Yallourn Mine Rehabilitation Project

Feasibility Stage Design Report

PSM4487-200R 13 May 2025

Executive Summary

This report presents the results of the Feasibility Level Rehabilitation Design for the Yallourn Mine. The design has been carried out at the request of EnergyAustralia Yallourn (EAY)

In 2023 a high-level strategic study assessed from first principles the geotechnical approaches for rehabilitating Yallourn Mine that best suited the technical setting and conditions at the mine site. The study was risk based and considered the main elements necessary to achieving a safe, stable and sustainable rehabilitation outcome for the site.

The Feasibility Design comprises a more detailed and comprehensive technical evaluation of the concepts and ideas developed during the strategic study.

The mine cover a very large area with 19 different geotechnical mine domains and 6 sub-MRD domains each with a unique combination of size, ex-pit topography, current surface water diversions, land ownership, internal mine batter geometry, geological, geotechnical and groundwater conditions. Superimposed onto this base there are a large number of other important time, spatial, geometric, geological and geotechnical factors. Development of an acceptable rehabilitation design for the mine cannot be undertaken without incorporating adequate surface water control in Peripheral Catchments. The main concept for achieving this surface water control is to drain the critical Peripheral Catchments into the mine in a controlled manner. This is a fundamental cornerstone of the rehabilitation strategy. The other is to fill the pit voids to their design levels to stabilise the landform.

The Feasibility Rehabilitation Design and assessment included:

1. Classification of each domain into different qualitative geotechnical and surface water risk ratings (Risk Rating Low to High), and EAY consequence category from planned post mining land use (Consequence Category 1 to 5).
2. Development of a robust geotechnical model, with accurate geometry, structural model, conservative strength and groundwater parameters, validated with testing, historic mapping and monitoring.
3. Classification of current and future landforms in a geomorphic context: based on inspection of existing landforms slopes in Haunted Hills Formation are stable at angles up to around 25° (slightly steeper than 2H:1V), although for taller slopes the natural trend is towards a slope of 15° (around 4H:1V).
4. Discussion and development of a Yallourn-specific Design Intent Period and Design Acceptance Criteria. A Design Intent Period of 100 years from completion of rehabilitation for the rehabilitation design of mine slopes and MRD is generally accepted, especially considering the uncertainties of climate change effects.
5. Assessment of mine stability in the context of:
    a. Geotechnical slope stability and the stabilising benefits of pit lake filling;
    b. Sensitivity of slope stability to increases in failure shear strength, buttressing, drainage, and flood loads;
    c. Slope stability from seismic loads;
    d. Slope stability from surface water ingress to establish requirements for peripheral surface drain design;
    e. The assessment indicates that pit lake filling and some buttressing in specific locations is effective in achieving adequate stability over a range of design scenarios. More seismic assessment is needed in future design stages, particularly in areas with high Consequence Category.
    f. The assessment also provides requirements for peripheral catchment drain design, including drain extent, type, and design acceptance criteria.
6. Assessment of MRD of various stability and deterioration mechanisms

The MRD rehabilitation design outcomes include:

1. Re-purpose the river diversion into a rural levee system with the low flow channel conveying environmental flows.
2. In doing so, flattening and lowering of the embankment batters to improve resistance to deterioration mechanisms. Appropriate surface treatment on levee surfaces to reduce the likelihood of deterioration or scour.
3. Design the levee levels cognisant of likely long term settlement quantity and timeframe, and allowing design flood flows to pass through MRD uninterrupted.

4. Include spillways upstream and downstream to control flood flow levels and manage levee overtopping.
5. Stabilising the arches in existing conveyor tunnels by partial backfilling with concrete, essentially constructing a permanent lining.
6. Appropriate construction timeframe for the above works to minimise future repair and maximise effectiveness of the works.
7. Adaptive management, ie, appropriate inspection and maintenance regime, in accordance with government guidelines and cognisant with performance of the structure, throughout the design intent period of operation.

The key Yallourn Mine rehabilitation design outcomes include:

1. Pit lakes to be filled to a design level (RL 37 m), and spillways to be constructed at various times in the rehabilitation period to manage flood flows that exceed design level.
2. Overall batter slope based on stability, with buttressing requirements for rehabilitation.
3. Peripheral drainage to eliminate block sliding mechanisms where it governs stability;.its drain extent, position, type based on risk and stability assessment.
4. Reprofiling and landform development above lake level that are in harmony with pre-existing natural geomorphology and site experience.
5. These will be further explored in detailed design phase.

Table of Contents

1. Introduction 15

2. Approach to Rehabilitation at Yallourn Mine 16

3. Data 18

3.1 Data Source and Type 18

3.2 Existing Data 18

3.2.1 Geotechnical Drilling or Investigation Data 18

3.2.2 Instrumentation 18

3.2.3 Batter and Sub-Surface Deformations 18

4. Background, History and Timing 20

4.1 History of Mining 20

4.2 Timing 20

4.3 Existing Mine Rehabilitation and Closure Plans 21

4.4 Geography, Mine Layout, Batter Domains and Infrastructure 21

5. Risk Assessments 22

5.1 Introduction 22

5.2 Geotechnical Risk Assessment System 22

5.3 Surface Water Risk Assessment System 23

5.4 EA Consequence Classifications 27

5.5 Post Mining Land Use and Consequence Classifications 28

5.6 Consolidated Risk Assessment Outcome 28

5.7 Design Application 30

6. Geological, Groundwater and Geotechnical Models 31

6.1 General Discussion 31

6.2 Geological Model 31

6.2.1 Introduction 31

6.2.2 Regional Geology 31

6.2.3 Yallourn Geological Models 32

6.2.4 Aims and Methodology 32

6.2.5 Borehole Data and Information 32

6.2.6 Validation and Checking of EAY Geological Models 33

6.2.7 Structural Geology 33

6.3 Groundwater Model 33

6.4 Geotechnical Model 34

6.4.1 Movements and Deformations 34

6.4.2 Geotechnical Sections 35

6.4.3 Interseam Shear Strength 36

7. Engineering Geomorphology Model 41

7.1 Background 41

7.2 Geology and Landform Evolution 41

7.3 Land Systems 42

7.4 Pre-mining Landforms 42

7.5 Post Mining Landforms 43
7.6 Yallourn Coal 43
7.7 Rehabilitation Trials 43
7.8 Analogues for Rehabilitation Slopes and Slope Performance 44
7.9 Factors for Batter Slope Angles for Rehabilitation Design 47

8. Design Intent - Timeframes, Climate Change and the Approach to Defining the Design Intent Period for Rehabilitation 48

8.1 Introduction 48
8.2 Design Life, Design Service life and Design Intent Period 48
8.3 Discussion on Project Development Stages, Design Life and Design Intent 48
8.4 General Guidance from Published Standards and Documents 48
8.4.1 Civil Engineering Structures 48
8.4.2 Discussion 50
8.5 General Guidance Earth and Mine Waste Structures 50
8.5.1 General 50
8.5.2 Actual Experience 51
8.5.3 Summary 52
8.6 Climate Change and the Design Intent Period 52

9. Design for Surface Water 54

9.1 Background 54
9.2 Regional Hydrology 54
9.3 Mine Peripheral Catchments 55
9.3.1 Catchment Area and Existing Infrastructure 55
9.3.2 Bushfires 56
9.3.3 Forestry 57
9.4 Critical Aspects for Closure 58
9.4.1 Overall Closure Aspects 58
9.4.2 Down Batter Drain Concepts 58
9.4.3 Critical Hydrology Aspects 61
9.5 Design Steps 62
9.6 Design Hydrologic Likelihood vs AEP 62
9.6.1 Hydrologic Likelihood 62
9.6.2 Non-stationary Hydrologic Likelihood 63
9.7 Down Batter Drain Design Types 66
9.7.1 Drain Types and General Inputs 66
9.7.2 Batter Drains with Various Surface Protection 66
9.7.3 HDPE Pipes 70
9.7.4 Herringbone Drains 74

10. Design for Seismic Action 76

10.1 Introduction and Context 76
10.2 Seismic Hazard Assessment 76
10.3 Assessment Methodology 77
10.4 Domain Risk Rating 77
10.4.1 Comparison to Industry Standard 77

10.5 Geological Siting and Soil Profile 78
10.5.1 Average Shear Wave Velocity 78
10.5.2 Seismotectonic Setting 78
10.5.3 Past Seismic Activities 79
10.5.4 Earthquake Magnitude 5.0 on 19 June 2012 80
10.5.5 Earthquake Magnitude 5.9 on 22 September 2021 81
10.6 Seismic Hazard Assessment 81
10.6.1 Seismic Source Models 81
10.6.2 Ground Motion Models 81
10.6.3 Peak Ground Acceleration 81
10.6.4 Response Spectra 82
10.7 Earthquake Design Parameters and Assessment 82
10.7.1 Earthquake Design Parameters 82
10.7.2 Comparison of AEP and Resulting PGA with Established Standards 83
10.7.3 Further Work in Detailed Design 84

11. Design for Slope Stability 85

11.1 Basis of Rehabilitation Feasibility Design for Geotechnical Stability 85
11.1.1 Overview of Stability Factors and Primary Failure Mechanisms 85
11.1.2 Guiding Principles for Long-Term Stability 85
11.2 Design Acceptance Criteria 86
11.2.1 Introduction 86
11.2.2 DEECA CDAC Main Objectives, Technical Questions to reduce data uncertainty 87
11.2.3 DEECA CDAC Slope Design Acceptance Criteria 87
11.2.4 EAY Rehabilitation Framework and design approach 88
11.2.5 How does the EAY Rehabilitation design approach address and satisfy the DEECA CDAC Objectives and Technical Questions 88
11.2.6 How the EAY Strategy Addresses the DEECA CDAC CoV and PoF Requirement 90
11.2.7 How the EAY Strategy Addresses the DEECA CDAC FoS Requirement 91
11.2.8 Discussions and Conclusions 91
11.3 Discussion on Criteria for Stability Analysis 91
11.4 Slope Stability Assessment 93
11.4.1 Methodology 93
11.4.2 Geotechnical Sections, Model, Parameters 93
11.4.3 Groundwater Conditions 94
11.4.4 Failure Mechanisms 94
11.4.5 Base Cases and Sensitivity Checks 95
11.4.6 Stability Analyses for Peripheral Catchment Drainage Design Assessment 96
11.4.7 Stability Analysis of the MRD 96
11.5 Presentation of Analysis Outputs 97
11.5.1 Presentation 97
11.5.2 Discussion 97
11.5.3 Summary 98
11.6 Assessment of Stability and Deformations Under Seismic Loading 104
11.6.1 Context 104
11.6.2 Conversion of PGA to Pseudo-Static 104
11.6.3 Back-Analysis 104

11.6.4 Pseudostatic Limit Equilibrium Stability Analysis 105
11.6.5 Empirical Assessment of Displacements 106
11.6.6 Discussion 107

12. Surface Water Peripheral Drainage System Assessment 109

12.1 Risk 109
12.2 Design Criteria 109
12.2.1 Criteria for Geotechnical Stability 109
12.2.2 Criteria for Drain Design 109
12.2.3 Comparison with Industry Standard 112
12.3 Stability and Surface Drainage and Risk-based Design Assessment 112
12.3.1 Concept and Strategy 112
12.3.2 Assessment Objectives 113
12.3.3 Assessment Process 113
12.4 Final Rehabilitation Outcome: Drainage, Stability, Risk 114
12.4.1 YEF NB West 115
12.4.2 YEF NB East 116
12.4.3 YEF LRB 117
12.4.4 YEF LREB North 118
12.4.5 YEF LREB South 121
12.4.6 YEFX SB 123
12.4.7 MVF EB 124
12.4.8 MVF SB 126
12.4.9 MVF WB 128
12.4.10 YTF FSPB 129
12.4.11 YTF FPB 129
12.4.12 YTF SB and SWB General Discussion 129
12.4.13 YTF SB 131
12.4.14 YTF SWB 132
12.4.15 YTF HOB South 134
12.4.16 YTF HOB North 135
12.4.17 YTF WB 137
12.4.18 YTF NB and RCB 140
12.4.19 YTF LS 141
12.5 Summary of Domain Specific Surface Drainage 142

13. Rehab Batter and Landform Design and Stability Implications 145

14. MRD Rehabilitation Design 148

14.1 Background, History, Design Intent and Performance 148
14.1.1 Introduction 148
14.1.2 Background 148
14.1.3 Performance since Completion 149
14.1.4 Risks to the MRD 150
14.1.5 Summary of MRD Historic Design, Construction and Status 150
14.2 MRD Rehabilitation Design Objectives 150
14.3 Design Investigations and Studies 151
14.3.1 Introduction 151

14.3.2 Basis of Design 151
14.3.3 Site Investigations and Material Parameter Selection 157
14.4 MRD Design Assessments 158
14.4.1 Criteria 158
14.4.2 Stability Analyses 158
14.4.3 Settlement Assessment 159
14.4.4 Protection from Wave Action 160
14.4.5 Liquefaction Susceptibility 161
14.4.6 Piping Potential 161
14.5 MRD Feasibility Design 163
14.5.1 Concepts 163
14.5.2 Design for Stability 164
14.5.3 Design for Settlement 164
14.5.4 Design for Other Deterioration Mechanisms 165
14.5.5 Design for Levee Overtopping 166
14.6 Conveyor Tunnels 167
14.7 Construction Sequencing and Program 168
14.8 Maintenance 169
15. Final Lake and Spillway Level and Position 170
15.1 Design Intent 170
15.2 Latrobe & Morwell River Event Scenarios 170
15.3 Rehab Concepts 171
16. Rehabilitation Design Summary 172

List of Tables

Table 1 - Surface Water Domain Risk Assessment 25
Table 2 - Summary of the EAY DMRP Consequence Classifications 27
Table 3 - Comparison of Risk Assessments and Risk Factors for Each Domain Under Current Conditions 29
Table 4 – Statistical spread of validated laboratory interseam shear strength values 39
Table 5 – Down Batter Drain Option Influencing Factors 59
Table 6 – Hydrologic Likelihood (%) 63
Table 7 – Comparison of Earthlok and Articulated Concrete Mattress Drain Dimensions 69
Table 8 – Debris Potential classification 74
Table 9 - Land use consequence category comparison to AS4678 and NCC2019 77
Table 10 - Earthquakes recorded with magnitude Mw ≥ 5.0 close to Yallourn 80
Table 11 Design PGA's for different AEP's for Yallourn 81
Table 12 - PGAs for design. 83
Table 13 - Comparison with BCA importance level and AEP 83
Table 14 - Comparison with AS1170.4 AEP and earthquake action 84
Table 15 - Proposed slope design acceptance criteria for inter-ramp and overall open pits slopes (DEECA CDAC) 88
Table 16 – Material properties adopted for LE analyses. 94
Table 17 – Summary of stability analyses 99
Table 18 - Empirical co-seismic displacement estimates for sections with a FoS <1 for the 100-year design intent period 106
Table 19 Sizing Criteria for Peripheral Drain 111
Table 20 – Probability of Exceedance during Design Intent Period ("PoE during DIP") 112
Table 21 – Summary, Final Rehabilitation Outcome: Drainage, Stability, Risk 143
Table 22 - Embankment Fill design parameters 157
Table 23 - MRD Failure Mechanisms, Consequence and proposed design solution 158
Table 24 MRD Deterioration Mechanisms 165

List of Figures

Figure 1: Location of Existing Infrastructure 179
Figure 2: Existing & Planned Buttresses & Dumps 179
Figure 3: Final Rehabilitation Plan 179
Figure 4: current EAY planned PMLU 179
Figure 5: consequence category for each rehabilitation domain for EOM and through lake filling 179
Figure 6: consequence category for each domain once lake filling is complete 179
Figure 7: existing peripheral catchment drains 179
Figure 8: plan overview of all geotechnical investigation data 179
Figure 9: plan overview of all instrumentation 179
Figure 10: Topography & Mine Layout 179
Figure 11: Rehabilitation Domains & Stability Section Locations 179
Figure 12: Section Type & Location Plan 179
Figure 13: Geotechnical Domain Risk Plan 179
Figure 14: Surface Water Domain Risk Plan 179
Figure 15: Yallourn Coal Floor Dip Plan 179
Figure 16: Yallourn Coal Thickness Plan 179
Figure 17: Geology Plan 179
Figure 18: Borehole & Confidence Location Plan 179
Figure 19: Illustration of Groundwater Conditions - YEF-LRB 179
Figure 20: Illustration of Groundwater Conditions - YTF-WB 179
Figure 21: Groundwater Hydrographs HHF & Yallourn Seam - YEF-LRB 179
Figure 22: Groundwater Hydrographs HHF & Yallourn Seam - YTF-WB 179
Figure 23: Geotechnical Section - Section 4 (YEF-LRB) 179
Figure 24: Geotechnical Section - Section 27 (YTF-WB) 179
Figure 25: Deformations Recorded During Mining 179
Figure 26: Length of Outer Batter Zone Versus Slope Height 179
Figure 27: Validated Direct Shear Tests Residual Shear Strengths 179
Figure 28: Basic Natural Land Systems 179
Figure 29: Inferred Pre-Mining Geomorphology 179
Figure 30: End of Mining Geomorphology 179
Figure 31: Climate Change Temperature Predictions Relative to 1995 Baseline 179
Figure 32: Failure Mechanisms Analysed Per Section & Domain Landform Type 179
Figure 33: FOS for Multilinear failure at end of mining 179
Figure 34: FOS for Multilinear failure at final lake level 180
Figure 35: Plan showing Qualitative Risk for Drain Design per Domain 180
Figure 36: MRD Domains 180
Figure 37: MRD rehab design sketch 1 180

Figure 38: MRD rehab design sketch 2 180
Figure 39: Regional catchments for Latrobe & Morwell rivers 180
Figure 40: Conceptual flood hydraulics of the MRD 180
Figure 41: Conceptual layout of the Yallourn surface water system 180
Figure 42: MRD system in a Latrobe-dominant flood 180
Figure 43: MRD system in a Morwell-dominant flood 180
Figure 44: MRD system in a Latrobe-dominant flood with RL33.4m lake level 180
Figure 45: MRD system in a Latrobe-dominant flood with RL37.0m lake level 180
Figure 46: Proposed feasibility level peripheral catchment drainage for geotechnical stability 180

List of Insets

Inset 1: DMRP Schedule (from EAY 2024) 20

Inset 2: Domain Geotechnical Risk Ratings 23

Inset 3: Domain Surface Water Risk Ratings 27

Inset 4: Schematic representation of coal sedimentary depositional environment (from Walker et al 1984) 37

Inset 5: Typical depositional models showing distribution of fine-grained material (from Horne et al 1978 and Miall 1996) 37

Inset 6: Example of valley landform evolution around Yallourn mine 42

Inset 7: Rehabilitation Trial YEF LREB 44

Inset 8: Rehabilitation Trial YEF LREB batters, view looking north 44

Inset 9: Slope performance of road and mine cuttings in HHF 45

Inset 10: Slope performance of natural slopes in HHF 46

Inset 11: Engineered mine waste structure design life (from Anderson et al 2016) 51

Inset 12: Relative influence of engineered construction versus evolving environmental impacts during the life of a closed facility (from Fourie et al 2012) 52

Inset 13: Yallourn Area Mean Monthly Rainfall and Evapotranspiration 55

Inset 14: 1944 Bushfire (burnt areas shown in red, from Slight 1944) 56

Inset 15: 2014 Bushfire (burnt areas shown in orange) 57

Inset 16: HVP Planation Felling 58

Inset 17: flow over coal batter (2012/2013) 60

Inset 18: Flood discharge into YTF in 2012 61

Inset 19: surface water design considerations for non-stationary conditions 64

Inset 20: Typical section, articulated concrete mattress drain 67

Inset 21: Synthetex Hydrotex® Articulating Block 67

Inset 22: Articulated Concrete Mattress Systems Duct Component 68

Inset 23: Earthlok Concrete Mats 69

Inset 24: Typical cross section, rockfill chute drain 70

Inset 25: schematic, HDPE pipe with inlet pit 71

Inset 26: Schematic, HDPE pipes with embankment inlet 72

Inset 27: Existing culvert infrastructure within the catchment showing blockage from various sources 73

Inset 28: Herringbone Pattern Drain. 75

Inset 29: Contour Drain Options 75

Inset 30: Yallourn mine, sites used for seismic hazard assessment (pink) and seismic test locations (red) 76

Inset 31 Neotectonic features identified close to Yallourn (mine in yellow) 79

Inset 32: Earthquakes recorded with magnitudes Mw ≥ 5.0. The location of the mine is the yellow polygon. The number next to the epicentre (red stars) denote the event Mw 79

Inset 33: Extensometer Ch148320 Movement, January to December 2012 80

Inset 34: Response spectrum for all AEP's 82

Inset 35: Main failure mechanisms at Yallourn. The primary large-scale failure mechanism is a block slide along the underling clay interseam with water loading of pre-existing joints. 85
Inset 36: Summary model of principal factors and considerations for rehabilitation. 86
Inset 37: Schematic of assessed failure mechanisms 95
Inset 38 Consideration for peripheral catchment and second order drains 111
Inset 39: Key features in YEF NB and LRB Domains 115
Inset 40: Main elements of YEF Latrobe Road Batter domains 119
Inset 41: Landforms and existing drainage in domain YEF LREB North 120
Inset 42: Landforms and existing drainage in domain YEF LREB South 122
Inset 43: Landforms and existing drainage in domain YEF SB 123
Inset 44: Landforms and existing drainage in domain MVF EB 125
Inset 45: Landforms and existing drainage in domain MVF SB 126
Inset 46: Landforms and existing drainage in domain MVF WB 128
Inset 47: Landforms in Domains YTF SB & SWB 130
Inset 48: Existing Drainage in Domains SB and SWB 130
Inset 49: Landform and existing drainage YTF HOB South 134
Inset 50: Landform and Existing Drainage YTF HOB North 136
Inset 51: Landform and Existing Drainage YTF WB 138
Inset 52: Landform and Existing Drainage YTF NB and RCB 140
Inset 53: Landform and Existing Drainage YTF LS 141
Inset 54: Typical mine batter landform sections 146
Inset 55: Typical rehab landform treatment options 147
Inset 56: Geology and Geometry of the MRD and example of vertical (differential) movement recorded along the MRD between November 2013 and December 2021 149
Inset 57: MRD Terminology 152
Inset 58: Potential MRD Failure Mechanisms 154
Inset 59: Potential MRD Deterioration Mechanisms 155
Inset 60: Design effectiveness for MRD failure mechanisms with time 155
Inset 61: Design effectiveness for MRD deterioration mechanisms with time 156
Inset 62: Role of maintenance to MRD functionality 156
Inset 63: MRD fill thickness, western levee crest (from PSM4487-137R Figure 2) 160
Inset 64: Assessed MRD settlement, western levee crest, 100 years (from PSM4487-137R Figure 4) 160
Inset 65: Piping potential for a “flood event” scenario 162
Inset 66: MRD Levee crest RL after 100 years 165
Inset 67: Elevation of the 4 conveyor tunnels (taken from SMEC design drawing LV49/1-2/002, 2002) 167
Inset 68: Typical Arch Section (taken from RECO design drawing LV49/1-2/091, 2002) 167

List of Appendices

Appendix A Monitoring Plans

Appendix B Geology, Deformations and Pin Movement Domain Plans

Appendix C Geotechnical Sections

Appendix D Domain Groundwater Information

Appendix E Interseam Shear Strength Data

Appendix F Limit Equilibrium Stability Analyses Outputs

Appendix G Empirical Co-Seismic Displacement Assessment

Appendix H Stability Analyses Summary Plans and Interpretive Plots

Appendix I MRD Assessment

Appendix J Peripheral Catchment Arrangement

1. Introduction

This report presents the results of the Feasibility Level Rehabilitation Design for the Yallourn Mine. The design has been carried out at the request of Energy Australia Yallourn (EAY) and has been prepared in support of the Declared Mines Rehabilitation Plan (DMRP).

This design follows on from a high-level strategic rehabilitation study undertaken in 2023, which assessed from first principles the geotechnical approaches for rehabilitating Yallourn Mine that best suited the technical setting and conditions at the mine site. Although some rehabilitation studies had already been undertaken, the strategic study was formulated without reliance on earlier works. The study was risk based and considered the main elements necessary to achieving a safe, stable and sustainable rehabilitation outcome for the site. This risk-based approach to the rehabilitation design has been continued forward from the strategic study.

The Feasibility Design comprises a more detailed and comprehensive technical evaluation of the concepts and ideas developed during the strategic study. This design also provides a more in-depth assessment of the MRD focussing on the future and integrating it into the long-term rehabilitation aims. The main areas of this design assessment comprise:

- Background, History and Timing;
- Data sources;
- Risk assessments,
- Geological, groundwater and geotechnical models;
- Engineering geomorphology model,
- Design intent and climate change;
- Design for surface water,
- Design for seismicity,
- Design for geotechnical batter stability,
- Surface Water control and peripheral catchment drainage design assessment,
- The Morwell River Diversion (MRD); and
- Discussion and design for pit lake and spillway interaction.

This report includes three main technical components of the rehabilitation design assessment:

1. MRD:
    a. Basis of Design.
    b. Investigations and studies.
    c. Design assessments including settlement, wave action, liquefaction susceptibility.
    d. Design concepts, discussion on construction sequence, and operation maintenance.
2. Geotechnical Stability assessment:
    a. Geological, Engineering Geomorphology, Geotechnical and Groundwater Models.
    b. Shear Strengths.
    c. Consideration of seismic inputs.
    d. Stability Analyses.
    e. Design for peripheral drain extent.
3. Surface water assessment:
    a. Basis of Design.
    b. Design approach.
    c. Surface Water control concepts.
    d. Peripheral drain design.

The Yallourn North Open Cut is not included in this design and is being assessed separately by EAY.

2. Approach to Rehabilitation at Yallourn Mine

The Latrobe Valley mines are quite different to other mines in Australia, and probably globally, because they comprise very large open pits with very thick, very low-density coal seams. In this geotechnical setting the stability of the batter slopes is highly sensitive to any water loading. Hence this design has focussed principally on what are considered to be key elements for successful rehabilitation in the Latrobe Valley:

- Stability,
- Effective control of water, and
- Where possible the potential beneficial use of water for stability control.

However, Yallourn Mine is also unlike the other two Latrobe Valley mines because:

1. There is substantial topographic relief around the mine, with large parts of the mine well above a free spilling 37 mRL lake level. Thus, both rising topography and surface catchments extend well outside the mine. These peripheral catchments present a potential destabilising water load risk for the mine batters.
2. There are more complex larger-scale geological structures present, which lie close to but outside the mine crests. The mine was deliberately sited to avoid these structures to enable safe efficient mining, but the legacy issue for rehabilitation is the structures remain and lie close to the batters. Hence their consideration is fundamental to the rehabilitation studies. Some legacy issues are also linked with mining practices during SECV ownership of the Mine, prior to privatization of the electricity sector in Victoria.

The strategic design identified and categorized rehabilitation domains around the mine based on:

- Geological setting,
- The peripheral surface water catchments,
- Groundwater conditions,
- Geotechnical conditions,
- Existing surface topography outside the mine crest,
- Understanding the long-term historical batter slope performance in each domain and using the larger-scale structural geology to define potential movement zones outside the mine, and
- Assessing the likely future success and potential problems with man-made surface water diversions in the long-term post closure.

The other discipline that was incorporated into the strategic study was engineering geomorphology. Yallourn Mine was excavated through pre-existing natural landforms. The rehabilitation, which will take place in the same geographic locations and geological materials, and hence needs to be informed by that historic understanding of the natural environment. This engineering geomorphological understanding was then used to assess and categorize the performance of man-made slopes excavated for the mine and some trial rehabilitations of the mine batters.

These factors formed the basis for the risk-based domain classifications, which were assessed against the historical understanding of the major controls on batter movements and stability in the Latrobe Valley. This work then led into the development of the overall aims for rehabilitation strategy, which are to:

1. Identify the risk rating for each of the rehabilitation domains so that site specific remediation strategies may be developed and implemented as part of the mine rehabilitation, Section 5.
2. Assess the feasible range of measures to control the major de-stabilising factors to limit the large-scale batter movement potential, Section 11.
3. Assess the general approach to water control measures around the mine that are in accord with the final rehabilitated landform planned by EAY, Section 12.
4. Protect the slopes from large water ingress through suitable control of the peripheral surface catchments, Section 12.
5. Assess the stabilizing benefits from a range of lake levels, Section 15.
6. Develop landforms above final lake level that are in harmony with the pre-existing natural geomorphology and site experience, Section 13.

It has been stated in the strategic study that much of the study focus in mine rehabilitation typically had been on trying to specify the Design Acceptance Criteria (DAC) that should be used in all circumstances, albeit this is implied

rather than explicitly stated. However, this approach fails to capture the extremely wide range of mine types and conditions. In that context, the Latrobe Valley Mines are in many areas quite unique and require a site-specific rehabilitation design approach that includes DAC as one of the outcomes but not as a primary input at the start of the process. In addition, based on the Yallourn-specific geological and topographical settings, and the legacies that resulted from this, different DAC will apply to the different rehabilitation domains around Yallourn Mine.

Thus, the DAC's for long term rehabilitation cannot be predetermined but are an outcome of the design. These DAC's of necessity may then also require consideration of the potential post mining land use (PMLU). Where the feasibility design process identifies domains with negative impacts or with lower than acceptable stability, then the PMLU may need to be reconsidered.

This is the approach taken in this Feasibility Stage design. While the PMLU was an input for this assessment, it is understood that it is not fixed and is likely to change based on the findings of the feasibility design assessment and other technical study findings, being progressed by others.

In order to ameliorate any potential negative perceptions of the resultant DAC's developed from this design a different design approach has been followed. This entails a thorough detailed evaluation of the levels of confidence and uncertainties around all the stability models as applied to both the resistance and disturbing factors used in the stability equations. In summary this has entailed:

- Checking and validation of the geological model for each domain in order to provide high reliability models for the stability analyses,
- Development of comprehensive geotechnical and groundwater models for each representative section in each domain,
- Detailed review of all the direct shear strength testing and adoption of a lower bound residual shear strength from the lower population for design,
- Compilation of and incorporation into the stability analyses of domain and section specific groundwater pressure profiles,
- Incorporation of upper and lower bound groundwater recovery pressures into the stability analyses for each domain for the End of Mining (EOM) lake Filling and Lake Full situations,
- Evaluation of multiple failure modes,
- Assuming full groundwater recovery in the long-term post lake filling,
- Design of the Peripheral Catchment drainage structures to effectively eliminate the potential for adverse surface water loading events, and
- Risk based design for surface water overtopping and seismic loading.

The MRD is a complex structure that has continued to show adverse deterioration that has increased over time. These effects are a manifestation of the interaction of the poor choice of materials used for construction and the design. Over the limited design life to date, the MRD has already failed once (2012) and had an additional major stability incident (2021). This Feasibility rehab design has focussed on the engineering characteristics of the construction materials and how these have led to the mechanisms contributing to the deterioration of the structure. The rehab design has adopted the long-term aim to maintain environmental flows through the MRD, which is considered to provide the maximum benefit to the stakeholders. In order to achieve this the MRD will be repurposed such that it can reliably continue to carry Morwell River environmental flows and design flood flows but impacts of the adverse material characteristics and deterioration mechanisms are minimised.

3. Data

3.1 Data Source and Type

The following data has been used for the development of the rehabilitation strategy and feasibility design:

- Factual information (from EAY) on
  - Drilling data,
  - Instrumentation, including piezometers, inclinometers, extensometers, horizontal drains,
  - Cracking and deformations on mine batters and outside the mine,
  - Geological structure mapping,
  - Movement monitoring around mine batters using survey pin and
  - Research investigations of old mine batters.

Much of the monitoring data has been discussed in the Strategic Study report and is not repeated here.

3.2 Existing Data

In a mining context, the level of knowledge, as informed by the extent, character and distribution of the factual data informs the understanding of the reliability of the geological, geotechnical and groundwater models. These models are the basis for the assessment and analysis of the stability and subsequent rehabilitation. The reliability of these models therefore directly informs the acceptability of the DAC.

3.2.1 Geotechnical Drilling or Investigation Data

Geotechnical data included those from core drilling, sonic geophysics, test pitting, and CPTs, Figure 8 (see also Figure 18). The information from these sources is used to formulate and validate the geological and geotechnical model, see Section 6.2.5.

CPT, geophysics and laboratory testing data is used to formulate and and validate the engineering parameters of the different geotechnical units, see Section 6.4.3, and especially for the MRD embankment materials Section 14.1.

3.2.2 Instrumentation

The full extent of the active instrumentation in and around the mine is shown Figure 9 and by rehabilitation domain in Appendix A. The instrumentation comprises:

- Survey pin monitoring,
- Piezometers,
- Inclinometers,
- Extensometers, and
- Horizontal bores.

The survey pin monitoring data is used for the risk ranking of the domains and for the definition of the strain zones as part of the PMLU assessment.

The piezometer data is used for the risk ranking of the domains and for the initial stability analyses.

The horizontal drain data is used in combination with piezometers hydrographs, and the Pore Pressure Profiles, for the risk ranking of the domains.

3.2.3 Batter and Sub-Surface Deformations

Figure 25 shows the location and extent of the historical and more recent surface cracking and batter deformations (i.e., 1979, 1997 and since 2000) observed around the Yallourn Mine. These records are used to develop an understanding of the underlying structural geology, see Section 6.2.7 as well as performance of old coal batters with time. The figure also shows the GHD 2021 assessment of the boundary of geotechnical risk, accounting for observed ground movements, and past and future mining activities. These were used to define the domain boundaries for the geotechnical rehabilitation design.

Borehole camera surveys undertaken by the GHERG Batter Stability Project at Federation University was reviewed by PSM , Section 6.4.1.2 and interpreted in Figure 26, recording cracks and deformations from old horizontal drains, to provide information on the character, deterioration and longer-term performance of the coal units within mine batters.

The interpretations are summarised as follows, Figure 26:

- There is an outer zone of increased frequency of deformations, which is a well-defined zone of deterioration of the batters where the stability will be more sensitive to adverse water loading events from rainfall runoff; and
- There is an approximate relationship between slope height and the width of the outer batter zone, with higher slopes resulting in a wider zone of deformation. The relationship is: the zone of higher deformation in length for the batter toe is approximately 3 times the batter height

This information is particularly useful in areas away from recent mining where the principal potential disturbing factors are:

- Rainfall runoff,
- Gravity and
- Weathering and or time dependent loss of material properties.

4. Background, History and Timing

4.1 History of Mining

The current mine layout and main current physical features of Yallourn Mine and its surrounds are shown in Figure 1.

Brown coal was identified for commercial use in the Latrobe Valley in 1874. In 1889, the Great Morwell Coal Mining Company was formed to mine coal on the northern bank of the Latrobe River for briquettes, in YNOC, but was abandoned ten years later. During the First World War the mine was reopened at a new open cut site called Yallourn located south of the Latrobe River, which is now known as the Yallourn Township Field (YTF). Work on the open cut, power station and briquette factory began in the 1920s. Power generation has been via a complex of power stations built progressively between the 1920s to the 1970s.

Mining of the Yallourn East Field (YEF) began in around 1991. In the early 2000s, the Morwell River was diverted for a second time and moved up to around 4 km upstream of its original confluence with the Latrobe River via the construction of the current MRD. The Maryvale Field (MVF) was developed from 2011. Several areas of the pits have been backfilled with overburden dumps or buttresses as part of the mining process and/or with rehabilitation in mind, Figure 2.

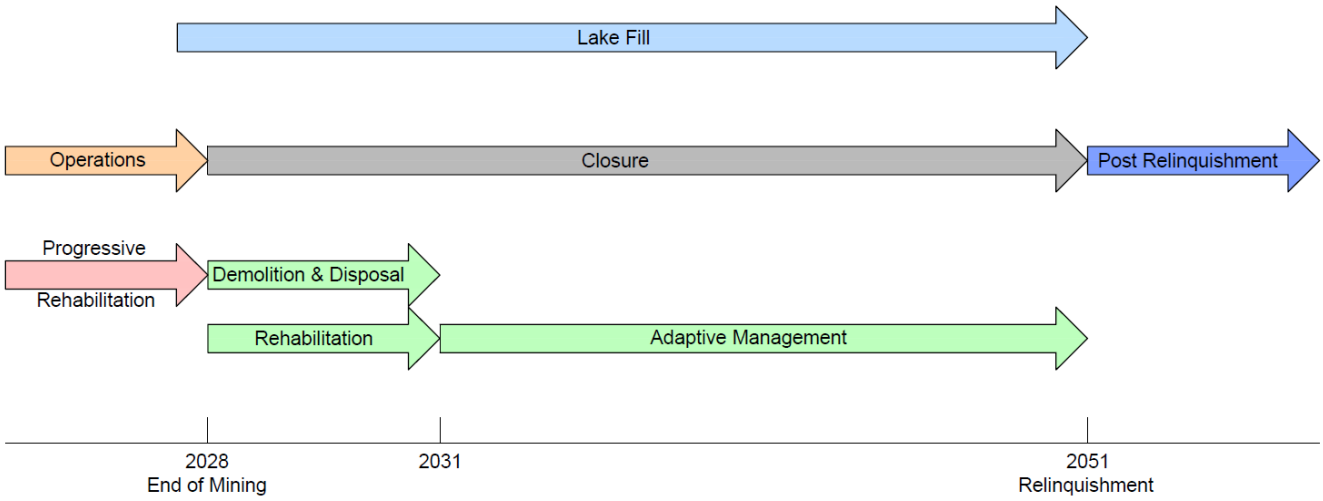
Mining in YTF commenced in the north near to and just to the south of the confluence of the Morwell and Latrobe Rivers, Figure 29. The location of the initial mine and the remaining mining in YTF were based on economic decisions made by the SECV, with mining continuing within lower lying topographic areas with lower overburden thickness.

The relevance of this history to the rehabilitation strategy is that many of the coal mine batters and other materials have been exposed in large scale excavations for many decades. This experience has been used directly to infer longer term performance.

4.2 Timing

The mine will continue extraction and power generation from now until the End of Mining in 2028 (EOM) and this will be followed by, Inset 1. The timing of these post EOM stages are presented as per current assumption, they may change as the rehabilitation requirements become better understood.

- EOM 2028,
- Lake Filling and Closure to 2051,
- Rehabilitation from 2028 to 2031,
- Adaptive Management 2031 to 2051, and
- Relinquishment 2051.



Inset 1: DMRP Schedule (from EAY 2024)

4.3 Existing Mine Rehabilitation and Closure Plans

Yallourn Mine operates within a mining licence under the Mineral Resources Sustainable Development Act (1990), which requires progressive rehabilitation.

Plans for Yallourn Mine closure and rehabilitation are outlined in the Rehabilitation and Closure Plan (RCP) produced by EAY in 2018 (EAY, 2018). It was developed considering the mine's regulatory, license, technical and community requirements for closure. The RCP states that the primary objective of mine rehabilitation and closure is to "…*achieve a safe, stable, non-polluting and sustainable landscape with no unacceptable liability to the State, community and the environment."* The current approved Yallourn Mine rehabilitation plan entails flooding to 37 mRL.

The current final rehabilitation plan is shown in Figure 3.

4.4 Geography, Mine Layout, Batter Domains and Infrastructure

The overall geography of Yallourn Mine, the principal elements of the mine itself, together with the important man made and natural infrastructure within and surrounding the mine are all fundamentally important for this Feasibility Rehabilitation Design, Figure 10. The mine comprises two very large excavations and a man-made structure:

- YTF in the west,
- YEF and MVF in the east and
- The MRD, which is an elevated structure 10's of meters above the adjacent mine floors.
- Although the MRD forms a physical barrier between the two excavations it does not form a hydraulic barrier because there are three large conveyor tunnels traversing under the MRD from YEF/MVF to YTF.

As discussed in Section 2, the rehabilitation domains have been defined for this feasibility design. The boundaries and extent of these domains are determined by geology, topography, catchment, and batter performance. The risk-based assessments, Section 5, based on domain-scale characteristics including existing and planned infrastructure commensurate to a feasibility stage design have been undertaken and reported in this document. More detailed design assessment within domains, based on individual infrastructure-at-risk, may be appropriate in future design stages and may lead to modifications to planned post mining land use or the rehabilitation design.

Figure 7 shows the full extent of the existing Peripheral Catchments surrounding the Rehabilitation Domains and Figure 11 shows the representative sections selected for each domain.

5. Risk Assessments

5.1 Introduction

The Yallourn Mine rehabilitation is a risk-based design. The mine scale and the range and variability of settings around the mine means the number, complexity and inter-relationships of the technical factors that need to be assessed and accounted for in the designs is very large. Consequently, in order to capture all the elements required for effective rehabilitation it has been necessary to use a particular approach to risk with a combination of technical and conventional risk consequence evaluations.

This process has been adopted for Yallourn because conventional risk matrixes are quite coarse and can result in some essential technical elements not being adequately addressed. The technical risk classification systems have been developed from first principles, and the benefits are that they help to focus on the important rehabilitation risk design factors for Yallourn within each domain. The EAY consequence ratings are in very close alignment with those used by Department of Energy, Environment and Climate Action (DEECA), incorporating likelihood and consequence analysis to address issues of safety, environmental impact, land and property, and cultural heritage; this is discussed in Section 5.4.

The consequence ratings are a step in the process to assist with:

- Selection of the design flows and probability of exceedance within the design intent periods and
- Focussing on the remediation design in the domains with Major and Critical Consequence ratings.

The risk evaluation thus entails a two-tier risk process:

1. The first tier uses separate evaluations of the geotechnical and surface water technical risk ratings for every domain in the mine.
2. The second tier uses a conventional consequence rating and ensures the designs effectively deal with the potential consequence issues around safety, environment, land and property; and cultural heritage.

Geotechnical risk assessment firstly defines the base conditions, which are the underlying factors that defines inherent risk. The system responses are subsequently evaluated, identifying how geometry, environmental exposure, and time may exacerbate these risks.

Similarly, surface water risk is assessed by firstly analysing the base conditions, such as catchment size and peripheral water sources, which are the inherent factors that categorise each domain. Subsequently, the complicating factors define those that may increase the future design complexity.

The approaches used to achieve this is set out in the following sections.

5.2 Geotechnical Risk Assessment System

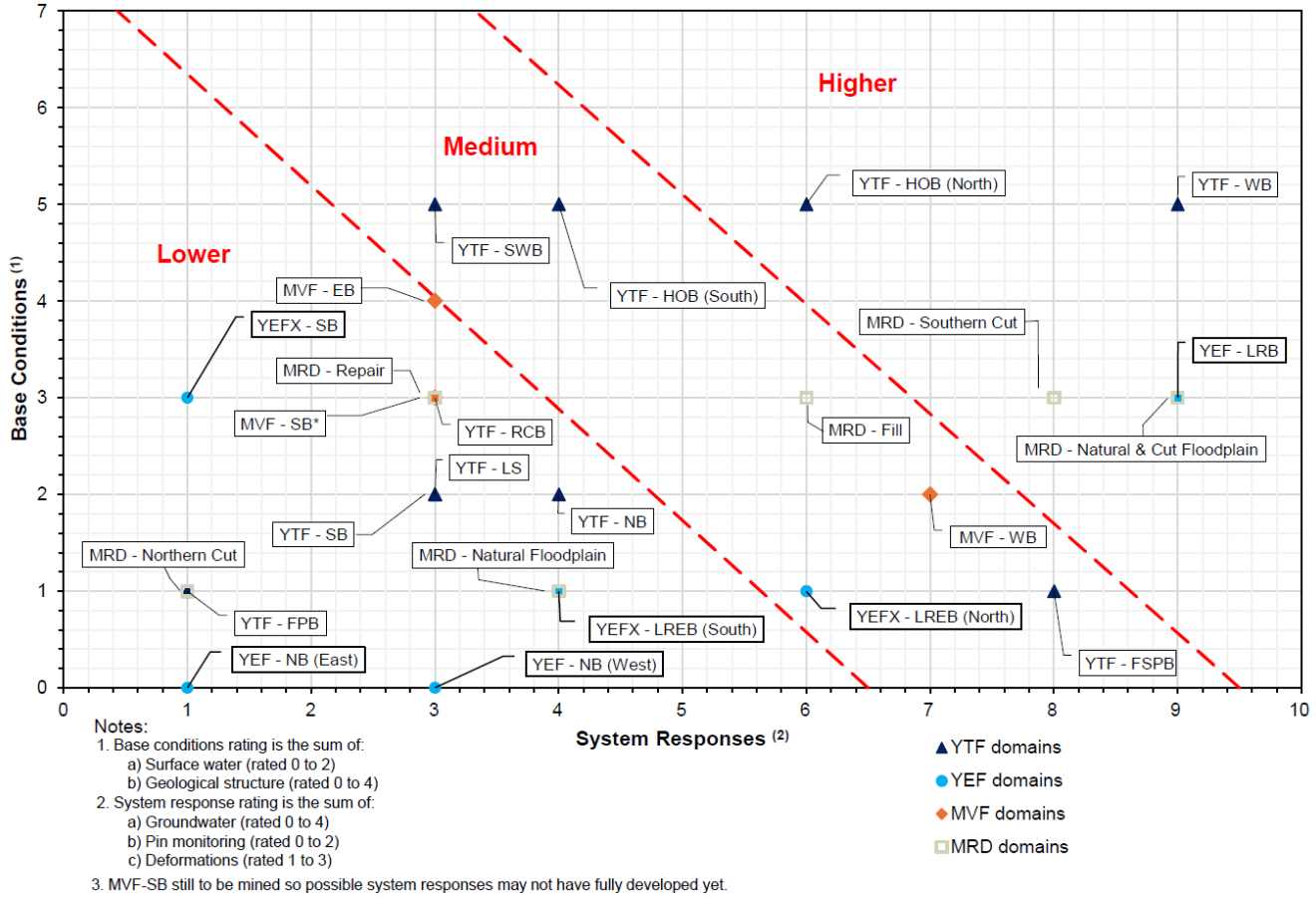
A geotechnical risk assessment framework was developed from first principles to define and classify the rehabilitation domains. It was a site-specific tool and based on the understanding of all the important technical areas that contribute to instability at Yallourn and the other Latrobe Valley mines. The geotechnical assessment framework comprises two elements:

- Base conditions and
- Responses.

The base conditions are the underlying factors that result in a basic risk setting. The system responses identify whether other factors, including exposure, time, environment, mining and mine geometry, have collectively or individually exacerbated the underlying risk setting. The presence of surface water bodies and geological structure were both considered base conditions that are the major drivers of instability at Yallourn. The groundwater responses in the domains, the movement monitoring and the mapped physical deformations are then combined to represent the responses of the system to these other factors that have occurred over time, that is the sensitivity factors. Because this risk approach is focussed on the sensitivity factors that could compromise the rehabilitation strategy it highlights the domains where additional consideration is required.

The geotechnical risk assessment rating is shown in Inset 2. This assessment resulted in the rehabilitation domains falling into three groupings, representing Lower, Medium and Higher risk settings. Figure 13 shows the Rehabilitation Domains colour coded for these risk levels.

The MRD risk assessment and rehabilitation design is presented in Section 14.



Inset 2: Domain Geotechnical Risk Ratings

5.3 Surface Water Risk Assessment System

A surface water risk assessment Figure 14 was also presented as part of the Strategic Rehabilitation Study however the assessment was quite different to the approach utilised for the geotechnical assessment. The surface water risk assessment followed a more conventional risk methodology and included factors linked to both likelihood and consequence. Review of the earlier surface water risk assessment as part of this risk-based design study showed that an alternate assessment methodology would assist in the Peripheral Catchment drainage design.

The risk assessment framework used to classify the Rehabilitation Domains for this study was also developed from first principles. It is a site-specific tool and based on the understanding of the important factors for control of potential adverse surface water loading events on mine stability. The overall aim of the assessment was to provide a sound basis for planning the rehabilitation such that activities were focussed on the important technical factors. The new assessment has followed a similar methodology to the geotechnical risk assessment, with two groupings:

- Base conditions and
- Complicating factors.

The base conditions are the inherent factors that categorize the domain and comprise:

1. Catchment size.
2. The nature of the Peripheral Catchment, for example this is illustrated by two end members:
   a. Low lying level terrain with small topographic relief which is considered to be a more easily controllable situation, compared to,
   b. An elevated catchment in steep terrain, which practically will present greater engineering and design difficulties.

The complicating factors are those elements that would increase the future design complexity and hence risk, and comprise:

- The complexity of the existing diversion infrastructure,
- The ability to guarantee future control, which could be compromised by factors such as the location of the mine license boundary, adjacent important infrastructure and or private land ownership close to the mine crest; and
- The simplicity of the future surface water control systems required.

The relative risk has been assessed for each Rehabilitation Domain by firstly listing all the important technical areas that contribute to instability and then assigning the numerical values as shown below in parentheses:

1. Catchment size:
    a. No significant Peripheral Catchment is present and/or the topography is flat and drainage is distributed (0).
    b. Small (1).
    c. Medium (2).
    d. Large (3).
2. The nature of the Peripheral Catchment:
    a. Single or multiple minor catchments on flat terrain (0).
    b. Single valley and or moderate terrain (1).
    c. Single valley in steep rising topography (2).
    d. Multiple valleys and or steep rising terrain (3).
3. Complexity of the existing surface water diversion infrastructure:
    a. Simple control systems - Low (1).
    b. Single medium sized diversion - Medium (2).
    c. Multiple intersecting and connected elements – High (3).
4. Simplicity of future surface water control system(s):
    a. Shallow grass lined surface drains constructed as part of rehabilitation (0).
    b. Single or multiple small diversions are possible (1).
    c. A single large diversion structure is required (2).
    d. Multiple large diversion structures with multiple ancillary water control systems are required (3).
5. Ability to control surface water in the future, which is a function of the land and catchment extent, future land-use and ownership as measured relative to the mine crest:
    a. Whole area and catchment is owned by EAY (0).
    b. Part of catchment and land ownership outside EAY property (1).
    c. Multiple land ownership and catchment largely outside EA property (2).

This assessment resulted in the rehabilitation domains falling into four groupings, Low, Medium, Medium-High and High risk settings. The risk ratings and the risk scores for each domain are presented in Table 1 and Inset 3. Figure 14 shows the Rehabilitation Domains colour coded for these risk levels.

It is noted there are some circumstances where a flat terrain could provide a more adverse condition for the Peripheral Catchment, Point 2a. above. However, at Yallourn it was adjudged that the adverse impacts of this were addressed in Points 3, 4 and 5 and hence the simple Peripheral Catchment classification was maintained.

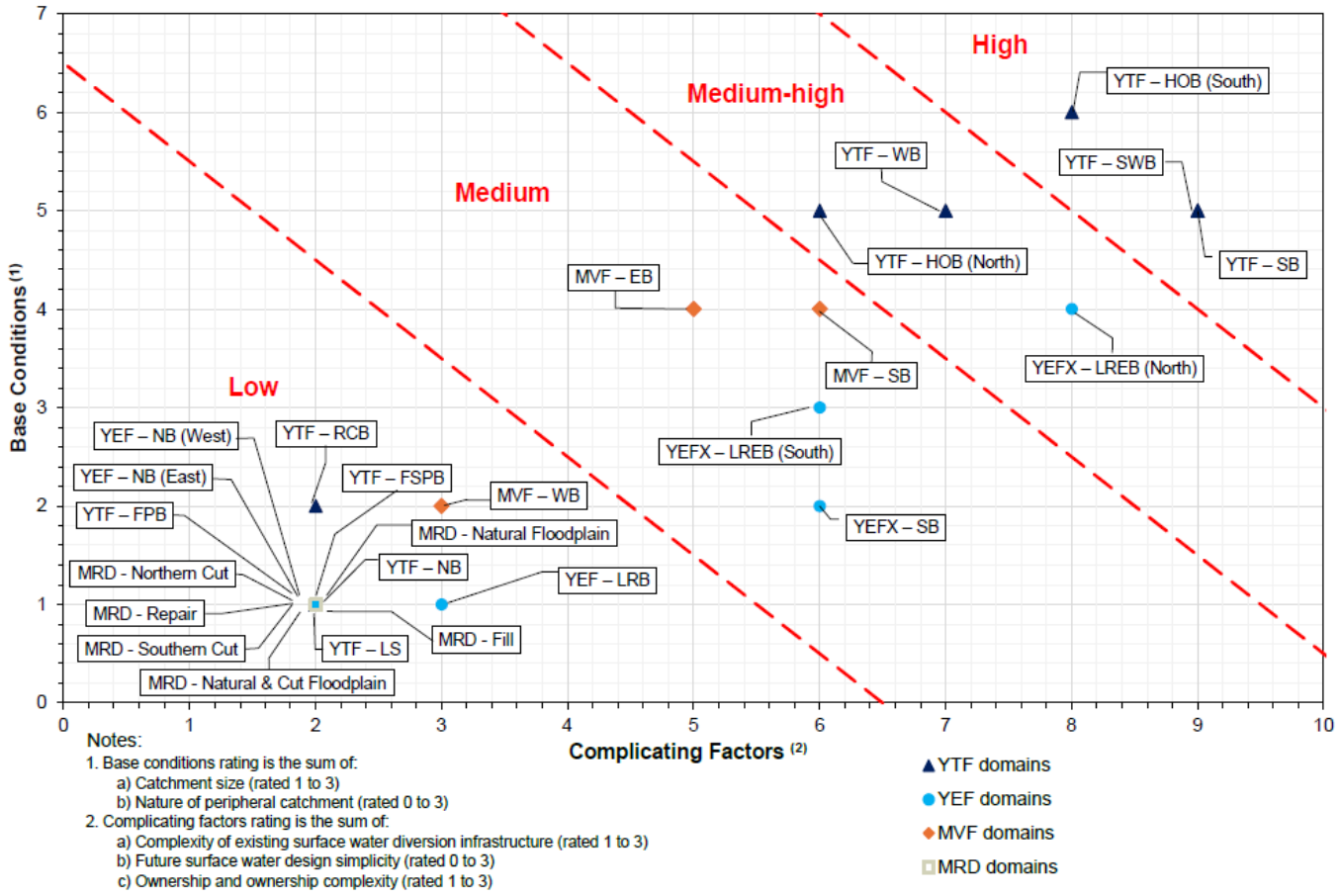
Comparison of Inset 2 and Inset 3 shows that while there is considerable overlap between domains with the higher risk ratings, some differences remain and that illustrates the benefit of the process.

Because this risk system is related to Peripheral Catchment drainage measures, it does not effectively deal with the situation where there are rivers or floodplains near or adjacent to a mine batter. However, the large potential environmental consequences associated with these domains are then covered by the second tier the consequence ratings.

Table 1 - Surface Water Domain Risk Assessment

Domain	BASE CONDITIONS					COMPLICATING FACTORS THAT INCREASE THE FUTURE DESIGN COMPLEXITY AND/OR RISK								Overall Risk Rating
	Catchment Size	Nature of Peripheral Catchment				Complexity of Existing Surface Water Infrastructure	Future Surface Water Design Simplicity				Ownership and Ownership Complexity			
	Small (1) Medium (2) Large (3)	Minor and flat terrain (0)	Single valley moderate terrain (1)	Single valley steep rising terrain (2)	Multiple valleys, and or steep rising terrain (3)	Low (1) Medium (2) High (3)	Simple shallow grass lined drains (0)	Single or multiple small diversions (1)	Single large down-batter drain (2)	Multiple large diversions and ancillary works (3)	Land and catchment owned by EA (1)	Part of catchment not owned by EA (2)	Multiple ownership, Catchment outside EA land (3)	
YTF – LS	1	0				1	0				1			3
YTF – RCB	2	0				1	0				1			4
YTF – NB	1	0				1	0				1			3
YTF – WB	2				3	3				3	1			12
YTF – HOB North	2				3	3			2		1			11
YTF – HOB South	3				3	3			2				3	14
YTF – SWB	3			2		3				3			3	14
YTF – SB	3			2		3				3			3	14
YTF – FPB	1	0				1	0				1			3
YTF – FSB	1	0				1	0				1			3
YEF – NB (West)	1	0				1	0				1			3
YEF – NB (East)	1	0				1	0				1			3
YEF – LRB	1	0				1	0					2		4
YEF – LREB North	3		1			2				3			3	11

Domain	BASE CONDITIONS					COMPLICATING FACTORS THAT INCREASE THE FUTURE DESIGN COMPLEXITY AND/OR RISK								Overall Risk Rating
	Catchment Size	Nature of Peripheral Catchment				Complexity of Existing Surface Water Infrastructure	Future Surface Water Design Simplicity				Ownership and Ownership Complexity			
	Small (1) Medium (2) Large (3)	Minor and flat terrain (0)	Single valley moderate terrain (1)	Single valley steep rising terrain (2)	Multiple valleys, and or steep rising terrain (3)	Low (1) Medium (2) High (3)	Simple shallow grass lined drains (0)	Single or multiple small diversions (1)	Single large down-batter drain (2)	Multiple large diversions and ancillary works (3)	Land and catchment owned by EA (1)	Part of catchment not owned by EA (2)	Multiple ownership, Catchment outside EA land (3)	
YEF – LREB South	2		1			2		1					3	9
YEFX – SB	1		1			2			2			2		8
MVF – EB	3		1			2		1				2		9
MVF – SB	3		1			2			2			2		10
MVF – WB	1		1			1	0				1			4



Inset 3: Domain Surface Water Risk Ratings

5.4 EA Consequence Classifications

In addition to the technical risk assessment systems described above EAY have separately developed a conventional risk assessment system as part of the Declared Mines Rehabilitation Plan (DMRP). The system is approximately the same as the DEECA system and is summarised in Table 2 and is used as the second tier of the risk assessment.

Table 2 - Summary of the EAY DMRP Consequence Classifications

No.	CATEGORY	SAFETY & HEALTH	ENVIRONMENT (IMPACT TIME YEARS)	LAND & PROPERTY	CULTURAL
5	Critical	Loss of life	Very serious, >20 impact	Significant damage, Permanent loss	Permanent loss
4	Major	Permanent injury, impact public health	Major effect, 10 to 20	Damage results in temporary losses damage	Significant or impact
3	Moderate	Recoverable injury or health impact	Moderate effect, 5 to 10	Moderate damage, Short term and recoverable	Limited impact
2	Minor	Negligible	Limited effect, 1 to 5	Minor damage or impact	Negligible
1	Insignificant	None	Minimal	Not discernable	None

5.5 Post Mining Land Use and Consequence Classifications

The rehabilitation design uses a risk-based approach to assess the potential rehabilitation design impacts to understand the potential consequence of failure and to guide assessments of risk, design, evaluation of Factors of Safety (FoS) and remediation.

The intended Post Mining Land Use (PMLU) affects the potential consequence of any deformations or failures. There is obviously a transition period following EOM and leading through till the lake full situation is reached. Consequently, the PMLU in the transition period cannot be fully defined at this time. However, there are two periods that are reasonably well known or for which a plan exists, EOM and Post Lake filling. Although mining activities will cease at EOM, rehabilitation activities and lake filling will proceed, and the exact timing and order of all activities is currently unknown. Thus, in order to assess potential consequences, it is assumed the overall situation at EOM continues until rehabilitation is completed (including lake filling and all drainage and landform designs).

Five consequence categories have been developed for the Feasibility Rehabilitation Design studies based on current infrastructure and proposed / planned PMLU. The categories ranked from highest to lowest consequence, their equivalent expression, and general infrastructure descriptors are:

- Severity 5 – Critical – highways (including major roads) and railway lines,
- Severity 4 – Major – rivers,
- Severity 3 – Moderate – secondary public roads,
- Severity 2 – Minor – picnic spots or areas of temporary human occupation (for a few hours),
- Severity 1 – Insignificant – farmland or areas with no extended or permanent human occupation.

Figure 1 shows the location of existing infrastructure around Yallourn Mine and Figure 5 shows the consequence category for each rehabilitation domain for EOM and through lake filling.

Figure 4 shows the current EAY planned PMLU, with Figure 6 the consequence category for each domain once lake filling is complete. It is important to note that this planned PMLU is preliminary in nature and subject to updates from future urban planning and stakeholder engagement.

As discussed in Section 4.4, dividing the mine into discrete rehabilitation domains with common characteristics and applying risk-based assessment for design is appropriate and commensurate to a feasibility stage design. This assessment is high level and at times over-predicts the impact of geotechnical stability to a particular infrastructure, especially if they are a distance away from the mine crest and do not fall within the zone of geotechnical impacts. In such cases, it is appropriate to reduce the “incident likelihood” applicable to the infrastructure, or conversely reduce the “incident consequence”, with the resulting risk assessment showing a reduced impact. This has been discussed in general terms in Section 12.4.

To achieve granularity more detailed assessment on individual infrastructure or locale-at-risk (based on current or updated PMLU), rather than domain-based, may be warranted in future stages.

5.6 Consolidated Risk Assessment Outcome

The assessment outcomes for the three systems are presented in Table 3 for each domain for comparison. Note this assessment is before assessment of stability analyses and other factors. The risk assessment using the EAY consequence rating and does not include allowance for the stability analysis results and the evaluation of the other rehabilitation design factors. The assessment includes both EOM and Lake Full conditions. Figure 5 and Figure 6 present the consequence assessed for each Domain and Section for the EOM and Lake Full conditions (based on PMLU). It is sometimes the case that a section line within a domain has a different rating to the domain itself and this is to account for local conditions within the domain and is required in order to ensure risk elements are addressed in the rehabilitation design.

The consequence for EOM has been assessed as effective on the last day of mining and before any of the major mine infrastructure has been removed. In addition, the extent of any remediation works associated with rehabilitation that has been constructed during the final years of mining is unknown and thus this has not been included. For the Lake Full situation, it is assumed that the rehabilitation works including all necessary drainage works have been completed during the final years of mining or during lake filling.

The domains with critical and or major ratings that stand out are YTF LS, YTF FPB, YTF FSPB and YEF LRB, because they have relatively low geotechnical and surface water peripheral catchment risk ratings. In these cases,

the consequence rating is based on the presence of the Latrobe River or the Morwell River Floodplain. This risk rating system is merely an input into the design process, and do not consider the relative position of the infrastructure-at-risk, the geology, the stability mechanism, and surface drainage. For details of the design assessment please refer to discussions in Section 12.

Table 3 - Comparison of Risk Assessments and Risk Factors for Each Domain Under Current Conditions

Domain	Section(s)	Technical Risk Ratings		EAY Consequence Classifications			Exposed Height Above Final Lake Level (4)	Coal Exposure Above 37 mRL (m)	Exposed Overburden Thickness in Batter above 37mRL (m)
		Geotech	Surface Water	EOM	Lake Full / completion of rehabilitation	Note on Infrastructure impact (5)			
YTF – LS	31	L	L	4 (1)	4 (1)	(6)	VL	0	
YTF – RCB	30	L	L	3	3 (3)	(7)	VL	0	
YTF – NB	29, 28	L	L	3	1		M	~10	
YTF – WB	25 to 27	H	M-H	3	3	(8)	H	~10 to 50 (2)	
YTF – HOB North	24, 23	H	M-H	3	3	(8)	M - H	~30	
YTF – HOB South	22	M	H	3	3	(8)	H	~ 40	
YTF – SWB	21, 20	M	H	5	5		H	~25 to 35	
YTF – SB	19	L	H	5	5		M - H	~ 20	
YTF – FPB	17, 18	L	L	4 (1)	4 (1)		VL	0	
YTF – FSB	16	M	L	4 (1)	4 (1)		VL	0	
YEF – NB (West)	1, 2	L	L	4	4	(9)	L	0	~ 25
YEF – NB (East)	3	L	L	1	1		VL	0	~ 20
YEF – LRB	4 to 6	H	L	4 (1)	4 (1)		VL	0	~ 10 - 20
YEF – LREB (North)	7	M	M-H	3	3	(10)	L	0	
YEF – LREB (South)	8, 9	L	M	3	3	(10)	M - H	~ 15	
YEFX – SB	10	L	M	1	1		M - H	20	
MVF – EB	11	L	M	2	2		L	~10	
MVF – SB	12, 13	L	M	1	1		L - M	10 - 20	
MVF – WB	14, 15	M	L	3	1		L	0 - 10	

Notes: Pale Red shaded cells denote High or Medium to High Risk, Pale Orange shaded cells denote Medium Risk.
VL = Very Low, L= Low, M = Medium and H = High.

(1). This rating is because of the domain is located in the Latrobe River or Morwell River or their floodplains.
(2). YTF WB - Includes the exposed buttress.
(3). YTF RCB - Rating due to the parcel of privately owned land within the RCB Domain. To be reviewed in future stages and see Note 7.
(4). includes the exposed batters and slopes above as appropriate.

(5). Notes in here discuss the impact of considering stability analysis, geology, and other technical items that change the risk profile of the domain. The consequence category, or the incident likelihood, may be adjusted as a result of consideration of zone of geotechnical stability impact and deformation. If the infrastructure-at-risk is outside of this zone, then the risk design should be reconsidered, see discussion in Section 12.

(6). YTF LS - The Latrobe River is located ~400 m from crest and there is minimal continuing hazard from batter failure or batter failure impacting on the Latrobe River (FoS >2).

(7). YTF RCB - There is an external private land in the domain, thus the Consequence has been increased to 3. The geotechnical failure modes do not extend to it (FoS >2) and therefore there is minimal continuing hazard from batter failure impacting on the private land.

(8). YTF WB, YTF HOB – Haunted Hills Road or De Campo Drive are located some distance from the mine crest, and there is low continuing hazard from batter failure impacting on the roads (FoS >1.3).

(9). YEF NB West - The Latrobe River is located ~400 m from crest and there is minimal continuing hazard from batter failure or batter failure impacting on the Latrobe River (FoS >2).

(10). YEF LREB - The Latrobe Road is located 50 to 100 m from crest and there is minimal continuing hazard from batter failure or batter failure impacting on the road (FoS >2).

5.7 Design Application

As noted above the risk needs to be assessed, considered, and changes with time reflected in designs.
The Yallourn approach integrates both technical and conventional assessments to ensure comprehensive risk evaluation of all required elements for rehabilitations. The benefits of the technical risk matrices are that they can be used to assist in defining; Where, When and How particular design measures need to be addressed.
The technical risk assessments are used to define the location, timing, and type of measures that need to be addressed in the design.

The consideration for current and post mining land use and their consequence category is critical in a risk-based design assessment. The outcomes will also guide future refinement of land use design. The conventional risk assessment subsequently defines the reliability and therefore extent of the adopted rehabilitation design measure, and which is dependant on the consequence of the PMLU.

Both the Geotechnical and Surface Water Risk ratings (Figure 13 and Figure 14) will educate designs as appropriate. The technical assessment component separately evaluates geotechnical and surface water risks across the different mine domains. The geotechnical risk rating is focussed on the sensitivity factors that could compromise the rehabilitation strategy and highlights the domains where additional consideration is required. The surface water risk rating provides the basis for planning the rehabilitation activities, for instance decisions regarding temporary versus permanent design, drain location and type.

The EAY consequence rating determines the design acceptance criteria (DAC), which is then an outcome of this risk assessment process, rather than a primary input. It allows for more adaptable rehabilitation designs where variations in risk settings across the mine are reflected in the final post-mining land use (PMLU) and rehabilitation design.

The aim is then to use the EAY Risk Consequence system rankings in the medium and high risk domains to define the approach to selection of the design parameters. For example with surface water, domains with lower risk as measured by the consequence rating can adopt lower design Annual Exceedance Probabilities (AEP's) or Peak Design Flow Rates. Thus, the conventional risk classifications assist in defining what reliability is required and therefore how large a particular drainage structure is required.

6. Geological, Groundwater and Geotechnical Models

6.1 General Discussion

The Design Acceptance Criteria (DAC) adopted for a mine and or a rehabilitation domain is often dependent on reliability of the geological, groundwater and geotechnical models. Where this is not assessed in detail, designers usually fall back onto heuristics or rules of thumb, such as industry standard Factors of Safety for particular risk situations. For the geological model, the reliability is a function of the complexity or, in the Yallourn Mine case, the simplicity of the geology. In sedimentary deposits like Yallourn Mine, the different geological layers are colour coded and sorted according to material types by the sedimentary processes, so this generally results in relatively simple and predictable geology. Downhole geophysics has also been used for a lot of the drilling and this adds another layer of reliability to the interpretations.

Notwithstanding this, the extent, character and distribution of the factual data also informs the understanding of the reliability of the geological, geotechnical and groundwater models. These models are the basis for the assessment and analysis of the stability and subsequent rehabilitation and thus the reliability of these models directly informs the selection of the DAC.

There are three layers to the Model as used to define the stability. The first layer is the Geological Model. Superimposed on this is the groundwater data which then comprises the Groundwater Model. The final layer is the Geotechnical Model, which is the basis for assessments of stability. The models are hierarchical and hence fundamentally it is necessary to evaluate both the geology and groundwater models as necessary first steps in order to define the Geotechnical Model.

6.2 Geological Model

6.2.1 Introduction

The rehabilitation of the mine batters is essentially concerned with both the exposed batters and the geology behind the mine batters. In this latter region there are limited coal seam outcrops. There are two sources of information that can be used to provide evaluate the geology in this region, the Geological Models used by the mine and the available borehole data.

There are two regional scale geological models used at Yallourn, MineScape and Leapfrog. These models have been reviewed using the factual borehole and geophysical logging data. This review is focussed on the upper two geological units, the Haunted Hills Formation (HHF) and the Yallourn Seam in particular the base of the Yallourn coal and coal/interseam contact, but also includes assessment of the geometry for the underlying interseam units, although these underlying units are not expected to impact on the stability of the rehabilitation design.

This section of the report deals with the process of evaluation and validation of the borehole data and the existing geological models and then describes the development of the Rehabilitation Domain Models, as illustrated in Figures 18 and 19, covering:

- Existing geology models,
- Aims and methodology,
- Available borehole data and Information,
- Model validation process, and
- Development of the section models used for the Stability Analyses.

6.2.2 Regional Geology

Figure 17 shows the actual geological units exposed at the surface either natural exposures or in the mine. Aspects of the regional geology in and around Yallourn Mine are represented as:

- Yallourn Seam floor dip, Figure 15, and
- Yallourn Seam coal thickness, Figure 16.

These plans include the Rehabilitation Domain boundaries and the main large scale geological structures.

6.2.3 Yallourn Geological Models

EAY have two Geological Models and these are large Latrobe Valley scale three-dimensional models of the coal and interseam units, used principally for resource planning, mining, geological and hydrogeological purposes. These models extend well outside the mine voids and also at depth below the floor of the Yallourn Seam.

6.2.4 Aims and Methodology

These Geological Models are appropriate for their intended uses, however, much smaller scale models with more detail are required to model the stability in the individual Rehabilitation Domains. Consequently, the existing Geological Models were reviewed and modified locally with a focus on:

- The upper two geological units, the HHF and the Yallourn Seam, and
- The boundary between the Yallourn Seam and the underlying interseam units.

Selected section(s) were chosen for each Rehabilitation Domain based on, Figure 12:

1. A section line that was broadly representative of the typical surface topography, representative of the more adverse geology, and with sufficient boreholes close to the section line.
2. Sections along the main Peripheral Catchment valley lines to allow design of the drainage systems, if this was not consistent with Item 1.

The general process after the selection of the section lines comprised:

1. The available borehole data was collated and reviewed.
2. The high confidence borehole data was selected.
3. The existing Geological Models were then tested and evaluated using high confidence borehole and geophysical logging data.
4. The review was focused initially on the immediate areas along the geological sections.
5. However, the borehole data coverage around each section was quite variable and so it was easier to extend the model across the whole of each Rehabilitation Domain on a domain-by-domain basis.

6.2.5 Borehole Data and Information

There are approximately 7,900 boreholes from drilling campaigns carried out between 1917 and 2023. There is large variability in the type and quality of information for each borehole, ranging from no geological records to full geotechnical logging. This is a function of both the drilling method and period, for example, boreholes drilled with rotary methods have the lowest level of geological information, however for the more recent boreholes full geological logging is more commonplace.

The distribution and the information available from each borehole are shown in Figure 18. Boreholes were ranked from least to highest confidence, based on the information available as:

- No geological information (32%),
- General lithological descriptions (15%),
- Formation data only (2%) and
- Both general lithology and formation data (51%).

Geophysical data was also available for a small number of boreholes and this data was used for confirmation of lithologies. Checks on the lithological logging showed a very good correlation between the recorded lithology and the downhole geophysics and consequently, there was a high confidence and reliability in the general lithology logging. The comparison also showed a good alignment between the logged and geophysics boundaries, giving high confidence and reliability in unit boundaries.

The formation logging was validated for the Yallourn Seam by cross checking the lithology descriptions with the formation logging and although the interpretations was generally reliable, some boreholes with multiple intervals for the same formation were adjusted manually to better align with geological principles and the regional geology. Borehole data was discounted and omitted as unreliable, where collars were below the pit floor, azimuths and inclinations could not be verified and there was a conflict with other boreholes in the immediate vicinity.

The Rehabilitation Domain Models used for this design were then developed using only high confidence borehole data.

Figure 18 show the spatial coverage of investigation data is high, with a lower density of data points in the following areas:

- YTF – Fire Services Ponds,
- YTF – Floc Ponds and
- YTF - Southern Batters.

This may lead to additional investigations in these domains in future stages, should they become critical to design.

6.2.6 Validation and Checking of EAY Geological Models

In summary, although some large differences between the models were evident at the larger scale, on the local rehabilitation domain scale, where the focus is on the Yallourn Seam in the upper part of each model, there is general agreement between the two models.

In the MineScape Model checking of the Yallourn Seam and inter-seam geometry was undertaken using the high confidence borehole data and the downhole geophysics. The evaluation compared the modelled floor with the downhole lithology logging and the vertical differences between the MineScape Model and the borehole data was assessed as < or > 5 m. Some differences were identified particularly at greater depth and outside the mine crest, which are of minimal consequence for geology and mining. However, in the more shallow zone, which is the focus for this validation there is broad overall consistency between borehole data and the model, with some local adjustments made on the sections as appropriate.

A similar comparison between the Leapfrog Model and the borehole data broadly showed the same results.

6.2.7 Structural Geology

The historic cracking / deformation data cluster is considered a reflection of the relative degree of batter deformation that has occurred in any area, around:

- Known failures,
- Known long term movement areas,
- The YTF,
- The MRD and
- The MVF, which is mining much deeper than elsewhere at Yallourn Mine.

This information provides an indication of real movements and their mechanisms controlled by the geological and structural conditions in the deep coal units below the ground surface, see Section 3.2.3 and Figure 25.

6.3 Groundwater Model

The Yallourn Mine groundwater situation is relatively complex with a multilayered sequence of varying permeability, with both intergranular and joint controlled permeability, deep aquifer depressurisation, horizontal drains and substantial Peripheral Catchments feeding into the mine. In this situation vertical boreholes with piezometers distributed around a domain in various locations can make accurate interpretation difficult. Piezometer monitoring data is presented in Appendix A.

Representative figures showing the groundwater conditions and the geotechnical section models for the Yallourn Eastfield Latrobe River Batters and Yallourn Township Field Western Batters are included as Figure 19 to Figure 24.

Consequently, the groundwater information for use in the stability analyses was assessed and analysed in three formats:

1. As piezometric levels for each separate piezometer tip or standpipe on the Geotechnical Sections, Figure 23, Figure 24 and Appendix C.
2. As Pore Pressure profiles for each Rehabilitation Domain for the corresponding geotechnical section, Figure 19, Figure 20 and Appendix C.

3. As combined hydrographs for all piezometers in HHF and Yallourn Seam for each Rehabilitation Domain, Figure 21, Figure 22 and Appendix C.

The information and understanding from the three different formats as described above were then used in combination to provide guidance as to the actual overall groundwater situation within each Rehabilitation Domain as set out below:

1. The Geotechnical sections, which relate water observations spatially to many of the other geological and geometric factors.
2. The Pore Pressure Profiles, which are focussed on the HFF and Yallourn Seam and their potential relationships with surface water recharge, regional depressurisation, local batter depressurisation and the geotechnical conditions.
3. The hydrographs, which illustrate the connections with surface rainfall/runoff, surface water bodies and also the degree of hydraulic connection through the vertical profile.

Substantial depressurisation exists in every domain and deep aquifer depressurisation is planned to continue for many years after EOM. Groundwater modelling by GHD (in progress) shows the groundwater recovery lags many decades behind lake filling. The question then becomes what recovery will occur during lake filling and over what period.

In order to provide the requisite degree of conservatism, remove any uncertainty and to provide high reliability, three situations have been modelled in the stability analyses:

- EOM pore pressures are maintained through lake filling,
- Full recovery occurs below the relevant lake level at every stage of lake filling and
- Full recovery occurs instantaneously at the end of lake filling.

6.4 Geotechnical Model

6.4.1 Movements and Deformations

6.4.1.1 Introduction

Many of the mine batters are now decades old. It is important for this rehabilitation design to gain an appreciation of the character and long-term performance of mine batters. This is particularly the case in areas away from recent mining where the main long-term potential disturbing factors are:

- Rainfall runoff,
- Gravity and
- Weathering and or time dependent loss of material properties.

The survey pin monitoring over time gives one measure of the likely possible deterioration of these mine batters and the timeframes over which deformations may be occurring. The other principal source of information about stability are the cracks and other deformations, which are the near surface observations recorded by EAY over the years around the mine, Figure 25.

6.4.1.2 Information from the Investigations of Old Horizontal Drains

Notwithstanding this surface information the question remains as to the extent of movements at depth below the ground surface. The recent GHERG project at Federation University provides data on this. The GHERG Batter Stability sub-project (GHERG 2020), undertook borehole camera surveys of several old horizontal drain holes in Yallourn Mine. Selected video images from this investigation have been reviewed by PSM. The following drains were selected for review based on age and location:

1. Drain M3952 – In MVF western batters – Less than 10 years old.
2. Drains N6853 and N5224 – YEF northern batters – Around 20 years old.
3. Drains N3860 and N4676 – YTF western batters – Around 50 years old.

These were chosen to define:

- The drain condition and any long-term changes that could have affected their performance,
- The type of deformation that has occurred at depth within the batters,
- The depth or zonation appliable to any such deformations and
- General observations on water within the drains.

The newest drain M3952, had an outer zone between 60 and 80 m from the hole collar with what are interpreted as structures and frequent zones of some change in the character of the drain hole walls. The first water intersection was at 100 m, which was directly below the leading edge of the overlying HHF. In the oldest drains, holes N3860 and N4676, the outer zone of increased structures and more frequent zones of some change in the character of the drain hole walls was 120 m. In addition, in these older drains there were water intersections starting from near the drain hole collar. In hole N5224 the outer zone is estimated as 110 m in length.

The results are summarised in Figure 26, which shows:

- There is an outer zone of increased frequency of deformations, and
- There is an approximate relationship between slope height and the width of the outer batter zone, with higher slopes resulting in a wider zone of deformation.

This outer batter zone is very important for this rehabilitation design because it means there is a well-defined zone of deterioration of the batters where the stability will be more sensitive to adverse water loading events from rainfall runoff.

6.4.1.3 Deformation Plans

The other main component of the Geotechnical Model are the deformation plans, Appendix B. These plans are a compilation of:

1. Total survey pin movement.
2. Mapped surface cracking (discussed in Section 3.2.3).

The monitoring and mapping plans collate all the pit movements and measurements and now extend for a period of decades. The survey pins extend outside the pit crest and thus also show the historical deformation zones surrounding the mine batters. These deformations are overlain onto plans of Yallourn Coal thickness and Yallourn Seam Floor Dip and this highlights where the underlying large scale geological structure has controlled both the extent and location of the deformations.

These plans, which are separate to the stability analyses effectively illustrate the degree of stability of each domain and are an independent check on the stability analysis results. The plans also demonstrate the sensitivity of each domain to surface water loading events and assist in defining the location and extent of the surface drainage design measures required in each domain.

These are inputs into the geotechnical domain boundaries and are important considerations for rehabilitation geotechnical design.

6.4.2 Geotechnical Sections

Detailed geotechnical models have been developed for each of the 36 geological sections, Figure 11 and Figure 12. These sections are included with an explanation sheet in Appendix C. In addition, two sections (Sections 4 and 27) are presented in Figure 23 and Figure 24. These geology on these sections has been fully validated as discussed in Section 6.2.

These sections present a compilation of the relevant geological, groundwater and geotechnical information comprising:

1. A location plan showing the current Digital Terrain Model, large known geological structures, and the section location.
2. The 2023 ground surface.
3. Boreholes adjacent to each section, colour coded for lithology and with the borehole numbers shown.
4. The main geological units, HHF, HHFA, Yallourn Seam, interseam, MRD, Fills and water bodies.

5. Geological unit boundaries as:
    a. Inferred - dashed lines with question marks, where there is insufficient adjacent information.
    b. Approximate – dashed lines, where there is sufficient adjacent information.
6. Piezometers with borehole number, all measuring tips, their related water levels and the date of the water level record.
7. Horizontal drains.
8. The inferred and approximate groundwater table(s).
9. Final Lake levels at 33.4 and 37 mRL.
10. Locations of all mapped tension cracks and tension crack zones.
11. The locations of natural and man-made infrastructure.
12. The geomorphological units.

These geological units are used for the stability analyses, the surface water evaluations and the conceptual design of rehabilitation slopes. In addition, these models are also used to assist in definition of the groundwater models for stability analyses.

6.4.3 Interseam Shear Strength

6.4.3.1 Introduction

This section of the report presents a review of available shear strength testing for the Yallourn interseam unit. Experience has shown the critical failure mechanisms for geotechnical stability of the mined batters at Yallourn always includes a component of sliding along low strength interseam clays at the base of the Yallourn Seam. This mechanism has been the dominant failure mode for all large-scale stability issues in the Latrobe Valley and at Yallourn and hence the interseam shear strength is a key parameter for stability and design. The aim of the review was to develop a validated high-confidence shear strength database of the interseam clays to inform the geotechnical stability assessments for rehabilitation design.

Every test for which data sheets were available was reviewed against the relevant Australian Standards. In total there were 285 Direct Shear (DS) tests from 84 boreholes across the mine. These tests were firstly screened and this resulted in a database with not only DS testing but engineering index testing, comprising:

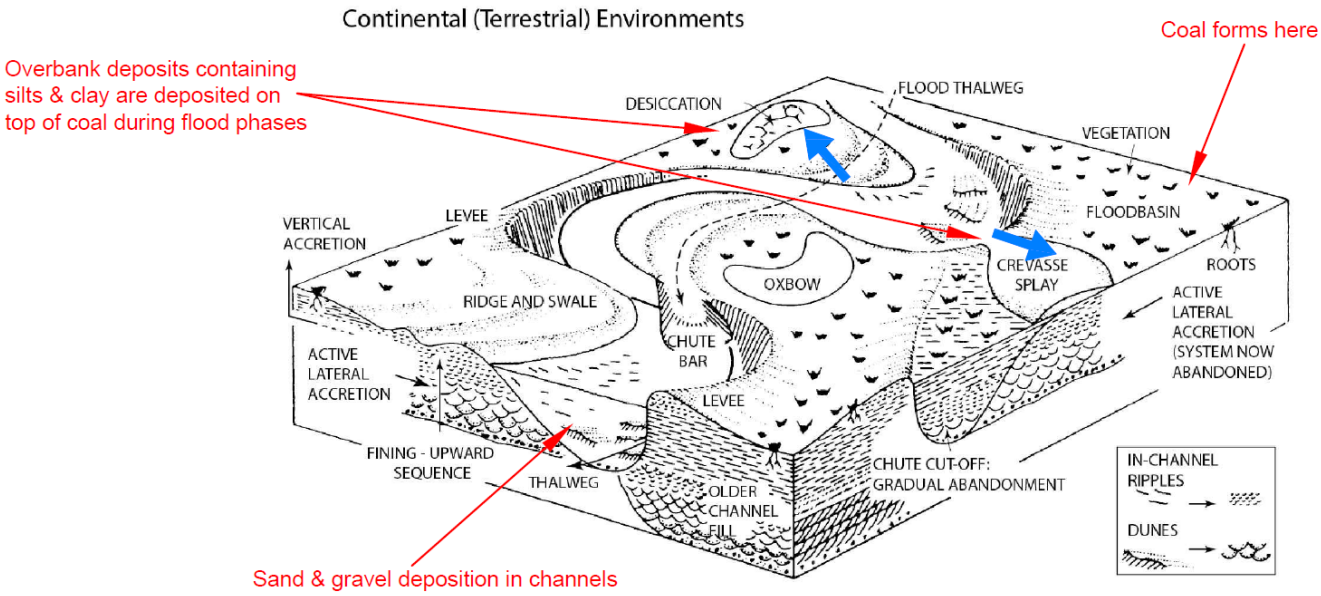
- 59 DS tests with reports from 25 boreholes,
- 59 samples with Particle Size Distributions (PSD) and
- 64 samples with Atterberg Limit tests.

Results and interpretive plots are included in Appendix E.

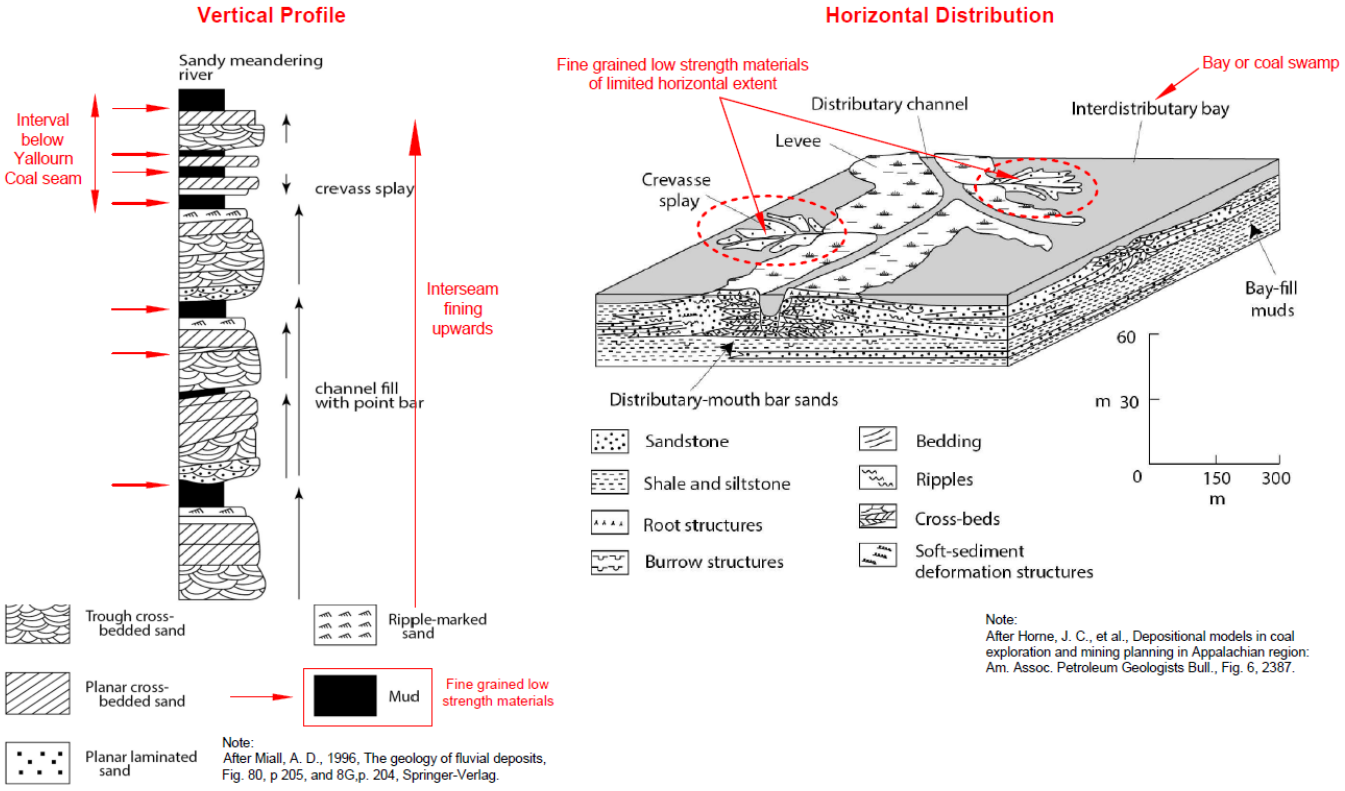
6.4.3.2 Depositional Environments of Coal and Coal-Bearing Strata

The Latrobe Valley depression contains a sequence of thick brown coal seams interbedded with minor coal and sediments of fluvio-lacustrine origin. The interbedded sediments are collectively known as the ‘interseam’ and for the most part consist of semi-consolidated clays, silty clays, silts, sands and gravels. Inset 4 presents a schematic representation of a typical coal sedimentary depositional environment (after Walker et al 1984). Sediments in fluvio-lacustrine environments are transported either through channel transport or floodplain deposition. Sediment transport proximal to rivers mainly occurs within the river channel with associated deposition of sands and gravels. Floodplains are the land adjacent to rivers that are commonly inundated during seasonal floods and deposit fine-grained sediments that settle out of suspension from floodwaters onto the floodbasin, which may be a broad, low-relief plain, a swamp, or shallow lake.

Inset 5 presents typical depositional models showing the vertical and horizontal distribution of fine-grained material. Layers of fine-grained low strength materials are deposited increasingly in an overall upward-fining sequence. These deposits are of limited horizontal distribution as they are deposited variably within the coal swamp during flooding.



Inset 4: Schematic representation of coal sedimentary depositional environment (from Walker et al 1984)



Inset 5: Typical depositional models showing distribution of fine-grained material (from Horne et al 1978 and Miall 1996)

The main area of interest for stability at Yallourn are these fine-grained low strength interseam layers underlying the main Yallourn coal seam. The majority of the Latrobe Valley coal measures were deposited in a coal swamp and the interseam sediments deposited as thin fine-grained silts and clays on top of the coal during flood phases. The interseam is therefore laterally and vertically variable and characterised by horizontal stratification within an overall fining-upward sedimentary sequence.

On the basis of the depositional origin and process, it is assessed that the interseam unit may have vastly different strengths, as follows:

- Discrete horizontal stratified plane of fine-grained silts and clays is likely to have the lowest shear strength. It is noted that planes with pre-shearing have been observed in cores within drill holes around the mine.
- Discrete horizontal stratified plane with some granular sands and gravels (higher velocity deposition) is likely to have a higher shear strength.
- Sediment unit with mixture of soil types and coal particles with no clear stratification is likely to have a higher shear strength.

6.4.3.3 Validated Test Database

Direct shear testing is a multi-stage test and involves shearing the sample at a constant normal stress and re-shearing of the same sample at increasing normal stresses in subsequent stages, or in some cases, with three sub-samples being tested at three different normal stresses. For this review each shearing stage has been treated separately, resulting in 177 individual data points from 59 samples. Every test result was reviewed for:

- Population type (Section 6.4.3.4),
- Consolidation rate relative to the test shearing rate, and
- The stress-strain behaviour during testing.

Some problems were identified with:

1. Strain rates that were too fast and not based on the consolidation testing. This is a common issue that contorts the resulting strength value, by pore pressure buildup that leads to lower friction angles and higher apparent cohesion values. Where this was apparent, the results were disregarded.
2. Strain hardening or stain softening with increasing shear displacement. As there are uncertainties over test method and results, these were disregarded.

These problematic test results were excluded from database. The rigorous screening process led to 50 validated data points from 24 samples from 15 boreholes.

6.4.3.4 Interseam Sample Populations and Characteristics

Particle size distribution and index tests of samples were interpreted to assess the interseam characteristics; Appendix E presents the following:

- PSD curves
- Plasticity charts of the samples for two conditions:
  - Population and
  - Distance below the base of the Yallourn Seam.

Review of the 59 PSD data showed four material populations based on clay content:

- Type 1 - > 60% Clay (6 no.),
- Type 2 - 40% to 60% Clay with silt (22 no.),
- Type 3 - Silt with a lower clay fraction of between 20% and 40% (27 no.); and
- Type 4 – Sand and Silt with <20% clay (3 no.).

It is typical that fine-grained samples are selected for direct shear tests, in preference to coarse-grained samples, due to the ease of sample recovery and the understanding that it would yield a lower strength result. But if the number of PSD data is representative of the interseam unit, it infers that the interseam is predominantly made up of fine-grained materials, with various portions of silt and clay (20 to 60% clay, and 40 to 60% silt, the rest sands).

Index tests show that the fines classify as:

- Low plasticity silts or clays, accounting for 58% of the sample population,
- Intermediate plasticity clays, comprising 20% of sample population and
- High plasticity silts, clays and/or organic soil, comprising 22% of sample population.

There is no clear relationship between the plasticity of the samples and the clay proportion of each population type. There is a very loose relationship between increasing plasticity with depth below the Yallourn Seam.

6.4.3.5 Discussion of Results

Table 4 presents the statistical spread of the 24 samples (50 loading stages) with validated shear strength values, and Appendix E presents various interpretive plots for these validated samples.

- Peak and residual shear strength results, sorted by sample clay content, indicate there is a differentiation, with lower friction angles for higher clay contents.
  - Materials with clay contents greater than 60% define the lower boundary of the shear strength envelope.
- Frequency distributions of residual secant friction angles, sorted by clay content, indicate.
  - Samples with < 40% clay have higher residual secant friction angles, ranging between 13° and 25° with a median of 23°
  - Higher clay content samples with > 40% have lower residual secant friction angles ranging between 11° and 28° with a median of approximately 18°.

Table 4 – Statistical spread of validated laboratory interseam shear strength values

	Peak Friction Angle (°)			Residual Friction Angle (°)		
	Total population	Lower population (>40% Clay)	Higher population (<40% Clay)	Total population	Lower population (>40% Clay)	Higher population (<40% Clay)
Count	24	8	5	24	8	5
Mean	25.21	22.96	25.90	20.05	19.40	19.90
Std. Dev.	7.28	4.95	4.06	5.54	5.59	4.62
COV	0.29	0.22	0.16	0.28	0.29	0.23
Min.	13.88	15.13	19.46	11.00	11.12	13.25
25th %	19.66	20.11	25.26	16.06	16.05	15.51
50th %	25.31	21.47	25.36	20.50	18.68	22.73
75th %	28.84	26.40	27.34	24.71	23.23	23.07
Max.	41.13	31.80	32.09	29.58	28.14	24.94

6.4.3.6 Values for Design

The 50 validated direct shear test points are presented in Figure 27 for residual strengths. Tests are categorised by their clay content where PSD results are available. The data shows have an upper bound residual shear strength of 27° and cohesion of 10 kPa, and a lower bound friction angle of 11° (zero cohesion). Mean residual shear strengths have no cohesion and a friction angle of 18°. Interseam materials with clay contents > 60% define the lower boundary of the shear strength envelope.

It is considered at this stage there is insufficient valid testing data to allow domaining of interseam shear strengths, let alone sub-domaining around the mine. In order to allow for the technical issues as discussed in the preceding sections of this report a very conservative design approach has been adopted for all the static limit equilibrium analysis, entailing:

- The absolute lower bound,
- Residual strength = 11°, and
- Applied universally in all domains.

This lower bound value is chosen to assess geotechnical stability of individual slopes, with the assumption that a low-strength band of interseam materials (likely more fine-grained) can occur anywhere locally and impacting on the stability of the batter.

Back analysis of the specific 2018 cracking and 2021 stability event on the MRD was undertaken as part of the investigation of the 2021 Stability Incident. Assuming a FoS of 1 during the event and with the highest water loading, a shear strength of between 11 and 12° was calculated for failure through the specific crack location.

Back analysis using the same loading conditions of the 2021 stability event along the MRD indicates failure would occur in other locations unless the shear strength is much higher, above 16°. This demonstrates that variable interseam strengths can dictate the failure location and extent.

Batter stability assessment of the 2007 Latrobe River incident reported by GHERG (GHERG, 2020) included additional shear strength testing and reported higher values (Minimum 14.9°, Mean 23.7°, Maximum 32°) of the interseam material.

6.4.3.7 Values for Seismic

For seismic analysis, a more realistic design value has been chosen, discussed in Section 11.6.4, being the median (50th percentile) of the residual strength of the lower population (>40% clay) for the validate test results. This value is considered to represent the more realistic design condition because:

- During an earthquake, the entire region undergoes uniform disturbance, not just the mine, or a single batter.
- Failure would include a much larger area, domain-scale or larger, which can be over 2 km in length and 500 to 600 m in width.
- This scale is large relative to the inferred area of deposition of very clay rich materials in the interseam, therefore isolated or localised area of low strength interseam would not govern stability for the full pit slope.
- Back analyses of previous seismic events and stability incidents have indicated higher shear strengths are present, more towards the mean value of 18°, see Section 11.6.3.
- It is probably justified to use the average shear strength value to assess this transient loading condition, as per the back analysis in Section 11.6.3.
- For conservatism:
  - We have only used the residual shear strength, and not the peak shear strength
  - We have only used the clay-rich (lower population) strength, and not the full population.

This is discussed more fully in Section 11.6.4.

7. Engineering Geomorphology Model

7.1 Background

Geomorphology is about landforms, understanding the processes that shaped them, their current behaviour, and their likely future behaviour. Geomorphology for engineering provides a framework for:

- Understanding the behaviour of the natural physical systems, and
- Dealing with land elements that have been extensively modified by man's activities.

It can be used to evaluate the sensitivity of geomorphological systems to change, thus providing some insight into how various land forming mechanisms operate, their locations and potential intensities; and also how these might change during the design intent period.

The natural and modified landscapes around Yallourn mine have been assessed using a form of terrain evaluation. Terrain evaluation is a remote sensing tool that focusses on subdividing the landscape into a series of progressively smaller components, comprising (largest to smallest) systems, facets and elements.

Most landforms are in a state of natural equilibrium where their morphology is governed by their makeup and the natural erosional or depositional processes that are acting upon them. However man-made excavations by their very nature can be considered over-steepened natural landforms and given a long enough period, may revert towards their equilibrium state. Landform adjustments occur in response to fluctuations in energy inputs into these systems, including variations over a range of timescales. There are two distinct modes of change:

- Episodic, progressive change, where no recovery occurs, and
- Periodic or cyclical change, where the landform responds to an event such as a storm but gradually recovers its original form.

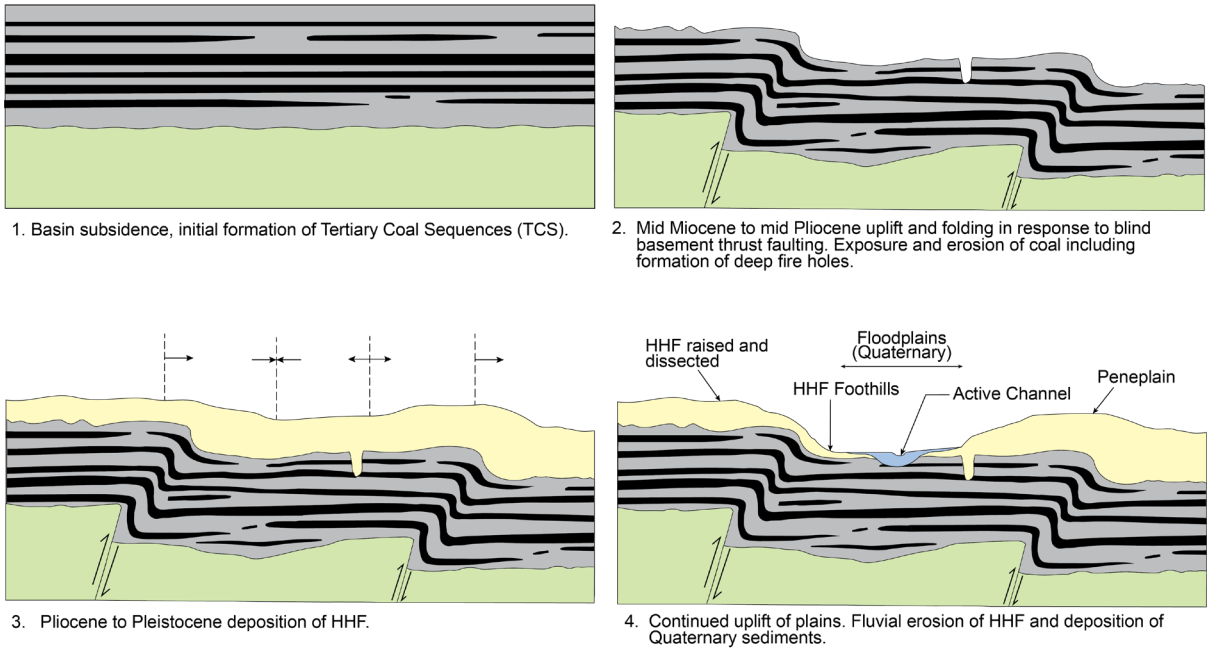
Monitoring and deformation mapping show that the Yallourn batters are subject to episodic progressive change.

For mine rehabilitation, achieving final landforms that are in approximate harmony with the pre-mining environment is part of the rehabilitation strategy.

7.2 Geology and Landform Evolution

Yallourn Mine resides in the Latrobe Valley which is in the eastern lowlands of the Gippsland Plains. The Latrobe Valley is bound by uplands to the south and north and underlain by Tertiary rocks and more recent erosional and alluvial plains.

Before mining, the Latrobe Valley was a relatively stable landform, developed over millions of years. After accumulation of Tertiary coal, the basin experienced tectonic uplift and folding in the mid Miocene and early Pliocene. The folding and uplift led to exposure and erosion of the coal. This was followed by a period of deposition of widespread gravels (HHF) in the Pliocene to Pleistocene from fluvial erosion of the adjacent highlands onto vast alluvial plains. Continued elevation of the plains occurred after the gravels were deposited causing rejuvenated streams to incise into them, Inset 6. This most recent fluvial erosion has deposited reworked HHF material in the Quaternary period particularly within and adjacent to the main rivers.



1. Basin subsidence, initial formation of Tertiary Coal Sequences (TCS).
2. Mid Miocene to mid Pliocene uplift and folding in response to blind basement thrust faulting. Exposure and erosion of coal including formation of deep fire holes.
3. Pliocene to Pleistocene deposition of HHF.
4. Continued uplift of plains. Fluvial erosion of HHF and deposition of Quaternary sediments.

Inset 6: Example of valley landform evolution around Yallourn mine

7.3 Land Systems

There are three main land systems identified around Yallourn, comprising two raised blocks separated by a wide valley, Figure 28. Both raised blocks share a similar orientation, north northeast to south southwest, but are different in their character. Hills to the west are deeply incised into HHF a very weakly, irregularly cemented soil with no apparent internal structural fabric influencing the landform. On the eastern margin there is a structural influence along the line of the Yallourn Monocline, Inset 6 and Figure 17. Denudation of these raised hills is predominantly by localised fluvial erosion where small drainage channels form and continuously regress. There is very minor evidence of mass wasting by landsliding.

The eastern block is lower in elevation, very flat with moderately incised margins into thick HHF over coal. Denudation is slow and gradual erosion by fluvial action particularly around the margins, but overall erosion is less aggressive compared to the western hills. Mass wasting is a very minor contributor to denudation in this block.

Separating these two blocks is a broad curved valley, the Morwell River Floodplain. This is approximately coincident with the Yallourn Syncline, which has influenced the development of the valley. The valley form is typically a defined central floodplain within which a main single channel meanders forming numerous ox bow lakes and abandoned channels. Outside this are raised terraces, which are covered during larger flood events. Although part of the valley, the raised terraces are less influenced by fluvial action from the main drainage channel.

Figure 29 shows the three main land systems pre-mining in comparison to the Yallourn Mine. It is evident from this that prior to mining around 50% of the mine area was comprised of Floodplain and Floodplain with Active Channels. It is understood this area was referred to as the ‘Melbourne Swamp’.

7.4 Pre-mining Landforms

Figure 29 shows an approximation of the pre-mining landform at Yallourn Mine with land facets representing terrain resulting from similar land forming processes and similar morphology:

- Floodplain
- active alluvial channels.
- Alluvium/colluvium
- Peneplain, denuded, flank
- Peneplain, deeply incised
- Peneplain with dissected margins.
- Peneplain, remnant.
- Incised basement.

These land facets also reflect how the major geological structures such as fold axes and faulting have influenced the evolution of the present-day landforms, for example, west of the Yallourn Monocline, the land comprising HHF and coal over basement has been upthrust and dissected by continual fluviatile erosion. Conversely, the accompanying Yallourn syncline axis to the east and separating YTF and YEF/MVF, controls the position of the Morwell River and hence the evolution of the Morwell River Floodplain. Similar large scale structural features also demarcate the approximate boundary of the coal basin in the Latrobe Valley.

In the slopes west of YTF, where the peneplain is deeply incised, erosion of the slopes is limited and there is no evidence of sediment movement. primary form of erosion is via sheet erosion causing uniform removal of soil from the area without the development of conspicuous channels. Gully erosion is minor and isolated to the primary drainage lines. Evidence of landsliding is rare and mass wasting is not a significant or common land-forming mechanism in this terrain. The whole geomorphological character of his area is considered important for the rehabilitation because it means that even steeper man-made slopes, provided they are adequately revegetated will slowly degrade to flatter slopes without major disturbance.

In the slopes east of YEF, where the peneplain has dissected margins, the slopes are moderately inclined and the landform is heavily influenced by the relatively flat lying bedding in the underlying geology. Drainage off the peneplain is dominated by the valley development around the margins, which takes the forms of radial and parallel drainage. This pattern is formed by progressive fluvial erosion downcutting between 20 and 30 m into the peneplain and up to 1.5 km inwards of the margins. These peripheral valleys take the form of rounded crests with slope angles between 10 and 15°. Erosion of the slopes is stabilised with no evidence of sediment movement and valley sides and floor are vegetated. The primary form of denudation is via sheet erosion causing uniform removal of soil from an area without the development of conspicuous open and unvegetated channels. Evidence of landsliding is rare and mass wasting is not a significant land-forming mechanism in this terrain.

7.5 Post Mining Landforms

Land in and around Yallourn Mine has been significantly modified by open cut mining activities and development of public infrastructure. Figure 30 shows the predicted end of mining geomorphology incorporating the more significant modifications to the landscape that have predominantly occurred over the last 100 years.

7.6 Yallourn Coal

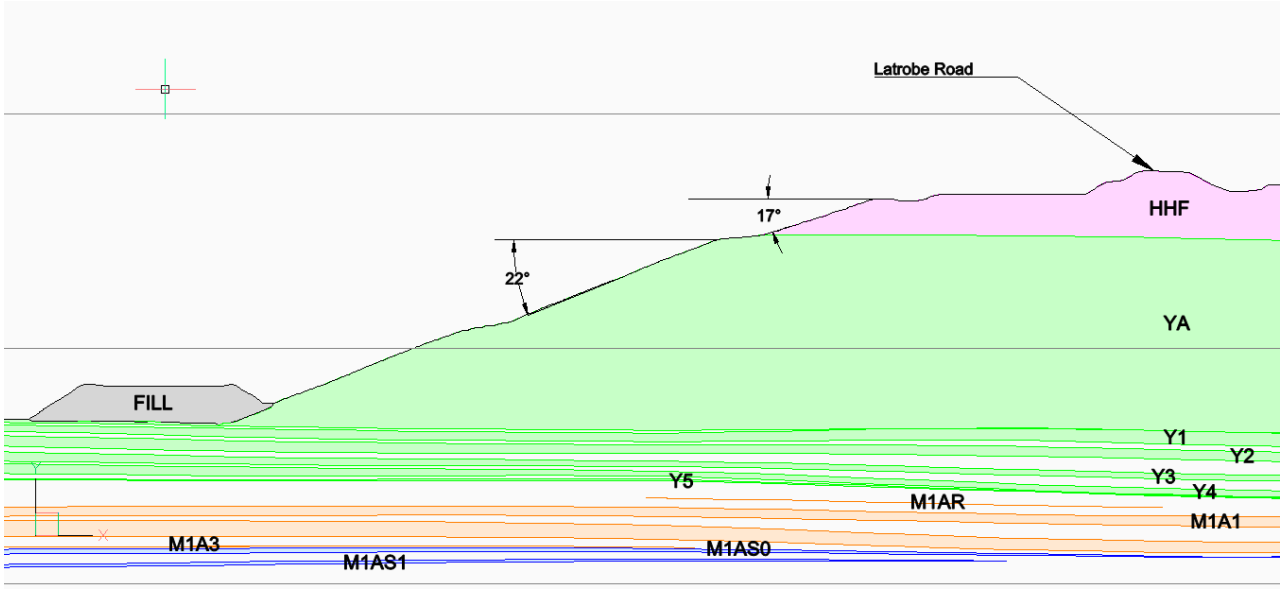
Outcropping Yallourn Coal is rare in the Latrobe Valley. Therefore, unlike HHF, a direct measure of the natural landform slopes comprising coal is not possible. This is in accord with observations of older batters in YTF, which shows development of a skin of completely weathered coal, approximately one metre deep overlying intact coal. The outer surface skin of the coal weathers, but below this layer, although there is some deterioration the intact coal appears relatively intact and tends to be resistant to surface water erosion. There is general experience from the other Latrobe Valley mines and at Yallourn that shows concentrated surface water flows does not show long term erosion of the coal.

7.7 Rehabilitation Trials

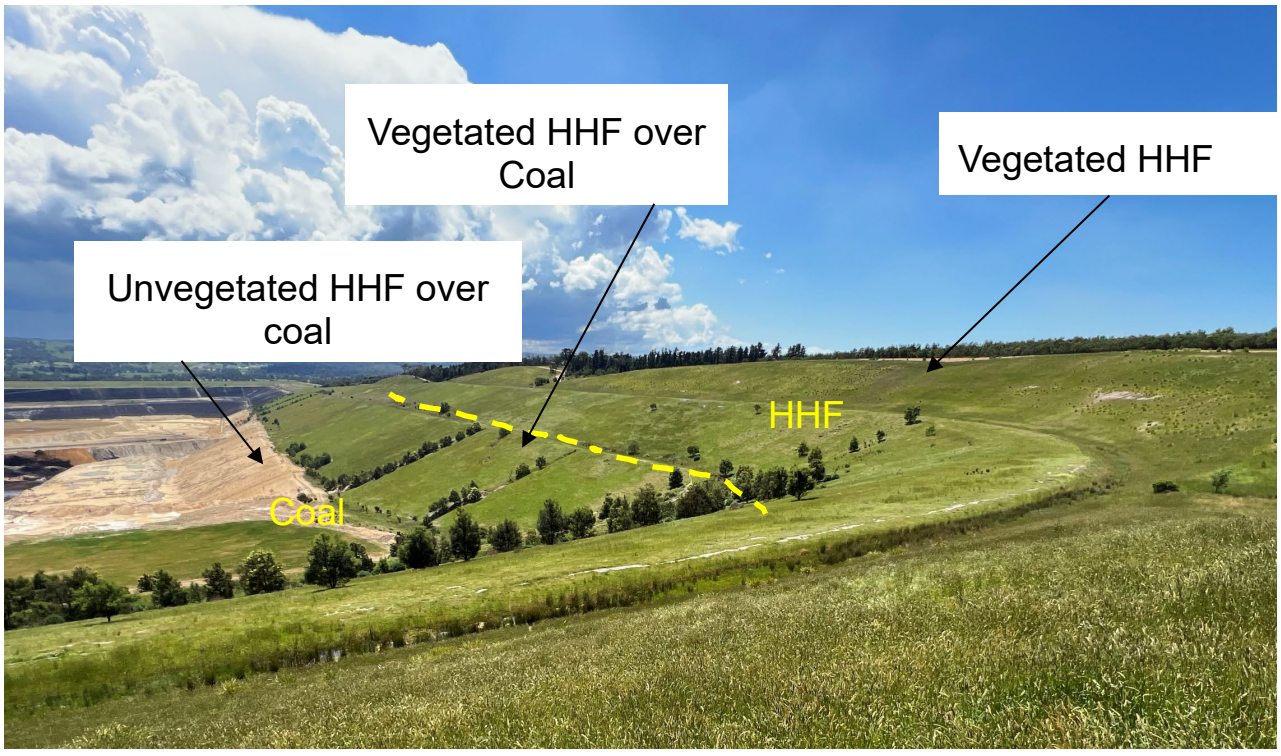
EAY have implemented two rehabilitation trials in mined out areas and one on these is considered relevant to the considerations of rehabilitation slopes and their long-term performance. The trial in on the northern end of the Latrobe Road East batters and has been in place for 10 years. The details of the trial are:

1. 0.5 m of HHF was placed over a cut slope in Yallourn Coal and was revegetated with grasses.
2. The design slopes, Inset 7, are:
    a. HHF – 3:1 (H:V) and
    b. Yallourn Seam – 2.5:1 (H:V) (with 0.5 m HHF as cover).
3. It is understood the trial was not fully researched or engineered.
4. The general performance is shown in Inset 8. Sheet flows appear to have been well controlled and concentrated flows were placed in down batter drains cut directly into coal. No signs of extensive coal erosion were evident. However, it is noted that the HHF above the drain edges is sloughing off and this detail needs additional design considerations.

In addition to these trials there are many older excavations around YTF that were formed last century by the SECV. Although not specifically designed as trials it appears the SECV intention was that these would be long term post closure landforms.



Inset 7: Rehabilitation Trial YEF LREB



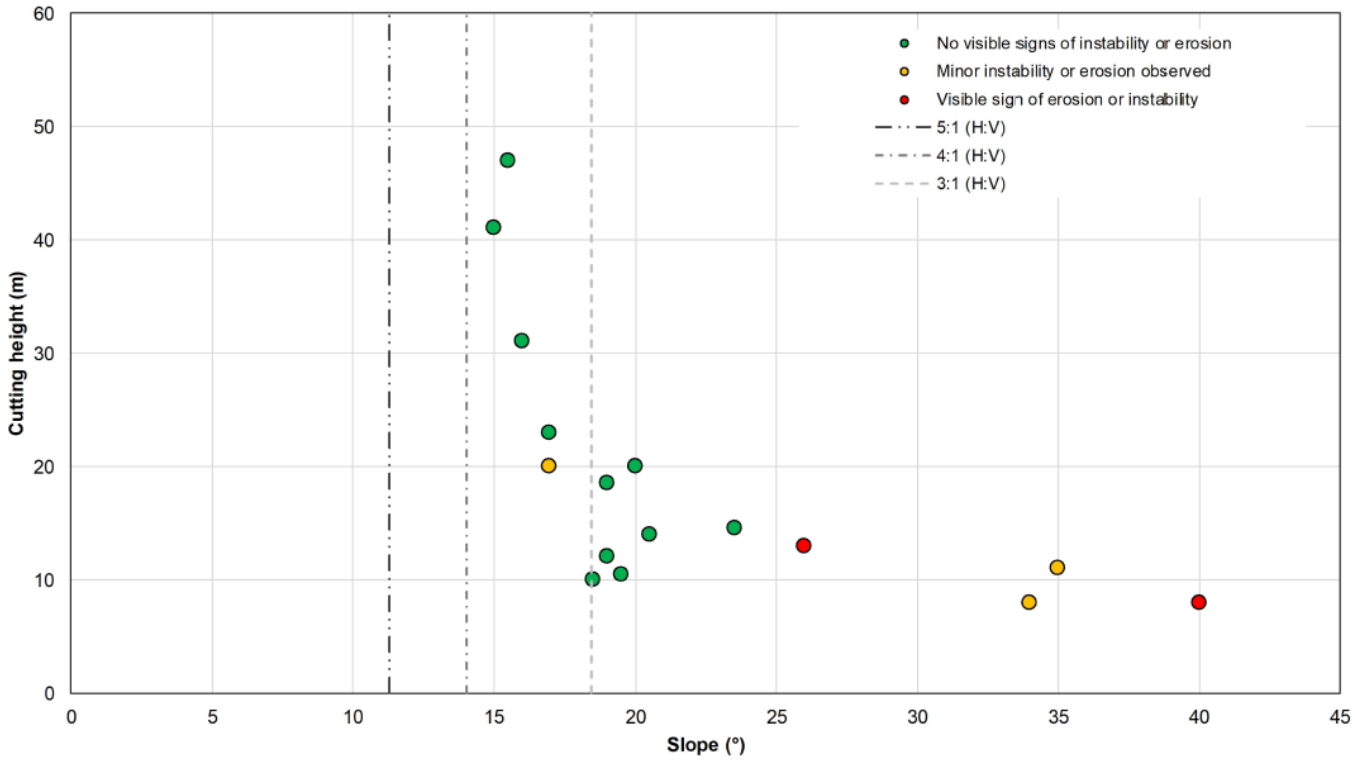
Inset 8: Rehabilitation Trial YEF LREB batters, view looking north

7.8 Analogues for Rehabilitation Slopes and Slope Performance

The discussions above are focussed on understanding the natural terrain surrounding the mine and that existed prior to mining. Because mining has now been ongoing for over 100 years, which is of similar order to the future post mining period these slopes can be used to inform the final landforms constructed as part of the rehabilitation. There are three potential analogues, man-made excavated slopes in HFF, natural slopes in HHF and excavated slopes in coal.

The man-made slopes were excavated to civil engineering standards. Slope data from 16 excavated slopes in HHF is presented in Inset 9. The data shows a good correlation between overall slope height, overall slope angle and performance, with:

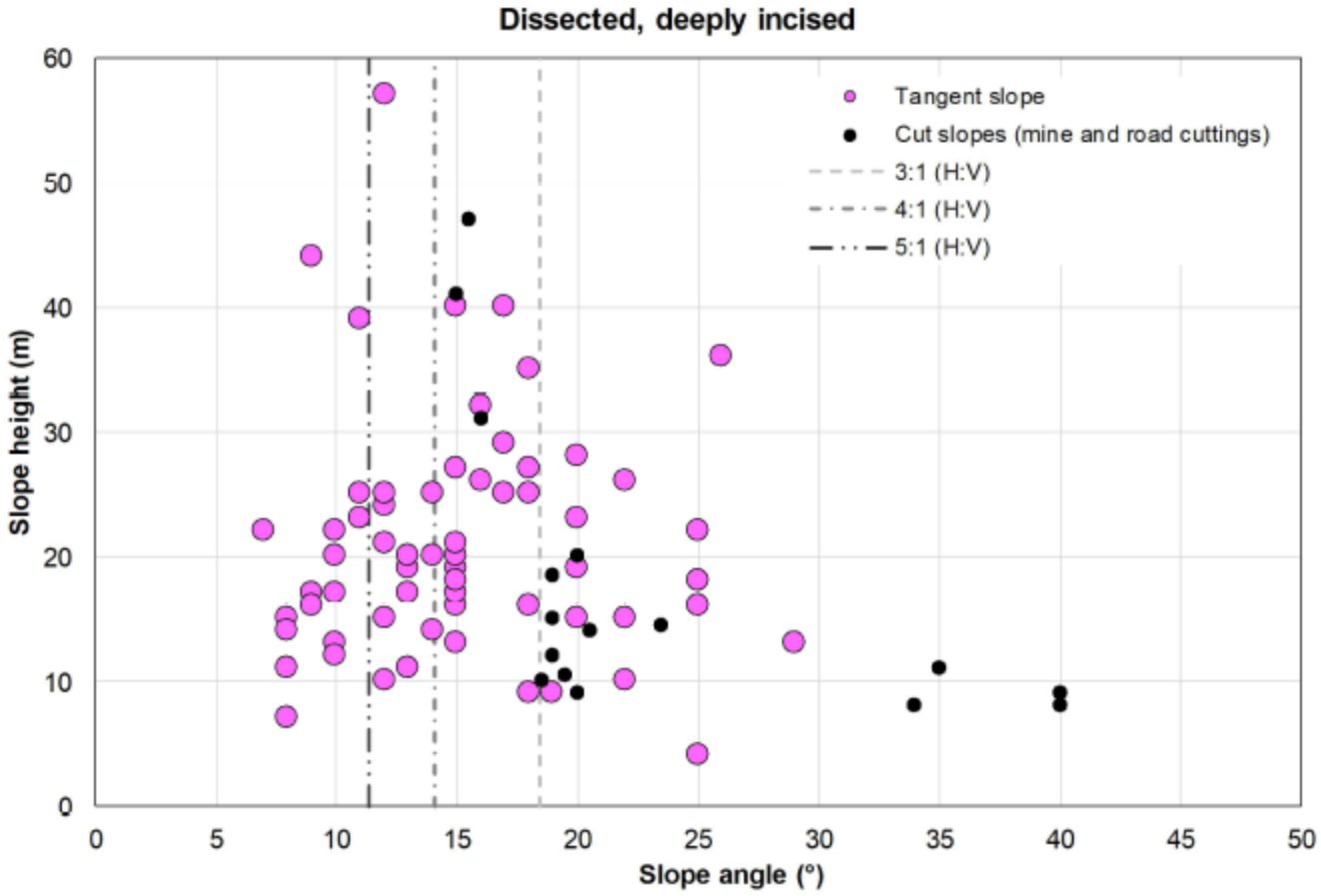
1. Generally good performance for slopes up to 25° and between 10 and 50 m in height. In this context, good performance means there are no visible signs of instability or erosion on the face of the cutting.
2. Poorer short-term performance, with visible signs of erosion or instability, for slopes steeper than around 25°.
3. Slope height alone does not appear to affect performance.

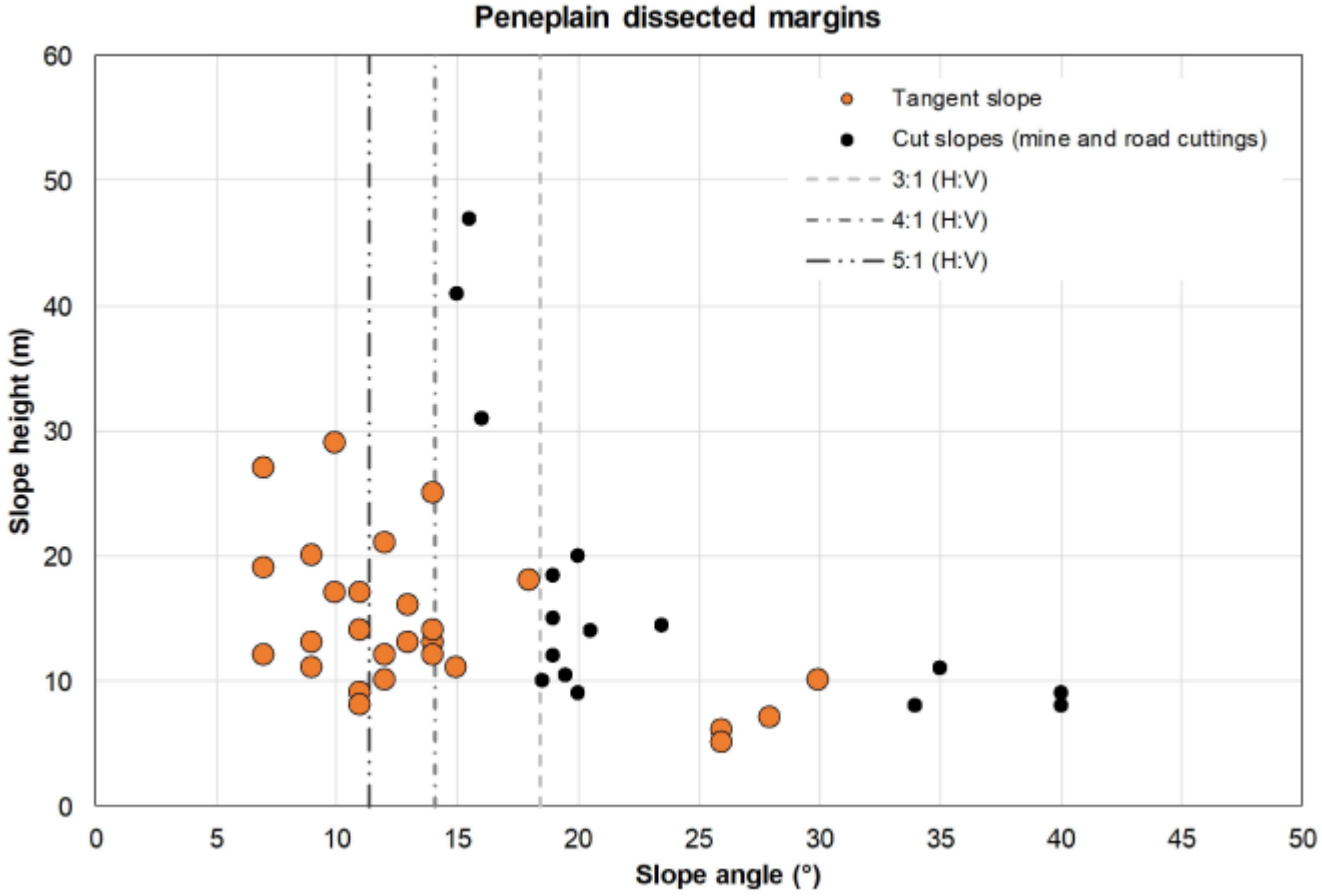


Inset 9: Slope performance of road and mine cuttings in HHF

Slope data for 97 natural slopes around the mine located in the land facets denuded, deeply incised and peneplain dissected margins, all in HHF, is presented in Inset 10. The relationship between overall slope height and overall slope angle shows:

1. Decreasing overall slope height with increasing slope angle.
2. All slopes are less than around 25°.
3. Decreasing slope angle with landform maturity, where denuded, deeply incised slopes are steeper than the peneplain dissected margin slopes.





Inset 10: Slope performance of natural slopes in HHF

Outcrops of the Yallourn Coal are rare in the Latrobe Valley and a direct measure of the natural landform slopes comprising coal is not possible. Older batters in YTF show development of a skin of completely weathered coal, approximately 1 m deep overlying intact coal. The outer surface skin of the coal weathers and, while there is some deterioration of the intact coal below this layer, it appears relatively intact and reasonably resistant to surface water erosion. Based on general experience from the other Latrobe Valley mines and at Yallourn, concentrated surface water flows do not show long term erosion of the coal unless there are large water flows directed across old coal batters that contain extensive cracking. The inference is that lower levels flows will not cause extensive coal erosion.

Section 3.2.3 presents the coal batter deterioration process with time, based on inspection of old batters, where there is a well-defined zone of deterioration of the batters where the stability will be more sensitive to adverse water loading events from rainfall runoff, and interprets an approximate relationship between the distance of deterioration and batter height, Figure 26.

7.9 Factors for Batter Slope Angles for Rehabilitation Design

This engineering geomorphological approach has identified a number of very important factors for rehabilitation planning and design:

1. Mass wasting is rare and considered a subordinate mechanism in all terrains around the mine.
2. The primary form of deterioration of slopes formed either by man-made excavation or naturally is sheet erosion (a slow process in the Latrobe Valley materials) causing uniform slow removal of material without development of conspicuous channels or gullies.
3. Slopes excavated in natural materials are stable at angles up to around 25° (HHF with height of up to 20m, as per Inset 9), although for higher slopes the natural trend is towards a slope of 15° (around 4:1 H:V).
4. As material transport and landform processes mature, the slope angle decreases, Inset 10. This is not associated with instability, simply a natural transition associated with the landscape's geomorphic cycle. This is also probably a function of catchment size and catchment gradient.
5. This means that generally batter slopes in the range from 5:1 to 3:1 (H:V) may be used for planning and rehabilitation. However locally other factors will also feed into this assessment including local catchments and the detail of the surface rehabilitation on coal.
6. Wave action has not been included; impacts of wave actions on the HHF Batter angles will be considered in detailed design.

No landform regrading is required in coal as observations on old coal batters indicate very little erosion occurs, even with high water flows.

This is further discussed in Section 13 with consideration to batter stability, and in Section 12.4 with consideration of surface water drainage design.

8. Design Intent - Timeframes, Climate Change and the Approach to Defining the Design Intent Period for Rehabilitation

8.1 Introduction

The key milestones and planning timeframes for geotechnical and surface water studies for this Feasibility Rehabilitation Design Design are, Inset 1:

1. EOM.
2. Lake Filling.
3. Post Relinquishment, the period post closure of all operations and with Lake Filling completed.

EOM has been set by EAY as mid-2028 and currently this is the only relatively fixed date. The Lake Filling time is dictated by water availability and climate, it forms part of ongoing studies by EAY and also part of the discussions with a number of Victorian Government bodies. Consequently, while a hard number cannot be assigned at this time, there is sufficient information to indicate the lake filling time is likely to be of the order of 7 to 30 years. For this design 20 years has been adopted as the Base Case and the 30 years represents an allowance for the chance that an extended drought occurs and is a Sensitivity Case.

There are significant uncertainties associated with climate change prediction, including the emission scenario followed over time, as well as the potential for advances and updates in climate change science and the understanding of its impacts. The draft guidelines, LVRRS (2020), advocates for an adaptive approach to designing for climate change. The adaptive design approach allows for a balance between climate change, risk mitigation and implementation costs. It should be noted the LVRRS (2020) climate change predictions only extend to 2067 and are then extrapolated to 2100. This prediction timeframe within the climate change context is very important for definition of the Design Intent Period.

The aim of the geotechnical rehabilitation studies is that once Lake Filling to the Final Level has been achieved the system will largely be in equilibrium and external loading factors will not compromise the overall stability.

8.2 Design Life, Design Service life and Design Intent Period

There are a number of national and international design standards or codes that deal with the concept of Design Life and Design Intent Period of a structure. However, the words “design life” hardly appears in these codes. The codes refer to the working life or the design service life, where the latter is the service life intended by the designer. The design service life is the period over which the structure is reliably expected to perform its intended purpose. This report uses Design Intent and Design Intent Period, because those terms are a continuation of the original terminology for the MRD.

8.3 Discussion on Project Development Stages, Design Life and Design Intent

Most engineering structures go through a number of stages over their life. During planning a Design Life number may be used generally in discussions, but that is not a guarantee just an approximate estimate of what the owner hopes to achieve. In fact, in many cases one cannot accurately or reliably predict the Design Life of an earth structure until some loading events have been experienced and the post construction performance monitored.

If the intent of a structure is to allow an operation to be safely and efficiently carried out, then the Design Intent Period is equivalent to the Design Life and is effectively the life of the operations as planned. However, at the same time there may be other requirements that a structure is intended to meet, for example a structure may also have a requirement to maintain its functionality post closure of the operation, but in that case, this would need to be defined and incorporated during the Design and Construction Stages.

8.4 General Guidance from Published Standards and Documents

8.4.1 Civil Engineering Structures

For general infrastructure, the Design Intent Period can be considered similar to the ‘effective service life’ of that structure. The effective service life of a structure is a complex product of many factors, including the infrastructure design, materials, environment, maintenance, rehabilitation regime and Post Mining Land Use.

The Australian Rainfall and Runoff summarises typical effective services lives for some example Infrastructure types:

- Water Treatment Plants 20 to 50 years,
- Concrete kerbs and gutters 40 to 70 years,
- Stormwater pipes 80 to 100 years,
- Wastewater systems 50 to 80 years,
- Residential buildings 40 to 95 years,
- Roads 35 to 110 years,
- Commercial buildings 15 to 150 years,
- Open stormwater channels 10 to 100 years,
- Locks and weirs 40 to 200 years and
- Dams 50 to 500 years.

Although there is a very wide range in these numbers, a 50 year effective service life is considered indicative of an approximate standard for general surface water civil infrastructure, with very important and higher risk structures such as dams having effective service lives in excess of 100 years.

Concrete structure design refers to design life, where this is defined as the "*period for which a structure or a structural member is to remain fit for its designed purpose with maintenance*". Typically, design is undertaken to one of two standards:

- AS3600 (2018) for buildings, which adopts a design life of 50 years ± 20%,
- AS5100.5 (2017) for bridges, which adopts a design life of 100 years and
- The standards highlight that a design life in excess of 100 years may be appropriate for monumental or high risk significant bridge structures crossing major waterways.

For the design life of dams and tailings dams there is a wide range of guidance:

- The ANCOLD Guidelines on Tailings Dams (2019) indicates:
  - "*There is a wide variation in current acceptable design life periods, varying up to 1,000 years in the USA and 1,000 – 2,000 years in the EU noting that closure design is tending to be defined in a geological timescale. The period of 1,000 years is considered reasonable, given that in Europe there are currently examples of water storages in excess of 800 years old that are actively monitored*".
  - "*If there is no defined post-closure design life, ANCOLD recommend adopting 1,000 years as a reasonable period as being considered "in perpetuity*".
- Chow (1959) presents the following:
  - Small dams with no likelihood of loss of life 50 to 100 years and
  - Small dams with probable loss of life In excess of 100 years.
- SA Water (2024) provides the following minimum design life for dams (excluding earth bank storages, wastewater lagoons and infrastructure with Dam Safety implications):
  - Concrete 100 years,
  - Earth Embankment 150 years,
  - Inaccessible infrastructure 150 years,
  - Accessible without dam safety implications 50 yrs (Service Life), 100 yrs (Design Life) and
  - Anchors 100 years.
- Queensland Guidelines on Acceptable Flood Capacity for Dams (2007):
  - "*A design life of no less than 150 years following the completion of any necessary dam safety upgrades is to be adopted when assessing the risk of failure over the life of the dam*".
- Washington State Department of Ecology Safety Guidelines, Part IV Dam Design and Construction (1993):
  - References a 'life' of 100 years, or more, for concrete structures associated with dams.

8.4.2 Discussion

Although there is a wide range in individual Design Intent Periods given above even for the same or similar structures the generally guidance is that as either the criticality of the infrastructure increases, or the consequences of failure increase and/or the difficulty of replacing the infrastructure increases, there is a corresponding increase in the expected design life/effective service period. Some problems with this general guidance from published standards and other sources are that much of it:

1. Refers to concrete structures.
2. Is focussed heavily on civil structures constructed within urban type environments.
3. Forms part of civic infrastructure systems with well-established permanent management and maintenance regimes, for example bridges, buildings, roads and civil water supply infrastructure.
4. Is focussed on water storage bodies with significant downstream safety implications under dam breach.

As a general summary of the above:

- Buildings (can be easier to replace) 50 years ± 20%,
- Engineered mine waste structures 25 to 75 years,
- Stormwater channels 10 to 100 years,
- Bridges 100 years,
- Dams (without safety implications) 100 to 150 years,
- Closure with long term environmental impact 300 years and
- Tailings dams 'in perpetuity' 1,000 years.

So the question is where does Yallourn Mine closure and rehabilitation fit into this guidance? Tailings dams can often be associated with severe environmental and/or safety implications and hence Design Intent Periods for these structures are not considered applicable at Yallourn. Similarly, the Yallourn rehabilitation is not considered to be the same mine setting with reference to having significant long term adverse environmental impacts and hence the 300 Year Design Intent Period is also not considered relevant.

Consequently, it is difficult to readily fit closure of the Yallourn Mine into this guidance. It is also important to note that for the MRD and the mine lakes, downstream safety under a breach scenario does not apply. The remaining data would indicate that a Design Intent Period of ≤ 100 years (from completion of Lake Filling to design height) as appropriate for Yallourn.

8.5 General Guidance Earth and Mine Waste Structures

8.5.1 General

In the context of mines, Anderson et al. (2016) provides design life period recommendations for engineered mine waste structures, mainly mine waste dumps and tailings dams, in Australia, with recommended periods ranging between 25 and 75 years depending on the consequence of failure, Inset 11. This assessment is heavily focussed on the longer term and two structures with high potential for generating adverse environmental pollution. A key component for both structures is the success of the earth capping layers used in rehabilitation to minimise rainfall infiltration.

The Western Australia '*Guideline for Preparing Mine Closure Plans*' (2011 and updated in 2025) does not provide specific guidance on closure design life, but references that "*the completion criteria should include performance indicators to demonstrate that rehabilitation trends are following the predicted performance, particularly where mathematical modelling is utilised to predict any long term environmental impact (usually 300 years or longer)*". Again the focus for this guidance is around mathematical modelling of adverse environmental pollution.

LEVEL OF POTENTIAL RESIDUAL IMPACT	LOW	SIGNIFICANT	HIGH
OUTCOME	No change in environmental values of receiving environment	Environmental values diminished in receiving environment	Environmental values diminished in receiving environment
POTENTIAL RESIDUAL IMPACT DEFINITION[#]	Releases of mine-affected water cause no more than short-term (potential for a residual impact but this is short-term and manageable) impacts in the receiving environment (analogous to *Low Consequence* in DEHP, 2016)	Releases of mine-affected water cause medium-term impacts in the receiving environment (analogous to *Significant Consequence* in DEHP, 2016)	Releases of mine-affected water cause long-term or permanent impacts in the receiving environment (analogous to *High Consequence* in DEHP, 2016)
DESIGN LIFE PERIOD	25 years	50 years	75 years

[#] Residual impact is evaluated against three criteria – harm to humans, general environmental harm, general economic loss or property damage. For illustrative purposes, the assessment is presented with reference to aquatic ecosystems.

Inset 11: Engineered mine waste structure design life (from Anderson et al 2016)

8.5.2 Actual Experience

Some recent studies (Anderson et al. 2016) provide good guidance on the actual design service life experienced in practice with engineered earth structures and some mine waste structures, essentially with soil and rock materials used for the rehabilitation. This guidance is supported by a number of Australian based research projects into the success rate of mine rehabilitation outcomes. Although once again these studies are focussed on high-risk mine facilities such as tailings dams and waste rock dumps with acid mine drainage potential, both of which have significant potential environmental risks. The studies are also focussed on the earth caping used to limit surface water infiltration a key factor in the control of adverse environmental effects long-term. It is important to note that this experience is with very important engineering structures where it would be reasonable to assume that at least some had detailed and careful engineering design and construction.

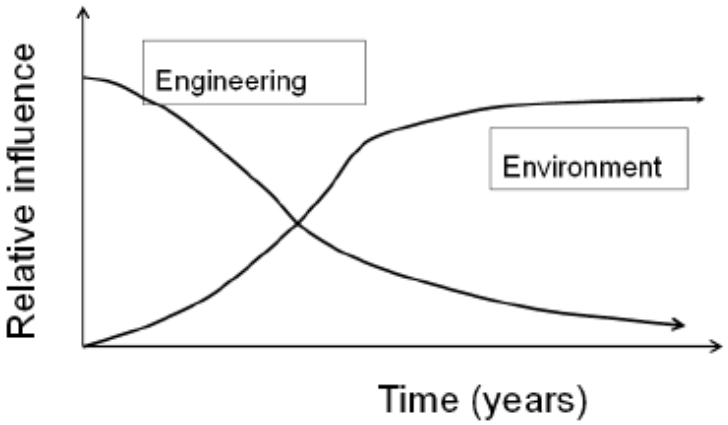
Inset 12 is a schematic representation highlighting the changes that always occur over time with earth structures and how with time these changes come to dominate over the engineering design and construction. The contribution of construction to performance is at its peak at the end of construction but as time passes the effects of environmental aspects become more important.

As discussed above while much of the experience is considered to have only limited direct relevance to the Yallourn Mine Closure, the experience with reference to the longer-term behaviour of engineered earth structures is directly relevant to the MRD. The other aspects set out in Anderson et al. (2016) in relation to the Design Intent Period are the addition of the concepts of the complexity of the structure under consideration, it's durability and the assumed maintenance.

Coupled with this focus on realistic Design Intent Periods there is a parallel increase in the importance of another key rehabilitation goal, that the rehabilitated landform is able to sustain the agreed Post Mining Land Use (PMLU). This then leads into the concept of durability, where:

- The Design Intent Period is the period after relinquishment in which the structure is expected to perform in accordance with the design objectives; and
- Durability is the capacity of the structure to satisfy the performance requirements over the Design Intent Period, with the planned maintenance.

Durability also relates in part to the design complexity of the structure, and it would logically be inferred that a less complex structure would have an increased durability. Thus, durability also relates directly to the level of maintenance required such that the structure can perform in accordance with the design objectives. Hence the design rehabilitation strategy adopted for Yallourn Mine Closure should have design simplicity and durability as key elements.



Inset 12: Relative influence of engineered construction versus evolving environmental impacts during the life of a closed facility (from Fourie et al 2012)

8.5.3 Summary

The main relevant points arising from the studies and research are:

1. Typically, geotechnical engineered earthen structures have a design life of 50 to 70 years (Fourie et al. 2012).
2. This does not mean the structure ceases to perform as intended after that period, rather that all engineered structures require some post-construction monitoring and maintenance.
3. The design of earth structures needs to consider the design complexity and the durability as part of the considerations of:
   a. The Design Intent Period.
   b. The maintenance assumptions attached to that designer decision.
4. Some regulators, published guidelines and ANCOLD, reference Design Intent Periods for earth structures of 100 years, 1000 years and “in perpetuity”. However, these periods are at odds with reality, because no engineered structure functions in perpetuity and particularly not earth structures.
5. Notwithstanding the fact that the mine waste structures covered by these documents have much higher potential adverse environmental risks than the Yallourn Mine Rehabilitation, these documents indicate that a Design Intent Period in excess of 100 years would be optimistic.

8.6 Climate Change and the Design Intent Period

Overprinting the decision regarding the Design Intent Period is uncertainty associated with climate change. The next century is likely to be critical to the extent of climate change that occurs, depending on the efforts the global community and Australia make to curb greenhouse gas emissions. As such, adopting an overly long Design Intent Period would result in large uncertainty. For example, the current Department of Environment, Land, Water and Planning (DELWP) Guidelines for Assessing the Impact of Climate Change on Water Availability in Victoria (2020), the most up to date climate change predictions for the Latrobe Valley, only provides predictions up to 2065, and the DELWP 2019 Gippsland Climate Projections are only marginally further out to the 2080 to 2099 period. The problem is illustrated in Figure 31, which shows the projected changes in temperature for three scenarios, Dry, Median and Wet Climate. These projected changes are then extrapolated out to 2090 and this extrapolation only takes the predictions out to approximately half way through a 100 year Design Intent Period.

In the figure, the three scenarios yield different timeframes to reach the assumed climate change temperature rise of 2.25°C (black dotted line). Comparing the scenarios against the project's likely lake filling (shaded blue) and various design intent periods (purple dotted lines) one can see much uncertainties in the prediction for design.

Under these circumstances, the draft guideline advocates for an 'adaptive' approach to designing for climate change. There are significant uncertainties associated with climate change prediction, including the emission scenario followed over time, as well as the potential for advances and updates in climate change science and the understanding of its impacts. In an adaptive approach, a baseline allowance for temperature change as a result of climate change is adopted, but the structure design should allow for updates in the future if the impacts are found to be greater than that assumed in the initial design. An example provided in the guideline is for a levee, where extra crest width is allowed, such that if the levee needs to be raised in the future (because of worse climate change impacts), this can be readily achieved. This is as opposed to adopting the upper bound of the RCP 8.5 scenario predictions, Figure 31, which could result in potentially conservative and likely more costly designs. The adaptive design approach allows for a balance between climate change risk mitigation and implementation costs.

From the preceding discussions it should be evident the Design Intent Period is also linked with the:

- Design complexity of the different components, for example the MRD, Peripheral Catchment Drainage structures, etc;
- The durability of those components and
- The maintenance requirements.

It is important that there are realistic expectations from the stakeholders and based on the climate predictions, Figure 31, and the actual experience in Australia with engineered mine wastes it is very difficult to justify scientifically a Design Intent Period longer than 100 years.

Based on the above discussion, a Design Intent Period of 100 years from completion of lake filling has been adopted for Yallourn Mine rehabilitation design, supported by maintenance and management commensurate measured performance through various phases of rehabilitation and post rehabilitation.

9. Design for Surface Water

9.1 Background

Surface water management is critical to the rehabilitation strategy for the Yallourn Mine, both in terms of the closure slope geotechnical performance, as well as the water balance of the voids. Any long-term water control structures installed as part of the future rehabilitation will need to be simple, deformable structures with high design capacity and integrity. These structures may also require a tailored maintenance program for the long term for the success of rehabilitation.

The intention of this section is to present the basis of design framework for the peripheral catchment hydrology of the Yallourn Mine. Aspects covered include:

- Information to aid selection of the surface water drainage design event
- Storm event hydrology basis for:
  - The current climate
  - Projected future climate change scenarios, and
  - Response following a bushfire and/or forestry logging event in a catchment.

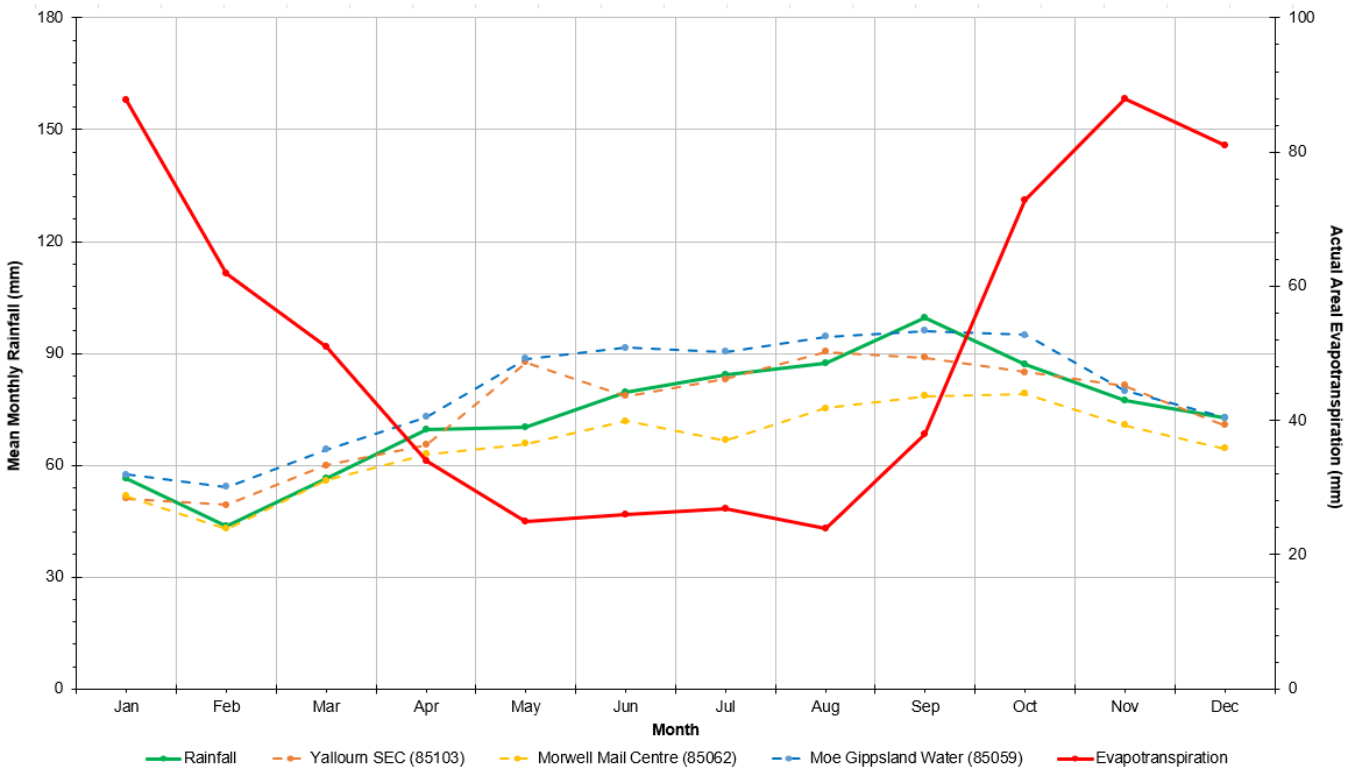
9.2 Regional Hydrology

The Yallourn Mine is located within the Latrobe Basin at the confluence of the Morwell and Latrobe Rivers. The Latrobe River and associated tributaries extend upstream to the northwest encompassing a catchment area of 1,935 km², whilst the Morwell River stretches upstream to the south with a reporting catchment area of 635 km², Figure 39. The northern and southern peripheries of these two regional catchments lie in the Great Dividing and Strzelecki Ranges.

The Yallourn Mine has a temperate climate. The rainfall tends to be more prevalent during winter, with a mean annual rainfall of approximately 800 mm. However, rainfall can be higher during both winter and spring due to climatic variations, see Inset 13. This is exceeded by the areal potential evaporation rate of approximately 1,050 mm/yr, which is the evaporation that would occur under conditions of unlimited water supply from a larger area, such as a pit lake. Higher elevation areas within the headwaters of the regional catchments are associated with higher rainfalls ranging between 1,100 and 1,400 mm/yr for the Strzelecki and Great Dividing Ranges respectively. Whilst the peripheral catchments around the Yallourn Mine, as well as the wider Latrobe Valley are in a lower mean annual rainfall region than the upstream areas of the Latrobe and Morwell Rivers.

The peripheral catchment areas around the mine site are mostly formed within the Haunted Hills Formation (HHF). However, most of the regional streamflow gauges, with smaller catchment areas, notionally less than 100 km², are associated with Wonthaggi Formation or Tynong Granite, Figure 17. Consequentially, there is limited regional streamflow data in catchments directly analogous to the mine peripheral catchments. In addition, most of the peripheral catchments are much smaller than those available from the regional streamflow gauge monitoring.

Understanding this geological context is important for predicting the hydrological response, as existing regional methods will have been calibrated to the regional streamflow gauges, which may not be particularly representative of the site peripheral catchments.



Inset 13: Yallourn Area Mean Monthly Rainfall and Evapotranspiration

9.3 Mine Peripheral Catchments

9.3.1 Catchment Area and Existing Infrastructure

Figure 7 shows the peripheral catchments around the Yallourn Mine, with the total catchment area (including the pits) of approximately 57 km², of which currently approximately 30 km² of catchment is diverted around the mine via existing drainage infrastructure.

There is a significant amount of existing water diversion infrastructure around Yallourn Mine. Most of this infrastructure is located west and south of Yallourn Township Field (YTF), with a lesser amount east and south of Maryvale Field (MVF). The performance of some of the main elements of this infrastructure has been reviewed as part of the rehabilitation strategy study.

There is a significant amount of existing diversion infrastructure associated with the current surface water management of the peripheral catchments. Much of this infrastructure was designed and installed decades ago. The peripheral catchment infrastructure includes, Figure 7:

- Existing dams, Rifle Range Gully and Witts Gully Dams:
  - Rifle Range Gully Dam was constructed in 1969 as a detention basin with a zoned earthfill, clay core, embankment. The dam was subsequently raised in 1979 by approximately 2 m (to a crest level of 95.8 m AHD) with an emergency spillway also added, consisting of a culverted pipework system through the embankment underneath De Campo Dr, in order to control the Full Supply Level following the raise. The culvert spillway ultimately discharges to the downstream toe of the dam embankment, for where the flow goes to the Yallourn Township Field (YTF).
  - Witts Gully Dam was constructed in the 1960s, with an upgrade completed in 2015 to uplift the dam to comply with ANCOLD requirements. The dam forms a part of the firefighting network for the mine and is operated via pumping in and gravity flow out of the dam such that the water is maintained at a level a few hundred millimetres below the emergency spillway level. During spill events, flow is transferred via drains to culverts under the M1 Princes Freeway where it meets with the Melbourne Swamp Diversion Drain, with the majority of the flow continuing to the northeast through culverts under the railway line and discharging to the YTF.
- Existing diversion drains, including Melbourne Swamp, Morwell West, Remnant Morwell West, and Hancock Victorian Plantations diversion drains.

- The existing railway line along the southern edge of YTF with culverts under the rail embankment transferring water towards the mine and into the Morwell River system.
- Existing public roads, including M1 Princes Freeway, Marretts Road, De Campo Drive, Haunted Hills Road and Latrobe Road.

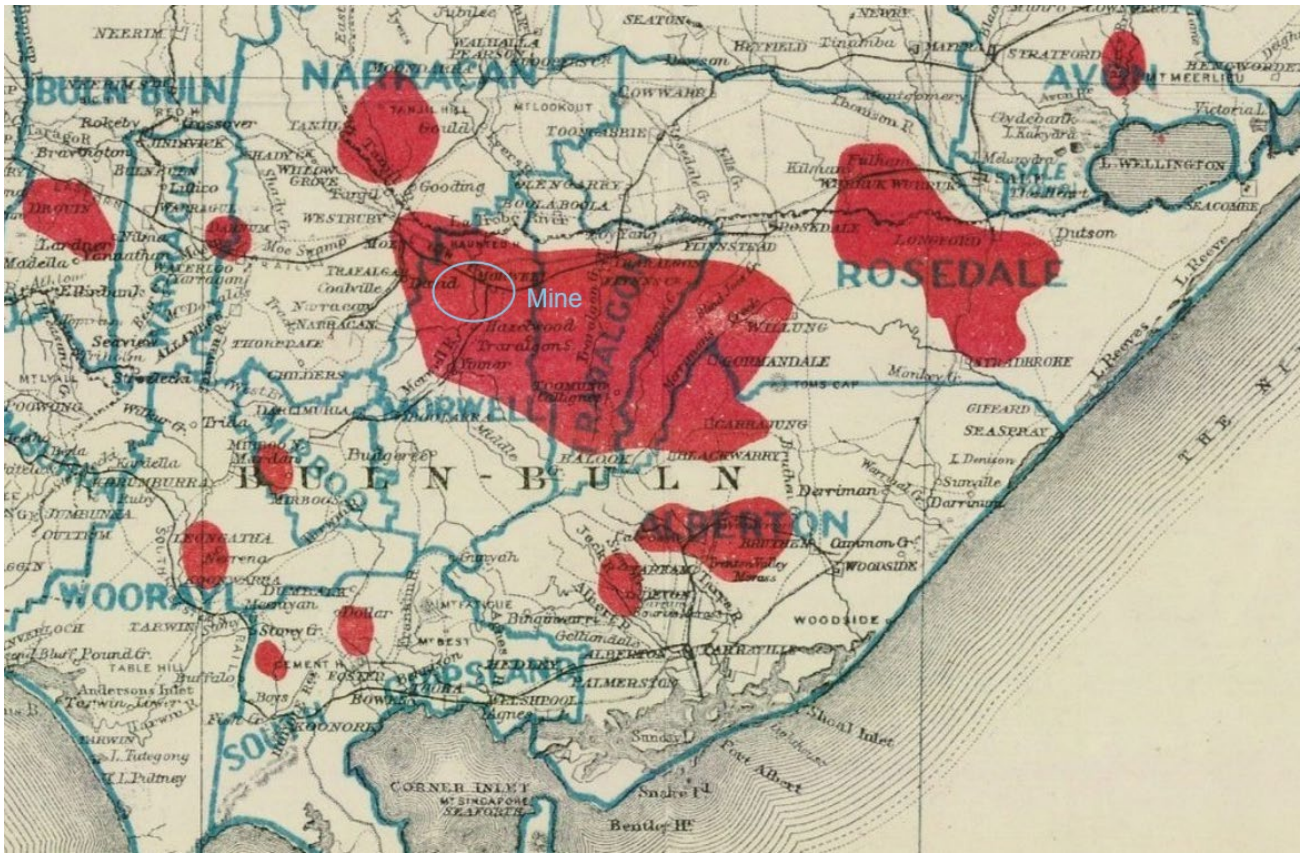
The peripheral catchments are also subject to a number of ‘conservation areas’; these are areas that would require additional stakeholder consultation and agreement if any modifications are proposed as part of the closure design.

9.3.2 Bushfires

Bushfires can have an impact on the surface water runoff response, both in terms of yield and storm response, as a result of the loss and regrowth of vegetation. There is evidence of bushfire impacts in the Yallourn Mine peripheral catchments. For example:

- Fire impacted the mine and adjacent area in 1944, as shown in Inset 14,
- Areas to the north of the Yallourn Mine have experienced bushfires in 1997/1998, 1999, 2001, 2004 and 2006/2007, and
- Nearmap images highlight a bushfire impacted the western and southern peripheral catchments in 2014, as shown in Inset 15.

The precedence supports that bushfires are typically of larger extent than the Yallourn mine peripheral catchment areas, such that complete burn of all peripheral catchments must be considered as a feasible scenario if/when a bushfire occurs around the mine.



Inset 14: 1944 Bushfire (burnt areas shown in red, from Slight 1944)



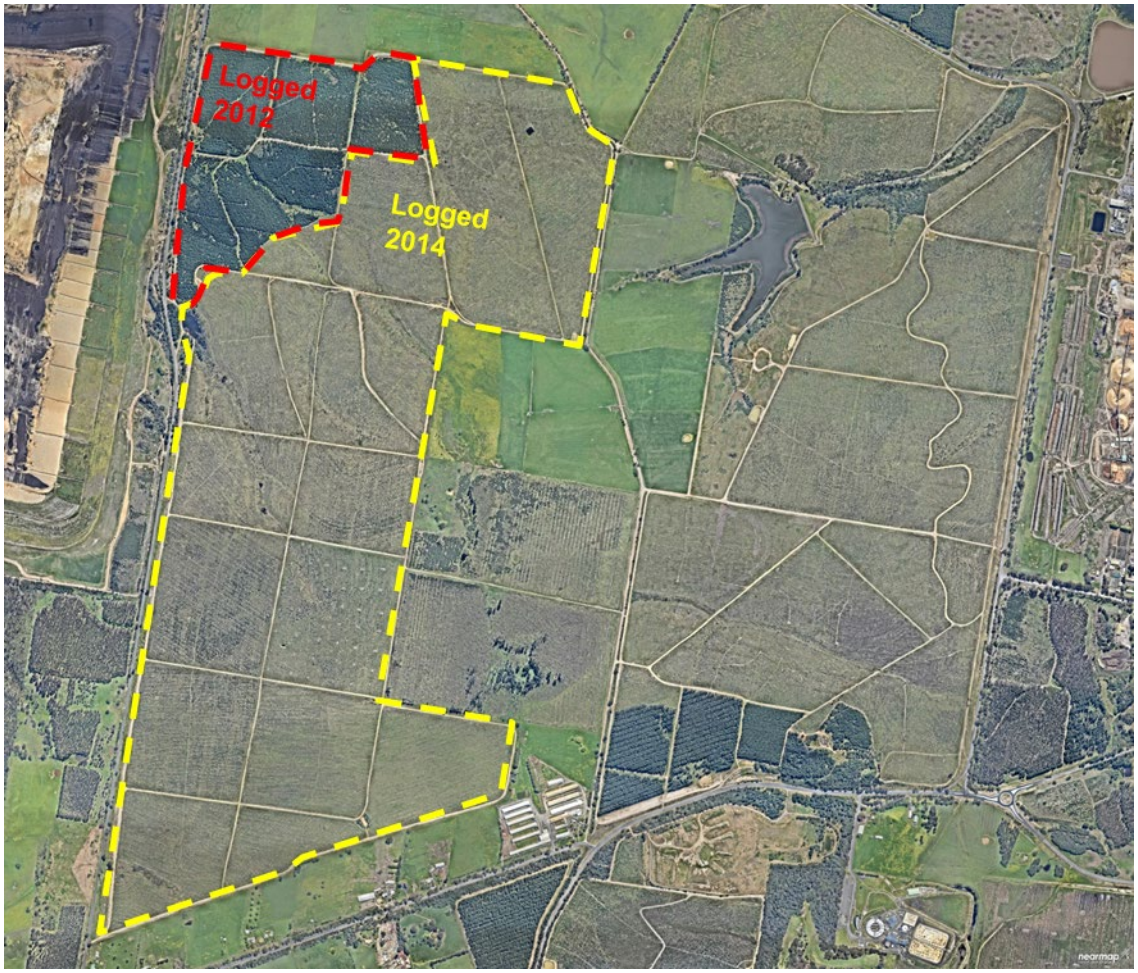
Inset 15: 2014 Bushfire (burnt areas shown in orange)

9.3.3 Forestry

There are also forestry plantations in many of the peripheral catchments, including upstream of Witts Gully Dam and to the west and east of Latrobe Road and the Yallourn East Field (YEF). The plantation to the east of Latrobe Road is the Hancock Victorian Plantations (HVP) forestry area, which is understood to be a softwood pine plantation. VicForests has established around 500,000 native blue gum seedlings at five different crown land sites around Maryvale and the Latrobe Valley, it appears that one of these areas is the forest running along the western side of Latrobe Road, near the upstream end of the Morwell West Drain. The Witts Gully plantation appears to be a pine planation from aerial images.

The forestry can be assumed to operate on a 25 to 30 year cycle. Inset 16 shows the logging areas within the HVP planation, with two main forestry areas, the larger of which covers the bulk of the planation, such that loss of vegetation within the majority of the planation is expected every 25 to 30 years.

The Witts Gully planation area (which excludes the Sayers Trig Bushland Reserve) within the Witts Gully Dam catchment is logged in its entirety at the same time, with the last logging event in 2016.



Inset 16: HVP Planation Felling

9.4 Critical Aspects for Closure

9.4.1 Overall Closure Aspects

A Design Acceptance Criteria (DAC) needs to be established for each domain in order to achieve an agreed Post Mining Land Use (PMLU). The DAC needs to be cognisant of the geotechnical and surface water related risks for each domain.

The control of surface water is inherently linked to the geotechnical performance of the rehabilitation slopes via:

- The need to control surface water and mitigate the risk of tension cracks being charged with water and triggering a block sliding slope deformation and/or failure, and
- The need to create the pit lake as part of measures to improve stability of the pit slopes.

Down-batter drains, linking the peripheral catchments to the pit lakes, are an important component of the concept to address the above aspects. Any long-term water control structures installed as part of the future rehabilitation will need to be simple, deformable structures with high design capacity and integrity. The design intent will be to achieve minimal maintenance where possible.

9.4.2 Down Batter Drain Concepts

The rehabilitation design will need to be able to deal with sheet flows, as well as concentrated flows sourced from the peripheral catchments. These concentrated flows will need to be transferred from the peripheral catchments down to the pit lake level through an engineered structure (i.e. the down batter drain). The engineered drain structures will need to be flexible systems, that can continue to function following slope deformations. There is also a benefit of these drain structures limiting infiltration into the slopes from the drain base.

Table 5 presents a qualitative summary of some of the factors related to the performance of the different down batter drain options.

Table 5 – Down Batter Drain Option Influencing Factors

Factor	Articulated Concrete Mattress Drain	Coarse Rockfill Chute Drain	HDPE Pipe Inlet Pit
Drain Flexibility	High	Very High	High
Material Availability	Mattress will need to be purchased	No readily available durable coarse rockfill on site	Already available
Permeability of drain base	Low to Moderate (Moderate to High for products such as Earthlok)	Will depend on basal drain layer (e.g. geotextile, HDPE plastic)	Low, only risk is for a pipe weld breach/leak
Criticality of inlet	Low to Moderate	Low to Moderate	High. Inlets to be designed to not permanently pool water
Maintenance potential	Low to Moderate	Low to Moderate, main risk could be rockfill clogging	Moderate to High (inlet trash rack blockage cleanout)
Safety risk once rehabilitated is open to the public	Some risk of feet getting trapped within the gaps between concrete blocks	Some risk of feet getting trapped within the gaps between boulders	The pipes are large diameter that people may try and access, if someone got into one, they would likely get trapped and/or could drown
Consequence of drain capacity overtopping	Localised impacts, but still large proportions of flows going down drain		As per other drains, but potential for poorer outcomes where inlet is offset from pit crest and there is an irregular/poorly defined flow path to the pit edge

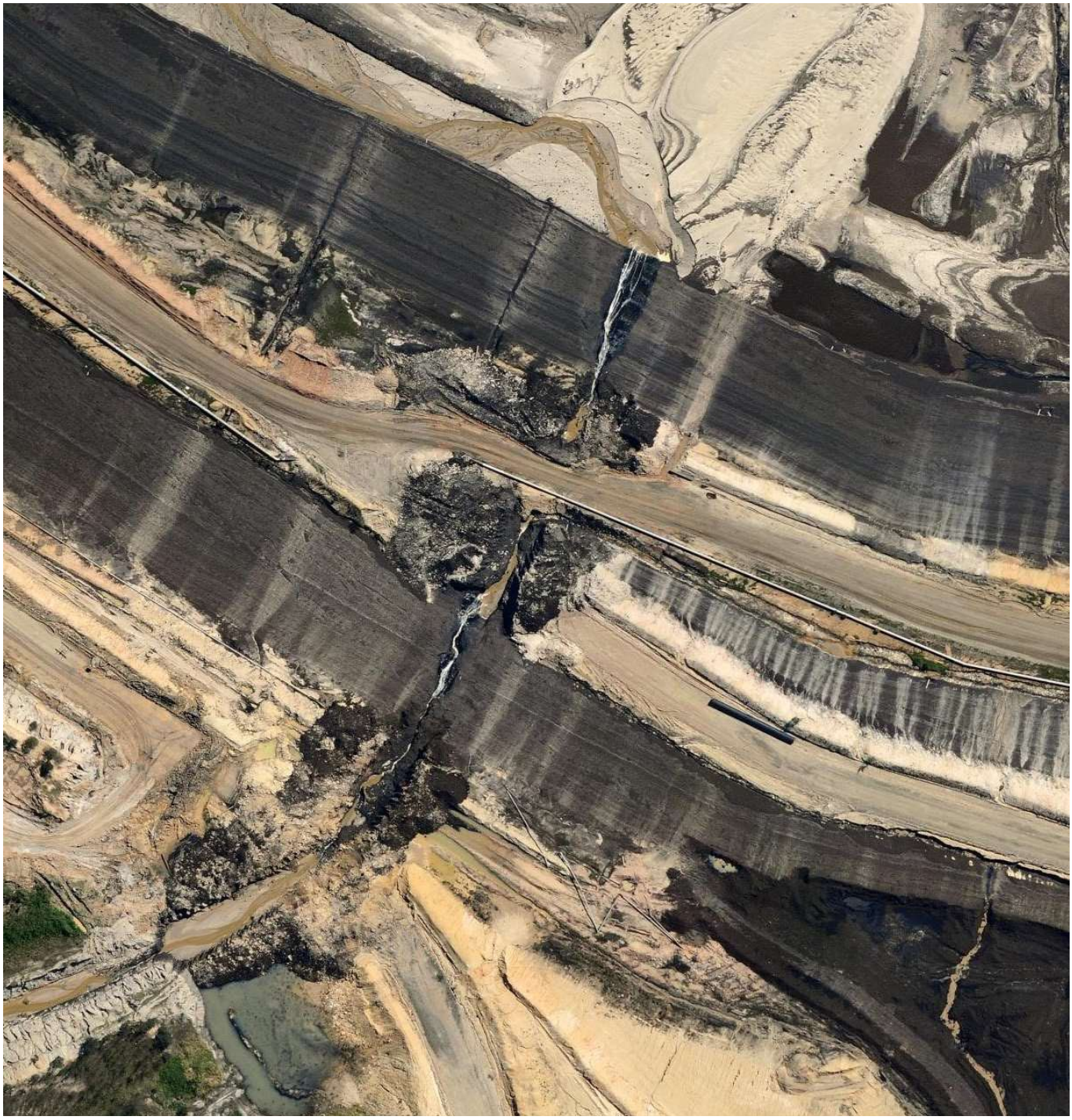
Drainage may also be required on:

- Areas below the final lake level during the lake filling phase, and
- Above the pit lake level, but on flatter slopes away from the batters.

For areas below the final lake level, it is assumed that the coal will not need to be covered, as such there could be an opportunity to use a drain cut in the coal surface. There is a number of precedents for the performance of coal in response to concentrated flows:

- Inset 17 shows a significant flow over a coal batter in the Yallourn East Field (YEF) in 2012 and 2013, with the estimated peak flow in the order of 20 to 25 m^3/s. Significant cut-back and/or erosion of the batter drain was not observed. It is highlighted that this would have been a fairly recently excavated slope at the time of the flow.
- Inset 18 shows flood flows from the Morwell River were discharged over a batter in the Yallourn Township Field (YTF) in 2012, which in the space of one or two days resulted in a block sliding failure in the coal.

These demonstrate the potential for very good performance for a drain cut in coal, provided that the batter does not have significant cracking and/or the slope has not already experienced significant deterioration and/or deformation.



Inset 17: flow over coal batter (2012/2013)



Inset 18: Flood discharge into YTF in 2012

There may also be an opportunity to accept an unlined drain below the final lake level, but the erosional outcomes would need to be considered. For example, for fill buttresses critical to the stability of the closure slope, then erosion of any drain across the buttress would need to be minimised.

For flatter slopes above the pit lake level (i.e. away from the closure pit batters), drain options could include, discussed further in Section 9.7:

- No drain (i.e. utilising the existing valley topography)
- An unlined drain (notionally in more tranquil flow conditions, or areas where there are lower consequences of erosion), or
- A rip-rap lined drain (with either a graded transition and/or geotextile as a basal layer) to mitigate drain erosion.

On slopes, where the surficial layer could experience poor performance under sheet flows, then a herringbone pattern of v-drains could be used to direct flows back towards the down-batter drains.

Where different drains are utilised will be a balance between the geotechnical performance of the domain, the amount of catchment intercepted and size of the catchment downslope of any drain (which would be required to flow as sheet flow into the pit lake).

9.4.3 Critical Hydrology Aspects

To be able to estimate design flows from the peripheral catchments over the closure period, the following critical aspects need to be understood:

- The current climate hydrological response of Haunted Hills Formation catchments
- The impacts of climate change on the rainfall-runoff response
- The impacts of bush fire on the rainfall-runoff response, noting that climate change has the potential to increase the frequency of bush fires, and
- The impacts of forestry logging on the rainfall-runoff response for the domains that have forestry areas.

Estimates of design flows for sub-catchments within each domain will allow assessment of the feasibility of different closure drain design options and consequentially the catchment area that might be diverted into the pits. The area of peripheral catchments that can be diverted into the pits has a flow on effect to the water balance of the pit lakes and has an influence on the pit filling time and maintenance of the final lake level.

9.5 Design Steps

The steps for the peripheral catchment drainage design for each domain are to:

1. Establish conceptual options for drain type and siting based on the geotechnical slope stability analyses and the DAC, including risk framework during different rehab periods. The method and results are discussed in Section 12
2. Establish the design hydrologic likelihood for each domain, based on the qualitative risk for drain design. The hydrologic likelihood, and the equivalent AEP, should be established with consideration of climate change, bushfire and logging considerations, Section 9.6. Chosen values are discussed in Section 12.
3. An iterative review process with EAY to confirm the rehabilitation strategy and this concept align.
4. Calculate the design flow for the design, following the risk-based design criteria documented in Section 12.
5. Estimate drain sizes. The calculation methods are discussed in Section 9.7.
6. Lay out drain design across the rehab landform.

At this feasibility stage, steps 1 and 2 are established and discussed. Steps 3 to 6 are a part of an interactive process with EAY including final landform rehabilitation plans, and need to be quantified in future detailed design stages.

9.6 Design Hydrologic Likelihood vs AEP

The Annual Exceedance Probability (AEP) describes the probability of an event occurring within any given year. This, when used in combination with the period the structure is aimed to operate (or achieve a certain performance) over, here referred to as the '*design intent period*', can be used to understand the exposure likelihood of a larger event than a selected design event magnitude occurring during the structure's design intent period. Discussions on the design intent period is included in Section 8. This likelihood can be combined with the consequences of failure to assess the overall risk for a structure designed to a certain AEP.

Given a closure timeframe, selection of the design event is an important aspect to the overall rehabilitation strategy. As the risks in each domain vary, there is likely to be a range of design events considered, with bespoke design event selection to mitigate the associated risks on a case-by-case basis.

9.6.1 Hydrologic Likelihood

The hydrologic likelihood can be calculated using the following formula where the conditions in the catchment are constant:

$$P_f\,[\%] = \text{Hydrologic Likelihood} = 100 \times (1 - (1 - AEP)^{L})$$

Where *AEP* is the Annual Exceedance probability as a fraction, and *L* is the design intent period in years.

The hydrologic likelihood gives the change of a certain design magnitude event (represented by the AEP) occurring one (or more) times within the design intent period. For cases where there is not a change in the catchment (such as a bushfire temporarily changing the catchment runoff response), the hydrologic likelihood could be viewed, for example, as the risk of a flow in a surface water drain exceeding the design drain capacity. The consequence of this occurrence, in combination with the hydrologic likelihood, then becomes where the risk judgement is used to decide the design event.

The design hydrologic likelihood is selected based on the risk assessment system, namely, what is the consequence of a hydrologic exceedance, does it lead to a geotechnical instability, and if so, what is the consequence of such instability. The three are intimately linked and must be selected carefully to enable the drainage design.

Table 6 presents hydrologic likelihoods for a range of design event AEP's and design intent periods, with colour coding based on:

- Red Likelihood > 50% Probable or more likely over the DIP
- Orange 20% < Likelihood < 50% Possible to even chance over the DIP
- Yellow 10% < Likelihood < 20% Very low to low chance over the DIP
- Blue 1% < Likelihood < 10% Very improbable / very unlikely over the DIP
- Green Likelihood < 1% Almost impossible over the DIP

Table 6 – Hydrologic Likelihood (%)

AEP	Design Intent Period (Years) and Hydrologic Likelihood (%)				
	20	30	50	75	100
1 in 10	87.8	95.8	99.5	>99.9	>99.9
1 in 50	33.2	45.5	63.6	78.0	86.7
1 in 100	18.2	26.0	39.5	52.9	63.4
1 in 200	9.5	14.0	22.2	31.3	39.4
1 in 500	3.9	5.8	9.5	13.9	18.1
1 in 1,000	2.0	3.0	4.9	7.2	9.5
1 in 2,000	1.0	1.5	2.5	3.7	4.9
1 in 5,000	0.4	0.6	1.0	1.5	2.0
1 in 7,500	0.3	0.4	0.7	1.0	1.3
1 in 10,000	0.2	0.3	0.5	0.7	1.0

Based on the values in Table 6, the hydrologic flow estimation approach has focussed on storm parameters for events up to the 1 in 10,000 AEP.

9.6.2 Non-stationary Hydrologic Likelihood

9.6.2.1 Formula

The non-stationary Hydrologic Likelihood accounts for components that change with time, ie, climate change, bushfire and logging events, where a design flow can be associated with an AEP that vary over time, such that the linear relationship is no longer linear.

Non-stationary aspects that impact the peak flow include:

- Climate change, and
- The two-year periods following either a bushfire and/or logging event.

Estimating the likelihood of a design flow occurring in a non-stationary year has been informed by the methods presented in Salas and Obeysekera (2014). The hydrologic likelihood of a certain design flow occurring by a particular year ($P_{D,Y}$) can be calculated as:

$$P_{D,Y} = 1 - \prod_{t=1}^{Y}\left(1 - P_{Design,t}\right)$$

Where $P_{Design,t}$ is the AEP of the design flow occurring in year *'t'*.

For example, taking 2028 as the year of construction of the piece of infrastructure, then the hydrologic likelihood for the design flow being exceeded by 2030 can be calculated as:

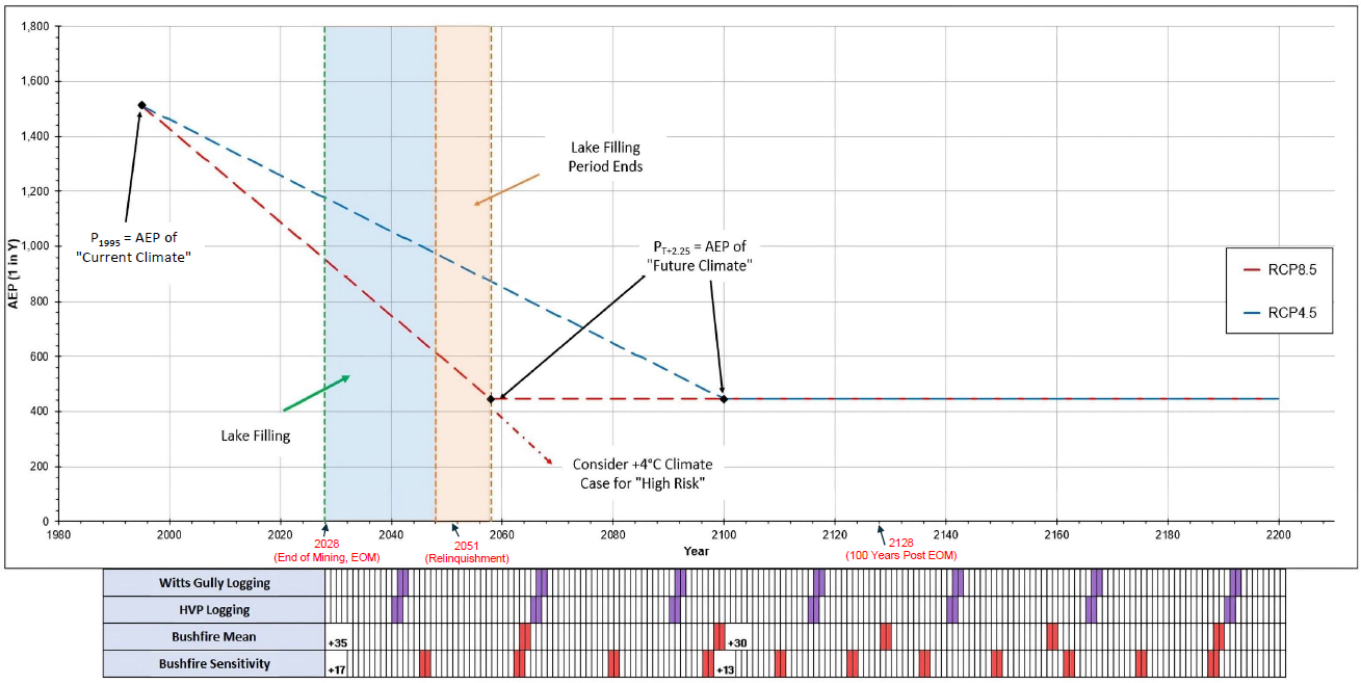
$$P_{D,2030} = 1 - \left(1 - P_{Design,2028}\right)\left(1 - P_{Design,2029}\right)\left(1 - P_{Design,2030}\right)$$

To estimate $P_{Design,t}$ in a particular year, the more frequent AEP of the following two cases is adopted:

- P_{Fire} if it is a year in the two year period following a bushfire or logging event, and
- An interpolated AEP between P_{1995} and $P_{T+2.25°C}$ for the climate change sequence being adopted. The 'blue' and 'red' dashed lines in Inset 19 show the interpolation of the AEP.

The above process is used for every year with climate change, bushfire and logging scenarios, to estimate the hydrologic likelihood over the entire design intent period, with the overall 'curve' used for design.

The non-stationary conditions are discussed in the following sections.



Inset 19: surface water design considerations for non-stationary conditions

9.6.2.2 Impact of Climate Change

Climate change has the potential to make a significant impact on a number of hydrologic processes.

Large storm event rainfalls are expected to worsen in line with the Clausius-Clapeyron relationship, which explains that for every degree of warming in the air temperature, the atmospheric water holding capacity increases by 7%. It would be expected that short duration (i.e. 1 to 3 hr) convective rainfall extremes will intensify in line with this relationship. Whereas longer duration (e.g. daily) large storms are more likely to be affected by the larger atmospheric circulation pattern changes (e.g. changes to the Southern Annular Mode, ENSO system, etc).

Climate change also has the potential to impact catchment antecedent conditions, which then influences storm event losses. If there is a reduction in seasonal and annual rainfalls, as well as an increase in evapotranspiration (associated with warmer air temperatures), then it is more likely that a catchment, on average, will be drier at the beginning of a storm event. This may increase the storm rainfall event losses, reducing the excess rainfall, and therefore the peaks flows. The soil moisture can be used as a good proxy for understanding changes in antecedent conditions.

There are three main documents that provide climate change predictions for the Latrobe Valley:

- Latrobe Valley Regional Rehabilitation Strategy, CSIRO (2017)
- DELWP Gippsland Climate Projections, Clarke et al. (2019), and
- DELWP (2020).

The documents have typically focussed on two global emission scenarios in:

1. RCP 4.5, and
2. RCP 8.5 (a "very high baseline emissions scenario", representing the 90th percentile of 'no-policy' emission baseline scenarios available at the time).

There is general agreement in trends between the three documents, and closure studies for the Hazelwood mine have adopted the LVRRS (2020) predictions. Given the good general agreement in trends between the different reports and that the LVRRS predictions are specific to the Latrobe Valley, the LVRRS (2020) climate change predictions have also been adopted for the Yallourn mine.

With respect to the potential hydrologic rainfall-runoff impacts of climate change, updated climate change guidance has been presented to the industry as a draft update to the Australian Rainfall and Runoff guideline (DCCEEW, 2023). Whilst this guidance is still under industry review, it is expected to become the recommended guidance presented in the Australian Rainfall and Runoff guideline by mid-2024. As such, it is considered prudent to consider the guidance presented in this update as part of this closure study.

The updated draft climate change guidance presented in DEECA (2023) provides:

- Updated IFD rainfall scaling factors, which vary with storm duration, but apply to all magnitudes (including the Probable Maximum Precipitation, PMP), and
- An approach to account for potential increases in rainfall losses as a result of climate change.

The scaling factors recommended are linked to the change in air temperature. For the impacts to the Bureau of Meteorology (2016) IFD curves, the temperature change used is relative to a 1960 to 1990 baseline temperature. Similarly, the impacts on rainfall loss parameters are also linked to the 1960 to 1990 baseline temperature. The LVRRS (2020) Latrobe Valley air temperature change predictions are relative to 1995, indicating that the predicted air temperature increases can also be used to estimate rainfall intensity and loss impacts.

The draft guideline also advocates for an 'adaptive' approach to designing for climate change. There are significant uncertainties associated with climate change prediction, including the emission scenario followed over time, as well as the potential for advances and updates in climate change science and the understanding of its impacts. In an adaptive approach, a baseline allowance for temperature change as a result of climate change is adopted, but the structure design should allow for update in the future if the impacts are found to be greater than that assumed in the initial design. The adaptive design approach allows for a balance between climate change risk mitigation and implementation costs.

Unless there is a higher consequence of failure of the closure surface water infrastructure (for example a risk to life), then adopting 2.25°C is considered a reasonable allowance. In the context of allowing for an adaptive approach for the drain design, this would likely mean the potential for more frequent maintenance of the drain structures if the impacts of climate change were found to be worse in the future.

9.6.2.3 Impact of Bushfire Occurrence

Xu et al. (2023) have investigated the change in catchment flooding in southeast Australia in the wake of the extensive 2019 to 2020 fire season, which found that there was a significant increase in flood peak discharges (relative to pre-fire conditions) for the two years following the bushfires. The analysis presented in the paper found that hourly scale peak flows (relative to the pre-fire catchment) were:

- On average, 60% higher in the first year following the bushfire
- On average, 39% higher in the second year following the bushfire.

A separate study (Candela et al. 2005), of a Mediterranean catchment that had experienced a bushfire found that in the year following the bushfire that there was approximately a 41% increase in the peak flow relative to an unburnt catchment.

These studies indicate a significant impact on peak flows as a result of bushfires, highlighting the importance of considering these impacts. It is however likely that these impacts are more associated with catchments with tree vegetation, as opposed to grassland catchments.

The increases in the peak flow are associated with two aspects, namely:

- A reduction in the rainfall losses, and
- A change in the catchment runoff lag due to the loss of the tree canopy and/or increase in the overland flow mechanism.

The number of bushfires that could occur over the design intent period can be informed by the historic precedence. But the frequency is also likely to be affected by the impacts of climate change.

9.6.2.4 Impact of Forestry Logging

There are forestry plantations around the mine peripheral catchments, designed to be logged every 25 to 30 years. The response of a catchment to logging is expected to be similar to that caused by bushfire. As discussed in Section 9.6.2.3, peak flows were found to increase (relative to pre-fire conditions) in the two years following a bushfire. A similar response is anticipated from a logging event, such that there would be in the order of eight years in every 100 years where higher peaks flows would be anticipated as a result of logging.

Similar to bushfire, the chance of higher runoffs associated with logging being realised means that a significant storm is required to occur in the two years following a logging event.

9.7 Down Batter Drain Design Types

9.7.1 Drain Types and General Inputs

There are various down batter drain types to direct concentrated peripheral catchment flows into the pit, including:

1. Batter drains with surface protection such as
    a. Grass lined
    b. Earthlok
    c. Articulated Concrete Mattress Drain
    d. Coarse Rockfill Chute Drain.
2. HDPE Pipes
    a. with Inlet Pit
    b. with Embankment Inlet.

The design of each down batter drain is unique as each drain needs to consider a specific combination of:

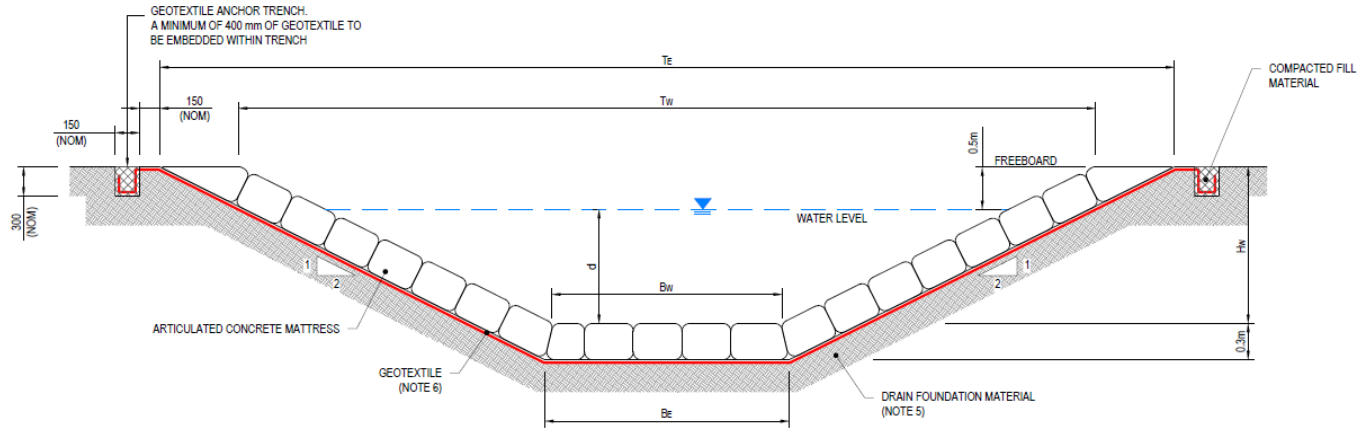
- Available drain width
- Longitudinal slope
- Catchment area / Design flow
- Erosion potential
- Geotechnical stability, and
- Acceptable hydrologic likelihood.

Details related to each down batter drain type and the corresponding design chart are outlined below.

9.7.2 Batter Drains with Various Surface Protection

9.7.2.1 Articulated Concrete Mattress Drain

The articulated concrete mattress products are comprised of a matrix of individual concrete ‘cushion’ units linked together between two geotextiles. Articulated concrete mattresses are designed to be permeable to allow seepage from the underlying soil and limit pressure build-up underneath the mattress. Given the intended deployment of the mattresses on ‘steep’ slopes, the maximum velocity limit for a mattress product is also important to consider. Whilst the main purpose of the ‘articulation’ is permeability, the articulation of the mattress also provides flexibility in the concrete block matrix and ability to conform to deformations in the underlying material, Inset 21. Inset 20 presents the general cross section of an articulated concrete mattress.



Inset 20: Typical section, articulated concrete mattress drain



Inset 21: Synthetex Hydrotex® Articulating Block

One of the critical inputs to the design of articulated concrete mattress drain is the thickness of the concrete blocks. The Pilarczyk (2010) approach is commonly used to estimate the required thickness based on the flow depth, velocity, turbulence and channel slope. However, from discussions with the Huesker technical team, it is understood that the approach is expected to be conservative for higher flow velocities and is more applicable to flow through canals, where velocity tends to be limited.

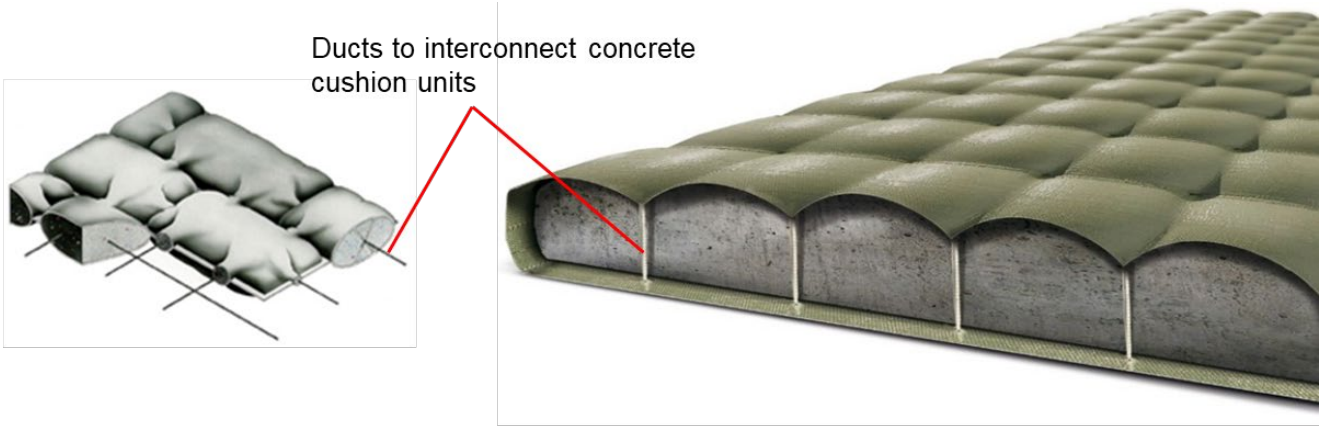
Based on information gathered from consultations with articulated concrete mattress suppliers, the following design values are adopted:

- The thickness of concrete mattress: 0.3 m
- Manning's n: 0.024 to 0.032
- Upper bound tolerable flow velocity: 7.73 m/s
- Maximum permissible flow velocity: 10.5 m/s.

The articulated concrete mattress requires slope preparation prior to installation. As part of the slope preparation, a non-woven geotextile with mass per unit area of 400 to 500 g/m² (Bidim A64 or equivalent) is recommended for protection for coarser underlying soil.

Given the relatively low permeable openings in the mattresses, additional foundation treatment to limit infiltration, such as a compacted clay basal layer is unlikely to be required.

The durability of the mattresses is provided by the concrete mix used to fill the mattresses on site. The mattress geotextile matrix that the concrete is poured into is only required to facilitate construction, with the geotextile typically degrading in a two year period following construction. The articulated blocks are 'threaded' together via steel mesh and/or ducts that are embedded within the concrete, as shown Inset 22, with these steel elements help 'hold' the concrete 'cushions' together once the geotextile has degraded.



Synthetex Hydrotex® Articulating Block

Huesker Incomat® Concrete Mattress System

Inset 22: Articulated Concrete Mattress Systems Duct Component

Concrete mix durability guidance can also be developed based on the AS 5100.5 (2024) standard.

9.7.2.2 Earthlok Concrete Mat

Earthlok concrete mats, Inset 23, have been investigated because of its application at Hazlewood Mine and its cost-effectiveness.



Inset 23: Earthlok Concrete Mats

The key specifications of an Earthlok drain are:

- Manning's n 0.05
- Block size 165 mm x 165 mm x 60 mm
- Maximum flow velocity 5.79 m/s
- Percentage open area 20%.

While the Manning's n value of Earthlok concrete mats is stated as 0.05, this value is likely to vary over time due to potential vegetation growth between the concrete blocks. Montano and Miller (2020) reported laboratory testing on a concrete mattress with block dimensions approximately 160 mm x 148 mm x 58 mm, similar to those of Earthlok. For the flows between 0.03 m³/s/s and 0.375 m³/s/s, the measured Manning's n of the concrete mattress ranged between 0.06 and 0.12, suggesting that the Manning's n value of 0.05 may be an underestimation.

Unsurprisingly, given the thickness of the concrete blocks, the maximum allowable flow velocity is lower for the Earthlok drains than for the other articulated concrete mattress options, typically requiring a wider drain base width to reduce the flow velocity on steep batter slopes.

Table 7 presents the comparison of dimensions for an articulated concrete mattress and Earthlok drain for design flows of 5, 10 and 15 m³/s for a longitudinal slope of 1V:4H. For the sizing of Earthlok drain, a Manning's n of 0.05 as well as 0.06, from Montano and Miller (2020), is considered (which also provides some allowance for additional roughness due to grass developing between the blocks).

Table 7 – Comparison of Earthlok and Articulated Concrete Mattress Drain Dimensions

Product	Manning's n (-)	Q (m³/s)	B_E (m)	T_E (m)	Mattress surface area (m²/m)
Articulated concrete mattress	0.024 – 0.032	5	2.45	6.7	7.2
		10	4.7	8.95	9.5
		15	8.35	12.45	13.0
Earthlok	0.05 – 0.06	5	4.35	7.65	8.1
		10	5.65	9.25	9.7
		15	6.55	10.4	10.9

Earthlok drain typically results in smaller drain widths and less mattress surface area than the articulated concrete mattress. This is primarily due to its rougher Manning's n, effective in reducing the velocity and the smaller thickness, requiring less drain excavation to 'place' the mattress.

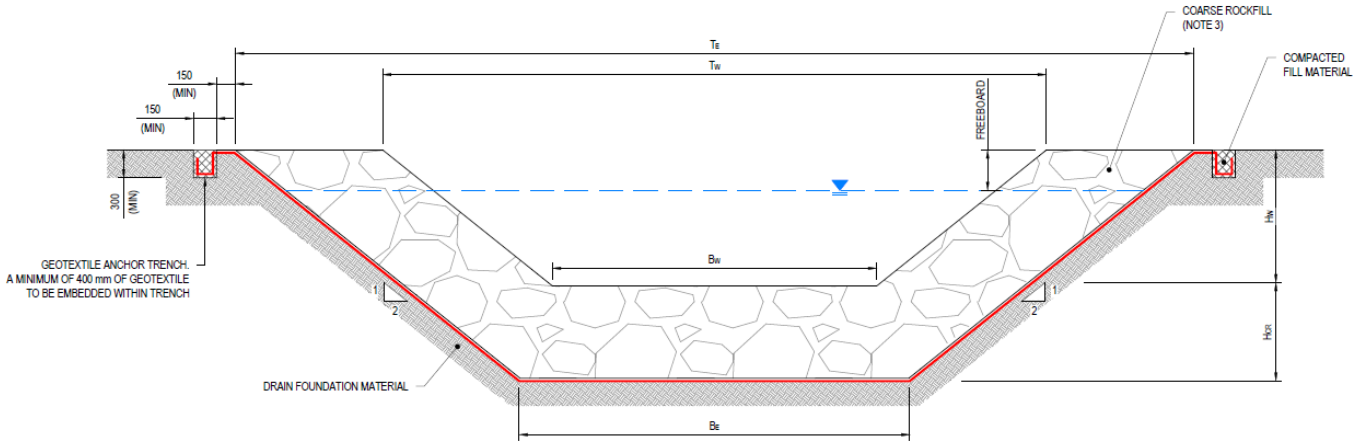
The supplier of Earthlok has stated that the product is anticipated to have a 100 design life where vegetation has established within the gaps between the concrete blocks. The mattress would require anchoring to the slope, with the durability of the anchoring elements likely to be critical to the operating life of the drain. Due to the nature of how Earthlok concrete mats are installed, it is anticipated that Earthlok drains would have higher anchoring requirements than the other articulated concrete mattress products.

However, it is noted that Earthlok concrete mats have 20% permeable area, likely to result in increased infiltration, increased risk of drain foundation erosion failure and increased risk of allowing water to enter any tension cracks the drain overlays. Use of Earthlok could be appropriate for areas with lower design flows and less sensitivity to infiltration into the slope (for example herringbone down batter drains). To use Earthlok for areas with higher sensitivity to infiltration and/or consequences of failure, a thick clay layer would be required for the drain foundation, which would 'cap' any existing cracks in the slope. This clay layer may not be sufficient to mitigate 'daylighting' of tension cracks if there slope where the deform post closure (for example following an earthquake).

9.7.2.3 Coarse Rockfill Chute Drain

The coarse rockfill chute drain as traditional rip-rap drains (i.e. where no flow is assumed to flow through the rockfill), Inset 24.

There are numerous published methods for designing the rip-rap required to line chutes and channels, and offer stability against erosion and failure under design flows.



Inset 24: Typical cross section, rockfill chute drain

The design of the rockfill drains have considered standard rip-rap drain design method (which tend to focus on the individual 'rock plucking' failure mechanism), as well as the infinite slope global failure mechanism.

For the rockfill chute drains, the design has included:

- A geotextile liner to act as an erosion barrier between the rip-rap and the underlying slope material
- Graded rip-rap along the base and sides of the channel
- Side batter slopes of 1V:2H, which will act to prevent the sides of the drain being eroded preferentially to the base of the channel
- A freeboard allowance to account for slope deformation and flow waves:
  - Where flow is sub-critical (Froude number < 1) a freeboard of 300 mm has been allowed for.
  - Where flow is supercritical (Froude number > 1) a freeboard of 500 mm has been allowed for.

Generally, a base width equal to twice the flow depth has been aimed for, as this typically provides an efficient drain design. However, for larger design flows, the design has aimed to achieve D_{50} less than 700 mm to aid constructability and sourcing of the material.

In the design of the rockfill chute drains the following characteristics have been adopted for the rockfill:

- Specific gravity 2.65
- Porosity 0.4
- ρ_{sat} 1,990 kg/m^3 = Saturated density of the rockfill
- Friction angle 35°

9.7.3 HDPE Pipes

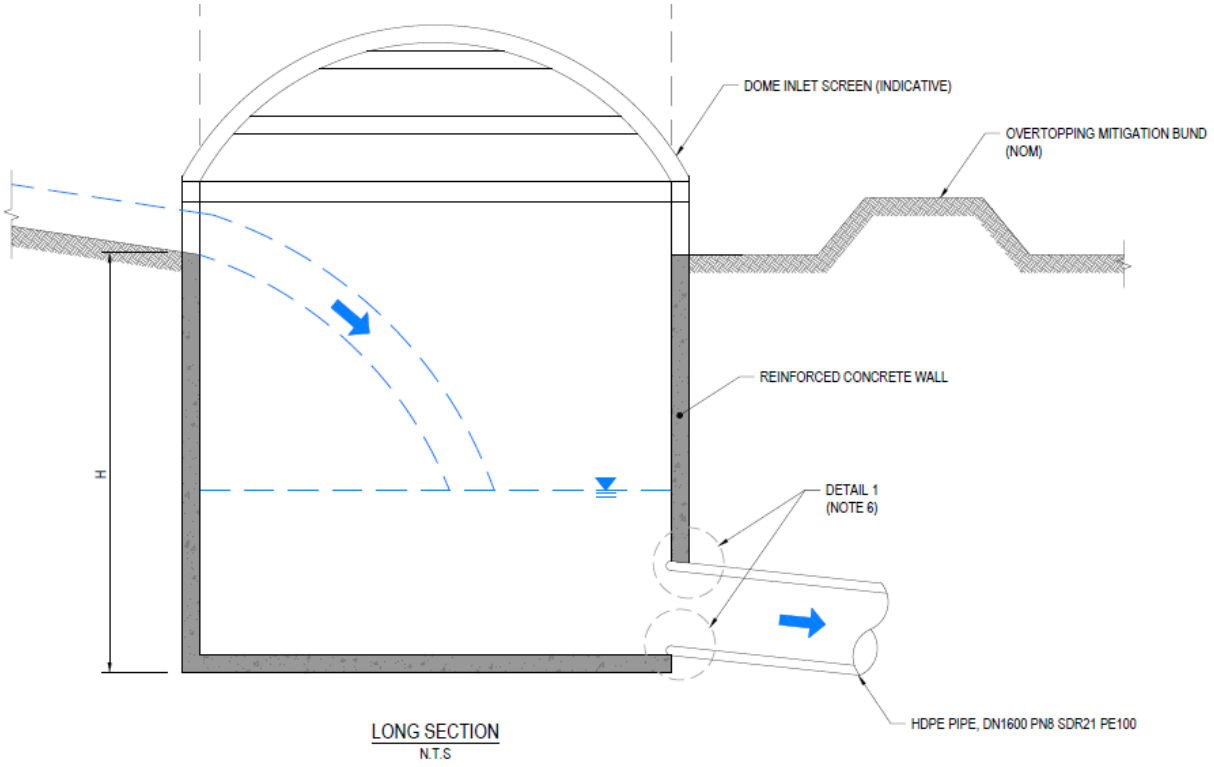
The Yallourn site has in the order of 8 km of 1,600 mm, diameter PN8, SDR21, PE100 HDPE pipe available, that could be utilised during closure. Whilst using different pipe diameters would be feasible, the design charts presented in this report have focussed on the 1,600 mm diameter pipes, given that additional CAPEX costs would not be required to purchase the pipe.

The challenge associate with a pipe option to transfer flows down a batter is getting the water into the pipes in a controlled manner. Two options are investigated:

1. HDPE Pipe Inlet Pit, where a 'drop pit' is used, similar to a roadside drainage pipe network, to transfer flows into the pipe/s (details of which are presented in this section)
2. HDPE Pipe Embankment Inlet, where the HDPE pipes are used as 'culverts' through an embankment, which would temporarily pool water in order to allow flow into the pipes (details of which are presented in Section 9.7.3.2).

9.7.3.1 Pipes with Inlet Pit

The HDPE pipe inlet pit design concept comprises of a dome inlet screen constructed over a pit which allows horizontal field (drop) inflow into the pit and the 1.6 m diameter HDPE pipes at the bottom of the pit, Inset 25. The intent of this design option is to input flows into the pit, with the HDPE pipes used to transfer flows from the pit crest to the lake level and/or base of the slope. The primary purpose of the dome inlet screen is to limit debris such as leaves, branches, trash, and sediment from entering the pit and causing blockages, as well as to prevent persons being swept into the pit or from entering the pit. A notional inlet width of 4 m is detailed to allow for sufficient space such that the flow trajectory can drop into the pit, as opposed to shooting 'over the top' of the pit.



Inset 25: schematic, HDPE pipe with inlet pit

Water dropping into the pit will be highly turbulent, with high air entrainment, requiring additional freeboard. The total water depth above the HDPE pipes is estimated using the orifice equation derived from Institute of Public Works Engineering Australia (2017). The 10% blockage applied for the pipes accounts for the expectation that the dome inlet screen will capture most of the debris, such that there should be a lower availability of debris to block the HDPE pipes themselves.

As the performance of the HDPE pipe inlet pit can be governed by how much flow the pit is able capture, the capacity of the pit as a sag inlet structure was assessed using the following equation from Australian Rainfall and Runoff:

$$Q_i = BF \times 0.67A(2gd)^{0.5}$$

Where:

- Q_i = the inlet flow rate (m³/s)
- BF = the blockage factor
- D = the average depth of ponding (m)
- P = the perimeter length of the pit allowing inflow (m)
- A = the clear opening of the pit (m²).

The inlet inflow rate Q_i was calculated assuming:

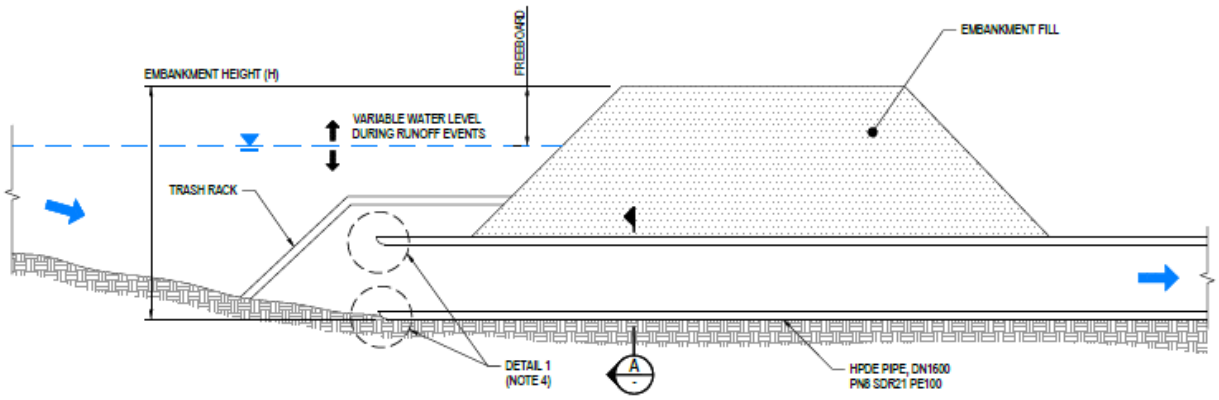
- Pipe outer diameter of 1.6 m
- Minimum 0.6 m spacing between pipes (based on standard guidelines to allow adequate compaction of fill between the pipes and reduce entry loss impacts)
- Minimum 0.3 m spacing between pipe and pit edge
- 4 m inlet width
- 50% blockage factor for the dome inlet screen (based on the assessment presented in Section 9.7.3.3).

Down slope of the inlet pits, the HDPE pipes could be run over the surface (with appropriate anchorage) or buried in a trench (say with Controlled Low Strength Material, CLSM, backfill as per AS/NZS 2566.2).

9.7.3.2 Pipes with Embankment Inlet

The benefit of using an embankment to place flow into the HDPE pipes is that the temporary ponding of the water on the upstream side of the embankment allows for flow attenuation and therefore the reduction in peak flows.

The HDPE Pipe Embankment Inlet option, Inset 26, consists of the HDPE pipes being installed through an embankment, removing the need for excavating large inlet pits. Minimum requirements for embankment design include a 1.9 m high embankment to facilitate enough room for the 1.6 m diameter pipes as well as a minimum 0.3 m cover above the crown of the pipe.



Inset 26: Schematic, HDPE pipes with embankment inlet

A trash rack may be required at the inlet of the pipes to mitigate the risk of barrel blockage. The use of CLSM (conforming to AS/NZS 2566.2) is recommended around the HDPE pipes through the embankment, as shown in Inset 26. Downstream of the embankment, the HDPE pipes could be run over the surface (with appropriate anchorage), or buried in a trench (say with CLSM backfill).

To calculate the water level associated with a design flow, the capacity for a HDPE pipe was calculated assuming:

- HDPE pipe Manning's n of 0.012
- HDPE pipes were inlet controlled
- Entry loss coefficient (K_e) of 0.2 (which is based on the rounded pipe lip detail, Inset 26), and
- Blockage factor of 50% (based on the analysis in Section 9.7.3.3).

9.7.3.3 Culvert Blockage Factor

Blockage has a significant impact on the performance of cross drainage structures such as culverts. Sediment or debris-laden floodwater can greatly affect flood behaviour by reducing the capacity of culverts, and thus is crucial to assess within the design. Excessive blockage leads to a variety of consequences including:

- Increased flood levels
- Changes to streamflow patterns
- Physical damage to neighbouring infrastructure, and
- Changes to sediment transport patterns within channels.

Design assumptions around blockage for the design intent period also interact with the potential future maintenance regime. Inset 27 shows some examples of existing culverts within the peripheral catchments, which shown degrees of blockage from a variety of sources, including:

- Sediment eroded from upstream channels
- Growth of vegetation around culvert inlets and outlets, and
- Large urban debris, such as vehicle tyres and litter.







Inset 27: Existing culvert infrastructure within the catchment showing blockage from various sources

Australian Rainfall and Runoff (2019) Book 6 Chapter 6 shows suitable methodologies to estimate potential blockage factors. ARR denotes three primary factors to assess debris potential for cross drainage structures, including:

1. Debris Availability: Region that debris/sediment is available from. ARR highlight several contributing factors including local geology, degree of vegetative cover, catchment area and potential for soil erosion
2. Debris Mobility: Dictates the ability for sediment/debris to become mobilised from source area, which is impacted by catchment slopes, rainfall intensity/duration and vegetative cover
3. Debris Transportability: How effectively mobilised debris can reach the structure, which is correlated with various factors including stream power, channel width and sinuosity of waterways.

The three factors are 'classed' for a given structure as either Low (L), Medium (M) or High (H). For the Yallourn Mine, the assessed debris classification is summarised in Table 8 and presented below.

Existing drainage infrastructure around the Yallourn Mine indicate availability of sediment. These include:

- Sediment ponds downstream of waste dumps in YTF-HOB (South)
- Sediment ponds upstream of existing culvert infrastructure along Latrobe Road
- Observations of partially blocked existing culverts
- The properties of the Haunted Hills Formation
- Regularly logged regions in HVP and Witts Gully Plantations.

Debris Availability is assessed to be Medium/High.

Assessment on debris mobilisation:

- Haunted Hills Formation, which acts as the primary surficial geology around the mine, is a fine grained sediment. The smaller particle sizes generally result in greater susceptibility to erosive forces once the cohesive/cementation of the unit has been overcome
- Domains along the western and eastern edges of the mine contain rising topography slopes in the upstream region of the catchment, with well defined valleys that convey concentrated flows. In these steeper regions, higher runoff velocities result in higher stream power and hence more soil mobilisation
- Periods of logging (and/or fire) leads to low vegetative cover across a number of peripheral catchments. Soil mobilisation increases due to greater surface runoff/velocities as well as reduced rainfall interception and soil stability.

Debris Mobilisation is classified as Medium.

Indications of soil transportability across the mine include:

- Deposition of fine-grained Haunted Hills Formation around existing culvert infrastructure and existing sediment basins around the mine
- Exposed Haunted Hills Formation unvegetated cover fills within mine batter slopes show high degrees of erosion and subsequent transportation.

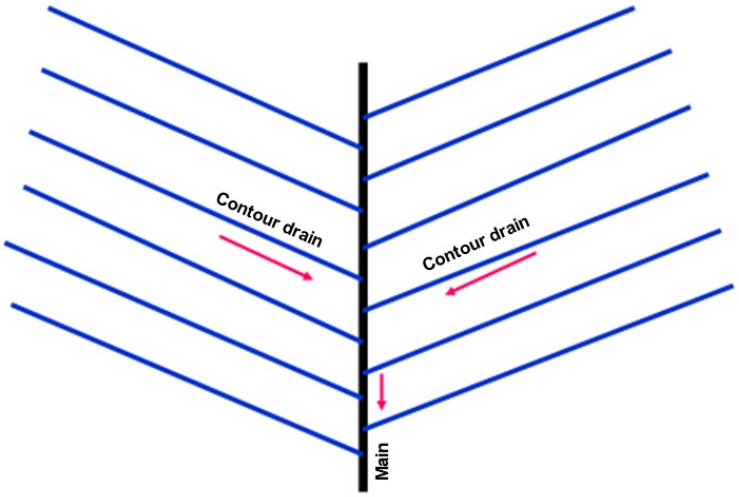
Debris Transportability is classified as Medium/High.

Table 8 – Debris Potential classification

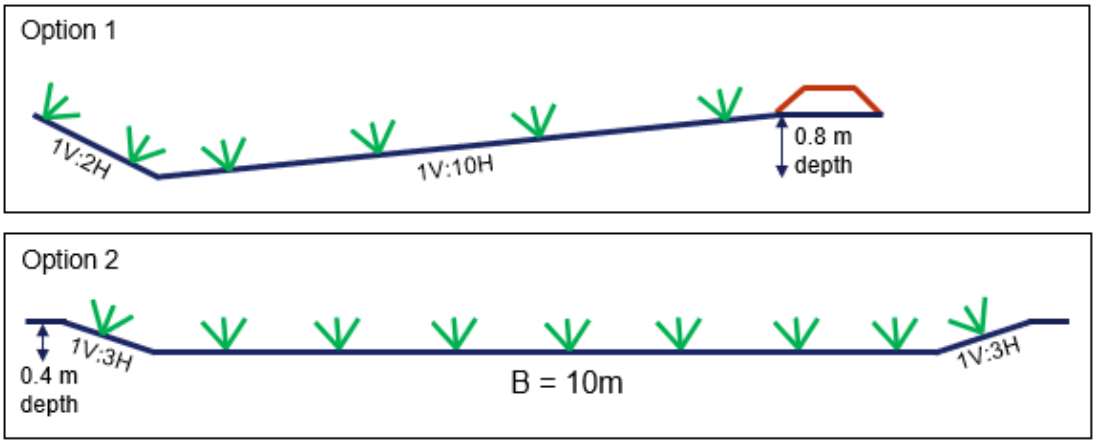
Likelihood Deposition will Occur	Classification
Debris Availability	High/Medium
Debris Mobility	Medium
Debris Transportability	High/Medium

9.7.4 Herringbone Drains

For domains with areas closer to the pit crest that are not managed by down batter drains, there is a risk of sheet flow concentration and subsequent soil erosion. Sheet flows commonly occur over flow distances of about 200 to 300 m down slope before concentrating and forming a gully or defined overland flow path (Morgan & Nearing, 2011). For those areas of catchments where surface runoff occurs in the form of sheet flow that are not significant enough to size a down batter drain for, grass-lined channels in the formation of a herringbone are proposed to manage the concentrated flows that would otherwise occur. A herringbone drain pattern comprises a central ‘trunk’ grass-lined drain and a number of lateral contour drains that are connected to the main drain at angles, Inset 28. Some typical drain sections are presented in Inset 29.



Inset 28: Herringbone Pattern Drain.



Inset 29: Contour Drain Options

Manning's equation was used to calculate the average flow depths and velocities in the herringbone drains. It is important to note that Manning's n value for a grass lining varies over a wide range depending on the retardance classification. Grasses are classified into five broad categories (A, B, C, D and E) based on the degree of retardance, which is a function of the height and density of the vegetation. Retardance class 'A' represents the highest resistance to flow and class 'E' represents the lowest resistance to flow. For the design of herringbone drains, retardance classes 'B' and 'C' (as defined in Chow, 1959) were adopted, which are linked with grass levels currently observed around the Yallourn Mine. For various design flows, there are a range of options for the batter slopes:

- For flatter batter slopes, utilise a grass lined drain
- Where a higher degree of erosion protection will be required, an Earthlok mattress drain may be considered.
- In areas where erosion protection is critical to the overall geotechnical performance, then other down batter drain design options may need to be considered.

10. Design for Seismic Action

10.1 Introduction and Context

The Yallourn Rehab needs to consider impacts from seismic action.

Design for structures and buildings is required to be in accordance with Australian Standards and Building Code of Australia. The applicable Australian Standards in this instance, are AS/NZS 1170-2002 “Structural Design Actions”, with the updated Part 4 AS/NZS 1170.4-2024 “earthquake actions in Australia”, or AS/NZS 4678-2002 “Earth-retaining structures”, as well as the Building Code of Australia’s 2019 National Construction Code (Part B1 Structural Provisions).

However, these standards generally apply to buildings and are not usually intended for large open pit mines such as Yallourn or engineered water-retaining embankments such as the MRD. On that basis, while they provide important considerations and design methods, they have not been strictly followed for this feasibility stage assessment.

Further improvements to the seismic design, during detailed design stage, will require re-visiting these standards for methods and requirements.

10.2 Seismic Hazard Assessment

Seismic hazard assessments aim to forecast earthquake occurrence and the resultant ground shaking. A site specific probabilistic seismic hazard assessment (PSHA) aims to consider all possible earthquake events and resulting ground motions, as well as their associated probabilities of occurrence, to find the level of ground motion intensity exceeded with some tolerable low rate.

A PSHA has been undertaken, with calculations at three locations to evaluate variations across the mine, Inset 30.



Inset 30: Yallourn mine, sites used for seismic hazard assessment (pink) and seismic test locations (red)

10.3 Assessment Methodology

The assessment for seismic action follows loosely the steps in the standards, they are, for each Domain:

1. Selection of risk rating, based on risk to life or risk to damage
2. Geological siting and soil profile (mostly common to the entire site)
    a. seismotectonic setting
    b. evaluation of past seismic activities
    c. 2012 (M5.0) earthquake
    d. 2021 (M5.9) earthquake
3. Estimate of seismic hazard
    a. Seismic source models
    b. Ground motion models
    c. Peak ground acceleration
    d. Response spectra
4. Earthquake Design Parameters for pseudo static analyses
5. Commentary on requirements for detailed design

It is noted that Geoscience Australia released an updated 2023 National Seismic Hazard Assessment of Australia (NSHA23), which includes revised and updated databases and models from Allen et al. (2024). This NSHA update results in higher seismic hazards than previously estimated, especially when long recurrence periods are considered. This new work has been used in this assessment.

10.4 Domain Risk Rating

The rehabilitation design used a risk-based approach to assess the potential long-term rehabilitation slope design stability impacts. The aim of this risk-based approach is to understand the potential consequence of failure and to guide assessments of risk, batter slope design, evaluation of Factors of Safety (FoS) and remediation.

This risk rating is a function of both the level of importance of the infrastructure within the domain, but also the consequence of failure, including financial, environmental, social and to life. Section 5.5 discusses the intended Post Mining Land Use (PMLU) and the potential consequence categories, developed for the Feasibility Rehabilitation Design based on current infrastructure and planned PMLU. The categories rank from highest (5, critical) to lowest consequence (1, insignificant)).

10.4.1 Comparison to Industry Standard

The Land Use Consequence Category above has been compared to two standards widely used in Australia, Table 9, with some commentary for context.:

- AS4678-2002 Structure Classification (Clause 1.2.2), and
- National Construction Code 2019 Importance Level (Table B1.2a).

Table 9 - Land use consequence category comparison to AS4678 and NCC2019

EAY PMLU / consequence category	AS4678 Structure Classification	NCC 2019 Importance Level ([1])
1 insignificant (farmland, no human occupation)	A – where failure would result in minimal damage and loss of access	1 Buildings or structures presenting a low degree of hazard to life and other property in the case of failure
2 minor (temporary human occupation)		
3 moderate (secondary public roads, ie, temporary human occupation but larger number)	B – where failure would result in moderate damage and loss of services	
4 major – rivers (environmental impacts and downstream impacts)	C – where failure would result in significant damage or risk to life	3 Buildings or structures that are designed to contain a large number of people ([2])

EAY PMLU / consequence category	AS4678 Structure Classification	NCC 2019 Importance Level ([1])
5 critical (highways, railways)		4 Buildings or structures that are essential to post-disaster recovery or associated with hazardous facilities

Note:

1 Importance Level 2 "Buildings or structures not included in Importance Levels 1, 3 and 4" does not fit any of the Yallourn categories.

2 It is assumed that high environmental impacts fit in this category.

It is clear that the AS4678 and NCC2019 classifications are primarily focused on impact to life, either to prevent structural collapse that leads to loss of life, or to prevent loss of service of the structure with post-disaster functions.

On the other hand, the Yallourn consequence category consider the complete consequence during and post event, including life, property, environmental and social costs. As such, the design consideration is wider and more holistic.

There is a question of whether design for earthquake loads need to consider any risk other than to life.

10.5 Geological Siting and Soil Profile

10.5.1 Average Shear Wave Velocity

The type and character of the geological materials at the site, local site conditions, are an important parameter in seismic hazard assessments because they influence the intensity of earthquake shaking. The average shear wave velocity for the top 30 m (Vs30), based on the surface materials, is used in the calculation.

The assessment of this value is equivalent to the assessment of "Site sub-soil class" in AS/NZS 1170, or "Site Factor" in AS4678.

At Yallourn, there are technical references on Vs30, and it was also measured in two seismic investigations on site, Inset 30 in pink:

1. Federation University Geotechnical and Hydrogeological Engineering Research Group (GHERG) (2020), Batter Stability Project Report (Ref 4909).
   a. MASW undertaken in the Latrobe River batter failure location.
   b. "*Coal above the interseam layer exhibited a shear wave velocity of approximately 100 m/s, a particularly low value, likely representing material softened as a result of the nearby failure*."
   c. Considered too low for design, but illustrates how the the batter failure has affected this value.
2. GHD (2017), Yallourn Maryvale Field Western Batters Crosshole Seismic Test (Ref 31\270701738).
   a. Recorded an average shear wave velocity in coal of 176m/s, and in overburden 370m/s.

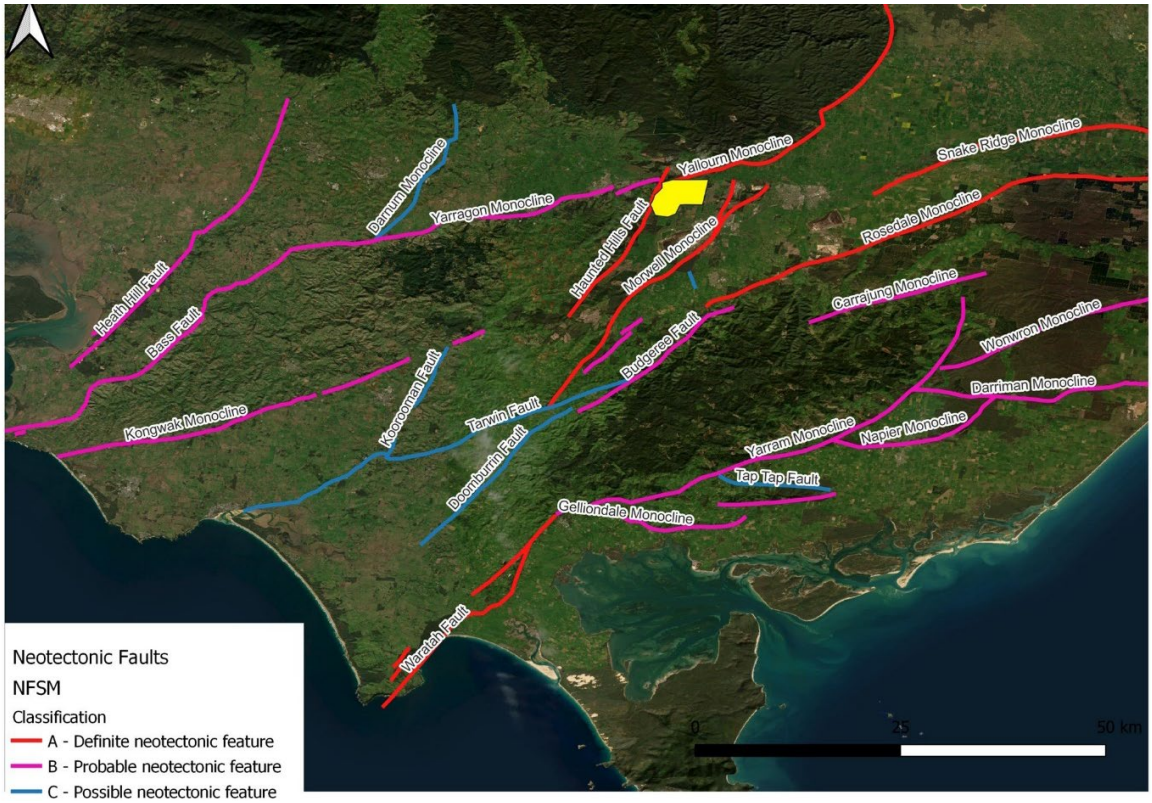
- Other references:
  – Measured recordings of 290m/s may by USGS and Geoscience Australia in 2010, ES&S (2011). "Loy Yang High Level Storage Dam & Settling Pond Dam, Seismic Hazard Assessment") quoted in Kayen and Carkin (2010). Preliminary report on the shear wave velocity of Australian strong motion seismometer sites by the Spectral Analysis of Surface Waves Method (SASW) with Parallel-arrayed harmonic-wave sources and H/W microtremor method)
  – between 270 to 555m/s from McPherson et al. (2007).

The very low measured or estimated values of Vs for coal is likely because the very low density makes the material very sensitive to seismic loading. As coal is present in the majority of open pit batters and the dominant foundation material for surrounding infrastructure, these batters and infrastructure are sensitive to small increases in seismic loads.

For the purpose of design, over the likely lithology (Section 6.2.3) and variations across the 3 sites, a single design Vs30 of 250m/s has been adopted.

10.5.2 Seismotectonic Setting

Australia is considered a Stable Continental Region (SCR) within the context of plate tectonics. The mine is located in a neotectonic domain classified as the Eastern Extended Continental Crust Domain from Clark et al. (2011). There are faults around Yallourn that are active or neotectonic which may be seismic sources for Yallourn, Inset 31.

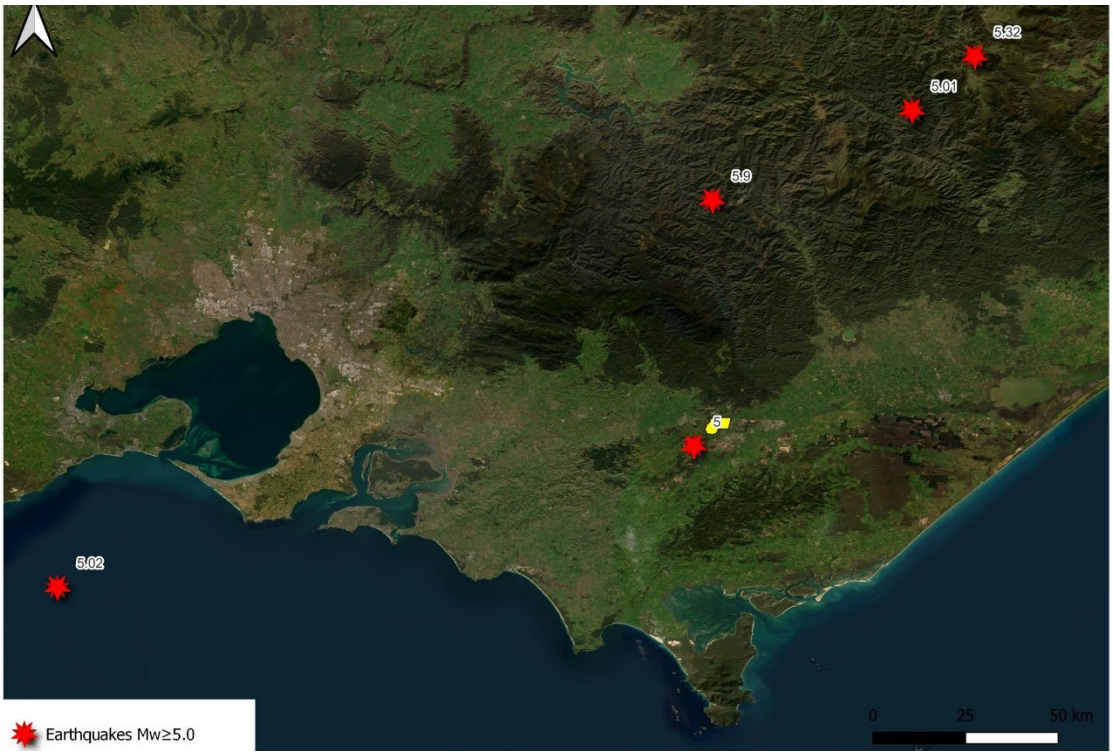


Inset 31 Neotectonic features identified close to Yallourn (mine in yellow)

10.5.3 Past Seismic Activities

The earthquakes with Mw ≥5 closest to Yallourn are, Inset 32 and Table 10:

1. Earthquake of magnitude 5.0 recorded on 19 June 2012 approximately 5 km southwest of the mine.
2. Earthquake of magnitude 5.9 on 22 September 2021 (9.15 am AEST) at approximately 75 km north of Yallourn. This event is the largest earthquake recorded in Victoria.



Inset 32: Earthquakes recorded with magnitudes Mw ≥ 5.0. The location of the mine is the yellow polygon. The number next to the epicentre (red stars) denote the event Mw

Table 10 - Earthquakes recorded with magnitude Mw ≥ 5.0 close to Yallourn

YEAR	MONTH	DAY	LONGITUDE	LATITUDE	DEPTH (Km)	MAGNITUDE (Mw)	EPICENTRAL DISTANCE TO YALLOURN (Km)
1965	9	14	144.3	-38.7	10	5.02	185
1966	5	3	147.168	-37.042	15	5.32	145
1982	11	21	146.972	-37.211	14.52	5.01	118
2012	6	19	146.29	-38.259	18.06	5	5
2021	9	21	146.3479	-37.4917	10	5.9	75

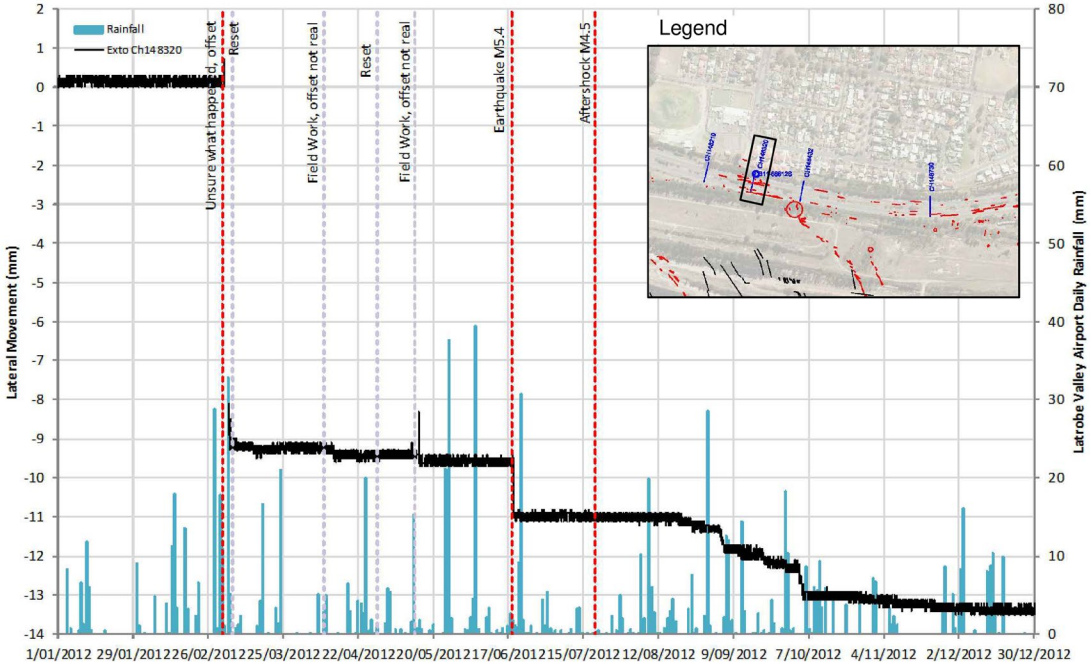
10.5.4 Earthquake Magnitude 5.0 on 19 June 2012

The earthquake on 19 June 2012 at 20:53 AEST, known as the Thorpdale, Gippsland or Moe earthquake, had a reported Mw = 5.0. This earthquake was followed by hundreds of aftershocks including a Mw = 4.6 earthquake a month later on 20 July 2012.

Thorpdale suffered modest loses, estimated to be approximately $20 million from Attanayake et al. (2019). Allen (2012) reported minor damage to residential and commercial structures in the region.

No strong motion records are available from Yallourn for this event. Post-earthquake visual inspections and pin monitoring surveys at Yallourn could not confirm any measured movements to this earthquake.

Nonetheless, there were continuously logged (5 minute intervals) electronic extensometers installed and monitored over 18km away in Morwell, with measurement sensitivity of tenths of millimetres. VicRoads installed four horizontal extensometers across Princes Freeway in Morwell in early 2011 as a result of significant cracking on the pavement surface. On 19 June 2012, three of the four extensometers recorded movements of around 0.1 mm at the time of the seismic event. The fourth extensometer, located across the crack zone, recorded a permanent slip movement of 1.4 mm at the same time, Inset 33. This data indicates that even small seismic forces from some distance away have the potential to develop or increase crack widths, and mobilise large blocks of coal, given the right sets of conditions.



Inset 33: Extensometer Ch148320 Movement, January to December 2012

10.5.5 Earthquake Magnitude 5.9 on 22 September 2021

The earthquake on 21 September 2021 with Mw 5.9 is the largest recorded in Victoria since European settlement. This event was recorded at a depth of 13 km, at Woods Point approximately 75 km north of Yallourn Mine. There have been hundreds of aftershocks in the area since this event.

The earthquake was felt up to 1400 km from the epicentre. There was very little damage reported in Woods Point and the surrounding towns, while 130 km away in Melbourne were reports of toppled chimneys, damage to brickwork and cracked pavements.

Site monitoring at Yallourn did not confirm any measured movements to this earthquake. Anecdotal information shows that while this earthquake was widely felt it was not associated with any slope failures or cracking.

While a 5.4 magnitude earthquake is not considered large or significant enough to cause damage to large structures, assessment of its impact on the pit stability, mine infrastructure, and adjacent area in general is warranted. The lack of slope failures indicates good slope performance under minor to moderate earthquake shaking and provides some context to understand future slope performance.

10.6 Seismic Hazard Assessment

10.6.1 Seismic Source Models

The earthquake source models NSHA23 and faults identified as active or neotectonic were used in this assessment. Specifically, the following faults close to Yallourn have been used:

- Haunted Hills Fault,
- Bass Fault,
- Geliondale Monocline,
- Morwell Monocline,
- Napier Monocline,
- Snake Ridge Monocline,
- Waratah Fault,
- Yallourn Monocline and
- Yarran Monocline.

The Yallourn seismic model used all 16 seismic source models in NSHA23 with their assigned calculation weighting.

10.6.2 Ground Motion Models

The prediction of ground motion levels at a site is commonly achieved using empirical ground motion prediction equations (GMPE) derived through regression analysis of recorded strong-motion data.

The GMPE predicts the peak ground acceleration (PGA), peak ground velocity (PGV) or spectral acceleration (SA), to a set of variables including earthquake magnitude, style of faulting of the causative fault, site to source distance and local site conditions in terms of Vs30.

10.6.3 Peak Ground Acceleration

Because the variability across the 3 sites at Yallourn is low, a single peak ground acceleration value has been used for each AEP, Table 11.

Table 11 Design PGA's for different AEP's for Yallourn

AEP	1/475	1/2,500	1/5,000	1/10,000
PGA	0.156	0.48	0.72	1.04

The 2012 and 2021 earthquakes were assessed using the GMPEs to provide an estimation of the possible PGA generated at the site.

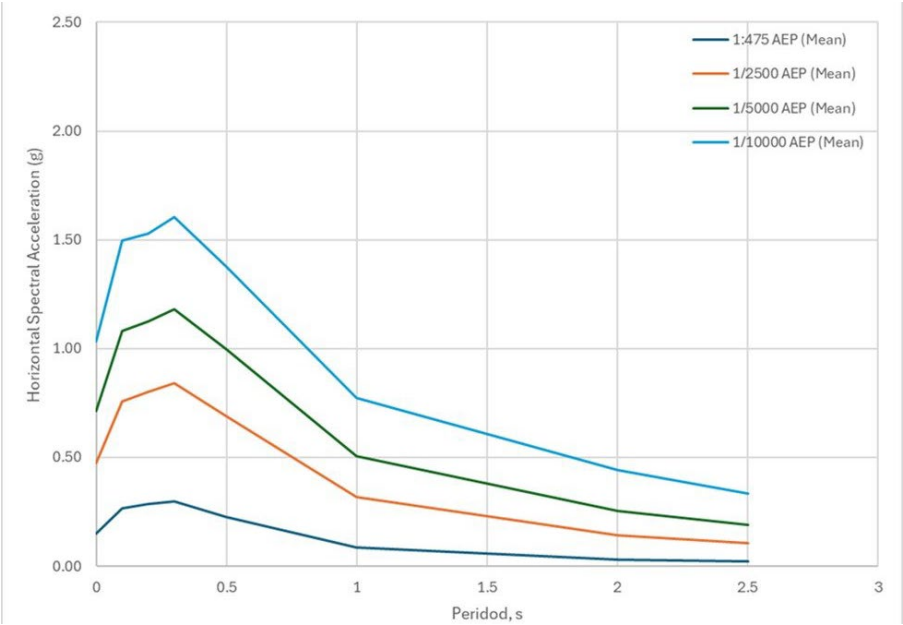
The 2012 M5.0 earthquake was recorded only 5 km from Yallourn and the estimated average PGA = 0.16g, with an estimated average return period of approximately 500 years with a 20% probability of exceedance in 100 years and a 5% of probability of exceedance in 30 years.

The 2021 earthquake, M5.9, was recorded 75 km north of Yallourn, has estimated average PGA = 0.05g, an estimated average return period of approximately 150 years with a 50% probability of exceedance in 100 years and a 20% of probability of exceedance in 30 years.

These were two of the most significant recent earthquakes in Victoria. The slope performance provides some guidance for similar earthquakes and ground shaking intensity in the future.

10.6.4 Response Spectra

A response spectra is the plot of the maximum earthquake acceleration experienced by the system, at any time during a particular earthquake against the period of the system. The horizontal spectral acceleration, measured in g, for different periods are presented in Inset 34.



Inset 34: Response spectrum for all AEP's

10.7 Earthquake Design Parameters and Assessment

10.7.1 Earthquake Design Parameters

The rehabilitation design requires the selection of design PGA's based on the following factors:

- The Design Intent Period and
- Current and Post Mining land Use (PMLU).

Hence the approach is risk based. Table 12 summarises the approach for the selection of PGAs and shows:

- Assigned PGA probability of exceedance for each of the above land use conditions
- Equivalent PGA return periods corresponding to the assigned PGA probability of exceedance over the 30 year, 100 year design intent periods, respectively
- Corresponding PGA values estimated considering the 30 year, 100 year design intent period.

These parameters are used for pseudo-static stability analyses, discussed in Section 11.6.

Table 12 - PGAs for design.

PMLU Rating	Probability of Exceedance during Design Intent Period	Design intent period 30 years		Design intent period 100 Years	
		Equivalent return period over the design intent period (Years), AEP (%) in bracket	Design PGA (g)	Equivalent return period over the design intent period (Years), AEP (%) in bracket	Design PGA (g)
1	50%	43 (2.33)	0.015	144 (0.69)	0.05
2	30%	84 (1.19)	0.025	280 (0.36)	0.09
3	10%	285 (0.35)	0.09	949 (0.11)	0.26
4	5%	585 (0.17)	0.15	1950 (0.05)	0.41
5	2%	1485 (0.07)	0.32	4950 (0.02)	0.7

10.7.2 Comparison of AEP and Resulting PGA with Established Standards

The same three Australian standards have been used to compare with this site-specific design AEP and PGA, including some commentary.

The main difference between the Australian standards, and the PSHA steps, is the use of an annualised probability, or over the full design period.

BCA 2019 uses an annualized probability. Table 13 shows the comparative design AEP.

Table 13 - Comparison with BCA importance level and AEP

PMLU rating	BCA Importance Level	BCA AEP for earthquake	BCA AEP (%)	design AEP (100yr)	design AEP (30yr)
1	1	1:250	0.4%	0.69%	2.33
2	1	1:250	0.4%	0.36%	1.19
3	1	1:250	0.4%	0.11%	0.35
4	3	1:1000	0.1%	0.05%	0.17
5	4	1:1500	0.07%	0.02%	0.07

While the Yallourn design AEP is more conservative when compared to the BCA values, they are currently used for pseudo-static stability analyses, and not as input to dynamic assessments, which is what BCA and AS1170.4-2024 requires for high risk structures. On the basis, while it may be conservative for dynamic assessments, the Yallourn AEP and design PGA used in this report is considered appropriate for the level of detail and rigor at feasibility design.

AS/NZS 1170.4-2024 gives a table of AEP with Probability factor (kp), which is a factor applied over the earthquake hazard design factor (Z) to estimate a PGA. Z is 0.10 for Latrobe Valley. Table 14 presents a comparison with this method.

While kp Z is much smaller than the design PGA from PSHA, it does not yet take into account the soil type and condition. The spectral shape factor, which described the soil condition, which is Ce (shallow soil) or De (deep or soft soil), is 3.68 for the site. This is used as input for dynamic analyses.

Table 14 - Comparison with AS1170.4 AEP and earthquake action

PMLU	AEP	kp	kp Z (PGA)
1	AS recommends no need for specific earthquake analyses		
2	1/250	0.75	0.075
3	1/250	0.75	0.075
4	1/1000	1.3	0.13
5	1/1500	1.5	0.15

10.7.3 Further Work in Detailed Design

A comprehensive first principle assessment of seismic hazard has been undertaken for the Yallourn Rehabilitation feasibility design. The design PGA for pseudo-static stability analysis have been assessed based on design intent period and domain-specific consequence rating.

It is considered at this feasibility stage that the results of the stability analyses and estimated displacements (detailed in Section 11.6) indicate that adverse outcomes for the infrastructure at risk, rehabilitated slopes and the peripheral catchment drainage structures are not likely, recognising the following uncertainties and limitations:

- Design PGAs for pseudo-static analyses are conservative,
- Stability and deformation results are used for sensitivity checks,
- Geotechnical model is to be updated with additional investigation and test data (currently progressing), and
- EAY PMLU and Consequence Ratings are subject to future refinement.

Where the PMLU is high risk, or where pseudo-static analyses show inadequate stability, dynamic assessments should be undertaken as they can overcome the technical limitations of limit equilibrium analysis. The new AS/NZS1170.4-2024 dynamic assessment methodology and approach will be considered at future stages.

These dynamic methods are computationally demanding. Compared to limit equilibrium and static numerical modelling, significantly more inputs are required including earthquake ground motion characteristics and a suite of dynamic material properties.

As per discussions in Section 6.4.3.5, the material parameters used for earthquake pseudo-static stability analyses should also be reviewed to improve the model. Further geotechnical site investigation and laboratory testing is planned for the next stage of works.

This future work will support the mine's engagement with stakeholders and the preparation of an O&M process.

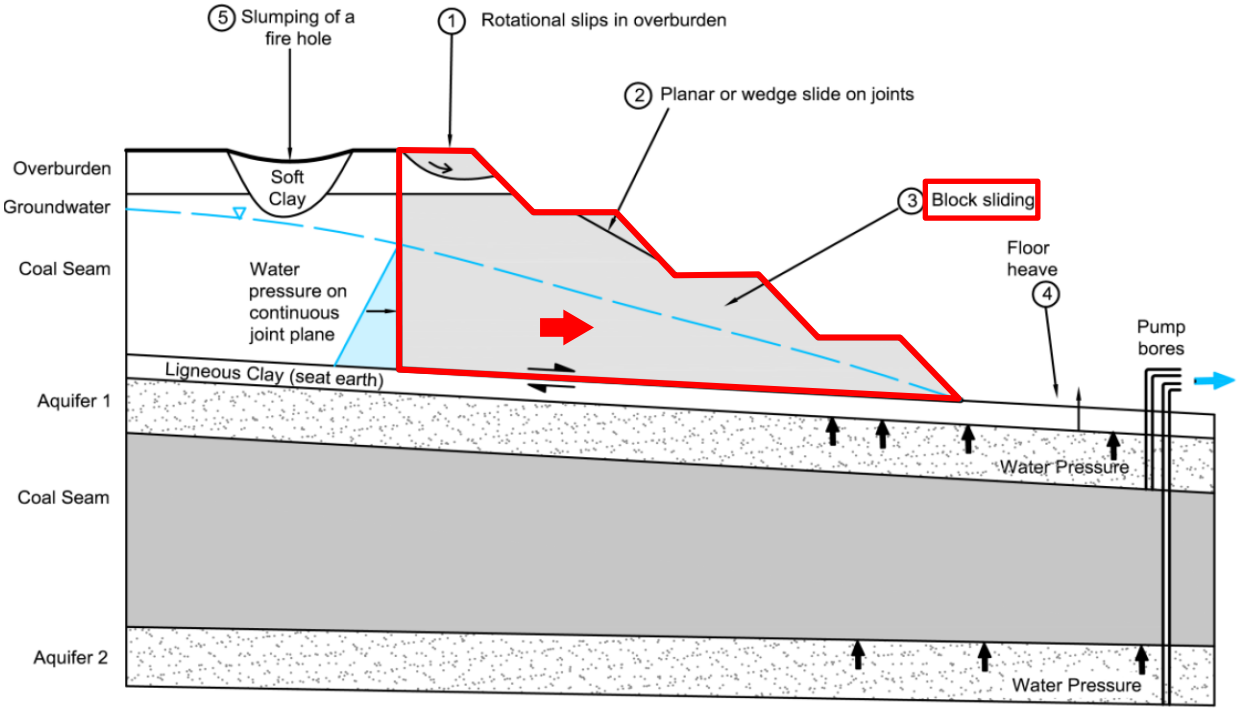
11. Design for Slope Stability

11.1 Basis of Rehabilitation Feasibility Design for Geotechnical Stability

11.1.1 Overview of Stability Factors and Primary Failure Mechanisms

The Latrobe Valley and the mines it contains is a system with multiple mutually interacting components. The system has evolved and become more complex as the pit voids have increased in size over more than a century of mining. Geotechnical stability of the mines and the immediate surrounding area is contingent on this history.

The principal batter failure mechanism of large-scale failures and stability incidents is block-sliding of the coal along the underlying interseam clays, as illustrated in Inset 35. The mechanism is primarily driven by water loading in pre-existing joints sub-vertical joints in the coal. The displacement of the coal seam by block failure allows other deformations to spread further back into the slope. This then allows individual joints in the coal to dilate and potentially fill with water, which can exacerbate movement of the coal leading to further opening of cracks elsewhere and further ingress of water. This can lead to an episodic progressive deterioration and is another mechanism to be controlled by the rehabilitation.

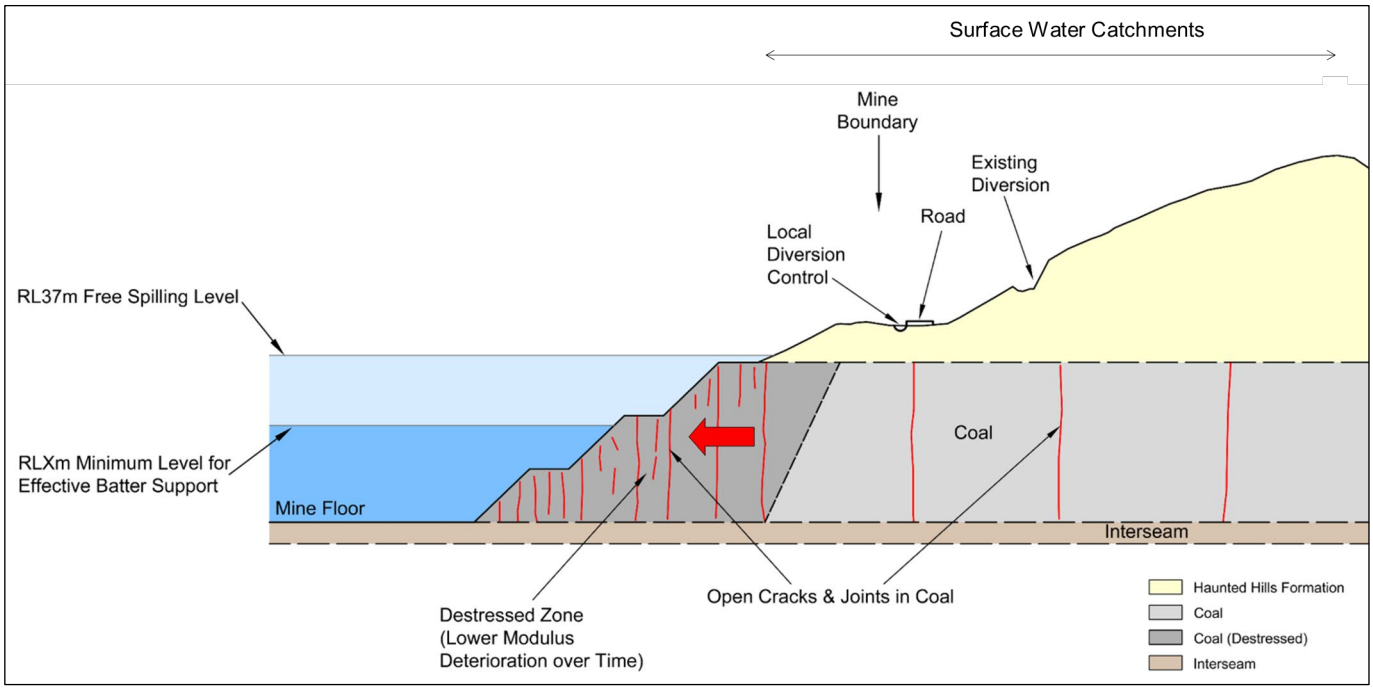


Inset 35: Main failure mechanisms at Yallourn. The primary large-scale failure mechanism is a block slide along the underling clay interseam with water loading of pre-existing joints.

11.1.2 Guiding Principles for Long-Term Stability

As discussed in Section 2, key to maintaining long-term batter stability for mine closure is to control the risk of adverse water loading of the coal through passive management systems. The principal physical elements of the batters to consider in the design of these systems are summarised as follows and schematically illustrated in Inset 36:

1. Catchments that extend outside the mine area with runoff reporting to the pit void.
2. A weathered and destressed zone of the mined Yallourn Coal seam batters with increased cracking and reduced geotechnical properties that renders the slope sensitive to water loading.
3. Bedding dip relative to the mine batters and the presence of large-scale geological folds.
4. In-pit support to counteract potential large-scale batter movements using the pit lake in combination with overburden buttresses or floor surcharges where required.



Inset 36: Summary model of principal factors and considerations for rehabilitation.

The primary control to maintain long-term global stability is flooding of the pit to a high elevation which reduces major risks including:

- Reducing risk of slope instability,
- Reducing coal exposures,
- Reducing the potential for long term weathering and progressive deterioration of the coal (where inundated),
- Reducing slopes above the pit lake level requiring rehabilitation work, and

It should be noted that because of the presence of large-scale geological structures together with the presence of Yallourn Seam well above final lake level, that the Lake Full situation results in lower Factors of Safety in some domains, mainly in YTF. Nonetheless, this is still a better rehabilitation strategy, with positive design outcomes including durability of the rehabilitated landform, when compared to partial lake or dry void options.

The guiding principles of the Yallourn Mine rehabilitation strategy for long term slope stability are therefore to:

1. Control the potential for larger scale block movement using pit lake filling and targeted construction of overburden buttresses to improve the long-term slope stability performance.
2. Ensure a high degree of confidence in the geotechnical knowledge base.
    a. Use the lower bound residual strength for the Yallourn Interseam from all of the laboratory testing and apply this universally to all domains. This means it is barely credible the major plane controlling the FoS for both multilinear and block sliding mechanisms can have a lower strength.
3. Eliminate or control the triggering factors to minimise surface water loading.
    a. Peripheral Catchment Drainage Structures constructed to remove the risk of adverse water loading.
4. Establish appropriate domain-specific rehabilitation stability criteria and Post-Mining Land Use (PMLU).
5. Reduce the potential for the long-term progressive deterioration of the coal by lake filling and of HHF by batter reprofiling.

11.2 Design Acceptance Criteria

11.2.1 Introduction

This rehabilitation design follows the intent and satisfies the requirements of DEECA's latest Technical Guidance: Closure Design Acceptance Criteria for Latrobe Valley Coal Mines from DEECA (2025). The following section discusses the criteria and how EA's design fit within the DEECA framework.

11.2.2 DEECA CDAC Main Objectives, Technical Questions to reduce data uncertainty

The DEECA CDAC lists three fundamental technical areas that any rehabilitation design in the Latrobe Valley must characterise and quantify, which are:

1. Geotechnical model, including the many critical factors that affect stability;
2. Data uncertainty; and
3. Design reliability.

The DEECA CDAD lists four main Objectives that closure design must meet, mostly related to the geotechnical model, listed below:

1. An appreciation of the control mechanisms is critical (relevant to geotechnical model, fundamental area 1).
2. Data reliability and the level of understanding of underlying site-specific geotechnical information must be commensurate with the level of identified risk (relevant to geotechnical model & data uncertainty, fundamental area 1 & 2).
3. At relinquishment, final slope geometries must be in harmony with long-term material strengths and pore pressure conditions (relevant to geotechnical model, fundamental area 1).
4. Long-term profiles adopted in the design should allow for flexibility to be upgraded in the future if performance is not meeting the design (relevant to geotechnical model, design reliability, fundamental area 1 & 3).

It is noted that while the rehabilitation design needs to be cognisant, Objective 4 can only be achieved with collaboration with and approvals from DEECA and other stakeholders, to agree on a progressive, observational design approach.

In order to address and reduce data uncertainty, the following 7 technical questions need to be addressed:

1. Is there sufficient data to capture natural variations in the rock mass?
2. Is the spread of the data sufficient to adequately define boundaries between different lithological units and identify critical structures or zones that could be problematic?
3. Is the data collection consistent using industry accepted practices?
4. How good is the quality of data collection and what quality assurance and quality control processes are used?
5. Is there a bias in the data such as direction of drilling, or sampling of stronger materials?
6. How good is the laboratory testing programme, both in quantity and quality of testing?
7. How is the data managed and interpreted?

11.2.3 DEECA CDAC Slope Design Acceptance Criteria

The DEECA CDAC design acceptance criteria is informed by the risk based design process outlined in the Declared Mine Rehabilitation Plan Guideline, DEECA (2024). The slope stability DAC proposed for inter-ramp and overall slopes are determined based on mine domain Consequence Category, discussed in Section 5.4 and Table 2.

The DEECA CDAC defines data uncertainty for a particular geotechnical parameter to be the Coefficient of Variation (CoV), which is the measure of relative distance between the standard deviation and the mean. Typically, a CoV under 0.1 is considered low (low data uncertainty), and over 0.3 considered high (high data uncertainty).

For each mine slope domain, the mine must establish the Consequence Category based on landuse, and the CoV based on the critical geotechnical parameter, in this case, the interseam shear strength, to select the required DAC FoS, or using a stochastic approach deriving a Probability of Failure (PoF). Table 15 presents geotechnical closure design acceptance criteria.

The use of PoF reflect the risk design approach and takes into consideration data uncertainty and design reliability. It is noted that DEECA CDAC proposes a higher data reliability for closure, where greater longevity is required, and where the mine is no longer actively managed to reduce public exposure to within tolerable limits. It also requires higher data reliability for higher consequence category slopes. Notwithstanding the criteria, the DEECA CDAC suggests that where possible, the design acceptance criteria values should be tailored to site-specific conditions such that a reasonable estimate for that site is made.

Table 15 - Proposed slope design acceptance criteria for inter-ramp and overall open pits slopes (DEECA CDAC)

DAC	Consequence Category				
	Insignificant	Minor	Moderate	Major	Critical
CoV	≤0.20 (low confidence)	≤0.15 (high confidence)		≤0.10 (very high confidence)	
PoF	≤30%	≤20%		≤10%	
FoS	≥1.3	≥1.4		≥1.6	

11.2.4 EAY Rehabilitation Framework and design approach

In large and complex settings such as Yallourn Mine, studies require considerable time to deliver outcomes that are technically robust and broadly acceptable to all stakeholders. Notwithstanding, the EAY design approach was formulated with the understanding that End of Mining was fast approaching and that EAY intended to commence progressive rehabilitation. It was also understood that the DEECA regulatory guidelines were in preparation, including consideration of Design Acceptance Criteria (DAC). Consequently, the EAY design approach was chosen to ensure that the studies could progress as part of the progressive rehabilitation design and rehabilitation approval and this can form the basis of seeking approval for early implementation of the rehabilitation works.

This strategy is adaptive to industry best practice and progressive regulatory expectations, with ongoing engagement with the regulators as study outcomes are produced.

The rehabilitation studies commenced with a high-level strategic study and the overall aims were, Section 2, 5:

- To assess from first principles the approaches for rehabilitating Yallourn Mine, that best suit the technical setting and conditions at the mine site and aims to maximise Post Mining Land Use flexibility.
- All risk based designs.
- The aim was to achieve a high degree of confidence in the geotechnical knowledge base.
- Establish appropriate domain specific stability criteria, with Conservative parameter selection and Domain specific geological/geotechnical settings.

It used a three-part approach:

- Assessing historic large scale batter performance (Section 6.4.1),
- Assessing current arrangement and feasibility design of peripheral catchments (Section 9, 12), and
- Developing a robust geotechnical model that underpins the rehab strategy (Section 6.4).

The conclusions of the rehabilitation studies were to primarily deal with water as follows:

- Establish pit lakes with appropriate lake levels to control block sliding,
- Remove existing complex diversions around the mine, and implement an effective strategy that controls surface water from peripheral catchments such that it is drained directly into the pit and beneficially used for stability control, and
- Where possible, rehabilitate upper slopes above lake level in accordance with geomorphology, educated by local performance, and therefore reducing risk to stability from surface water infiltration as much as possible.

11.2.5 How does the EAY Rehabilitation design approach address and satisfy the DEECA CDAC Objectives and Technical Questions

The EAY rehabilitation design approach adequately addresses and satisfies the DEECA CDAC objectives and technical questions. This is detailed in the following sections.

The DEECA CDAC Objective 1 (critical control mechanism) and Objective 2 (level of understanding commensurate with level of risk) are addressed via a design geotechnical model, Inset 35, that underpins the rehabilitation strategy:

- To achieve “Safe, Stable and Sustainable” the mine requires stable slopes.
- The key slope failure mechanism is identified at Yallourn, Inset 35.
- Assessing historic large scale batter performance which show old batters are highly sensitive with large deformations and open joints/cracks, and these large scale movements are primarily associated with water loading events (critical control mechanism), Inset 36.
- To control water loading events, it is not enough to rely on diversions around the pit crest for long term rehabilitation, instead, it is only possible with control of peripheral drainage where they are critical to stability, and with the filling of the pit lakes (level of understanding commensurate with level of risk), Inset 36.
- In assessing peripheral catchment drainage and mine geometry where many large peripheral catchments historically drained into the mine, it is assessed that the successful rehab requires a drainage design that moves the water effectively and efficiently into the mine Inset 36.

Objective 3 (final slope in harmony with long term strength and pore pressure conditions) is addressed via a sound understanding of the geomorphic process around the site in the environment, Section 7, both pre-mining (Figure 29) and post-mining (Figure 30). Geomorphology provides a framework for understanding the current and future behaviour of a physical system and at Yallourn the mine batters are subject to episodic progressive change, where no recovery occurs. On that basis, the rehab strategy must deal with the batter, which it does in three areas: below lake, above lake, and outside crest:

- Below lake: no landform changes, lake level to control block sliding, Section 15
- Above lake: rehabilitate upper slopes above lake level in accordance with geomorphology educated by local performance, Section 7.8 and 7.9
- Outside crest in natural landform: Remove existing diversions and control water into mine quickly and efficiently, primarily driven by surface water requirements, Section 12.3.

11.2.5.1 Validation of the Geological Model

The Geological Model is the basis for all stability analyses and is critical for mine rehabilitation design. Therefore, understanding the level of confidence in the Geological Model is also an essential input into the considerations for the Design Acceptance Criteria and Post Mining Land Use (PMLU) discussions. The lower the confidence in the Geological Model, the more conservative the rehabilitation design and/or the greater limitations imposed on acceptable PMLU.

Section 6.2 presents the Yallourn Geological Model in detail. All available borehole data, Section 3.2.1, has been collated, assessed and tested to identify high confidence borehole and geophysical logging data that was then used to develop models, Section 6.2.6. A rigorous validation approach was followed on the model geometry and strength to ensure a very high reliability on all aspects of the geological and geotechnical model, Section 6.4. This is how the technical questions on data quantity, coverage, collection, bias and interpretation are answered.

Out of more than 7900 boreholes drilled between 1917 to 2023, 51% has lithology and formation data. An accuracy check, focused on the Yallourn Seam and the interseam, was done on the model using the borehole database and downhole geophysics. The evaluation shows in many instances, the existing geological model does not agree with borehole information, with an overall poor correlation particularly along the YTF Western slopes. On that basis, lithology along all sections were re-developed and checked with borehole information to achieve a geological model with high reliability.

11.2.5.2 Stability Model

A reliable stability model has been developed, Section 11.4, using:

- An accurate geological model (previous section) with validated boundaries
- Use of lower bound shear strength at the base of coal (discussed in 11.2.5.3)
- Well defined failure mechanisms (Inset 35, Section 11.4.4)
- Software to automatically search for minimum FoS extending a long distance behind the crest
- Worst case loading condition with water filled tension crack to the surface for block slide mechanism (Section 11.4.5, 11.4.6)
- Checking other failure mechanisms and for critical pool mechanism (Section 11.4.5)

This resulted in outputs for stability analyses that are rigorous and conservative. Section 11.5 and Table 17 present the analysis outputs.

11.2.5.3 Shear Strength of Interseam and Data Uncertainty

Stability of all mines in Latrobe Valley is controlled principally by the strength along the interseam at the base of the coal. Investigation and sampling programs for shear strength testing need to be cognisant that stability problems are three dimensional and controlled by geology. The majority of the Latrobe Valley coal measures were deposited in a coal swamp and the interseam sediments deposited as thin fine-grained silts and clays on top of the coal during flood phases. The main area of interest for stability at Yallourn are therefore these fine-grained low strength interseam layers underlying the main Yallourn coal seam that enables the block sliding mechanism, Inset 35.

The shear strength test database, testing, sampling and methodology has been carefully reviewed and validated, Section 6.4.3. Although the initial database appears extensive and provides good overall coverage of the mine, the actual database that could be validated from the laboratory test sheets and testing is limited. There is insufficient valid data to allow domaining of strengths, let alone sub-domaining.

On that basis, the EAY rehabilitation design has adopted the use of lower bound residual strength (11 deg) in all domains, Table 4. The adoption of the lower bound residual strength for long term rehabilitation design means there is now a very high level of confidence in the geotechnical strength; the CoV requirement is irrelevant when lower bound is used.

In Section 11.2.7, the impact of using a mean shear strength value to the stability FoS is discussed, with respect to the DAC. It is demonstrated that using a mean strength leads to increases in FoS of at least 0.5. So, the choice to use the lower bound value with a corresponding DAC satisfies the intent of the DEECA CDAC. In this way, we address Objective 1, 2, 3, and satisfy Technical Questions 1 to 7.

11.2.5.4 CDAC and Design Reliability

The EAY rehabilitation strategy addresses pit slope stability risk in two ways:

- Reducing the capacity to as low as possible (reducing the resistance) by using lower bound residual strength values, i.e., reducing the resistance
- Increasing the demand (increasing the stabilising force) by buttressing, i.e., increasing the stabilising force, and
- Increasing the demand (reducing the destabilising force) by removing water loading potential, i.e., reducing the destabilising force.

This removes the uncertainties around questions on stability and design reliability and addresses Objective 1, 2, 3.

11.2.6 How the EAY Strategy Addresses the DEECA CDAC CoV and PoF Requirement

Despite the exhaustive rigor of the data validation process on the model, or on the interseam shear strength, Section 6.4.3, the resulting CoV for interseam shear strength do not meet the DMCDAC criteria in any consequence category.

Martin (2020) provides some commentary on typical CoV as it exists in nature, and suggests that the shear strength of the interseam soil can exhibit a natural CoV of up to 50%. In which case, the CDAC CoV requirement would unlikely to ever be met. Martin (2020) suggests that while in a manufactured material such as concrete or steel, the CoV may be less than 20%, in a natural material the variation can be very high and cannot be reduced by increased testing. On this project, with 59 direct shear test results, the CoV is around 0.3.

Nonetheless, since the lower bound value is adopted in our rehabilitation design strategy, it is considered to have satisfied this requirement.

Whilst CoV and PoF requirements are suitable when using mean shear strength values, the adoption of the lower bound residual strength means that CoV and PoF no longer have a meaningful impact on the rehabilitation design for Yallourn Mine. The use of a lower bound shear strength means that the uncertainty associated with a relatively high CoV is already captured in the selected value. This approach provides inherent robustness, reduces sensitivity to statistical variability, and effectively accounts for failure risk without the need for further probabilistic analysis. As a result, the design becomes independent of both CoV and PoF, offering a high level of confidence in its stability outcome.

11.2.7 How the EAY Strategy Addresses the DEECA CDAC FoS Requirement

The DEECA CDAC criteria, Table 15, calls for a minimum mean FoS that is dependent on the risk-based Consequence Category. It assumes a probabilistic analysis approach, where CoV and PoF values, along with the corresponding mean FoS, are also specified for each risk-based Consequence Category. The EAY Strategy is aligned to this albeit with slightly different and deterministic FoS values: due to the rigor in the validation of all model inputs, lower FoS are considered acceptable. The EAY acceptance criteria is 1.3 (and 1.5 with higher Consequence Category) (multi-linear), (1.1 with block sliding,) using lower bound residual strength values along the failure plane, Section 11.3.

The increases in model FoS from using mean strengths are significant. This is evident in the stability analyses conducted on six selected sections with mean residual strength (21°), which typically increases the FoS by 0.5 to 0.7 and where the mean peak strength (23°) is used the increase is 0.6 to 0.9, or even higher. The DEECA CDAC notes that for a lognormally distributed FoS, a standard deviation (SD) of 0.3 is equivalent to a CoV of 0.3. The Yallourn test database for the interseam material indicates a CoV of around 0.3, and therefore, if the mean value is used in the stability analyses, the stability FoS is expected to have a SD of 0.3. The reported analyses, which demonstrate increases of FoS of at least 0.5, are therefore in line with the DEECA CDAC.

This means that while the EAY design DAC FoS for multilinear failure mode is 1.3 and 1.5 (higher consequence categoriees), for EOM, during lake filling and for lake full time periods, which is different from that in the DEECA CDAC, it satisfies the intent of the DEECA CDAC by choosing lower bound residual strength, and this approach results in slope designs more conservative than what the DEECA CDAC requires.

11.2.8 Discussions and Conclusions

The principal factor resisting instability is the strength of the interseam. Using the lower bound residual strength means in reality the strength is likely higher.

The principal adverse loading factor promoting instability is water pressure. The design analyses assume full groundwater pressures up to ground surface and or flood or lake level as appropriate, and it means the adverse loads cannot get any higher than modelled.

The resulting stability value is used to assess the slope's performance.

This conservative methodology was specifically adopted for the rehabilitation at Yallourn Mine because of the uncertainties about future climate variabilities that could influence the design. The EAY rehabilitation approach provides very high levels of confidence and high reliability in the designs. In all three technical areas (geotechnical model, data uncertainty, design reliability) it is demonstrated that it meets the intent, addresses the key objectives and is a more conservative approach than the requirements of the DEECA CDAC.

11.3 Discussion on Criteria for Stability Analysis

The stability design methodology entails:

1. Development of very high reliability geological models.
2. A comprehensive validation and analysis of all laboratory strength testing.
3. Adoption of the lower bound residual strength from all validated tests for design.
4. Development of very detailed domain specific groundwater models and:
    a. Assumption of conservative groundwater loading in line with GHD Numerical Groundwater Model outputs.
    b. Allowance for full groundwater pressures up to flood levels in domains adjacent to surface water sources.
    c. Assumption of instantaneous equilibration of groundwater pressures with rising lake levels.
5. Analysis of stability for two different potential failure mechanisms, Inset 37, both of which were developed from real large stability experience in the Latrobe Valley over many decades.
6. Modelling for a combination of time, stress level and geometry dependent factors, using:
    a. Unconstrained model searches for the minimum FoS.
    b. Deterministic searches for the minimum FoS with the key variables of rising lake levels and distance from the mine batter crest.

The principal factor resisting instability is the interseam shear strength and using the lower bound residual strength means the strength actually cannot be any lower. In addition, the principal adverse loading factor promoting instability is water pressure and assuming full groundwater pressures up to ground surface and or flood or lake level as appropriate means the adverse loads cannot get any higher. This conservative methodology was specifically adopted for the rehabilitation at Yallourn Mine in order to provide very high levels confidence and reliability designs.

The Design Failure Modes are prescribed and the basis for that are the domain characteristics for which there are three types, Figure 32:

1. Type 1 – A domain with relatively flat topography and no concentrated surface water flow paths, for example YEF NB.
2. Type 2 – Domains with permanent or semi-permanent water bodies such as floodplains or the MRD, for example YTF FPB.
3. Type 3 – Domains with significant Peripheral Catchments and concentrated creek lines, for example YTF HOB.

The Design Failure Modes for each of the three principal design periods of mine closure and rehabilitation are included in Table 17. It should be understood that the Design Failure Modes for these different domain types are different and can change through the three principal design periods.

At EOM and during lake filling the Design Failure Modes are:

- Type 1 – Multilinear, because the topographic setting is such that concentrated water bodies or flows are not of sufficient magnitude to facilitate large scale block sliding
- Type 2 – Multilinear or Block Sliding, whichever generates the lowest FoS
- Type 3 – Block Sliding because the Peripheral Catchment drainage structures have not yet been constructed.

At Lake Full the Design Failure Modes are:

- Type 1 – Multilinear as for EOM
- Type 2 - Multilinear or Block Sliding, whichever generates the lowest FoS
- Type 3 – Multilinear, because the Peripheral Catchment drains required to control adverse water loading events leading to Block Sliding are assumed as constructed early in lake filling and are in operation, thus eliminating the risk of block sliding.

The application of consequence ratings as part of the EAY risk classification system and how it impacts on design acceptance criteria requires some discussion. It is good practice to assign a consequence to a slope depending on presence of man-made or natural infrastructure and the relevant safety, environmental and cultural heritage impacts. Hence when using a risk matrix for identification of a particular consequence if the infrastructure is present than the consequence is assigned to that slope. And it is entirely appropriate to ascribe difference DAC for slopes depending on its specific safety, environmental and cultural requirements.

At Yallourn Mine, the domain scales are so large, domains are 1 to 2 km wide, mine slopes are over 100 m deep, and geotechnical risk or deformation zone hundreds of metres behind the mine crest, that when looking at risk, infrastructure that is hundreds of metres away from the pit may be considered at risk. This is appropriate and suitable for feasibility assessment, as discussed in Section 5.5, where every risk should be identified and assessed, but at detailed design stage infrastructure may be considered on an individual basis and the risk assessed explicitly. In reality in many cases, the stability analyses show that the FoS is high and the failure envelope does not extend to the location of the infrastructure. In such cases, the consequence category, or the incident likelihood, should be adjusted. It should also be noted that the general Latrobe Valley experience with the scales of large scale movements and instabilities is in accord with this approach.

Based on the methodology described above the following Design Acceptance Criteria have been adopted for rehabilitation of batters and design of surface water control for rehabilitation design, also shown in Table 17:

1. The selection of the Design Failure Mode is in accordance with the Design Period and Domain or Section type and where a Peripheral Catchment drainage structure is specified then the default mechanism is Multilinear.
2. Multilinear Failure Mechanism FoS ≥ 1.3.

3. Block Sliding Failure Mechanism, where the combination of tensile crack and surface water fully filling the crack is required, FoS ≥1.1.
4. FoS for buttressing, ≥1.1
5. FoS for identification of a continuing consequence of Category 4 and or 5 (Table 2), FoS ≥ 1.5.

The adopted DAC assumes no active stability controls, and therefore, the DAC for EOM and for lake filling periods, which are during the rehabilitation period with active management and maintenance, could be lower. It is reported to be the same for comparison purposes in this report.

11.4 Slope Stability Assessment

The aim of the stability analysis assessment is to ascertain the base case stability and to understand the impact of potential future loading factors that may impact long-term stability for mine closure, to inform the rehabilitation design, including measures to control the major de-stabilising factors, and assess those that may improve the long-term stability outcomes.

The following key factors are considered for the design for slope stability:

1. Analysis methodology.
2. Model parameters.
3. Load cases.
4. Risk-based assessment of stability outcomes.

11.4.1 Methodology

As the rehab design is risk based, several factors determine the model parameters and load cases that are used in any stability section, and its acceptance criteria. They are:

- The land use and related consequence category (qualitative)
- The geotechnical and surface water risk assessment outcomes (qualitative), which includes consideration of geometry, geology, geomorphology, peripheral catchment character, and ease of implementing drainage control.

For instance:

- Where a river is located behind the batter crest, it dictates the possible stability mechanism under consideration.
- Where the planned future land use is greenfield with controlled access, the design acceptance criteria can be lower.

This is a key input into the design of the stability section.

11.4.2 Geotechnical Sections, Model, Parameters

Global stability checks have been undertaken on representative geotechnical sections for each of the rehabilitation domains shown in Figure 12, Appendix C. Sections for domains are chosen due to two reasons:

1. Critical geology sections.
2. Peripheral catchment sections or sections prone to flooding.

Material properties adopted for the stability analyses are summarised in Table 16 for:

- Haunted Hills Formation (HHF) overburden,
- Yallourn Seam (including Disturbed Yallourn Seam, representing the zone of displaced coal within the Latrobe River Batters failure),
- Interseam, and
- Fill material (buttress, MRD embankment or engineered fill, dumps).

Selection of parameters for engineered fill material are based on construction records for the MRD engineered fill. These records indicate that the material was compacted at 100% standard and close to Optimum Moisture Content (OMC) with a bulk density of about 20 kN/m^3.

Other fill materials are end-dumped or placed by conveyors with minimal compaction. Typical earthworks experience is that density ratio of uncompacted fill materials ranges from about 75% to 90% standard. A unit conservative weight of 15 kN/m^3 has therefore been adopted for new buttresses which is equivalent to a compaction ratio of 75%. Older, existing buttresses and fills have adopted higher unit weights representing compaction ratios closer to 90% due to long-term consolidation. It is noted that strength testing of the MRD embankment Levee materials has been confirmed with laboratory testing.

Table 16 – Material properties adopted for LE analyses.

Unit		Unit weight, γ (kN/m^3)	Strength Type	Cohesion, c' (kPa)	Friction angle, φ' (°)
New Buttress Fill		15.0	Mohr-Colomb	2	32
MRD Engineered Fill		20.0		5	28
Stabilising Fill (engineered)		20.0		5	28
Existing Fill & In-Pit Dumps		18.0		2	32
Haunted Hills Formation (HHF) & Haunted Hills Aquifer (HHFA)		20.0		20	24
Yallourn Coal		11.2		150	40
Disturbed Yallourn Coal		11.2		90	24
Interseam	Lower Bound	19.6		0	11
	Mean	19.6		0	18

11.4.3 Groundwater Conditions

Existing piezometric observations from available piezometer tips or standpipes have been assessed spatially to establish conditions for EOM, as:

- Piezometric levels shown on each of the geotechnical sections, and
- Pore pressure profiles focussed on the HHF, Yallourn Coal and interseam for each geological unit and rehabilitation domain.

Two main groundwater cases are modelled for the lake filling period due to the uncertainty about how quickly the groundwater conditions behind the mine batters will equilibrate to the rising lake levels:

- EOM pore pressures continuing during lake filling.
- Hydrostatic pore pressures recover instantaneously during lake filling.

Piezometric levels during lake filling were modelled so that the batter is saturated to the respective elevation of the pit lake level being analysed. Lake filling situations were modelled to the final pit lake level at 37 mRL.

11.4.4 Failure Mechanisms

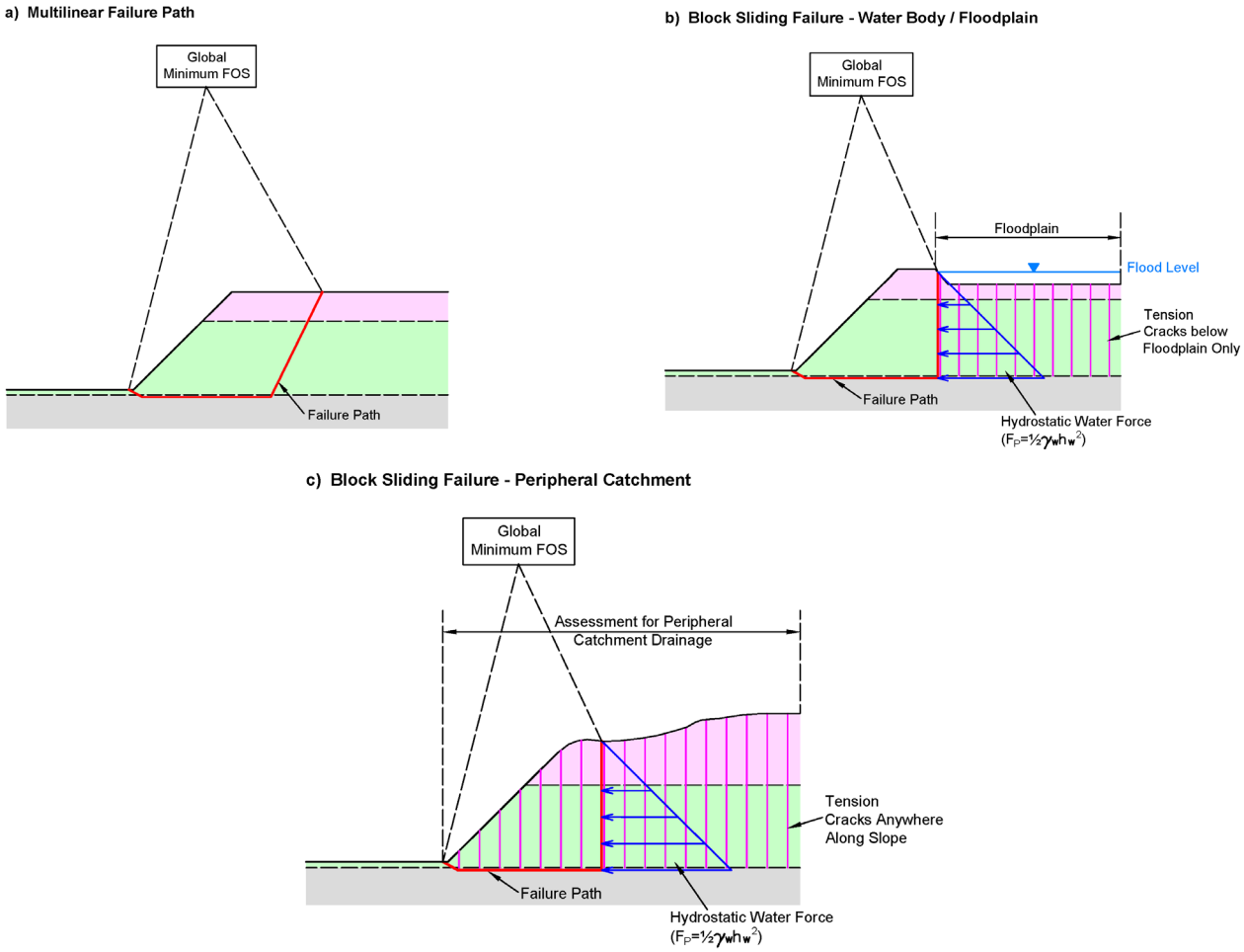
Generally, the critical failure mechanism at Yallourn is a block sliding mechanism primarily driven by water loading within coal joints, Inset 35. This mechanism is feasible in domains prone to flooding from rivers and along peripheral catchment drains. However, the critical failure mechanism becomes a multilinear failure path where drain control measures have been designed to eliminate the risk of water loading from peripheral catchments. On that basis, two stability mechanisms have been analysed around the mine, Inset 37:

1. Multilinear failure path with sliding along the base of the Yallourn Seam, and
2. Block sliding along the base of the Yallourn Seam with a tension crack from the base of coal to surface and filled with water

a. Undertaken for domains with potential for water loading from flood plains of the Latrobe and Morwell rivers

b. Undertaken for domains where peripheral drainage catchments are applicable, to evaluate design criteria for drains.

Figure 32 presents the stability mechanism for each section in each domain, based on the possible mechanism as well as surface water characteristic.



Inset 37: Schematic of assessed failure mechanisms

11.4.5 Base Cases and Sensitivity Checks

Four Base Case situations represent different point of time in the rehab period and include:

1. Base Case 1 - EOM situation with current piezometric levels and pore pressure conditions.
2. Base Case 2 - Lake filling situation using EOM pore pressures (Lake Filling EOM Groundwater).
3. Base Case 3 - Lake filling situation with pore pressures equilibrated to hydrostatic pore pressures (Lake Filling Hydrostatic Groundwater).
4. Base Case 4 - Lake full situation with the final pit lake level at 37 mRL and hydrostatic pore pressures

Several cases are chosen to test future remediation options and to confirm the sensitivity of certain parameters. These sensitivity checks include:

- Multilinear failure mechanism with higher shear strength for Base Cases 1, 2, and 4, to test sensitivity of the strength parameter;
- Buttressing for Base Cases 1, 3 and 4 to achieve a minimum static FoS < 1.3, to test future remediation options, and
- Pseudo-static analyses to assess the stability under seismic loads for a range of shear strength parameters, to test future remediation options and define land use constraints.

11.4.6 Stability Analyses for Peripheral Catchment Drainage Design Assessment

Specific stability analyses were undertaken to assess the rehab peripheral catchment drainage design requirements, in terms of location, importance, sizing. These include:

- Assessing FoS of block sliding along the base of the Yallourn Seam with a tension crack from the base of coal to surface and filled with water to assess consequence of no drain or overtopped drain.
- Assessing changes in FoS with distance from mine crest to assess where individual drains should start / finish.

Detailed discussion is included in Section 12.

11.4.7 Stability Analysis of the MRD

11.4.7.1 Introduction

The stability analyses along the MRD elements include, Inset 57:

- The global stability of the overall structure of the MRD,
- The local stability of the MRD Levee slopes and
- The local stability of the LFC channel slopes.

Three stability mechanisms have been analysed:

1. Multilinear failure path with sliding along the base of the Yallourn Seam (global).
2. Block sliding along the base of the Yallourn Seam with a full height tension crack filled with water (global).
3. Overall circular failure (local).

The same four base case conditions have been analysed:

1. End of Mining (EOM) with current pore pressure distribution,
2. Lake filling with current pore pressure distribution, which in all cases is less than hydrostatic,
3. Lake filling with groundwater equilibrated to hydrostatic conditions, and
4. Lake full with groundwater equilibrated to hydrostatic conditions.

Sensitivity cases to confirm the sensitivity of certain parameters include:

- As per Case 2, with an added surcharge of flood levels in the MRD (global), to test sensitivity of the water loading.
- Adverse material parameters for MRD levee slopes, to test a sensitivity of a lower embankment strength, with a circular failure within the low flow channel (Section 14.3.3.4).
- Adverse groundwater conditions (mounded pore pressure from the LFC) (Section 14.3.3.6)

11.4.7.2 Global Stability

For all sections analysed, with all failure modes and base cases, high FoS are indicated, most above 2.0. Analysis of the Critical Pool Level indicate that a minimum FoS of 1.3 is achieved across the entire MRD alignment.

Flood surcharging reduces the FoS but not under 1.8 in all sections analysed.

Using a higher-than-lower-bound interseam shear strength typically leads to a FoS increase of at least 0.4, for instance Section 32 FoS for multilinear mode for EOM increased from 1.7 to 2.2.

It is concluded that the global stability of the MRD structure does not dictate the rehab design.

11.4.7.3 Stability of the HFC and Levee Structure

Stability of the HFC was assessed where the embankment is the highest at around CH2,000. The existing slope geometry, before any rehab reprofiling, i.e., up to 2.6H:1V slope for Section 32, was used in this analysis.

As discussed, both Design and Adverse material parameters for MRD levee, and both groundwater conditions were tested. For local levee slopes, a factor of safety of 1.5 is considered acceptable and is consistent with good industry practice. This is achieved for the adopted design material parameters; with adverse case yielding slightly lower FoS,

suggesting possible local slumping which can be readily remediated as part of routine maintenance. It is noted that strength testing of the Levee materials has been confirmed with laboratory testing.

Discussion on design for levee stability is included in Section 14.5.2.

11.4.7.4 Stability of the LFC

The LFC has generally performed well over the 20 year operating life with respect to stability with some localised erosion, slumping and general deterioration. It is noted that lower FoS associated with local instability of the LFC does not affect the MRD's ability to meet its performance requirements and hence lower FoS can be accepted. Some local slumping has occurred and this is probably associated with a combination of locally oversteep slopes, poorer materials and rapid drawdown.

Stability of the LFC was assessed using the typical channel geometry, with the following groundwater conditions:

- LFC partially full and groundwater gently decreasing away from the LFC
- LFC close to empty and a rapid drawdown groundwater condition.

The analyses indicate acceptable performance using design material parameters; with lower, adverse parameters the conditions under rapid drawdown indicate sub-optimal stability. These results, presented in Appendix F, are consistent with the observed performance of the LFC to date.

In future detail design stages, discussions on the cost of LFC reshaping vs the cost of ongoing maintenance and repair, should be undertaken to determine the best design approach for the LFC slope.

11.5 Presentation of Analysis Outputs

11.5.1 Presentation

The stability analysis results are summarised graphically as the spatial distribution of the Factor of Safety (FoS) for multilinear failure mechanism for EOM in Figure 33 and Figure 34 for final lake level, and similar plots for block sliding mechanism under flood loading in Appendix H. Stability analysis outputs for the multilinear failure paths, and block sliding failure for domains prone to water loading for the four Base Cases are presented in Appendix F.

The analyses show:

1. EOM - Generally high FoS, >1.5, with few exceptions presented, Table 17, increasing incrementally behind the pit crest, for both multilinear and block slide failure paths.
2. EOM - Stability is lower for block-sliding failure in domains prone to flooding compared to multilinear failure.
3. EOM and Lake Full - Domains with adverse geology where bedding dips out of the slope have lower FoS relative to other domains.
4. Lake Full - Lower FoS, <1.5, for multilinear failure paths for domains with adverse geology, including the YTF-SB, YTF-SWB, YTF-WB, and MVF-SB.
5. Lake Full - Multilinear failure becomes the critical failure mechanism, once peripheral catchment drainage has been constructed.

The sensitivity checks using higher interseam strengths and multilinear failure path show higher FoS, typically >+0.4.

The sensitivity checks using an assumed buttress volume to achieve a FoS of 1.3 show that buttressing to improve the stability is feasible. The final buttressing location, extent and height will depend on mine logistics as well as future studies (mine lake studies, surface hydrology) and therefore will be refined in future detailed design.

11.5.2 Discussion

Table 17 provides a high level summary of the outputs of the stability analyses. In this table, several analyses with lower than DAC have been identified:

- Cells that are shaded red are those with a FoS that do not meet the general DAC in Section 11.2 (multilinear FoS≥1.3; block sliding FoS≥1.1):
  - For domains YTF SB (Section 19), YTF SWB (Section 20) and YTF HOB (Section 22, 24), the governing min FoS is via a block slide mechanism with filled tension crack (1.04, 1.20, 1.13, 0.85 for EOM, and similar for lake filling and lake full scenarios). This indicates the need for a permanent

peripheral drainage system that effectively and efficiently remove surface water from the mine crest, in order to improve the FoS for this stability mechanism to not govern the design. It is noted that with this mechanism effectively managed (via drainage), the multilinear FoS are more than adequate (1.92, 1.81, 1.98 and 1.79 respectively for EOM, similar for other time periods).

  - Similar conditions exist for YTF WB (Section 25) where in the permanent lake full scenario, the block sliding FoS falls under 1.1, indicating the need for an effective permanent peripheral drainage system.
  - For domain YTF WB (Section 28) the reduction in FoS due to lake filling from 1.40 to 1.12 is due to the increase in pore pressure in the batter to hydrostatic. Buttressing in this area, which is intended and needs to be permanent, is able to increase the final lake-full FoS to over 1.3.

- Text that are in red are those with a consequence level 4 or 5 with a FoS that do not meet the required DAC of FoS≥1.5:
  - For domains YEF LRB (Section 6) and YTF FSPB (Section 16), the low EOM & lake filling FoS can be managed by buttressing. This will require further refinement in the detailed design phase where opportunities for optimisation are to be considered.
  - For domains YTF SWB (Section 20 and 21) the EOM block slide FoS is 1.2 (Section 20) and lake full multilinear FoS is 1.39 (Section 21). While these are above the DAC for a normal slope, the presence of the railway gives the domains the high consequence level. When reviewing the applicable FoS at the railway, which is located 170m from the crest, it is over 1.5. Nonetheless, drainage structures in this area need to be specifically designed carefully and effectively to avoid further future loading of the batters. They also need to be permanent structures.

In YTF SWB and YTF SB, future investigation and testing is planned to refine the geotechnical model to increase the confidence in the assessment.

Stability analyses for peripheral drainage assessments have been used to assess the best locations for drains for each domain, Section 12.4.

Buttress analyses have been used to confirm the feasibility of using buttress to increase stability to acceptable levels.

Sensitivity analyses using higher shear strength provide confirmation of the reliability of the results reported here.

Sensitivity analyses with seismic loads, interpretations and further work are discussed in Section 10.7.

11.5.3 Summary

In summary the overall assessment of the results, Table 17, is:

1. At EOM:
   a. The stability in all domains at the EOM under a block sliding scenario is generally considered acceptable.
   b. The stability in selected domains in flood plains under a multi-linear scenario is generally considered acceptable, a few domains have a FoS under 1.5 but over 1.1.
2. For Lake Full:
   a. The stability in most domains is considered acceptable.
   b. Except YTF-WB/NB, where buttressing is indicated.
3. During Lake Filling:
   a. The stability in most domains is considered acceptable.
   b. Except for YTF-FSPB and YEF-LRB, where additional buttressing is indicated.
4. The stability in selected domains outside of flood plains under a multi-linear scenario, for all time periods, are low, indicating the need for effective peripheral drainage structures both now and for the permanent case.

Stability using the base case multilinear failure mechanism for all domains is presented in plan in Figure 33 for EOM and Figure 34 for final lake level. Appendix F presents stability analysis outputs for block sliding, the four Base Cases, Sensitivity checks and all outputs for MRD. Appendix H also presents summary plans including block sliding and plots of stability changes in space and with lake levels.

Table 17 – Summary of stability analyses

Domain	Land-form Type (10)	Sect-ion	End of Mining (2028)				Lake Filling (30 years)					Lake Full - Post Relinquishment (100 years)			
			Consequence Category (2)	Ground-water Condition (Hu) (7)	DAC / Target FoS (1)	Min FoS	Consequence Category (2,3)	Ground-water Condition (Hu) (4)	DAC / Target FoS (1)	Critical Lake Level (RL)	Min FoS	Consequence Category (2)	Ground-water Condition (Hu) (9)	DAC / Target FoS (1)	Min FoS
YEF NB	Type 1	1 (27)	4	0.6	1.5	3.27 (11)	4	0.6	1.5	20 m	3.24	4	1 (8)	1.5	2.80
		2	2		1.3	1.90	2		1.3	-5 m	1.92	2	1 (8)	1.3	1.72
		3	1		1.3	2.40	1		1.3	-10 m	2.36	1	1 (8)	1.3	2.82
YEF LRB	Type 2	4 (27)	4	0.7 (5)	1.5	2.24 (15)	4	0.7 (5)(6)	1.5	-10 m	2.38 (15)	4	1 (5)	1.5	3.01
		5 (27)	4		1.5	1.90	4		1.5	-20 m	1.84	4		1.5	3.88
		6 (27)	4		1.5	1.29 (32)	4		1.5	-20 m	1.32 (32)	4		1.5	3.15
YEF LREB	Type 3	7	3	0.6	1.3	1.80	3	0.6	1.3	-25 m	1.82	3	1 (8)	1.3	2.18
		7b	3		1.1	1.56 (23)	3		1.1	-10 m	1.53	3		1.1	2.50 (28)
		8	3	0.5	1.3	2.08	3	0.5	1.3	-5 m	2.01	3		1.3	1.73
		9	3		1.3	2.33 (25)	3		1.3	-5 m	2.24 (25)	3		1.3	2.03 (25)
					1.1	1.26 (24)			1.1	-5 m	1.16 (24)			1.1	1.17 (26)
YEFX SB	Type 3	10	1	0.5	1.1	1.84 (23)	1	0.5	1.1	0 m	1.82	1	1 (8)	1.3	2.22
MVF EB	Type 3	11	2	0.5	1.3	2.38 (25)	2	0.5	1.3	-5 m	2.32 (25)	2	1 (8)	1.3	1.96 (25)
					1.1	1.30 (24)			1.1	-5 m	1.19 (24)			1.1	1.32 (28)

Domain	Land-form Type (10)	Sect-ion	End of Mining (2028)				Lake Filling (30 years)					Lake Full - Post Relinquishment (100 years)			
			Consequence Category (2)	Ground-water Condition (Hu) (7)	DAC / Target FoS (1)	Min FoS	Consequence Category (2,3)	Ground-water Condition (Hu) (4)	DAC / Target FoS (1)	Critical Lake Level (RL)	Min FoS	Consequence Category (2)	Ground-water Condition (Hu) (9)	DAC / Target FoS (1)	Min FoS
MVF SB	Type 3	12	1	0.6	1.1	1.40 (14) (23)	1	0.6	1.1	5 m	1.26 (14)	1	1 (8)	1.3	2.23 (14)
		13 (13)	1		1.3	1.43	1		1.3	-40 m	1.43	1	1 (8)	1.3	1.34
MVF WB	Type 1	14	3	0.6	1.3	1.71	3	0.6	1.3	-30 m	1.70	1 (18)	1 (8)	1.3	1.78
		15	3		1.3	1.83 (25)	3		1.3	-25 m	1.90 (25)	1 (18)		1.3	1.94
					1.1	1.87 (24)			1.1	-25 m	1.92 (24)			1.1	19.1
YTF FSPB	Type 2	16 (27)	4	0.5 (5)	1.5	2.01 (31)	4	0.5 (5)	1.5	0 m	2.17 (31)	4	1 (5)	1.1	2.13 (12)
					1.5	1.21 (30)			1.5	0 m	1.33 (30)				
YTF FPB	Type 2	17 (27)	4	0.5	1.5	1.76	4	0.5	1.5	0 m	1.86	4	1 (8)	1.5	1.95
		18 (27)	4		1.5	1.75	4		1.5	5 m	1.77	4		1.5	2.05
YTF SB	Type 2	18b (27)	5	0.5 (5)	1.5	1.96	5	0.5 (5)	1.5	10 m	1.94	5	1 (8)	1.5	2.30
	Type 3	19	5	0.4	1.5	1.92 (25)	5	0.4	1.5	33.4 m	1.92 (25)	5	1 (8)	1.5	1.54 (25)
					1.5	1.04 (24)			1.5	33 m	1.04 (24)			1.5	0.74 (26)
YTF SWB	Type 3	20	5	0.7	1.5	1.81 (25)	5	0.7	1.5	NA (16)	1.81 (25)	5	1 (8)	1.5	1.59 (25)

Domain	Land-form Type (10)	Sect-ion	End of Mining (2028)				Lake Filling (30 years)					Lake Full - Post Relinquishment (100 years)			
			Consequence Category (2)	Ground-water Condition (Hu) (7)	DAC / Target FoS (1)	Min FoS	Consequence Category (2,3)	Ground-water Condition (Hu) (4)	DAC / Target FoS (1)	Critical Lake Level (RL)	Min FoS	Consequence Category (2)	Ground-water Condition (Hu) (9)	DAC / Target FoS (1)	Min FoS
					1.5	1.20 (24)			1.5	NA (16)	1.20 (24)			1.5	1.06 (26)
		21	5		1.5	1.73	5		1.5	33 m	1.73	5		1.5	1.39
YTF HOB	Type 3	22	3	0.5	1.3	1.98 (25)	3	0.5	1.3	33.4 m	2.04 (25)	3 (19)	1 (8)	1.3	1.77 (25)
					1.1	1.13 (24)			1.1	33 m	1.04 (24)			1.1	0.86 (26)
		23	3	0.6	1.3	1.92	3	0.6	1.3	25 m	1.96	3 (19)		1.3	1.69
		24	3		1.3	1.79 (25)	3		1.3	20 m	1.83 (25)	3 (19)		1.3	1.65 (25)
					1.1	0.85 (24)			1.1	20 m	0.86 (24)			1.1	0.63 (26)
YTF WB	Type 3	25	3	0.6	1.3	1.47 (25)	3	0.6	1.3	5 m	1.47 (25)	3	1 (8)	1.3	1.36 (25)
					1.1	1.26 (24)			1.1	5 m	1.26 (24)			1.1	1.06 (26)
		26	3		1.1	1.75	3		1.1	10 m	1.75	3		1.3	1.56
		27	1		1.1	1.60	1		1.1	15 m	1.53	1 (20)		1.3	1.32
		28	1		1.3	1.40	1		1.3	15 m	1.35	1 (20)		1.3	1.12
														1.3	>1.3 (29)
YTF NB	Type 1	29	3	0.6	1.3	2.35	3	0.6	1.3	5 m	2.26	1 (21)	1 (8)	1.3	2.23
YTF RCB	Type 1	30	3	0.8	1.3	2.38	3	0.8	1.3	10 m	2.41	3 (22)	1 (8)	1.3	2.52

Domain	Land-form Type (10)	Sect-ion	End of Mining (2028)				Lake Filling (30 years)					Lake Full - Post Relinquishment (100 years)			
			Consequence Category (2)	Ground-water Condition (Hu) (7)	DAC / Target FoS (1)	Min FoS	Consequence Category (2,3)	Ground-water Condition (Hu) (4)	DAC / Target FoS (1)	Critical Lake Level (RL)	Min FoS	Consequence Category (2)	Ground-water Condition (Hu) (9)	DAC / Target FoS (1)	Min FoS
YTF LS	Type 1	31	4	1.0	1.5	1.70	4	1.0	1.5	10 m	1.64	4	1 (8)	1.5	2.31
MRD	Type 2	32 (27)	4	0.4	1.5	2.38	4	0.4	1.5	0 m	2.38	4	1 (8)	1.5	1.48
		33 (27)	4	0.5	1.5	2.12	4	0.5	1.5	-20 m	2.21	4	1 (8)	1.5	1.95
		34 (27)	4	0.5	1.5	2.10	4	0.5	1.5	-30 m	2.15	4	1 (8)	1.5	2.29
		35 (27)	4	0.6	1.5	2.09	4	0.6	1.5	-10 m	2.45	4	1 (8)	1.5	2.53

NOTES:

(1). DAC as listed in Section 11.5

(2). Based on the EAY current mining and post relinquishment PMLU.

(3). There is obviously a transition period following EOM and leading through till the lake full situation is reached. Consequently, the PMLU in the transition period cannot be fully defined at this time. However, there are two periods that are reasonably well known or for which a plan exists, EOM and Post Lake filling. Although mining activities will cease at EOM, rehabilitation activities and lake filling will proceed, and the exact timing and order of all activities is currently unknown. Thus, in order to assess potential consequences, it is assumed the overall situation at EOM continues until lake filling is completed. These may need to be re-visited once EAY has developed their full rehabilitation schedule.

(4). Assumes regional dewatering is maintained until Lake Full (or approximately). Assumes surface drainage in Peripheral catchments is maintained until lake Full and longer as required. Assumes this is confirmed by monitoring during the 3 year rehabilitation program to the end of 2031. Assumes slow recovery over many years as lake level slowly rises.

(5). Assumes a full tension crack under hydrostatic conditions develops under flood plain during significant floods, but only to spillway level.

(6). Modifications to surface landform to exclude potential for flooding and or limit the intake area.

(7). This is the current situation without any rehabilitation, Peripheral Drainage and or some landform modifications. Along with the assumptions in Point 4 this means the current groundwater situation is unlikely to worsen and more likely to improve. This applies until at least a significant lake level has been achieved.

(8). Assume recovery of groundwater to a Hydrostatic level but to the current top of groundwater level and/or pit lake level.

(9). Assume this condition occurs instantaneously once lake level reaches 37 mRL ± 3m. In reality (based on modelling) the pore pressure recovery takes decades.

(10). Domain landform types as follows: Type 1 – A domain with relatively flat topography and no concentrated surface water flow paths, Type 2 – Domains with permanent or semi-permanent water bodies such as floodplains or the MRD, and Type 3 – Domains with significant Peripheral Catchments and concentrated creek lines.

(11). Some movement possible but failure is not feasible.

(12). FoS based on a block sliding mechanism connecting the MRD flood plain with a fully filled tension crack to the surface. The fully filled lake improves the stability of this mechanism.

(13). Assumes the final permanent coal batters are constructed steeper than as-planned and an in-pit dump is progressively backfilled against the batters at the EOM.

(14). The FoS is high with the in-pit dump in place. There is a large catchment and the FoS could be much lower without the dump, see Section 13 results.

(15). Multilinear FOS is less than the block slide FOS for this floodplain section.

(16). The pit lake level is below the toe of the batter, and therefore lake filling does not have an impact to the FoS.

(17). For the MRD sections, for the post relinquishment period, while the block sliding mechanism is viable, the analyses for multilinear result in lower FoSs which are quoted here.

(18). Removal of coal conveyor system changes Consequence Category from 3 to 1 for Domain MVF WB (Section 14, 15)

(19). There are plans to re-align Haunted Hills Road. Even if it is re-aligned the road is still behind the crest so Consequence Category remains 3 for YTF HOB domain (Section 22, 23, 24).

(20). De Campo Drive in this area (Section 27, 28) lies outside of the geotechnical domain so Consequence Category is 1.

(21). YTF NB (Section 29) – Consequence Category is 3 during mining due to mine offices and infrastructure; changed to 1 assuming mine offices and infrastructure are removed.

(22). YTF RCB (Section 30) – PMLU shows private land which can be occupied at rehab. Consequence Category therefore remains at 3. Note the PMLU could change in future design stages

(23). FoS based on block slide mechanism with a fully filled tension crack. This section does not lie in a flood plain, i.e., the landform does not enable flood inundation, this analysis is only used to assess peripheral catchment drain requirements.

(24). FoS based on block slide mechanism with a fully filled tension crack. This section does not lie in a flood plain, i.e., the landform does not enable flood inundation, this analysis is done to assess peripheral catchment drain requirements. While there is no flood plain along this section, there is historic cracking indicating past batter movement (and the low FoS indicates this is a possible failure mode under some conditions, at least historically). The results indicate the criticality of effective peripheral catchment drainage.

(25). FoS based on a multilinear mechanism. This is the design FoS provided that there is effective peripheral catchment drains.

(26). FoS for post-relinquishment based on a block slide mechanism with a fully filled tension crack. This section does not lie in a flood plain, i.e., the landform does not enable flood inundation, this analysis is done to assess the failure of designed peripheral catchment drains. This indicates insufficient FoS and therefore the peripheral drains are required post relinquishment.

(27). These sections have a flood plain or river and therefore the block slide mechanism is analysed with a fully filled tension crack.

(28). FoS for post-relinquishment based on a block slide mechanism with a fully filled tension crack. This section does not lie in a flood plain, i.e., the landform does not enable flood inundation, this analysis is done to assess the failure of designed peripheral catchment drains. This indicates sufficient FoS and therefore the peripheral drains may be decommissioned at relinquishment.

(29). FoS with some buttressing at toe. This indicates that buttressing is effective in increasing the stability to acceptable level.

(30). FoS based on a block sliding mechanism connecting the MRD flood plain with a fully filled tension crack to the surface. This indicates the importance of both horizontal drains below the MRD flood plain, effective surface treatment to minimise formation of cracks and construction of buttressing.

(31). FoS based on a multilinear mechanism, provided effective horizontal drains and no cracks, minimising the block sliding mechanism.

(32). FoS based on a block sliding mechanism connecting the Latrobe River flood plain with a fully filled tension crack to the surface. This indicates the importance of effective surface treatment to minimise formation of cracks and reinforcement of the diversion bund by internal buttressing.

11.6 Assessment of Stability and Deformations Under Seismic Loading

11.6.1 Context

Section 9 presents the site specific probabilistic seismic hazard assessment (PSHA) for Yallourn and the basis for the selection of seismic loads. Notwithstanding the rigour of the analyses, there are unknowns and uncertainties about earthquake effects on Yallourn Mine. It is also evident that in high consequence domains, more refined assessments will be required as part of future design stages.

Conventional methodologies to assess earthquake effects include estimating the reduction in FoS in a pseudo-static analysis. The predicted deformations (estimated displacements based on empirical methods) are considered a better indicator of the effects. In the higher consequence domains, dynamic analyses may be warranted.

Feasibility stage design assessment of this hazard includes:

1. Pseudo static limit-equilibrium stability analysis.
2. Back-analysis of the two largest recorded earthquakes in Victoria in 2012 and 2021, as reality check on the pseudo-static results.
3. Empirical deformation assessments.

11.6.2 Conversion of PGA to Pseudo-Static

Where pseudo static method is used in stability analyses to assess seismic impact, the dynamic effects of the earthquake design (e.g. PGA) are represented by a horizontal force acting as a constant force in the direction outward from the slope.

It is reasonable to use a fraction of the PGA instead of the total estimated PGA for the site in pseudo static analysis. A 50% reduction of the PGA is suggested to be adopted, consistent with AS4678 and has been previously used in different studies (Hynes – Griffin and Franklin 1984. Rationalizing the seismic coefficient method).

11.6.3 Back-Analysis

11.6.3.1 Introduction

Over more than a hundred years of mining at Yallourn, the 2012 and 2021 are the large events, with the following estimated PGAs:

- 0.16g for the magnitude Mw 5.0 on 19 June 2012 located approximately 5 km southwest of the mine, and
- 0.05g for the magnitude Mw 5.9 on 22 September 2021 located approximately 75 km north of Yallourn.

These events are discussed in Section 10.5.4 and 10.5.5. No significant displacements nor global instability of the mine batters were reported or recorded for these events and provide important clues for seismic slope design for rehabilitation. The 2012 earthquake event has the highest site PGA of 0.16g, which is used in the back-analysis to understand the impact of shear strength, and limitation of the limit equilibrium method. Results are presented in Appendix F.

11.6.3.2 The 2012 Earthquake

The back-analysis of the 2012 event used the June 2012 batter geometries and groundwater conditions. Sensitivity checks were undertaken to understand the impact of interseam shear strengths (11° and 18°). Results indicate:

- 18° strength: no domain section has a FoS of under 1.0; minimum calculated FoS of 1.28
- 11° strength: three domain sections (all in YTF WB) have FoS of under 1.0 (0.90, 0.94, 0.99); some sections are quasi-stable (FoS 1.0 to 1.1, in YTF SWB, YTF RCB, YEF LRB).

As there was observed good performance around the mine after the earthquake, the results of the back analysis support the logic that, on a domain wide scale, the strength on the interseam layer is closer to the mean (18°) than the lower bound (11°) (Section 6.4.3.5).

This back analysis indicates that:

- All batters around the mine have performed satisfactorily during moderate seismic events, equivalent to an AEP of 1:600.
- Higher mine-scale shear strength, of around 18°, is appropriate for assessment of stability under seismic loading.

11.6.4 Pseudostatic Limit Equilibrium Stability Analysis

A risk-based approach has also been adopted to assess the effects of earthquake loading on batter stability. The aim of this risk-based approach is to understand the potential consequence of deformations in each domain to guide the assessments of risk and impacts on rehabilitation batter slope design. This approach can then also be used as required to:

- Potentially modify the intended PMLU in a particular domain such that the potential consequential risk is lowered, and/or
- Undertake additional investigations to better define the geotechnical model, and/or
- Undertake more rigorous seismic investigations.

The pseudo-static method applies a horizontal inertial force to the slope to represent a seismic load, calculated as a proportion of weight. It provides a FoS and indicates if the slope is at risk of yielding during an earthquake. Pseudo static back-analysis are also used to provide the critical seismic coefficient which is the horizontal seismic load required to achieve a FoS of 1 for a given model. Despite its limitations the method is commonly used as an initial tool for seismic assessments and are usually sufficient in most scenarios provided the earthquake load is appropriately represented.

Both the Design Intent Period and the land use influence the risks from earthquakes, firstly because the probability of a site experiencing larger earthquakes increases with the time and secondly because whether or not a particular sized earthquake results in a significant risk depends on the sensitivity of man-made or natural infrastructure within the domain. The land use affects the potential consequence of failure and for a high consequence domain, a lower probability of exceedance, resulting in a higher design earthquake magnitude, is adopted.

Domains with the following consequence categories were checked for seismic loading:

- MRD
- Categories 4 and 5 for the 30-year design intent period, and
- Categories 3, 4, and 5 for the 100-year design intent period.

Domains with lower consequence categories were not assessed at this stage because (1) the pseudo-static PGAs are relatively low and moderate events such as the 2012 earthquake have already demonstrated adequate performance of the batters, and (2) the consequence of failure is low and do not typically involve risk to life.

The following failure mechanisms were modelled:

1. Domain-specific critical failure mechanisms at EOM for the 30-year design intent period, Section 11.4.5
2. Multilinear failure mechanism for the lake full 100-year design intent period
3. Circular failure mechanism within the engineered fill in the MRD embankment for section 32 only.

Analysis for the 30-year Design Intent Period adopted the EOM situation, groundwater conditions and pore pressures. The final pit lake level situation and hydrostatic pore pressures were modelled for the 100-year Design Intent Period.

The use of mean interseam shear strength is considered to be the representative condition for these seismic stability assessments as per discussion in Section6.4.3.7. The analyses are for a seismic loading coefficient of 50% of the consequence-specific PGA as a horizontal seismic load.

The results are presented in Appendix F and shown in summary plans in Appendix H. Results indicate:

- For domains analysed for the 30-year rehabilitation period: FoS above or near 1.0. The lowest FoS is at YTF-SWB with FoS of 0.98 and 0.99. This is considered acceptable for this feasibility stage.
- For domains analysed for the 100-year period: due to the higher PMLU category and the longer design duration attracting a much higher design PGA, many sections, especially those with a PMLU category of 4 or 5, report a FoS of lower than 1.0, indicating further seismic assessments will need to be considered in future design stages. This is discussed in Section 11.6.6.
- It is noted again that the PMLU is preliminary in nature and subject to future developments, based on the outcomes of this feasibility design.

11.6.5 Empirical Assessment of Displacements

Empirical assessment of displacements has been undertaken as a first pass assessment of the dynamic response.

Empirical deformation methods are utilised as first-pass estimation of slope displacement using one or more methods based on Newmark's sliding block. The key assumptions of these empirical methods are that it treats the instability as a rigid-plastic body which does not deform internally, experiences no permanent displacement at accelerations below the critical level, and deforms plastically at constant stress along a discrete basal shear surface when the critical acceleration is exceeded, all of which are questionable in the Yallourn conditions. Two empirical methods (Ambraseys 19888, Saygili 2008) are used in this study to estimate co-seismic displacement for models where the FoS in the pseudostatic analysis is less than 1. Displacement is estimated using the critical seismic coefficient, which is the earthquake acceleration to achieve a FoS = 1.0 stated as a fraction of the acceleration due to gravity. These empirical estimates are intended to provide ballpark displacement estimates for the rehabilitation domains, however these estimates do not consider distance behind the crest, size of slope, or spatial distribution of these calculated displacements.

The outputs and displacement assessment charts are summarised in Table 18 and included in Appendix G. The calculated displacements are in the range from 40 to 750 mm.

Table 18 - Empirical co-seismic displacement estimates for sections with a FoS <1 for the 100-year design intent period

Domain	Section	Lake Full pseudo-static FoS	Empirical Co-Seismic Displacement Estimate			
			Critical Seismic Coefficient (g)	Length of Failure (m)	Displacement (mm)	Strain (%)
YEF-NB W	1	0.69	0.13	575	121	0.02%
YEF-LRB	4	0.68	0.13	622	121	0.02%
	5	0.45	0.09	627	273	0.04%
	6	0.36	0.08	551	335	0.06%
YEFX-LREB N	7	0.66	0.07	945	150	0.02%
MVF-EB	11	0.68	0.08	611	113	0.02%
MVF-WB	14	0.94	0.11	416	50	0.01%
	15	0.98	0.12	414	39	0.01%
YTF-FSPB	16	0.48	0.09	393	273	0.07%
YTF-FPB	17	0.45	0.09	359	273	0.08%

Domain	Section	Lake Full pseudo-static FoS	Empirical Co-Seismic Displacement Estimate			
			Critical Seismic Coefficient (g)	Length of Failure (m)	Displacement (mm)	Strain (%)
	18	0.56	0.11	304	181	0.06%
YTF-SB	19	0.48	0.12	354	600	0.17%
YTF-SWB	20	0.45	0.11	620	674	0.11%
	21	0.47	0.11	500	757	0.15%
YTF-NB	29	0.60	0.11	1879	181	0.01%
YTF-RCB	30	0.62	0.11	939	181	0.02%
YTF-LS	31	0.76	0.15	666	82	0.01%
MRD	32 (left to right)	0.56	0.08	717	335	0.05%
	32 (right to left)	0.78	0.15	836	82	0.01%
	32 (circular)	0.78	0.13	127	121	0.10%
	33 (left to right)	0.55	0.09	1037	273	0.03%
	33 (left to right)	0.96	0.19	648	39	0.01%
	34 (left to right)	0.36	0.07	1300	411	0.03%
	35 (left to right)	0.40	0.08	1226	335	0.03%

Comparing the calculated critical seismic coefficient for each section, to the PGA of 0.16g of the historic event, which showed minimal amount of damage and no permanent displacements across the mine, and estimated displacements for a similar PGA in the table, suggest this calculation method yields conservative results.

In addition, these estimated displacements need to be compared against the other displacements that occur and have occurred in the past around Yallourn Mine:

- Long term movements due to the general mining operations at Yallourn and aquifer pumping in the valley and
- Movements associated with pre-failure and pre-cracking movements for the 2007 YEF Latrobe River Batter Failure, which were up to 1800 mm.

11.6.6 Discussion

A comprehensive first principle assessment of seismic hazard has been undertaken for the Yallourn Rehabilitation feasibility design. The design PGA for pseudo-static stability analysis have been assessed based on design intent period and domain-specific consequence rating.

It is considered at this feasibility stage that the stability analyses and estimated displacements are not likely to result in adverse outcomes for the rehabilitated slopes and the peripheral catchment drainage structures, recognising the following limitations:

- Design PGAs for pseudo-static analyses are conservative,
- Stability and deformation results are used for sensitivity checks,
- Geotechnical model is to be updated with new investigation and test data, and
- EAY PMLU and Consequence Ratings are subject to future refinement.

Design for seismic hazard for mine rehab increases in rigor at each design stage. For feasibility design, a PSHA has been undertaken, to generate a set of design PGAs for pseudo-static stability analyses.

For more detailed design, further work is recommended, focused on the higher consequence domains (Section 10.7.3):

- More targeted testing of the interseam materials to refine the geotechnical model,
- Re-evaluation of the PMLU, and
- Dynamic analyses, based on a refined risk matrix.

12. Surface Water Peripheral Drainage System Assessment

12.1 Risk

The mine scale and the range and variability of settings around the mine means the number, complexity and inter-relationships of the technical factors that need to be assessed and accounted for in the designs is very large. Consequently, in order to capture all the elements required for effective rehabilitation it has been necessary to use a particular approach to risk with a combination of technical and conventional risk consequence evaluations.

The consequence ratings for EOM and completion of rehabilitation periods are a step in the process to assist with:

- Selection of the design flows and probability of exceedance within the design intent periods and
- Focussing on the remediation design in the domains with Major and Critical Consequence ratings.

The risk evaluation thus entails a two-tier risk process, Section 5:

1. The first tier uses separate evaluations of the geotechnical and surface water technical risk ratings for every domain in the mine.
2. The second tier uses a conventional consequence rating and ensures the designs effectively deal with the potential consequence issues around safety, environment, land and property; and cultural heritage.

12.2 Design Criteria

Two design criteria are used in this assessment, a geotechnical stability design criteria, and a drain design size criteria.

12.2.1 Criteria for Geotechnical Stability

Section 11 presents a comprehensive analysis of mine stability for all domains under the full range of conditions to be experienced over the period from EOM and into mine relinquishment. To achieve the rehabilitation drainage designs some additional analyses were undertaken comprising block slide analyses, assuming a full depth tension crack filled to the ground surface with water. This assesses the impact of failure of the main peripheral catchment drainage structure during a peak rainfall runoff event, Section 11.4.6. The results of the block sliding analyses are then plotted as FoS with distance behind the mine crest in order to define where Peripheral catchment drainage structures are required. The results are then compared with the empirical stability evidence as demonstrated by the deformation cracking and pin movement data.

Based on the methodology described above the following Design Acceptance Criteria have been adopted for rehabilitation of batters and design:

1. The selection of the Design Failure Mode is in accordance with the Design Period and Domain or Section type. However, where a Peripheral Catchment drainage structure is specified then the default mechanism is Multilinear.
2. Multilinear Failure Mechanism FoS ≥ 1.3.
3. Block Sliding failure Mechanism FoS ≥1.1.
4. Limiting FoS for buttressing, ≤ 1.1.
5. Limiting FoS for identification of a continuing consequence of Category 4 and or 5 (Table 2), FoS ≥ 1.5.

12.2.2 Criteria for Drain Design

12.2.2.1 Key Assumptions

The below rehabilitation design assessments for peripheral catchment drains make the following key assumptions:

- Existing rivers (Latrobe River, Morwell River and their floodplains) continue to function adequately
- Existing main river diversion drains, i.e., Melbourne Swamp Diversion Drain, Morwell West Drain (and its remnant) and Morwell Main Drain also continue to function adequately to their current capacity.

Some commentary is included in the following sections on consequences should these not function, however it is not the focus of this report.

12.2.2.2 Peripheral Catchment Drains

The drains constructed as part of the rehabilitation including the major Peripheral Catchment drains required for the large catchments will be designed for a design flow event and also a likelihood of exceedance of the drain capacity for that design event. The likelihood of exceedance will be defined using the Hydrologic Likelihood, ie, probability of exceedance over the Design Intent Period, Section 9.6. For ease of comparison to other standards, we have included an Annual Exceedance Probability (AEP) value converted using the standard relationship. When assessing the design event (flow), these design criteria will need to be applied with consideration of non-stationary hydrologic aspects, i.e., climate change and the impacts of tree logging and/or bushfire on the runoff response of the peripheral catchments.

The role of the drains is to convey surface runoff water efficiently and also to reduce the risk of adverse water loading causing Block Sliding mechanisms. The Design Failure Modes are prescribed based on the domain topography and geography. The drain designs also require design criteria and the following has been adopted:

1. The zone where a continuing surface water risk hazard is present and peripheral catchment drainage structure is required is generally limited to the area behind the pit crest where the geotechnical stability FoS under a block sliding mechanism is <1.3.
    a. In higher Consequence Category (4 or 5) domains or where there is a substantial catchment, the geotechnical stability FoS criteria for drains would be required is increased to FoS of 1.5.
2. A Qualitative risk category for peripheral drain design is determined in terms of geotechnical stability under a block sliding mechanism:
    a. Very Low risk – FoS >1.3 (or FoS >1.5 in Category 4 or 5).
    b. Low risk – FoS 1.2 to 1.3 (of 1.2 to 1.5 in Category 4 or 5).
    c. Medium risk – FoS 1.1 to 1.2
    d. High risk – FoS <1.1, see also Section 12.2.2.3.

        For very low risk drains, it means that if the drain is blocked, overtopped, or drain lining fails, and water spills over onto the ground, the resulting stability impact is very low, i.e., it has adequate FoS to prevent geotechnical instability.

        For high risk drains, it means that if the drain is blocked, overtopped, or drain lining fails, and water spills over onto the ground, the resulting stability impact is high, i.e., it has inadequate FoS to prevent geotechnical instability.

        This directly leads to the appropriate criteria for the design flow, i.e., the appropriate hydrologic likelihood (HL) over the design intent period that the drain needs to be designed for.
    e. Where the geotechnical stability FoS under a block sliding mechanism is below 1.0, it indicates that peripheral catchment drains alone may not be sufficient to control the surface water risk, and that second order drains (smaller, swale or herringbone drains) to remove surface water closer to the pit crest are required. The design criteria for this is discussed in Section 12.2.2.3.
3. The peripheral drain sizing criteria for design flow (likelihood of exceedance) to be based on this qualitative risk category (FoS under a block sliding mechanism), Table 19. It is assumed that the drains are to be sized for a design intent period of 100 years. If a shorter or different design intent period may be appropriate, this is discussed in more detail in the following sections.

It should be noted that in certain domains where there is high drainage complexity coupled with increased uncertainty or high consequence category, the categorisation of a qualitative risk category is not strictly followed, and a higher risk drain design rating may be allocated to that domain.

Conversely the design may be adjusted in domains with very low consequence categories or with simple existing surface water conditions.

Table 19 Sizing Criteria for Peripheral Drain

Qualitative risk for peripheral drain design	Peripheral Drain Design Hydrologic Likelihood (100 year design intent period)
Very Low (FoS > 1.3)	Drains may not be required, otherwise >99%
Low (FoS 1.2 - 1.3)	>99%
Medium (FoS 1.1 - 1.2)	30%
High (FoS < 1.1)	2 to 5%

Where possible, and especially for drains for high risk areas, the drain design also includes designing a drain with a high overflow capacity. The intention is to design a well lined drain (eg ACM) to take a medium flood event (say HL of 5%), but the design also includes a wide flood plain area that is less protected (eg grass lined) to take the maximum flood loads (say HL of 2%). In this way the full drain capacity can handle the design flow, but cost of lining is reduced as it only applies to the smaller area.

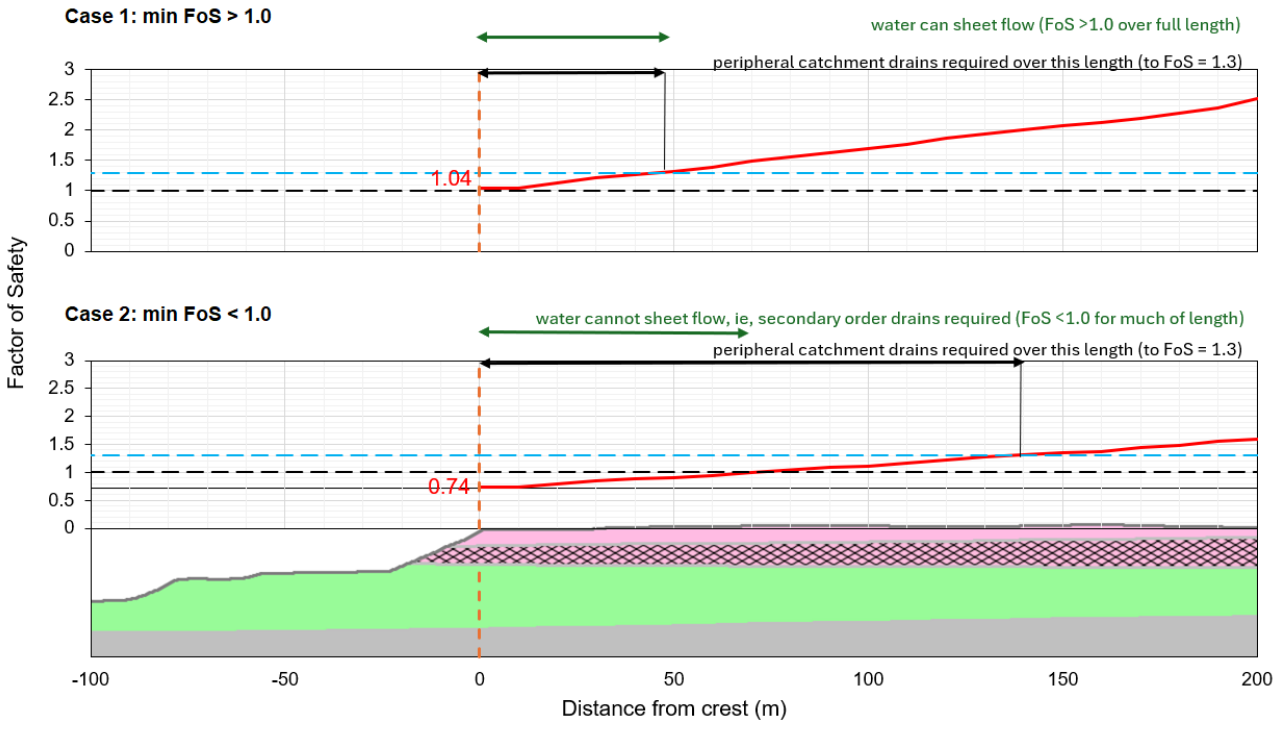
This drain design consideration is undertaken for both end of mining and post-relinquishment time periods, to determine if the peripheral drains are required in a temporary or permanent state, their locations and lengths.

12.2.2.3 Second Order Drains

While not the key consideration for this design, an assessment of the requirement for second order drains (smaller swales or herringbones) has been undertaken. The assessment methodology is dependent on the geotechnical stability evaluation of the area behind the mine crest, an example is presented in Inset 38.

Assuming peripheral drainage structure locations have been determined, which correspond to the area behind the crest where the block sliding mechanism has a FoS of less than 1.3:

- If the block sliding mechanism FoS for the rest of the crest is above 1.0, then no second order drains are required, presented in Inset 38 case 1. Surface runoff is allowed to occur generally as distributed flow across rehabilitated and vegetated slopes.
- If the block sliding mechanism FoS for the rest of the crest is below 1.0, then additional second order drains such as swales are required to remove the surface water from within the local catchment, presented in Inset 38 case 2.



Inset 38 Consideration for peripheral catchment and second order drains

12.2.3 Comparison with Industry Standard

The above drain design criteria converts to a stationary AEP, Table 20, which is compared to the risk criteria for earthquake loads described in Section 10.7.

Table 20 – Probability of Exceedance during Design Intent Period ("PoE during DIP")

Consequence Category & description	Surface water (peripheral catchment drains) (this report)			Earthquake design for PGA (this report)			BCA AEP for earthquake
	AEP	PoE during DIP	Risk to life	AEP	PoE during DIP	Risk to life	
1 - insignificant	1 in 10	>99.9	None	1 in 144	50	None	1:250
2 - minor	1 in 10	>99.9	None	1 in 280	30	None	1:250
3 – moderate	1 in 300	30	None	1 in 949	10	Minor	1:500
4 – Major	1 in 2,000	4.9	None	1 in 1950	5	Significant	1:1000
5 – critical	1 in 5,000	2.0	None	1 in 4950	2	Catastrophic	1:1500

As discussed in Section 9.6.1, the design hydrologic likelihood for drain design is appropriately selected based on the risk assessment system, namely, what is the consequence of a hydrologic exceedance, does it lead to a geotechnical instability, and if so, what is the consequence of such instability. The three are intimately linked and must be selected carefully to enable the drainage design.

It can be seen with the assessment in Section 12.3 that the Hydrologic Likelihood for drains are lower than those for seismic loads, as exceedances do not typically lead to geotechnical instability. The failure of a drain due to a larger-than-design event typically means overtopping, which can be managed. The risk profile is very different to that for seismic design, where it is assumed that exceedances typically lead to an adverse stability event, i.e., a failure of some sort. The design criteria pegs well with the BCA guidance, probably because of the different design intent period of interest.

12.3 Stability and Surface Drainage and Risk-based Design Assessment

12.3.1 Concept and Strategy

The mine batters cover a very large area with 19 different domains each with a unique combination of size, ex-pit topography, current surface water diversions, land ownership, internal mine batter geometry, geological, geotechnical and groundwater conditions. Superimposed onto this base there are a large number of other important time, spatial, geometric, geological and geotechnical factors, discussed in 5.3. To develop an acceptable rehabilitation strategy for the Yallourn Mine, one must consider adequate surface water control in Peripheral Catchments with adverse conditions.

The main concept for achieving this surface water control is to drain the critical Peripheral Catchments into the mine in a controlled manner. This is a fundamental cornerstone of the rehabilitation strategy to address this significant risk to rehabilitation of the batters and surrounding slopes. Some current Peripheral Catchments do not fit this criterion and for these the current drainage arrangements will remain largely unchanged. In addition, some catchments lie partly or substantially outside EAY property and where possible the intention is to try and avoid third party disturbances. The aim is that any future drainage modifications as part of rehabilitation will avoid the necessity for engineering works within those areas, where practicable. The pre-mining landform was significantly disrupted by the creation of the two mine pits, and also natural flow paths significantly disrupted by mine related engineered diversion structures that removed peripheral catchment from the pits via levees and diversion drains. Therefore, this rehabilitation concept seeks to return the surface water environment somewhat to the pre-mining condition.

Detailed studies of the Peripheral Catchment drainage have been carried out to a level to ensure that the feasibility of the proposed surface water control systems, to a consistent standard in keeping with the Feasibility Design. EAY also requested that consideration be given to using the very large amount of HDPE Pipeline available onsite; this was also incorporated into the considerations.

12.3.2 Assessment Objectives

The overall aims of the surface water drainage risk-based design process are to determine for each domain:

1. To define a practical risk basis for determining the design catchment surface water flows in each domain.
2. Whether surface water control systems can simply be incorporated into the planned final landforms or special diversion works are required.
3. How adequate control of Peripheral Catchments can be achieved without encroachment onto third party property.
4. Whether the existing diversion works on EAY property create a risk to any third parties.
5. Whether protection of elements of the mine batters and or surrounds is required, including:
    a. Any buttresses or in pit dumps.
    b. Coal batters.
    c. Overburden batters, within the mine crest.
    d. Slopes outside the mine crest.
6. The periods when any such diversion works are required:
    a. Before mine closure.
    b. During lake filling.
    c. After lake filling is completed.
    d. All three.
7. Recommendations on the schematic drainage designs for each domain, including:
    a. The extent of any major surface water diversion structures required including their location and extent inside and outside the mine crest.
    b. Whether other secondary surface water control measures are required to supplement the main surface water diversion(s).
    c. Any other earthworks required.

The stability analyses discussed in this section assess the impact of failure of the main peripheral catchment drainage structure during a peak rainfall runoff event, plotted as FoS linearly with distance behind the mine crest in order to define where Peripheral catchment drainage structures are required. The target FoS for the stability analyses is FoS ≥ 1.3 using lower bound shear strength parameters. This is also compared to existing deformation cracking and pin movement data.

This is the first step of the design process discussed in Section 9.5.

12.3.3 Assessment Process

The surface drainage design requires integration of a very large number of different technical streams, which is a complex process. The relevant information sources and the approximate order in which they are evaluated comprises:

1. Topographic and geometric factors comprising:
    a. The general characteristics of the domain topography.
    b. The topographic and mine batter heights above the final lake level of 37 mRL.
    c. The height of coal exposure above final lake level of 37 mRL.
    d. The overburden thickness and whether it is insitu or man-made.
2. The current natural surface water network and diversion systems.
3. Domain risk ratings using:
    a. Geotechnical Risk Rating.
    b. Surface Water Risk Rating.
    c. EAY Domain consequence ratings for both the EOM and Lake Full cases.
4. The geotechnical and groundwater information collated onto the Geotechnical Sections. These are also the stability analysis sections for each domain.

5. Comparison of geological information with the recorded deformations and pin movement data for each domain.
6. Stability analyses:
    a. Base cases: Block Sliding and Multilinear sliding during:
        i. EOM.
        ii. Lake filling.
        iii. Lake Full.
    b. Sensitivity: Assessment of stability and deformation under the design seismic loading.
        i. Comparisons of stability with various geometric and geological factors, including distance relative to the mine crest and Coal Seam Floor dip & seam thickness.
7. Determine / define where Peripheral Catchment drainage are required per Domain.

To achieve suitable rehabilitation drainage designs some additional analyses were undertaken comprising block slide analyses, assuming a full depth tension crack filled to the ground surface with water. This assesses the impact of failure of the main peripheral catchment drainage structure during a peak rainfall runoff event. The results of the block sliding analyses are then plotted as FoS with distance behind the mine crest in order to define where Peripheral catchment drainage structures are required. The results are then compared with the empirical stability evidence as demonstrated by the deformation cracking and pin movement data.

12.4 Final Rehabilitation Outcome: Drainage, Stability, Risk

Discussions on risk framework, domain setting, geotechnical slope stability analyses and the DAC, together with recommendations for peripheral drains are presented in this section, in the following order:

- General domain description,
- Topographic and Geometric Factors,
- Existing drainage,
- Identification of the principal design hazards,
- Current Risk Ratings,
- Geotechnical, Groundwater, Deformation and Movement Factors,
- Stability,
- Changes in consequence or likelihood due to zone of geotechnical stability impact with respect to distance to infrastructure-at-risk
- Implications for surface water control measures including Peripheral Catchments,
- Conceptual design information for drainage control measures,
- Time period over which surface water drainage measures are required, and
- Qualitative risk for drain design to estimate Peak Design Flows. The assessment outcome, showing the qualitative risk, for all domains is presented in Figure 35.

The domains are evaluated in order in a clockwise direction in accord with the geotechnical section numbering system starting at the north-western corner of YEF and progressing clockwise around the whole mine. The MRD risk assessment and rehabilitation design is presented in Section 14.

Appendix J presents the existing peripheral catchment drainage arrangement in each domain, as well as the topography. In domains where additional peripheral catchment drains are required, the arrangement is also presented; they are also summarised in a single plan in Figure 46.

It is noted that this assessment for peripheral drainage requirements is based on geotechnical (geological, topographical, hydraulic) considerations. Additional drainage may be required to manage other risks, such as landform erosion, which is the subject to a separate study by others.

12.4.1 YEF NB West

12.4.1.1 Setting

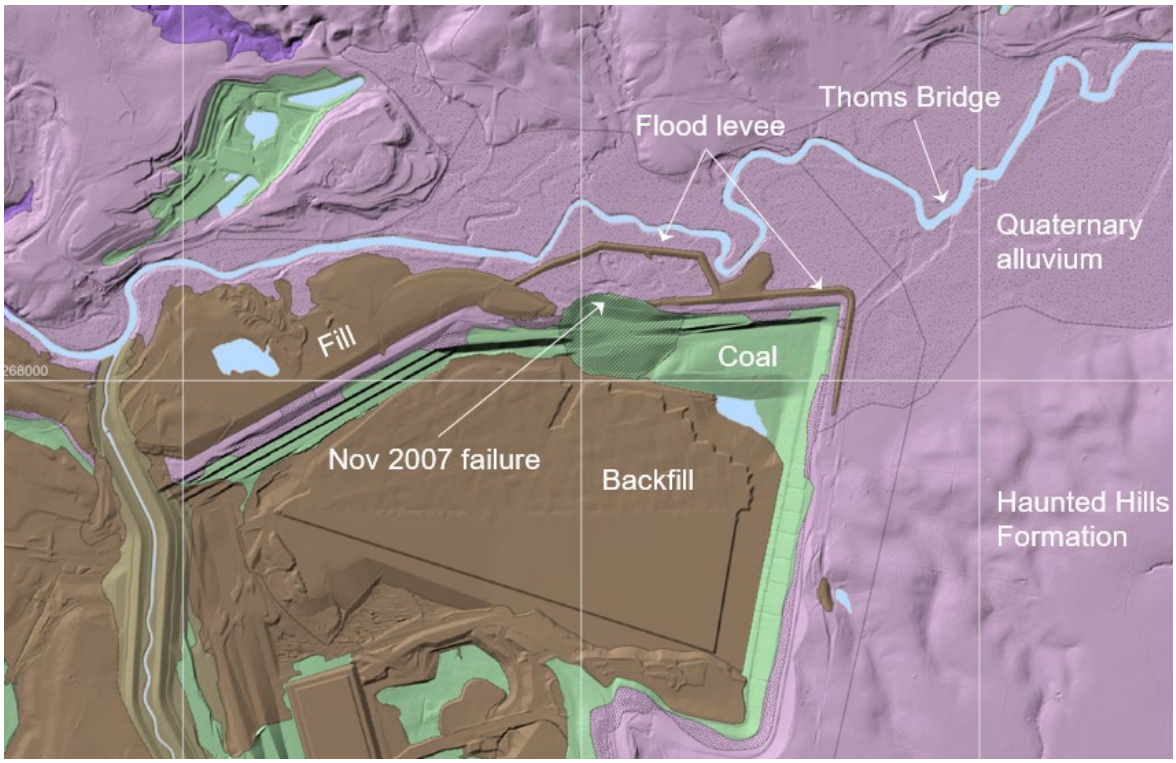
This domain is adjacent to the MRD on its western side and abuts the Latrobe River in the north. The main elements of the site are shown in Inset 39; Appendix J presents the existing peripheral catchment drainage arrangement. The key rehabilitation factors for this domain are:

1. The whole area is relatively flat has been extensively filled with mine overburden and the surface elevations are around +50 to +60 mRL.
2. The MRD is lined with a geomembrane in this section.
3. A buttress has recently been completed in YTF to support the upper western side of the MRD (CH2700), near Section 1.
4. YTF has a 20 to 30 m thick in-pit overburden dump abutting the coal and the lower MRD.
5. The nearest mine batter is ~ 500 m from the Latrobe River.
6. The exposed height of the surface above the final lake level is classified as Low.
7. The final lake level covers all coal.

The majority of the existing drainage is towards the Latrobe River and the MRD. There is minor local drainage close to the pit crest which is directed in-pit although this will be modified slightly by the planned rehabilitation landscaping. There is one drainage line that runs along the toe of the top batter for the full domain length. It is assumed that the overall current drainage directions will remain largely unchanged as a result of the rehabilitation.

There is nothing of note in either the Yallourn Latrobe Coal Seam thickness or dip, it is noted that the coal seam pinches to the north, closer to Latrobe River in this domain. The mapped deformations show nothing of note.

No time period is critical for stability.



Inset 39: Key features in YEF NB and LRB Domains

12.4.1.2 Hazards, Stability and Risk

There are three principal hazards that could conceivably impact this domain:

- Encroachment of the Latrobe River into the mine,
- Complete or partial failure of the MRD into YTF and or
- Mine batter failure in YEF.

The FoS are high (> 2.0) for failure of the MRD and high (> 1.5) for batter failure and very high for any failure paths approaching the Latrobe River. FoS at the Latrobe River is > 2. Hence no changes or modifications are required for stability. The stability in all case increases for Final Lake Level and there is no Critical Pool Level.

Given the very large distance to the Latrobe River and the ground surface elevation within the domain, encroachment of the Latrobe River into the mine in this domain is not considered a viable hazard.

The current risk ratings are:

- The geotechnical risk is Low
- The surface water risk is Low
- The EA consequence ratings for EOM and Completion of rehabilitation are Major (4), due to proximity to Latrobe River
- Nonetheless, it is assessed that there is minimal continuing hazard from batter failure or batter failure impacting on the Latrobe River (FoS >2).

12.4.1.3 Conclusions

The risk settings and consequence are all low and outside of the rivers, no specific drainage works are required. If peripheral catchment drains are used , the overall qualitative risk for drain design is Very Low.

12.4.2 YEF NB East

12.4.2.1 Setting

This domain abuts the Latrobe River in the north. The main elements of the site are shown in Inset 39; Appendix J presents the existing peripheral catchment drainage arrangement. The key rehabilitation factors for this domain are:

1. The whole area is relatively flat, it has been extensively filled with mine overburden and the surface elevations are around +50 mRL.
2. The nearest mine batter is ~ 450 m from the Latrobe River.
3. The exposed height of the surface above the final lake level is classified as Low.
4. The final lake level covers all coal.
5. An inpit dump has already been placed to buttress the lower slopes in this domain.

The majority of the existing drainage is towards the Latrobe River and the MRD. There is minor local drainage close to the pit crest which is directed in-pit although this will be modified slightly by the planned rehabilitation landscaping. There are two drainage lines of note, one runs along the toe of the top batter for the full domain length and the other along the second batter toe for part of the domain. It is assumed that while the overall current drainage directions will remain largely unchanged as a result of the rehabilitation, all current two in-pit and near pit drainage lines on the mine batters should be converted to simple down batter drains as part of rehabilitation.

There is nothing of note in either the Yallourn Latrobe Coal Seam thickness or dip, it is noted that the coal seam pinches to the north, closer to Latrobe River in this domain. The mapped deformations and movements show three zones:

- An increased frequency of cracking in the eastern two thirds of the batters and it is for these reasons that the modifications to the current in-pit drainage lines is required prior to lake filling.
- The very eastern part of the domain intersects the cracking and deformations associated with the 2007 Latrobe River Failure.
- The historical pin movement zone also increases substantially in width towards the Latrobe River. This movement zone is also associated with the 2007 Failure.

No time period is critical for stability, but the modifications above are recommended before the start of lake filling, because of the historical cracking.

12.4.2.2 Hazards, Stability and Risk

There are two principal hazards that could conceivably impact this domain:

- Encroachment of the Latrobe River into the mine and or
- Mine batter failure in YEF.

The FoS are high (> 2.0) for batter failure and very high for any failure paths approaching the Latrobe River (> 2.0). Hence no changes or modifications are required for stability. The stability in all case increases for Final Lake Level and there is no Critical Pool Level.

Given the very large distance to the Latrobe River and the ground surface elevation within the domain, encroachment of the Latrobe River into the mine in this domain is not considered a viable hazard.

The current risk ratings are:

- The geotechnical risk is Low
- The surface water risk is Low
- The EAY consequence ratings for EOM and Completion of rehabilitation are Insignificant (1).

12.4.2.3 Conclusions

The risk settings are all low and outside of the river, no specific drainage measures are required. If peripheral drains are used, the overall qualitative risk for drain design is Very Low.

12.4.3 YEF LRB

12.4.3.1 Setting

This domain abuts the Latrobe River in the north and is the closest part of Yallourn Mine to the Latrobe River. The main elements of the site are shown in Inset 39; Appendix J presents the existing peripheral catchment drainage arrangement. The key rehabilitation factors for this domain are:

1. The area is the site of the 2007 Latrobe River Batter Collapse and this has resulted in:
    a. Reshaping of the failed mass inside the mine.
    b. A triangular shaped gap in the mine batters that marks the failure itself.
    c. A large wedge of insitu coal at the eastern end of the domain, left in place as a buttress.
2. A levee was constructed soon after the failure to divert and exclude the Latrobe River. It is understood the levee was:
    a. Constructed under emergency measures.
    b. There were no foundation investigations or detailed design.
    c. The levee does not have a substantial sub-surface key.
    d. Anecdotal evidence suggests the lower part of the levee has lower levels of compaction.
3. The topography is very low lying and much of the area inside the levee will be under the final lake level.
4. Much of the area was originally part of the Latrobe and Morwell River Floodplains and there are numerous old river meander lines, Appendix J.
5. There is a substantial in-pit dump near to but not abutting the batters over a large portion of the domain. The gap between the lower coal/batter/rehaped failed mass and the dump is already planned to be filled by EAY. This is of high geotechnical risk and therefore should be actioned early.
6. The Latrobe River is close to the levee and or mine in two locations:
    a. The first is near the western end of the levee, where it abuts an ex-pit overburden dump.
    b. The second is towards the northeastern corner of YEF, where a river meander doubles back on itself coming close to the mine and the levee.
7. The exposed height of the surface above the final lake level is classified as Very Low and the final lake level covers all coal.

All the current drainage inside the levee is towards the mine. Current drainage on the coal batters is directed such that it avoids the failed mass.

The area of deformations mirrors the shape and location of the 2007 failure. The cracking is very extensive and up to about 500 m wide in plan. Importantly the zone of most intense cracking, which is along the alignment of the rear scarp of the 2007, intersects the levee where it meets the ex-pit dump at the western end of the levee. Since the 2007 failure remediation some cracking has continued to be observed in this area.

There is extensive historical cracking of the mine batters in two areas east and west of the 2007 failure.

The Yallourn Latrobe Seam Coal Floor dip plan also shows the edge of the coal basin with increased dips approaches closer to the batters at the eastern end of the domain.

The other important factor is groundwater. The groundwater level has stabilised approximately at the level of the top of the in-pit dump, which is also coincident with the wide berm on the mine batters at around -20 mRL. Hydrographs also indicate increased responses in the Yallourn Seam to Latrobe River levels and or rainfall runoff over the past few years.

12.4.3.2 Hazards, Stability and Risk

There are three principal hazards that could conceivably impact this domain:

- Encroachment of the Latrobe River into the mine by general erosion and / or meander migration,
- Failure of the levee by piping failure of the levee or through the immediate foundations, resulting in encroachment of the river into the mine and
- Mine batter failure.

The FoS are high (> 1.9) for EOM and during lake filling there is no critical pool level and the FoS is > 1.3. The exception is for Section 6 where the FoS is 1.29 at lake full. This lower value is because at section 6 there is an in-pit sump between the in-pit dump and the coal batters. Section 6 also has a critical pool level at lake level 0 mRL with FoS = 0.9. EAY plans to decommission and infill the sump to buttress the coal and this results in FoS > 1.3 for all lake levels. All sections 4, 5 and 6 show the minimum FoS at the location of the Latrobe River is >1.9.

Based on the stability analyses and the current and planned buttressing, batter failure is not a hazard, particularly once lake filling is completed with FoS > 3. The risk of general erosion by the Latrobe River is being assessed by the regional hydraulic modelling by others. Given the setting there is potential for the hazard of piping failure to develop. It is recommended the diversion bund be reinforced by an additional internal dump in the two key locations. This will need to be engineered as part of the ongoing rehabilitation studies.

The current risk ratings are:

- The geotechnical risk is Higher
- The surface water risk is Low
- The EAY consequence ratings for EOM and Completion of rehabilitation are Major (4).

12.4.3.3 Conclusions

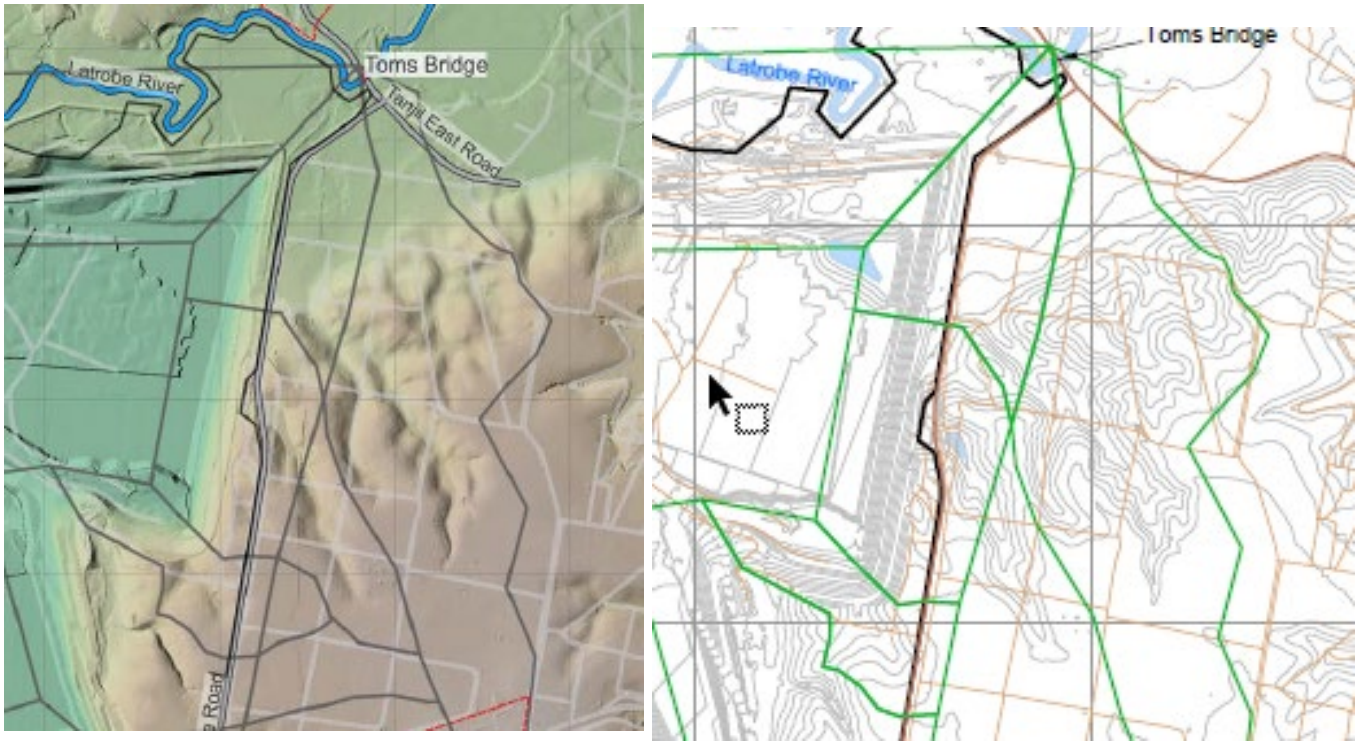
Outside of the river, no peripheral catchment drainage works are required and the **qualitative risk for drain design is Low.** However additional geotechnical works are required in two areas to maintain the current river positions:

1. Infilling of the in-pit sump.
2. Internal buttressing or reinforcement of the levee (Latrobe River Levee).

12.4.4 YEF LREB North

12.4.4.1 Setting

This domain is located in the northeast corner of YEF. The main elements of the domain are shown in Inset 6; Appendix J presents the existing peripheral catchment drainage arrangement. This domain has a complex land ownership setting because the peripheral catchments are mainly covered with a private plantation, Inset 40, which are then separated from the mine by Latrobe Road running north some 100 m behind the pit crest along the mine lease boundary.



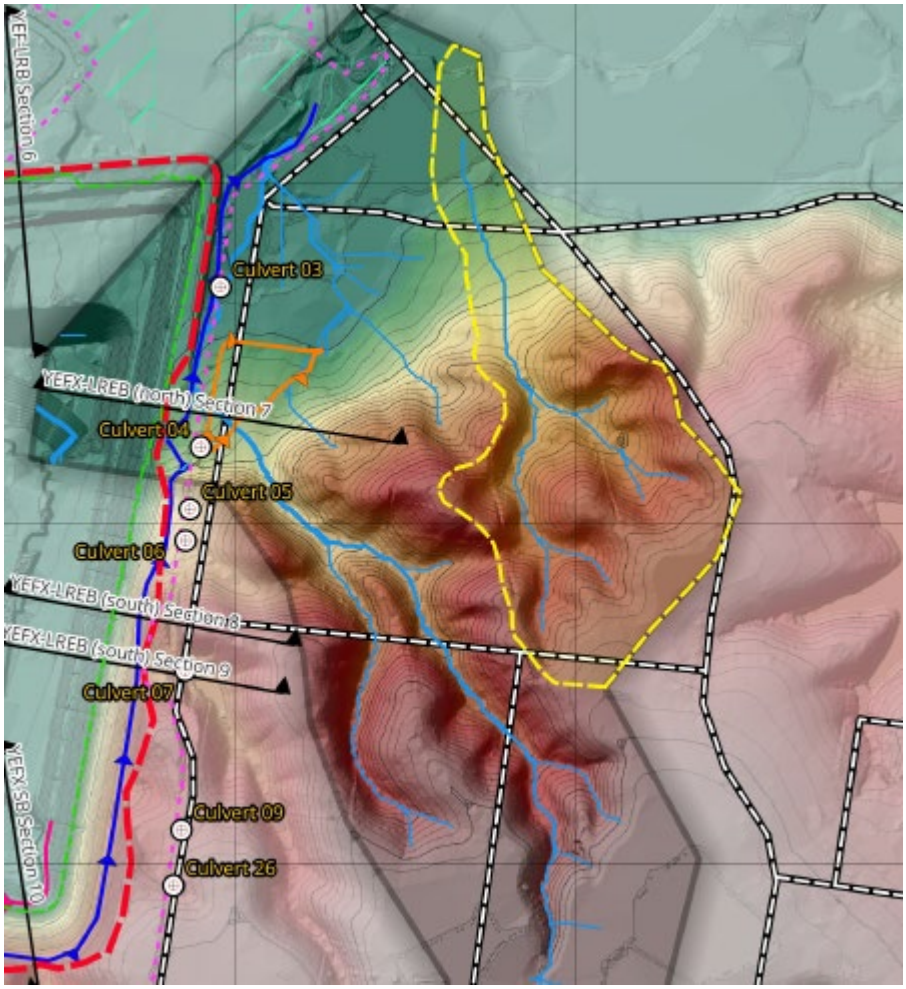
Inset 40: Main elements of YEF Latrobe Road Batter domains

This land ownership complexity and the associated constraints on activities that can be carried out or that EAY may seek to negotiate with the landholders will largely influence or control the final drainage solutions for this domain. This will need to be determined by EAY. However, at this stage preliminary drainage solutions are presented that seek to minimise third party disturbances.

The key rehabilitation factors Include:

1. The landform comprises an elevated peneplain plateau, with dissected drainage along the plateau margins, Inset 41.
2. The catchment comprises three separate drainage lines of which the northern two lines drain towards Latrobe River.
3. The third drainage line in the south enters the mine through a culvert under Latrobe Road, Culvert No.4.
4. Further north Culvert No. 3 exits the mine under Latrobe Road and the drainage eventually enters one of the drainage lines running north into the Latrobe River, Inset 41.
5. Both Culverts 3 and 4 are connected to a drain which runs north parallel to Latrobe Road and is located inside the mine lease boundary, the dark blue line in Inset 41. This drain also leads into the Latrobe River.
6. In 2014 there was a stability incident in this domain when an extensive crack with some associated erosion occurred across Latrobe Road following a rainfall event. The crack extended into the plantation and linked up with a small dam on the eastern side of Latrobe Road. This incident occurred while mining was in progress in YEF and so large ongoing mining related movements were occurring at the time. It is understood some additional drainage was constructed in the plantation following the incident, the brown lines in Inset 41.
7. There is around 20 to 35 m of Haunted Hills Overburden.
8. The final lake level covers all coal.
9. The exposed height above final lake level is classified as low.
10. There is an in-pit dump around ~ 20 m high buttressing the majority of the domain except for the far northern end where there is a sump, which is planned to be infilled.

The mapped movements and deformations show small movements concentrated west of Latrobe Road and minimal cracking. The cracking associated with the 2014 Latrobe Road Stability Incident intersects Section 7. There are no features of note in either the coal thickness or coal dip plans.



Inset 41: Landforms and existing drainage in domain YEF LREB North

12.4.4.2 Hazards, Stability and Risk

The principal hazard in this area is a failure of the coal batters that is large enough to intersect Latrobe Road.

Section 7, which is in the middle of the domain and taken as generally representative of domain conditions shows the FoS are > 1.5 for EOM increasing to > 2.0 for lake full. Section 7B, which is along the join between domains YEF LREB North and LREB South shows a reduced FoS during lake filling of 1.2 for lake level at 0 mRL. However, this assumes worst case groundwater conditions and better groundwater conditions show FoS > 1.5 and no reduction in FoS with lake filling.

The FoS for failure at Latrobe Road is > 2.0. While the FoS are high, due to surface water complexity this is one domain where the qualitative risk for drain design has been adjusted.

The current risk ratings are:

- Geotechnical Risk is Medium and this rating is because of responses of the groundwater system to rainfall runoff. However, notwithstanding this the base conditions are very good, Inset 39, and the groundwater levels are very low.
- The Surface Water Risk is Medium to High and this rating is because of the:
  a. Multiple land ownership.
  b. The complexity of the existing surface water infrastructure.
  c. The likely complexity of future diversion works.
  d. The size of the catchment.
- The EA consequence ratings are Moderate (3) for EOM and completion of rehabilitation due to proximity to Latrobe Road.
- Nonetheless, it is assessed that there is minimal continuing hazard from batter failure or batter failure impacting on the road (FoS >2).

12.4.4.3 Conclusions

Drainage solutions utilising land outside of the mining lease are technically feasible and easily constructable. Although it is possible to engage with the private land owners, Hancock Victoria Plantations and VicRoads, in order to gain access to undertake significant drainage works it is assumed that this will create logistical problems for EA and it is therefore assessed this is not the preferred strategy. There appear to be two main alternate strategies for surface water control that have minimal external impacts:

1. A direct down batter drain around Culvert No. 4. This would also probably require some re-engineering of the Culvert No. 4 to increase capacity (would require VicRoads interaction). This option means that portion of the catchment would be directed into YEF.
2. Upgrade the existing drainage line inside the mine lease boundary that runs to the north into the Latrobe River. This would also probably require upgrading of the Latrobe Road Culvert No. 4. This option means that portion of the catchment would be directed to Latrobe River.

This second option would probably need to be integrated with the drainage solution for Domain YEF LREB South, with consideration of the available land between the mine crest and Latrobe Road and the Mine lease Boundary.

Based on the stability analysis results and due to the complexity of ownership, existing and future surface water complexity, this domain has an overall Medium risk for drain design, with overtopping not being critical for stability, the strategy is to simplify the future surface water drainage arrangement.

Option 1 will require lining because of the thickness of HHF and the batter gradient. However, at this stage it is likely the lining will only need to be low cost and the drain only needs to extend to just below the top of coal. The aim for Option 2 would be a grass lined drain.Plans showing the general additional peripheral drain arrangement are included in Appendix J and summarised in Figure 46.

The qualitative risk for drain design is Medium.

This will need to be re-assessed pending the outcomes of stakeholder engagement.

12.4.5 YEF LREB South

12.4.5.1 Setting

The main elements of the domain are shown in Inset 42; Appendix J presents the existing peripheral catchment drainage arrangement and sub-catchments. This domain has a complex land ownership setting because the peripheral catchment mainly comprises a private plantation, Inset 41. In addition, these plantations are separated from the mine by Latrobe Road running north between 50 and 100 m behind the pit crest along the mine lease boundary.

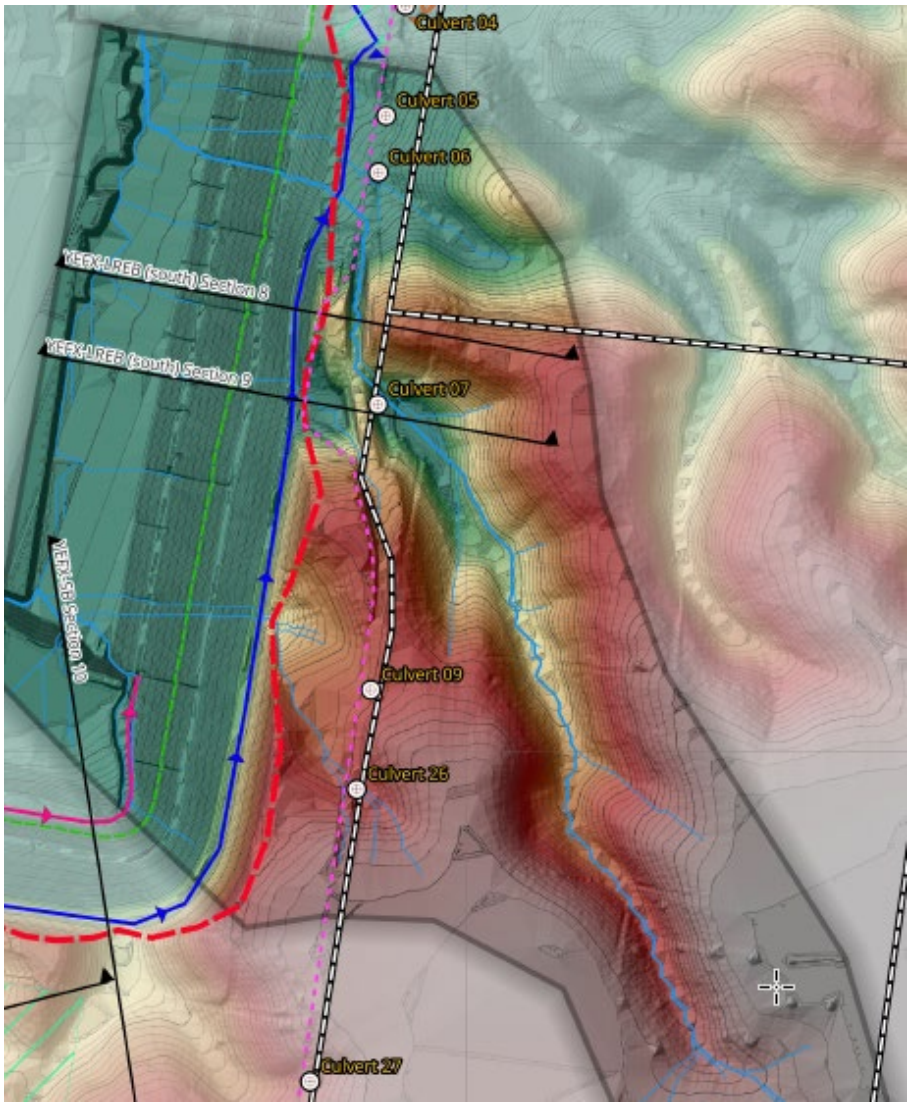
This land ownership complexity and the associated constraints on activities that can be carried out or that EAY seek to negotiate with the landholders may influence the final drainage solutions for this domain. This will need to be determined by EAY. Notwithstanding this the drainage solutions appear more straightforward than for Domain YEF LREB North but the aim remains to minimise third party disturbances.

The key rehabilitation factors Include:

1. The landform comprises an elevated peneplain plateau, with dissected drainage along the plateau margins, Inset 42.
2. The catchment comprises five separate drainage lines, one major catchment at Culvert No.7, Inset 42, and four other minor catchments with some culverts under Latrobe Road. Currently the two southern catchments, Culverts Nos. 26 and 9, drain to a common low topographic point below Culvert 9. The major catchment through Culvert No. 7 initially drains to the north along the mine crest towards Culvert No. 6 and then proceeds down the batter into the mine. The small northern catchments, Culverts Nos. 6 and 5, both drain into the mine.
3. There is an existing drainage channel, which commences in YEF SB and then traverses the whole length of the Latrobe Road Batters. Towards the northern end of YEF LREB South just south of Culvert No. 6, Appendix M9, the drain exits the mine batters and moves outside the mine crest.
4. There is ~15 m of coal exposed above final lake level.

5. The exposed batter height above final lake level is Medium to High, with ~ 15 to ~ 40 m of HHF Overburden. In particular to the south, the current batter with the thick HHF has the potential to erode, which should be considered in overall drain design.
6. There is an in-pit dump ~ 30 m high buttressing the majority of the domain.

Deformations are minor and movements are also small. The historical movements are mainly to the area around Latrobe Road and west of there. There are no features of note in either the coal thickness or coal dip plans.



Inset 42: Landforms and existing drainage in domain YEF LREB South

12.4.5.2 Hazards, Stability and Risk

The principal hazard in this area is a failure of the coal batters that is large enough to intersect Latrobe Road, but this is only a potential around Sections 8 and 9, because further south Latrobe Road veers away from the mine.

Because of the topography the stability of the majority of this domain is controlled by a multilinear failure mechanism that is confined to within the mining boundary. For this mechanism the FoS is > 1.5 increasing to > 2 for all failure paths including those around the location of Latrobe Road. However, the critical location for stability is along Section 9, Inset 42, where the main Peripheral Catchment connects with the mine. Part of the valley is dammed and drainage is then directed though a cutting towards the north. In this location the critical mechanism is Block Sliding with a tension water crack filled to the ground surface. The FoS for this mechanism is 1.26 at EOM decreasing to 1.17 at EOM. There is also a critical pool mechanism at lake levels from ~ -10 to + 20 mRL with the FoS falling to between 0.95 and 1.15 depending on the groundwater conditions. However, because the peripheral catchment drainage structure will be constructed early in lake filling the default failure mechanism is Multilinear and the higher FoS apply.

Notwithstanding, there is a peripheral catchment beyond the mining boundary that would drain into the pit.

The current risk ratings are:

- The Geotechnical Risk rating is Low.
- The Surface Water Risk rating is Medium, with this rating mainly driven by the land ownership issues.
- The EA consequence ratings are Moderate (3) because of Latrobe Road for both EOM and completion of rehabilitation.
- Nonetheless, it is assessed that there is minimal continuing hazard from batter failure or batter failure impacting on the road (FoS >2).

12.4.5.3 Conclusions

A peripheral catchment drainage structure is required for the single large catchment at Culvert No.7 and this structure needs to extend from Latrobe Road into the mine to the lake level.

A plan showing the general additional peripheral drain arrangement is included in Appendix J and summarised in Figure 46.

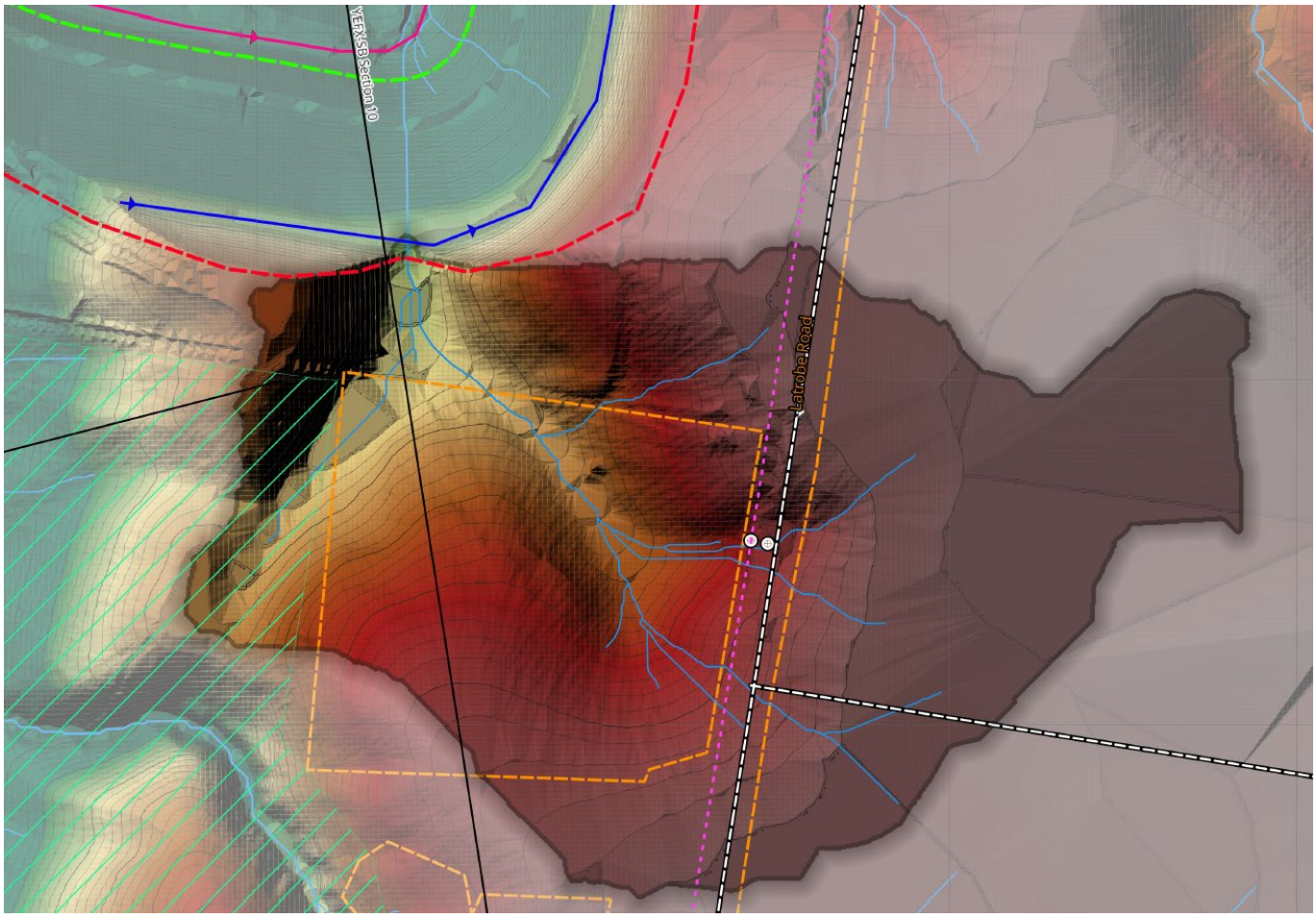
The qualitative risk for drain design is Medium.

This will need to be re-assessed pending the outcomes of stakeholder engagement.

12.4.6 YEFX SB

12.4.6.1 Setting

The main elements of the domain are shown in Inset 43; Appendix J presents the existing peripheral catchment drainage arrangement. The domain comprises a single valley. The drainage solutions for this domain are relatively straightforward because the majority of the catchment lies within the mine lease. Notwithstanding this, the catchment extends to the west over Latrobe Road and into private land covered with plantations.



Inset 43: Landforms and existing drainage in domain YEF SB

The key rehabilitation factors are:

1. The domain has some elevated topography with a number of separate drainage lines that coalesce into a single main drainage line which has a gentle gradient and feeds into the mine.
2. The exposed height above final lake level is Medium to High and includes about 25 m of HHF overburden.
3. There is ~ 20 of exposed coal above final lake level.
4. There is a large in-pit dump against the mine batters of the order of 50 m high and which extends up to final lake level adjacent to the mine batters. This high dump is confined to this corner of YEF and hence it will be susceptible to erosion under uncontrolled surface flows from the Peripheral Catchment.

There is minimal deformation of the mine batters and historical movements are small. There is nothing of note in either the Yallourn Seam thickness or dip.

12.4.6.2 Hazards, Stability and Risk

The principal hazard in this area is a failure of the coal batters.

Because of the topography, with a single well-defined valley entering the mine the stability of the majority of this domain is mainly controlled by a multilinear failure mechanism. For this mechanism the FoS is > 2.0 under both EOM and lake full. Although the critical location for stability is along Section 10, Inset 43, where the main Peripheral Catchment connects with the mine. In this location the critical mechanism is Block Sliding with a tension water crack filled to the ground surface and the FoS for this mechanism (in a high pore pressure scenario) is 1.4 at EOM increasing to 1.46 at lake full. The section line and the main drainage line are in the corner of the mine at the join between domains YEF SB and LREB South. This means a Block Sliding mechanism is even less likely because the slope is buttressed in part by YEF LREB South. There is also no critical pool mechanism. There is no reduction in FoS away from the mine crest and the lowest FoS is at the mine crest as quoted above.

The current risk ratings are:

- The Geotechnical Risk rating is Low
- The Surface Water Risk rating is Medium, with this rating mainly driven by the potential land ownership issues
- The EAY consequence ratings are Insignificant (1) at EOM and lake full.

Based on the stability analysis results the main potential risk for the principal hazard to occur in this domain is through an uncontrolled erosion and water loading event associated with the Peripheral Catchment.

12.4.6.3 Conclusions

A simple Peripheral Catchment drainage structure is required from the mine crest down across the inpit dump, with some form of dissipator. A plan showing the general additional peripheral drain arrangement is included in Appendix J and summarised in Figure 46. The qualitative risk for drain design is very low.

12.4.7 MVF EB

12.4.7.1 Setting

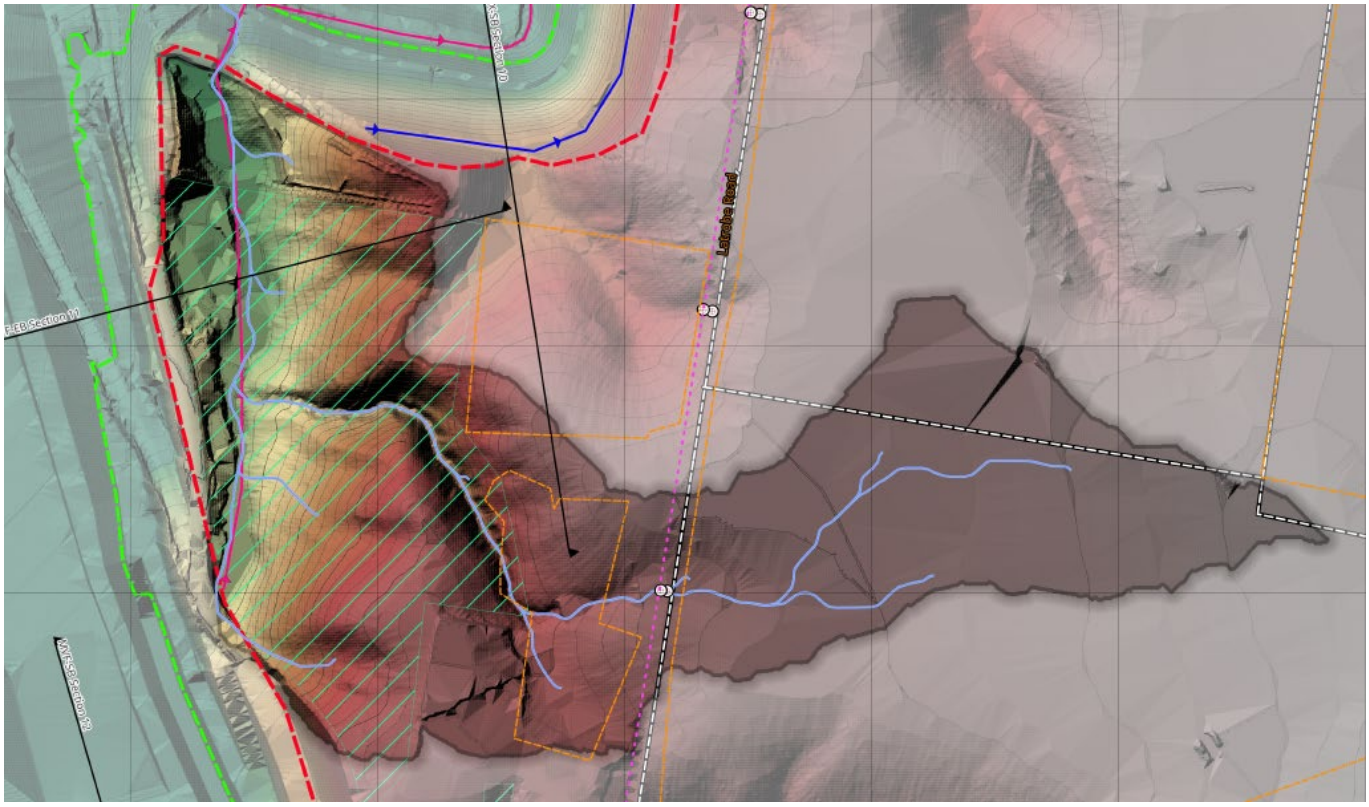
The main elements of this domain are shown in Inset 44; Appendix J presents the existing peripheral catchment drainage arrangement. The topography and drainage are complex because the mine has been sited adjacent to the western edge of the elevated peneplain plateau. The surface water catchment extends well to the east across Latrobe Road and into the area of private land and plantations.

The key rehabilitation factors are:

1. A large part of the catchment area adjacent to the mine is a conservation area, placing constraints on access and potential construction earthworks.
2. As noted above the domain is dominated by a single large peripheral catchment, which drains into a valley running north-south sub-parallel to and outside the mine crest.
3. In addition, there are a number of small drainage lines along the side of the elevated peneplain plateau that also drain into the valley.

4. The valley is dammed in the north behind the YEF SB and all the drainage leads into the mine following a berm drain that runs the entire length of the YEF SB, LREB North and South, Inset 44.
5. The exposed height above final lake level is low.
6. The height of exposed coal above final lake level is up to ~ 10 m, typically in the southern end of this domain.
7. There is a 35 m high insitu dump against the batter toe.

There is nothing of note in either the Yallourn Seam thickness or dip. There is generally limited deformation of the mine batters except for a region at the northern end of the domain with increased cracking. Historical movements are low.



Inset 44: Landforms and existing drainage in domain MVF EB

12.4.7.2 Hazard, Stability and Risk

The principal hazards are:

- Batter failure and
- Batter Failure impacting the conservation area.

Because of the topography, with the valley running close to and sub-parallel the mine crest the majority of this domain is controlled by a block sliding failure mechanism. For this mechanism a water filled tension crack gives FoS ≥ 1.3 under both EOM and lake full. Multilinear failure mechanisms are FoS > 2.0. There is no critical pool mechanism. There is no reduction in FoS away from the mine crest and the lowest FoS is at the mine crest as quoted above. The FoS increases to > 1.5 at 50 m from the mine crest.

The current risk ratings are:

- The Geotechnical Risk rating is Low.
- The Surface Water Risk rating is Medium, with this rating mainly driven by;
  a. Catchment size.
  b. The complex topography/drainage close to the mine crest.
  c. The potential land ownership issues.
- The EAY consequence ratings are Minor (2) at EOM and lake full.

12.4.7.3 Conclusions

The presence of the valley sub-parallel to the mine crest does not result in critical FoS and hence it is sensible to use the valley as the initial surface water control. The main peripheral catchment and all minor catchments drain into the valley. One option has a drainage structure constructed from above the valley and leading straight down from the peripheral catchment drainage line across the mine batters into the mine; this may be easily constructed as part of the HHF regrading exercise.

Another option is to utilise the existing haul road traversing the mine batters from the south, access this road from the southern end of the valley, Inset 44. The haul road can then be used to carry surface flows into the mine. If this is the case the drainage direction needs to be reversed, this can be done at the same time as landform reworking for the HHF unit.

Because the FoS are relatively high and there is only minor deformation of the batters it is questionable whether any drain requires lining and it may be simpler to just carry out maintenance of the haul road drain as required.

Plans showing the general additional peripheral drain arrangement are included in Appendix J and summarised in Figure 46.

The qualitative risk for drain design is Low.

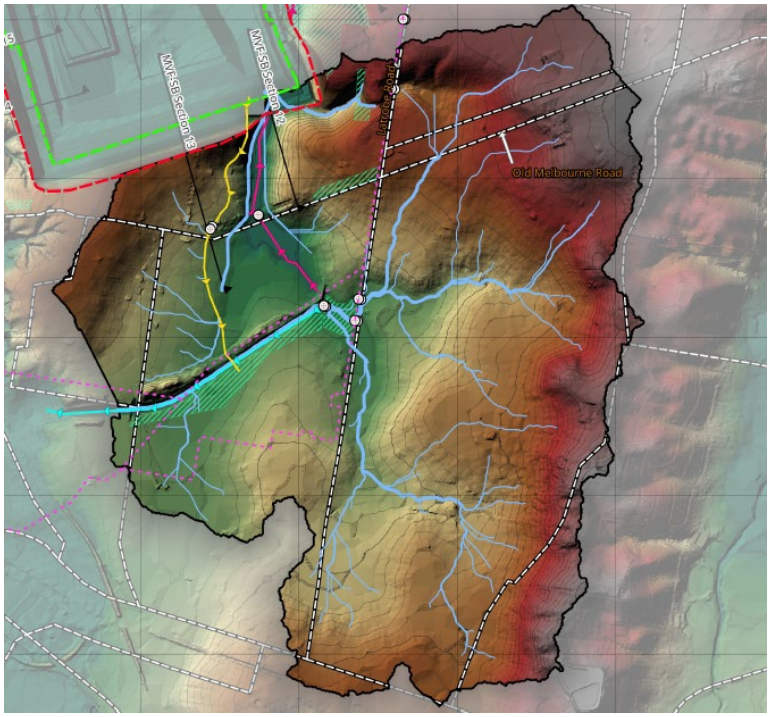
This will need to be re-assessed pending the outcomes of stakeholder engagement.

12.4.8 MVF SB

12.4.8.1 Setting

The Peripheral Catchment for MVF SB is one of the largest catchments around Yallourn Mine. Large parts of the catchment extend to the edge of an into Morwell Township in the south southeast; Appendix J presents the existing peripheral catchment drainage arrangement. The surface drainage has been extensively altered by man and the main diversions are, Inset 45:

1. Morwell West Drain, which currently captures the majority of the catchment and directs the flow westwards into the Morwell River Floodplain, Light blue in Inset 45.
2. The 1:150 drain, yellow in Inset 45, which collects the western part of the catchment closest to the mine and directs it into the Morwell West Drain.
3. A small catchment in the south southeast of MVF SB, where the Remnant Morwell West Drain takes flows to the north towards the mine, red in Inset 45.



Inset 45: Landforms and existing drainage in domain MVF SB

The key rehabilitation factors are:

1. As noted above the remnant part of the peripheral catchment is dominated by a single valley running north-south and which will enter the mine in the southeast corner of MVF. The valley has a very gentle gradient.
2. In addition, there is one additional small valley in the southeast corner that has its confluence with the main valley inside the mine crest also in the southeast corner of MVF, Inset 45.
3. The exposed height above final lake level is Medium to High, with ~ 30 m of HHF overburden along most of the domain.
4. The coal will be freshly excavated as at EOM and will therefore be in good condition.
5. The height of exposed coal above final lake level is ~ 15 m.
6. There is a ~ 35 m high insitu dump against the batter toe in the eastern corner, which is mainly in place against the MVF EB.
7. This domain is a future domain that will be formed at EOM. An active mining is progressing south in Maryvale Field towards the final planned batter location and the final batter configuration is yet to be determined. However, at this time the following modifications have been recommended for stability:
    a. The active mining faces are quite flat (3.5:1, H:V) and also incorporate a 45 m wide mid height berm.
    b. The recommendation is to steepen the lower 70 m of coal to 0.6H:1V.
    c. Place the planned berm at final lake level.
    d. Advance the inpit dump up to the final toe position.

There is nothing of note in either the Yallourn Seam thickness or dip. The batter has not been excavated so there is no information about deformations however there is a mapped dominant E-W striking subvertical joint set that has been evident throughout the mining of MVF and is reasonably likely to be present in this domain. Generally, movement and deformations of the southern batters in MVF have been minor to date and the expectation is that this will continue.

12.4.8.2 Hazards, Stability and Risk

The principal hazard is batter failure.

Because of the topography the controlling failure mechanism is multilinear failure over the majority of the domain. The FoS for multilinear failure is > 1.4 for EOM and > 1.3 for lake full. However, a check is required for Block Sliding along Section 12 (Appendix A) where the main valley enters the mine. Along Section 12 for block sliding the FoS is 1.4 for EOM and > 1.4 for lake full. Along Section 12 with a drain in place the applicable failure mechanism become multilinear failure and the FoS > 2.0. There is a critical pool mechanism but only for the block sliding mechanism along Section 12. There is no reduction in FoS away from the mine crest and the lowest FoS is close to the mine crest as quoted above, with a minimum FoS > 1.3, increasing to > 1.5 at 100 m from the mine crest.

The current risk ratings are:

- The Geotechnical Risk rating is Low.
- The Surface Water Risk rating is Medium, with this rating mainly driven by catchment size, complexity of the existing diversions and possible land ownership issues, but these are all factors applicable to the whole catchment and not applicable to batter design. The complexity is also due to the reliance on Morwell West Drain to limit the catchment area and to take a high current and future flood flows.
- The EAY consequence ratings are Insignificant (1) at EOM and completion of rehabilitation.

12.4.8.3 Conclusions

It is recommended that the current diversions that in place for the whole catchment are maintained. The hydraulic design parameters for these diversions need to be checked to ensure they are compatible with the other rehabilitation designs. In particular, the integrity and capacity of the Morwell West Drain needs to be confirmed over the rehabilitation design intent period to ensure the effectiveness of the full drainage system.

Based on all the factors outlined above a single simple drainage structure is required along Section 12 from the mine crest down to the level of the planned coal bench at 37 mRL and extending out to the northern edge of the coal berm. This drain should be directed away from the buttress along the MVF EB and allowed to spill down the steep lower coal bench.

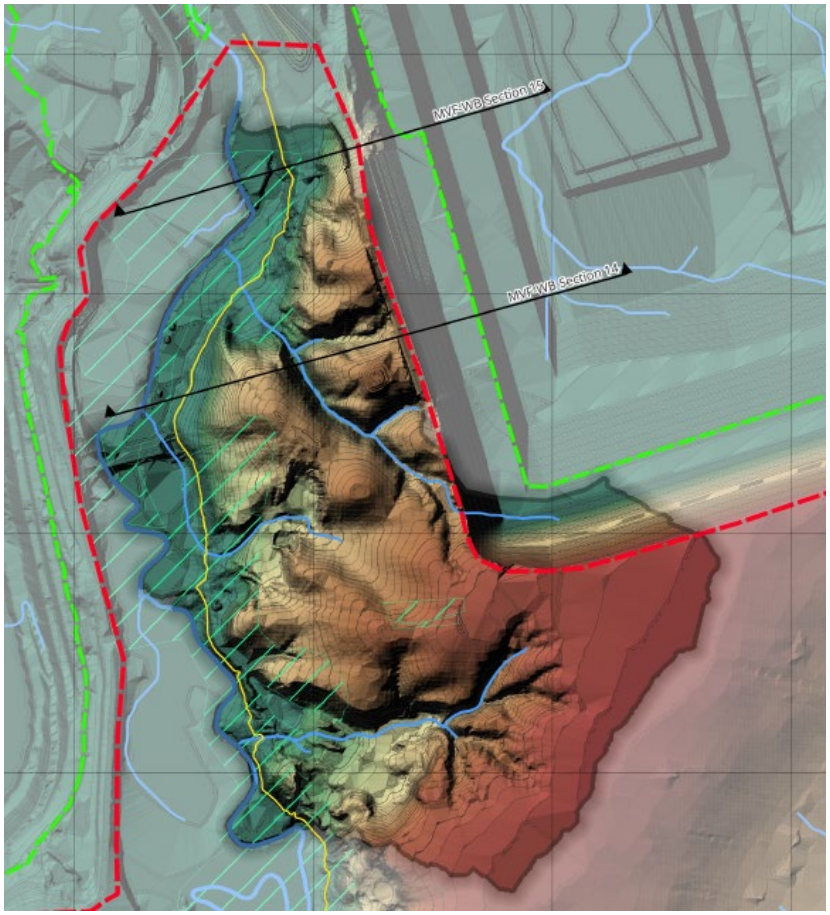
A plans showing the general additional peripheral drain arrangement is included in Appendix J and summarised in Figure 46.The qualitative risk for drain design is Low.

12.4.9 MVF WB

12.4.9.1 Setting

This domain drains to the west into the Morwell River Floodplain, Inset 46; Appendix J presents the existing peripheral catchment drainage arrangement. The exposed height above final lake level is low and the exposed coal height above final lake level is 0 to 5 m.

The Morwell River Diversion (MRD) and its flood plain runs along the edge of the domain boundary and surcharges the batter during flood events; this increases the geotechnical risk of this domain.



Inset 46: Landforms and existing drainage in domain MVF WB

12.4.9.2 Hazards, Stability and Risk

The main hazard is batter failure.

A block sliding failure can potentially occur if the river diversion or the floodplain floods, or if there is poor drainage. The associated FoS for block sliding failure is > 1.8 for EOM and > 2.0 for completion of rehabilitation. For block sliding the FoS is >1.7 for EOM and completion of rehabilitation. This indicates that surcharging of the flood plain, while probable, does not have a significant impact on geotechnical stability.

The current risk ratings are:

- The Geotechnical Risk rating is Medium and this rating is mainly related to the 2021 Stability Incident and associated deformations, movements and groundwater responses. The southern edge of the Stability Incident block is along the northern edge of this domain.
- The Surface Water Risk rating is Low.
- The EAY consequence ratings are Moderate (3) at EOM mainly because the coal conveyors would still be in place on this batter, reducing to Insignificant (1) at completion of rehabilitation.

12.4.9.3 Conclusions

No drainage measures are required and the qualitative risk for drain design is Very Low.

12.4.10 YTF FSPB

The Morwell River Diversion (MRD) and its flood plain runs along the edge of the domain boundary and surcharges the batter during flood events; this increases the geotechnical risk of this domain. The principal hazard is batter failure during a flood event. Appendix J presents the existing peripheral catchment drainage arrangement.

The FoS for block sliding is > 1.2 for EOM increasing to > 2 for lake full. Multilinear FoS > 2 for EOM and lake full. During lake filling for the block sliding mechanism there is no critical pool level, but the FoS is dependent on the groundwater pore pressure recovery as the lake rises, Appendix F. Because regional groundwater pumping is continuing then full equilibration of groundwater pressures will not occur until sometime after pumping is ceased. This analysis indicates the pumping needs to continue till a lake level of ~ +25 mRL to ensure the low groundwater levels are maintained until the buttressing effect from the Lake waterbody is formed. This addresses the low FoS (<1.3) for Block Slide during lake filling (Appendix F.2, Section 16).

The current risk ratings are:

- The Geotechnical Risk rating is Medium because of the presence of the Morwell River Floodplain combined with significant historical deformations of the batters and groundwater responses
- The Surface Water Risk rating is Low
- The EAY consequence ratings are Major (4) at EOM and completion of rehabilitation, because of the adjacent river diversion and floodplain.

Outside of the river, no specific drainage control measures are required for this domain.

The qualitative risk for drain design is Very Low.

12.4.11 YTF FPB

The principal hazard is batter failure during a flood event.

The FoS for block sliding is > 2 for EOM decreasing to > 1.7 for lake full. Multilinear FoS > 1.9 for EOM and lake full. During lake filling for the block sliding mechanism, Appendix F.

The current risk ratings are:

- The Geotechnical Risk rating is Low
- The Surface Water Risk rating is Low
- The EAY consequence ratings are Major (4) at EOM and completion of rehabilitation, because of the adjacent floodplain.

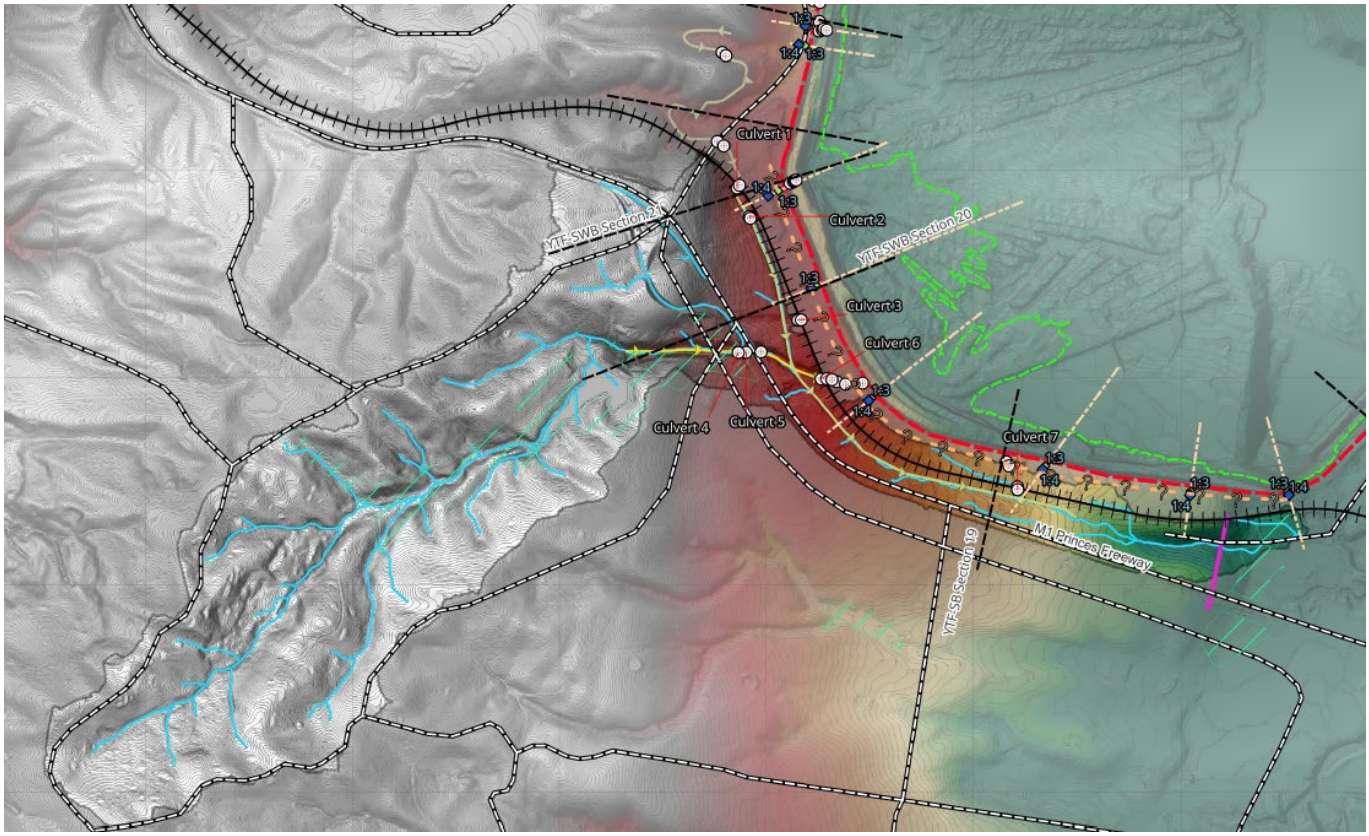
No specific drainage control measures are required for this domain.

The qualitative risk for drain design is Very Low.

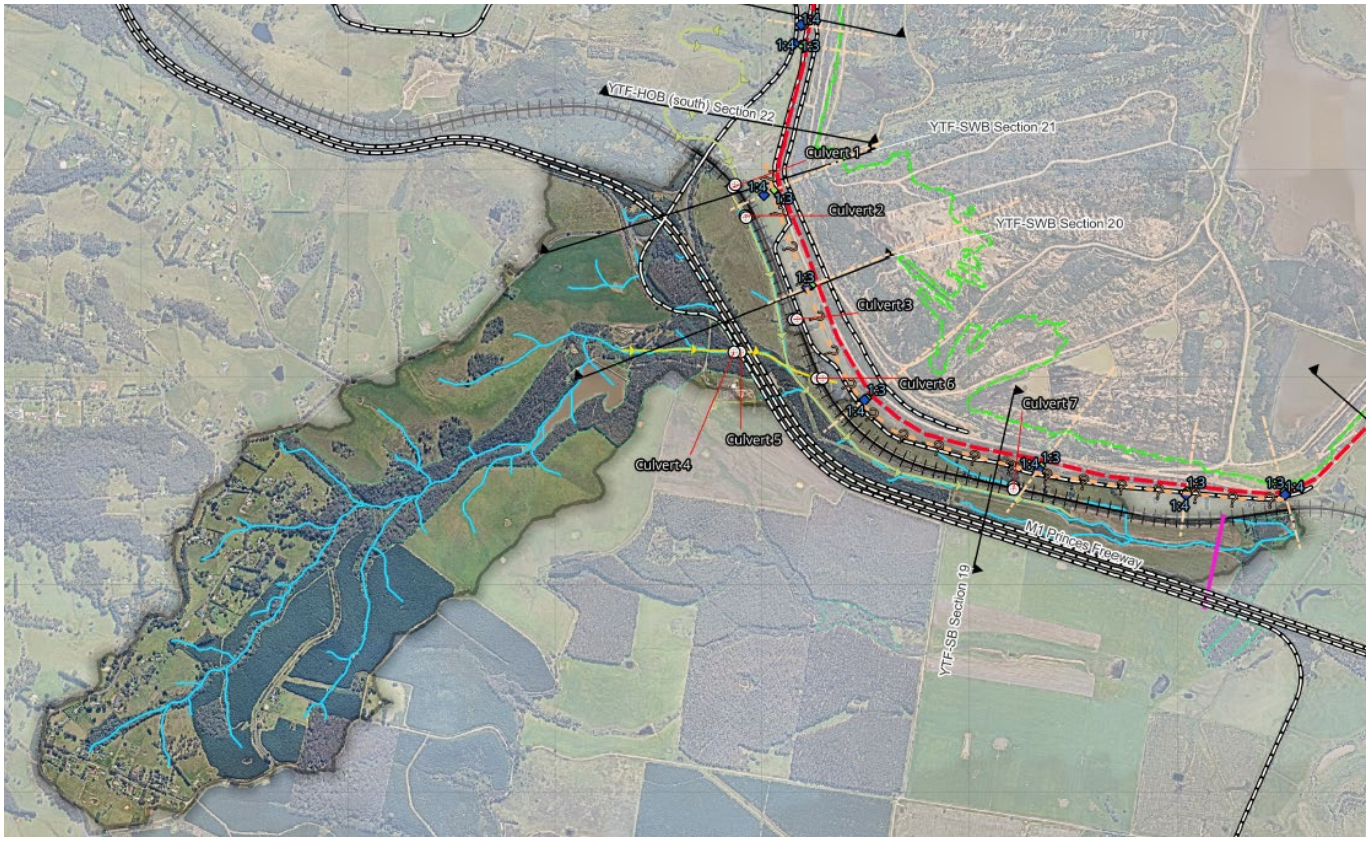
12.4.12 YTF SB and SWB General Discussion

In the pre-mining topography and the EOM topography with man-made deposits and modified ground highlighted, Domains YTF SB and SWB cover two geographic regions with Domain YTF SB forming a gently sloping flank that falls to the west to the Mowell River Floodplain and Domain YTF SWB comprising the deeply dissected margins of a remnant peneplain on its western side. This geographic complexity is then enhanced firstly by the Yallourn Mine, which has truncated the natural drainage and secondly by important linear infrastructure, the railway and Princes Freeway which are diverted around the edge of the mine.

The main elements of these domains related to surface water control are shown in Inset 47 and Inset 48; Appendix J presents the existing peripheral catchment drainage arrangements. Domains YTF SB and SWB are linked because YTF SB itself has minimal external catchments and all the surface water issues are because the main drainage arising from YTF SWB and to a lesser extent from HOB South.



Inset 47: Landforms in Domains YTF SB & SWB



Inset 48: Existing Drainage in Domains SB and SWB

All of this results in additional complexity for rehabilitation because:

1. The domains contain significant existing infrastructure, including Witts Gully Dam, Melbourne Swamp Diversion Drain, and several culverts under Marretts Road and along the railway.
2. The main drainage runs parallel and relatively close to the mine batter crest.
3. The multiple land ownership setting, with major infrastructure, both the railway and M1 Princes Freeway, also close to and parallel to the mine crest.
4. In addition, various components of the drainage currently intersect both infrastructure elements.

All the surface water elements are assessed using conventional hydrological approaches. However, in addition to all the technical complexity described above there are the added future uncertainties (post mine rehabilitation) related to climate change, bushfires, plantation logging and ownership and operation of Witts Gully Dam.

The final drainage solution approach for these two domains needs to be considered holistically by EAY, incorporating consideration of the following major elements:

1. Geography.
2. Transport Infrastructure.
3. Multiple land ownership.
4. Ability to control or influence activities in properties not owned by EAY.
5. Existing surface water diversions.
6. Sensitivity of the adjacent mine batters.
7. Future uncertainties that could impact hydrological assessments including climate change, logging and bushfires.

One approach given this situation would be to adopt very conservative designs. However, given the complexity and uncertainties it is not clear this approach will provide an adequate risk based solution.

Based on these factors it is considered that because of the importance of the transport infrastructure the overall aims for drainage solutions in these two domains should be to:

- Simplify,
- Adopt solutions that are not subject to large uncertainties,
- Remove unnecessary third-party interactions where practical, and
- Remove, where practical, any drainage that intersects the major infrastructure.

12.4.13 YTF SB

12.4.13.1 Setting

The general setting of this domain is discussed above in Section 12.4.12, which dealt mainly with the existing surface water controls and elements related to uncertainty and risk.

Geologically the domain is relatively benign with:

1. A very small dip of the beds into the mine, ~ 1°.
2. The only significant geological structure is ~ 500 m away from the pit crest.
3. The historical movements are very small, mainly concentrated along the pit crest.
4. There have been minimal deformations despite the decades of exposure of the batters.

There is an inpit dump about 10 to 15 m high abutting the lower coal batter. The ground surface elevation at the crest gradually increases from east to west as the ground surface rises, from ~ 50 to ~ 80 mRL. This compares to the final lake level of 37 mRL and consequently:

1. The exposed height above final lake level is medium to high.
2. The exposed height of coal is ~ 20 m.

12.4.13.2 Hazards, Stability and Risk YTF SB

The principal hazards are:

- Failure of the batters,
- Batter failure leading to failure and or adverse movement of the railway line,
- Batter failure leading to failure and or adverse movement of the Princes Freeway and
- Failure of the existing culverts leading to local erosional failure under either the railway or Princes Freeway.

Because of Melbourne Swamp Diversion drain running parallel to the mine batters the critical failure mechanism is block sliding and the FoS are ~ 1 for EOM reducing to 0.74 for lake full. FoS for multilinear failure are > 1.5 for both EOM and lake full. There is no critical pool level during lake filling. The FoS for block sliding reaches 1.3 at ~ 50 m from the crest at EOM and ~ 140 m for lake full.

Based on the stability analyses without a peripheral drainage structure in Melbourne Swamp Diversion there is a risk of failure of the batters. The railway line is ~ 165 m from the batter crest and thus appears to be at some risk from batter failure. There does not appear to be any risk to the Princes Freeway, which is ~ 300 m from the crest. However, culvert failure leading to erosional failure affecting either the railway line of the Princes Freeway also appears to be a risk and may need to be further evaluated depending on the drainage solution adopted by EAY.

The current risk ratings are:

- The geotechnical risk is Low
- The surface water risk is High
- The initial EAY consequence rating is Critical (5) for both EOM and Completion of rehabilitation.

12.4.13.3 Conclusions

Additional geotechnical investigations of this domain are currently underway to improve the geotechnical model and the database and the results will be incorporated into future assessments.

The domain is characterised by a complex surface drainage layout. Because of the complexities of ownership and risk, and the logistical problems with implementing remedial measures in Because of the complexities of ownership and risk, and the logistical problems with implementing remedial measures in third party property it appears there would be major benefits in simplifying the whole domain surface water control system. This would entail, Figure 46:

1. Removing all the culvert diversions that cross under the railway; this is because Culvert 7 currently flows southward. Keeping the culvert is possible, with the construction of the drain to the pit lake level to manage flows during high flow conditions from Melbourne Swamp Drain.
2. Improve the Melbourne Swamp diversion so that it carries all surface water without potential leakage into the Morwell River Floodplain. This means lining at least the low flow of the diversion.
3. North of the railway incorporate simple drainage systems into the mine rehabilitation so that all waters within this area flow into the mine.

Because of the exposed height and the exposed height of coal, plus the stability of the coal betters themselves any substantial drainage structures in this domain carrying water into the pit will have to be lined and carried down to the in-pit dump level. These are permanent structures.

The qualitative risk for drain design is High.

12.4.14 YTF SWB

12.4.14.1 Setting

The general setting of this domain is discussed above in Section 12.4.12, which dealt mainly with the existing surface water controls and elements related to uncertainty and risk. There is one major valley in this domain and the geotechnical section, No. 20, is sited along this valley.

Geologically the domain has increased complexity because:

1. The Yallourn Monocline, a structure with dips ~ 25° gradually trends closer to the mine crest moving north, at Section 20 it is > 500 m from the crest, decreasing to ~ 250 m at the northern edge of the domain.
2. Historical movements increase in sympathy with this geological trend, increase in scale and extent towards the north.
3. There is some deformations on the mine batters.

There is an inpit dump ~ 25 m high abutting the lower coal batter. The ground surface elevation at the pit crest is around 90 mRL and with the final lake level of 37 mRL this results in:

1. The exposed height above final lake level is high.
2. The exposed height of coal is ~ 25 to ~ 35 m.

12.4.14.2 Hazards, Stability and Risk

The principal hazards are:

- Failure of the batters,
- Batter failure leading to failure and or adverse movement of the railway line and
- Failure of the Melbourne Swamp Diversion drain leading to local erosional failure under of the railway.

The Princes Freeway is around 425 m from the mine crest and too far away to be impacted by any batter instabilities.

Because of Melbourne Swamp Diversion drain running parallel and close to the mine batters the critical failure mechanism is block sliding, Inset 47. The main peripheral catchment valley also has block slide potential. For block sliding the analyses show:

1. At EOM the FoS is 1.2 reducing as lake fills to 1.06 for Block Slide.
2. The batters below the crest all have low FoS.
3. The FoS increases away from the crest and at 200 m the FoS is > 1.3. For Section 21, the railway is 200-230 m away from the crest, where the FoS is over 1.50.

If the Melbourne Swamp Diversion drain is removed or designed such that no connection with tension cracks could occur and the main valley along Section 20 has a drainage structure then the stability is controlled by multilinear failure where the FoS is > 1.5.

The current risk ratings are:

- The geotechnical risk is Medium
- The surface water risk is High
- The EAY consequence rating is Critical (5) for both EOM and Completion of rehabilitation.

12.4.14.3 Conclusions

The uncertainty around the future of Witts Gully Dam has design implications in this domain. If the dam is to be decommissioned, then the downstream flow must drain into MSD and not through Culvert 6. If the dam can remain operational with a flood mitigating storage, then connection to Culvert 6 into the pit would be feasible.

Nonetheless, a peripheral catchment drainage structure is required along Section 20 in the main valley. This structure should start 200 m southwest of the crest, west of the railway line via Culvert 6. Because of the exposed height and the exposed height of coal, plus the stability of the coal batters themselves a substantial drainage structure in this domain carrying water into the pit will have to be lined and carried down to the in-pit dump level. This is a permanent structure.

The flow from YTF HOB South along the Melbourne Swamp Diversion drain should be diverted in pit before the drain comes into this domain; this means alternate peripheral drainage is then required in YTF HOB South.

A plan showing the general additional peripheral drain arrangement is included in Appendix J and summarised in Figure 46.

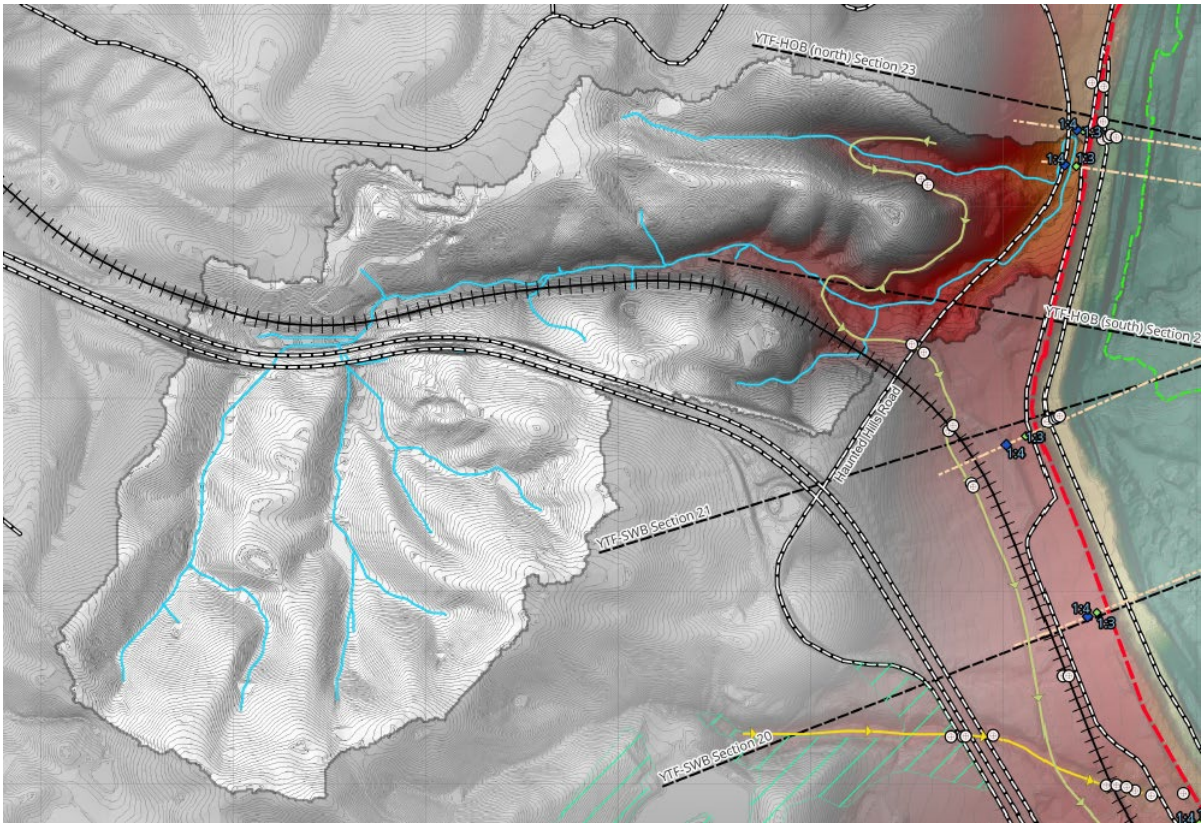
The qualitative risk for drain design is High.

12.4.15 YTF HOB South

12.4.15.1 Setting

The main elements of the domain are shown in Inset 49; Appendix J presents the existing peripheral catchment drainage arrangement. The domain comprises two valleys:

- The northern valley has a relatively small catchment, and
- The southern valley is much larger.



Inset 49: Landform and existing drainage YTF HOB South

The key rehabilitation factors include:

1. The topography is a deeply incised peneplain margin with heavily modified ground closer to the mine.
2. There are two separate valleys, which will require peripheral drainage structures, Inset 49.
3. The peripheral catchment is divided because the upper parts of both valleys is intercepted by Melbourne Swamp Diversion drain, which discharges to the south into YTF SWB and then YTF SB domains. The catchment area between the pit crest and Melbourne Swamp Diversion drain currently drains towards north-east then into YTF.
4. Haunted Hills Road runs between the Melbourne Swamp diversion and the mine crest and approaches very close to the crest at the boundary between YTF HOB South and North domains.
5. There is a up to 40 m high inpit dump abutting the lower coal batters.
6. The ground surface elevation is ~ 90 mRL and the final lake level just covers the dump, which means:
    a. The exposed height is high.
    b. The exposed coal height is ~ 40 m.

The Yallourn Monocline runs parallel to the mine batters and the area of steep bedding dip is around 200 m from the crest. There are substantial historical movements and these match the location and extent of the Yallourn Monocline. There are only limited deformations of the mine batters.

12.4.15.2 Hazards, Stability and Risk

The principal hazards are:

- Failure of the mine batters and
- Failure of the mine batters impacting on Haunted Hills Road.

The stability under block sliding for the peripheral catchment valleys is FoS > 1.1 reducing to 0.86 for lake full, which means peripheral catchment drains are required. The drains need to start 140 m from the pit crest and extend down to the inpit dump level. The drains need to be installed by around EOM in line with batter reprofiling works.

Assuming the drains are constructed the general stability in the domain is governed by multilinear failure with FoS > 1.9 at EOM and FoS > 1.6 at lake full. There is no critical pool level.

The distances of Haunted Hills Road from the mine crest are, Section 22 ~ 115 m and Section 23 ~ 70 m. Sections 21, 22 and 23 show the FoS > 1.3 for all sections and distances from the mine crest.

Based on this Haunted Hills Road realignment may not be required, this needs to be considered from a geotechnical stability viewpoint in detail with more seismic analyses in future detailed design stages. It is also noted that flatting of the batter slopes is required for rehabilitation and its extent may include the current road location.

The current risk ratings are:

- The geotechnical risk is Medium
- The surface water risk is High
- The EAY consequence rating is Moderate (3) for EOM and for completion of rehabilitation
- It is assessed that there is low continuing hazard from batter failure or batter failure impacting on the road (FoS >1.3).

12.4.15.3 Conclusions

Two peripheral catchment drainage structures are required in this domain from EOM. A plan showing the general additional peripheral drain arrangement is included in Appendix J and summarised in Figure 46. The qualitative risk for drain design is High.

12.4.16 YTF HOB North

12.4.16.1 Setting

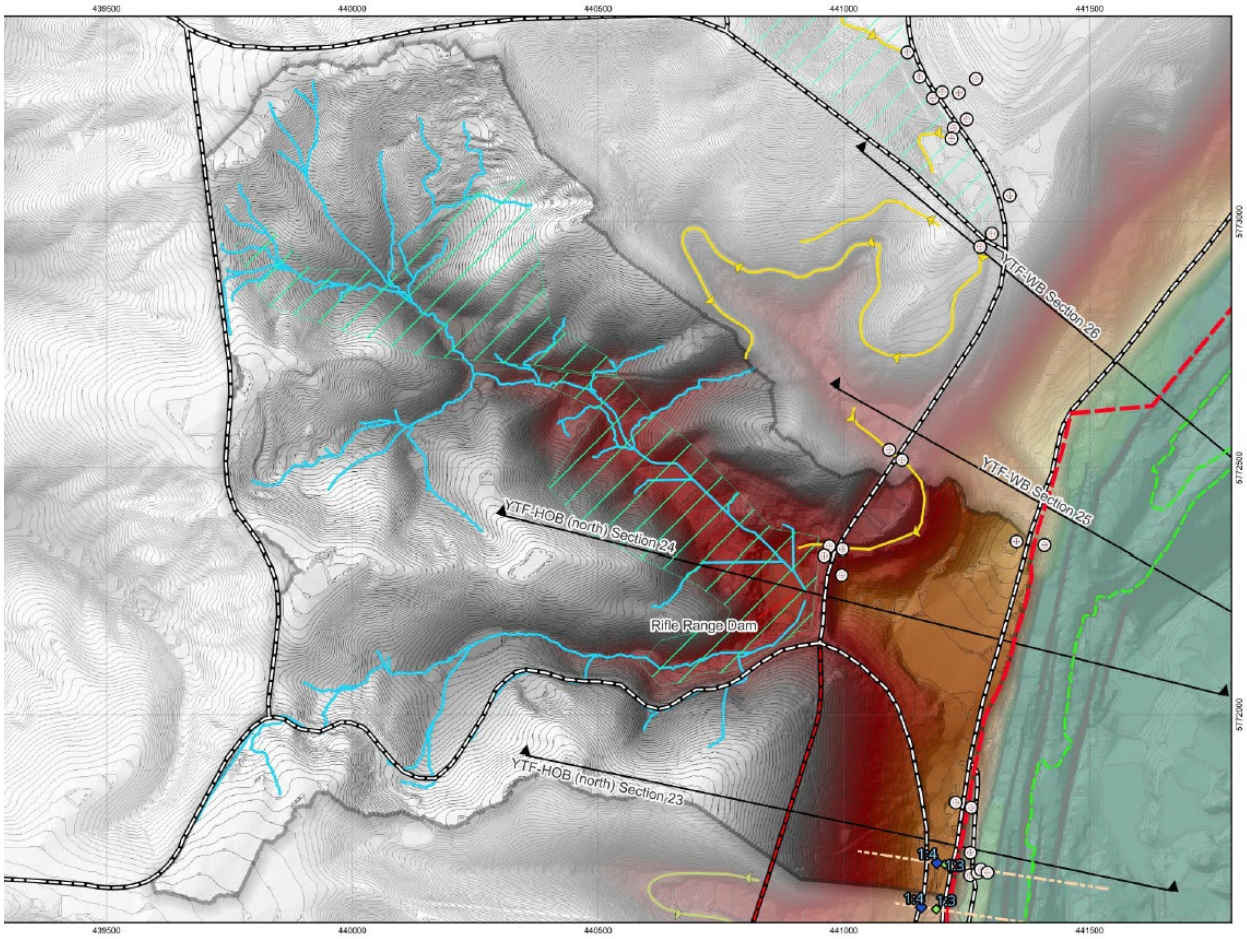
YTF HOB North is the area where failure of the exiting surface water diversions in 2011 caused widespread cracking and erosion of the mine batters, other historical issues are also present. While the diversion failure occurred well outside the mine, this resulted in deformations on the mine batters due to cracking along the coal benches and associated internal drains. Over the years following the stability incident some cracking spread to the west and was mapped on Haunted Hills Road.

The main elements of the site are shown in Inset 50; Appendix J presents the existing peripheral catchment drainage arrangement. Rifle Range Gully Dam is locate in this domain.

The key rehabilitation factors for this domain are:

1. The topography is steep and rising away from the mine, Inset 50.
2. The Domain is dominated by Rifle Range Gully Dam and its catchments, in summary there are three main topographic and infrastructure elements:
    a. Two separate Peripheral Catchment valleys that coalesce at De Campo Drive,
    b. Feed into the Rifle Range Gully Dam and
    c. De Campo Drive, which separates the steeper valleys to the west from the flatter topography closer to the mine and traverses the Rifle Range Dam Embankment.
3. There is one existing contour drain, yellow in Inset 50.
4. Although there is no engineering buttress, the lower coal batter is partly buttressed by an inpit dump ~ 20 high.

5. Because of the elevated and rising topography there is:
    a. The exposed height above final lake level is medium to high and
    b. This domain has ~ 40 m of coal exposure above final lake level.
6. Geologically this domain partially overlaps with the southern part of YTF WB. Section 24 in YTF HOB North is similar geologically to Section 25 in YTF WB, Figure 9. South of Section 25 the base of the Yallourn Seam flattens and becomes deeper, which means the Yallourn Seam Subcrop moves much further to the west.
7. The geotechnical sections and the deformation and movement plans show that:
    a. Pin movements away from the crest are not as large as YTF WB, but they have spread further west of the crest,
    b. Deformation cracking away from the crest reduces,
    c. Cracking and significant pin movement is more common near the mine crest, and
    d. The significant deformation zone is ~200 m wide measured from the mine crest.



Inset 50: Landform and Existing Drainage YTF HOB North

12.4.16.2 Hazard, Stability and Risk

The principal hazards are:

- Failure of the mine batters and
- Failure of the mine batters impacting on Haunted Hills Road and or De Campo Drive, or even further up to Rifle Range Dam.

The stability under block sliding for the peripheral catchment valley leading up to Rifle Range Gully Dam is FoS = 0.85 reducing to 0.63 for lake full, which means a peripheral catchment drain is required. The drains need to start 200 m from the pit crest and extend down to the inpit dump level. The drain needs to be installed by around EOM in line with batter reprofiling works.

Assuming the drain is constructed the general stability in the domain is governed by multilinear failure with FoS > 1.7 at EOM and > 1.6 at lake full. There is no critical pool level.

The FoS away from the mine crest remains > 1.6 so there is low risk to Haunted Hills Road or De Campo Drive. This is important to consider for the qualitative risk for drain design and this is one domain where the risk has been adjusted based on distance to an infrastructure-at-risk.

The current risk ratings are:

- The geotechnical risk is High
- The surface water risk is Medium to High
- The EA consequence rating is Moderate (3) for EOMand at completion of rehabilitation
- It is assessed that there is low continuing hazard from batter failure or batter failure impacting on the road (FoS >1.3).

12.4.16.3 Conclusions

Rifle Range Gully Dam includes pumping to maintain levels and hence the long term future of the dam needs to be considered by EAY. This is also important because the dam carries De Campo Drive along its crest. As shown in Inset 50 there is a large triangular shaped flat area on Section 24 below the dam where the start of the peripheral drainage structure will be sited. This whole area needs to be accounted for with the design of general drainage that should be linked to the major peripheral drain or controlled using a number of smaller down batter drains of simple construction.

The southern half of the domain just requires simple down batter drains and these could be incorporated into the general regrading of the batters.

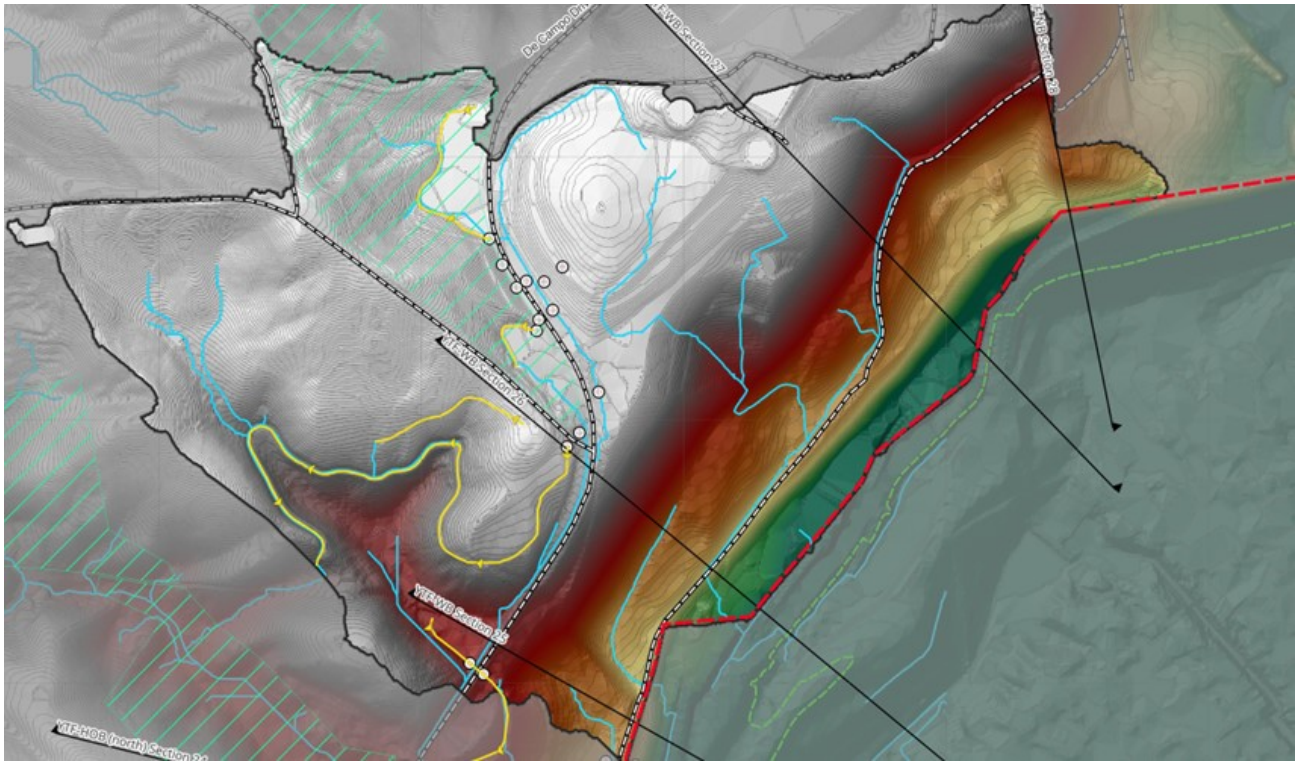
A plan showing the general additional peripheral drain arrangement is included in Appendix J and summarised in Figure 46.

The qualitative risk for drain design is Medium.

12.4.17 YTF WB

12.4.17.1 Setting

The main elements of the domain are shown in Inset 51; Appendix J presents the existing peripheral catchment drainage arrangement. The Western Batters of YTF have a long history of instability and movement. A substantial buttress with underlying batter drainage systems has already been constructed at the toe of the slope. Underlying this buttress is a coal wedge that was unmined with a ~28m thick internal dump constructed on top of the coal wedge.



Inset 51: Landform and Existing Drainage YTF WB

The key rehabilitation factors include:

1. The topography is steep and rising away from the mine and comprising six large topographic elements, as shown in Inset 51 and on the geotechnical sections. The topographic elements comprise:
   a. The mine batters.
   b. A large in-pit stabilising buttress.
   c. The upper modified slopes, which have been unloaded and moved them outside the Yallourn Monocline.
   d. The area of the external waste dump (Savages Road historic dump), Yallourn High Level Basin and storage tanks in the north located east of De Campo Drive.
   e. Two separate peripheral catchment valleys on the western side of De Campo Drive.
2. The mine batters in this domain comprise two separate components, the upper slopes and the lower mine batters. The substantial modifications to the upper slopes were undertaken historically by the SECV and these works are assumed to have been undertaken to stabilise the lower mine batters. These upper excavated and rehabilitated slopes are in good condition and showing minimal erosional and or stability problems.
3. The YTF WB is the area where the Yallourn Monocline approaches closest to the mine crest.
4. The buttress is in two parts, an upper buttress on the lower coal batters at ~ 10 to 40 mRL and an inpit dump which abuts the lower coal bench and is ov variable height from ~ 15 to 30 m high.
5. The existing drainage is a complex system of natural and man-made components. This existing system is showing signs of poor performance.
6. There is one significant peripheral catchment valley, on Section 25.
7. The geotechnical sections and the deformation and movement plans show that:
   a. In the southern two-thirds of the domain historical cracking, and the movement pins define a zone of movement that is coincident with the Yallourn Seam Subcrop (Yallourn Monocline).
   b. This is below and close to the toe of the 3:1 (H:V) upper modified slopes.
8. In the northern third of the domain the pit crest moves away from the subcrop and the monocline becomes more accentuated with a steeper rear section up to the subcrop and a flat section in front of this under the mine batters.

9. Overall, the limit of deformations and significant movements is defined by the effective Yallourn Seam Subcrop. Hence there is a well-defined geological and empirical monitoring limit defining the western limit of the rehabilitation surface drainage.
10. The ground surface elevation is ~ 65 to 75 mRL at the mine crest, but he ground surface rises up above this where the HHF overburden and some coal have been excavated as part of historical stabilisation measures. The final lake level covers the insitu dump and part of the buttress but it is low, which means:
    a. The exposed height above final lake level is high.
    b. The exposed coal height is ~ 15 to 50 m.

12.4.17.2 Hazards, Stability and Risk

The principal hazards are:

- Failure of the mine batters and
- Failure of the mine batters impacting De Campo Drive and or the external overburden dump.

De Campo Drive is situated outside the sub-crop of the Yallourn Coal Seam and hence cannot be impacted by any instability in the mine. Similarly all other internal infrastructure also lies outside the subcrop of the Yallourn Seam and cannot be impacted by batter instability.

Four sections, Nos. 25 to 28, represent the conditions in this domain. Sections 25 and 28 are located towards the northern and southern ends of the buttress, Inset 51.

Section 25 is along the axis of the main Peripheral Catchment and for block sliding the FoS is 1.06 at EOM increasing to 1.26 at completion of rehabilitation,Appendix H. For this mechanism the FoS increase to > 1.3 ~ 200 m west of the mine crest and this defines the start of the peripheral catchment drain. The stability analysis results are in good agreement with the deformation and movement data. There is a small drop in FoS for this mechanism as the lake fills but the FoS remains above 1.0. Along Section 25, the road is located beyond the zone of stability risk, ie, FoS over 1.5. This is important to consider for the qualitative risk for drain design and this is one domain where the risk has been adjusted based on distance to an infrastructure-at-risk.

With the peripheral catchment drain in place the stability over the remainder of the domain is based on Multilinear failure. For this mechanism the FoS > 1.4 at EOM and > 1.3 at completion of rehabilitation with the exception of Section 28, where the FoS falls to 1.12 at completion of rehabilitation. There is a small decrease in FoS with lake filling and the actual FoS is a function of the assumed groundwater pore pressure recovery. Because of the history of instability and the uncertainties around pore pressures it has been recommended that the buttress be extended north to cover this section line.

The current risk ratings are:

- The geotechnical risk is High.
- The surface water risk is Medium to High.
- The EAY consequence ratings are Moderate (3) for EOM and completion of rehabilitation.
- It is assessed that there is low continuing hazard from batter failure or batter failure impacting on the road (FoS >1.3).

12.4.17.3 Conclusions

In summary this means the principal zone of concern for rehabilitation design is protection of the mine batters and buttress from adverse water loading. This is the area below the upper modified slopes and inside the Yallourn Seam Sub-crop, Inset 51. The Yallourn Seam subcrop varies from 150 to 250 m from the mine crest.

The implications from the assessment of all the factors above is, Figure 46:

1. A single peripheral catchment drain is required to be constructed along the axis of the main valley at the southern end of the domain. The drain only needs to extend for approximately 200 m west of the mine crest. However, the system will be required to extend down past the mine crest and across the buttress and be installed at EOM, line with batter reprfiling works.

2. For the remaining area to the north a series of simple down batter drains is appropriate and these could be incorporated into the general regrading of the batters. The drains need to start approximately at the toe of the 3:1 (H:V) slope and extend to the buttress. The aims would be to:
    a. Try and maximise the use of the existing topography in the upper catchments as part of the drainage plan.
    b. Then link simple down batter drains within the 3:1 upper modified slope.
    c. Use multiple small drains to divide up the flows and therefore not compromise the buttress during Lake Filling.
3. Tidy up and simplify the current existing drainage system in the upper part of the catchment outside the Yallourn Seam Lower Contact Subcrop line to improve its performance and durability.

12.4.18 YTF NB and RCB

12.4.18.1 Setting

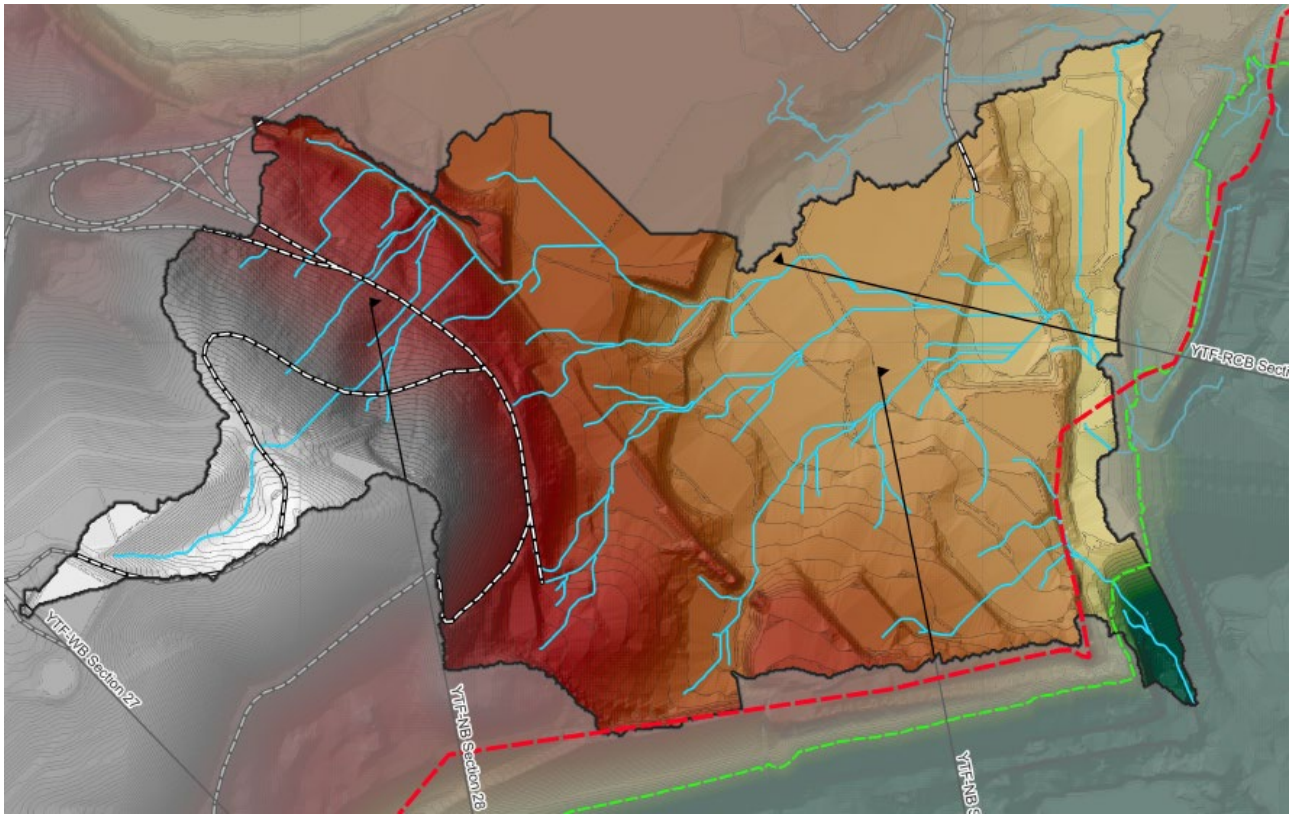
The main elements of the domain are shown in Inset 52; Appendix J presents the existing peripheral catchment drainage arrangement. The area covers the power station, mine offices, workshops and various elements of mine and power station infrastructure. The domains are elevated and generally flat lying with an overall drainage to the east into the mine, Inset 52 . The western end of YTF RCB has some elevated topography but this is expected to remain unchanged as a result of the rehabilitation. The two domains although separated for considerations of mine stability are really part of one overall landform and best considered together from a mine rehabilitation perspective.

There are two main drainage lines, the main catchment to the north which is directed down the access road into the mine under the RCB conveyor and the smaller southern catchment that is directed down the concrete mine access road into YTF, Inset 52.

There is currently a 25 to 30 m high inpit dump buttressing both YTF NB and RCB batters.

The exposed height above final lake level is very low to medium and the lake covers all coal in YTF RCB and there is a 10 m high exposure in NB.

The future inlet point for bulk water into the YTF pit for lake filling is likely to be located in this domain, exact location is yet to be determined.



Inset 52: Landform and Existing Drainage YTF NB and RCB

12.4.18.2 Hazards, Stability and Risk

The principal hazards are:

- Failure of the mine batters and
- Failure of the mine batters impacting on the small parcel of private land.

The stability is governed by multilinear failure and the FoS are > 2 for EOM and lake full. There is no critical pool level. Although the FoS does show some variability away from the mine crest the FoS remains above 2 and is ~ 2.5 to 3 in the area of the private land.

The current risk ratings are:

- The geotechnical risk is Low
- The surface water risk is Low
- For YTF NB, the EAY consequence rating is Moderate (3) for EOM due to mine infrastructure, reducing to Insignificant (1) for completion of rehabilitation
- For YTF RCB, the EA consequence rating is Moderate (3) for EOM due to mine infrastructure, and the completion of rehabilitation due to the presence of an external private land.

12.4.18.3 Conclusions

No specific drainage measures are required and the current two drainage paths into the mine could be maintained either as a single drain or as currently laid out. The current drainage path along the conveyor road can be maintained as long as sediment load does not impact the future MRD conveyor tunnel pipeline. No treatment of either drain is required at present and the qualitative risk for drain design is Very Low.

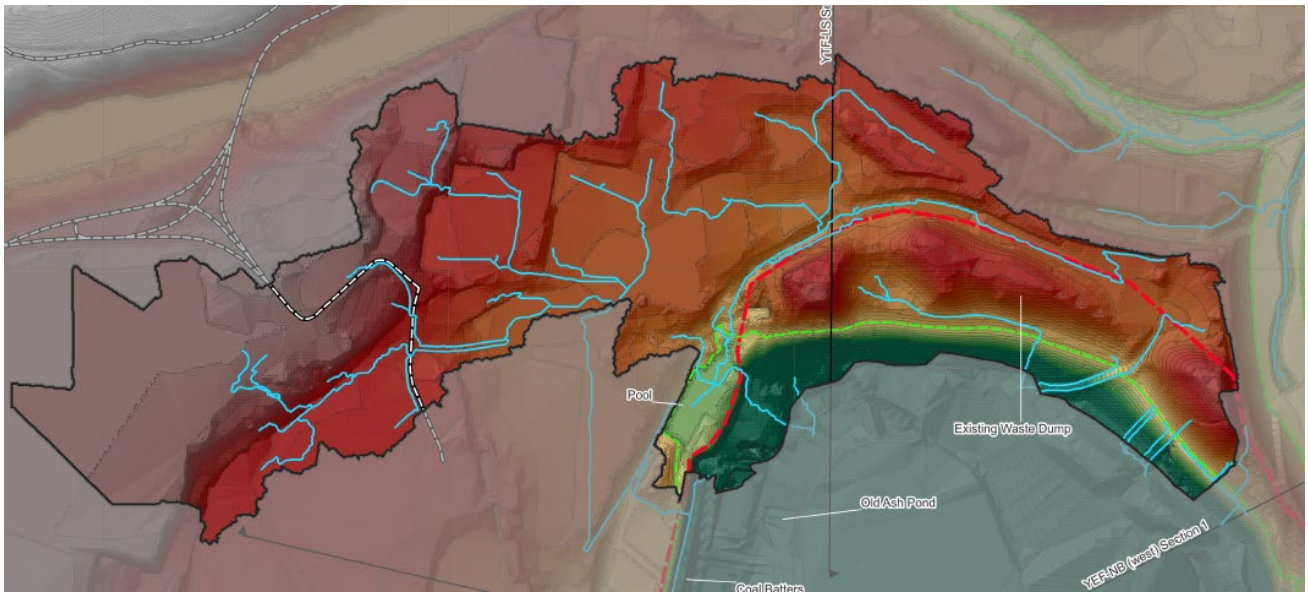
12.4.19 YTF LS

12.4.19.1 Setting

This domain lies adjacent to and south of the Latrobe River. The main elements of the domain are shown in Inset 53; Appendix J presents the existing peripheral catchment drainage arrangement. The area is relatively flat lying and extensively modified with man-made deposits, Figure 3. The ground surface elevation is around 45 to 50 mRL. The domain boundary is south of the Latrobe River, to the north of the domain there is along narrow area that drains into the river. The domain currently drains into the mine, Inset 53 .

There is a capped ash pond in the mine floor ~ 40 to 45 m high. Currently water flows to an old “concrete bunker” at the top of the northern end of the YTF RCB batters and then down to the mine toe. The drainage on the existing waste dump is also not very efficient.

The exposed height above final lake level is very low and the lake covers all coal.



Inset 53: Landform and Existing Drainage YTF LS

12.4.19.2 Hazards, Stability and Risk

The principal hazards are:

- Failure of the mine batters,
- Failure of the mine batters impacting on the Latrobe River and
- Encroachment of the Latrobe River into the mine during large floods.

The hazard caused by large floods is being assessed by others as part of the regional hydrological modelling.

The failure mechanism is multilinear and the FoS is > 1.7 and EOM increasing to >2 at lake full. There is no critical pool level.

The Latrobe River is ~ 400 m north of the mine crest. The subcrop of the Yallourn Seam is around 100 m from the mine crest. The FoS does not significantly decrease away from the mine crest and at 200 m away is ~ 1.8 at EOM and ~ 2.4 at lake full. Consequently there is no continuing hazard from batter failure or batter failure impacting on the Latrobe River.

The current risk ratings are:

- The geotechnical risk is Low
- The surface water risk is Low
- The EAY consequence rating is Major (4) at EOM and completion of rehabilitation because of the Latrobe River.

12.4.19.3 Conclusions

No special drainage measures are required and all drainage should be incorporated into the rehabilitation, although simplification of the current drainage system would be desirable. The qualitative risk for drain design is Very Low.

12.5 Summary of Domain Specific Surface Drainage

Table 21 presents a summary of the peripheral drainage system assessment for each domain.

Table 21 – Summary, Final Rehabilitation Outcome: Drainage, Stability, Risk

Domain	Section	Initial surface water Risk Rating	EA Consequence Rating		Qualitative risk for drain design	Hydrologic Likelihood (100 year design intent period)	Equivalent AEP	Design life & Construction timing	New peripheral drainage measures	Peripheral Drainage Description	Other Works required / indicative drain type
			EOM	Rehab complete							
YTF – LS	31	L	4	4	N/A (Very Low)	N/A	N/A	N/A : No specific drains are required	-	No drainage works required	N/A
YTF – RCB	30	L	3	3	N/A (Very Low)	N/A	N/A	N/A : No specific drains are required	-	No drainage works required; keep current drainage lines	N/A
YTF – NB	29	L	3	1	N/A (Very Low)	N/A	N/A	N/A : No specific drains are required	-	No drainage works required; keep current drainage lines	N/A
YTF – WB	25, 26, 27, 28	M/H	3	3 / 1	Medium (1) (for south)	30% (for south)	1 in 300	Permanent structures to be constructed around EOM. 100 year design life	1 new drain (south) from 200m west of pit crest then down batter to in-pit buttress. In north: series of small (regraded) swale and batter drains (no peripheral catchment structure required)	Aim to protect mine batters and buttress from adverse water loads North: a series of down batter drains from regrading of batter South: a single large batter drain down the mine and across buttress.	Small down batter drains – grass lined
YTF – HOB North	23, 24	M/H	3	3	Medium (1)	30%	1 in 300	Permanent structures to be constructed around EOM. 100 year design life	Rifle Range Gully Dam future uncertain. 1 new drain 200m west of pit crest then down batter to in-pit dump level, fully lined. Second order drains required	Consider long term future of Rifle Range Gully Dam. North: downstream of dam – down batter drains South: simple down batter drains	Down batter drains – may need to be lined depending on flow and gradient
YTF – HOB South	22	H	3	3	High (if road remains) Medium (if road re-aligned)	5% (if road remains) 30% (if road re-aligned)	1 in 2000 (High) 1 in 300 (Medium)	Permanent structures to be constructed around EOM. 100 year design life	2 new drains 140m west of pit crest then down batter to in-pit dump level Second order drains required	2 drainage structures required. Direct water in Melbourne Swamp Diversion into the pit before flowing into SWB	Drains – need to be lined Rework landform, which may include Haunted Hills Road
YTF – SWB	20, 21	H	5	5	High	2% (5% drain) for batter drain	1 in 2000 to 1 in 5000 (High)	Permanent structures. 100 year design life	Witts Gully Dam future uncertain. New down batter drain from 50m upstream of Culvert 6 to pit lake level, lined. Culvert 6 node: Option 1 (Witts Gully dam operational): connect dam outflows to culvert 6. Option 2 (dam decommissioned): connect dam outflows to MSD. Second order drains required	Permanent drain along Section 20 to in-pit dump. Do not take water from HOB S in Melbourne Swamp Drain.	Complex ownership Down batter drains – need to be lined and extend to in-pit dump
YTF – SB	18b, 19	H	5	5	high	2% (5% drain) for Melbourne Swamp diversion 5% for batter drain north of railway	1 in 2000 to 1 in 5000 (High)	Permanent structures. 100 year design life	Improve current MSD Second order drains required	Consider: Remove all existing culvert diversions (simplify and remove interactions with third party infrastructure) Upgrade Melbourne Swamp diversion to take all flows Catchment north of the railway simple batter drain into pit	Complex surface drainage layout, land ownership. Additional geotechnical investigations to improve the geotechnical model. Down batter drains – need to be lined and extend to in-pit dump,
YTF – FPB	17, 18	L	4	4	N/A (Very Low)	N/A	N/A	N/A : No specific drains are required	-	No drainage works required	N/A

Domain	Section	Initial surface water Risk Rating	EA Consequence Rating		Qualitative risk for drain design	Hydrologic Likelihood (100 year design intent period)	Equivalent AEP	Design life & Construction timing	New peripheral drainage measures	Peripheral Drainage Description	Other Works required / indicative drain type
			EOM	Rehab complete							
YTF – FSPB	16	L	4	4	N/A (Very Low)	N/A	N/A	N/A: No specific drains are required	-	No drainage works required	N/A
YEF – NB (West)	1, 2	L	4	4	N/A (Very Low)	N/A	N/A	N/A: No specific drains are required	-	No drainage works required; keep current drainage lines	N/A
YEF – NB (East)	3	L	1	1	N/A (Very Low)	99% (overtopping not critical to stability)	1 in 10	Drain conversion works to be done before lake filling. 100 year design life		No drainage works required; conversion of existing drainage lines to simple down batter drains	N/A
YEF – LRB	4, 5, 6	L	4	4	N/A (low)	N/A	N/A	N/A: No specific drains are required Prefer no concentrated flow, regrade catchment for sheet flow		No drainage works required (catchment is limited by the diversion bund, therefore stability and integrity of the bund is paramount)	Infilling of the in-pit sump River is close – risk of meander migration - Reinforce diversion bund with internal buttress
YEF – LREB North	7, 7b	M/H	3	3	Medium (2)	30%	1 in 300	Drain upgrade works to be done any time during rehab. 100 year design life	Either new down batter drain OR upgrade existing crest drain	Upgrade Culvert No. 4 Option 1: lined down batter drain around Culvert 4. Option 2: upgrade existing drain to Latrobe River	Option 1: line HHF and batter Option 2: grass lined Complex ownership Complex existing drains
YEF – LREB South	8, 9	M	3	3	Medium	30%	1 in 300	Drains need to be constructed before lake filling. 100 year design life.	New drain from Latrobe Road to pit and down batter drain to RL37m	Single structure at Culvert 7 from Latrobe Road into the pit The main drain at Culvert No. 7 needs to divert water to prevent a block sliding mechanism.	Complex ownership Complex existing drains Due to high HHF drains should be lined to protect from erosion.
YEFX – SB	10	M	1	1	Very low	99% (overtopping not critical to stability)	1 in 10	Drain construction works to be done any time during rehab. 100 year design life	New down batter drain from mine crest to in-pit dump (no peripheral catchment drain required)	Single structure from mine crest to in-pit dump	
MVF – EB	11	M	2	2	Low	99% (overtopping not critical to stability)	1 in 10	Drain construction works to be done any time during rehab. 100 year design life	Modification of remnant MWD direction Option 1: new drain from intersection directly to pit lake level, low flow lined in HHF Option 2: utilise existing ramp grade as a drain, unlined	Use valley as main surface water control with minor drains discharging into the valley.	Unlined. Works on the remnant Morwell West Drain to reverse direction and connect it to the pit directly
MVF – SB	12, 13	M (for remnant drain)	1	1	Low (separate for Morwell West Drain)	99% (overtopping not critical to stability) (MWD is different)	1 in 10 (MWD is different)	Drain construction works to be done any time during rehab. 100 year design life	New down batter drain connecting existing drain to lake level (lined in HHF)	Maintain current Morwell West Drain diversions Single structure along valley at Section 12	Assumes diversion of majority of water via Morwell West Drain – the integrity and capacity of the MWD needs to be checked and maintained Due to catchment size this should be lined
MVF – WB	14, 15	L	3	1	N/A (Very Low)	N/A	N/A	N/A. No specific drains are required		No drainage works required; keep current drainage lines	N/A

Notes:

(1) YTF WB & YTF-HOB N: the stability analyses show low FoS however on the balance of consequence level and geotechnical risk, a medium risk for drain design has been assigned to this domain.
(2) YEF – LREB N: the stability analyses show high FoS however on the balance of consequence level and geotechnical risk, a medium risk for drain design has been assigned to this domain.

13. Rehab Batter and Landform Design and Stability Implications

A comprehensive stability assessment has been undertaken, for all mine batters as well as along the MRD, to assess the likely future risks to stability. It has been assessed that buttressing and pit lake filling is effective to increase the stability of the mine batters.

Peripheral drainage is required in specific domains to remove surface water from batters, see Section 12, which also has discussions on actions for geotechnical stability.

For the MRD, it has been assessed that it has sufficient global and local stability as a structure. Other deterioration mechanisms that pose a primary risk and the resulting design for MRD is discussed in Section 13.

Consideration of infrastructure, existing landform, geotechnical risk, surface water risk, geomorphology and geology leads to the following recommendations on rehabilitation batter slopes. Design inputs for rehab batter surfaces are:

- Domain risk category
- Infrastructure at risk
- Design intent period
  - Peripheral catchment drainage structures
  - Slopes above Final Lake Level

Typical final rehab landform will also be dictated by:

- Lake level with respect to geology
- Surface material type and existing slope
- Slope stability requirements
- Peripheral drainage requirements

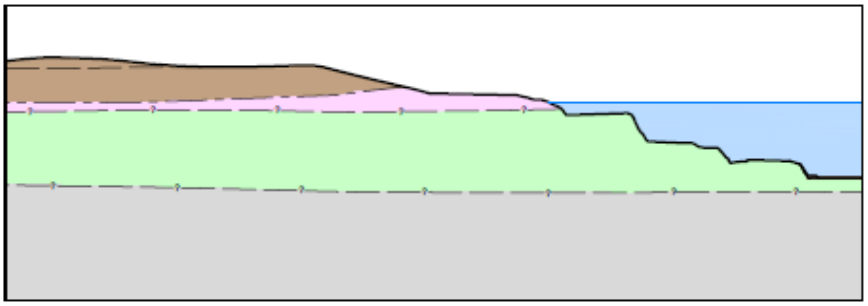
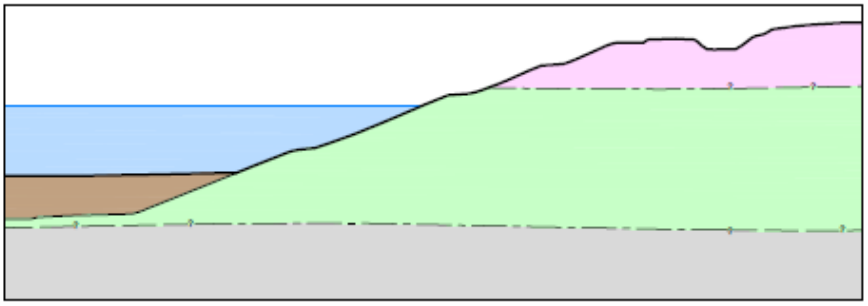
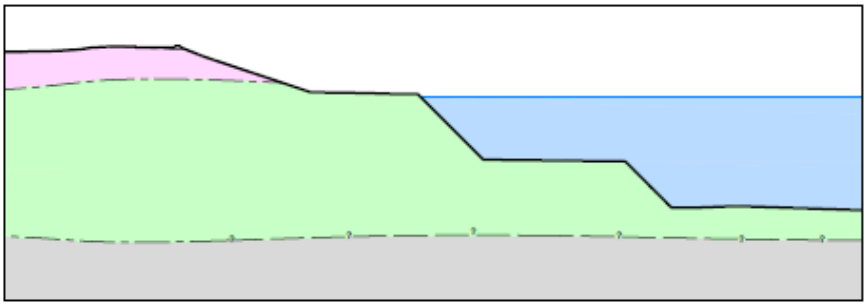
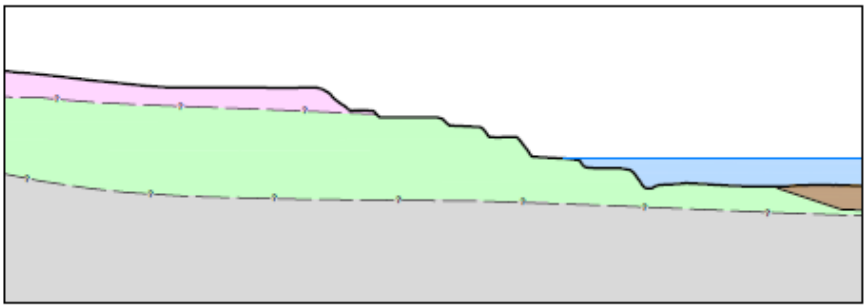
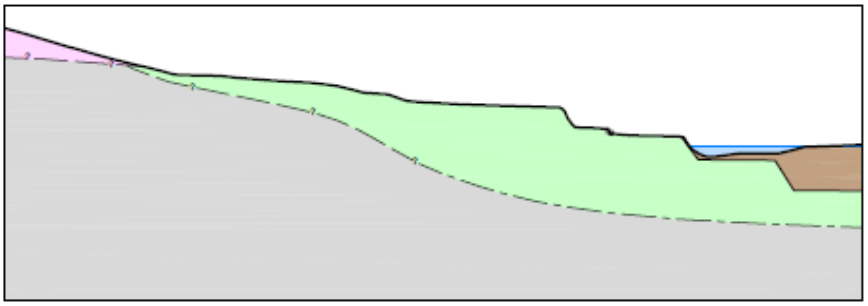
Generally the current landform:

- Fill or HHF insitu, or a combination of the two, no coal exposed above Final Lake Level.
- Minor coal exposed above Final Lake Level with no benching and slopes <3H:1V, insitu HHF overlying.
- Wide flat bench of coal at or near 37 mRL and/or minor coal batters less than 3H:1V exposed above Final Lake Level with insitu HHF above.
- Significant coal exposed above Final Lake Level with multiple small batter/berms steeper than 3H:1V, insitu HHF overlying.
- Significant coal exposed above Final Lake Level comprising broad slopes or multiple steep batters and wide berms, no HHF.

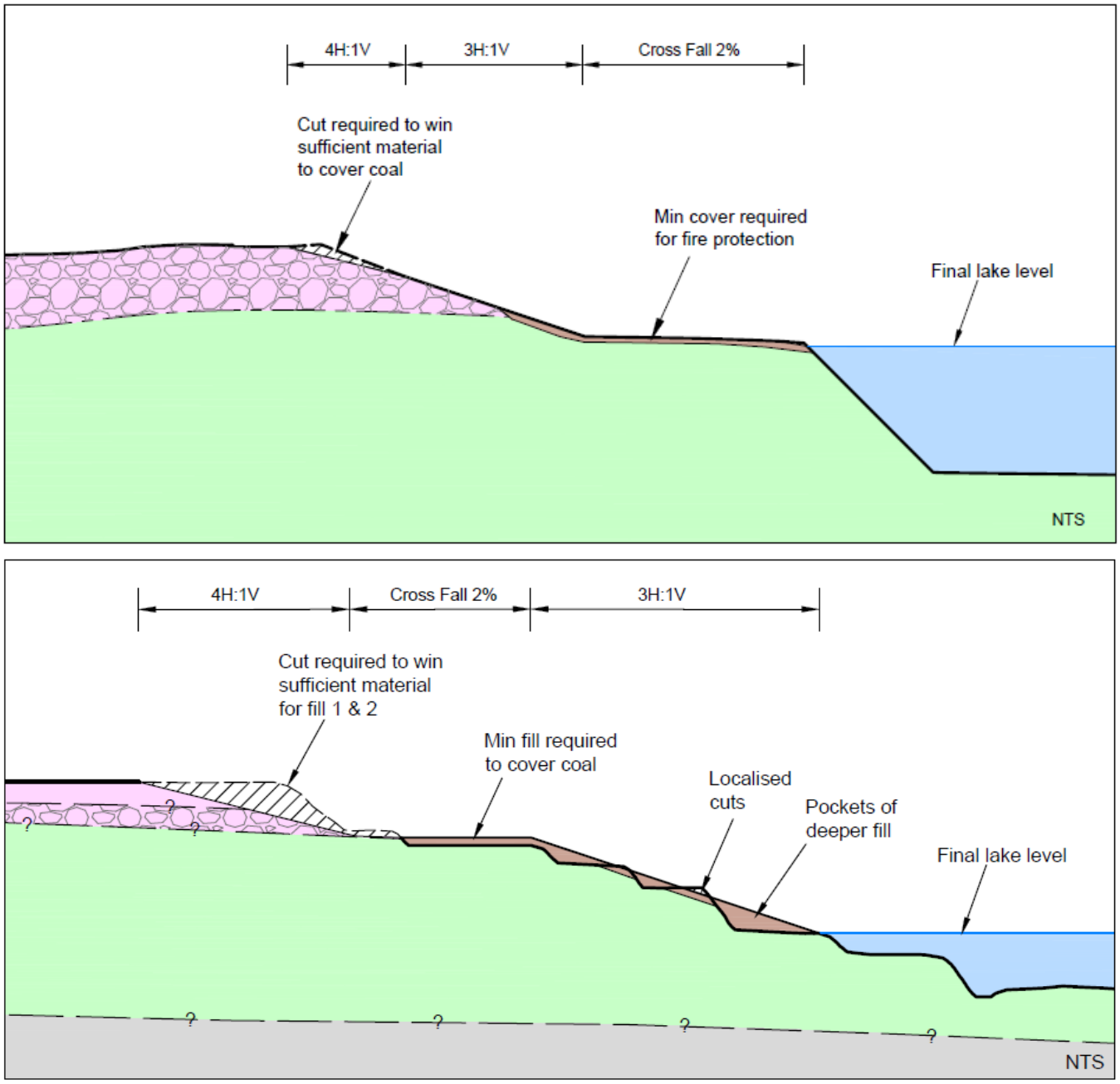
Inset 54 presents a range of current typical sections around the mine.

Batter treatment for achieving long term stability and durability includes, Inset 55:

- Slopes below Final Lake Level do not require treatment
- Coal protection from fire (cap), otherwise no treatment
- Regrading of HHF (to no less than 3H:1V, preferably to 4H:1V) for long term stability and protection from scour
- Earthworks associated with peripheral drains.

	Closure slope configuration above RL37m	Relevant Sections	Typical Profile
1.	Fill or HHF insitu, or a combination of the two, no coal exposed above Final Lake Level (FLL)	1, 2, 3, 4, 5, 6, 7, 16, 17, 18, 30, 31	
2.	Minor coal exposed above Final Lake Level (FLL) with no benching and slopes <3H:1V, insitu HHF overlying	8, 9, 10, 12, 13, 28, 29	
3.	Wide flat bench of coal at or near RL37m and/or minor coal batters less than 3H:1V exposed above Final Lake Level (FLL) with insitu HHF above	11, 14, 15, 25	
4.	Significant coal exposed above Final Lake Level (FLL) with multiple small batter/berms steeper than 3H:1V, insitu HHF overlying	19, 20, 21, 22, 23, 24	
5.	Significant coal exposed above Final Lake Level (FFL) comprising broad slopes with or without multiple steep batters and wide berms, no HHF	26,27	

Inset 54: Typical mine batter landform sections



Inset 55: Typical rehab landform treatment options

14. MRD Rehabilitation Design

14.1 Background, History, Design Intent and Performance

14.1.1 Introduction

The future of the MRD beyond EOM is an integral part of the overall Yallourn Mine Rehabilitation strategy. However, there are very large question marks and uncertainties with this structure mainly relating to deficiencies in its design, construction and performance. The MRD design documents state that it was designed and constructed to the standards of a large dam, however, this design intent is not supported by the performance since it was completed.

This section presents a discussion of the background, history, design intent and performance of the MRD relevant to the Design Intent Period and the future role of the MRD.

14.1.2 Background

14.1.2.1 History of MRD

Planning and concept assessment of the MRD had been ongoing for a long period before it was approved and constructed between 2002 to 2005. The MRD has now been in operation for around 20 years. The principal design document for the MRD was issued in 2005, after construction was completed, which is considered unusual for a structure like the MRD. The design itself changed in the stages from concept to construction and was finalised over the period of construction.

The current MRD alignment was one of many options being considered in the period up to around 2002. Consequently, it is referred to variously in the documents prepared at that time as the Alternate Morwell River Diversion (AMRD) and or MRD Option 9. In this report the current Morwell River Diversion is simply referred to as the MRD.

During early considerations the original concept for the MRD was to re-locate it outside the mine with the proposed alignment, termed the Eastern Alignment, running along the southern and eastern sides of Yallourn Eastfield (YEF) and Maryvale Field (MVF). This option mainly entailed an excavation into natural materials. By comparison the as-built MRD (Option 9) runs to the northern mine edge, Figure 1, through the middle of Yallourn Mine with a fill construction founded on a mix of old dump (the Midfield Overburden Dump) and along the top of a pillar of coal left in place between the old Township Field (YTF) and YEF.

14.1.2.2 Original Design Intent of the MRD

The documents prepared over the period in the late 1990s covering planning, design and construction of the original MRD concept and the current MRD use terms related to both the Design Life and the Design Intent. Some references refer variously to periods of 50 years, but 30 years is also used. These differences are explained by the nature of the structures under consideration at the various times, for example the Eastern Alignment or the MRD, and also by the fundamental difference between Design Life and Design Intent.

Notwithstanding this, the Design Intent has remained relatively unchanged throughout the process and entails construction of a diversion of the Morwell River to allow open cut mining to the end of the operating life of the mine in MVF. This was the Design Intent. There were also some references to a subsequent period where the MRD continued to operate for rehabilitation after mining, but this was never defined and no time period(s) were given. In that context it is difficult to see how an unknown timeframe could have been incorporated into the design by the designers. The design intent for the MRD in its current in-pit location has always been to permit mining of MVF to the end of planned mining, originally around 2032. Although the exact end date for completion of mining has changed somewhat, the Design Intent Period for mining MVF has remained consistent at around 30 years.

However, if the MRD was designed and constructed to the standards of a large dam, which was the stated intent of the designers, then based on discussions in Section 8.4 this should have resulted in a design life of around 100 to 150 years.

14.1.2.3 Experience with Earth Structures Relevant to the MRD

The studies for engineered mine waste structures at mine closure, refer to Section 8.5 and Reference 2, used a residual environmental risk potential framework (Inset 11) to classify an engineered earth and rock structures constructed at a mine and their applicable Design Intent Periods. The design used a nominal maximum Design Intent Period of 75 years and defined the Design Intent Periods mainly in relation to residual environmental risk as:

- Low Risk – 25 years,
- Significant Risk – 50 years and
- High Risk – 75 years.

The risk categorisation was carried out in accordance with a government manual (Dept of Environment and Heritage Protection (Qld) (DEHP) 2016; Manual for Assessing the Consequence Categories and Hydraulic Performance of Structures; ESR/2016/1933 (Version 5)) that covers both dams and levees.

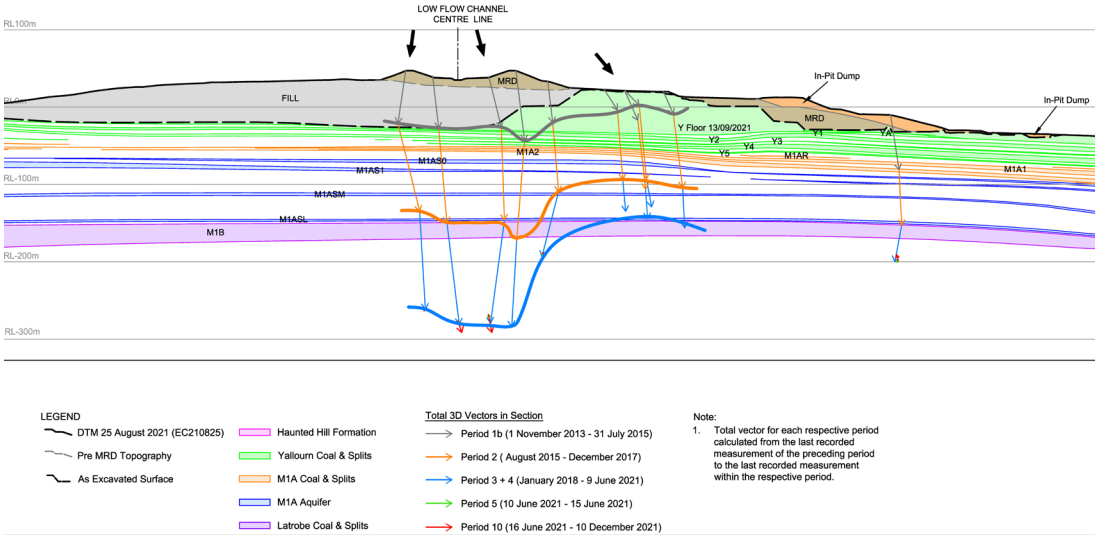
14.1.3 Performance since Completion

In summary the MRD is quite a complex engineering structure, comprising, Inset 56:

- A compacted fill soil structure,
- Constructed partly on an old waste dump (MOBD) and partly on an insitu coal dyke;
- That sits 75 to 80 m above the floor of the adjacent mine,
- That is subject to time, environment and mining induced movements;
- That annually continues to develop multiple deformations, and
- Which is now approaching the end of its Design Intent, that is to allow completion of mining in MVF.

The statement that the Design Intent of the MRD is equivalent to a large dam is not supported by the performance since construction as illustrated by:

1. The 2012 Failure and June 2021 Stability Incident. The 2012 Failure and June 2021 Stability Incident were caused by seepage and or seepage pressures developing beneath the MRD during flood phases and caused by loss of integrity of the structure. These stability events had long gestation periods, developed over many years and involved complex movements and interactions.
2. There has been deformation of the structure over many years, associated with adjacent mining, poor and variable foundation conditions and poor engineering materials used for construction, Inset 9. This is illustrated in part by the complexity of the movements experienced by the MRD over time and which are continuing, Inset 56. It should be understood these deformations are occurring to a structure made from soil and which is expected to hold water without any losses, i.e., a dam.
3. Biannual inspections of the MRD continue to identify hundreds of defects along the length of the structure.



Inset 56: Geology and Geometry of the MRD and example of vertical (differential) movement recorded along the MRD between November 2013 and December 2021

14.1.4 Risks to the MRD

For MRD rehabilitation, a high level of risk associated with mining (from mining induced movements and other loading changes) is substantially removed once end of mining is reached.

As a result of this combination of factors, the MRD structure is considered to be compromised in regard to some of its original design intent, which included carrying Morwell River environmental flows and flood flows up to 1 in 10,000 year events. The main geotechnical risks for the MRD rehabilitation are at two scales:

4. Time dependent deterioration: ongoing cracking, piping, dispersion, sinkholes and tunnel erosion of the MRD materials leading to progressive time dependent deterioration and loss of integrity of the structure.
5. Flooding:
    a. Water loads associated with higher floods in the Morwell River and/or Latrobe River,
    b. Opening of existing cracks and or development of further cracking leading to adverse water pressures in the structure and in its foundations, the coal and the Midfield Overburden Dump; and
    c. Both of which become more critical as the flood levels increase.

These risks could manifest themselves as either major failure of the sides of the MRD, similar to the 2021 Stability Incident, and or internal erosion leading to piping failure, similar to the 2012 Failure.

The risks of overall failure of the MRD can be mitigated by lake filling to 37 mRL. However, if the current MRD geometry remains unchanged, the ongoing risk of internal erosion and piping failure would continue and probably increase with time.

14.1.5 Summary of MRD Historic Design, Construction and Status

In summary:

1. The Design Intent for the MRD has remained the same through all the project stages, that is to divert the Morwell River to allow mining of YEF and MVF. This was to the EOM in 2032, a planned design life of around 30 years.
    a. While a 50 year Design Life was used in the original planning documents for the Eastern Alignment and was notionally carried through into the current MRD, this 50 year design life was for a different MRD structure, the Eastern Alignment, in a different location, located outside the mine and with a different design.
2. The previously approved rehabilitation concept (2002) and the approved mine plan in 2018 (Section 4.3) is flooding of the mine after MVF is completed although this has not been fully engineered. The MRD is to be maintained as a hydraulic structure in this concept and not connected to the flooded mine in YTF or YEF/MVF.
    a. Separate connections between the rivers and mine, formed upstream from Morwell River into YTF and downstream from the Latrobe River into YEF, are part of this approved rehabilitation concept.
    b. Due to these separated connections to rivers, sometime after EOM the MRD would not be carrying the original design flood levels and will no longer fulfill this original design function.
    c. There is an expectation the MRD would remain in some form and with some functional capacity for some or all of the flooding period, yet undefined.

The above summary provides a good basis to develop the Rehabilitation Design objectives contained in this report.

14.2 MRD Rehabilitation Design Objectives

Based on the original design and costing it is considered neither technically nor economically feasible to completely rebuild the MRD. It has become clear over the 20 years since commissioning that the MRD is compromised and hence the rehab design needs to be adapted to maintain some of its original planned functionality, in particular its environmental functionality. The only feasible solution would be to re-purpose the MRD to a simpler and more durable structure geotechnically, while maintaining much of its original environmental design intent and function, achieving a favourable environmental outcome for the MRD within the Yallourn Rehabilitation.

Using the risk categorisation standard in Section 8.5.1 the MRD re-purposed as a levee classifies as Low Risk and the applicable Design Intent Period would only need to be in the 25 to 75 year range. Notwithstanding this the new design intent would be that the MRD continues to carry the environmental flows and lower level floods through the

rehabilitation Design Intent Period of 100 years. This approach is broadly in accord with the adaptive concepts as set out by LVRRS and in the DELWP (now DEECA) guidelines.

14.3 Design Investigations and Studies

14.3.1 Introduction

The overall aim of the MRD feasibility design is to maintain the MRD as a functional structure for the Design Intent Period, this is the new Design Intent. The feasibility design for the MRD comprises three main components and three supporting studies covering more narrow technical aspects:

1. Basis of Design.
2. Site Investigations and material parameter selection.
3. Design, with supporting studies/assessments:
    a. Assessment of Settlement.
    b. Assessment of and design for Wave Action.
    c. Assessment of Liquefaction Susceptibility.

14.3.2 Basis of Design

14.3.2.1 General

The Basis of Design assesses feasible approaches to meet this overall design aim and determines the Performance Requirements (PR) which supports the Design. It also sets out the future performance requirements for the MRD as part of the Design Intent. Noting that these PR's may vary through the different stages from Mine Operations, EOM, Rehabilitation, Lake Filling and Post relinquishment.

The key underlying assumption of the PR's is that the MRD will require ongoing maintenance throughout its design intent.

The Basis of Design sets out the geometry, characteristics and components of the MRD, which has been divided into a series of domains based on, Figure 36:

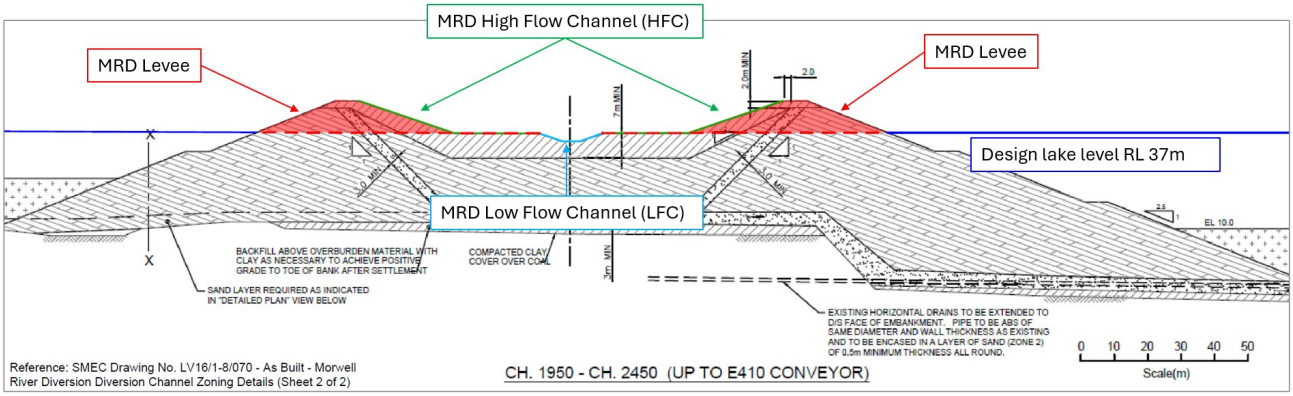
- The subsurface conditions,
- Embankment designs,
- Embankment geometries and
- Remediations.

This is then used to identify:

1. The ground mechanisms potentially affecting the ability of the MRD to achieve the Performance Requirements within each domain.
2. The susceptibility of the MRD to these mechanisms over the Design Intent Period.
3. The general level of maintenance that will be needed has to be progressively detailed and refined with the development of the detailed design and performance monitoring.
4. Additional investigations as required to assist in defining these three elements.

A typical section presenting the terminology for the MRD is presented in Inset 57. This is important because different Performance Requirements and maintenance regimes are required for the various components. The terminology includes:

- HFC: high flow channel, the plain for flood flows
- LFC: low flow channel, existing
- Levee: the MRD embankments, regraded for rehab.



Inset 57: MRD Terminology

14.3.2.2 Design Assumptions and Qualifications

The following assumptions form part of this Feasibility Design:

1. The final lake level will be around 37 mRL.
2. The lake filling is generally planned from 2028 for a period of 10 to 20 years (design case assumes 20 years).
3. The current hydraulic capacity of the LFC is acceptable and the current environmental performance of the MRD is satisfactory.
4. The synthetic clay liner within the MRD Repair domain remains covered and will remain functional for the Design Intent Period.
5. The three conveyor tunnels will be maintained as a hydraulic link between the two pits with:
   a. Large diameter flexible pipes placed through the existing tunnels,
   b. The anulus between the pipes and tunnels filled (concrete or grout) and
   c. This is assumed to be a permanent hydraulic link with very high reliability.

In addition to these assumptions there are a number of qualifications which will need confirmation from other studies including:

1. Studies for regional hydrology, water availability and the mine lakes are in progress by others and when completed the Performance Requirements set out below will need to be updated or restated.
2. The regional hydrology studies may also result in modifications to spillway and levee levels and spillway locations.
3. The detailed construction sequencing for the MRD is yet to be determined. There are a number of competing risks and once timing of the lake filling is better understood, staging of the rehabilitation works can be planned to balance the competing risks. In summary:
   a. Ideally, from a geotechnical perspective the MRD Rehabilitation Design should be implemented as soon as practicable because:
      i. It will reduce the risks from further deterioration.
      ii. Allow for effective monitoring and assessment of the MRD during the rehabilitation period.
      iii. An extended period of monitoring will better inform EAY and stakeholders about the long-term maintenance needs.
   b. However, this means the MRD rehabilitation works are completed before substantial lake filling (the lakes may be at low levels) and with ongoing embankment movements / settlement, potentially requiring rework at a later time. In addition, the MRD spillways will spill down the outside of the existing MRD embankments and could entail additional risks and require additional construction.

14.3.2.3 Performance Requirements

The PR's are:

PR1

The LFC has capacity to transmit the designated low flows of up to 46 m^3/s, from south to north uninterrupted over the Design Intent Period with reasonable maintenance works. Studies by Alluvium define the environmental flow as 2,200 ML/day (25 m^3/s). This means that LFC alone is needed to transmit the full environmental flow.

PR2

The MRD Levees and HFC, in combination with LFC, can transmit above the Morwell River environmental flows during the Design Intent Period, while capping flood levels to below RL40 m AHD at the southern end of the MRD. Consequently, Morwell River floods above 40 mRL can be diverted into the pit lake system and in the long term be transmitted to the Latrobe River via the pit lake outlet.

Following large flooding events, temporary and partial loss of this capacity is acceptable provided capacity can be restored with reasonable maintenance works.

PR3

The MRD Levees shall be designed to minimise the risk of potential loss of the LFC whilst targeting a reasonable maintenance schedule. This is particularly relevant to the elevation of the top of the MRD Levees which controls the maximum water surcharge driving most of the ground mechanisms and the frequency of overtopping. Both factors are important for defining the maintenance requirements for the MRD Levees.

PR4

The MRD Levees shall be designed, constructed and maintained in general accordance with the Victorian Levee Maintenance Guidelines, which states:

- They classify as Rural levees because they do not protect urban environments,
- The Hazard Classification is Low and
- With regards to the level of protection, the Guidelines state:

"The level of protection for rural areas tends to vary, but generally should be around the 10% to 5% AEP (10-20 year return period) flood. A rural levee designed to a higher level of protection will confine larger floods, which will have an increased cumulative effect further downstream, which is not desirable."

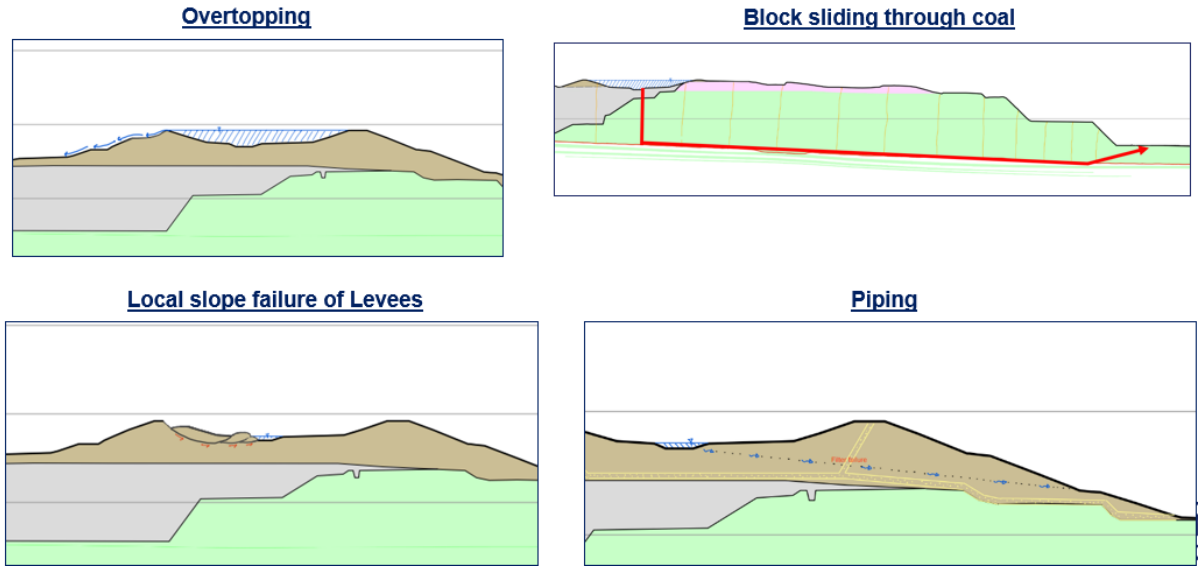
The flood level of 40 mRL has a recurrence interval of approximately 5 to 10 years, which meets PR1 and PR2. Large Latrobe River floods result in water backing up along the MRD. The detailed flood modelling being undertaken by others will allow the flood levels in the MRD from this to be determined. Protection from Latrobe River floods requires balancing of overtopping frequency with surcharging resulting in activation of other ground mechanisms. The intention is an emergency spillway will be incorporated into the design at an appropriate location. This will be assessed when the detailed modelling is completed.

14.3.2.4 Potential Failure and Deterioration Mechanisms

The historic performance and ongoing monitoring have shown the MRD has already and will potentially in the future be impacted by a number of different failure and deterioration mechanisms:

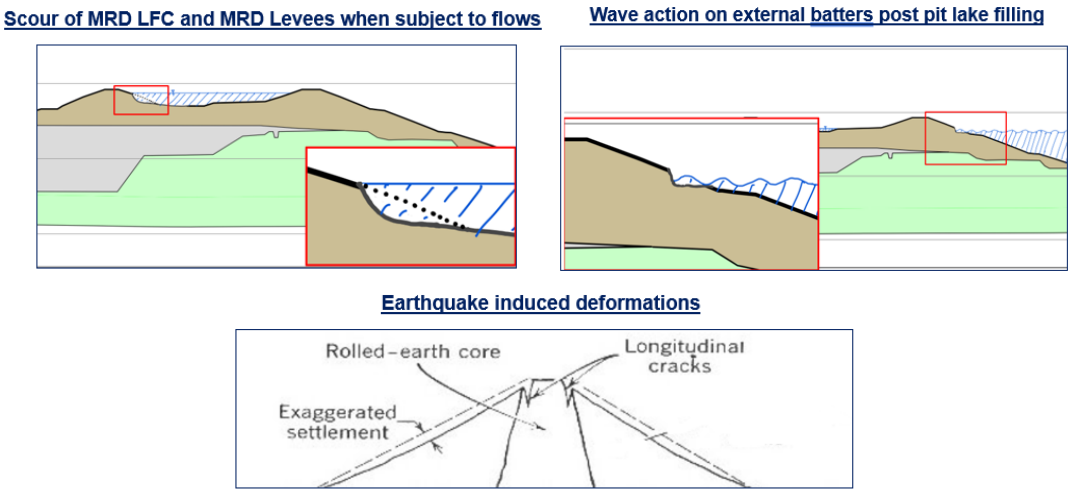
1. Potential failure mechanisms, Inset 58:
    a. Block sliding of coal in the MRD foundations resulting in loss of the LFC and levees.
    b. Local slope failure of the levees:
        i. On internal slopes, partial or complete levee loss.
        ii. On external slopes, partial or complete levee loss and loss of LFC.
        iii. Overtopping leading to partial or complete levee loss and loss of LFC.
    c. Piping:
        i. Under average conditions, piping from LFC to the outside of the MRD leading to loss of LFC and MRD Levees.

ii. Under flood conditions, piping through the levee to the outside of the MRD leading to partial levee loss, total levee loss or loss of LFC.



Inset 58: Potential MRD Failure Mechanisms

2. Potential deterioration mechanisms, Inset 59:
   a. Mining induced deformations leading to:
      i. Cracking of the MRD and or
      ii. Hydromechanical coupling between MRD and the underlying Yallourn Seam.
   b. Settlement leading to:
      i. Cracking of the MRD and or
      ii. Loss of surface grades and or
      iii. Loss of freeboard and or
      iv. Low points exacerbating the effects of overtopping.
   c. Reactive soil movements leading to:
      i. Near surface cracking and or
      ii. Initiation of tunnel erosion and or
      iii. Initiation of localised slumping/slope instability.
   d. Surface and tunnel erosion leading to:
      i. Initiation of localised slumping/slope instability and or
      ii. Initiation of piping mechanisms and or
      iii. Localised settlement.
   e. Scour of LFC and MRD Levees when subjected to flows leading to initiation of localised slumping/slope instability of internal batters.
   f. Wave action on external batters post pit lake filling leading to initiation of localised slumping/slope instability of external batters.
   g. Earthquake loading and earthquake induced deformations leading to:
      a. Instability and or
      b. Cracking of the MRD and or
      c. Loss of surface grades and or
      d. Loss of freeboard and or
   e. Low points exacerbating effects of overtopping.

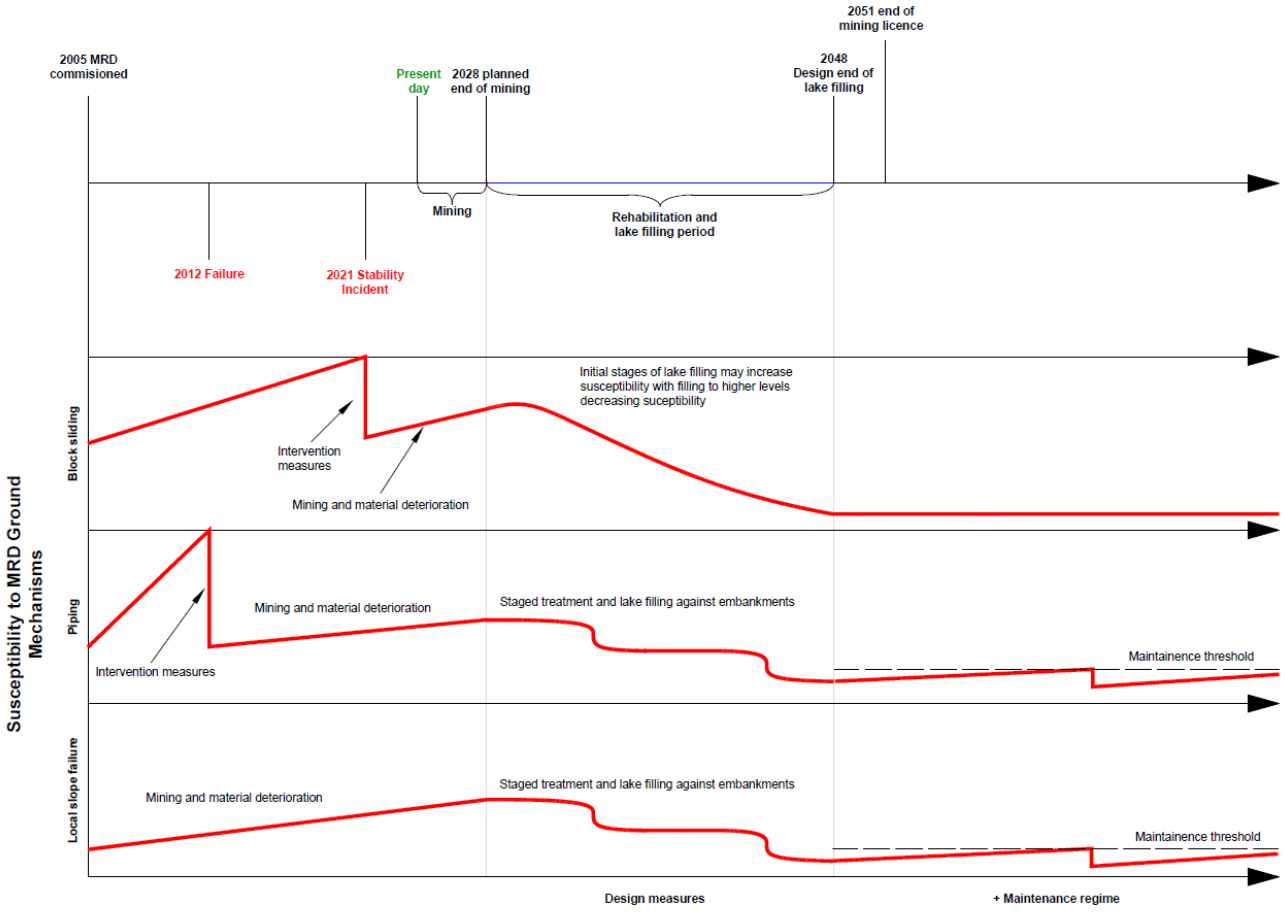


Inset 59: Potential MRD Deterioration Mechanisms

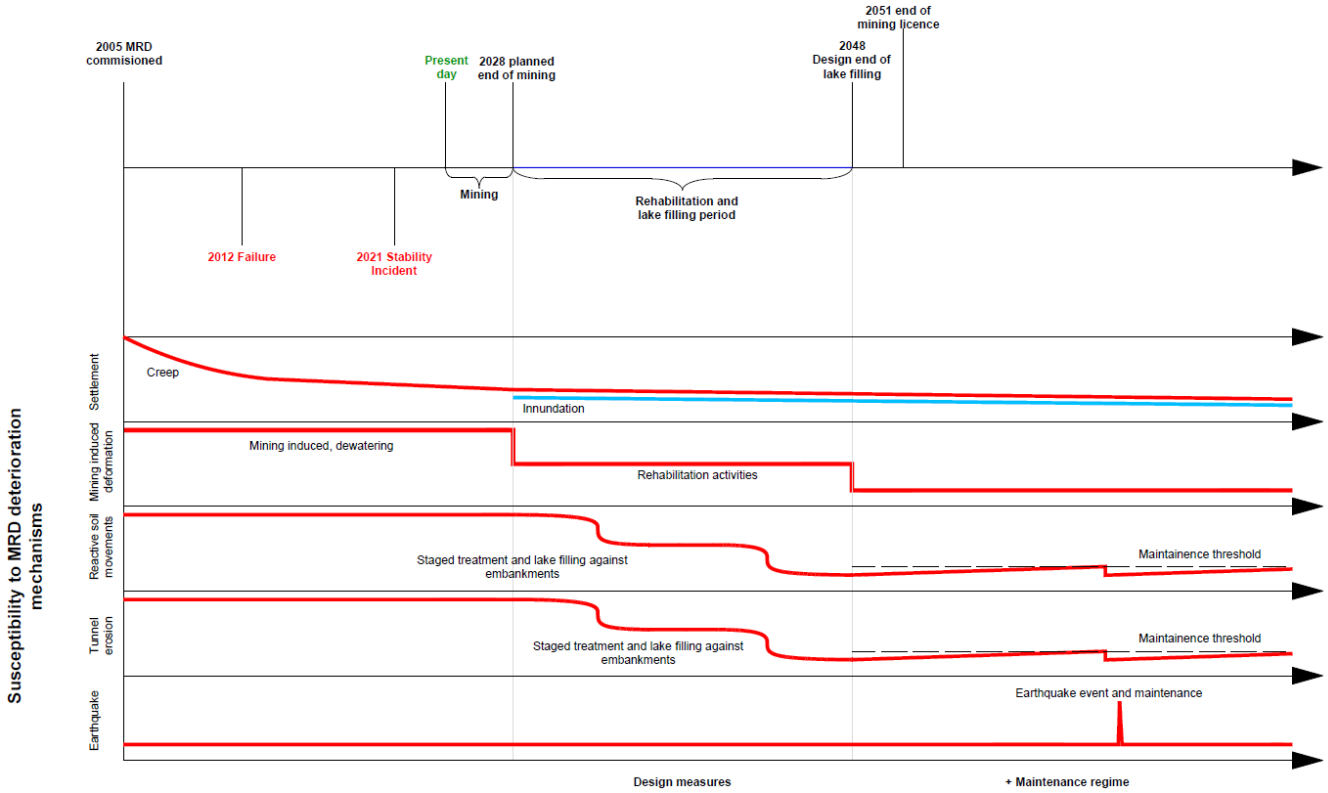
Each of these mechanisms may occur to various degrees of severity with corresponding different consequences. The susceptibility of each of the ground mechanisms for the various stages of the closure plan is presented qualitatively in Inset 60 and Inset 61. The susceptibility of the MRD to these ground mechanisms is a function of:

1. The MRD design and construction characteristics including the geometry, geotechnical conditions and as built conditions, for example the presence of liners, historical performance, etc.
2. The stage of the rehabilitation closure plan, because the general susceptibility decreases with time until pit lake filling is complete.

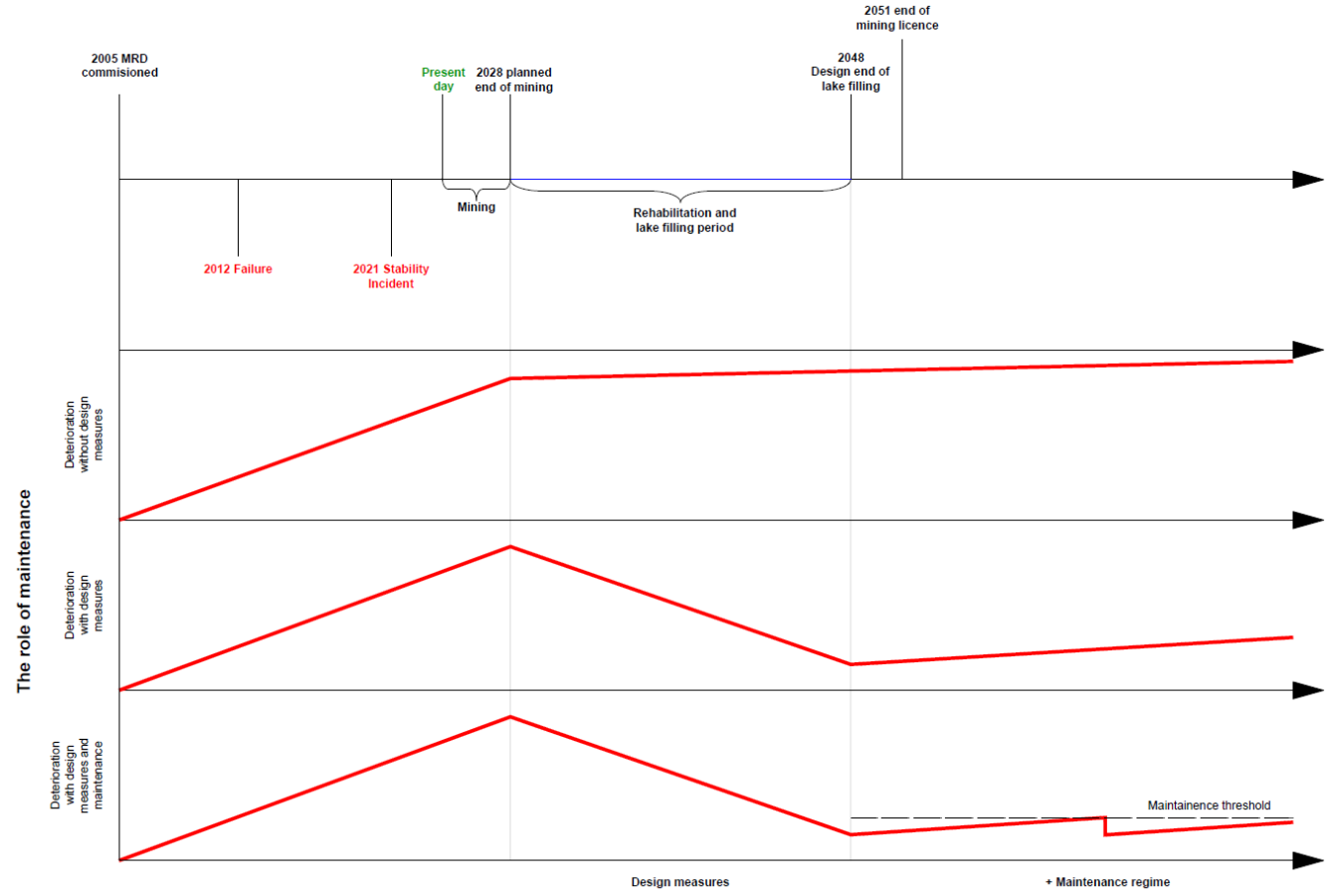
The feasibility design addresses all of these ground mechanisms for each MRD domain and for the various stages of the closure plan. The feasibility design of the MRD is to include inspection and maintenance requirements to be adopted during the various closure stages and in the long term during the Design Intent Period. The role of maintenance is presented conceptually in Inset 62.



Inset 60: Design effectiveness for MRD failure mechanisms with time



Inset 61: Design effectiveness for MRD deterioration mechanisms with time



Inset 62: Role of maintenance to MRD functionality

14.3.3 Site Investigations and Material Parameter Selection

14.3.3.1 Introduction

Additional geotechnical site investigations was undertaken in 2023 to further characterise the materials that form the MRD embankments as well as the MOBD fill materials that form the foundations of the HFC and levee embankments. The investigations comprised:

- 38 shallow boreholes (~1m depth) to undertake field testing and recover embankment fill samples for laboratory testing
- 5 CPTs to investigate the strength and stiffness of the embankment and MOBD materials
- 3 nested vibrating wire piezometers (VWPs) were installed within the MOBD to investigate the pore pressure behaviour in this material.

14.3.3.2 Fill Character

The shallow boreholes indicate that the sub-surface fill materials are consistent along and across the MRD embankment and generally comprise:

- Up to 0.4 m of topsoil (medium to high plasticity CLAY)
- Clayey Embankment Fill.

There is no differentiable difference between Zone “1A” “1B” or “3” materials.

14.3.3.3 Fill Properties

Over the entire length of the MRD embankment, the fill material is found to be:

- Clay dominant
- Reactive
- Sodic and
- Dispersive.

14.3.3.4 Fill Design Parameters

Two sets of material parameters have been used to consider the MRD design, Table 22. The Design parameters are consistent with experience in similar materials and is confirmed by laboratory testing. The Adverse parameters have been adopted as a sensitivity case, considering possible deterioration of the fill materials over the life of the structure.

Table 22 - Embankment Fill design parameters

Design Case	Unit weight (kN/m3)	Effective cohesion (kPa)	Angle of friction (deg)
Design Case	20	5	28
Adverse Case	20	2	25

14.3.3.5 MOBD

The MOBD was constructed as a spreader waste dump with three lifts. Below the MRD only two lifts are present. Under the MRD embankment the MOBD foundation is of varying thickness, with maximum 38 m under the eastern embankment, and 76 m under the western embankment.

Design parameters are presented in Table 16.

14.3.3.6 Groundwater Conditions

No groundwater was encountered in any of the site investigation locations. Pore pressure trace in CPT has been interpreted to assess depth to groundwater table. In the MOBD, this is assessed to be between 6 to 21 m below surface.

For design, two groundwater conditions have been considered:

- No pore pressure developed within the MRD. This assumes that there is no leakage from the LFC. This also applies in the HFC in the MRD Repair domain.
- Mounded pore pressure originating from the LFC. This requires leakage from the MRD and similar permeability between the embankment and the LFC clay liner.

This analysis assumes that elevated flood waters are not present for sufficient time to generate elevated groundwater in the embankments. This will be further tested during detailed design when flood durations are better understood (from flood modelling conducted by others).

14.4 MRD Design Assessments

14.4.1 Criteria

Table 23 presents the failure mechanisms of the MRD with the likely consequences that the rehab design has to design out.

Table 23 - MRD Failure Mechanisms, Consequence and proposed design solution

Failure Mechanism	Consequence	Design Solution
Overtopping of MRD Levees	• Partial loss of MRD Levee • Total loss of MRD Levee • Loss of MRD LFC	Inclusion of spillways to minimise levee overtopping High pit lake level to reduce consequence of overtopping for LFC
Global slope failure due to block sliding along the base of the Yallourn Seam	• Loss of MRD LFC • Loss of MRD Levees	High pit lake level to increase stability
Local slope failure of MRD Levees	Internal slope failure leading to: • Partial loss of MRD Levee • Total loss of MRD Levee External slope failure leading to: • Partial loss of MRD Levee • Total loss of MRD Levee • Loss of MRD LFC	Embankment geometry designed for long term stable batter scale slopes and for erosion potential Appropriate slope angles for batters and batter protection High pit lake level to reduce consequence of local levee failure
Piping leading to failure	Sunny day event leading to: • Loss of Levees • Loss of MRD LFC Flood event leading to: • Partial loss of MRD Levee • Total loss of MRD Levee • Loss of MRD LFC	Pit flooding to RL37m eliminates hydraulic gradient necessary for piping initiation Hydraulic gradient between pit lake and LFC too low to initiate piping

Design solutions are discussed in detail in Section 14.5.

14.4.2 Stability Analyses

The stability of the MRD as a levee structure for environmental and flood flows can be compromised via failure of the overall structure, the levee slopes or the LFC slopes.

These failure mechanisms have been analysed using design and adverse strengths, multiple conditions (end of mine, lake fill, groundwater pressure), Section 11.4.7, with results presented in Appendix F. An additional load case where there is full hydraulic connectivity between the MRD and tension cracks within the coal has also been analysed as

this represents the worst case conditions under a flood loading in the MRD, showing sufficient stability even in this flood surcharging scenario.

Global assessment of the levee structure is summarised in Table 17; stability analyses for the levee slopes and LFC show adequate FoS for design cases, see Appendix F.

14.4.3 Settlement Assessment

Long term settlement of the MRD foundations and embankments impact on flood capacity and freeboard, as well as deterioration and stability mechanisms such as cracking and piping. The design aim for rehab is to:

- Where possible, minimise differential settlements,
- Reduce the impacts of cracking and differential settlements by specific design,
- Treat cracks and other issues as part of design or maintenance.

Measured settlements at the mine may be associated with a range of mechanisms including:

1. Internal settlement of fill materials, which includes:
   a. Primary Consolidation and “elastic” settlements due to the weight of the fill.
   b. Creep settlement.
   c. Collapse or hydroconsolidation settlements, which occurs when partially saturated fills are inundated for the first time.

   This is a function of the (uneven) fill height across and along the MRD and reduces over time.

   Based on monitoring data over the last 100 years, creep coefficients for MRD embankment, MOBD and coal have been calculated to estimate creep.
2. Ongoing creep settlement of the coal underlying the MRD.

   This is a function of the (uneven) foundation coal thickness and reduces over time.
3. Settlement associated with mining including:
   a. Unloading, both vertical and lateral.
   b. Instabilities eg the 2021 Stability Incident.

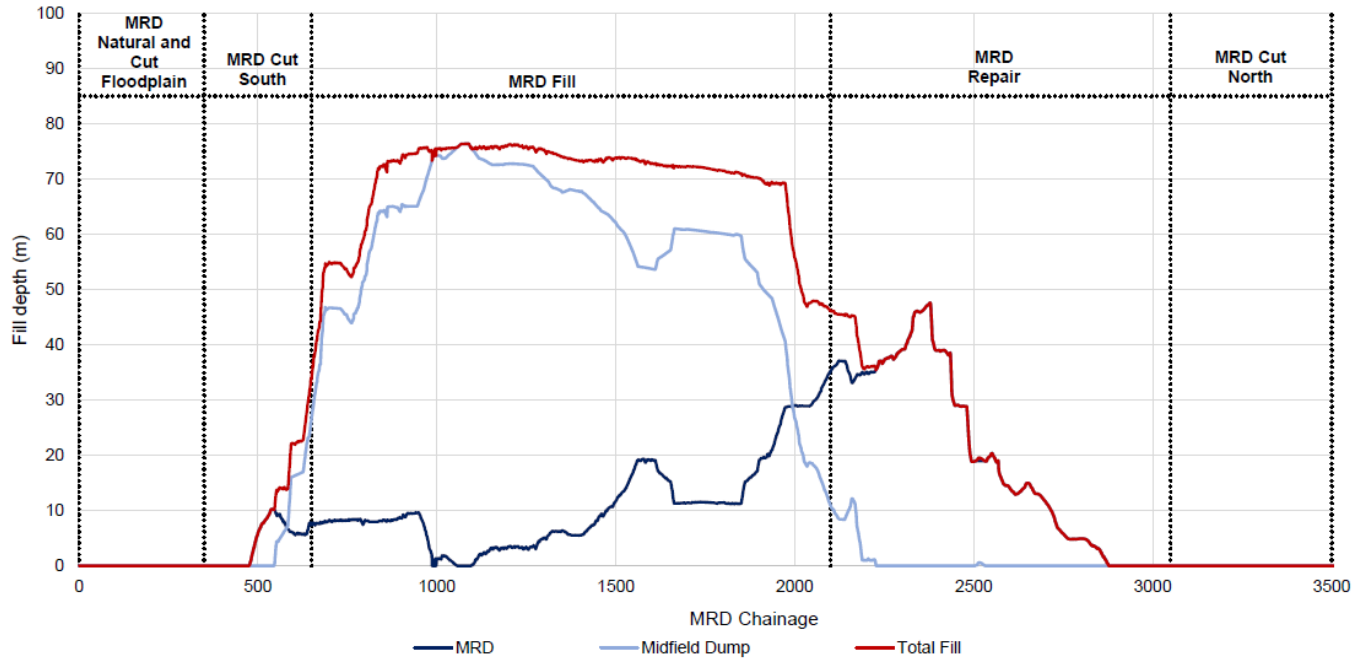
   This mechanism is likely to reduce to near zero at end of mining.
4. Mine scale settlement or heave associated with changes in groundwater levels including:
   a. Settlement due to groundwater drawdown and resultant increases in effective stress.
   b. Rebound following groundwater recharge.

   This mechanism is ongoing and its impact is likely to lessen at the end of rehab with the full pit lakes and expected cessation of deep aquifer pumping.

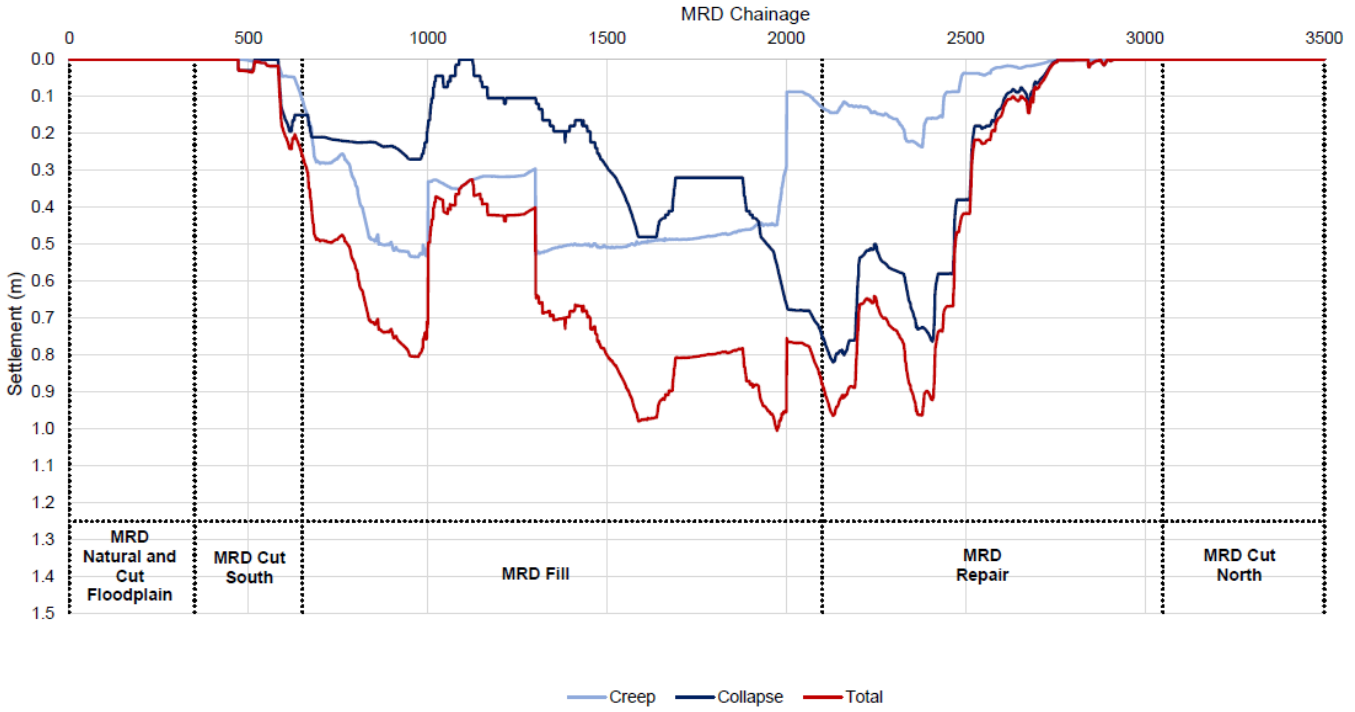
As an example, Inset 63 shows the thickness of embankment and MOBD along the western levee crest; and Inset 64 shows the estimated total settlement over the design intent period.

The estimated total settlement over the design intent period includes:

- Collapse settlement of the MRD – between 0.5 to 0.9m depending on thickness; note this occurs relatively quickly after inundation
- Creep, which occurs over the full duration of the design intent period:
  – Creep of coal – ~0.05 m
  – Creep of MOBD – up to ~0.4 m depending on thickness
  – Creep of MRD fill - up to ~0.6 m depending on thickness
  – Creep of the whole system – up to ~0.6 m
- Groundwater recharge rebound heave – 0.1 to 0.2 m (in the positive direction)



Inset 63: MRD fill thickness, western levee crest (from PSM4487-137R Figure 2)



Inset 64: Assessed MRD settlement, western levee crest, 100 years (from PSM4487-137R Figure 4)

Settlement assessment plots are presented in Appendix I.

14.4.4 Protection from Wave Action

The MRD consists of compacted earthfill embankment at slope of up to 2.5H:1V, and with the top of the external batters at RL46.8 to 48.3 m.

Wind gusting over the pit lakes will result in the formation of waves and if left unprotected, wave action against the MRD fill external batters may result in ongoing erosion and scour. An assessment for wave protection of the external batters has been undertaken with consideration of wind speed, fetch and duration of wind events that produces certain design wave heights for shore protection for various wind ARI.

Assuming a design ARI of 100 years is adopted for the design intent period, depending on the final MRD external embankment slope geometry, some slope protection may be required -1.0 m below, and +0.7 m above final lake

level. If very flat slopes planned as part of the re-purposing of the MRD to a rural levee, adequate performance might be achieved with grassed slopes and ongoing maintenance. This trade-off between the cost of slope protection and the cost of an ongoing maintenance program will need to be assessed as part of ongoing studies.

Regardless, ongoing maintenance of the external slopes is required for the life of the structure; these are minor in nature and may be undertaken in dry periods when the lake levels are typically lower.

14.4.5 Liquefaction Susceptibility

The Haunted Hills Formation (HHF) materials, typically ranging from clays to sandy gravels of alluvial origin, were used in construction of waste dumps, buttresses around the mine and the construction the MRD.

A liquefaction susceptibility screening assessment, using available particle size and plasticity test data and CPT tests to determine material type, has concluded that the fills derived from HHF have little to no susceptibility to cyclic liquefaction. There may be small zones or lenses of sandy materials that may be potentially liquefiable, but as they are likely discontinuous and partially confined they are unlikely to affect the performance of the dumps, buttresses and the MRD.

Liquefaction screening assessment plots are presented in Appendix I.

14.4.6 Piping Potential

There is substantial evidence of reactive soil movements, surface and tunnel erosion along the MRD, leading to piping failure of the embankments as a potential risk.

For piping to initiate, there needs to be sufficient hydraulic gradient ("critical hydraulic gradient") developed. In a simplified model, where suffusion erosion is the key piping mechanism, the critical hydraulic gradient to initiate piping is in excess of 500 %. It is assessed that the risk of suffusion erosion of the MRD is negligible. A more feasible piping mechanism is concreted leak erosion through a crack (Fell 2013). Assuming a critical shear stress for dispersive soils of between 1 and 5 Pa, the critical hydraulic gradient is estimated to be between 2 and 10 %.

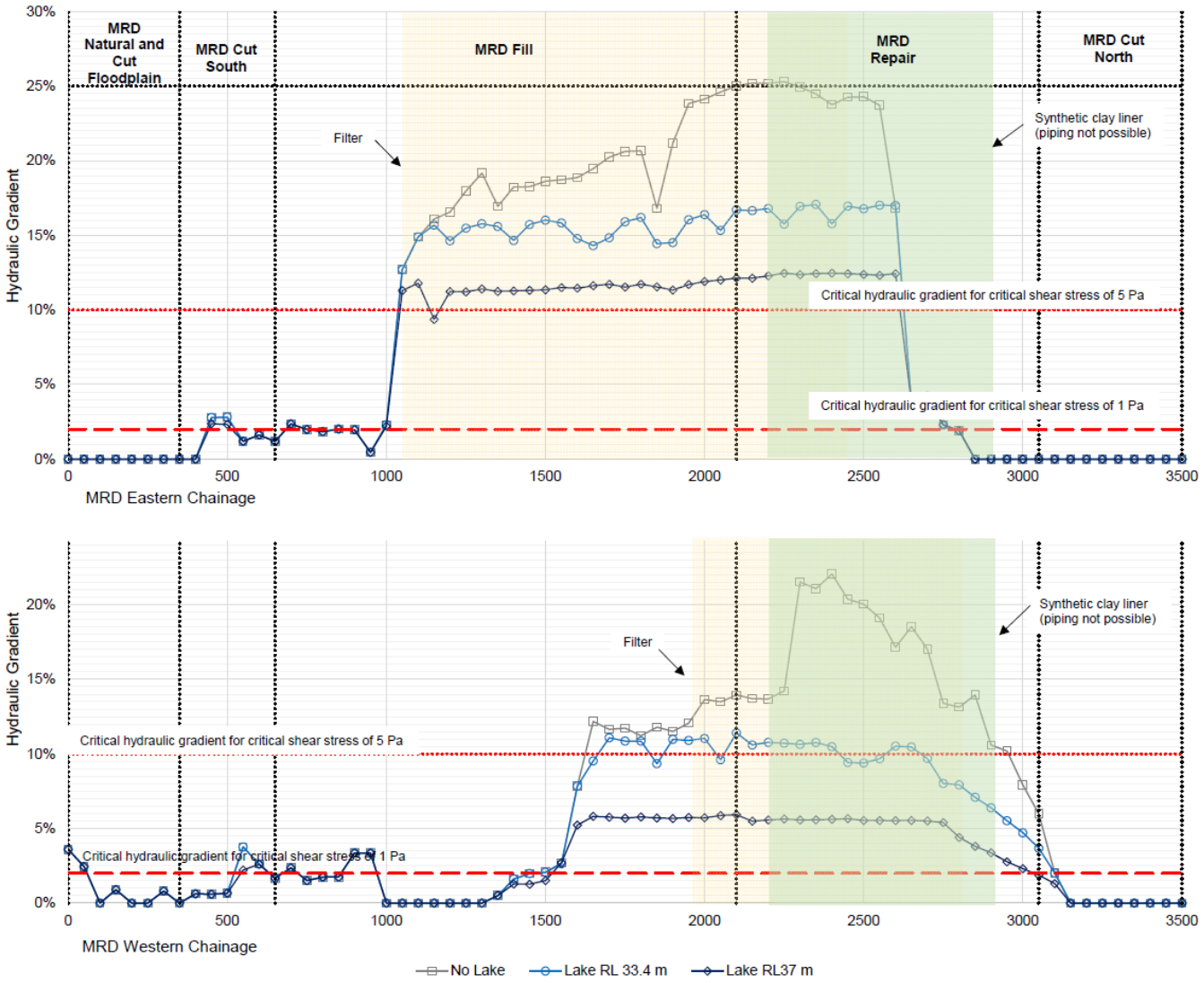
Protection from piping initiation for MRD comes in two forms: filter and liner (clay for LFC or synthetic clay in Repair Domain).

- An existing filter is present between Chainage CH1,950 to 2,800 on the western levee, and between Chainage CH1,050 to 2,450 on the eastern levee.
- The LFC clay liner over the full alignment is submerged or within the capillary zone, and should be in good condition; pore pressure monitoring data confirms this. On that basis the LFC is not at risk of piping.
- The synthetic clay liner from CH2,200 to 2,900 installed on both levees in the Repair Domain at the highest embankment height has been designed explicitly to prevent piping. It has been designed to protect the structure over the MRD rehabilitation design intent period and therefore it is assumed over this length piping is not possible.

Two piping scenarios have been assessed:

- Piping failure of the LFC under normal dry operating conditions, termed "sunny day"
- Piping through the MRD Levees under flood events.

Assuming the rehabilitation works are completed and the lake level is at final level, RL37m, it is assessed that the maximum hydraulic gradient (along certain MRD chainages locally) for a "sunny day" condition is 1%. For a "flood event" scenario, where there is an increased hydraulic gradient to up to 12 %, in a transient state, the piping risk increases accordingly, Inset 65.



Inset 65: Piping potential for a "flood event" scenario

The above assessment indicates that, at the completion of rehabilitation and lake filling:

1. The LFC is in good condition and is not expected to crack due to the soils being fully submerged or within the capillary zone, therefore risk of piping in the LFC leading to loss of LFC is negligible.
2. Between CH2,200 and 2,900 where the synthetic clay liner is present, no hydraulic gradient is expected to be developed.
3. There exists a piping risk in the current state and during lake filling, as the existing hydraulic gradient is high. Any rehabilitation works, done early during the rehabilitation period, will improve the current situation.
4. For the full MRD alignment, no hydraulic gradient is expected to be developed, due to geometry and high lake level, for the "sunny day" scenario. On that basis there is no risk of piping during normal operation from the completion of rehabilitation and lake filling.
5. For a "flood event" scenario, where there is an increased hydraulic gradient between the flooded MRD levees and the lake, the piping risk increases. However, this is a transient condition, and for most of the alignment with a piping risk, there is either a filter, or a synthetic clay liner present. The area at some risk, is where there is neither filter nor synthetic clay liner, i.e., along the western levee between CH1,600 to 1,950, where the hydraulic gradient at flood times is marginally higher than the critical hydraulic gradient 12% in the current condition and while lake is filling (with a critical shear stress of 5 Pa). Once the full lake level is reached, the risk reduces.
6. Nonetheless, it is assessed that the PR1 and PR2 can be achieved and maintained, as damaged levees can be reinstated via reasonable maintenance work.
7. The piping potential is also reduced via levee surface treatment works to minimise the potential for crack formation and crack propagation.

8. Monitoring of levee performance and early intervention during the rehabilitation period is required to inform residual risk after lake filling.

14.5 MRD Feasibility Design

14.5.1 Concepts

14.5.1.1 Re-Purpose

Post mining and rehabilitation, the primary function of the MRD is to transit environmental flows across the mine; protection of the mine pits is of lesser concern. The primary function of this structure at rehab is therefore as a flood levee.

The change in functionality and repurposing the MRD into a levee results in the following benefits:

- Ability to transmit environmental flows while
- Allowing higher ARI flood events to overtop the MRD levees in a controlled manner and spill into the adjacent mine via engineered spillways.

14.5.1.2 Design Concepts

Specifically, the rehab levee feasibility design involves:

1. Filling the pit lakes to 37 mRL.

   Flooding the mine to 37 mRL will provide support for and stabilise the MRD embankment against most future movements and potential deterioration:

   – Significant reductions in coal exposures above lake level,
   – Significant reductions in the extent of slope rehabilitation above lake level,
   – Reductions in the extent of the Peripheral Catchment Drainage Structures and
   – Improvement in batter stability

2. The MRD will be converted into a significantly smaller structure operating at or close to the final lake level. The components of the original MRD are to be redesigned to function as a rural levee to carry the Morwell River environmental flows.

   a. Generally, lower the MRD Levee crests to:

   – 42.5 mRL for the western banks.
   – 43.0 mRL for the eastern banks.
   – In order to:
     - Reduce the risks associated with surcharging the MRD during floods, whilst balancing with the frequency of overtopping.
     - Reduce deterioration of the MRD Levees.
     - Improve stability.
     - Reduce maintenance obligations on the MRD Levees.

   b. Flatten internal Levee batters and external batters above 37mRL in order to:

   – Reduce long term deterioration of the Levees.
   – Improve overall stability of the Levees.
   – Improve safety of persons that may need to access the lakes.
   – Provide access routes for walkways, etc.
   – Reduce maintenance obligations on the MRD Levees.

   c. Stabilise the HFC and possibly LFC near surface materials with lime to reduce:

   – Deterioration associated with dispersive and reactive soils.
   – Risk of piping.
   – Reduce maintenance obligations on the MRD Levees.

3. Provide flood protection via the construction of three spillways:
    a. A spillway upstream of the MRD to divert Morwell River floods above 40mRL into the Yallourn Township Field (YTF) lake. This satisfies both the hydraulic requirements of the system and enables improvements to the geotechnical stability outcomes of the MRD levee embankments.
    b. Provide a spillway on the eastern Levee at ~42.5mRL to:
    – Provide a localised overtopping location in the event the storage capacity of the YTF pit lake is exhausted, to prevent uncontrolled water flow from the MRD into Yallourn East Field (YEF) pit lake.
    – Allow water to spill from the YTF pit lake into the YEF lake.
    – Define a location at which the MRD eastern Levee can first overtop, thus reducing maintenance obligations on the remainder of MRD Levees.
    c. Provide a spillway on the western Levee at ~41.5mRL to:
    – Assist in controlling water levels within the MRD during flooding by discharging floodwaters into YTF pit.
    – Define a location south of Chainage 2075 where the MRD western Levee may first overtop (in the event beyond the spillway capacity), thus reducing maintenance obligations on the remainder of MRD Levees.
    – Divert Latrobe River flood backwaters into the YTF.

This is conceptually presented in Figure 36 in plan.

14.5.1.3 Design Sketches

The following concept cross section sketches for the MRD Rehab Design are presented:

- Inner and outer embankment geometry and treatment, Figure 37
- Embankment with repair zone, Figure 37
- Spillway geometry and treatment, Figure 38.

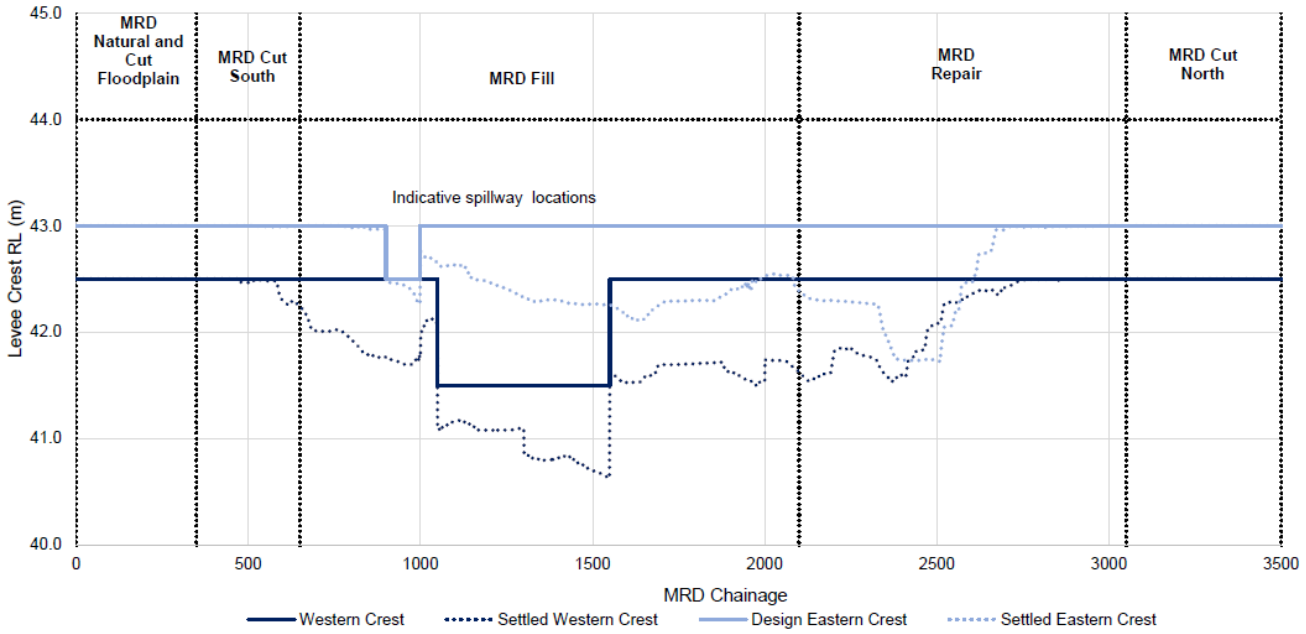
14.5.2 Design for Stability

The stability of the MRD as a levee structure for environmental and flood flows has been assessed. In summary, the rehab design for stability includes:

- Flattening of the levee embankment slope, above the design pit lake level, to improve local levee stability.
    – Lowering the levee embankment height has an associated benefit to local stability, however it is not the driver for the design.
    – In the Repair Domain, where a synthetic clay liner is present in the embankment, there is an option to leave the original profile untreated, with no reprofiling. This aims to preserve the integrity and performance of the liner in this section.
- No change to LFC geometry is recommended at this stage.

14.5.3 Design for Settlement

Section 14.4.2 summarises the types and estimated settlement of the MRD over the design intent period. The impact to the reduced flood capacity and freeboard at the levee crests is illustrated in Inset 66. It has been stated that collapse settlement is likely to occur shortly after pit filling, over a relatively short period of time, while creep occurs over the full duration.



Inset 66: MRD Levee crest RL after 100 years

This requires a solution from both a design and maintenance perspective:

1. Design the levee and spillway levels to take into account the likely settlement over the life of the structure, as well as the likely timescale of the settlement. E.g.,
   a. Construct the levees and spillways after end of mining, to remove any mine-induced effects.
   b. Design the levee and spillway crest levels to include the likely collapse settlement.
2. Design in maintenance at certain periods to raise the levee crests to maintain the flood protection. E.g.,
   a. Schedule in maintenance, based on monitoring, to manage loss of freeboard as a result of creep.

14.5.4 Design for Other Deterioration Mechanisms

The potential deterioration mechanisms, Table 24, are addressed through implementation of the design and maintenance.

Table 24 MRD Deterioration Mechanisms

Deterioration Mechanism	Consequence	Design Solution
Mining induced deformations	Cracking of the MRD Hydromechanical coupling between MRD and coal	Rehab design to be implemented post-mining, or in locations with little impacts, to eliminate the risks associated with further deterioration of the MRD due to mining induced deformations
Settlement	Loss of freeboard or spillway capacity Low points exacerbating effects of overtopping Preferential overtopping exacerbating erosion Cracking of the MRD Loss of surface grades	Design levee crest to include shorter term settlement. Designer spillway crest and freeboard considering overall flood modelling (by others). Plan for maintenance to “top up” levee on an as needs basis Cracking from settlement expected to be minor and repaired as part of regular maintenance
Reactive soil movements due to	Near surface cracking Initiation of tunnel erosion mechanisms	Design: Treat the near surface materials of the HFC with lime

Deterioration Mechanism	Consequence	Design Solution
sodic and dispersive soil	Initiation of localised slumping/slope instability	Design & Maintenance: Topsoiling and establishing vegetation along the HFC and levees Maintenance: Surface reprofiling of the levees
Surface and tunnel erosion	Initiation of localised slumping/slope instability Initiation of piping mechanisms Localised settlement	Design: Treat HFC (1m) with lime Design: Flatten and reduce height of the MRD levee slopes Design & Maintenance: Topsoiling and establishing vegetation Maintenance: remediate existing cracks and erosion features; remove trees from levee batters Maintenance: remediate after mining induced settlements have ceased.
Scour of LFC when subject to flows	Loss of LFC or partial loss of levees due to progressive scour of LFC Initiation of localised slumping/slope instability of internal batters	Design: relatively flat levee batter slopes reduces the risk of loss of LFC or partial loss of levees Maintenance: ongoing minor local reshaping or reinstatement of rip rap
Scour of HFC and MRD Levees when subject to flows	Scouring and erosion (not observed) associated with flood events within the HFC.	The MRD design will increase the resilience of the HFC to scour and erosion Maintenance: ongoing minor
Wave action on external batters post pit lake filling	Initiation of localised slumping/slope instability of external batters	Design: erosion of batters from wave action considered in batter design; slope protection design Maintenance: ongoing minor
Earthquake loading and earthquake induced deformations	Instability Cracking of the MRD	Design: loading from seismic actions considered in batter design and embankment stability assessments. Maintenance: repair cracks

14.5.5 Design for Levee Overtopping

The MRD rehabilitation design strategy intends for the MRD spillways to be overtopped during design flood events and the levees only overtopped during higher events. The surface of the designated spillways is designed to protect the MRD and the spillway itself from scour and erosion and the potential loss of storage that may result from these mechanisms. It is noted that that once the lakes are established at RL 37 m, the potential partial loss of the LFC is only geometrically possible for less than 10% of the MRD Levee length.

The primary controls on levee overtopping are:

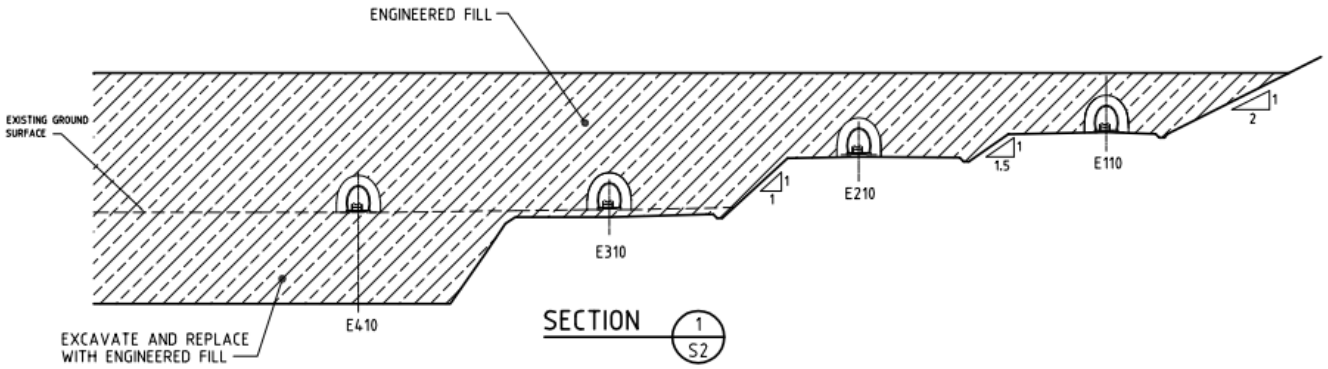
1. Sizing the spillways so that levee overtopping only occurs on large flooding events. The sizing is a function of the flood studies being completed by others.
2. Maintaining the lake levels at or near 37.0 mRL, which is controlled by the lake discharge points. The lake level controls the maximum depth of scouring that could occur.
3. The planned construction sequencing and sequencing design.
4. Inspection and maintenance of the levees including maintenance in accordance with performance requirements PR3 and PR4. The ongoing maintenance of the levee crest elevations to maintain design freeboard is particularly important with respect to overtopping risk.

The levee material and geometry has been designed to be resilient to overtopping:

- Relatively flat slopes, 4H:1V above the design lake level,
- Wide crests, typically greater than 10 m,
- Very low above water slope heights once the lakes have reached or approach final lake level,
- Surface protection ie, topsoil and vegetation,
- Treatment in the form of surface compaction and vegetation to reduce erosion and scour potential,
- Ongoing maintenance to maintain the performance of the levee material and design geometry, including remediation for crest settlement.

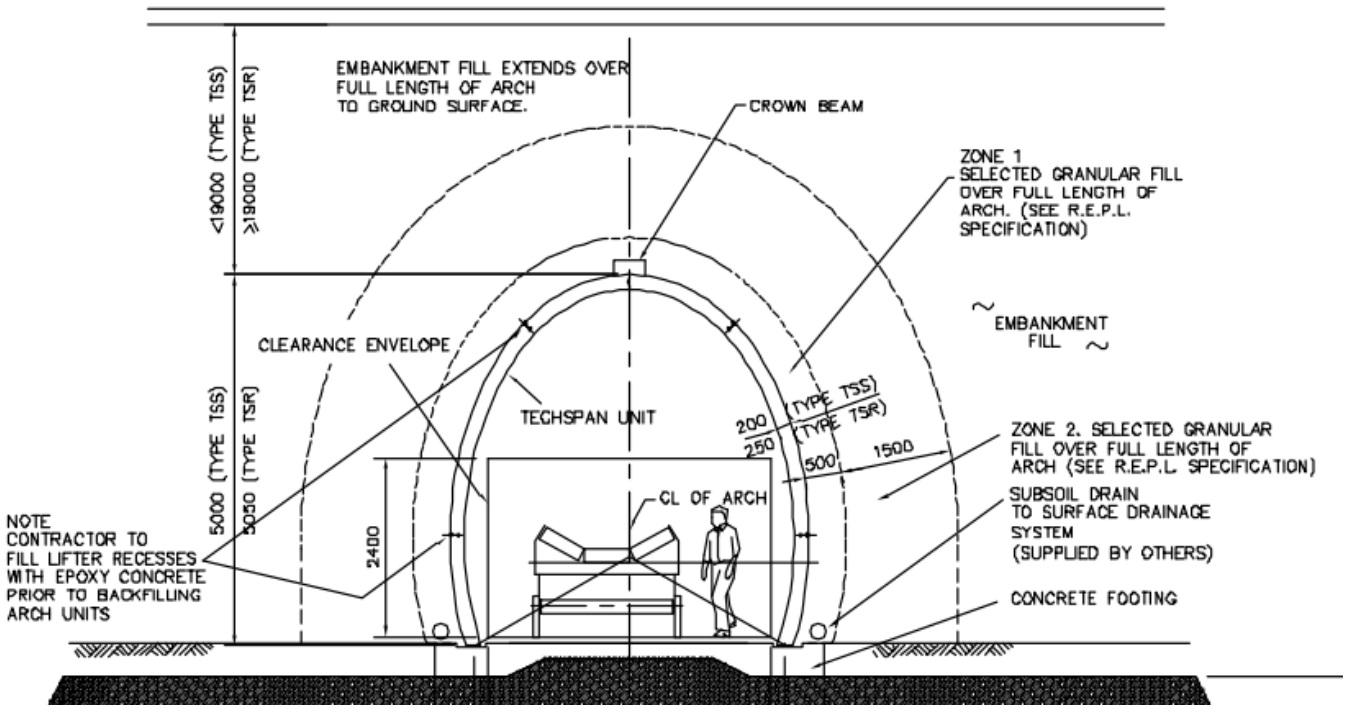
14.6 Conveyor Tunnels

The conveyor tunnels currently operate as a connection between the two pit voids. Four tunnels have been constructed under the MRD embankment, Inset 67.



Inset 67: Elevation of the 4 conveyor tunnels (taken from SMEC design drawing LV49/1-2/002, 2002)

They tunnels are constructed with pre-cast reinforced concrete arch and invert segments, with a drained surface around the outside of the segments, Inset 68.



Inset 68: Typical Arch Section (taken from RECO design drawing LV49/1-2/091, 2002)

Because of the geometry, and the presence of the drain / filter around the segments, the conveyor tunnels have the potential to be part of a piping mechanism.

For rehab, it is intended for the conveyor tunnels to be re-purposed as a hydraulic connection between YTF and YEF/MVF. Conceptually, this involves a number of large diameter pipes to be placed within these tunnels, and the annulus backfilled with durable concrete or grout. Essentially, the durable concrete backfill acts as a permanent tunnel lining that provides structural integrity and durability for the system.

The size and number of pipes required in each tunnel forms part of the surface hydrology and mine lake studies currently being undertaken by others. The exact structural design of the concrete backfill is also to be refined in detailed design. However it is noted that this rehab design will effectively eliminate the risk of tunnel collapse, and the risk of piping through the tunnels.

14.7 Construction Sequencing and Program

The detailed construction sequencing for the MRD is yet to be determined and will entail consideration of a number of different timing and logistical factors. The program of the rehabilitation works should be developed to balance the benefits and costs of undertaking the works as early as possible and the costs of having to repair or update the works closer to relinquishment, due to damage from ground movements or design updates resulting from the monitoring as part of adaptive management.

From only geotechnical perspective, the MRD Rehabilitation Design should be implemented after lake filling is completed and the majority of the settlement has already occurred. However they have to weighed up against other factors.

Constructing the MRD rehab design early has these benefits:

1. Reduce the effects of the deterioration experienced to date and potential for further deterioration and thus reduce the risk of not meeting the performance requirements prior to and during lake filling, when risks are elevated.
2. Allow for effective monitoring of the rehabilitation works and assessment during the rehabilitation period including a better understanding of the need for further treatment.
3. Use the monitoring to quantify the long-term maintenance needs of the MRD following relinquishment to better inform EAY and stakeholders.

The main negatives are:

1. This means the Lakes may be at low levels. Because the MRD spillways will be part of this construction, floods above 41.5 and 42.5 will spill down the outside of the existing MRD embankments increasing the risks of global instability of the MRD, before the lake has reached a stabilising level. This may require additional construction works.
2. The need to undertake additional earthworks later prior to relinquishment to correct for the settlement effects. However, it is noted that long term creep may also require additional works post relinquishment.

Consequently, there appear to be a number of competing risks, including:

1. From the perspective of risk to the MRD Rehabilitation Design structure, construction after lake filling is completed is best.
2. From the perspective of risk to the current MRD structure as soon as practicable is best.
3. From the perspective of risk of achieving Relinquishment on lake filling completion, the sooner the better.
4. Constructing the MRD Rehabilitation Design structure early in lake filling could adversely impact on some of the other planned mine rehabilitation. If a significant flood occurs other risks could eventuate, for example flooding conveyor tunnels before pipe completion works.

Once timing of the lake filling is better understood, staging of the MRD repurposing works can be planned to balance these competing risks. However, on balance the recommended strategy comprises:

1. Undertake the lake filling as quickly as practicable.
2. Plan the MRD repurposing works when the lake levels are sufficient to provide buttressing of the MRD for global stability (i.e., lake level at least to RL 20 m).
3. Only excavating the levees to an elevation that accounts for the estimated long-term settlement and not including collapse settlements.

4. Excavating the MRD spillways to the design level and allow for raising over time when and if required, so as to ensure environmental flows over the short to long term.
5. In the 2012 Repair area leave the MRD unchanged from its present shape.

These options need to be explored further in future stages.

14.8 Maintenance

In accordance with the Rehab MRD being repurposed into a rural levee, inspection and maintenance activities should be undertaken in accordance with the Victorian Levee Maintenance Guidelines, which allow for the approach to inspection and maintenance activities to be varied depending on the level of risk.

- During lake filling –
  - Higher risks thus a higher degree of maintenance including increased monitoring/inspections and early intervention in the adaptive management stage
  - Monitoring used to confirm the predicted behaviours and to develop up front and maintenance strategies to reduce the long-term maintenance obligations
- The Guideline contains I&M activities for operation as well as for during a flood event.

15. Final Lake and Spillway Level and Position

15.1 Design Intent

Although the approved rehabilitation Final Lake level is 37 mRL, the Latrobe River level at Thom's Bridge, Figure 1, is approximately 32 mRL. As a consequence of that EAY have been assessing the impacts of Final Lake levels from 33.4 to 37 mRL. The Final Lake level will impact on most elements of the planned rehabilitation, but it is considered the most important element are the implications for the MRD.

One important aim of the rehabilitation strategy is the continuance of the MRD in the long term, in order to be able to maintain environmental flows, with the low flow channel protected and the ability of the MRD to carry floods, notionally to around 42 mRL. However, there are considerable uncertainties with this structure mainly relating to design and construction deficiencies. The design documents state the MRD was designed and constructed to the standards of a large dam, but this is not supported by the performance, as illustrated by:

1. The 2012 Failure and June 2021 Stability Incident.
2. The large and ongoing deformations of the structure due to adjacent mining, poor and variable foundation conditions and poor engineering materials used for construction.
3. Biannual inspections of the MRD continue to identify hundreds of defects along the length of the structure.

As a result of this combination of factors, the MRD as a long-term river diversion with close to its original design capacity is compromised. If the current MRD geometry remains unchanged, the ongoing risk of failure would continue and the potentially increase with time. Although, it is feasible to re-purpose the MRD using relatively simple earthworks to continue as a rural levee, carrying environmental base follows and floods to a certain design level. However, this design has found that the future design and the long-term performance of the MRD is intimately linked with the Yallourn Water System, including:

- The design and operation of the lake system,
- The Final Lake Level, and
- The spillway interconnections.

15.2 Latrobe & Morwell River Event Scenarios

The regional catchments are shown in Figure 39, showing the Latrobe River Catchment approximately three times the size of the Morwell River catchment. It is also located in a higher rainfall area. Hence there is a higher likelihood of Latrobe dominant floods. On that basis, there is a higher likelihood that Latrobe River dominant events would govern hydraulic considerations for the MRD system.

Figure 40 is a schematic model illustrating the current hydraulic interaction between the MRD, Latrobe and Morwell Rivers. Latrobe dominant floods cause backing up of water from the confluence point into the MRD and this can be adverse for MRD levee stability. Hence the long term MRD rehab needs to design for these flood scenarios.

Rehab MRD designs and levels due to river floods and with various spillways proposed for rehab have been considered conceptually, Figure 41; the design includes:

- Pipes within the existing conveyor tunnels to balance water levels between the YEF and YTF pit lakes
- Spillways from the MRD into YTF (and potentially YEF also) to assist in controlling flood levels in the MRD under various flood scenarios, discussed below;
  - Figure 42 shows how the system may operate under a Latrobe River dominant flood:
    i. Backflows from the Latrobe River flow into YEF. Having a high Final Lake Level of 37 mRL reduces the backflow quantum.
    ii. The MRD upstream spillway inlet plays little role, and
    iii. Backflows from the Latrobe River into the MRD produces high levels in the MRD flood plains.
  - Figure 43 shows how the system may operate under a Morwell River dominant flood:
    iv. The MRD upstream spillway inlet reduces levels in the MRD flood plain, and
    v. A spillway further downstream in the MRD has little benefit (unless the upstream spillway exceeds capacity).

- Pit lake discharge spillway in the east of the YEF pit lake into the existing Latrobe River system, just upstream of Thoms Bridge. Two pit lake levels have been considered conceptually:
  - Figure 44 shows a Latrobe dominant flood, with a low Final Lake level at 33.4 mRL:
    vi. There is a significant potential risk of losing the MRD because the lake level (33.4) is well below the MRD low flow channel level (37).
    vii. The flood flows are diverted from the Latrobe River, enter the lakes much earlier and in larger volumes.
    viii. Capacity of the conveyor tunnels needs to be larger to allow YEF/MVF flood levels to equilibrate with YTF.
    ix. The MRD spillway needs to have a much higher capacity, the benefit would be short term because the Latrobe floods are diverted into the system at larger volumes, Point 3b.
  - Figure 45 shows the operation of the system for a Latrobe dominant flood, with a high Final Lake level at 37 mRL:
    x. There is no risk of losing the MRD low flow channel, because the lake and low flow levels are the same.
    xi. The flood flows diverted from the Latrobe River are much lower.
    xii. The MRD spillway controls back up of Latrobe River along the MRD.

15.3 Rehab Concepts

The overall conclusions arising for this are:

1. The design and operation of the mine lake system is intimately linked with the long-term future of the MRD.
2. Lower final lake levels increase risks to MRD and can adversely impact the operation of the Yallourn Mine Surface Water System.
3. The MRD needs a spillway or spillways to control Latrobe dominant flood levels adversely impacting its long-term performance.
4. YEF Mine Lake Spillway should be in the northeast corner of YEF and intersect Latrobe River closer to Thoms Bridge.
5. Final lake level should be around 37 mRL, the higher level is preferred:
   a. Effectively eliminating the risk of losing the LFC.
   b. Significantly reduce the volume of fill or buttressing required to achieve rehabilitation DAC.
   c. Higher final lake levels will cover more coal.
   d. Higher final lake levels will reduce the wave protection requirements.
   e. Higher final lake levels will reduce the overall rehabilitation landform re-shaping requirements.

16. Rehabilitation Design Summary

This report has detailed the methodology and work undertaken to develop a rehabilitation design for the Yallourn Mine and Morwell River Diversion. The design assessment includes:

1. Classification of each domain into different qualitative geotechnical and surface water risk ratings, and EAY consequence category from planned post mining land use.
2. Development of a robust geotechnical model, with accurate geometry, structural model, conservative strength and groundwater parameters, validated with testing, historic mapping and monitoring.
3. Classification of current and future landforms in a geomorphic context.
4. Discussion and development of a Yallourn-specific Design Intent Period and Design Acceptance Criteria.
5. Assessment of mine stability in the context of:
    a. Geotechnical slope stability and the stabilising benefits of pit lake filling;
    b. Sensitivity of slope stability to increases in failure shear strength, buttressing, drainage, and flood loads;
    c. Slope stability from seismic loads;
    d. Slope stability from surface water ingress to establish requirements for peripheral surface drain design;
6. MRD design assessment of various stability and deterioration mechanisms.

The MRD rehabilitation design outcomes include:

1. Re-purpose the river diversion into a rural levee system with the low flow channel for environmental flows.
2. In doing so, flattening and lowering of the embankment batters to improve resistance to deterioration mechanisms. Appropriate surface treatment on levee surfaces to reduce the likelihood of deterioration or scour.
3. Design the levee levels cognisant of likely long term settlement quantity and timeframe.
4. Include spillways upstream and downstream to control flood flow levels and manage levee toppling.
5. Stabilising the arches in existing conveyor tunnels by partial backfilling with concrete, essentially constructing a permanent lining.
6. Appropriate construction timeframe for the above works to minimise future repair and maximise effectiveness of the works.
7. Adaptive management, ie, appropriate inspection and maintenance regime, in accordance with government guidelines, throughout the design intent period of operation.

The Yallourn Mine rehabilitation design outcomes include:

1. Pit lakes to be filled to a design level (RL 37 m), and spillways to be constructed at various times in the rehabilitation period to manage flood flows.
2. Overall batter slope based on stability, with buttressing requirements for rehabilitation.
3. Peripheral drainage to eliminate block sliding mechanism where it governs stability; its extent, position, type based on risk and stability assessment.
4. Reprofiling and landform development above lake level that are in harmony with pre-existing natural geomorphology and site experience.

Yours Sincerely

Mark Fowler on behalf of

TIM SULLIVAN
PRINCIPAL

IRENE CHAN
PRINCIPAL

This report is signed on behalf of Tim Sullivan by Mark Fowler, Managing Director of PSM. This acknowledges Tim Sullivan's contribution to the draft report.

REFERENCES

1. Abram, N.J., Henley, B.J., Gupta, A.S., Lippmann, T.J.R., Clarke, H., Dowdy, A.J., Sharples, J.J., Nolan, R.H., Zhang, T., Wooster, M.J., Wurtzel, J.B., Meissner, K.J., Pitman, A.J., Ukkola, A.M., Murphy, B.P., Tapper, N.J. and Boer, M.M. 2021. Connections of climate change and variability to large and extreme forest fires in southeast Australia. Communications Earrth and Environment, 2:8, pp. 1 – 17.
2. Abt, SR., Thornton, CI., Scholl, BA. and Bender, TR. 2013. Evaluation of Overtopping Riprap Design Relationships. Journal of the American Water Resources Association, 49, pp. 923-937.
3. Allen, T. I. 2012. Stochastic ground-motion prediction equations for southeastern Australian earthquakes using updated source and attenuation parameters. Record 2012/69. Geoscience Australia, Canberra.
4. Allen, T.I., Griffin, J.D., Clark, D.J. 2018a. The 2018 National Seismic Hazard Assessment for Australia: model input files, Geoscience Australia Record 2018/32, Canberra, pp 32, doi: 10.11636/Record.2018.032.
5. Allen, T. I., Leonard, M., Ghasemi, H., Gibson, G. 2018b.The 2018 National Seismic Hazard Assessment for Australia: earthquake epicentre catalogue, Geoscience Australia Record 2018/30, Canberra, pp 51, doi: 10.11636/Record.2018.030.
6. Allen, T. I., Griffin, J. D., Clark, D. J., Cummins, P. R., Ghasemi, H., Ebrahimi, R. 2023. The 2023 National Seismic Hazard Assessment for Australia: model overview. Record 2023/53. Geoscience Australia, Canberra. https://dx.doi.org/10.26186/148969.
7. Alluvium. 2022. Yallourn Mine Closure: Surface Water Management Options and Design Criteria, Draft Report dated December 2022.
8. Ambraseys, N.N. and Menu, J. M. 1988. Earthquake‐induced ground displacements. Earthquake Engineering & Structural Dynamics, 16(7), 985-1006.
9. ANCOLD. 2019. Guidelines on Tailings Dams.
10. Anderson, T.R., and Butler, A.R. 2016. A standard for design life and durability for engineered mine waste structures. Journal of Cleaner Production, Vol. 141, pp. 67 – 74.
11. Atkinson, G. M. and Boore, D.M. 2006. Earthquake ground-motion prediction equations for eastern North America, Bull. Seismol. Soc. Am. 96, 2181-2205, doi: 10.1785/0120050245.
12. Attanayake, J., Sandiford, D., Schleicher, L. S., Jones, A., Gibson, G., & Sandiford, M. 2019. Interacting intraplate fault systems in Australia: The 2012 Thorpdale, Victoria, seismic sequences. Journal of Geophysical Research: Solid Earth, 124(5), 4673–4693.
13. Ball, J., Babister, M., Nathan, R., Weeks, W., Weinmann, E., Retallick, M. and Testoni, I. (Editors), 2019. Australian Rainfall and Runoff: A Guide to Flood Estimation. Commonwealth of Australia.
14. Boucher, S.C. 1990. Field tunnel erosion, its characteristics and amelioration. Monash University, Clayton, Department of Conservation and Environment, East Melbourne, Australia.
15. Boulanger, R.W. and Idriss, I.M. 2006. Liquefaction susceptibility criteria for silts and clays, J. Geotechnical and Geoenvironmental Engineering, ASCE, Vol. 132, No. 11, 1413–1426.
16. Burbidge, D., Leonard, M., Allen, T., Collins, C., Volti, T. 2012. The 2012 Australian Earthquake Hazard Map, Geoscience Australia Record 2012/71.
17. Bureau of Meteorology and CSIRO. 2015. Climate Change in Australia, Chapter Seven – Projections: Atmosphere and the Land.
18. Candela, A., Aronica, G. and Santoro, M. 2005. Effects of Forest Fires on Flood Frequency Curves in a Mediterranean Catchment, Hydrological Sciences Journal, 50:2, pp. 193 – 206.
19. Chow, V.T. 1959. Open Channel Hydraulics. McGraw-Hill, New York.
20. Clark, D. 2010. Identification of Quaternary scarps in southwest and central west Western Australia using DEM-based hill shading: application to seismic hazard assessment and neotectonics, International Journal of Remote Sensing. 31, 6297-6325, doi: 10.1080/01431161003631592.
21. Clark, D., McPherson, A., Collins, C.D.N. 2011. Australia's seismogenic neotectonic record: a case for heterogeneous intraplate deformation, Geoscience Australia Record 2011/11, Canberra.
22. Clark, D., and McPherson, A. 2012. Neotectonic Features Database, Retrieved 16 January, 2024, from http://pid.geoscience.gov.au/dataset/ga/74056.

23. Clark, D., and Leonard, L. 2014. Regional variations in neotectonic fault behaviour in Australia, as they pertain to the seismic hazard in capital cities, Australian Earthquake Engineering Society 2014 Conference, Lorne, Victoria.
24. Clark, D. J. 2023. The 2023 National Seismic Hazard Assessment for Australia: notes on fault fault parametrisation for the fault-source model, Geoscience Australia Record 2023/54, pp 47, doi: 10.26186/149143.
25. Clarke, J.M., Grose, M., Thatcher, M., Round, V. and Heady, C. 2019. Gippsland Climate projections 2019. CSIRO, Melbourne Australia.
26. CSIRO, The University of Melbourne and Jacobs. 2017. Climate Change Projections – Method report and user guide. Latrobe Valley Regional Rehabilitation Strategy.
27. Cuthbertson, R. J. 2016. Automatic determination of seismicity rates in Australia, Australian Earthquake Engineering Society 2016 Conference, Melbourne, Victoria.
28. Department of Climate Change, Energy, the Environmental and Water. 2023. Discussion Paper: Update to Climate Change Considerations chapter in Australian Rainfall and Runoff: A Guide to Flood Estimation Discussion Paper, Department of Climate Change, Energy, the Environment and Water, Canberra. CC BY 4.0.
29. Department of Energy, Environmental and Climate Action. 2020. Latrobe Valley Regional Rehabilitation Strategy.
30. Department of Energy, Environmental and Climate Action. 2023. Latrobe Valley Regional Rehabilitation Strategy – Amendment
31. Department of Energy, Environmental and Climate Action. 2024. Declared Mine Rehabilitation Plan Guideline.
32. Department of Energy, Environmental and Climate Action. 2025. Technical Guidance: Closure Design Acceptance Criteria for Latrobe Valley Coal Mines (final draft).
33. Department of Environmental, Land, Water and Planning. 2020. Guidelines for Assessing the Impact of Climate Change on Water Availability in Victoria. Department of Environment, Land, Water and Planning, Victoria.
34. Department of Climate Change, Energy, the Environment and Water. 2023. Draft update to the Climate Change Considerations chapter in Australian Rainfall and Runoff: A Guide to Flood Estimation, Book 1, Chapter 6, Climate Change Considerations.
35. Dimas, V.-A., and S. Venkatesan. 2016a. Seismotectonic model for the Australian Plate – beyond borders, Australian Earthquake Engineering Society 2016 Conference, Melbourne, Victoria.
36. Dimas, V.-A., G. Gibson, and R. Cuthbertson. 2016b. Revised AUS6 model: significant changes & approaches to the seismotectonic model, Australian Earthquake Engineering Society 2016 Conference, Melbourne, Victoria.
37. Dimas, V.-A. 2020. How does the Australian National Seismic Hazard Map affect your PSHA study, The Groundwork, ATC Williams.
38. Drouet, S. 2015. drouet_2015_brazil.py, Global Earthquake Model oq-engine. Retrieved 24 January, 2024, from https://github.com/gem/oq-engine/blob/master/openquake/hazardlib/gsim/drouet_2015_brazil.py.
39. EAY. 2018. Yallourn Mine MIN 5003, 5216 & 5304 Energy Australia Rehabilitation and Closure Plan, RCP, Revision 1.
40. ES&S. 2011. “Loy Yang High Level Storage Dam & Settling Pond Dam, Seismic Hazard Assessment”.
41. Federation University Geotechnical and Hydrogeological Engineering Research Group. 2020. Batter Stability Project Report (Ref 4909).
42. Fell, R. 2007, The mechanics of internal erosion and piping of embankment dams and their foundations, 10th Australia - New Zealand Conference on Geomechanics, Brisbane.
43. Fourie, AB, Tibbett, M., De Jong, J. 2012. The fallacy of designing for in-perpetuity: geotechnical presumptions, ecosystem responses and concepts for managing inevitable change, in AB Fourie & M Tibbett (eds), Mine Closure 2012: Proceedings of the Seventh International Conference on Mine Closure, Australian Centre for Geomechanics, Perth, pp. 127 – 136, https://doi.org/10.36487/ACG_rep/1208_13_Fourie.
44. Fell, R. and Hunter, G. 2003. Travel distance for rapid landslides in constructed and natural slopes. Canadian Geotechnical Journal, Vol. 40, No. 6, 1123–1141.
45. Fell, R., MacGregor, P., Stapledon, D., Bell, G. 2015a, Geotechnical Engineering of Dams.
46. Fell, R. 2015b. Geotechnical Engineering of Dams: Chapter 12.5: liquefaction of dam embankments and foundations (2nd ed.).

47. Fell R., Hanson, G., Herrier, G., Marot, D., Wahl, T. 2017. Relationship between the erosion properties of soils and other parameters Erosion in Geomechanics Applied to Dams and, Levees.
48. Frankel, A. 1995. Mapping seismic hazard in the central and eastern United States, Seism. Res. Lett. 66, 8-21, doi: 10.1785/gssrl.66.4.8.
49. GHD. 2012. TRUenergy Yallourn Pty Ltd – Report for Witts Gully Reservoir – Dam Safety Review.
50. GHD. 2017, Yallourn Maryvale Field Western Batters Crosshole Seismic Test (Ref 31\270701738).
51. GHD. 2021. Yallourn Mine Permanent Batters, Geotechnical Risk Zone (GRZ) - Review & Justification. 12 April 2021 (ref 2543305).
52. Griffin, J., Volti, T., Clark, D., Ghasemi, H., Leonard, M. and Allen, T. 2016. Development of the 2018 Australian National Seismic Hazard Assessment (NSHA), presented at the Australian Earthquake Engineering Society 2016 Conference, Melbourne, Victoria.
53. Griffin, J., Weatherill, G., Allen, T. 2017. Performance of national scale smoothed seismicity estimates of earthquake activity rates, Australian Earthquake Engineering Society 2017 Conference, Canberra, ACT.
54. Griffin, J., and Davies, G. 2018a. Earthquake sources of the Australian plate margin: revised models for the 2018 national tsunami and earthquake hazard assessments, Geoscience Australia Record 2018/31, Canberra, pp 37, doi: 10.11636/Record.2018.031.
55. Griffin, J., Gerstenberger, M., Allen, T., Clark, D., Cummins, P., Cuthbertson, R., Dimas, V.-A., Gibson, G., Ghasemi, H., Hoult, R., Lam, N., Leonard, M., Mote, T., Quigley, M., Somerville, P., Sinadinovski, C., Stirling, M., Venkatesan, S. 2018b. Expert elicitation of model parameters for the 2018 National Seismic Hazard Assessment: summary of workshop, methodology and outcomes, Geoscience Australia Record 2018/28, Canberra, pp 74, doi: 10.11636/Record.2018.028.
56. Griffin, J. D., Allen, T.I., Gerstenberger, M.C. 2020. Seismic hazard assessment in Australia: can structured expert elicitation achieve consensus in the "land of the fair go"?, Seismol. Res. Lett. 91, 859–873, doi: 10.1785/0220190186.
57. Hansen, W.R, Reed, G.A. and Weinmann, P.E. 1986. Runoff Routing Parameters for Victorian Catchments. Hydrology and Water Resources Symposium, 1986, Griffith University, Brisbane.
58. Hills, E.S. 1975. Physiography of Victoria: an introduction to geomorphology. Whitcombe & Tombs.
59. Hillis, R. R. and Reynolds, S.D. 2003. In situ stress field of Australia; In Hillis, R. R., and Müller, R. D., Eds., Evolution and dynamics of the Australian plate, Geological Society of America. 372, 49-58, doi: 10.1130/0-8137-2372-8.49.
60. Ho, M., Wasko, C., O'Shea, D., Nathan, R., Vogel, E., Sharma, A. 2023. Changes in flood-associated rainfall losses under climate change. Journal of Hydrology, 625, 129950.
61. Horne, J. C. 1978, Depositional models in coal exploration and mining planning in Appalachian region: Am. Assoc. Petroleum Geologists Bull., Fig. 6, 2387.
62. Huesker. 2016. Installation manual and handling recommendations. Incomat.
63. Hughes, E., Stephens, D., Hill, P., Nathan, R., Ladson, T., Jayasinghe, R. and Lett, R. 2021. Benchmarking ARR2019 for Victoria. HWRS 2021, virtual symposium.
64. Hynes – Griffin, M.E. and Franklin A.G. 1984. Rationalizing the seismic coefficient method. https://erdc-library.erdc.dren.mil/jspui/bitstream/11681/10313/1/1029.pdf
65. Institute of Public Works Engineering Australia Queensland Division. 2017. Queensland Urban Drainage Manual (Fourth Edition), Institute of Public Works, Engineering Australasia, Queensland Division.
66. Jayaweera, L., Wasko, C., Nathan, R. and Johnson, F. 2023. Non-stationarity in extreme rainfalls across Australia. Journal of Hydrology, 624, 129872.
67. Jordan, P., Nathan, R., Mittiga, L., and Taylor, B. 2005. Growth curves and temporal patterns of short duration design storms for extreme events. Australasian Journal of Water Resources.
68. Kapostasy, S., 2002. Haunted Hill Gravel: deposition and neotectonic history along the southern Australian coast. Keck Geology Consortium, Wisconsin, USA.
69. Kayen R. and Carkin, B. 2010. Preliminary report on the shear wave velocity of Australian strong motion seismometer sites by the Spectral Analysis of Surface Waves Method (SASW) with Parallel-arrayed harmonic-wave sources and H/W microtremor method

70. Khilar, K., Folger, S., Gray, H. 1985. Model for Piping-Plugging in Earthen Structures, American Society of Civil Engineers ASCE.
71. Leonard, M. 2008. One hundred years of earthquake recording in Australia, Bull. Seismol. Soc. Am. 98, 1458–1470, doi: 10.1785/0120050193.
72. Leonard, M., Burbidge, D. R., Allen, T. I., Robinson, D. J., McPherson, A., Clark, D., Collins, C. D. N. 2014. The challenges of probabilistic seismic-hazard assessment in stable continental interiors: an Australian example, Bull. Seismol. Soc. Am. 104, 3008-3028, doi: 10.1785/0120130248.
73. Li, B., Garga, V. K., Davies, M. H. 1998. Relationships for Non-Darcy Flow in Rockfill. Journal of Hydraulic Engineering, 124:2, 206-212.
74. Mannik, R. D., Herron, A., Hill, P. I., Brown, R. E., Moran, R. 2013. Estimating the Change in Streamflow Resulting from the 2003 and 2006/2007 Bushfires in Southeastern Australia. Australasian Journal of Water Resources, Vol 16, No 2, pp. 107 – 120.
75. McMahon, T.A., Peel, M.C., Lowe, L., Srikanthan, R., McVicar, T.R. 2013. Estimating actual, potential, reference crop and pan evaporation using standard meteorological data: a pragmatic synthesis. Hydrology and Earth System Science, 17, 1331 – 1363, https://doi.org/10.5194/hess-17-1331-2013.
76. McPherson, A. A., Hall, L. S. 2007. Development of the Australian national regolith site classification map.
77. Meynink, W.J.C. 2011. Parsimonious Hydrological Modelling for Resource Development. Engineering Doctorate, University of Southern Queensland.
78. Miall, A. D., 1996. The geology of fluvial deposits, Fig. 80, p 205, and 8G, p. 204, Springer-Verlag.
79. Montano, L ., Miller, B. M. 2020. Hydraulic Performance Testing of a Concrete Mattress. Water Research Laboratory, School of Civil and Environmental Engineering, UNSW.
80. Morgan, R.P.C. and Nearing, M.A. 2011. Handbook of erosion modelling (1st ed.). Wiley-Blackwell. https://doi.org/10.1002/9781444328455.
81. Mote, T. I., So, M. L., Pappin, J. W. 2017. Arup NSHM – Australian National Seismic Hazard Model, Australian Earthquake Engineering Society 2017 Conference, Canberra, ACT.
82. Pagani, M., Monelli, D., Weatherill, G., Danciu, L., Crowley, H., Silva, V., Henshaw, P., Butler, R., Nastasi, M., Panzeri, L., Simionato, M., Vigano, D. 2014. OpenQuake Engine: an open hazard (and risk) software for the Global Earthquake Model, Seismol. Res. Lett. 85, 692–702, doi: 10.1785/0220130087.
83. Pearse, M., Jordan, P. and Collins, Y. 2002. A Simple Method for Estimating RORB Model Parameters for Ungauged Rural Catchments. Hydrology and Water Resources Symposium, 2002.
84. Peirson, W. L., Garcia, A. W. and Pells, S. E. 2003. Water wave attenuation due to opposing wind. Journal of Fluid Mechanics, 487, 345-365.
85. Pezeshk, S., Zandieh, A., Tavakoli, B. 2011. Hybrid empirical ground-motion prediction equations for eastern North America using NGA models and updated seismological parameters, Bull. Seismol. Soc. Am. 101, 1859–1870, doi: 10.1785/0120100144.
86. Pilarczyk, K. 2010. Design of Alternative Revetments. Handbook of Coastal and Ocean Engineering. pp. 479-520
87. PSM 2022, PSM4487-001R, “Report on the Extent and Cause of the Ground Movements and Cracking Following the Flood Event 9 June 2021,” dated 28/03/2022.
88. Queensland Guidelines on Acceptable Flood Capacity for Dams. 2007.
89. RGS. 2023. Stage 1 Sampling and Analysis Plan: Drilling Program, Yallourn Coal Mine.
90. Robertson, P.K. 2010. Evaluation of flow liquefaction and liquefied strength using the Cone Penetration Test. ASCE J. Geotech. Geoenviron. Eng. Vol. 136, No. 6, 842–853.
91. SA Water. 2024. Technical Standard TS 0109 – Infrastructure Design, SA Water.
92. Salas, J.D. and Obeysekera, J. 2014. Revisiting the Concepts of Return Period and Risk for Nonstationary Hydrologic Extreme Events. Journal of Hydrologic Engineering, ASCE, 19(3), pp. 554 – 568.
93. Saygili, G. & Rathje, E.M. 2008. Empirical predictive models for earthquake-induced sliding displacements of slopes. Journal of Geotechnical and Geoenvironmental Engineering, 134(6), 790-803
94. Seed, R.B., Cetin, K.O., Moss, R.E.S., Kammerer, A., Wu, J., Pestana, J., Riemer, M., Sancio, R.B., Bray, J.D., Kayen, R. and Faris, A. 2003. Recent advances in soil liquefaction engineering: A unified and consistent framework, Earthquake Engineering Research Center Report No EERC 2003-06.

95. Sharples, J.J., Cary, G.J., Fox-Hughes, P., Mooney, S., Evans, J.P., Fetcher, M-S., Fromm, M., Grierson, P.F., McRae, R., Baker, P. 2016. Natural hazards in Australia: extreme bushfire. Climate Change, 139, pp. 85 – 99.
96. Slight, J. 1944. Victoria [cartographic material] : main areas in which bushfires occurred during summer of 1943/44 shown in red / James Slight, engraver.
97. SMEC. 2002. Design drawing LV49/1-2/002.
98. SMEC. 2005a. Morwell River Diversion Design Report Volume I.
99. SMEC.2005b. MRD design drawings from Morwell River Diversion Vol 02 Design Report.
100. SMEC. 2010. Morwell River Diversion Post Construction Review, Project No. 3004131, Rev 1.
101. Somerville, P., Graves, R., Collins, N., Song. S. G., Ni, S., Cummins, P. 2009. Source and ground motion models for Australian earthquakes, Australian Earthquake Engineering Society 2009 Conference, Newcastle, New South Wales.
102. The State of Victoria Department of Environment Land Water and Planning. 2015. Levee Management Guidelines, Levee Management Guidelines
103. The State of Victoria Department of Environment, Land, Water and Planning. 2020. Guidelines for Assessing the Impact of Climate Change on Water Availability in Victoria.
104. Trollope, D. H., Rosengren, K. J., & Brown, E. T. 1965. The mechanics of brown coal. Geotechnique, 15(4), 363-386.
105. Walker, R. G, and Cant, D. J., 1984. Sandy fluvial systems, *in* R. G. Walker (ed.), *Facies models:* Geoscience Canada Reprint Ser. 1, Geological Association of Canada
106. State of Washington Department of Ecology. 1993. Washington State Department of Ecology Safety Guidelines, Part IV Dam Design and Construction.
107. Wasko, C. and Nathan, R. 2019. Influences of changes in rainfall and soil moisture on trends in flooding. Journal of Hydrology, 575, pp. 432 – 441.
108. Wasko, C., Guo, D., Ho, M., Nathan, N. and Vogel, E. 2023. Diverging projections for flood and rainfall frequency curves, Journal of Hydrology, 620, 129403.
109. Watts, K., and Charles, J. A. 2015. Building on fill: geotechnical aspects.
110. Western Australia Government. 2011. Guideline for Preparing Mine Closure Plans.
111. Western Australia Government. 2025. Guideline for Preparing Mine Closure Plans.

Brisbane

Level 6, 500 Queen Street
Brisbane QLD 4000
+61 7 3220 8300

Sydney

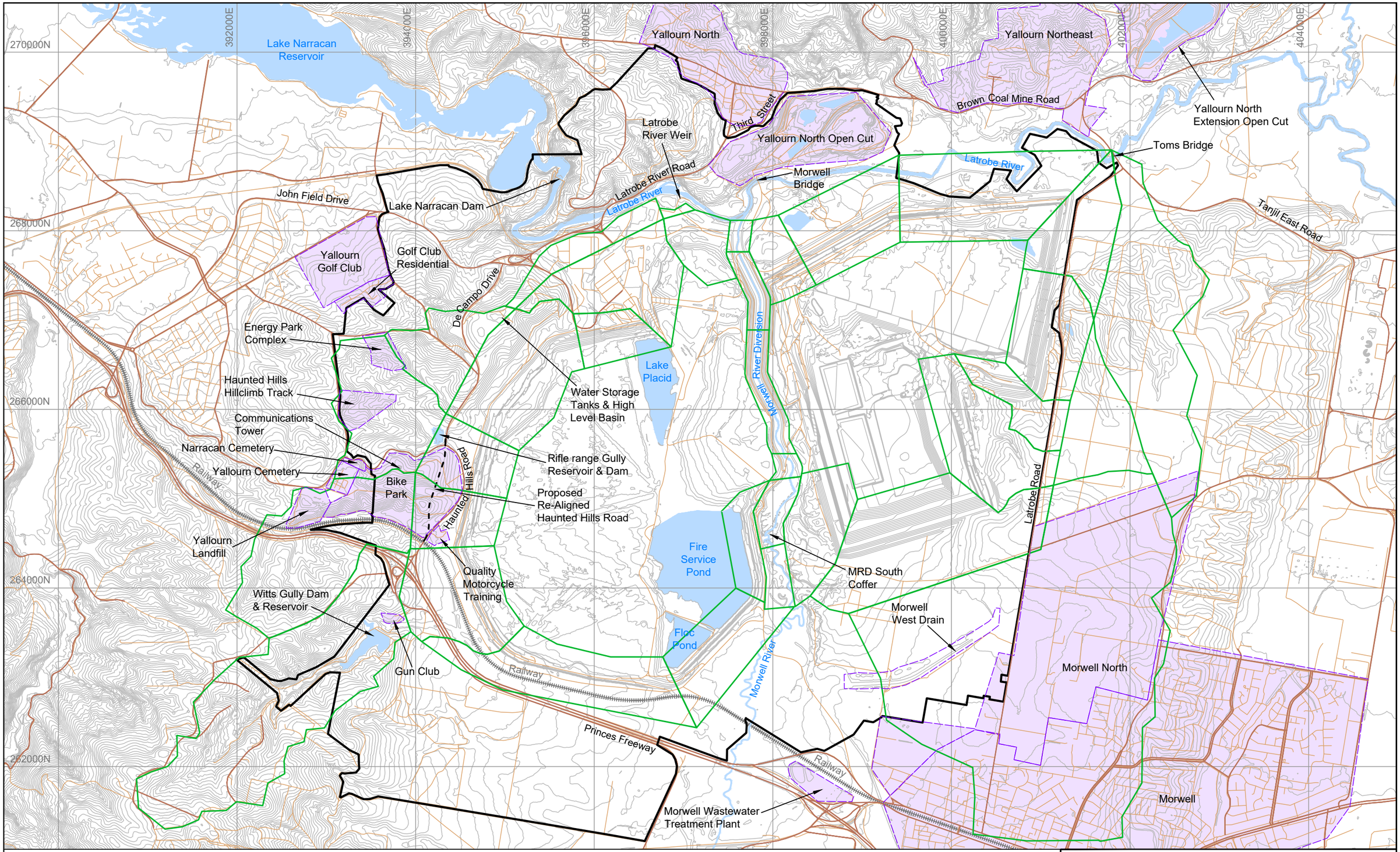
G3-56 Delhi Road
North Ryde NSW 2113
+61 2 9812 5000

Melbourne

Office 16
Level 4, 60 Moorabool Street
Geelong VIC 3220
+61 3 7068 5699

Perth

Level 3 22 Delhi Street
West Perth WA 6005
+61 8 9462 8400



LEGEND

- EOM Topography 5m Contours
- Major Rivers, Streams, Reservoirs & Ponds
- Main Roads
- Minor & Other roads
- Railway
- Existing Infrastructure
- Yallourn License Boundary
- Rehabilitation Domains

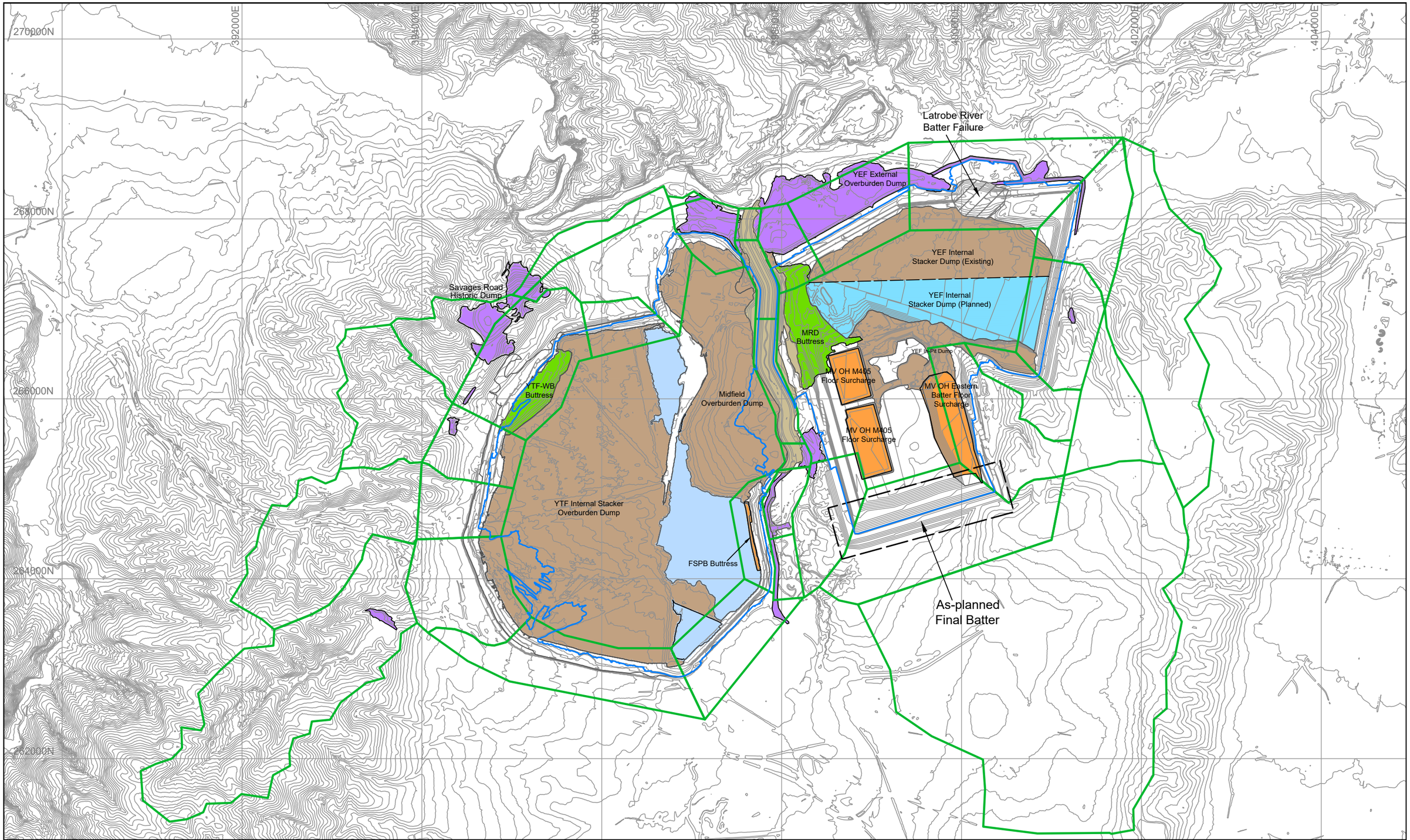
0 500 1000 1500 2000

Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

LOCATION OF EXISTING INFRASTRUCTURE

PSM4487-200R	Figure 1



LEGEND

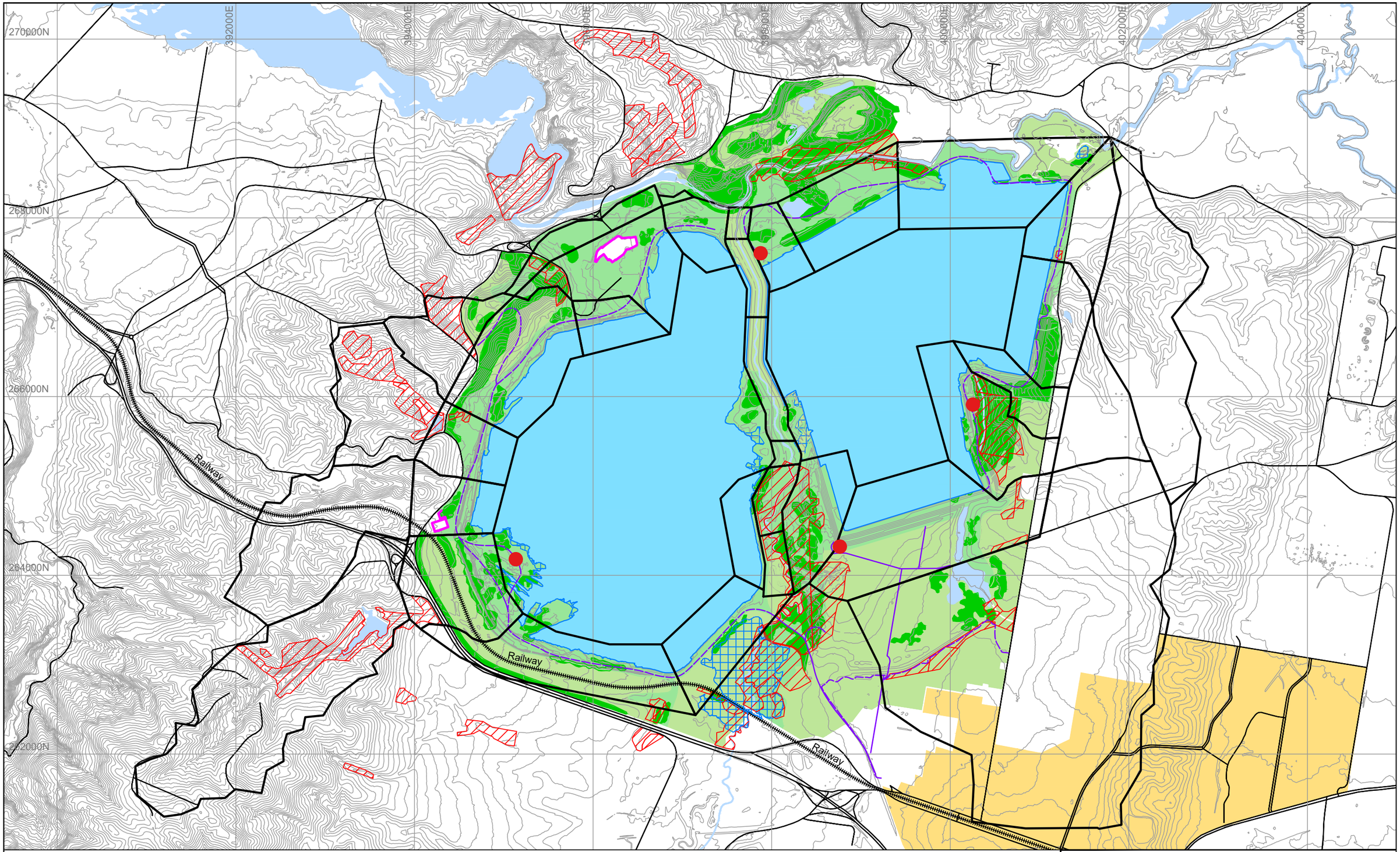
- EOM Topography 5m Contours
- Domains
- Pit Lake RL37m
- Existing Engineered Fill (MRD)
- Existing In-Pit Dump / Fill
- Existing External Dump / Fill
- Existing In-Pit Buttress
- Planned In-Pit Buttress / Floor Surcharge
- Planned In-Pit Stacker Dump
- Existing In-Pit Water Bodies

0 500 1000 1500 2000
Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

EXISTING & PLANNED
BUTTRESSES & DUMPS

PSM4487-200R | Figure 2



LEGEND

- EOM Topography 5m Contours
- Major Rivers, Streams, Reservoirs & Ponds
- Main Roads
- Railway
- Residential Areas
- Rehabilitation Domains

Rehabilitation

- Pit Lake RL37m
- Wetlands
- Grasslands
- Closed Woodlands
- Consevation Zone

Potential Land Use

- Access Routes
- Pathways
- Recreation Nodes
- Private Land

Notes:

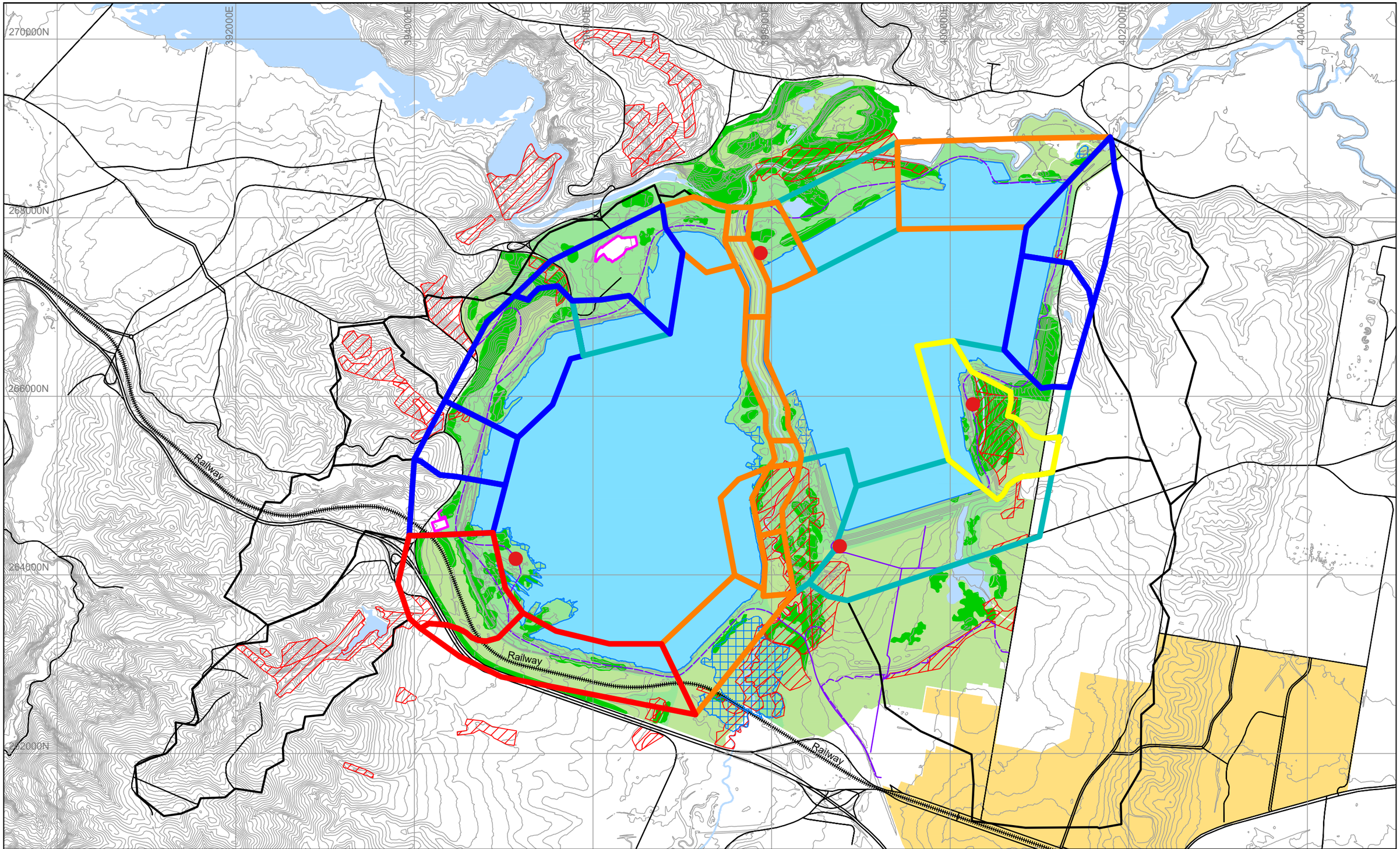
1. Final rehabilitation plan based on EAY drawing "YDMR/10-2/2-REHAFINAL PLAN (2209/12-REHAB FINAL PLAN)"

0 500 1000 1500 2000
Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

FINAL REHABILITATION PLAN

PSM4487-200R | Figure 3



LEGEND

- EOM Topography 5m Contours
- Major Rivers, Streams, Reservoirs & Ponds
- Main Roads
- Railway
- Residential Areas
- Rehabilitation Domains

EAY Rehabilitation[1]

- Pit Lake RL37m
- Wetlands
- Grasslands
- Closed Woodlands
- Consevation Zone

EAY Potential Land Use[1]

- Access Routes
- Pathways
- Recreation Nodes
- Private Land

Principal Risk Element per Domain[2]

- Farmland, no extended or permanent human occupation.
- Picnic spots, temporary human occupation, 1-10 people
- Secondary public road, mining infrastructure, or private land
- River
- Highway or railway line

Notes:

1. Final rehabilitation plan based on EAY drawing "YDMR/10-2/2-REHAFINAL PLAN (2209/12-REHAB FINAL PLAN)"
2. Considering land use only. Does not include stability.

0 500 1000 1500 2000

Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

CURRENT PLANNED
POST MINING LAND USE

PSM4487-200R | Figure 4

394000
396000
398000
400000
402000
268000
266000
264000

Legend

End of mining topographic contours (2m)

Rehabilitation domain

Section consequence rating - EOM

Severity 1 - Insignificant

Severity 2 - Minor

Severity 3 - Moderate

Severity 4 - Major

Severity 5 - Critical

Overall domain consequence rating - EOM

Severity 1 - Insignificant

Severity 2 - Minor

Severity 3 - Moderate

Severity 4 - Major

Severity 5 - Critical

NOTES:
1.

N

Scale 1:30,000

0 500 1,000 m

Local Mine Grid: SECV

P S M

Created By: BRJ

Revision: A

Date: 01 Apr 2025

Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

EA RISK CONSEQUENCE
OF FAILURE AT END OF MINING

PSM4487-200R

Figure 5

GIS - PSM4487\03_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Risk Consequence Plans.qgz Layout: Figure 5 - EA Risk Failure Consequence at EOM

394000
396000
398000
400000
402000
268000
266000
264000

Legend

End of mining topographic contours (2m)

Rehabilitation domain

Section consequence rating - Lake full

Severity 1 - Insignificant

Severity 2 - Minor

Severity 3 - Moderate

Severity 4 - Major

Severity 5 - Critical

Overall domain consequence rating - Lake full

Severity 1 - Insignificant

Severity 2 - Minor

Severity 3 - Moderate

Severity 4 - Major

Severity 5 - Critical

NOTES:
1. Consequence rating considers land use only. Does not consider stability results.

N

Scale 1:30,000

0 500 1,000 m

Local Mine Grid: SECV

P S M

Created By: BRJ

Revision: A

Date: 24 Apr 2025

Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

EA RISK CONSEQUENCE OF FAILURE AT END OF REHABILITATION & LAKE FULL

PSM4487-200R

Figure 6

GIS - PSM4487\03_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Risk Consequence Plans.qgz Layout: Figure 6 - EA Risk Failure Consequence Lake Full excluding stability

392000 394000 396000 398000 400000 402000

268000 266000 264000 262000

Lake Narracan
Yallourn North
Latrobe River
Thoms Bridge
Latrobe Weir
GPS Weather Station
De Campo Drive
East Field
Pond
Lake Placid
Pond
Pond
Rifle Range Gully Dam
Maryvale Field
Pond
Latrobe Road
Township Field
Pond
Haunted Hills Road
Fire Service Pond
Fire Services Weather Station
Old Melbourne Road
Flocc Pond
Witts Gully Dam
Morwell River
Marretts Road
M1 Princes Freeway

Legend

- Culvert
- Yallourn License Boundary
- Watershed Drainage
- Railway
- External Infrastructure
- Pit Boundaries
- Surface Water Features
- Pump
- Weather Station
- Lake Narracan
- Latrobe Weir
- Thoms Bridge
- Yallourn North

Catchment

- East Field/Maryvale Field
- Hancock Victorian Plantations (HVP)
- Maryvale Transfer
- Melbourne Swamp Drain Diversion
- Mid Field
- Morwell West Diversion Drain
- Morwell West Return Diversion (1 to 150 Drain)
- Railway Drain
- Remnant Morwell West Drain
- Rifle Range
- South West Pit Crest
- Township Field
- Witts Gully
- Yallourn Power Station
- Downstream
- Morwell River Diversion South Catchment

Drainage Features

- Diversion Drain
- HVP Drain
- Melbourne Swamp Diversion
- Morwell West Drain
- Remnant Morwell West Drain
- 2015 HVP Diversion Drain

NOTES:

N

Scale 1:40,000

500 0 500 1,000 1,500 m

Local Mine Grid: SECV

P S M	Created By: PSM	Revision: A
	Date: 28 Mar 2025	Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

EXISTING PERIPHERAL CATCHMENT DRAINAGE

PSM4487-200R | Figure 7

N:\PSM4487\Engr\07 Surface Water Review\01.GIS\01_MXDs\PSM4487_Figures_LMG_VK.qgz Layout: PSM4487-200R - Figure 7

270000N
268000N
266000N
264000N
262000N
392000E
394000E
396000E
398000E
400000E
402000E
404000E

LEGEND

EOM Topography
5m Contours

Rehabilitation Domains

Boreholes drilled to the interseam with logging (PSM4487-125R)

Other Boreholes

Cone Penetration Tests

Test Pits

Notes:

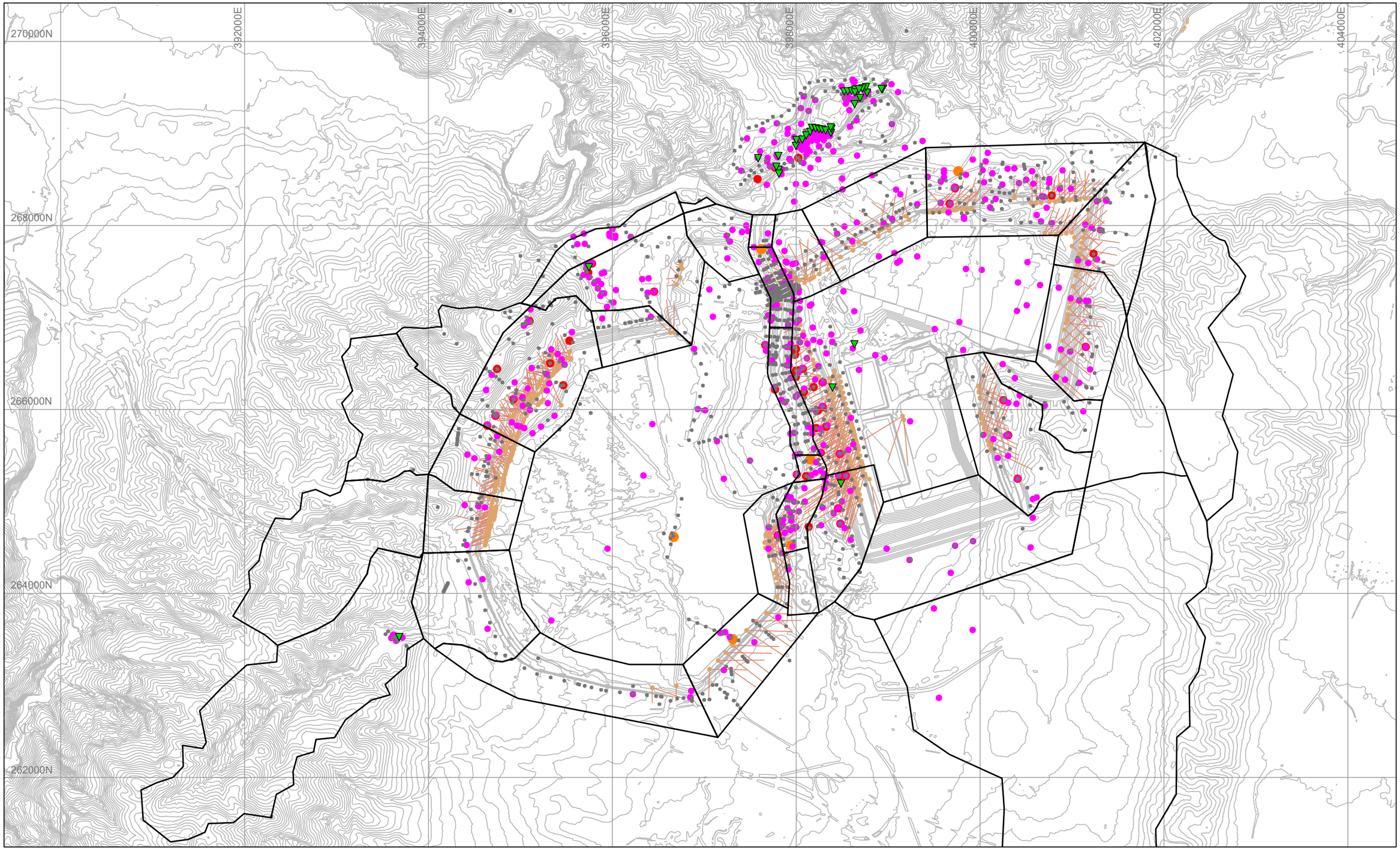
1. Site investigation localities from EnergyAustralia Yallourn database dated 04/03/2025 (YallMine.sqlite3)

0 500 1000 1500 2000
Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

SITE INVESTIGATION IN & AROUND YALLOURN MINE

PSM4487-200R | Figure 8



LEGEND

- EOM Topography 5m Contours
- Rehabilitation Domains
- Pins
- Piezometers with readings post 2023
- Inclinometers
- Horizontral Drains
- Water Level Sensors
- Pump Bores

Notes:

1. Active instrumentation shown from EnergyAustralia Yallourn database dated 04/03/2025 (YallMine.sqlite3)

0 500 1000 1500 2000

Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ALL ACTIVE INSTRUMENTATION
IN & AROUND YALLOURN MINE

PSM4487-200R | Figure 9

392000
394000
396000
398000
400000
402000
266000
264000
262000

Lake Narracan Reservoir
Latrobe River Dam (Lake Narracan)
Latrobe River Weir
Third Street
Yallourn North open cut, Ash pond and ash waste dump
Brown Coalmine Road
Toms Bridge
Tanjil East Road
Latrobe River Road
Morwell Bridge
John Field Drive
Yallourn Golf Club
Savages Dump
Water storage tanks
Westbrook Gully Dump
Golf club residential
De Campo Dr
Energy Park Complex
Haunted Hills Hillclimb Track
Communications Tower
Narracan Cemetery
Haunted Hills Road
Yallourn Cemetery
Bike Park
Latrobe Road
Yallourn Landfill
Quality Motorcycle Training
Morwell West Drain
Morwell north
Witts Gully Dam and reservoir
Gun Club
Princes Freeway
Morwell
Morwell wastewater treatment plant

Legend

- Geotechnical domains
- Existing infrastructure
- Main road
- Railway
- Other roads and tracks
- Yallourn Mine license boundary
- Major river and water bodies

NOTES:
1. The End of Mining topographic surface is shown

N

Scale 1:40,000

400 0 400 800 1,200 1,600 m

Local Mine Grid: SECV

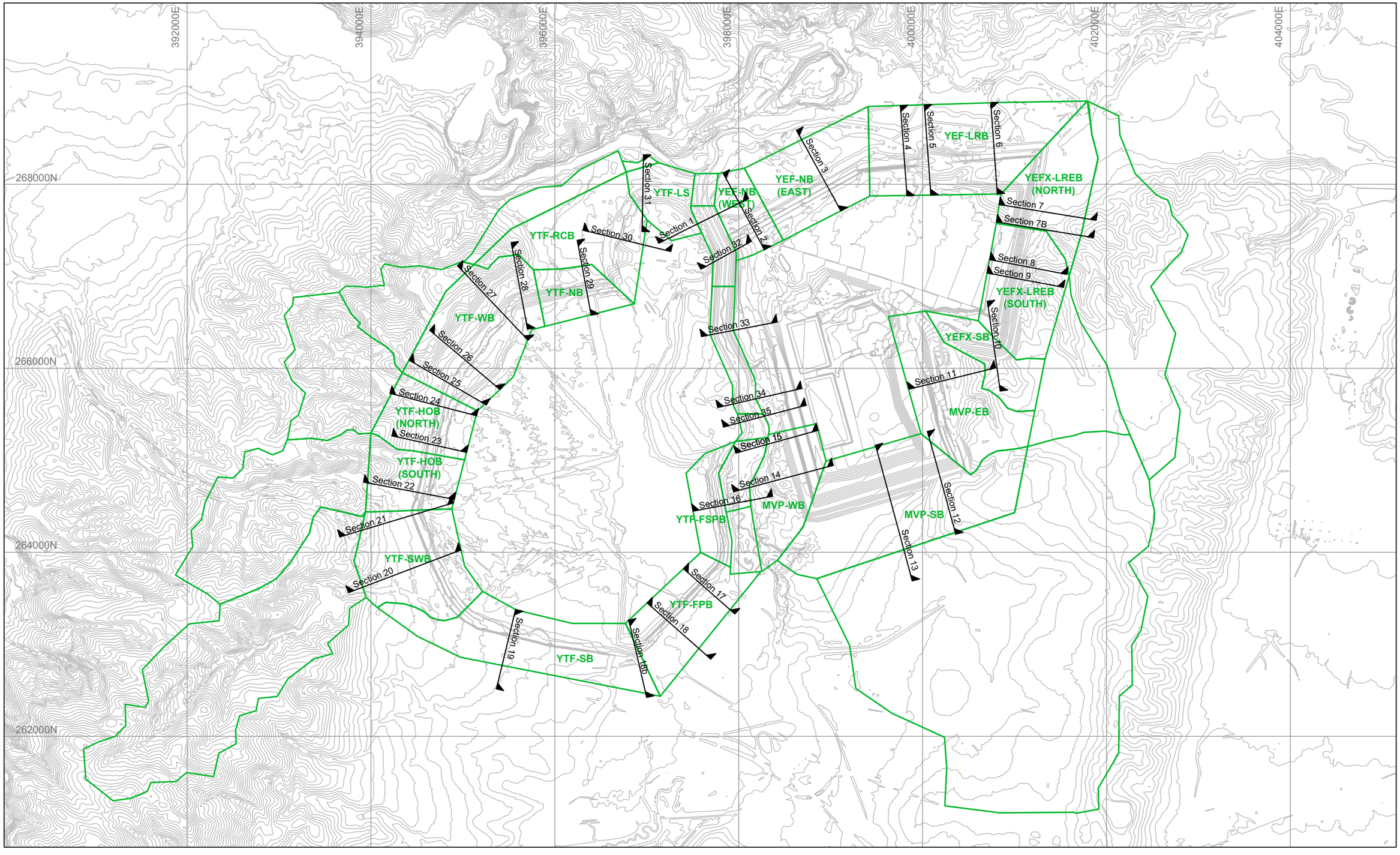
P S M	Created By: BRJ	Revision: 2
	Date: 28 Mar 2025	Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

END OF MINING TOPOGRAPHY & MINE LAYOUT

PSM4487-200R | Figure 10

GIS - PSM4487\03_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R_Topo_and_Infrastructure_Fig_10.qgz Layout: Figure 10



LEGEND

- EOM Topography 5m Contours
- Rehabilitation Domains
- Stability Section Locations

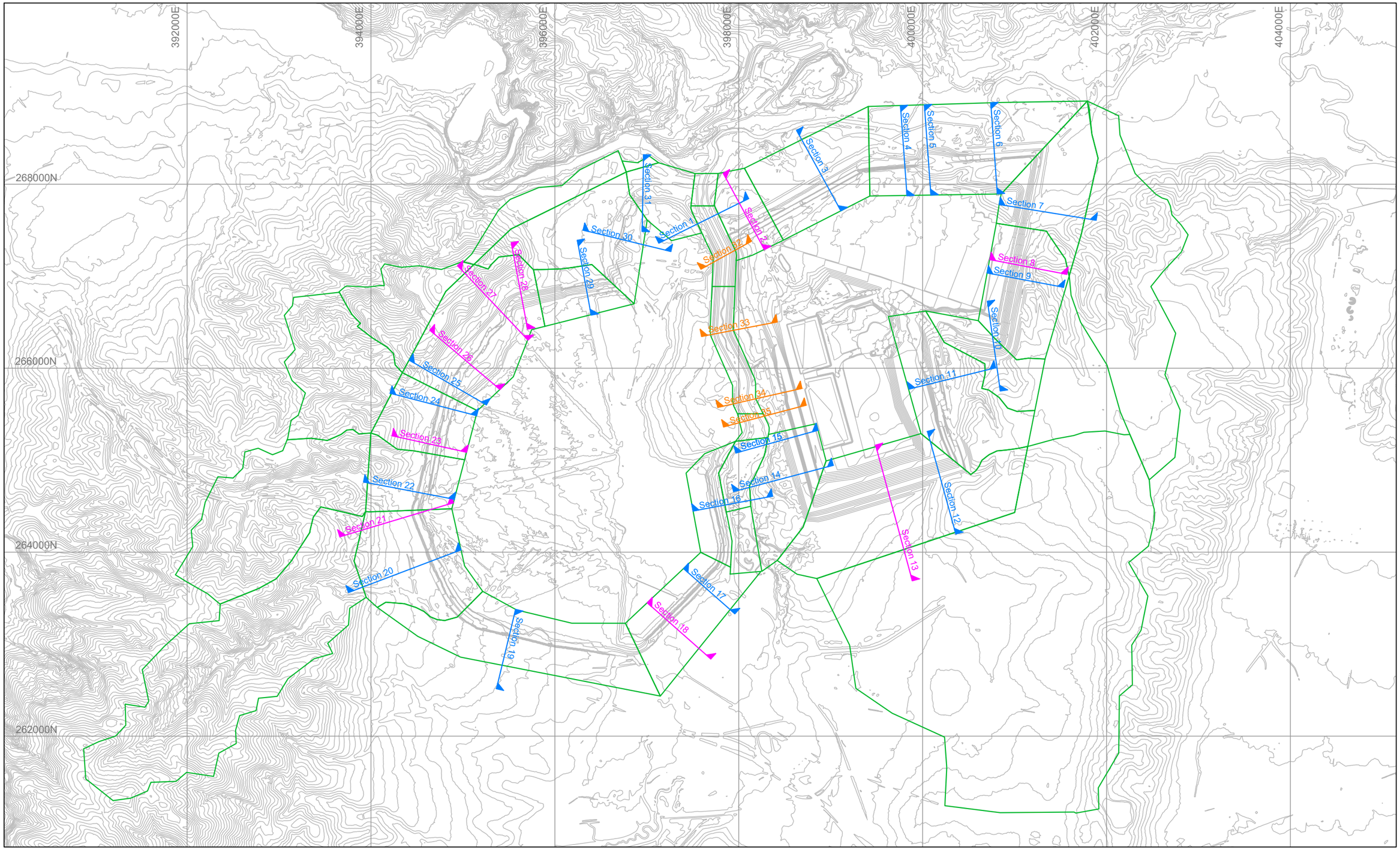
0 500 1000 1500 2000

Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

REHABILITATION DOMAINS & STABILITY SECTION LOCATIONS

PSM4487-200R | Figure 11



LEGEND

EOM Topography
5m Contours

Rehabilitation Domains

Open Pit Section Location

Sections along Peripheral CatchQment Drainage Structure or prone to flooding

Other Open Pit Sections

MRD Section Locations

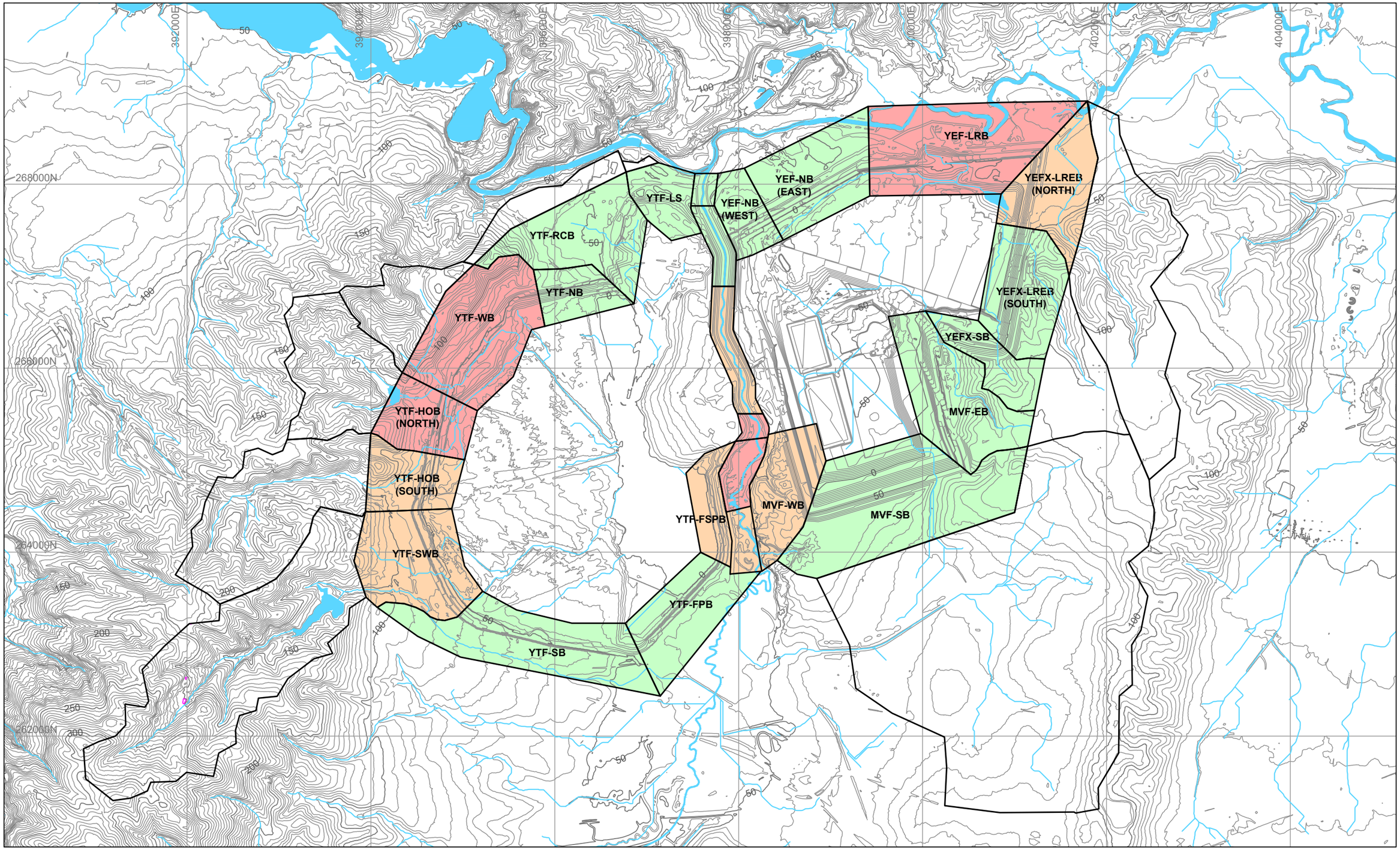
0 500 1000 1500 2000

Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

SECTION TYPE & LOCATION PLAN

PSM4487-200R | Figure 12



LEGEND

- EOM Topography 5m Contours
- Rivers, Streams & Reservoirs
- Rehabilitation Domains

Geotechnical Risk

- Higher
- Medium
- Lower

Notes:

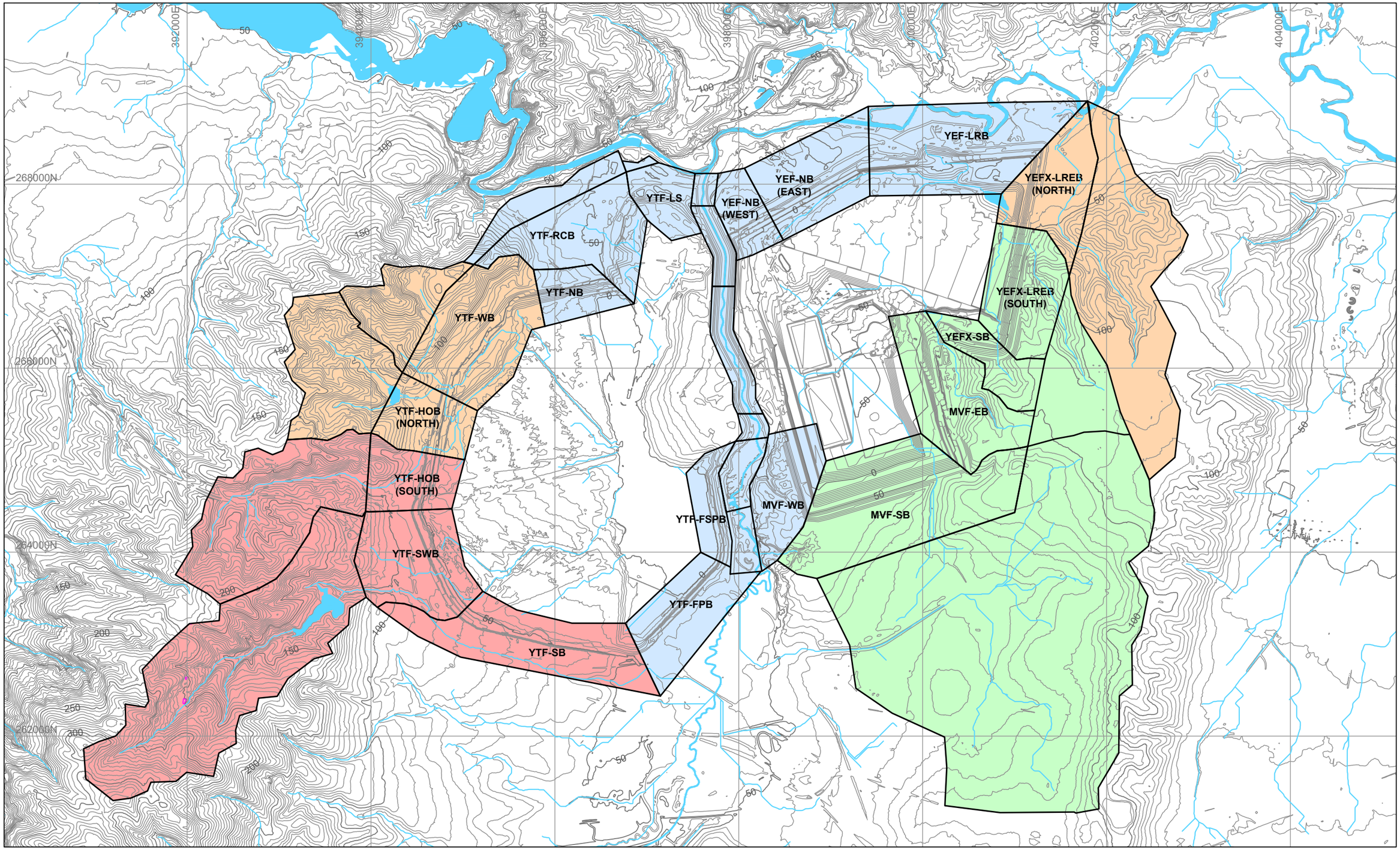
1. Domain risk rating based on:
   a) Base conditions including:
      i) Geological Structure
      ii) Surface Water
   b) Reponses including:
      i) Groundwater
      ii) Pin Monitoring
      iii) Deformations

0 500 1000 1500 2000
Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GEOTECHNICAL DOMAIN RISK PLAN

PSM4487-200R | Figure 13



LEGEND

- EOM Topography 5m Contours
- Rivers, Streams & Reservoirs
- Rehabilitation Domains

Surface Water Risk

- High
- Medium-High
- Medium
- Low

Notes:

1. Domain risk rating based on :
   a) Base conditions including:
      i) Catchment size
      ii) Nature of peripheral catchment
   b) Complicating factors including:
      i) Complexity of existing surface water diversion infrastructure
      ii) Future surface water design simplicity
      iii) Ownership and ownership complexity

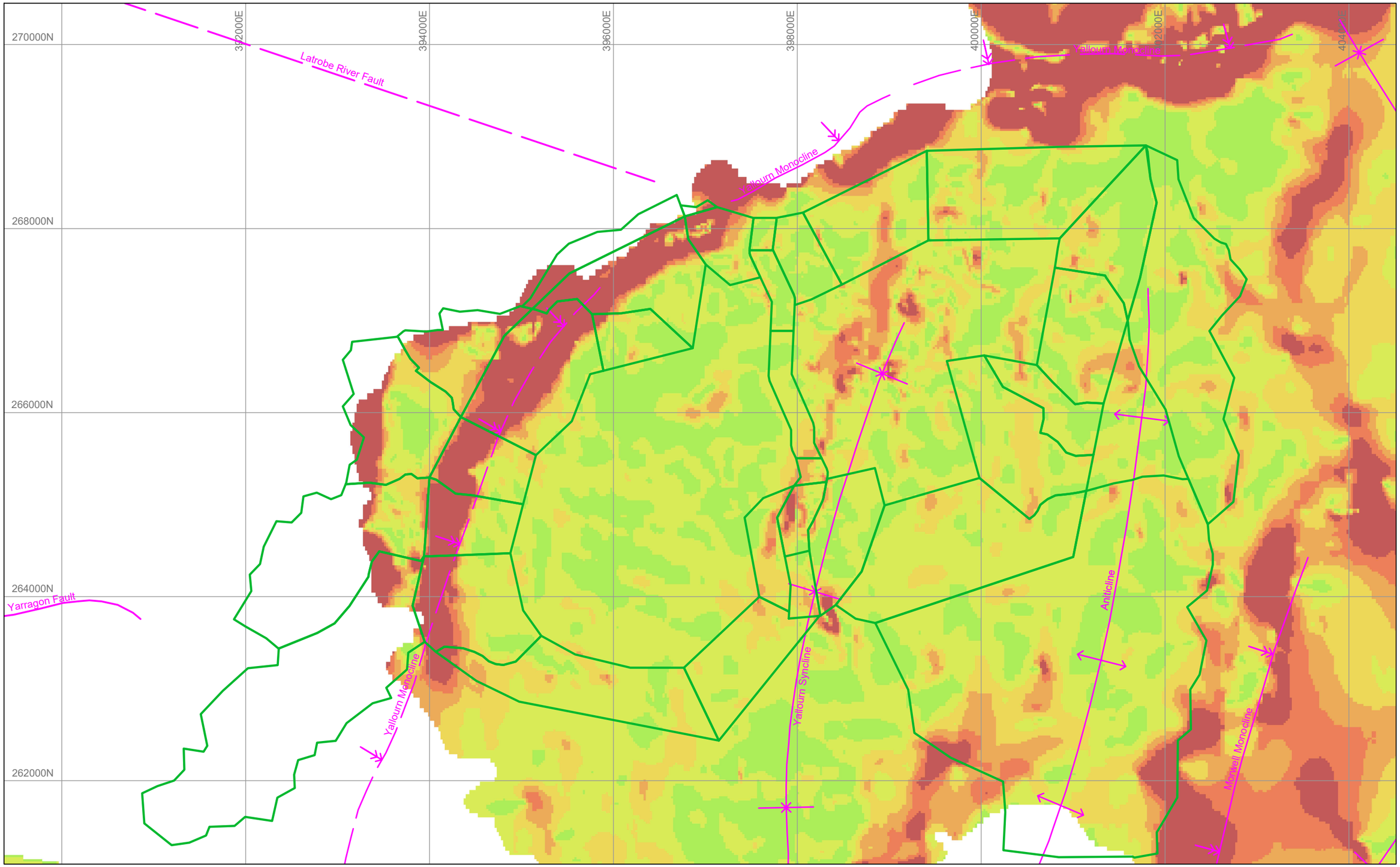
0 500 1000 1500 2000

Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

SURFACE WATER DOMAIN RISK PLAN

PSM4487-200R | Figure 14



LEGEND

- Geological Structures
- Geological Structures - Inferred
- Domains

Yallourn Coal floor dip

- <= 1°
- 1 - 2°
- 2 - 3°
- 3 - 4°
- 4 - 5°
- 5 - 6°
- > 6°

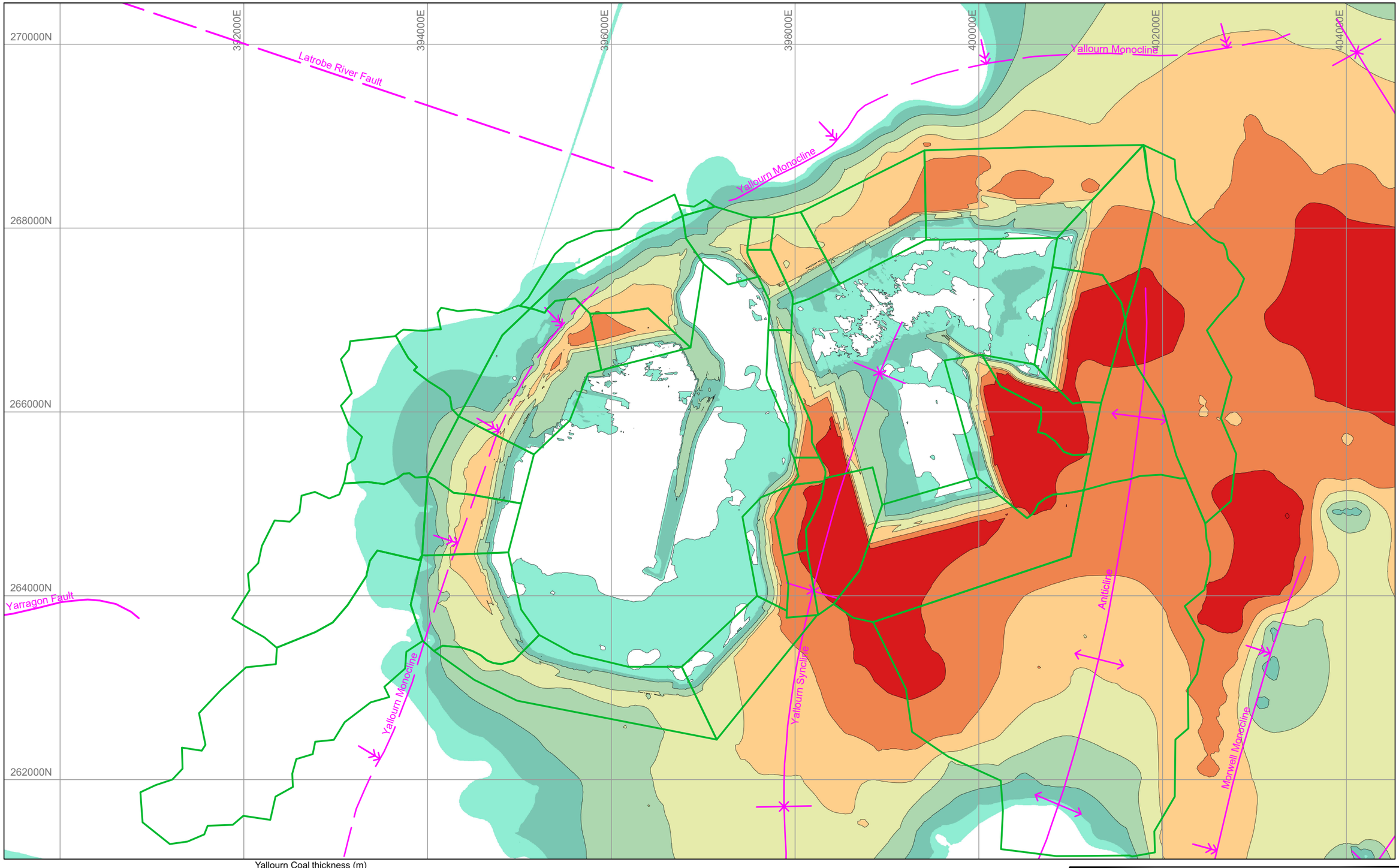
0 500 1000 1500 2000

Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YALLOURN COAL FLOOR DIP PLAN

PSM4487-200R | Figure 15



LEGEND

- Geological Structures
- Geological Structures - Inferred
- Domains

Yallourn Coal thickness (m)

- <= 0m
- 0 - 5m
- 5 - 15m
- 15 - 30m
- 30 - 45m
- 45 - 60m
- 60 - 75m
- > 75m

15m thickness contours

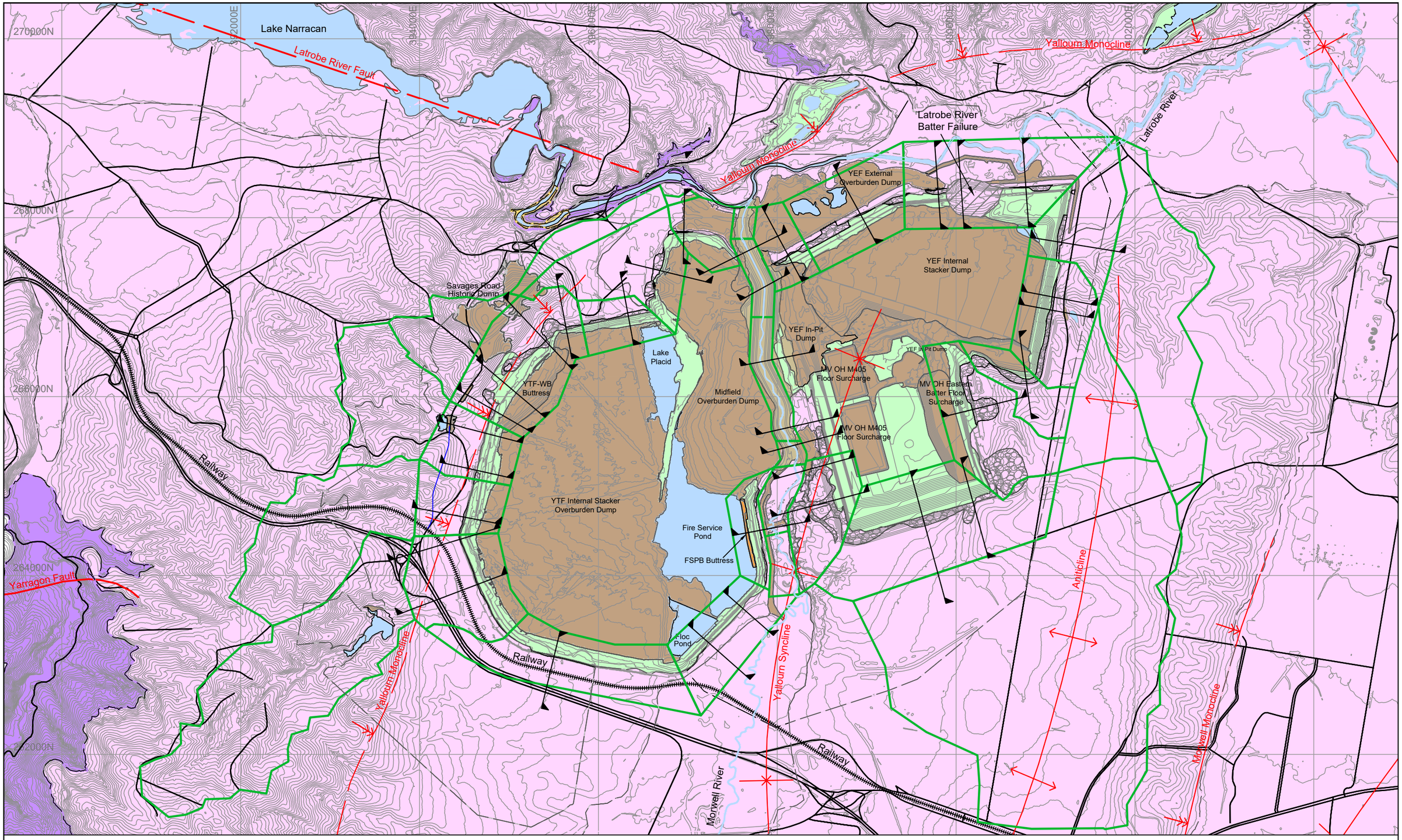
0 500 1000 1500 2000

Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YALLOURN COAL THICKNESS PLAN

PSM4487-200R | Figure 16



LEGEND

- EOM Topography 5m Contours
- Domains
- Main Roads
- Stability Section Locations
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer (HHFA)
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- Water Body
- Thorpdale Volcanics
- Basement

Notes:

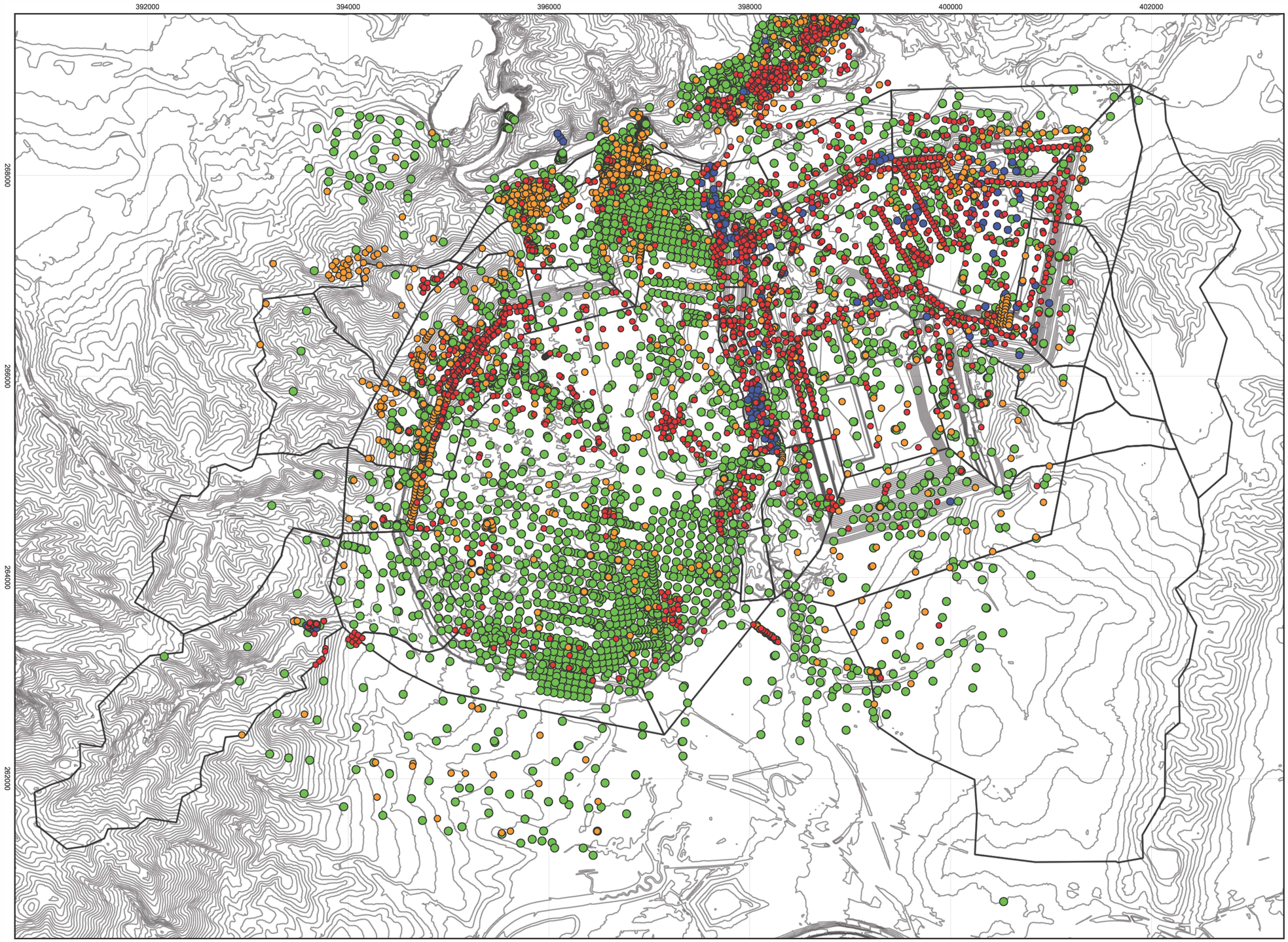
1. Modelled lithology for feasibility design geological model (PSM4487-125R)
2. Lithologies beyond modelled extents inferred from EnergyAustralia Mine Scope Geological Model
3. Geological structures from Moe 1:50000 geological map. (Bulger & Carey, 1983)

0 500 1000 1500 2000
Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GEOLOGY PLAN

PSM4487-200R | Figure 17



Legend

End of mining topographic contours (5m)

Feasibility Design Domains

Information Confidence

No Information

General Lithology Only

Formation Only

General Lithology & Formation

N

Scale 1:40,000

400 0 400 800 1,200 1,600 m

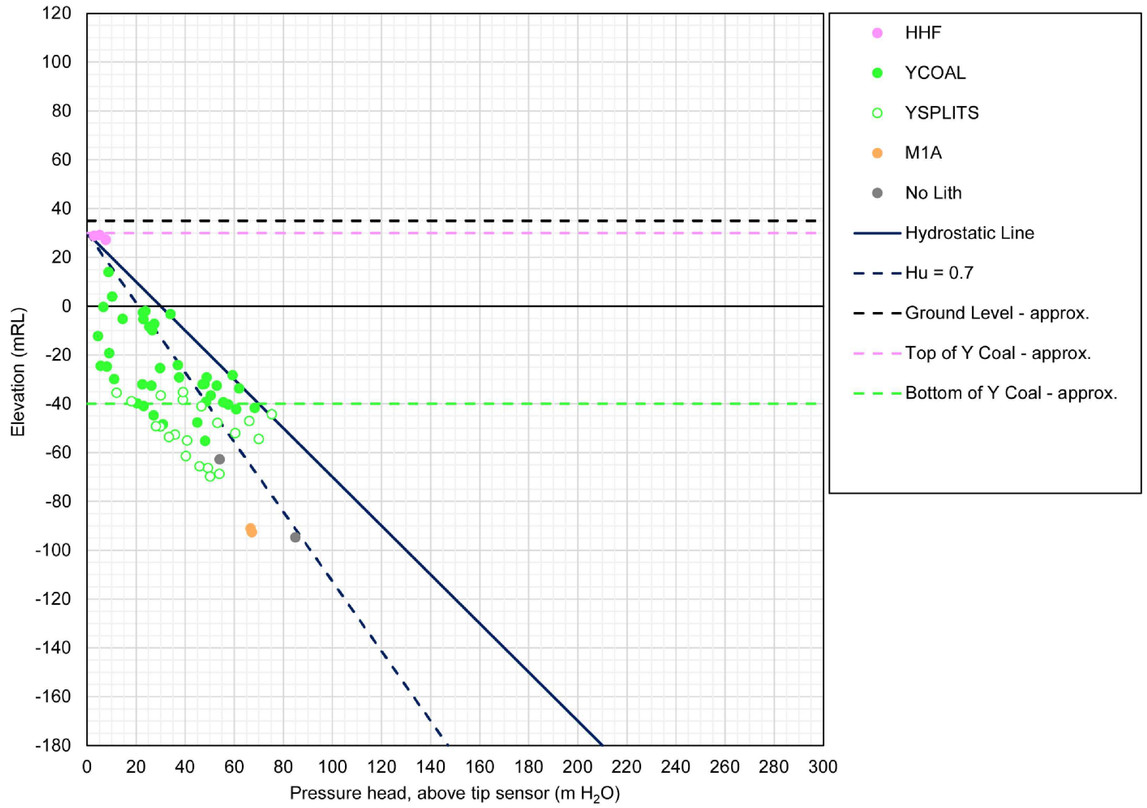
Local Mine Grid: SECV

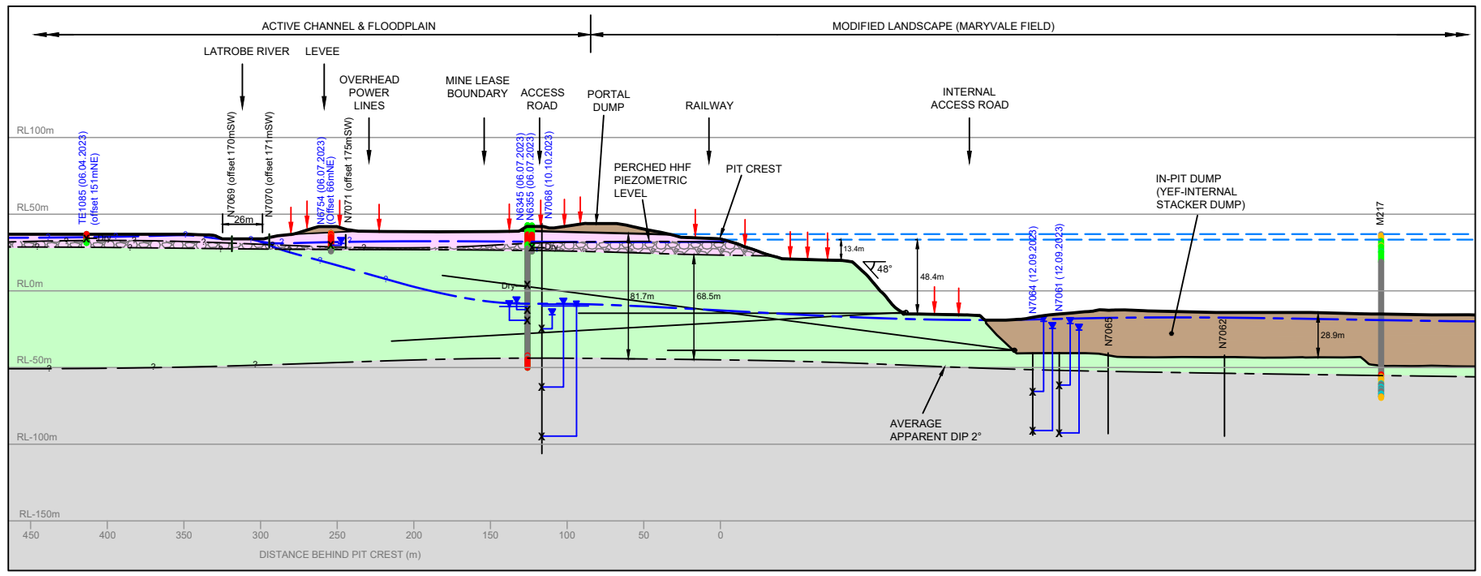
EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

BOREHOLE & CONFIDENCE
LOCATION PLAN

P S M	Created By: BA	Revision: A	
	Date: 02 May 2024	Paper Size: A3	PSM4487-200R	Figure 18

C:\Users\Brendon.Jones\Pells Sullivan Meynink\GIS -PSM4487\03_Figures\PSM4487-125R\PSM4487-125R_Figures_Geology_Model.qgz layout: Figure 5

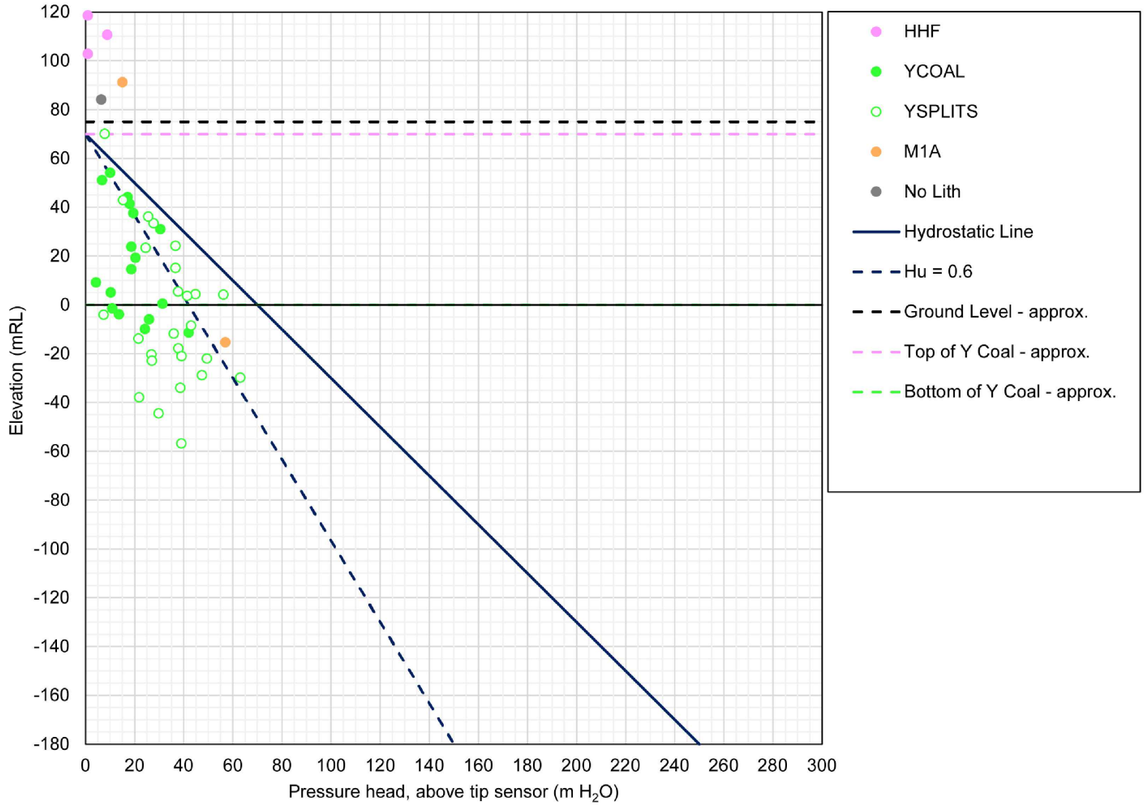


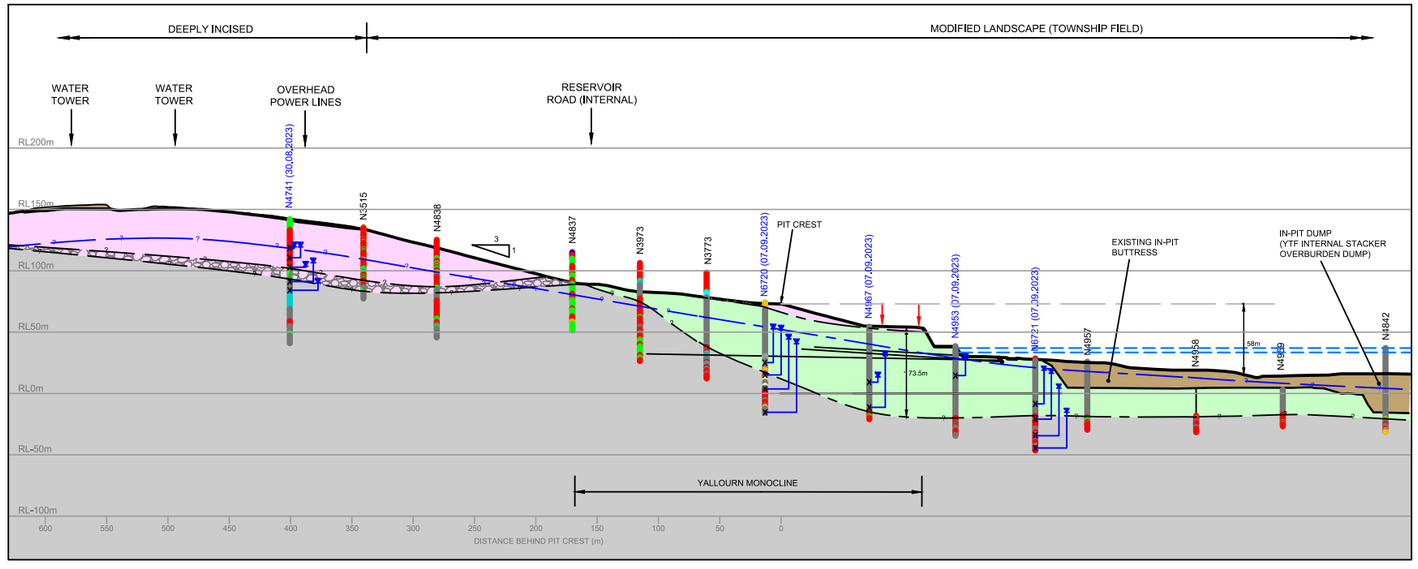


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - YEF-LRB

PSM4487-200R | Figure 19

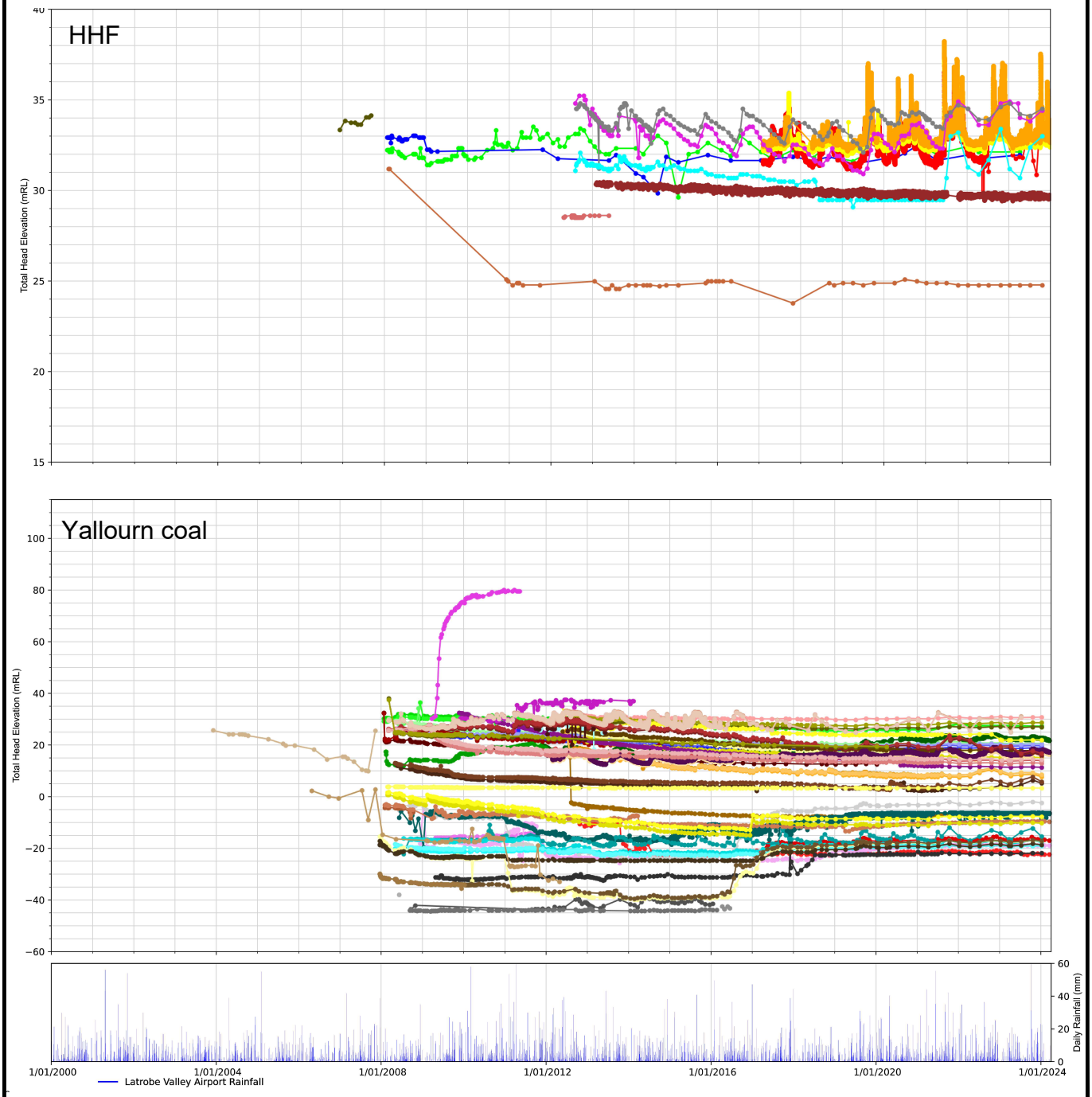




EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - YTF-WB

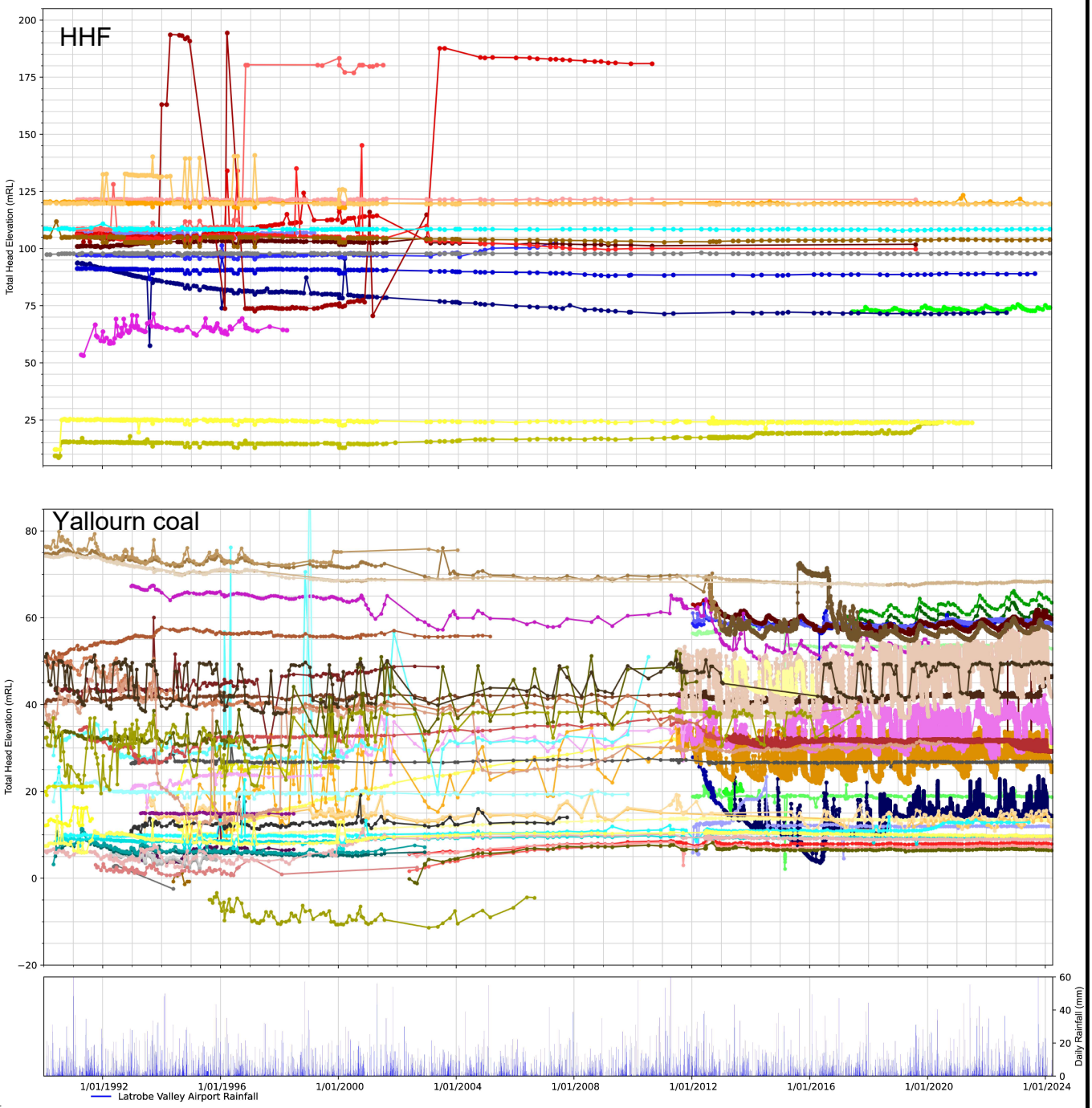
PSM4487-200R | Figure 20



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS
HHF & YALLOURN SEAM - YEF-LRB

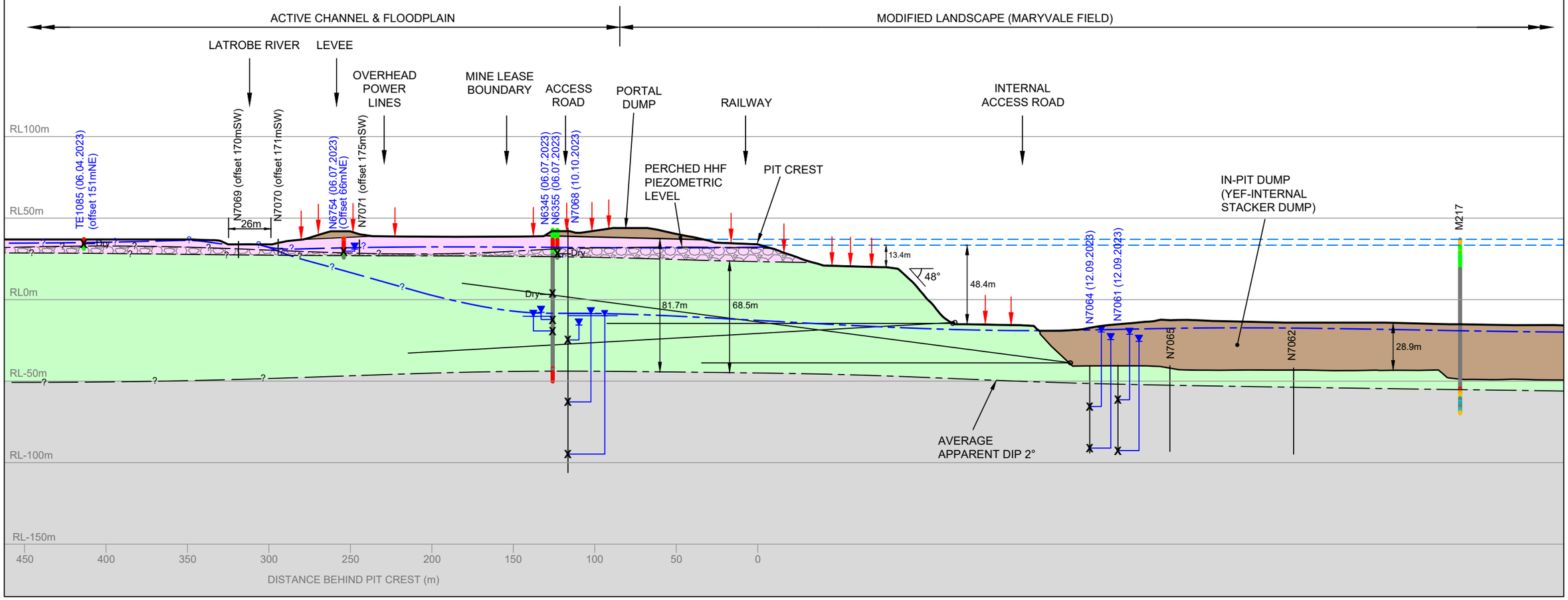
PSM4487-200R | Figure 21



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS
HHF & YALLOURN SEAM - YTF-WB

PSM4487-200R | Figure 22



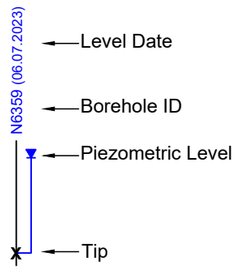
LEGEND

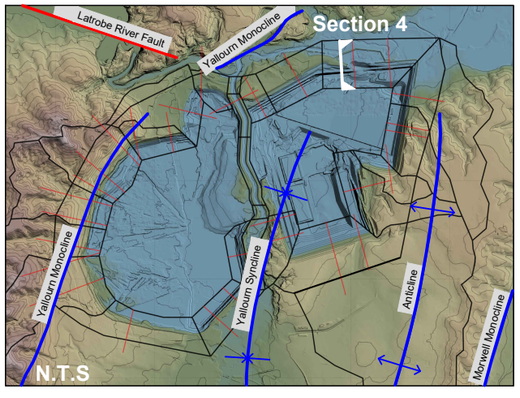
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





Notes

1. Typical geological & slope profile: Bedding dipping out of slope.

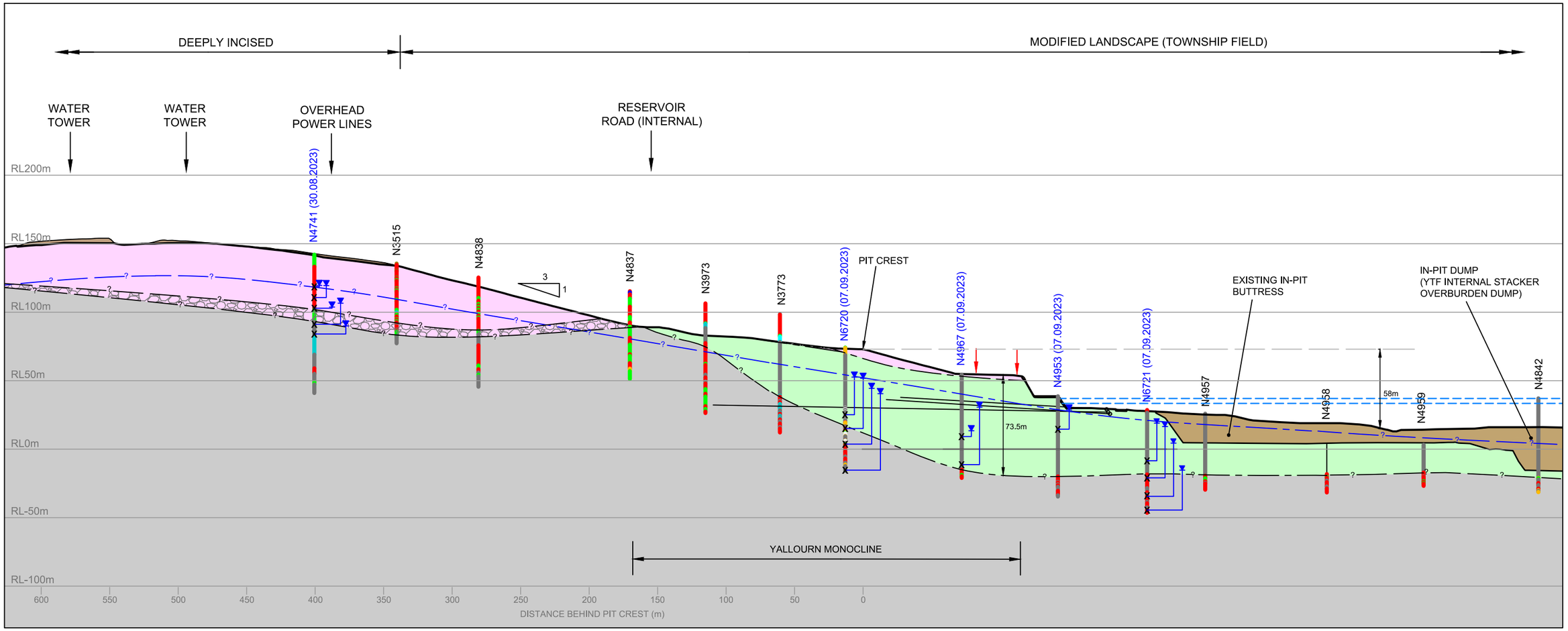
0 50 100
Scale (m)
@ 1:2500 A3

PSM

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GEOTECHNICAL SECTION
SECTION 4 (YEF-LRB)

PSM4487-200R | Figure 23



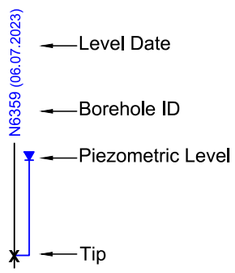
LEGEND

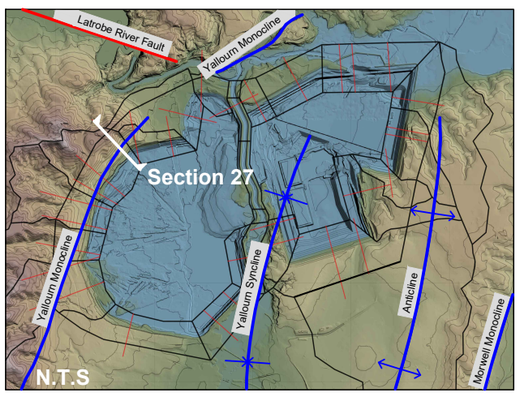
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





Notes

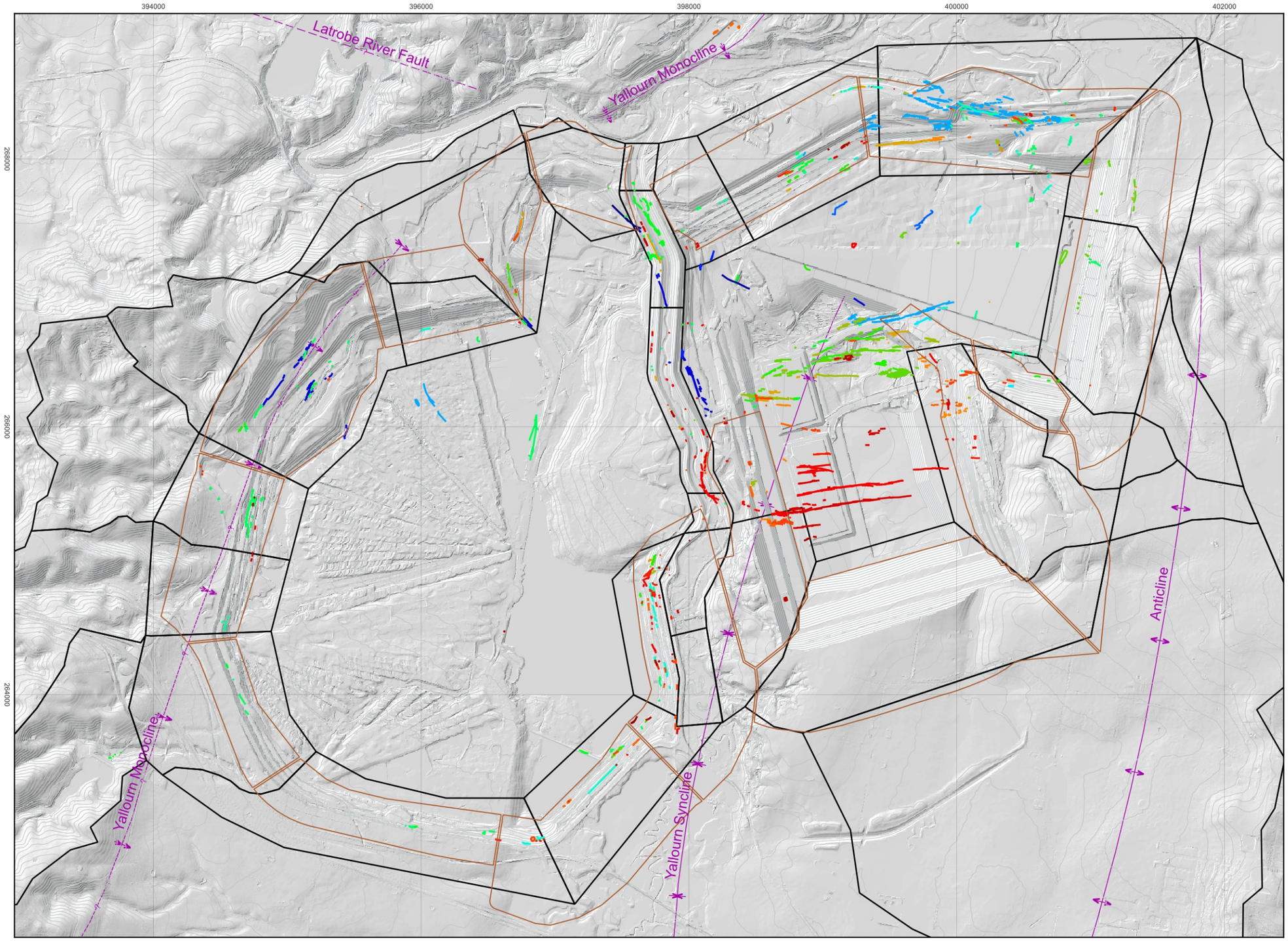
1. Typical geological & slope profile: Steep rear section with rising topography.

0 50 100
Scale (m)
1:3000 @ A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GEOTECHNICAL SECTION
SECTION 27 (YTF-WB)

PSM4487-200R | Figure 24



Legend

- End of mining topographic contours (5m)
- Rehabilitation domains
- Geotechnical Risk Zone (Note 1)

Deformations

- 1979
- 1997
- 2000
- 2001
- 2002
- 2003
- 2005
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018
- 2019
- 2020
- 2021
- 2022
- 2023
- 2024

Geological Structures (Note 2)

- Fault, inferred
- Anticline
- Monocline
- Monocline, inferred
- Syncline

Notes:
1. Geotechnical Risk Zone (GRZ) from EAY Mining Licence Work Plan Variation (Drawing No. YMP1-25-1-58D)
2. Geological structures from Moe 1:50000 geological map (Bulger & Carey, 1983).

N

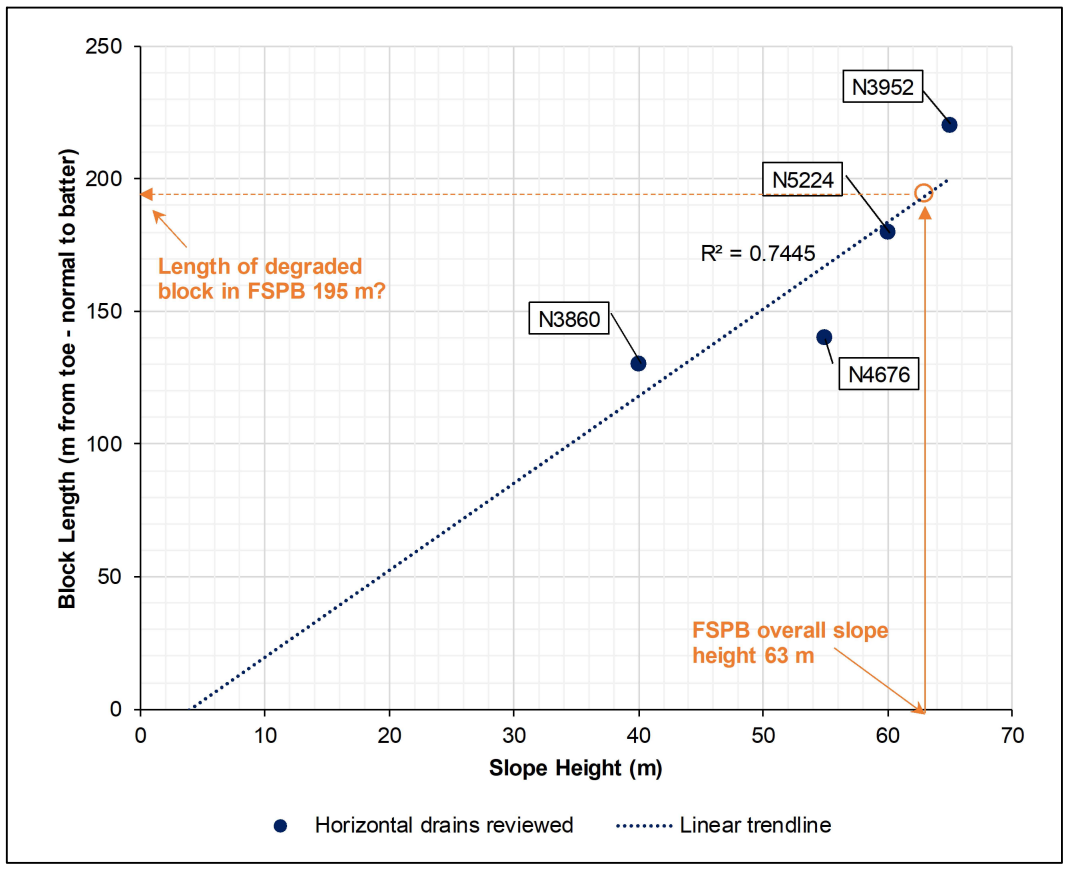
Scale 1:30,000

0 500 1,000 m

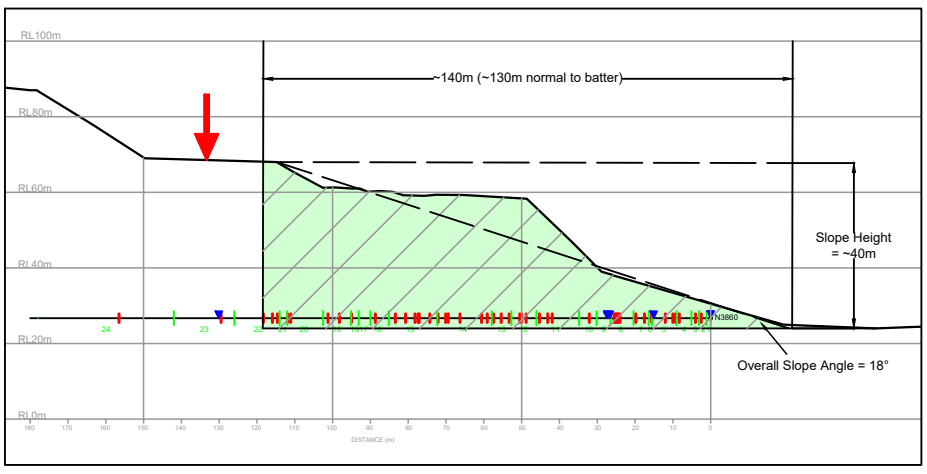
Local Mine Grid: SECV

P S M	Created By: BRJ	Revision: A	EnergyAustralia Yallourn Mine Rehabilitation Feasibility Design
	Date: 09 May 2025	Paper Size: A3	DEFORMATIONS RECORDED DURING MINING
			PSM4487-200R / Figure 25

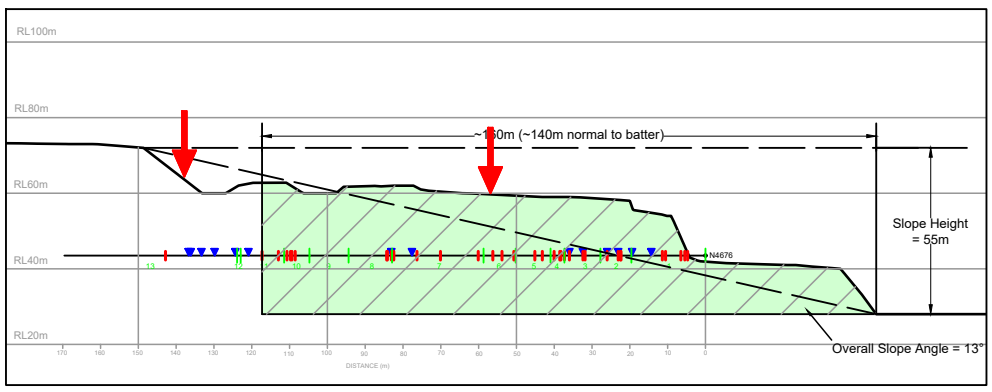
GIS - PSM4487t03_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Section Locations Summary Plans.qgz Layout: Deformation and GHD GRZ Plan



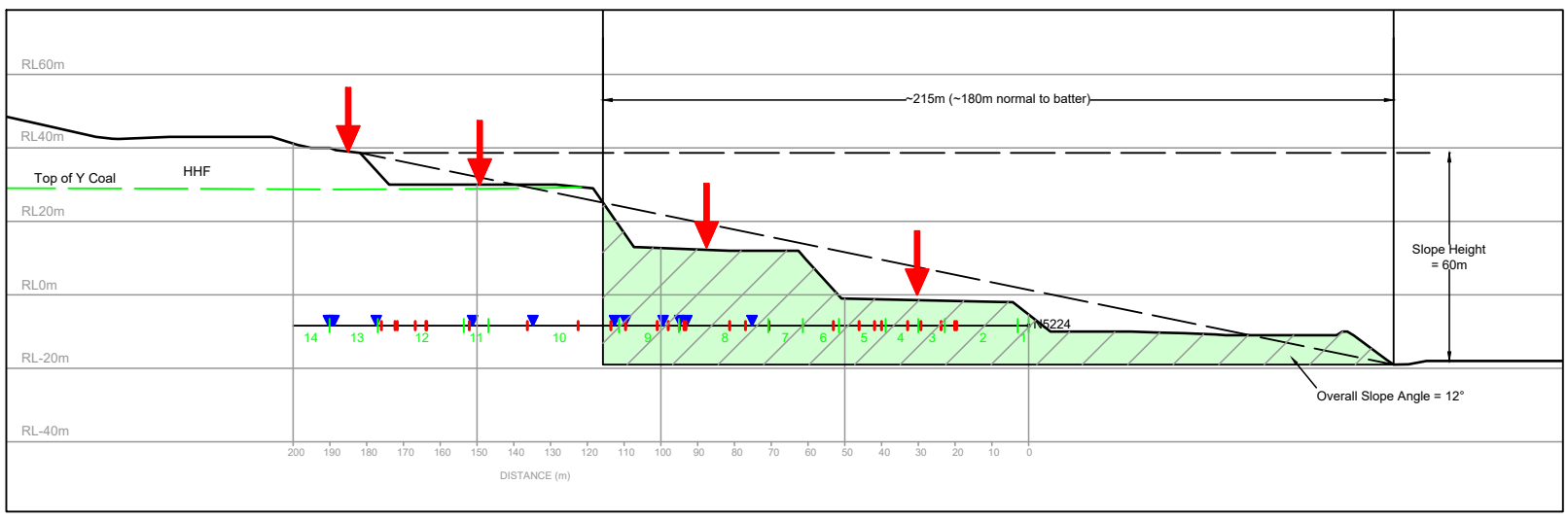
Horizontal Drain N3860 YTF Western Batters



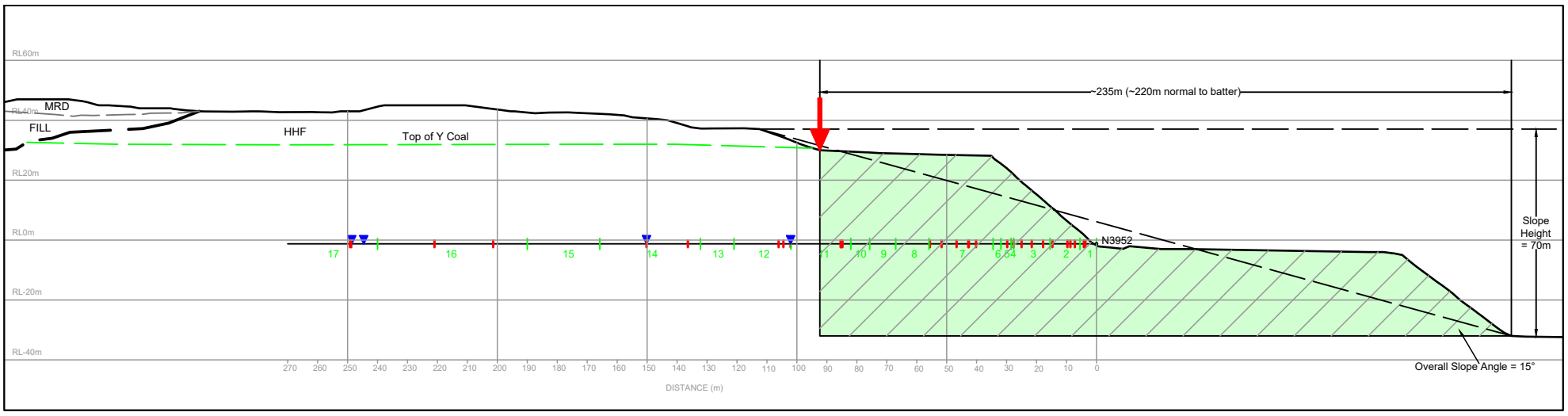
Horizontal Drain N4676 YTF Western Batters



Horizontal Drain N5224 YEF Northern Batters



Horizontal Drain N3952 MVF Western Batters



LEGEND

- Topography (EC210825)
- Horizontal Drain
- Degraded Coal Block
- Seepage Observation
- Structure Observation
- Zone Change Observation
- Inferred Crack Trend at Surface

Notes:

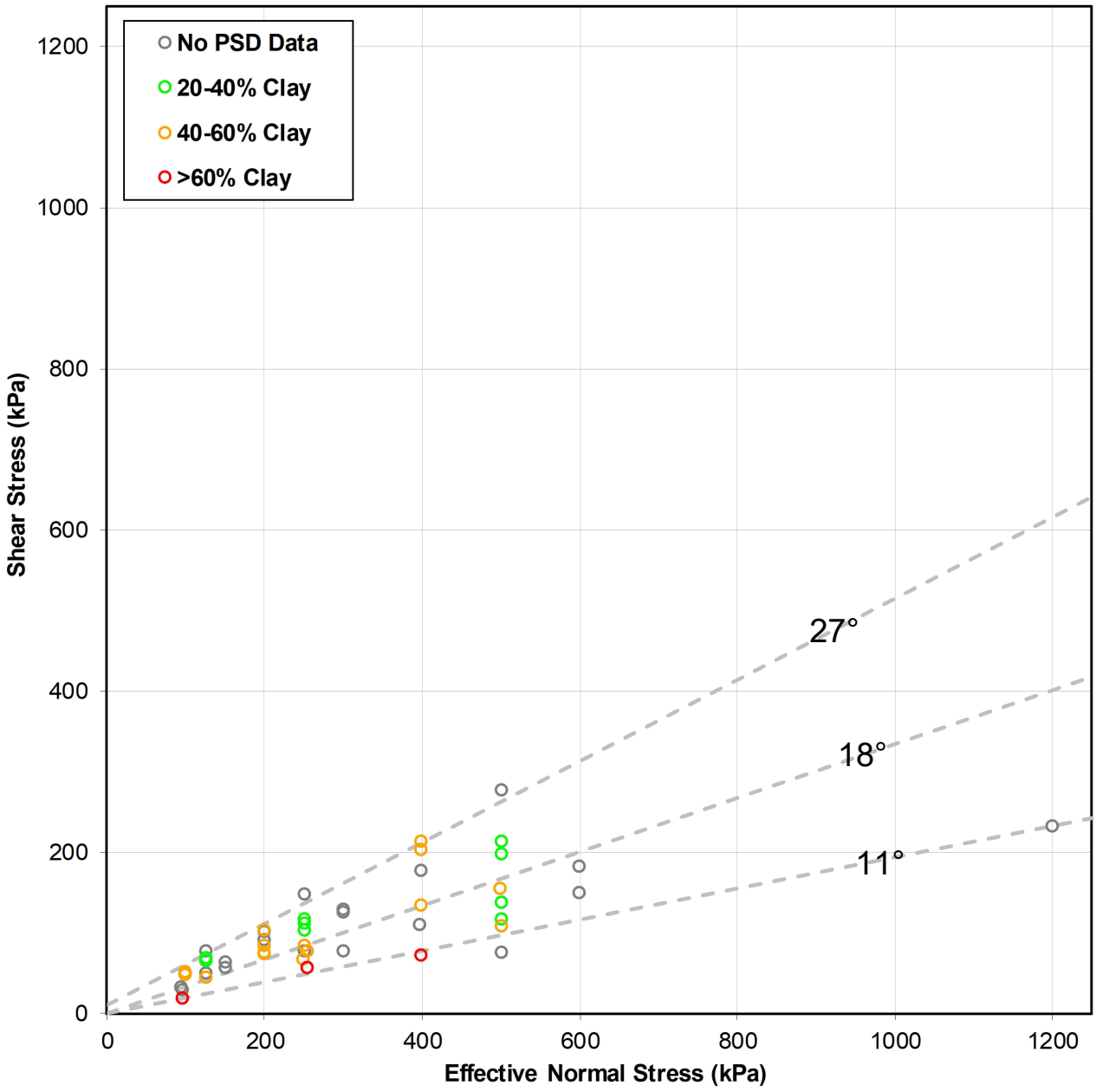
1. Extent of degraded coal block inferred from review of horizontal drain camera footage from GHERG project.
2. Bore survey information available. Bore illustrated as horizontal.

0 50 100
Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Study

LENGTH OF OUTER BATTER ZONE VERSUS SLOPE HEIGHT

PSM4487-200R | Figure 26



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

VALIDATED DIRECT SHEAR TESTS
RESIDUAL SHEAR STRENGTHS

PSM4487-200R

Figure 27

392000
394000
396000
398000
400000
402000

268000
266000
264000
262000

Broad flat valleys with meandering channels

Latrobe River

Morwell River

Raised and incised hills

Broad flat valleys with meandering channels

Low flat hills with incised margins

Legend

End of Mining topography

Elevation

RL150m

RL0m

Major rivers

NOTES:
1. The End of Mining topographic surface is shown
2. The position and description of the land systems approximates the natural terrain prior to mining.
3. The main rivers in blue represent their approximate position prior to mining shown to illustrate the sinuous nature of the main channel.

N

Scale 1:40,000

400 0 400 800 1,200 1,600 m

Local Mine Grid: SECV

P S M

Created By: TRN

Revision: 2

Date: 28 Mar 2025

Paper Size: A3

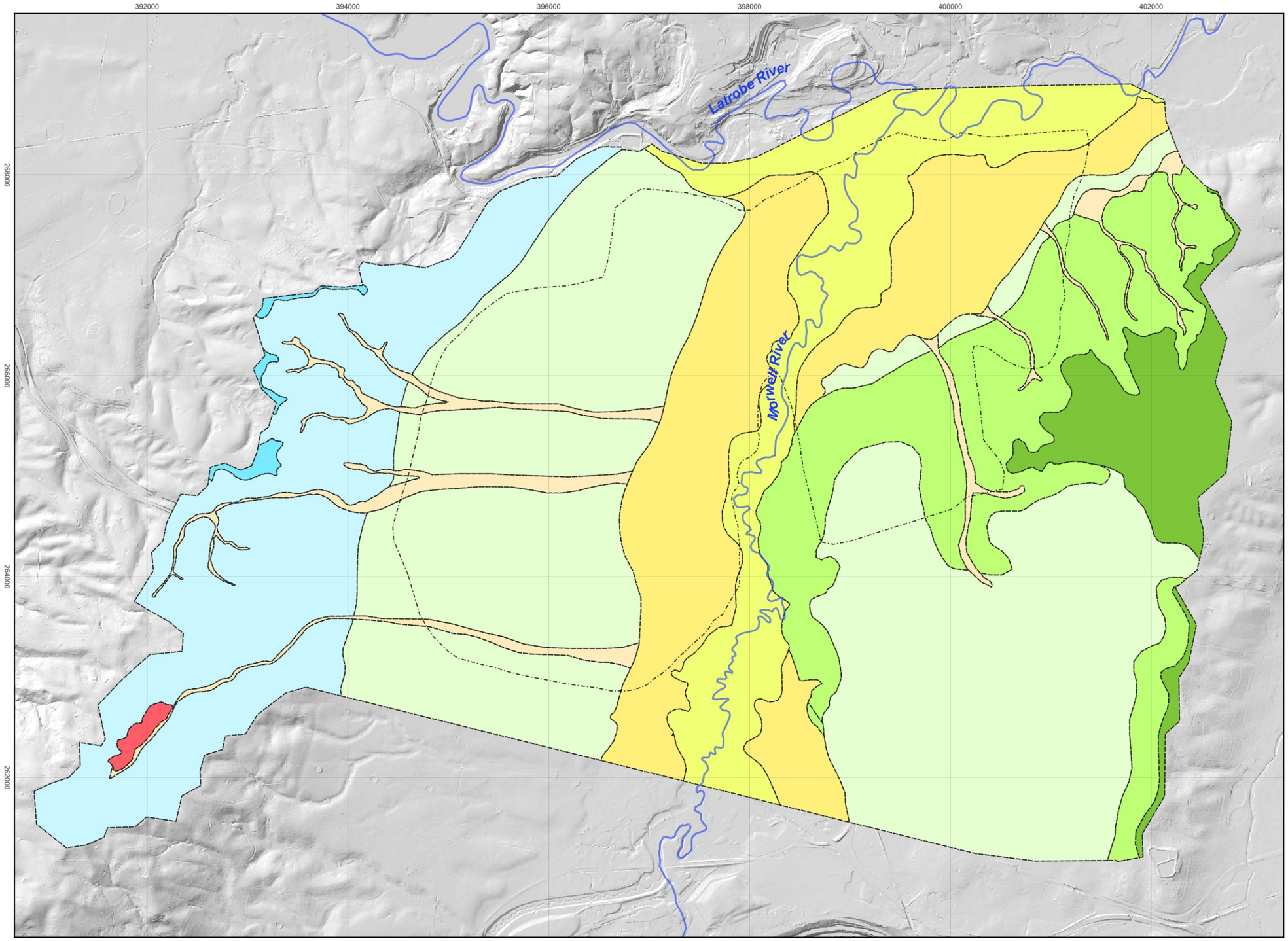
EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

BASIC NATURAL LAND SYSTEMS

PSM4487-200R

Figure 28

GIS - PSM4487t03_Figures\PSM4487-200R Rehab Feasibility Study\Geomorphology\PSM4487-200R_Geomorphology_Fig_28.qgz Layout: Figure 28



Legend

- End of Mining pit extent
- Major rivers

Inferred pre mining geomorphological units

- Active channels and floodplain
- Floodplain
- Alluvium/colluvium
- Landslide
- Denuded and peneplain flank
- Denuded, deeply incised
- Remnant peneplain
- Peneplain dissected margins
- Peneplain

NOTES:
1. The dash-dot black line shows the approximate outline of the extent of mining of YTF, YEF, YEFX and MVF

N

Scale 1:40,000

400 0 400 800 1,200 1,600 m

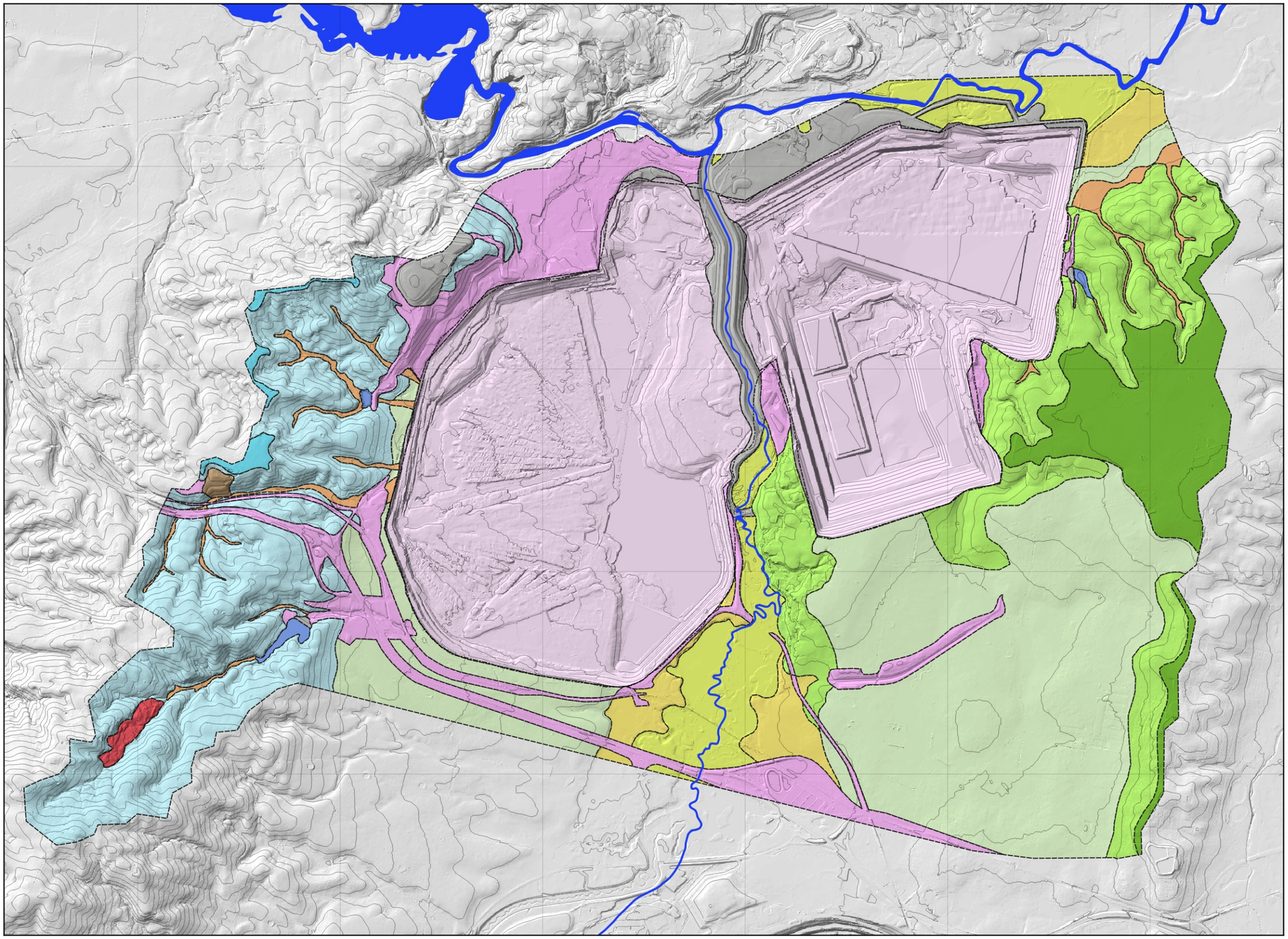
Local Mine Grid: SECV

P S M	Created By: TRN	Revision: 2	EnergyAustralia Yallourn Mine Rehabilitation Feasibility Design
	Date: 28 Mar 2025	Paper Size: A3	INFERRED PRE MINING GEOMORPHOLOGY
			PSM4487-200R | Figure 29

GIS - PSM4487\03_Figures\PSM4487-200R Rehab Feasibility Study\Geomorphology\PSM4487-200R_Geomorphology_Fig_29.qgz Layout: Figure 29

392000 394000 396000 398000 400000 402000

266000 264000 262000



Legend

- End of mining topographic contours (10 m)
- Major rivers
- Life of mine pit extent

End of mining geomorphology

- Mine void
- Heavily modified ground
- External dump/fill/embankment
- Reservoir
- Active channel and floodplain
- Floodplain
- Alluvium/colluvium
- Landslide
- Denuded and peneplain flank
- Denuded, deeply incised
- Remnant peneplain
- Peneplain dissected margins
- Peneplain
- Landfill

NOTES:
1. The End of Mining topographic surface is shown

N

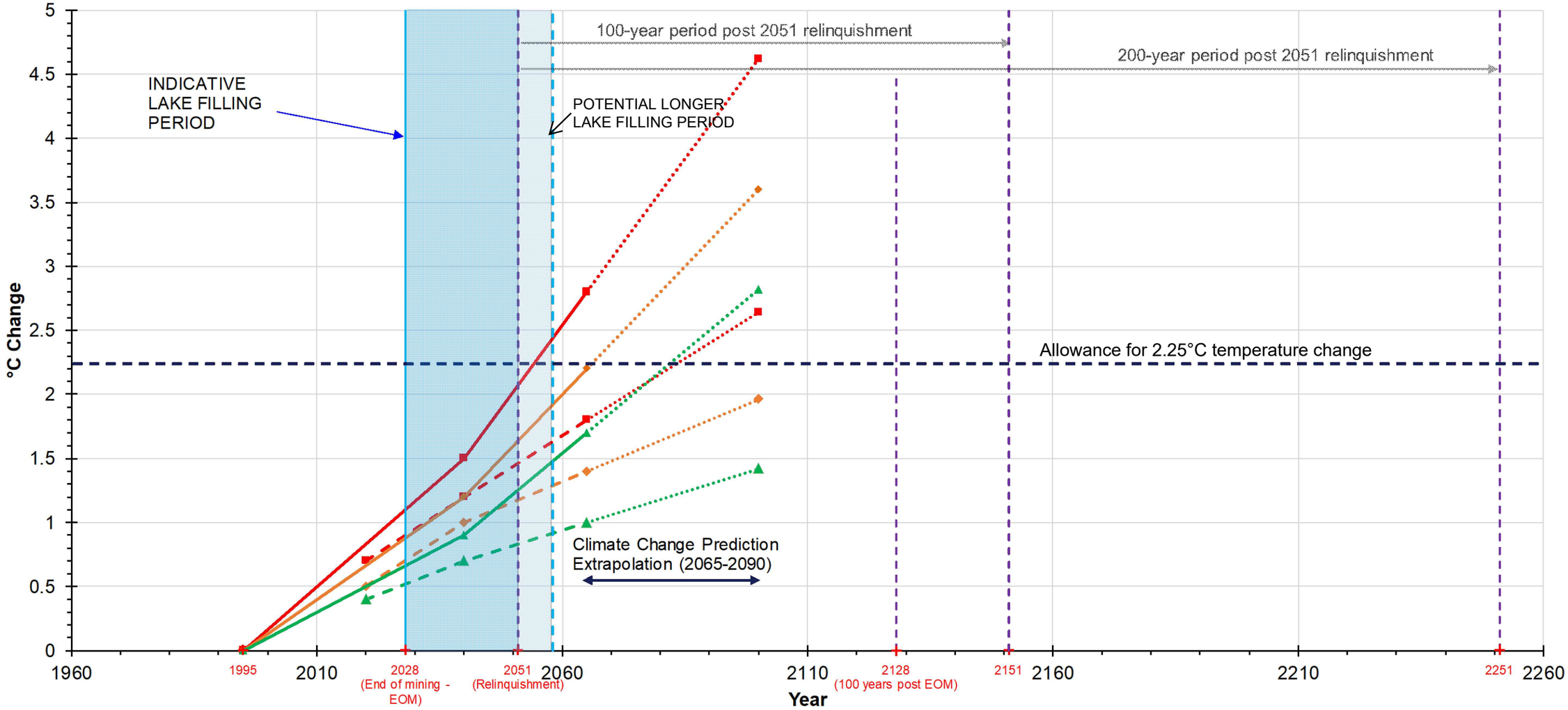
Scale 1:40,000

400 0 400 800 1,200 1,600 m

Local Mine Grid: SECV

Created By: TRN	Revision: 2	EnergyAustralia Yallourn Mine Rehabilitation Feasibility Design
Date: 28 Mar 2025	Paper Size: A3	END OF MINING GEOMORPHOLOGY
		PSM4487-200R / Figure 30

GIS - PSM4487\03_Figures\PSM4487-200R Rehab Feasibility Study\Geomorphology\PSM4487-200R_Geomorphology_Fig_30.qgz Layout: Figure 30



LVRRS 2020 Dry Climate Projection (RCP8.5)

LVRRS 2020 Median Climate Projection (RCP8.5)

LVRRS 2020 Wet Climate Projection (RCP8.5)

Indicative various project design intent periods

LVRRS 2020 Dry Climate Projection (RCP4.5)

LVRRS 2020 Median Climate Projection (RCP4.5)

LVRRS 2020 Wet Climate Projection (RCP4.5)

Notes:

1. LVRRS (2020) refers to DELWP *Guidelines for Assessing the Impact of Climate Change on Water Availability in Victoria* (2020).
2. Climate change predictions for Latrobe Valley are presented from DELWP (2020).

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

CLIMATE CHANGE TEMPERATURE PREDICTIONS RELATIVE TO 1995 BASELINE

PSM4487-200R | Figure 31

394000
396000
398000
400000
402000
268000
266000
264000

Legend

End of mining topographic contours (2m)

Rehabilitation domains

Analysed failure mechanism per section

Multilinear only

Multilinear & block slide (water body)

Multilinear & block slide (peripheral catchment)

Block slide only (peripheral catchment)

Domain landform character

Type 1 - Domains with no concentrated surface water flow paths

Type 2 - Domains with permanent or semi-permanent water bodies

Type 3 - Domains with significant peripheral catchments and concentrated creek lines

NOTES:
1.

N

Scale 1:30,000

0 500 1,000 m

Local Mine Grid: SECV

P S M	Created By: BRJ	Revision: A	EnergyAustralia Yallourn Mine Rehabilitation Feasibility Design
	Date: 28 Mar 2025	Paper Size: A3	FAILURE MECHANISMS ANALYSED PER SECTION & DOMAIN LANDFORM TYPE
			PSM4487-200R | Figure 32

GIS - PSM4487003_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Section Locations Summary Plans.qgz Layout: Failure Mechanism Analysed & Domain Landform Type - Fig 32

394000 396000 398000 400000 402000

288000 286000 284000

1.70 2.40 2.24 2.12 2.12 1.80 2.38 1.90 3.27 1.72 2.21 2.35 1.40 1.60 2.08 2.33 1.84 1.47 1.91 4.15 2.55 2.38 1.79 2.14 2.37 1.92 1.83 1.71 1.98 1.73 2.01 1.43 2.40 1.81 1.95 2.01 1.92 2.29

Legend

- End of mining topographic contours (2m)
- Rehabilitation domains
- Sections
- Critical FoS
- Failure direction (see note 6)

FoS along sections

- <1.0
- 1.0 - 1.1
- 1.1 - 1.2
- 1.2 - 1.3
- 1.3 - 1.4
- 1.4 - 1.5
- 1.5 - 1.6
- 1.6 - 1.7
- 1.7 - 1.8
- 1.8 - 1.9
- >1.9

NOTES:
1. Multilinear failure mechanism assessed
2. Pit lakes at end of mining levels
3. End of mining pore pressure conditions (domain-specific Hu)
4. Critical FoS is the minimum FoS for the section
5. The critical FoS of MRD sections is the minimum FoS that occurs within the MRD
6. Section 32 and 33 in the MRD channel analysed for slope stability in both directions

N

Scale 1:30,000

0 500 1,000 m

Local Mine Grid: SECV

P S M

Created By:	Revision:
MC	A
Date: 28 Mar 2025	Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

DISTRIBUTION OF FOS FOR MULTILINEAR FAILURE AT END OF MINING

PSM4487-200R | Figure 33

GIS - PSM4487\003_Figures\PSM4487-140R\FoS Along Sections.qgz Layout: A1 (No TC) - Mine Closure

394000 396000 398000 400000 402000

288000 286000 284000

2.31 2.83 3.01 3.88 3.15 2.18 2.52 1.72 2.80 1.48 2.16 2.23 1.12 1.32 1.73 2.03 1.95 5.09 1.56 1.36 1.65 1.69 1.96 2.22 2.29 2.53 1.94 1.78 1.77 1.39 1.59 2.24 1.34 2.23 1.54 2.05 1.95 2.30

Legend

- End of mining topographic contours (2m)
- Rehabilitation domains
- Sections
- Critical FoS
- Failure direction (see note 6)

FoS along sections

- <1.0
- 1.0 - 1.1
- 1.1 - 1.2
- 1.2 - 1.3
- 1.3 - 1.4
- 1.4 - 1.5
- 1.5 - 1.6
- 1.6 - 1.7
- 1.7 - 1.8
- 1.8 - 1.9
- >1.9

NOTES:
1. Multilinear failure mechanism assessed
2. Pit lake level at RL 37m
3. Hydrostatic pore pressure conditions (Hu = 1) below piezometric line (sections 1 to 18 and 29 to 35)
4. Hydrostatic pore pressure conditions (Hu = 1) below lake level line (sections 19 to 28)
5. Critical FoS is the minimum FoS for the section
6. The critical FoS of MRD sections is the minimum FoS that occurs within the MRD
7. Section 32 and 33 in the MRD channel analysed for slope stability in both directions

N

Scale 1:30,000

0 500 1,000 m

Local Mine Grid: SECV

P S M

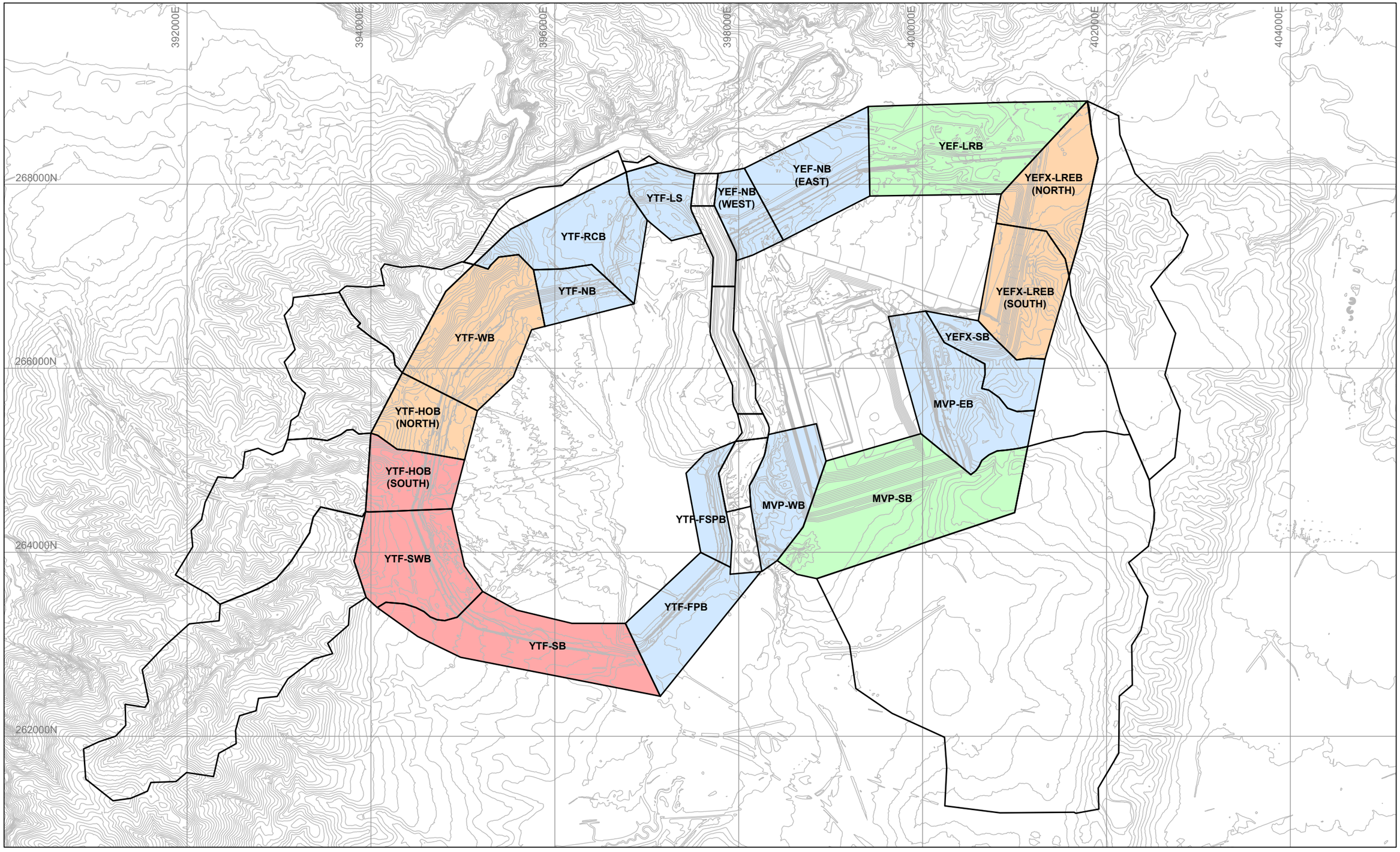
Created By:	Revision:
MC	A
Date: 28 Mar 2025	Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

DISTRIBUTION OF FOS FOR MULTILINEAR FAILURE AT FINAL LAKE LEVEL

PSM4487-200R | Figure 34

GIS - PSM4487/03_Figures\PSM4487-140R\FoS Along Sections.qgz Layout: A1 (No TC) - Lake Full



LEGEND

EOM Topography
5m Contours

Rehabilitation Domains

Qualitative Risk for Drain Design:

- Very low - no specific drain design required
- Low - design to hydrologic likelihood of >99%
- Medium - design to hydrologic likelihood of 30%
- High - design to hydrologic likelihood of 2 to 5%

0 500 1000 1500 2000
Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

PLAN SHOWING QUALITATIVE RISK FOR DRAIN DESIGN PER DOMAIN

PSM4487-200R | Figure 35

396000E
398000E
400000E
402000E
268000N
266000N
264000N
MRD Cut North
MRD Repair
MRD Fill
MRD Cut South
MRD Natural & Cut Floodplain
MRD Natural Floodplain
13500
13000
12500
2000
1500
1000
500
Section 32
Section 33
Section 34
Section 35
Section 14
Section 16
Western Levee RL42.5m
Eastern Levee RL43m
Indicative Spillway RL41.5m
Indicative Spillway RL42.5m
Indicative Spillway RL40m

LEGEND

EOM Topography
5m Contours

1000 MRD SMEC Chainage

MRD Domains

Section Locations

Indicative Spillways

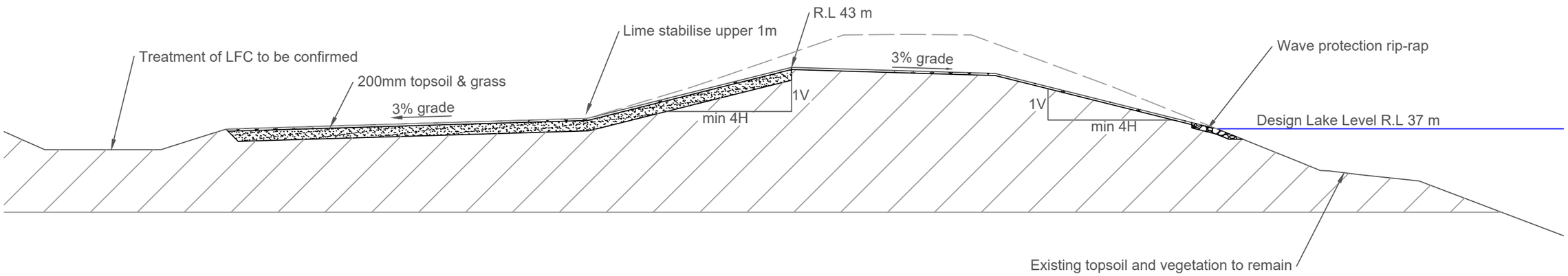
0 500 1000
Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

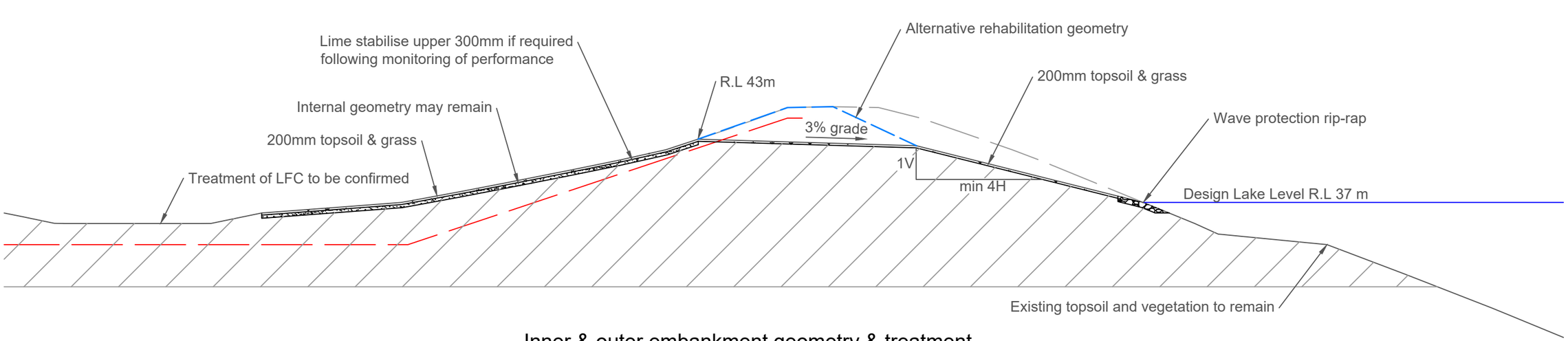
MRD DOMAINS

PSM4487-200R

Figure 36



Inner & outer embankment geometry & treatment
Standard (Eastern Levee to CH 1100 to 2200)



Inner & outer embankment geometry & treatment
Repair Zone (Eastern Levee to CH 2200-2600)

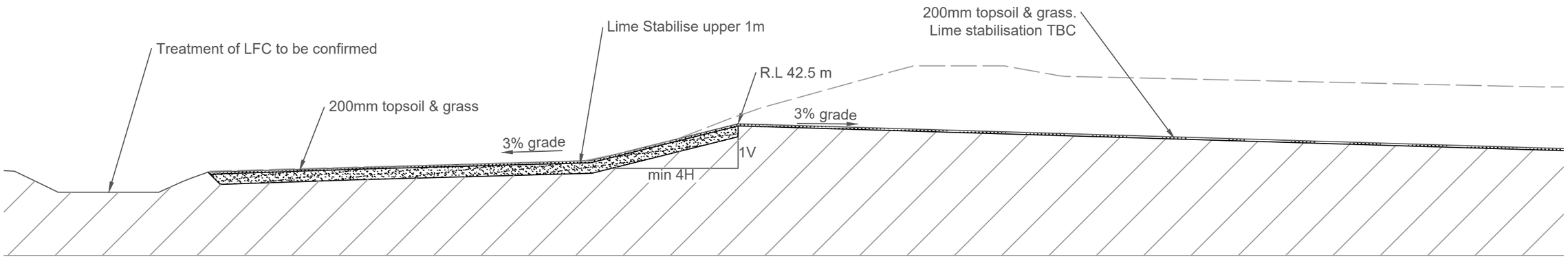
LEGEND

- Existing Surface
- Design Surface
- Indicative Synthetic Clay Liner
- Rip-rap
- Lime stabilised material
- Existing material
- Topsoil & grass

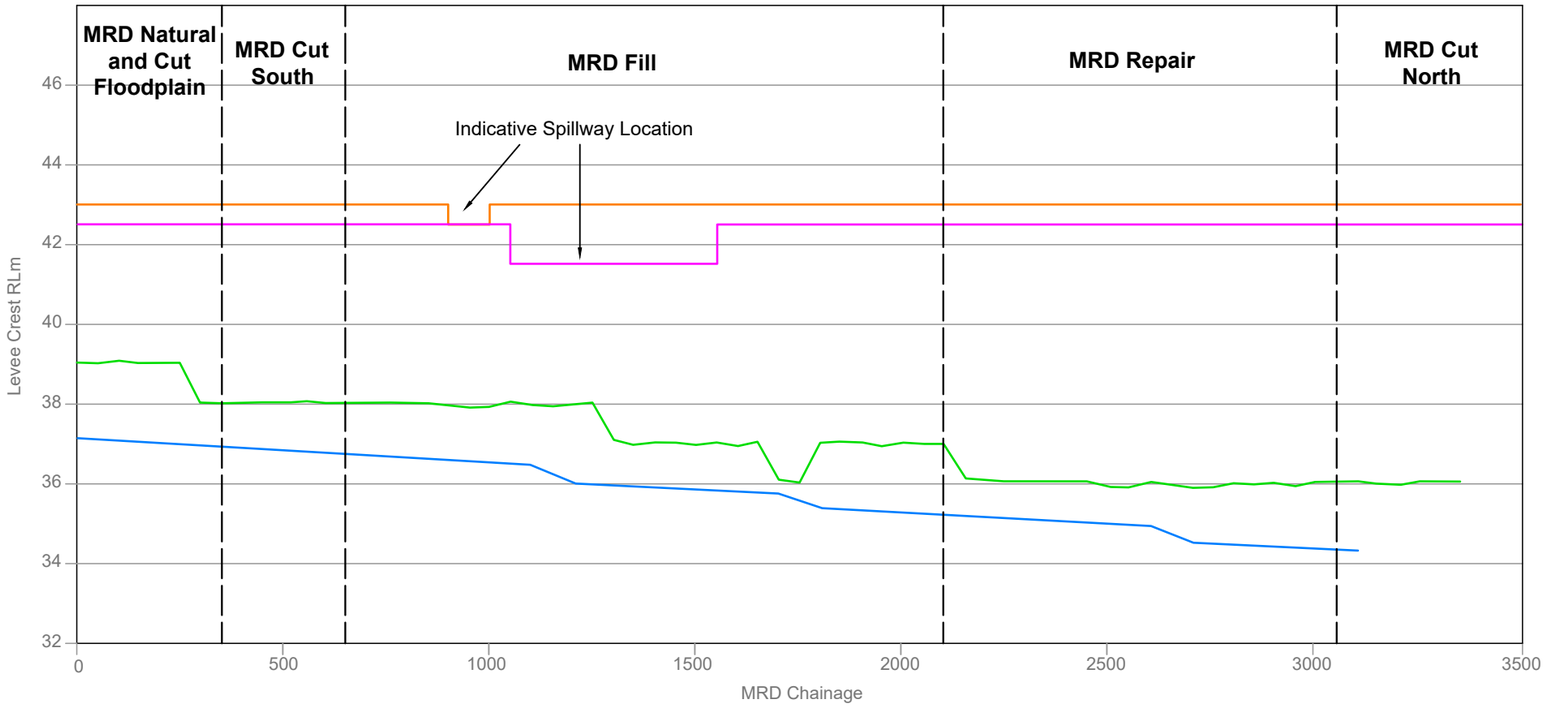
EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

MRD DESIGN SKETCH
CROSS SECTIONS 1 & 2

PSM4487-200R | Figure 37



Spillway geometry & treatment
Standard (Eastern Spillway CH 700-950)



MRD Long Section Levels (Schematic)

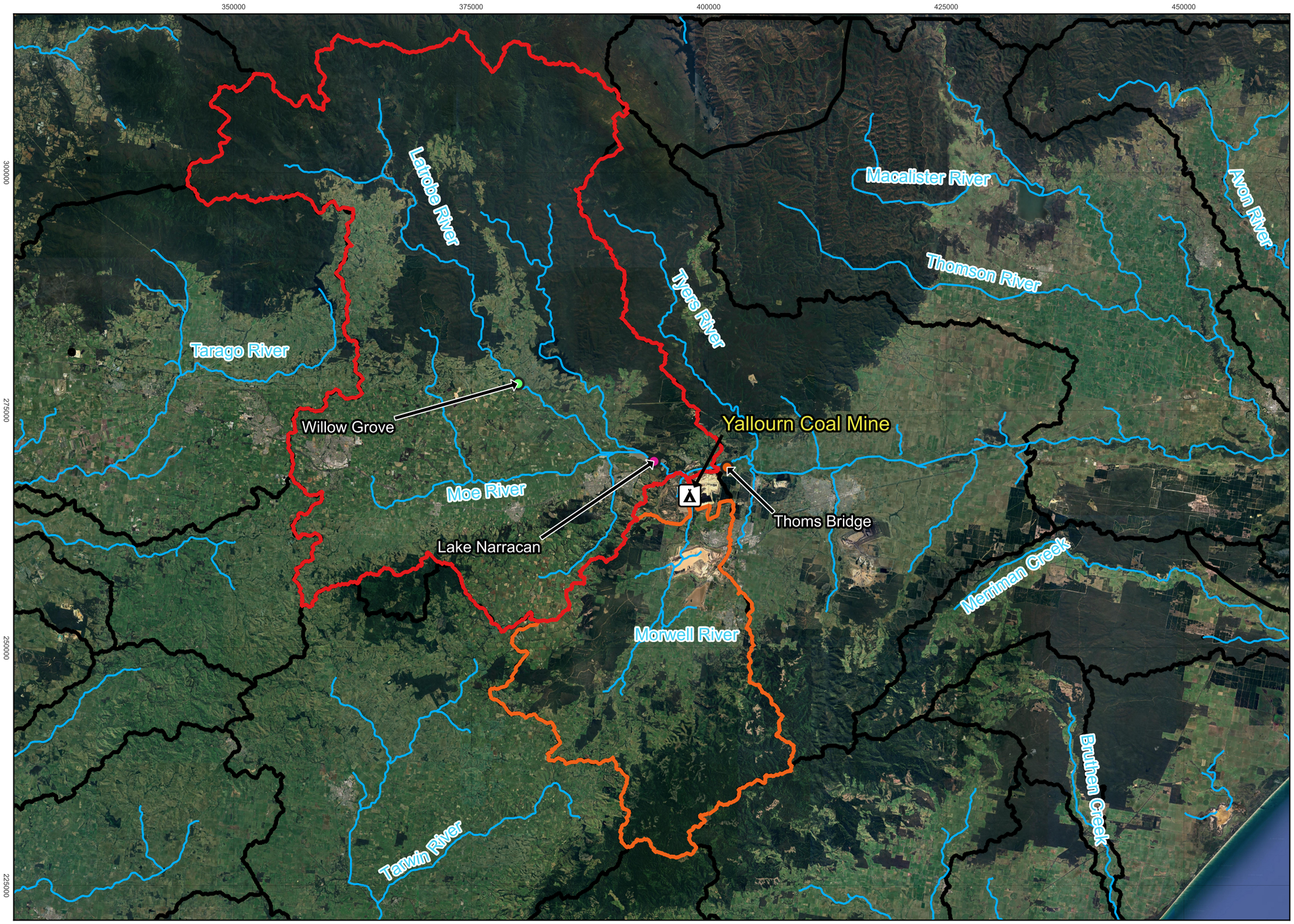
LEGEND
- Design Crest (W)
- Design Crest (E)
- LFC Invert (2005 Design Level)
- LFC Crest (2024 Survey)

LEGEND
- Existing Surface
- Design Surface
- Rip-rap
- Lime stabilised material
- Existing material
- Topsoil & grass

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

MRD DESIGN SKETCH - CROSS SECTION 3 &
MRD LONG SECTION LEVELS (SCHEMATIC)

PSM4487-200R | Figure 38



NOTES:
1.

N

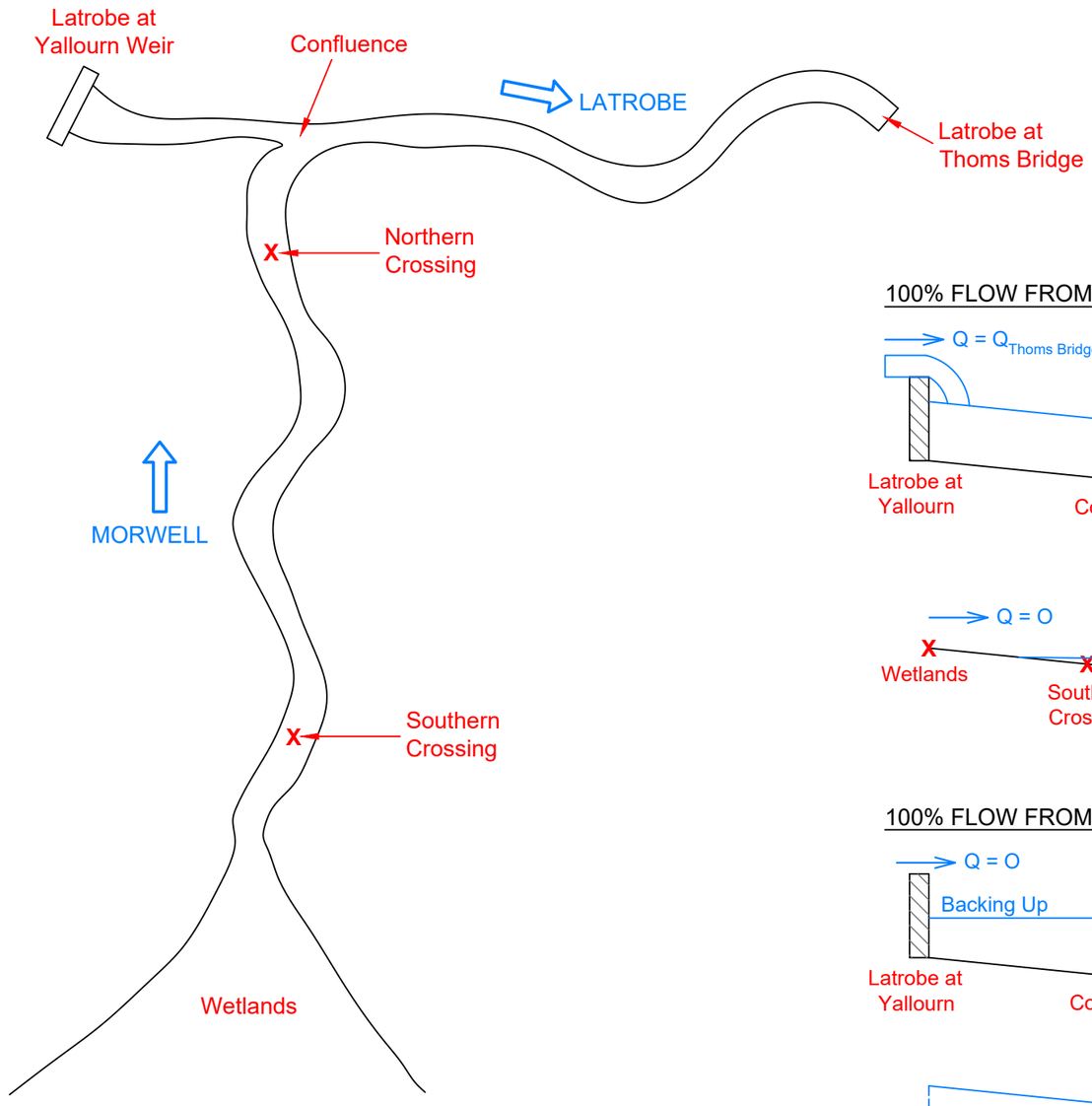
Scale 1:425,000

5,000 0 5,000 10,000 15,000 m

Local Mine Grid: SECV

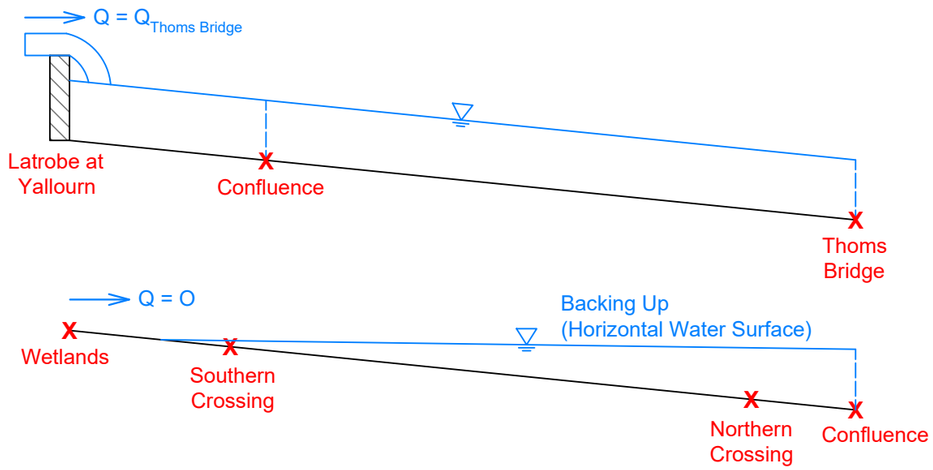
Created By: PSM	Revision: A	EnergyAustralia Yallourn Mine Rehabilitation Feasibility Design
Date: 24 Mar 2025	Paper Size: A3	REGIONAL CATCHMENTS
PSM4487-200R	Figure 39	

N:\PSM4487\Engl07 Surface Water Review\01.GIS\01_MXDs\Yallourn_JG.qgz Layout: PSM4487-200R Figure 38

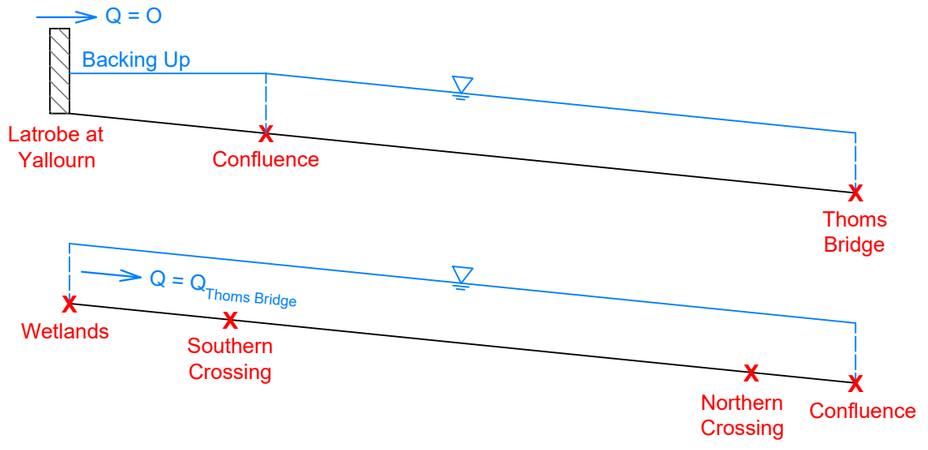


PLAN VIEW

100% FLOW FROM LATROBE SCENARIO



100% FLOW FROM MORWELL SCENARIO

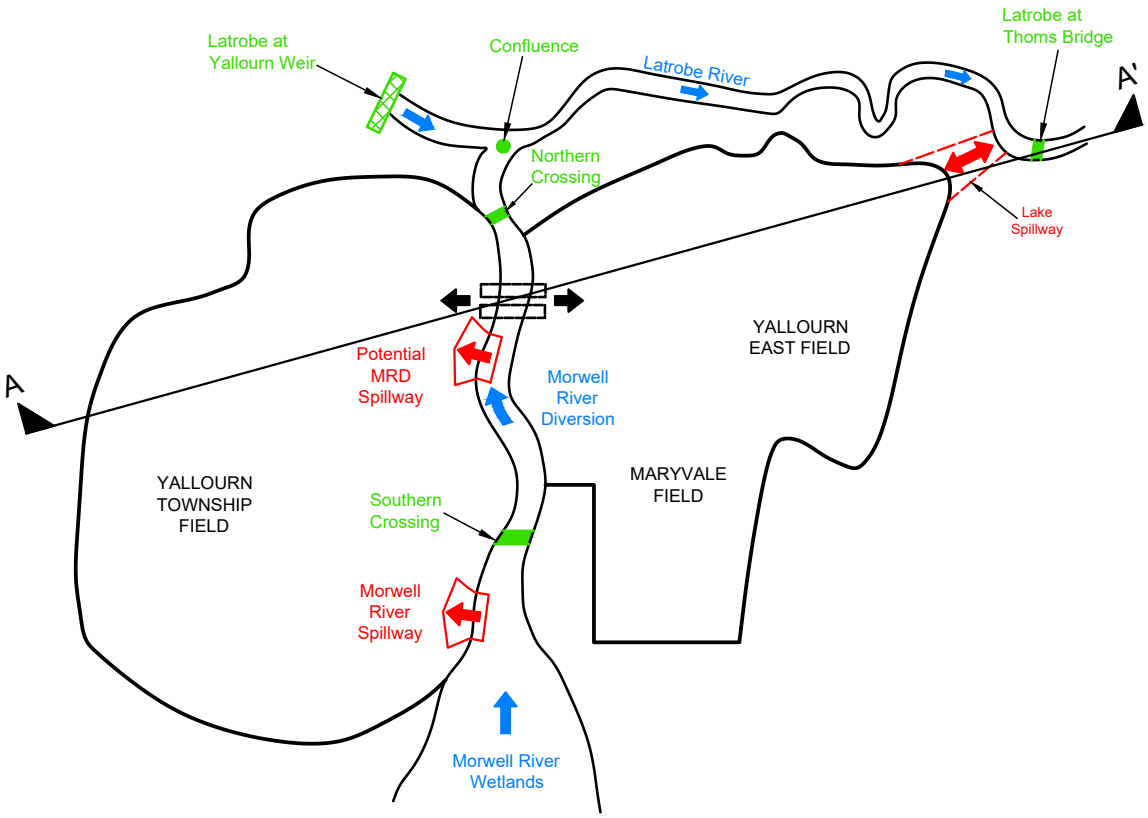


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

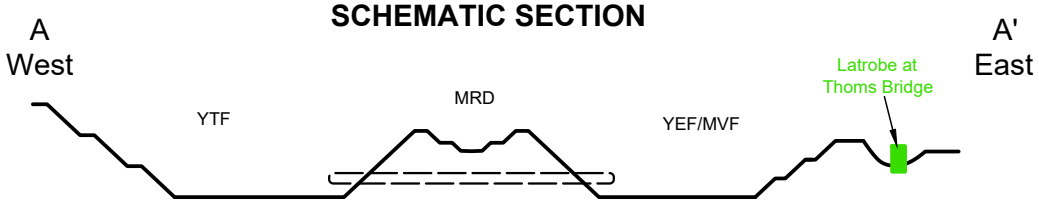
CONCEPTUAL FLOOD HYDRAULICS OF MORWELL RIVER DIVERSION

PSM4487-200R | Figure 40

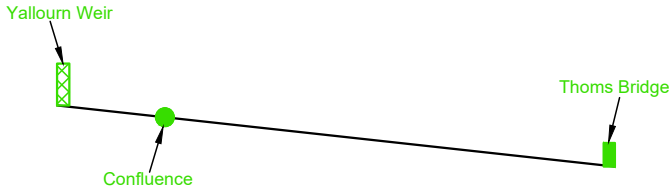
SCHEMATIC PLAN



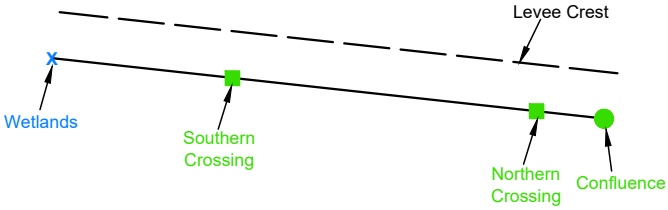
SCHEMATIC SECTION



LATROBE RIVER PROFILE



MRD PROFILE

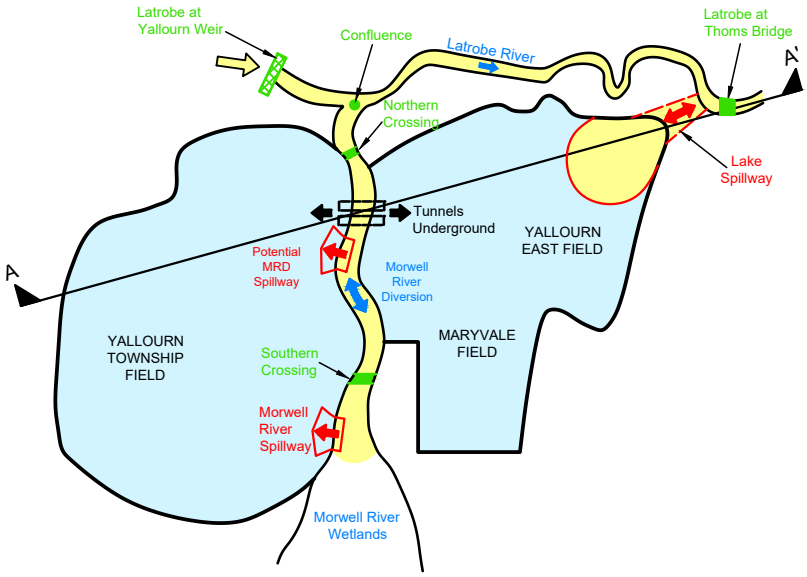


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

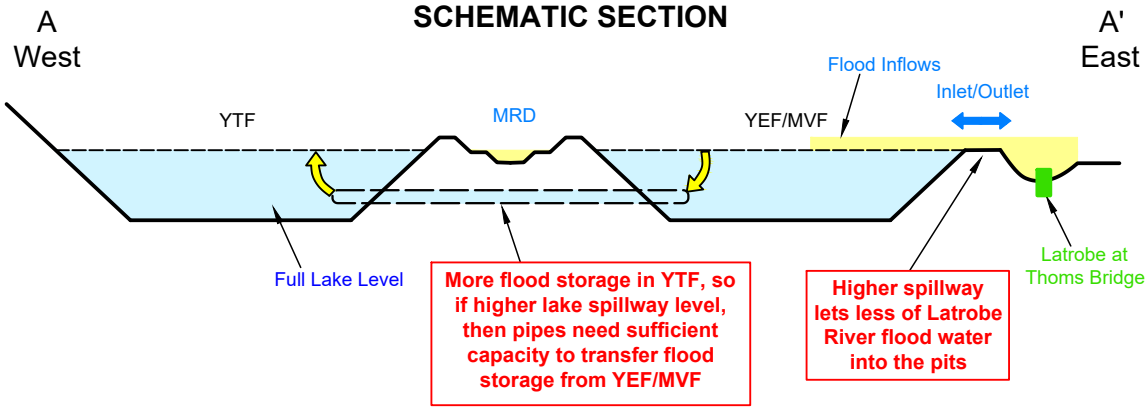
OVERALL LAYOUT OF THE YALLOURN SURFACE WATER SYSTEM

PSM4487-200R | Figure 41

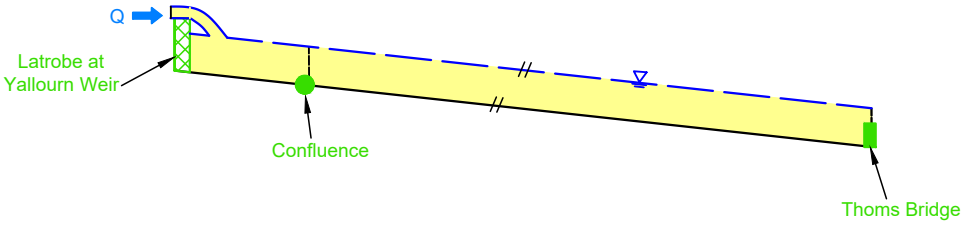
SCHEMATIC PLAN



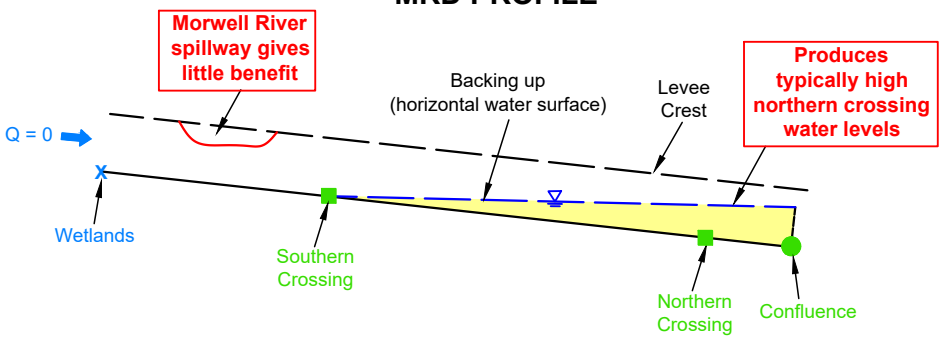
SCHEMATIC SECTION



LATROBE RIVER PROFILE



MRD PROFILE

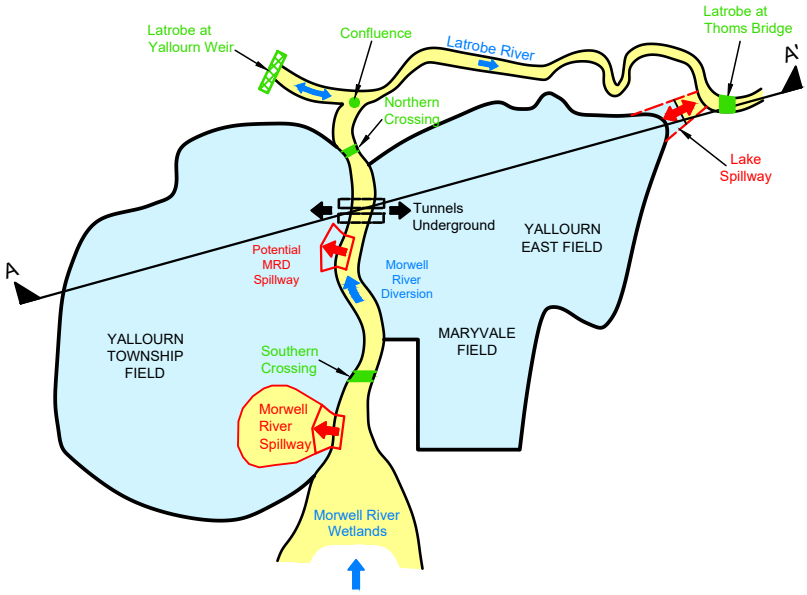


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

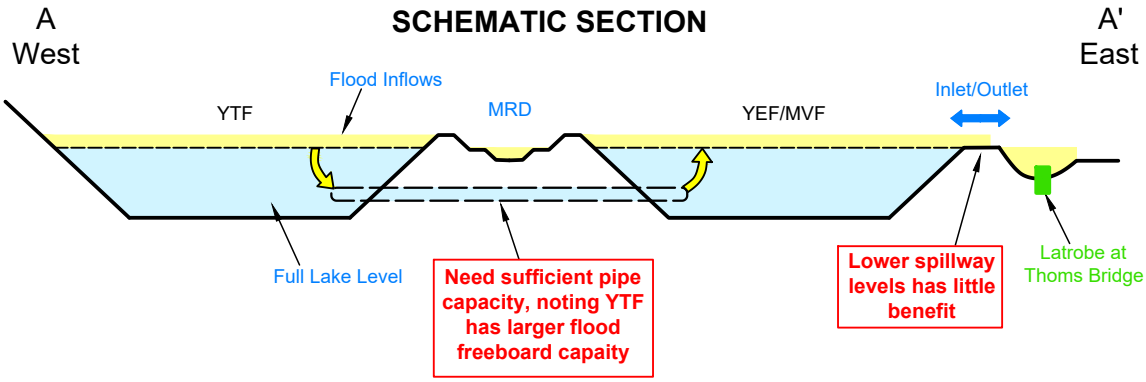
OPERATION OF THE SYSTEM IN A LATROBE DOMINANT FLOOD

PSM4487-200R | Figure 42

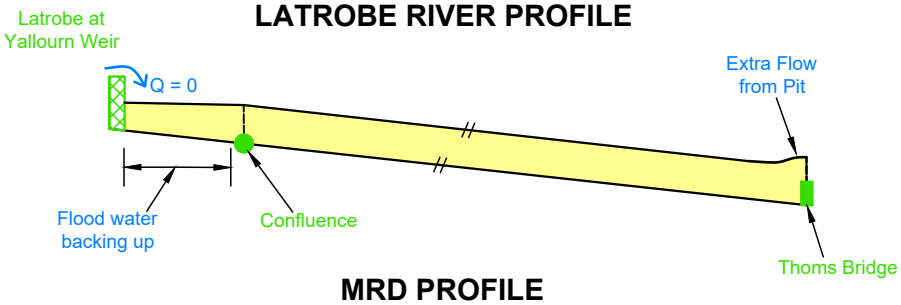
SCHEMATIC PLAN



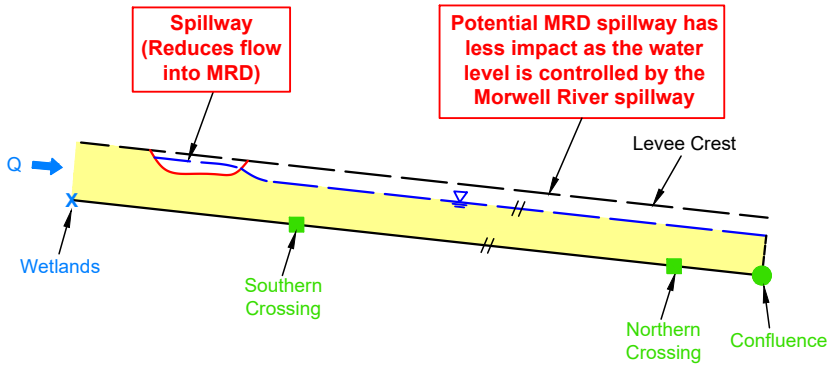
SCHEMATIC SECTION



LATROBE RIVER PROFILE



MRD PROFILE

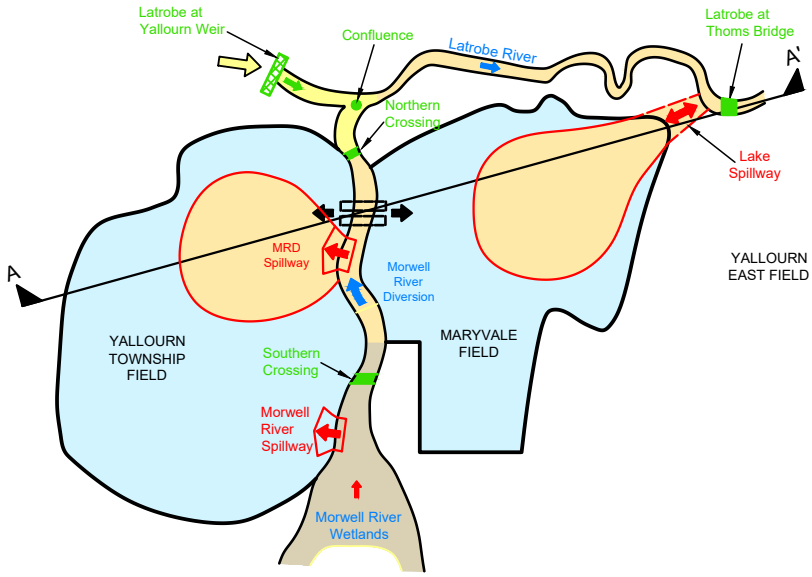


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

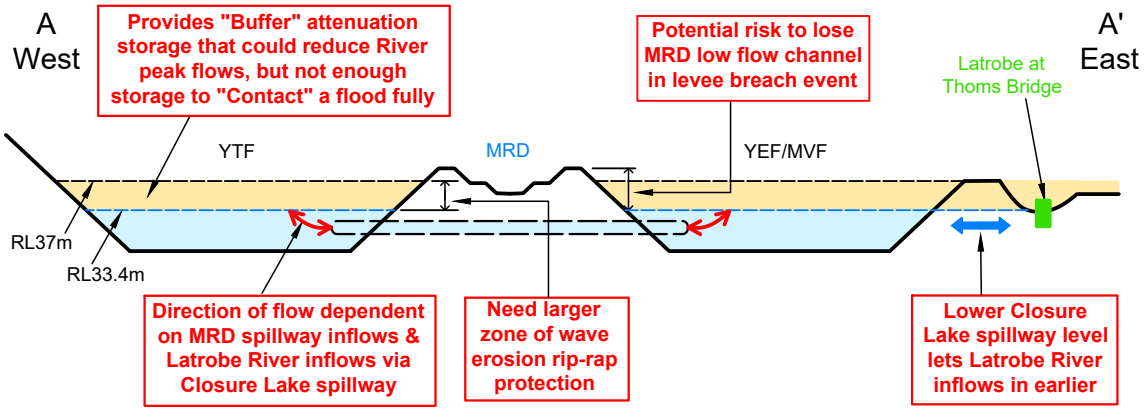
OPERATION OF THE SYSTEM IN MORWELL DOMINANT FLOOD

PSM4487-200R | Figure 43

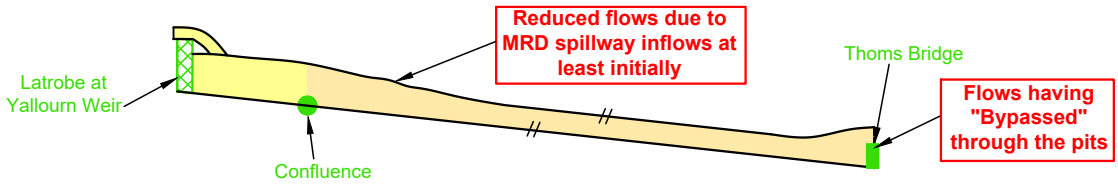
SCHEMATIC PLAN



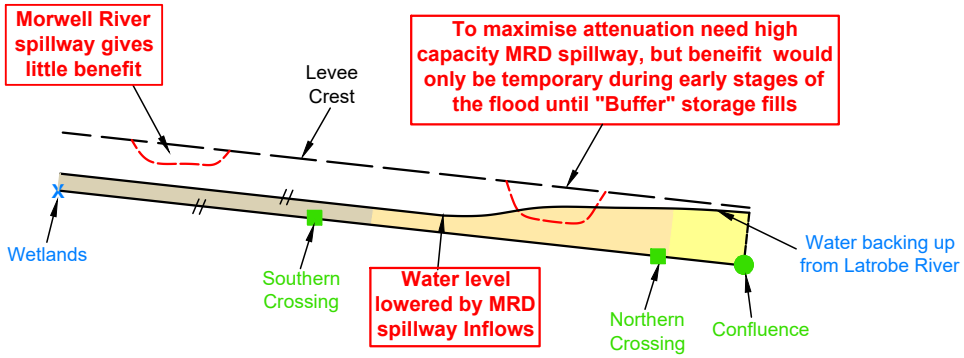
SCHEMATIC SECTION



LATROBE RIVER PROFILE



MRD PROFILE

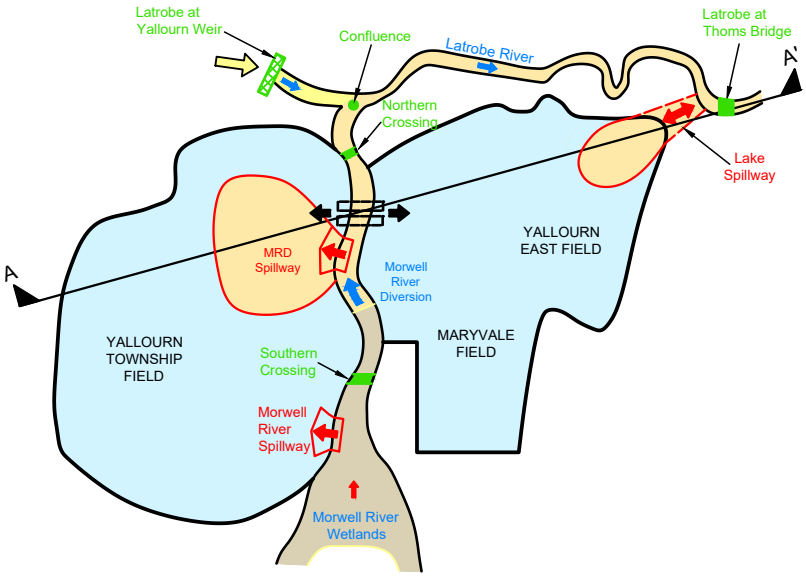


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

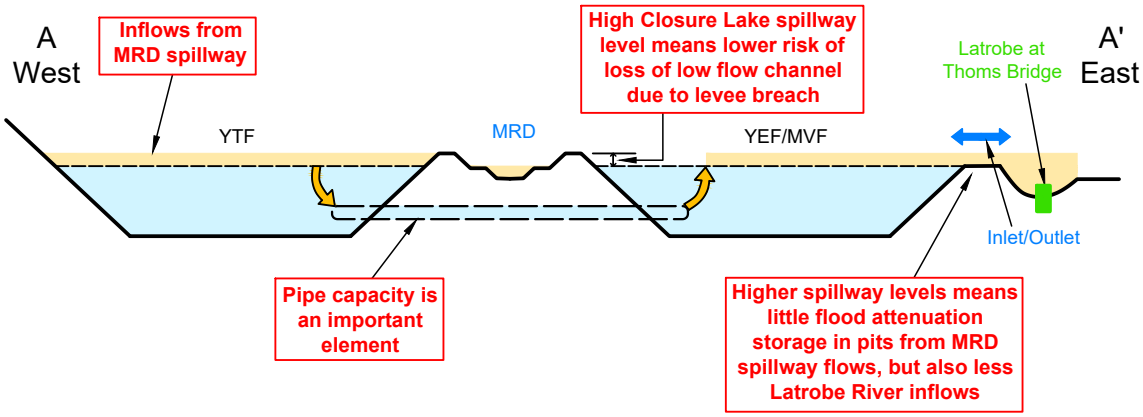
OPERATION OF THE SYSTEM
LATROBE FLOOD & RL33.4m LAKE LEVEL

PSM4487-200R | Figure 44

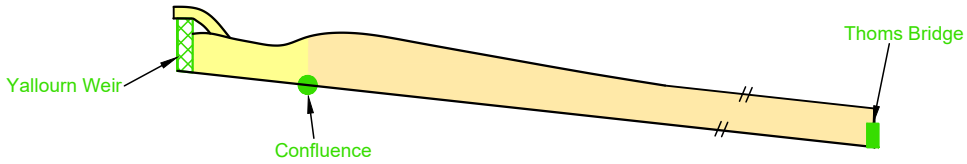
SCHEMATIC PLAN



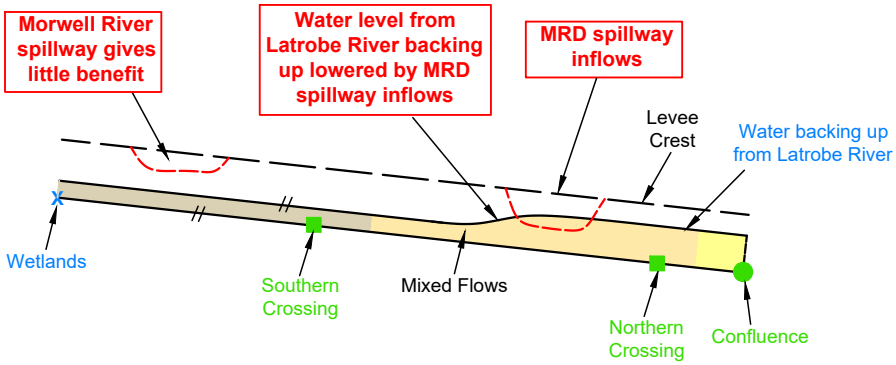
SCHEMATIC SECTION



LATROBE RIVER PROFILE



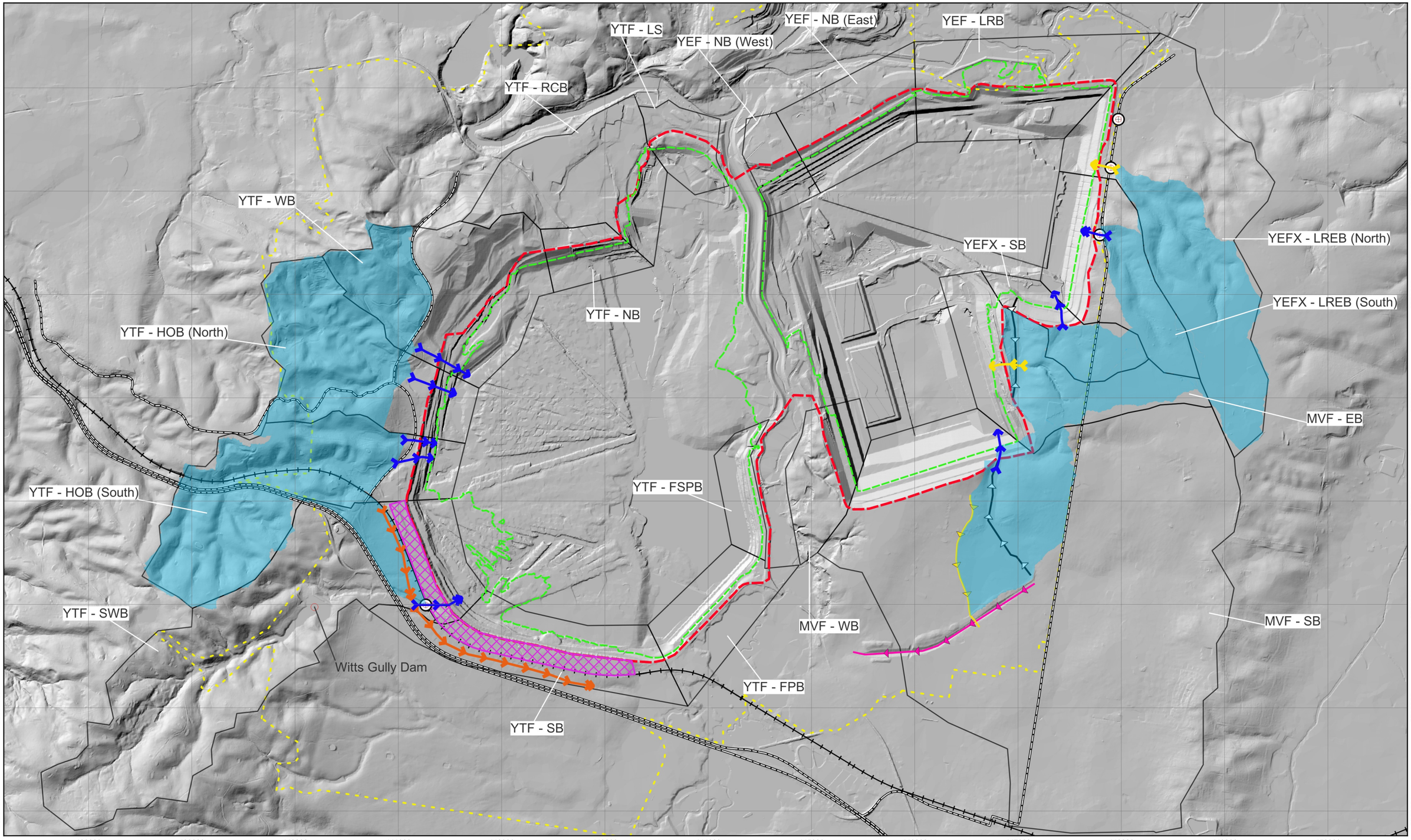
MRD PROFILE



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

OPERATION OF THE SYSTEM
LATROBE FLOOD & RL37m LAKE LEVEL

PSM4487-200R | Figure 45



LEGEND

- Down Batter Drain Catchment Areas
- Re-grade towards pit
- Life of Mine Pit Crest
- 37 mRL Contour
- Mine License Boundary
- Roadways
- Railways
- 1 to 150 Drain
- Morwell West Drain
- Remnant Morwell West Drain
- Down Batter Drains
- Potential Down Batter Drain Options
- Improved Melbourne Swamp Drainage to limit water leaker into slope

Notes:
1. Additional drainage outside of that shown on this figure is likely to be required to manage other risks, such as landform erosion.

Scale 1:35,000

N

500 0 500 1,000 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M

Created By:	Revision:
PSM	A
Date:	Paper Size:
07 May 2025	A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

PROPOSED FEASIBILITY LEVEL PERIPHERAL CATCHMENT DRAINAGE FOR GEOTECHNICAL STABILITY

PSM4487-200R | FIGURE 46

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK (mine wide drain figure).qgz Layout: PSM4487-200R Figure 46

Appendix A
Monitoring Plans

A1. Surface pin monitoring

A2. Piezometer monitoring

A3. Inclinometers

A4. Surface water monitoring

A5. Horizontal drains

A6. Pump bores

Appendix A.1
Surface pin monitoring

394000 396000 398000 400000 402000

268000 266000 264000

Legend

- End of mining topographic contours (5m)
- Rehabilitation domain
- Active pins
- Dead pins

NOTES:
1. EnergyAustralia Yallourn database 4/03/2025

N

Scale 1:30,000

0 500 1,000 m

Local Mine Grid: SECV

P S M	Created By: BRJ	Revision: A	EnergyAustralia Yallourn Mine Rehabilitation Design SURFACE PIN MONITORING IN AND AROUND YALLOURN MINE
	Date: 21 Mar 2025	Paper Size: A3	PSM4487-200R | Appendix A

C:\Users\Brendon.Jones\Pells Sullivan Meyninh\GIS - PSM4487\03_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R - Appendix - Monitoring Plans.qgz Layout: Appendix - Pin Monitoring

Appendix A.2
Piezometer monitoring

394000 396000 398000 400000 402000

268000 266000 264000

Legend

- End of mining topographic contours (5m)
- Rehabilitation domain
- Active piezometers with readings after 2023
- Active piezometers with no readings after 2023

NOTES:
1. EnergyAustralia Yallourn database 4/03/2025

N

Scale 1:30,000
0 500 1,000 m

Local Mine Grid: SECV

P S M	Created By: BRJ	Revision: A	
	Date: 21 Mar 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine
Rehabilitation Design

PIEZOMETER MONITORING
IN AND AROUND YALLOURN MINE

PSM4487-200R | Appendix A

C:\Users\Brendon.Jones\Pells Sullivan Meyninki\GIS - PSM4487\03_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R - Appendix - Monitoring Plans.qgz Layout: Appendix - Piezometer Monitoring

Appendix A.3
Inclinometers

394000 396000 398000 400000 402000

268000 266000 264000

Legend

- End of mining topographic contours (5m)
- Rehabilitation domain
- Active inclinometers
- Dead inclinometers

NOTES:
1. EnergyAustralia Yallourn database 4/03/2025

N

Scale 1:30,000

0 500 1,000 m

Local Mine Grid: SECV

P S M

Created By:	Revision:
BRJ	A
Date: 21 Mar 2025	Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

INCLINOMETER MONITORING
IN AND AROUND YALLOURN MINE

PSM4487-200R | Appendix A

C:\Users\Brendon.Jones\Pells Sullivan Meyninki\GIS - PSM4487\03_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R - Appendix - Monitoring Plans.qgz Layout: Appendix - Inclinometers

Appendix A.4
Surface water monitoring

394000
396000
398000
400000
402000
268000
266000
264000

Legend

- End of mining topographic contours (5m)
- Rehabilitation domain
- Water level sensor

NOTES:
1. EnergyAustralia Yallourn database 4/03/2025

N

Scale 1:30,000

0 500 1,000 m

Local Mine Grid: SECV

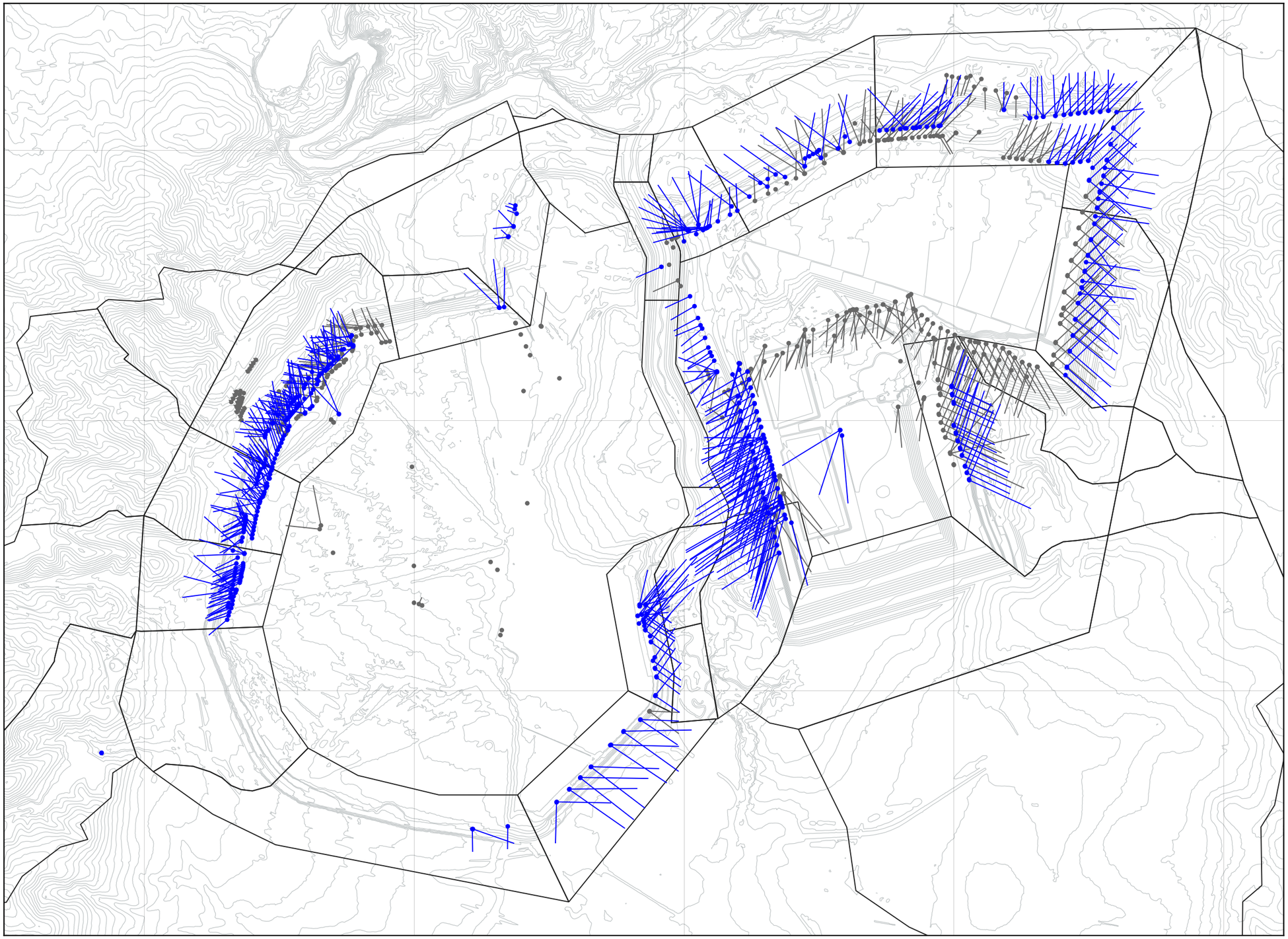
Created By: BRJ	Revision: A	EnergyAustralia Yallourn Mine Rehabilitation Design
Date: 21 Mar 2025	Paper Size: A3	SURFACE WATER LEVEL MONITORING IN AND AROUND YALLOURN MINE
PSM4487-200R	Appendix A	

C:\Users\Brendon.Jones\Pells Sullivan Meyninki\GIS - PSM4487\03_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R - Appendix - Monitoring Plans.qgz Layout: Appendix - Water Level Sensors

Appendix A.5
Horizontal drains

394000 396000 398000 400000 402000

268000 266000 264000



Legend

- End of mining topographic contours (5m)
- Rehabilitation domain
- Active horizontal drain collar
- Active horizontal drain
- Dead horizontal drain collar
- Dead horizontal drain

NOTES:
1. EnergyAustralia Yallourn database 4/03/2025

N

Scale 1:30,000

0 500 1,000 m

Local Mine Grid: SECV

P S M	Created By: BRJ	Revision: A	EnergyAustralia Yallourn Mine Rehabilitation Design HORIZONTAL DRAINS IN YALLOURN MINE
	Date: 21 Mar 2025	Paper Size: A3	PSM4487-200R | Appendix A

C:\Users\Brendon.Jones\Pells Sullivan Meyninki\GIS - PSM4487\03_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R - Appendix - Monitoring Plans.qgz Layout: Appendix - Horizontal Drains

Appendix A.6
Pump bores

394000
396000
398000
400000
402000
268000
266000
264000

Legend

- End of mining topographic contours (5m)
- Rehabilitation domain
- Active pump bore
- Dead pump bore

NOTES:
1. EnergyAustralia Yallourn database 4/03/2025

N

Scale 1:30,000

0 500 1,000 m

Local Mine Grid: SECV

Created By: BRJ	Revision: A	EnergyAustralia Yallourn Mine Rehabilitation Design
Date: 21 Mar 2025	Paper Size: A3	PUMP BORES IN AND AROUND YALLOURN MINE
PSM4487-200R	Appendix A	

C:\Users\Brendon.Jones\Pells Sullivan Meyninki\GIS - PSM4487\03_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R - Appendix - Monitoring Plans.qgz Layout: Appendix - Pump Bores

Appendix B
Geology, Deformations and Pin Movement Domain Plans

B1. Coal thickness, deformation and pin movement plans per domain

B2. Coal floor dip, deformation and pin movement plans per domain

Appendix B.1
Coal thickness, deformation and pin movement plans per domain

397000
398000
399000
268000
267000
Section 31
Section 1
Section 2
Section 3
Section 30
Section 32

Legend

Rehabilitation domains
End of mining topographic contours (1m)
Geotechnical sections
Cracks

Geological structures

Geological structures
Anticline
Fault, inferred
Monocline
Monocline, inferred
Reverse Fault
Reverse Fault, inferred
Syncline

Total horizontal movement of surface pins (mm)

Negligible <10
<50
50 - 200
200 - 500
>500

Yallourn Coal thickness DEM

<= 0.0
0.0 - 5.0
5.0 - 15.0
15.0 - 30.0
30.0 - 45.0
45.0 - 60.0
60.0 - 75.0
> 75.0

NOTES:
1. Yallourn Coal thickness of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)

N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M	Created By: PSM	Revision: A	
	Date: 30 Jul 2024	Paper Size: A3	

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL THICKNESS
& DEFORMATIONS
YEF-NB (WEST)

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487703_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.aggz Layout: YCOAL Thickness Overview Rev 2

398000
399000
400000
269000
268000
267000
Section 1
Section 2
Section 3
Section 4
Section 5
Section 32

Legend

Rehabilitation domains
End of mining topographic contours (1m)
Geotechnical sections
Cracks

Geological structures

Geological structures
Anticline
Fault, inferred
Monocline
Monocline, inferred
Reverse Fault
Reverse Fault, inferred
Syncline

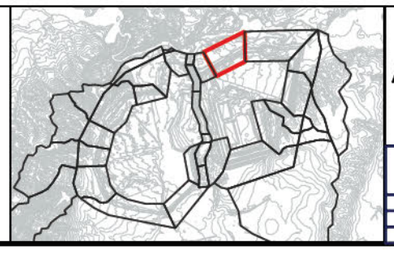
Total horizontal movement of surface pins (mm)

Negligible <10
<50
50 - 200
200 - 500
>500

Yallourn Coal thickness DEM

<= 0.0
0.0 - 5.0
5.0 - 15.0
15.0 - 30.0
30.0 - 45.0
45.0 - 60.0
60.0 - 75.0
> 75.0

NOTES:
1. Yallourn Coal thickness of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By: PSM
Revision: A
Date: 30 Jul 2024
Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL THICKNESS
& DEFORMATIONS
YEF-NB (EAST)

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyninh\KGIS - Documents\ArcGIS\PSM4487703_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Thickness Overview Rev 2

400000 401000 402000

269000

268000

Section 3
Section 4
Section 5
Section 6
Section 7
Section 7b

Legend

Rehabilitation domains
End of mining topographic contours (1m)
Geotechnical sections
Cracks

Geological structures

Geological structures
Anticline
Fault, inferred
Monocline
Monocline, inferred
Reverse Fault
Reverse Fault, inferred
Syncline

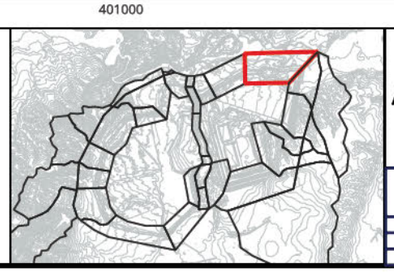
Total horizontal movement of surface pins (mm)

Negligible <10
<50
50 - 200
200 - 500
>500

Yallourn Coal thickness DEM

<= 0.0
0.0 - 5.0
5.0 - 15.0
15.0 - 30.0
30.0 - 45.0
45.0 - 60.0
60.0 - 75.0
> 75.0

NOTES:
1. Yallourn Coal thickness of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M	Created By: PSM	Revision: A	
	Date: 30 Jul 2024	Paper Size: A3	

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL THICKNESS & DEFORMATIONS YEF-LRB

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyninkl\GIS - Documents\ArcGIS\PSM4487703_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Thickness Overview Rev 2

400000 401000 402000

269000 268000 267000

Section 4
Section 5
Section 6
Section 7
Section 7b
Section 8
Section 9

Legend

Rehabilitation domains
End of mining topographic contours (1m)
Geotechnical sections
Cracks

Geological structures

Geological structures
Anticline
Fault, inferred
Monocline
Monocline, inferred
Reverse Fault
Reverse Fault, inferred
Syncline

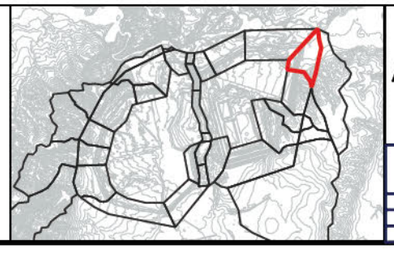
Total horizontal movement of surface pins (mm)

Negligible <10
<50
50 - 200
200 - 500
>500

Yallourn Coal thickness DEM

<= 0.0
0.0 - 5.0
5.0 - 15.0
15.0 - 30.0
30.0 - 45.0
45.0 - 60.0
60.0 - 75.0
> 75.0

NOTES:
1. Yallourn Coal thickness of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M	Created By: PSM	Revision: A	EnergyAustralia Yallourn Mine Rehabilitation Design
	Date: 30 Jul 2024	Paper Size: A3	YALLOURN COAL THICKNESS & DEFORMATIONS YEFX-LREB (NORTH)
			PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487703_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Thickness Overview Rev 2

400000
401000
402000
267000
266000

Section 7
Section 7b
Section 8
Section 9
Section 10
Section 11

Legend

Rehabilitation domains
End of mining topographic contours (1m)
Geotechnical sections
Cracks

Geological structures

Geological structures
Anticline
Fault, inferred
Monocline
Monocline, inferred
Reverse Fault
Reverse Fault, inferred
Syncline

Total horizontal movement of surface pins (mm)

Negligible <10
<50
50 - 200
200 - 500
>500

Yallourn Coal thickness DEM

<= 0.0
0.0 - 5.0
5.0 - 15.0
15.0 - 30.0
30.0 - 45.0
45.0 - 60.0
60.0 - 75.0
> 75.0

NOTES:
1. Yallourn Coal thickness of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By: PSM
Revision: A
Date: 30 Jul 2024
Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL THICKNESS
& DEFORMATIONS
YEFX-LREB (SOUTH)

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyninh\GIS - Documents\ArcGIS\PSM4487\03_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Thickness Overview Rev 2

400000
401000
402000
267000
266000
265000
Section 8
Section 9
Section 10
Section 11
Section 12
Section 13

Legend

Rehabilitation domains
End of mining topographic contours (1m)
Geotechnical sections
Cracks

Geological structures

Geological structures
Anticline
Fault, inferred
Monocline
Monocline, inferred
Reverse Fault
Reverse Fault, inferred
Syncline

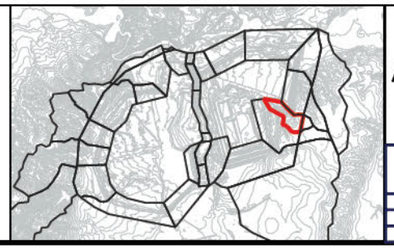
Total horizontal movement of surface pins (mm)

Negligible <10
<50
50 - 200
200 - 500
>500

Yallourn Coal thickness DEM

<= 0.0
0.0 - 5.0
5.0 - 15.0
15.0 - 30.0
30.0 - 45.0
45.0 - 60.0
60.0 - 75.0
> 75.0

NOTES:
1. Yallourn Coal thickness of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By:	Revision:
PSM	A
Date: 30 Jul 2024	Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL THICKNESS
& DEFORMATIONS
YEFX-SB

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyninh\KGIS - Documents\ArcGIS\PSM4487703_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Thickness Overview Rev 2

399000 400000 401000 402000

266000

265000

Section 10

Section 11

Section 12

Section 13

Section 14

Legend

Rehabilitation domains

End of mining topographic contours (1m)

Geotechnical sections

Cracks

Geological structures

Geological structures

Anticline

Fault, inferred

Monocline

Monocline, inferred

Reverse Fault

Reverse Fault, inferred

Syncline

Total horizontal movement of surface pins (mm)

Negligible <10

<50

50 - 200

200 - 500

>500

Yallourn Coal thickness DEM

<= 0.0

0.0 - 5.0

5.0 - 15.0

15.0 - 30.0

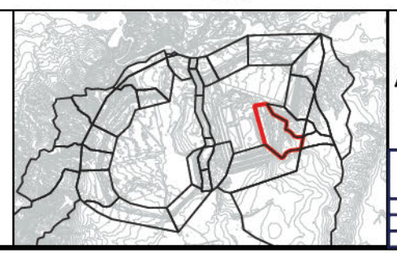
30.0 - 45.0

45.0 - 60.0

60.0 - 75.0

> 75.0

NOTES:
1. Yallourn Coal thickness of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By: PSM

Revision: A

Date: 30 Jul 2024

Paper Size: A3

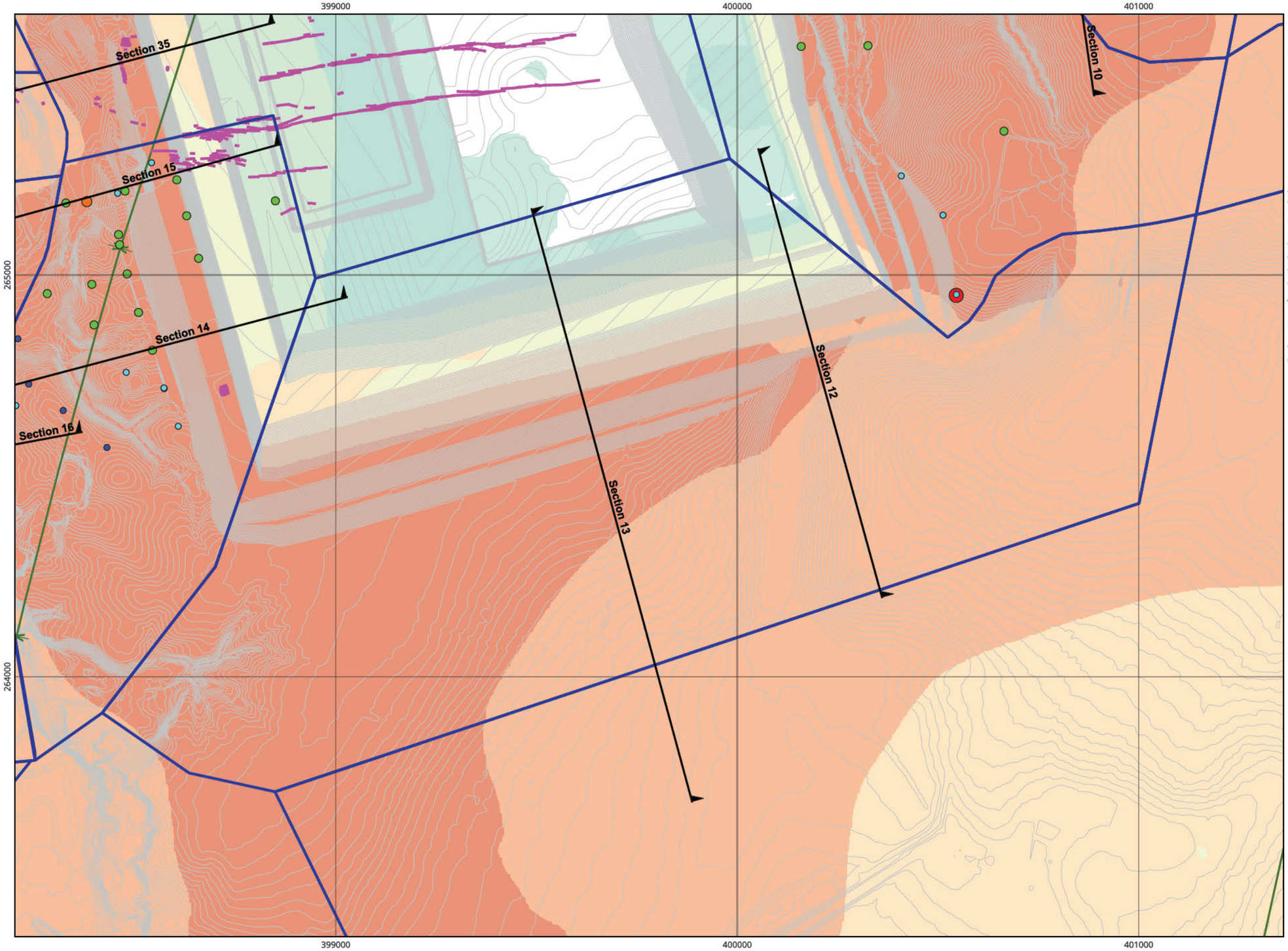
EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL THICKNESS & DEFORMATIONS
MVF-EB

PSM4487-200R

Appendix

C:\Users\Jarrod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487\03_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Thickness Overview Rev 2



Legend

- Rehabilitation domains
- End of mining topographic contours (1m)
- Geotechnical sections
- Cracks

Geological structures

Geological structures

- Anticline
- Fault, inferred
- Monocline
- Monocline, inferred
- Reverse Fault
- Reverse Fault, inferred
- Syncline

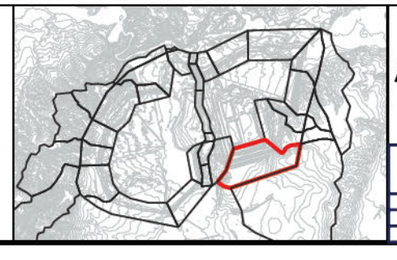
Total horizontal movement of surface pins (mm)

- Negligible <10
- <50
- 50 - 200
- 200 - 500
- >500

Yallourn Coal thickness DEM

- <= 0.0
- 0.0 - 5.0
- 5.0 - 15.0
- 15.0 - 30.0
- 30.0 - 45.0
- 45.0 - 60.0
- 60.0 - 75.0
- > 75.0

NOTES:
1. Yallourn Coal thickness of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By:	Revision:
PSM	A
Date: 30 Jul 2024	Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL THICKNESS
& DEFORMATIONS
MVF-SB

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrinki\GIS - Documents\ArcGIS\PSM4487\03_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.aggz Layout: YCOAL Thickness Overview Rev 2

397000
398000
399000
400000
265000
264000
Section 34
Section 35
Section 15
Section 14
Section 16
Section 17
Section 13

Legend

Rehabilitation domains
End of mining topographic contours (1m)
Geotechnical sections
Cracks

Geological structures

Geological structures
Anticline
Fault, inferred
Monocline
Monocline, inferred
Reverse Fault
Reverse Fault, inferred
Syncline

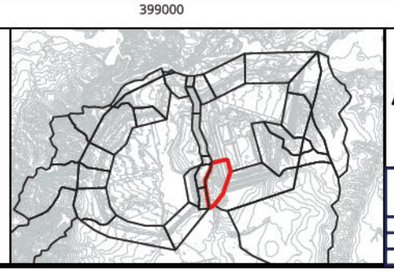
Total horizontal movement of surface pins (mm)

Negligible <10
<50
50 - 200
200 - 500
>500

Yallourn Coal thickness DEM

<= 0.0
0.0 - 5.0
5.0 - 15.0
15.0 - 30.0
30.0 - 45.0
45.0 - 60.0
60.0 - 75.0
> 75.0

NOTES:
1. Yallourn Coal thickness of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By: PSM
Revision: A
Date: 30 Jul 2024
Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL THICKNESS & DEFORMATIONS
MVF-WB

PSM4487-200R
Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyninkl\GIS - Documents\ArcGIS\PSM4487003_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Thickness Overview Rev 2

397000
398000
399000
265000
264000
Section 34
Section 35
Section 15
Section 14
Section 16
Section 17

Legend

Rehabilitation domains
End of mining topographic contours (1m)
Geotechnical sections
Cracks

Geological structures

Geological structures
Anticline
Fault, inferred
Monocline
Monocline, inferred
Reverse Fault
Reverse Fault, inferred
Syncline

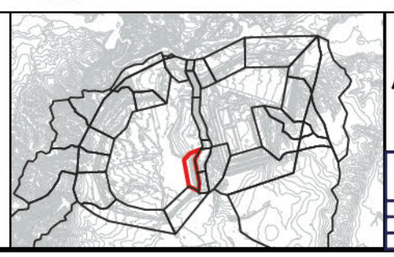
Total horizontal movement of surface pins (mm)

Negligible <10
<50
50 - 200
200 - 500
>500

Yallourn Coal thickness DEM

<= 0.0
0.0 - 5.0
5.0 - 15.0
15.0 - 30.0
30.0 - 45.0
45.0 - 60.0
60.0 - 75.0
> 75.0

NOTES:
1. Yallourn Coal thickness of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By: PSM
Revision: A
Date: 30 Jul 2024
Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL THICKNESS & DEFORMATIONS
YTF-FSPB

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyninh\GIS - Documents\ArcGIS\PSM4487703_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Thickness Overview Rev 2

396000 397000 398000 399000

264000 263000

Section 17

Section 18

Section 18b

0.75

396000 397000 398000 399000

Legend

Rehabilitation domains

End of mining topographic contours (1m)

Geotechnical sections

Cracks

Geological structures

Geological structures

Anticline

Fault, inferred

Monocline

Monocline, inferred

Reverse Fault

Reverse Fault, inferred

Syncline

Total horizontal movement of surface pins (mm)

Negligible <10

<50

50 - 200

200 - 500

>500

Yallourn Coal thickness DEM

<= 0.0

0.0 - 5.0

5.0 - 15.0

15.0 - 30.0

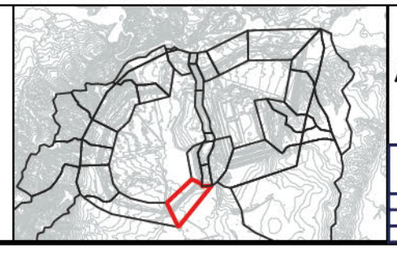
30.0 - 45.0

45.0 - 60.0

60.0 - 75.0

> 75.0

NOTES:
1. Yallourn Coal thickness of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M	Created By: PSM	Revision: A
	Date: 30 Jul 2024	Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL THICKNESS
& DEFORMATIONS
YTF-FPB

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487703_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.aprx Layout: YCOAL Thickness Overview Rev 2

395000
396000
397000
264000
263000
262000
Section 20
Section 19
Section 18
Section 18b

Legend

Rehabilitation domains
End of mining topographic contours (1m)
Geotechnical sections
Cracks

Geological structures

Geological structures
Anticline
Fault, inferred
Monocline
Monocline, inferred
Reverse Fault
Reverse Fault, inferred
Syncline

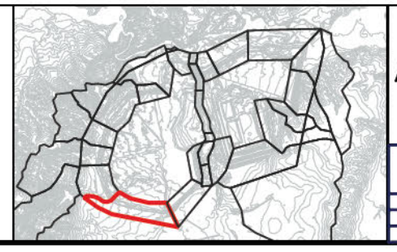
Total horizontal movement of surface pins (mm)

Negligible <10
<50
50 - 200
200 - 500
>500

Yallourn Coal thickness DEM

<= 0.0
0.0 - 5.0
5.0 - 15.0
15.0 - 30.0
30.0 - 45.0
45.0 - 60.0
60.0 - 75.0
> 75.0

NOTES:
1. Yallourn Coal thickness of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M	Created By: PSM	Revision: A	EnergyAustralia Yallourn Mine Rehabilitation Design
	Date: 30 Jul 2024	Paper Size: A3	YALLOURN COAL THICKNESS & DEFORMATIONS YTF-SB
			PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyninh\GIS - Documents\ArcGIS\PSM4487703_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Thickness Overview Rev 2

393000 394000 395000 396000

265000 264000 263000

Section 22

Section 21

Section 20

Section 19

Legend

Rehabilitation domains

End of mining topographic contours (1m)

Geotechnical sections

Cracks

Geological structures

Geological structures

Anticline

Fault, inferred

Monocline

Monocline, inferred

Reverse Fault

Reverse Fault, inferred

Syncline

Total horizontal movement of surface pins (mm)

Negligible <10

<50

50 - 200

200 - 500

>500

Yallourn Coal thickness DEM

<= 0.0

0.0 - 5.0

5.0 - 15.0

15.0 - 30.0

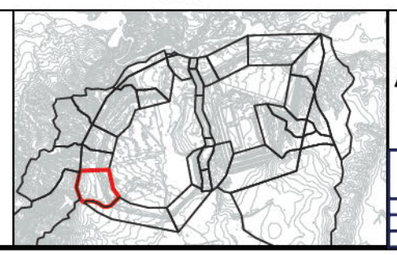
30.0 - 45.0

45.0 - 60.0

60.0 - 75.0

> 75.0

NOTES:
1. Yallourn Coal thickness of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By: PSM

Revision: A

Date: 30 Jul 2024

Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL THICKNESS & DEFORMATIONS YTF-SWB

PSM4487-200R

Appendix

C:\Users\Jarrod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487703_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Thickness Overview Rev 2

393000 394000 395000 396000

266000 265000 264000

Section 26
Section 25
Section 24
Section 23
Section 22
Section 21
Section 20

Legend

Rehabilitation domains
End of mining topographic contours (1m)
Geotechnical sections
Cracks

Geological structures

Geological structures
Anticline
Fault, inferred
Monocline
Monocline, inferred
Reverse Fault
Reverse Fault, inferred
Syncline

Total horizontal movement of surface pins (mm)

Negligible <10
<50
50 - 200
200 - 500
>500

Yallourn Coal thickness DEM

<= 0.0
0.0 - 5.0
5.0 - 15.0
15.0 - 30.0
30.0 - 45.0
45.0 - 60.0
60.0 - 75.0
> 75.0

NOTES:
1. Yallourn Coal thickness of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M	Created By: PSM	Revision: A	EnergyAustralia Yallourn Mine Rehabilitation Design
	Date: 30 Jul 2024	Paper Size: A3	YALLOURN COAL THICKNESS & DEFORMATIONS YTF-HOB (SOUTH)
			PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487003_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Thickness Overview Rev 2

393000 394000 395000 396000

266000

265000

Section 21
Section 22
Section 23
Section 24
Section 25
Section 26
Section 27
Section 28

Legend

Rehabilitation domains
End of mining topographic contours (1m)
Geotechnical sections
Cracks

Geological structures

Geological structures
Anticline
Fault, inferred
Monocline
Monocline, inferred
Reverse Fault
Reverse Fault, inferred
Syncline

Total horizontal movement of surface pins (mm)

Negligible <10
<50
50 - 200
200 - 500
>500

Yallourn Coal thickness DEM

<= 0.0
0.0 - 5.0
5.0 - 15.0
15.0 - 30.0
30.0 - 45.0
45.0 - 60.0
60.0 - 75.0
> 75.0

NOTES:
1. Yallourn Coal thickness of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)

N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By: PSM
Revision: A
Date: 30 Jul 2024
Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL THICKNESS
& DEFORMATIONS
YTF-HOB (NORTH)

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487003_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Thickness Overview Rev 2

394000
395000
396000
267000
266000

Section 23
Section 24
Section 25
Section 26
Section 27
Section 28
Section 29
Section 30

Legend

Rehabilitation domains
End of mining topographic contours (1m)
Geotechnical sections
Cracks

Geological structures

Geological structures
Anticline
Fault, inferred
Monocline
Monocline, inferred
Reverse Fault
Reverse Fault, inferred
Syncline

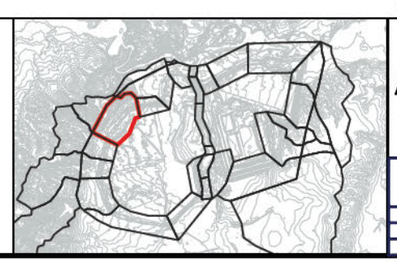
Total horizontal movement of surface pins (mm)

Negligible <10
<50
50 - 200
200 - 500
>500

Yallourn Coal thickness DEM

<= 0.0
0.0 - 5.0
5.0 - 15.0
15.0 - 30.0
30.0 - 45.0
45.0 - 60.0
60.0 - 75.0
> 75.0

NOTES:
1. Yallourn Coal thickness of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By: PSM
Revision: A
Date: 30 Jul 2024
Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL THICKNESS & DEFORMATIONS YTF-WB

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487703_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.aprx Layout: YCOAL Thickness Overview Rev 2

395000
396000
397000
267000
266000

Section 27
Section 28
Section 29
Section 30
Section 31
Section 1
Section 32
Section 33
Section 26
Section 25

Legend

Rehabilitation domains
End of mining topographic contours (1m)
Geotechnical sections
Cracks

Geological structures

Geological structures
Anticline
Fault, inferred
Monocline
Monocline, inferred
Reverse Fault
Reverse Fault, inferred
Syncline

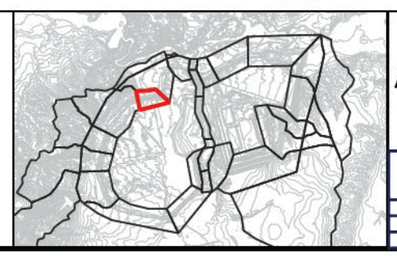
Total horizontal movement of surface pins (mm)

Negligible <10
<50
50 - 200
200 - 500
>500

Yallourn Coal thickness DEM

<= 0.0
0.0 - 5.0
5.0 - 15.0
15.0 - 30.0
30.0 - 45.0
45.0 - 60.0
60.0 - 75.0
> 75.0

NOTES:
1. Yallourn Coal thickness of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By:	Revision:
PSM	A
Date:	Paper Size:
30 Jul 2024	A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL THICKNESS & DEFORMATIONS YTF-NB

PSM4487-200R | Appendix

C:\Users\Jarrod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487703_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Thickness Overview Rev 2

395000
396000
397000
268000
267000

Section 31
Section 1
Section 30
Section 28
Section 29
Section 27
Section 26
Section 33

Legend

Rehabilitation domains
End of mining topographic contours (1m)
Geotechnical sections
Cracks

Geological structures

Geological structures
Anticline
Fault, inferred
Monocline
Monocline, inferred
Reverse Fault
Reverse Fault, inferred
Syncline

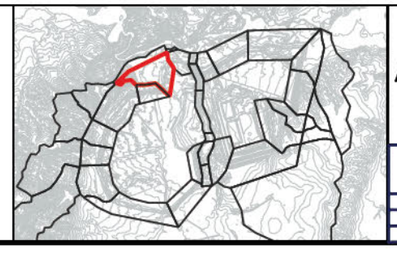
Total horizontal movement of surface pins (mm)

Negligible <10
<50
50 - 200
200 - 500
>500

Yallourn Coal thickness DEM

<= 0.0
0.0 - 5.0
5.0 - 15.0
15.0 - 30.0
30.0 - 45.0
45.0 - 60.0
60.0 - 75.0
> 75.0

NOTES:
1. Yallourn Coal thickness of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By:	Revision:
PSM	A
Date: 30 Jul 2024	Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL THICKNESS
& DEFORMATIONS
YTF-RCB

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487703_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.aprx Layout: YCOAL Thickness Overview Rev 2

396000
397000
398000
268000
267000

Section 1
Section 2
Section 3
Section 28
Section 29
Section 30
Section 31
Section 32

Legend

Rehabilitation domains
End of mining topographic contours (1m)
Geotechnical sections
Cracks

Geological structures

Geological structures
Anticline
Fault, inferred
Monocline
Monocline, inferred
Reverse Fault
Reverse Fault, inferred
Syncline

Total horizontal movement of surface pins (mm)

Negligible <10
<50
50 - 200
200 - 500
>500

Yallourn Coal thickness DEM

<= 0.0
0.0 - 5.0
5.0 - 15.0
15.0 - 30.0
30.0 - 45.0
45.0 - 60.0
60.0 - 75.0
> 75.0

NOTES:
1. Yallourn Coal thickness of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M	Created By: PSM	Revision: A	EnergyAustralia Yallourn Mine Rehabilitation Design
	Date: 30 Jul 2024	Paper Size: A3	YALLOURN COAL THICKNESS & DEFORMATIONS YTF-LS
			PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487003_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Thickness Overview Rev 2

Appendix B.2
Coal floor dip, deformation and pin movement plans per domain

397000
398000
399000
268000
267000
Section 31
Section 1
Section 2
Section 3
Section 30
Section 32

Legend

Rehabilitation domains

End of mining topographic contours (1m)

Geotechnical sections

Cracks

Geological structures

Geological structures

Anticline

Fault, inferred

Monocline

Monocline, inferred

Reverse Fault

Reverse Fault, inferred

Syncline

Total horizontal movement of surface pins (mm)

Negligible <10

<50

50 - 200

200 - 500

>500

Yallourn Coal floor dip (°)

<= 1.0

1.0 - 2.0

2.0 - 3.0

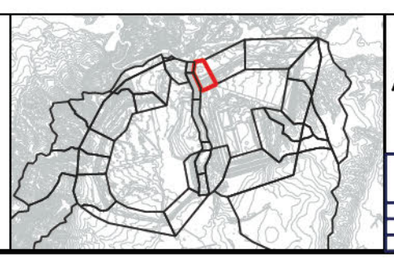
3.0 - 4.0

4.0 - 5.0

5.0 - 6.0

> 6.0

NOTES:
1. Yallourn Coal floor dip of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By: PSM

Revision: A

Date: 30 Jul 2024

Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL FLOOR DIP & DEFORMATIONS YEF-NB (WEST)

PSM4487-200R

Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487703_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.aggr Layout: YCOAL Coal floor dip Overview Rev 2

398000 399000 400000

269000 268000 267000

Section 1
Section 2
Section 32
Section 3
Section 4
Section 5

Legend

Rehabilitation domains

End of mining topographic contours (1m)

Geotechnical sections

Cracks

Geological structures

Geological structures

Anticline

Fault, inferred

Monocline

Monocline, inferred

Reverse Fault

Reverse Fault, inferred

Syncline

Total horizontal movement of surface pins (mm)

Negligible <10

<50

50 - 200

200 - 500

>500

Yallourn Coal floor dip (°)

<= 1.0

1.0 - 2.0

2.0 - 3.0

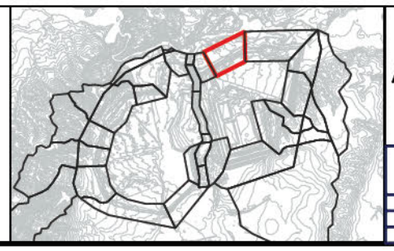
3.0 - 4.0

4.0 - 5.0

5.0 - 6.0

> 6.0

NOTES:
1. Yallourn Coal floor dip of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M	Created By: PSM	Revision: A
	Date: 30 Jul 2024	Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL FLOOR DIP
& DEFORMATIONS
YEF-NB (EAST)

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyninh\KGIS - Documents\ArcGIS\PSM4487703_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Coal floor dip Overview Rev 2

400000
401000
402000
269000
268000
Section 3
Section 4
Section 5
Section 6
Section 7
Section 7b

Legend

Rehabilitation domains

End of mining topographic contours (1m)

Geotechnical sections

Cracks

Geological structures

Geological structures

Anticline

Fault, inferred

Monocline

Monocline, inferred

Reverse Fault

Reverse Fault, inferred

Syncline

Total horizontal movement of surface pins (mm)

Negligible <10

<50

50 - 200

200 - 500

>500

Yallourn Coal floor dip (°)

<= 1.0

1.0 - 2.0

2.0 - 3.0

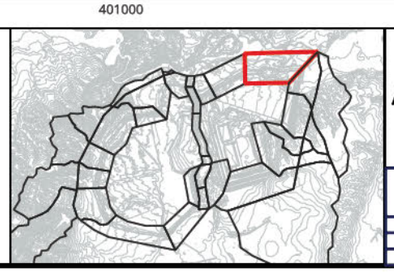
3.0 - 4.0

4.0 - 5.0

5.0 - 6.0

> 6.0

NOTES:
1. Yallourn Coal floor dip of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By: PSM

Revision: A

Date: 30 Jul 2024

Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL FLOOR DIP & DEFORMATIONS YEF-LRB

PSM4487-200R

Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyninh\KGIS - Documents\ArcGIS\PSM4487003_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Coal floor dip Overview Rev 2

400000
401000
402000
269000
268000
267000
Section 4
Section 5
Section 6
Section 7
Section 7b
Section 8
Section 9

Legend

Rehabilitation domains

End of mining topographic contours (1m)

Geotechnical sections

Cracks

Geological structures

Geological structures

Anticline

Fault, inferred

Monocline

Monocline, inferred

Reverse Fault

Reverse Fault, inferred

Syncline

Total horizontal movement of surface pins (mm)

Negligible <10

<50

50 - 200

200 - 500

>500

Yallourn Coal floor dip (°)

<= 1.0

1.0 - 2.0

2.0 - 3.0

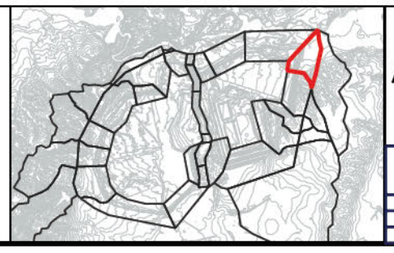
3.0 - 4.0

4.0 - 5.0

5.0 - 6.0

> 6.0

NOTES:
1. Yallourn Coal floor dip of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By: PSM

Revision: A

Date: 30 Jul 2024

Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL FLOOR DIP
& DEFORMATIONS
YEFX-LREB (NORTH)

PSM4487-200R

Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meynink\GIS - Documents\ArcGIS\PSM4487703_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Coal floor dip Overview Rev 2

400000
401000
402000
267000
266000

Section 7
Section 7b
Section 8
Section 9
Section 10
Section 11

Legend

Rehabilitation domains
End of mining topographic contours (1m)
Geotechnical sections
Cracks

Geological structures

Geological structures
Anticline
Fault, inferred
Monocline
Monocline, inferred
Reverse Fault
Reverse Fault, inferred
Syncline

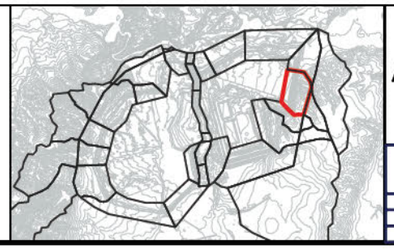
Total horizontal movement of surface pins (mm)

Negligible <10
<50
50 - 200
200 - 500
>500

Yallourn Coal floor dip (°)

<= 1.0
1.0 - 2.0
2.0 - 3.0
3.0 - 4.0
4.0 - 5.0
5.0 - 6.0
> 6.0

NOTES:
1. Yallourn Coal floor dip of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M	Created By: PSM	Revision: A	
	Date: 30 Jul 2024	Paper Size: A3	

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL FLOOR DIP
& DEFORMATIONS
YEFX-LREB (SOUTH)

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyninh\GIS - Documents\ArcGIS\PSM4487003_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Coal floor dip Overview Rev 2

400000
401000
402000
267000
266000
265000

Section 8
Section 9
Section 10
Section 11
Section 12
Section 13

Legend

Rehabilitation domains
End of mining topographic contours (1m)
Geotechnical sections
Cracks

Geological structures

Geological structures
Anticline
Fault, inferred
Monocline
Monocline, inferred
Reverse Fault
Reverse Fault, inferred
Syncline

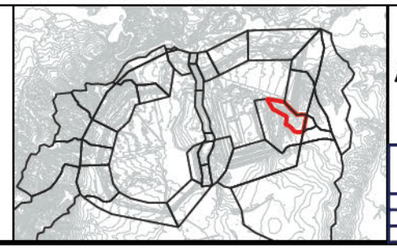
Total horizontal movement of surface pins (mm)

Negligible <10
<50
50 - 200
200 - 500
>500

Yallourn Coal floor dip (°)

<= 1.0
1.0 - 2.0
2.0 - 3.0
3.0 - 4.0
4.0 - 5.0
5.0 - 6.0
> 6.0

NOTES:
1. Yallourn Coal floor dip of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M	Created By: PSM	Revision: A
	Date: 30 Jul 2024	Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL FLOOR DIP
& DEFORMATIONS
YEFX-SB

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487f03_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.aprx Layout: YCOAL Coal floor dip Overview Rev 2

399000 400000 401000 402000

266000

265000

Section 10

Section 11

Section 12

Section 13

Section 14

Legend

Rehabilitation domains

End of mining topographic contours (1m)

Geotechnical sections

Cracks

Geological structures

Geological structures

Anticline

Fault, inferred

Monocline

Monocline, inferred

Reverse Fault

Reverse Fault, inferred

Syncline

Total horizontal movement of surface pins (mm)

Negligible <10

<50

50 - 200

200 - 500

>500

Yallourn Coal floor dip (°)

<= 1.0

1.0 - 2.0

2.0 - 3.0

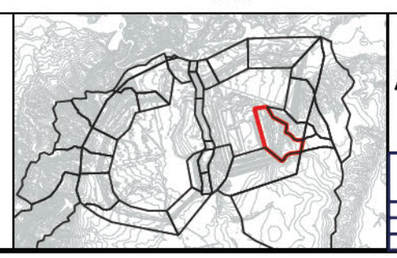
3.0 - 4.0

4.0 - 5.0

5.0 - 6.0

> 6.0

NOTES:
1. Yallourn Coal floor dip of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By: PSM

Revision: A

Date: 30 Jul 2024

Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL FLOOR DIP & DEFORMATIONS
MVF-EB

PSM4487-200R

Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487703_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Coal floor dip Overview Rev 2

399000
400000
401000
265000
264000
Section 35
Section 15
Section 14
Section 16
Section 13
Section 12
Section 10

Legend

Rehabilitation domains

End of mining topographic contours (1m)

Geotechnical sections

Cracks

Geological structures

Geological structures

Anticline

Fault, inferred

Monocline

Monocline, inferred

Reverse Fault

Reverse Fault, inferred

Syncline

Total horizontal movement of surface pins (mm)

Negligible <10

<50

50 - 200

200 - 500

>500

Yallourn Coal floor dip (°)

<= 1.0

1.0 - 2.0

2.0 - 3.0

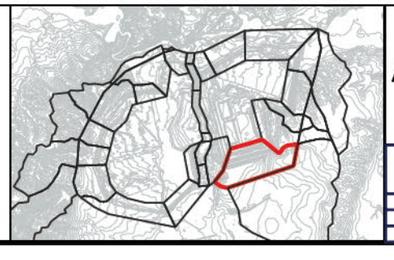
3.0 - 4.0

4.0 - 5.0

5.0 - 6.0

> 6.0

NOTES:
1. Yallourn Coal floor dip of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By: PSM

Revision: A

Date: 30 Jul 2024

Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL FLOOR DIP
& DEFORMATIONS
MVF-SB

PSM4487-200R

Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487703_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.aprx Layout: YCOAL Coal floor dip Overview Rev 2

397000
398000
399000
400000
265000
264000

Section 34
Section 35
Section 15
Section 14
Section 16
Section 13
Section 17

Legend

Rehabilitation domains

End of mining topographic contours (1m)

Geotechnical sections

Cracks

Geological structures

Geological structures

Anticline

Fault, inferred

Monocline

Monocline, inferred

Reverse Fault

Reverse Fault, inferred

Syncline

Total horizontal movement of surface pins (mm)

Negligible <10

<50

50 - 200

200 - 500

>500

Yallourn Coal floor dip (°)

<= 1.0

1.0 - 2.0

2.0 - 3.0

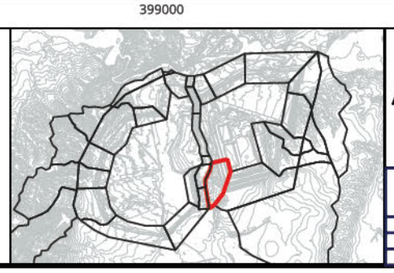
3.0 - 4.0

4.0 - 5.0

5.0 - 6.0

> 6.0

NOTES:
1. Yallourn Coal floor dip of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By: PSM

Revision: A

Date: 30 Jul 2024

Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL FLOOR DIP & DEFORMATIONS
MVF-WB

PSM4487-200R

Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyninh\GIS - Documents\ArcGIS\PSM4487703_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Coal floor dip Overview Rev 2

397000
398000
399000
265000
264000

Section 34
Section 35
Section 15
Section 14
Section 16
Section 17

Legend

Rehabilitation domains
End of mining topographic contours (1m)
Geotechnical sections
Cracks

Geological structures

Geological structures
Anticline
Fault, inferred
Monocline
Monocline, inferred
Reverse Fault
Reverse Fault, inferred
Syncline

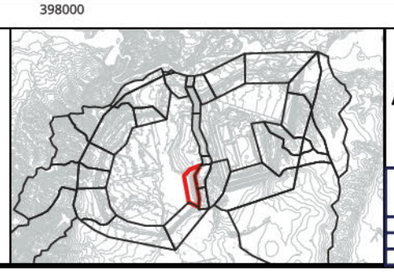
Total horizontal movement of surface pins (mm)

Negligible <10
<50
50 - 200
200 - 500
>500

Yallourn Coal floor dip (°)

<= 1.0
1.0 - 2.0
2.0 - 3.0
3.0 - 4.0
4.0 - 5.0
5.0 - 6.0
> 6.0

NOTES:
1. Yallourn Coal floor dip of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M	Created By: PSM	Revision: A	
	Date: 30 Jul 2024	Paper Size: A3	

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL FLOOR DIP & DEFORMATIONS
YTF-FSPB

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487\03_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Coal floor dip Overview Rev 2

396000
397000
398000
399000
264000
263000

Section 17
Section 18
Section 18b

Legend

Rehabilitation domains

End of mining topographic contours (1m)

Geotechnical sections

Cracks

Geological structures

Geological structures

Anticline

Fault, inferred

Monocline

Monocline, inferred

Reverse Fault

Reverse Fault, inferred

Syncline

Total horizontal movement of surface pins (mm)

Negligible <10

<50

50 - 200

200 - 500

>500

Yallourn Coal floor dip (°)

<= 1.0

1.0 - 2.0

2.0 - 3.0

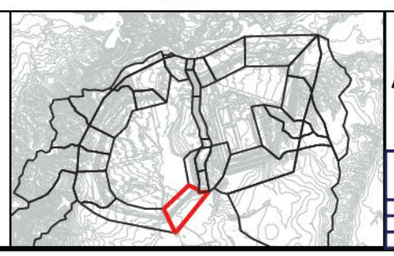
3.0 - 4.0

4.0 - 5.0

5.0 - 6.0

> 6.0

NOTES:
1. Yallourn Coal floor dip of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By: PSM
Revision: A
Date: 30 Jul 2024
Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL FLOOR DIP & DEFORMATIONS
YTF-FPB

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487\03_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.aggz Layout: YCOAL Coal floor dip Overview Rev 2

395000
396000
397000
264000
263000
262000
Section 20
Section 19
Section 18
Section 18b

Legend

Rehabilitation domains

End of mining topographic contours (1m)

Geotechnical sections

Cracks

Geological structures

Geological structures

Anticline

Fault, inferred

Monocline

Monocline, inferred

Reverse Fault

Reverse Fault, inferred

Syncline

Total horizontal movement of surface pins (mm)

Negligible <10

<50

50 - 200

200 - 500

>500

Yallourn Coal floor dip (°)

<= 1.0

1.0 - 2.0

2.0 - 3.0

3.0 - 4.0

4.0 - 5.0

5.0 - 6.0

> 6.0

NOTES:
1. Yallourn Coal floor dip of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)

N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By:	Revision:
PSM	A
Date: 30 Jul 2024	Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL FLOOR DIP
& DEFORMATIONS
YTF-SB

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyninh\GIS - Documents\ArcGIS\PSM4487703_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Coal floor dip Overview Rev 2

393000 394000 395000 396000

265000 264000 263000

Section 22

Section 21

Section 20

Section 19

Legend

Rehabilitation domains

End of mining topographic contours (1m)

Geotechnical sections

Cracks

Geological structures

Geological structures

Anticline

Fault, inferred

Monocline

Monocline, inferred

Reverse Fault

Reverse Fault, inferred

Syncline

Total horizontal movement of surface pins (mm)

Negligible <10

<50

50 - 200

200 - 500

>500

Yallourn Coal floor dip (°)

<= 1.0

1.0 - 2.0

2.0 - 3.0

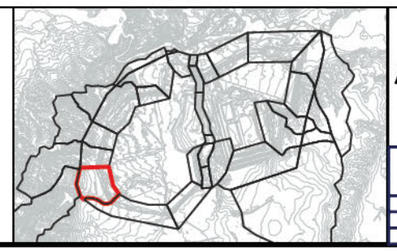
3.0 - 4.0

4.0 - 5.0

5.0 - 6.0

> 6.0

NOTES:
1. Yallourn Coal floor dip of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M	Created By: PSM	Revision: A
	Date: 30 Jul 2024	Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL FLOOR DIP
& DEFORMATIONS
YTF-SWB

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyninh\GIS - Documents\ArcGIS\PSM4487\03_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Coal floor dip Overview Rev 2

393000 394000 395000 396000

266000 265000 264000

Section 26
Section 25
Section 24
Section 23
Section 22
Section 21
Section 20

Legend

Rehabilitation domains

End of mining topographic contours (1m)

Geotechnical sections

Cracks

Geological structures

Geological structures

Anticline

Fault, inferred

Monocline

Monocline, inferred

Reverse Fault

Reverse Fault, inferred

Syncline

Total horizontal movement of surface pins (mm)

Negligible <10

<50

50 - 200

200 - 500

>500

Yallourn Coal floor dip (°)

<= 1.0

1.0 - 2.0

2.0 - 3.0

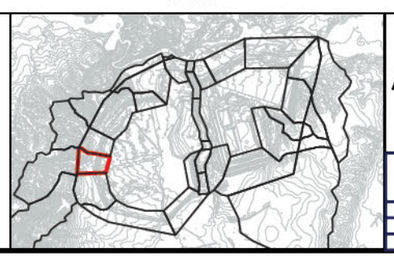
3.0 - 4.0

4.0 - 5.0

5.0 - 6.0

> 6.0

NOTES:
1. Yallourn Coal floor dip of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By: PSM

Revision: A

Date: 30 Jul 2024

Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL FLOOR DIP
& DEFORMATIONS
YTF-HOB (SOUTH)

PSM4487-200R

Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Coal floor dip Overview Rev 2

393000
394000
395000
396000
266000
265000

Section 28
Section 27
Section 26
Section 25
Section 24
Section 23
Section 22
Section 21

Legend

Rehabilitation domains

End of mining topographic contours (1m)

Geotechnical sections

Cracks

Geological structures

Geological structures

Anticline

Fault, inferred

Monocline

Monocline, inferred

Reverse Fault

Reverse Fault, inferred

Syncline

Total horizontal movement of surface pins (mm)

Negligible <10

<50

50 - 200

200 - 500

>500

Yallourn Coal floor dip (°)

<= 1.0

1.0 - 2.0

2.0 - 3.0

3.0 - 4.0

4.0 - 5.0

5.0 - 6.0

> 6.0

NOTES:
1. Yallourn Coal floor dip of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M	Created By: PSM	Revision: A
	Date: 30 Jul 2024	Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL FLOOR DIP
& DEFORMATIONS
YTF-HOB (NORTH)

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487003_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Coal floor dip Overview Rev 2

394000
395000
396000
267000
266000

Section 30
Section 28
Section 29
Section 27
Section 26
Section 25
Section 24
Section 23

Legend

Rehabilitation domains

End of mining topographic contours (1m)

Geotechnical sections

Cracks

Geological structures

Geological structures

Anticline

Fault, inferred

Monocline

Monocline, inferred

Reverse Fault

Reverse Fault, inferred

Syncline

Total horizontal movement of surface pins (mm)

Negligible <10

<50

50 - 200

200 - 500

>500

Yallourn Coal floor dip (°)

<= 1.0

1.0 - 2.0

2.0 - 3.0

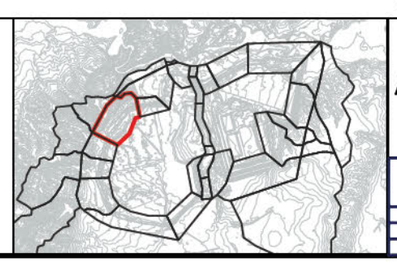
3.0 - 4.0

4.0 - 5.0

5.0 - 6.0

> 6.0

NOTES:
1. Yallourn Coal floor dip of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M

Created By: PSM

Revision: A

Date: 30 Jul 2024

Paper Size: A3

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL FLOOR DIP & DEFORMATIONS YTF-WB

PSM4487-200R

Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487703_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Coal floor dip Overview Rev 2

395000
396000
397000
267000
266000

Section 27
Section 28
Section 29
Section 30
Section 31
Section 1
Section 32
Section 33
Section 26
Section 25

Legend

Rehabilitation domains

End of mining topographic contours (1m)

Geotechnical sections

Cracks

Geological structures

Geological structures

Anticline

Fault, inferred

Monocline

Monocline, inferred

Reverse Fault

Reverse Fault, inferred

Syncline

Total horizontal movement of surface pins (mm)

Negligible <10

<50

50 - 200

200 - 500

>500

Yallourn Coal floor dip (°)

<= 1.0

1.0 - 2.0

2.0 - 3.0

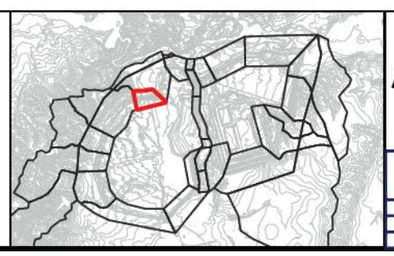
3.0 - 4.0

4.0 - 5.0

5.0 - 6.0

> 6.0

NOTES:
1. Yallourn Coal floor dip of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M	Created By: PSM	Revision: A	
	Date: 30 Jul 2024	Paper Size: A3	

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL FLOOR DIP & DEFORMATIONS
YTF-NB

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487003_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Coal floor dip Overview Rev 2

395000
396000
397000
268000
267000

Section 31
Section 1
Section 30
Section 27
Section 28
Section 29
Section 26
Section 33

Legend

Rehabilitation domains

End of mining topographic contours (1m)

Geotechnical sections

Cracks

Geological structures

Geological structures

Anticline

Fault, inferred

Monocline

Monocline, inferred

Reverse Fault

Reverse Fault, inferred

Syncline

Total horizontal movement of surface pins (mm)

Negligible <10

<50

50 - 200

200 - 500

>500

Yallourn Coal floor dip (°)

<= 1.0

1.0 - 2.0

2.0 - 3.0

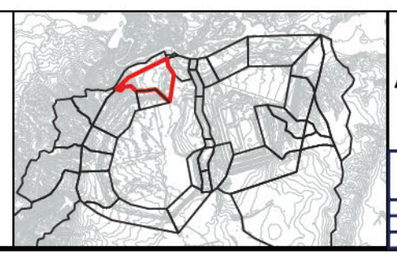
3.0 - 4.0

4.0 - 5.0

5.0 - 6.0

> 6.0

NOTES:
1. Yallourn Coal floor dip of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M	Created By: PSM	Revision: A	
	Date: 30 Jul 2024	Paper Size: A3	

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL FLOOR DIP & DEFORMATIONS YTF-RCB

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487003_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.aggz Layout: YCOAL Coal floor dip Overview Rev 2

396000
397000
398000
268000
267000

Section 31
Section 30
Section 29
Section 28
Section 1
Section 2
Section 3
Section 32

Legend

Rehabilitation domains

End of mining topographic contours (1m)

Geotechnical sections

Cracks

Geological structures

Geological structures

Anticline

Fault, inferred

Monocline

Monocline, inferred

Reverse Fault

Reverse Fault, inferred

Syncline

Total horizontal movement of surface pins (mm)

Negligible <10

<50

50 - 200

200 - 500

>500

Yallourn Coal floor dip (°)

<= 1.0

1.0 - 2.0

2.0 - 3.0

3.0 - 4.0

4.0 - 5.0

5.0 - 6.0

> 6.0

NOTES:
1. Yallourn Coal floor dip of EAY Minescape model.
2. Geological structures digitised from 1:50,000 Moe geological map (Bolger et al, 1983)



N

Scale 1:10,000
0 200 400 m

Local Mine Grid: SECV

P S M	Created By: PSM	Revision: A	
	Date: 30 Jul 2024	Paper Size: A3	

EnergyAustralia
Yallourn Mine
Rehabilitation Design

YALLOURN COAL FLOOR DIP & DEFORMATIONS
YTF-LS

PSM4487-200R | Appendix

C:\Users\Jarod.Gillespie\Pells Sullivan Meyrink\GIS - Documents\ArcGIS\PSM4487003_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Domain Plans.qgz Layout: YCOAL Coal floor dip Overview Rev 2

Appendix C
Geotechnical Sections

C1. Geotechnical section locality plan

C2. General notes

C3. Geotechnical sections with geology, boreholes, piezometric levels, geomorphology and infrastructure

392000E
394000E
396000E
398000E
400000E
402000E
404000E
268000N
266000N
264000N
262000N
YTF-LS
YEF-NB (WEST)
YEF-NB (EAST)
YEF-LRB
YEFX-LREB (NORTH)
YEFX-LREB (SOUTH)
YEFX-SB
MVF-EB
MVF-WB
MVF-SB
YTF-FSPB
YTF-FPB
YTF-SB
YTF-RCB
YTF-NB
YTF-WB
YTF-HOB (NORTH)
YTF-HOB (SOUTH)
YTF-SWB
Section 1
Section 2
Section 3
Section 4
Section 5
Section 6
Section 7
Section 8
Section 9
Section 10
Section 11
Section 12
Section 13
Section 14
Section 15
Section 16
Section 17
Section 18
Section 19
Section 20
Section 21
Section 22
Section 23
Section 24
Section 25
Section 26
Section 27
Section 28
Section 29
Section 30
Section 31
Section 32
Section 33
Section 34
Section 35

LEGEND

EOM Topography
5m Contours

Rehabilitation Domains

Stability Section Locations

0 500 1000 1500 2000
Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GEOTECHNICAL SECTION
LOCALITY PLAN

PSM4487-200R | Appendix C

GENERAL NOTES

G1. These drawings should be read in conjunction with the technical Report PSM4487-200R.

G2. As excavated mine void surface includes:

a. 221206 Yallourn Mine void as-excavated surface (YM_VOID_SQR)

b. 20220328 future life-of-mine batters - parallel advance

G3. End of mining landform includes:

a. 01 - YTF internal stacker OB dump

b. 02 - YEF internal stacker OB dump

c. 03 - Dump 3 - MV OH eastern batter floor surcharge - 211122a

d. 04 - Dump 4 - MV OH M405 floor surcharge - 211122a - 220315 GB redesign with 5m lift

e. 05 - MRD and Maryvale Field conveyor embankment fill

f. 06 - Latrobe River realignment fill and levee and E308 surcharge

g. 07 - Maryvale Field central and YEFX truck dumps and haul roads

h. 08 - Latrobe Road batters capping and levee

i. 20220328 future life-of-mine batters - parallel advance

j. Lidar_contours_191208_merged (surface geometry outside mine bounds)

G4. Only major infrastructure is shown. Where they are shown, they are considered indicative positions only.

G5. The following geodetic systems are adopted unless noted otherwise:

a. Yallourn Mine grid SECV

b. Australian height datum (AHD)

c. All orientations are reported relative to Yallourn Mine grid

G6. These drawings are developed to provide the closure or baseline conditions at the end of mining. Changes to the landform due to continued mining between this report date and the end of mining in 2028 are accounted for in assigning confidence to geological and groundwater boundaries.

GEOLOGICAL

GL1. Geotechnical sections have been developed with borehole data completed up to 17/08/2023.

GL2. 'Higher confidence' borehole data is defined as borehole logs with both lithology and Formation data.

GL3. Geological borehole descriptions are based on Yallourn borehole database provided by ENERGYAUSTRALIA YALLOURN (EAY).

GL4. Boreholes within 50 m of the section are typically shown. Not all boreholes or data used to develop the model are shown for clarity - where BH Data is not within 50m, the offset distance is indicated.

GL5. In some cases, borehole collars and data may be shown above the current ground surface. This reflects an older surface and therefore borehole collar.

GL6. Lithology boundaries shown on the sections are considered the 'best guess' using the boundary types 'approximate' and 'inferred':

a. Approximate: interpreted boundary based on a reasonable level of geotechnical data i.e. where higher confidence data is within approximately 50 m of section.

b. Inferred: interpreted boundary based on limited geotechnical data i.e. where higher confidence data is not within approximately 50 m of section; a lower level of confidence compared to an approximate boundary.

GL7. Undifferentiated Coal and Interseam material includes:

1. Yallourn Coal Splits (Y1, Y2, Y3, Y4, Y5) and Interseam
2. Morwell Coal (M1A), Coal Splits (M1A1, M1A2, M1A3) and Interseam
3. Morwell Aquifer (M1AS0, M1AS1, M1ASM, M1ASL) and Interseam
4. Latrobe Coal, Coal Splits (M1B, M2) and Interseam.
5. Thorpdale Volcanics

GL8. Inferred regional fold axis locations are shown on sections where applicable.

GL9. Not all localised geological structures such as dykes, faults and fold axis are shown on sections.

HYDROGEOLOGY

H1. Groundwater levels shown may not represent the maximum or minimum level for that instrument. It is the level recorded at the date indicated.

H2. Groundwater levels are shown where there is data from instrumented boreholes.

H3. Groundwater levels shown on section are intended to represent end of mining piezometric levels. Two boundaries are presented:

a. Approximate: interpreted phreatic level based on a reasonable coverage of groundwater instrumentation data.

b. Inferred: interpreted phreatic level based on few groundwater instrumentation data. A lower level of confidence compared to approximate levels.

H4. Horizontal drains reflect the design collar position and orientation. As built may vary from design alignment.

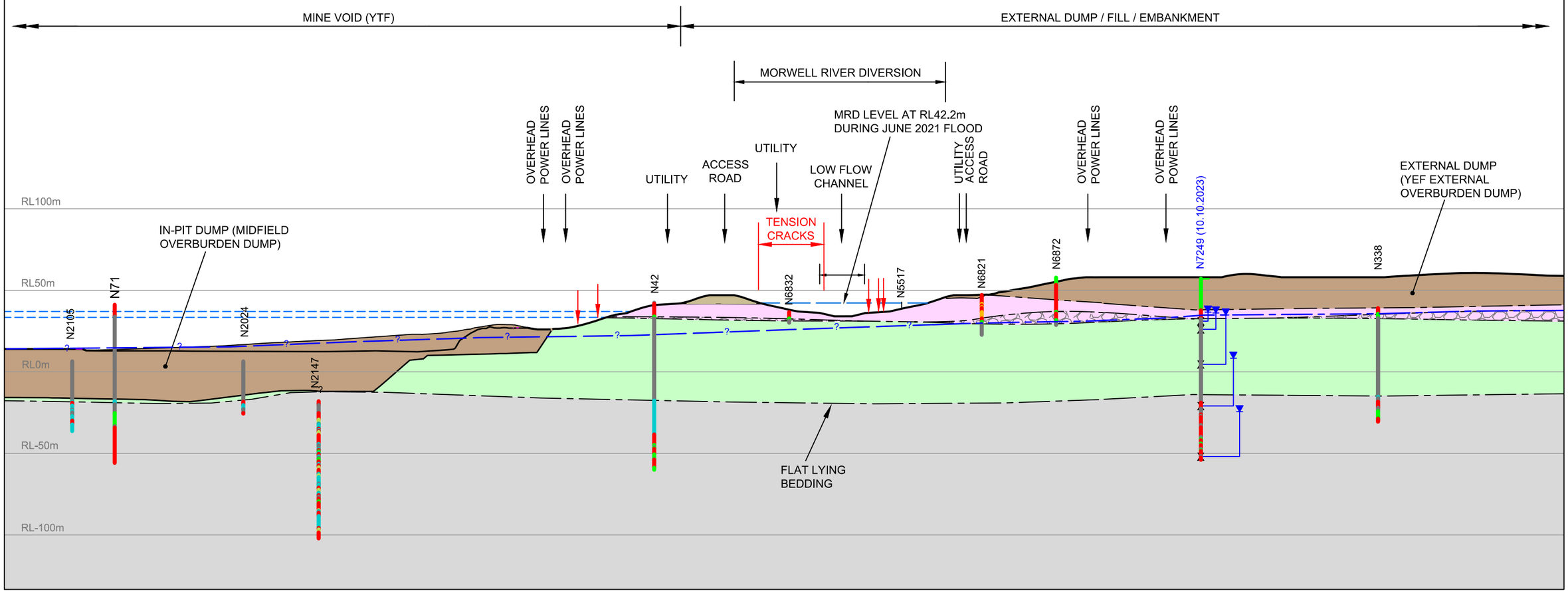
GEOMORPHOLOGY

GM1. Natural landforms outside of the Yallourn Mine are shown on the sections. These are divided into nine geomorphological landforms:

1. Denuded, gentle slopes
2. Denuded, steeply incised
3. Active channel and floodplain
4. Floodplain
5. Foothills
6. Peneplain
7. Remnant peneplain
8. Ridge crest
9. Alluvial/colluvial

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GENERAL NOTES FOR SECTIONS



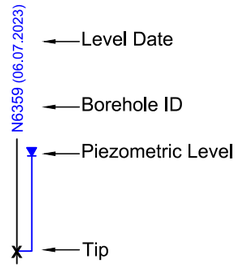
LEGEND

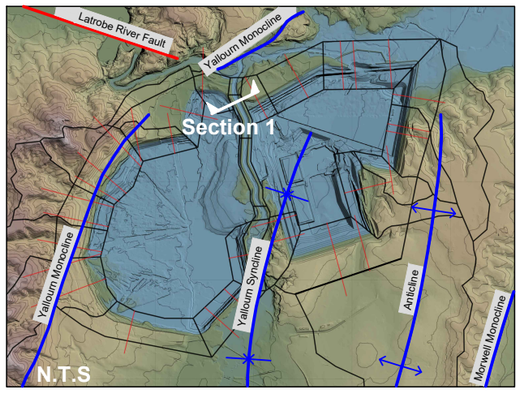
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation



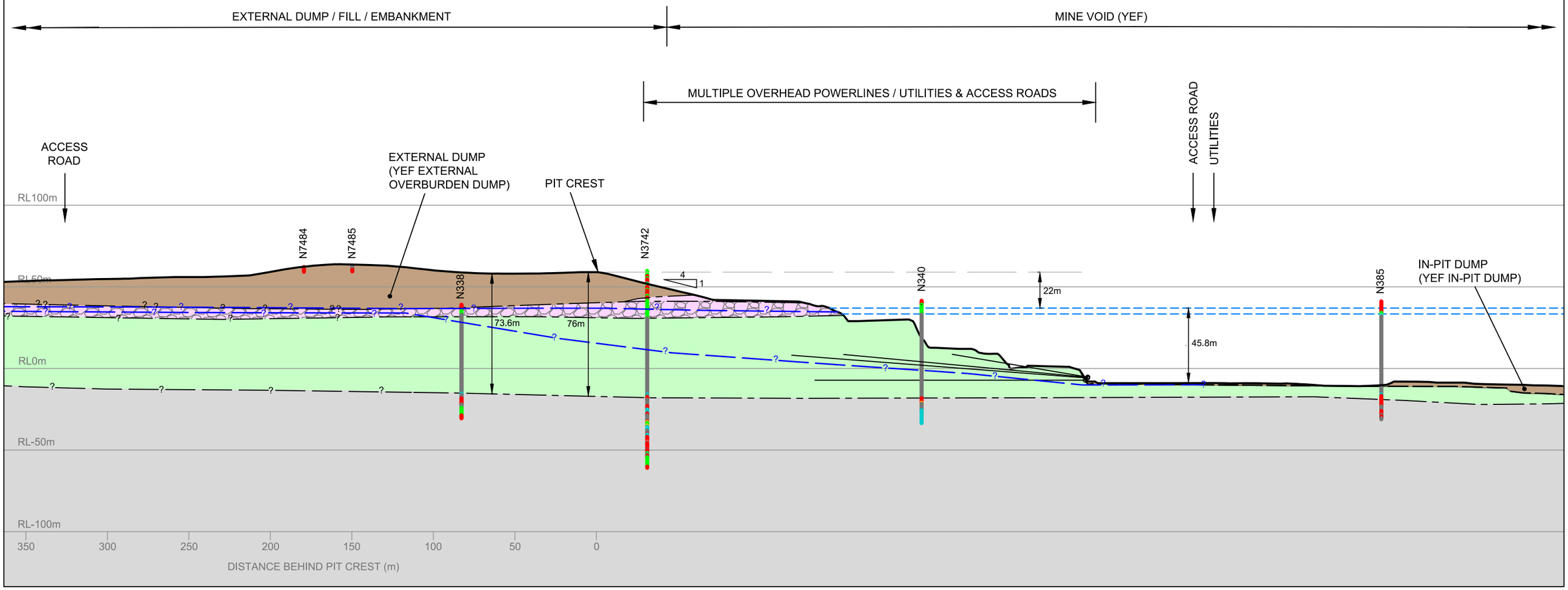


0 50 100
Scale (m)
@ 1:2500 A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 1 (YEF-NB)

PSM4487-200R | Appendix C



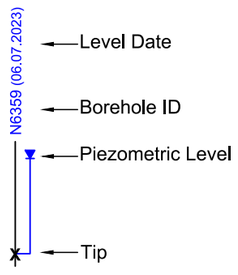
LEGEND

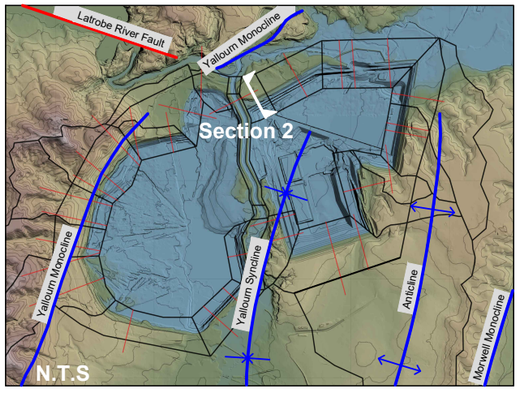
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





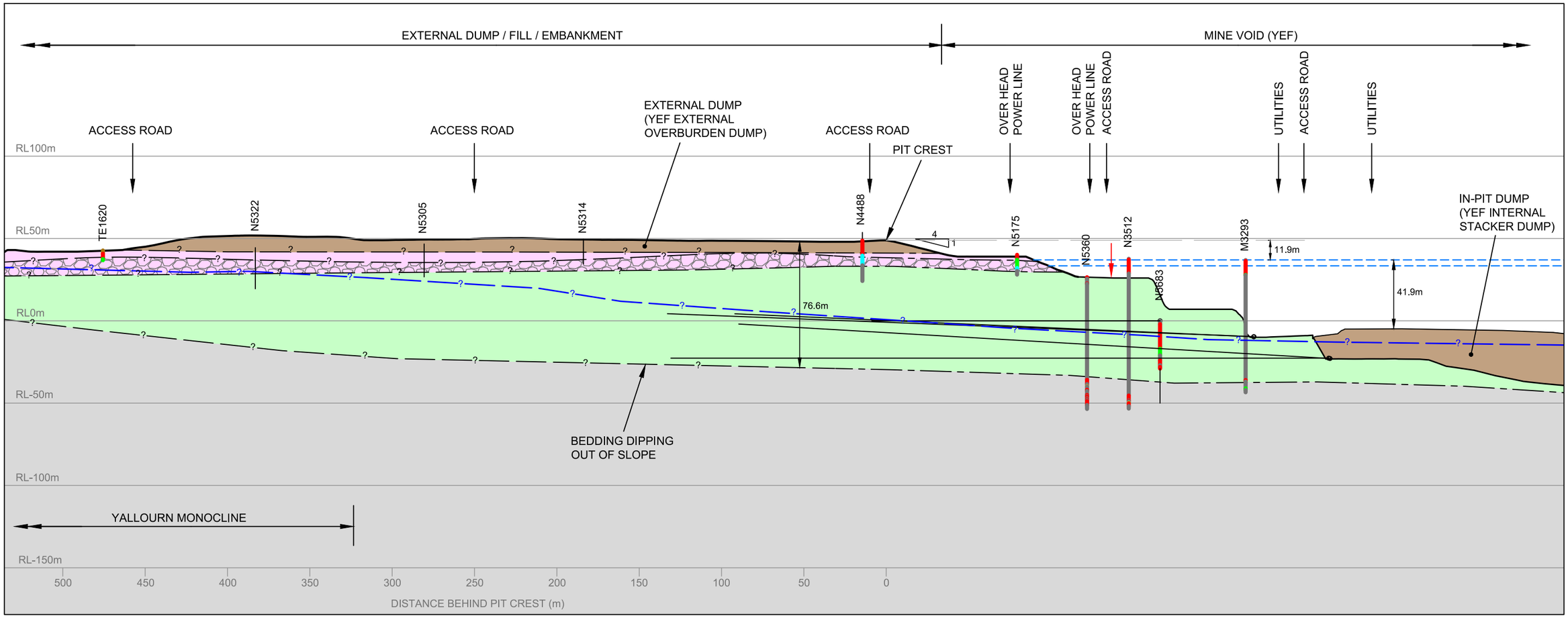
0 50 100
Scale (m)
@ 1:2500 A3

PSM

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 2 (YEF-NB) WEST

PSM4487-200R	Appendix C



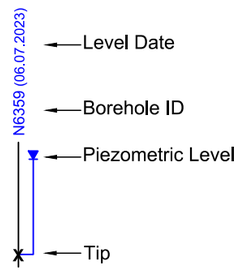
LEGEND

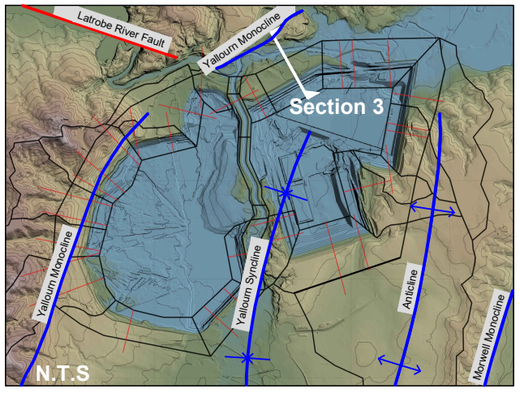
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





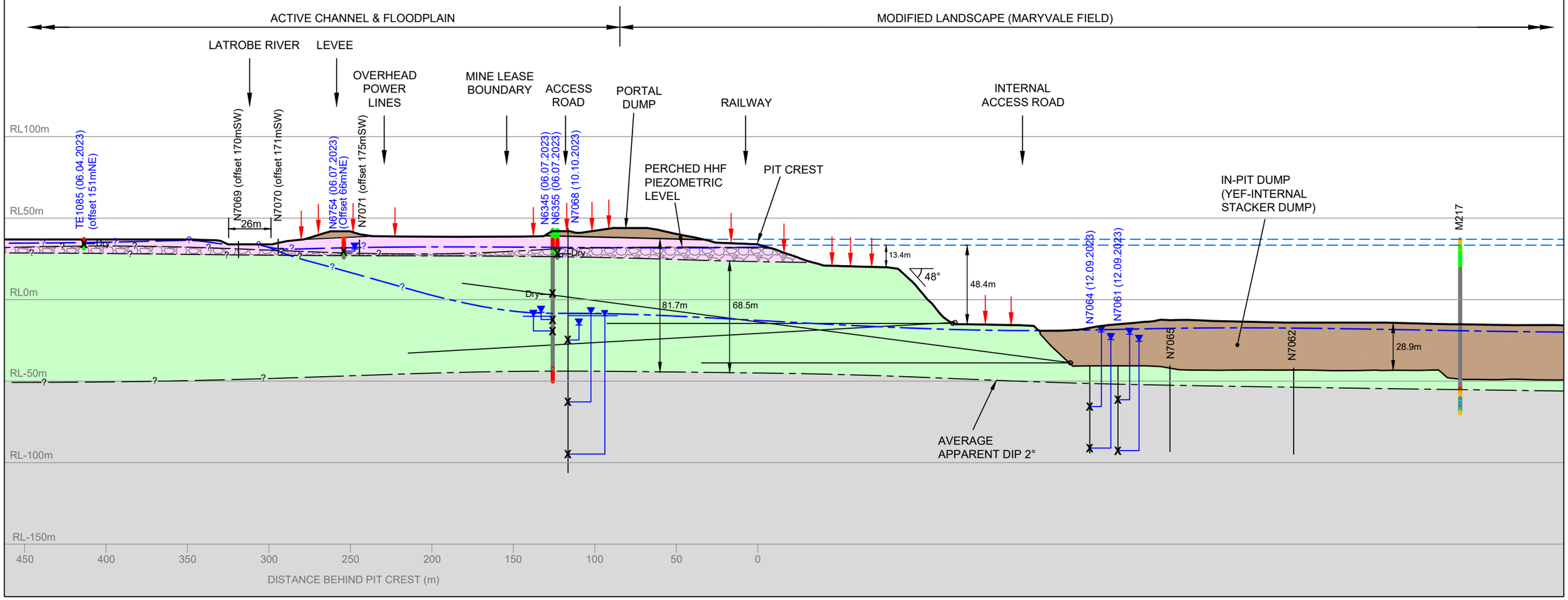
0 50 100
Scale (m)
@ 1:2500 A3

PSM

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 3 (YEF-NB) EAST

PSM4487-200R | Appendix C



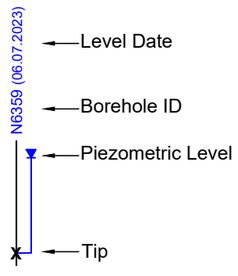
LEGEND

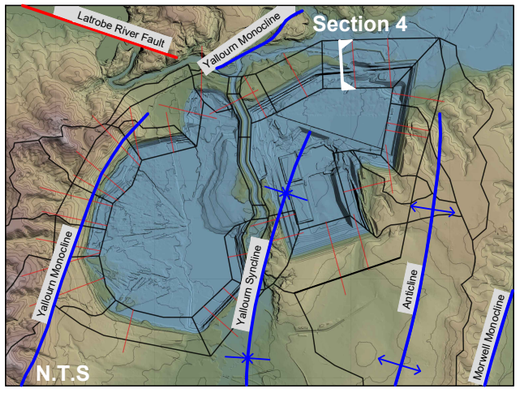
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





Notes

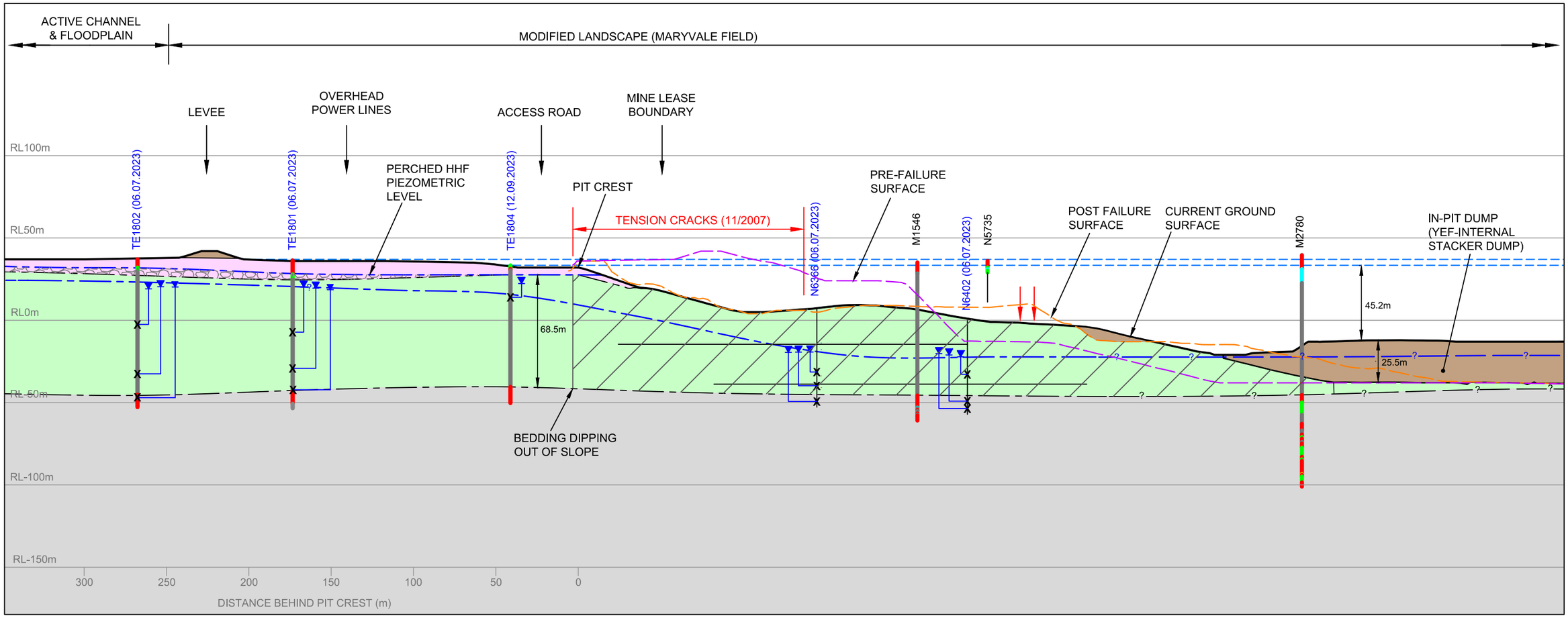
1. Typical geological & slope profile: Bedding dipping out of slope.

0 50 100
Scale (m)
@ 1:2500 A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 4 (YEF-LRB)

PSM4487-200R | Appendix C



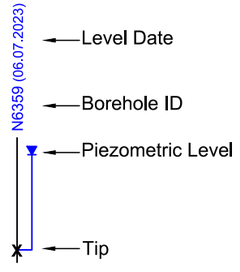
LEGEND

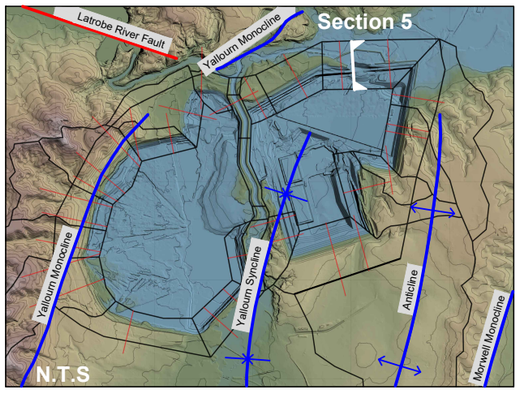
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- EC070926 (Pre-LRB Failure)
- EC071228 (Post LRB Failure)
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Failed Coal Block
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





Notes

1. Typical geological & slope profile: Bedding dipping out of slope.

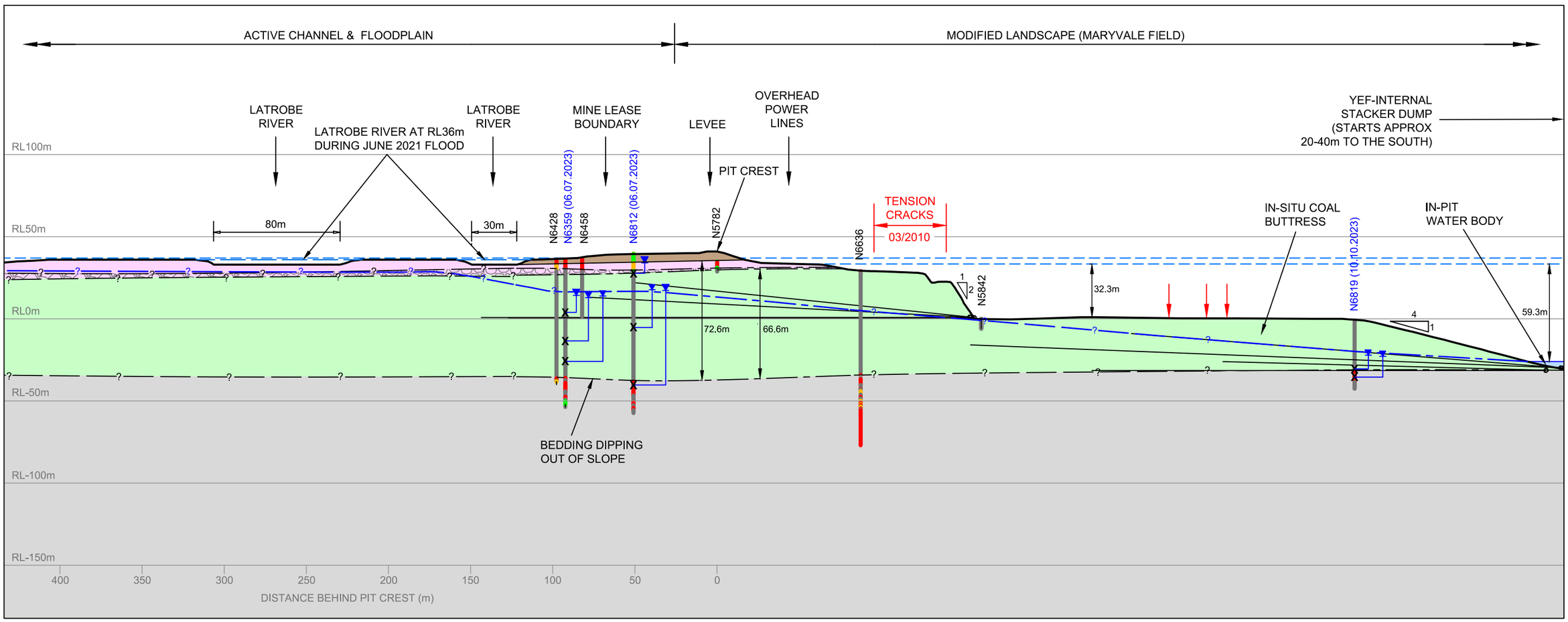
0 50 100
Scale (m)
1:2500 @ A3

P S M

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 5 (YEF-LRB)

PSM4487-200R	Appendix C



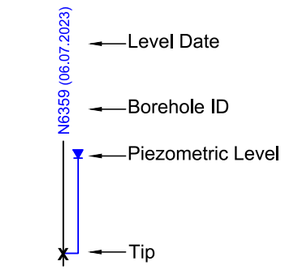
LEGEND

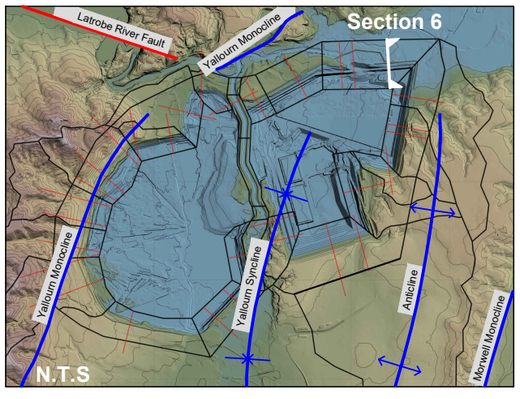
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





Notes

1. Typical geological & slope profile: Bedding dipping out of slope.

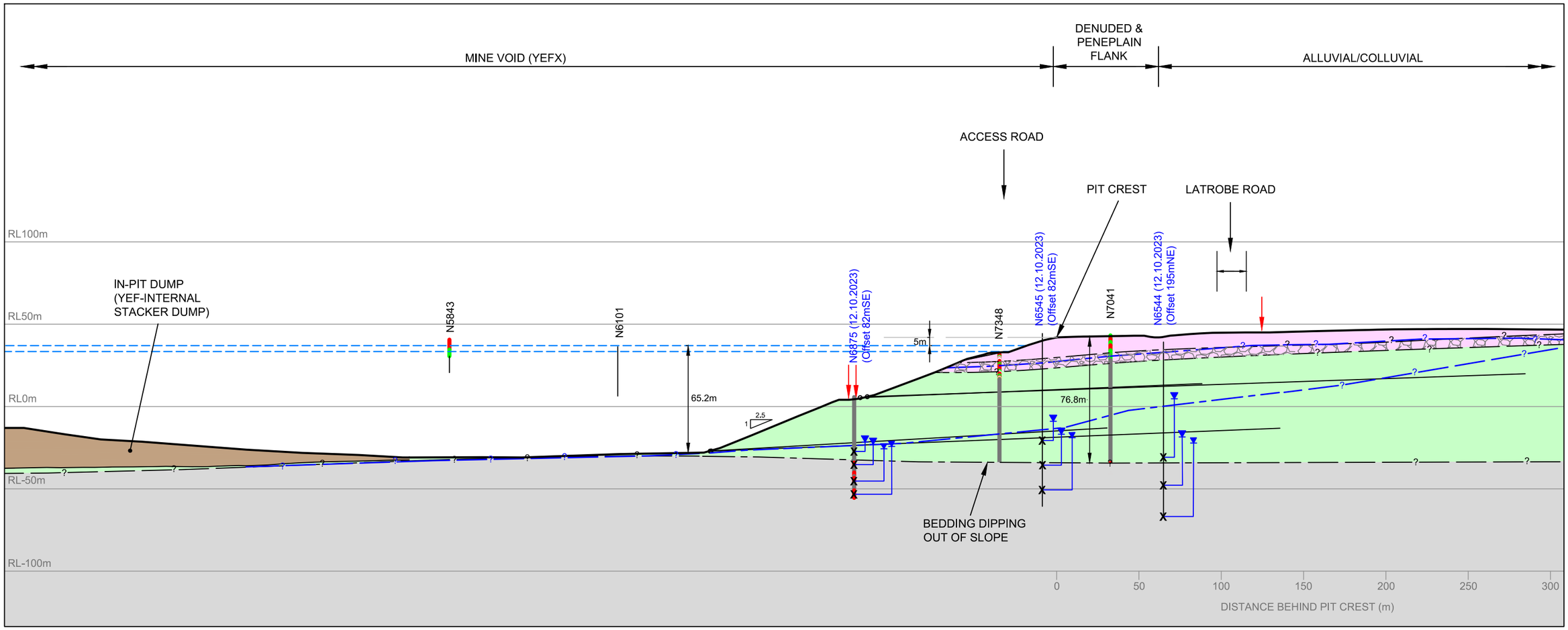
0 50 100
Scale (m)
1:2500 @ A3

PSM

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 6 (YEF-LRB)

PSM4487-200R	Appendix C



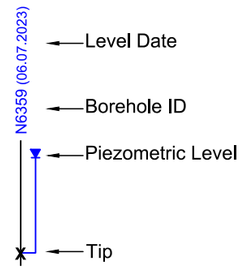
LEGEND

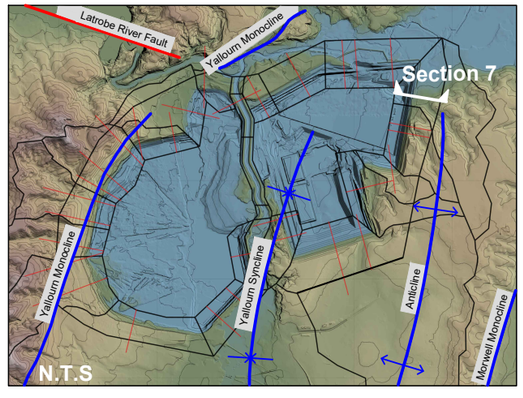
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





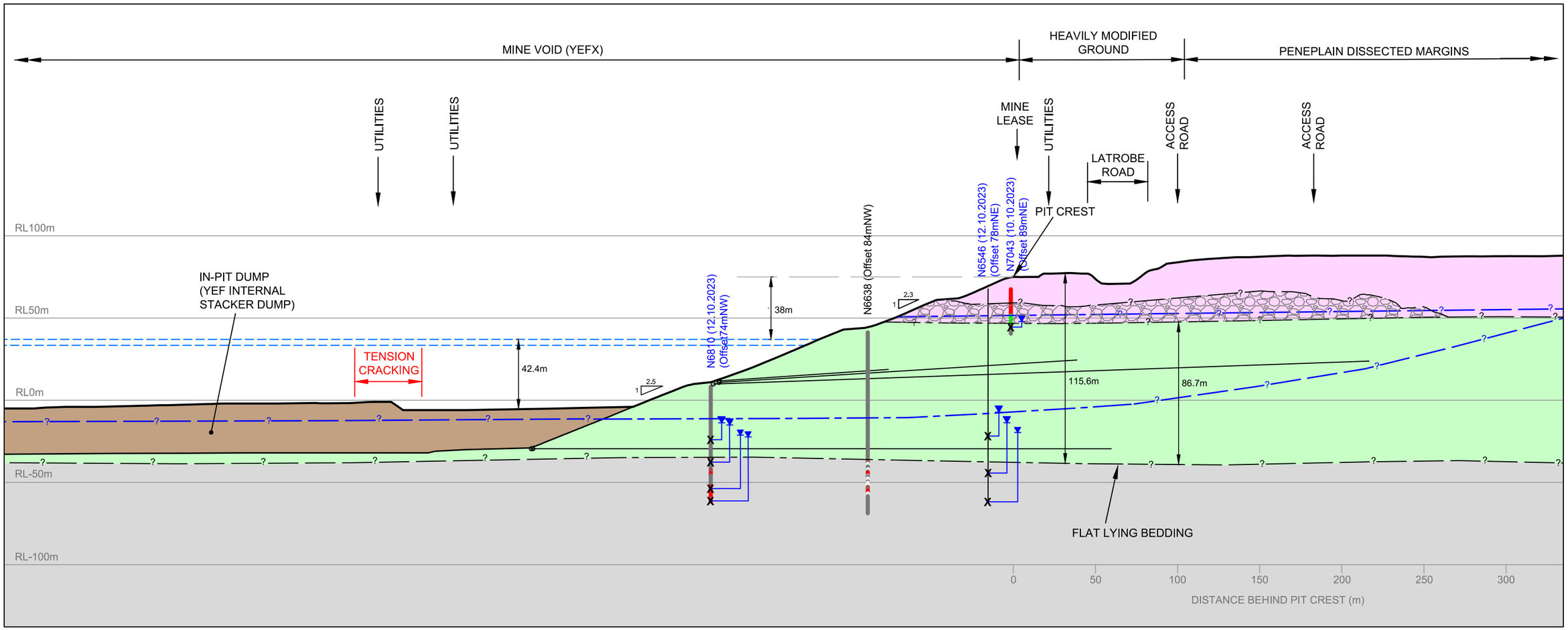
0 50 100
Scale (m)
@ 1:2500 A3

PSM

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 7 (YEFX-LREB) NORTH

PSM4487-200R | Appendix C



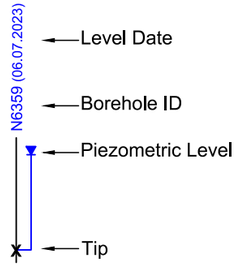
LEGEND

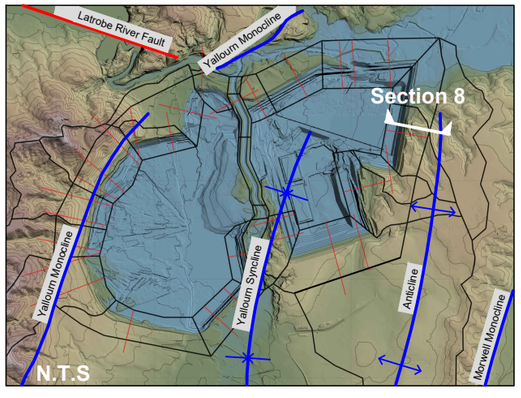
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





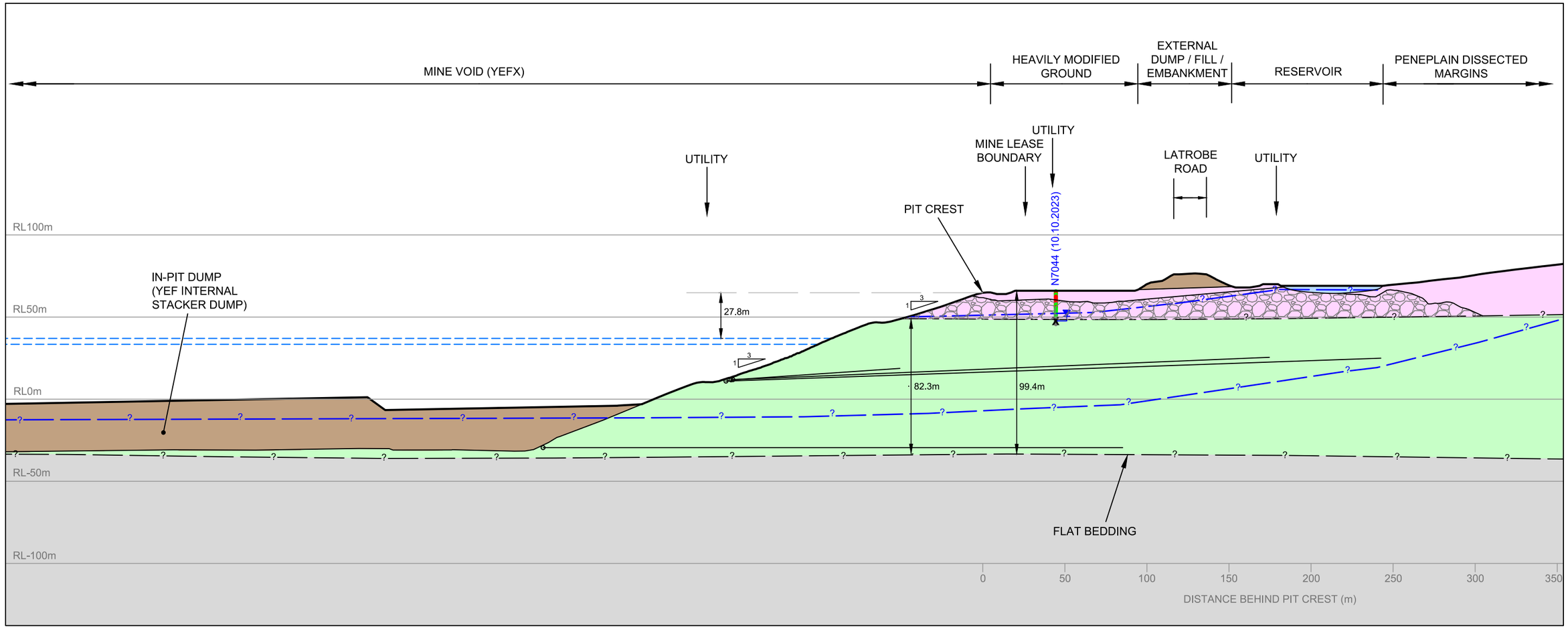
0 50 100
Scale (m)
@ 1:2500 A3

PSM

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 8 (YEFX-LREB) SOUTH

PSM4487-200R | Appendix C



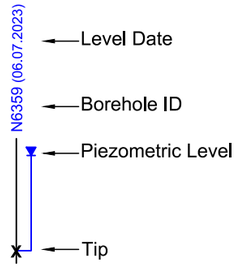
LEGEND

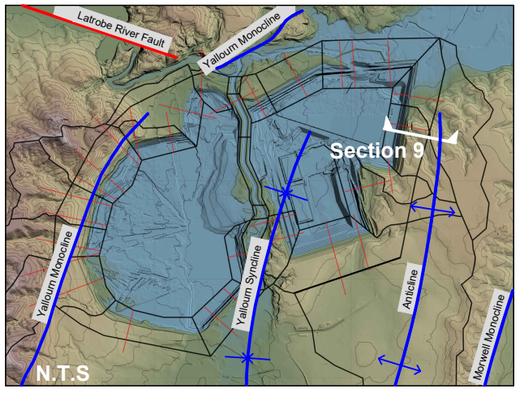
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation



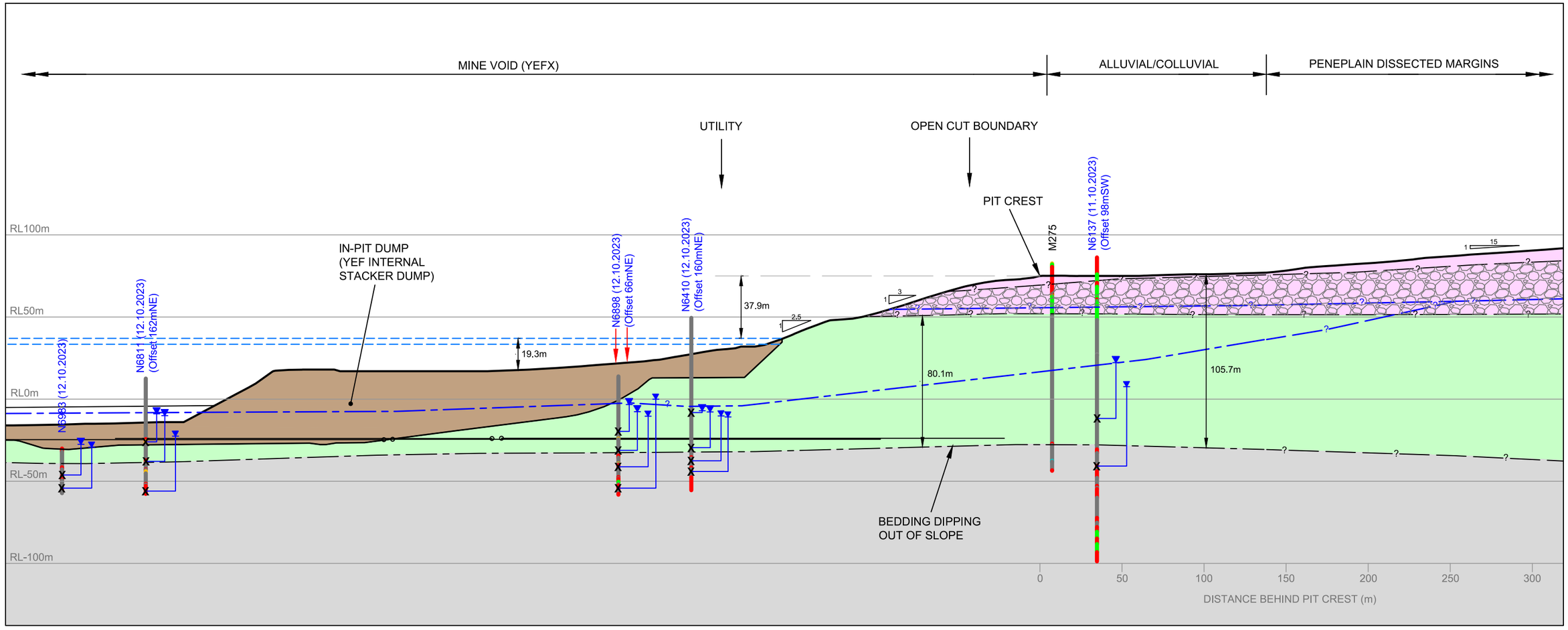


0 50 100
Scale (m)
@ 1:2500 A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 9 (YEFX-LREB) SOUTH

PSM4487-200R | Appendix C



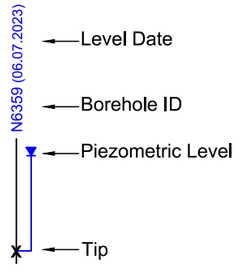
LEGEND

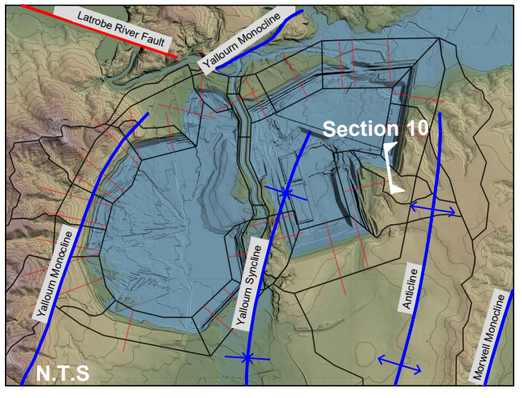
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





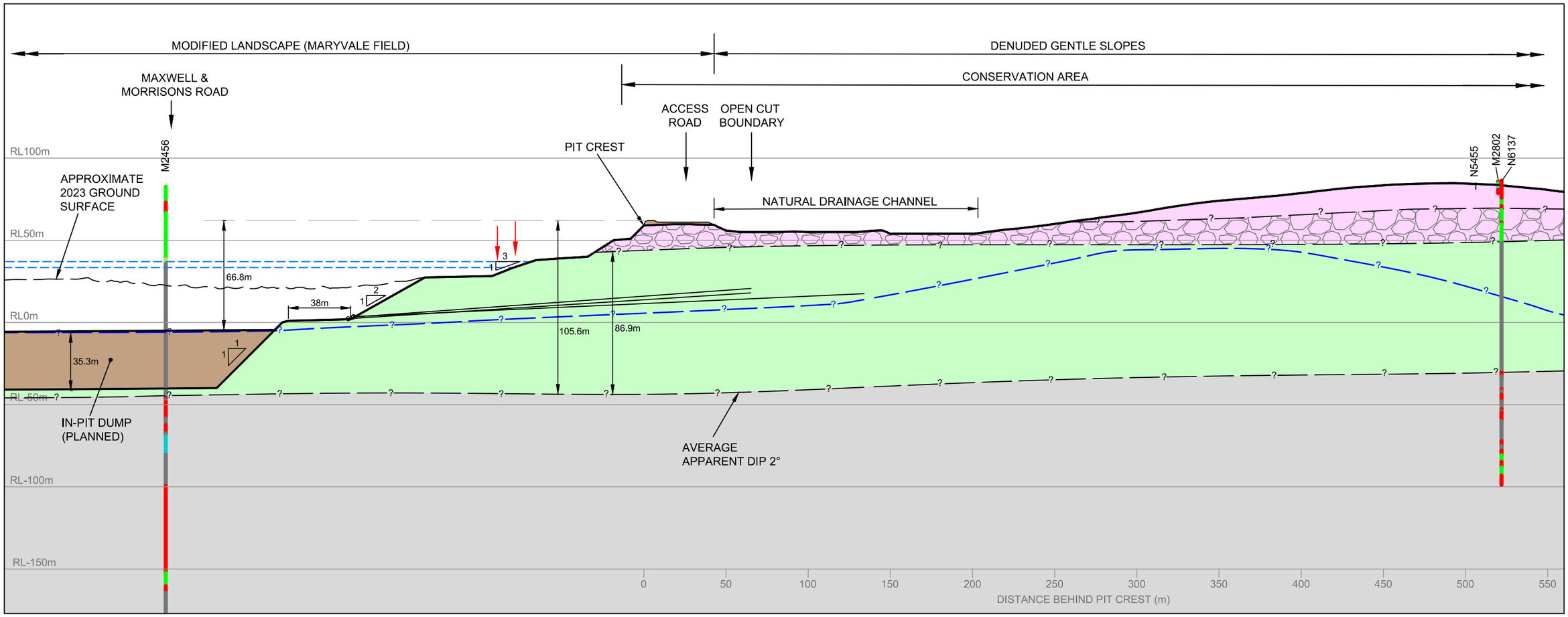
0 50 100
Scale (m)
1:2500 @ A3

PSM

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITIONS
SECTION 10 (YEFX-SB)

PSM4487-200R | Appendix C



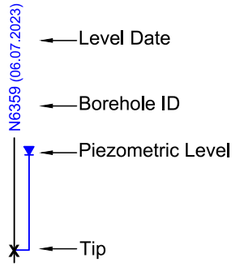
LEGEND

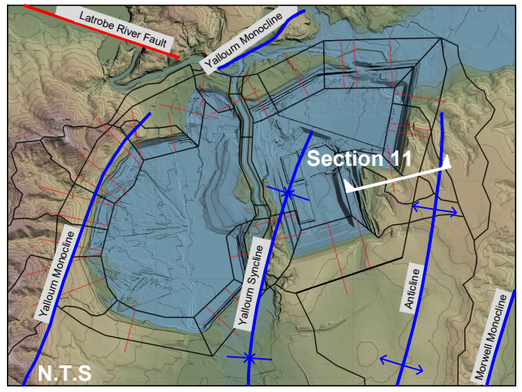
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





Notes

1. Typical geological & slope profile: Bedding dipping out of slope.

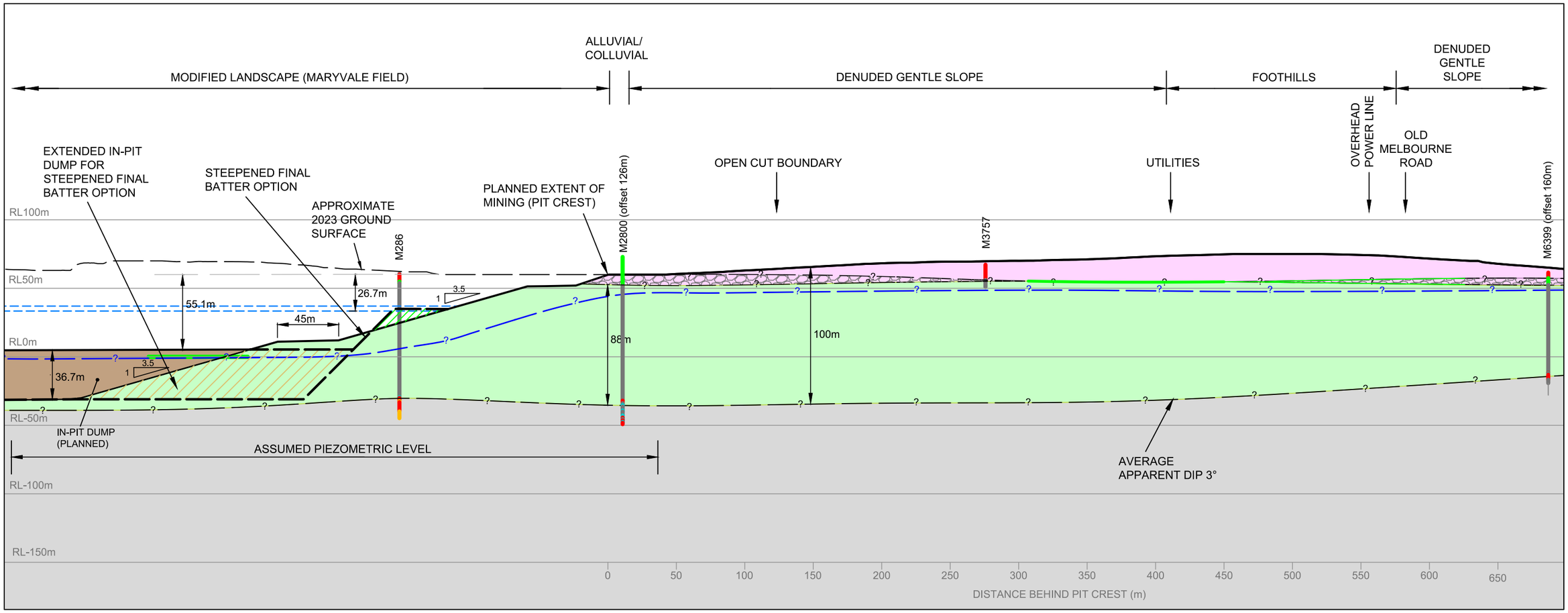
0 50 100
Scale (m)
1:2500 @ A3

PSM

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 11 (MVF-EB)

PSM4487-200R | Appendix C



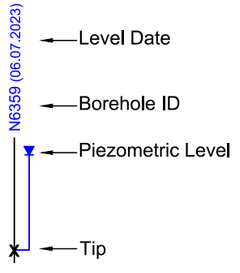
LEGEND

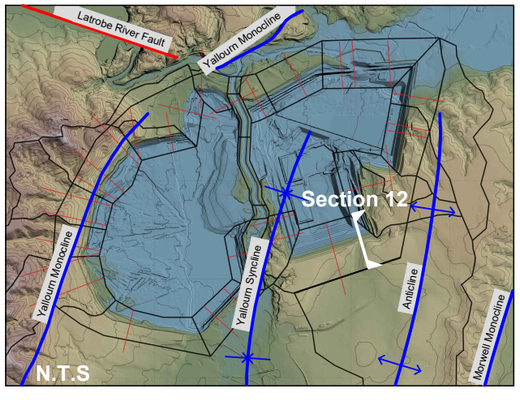
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





Notes

1. Typical geological & slope profile: Bedding dipping out of slope.
2. This section represents potential peripheral catchment drainage location.
3. This section shows current slope position and the planned extent of mining. Piezometric levels between current crest and final are assumed.

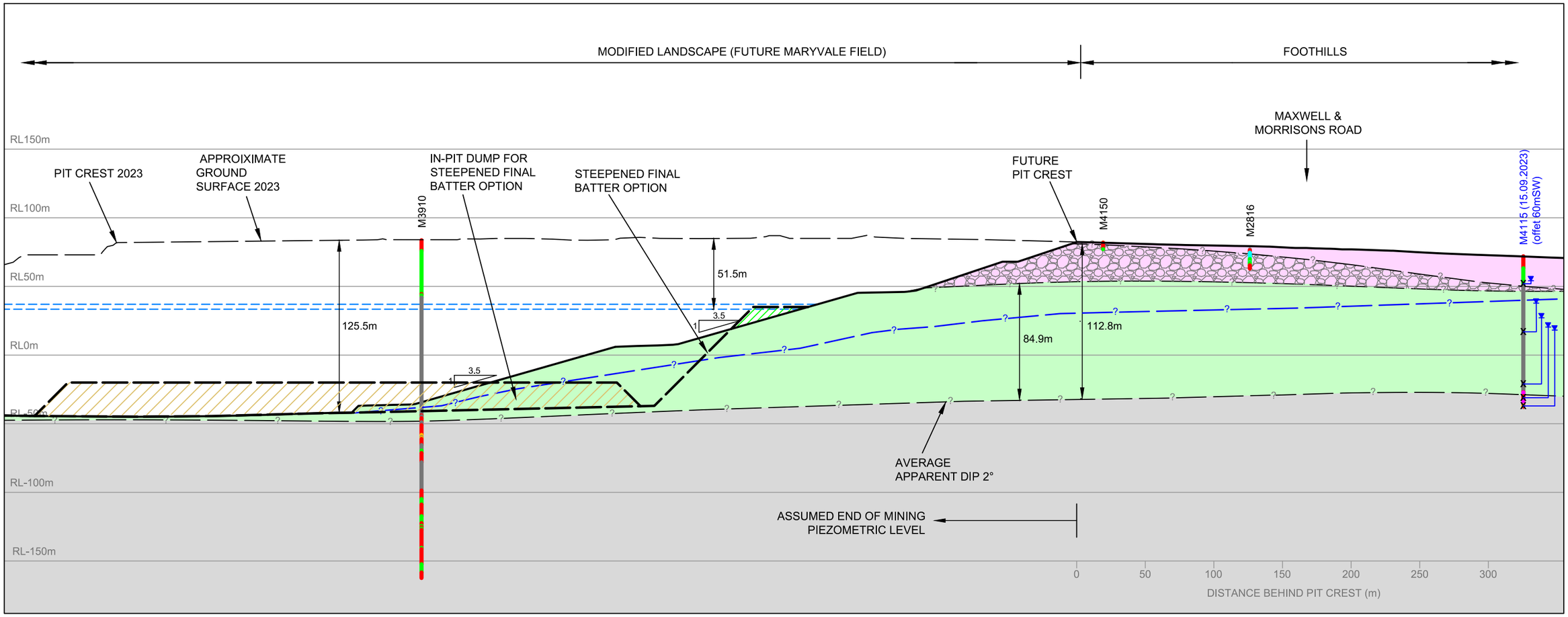
0 50 100
Scale (m)
1:3000 @ A3

P S M

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 12 (MVF-SB)

PSM4487-200R | Appendix C



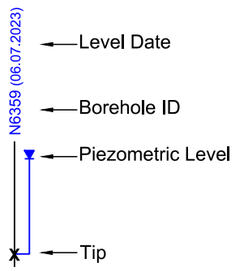
LEGEND

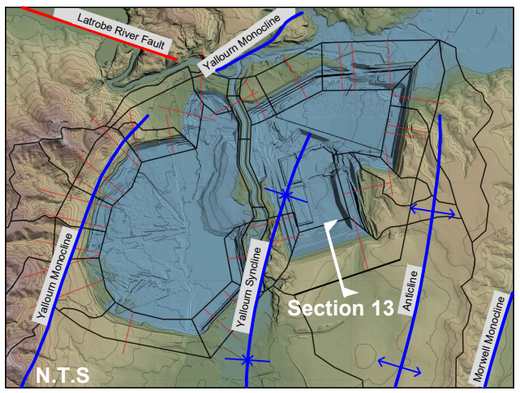
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





Notes

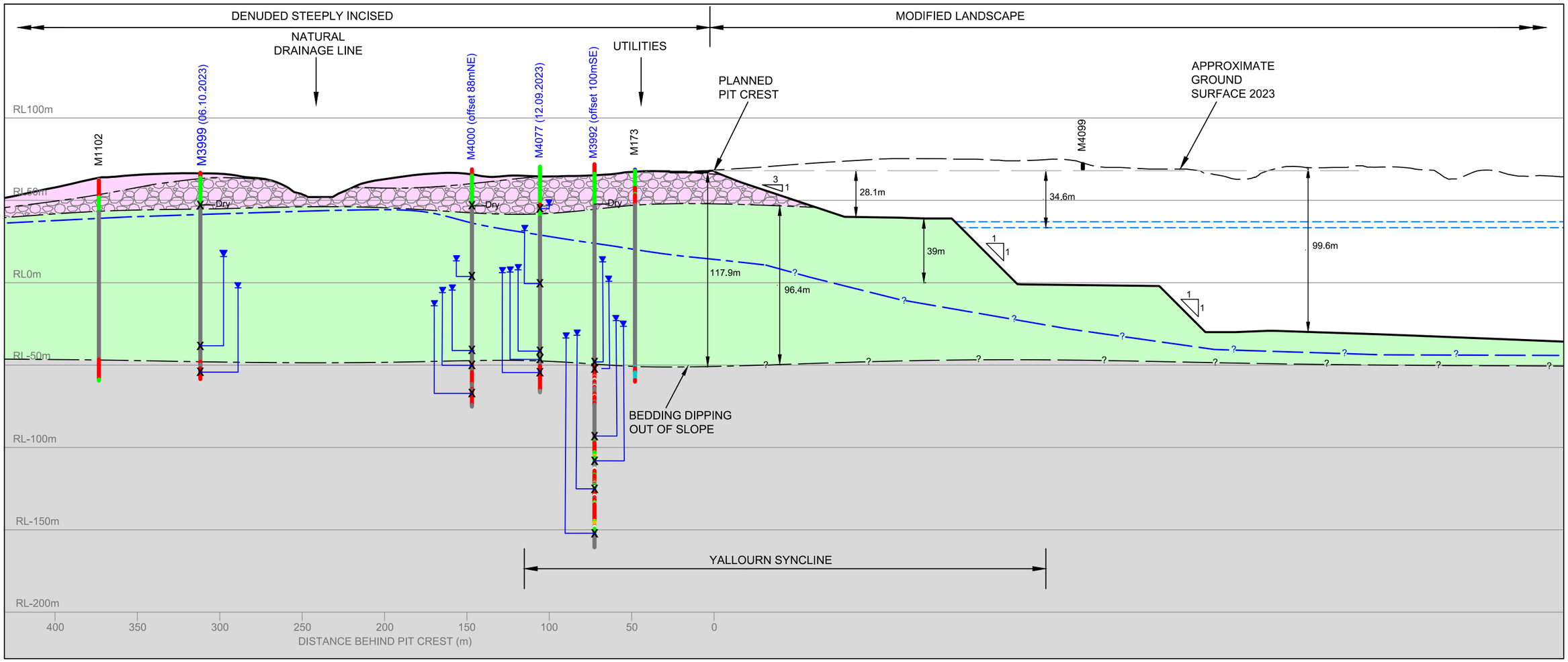
1. Maryvale Field is actively being mined as of December 2023. The planned extent of mining and in-pit dumps are shown.
2. Typical geological & slope profile: Bedding dipping out of slope.

0 50 100
Scale (m)
1:3000 @ A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 13 (MVF-SB)

PSM4487-200R | Appendix C



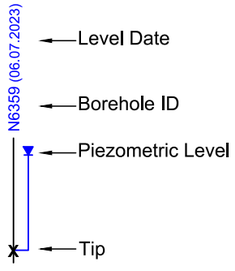
LEGEND

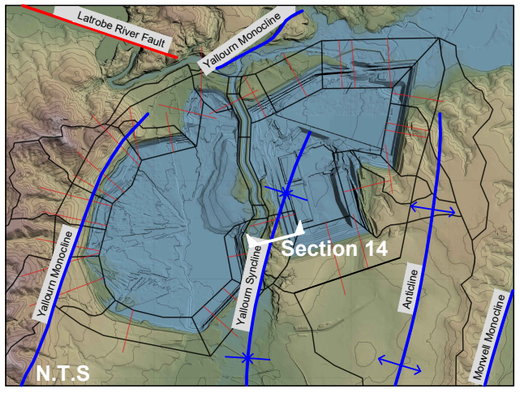
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





Notes
1. Typical geological & slope profile: Bedding dipping out of slope.

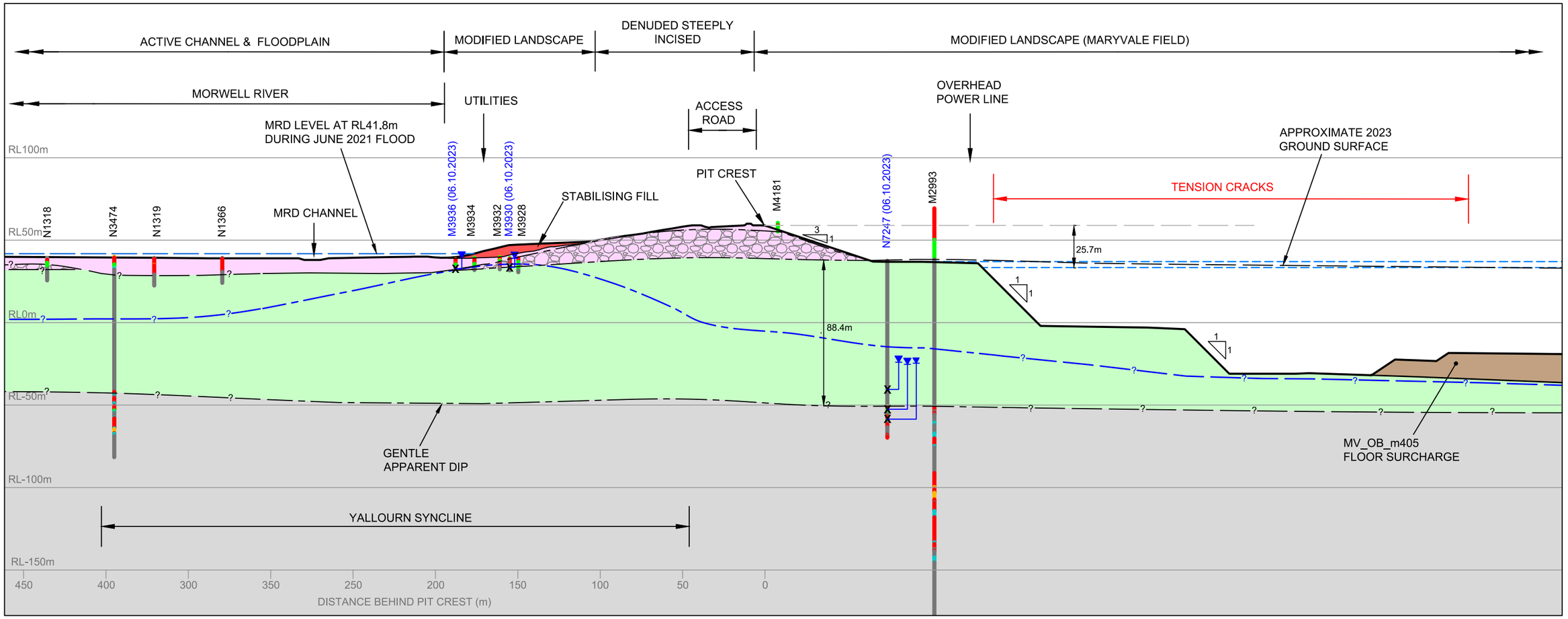
0 50 100
Scale (m)
1:2500 @ A3

PSM

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 14 (MVF-WB)

PSM4487-200R | Appendix C



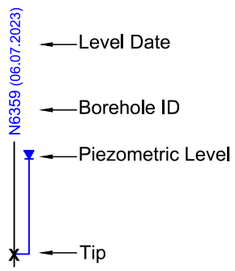
LEGEND

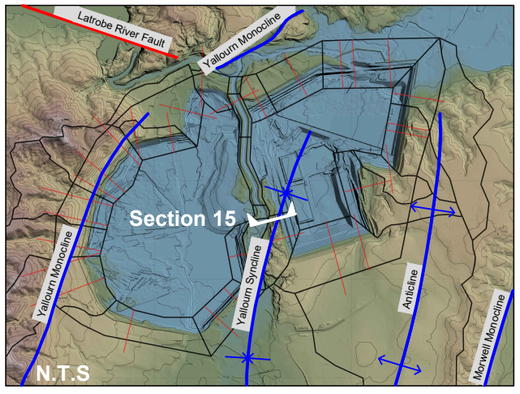
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





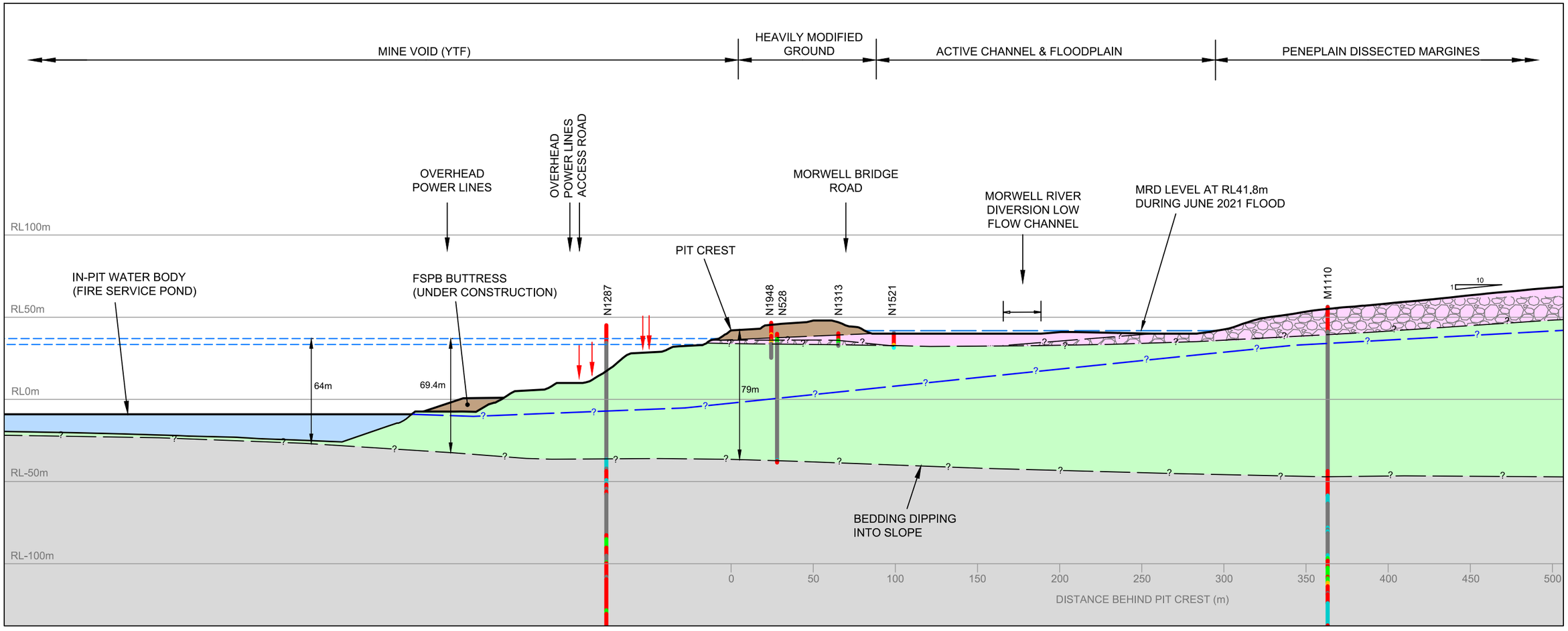
0 50 100
Scale (m)
1:2500 @ A3

PSM

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 15 (MVF-WB)

PSM4487-200R	Appendix C



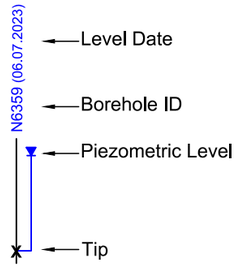
LEGEND

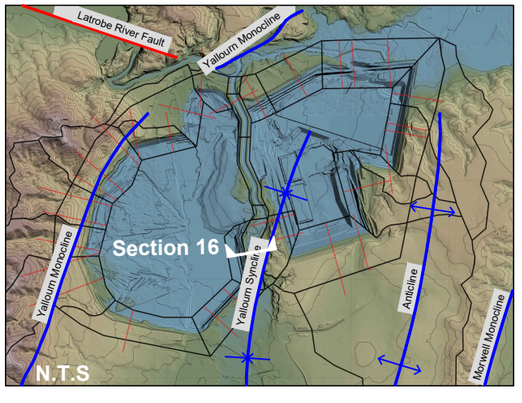
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





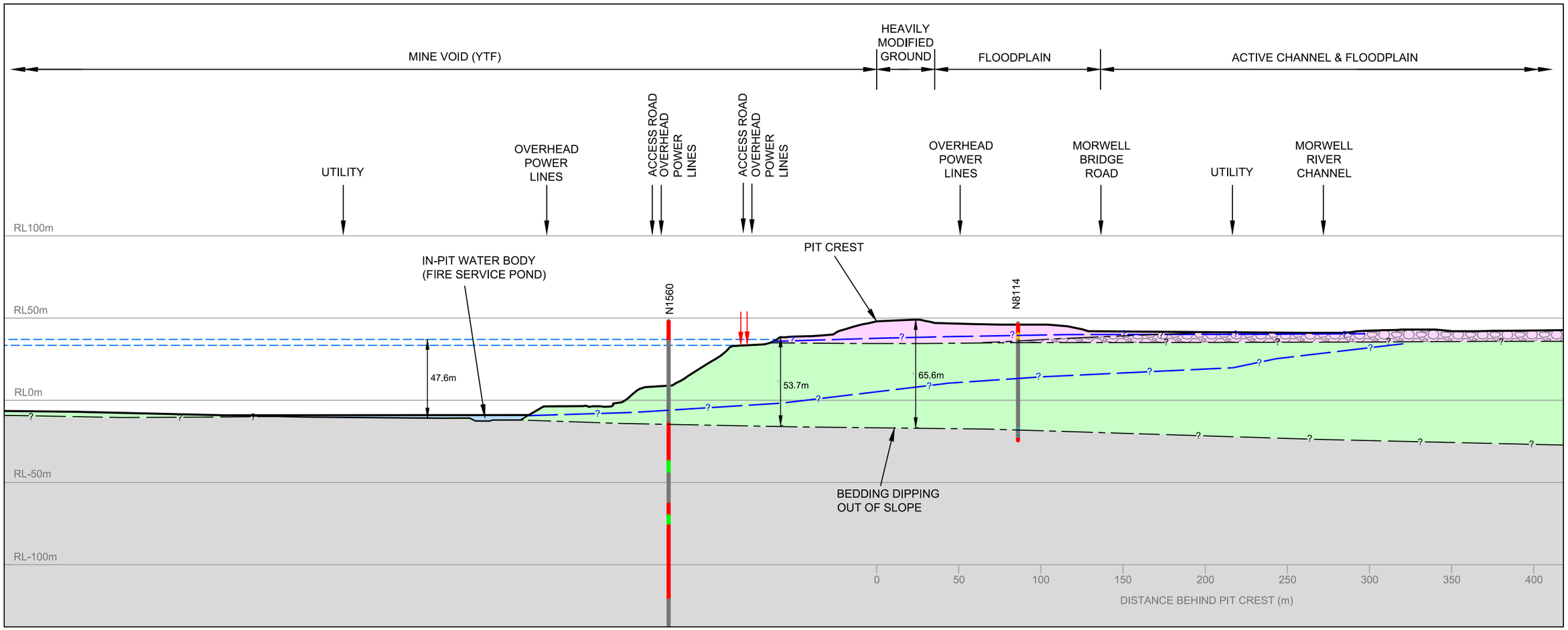
0 50 100
Scale (m)
1:2500 @ A3

PSM

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 16 (YTF-FSPB)

PSM4487-200R	Appendix C



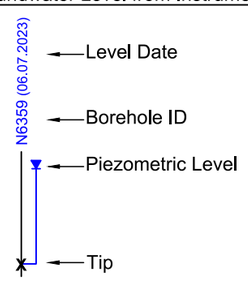
LEGEND

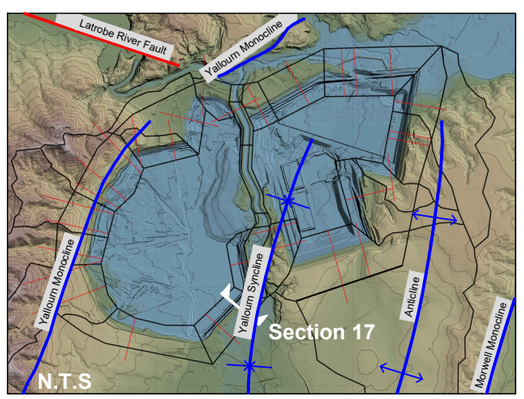
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





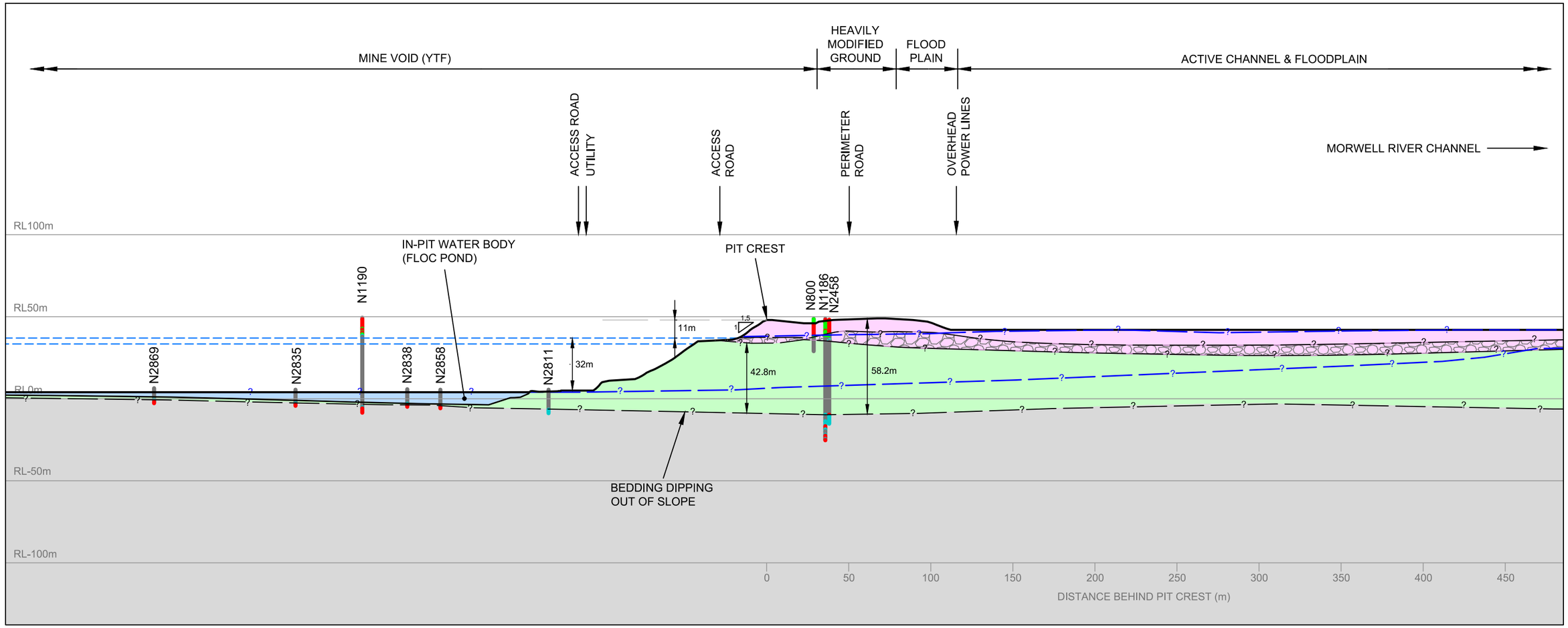
0 50 100
Scale (m)
1:2500 @ A3

PSM

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 17 (YTF-FPB)

PSM4487-200R | Appendix C



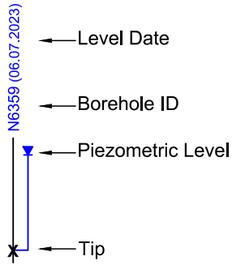
LEGEND

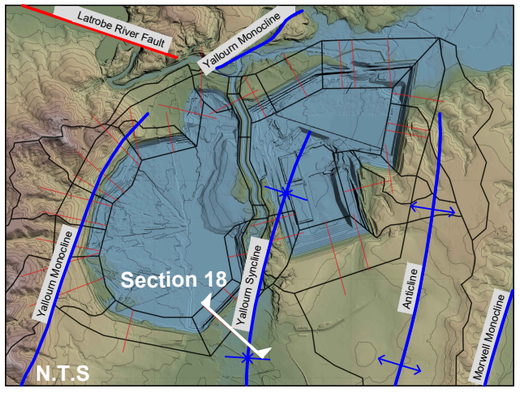
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation



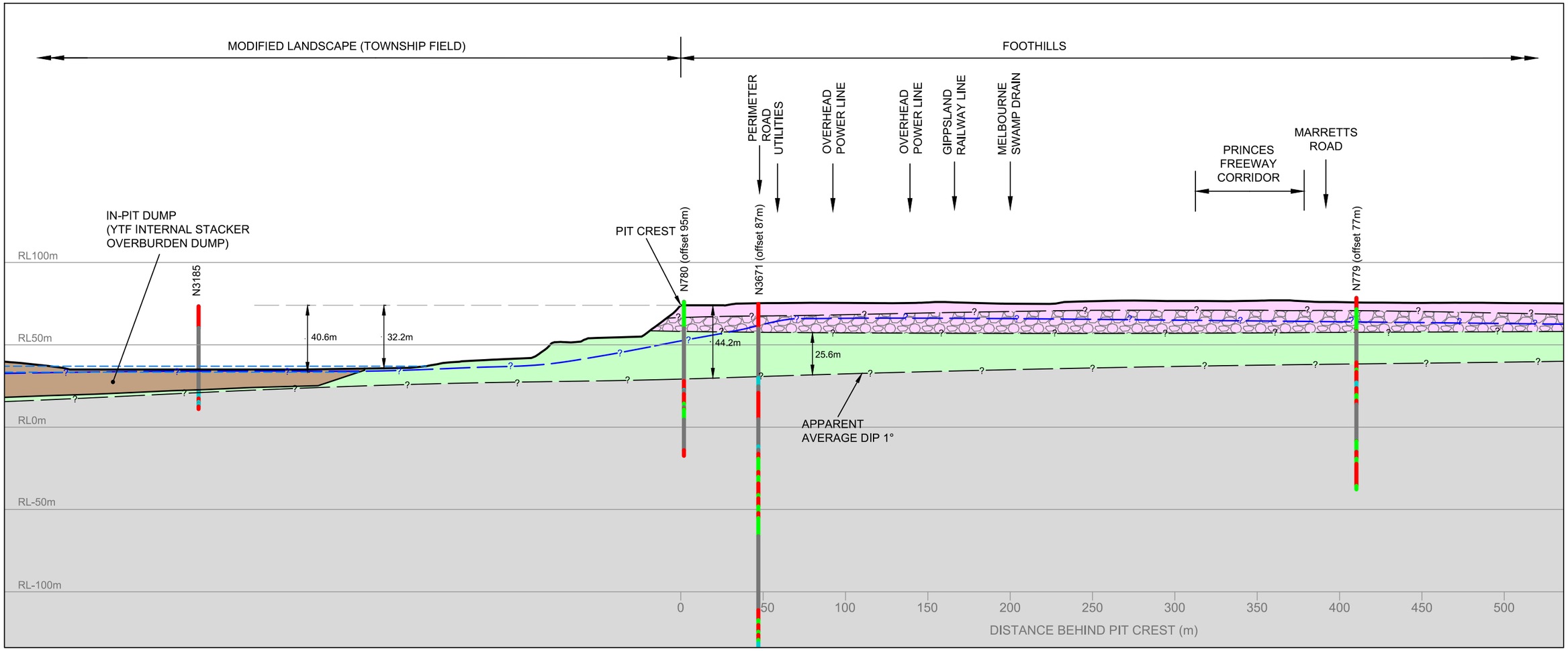


0 50 100
Scale (m)
1:2500 @ A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 18 (YTF-FPB)

PSM4487-200R | Appendix C



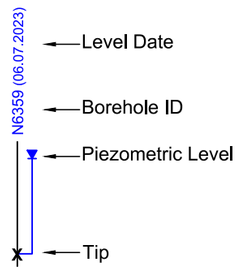
LEGEND

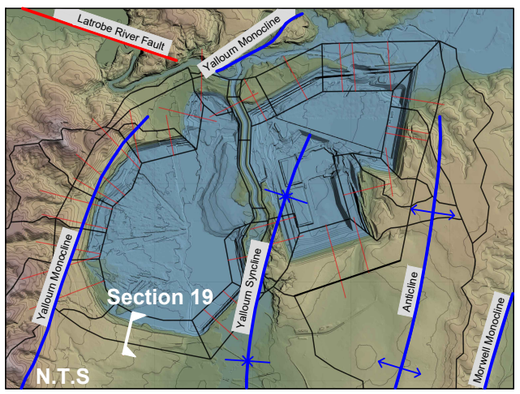
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





Notes

1. Typical geological & slope profile: Bedding dipping out of slope.

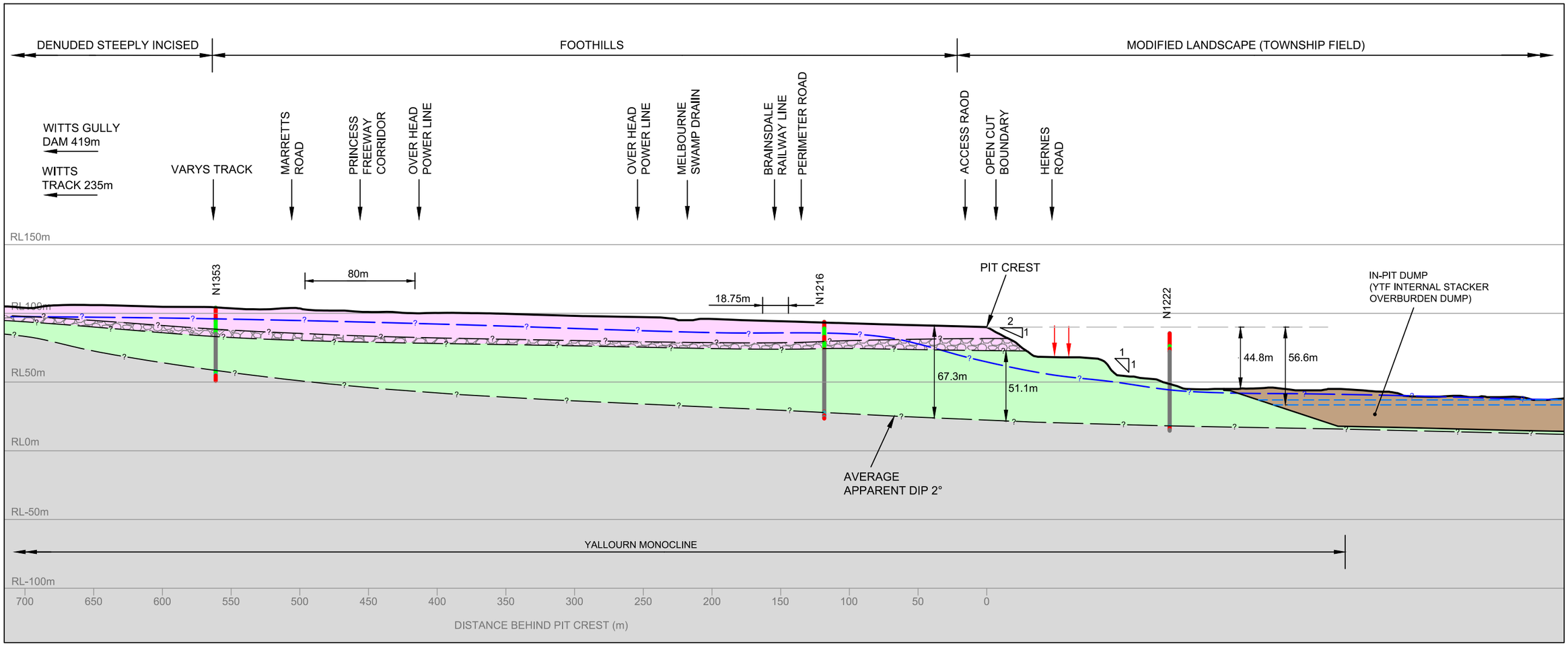
0 50 100
Scale (m)
1:2500 @ A3

P S M

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 19 (YTF-SB)

PSM4487-200R	Appendix C



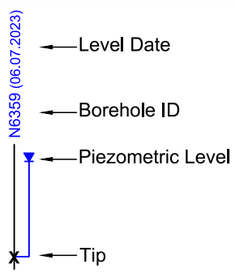
LEGEND

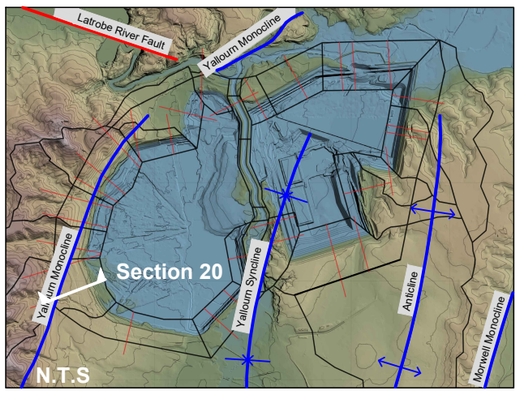
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





Notes

1. Typical geological & slope profile: Steeper rear section with rising topography

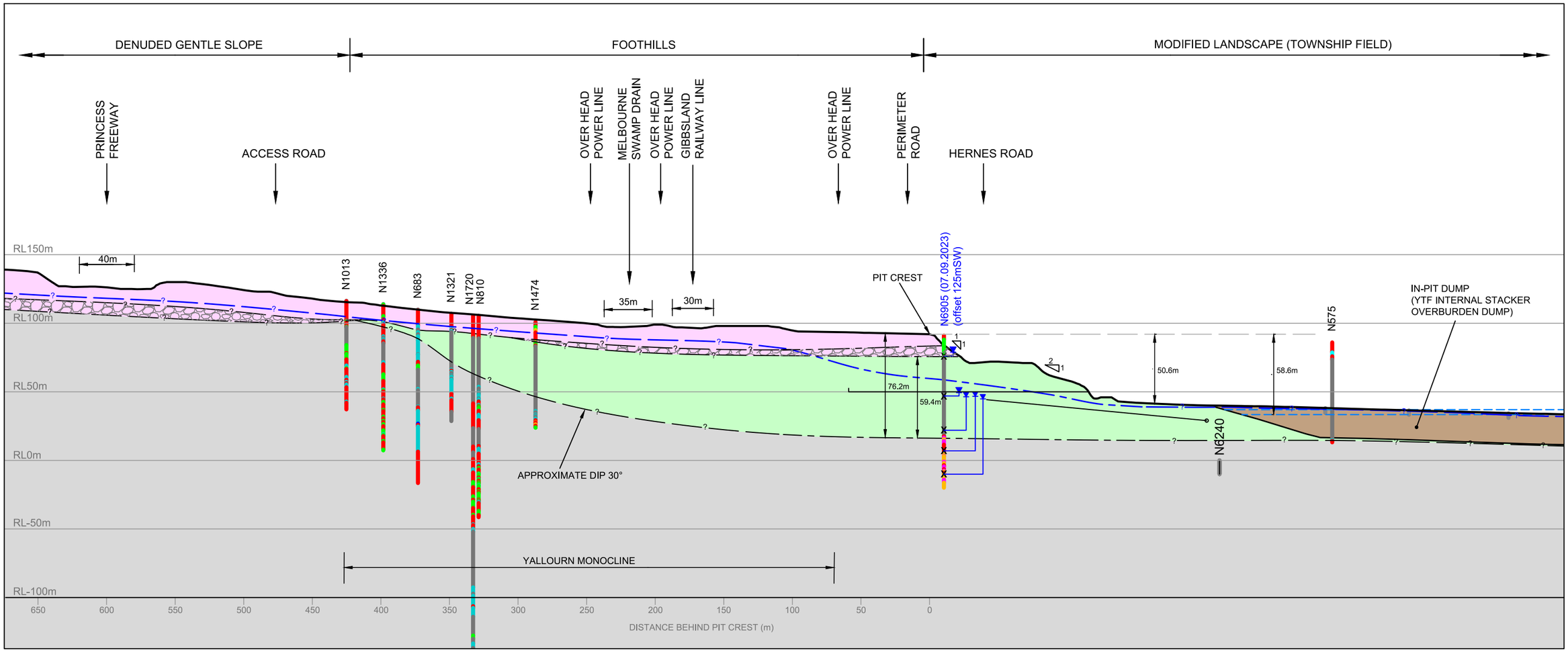
0 50 100
Scale (m)
1:3000 @ A3

P S M

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 20 (YTF-SWB)

PSM4487-200R | Appendix C



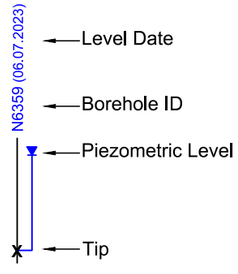
LEGEND

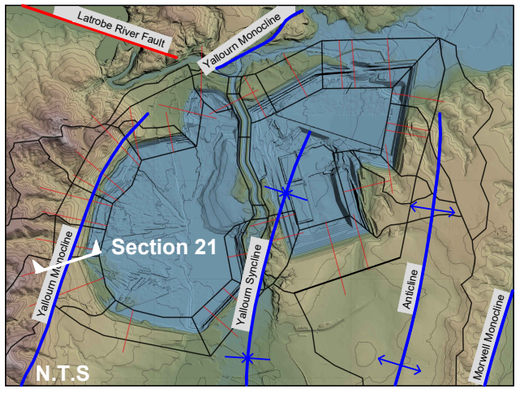
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





Notes

1. Typical geological & slope profile: Steeper rear section with flat topography.

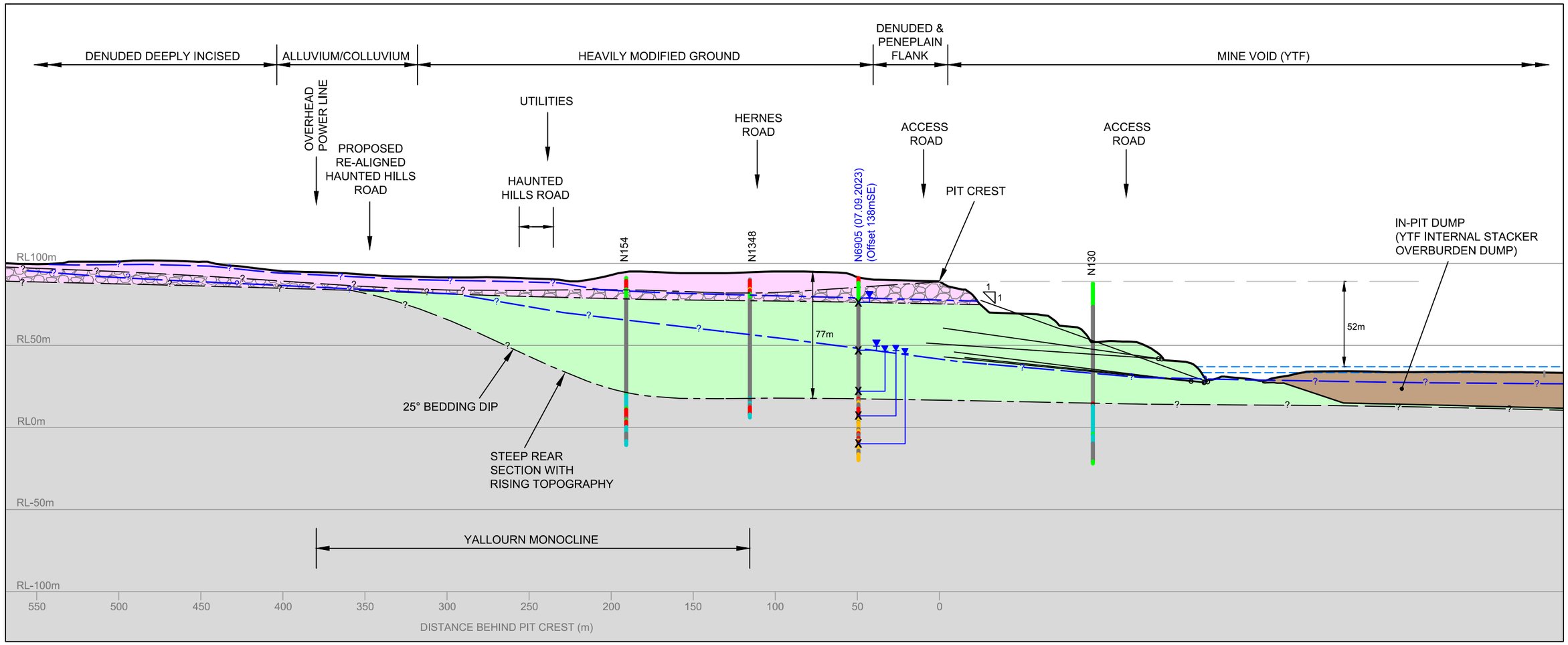
0 50 100
Scale (m)
1:3000 @ A3

P S M

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 21 (YTF-SWB)

PSM4487-200R	Appendix C



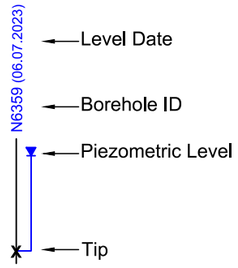
LEGEND

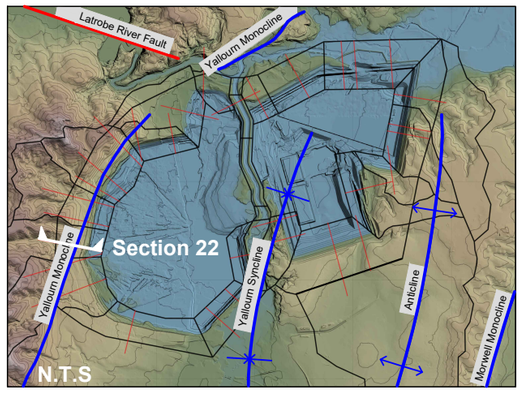
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation



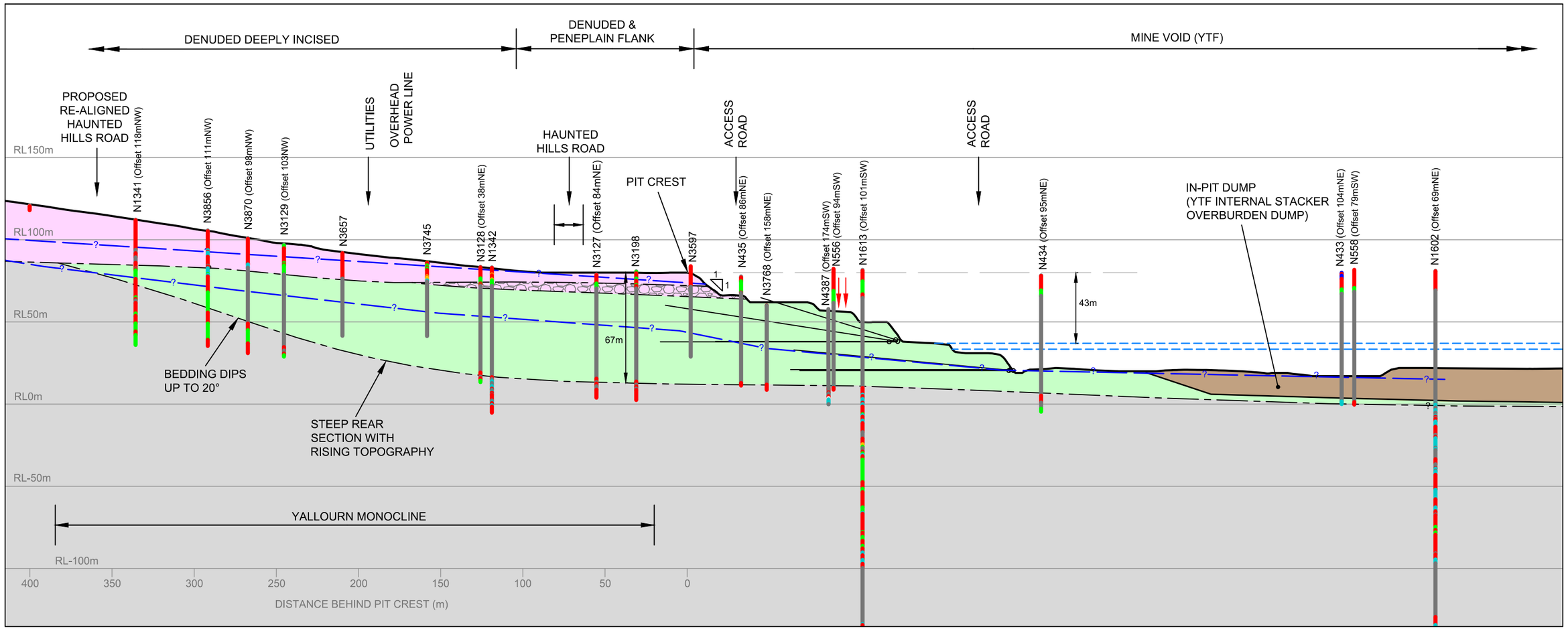


0 50 100
Scale (m)
@ 1:2500 A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 22 (YTF-HOB) SOUTH

PSM4487-200R | Appendix C



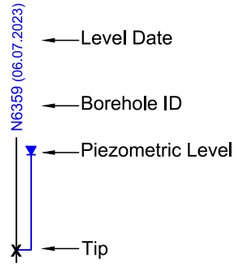
LEGEND

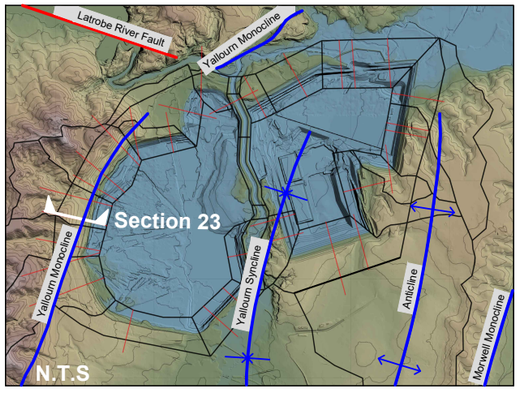
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





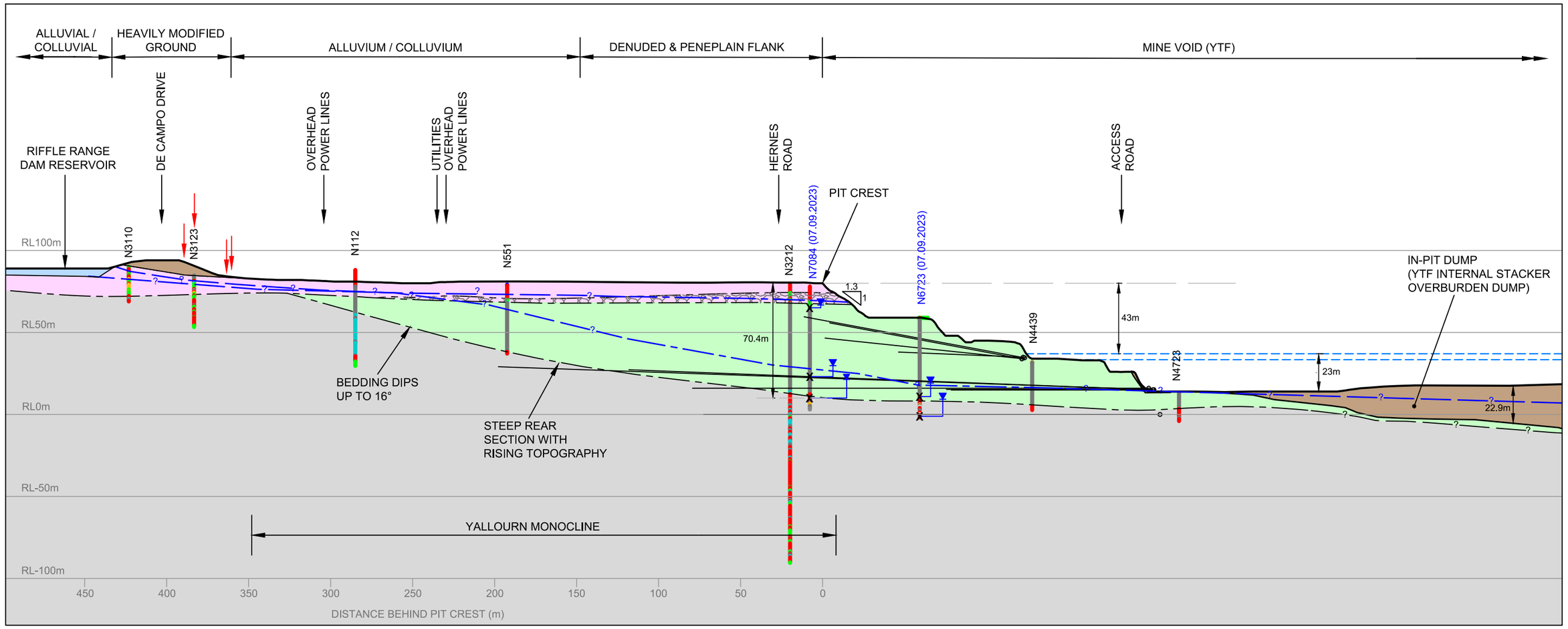
0 50 100
Scale (m)
@ 1:2500 A3

PSM

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 23 (YTF-HOB) NORTH

PSM4487-200R | Appendix C



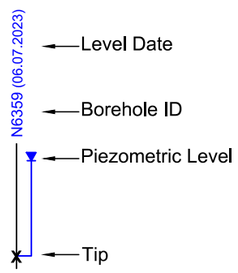
LEGEND

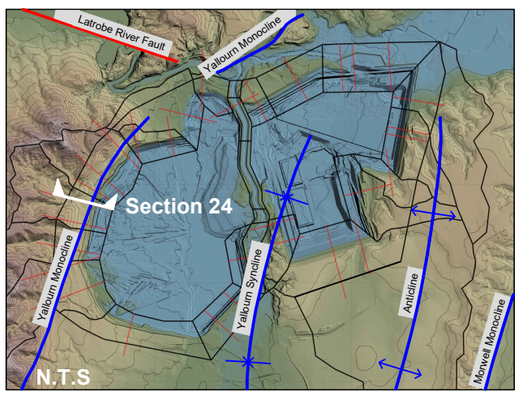
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





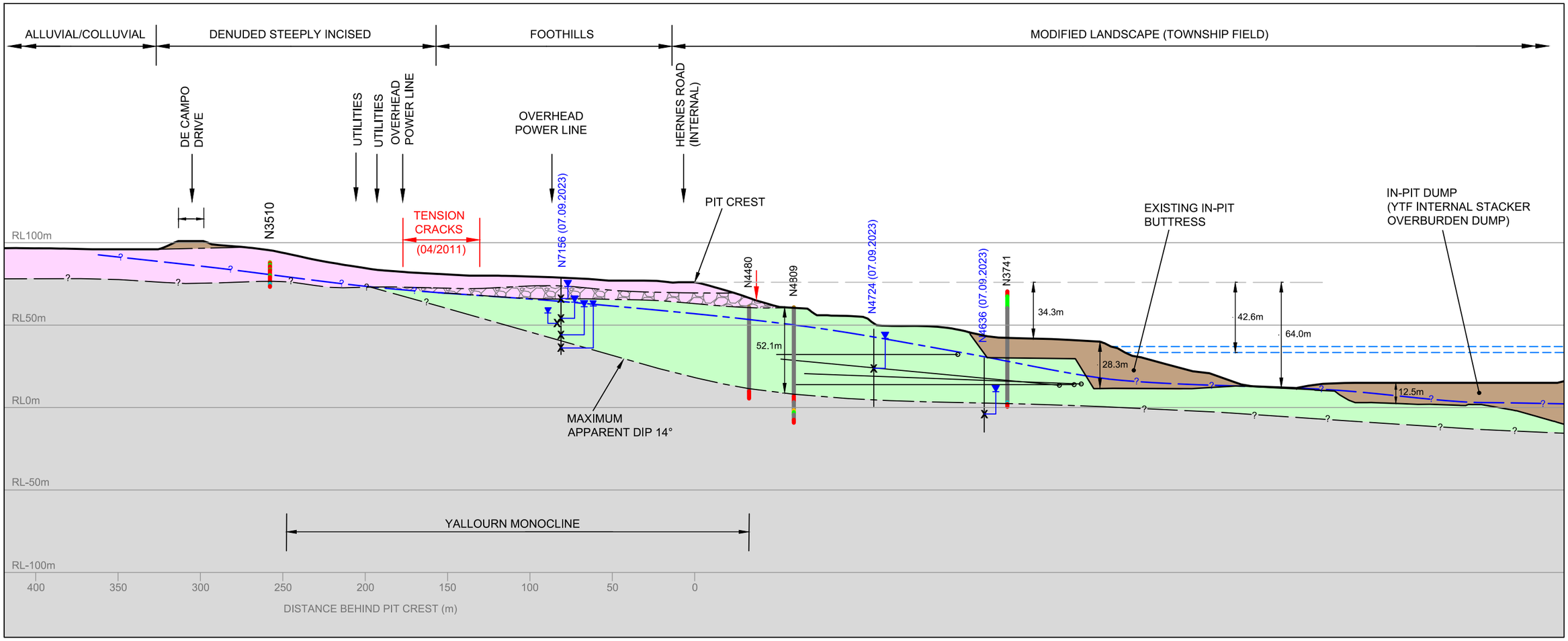
0 50 100
Scale (m)
@ 1:2500 A3

PSM

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 24 (YTF-HOB) NORTH

PSM4487-200R | Appendix C



LEGEND

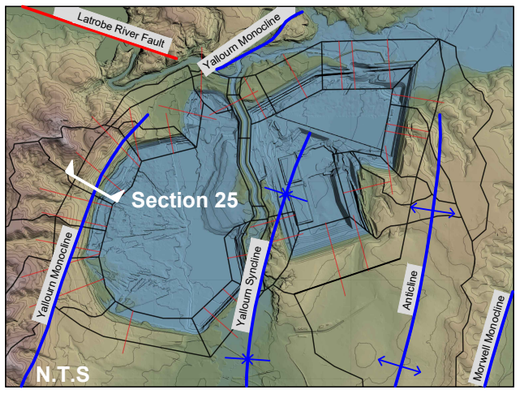
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation

N6359 (06.07.2023)
- Level Date
- Borehole ID
- Piezometric Level
- Tip



Notes
1. Typical geological & slope profile: Steep rear section with rising topography.

0 50 100
Scale (m)
1:2500 @ A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 25 (YTF-WB)

PSM4487-200R | Appendix C

DENUDED STEEPLY INCISED

MODIFIED LANDSCAPE TOWNSHIP FIELD)

DE CAMPO DRIVE

HERNES ROAD (INTERNAL)

N4645 (30.08.2023)

Dry

3

1

N3750

N3971

N5672

N4534

N4908 (07.09.2023)

N4664 (07.09.2023)

PIT CREST

N4910 (07.09.2023)

N4630

N4836

N6714 (07.09.2023)

EXISTING IN-PIT BUTTRESS

IN-PIT DUMP (YTF INTERNAL STACKER OVERBURDEN DUMP)

N5667

26.6m

52m

59m

27.9m

N4730

N4729

RL150m

RL100m

RL50m

RL0m

RL-50m

RL-100m

YALLOURN MONOCLINE

450 400 350 300 250 200 150 100 50 0

DISTANCE BEHIND PIT CREST (m)

LEGEND

- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

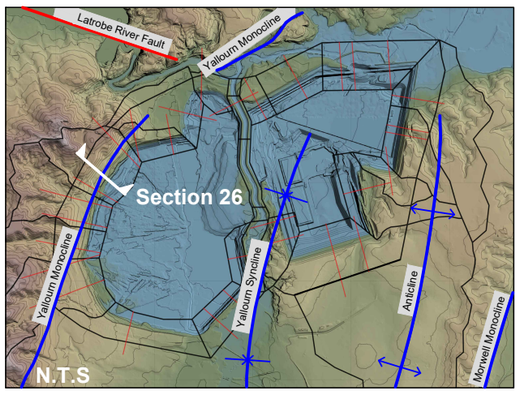
Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation

N6359 (06.07.2023)

- Level Date
- Borehole ID
- Piezometric Level
- Tip



Notes

1. Typical geological & slope profile: Steep rear section with rising topography.

0 50 100

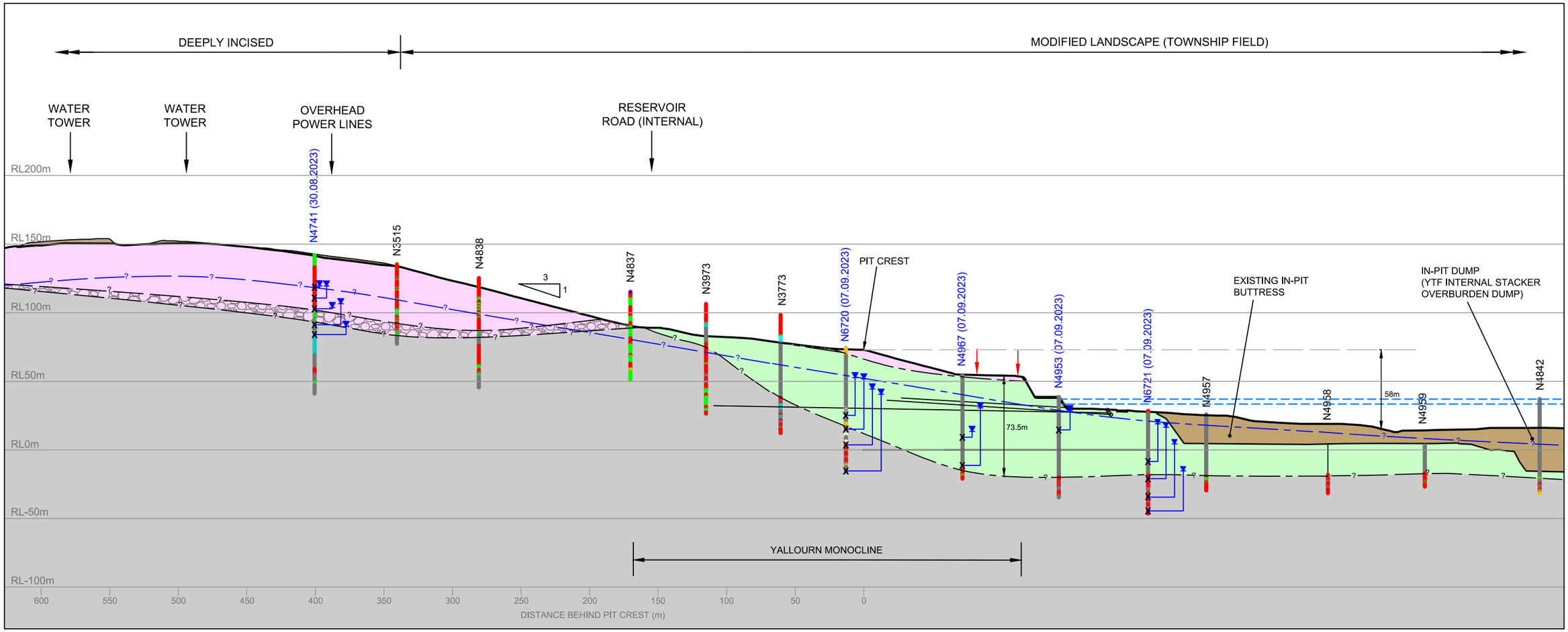
Scale (m)
1:2500 @ A3

P S M

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 26 (YTF-WB)

PSM4487-200R	Appendix C



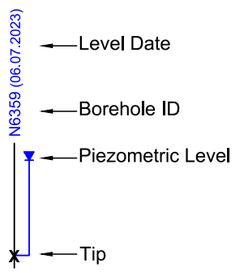
LEGEND

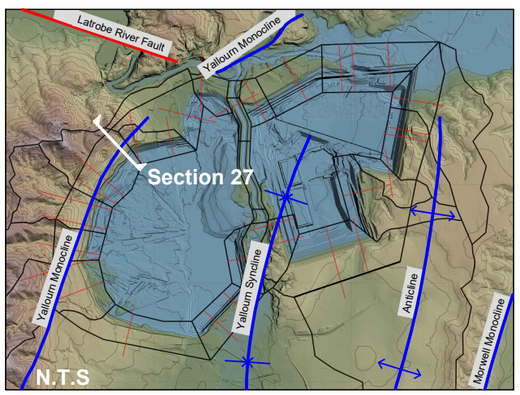
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





Notes

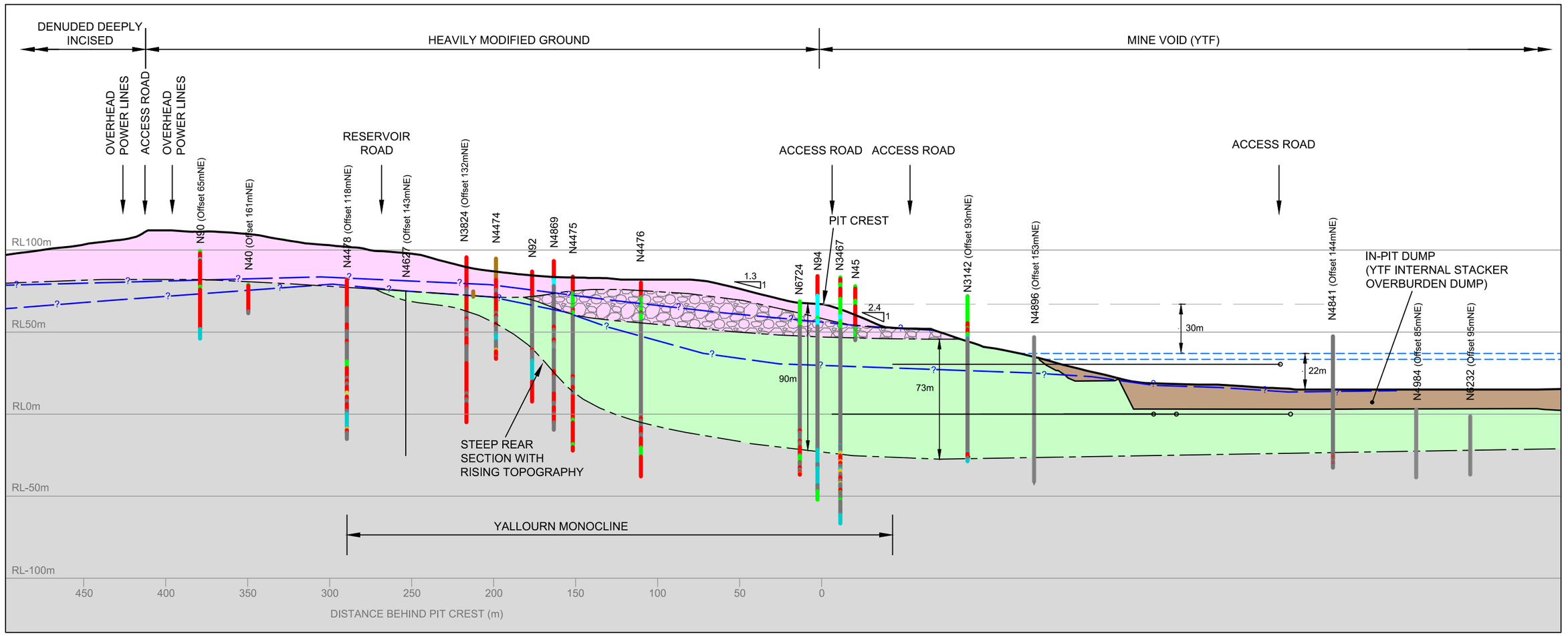
1. Typical geological & slope profile: Steep rear section with rising topography.

0 50 100
Scale (m)
1:3000 @ A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 27 (YTF-WB)

PSM4487-200R | Appendix C



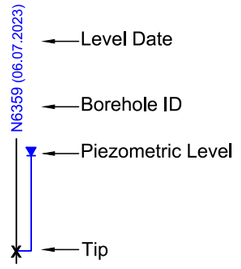
LEGEND

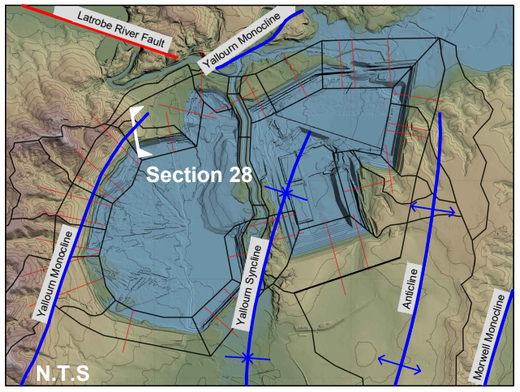
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





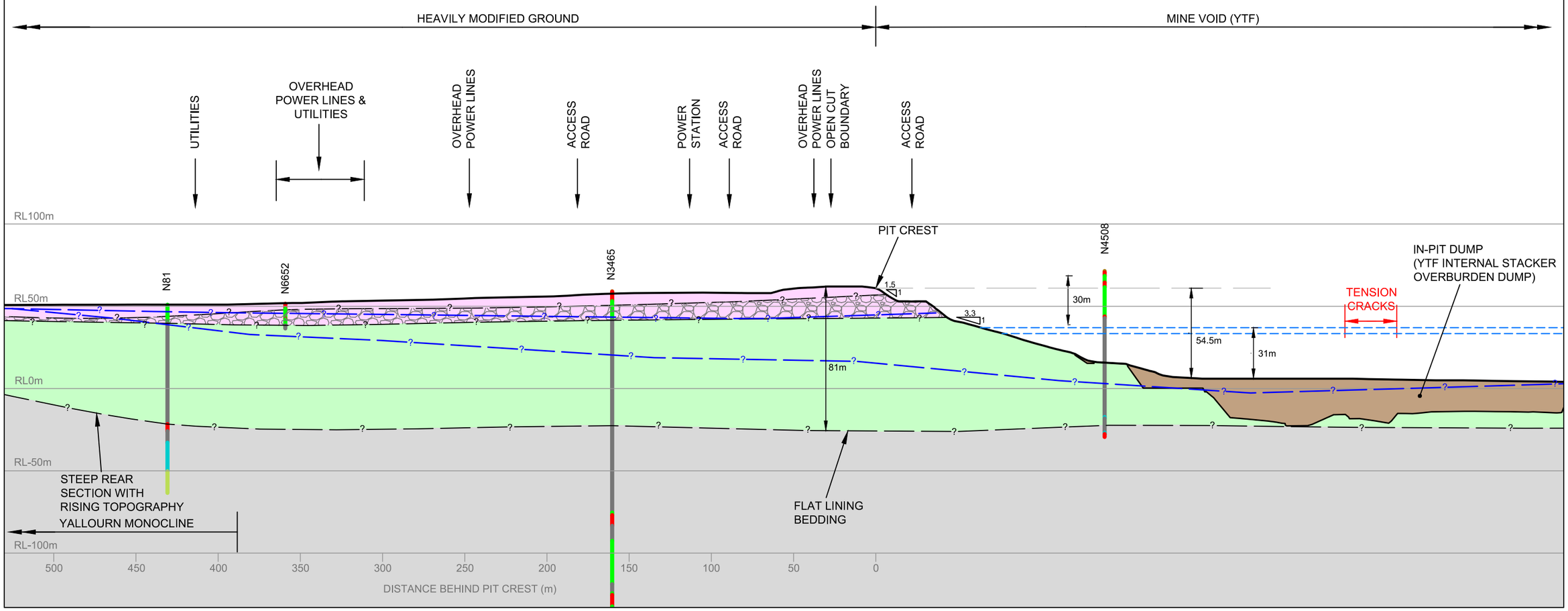
0 50 100
Scale (m)
@ 1:2500 A3

PSM

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 28 (YTF-WB)

PSM4487-200R | Appendix C



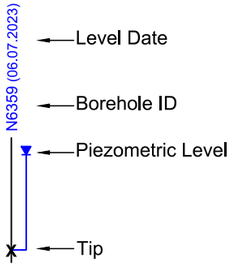
LEGEND

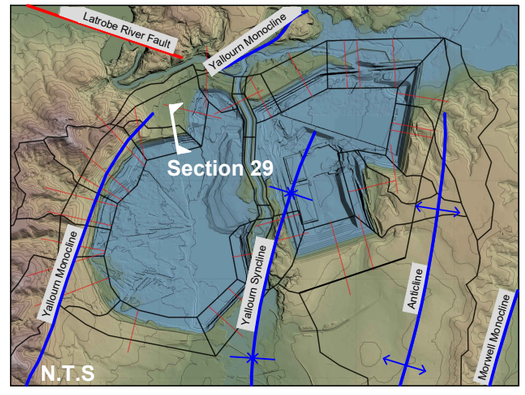
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





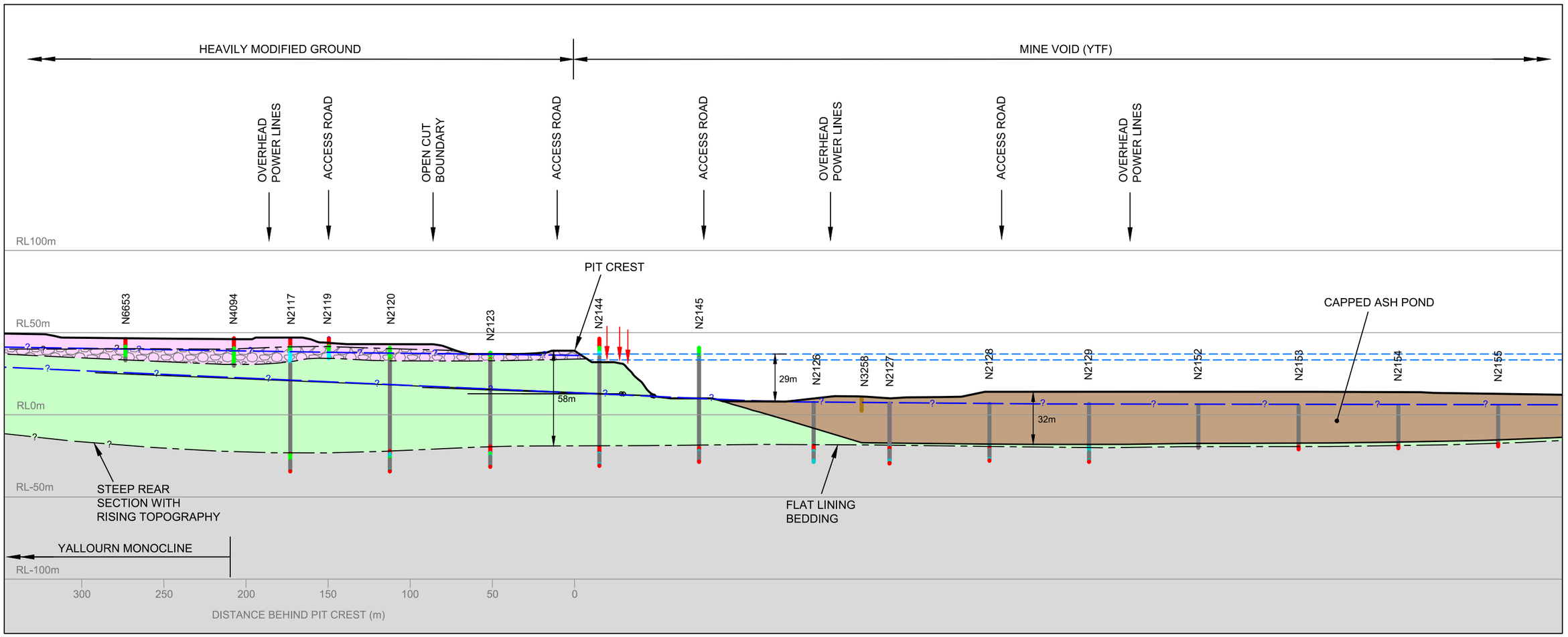
0 50 100
Scale (m)
@ 1:2500 A3

PSM

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 29 (YTF-NB)

PSM4487-200R	Appendix C



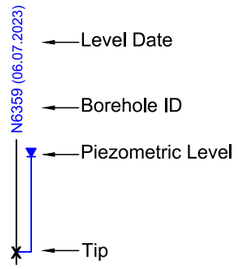
LEGEND

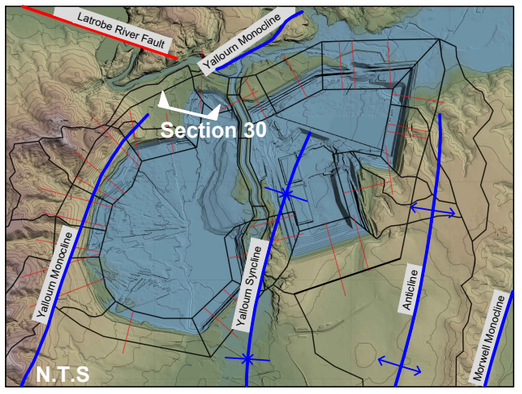
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





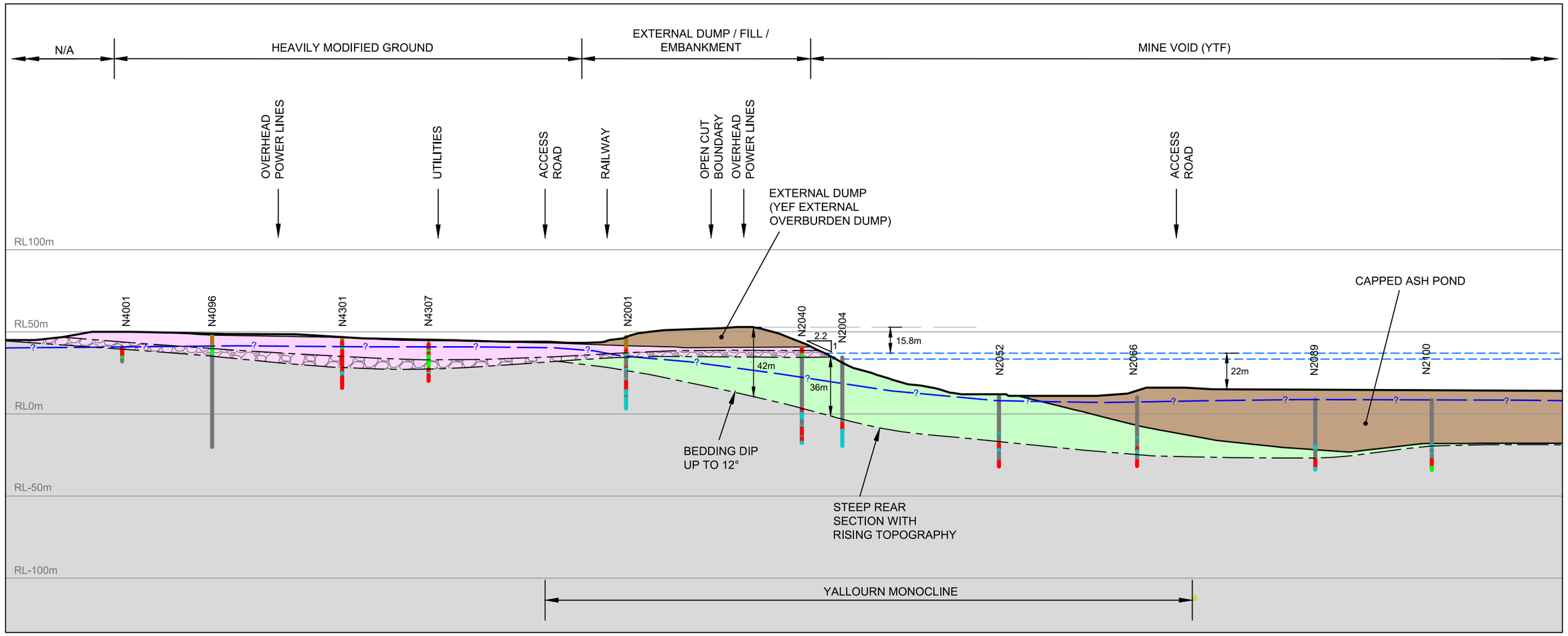
0 50 100
Scale (m)
@ 1:2500 A3

PSM

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 30 (YTF-RCB)

PSM4487-200R	Appendix C



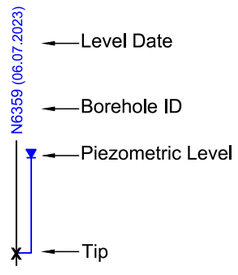
LEGEND

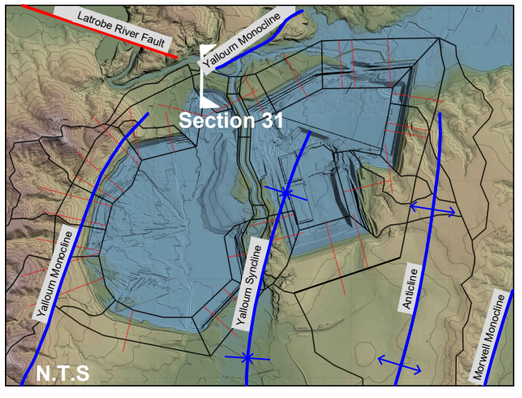
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





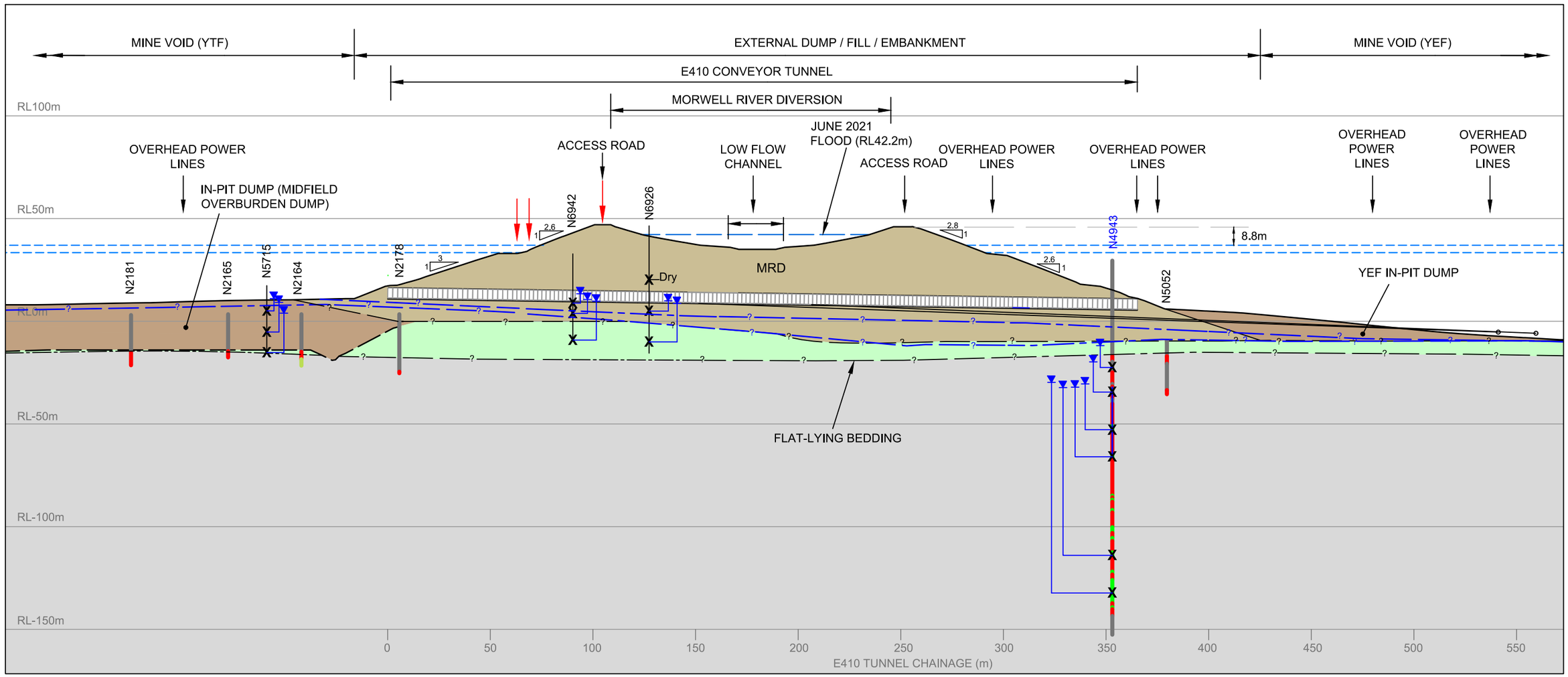
0 50 100
Scale (m)
@ 1:2500 A3

P S M

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 31 (YTF-LS)

PSM4487-200R	Appendix C



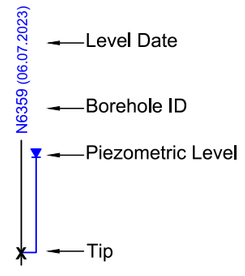
LEGEND

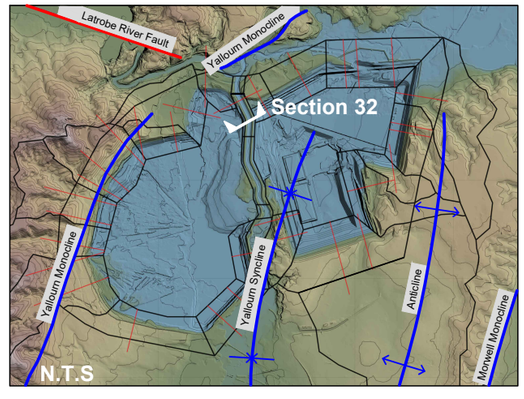
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- E410 Tunnel
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





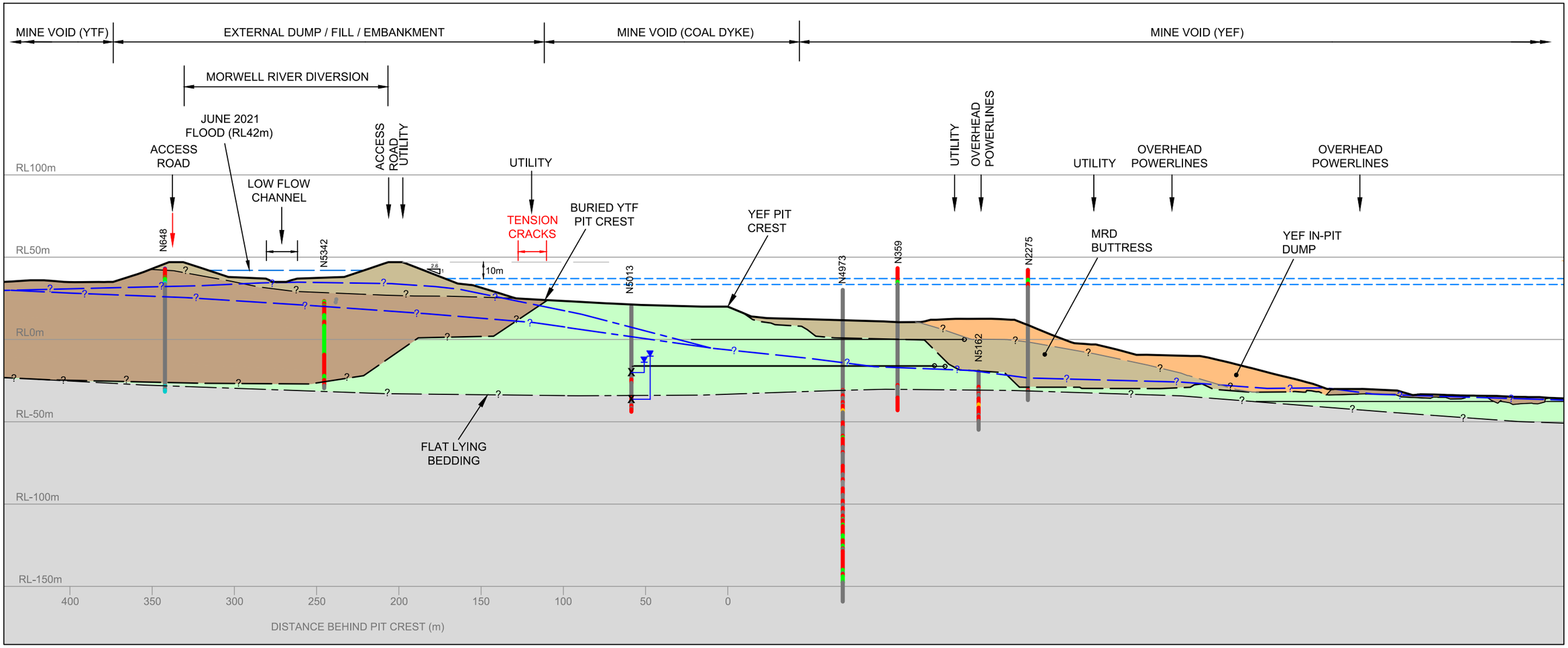
0 50 100
Scale (m)

PSM

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 32 (MRD REPAIR)

PSM4487-200R	Appendix C



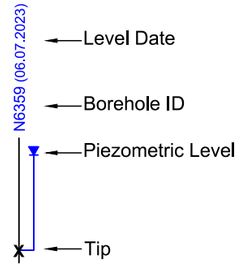
LEGEND

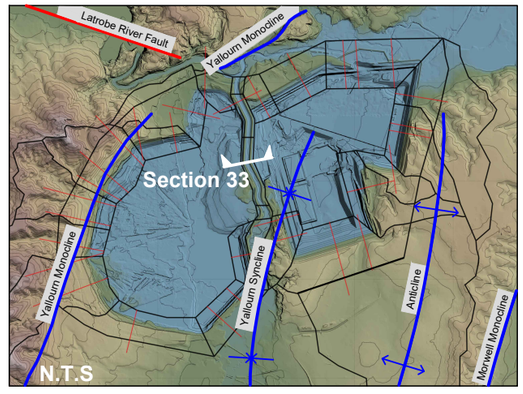
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





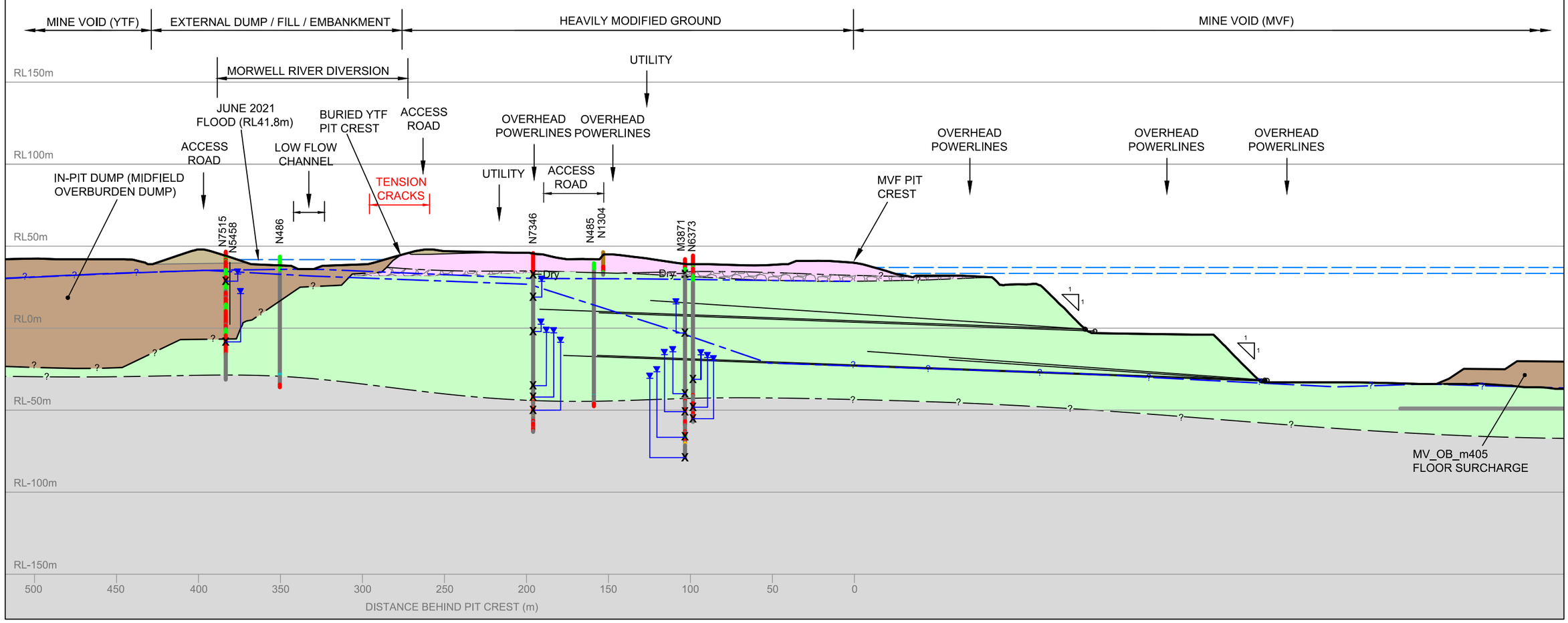
0 50 100
Scale (m)
1:2500 @ A3

PSM

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 33 (MRD FILL)

PSM4487-200R	Appendix C



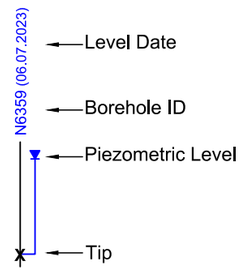
LEGEND

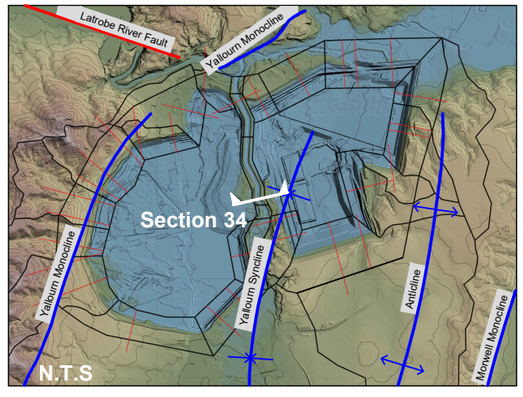
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation(HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill
- In-Pit Water Body

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation



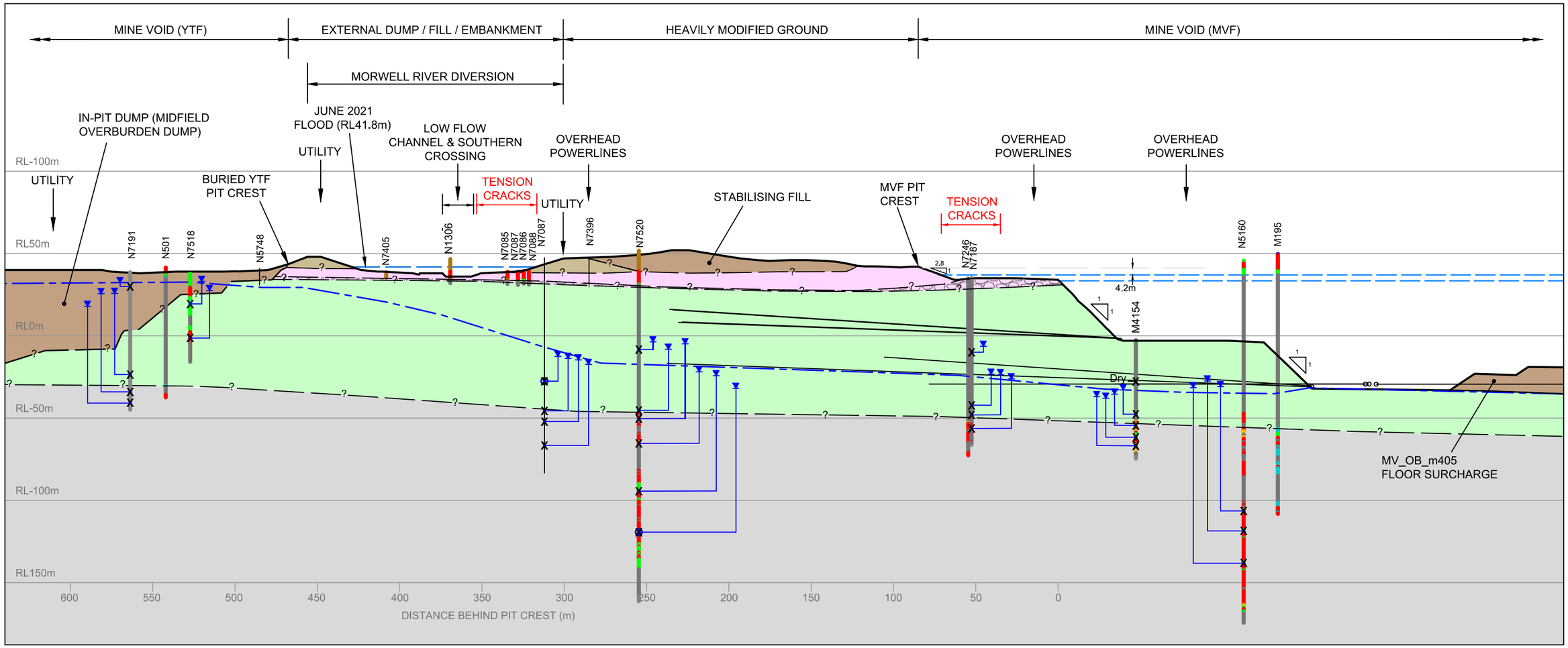


0 50 100
Scale (m)
1:2500 @ A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 34 (MRD FILL)

PSM4487-200R | Appendix C



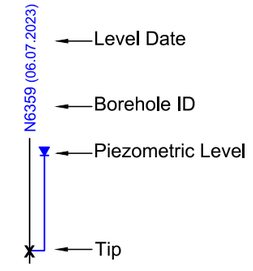
LEGEND

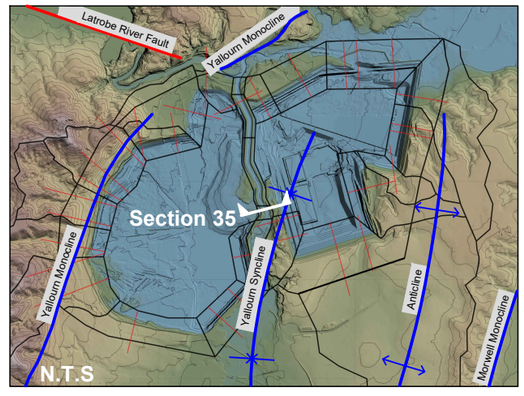
- End of Mining Surface
- Approximate 2023 Ground Surface
- As Excavated Surface
- Approximate Geological Boundary
- Inferred Geological Boundary
- Tension Cracks
- Approximate Piezometric Level
- Inferred Piezometric Level
- Proposed Final Lake Level (RL33.4m & RL37m)
- N5707 Borehole
- N6345 Borehole with Groundwater Data
- Horizontal Drain
- Haunted Hill Formation (HHF)
- Haunted Hill Aquifer
- Yallourn Coal Seam
- Undifferentiated Coal and Interseam Material
- MRD (Engineered Fill)
- Fill

Borehole Legend

- Fill
- Topsoil
- Clay
- Silt
- Gravel
- Sand
- Coal
- Ligneous Material (Coarse)
- Ligneous Material (Fine)
- Rock
- Unknown/ Not Logged

Groundwater Level from Instrumentation





0 50 100
Scale (m)
1:2500 @ A3

PSM

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ADOPTED MINE CLOSURE CONDITONS
SECTION 35 (MRD CUT SOUTH)

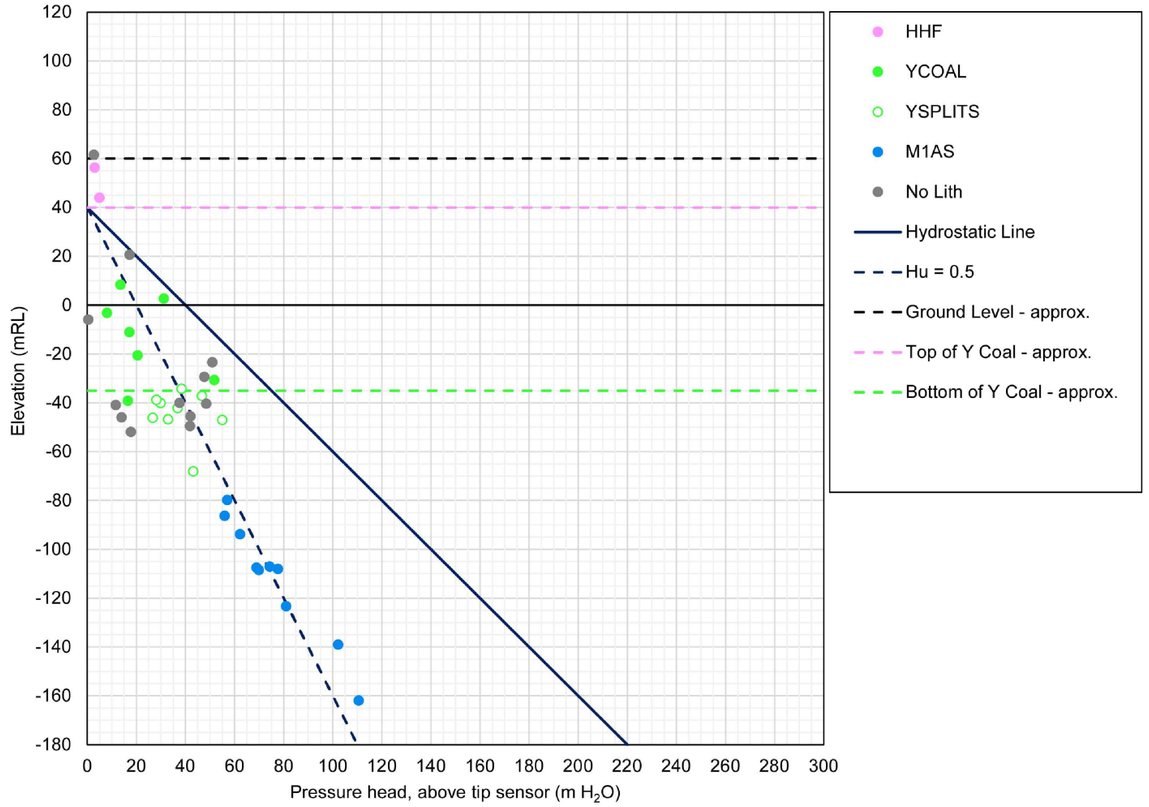
PSM4487-200R | Appendix C

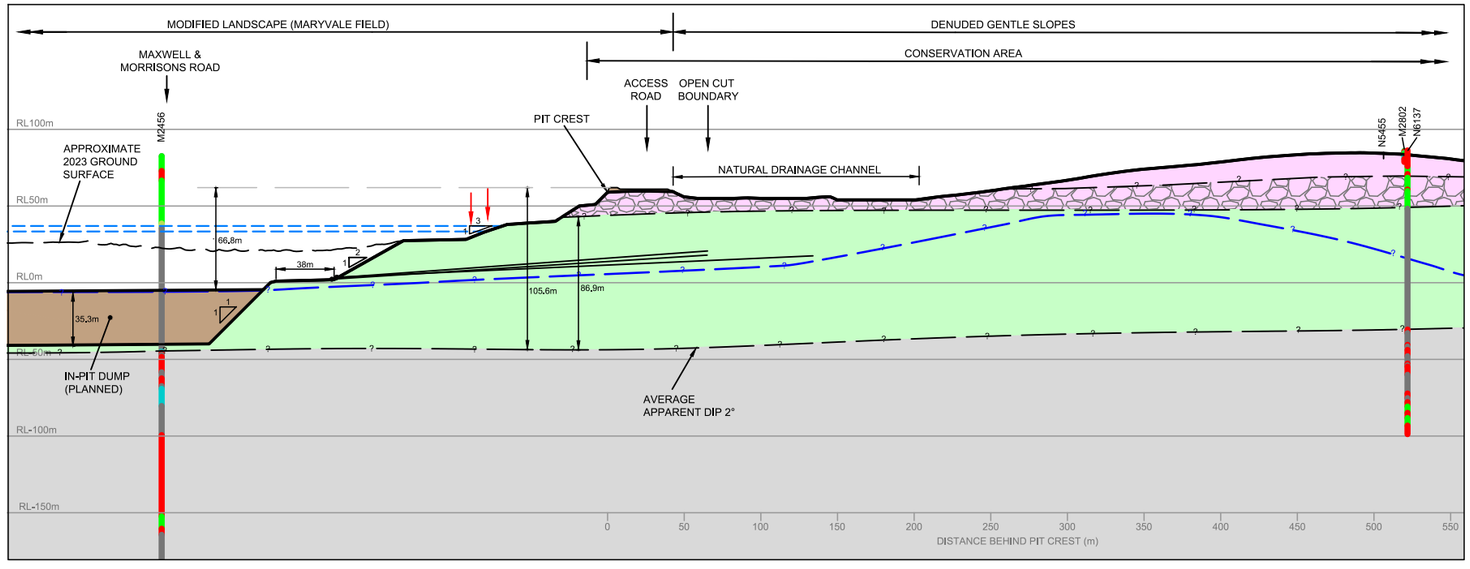
Appendix D
Domain Groundwater Information

D1. Illustration of groundwater conditions per domain showing geotechnical sections with pore pressure profiles

D2. Groundwater hydrographs per domain

Appendix D.1
Illustration of groundwater conditions per domain showing geotechnical sections with pore pressure profiles

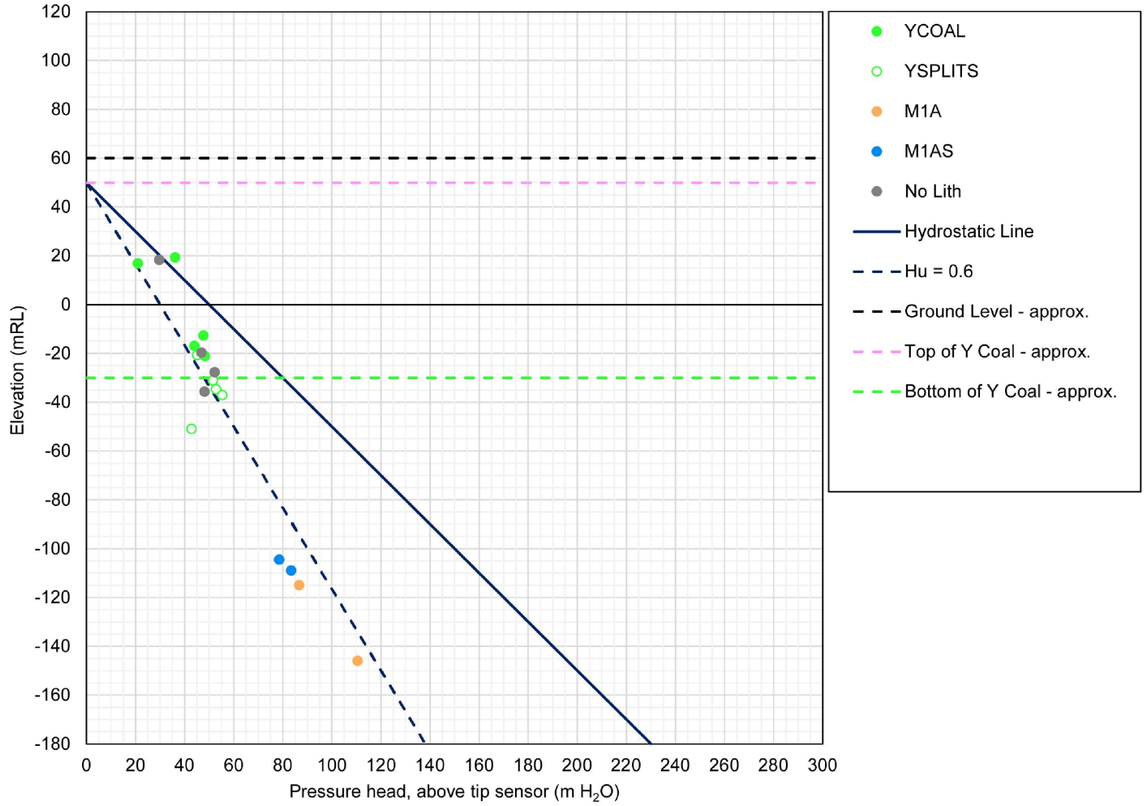


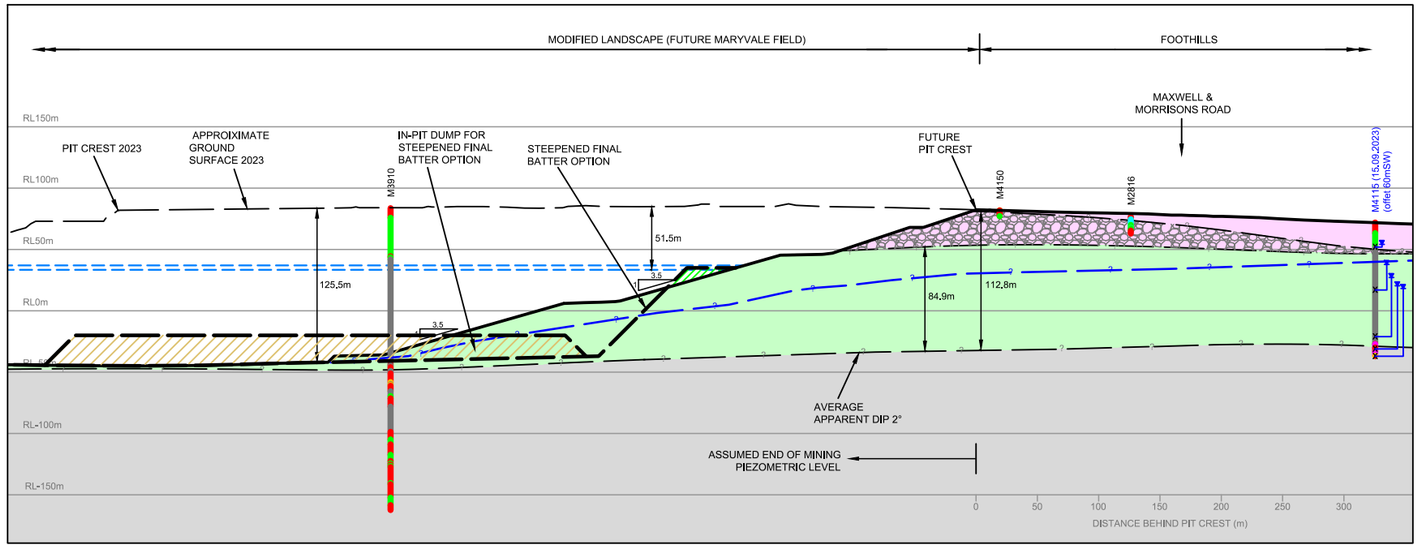


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - MVF-EB

PSM4487-200R | Appendix D

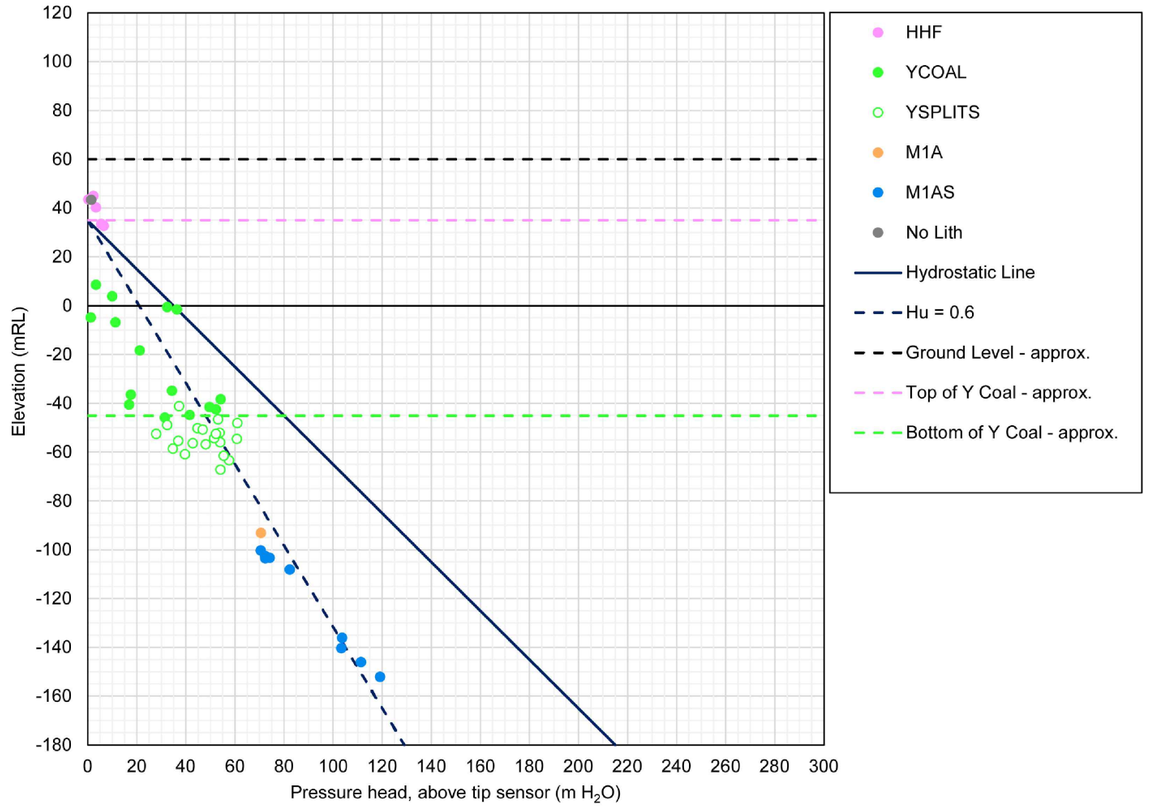


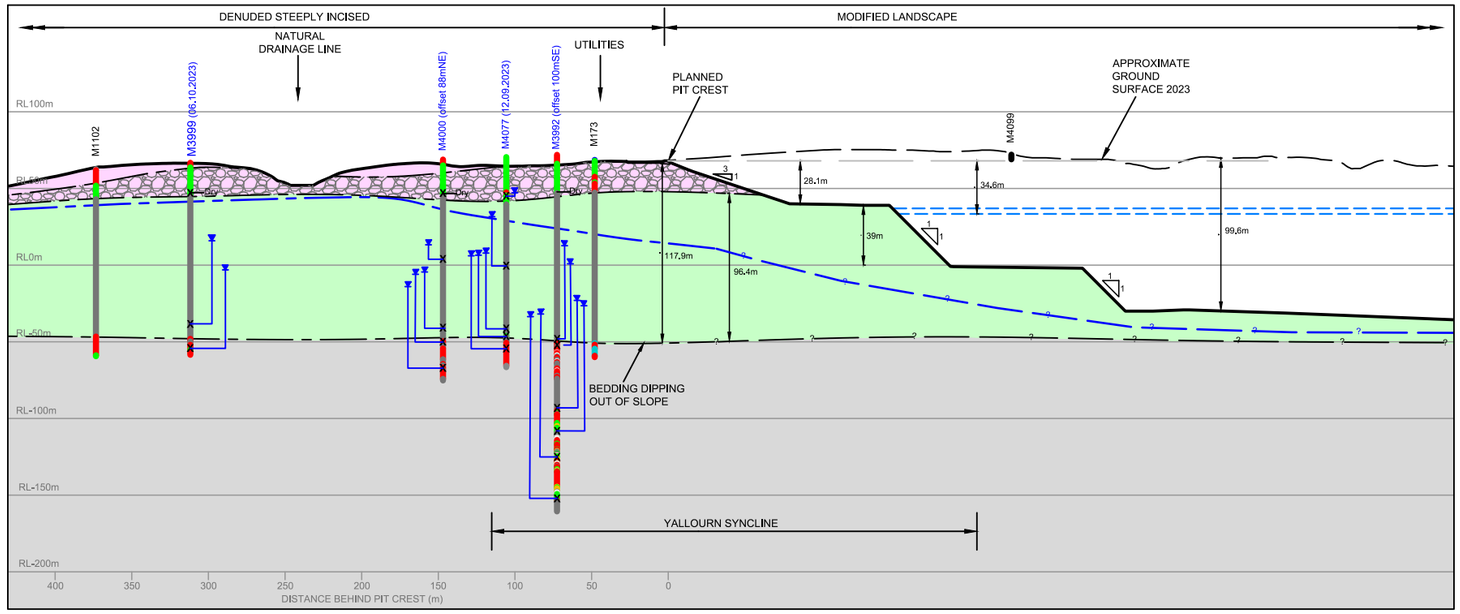


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - MVF-SB

PSM4487-200R	Appendix D

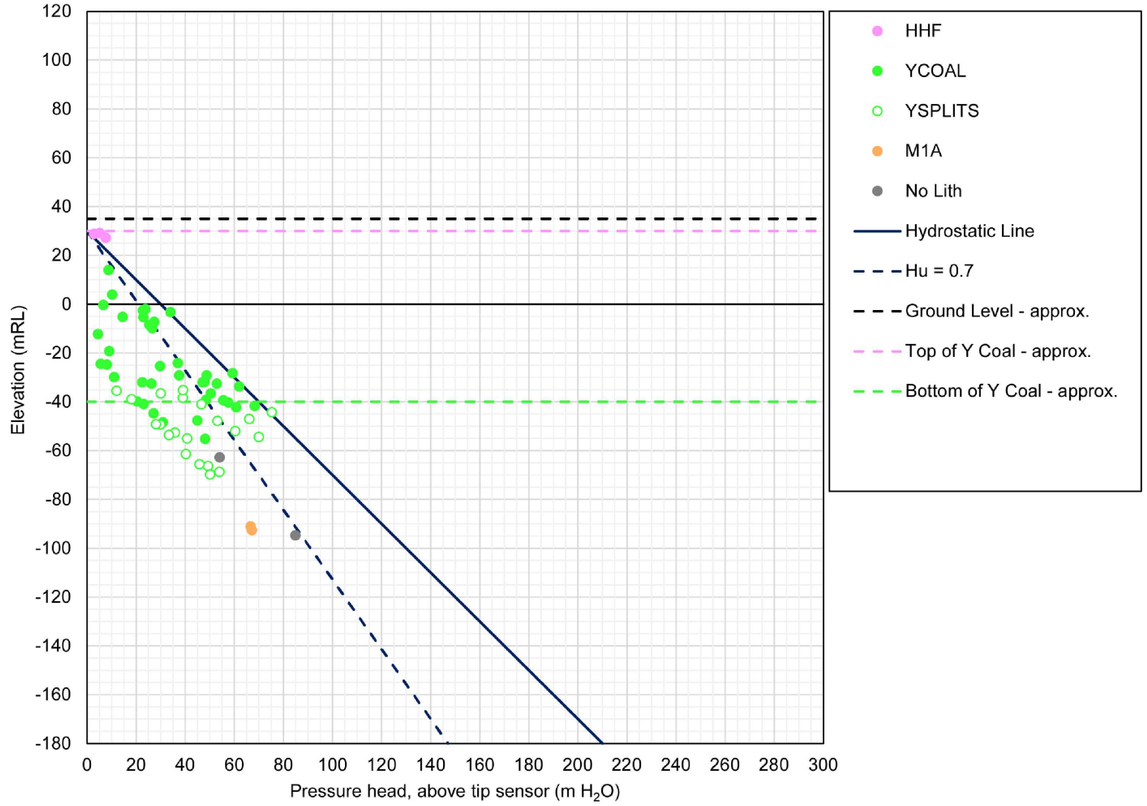


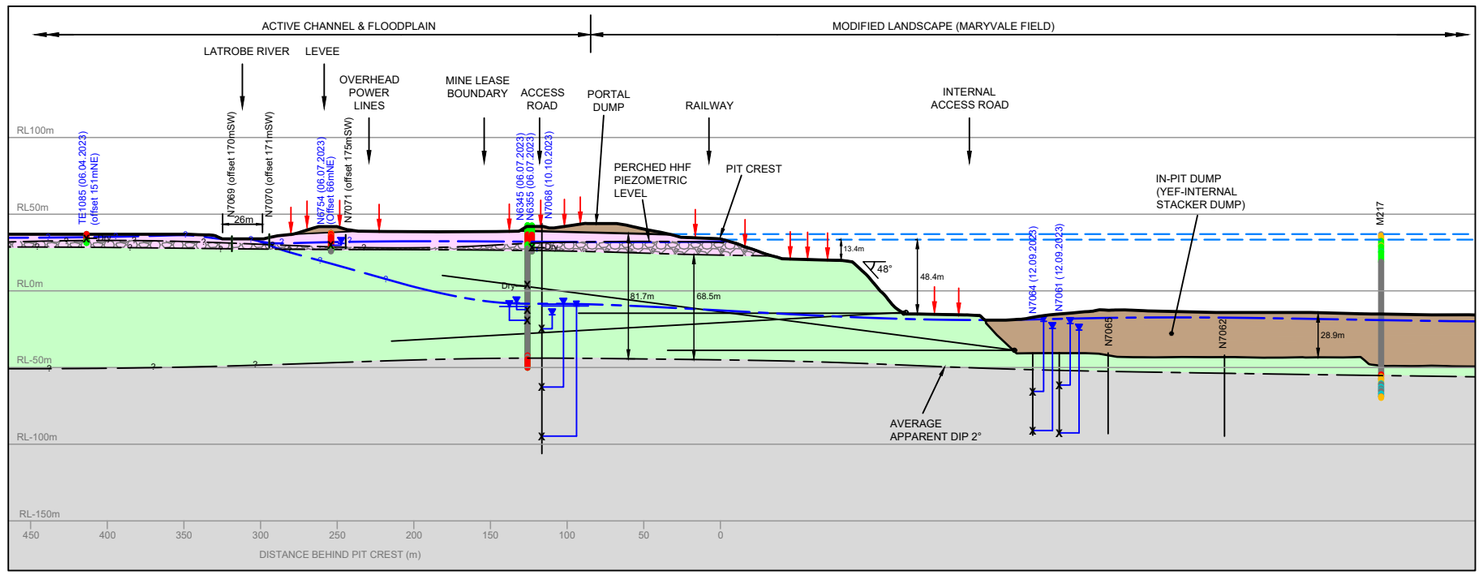


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - MVF-WB

PSM4487-200R | Appendix D

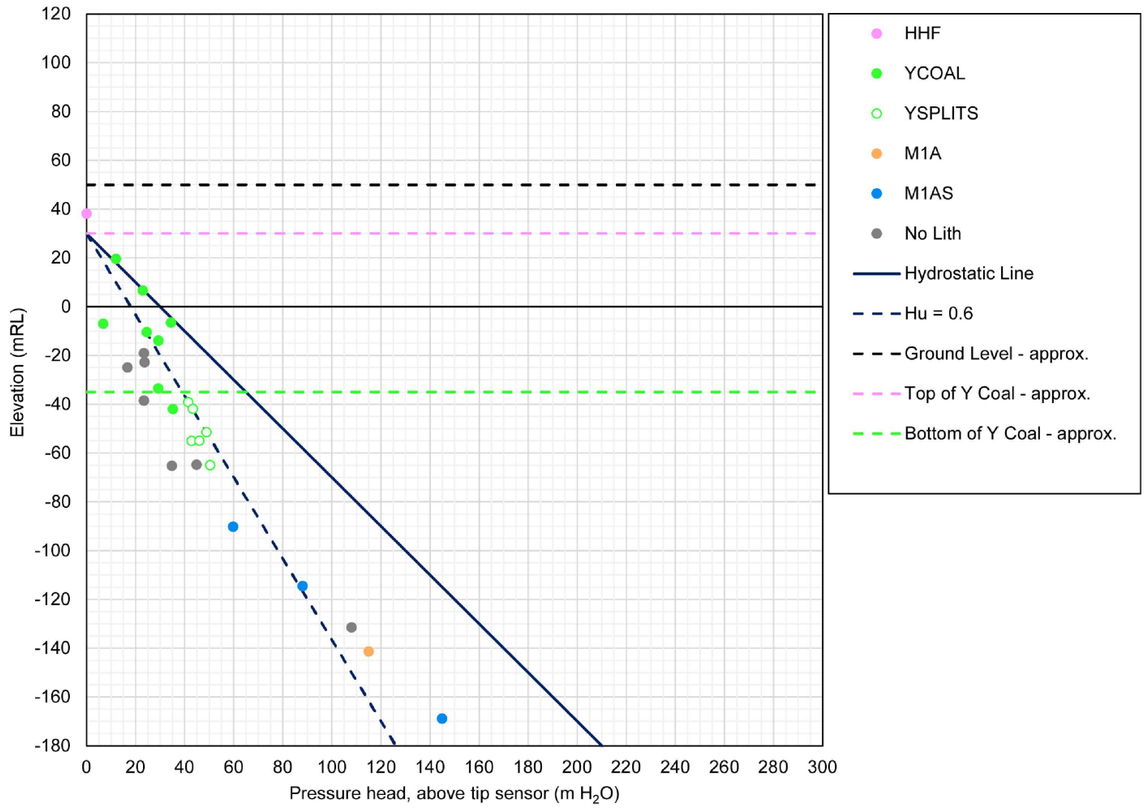


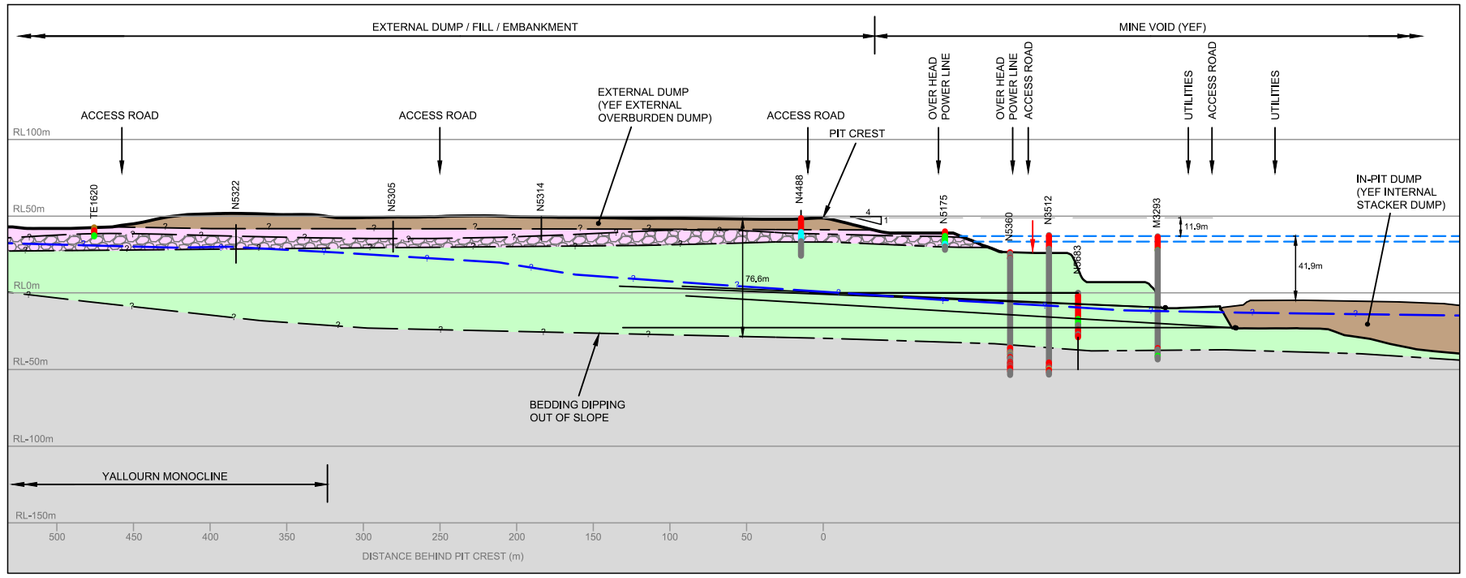


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - YEF-LRB

PSM4487-200R	Appendix D

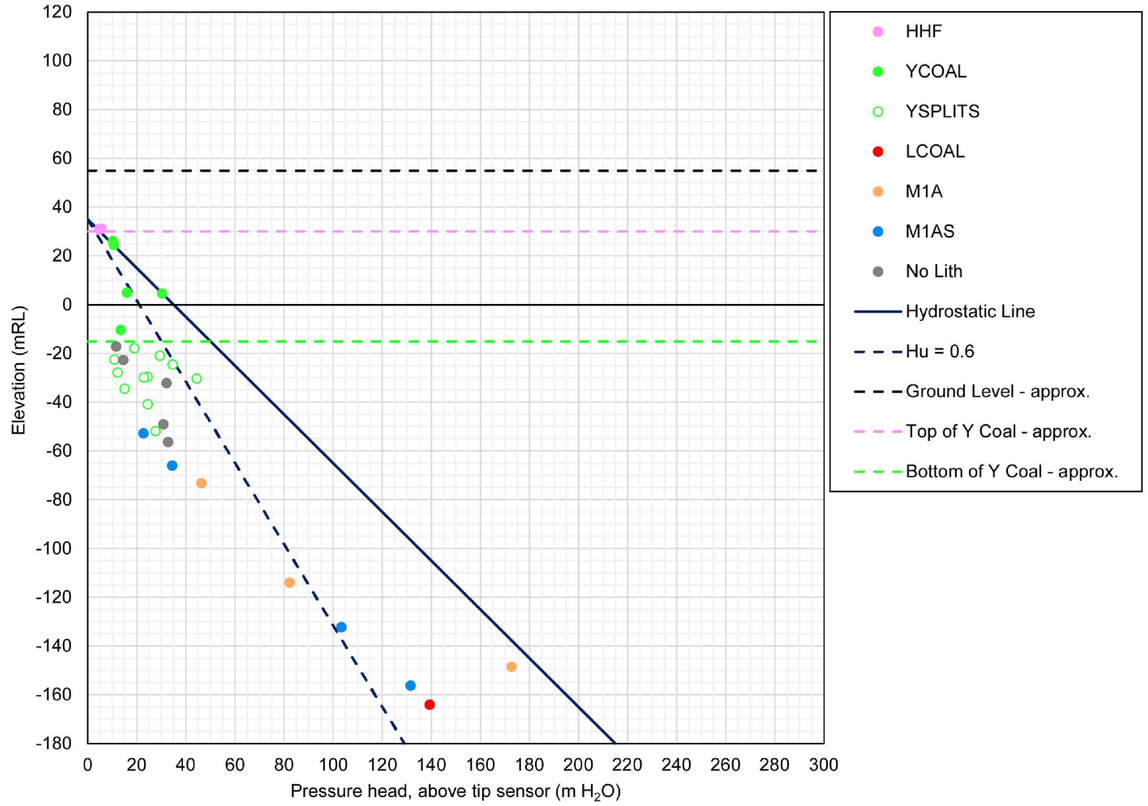


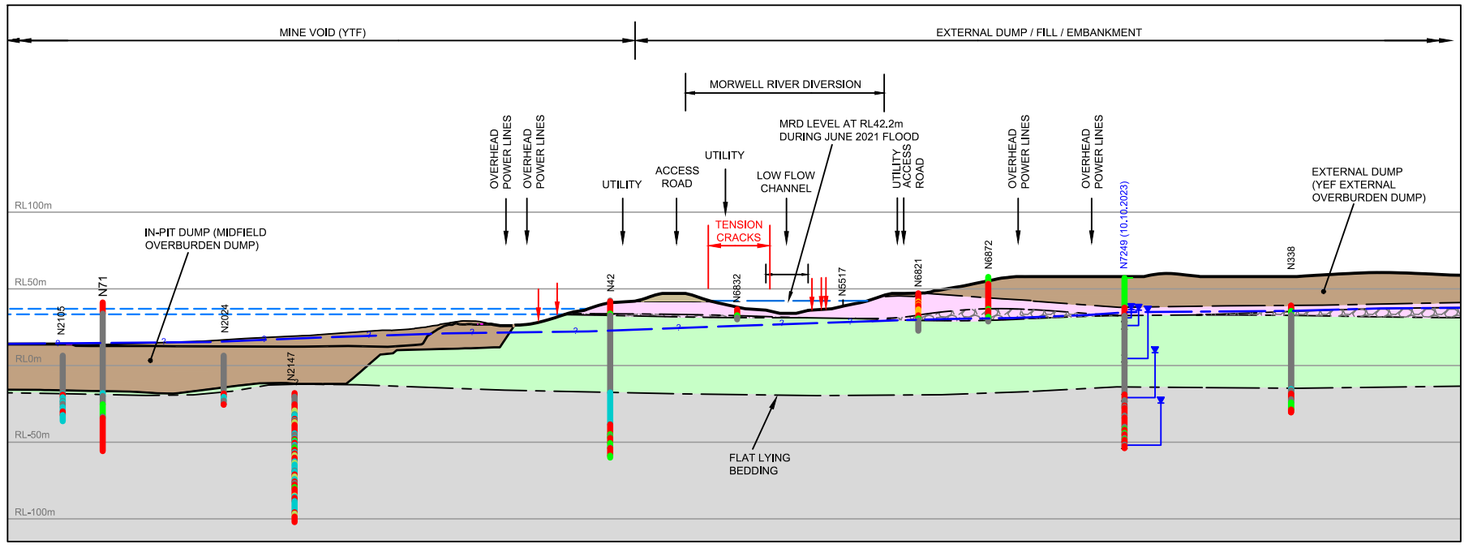


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - YEF-NB (EAST)

PSM4487-200R	Appendix D

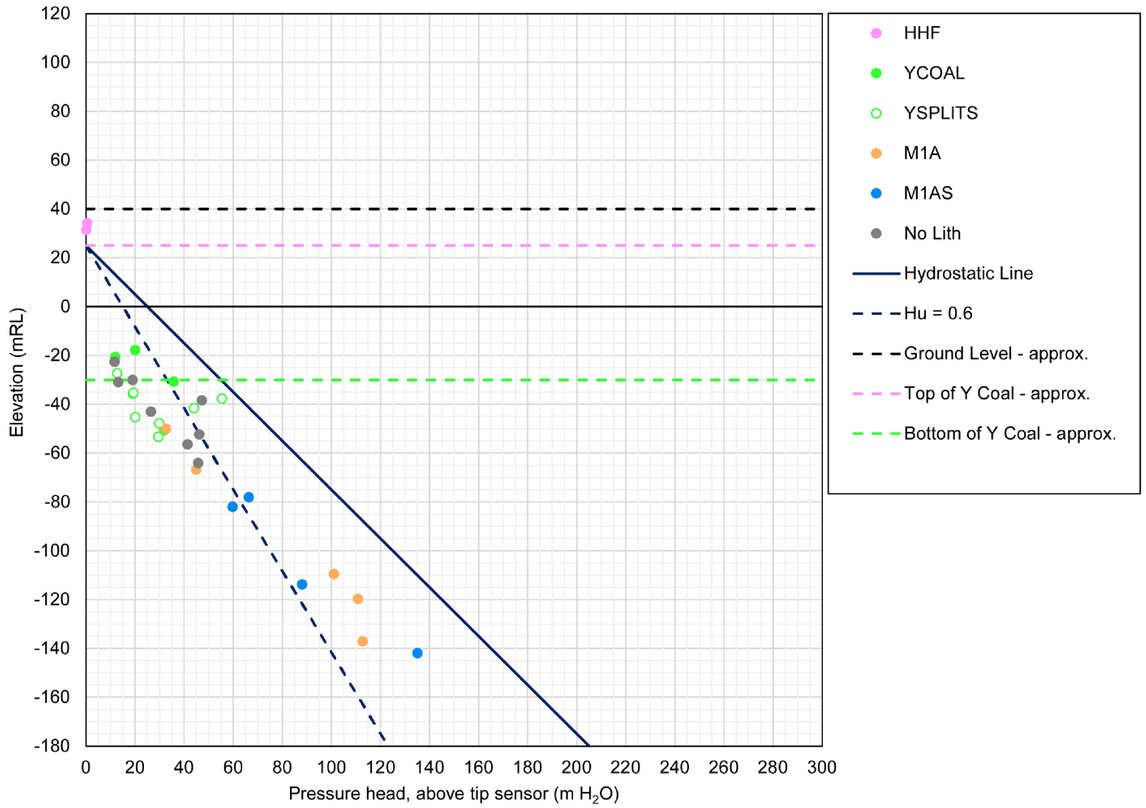


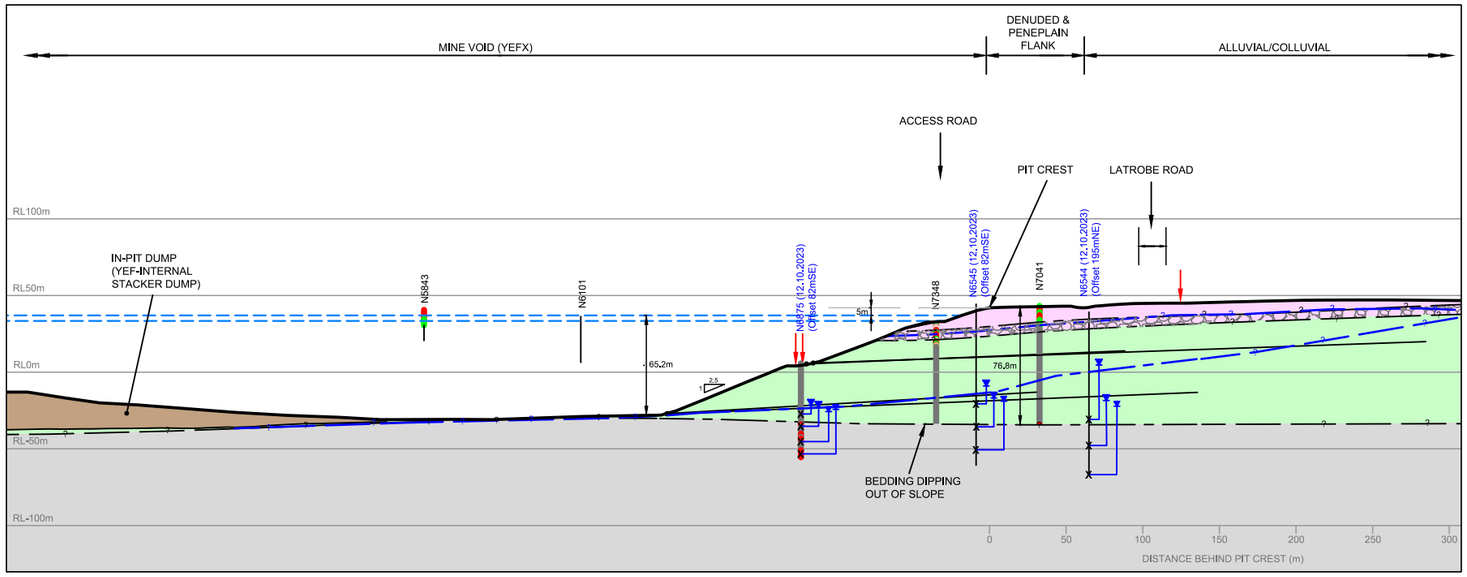


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - YEF-NB (WEST)

PSM4487-200R	Appendix D

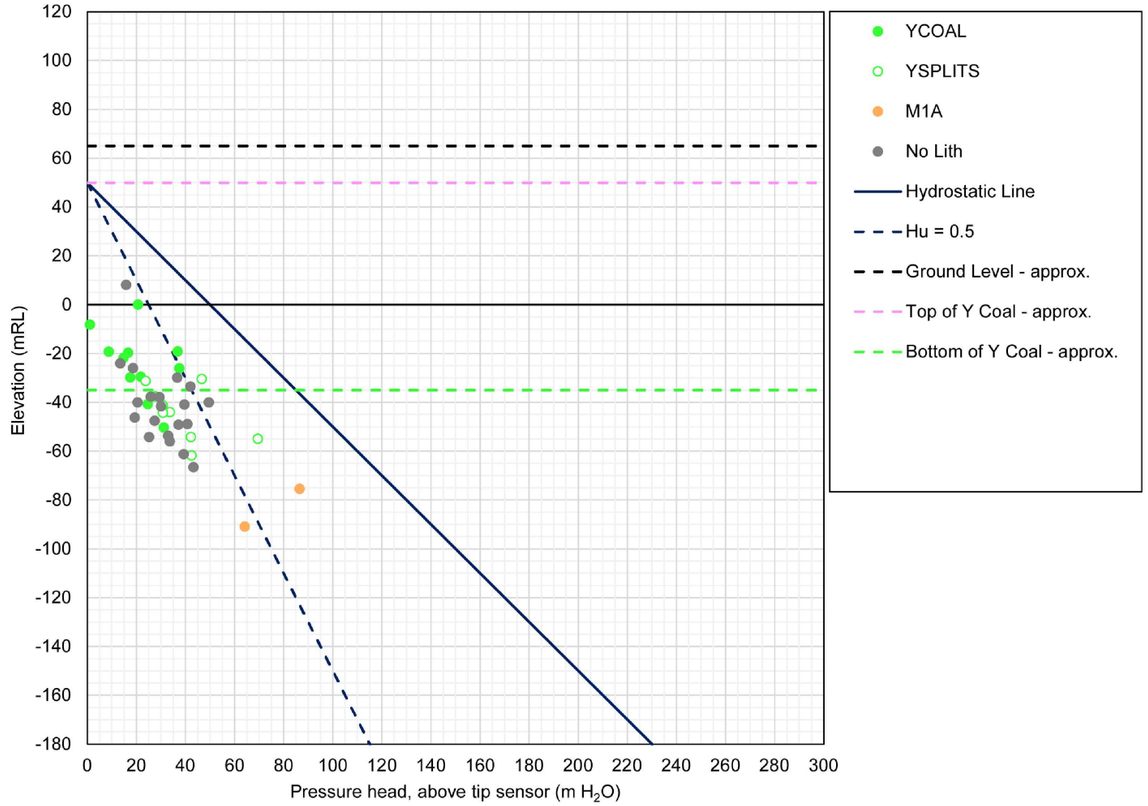


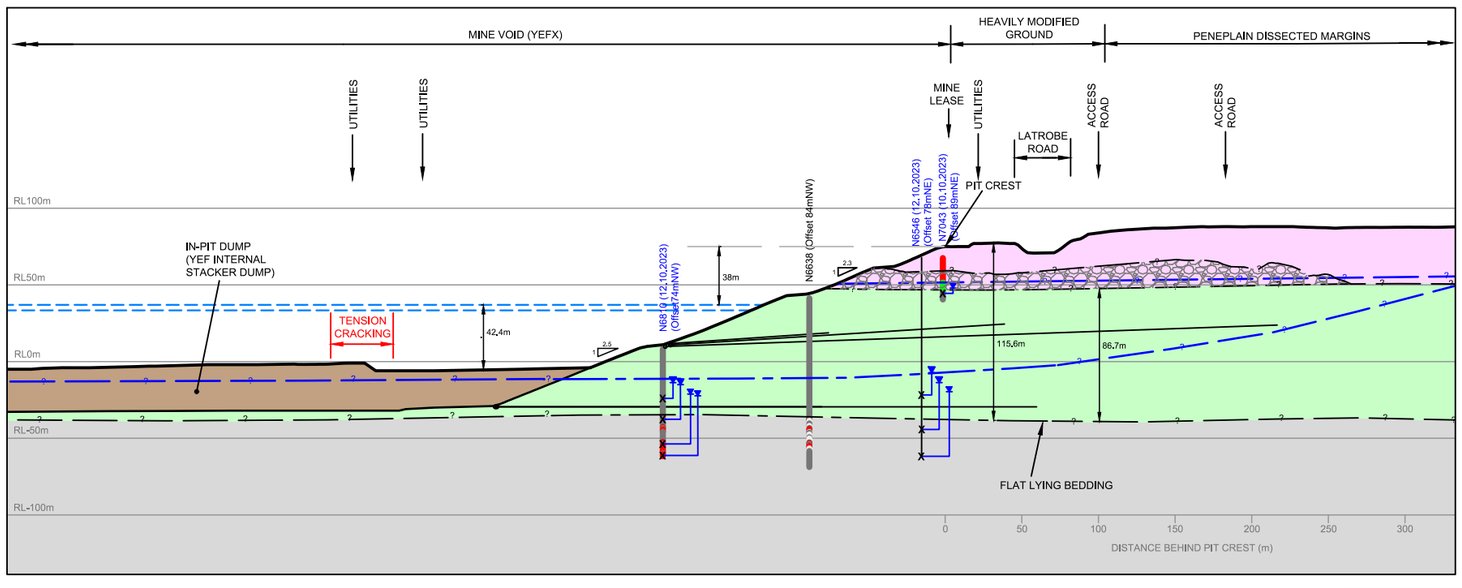


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - YEFX-LREB (NORTH)

PSM4487-200R	Appendix D

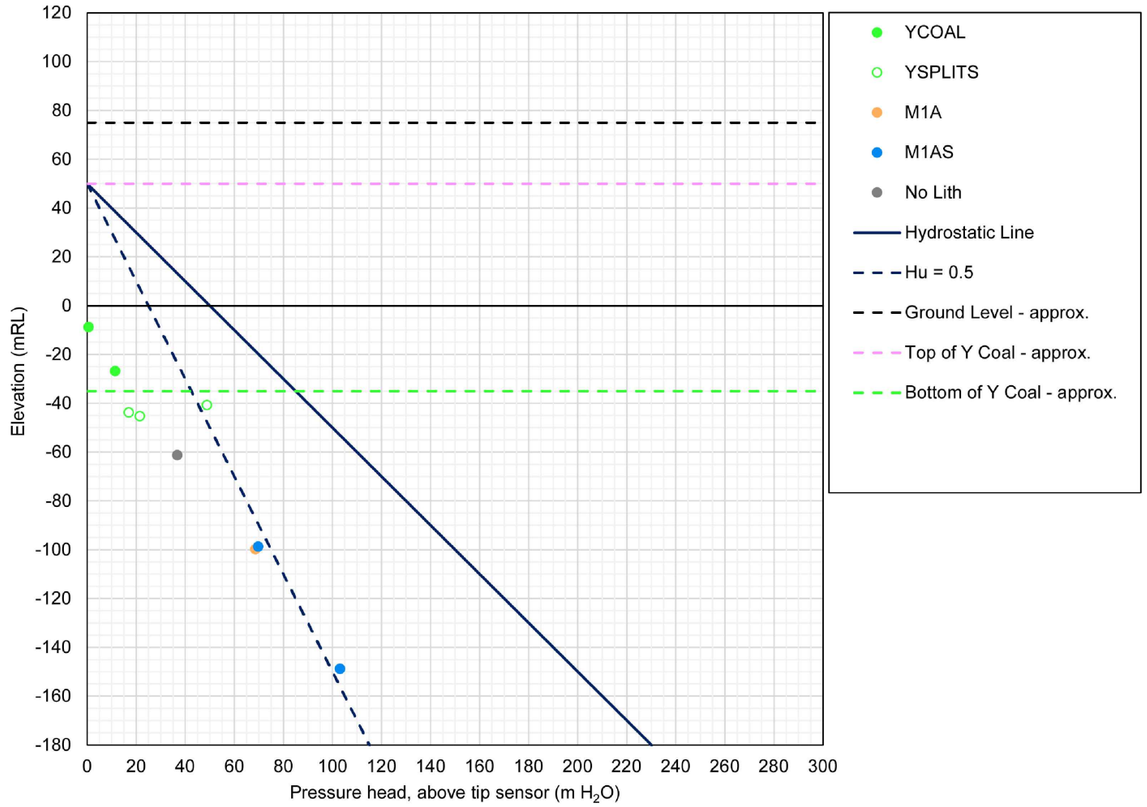


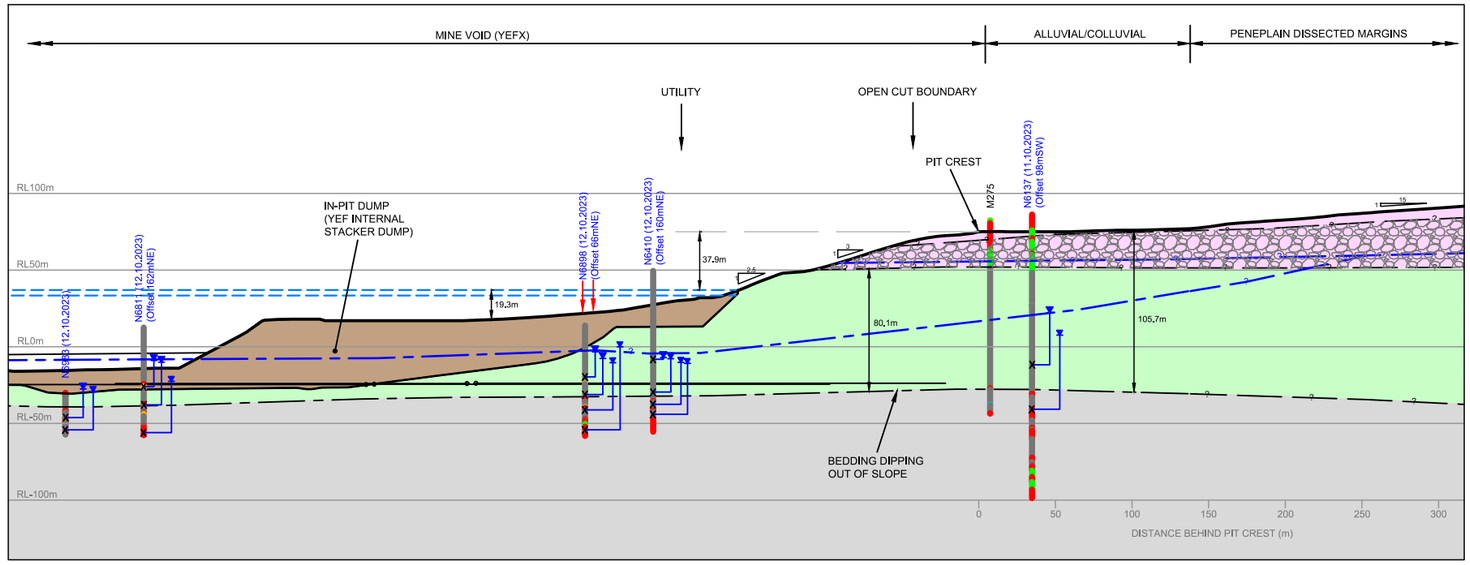


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - YEFX-LREB (SOUTH)

PSM4487-200R | Appendix D

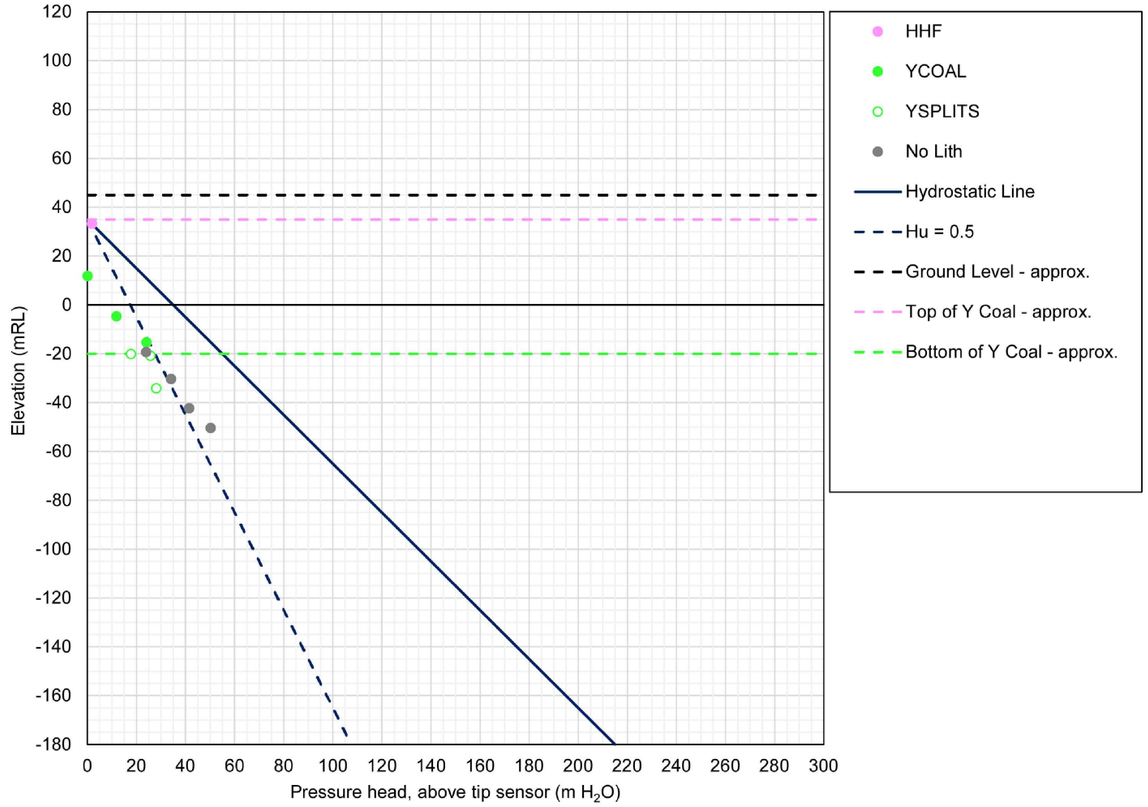


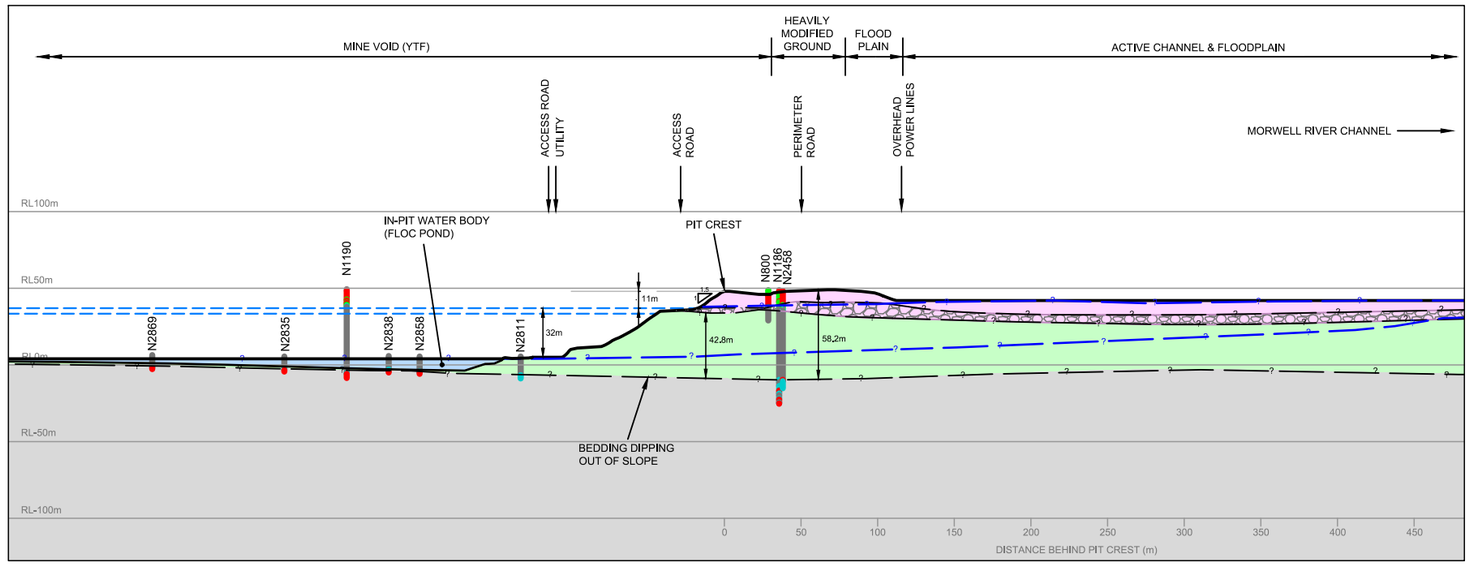


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - YEFX-SB

PSM4487-200R	Appendix D

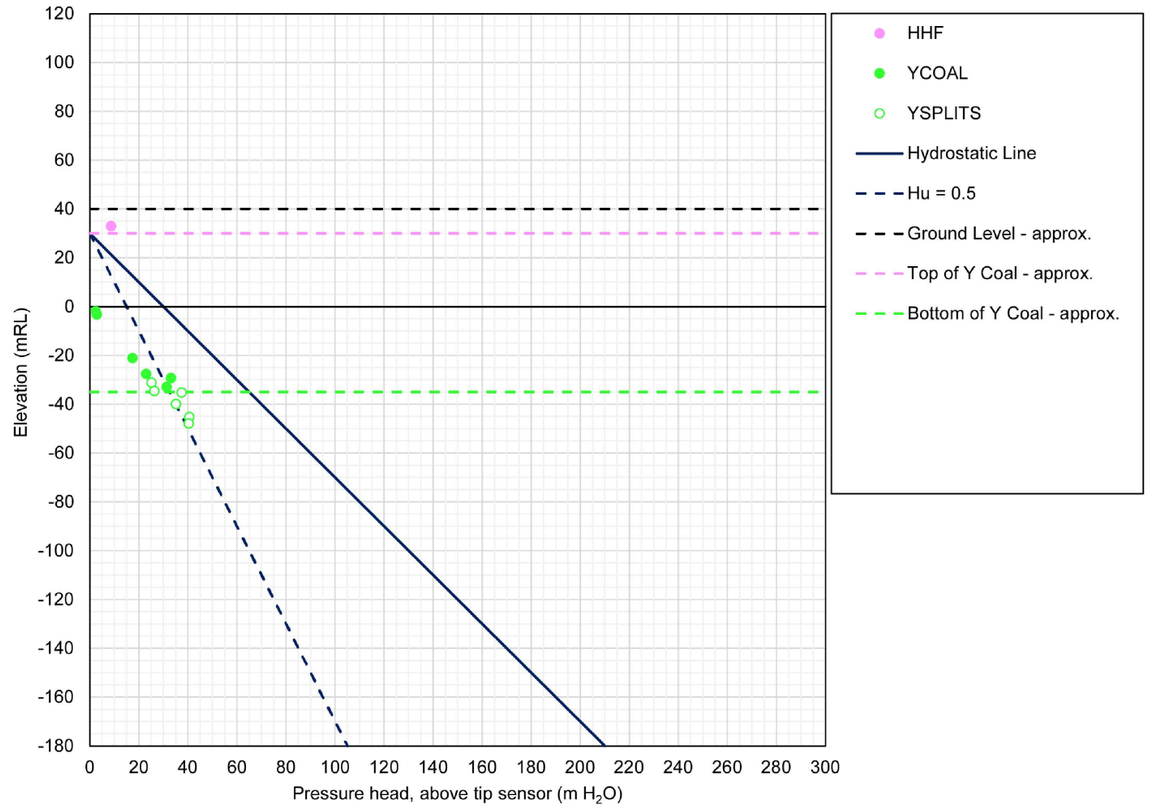


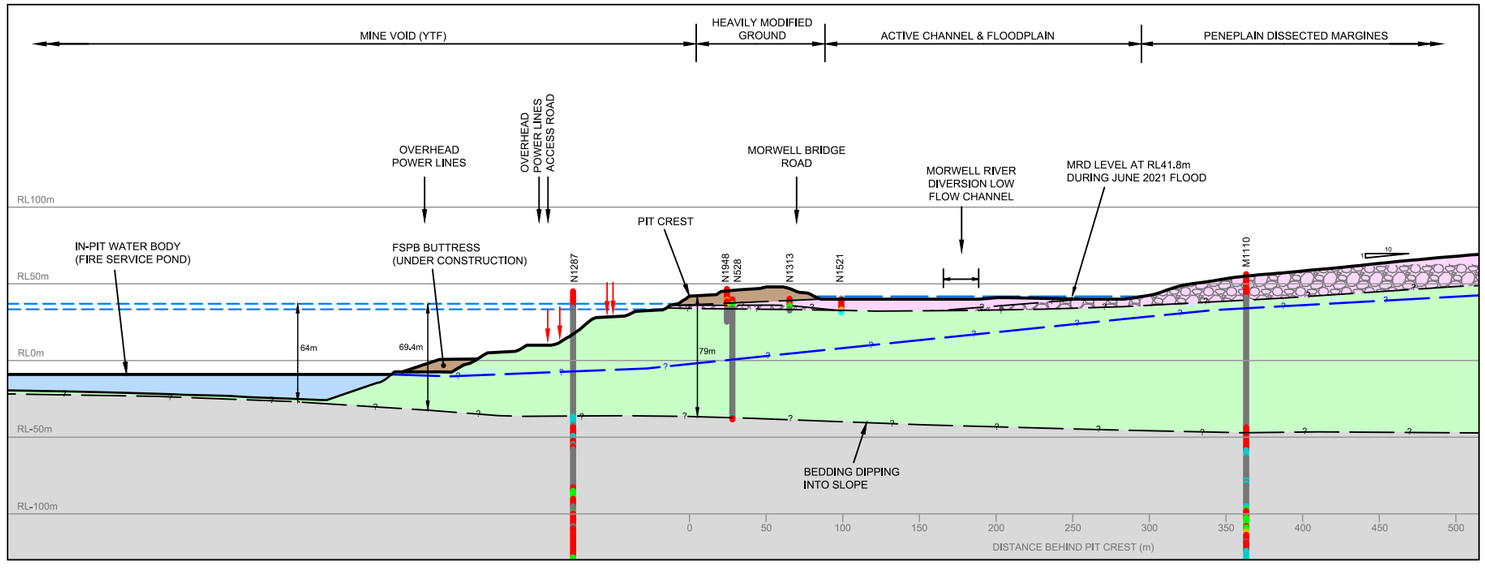


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - YTF-FPB

PSM4487-200R	Appendix D

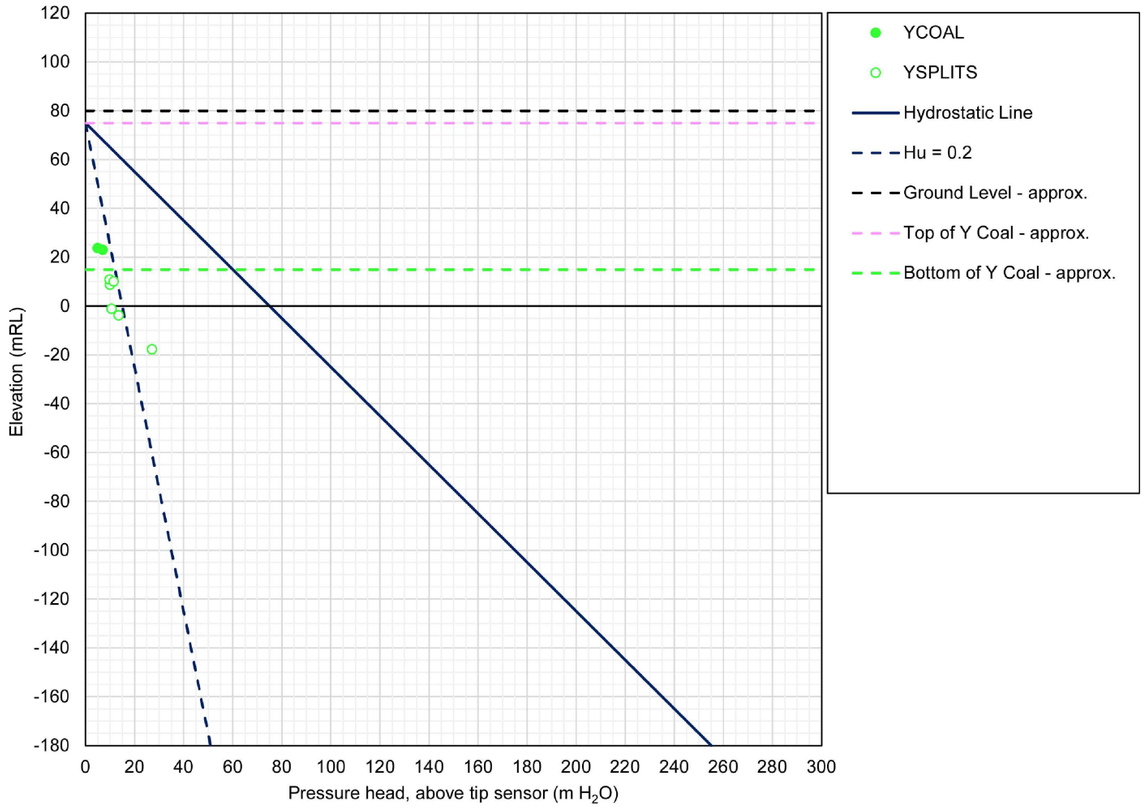


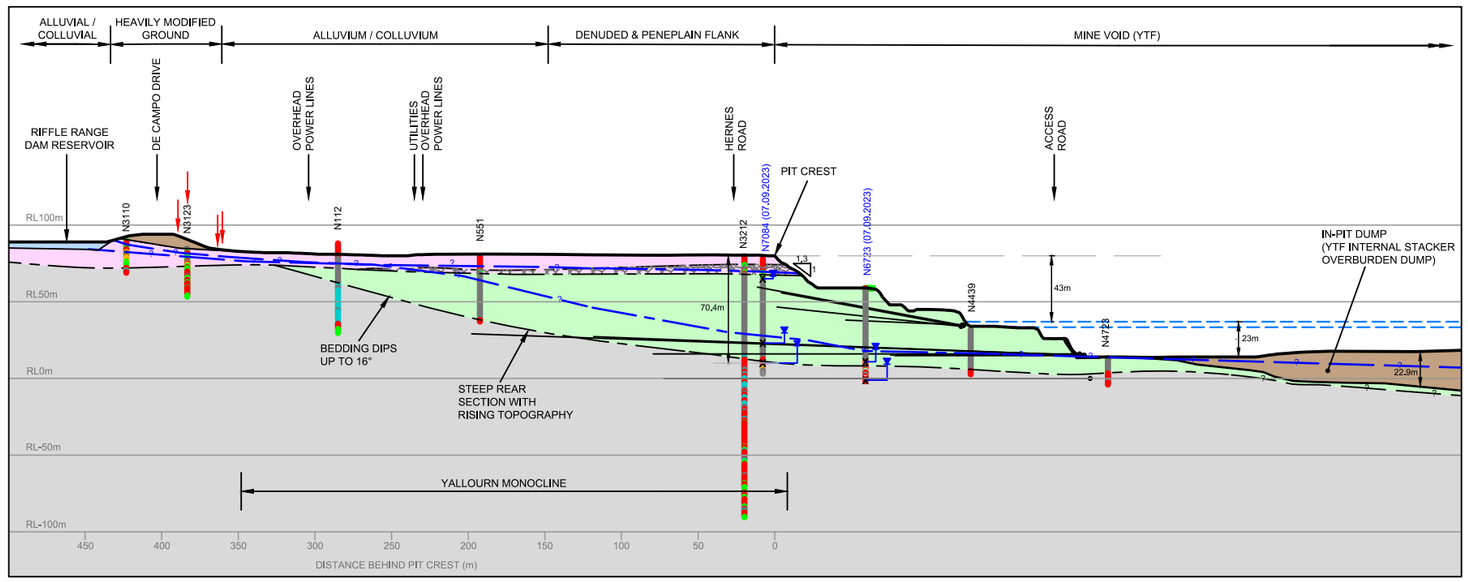


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - YTF-FSPB

PSM4487-200R	Appendix D

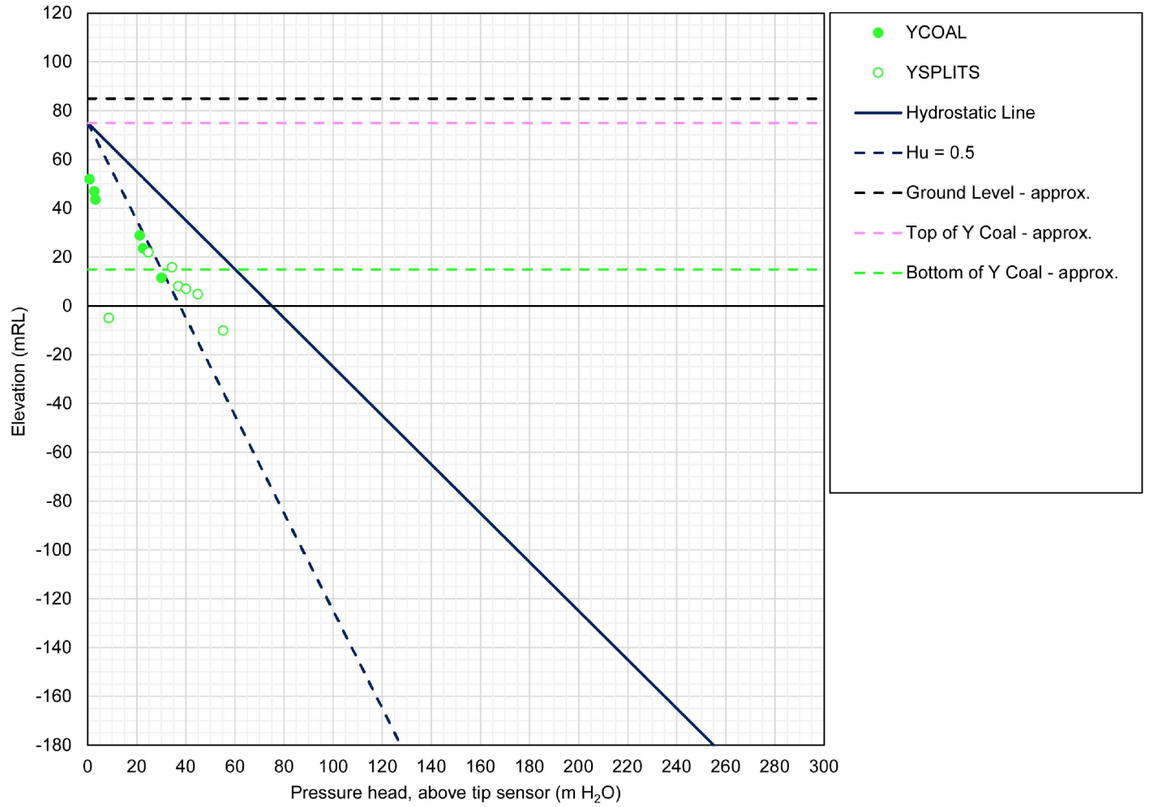


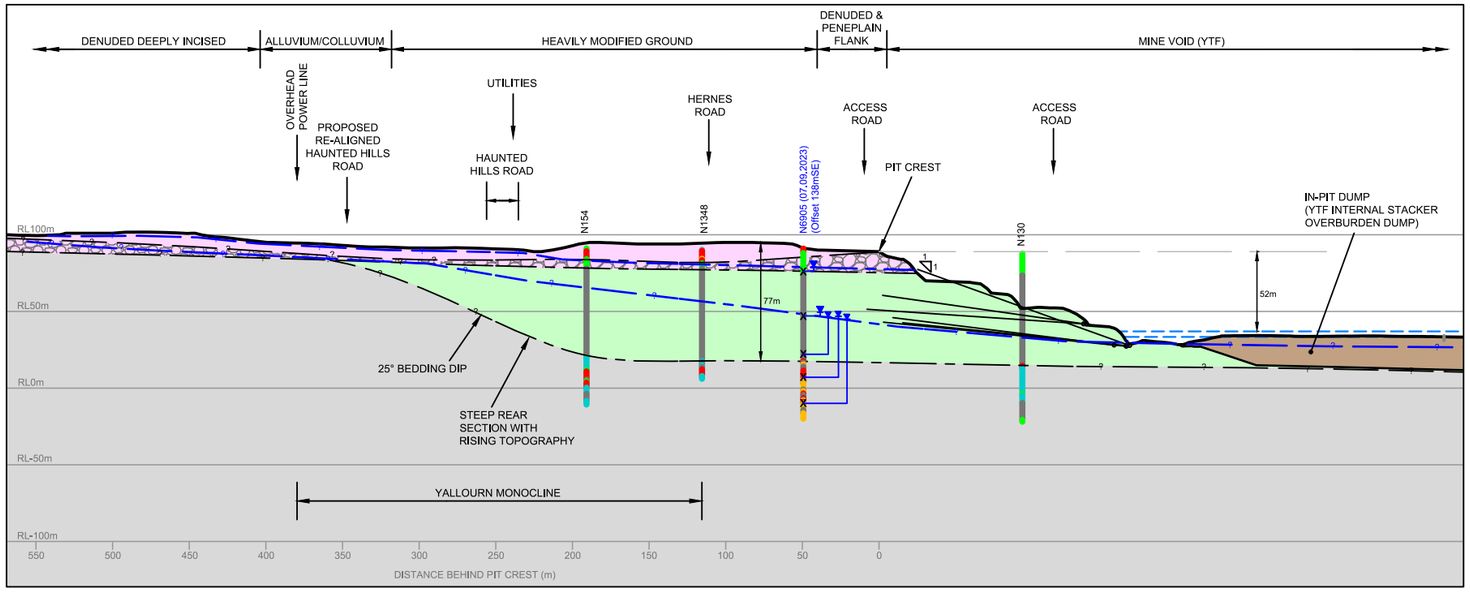


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - YTF-HOB (NORTH)

PSM4487-200R	Appendix D

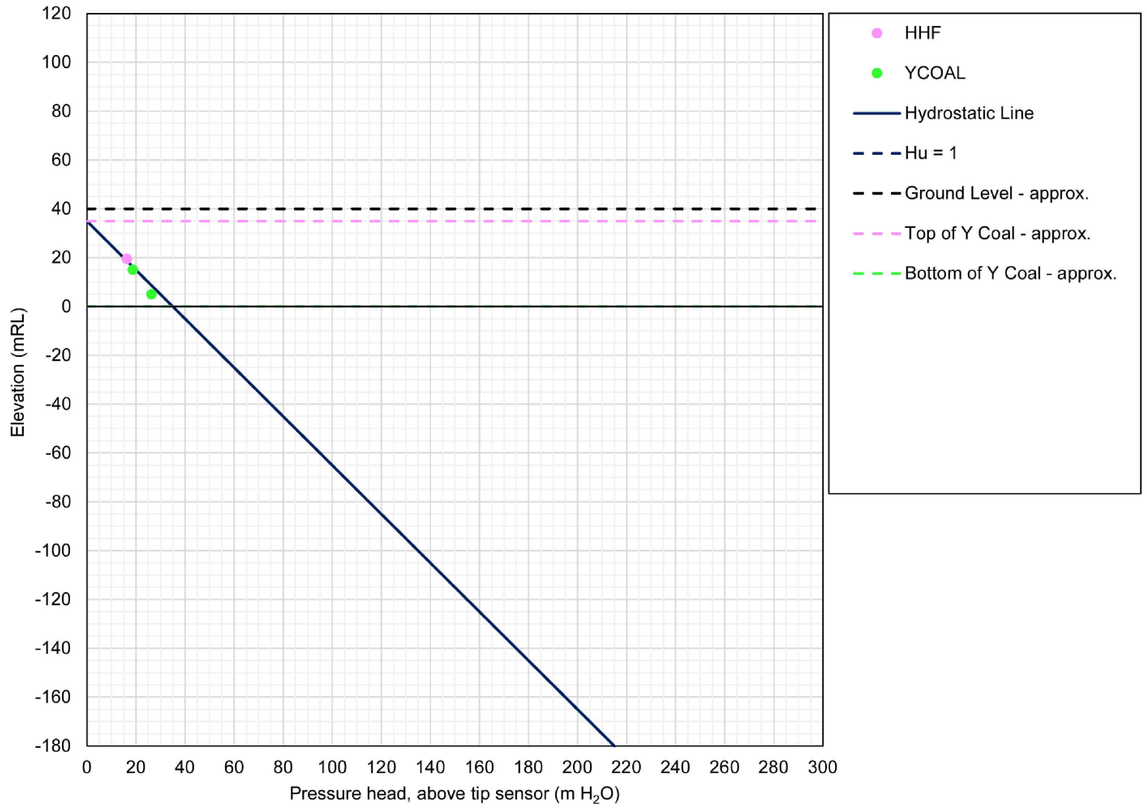


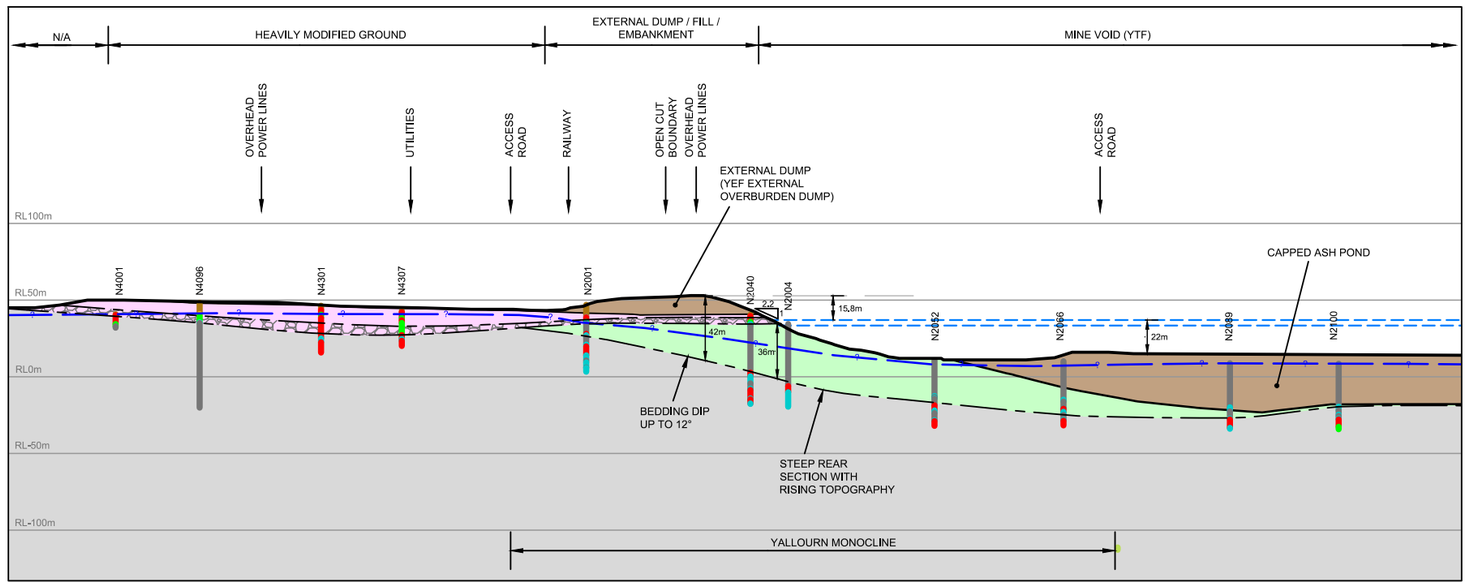


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - YTF-HOB (SOUTH)

PSM4487-200R	Appendix D

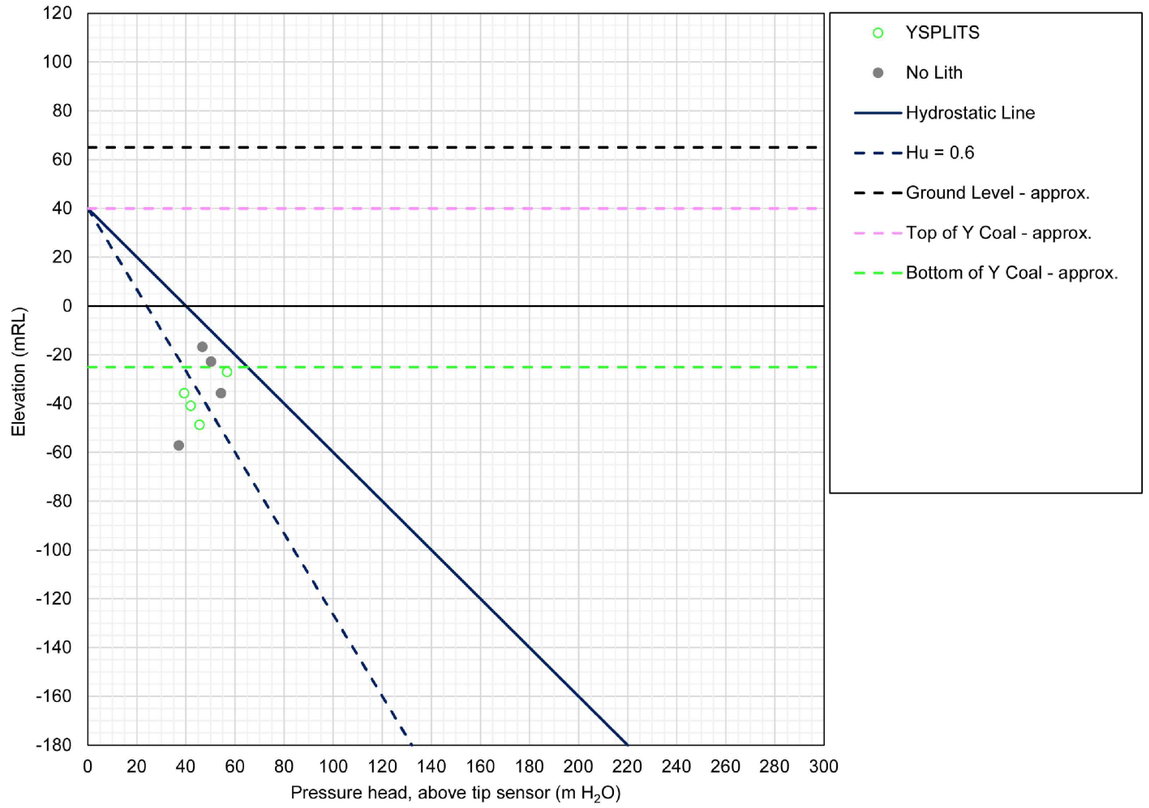


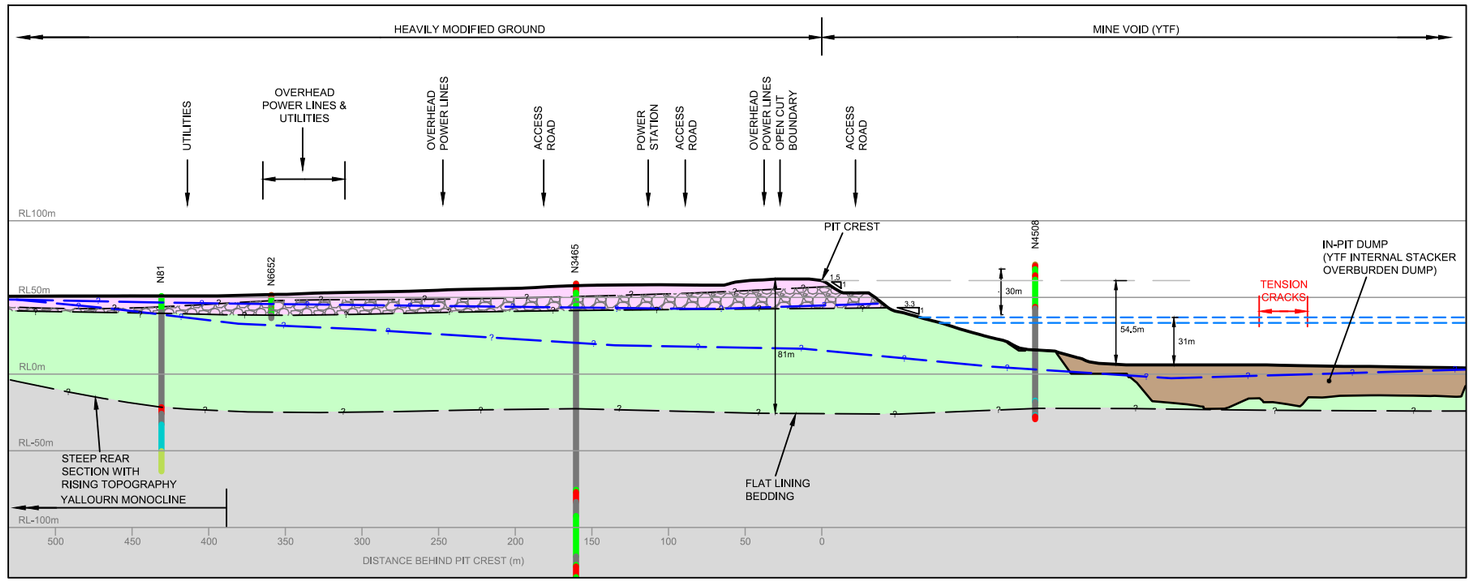


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - YTF-LS

PSM4487-200R	Appendix D

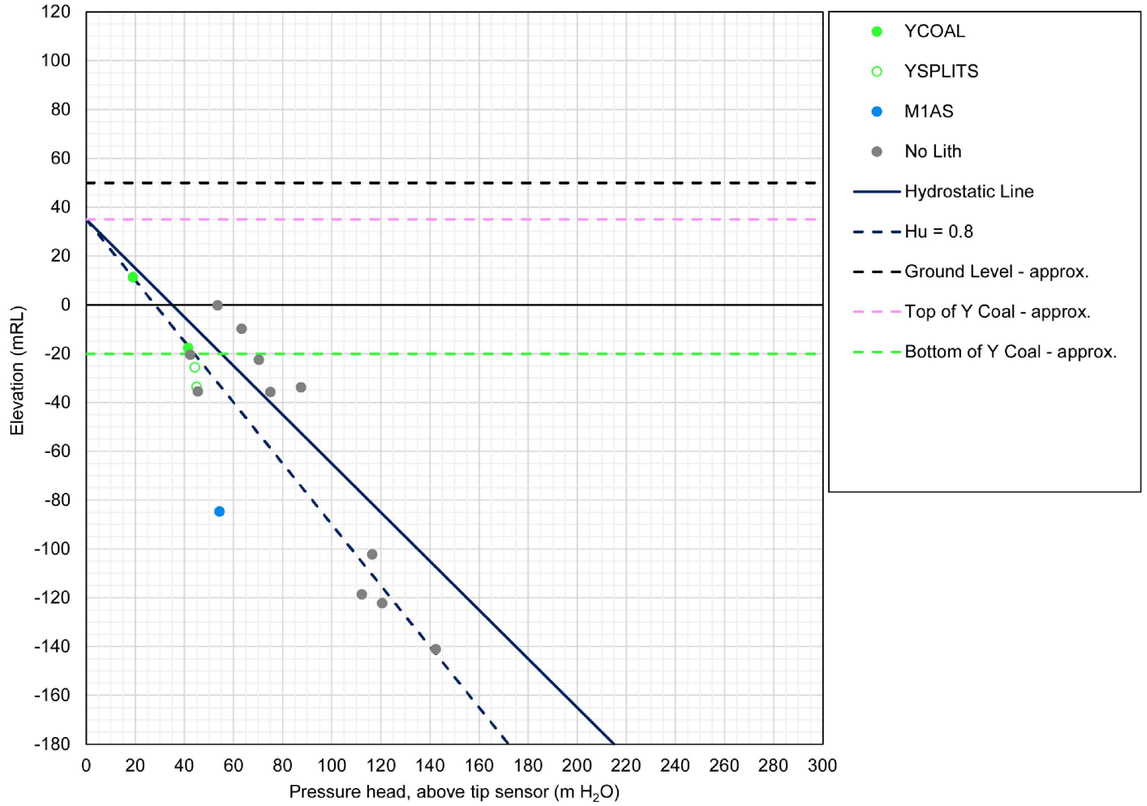


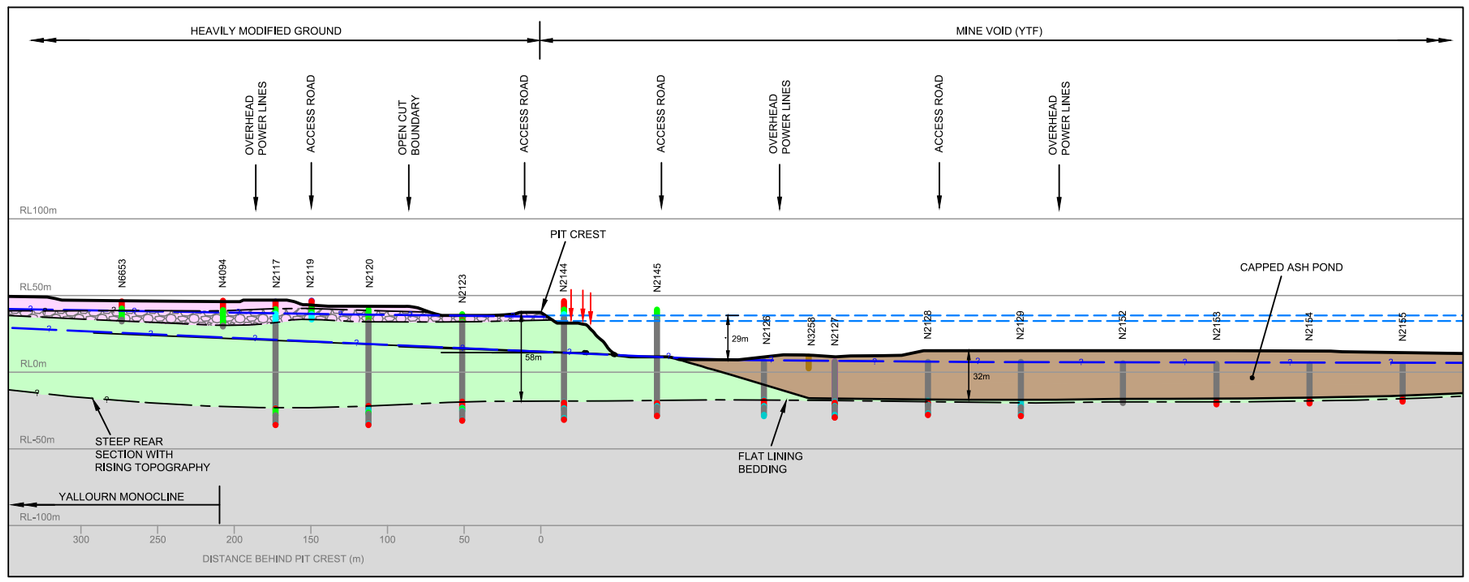


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - YTF-NB

PSM4487-200R	Appendix D

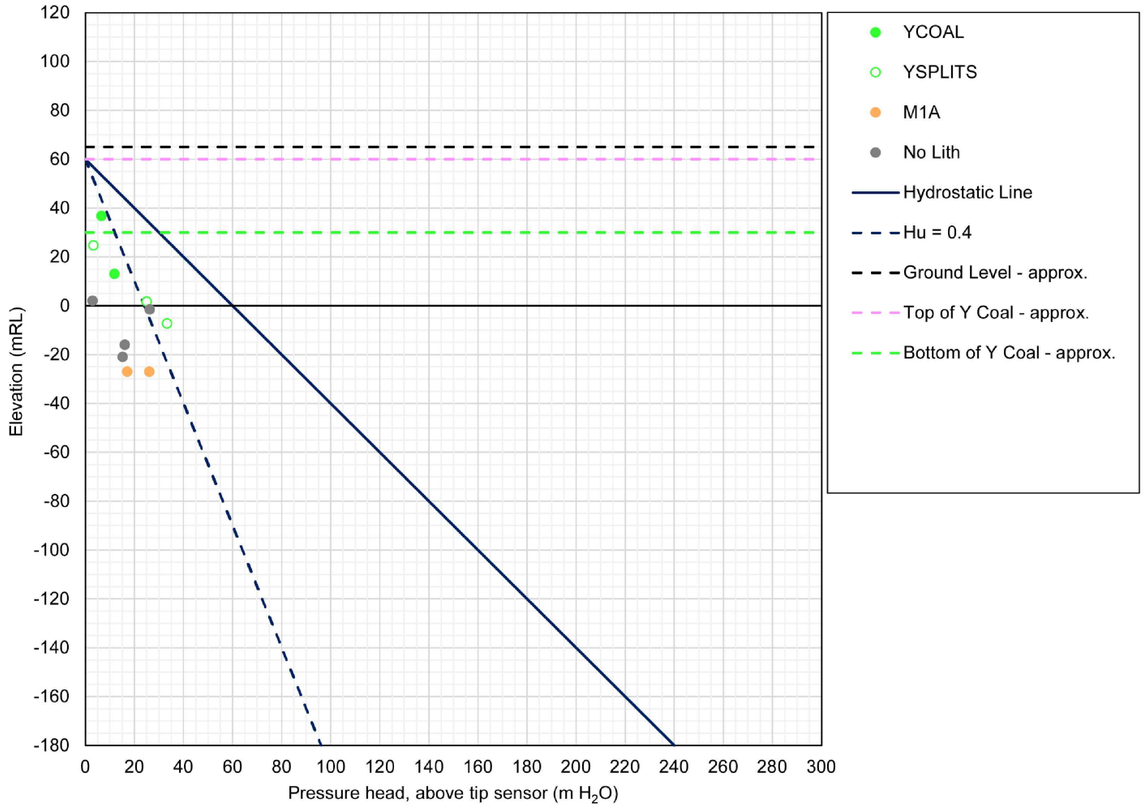


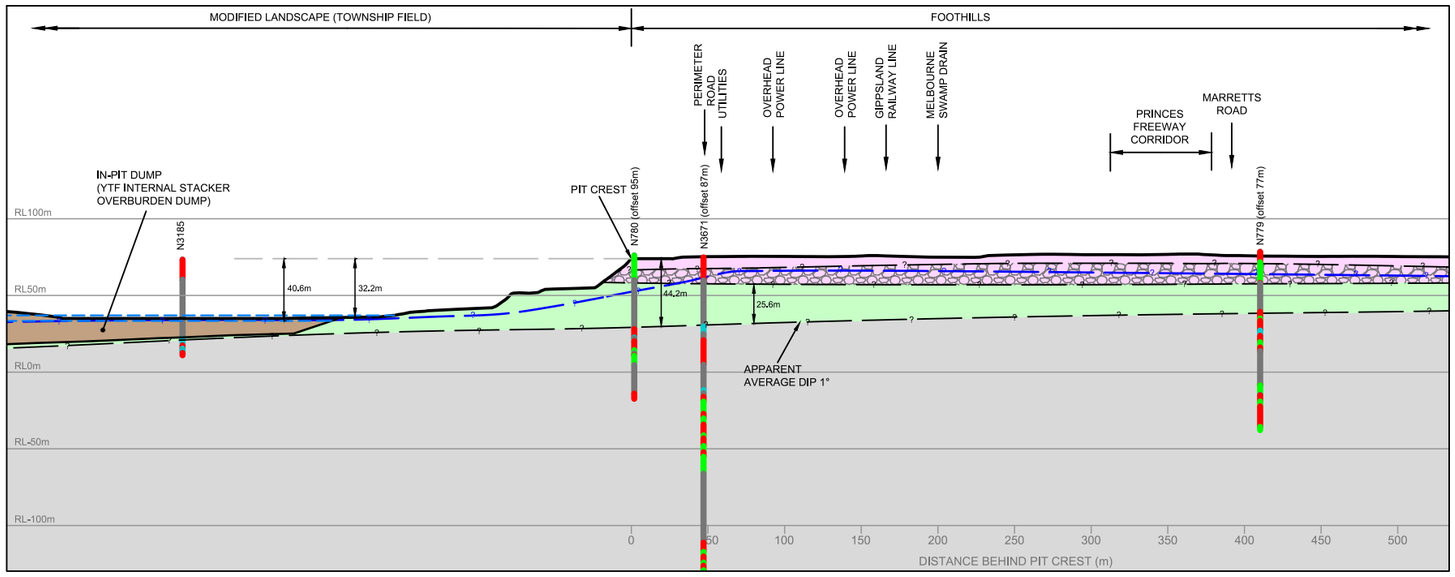


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - YTF-RCB

PSM4487-200R	Appendix D

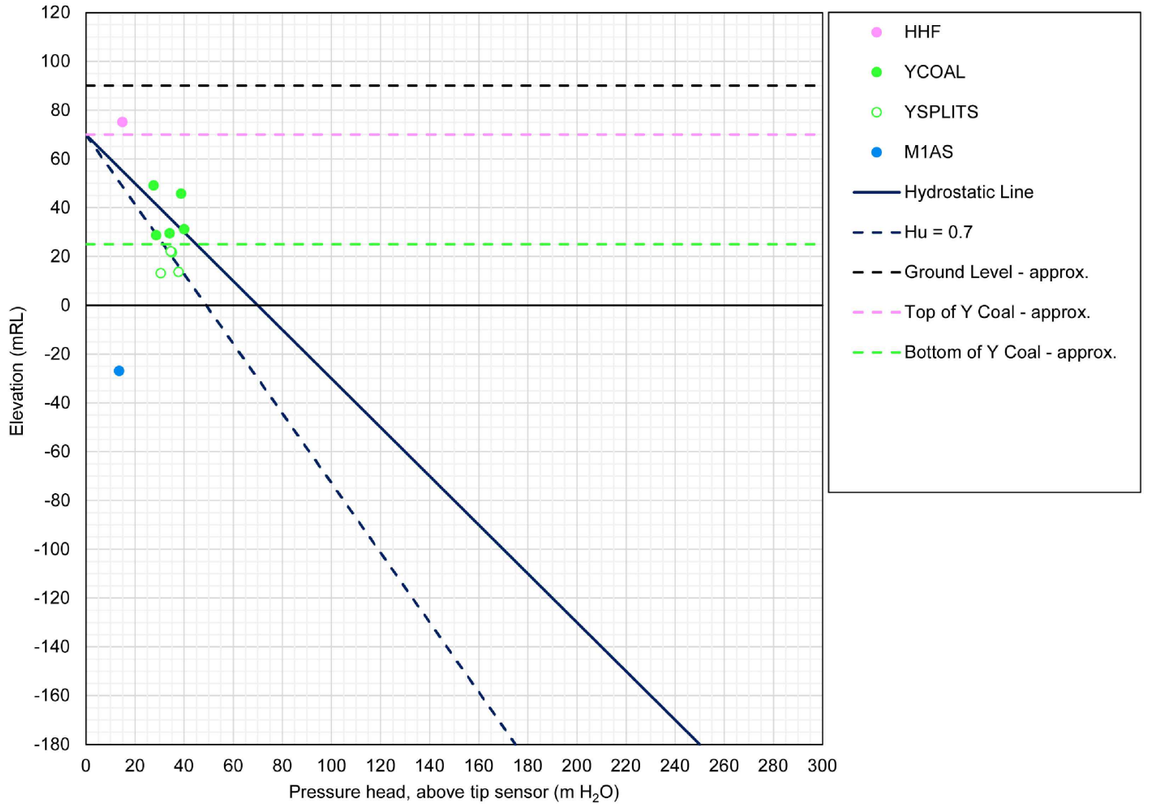


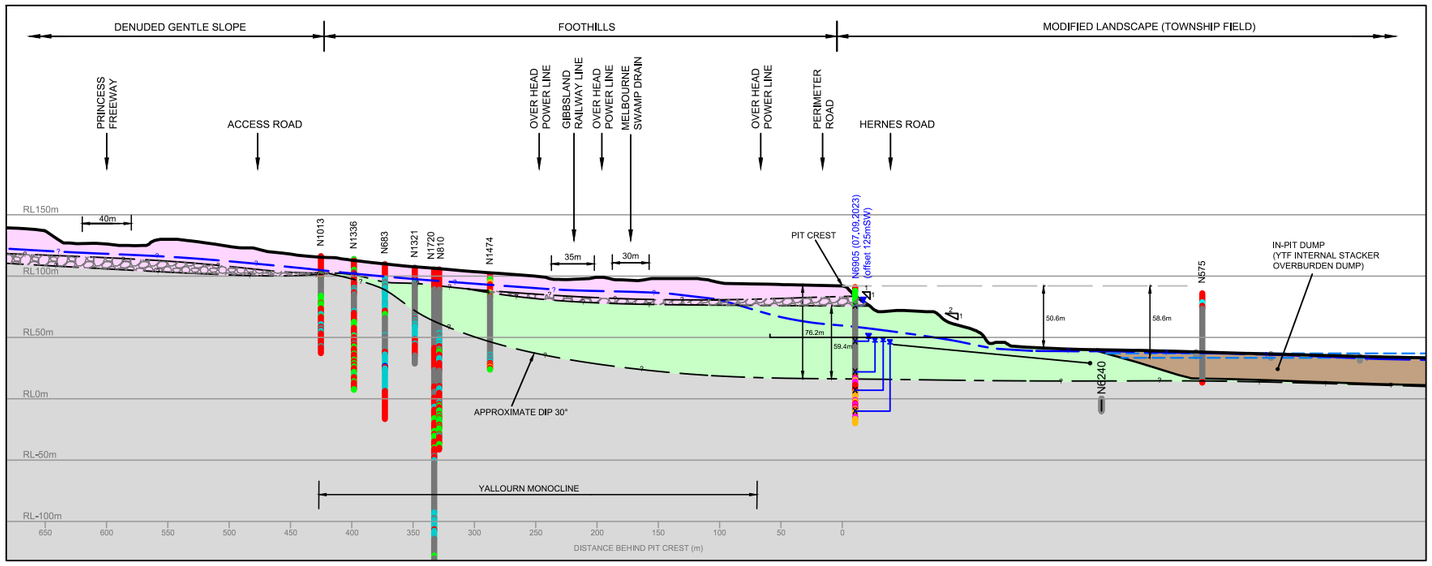


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - YTF-SB

PSM4487-200R	Appendix D

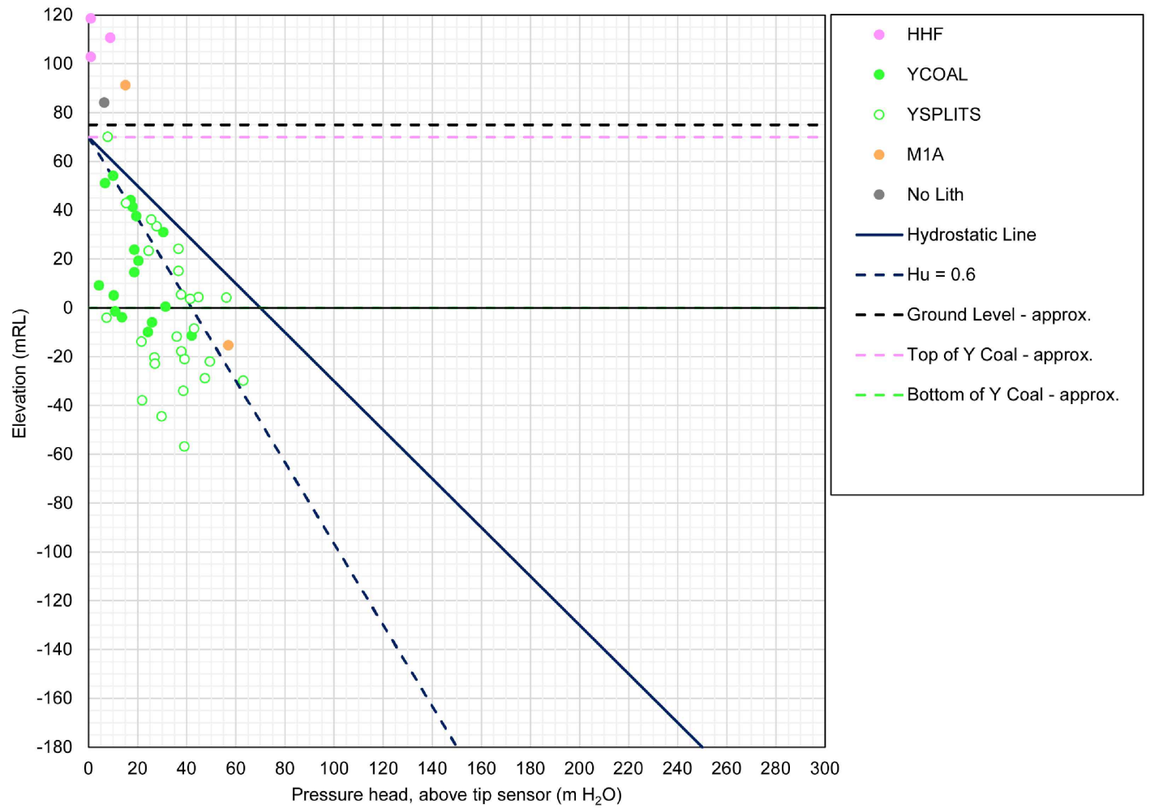


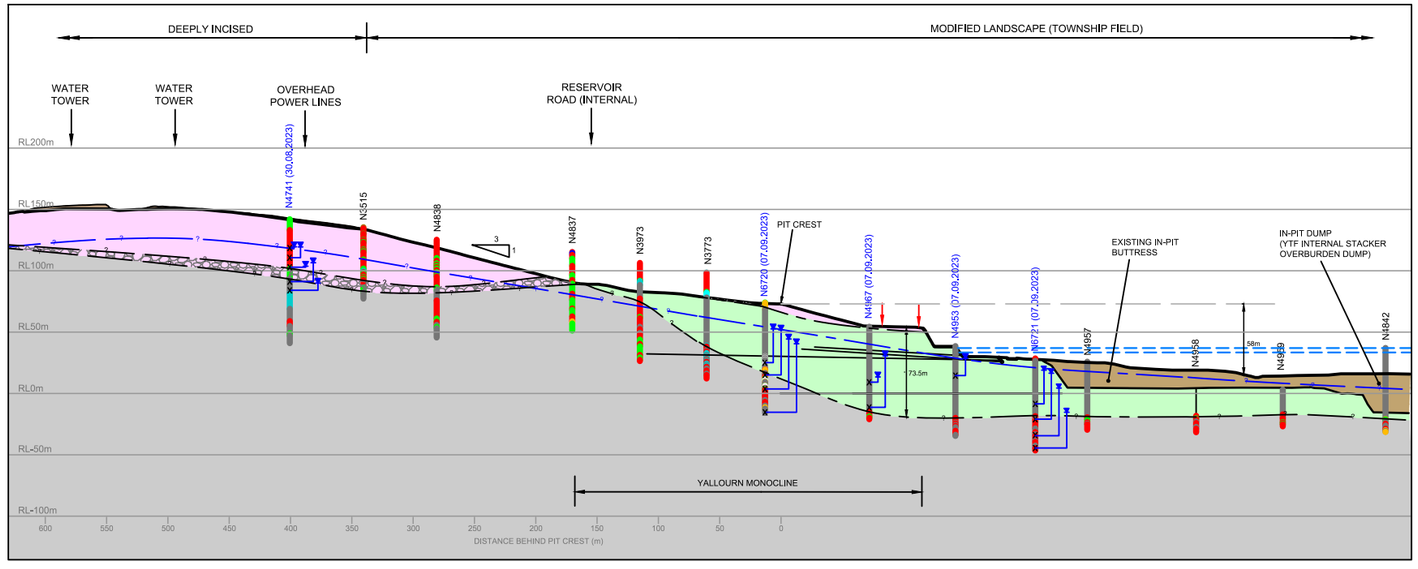


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - YTF-SWB

PSM4487-200R	Appendix D



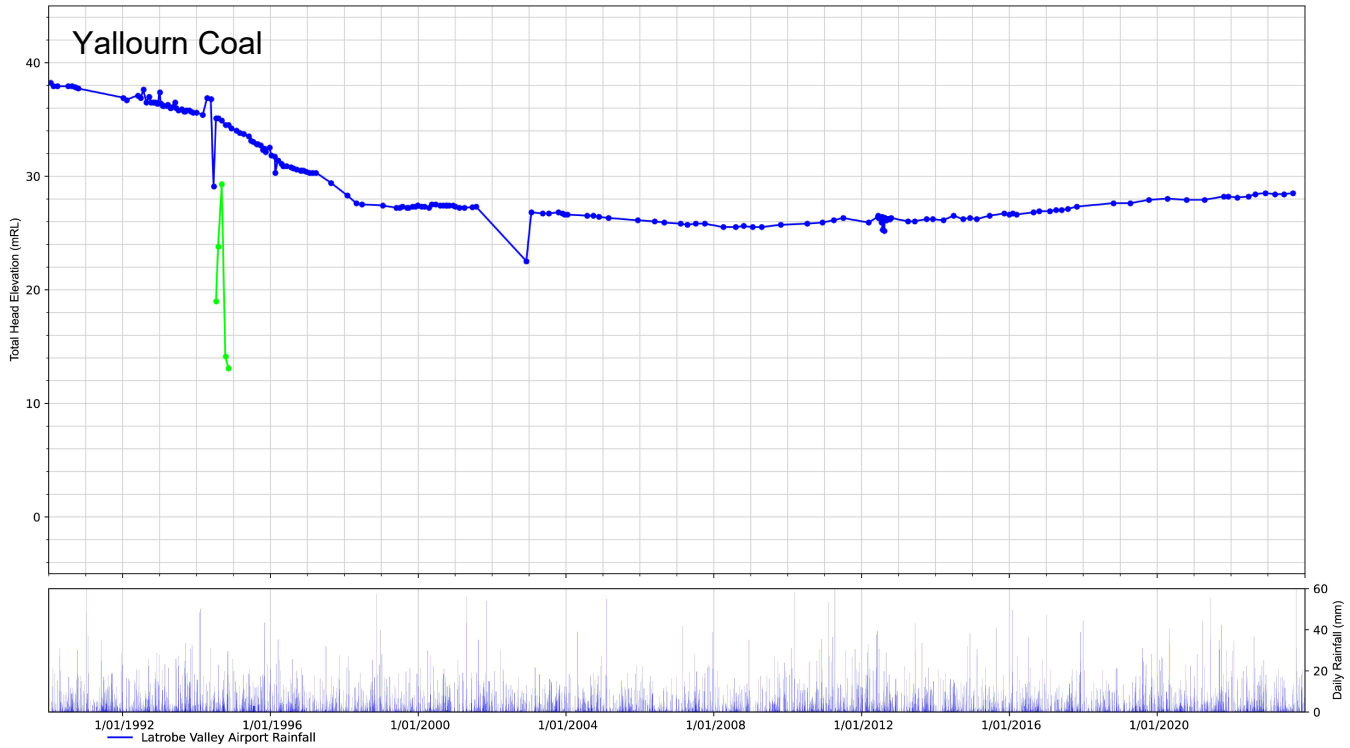


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ILLUSTRATION OF GROUNDWATER CONDITIONS - YTF-WB

PSM4487-200R | Appendix D

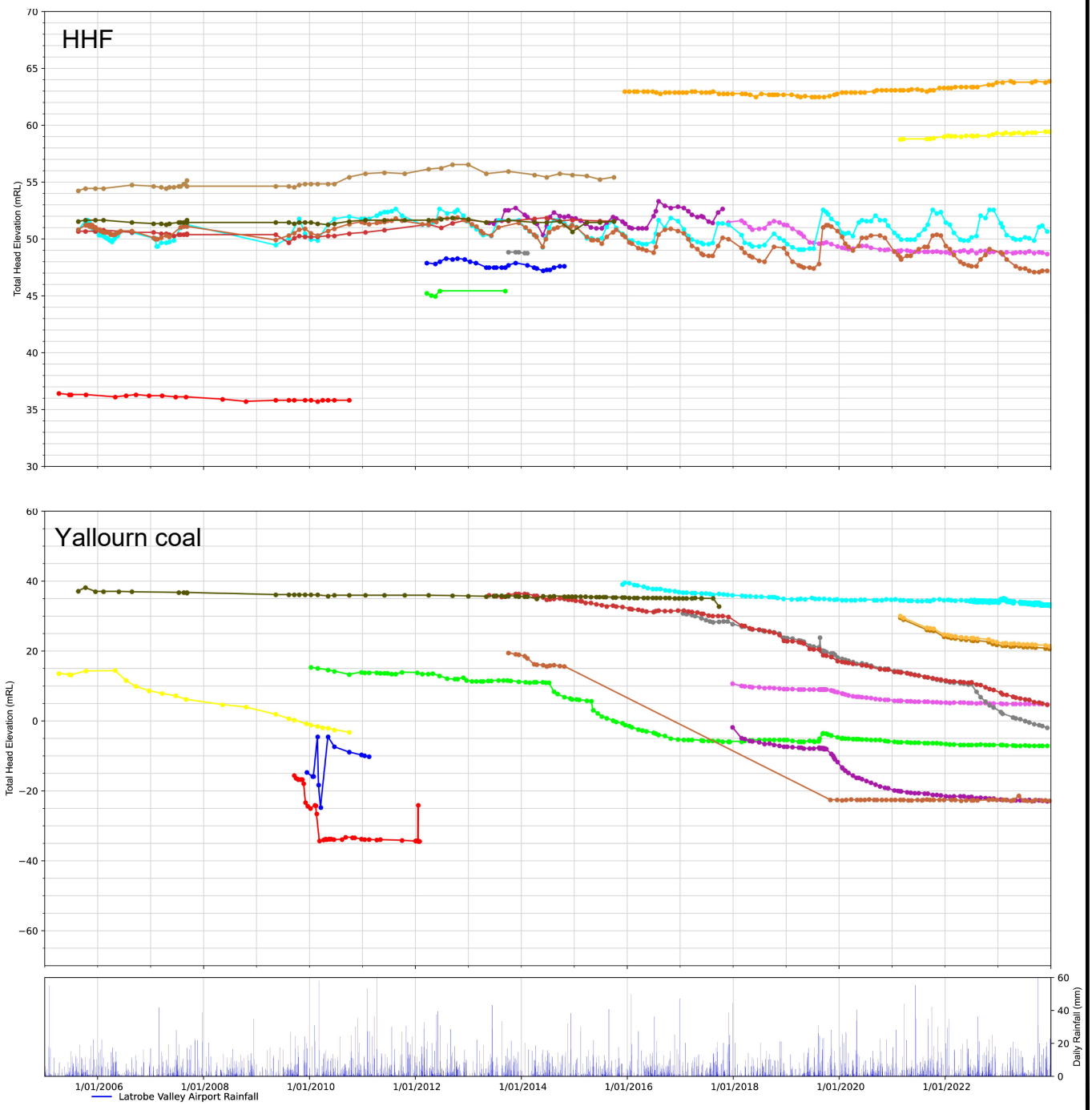
Appendix D.2
Groundwater hydrographs per domain



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS
YALLOURN SEAM - YTF-NB

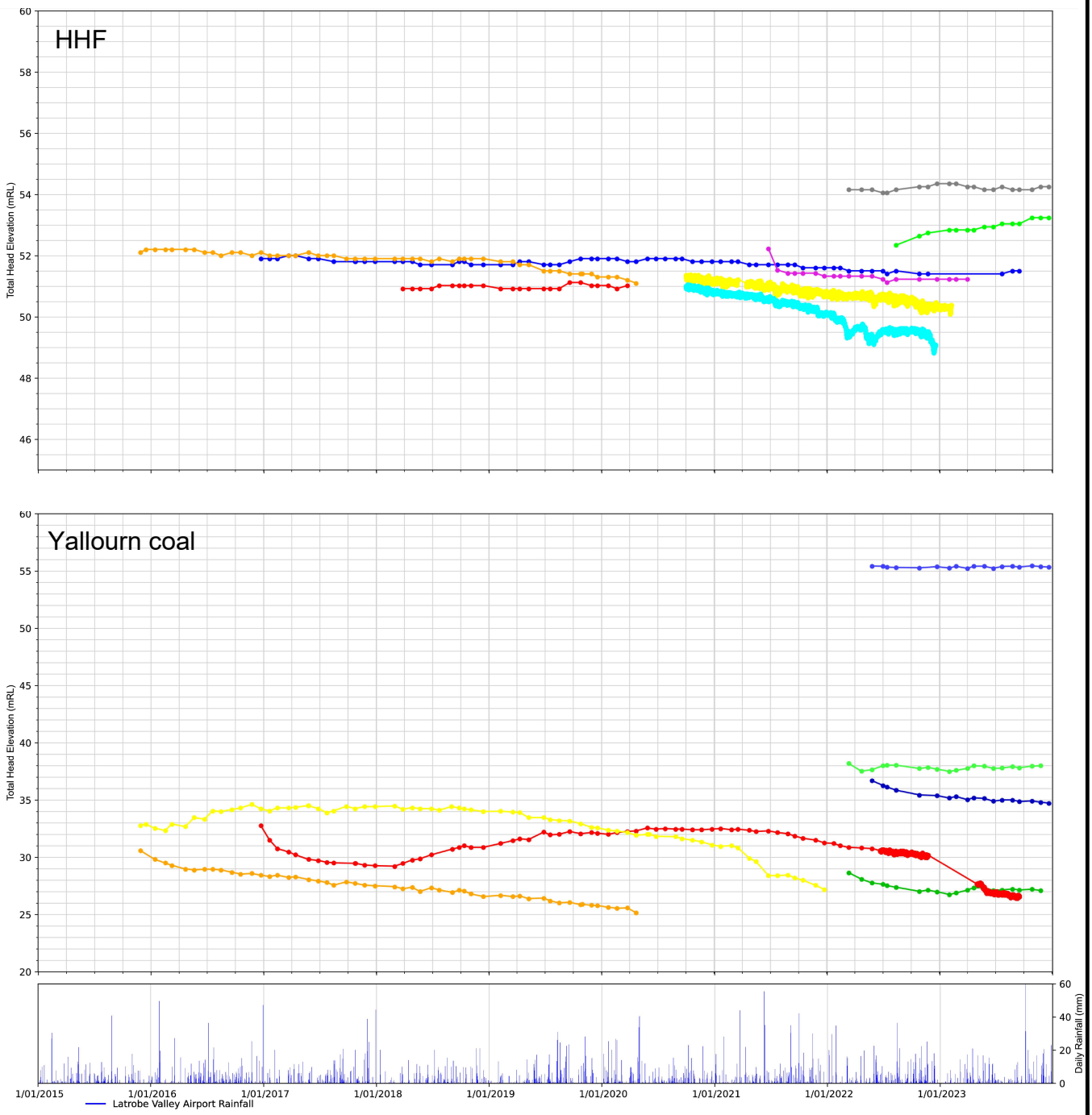
PSM4487-200R	Appendix D



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS
HHF & YALLOURN SEAM - MVF-EB

PSM4487-200R	Appendix D



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS
HHF & YALLOURN SEAM - MVF-SB

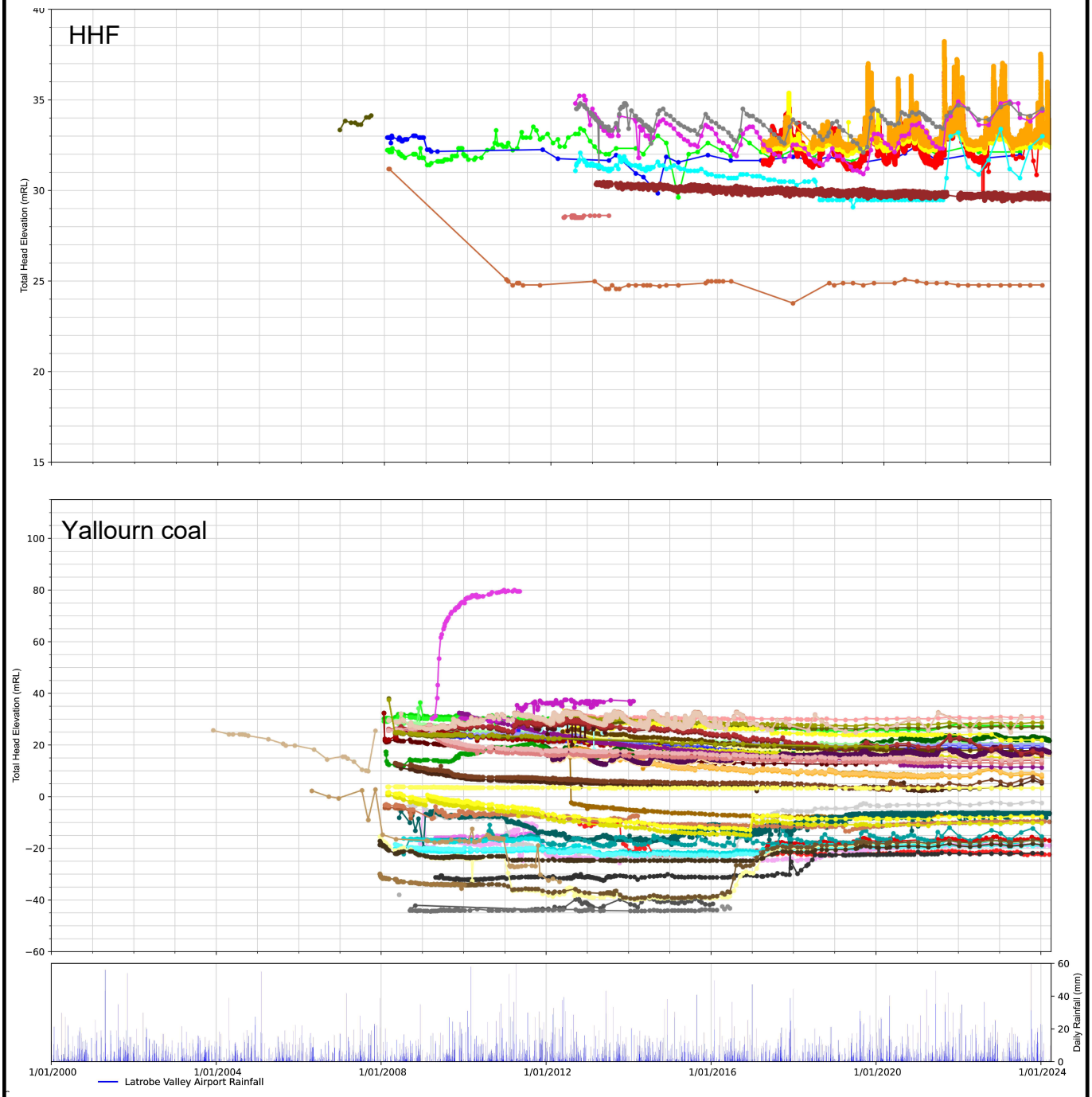
PSM4487-200R | Appendix D



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS
HHF & YALLOURN SEAM - MVF-WB

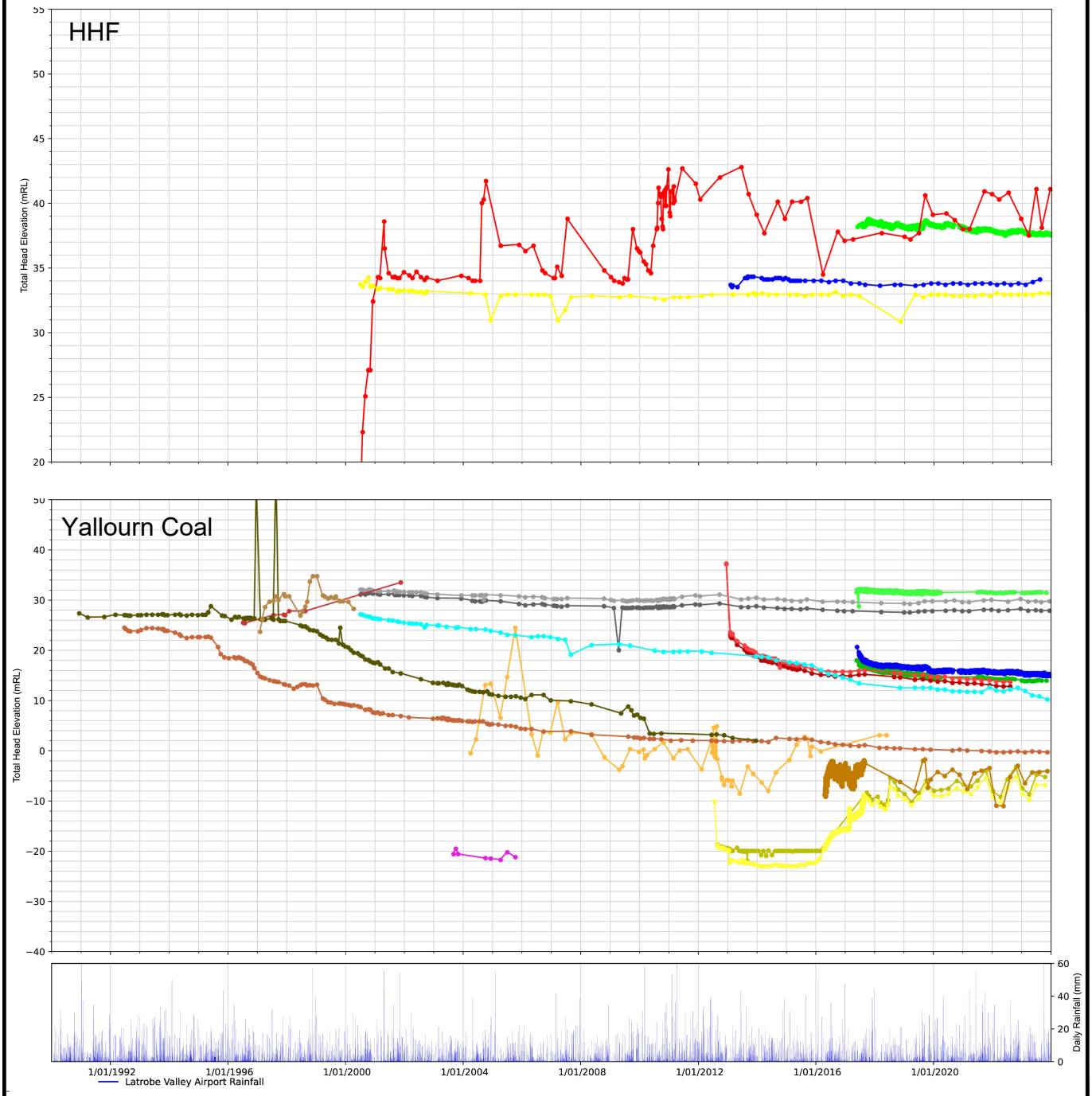
PSM4487-200R	Appendix D



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS
HHF & YALLOURN SEAM - YEF-LRB

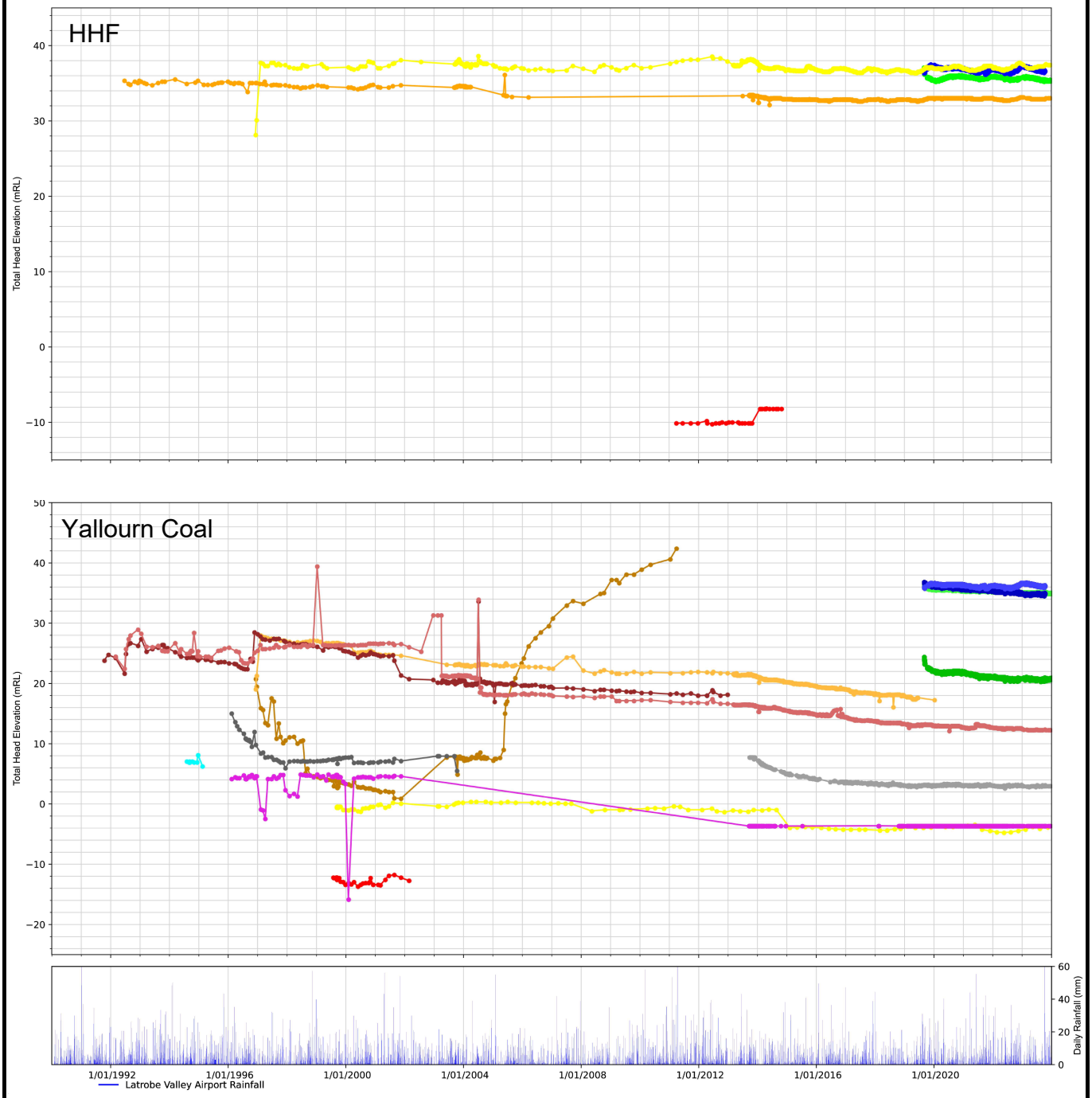
PSM4487-200R	Appendix D



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS
HHF & YALLOURN SEAM - YEF-NB (EAST)

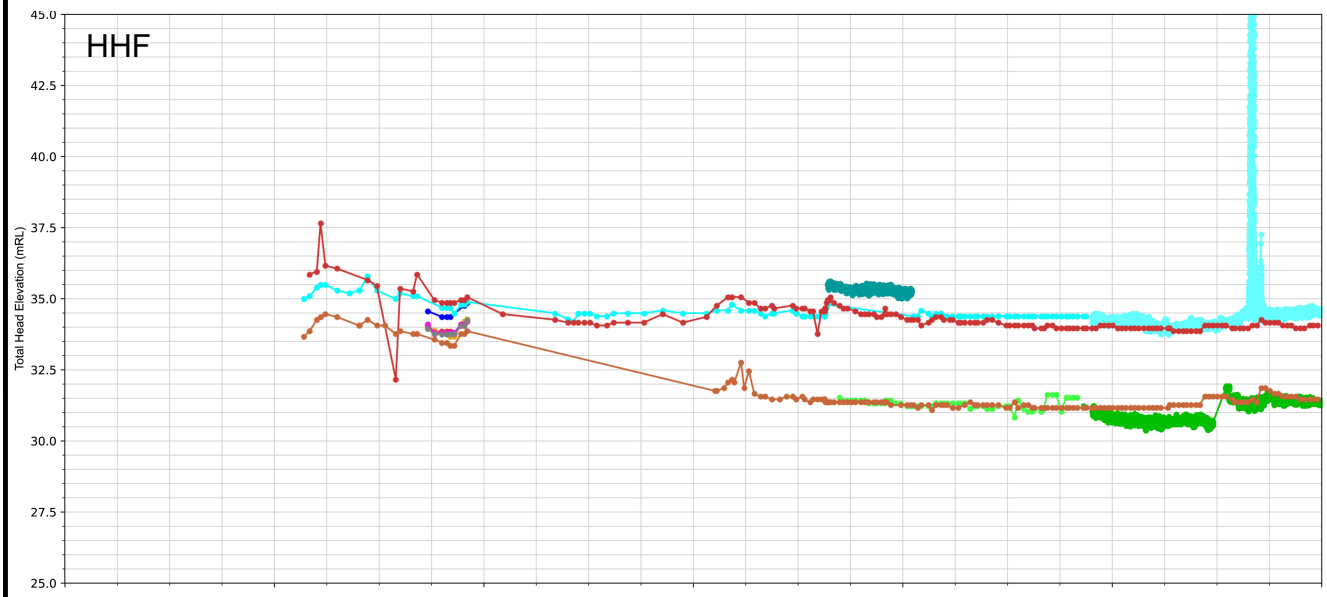
PSM4487-200R	Appendix D

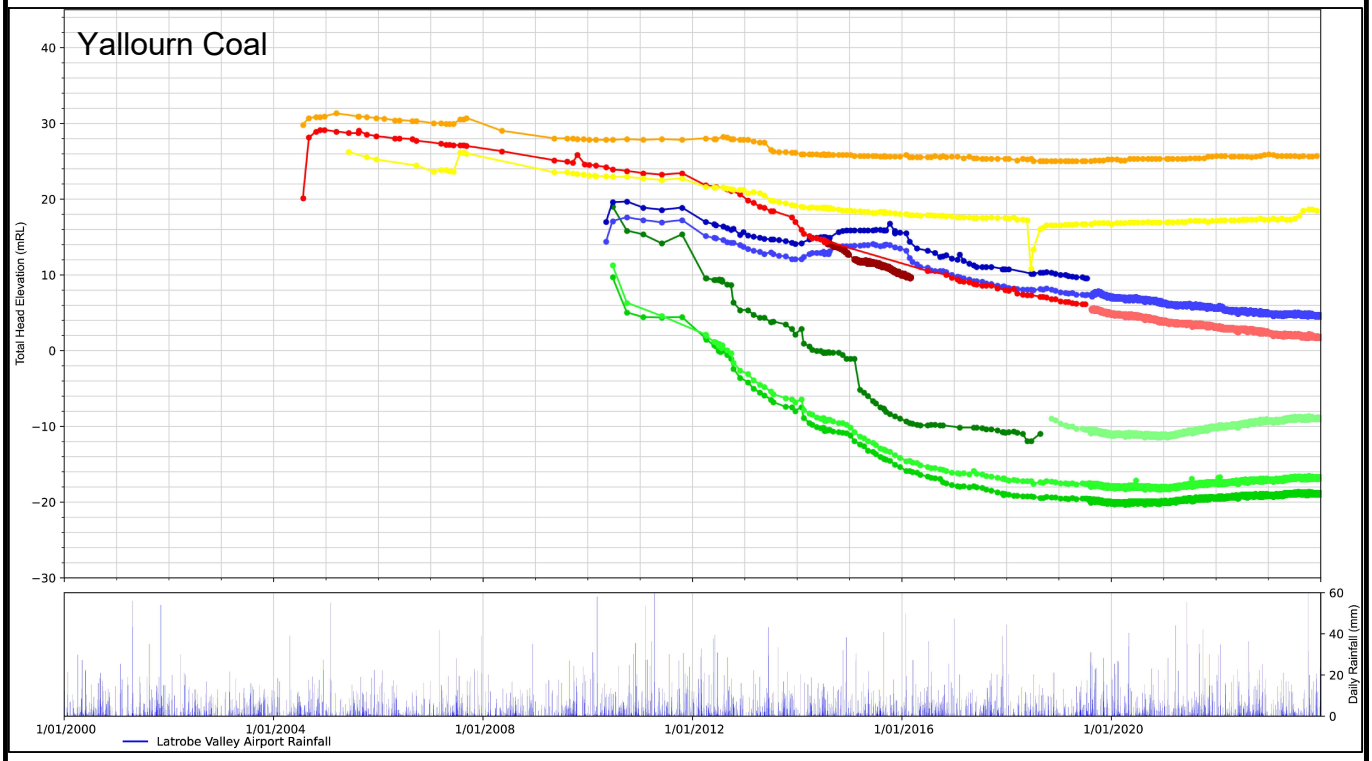


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS
HHF & YALLOURN SEAM - YEF-NB (WEST)

PSM4487-200R	Appendix D

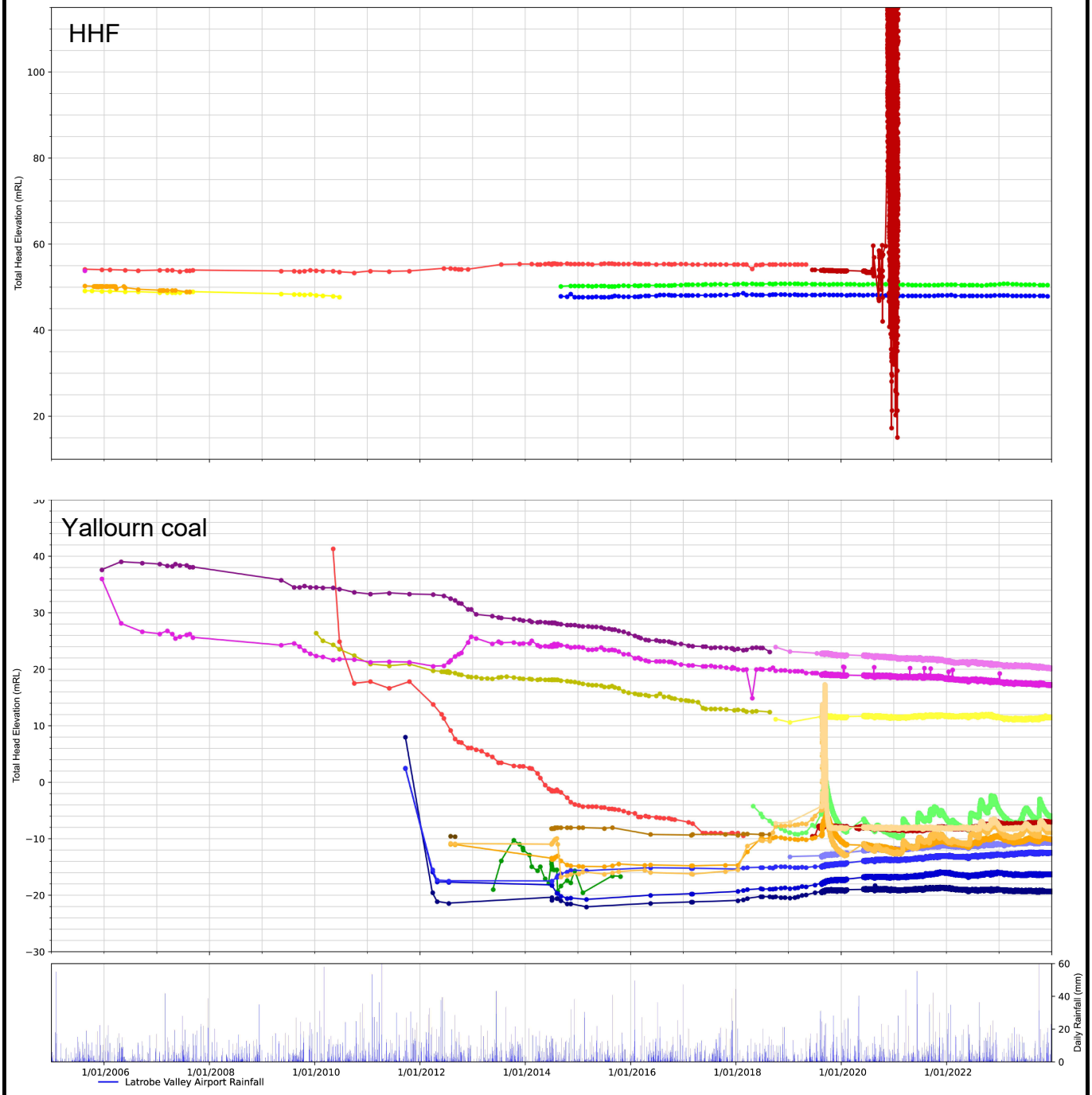




EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS HHF & YALLOURN SEAM - YEFX-LREB (NORTH)

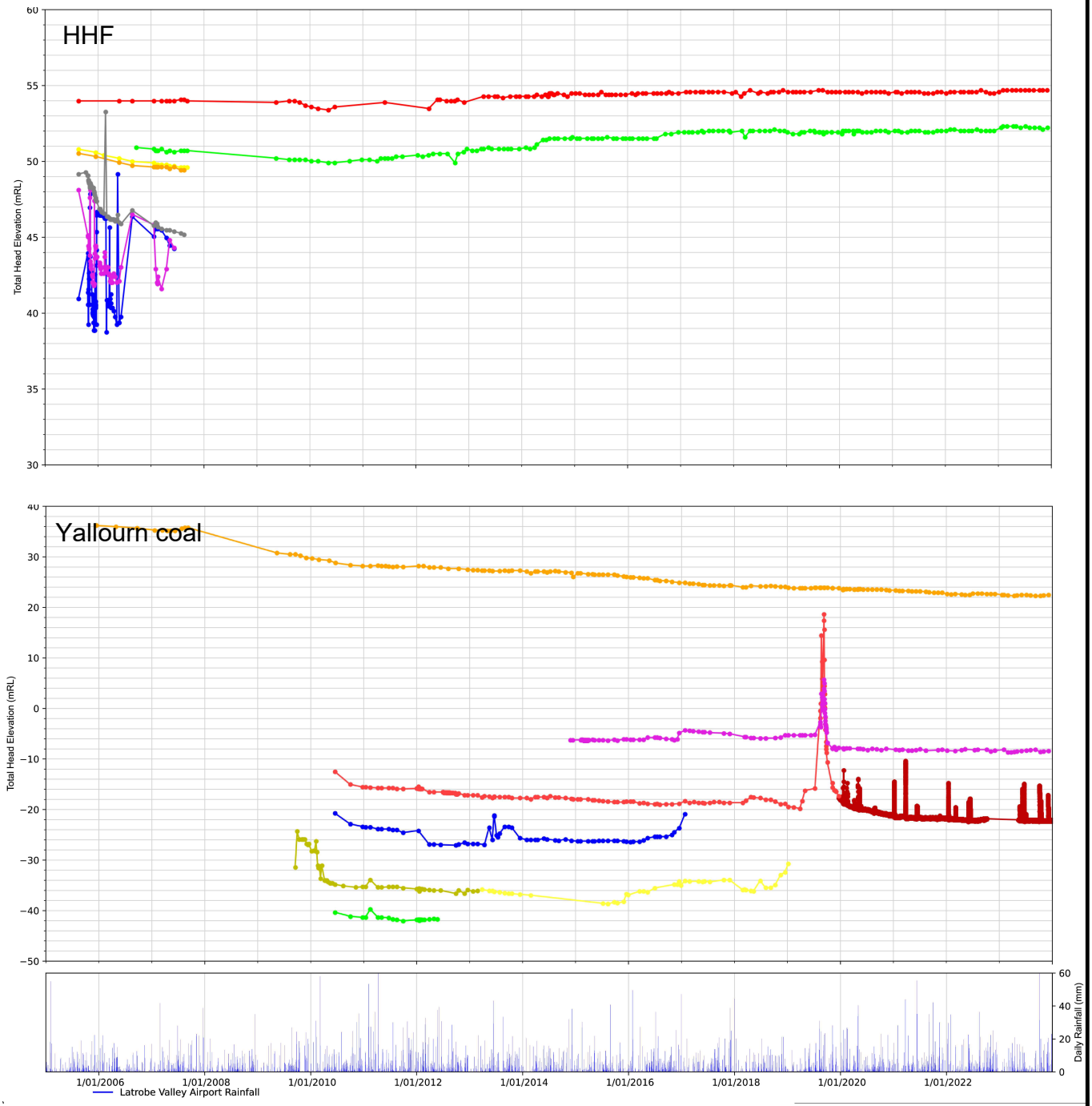
PSM4487-200R	Appendix D



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS HHF & YALLOURN SEAM - YEFX-LREB (SOUTH)

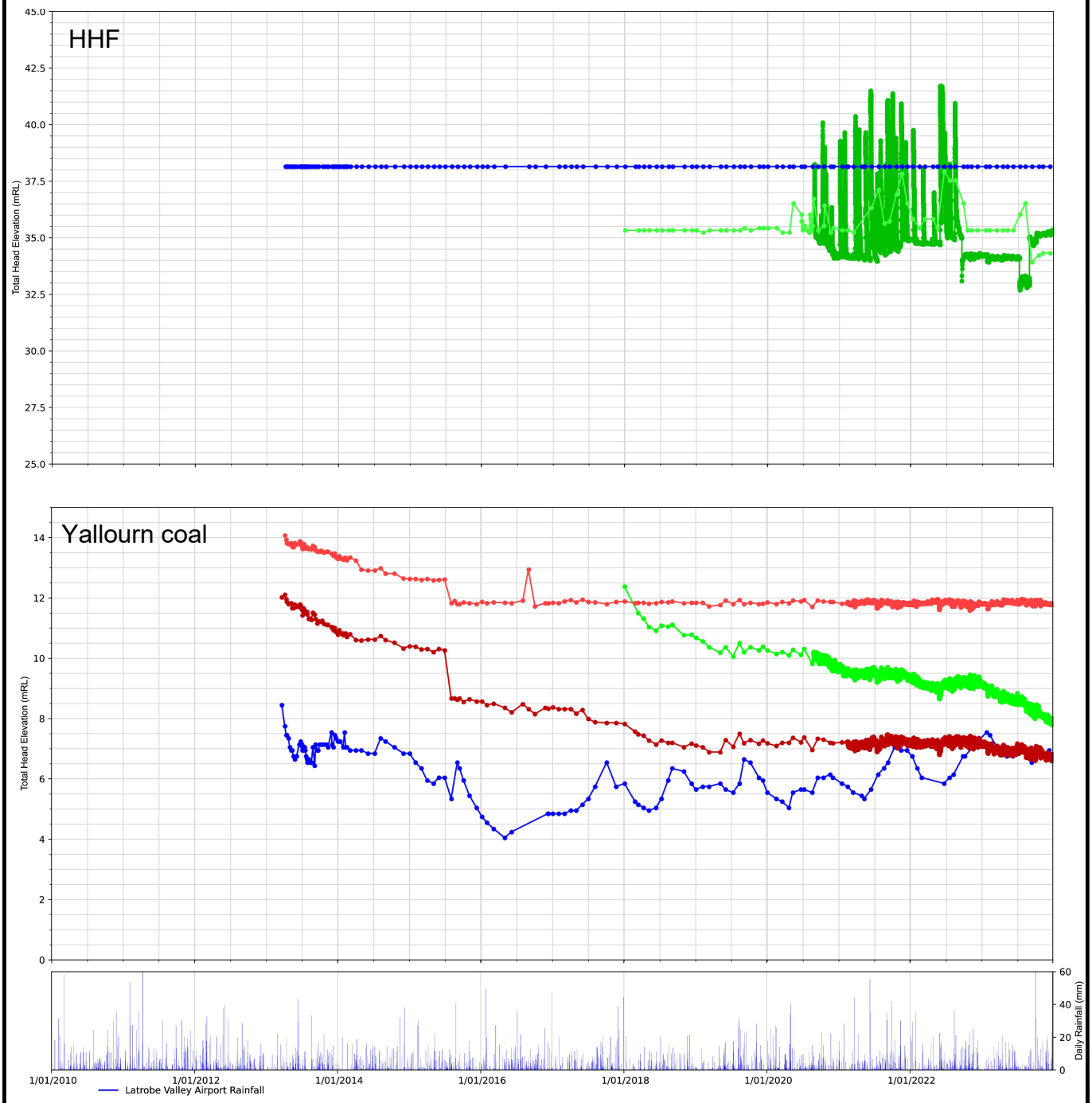
PSM4487-200R	Appendix D



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS
HHF & YALLOURN SEAM - YEFX-SB

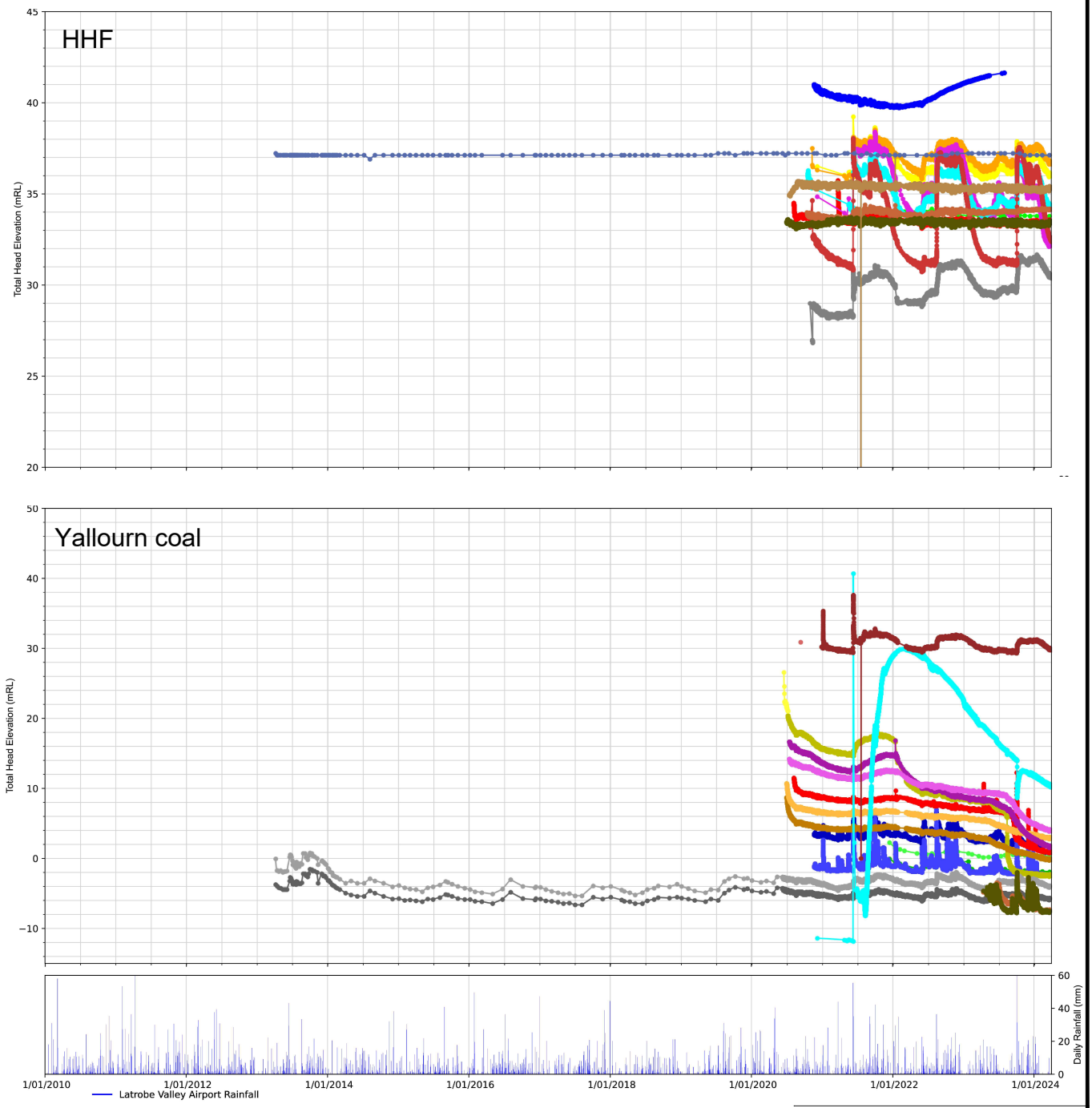
PSM4487-200R | Appendix D



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS
HHF & YALLOURN SEAM - YTF-FPB

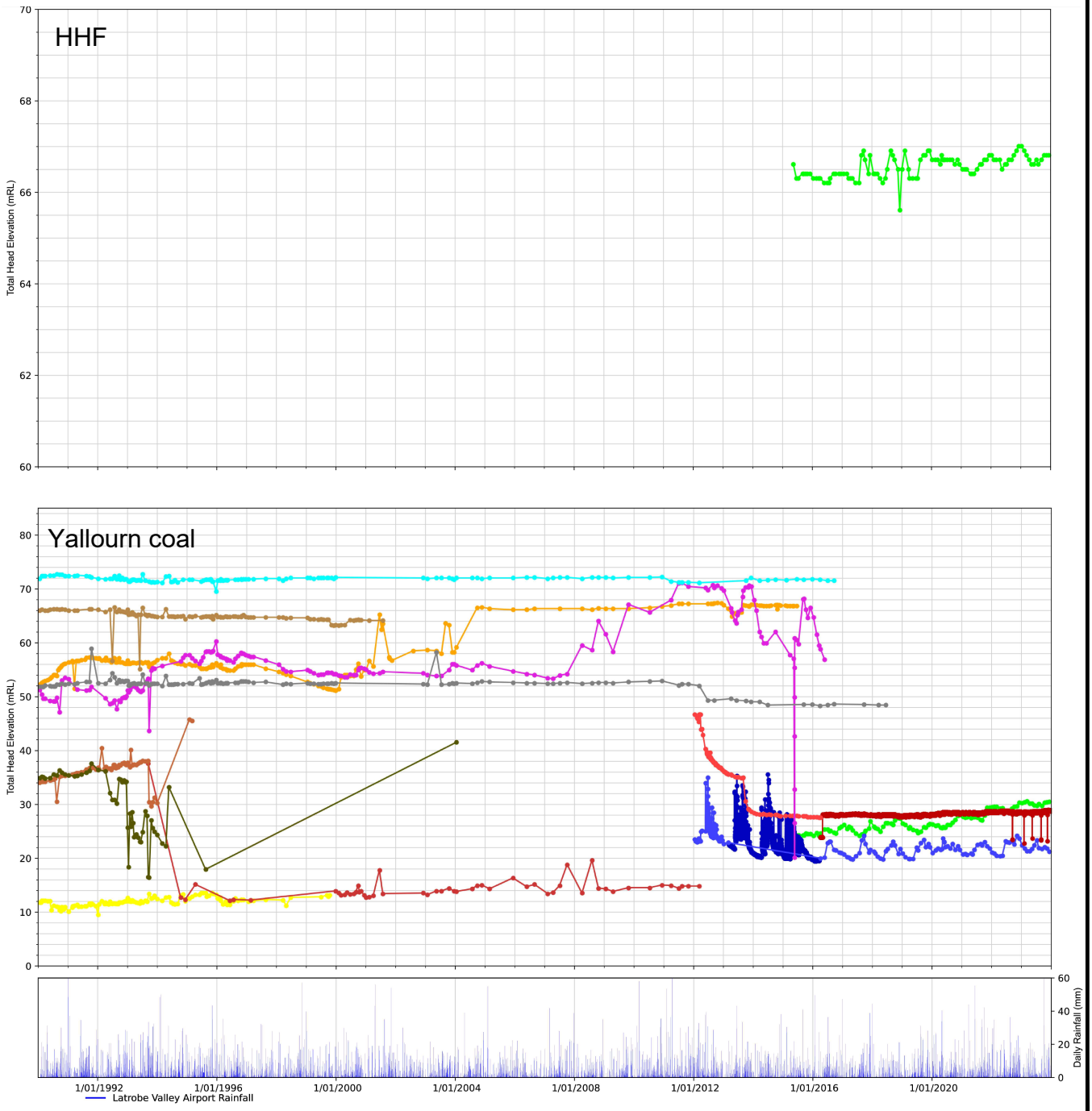
PSM4487-200R | Appendix D



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS
HHF & YALLOURN SEAM - YTF-FSPB

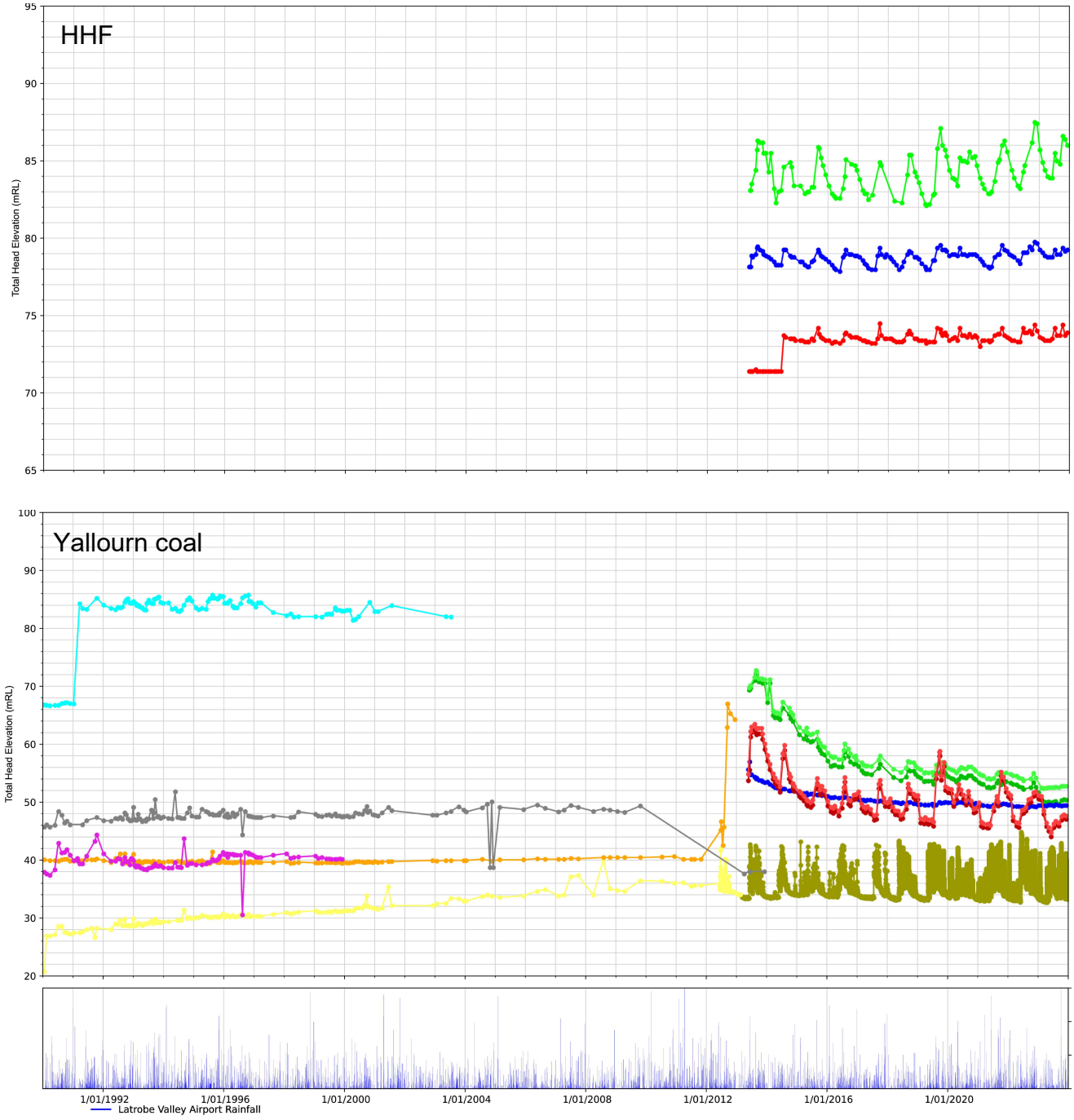
PSM4487-200R | Appendix D



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS
HHF & YALLOURN SEAM - YTF-HOB (NORTH)

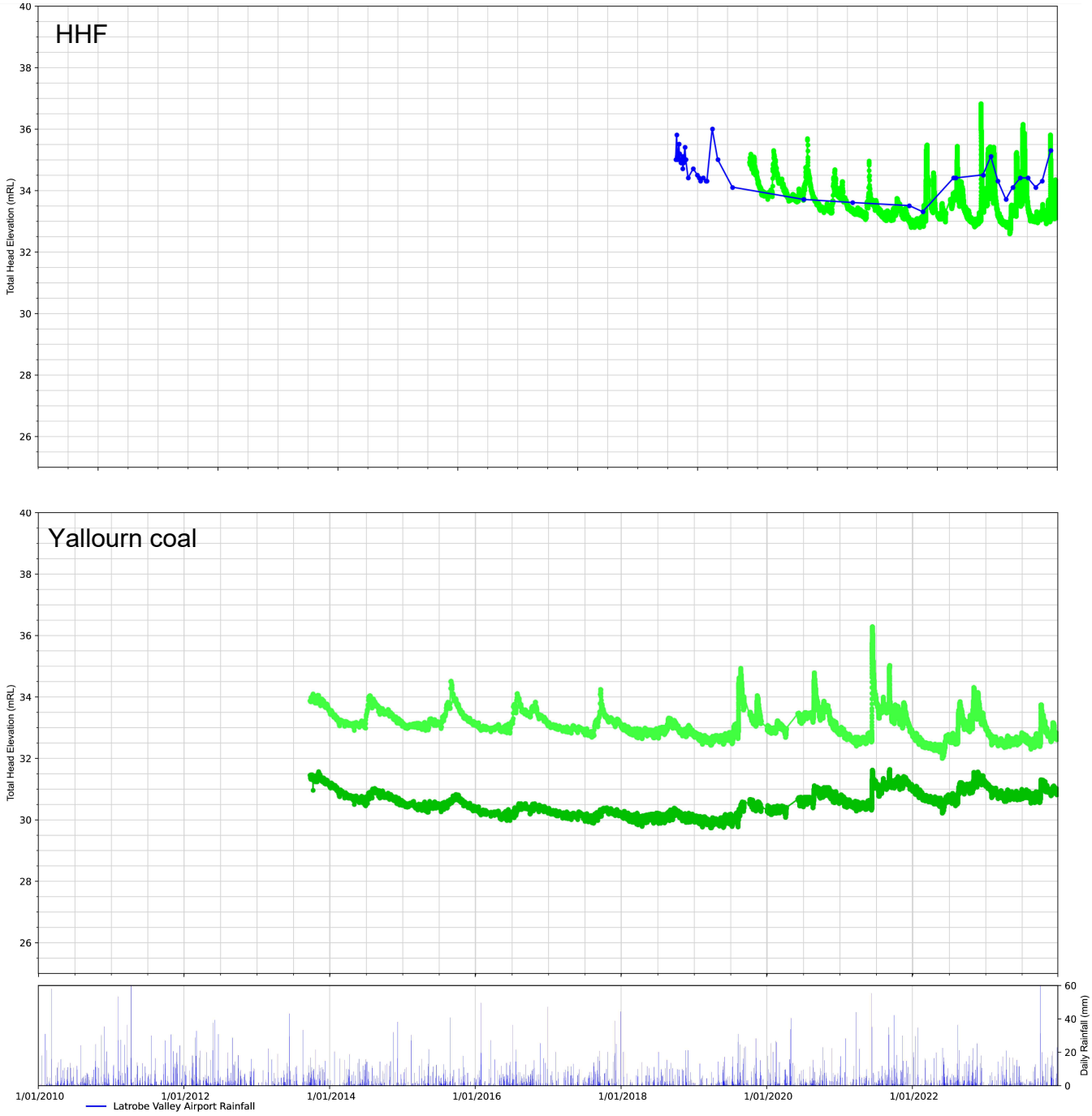
PSM4487-200R	Appendix D



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS
HHF & YALLOURN SEAM - YTF-HOB (SOUTH)

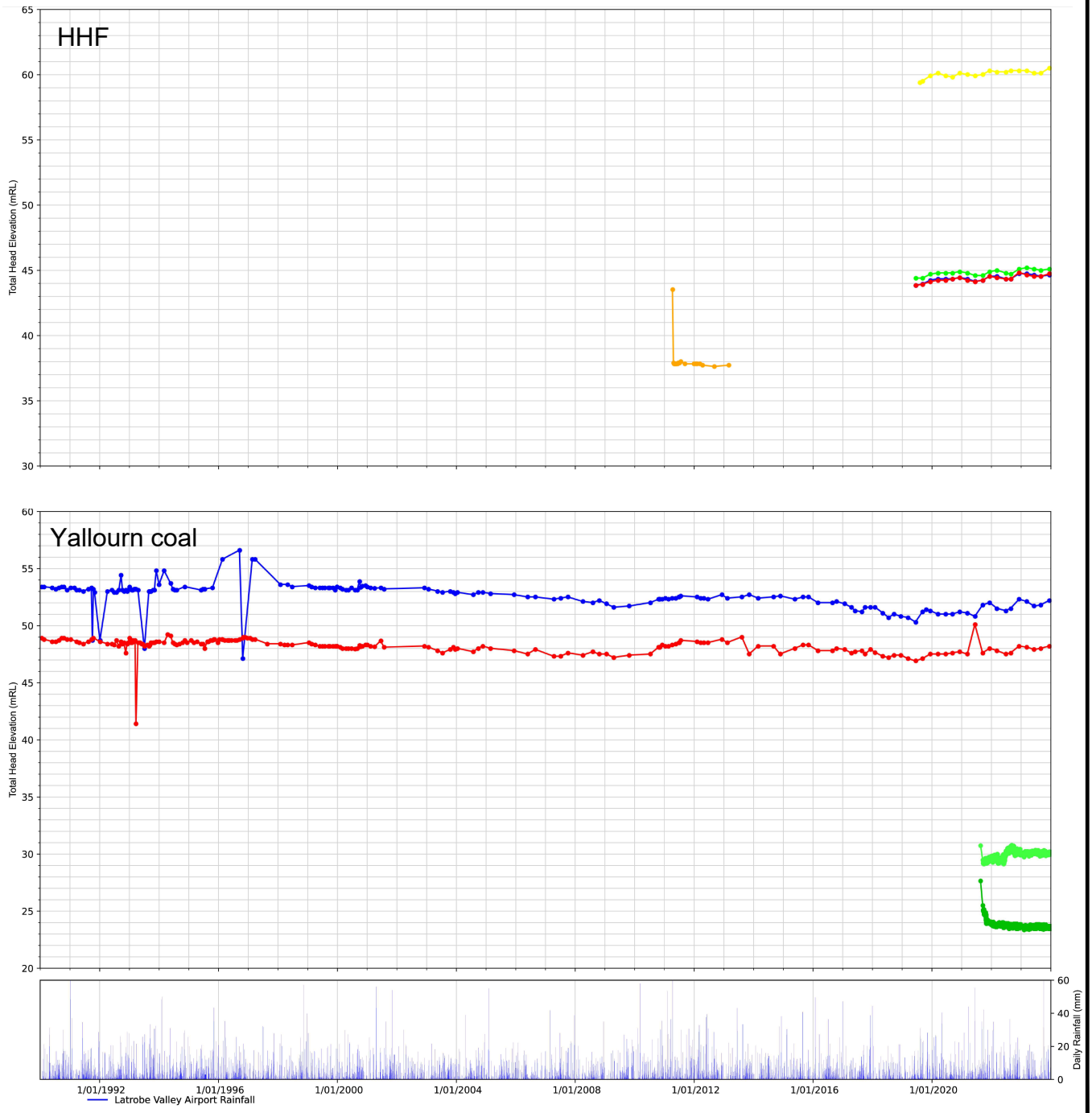
PSM4487-200R	Appendix D



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS
HHF & YALLOURN SEAM - YTF-LS

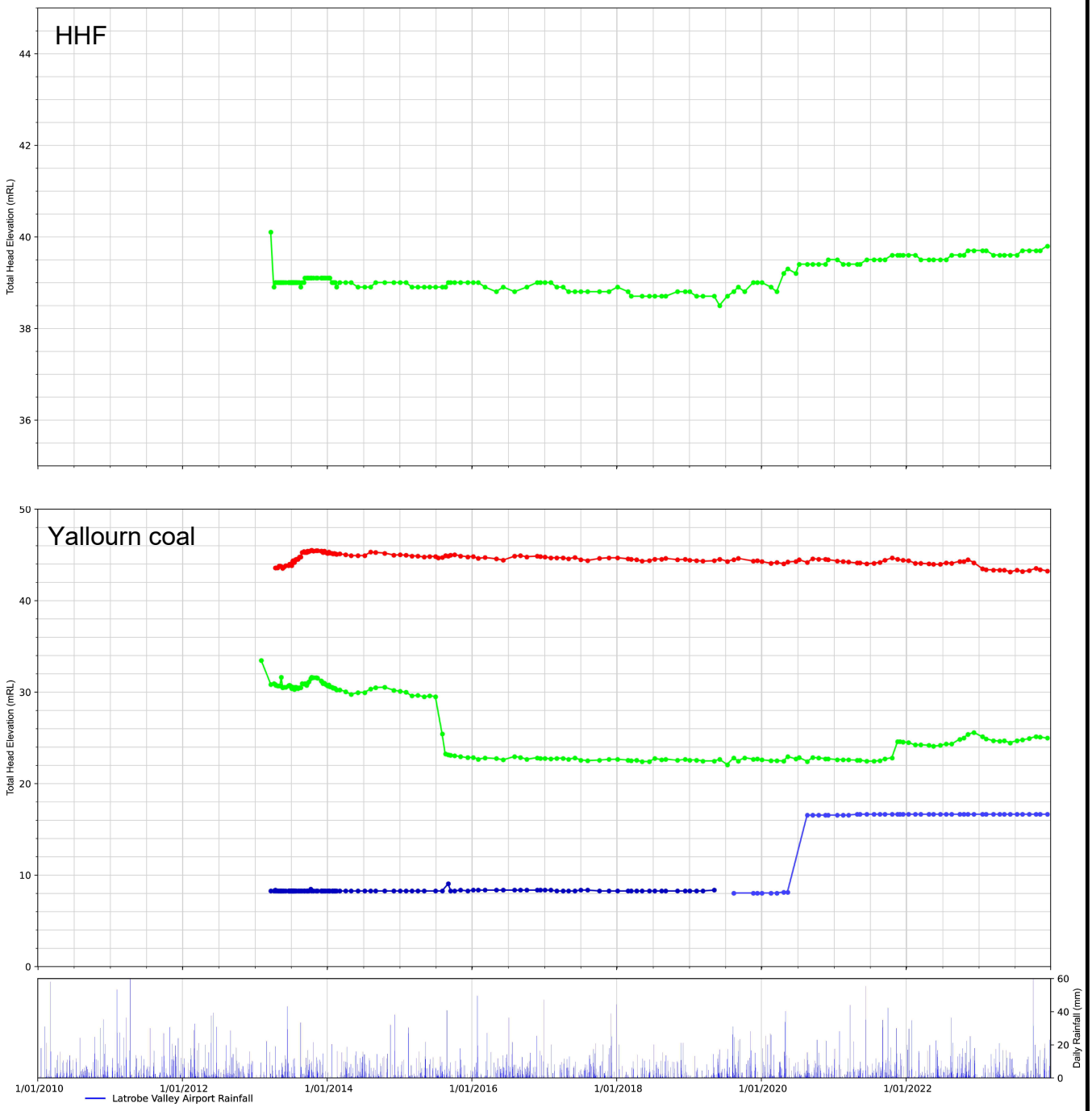
PSM4487-200R | Appendix D



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS
HHF & YALLOURN SEAM - YTF-RCB

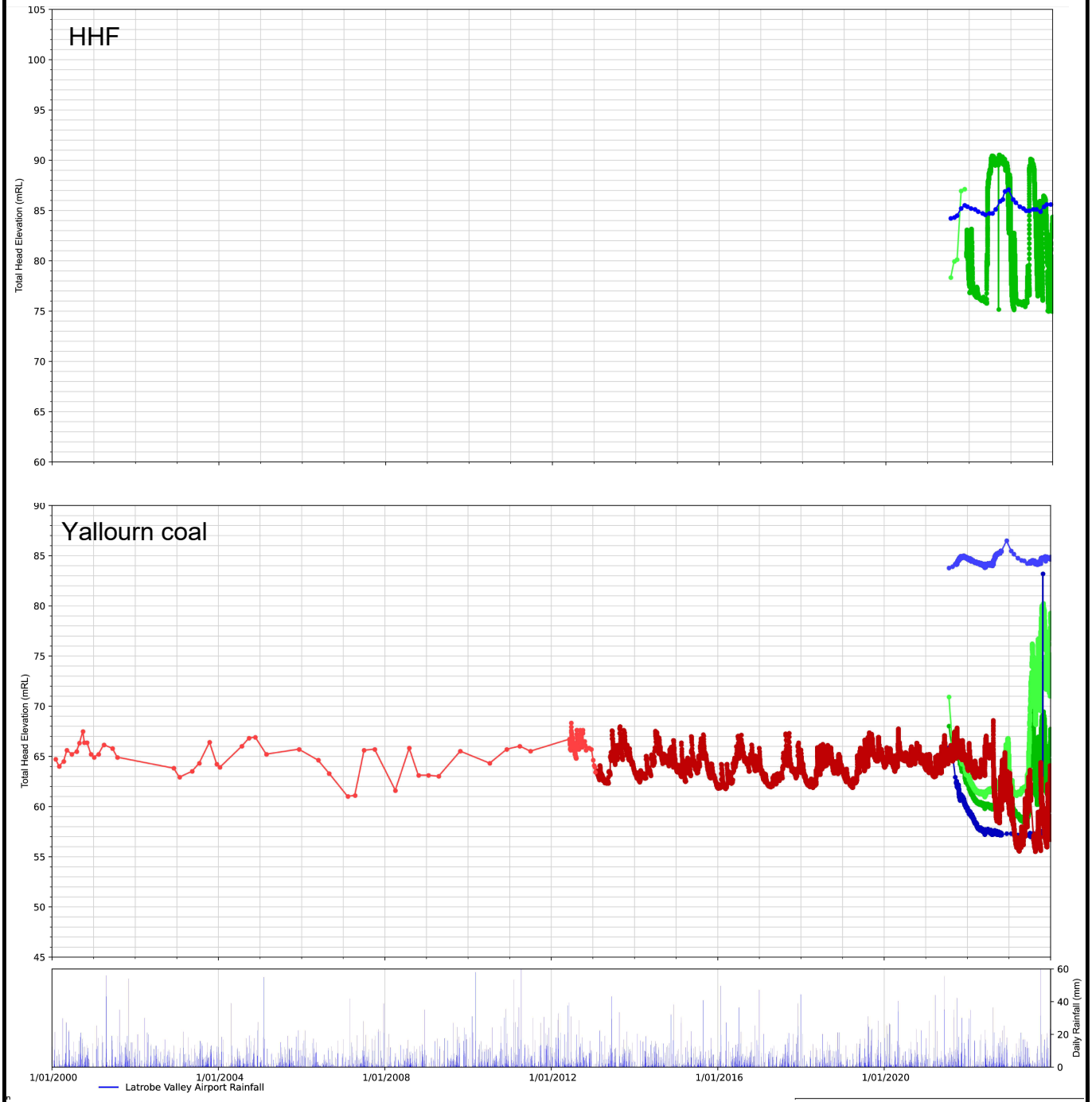
PSM4487-200R | Appendix D



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS
HHF & YALLOURN SEAM - YTF-SB

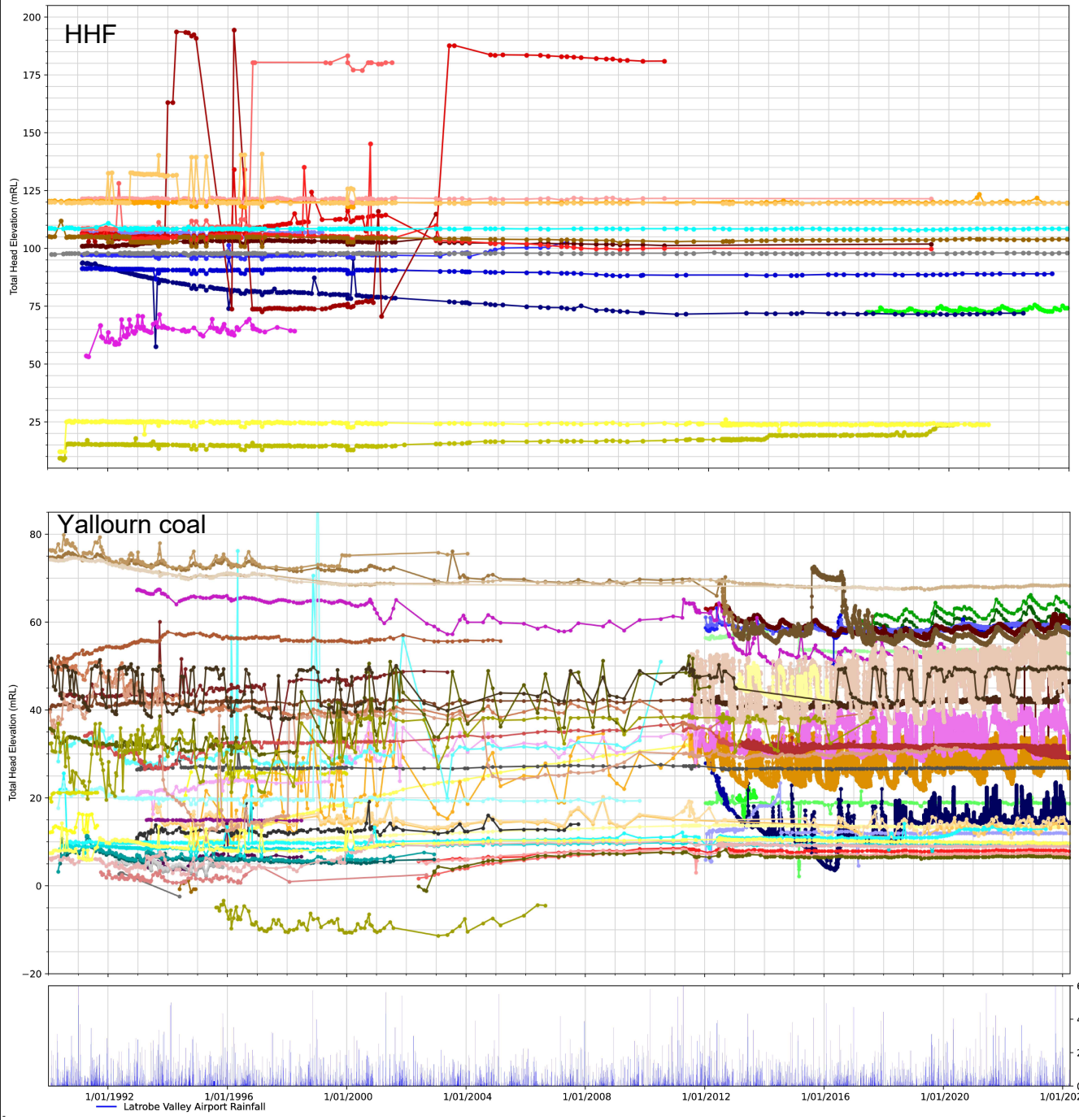
PSM4487-200R	Appendix D



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS
HHF & YALLOURN SEAM - YTF-SWB

PSM4487-200R	Appendix D



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

GROUNDWATER HYDROGRAPHS
HHF & YALLOURN SEAM - YTF-WB

PSM4487-200R	Appendix D

Appendix E
Interseam Shear Strength Data

E1. Location of direct shear tests with available documentation

E2. Particle size distribution interseam end members (population types 1 and 4)

E3. Particle size distribution interseam intermediate members (population types 2 and 3)

E4. Atterberg limits by interseam type and distance below base of coal

E5. Valid direct shear test sample locations

E6. Validated direct shear tests – peak shear strengths

E7. Validated direct shear tests – residual shear strengths

E8. Validated direct shear tests – friction angle histograms

394000E
396000E
398000E
400000E
402000E
268000N
266000N
264000N
N6459
N7348
N7327
N5742
N5744
N5745
N7422
N6136
N6465
N6468
N6467
N6378
M4155
N6380
N7346
N7198
N7246
N7248
N7247
N6735
M4113
M4114
M4115
N7328
N7329

LEGEND

EOM Topography
2m Contours

Domains

Borehole with Direct Shear sample with available testing documentation

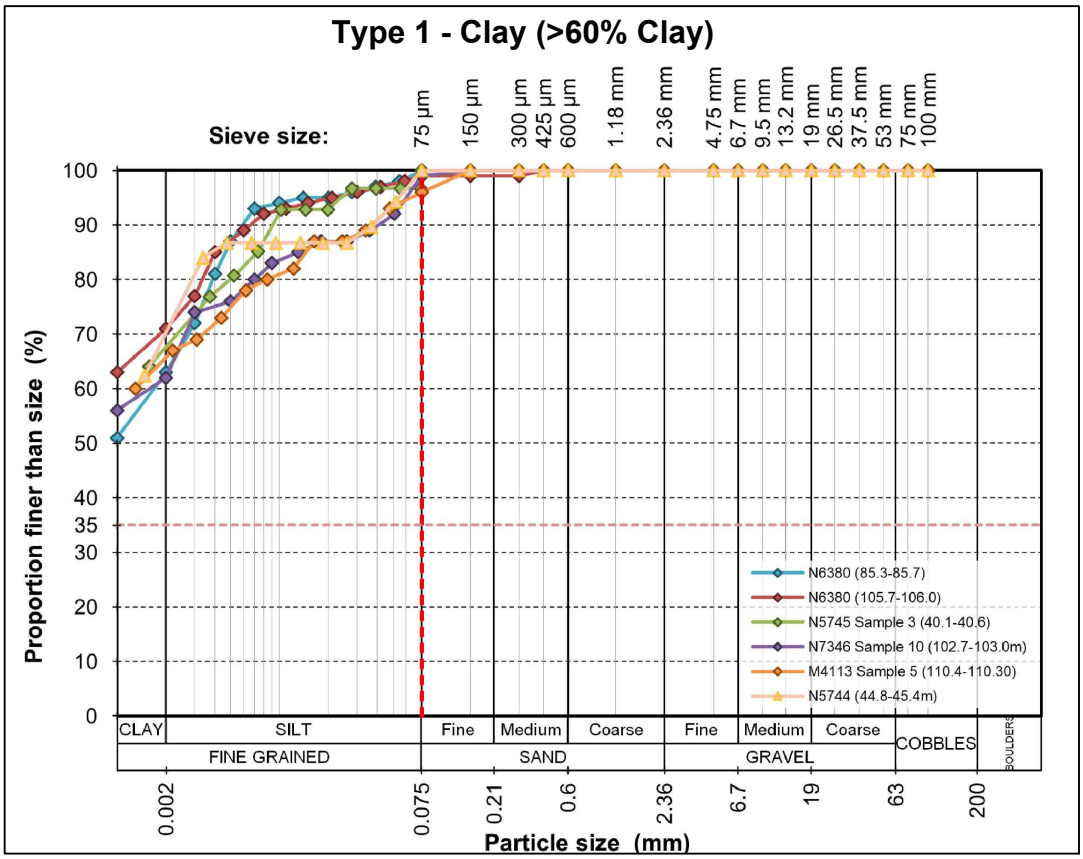
0 500 1000
Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

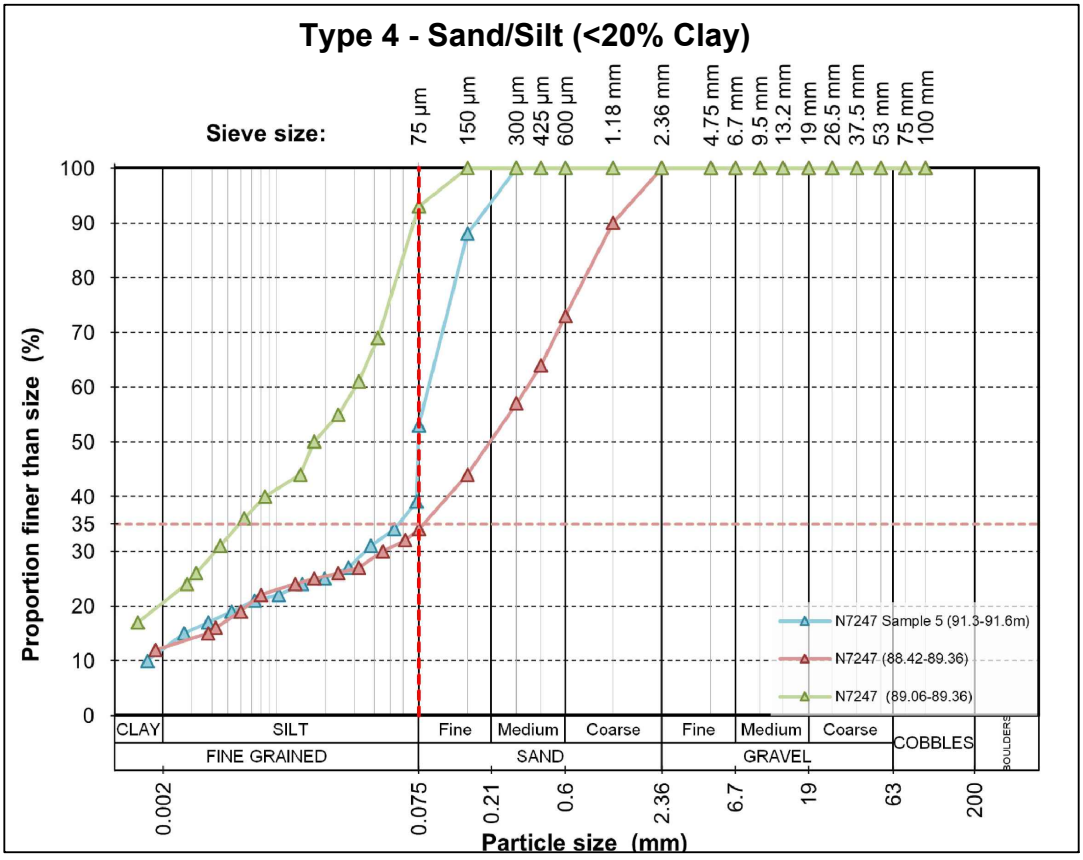
DATABASE OF DIRECT SHEAR TESTS WITH AVAILABLE DOCUMENTATION

PSM4487-200R	Appendix E

Type 1 - Clay (>60% Clay)



Type 4 - Sand/Silt (<20% Clay)

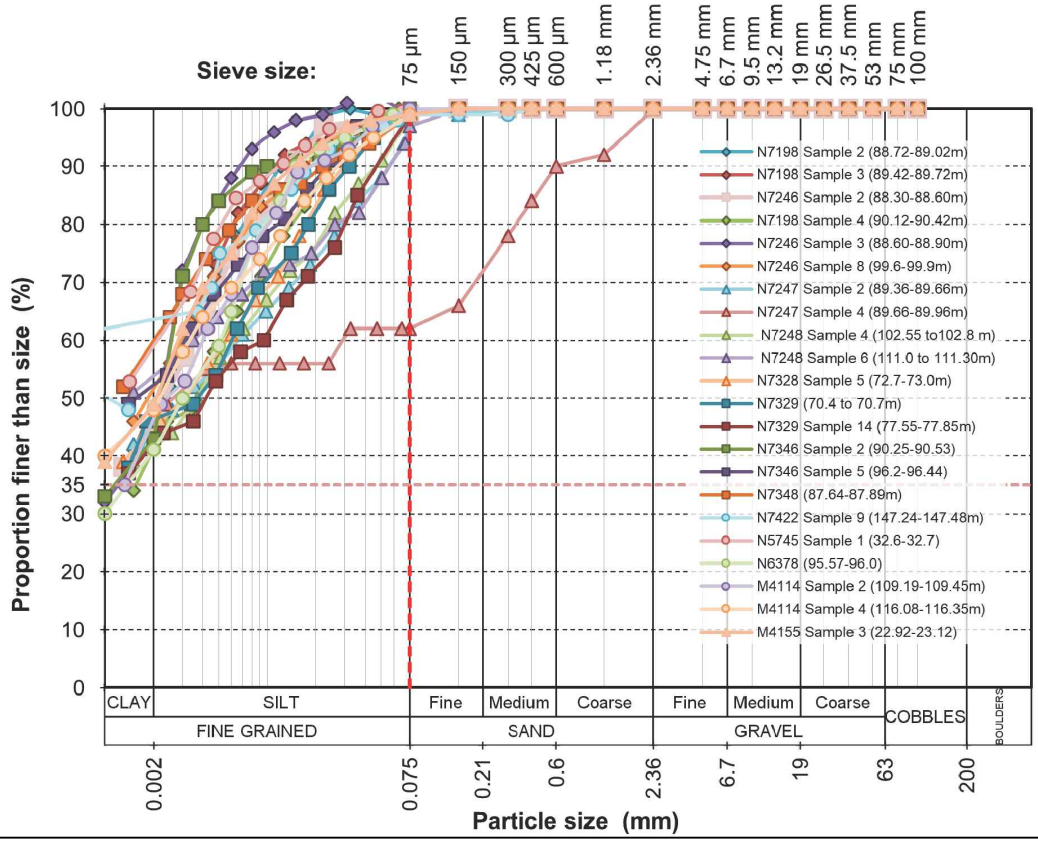


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

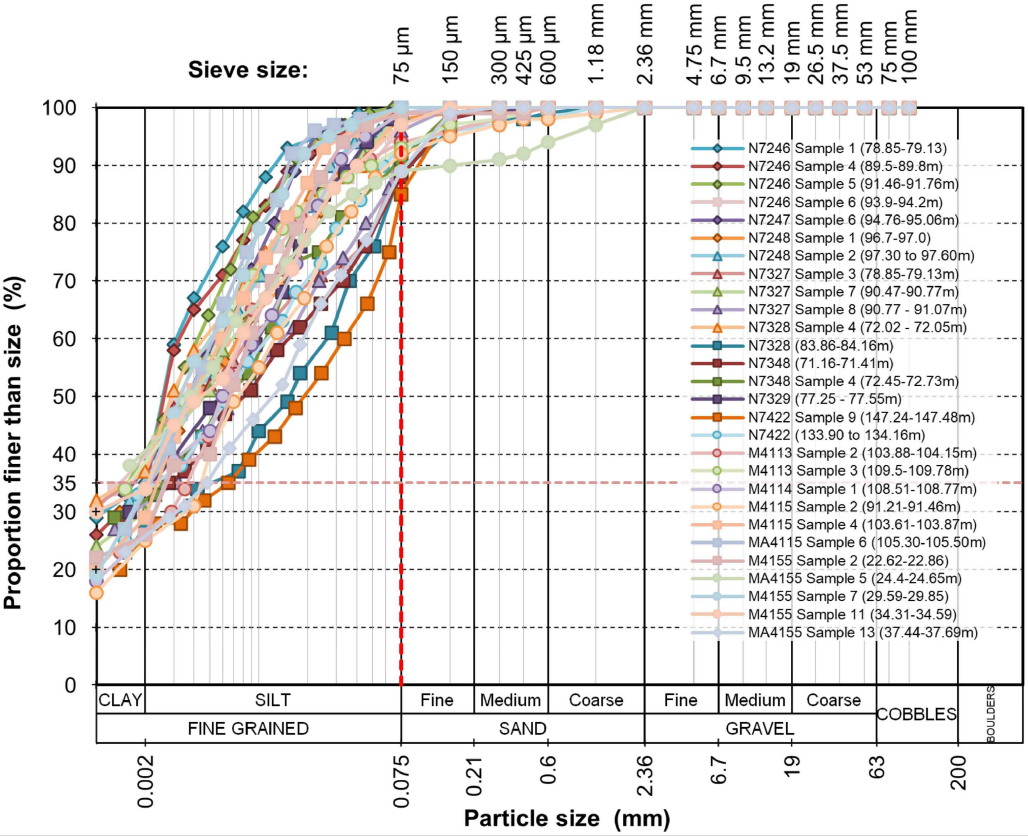
PARTICLE SIZE DISTRIBUTION
INTERSEAM END MEMBERS

PSM4487-200R | Appendix E

Type 2 - Higher Clay Fraction (40 - 60% Clay)



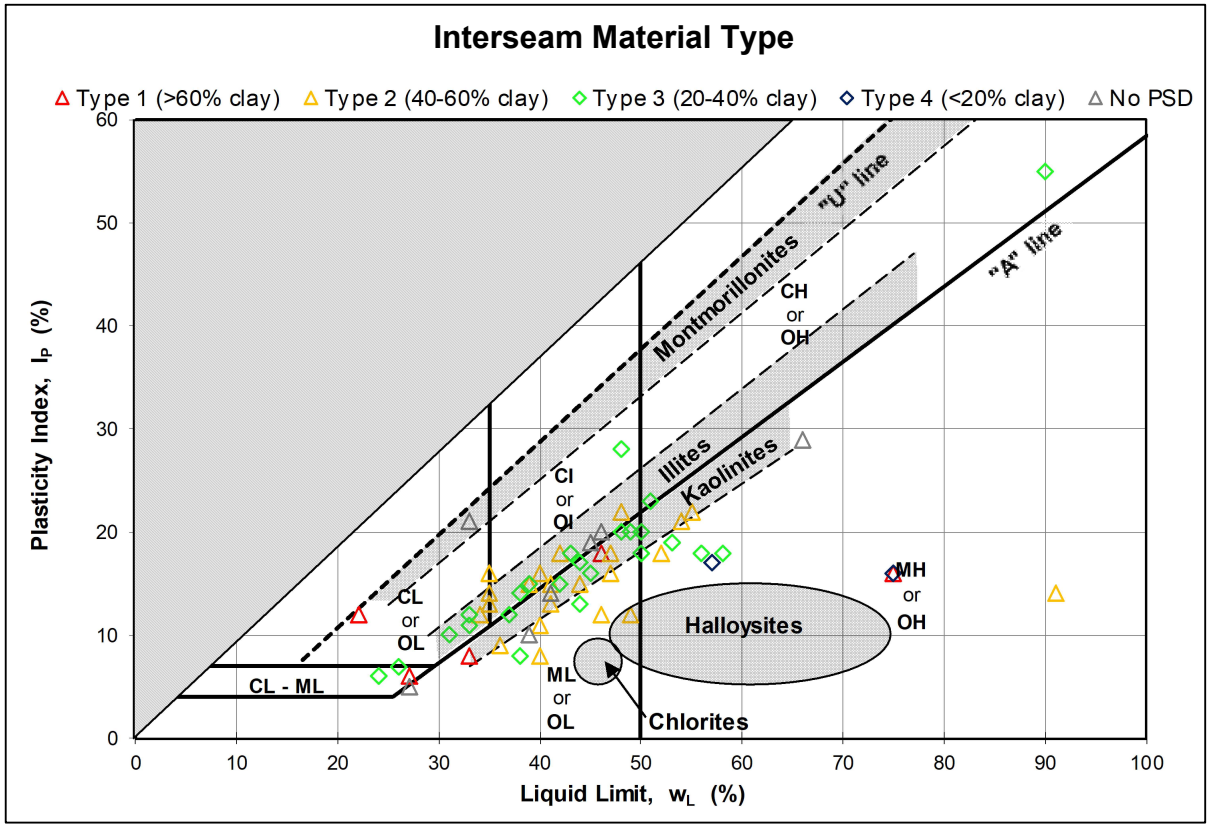
Type 3 - Lower Clay Fraction (20 - 40% Clay)

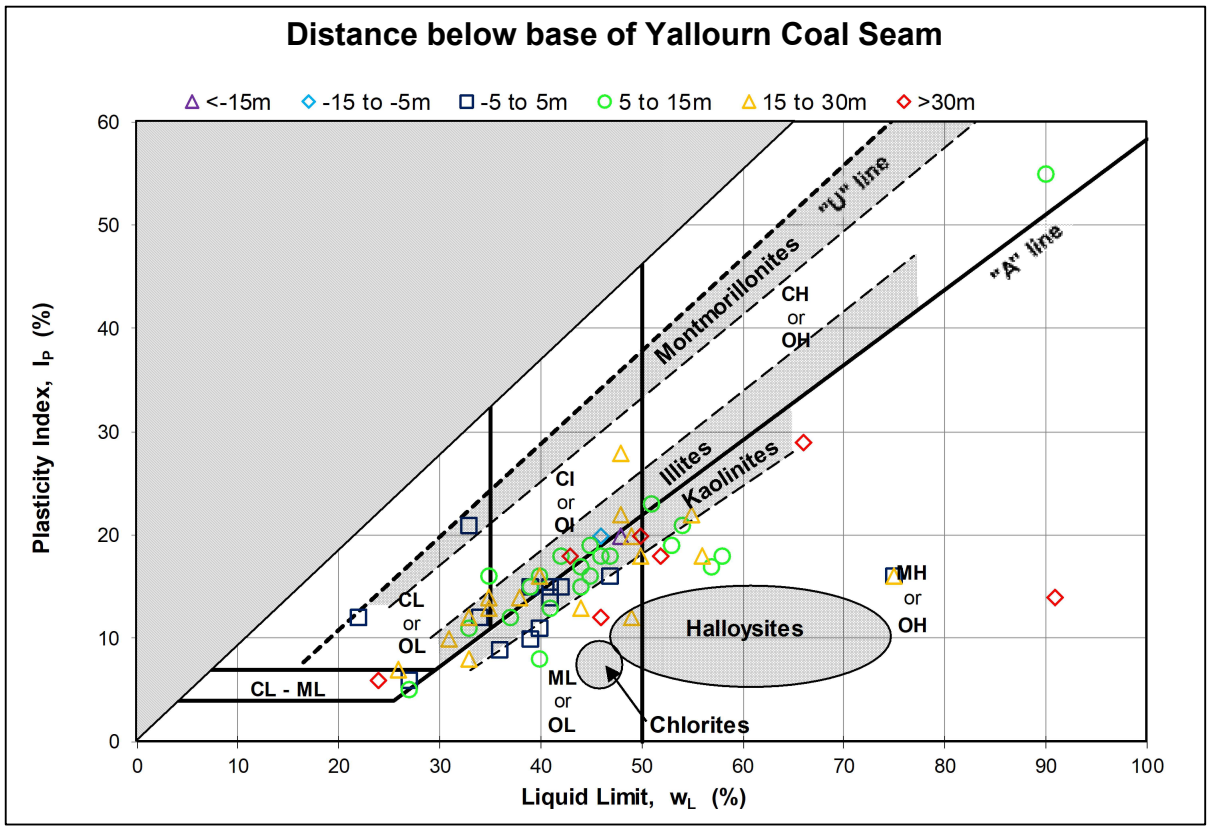


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

PARTICLE SIZE DISTRIBUTION
INTERSEAM INTERMEDIATE MATERIALS

PSM4487-200R | Appendix E





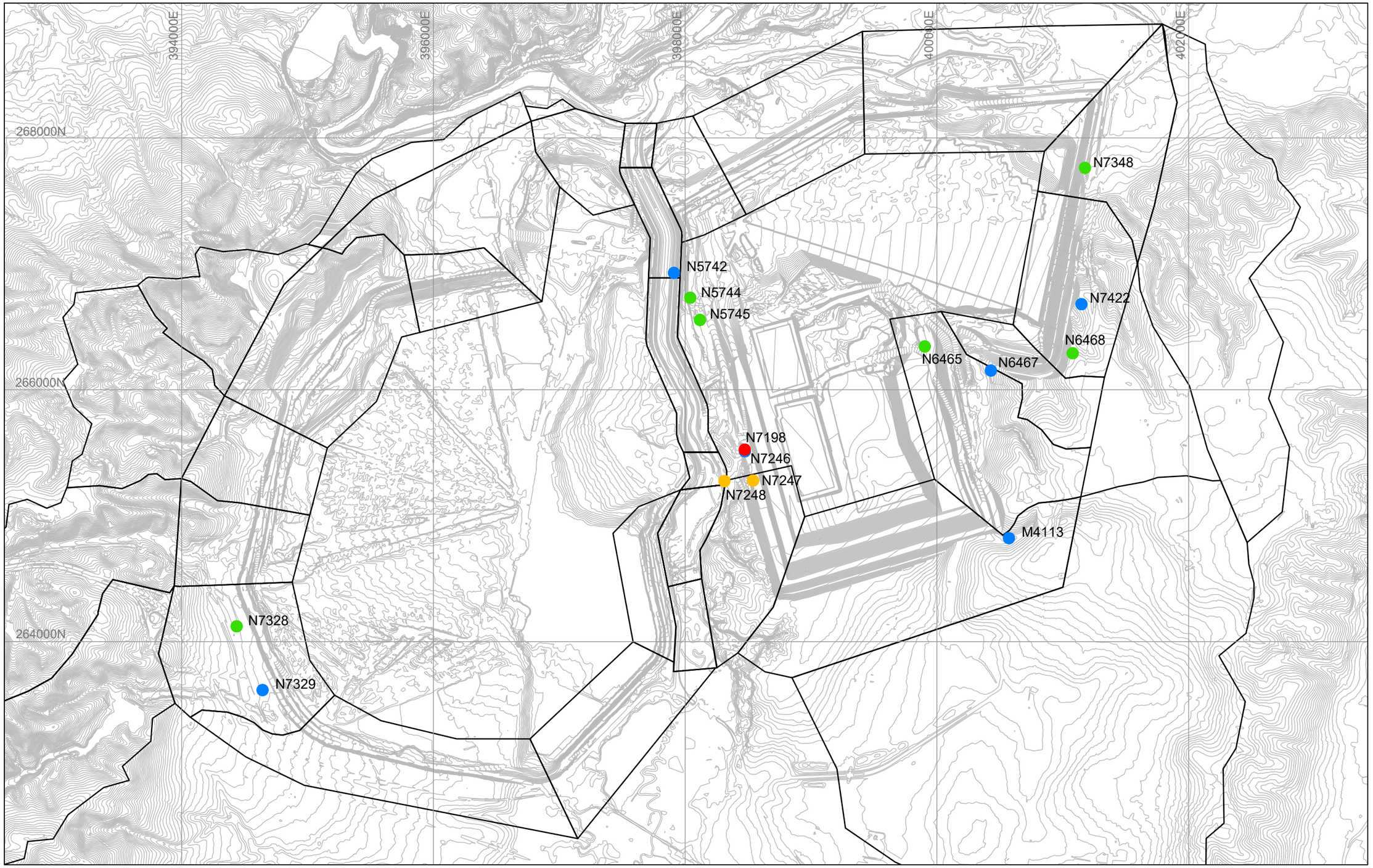
Notes:

1. Distance calculated from feasibility design geological model (PSM4487-126M)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

ATTERBERG LIMITS BY INTERSEAM TYPE & DISTANCE BELOW BASE OF COAL

PSM4487-200R | Appendix E



LEGEND

- EOM Topography 2m Contours
- Domains

Total Valid Test Stages per Borehole

- 1 - 2
- 3 - 4
- 5 - 6
- 7 - 9

Notes:

1. Total valid test stages represents a count of individual valid stages from multi-stage direct shear testing of samples in a borehole.

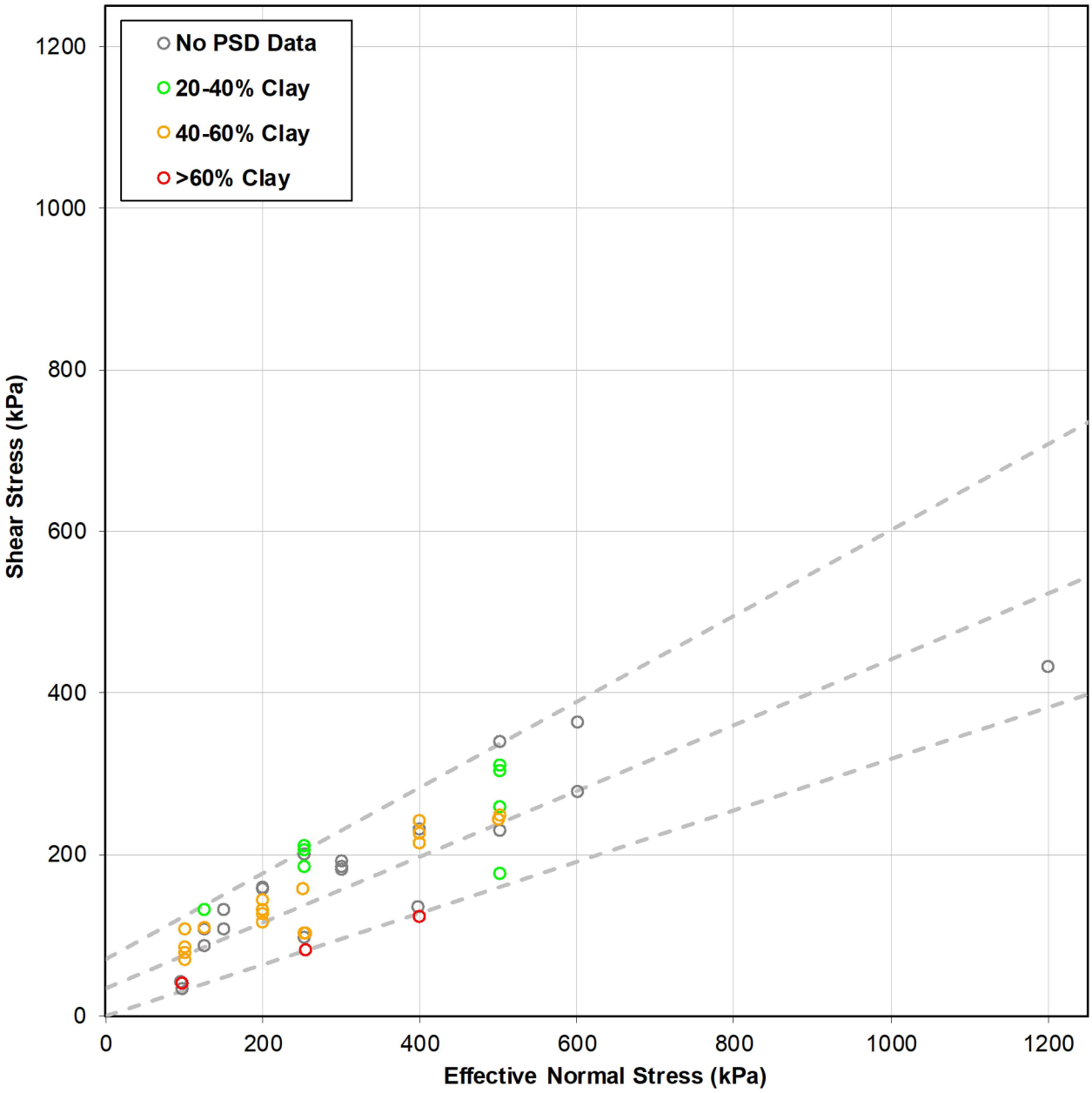
0 500 1000

Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

VALID DIRECT SHEAR TEST SAMPLE LOCATIONS

PSM4487-200R | Appendix E

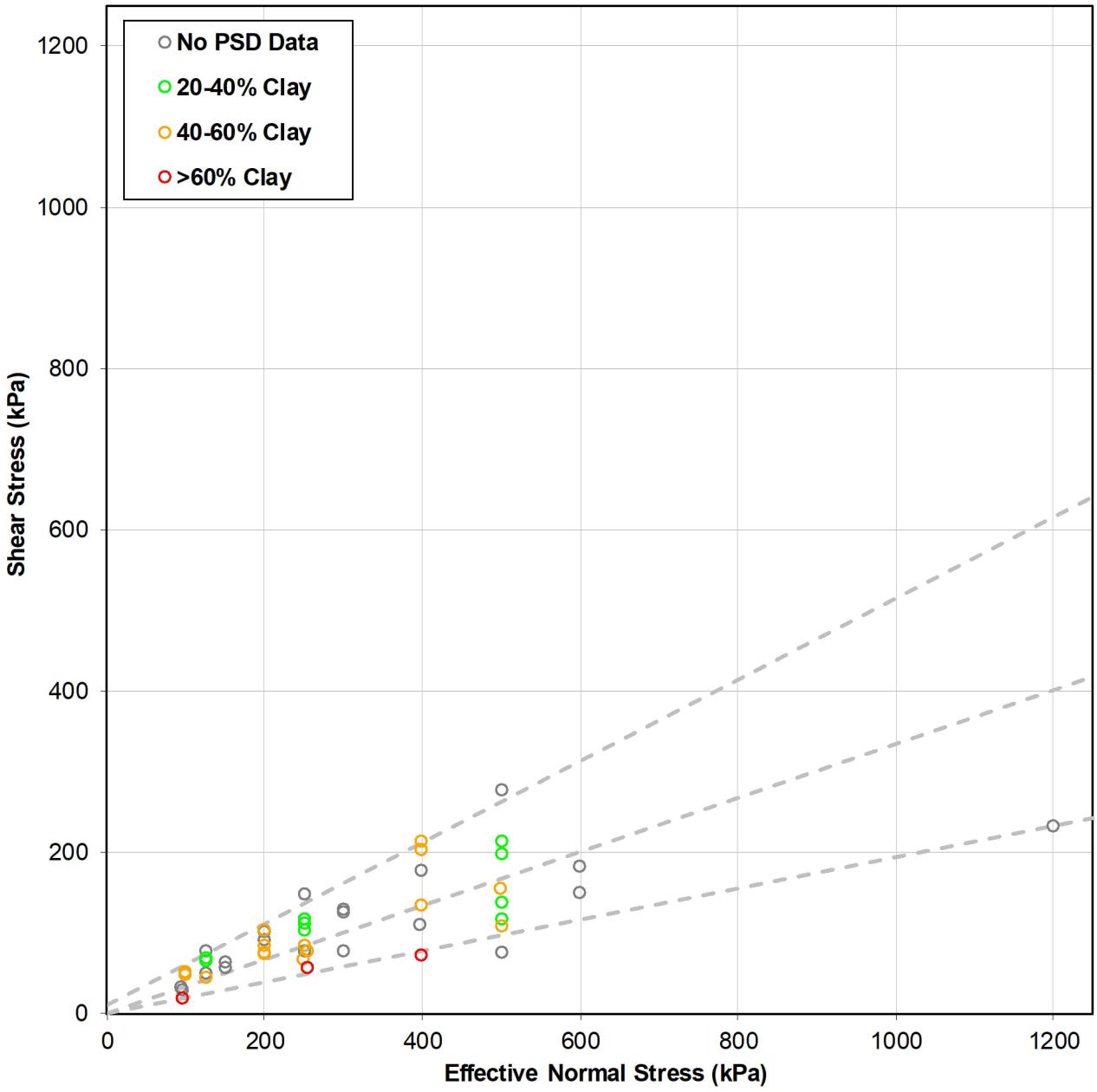


	Cohesion (kPa)	Friction Angle (°)
Upper Bound	70	28
Lower Bound	0	18
Mean	35	22

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

VALIDATED DIRECT SHEAR TESTS
PEAK SHEAR STRENGTHS

PSM4487-200R | Appendix E

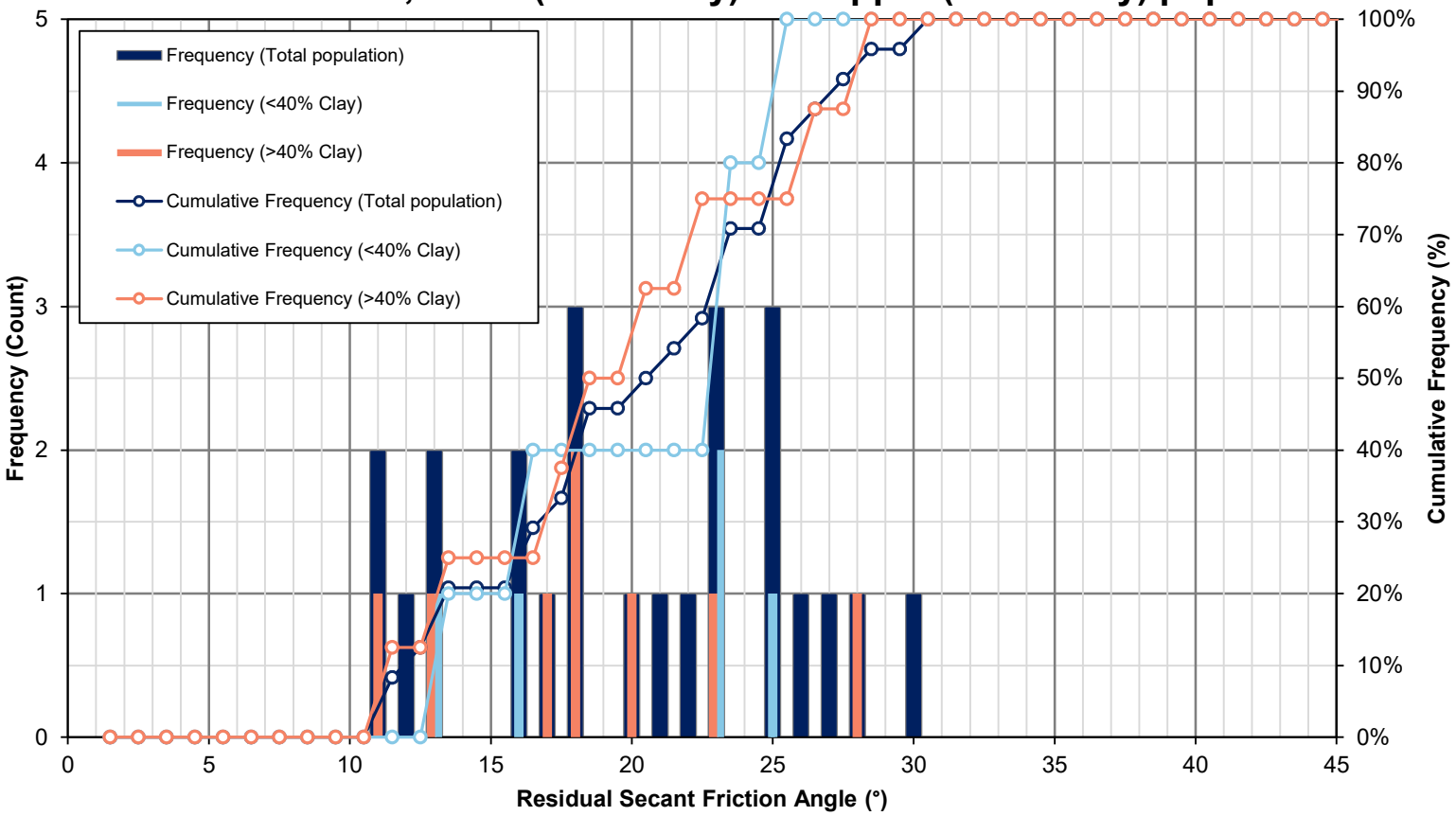


	Cohesion (kPa)	Friction Angle (°)
Upper Bound	10	27
Lower Bound	0	11
Mean	0	18

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

VALIDATED DIRECT SHEAR TESTS
RESIDUAL SHEAR STRENGTHS

PSM4487-200R | Appendix E



Notes: 1. Total population includes all valid DST data with and without associated PSD tests

2. Upper and lower population includes valid DST data with associated PSD tests

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design
VALIDATED DIRECT SHEAR TESTS
RESIDUAL FRICTION ANGLE HISTOGRAM

PSM4487-200R	Appendix E

N:\PSM4487\Eng\03 Drawings\PSM4487-200R Rehab Feasibility Study\Excel\[DS_Interseam_PSM4487-200R_Final_Figures_25-05-08_with_stats_EH_v1.xlsm]Residual_v2

Appendix F
Limit Equilibrium Stability Analyses Outputs

F1. Plan of sections and analyses approach schematics

F2. Material parameters

F3. Base case outputs (includes peripheral drainage assessment)

- F3.1 Multi-linear
- F3.2 Block slide – floodplains
- F3.3 Block slide – peripheral catchments

F4. Sensitivity cases outputs

F5. MRD global stability base case outputs

F6. MRD global stability sensitivity cases outputs

F7. MRD embankment local stability circular failure

F8. MRD levee stability circular failure outputs

F9. MRD low flow channel stability outputs

F10. 2012 Earthquake back-analysis

Appendix F.1
Plan of sections and analyses approach schematics

392000E
394000E
396000E
398000E
400000E
402000E
404000E
268000N
266000N
264000N
262000N
YTF-RCB
YTF-LS
YEF-NB (WEST)
YEF-NB (EAST)
YEF-LRB
YEFX-LREB (NORTH)
YEFX-LREB (SOUTH)
YTF-NB
YTF-WB
YTF-HOB (NORTH)
YTF-HOB (SOUTH)
YTF-SWB
YTF-SB
YTF-FSPB
YTF-FPB
YEFX-SB
MVP-EB
MVP-WB
MVP-SB
Section 1
Section 2
Section 3
Section 4
Section 5
Section 6
Section 7
Section 7B
Section 8
Section 9
Section 10
Section 11
Section 12
Section 13
Section 14
Section 15
Section 16
Section 16b
Section 17
Section 18
Section 19
Section 20
Section 21
Section 22
Section 23
Section 24
Section 25
Section 26
Section 27
Section 28
Section 29
Section 30
Section 31
Section 32
Section 33
Section 34
Section 35

LEGEND

EOM Topography
5m Contours

Rehabilitation Domains

Stability Section Locations

0 500 1000 1500 2000
Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

REHABILITATION DOMAINS &
STABILITY SECTION LOCATIONS

PSM4487-200R | Appendix F

394000
396000
398000
400000
402000
288000
266000
264000

YTF - LS
YEF - NB (east)
YEF - NB (west)
YEF - LRB
YEFX - LREB (north)
YTF - RCB
Section 32
YTF - NB
YTF - WB
Section 33
YEFX - LREB (south)
YEFX - SB
MVF - EB
Section 34
Section 35
YTF - HOB (north)
YTF - HOB (south)
MVF - WB
YTF - FSPB
MVF - SB
YTF - SWB
YTF - FPB
YTF - SB

Legend

- End of mining topographic contours (2m)
- Rehabilitation domains
- Geotechnical section
- Pit crest
- Crest position on geotechnical section

NOTES:
1.

N

Scale 1:30,000
0 500 1,000 m

Local Mine Grid: SECV

P S M	Created By: BRJ	Revision: A	EnergyAustralia Yallourn Mine Rehabilitation Design
	Date: 28 Mar 2025	Paper Size: A3	PIT CREST LOCALITY PLAN
			PSM4487-200R | Appendix F

GIS - PSM4487103_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Section Locations Summary Plans.qgz Layout: Pit Crest Plan

394000
396000
398000
400000
402000
268000
266000
264000

Legend

End of mining topographic contours (2m)

Rehabilitation domains

Analysed failure mechanism per section

Multilinear only

Multilinear & block slide (water body)

Multilinear & block slide (peripheral catchment)

Block slide only (peripheral catchment)

Domain landform character

Type 1 - Domains with no concentrated surface water flow paths

Type 2 - Domains with permanent or semi-permanent water bodies

Type 3 - Domains with significant peripheral catchments and concentrated creek lines

NOTES:
1.

N

Scale 1:30,000

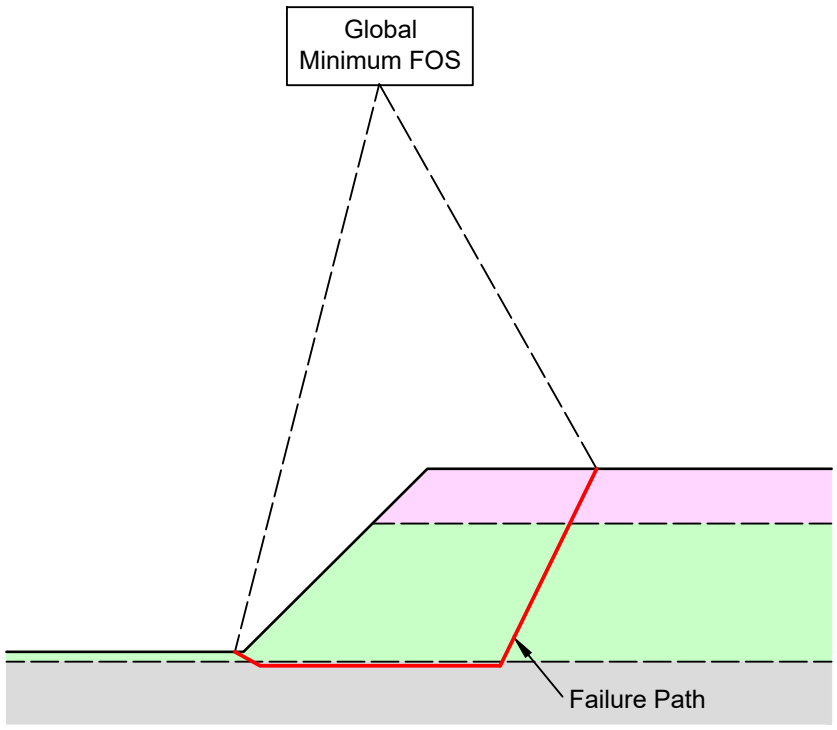
0 500 1,000 m

Local Mine Grid: SECV

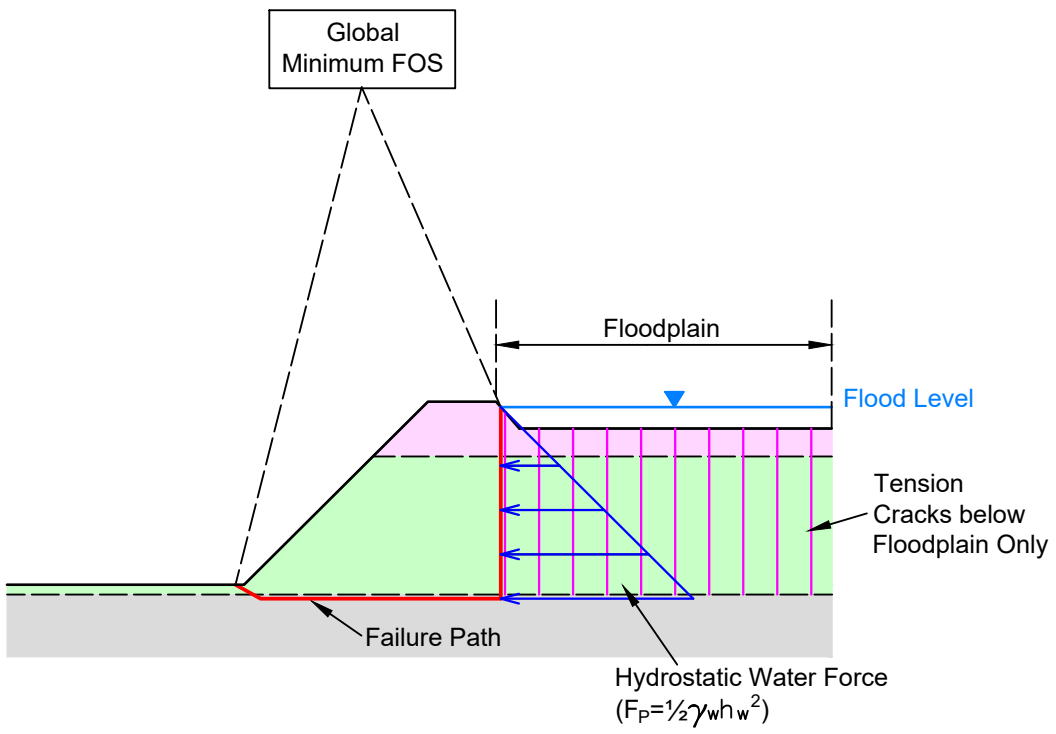
P S M	Created By: BRJ	Revision: A	EnergyAustralia Yallourn Mine Rehabilitation Feasibility Design
	Date: 28 Mar 2025	Paper Size: A3	FAILURE MECHANISMS ANALYSED PER SECTION & DOMAIN LANDFORM TYPE
			PSM4487-200R | Appendix F

GIS - PSM4487003_Figures\PSM4487-200R Rehab Feasibility Study\PSM4487-200R Section Locations Summary Plans.qgz Layout: Failure Mechanism Analysed & Domain Landform Type

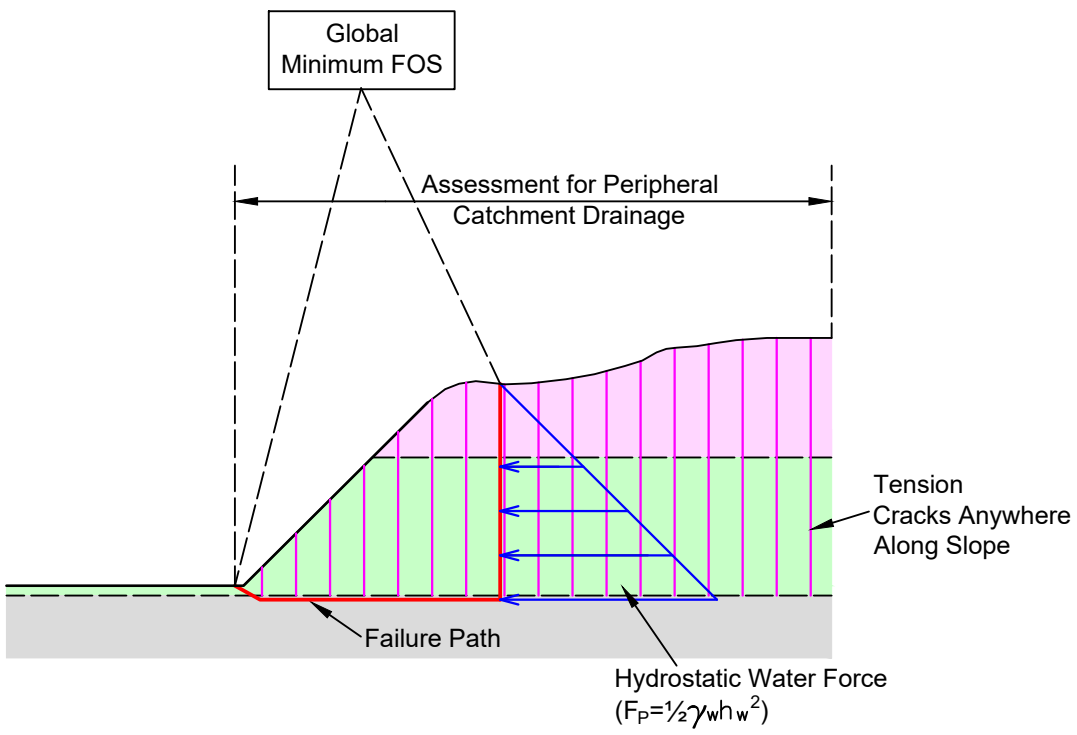
a) Multilinear Failure Path



b) Block Sliding Failure - Water Body / Floodplain



c) Block Sliding Failure - Peripheral Catchment

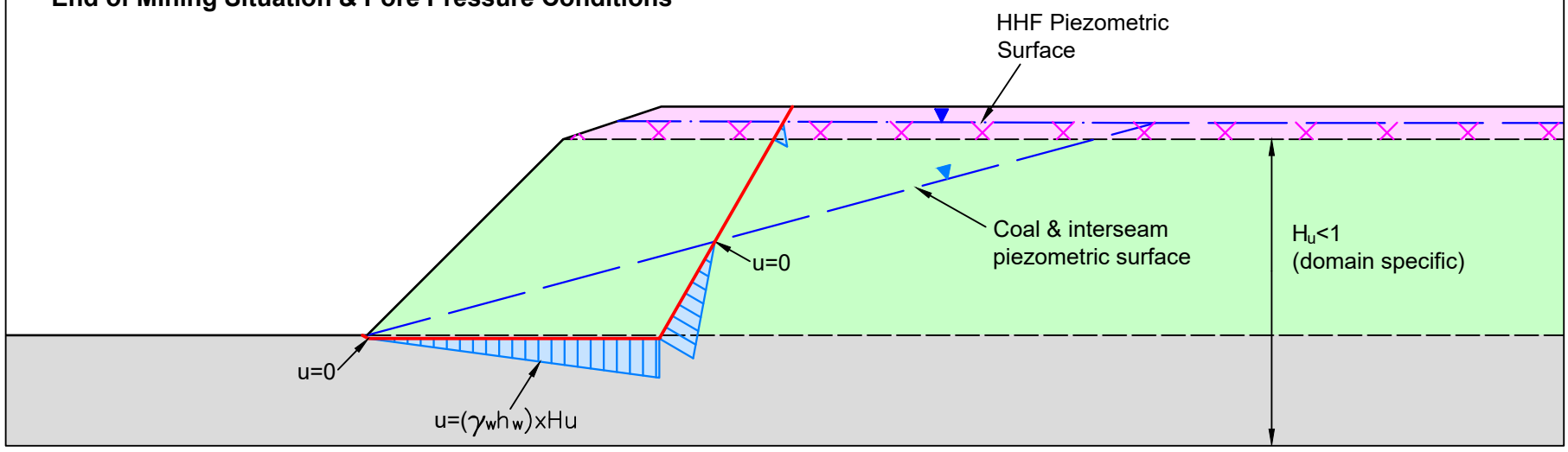


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

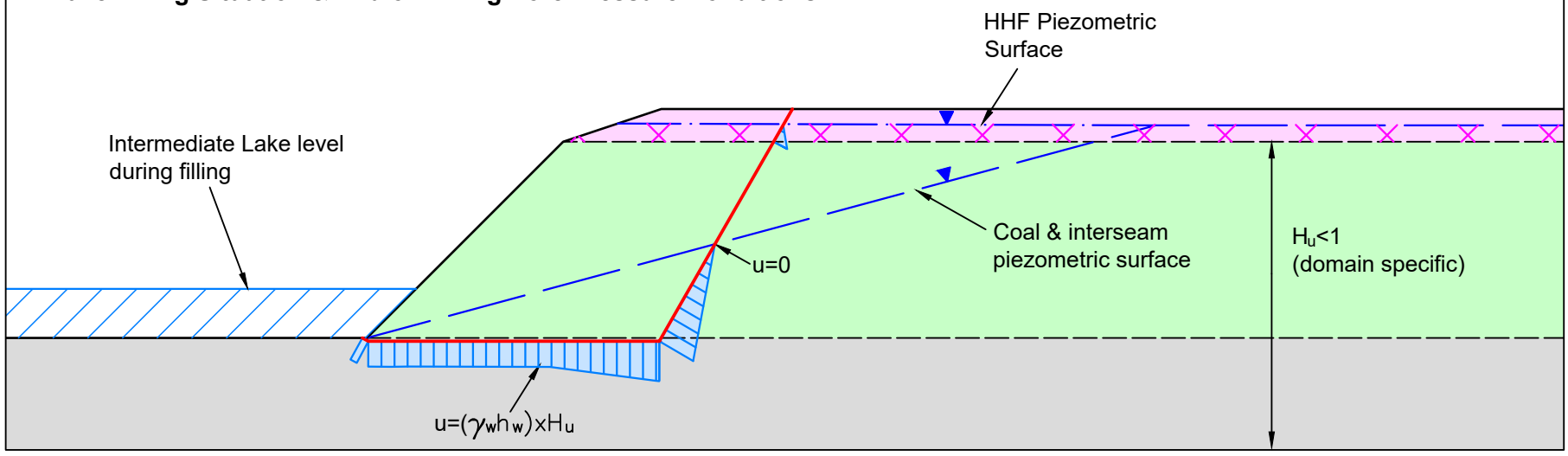
ASSESSED FAILURE MECHANISMS
SCHEMATICS

PSM4487-200R | Appendix F

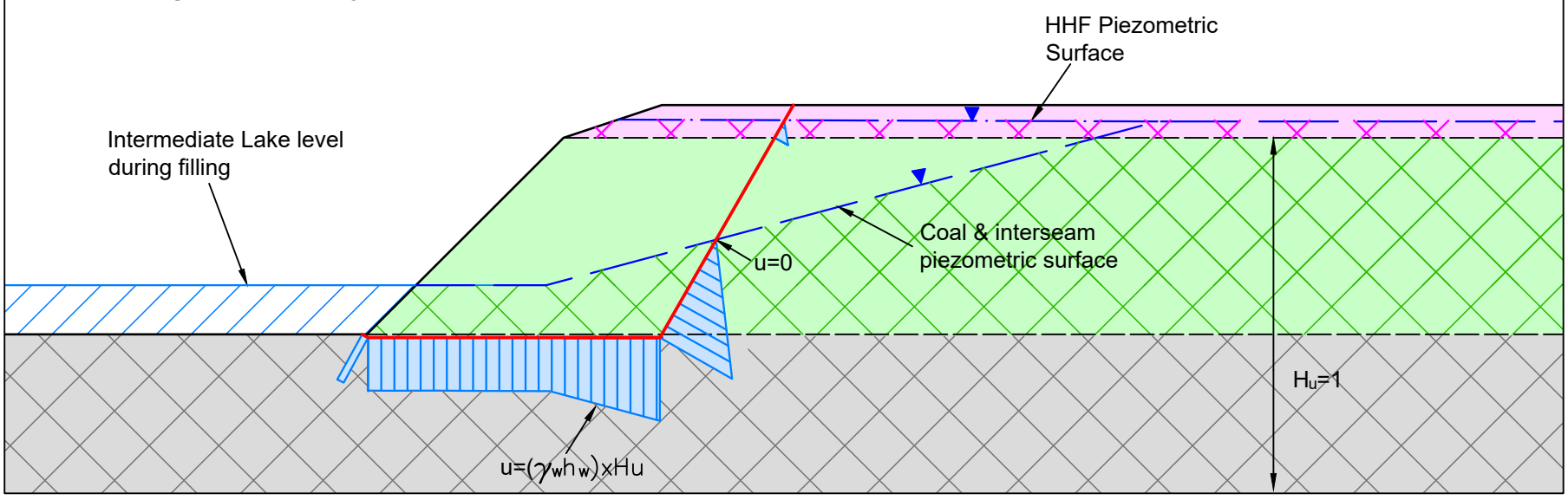
End of Mining Situation & Pore Pressure Conditions



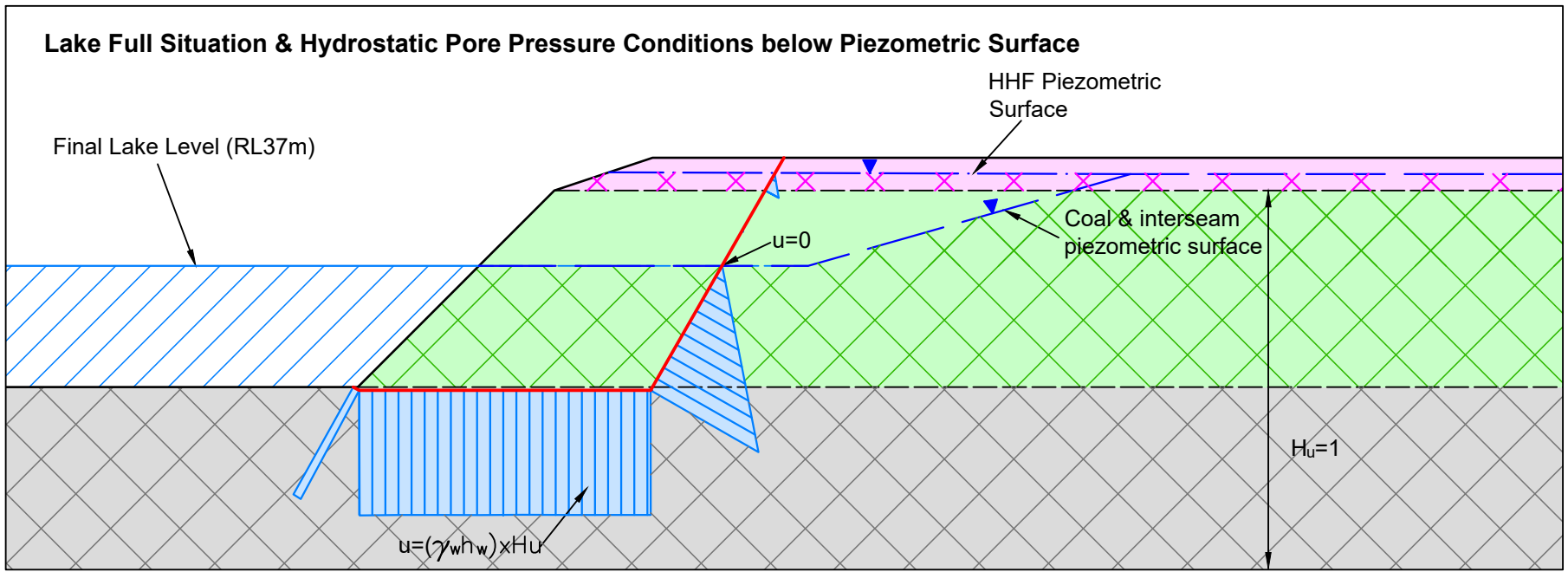
Lake Filling Situation & End of Mining Pore Pressure Conditions



Lake Filling Situation & Hydrostatic Pore Pressure Conditions below Piezometric Surface



Lake Full Situation & Hydrostatic Pore Pressure Conditions below Piezometric Surface

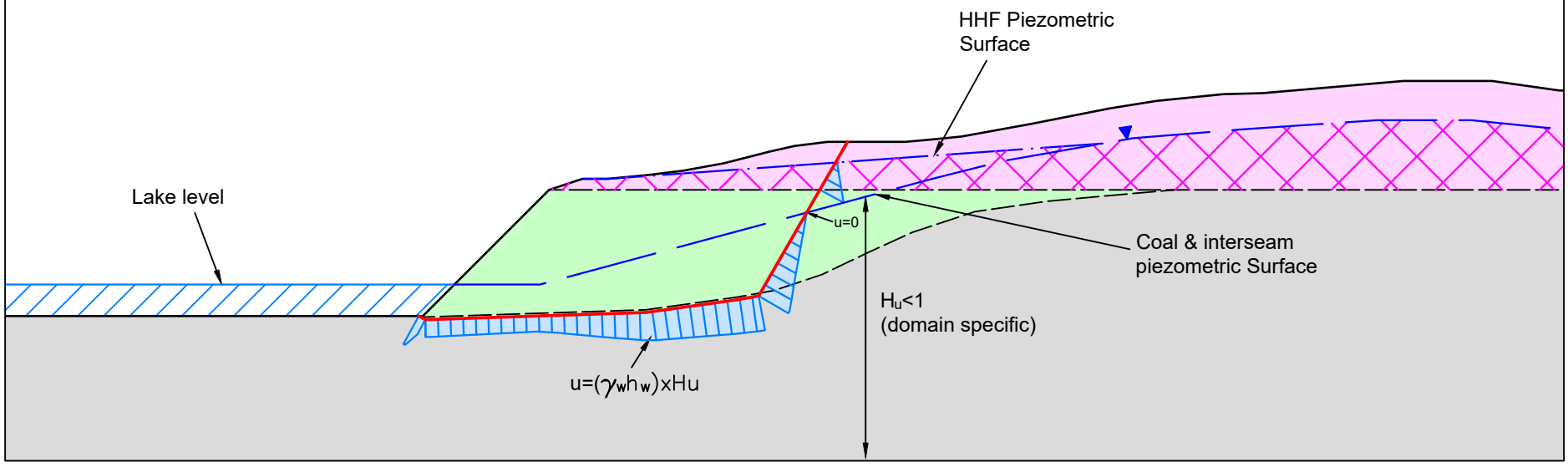


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Dssign

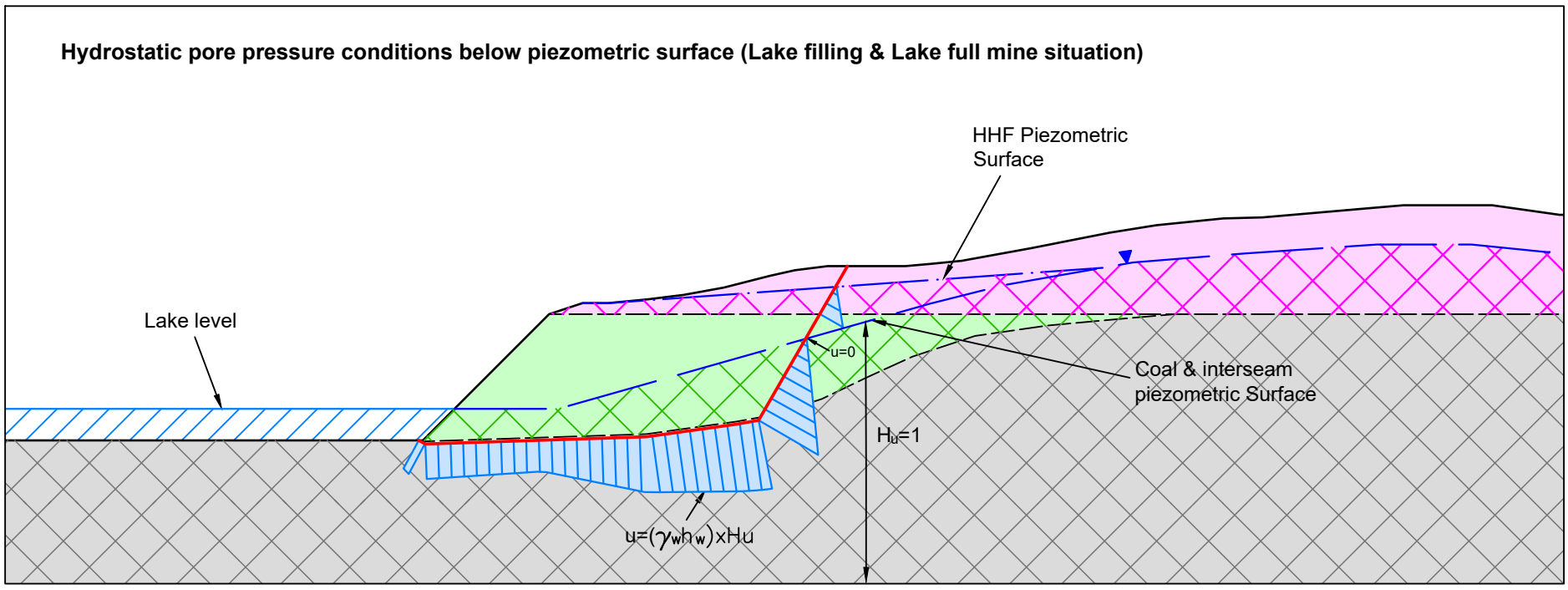
MODELLED BASE CASE
MINE SITUATIONS

PSM4487-200R	Appendix F

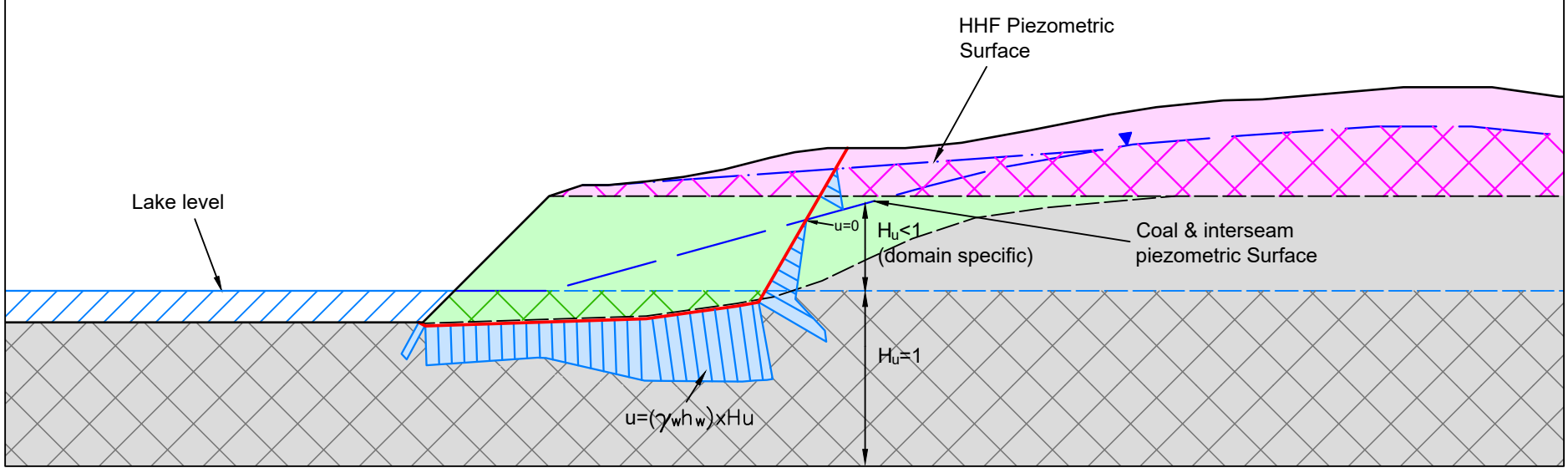
End of mining pore pressure conditions (Lake filling mine situation)



Hydrostatic pore pressure conditions below piezometric surface (Lake filling & Lake full mine situation)



Hydrostatic pore pressure conditions below lake level (Lake filling & Lake full mine situation)



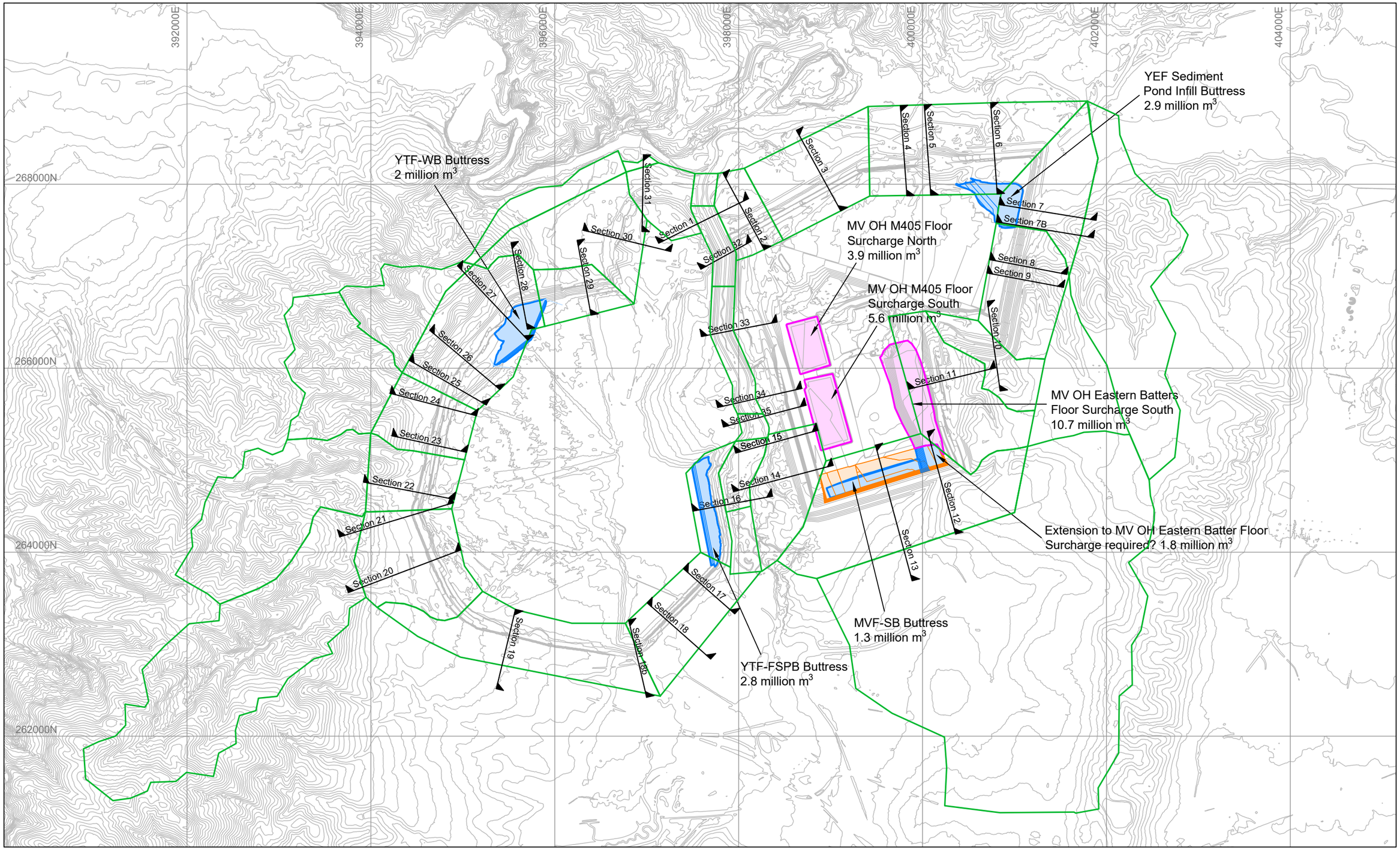
Applied to the following Domains:

1. Rising topography including YTF-HOB (south), YTF-HOB (north) & YTF-WB (Sections 22 to 26).
2. Where the piezometric surface is higher than the final lake level (RL37m) including YTF-SB & YTF-SWB (Sections 19 to 21).
3. Section 13 (MVF-SB) to check buttress requirements for steepened final coal batters.

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

MODELLED GROUNDWATER CONDITIONS FOR DOMAINS WITH RISING TOPOGRAPHY

PSM4487-200R | Appendix F



LEGEND

- EOM Topography 5m Contours
- Rehabilitation Domains
- Stability Section Locations
- EAY Planned Floor Surcharge
- Proposed Steepened Final Coal Batters (60° below RL35m). 5m Contours
- Proposed Buttress 5m Contours

0 500 1000 1500 2000

Scale (m)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

REHABILITATION BUTTRESSING & APPROXIMATE VOLUMES

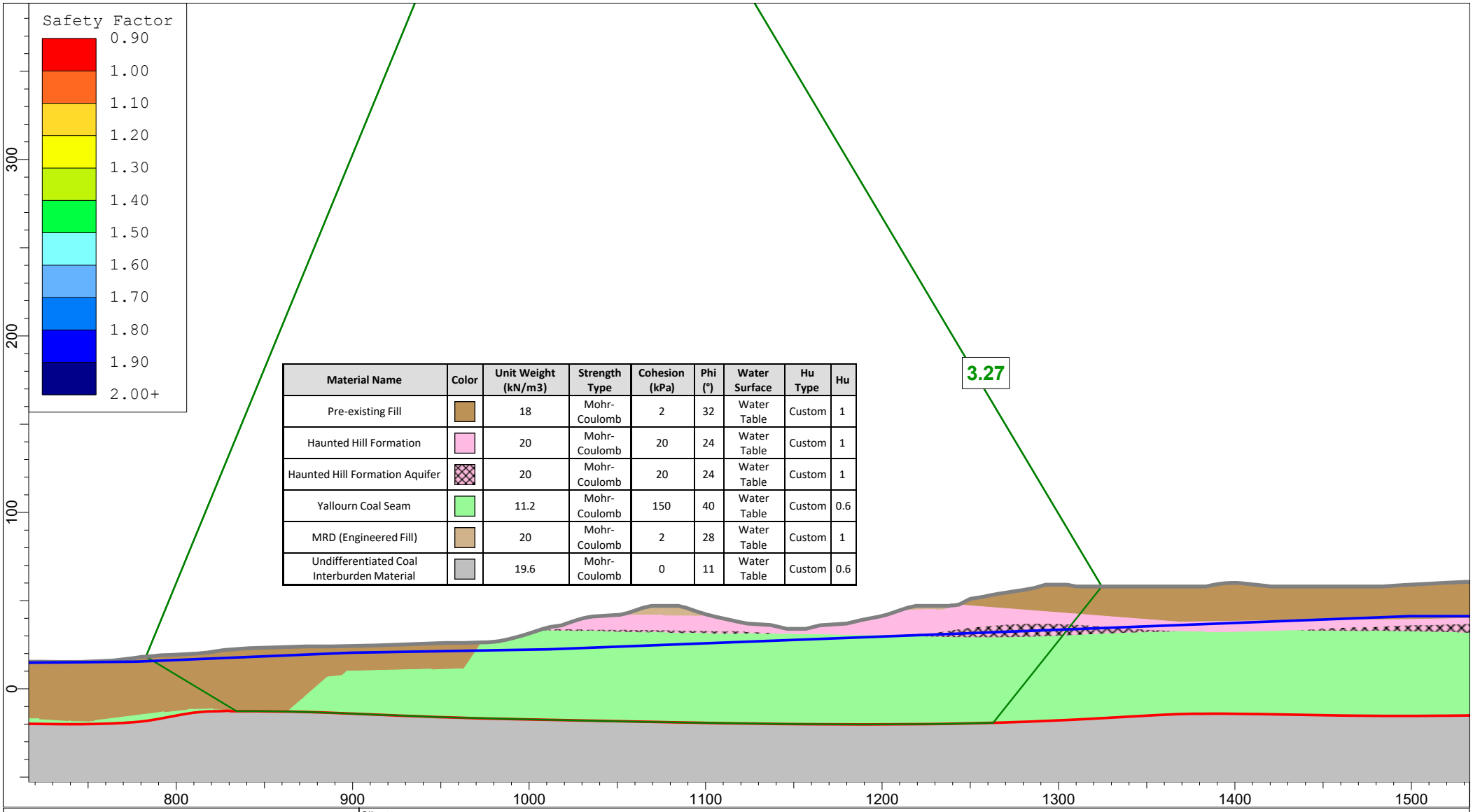
PSM4487-200R | Appendix F

Appendix F.2
Material parameters

Pit Area	Domain	Coal & Interseam Pore Pressure Coefficient at End of Mining (% of Hydrostatic)
Yallourn East Field (YEF)	YEF – NB (west)	60
	YEF – NB (east)	60
	YEF – LRB	70
Yallourn East Field Extension (YEFX)	YEFX – LREB (north)	60
	YEFX – LREB (south)	50
	YEFX – SB	50
Maryvale Field (MVF)	MVF – EB	50
	MVF – SB	60
	MVF – WB	60
Yallourn Township Field (YTF)	YTF – FSPB	50
	YTF – FPB	50
	YTF – SB	40
	YTF – SWB	70
	YTF – HOB (south)	50
	YTF – HOB (north)	60
	YTF – WB	60
	YTF – NB	60
	YTF – RCB	80
	YTF – LS	100
Morwell River Diversion (MRD)	MRD Repair	40
	MRD Fill	50
	MRD Cut South	60

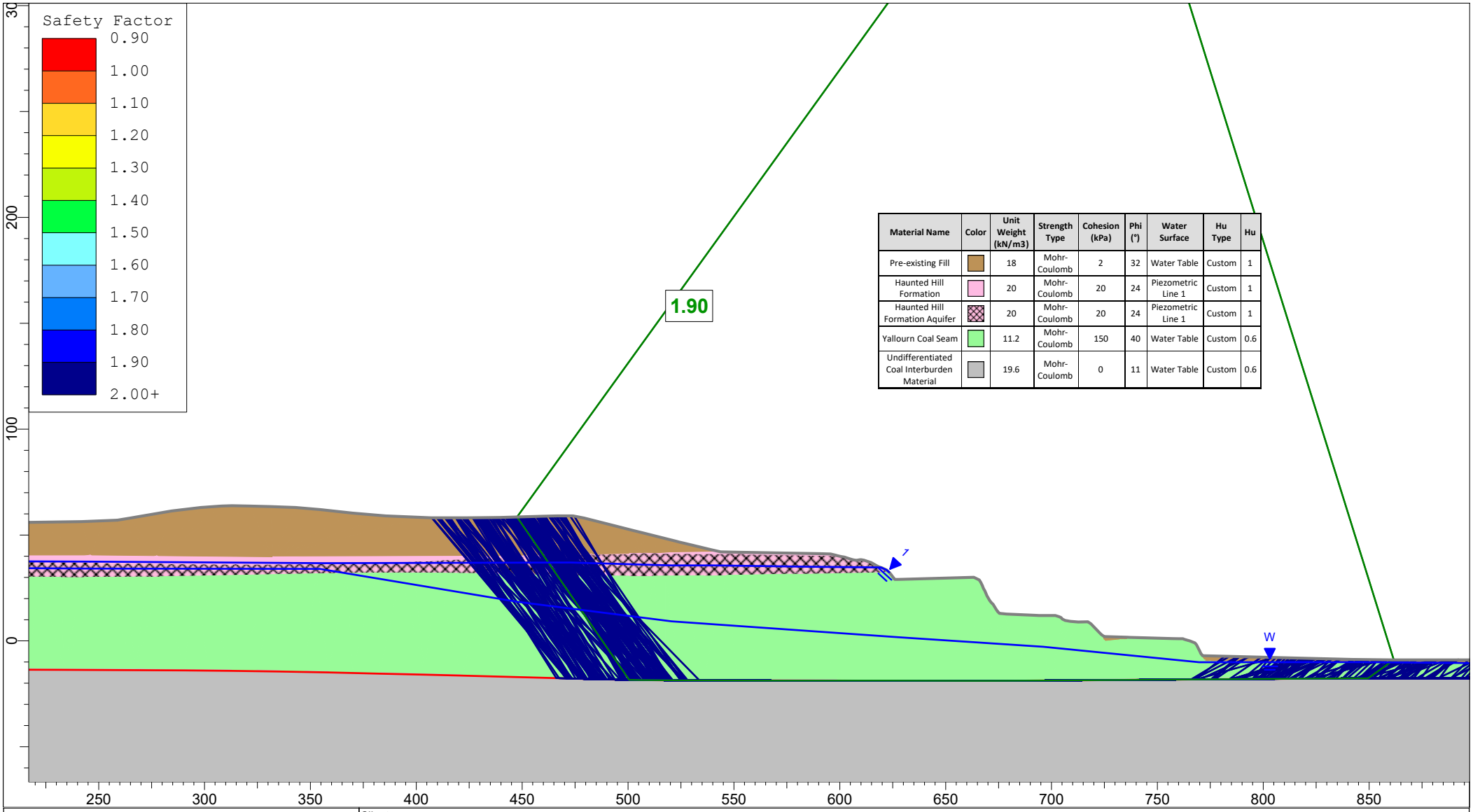
Appendix F.3
Base case outputs (includes peripheral drainage assessment)

Appendix F.3.1
Multi-linear



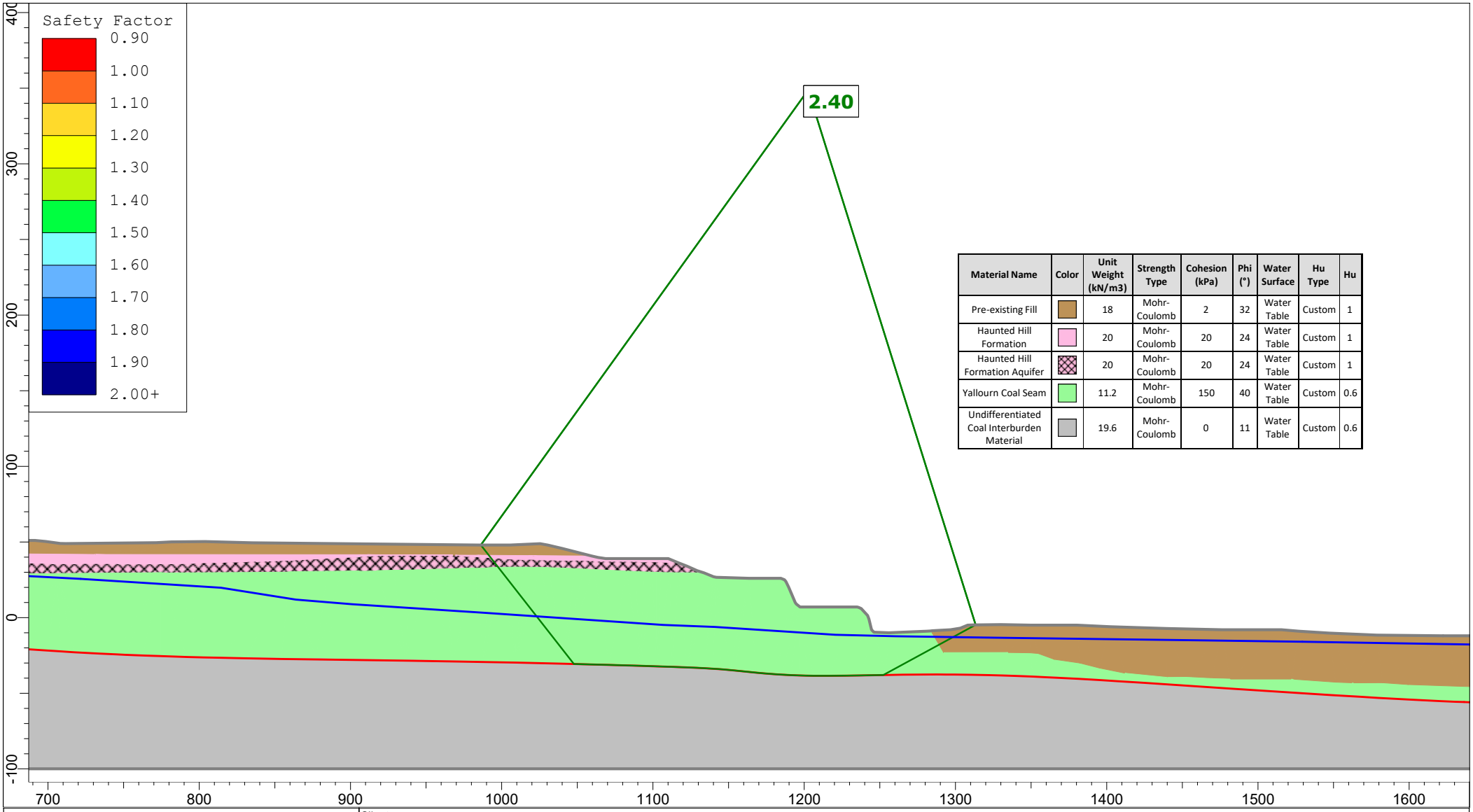
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



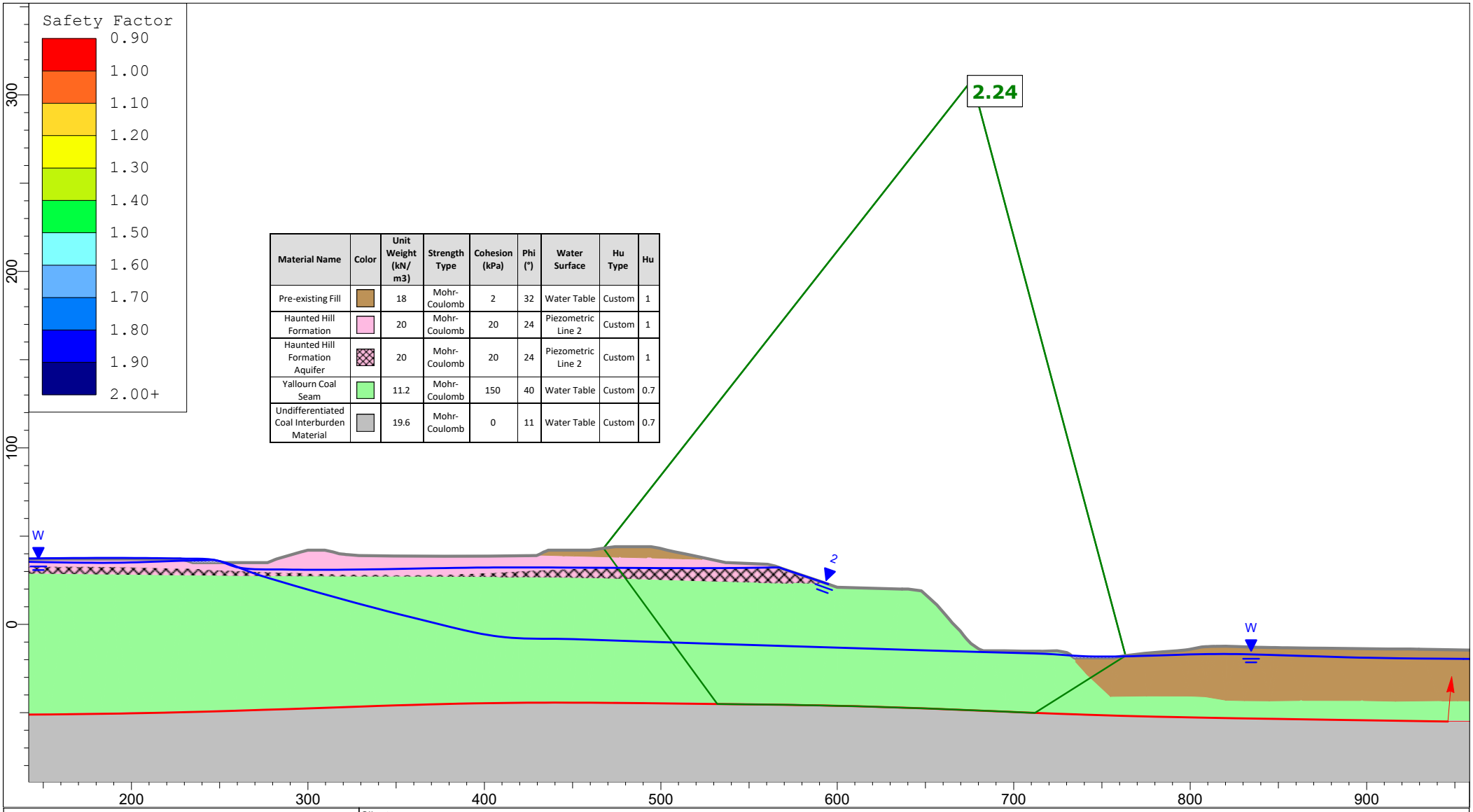
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 02	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



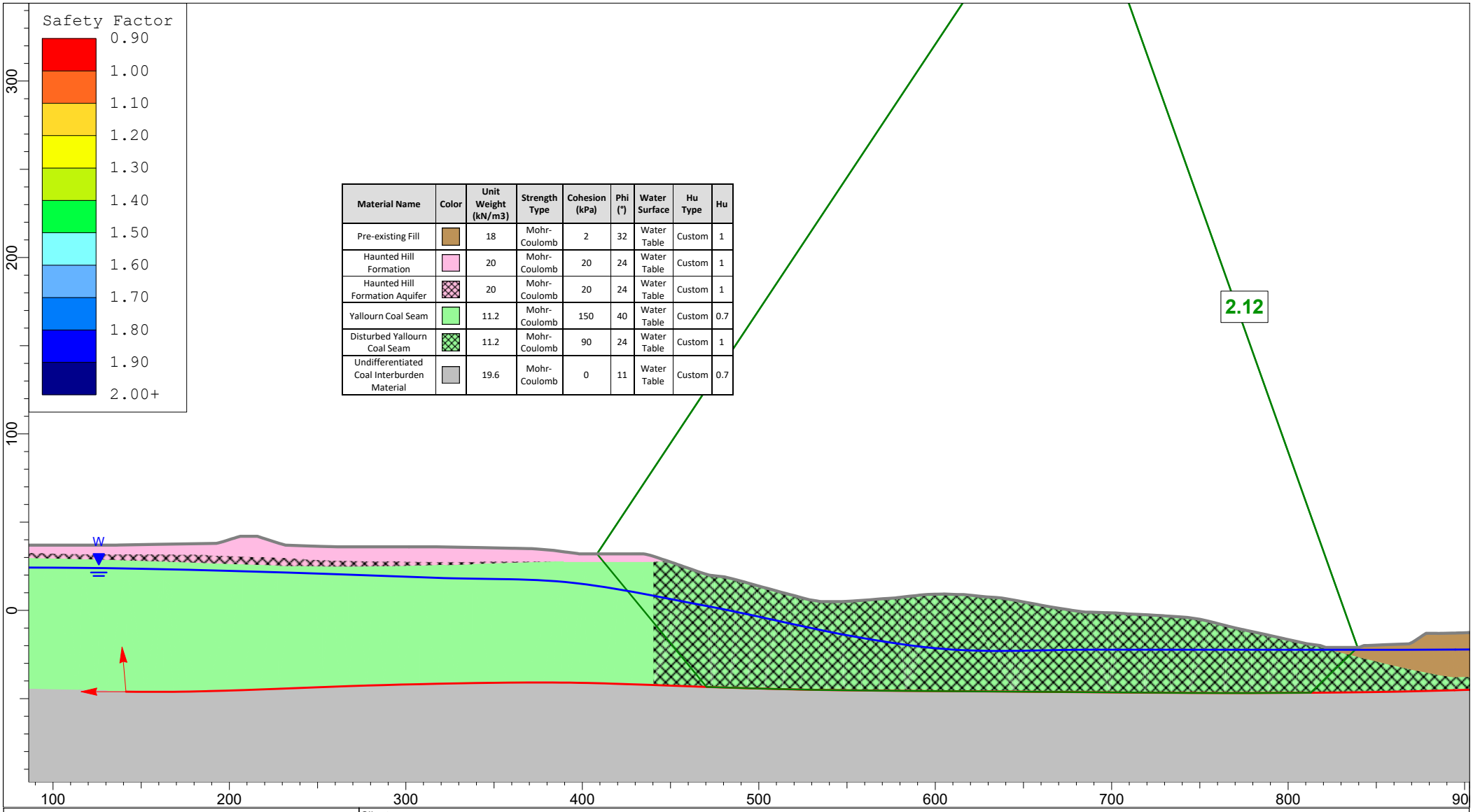
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (east)
Section:	Section 03	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



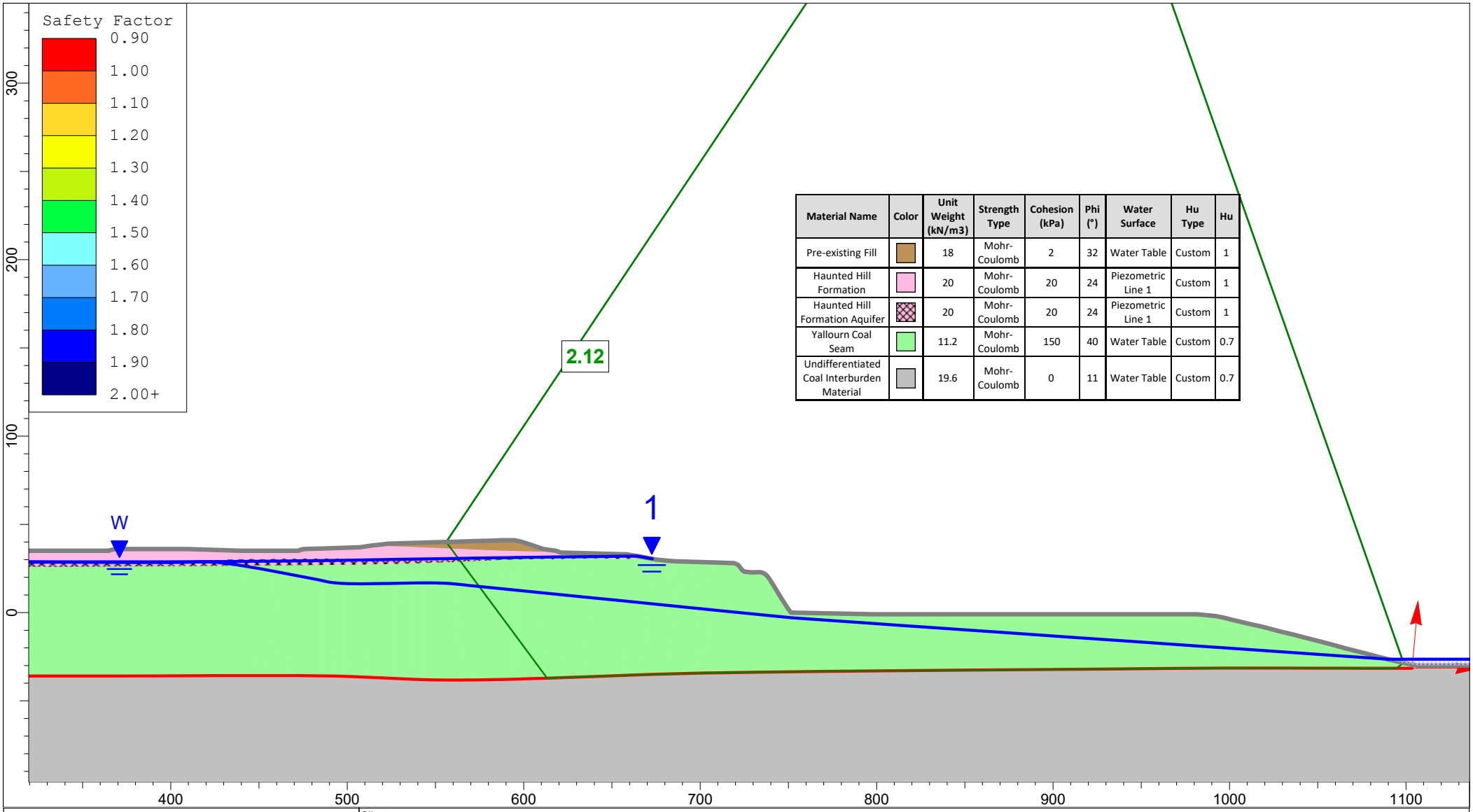
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



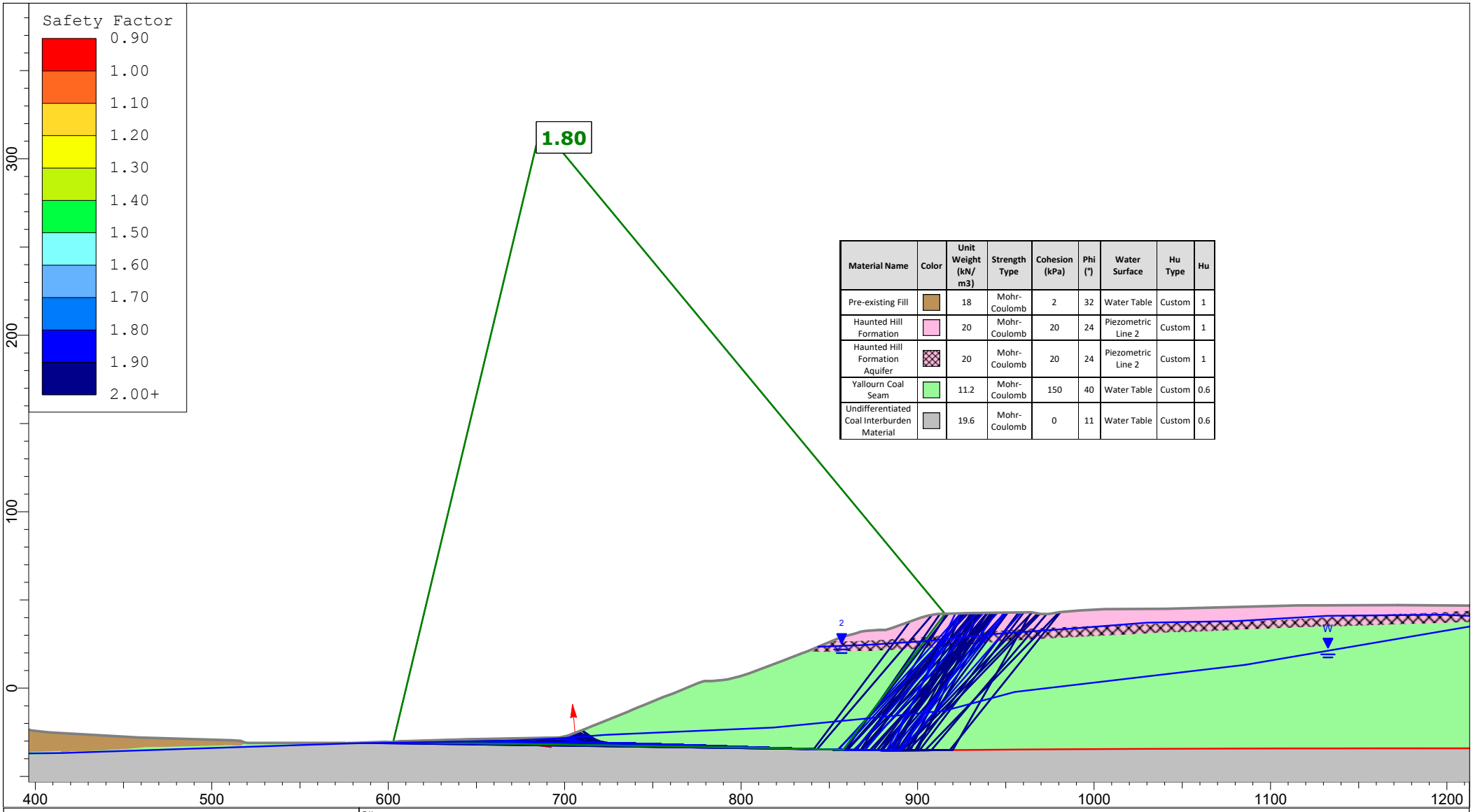
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



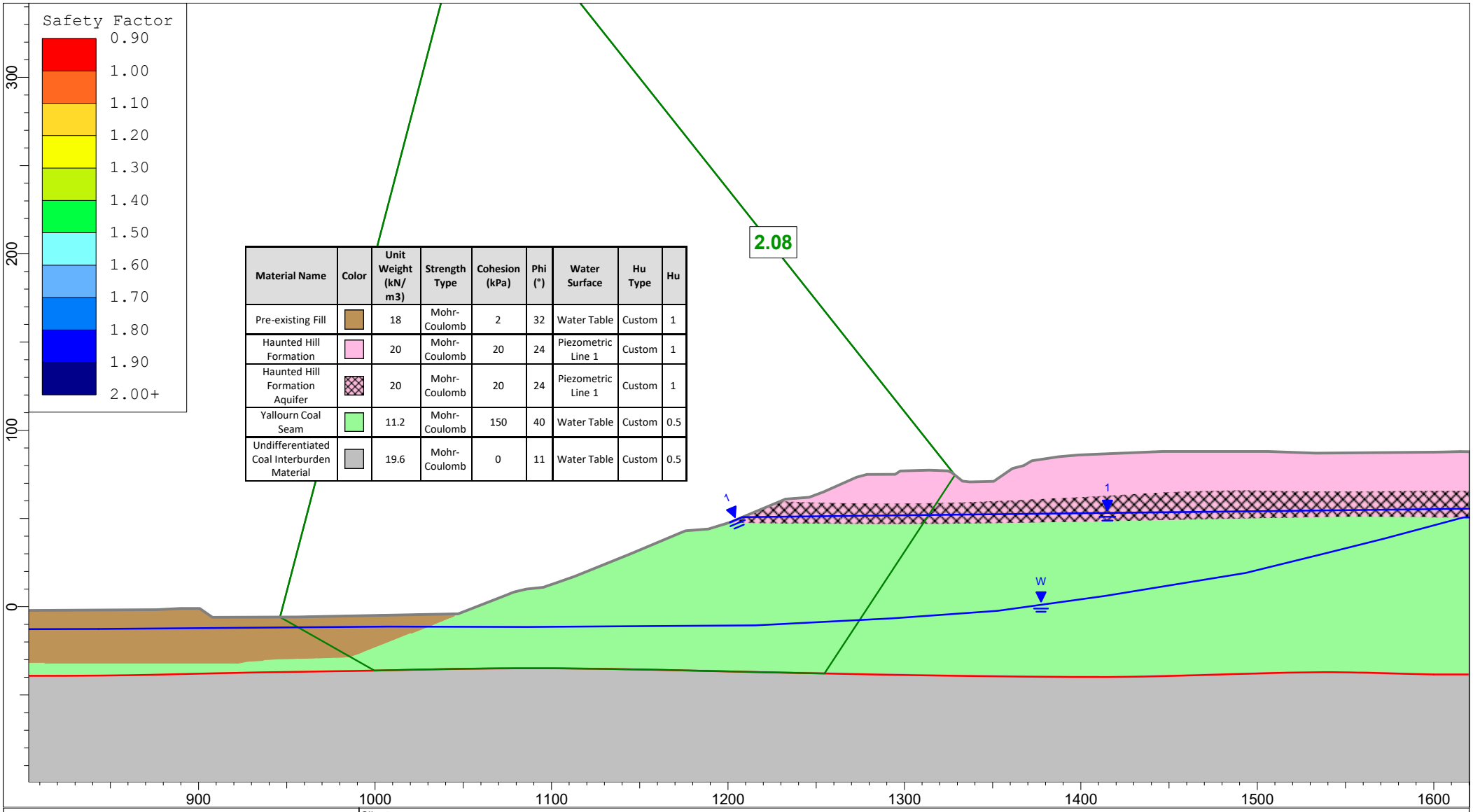
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



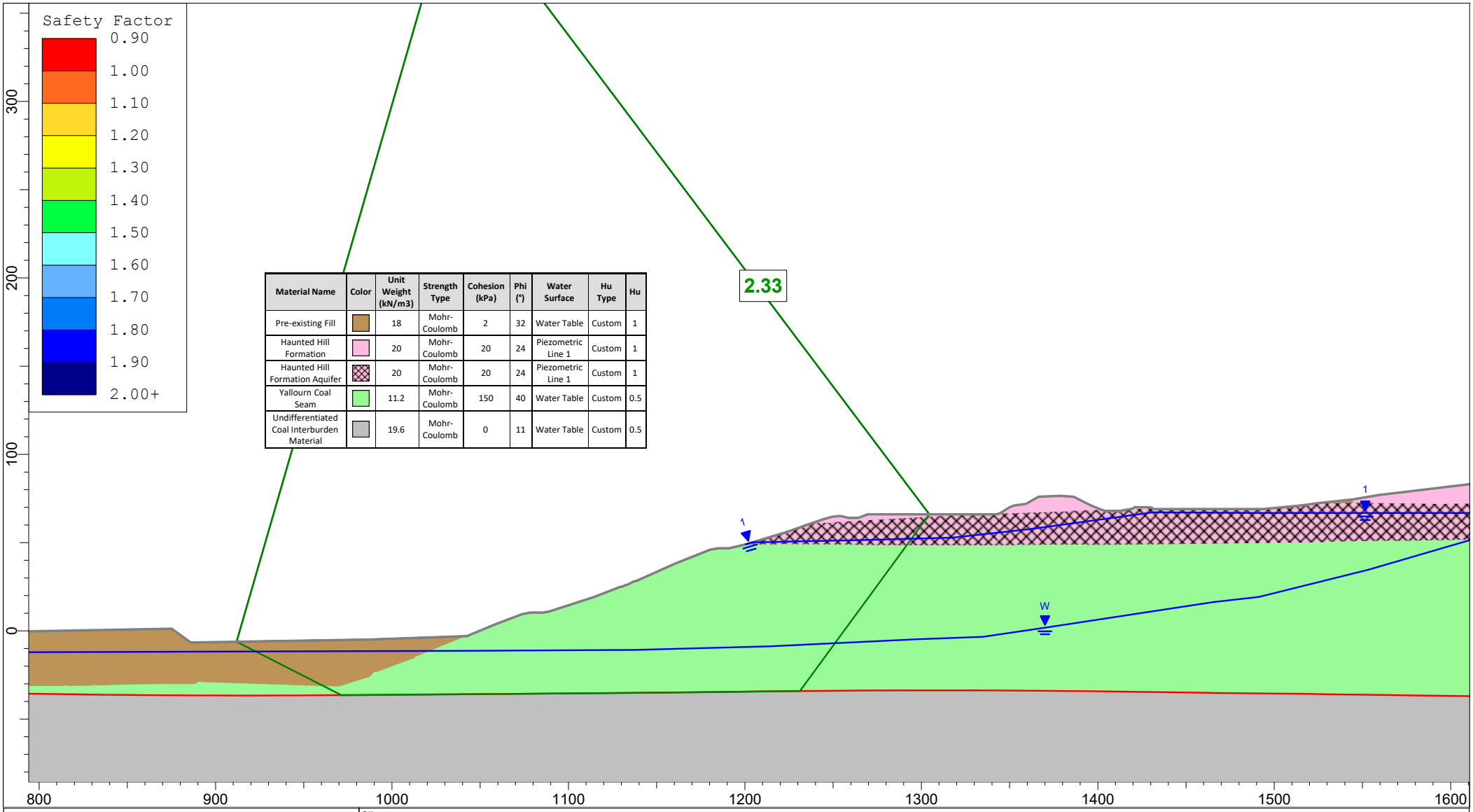
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



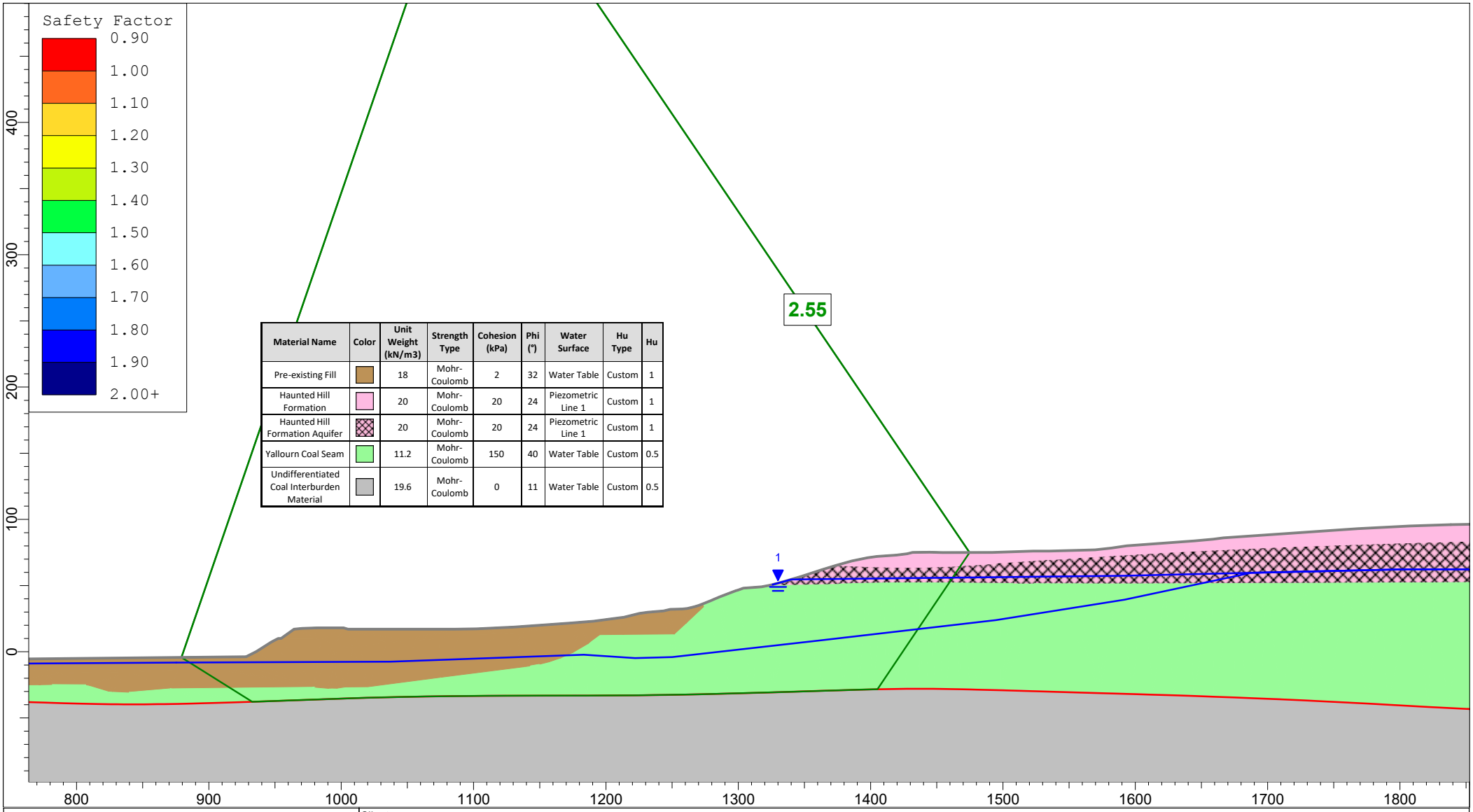
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



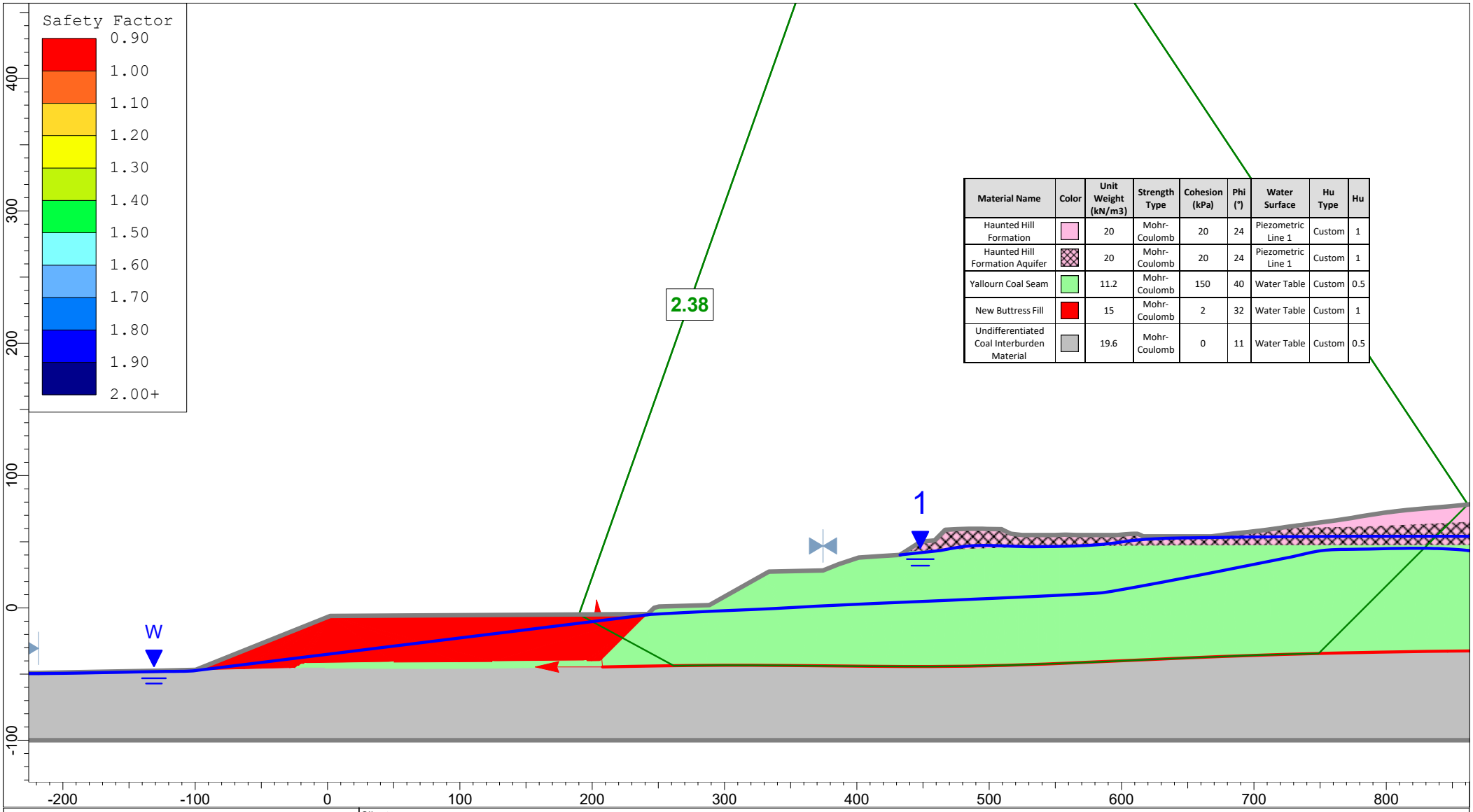
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



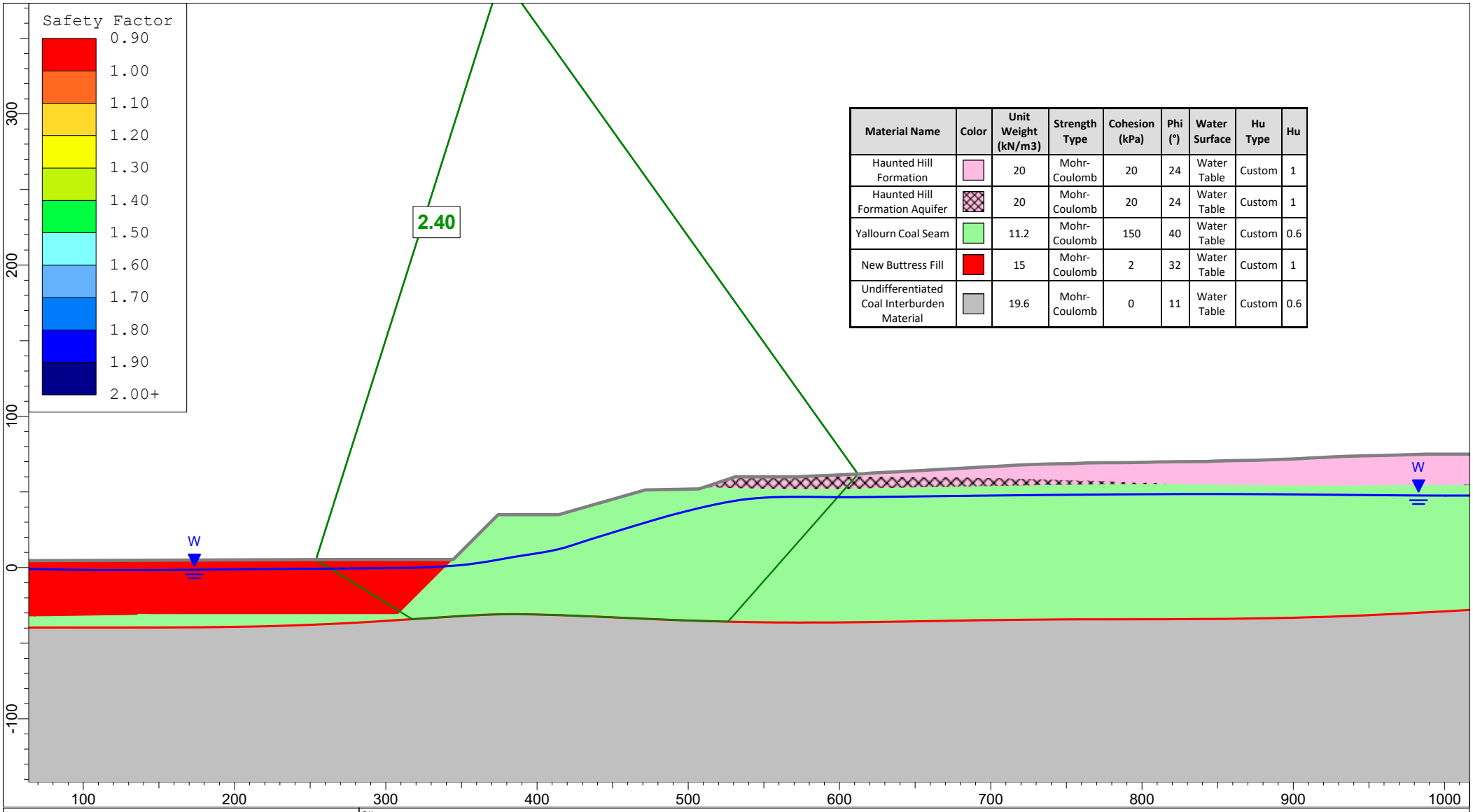
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



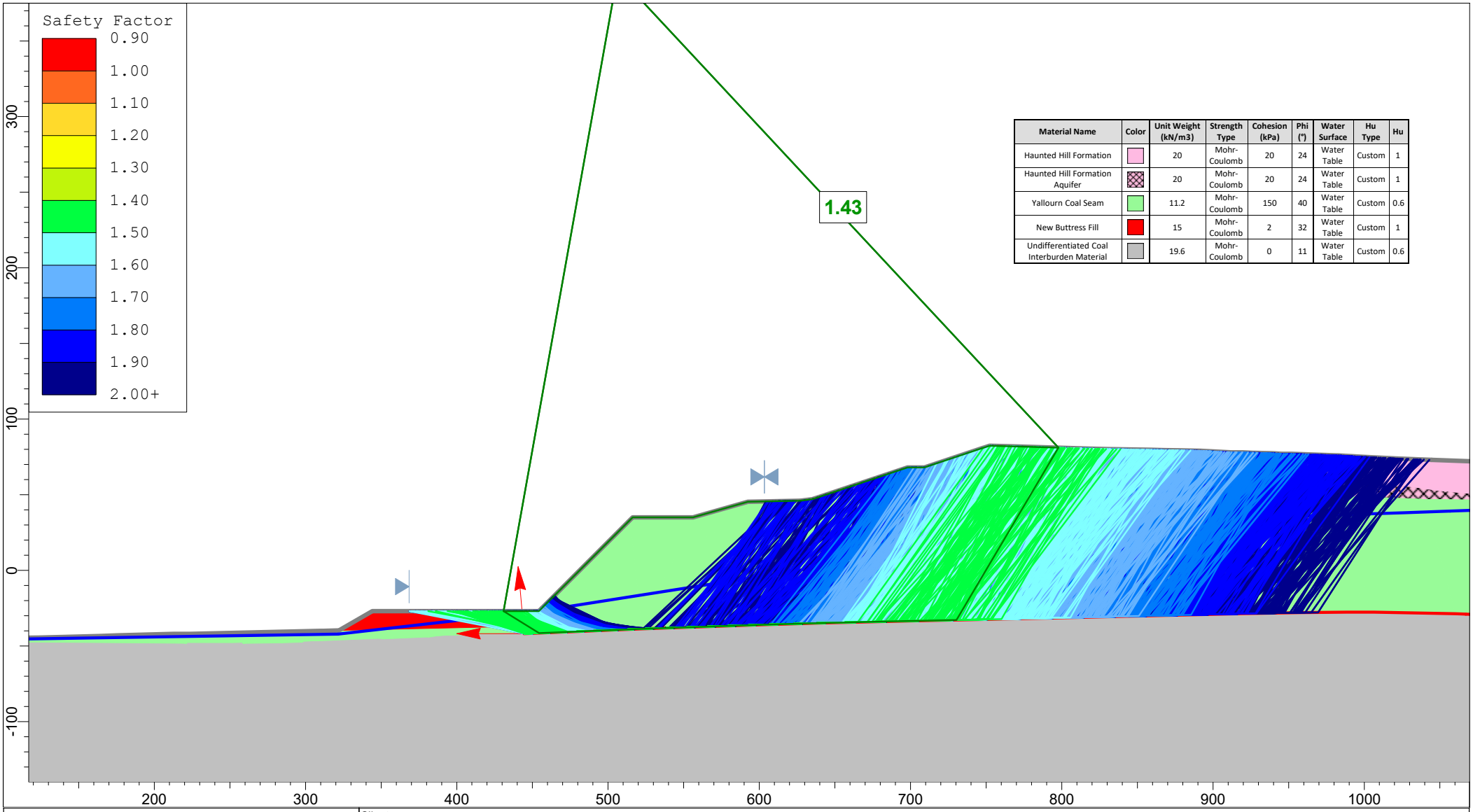
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



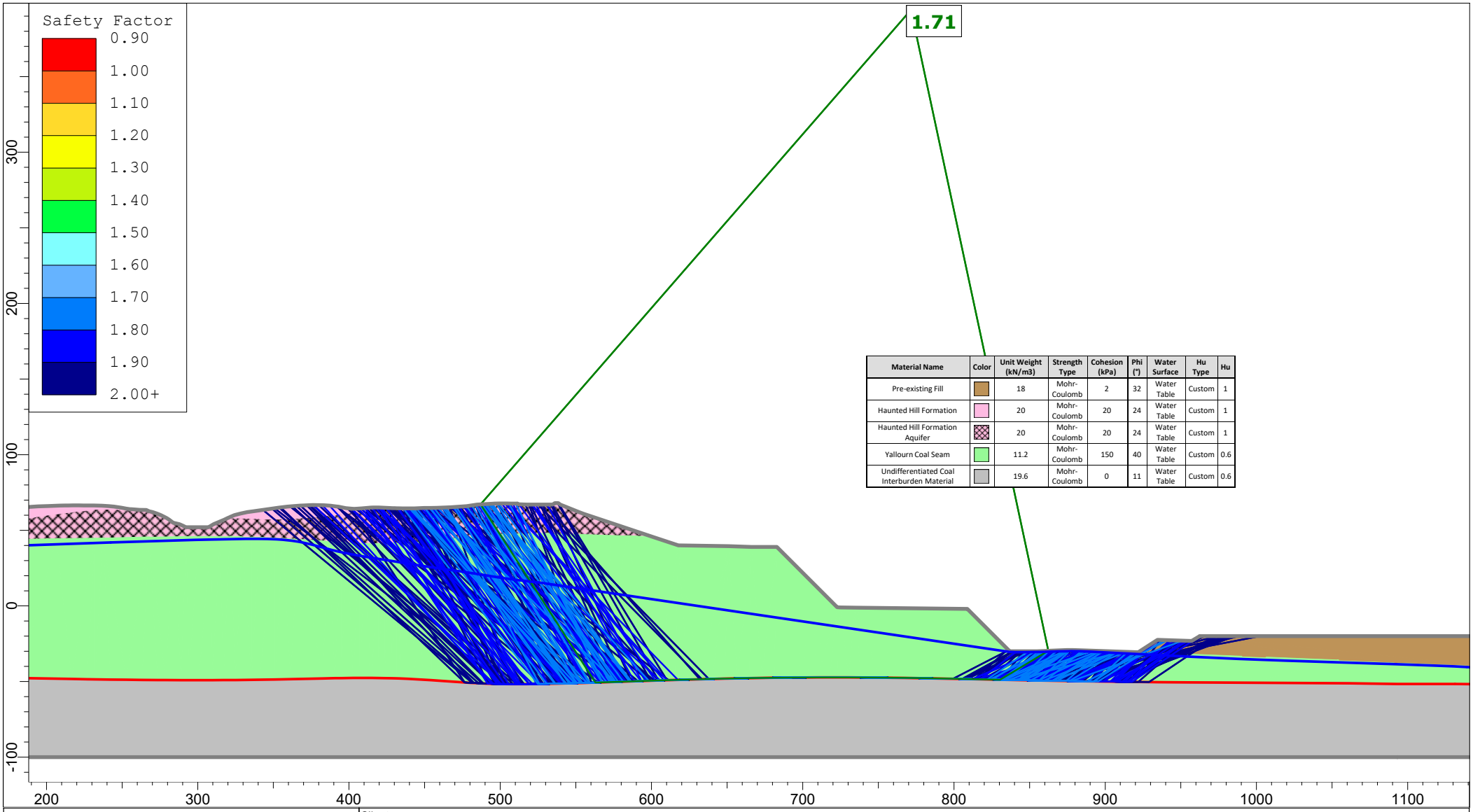
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



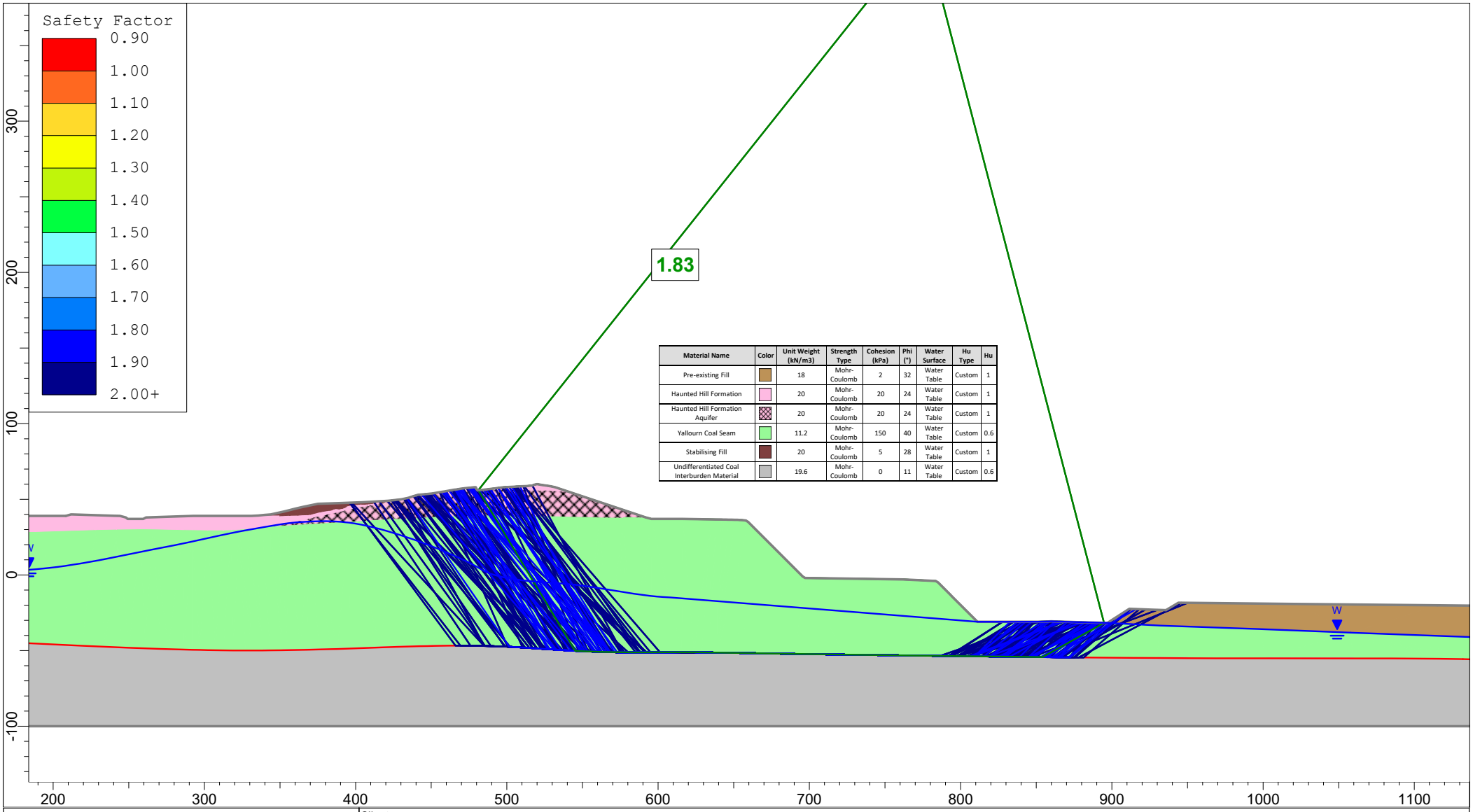
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



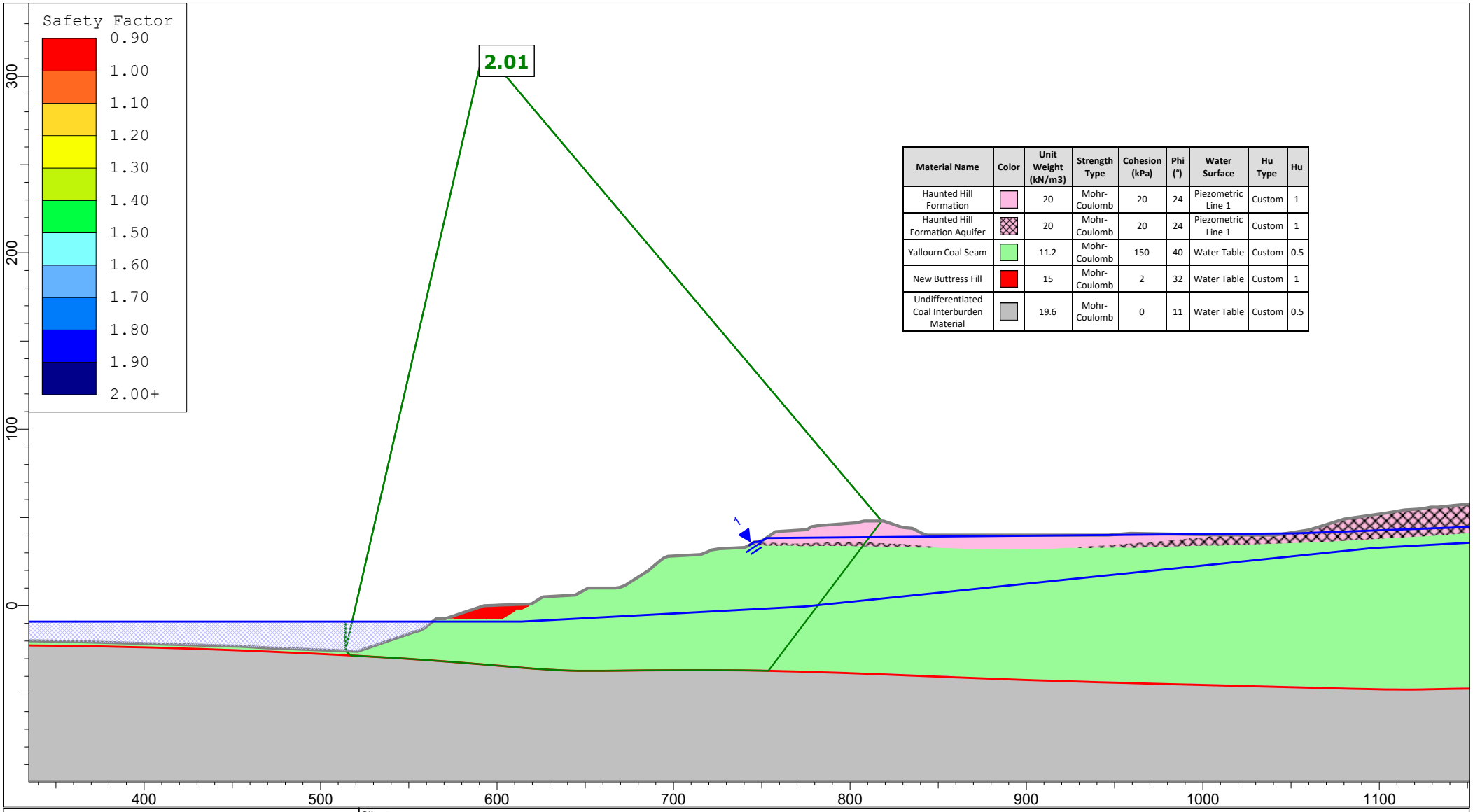
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 14	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



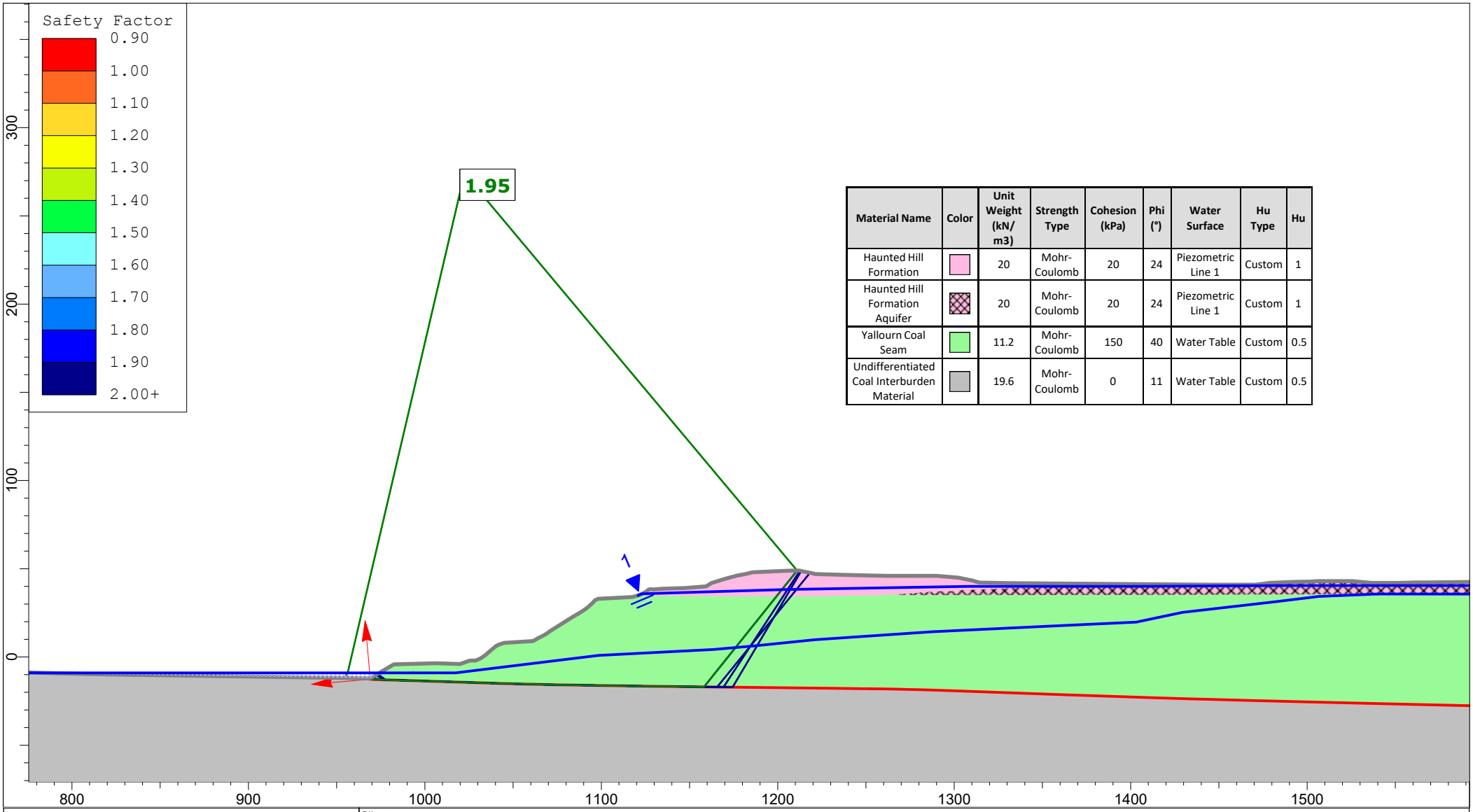
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Stabilising Fill		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 15	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



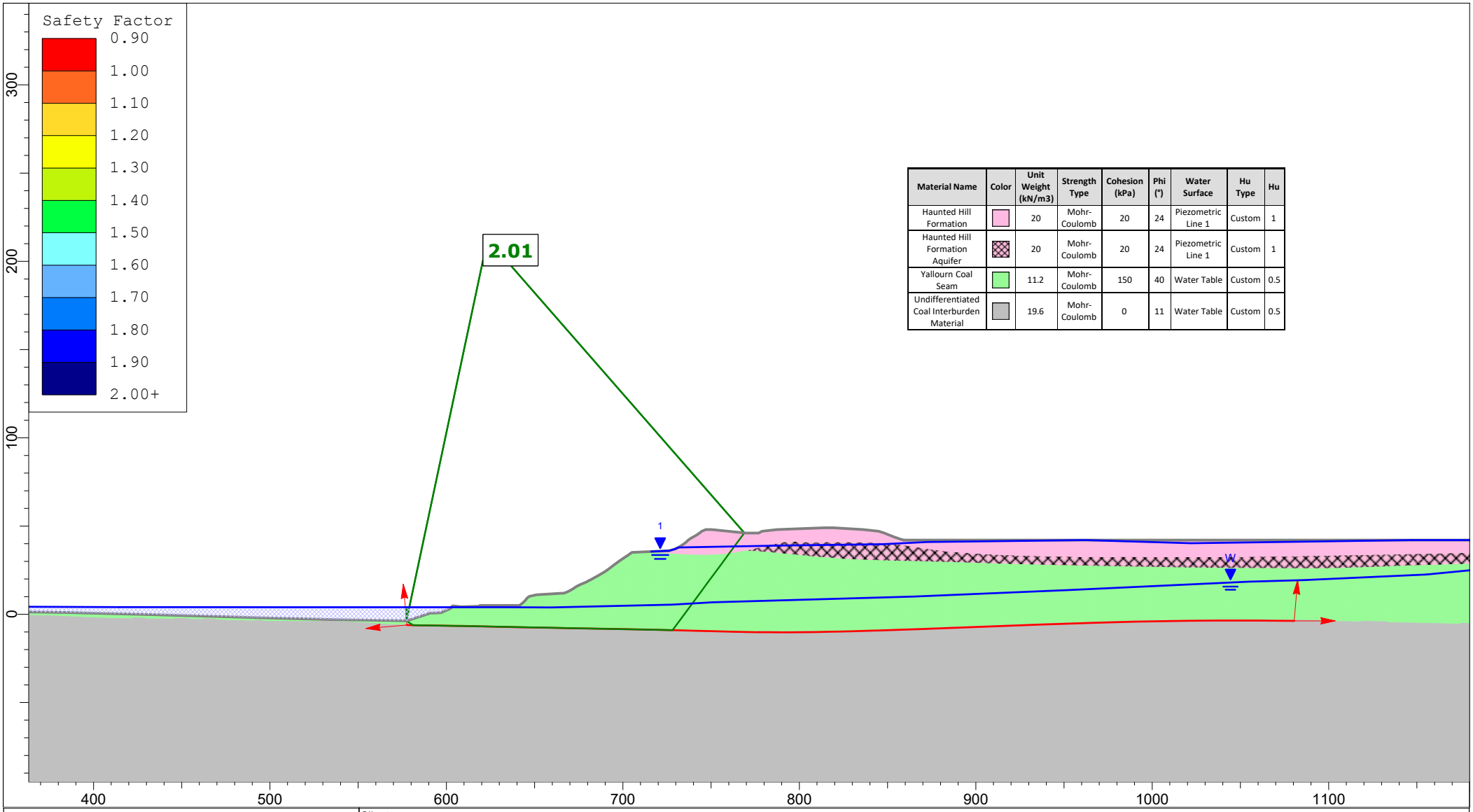
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



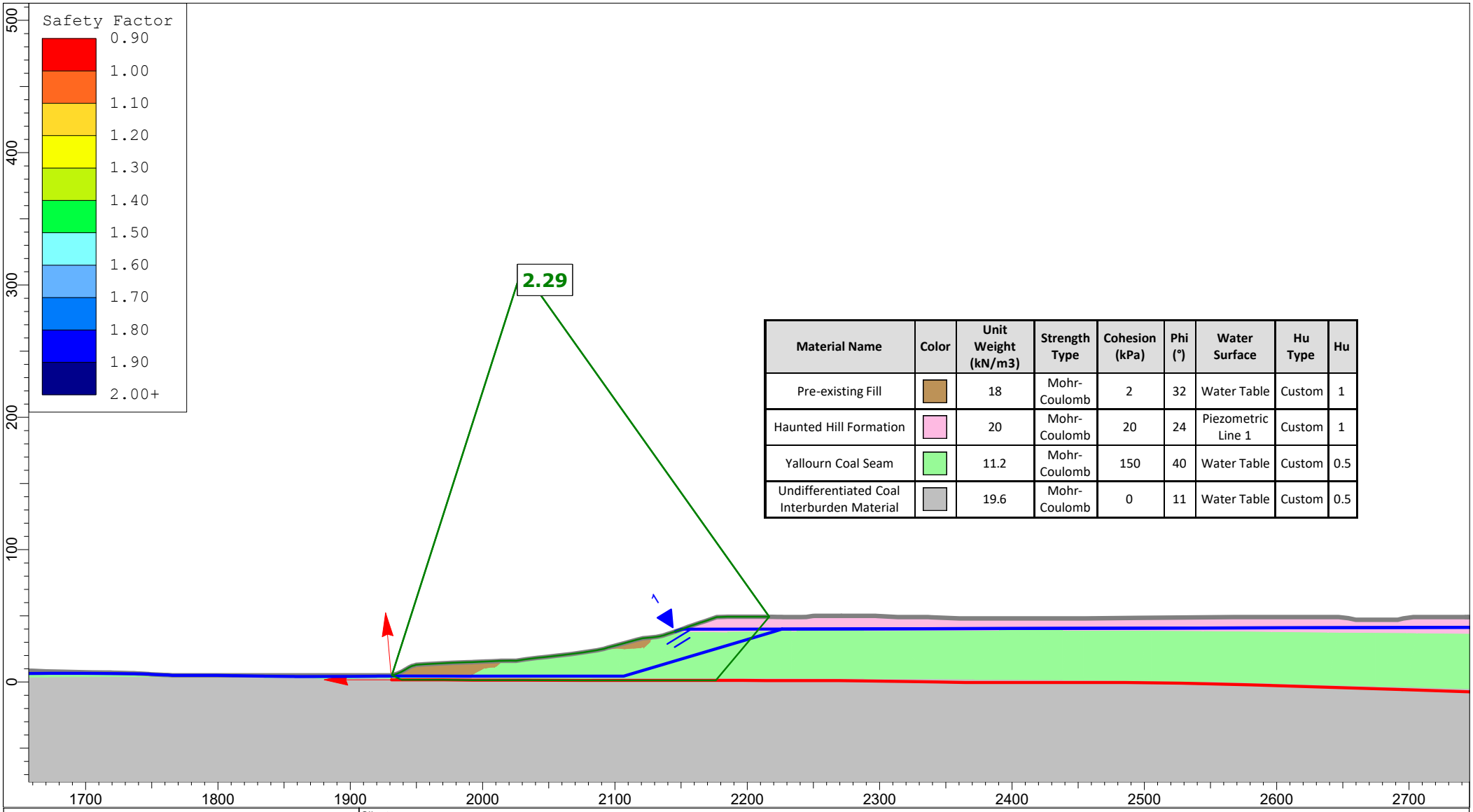
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



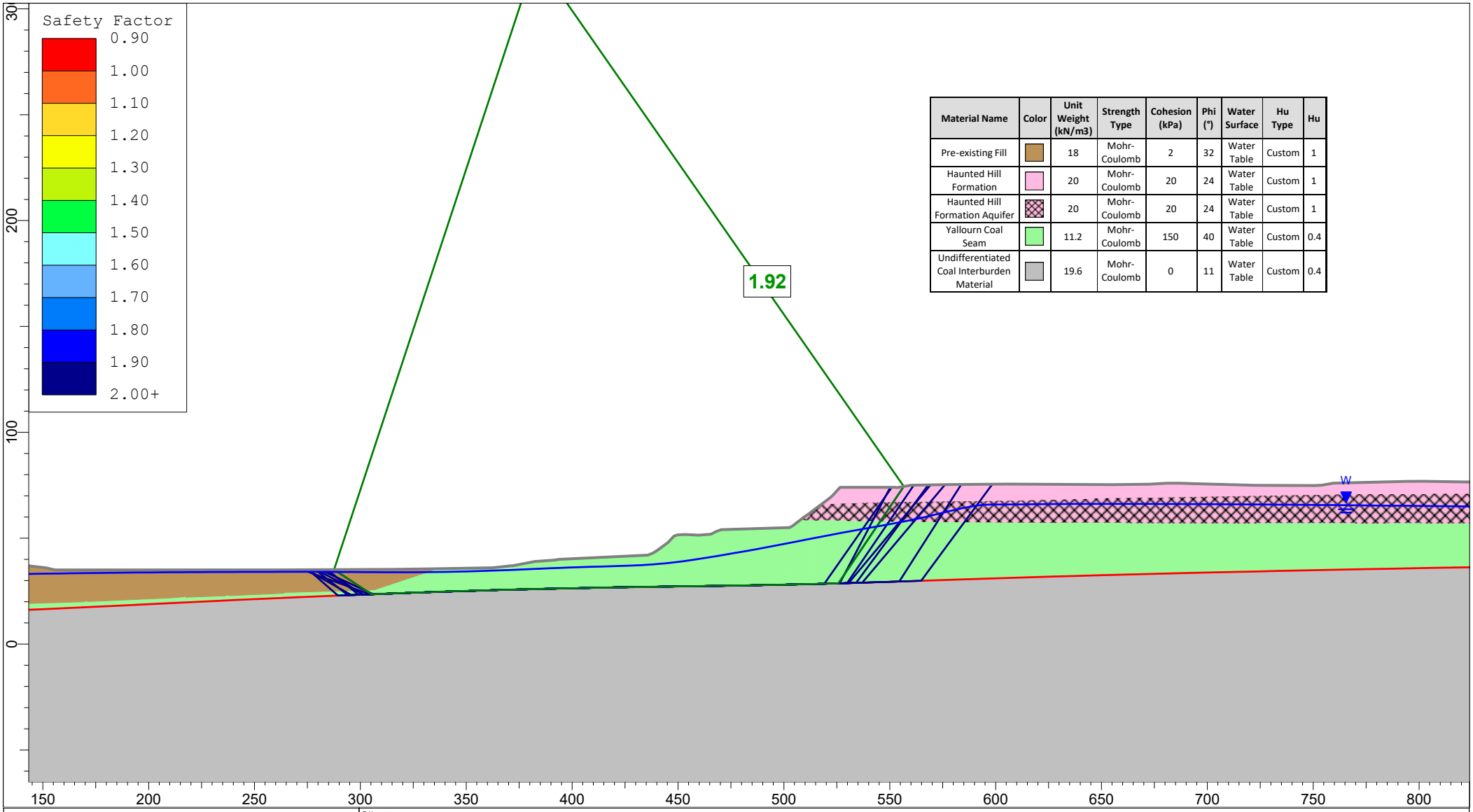
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



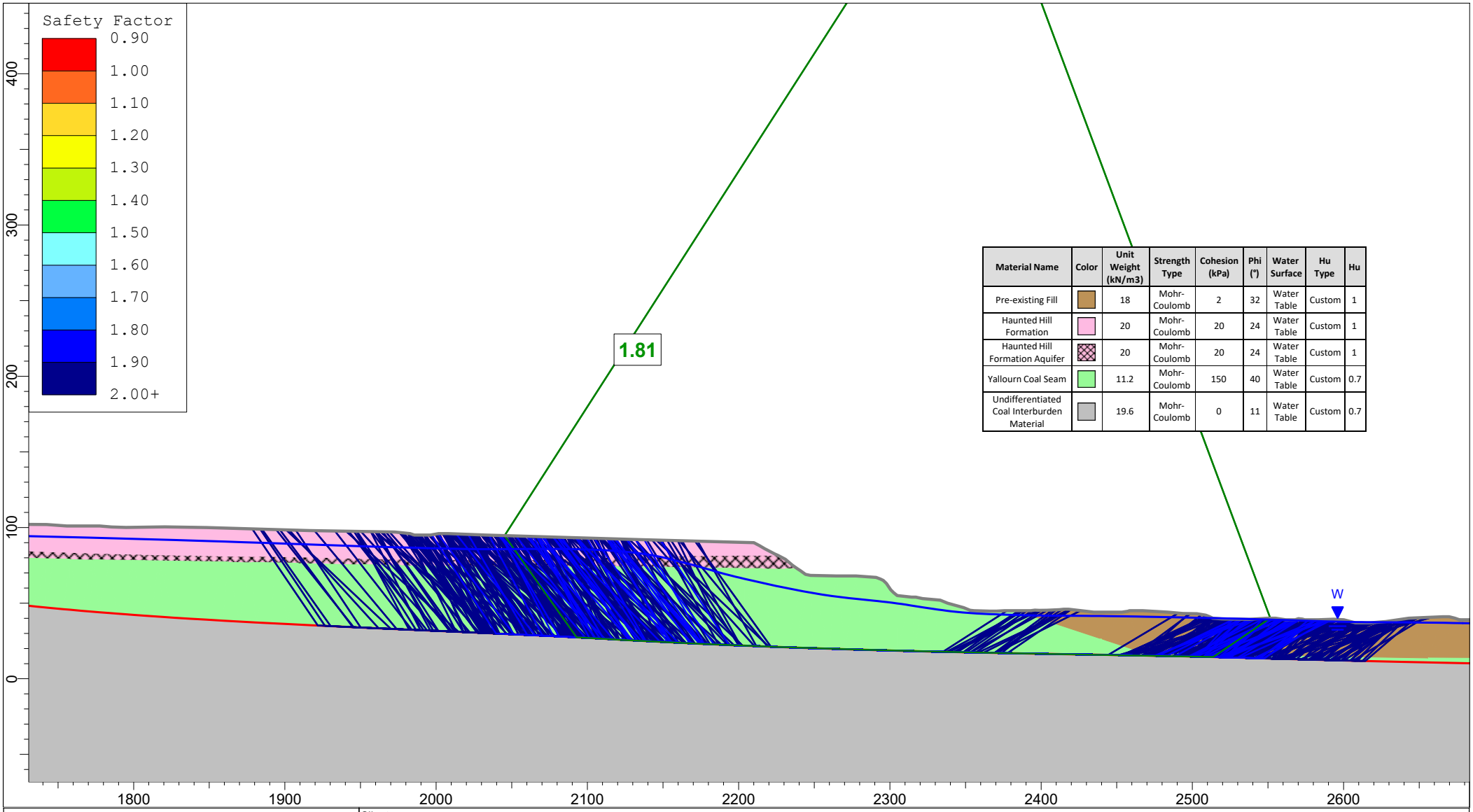
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



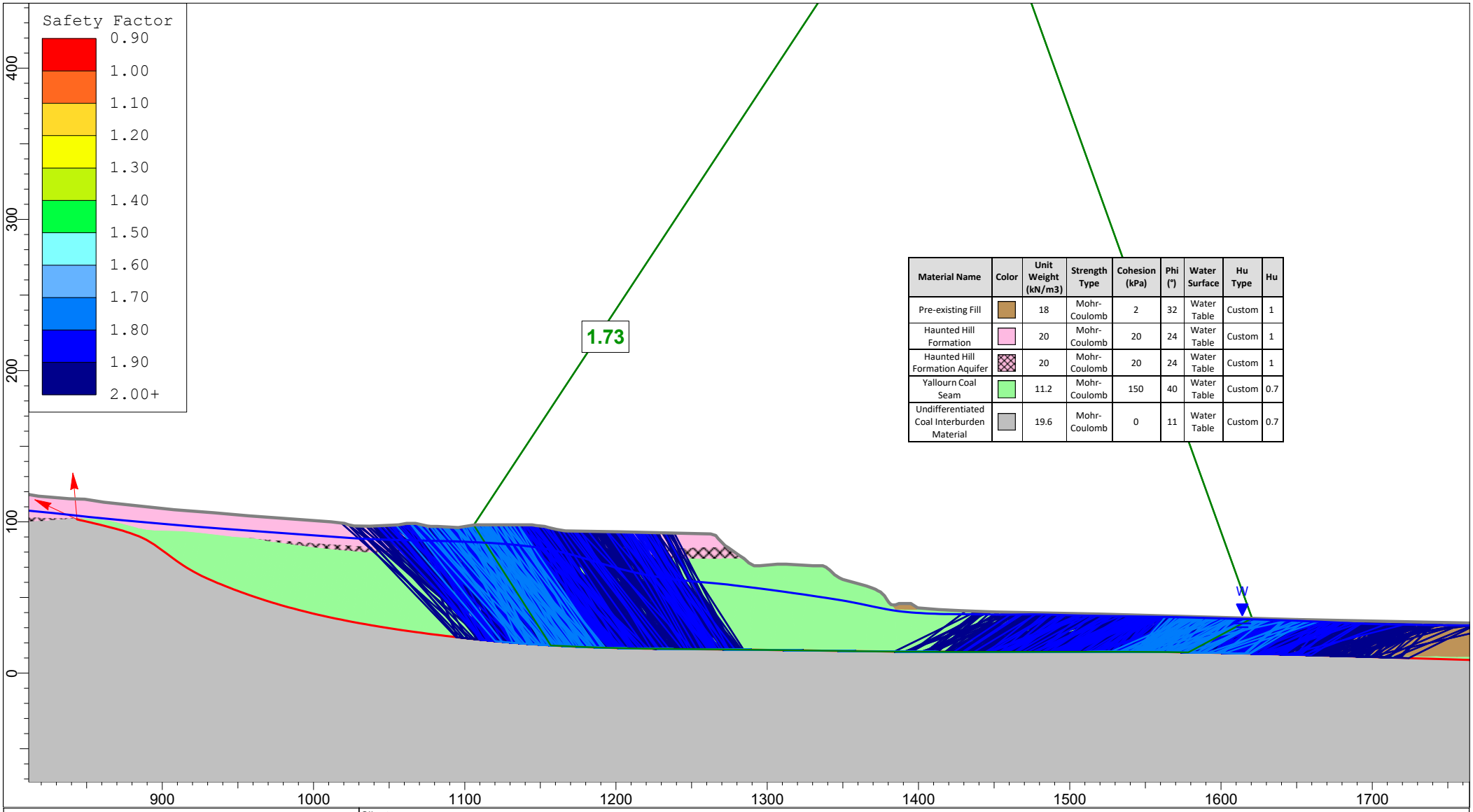
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SB
Section:	Section 19	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



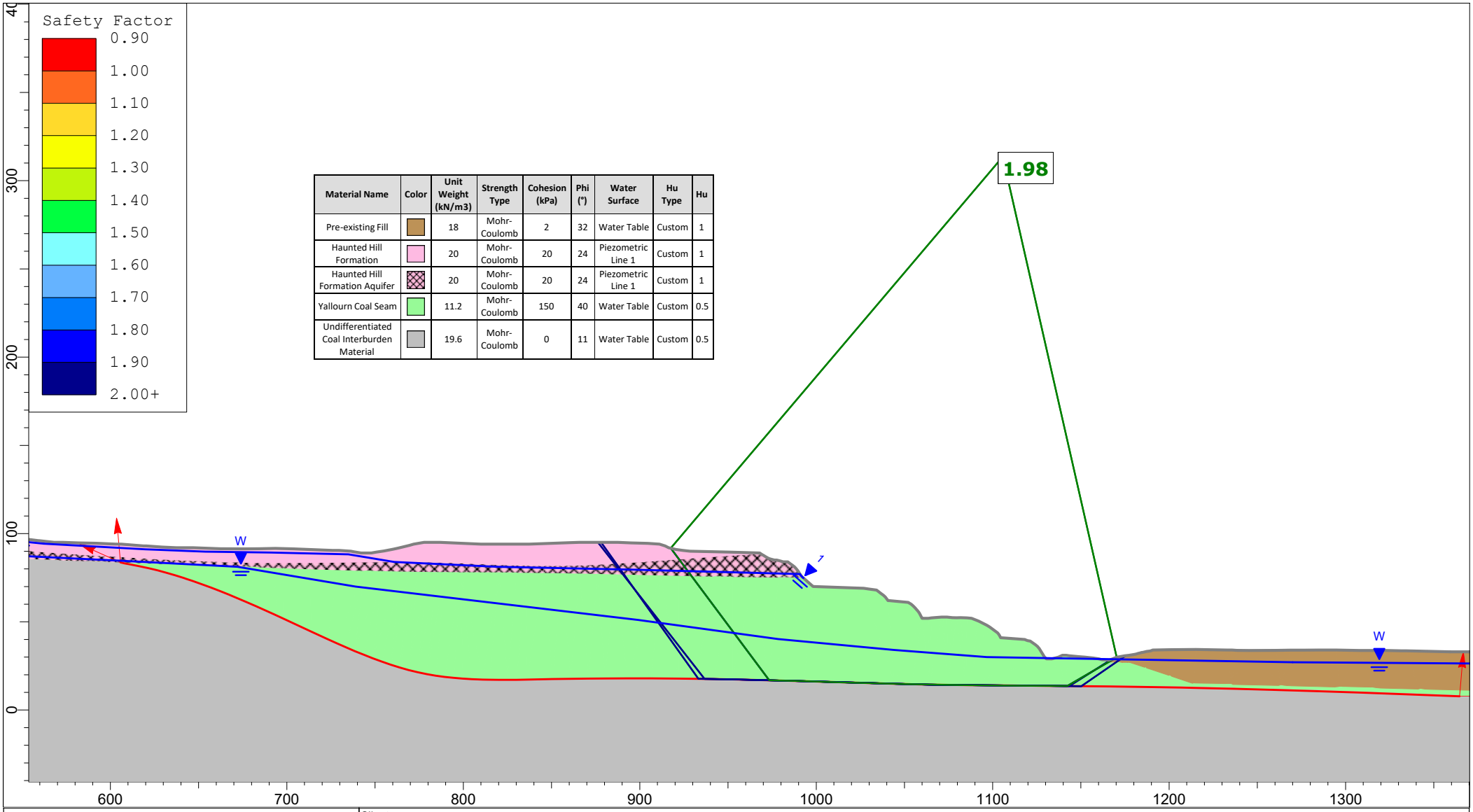
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 20	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



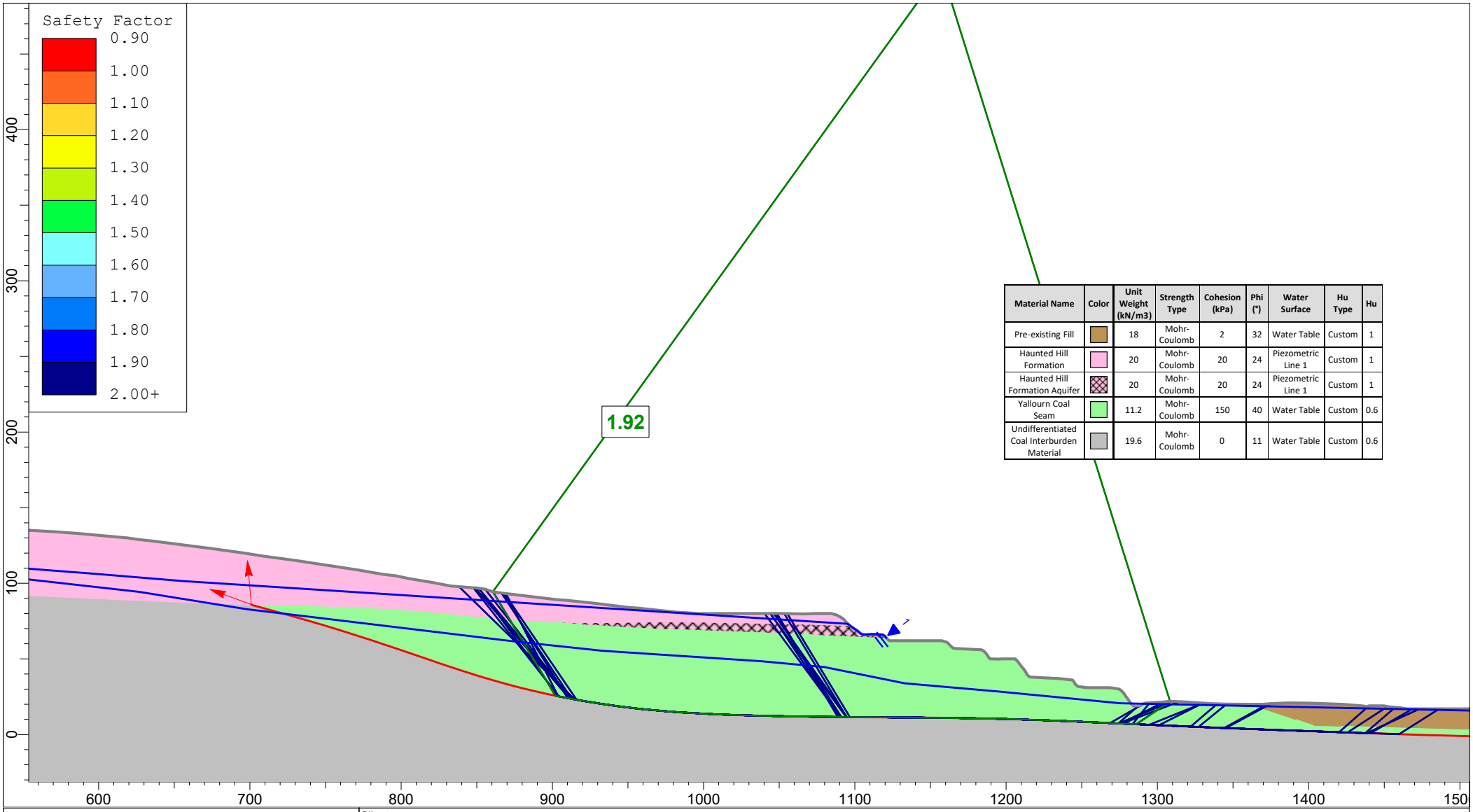
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 21	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



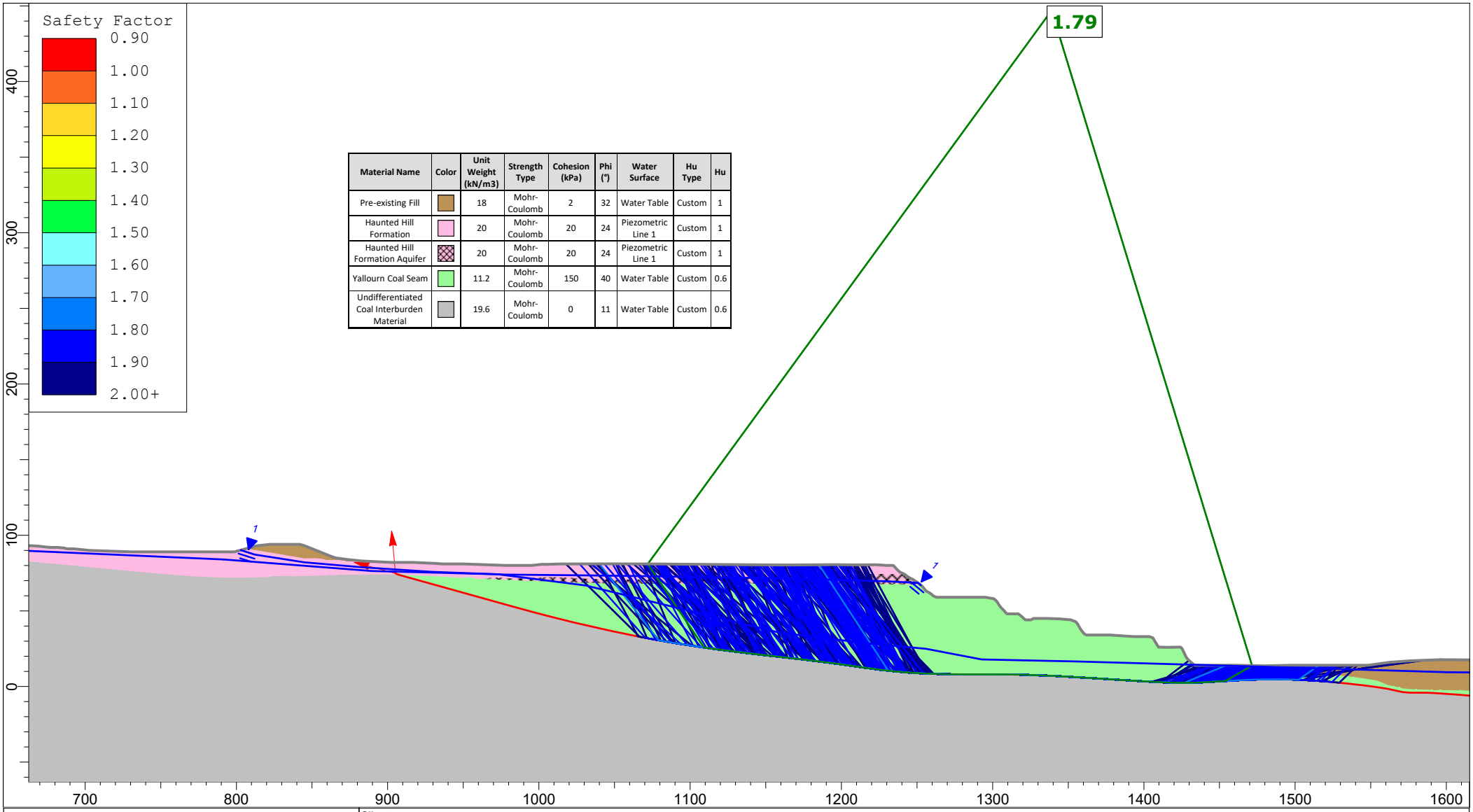
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (South)
Section:	Section 22	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



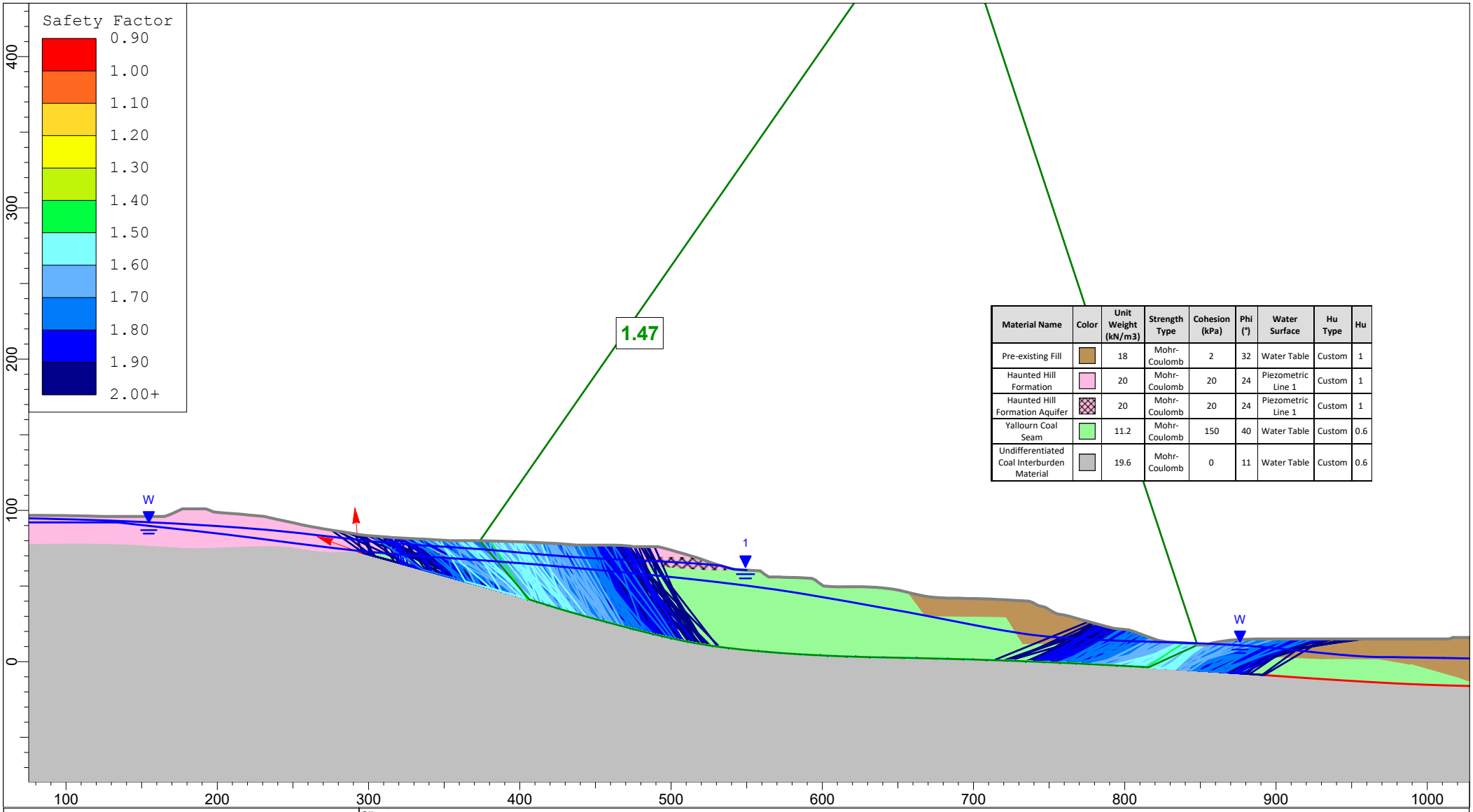
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 23	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



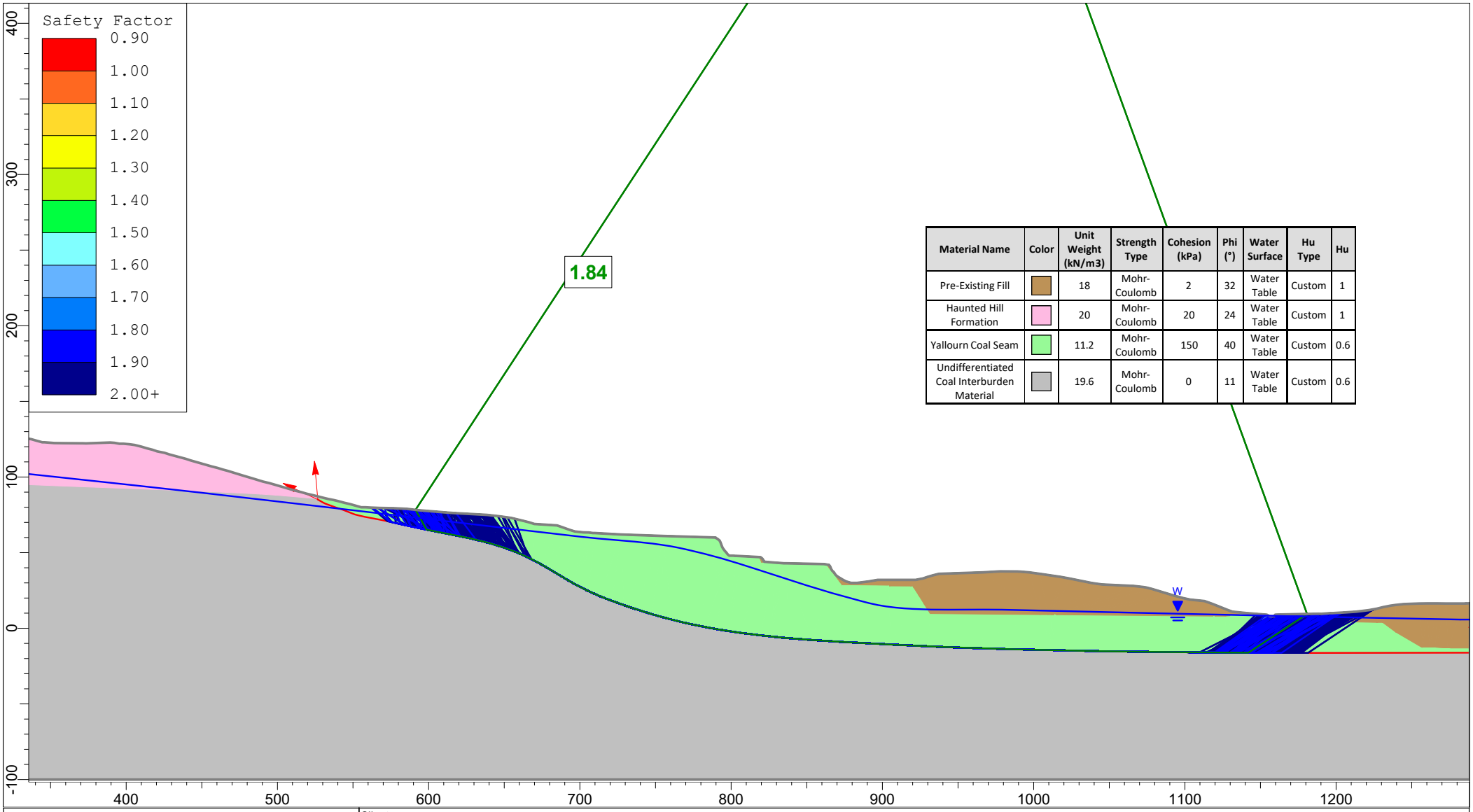
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



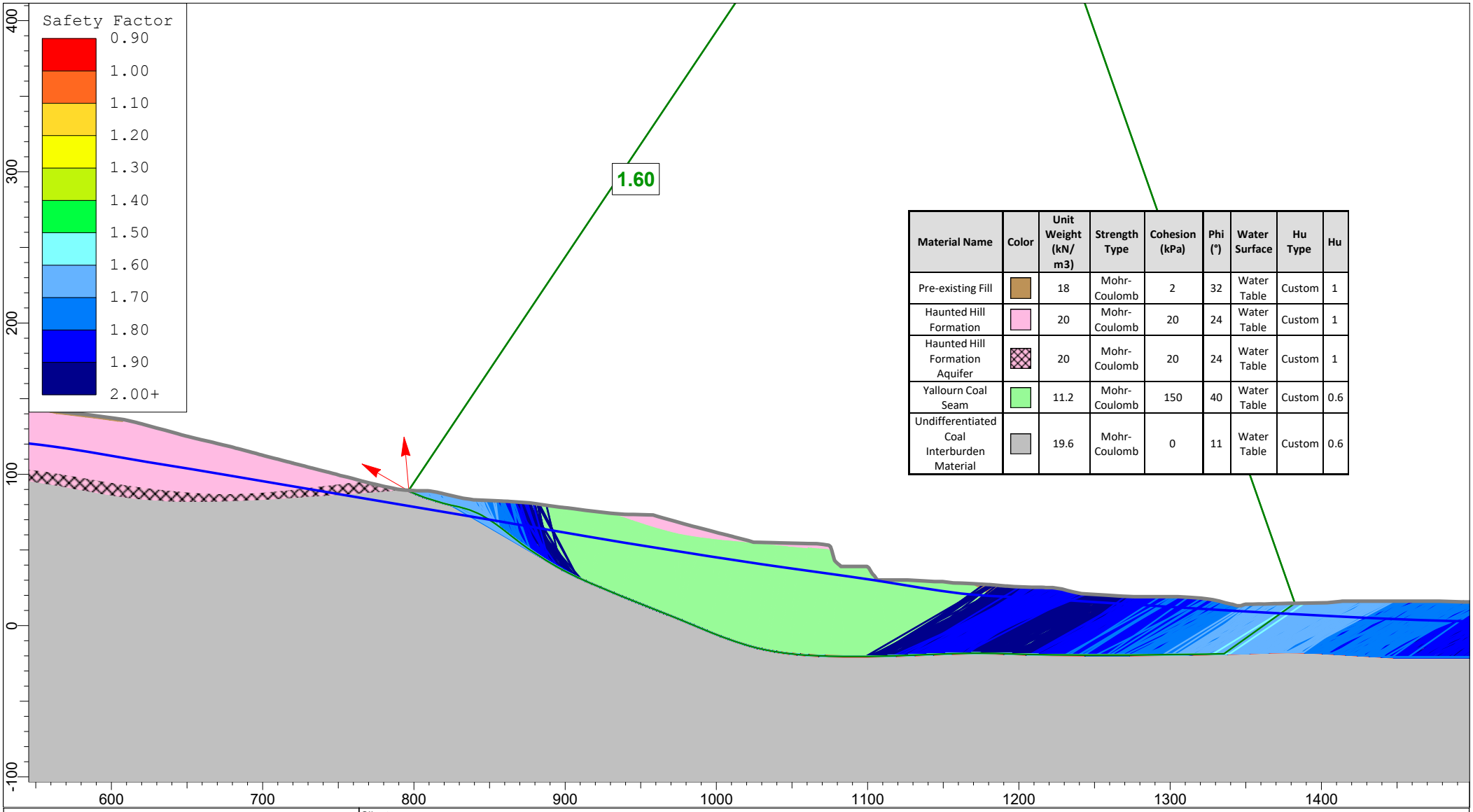
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



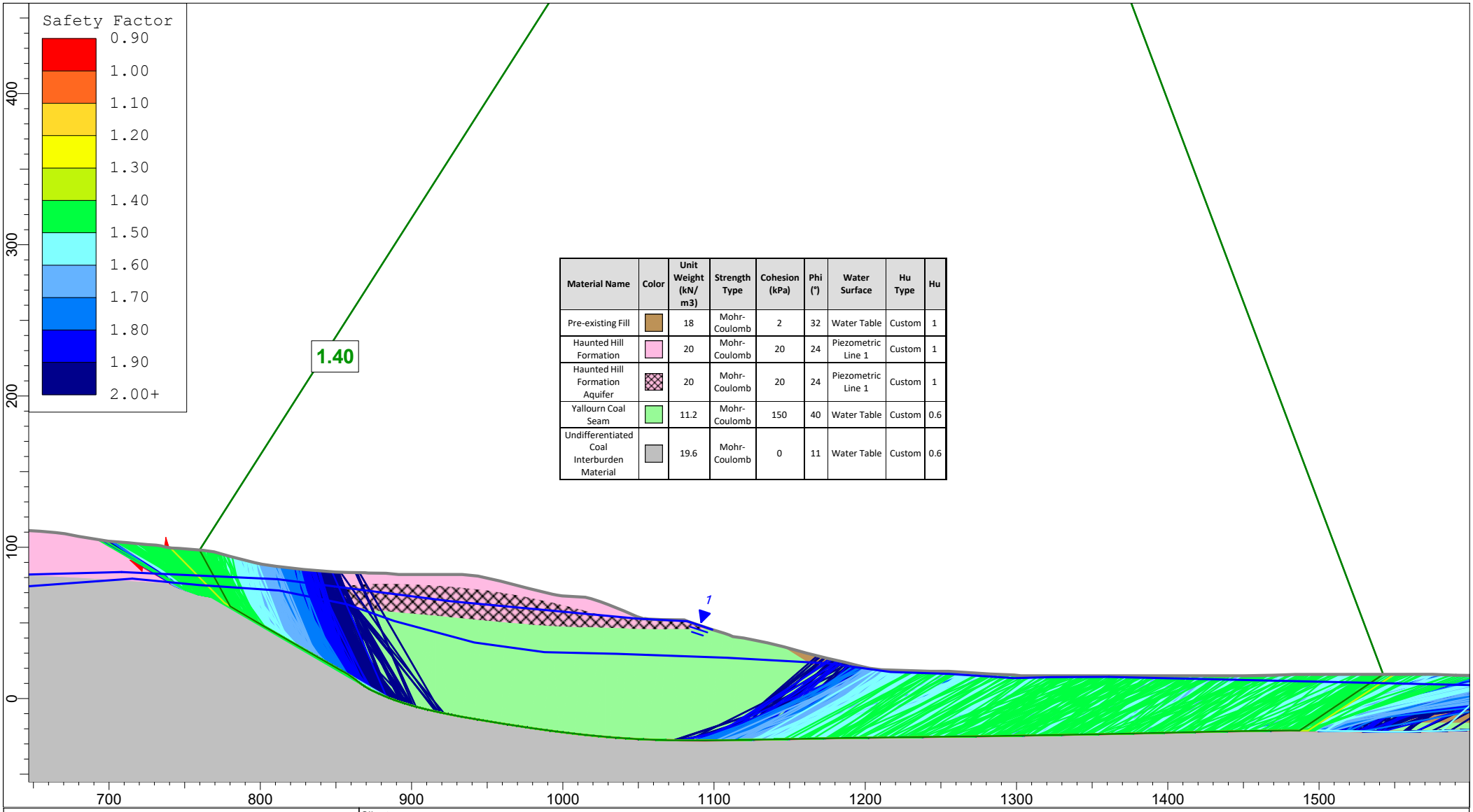
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



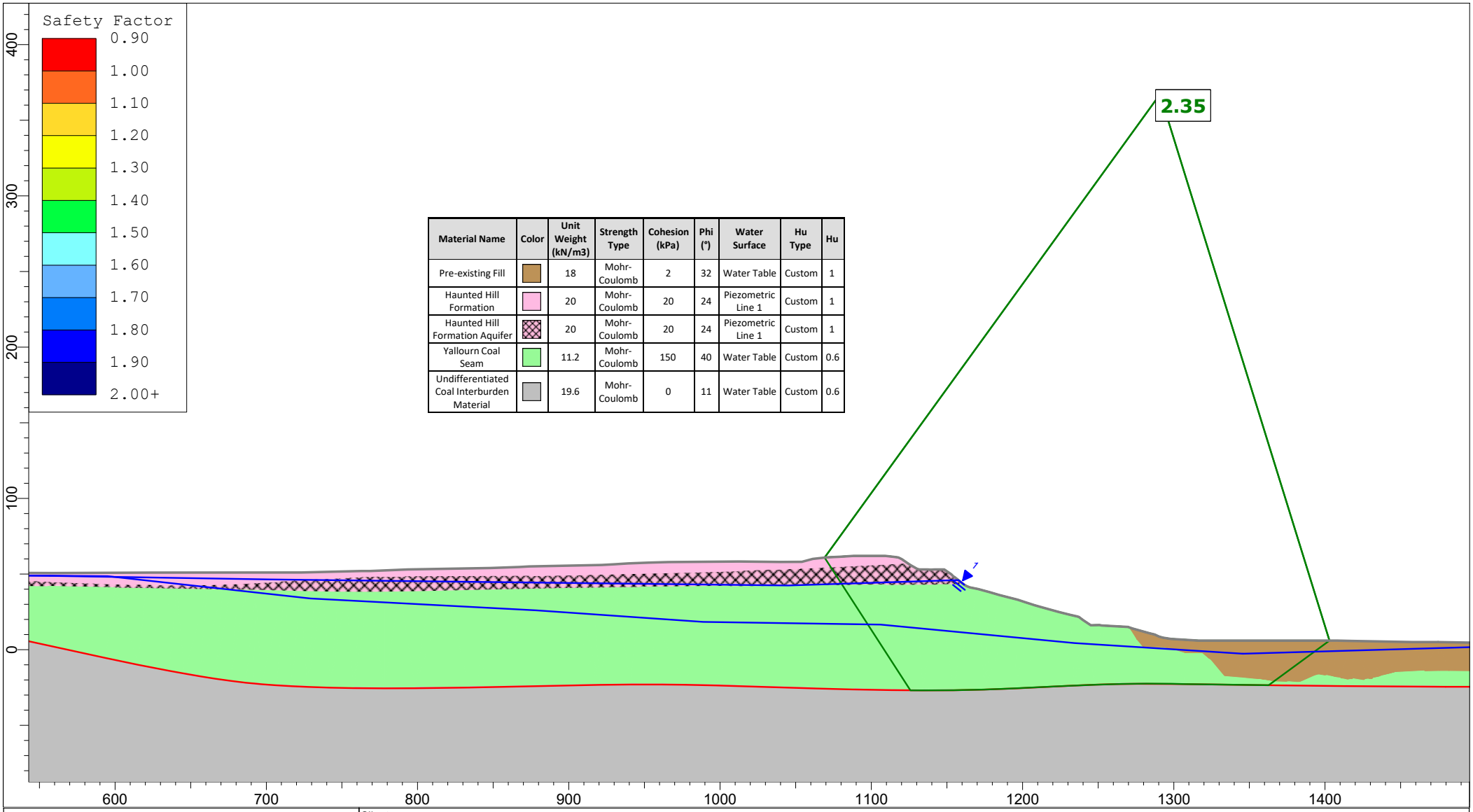
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



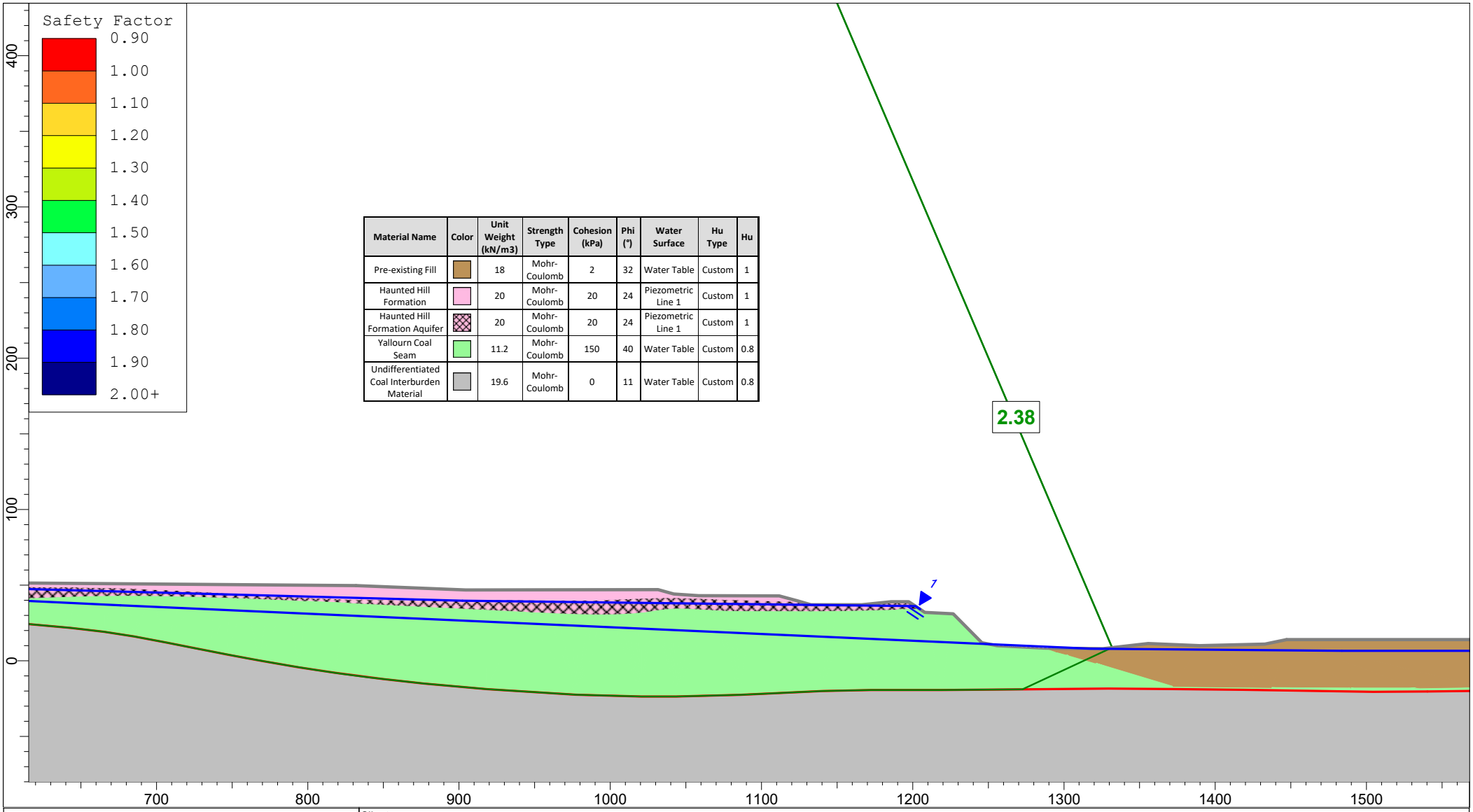
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



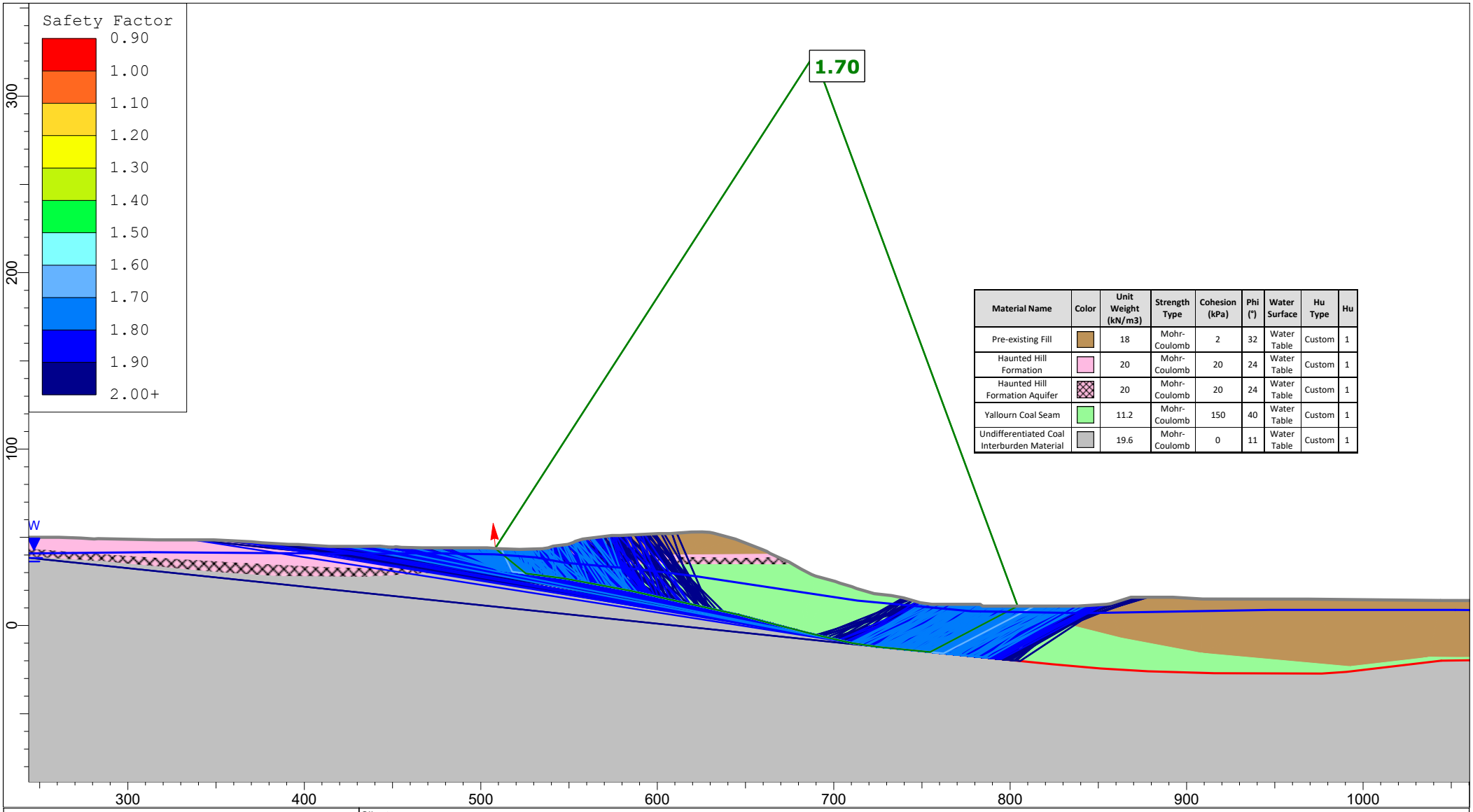
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-NB
Section:	Section 29	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



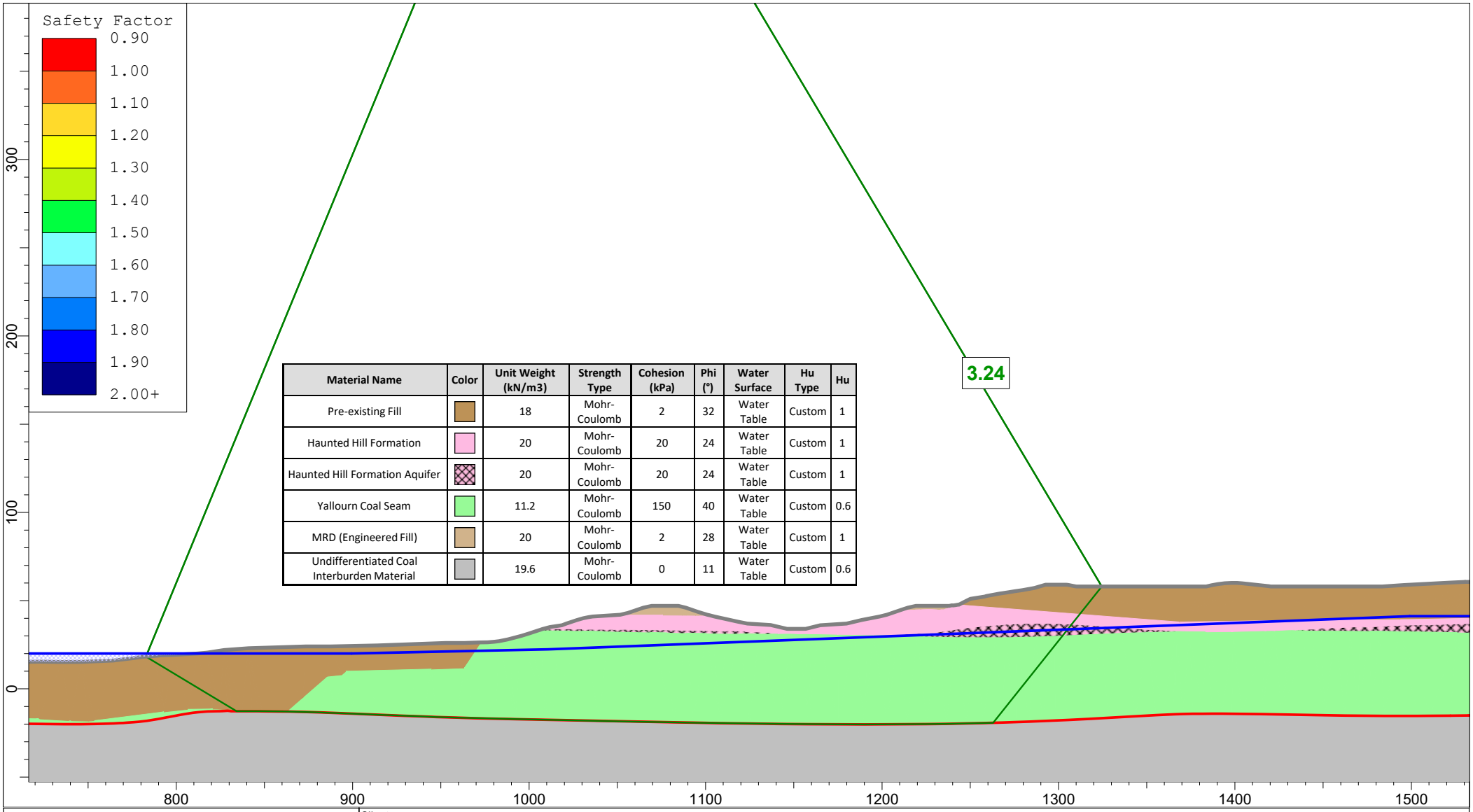
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.8
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.8

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



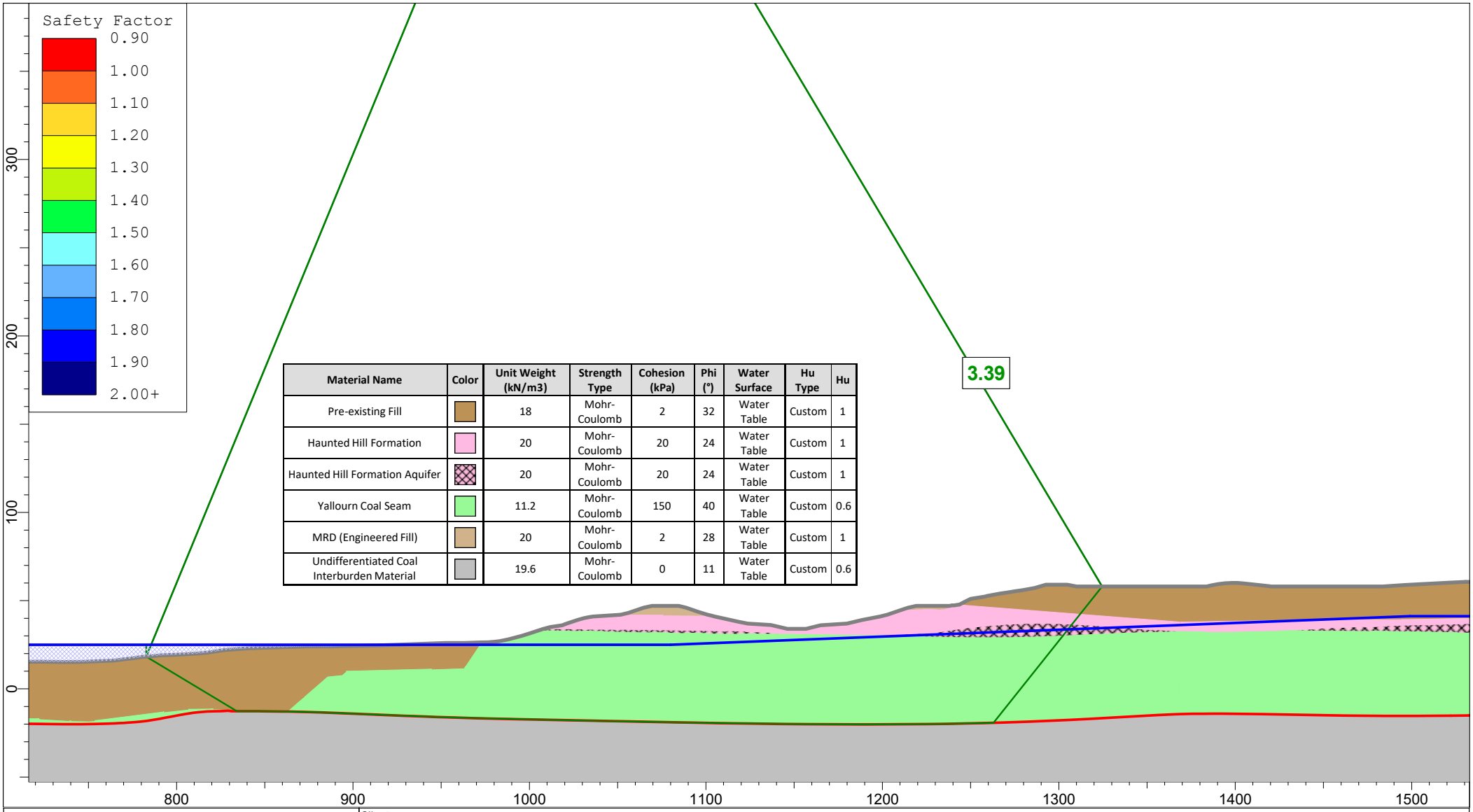
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-LS
Section:	Section 31	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



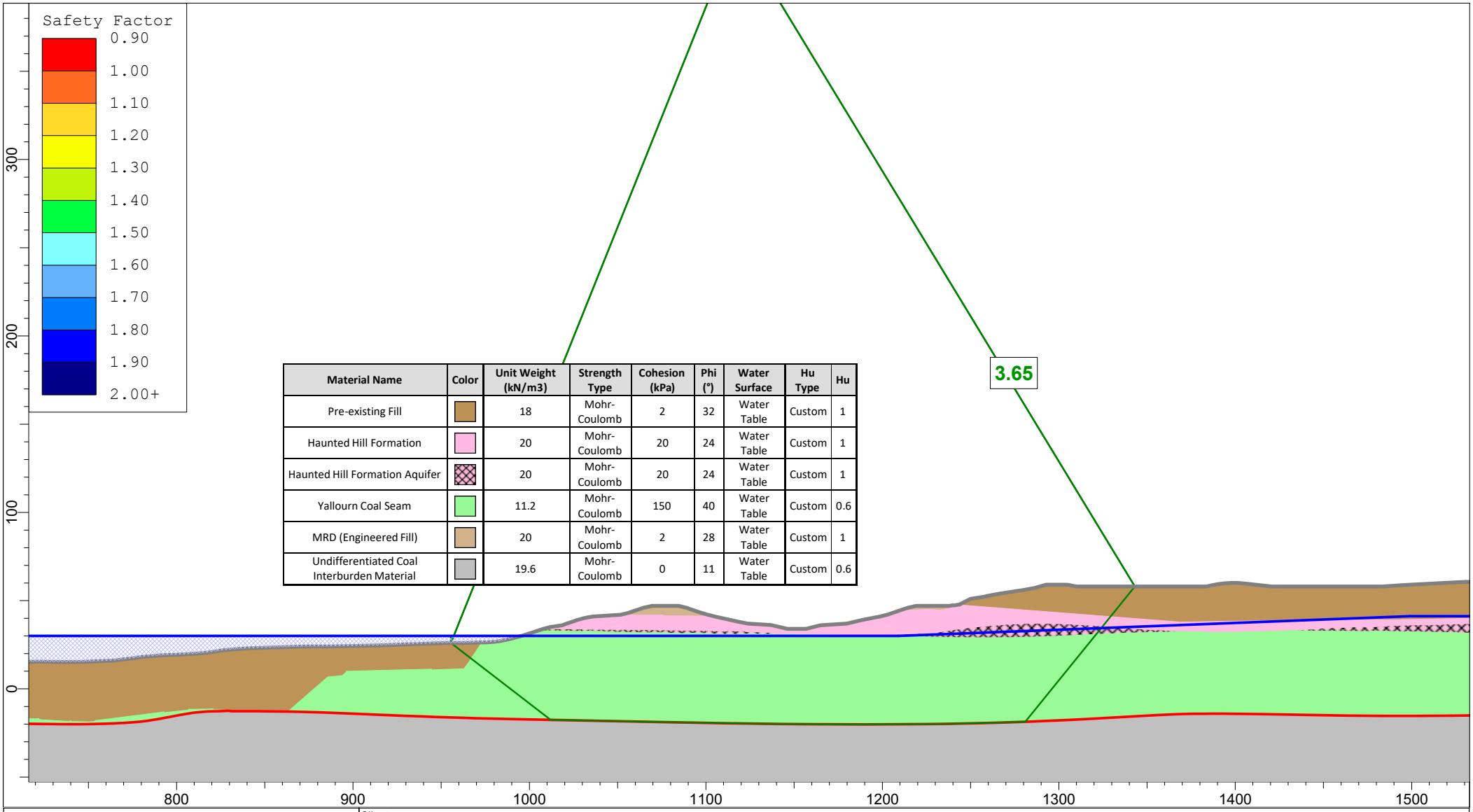
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



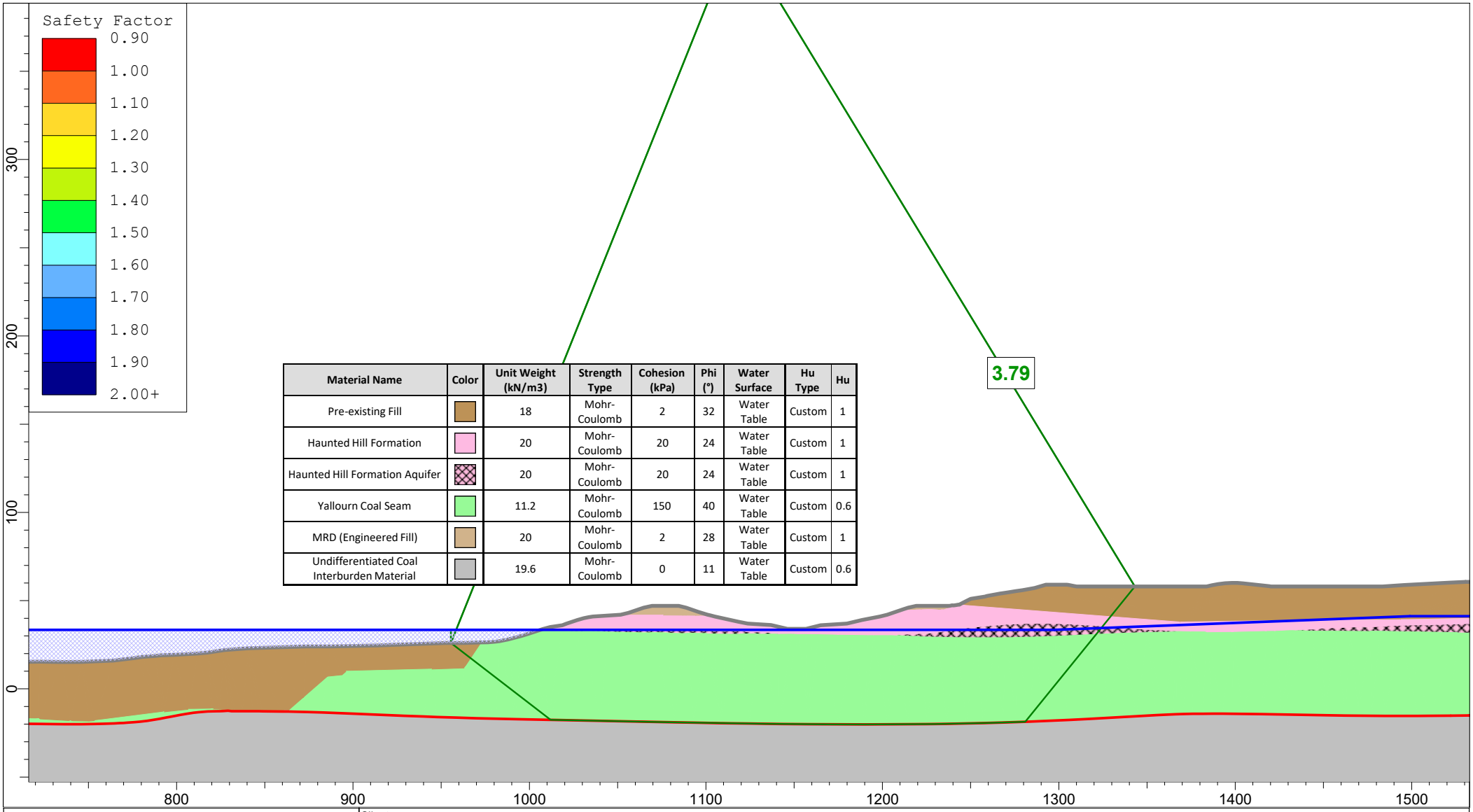
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



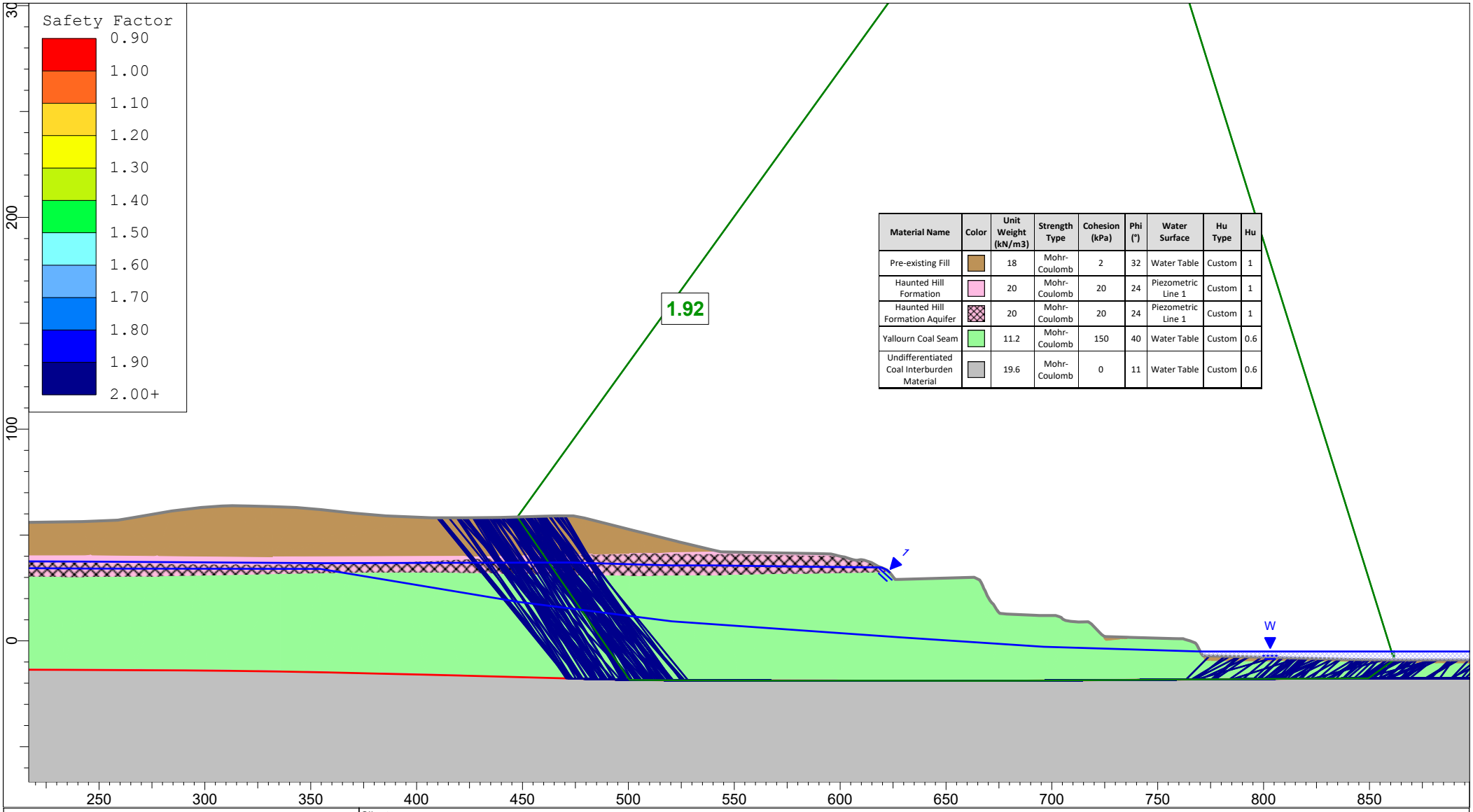
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 30 mRL
Notes:	Lower Bound Interseam Shear Strength		



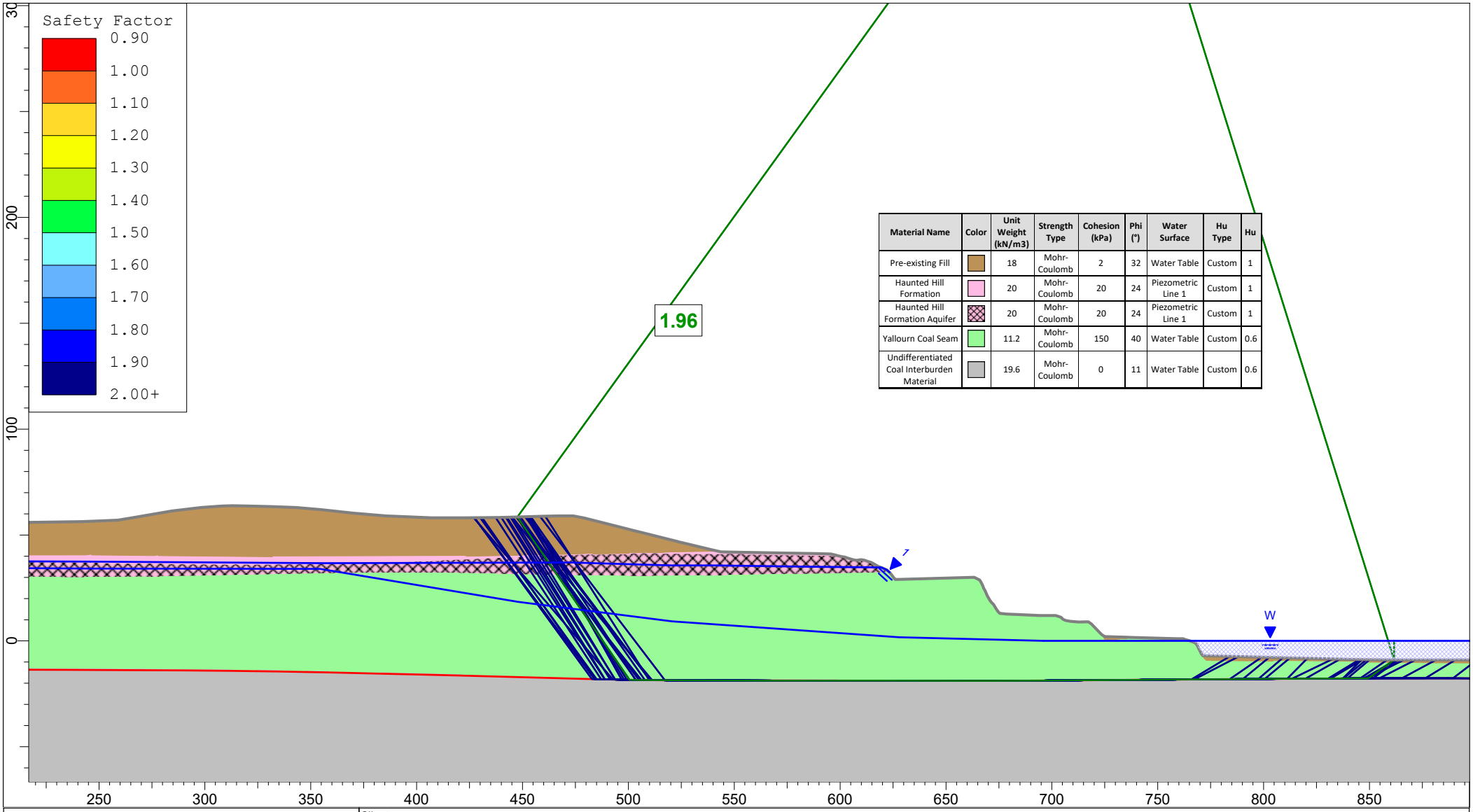
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



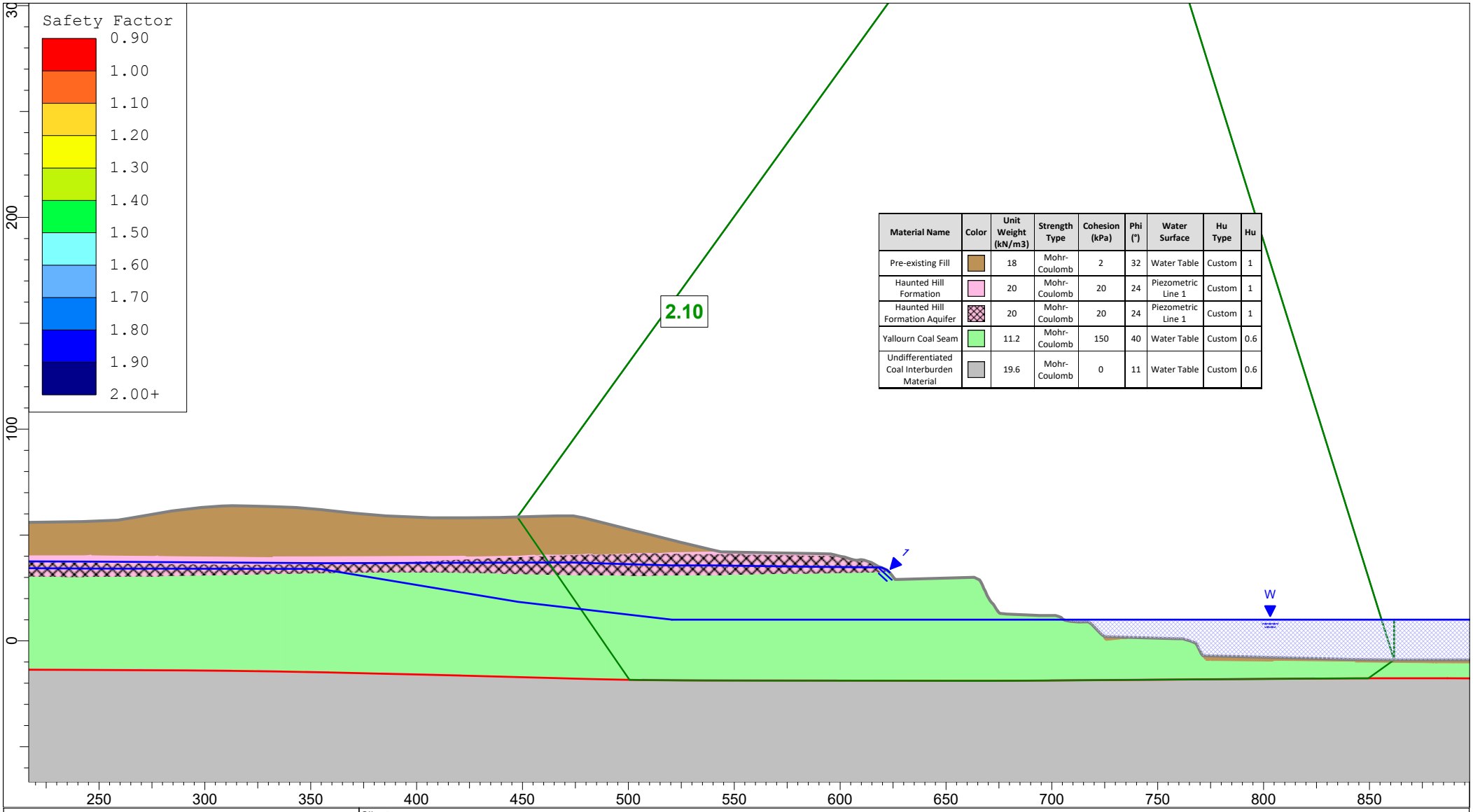
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 02	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength		



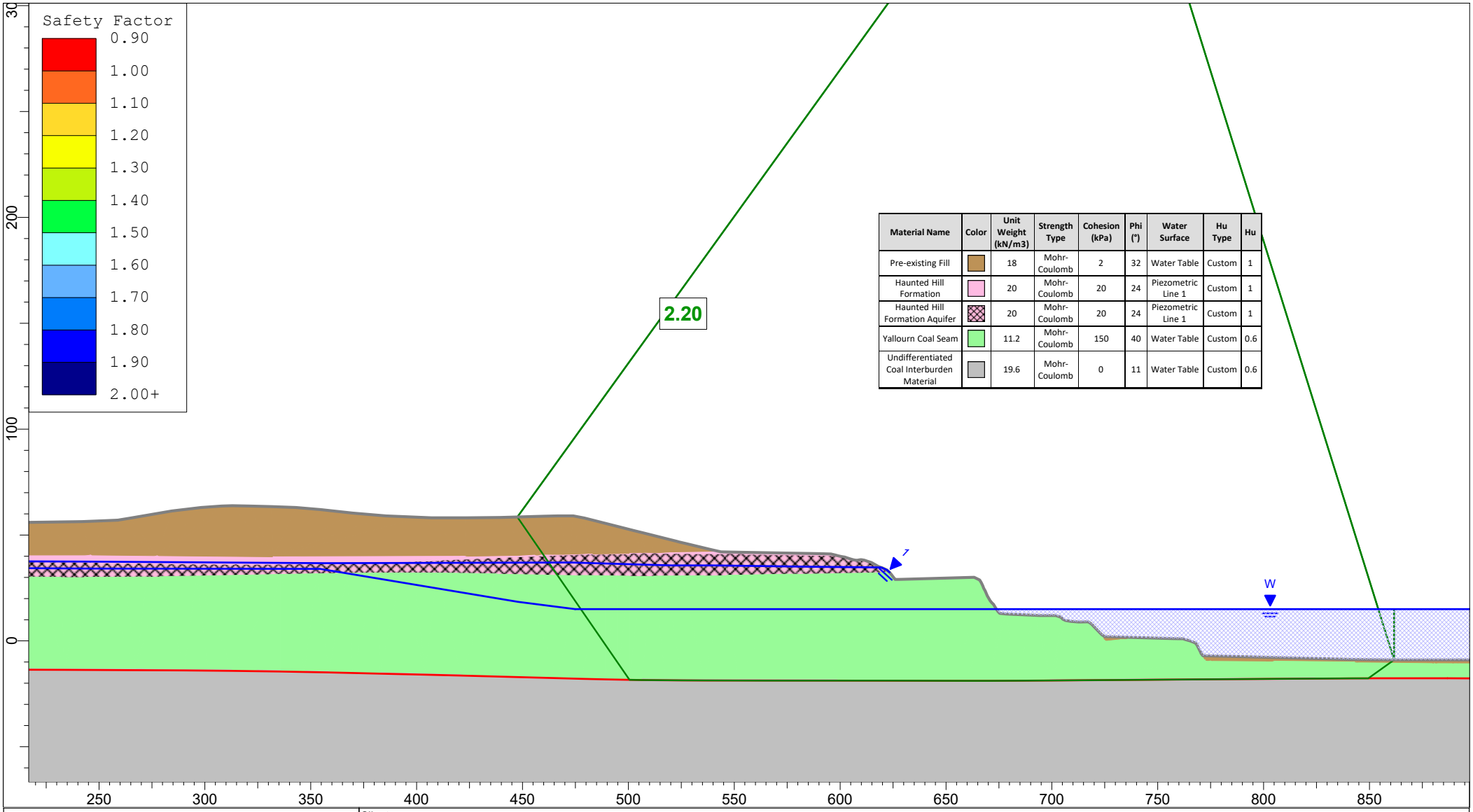
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 02	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



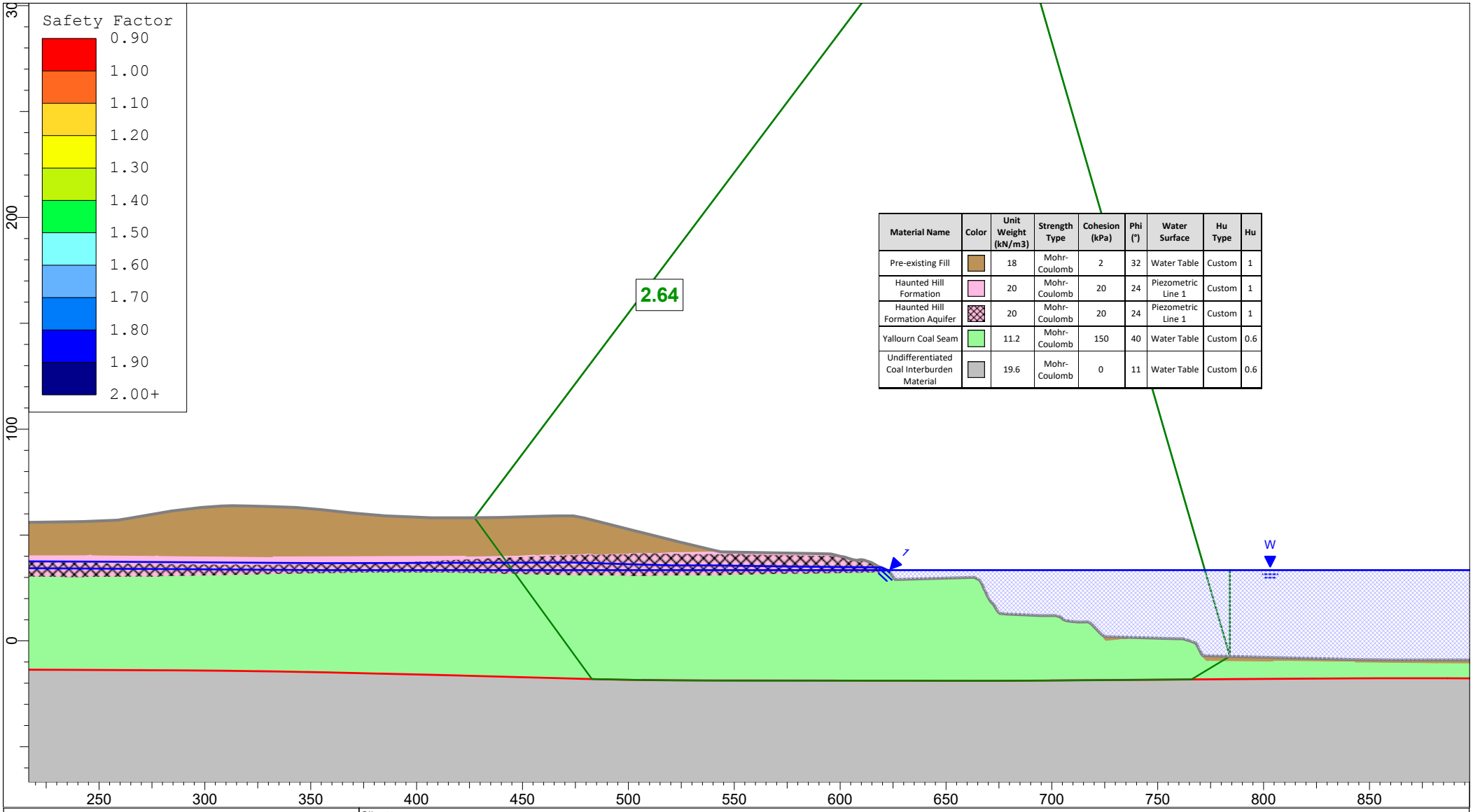
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 02	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



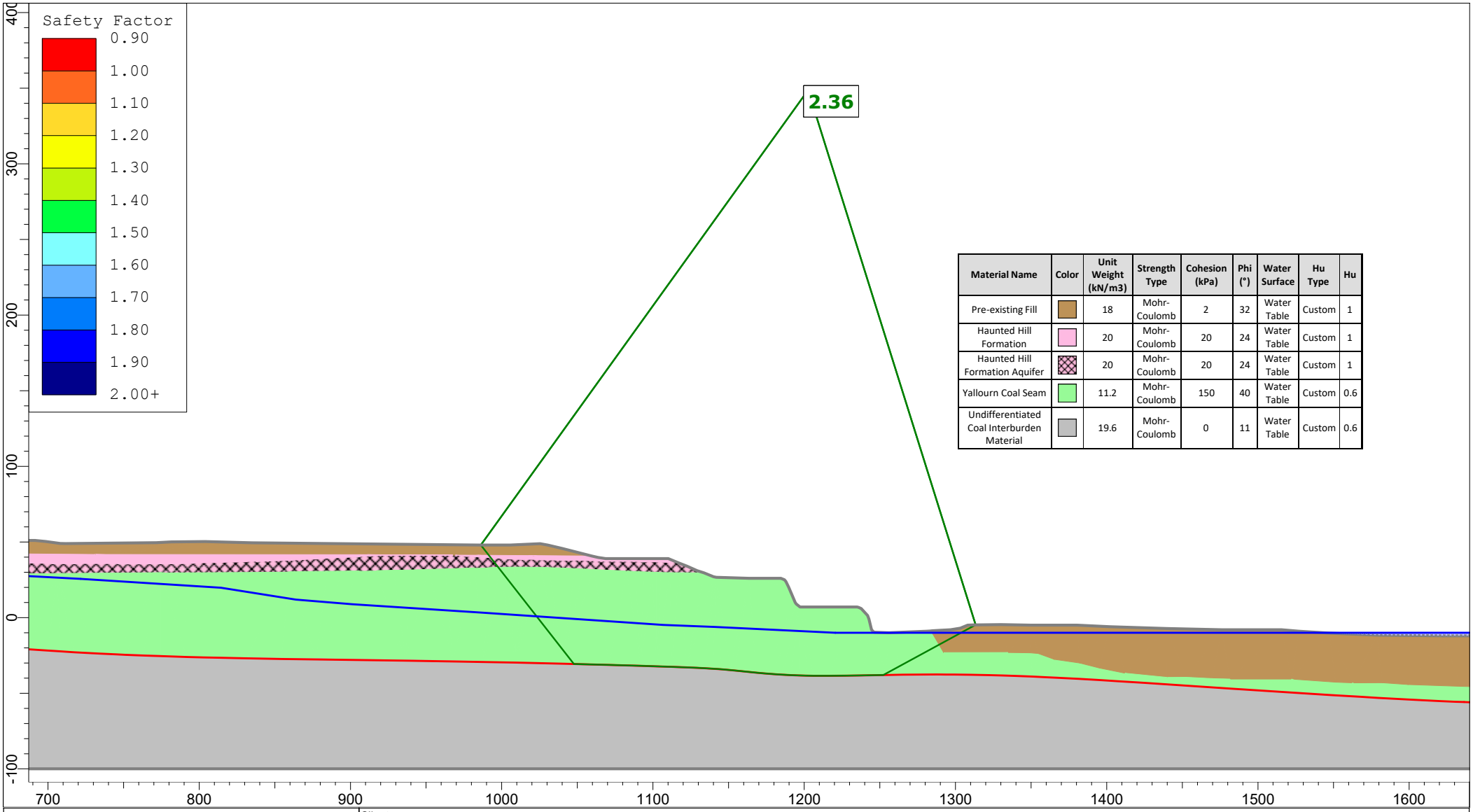
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 02	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



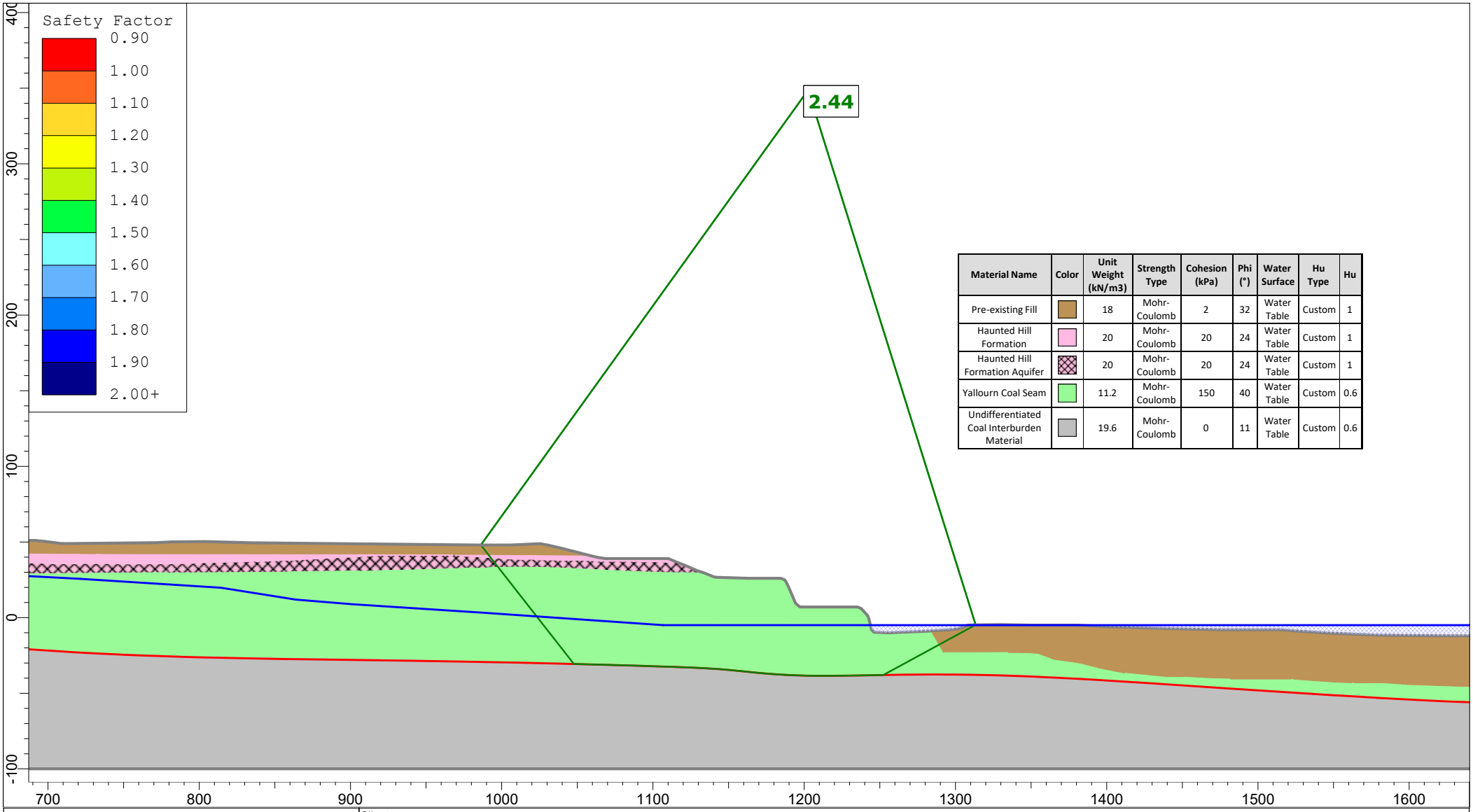
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 02	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



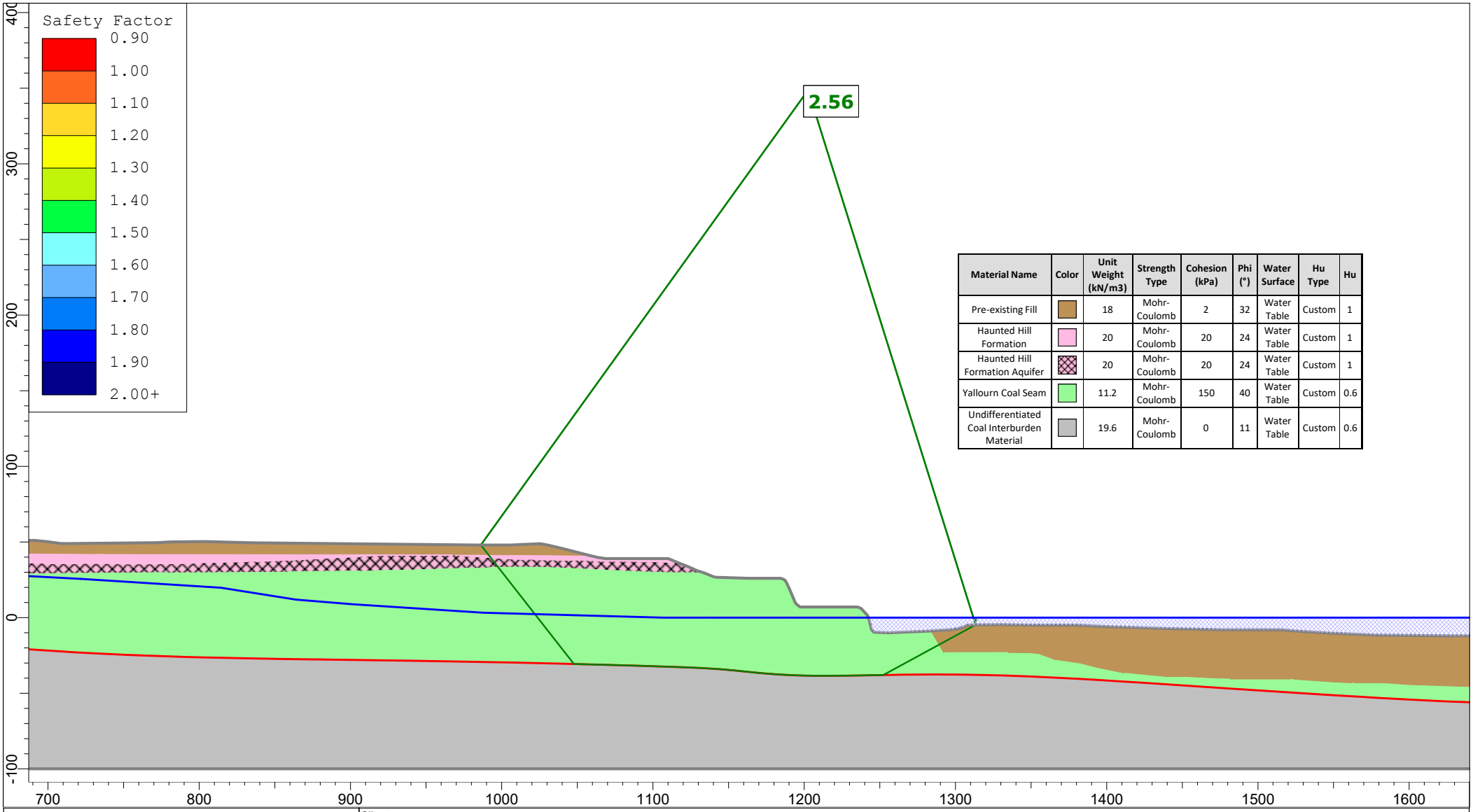
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (east)
Section:	Section 03	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength		



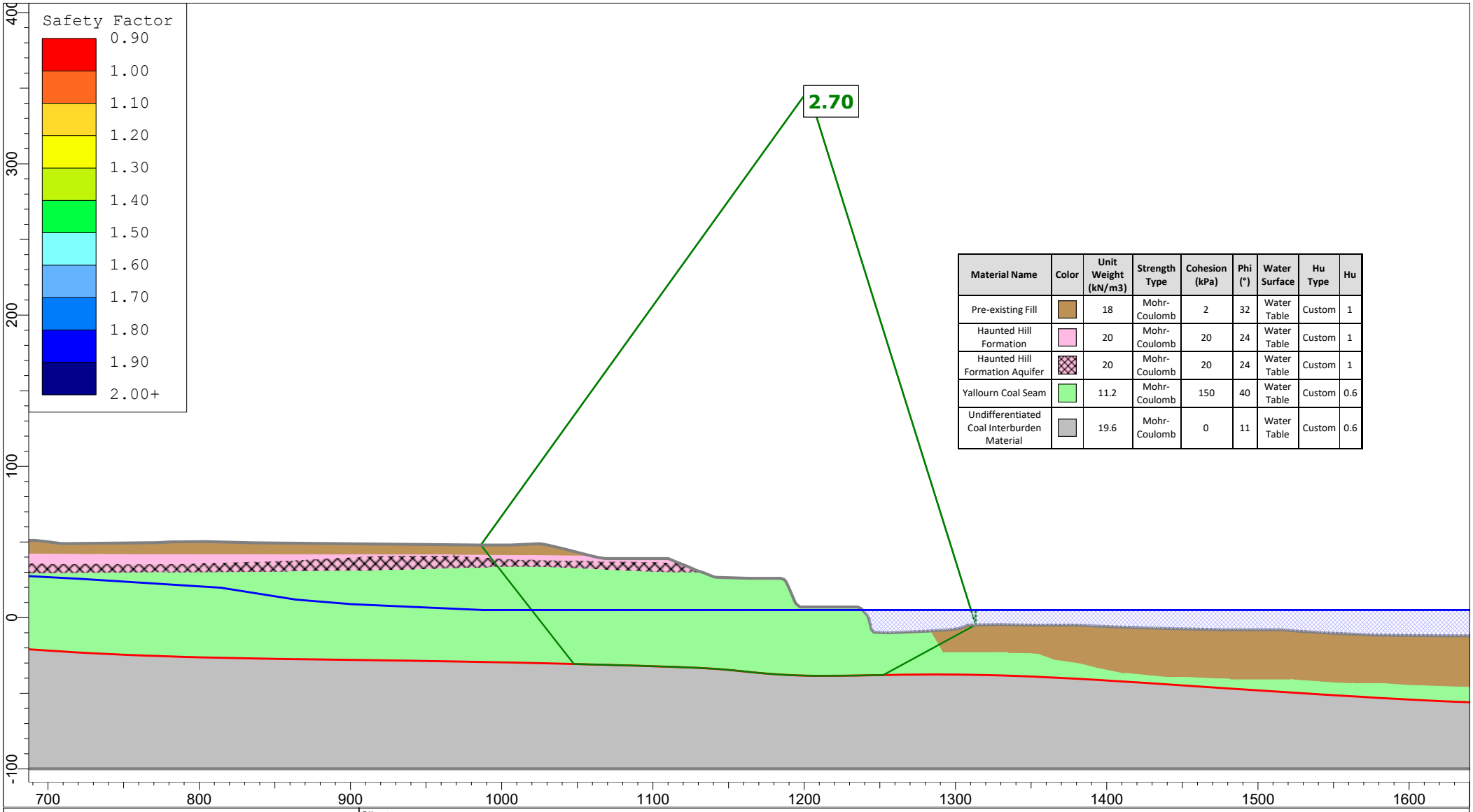
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (east)
Section:	Section 03	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength		



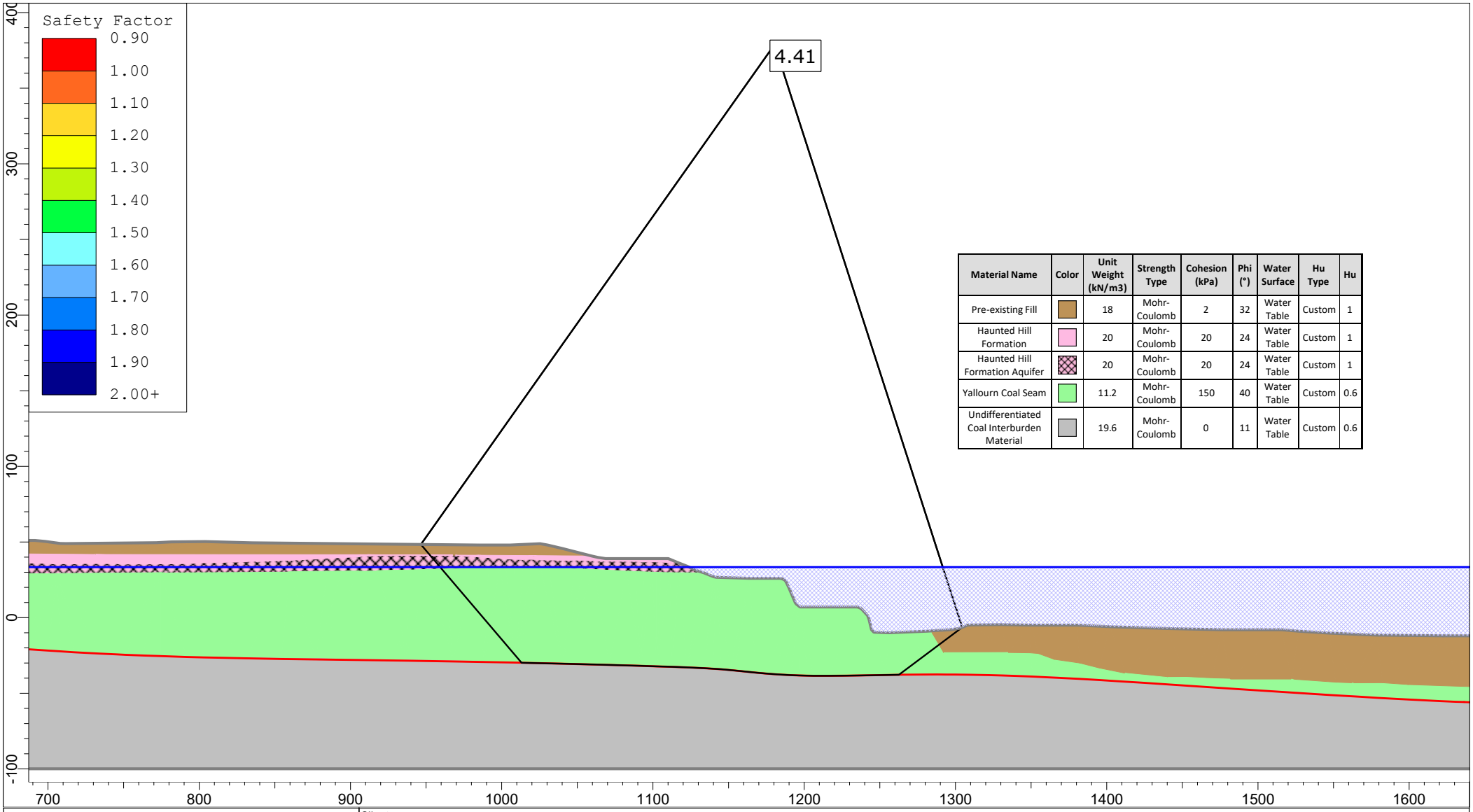
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (east)
Section:	Section 03	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



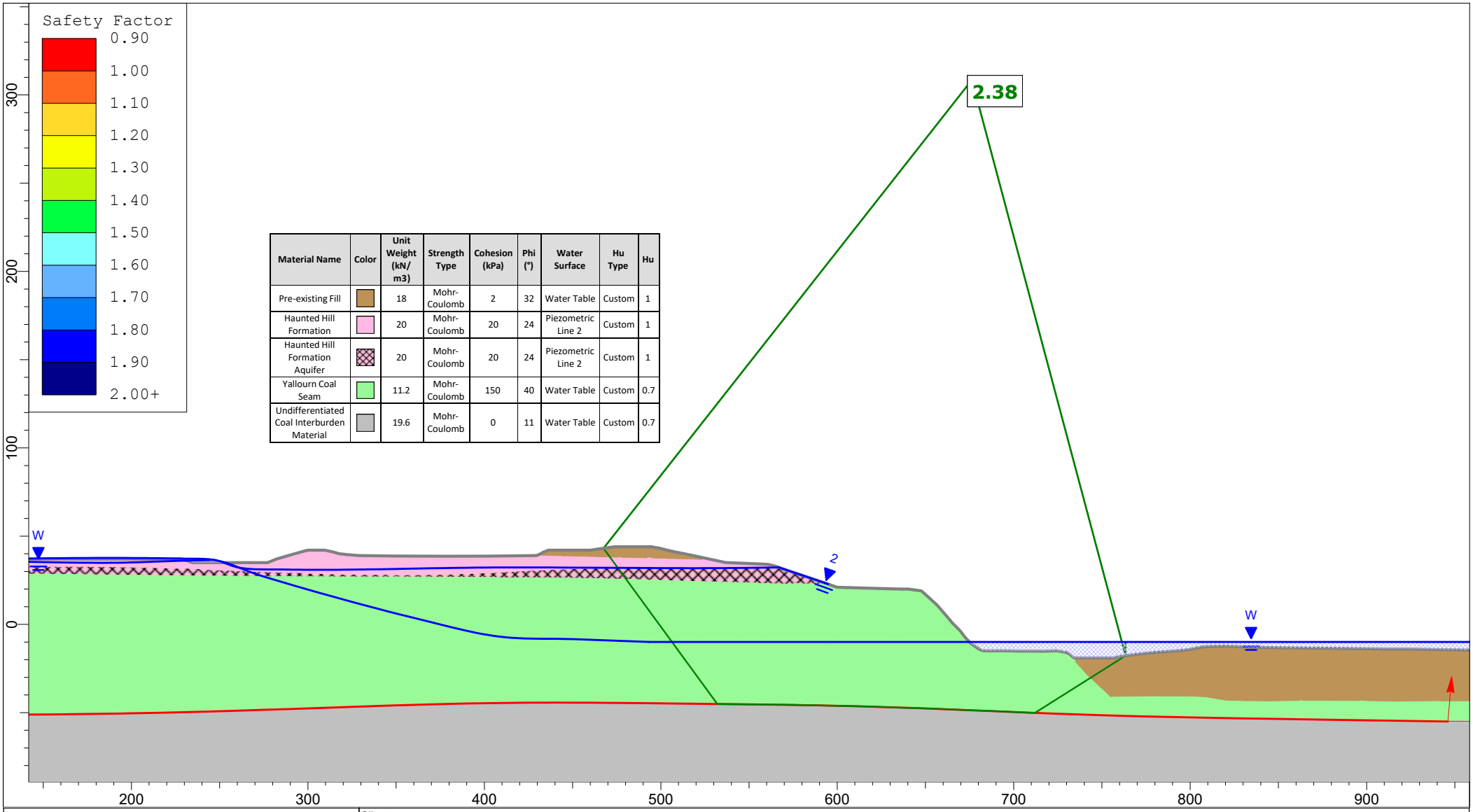
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (east)
Section:	Section 03	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



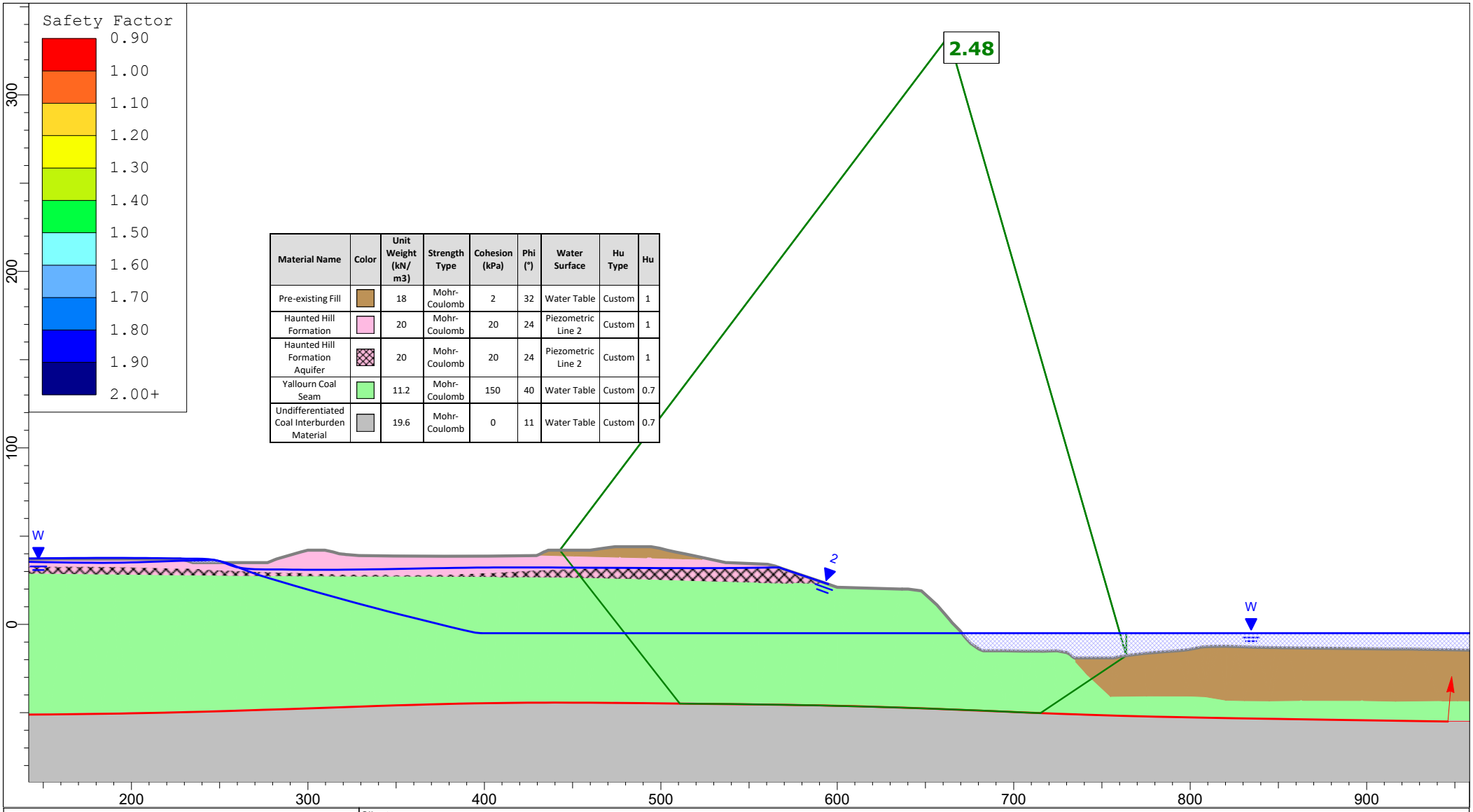
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (east)
Section:	Section 03	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



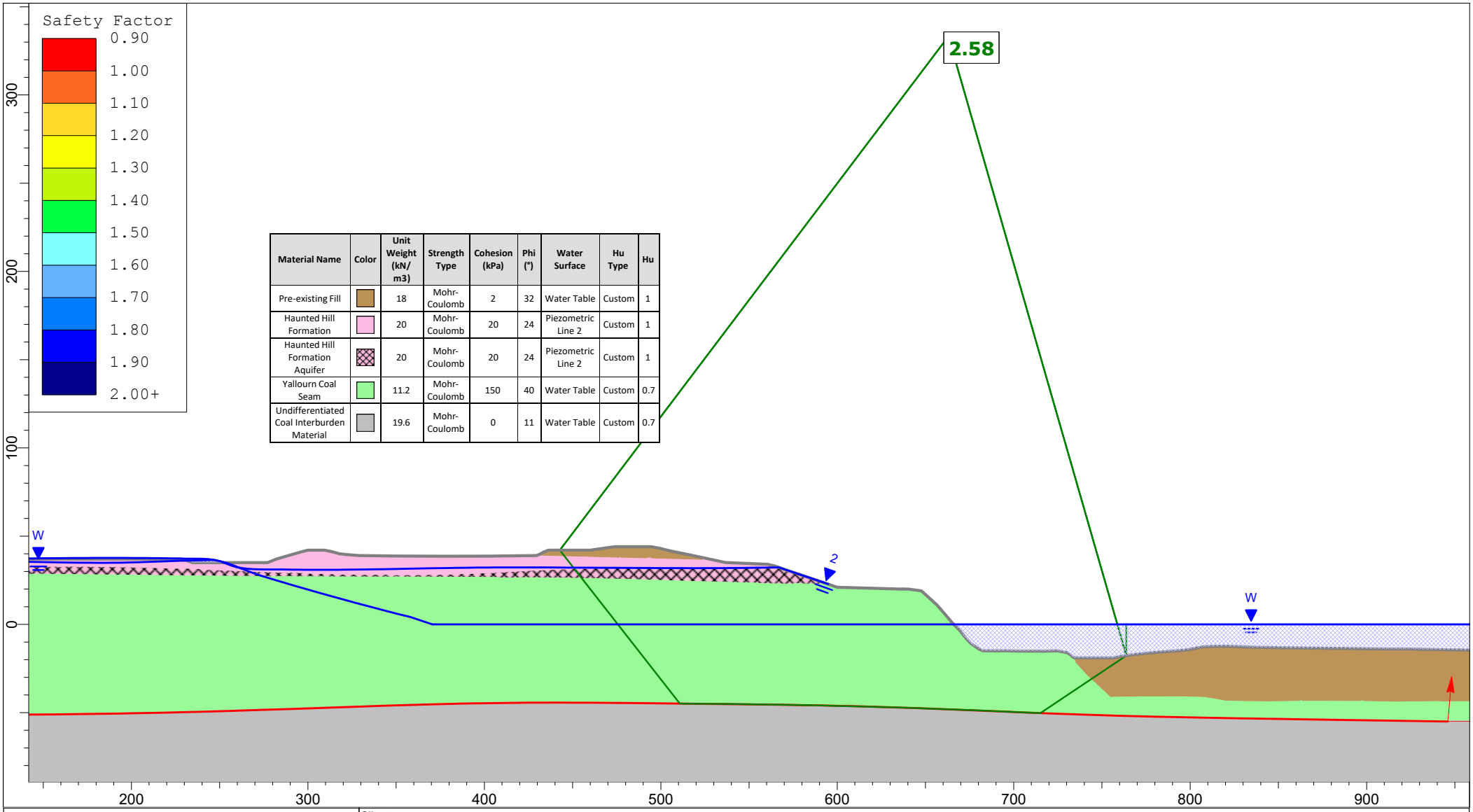
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength		



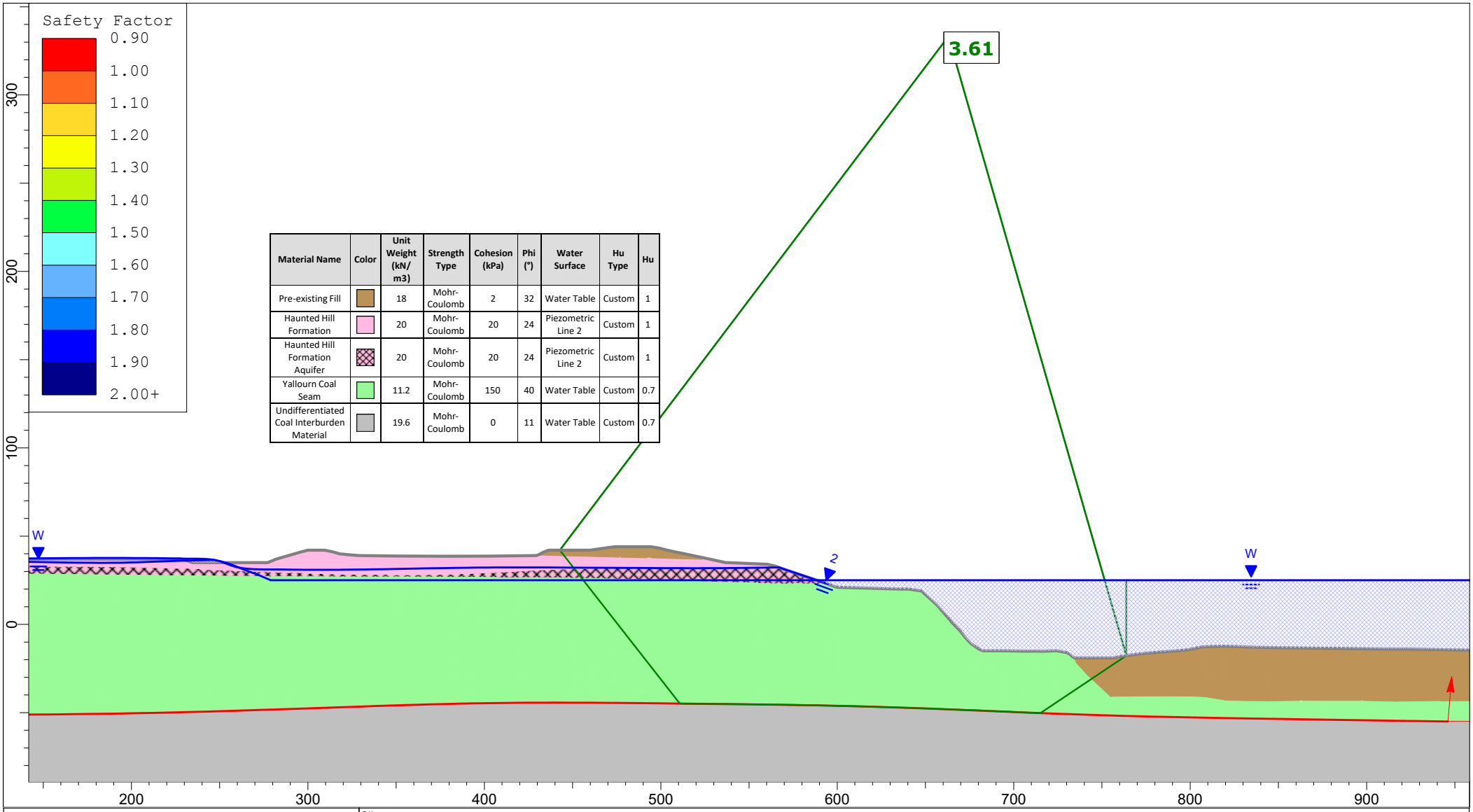
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength		



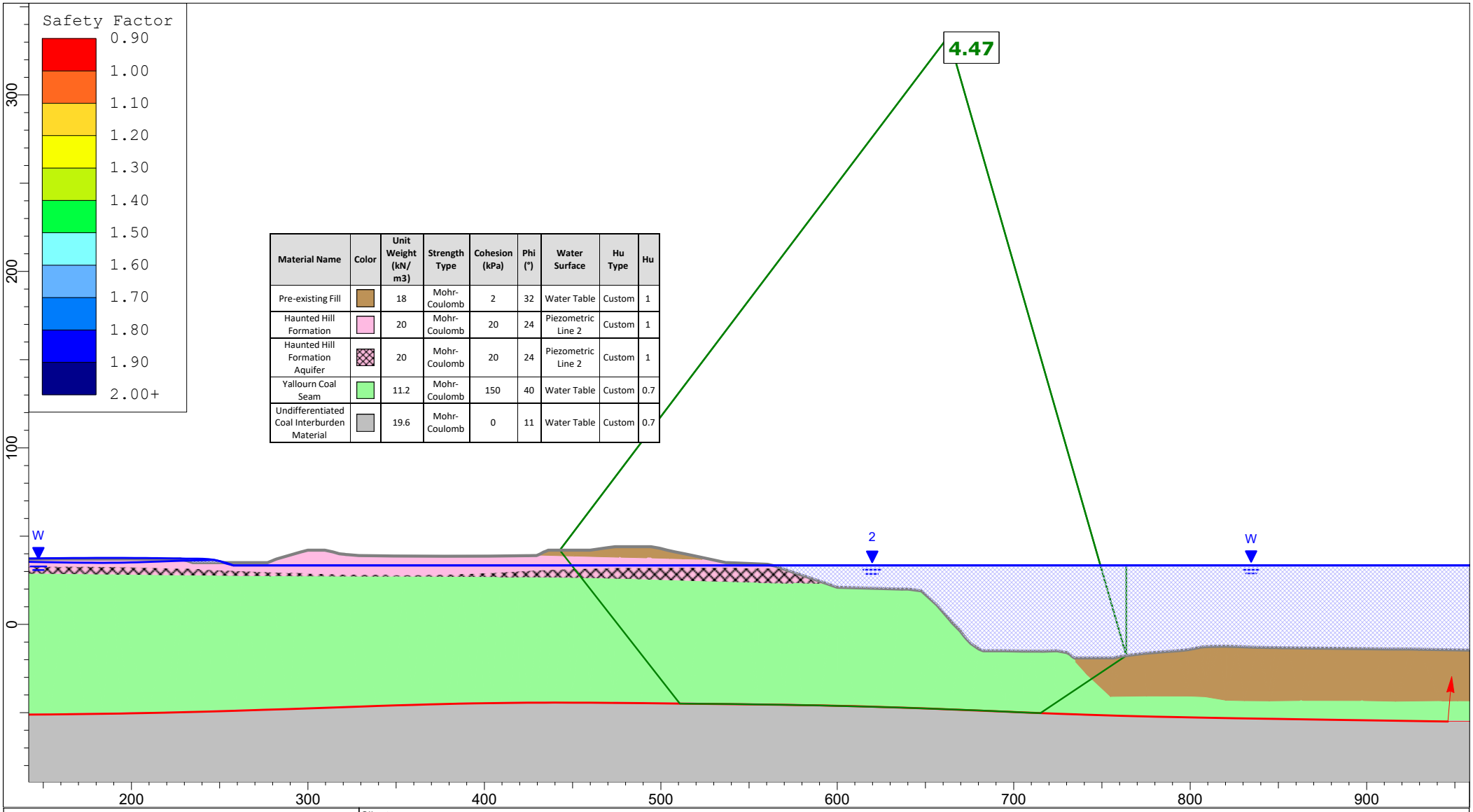
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



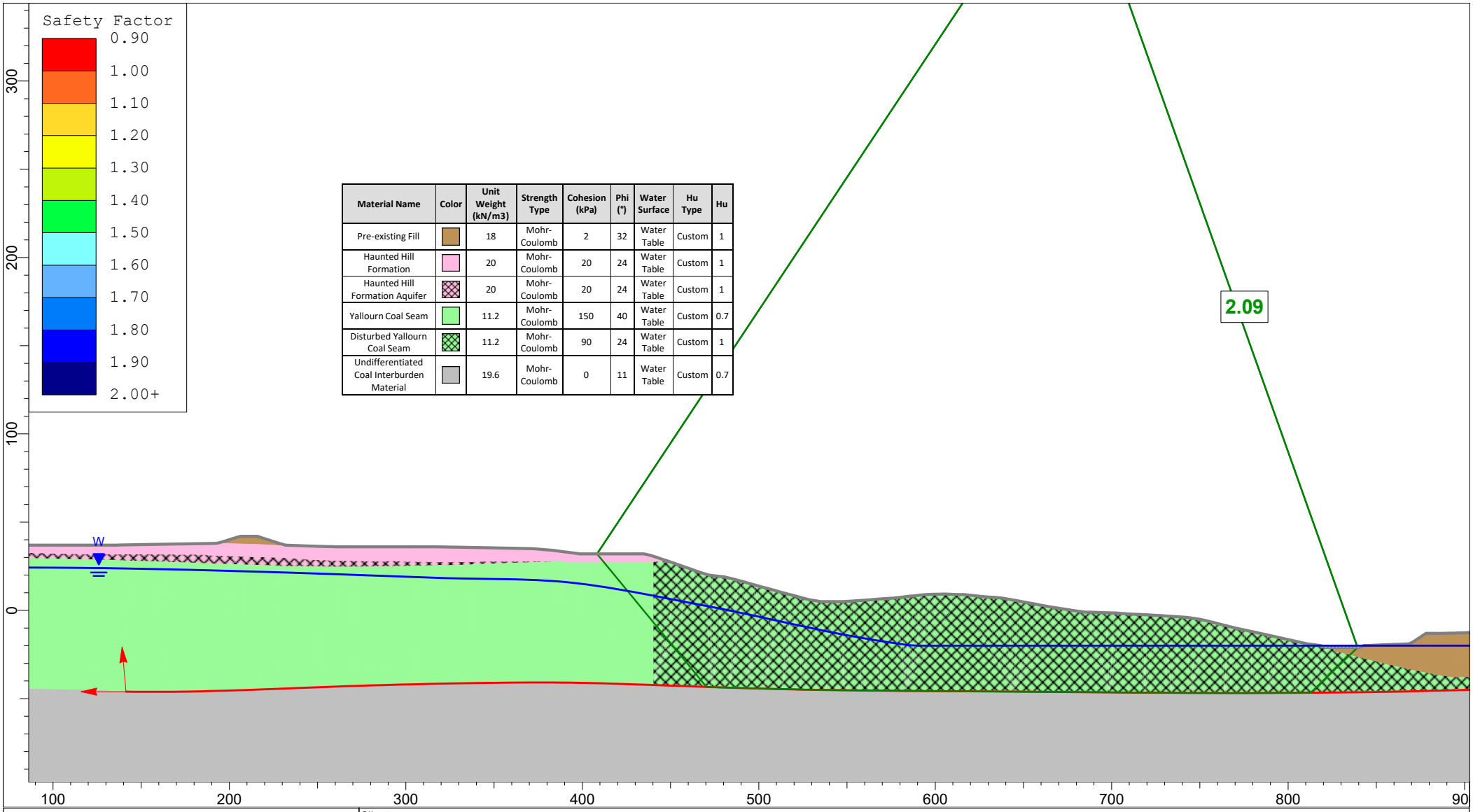
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



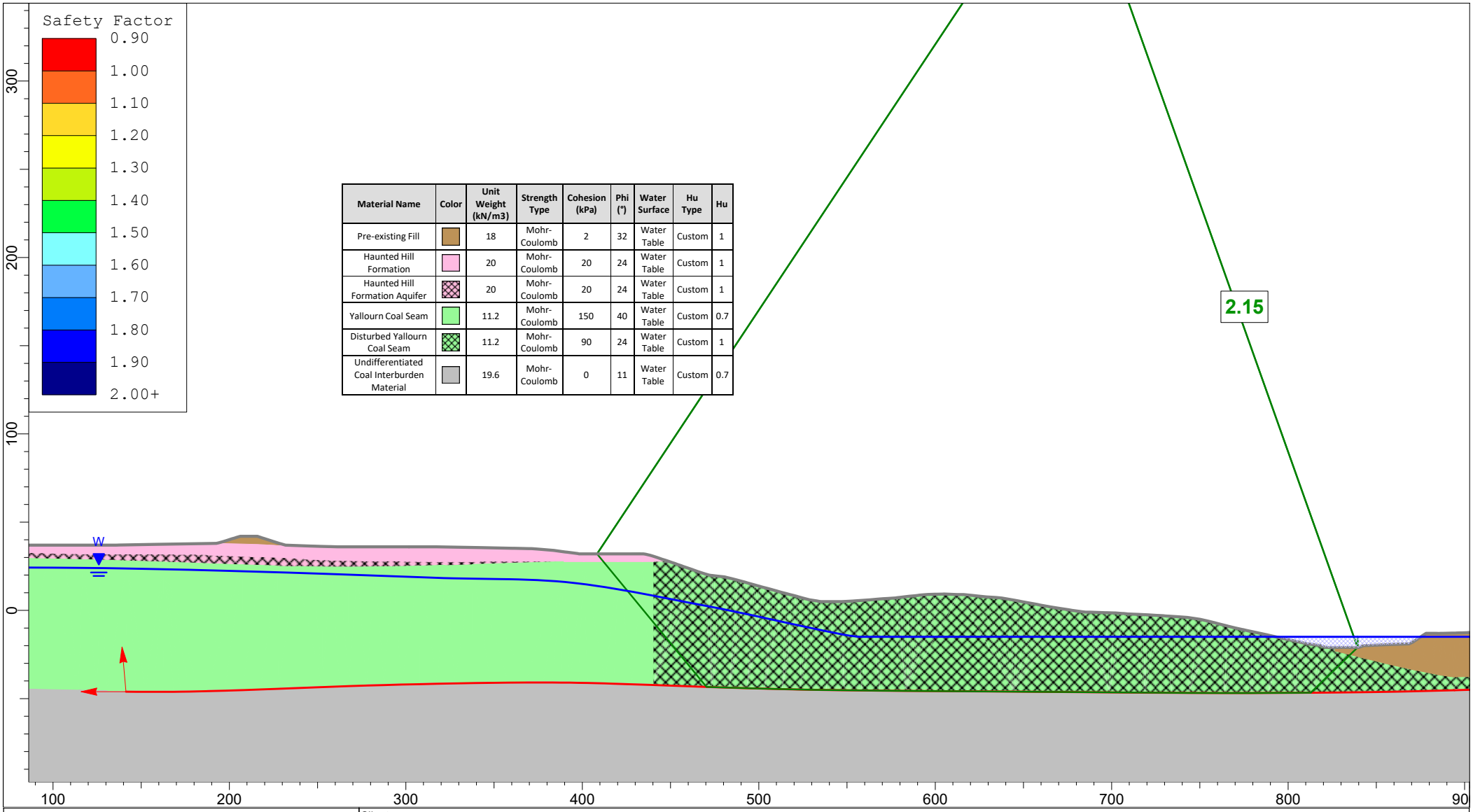
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



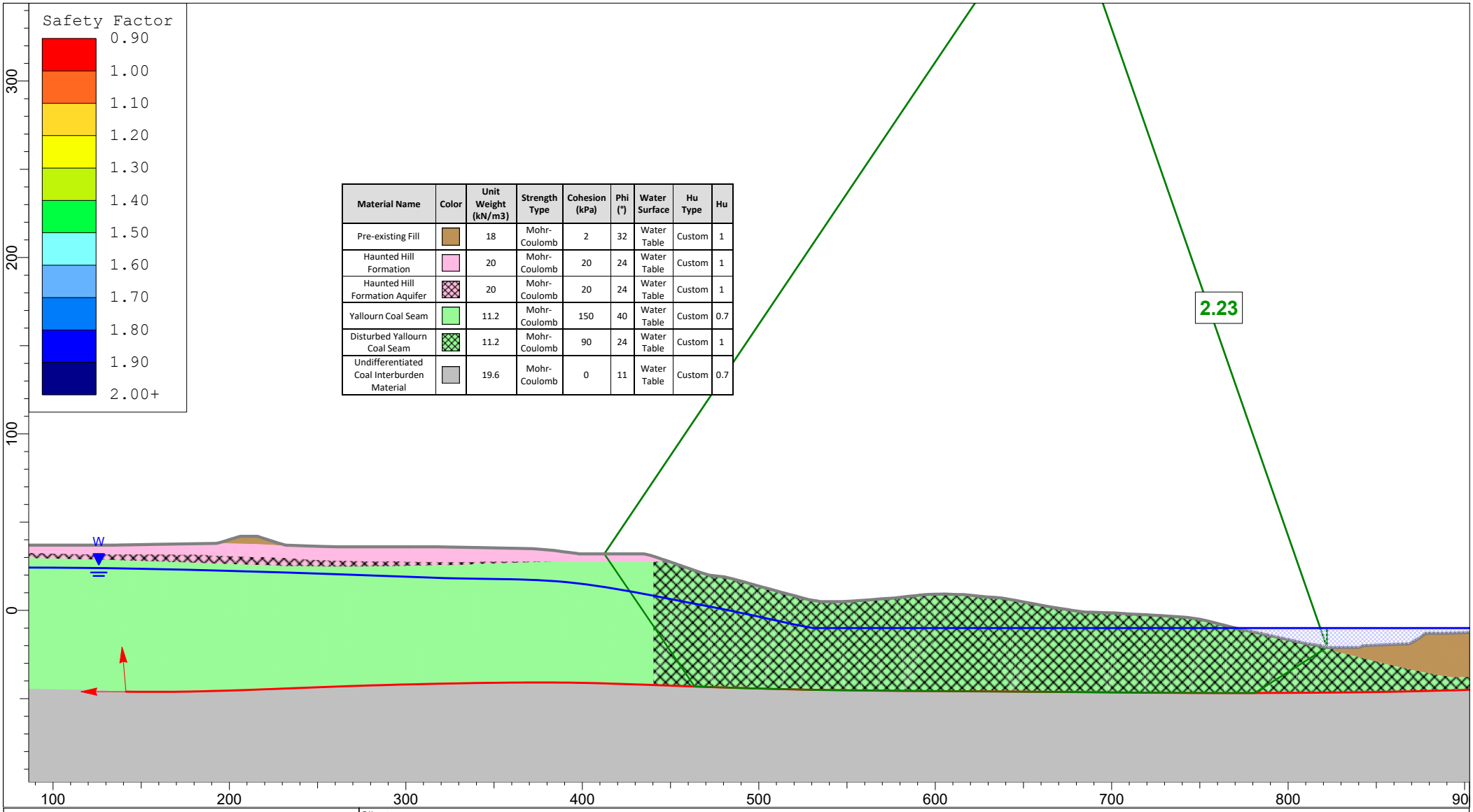
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -20 mRL
Notes:	Lower Bound Interseam Shear Strength		



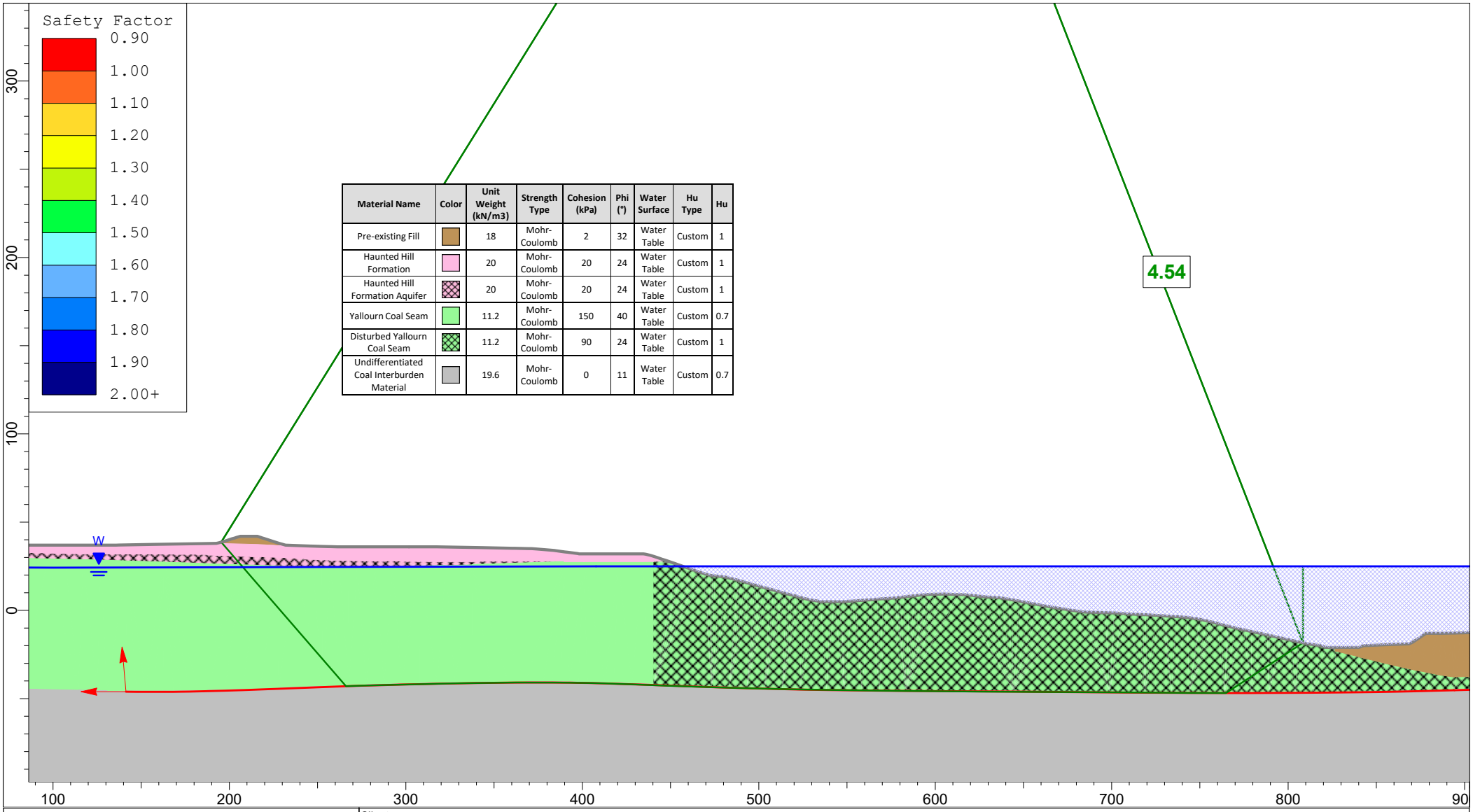
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -15 mRL
Notes:	Lower Bound Interseam Shear Strength		



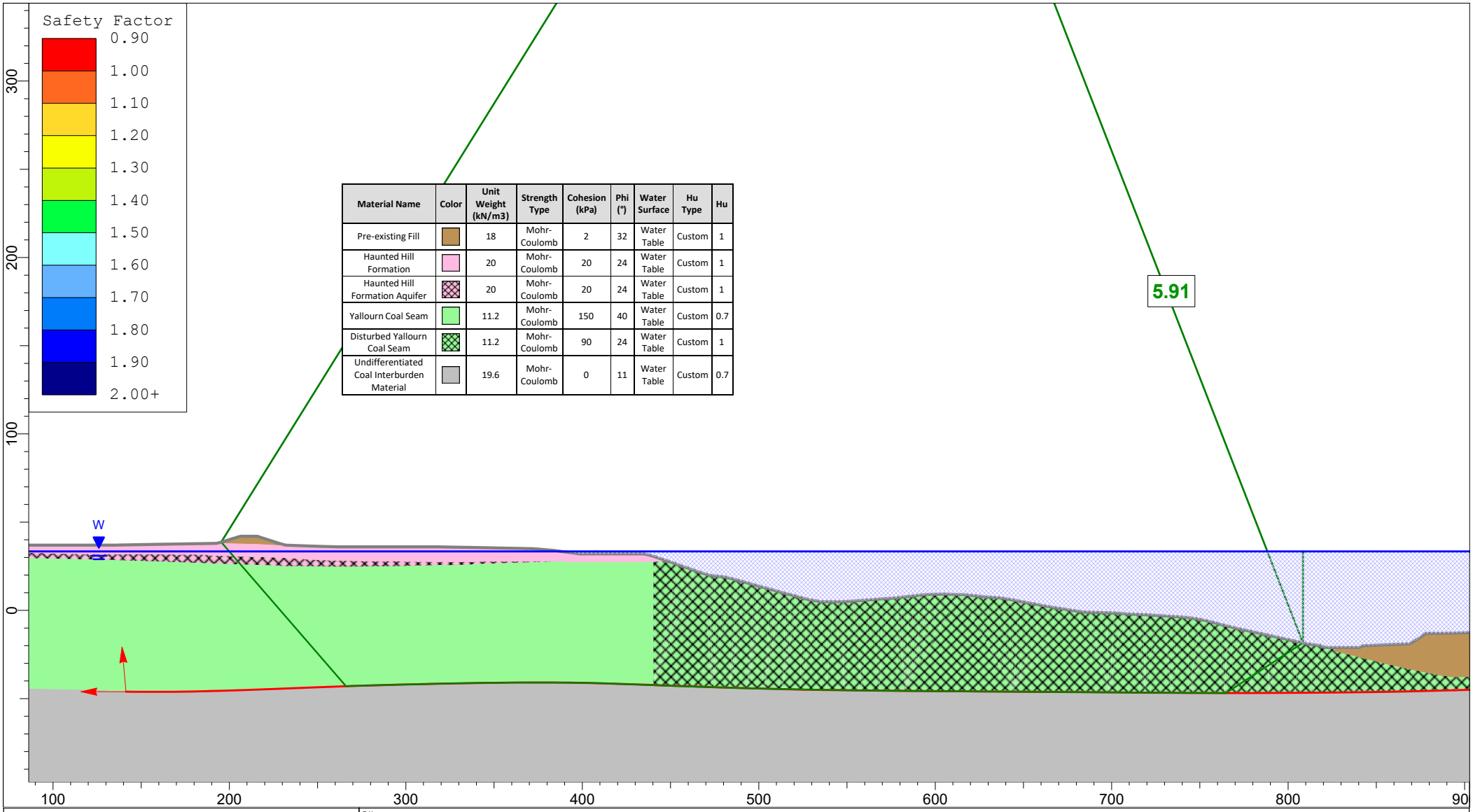
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength		



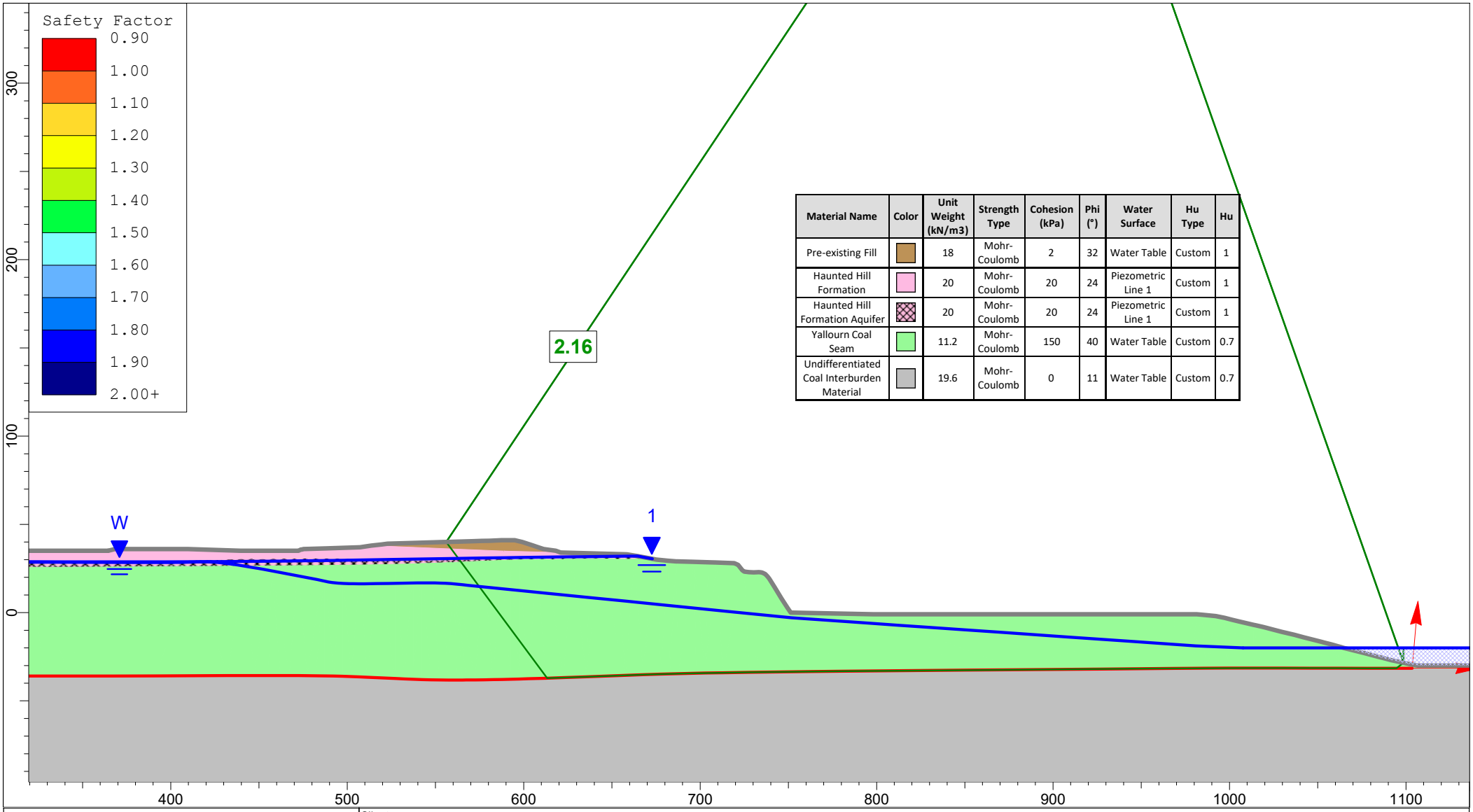
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



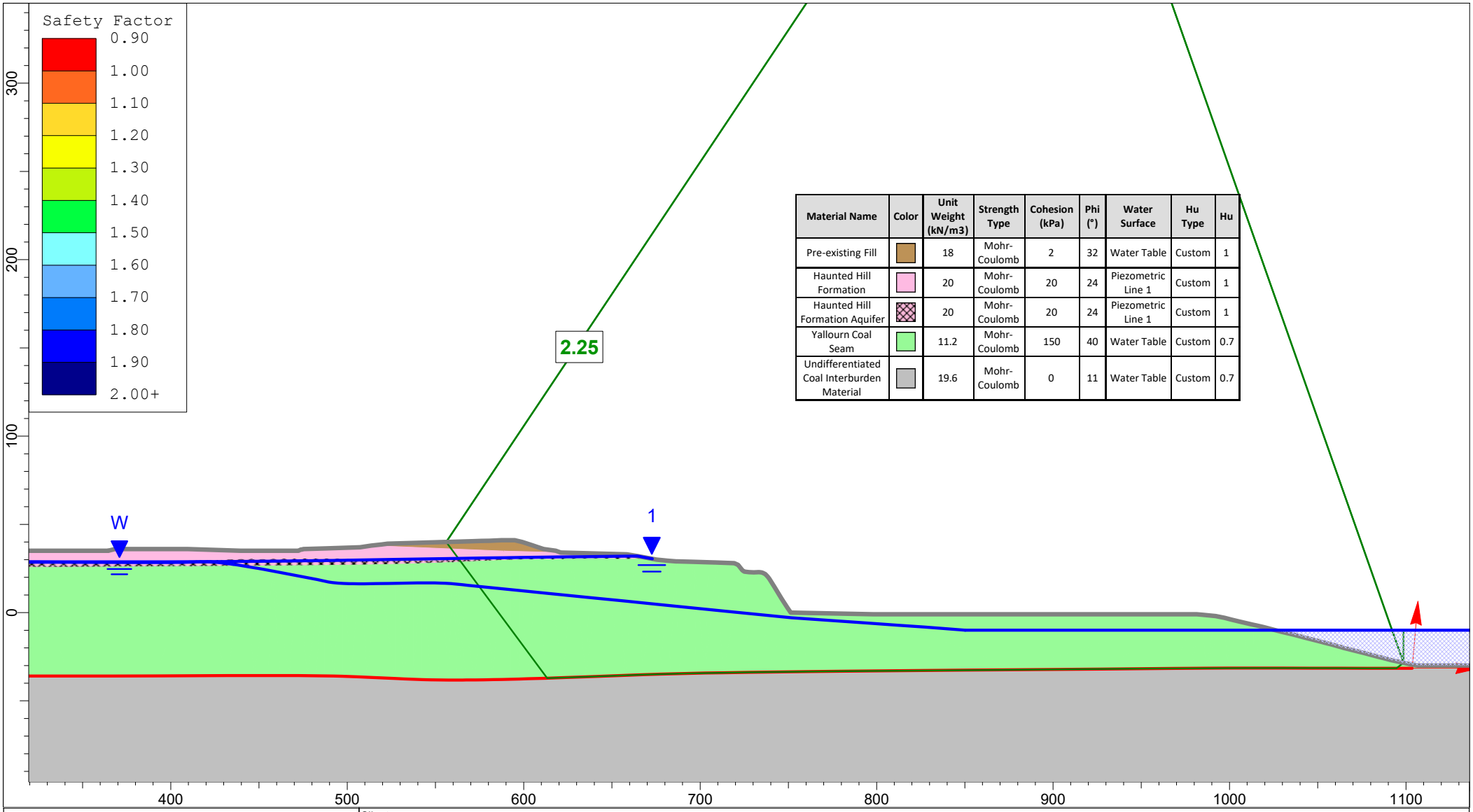
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



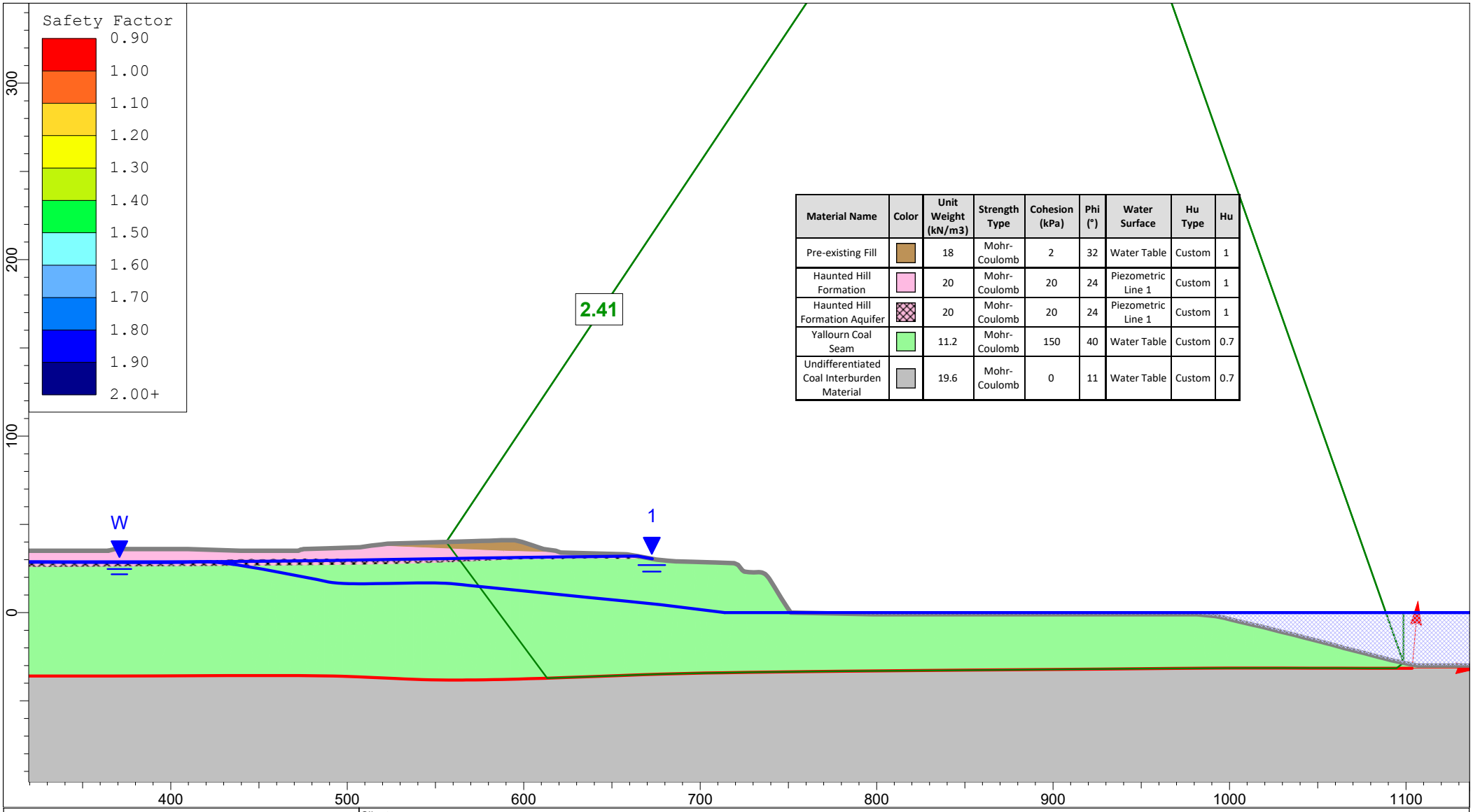
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -20 mRL
Notes:	Lower Bound Interseam Shear Strength		



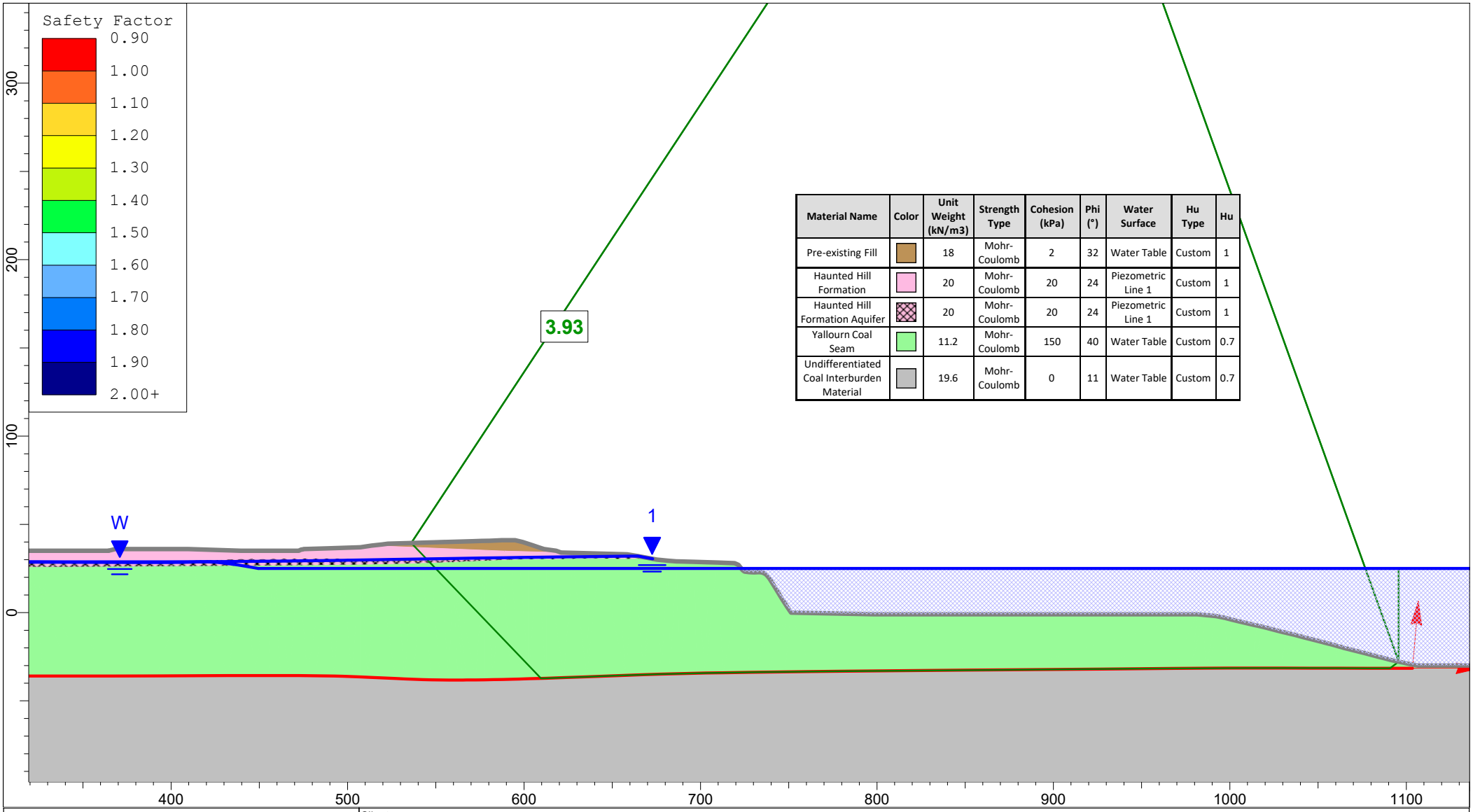
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength		



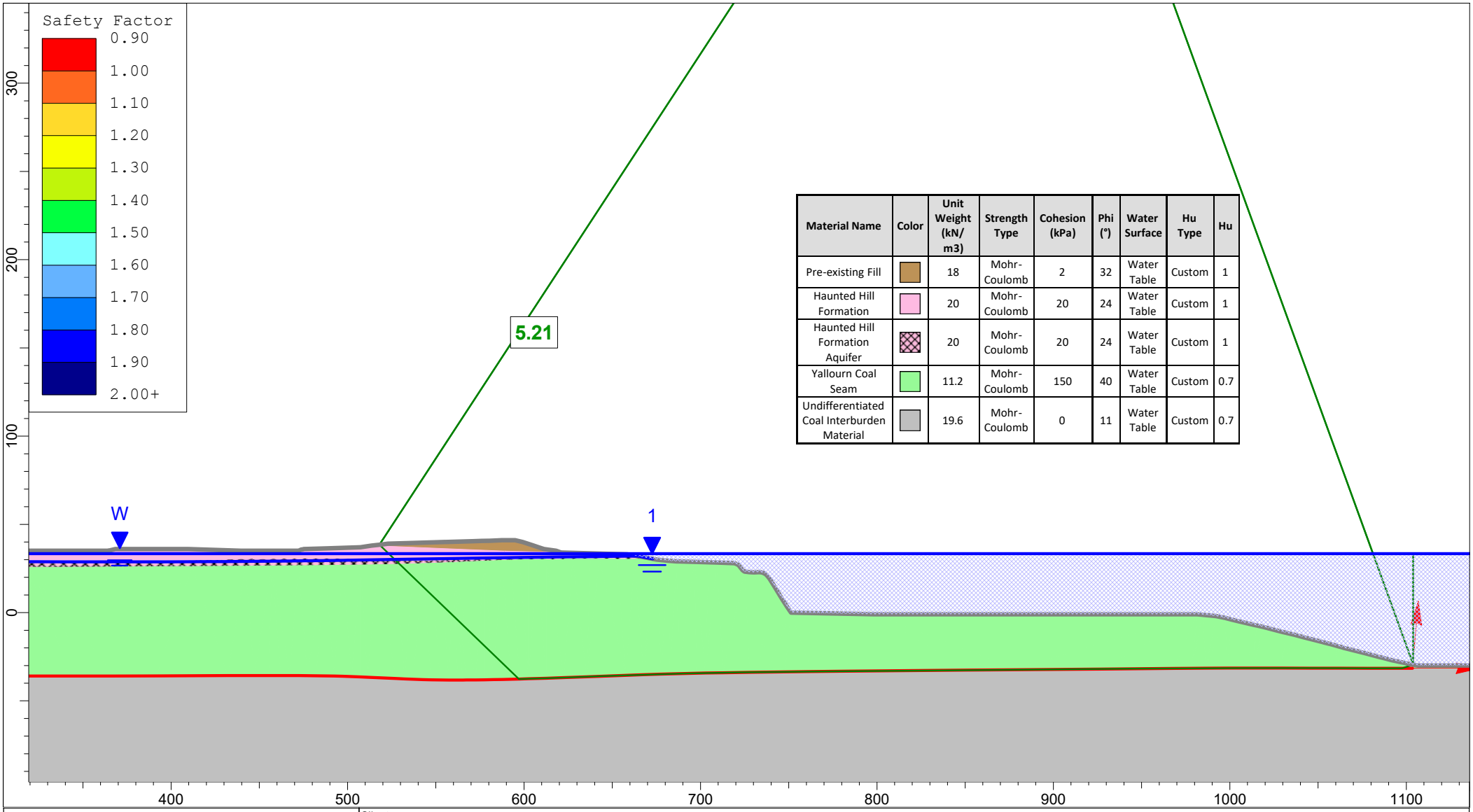
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



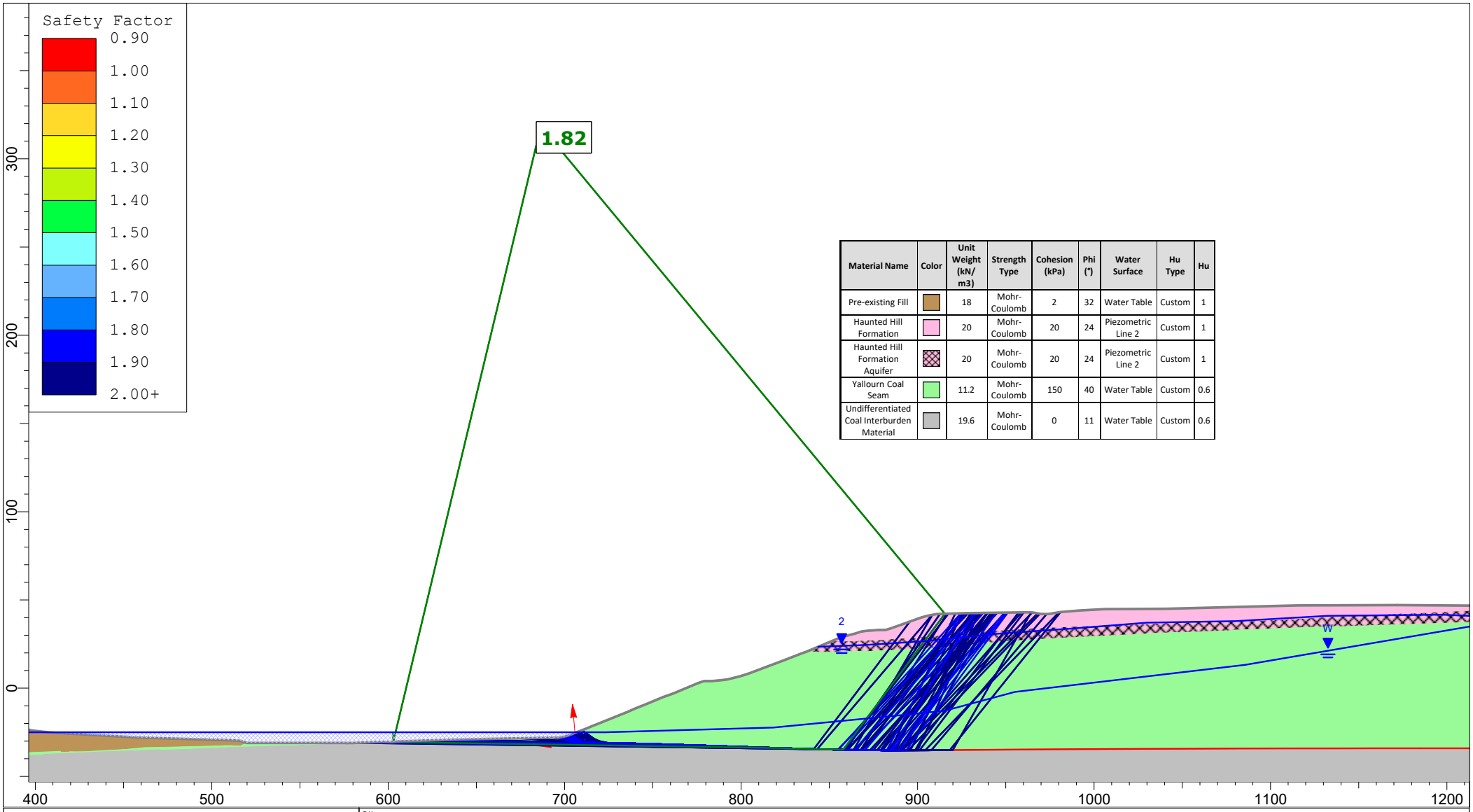
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



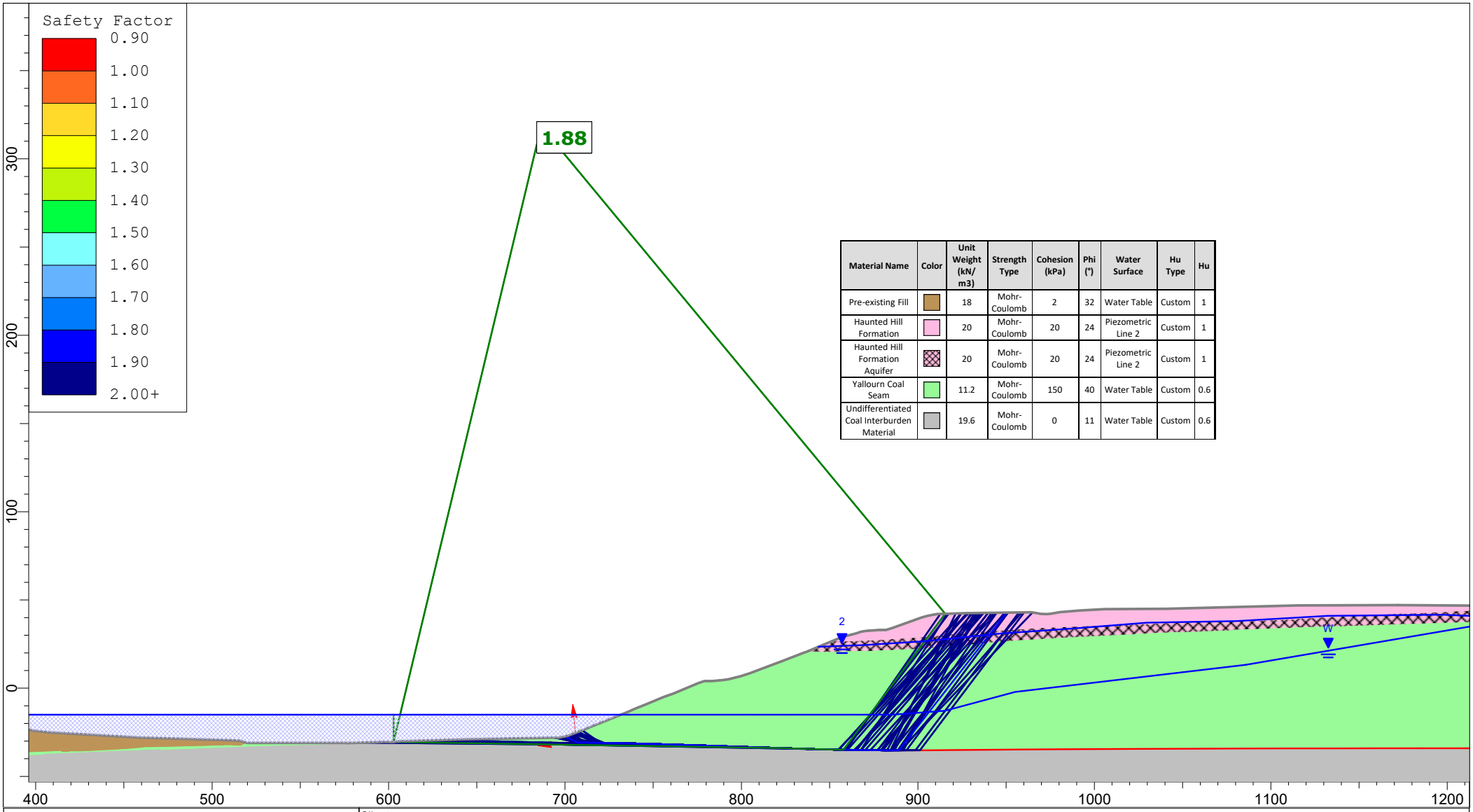
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4mRL
Notes:	Lower Bound Interseam Shear Strength		



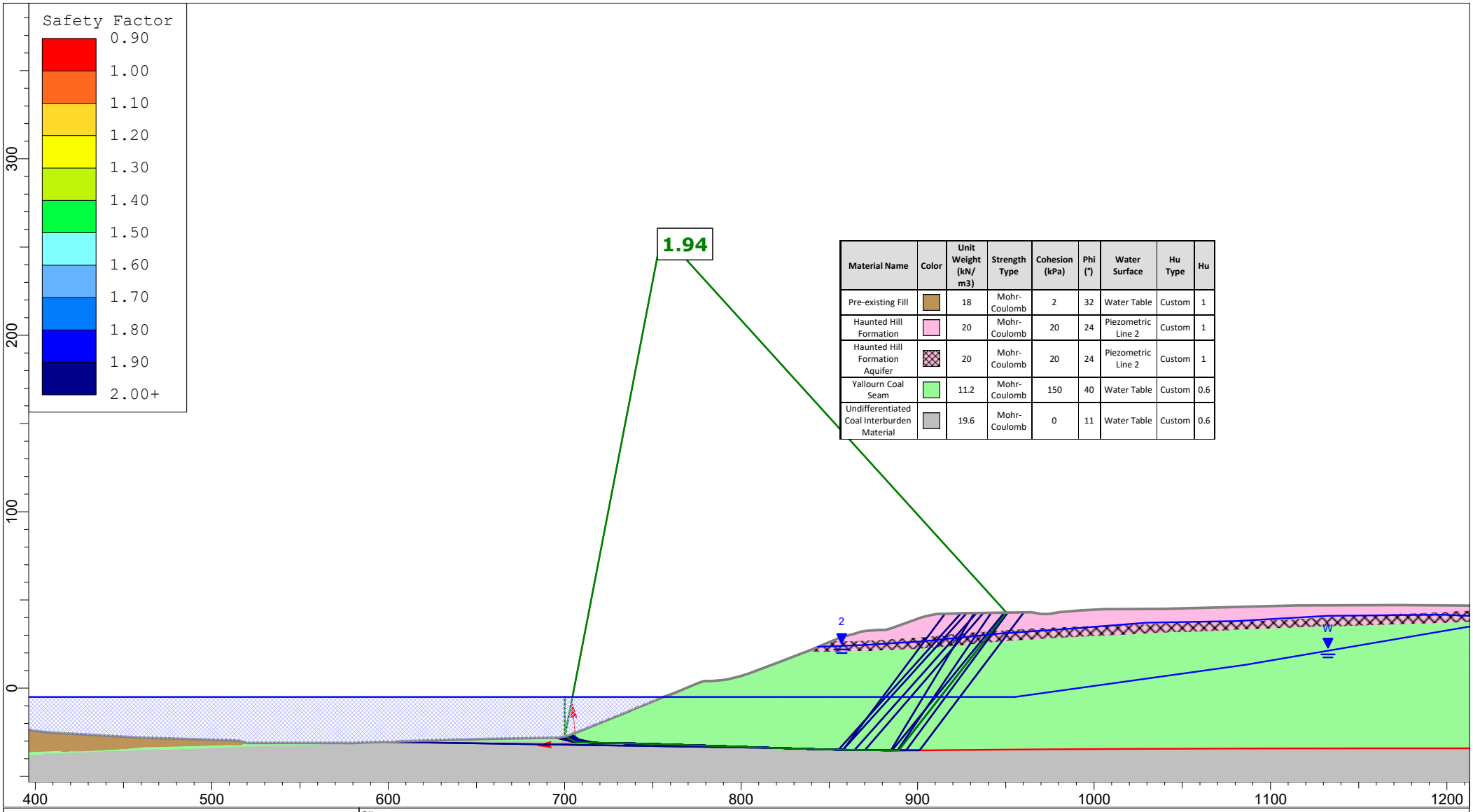
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -25 mRL
Notes:	Lower Bound Interseam Shear Strength		



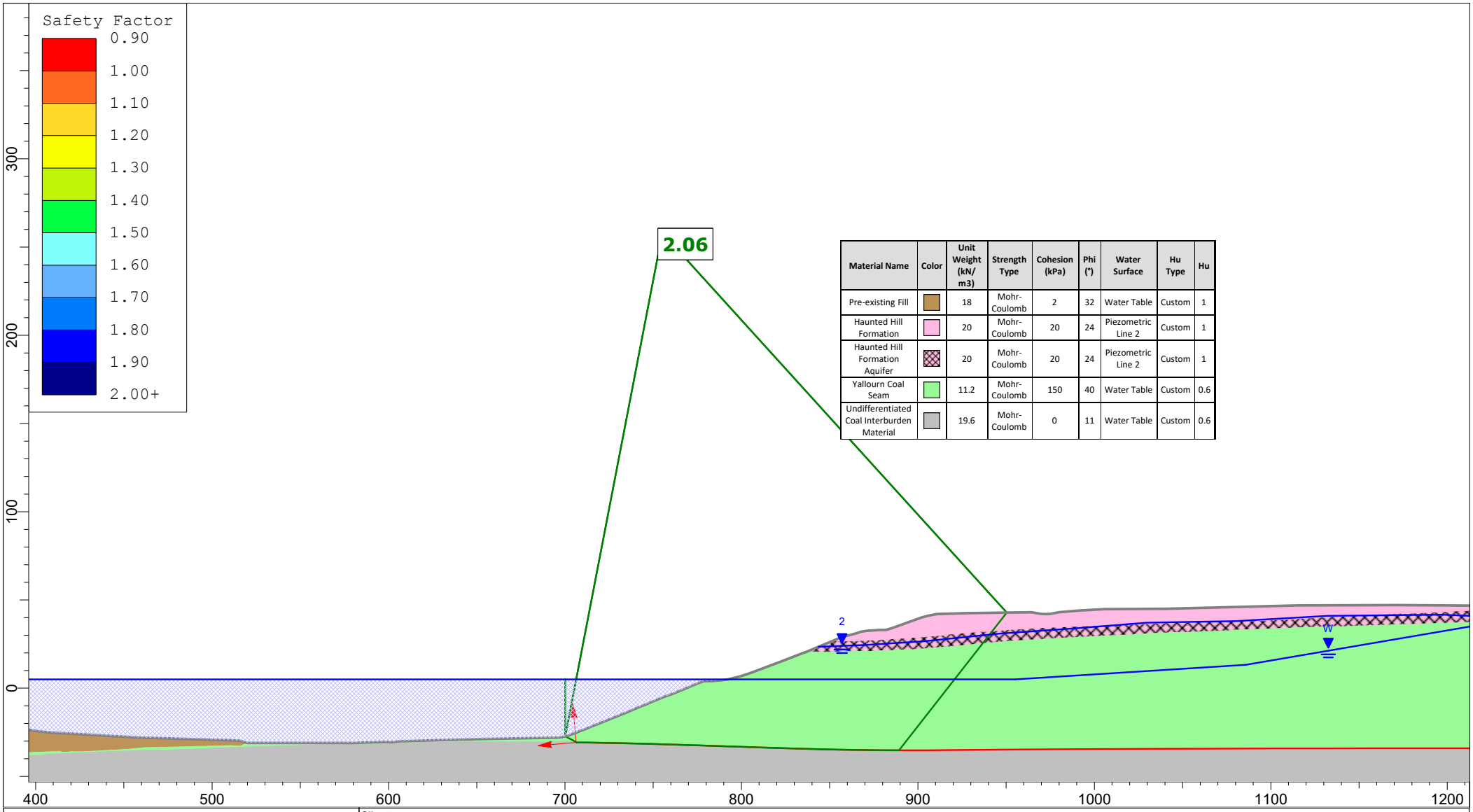
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -15 mRL
Notes:	Lower Bound Interseam Shear Strength		



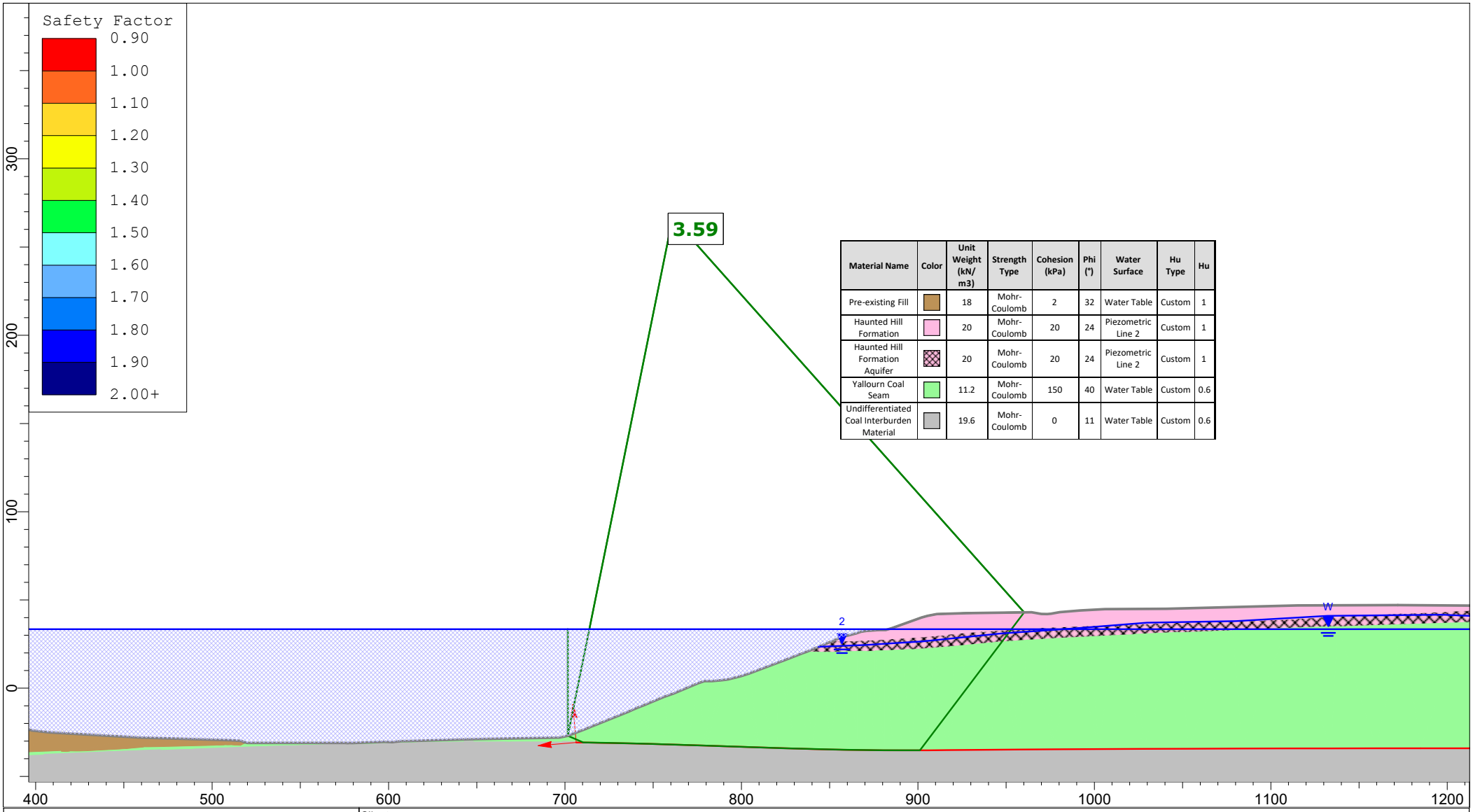
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength		



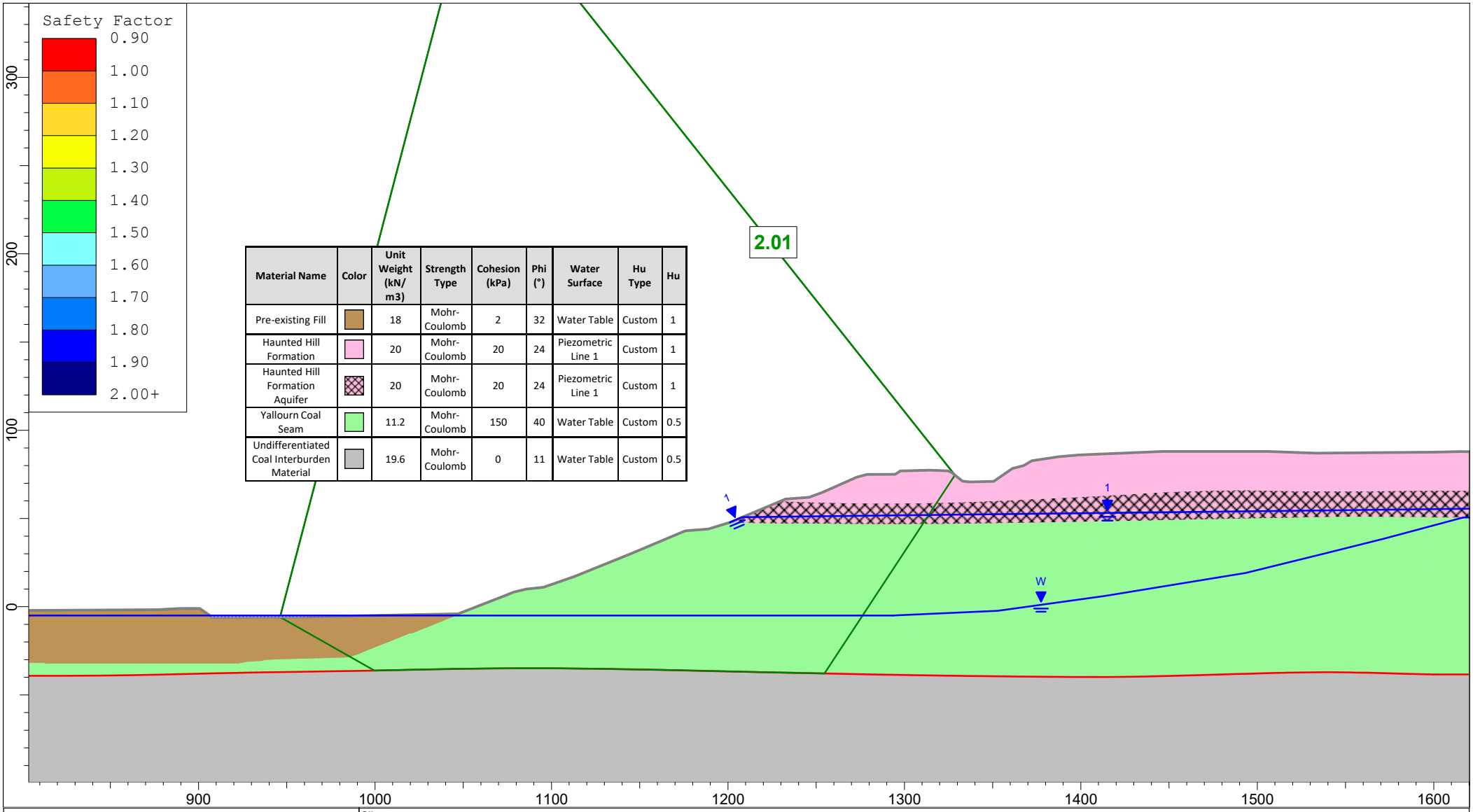
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



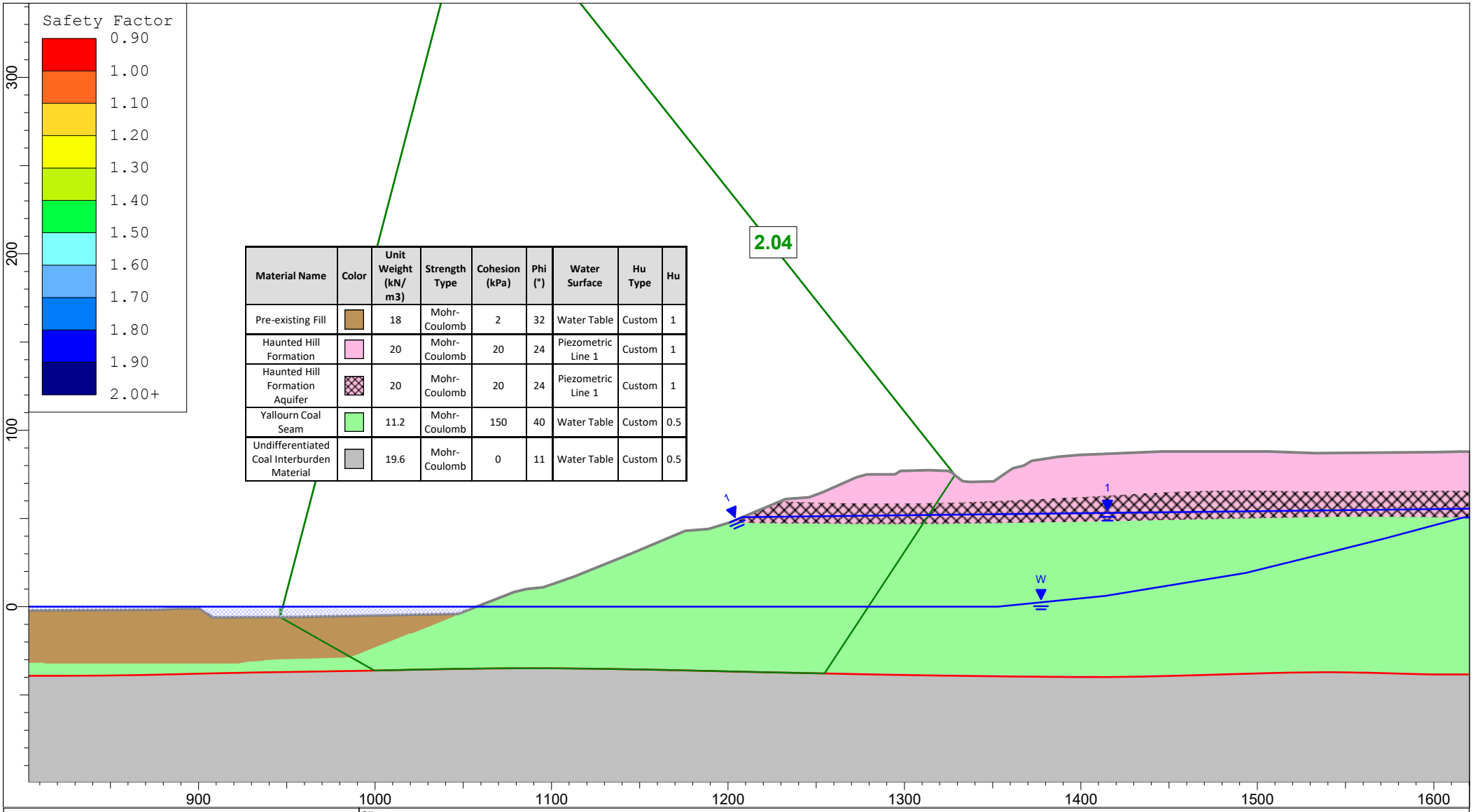
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



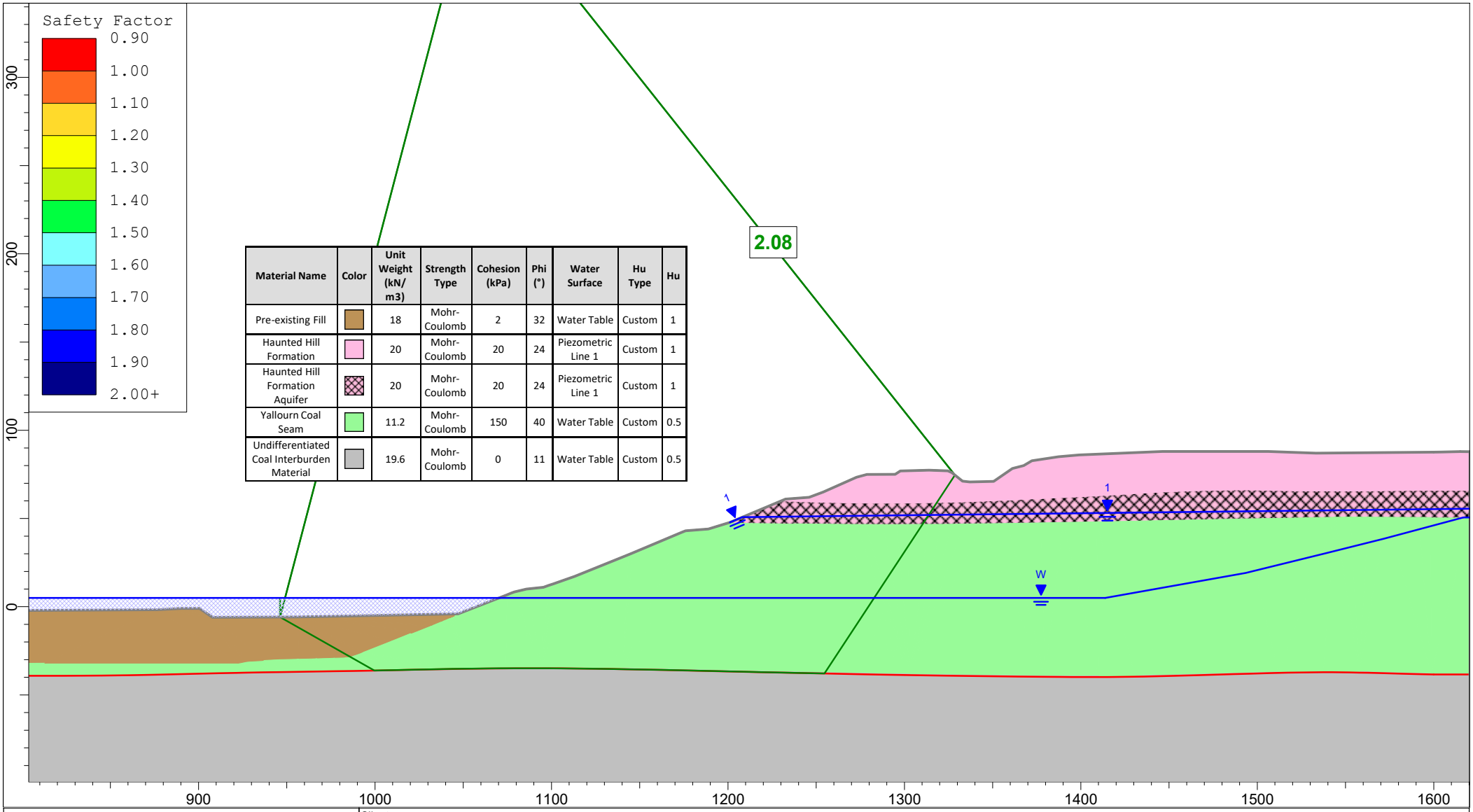
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength		



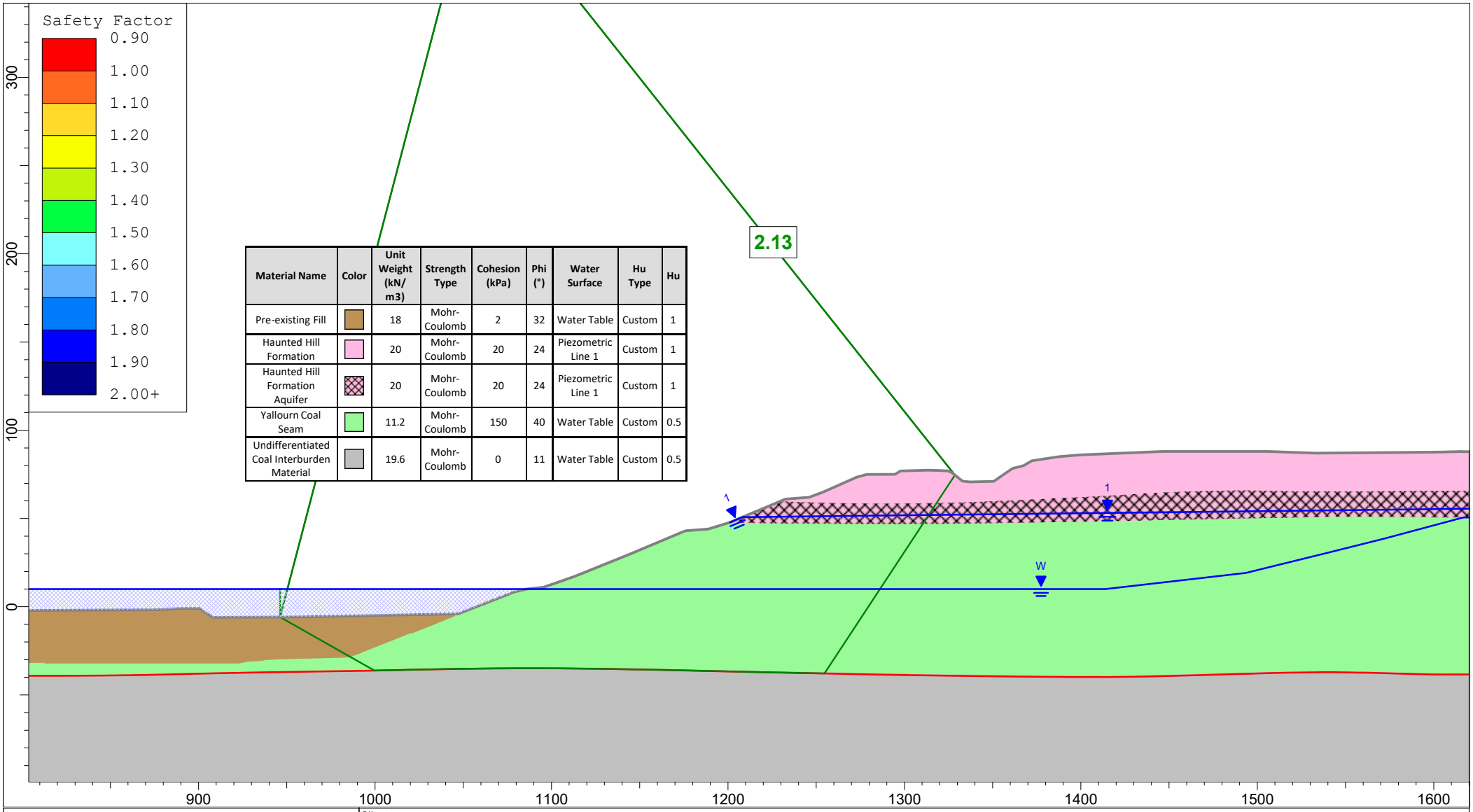
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



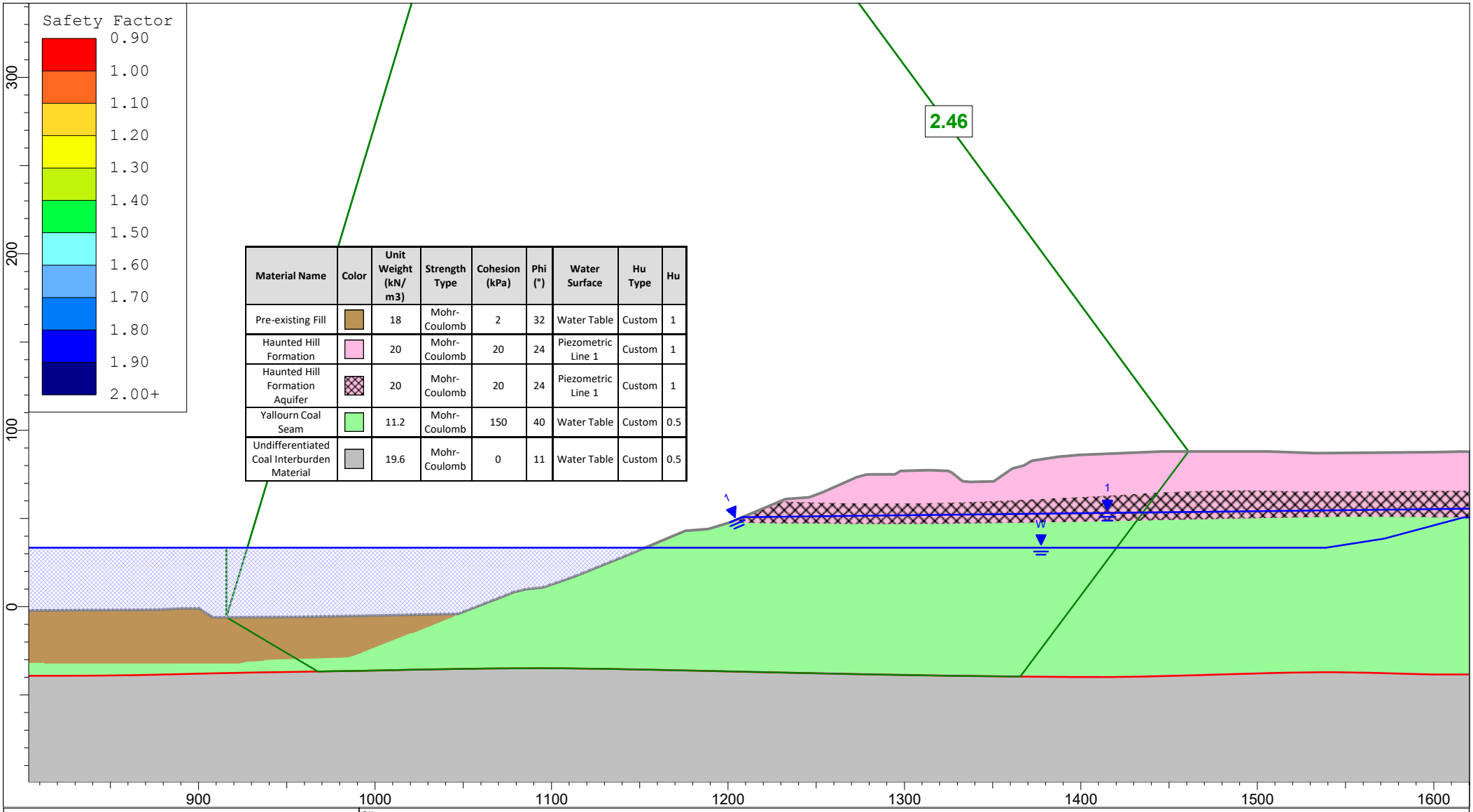
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



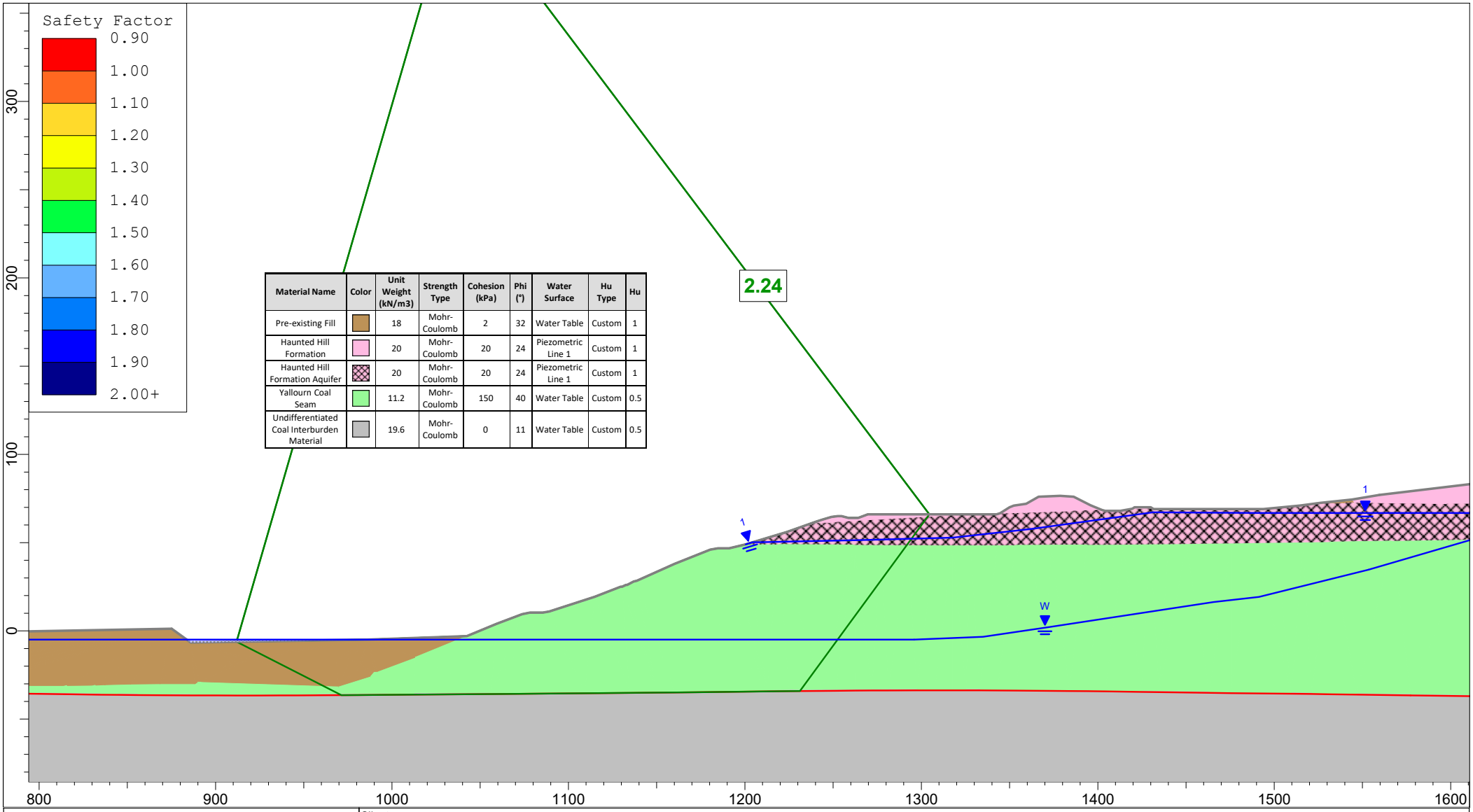
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



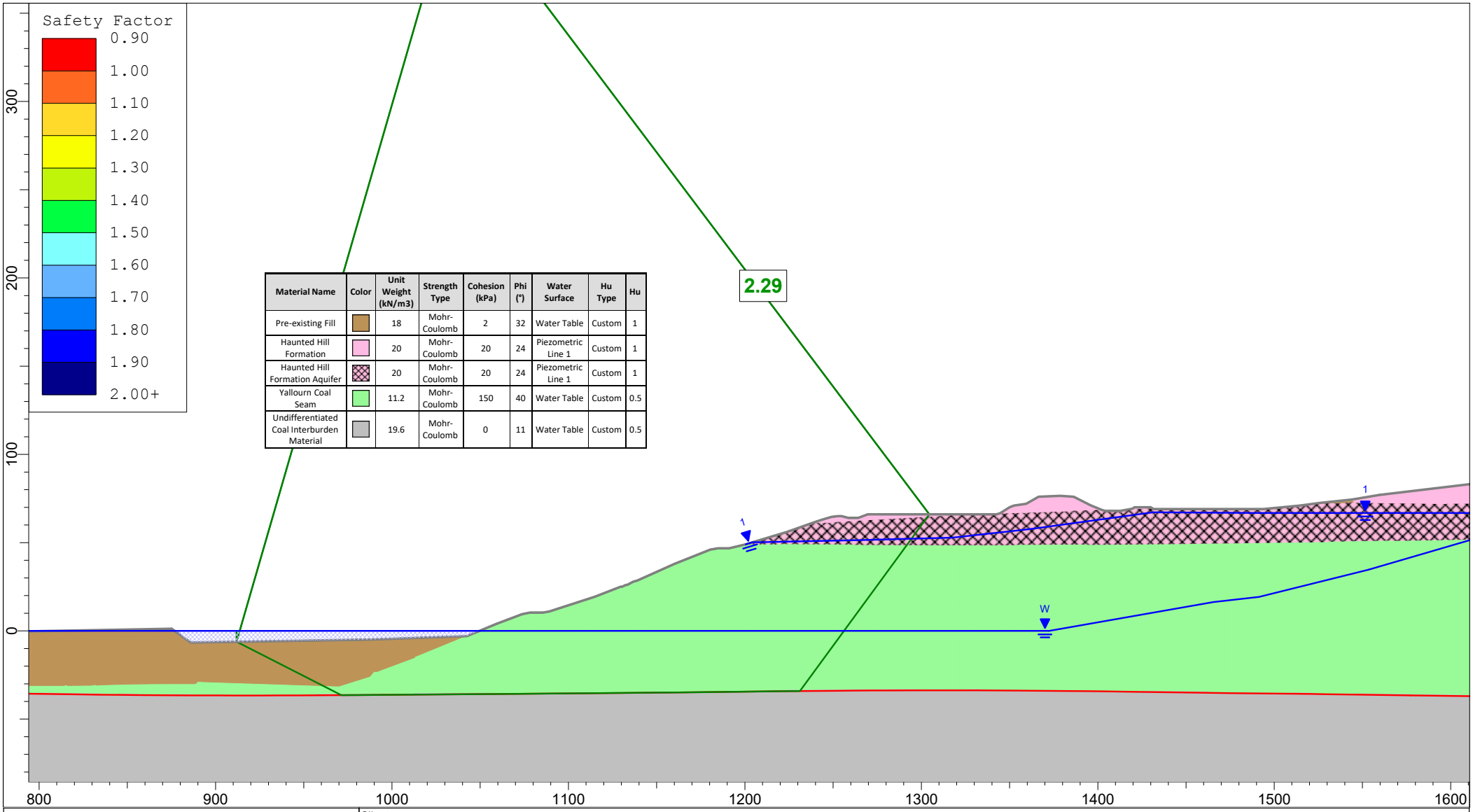
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



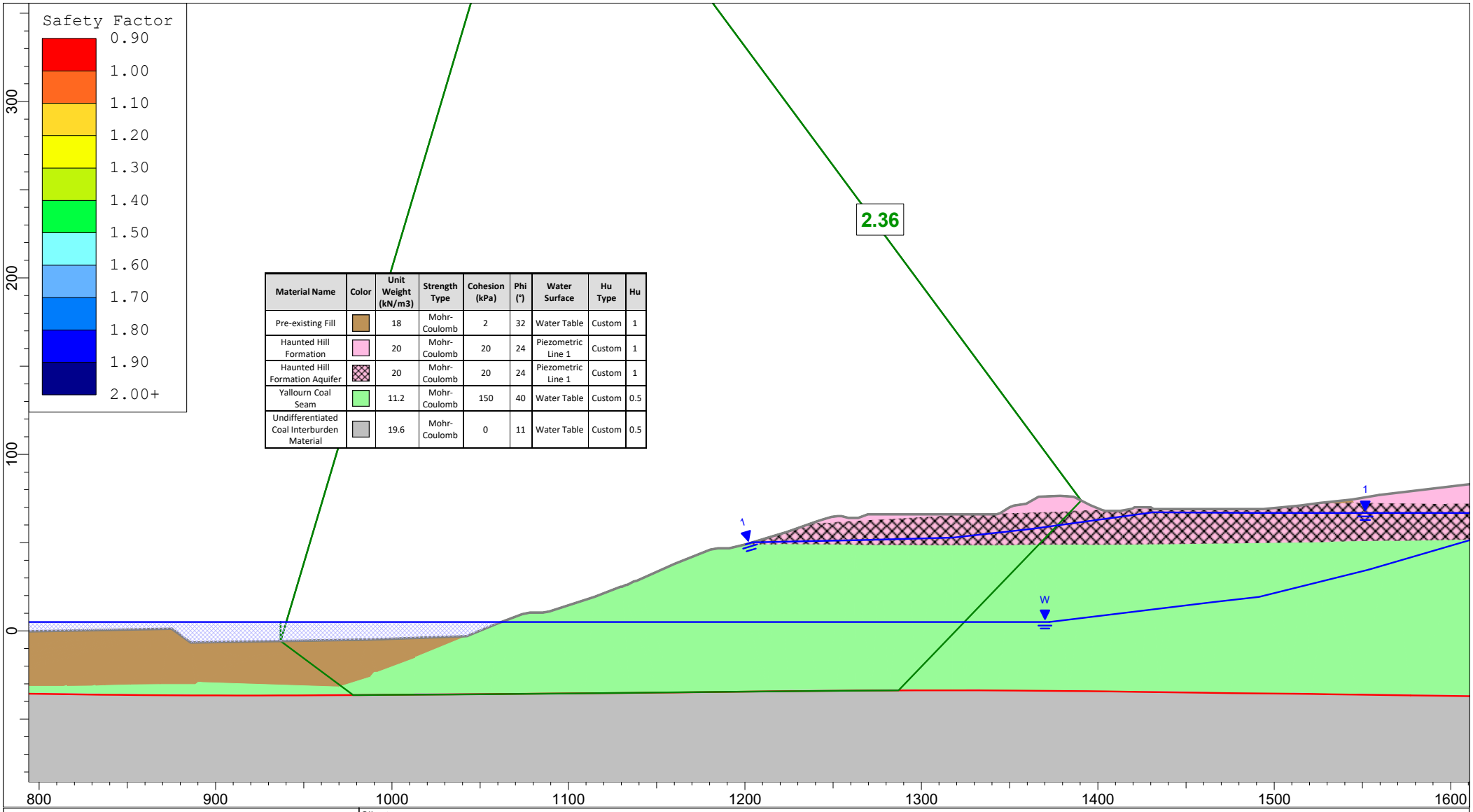
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength		



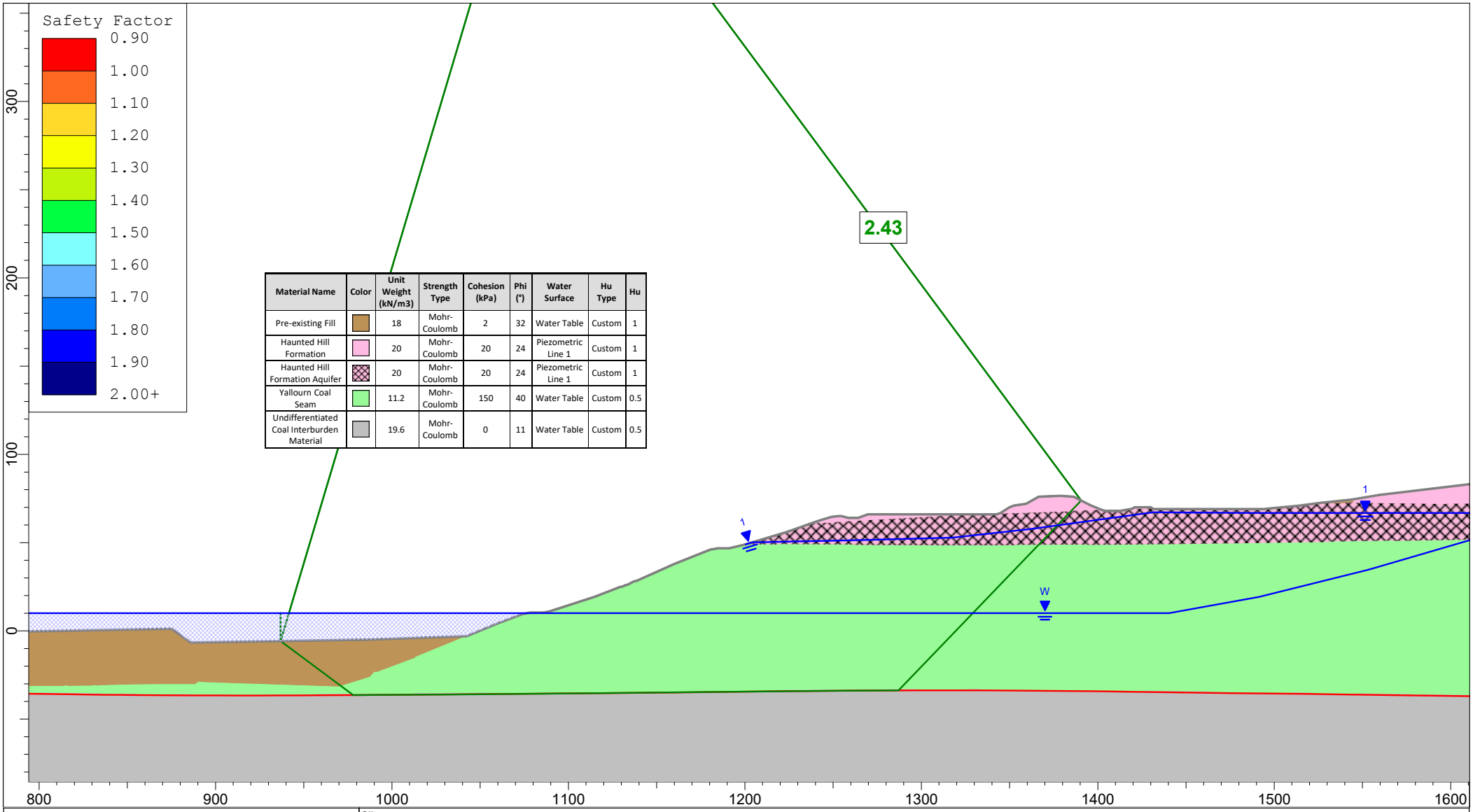
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



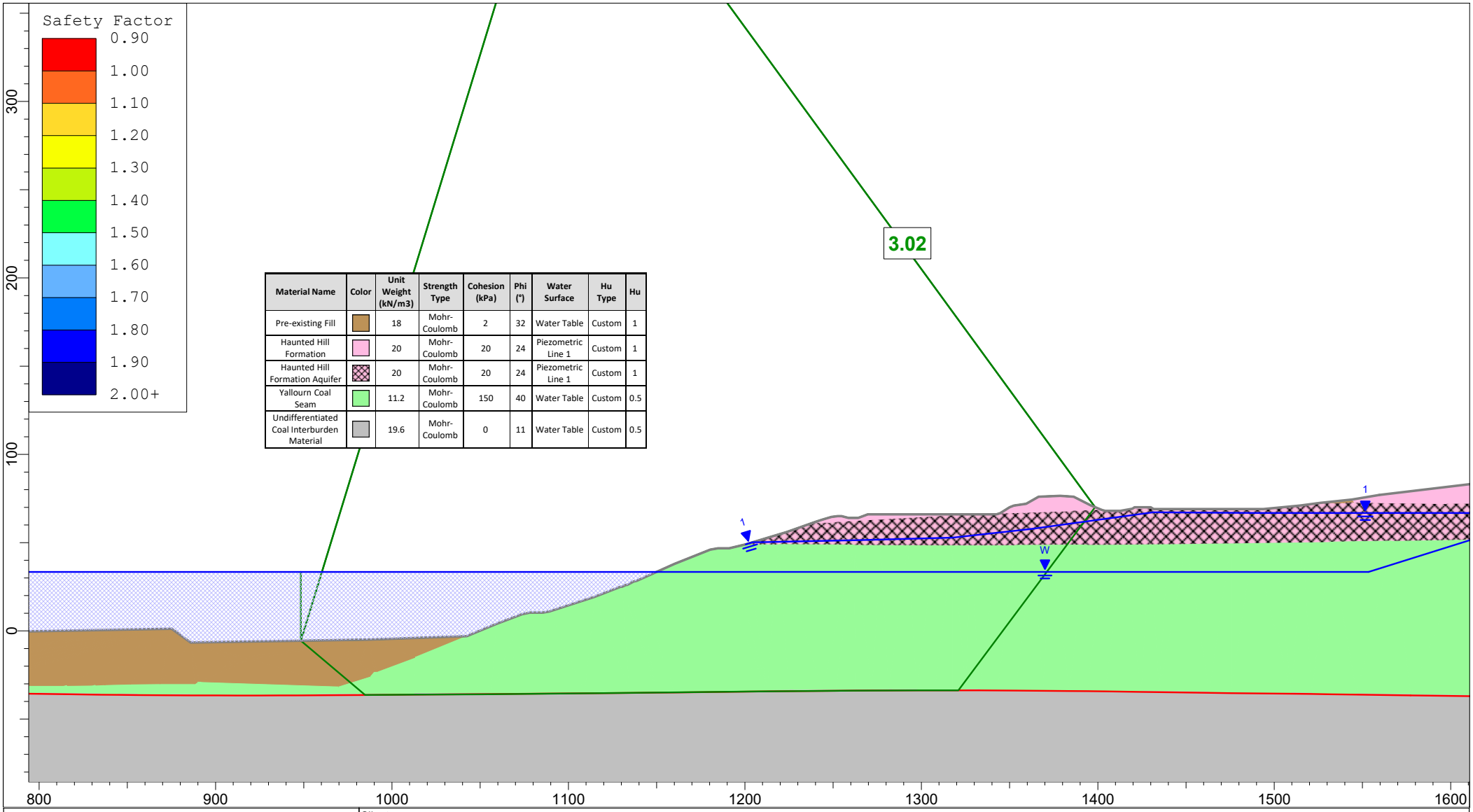
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



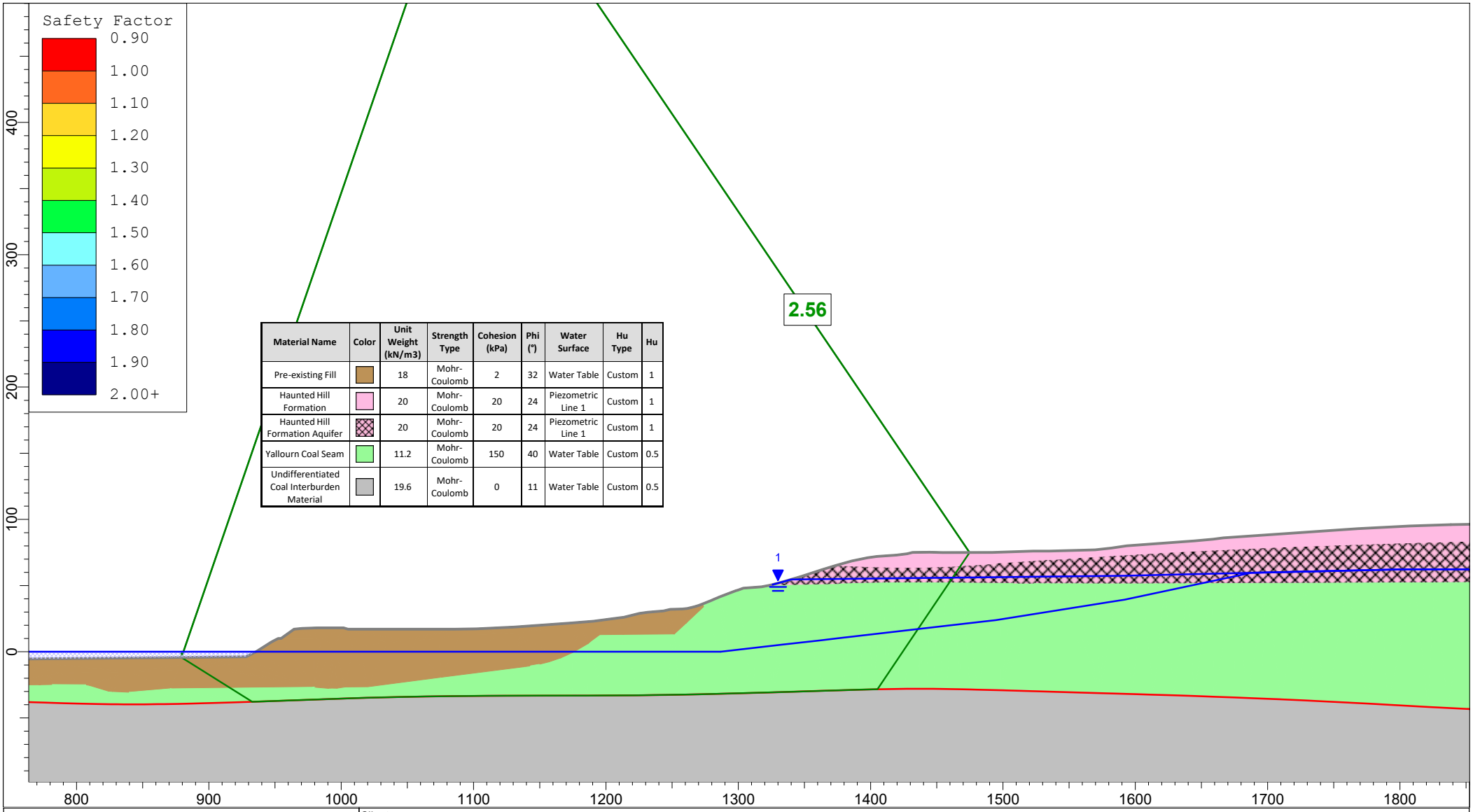
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



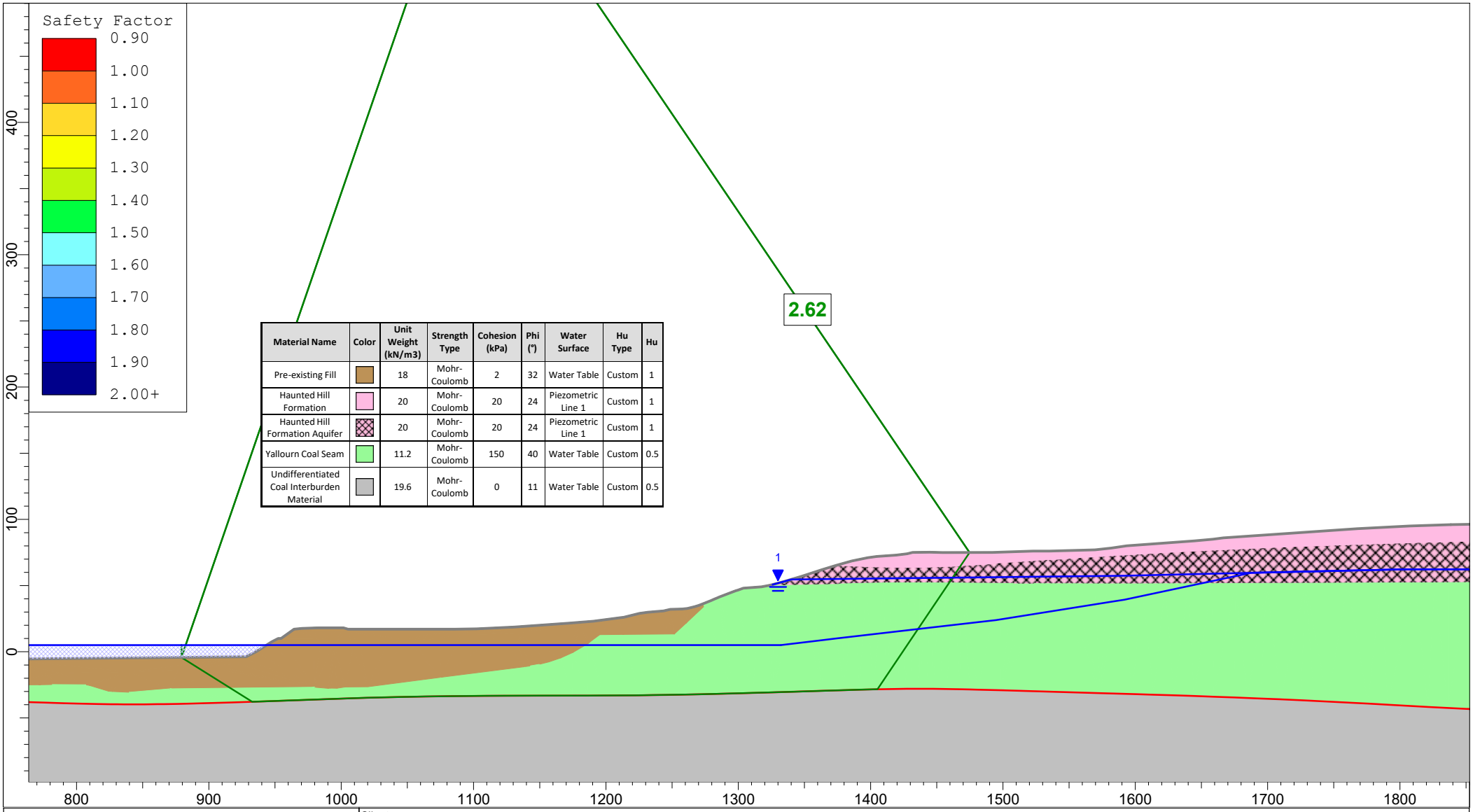
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



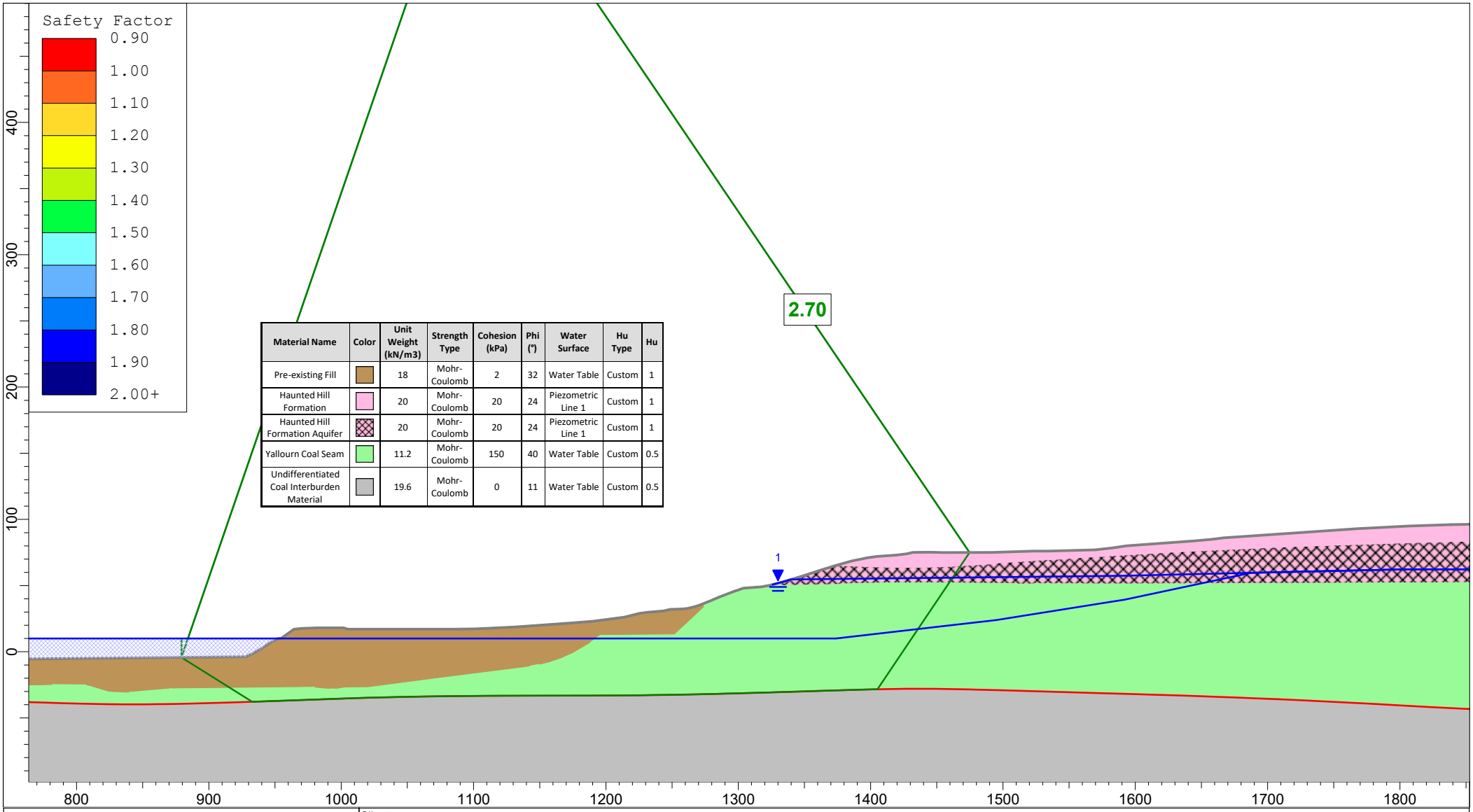
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



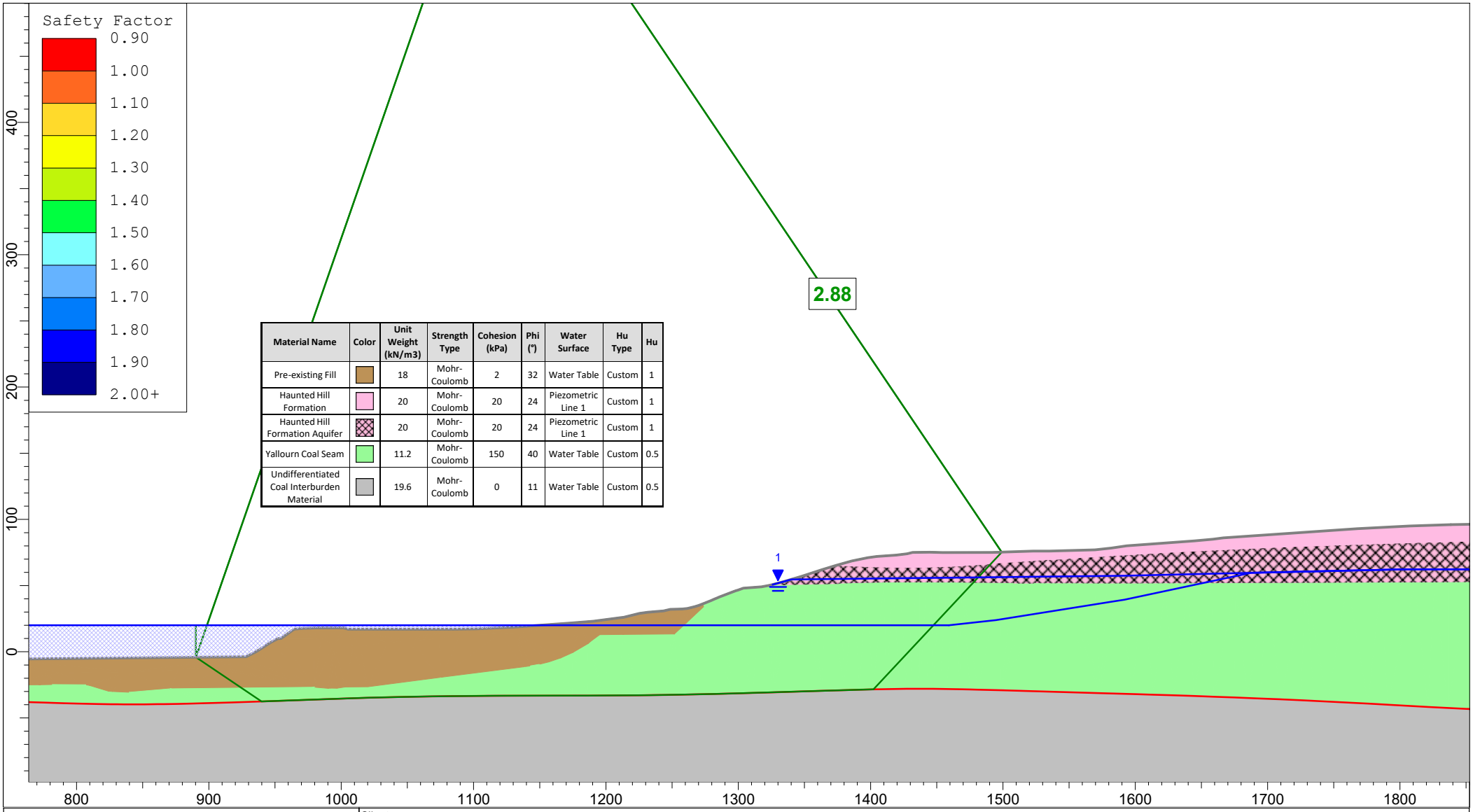
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



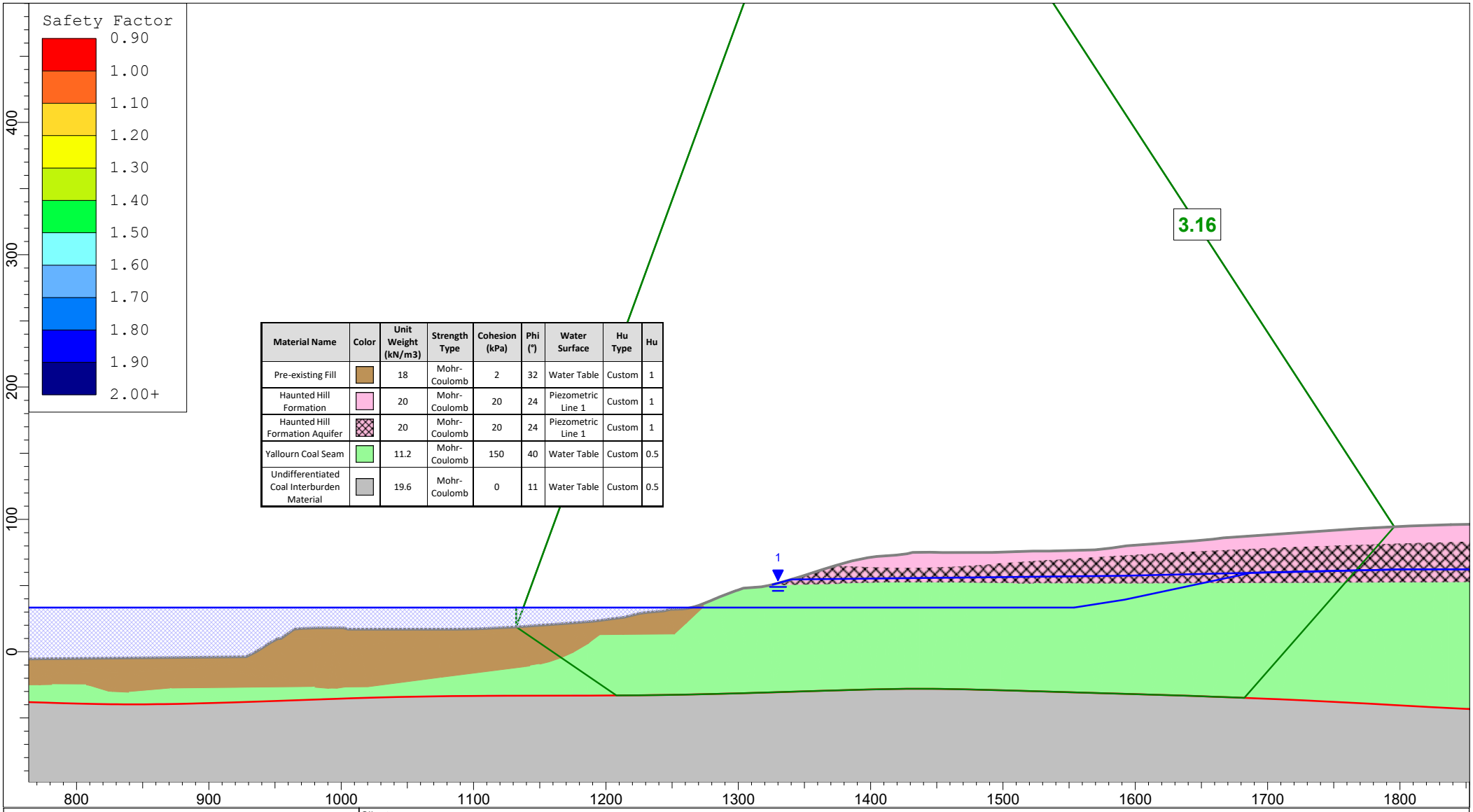
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



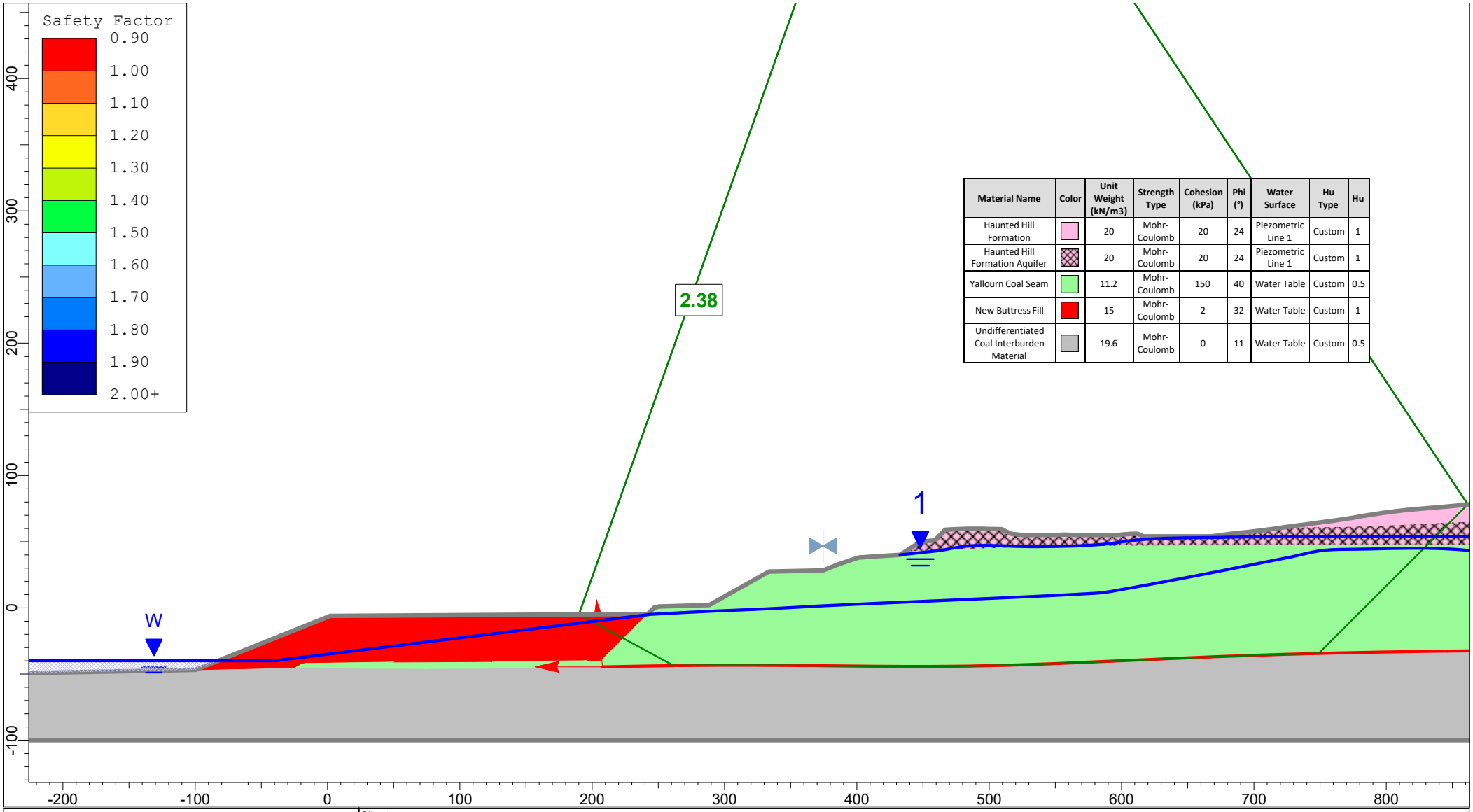
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



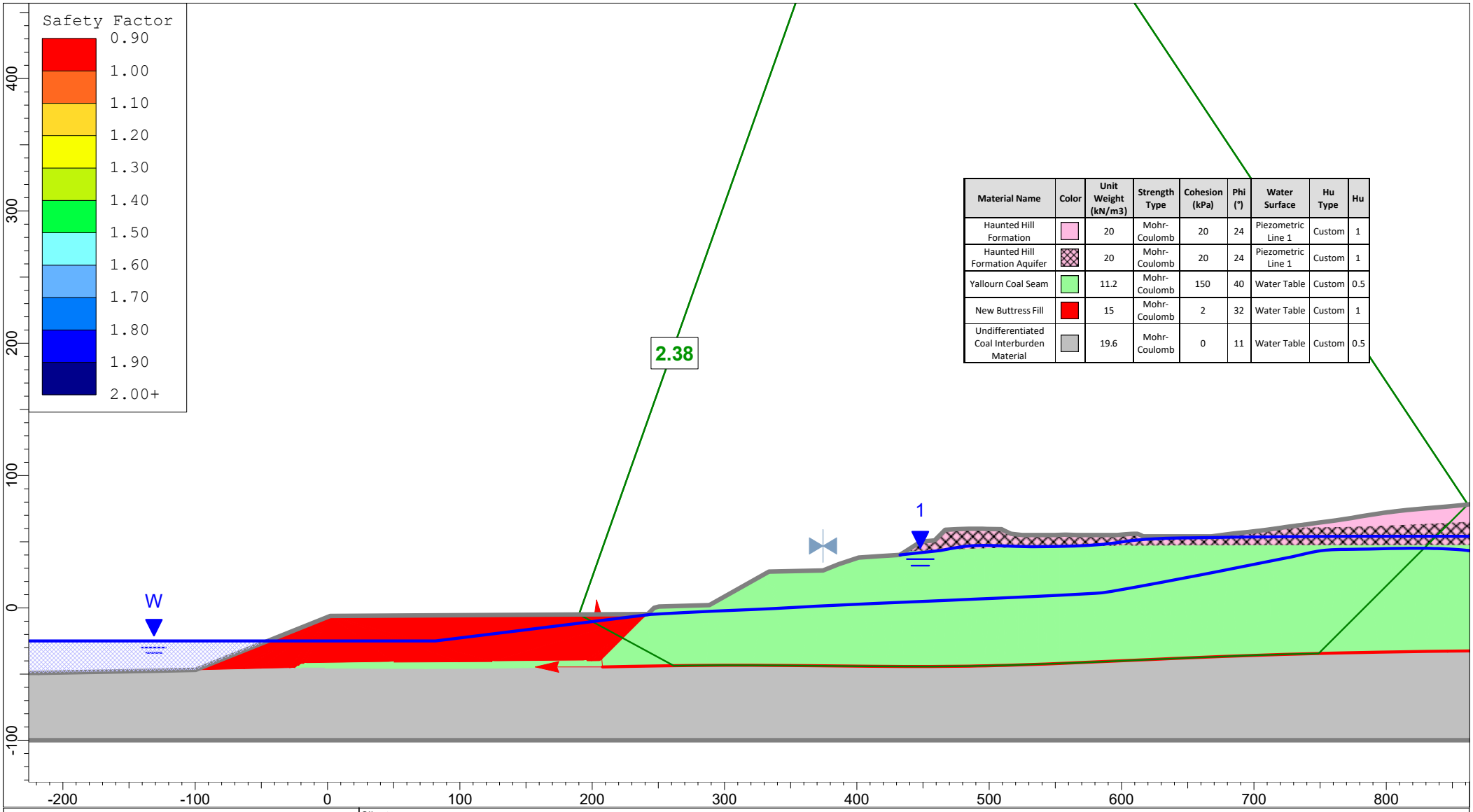
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



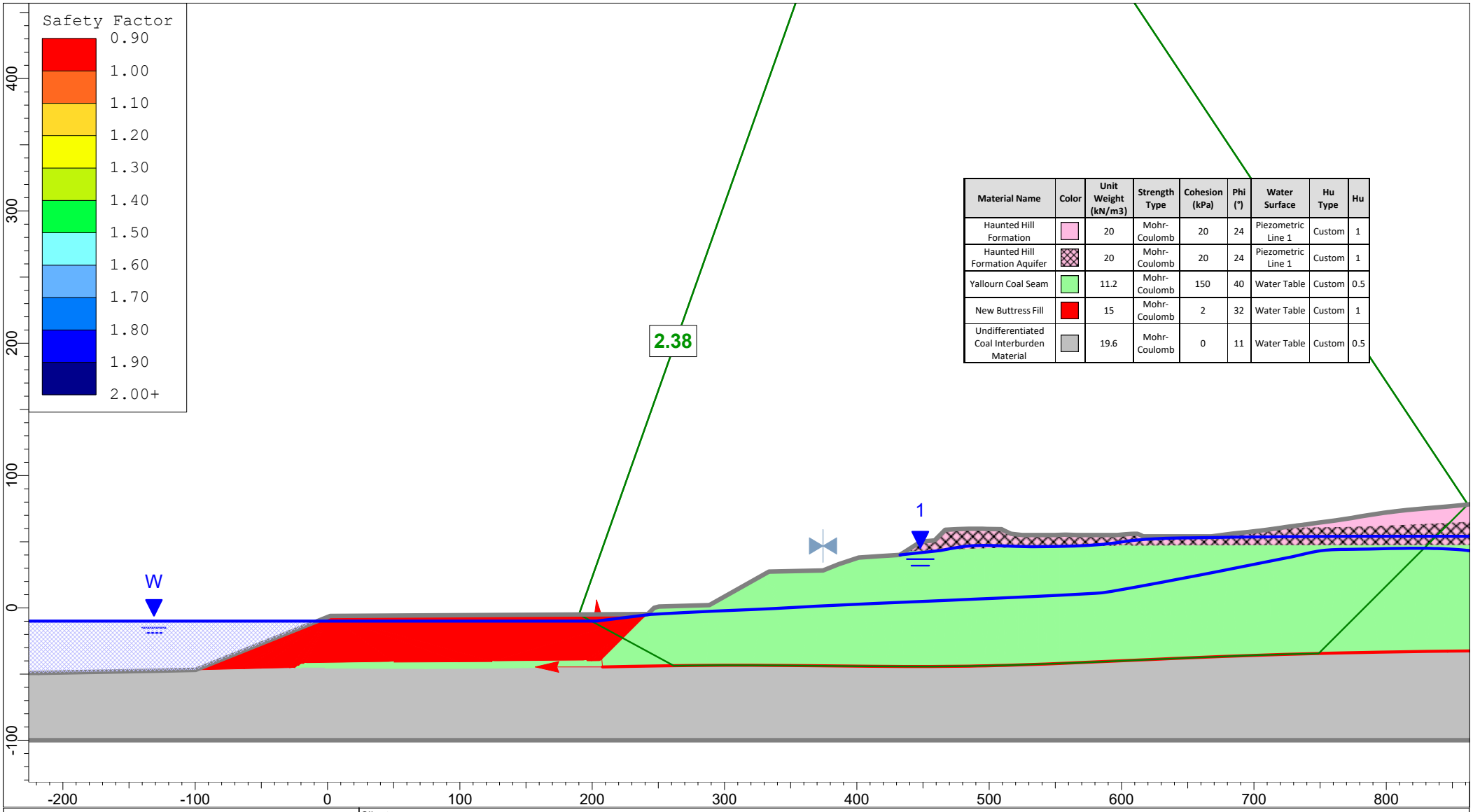
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -40 mRL
Notes:	Lower Bound Interseam Shear Strength		



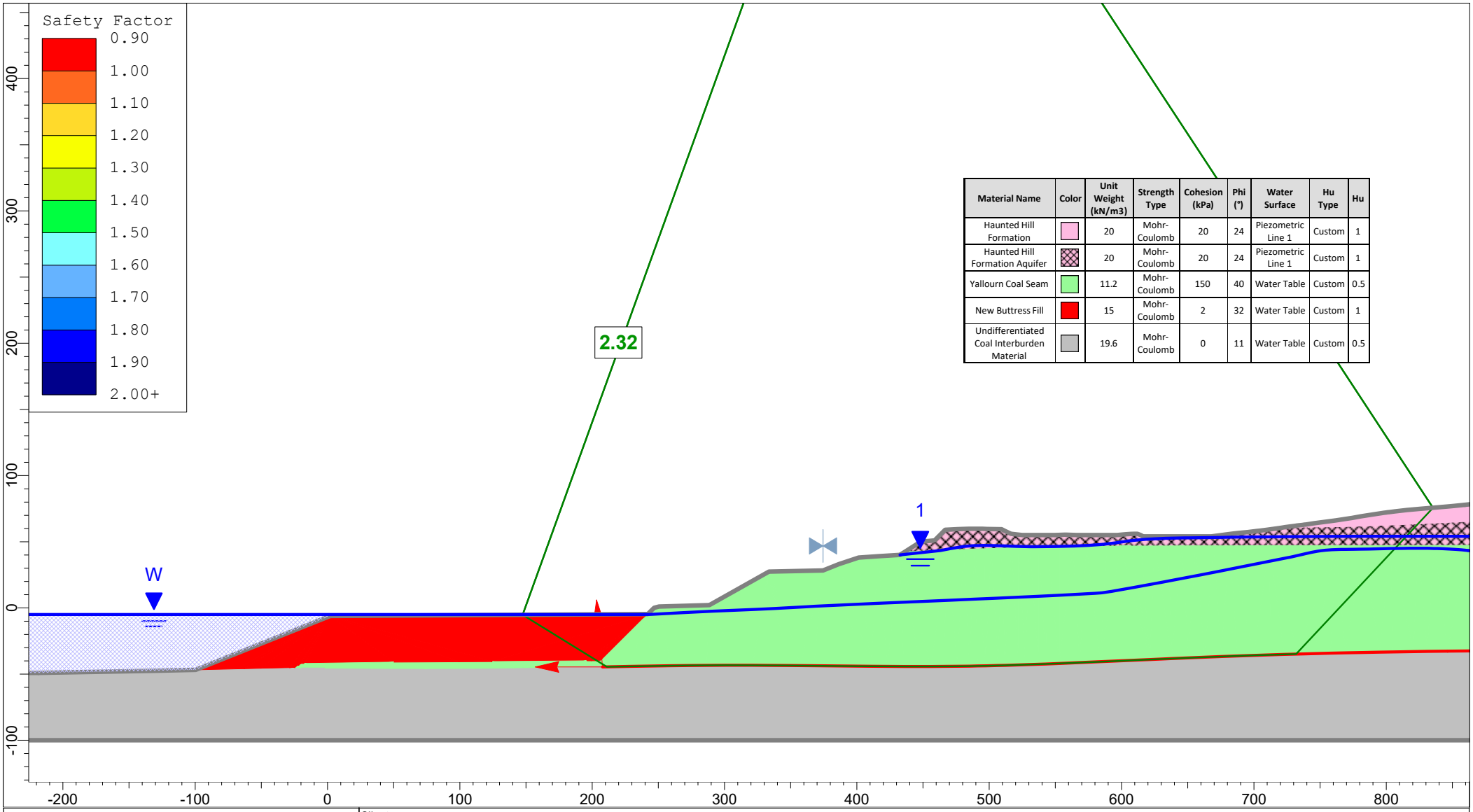
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -25 mRL
Notes:	Lower Bound Interseam Shear Strength		



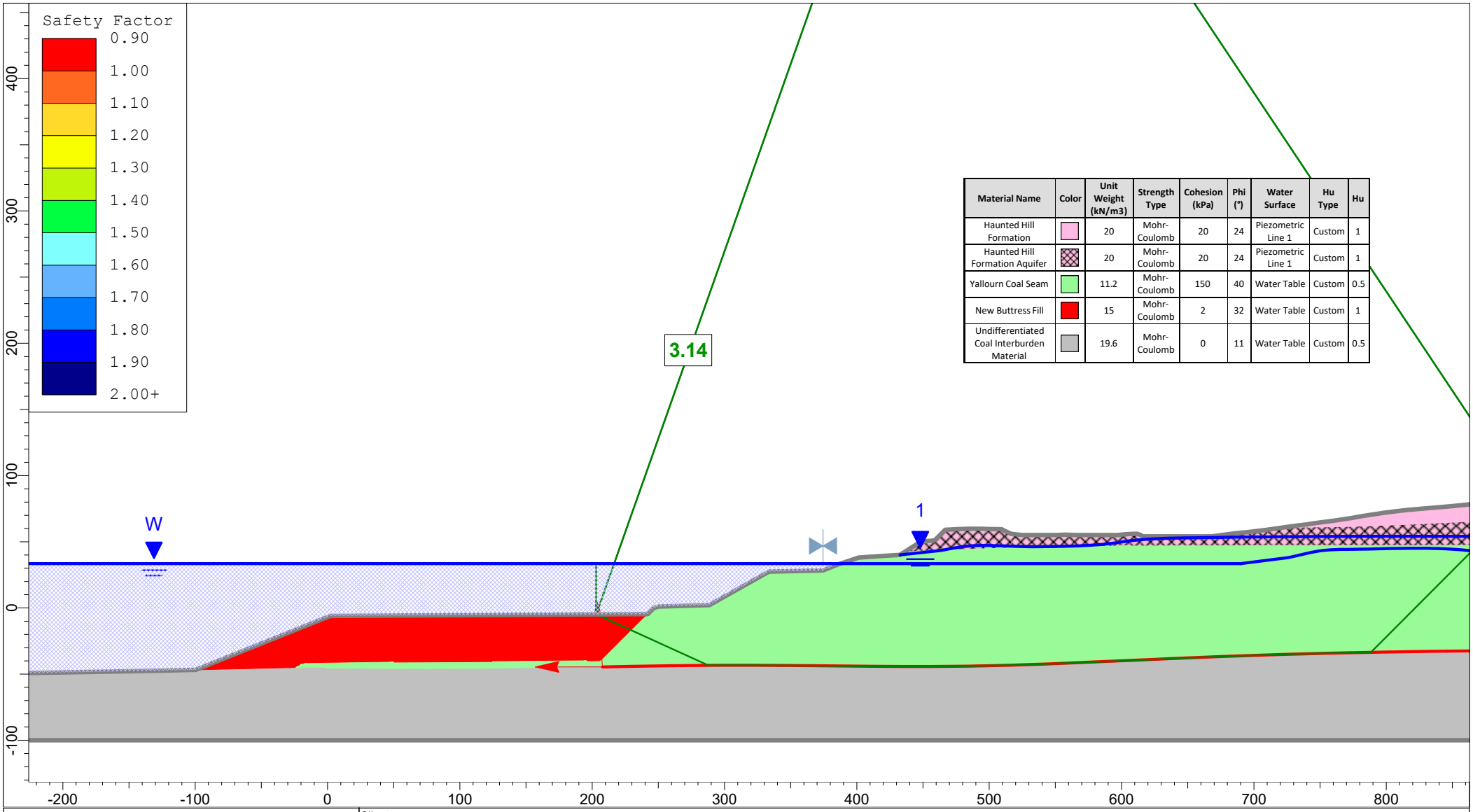
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength		



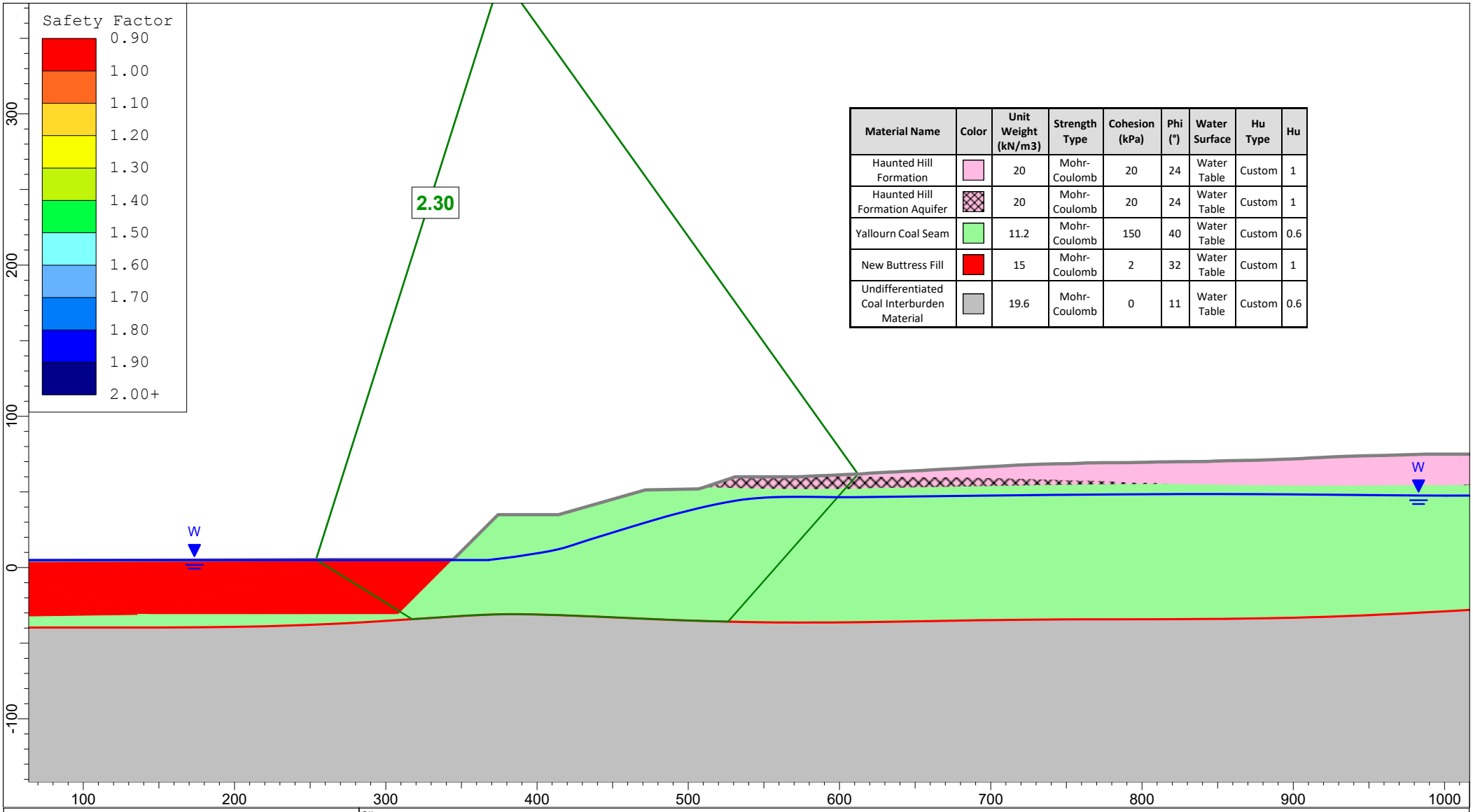
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength		



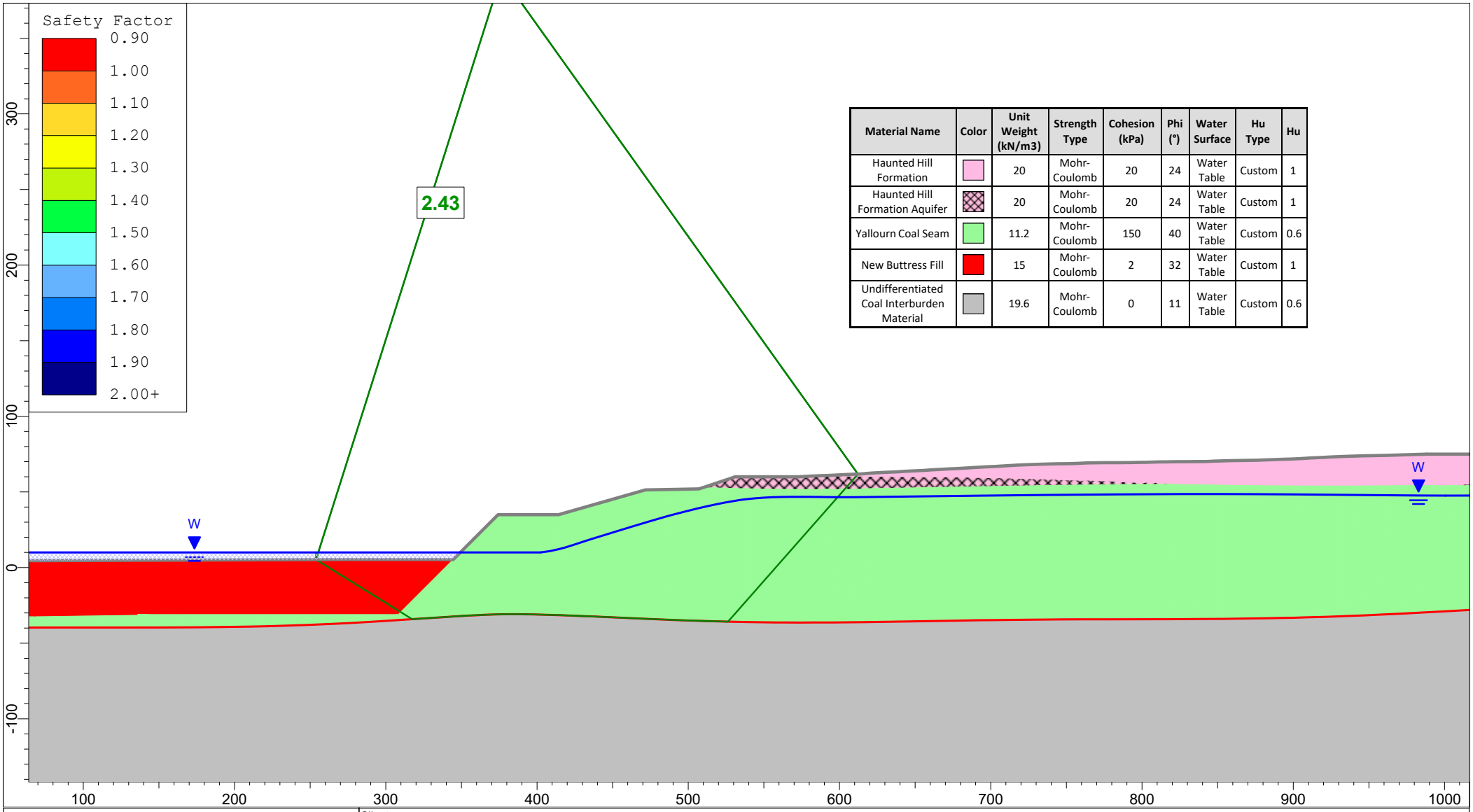
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



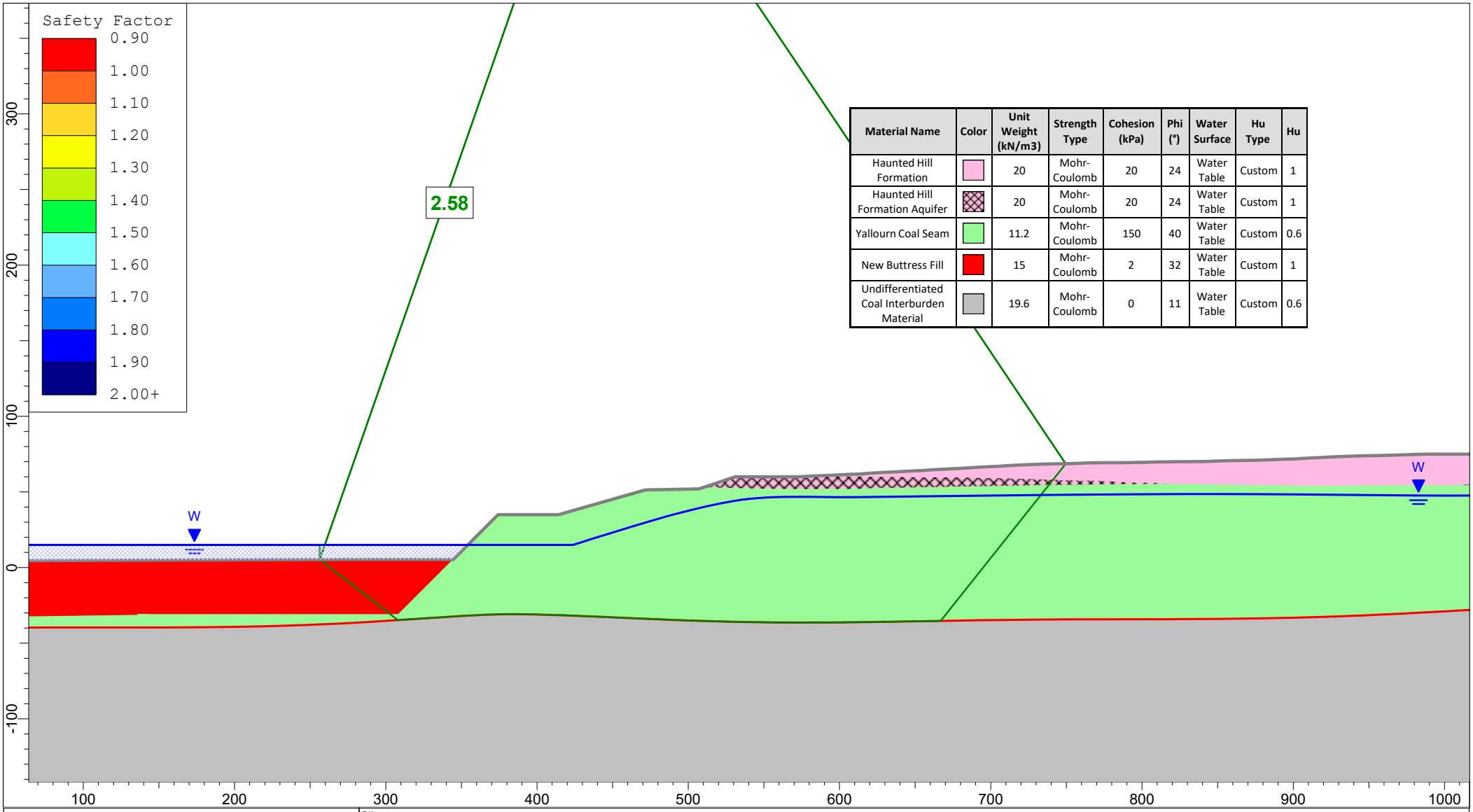
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



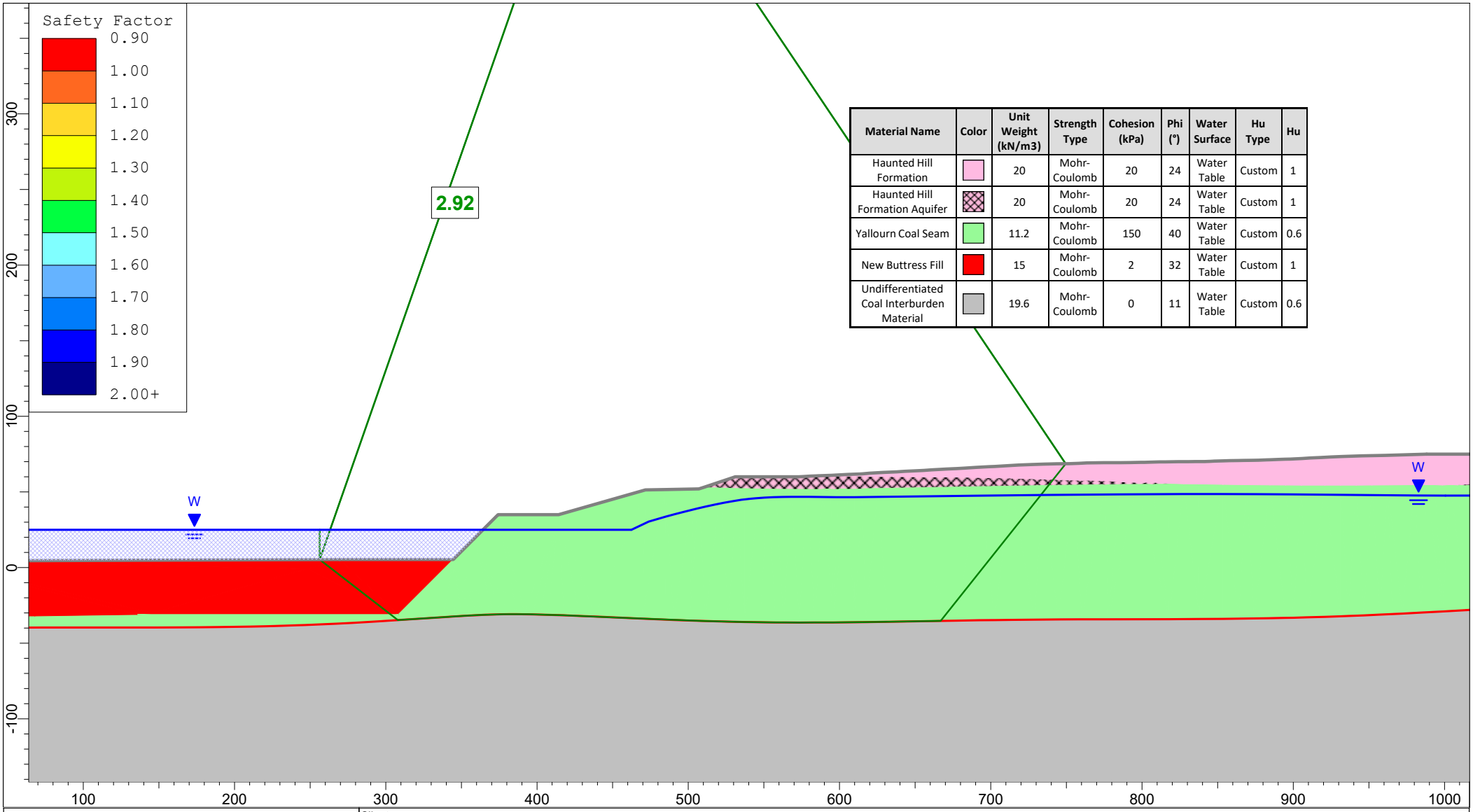
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



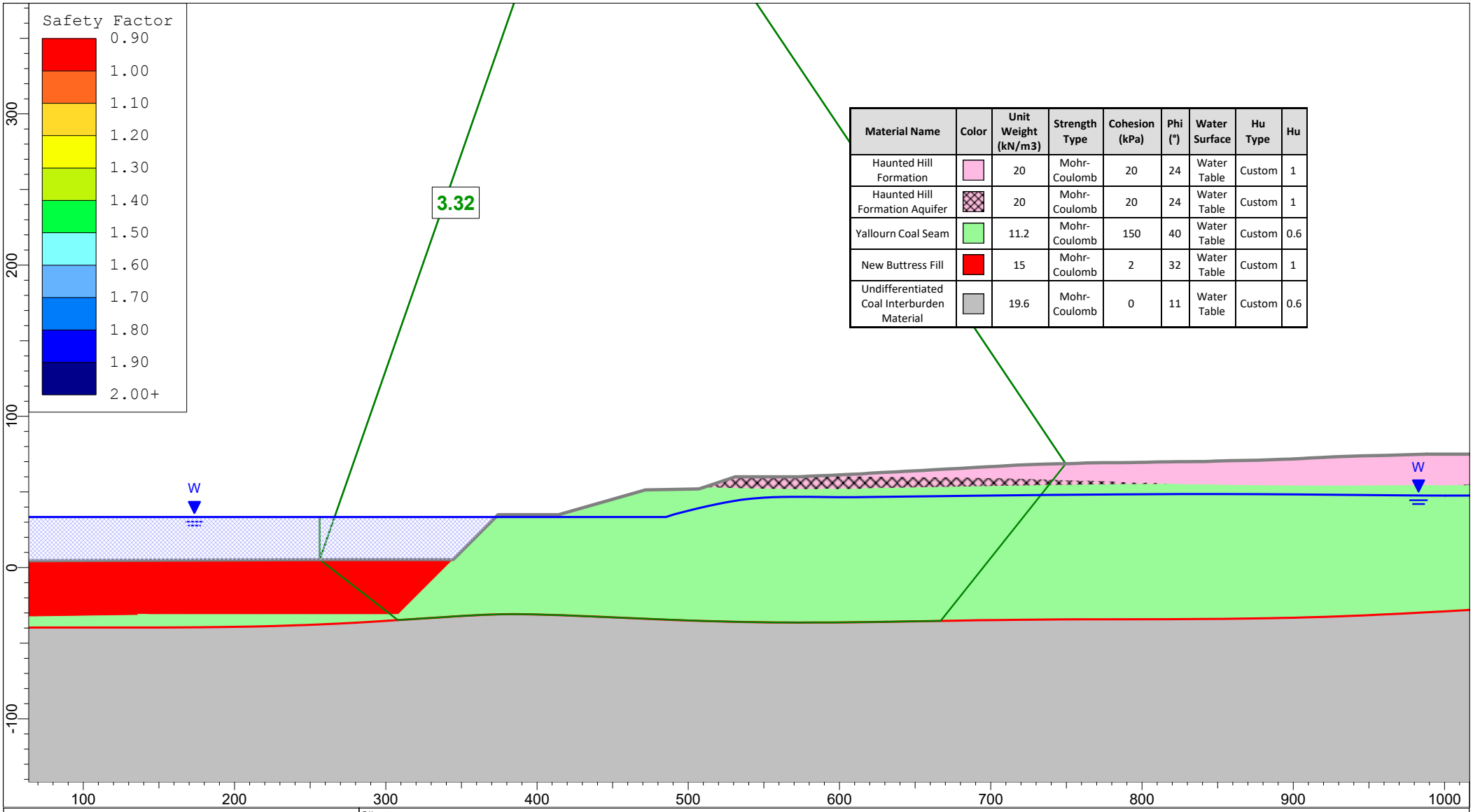
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



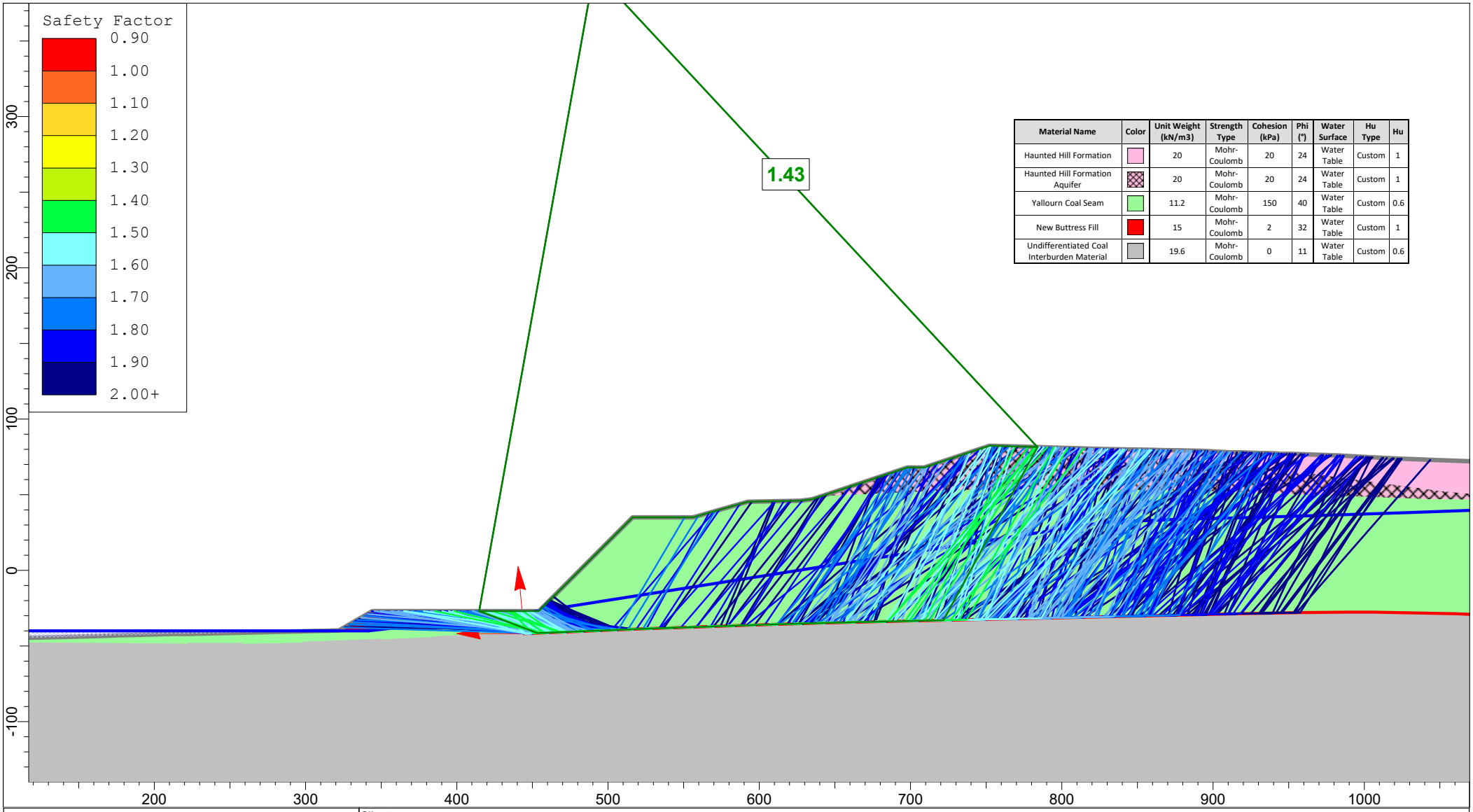
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



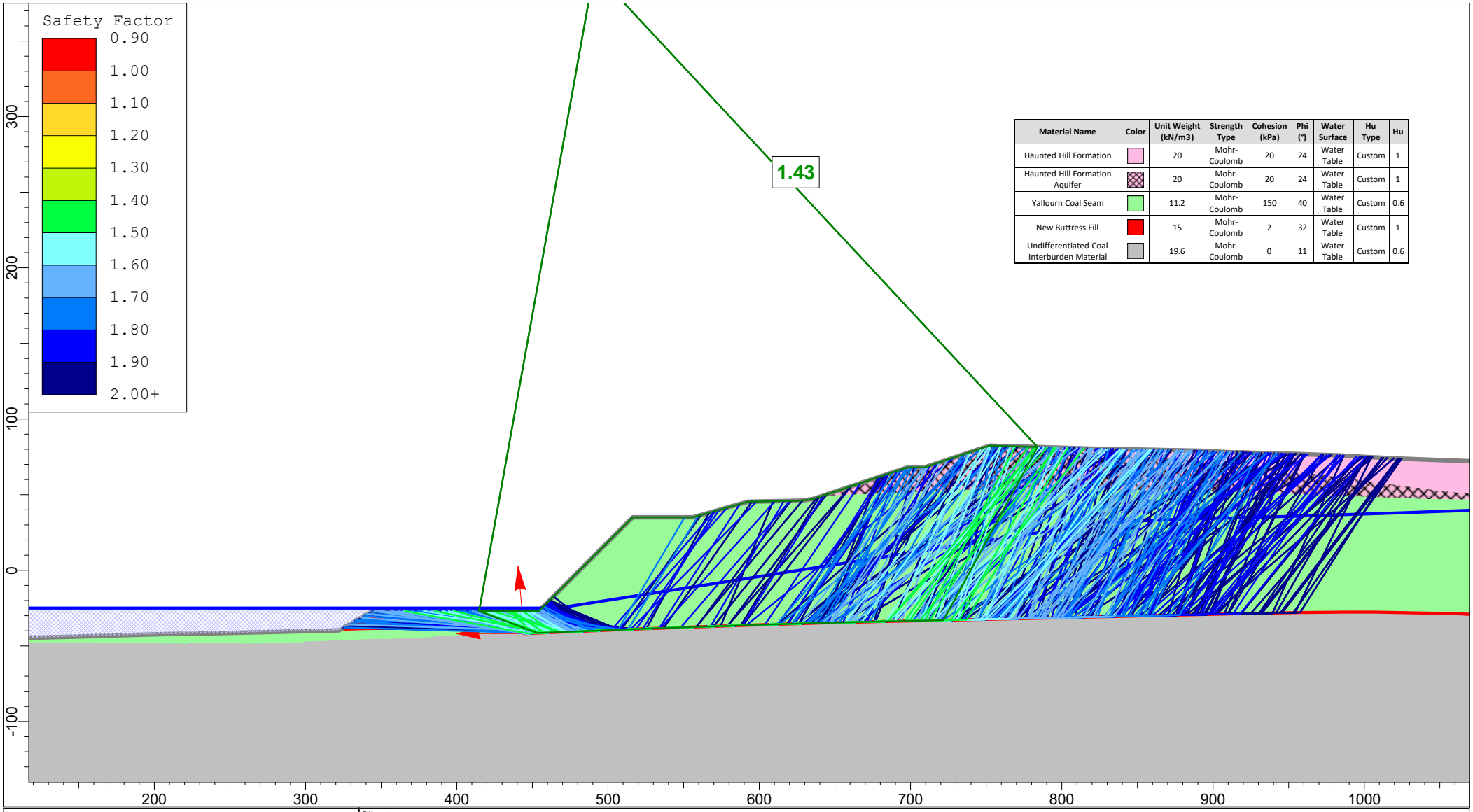
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



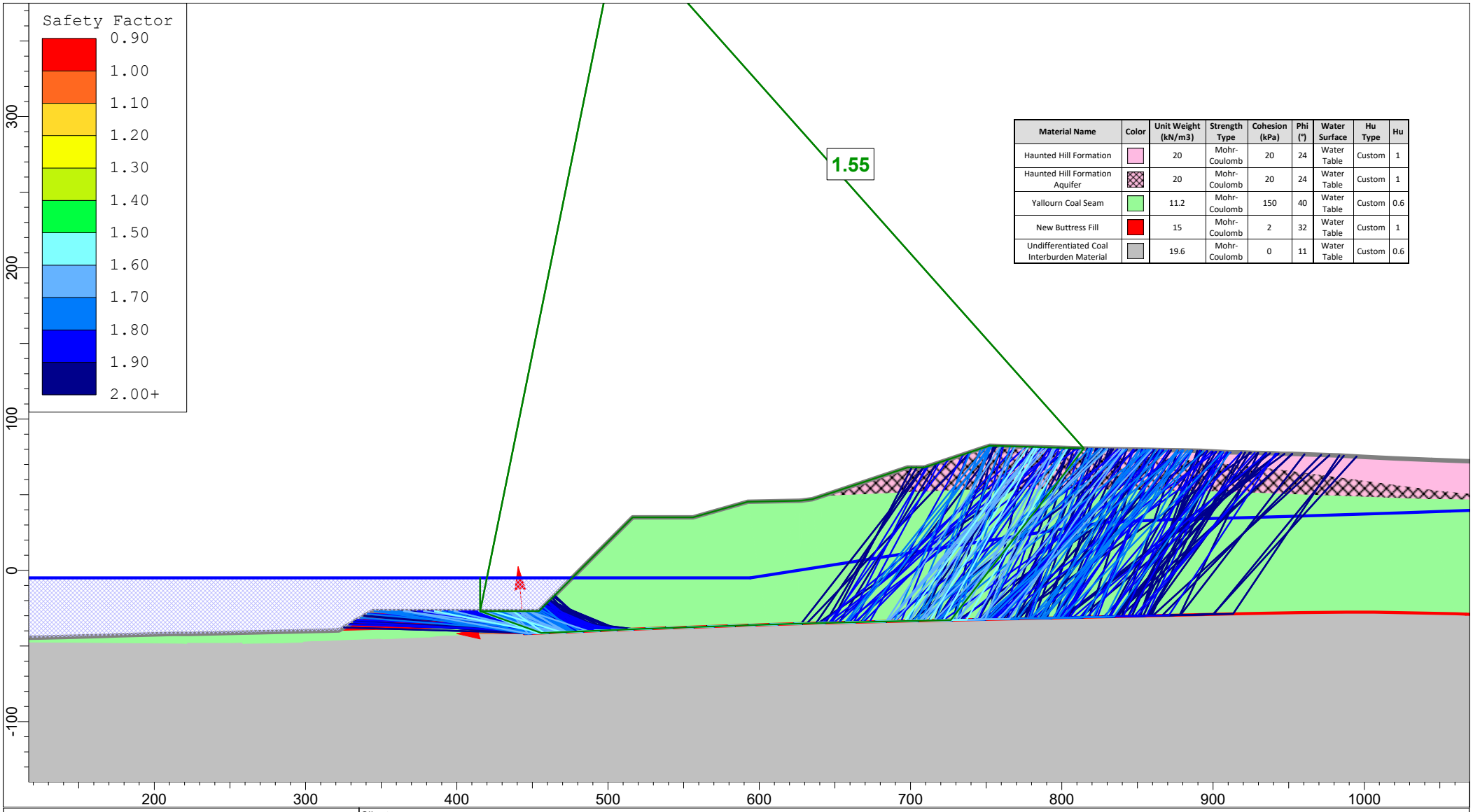
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -40 mRL
Notes:	Lower Bound Interseam Shear Strength		



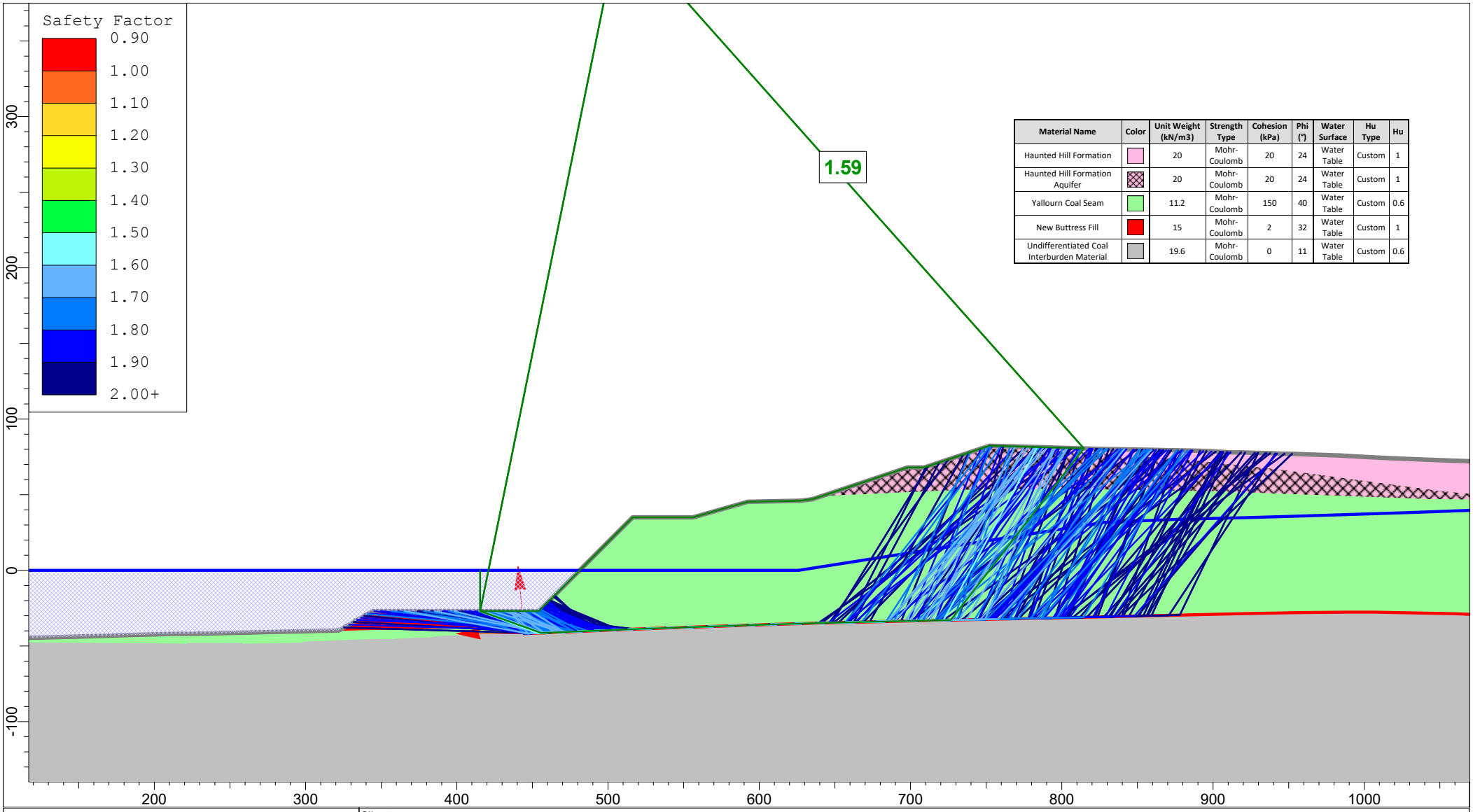
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -25 mRL
Notes:	Lower Bound Interseam Shear Strength		



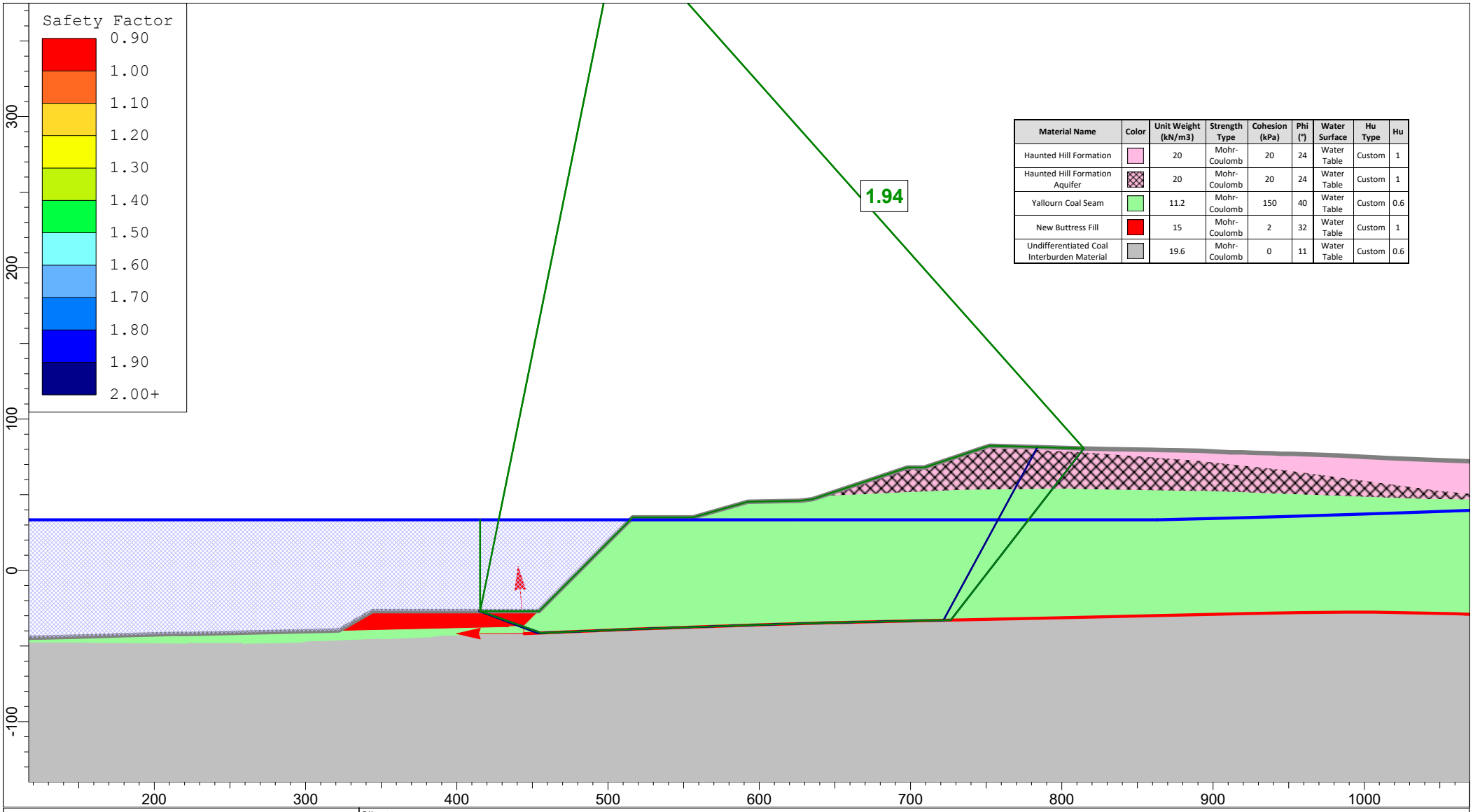
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength		



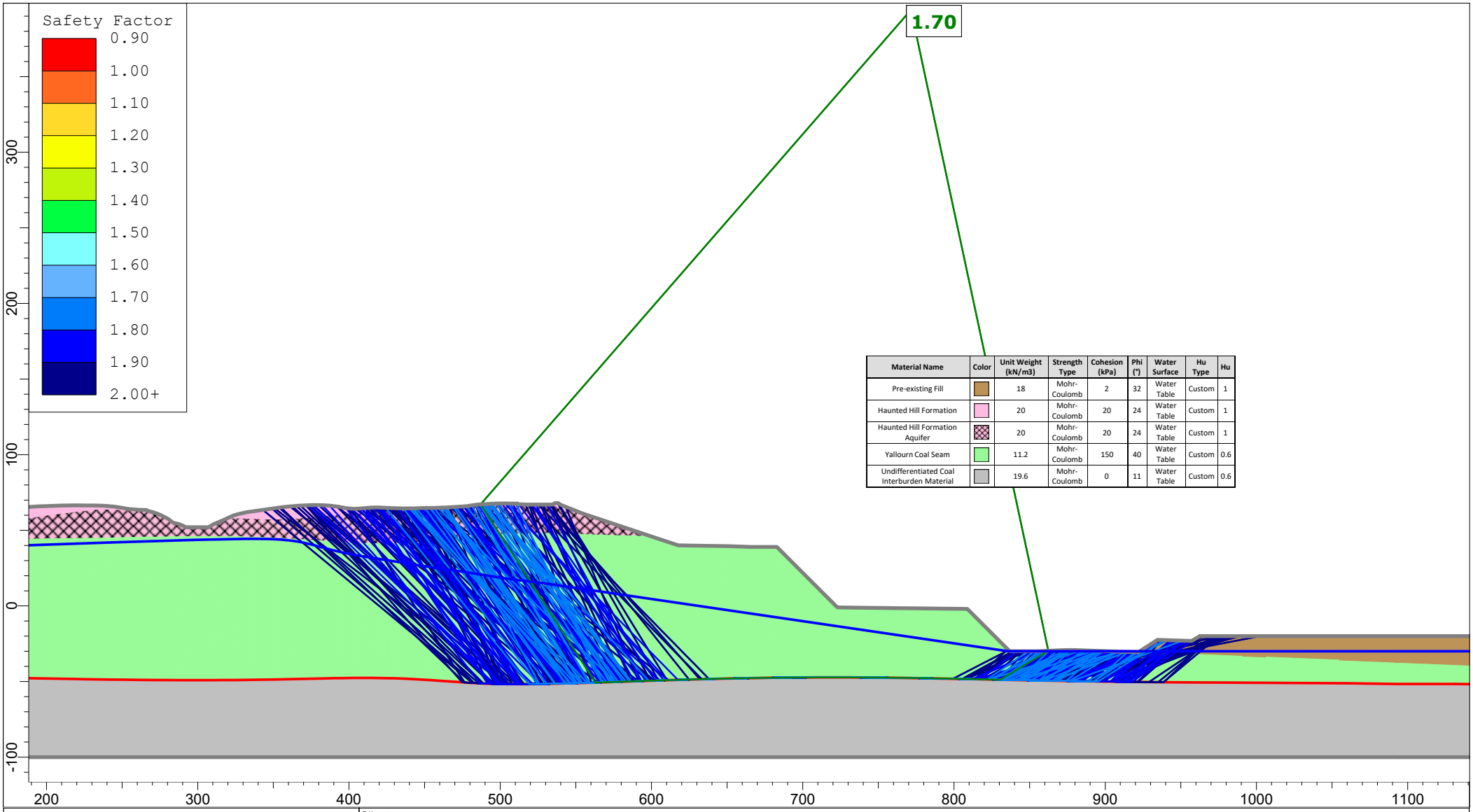
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



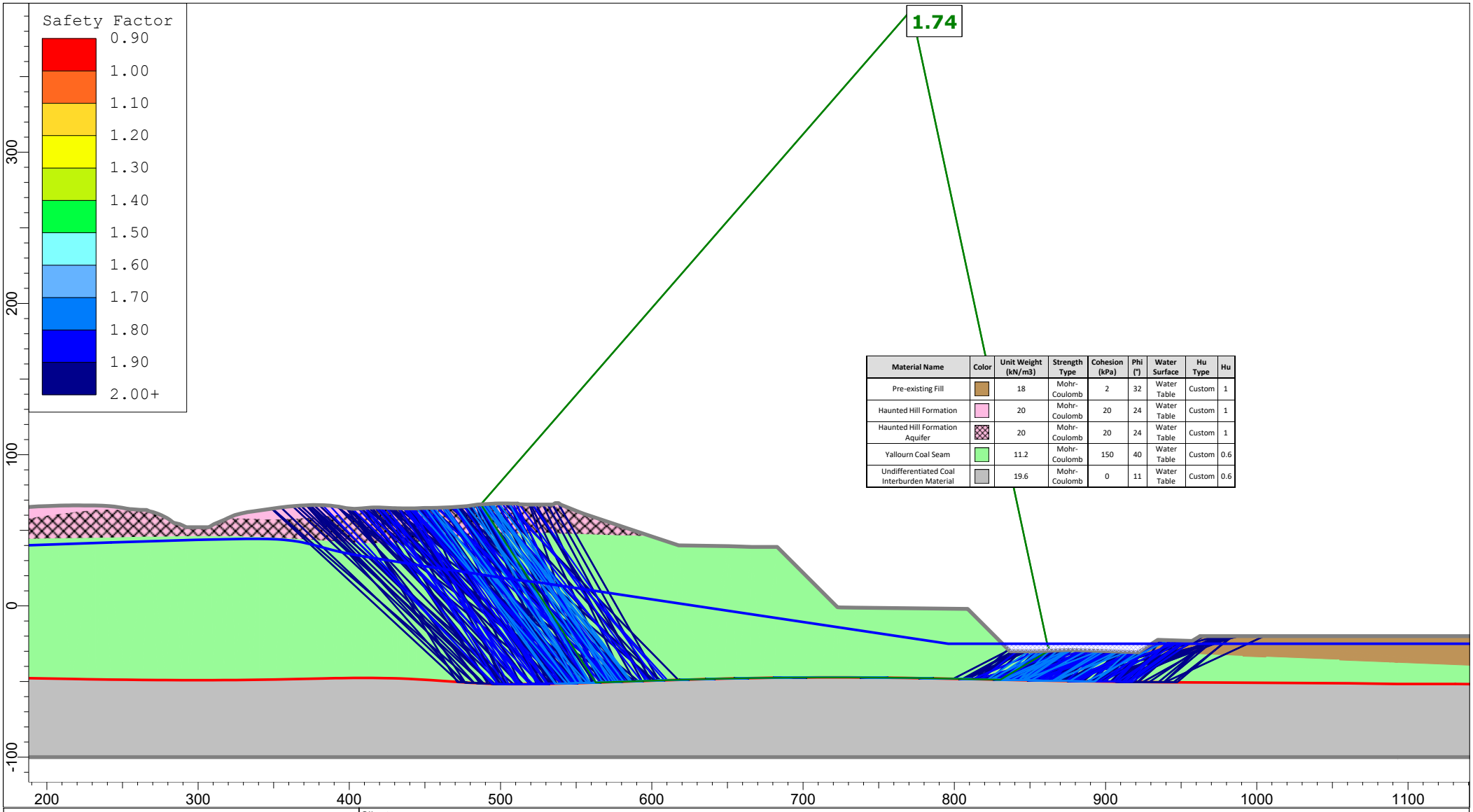
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**MVF-SB**
Section:	**Section 13**	Case:	**Multilinear - Hu specific**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 33.4 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



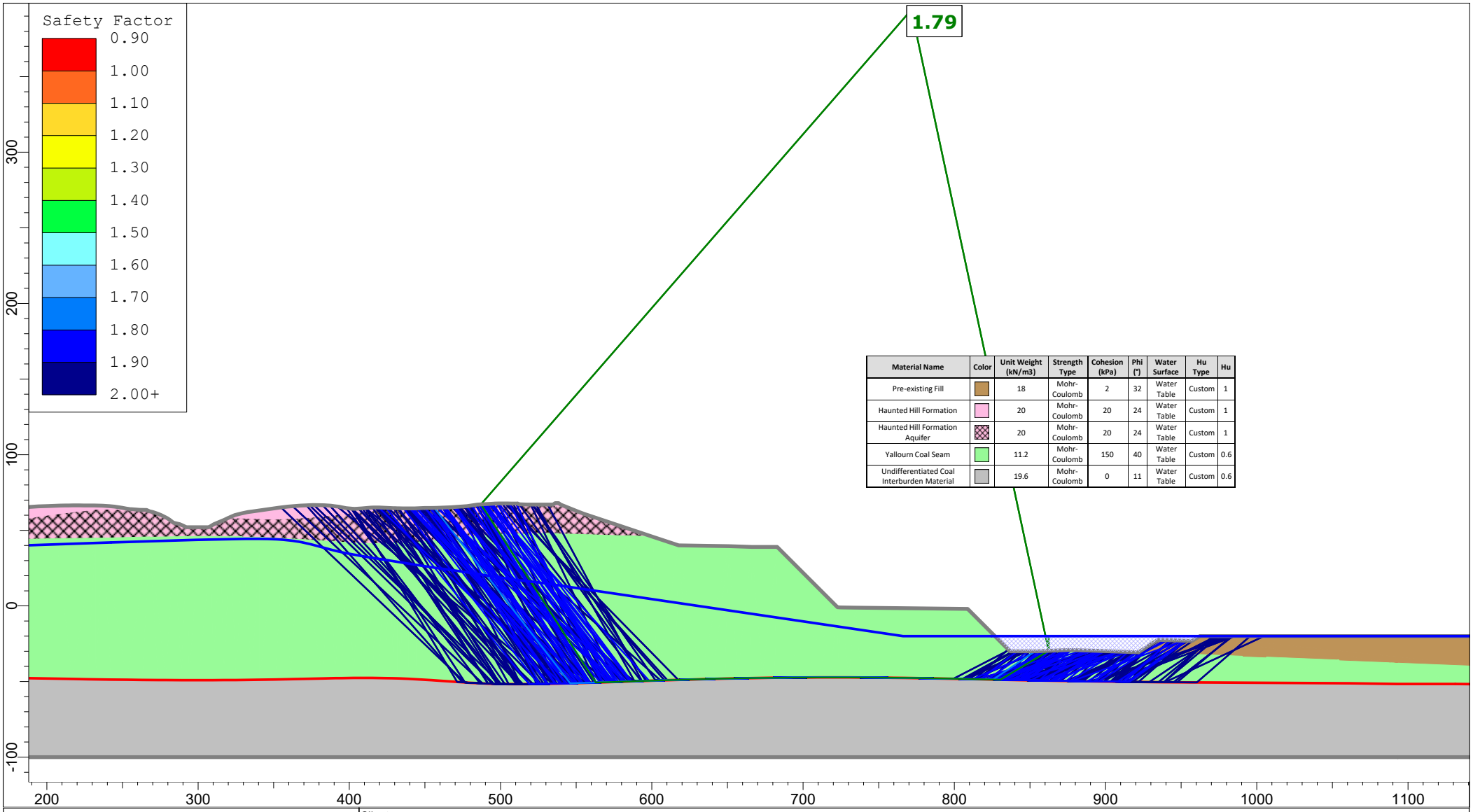
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 14	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -30 mRL
Notes:	Lower Bound Interseam Shear Strength		



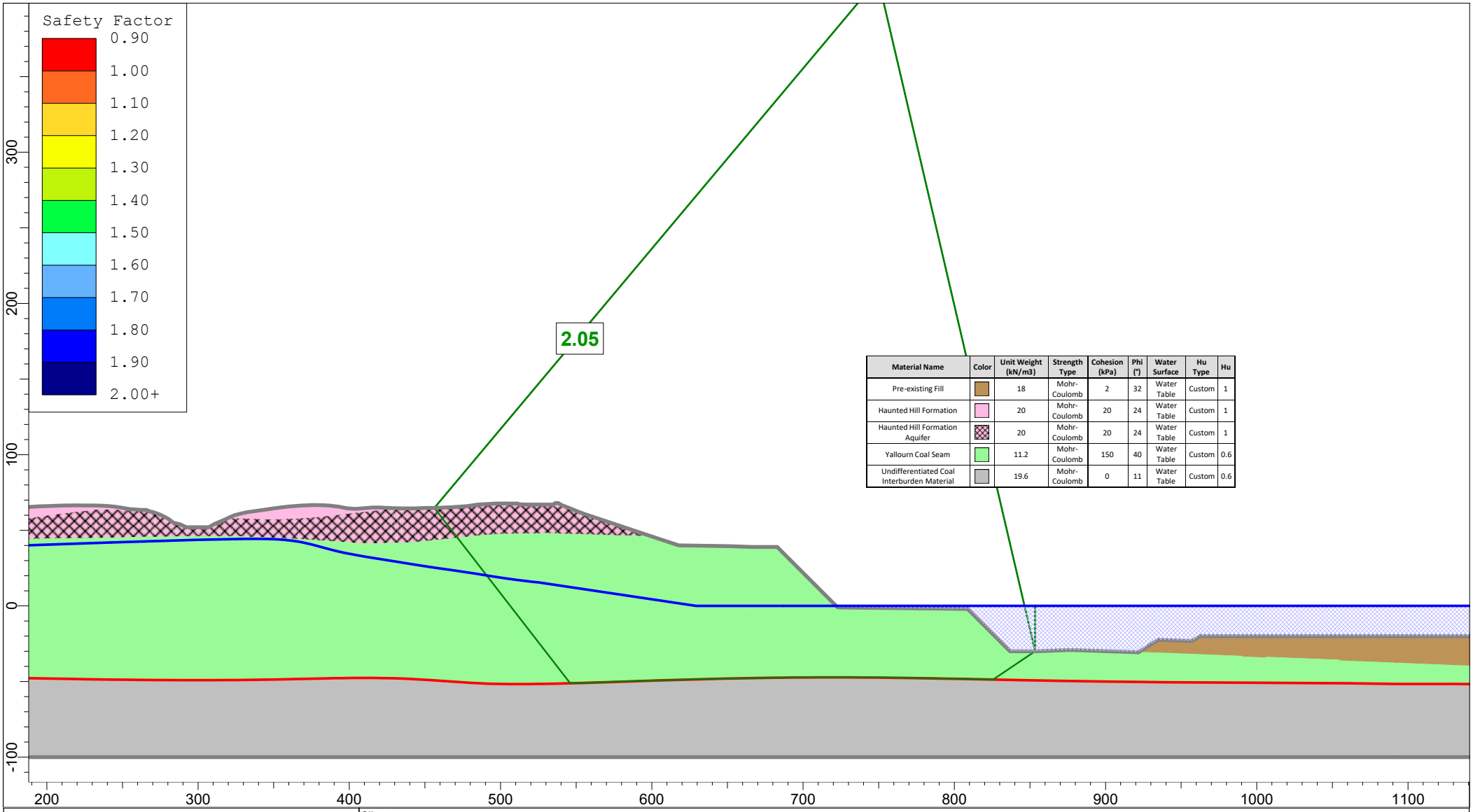
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 14	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -25 mRL
Notes:	Lower Bound Interseam Shear Strength		



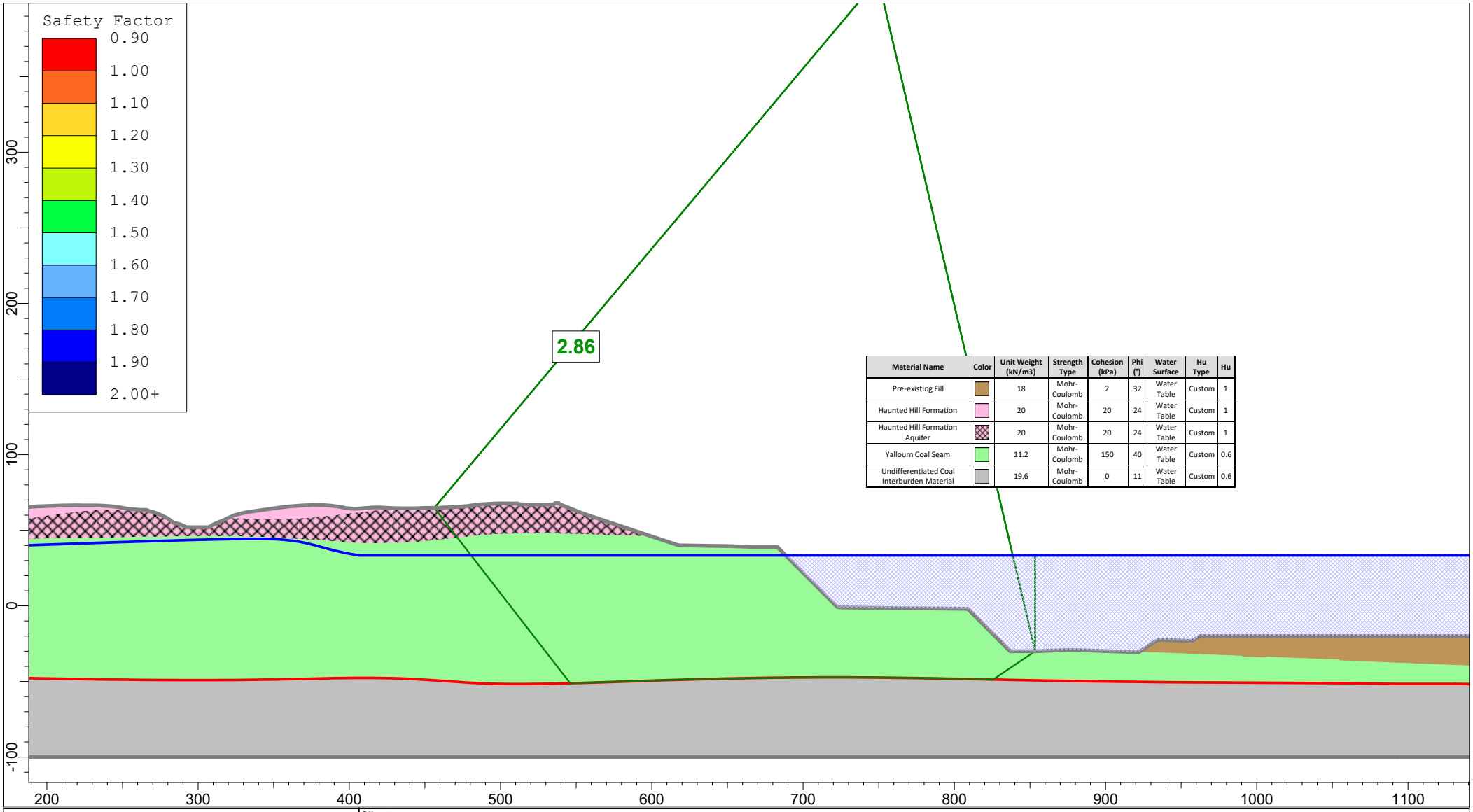
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 14	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -20 mRL
Notes:	Lower Bound Interseam Shear Strength		



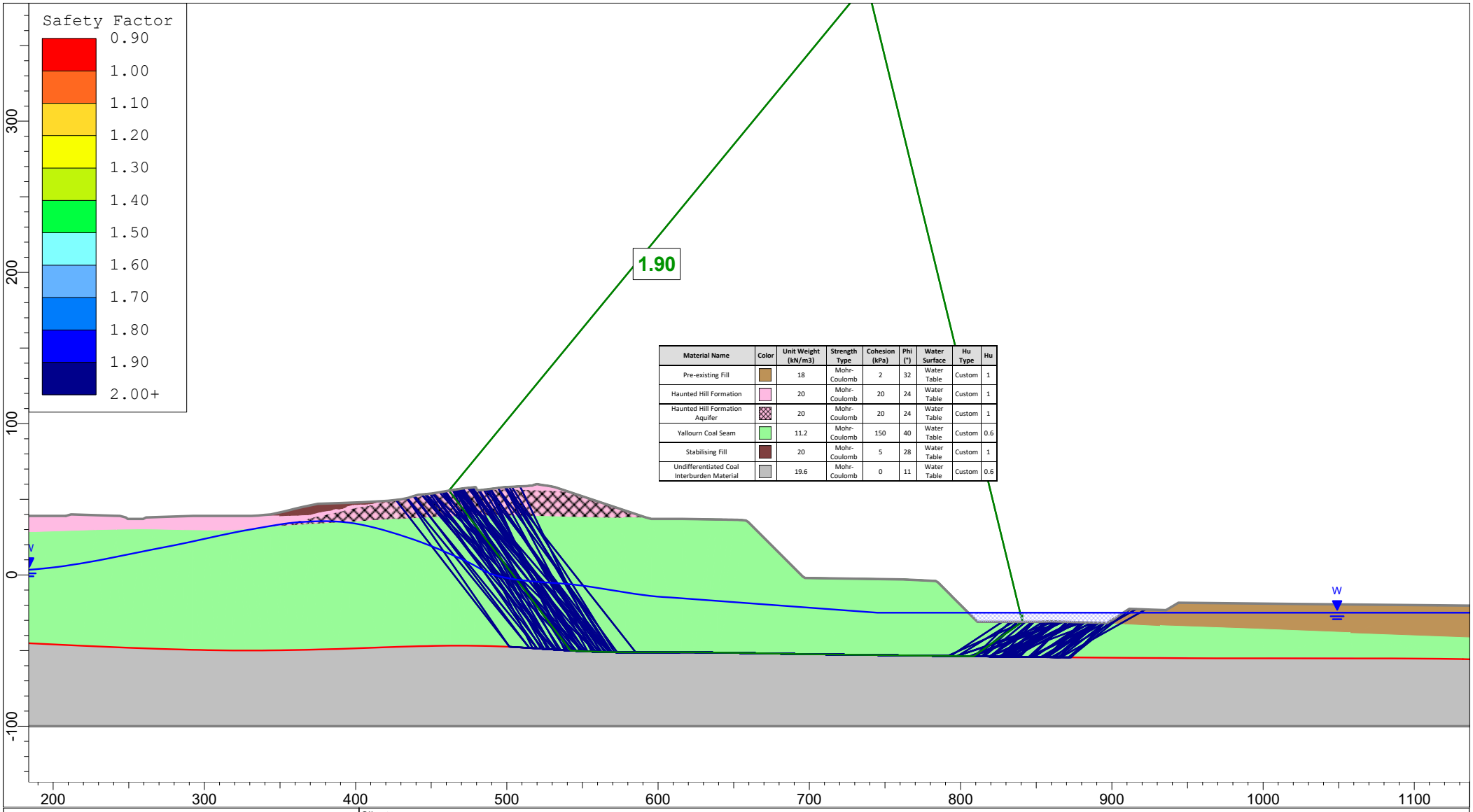
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 14	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



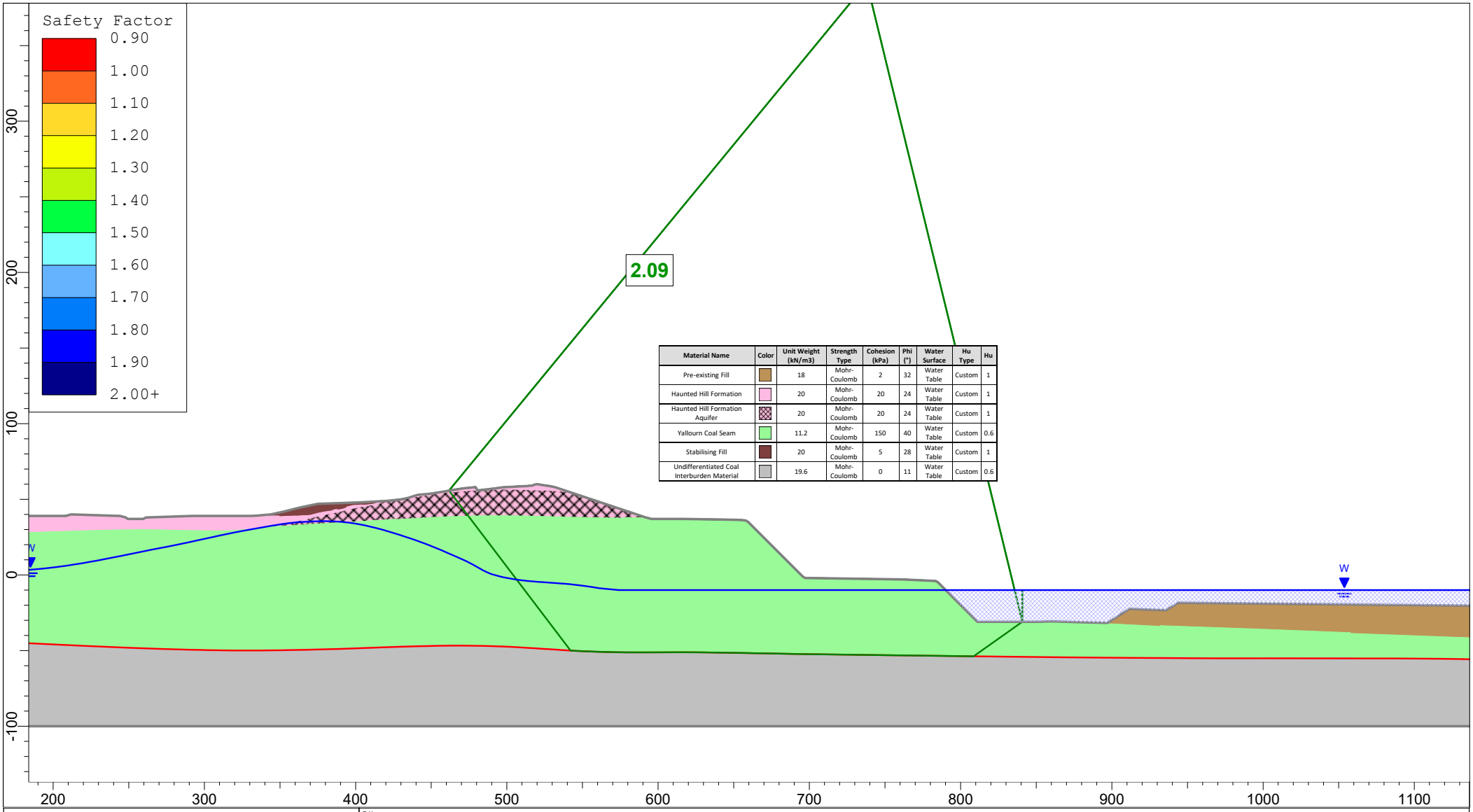
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 14	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



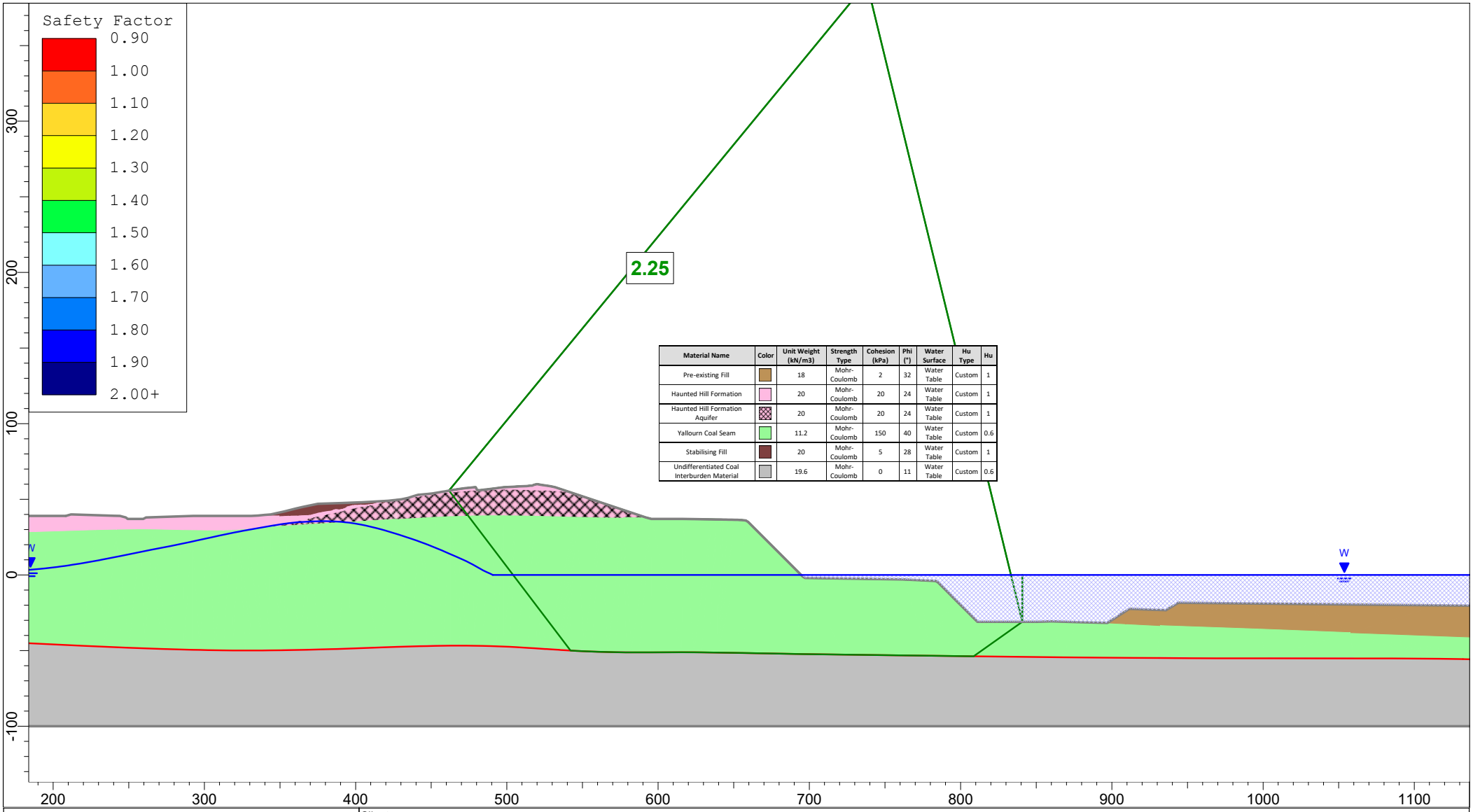
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Stabilising Fill		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**MVF-WB**
Section:	**Section 15**	Case:	**Multilinear - Hu specific**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at -25 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



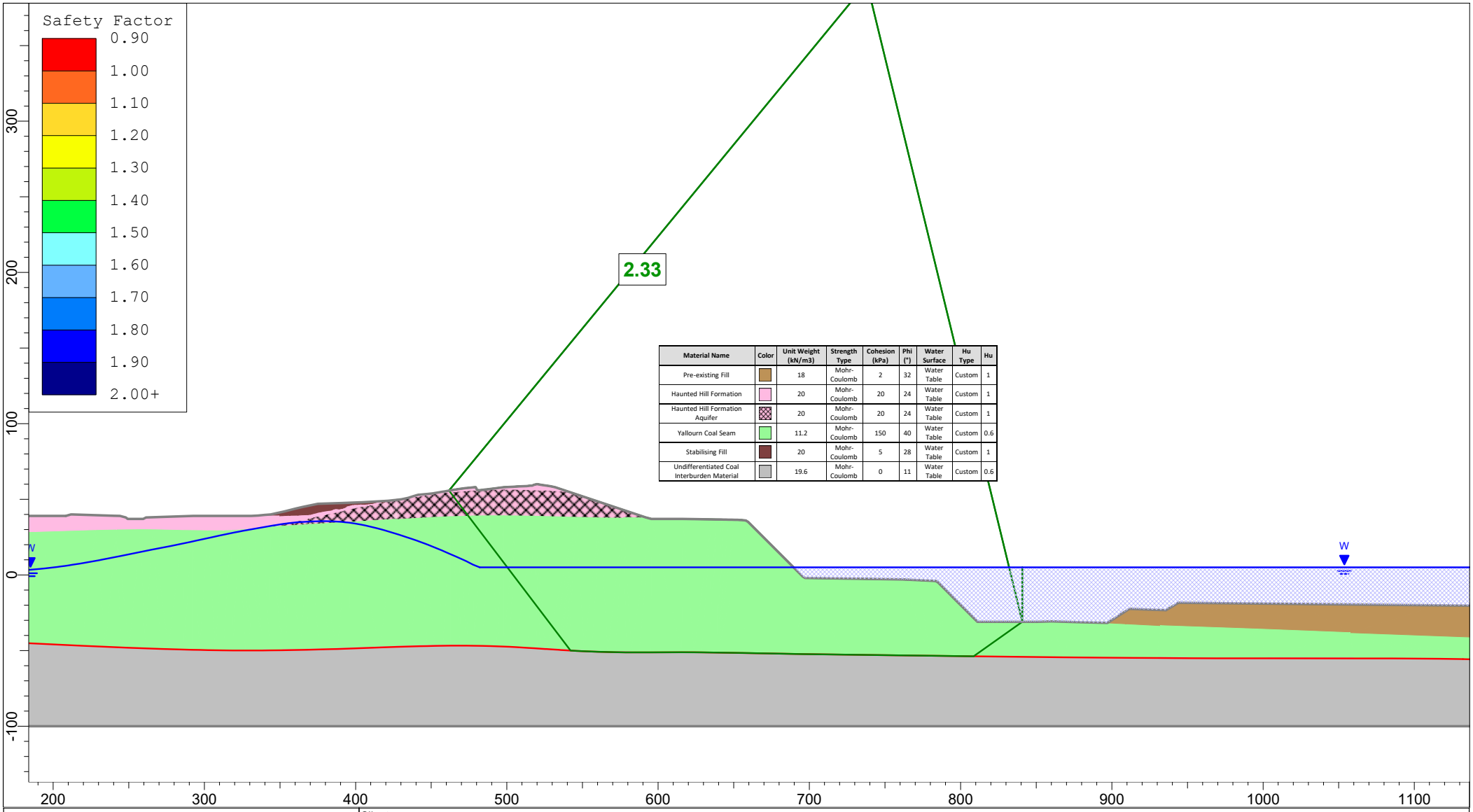
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Stabilising Fill		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 15	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength		



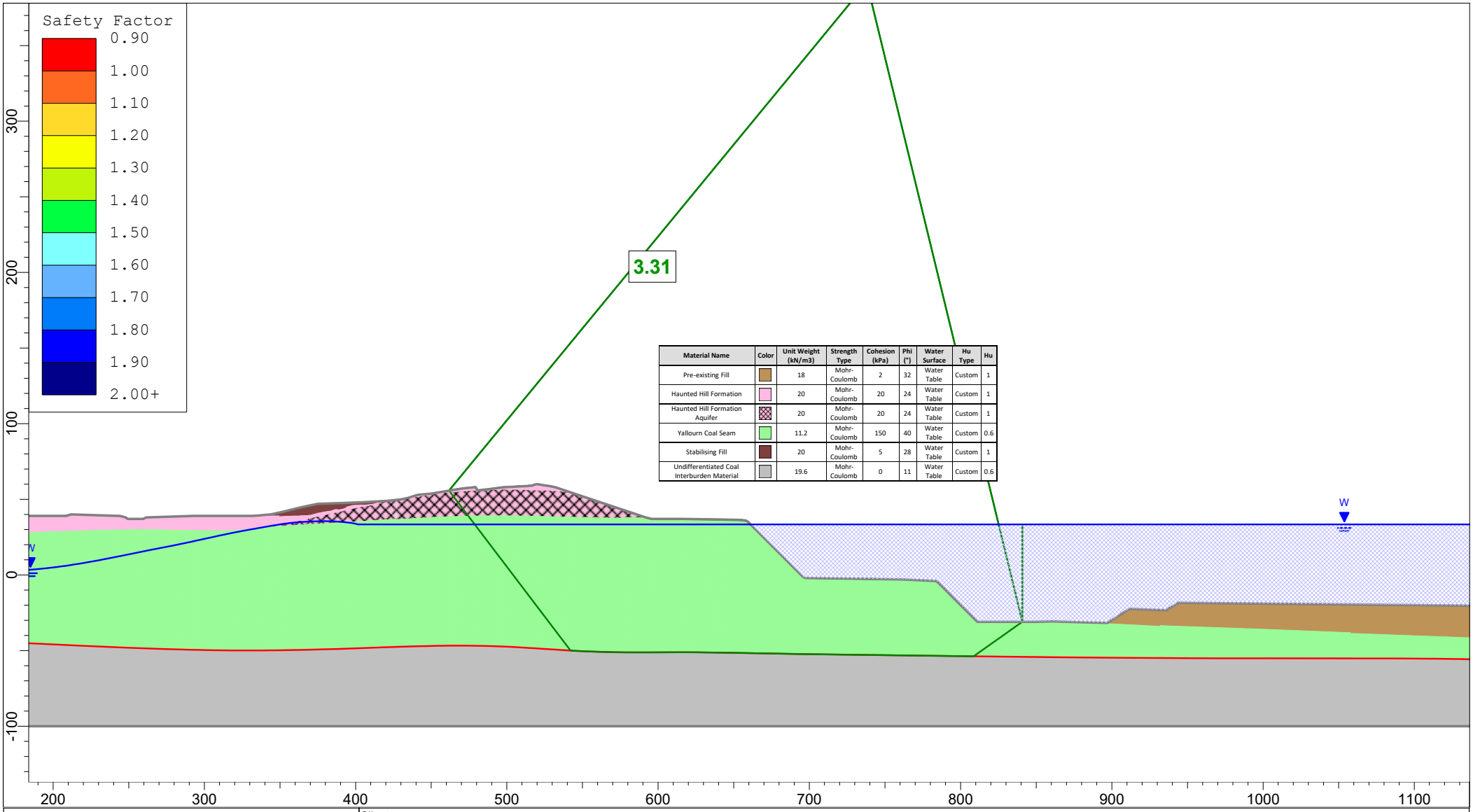
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Stabilising Fill		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**MVF-WB**
Section:	**Section 15**	Case:	**Multilinear - Hu specific**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 0 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



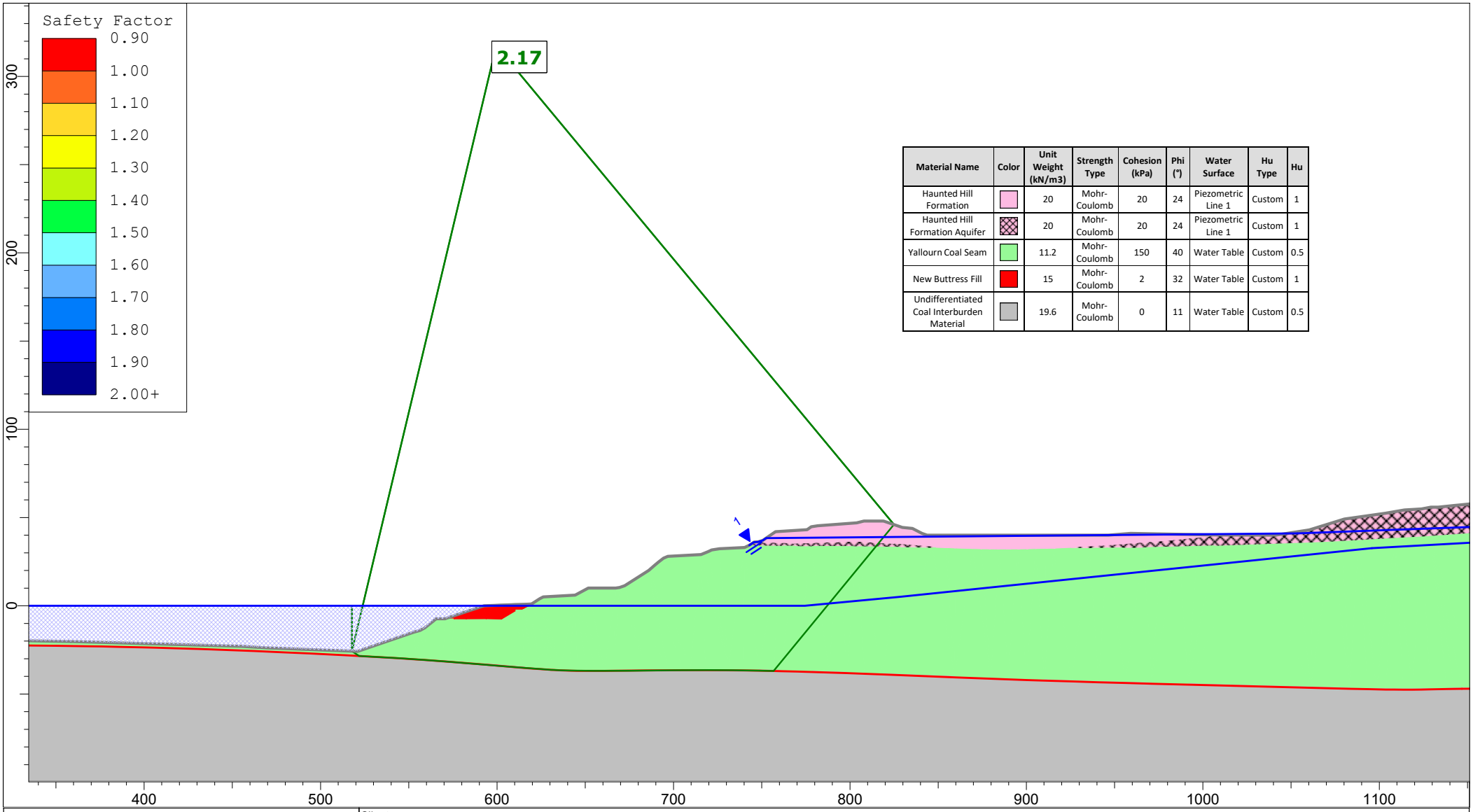
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Stabilising Fill		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 15	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



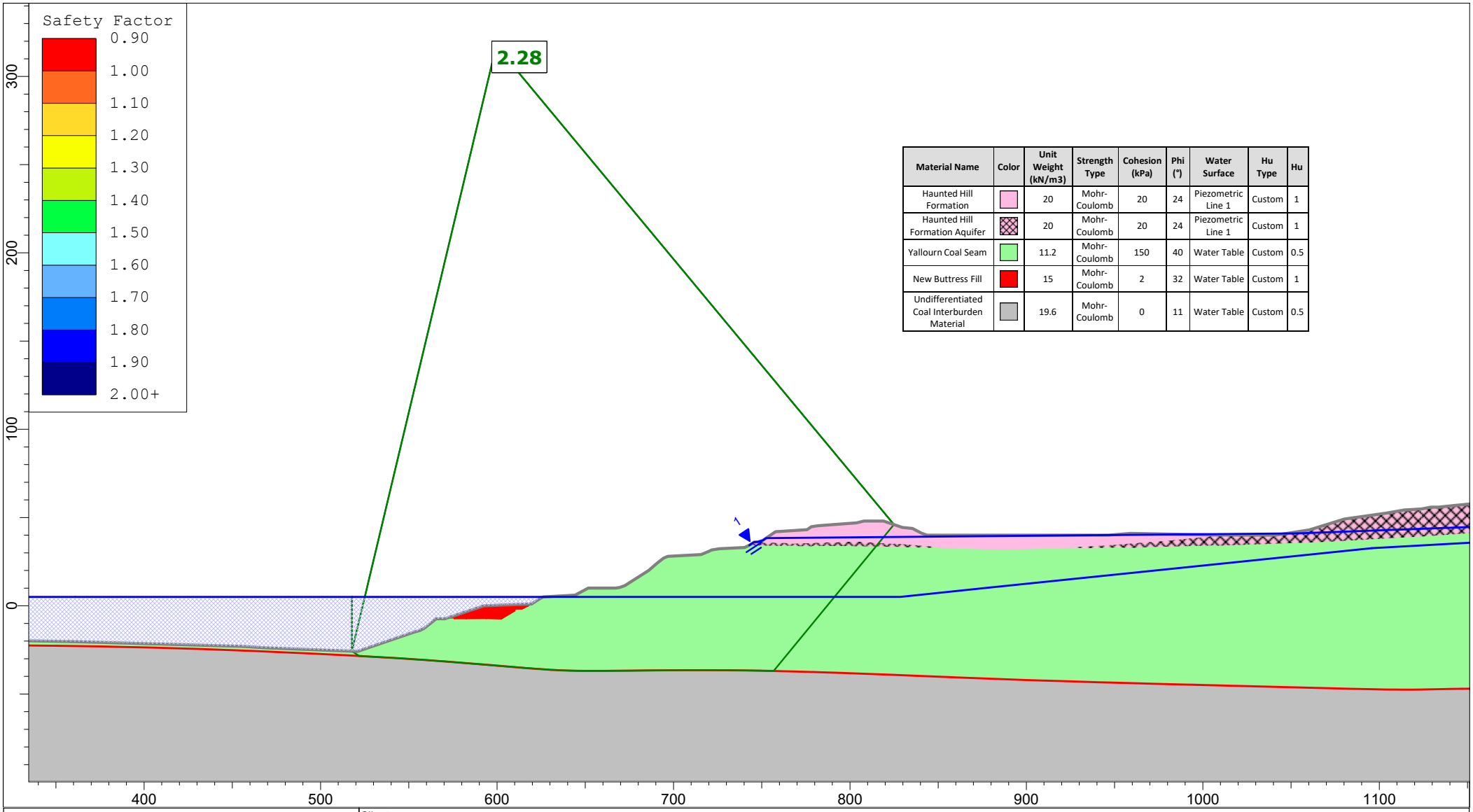
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Stabilising Fill		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 15	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



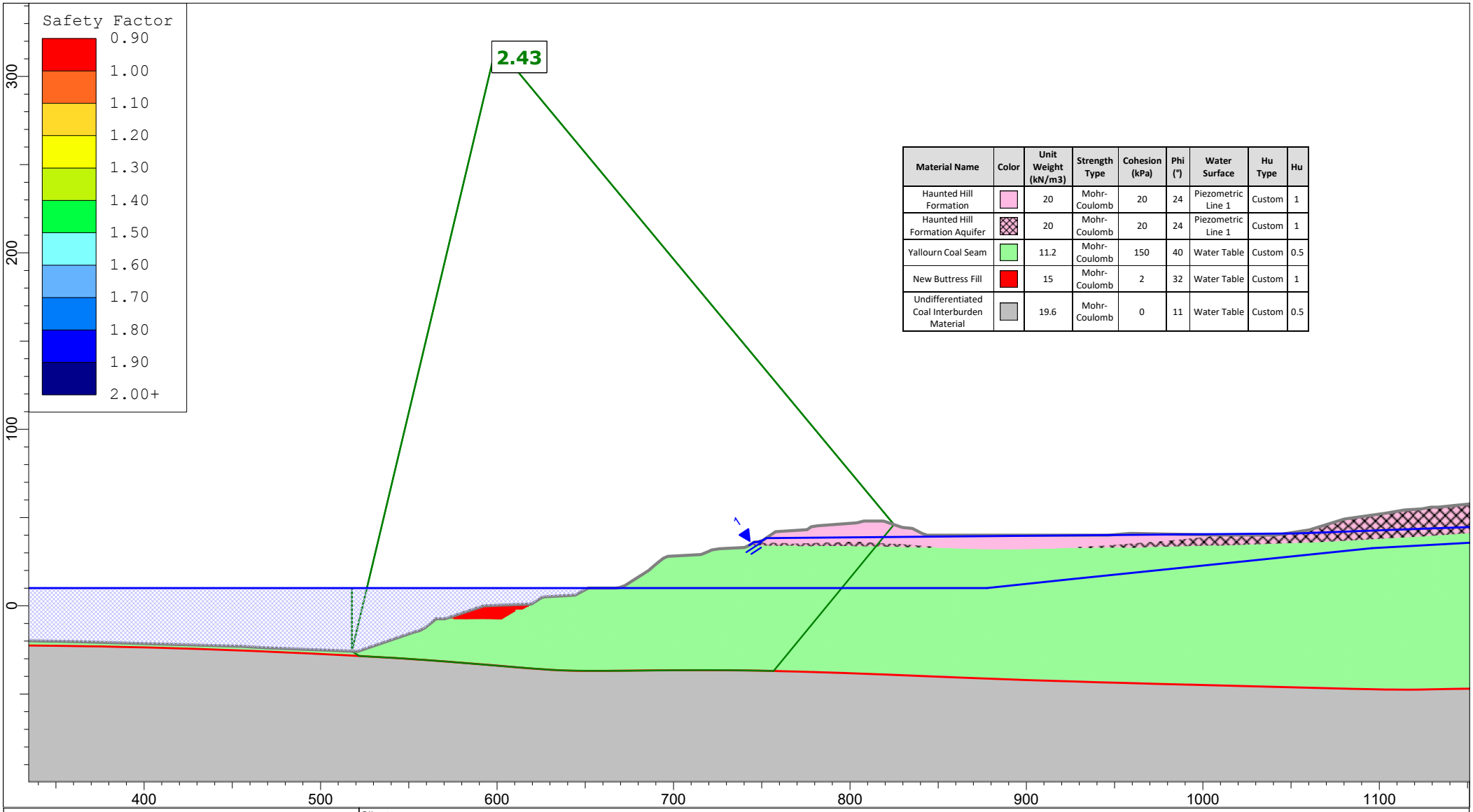
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



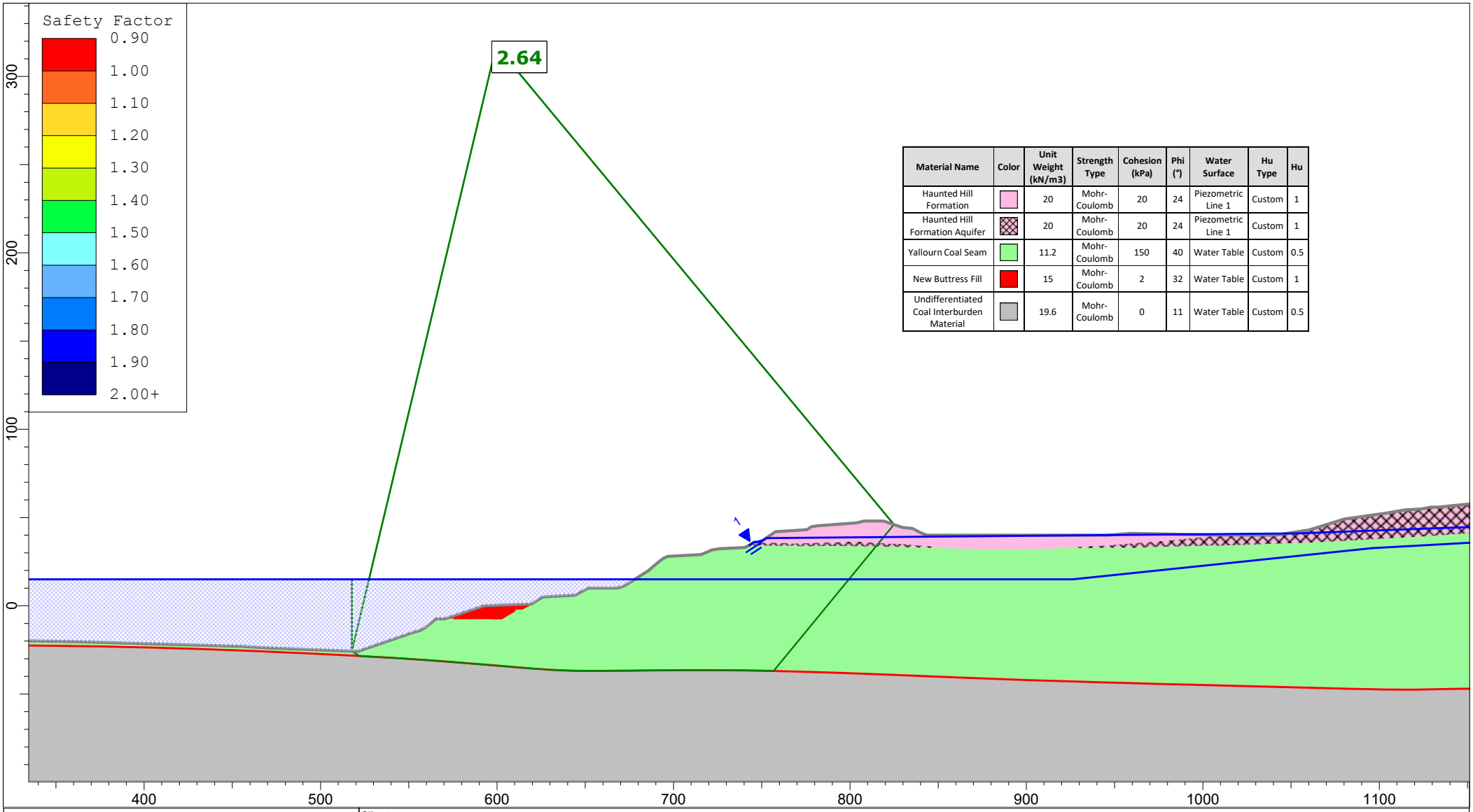
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



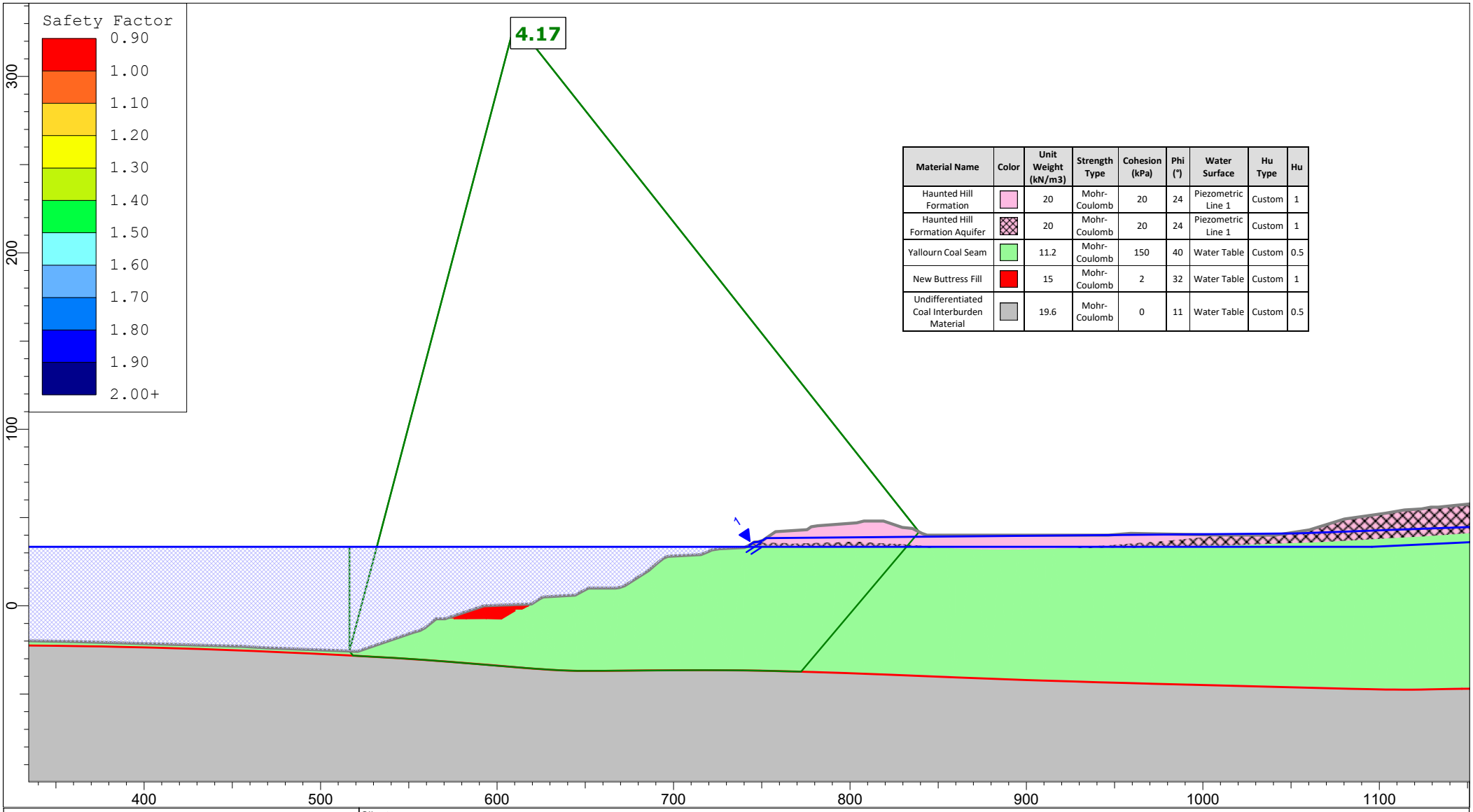
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



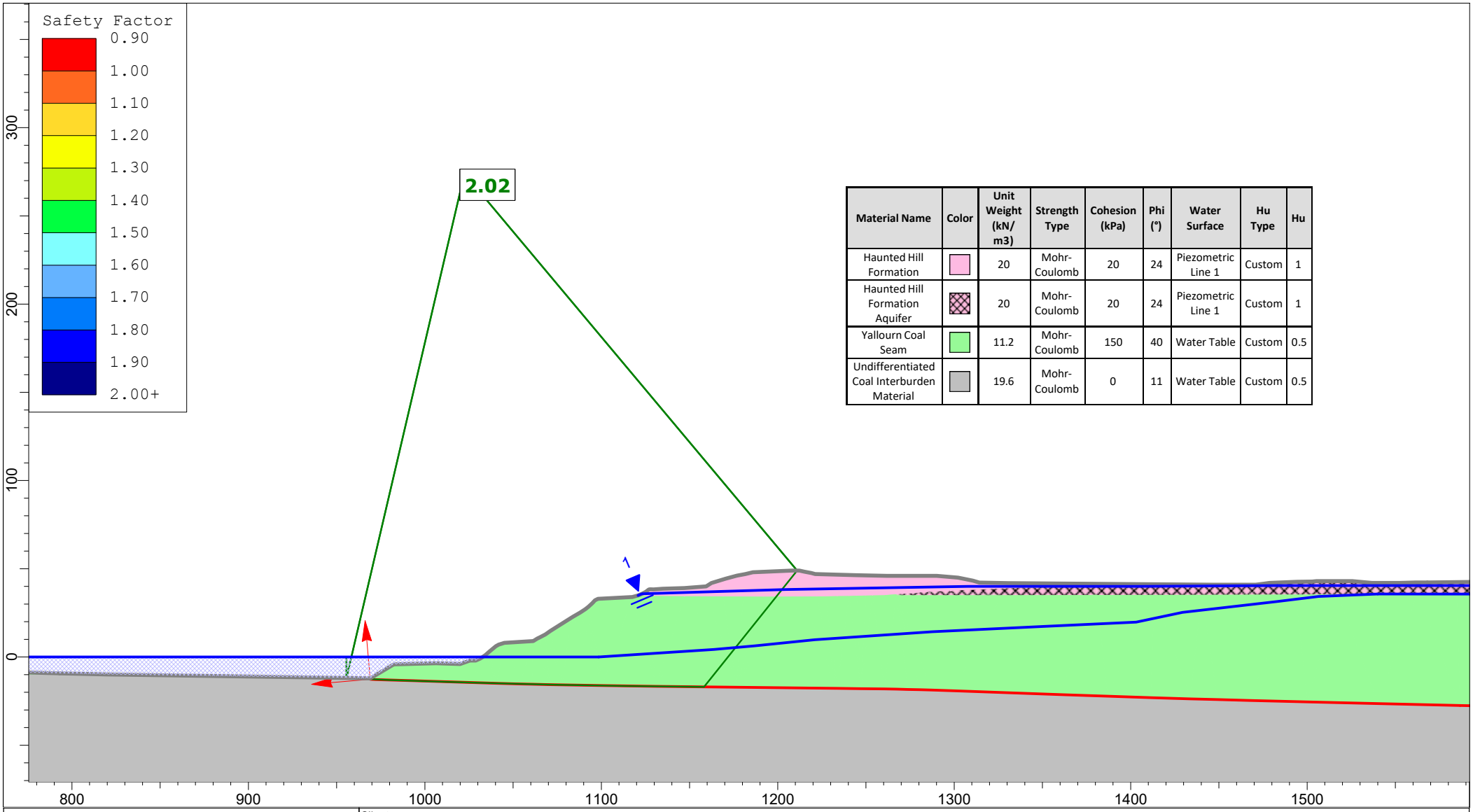
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



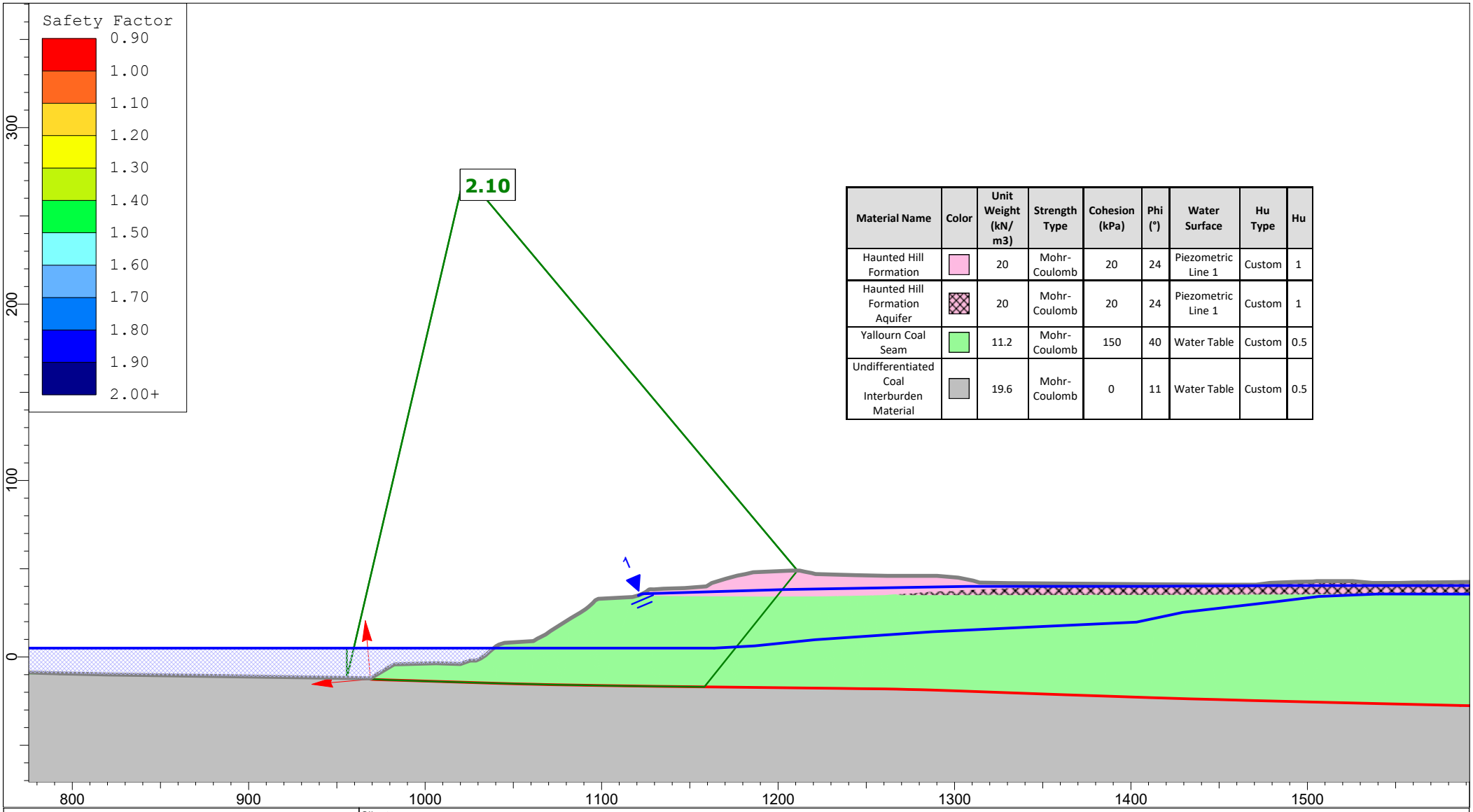
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



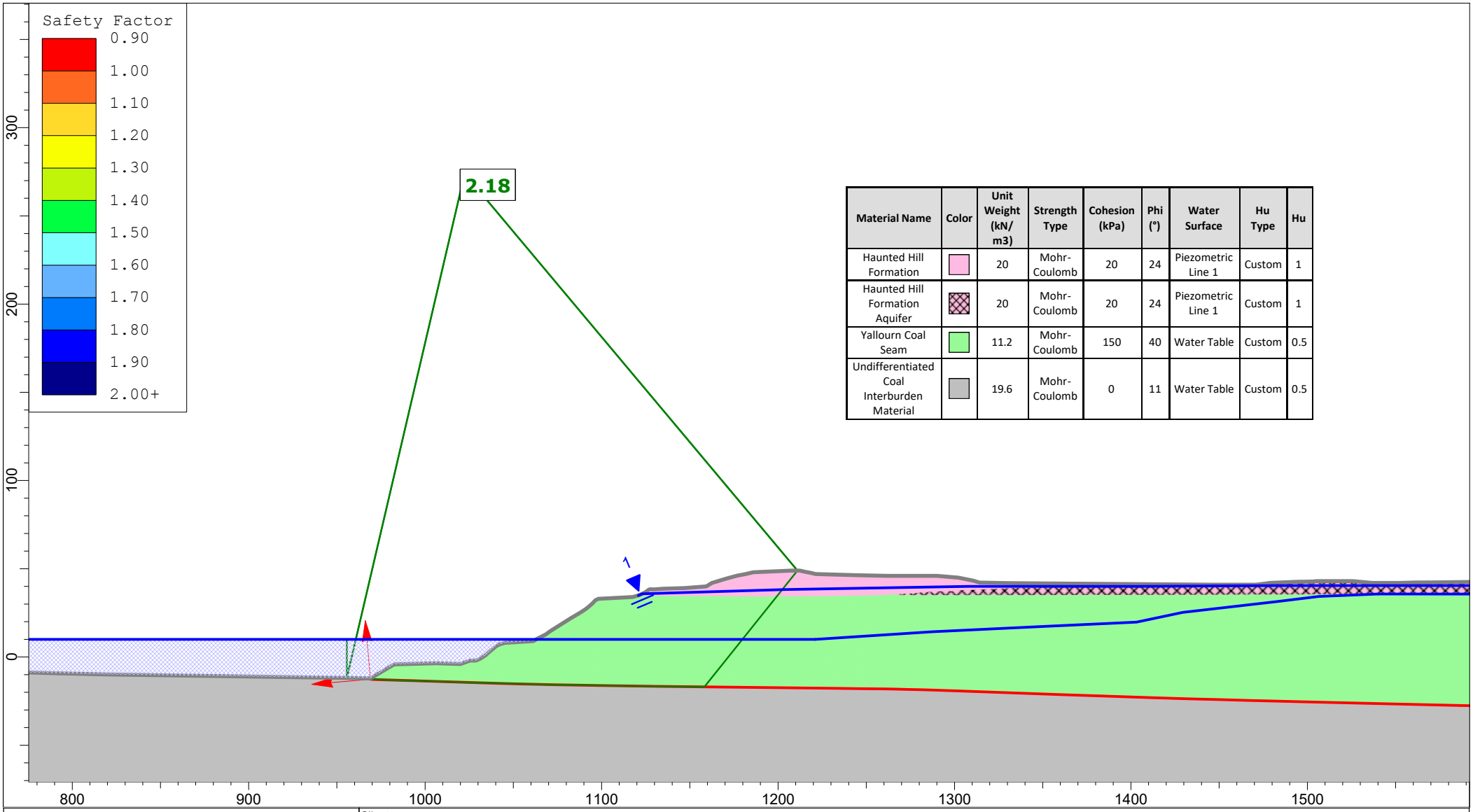
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



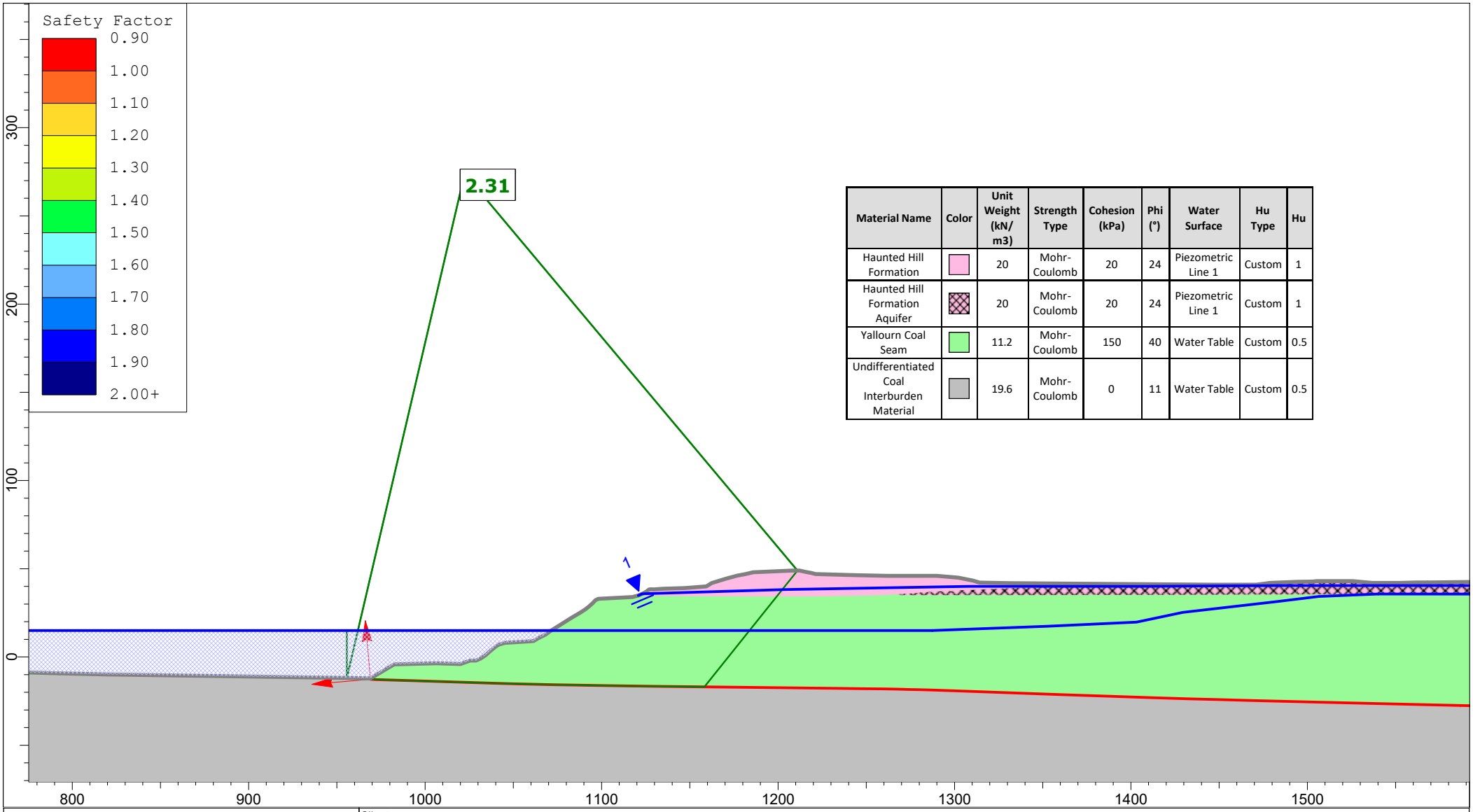
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



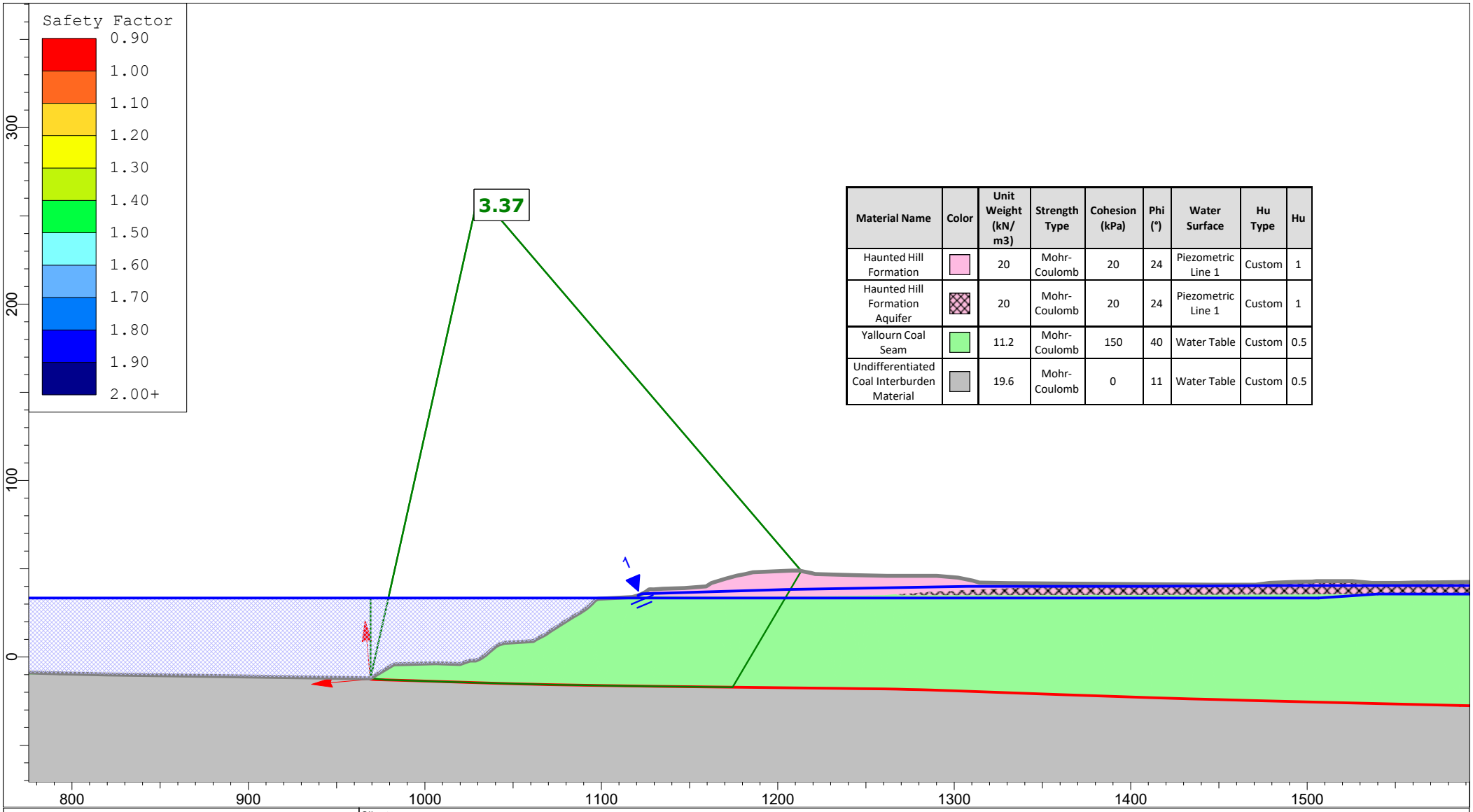
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



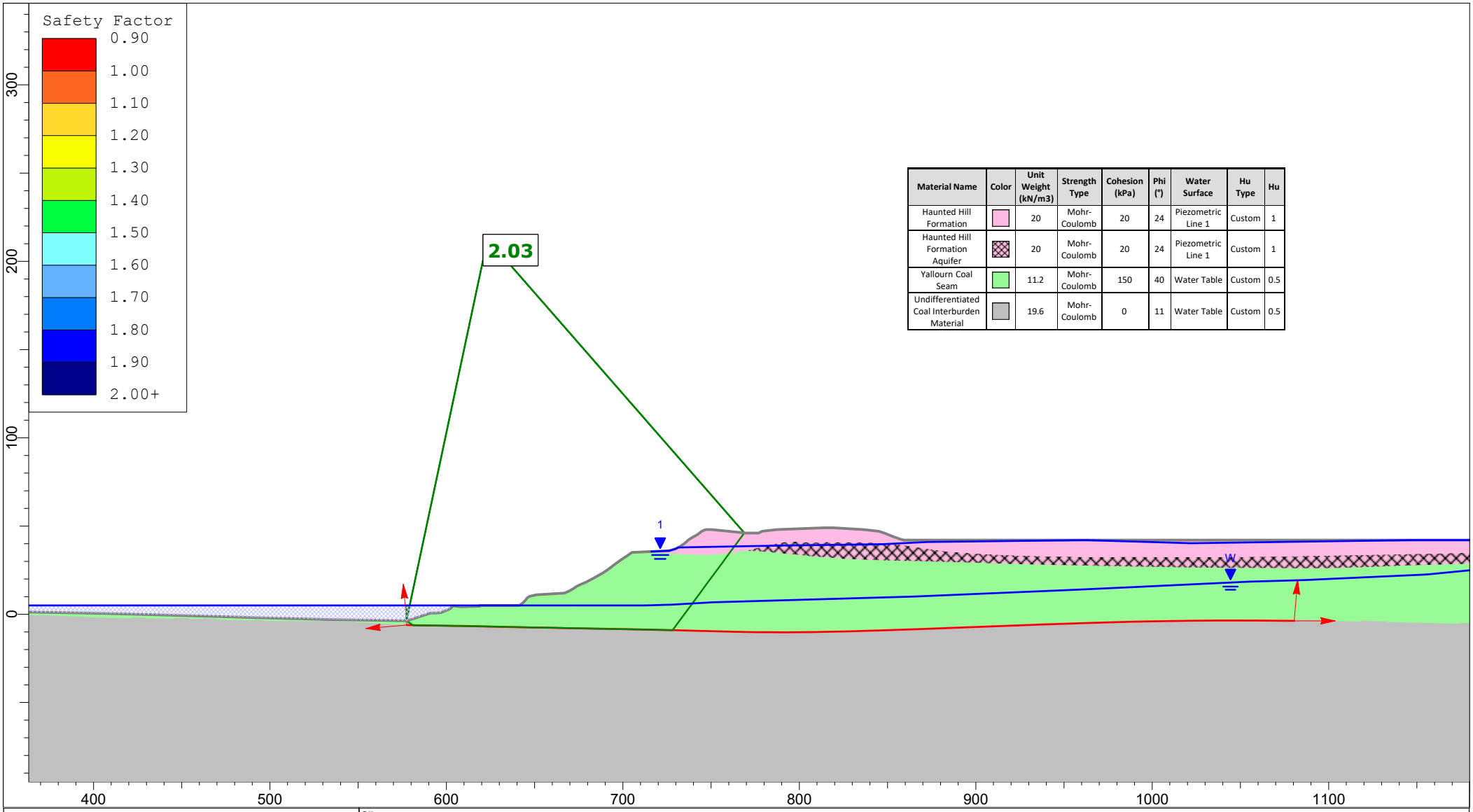
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



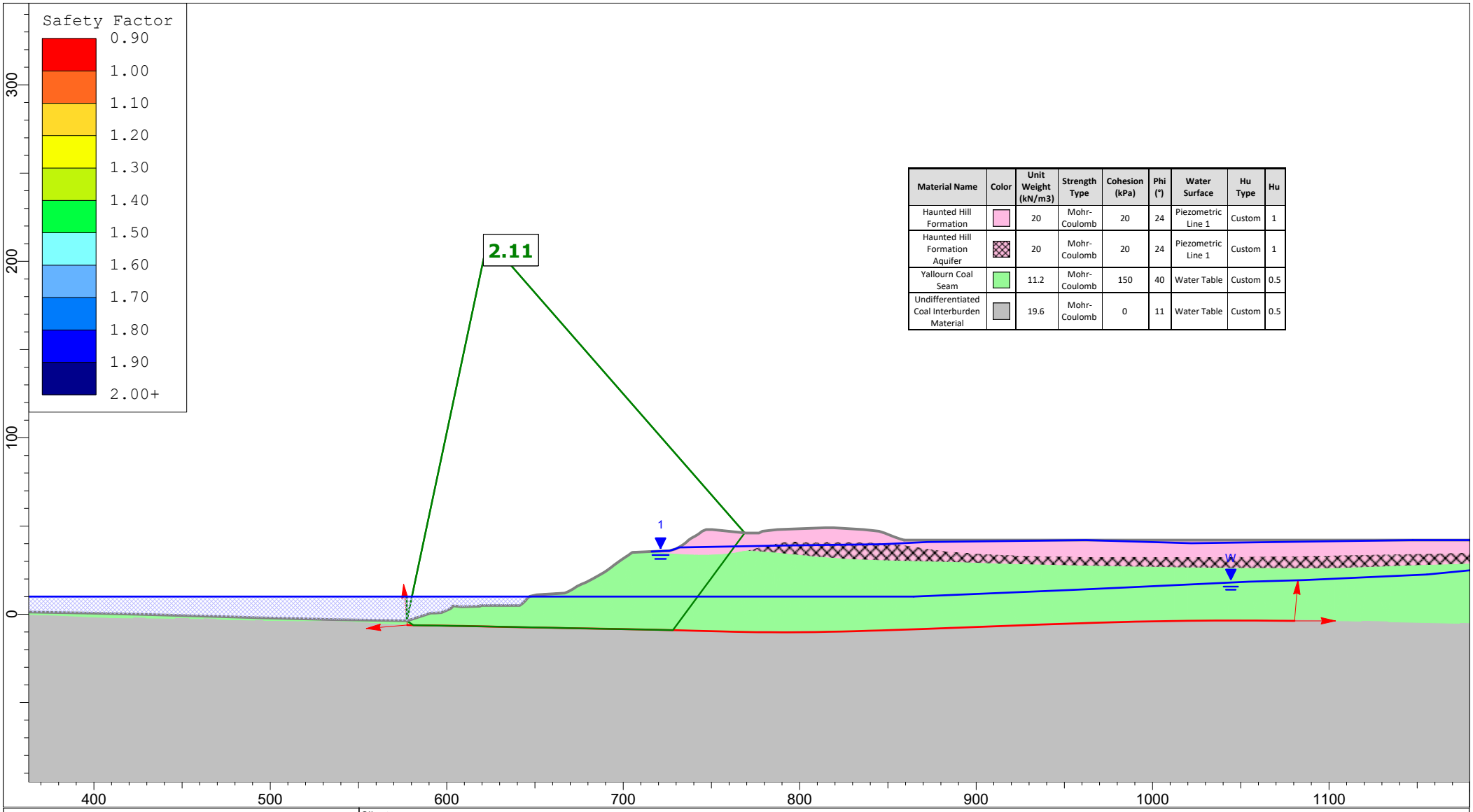
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



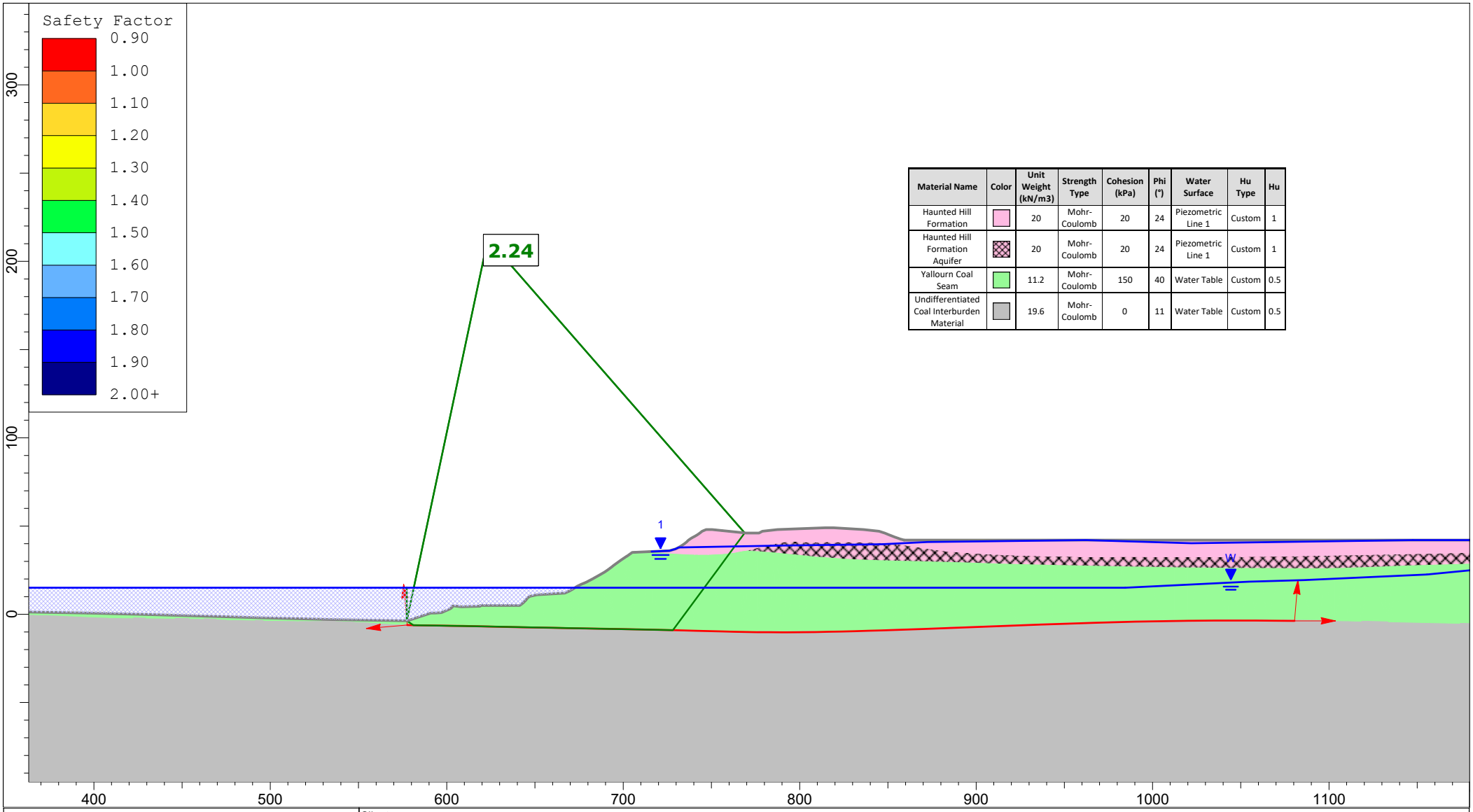
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



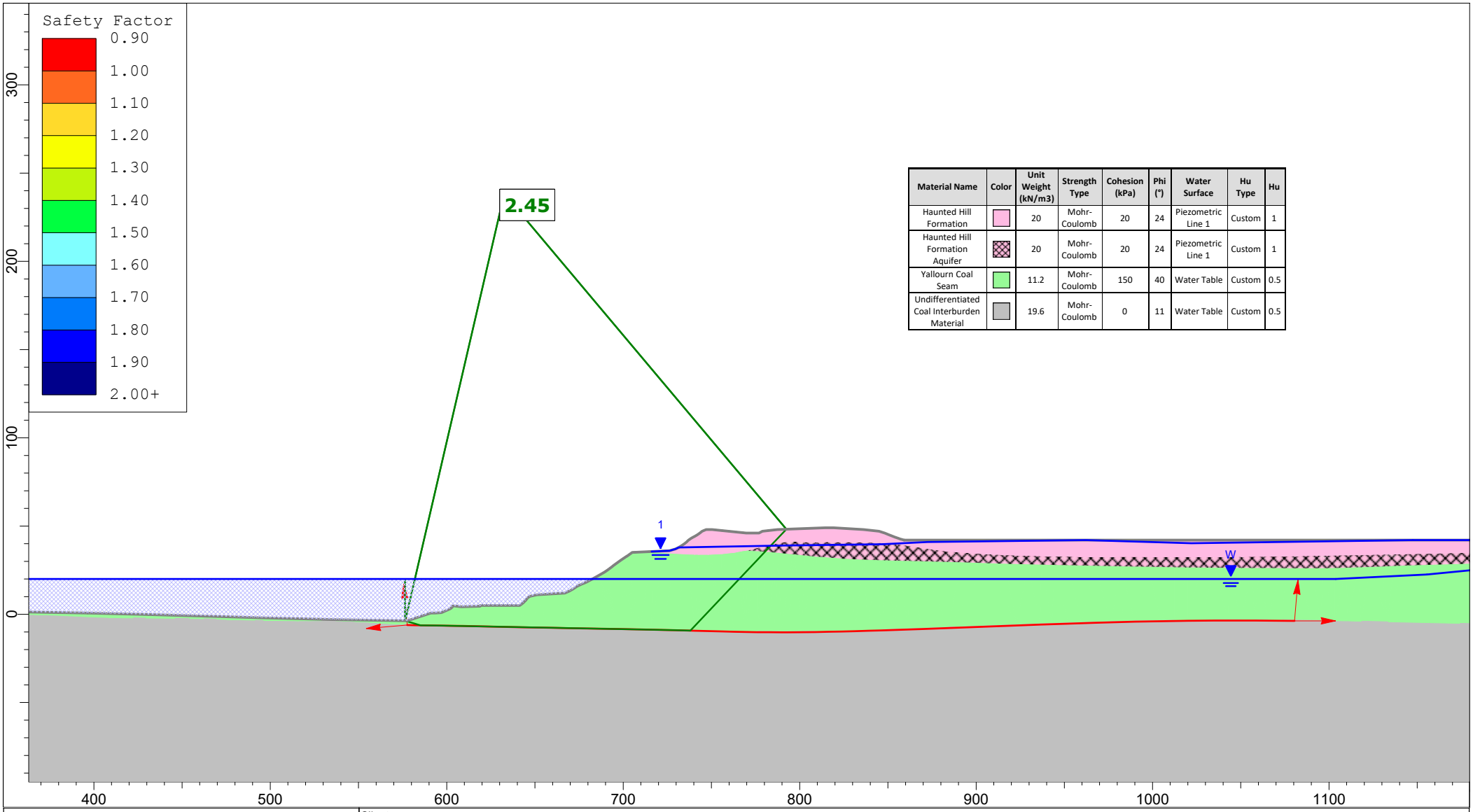
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



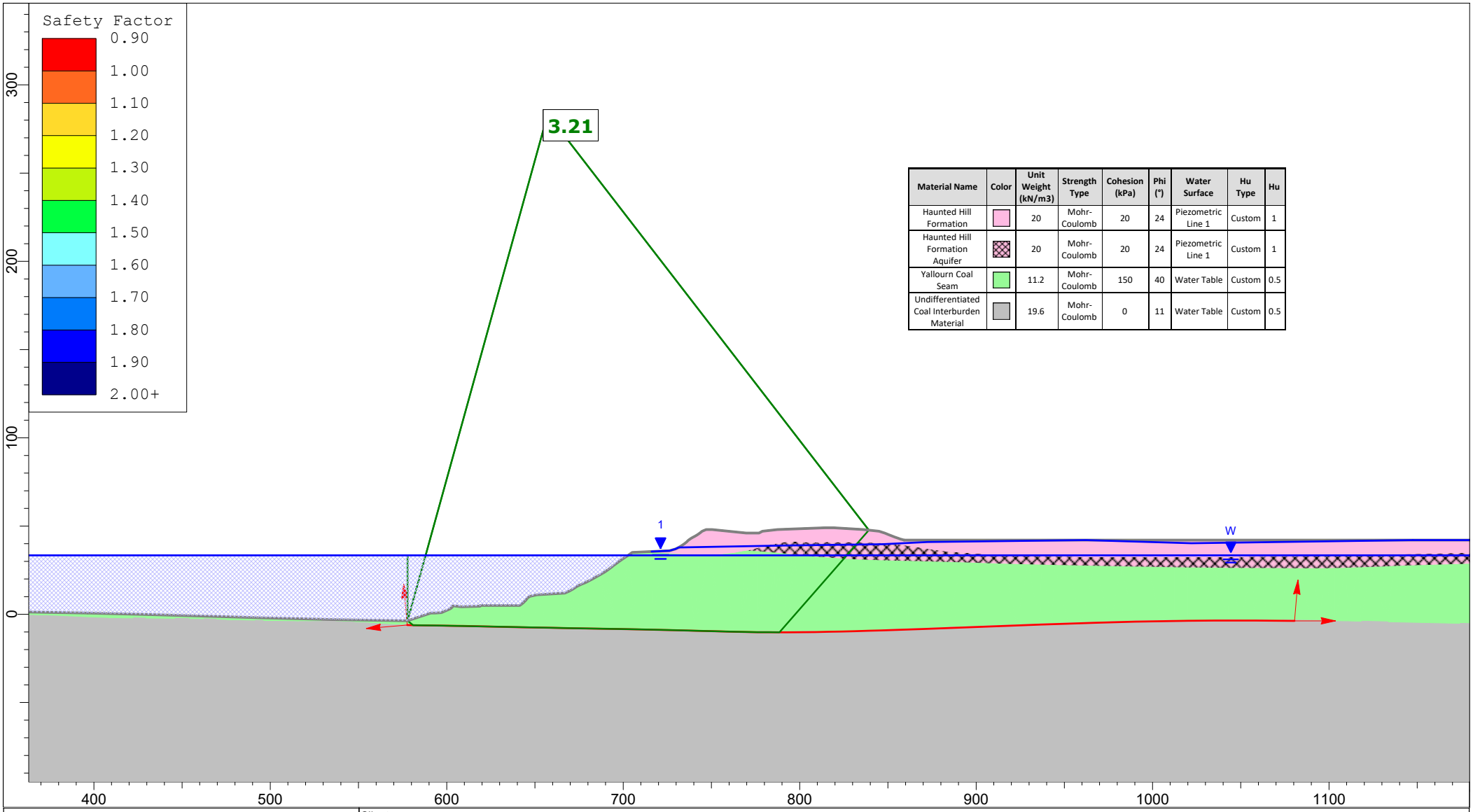
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



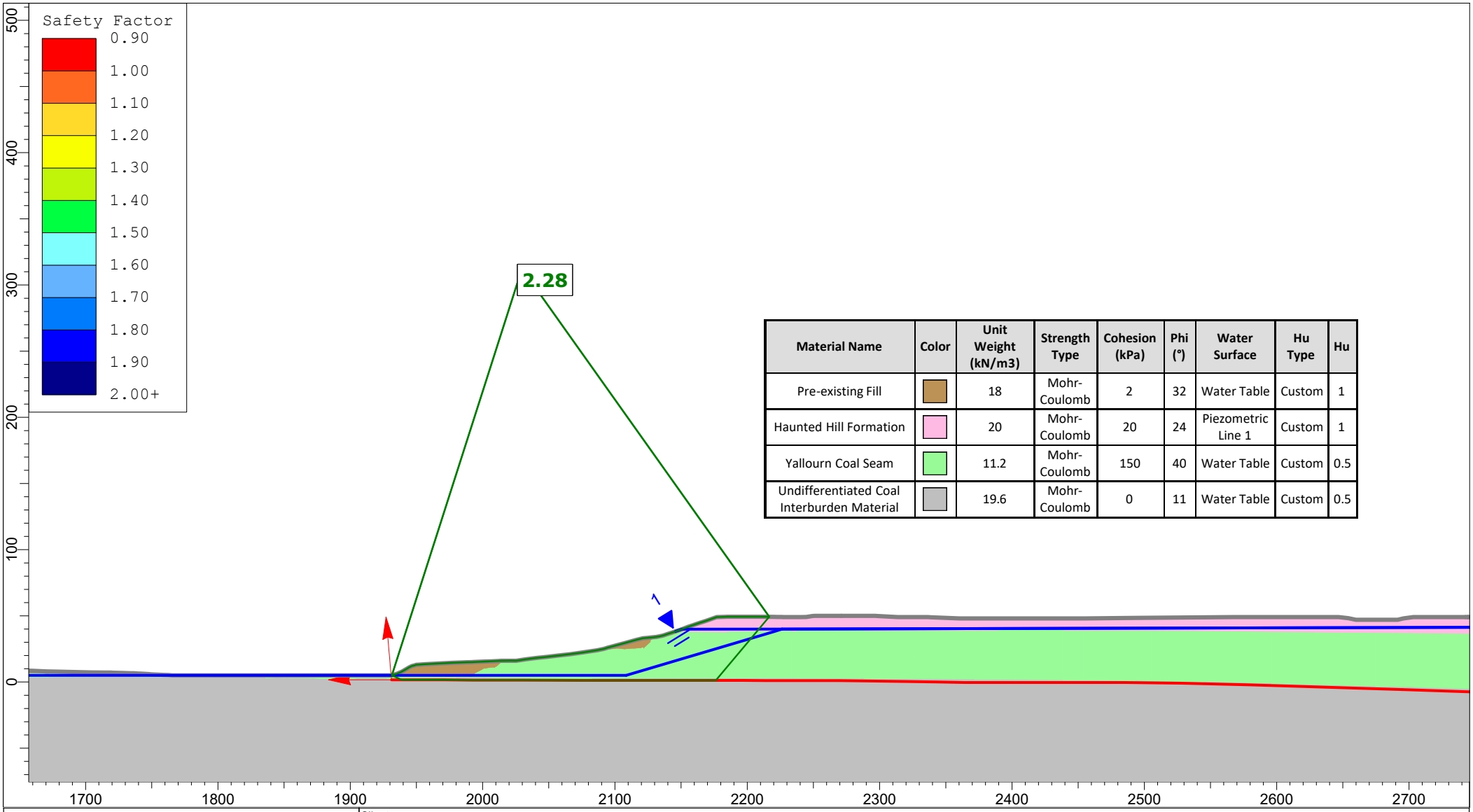
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



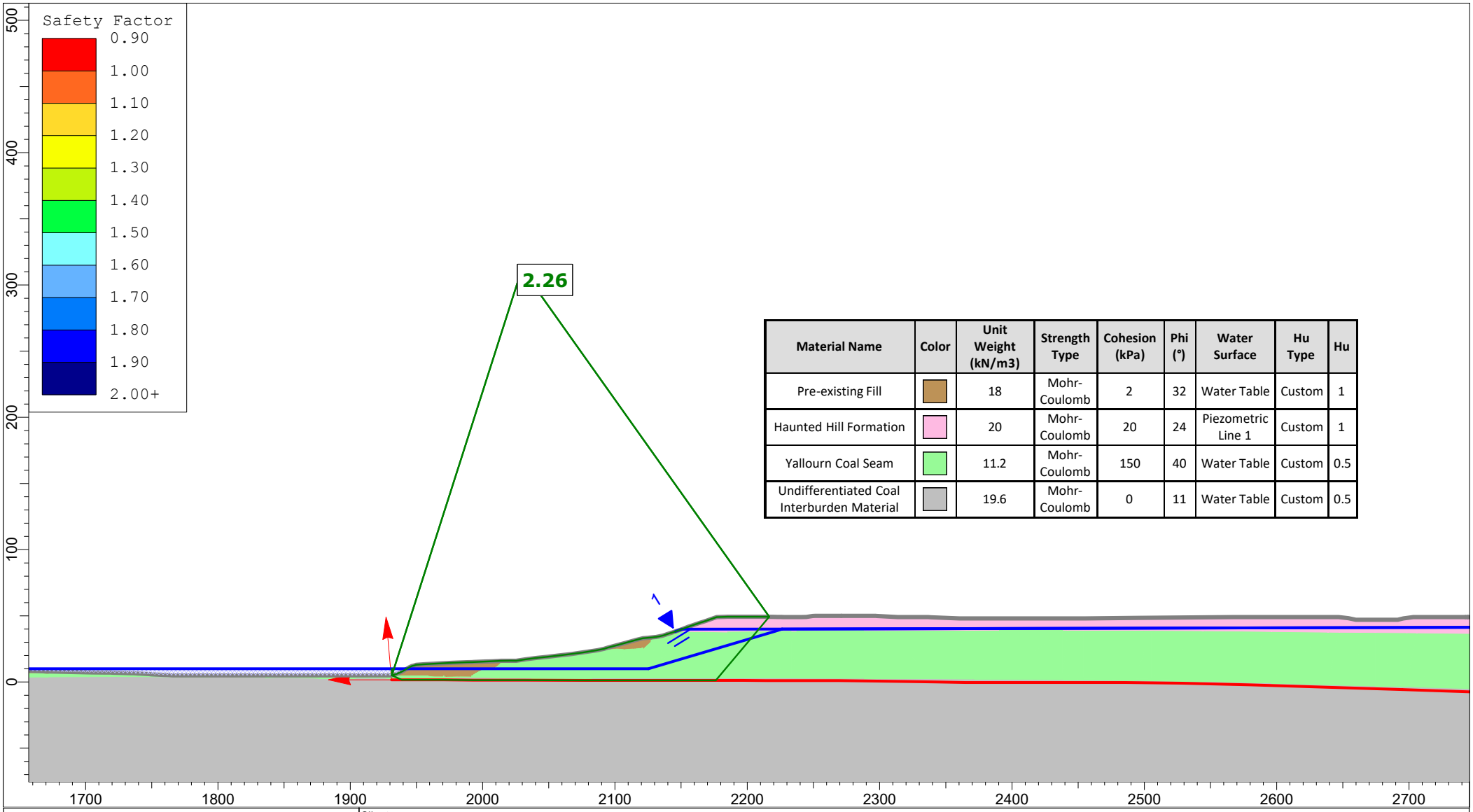
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



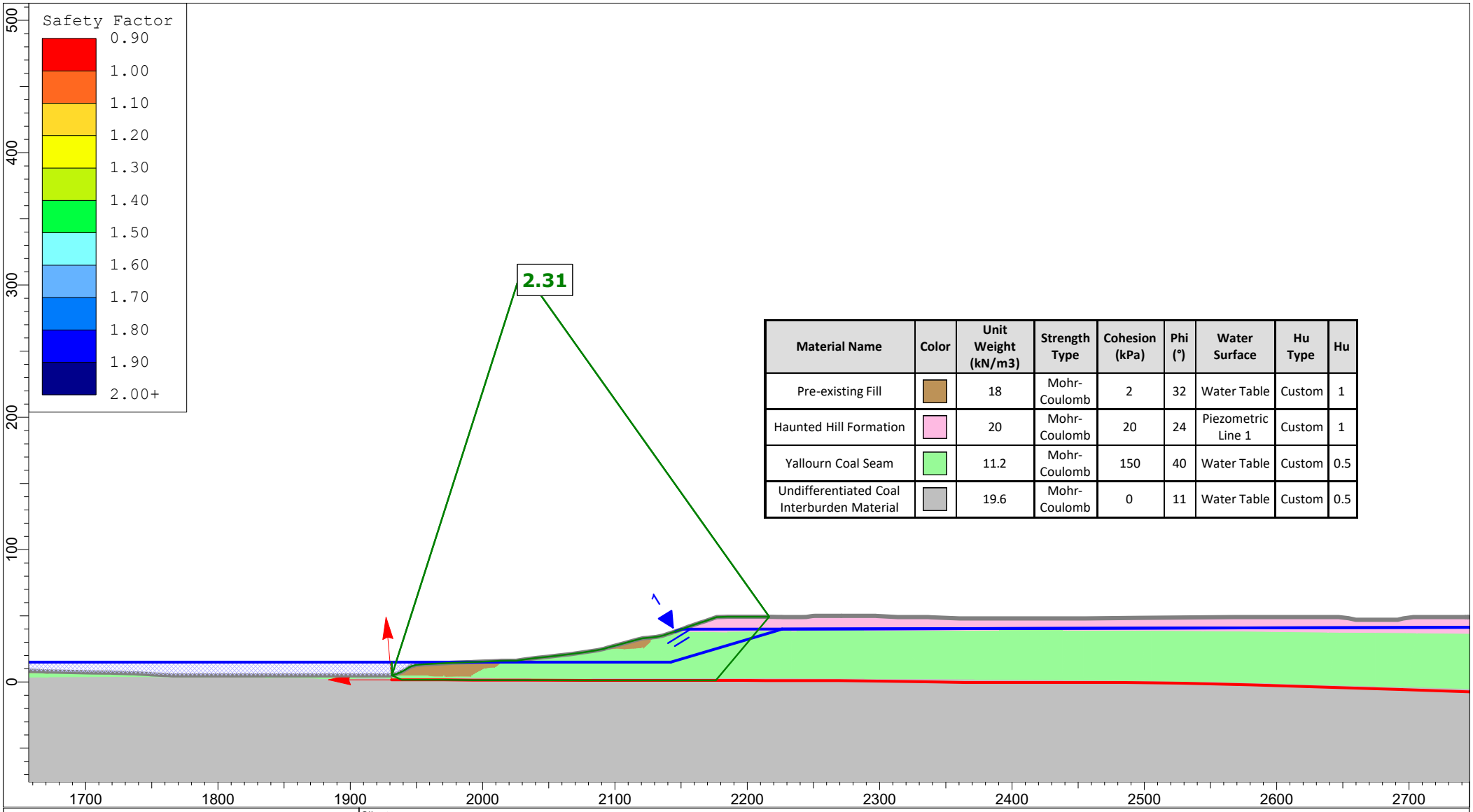
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



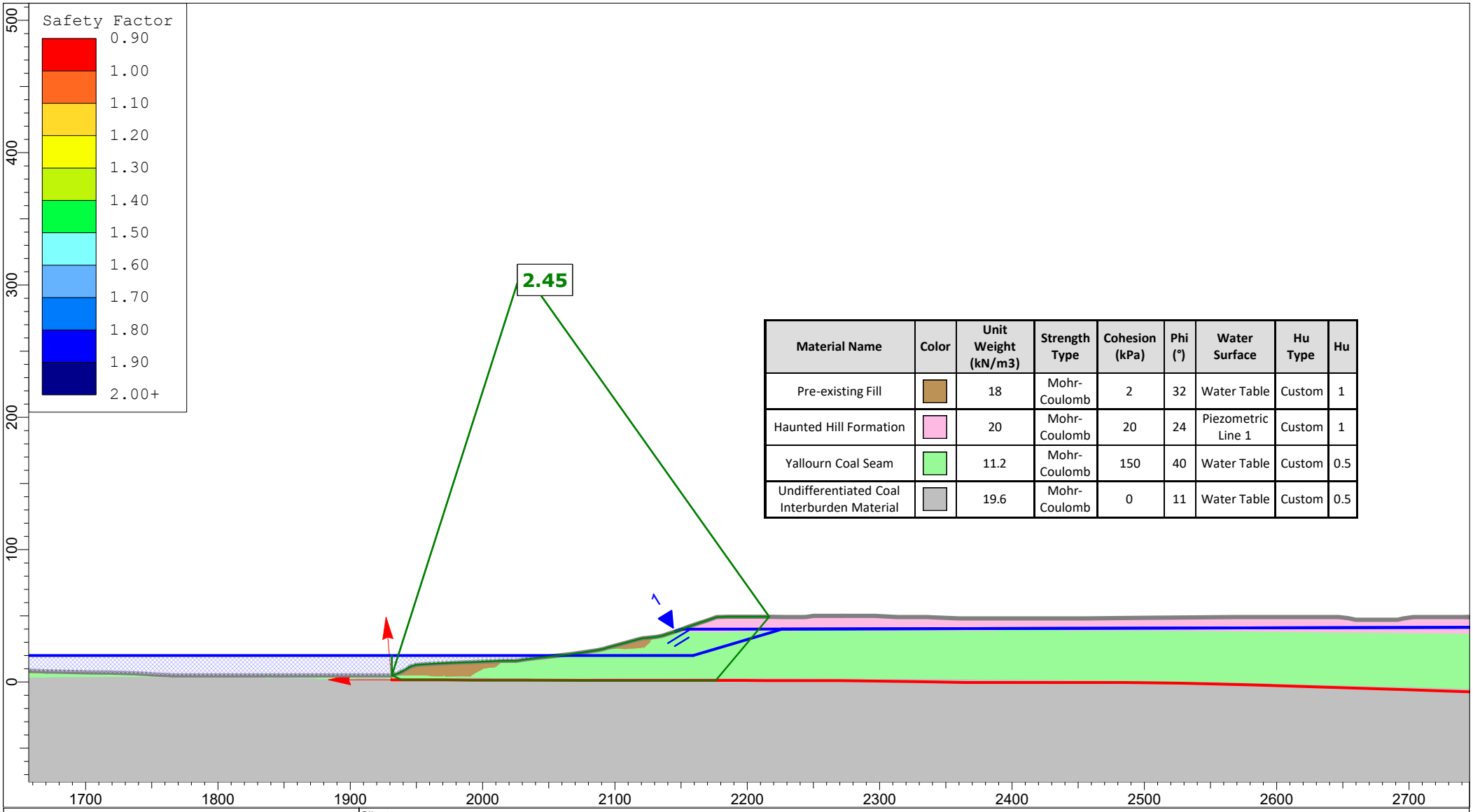
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



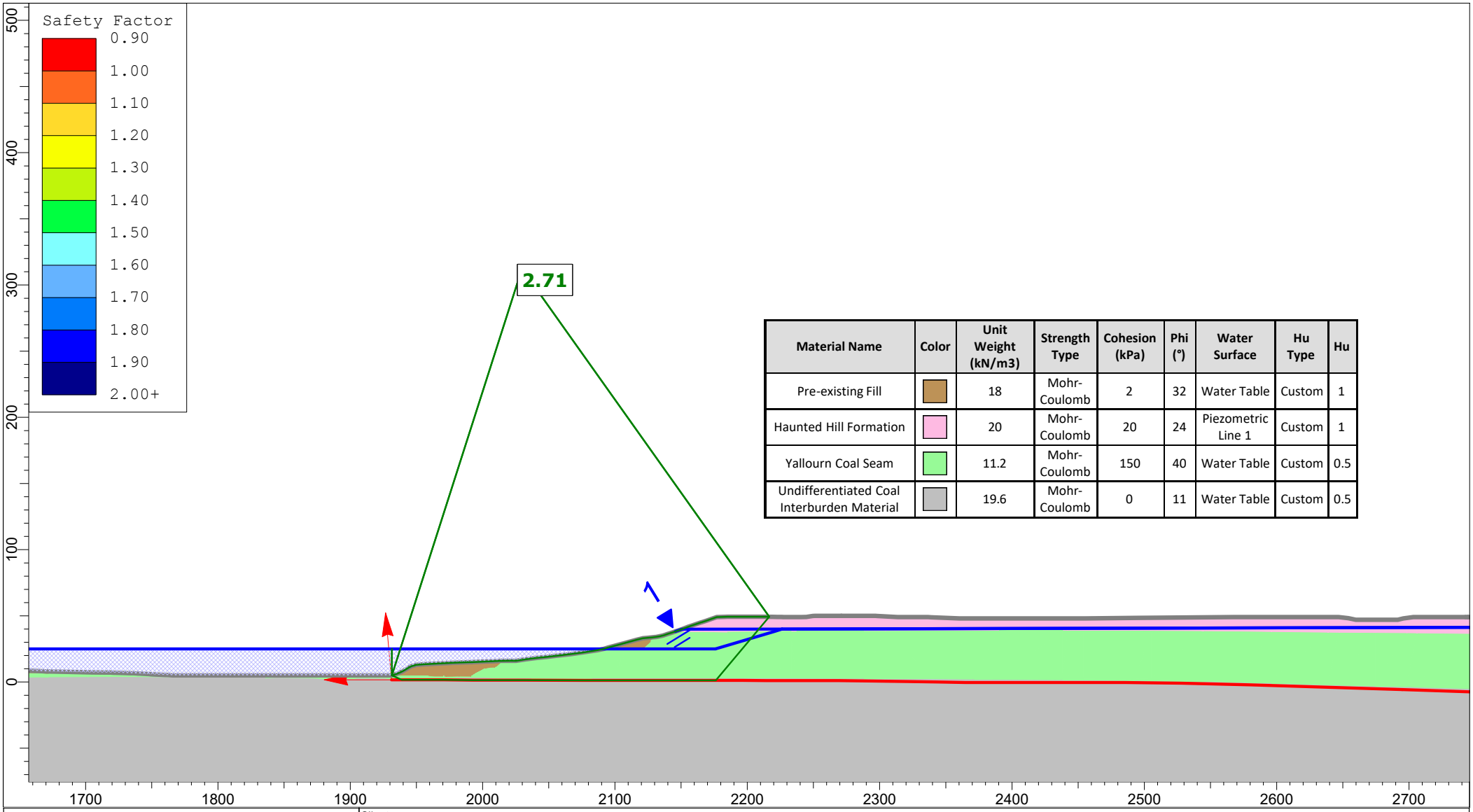
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



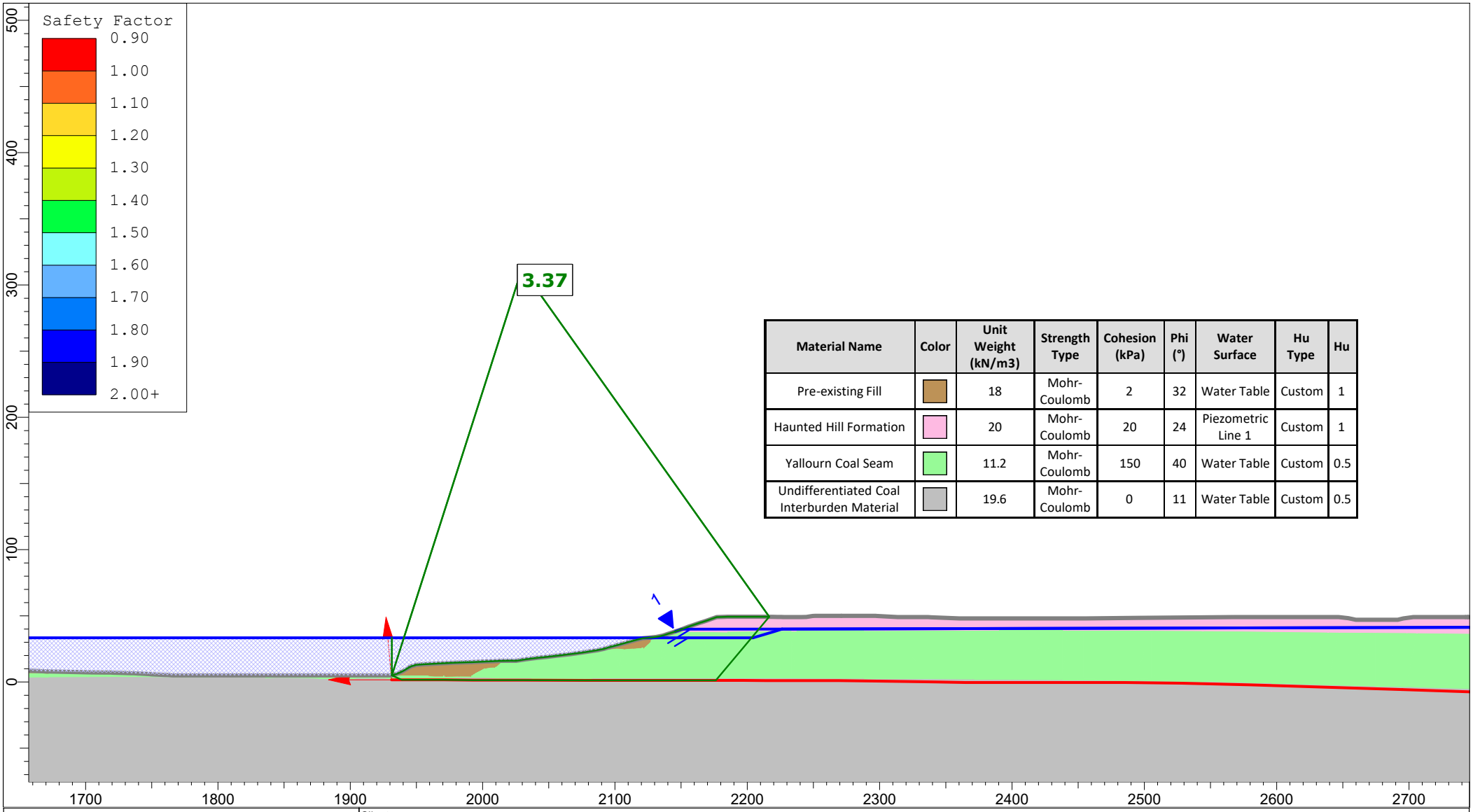
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



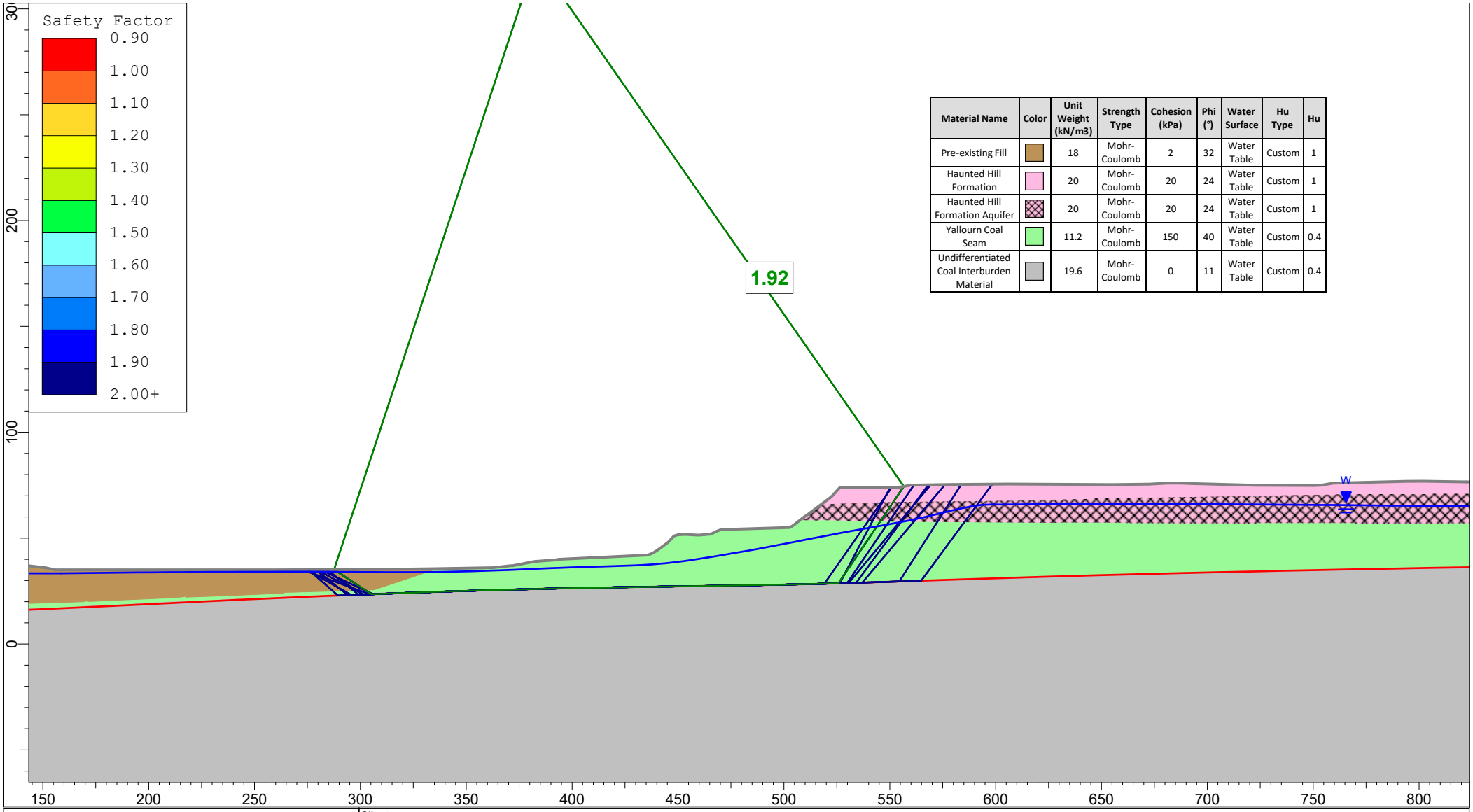
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



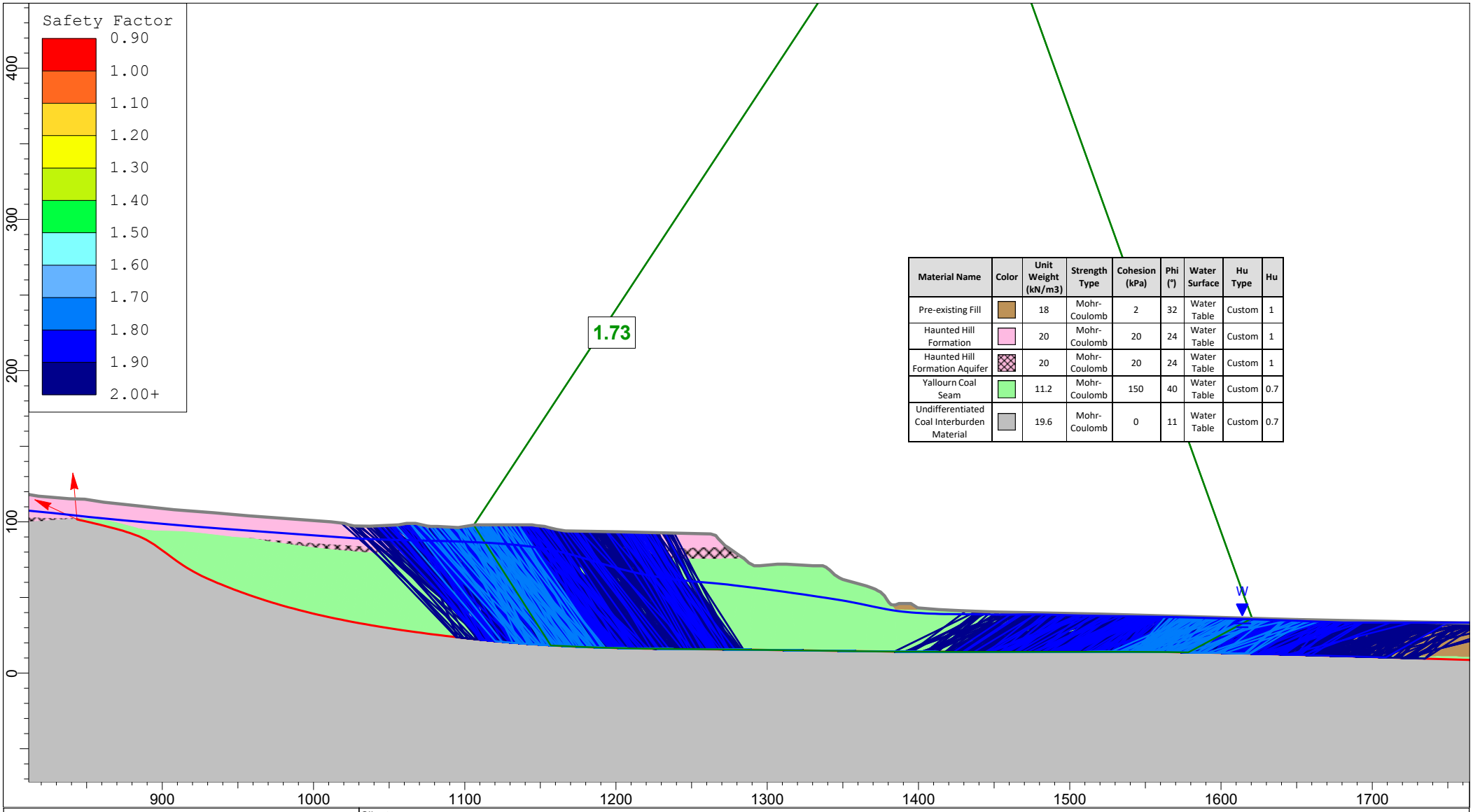
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



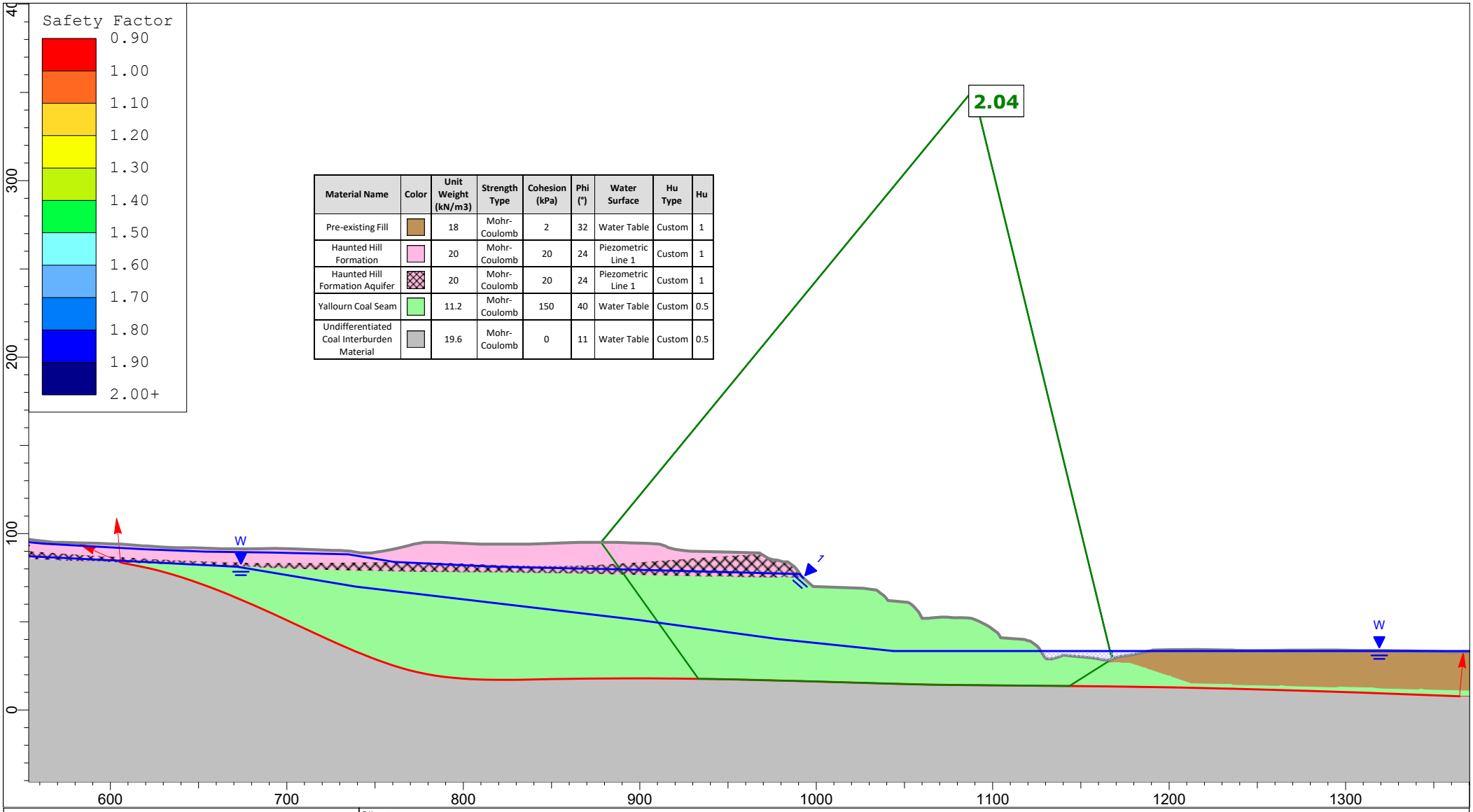
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SB
Section:	Section 19	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



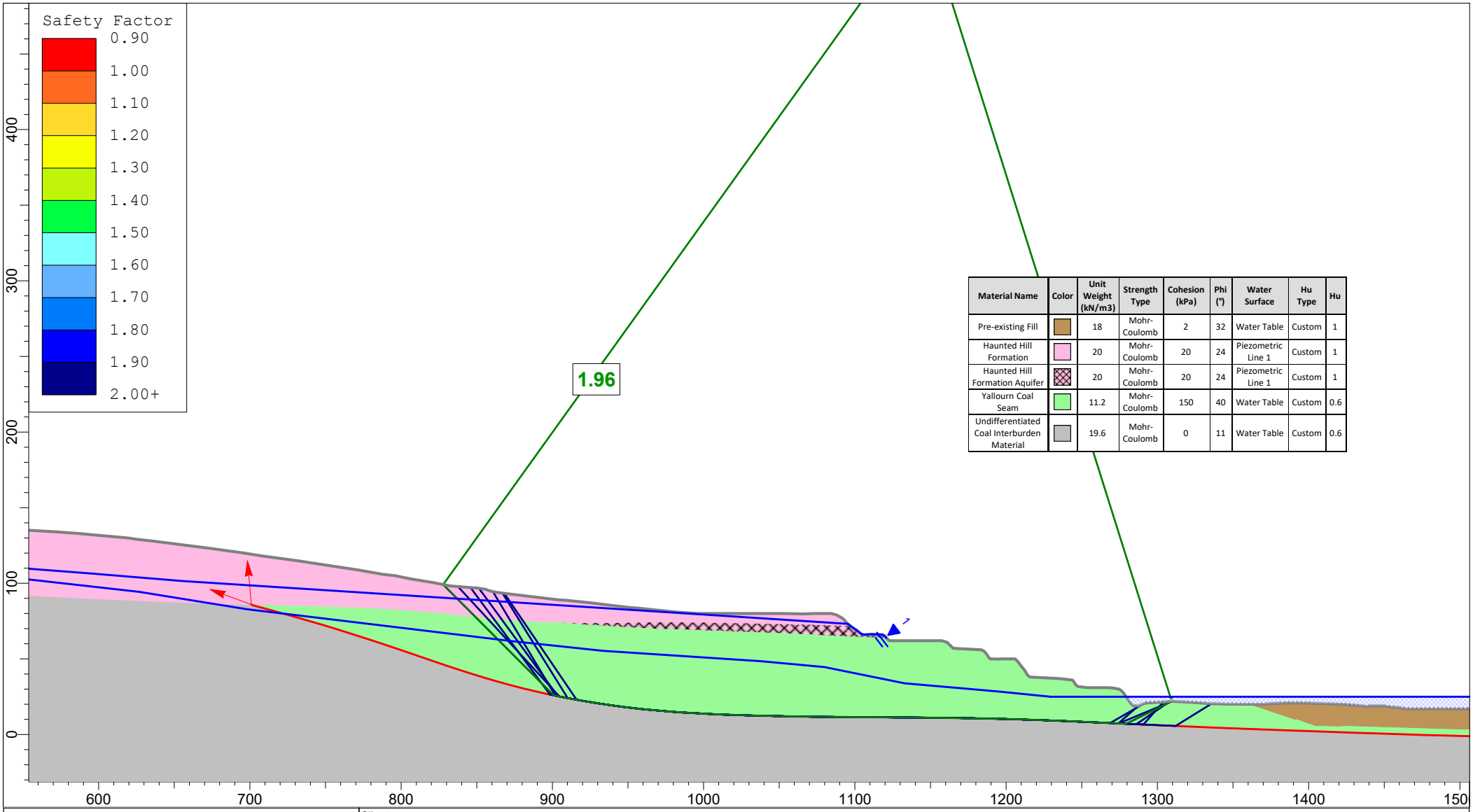
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 21	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



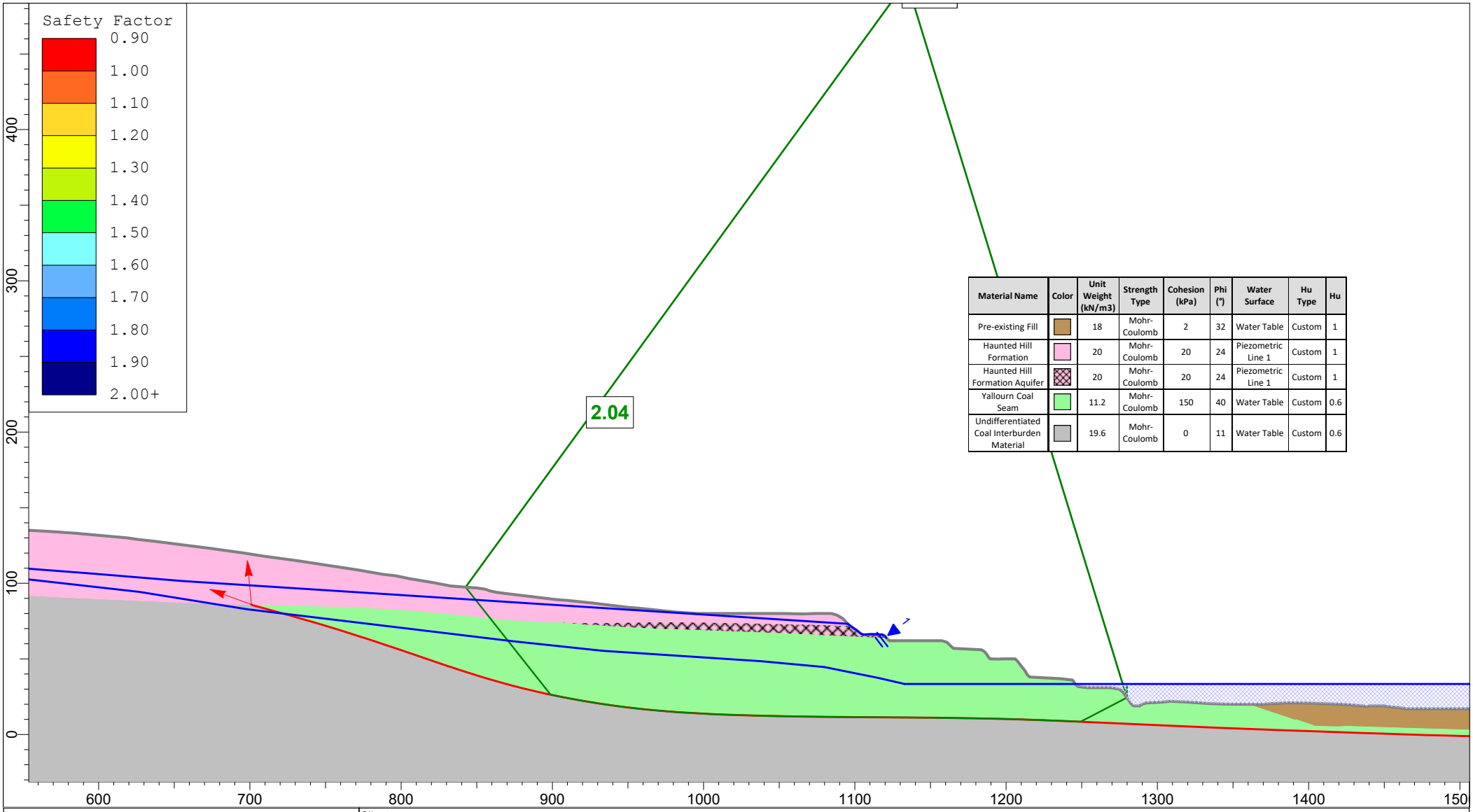
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (South)
Section:	Section 22	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



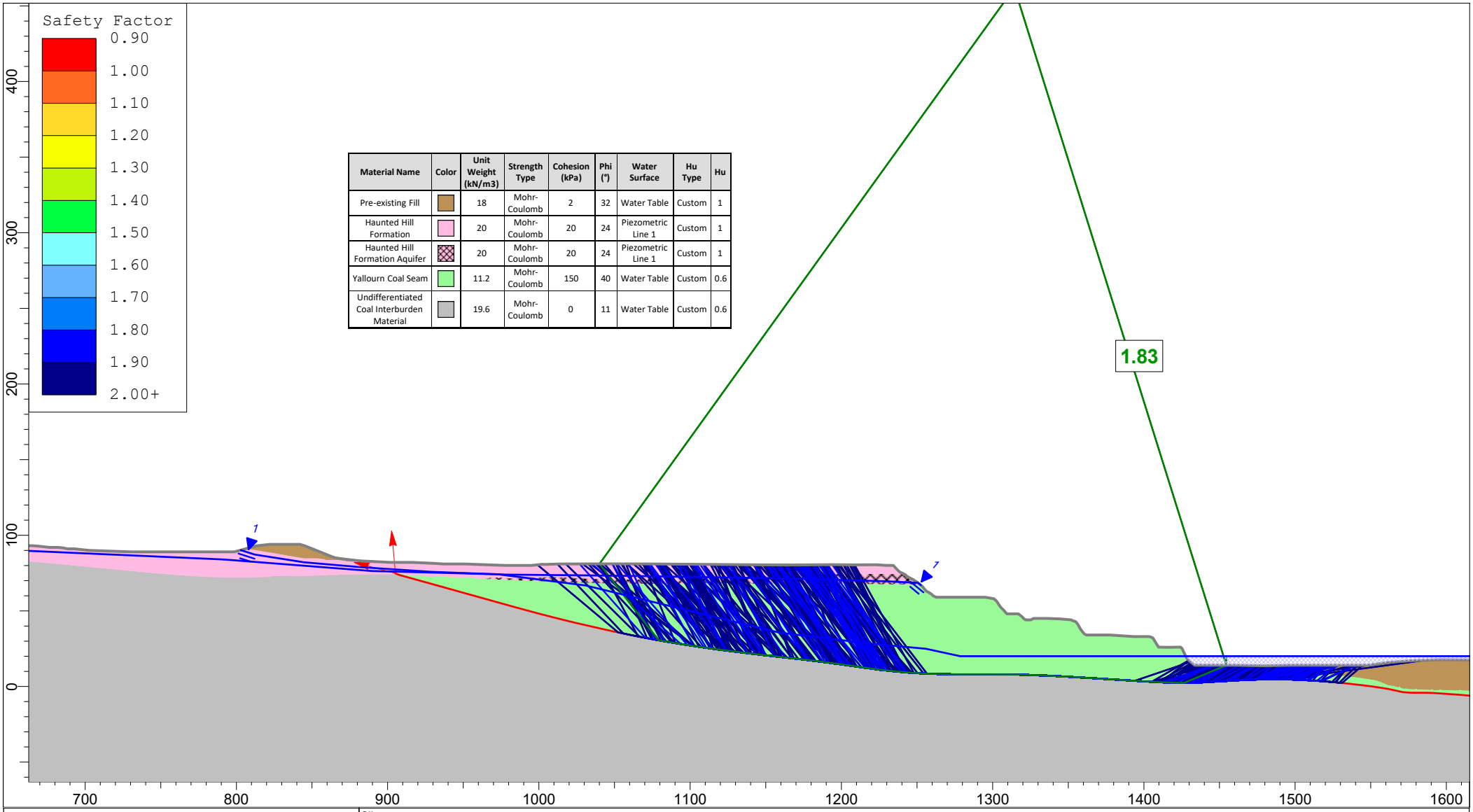
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 23	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



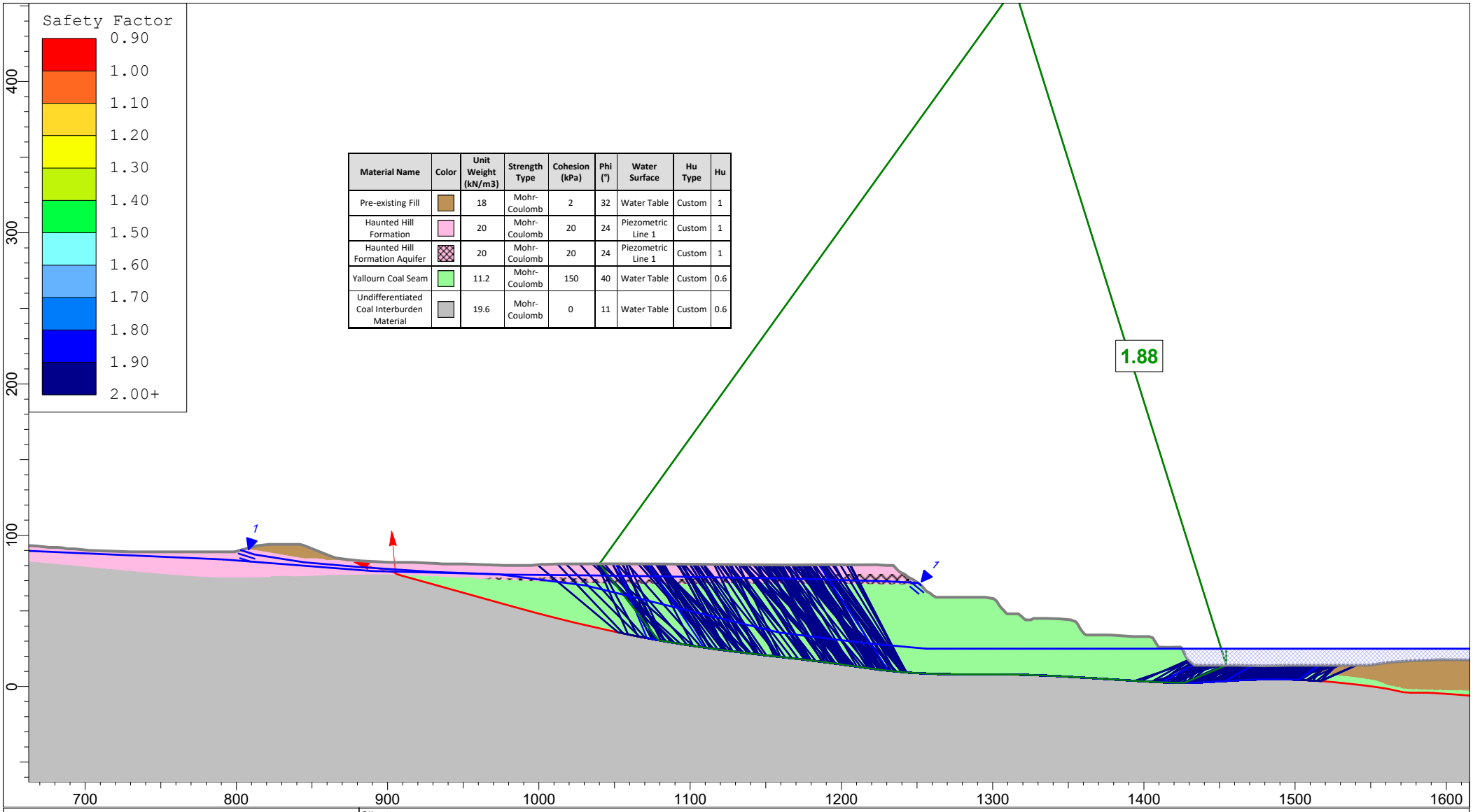
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 23	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



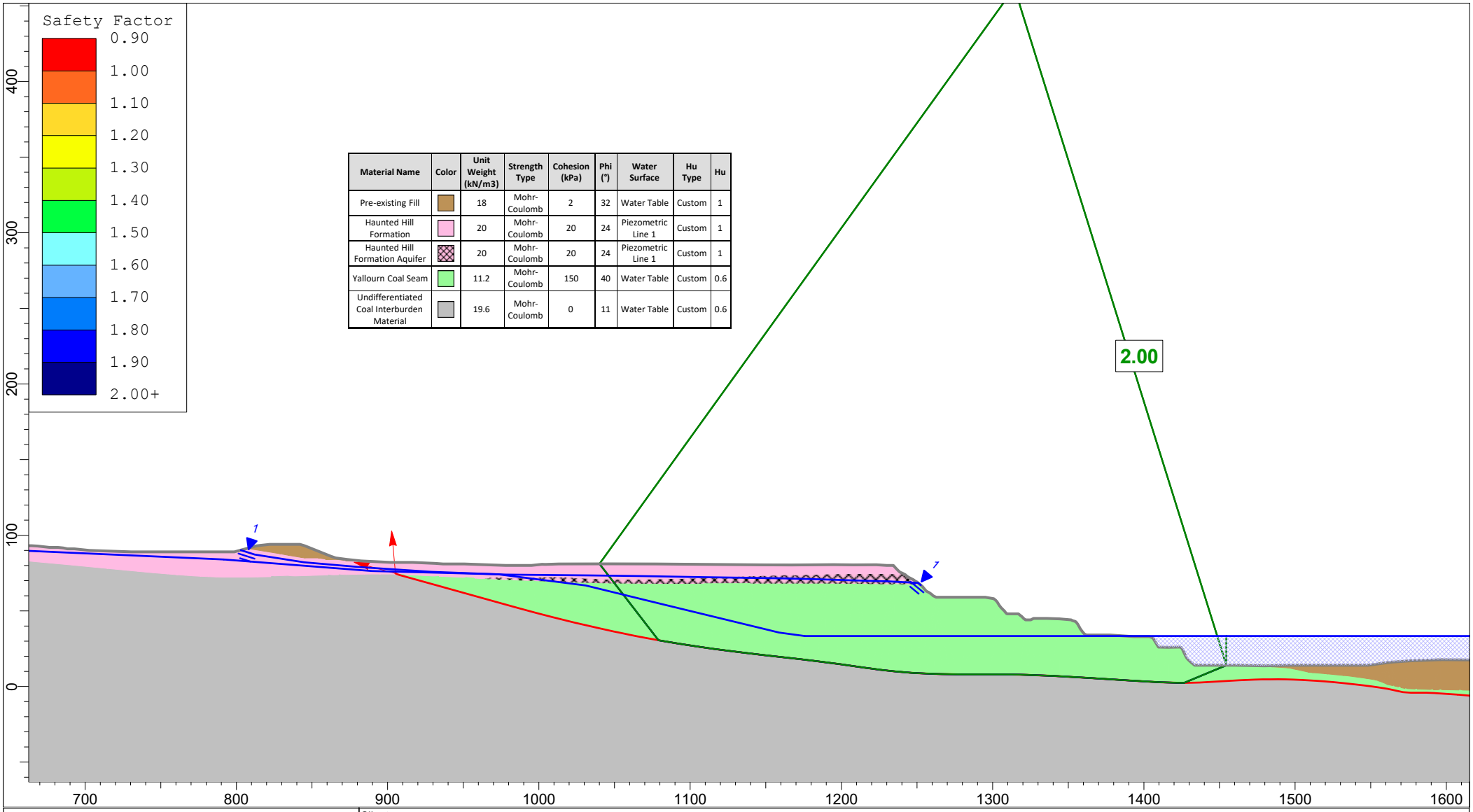
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



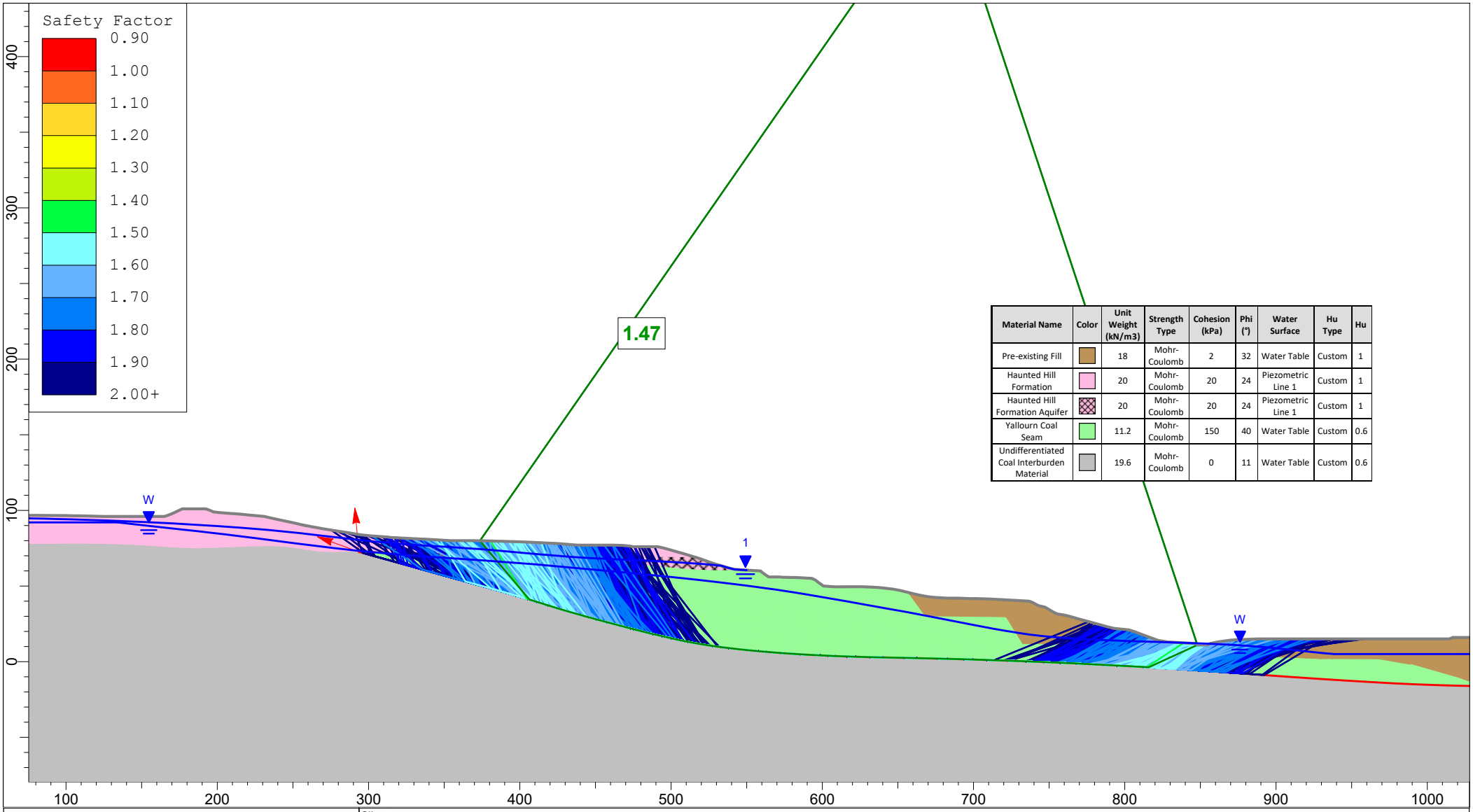
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YTF-HOB (North)**
Section:	**Section 24**	Case:	**Multilinear - Hu specific**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 25 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



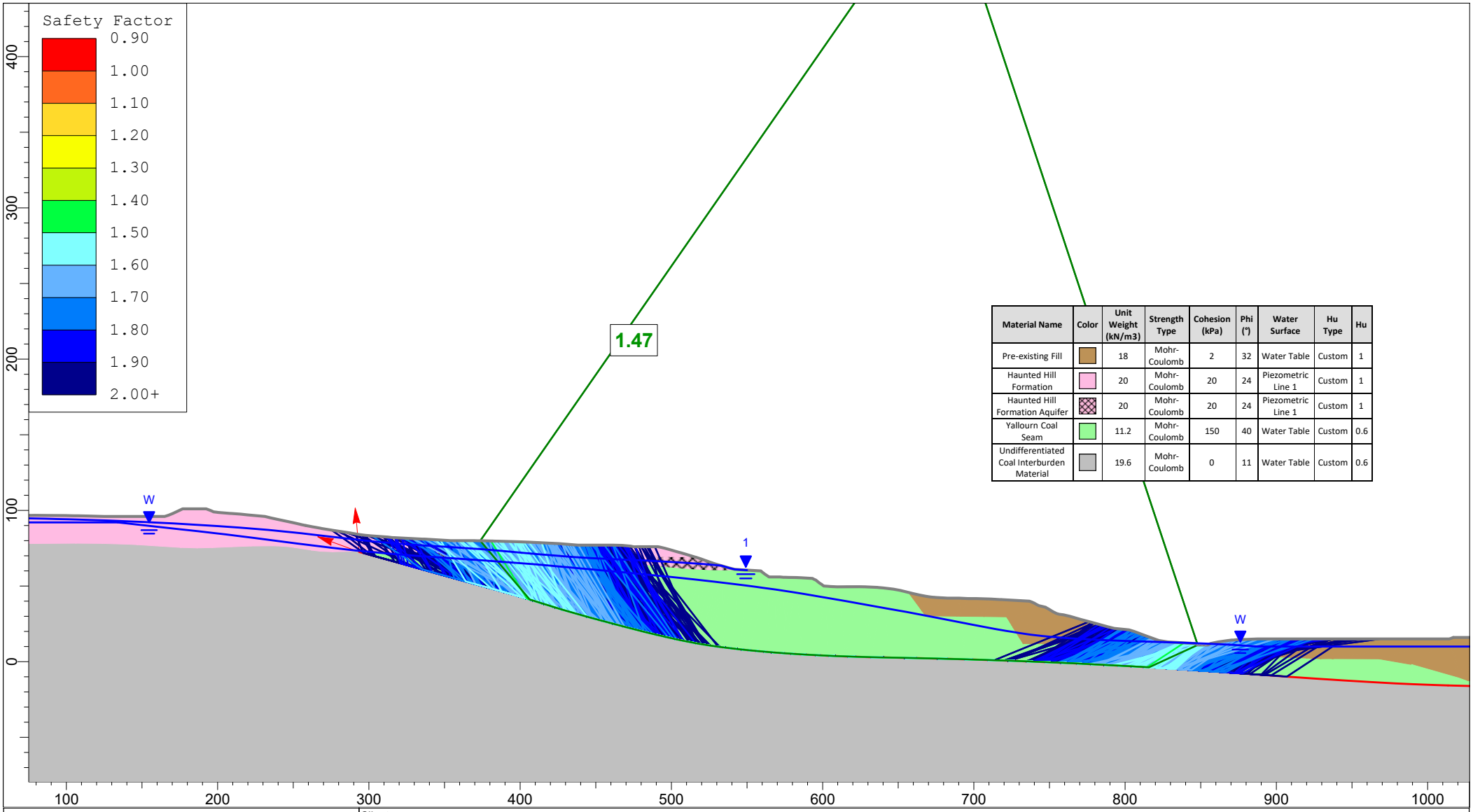
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



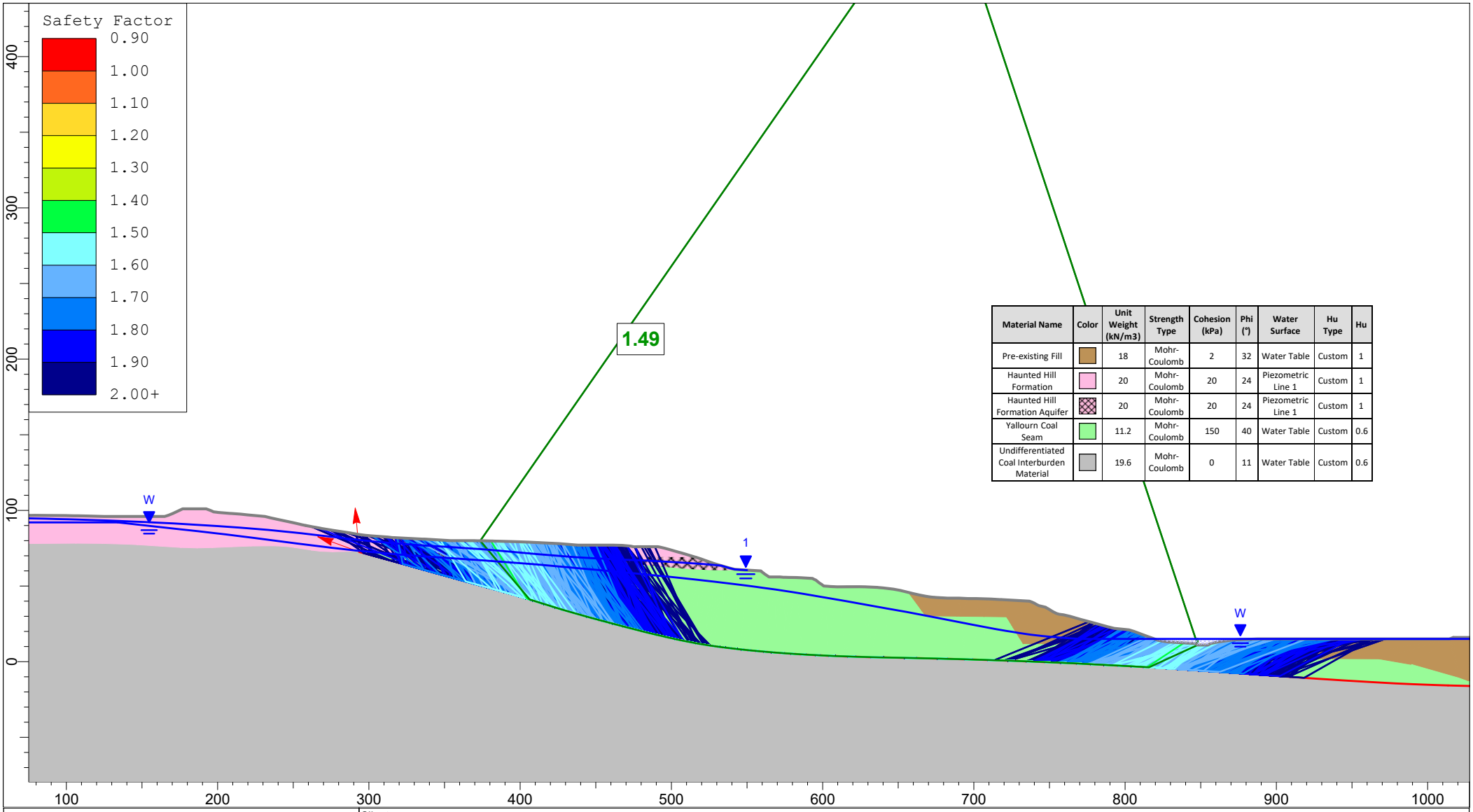
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



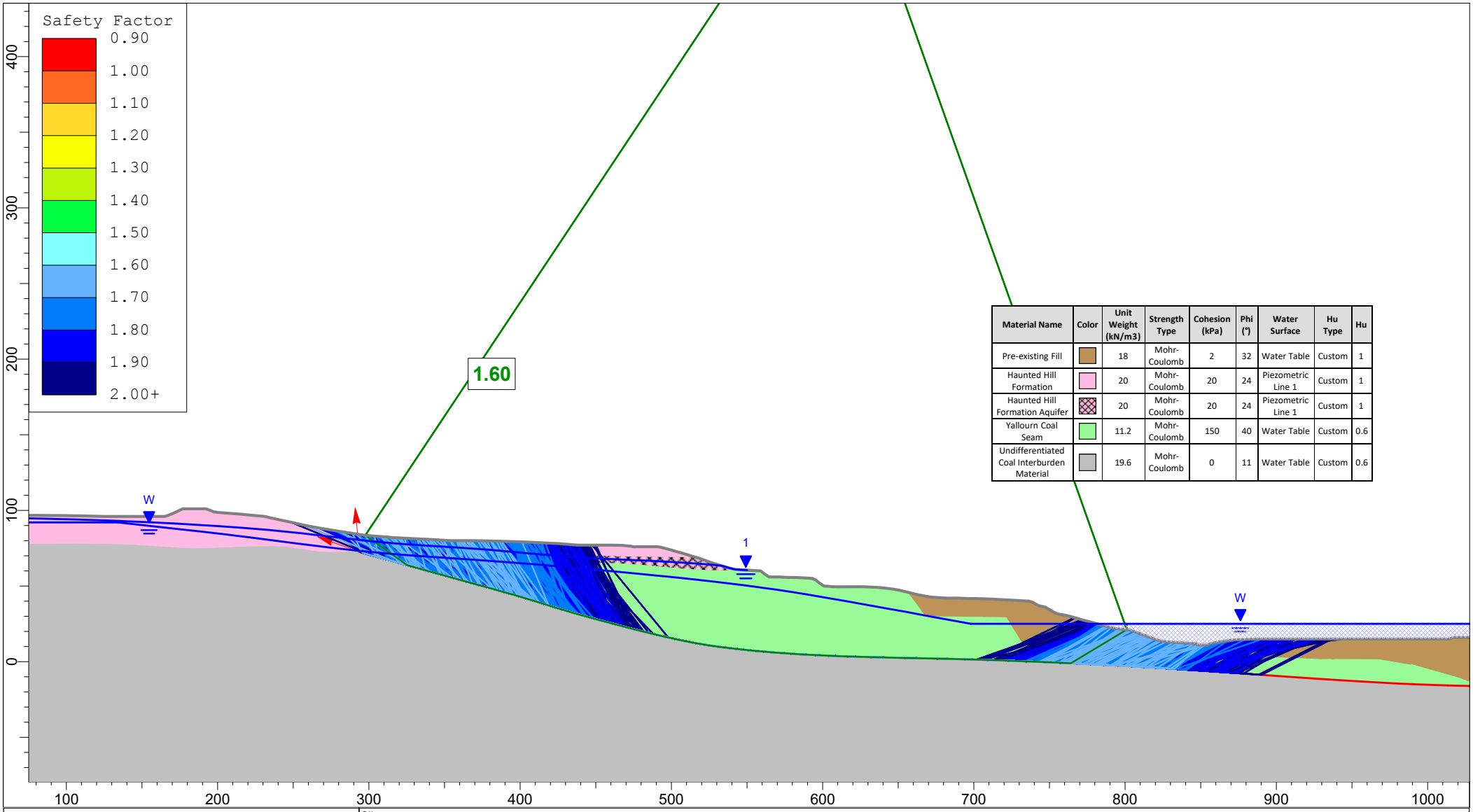
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



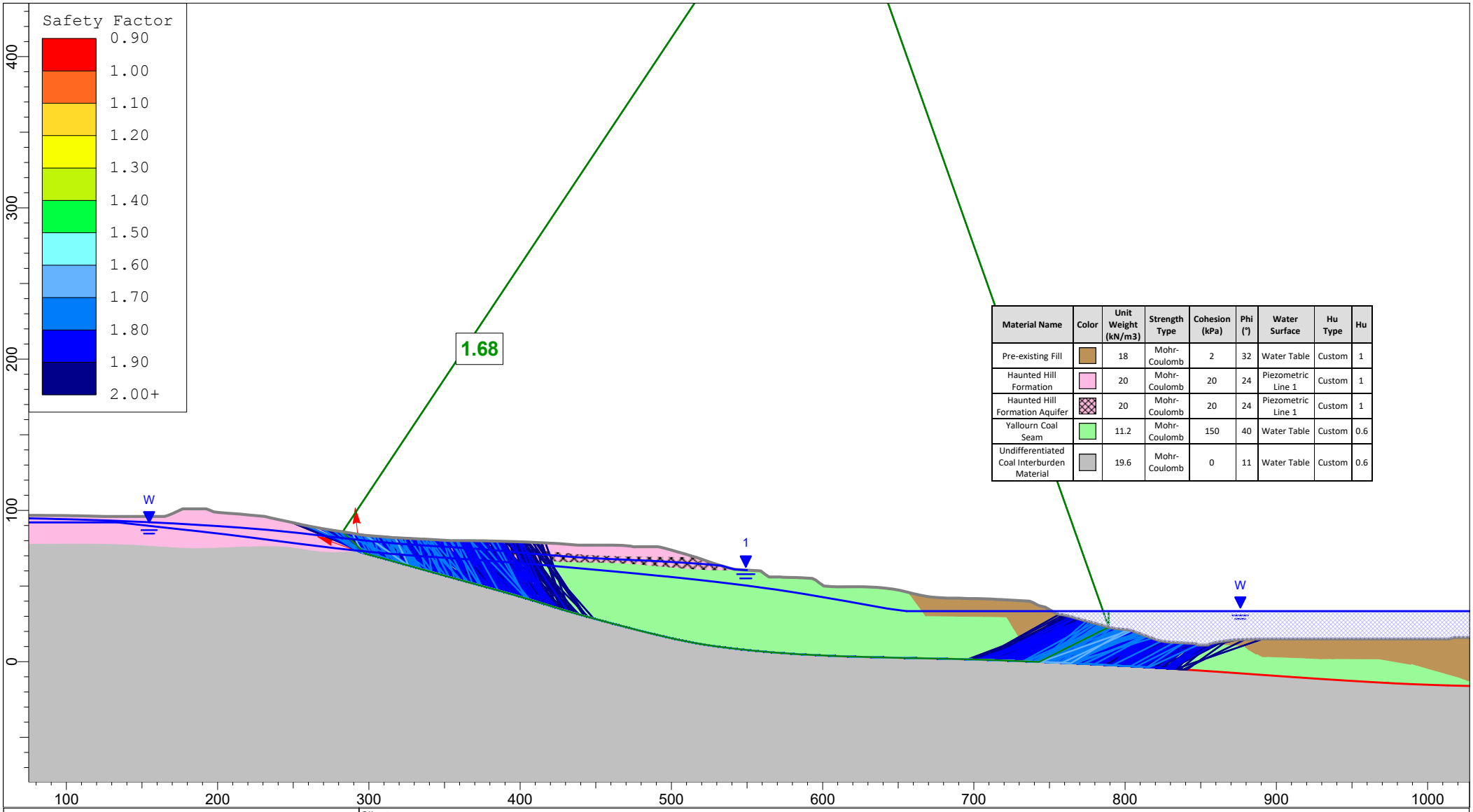
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



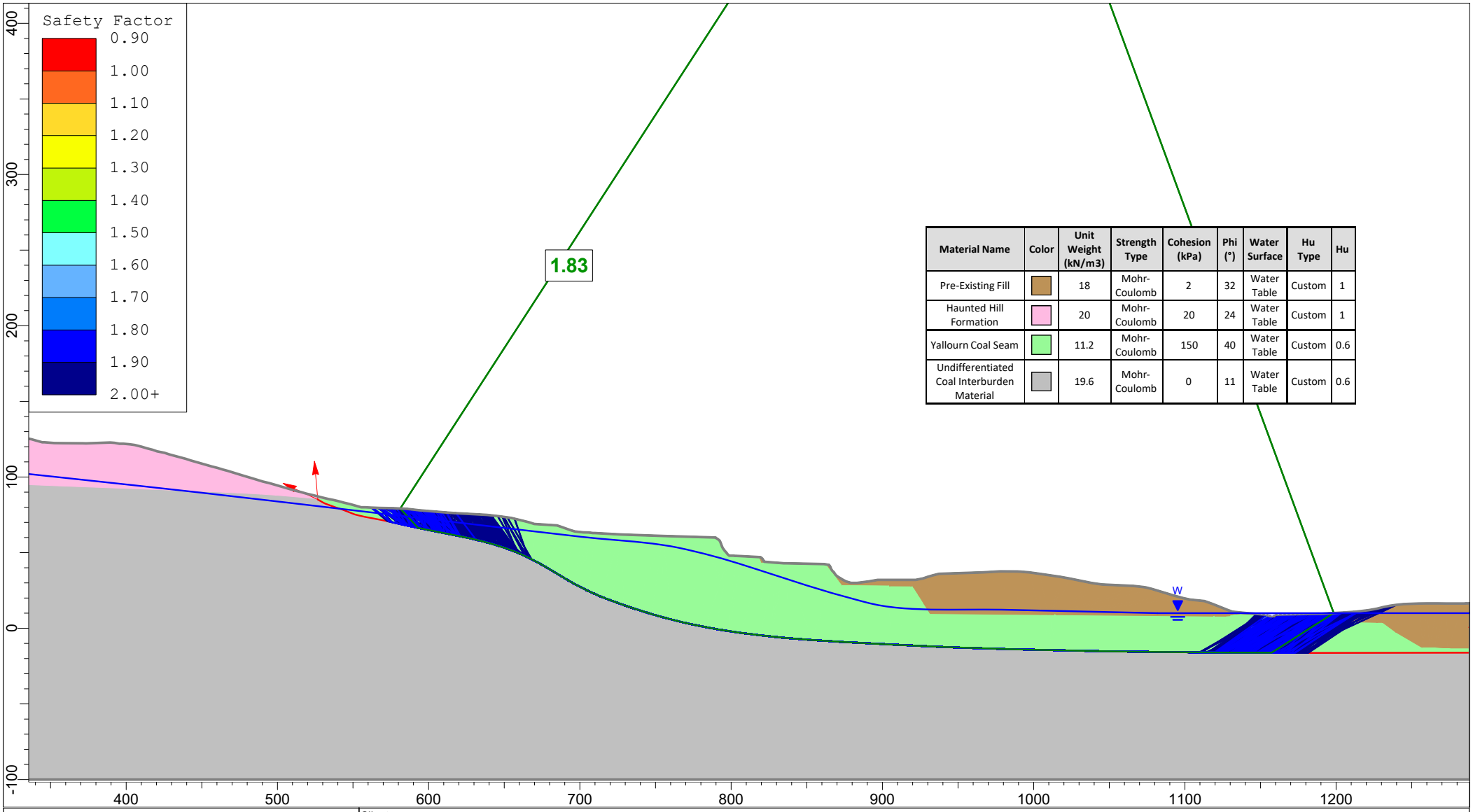
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



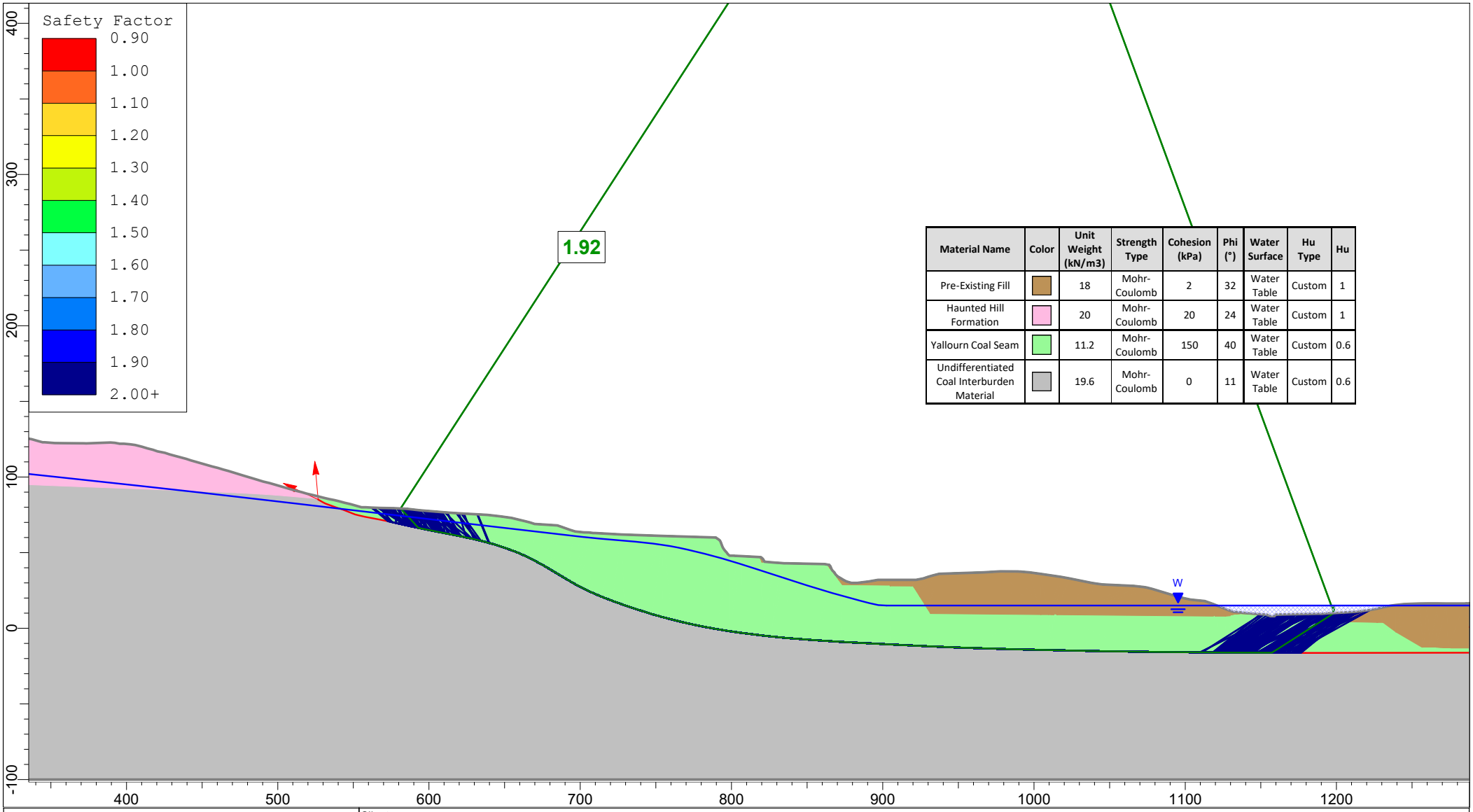
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YTF-WB**
Section:	**Section 25**	Case:	**Multilinear - Hu specific**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 33.4 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



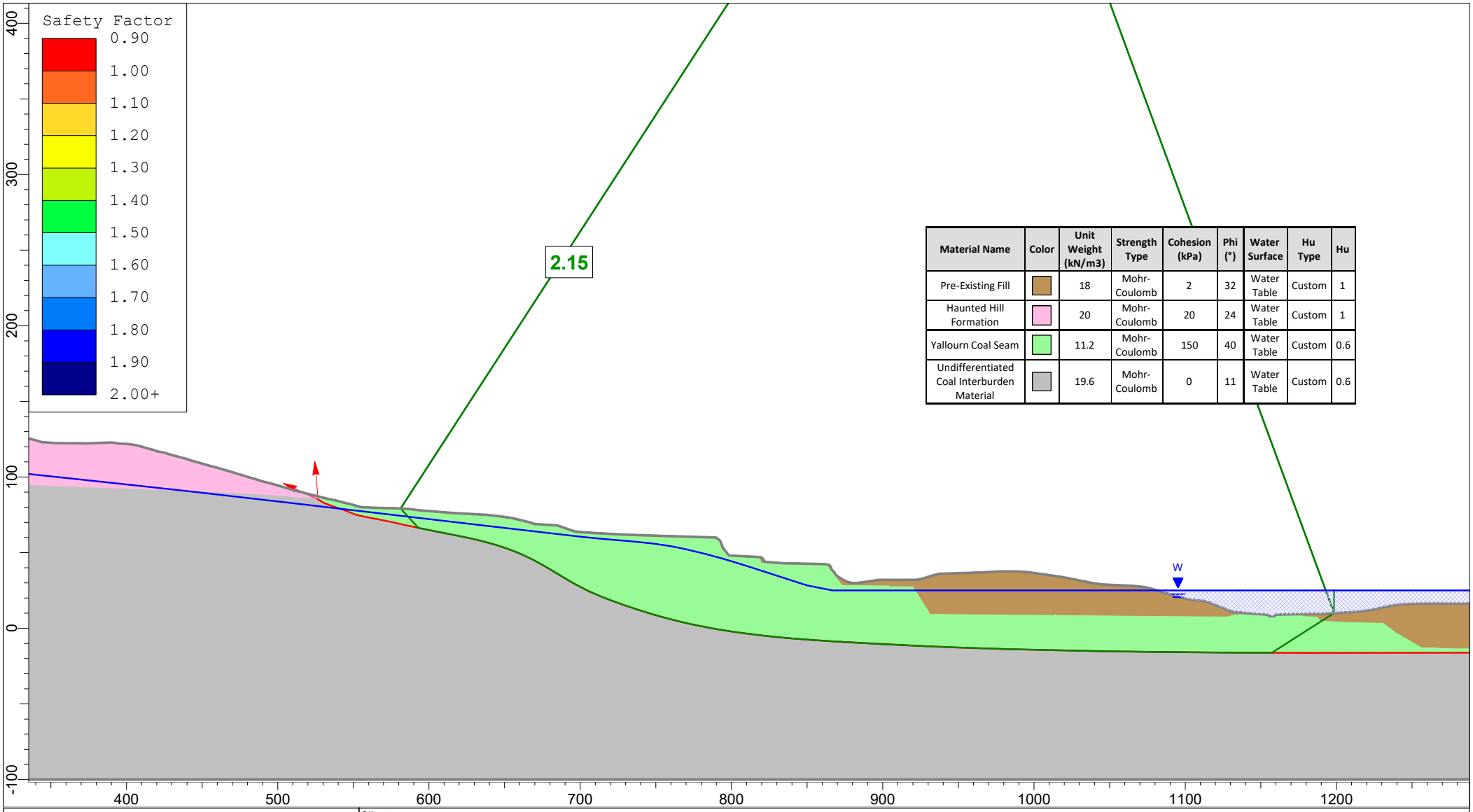
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



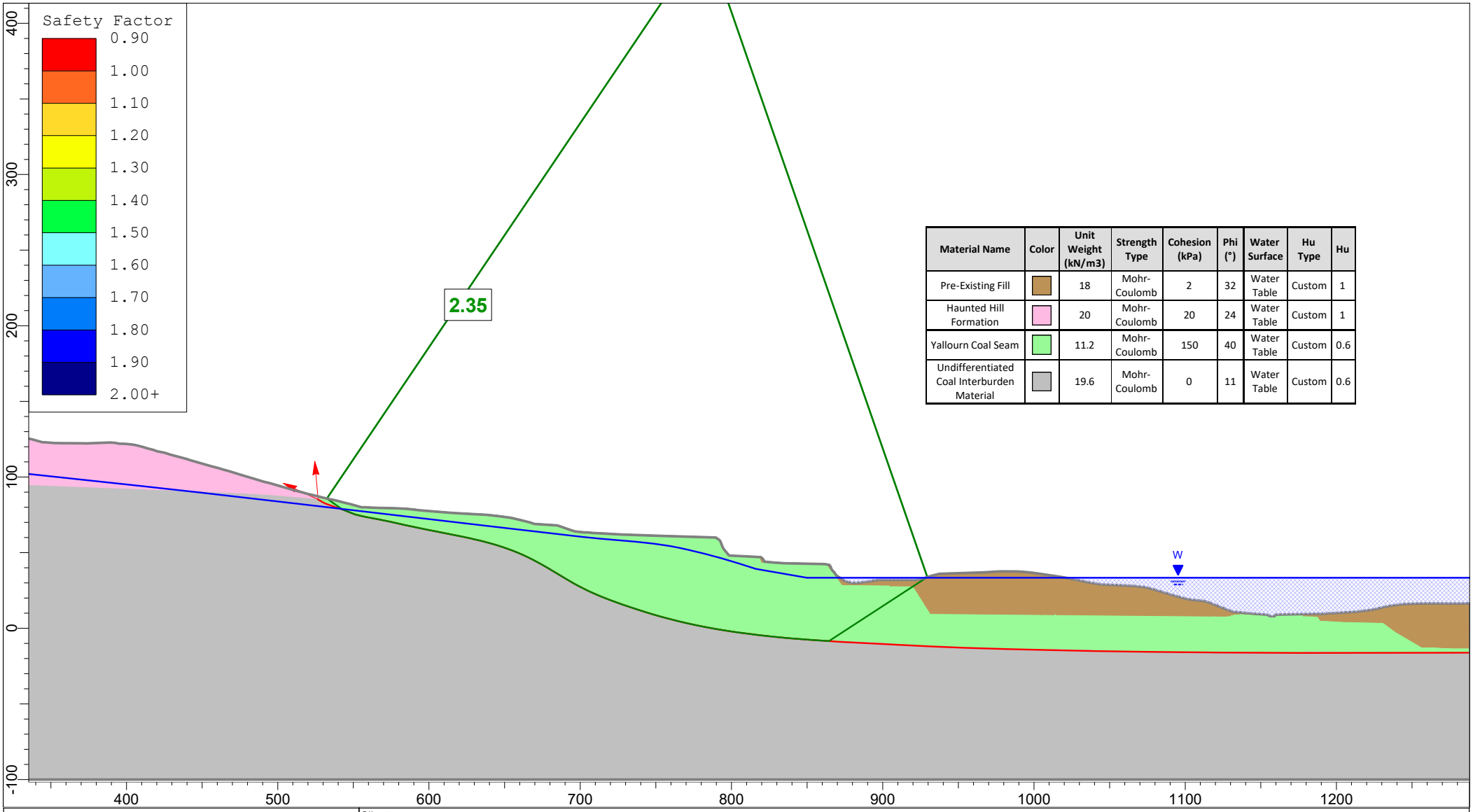
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



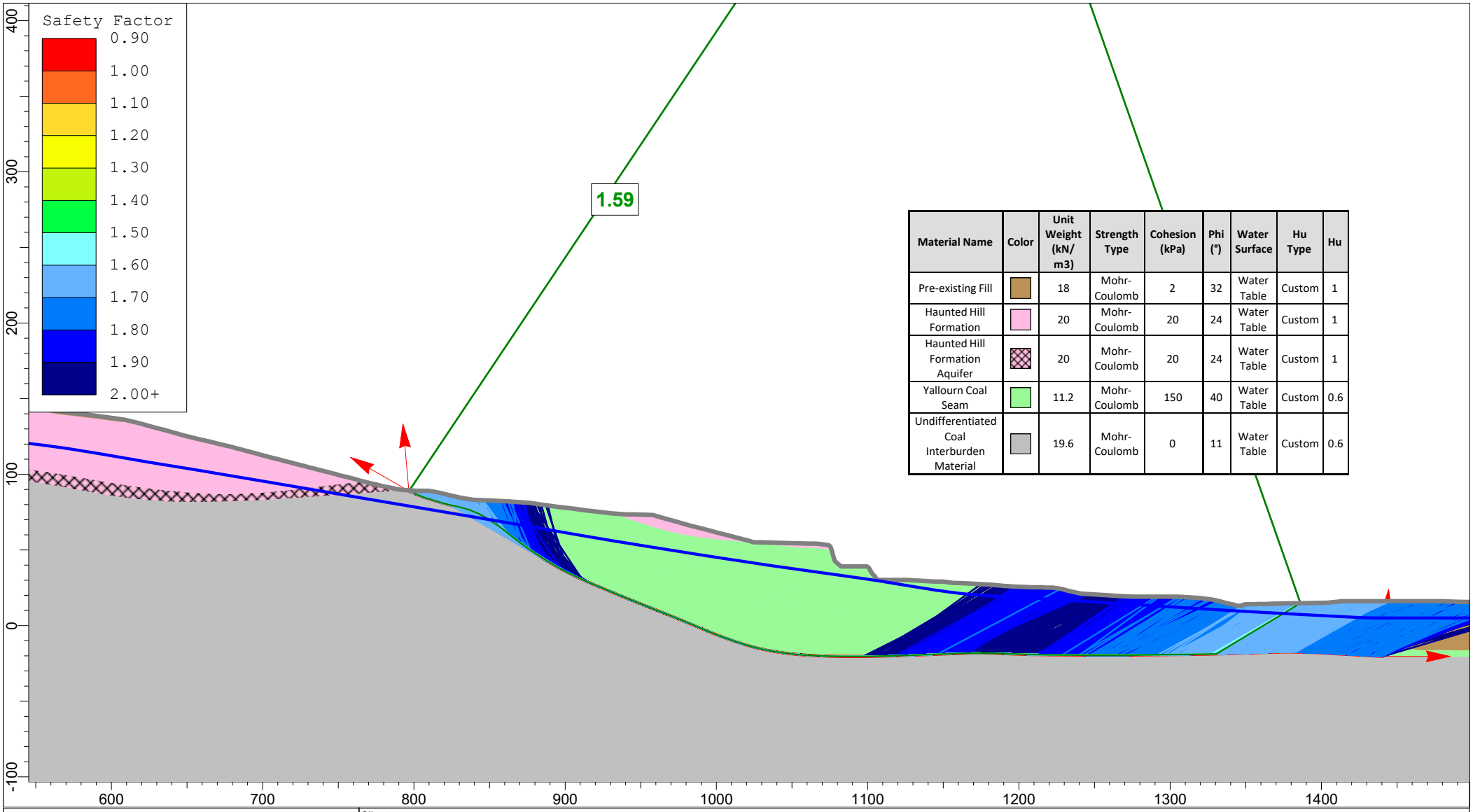
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



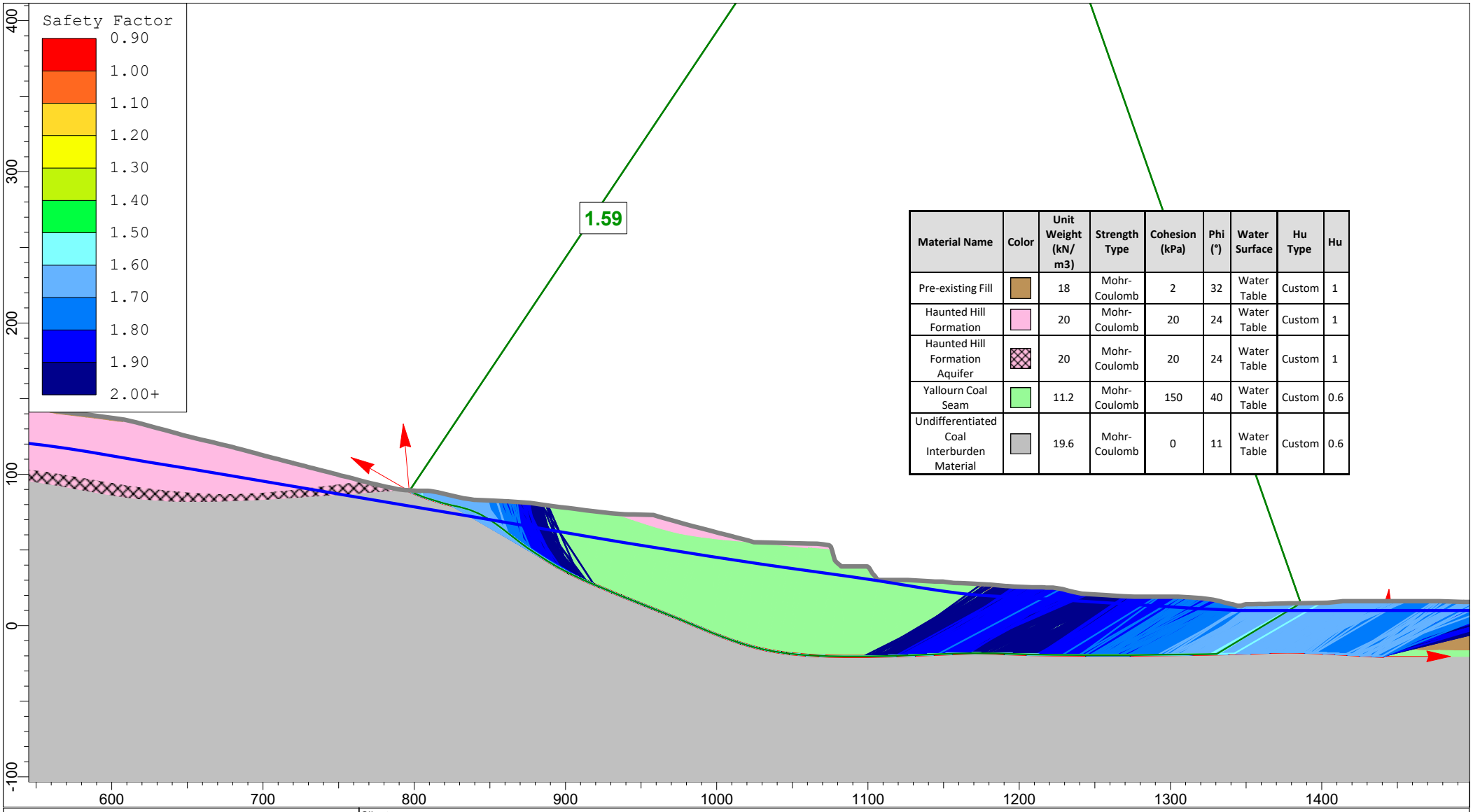
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



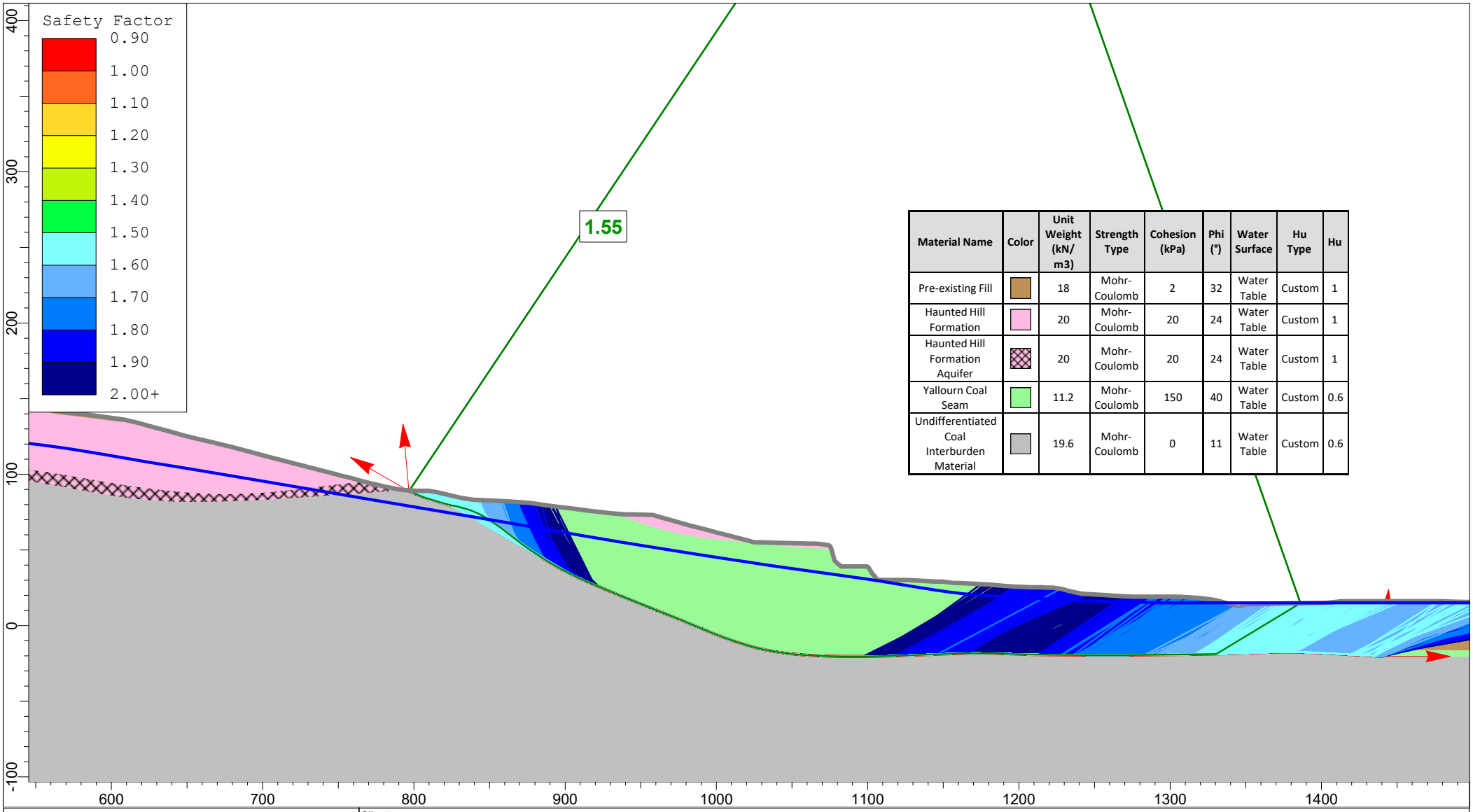
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



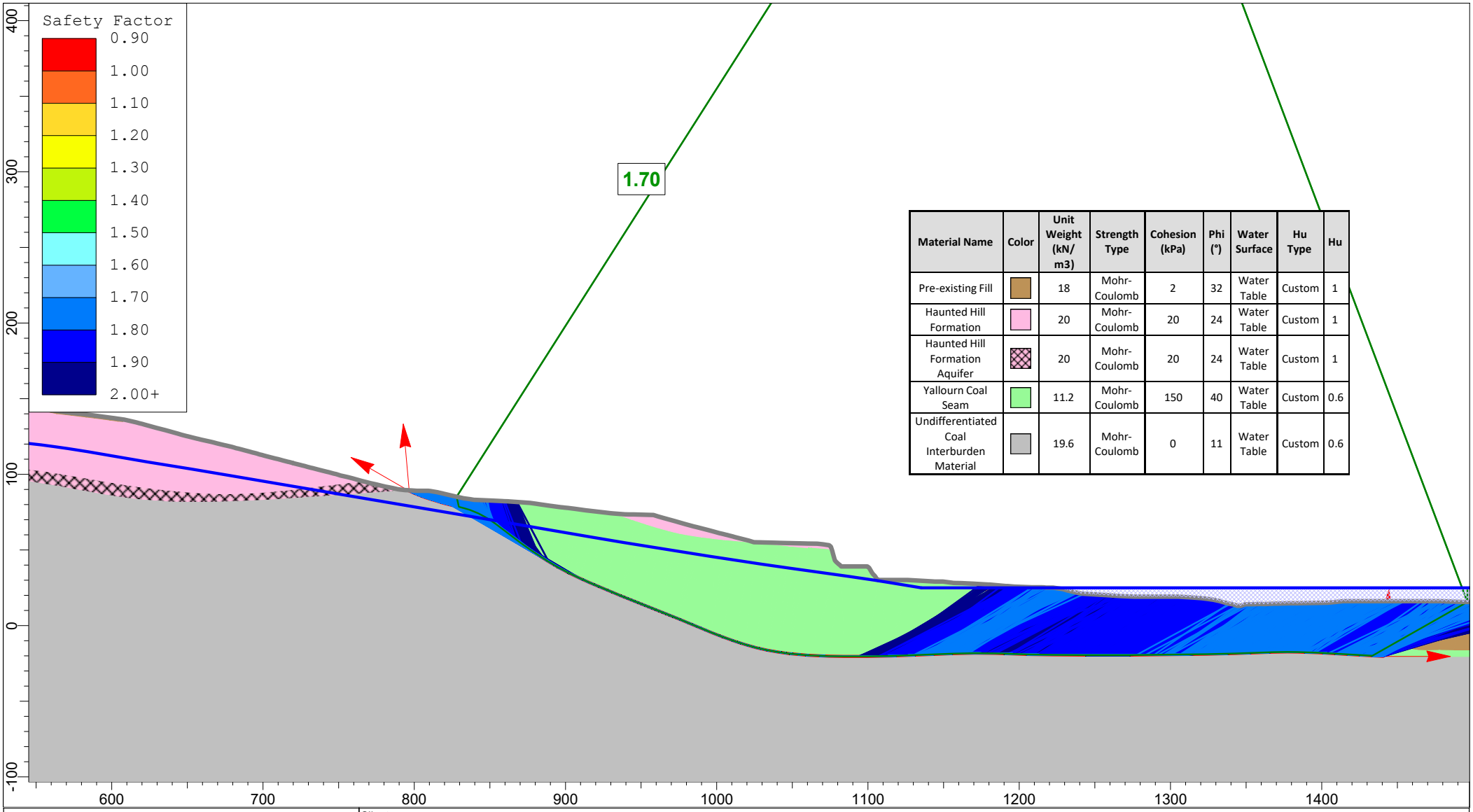
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



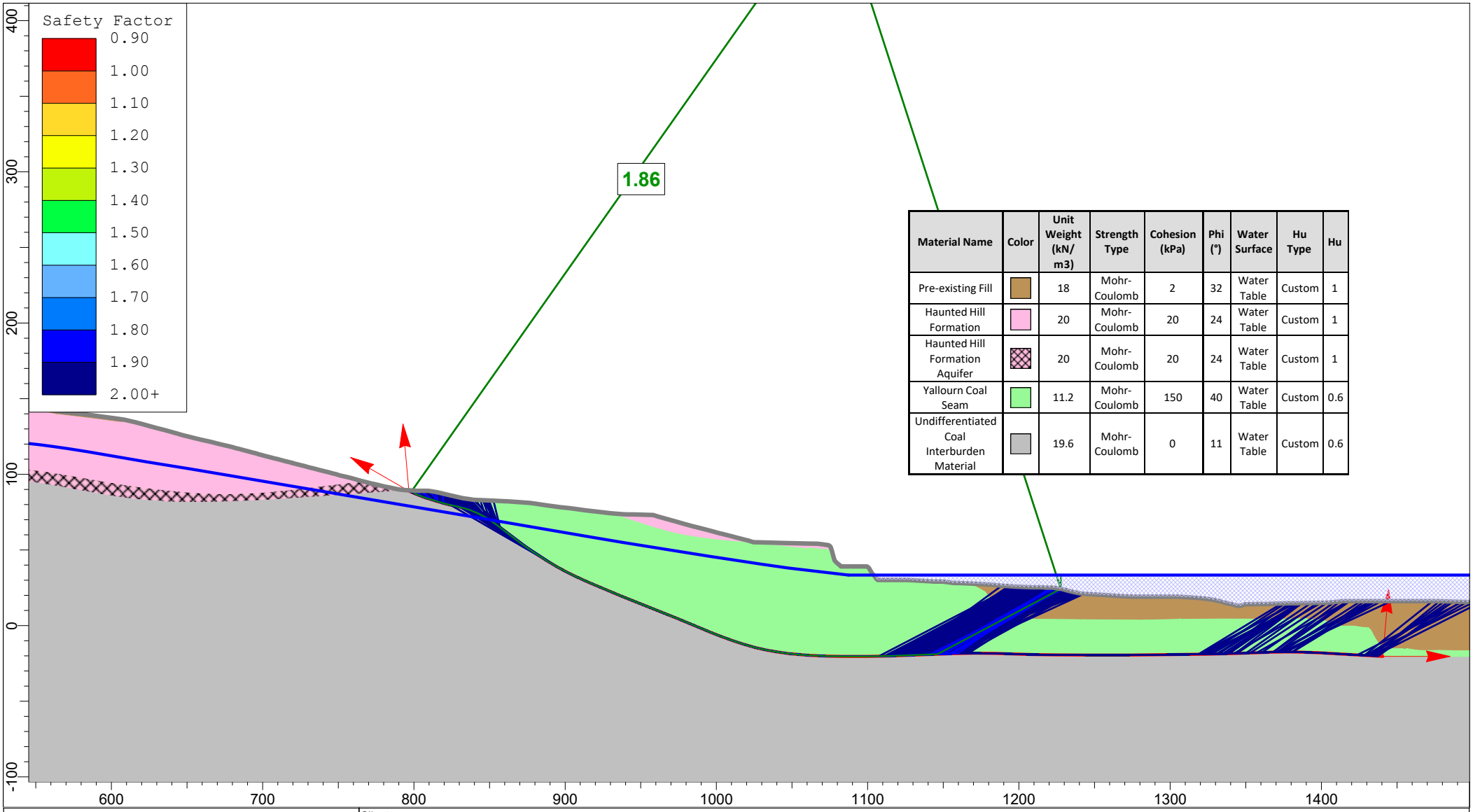
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



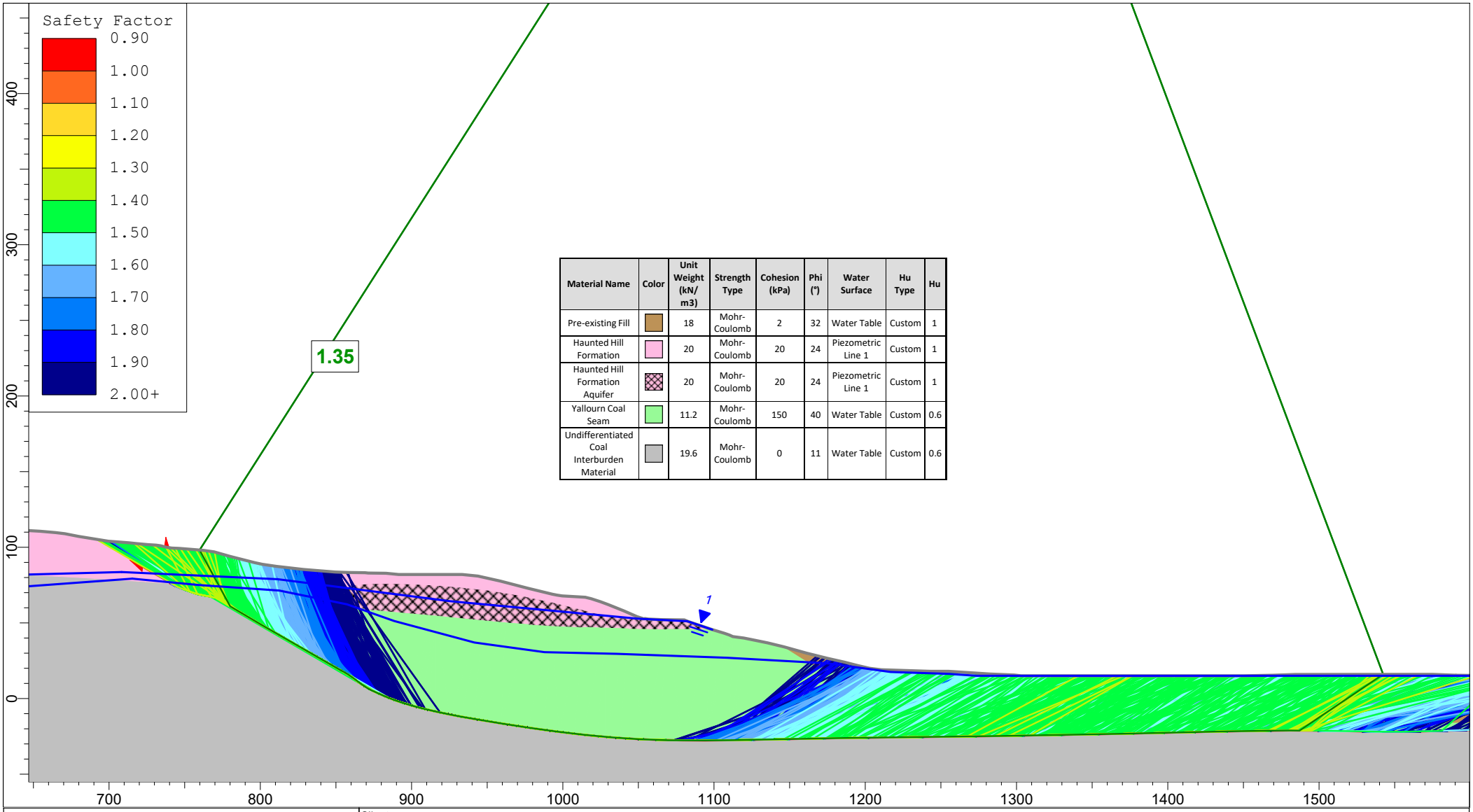
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



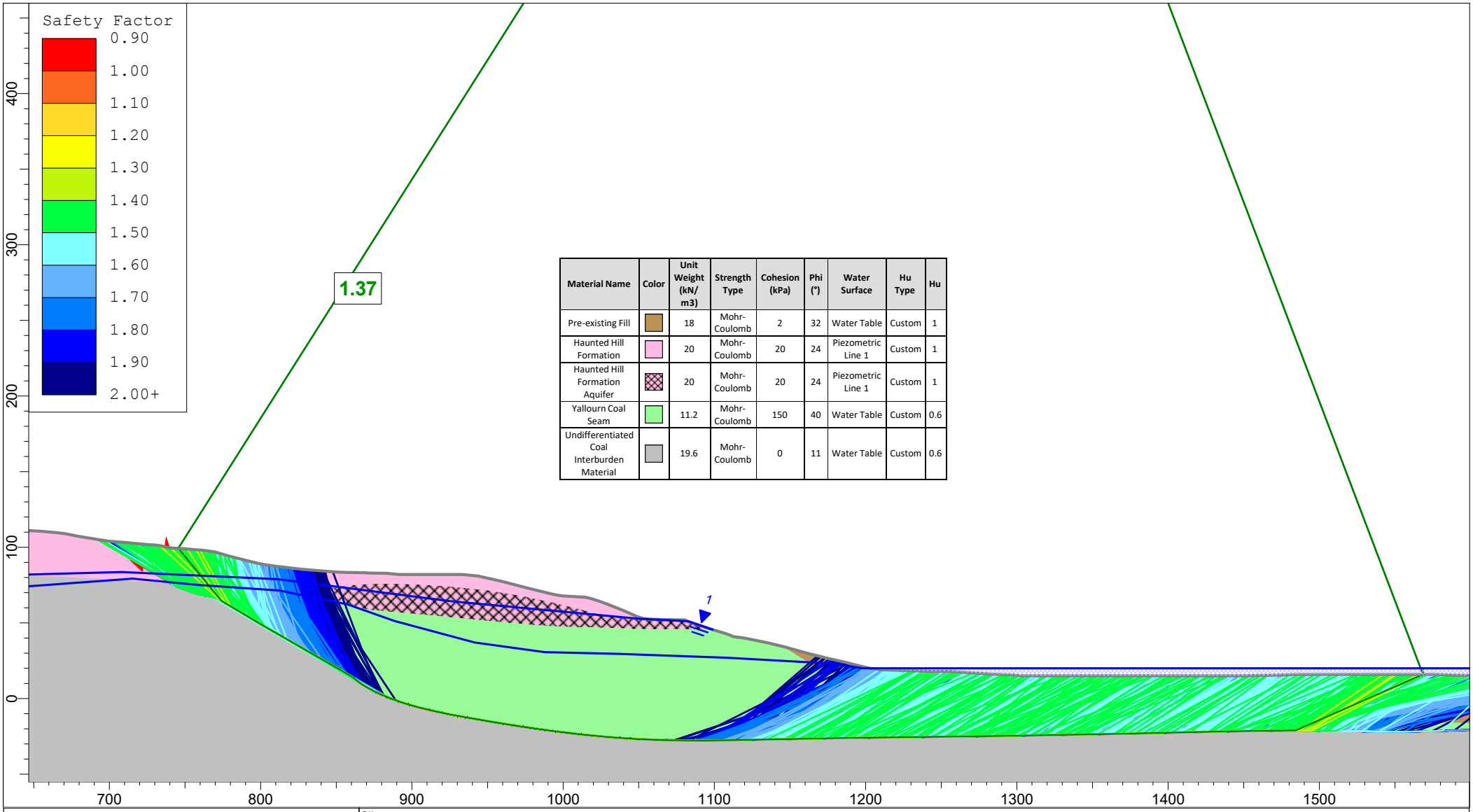
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



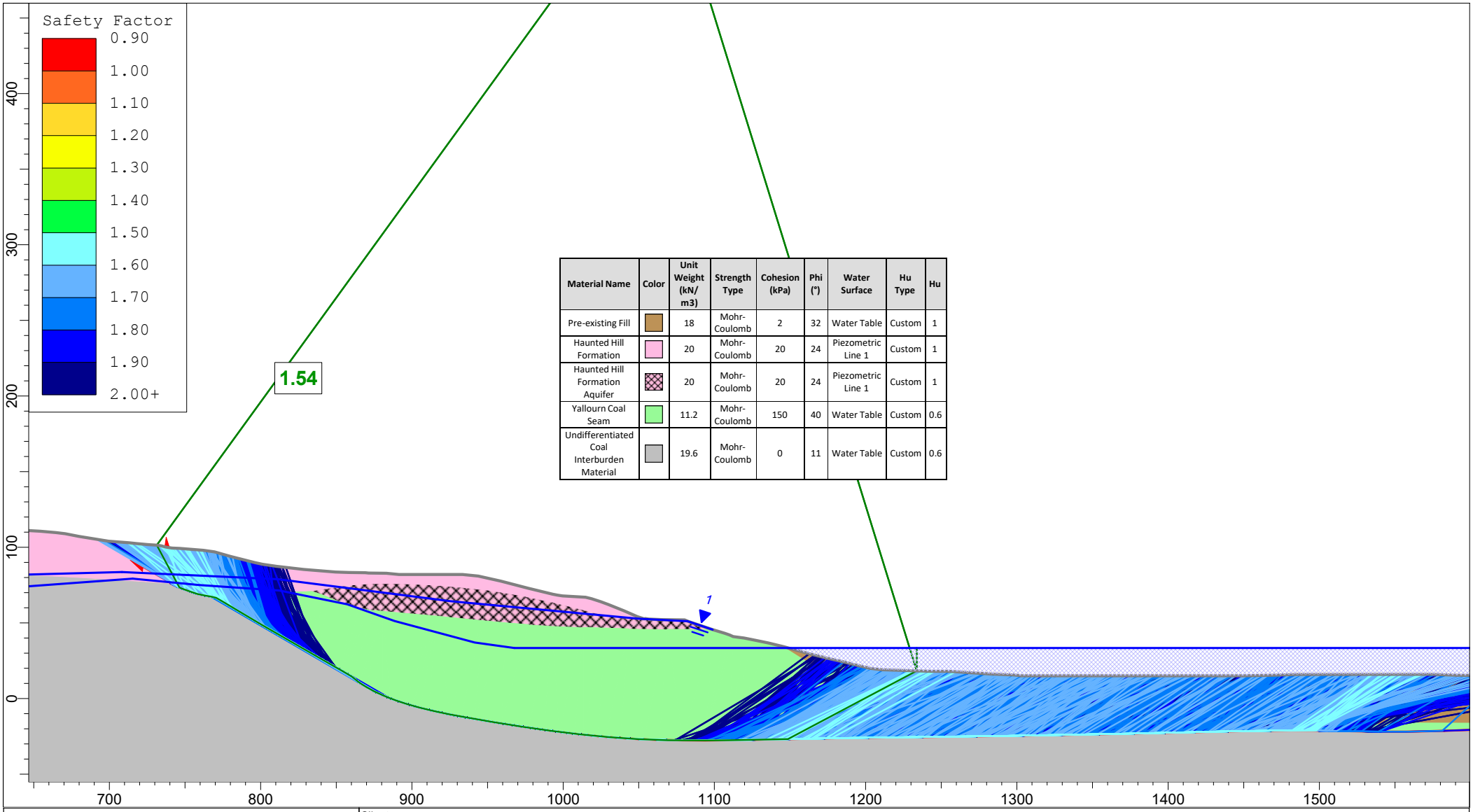
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



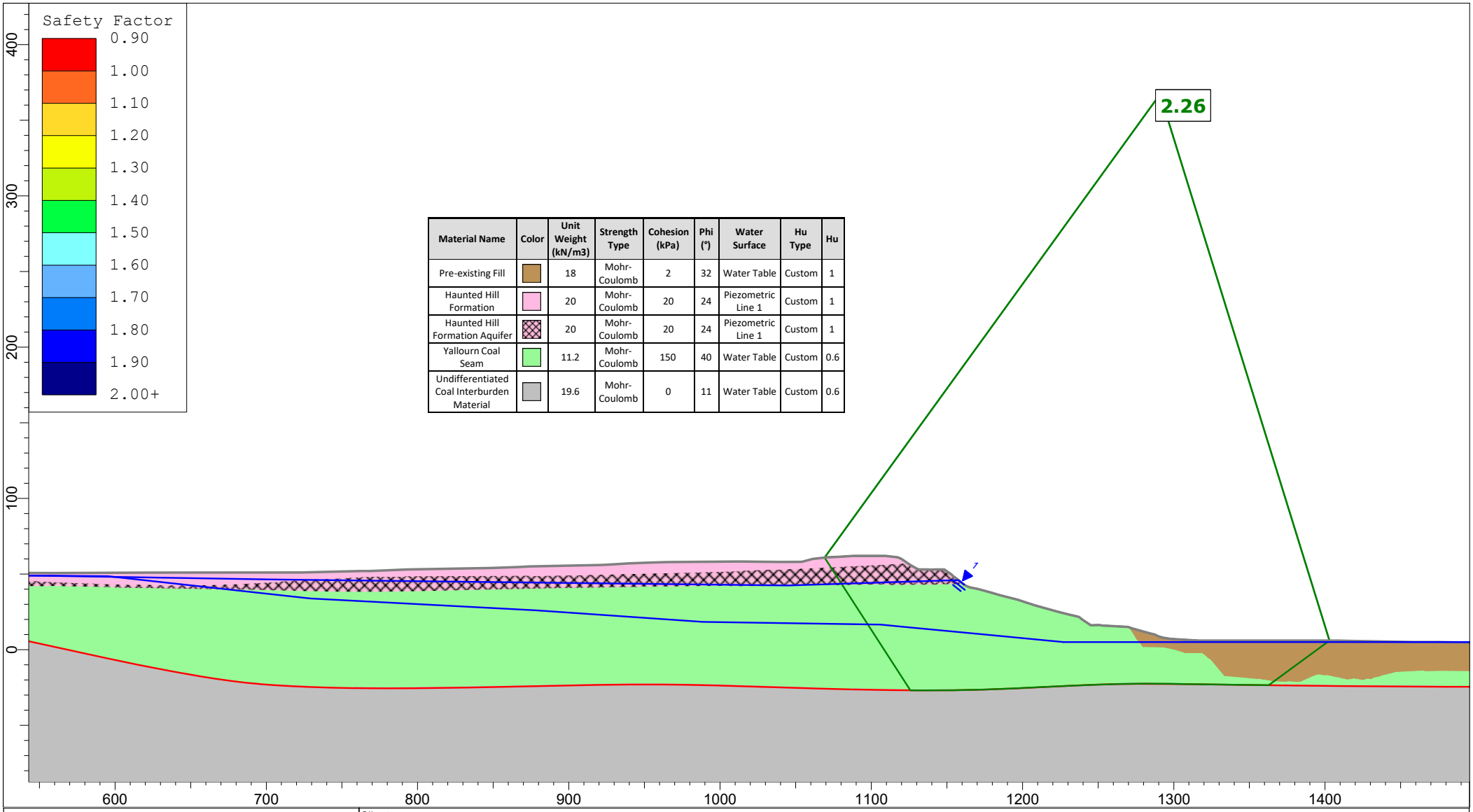
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



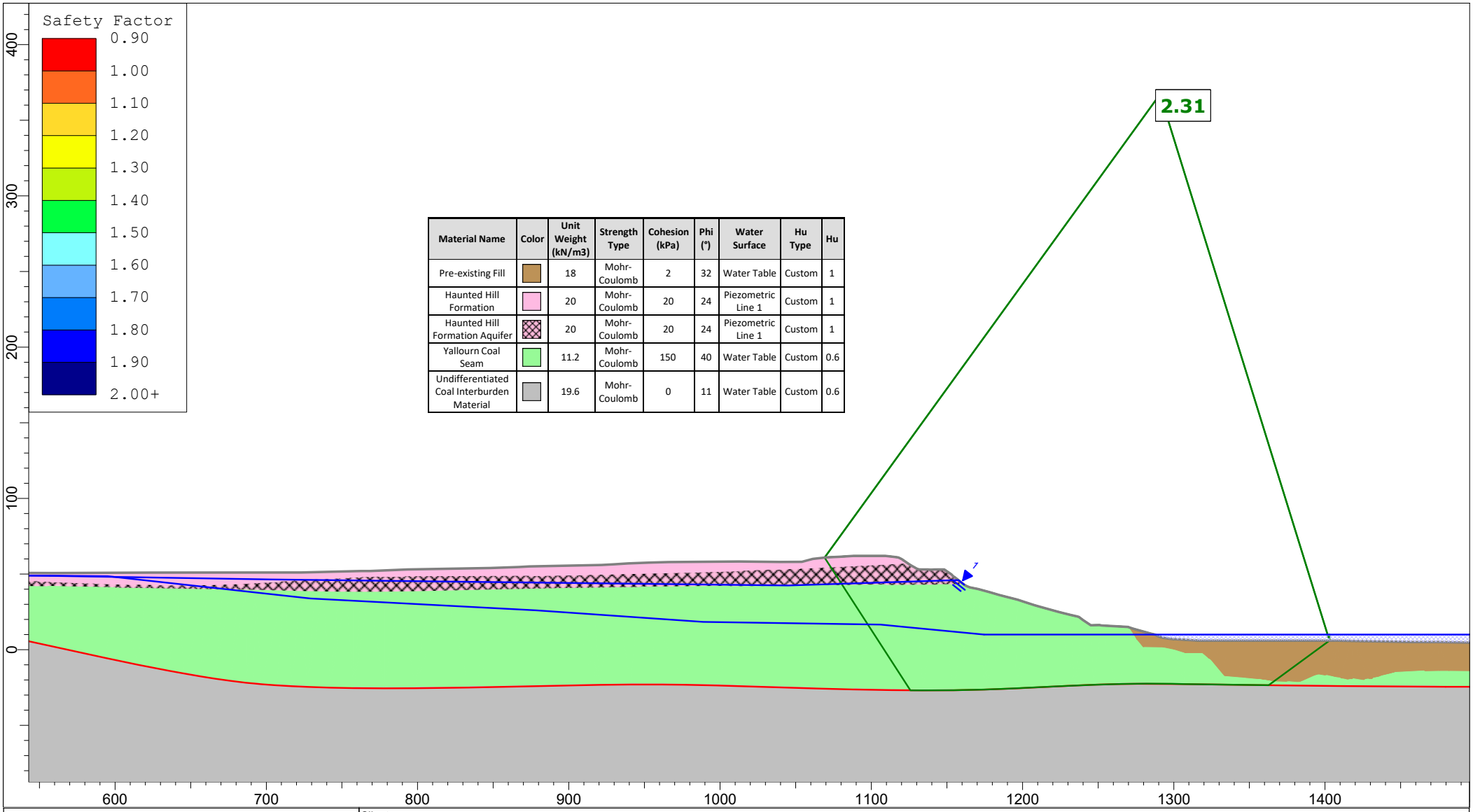
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



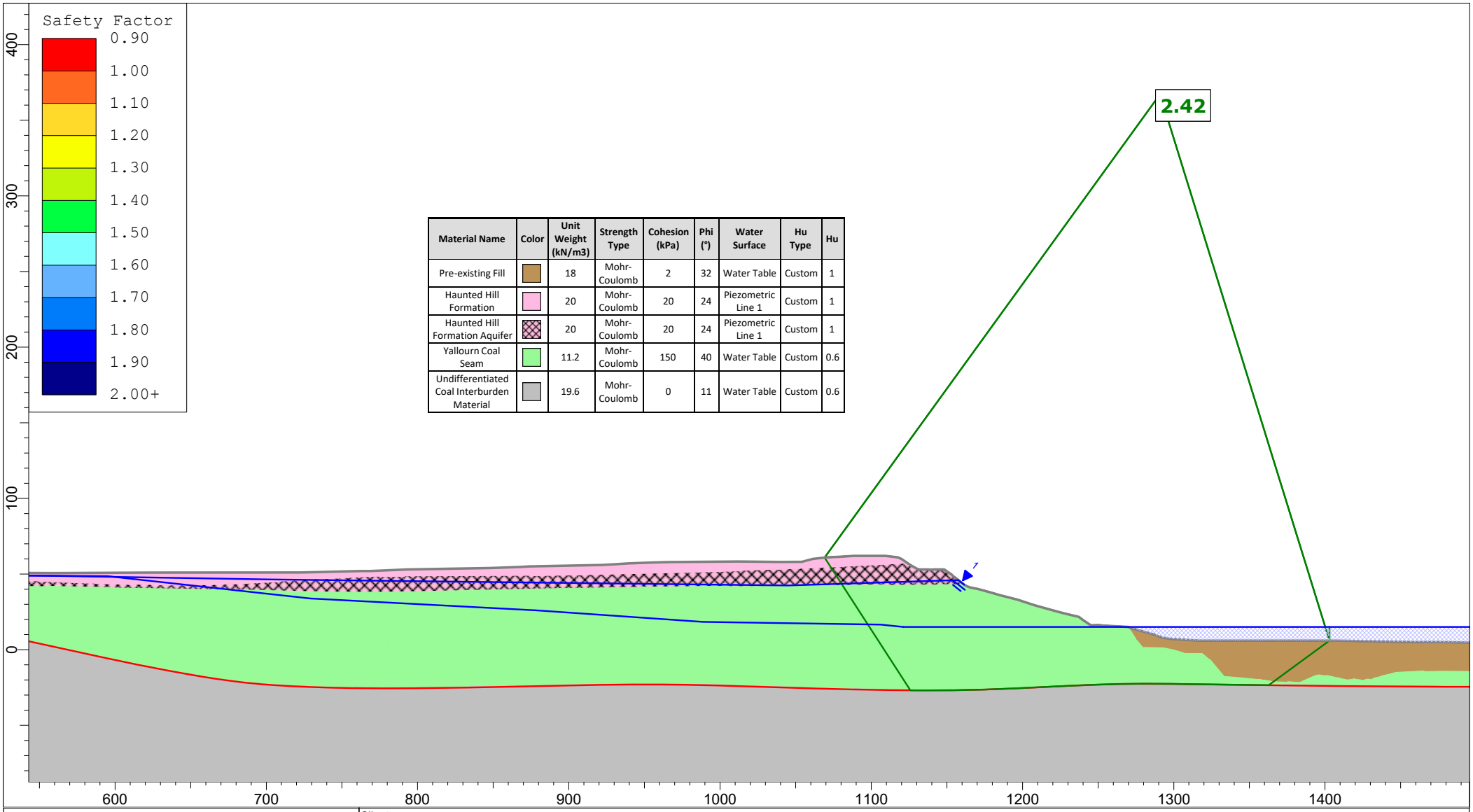
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YTF-NB**
Section:	**Section 29**	Case:	**Multilinear - Hu specific**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 5 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



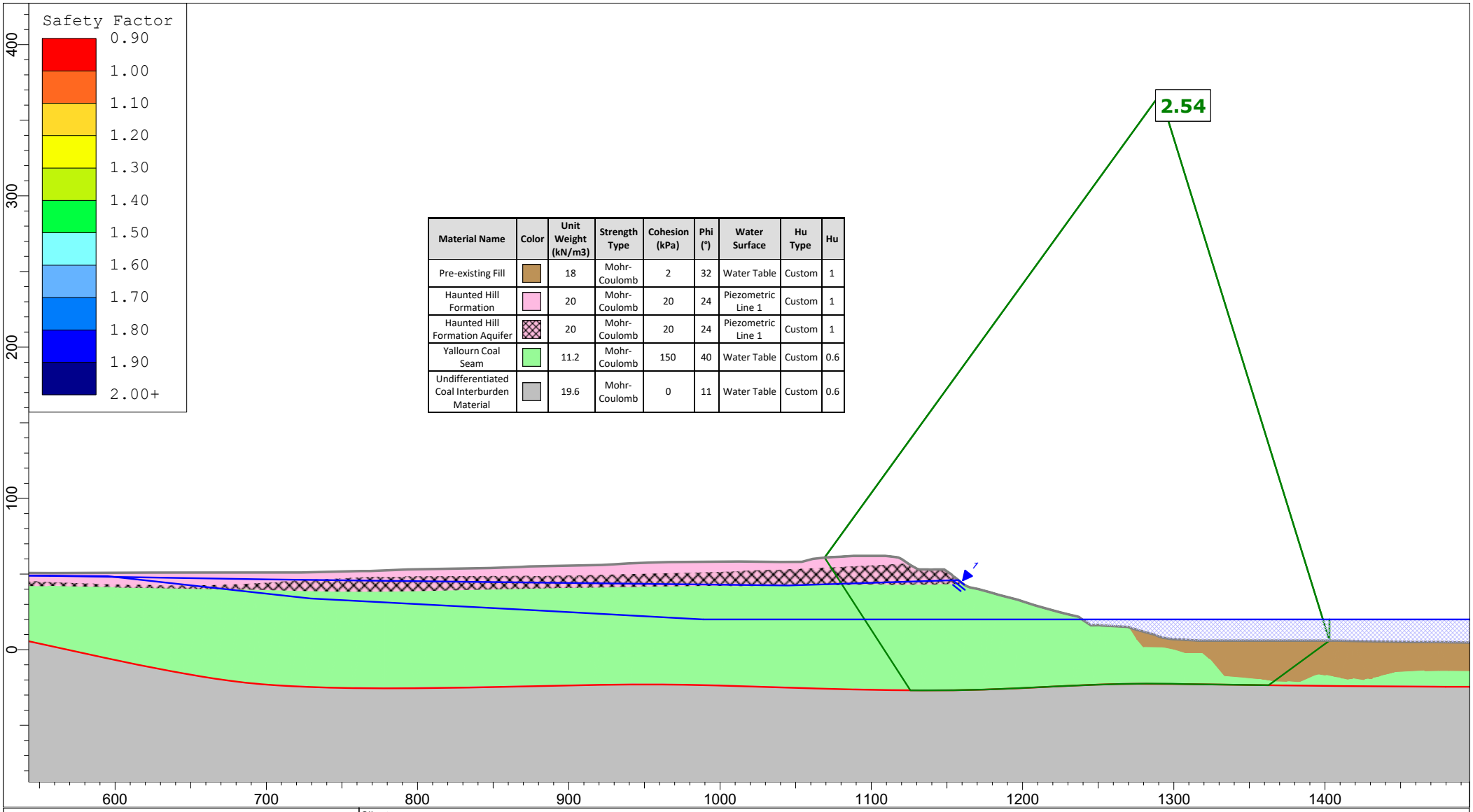
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-NB
Section:	Section 29	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



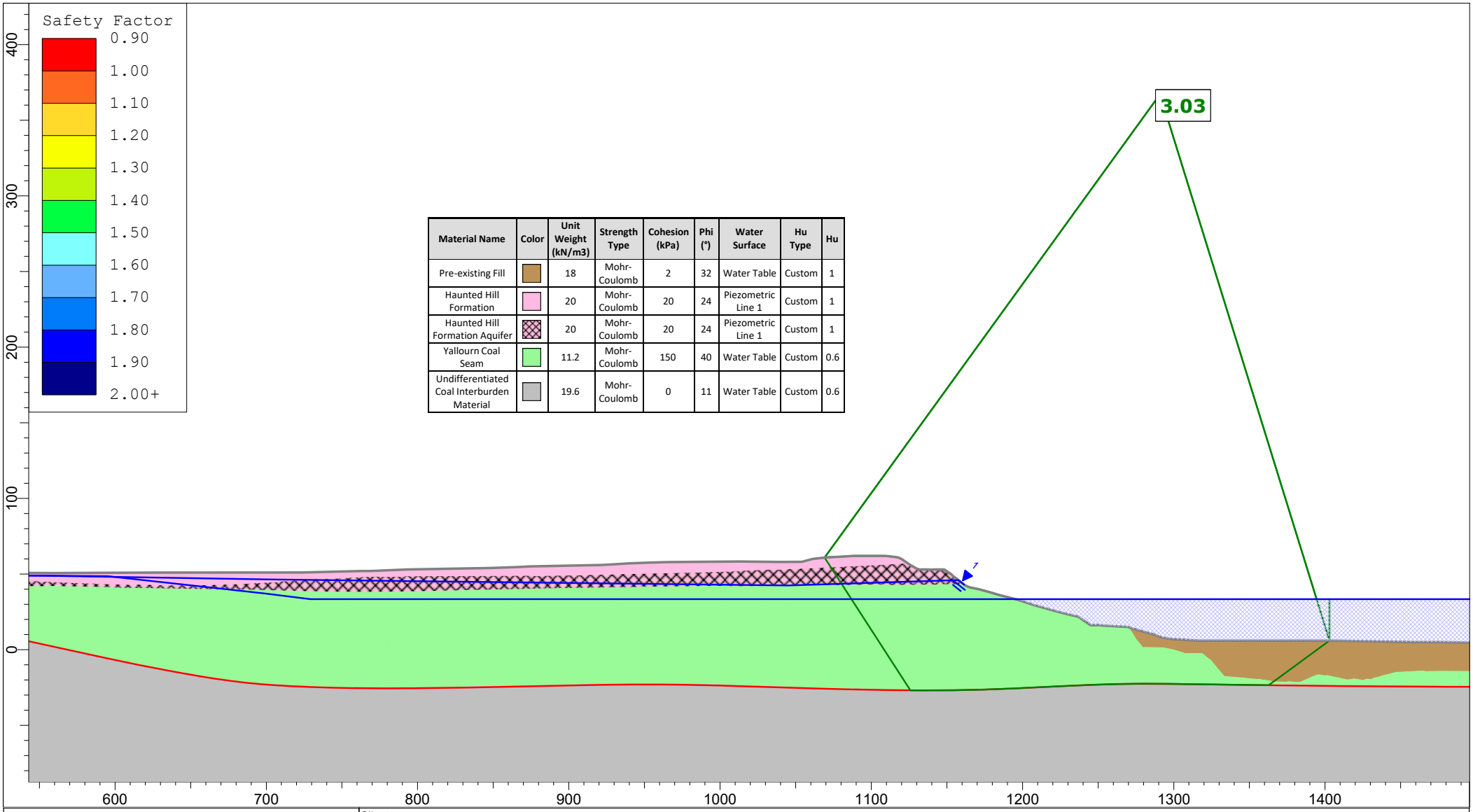
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-NB
Section:	Section 29	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



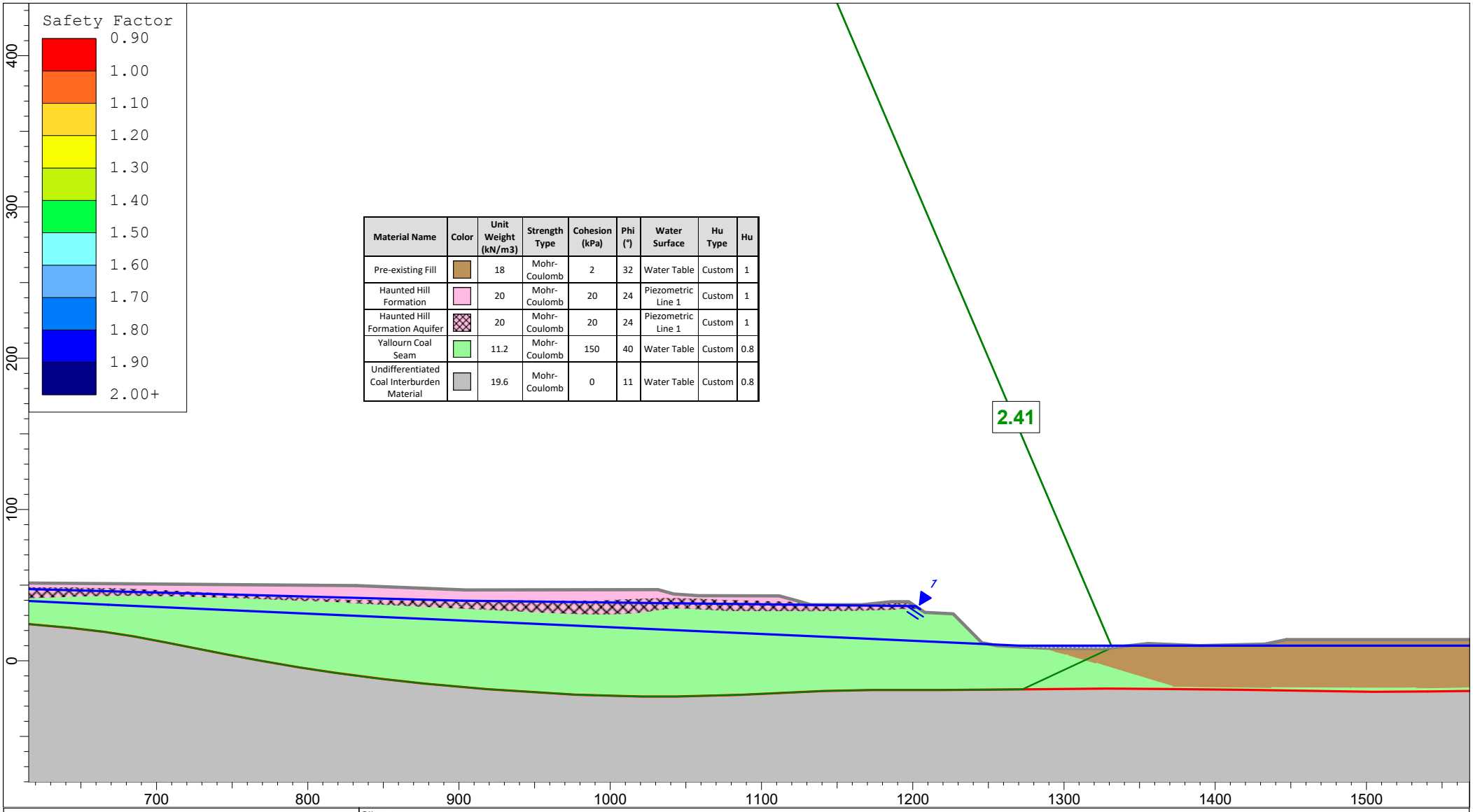
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-NB
Section:	Section 29	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



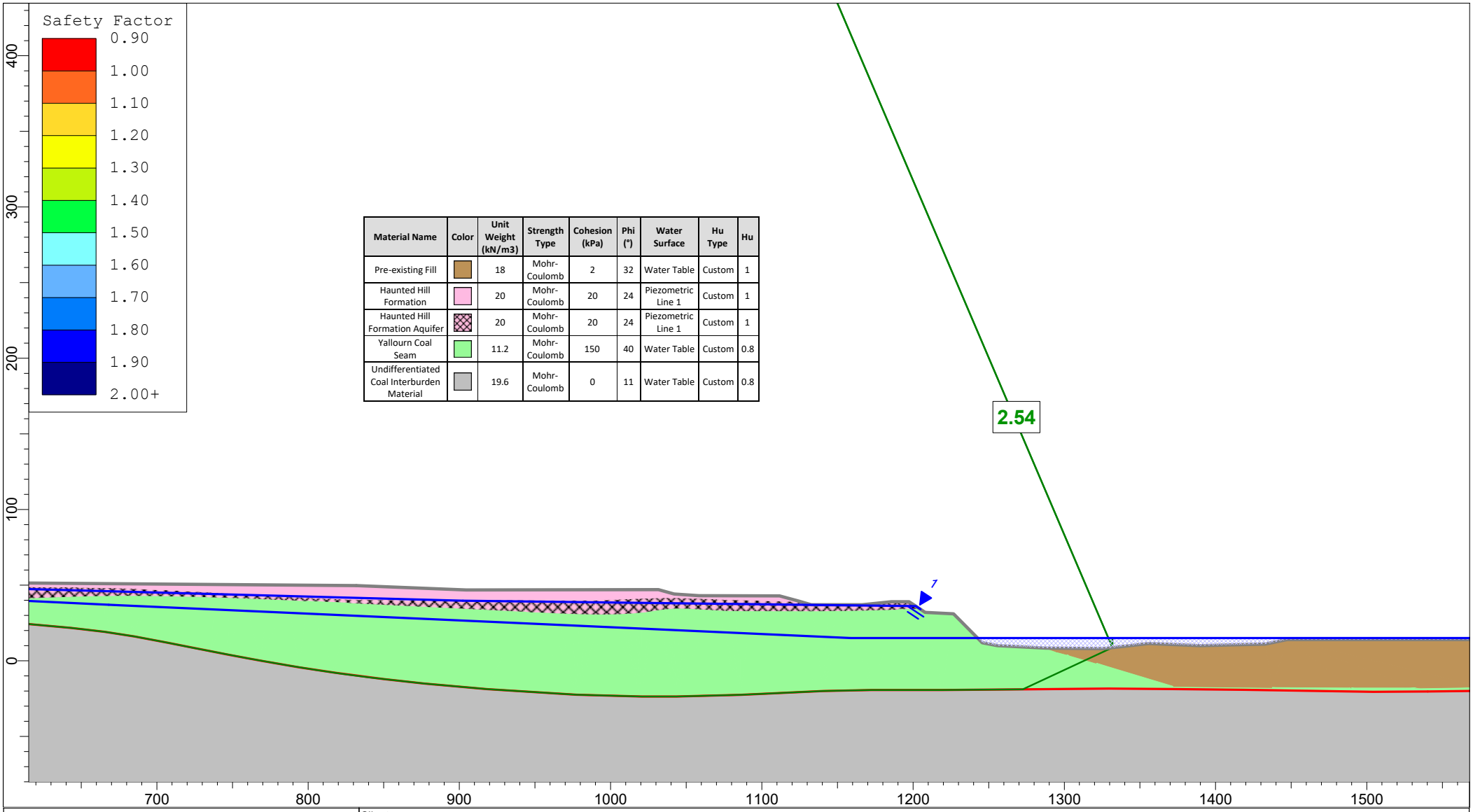
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-NB
Section:	Section 29	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



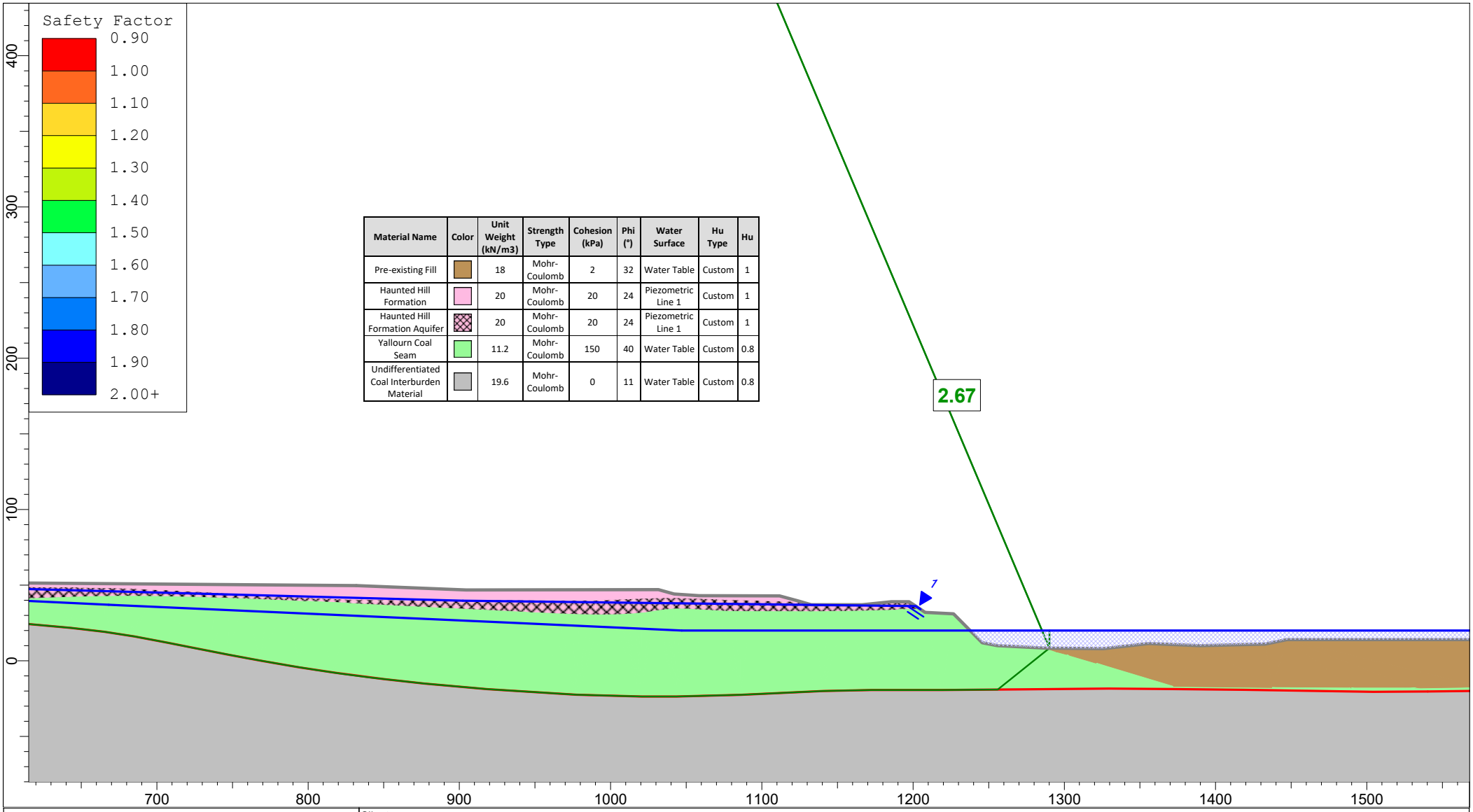
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.8
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.8

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



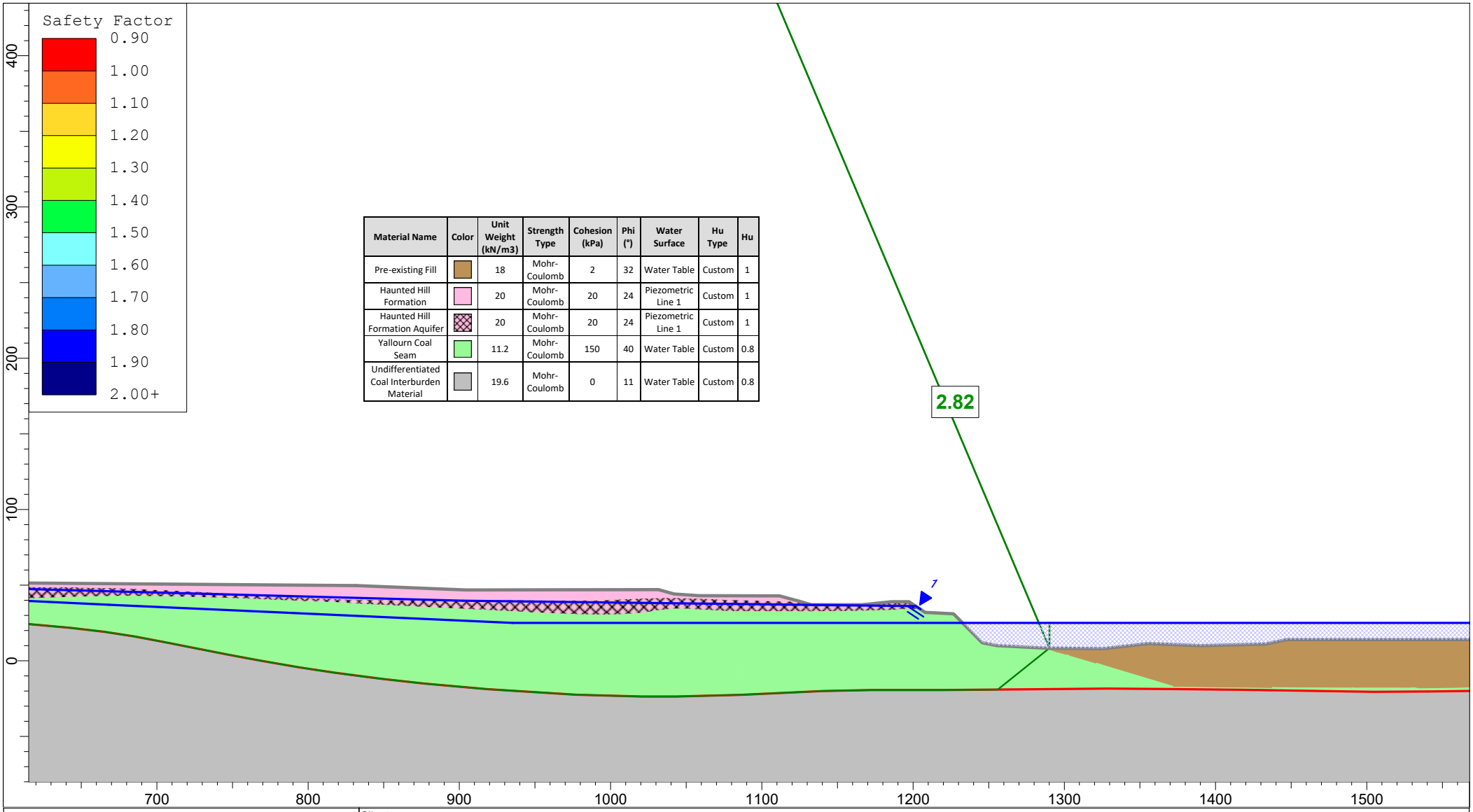
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.8
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.8

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



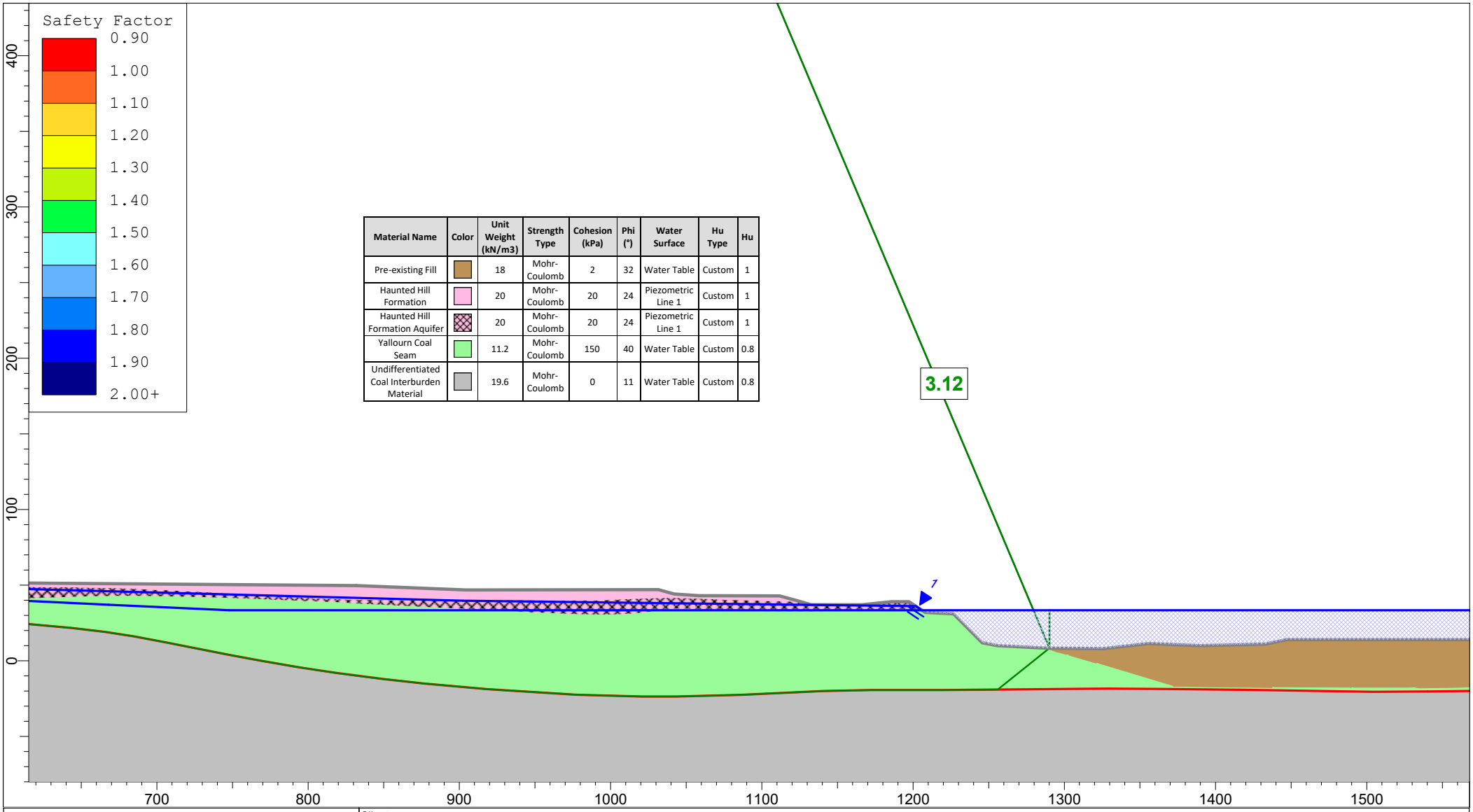
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.8
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.8

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



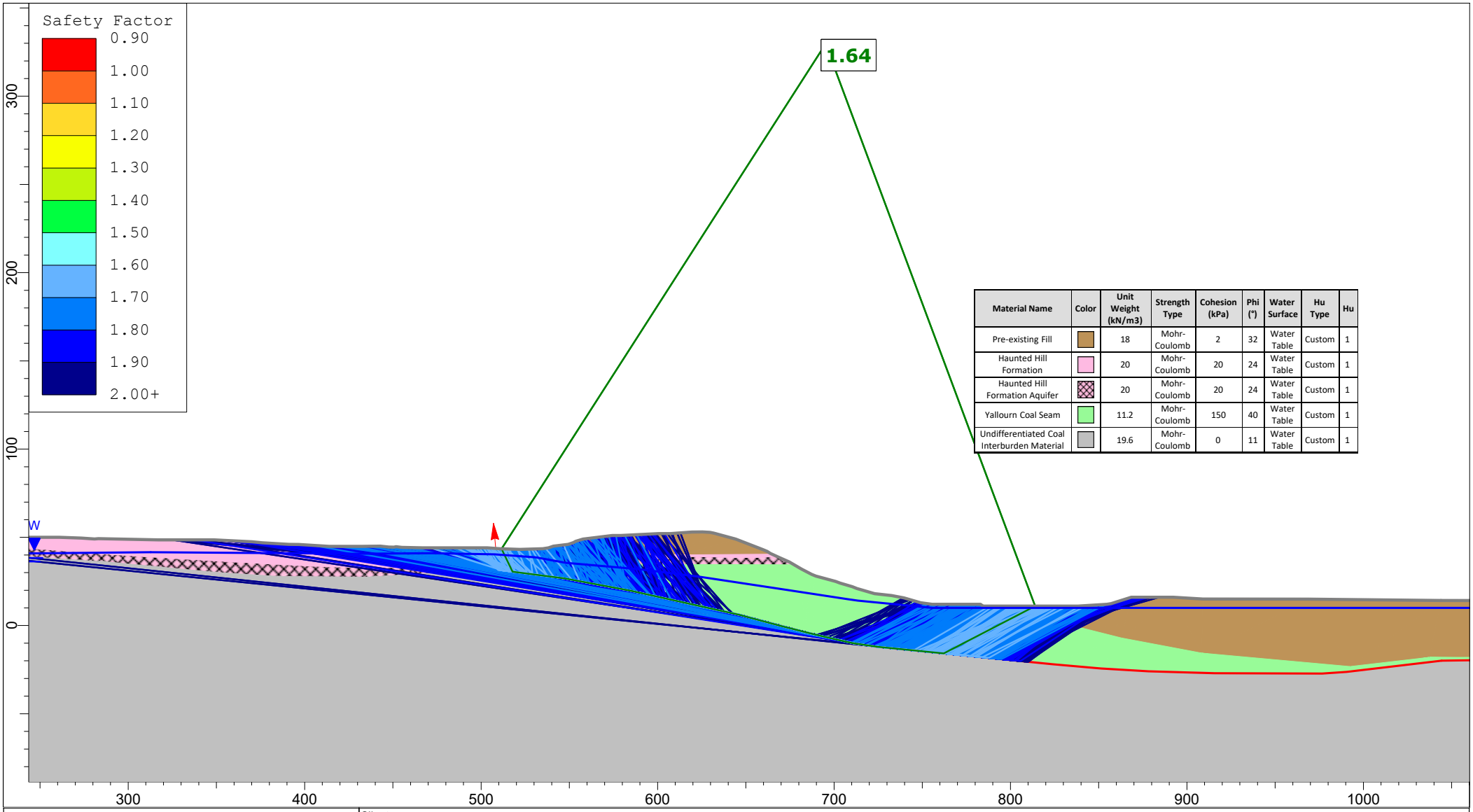
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.8
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.8

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



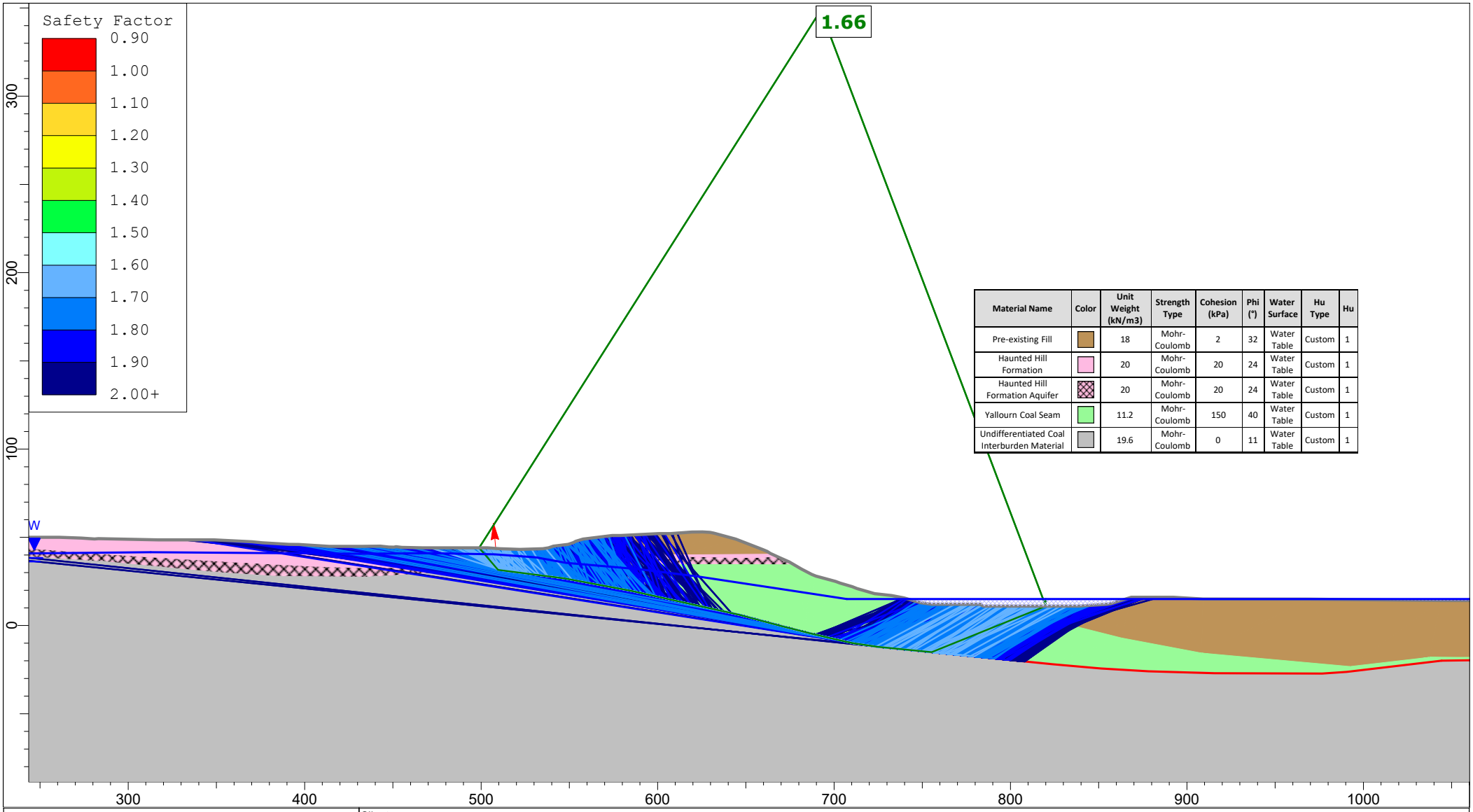
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.8
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.8

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



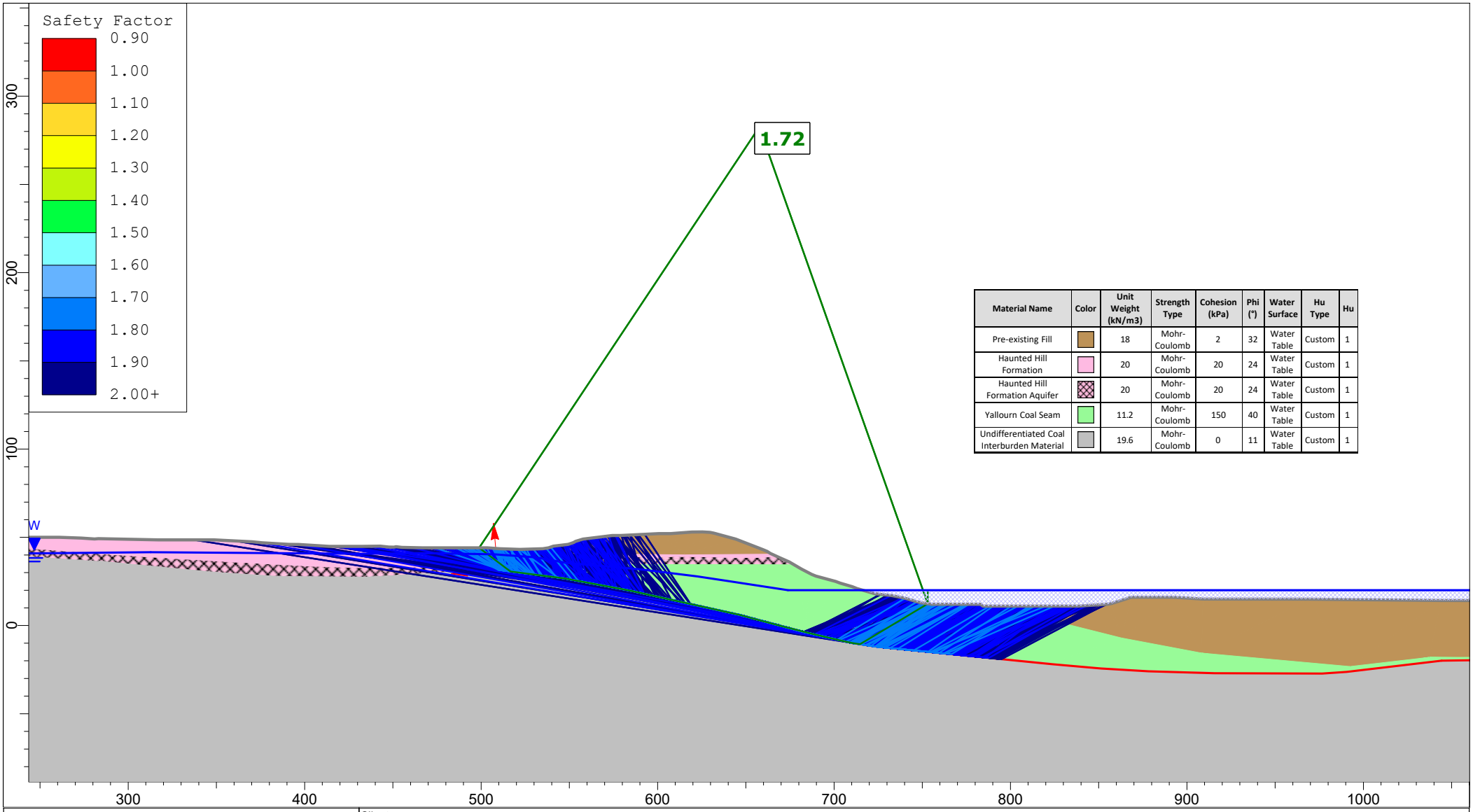
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YTF-LS**
Section:	**Section 31**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 10 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



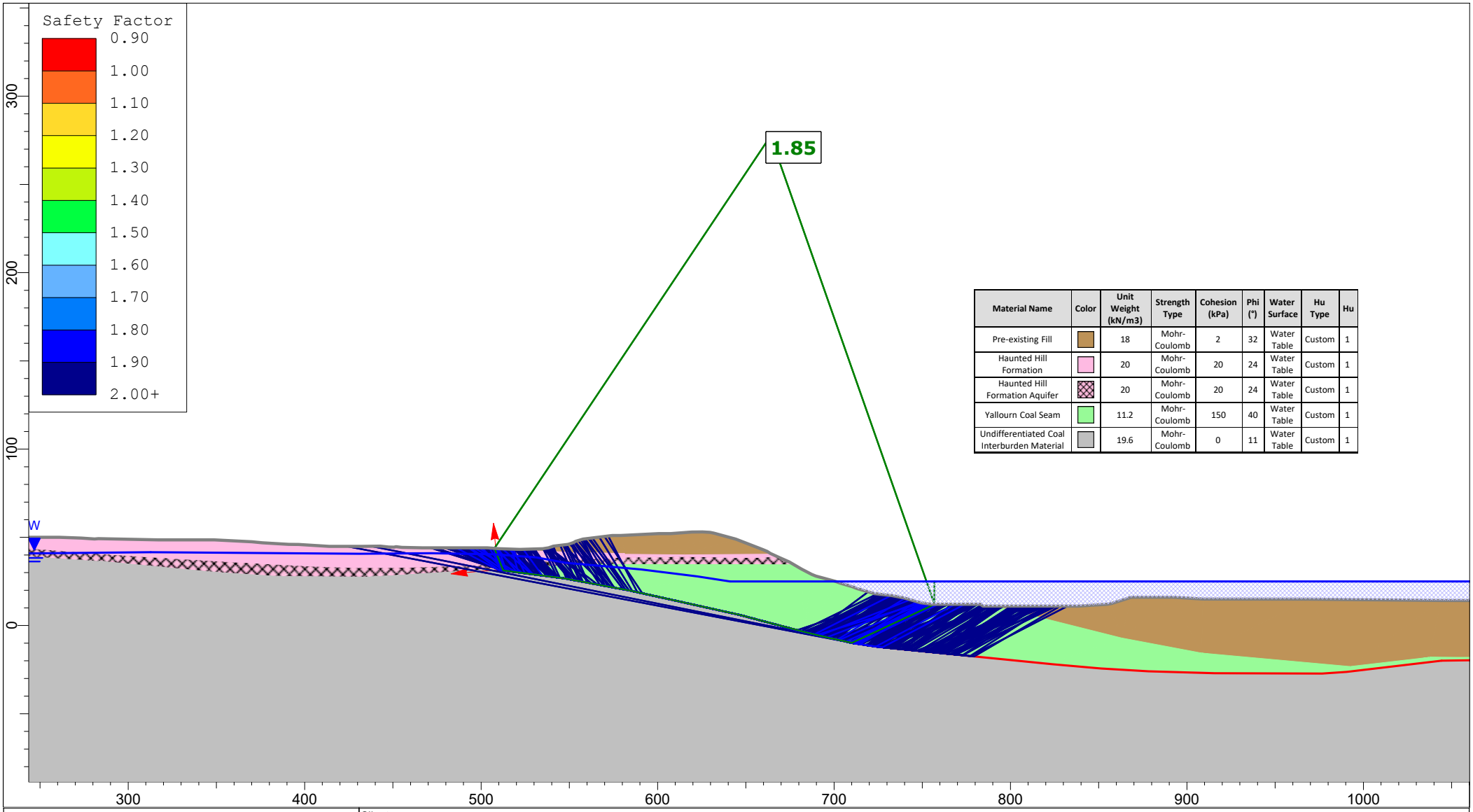
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YTF-LS**
Section:	**Section 31**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 15 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



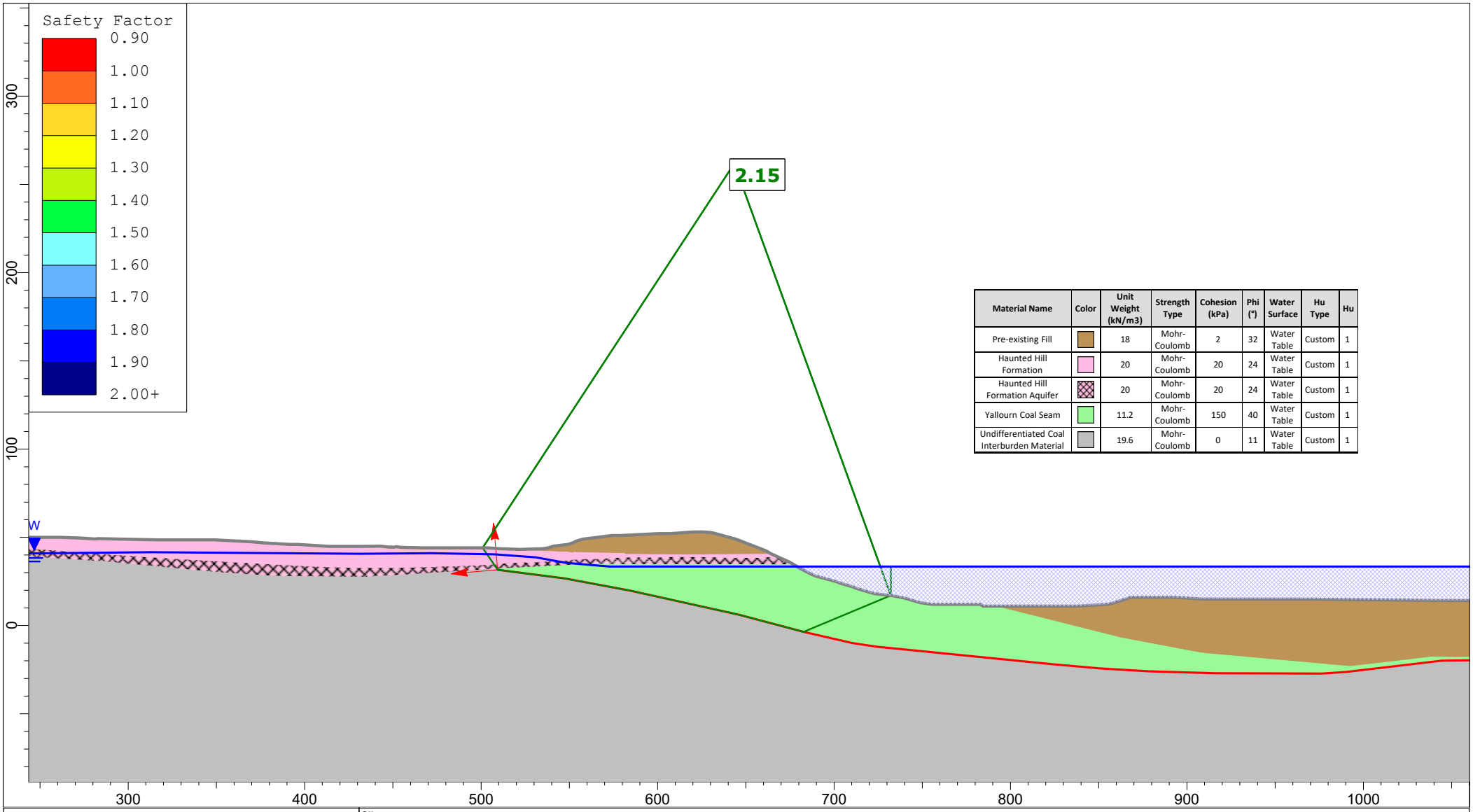
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-LS
Section:	Section 31	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



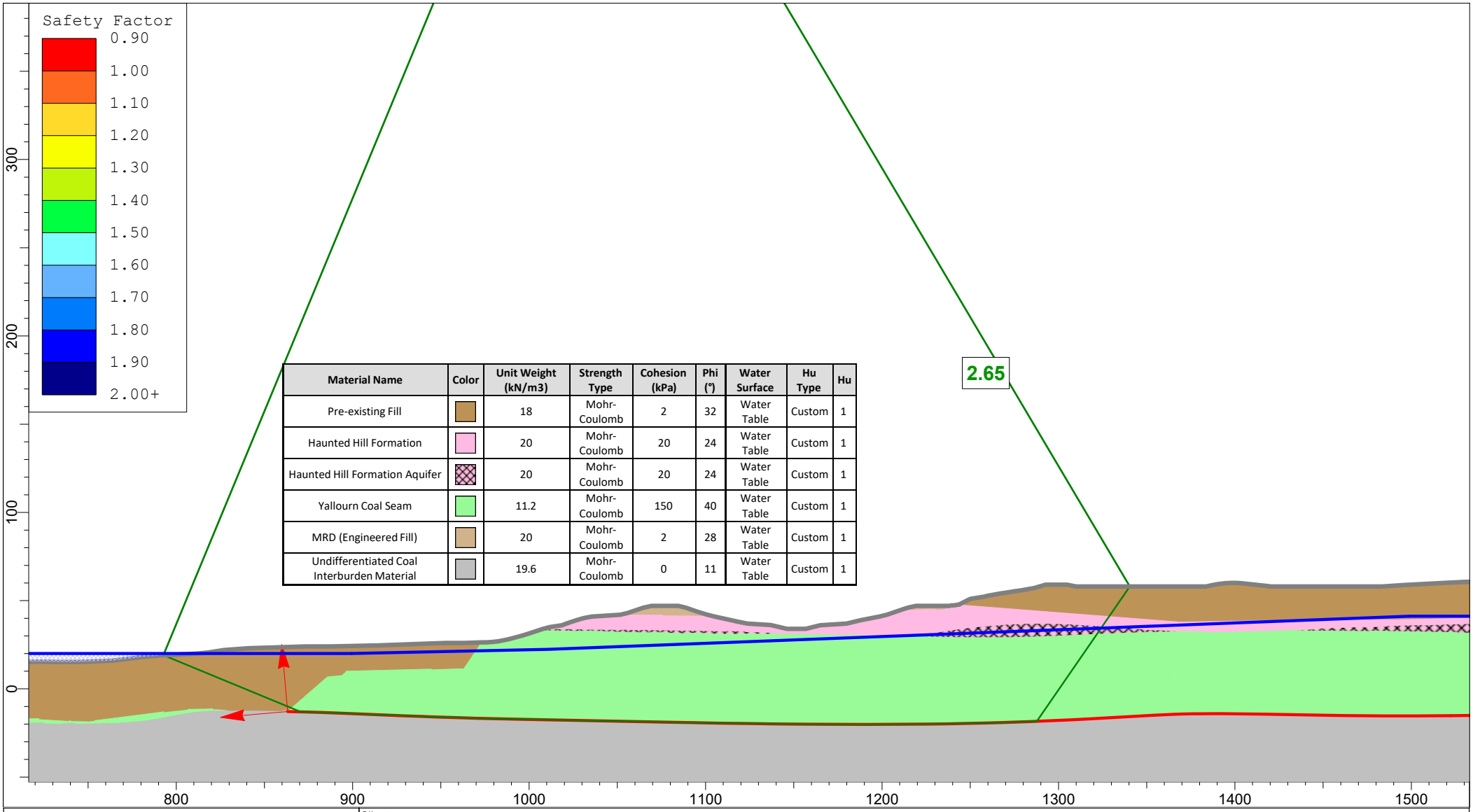
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-LS
Section:	Section 31	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



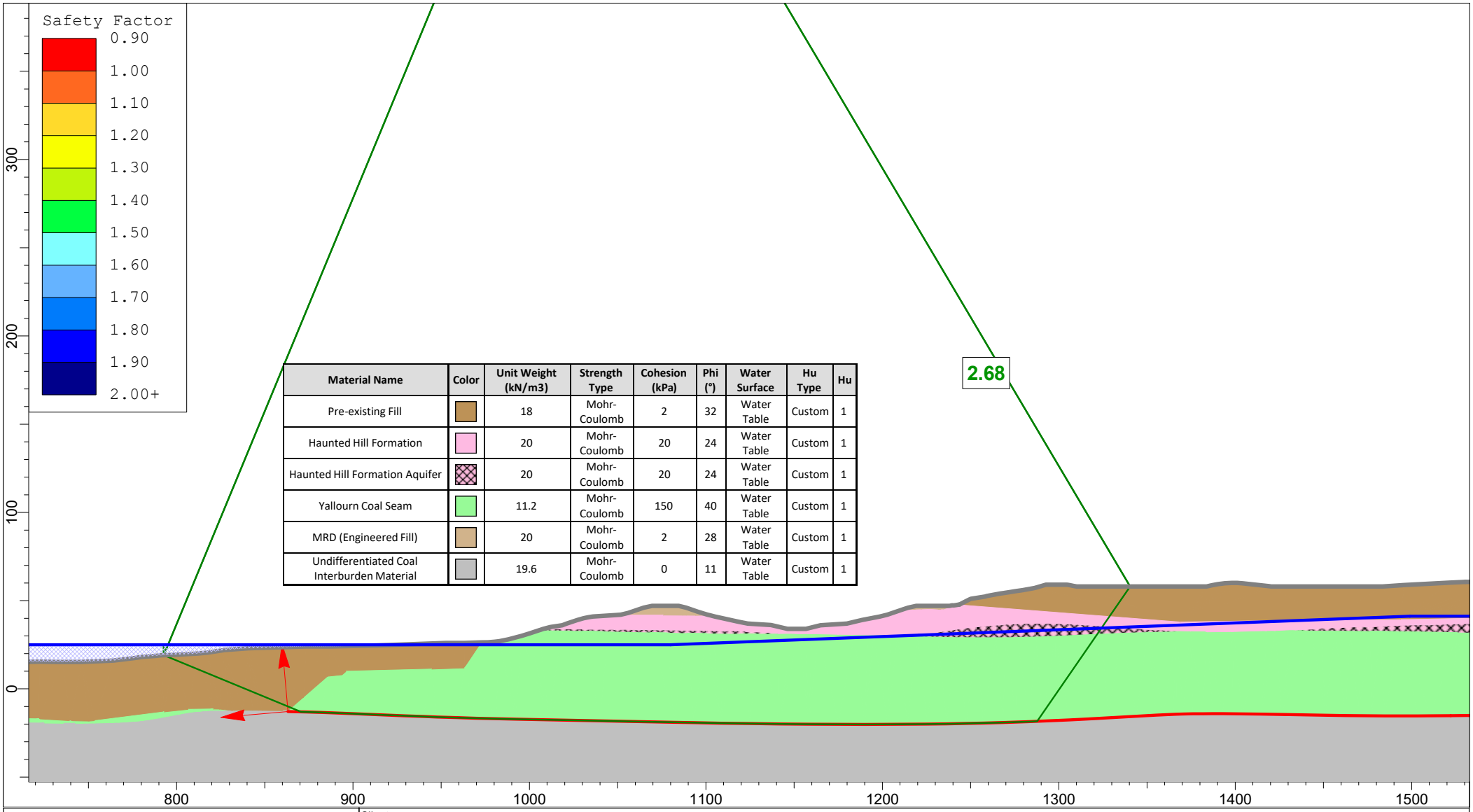
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-LS
Section:	Section 31	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



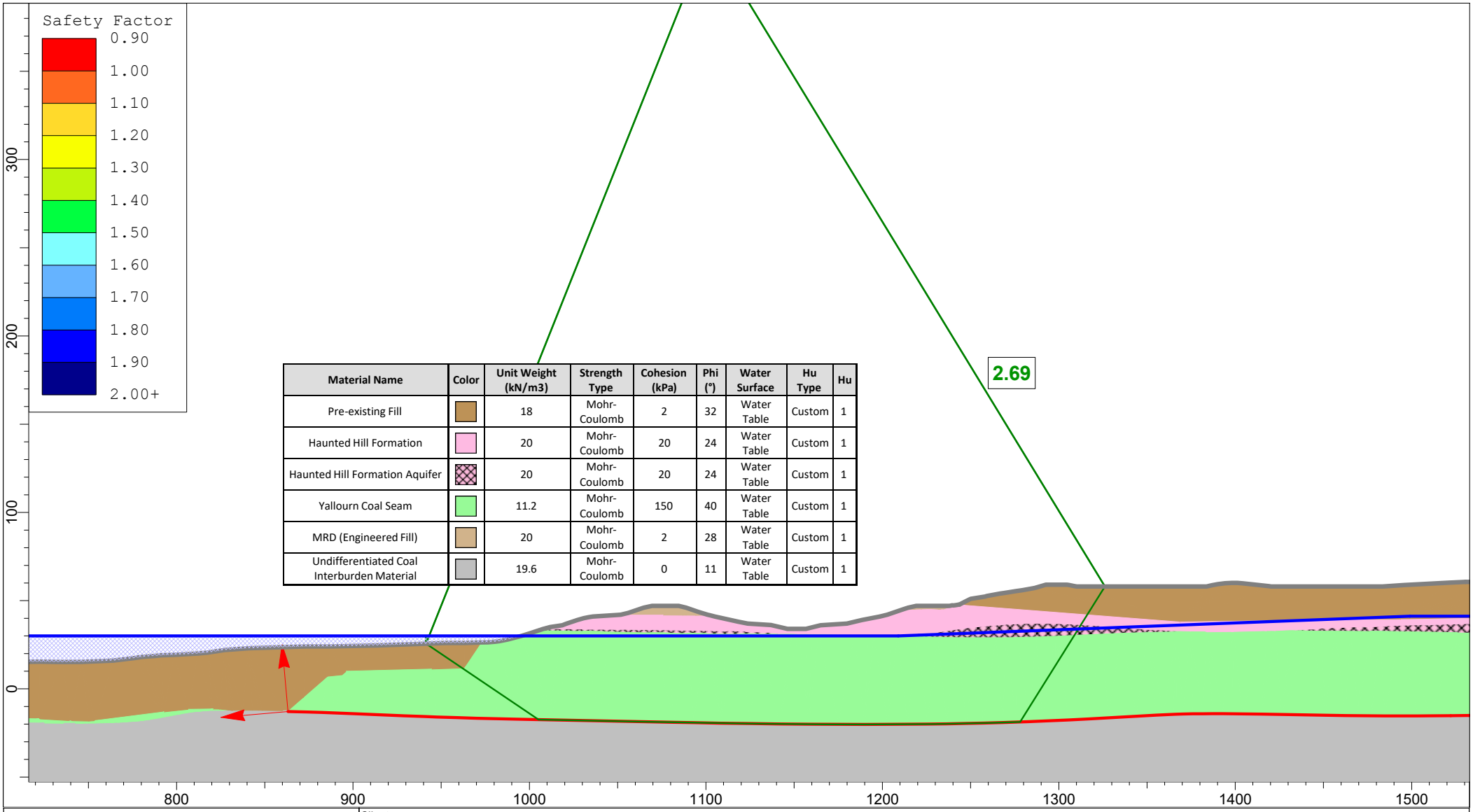
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



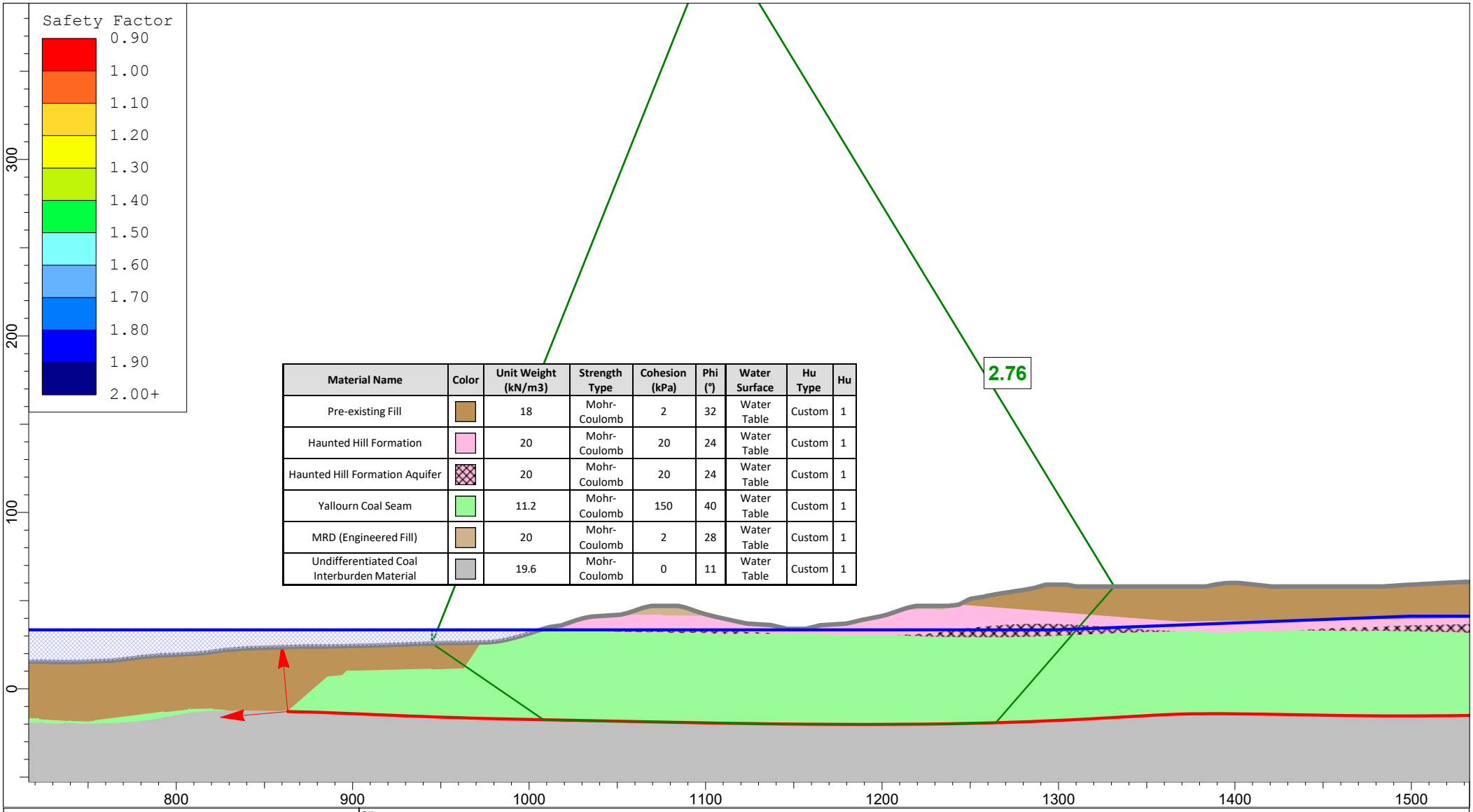
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



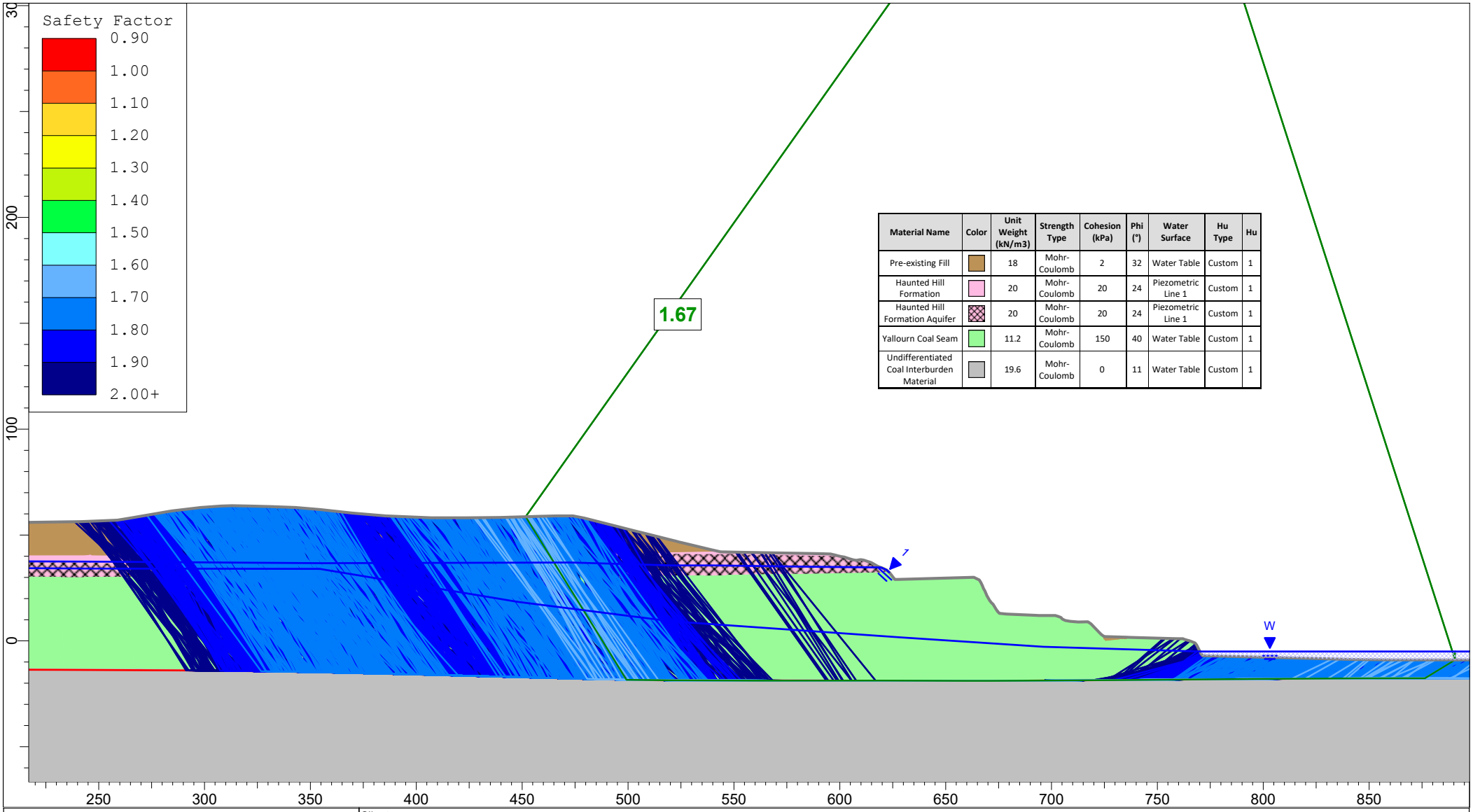
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 30 mRL
Notes:	Lower Bound Interseam Shear Strength		



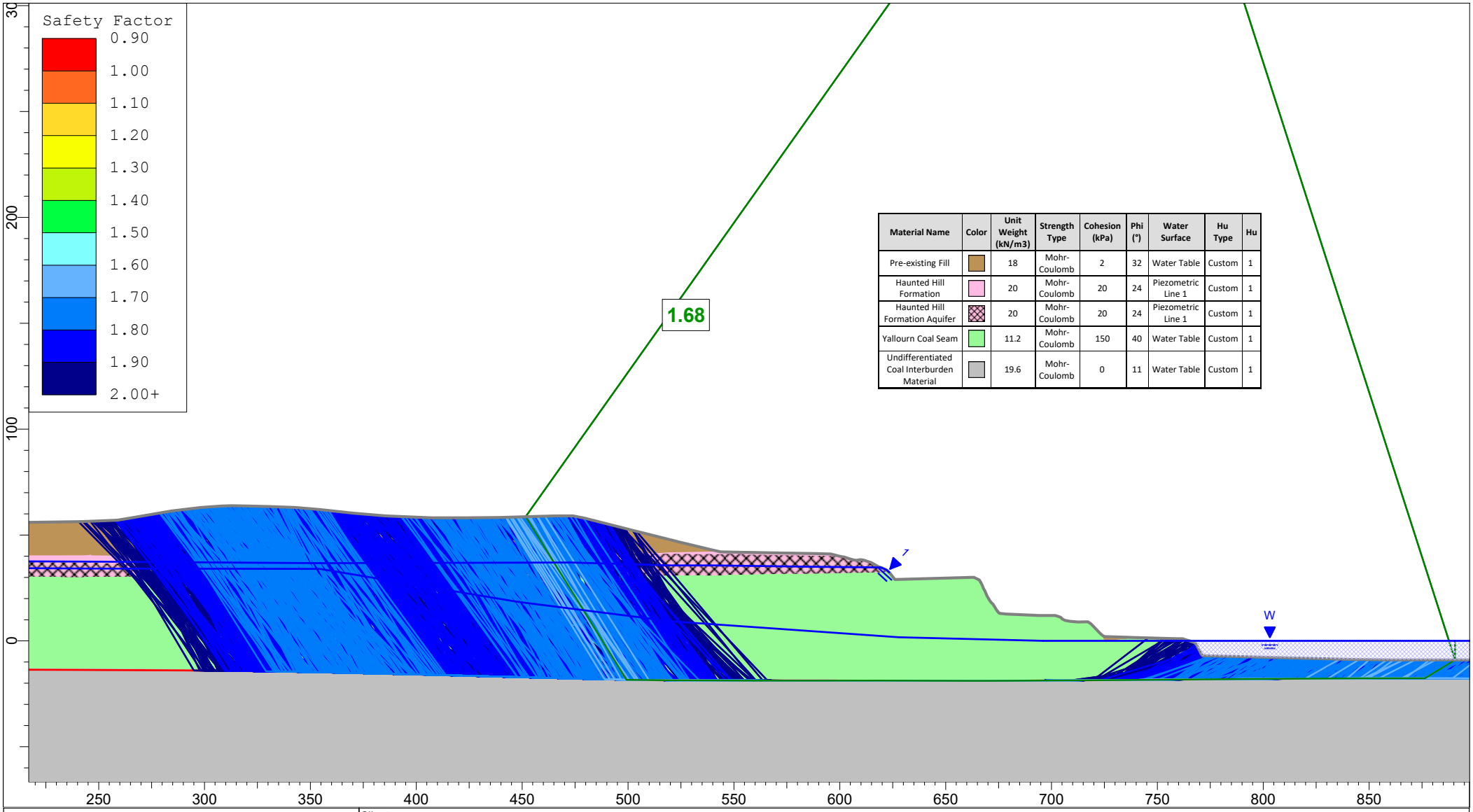
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



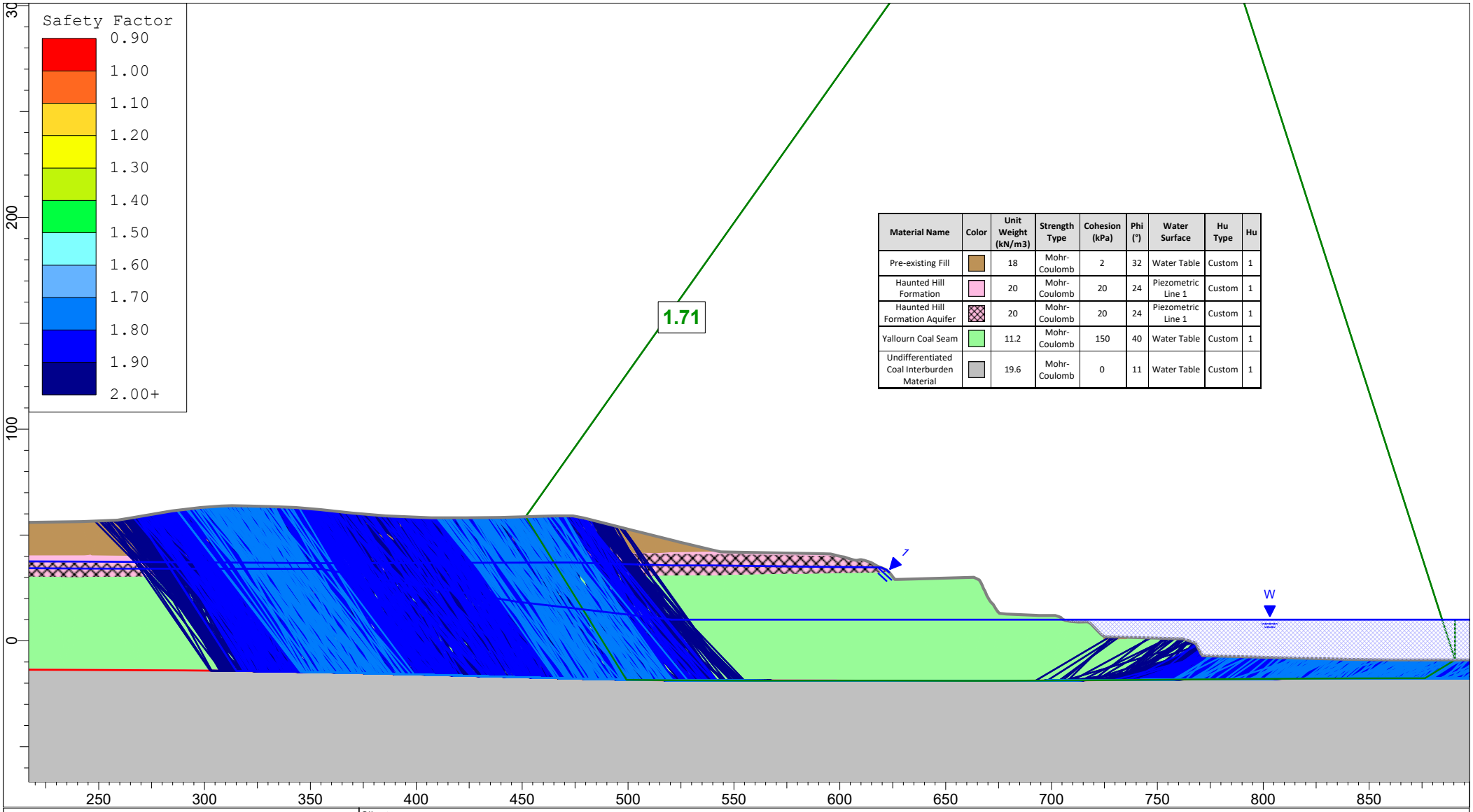
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 02	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength		



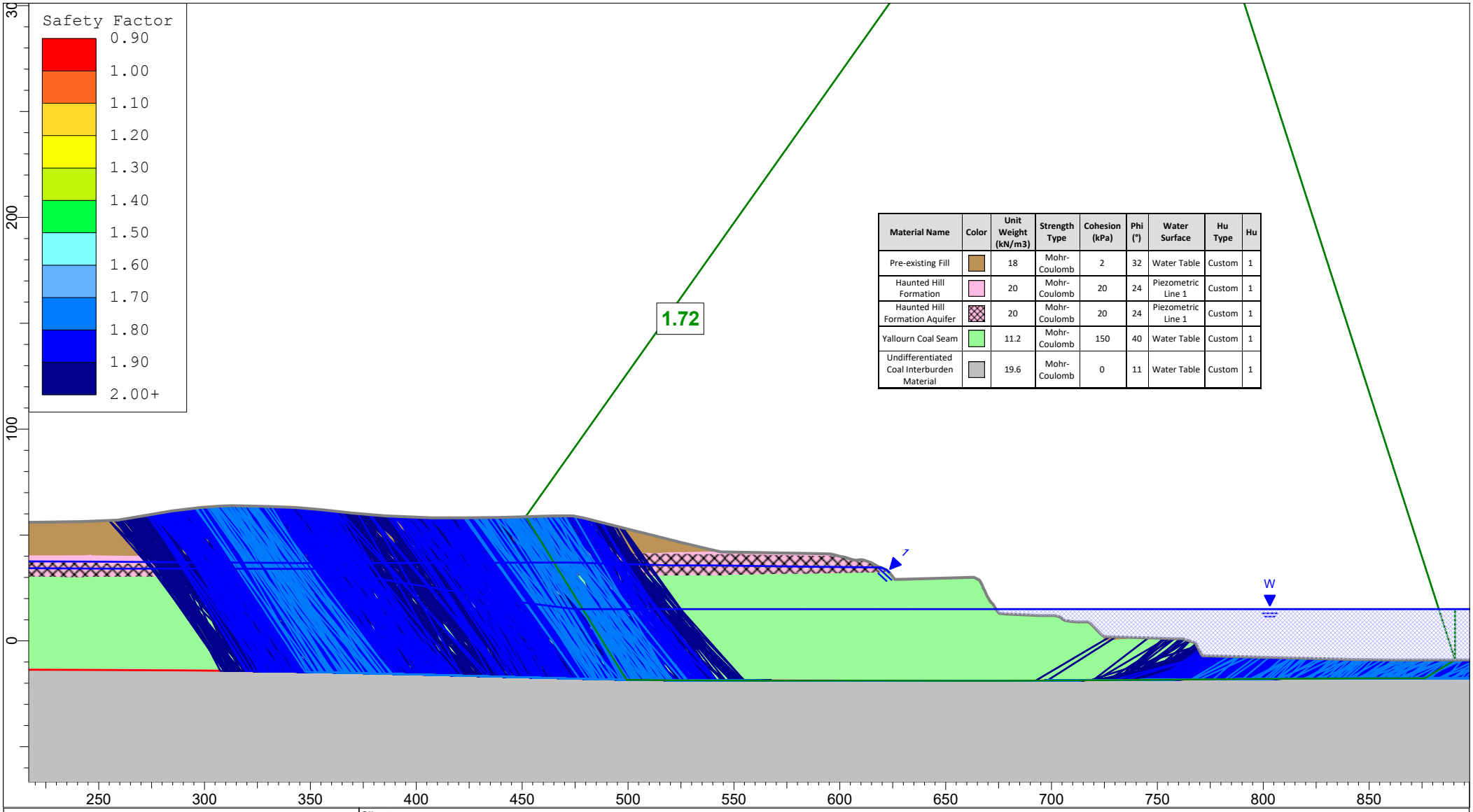
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 02	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



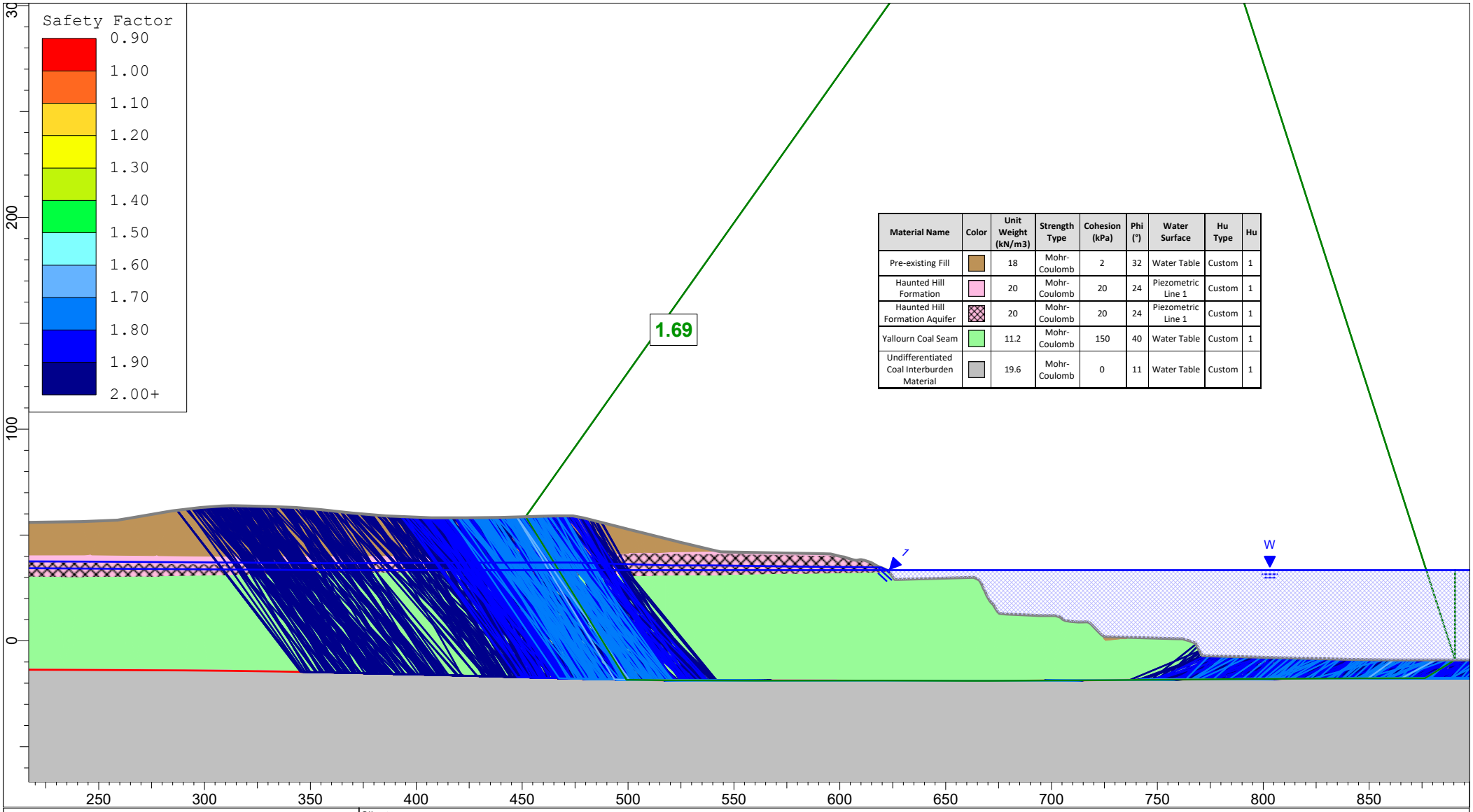
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 02	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



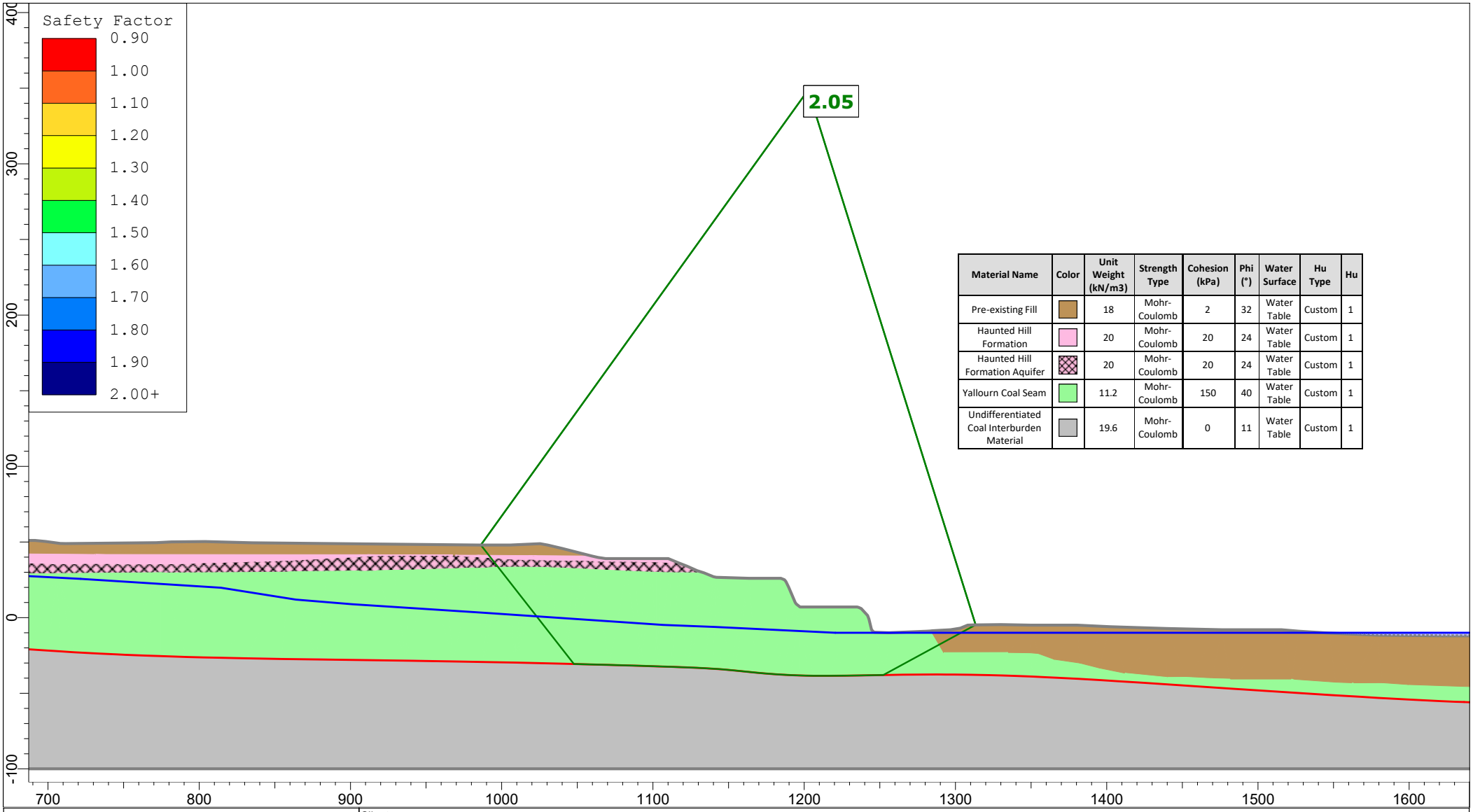
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 02	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



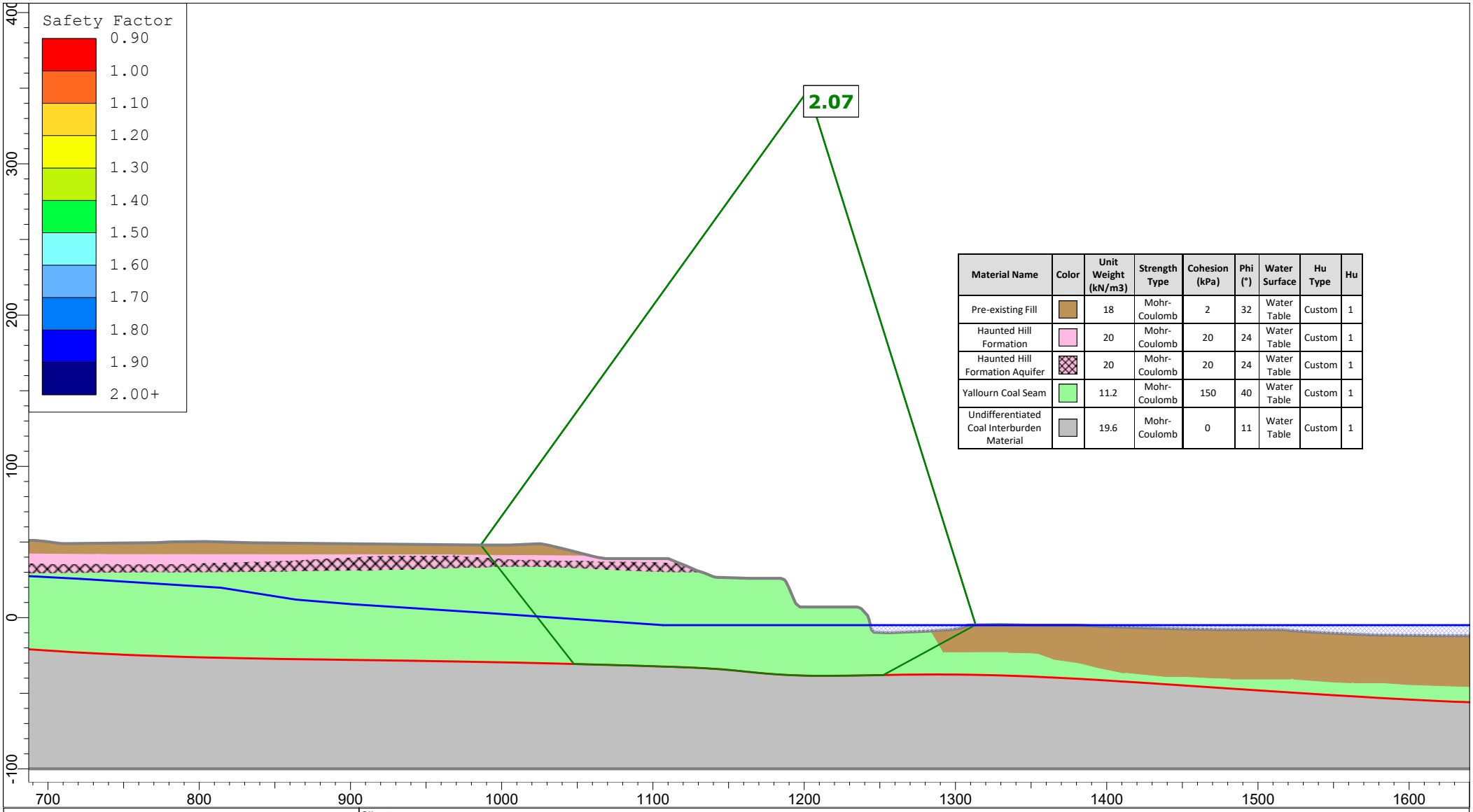
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 02	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



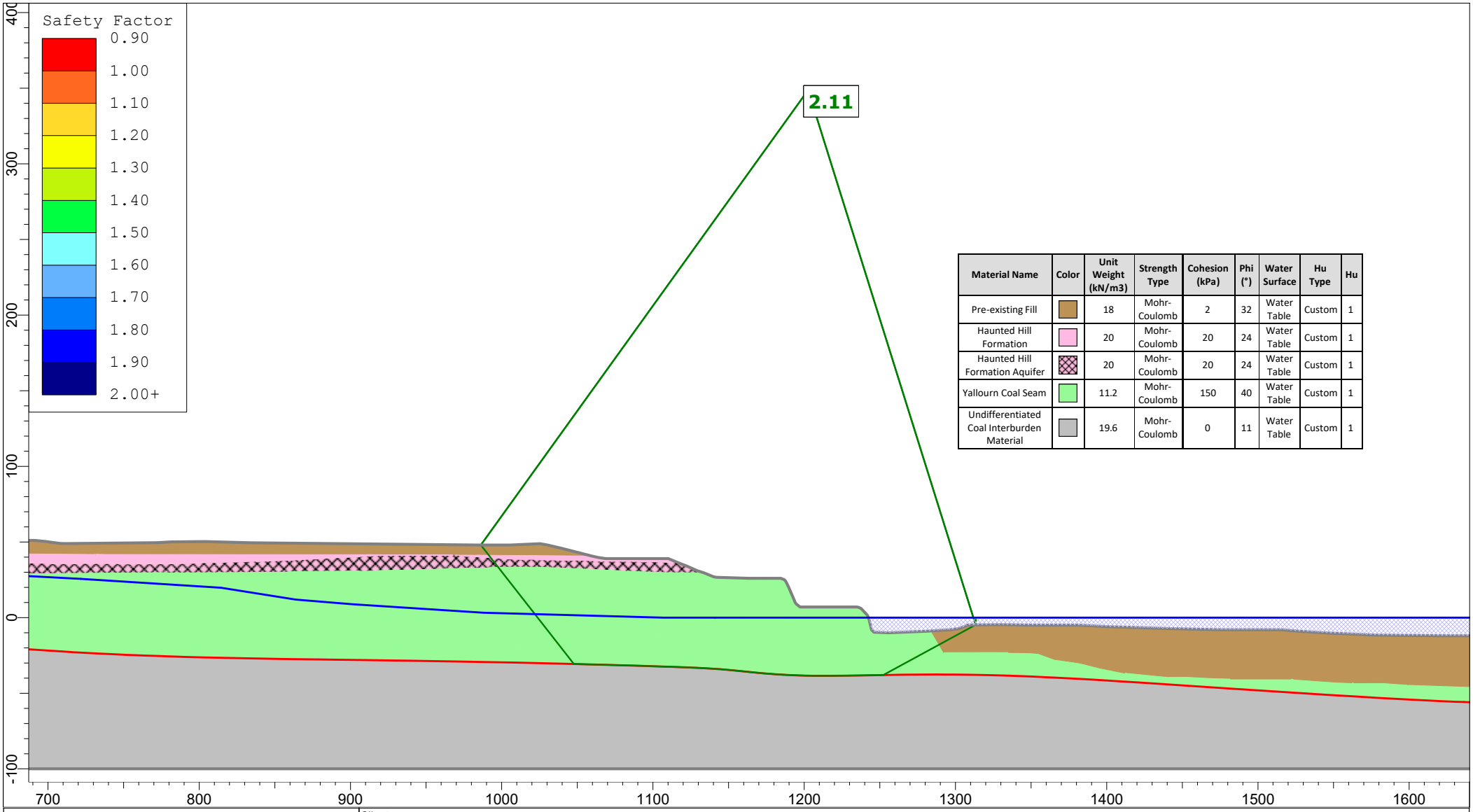
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (east)
Section:	Section 03	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength		



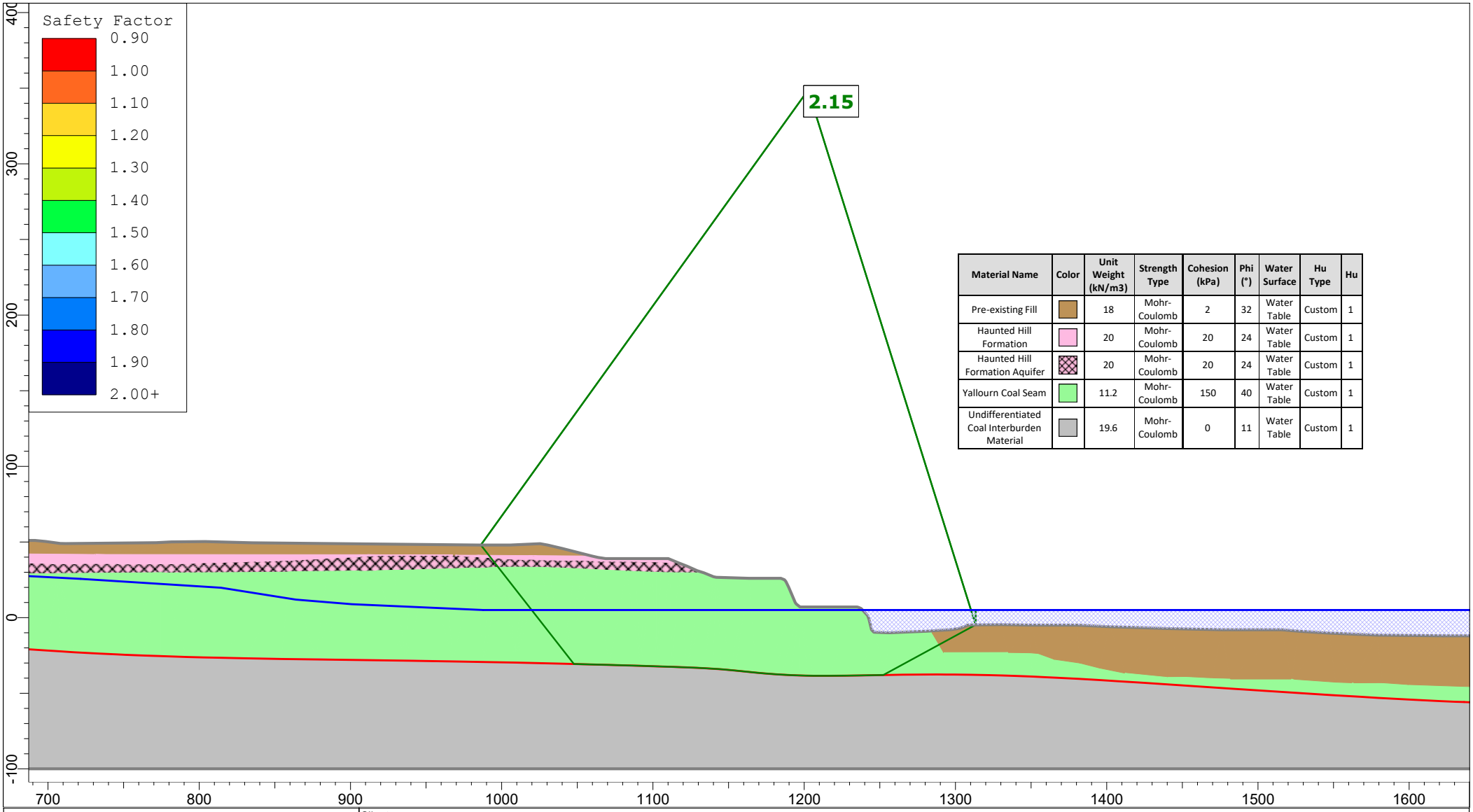
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (east)
Section:	Section 03	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength		



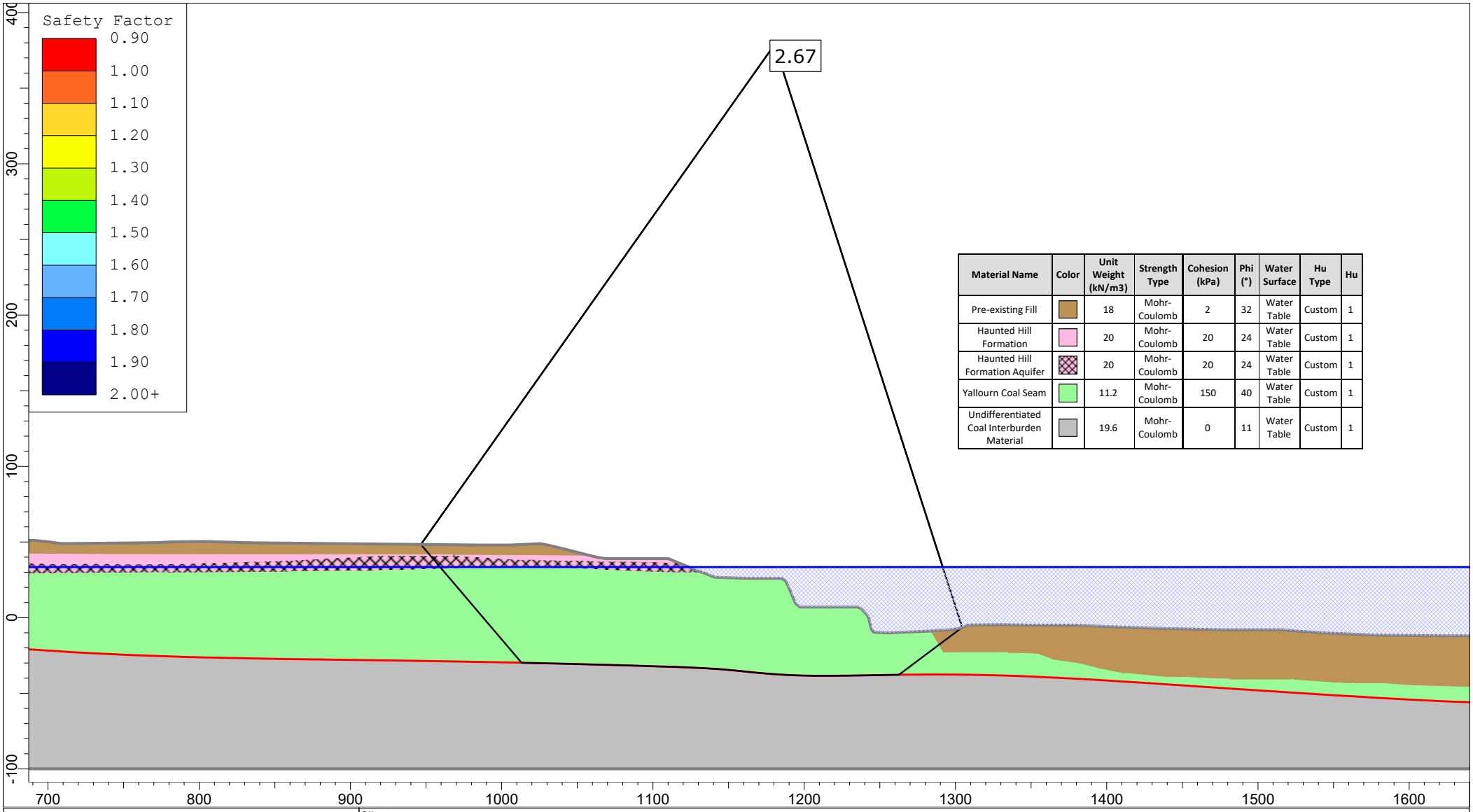
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (east)
Section:	Section 03	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



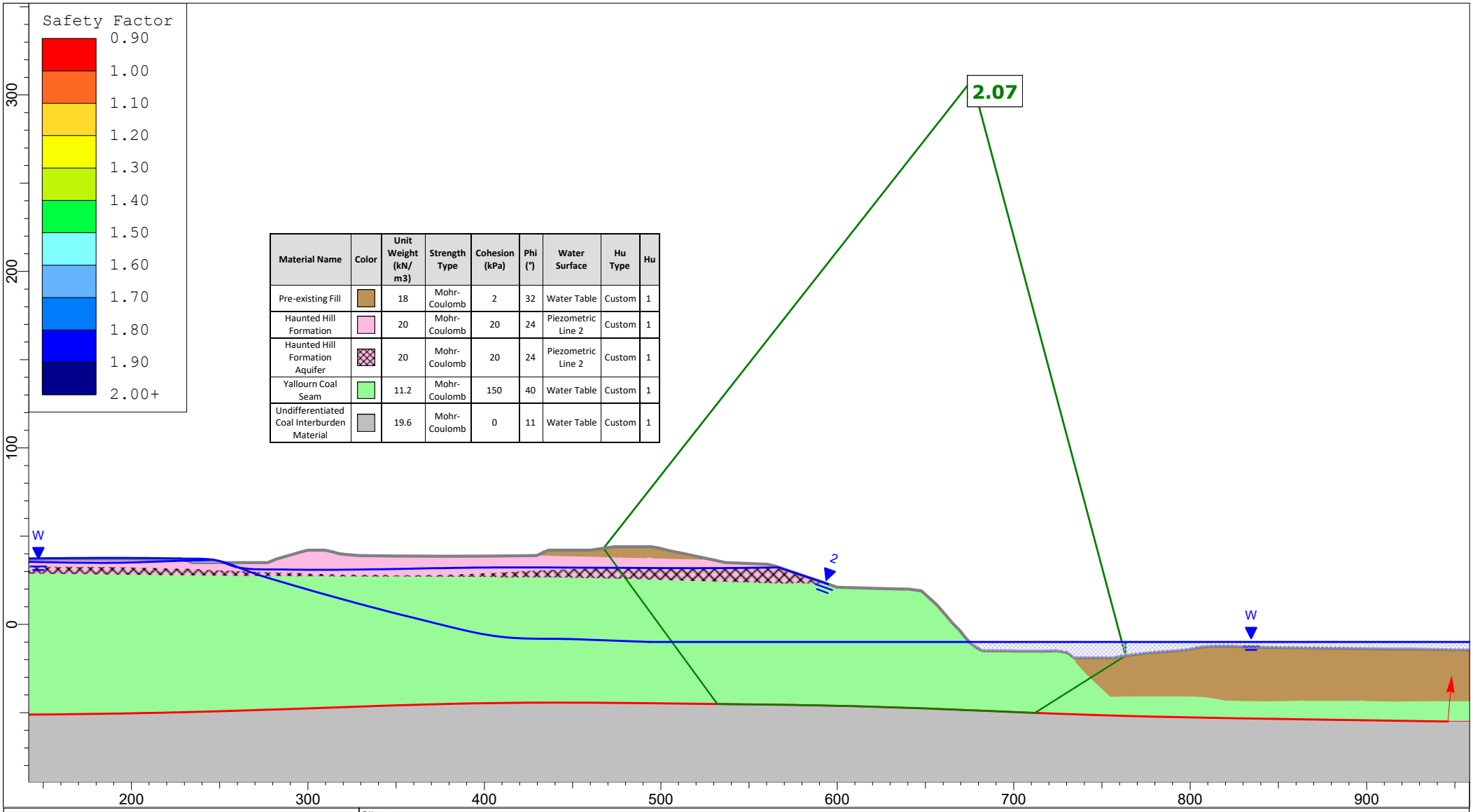
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (east)
Section:	Section 03	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



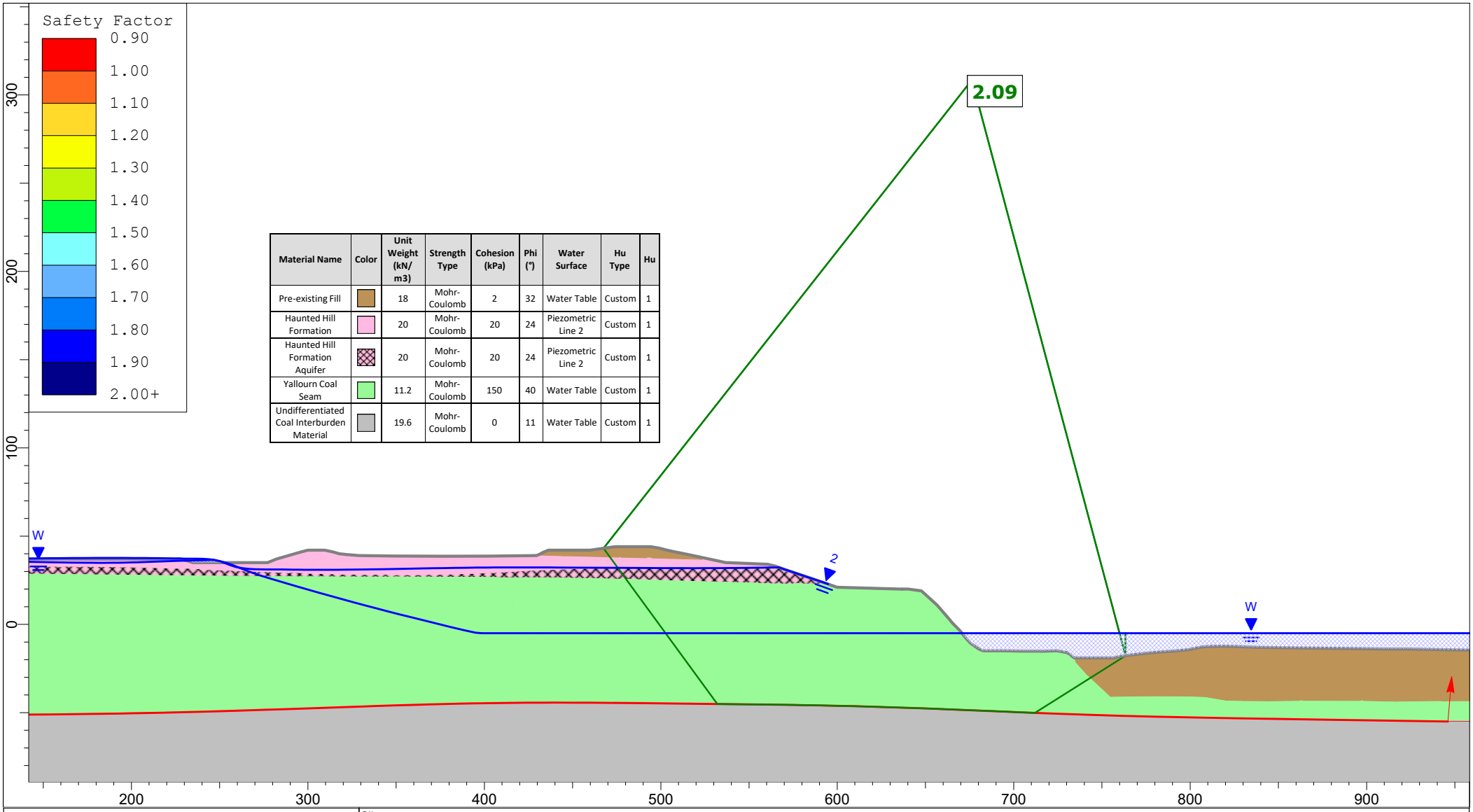
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YEF-NB (east)**
Section:	**Section 03**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 33.4 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



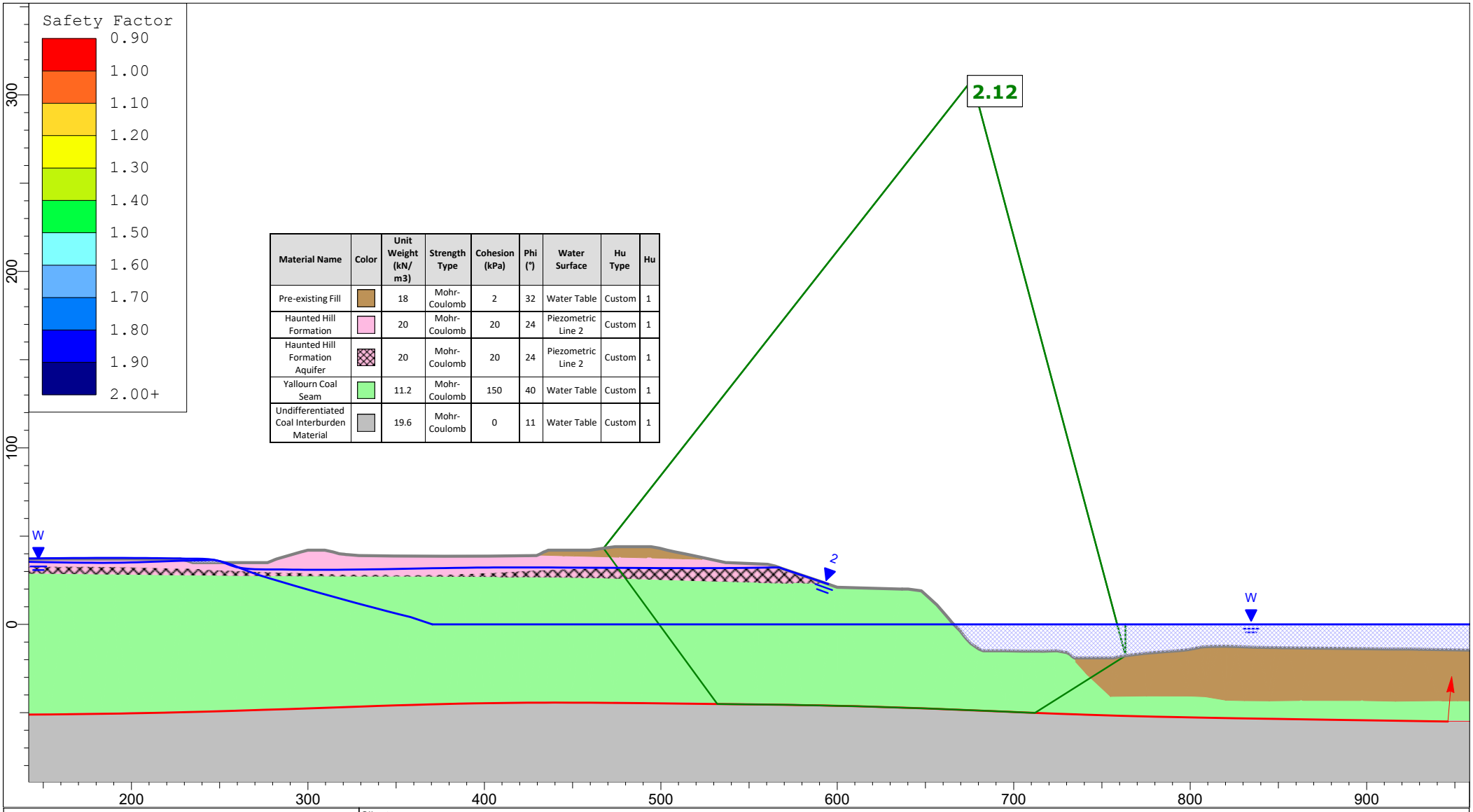
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength		



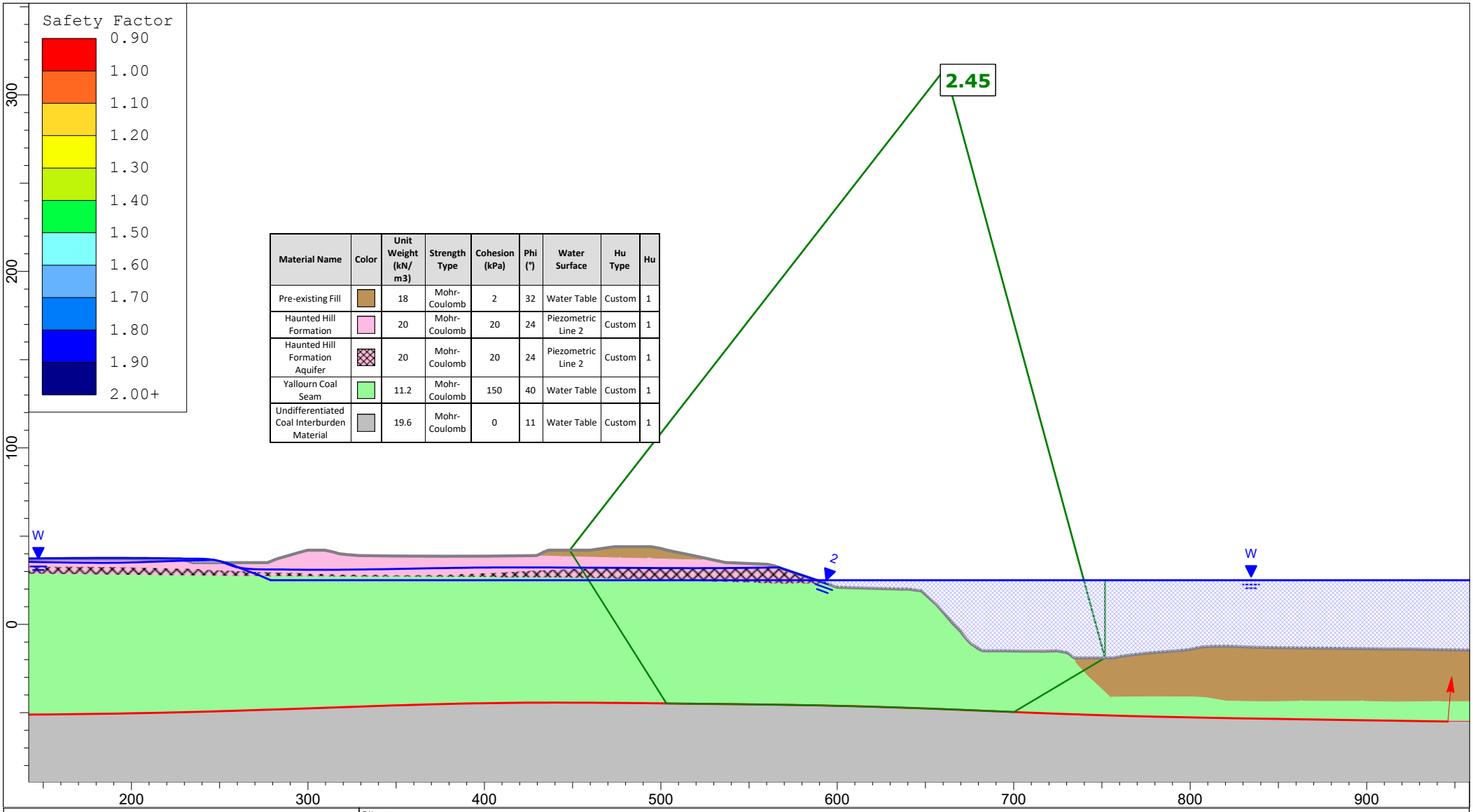
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength		



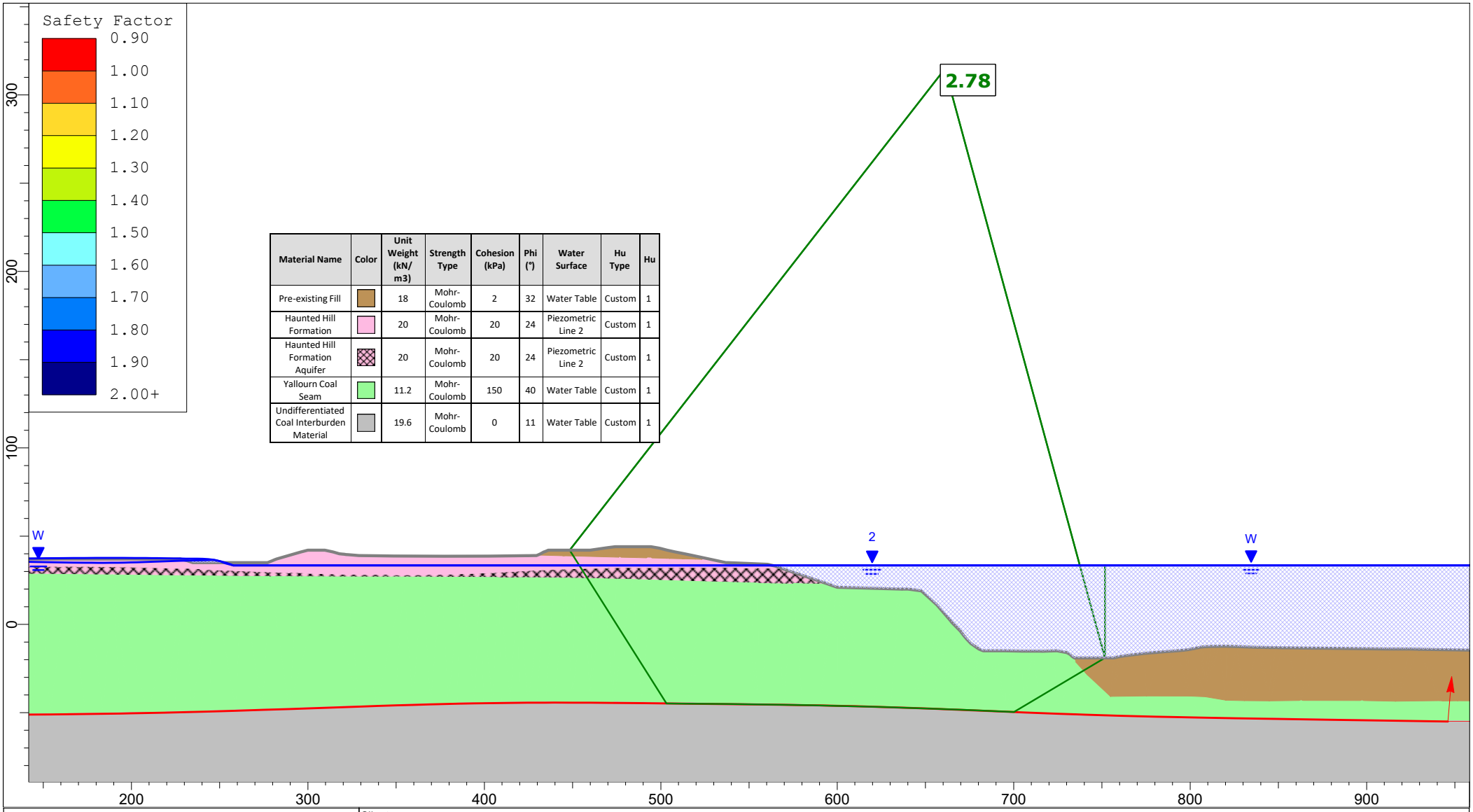
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



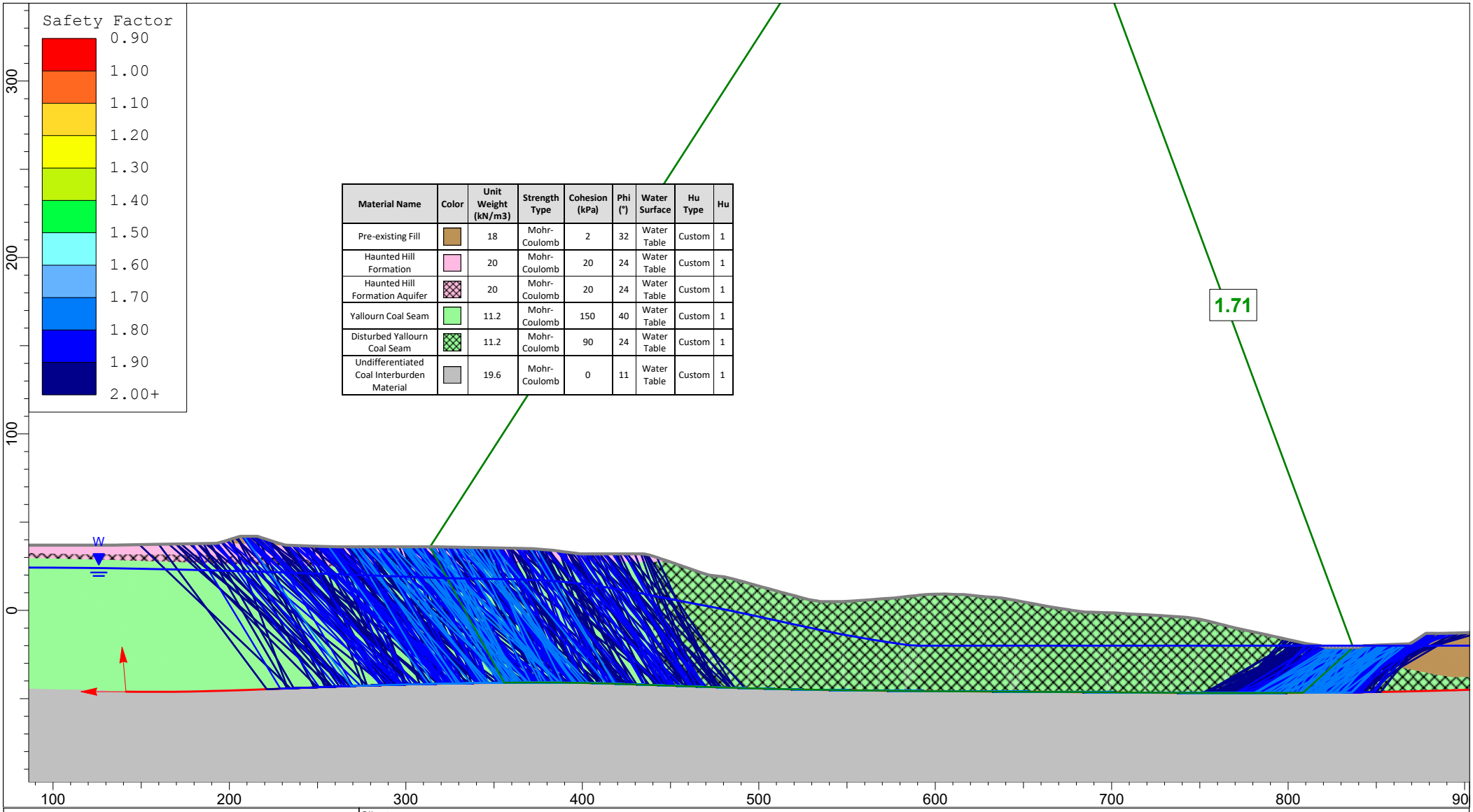
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



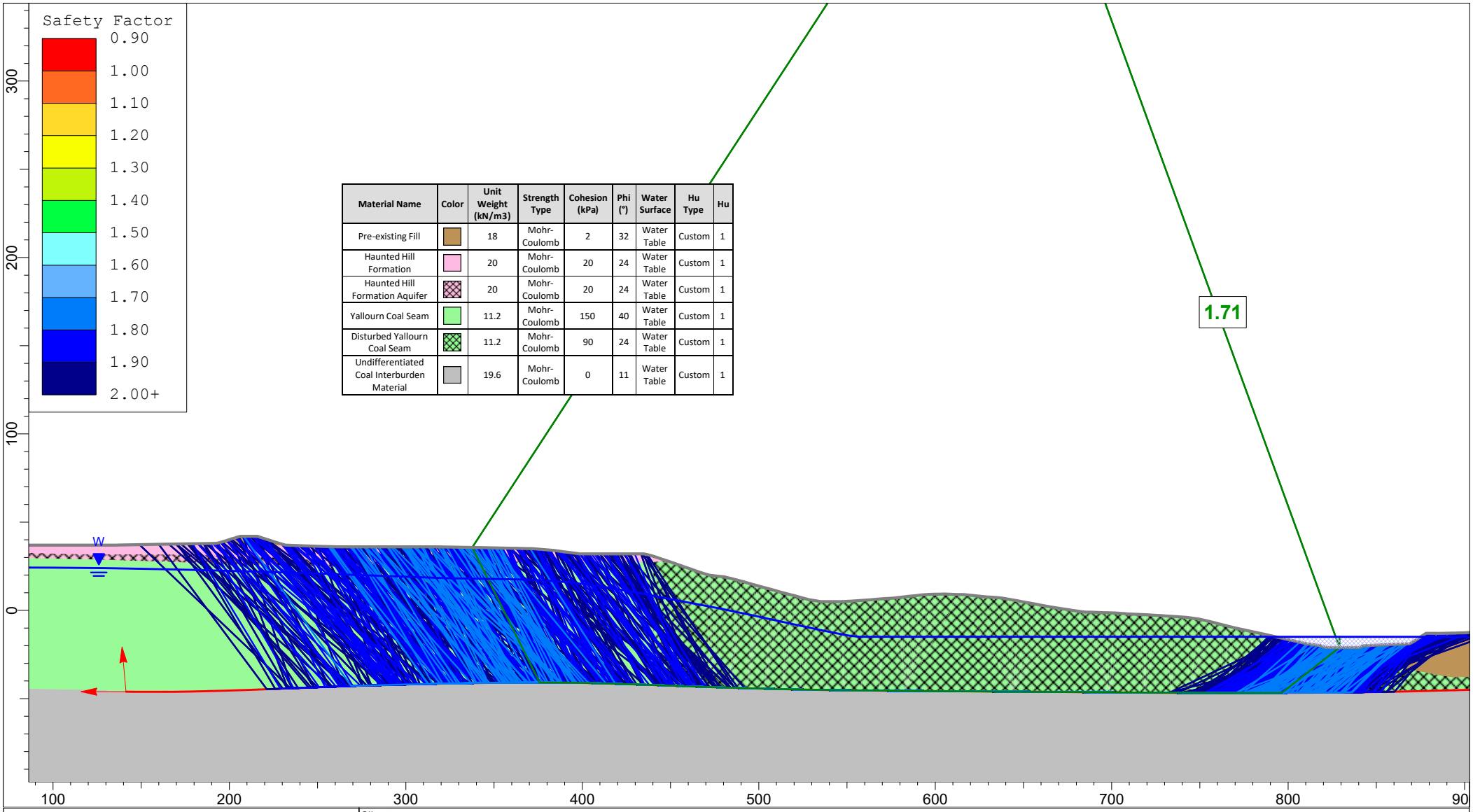
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



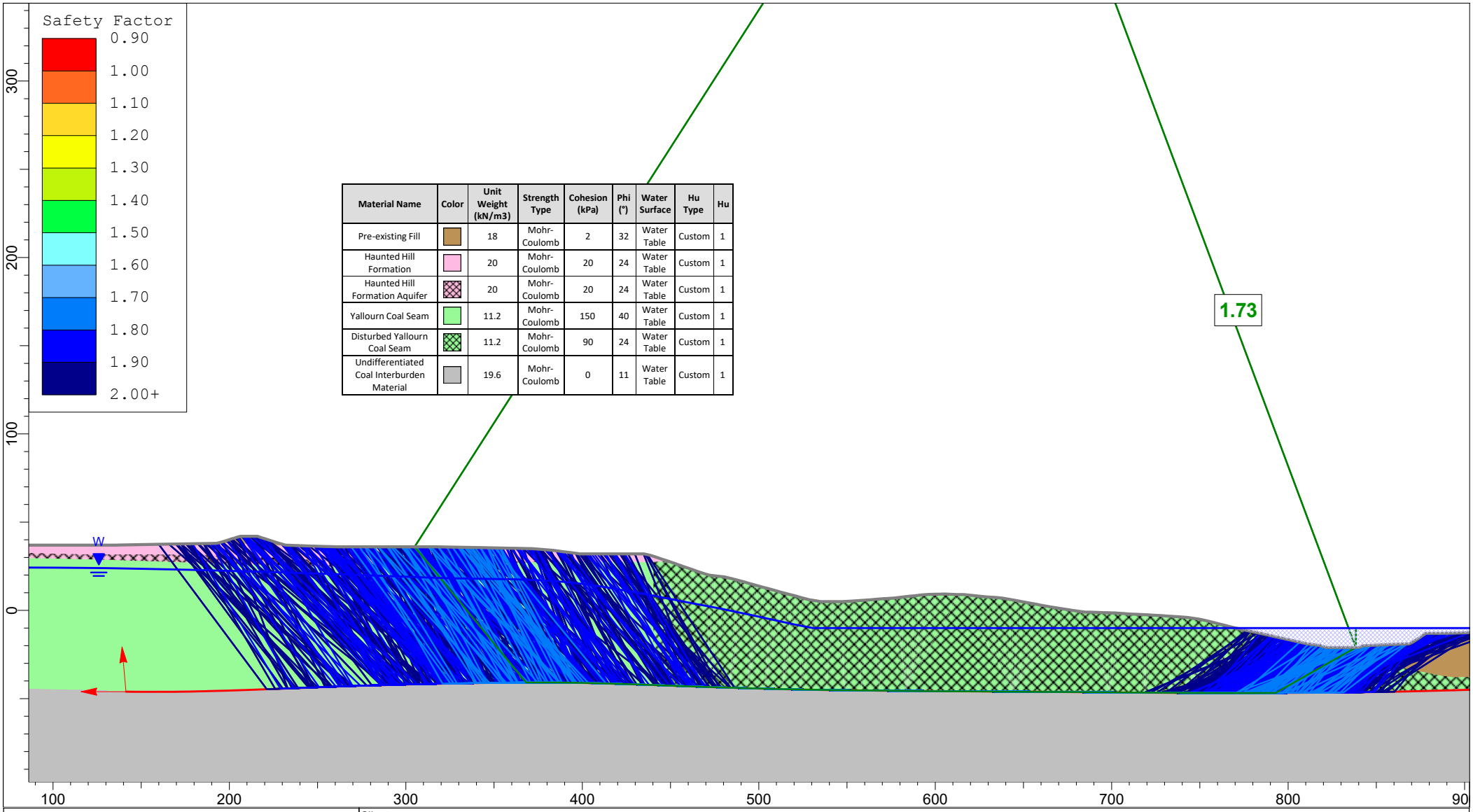
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -20 mRL
Notes:	Lower Bound Interseam Shear Strength		



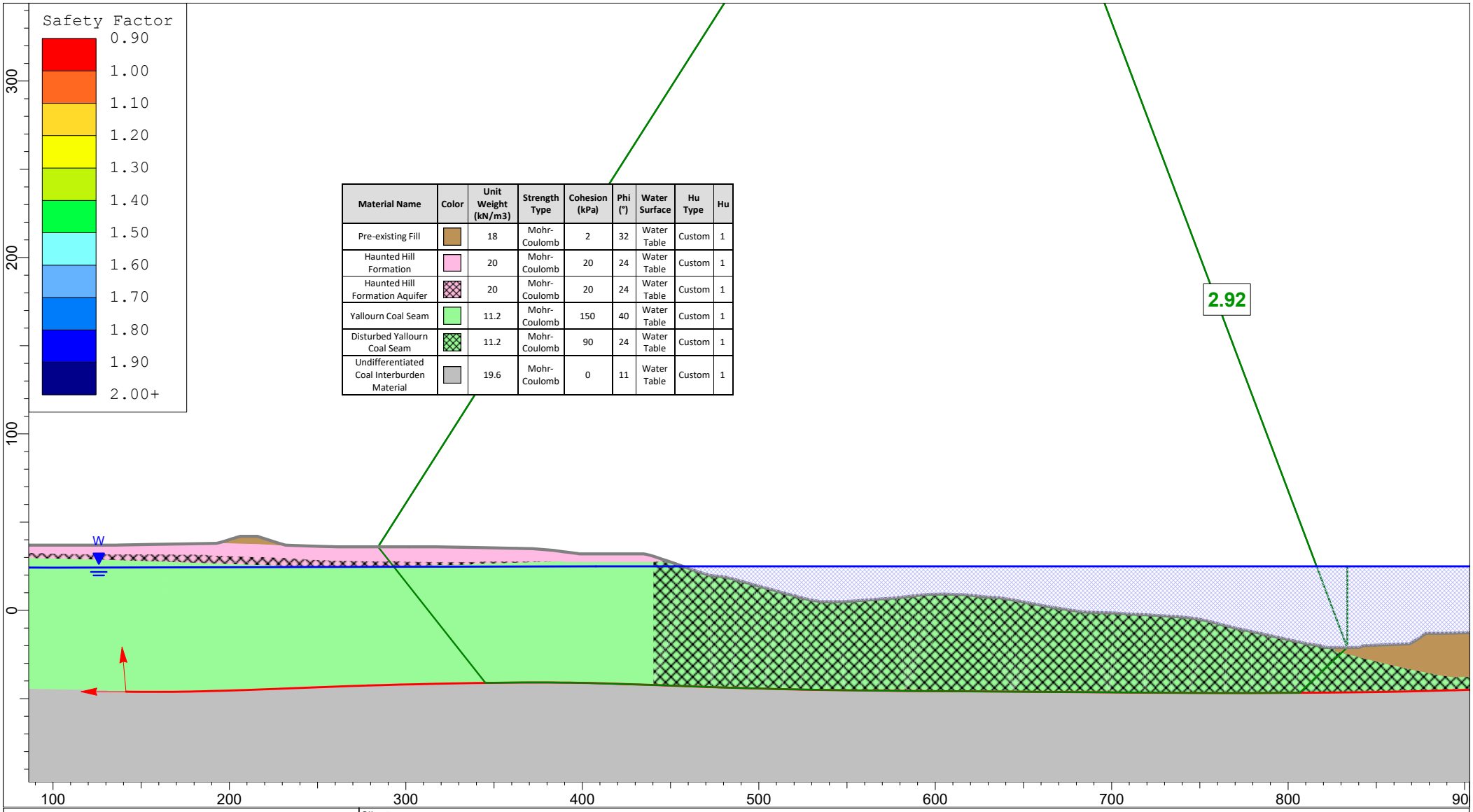
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -15 mRL
Notes:	Lower Bound Interseam Shear Strength		



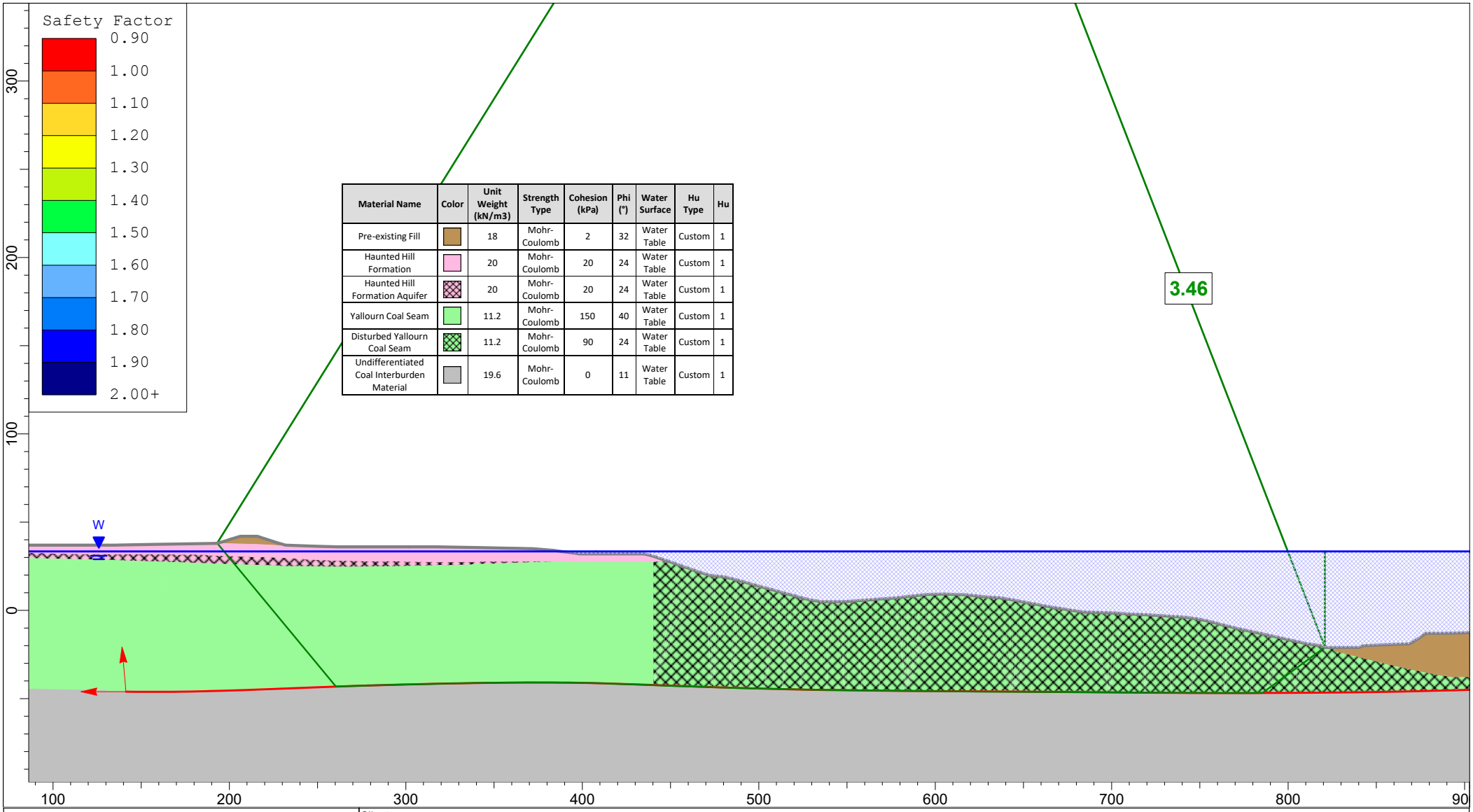
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength		



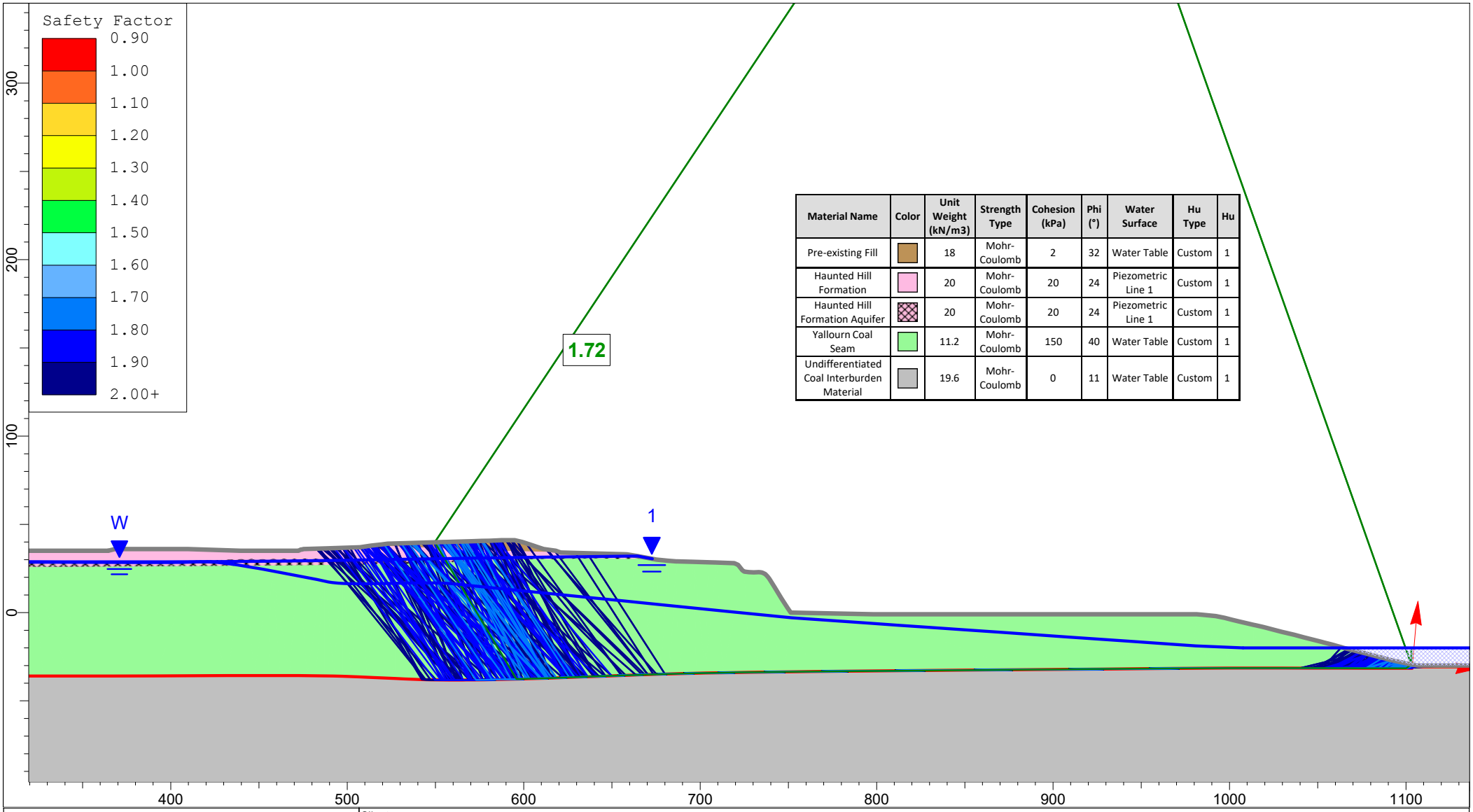
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



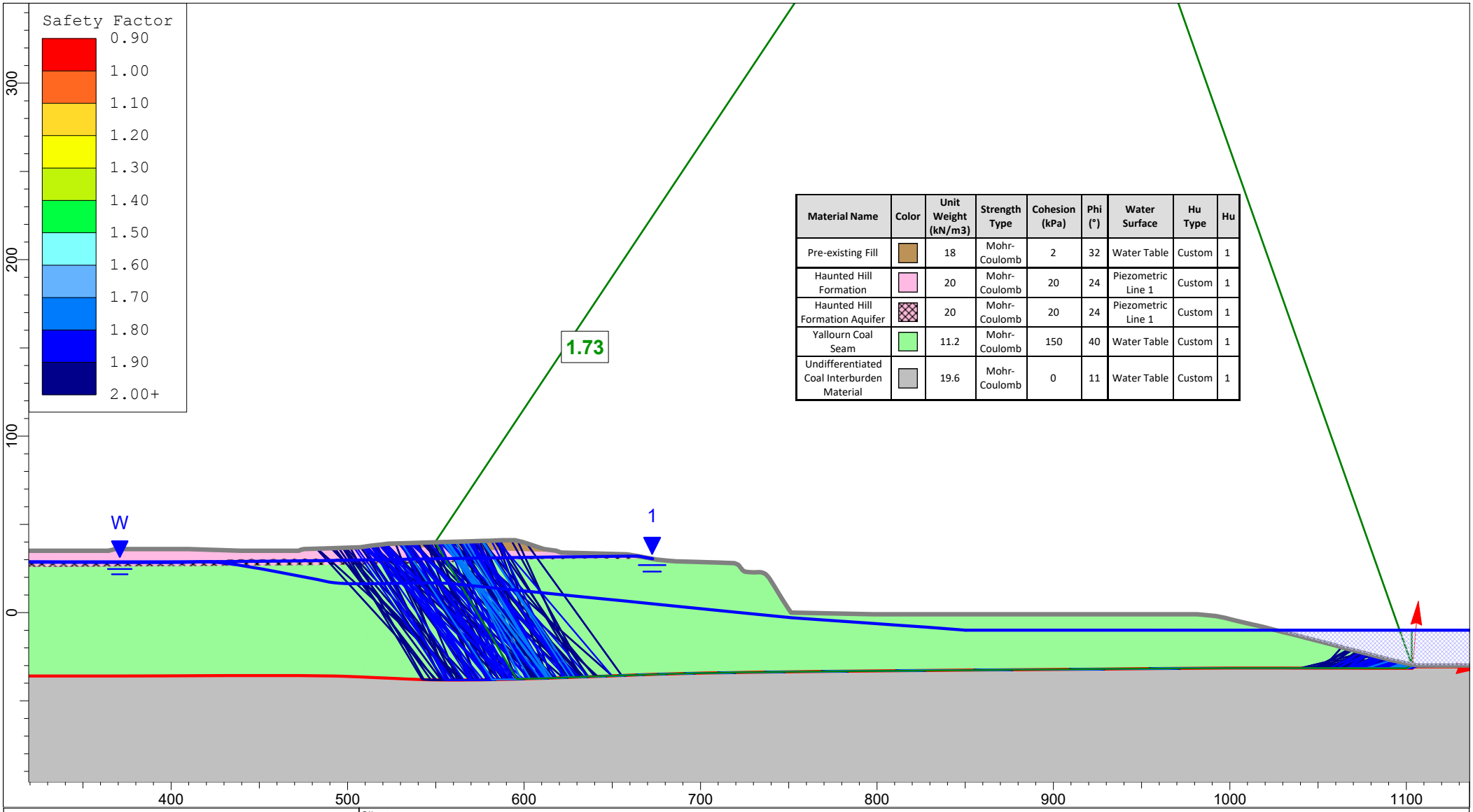
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



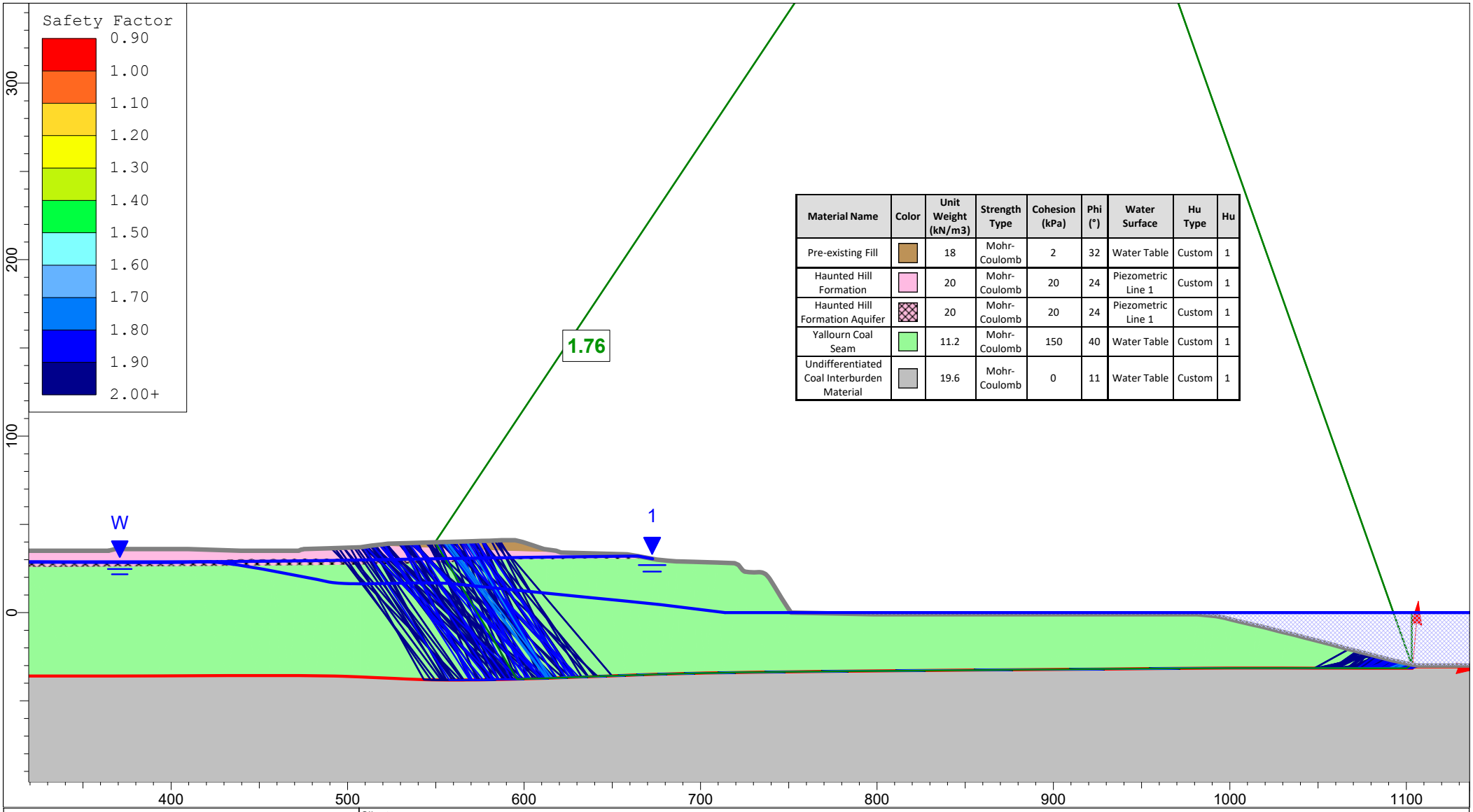
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -20 mRL
Notes:	Lower Bound Interseam Shear Strength		



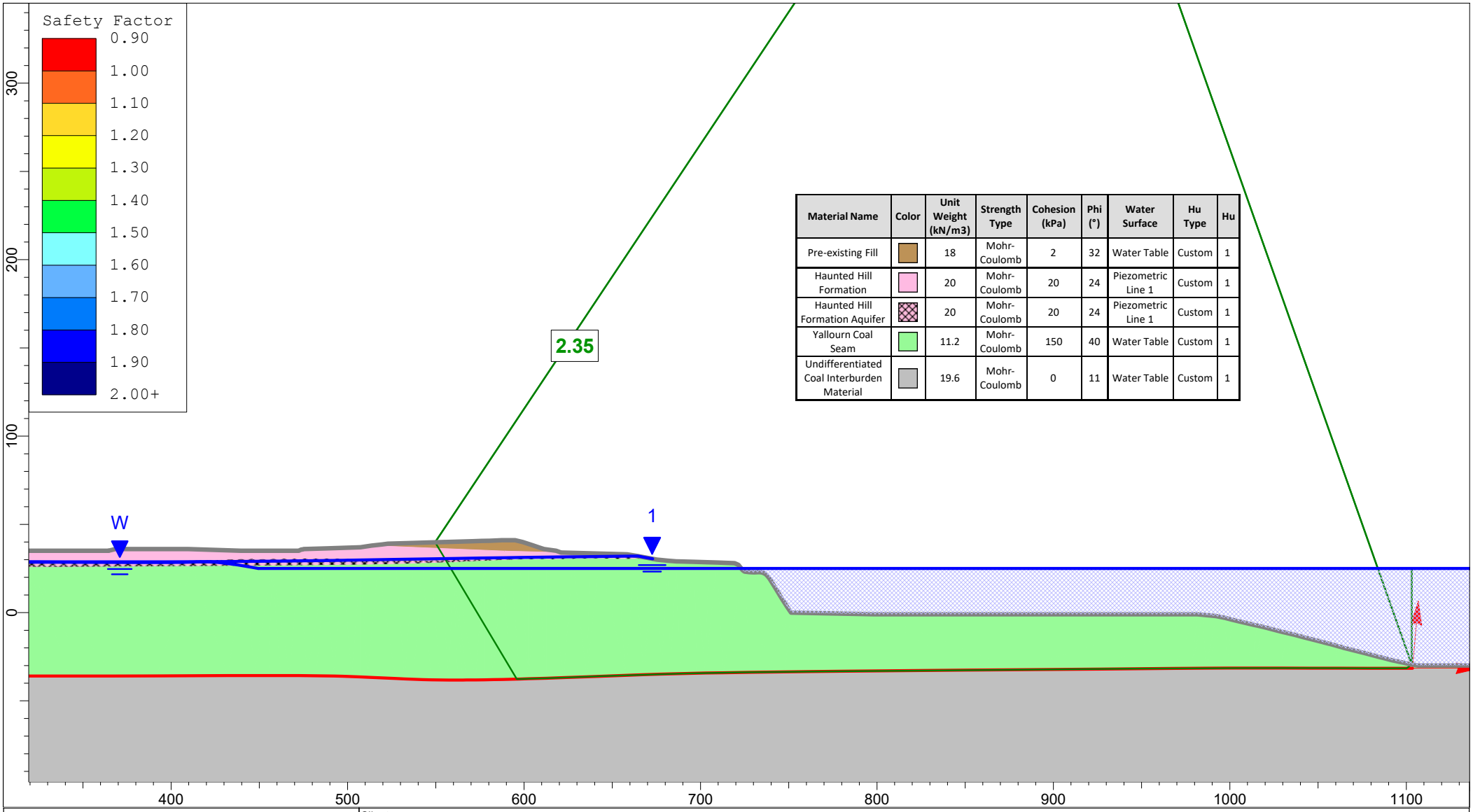
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength		



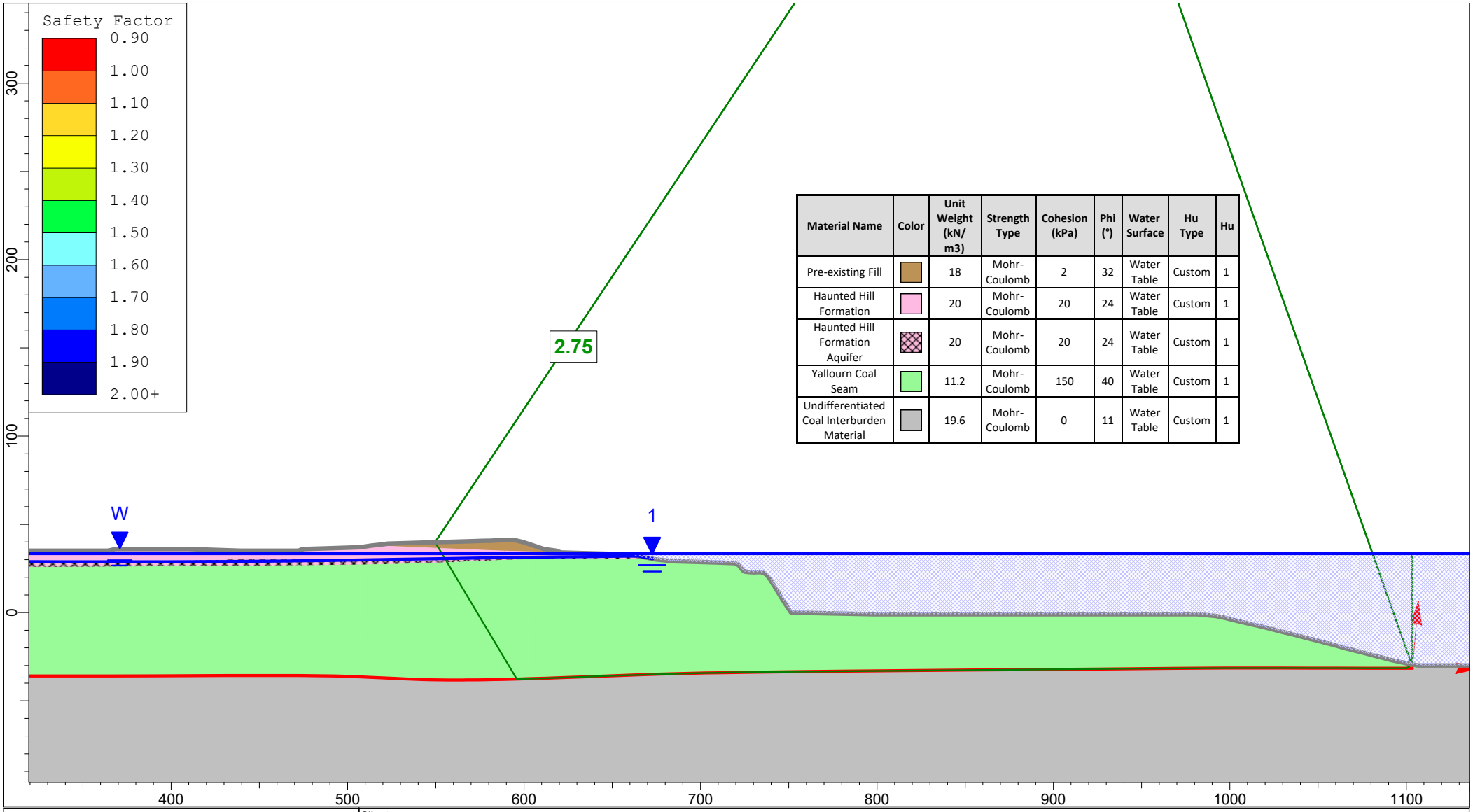
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



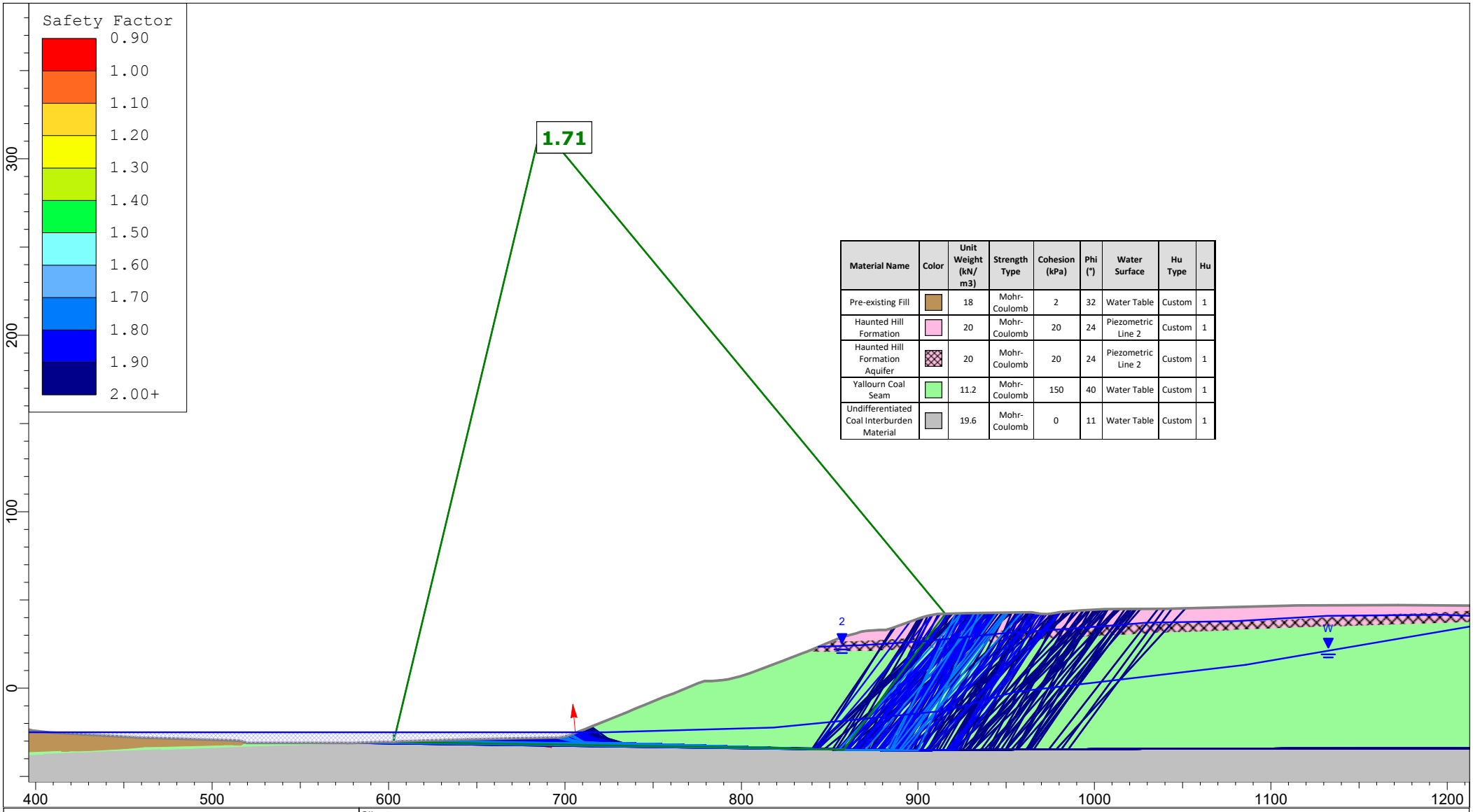
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



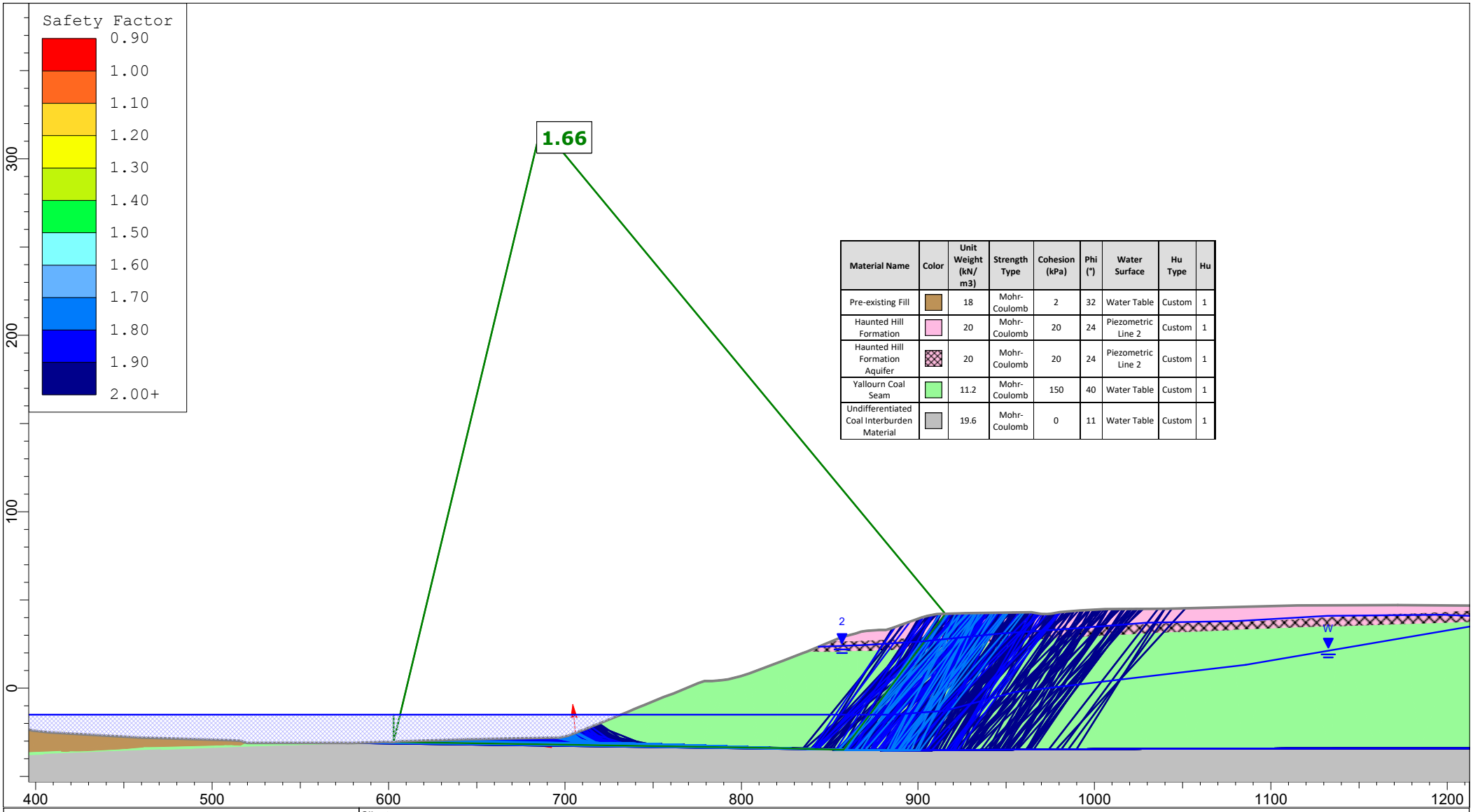
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4mRL
Notes:	Lower Bound Interseam Shear Strength		



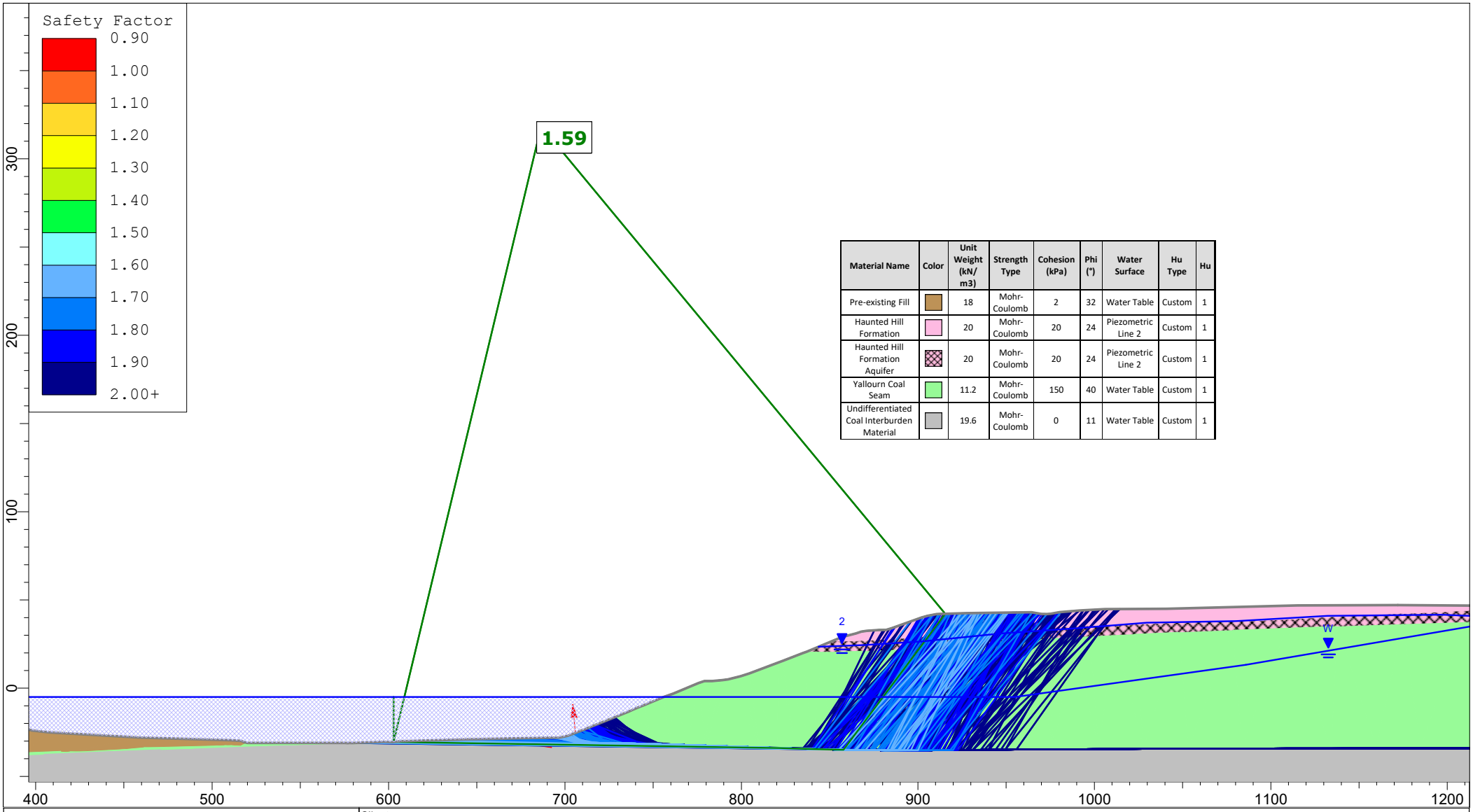
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -25 mRL
Notes:	Lower Bound Interseam Shear Strength		



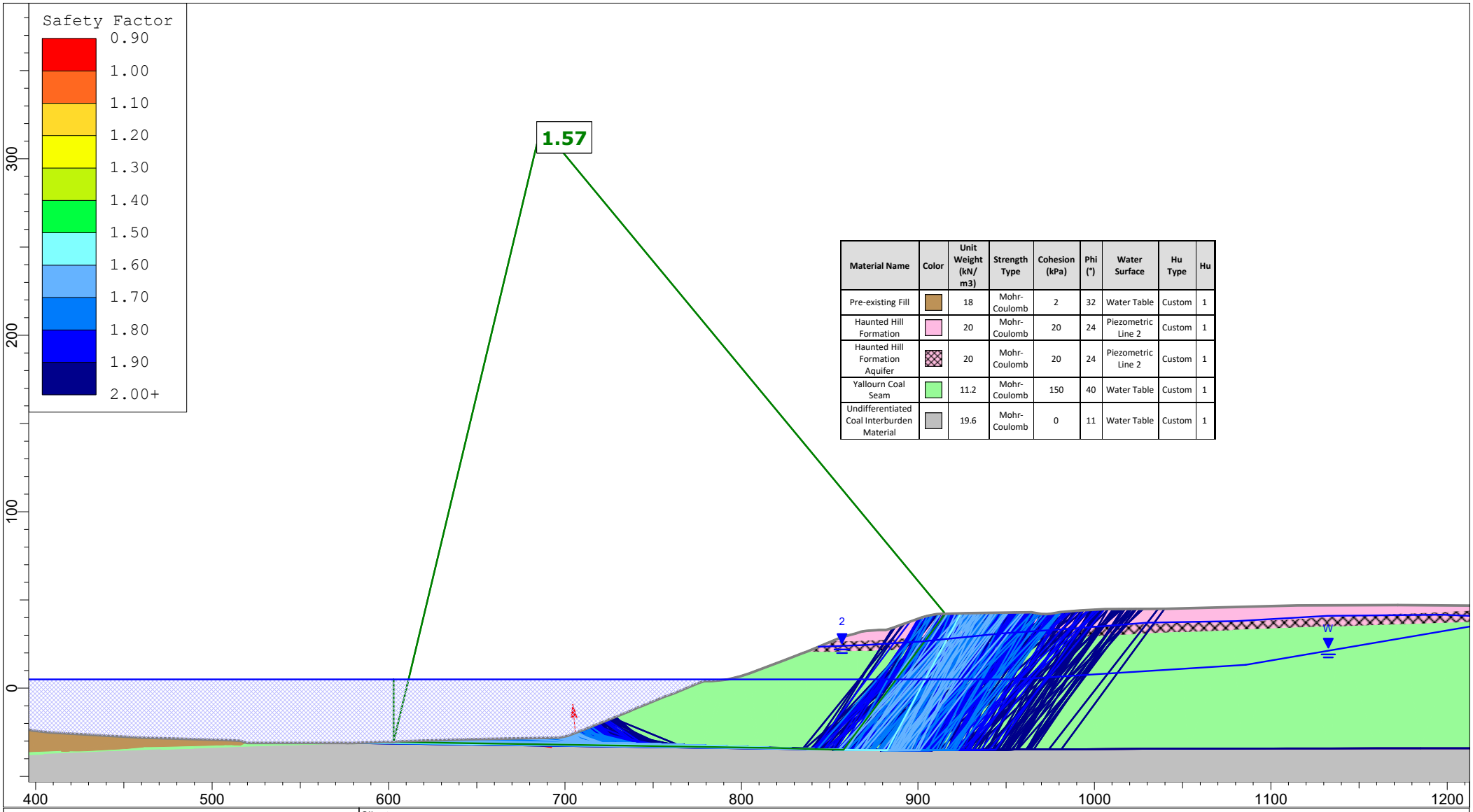
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -15 mRL
Notes:	Lower Bound Interseam Shear Strength		



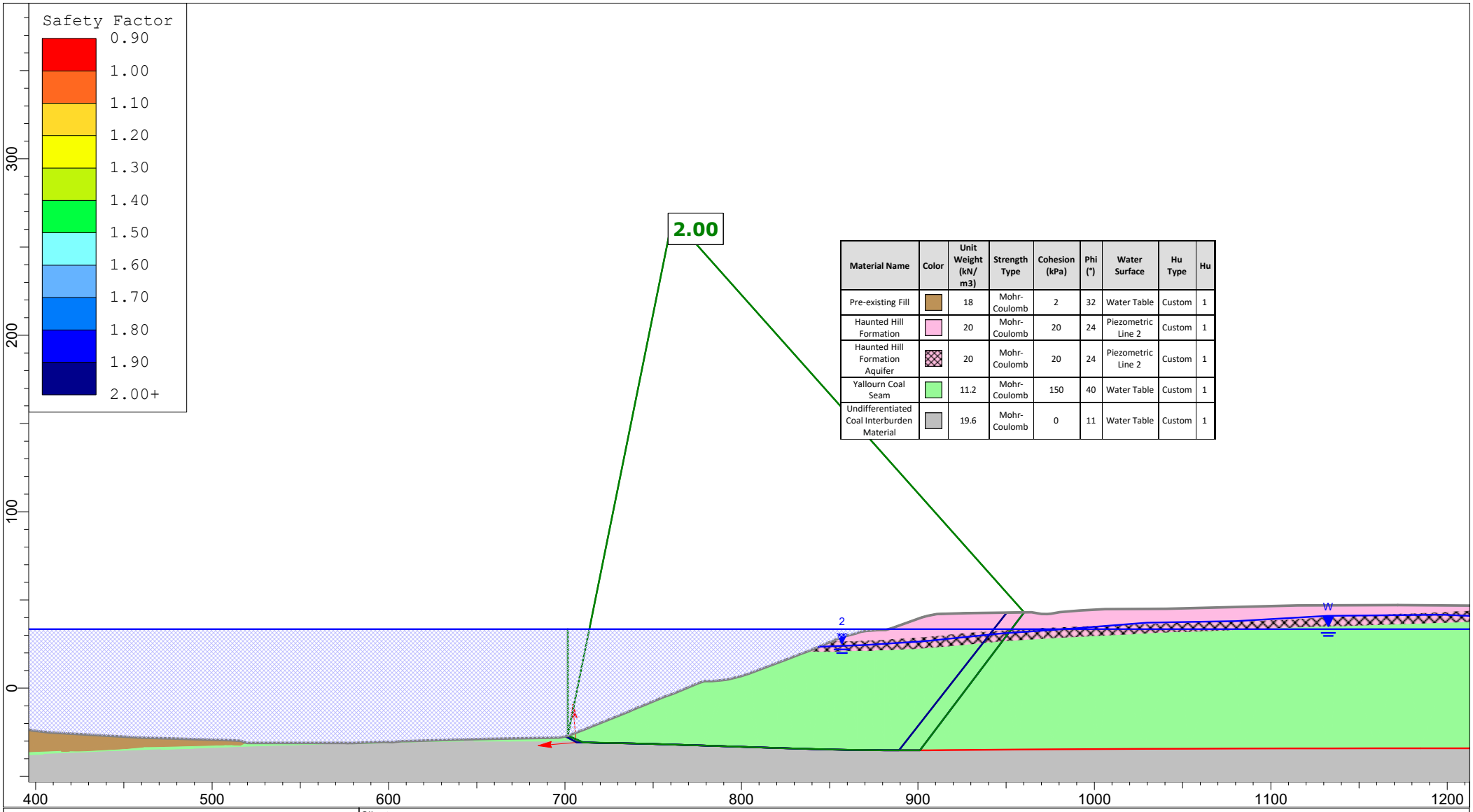
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength		



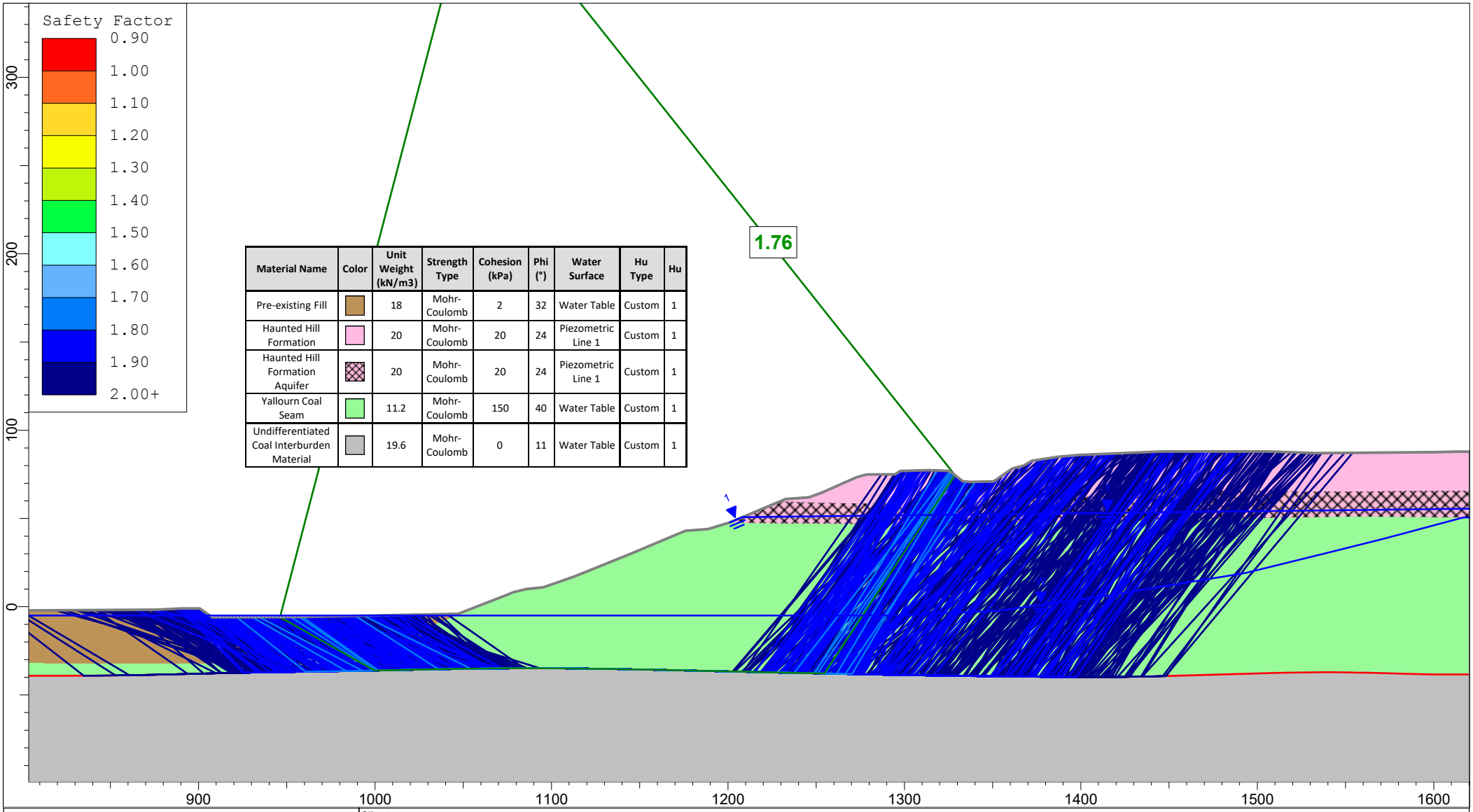
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



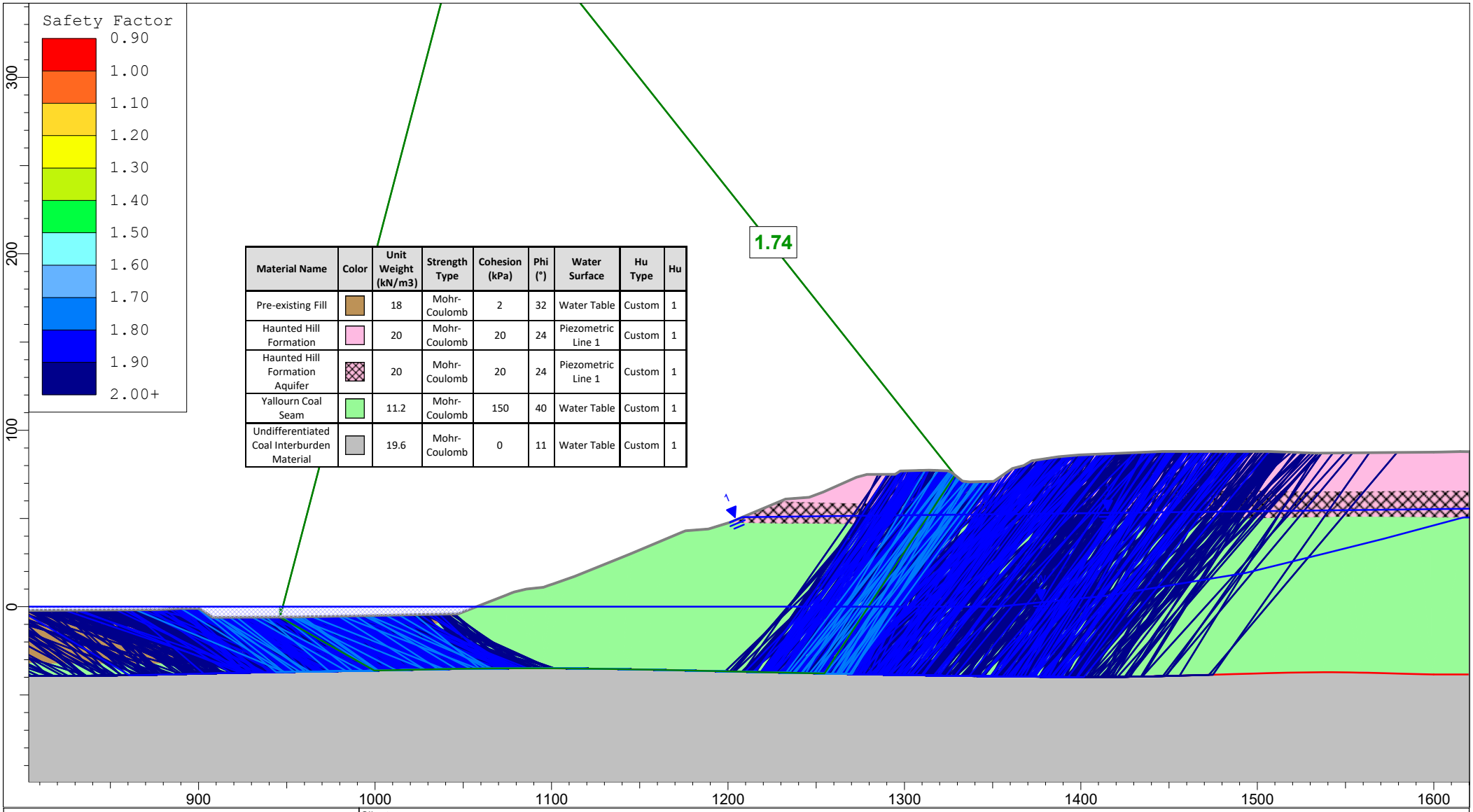
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



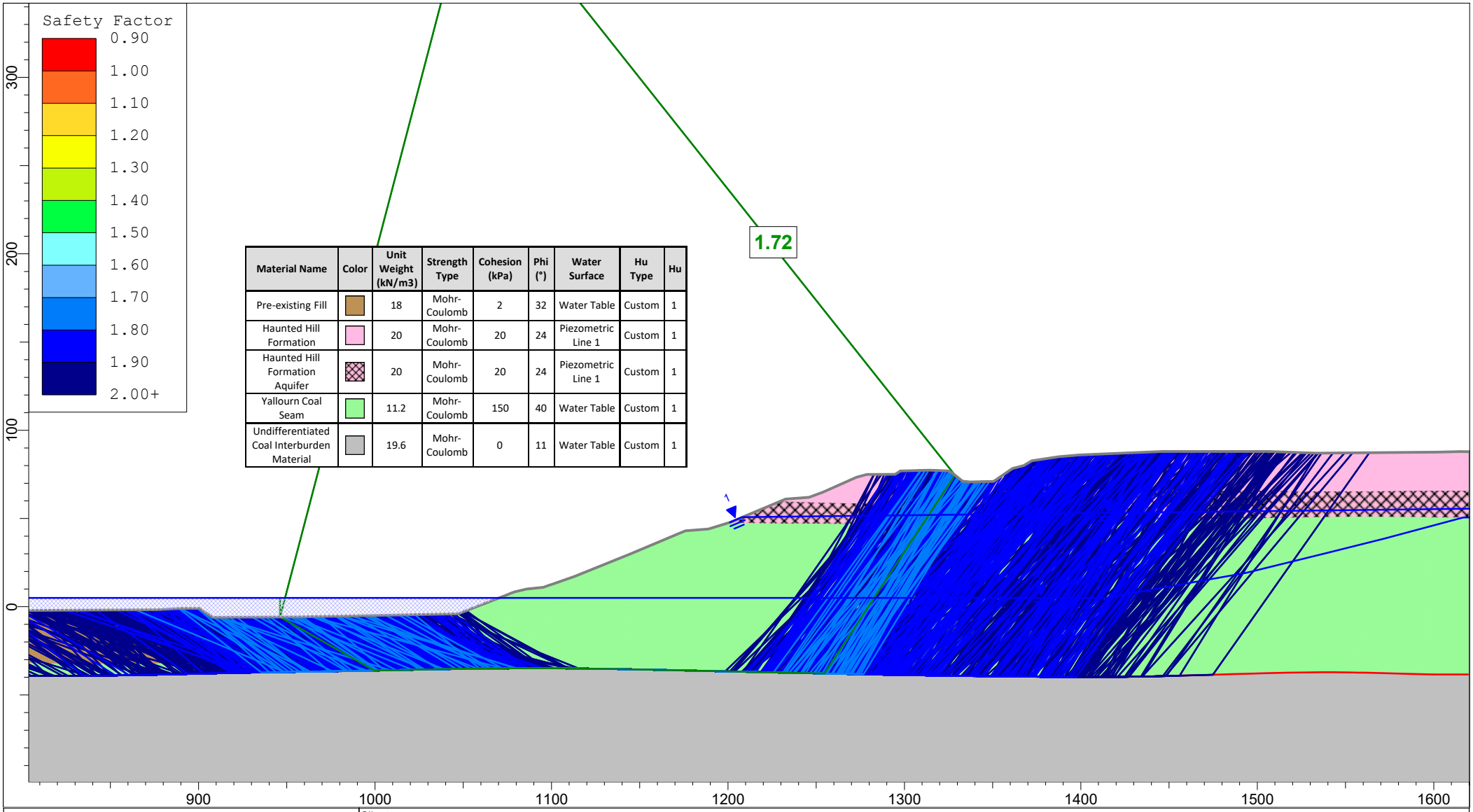
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength		



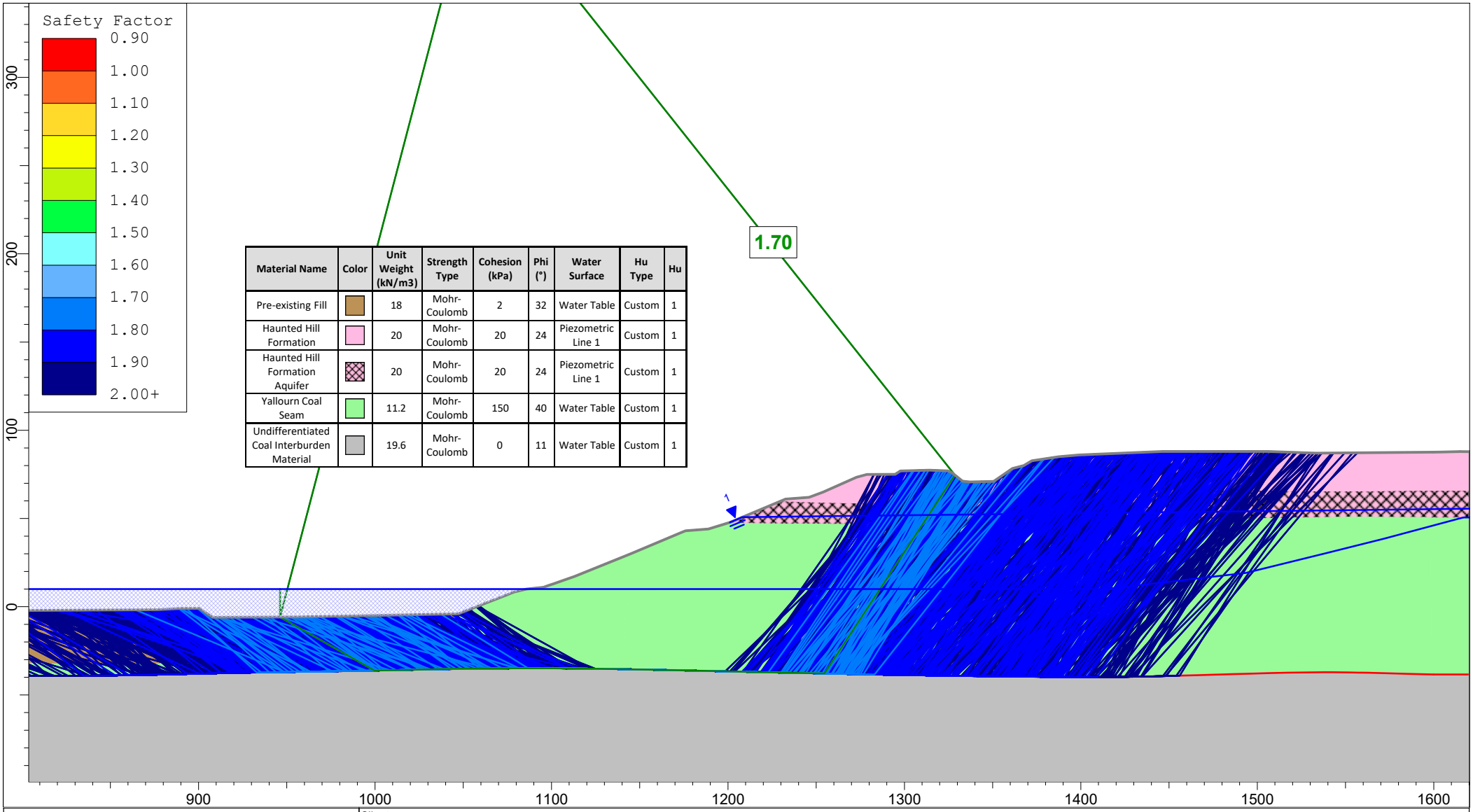
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



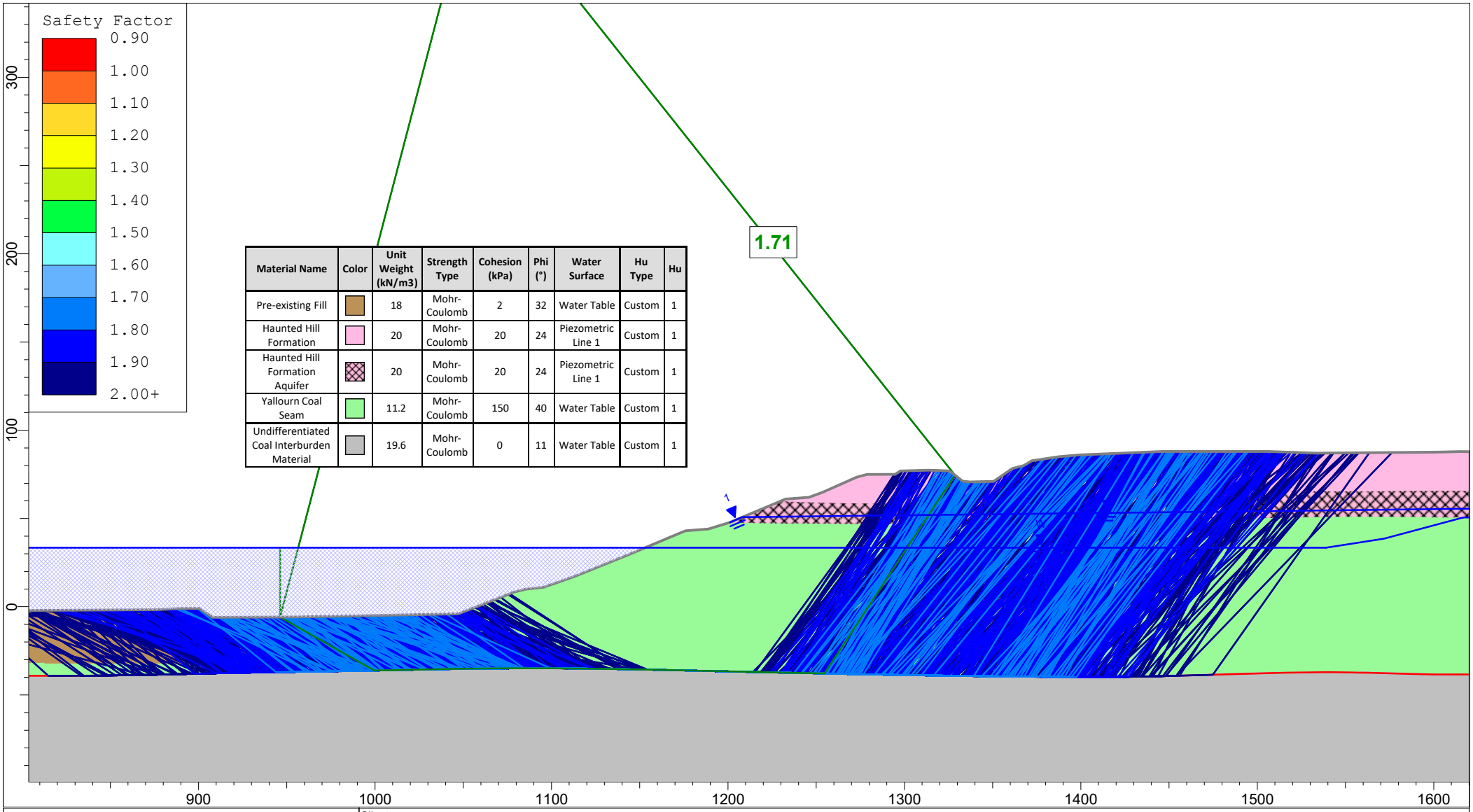
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



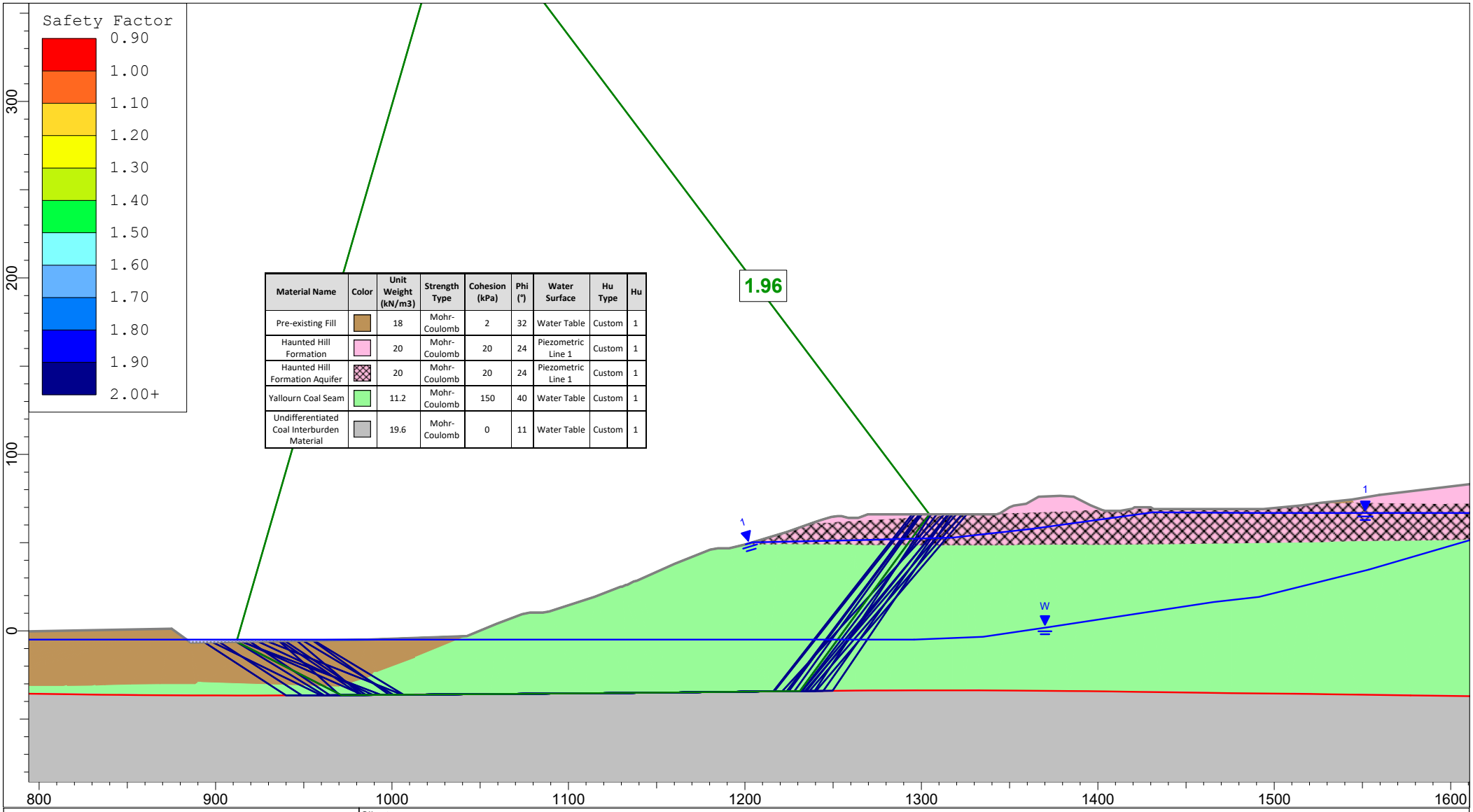
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



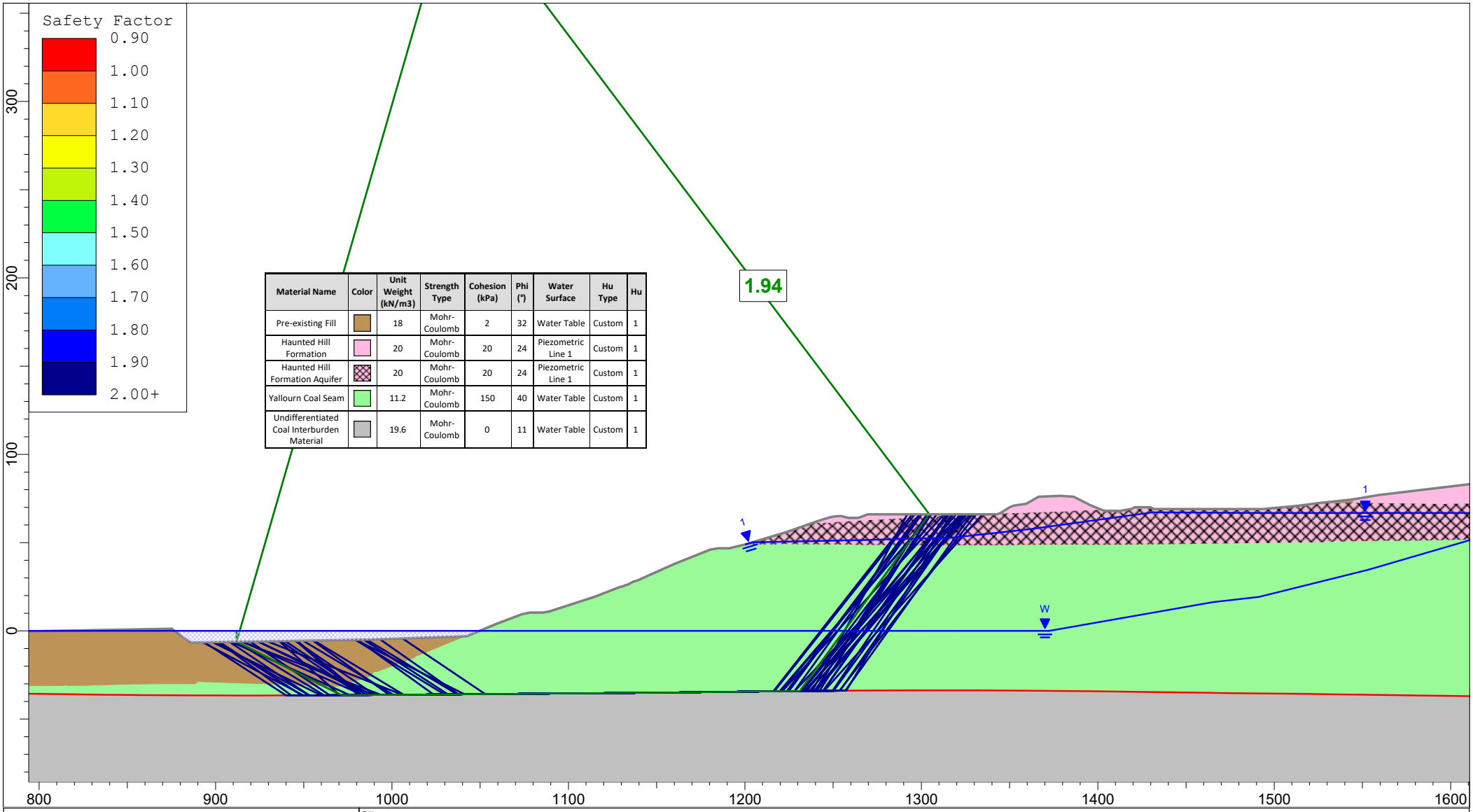
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



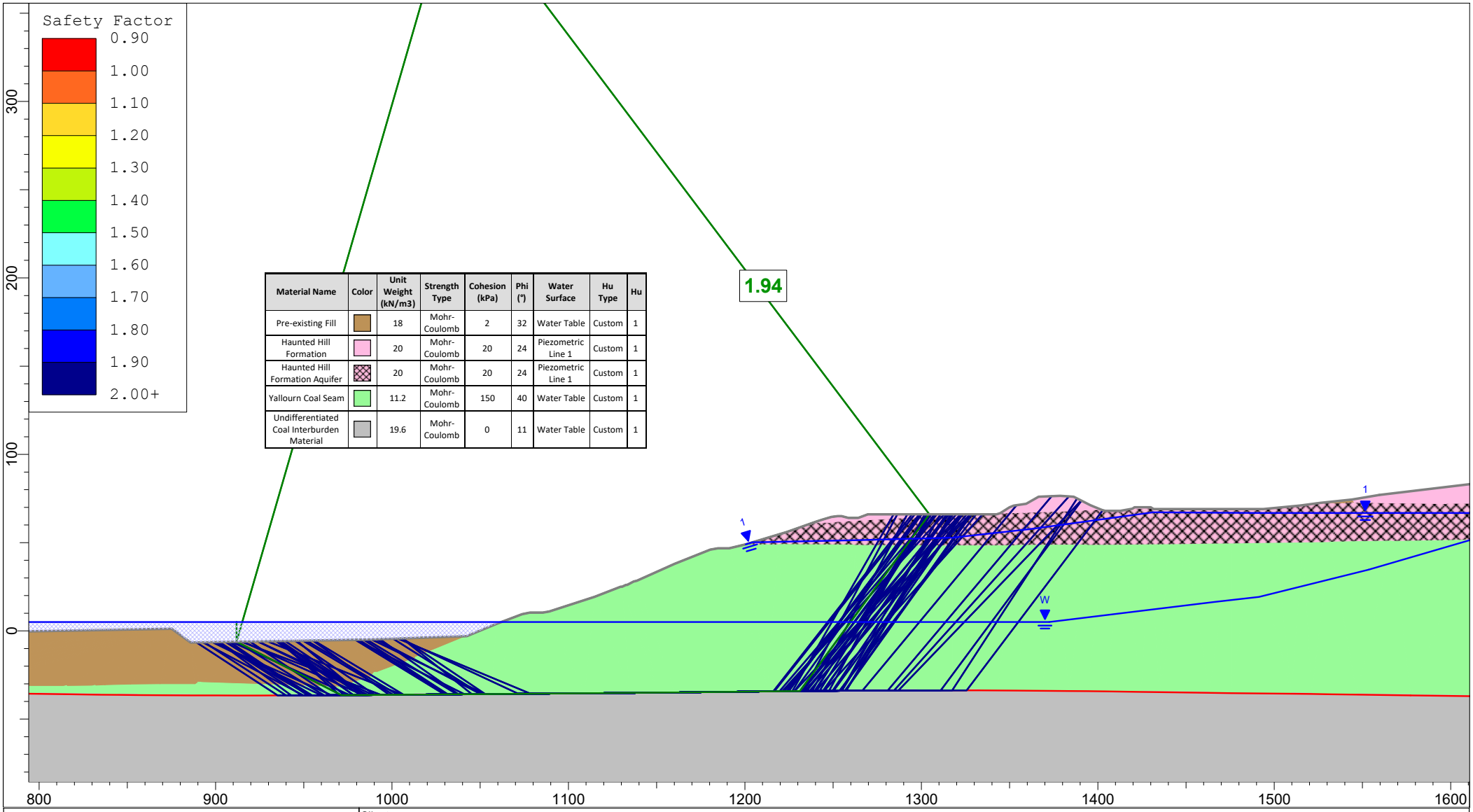
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength		



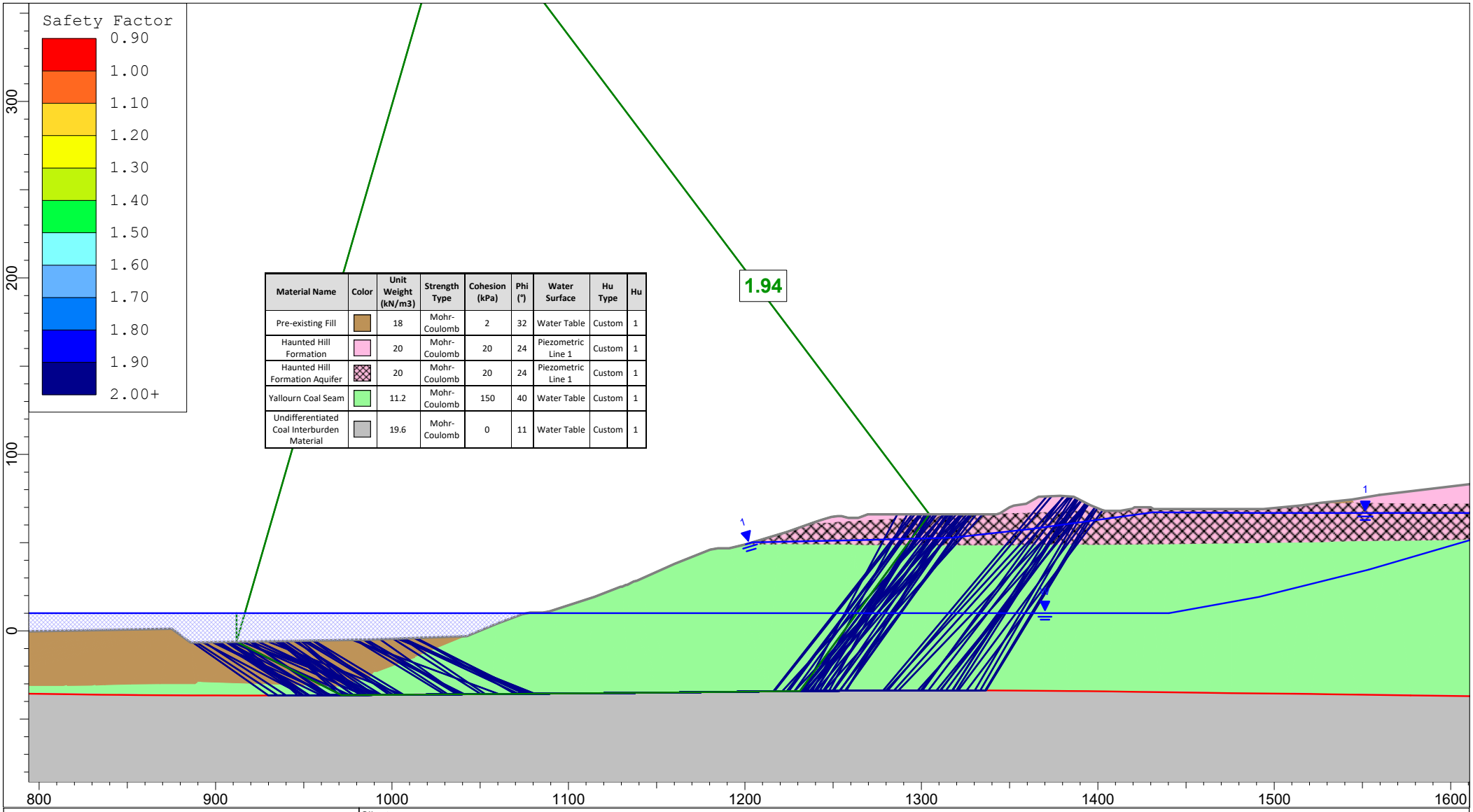
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



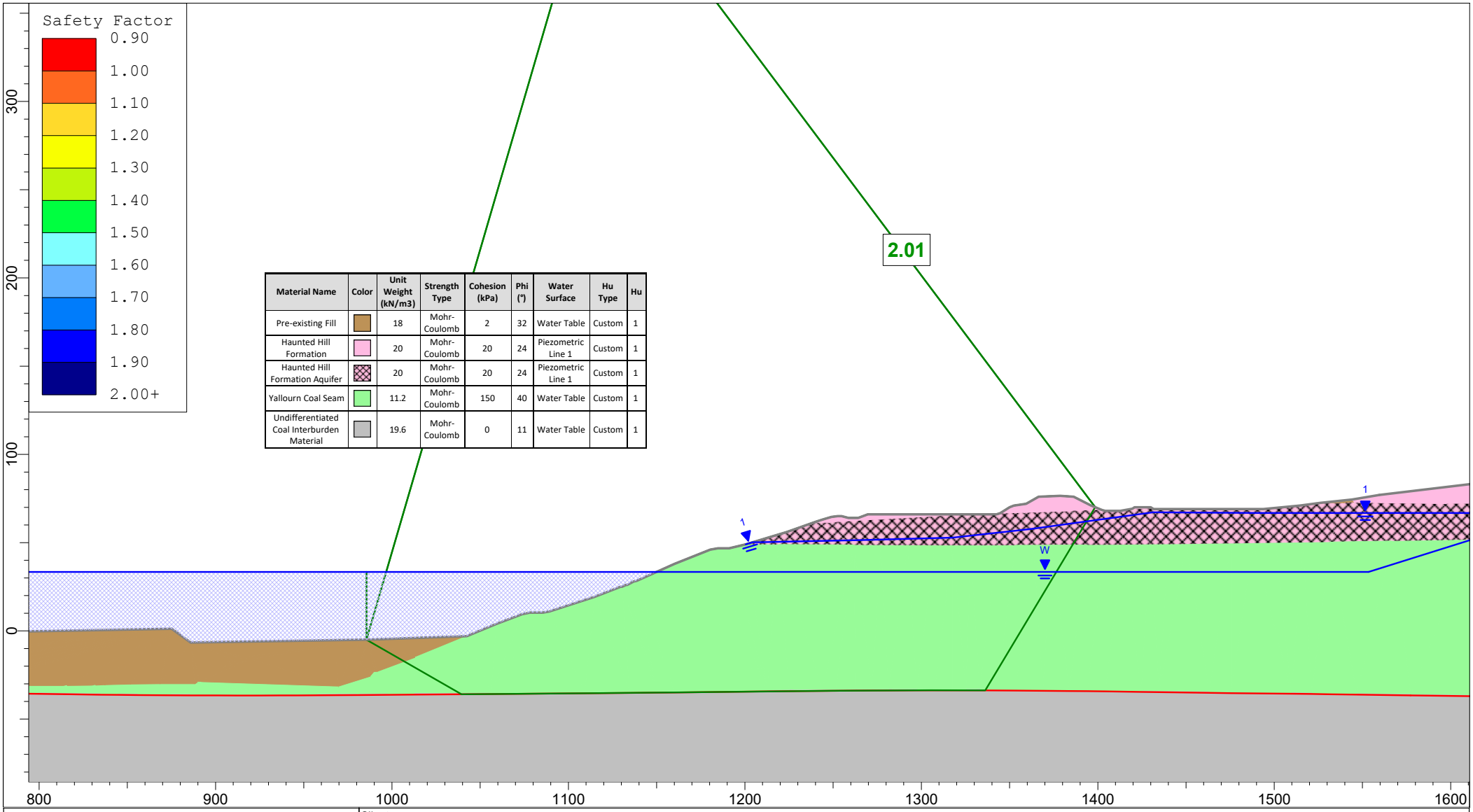
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



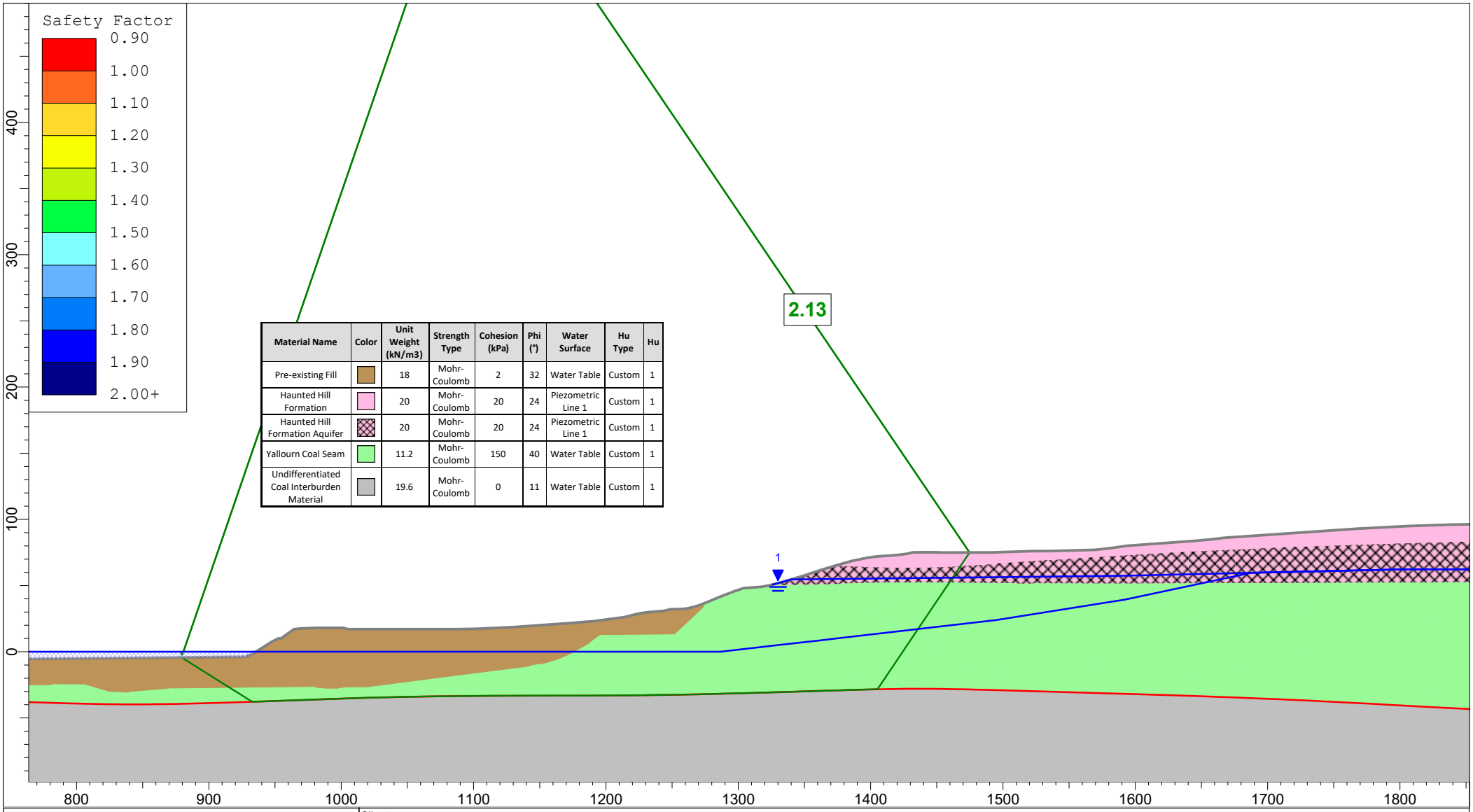
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



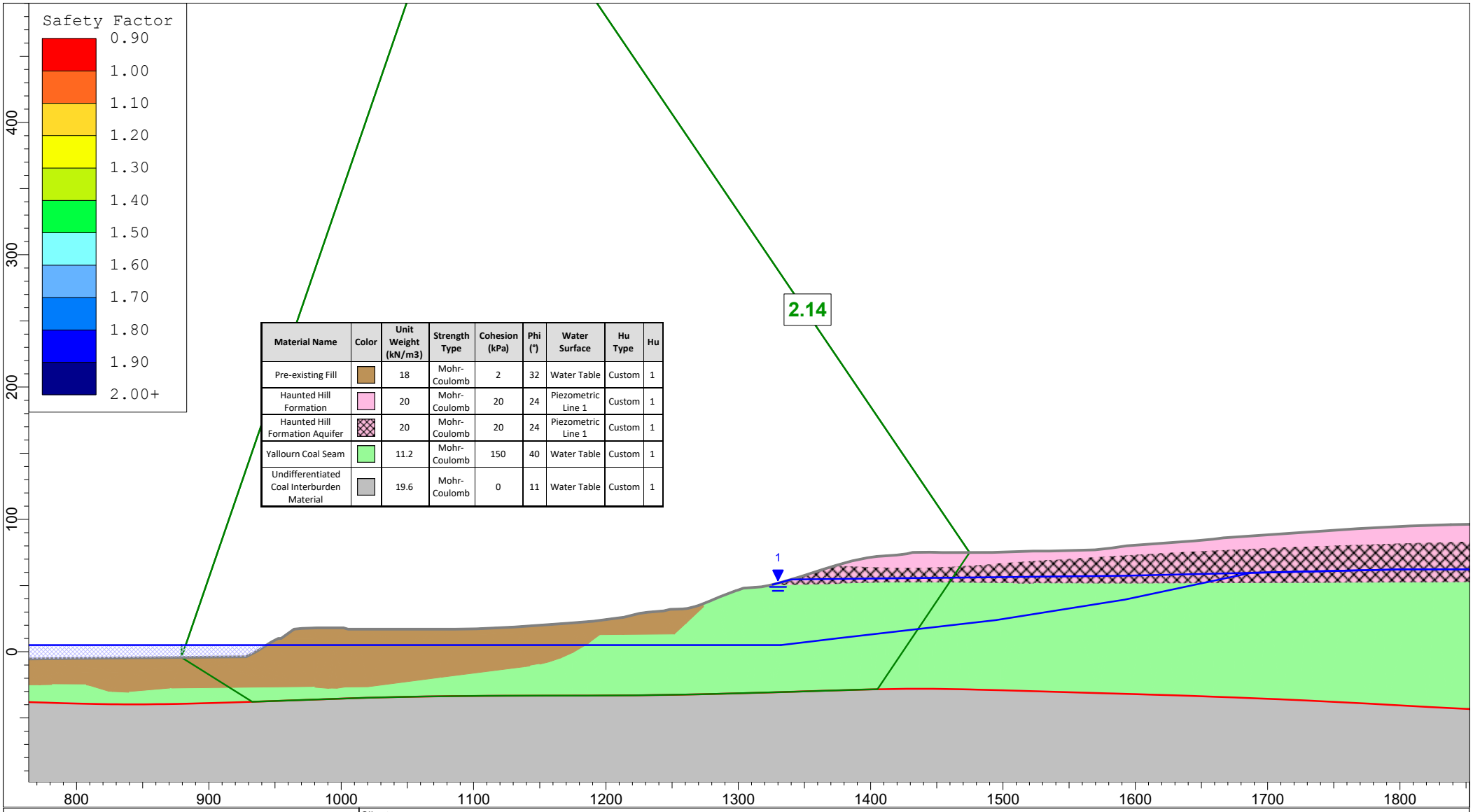
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



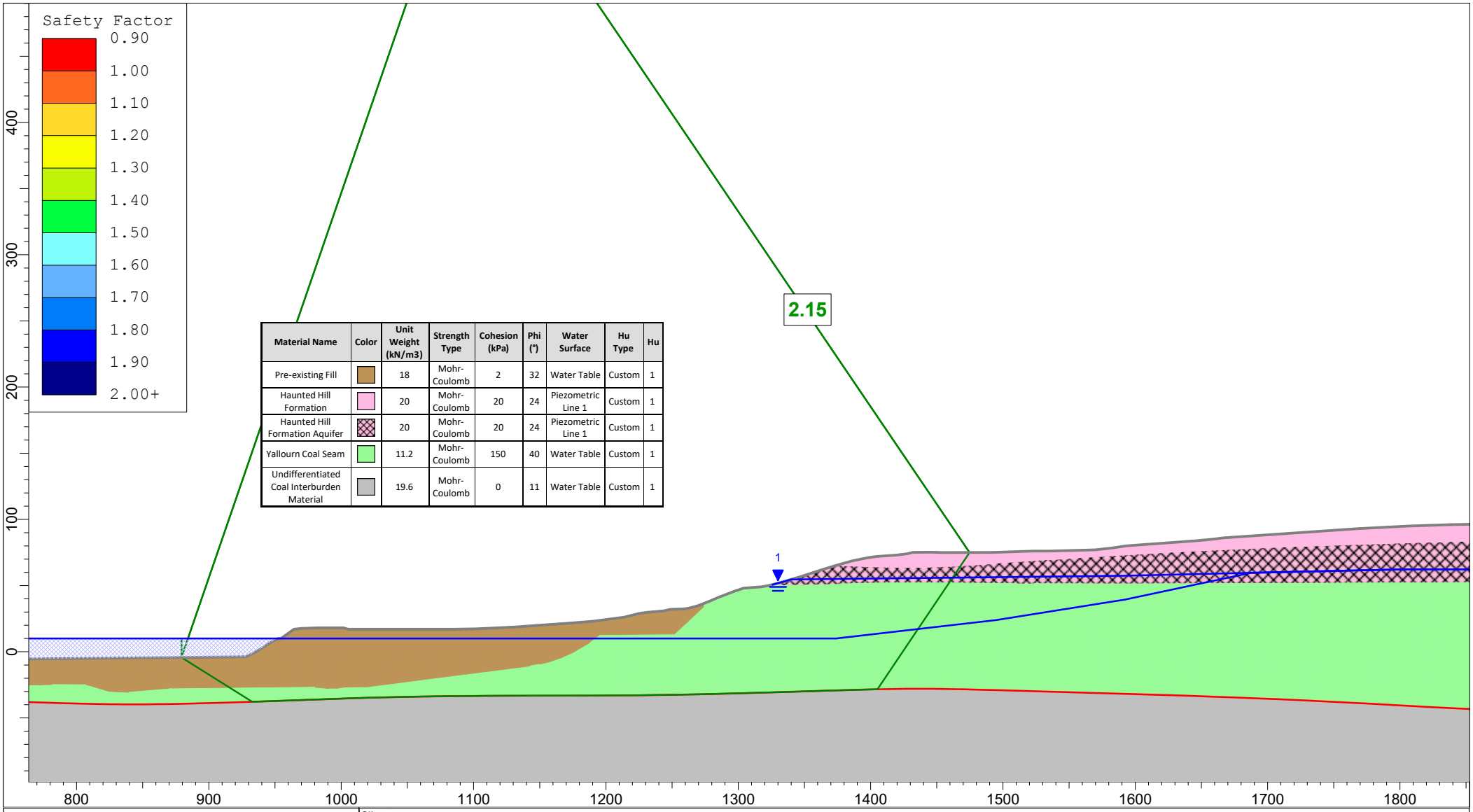
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YEFX-SB**
Section:	**Section 10**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 0 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



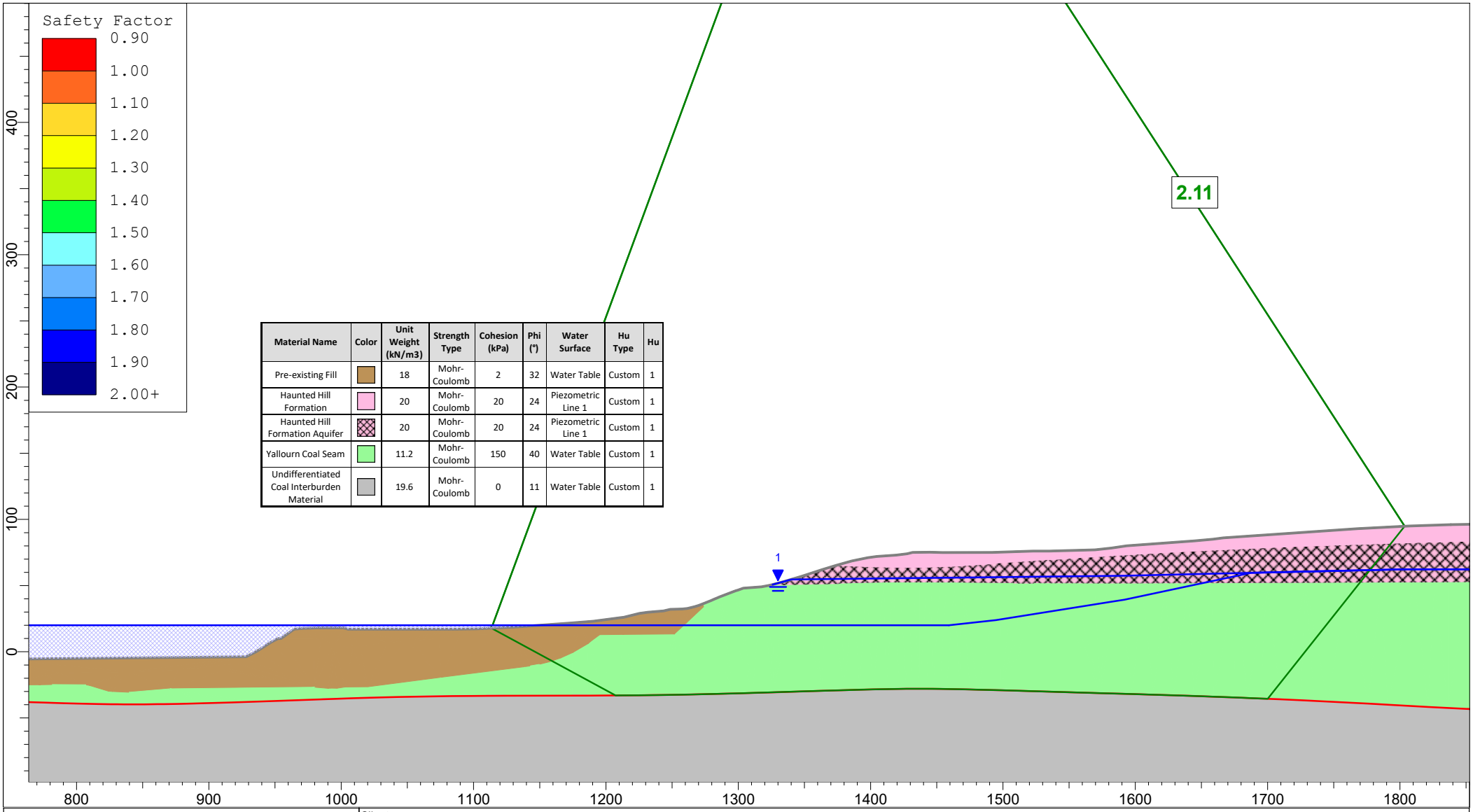
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



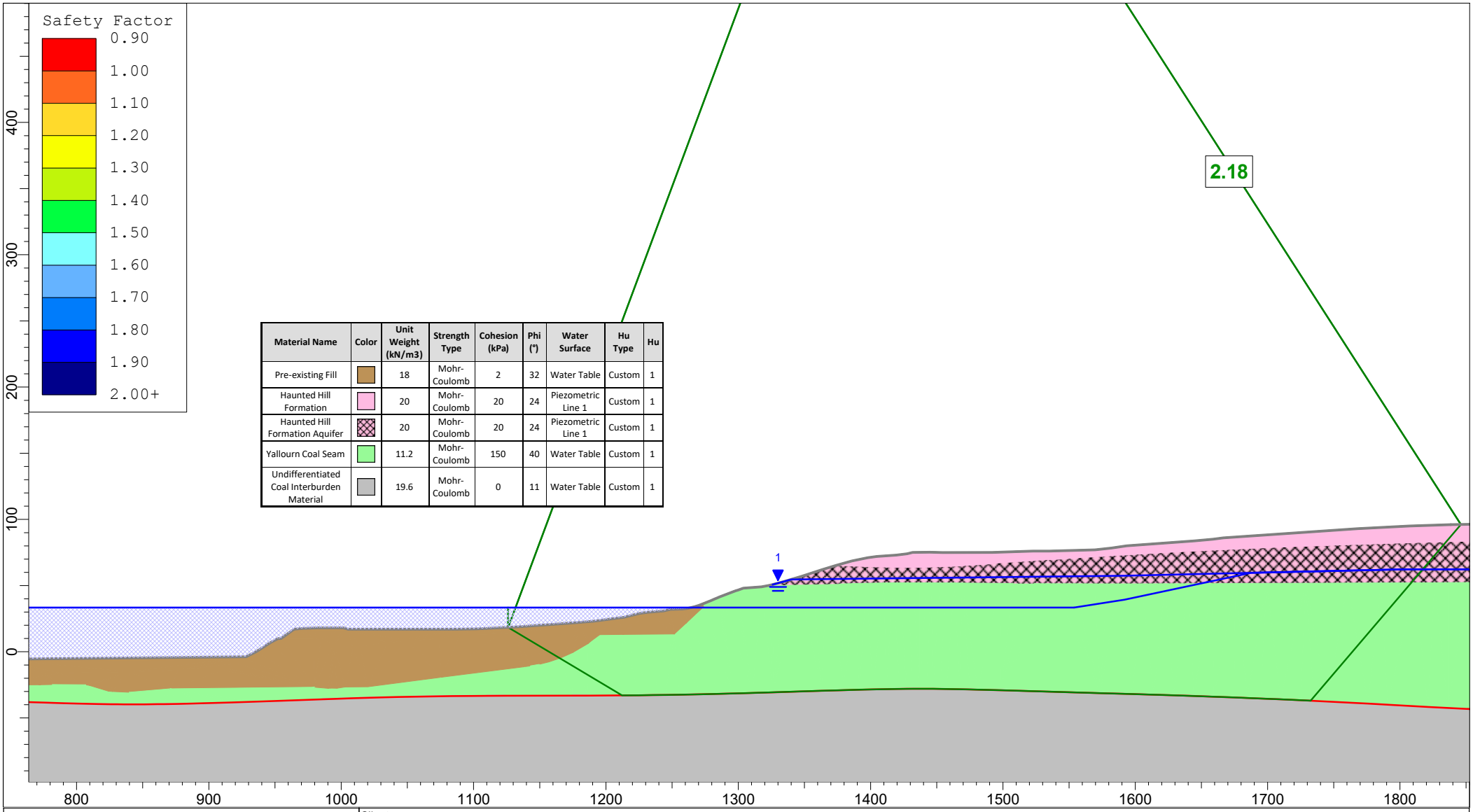
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YEFX-SB**
Section:	**Section 10**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 10 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



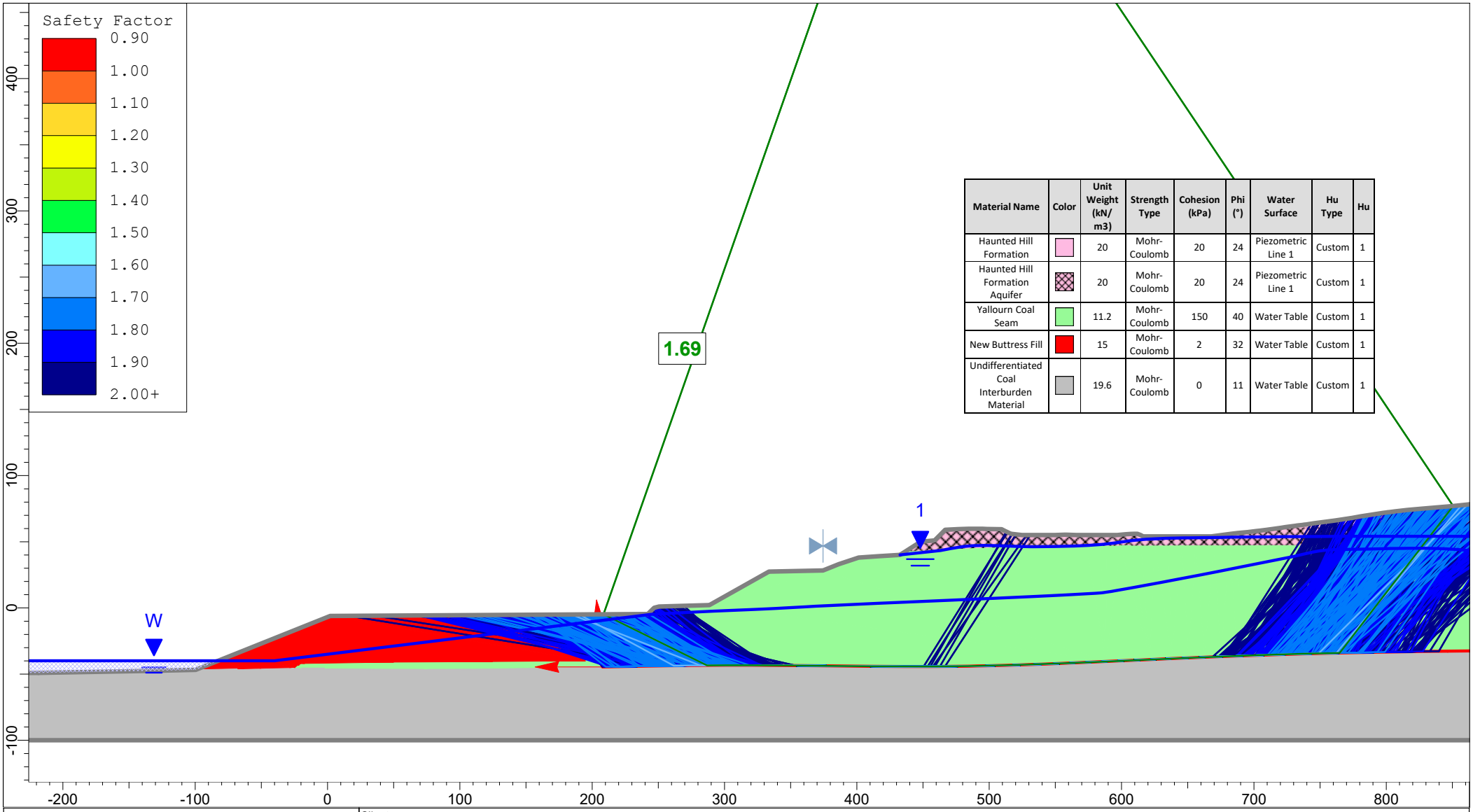
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YEFX-SB**
Section:	**Section 10**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 20 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



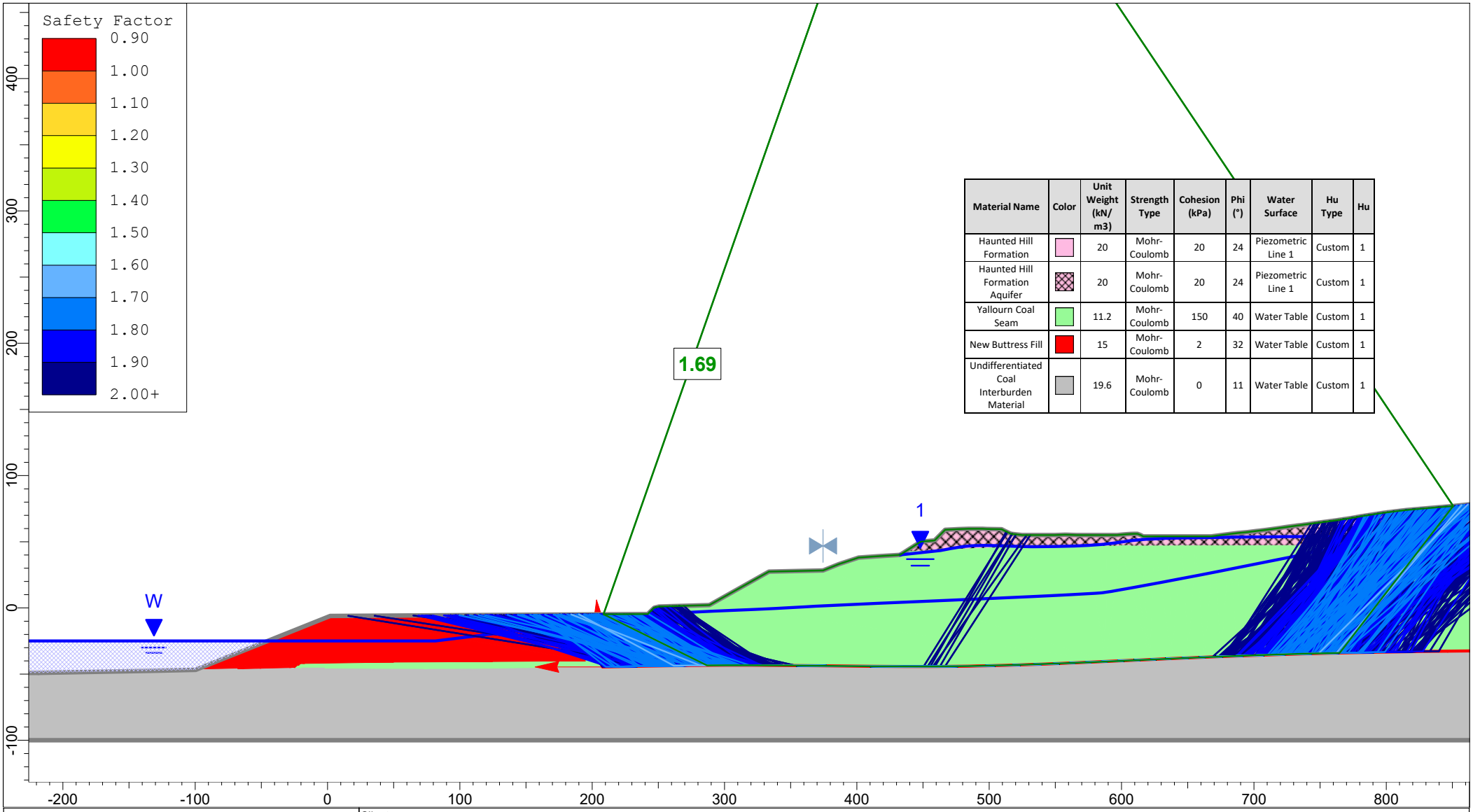
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



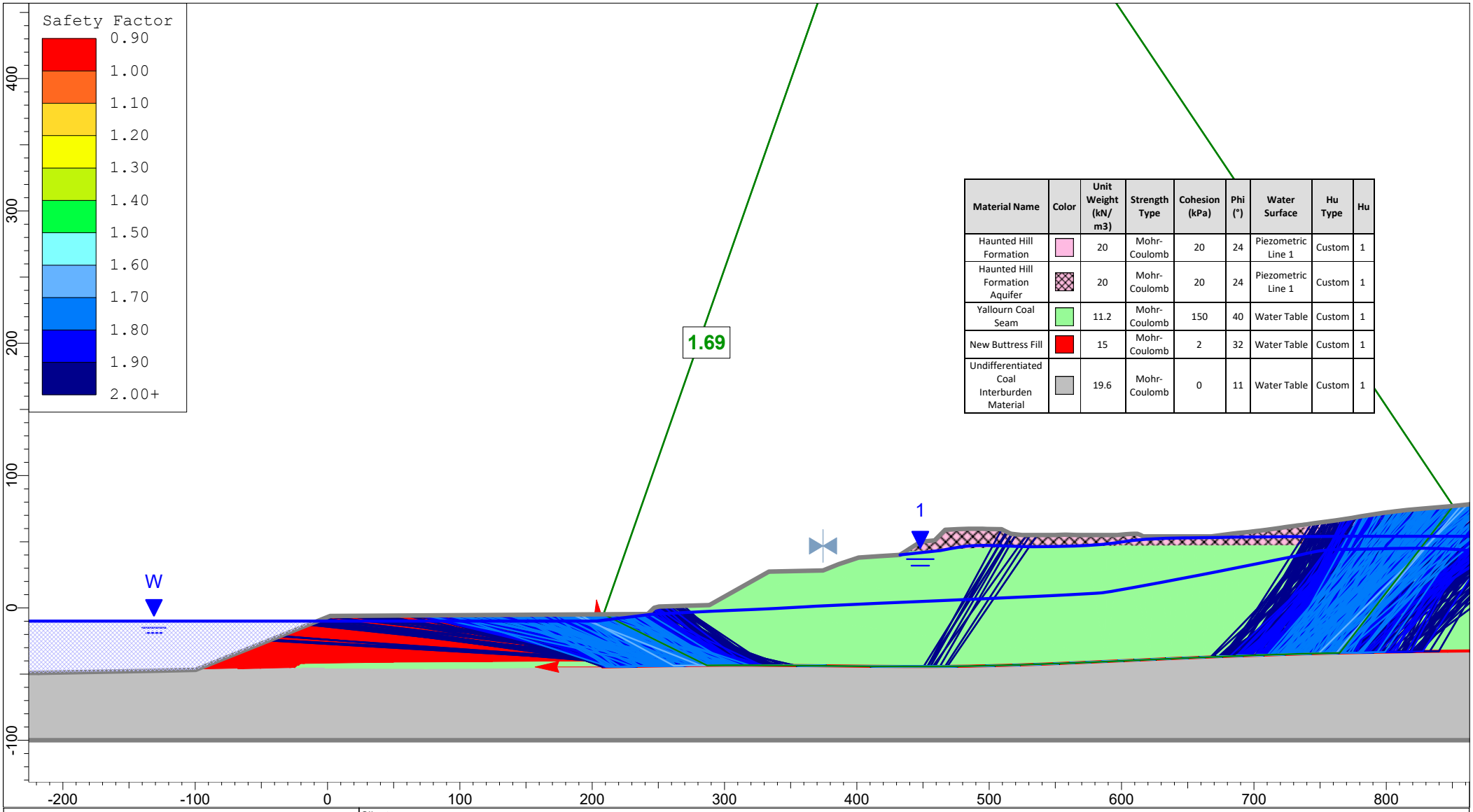
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -40 mRL
Notes:	Lower Bound Interseam Shear Strength		



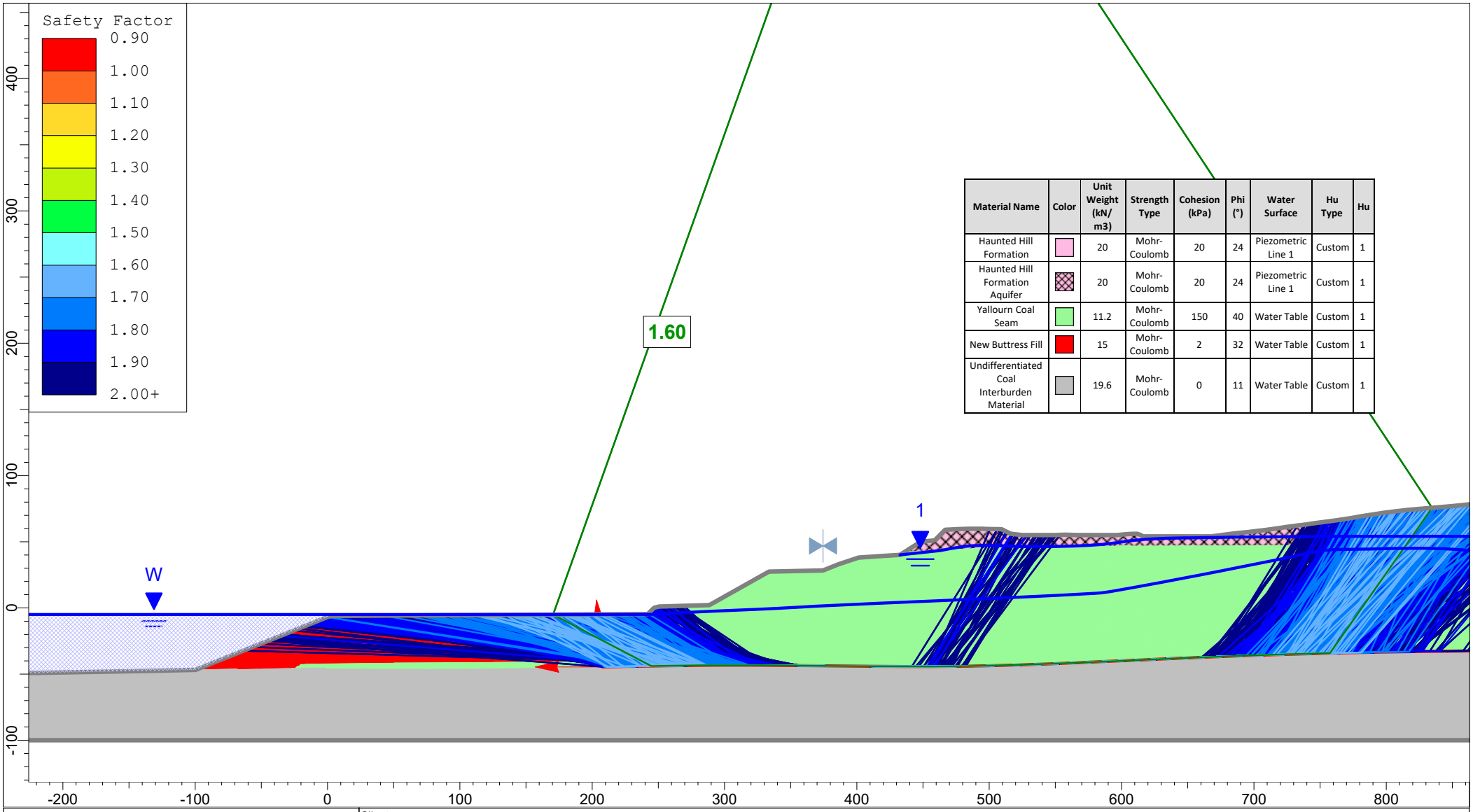
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -25 mRL
Notes:	Lower Bound Interseam Shear Strength		



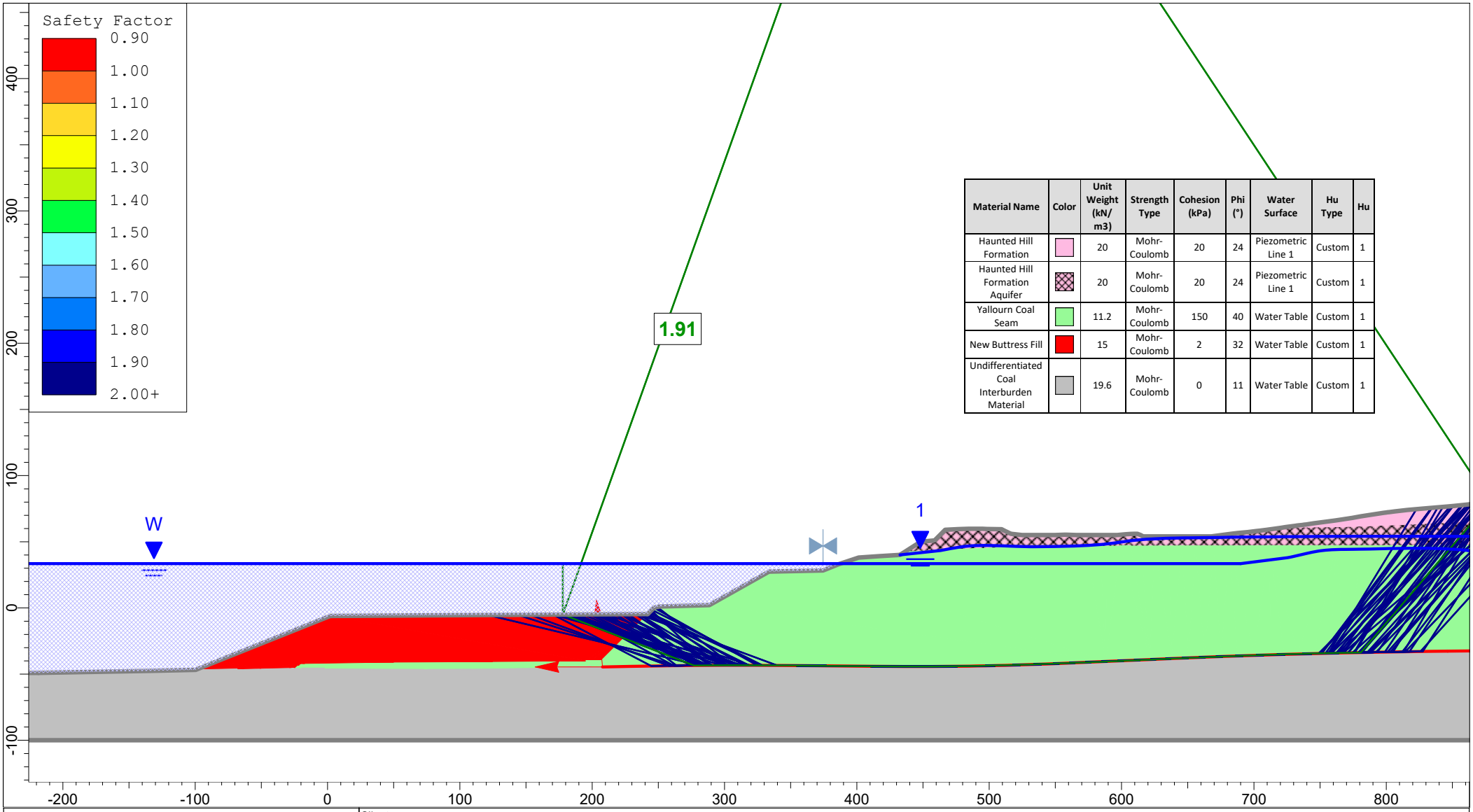
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength		



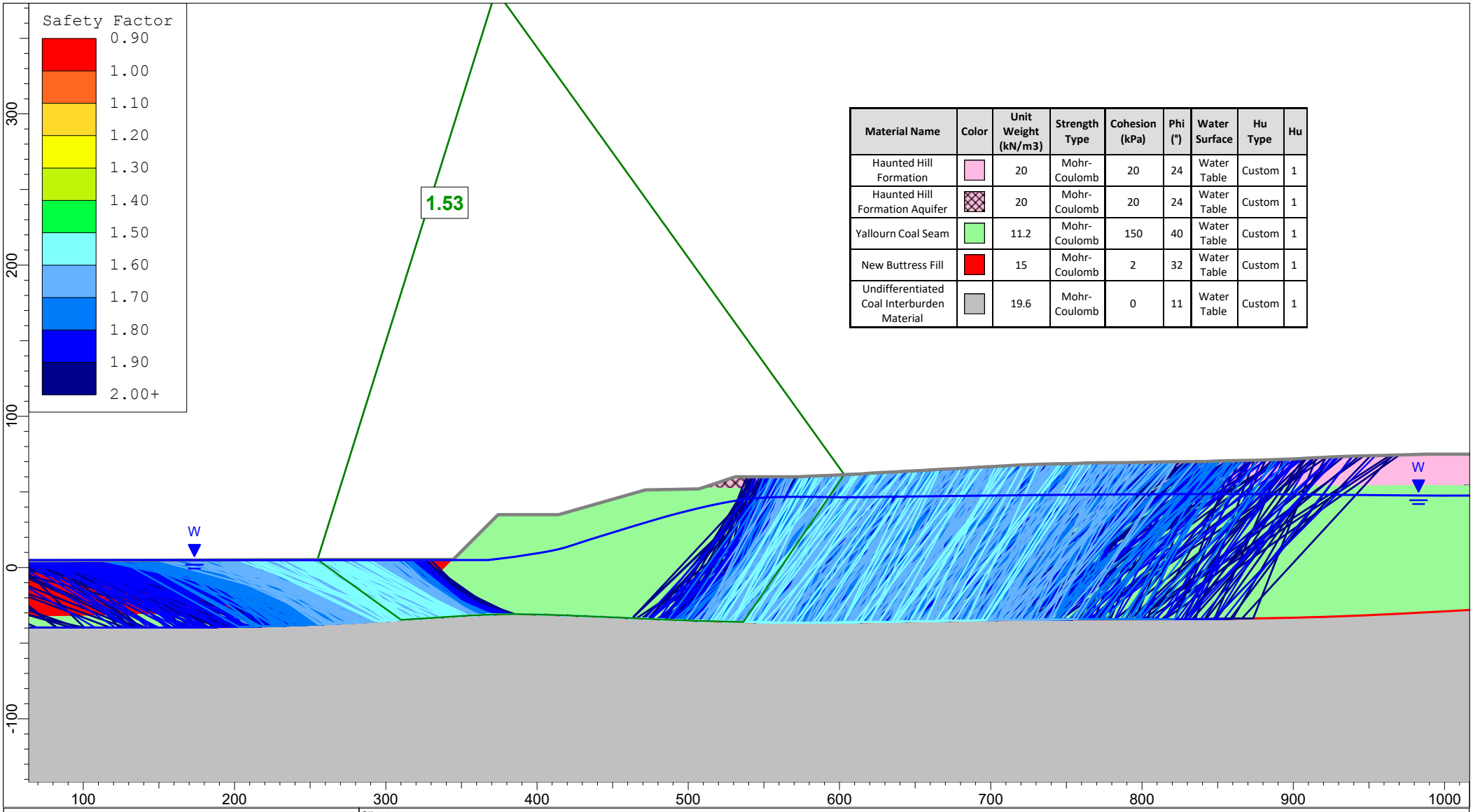
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength		



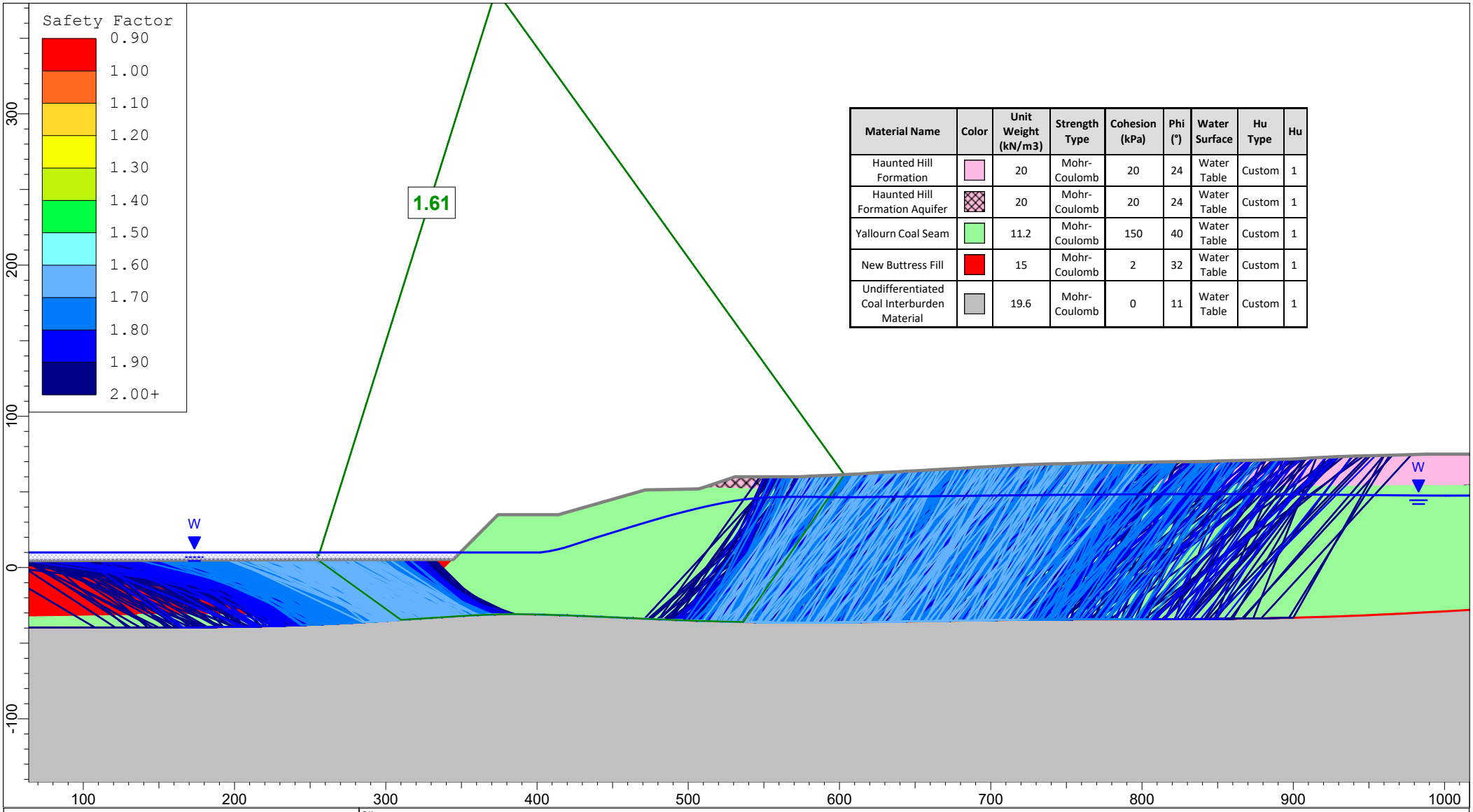
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



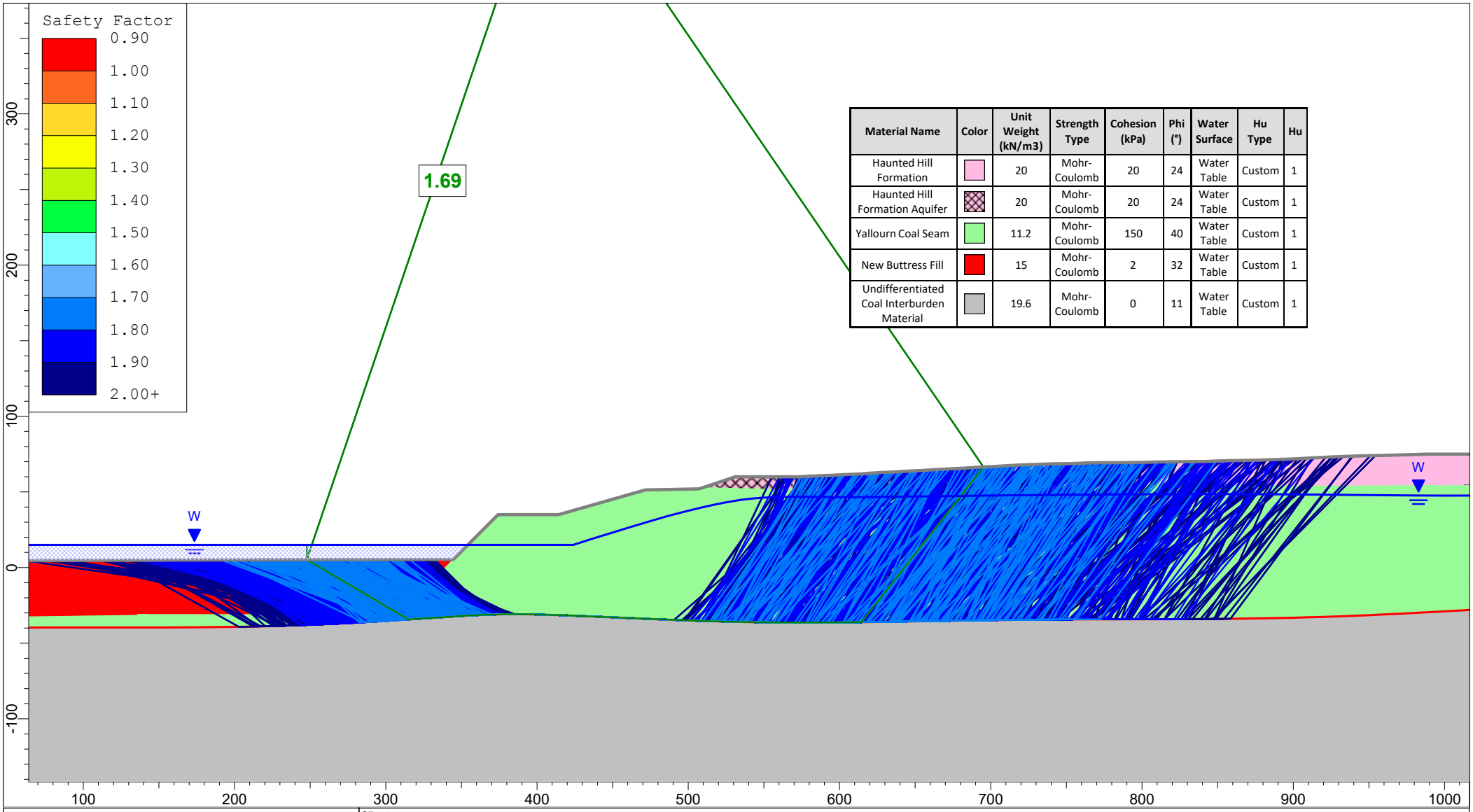
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



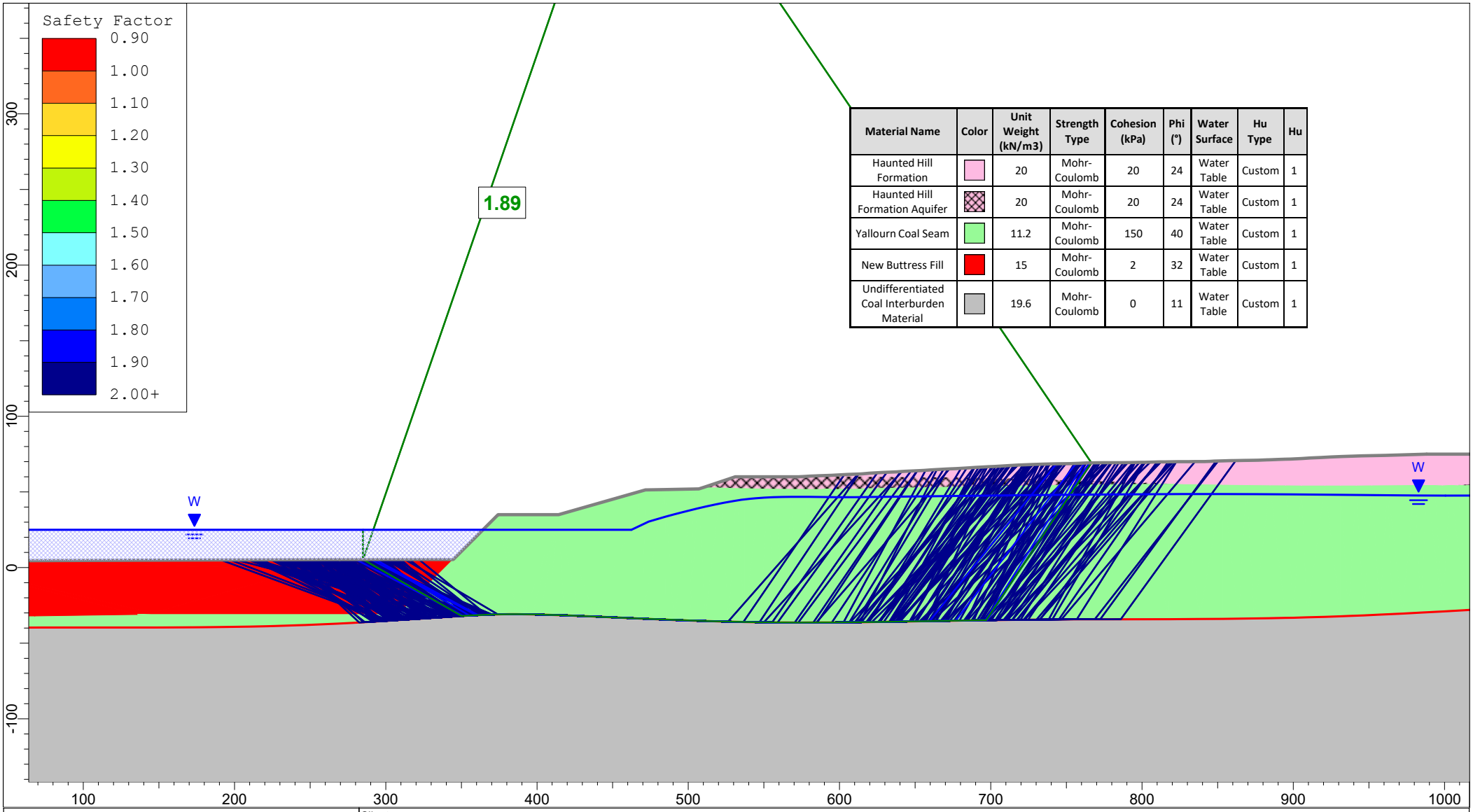
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



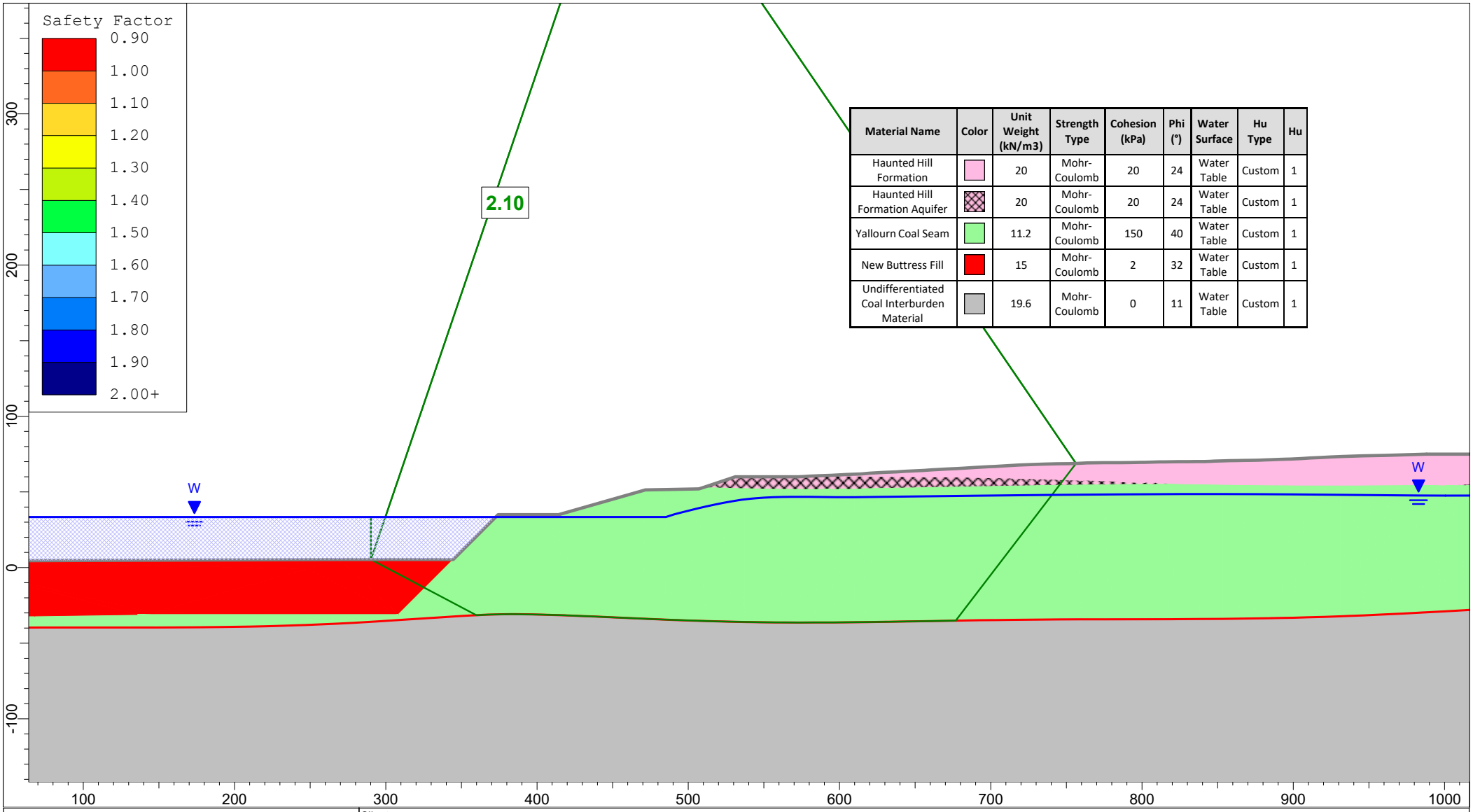
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



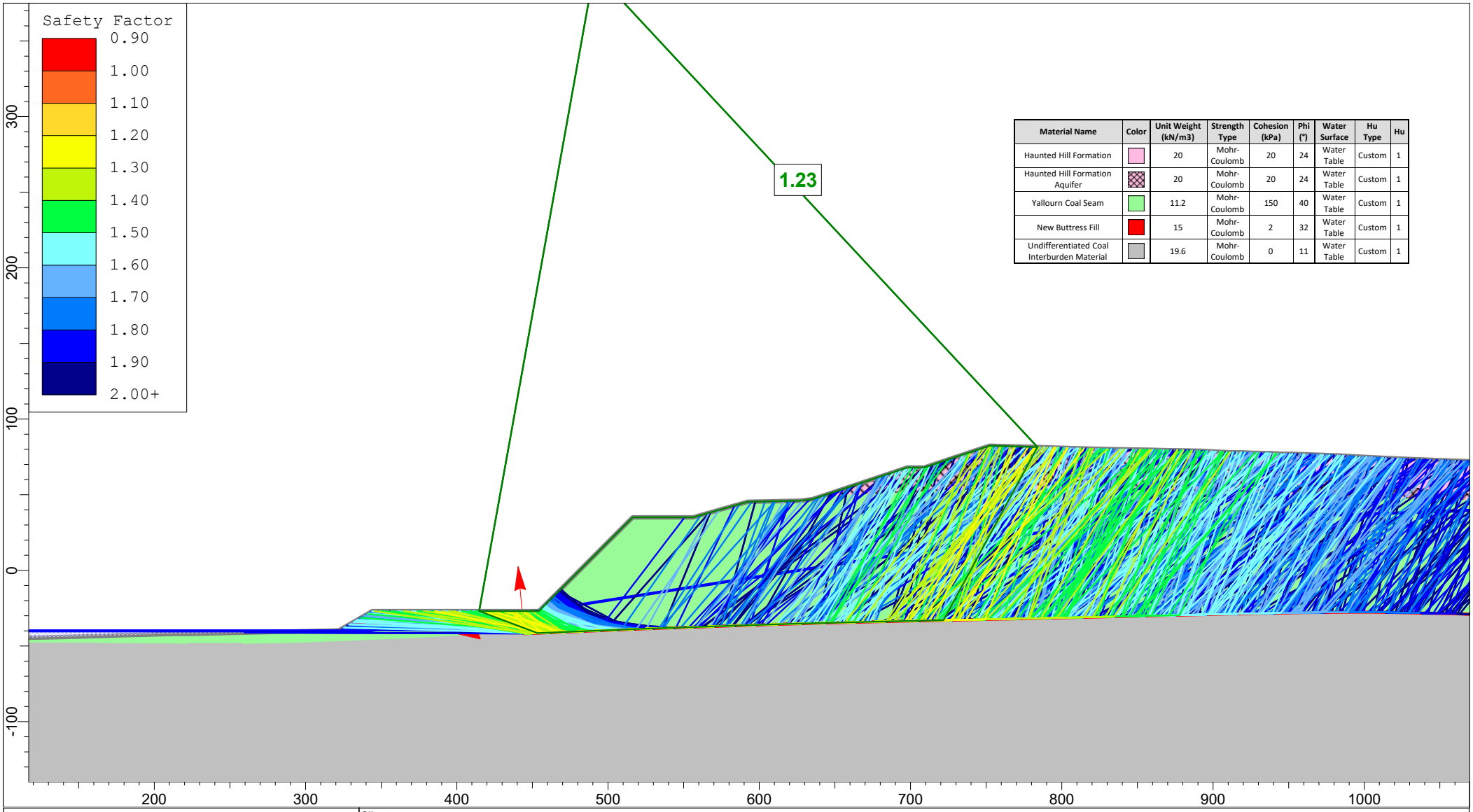
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



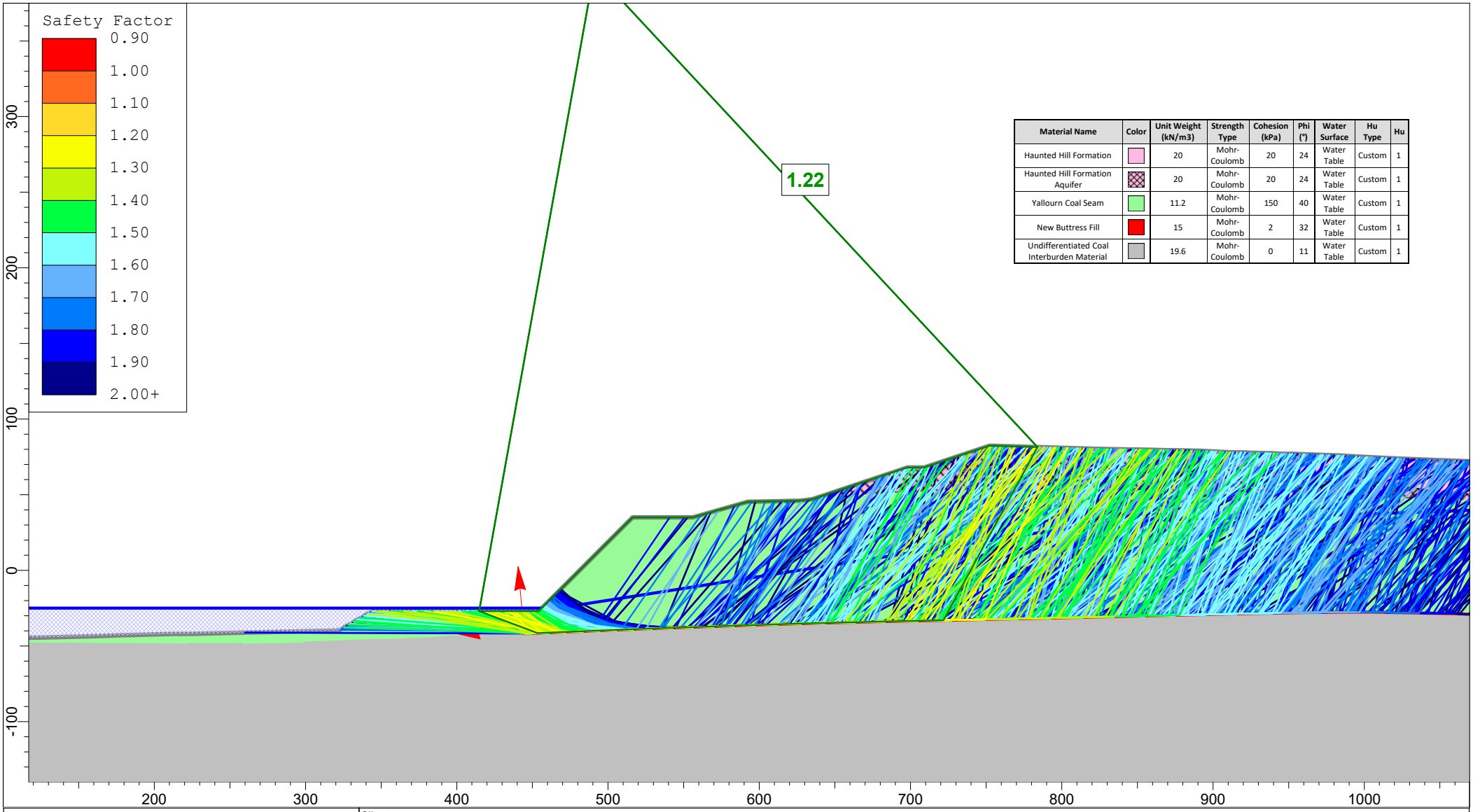
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



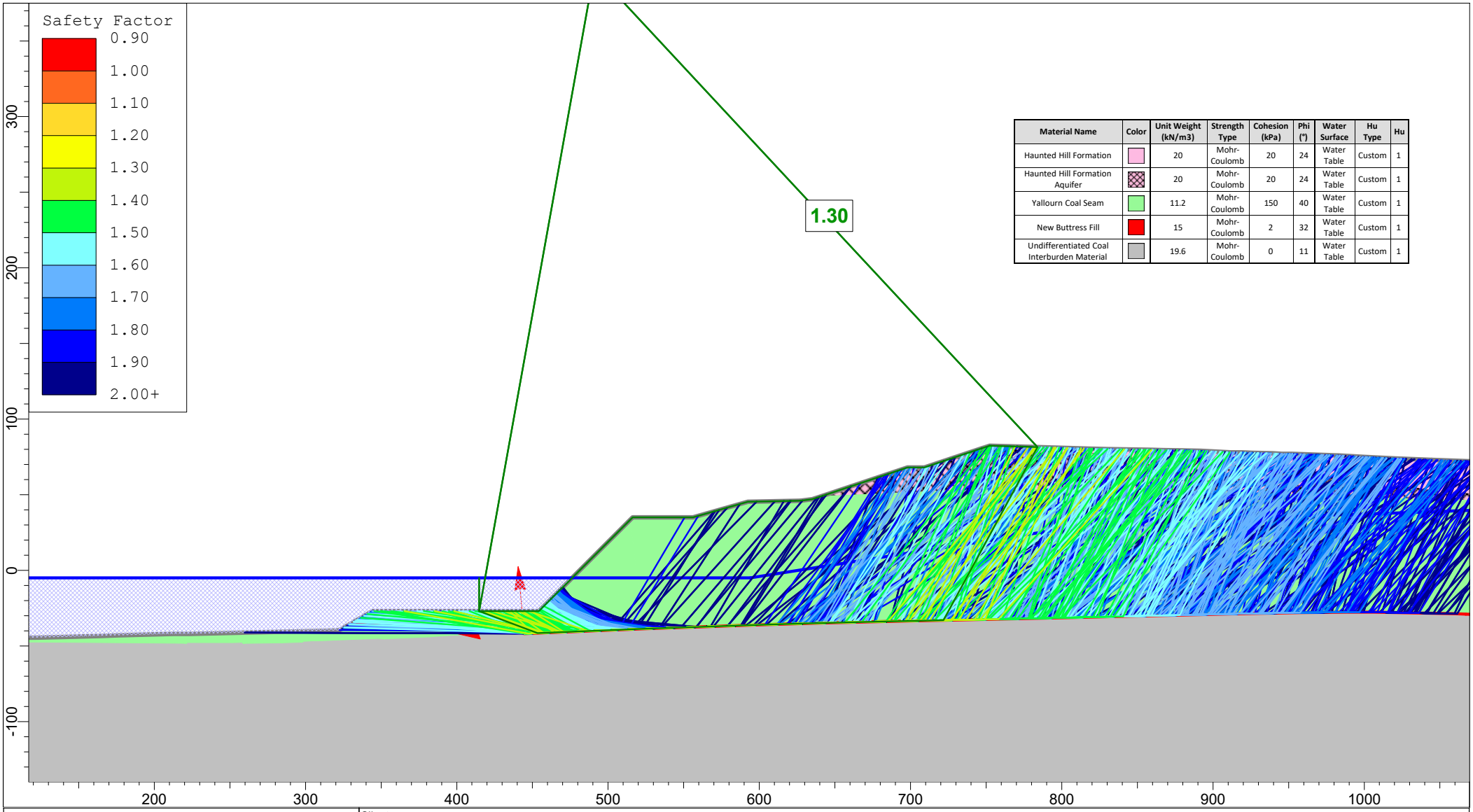
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -40 mRL
Notes:	Lower Bound Interseam Shear Strength		



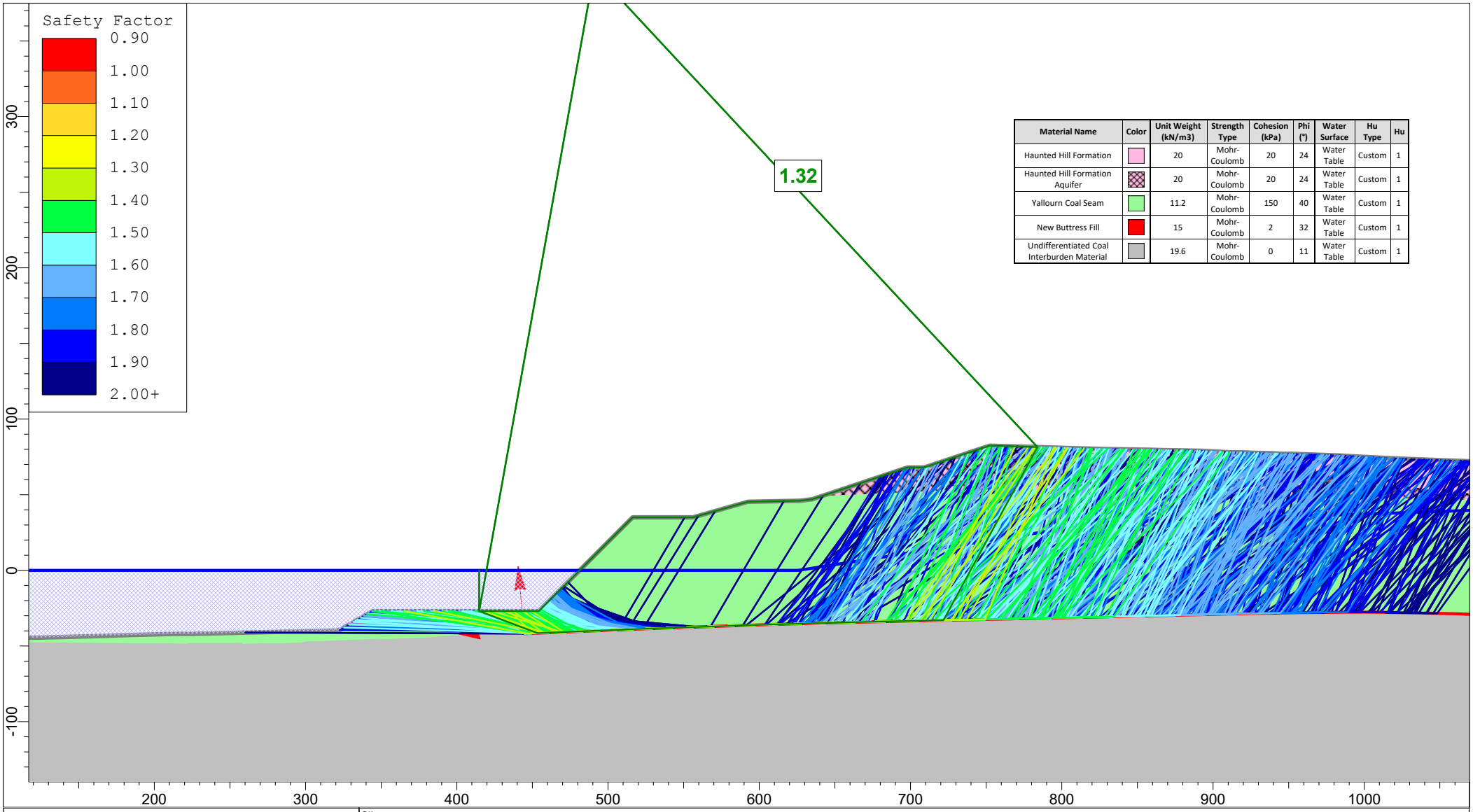
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -25 mRL
Notes:	Lower Bound Interseam Shear Strength		



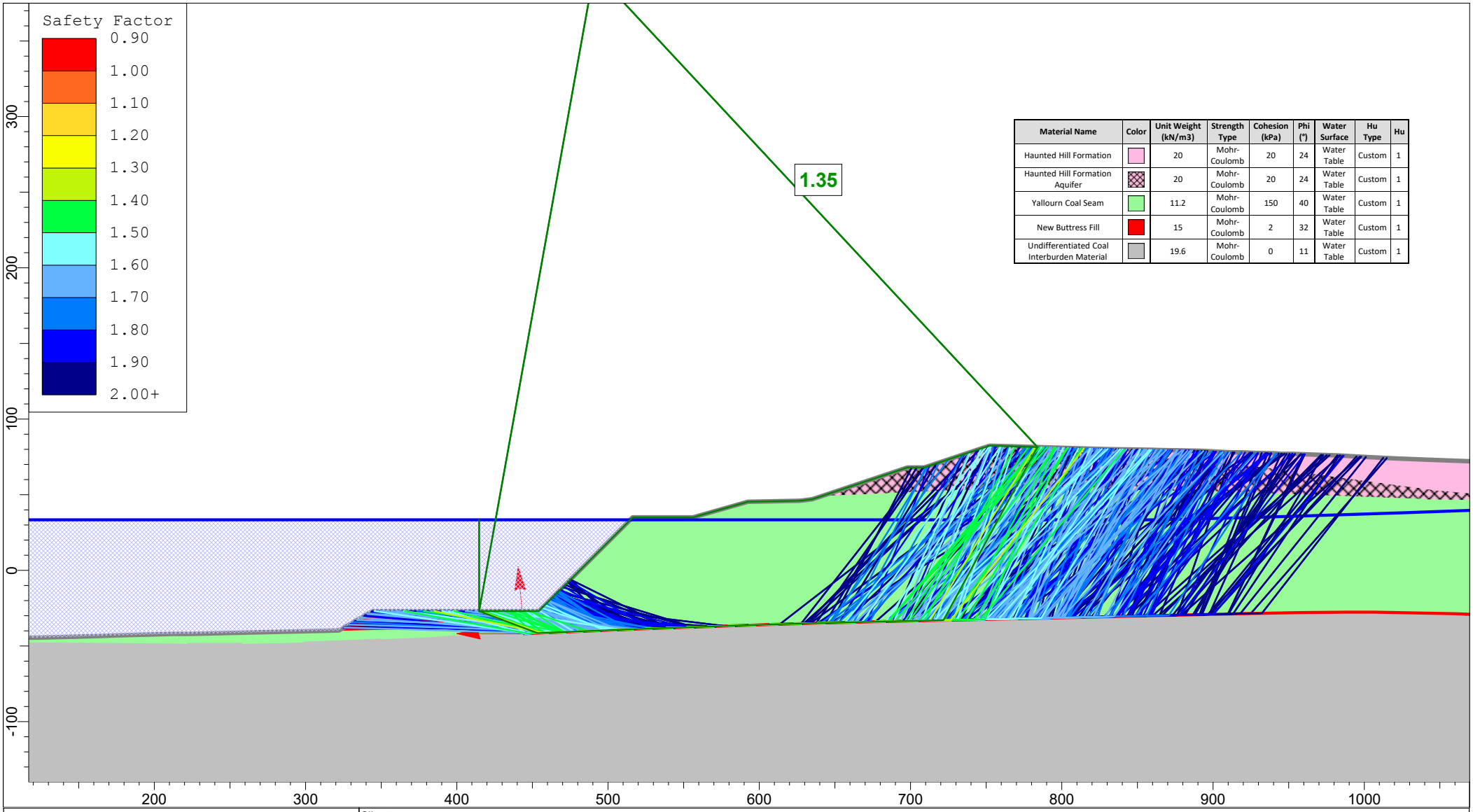
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength		



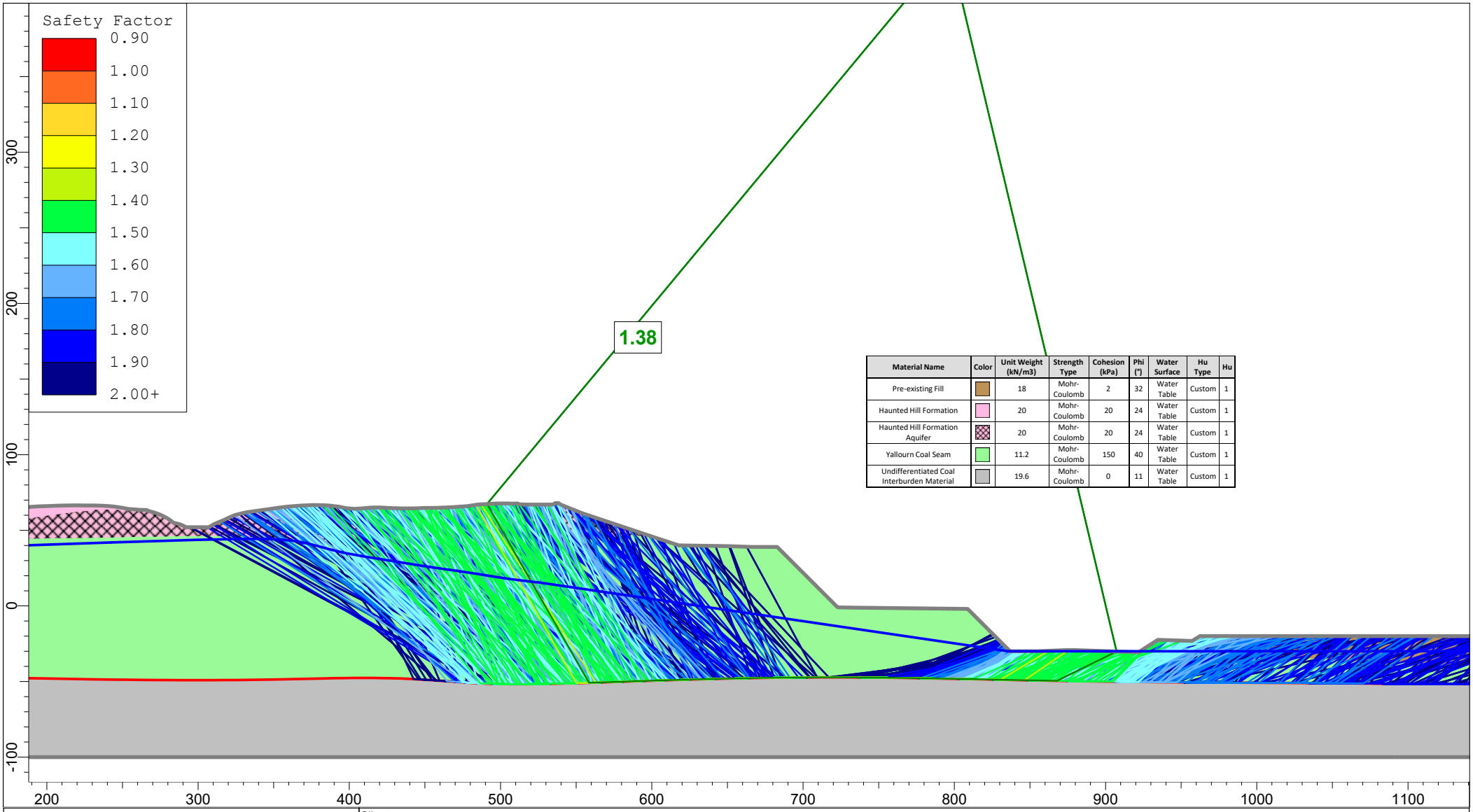
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**MVF-SB**
Section:	**Section 13**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 0 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



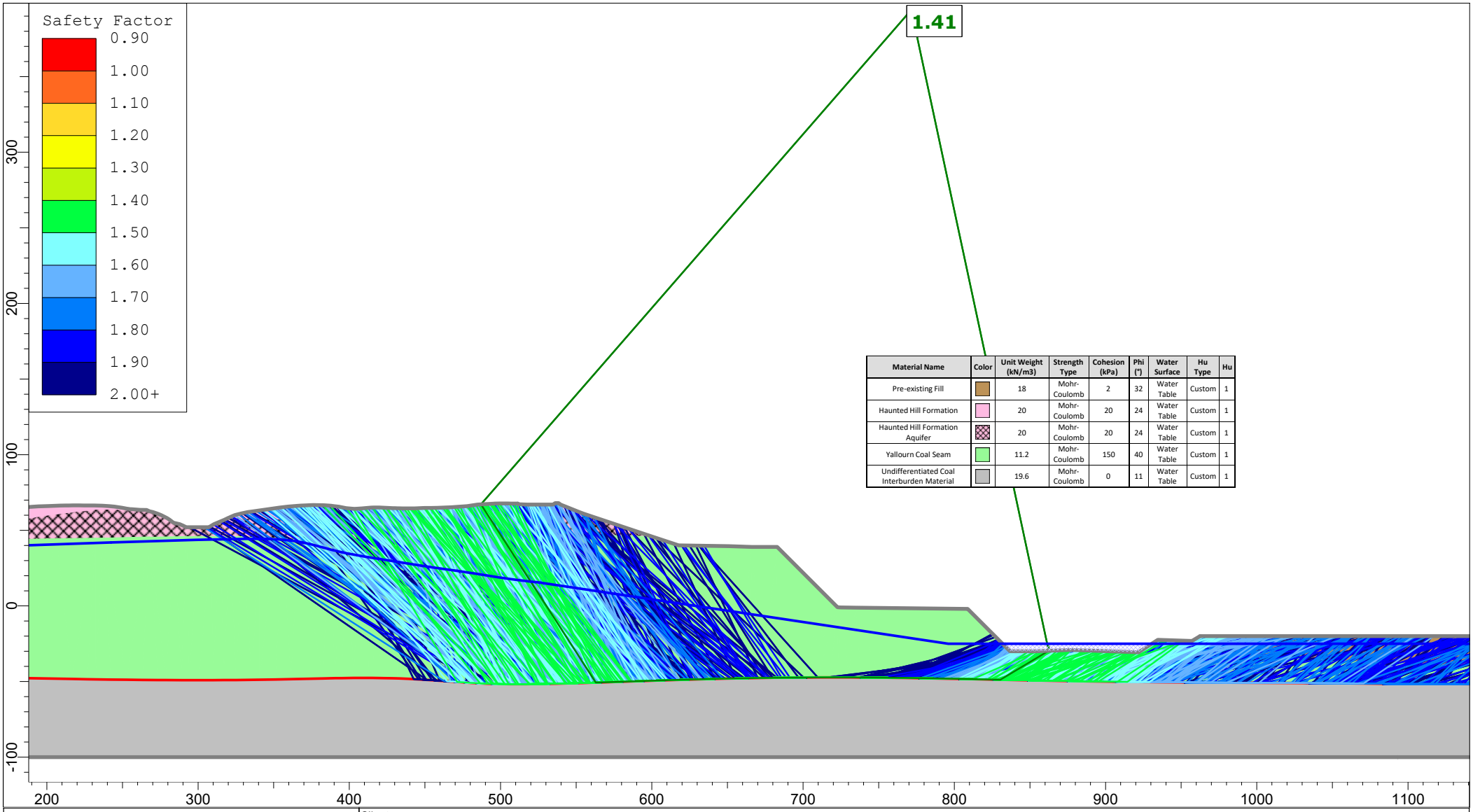
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**MVF-SB**
Section:	**Section 13**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 33.4 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



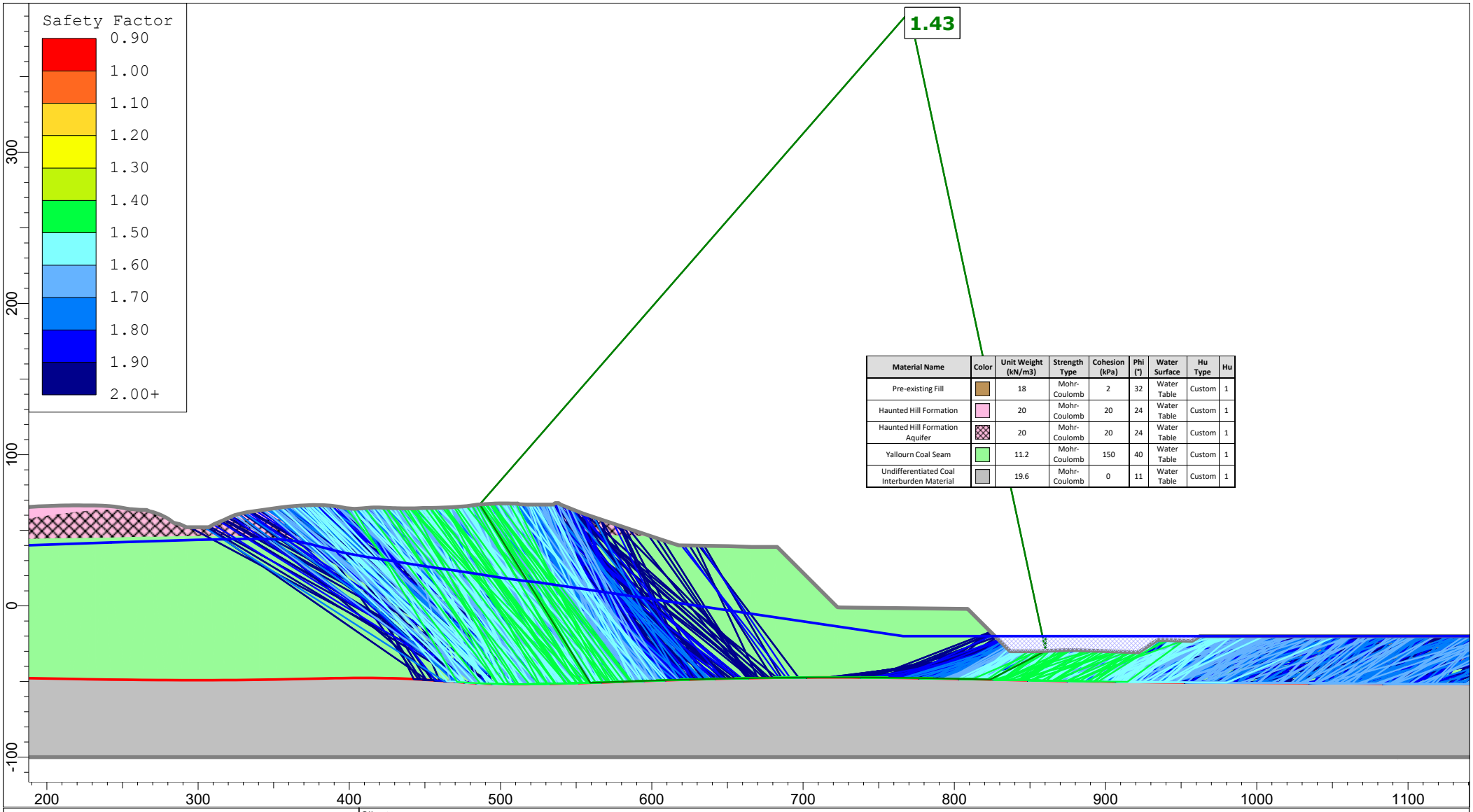
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 14	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -30 mRL
Notes:	Lower Bound Interseam Shear Strength		



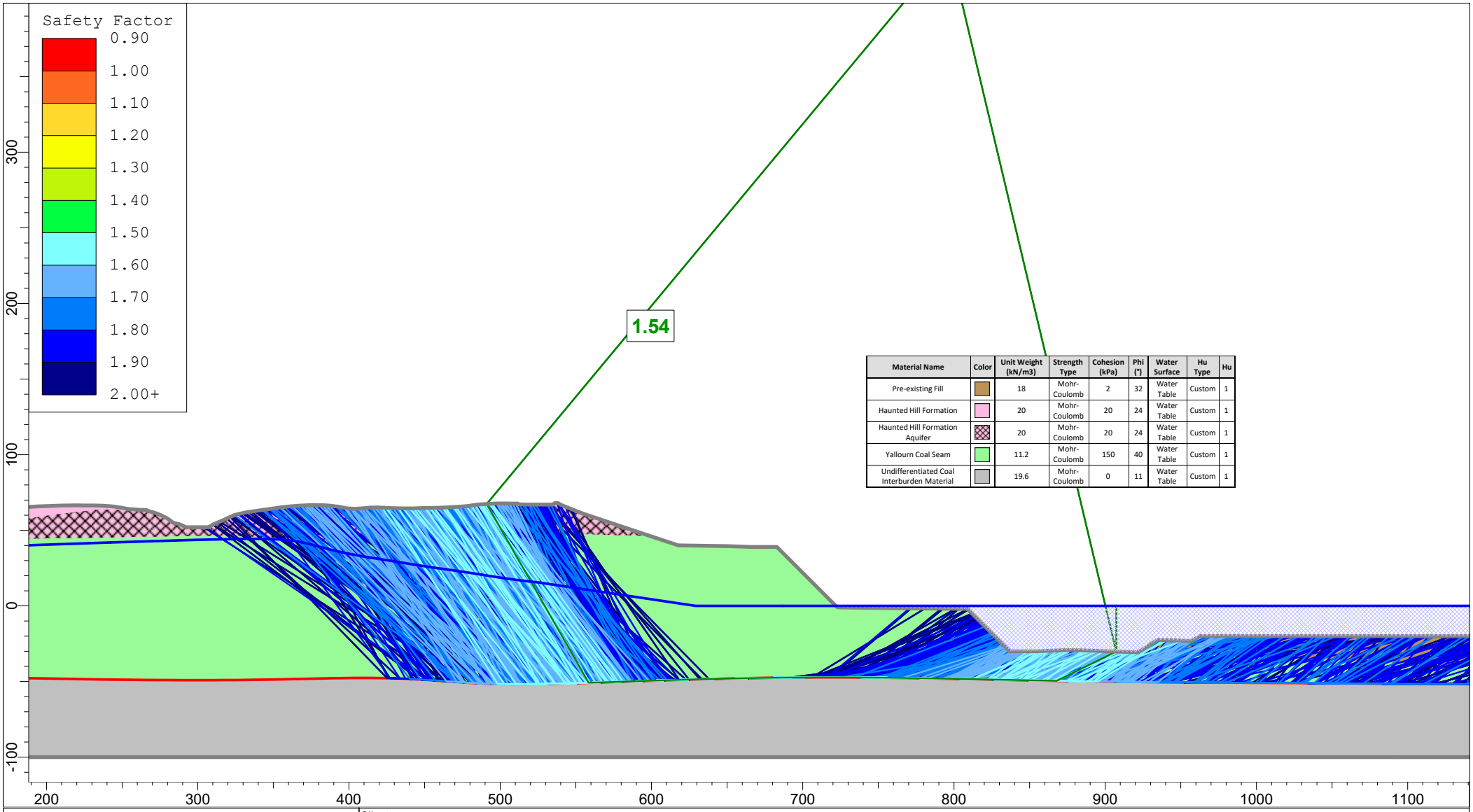
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 14	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -25 mRL
Notes:	Lower Bound Interseam Shear Strength		



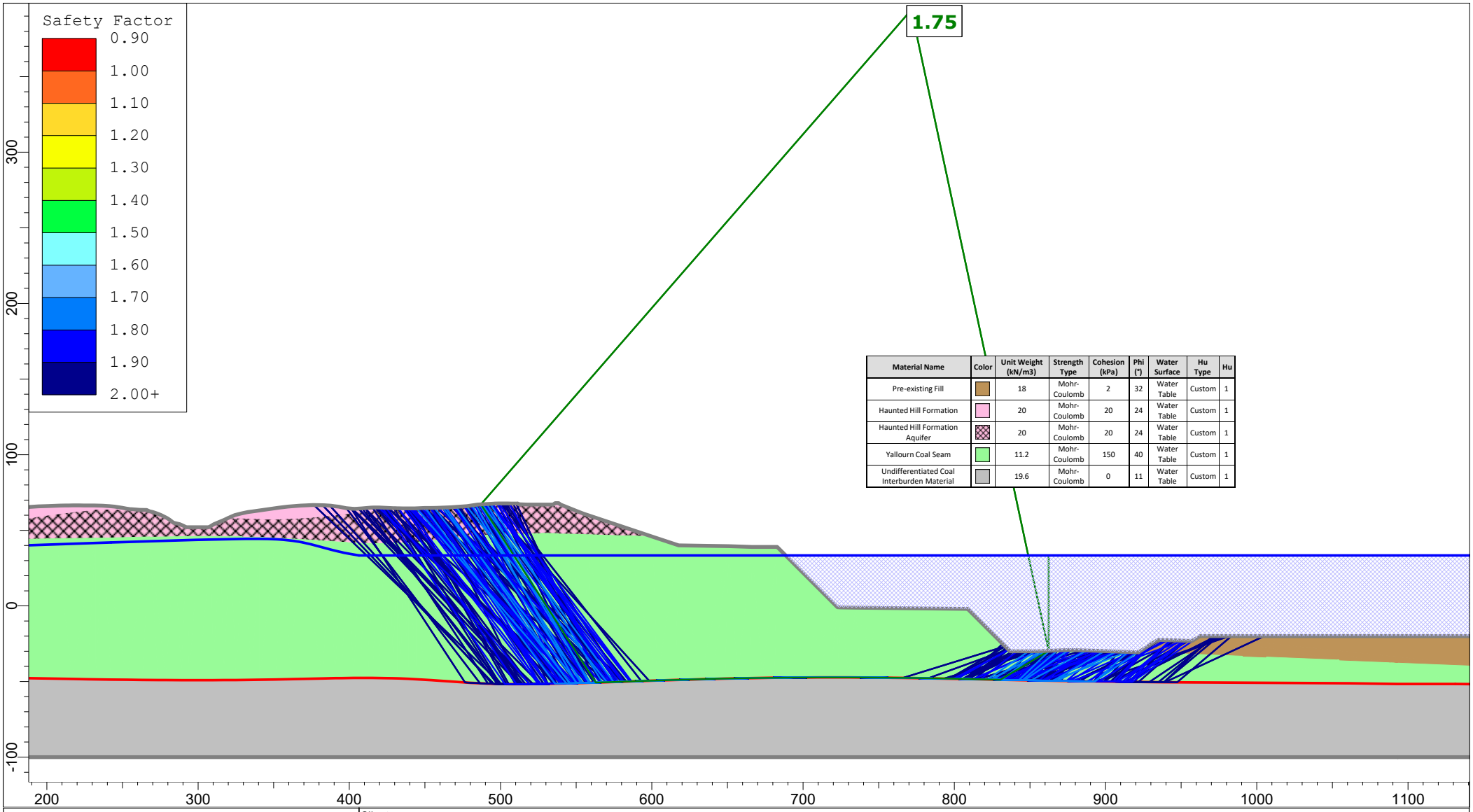
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 14	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -20 mRL
Notes:	Lower Bound Interseam Shear Strength		



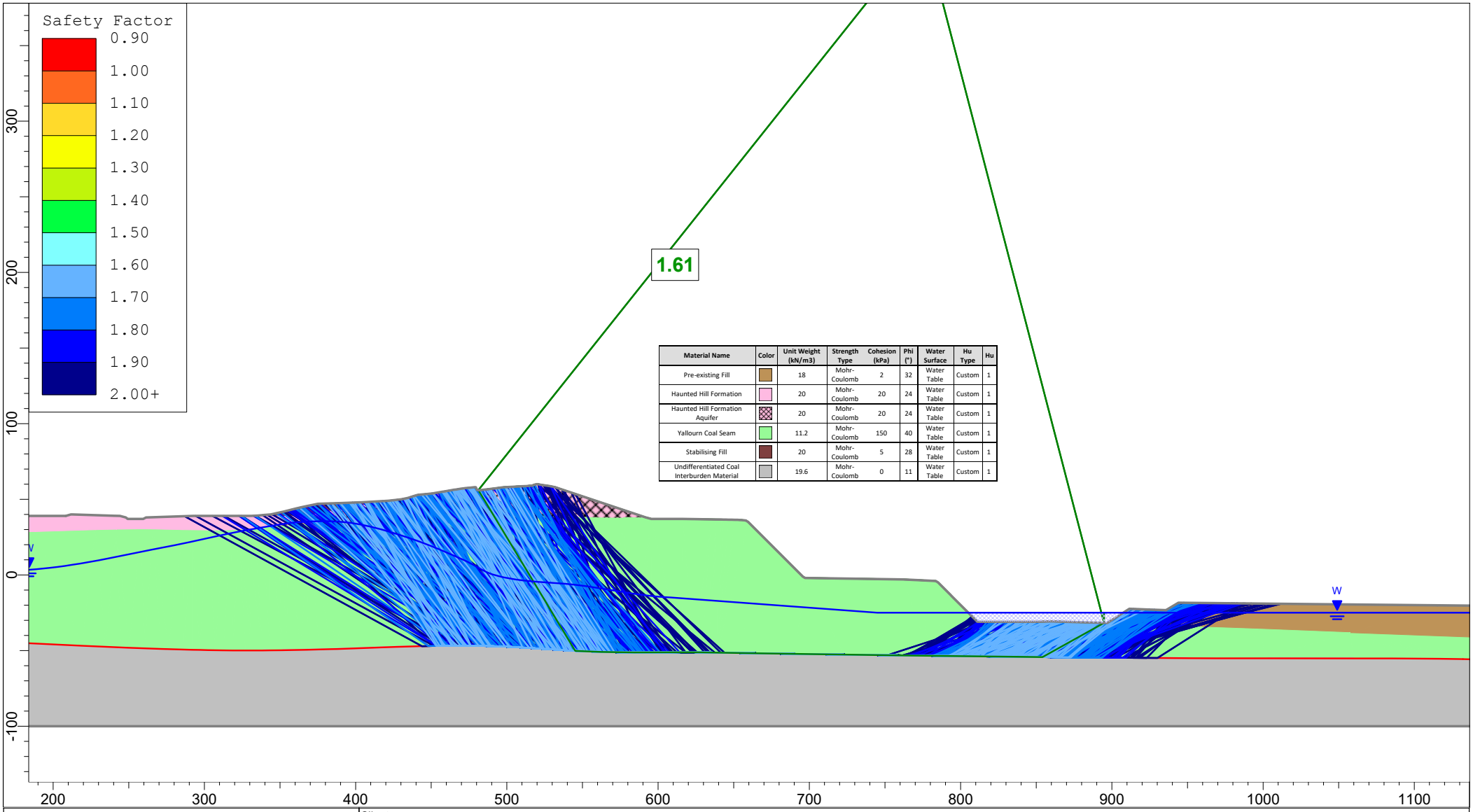
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 14	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



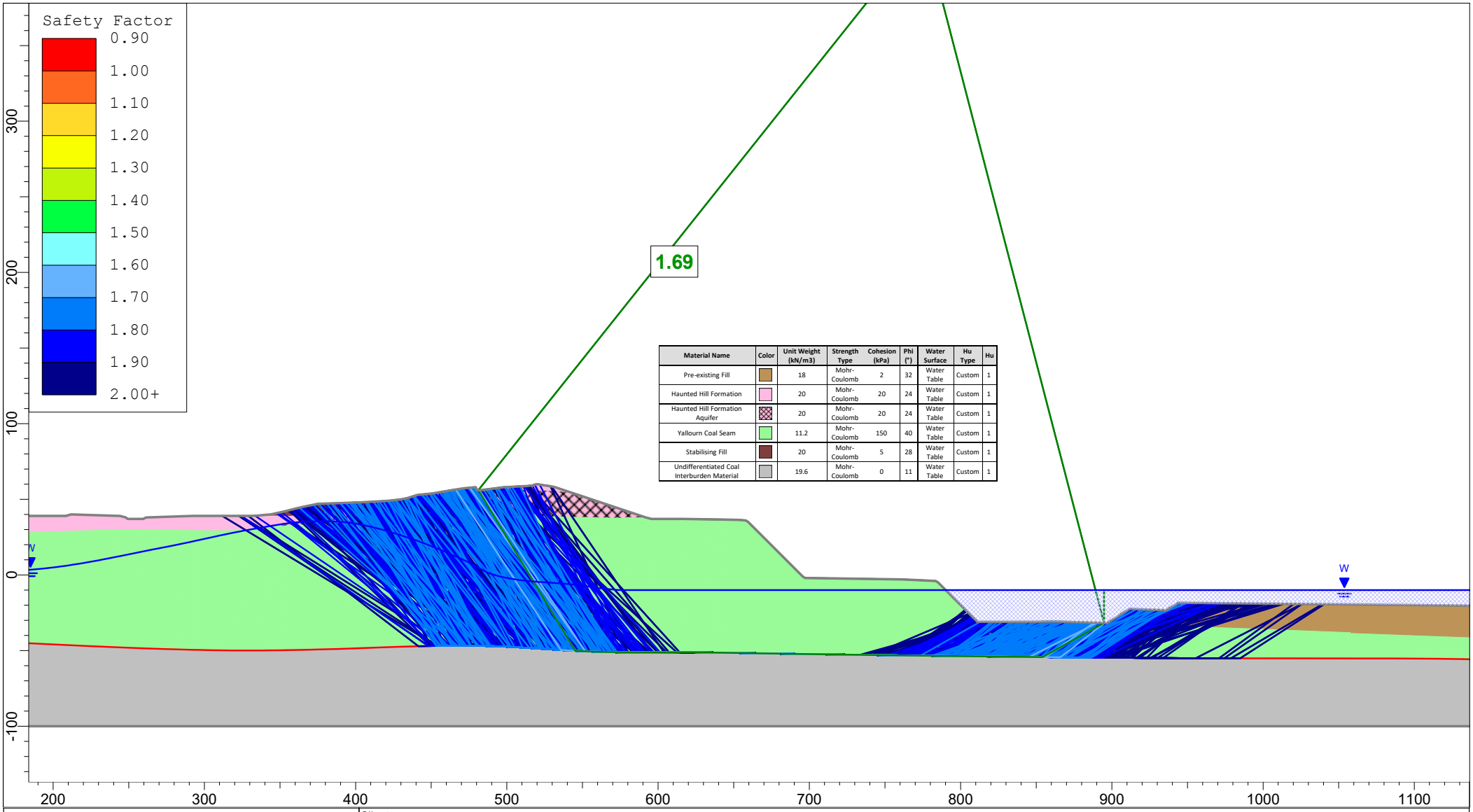
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 14	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



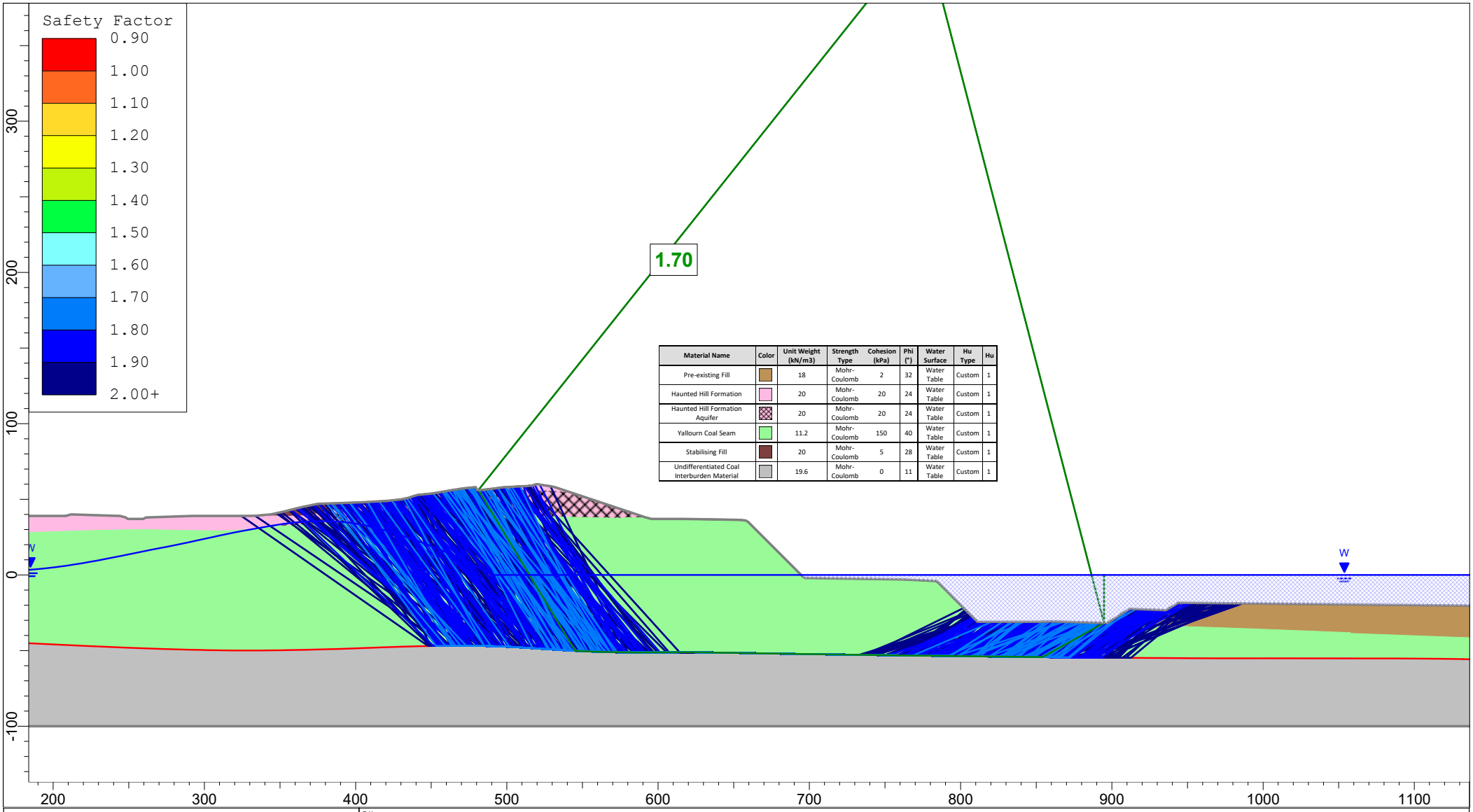
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Stabilising Fill		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**MVF-WB**
Section:	**Section 15**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at -25 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



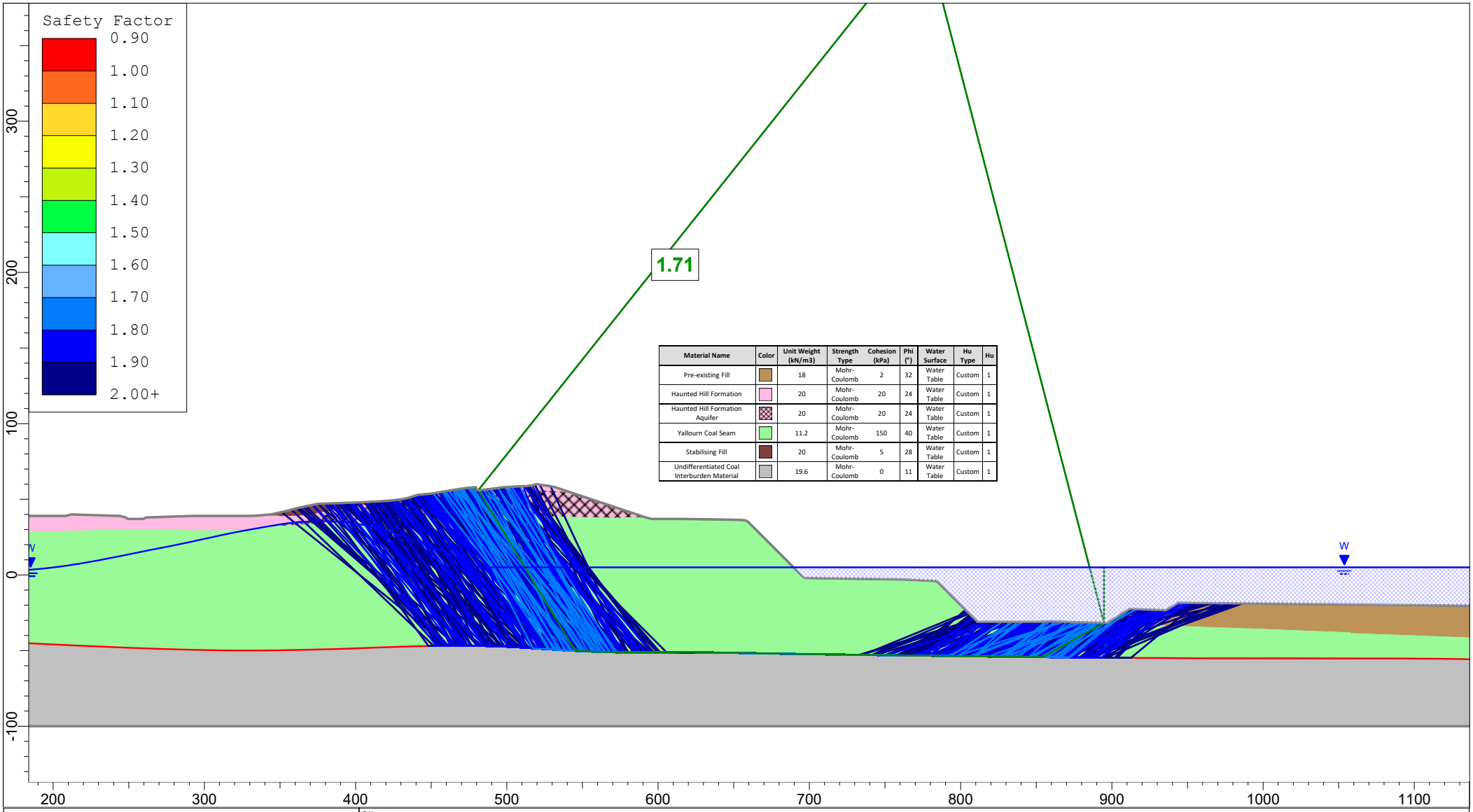
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Stabilising Fill		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**MVF-WB**
Section:	**Section 15**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at -10 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



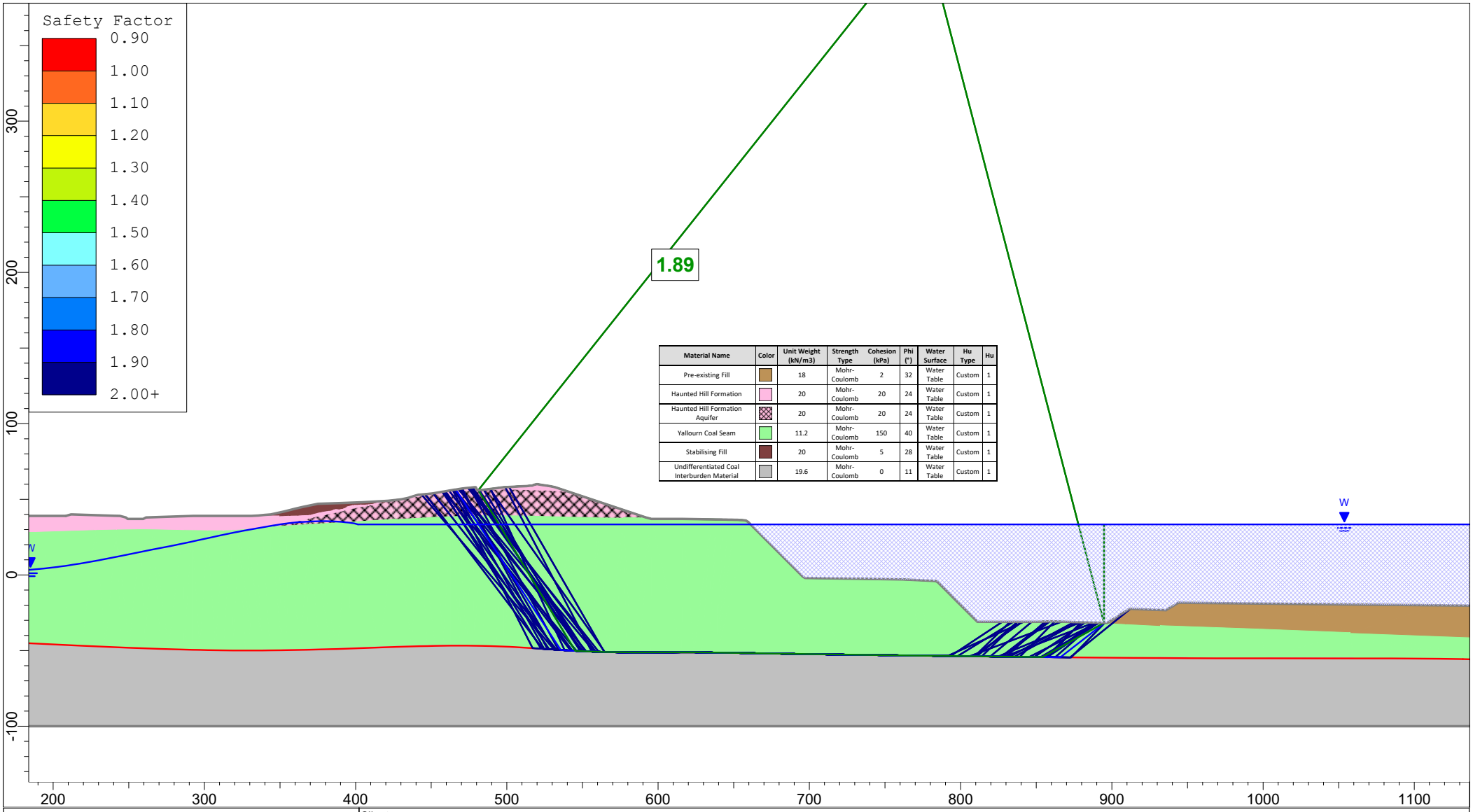
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Stabilising Fill		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**MVF-WB**
Section:	**Section 15**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 0 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



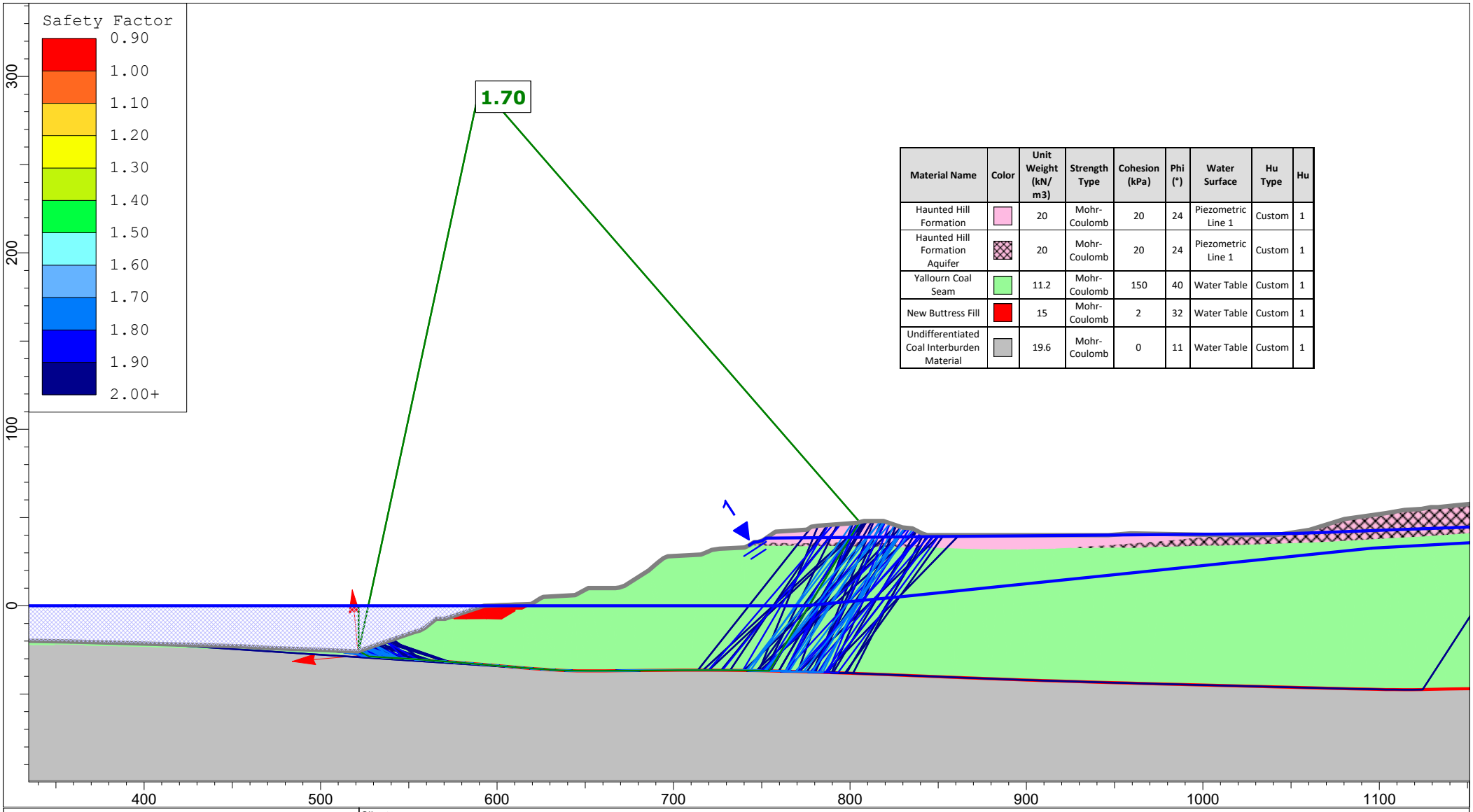
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Stabilising Fill		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**MVF-WB**
Section:	**Section 15**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 5 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



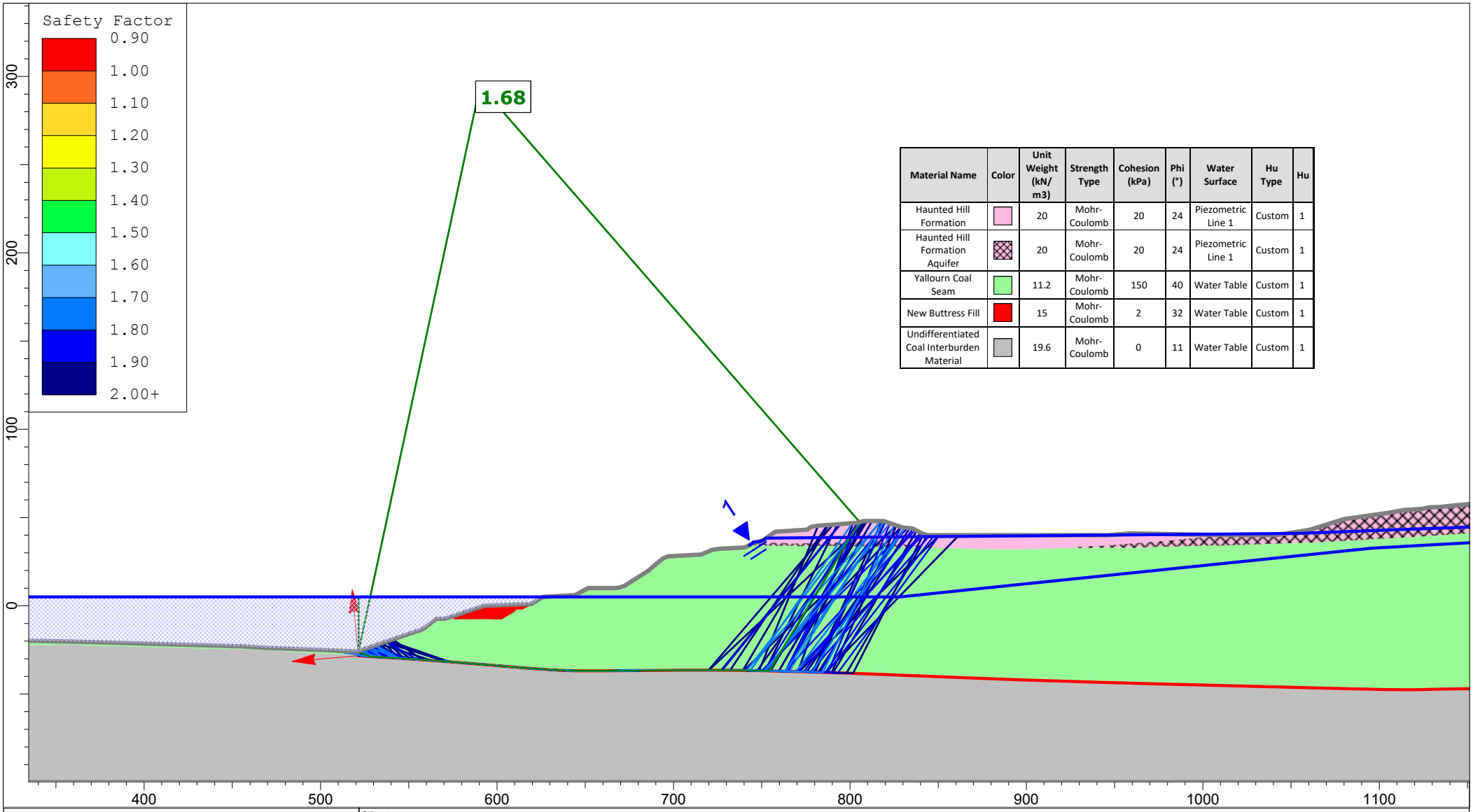
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Stabilising Fill		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 15	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



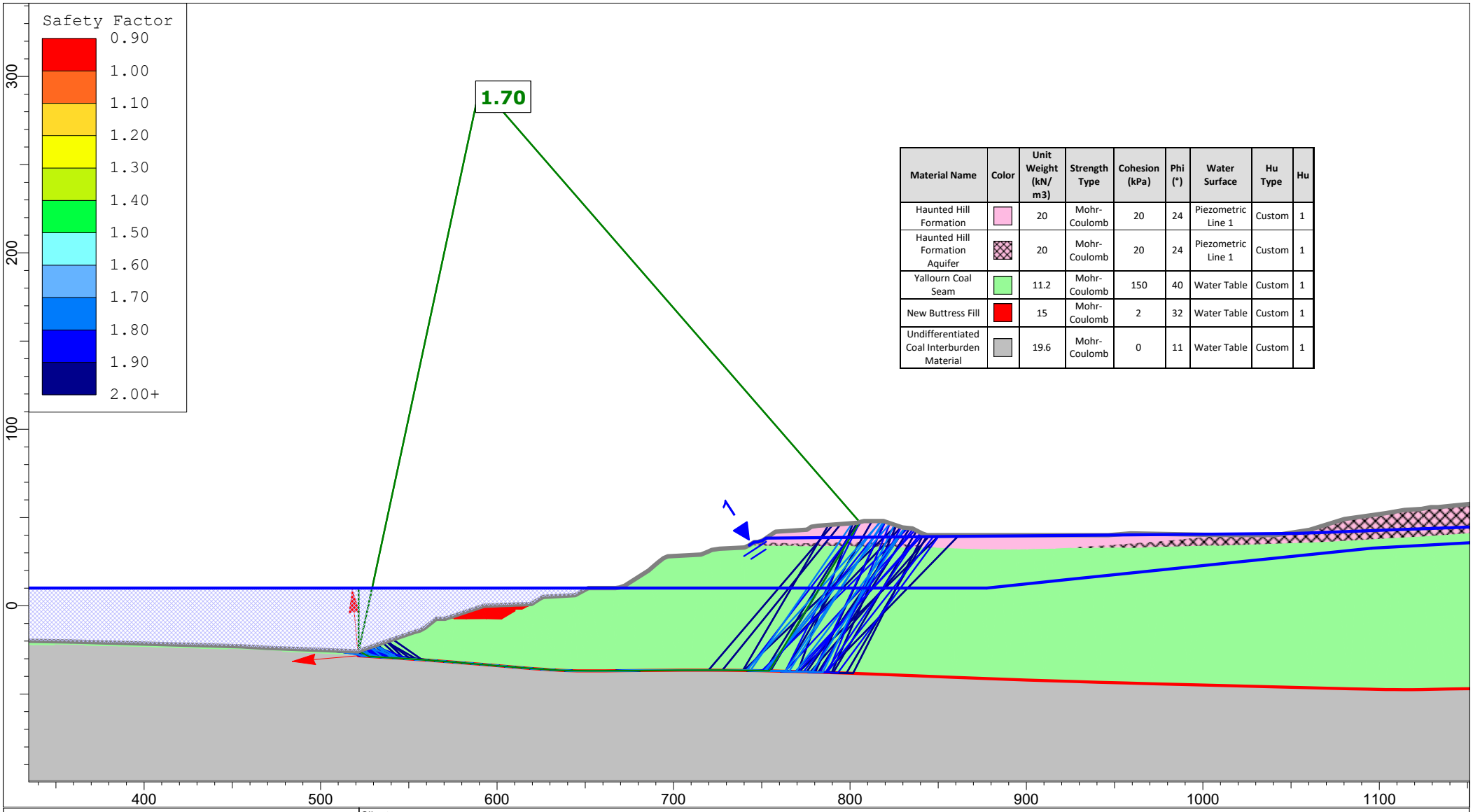
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



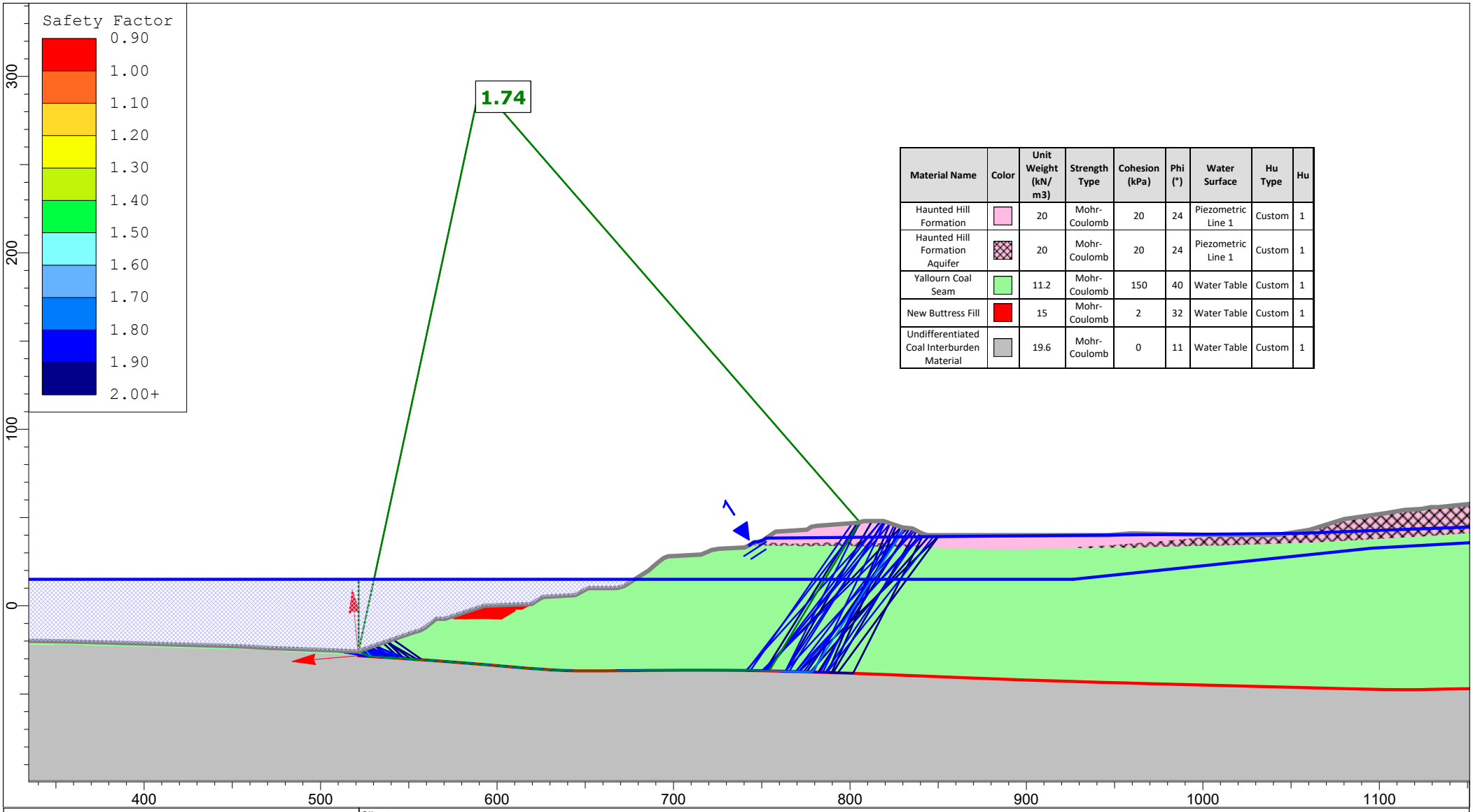
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



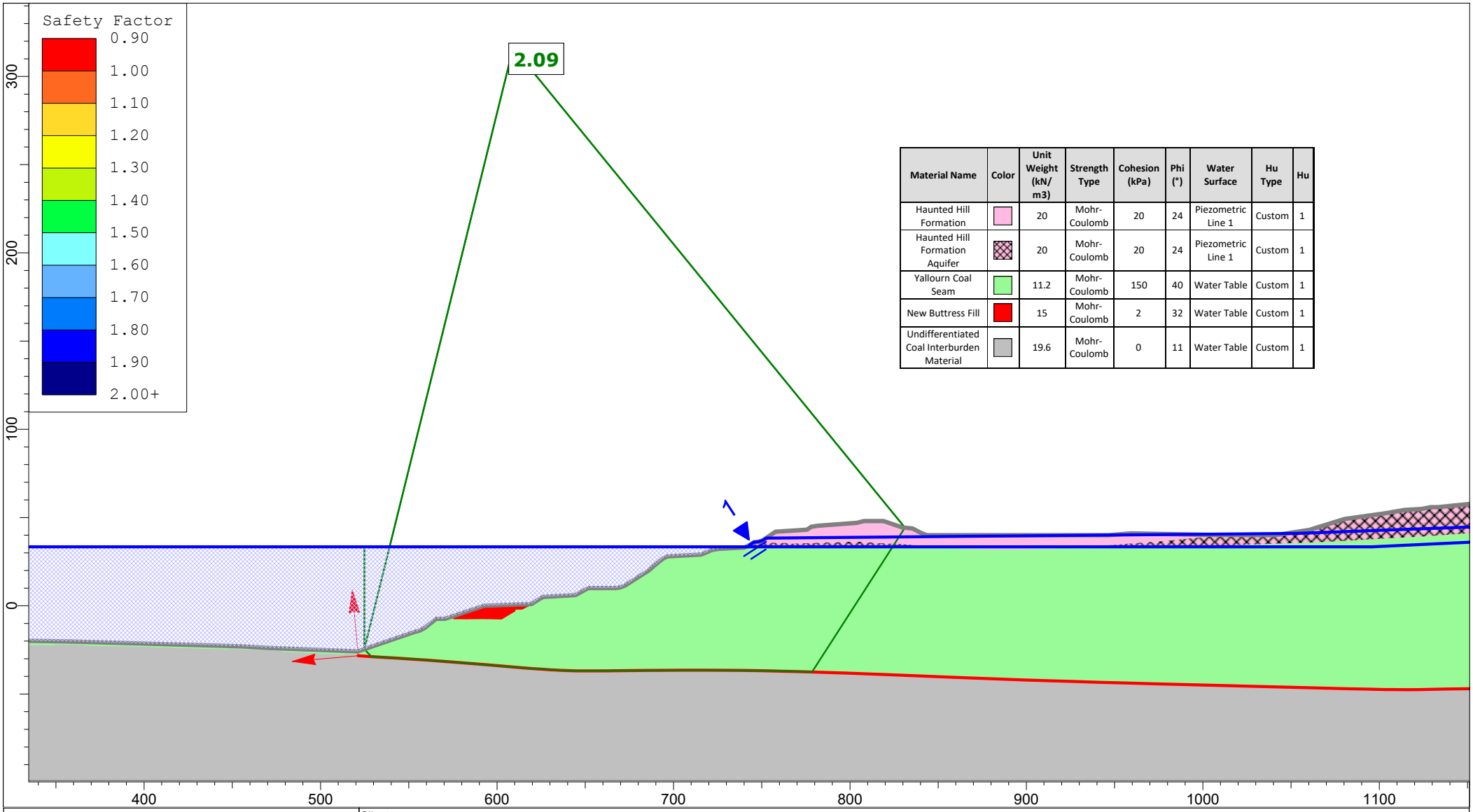
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



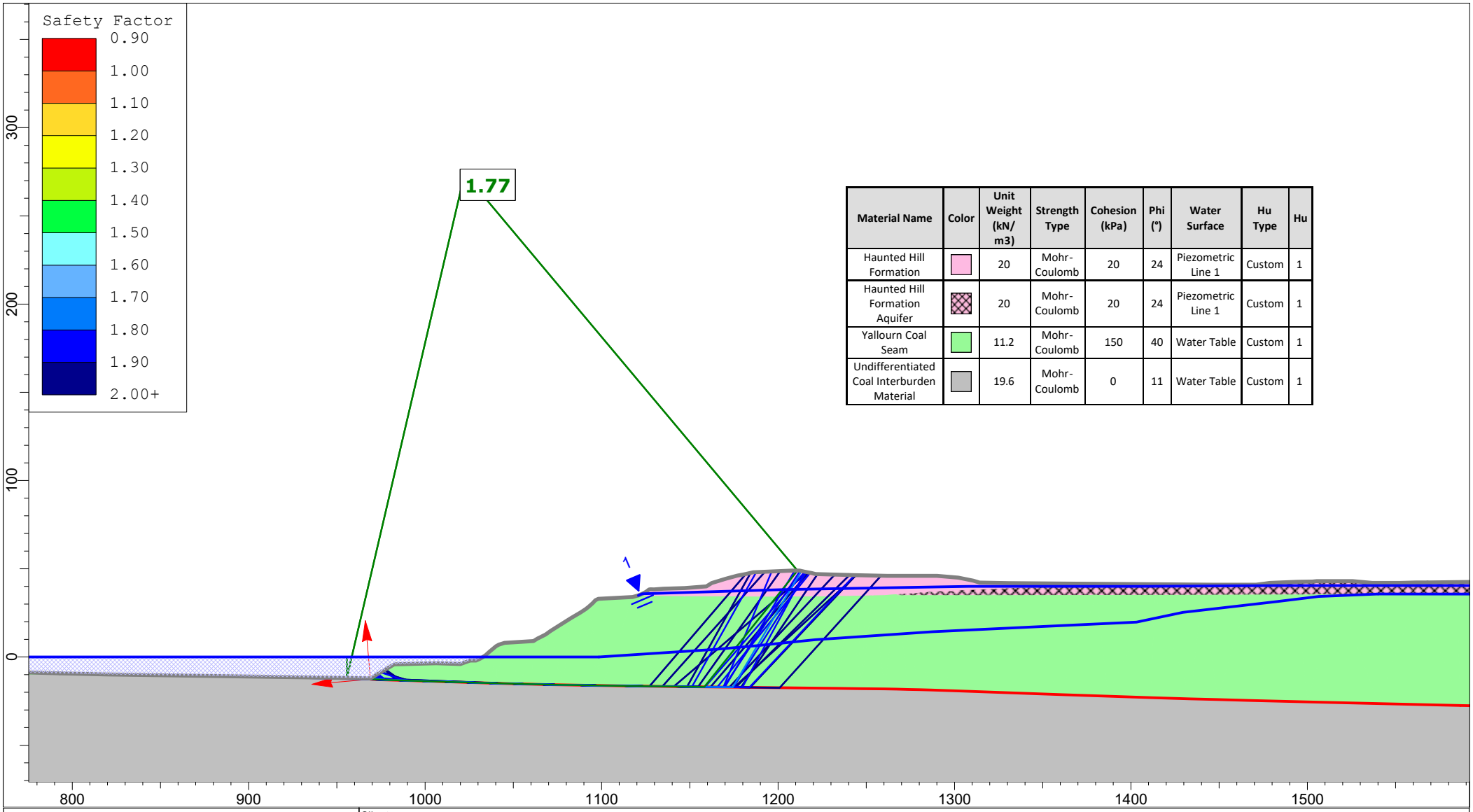
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



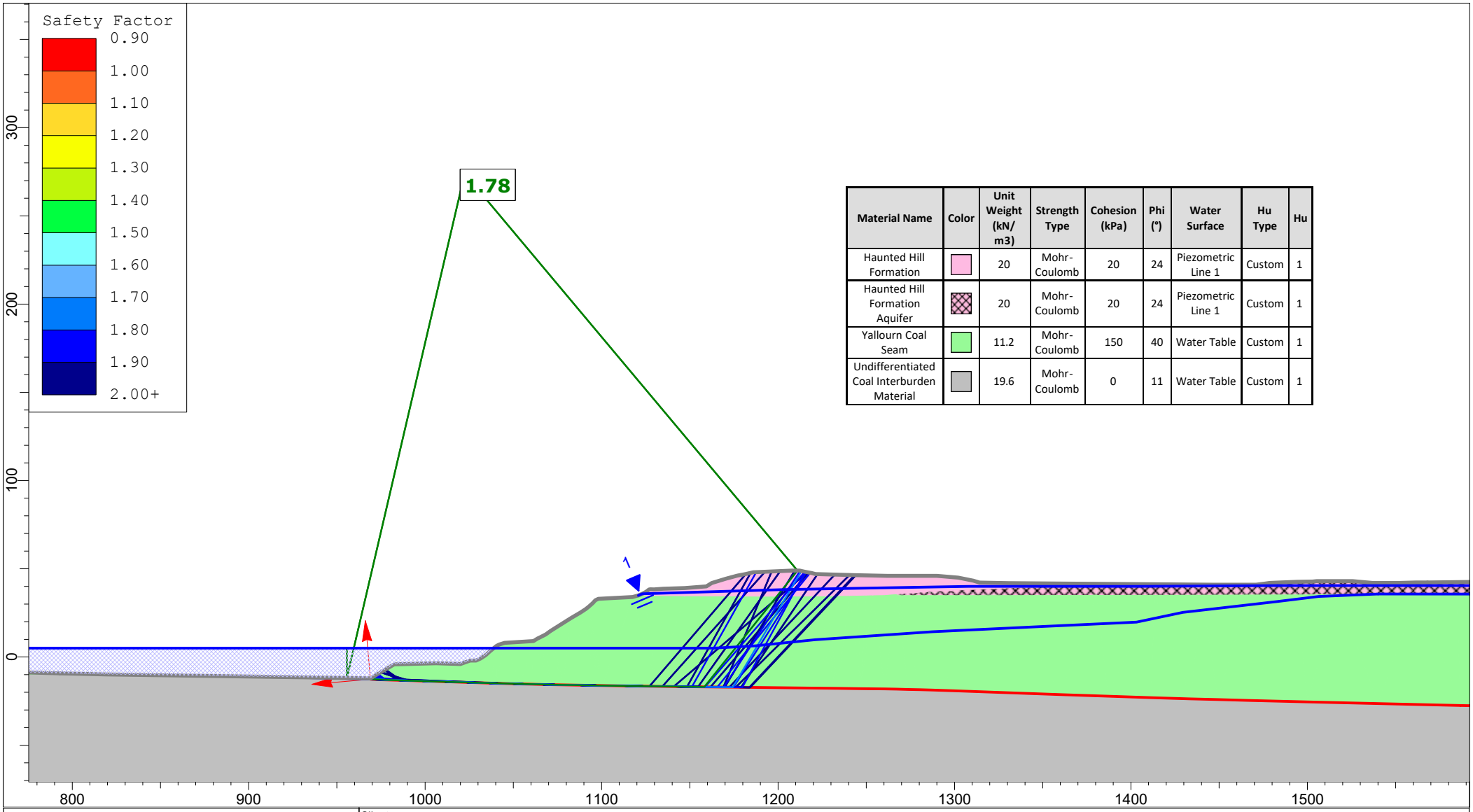
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



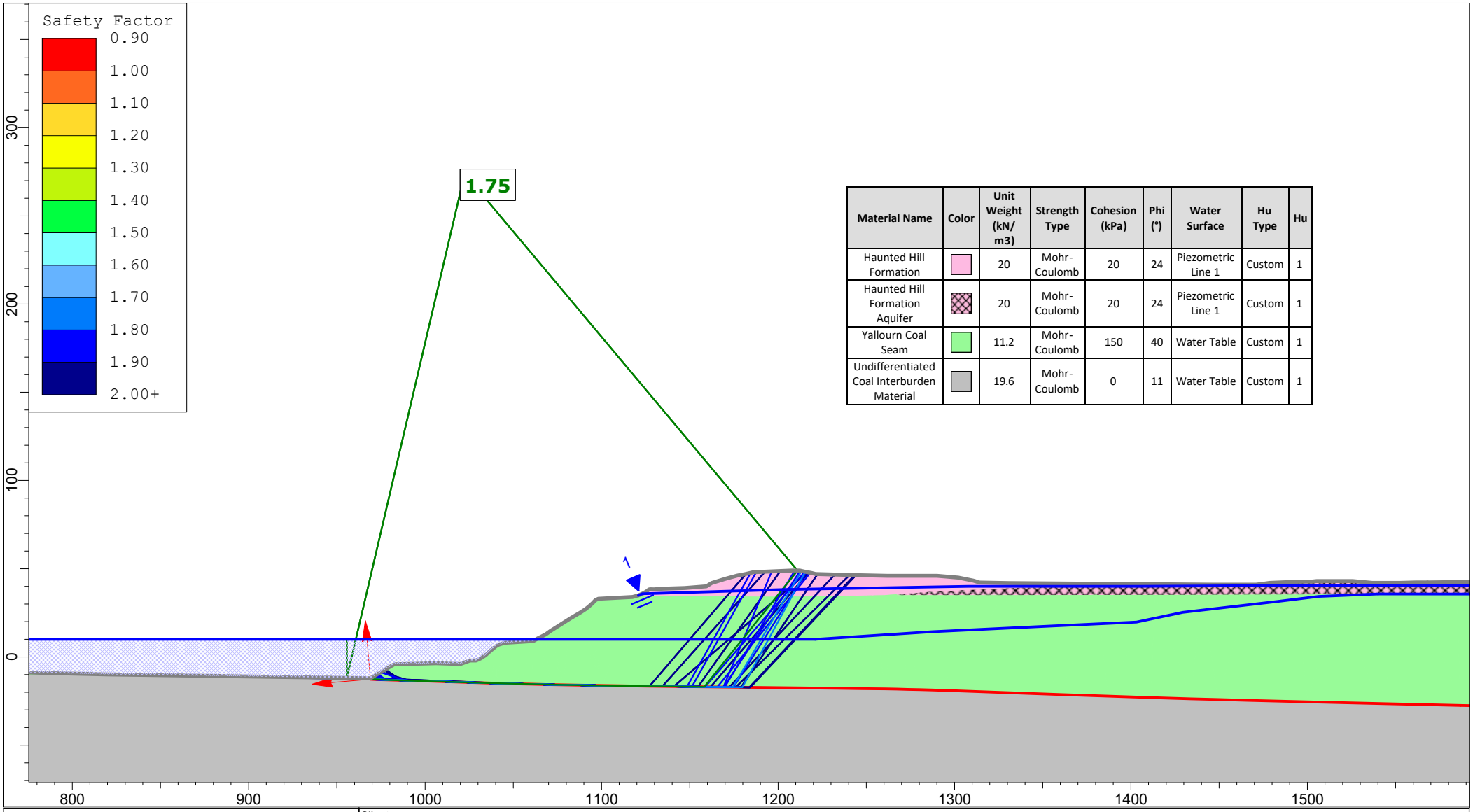
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



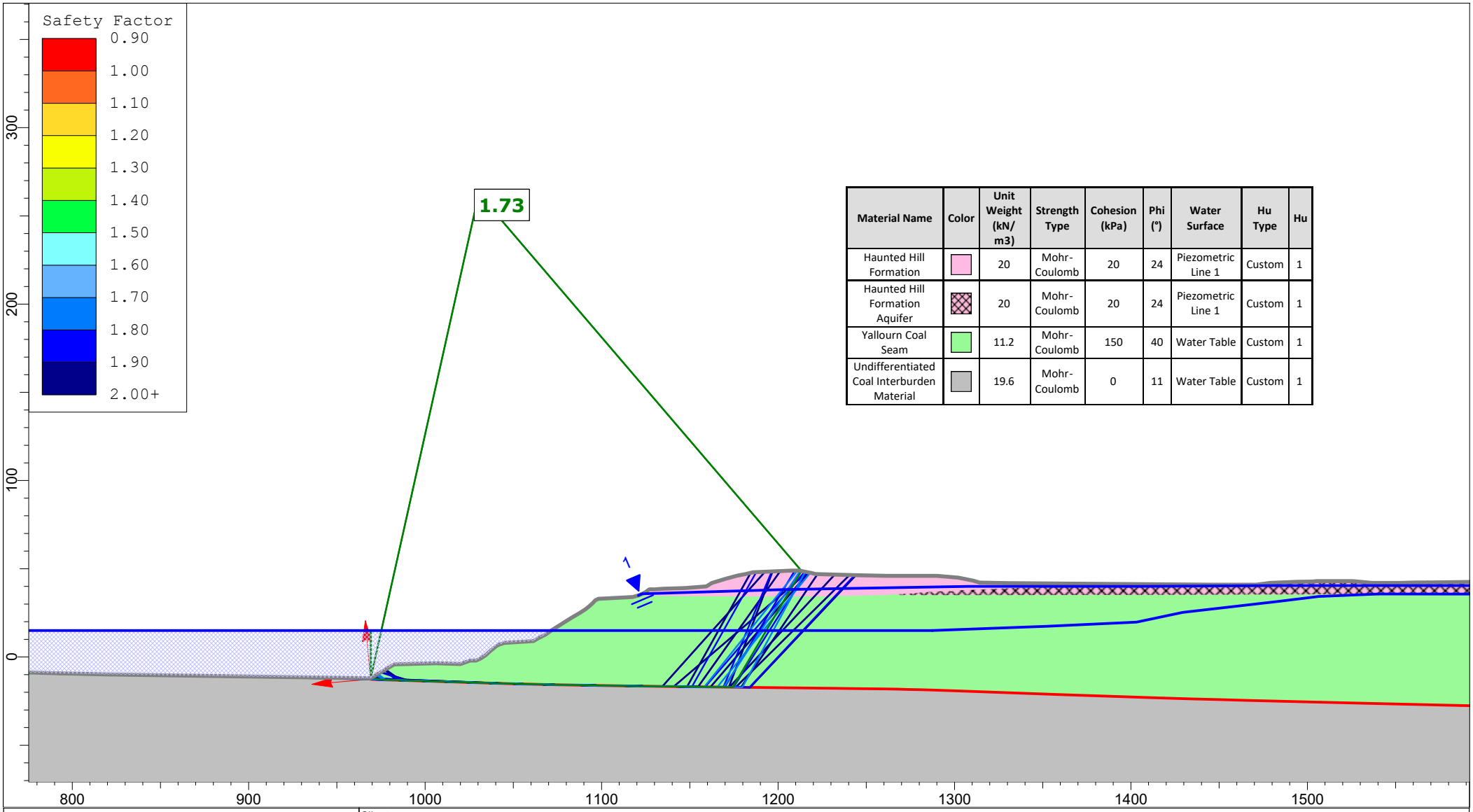
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



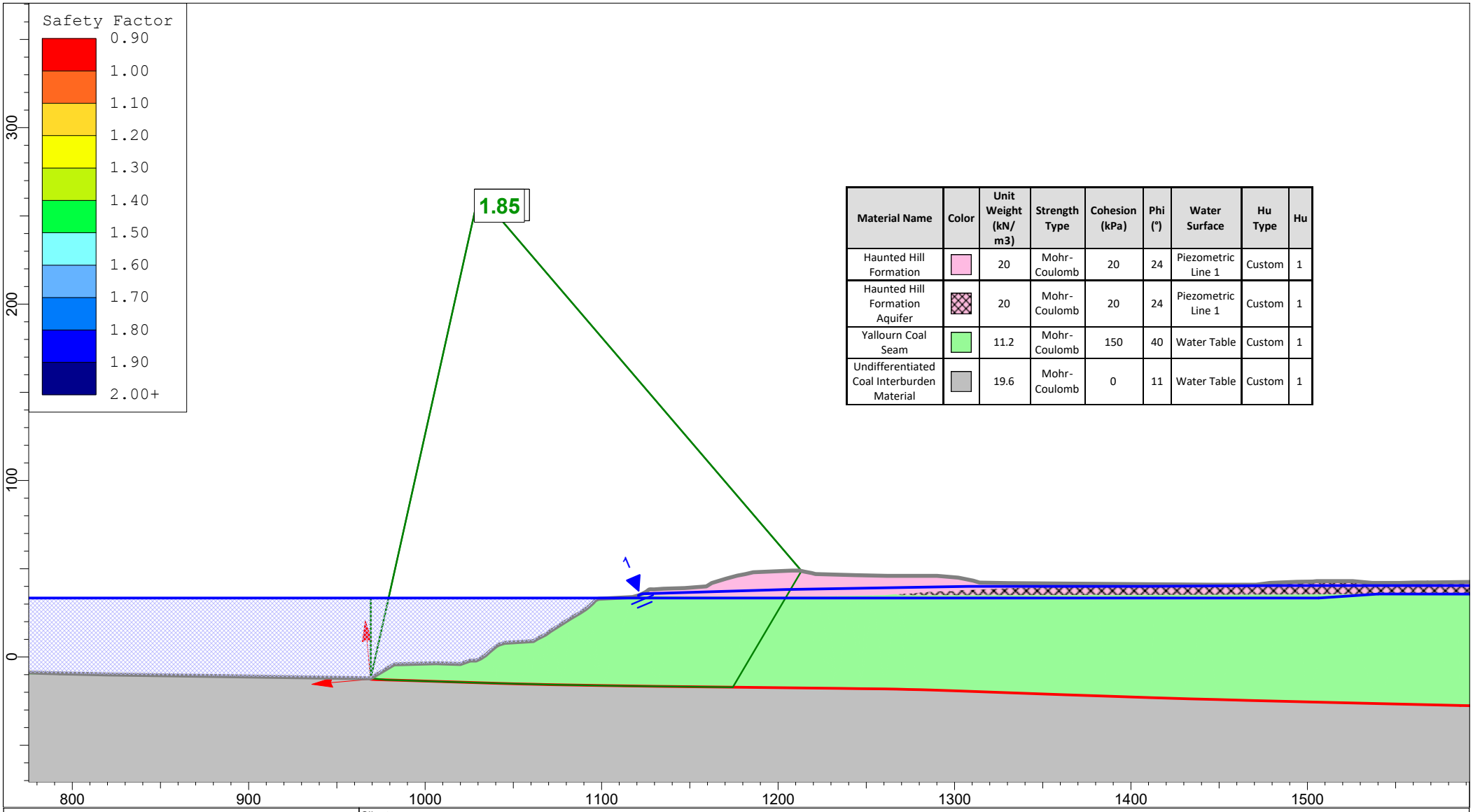
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



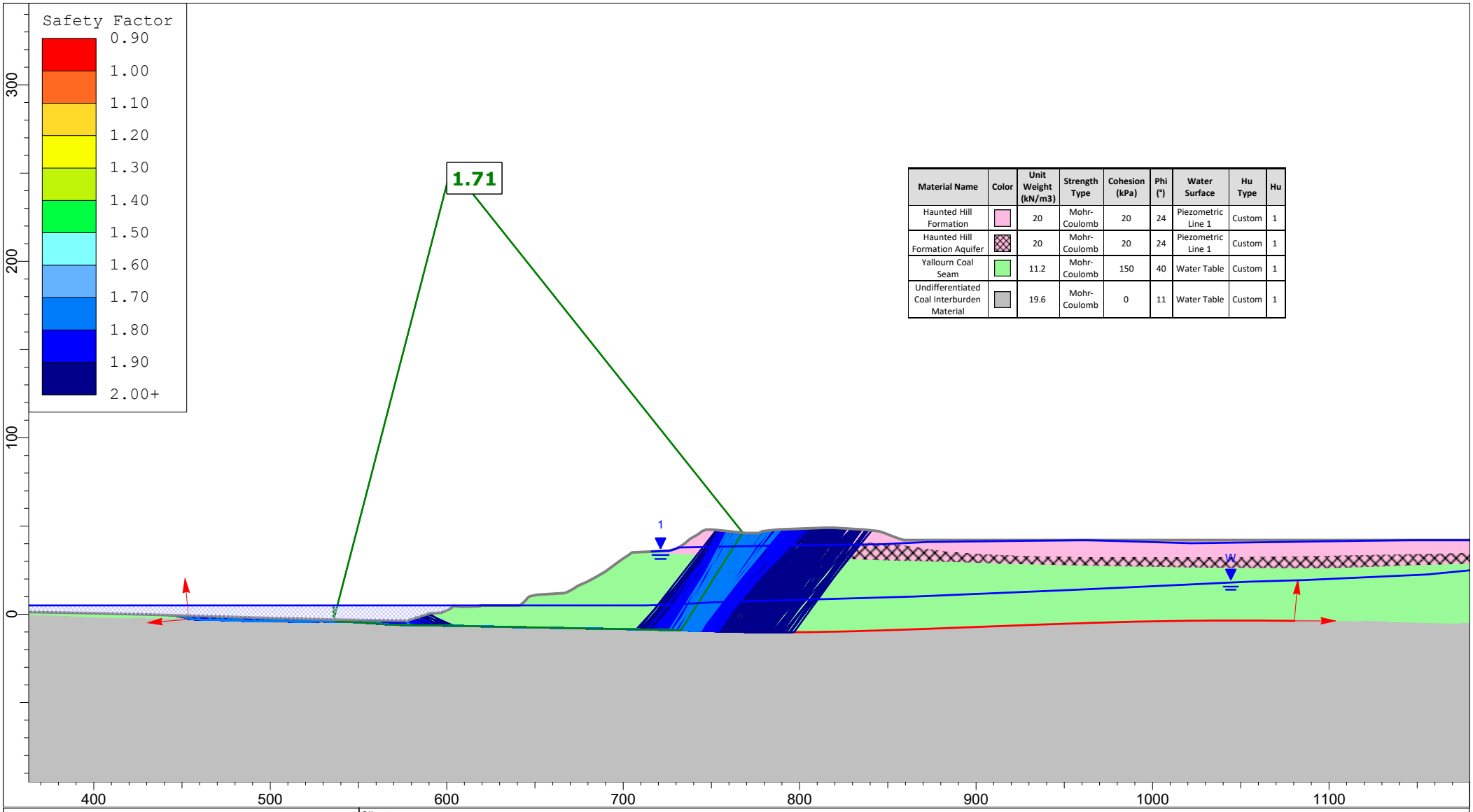
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



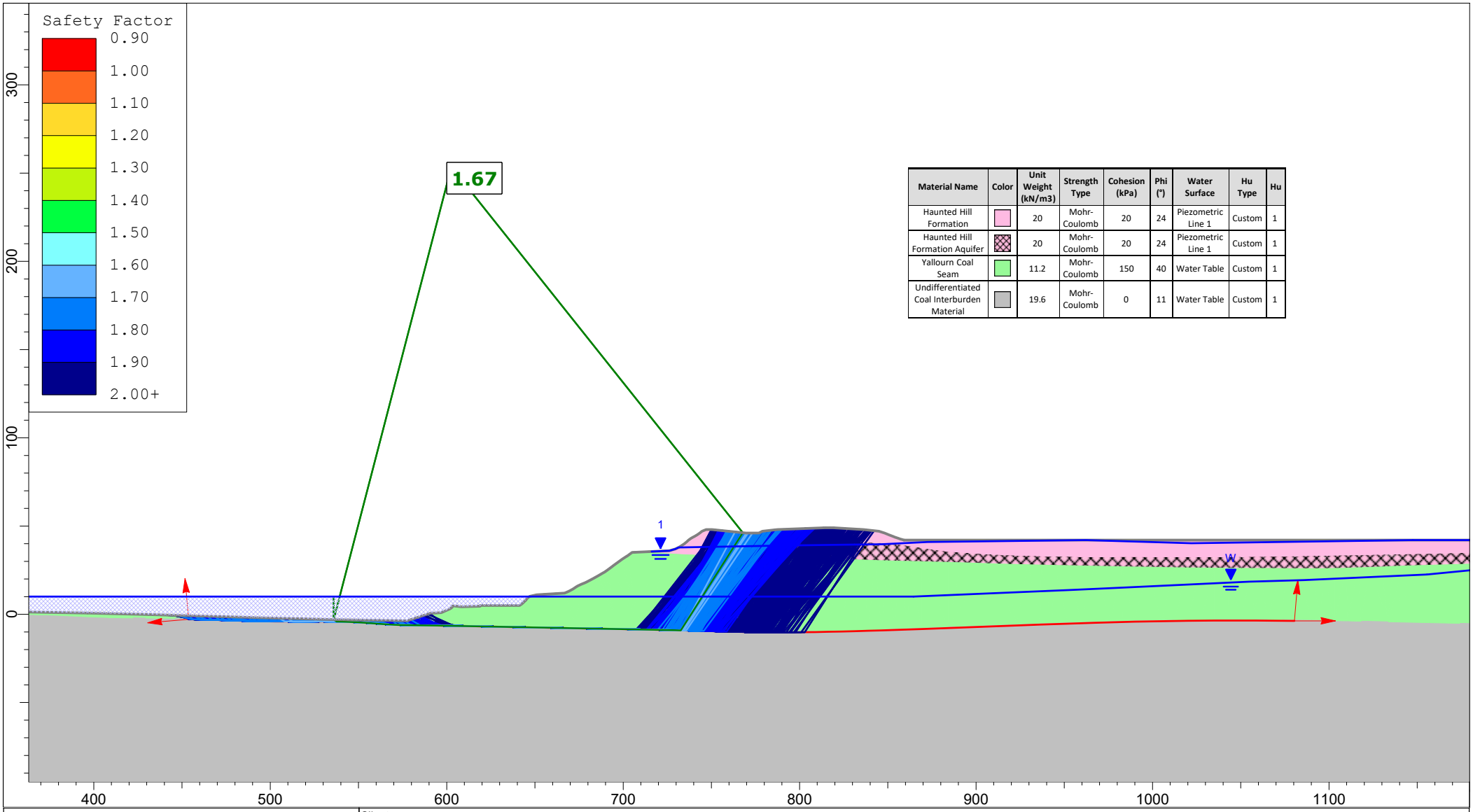
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



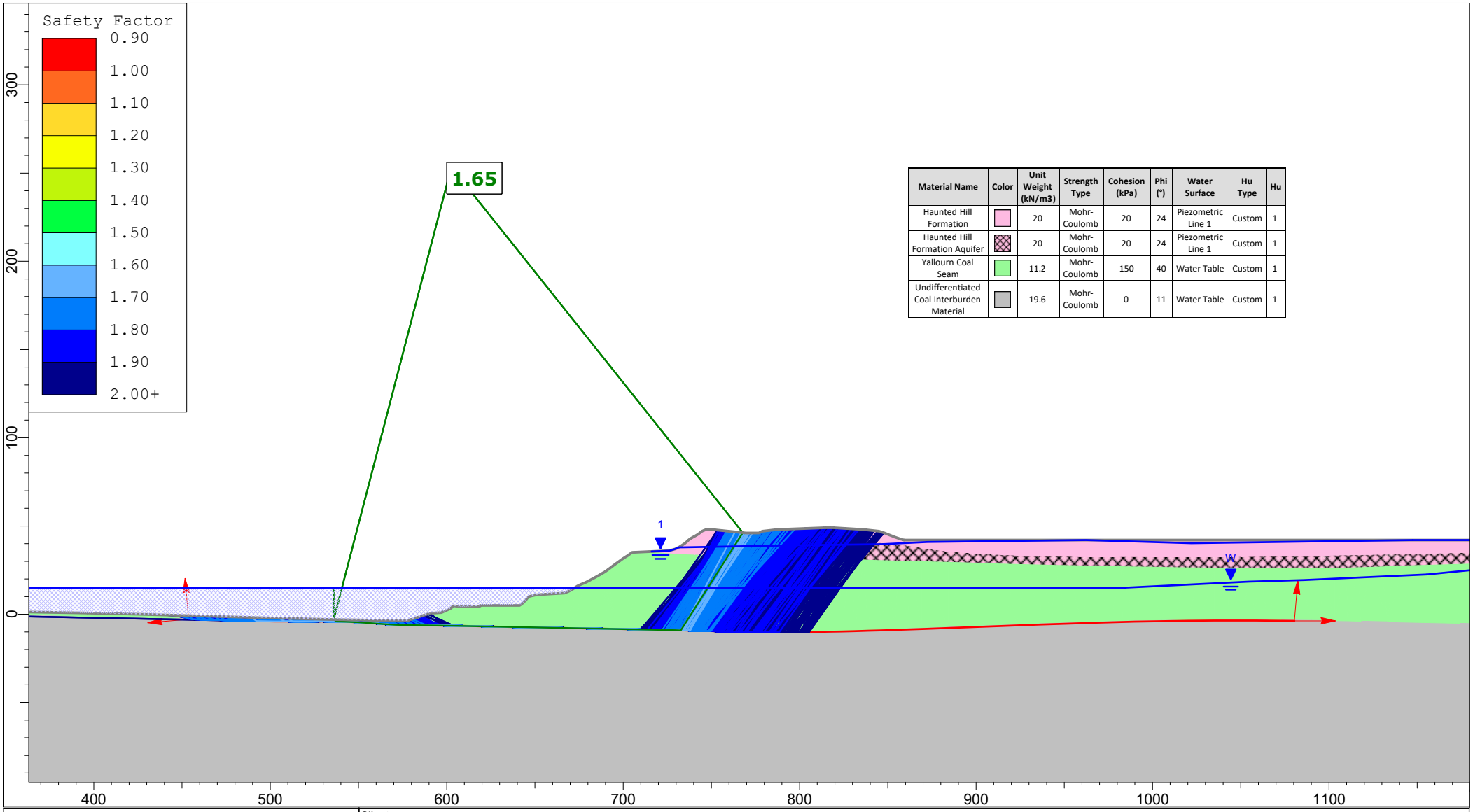
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



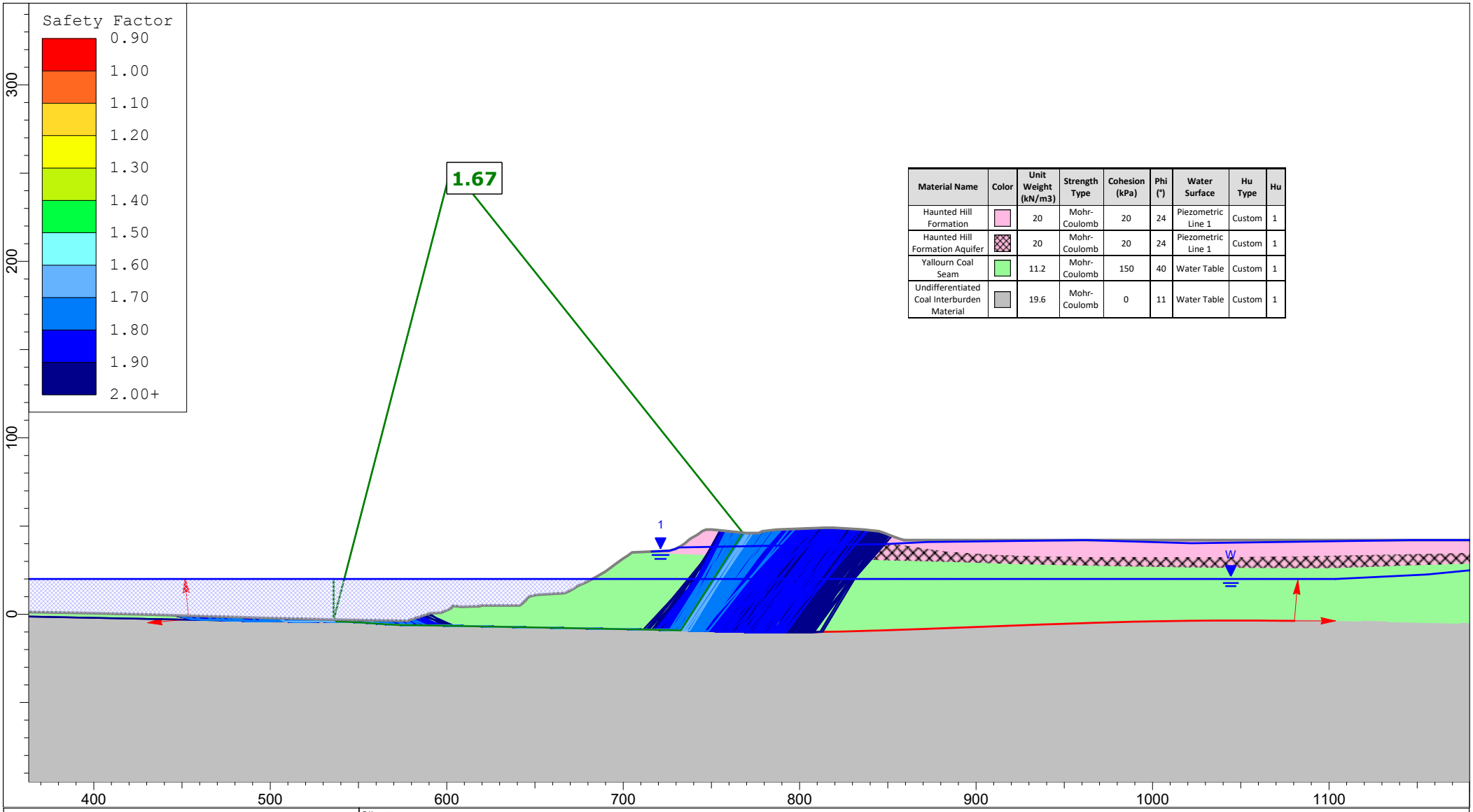
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



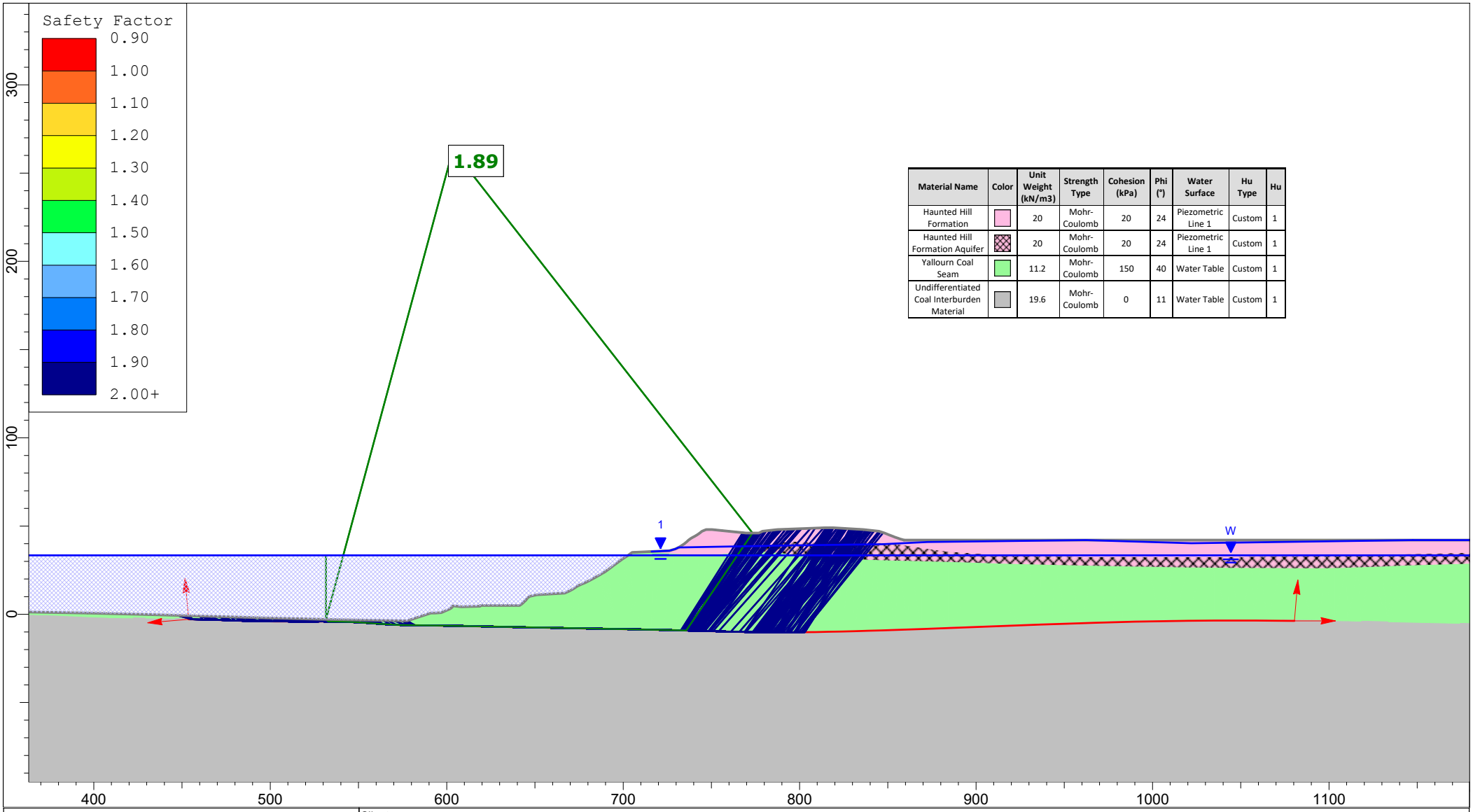
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



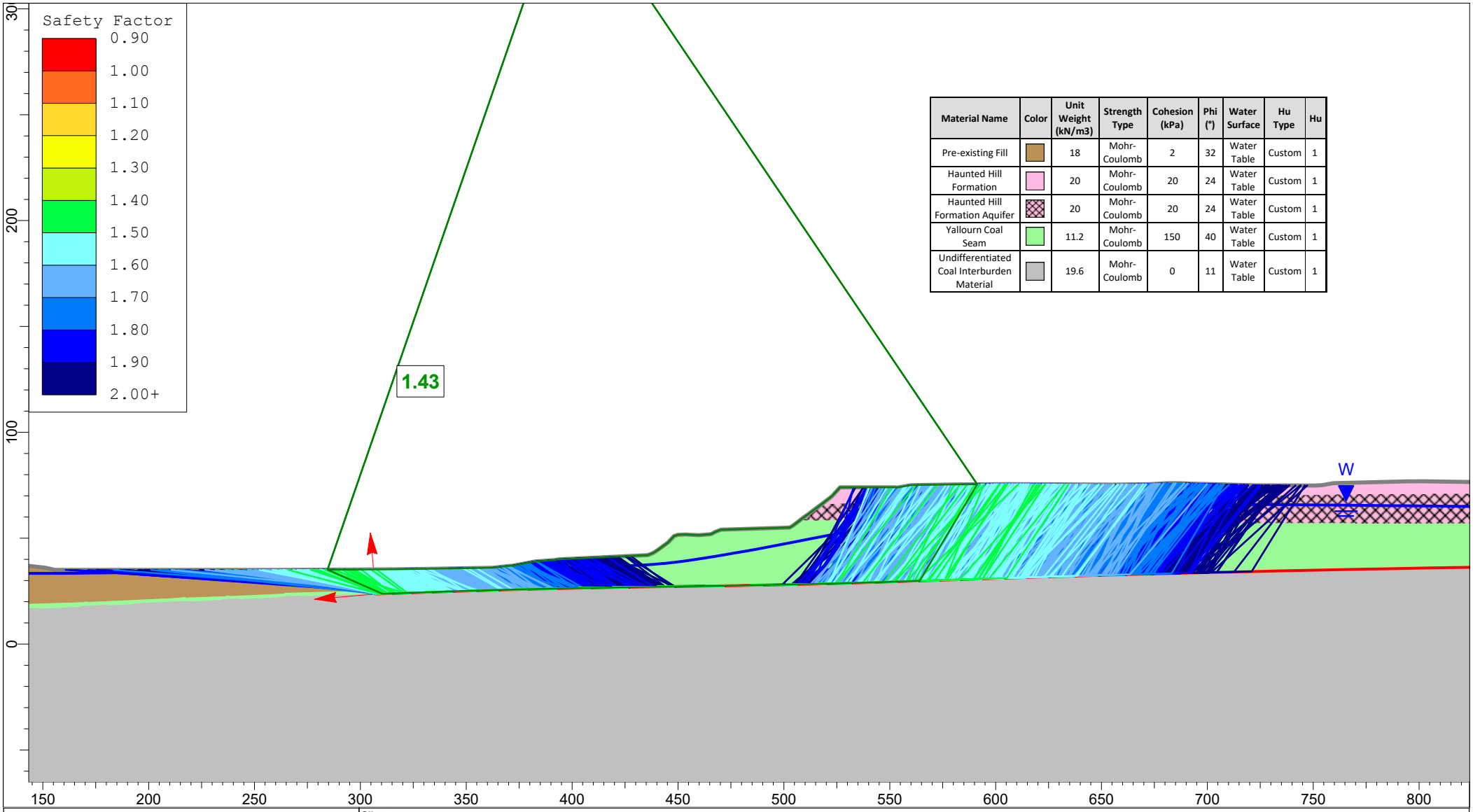
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



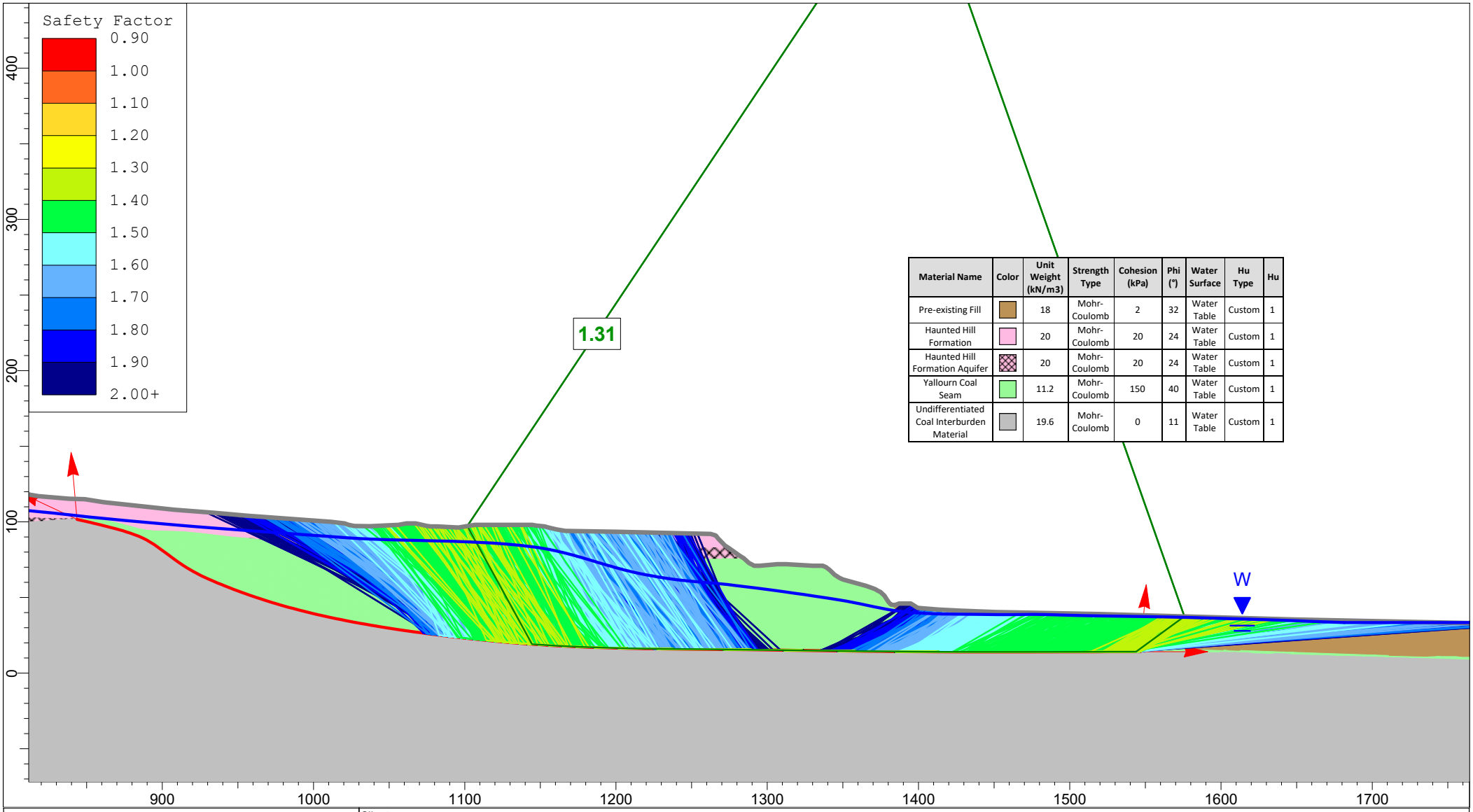
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



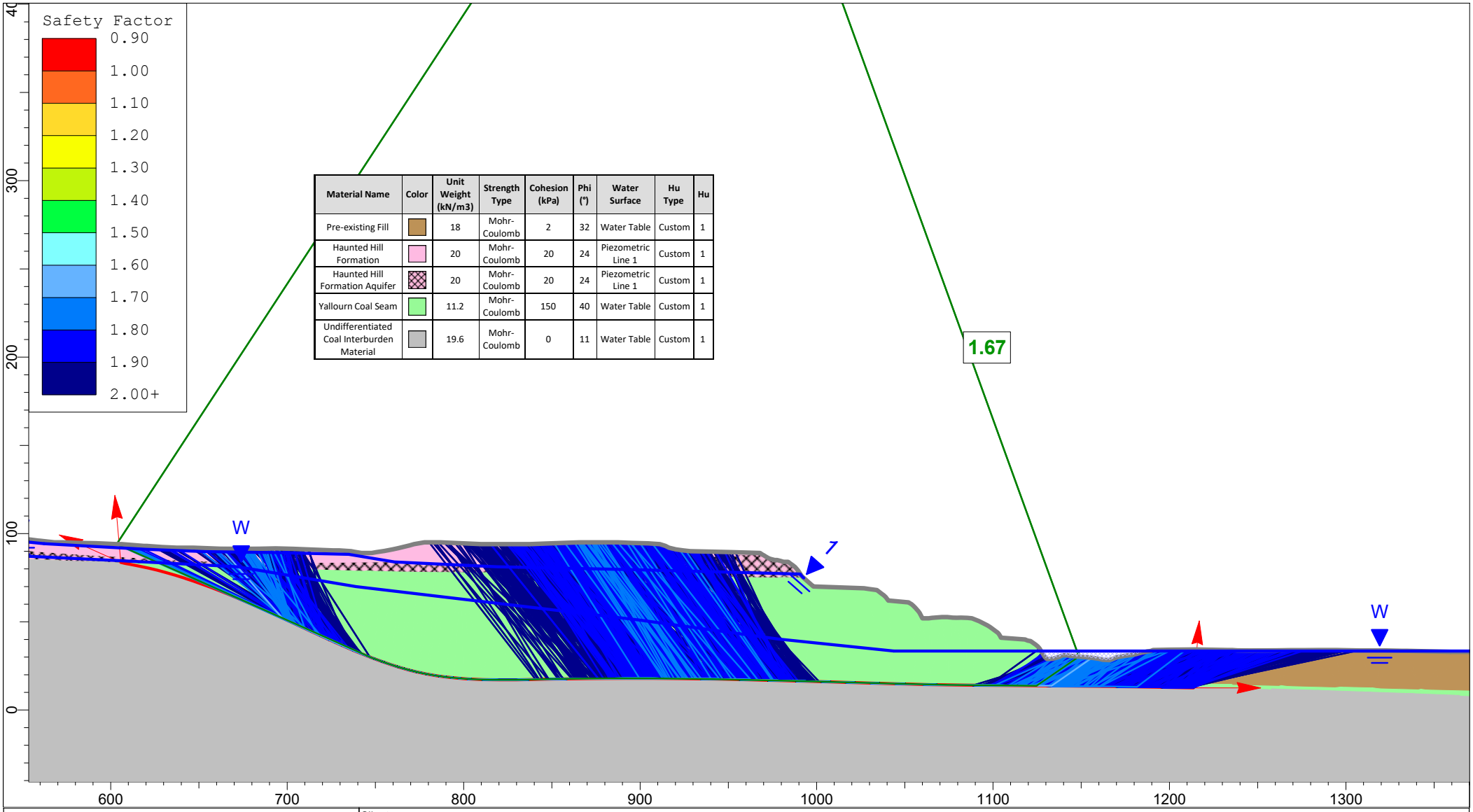
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SB
Section:	Section 19	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



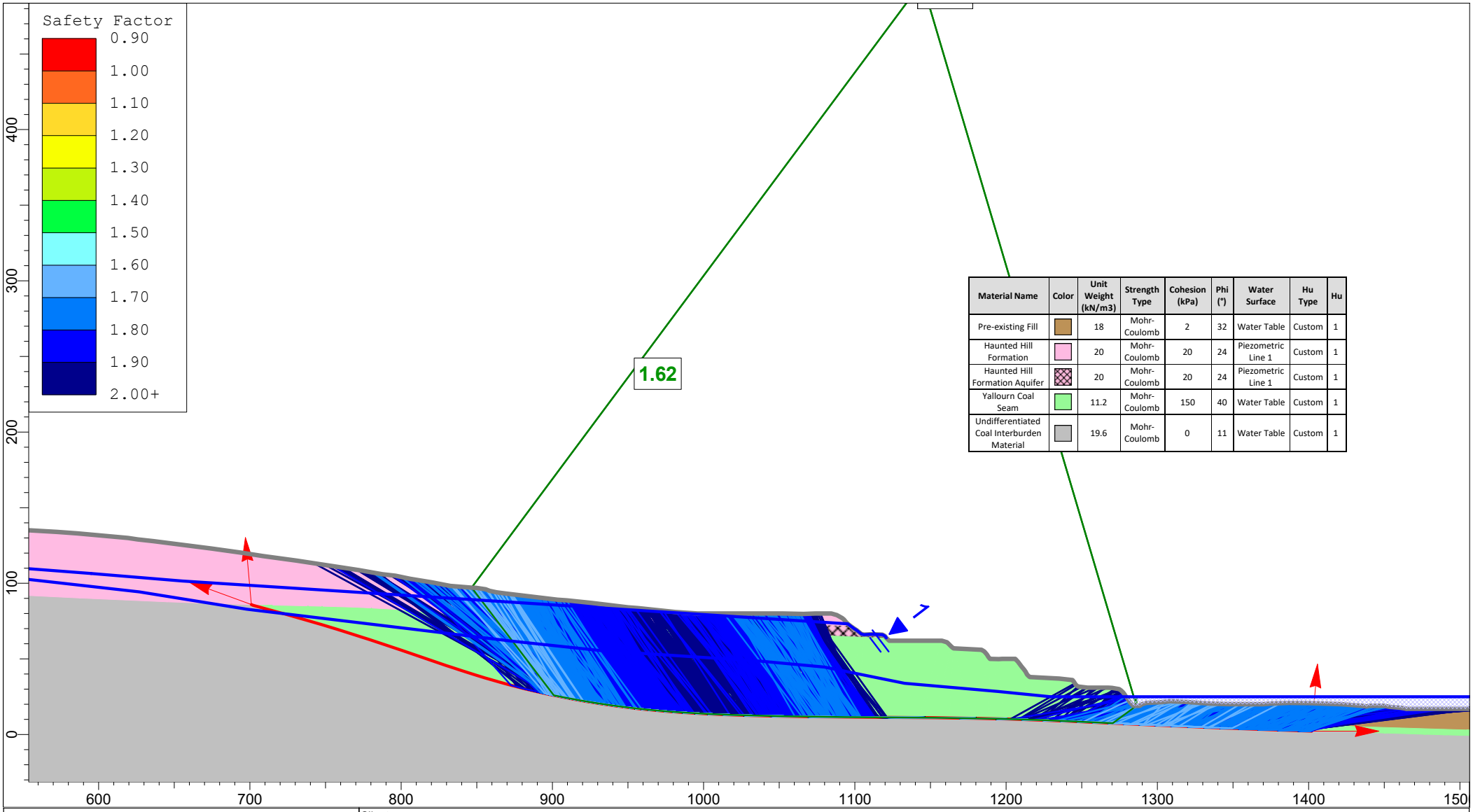
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 21	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



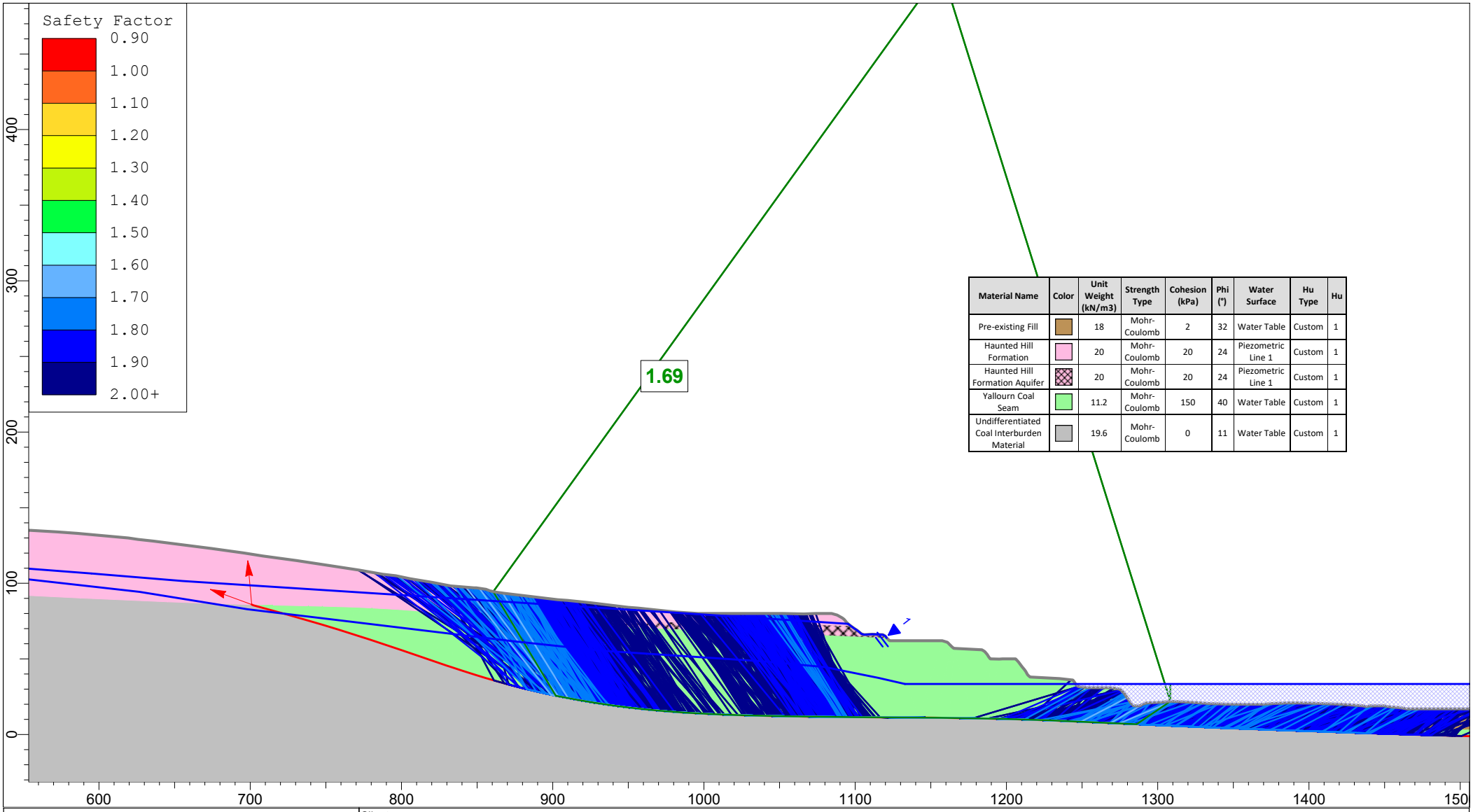
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (South)
Section:	Section 22	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



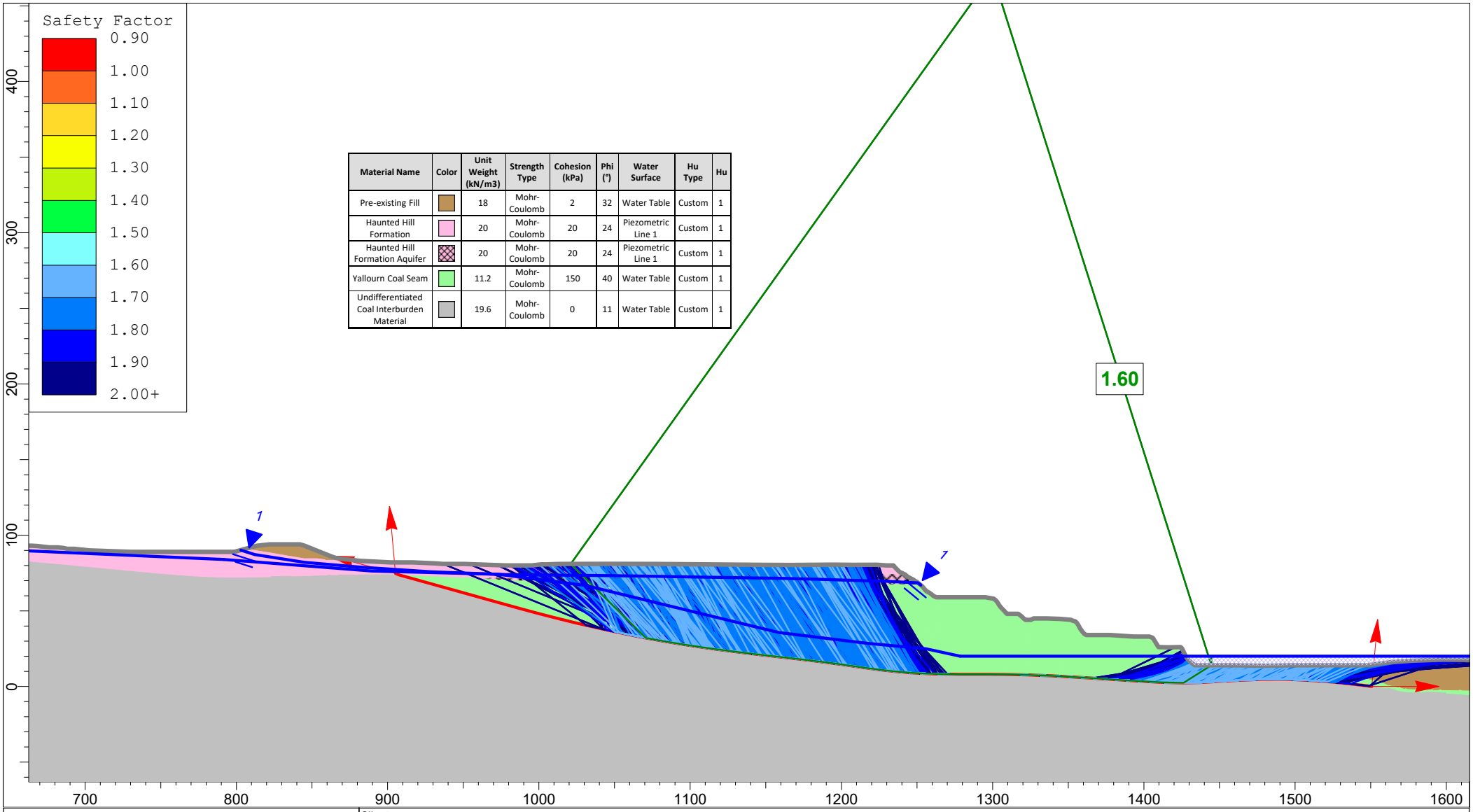
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 23	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



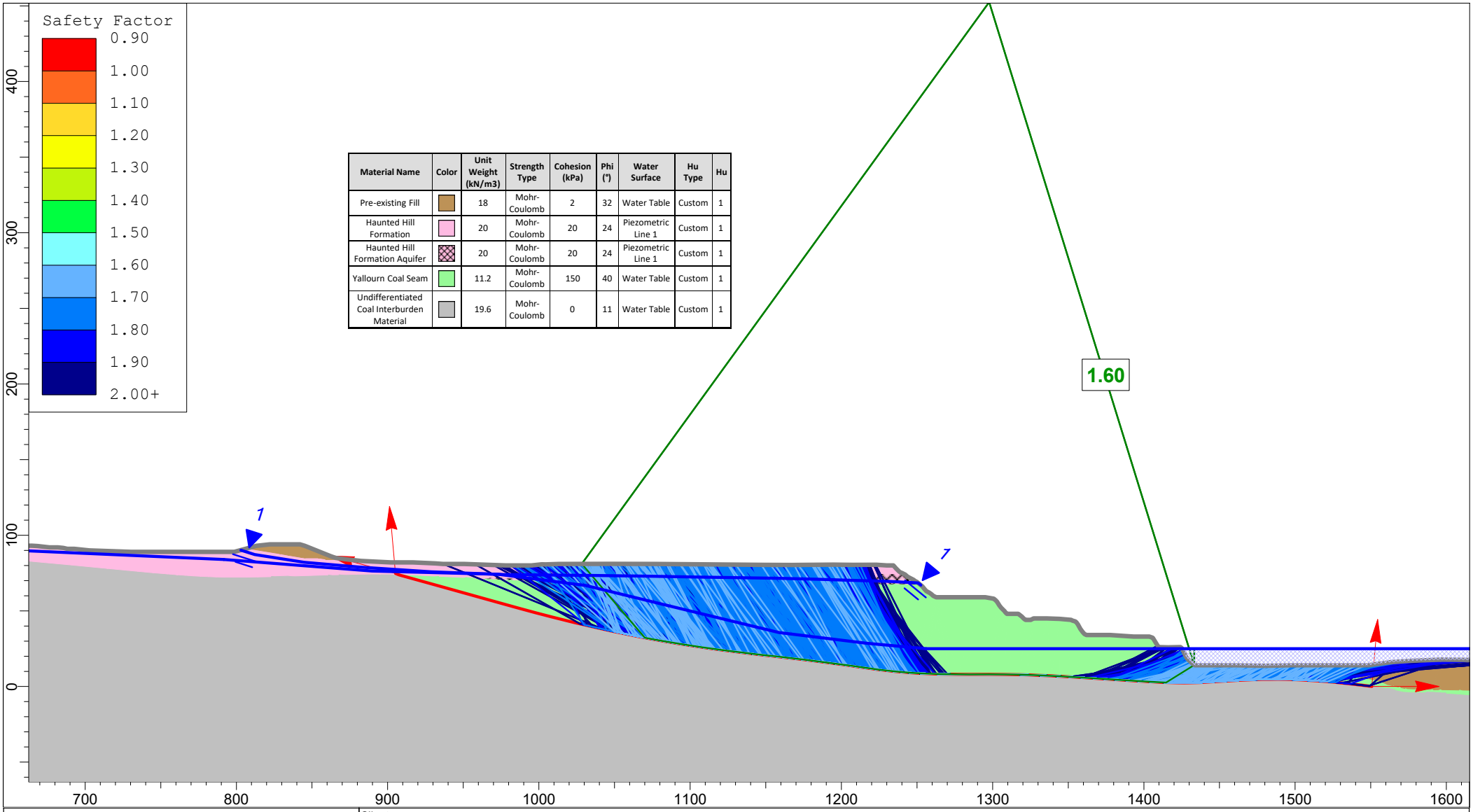
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 23	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



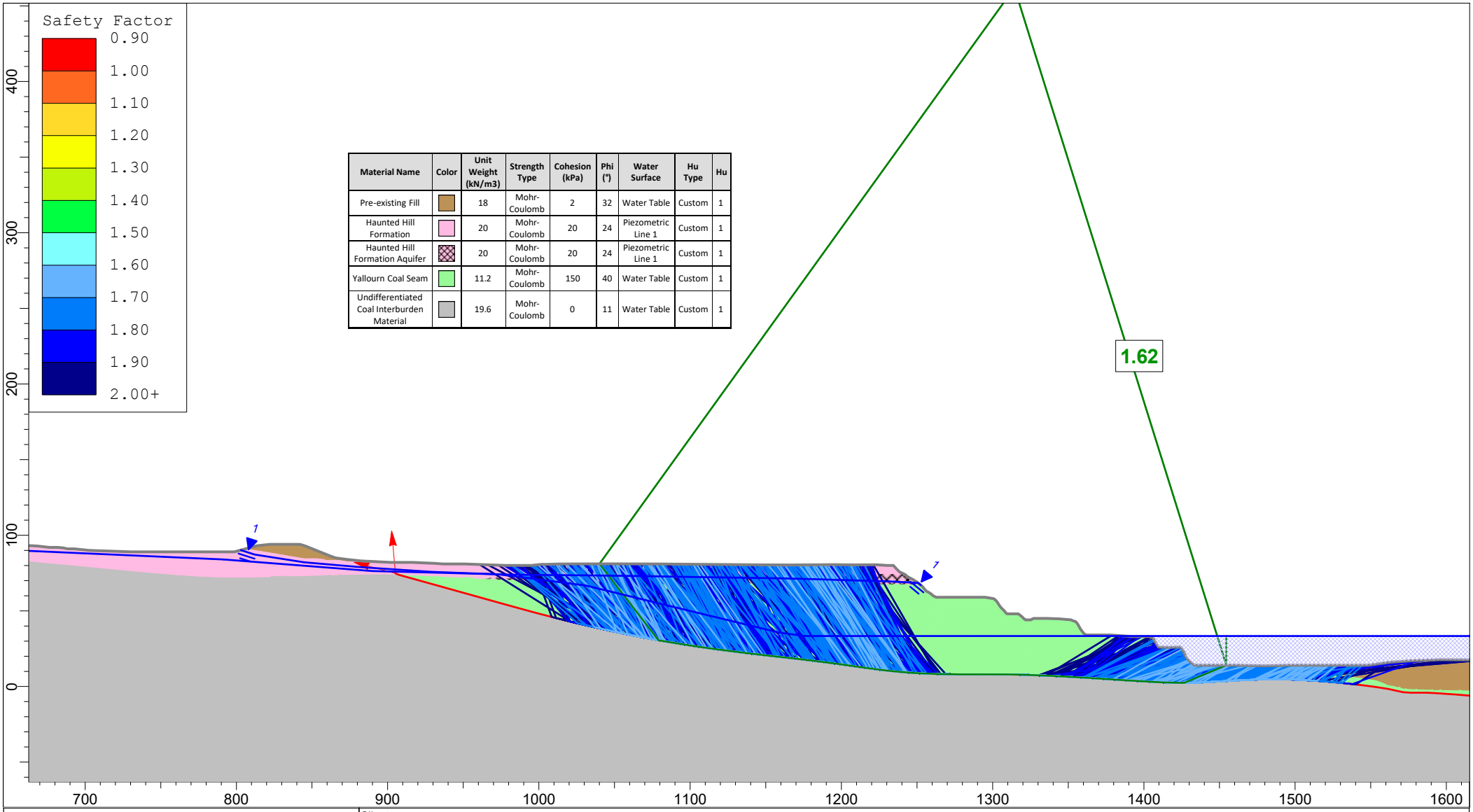
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



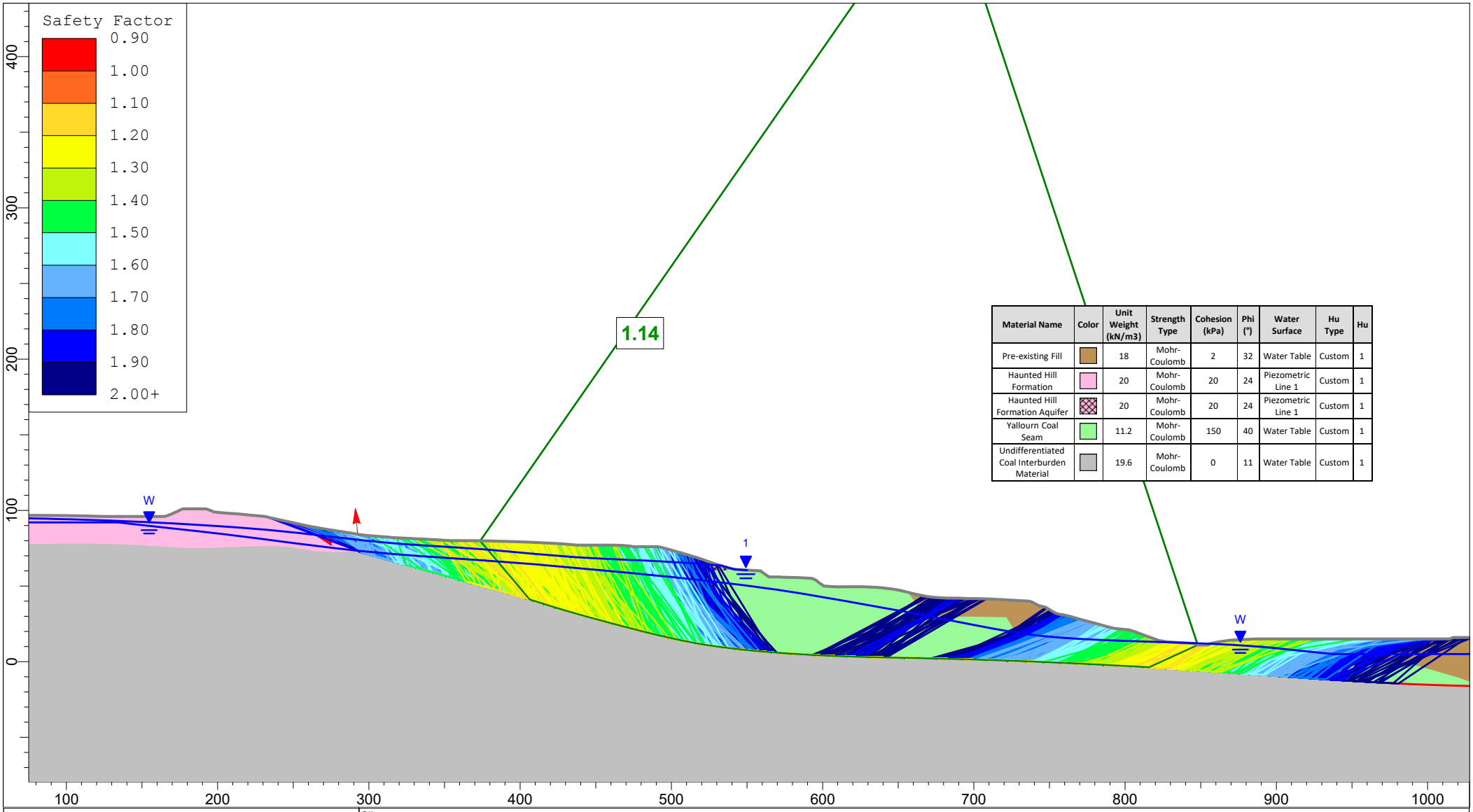
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



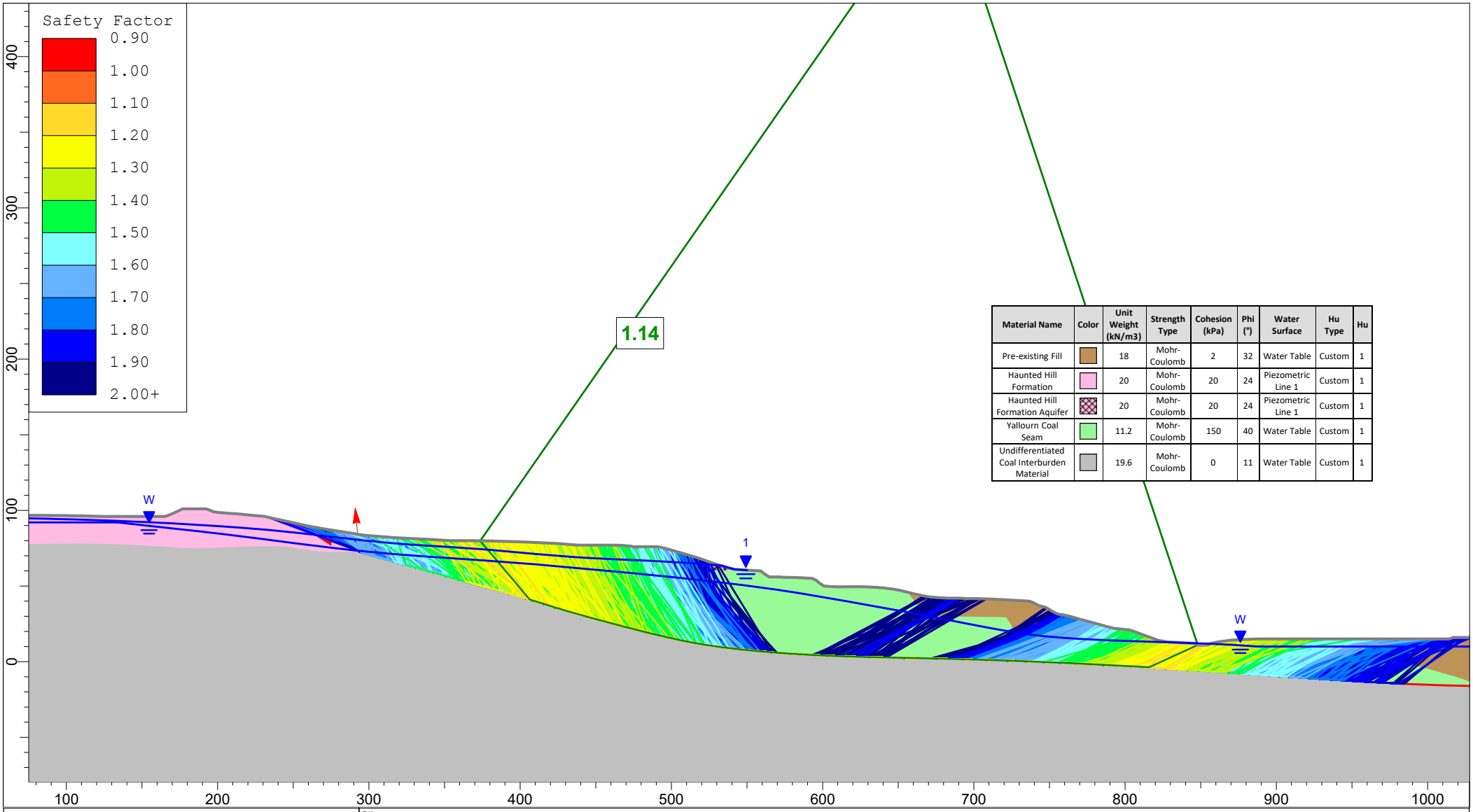
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



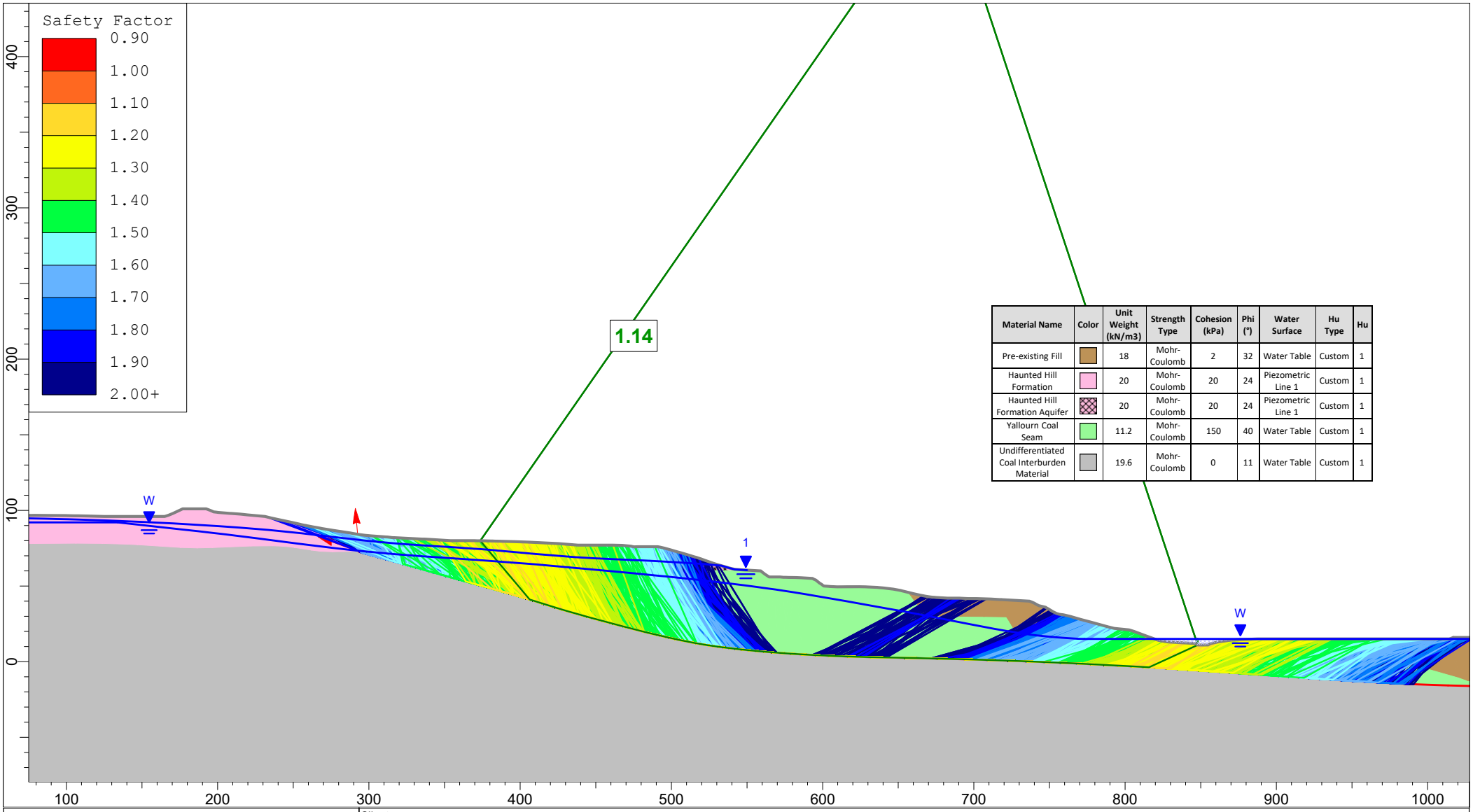
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



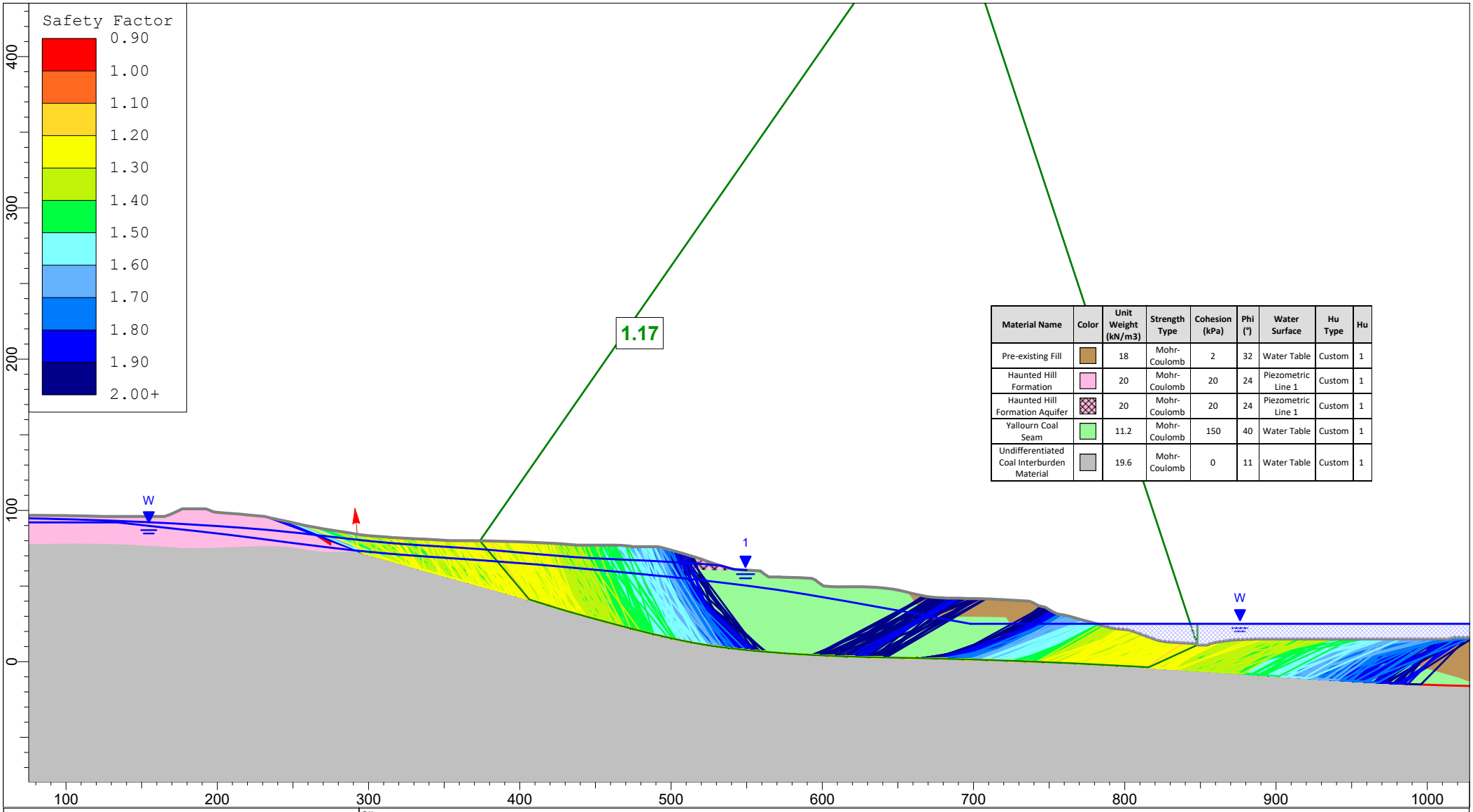
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



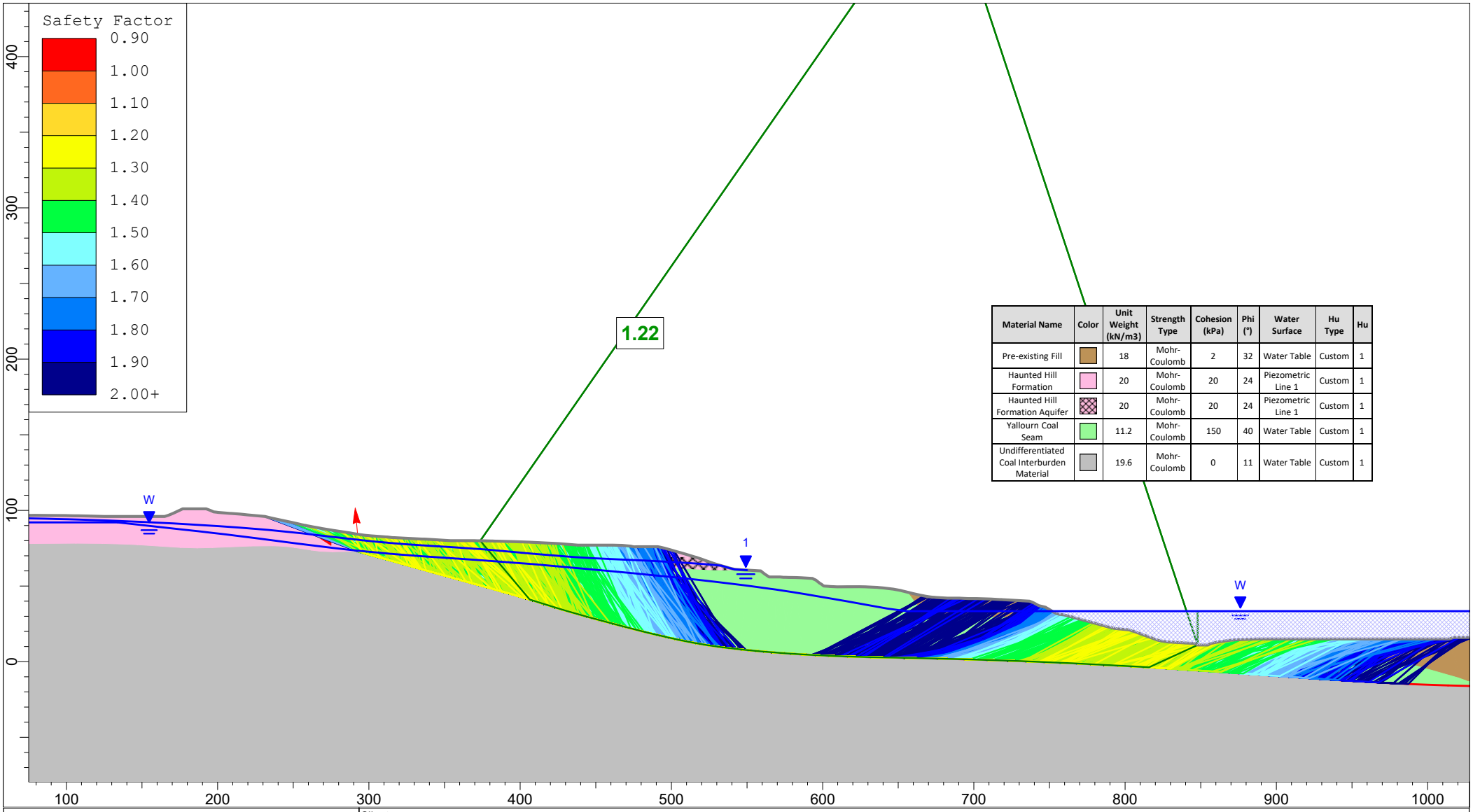
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



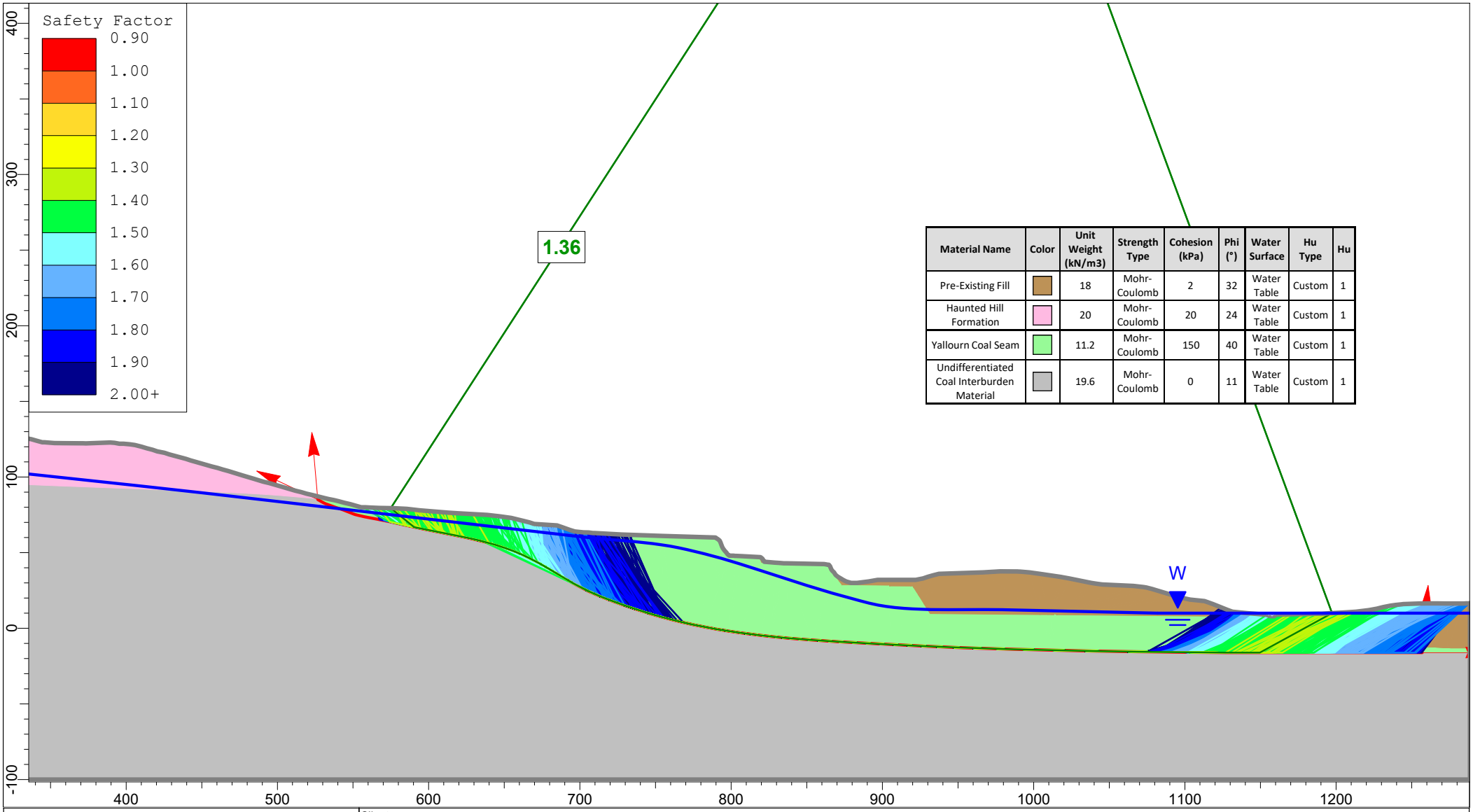
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



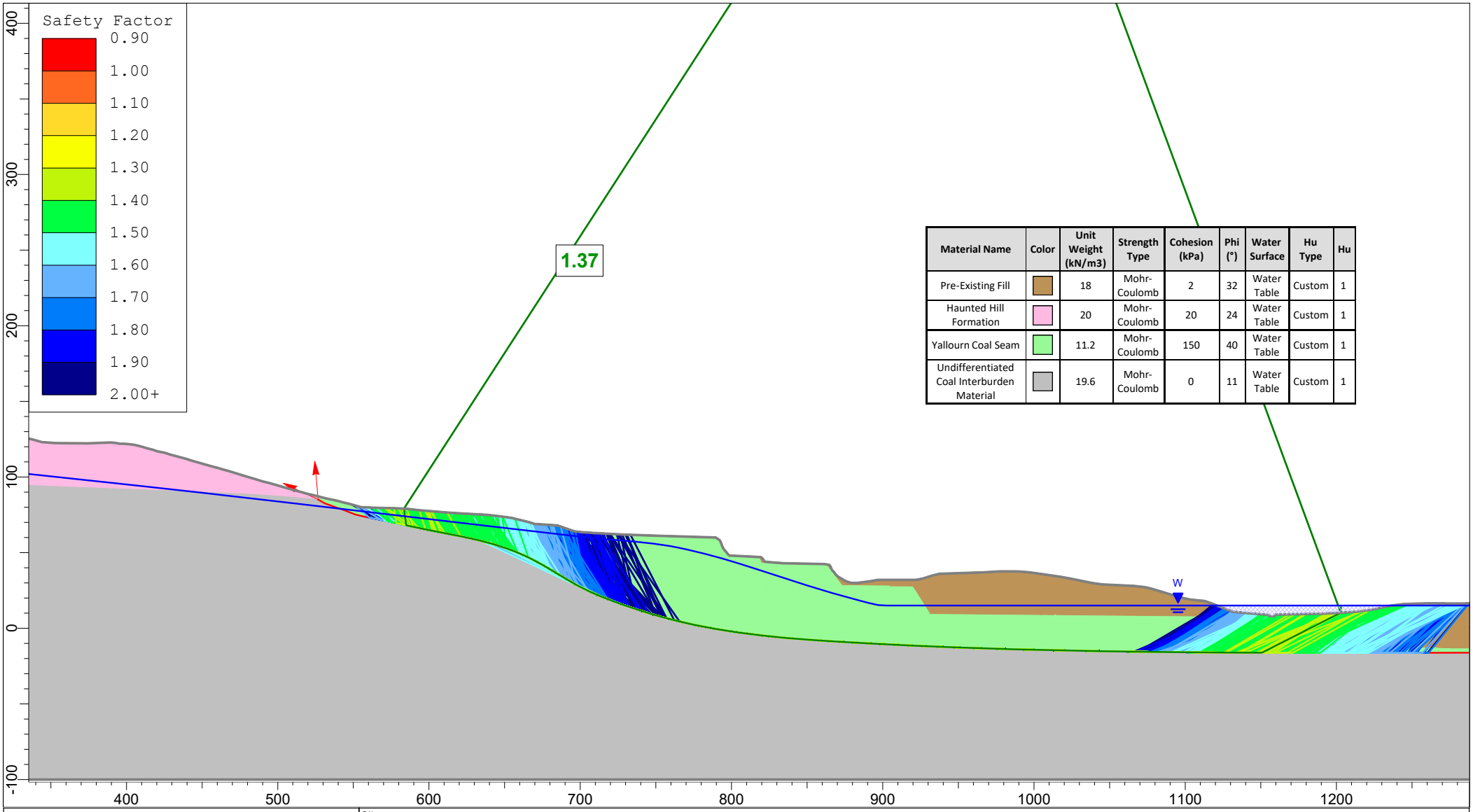
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



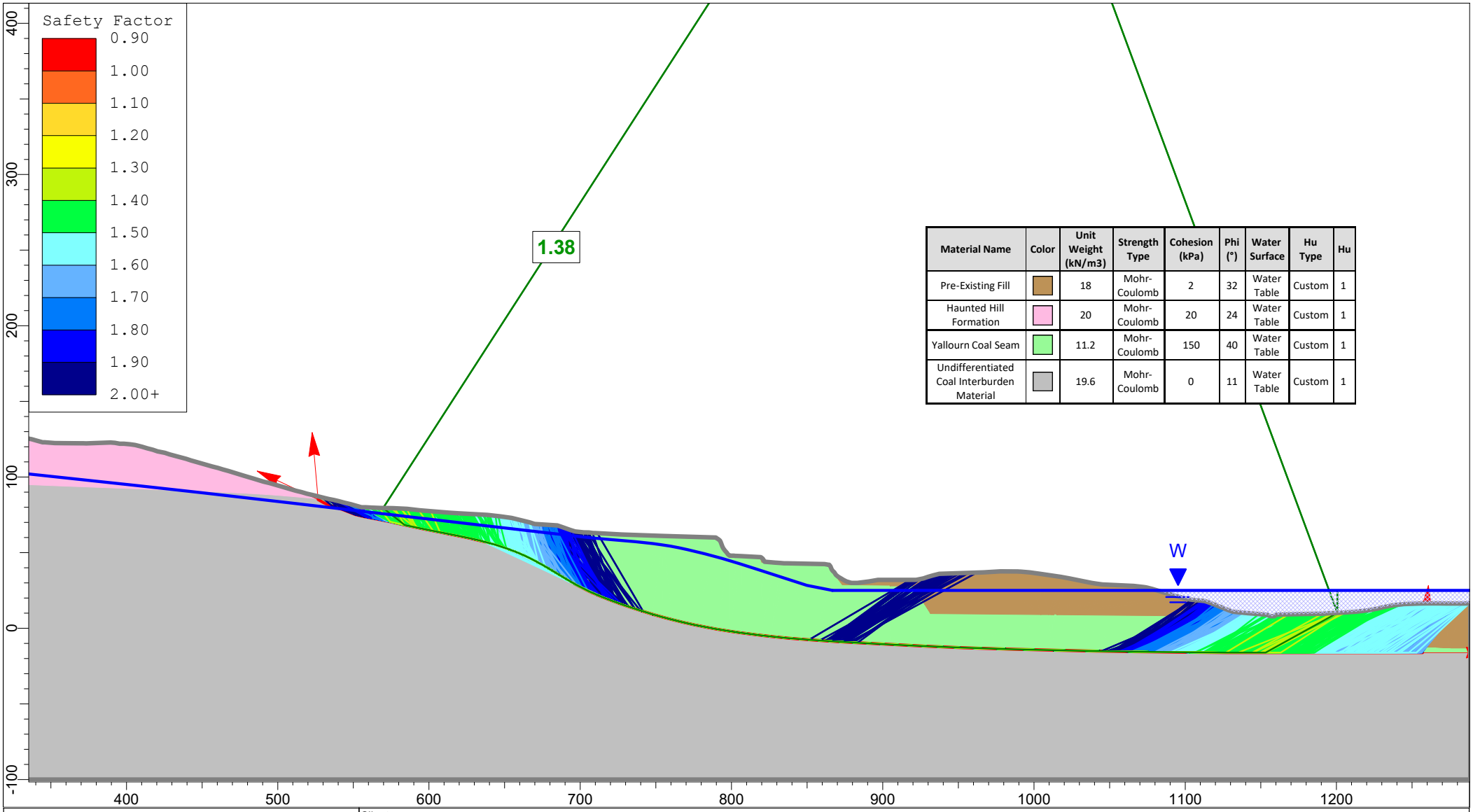
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



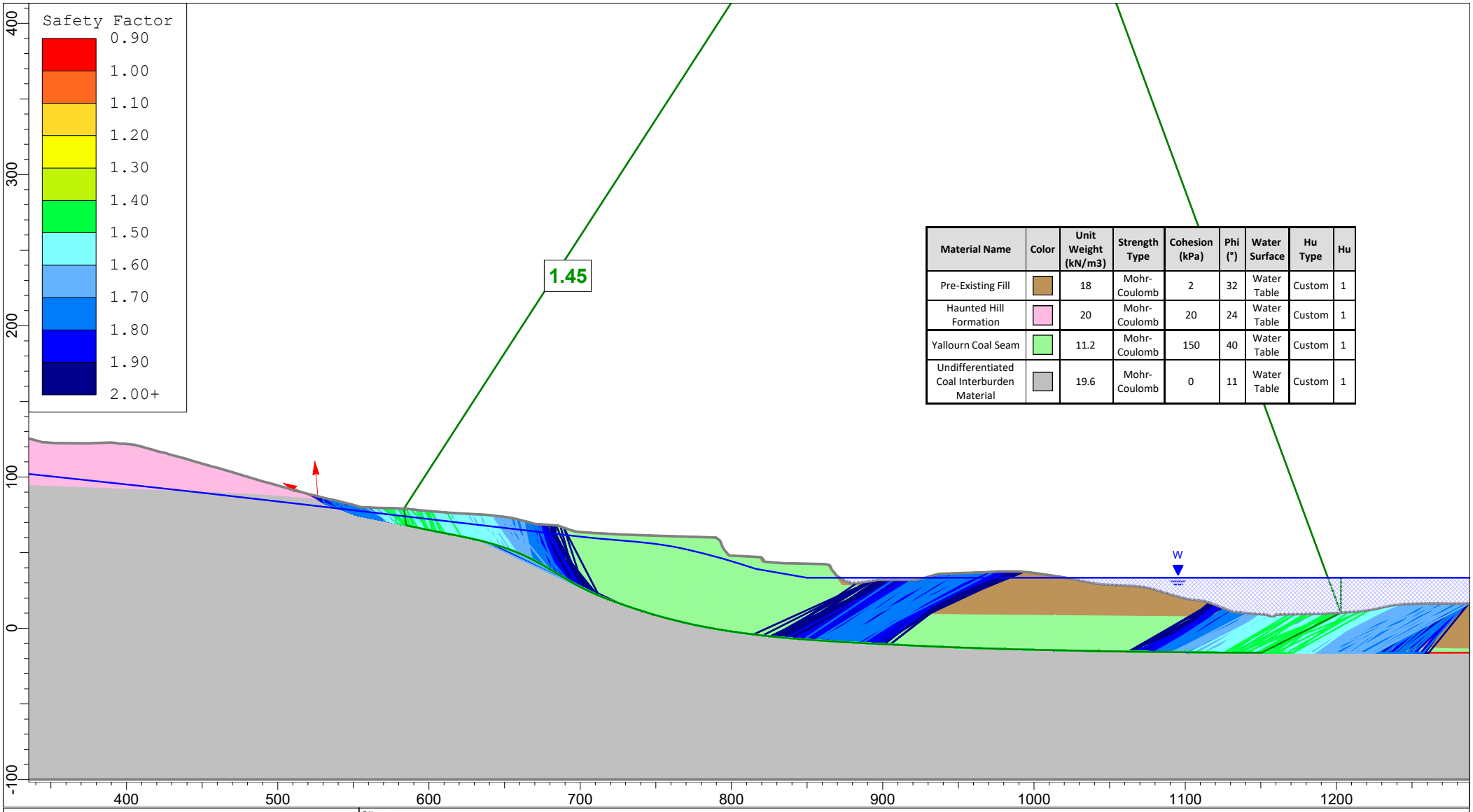
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



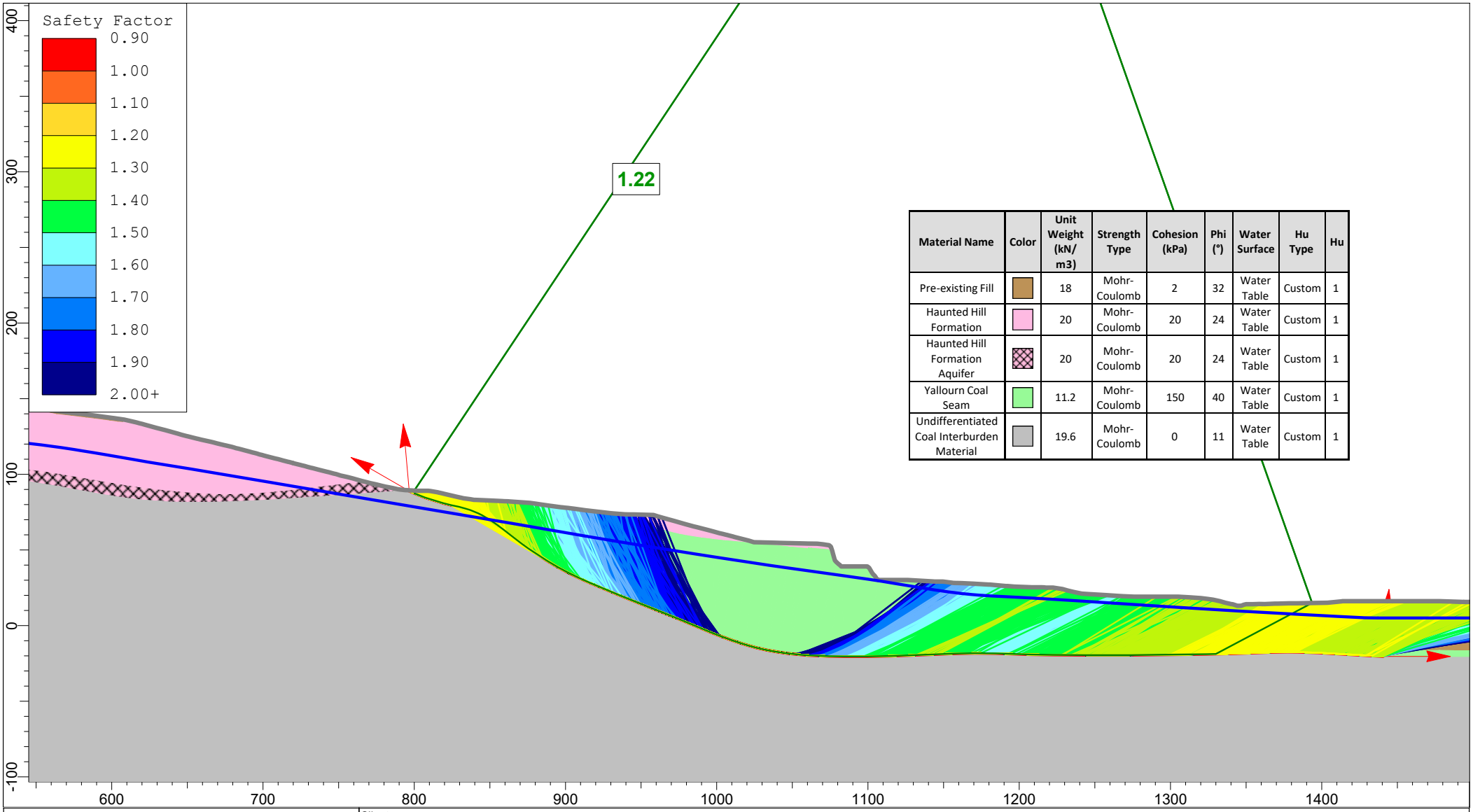
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



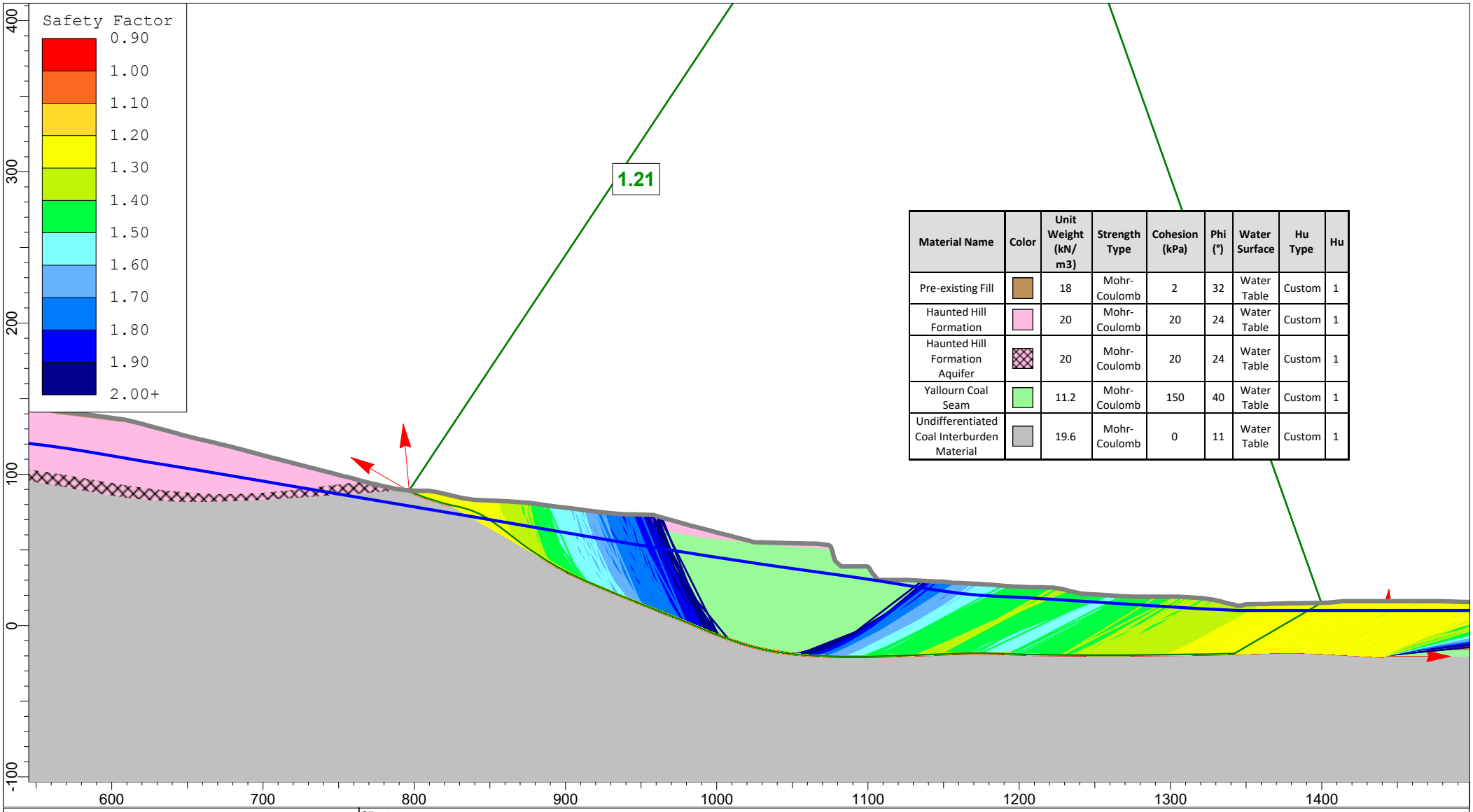
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



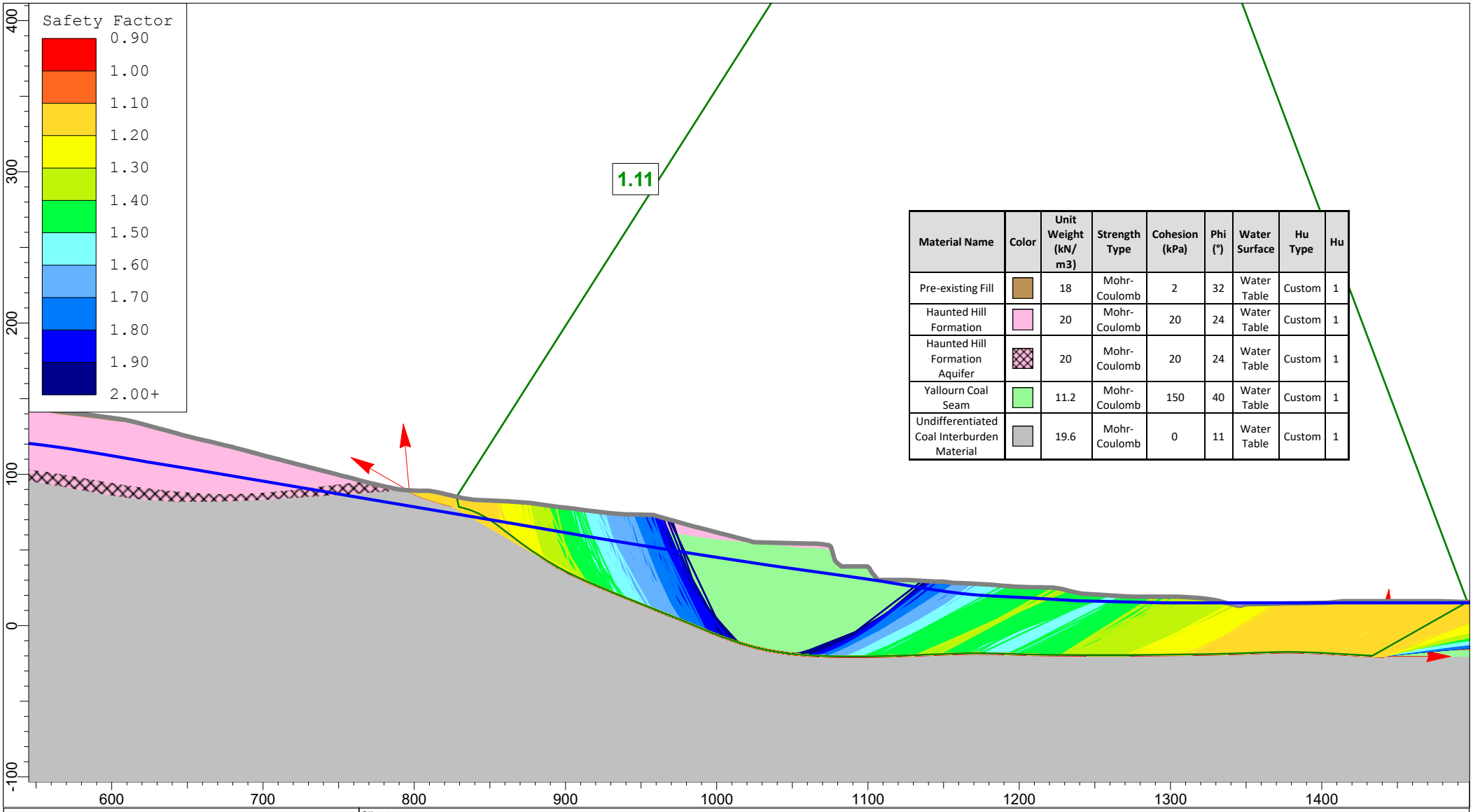
Material Name	Color	Unit Weight (kN/ m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



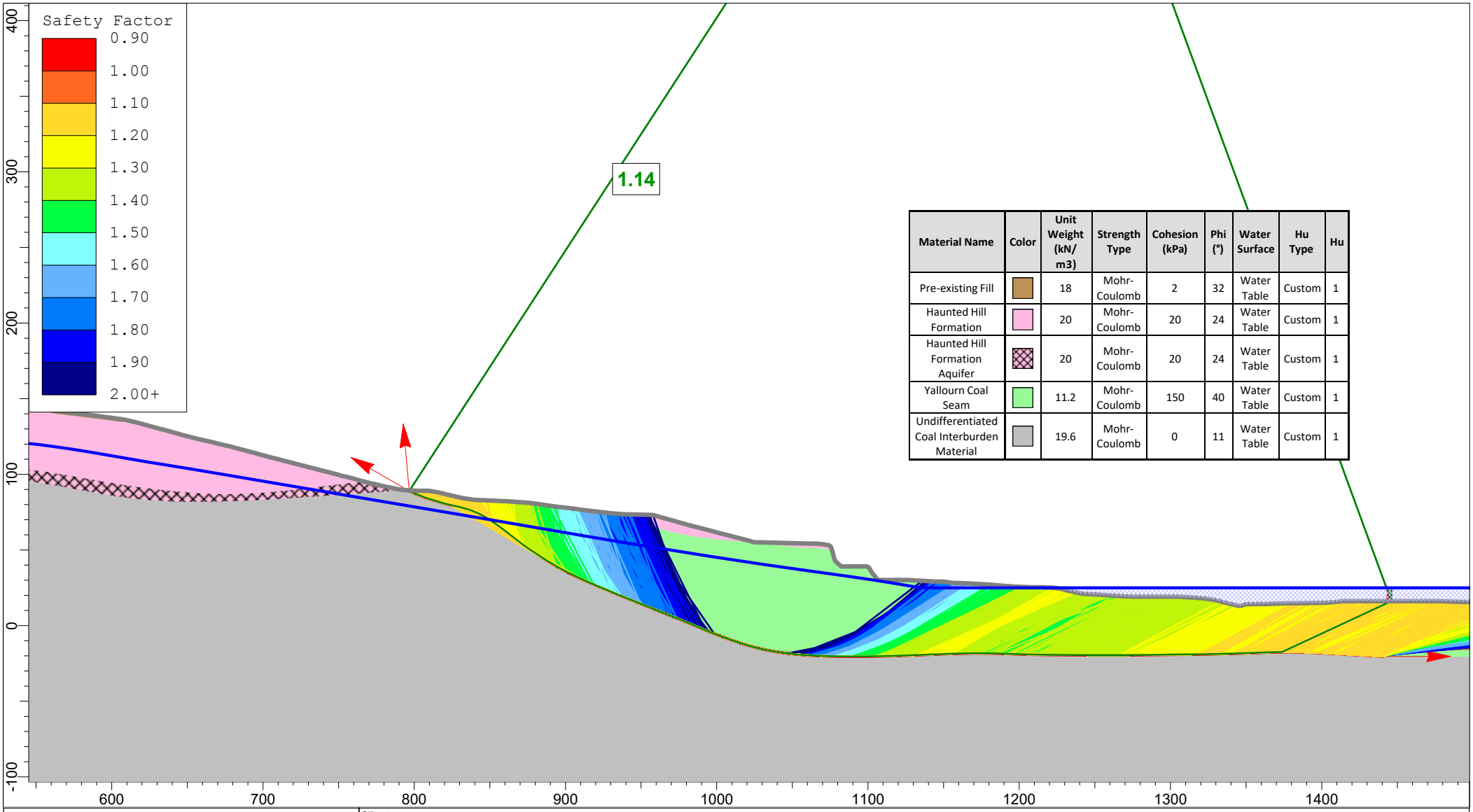
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



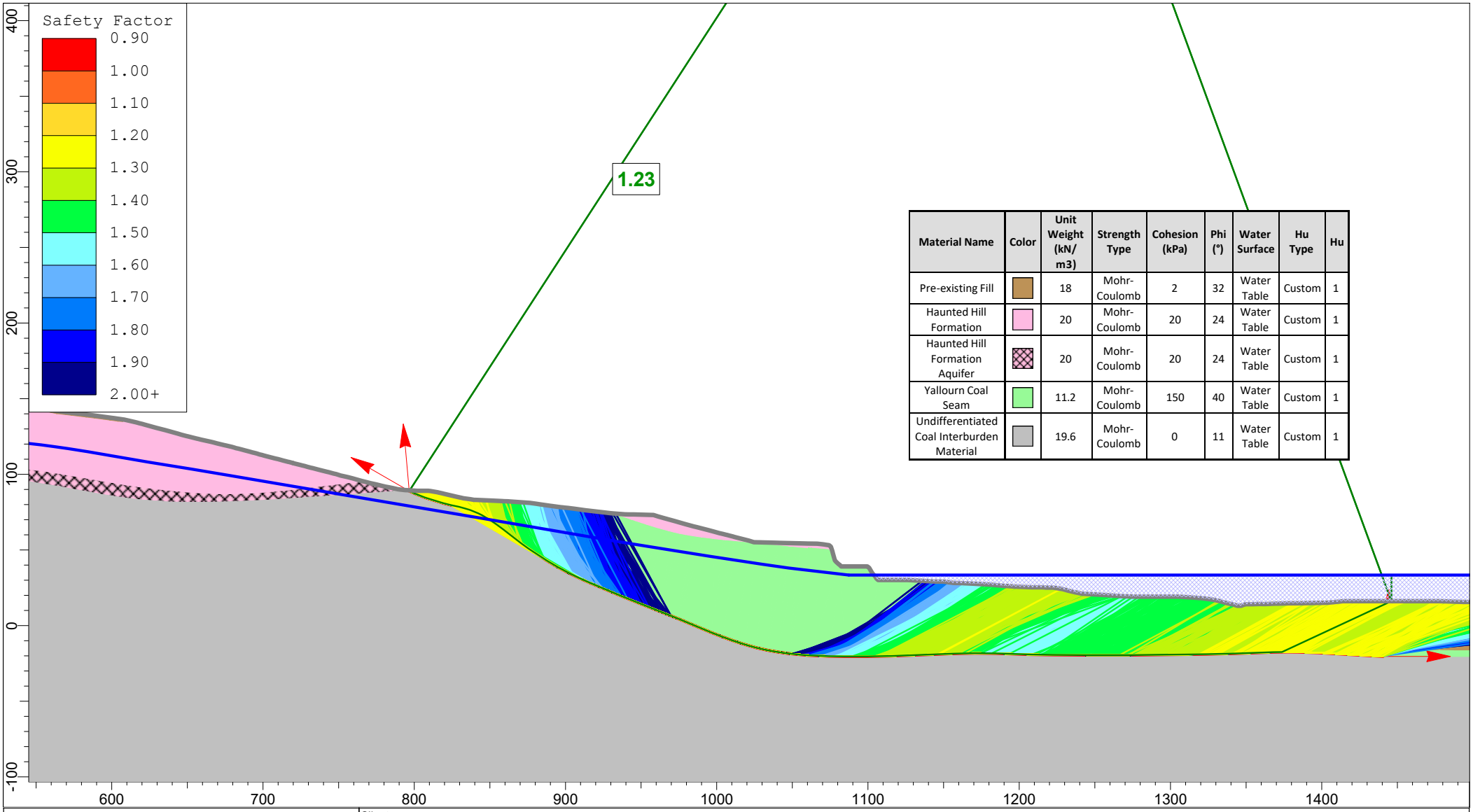
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



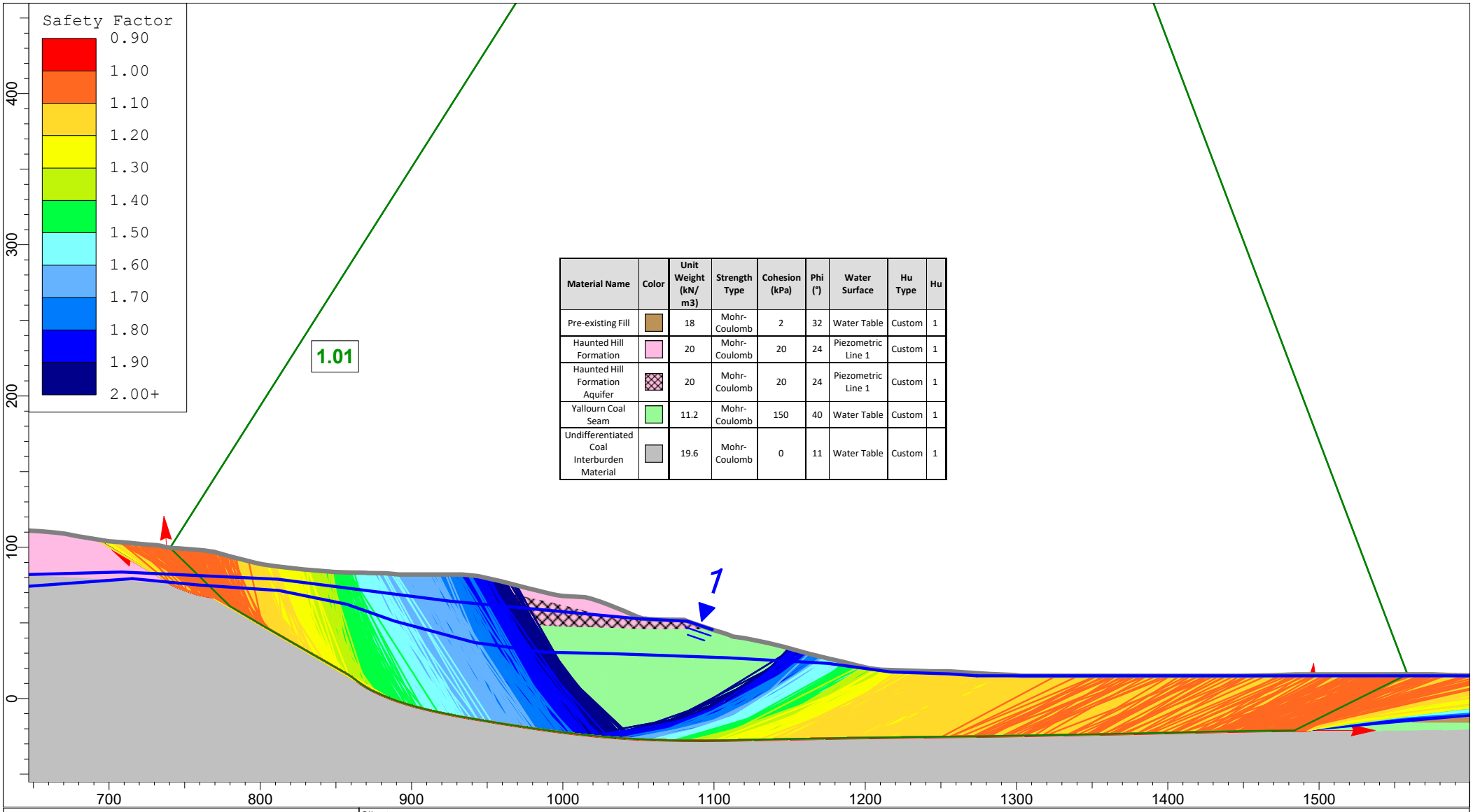
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



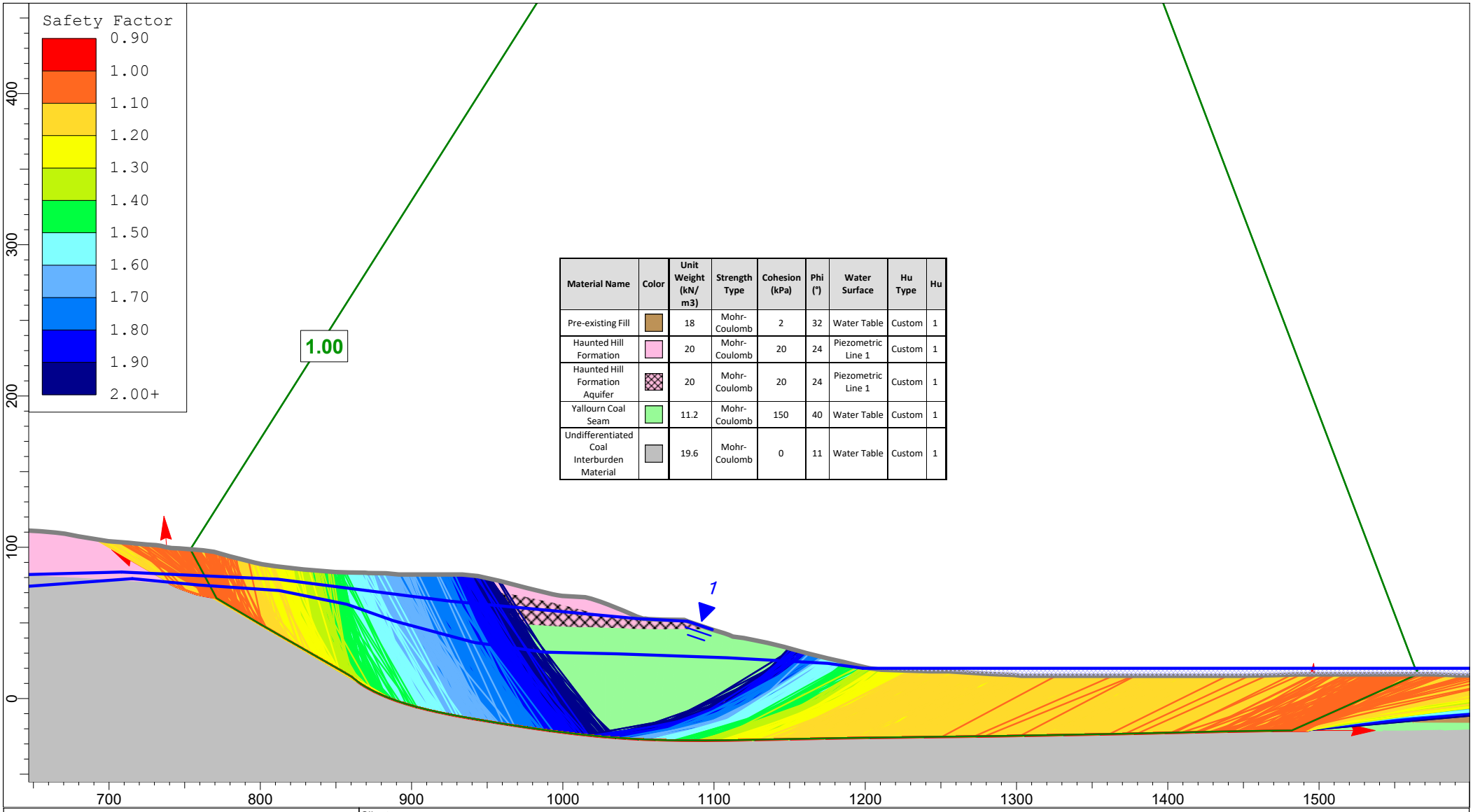
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



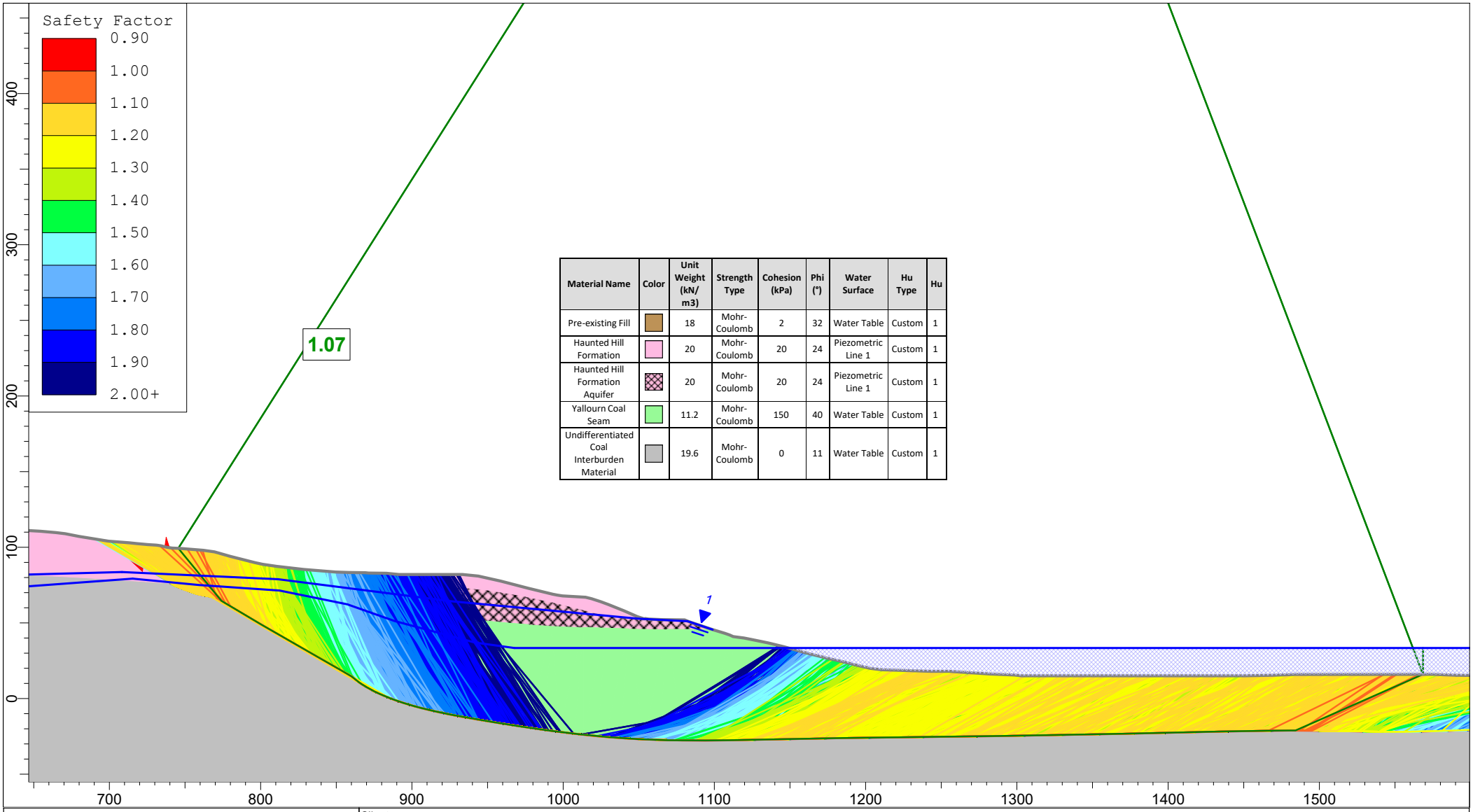
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu = 1 below piezometric line
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



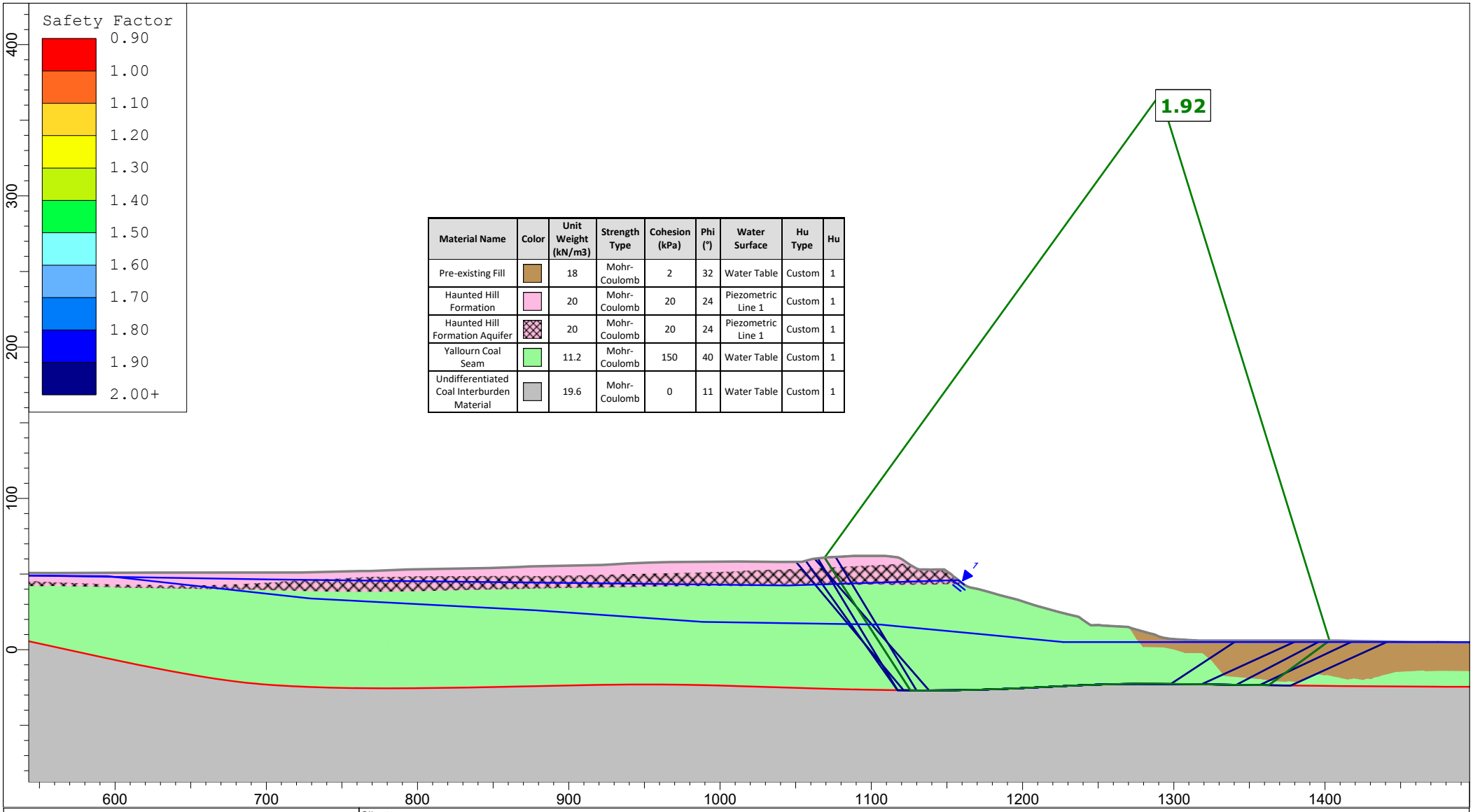
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu = 1 below piezometric line
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



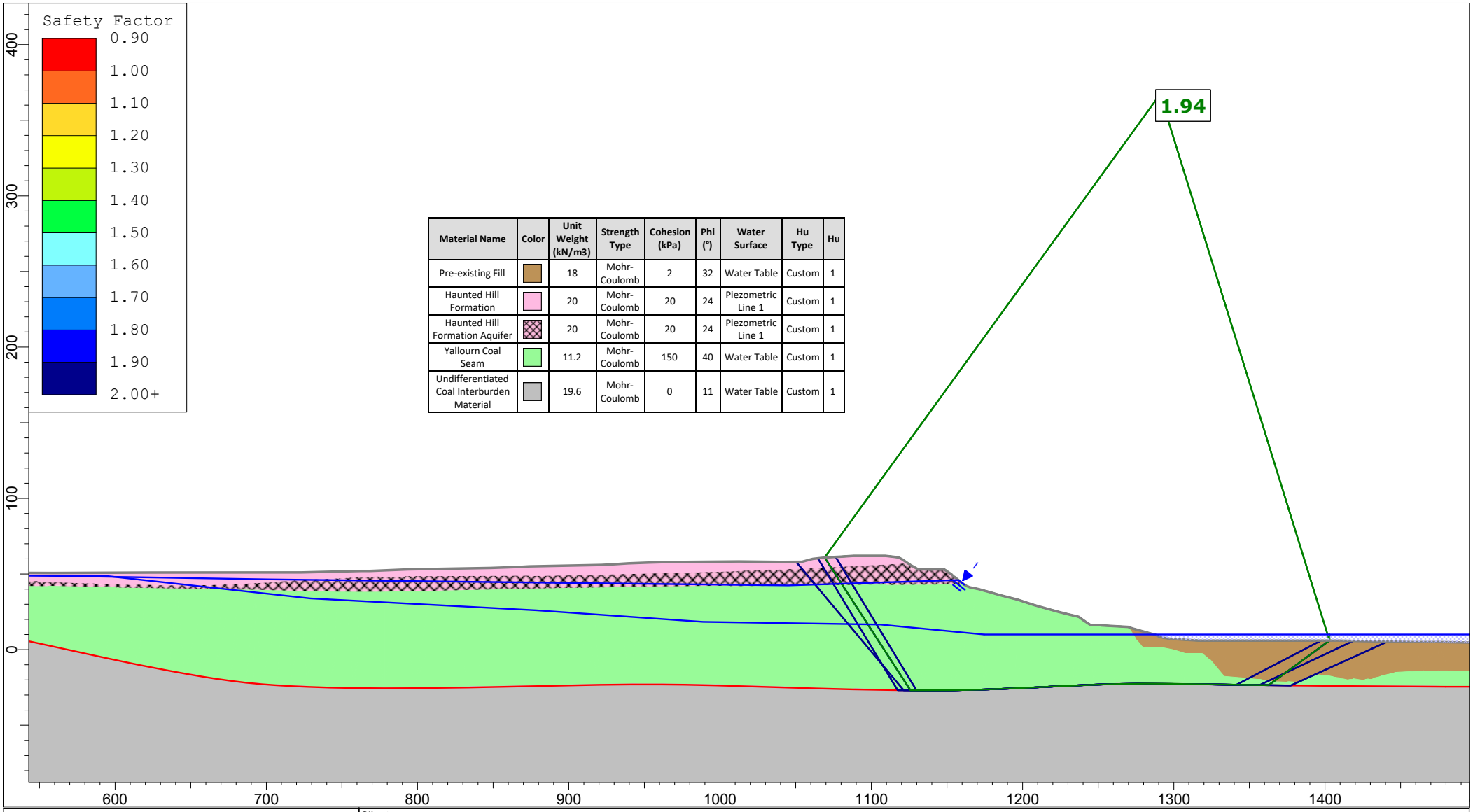
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



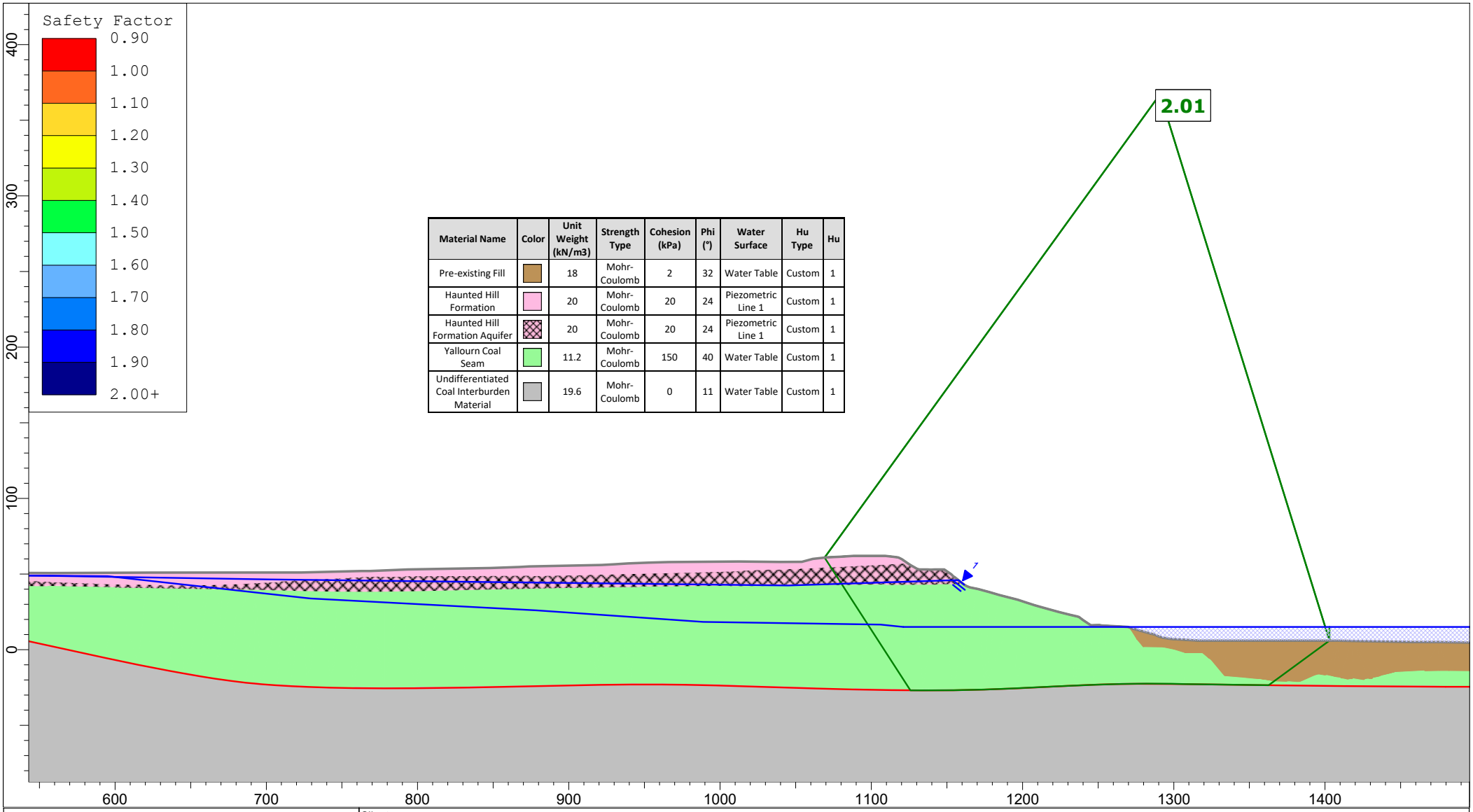
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-NB
Section:	Section 29	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



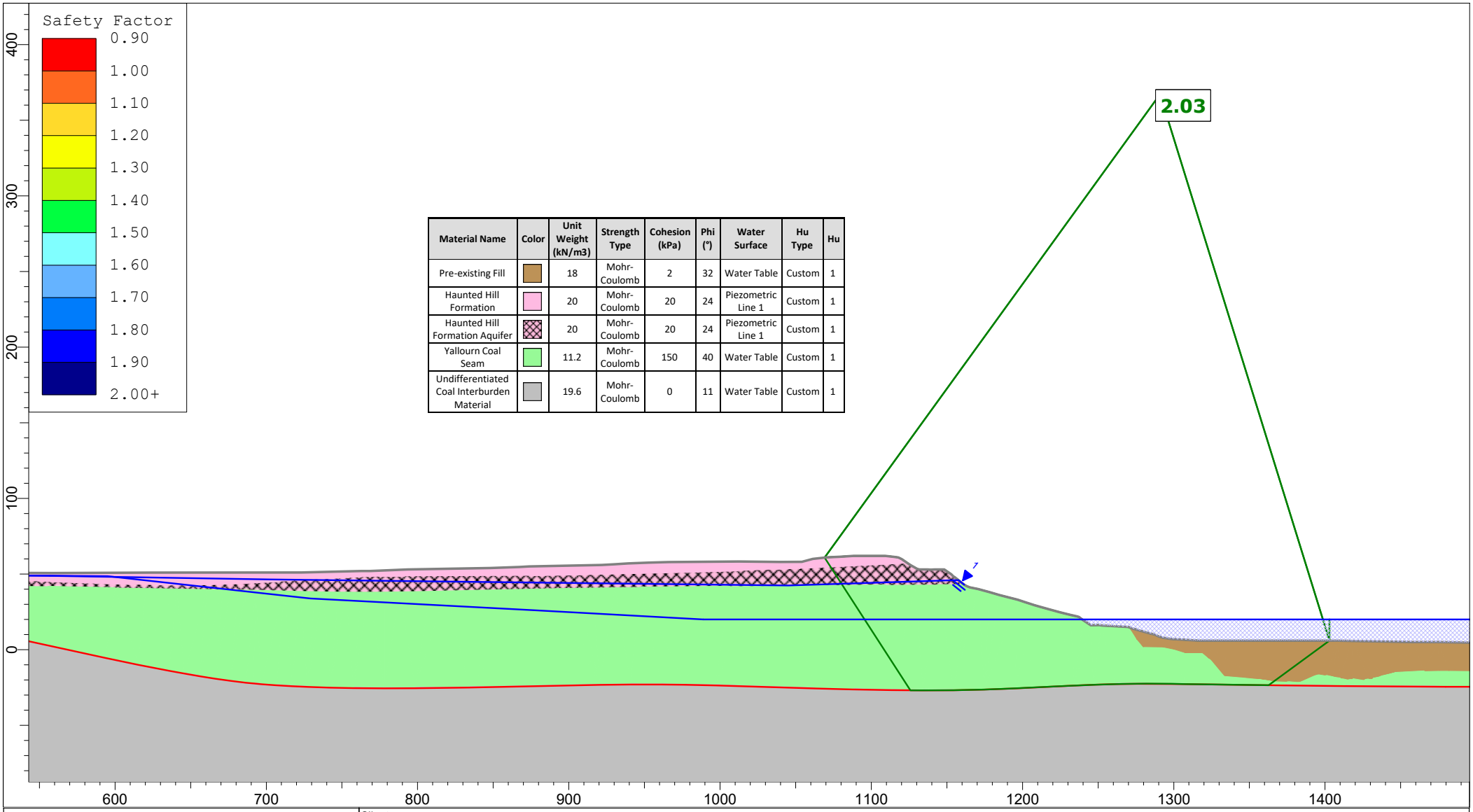
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-NB
Section:	Section 29	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



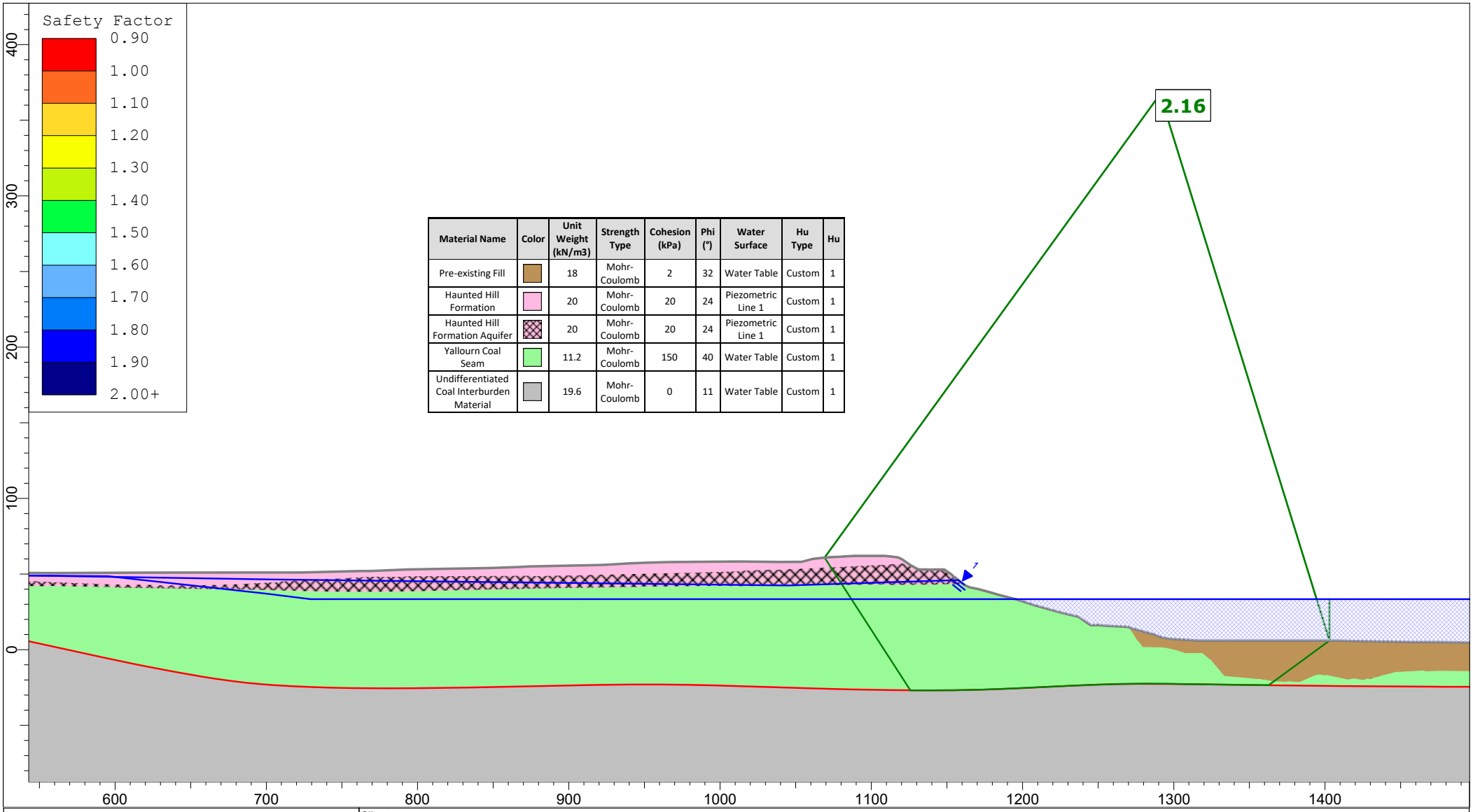
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-NB
Section:	Section 29	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



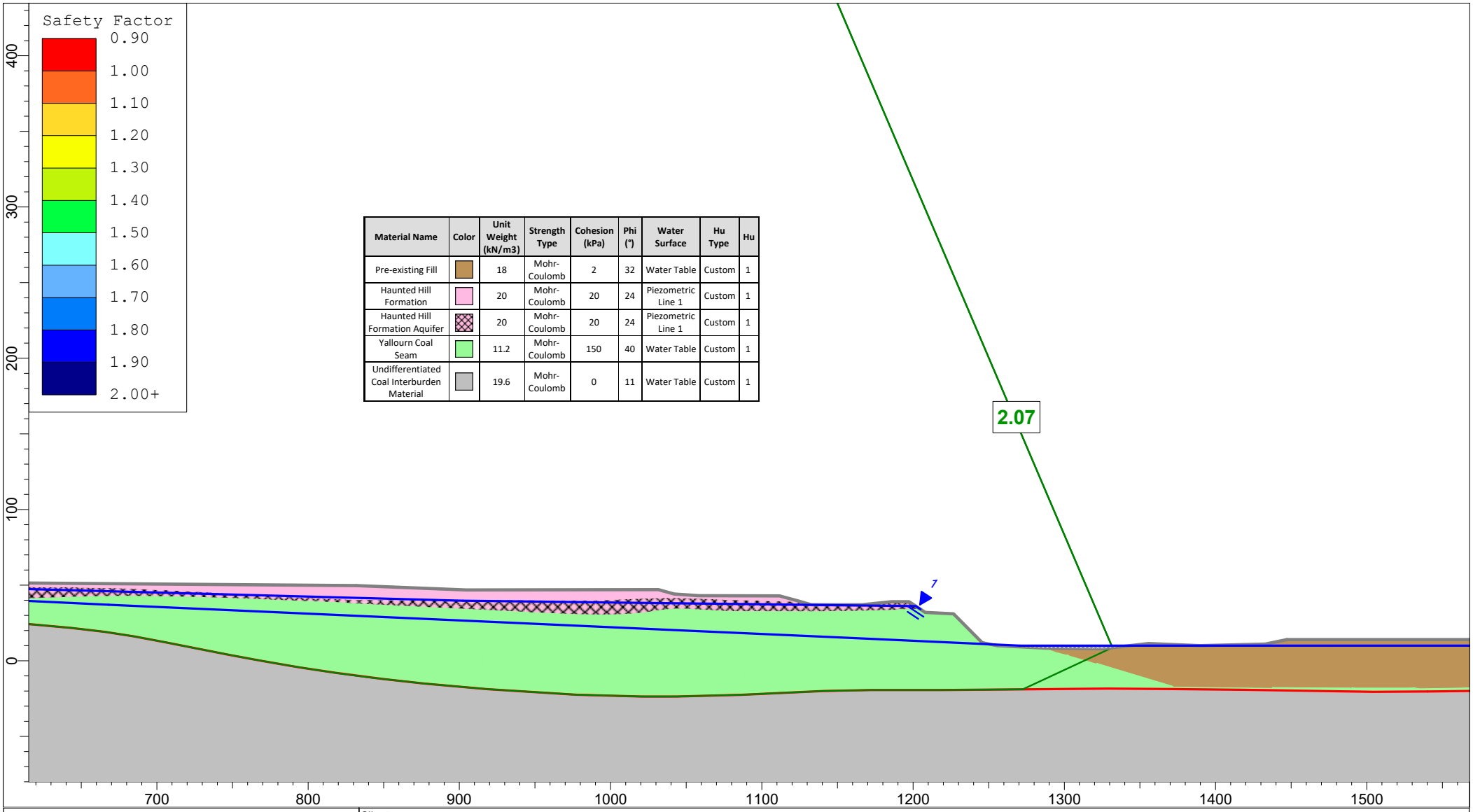
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-NB
Section:	Section 29	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



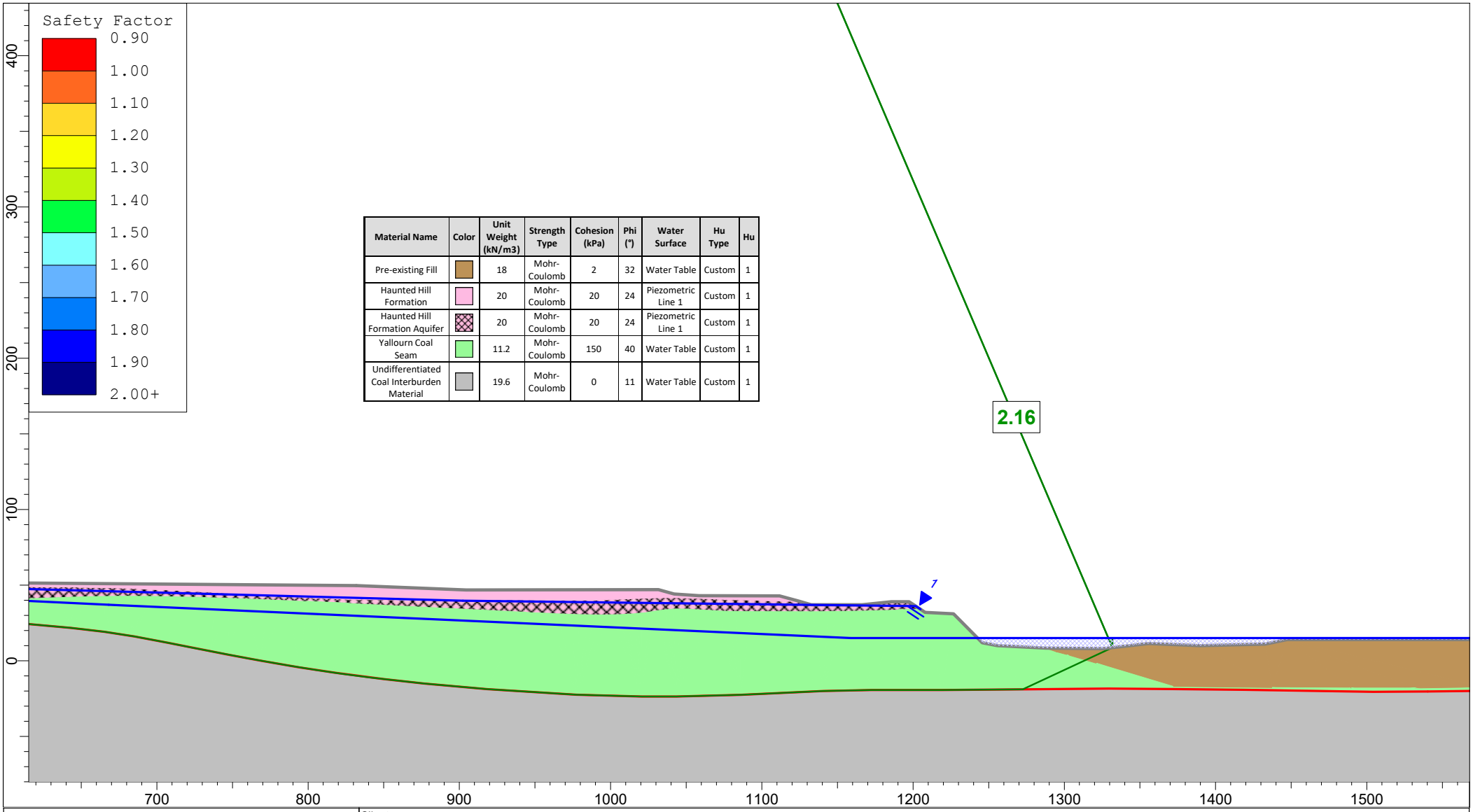
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-NB
Section:	Section 29	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



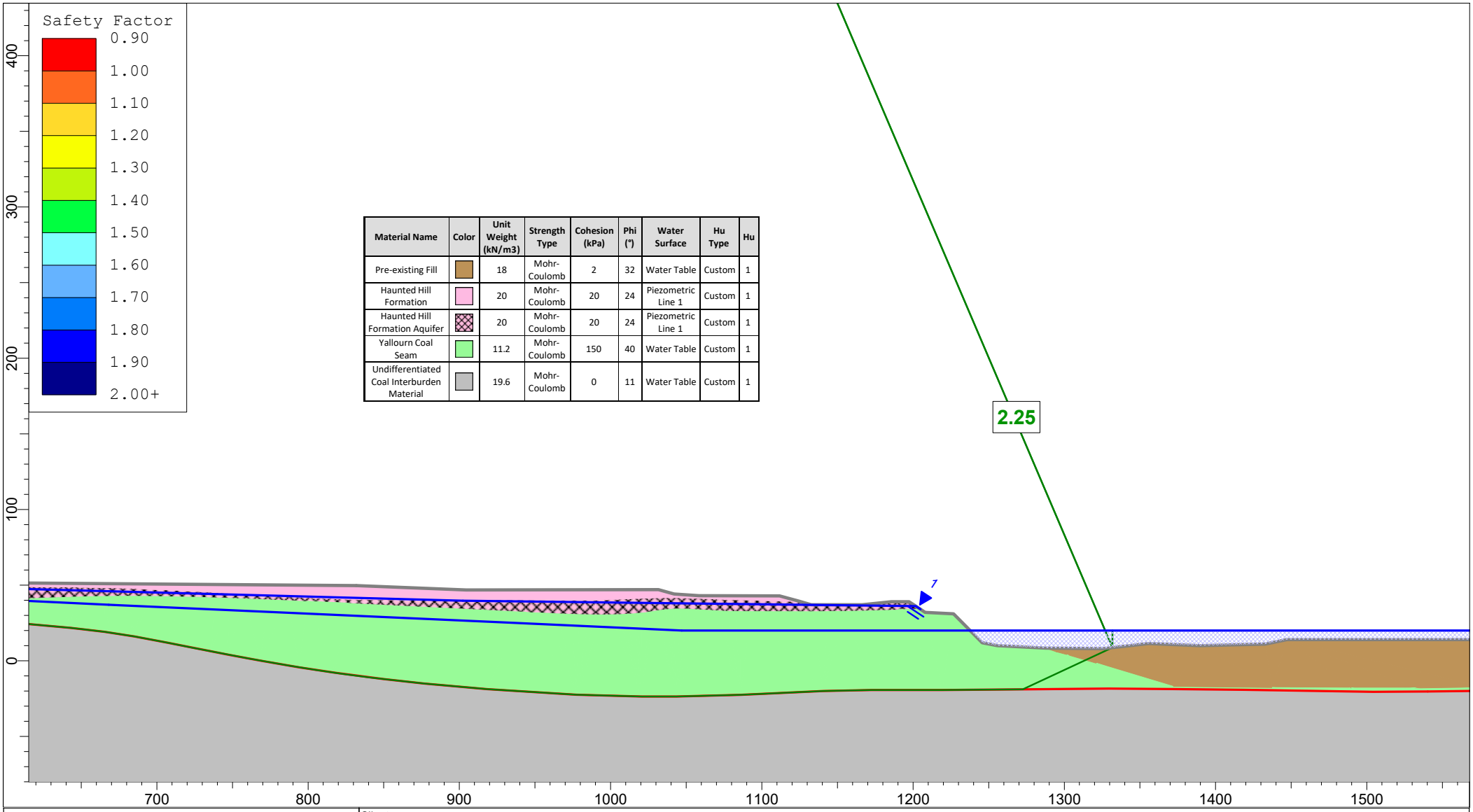
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



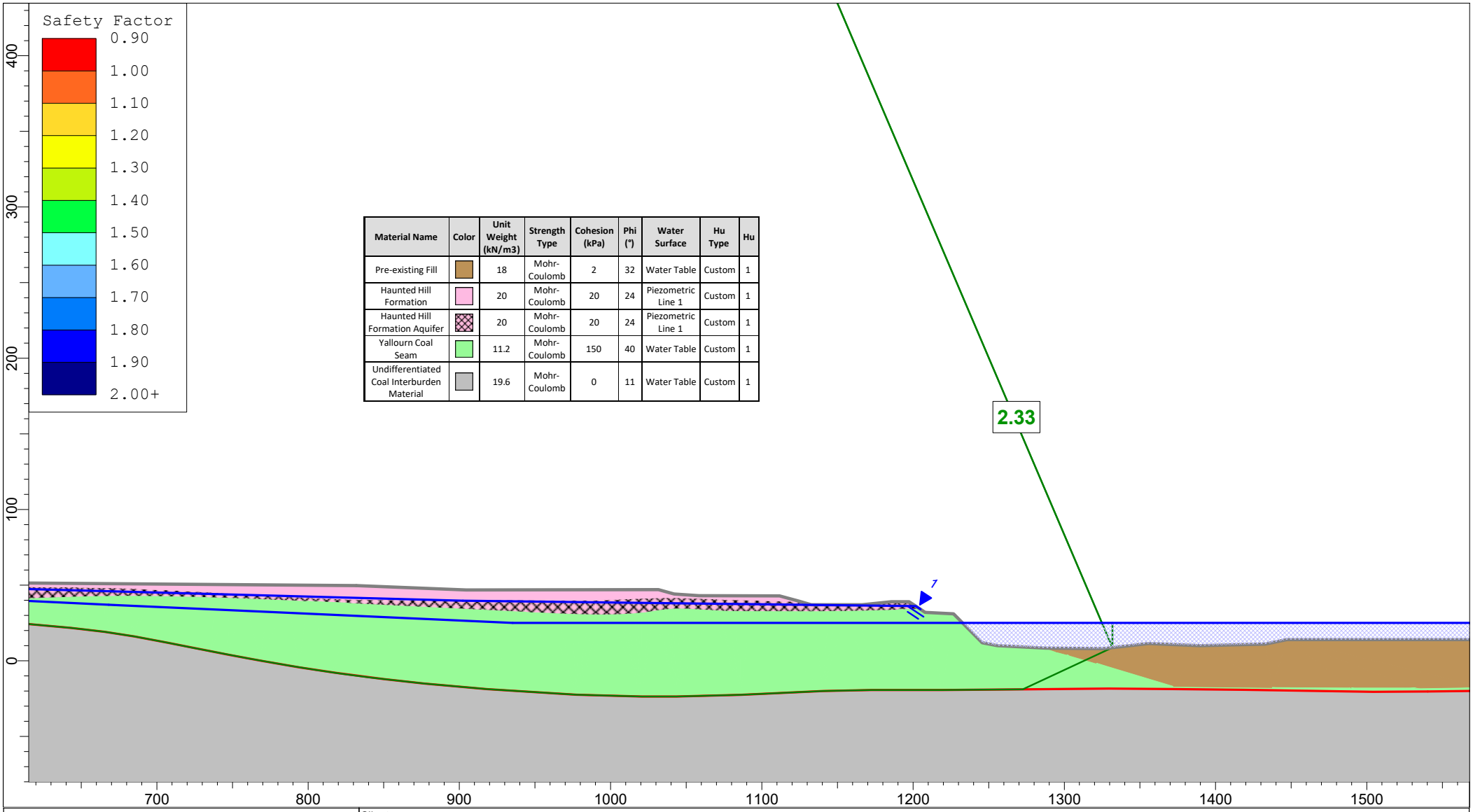
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



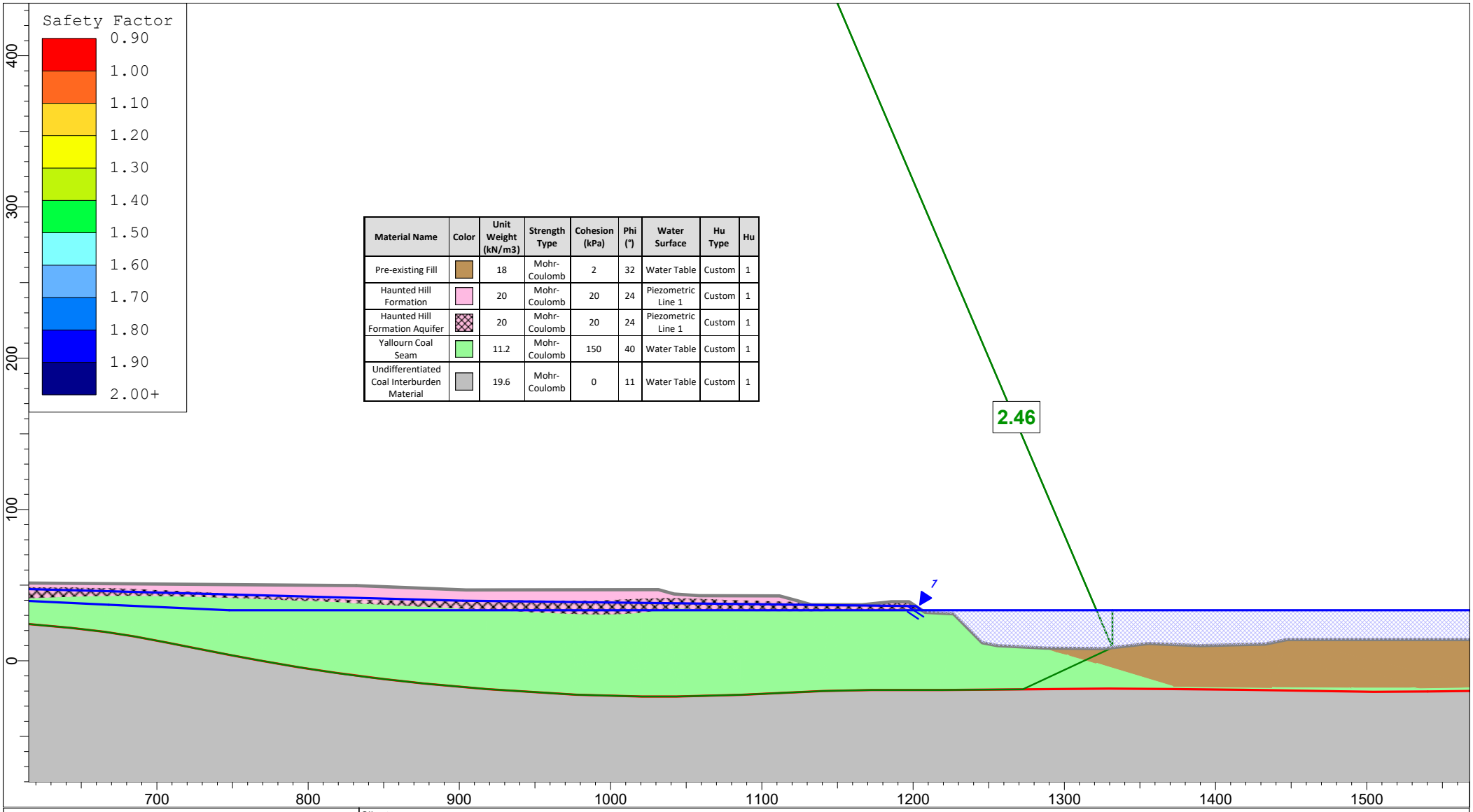
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



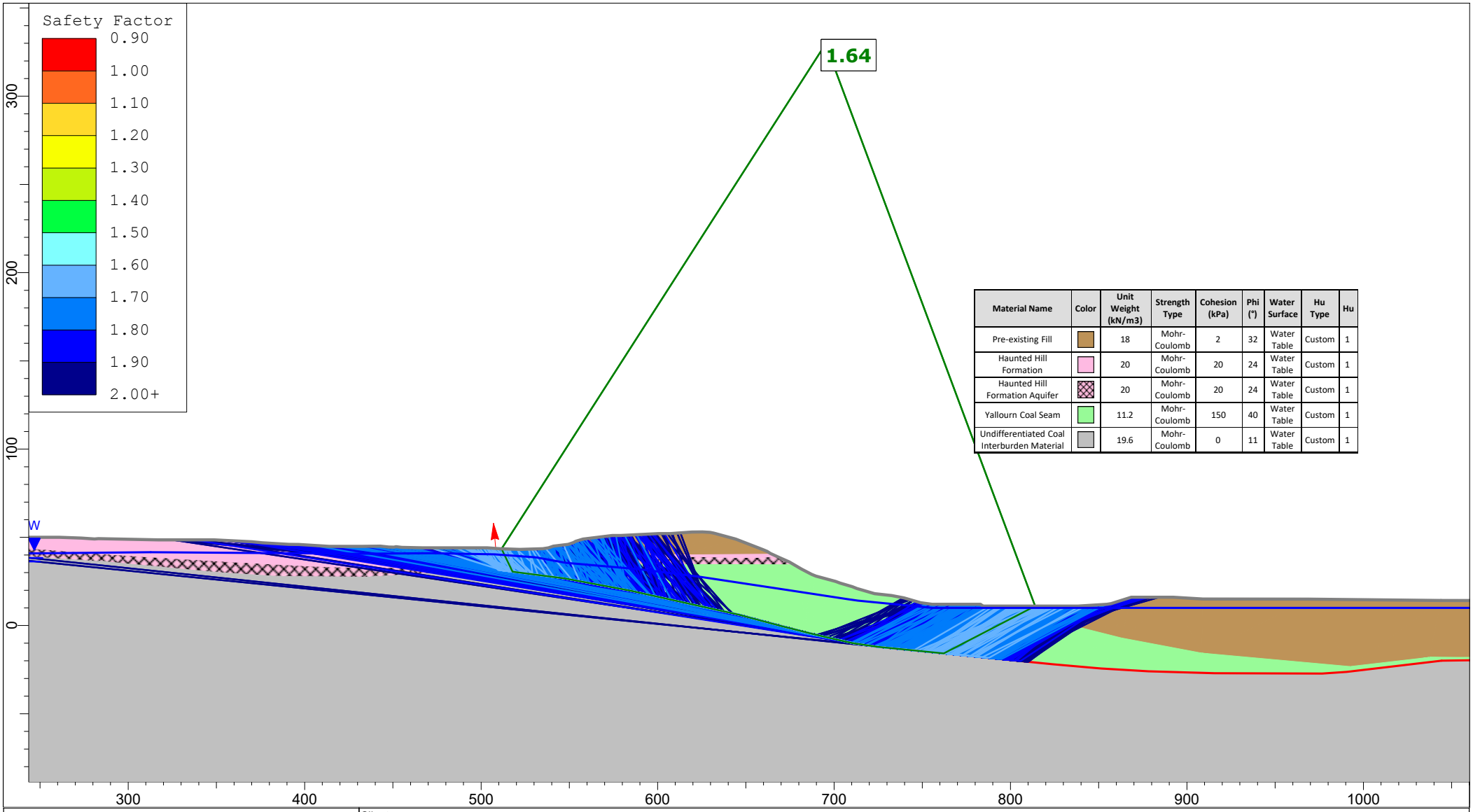
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



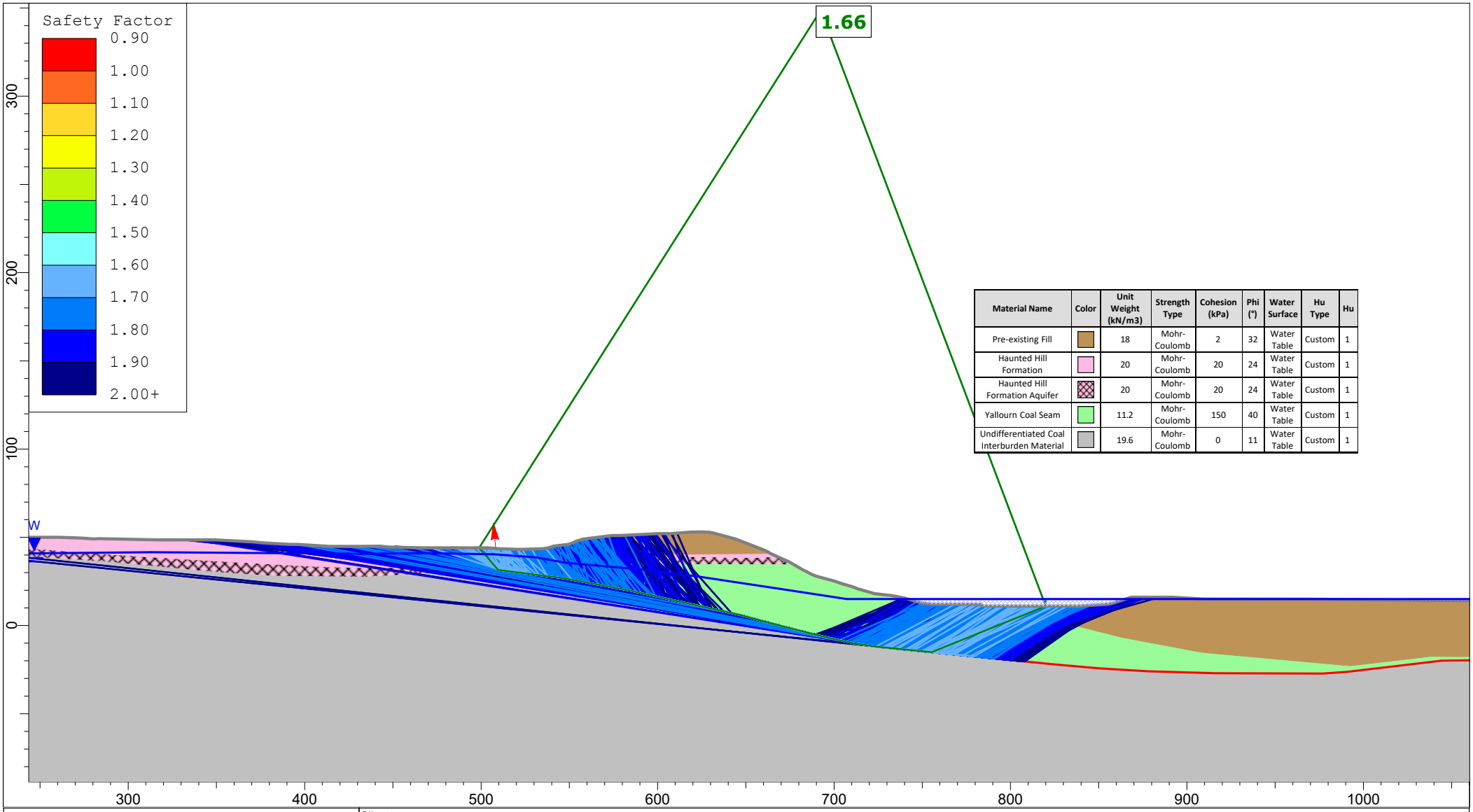
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



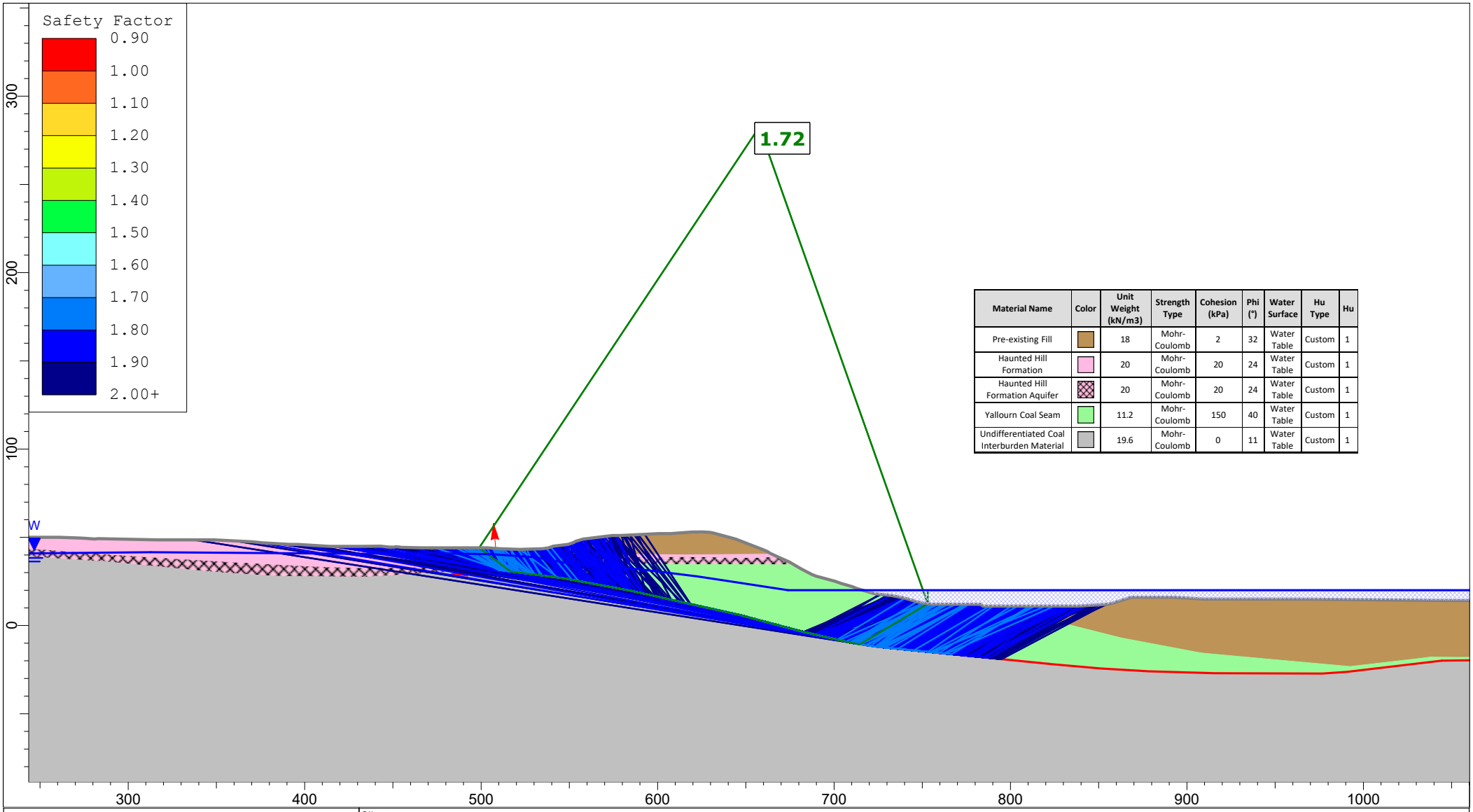
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YTF-LS**
Section:	**Section 31**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 10 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



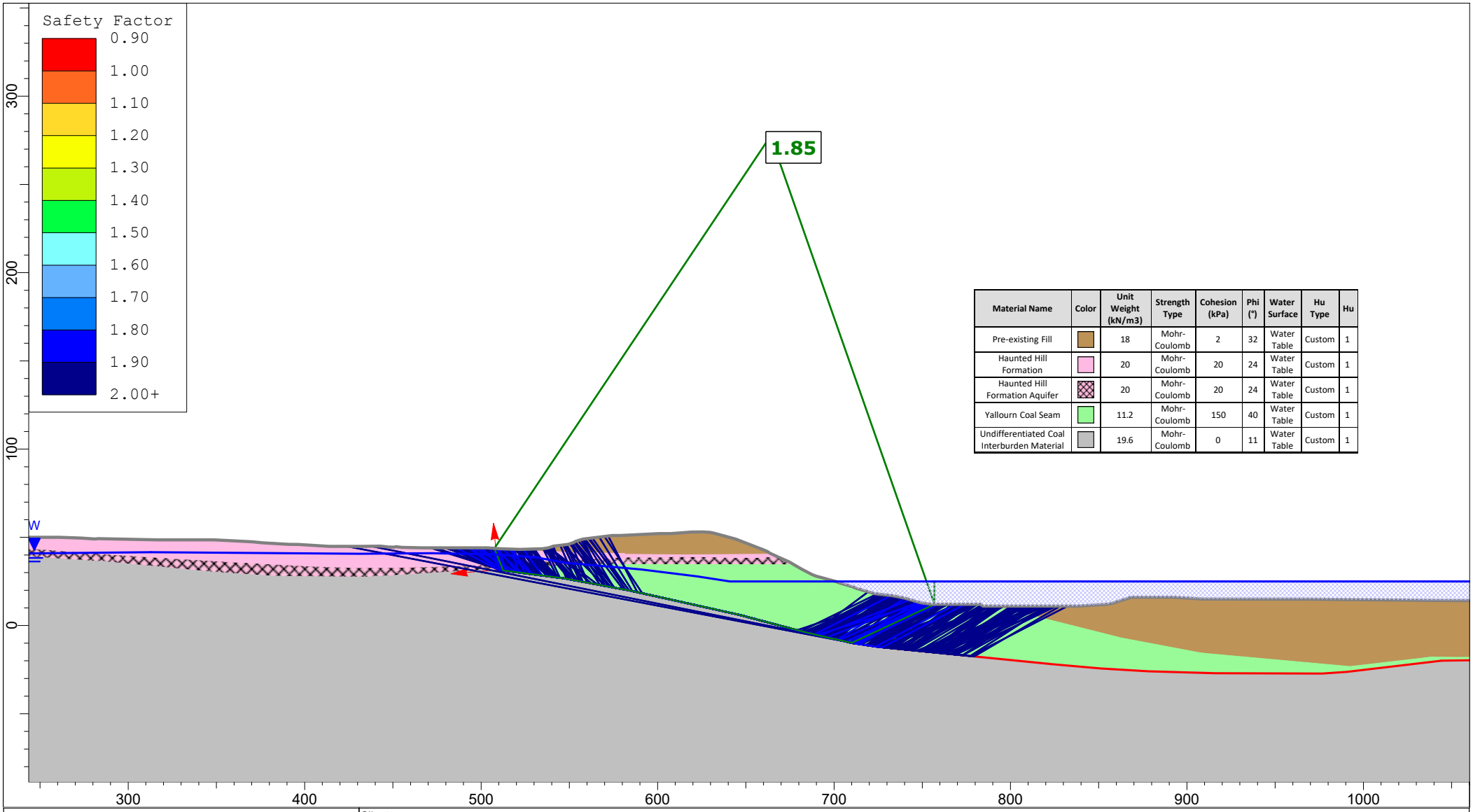
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YTF-LS**
Section:	**Section 31**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 15 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



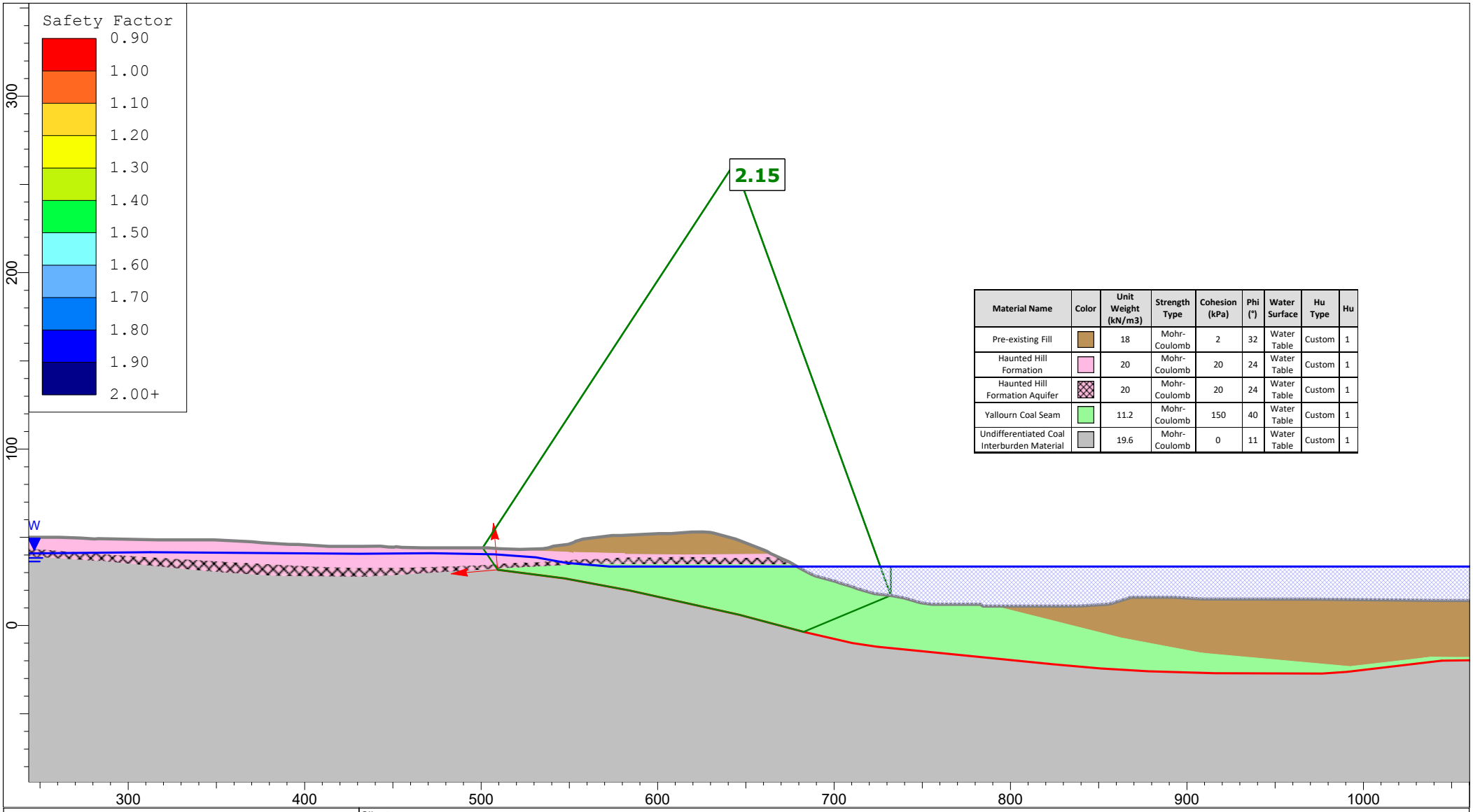
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-LS
Section:	Section 31	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



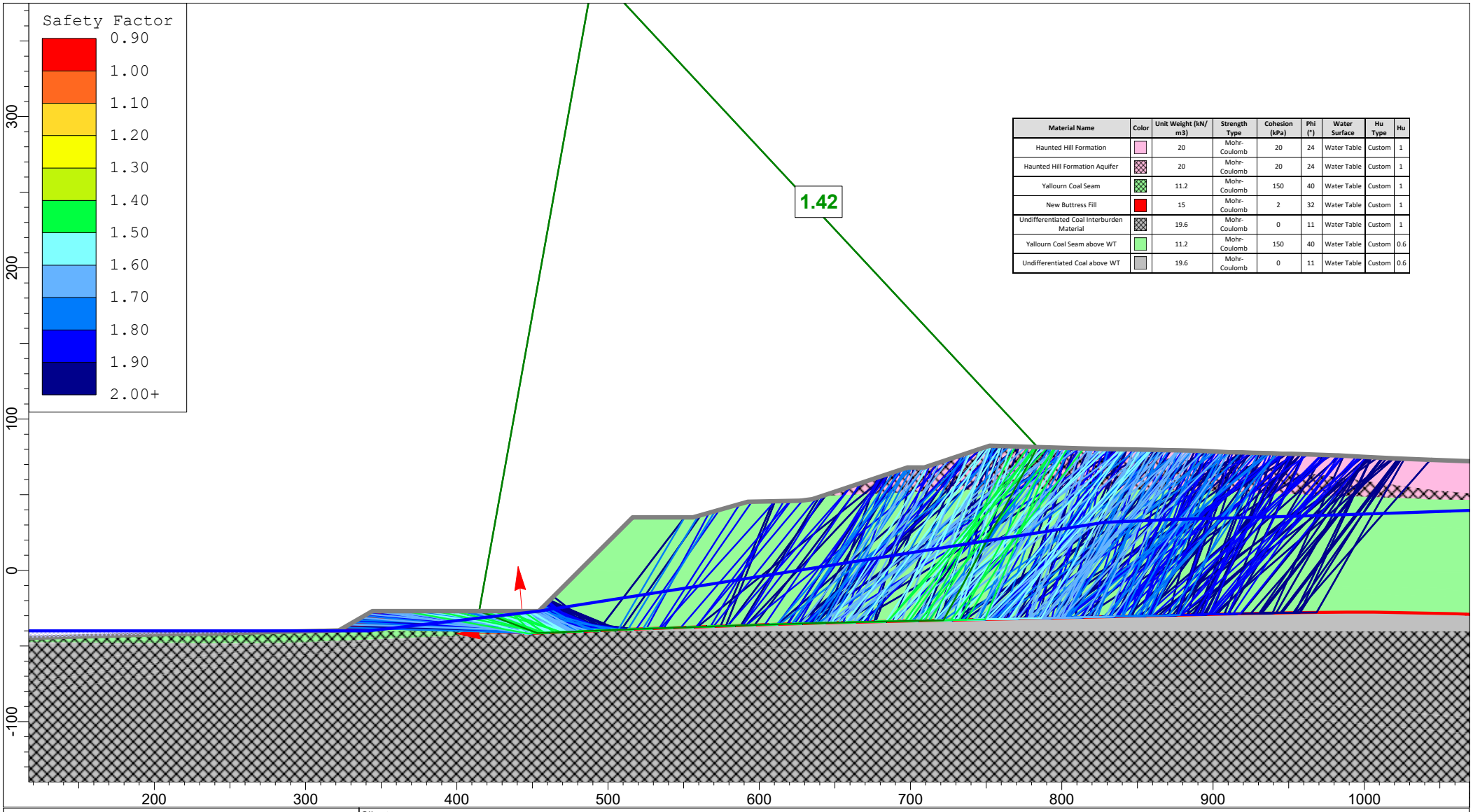
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-LS
Section:	Section 31	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



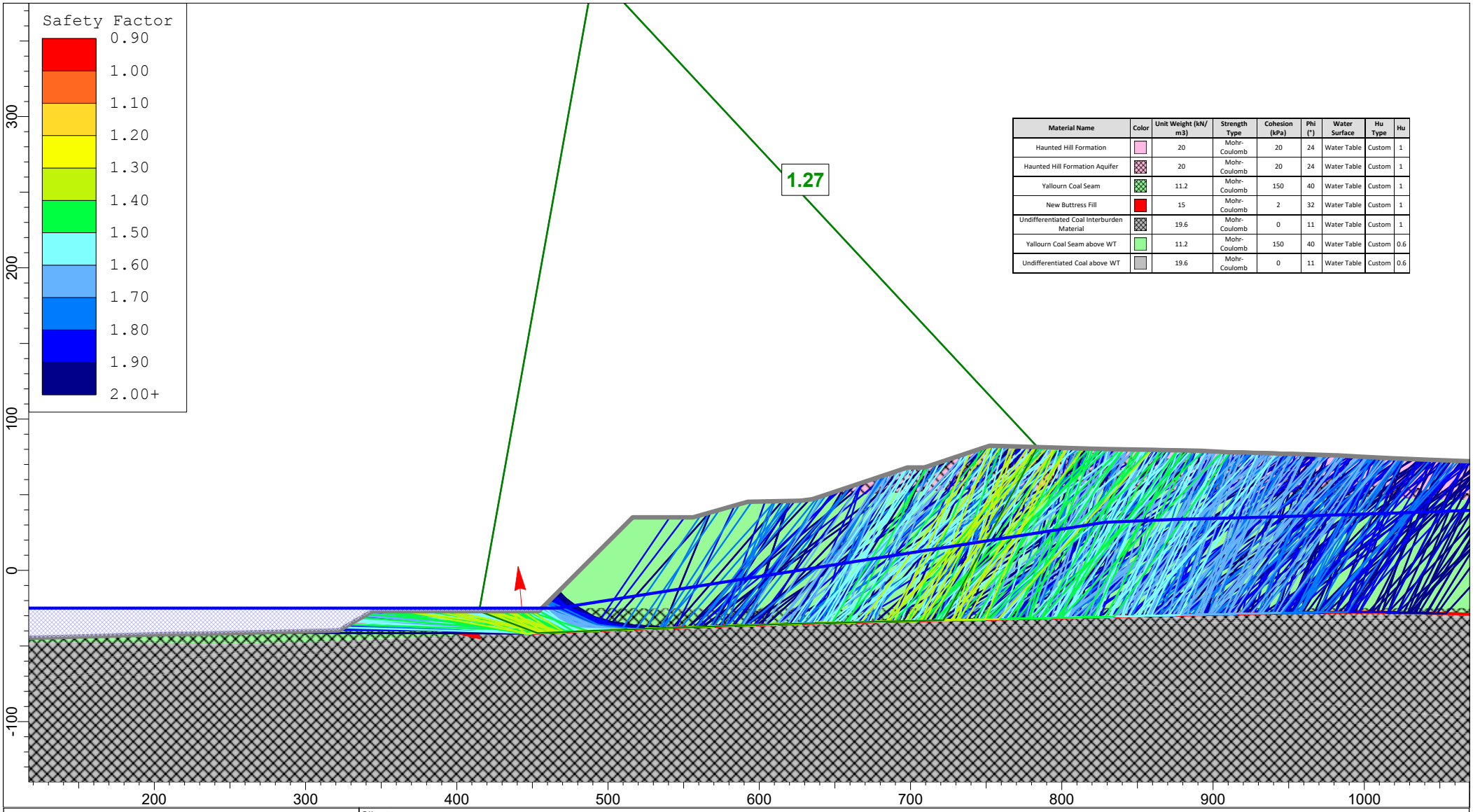
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-LS
Section:	Section 31	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



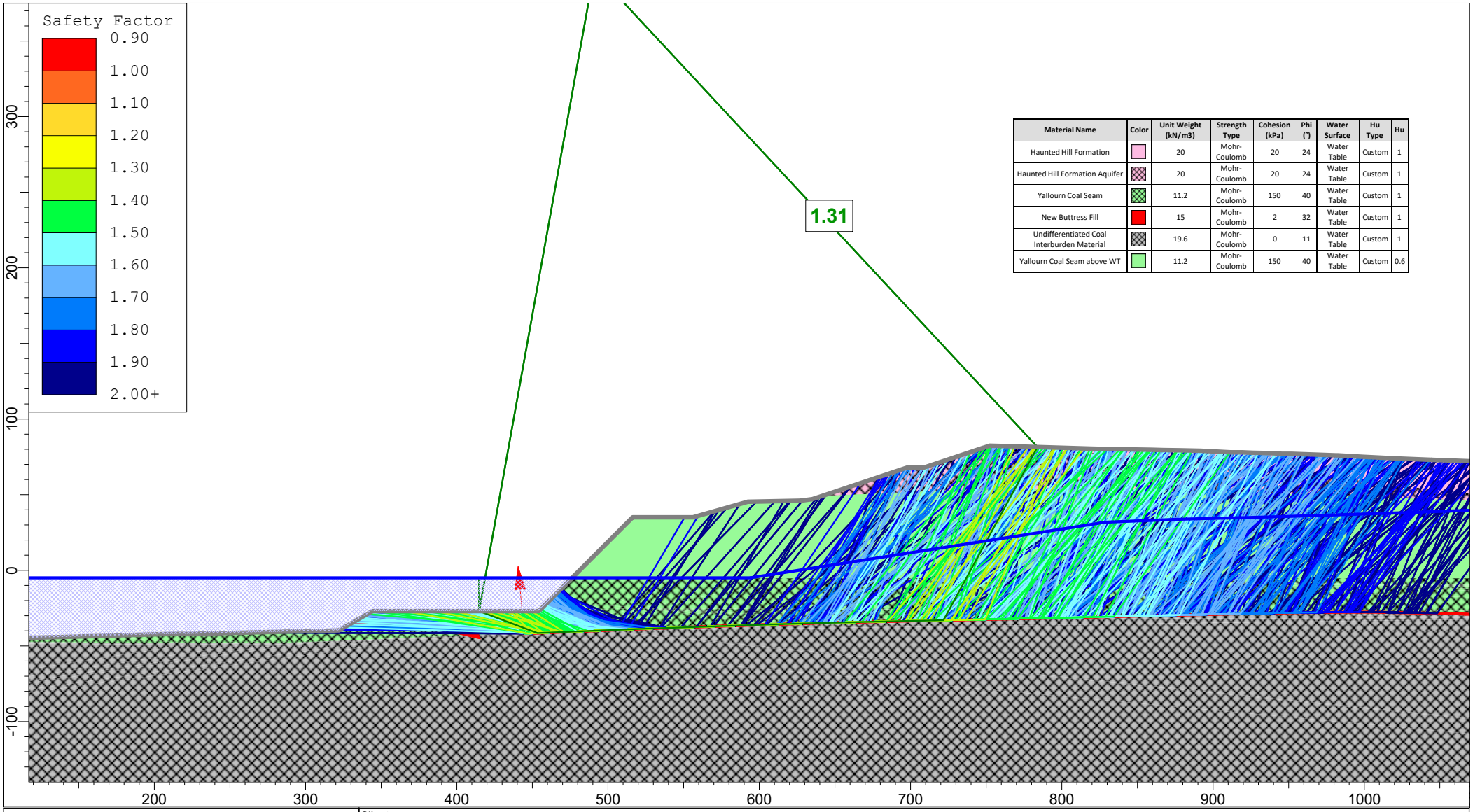
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at -40 mRL
Notes:	Lower Bound Interseam Shear Strength		



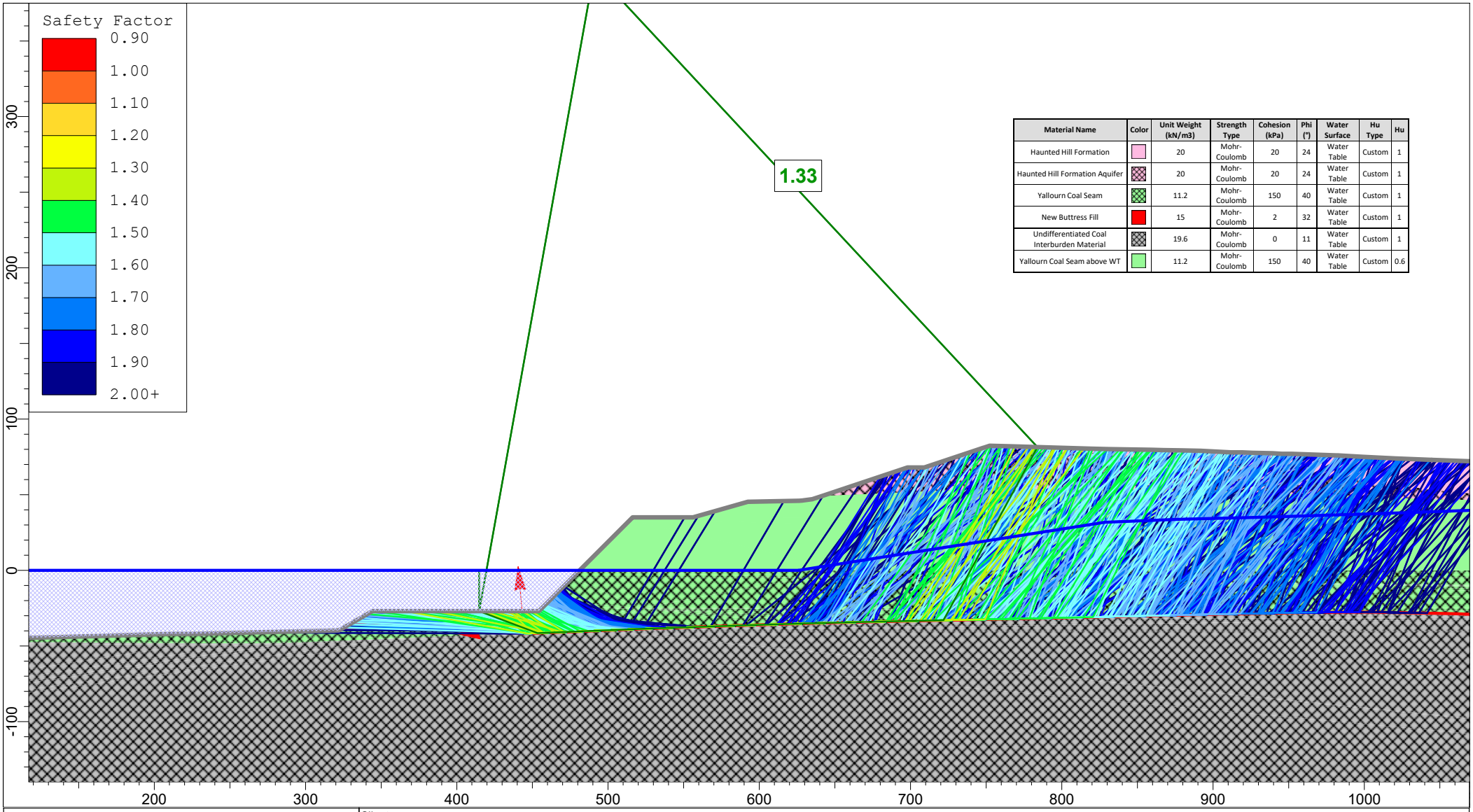
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at -25 mRL
Notes:	Lower Bound Interseam Shear Strength		



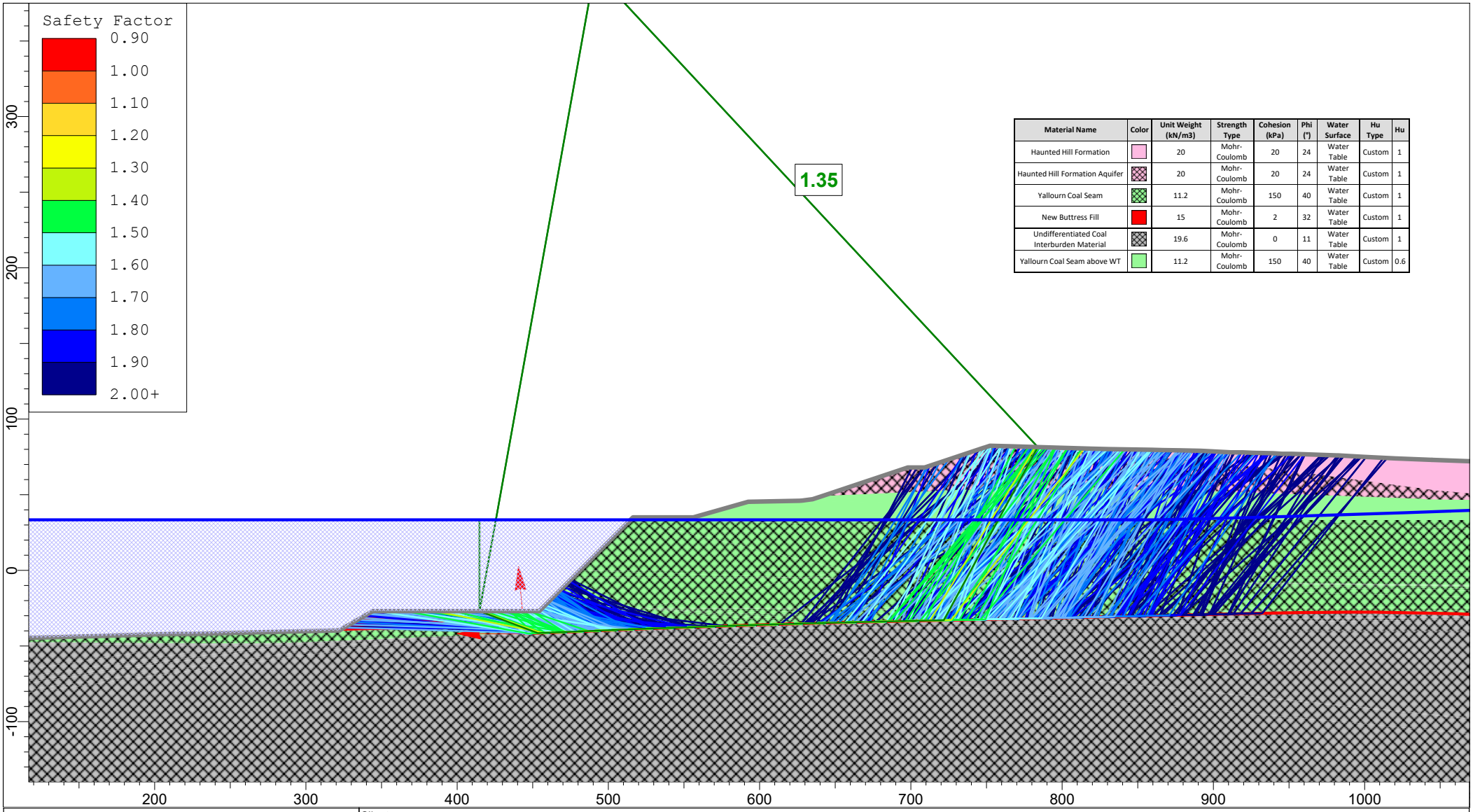
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**MVF-SB**
Section:	**Section 13**	Case:	**Multilinear - Hu = 1 below lake level**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at -5 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



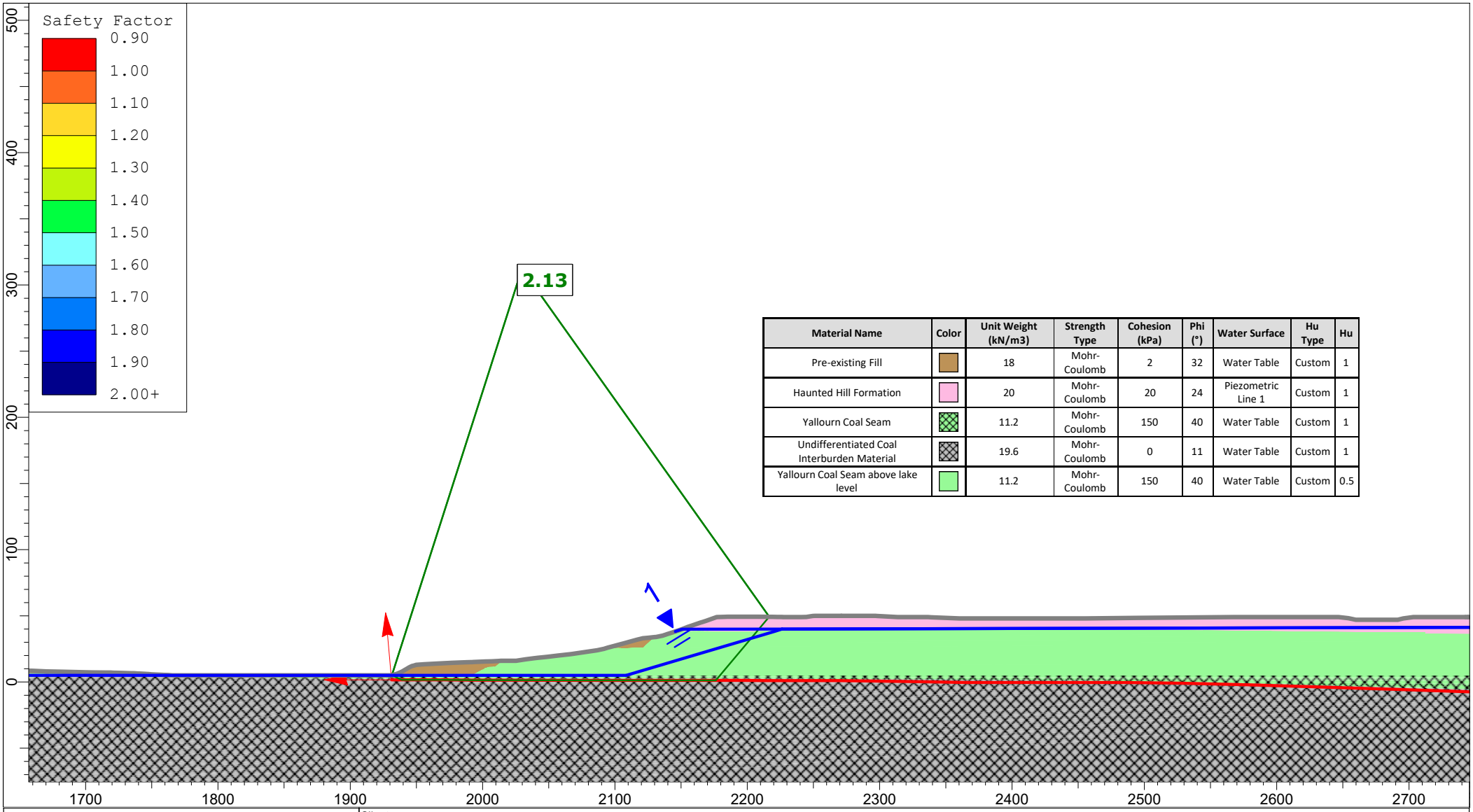
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**MVF-SB**
Section:	**Section 13**	Case:	**Multilinear - Hu = 1 below lake level**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 0 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



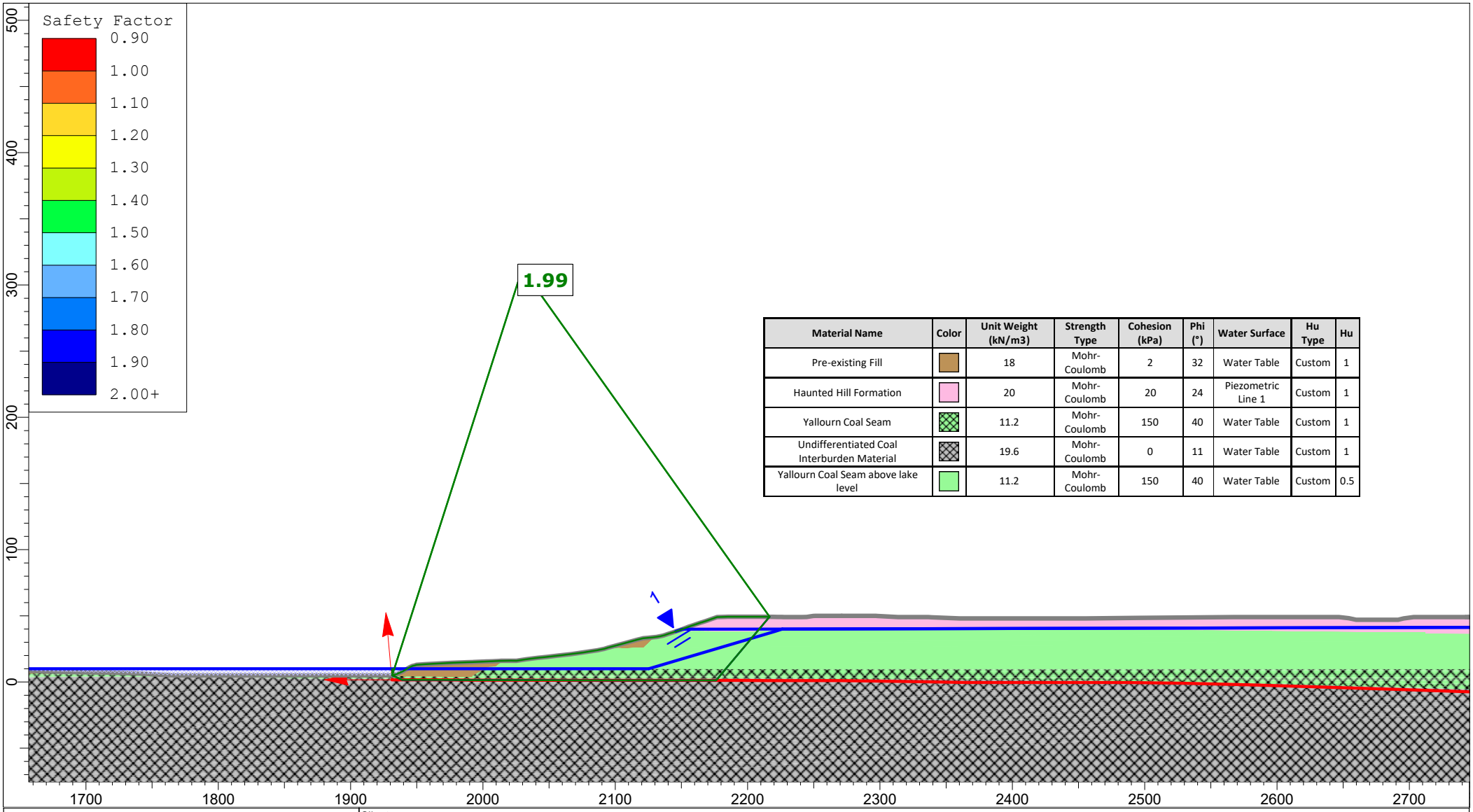
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**MVF-SB**
Section:	**Section 13**	Case:	**Multilinear - Hu = 1 below lake level**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 33.4 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



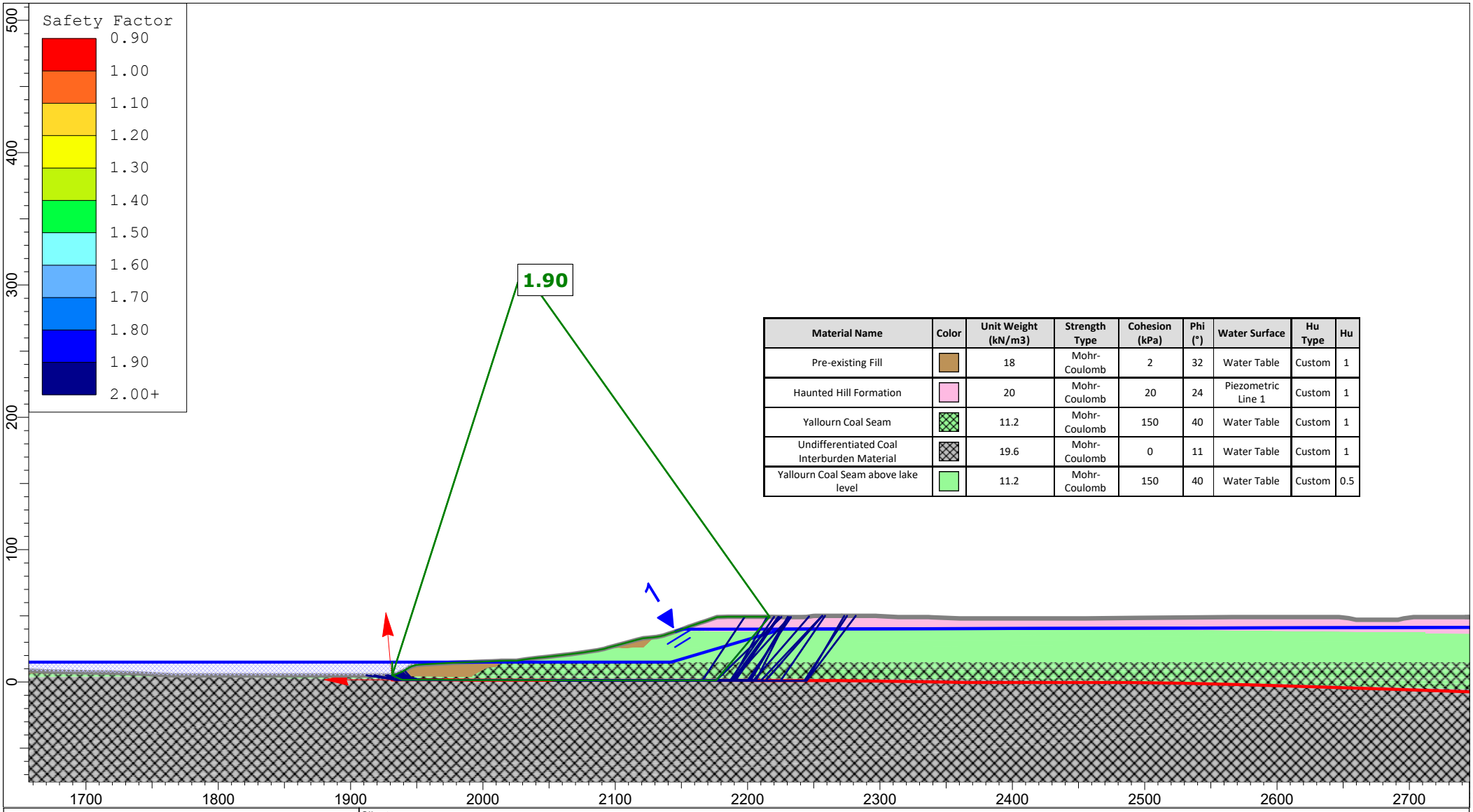
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above lake level		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



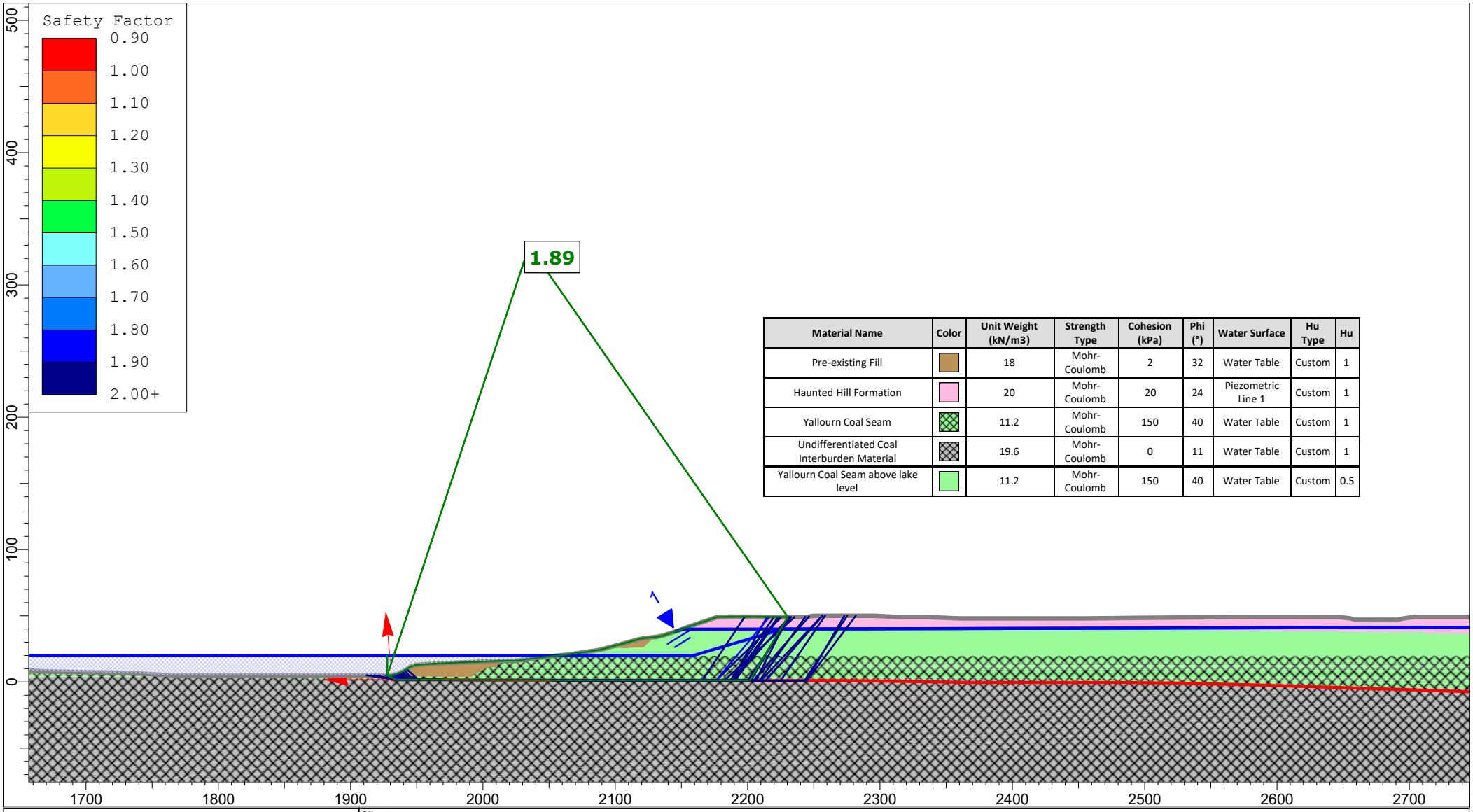
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above lake level		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



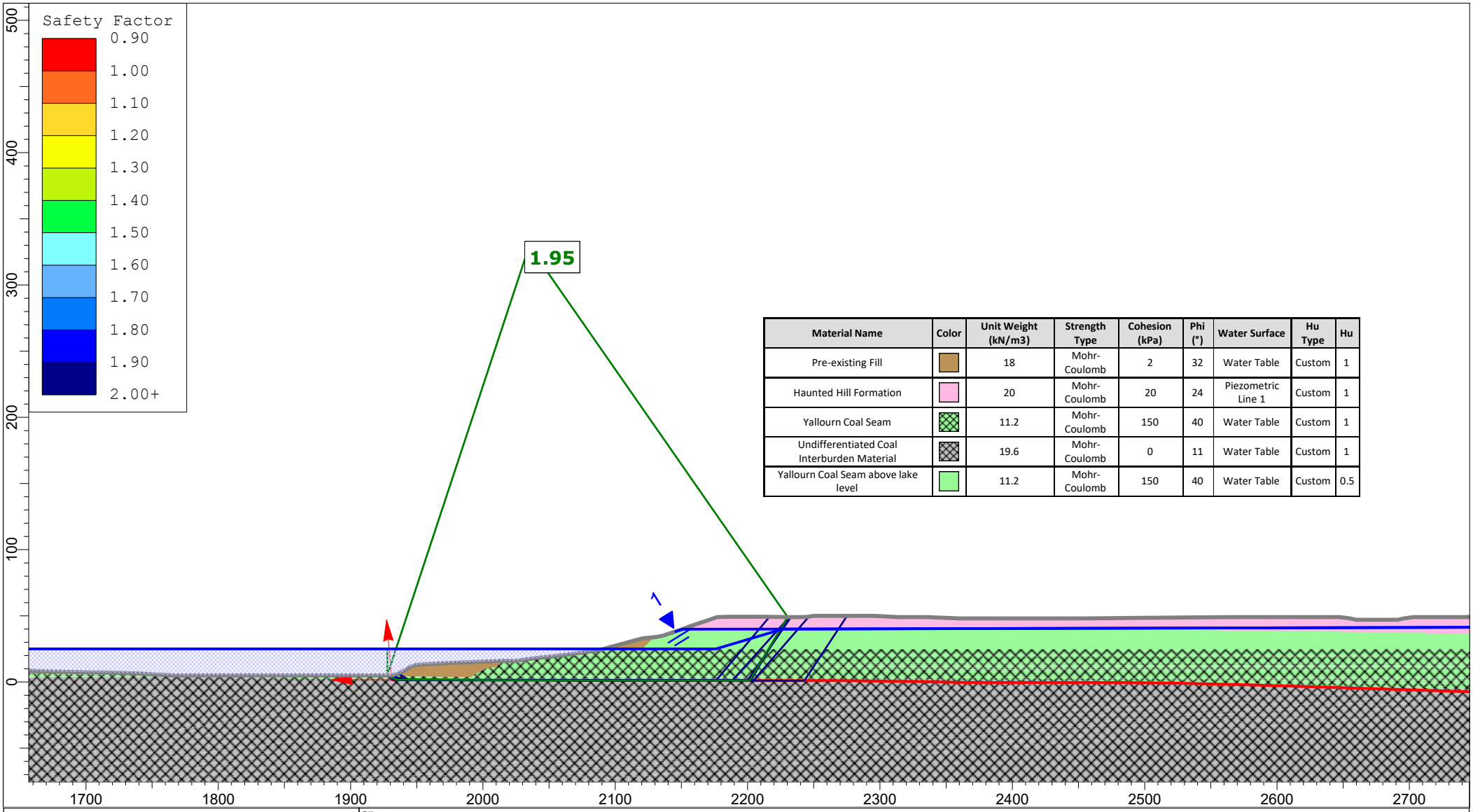
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above lake level		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



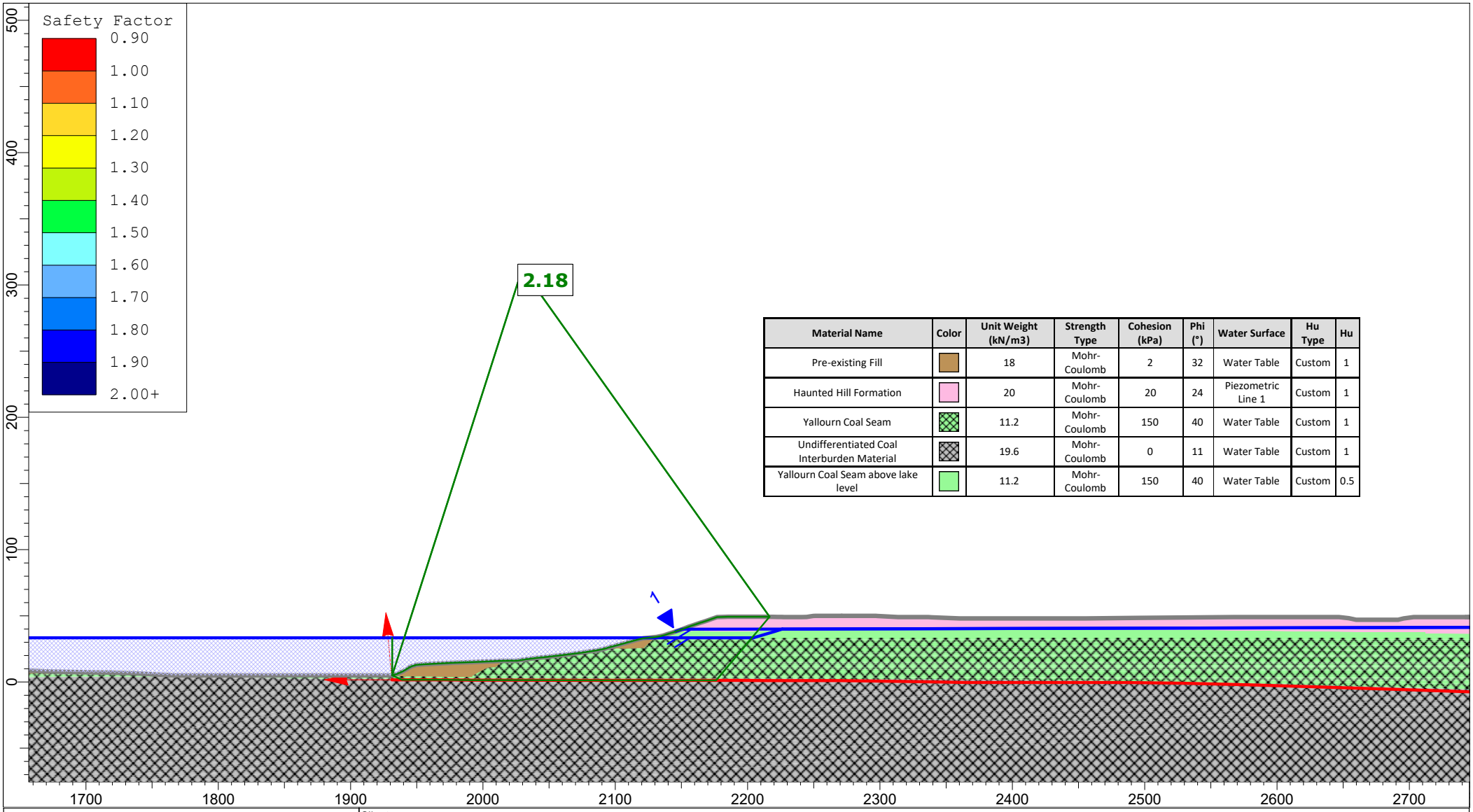
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above lake level		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



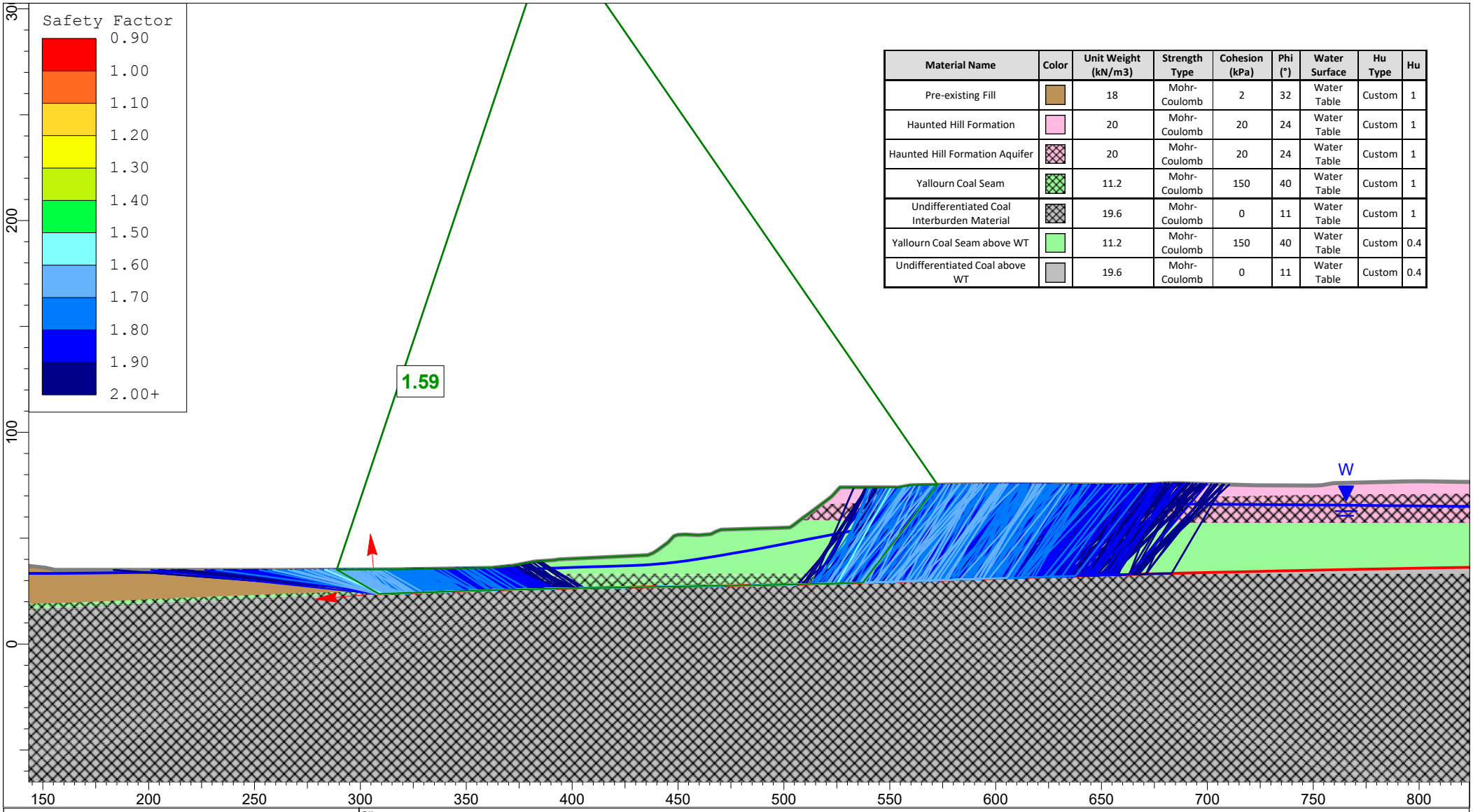
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above lake level		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



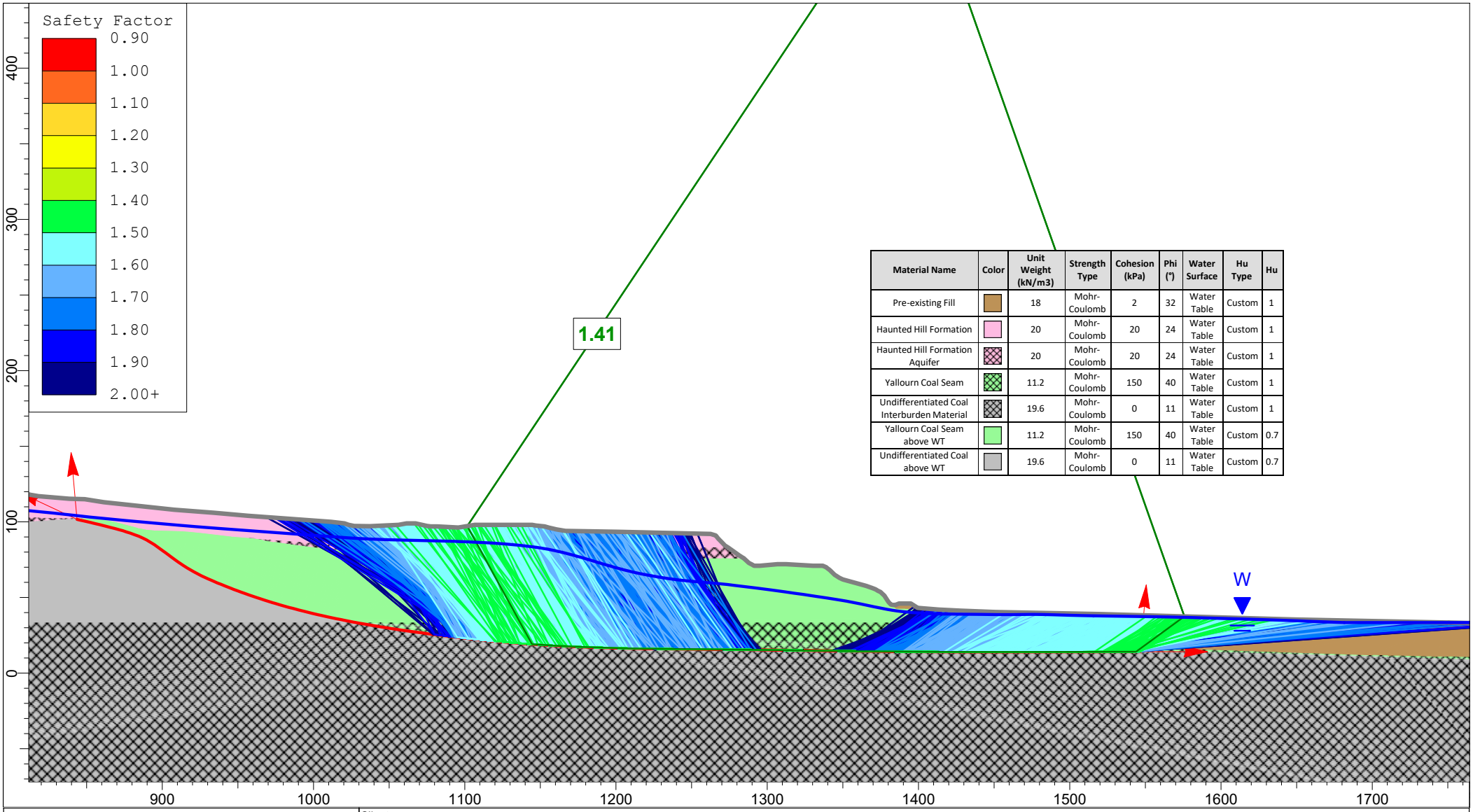
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above lake level		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



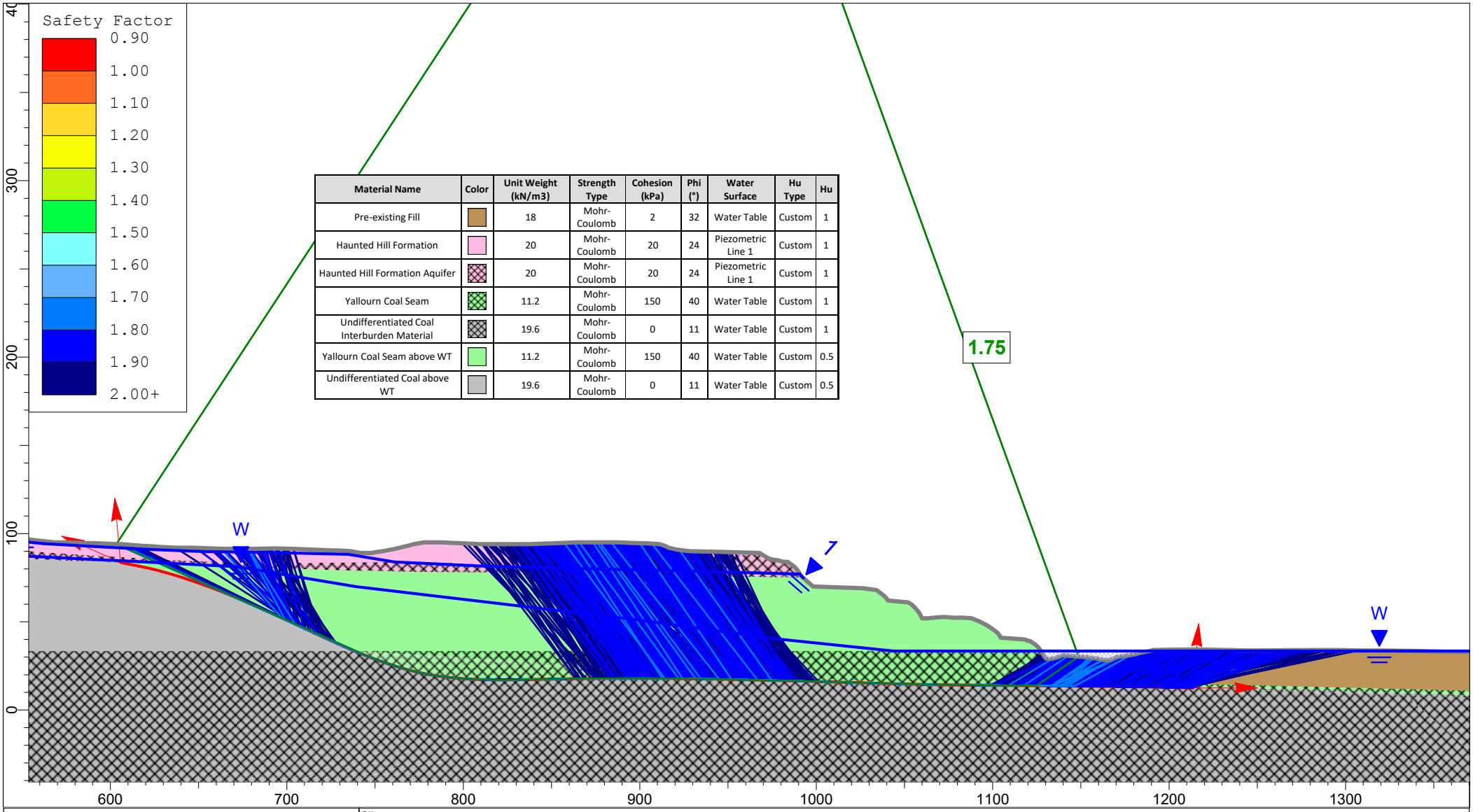
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SB
Section:	Section 19	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



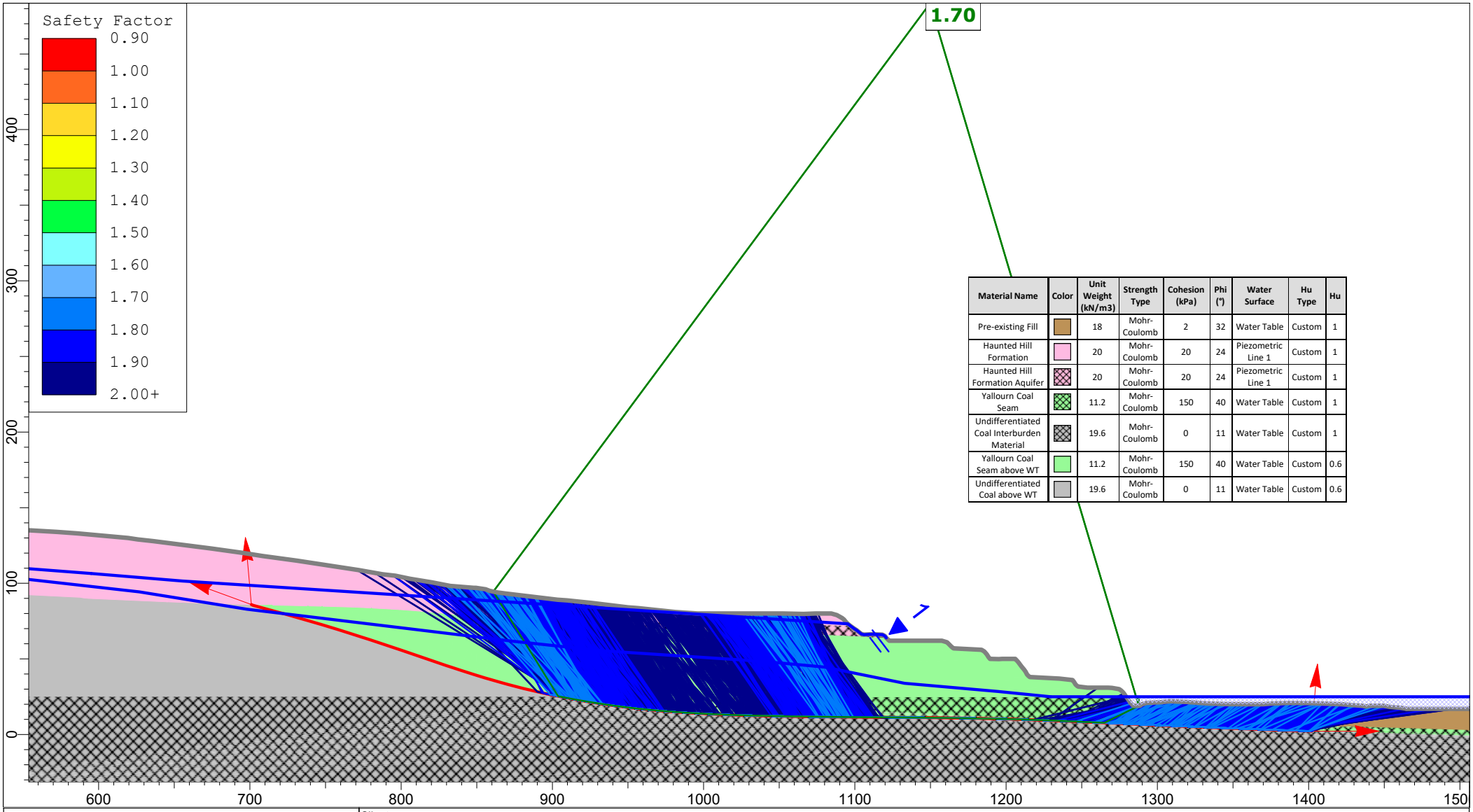
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 21	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



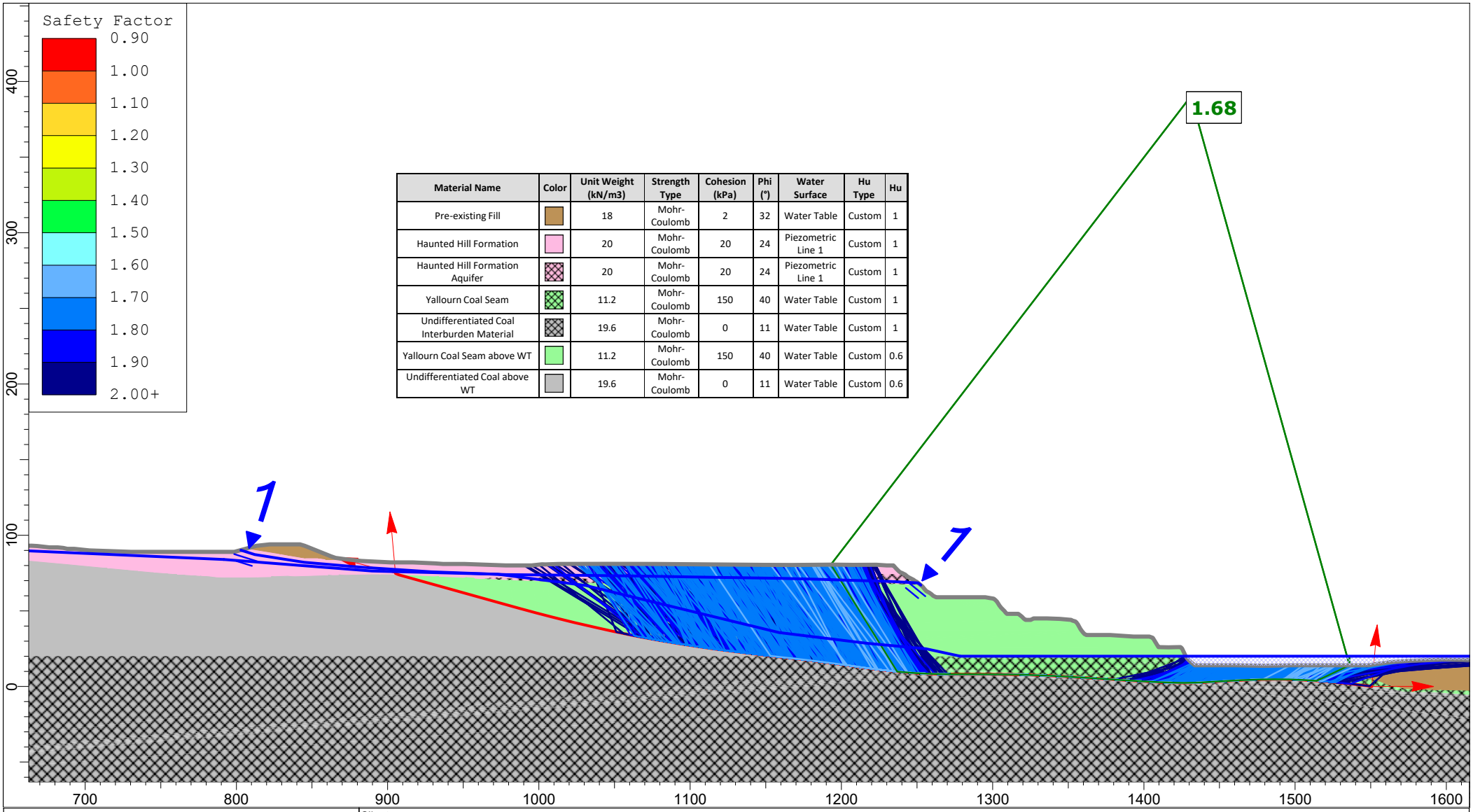
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (South)
Section:	Section 22	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



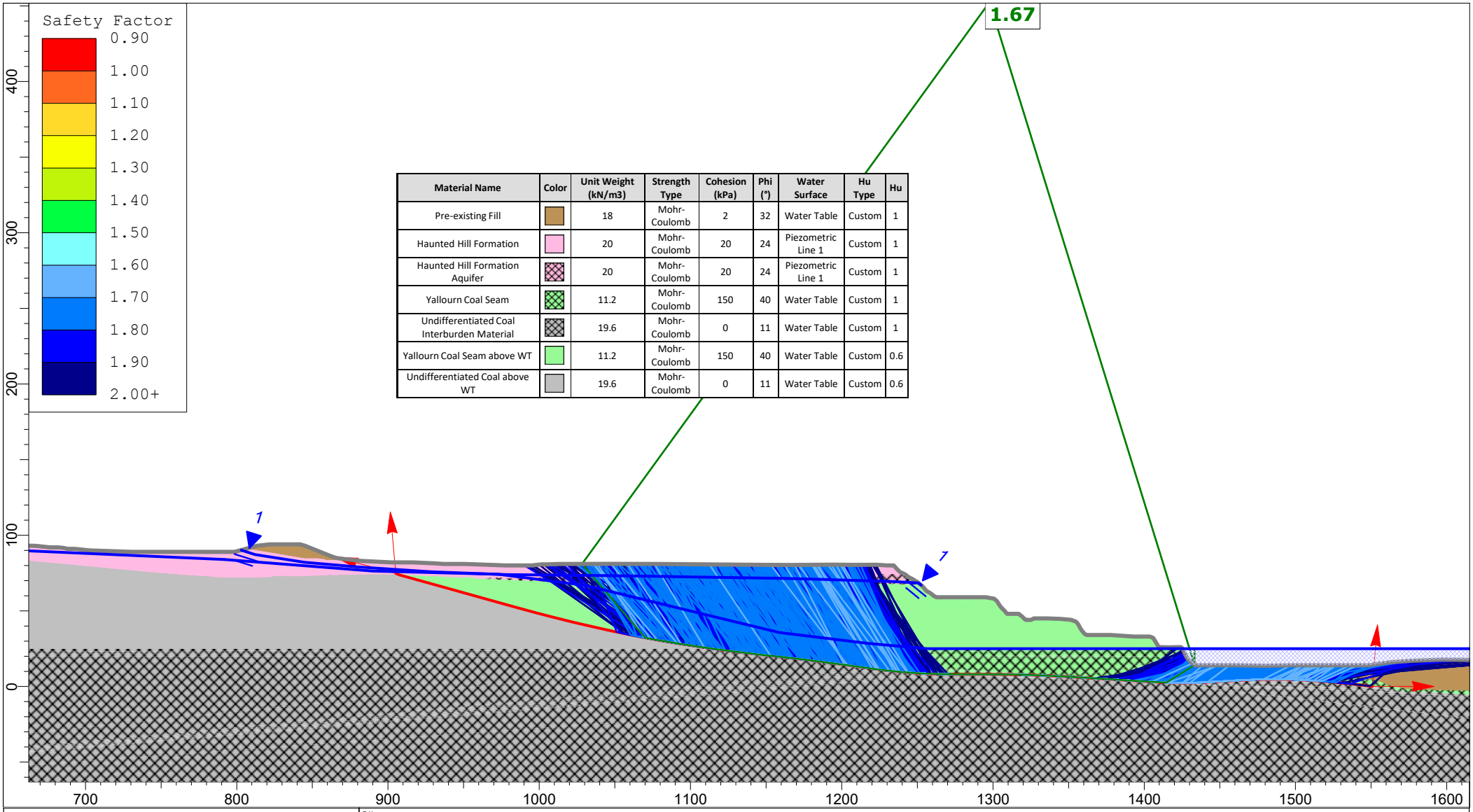
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 23	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



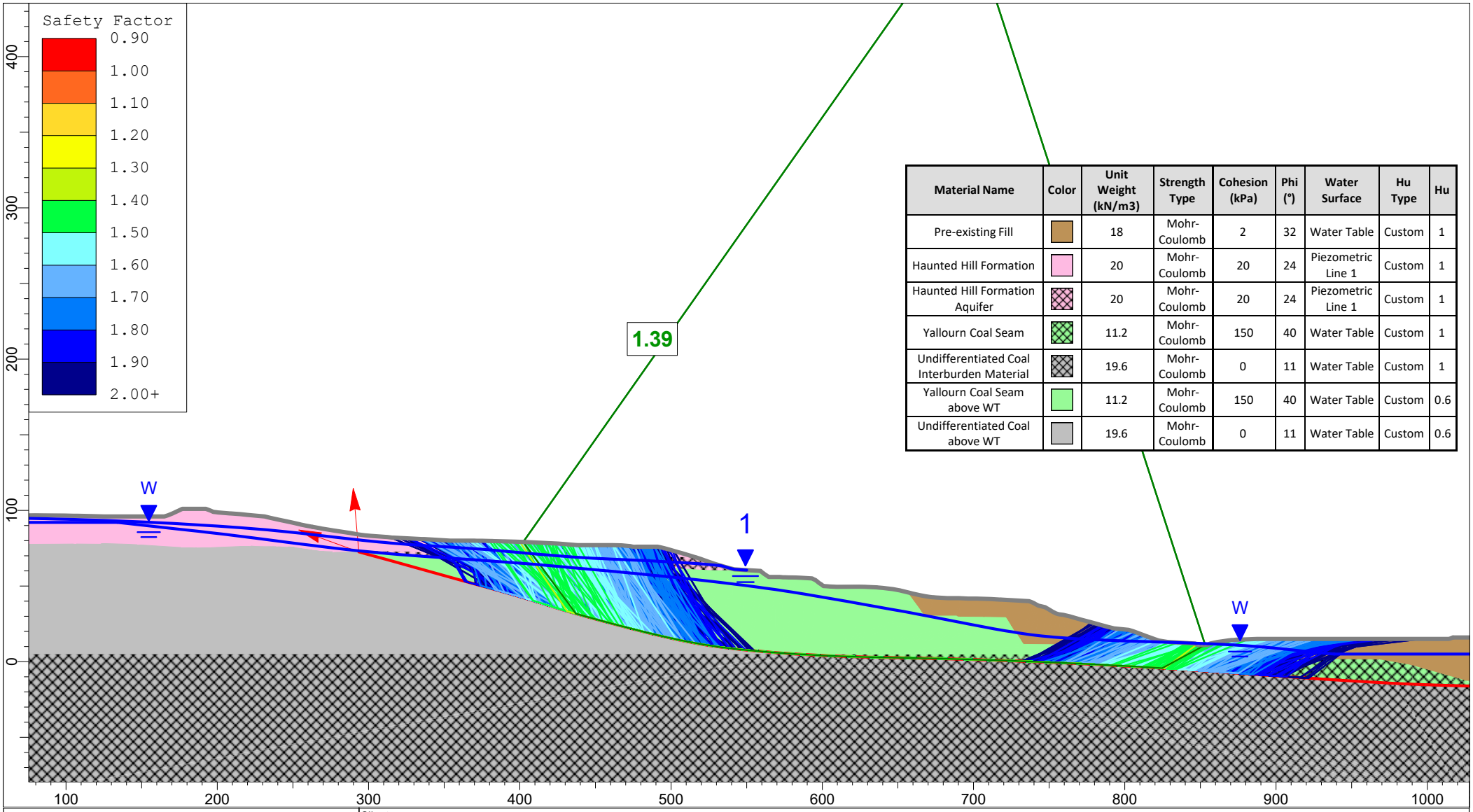
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



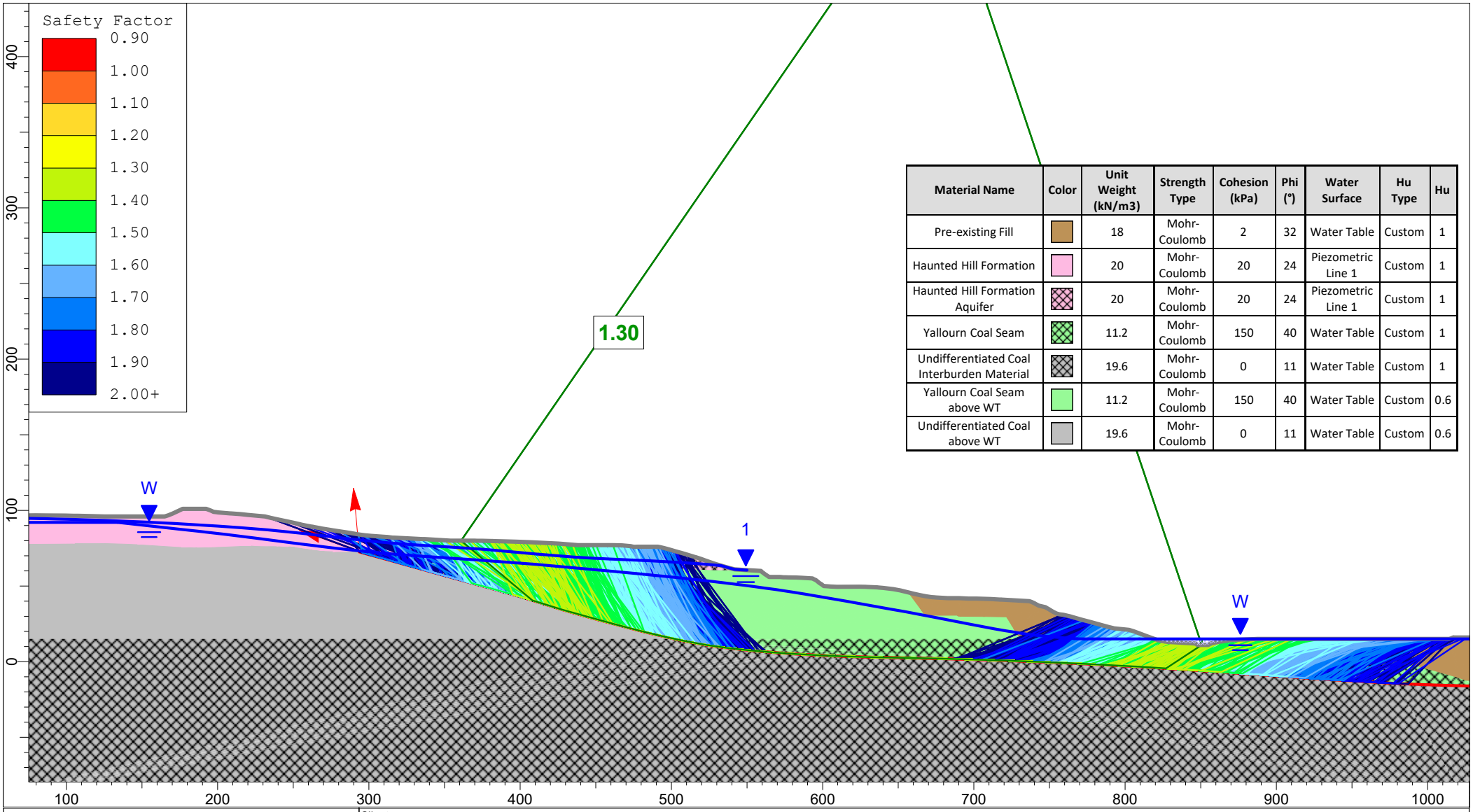
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



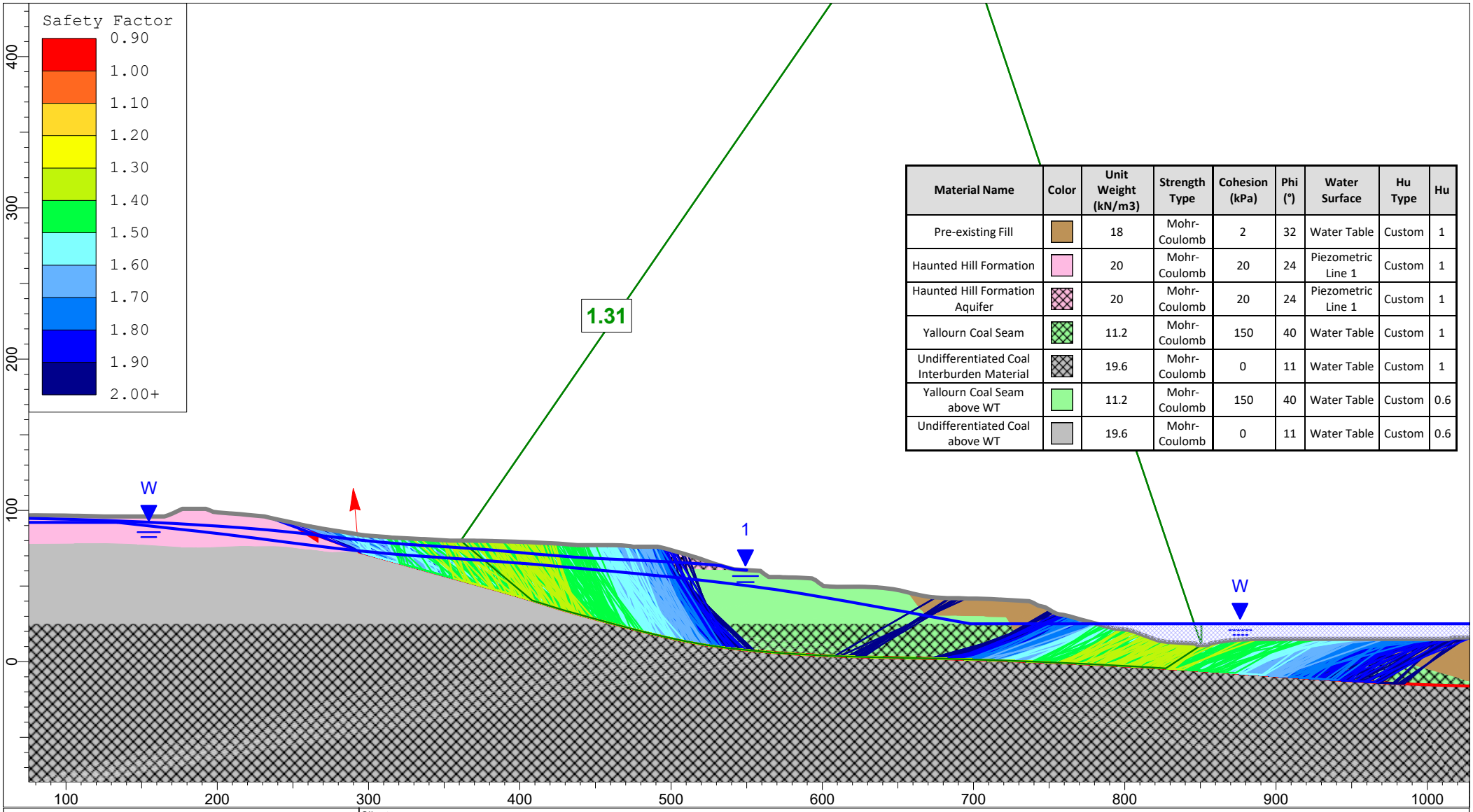
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



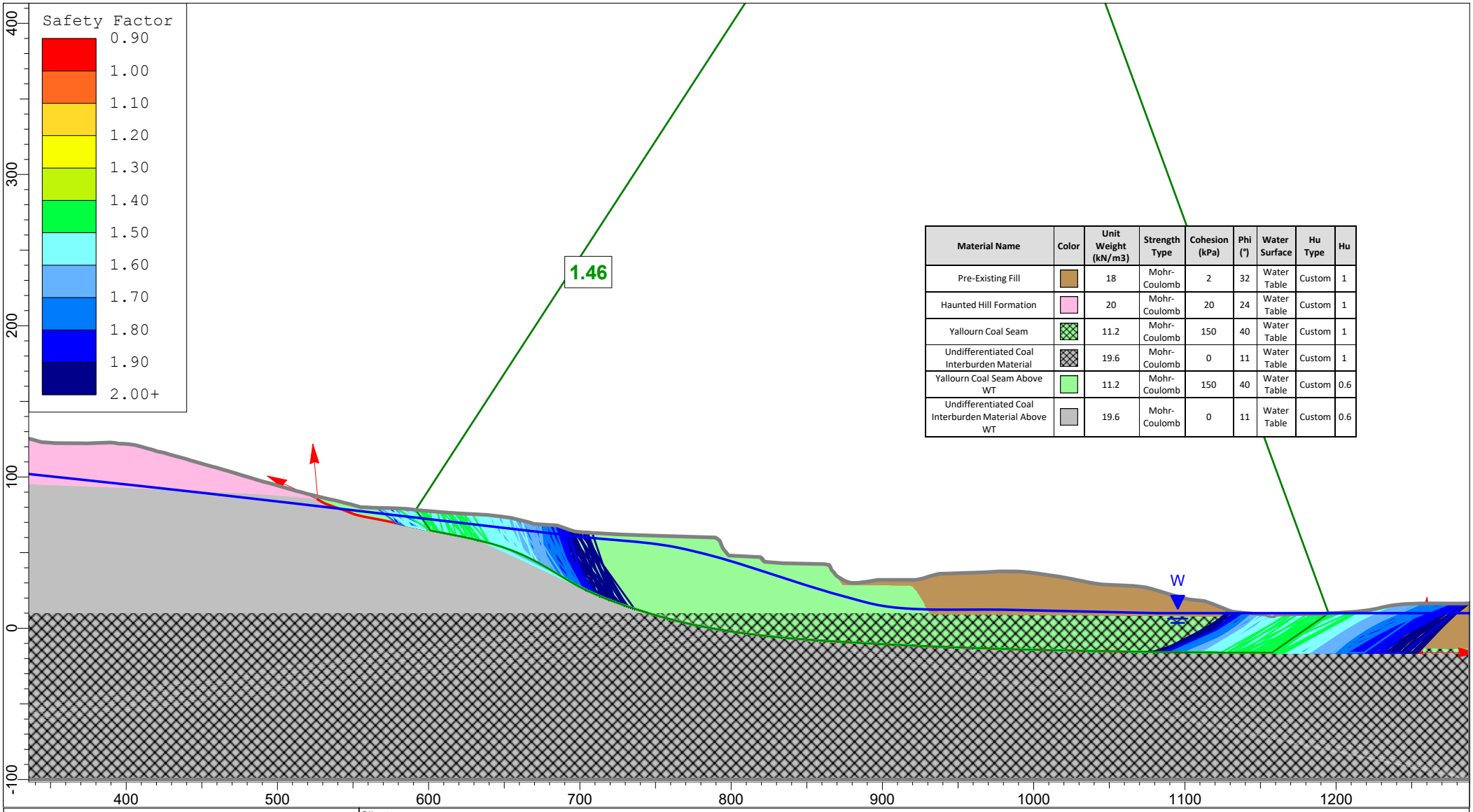
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



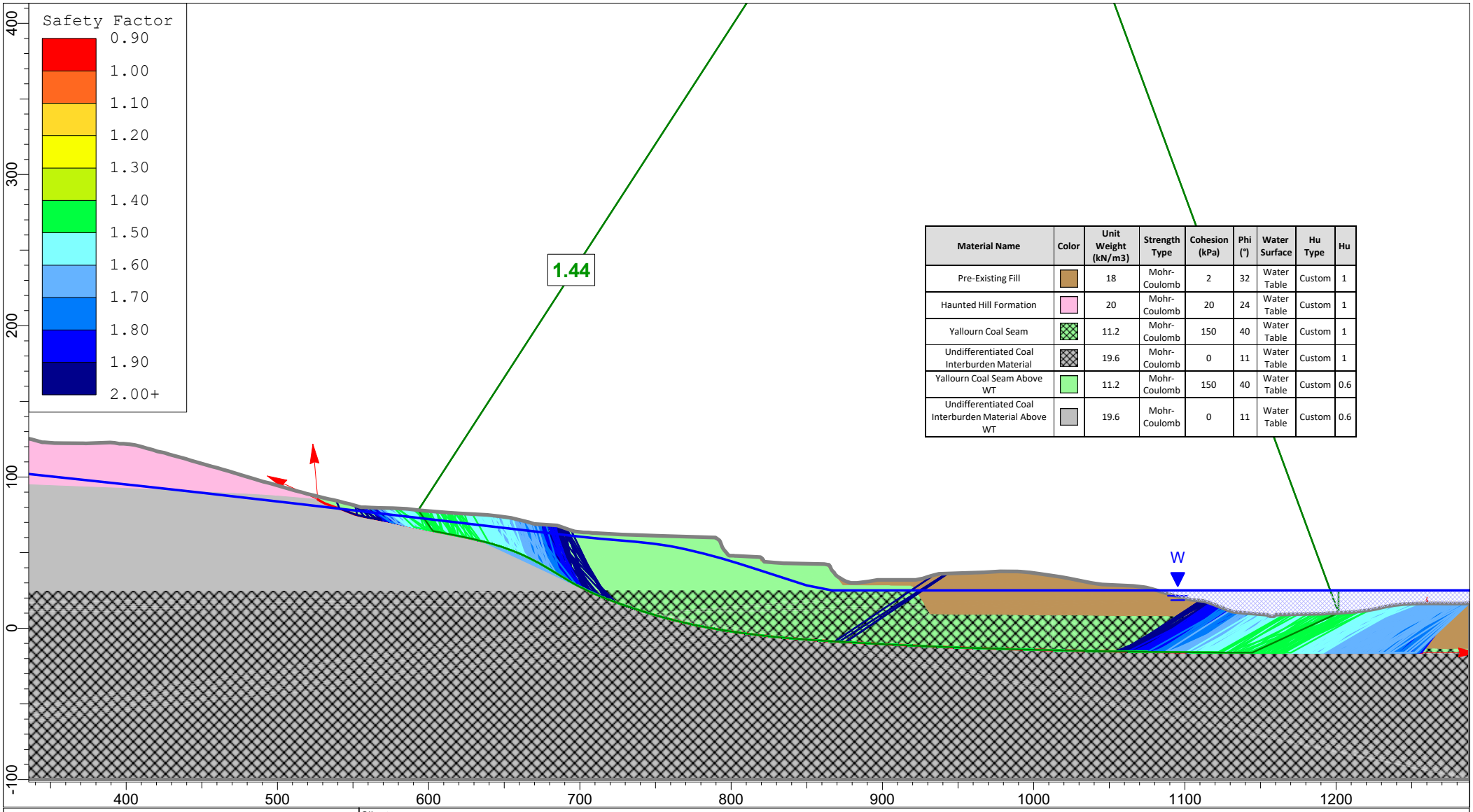
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



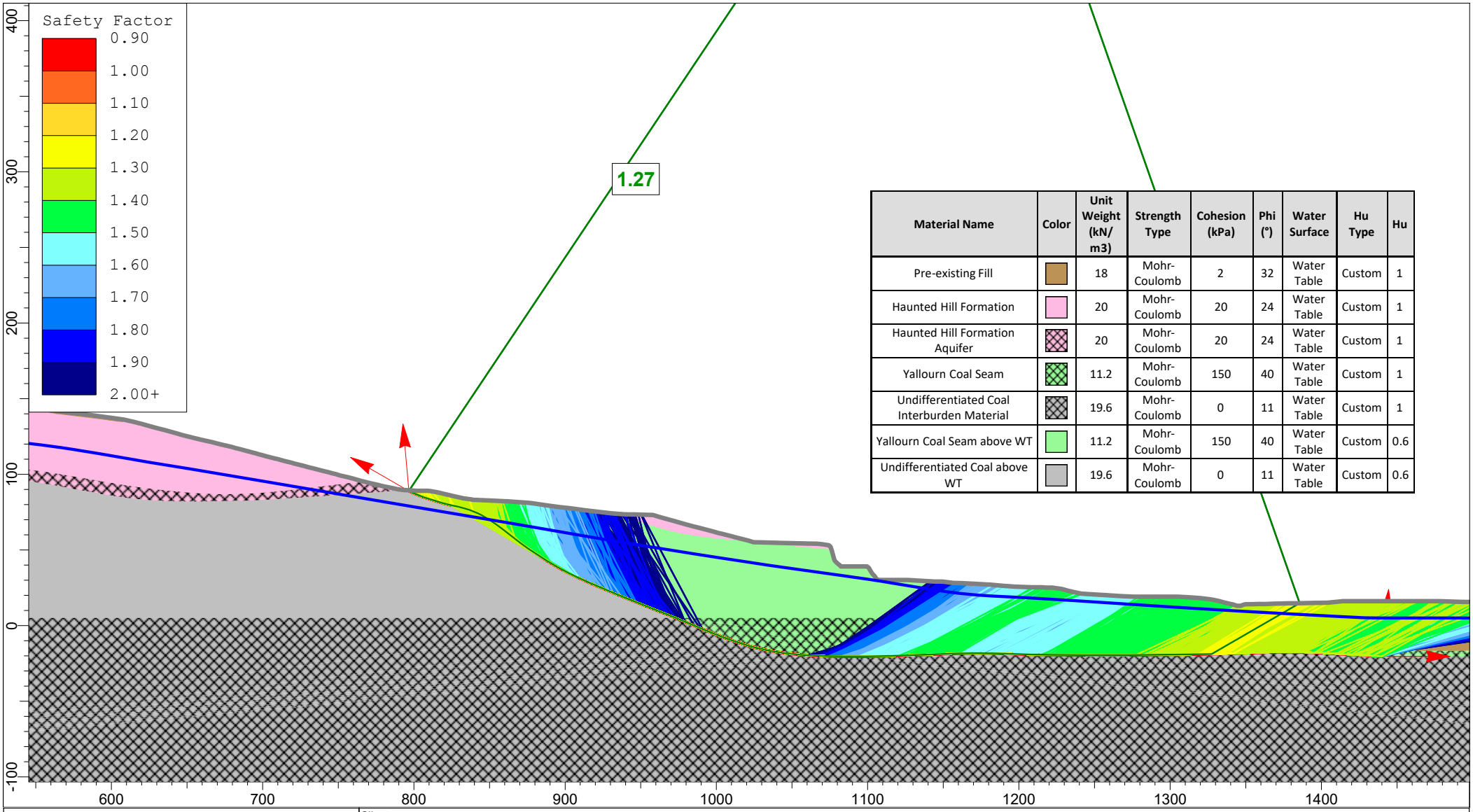
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam Above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material Above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YTF-WB**
Section:	**Section 26**	Case:	**Multilinear - Hu = 1 below lake level**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 10 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



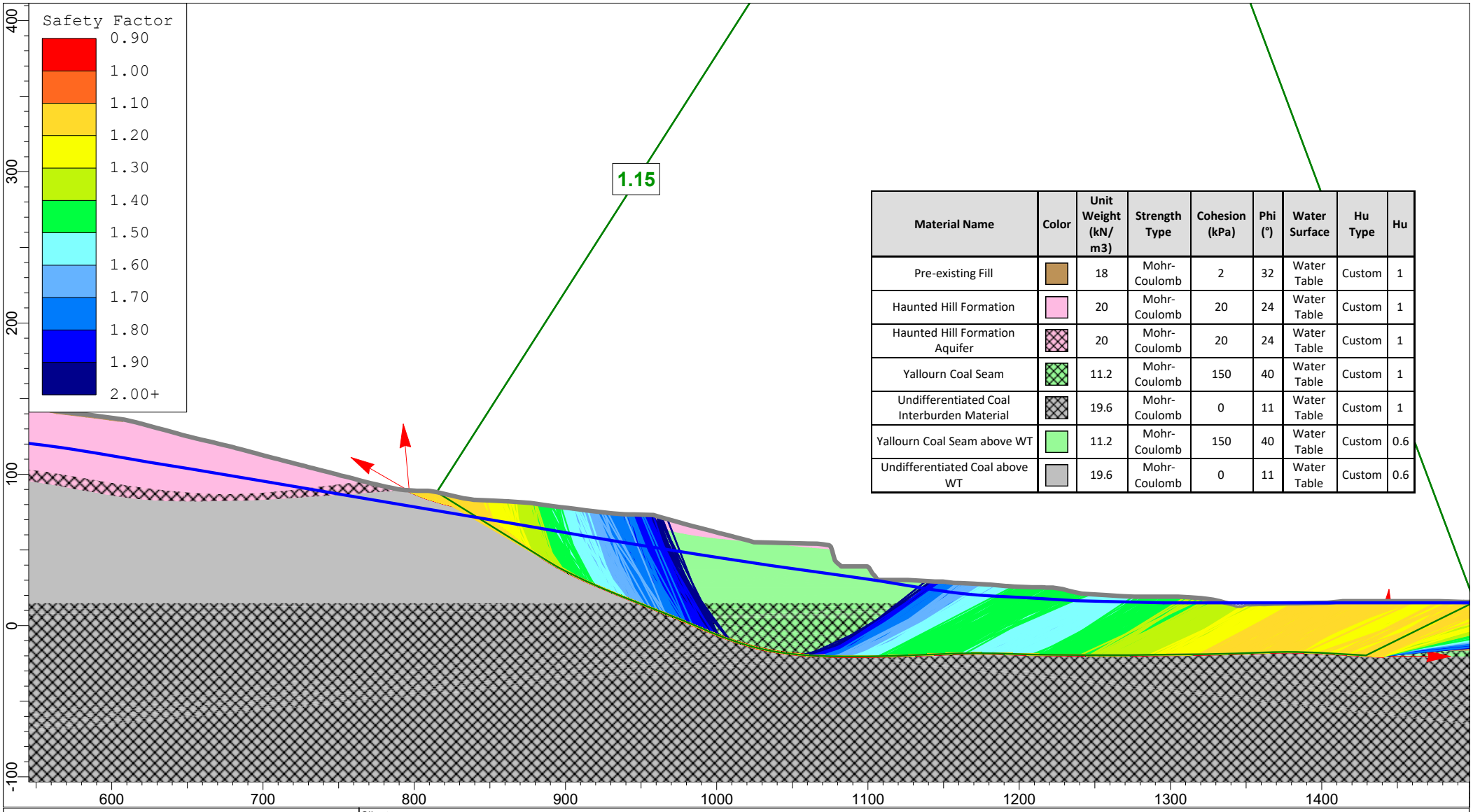
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam Above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material Above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



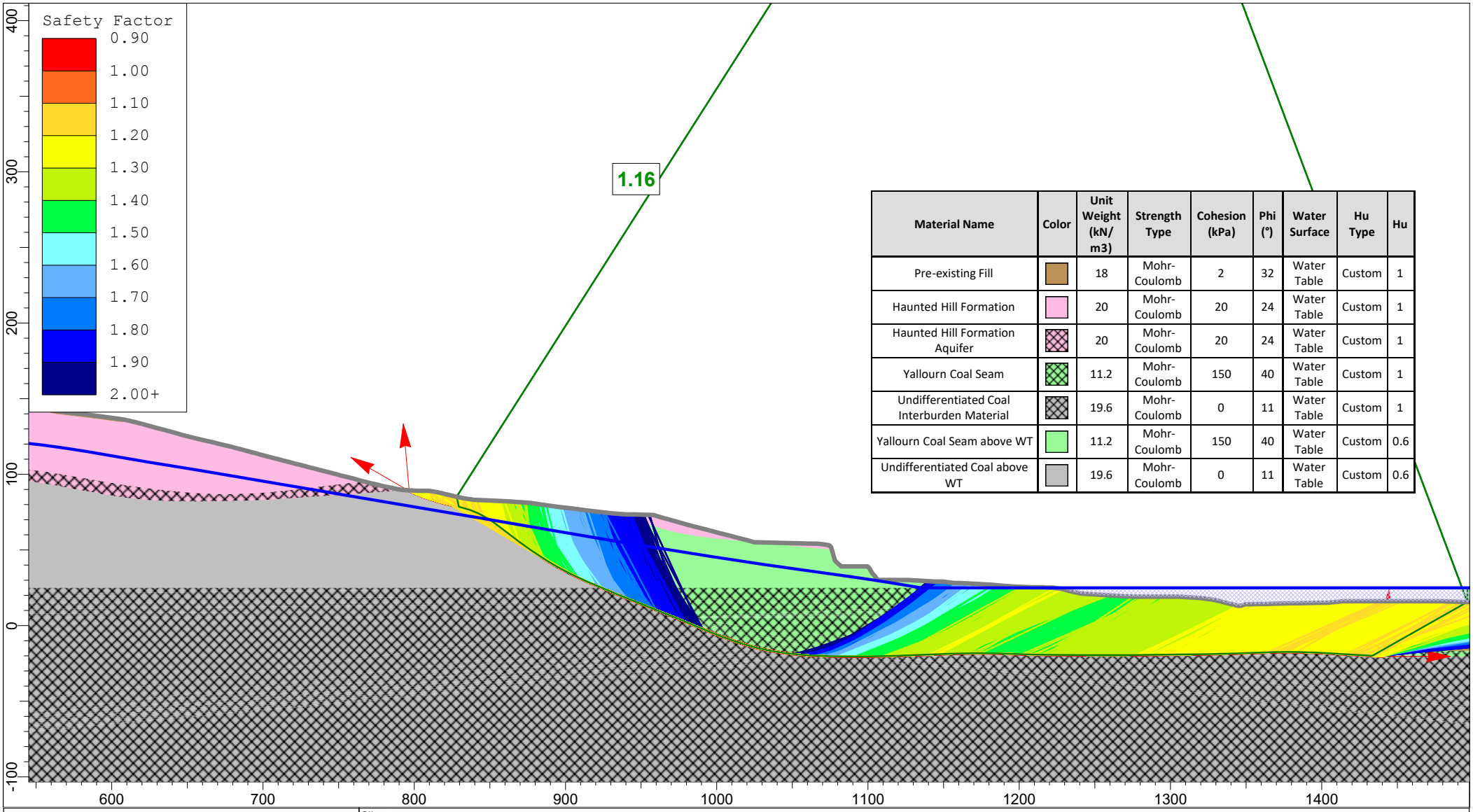
Material Name	Color	Unit Weight (kN/ m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength		



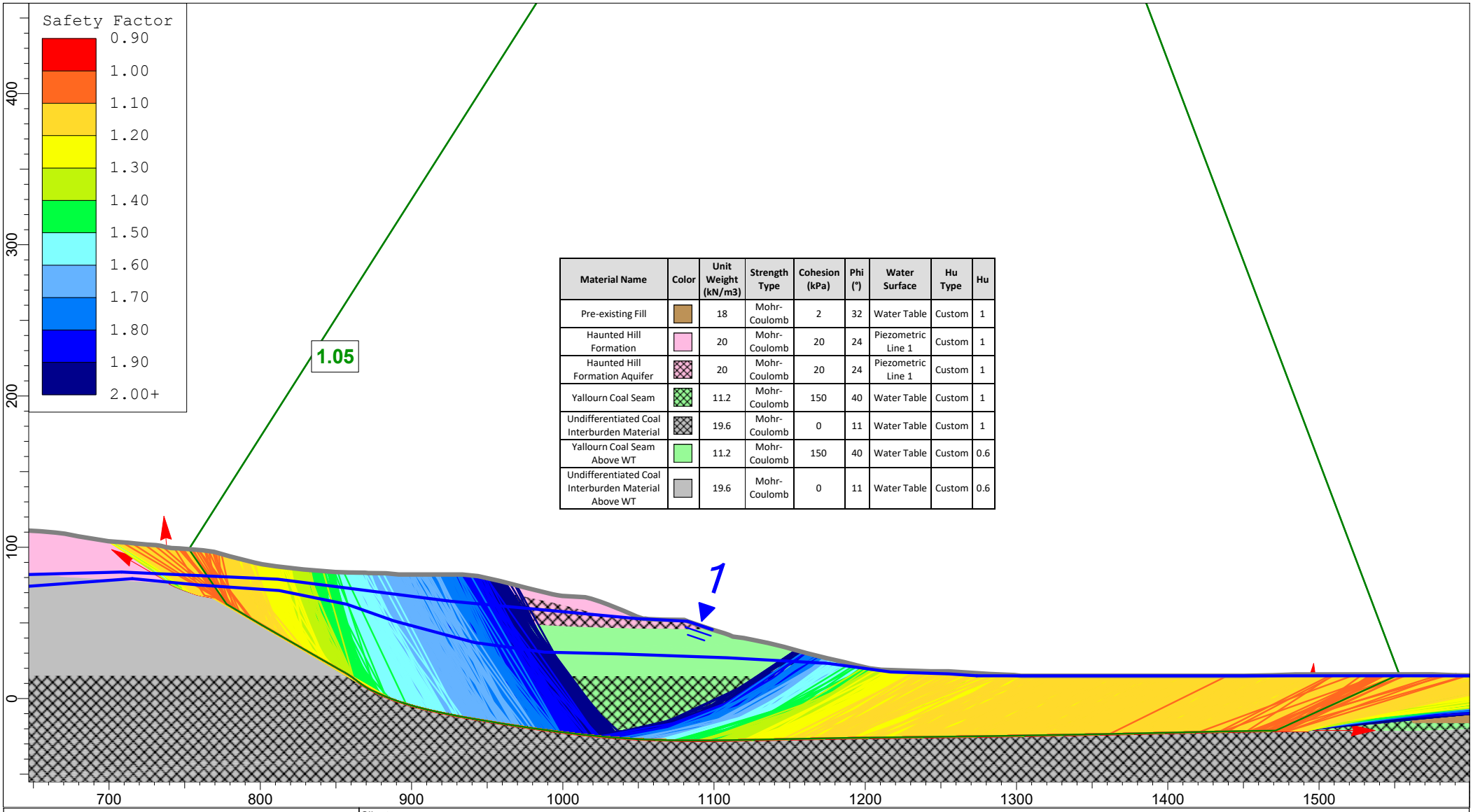
Material Name	Color	Unit Weight (kN/ m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



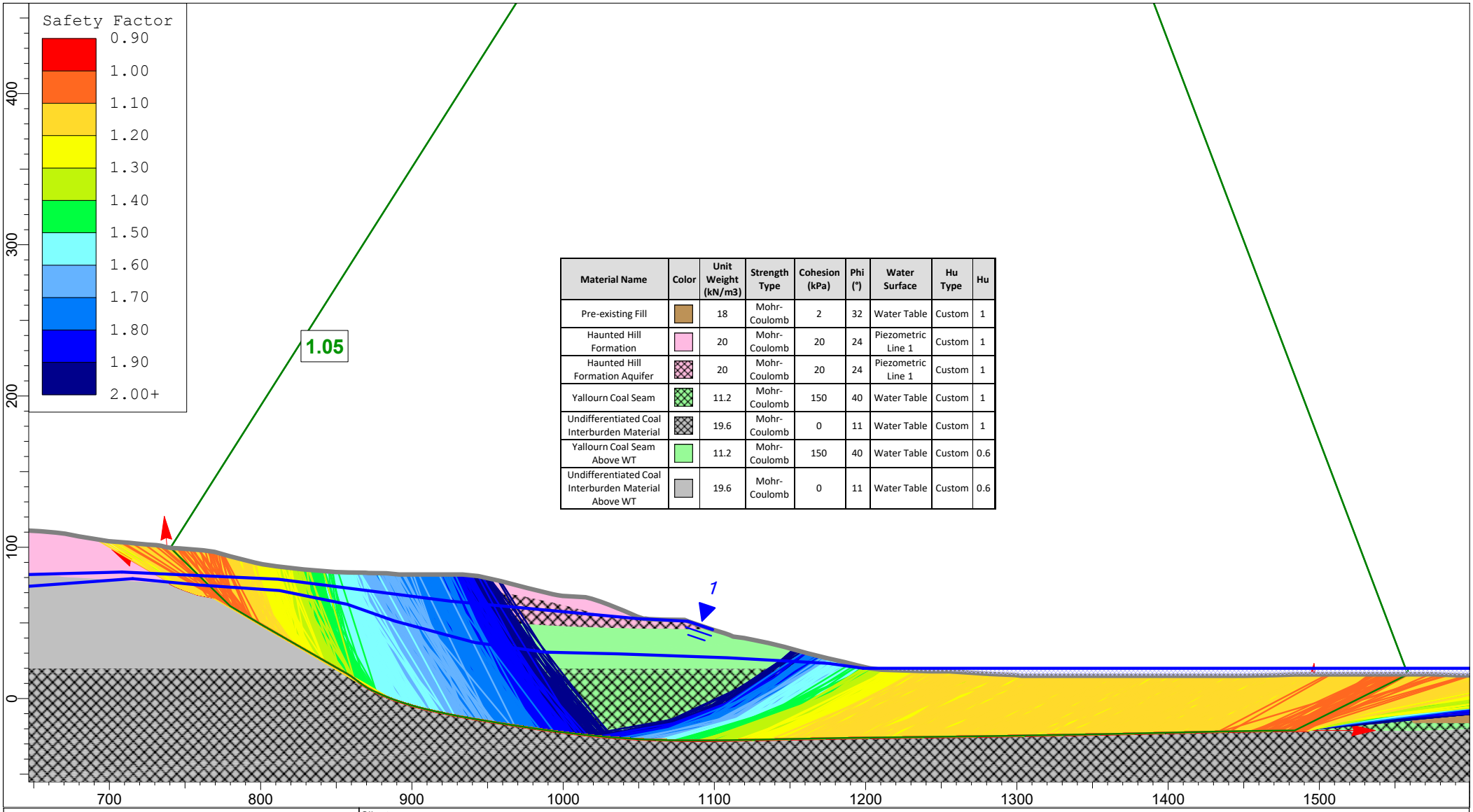
Material Name	Color	Unit Weight (kN/ m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



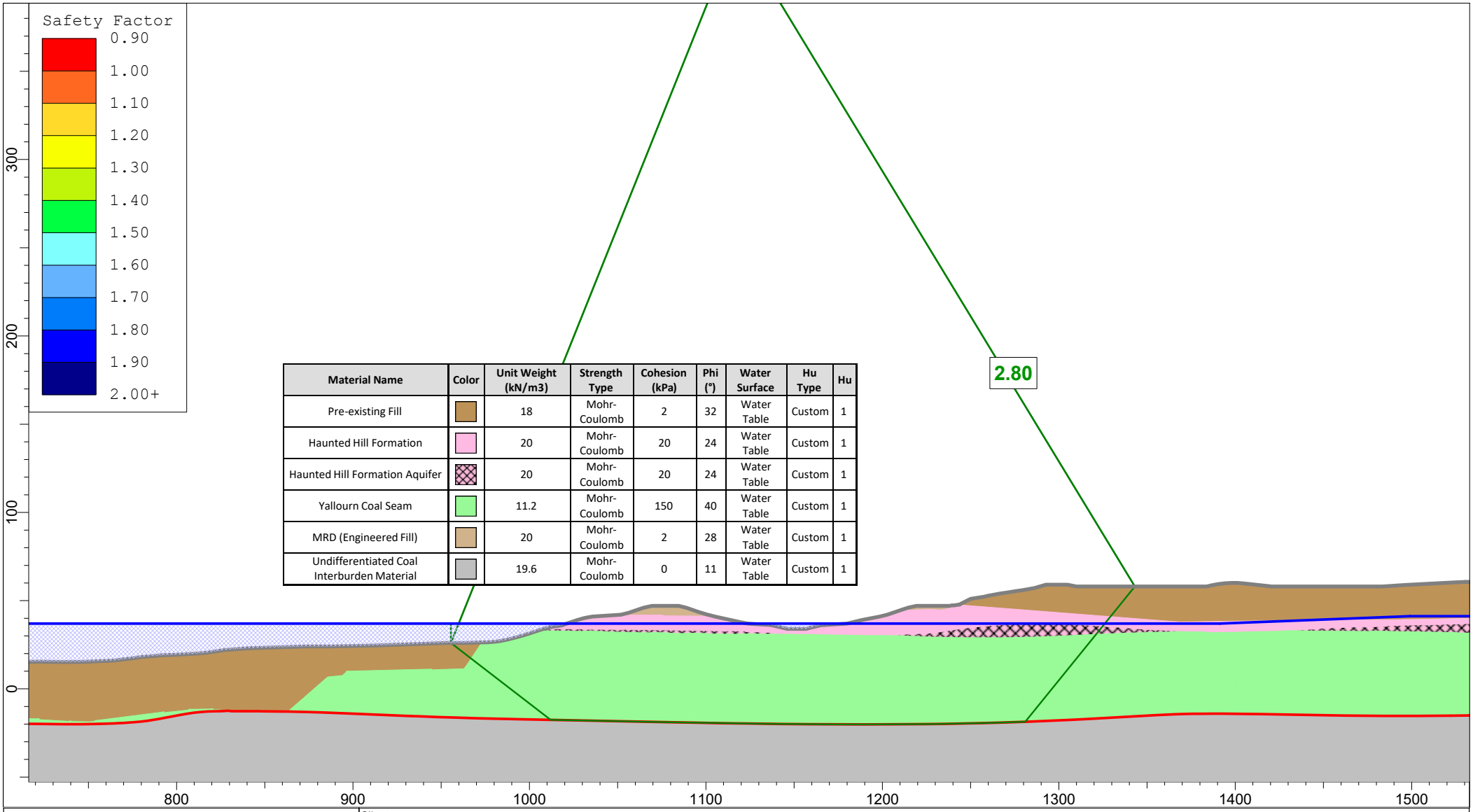
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam Above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material Above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



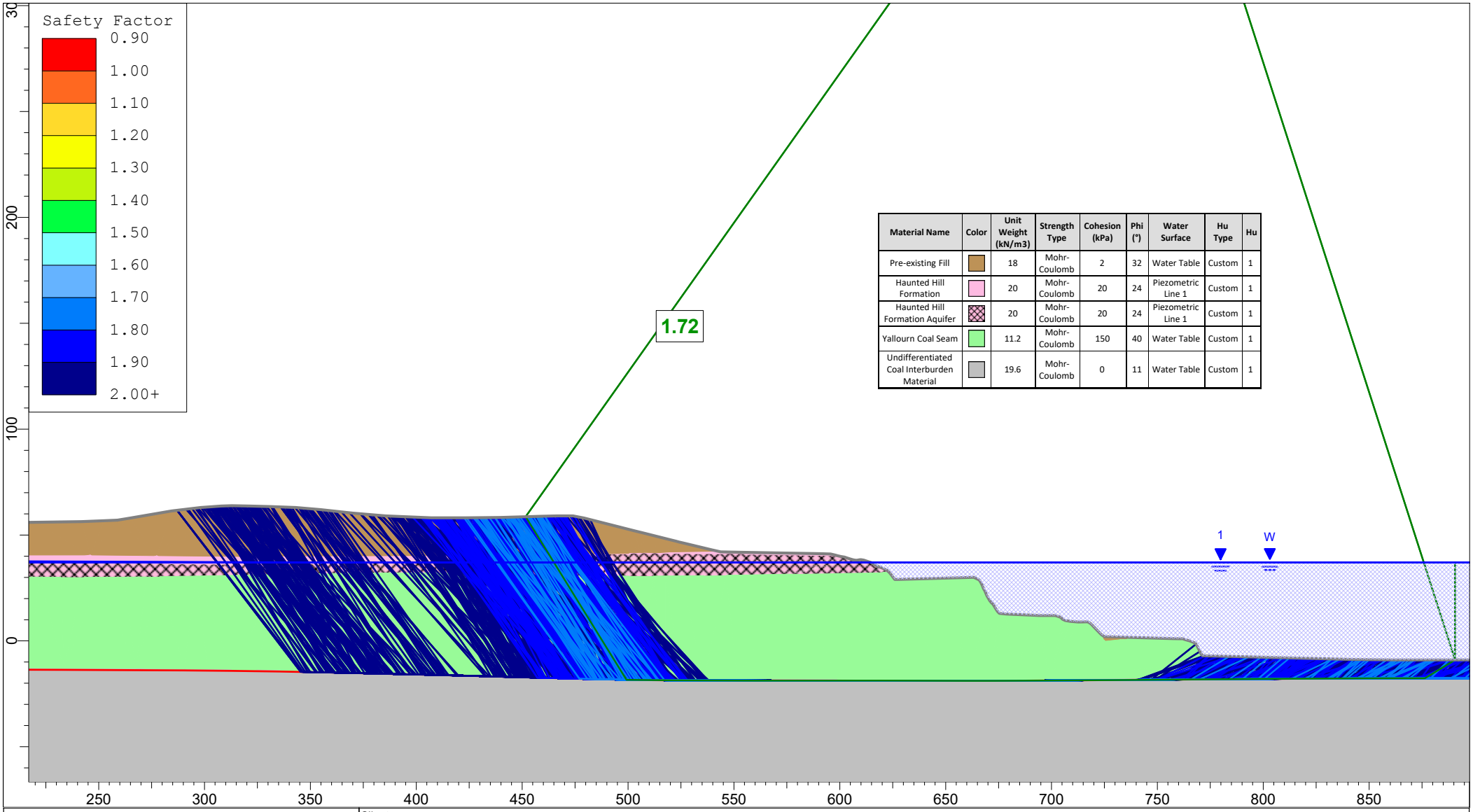
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam Above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material Above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



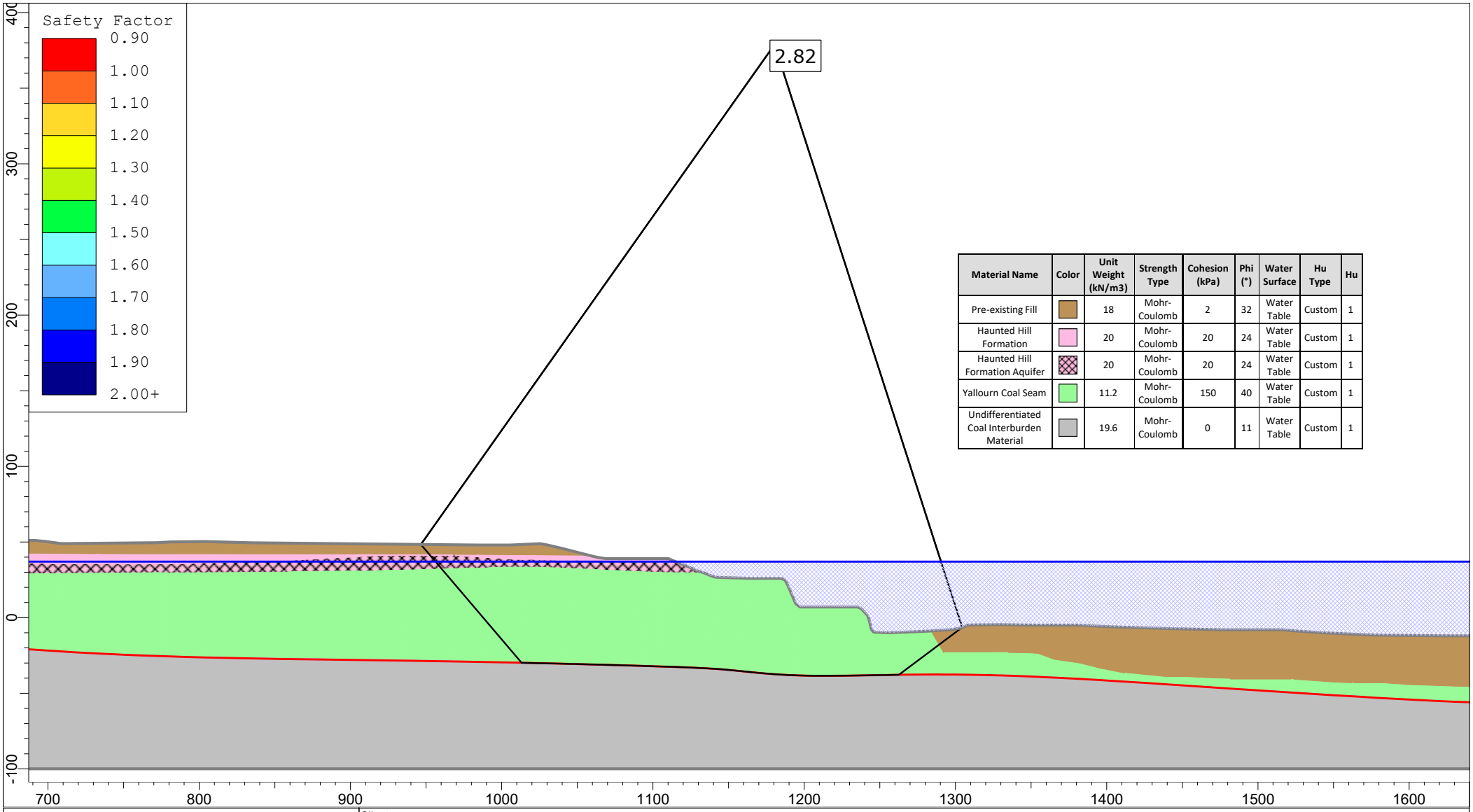
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



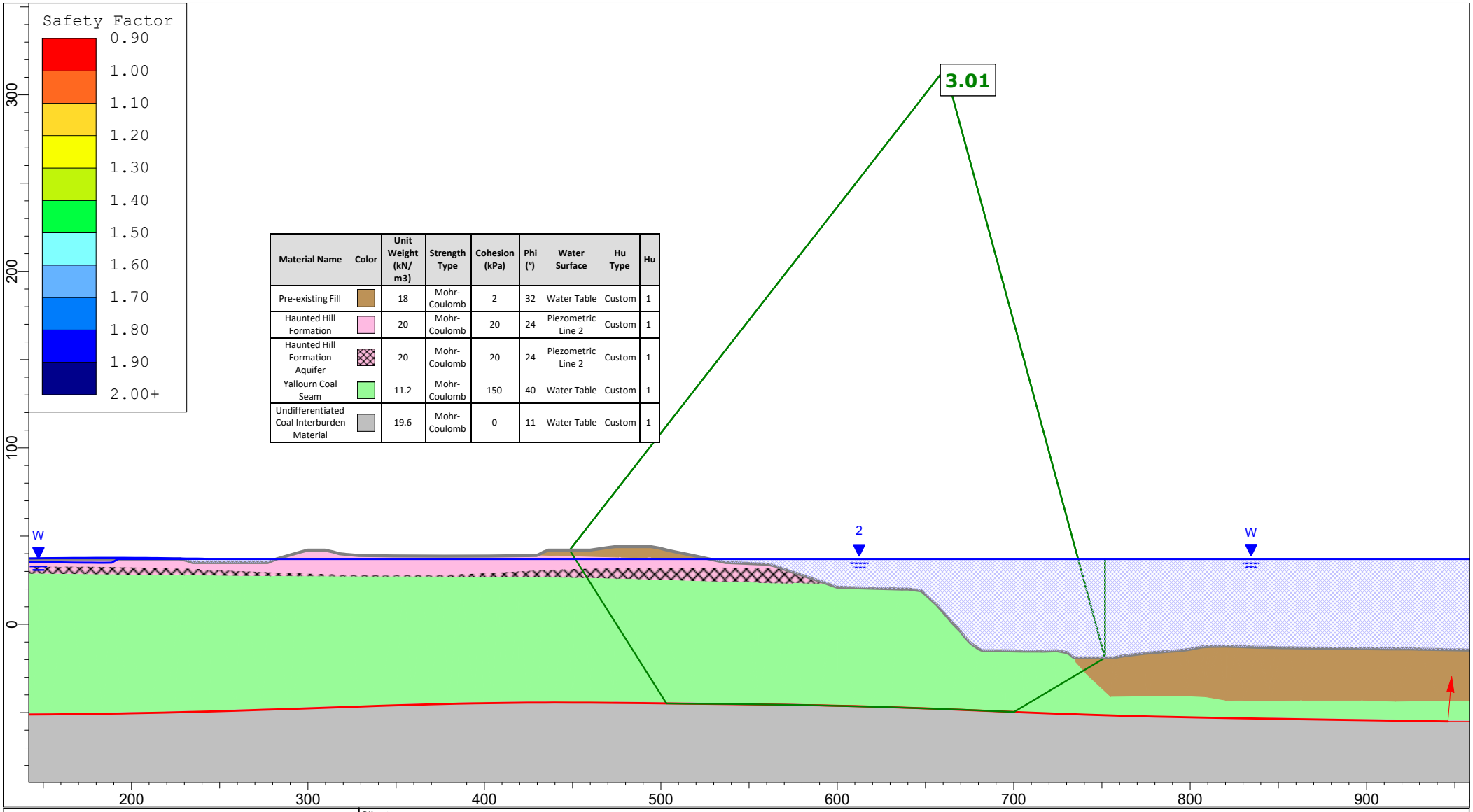
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 02	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



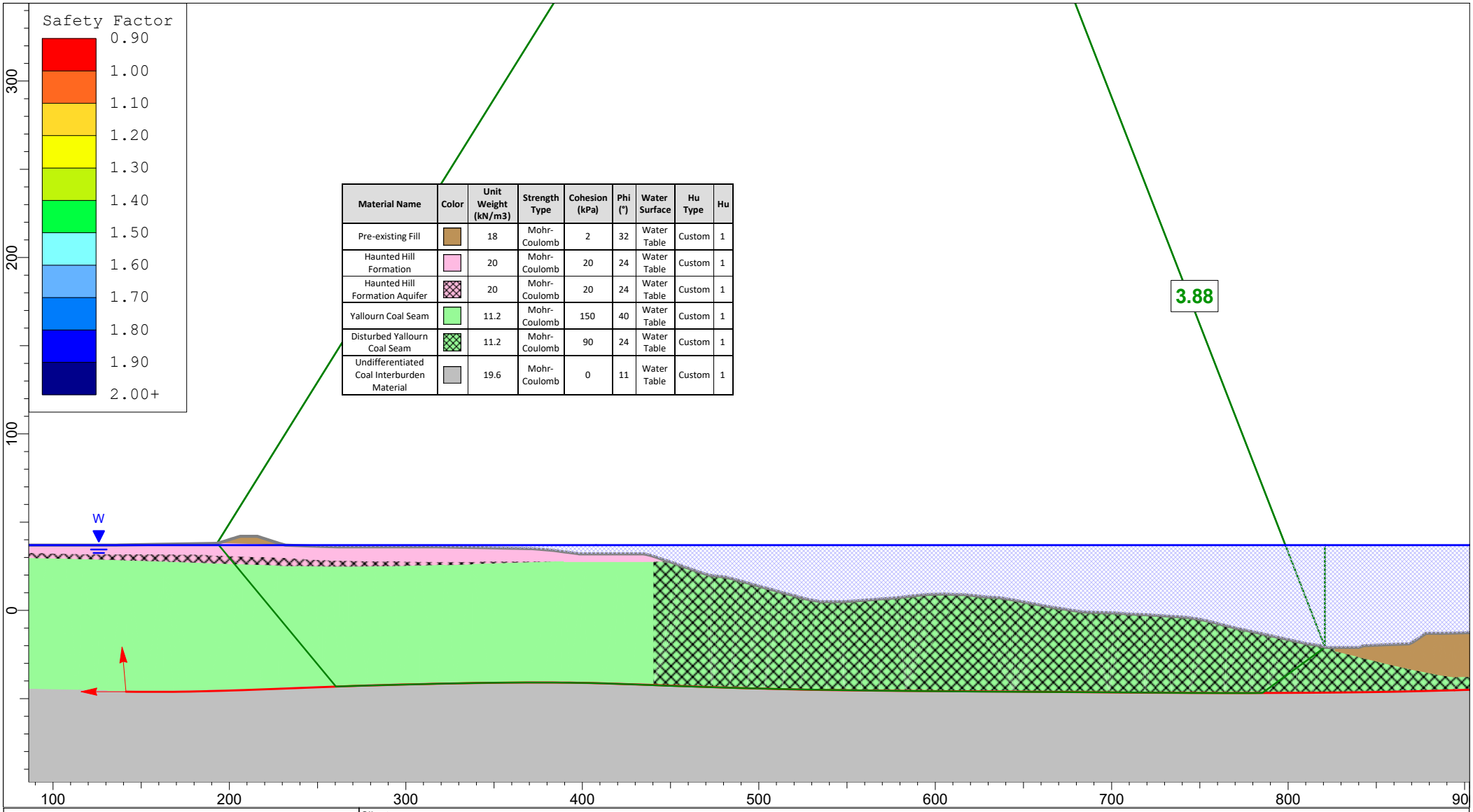
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YEF-NB (east)**
Section:	**Section 03**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake full - lake level at 37 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



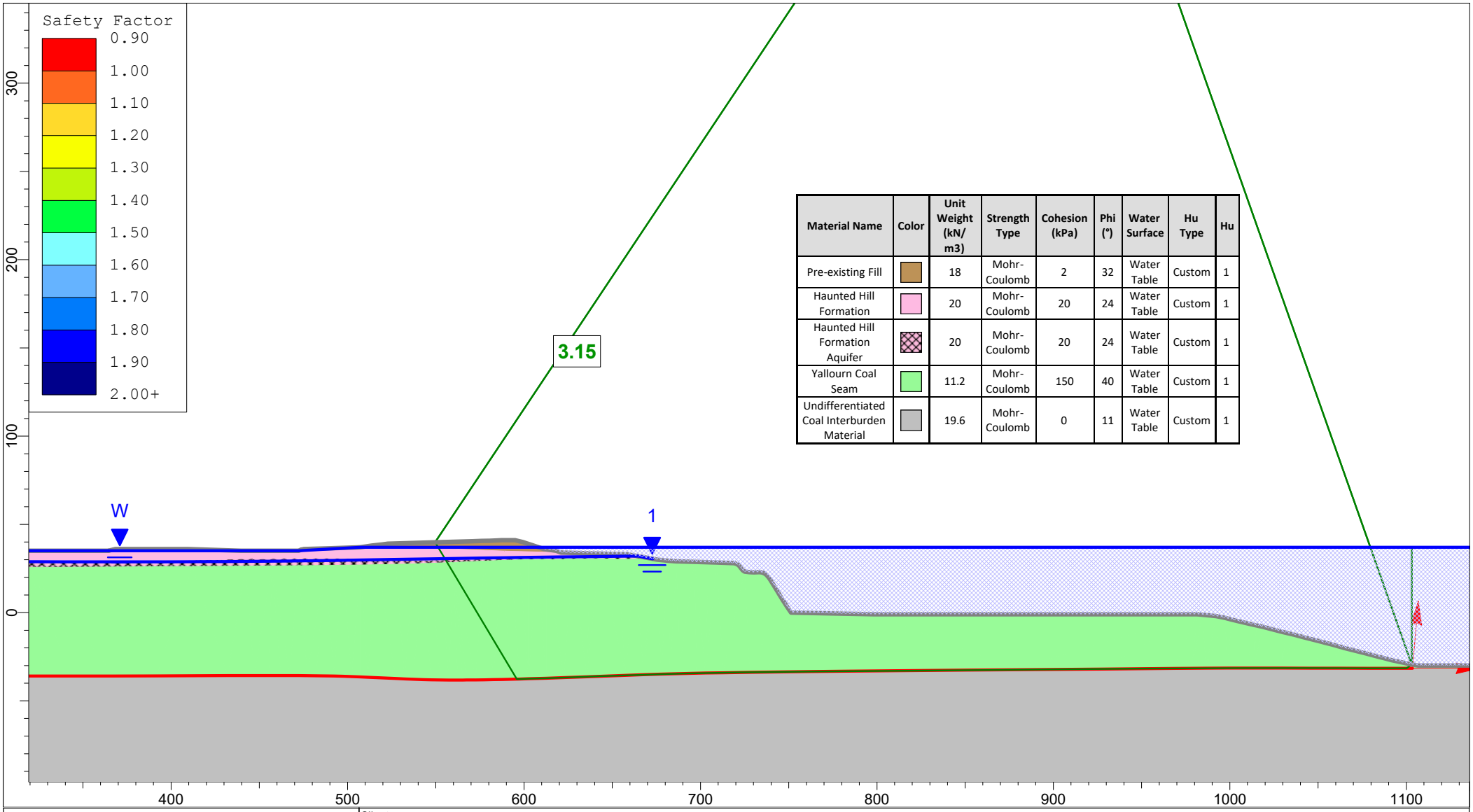
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



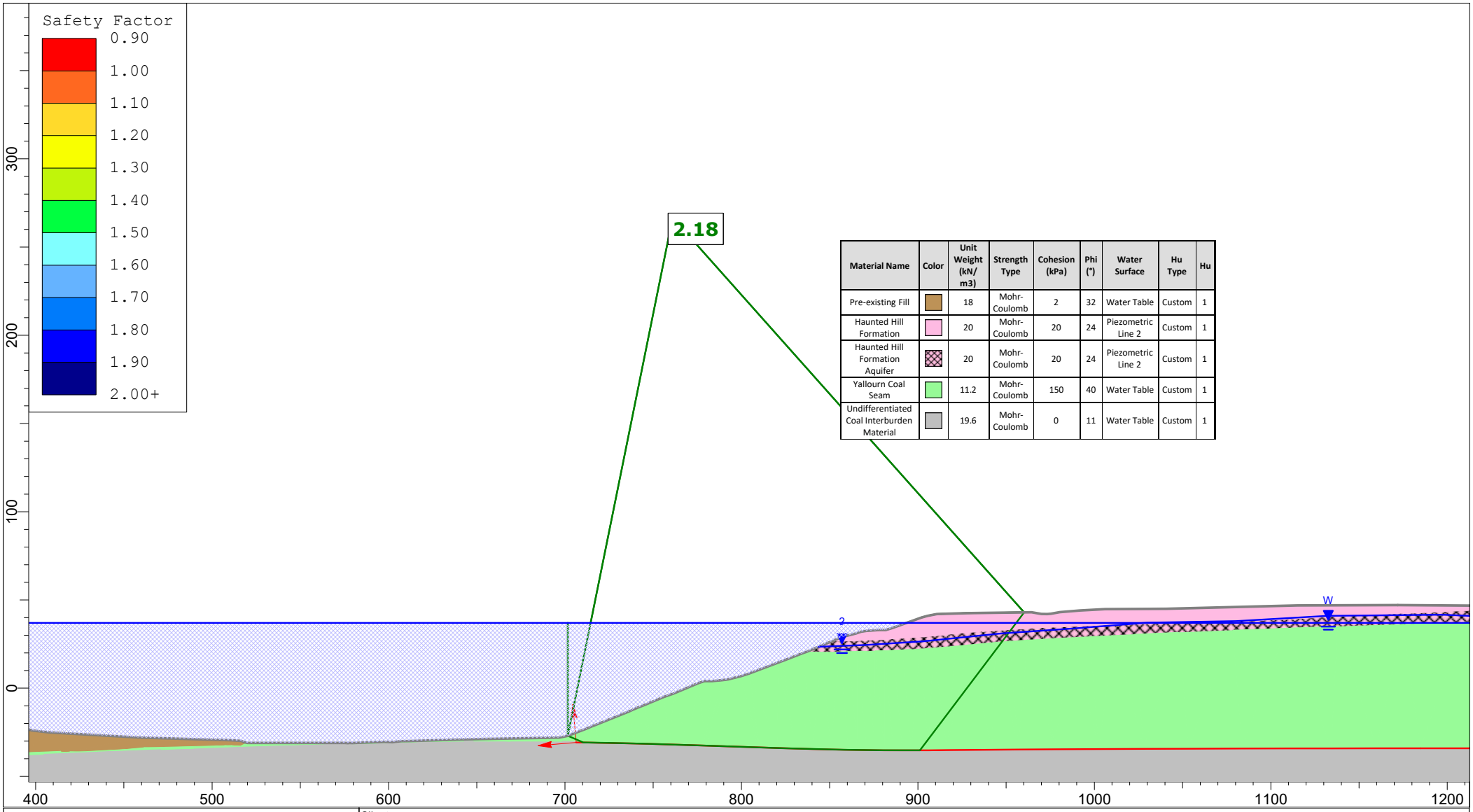
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



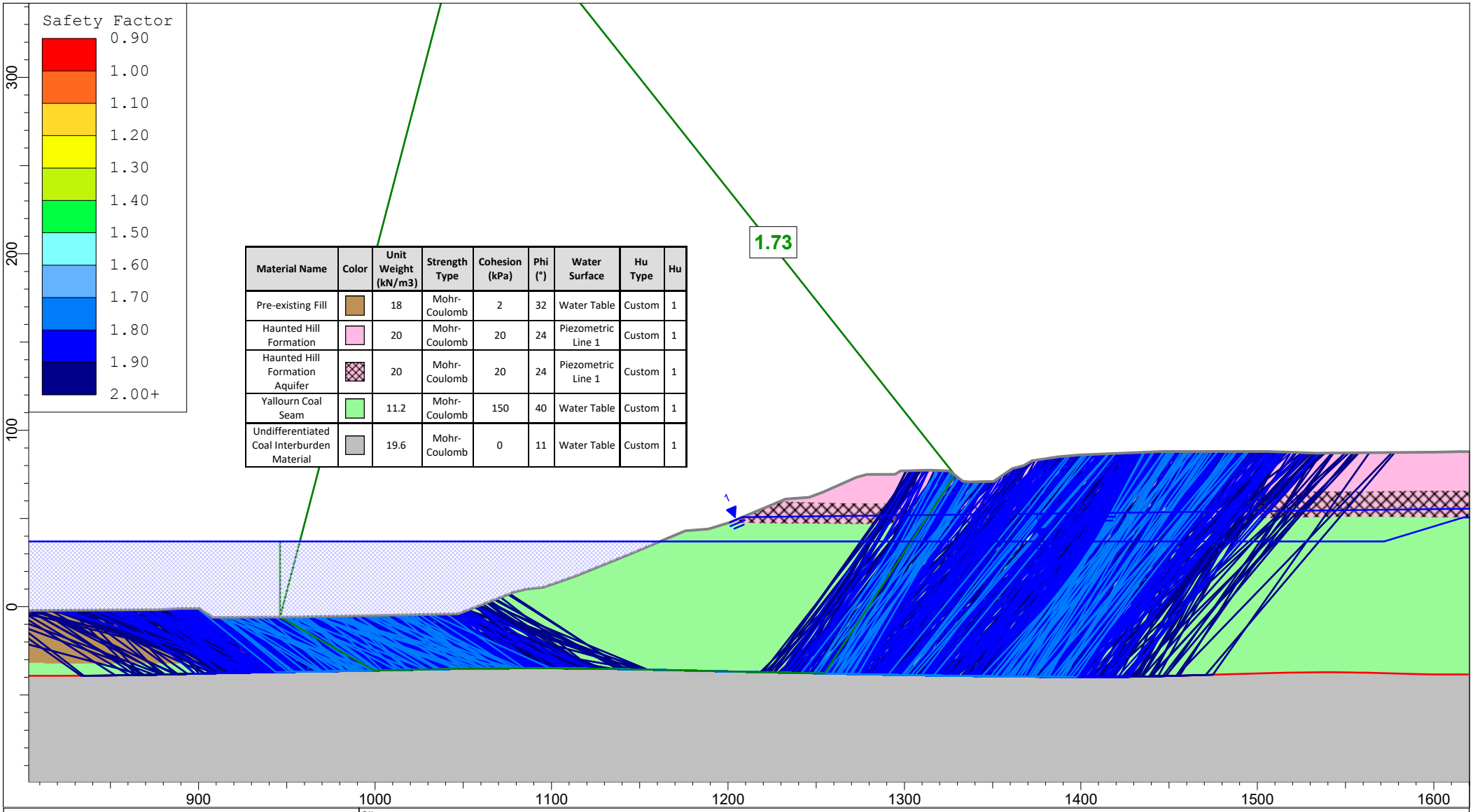
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



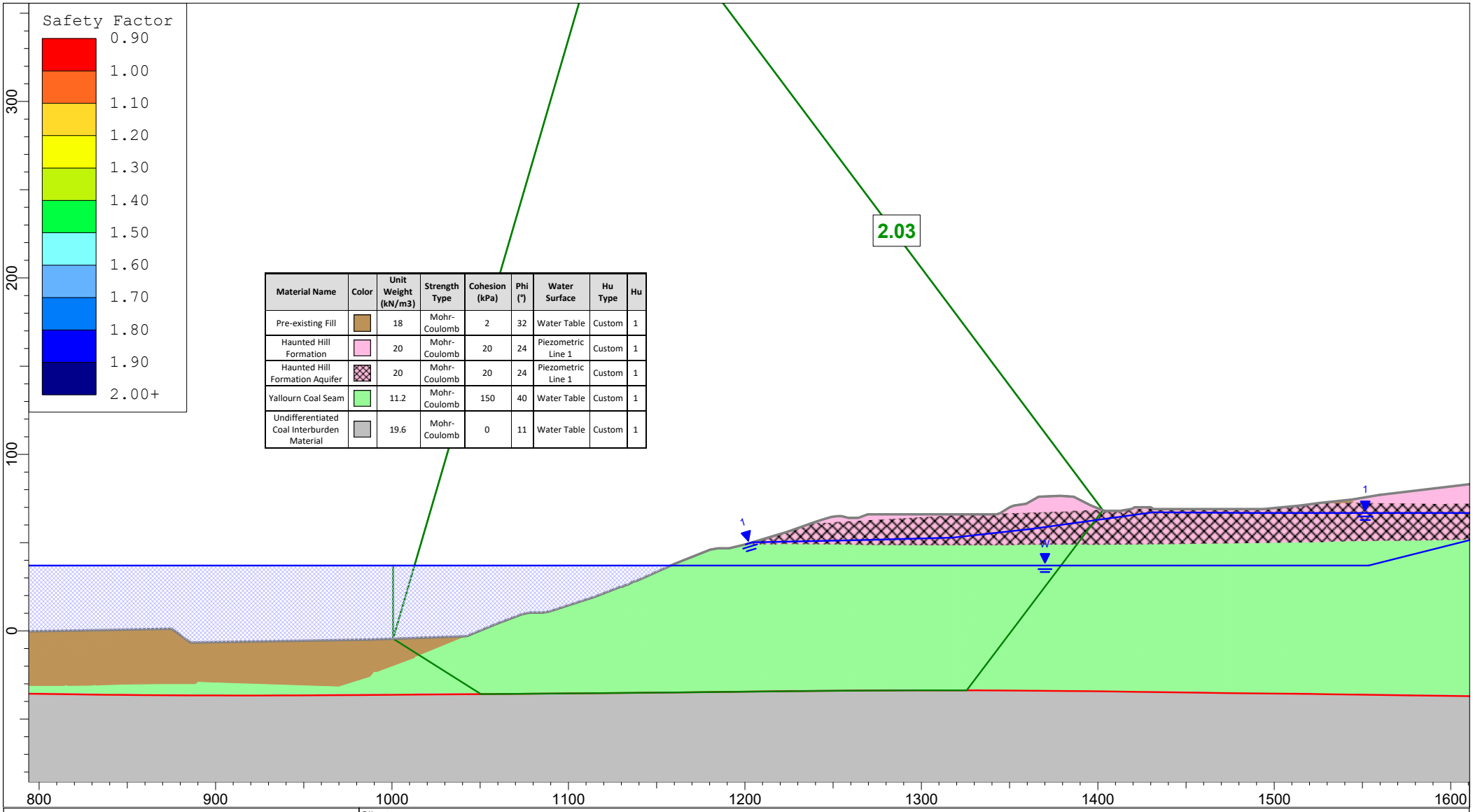
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



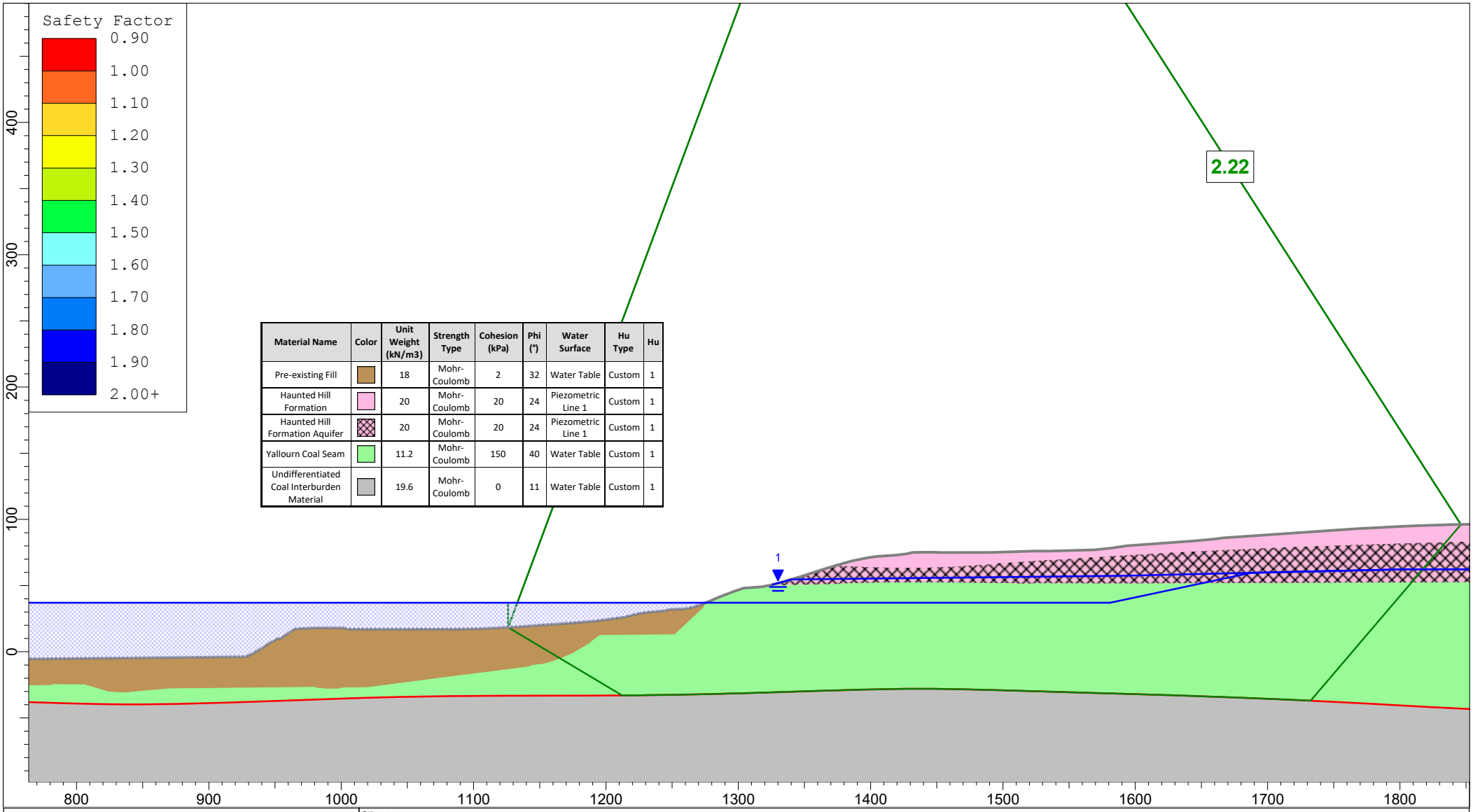
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



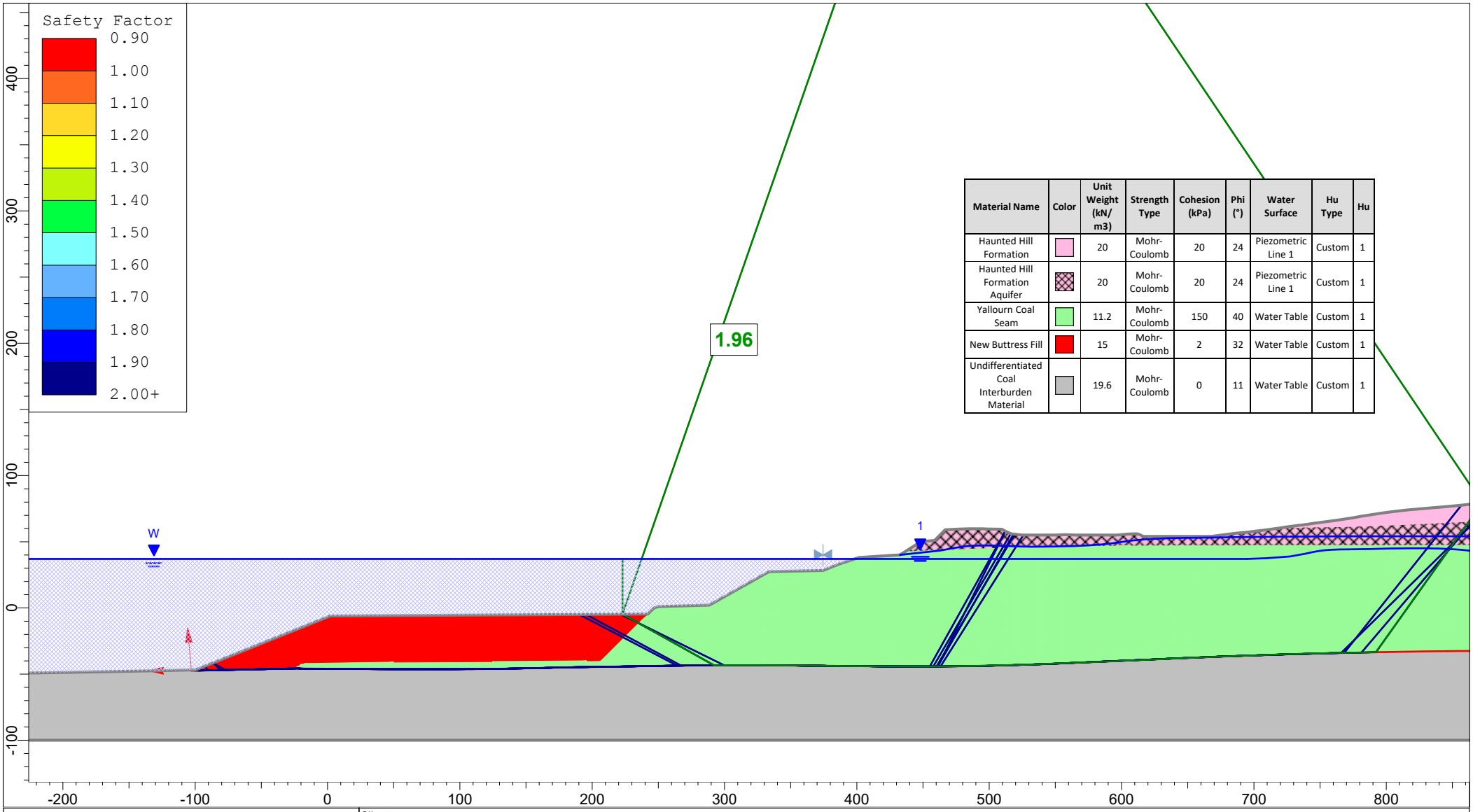
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



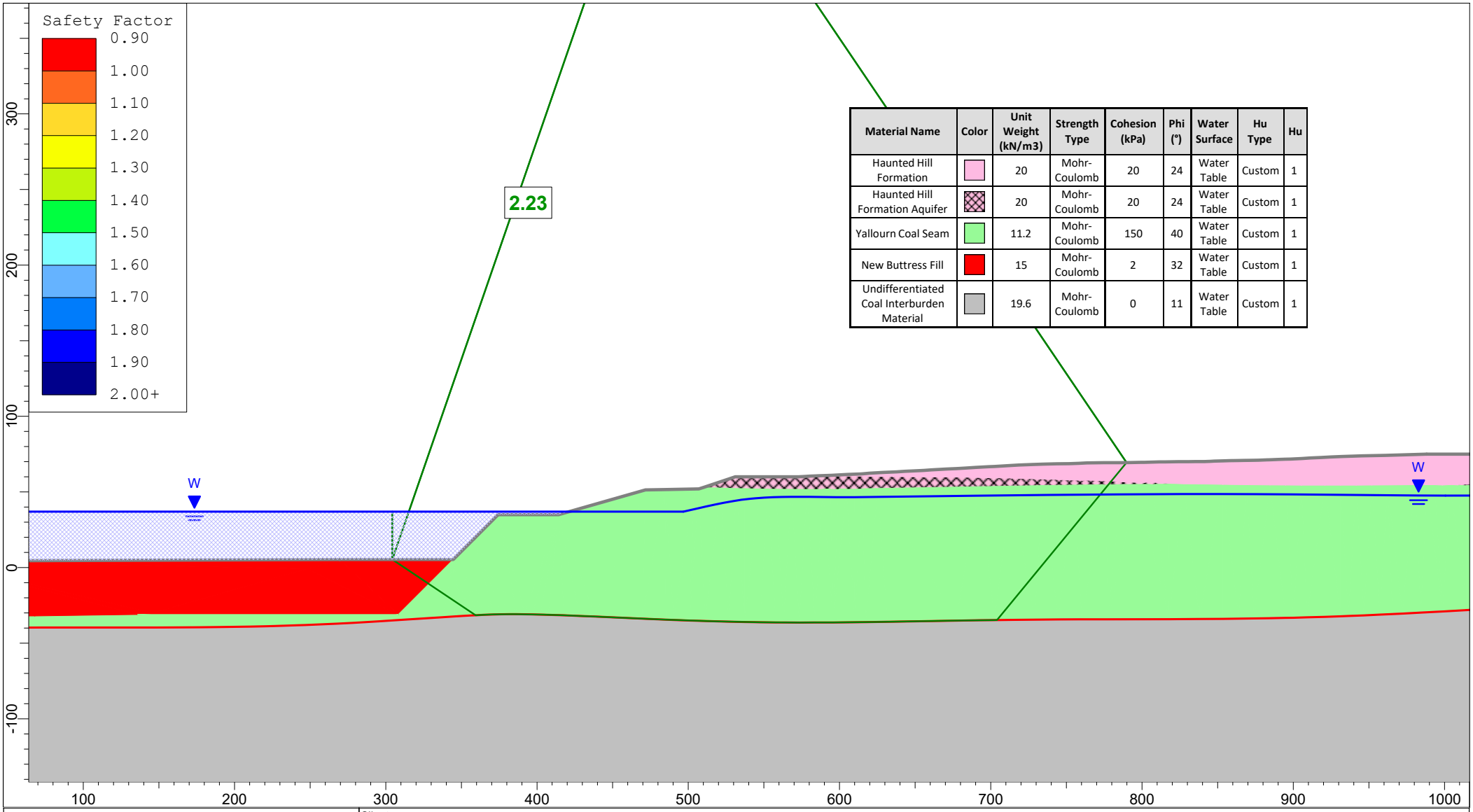
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YEFX-SB**
Section:	**Section 10**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake full - lake level at 37 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



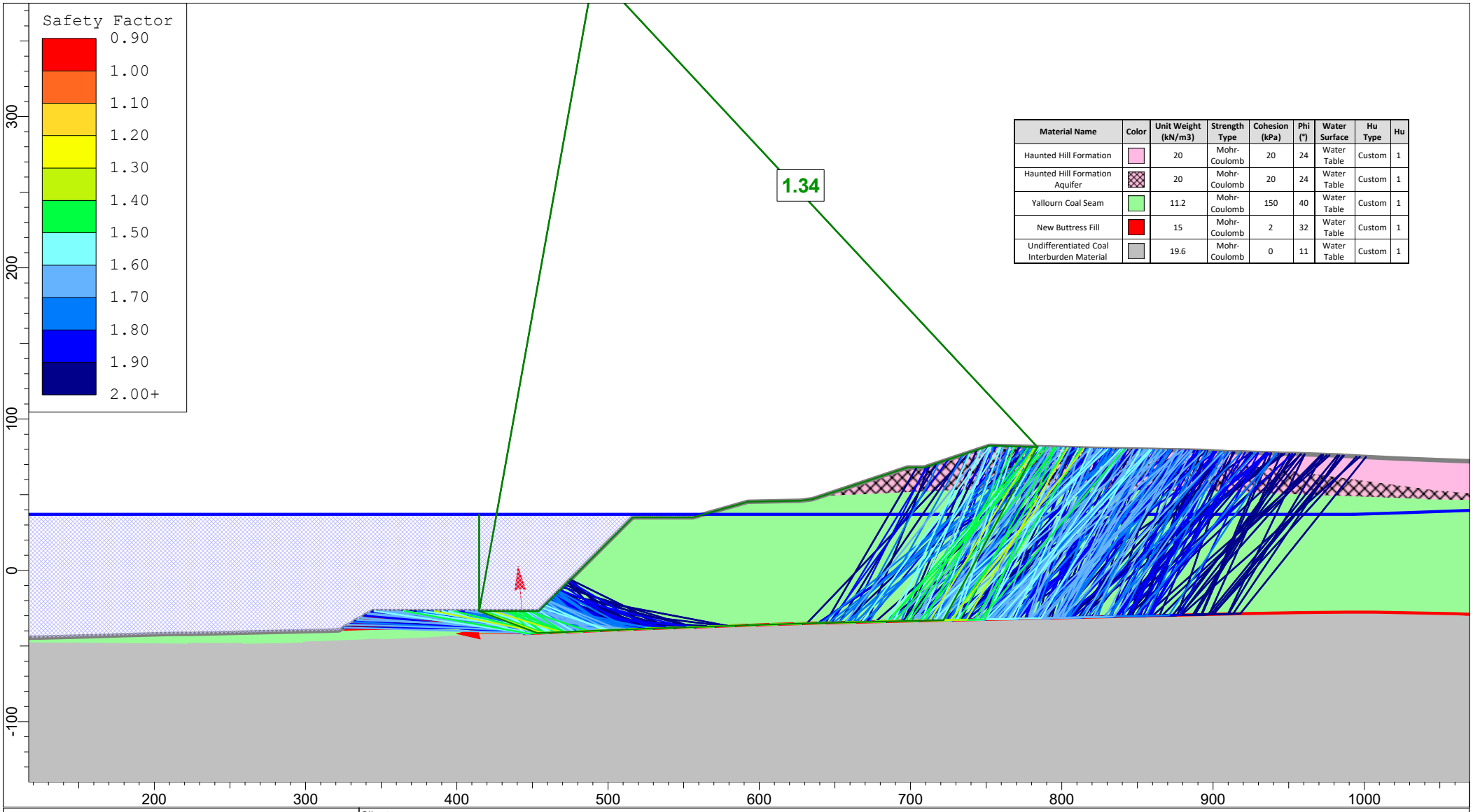
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



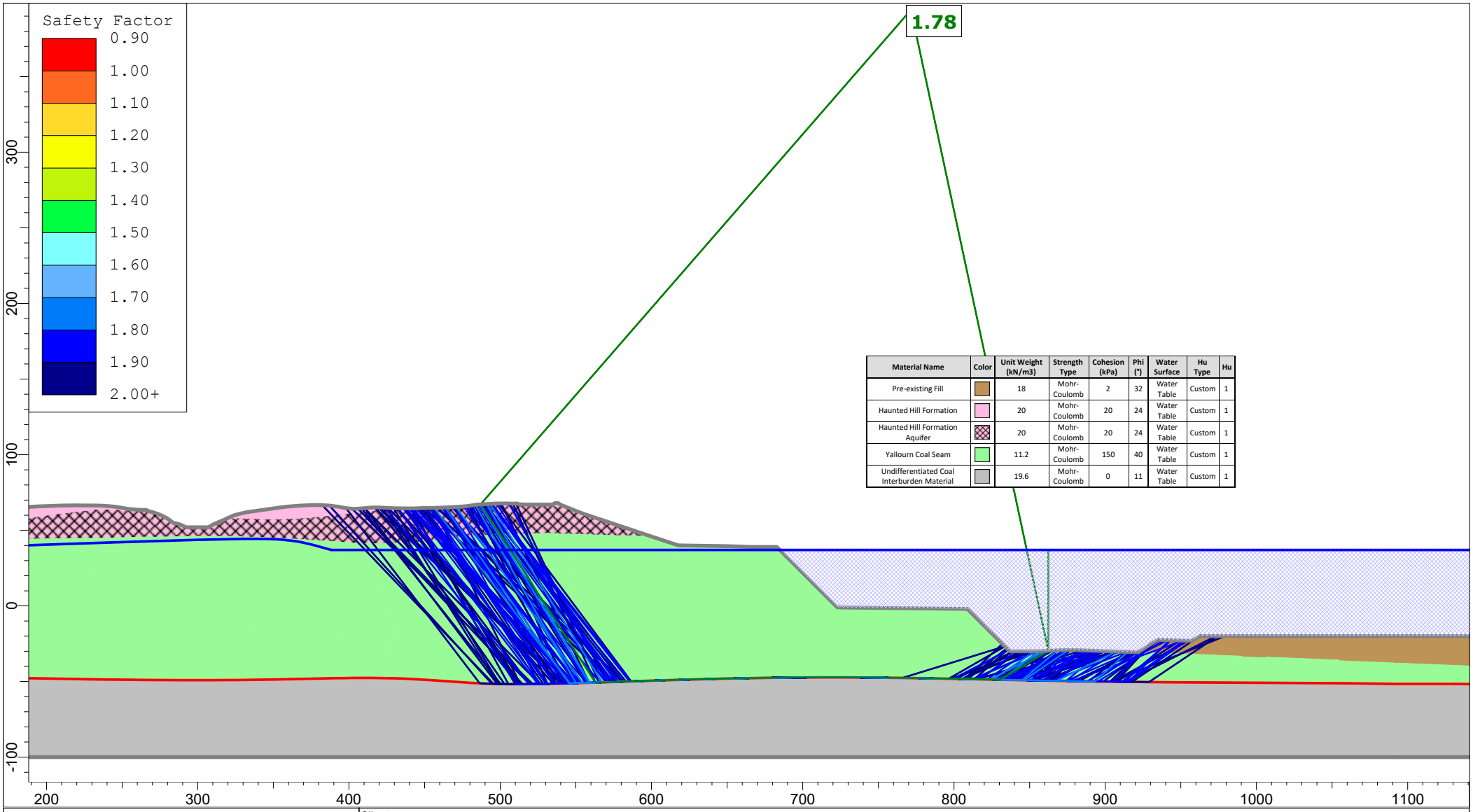
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



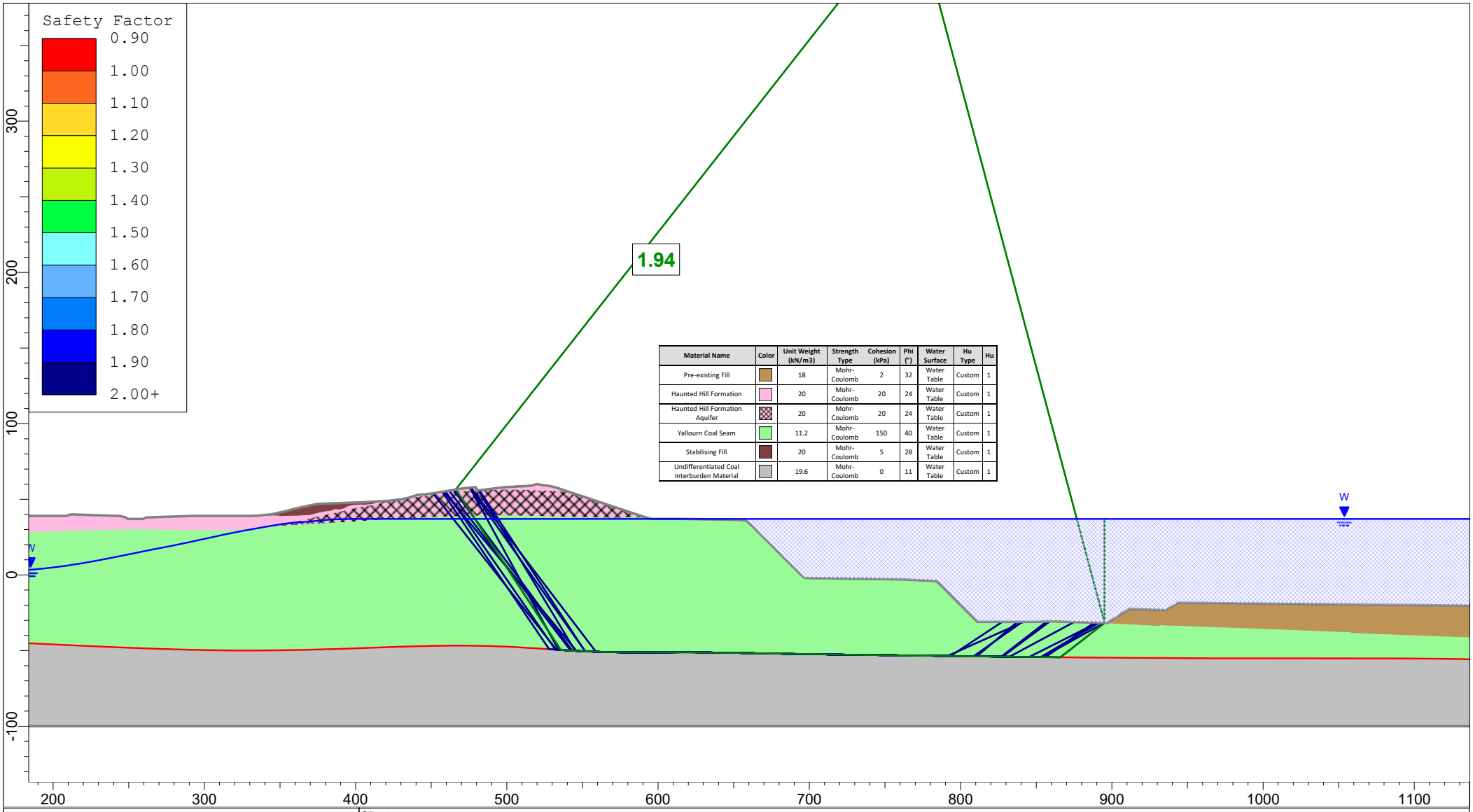
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**MVF-SB**
Section:	**Section 13**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake full - lake level at 37 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



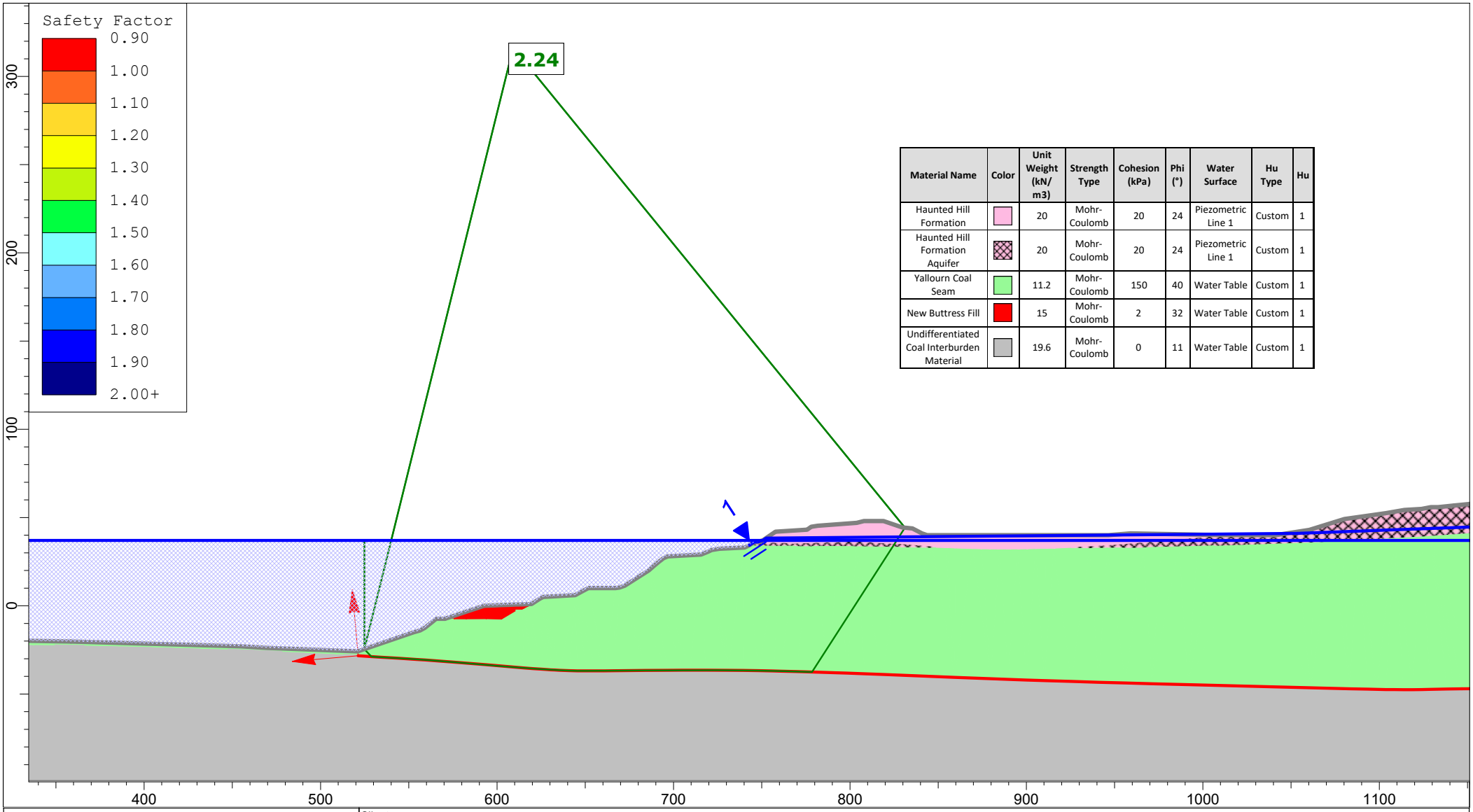
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 14	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



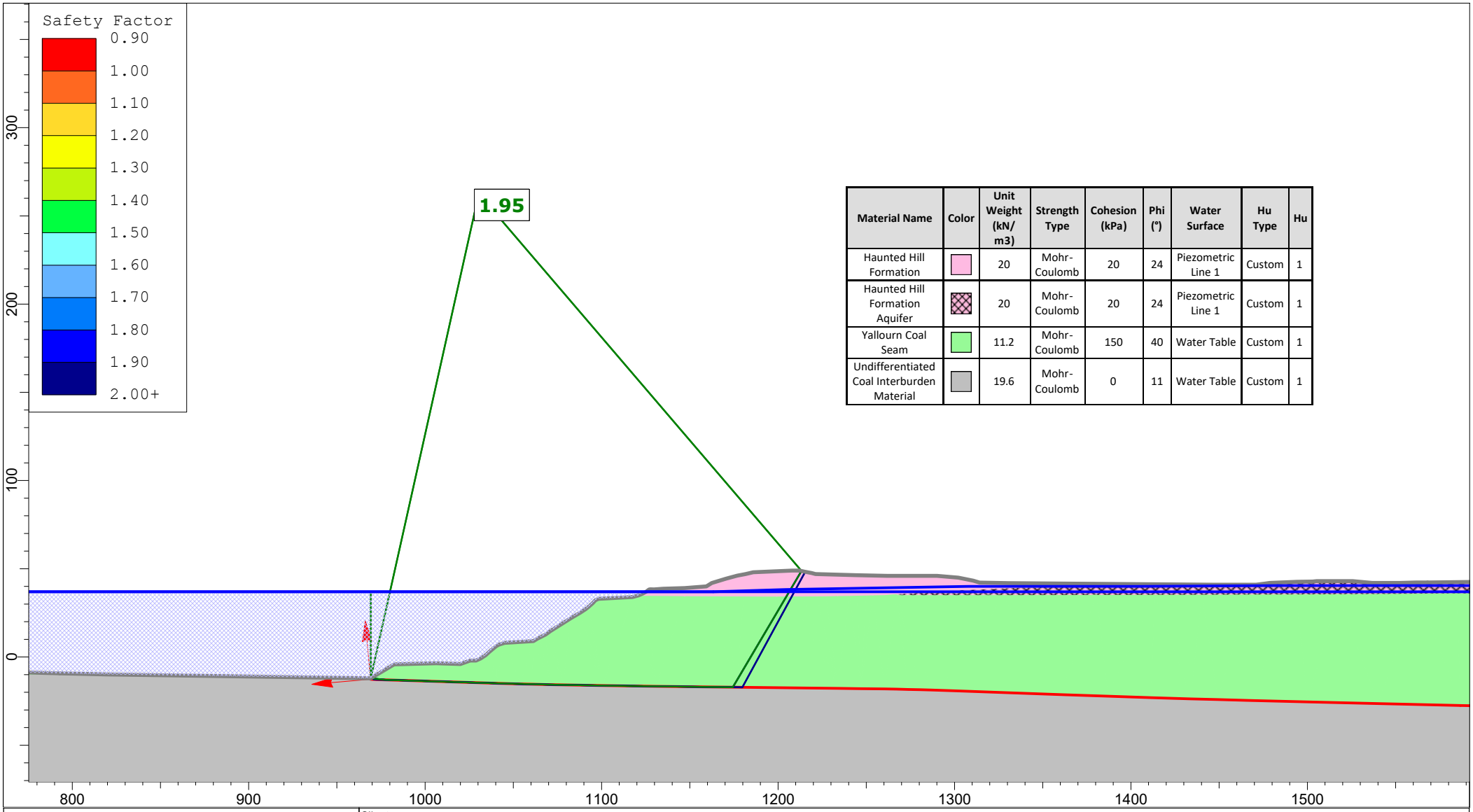
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Stabilising Fill		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 15	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



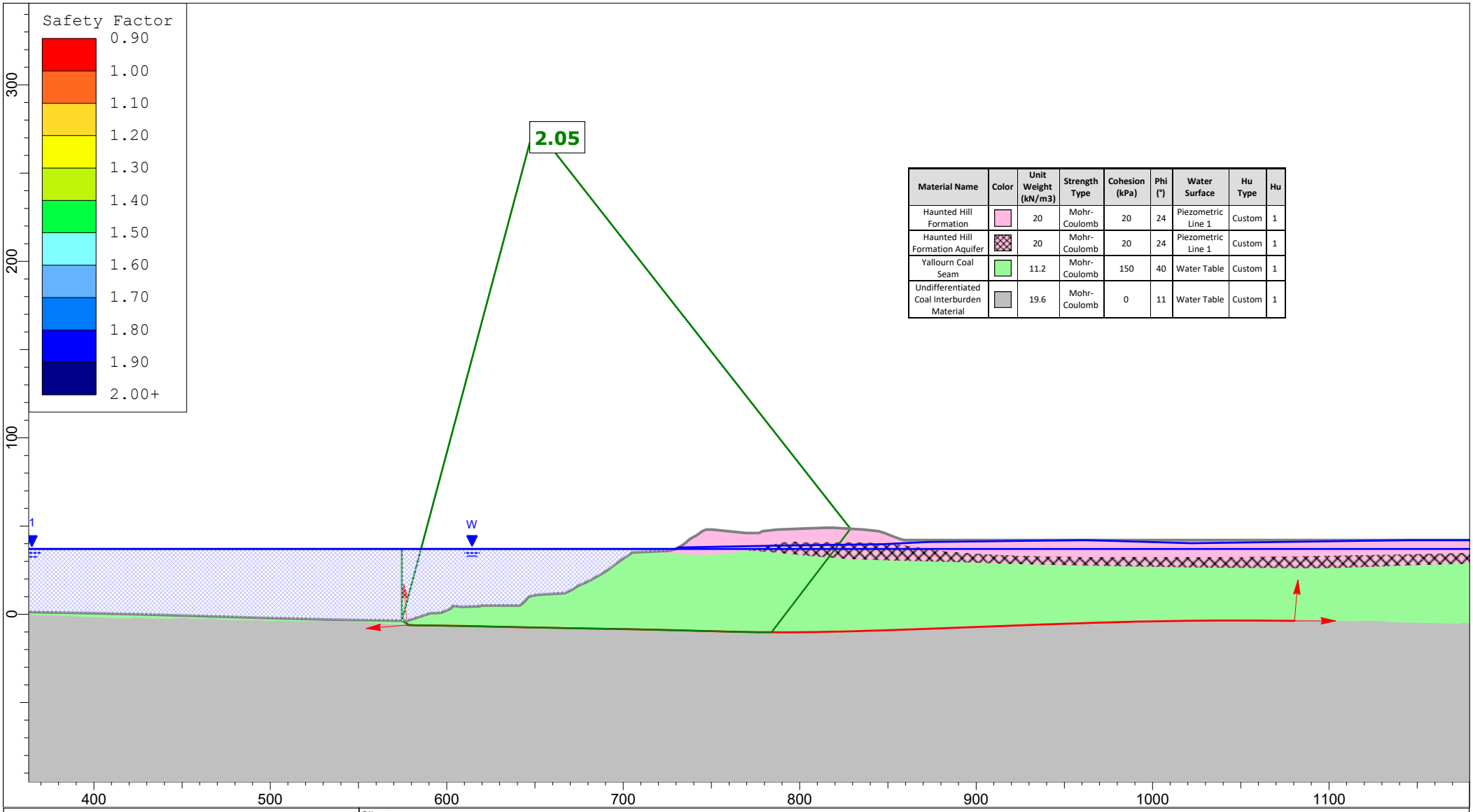
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



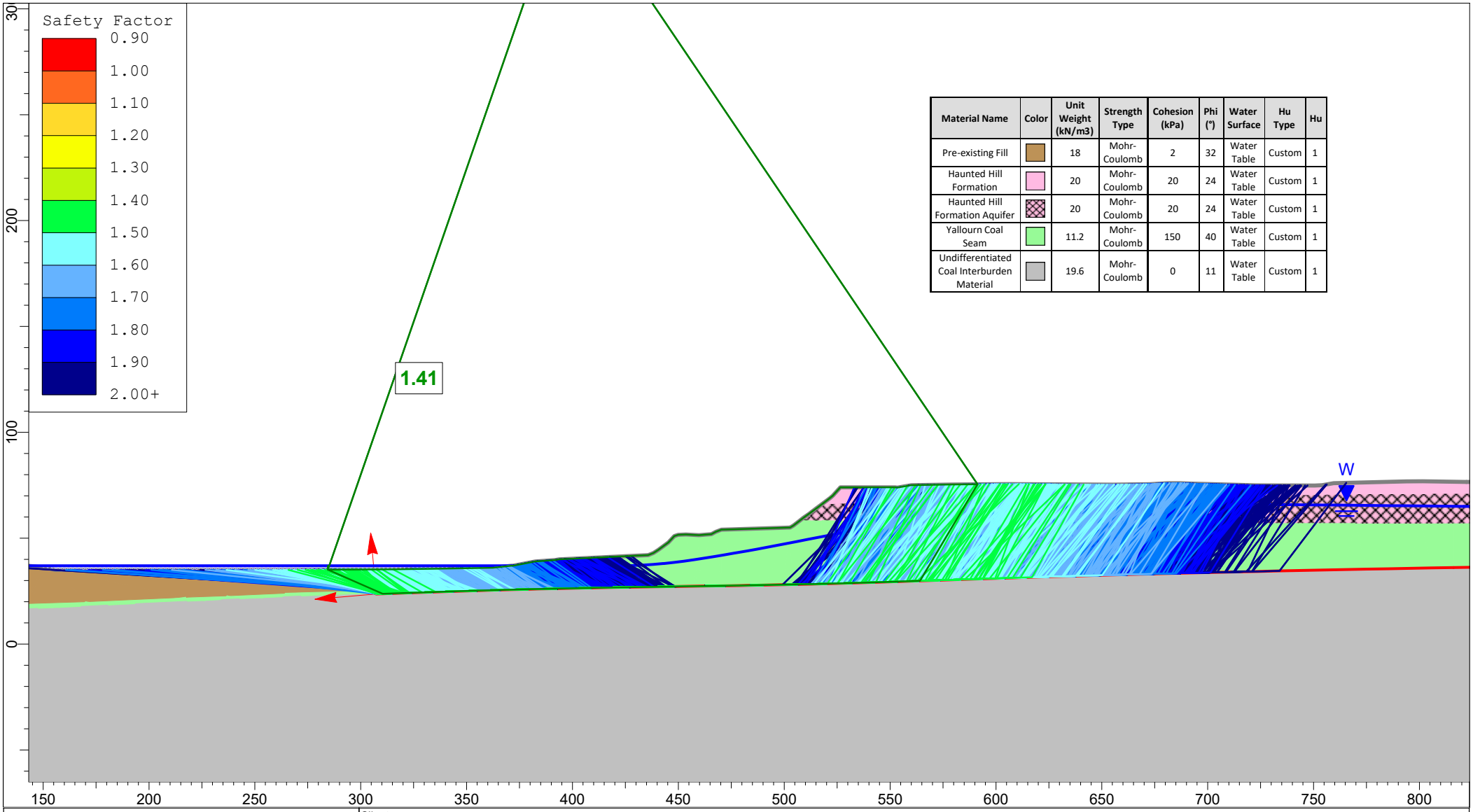
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



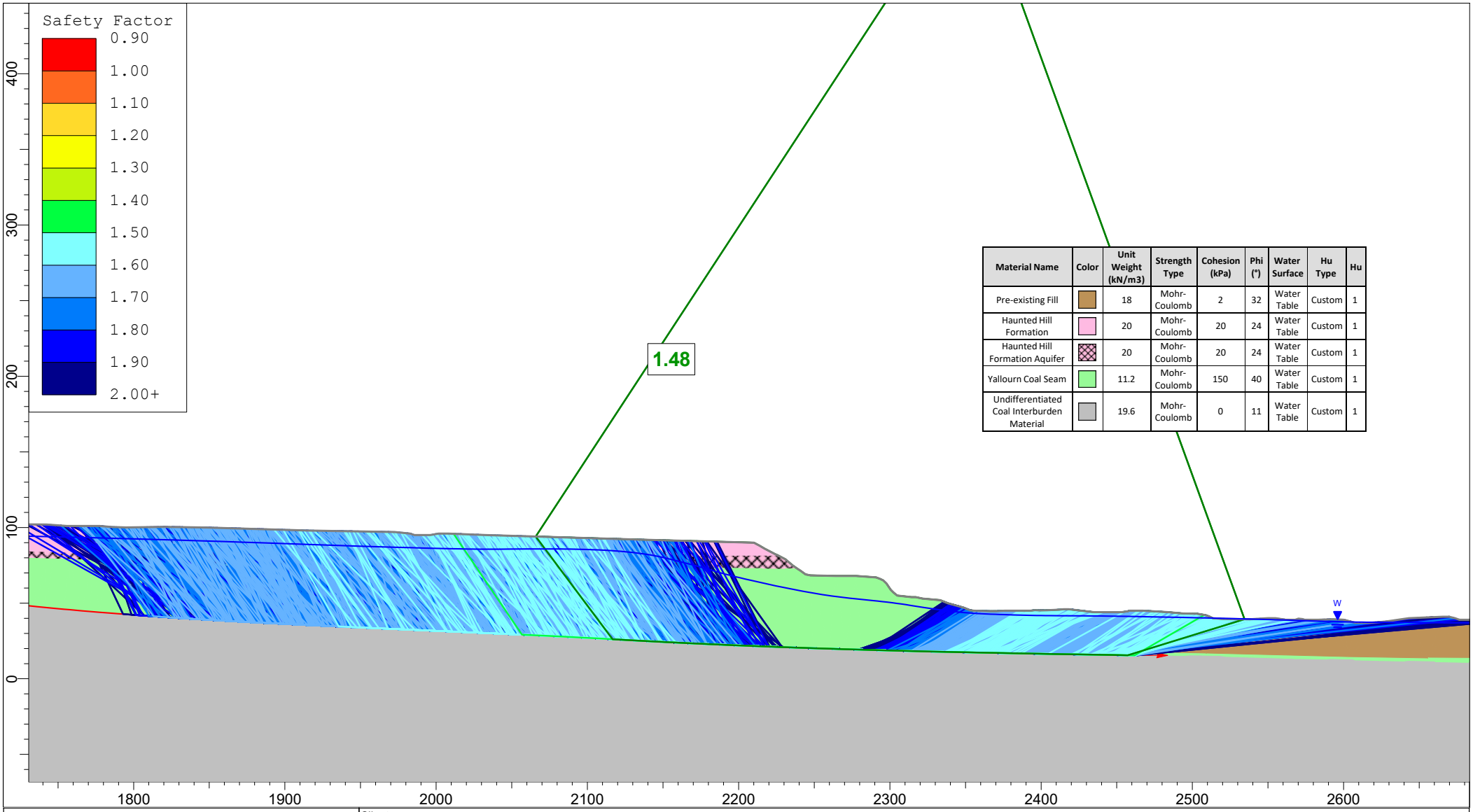
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



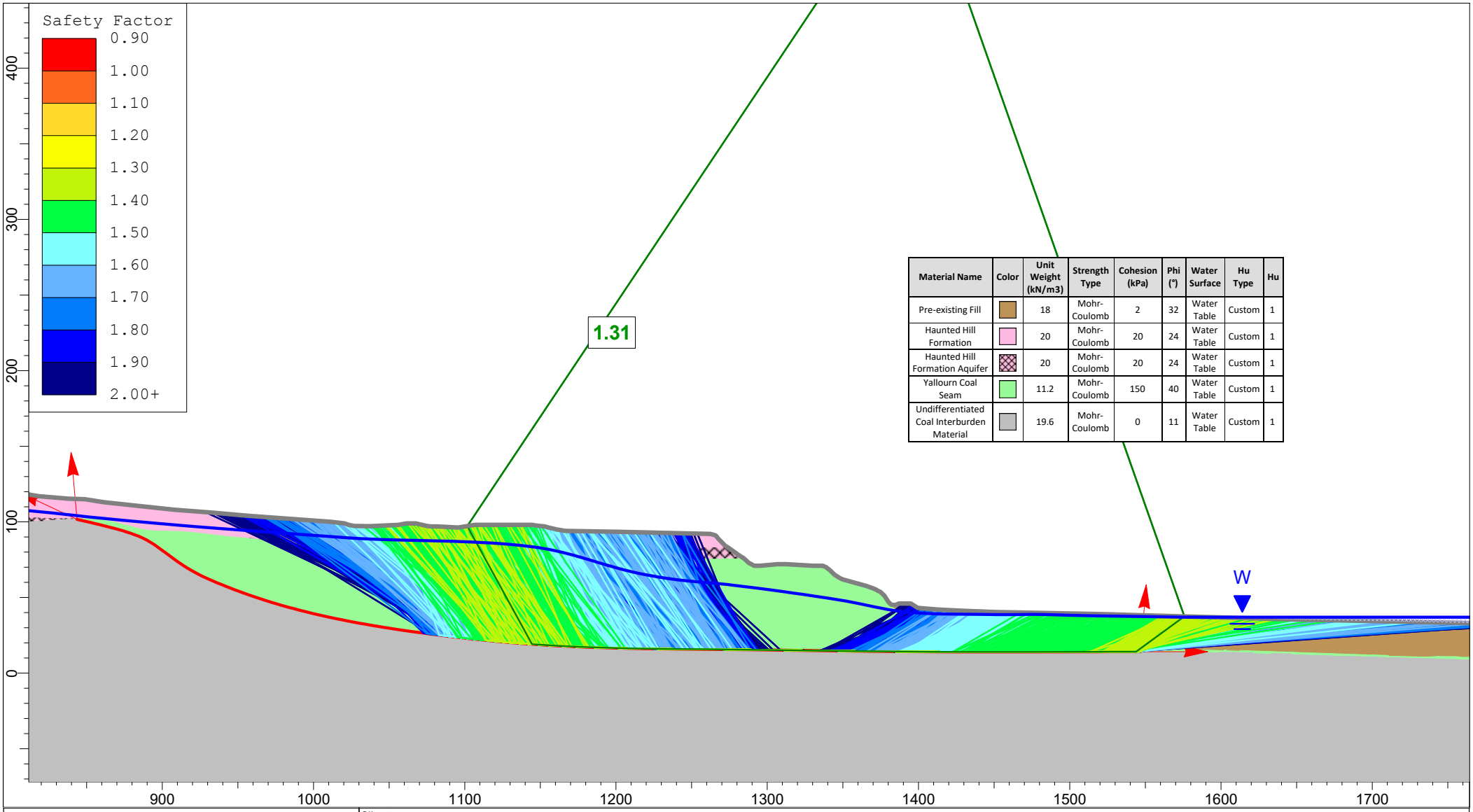
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SB
Section:	Section 19	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



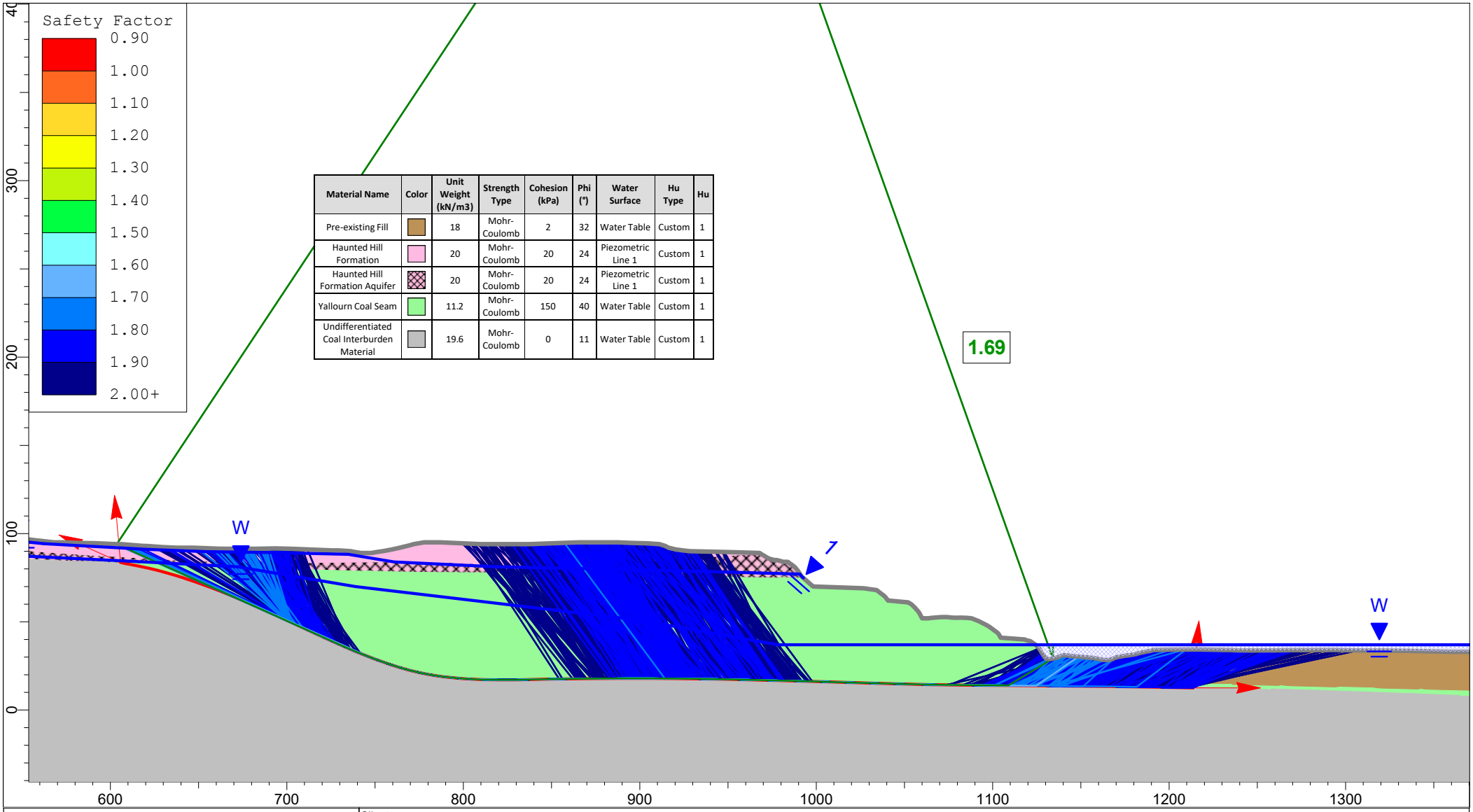
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 20	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



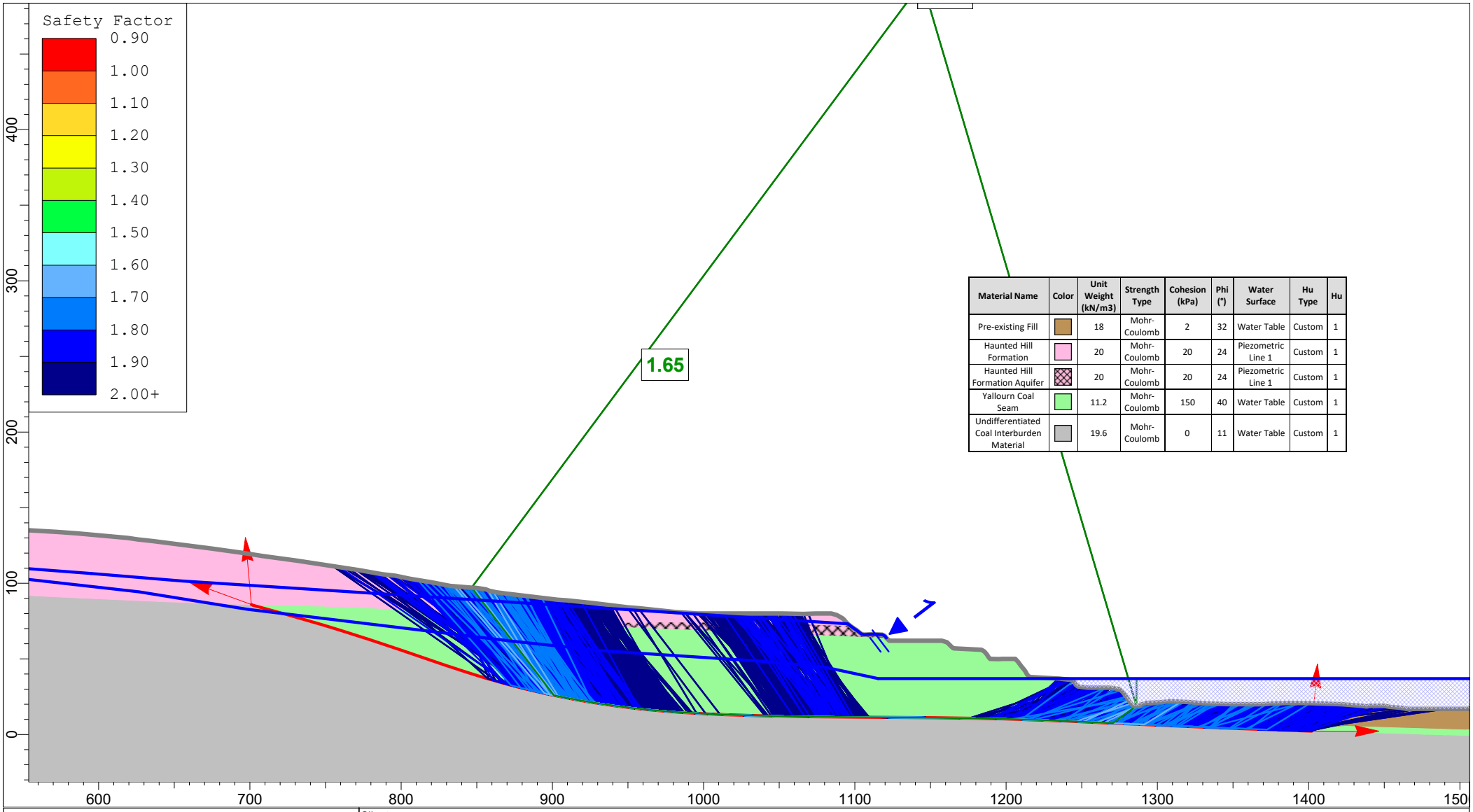
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 21	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



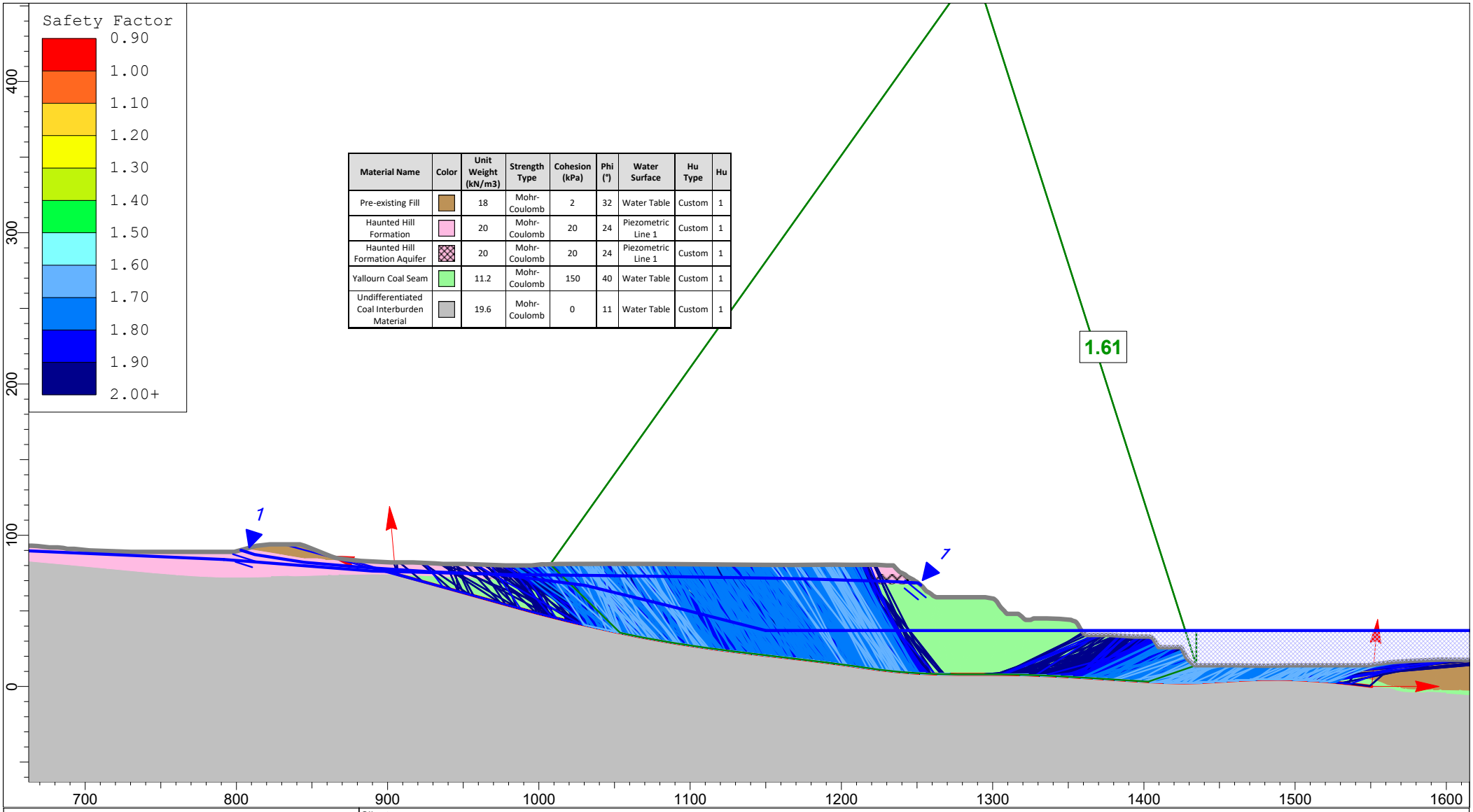
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (South)
Section:	Section 22	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



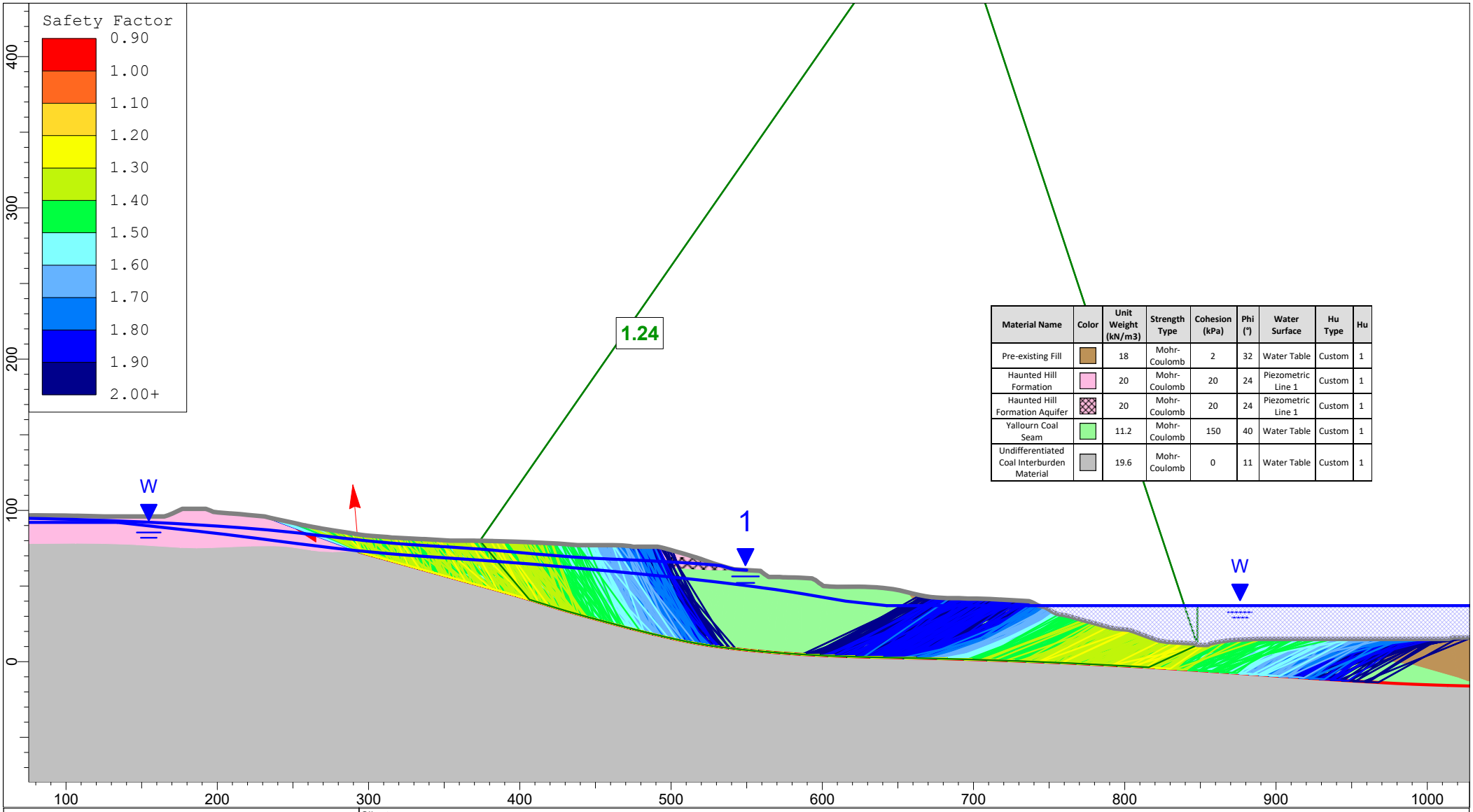
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 23	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



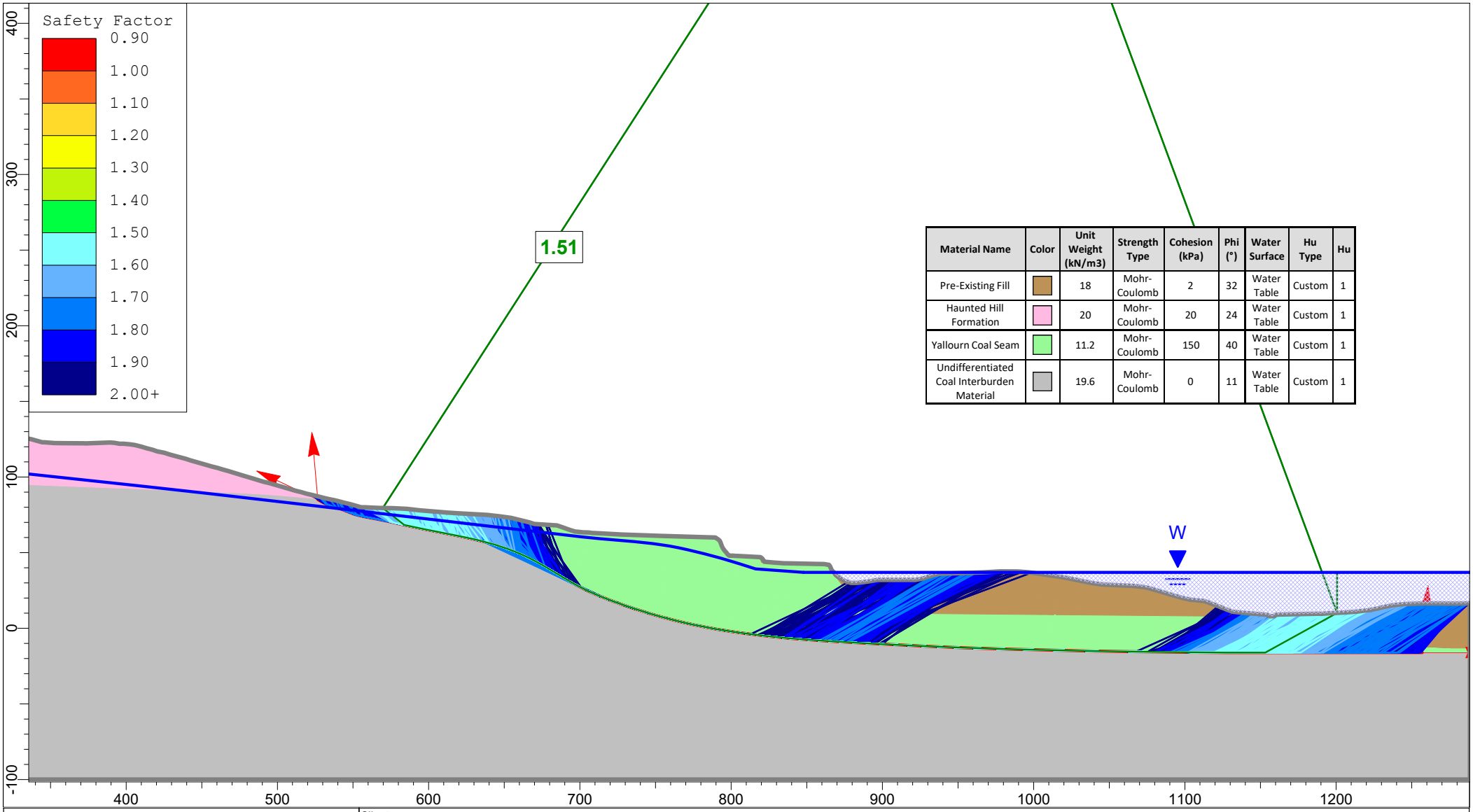
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



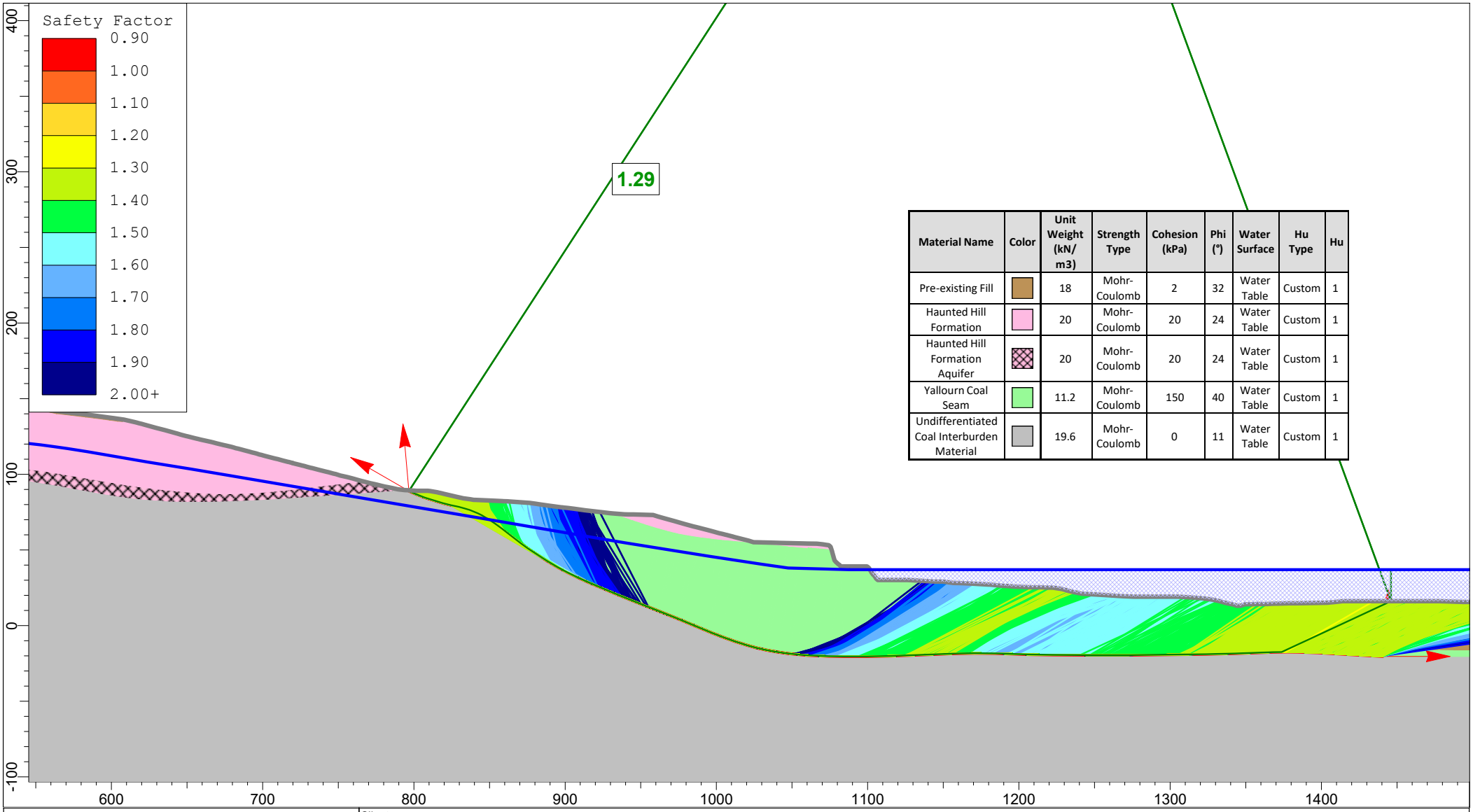
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



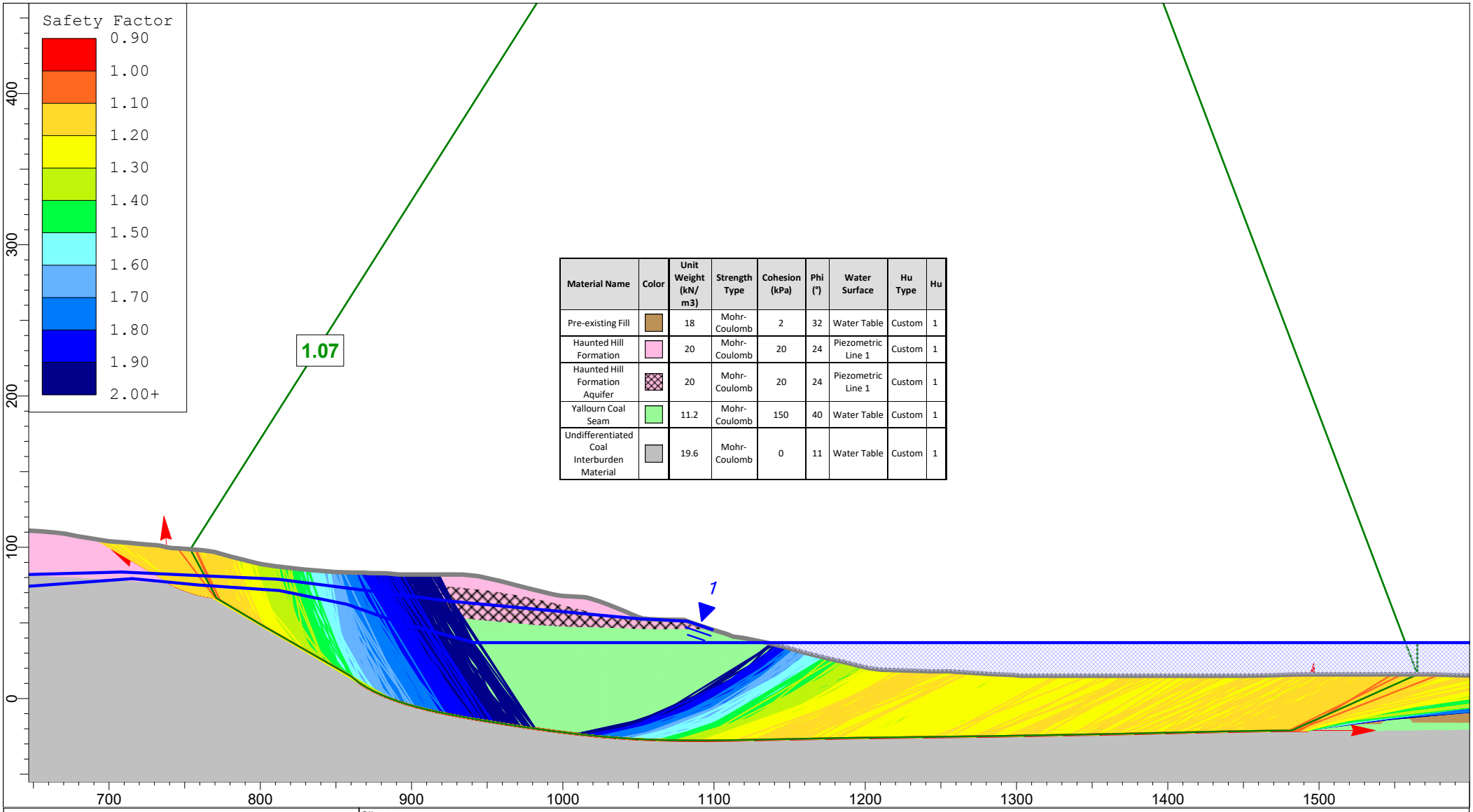
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



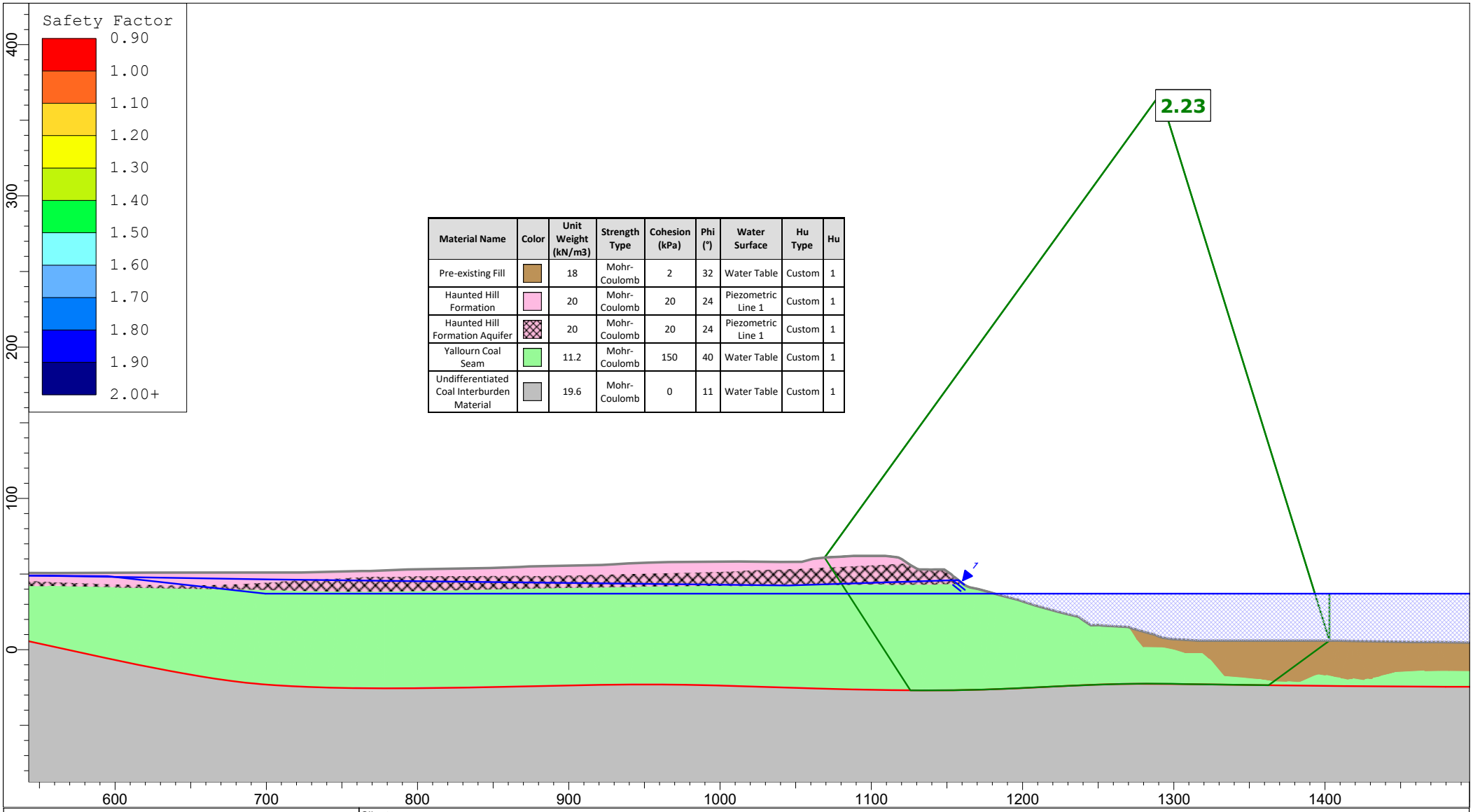
Material Name	Color	Unit Weight (kN/ m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



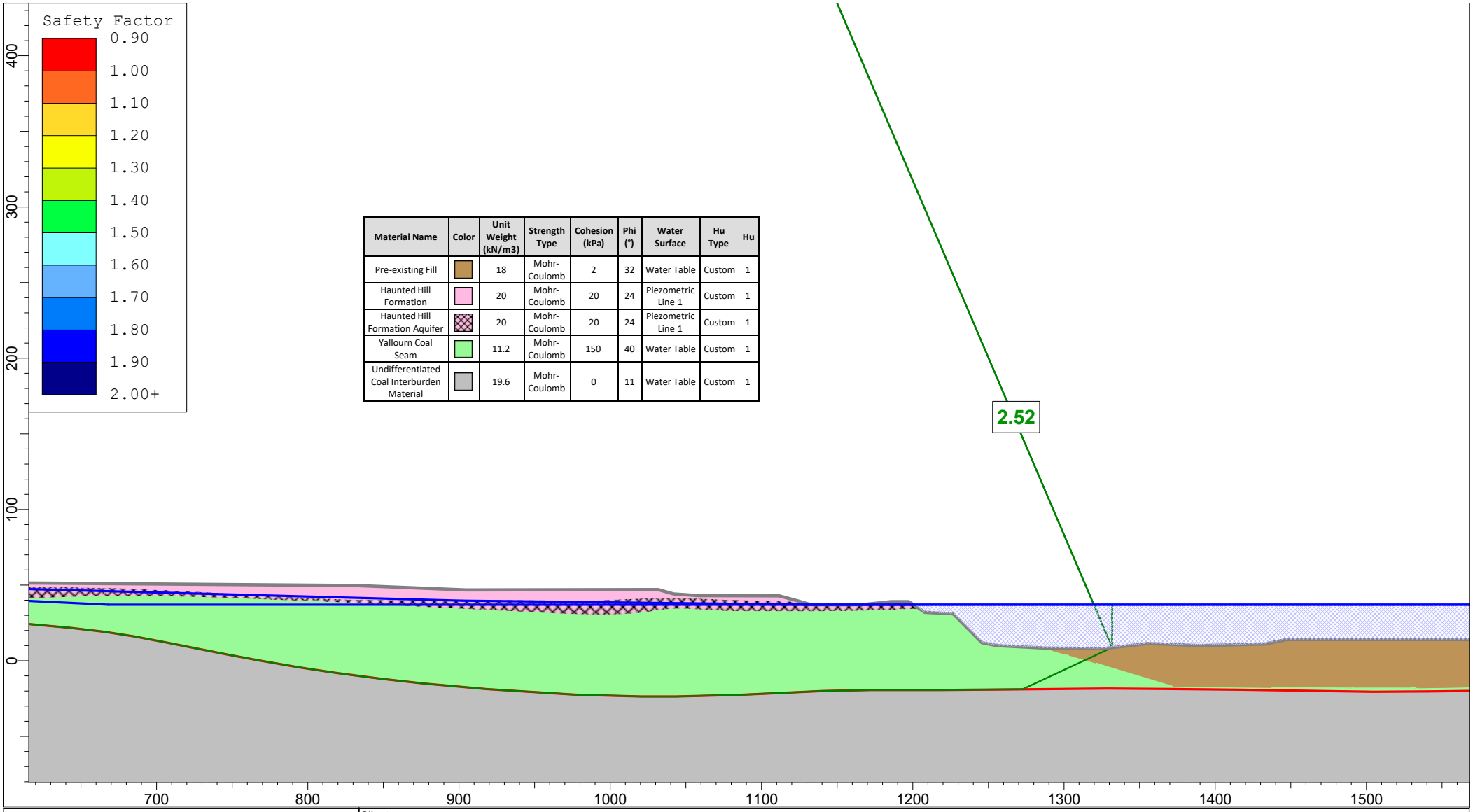
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu = 1 below piezometric line
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



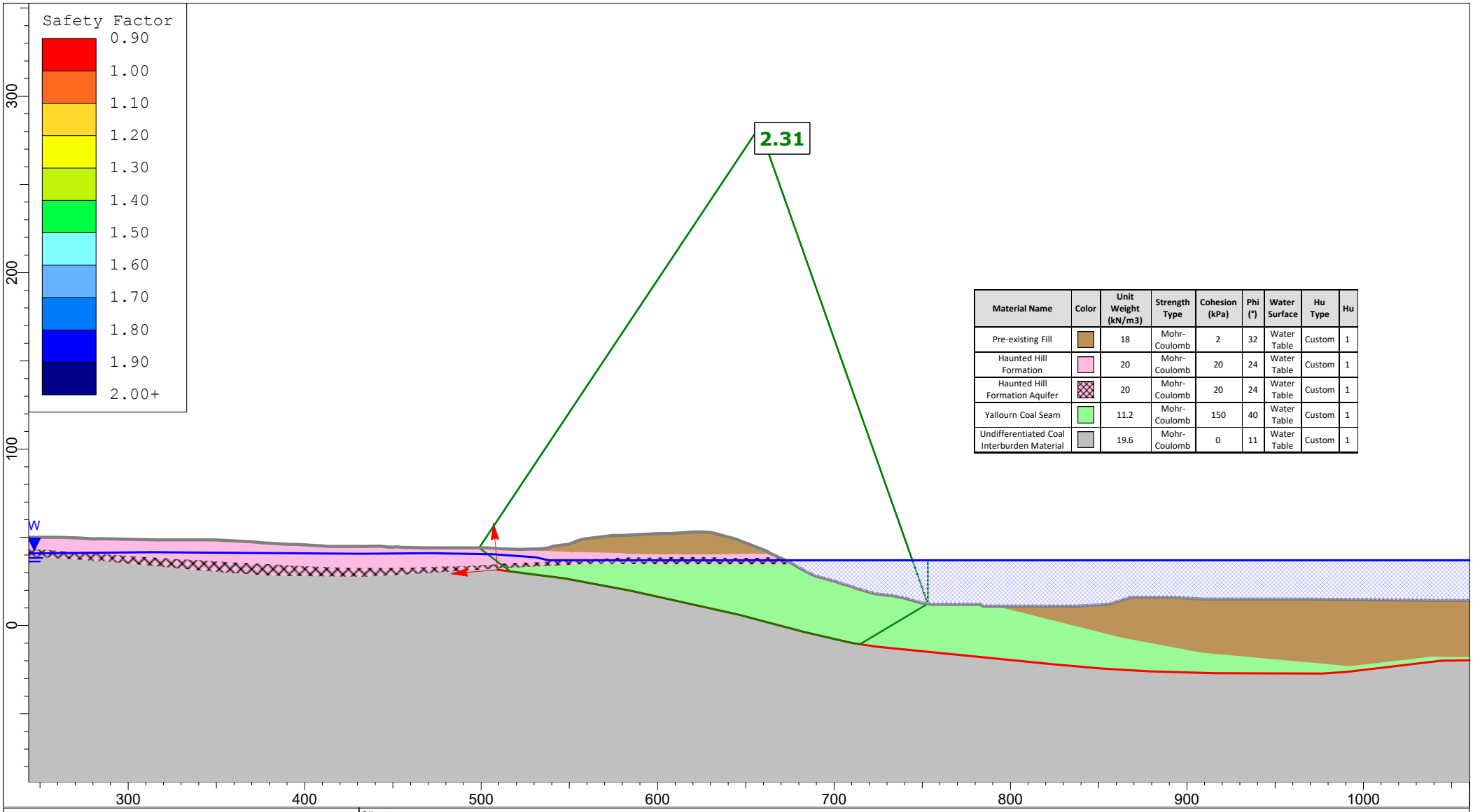
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-NB
Section:	Section 29	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



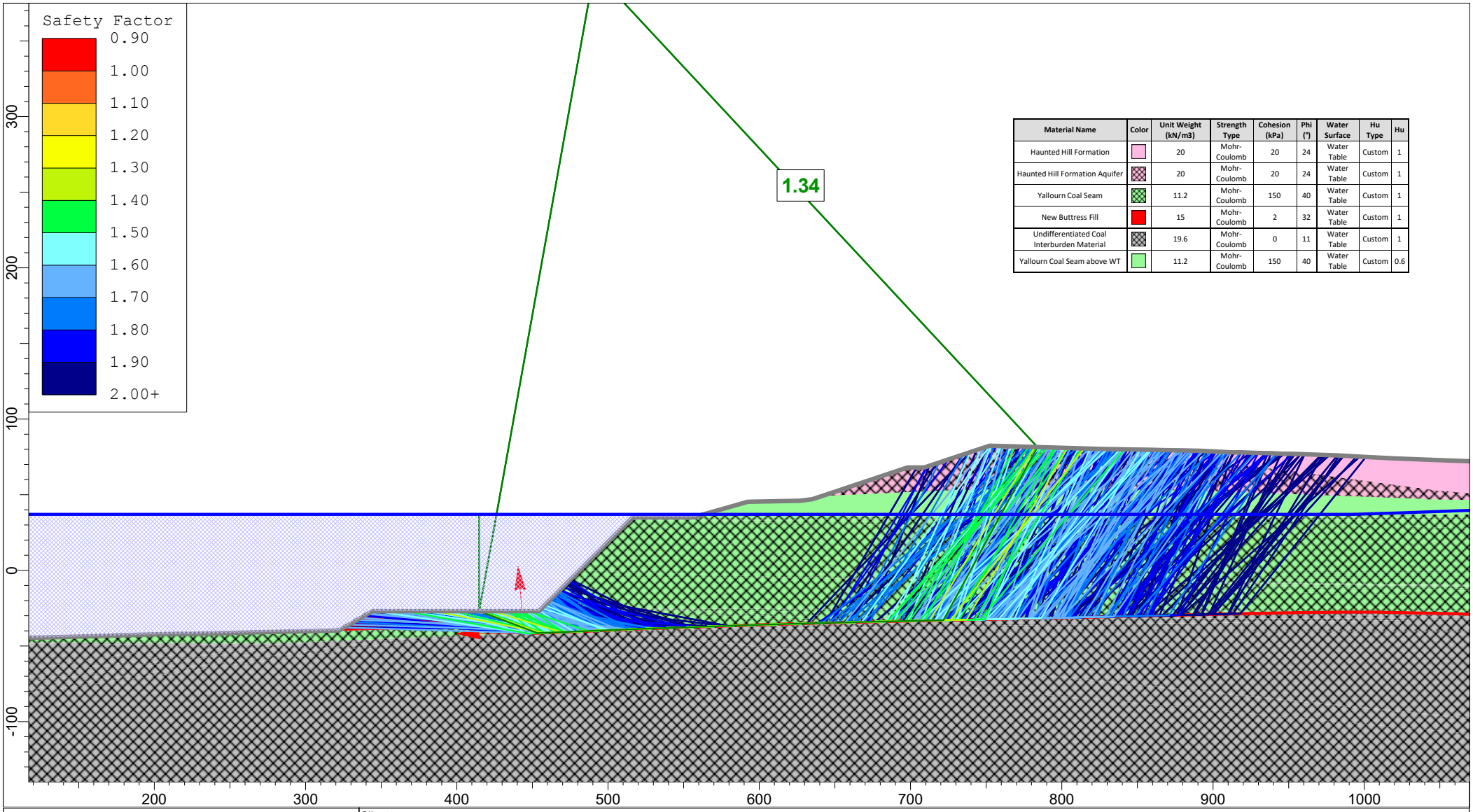
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



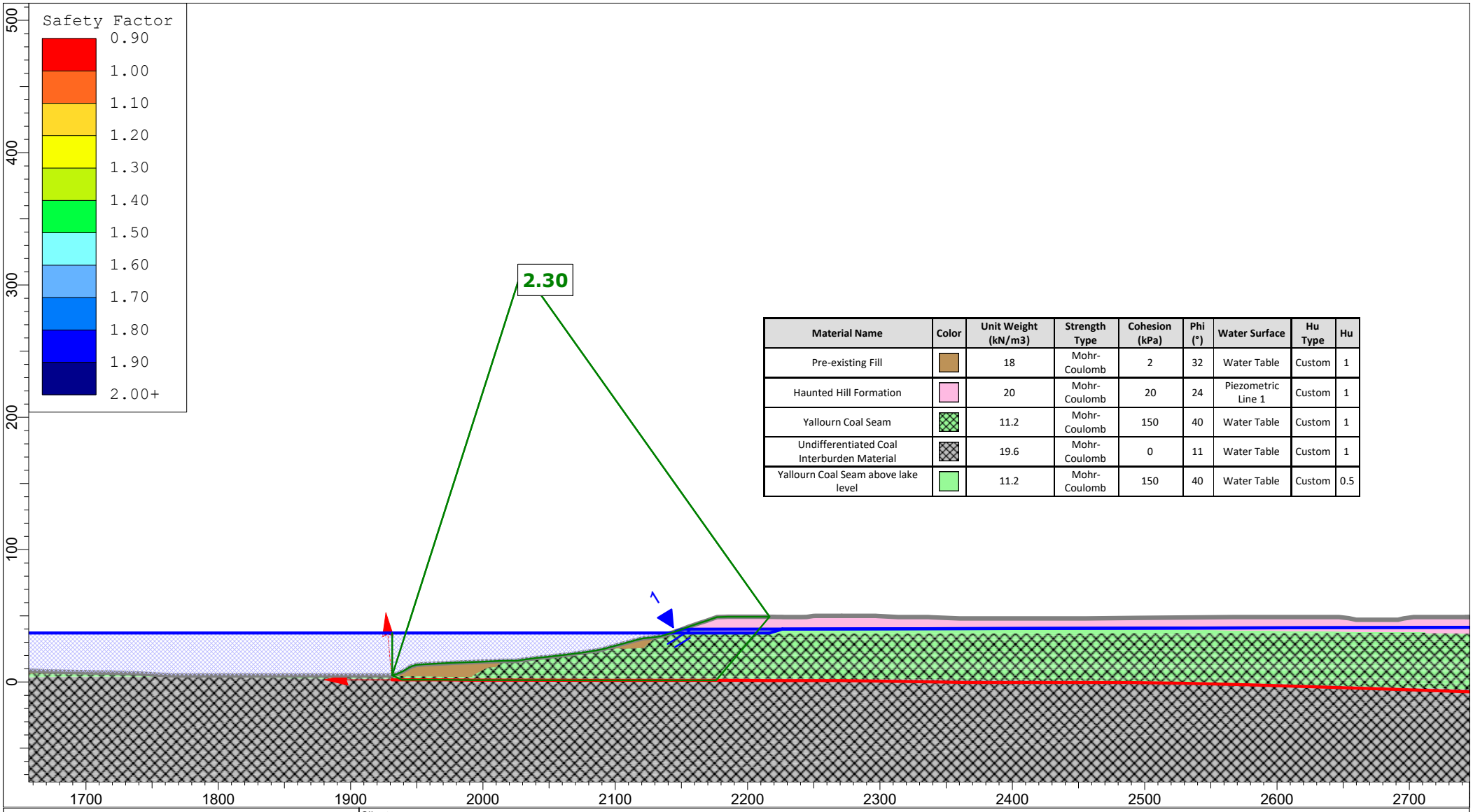
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YTF-LS**
Section:	**Section 31**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake full - lake level at 37 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



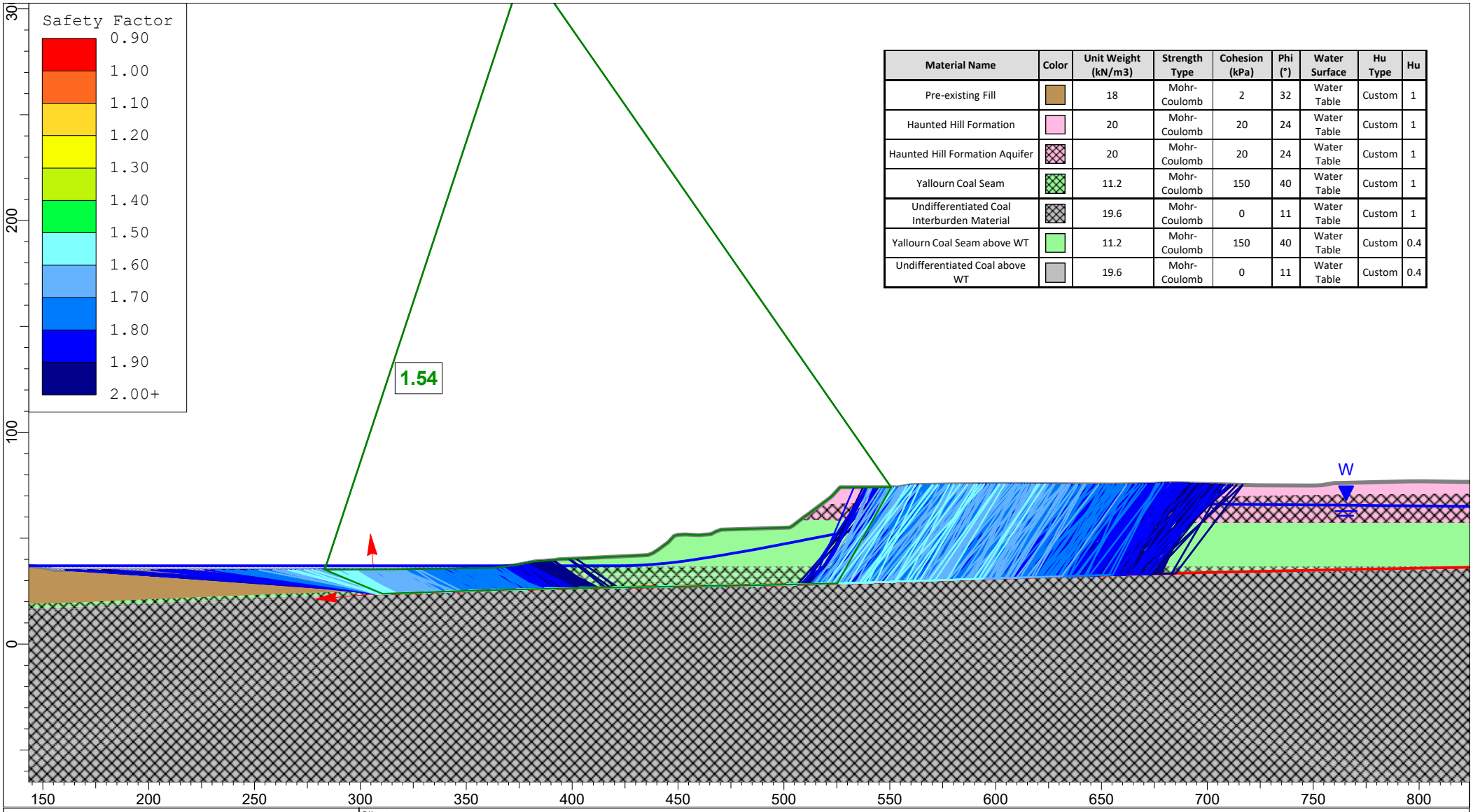
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**MVF-SB**
Section:	**Section 13**	Case:	**Multilinear - Hu = 1 below lake level**
Job No:	**PSM4487**	Run:	**Lake full - lake level at 37 mRL**
Notes:	**Lower Bound Interseam Shear Strength**		



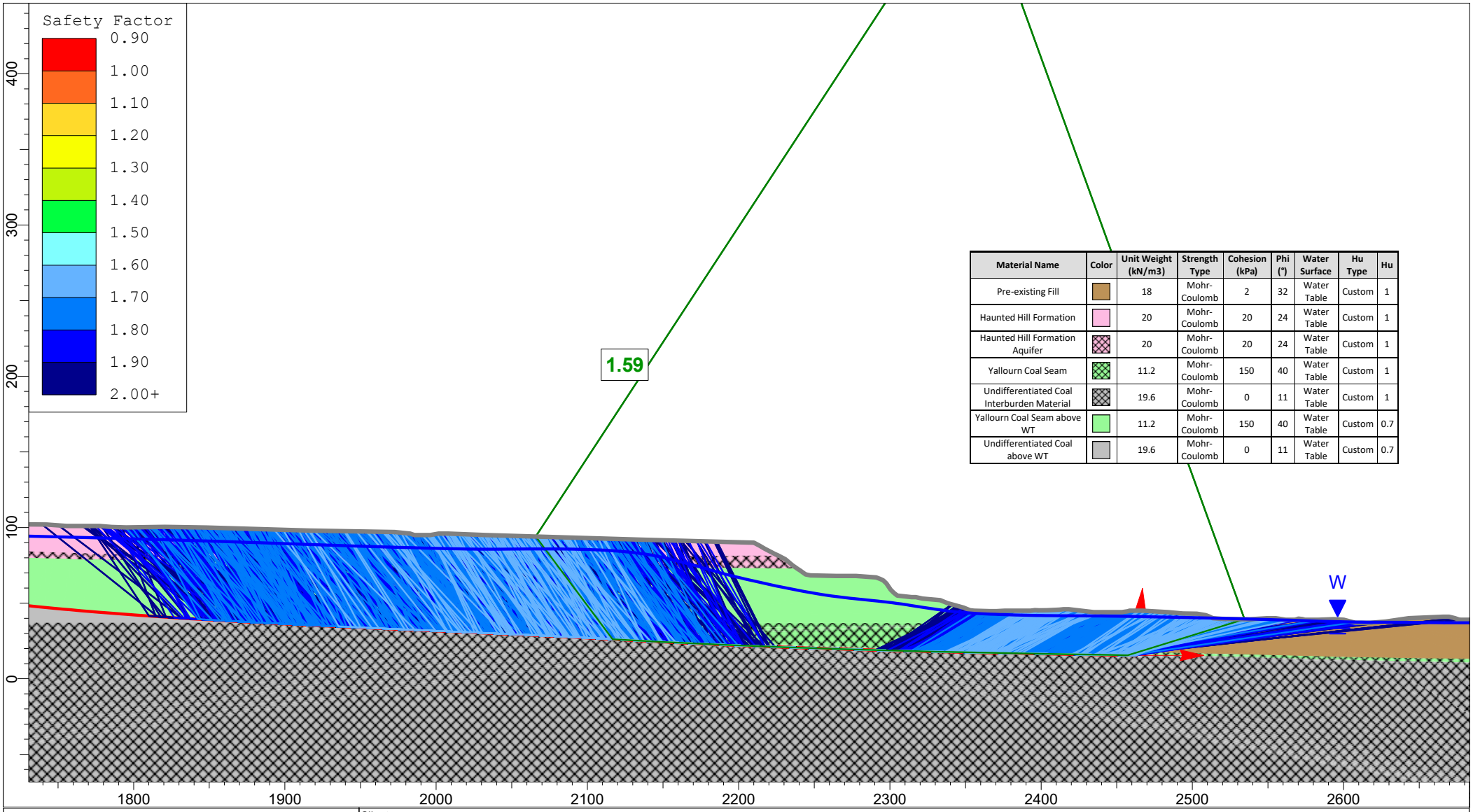
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above lake level		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



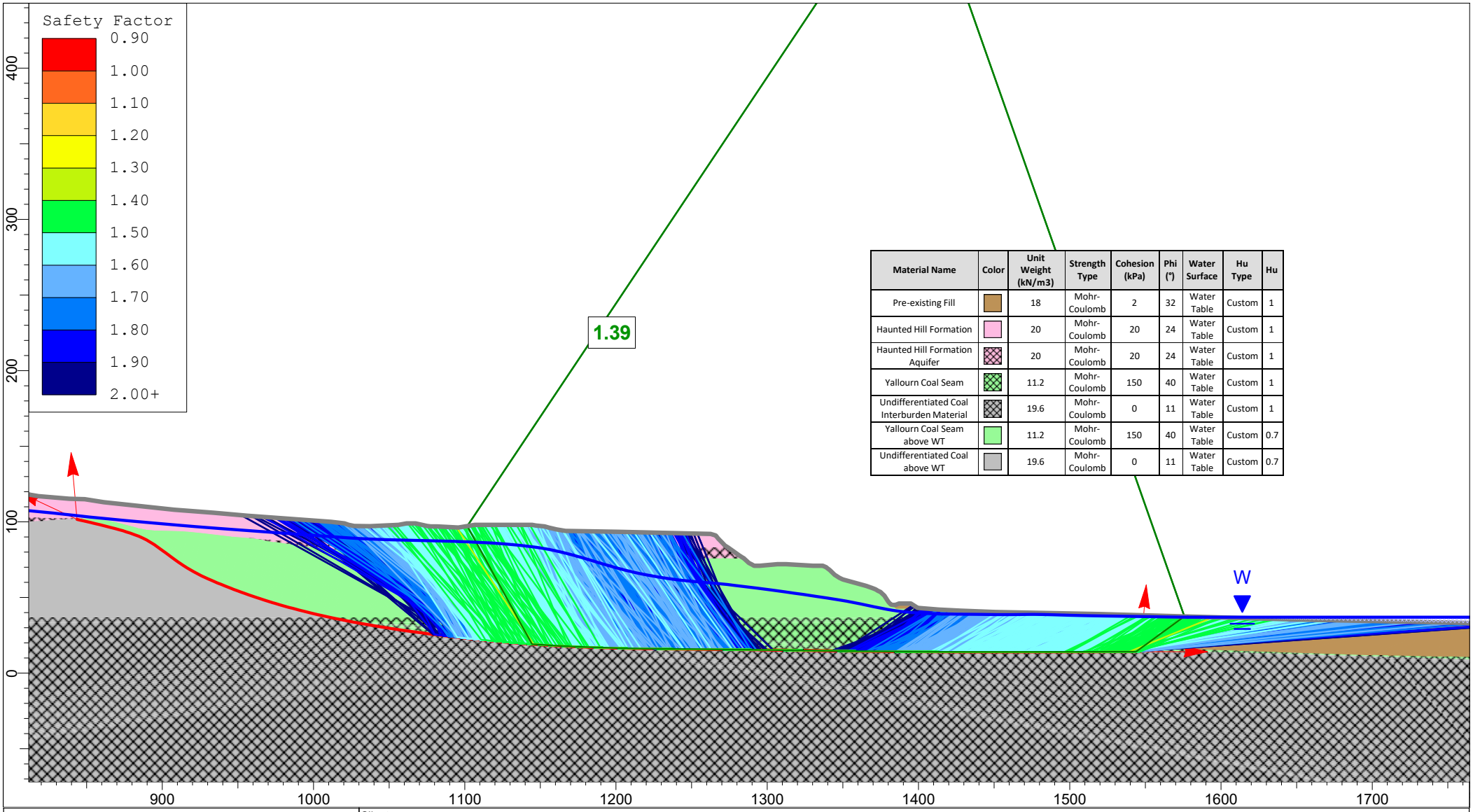
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SB
Section:	Section 19	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



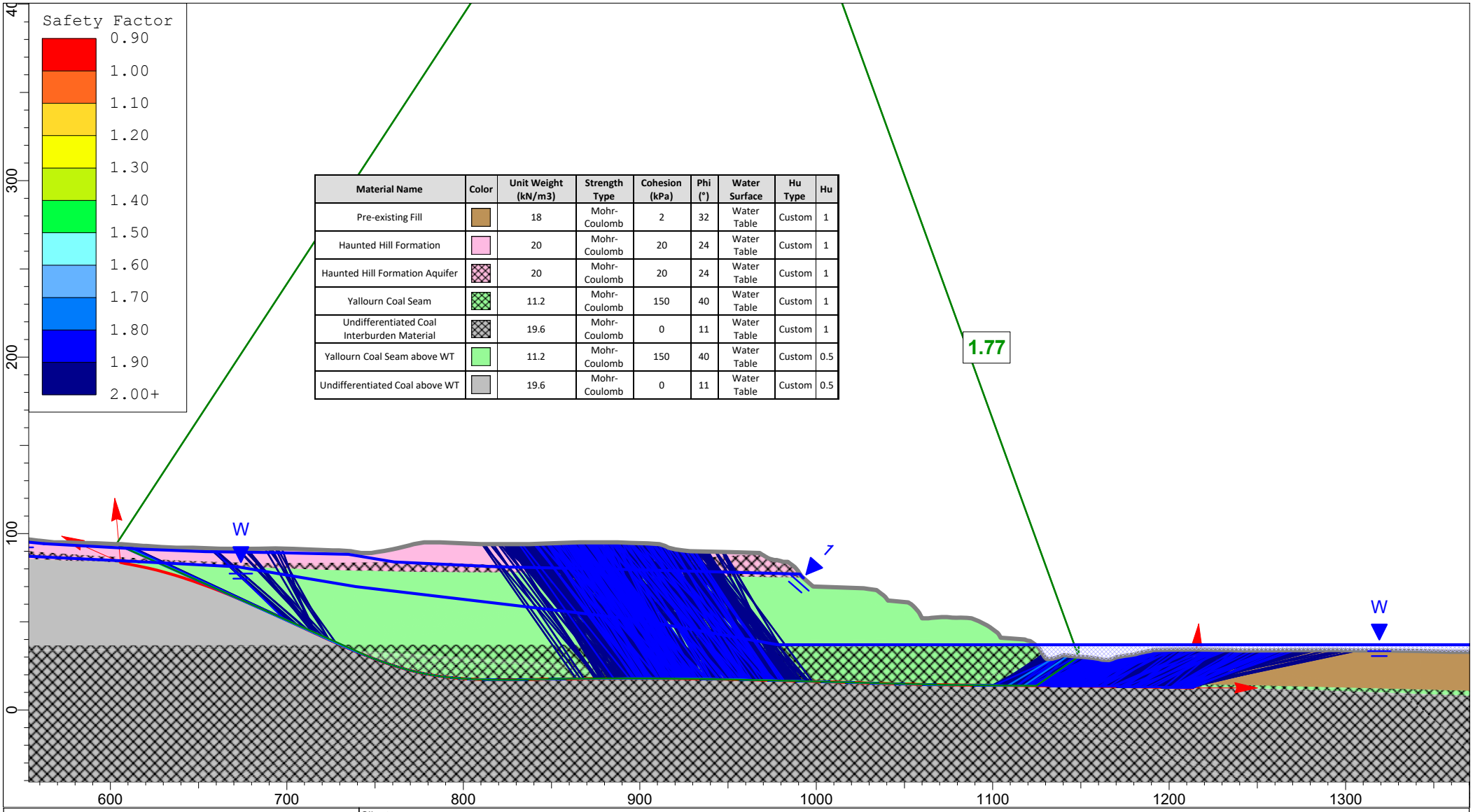
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 20	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



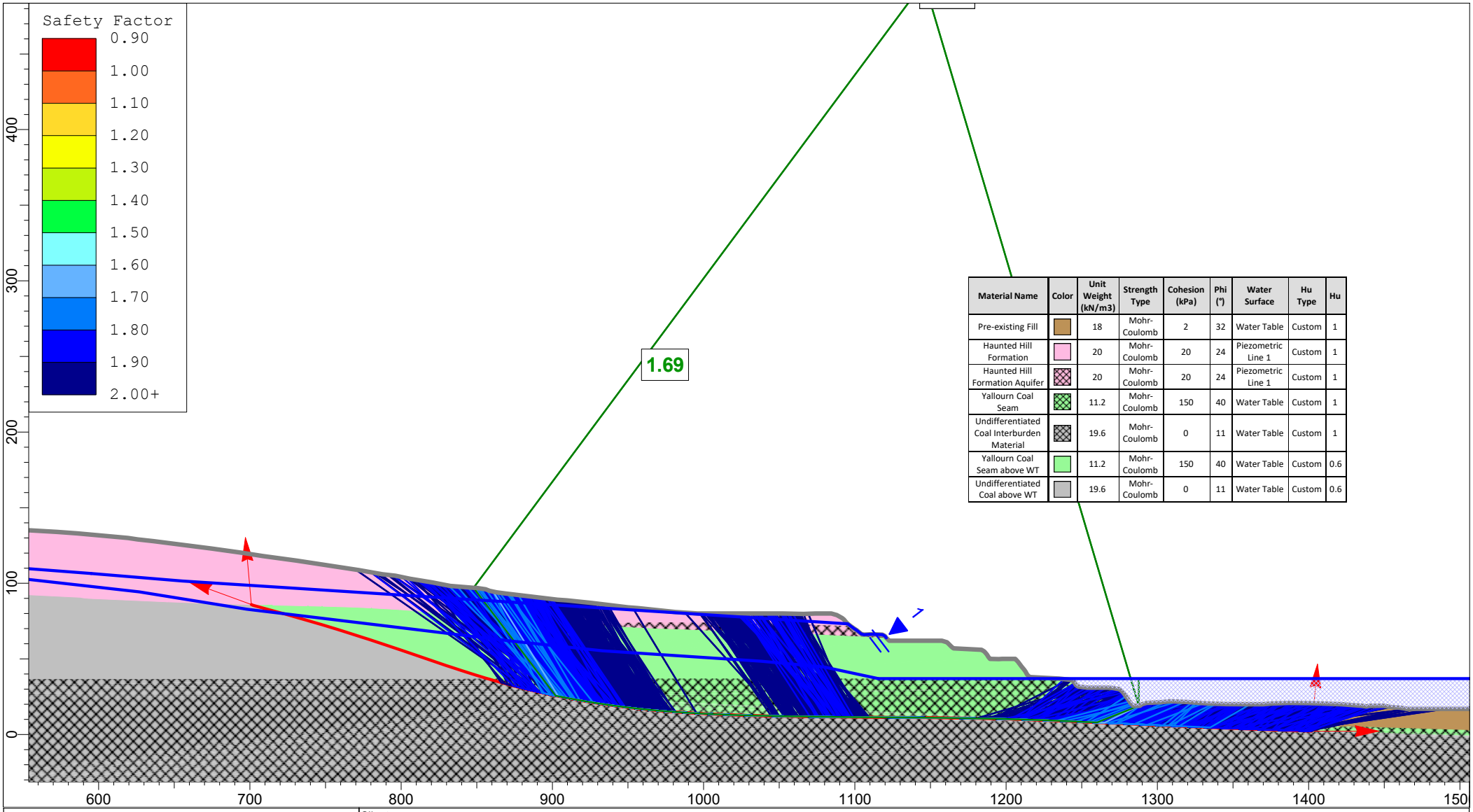
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 21	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



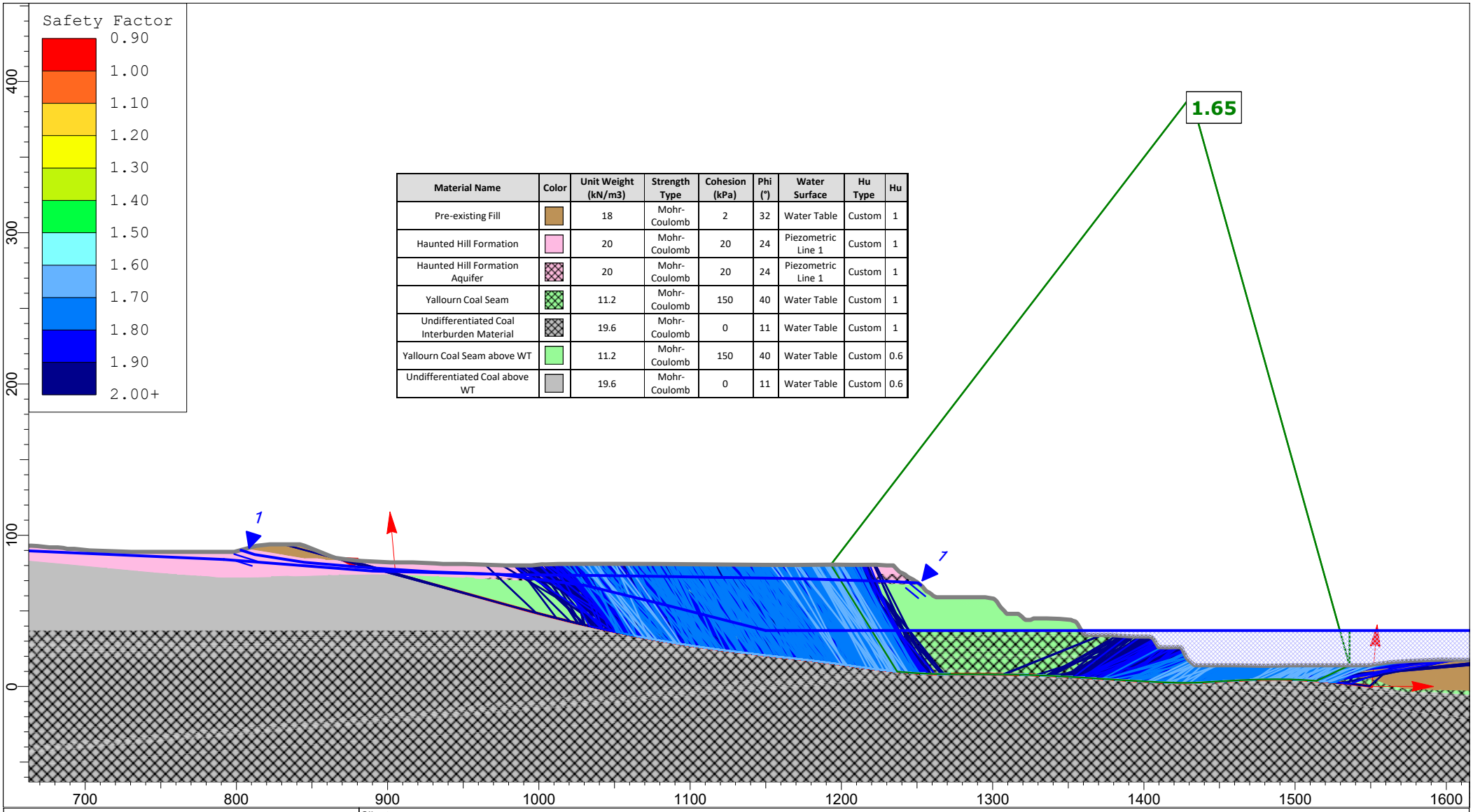
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (South)
Section:	Section 22	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



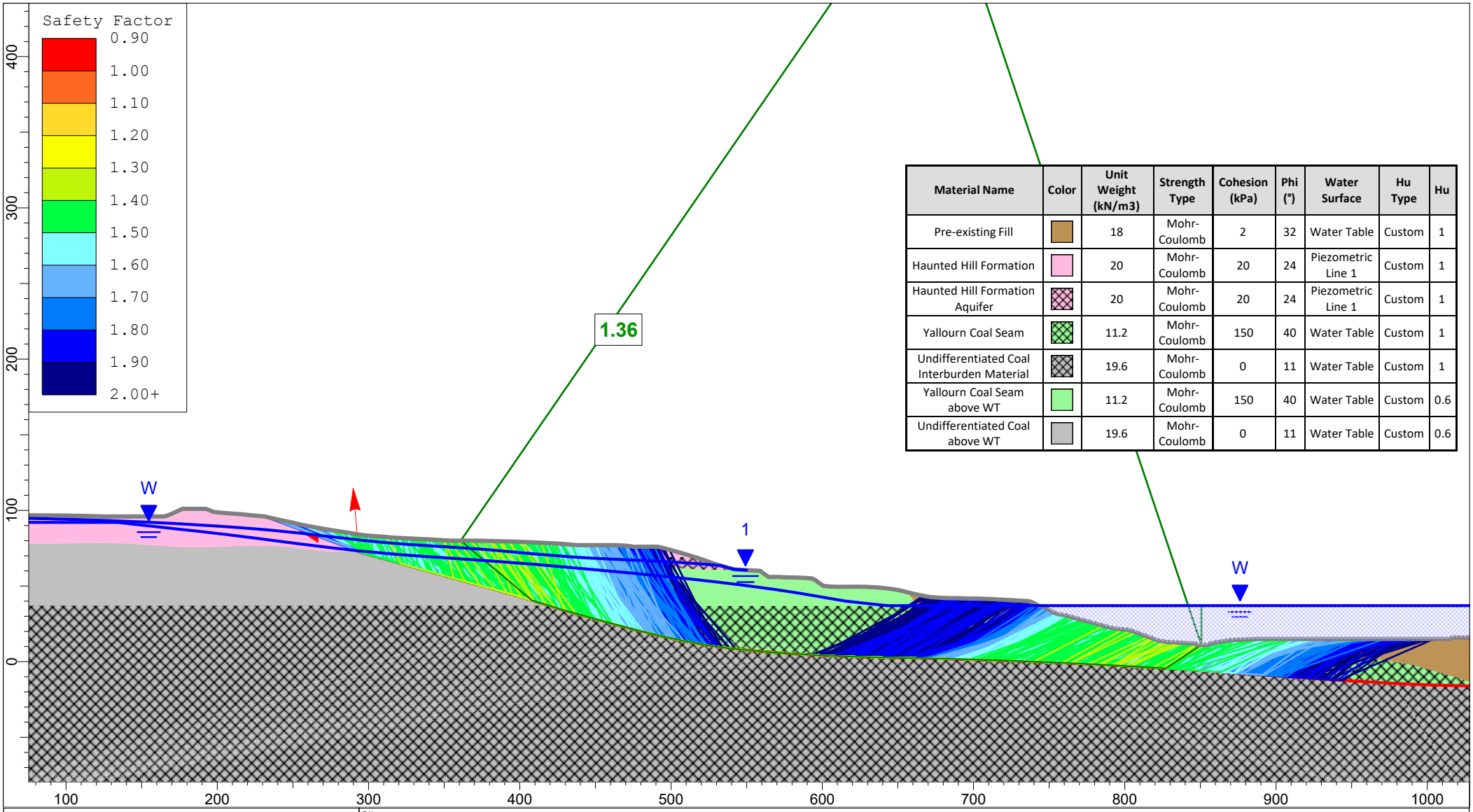
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 23	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



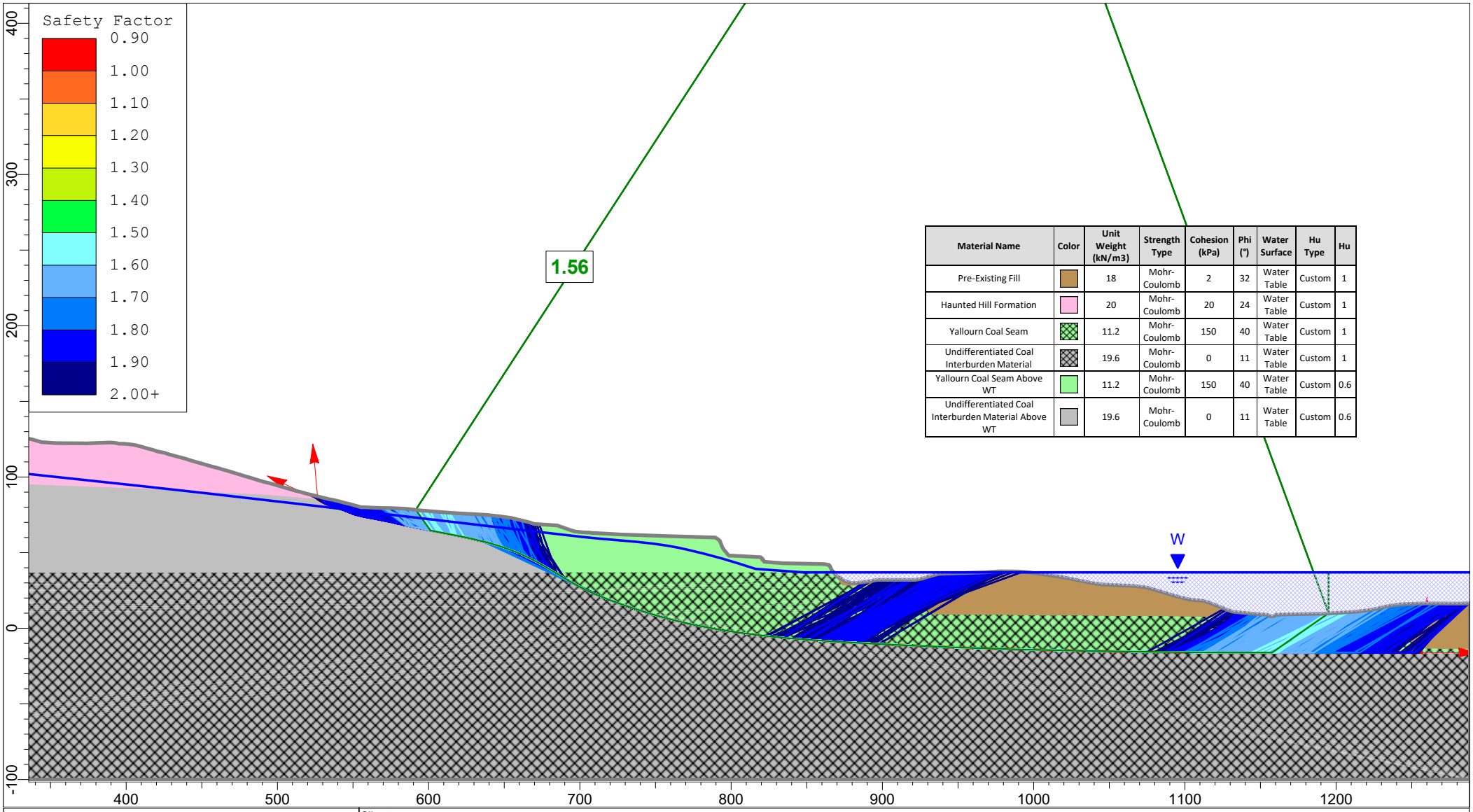
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



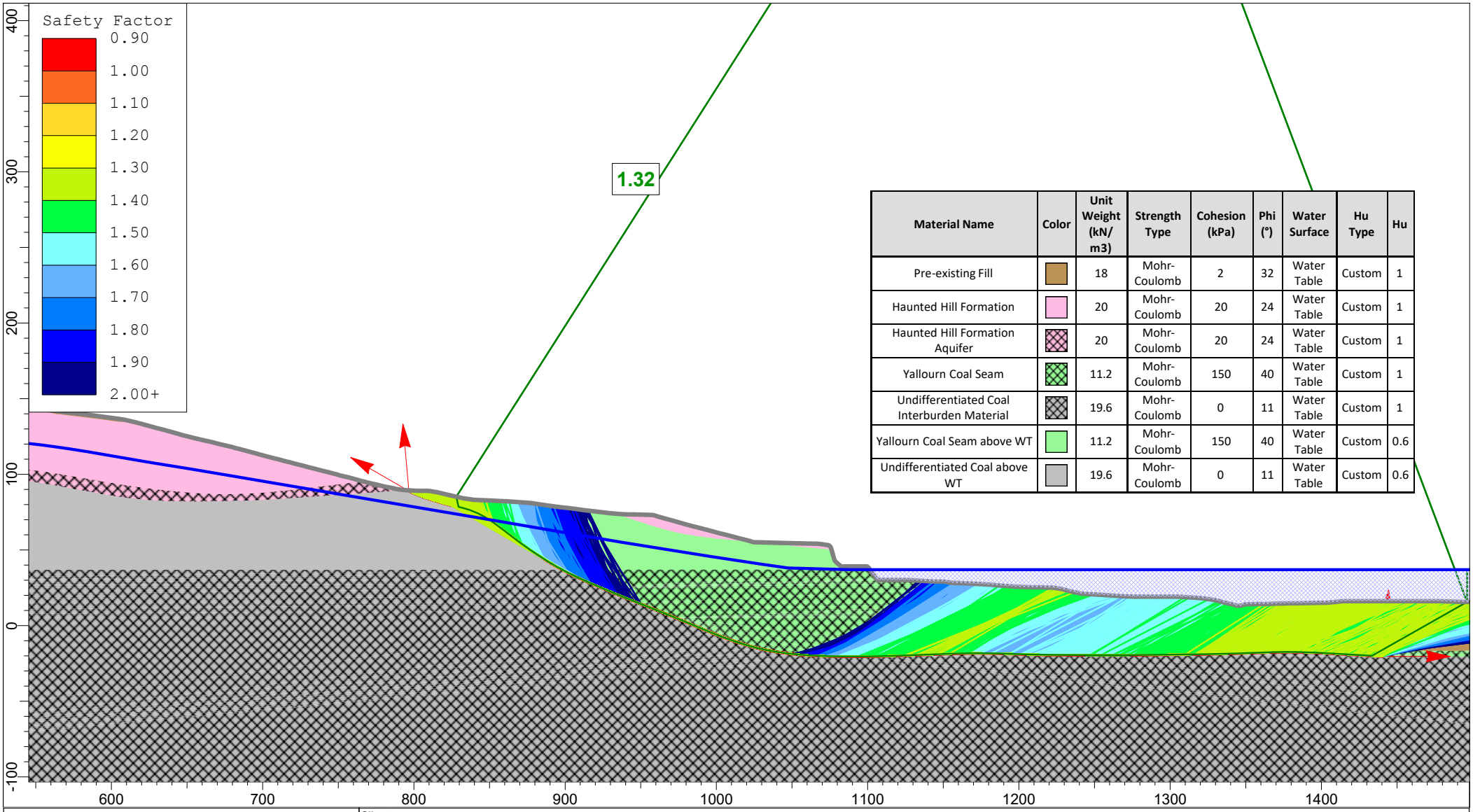
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



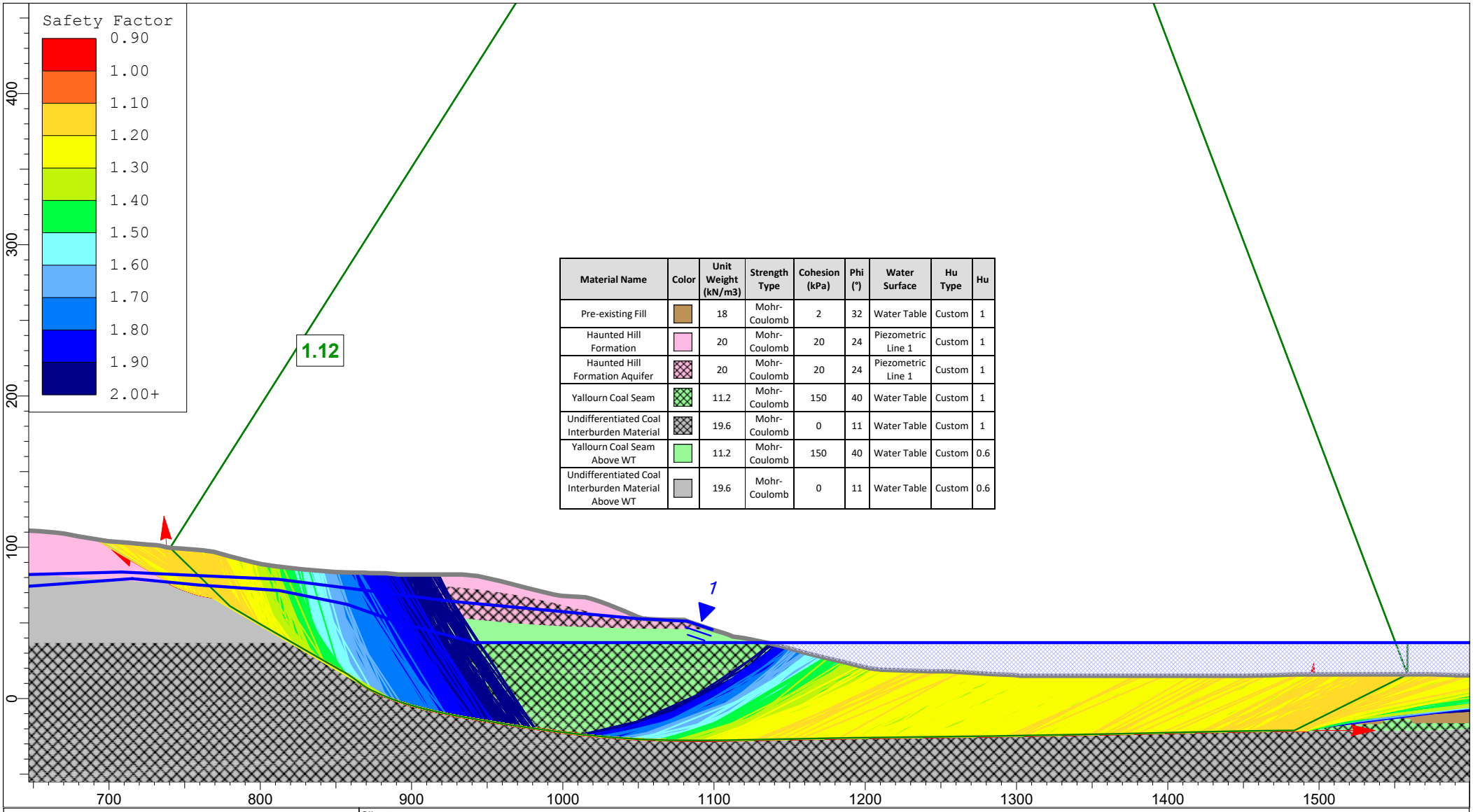
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam Above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material Above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



Material Name	Color	Unit Weight (kN/ m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

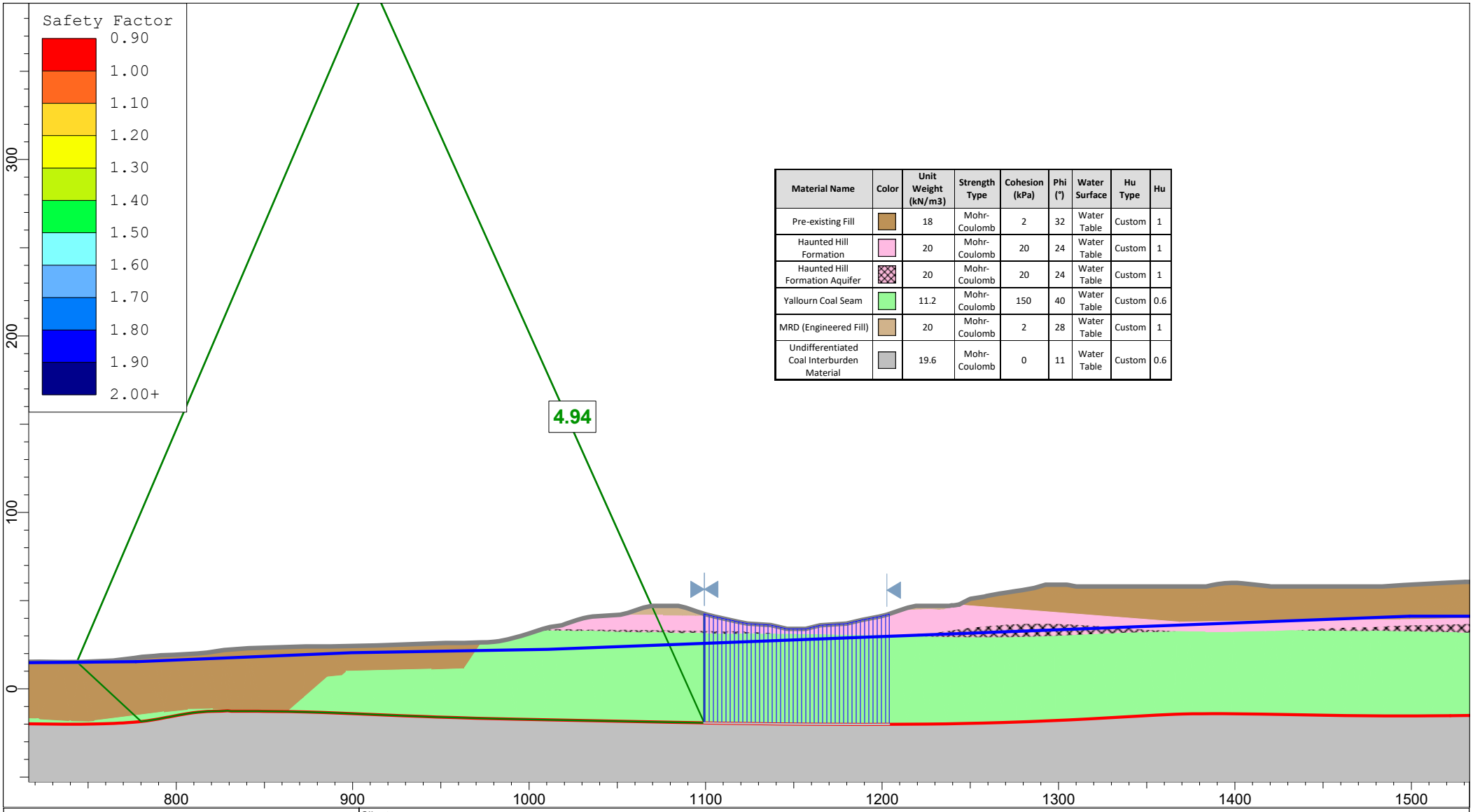
Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam Above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material Above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

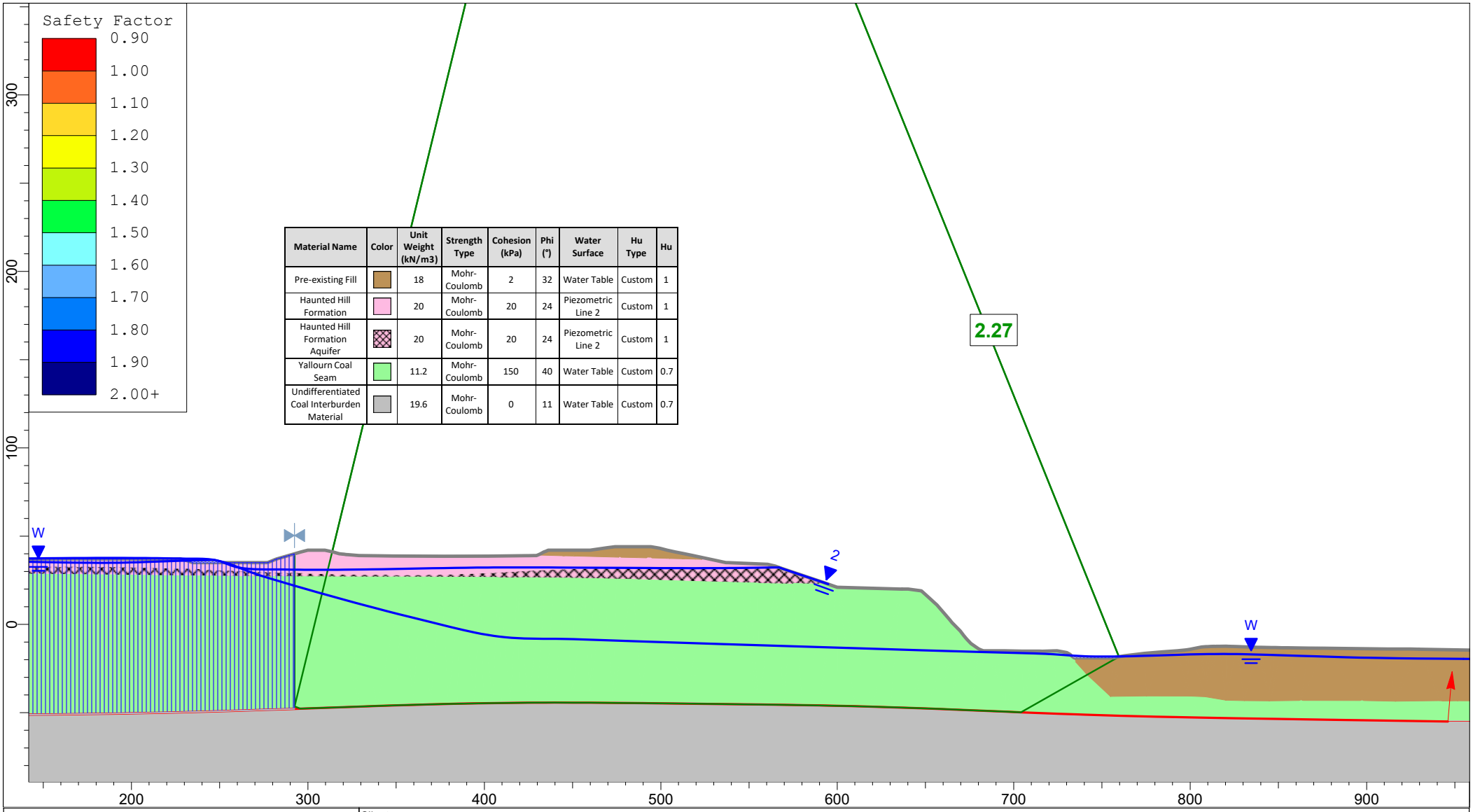
Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		

Appendix F.3.2
Block slide – floodplains



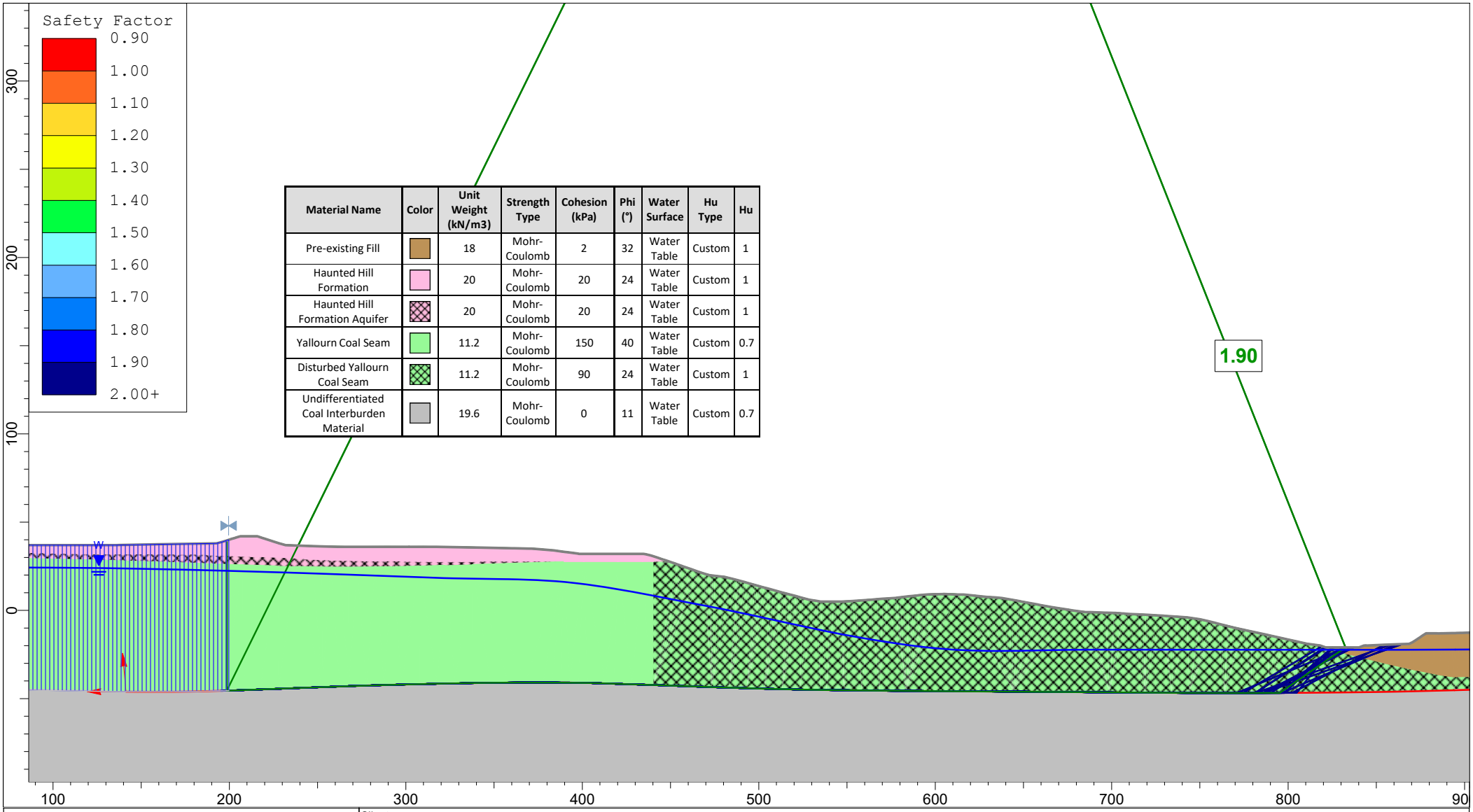
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



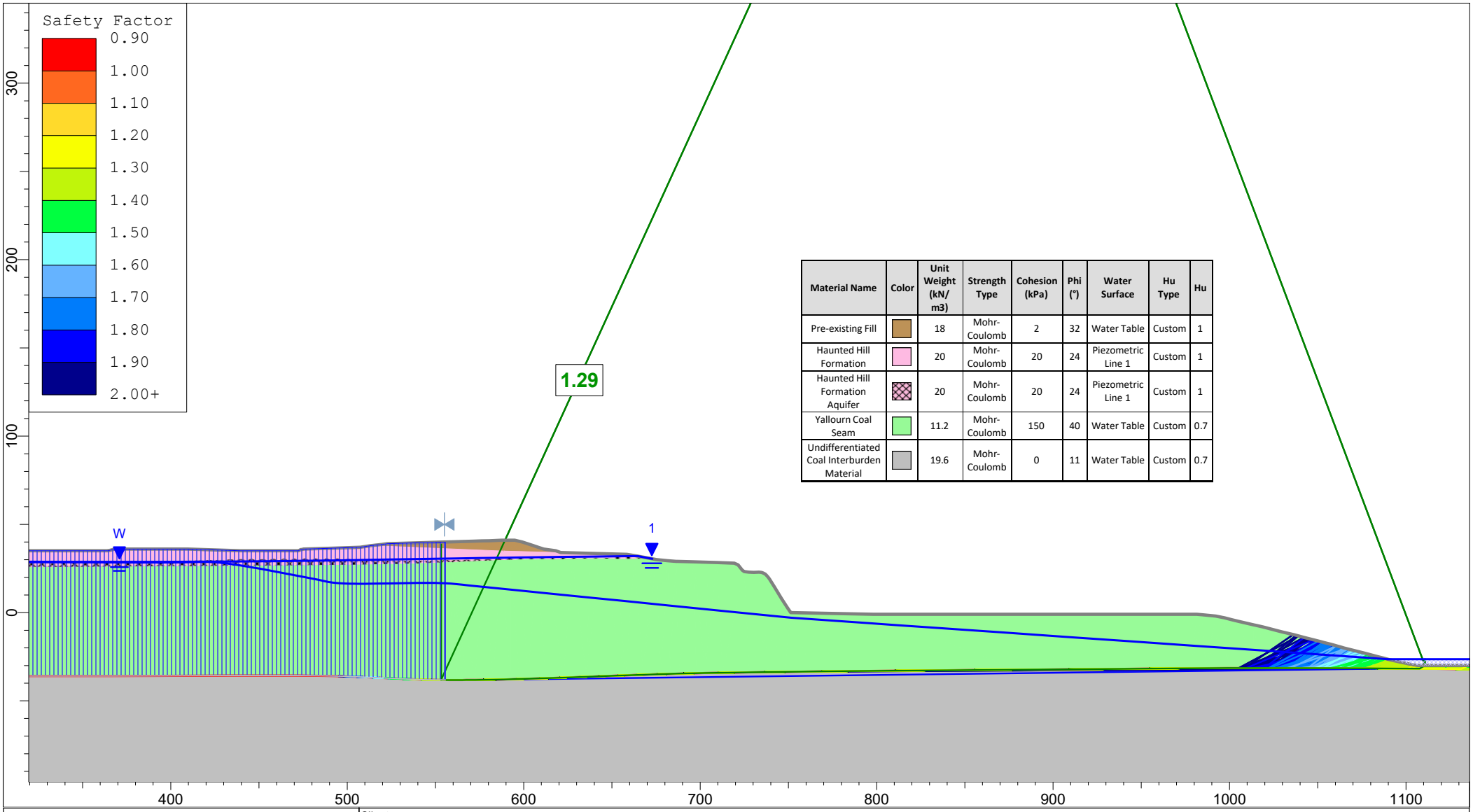
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



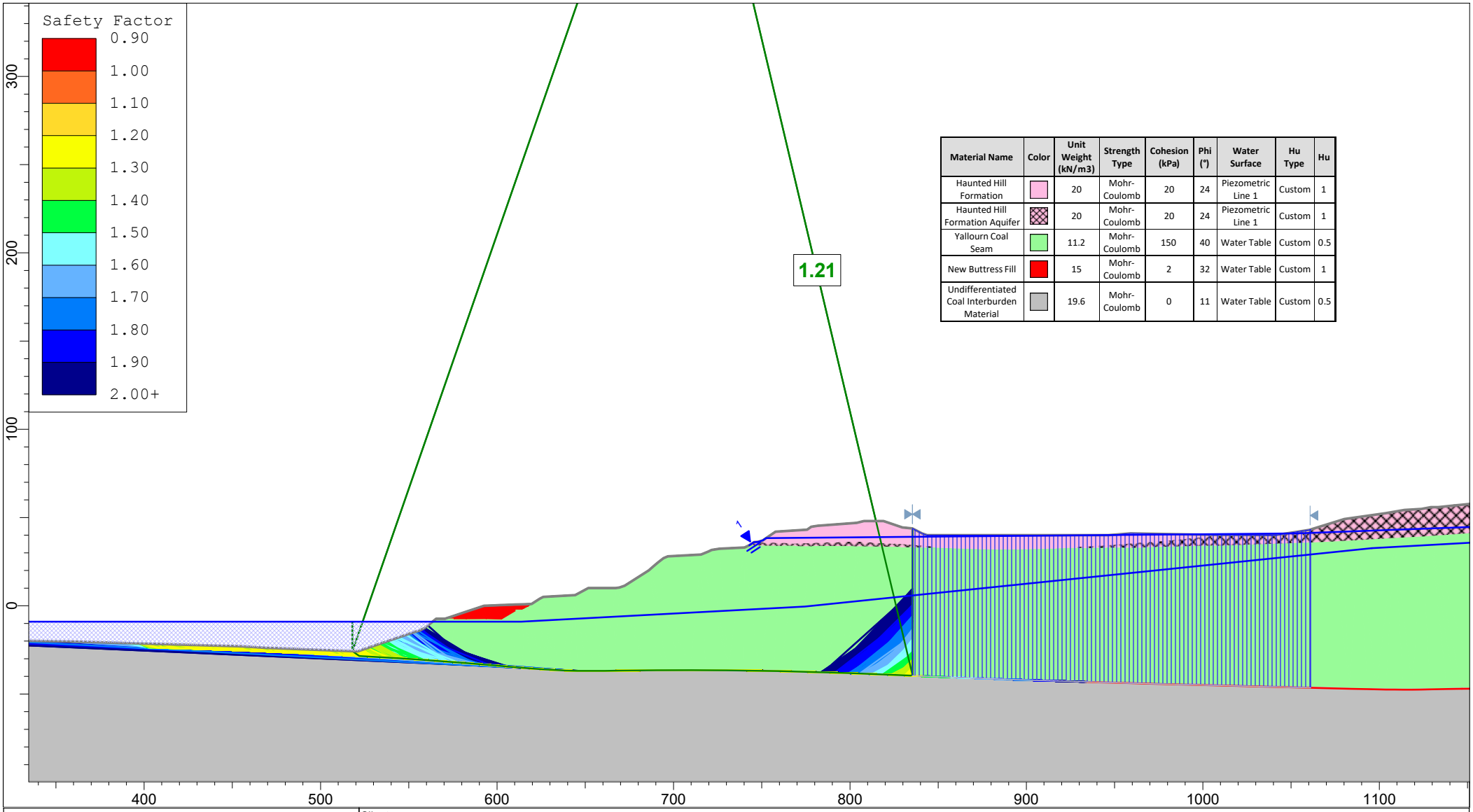
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



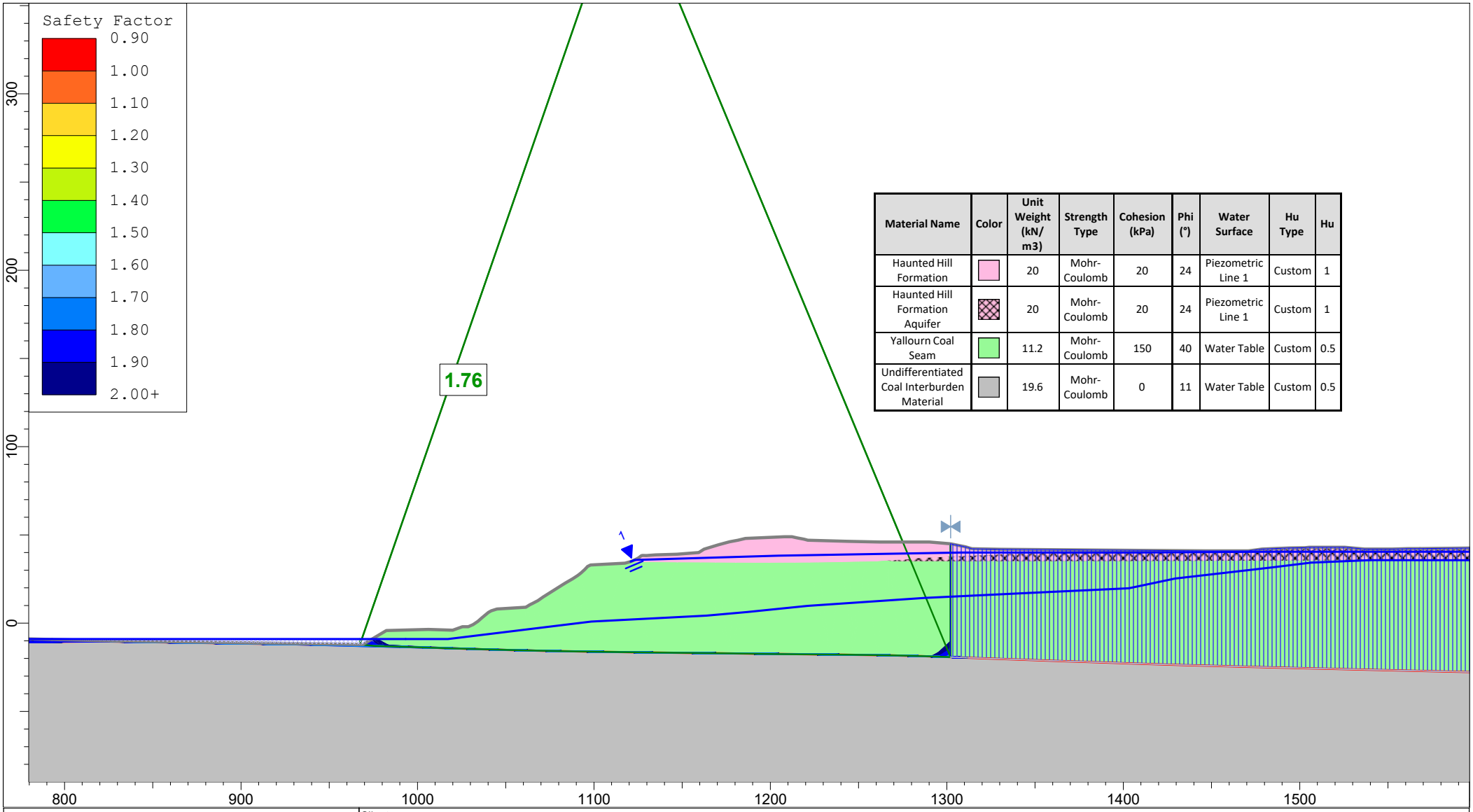
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



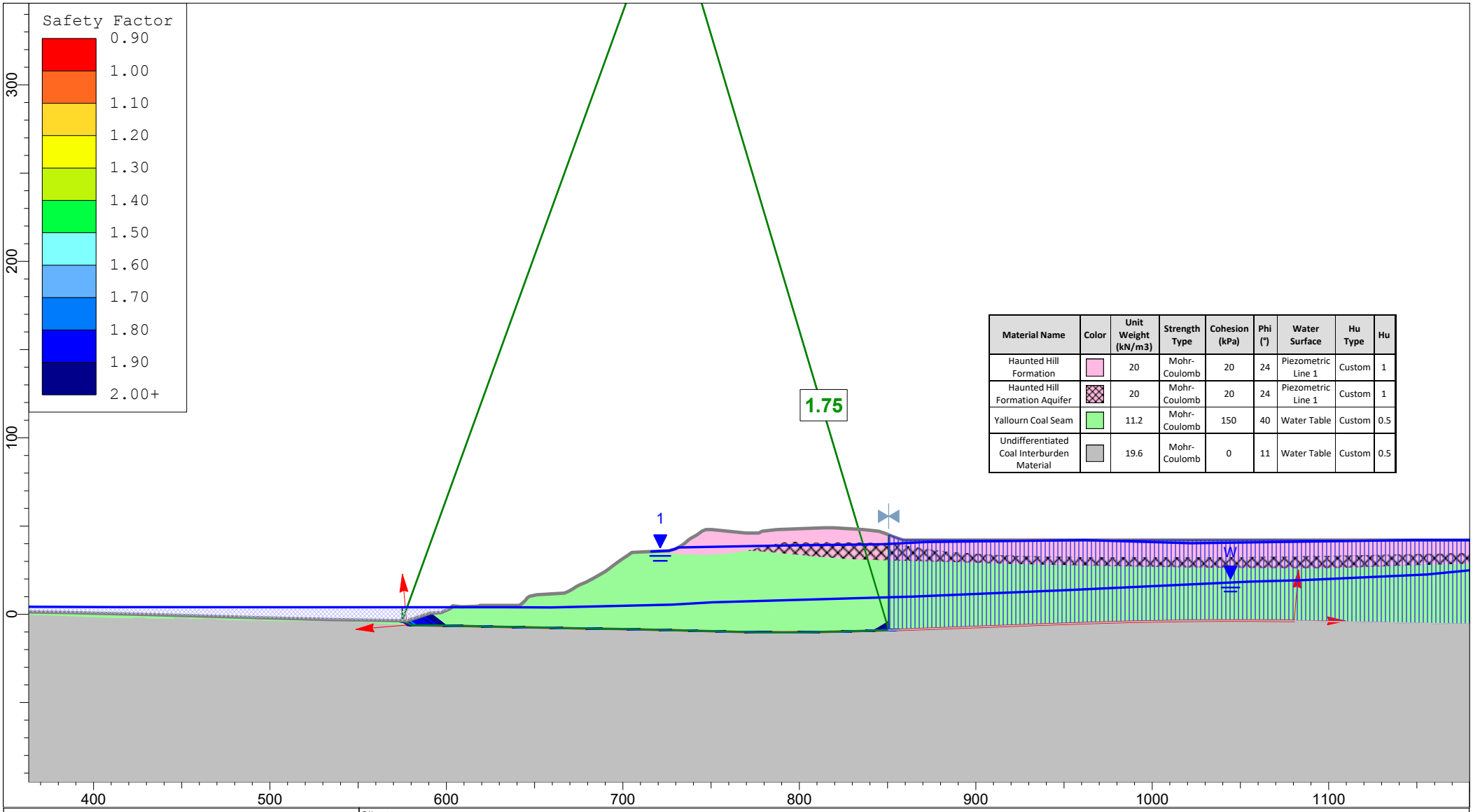
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



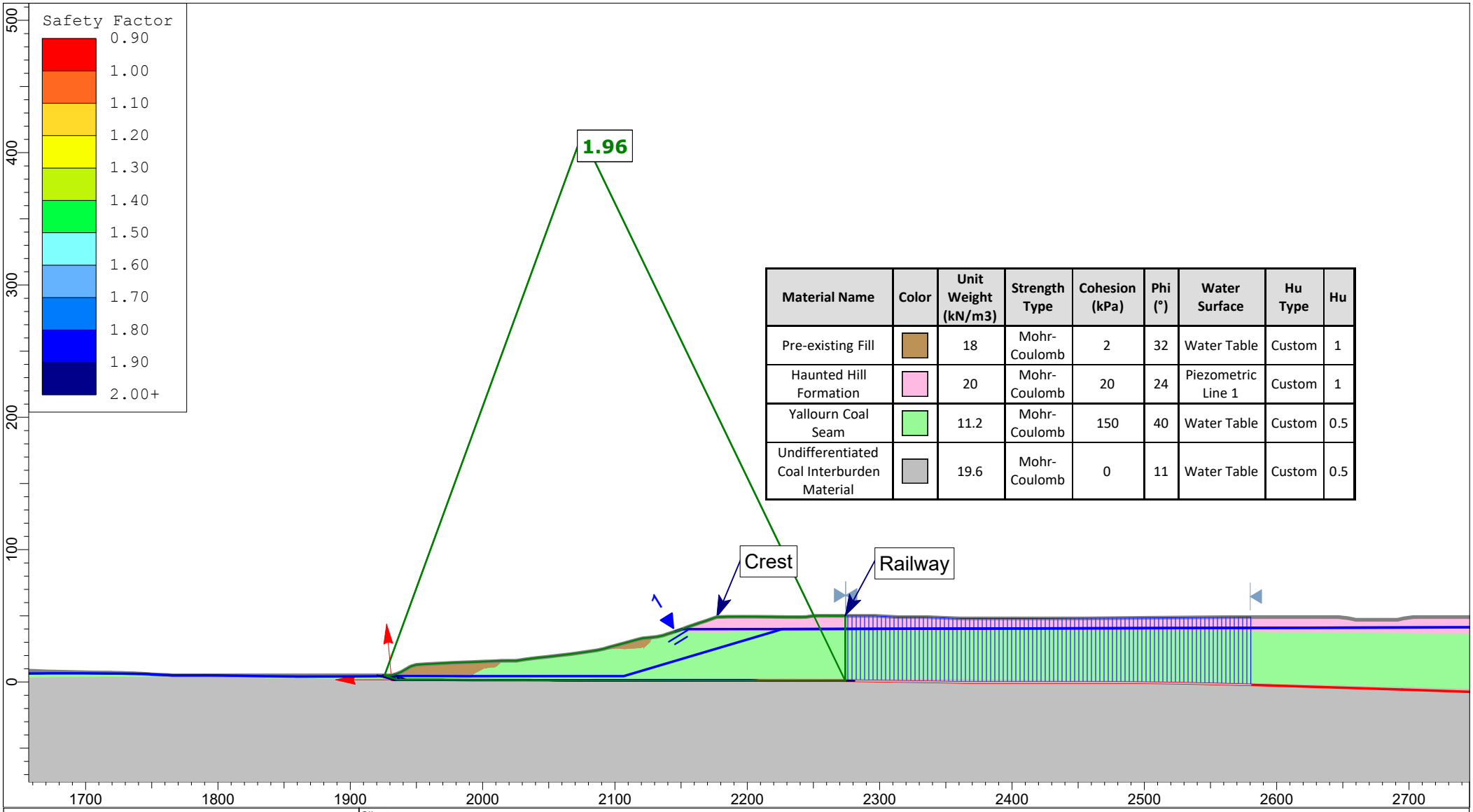
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



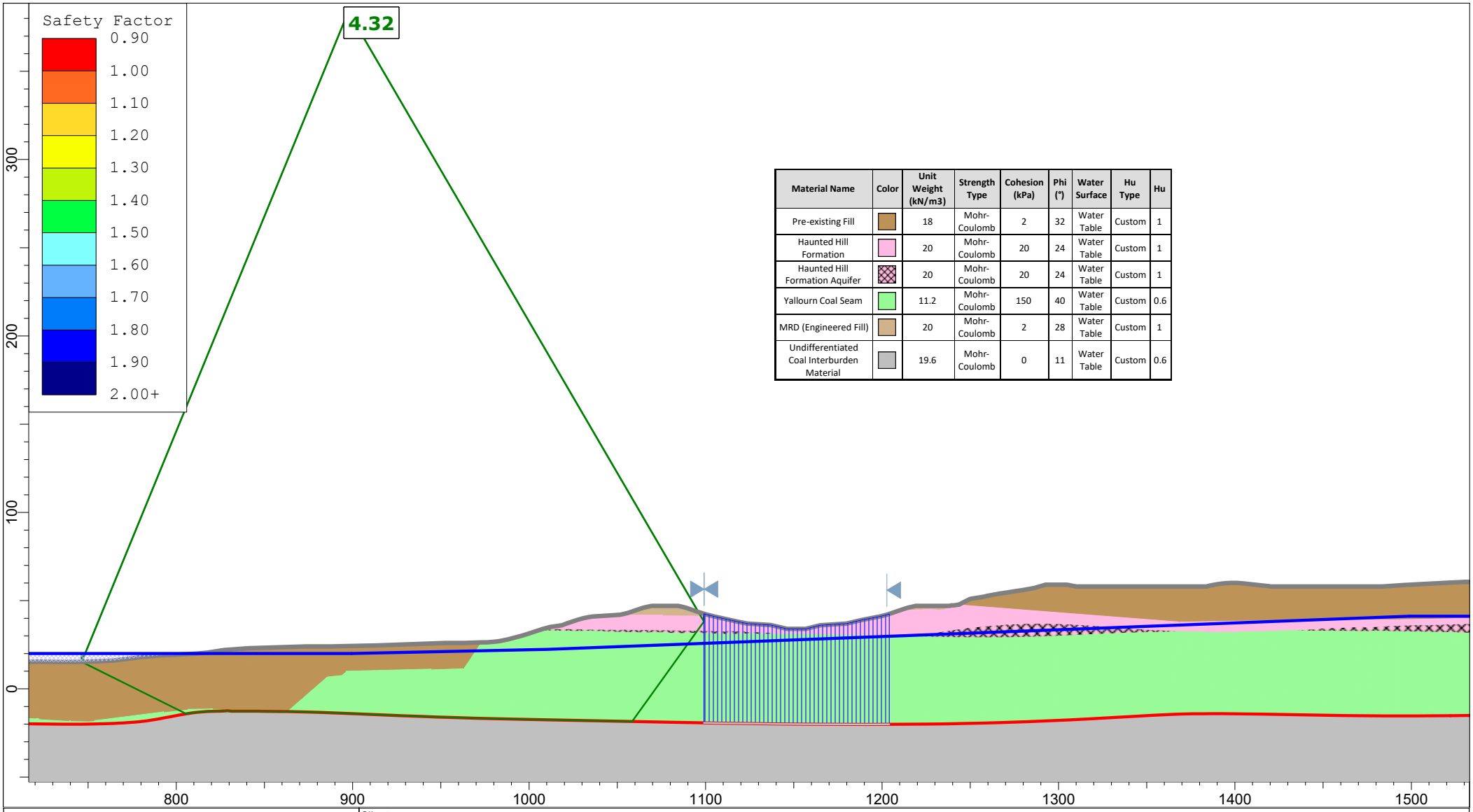
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



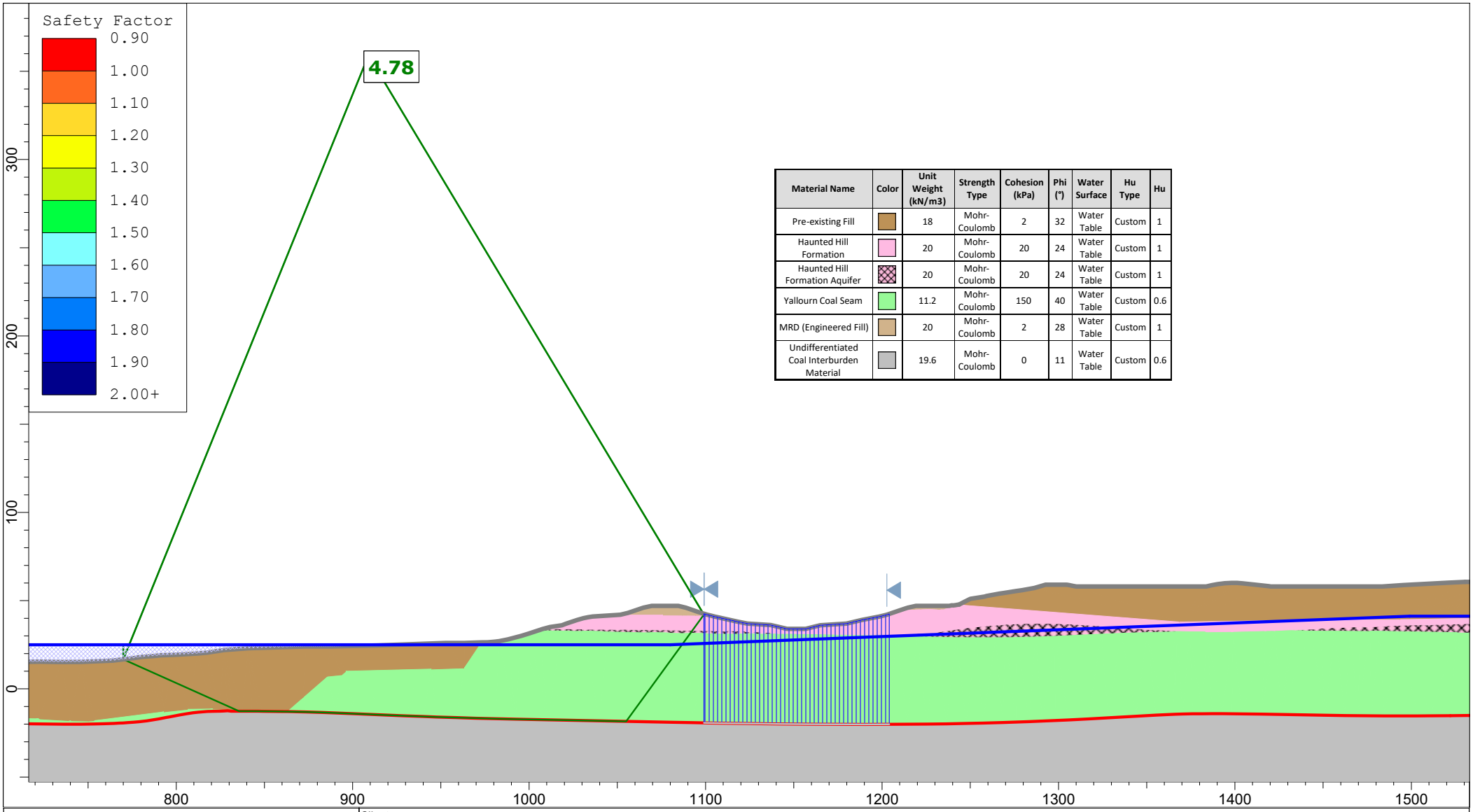
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



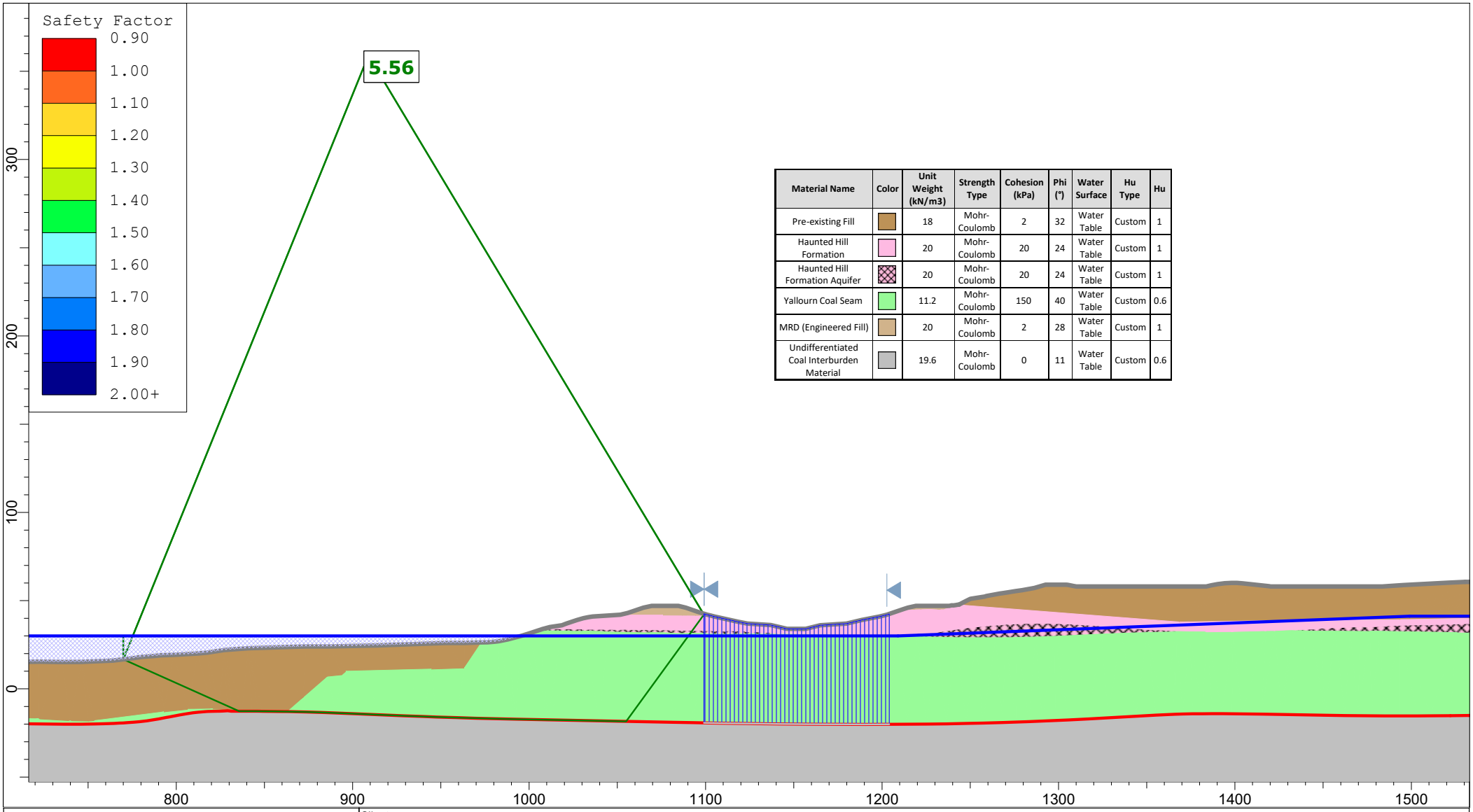
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



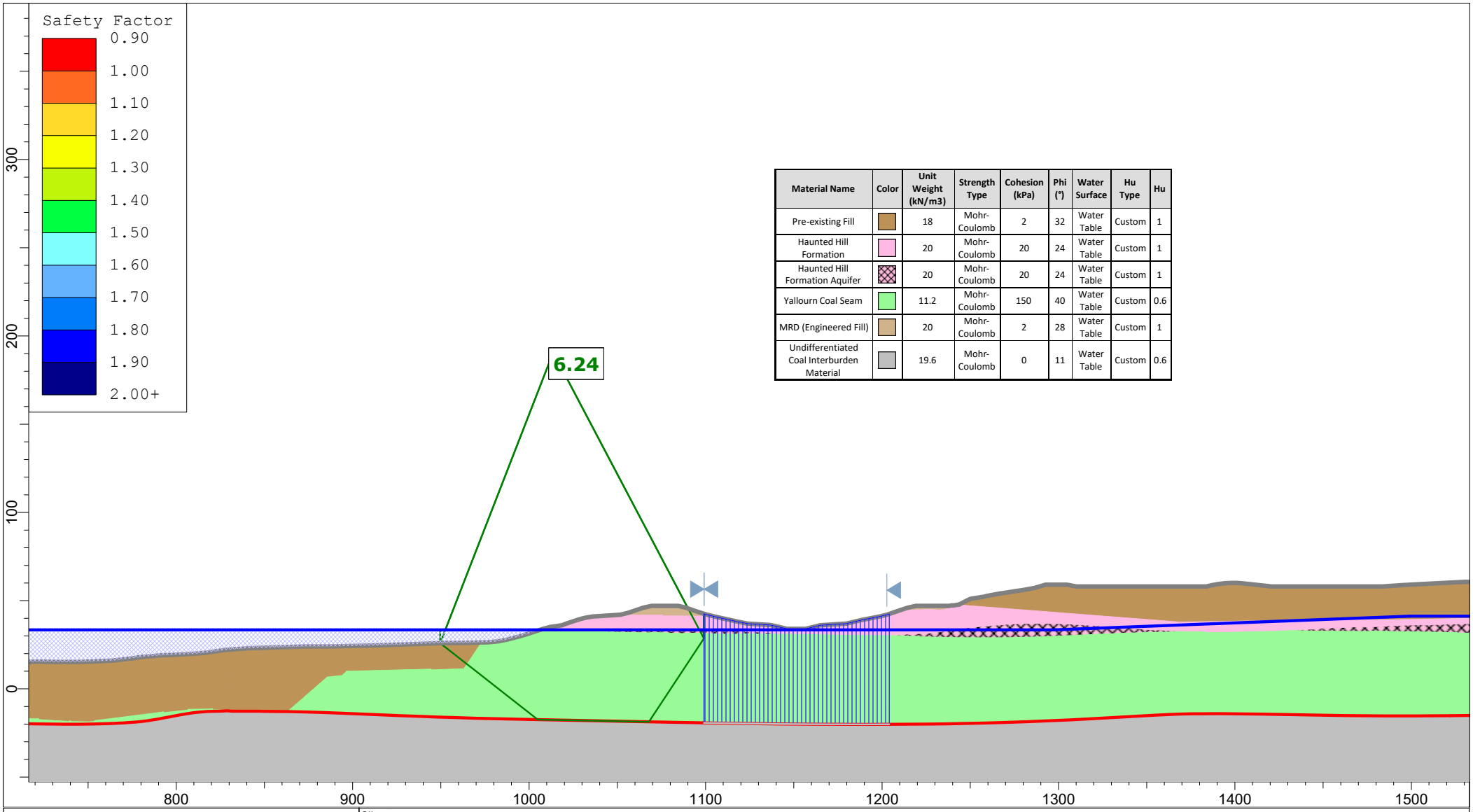
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



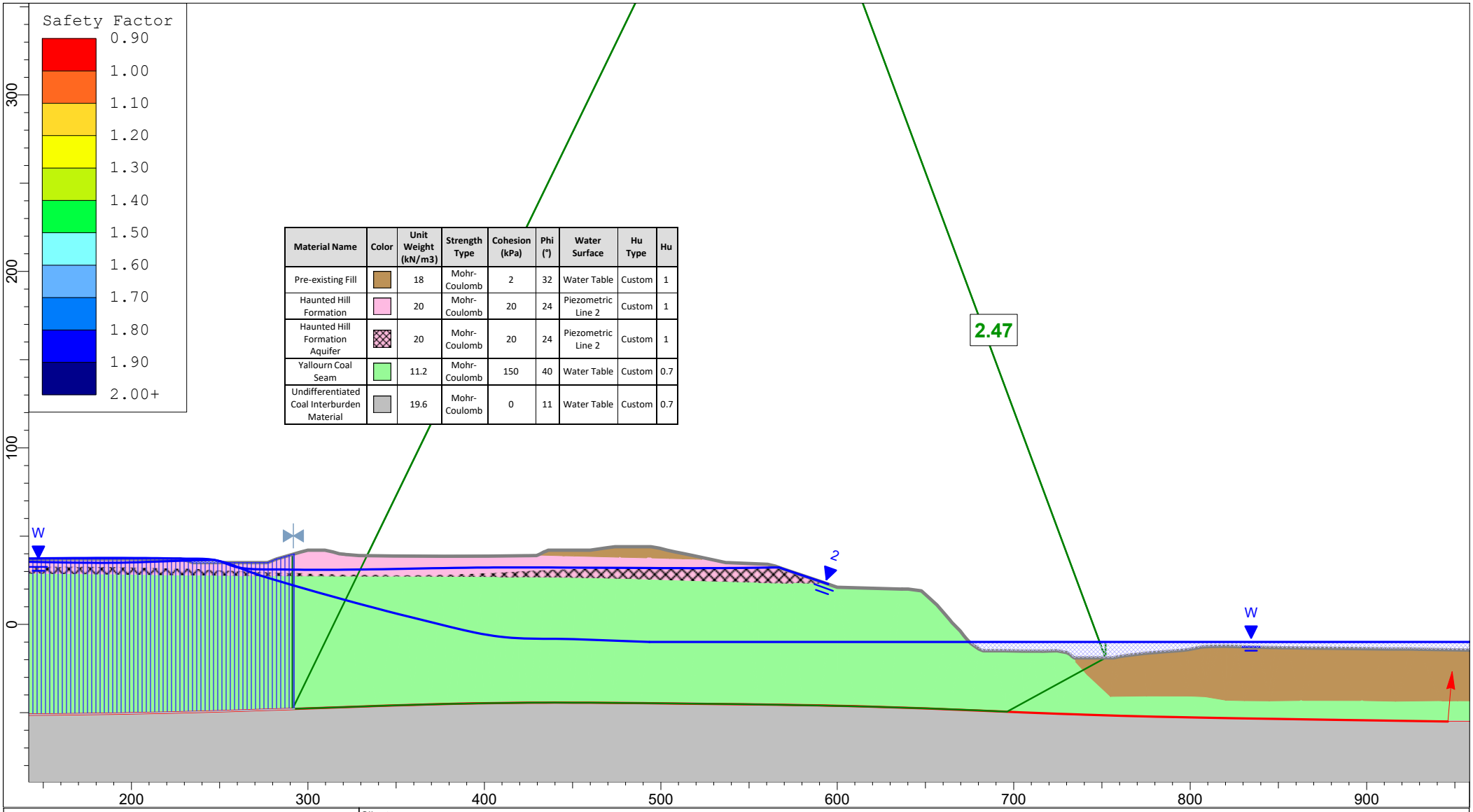
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 30 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



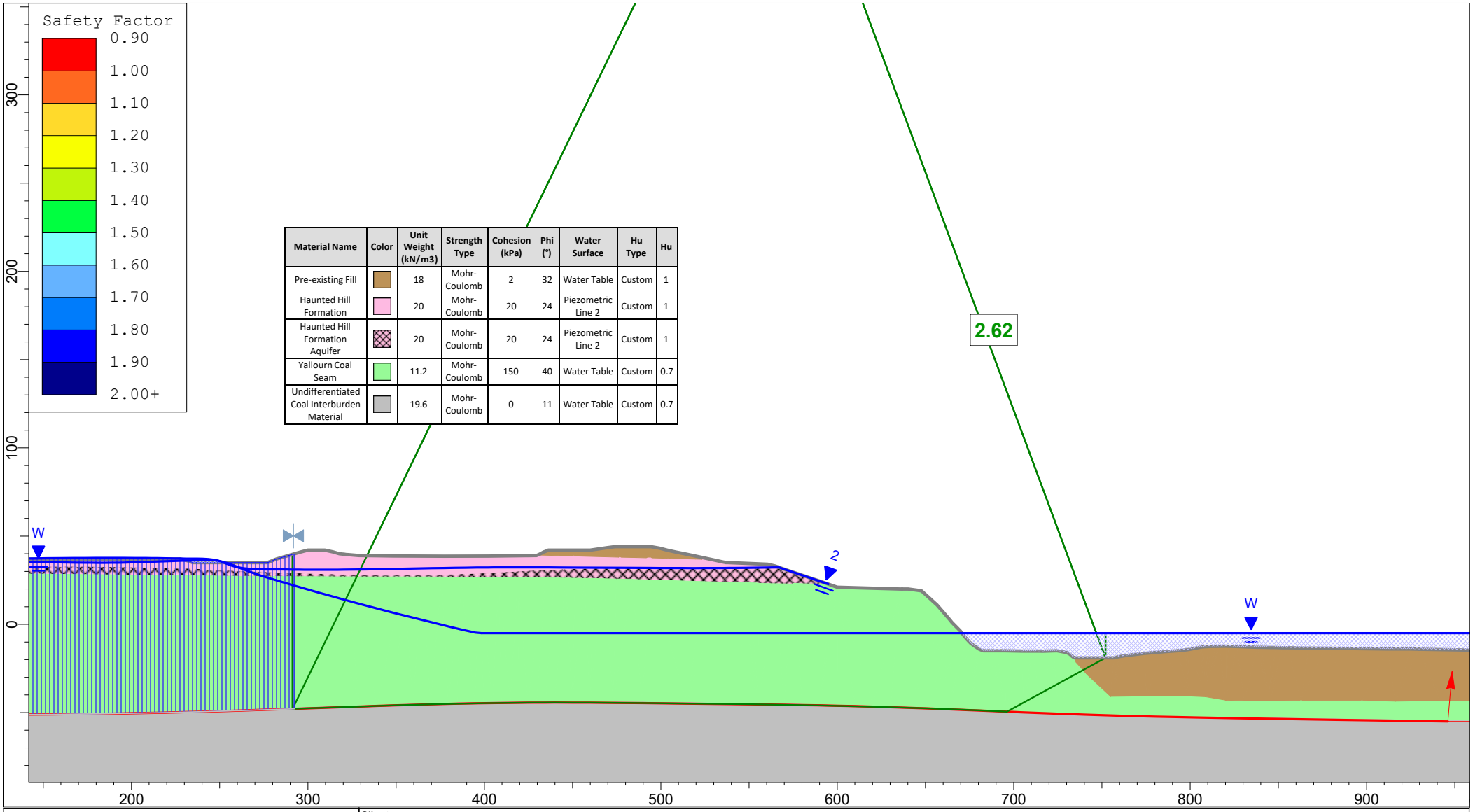
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



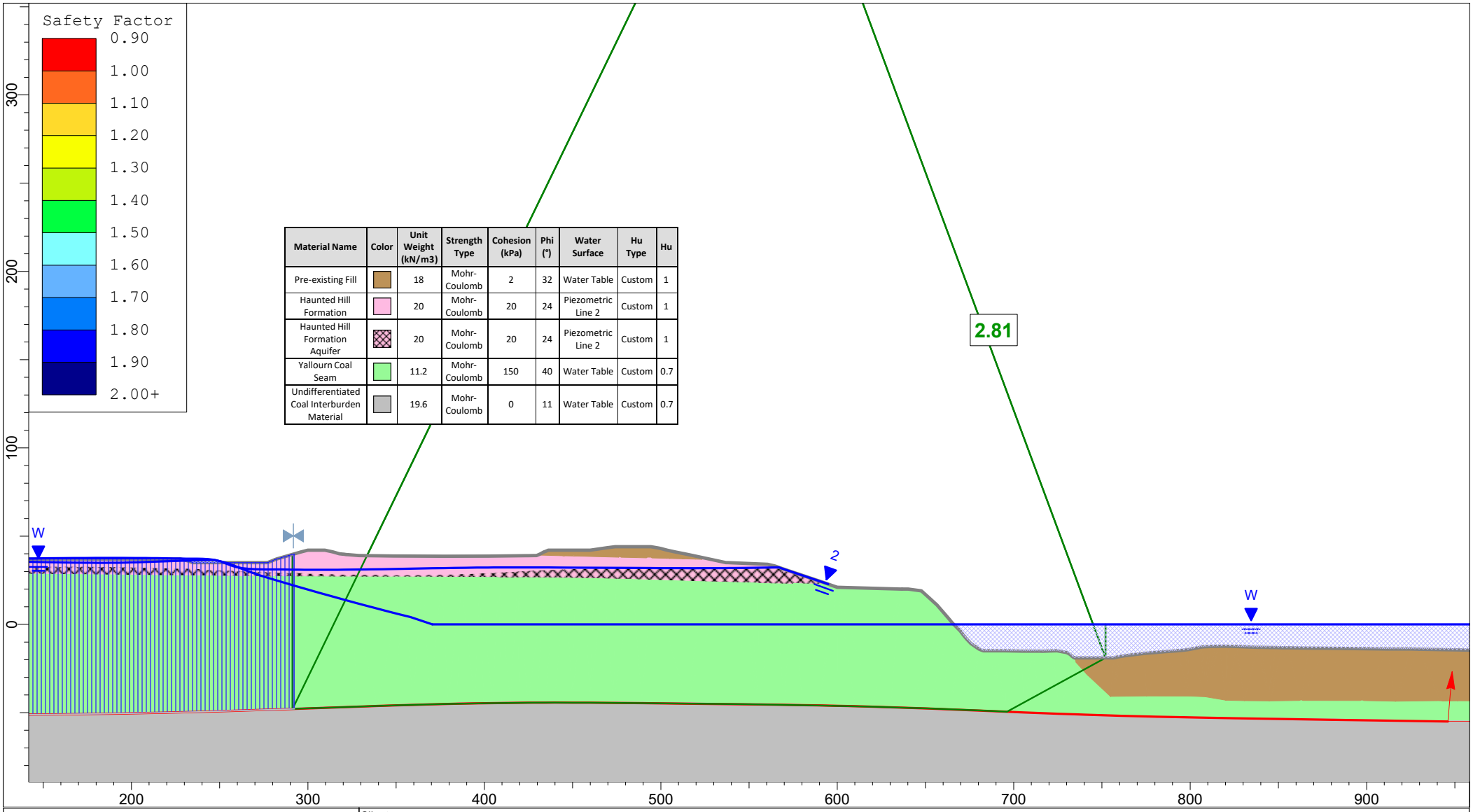
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



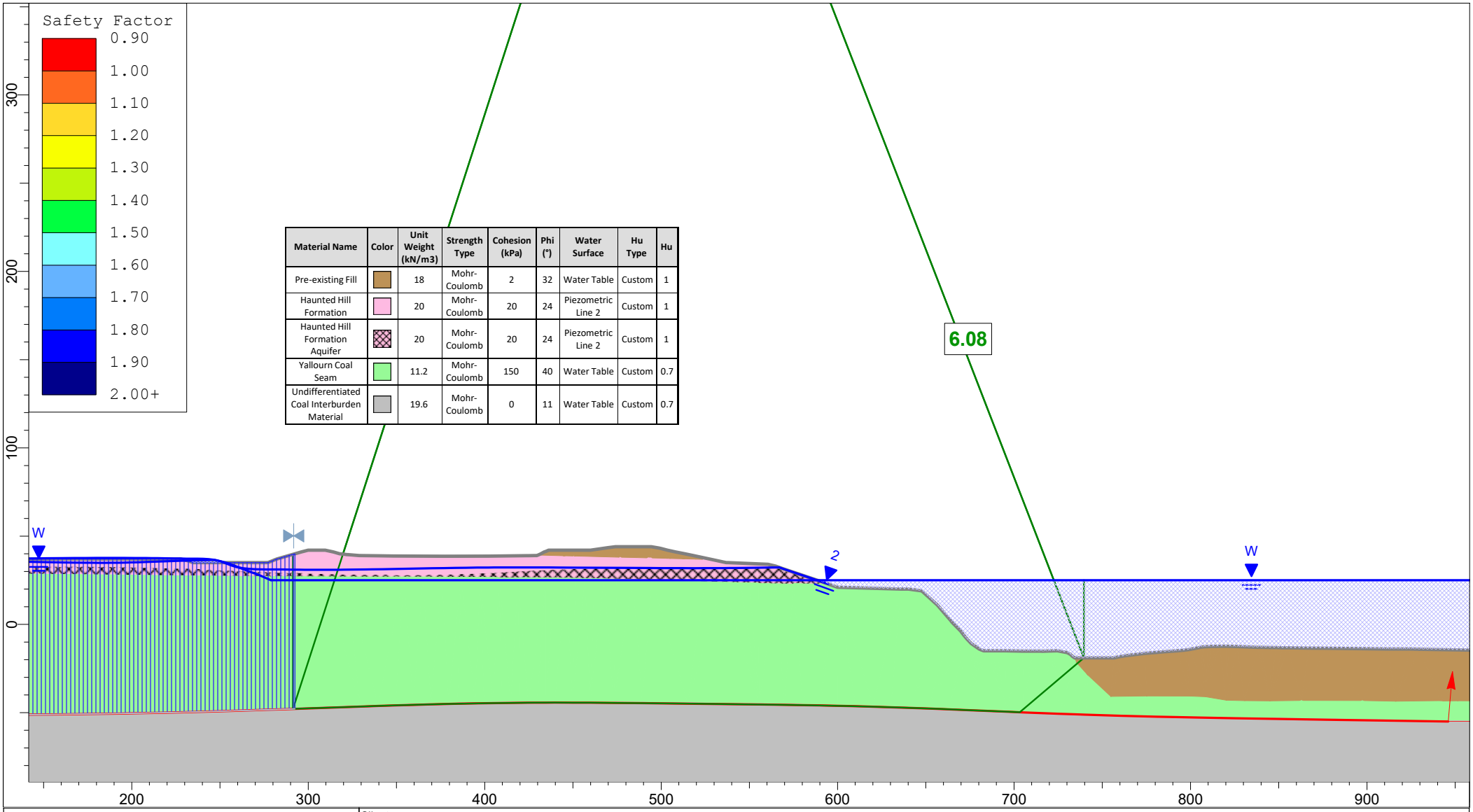
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



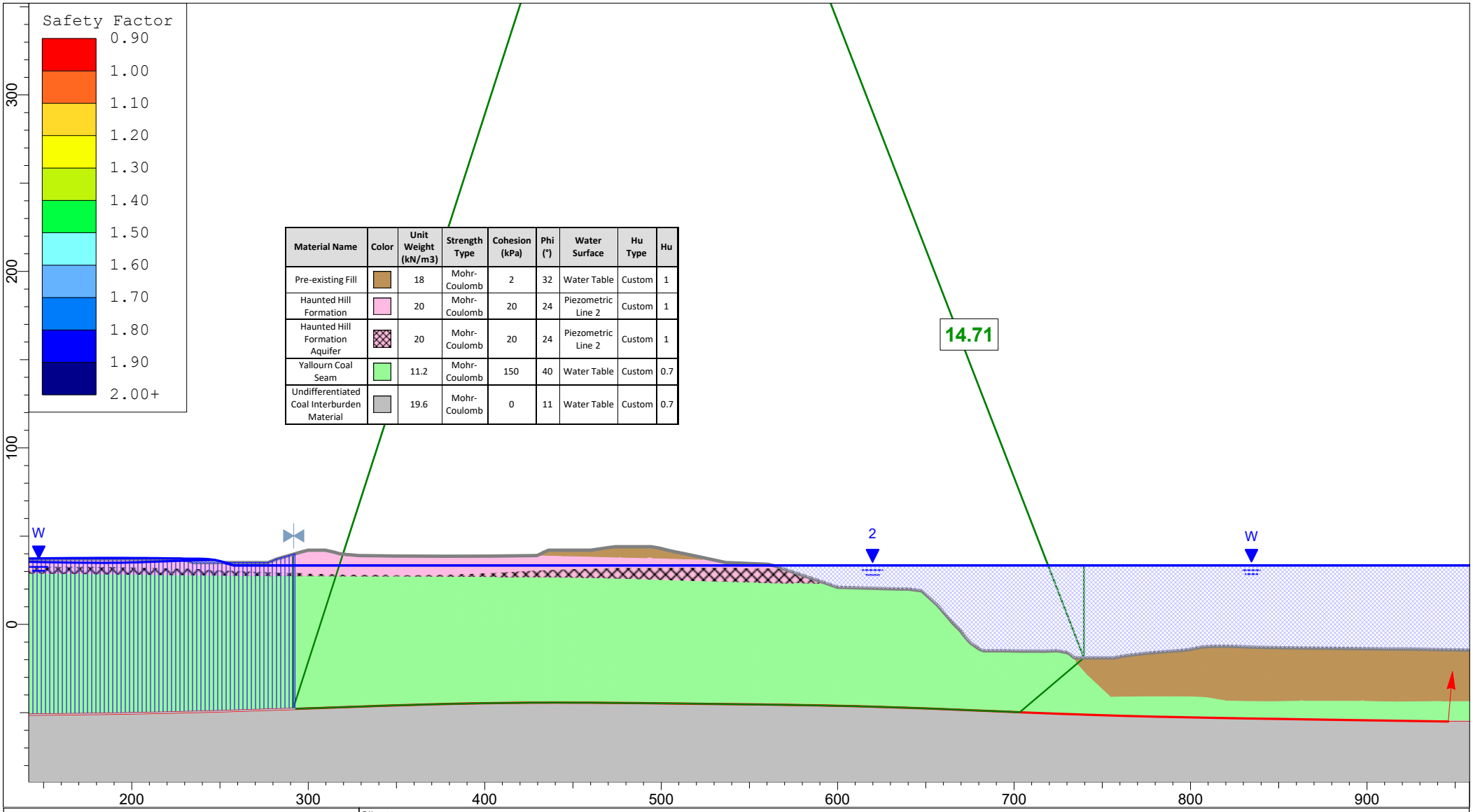
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



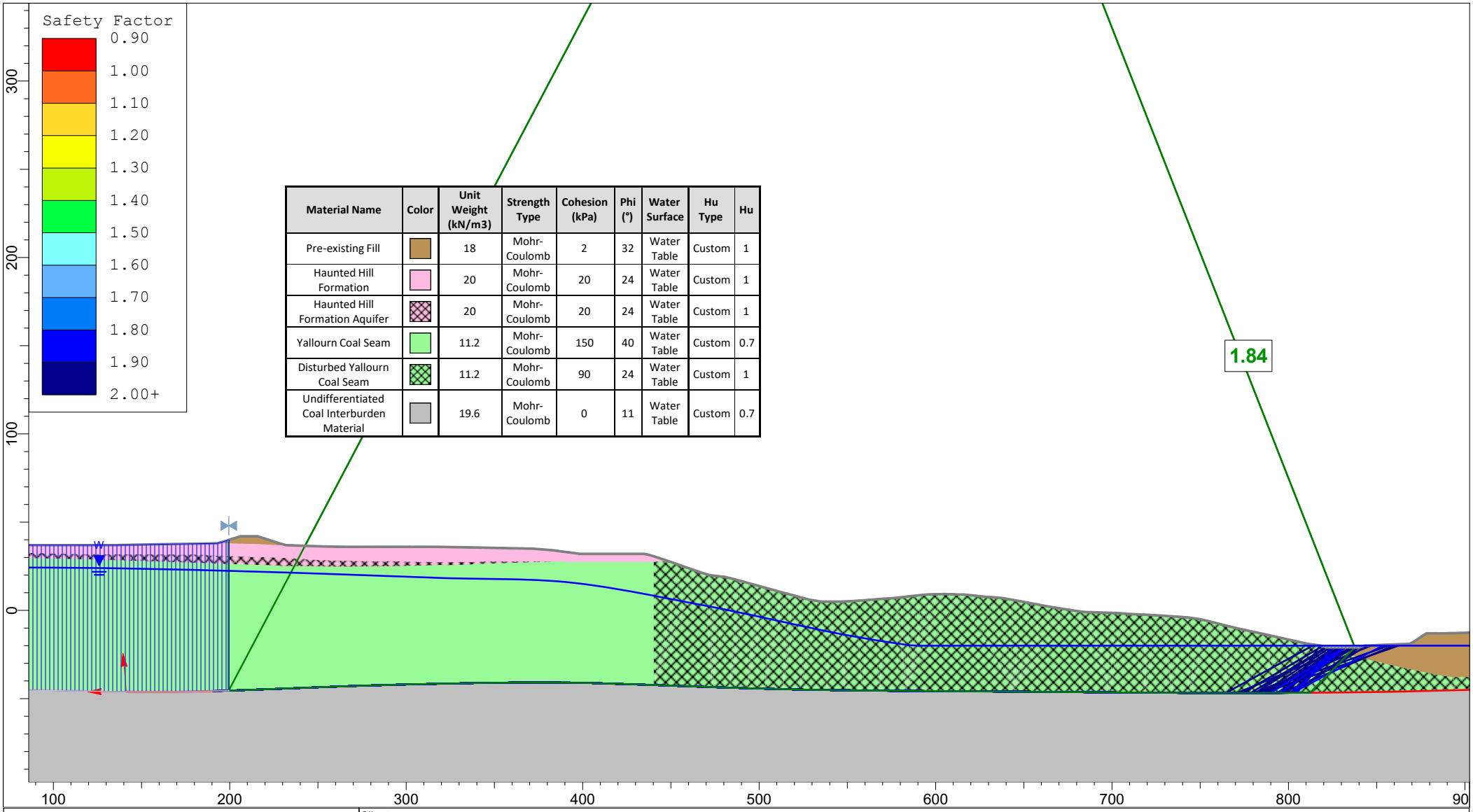
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



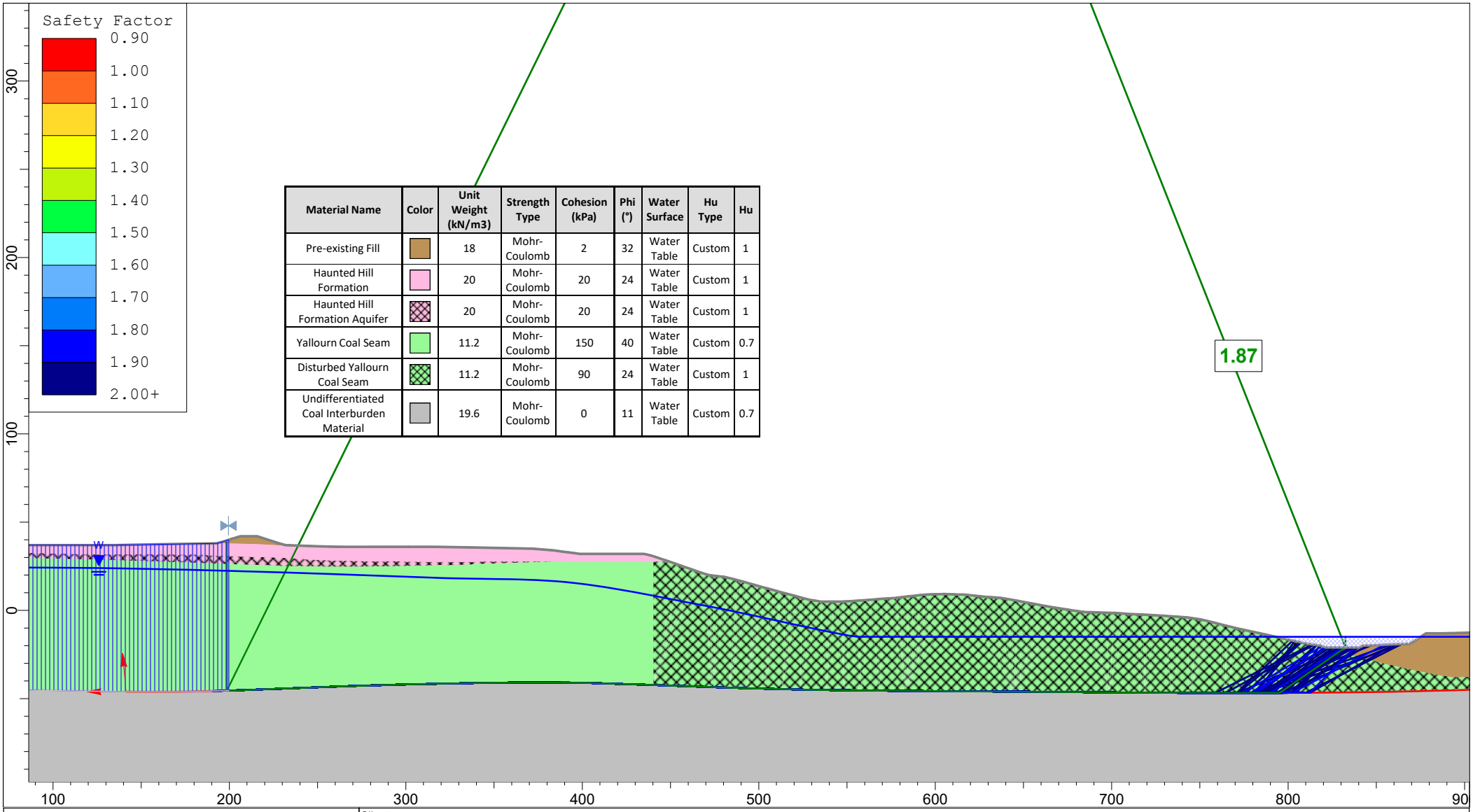
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



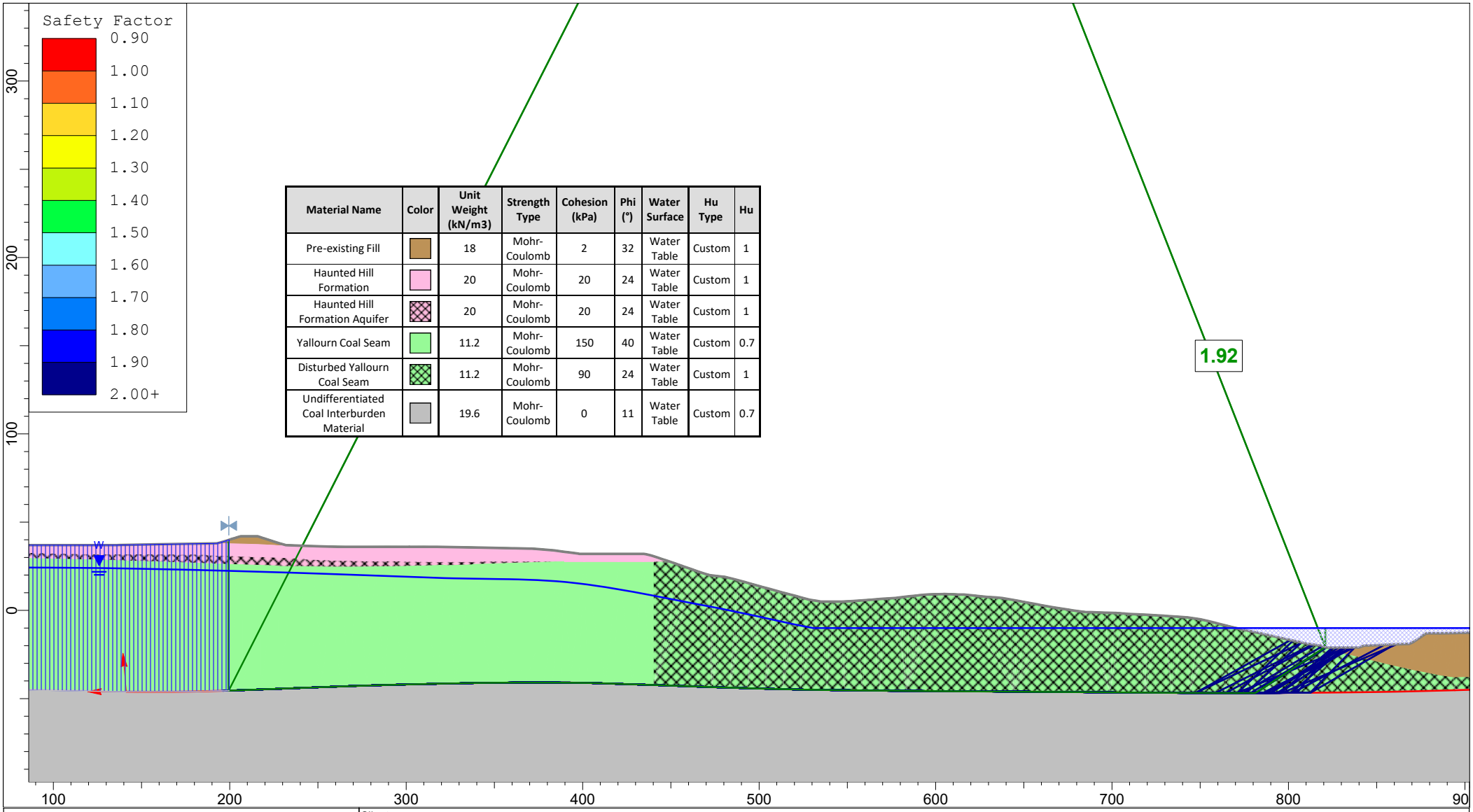
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



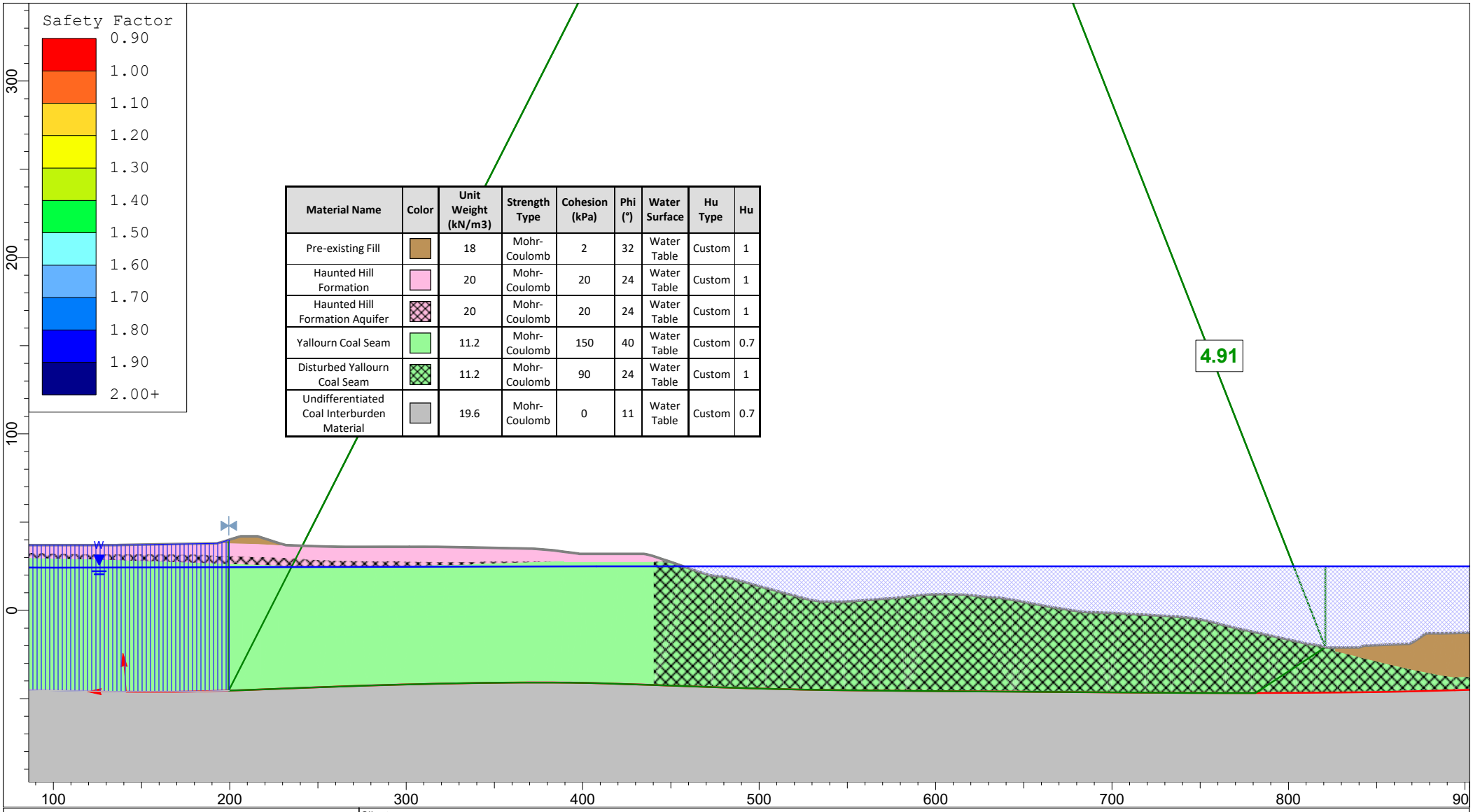
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -15 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



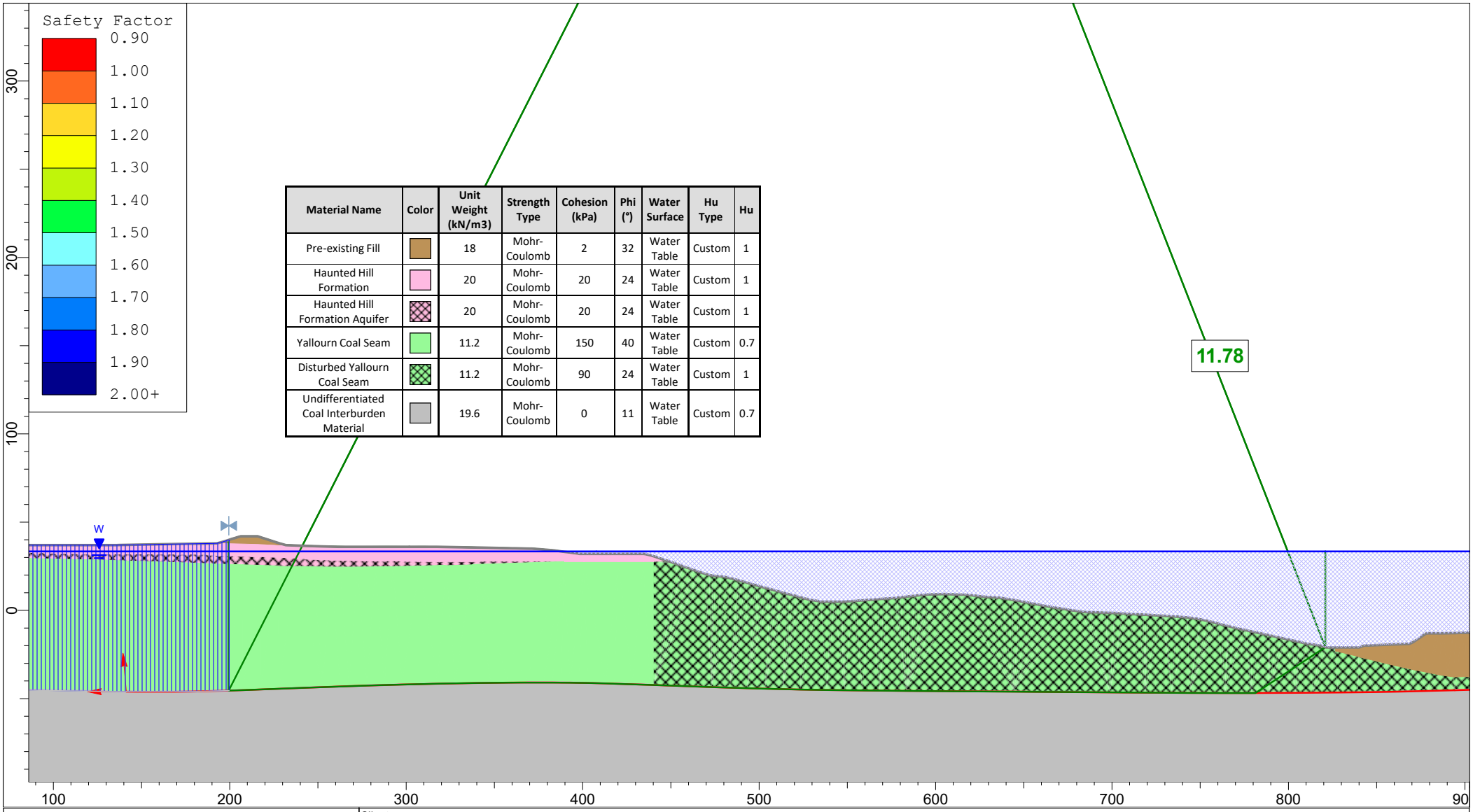
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



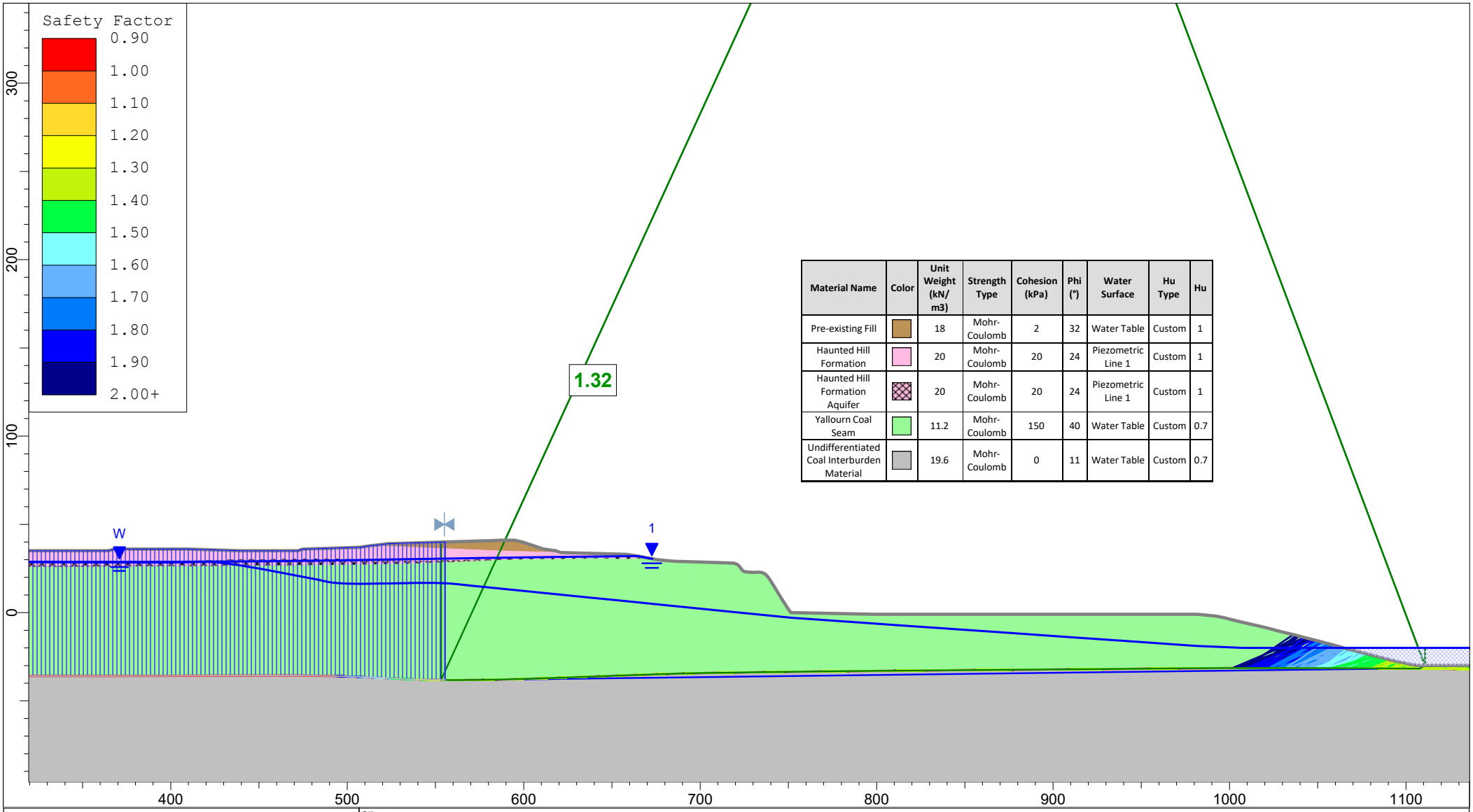
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



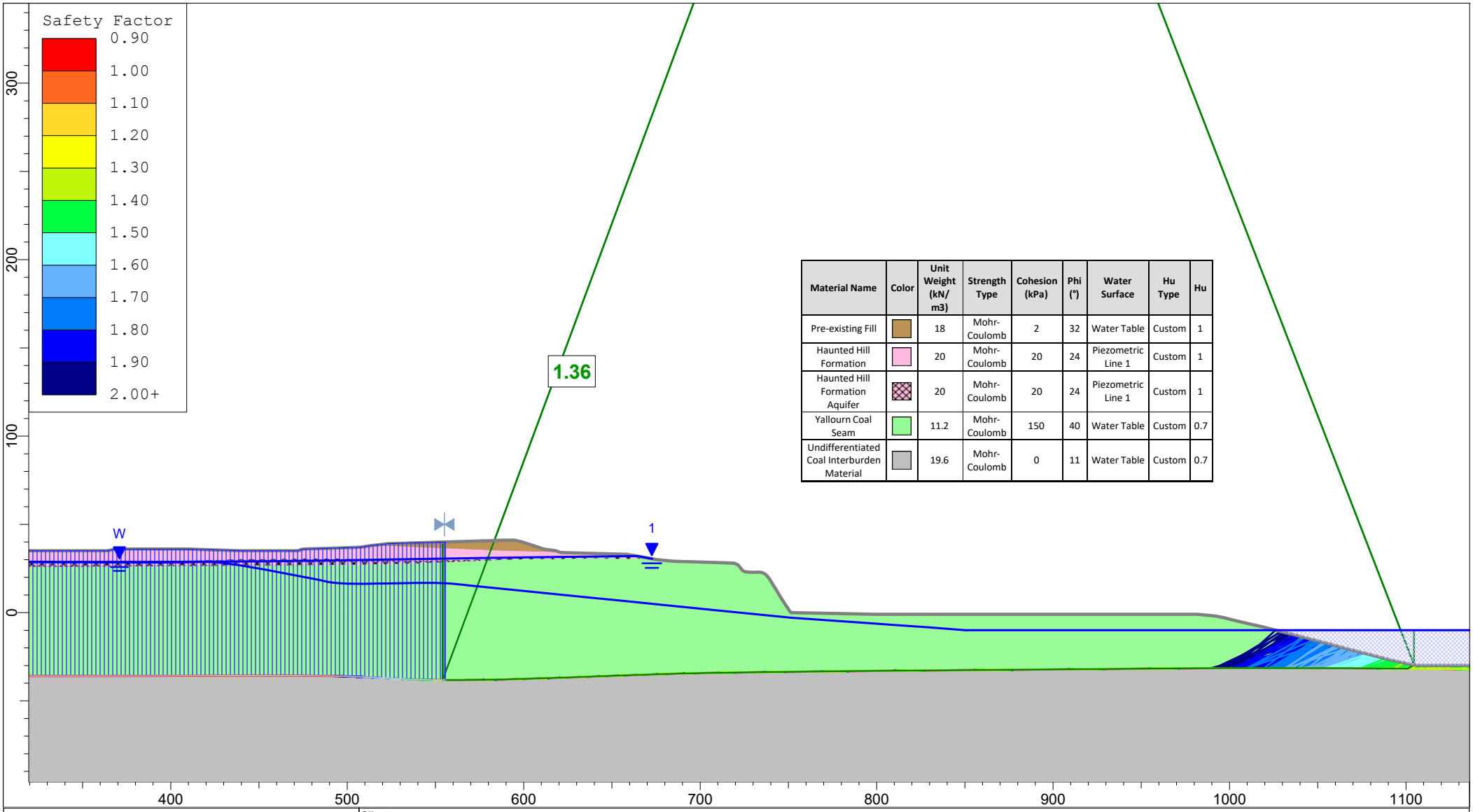
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



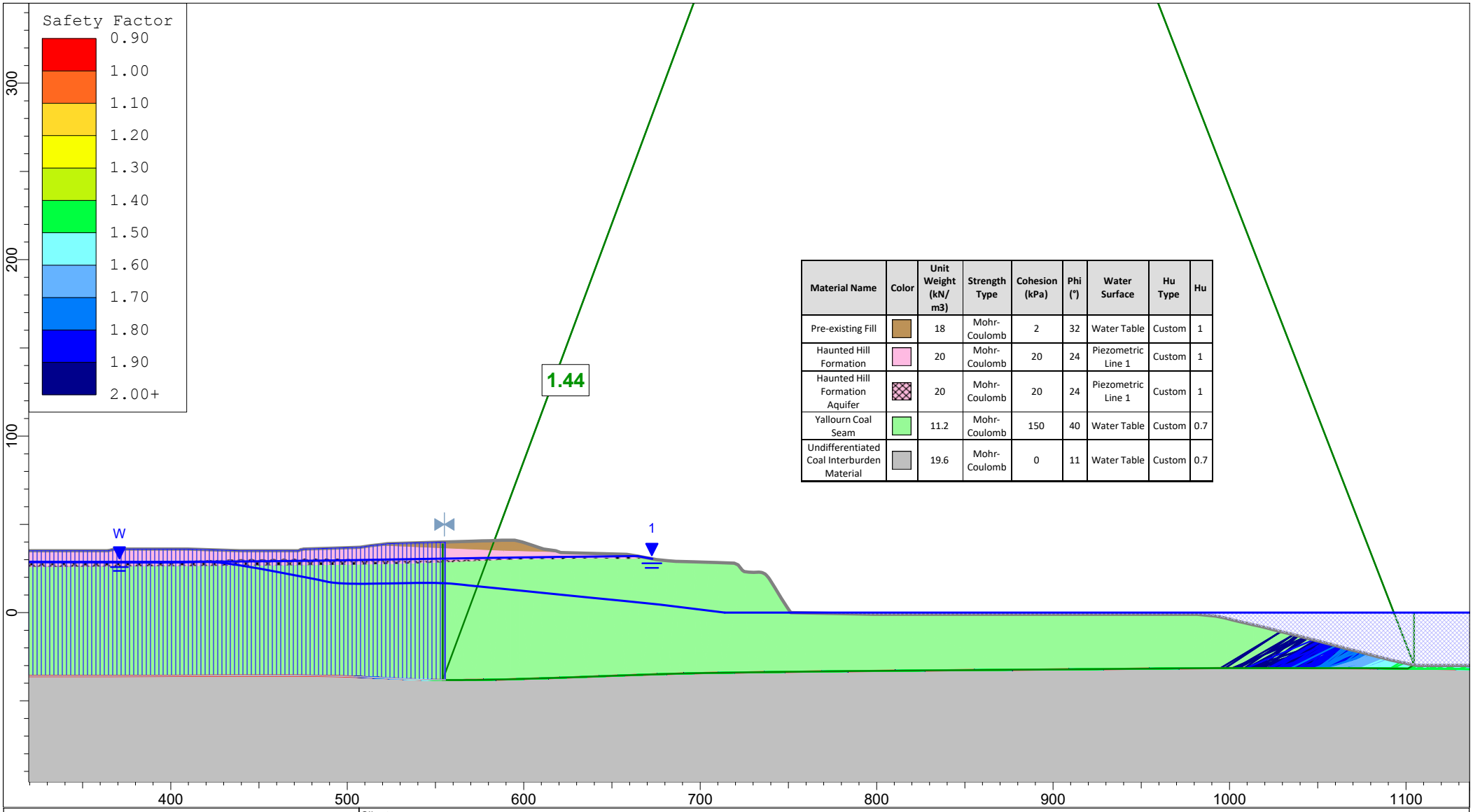
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



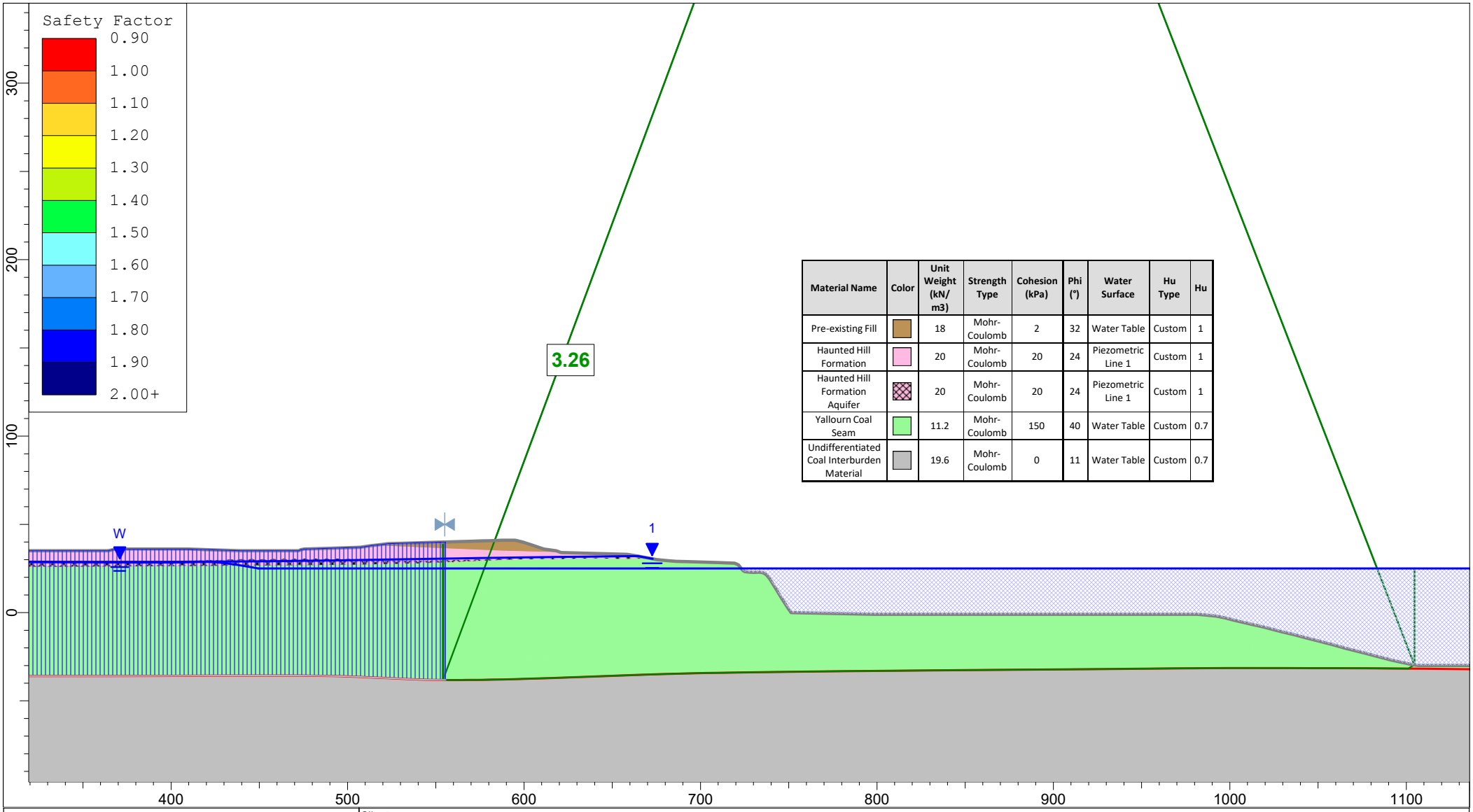
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



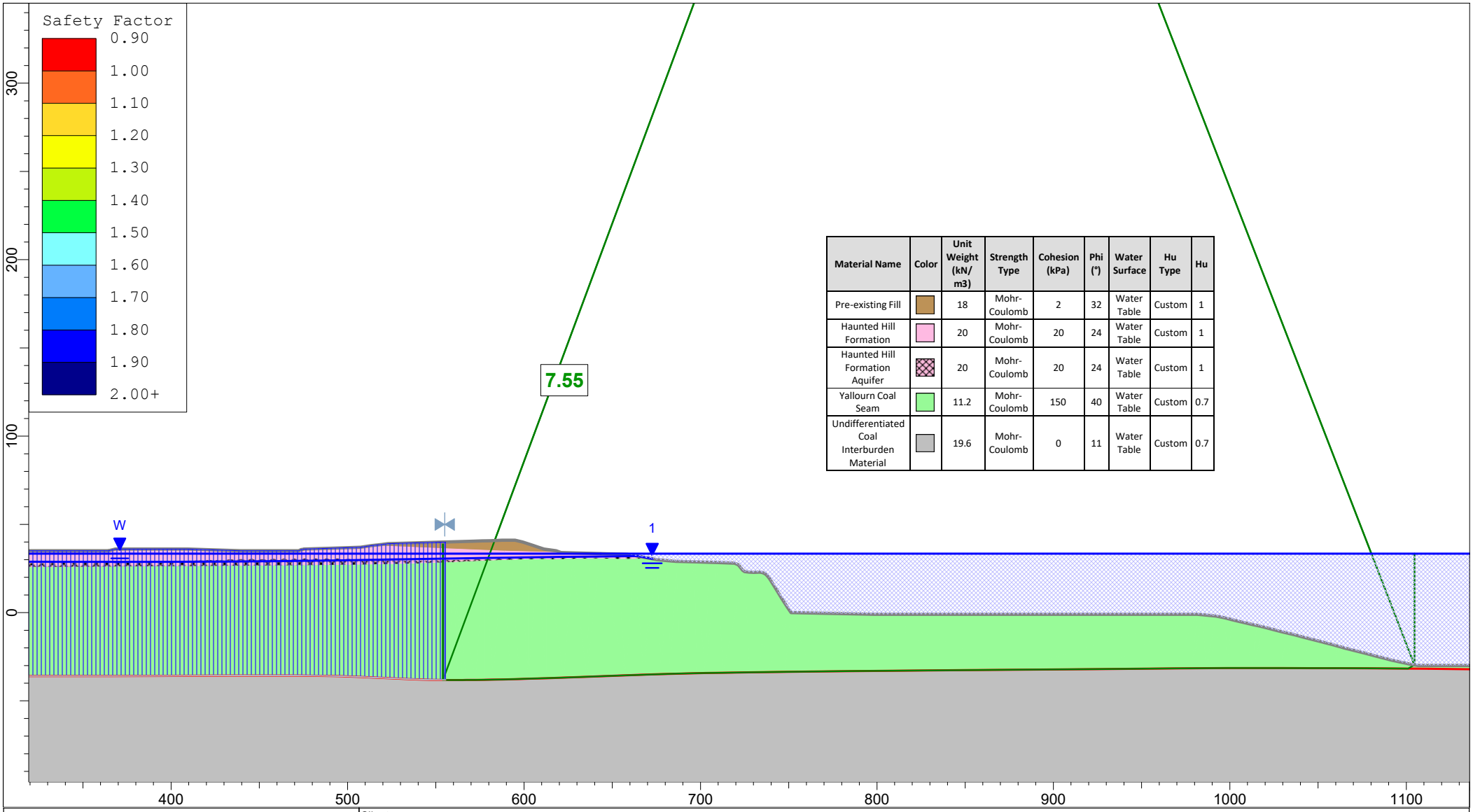
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



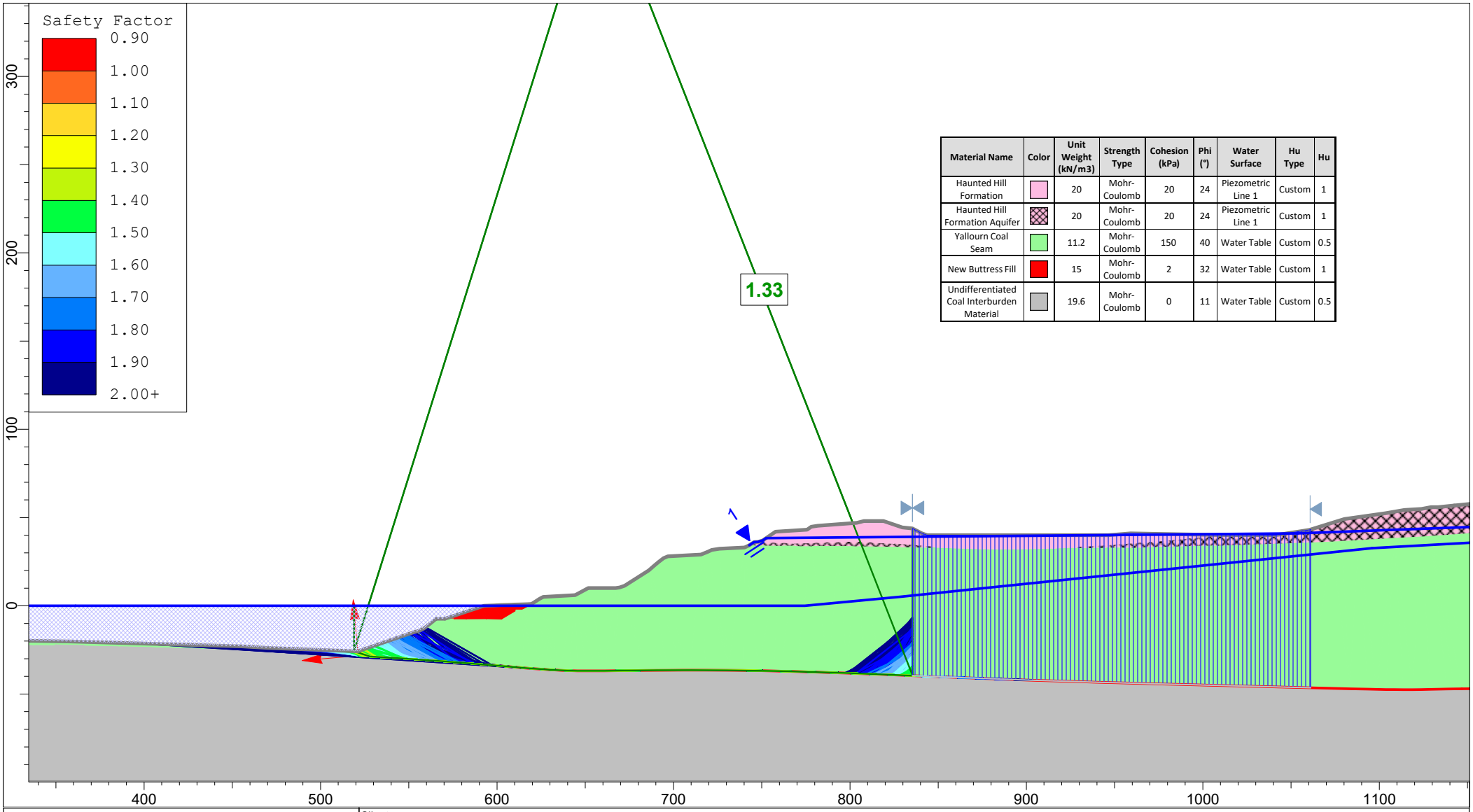
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



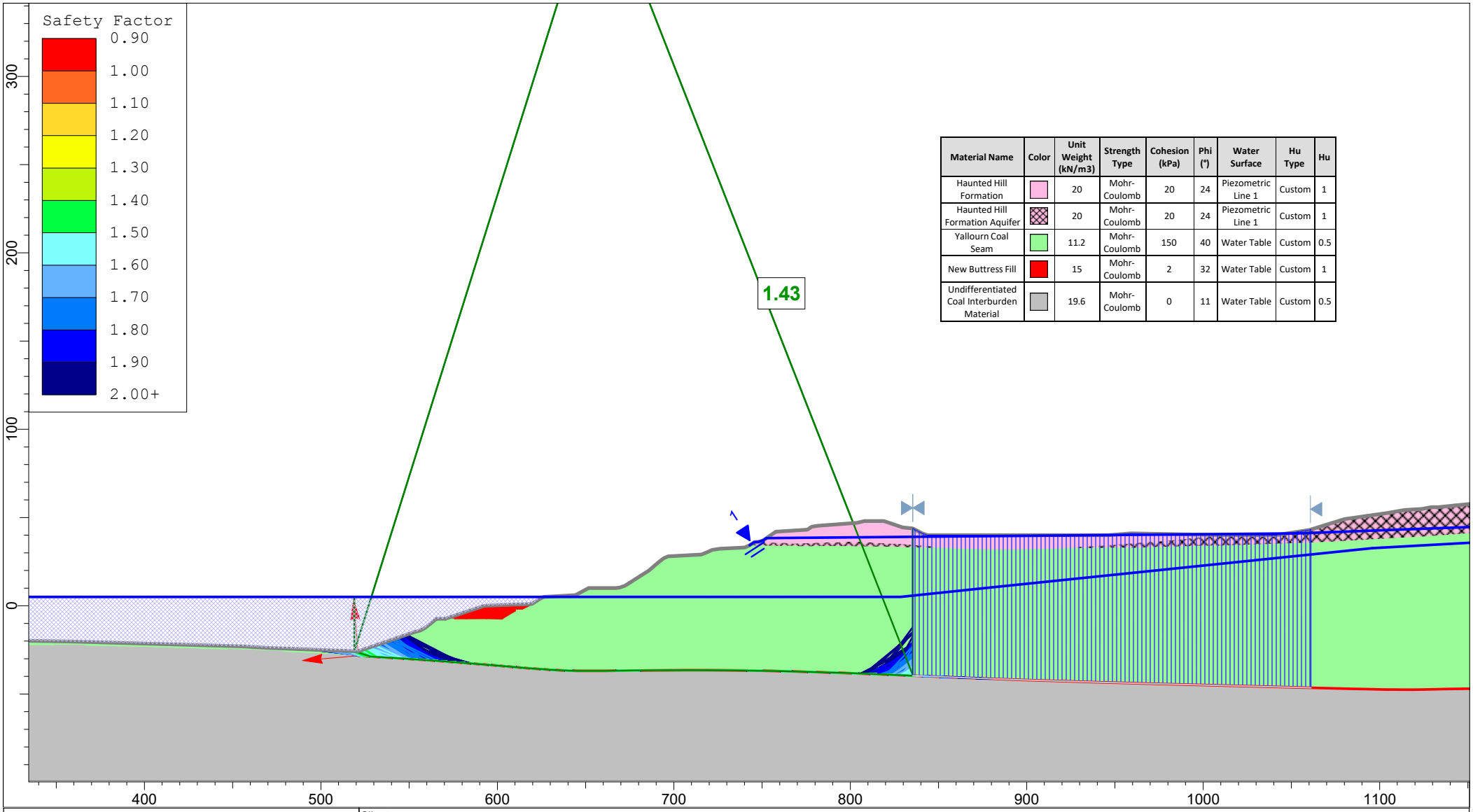
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



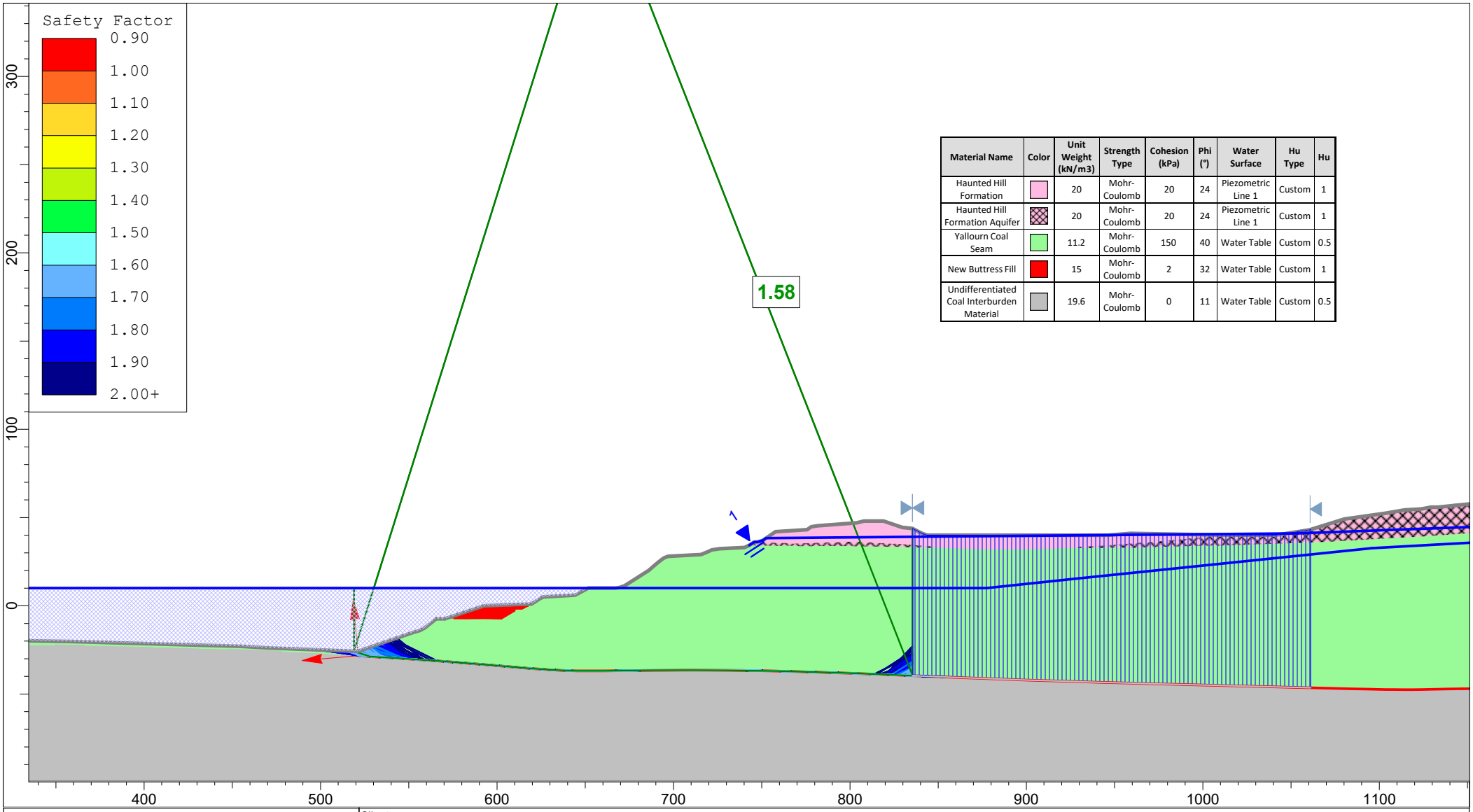
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



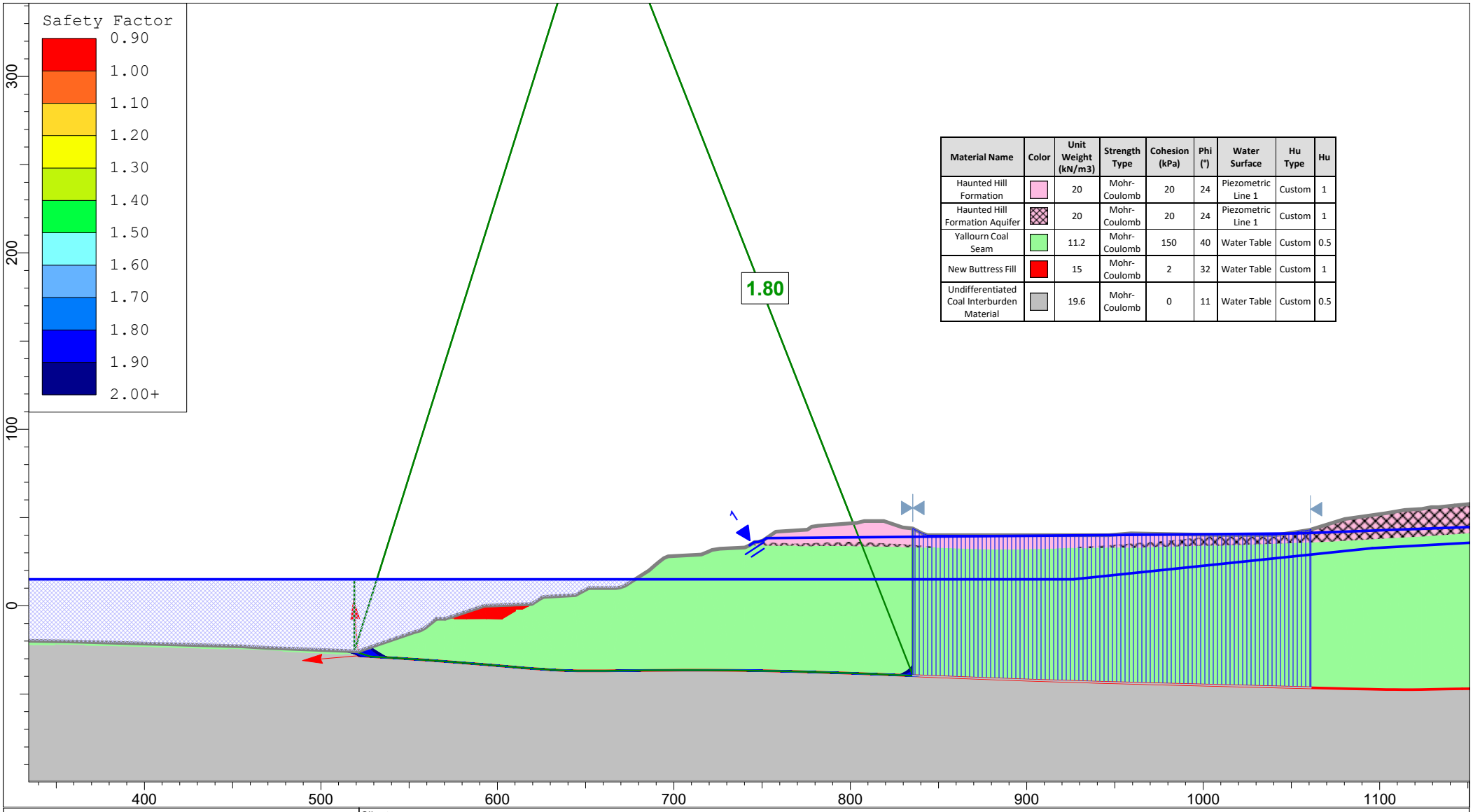
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



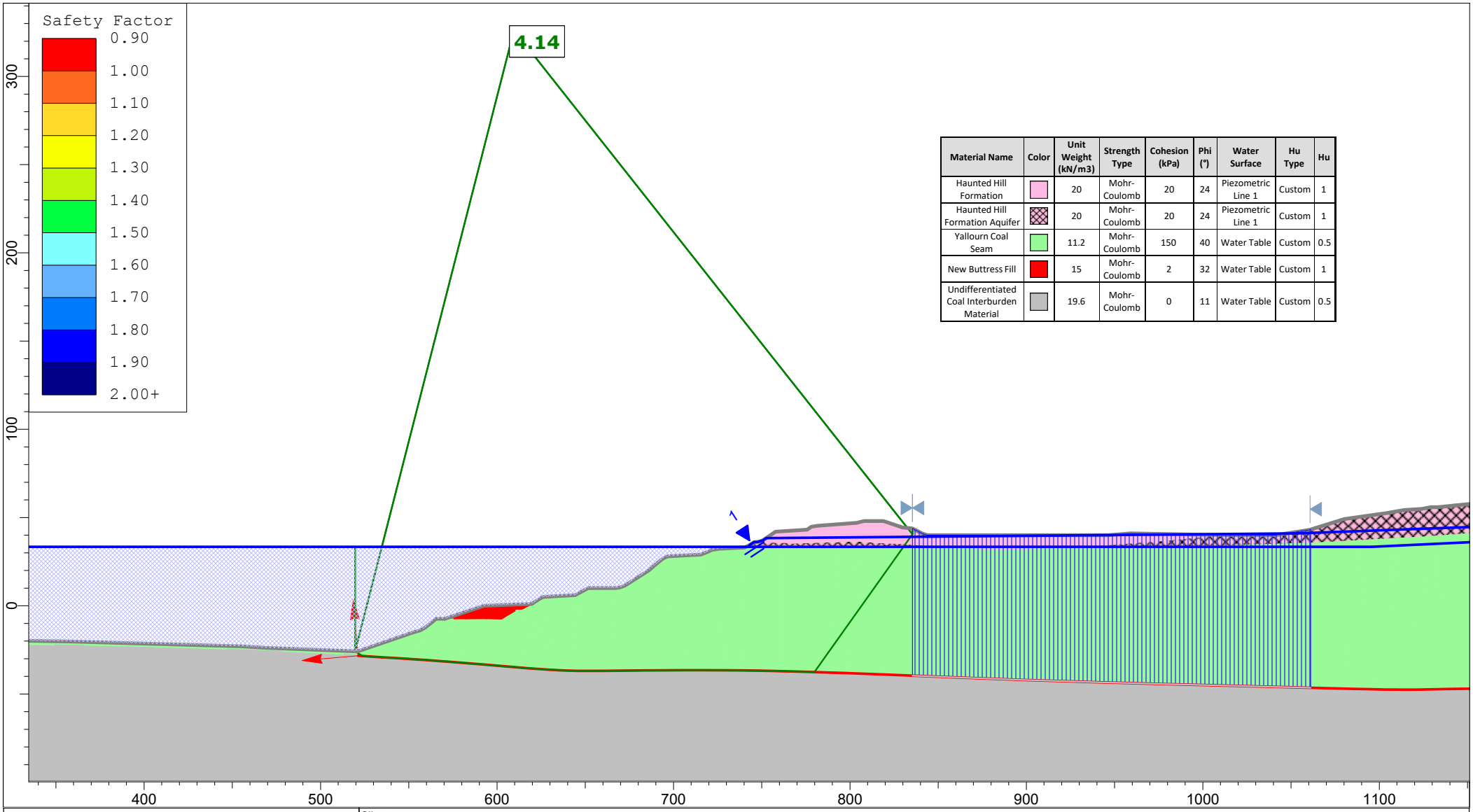
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



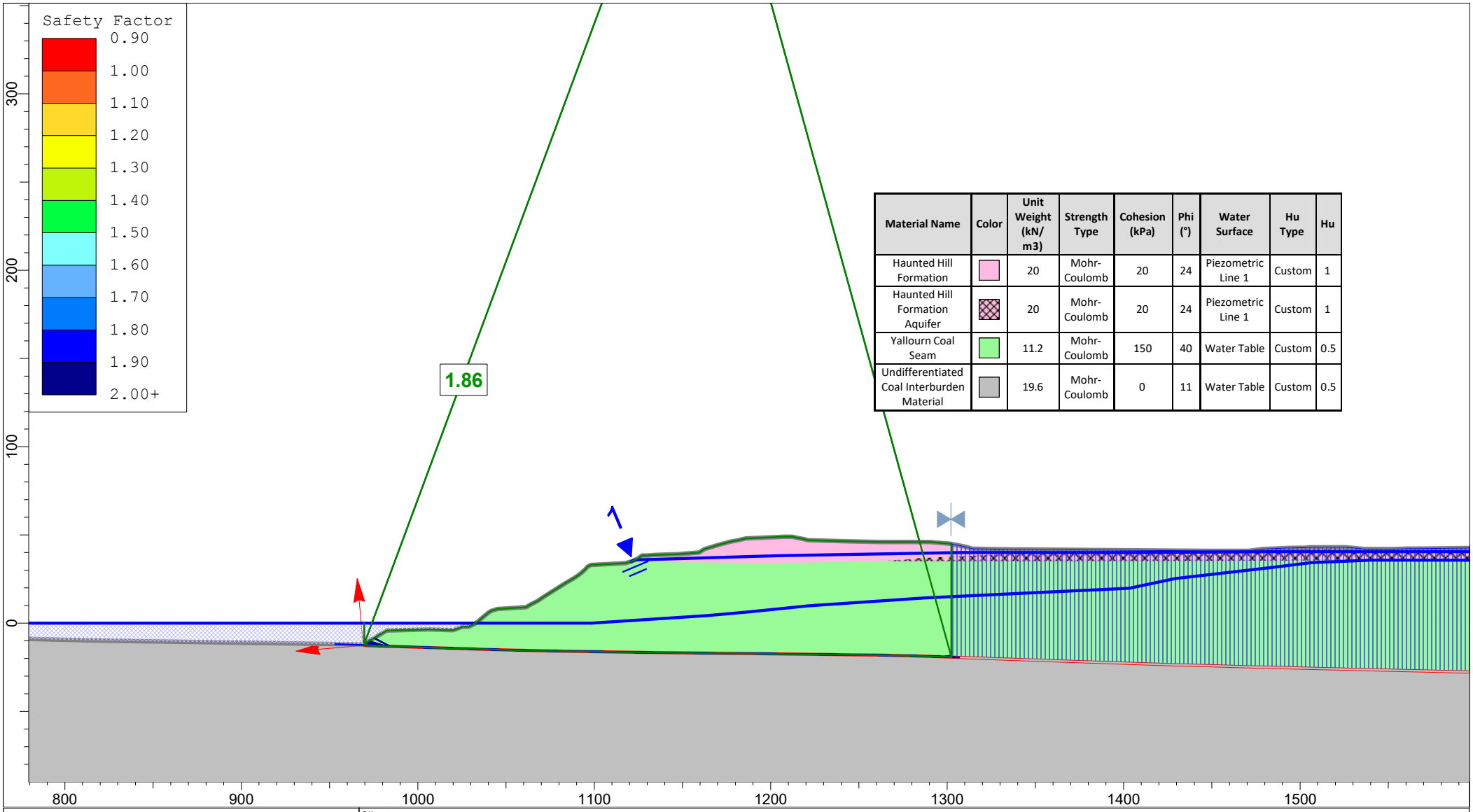
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



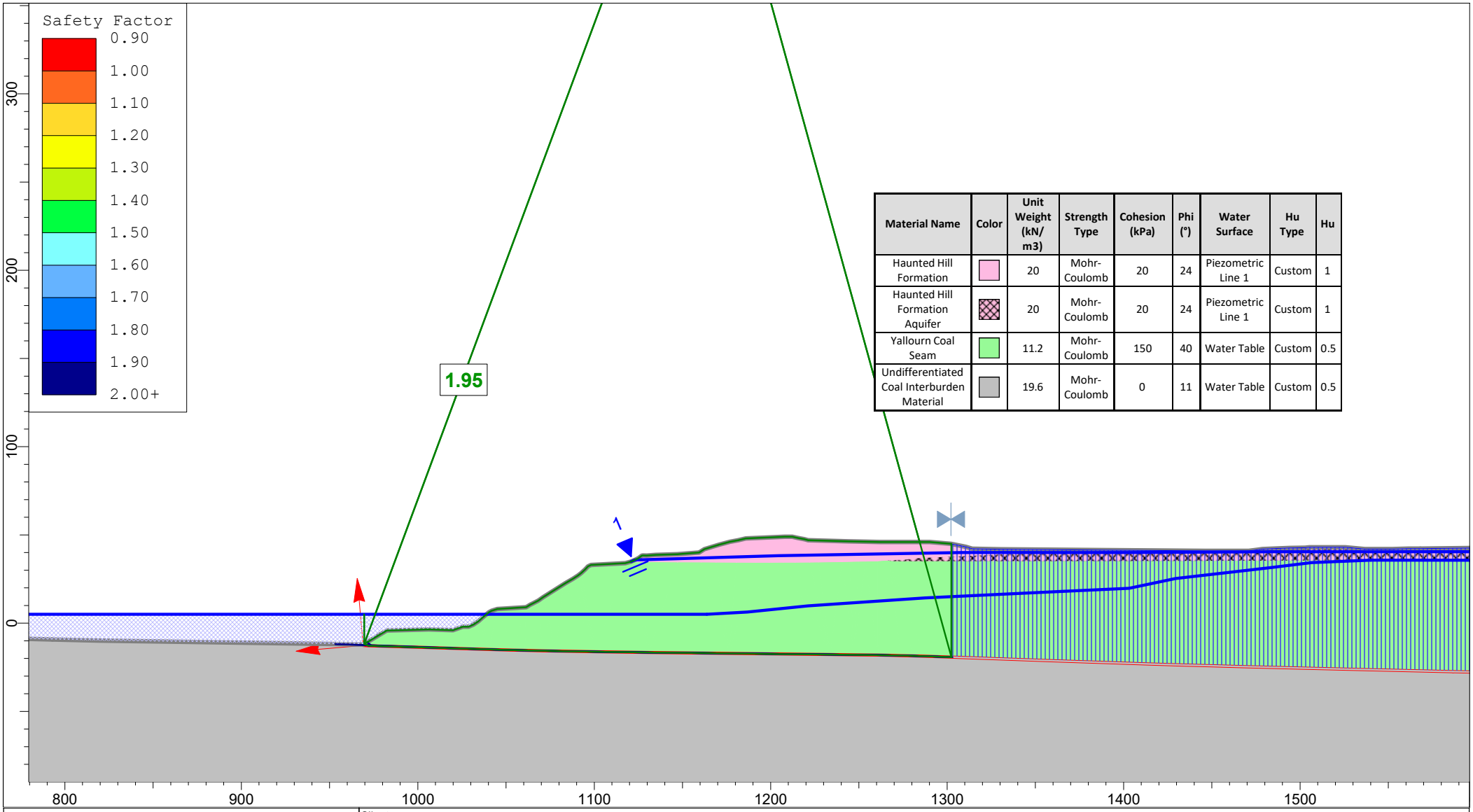
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



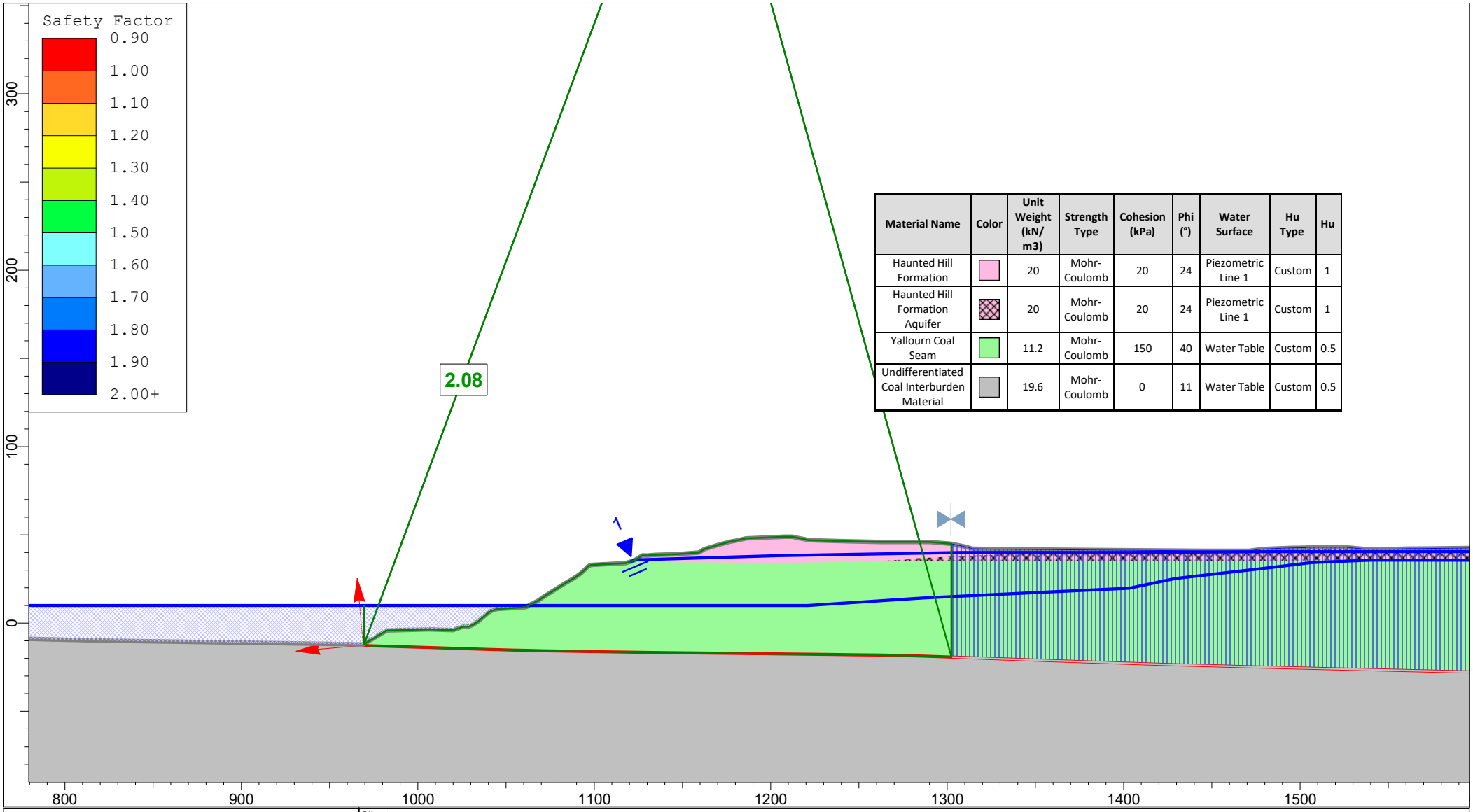
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



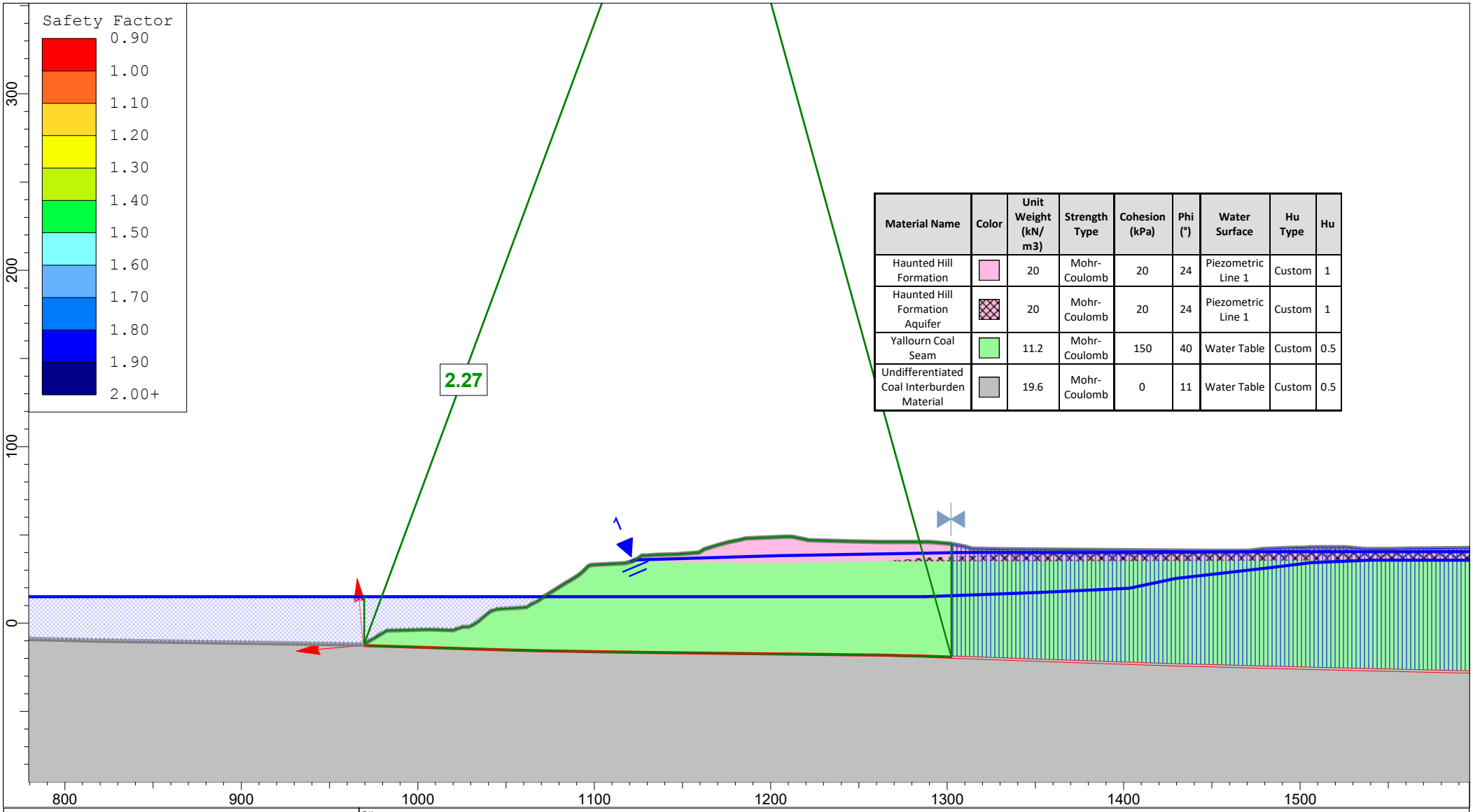
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



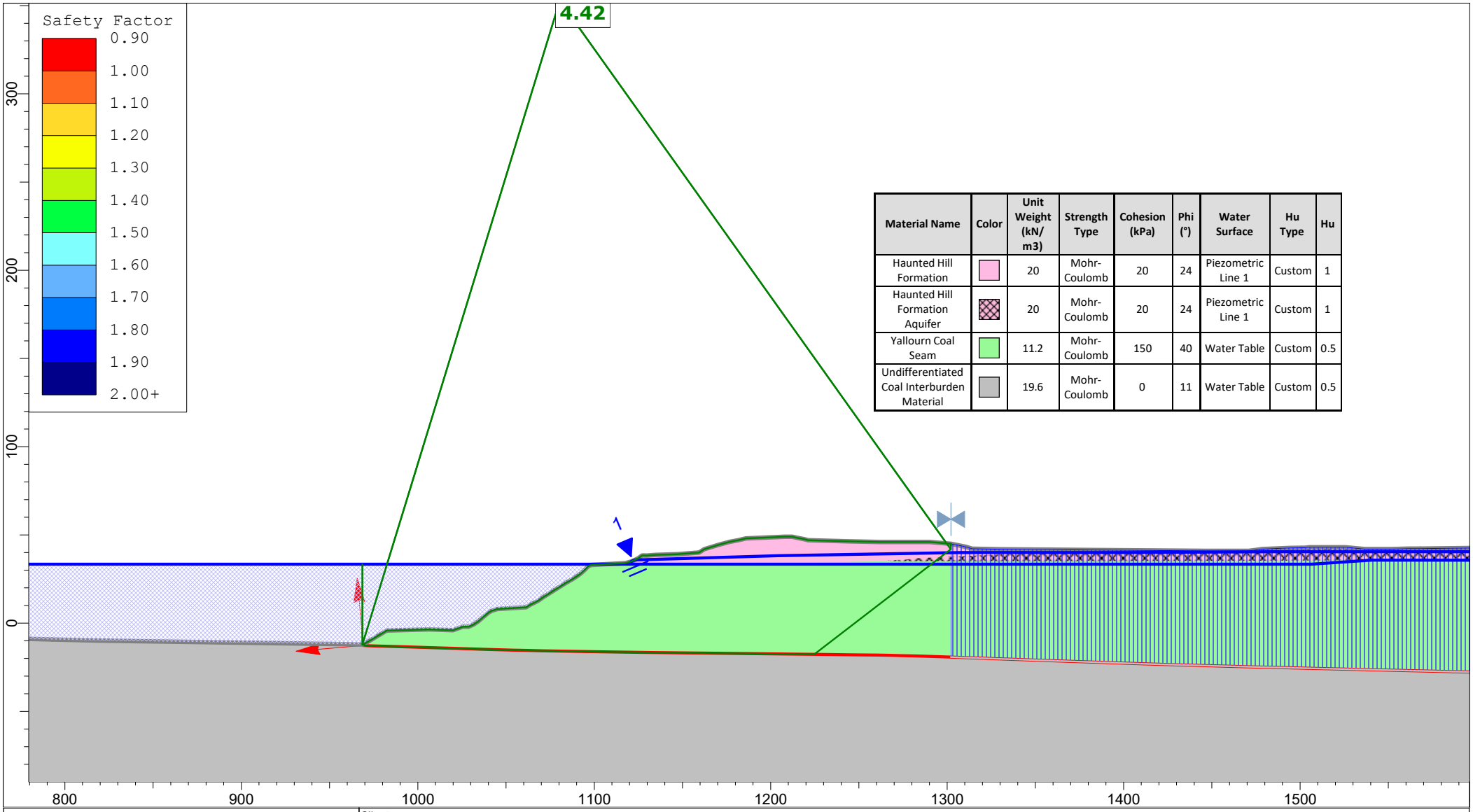
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



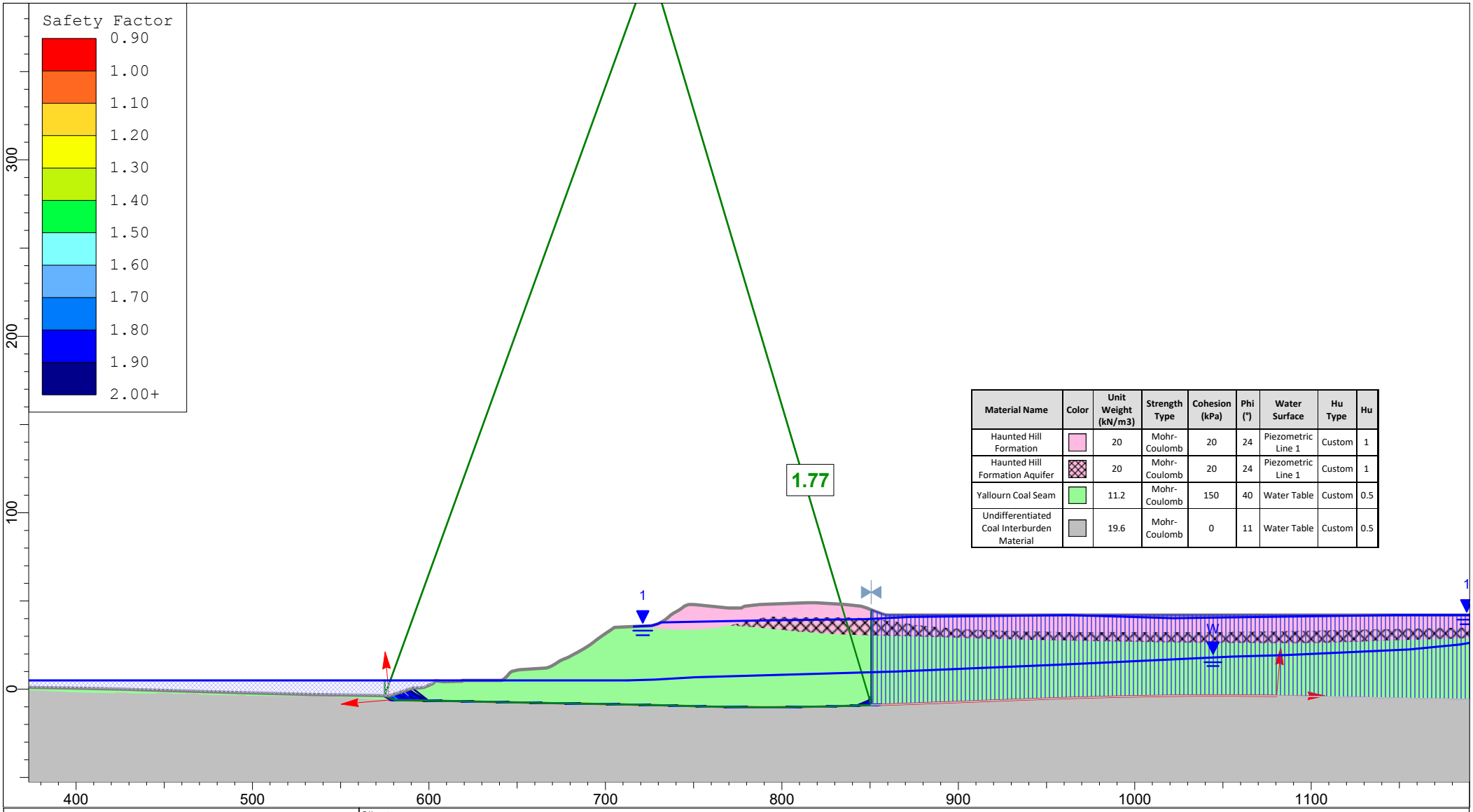
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



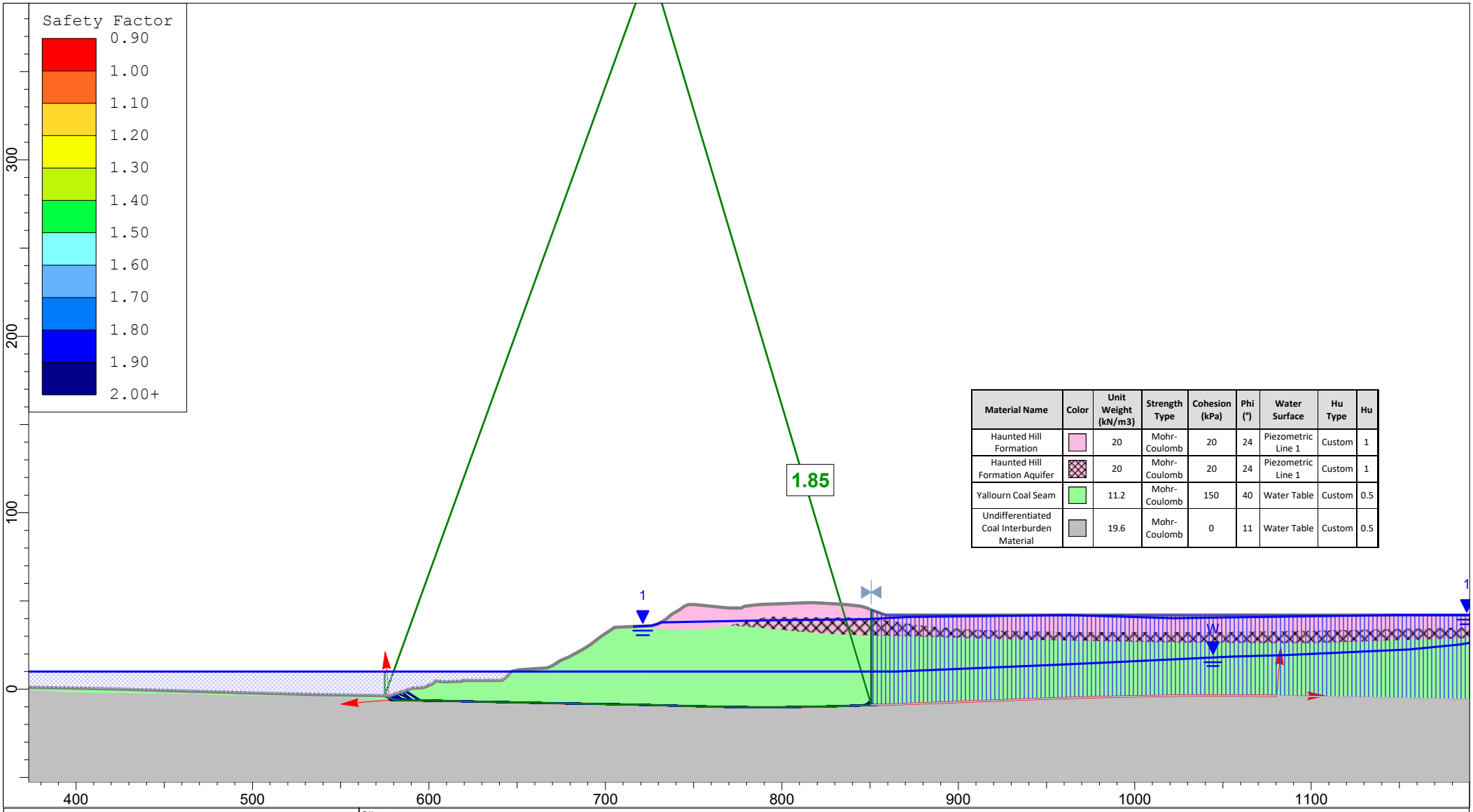
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



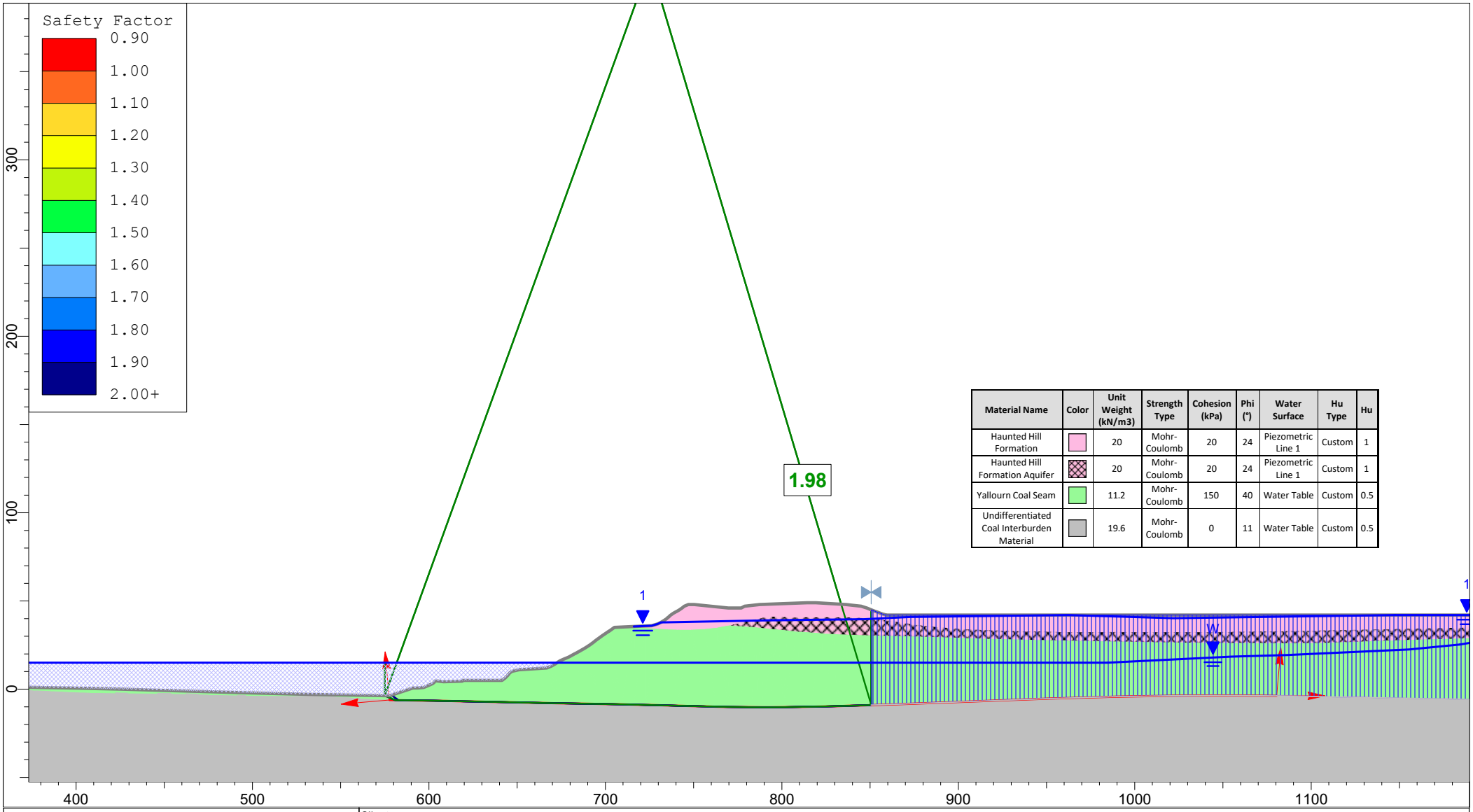
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



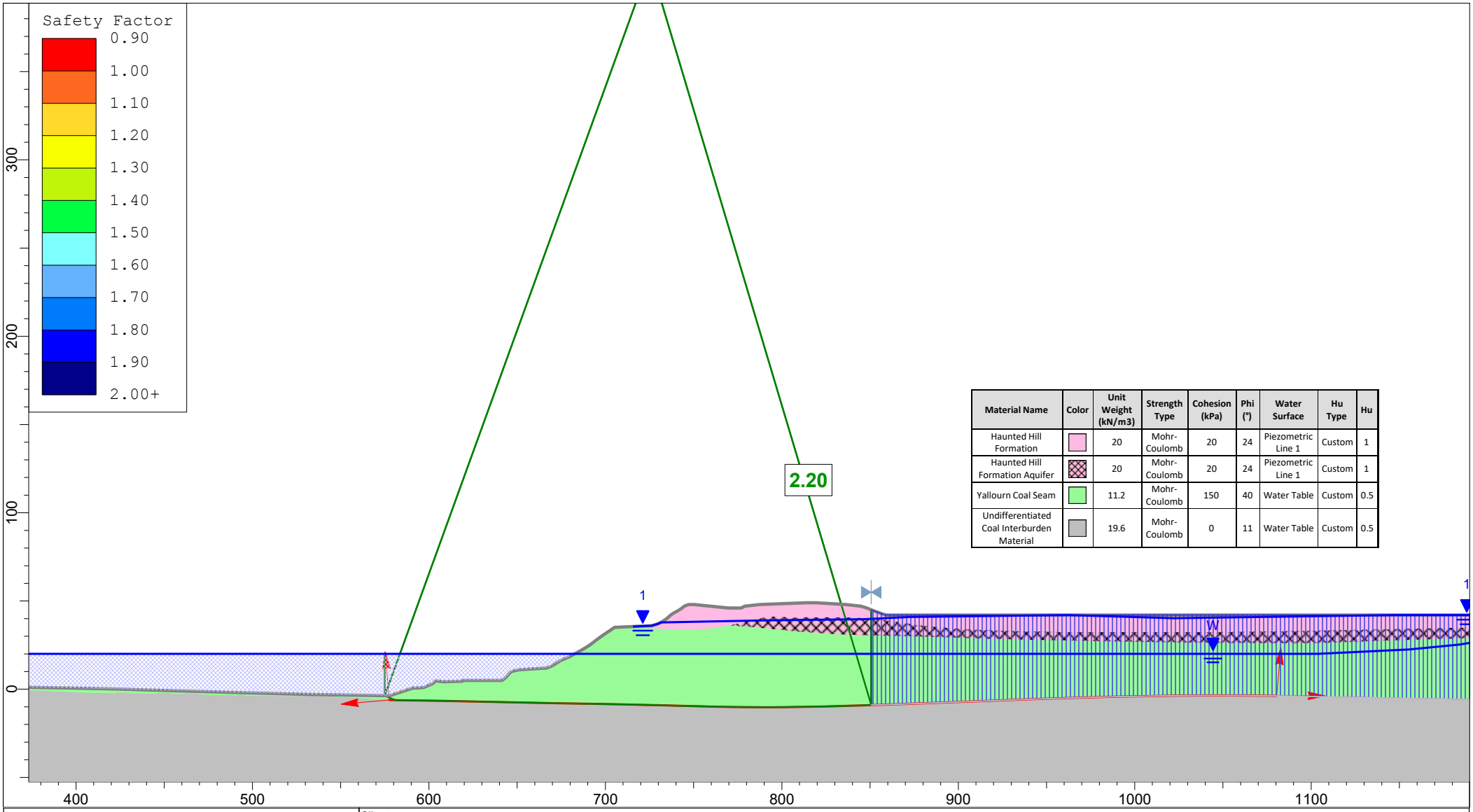
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



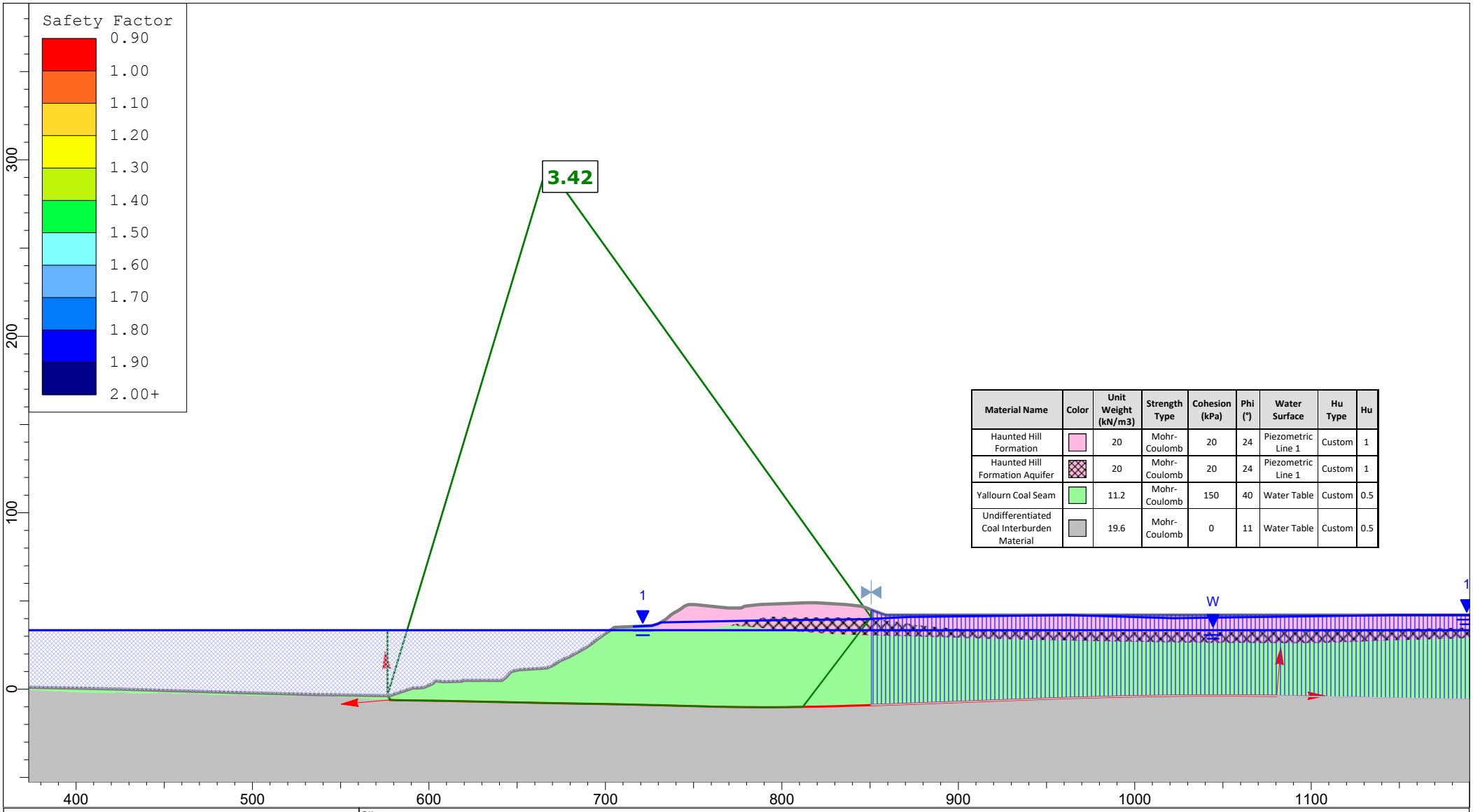
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



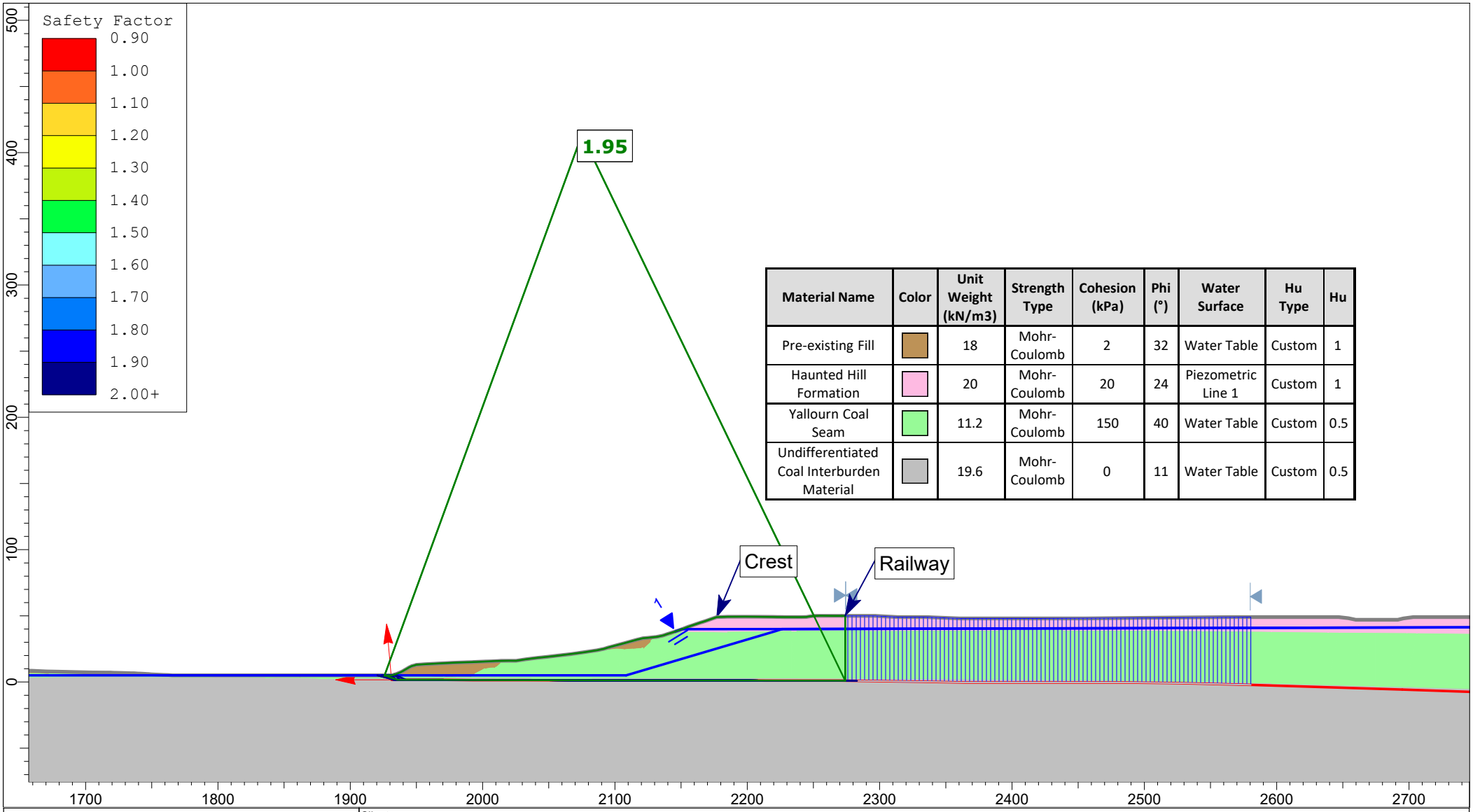
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



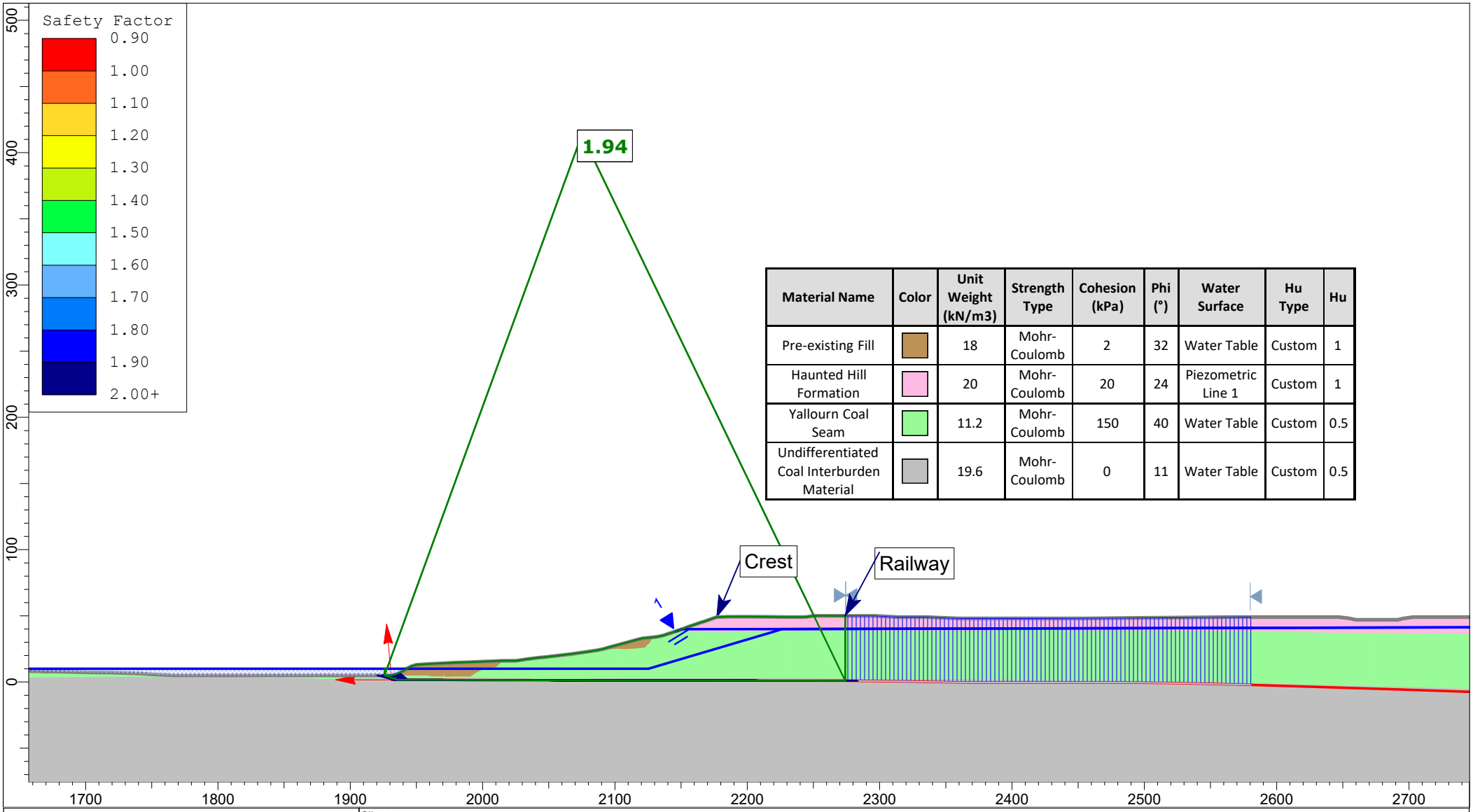
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



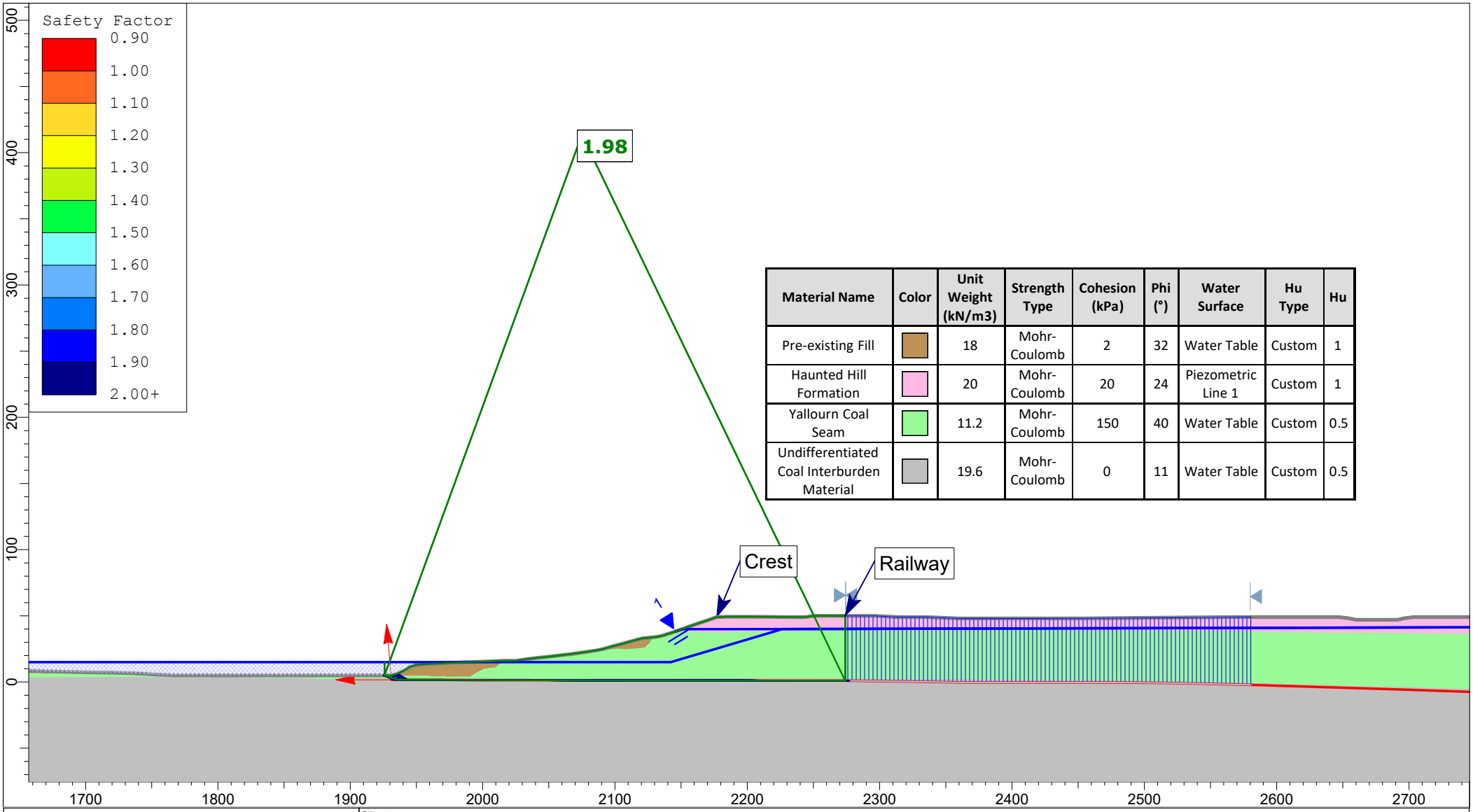
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



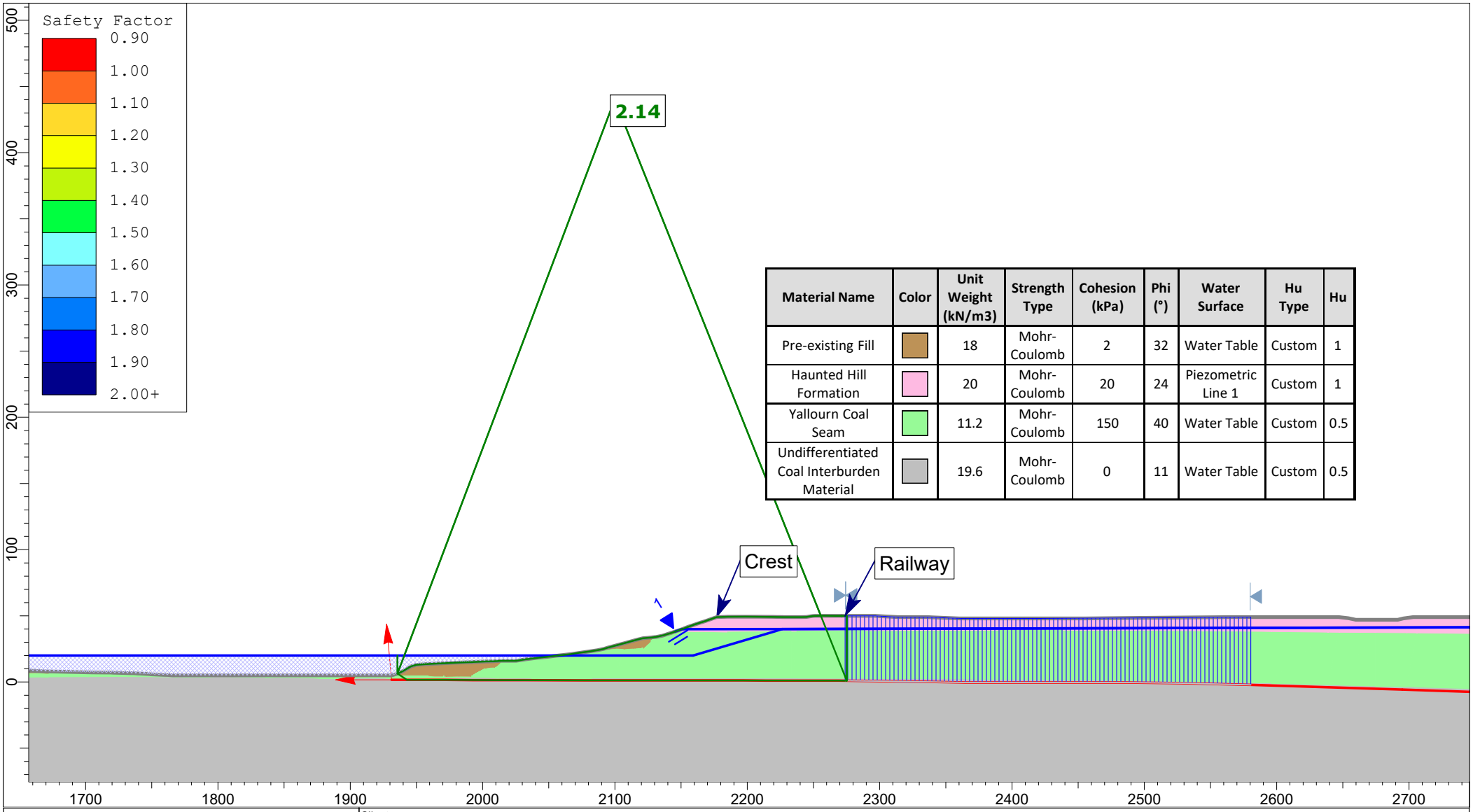
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



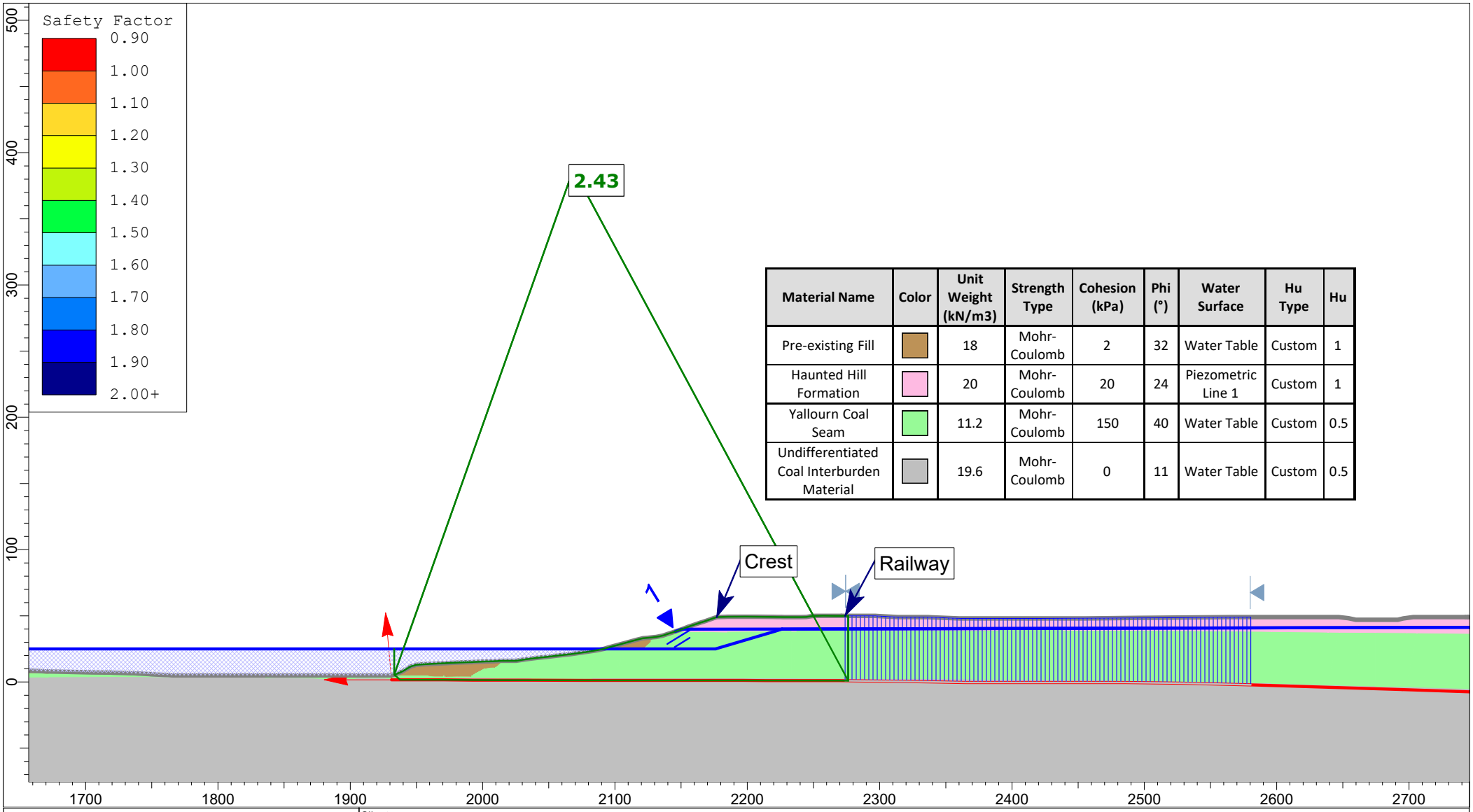
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



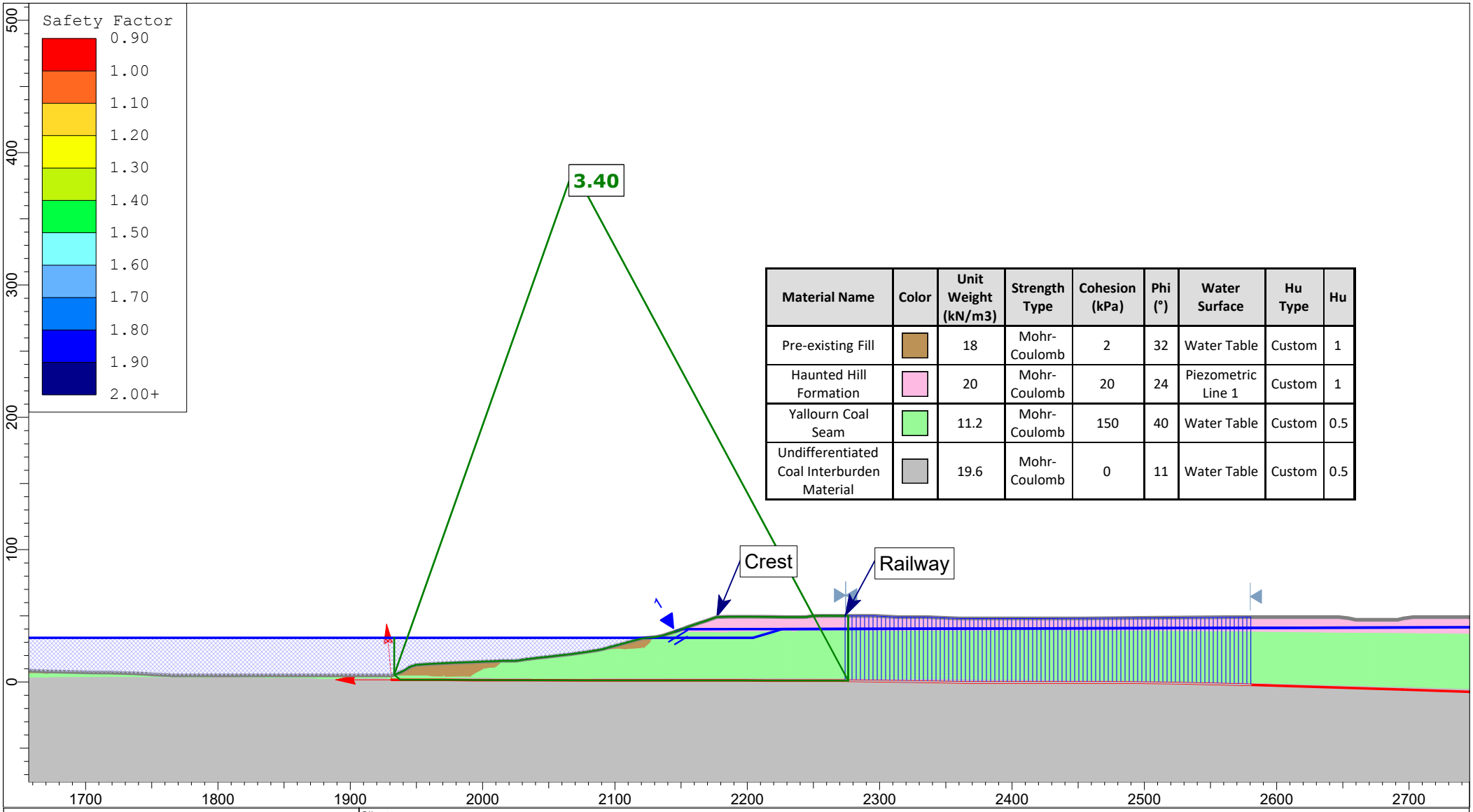
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



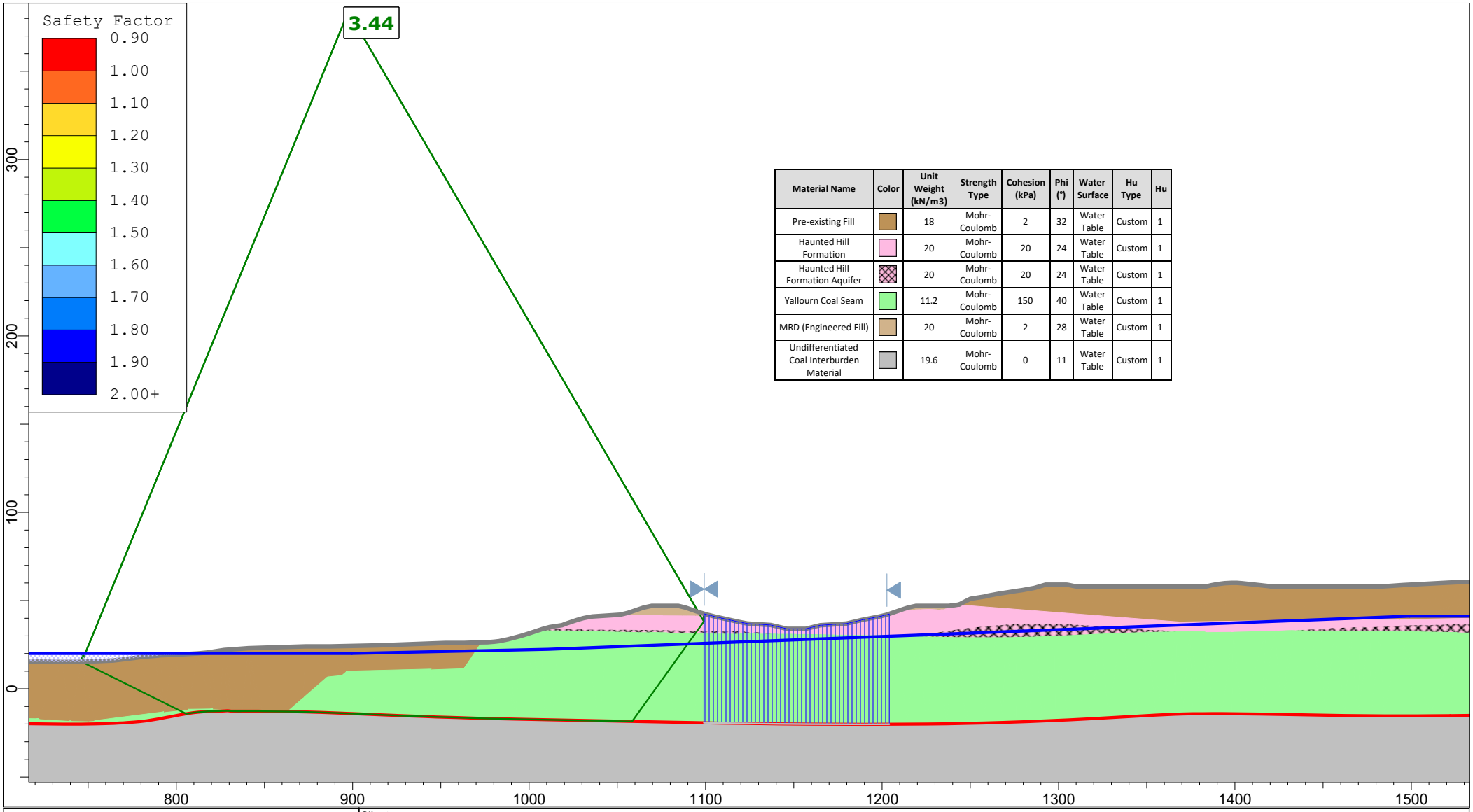
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



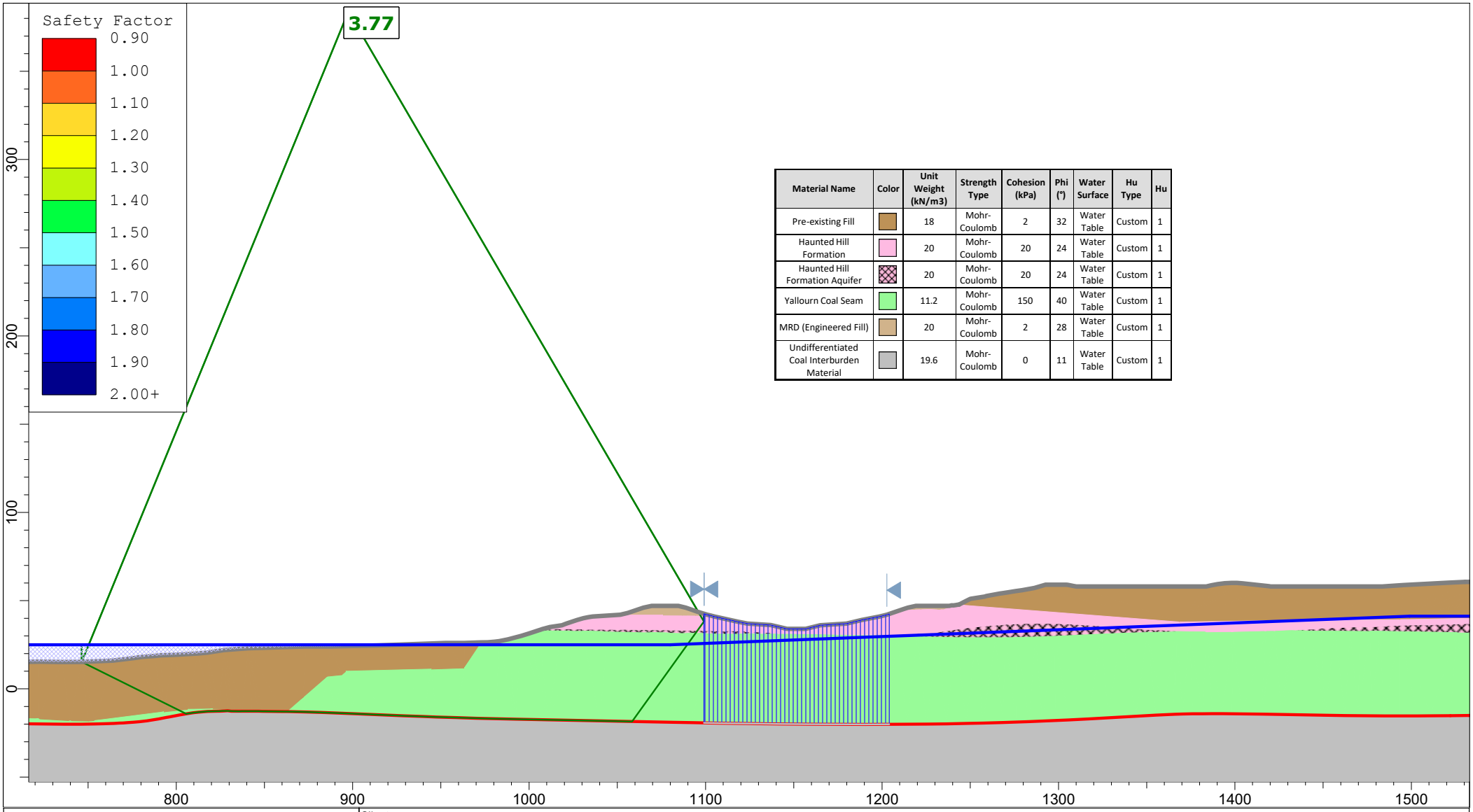
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



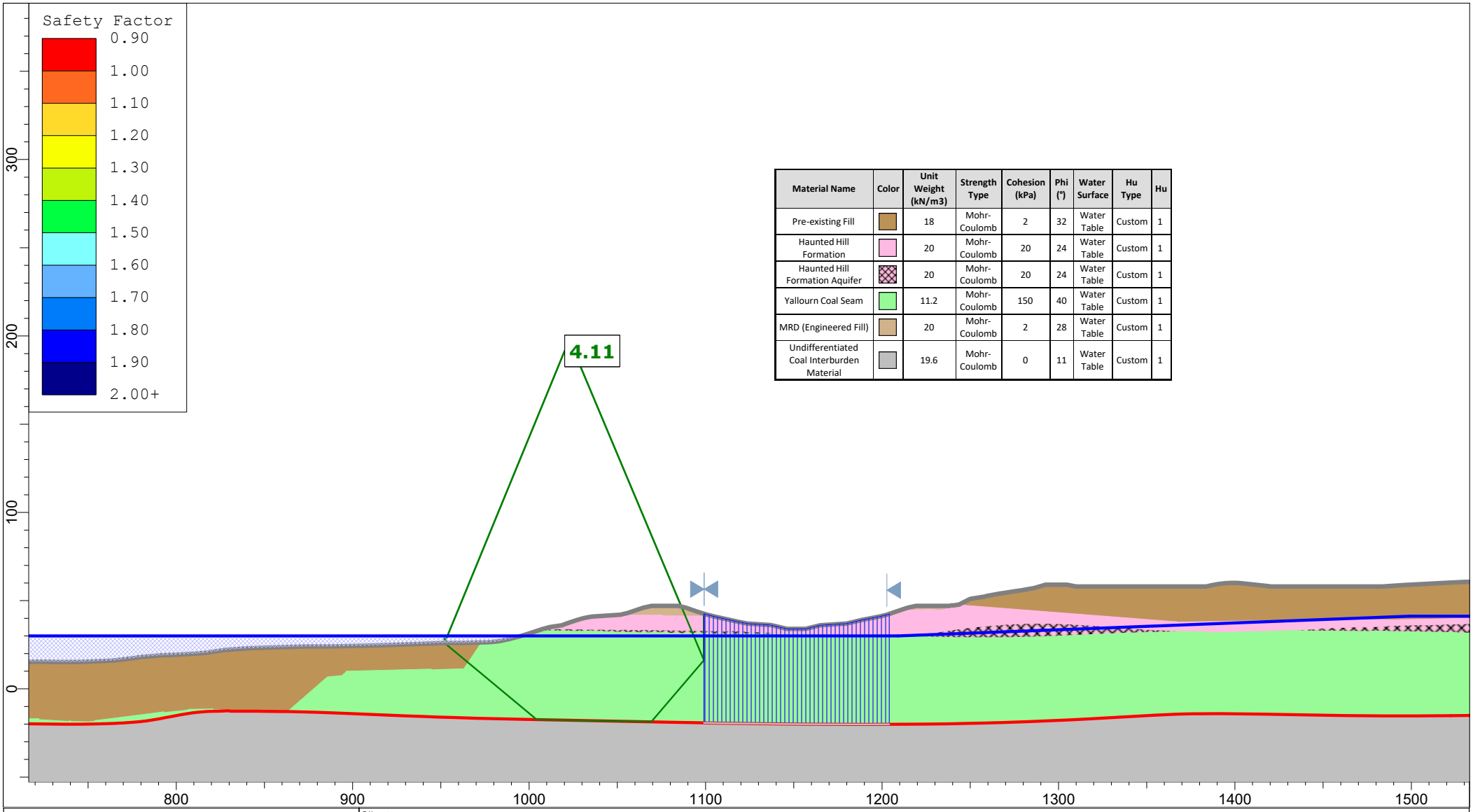
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



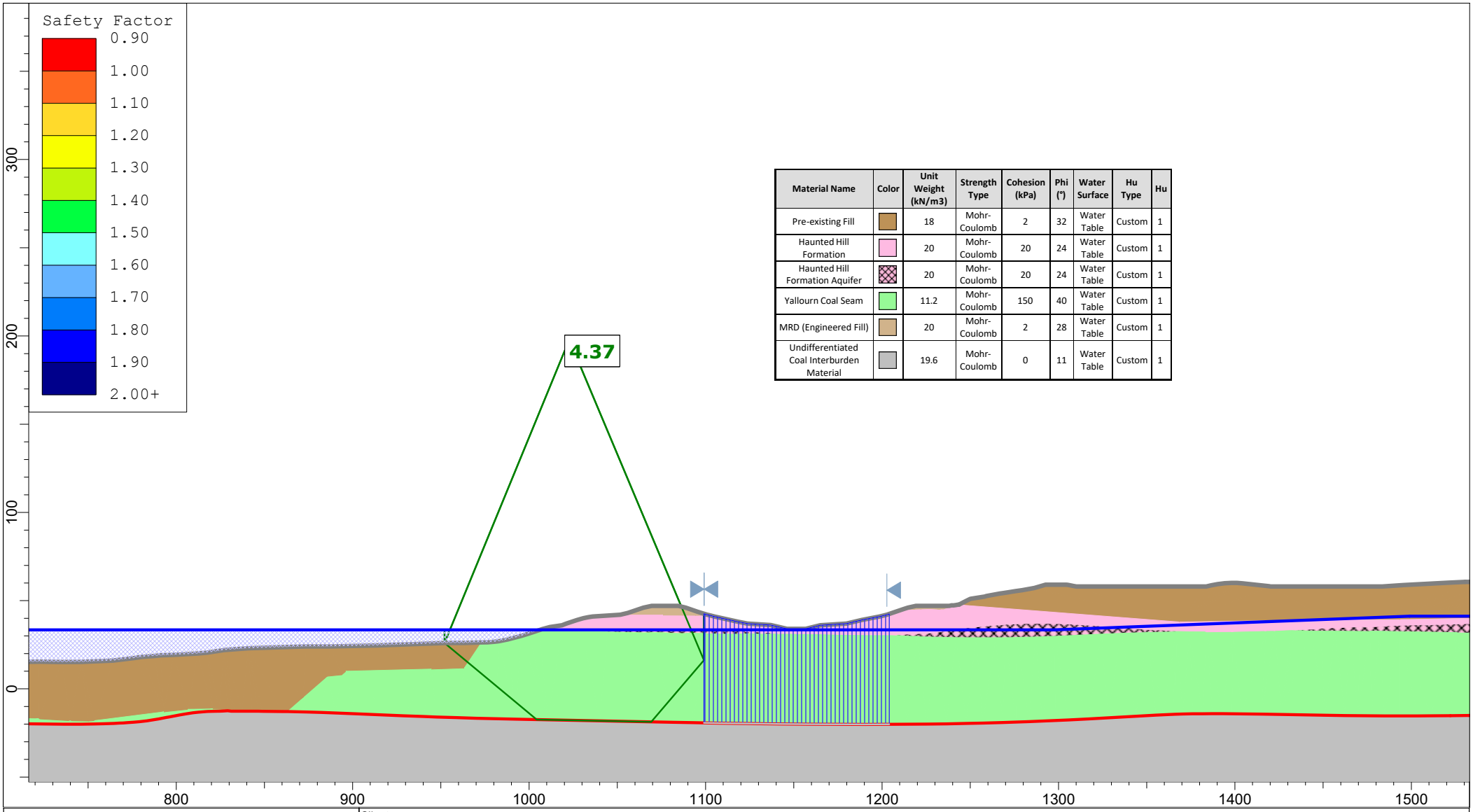
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



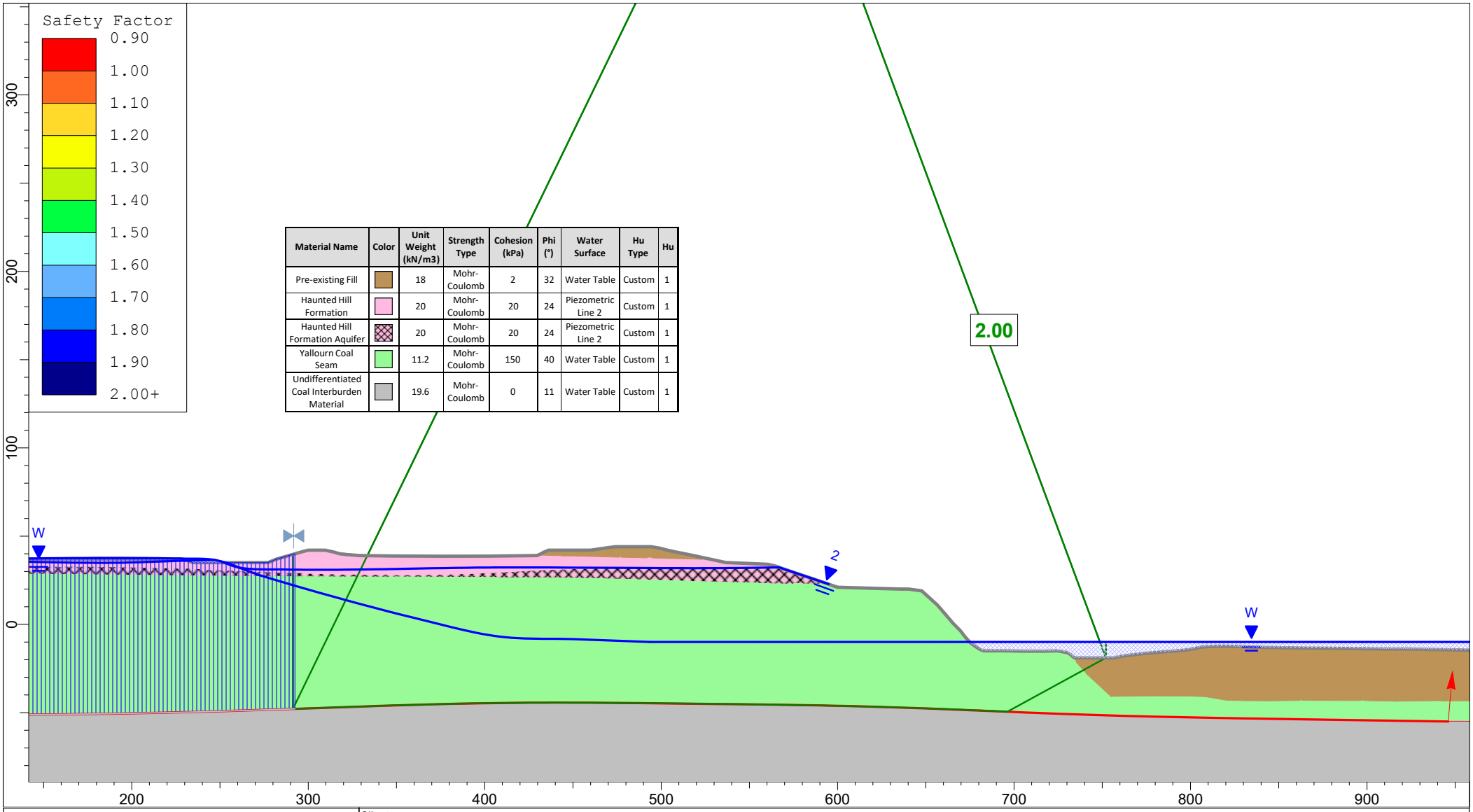
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 30 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



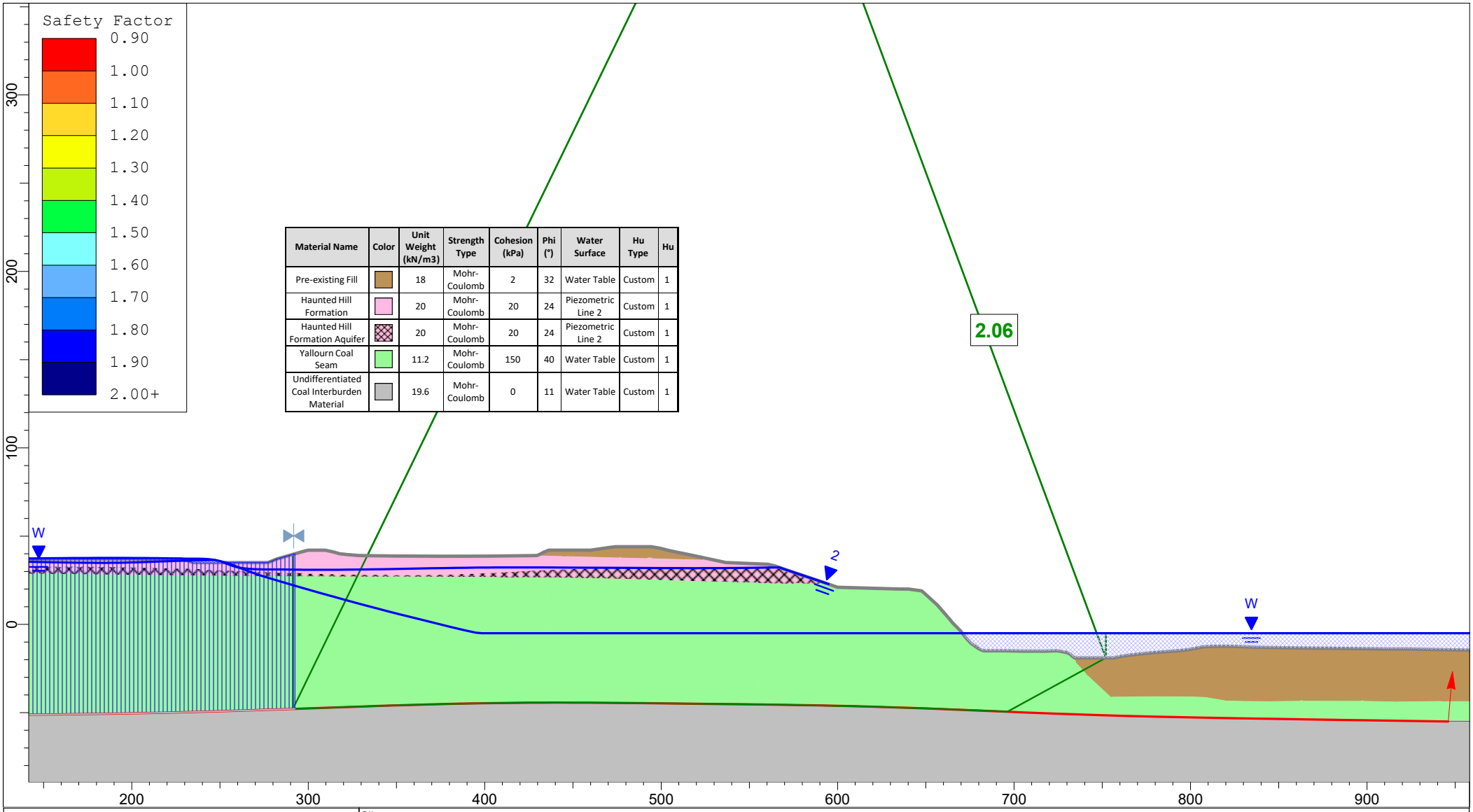
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



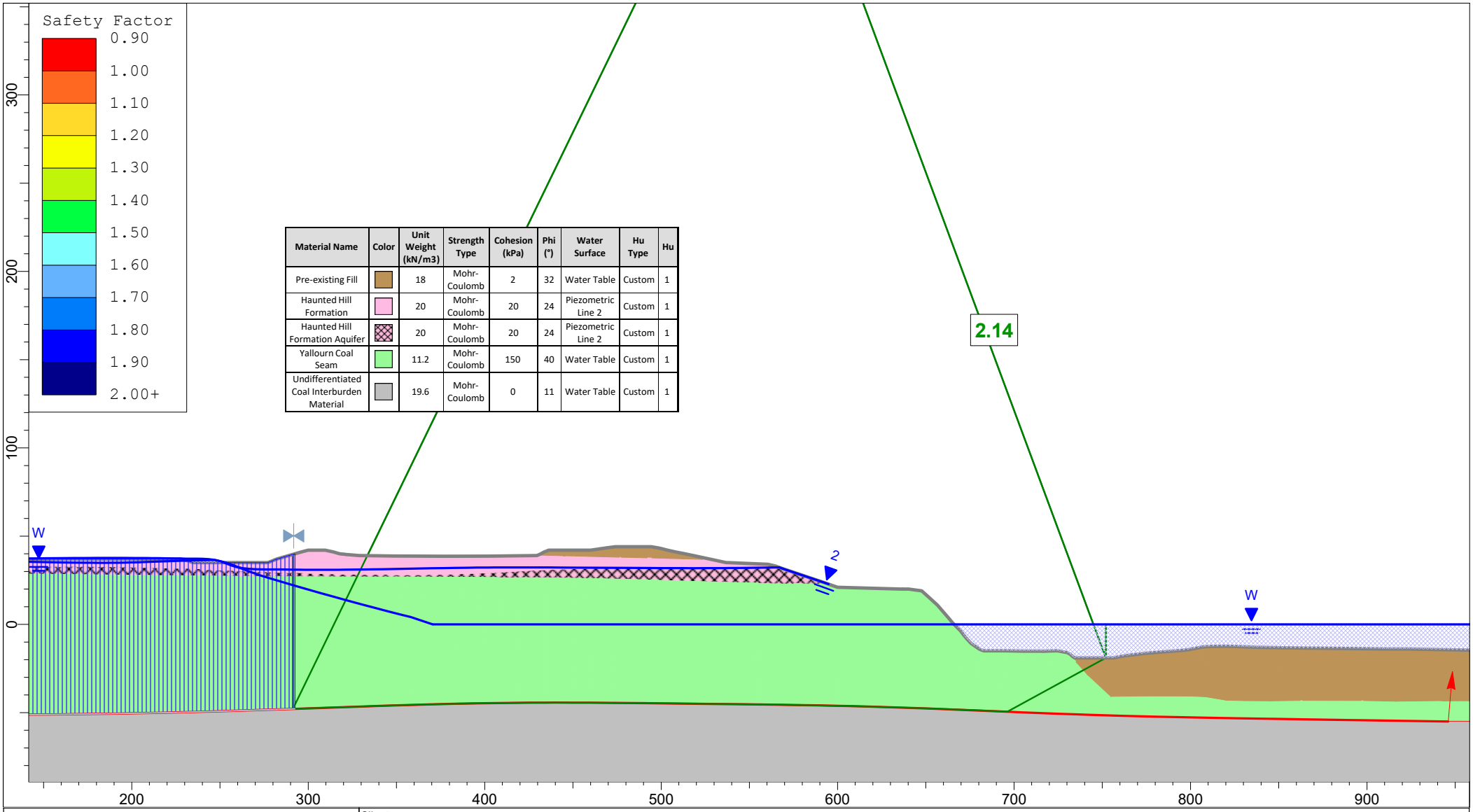
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



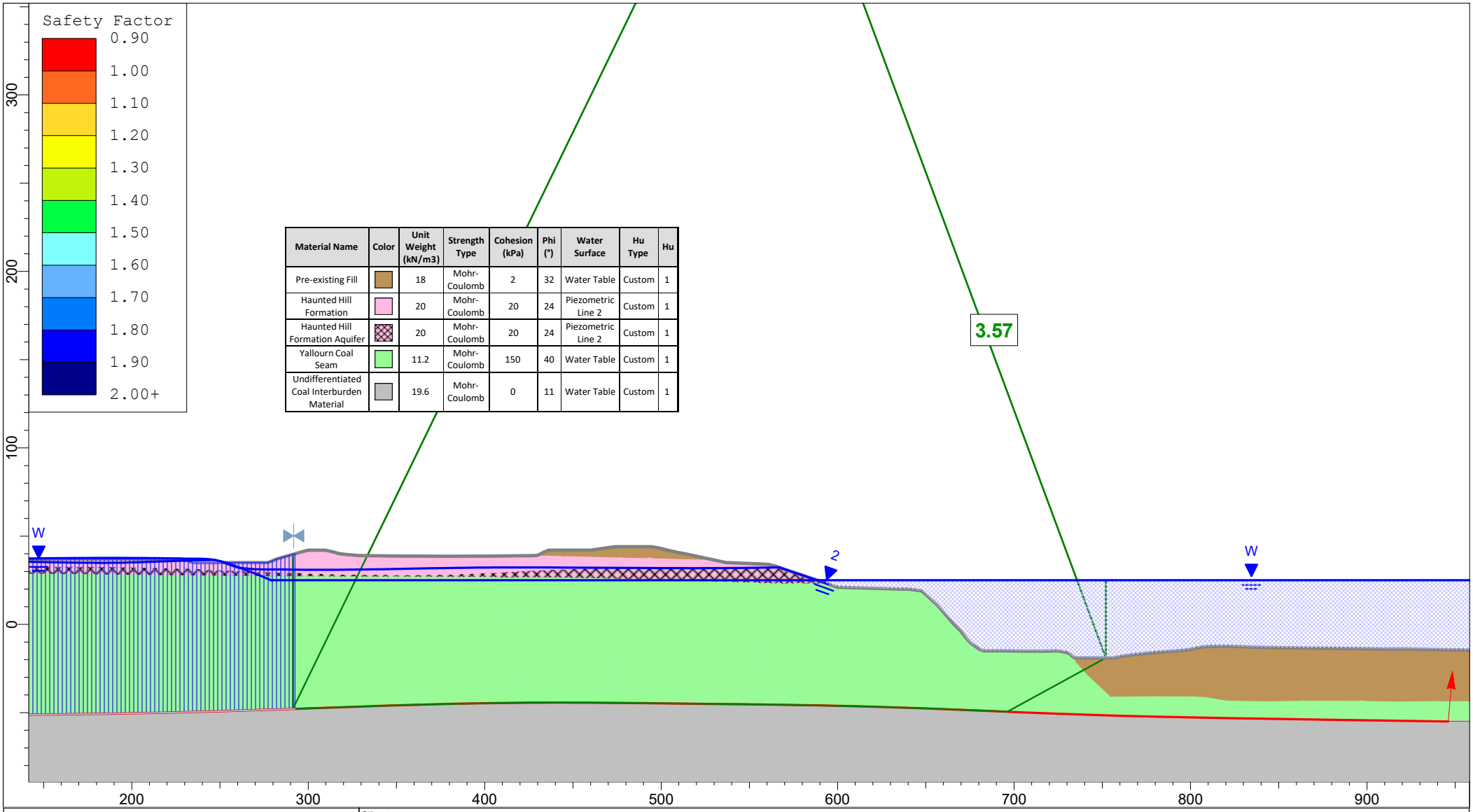
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



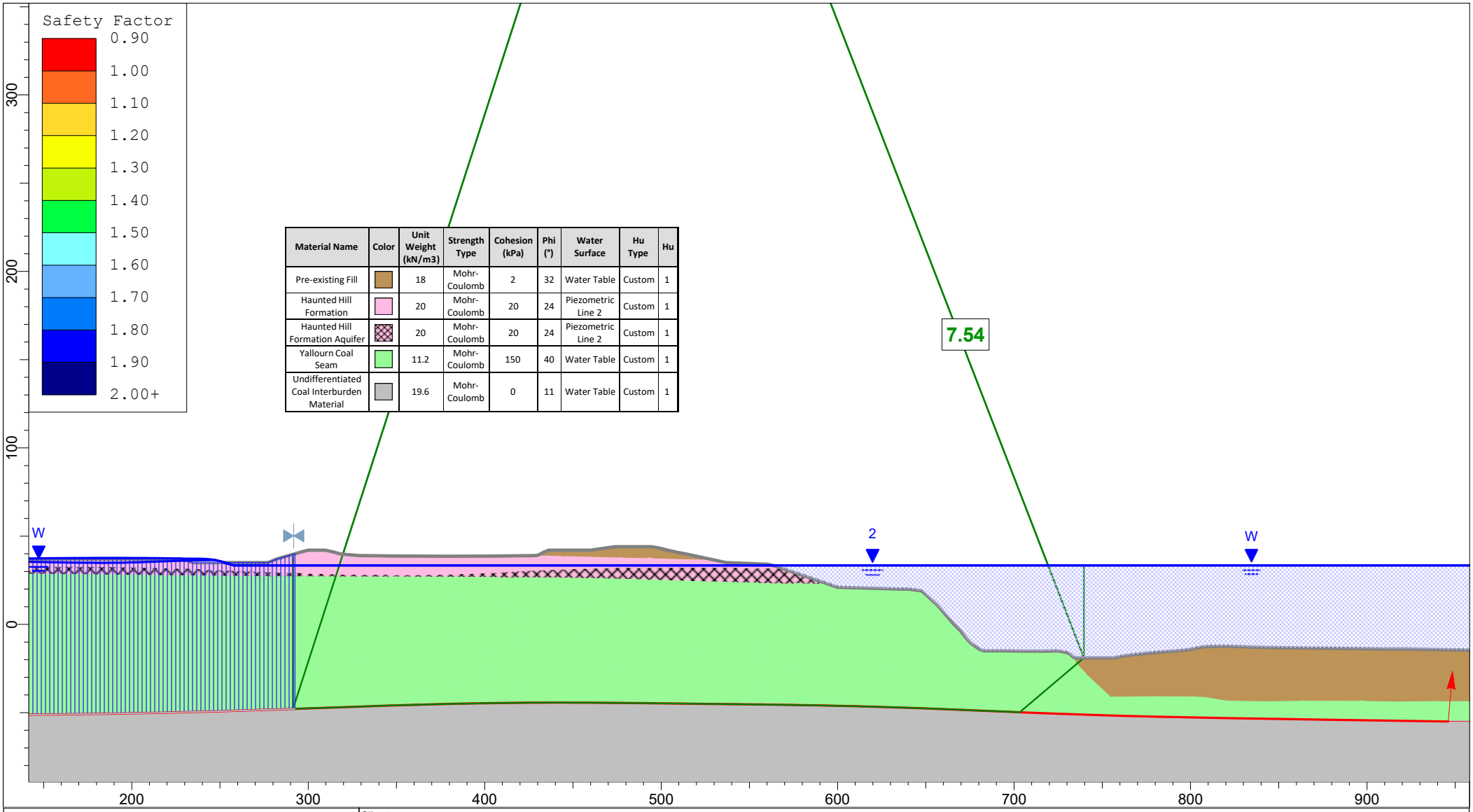
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



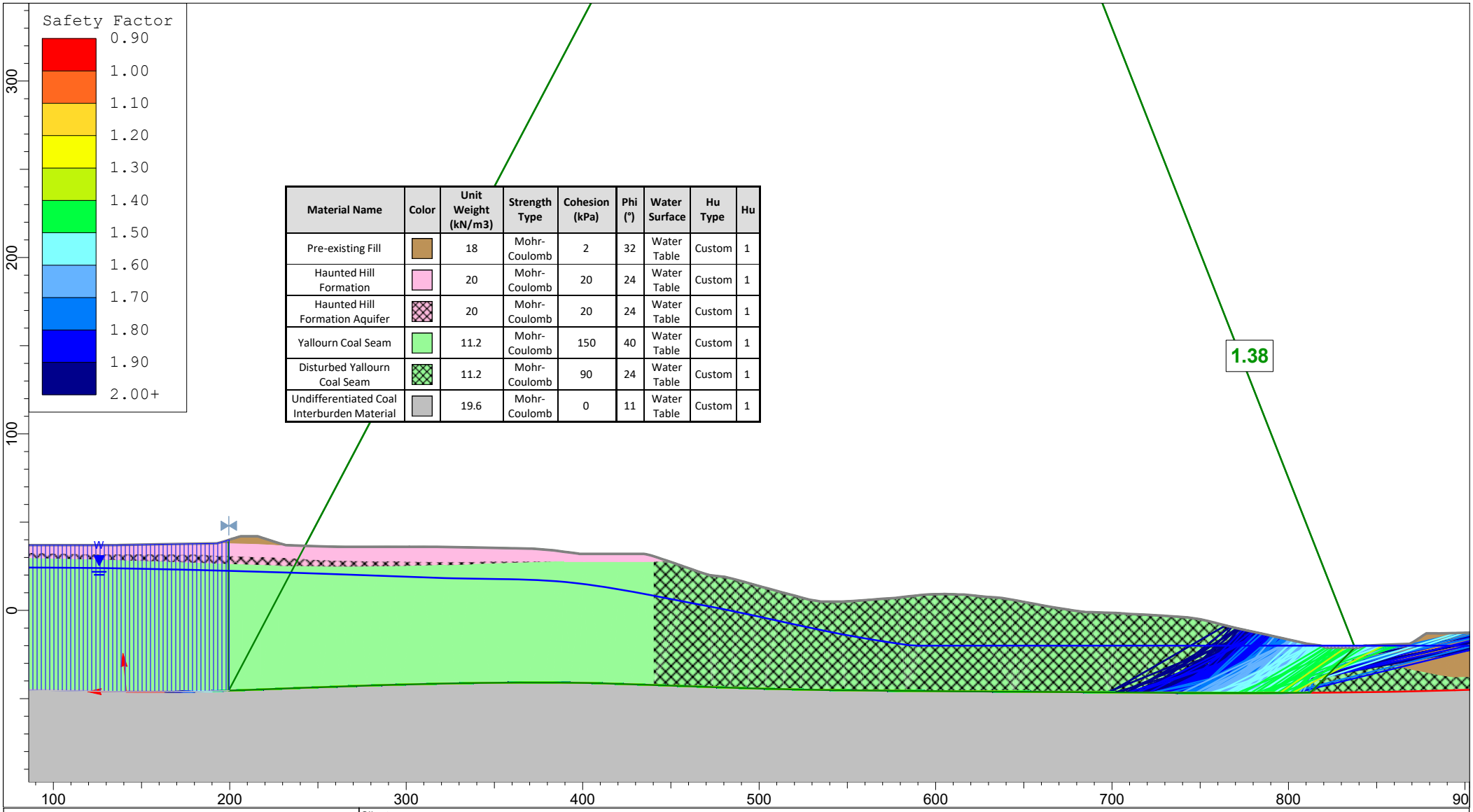
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



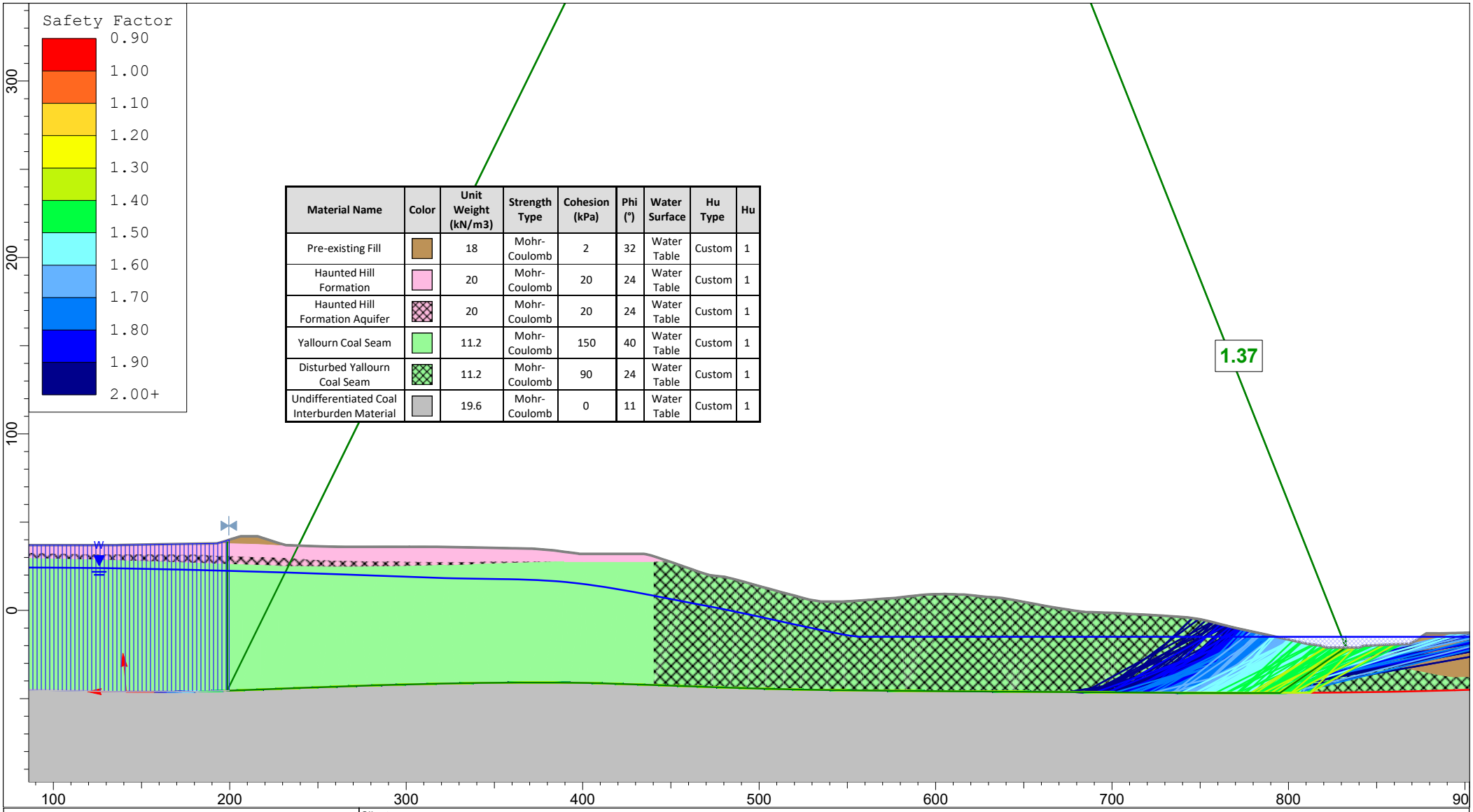
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



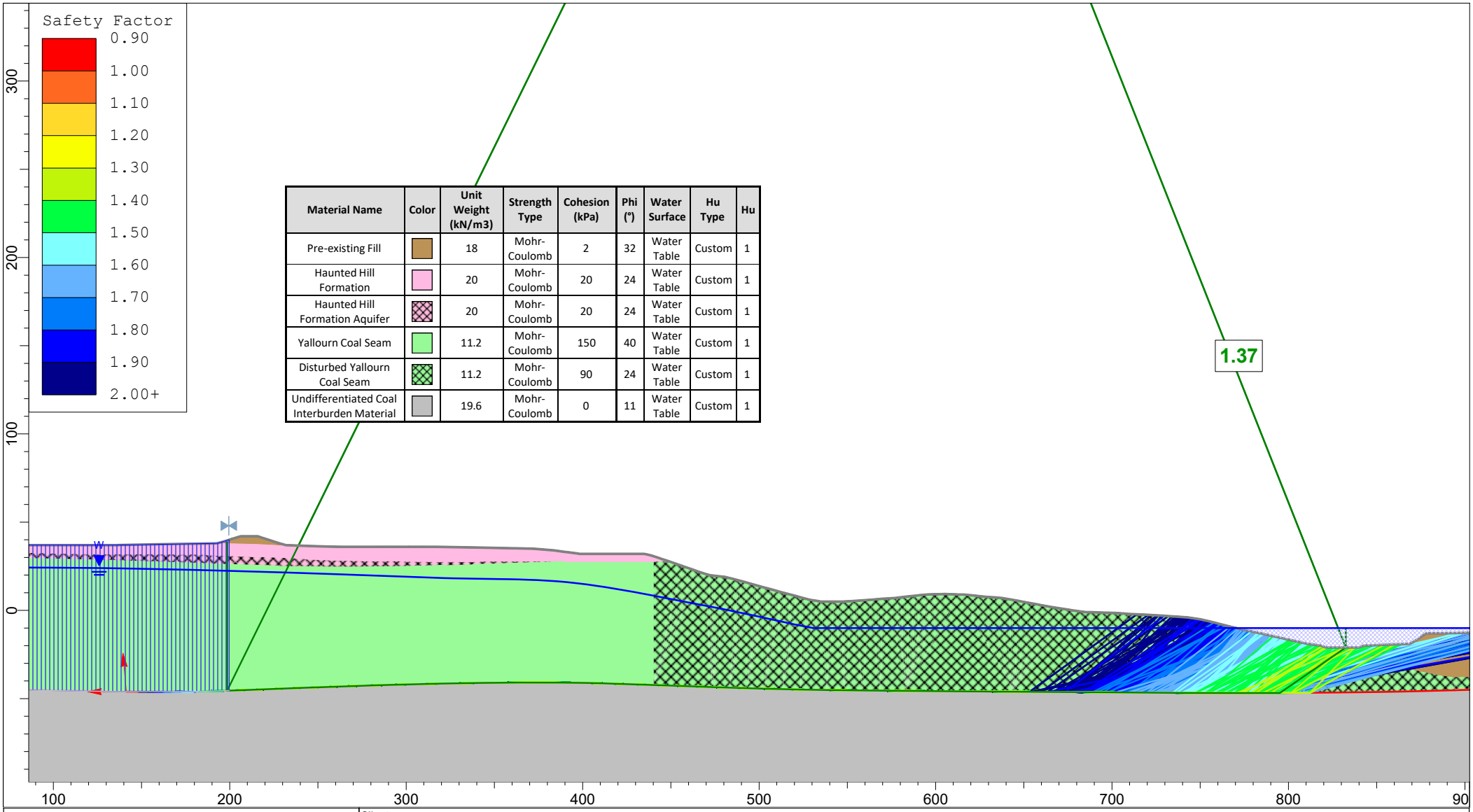
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



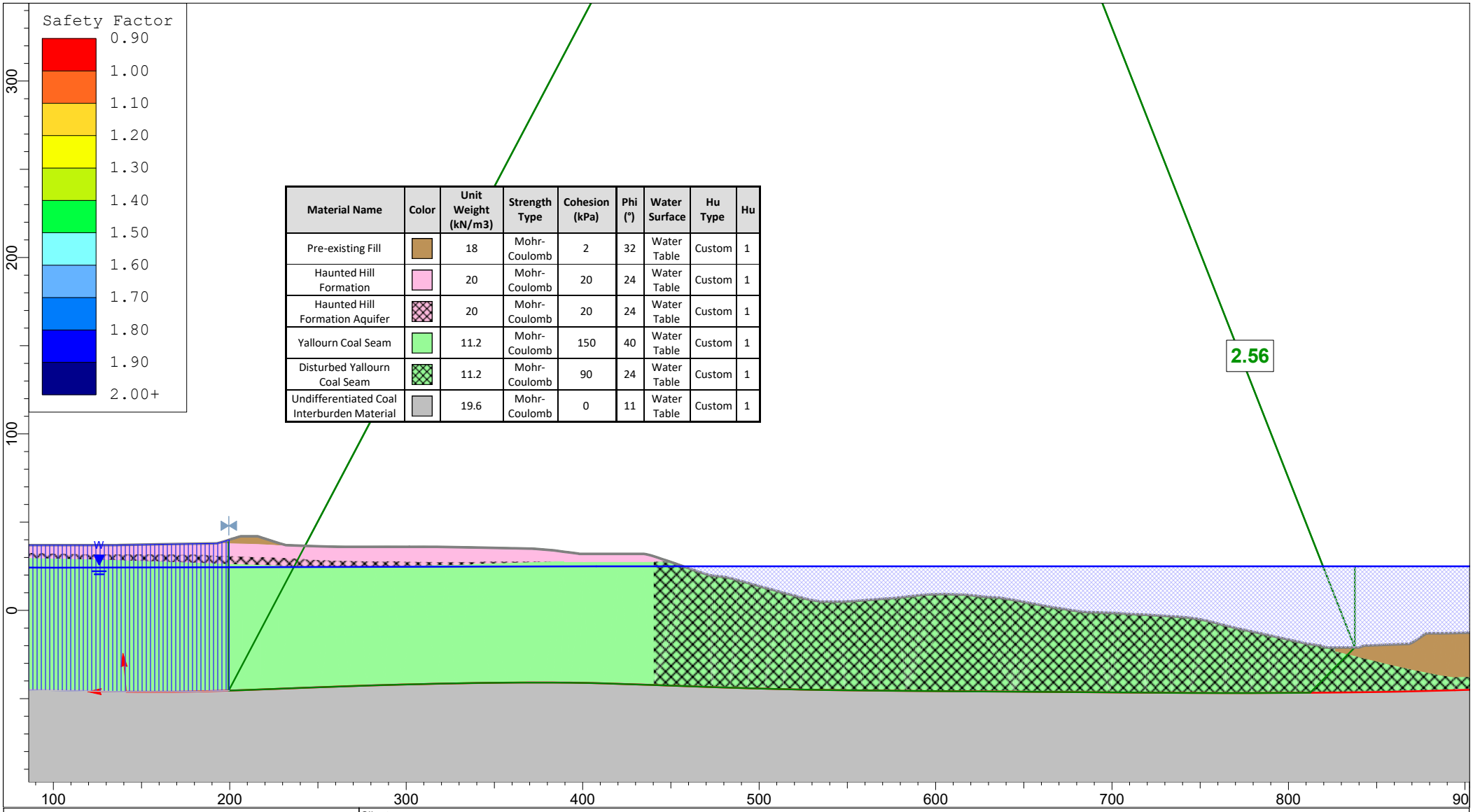
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -15 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



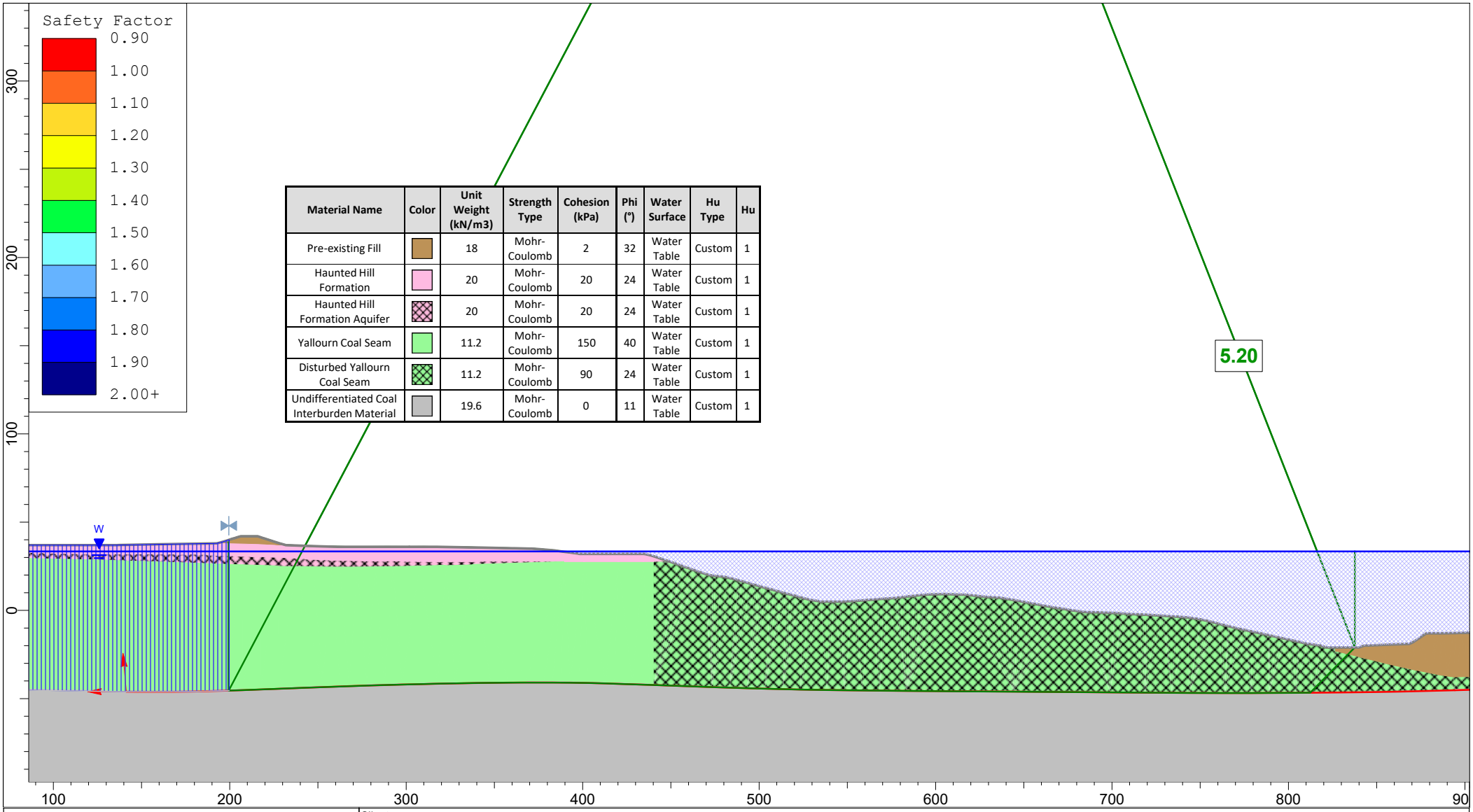
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



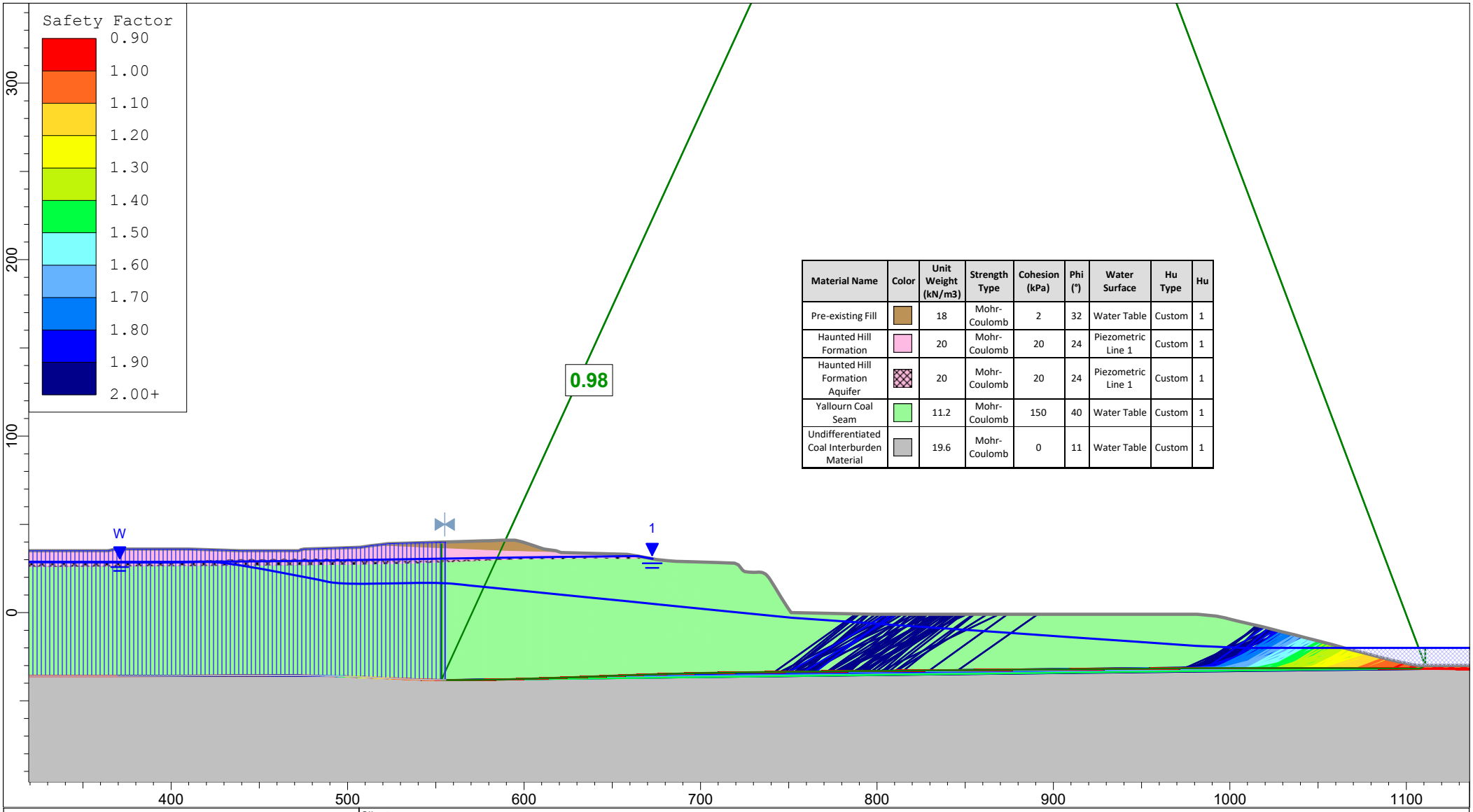
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



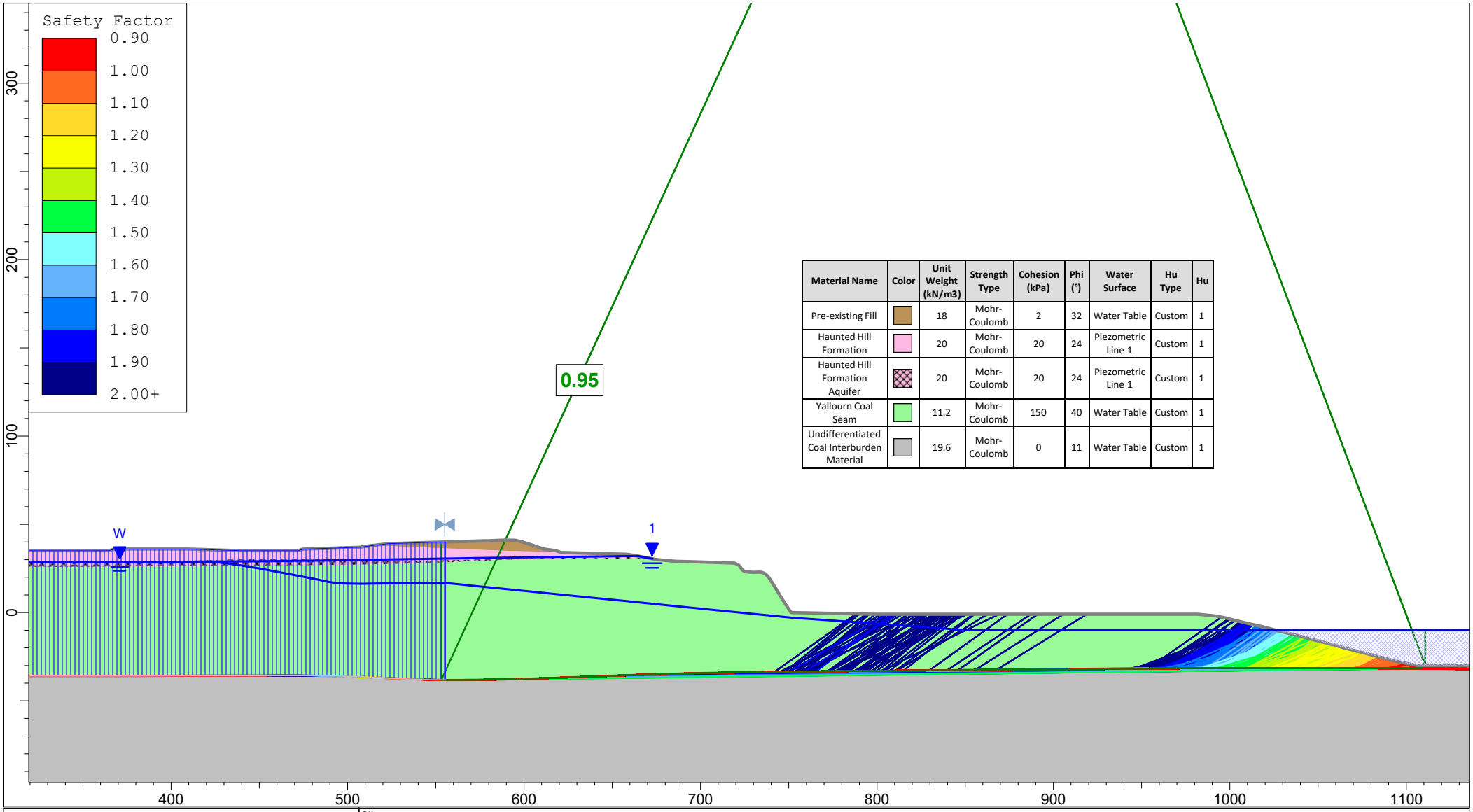
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



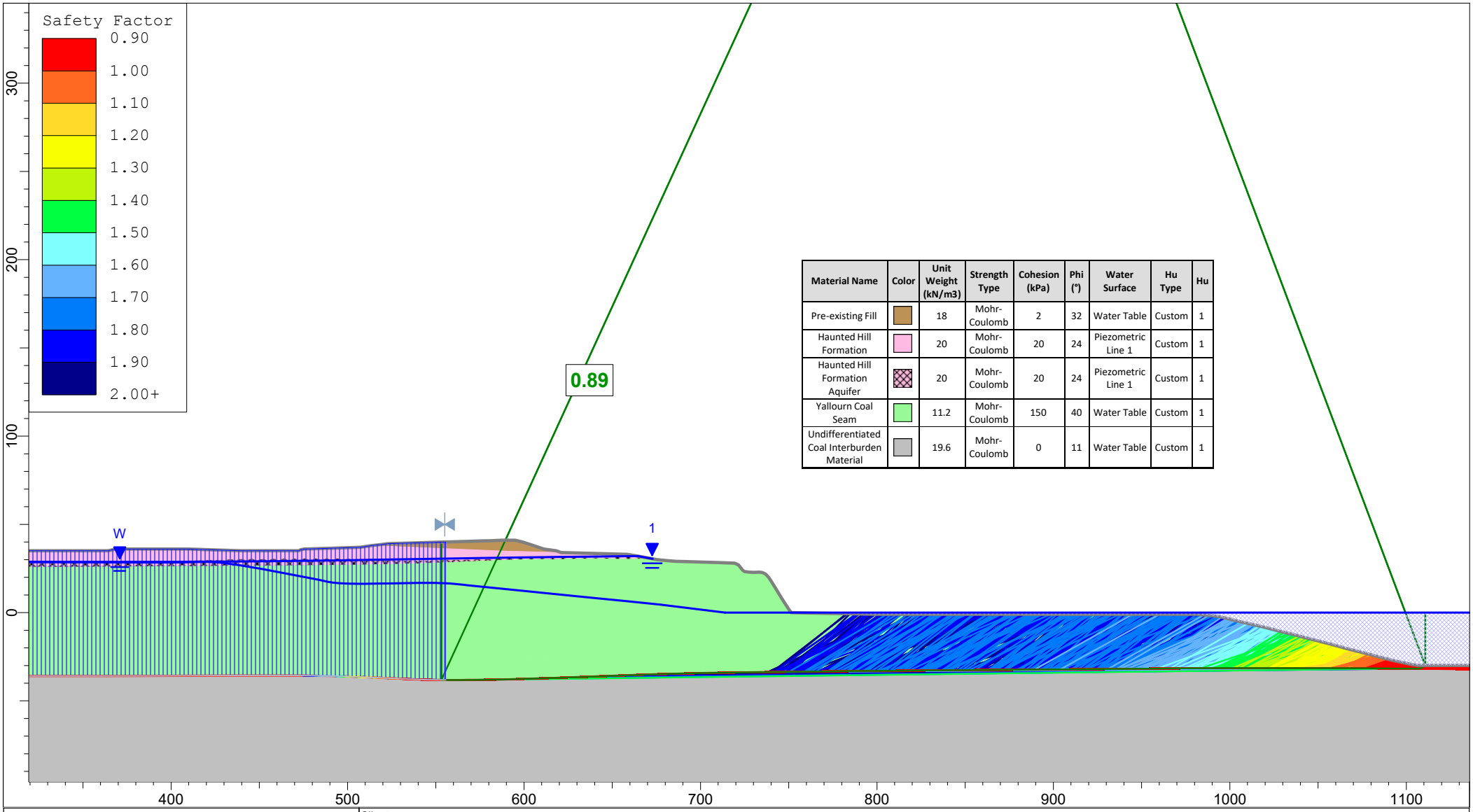
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



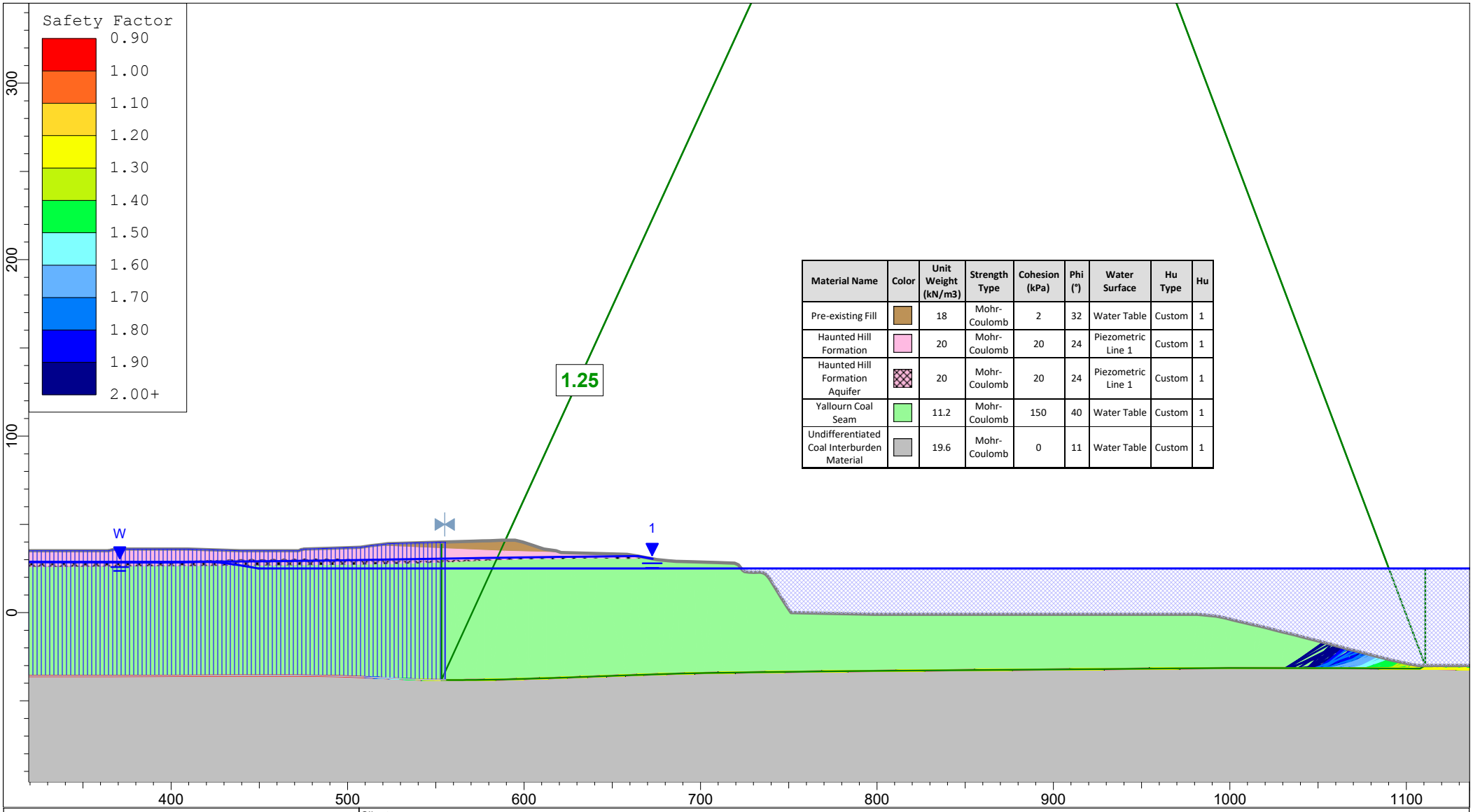
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



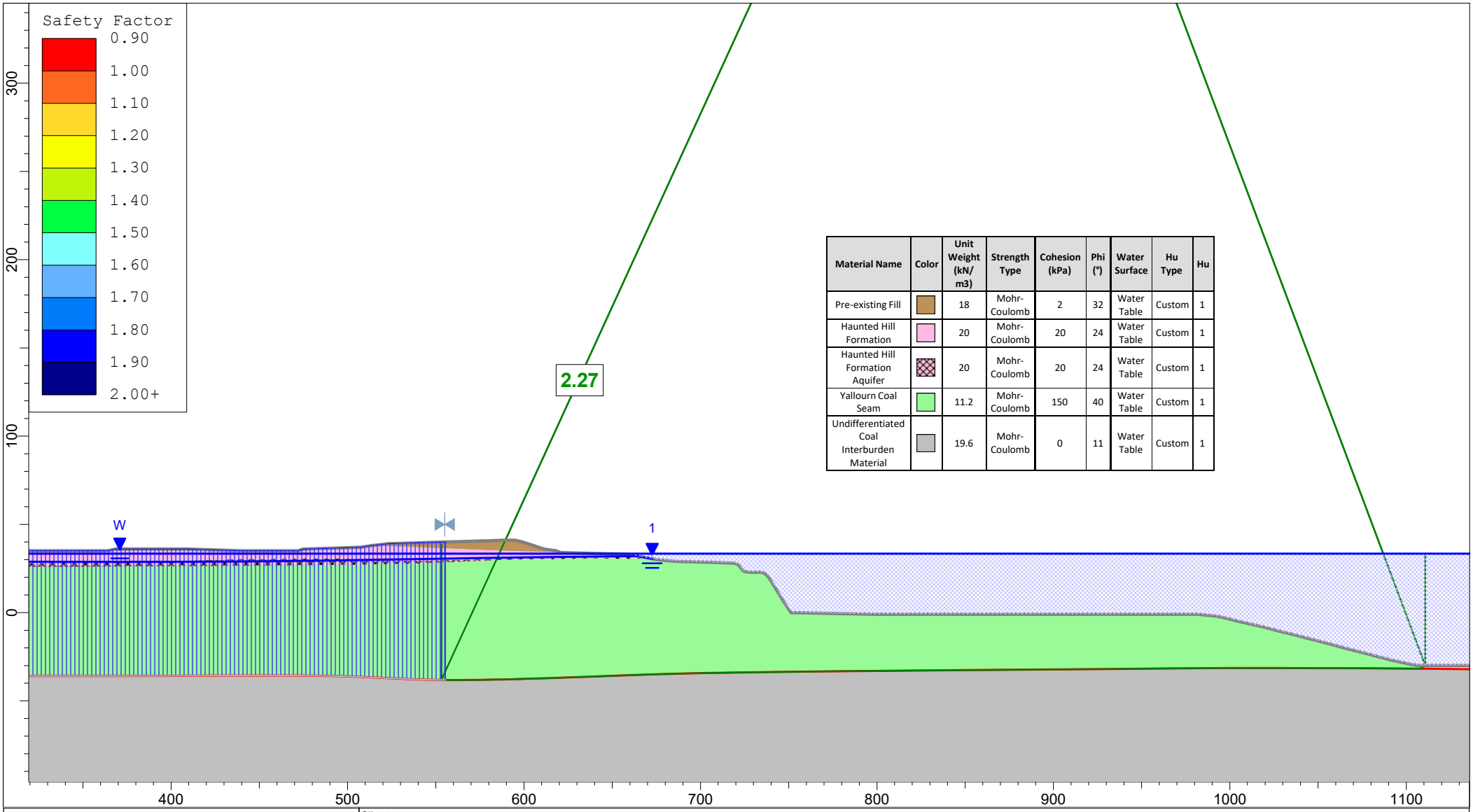
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



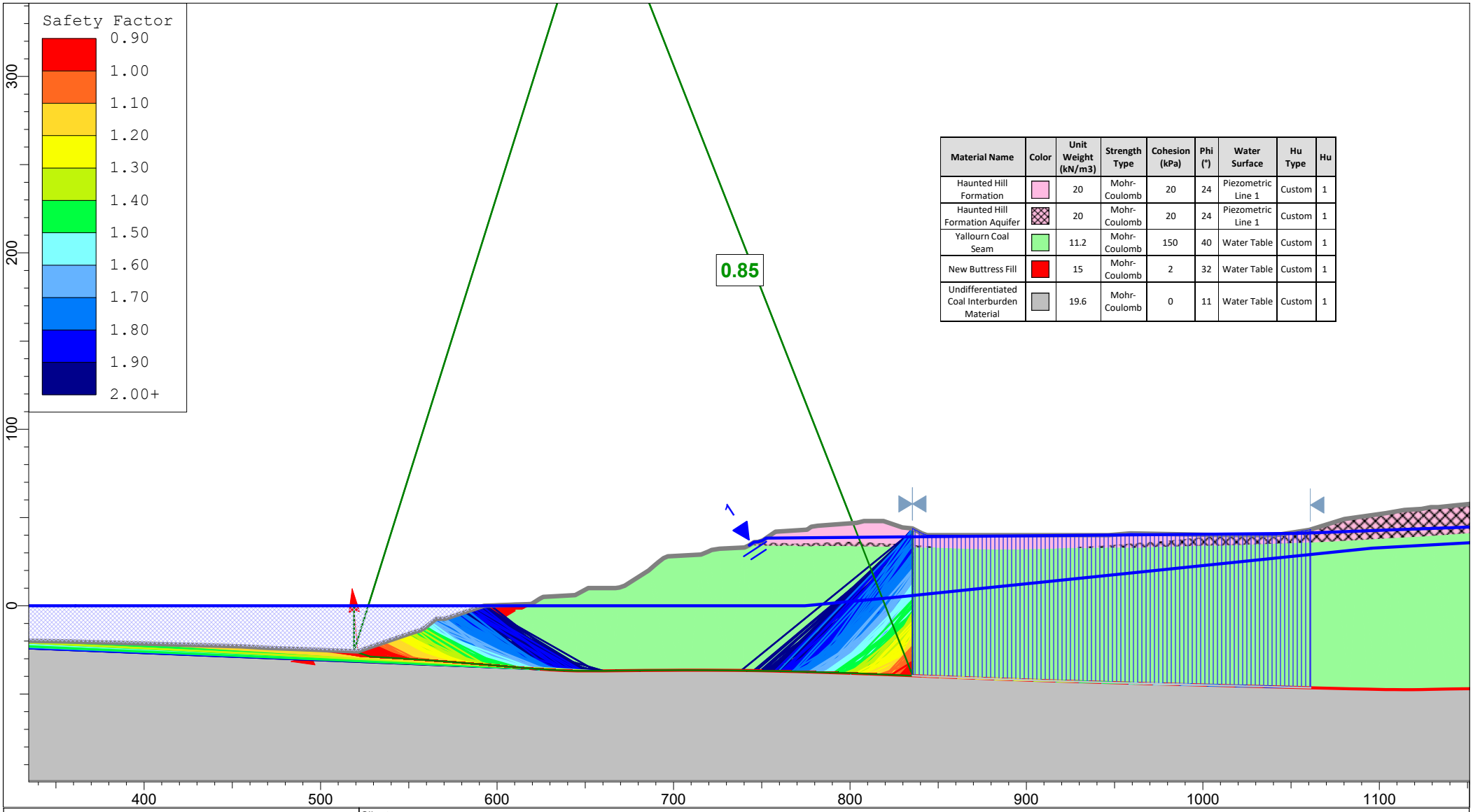
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



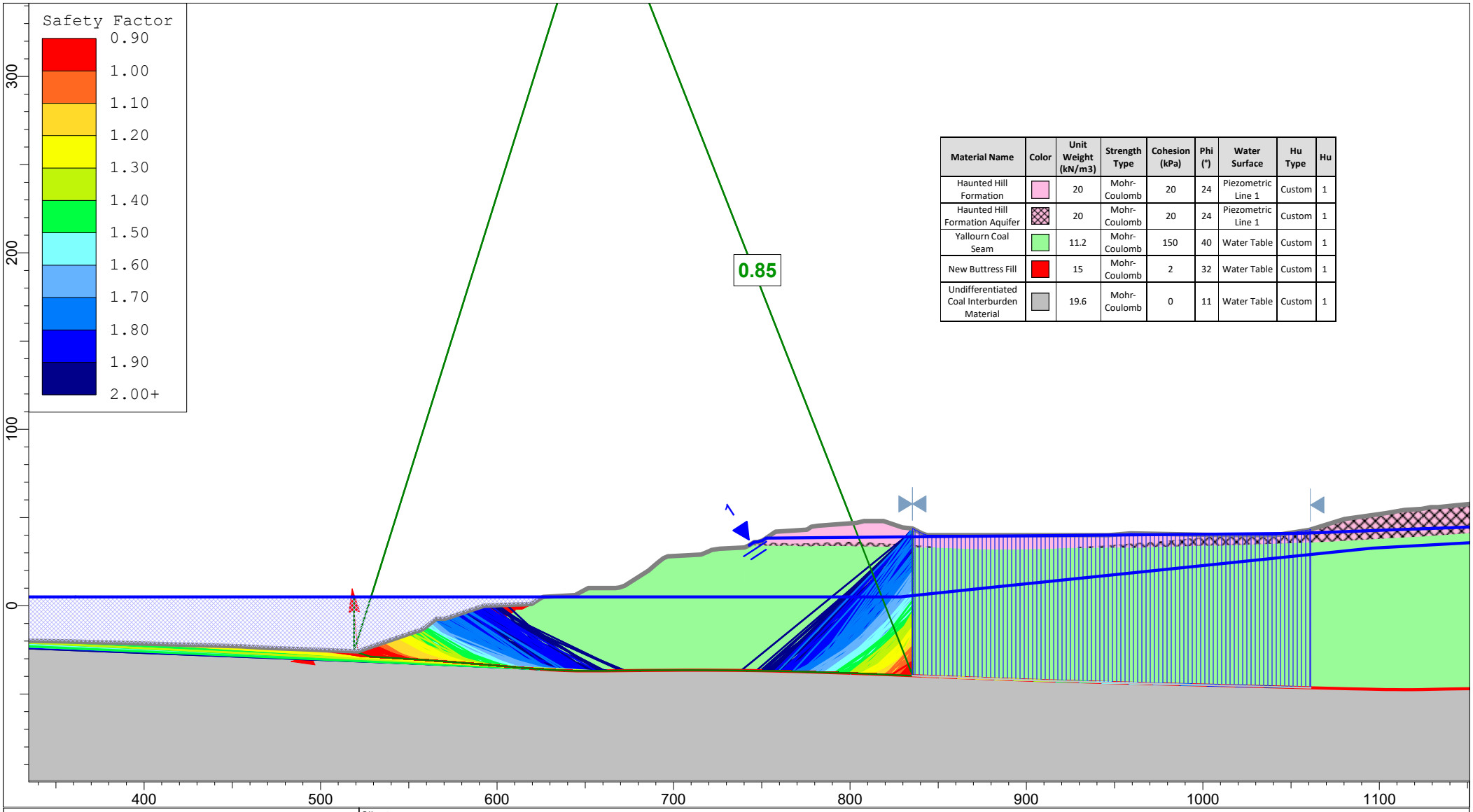
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



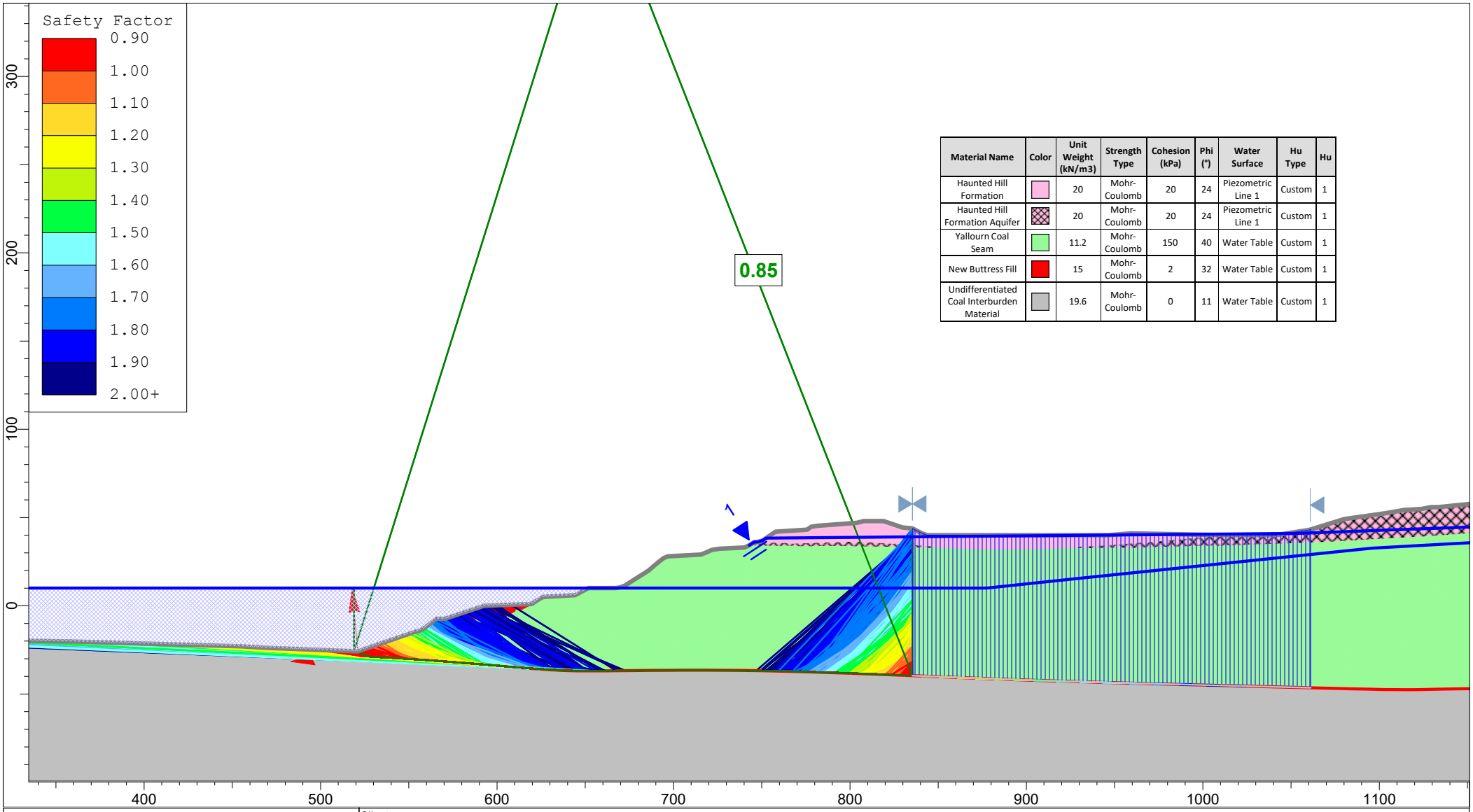
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



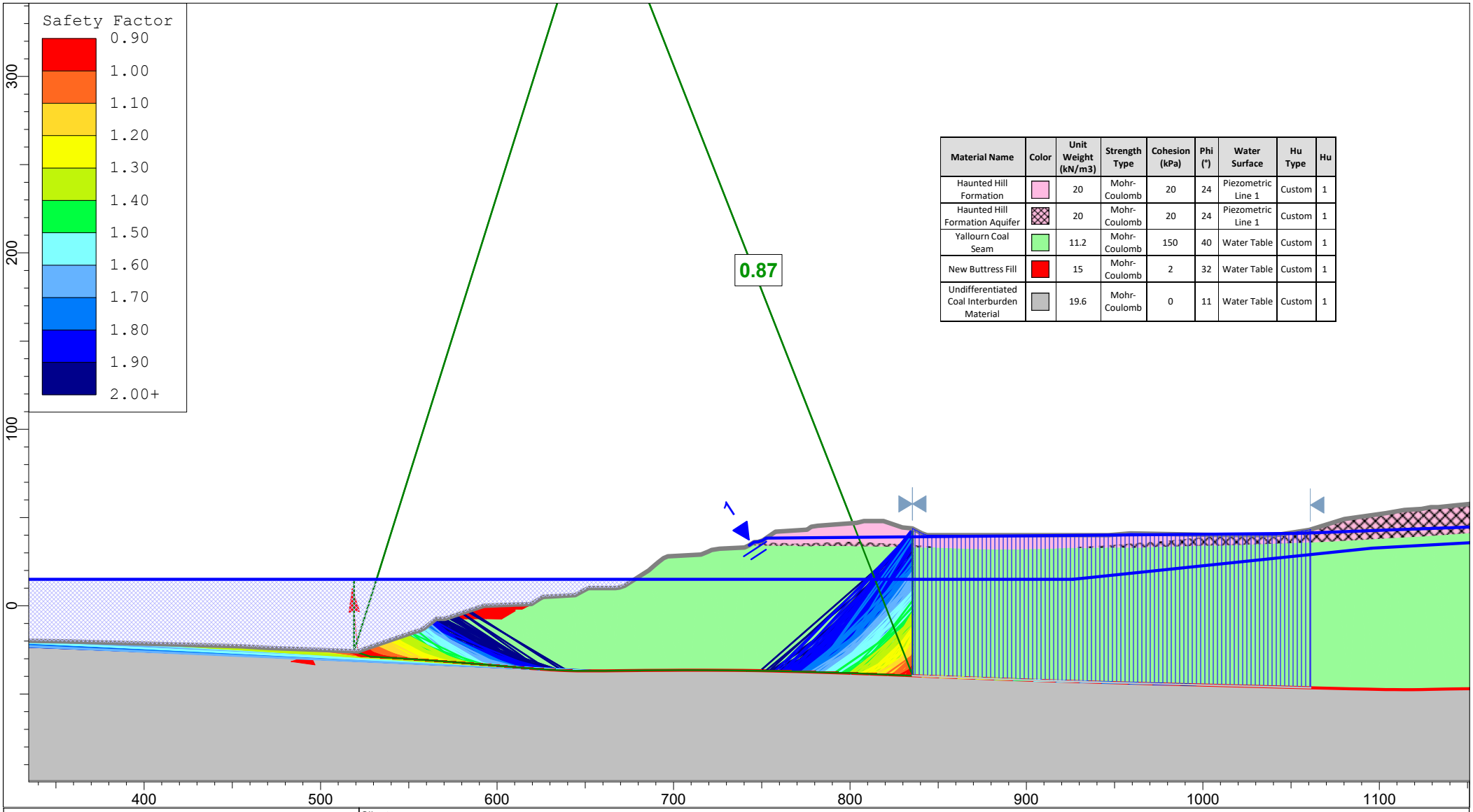
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



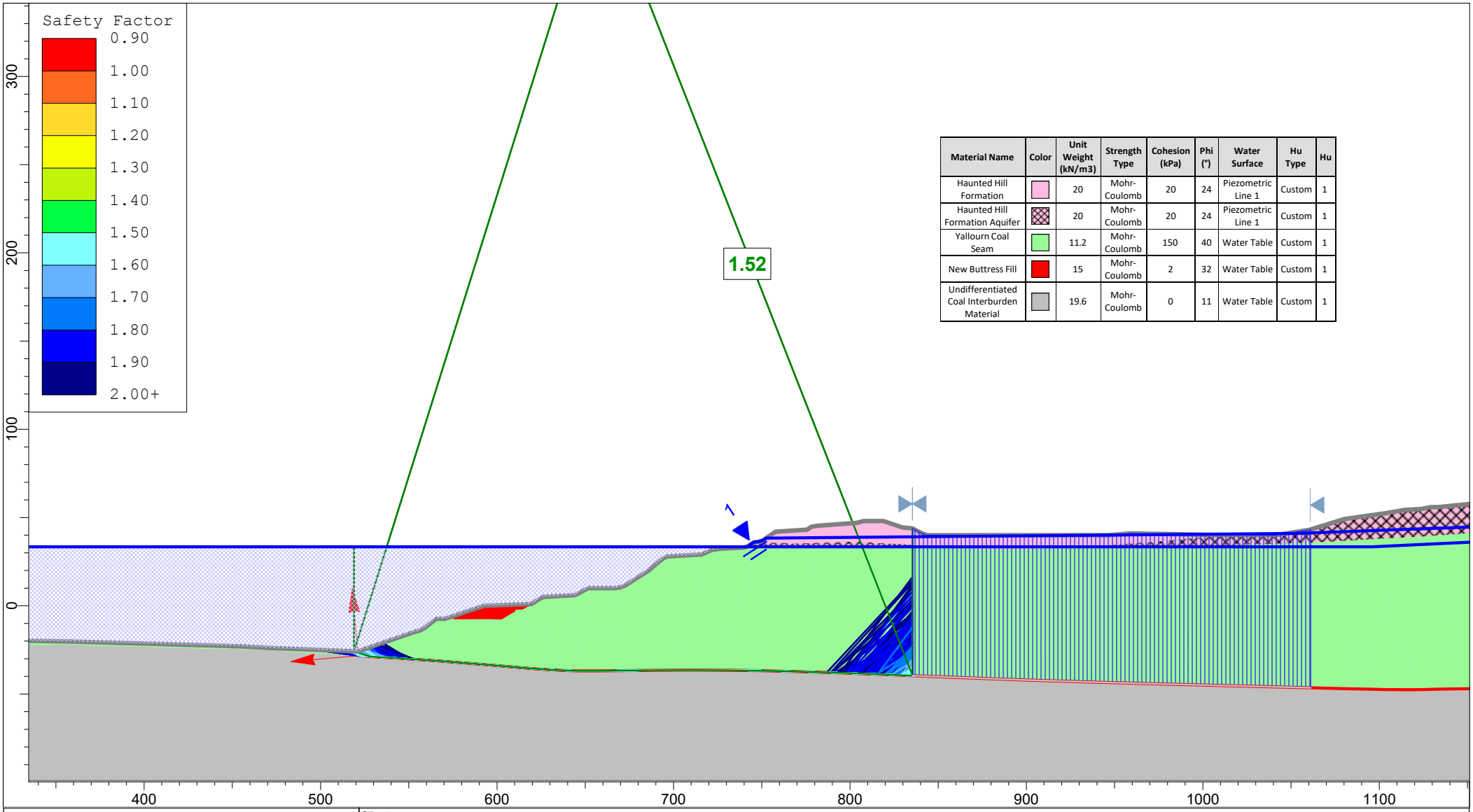
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



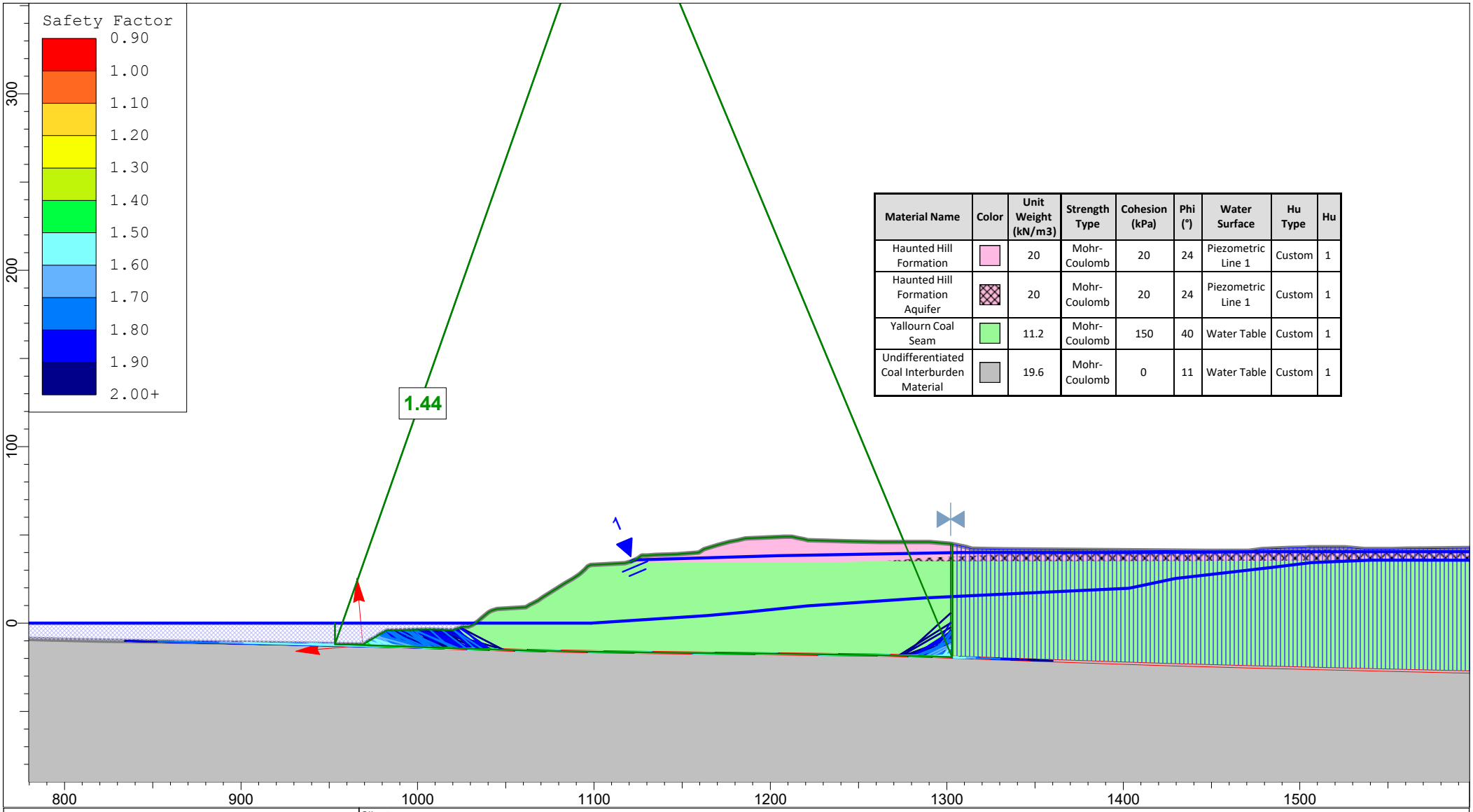
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



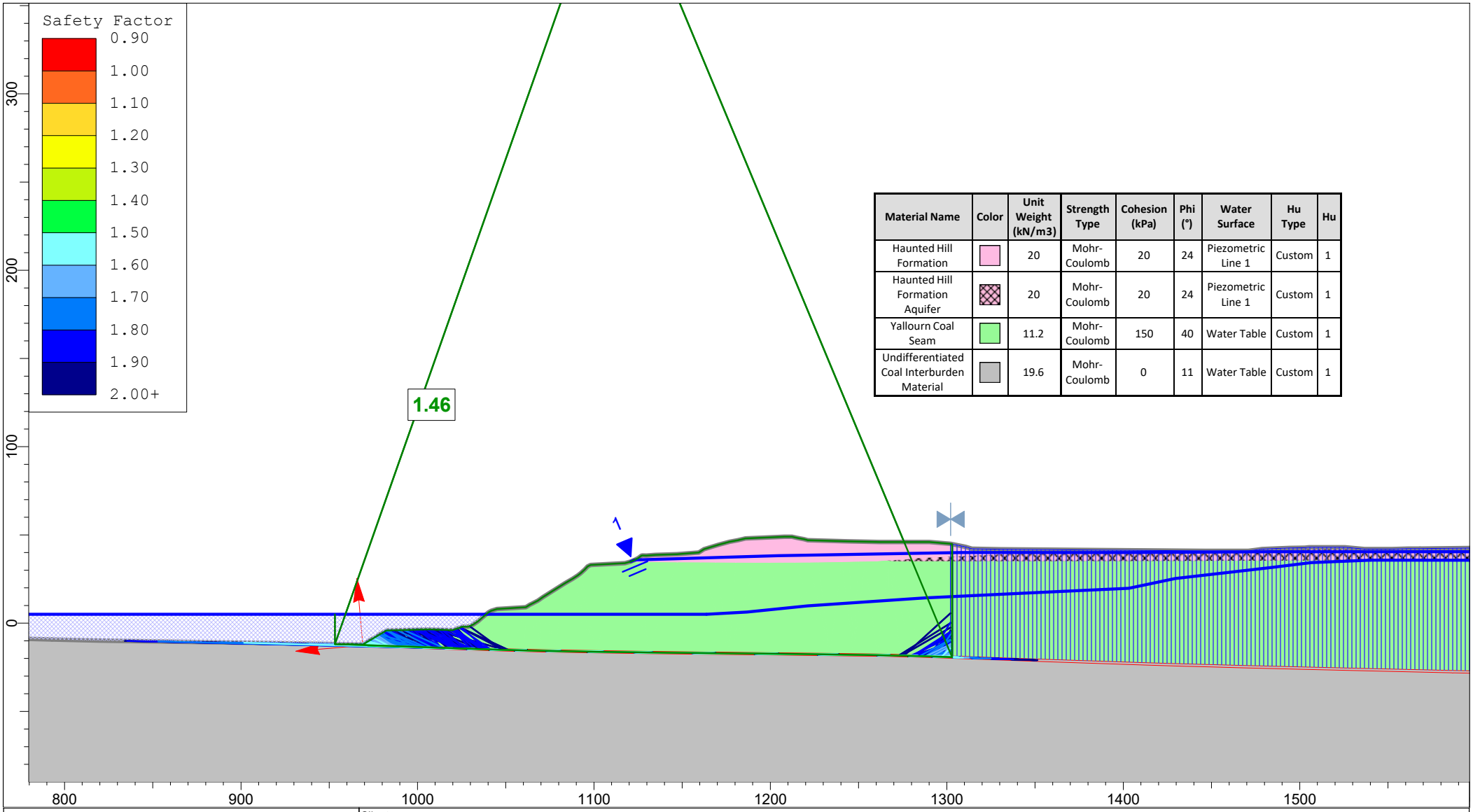
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



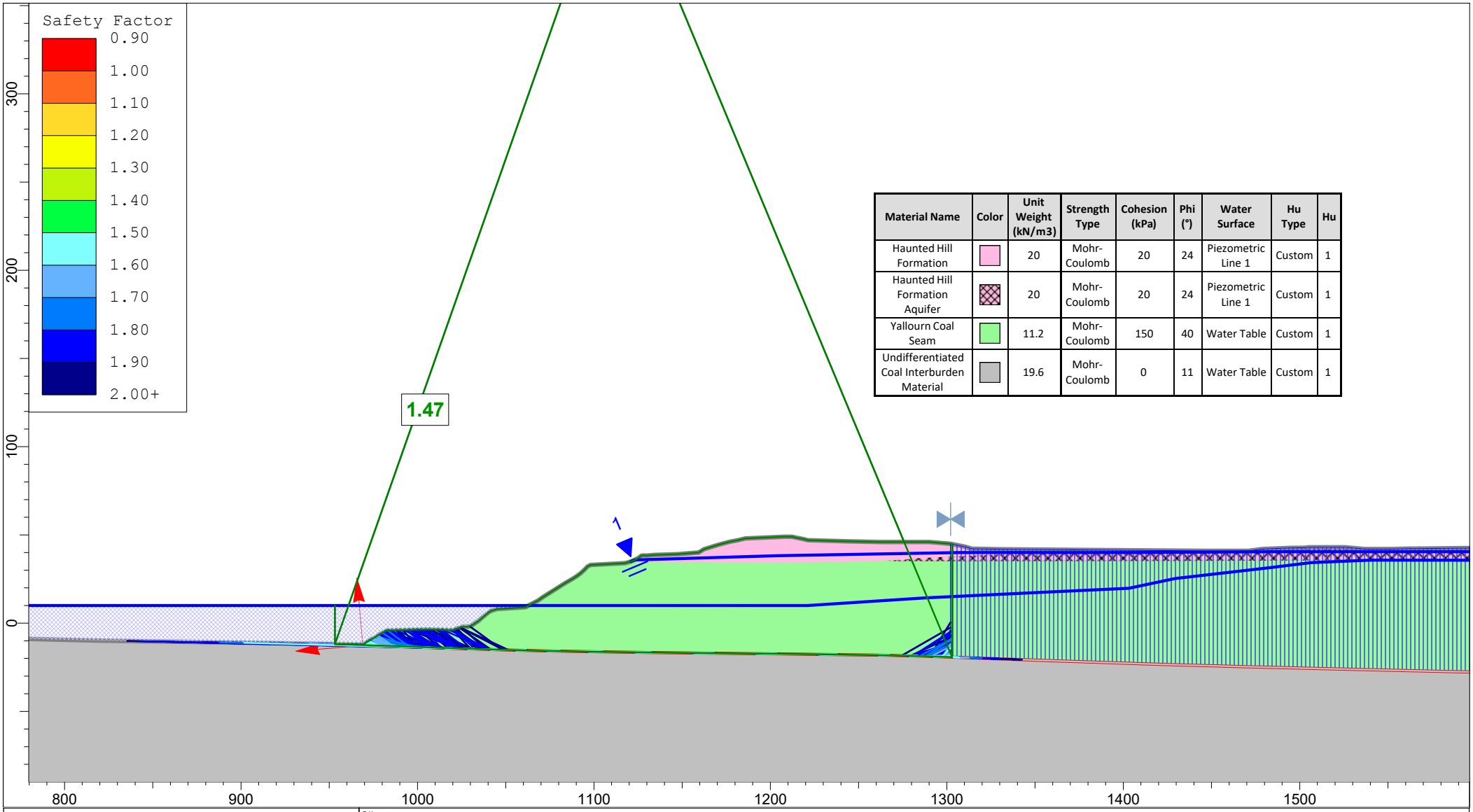
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



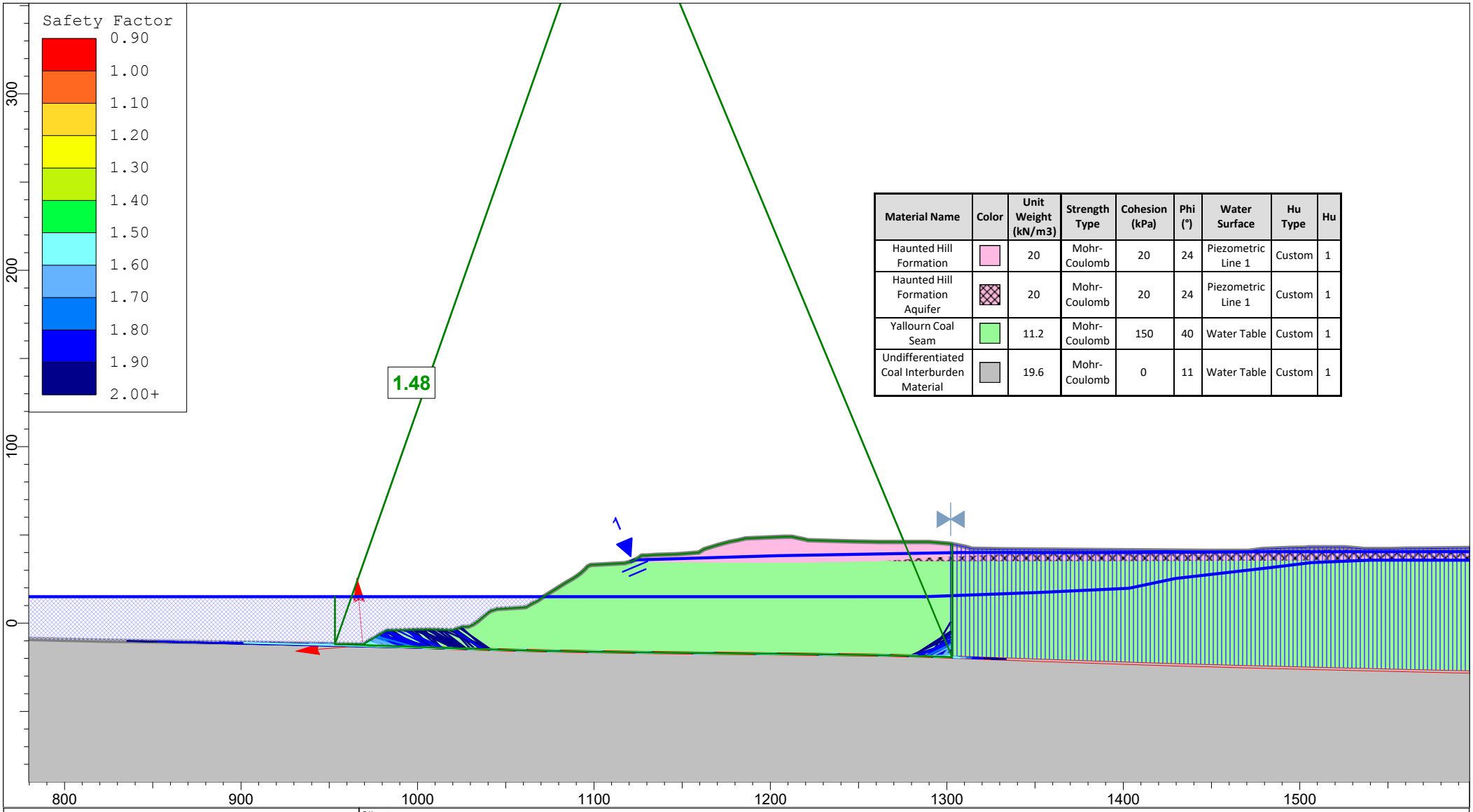
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



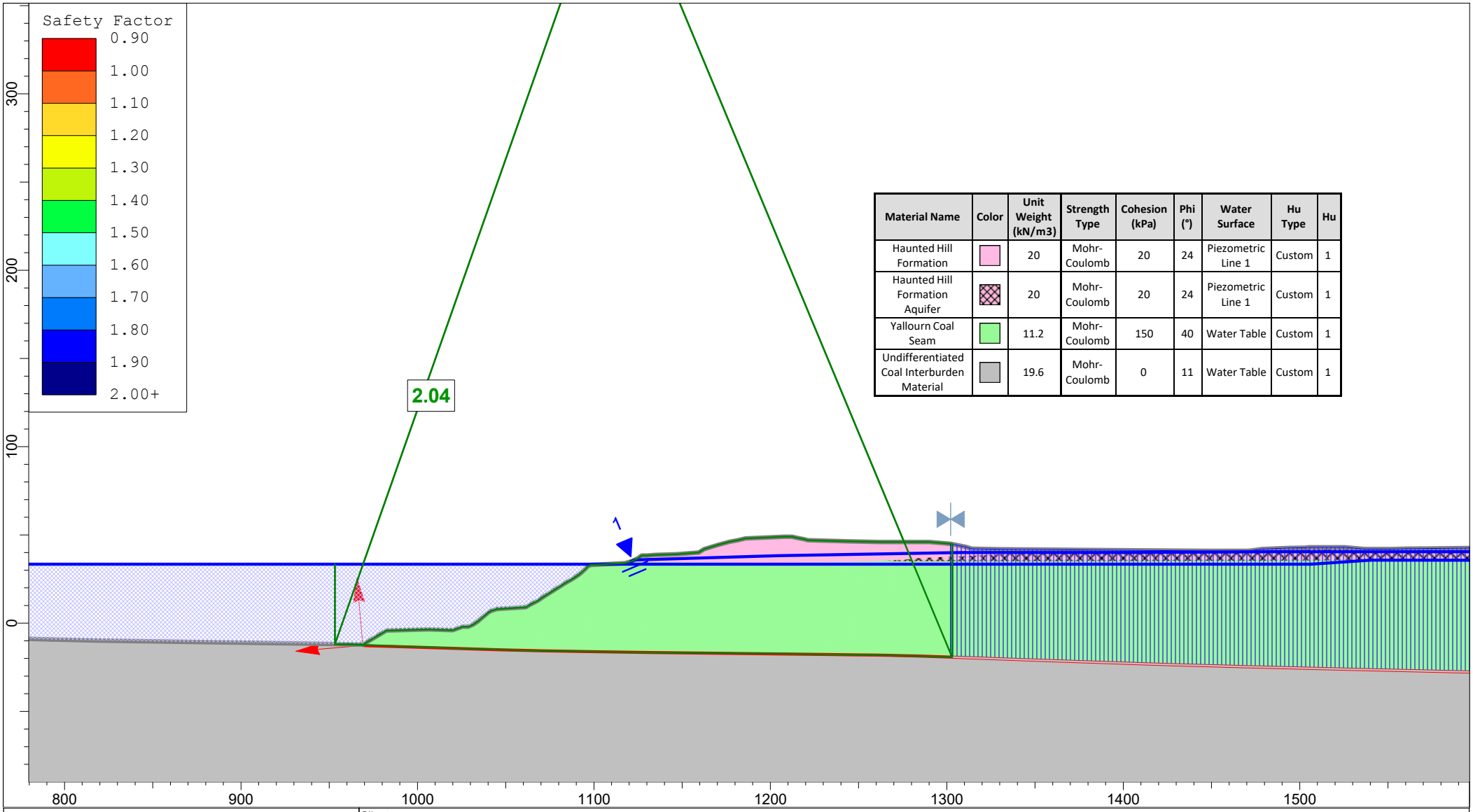
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



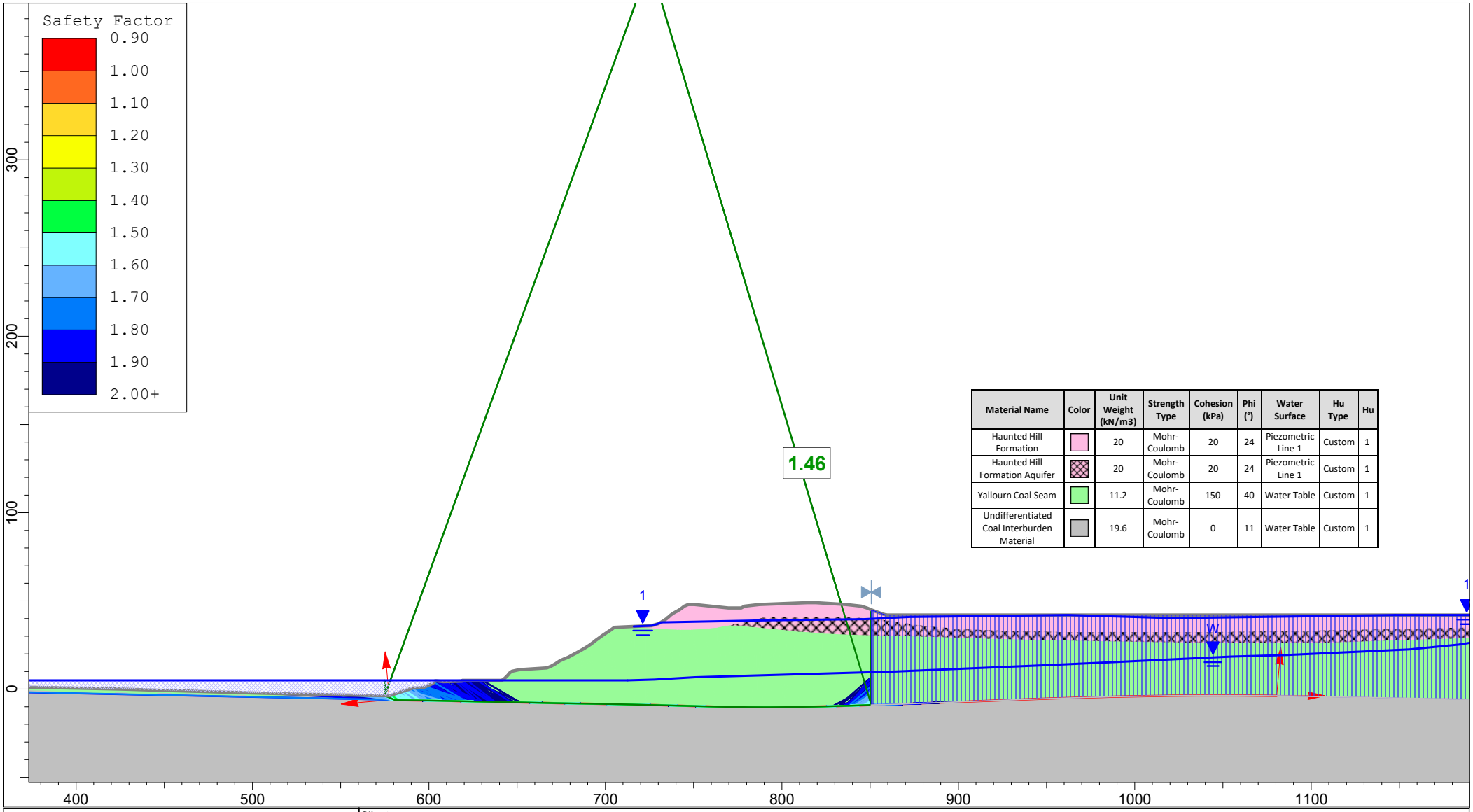
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



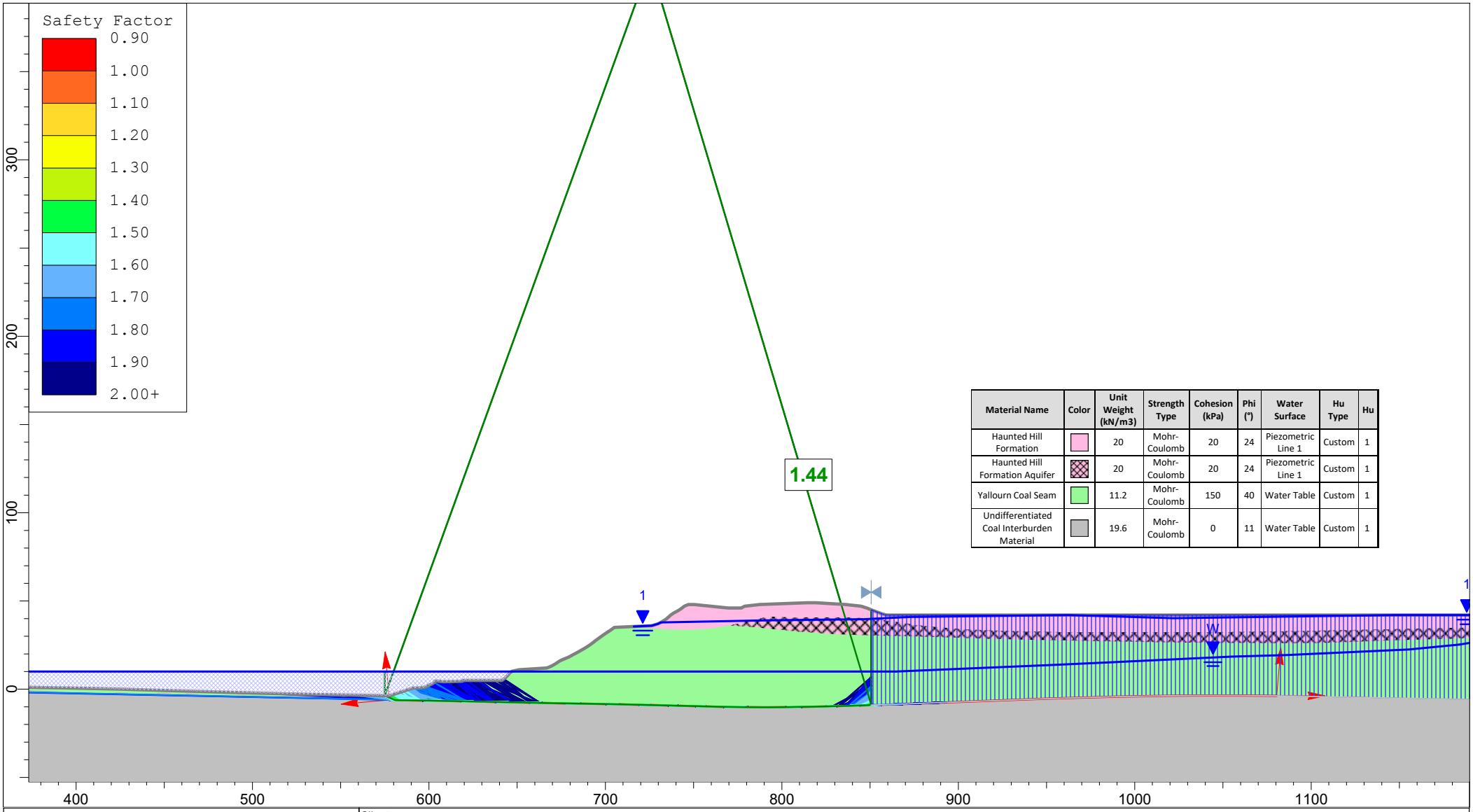
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



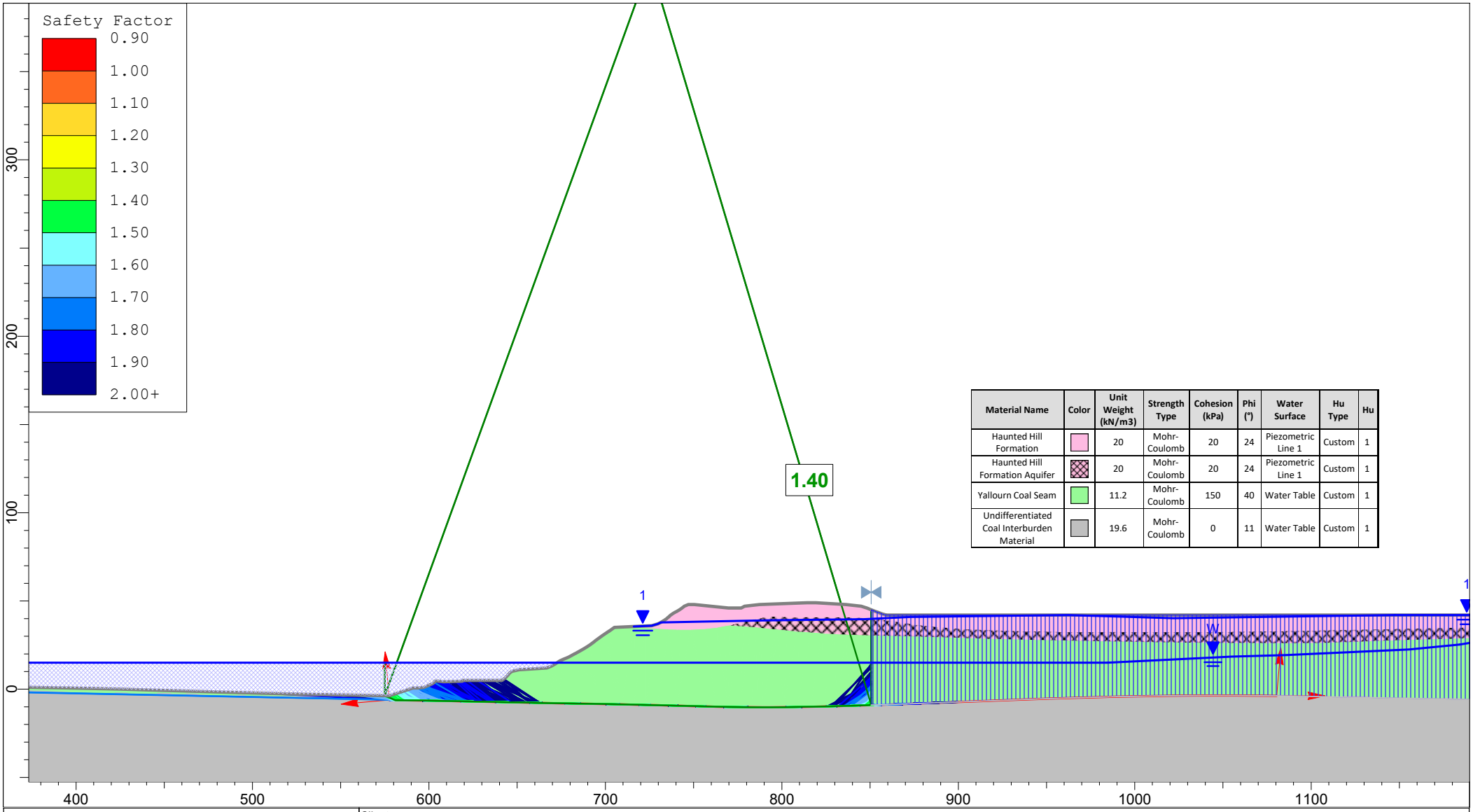
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



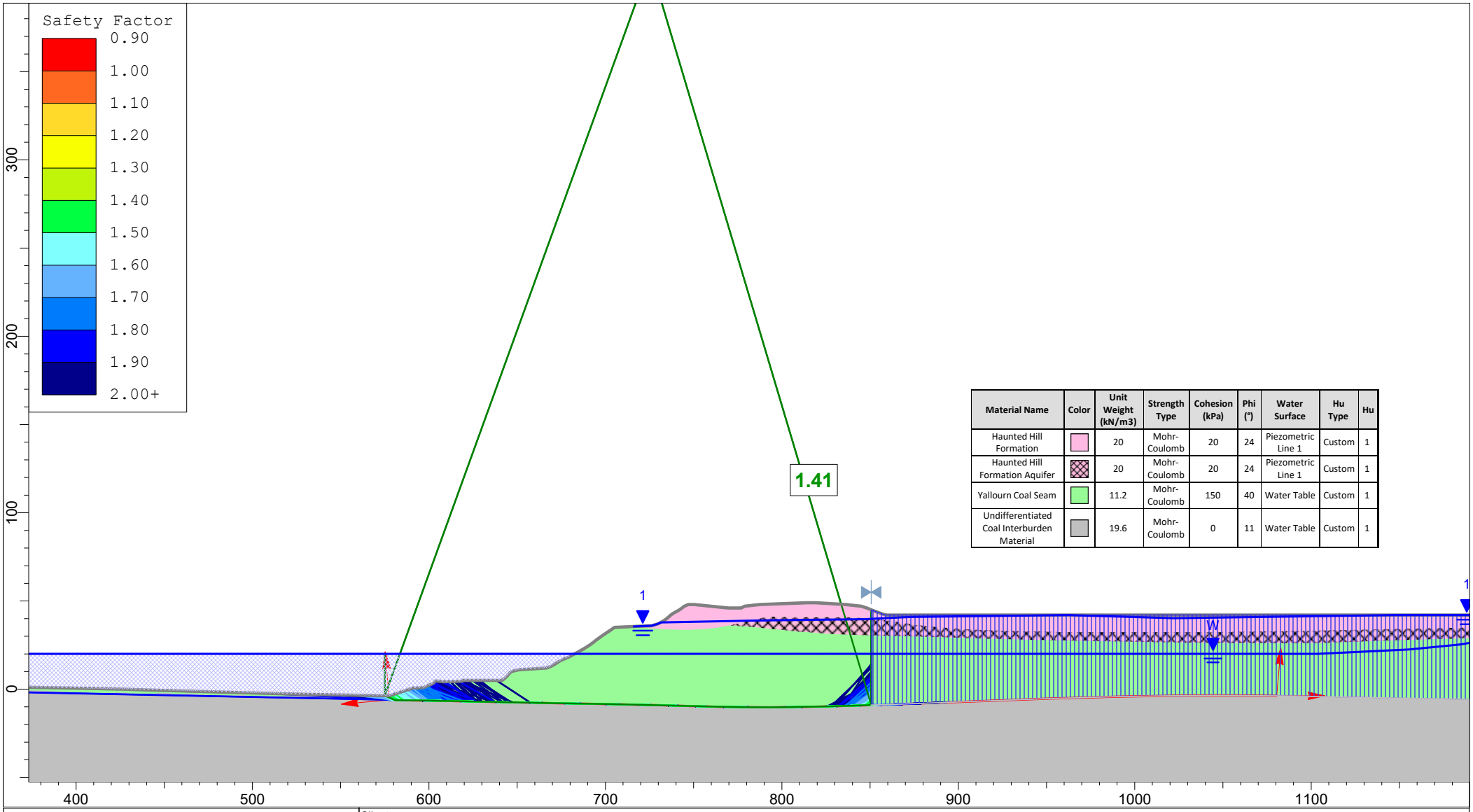
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



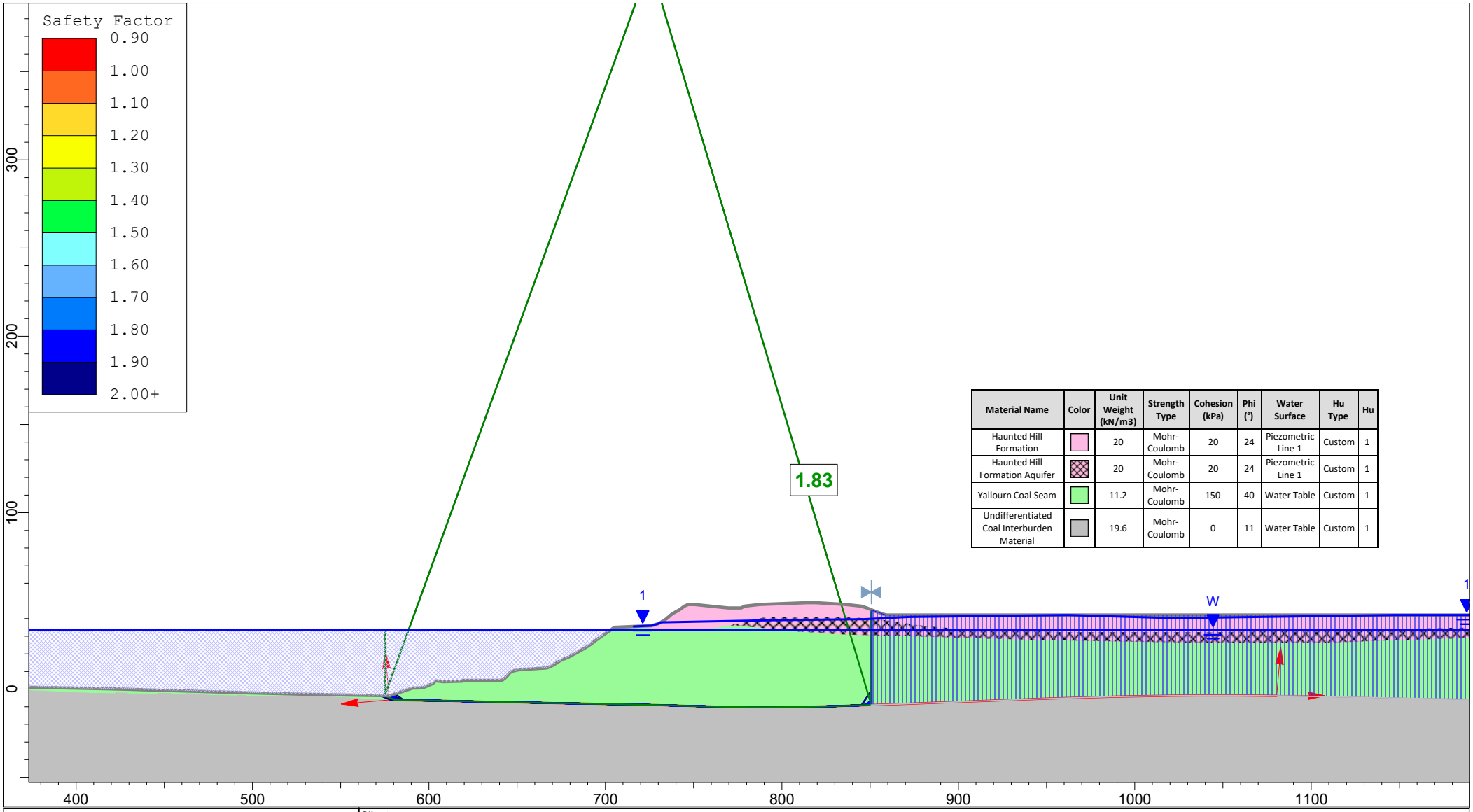
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



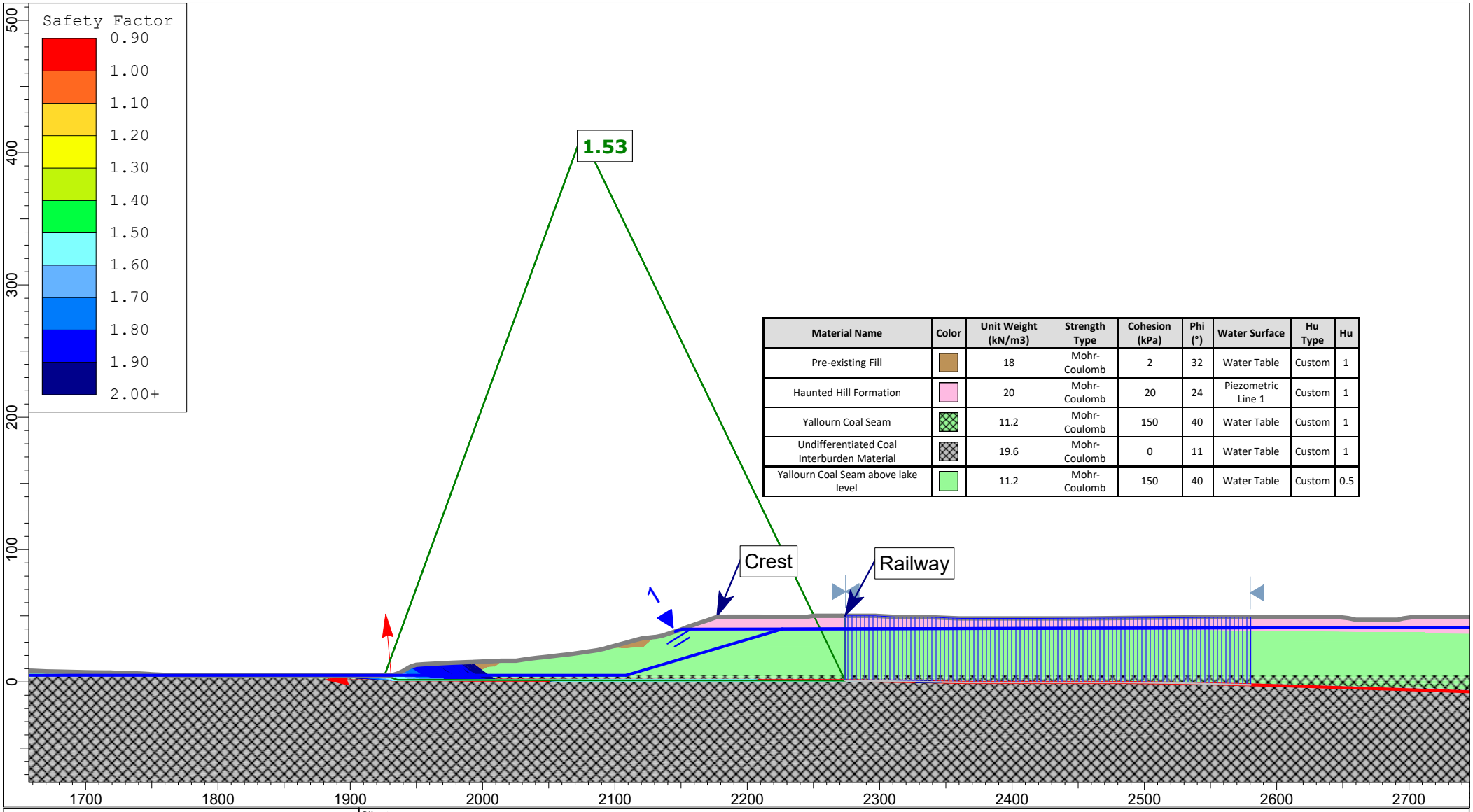
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



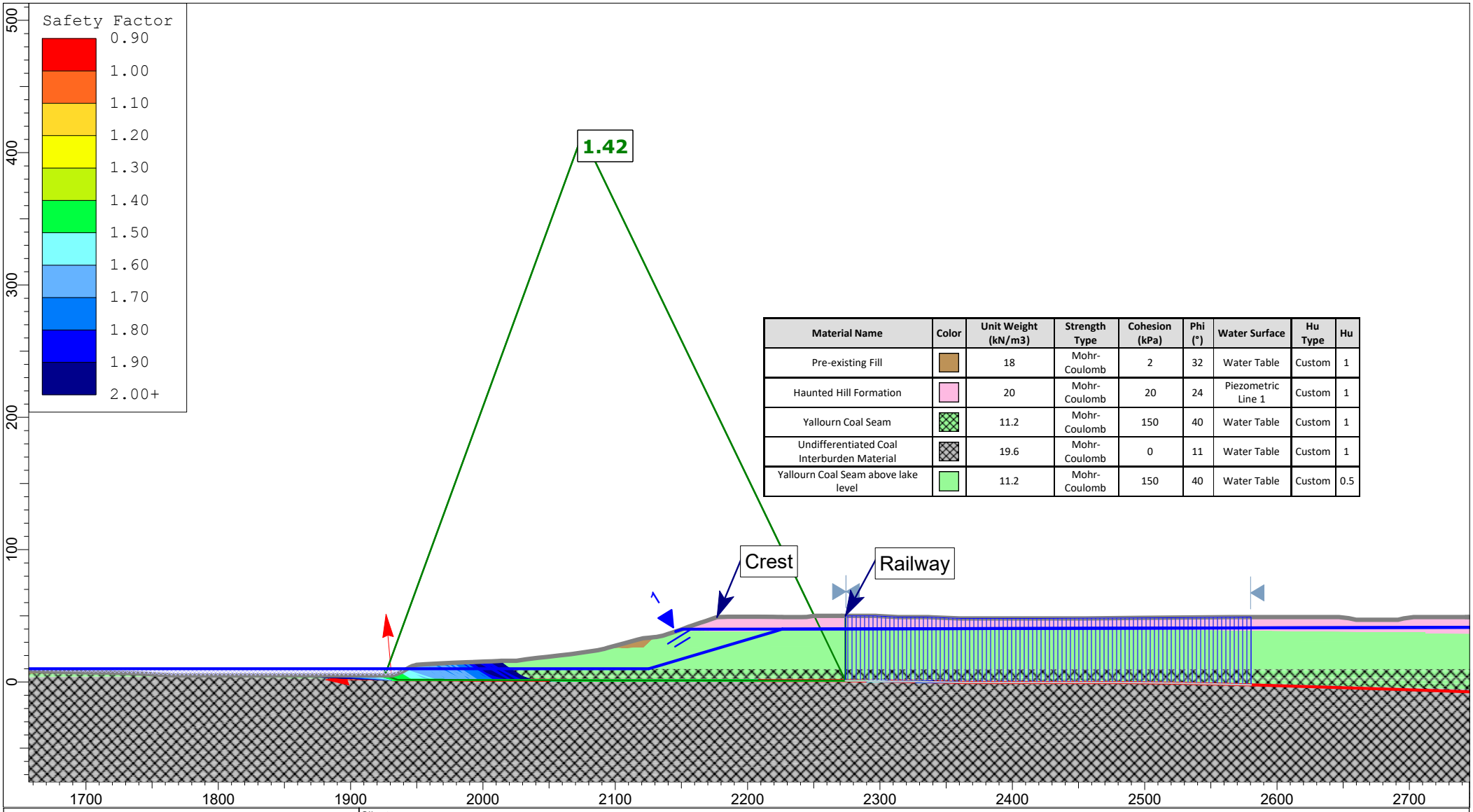
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



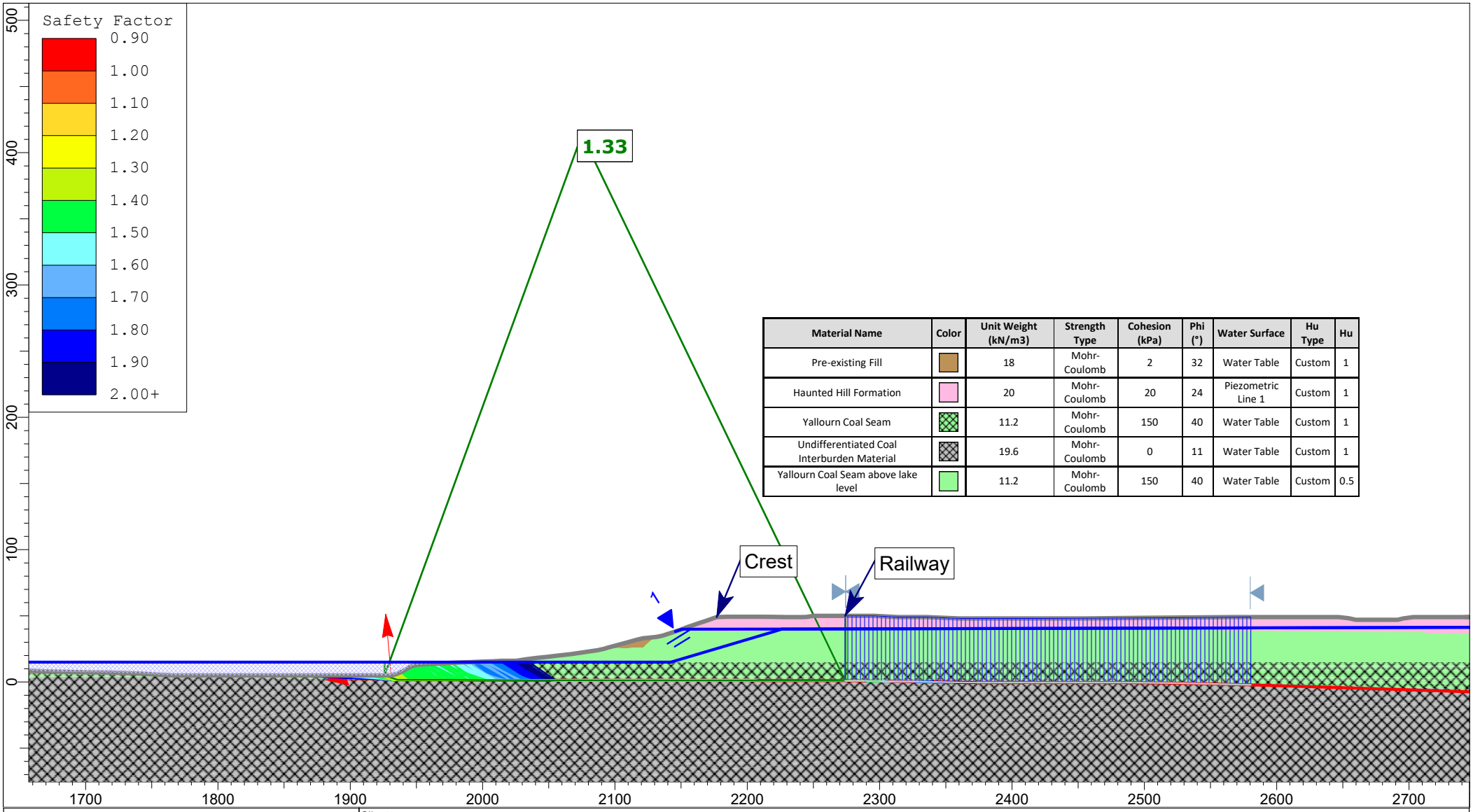
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above lake level		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



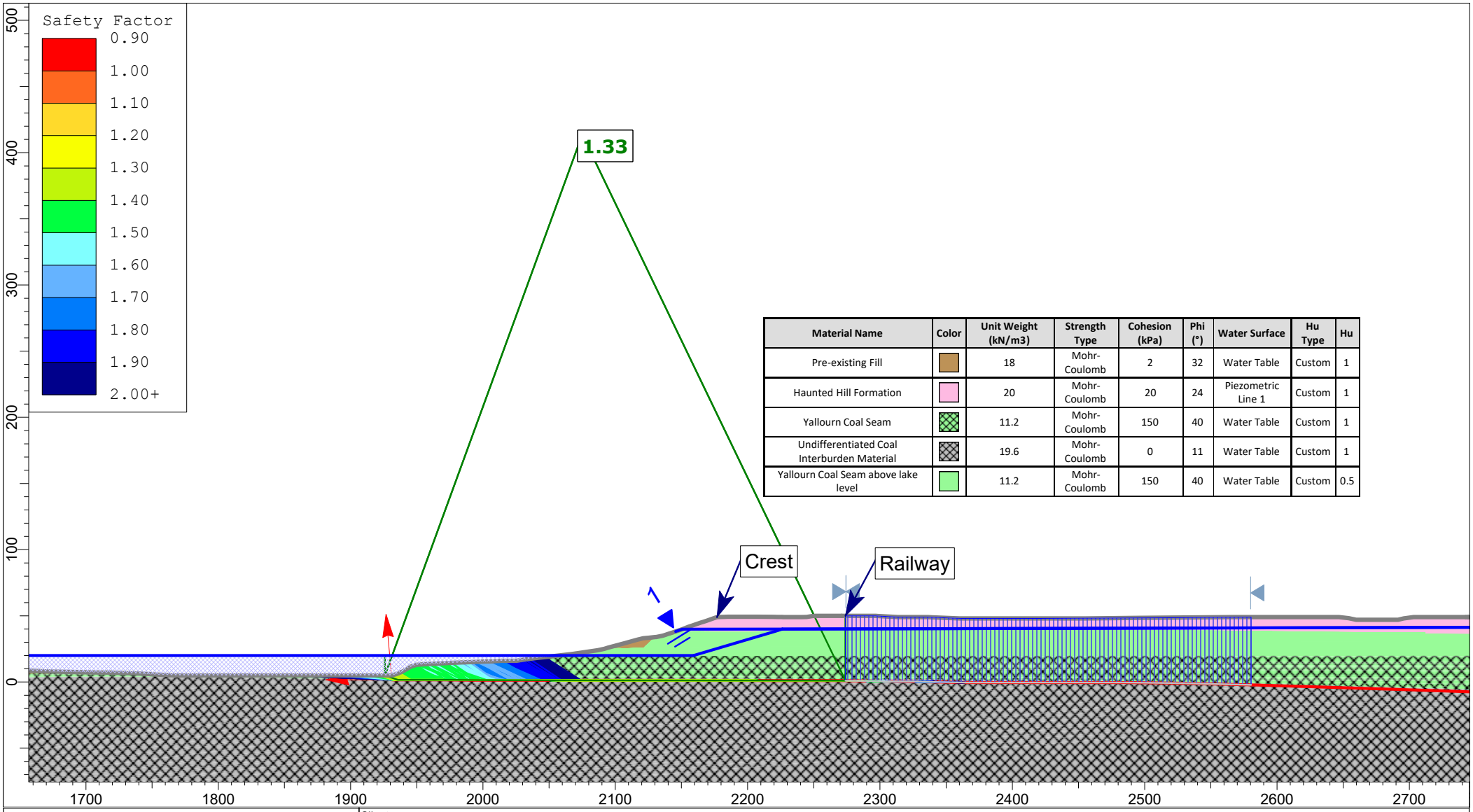
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above lake level		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



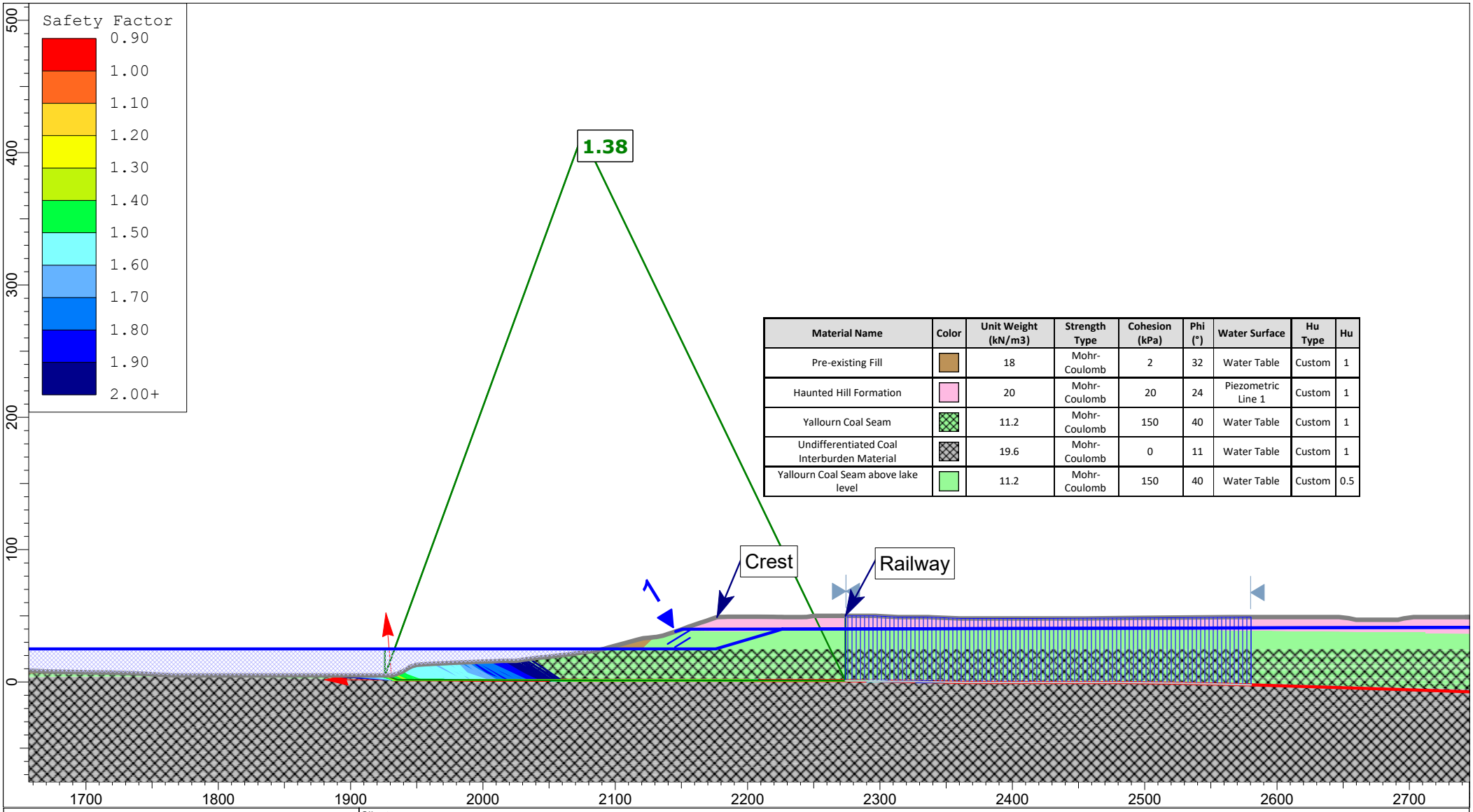
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above lake level		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



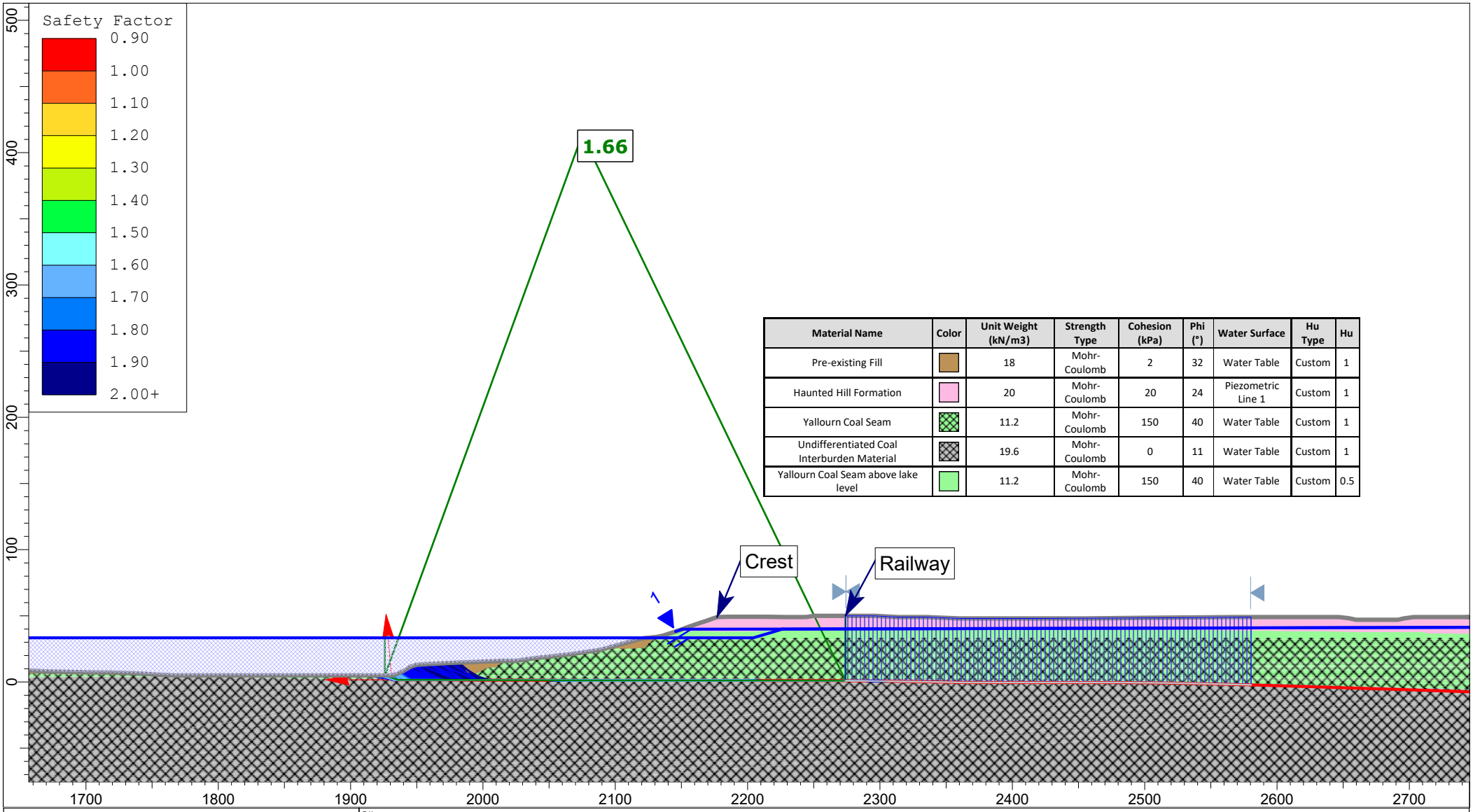
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above lake level		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



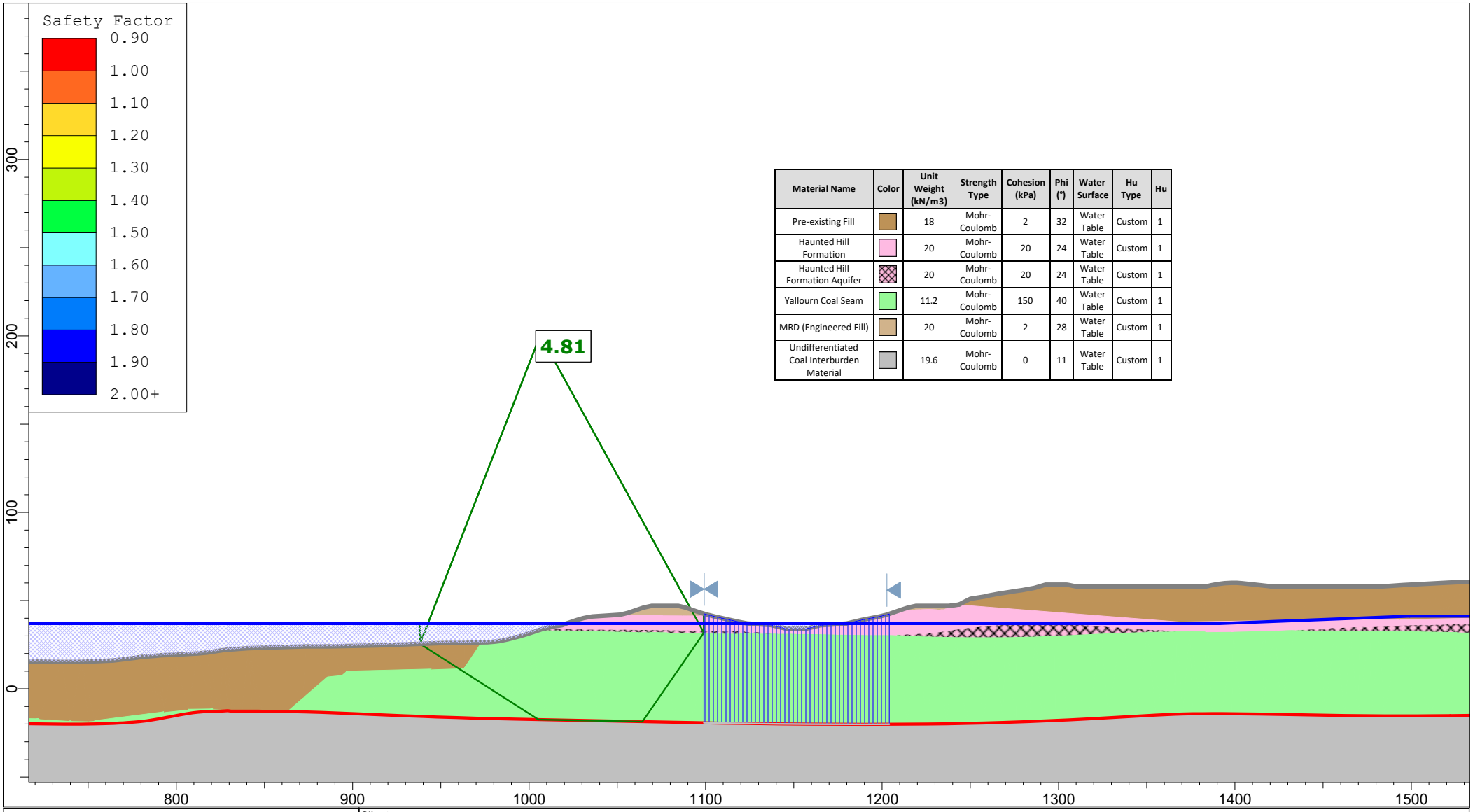
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above lake level		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



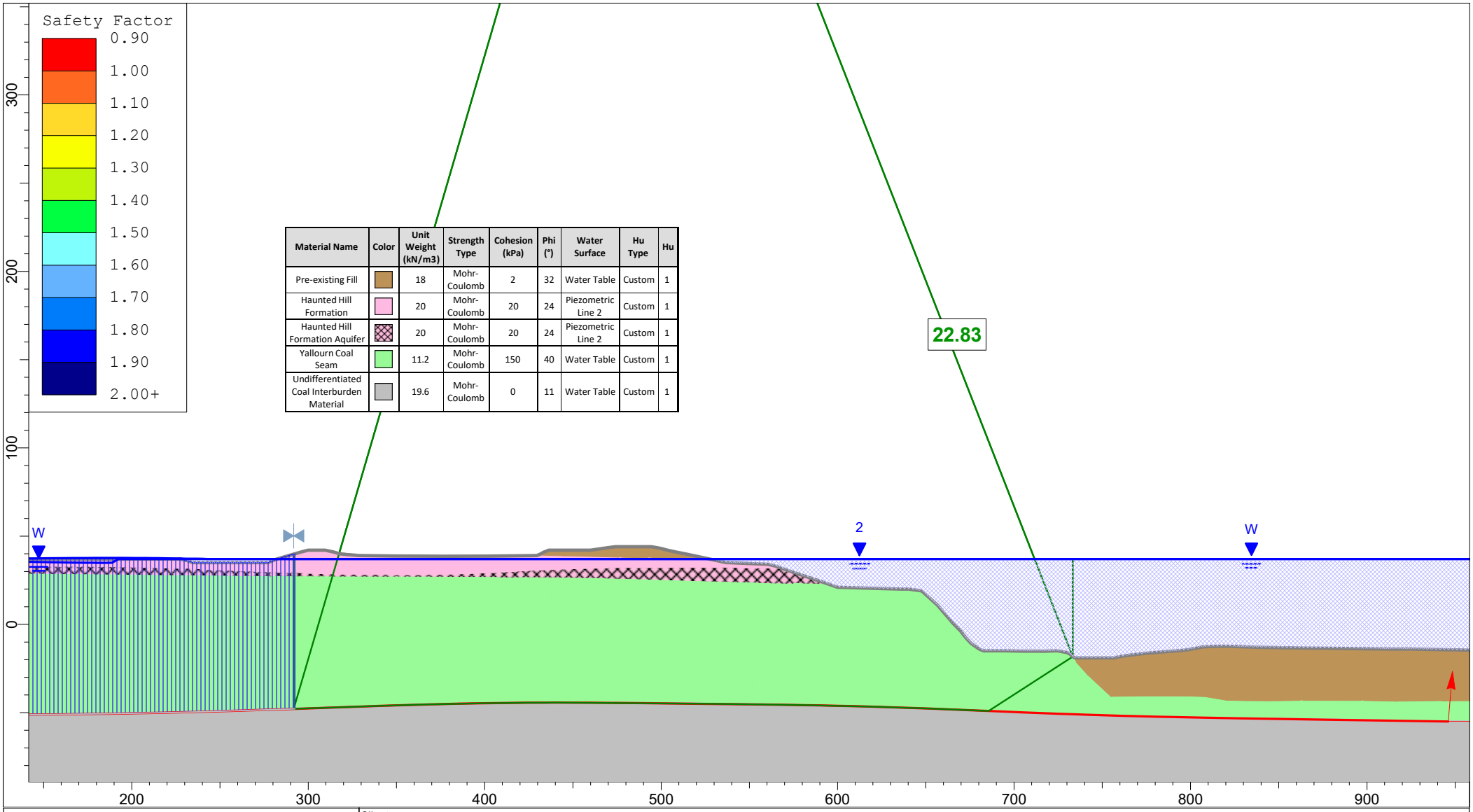
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above lake level		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



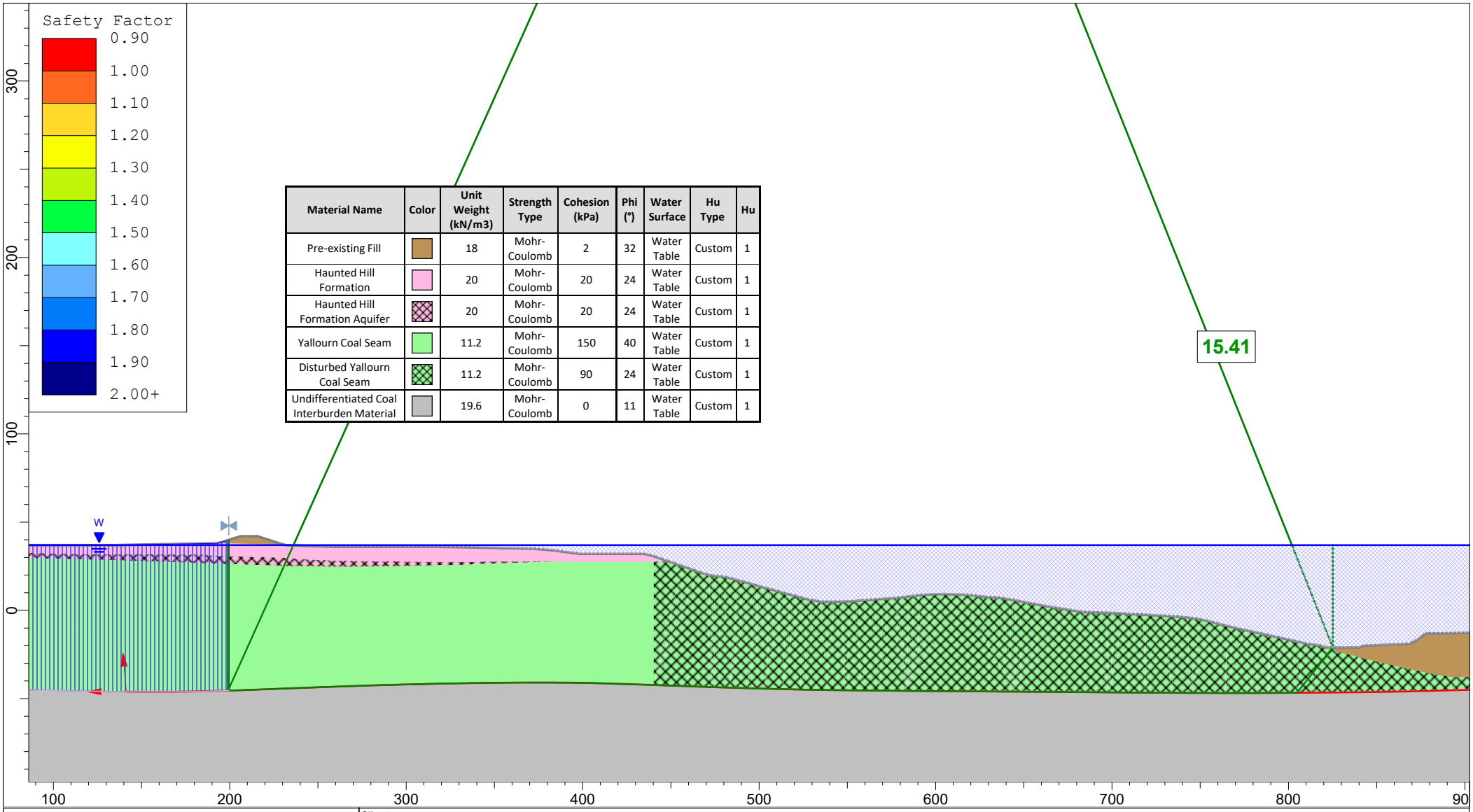
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



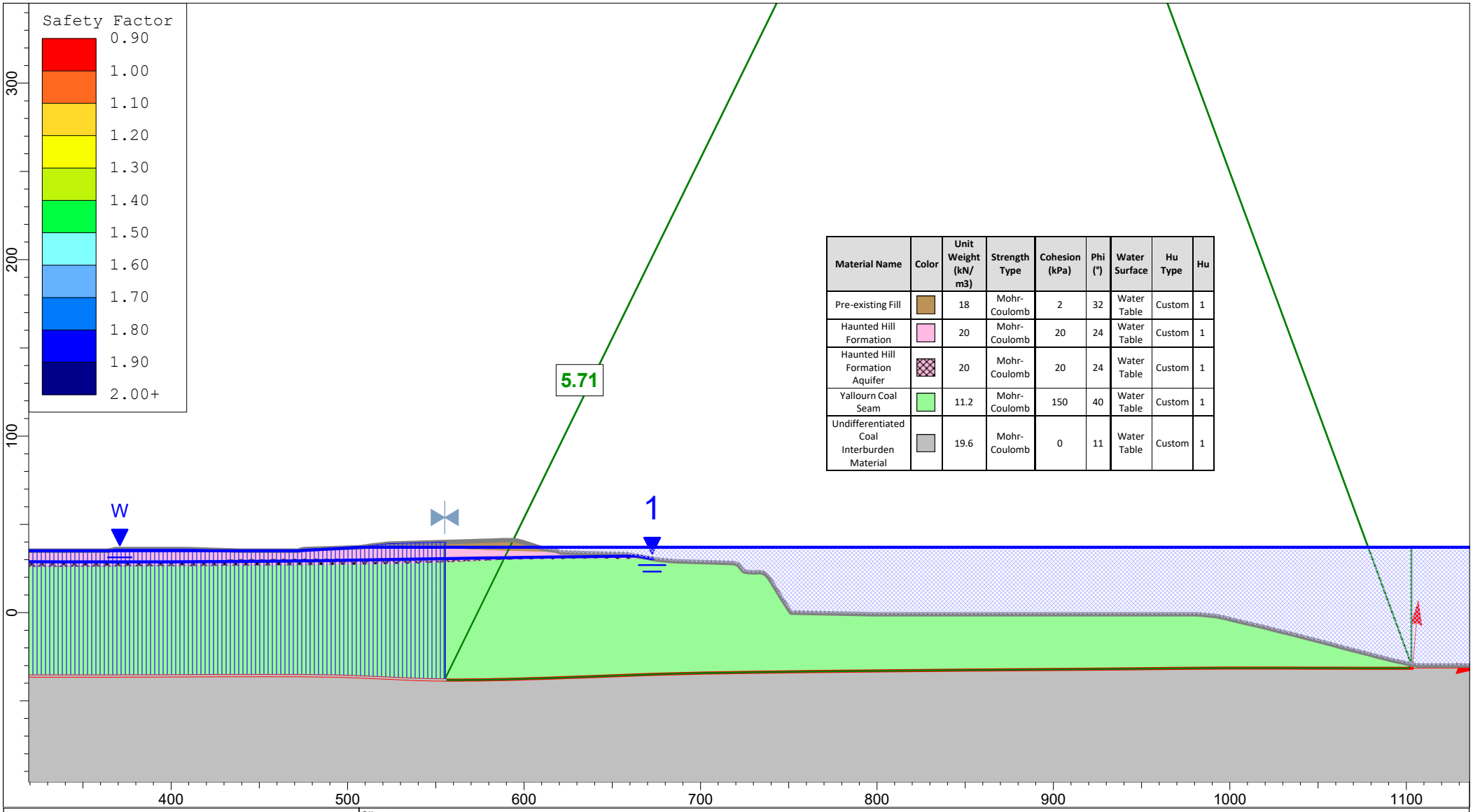
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



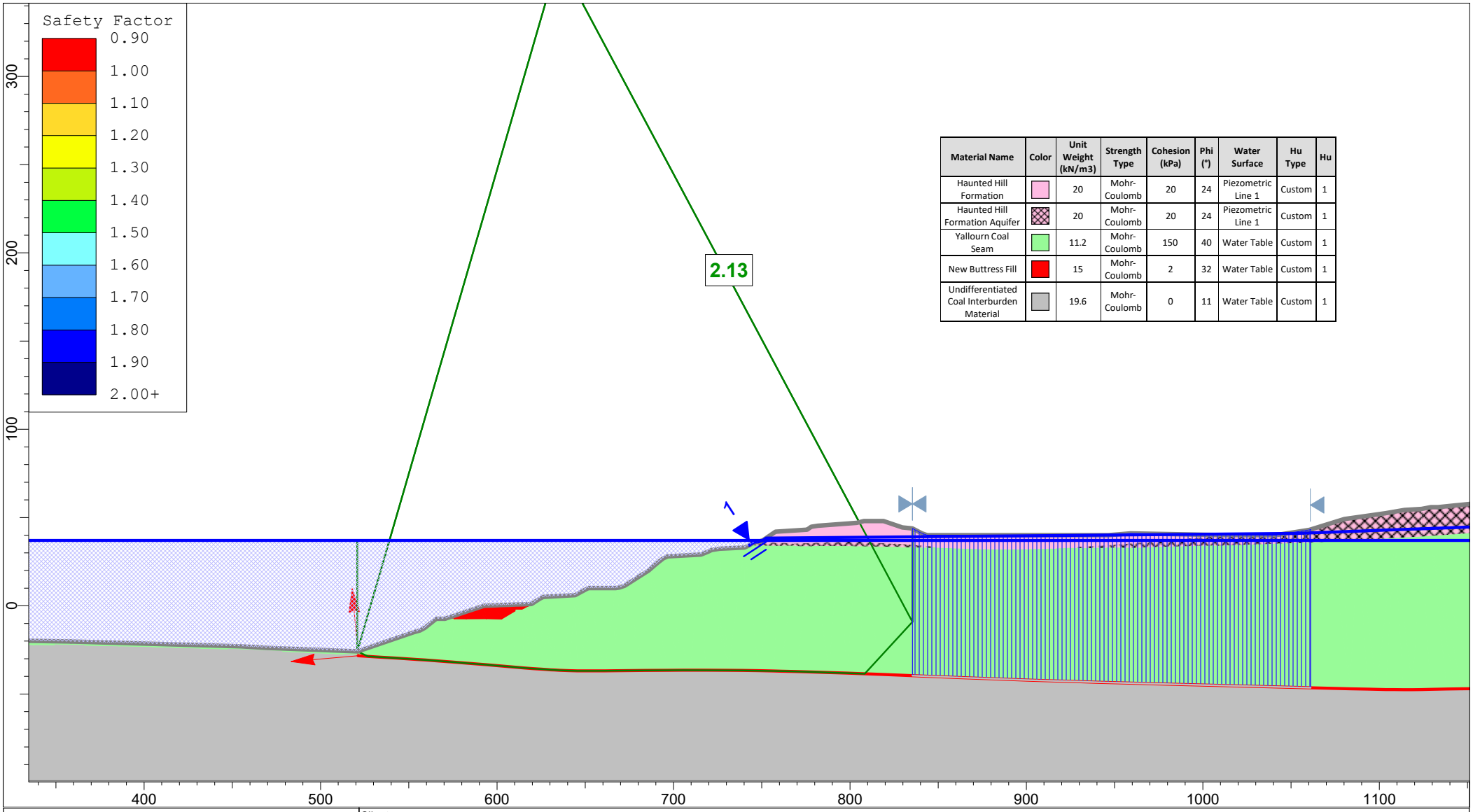
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



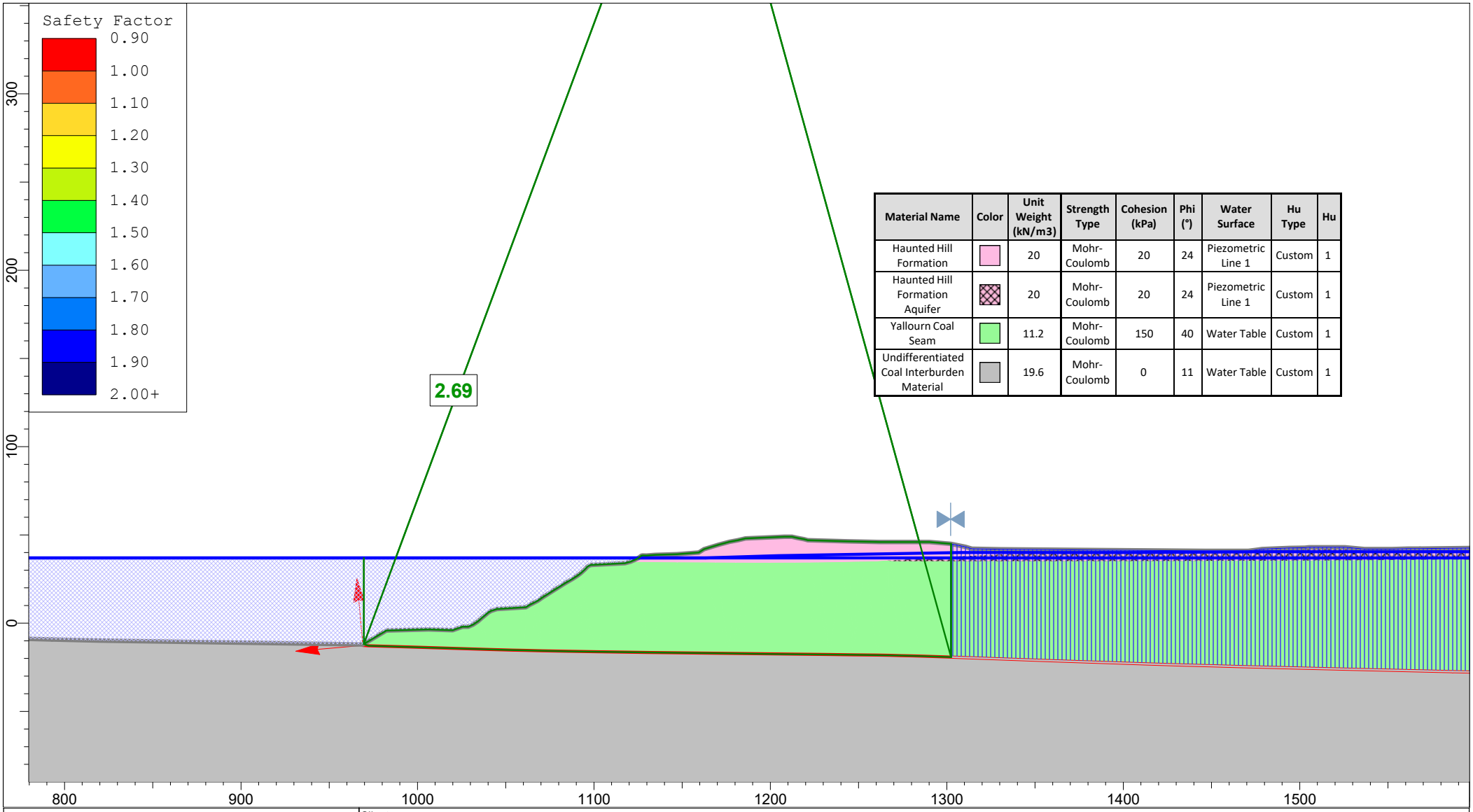
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



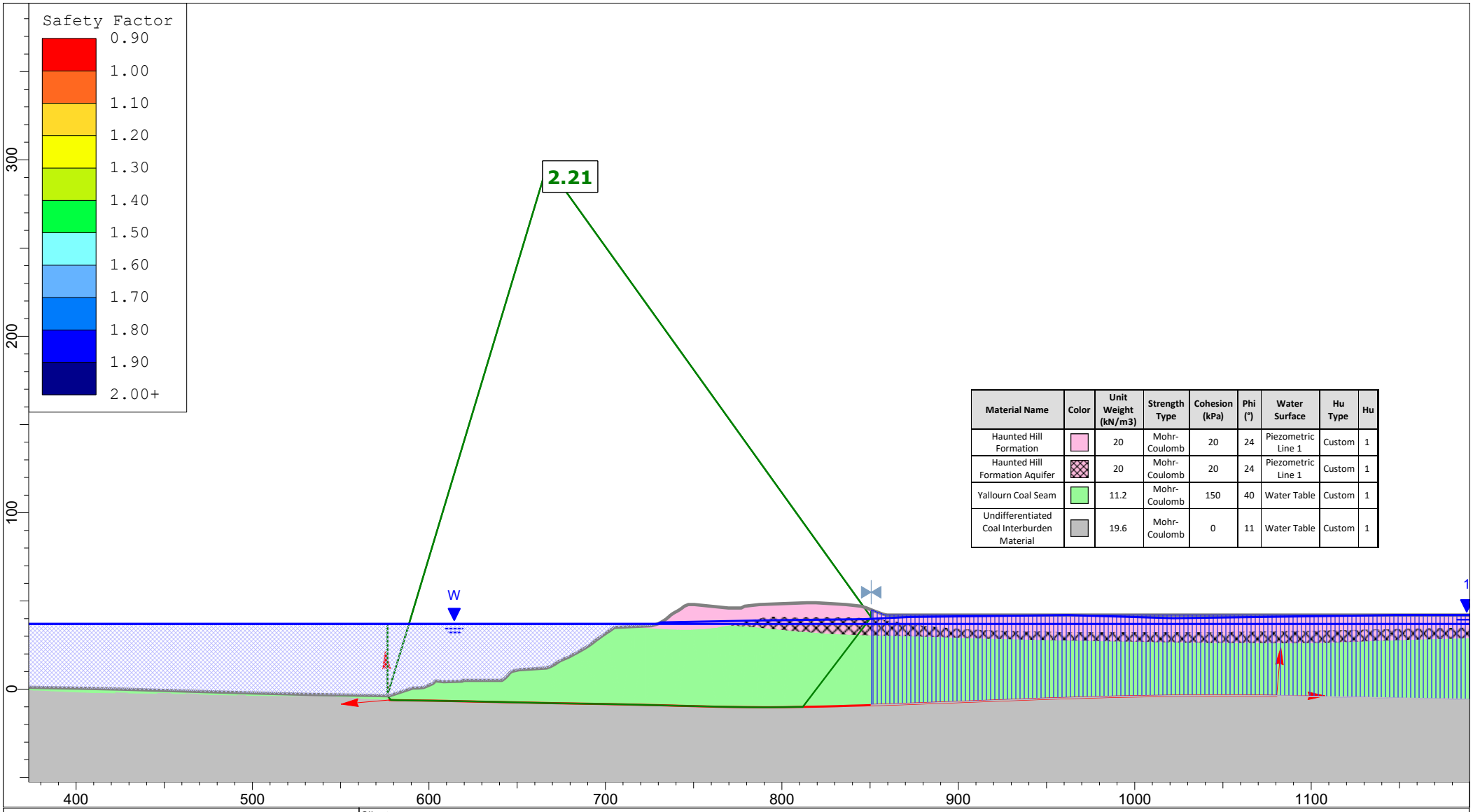
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



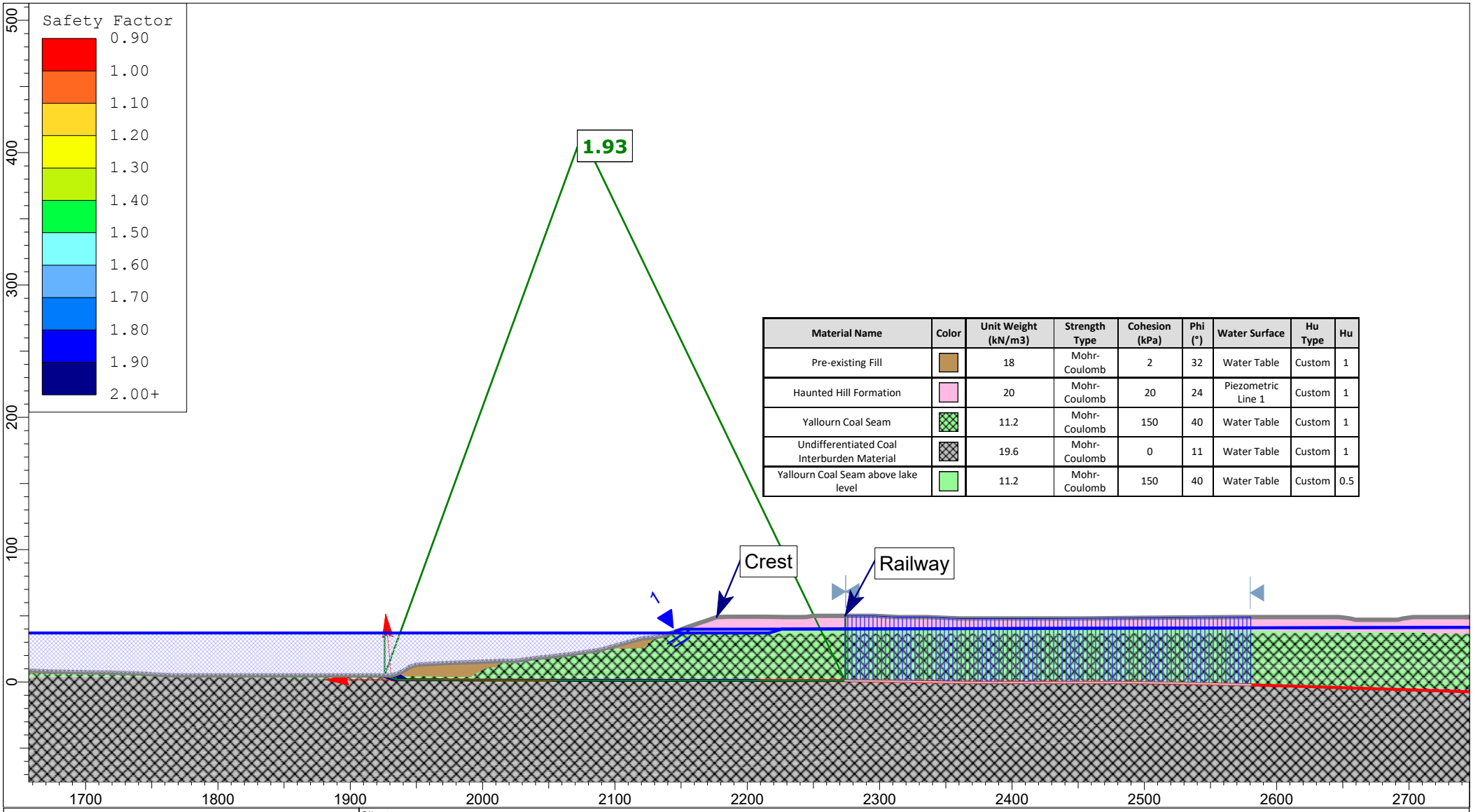
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

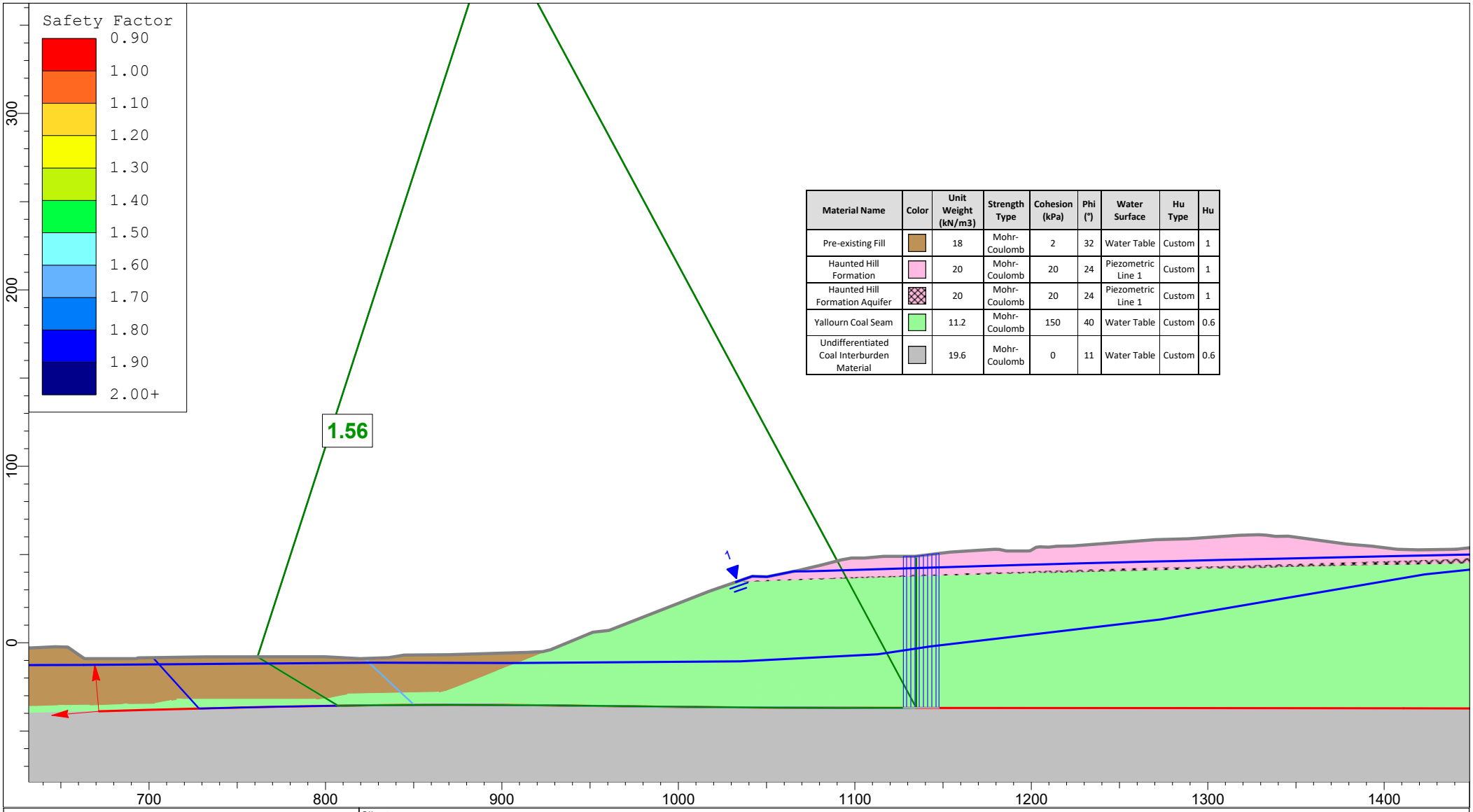
Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above lake level		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5

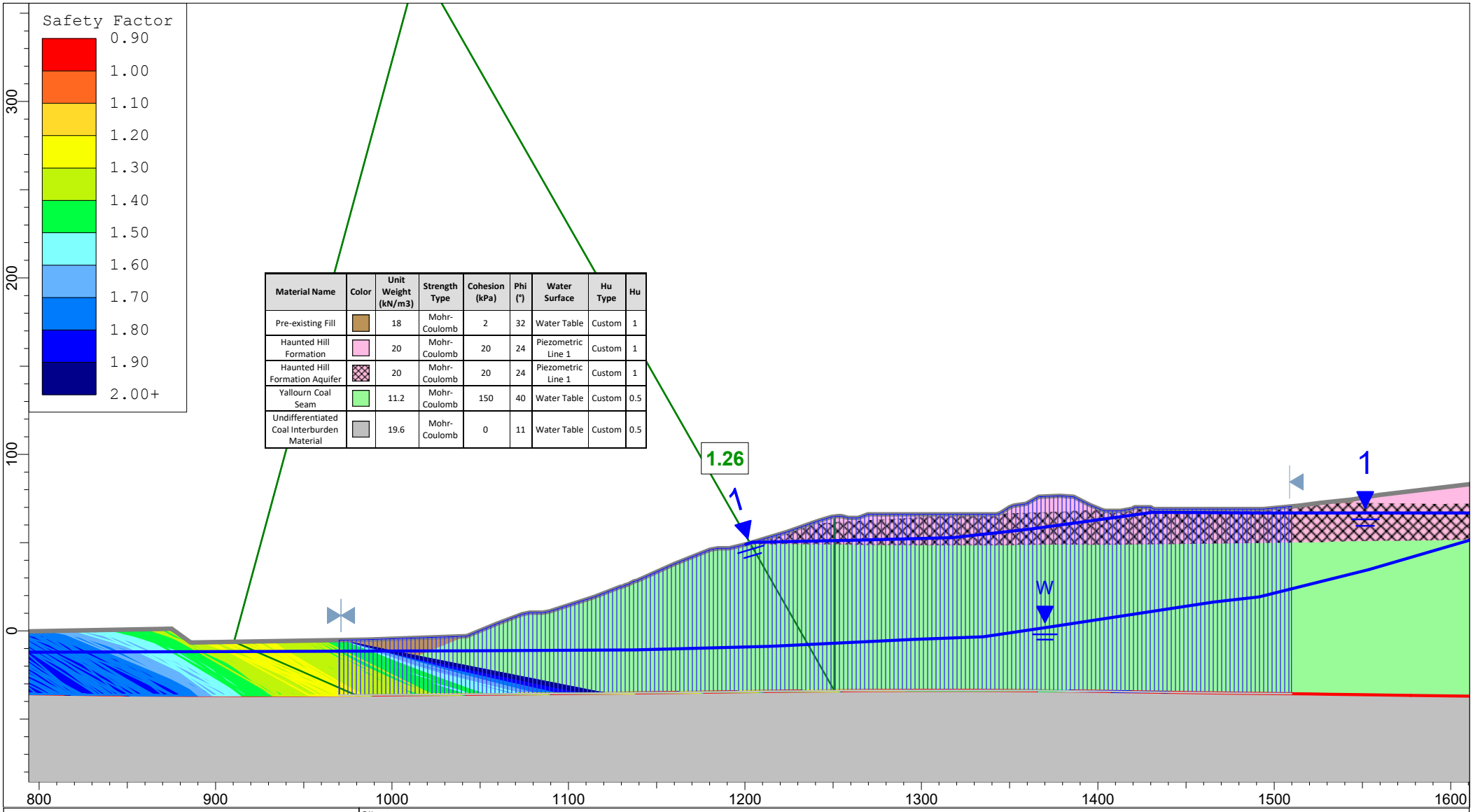
Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		

Appendix F.3.3
Block slide – peripheral catchments



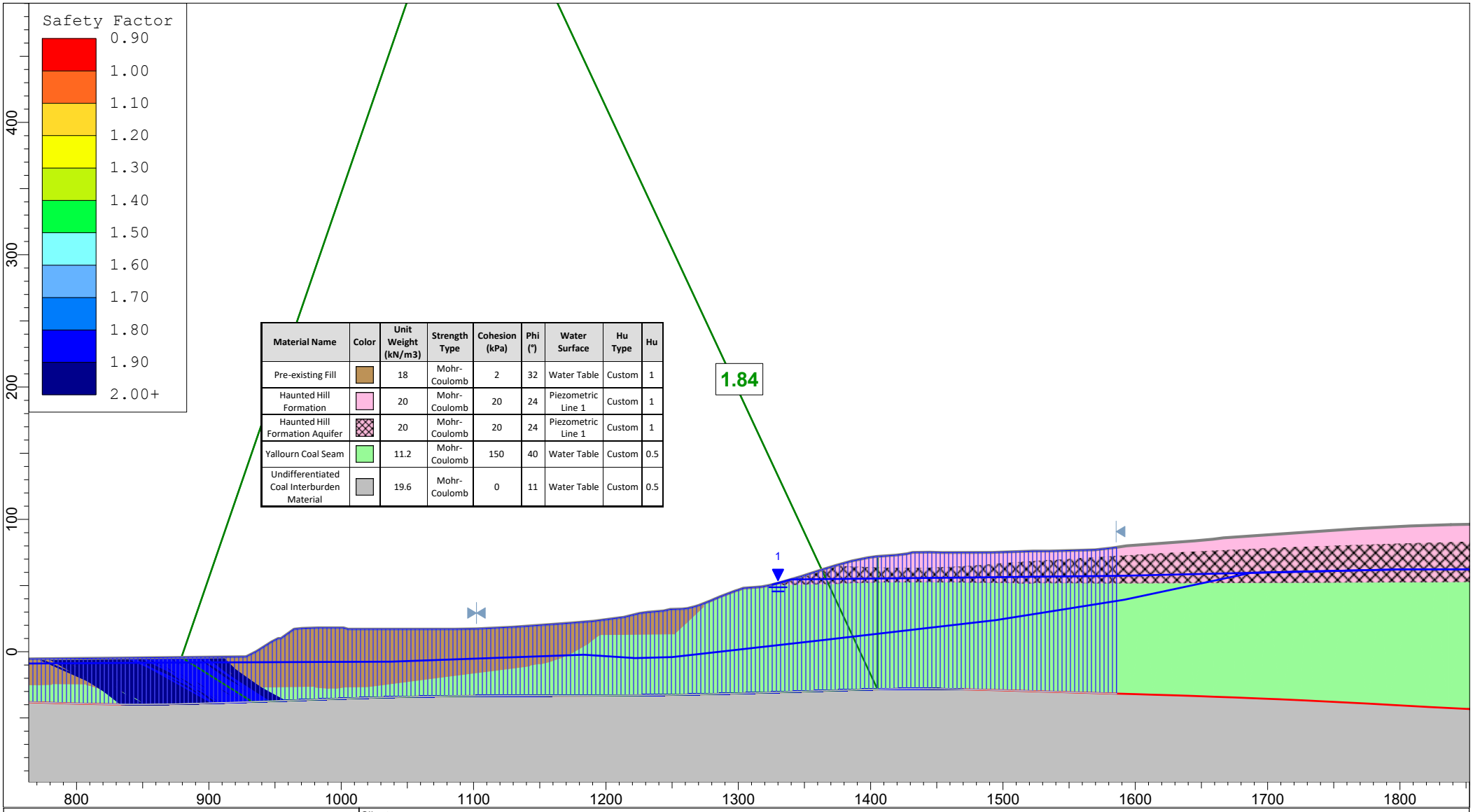
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07b	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



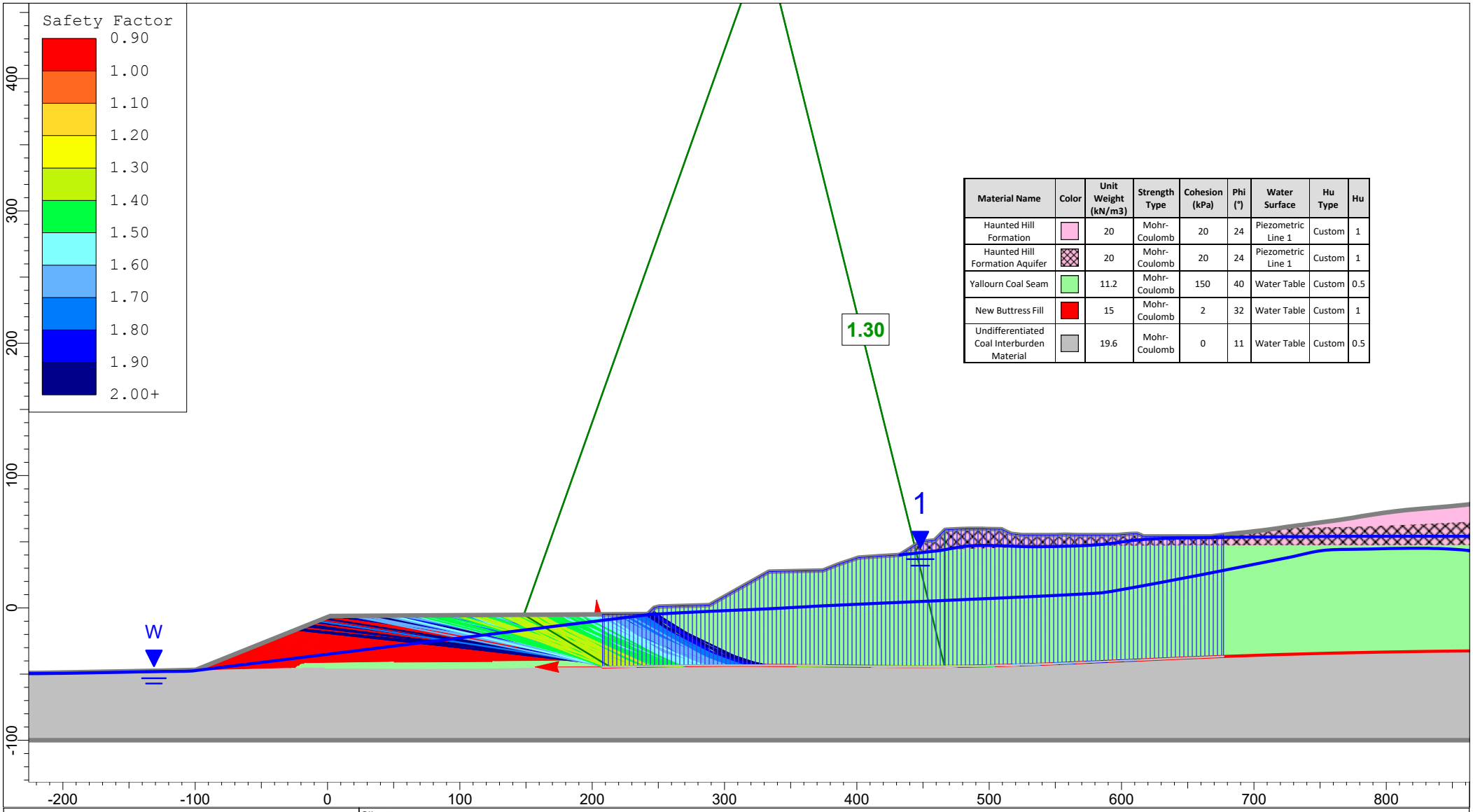
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



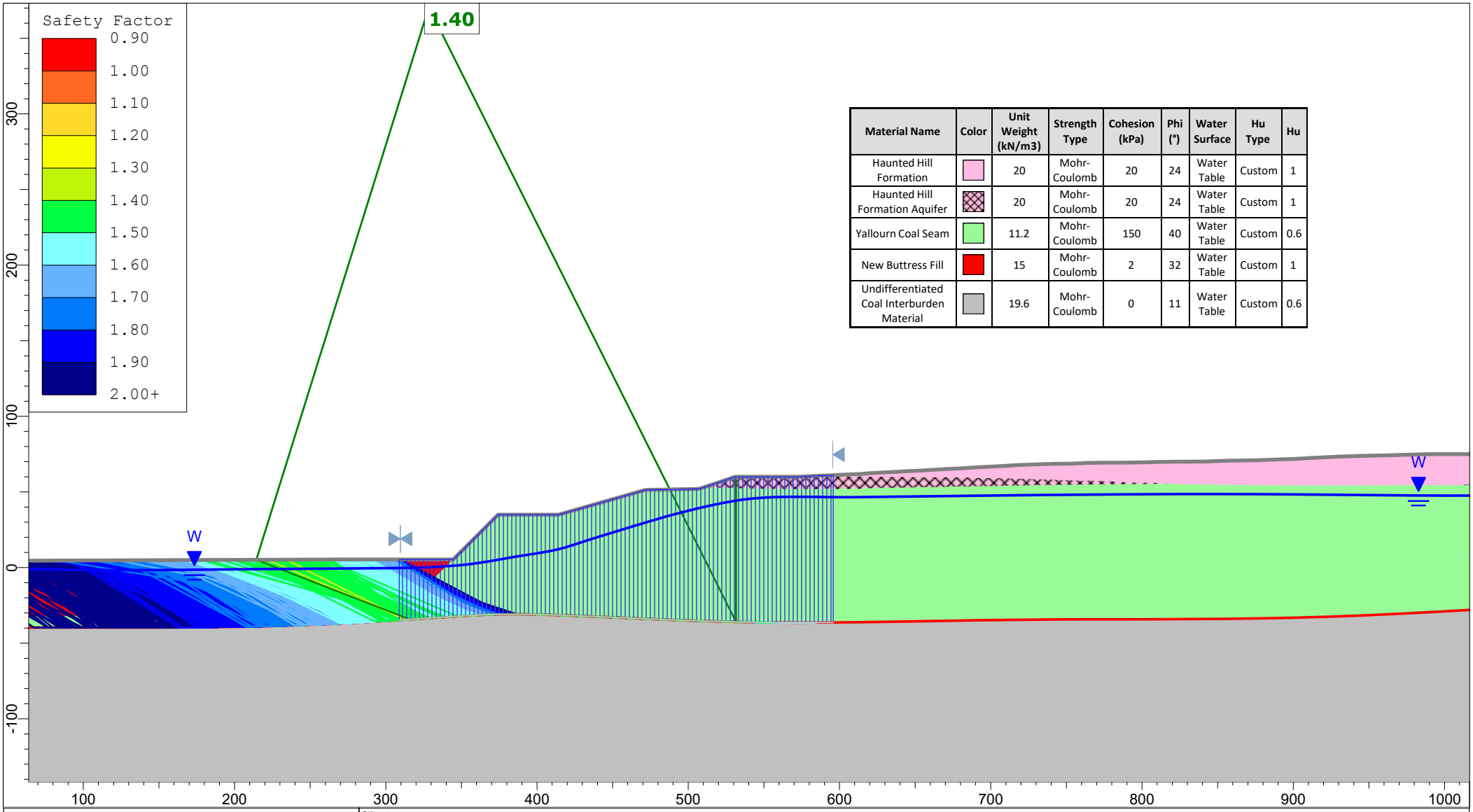
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YEFX-SB**
Section:	**Section 10**	Case:	**Block slide with full TC - Hu specific**
Job No:	**PSM4487**	Run:	**End of mining**
Notes:	**Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface**		



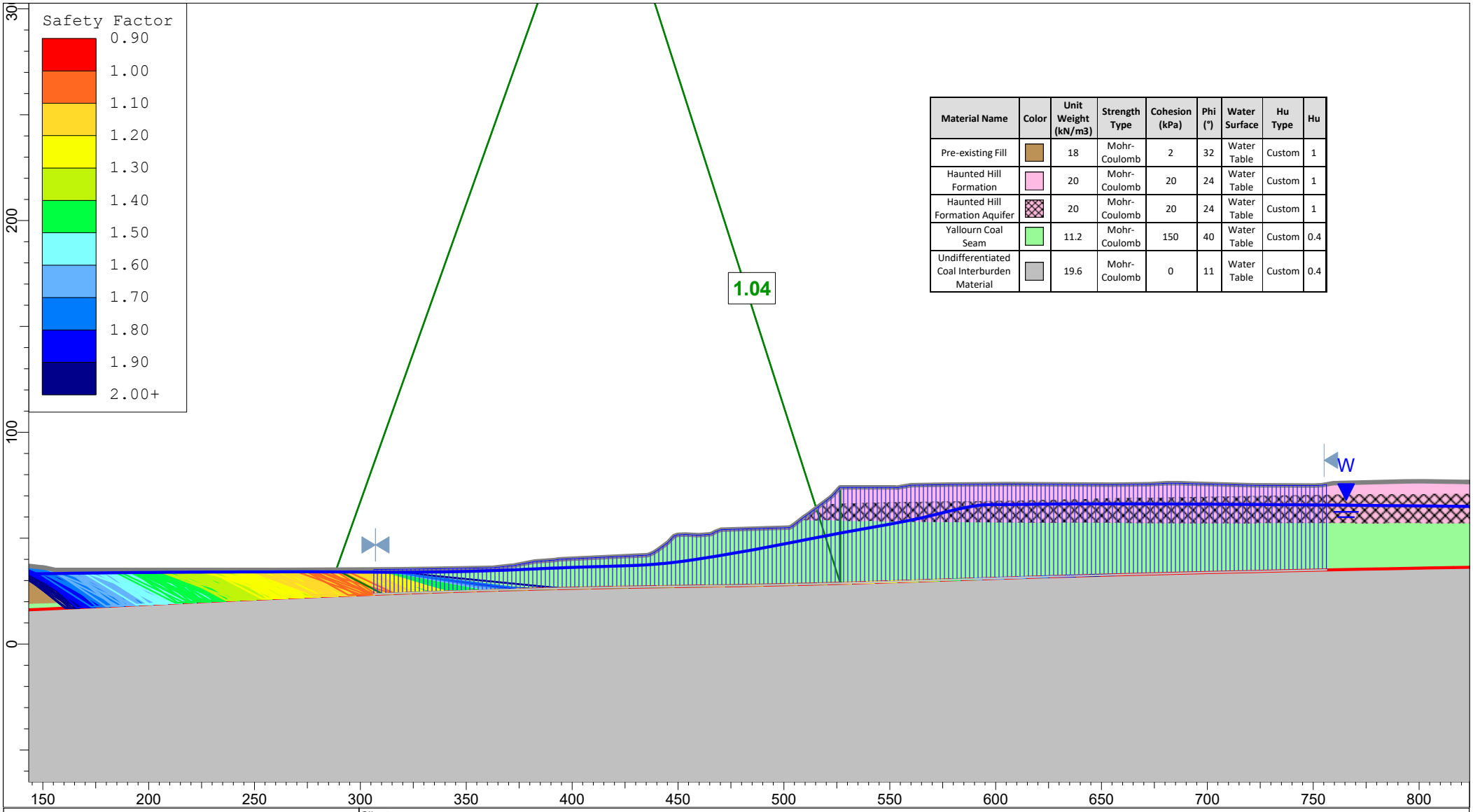
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



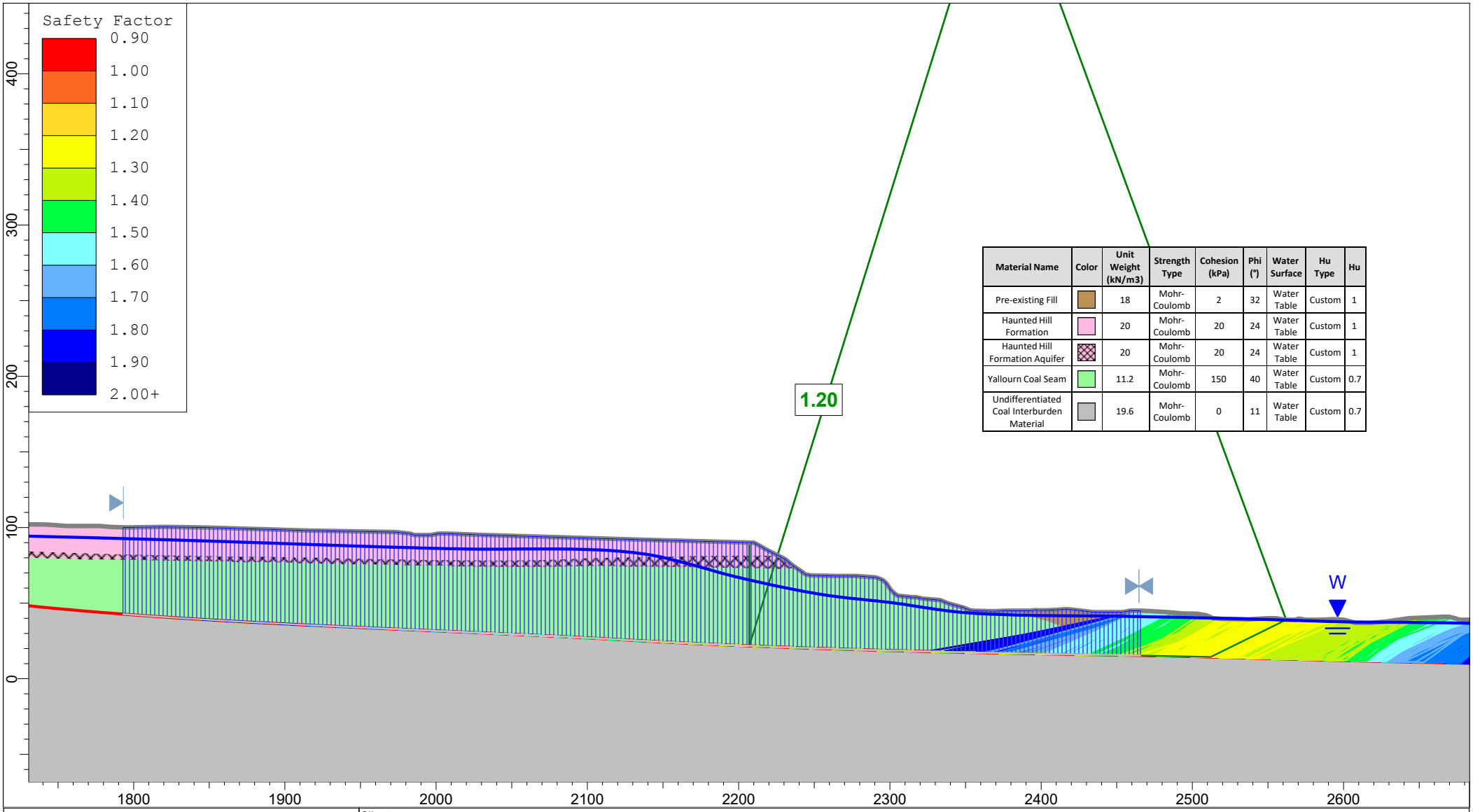
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



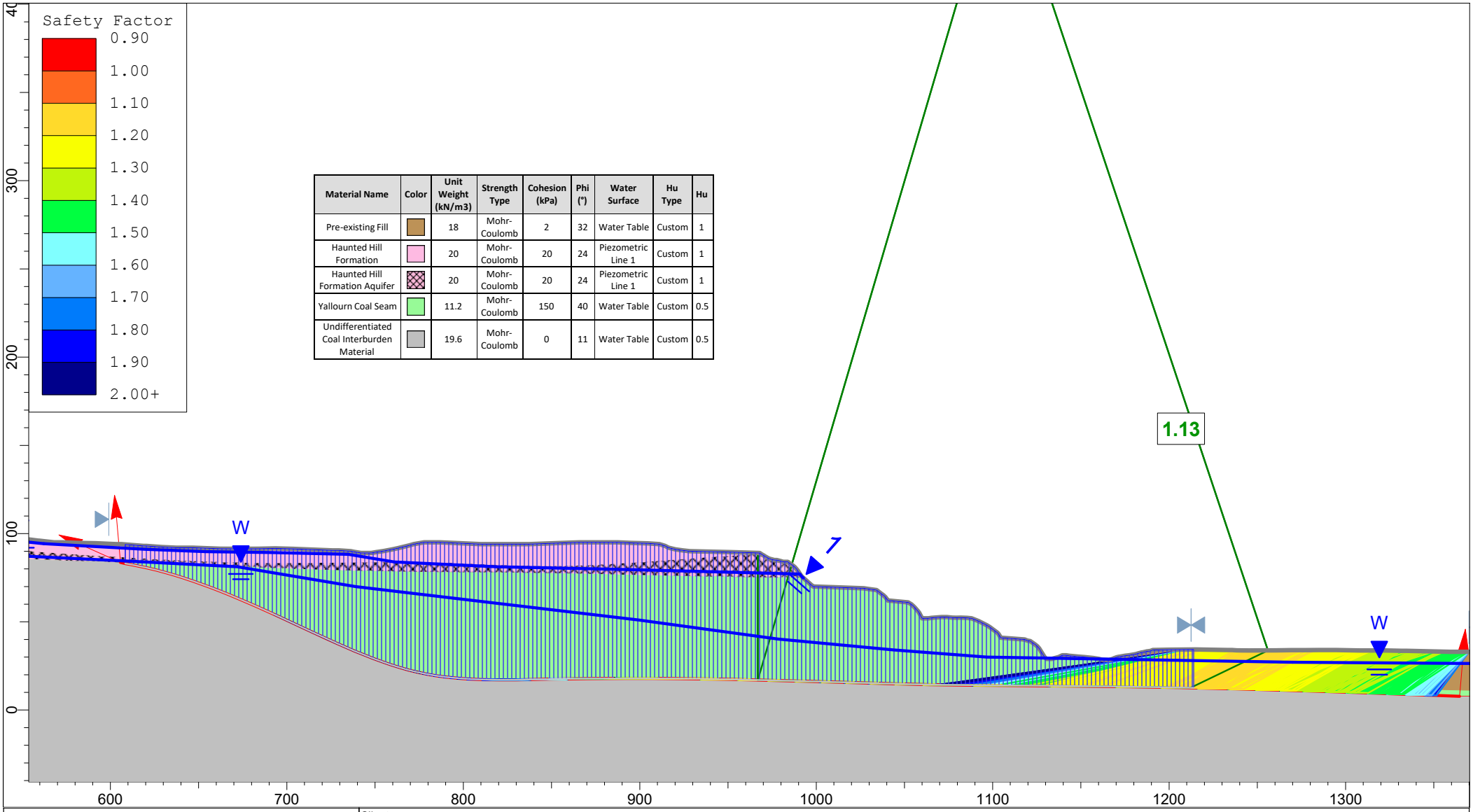
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SB
Section:	Section 19	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



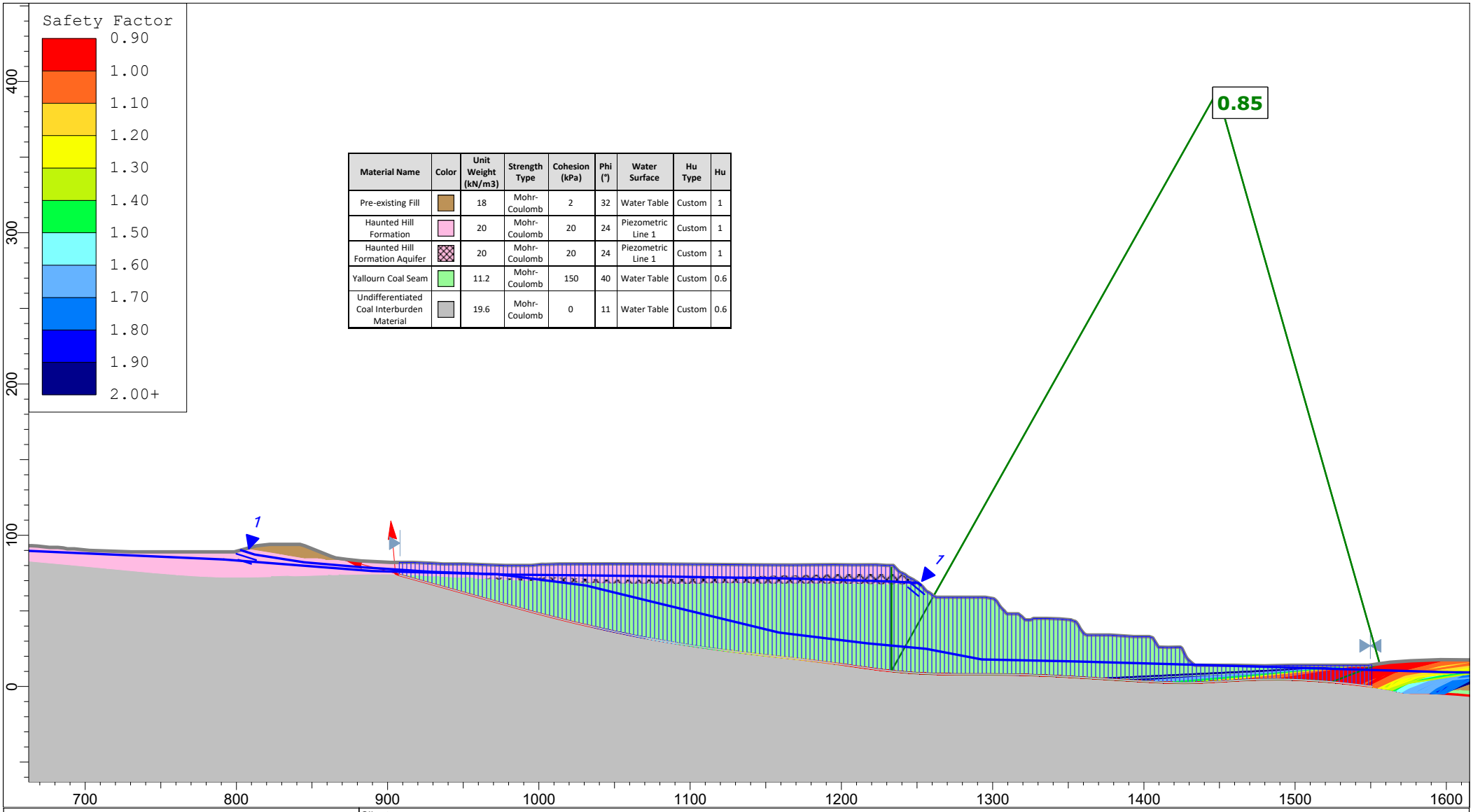
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 20	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



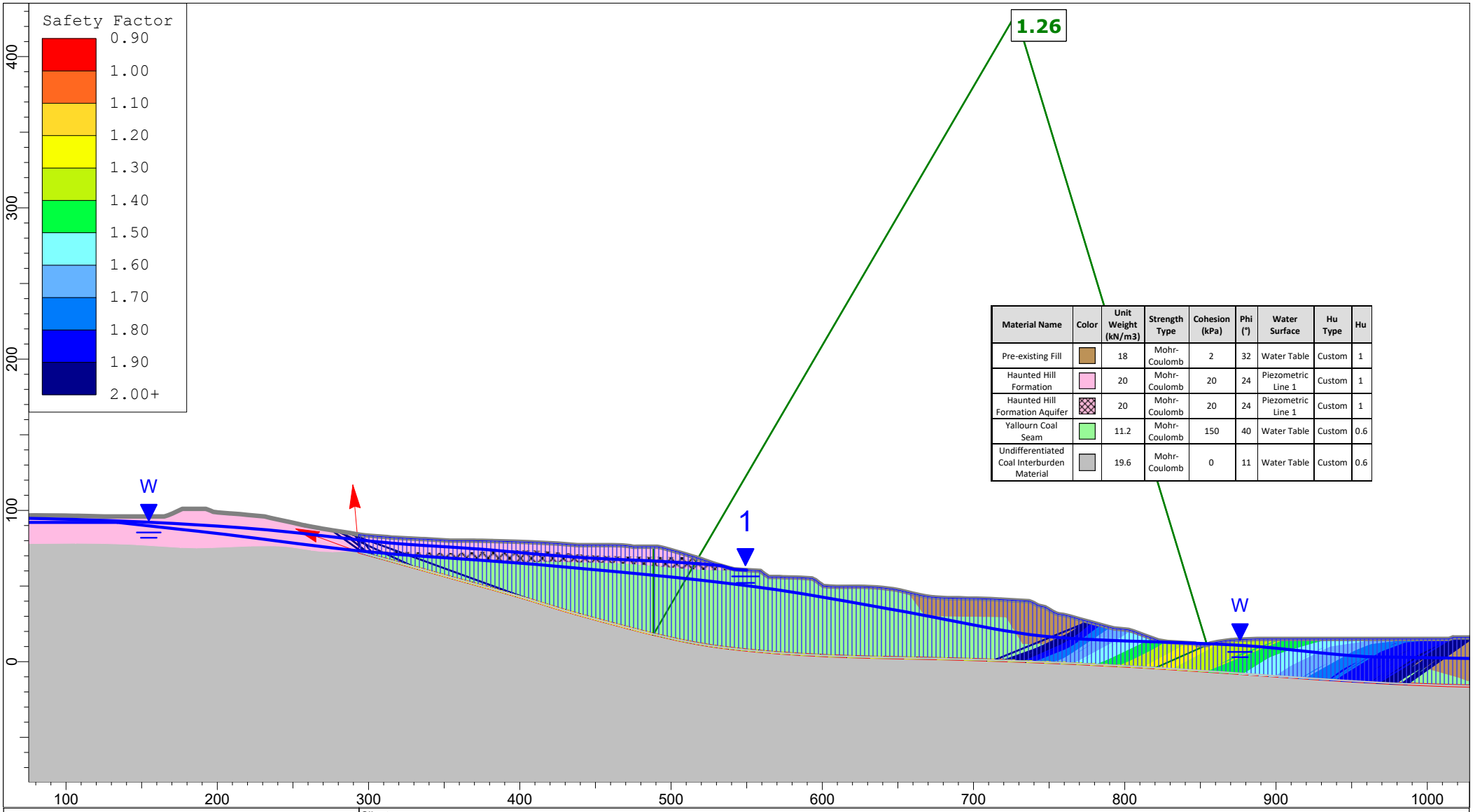
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (South)
Section:	Section 22	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



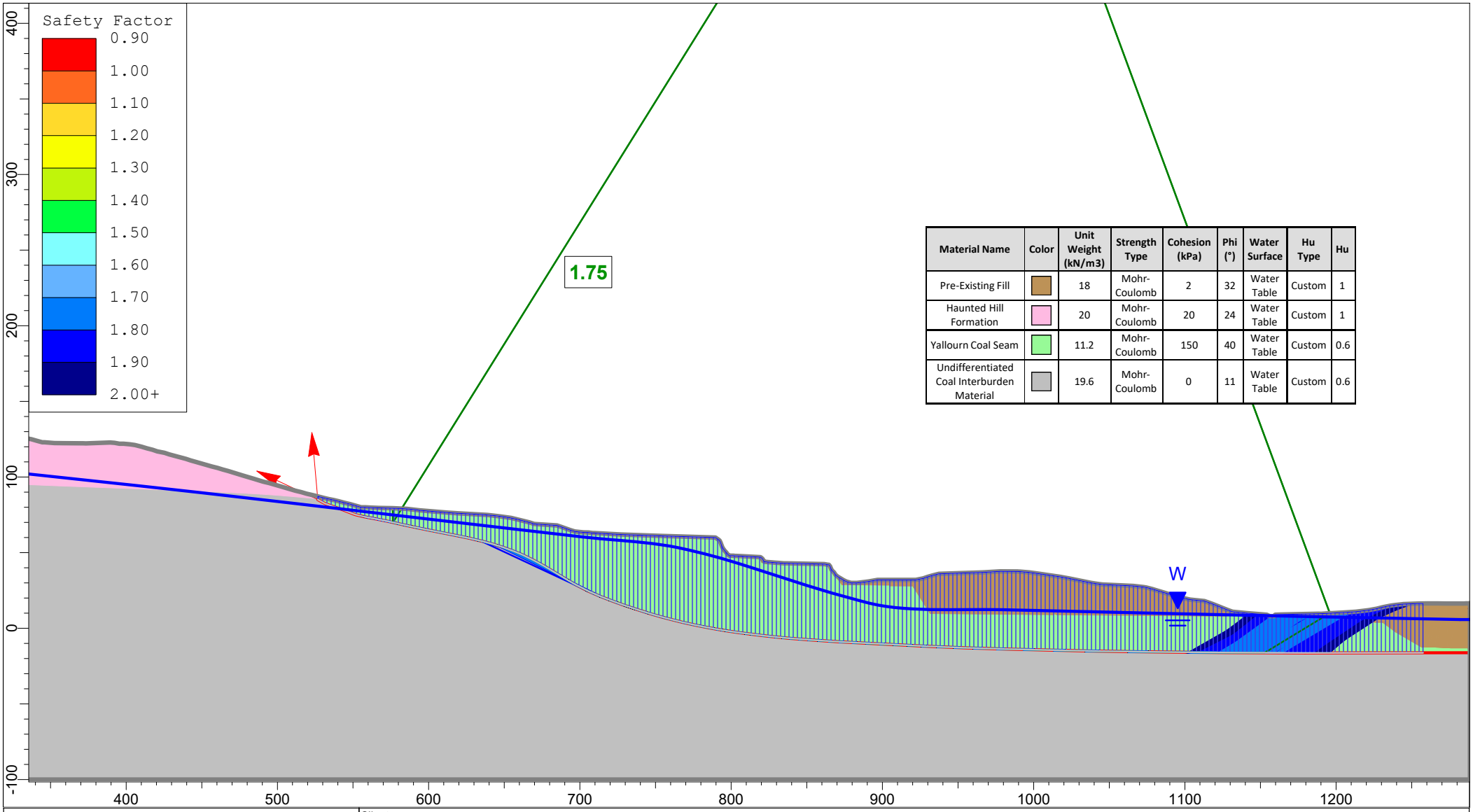
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



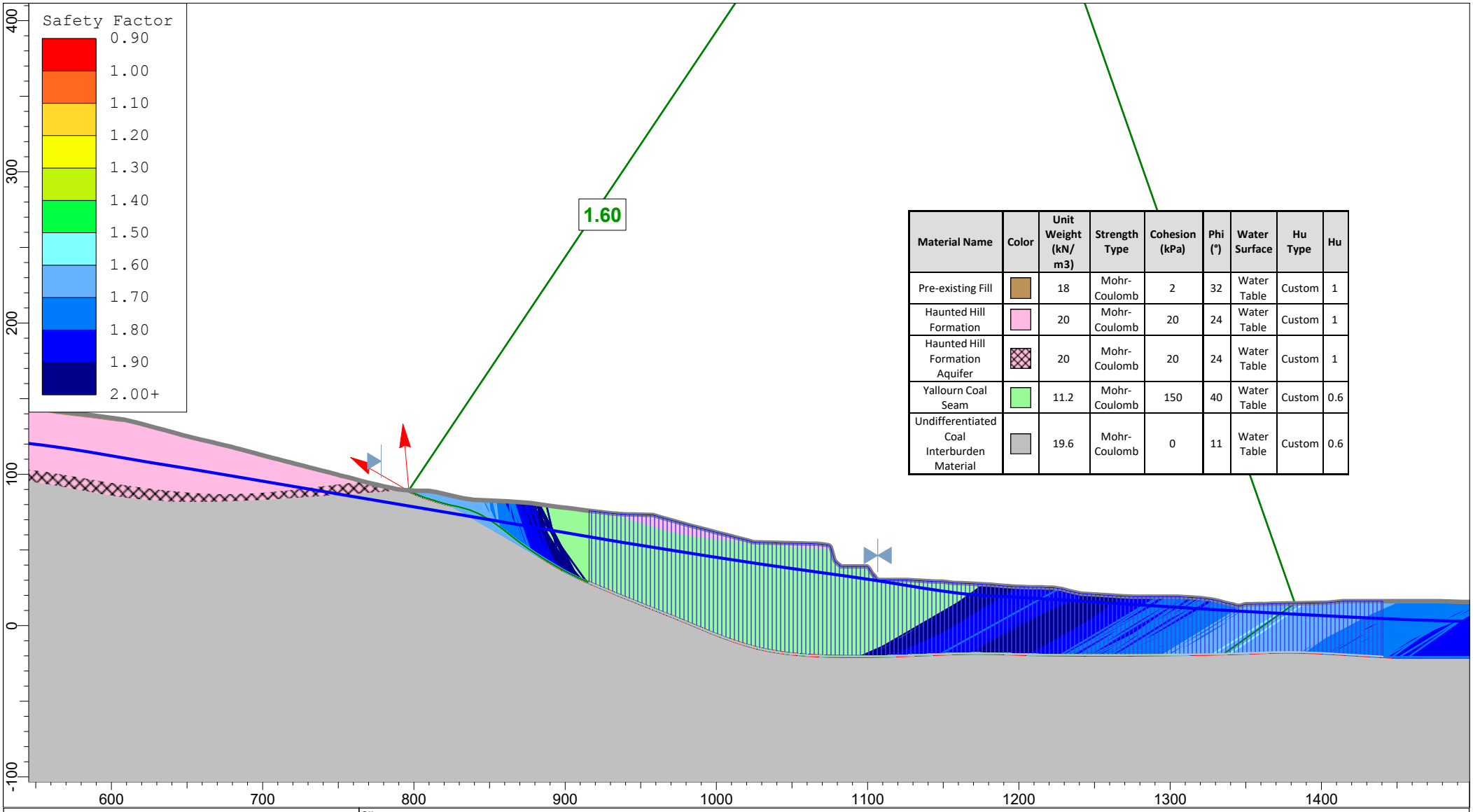
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



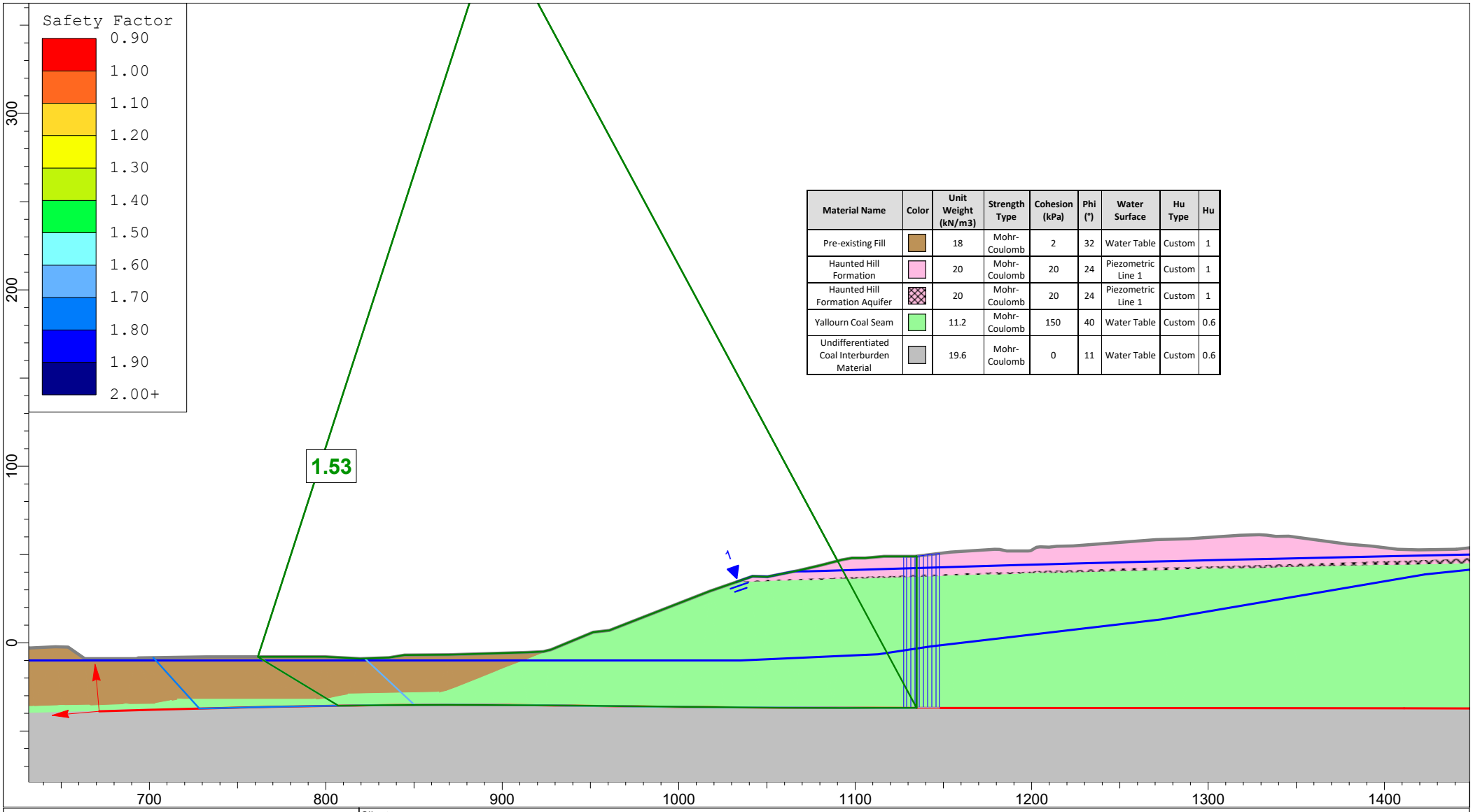
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



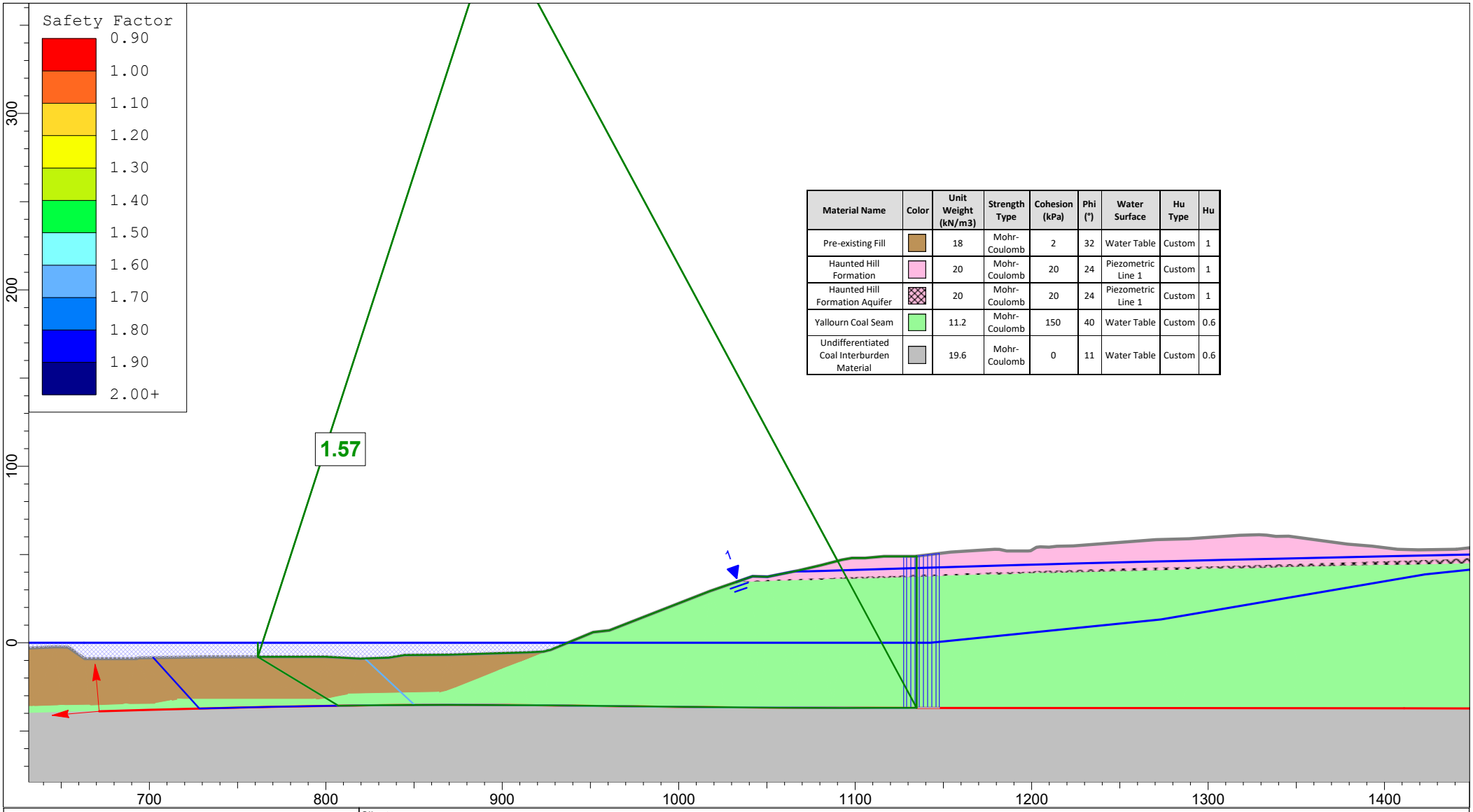
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



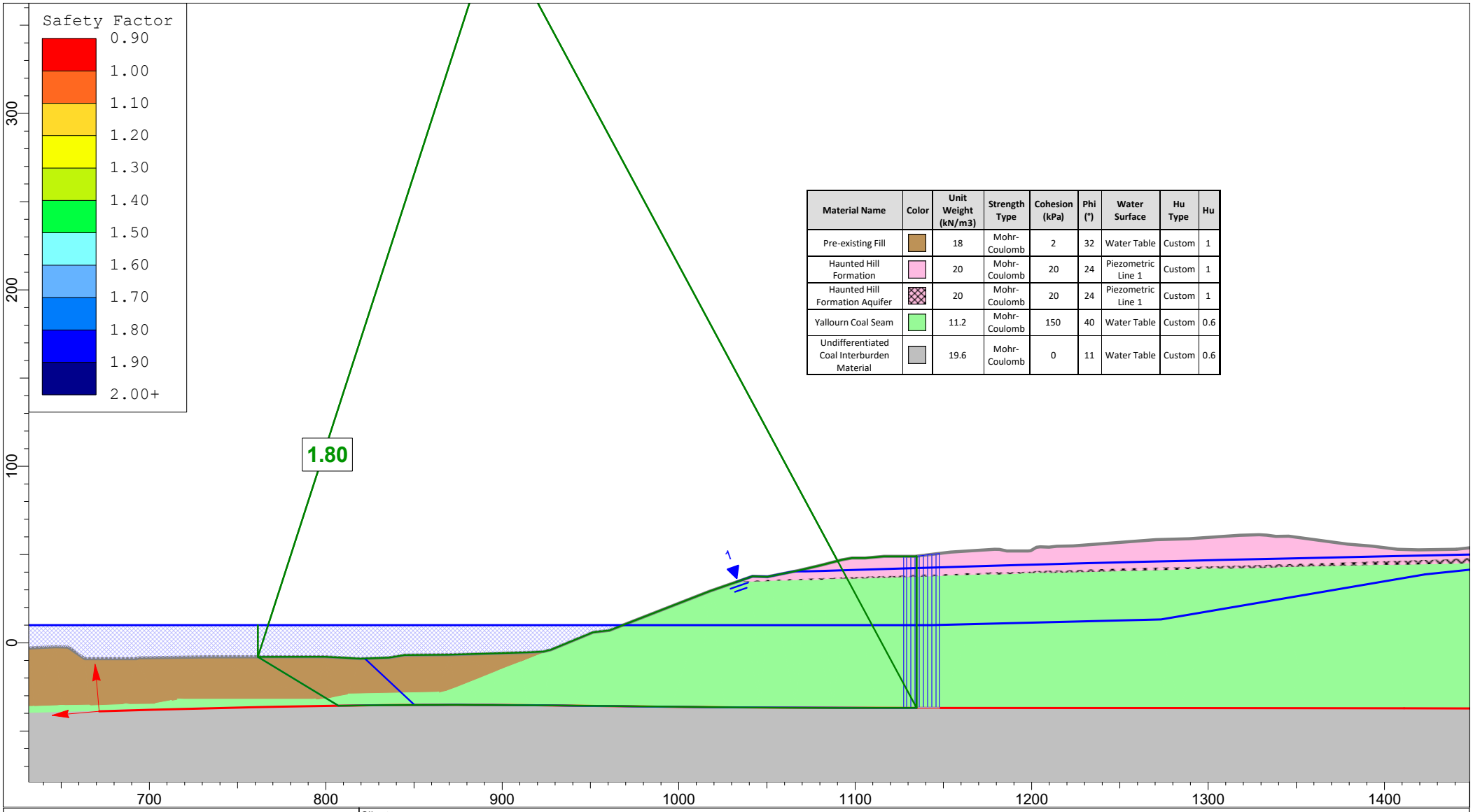
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07b	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



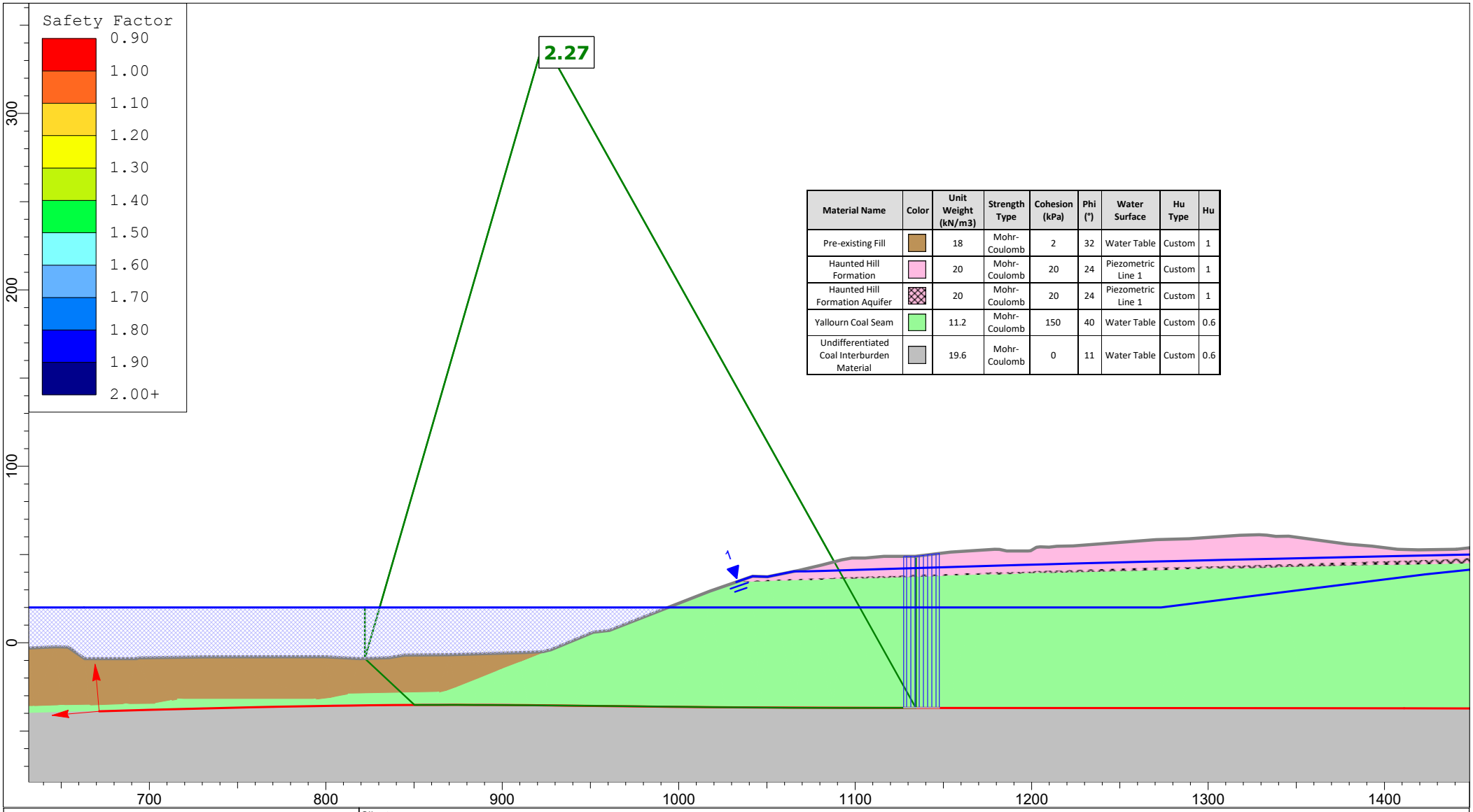
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07b	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



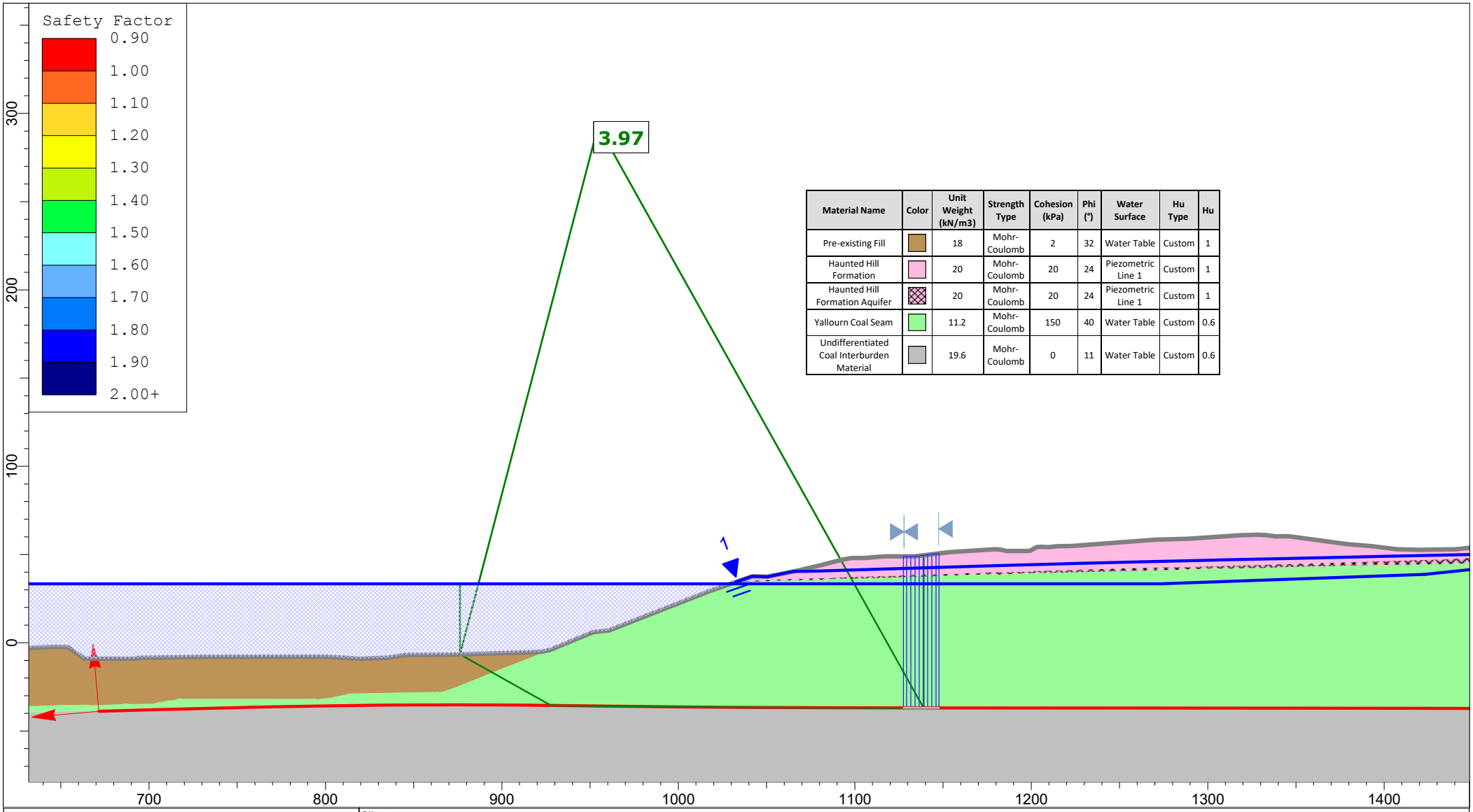
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07b	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



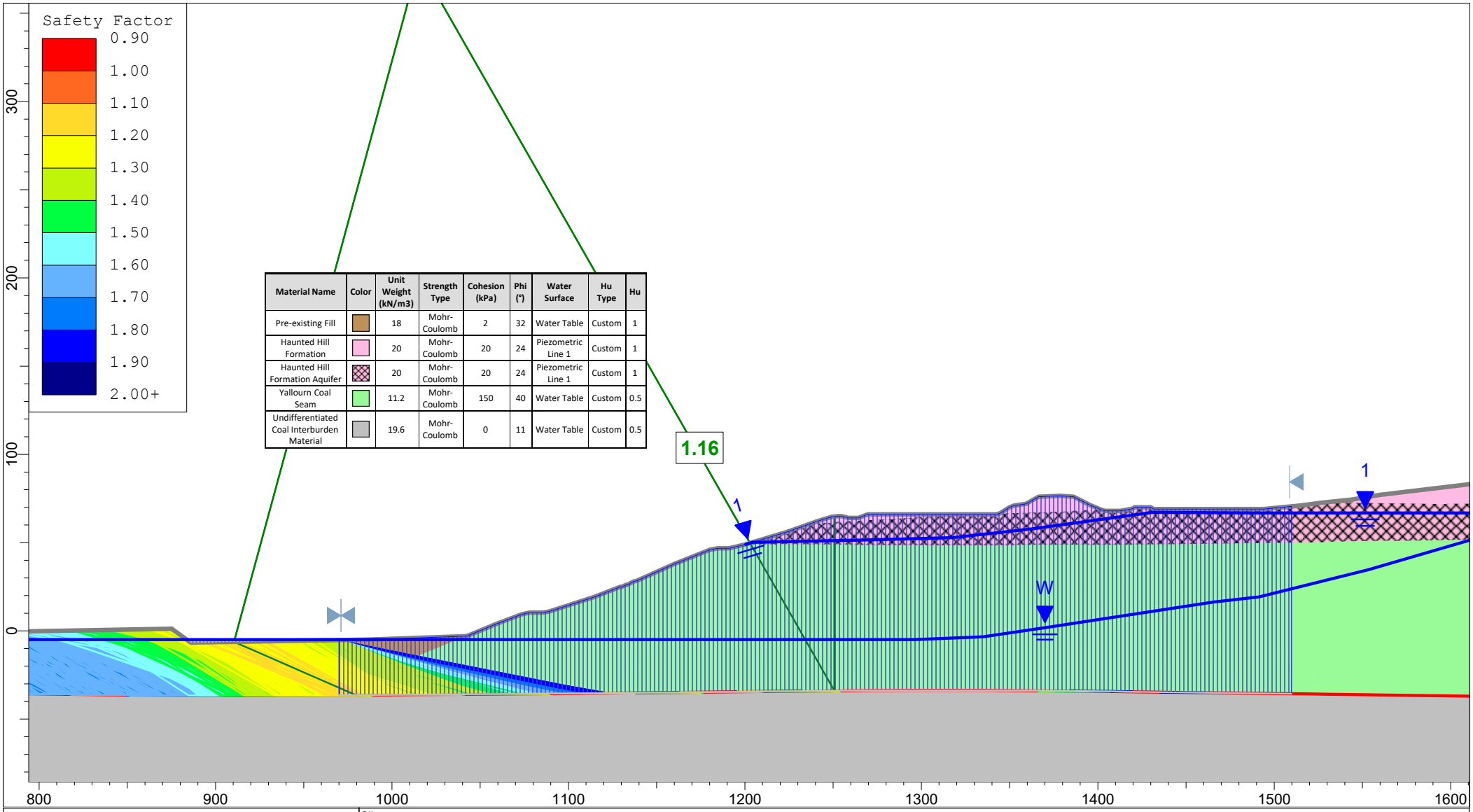
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07b	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



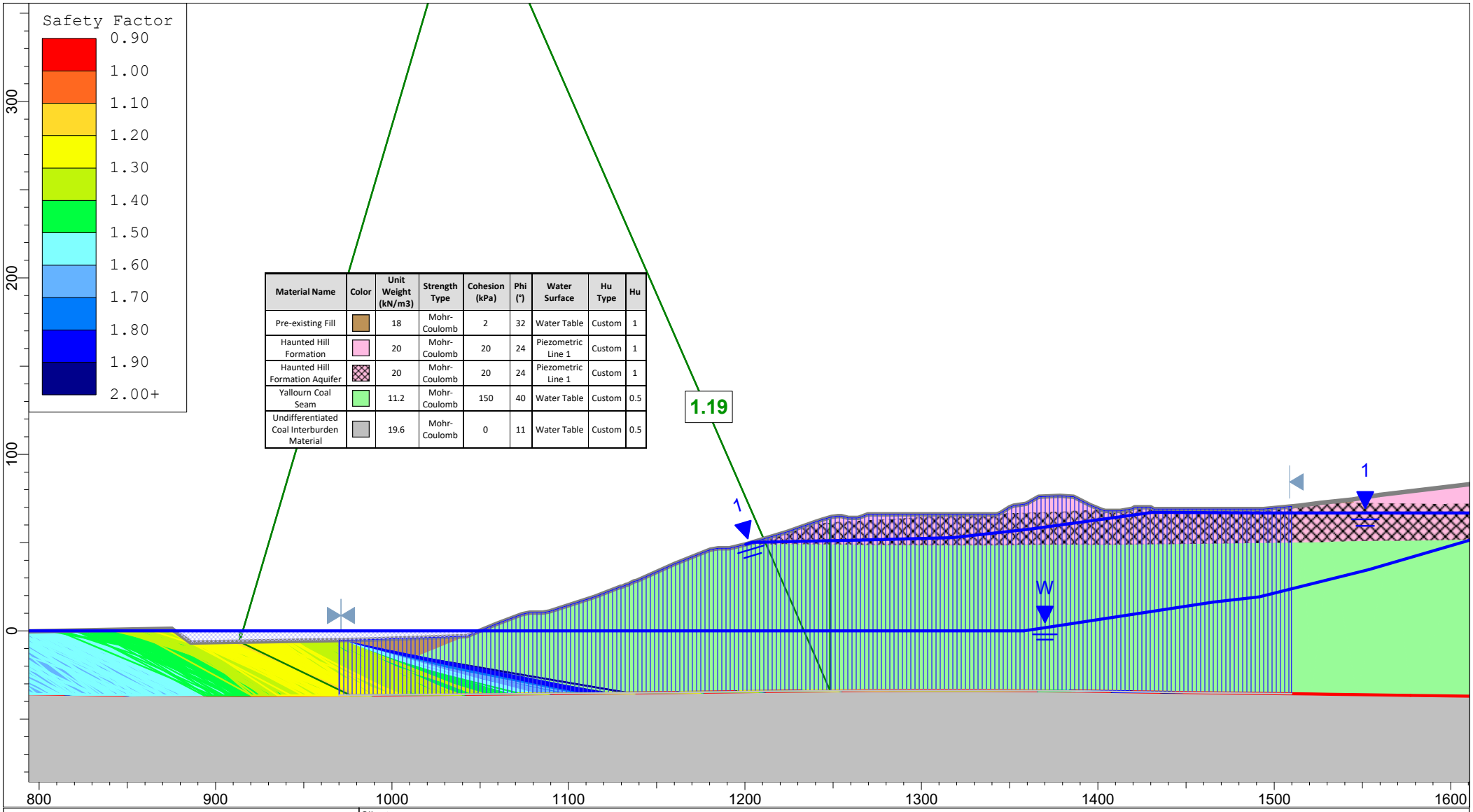
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07b	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



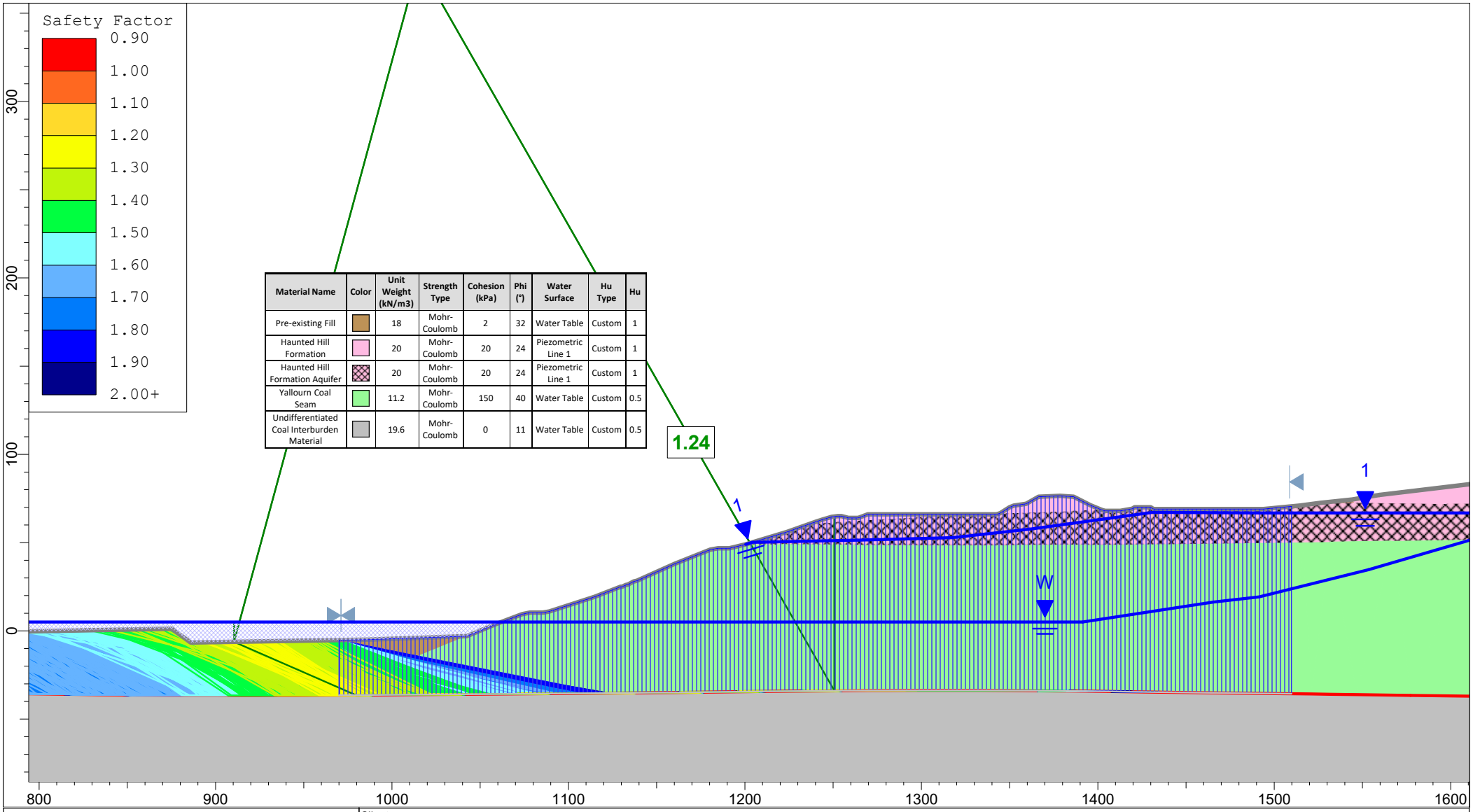
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



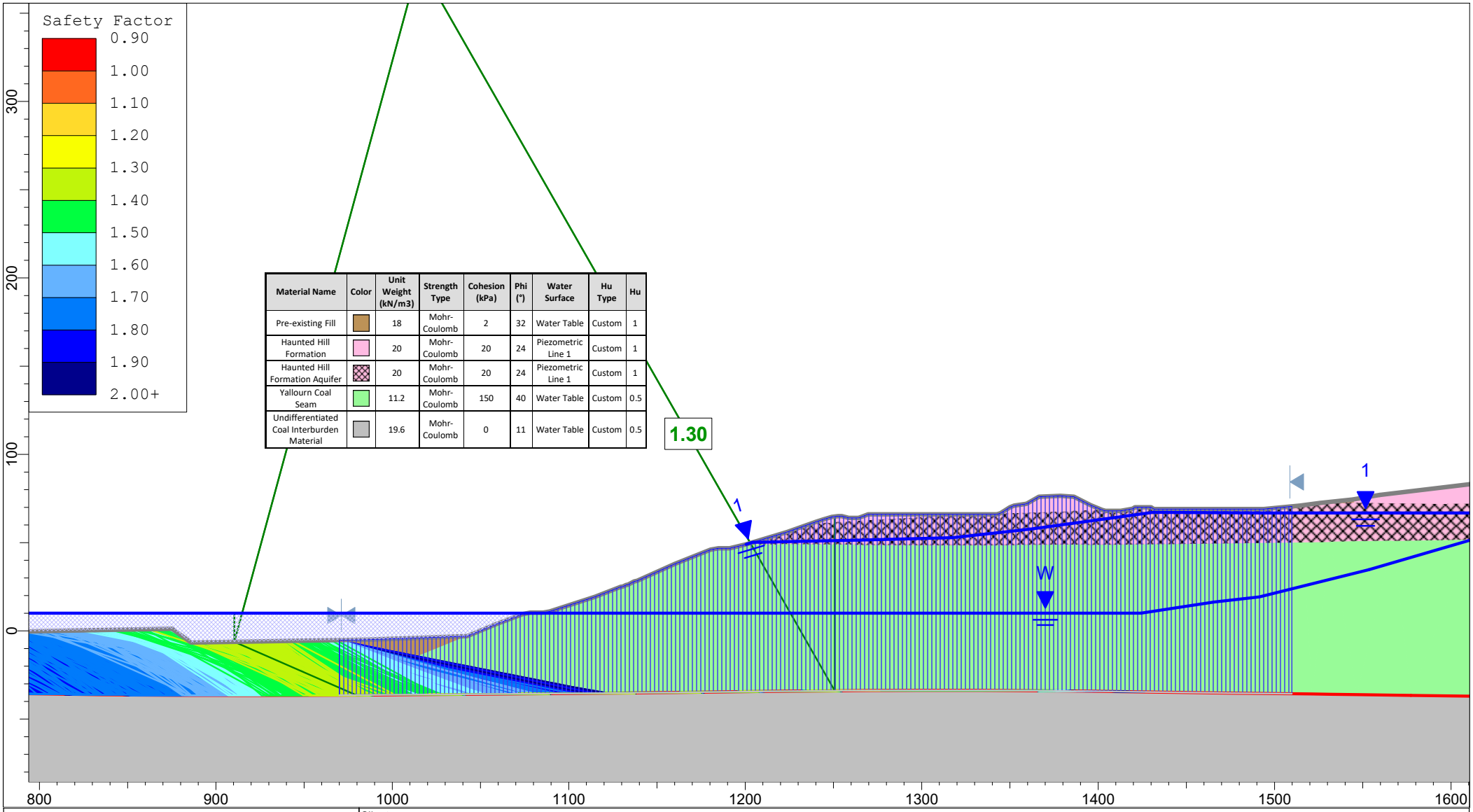
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



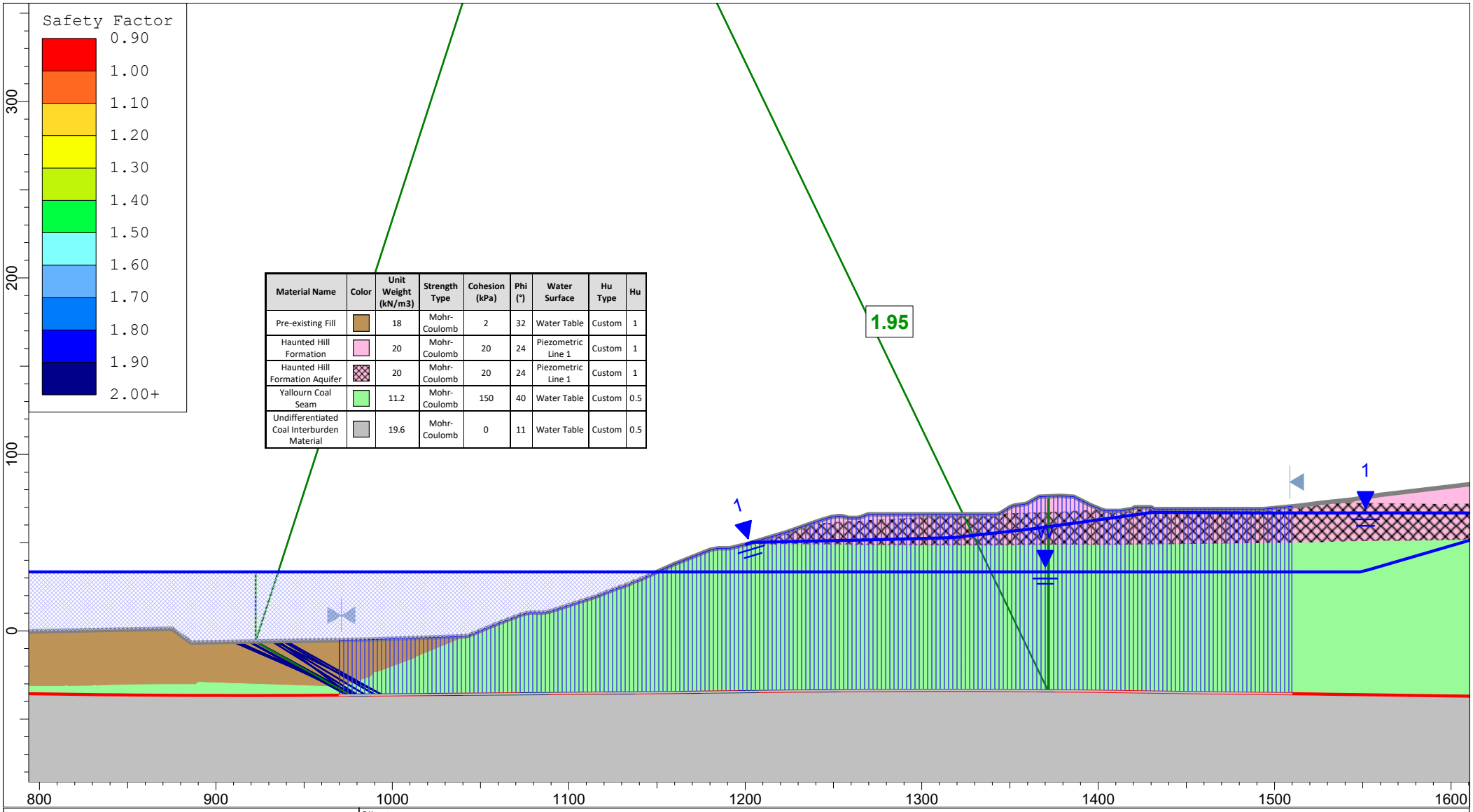
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YEFX-LREB (south)**
Section:	**Section 09**	Case:	**Block slide with full TC - Hu specific**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 5 mRL**
Notes:	**Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface**		



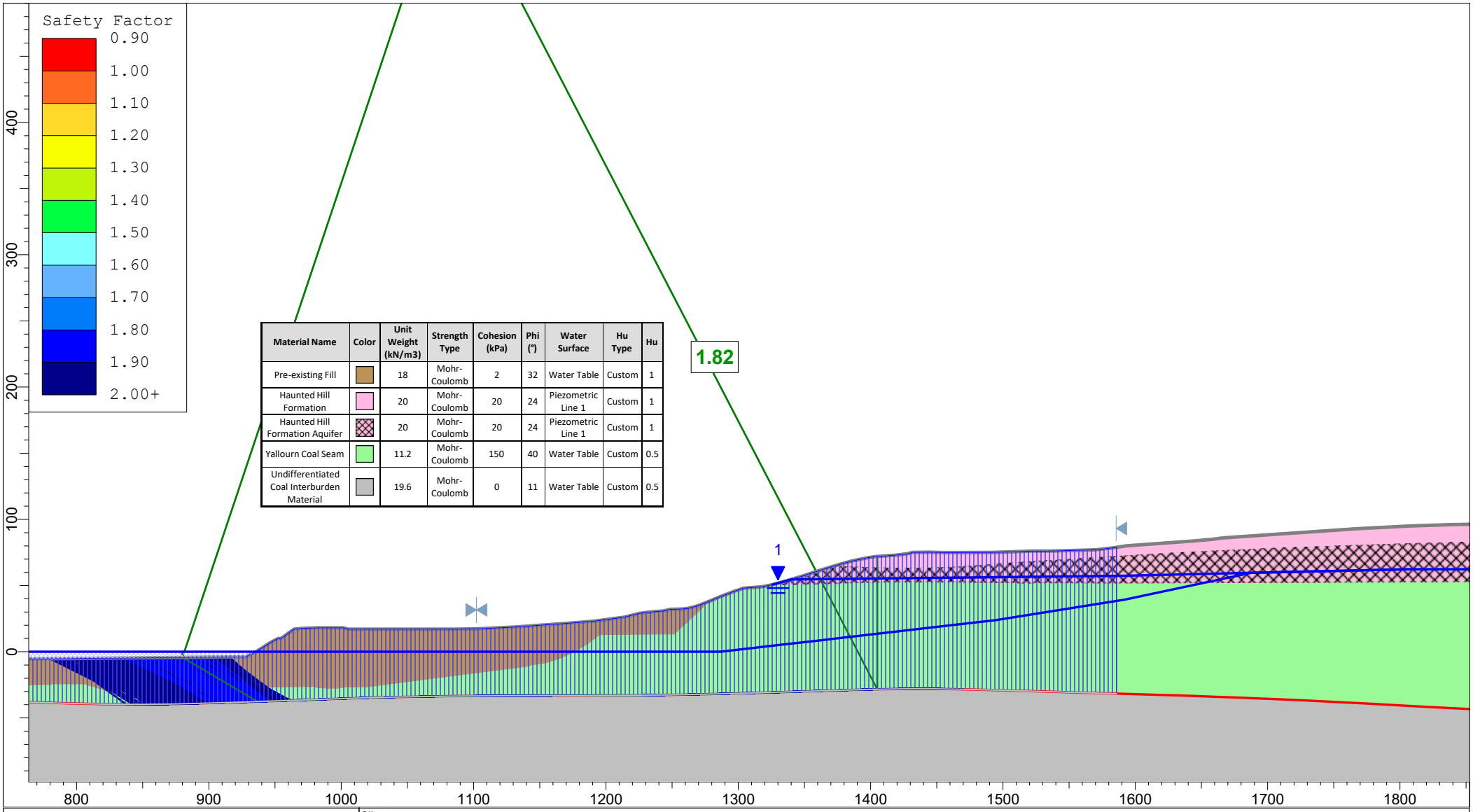
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



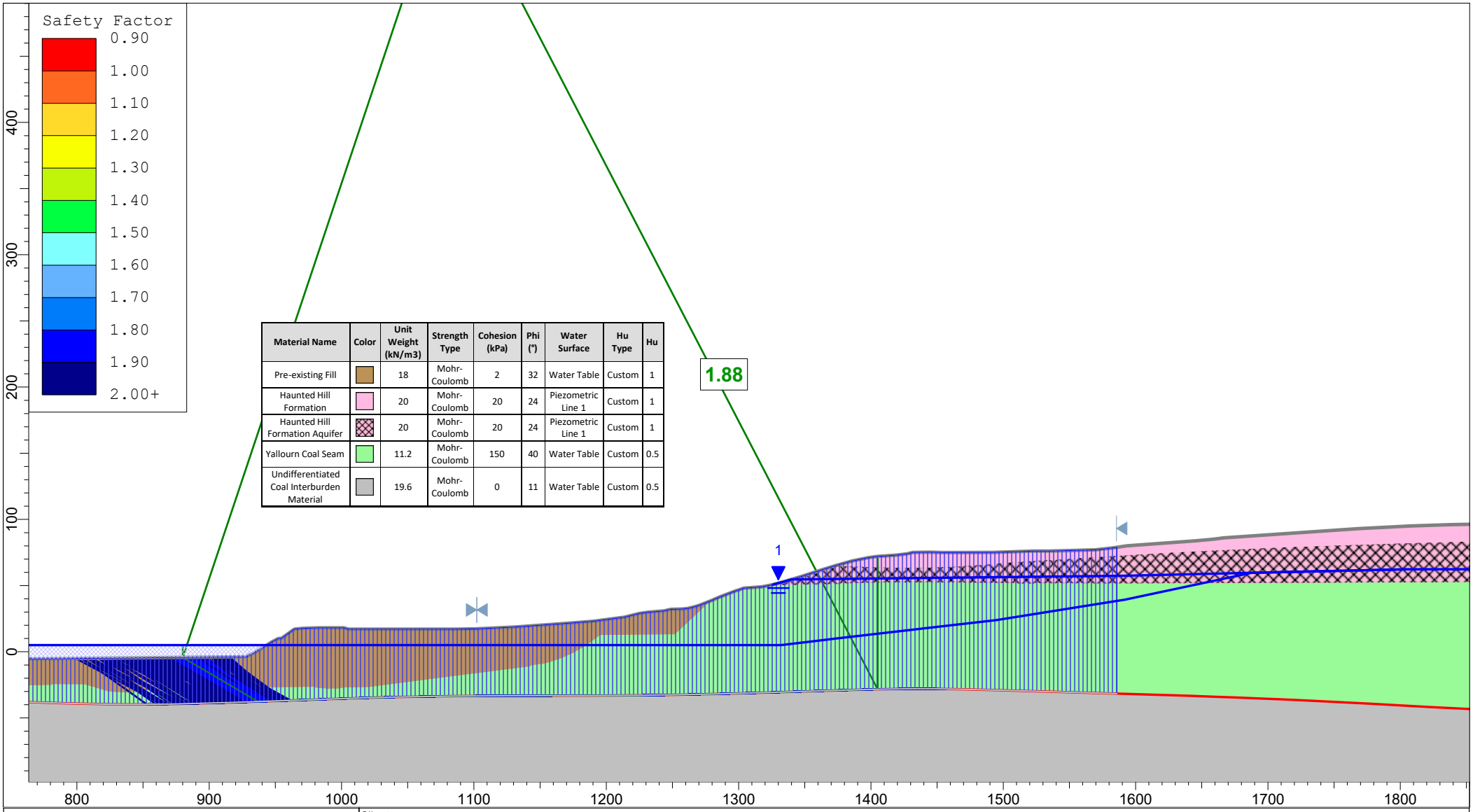
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



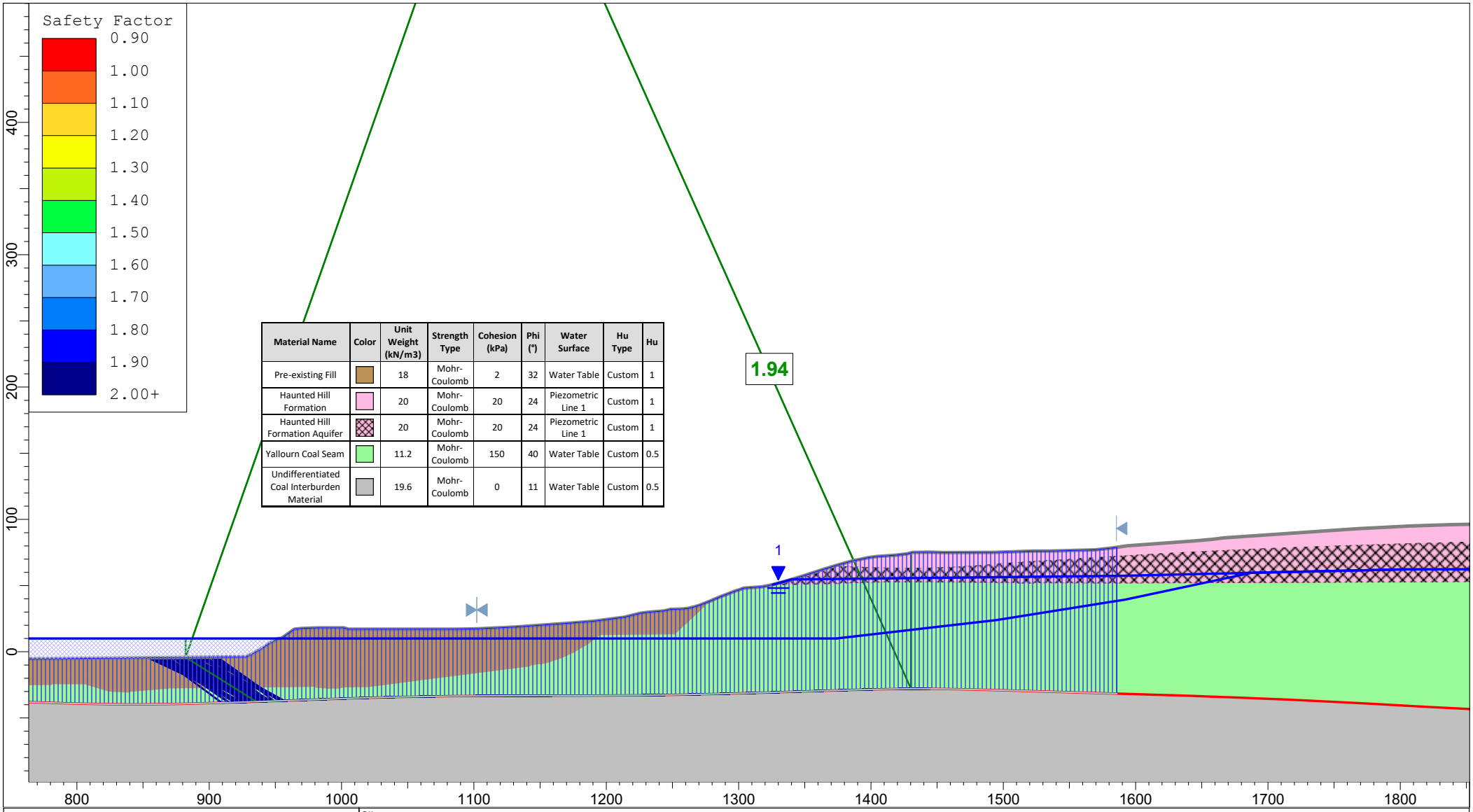
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



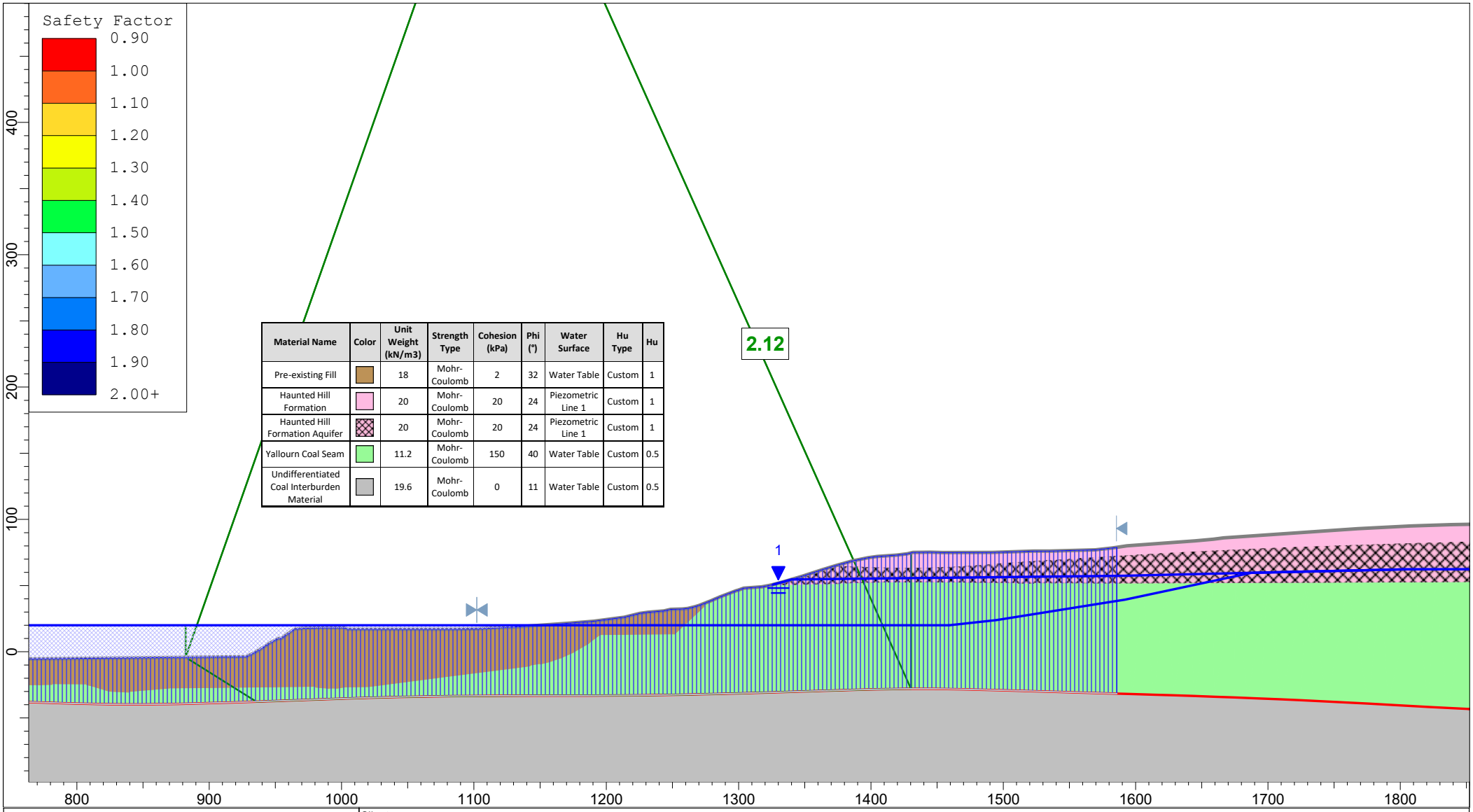
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



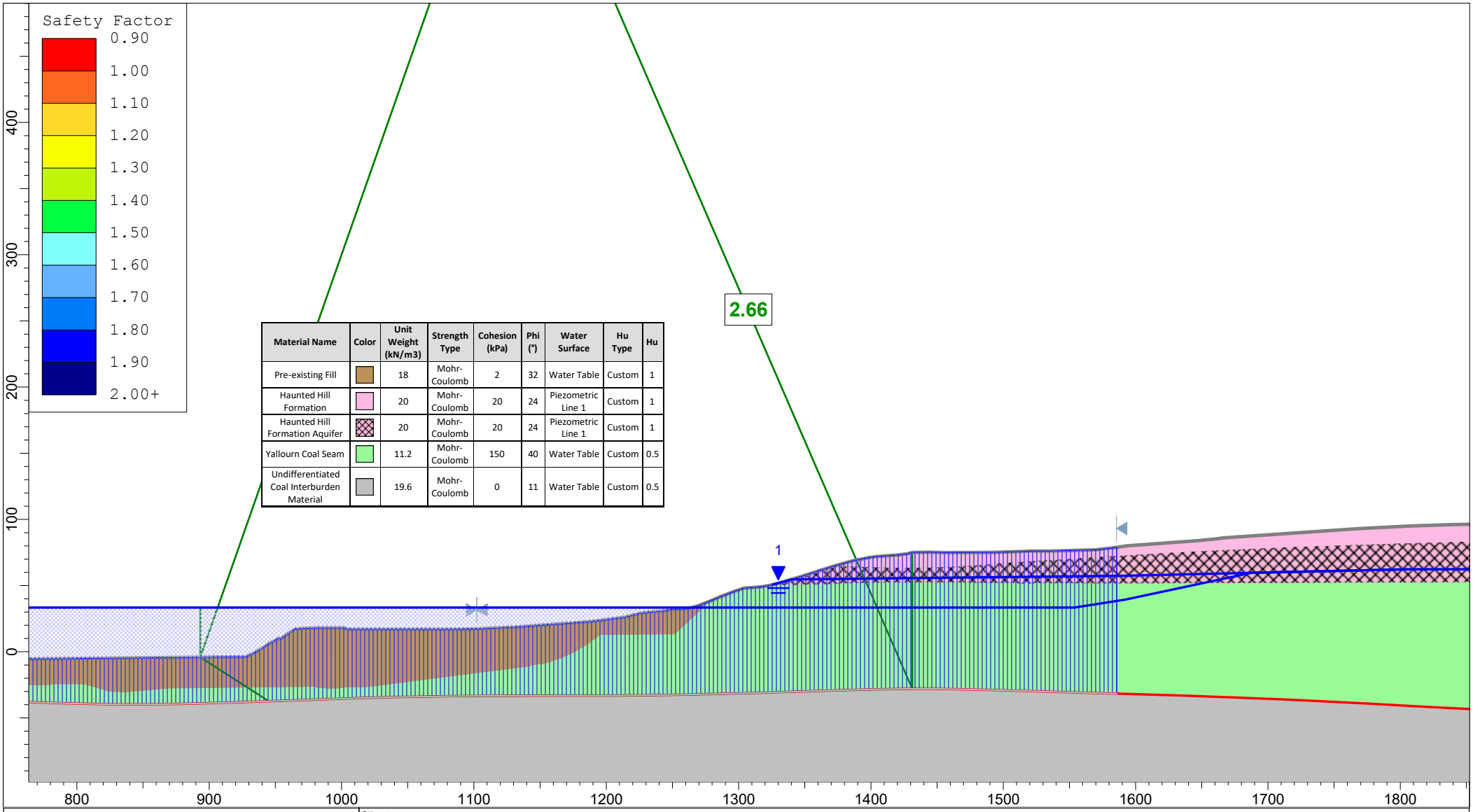
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



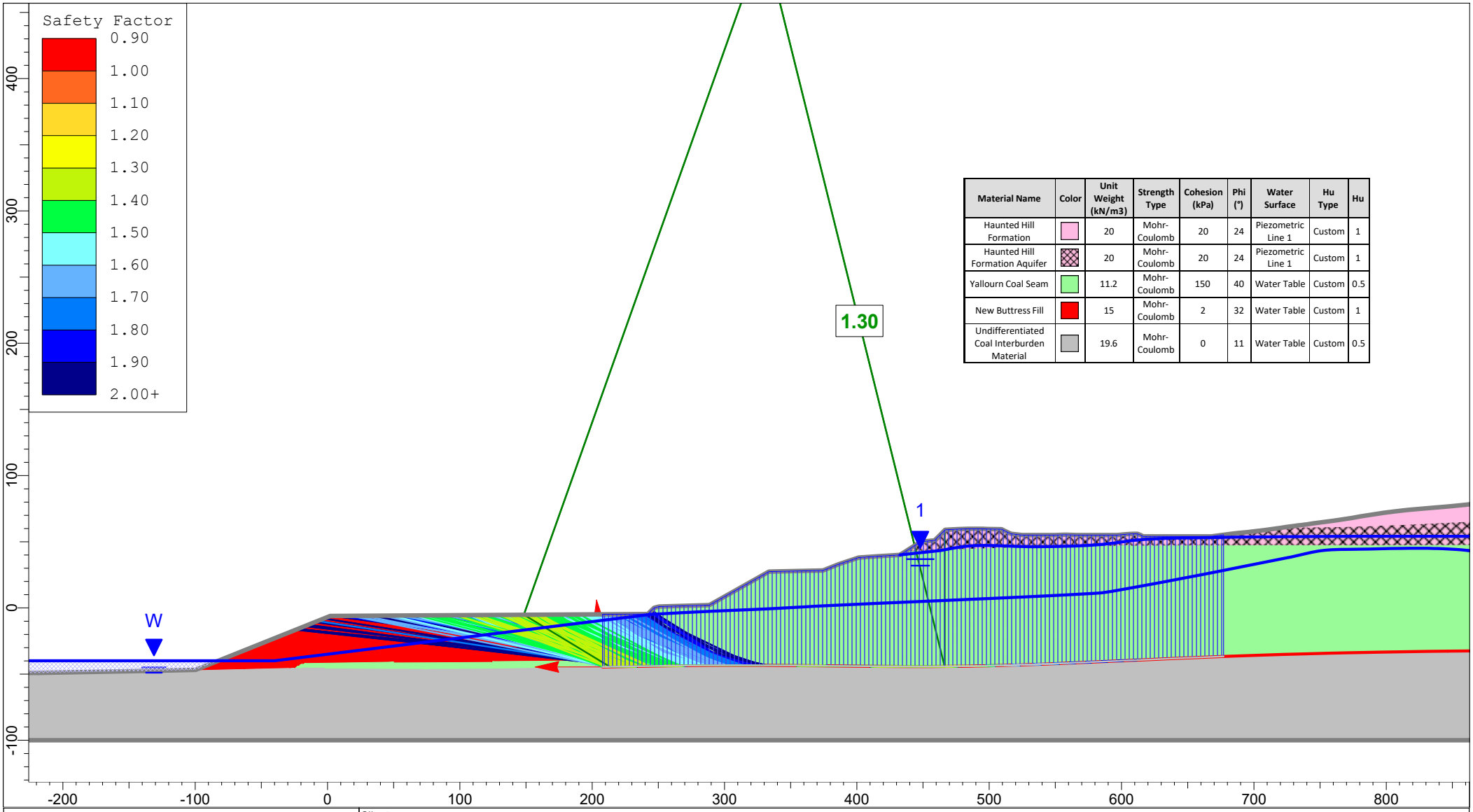
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



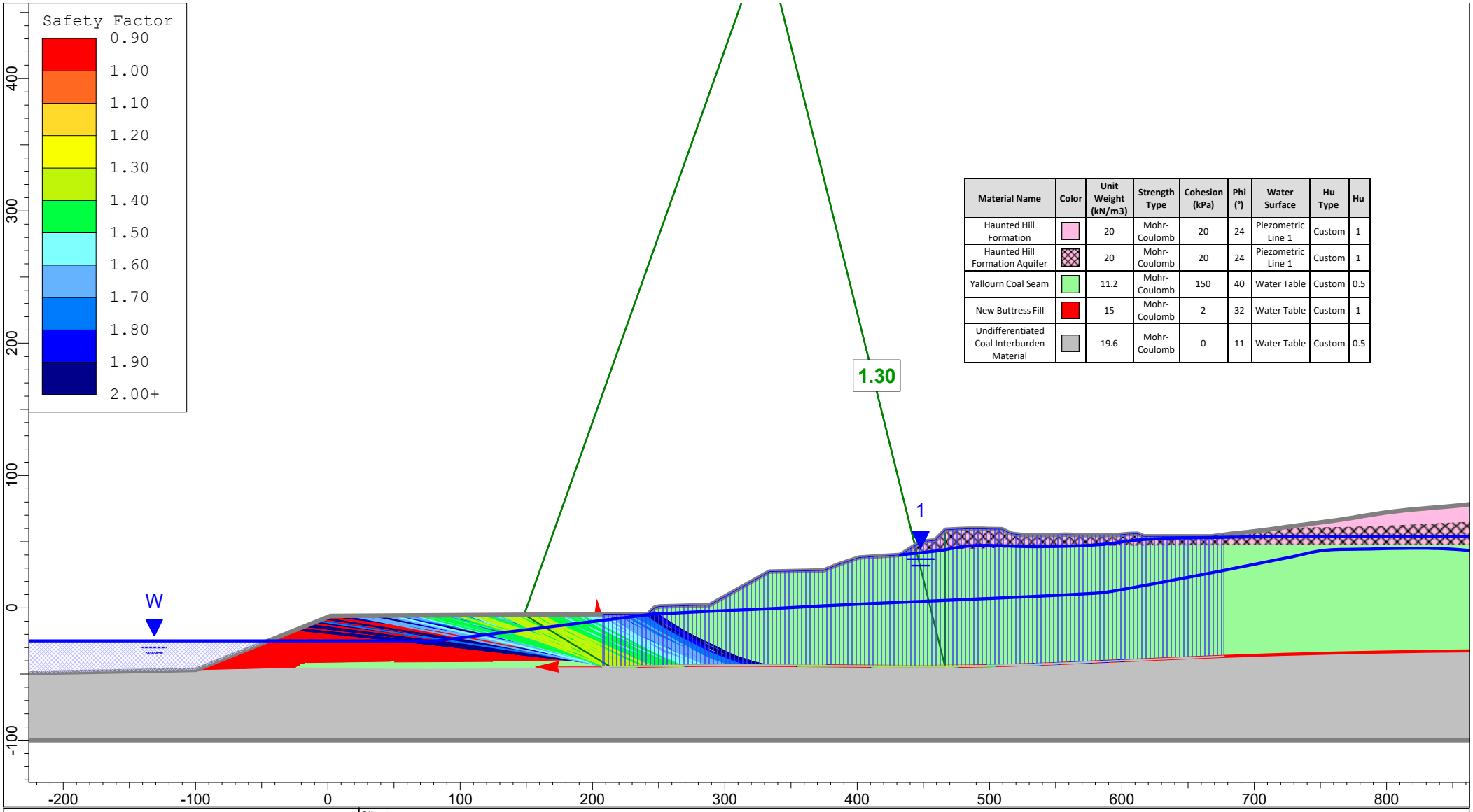
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



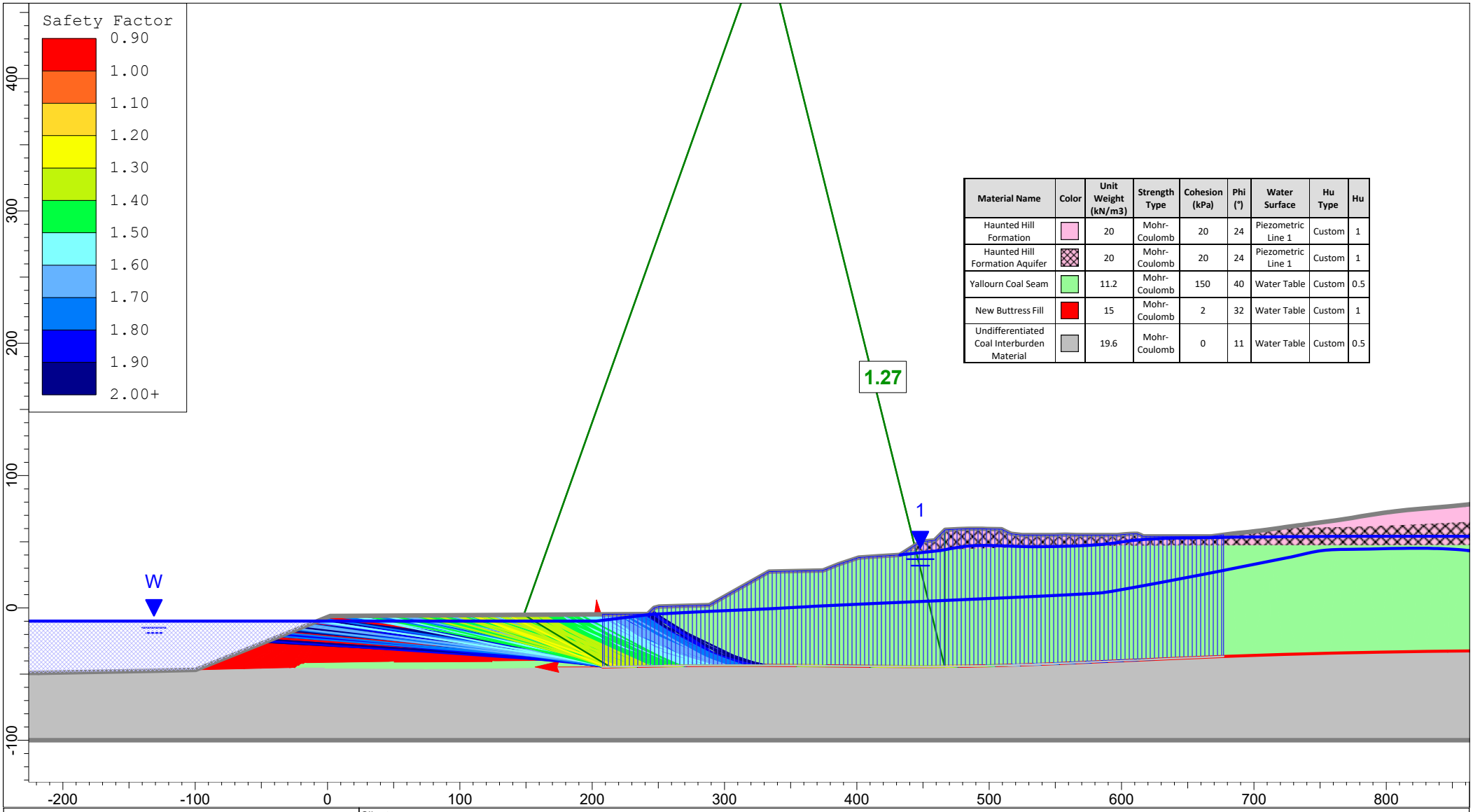
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -40 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



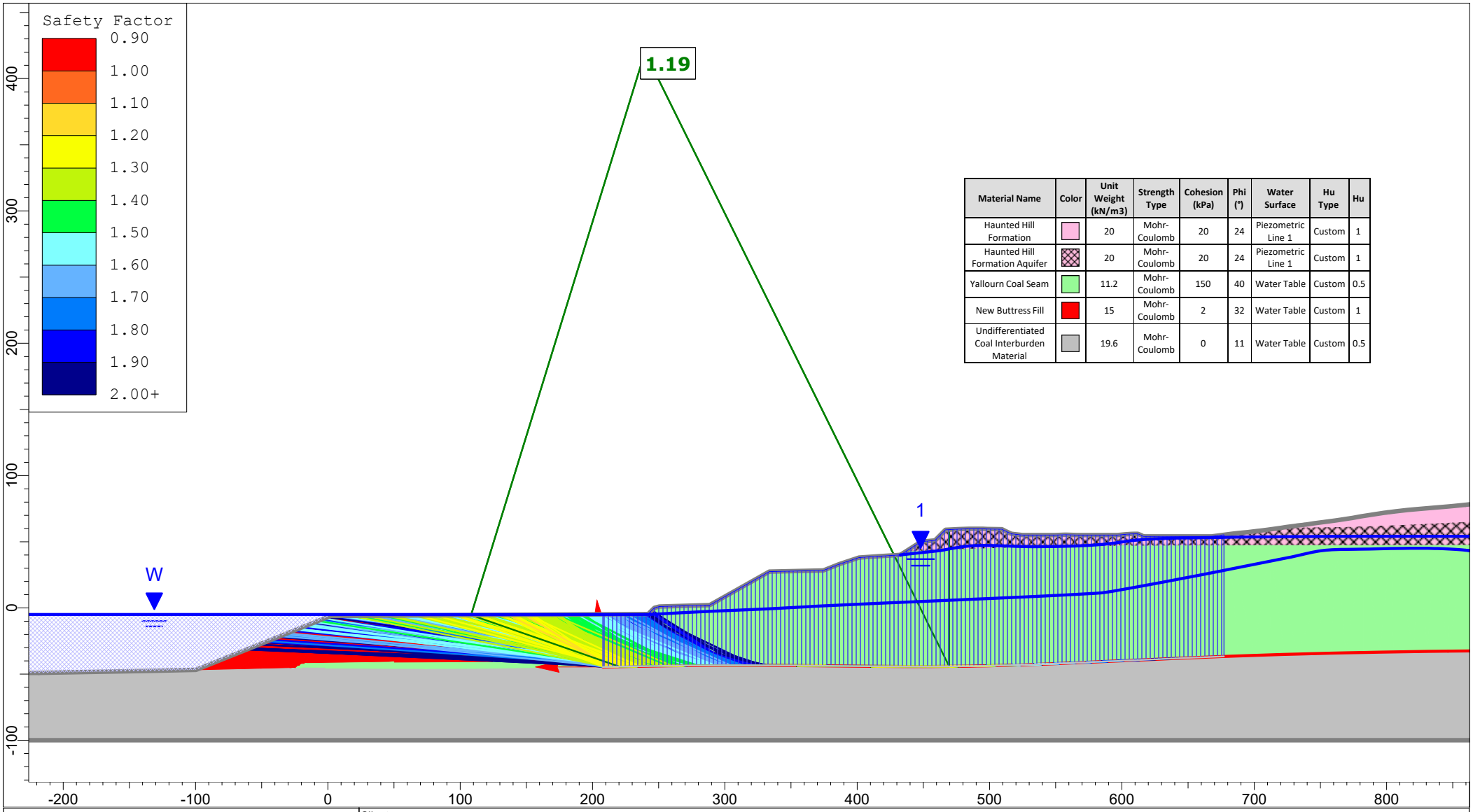
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



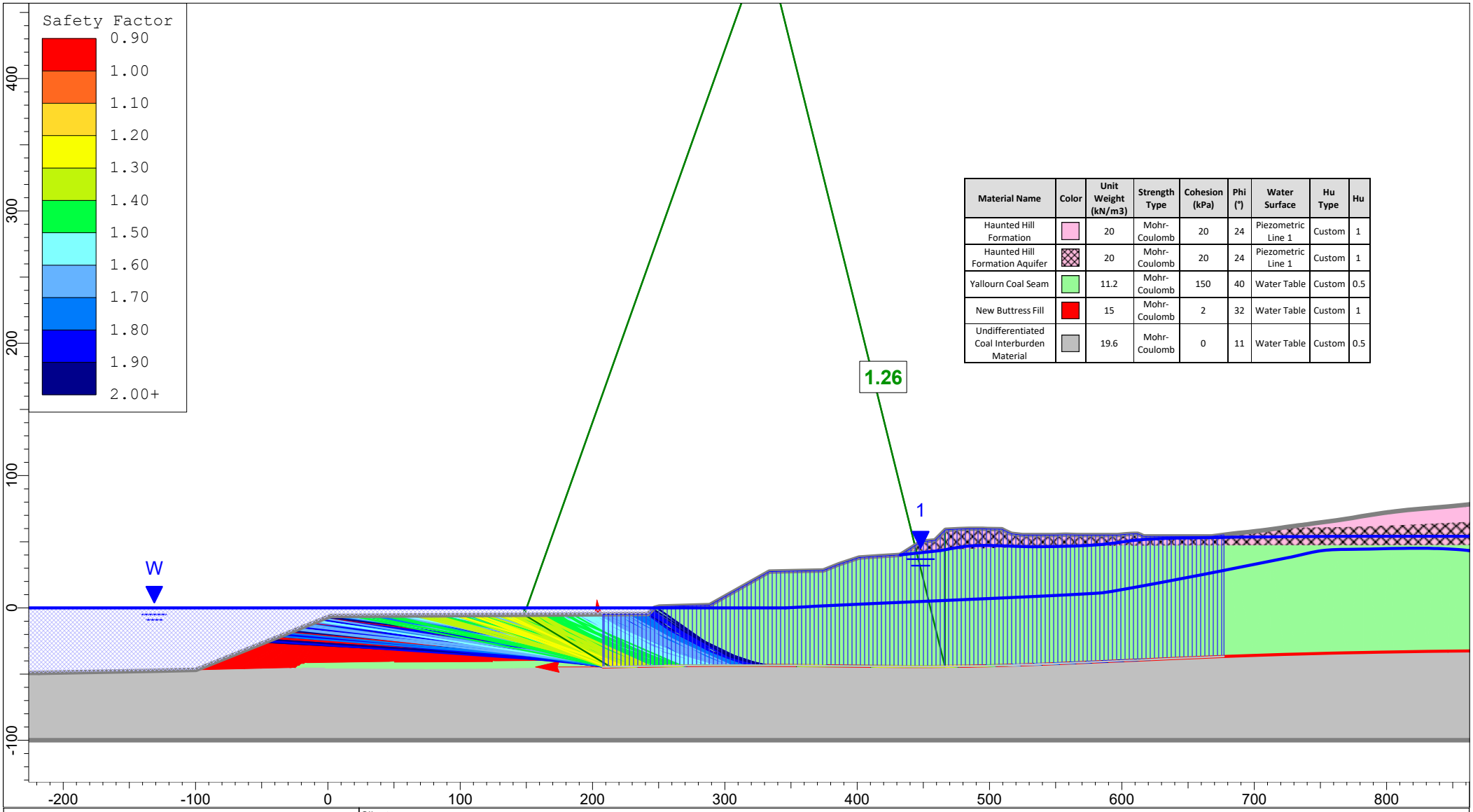
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



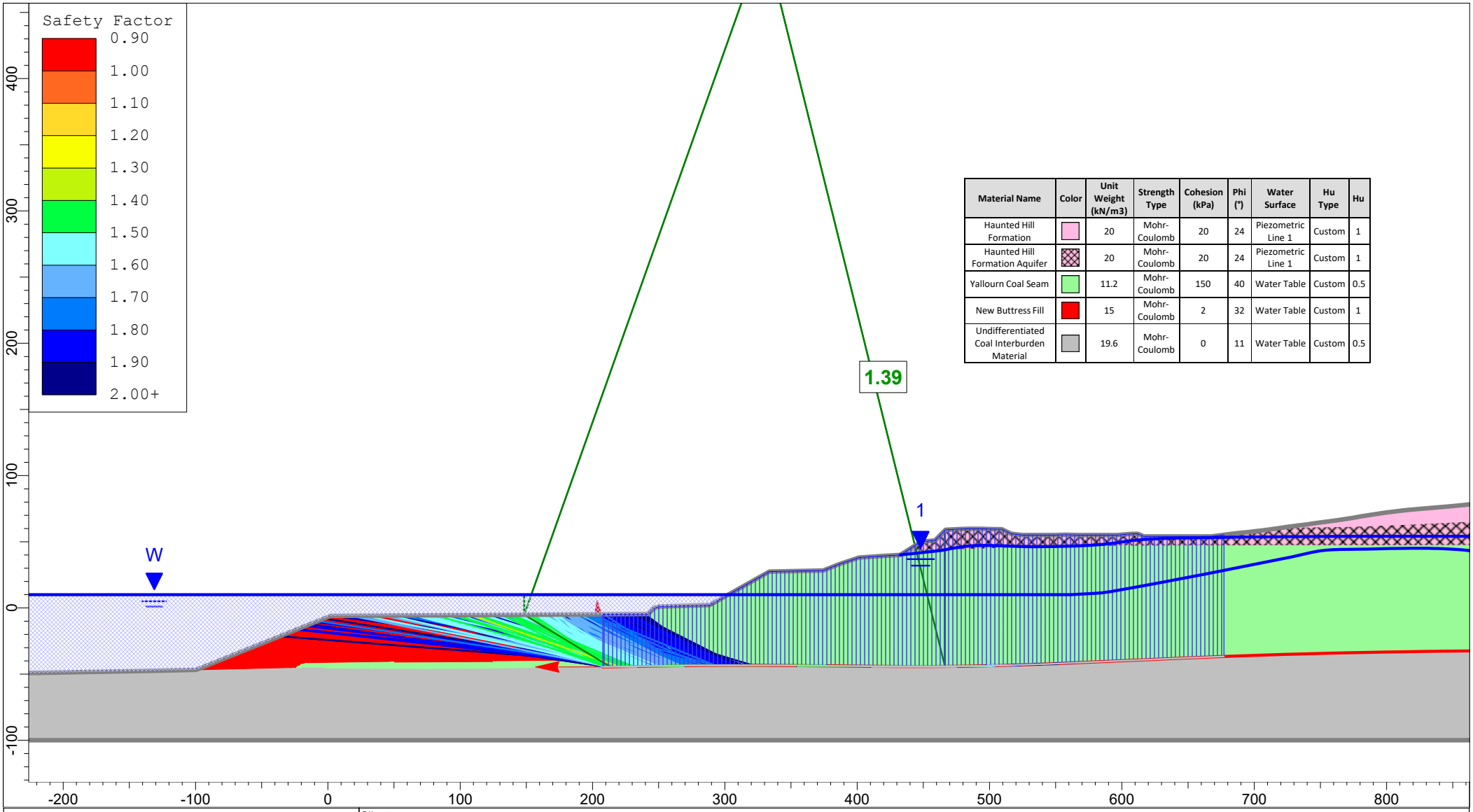
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



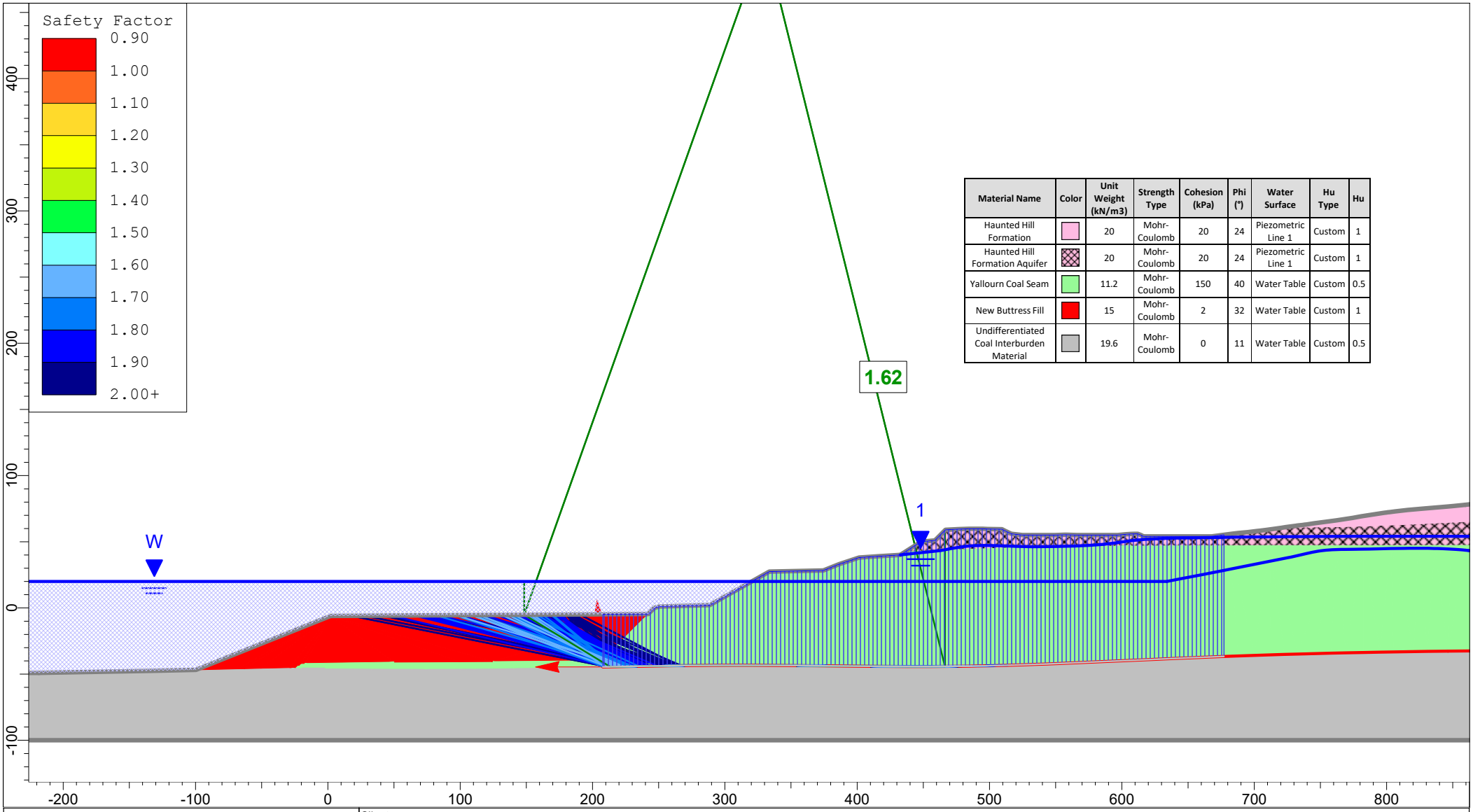
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



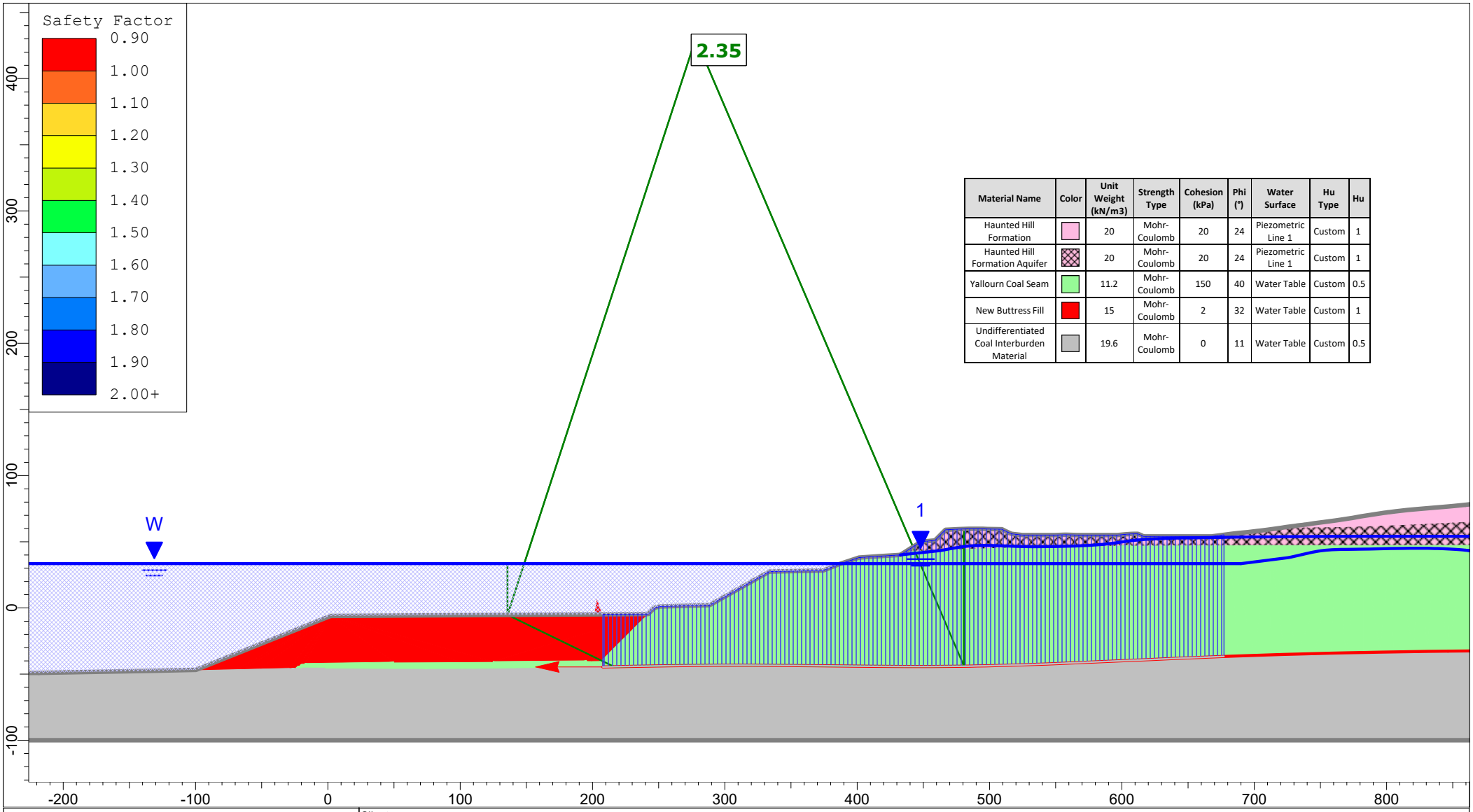
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



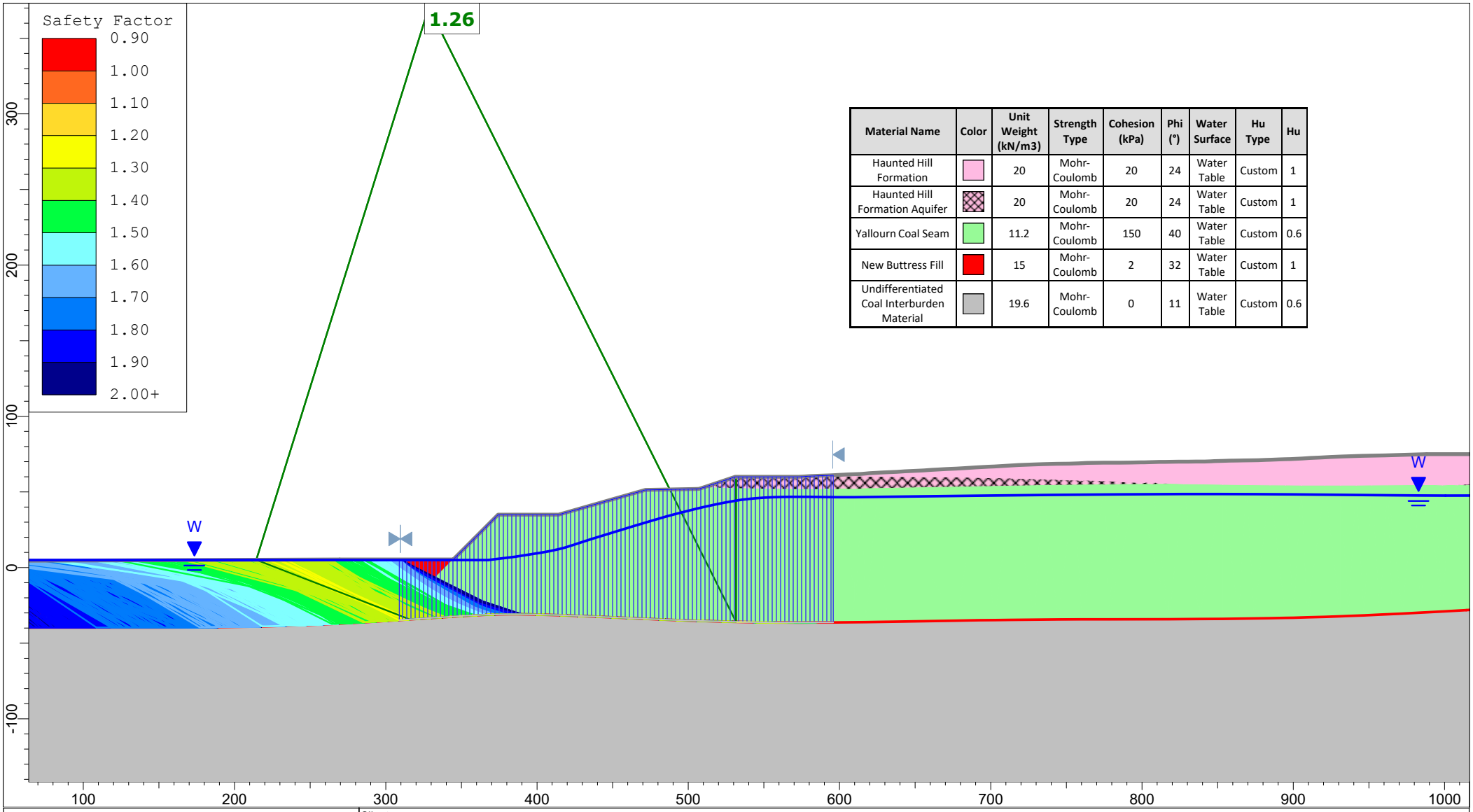
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



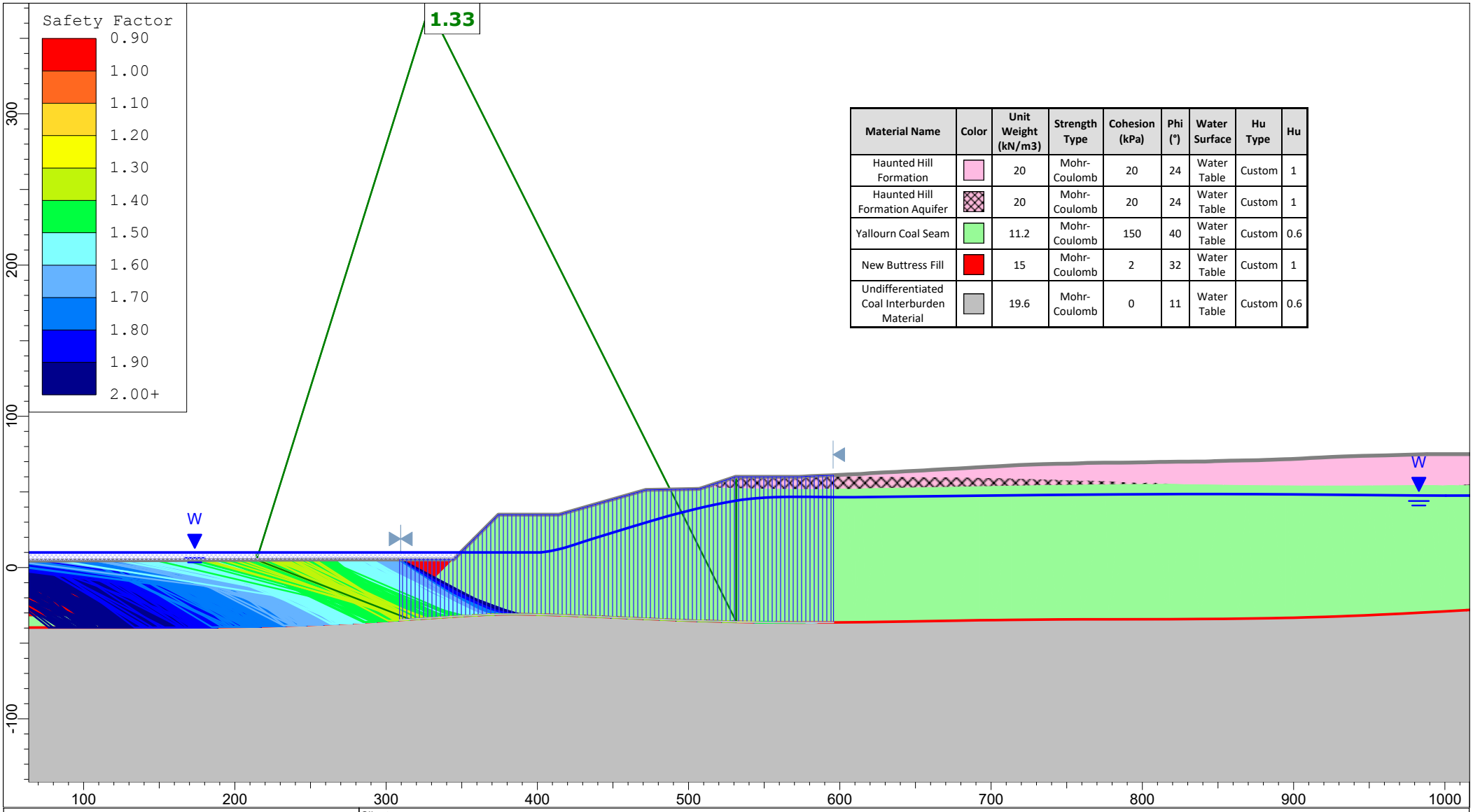
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



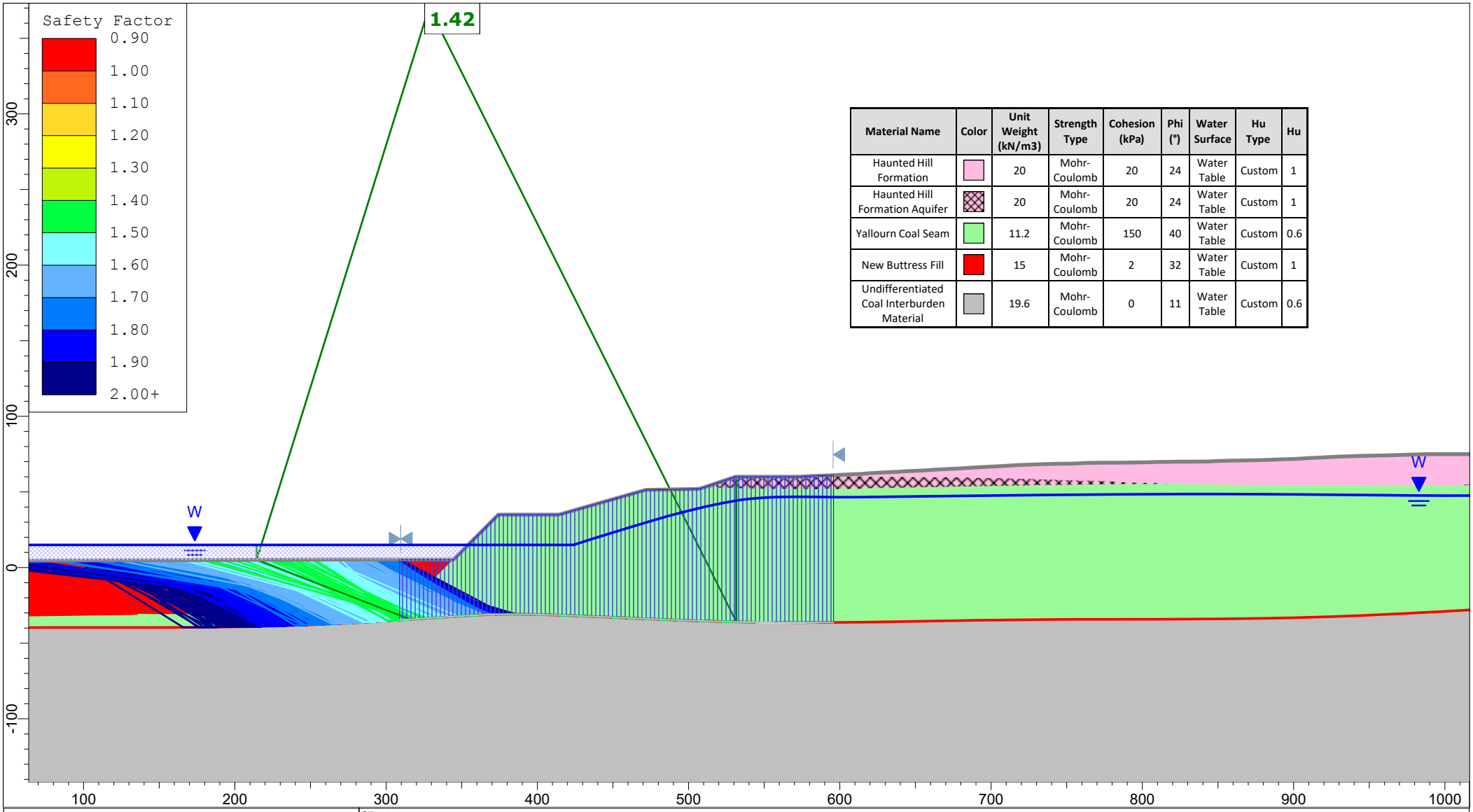
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



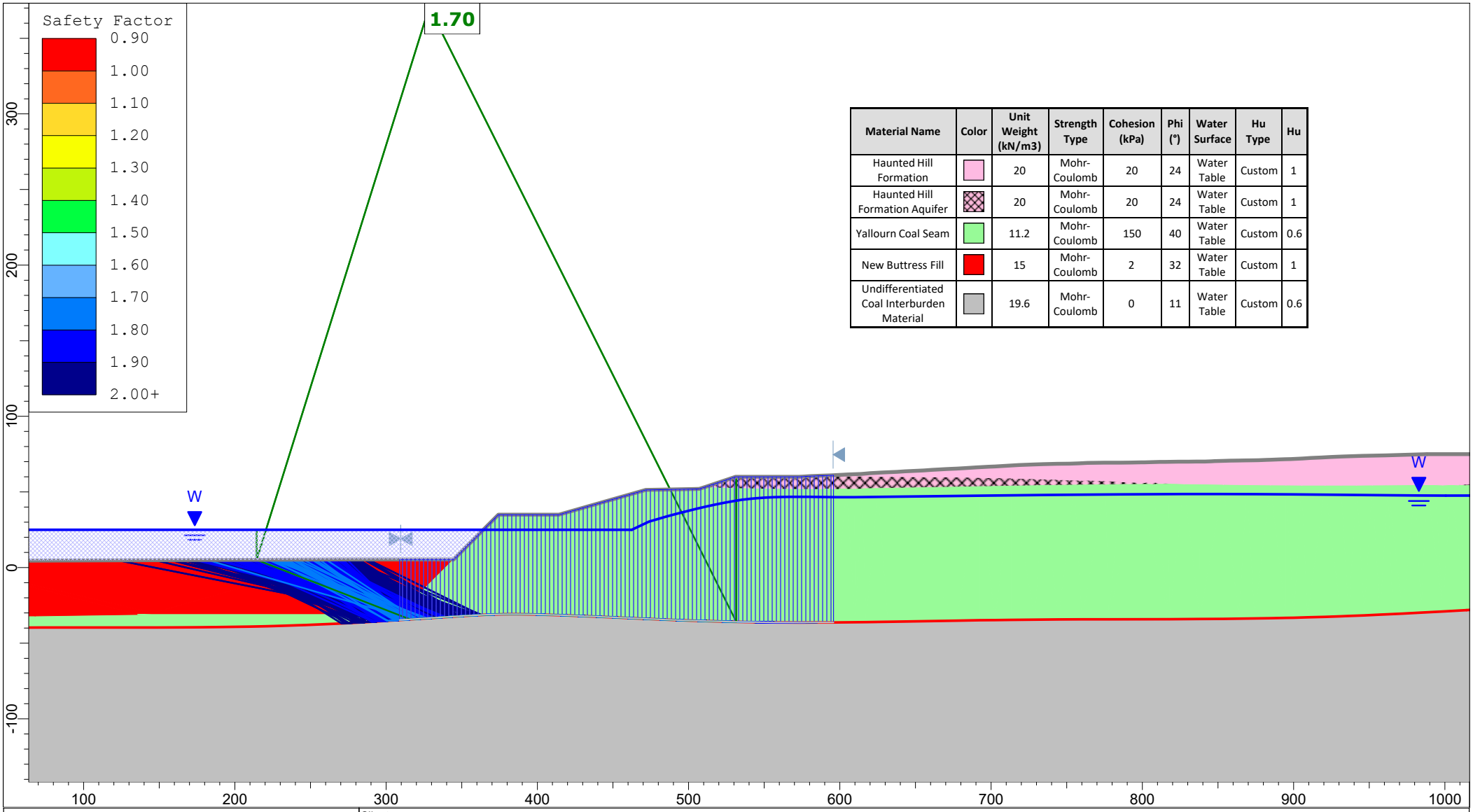
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



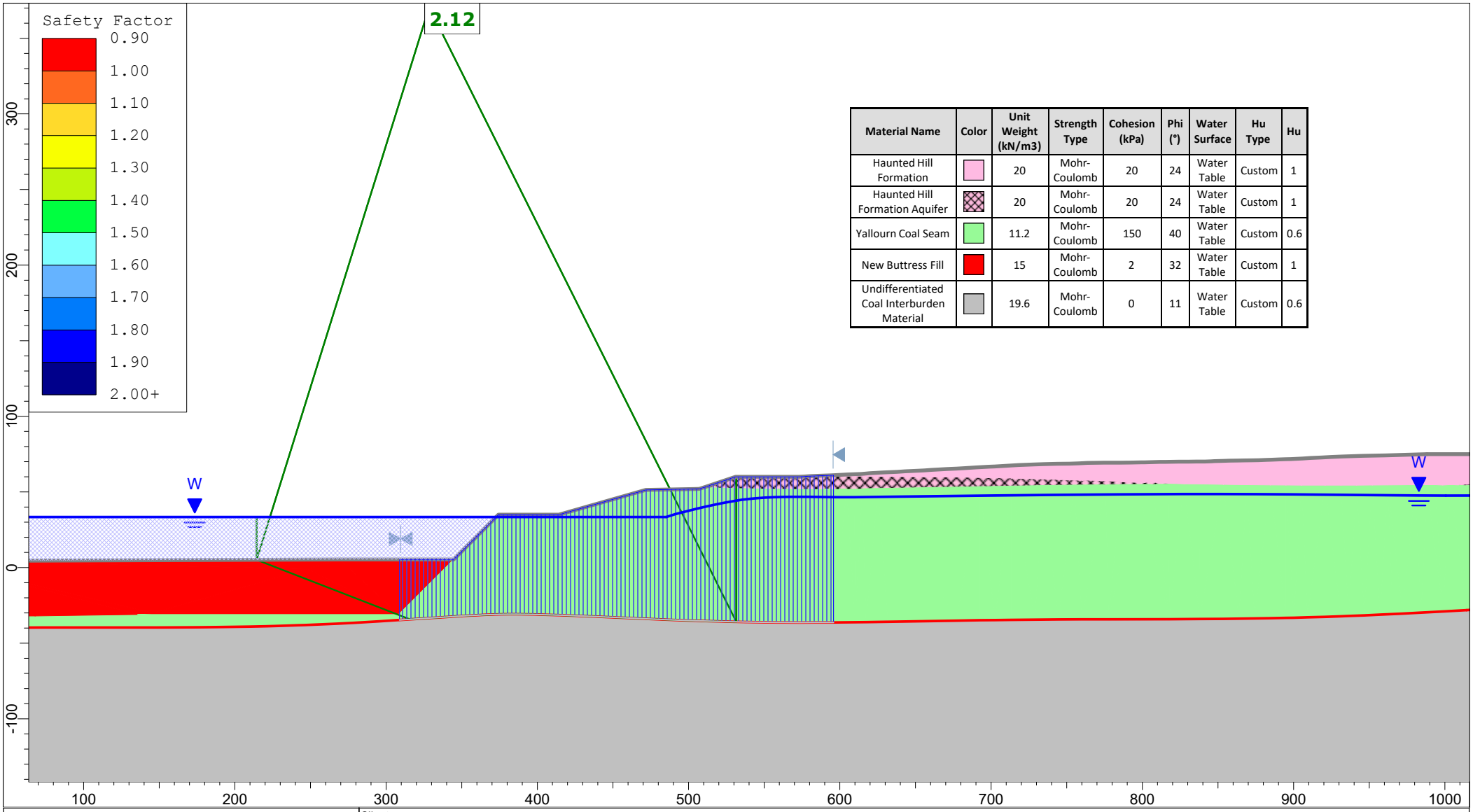
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



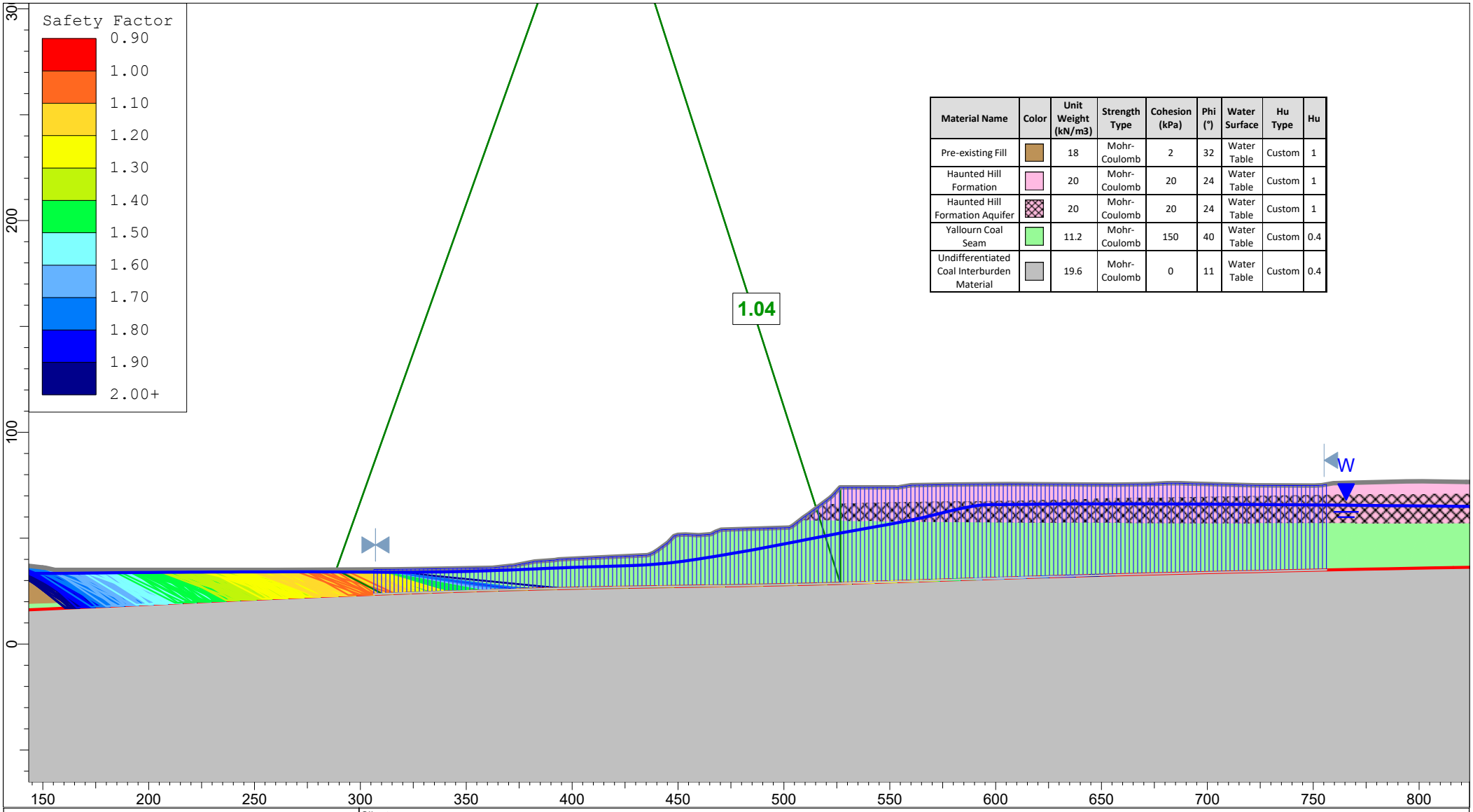
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



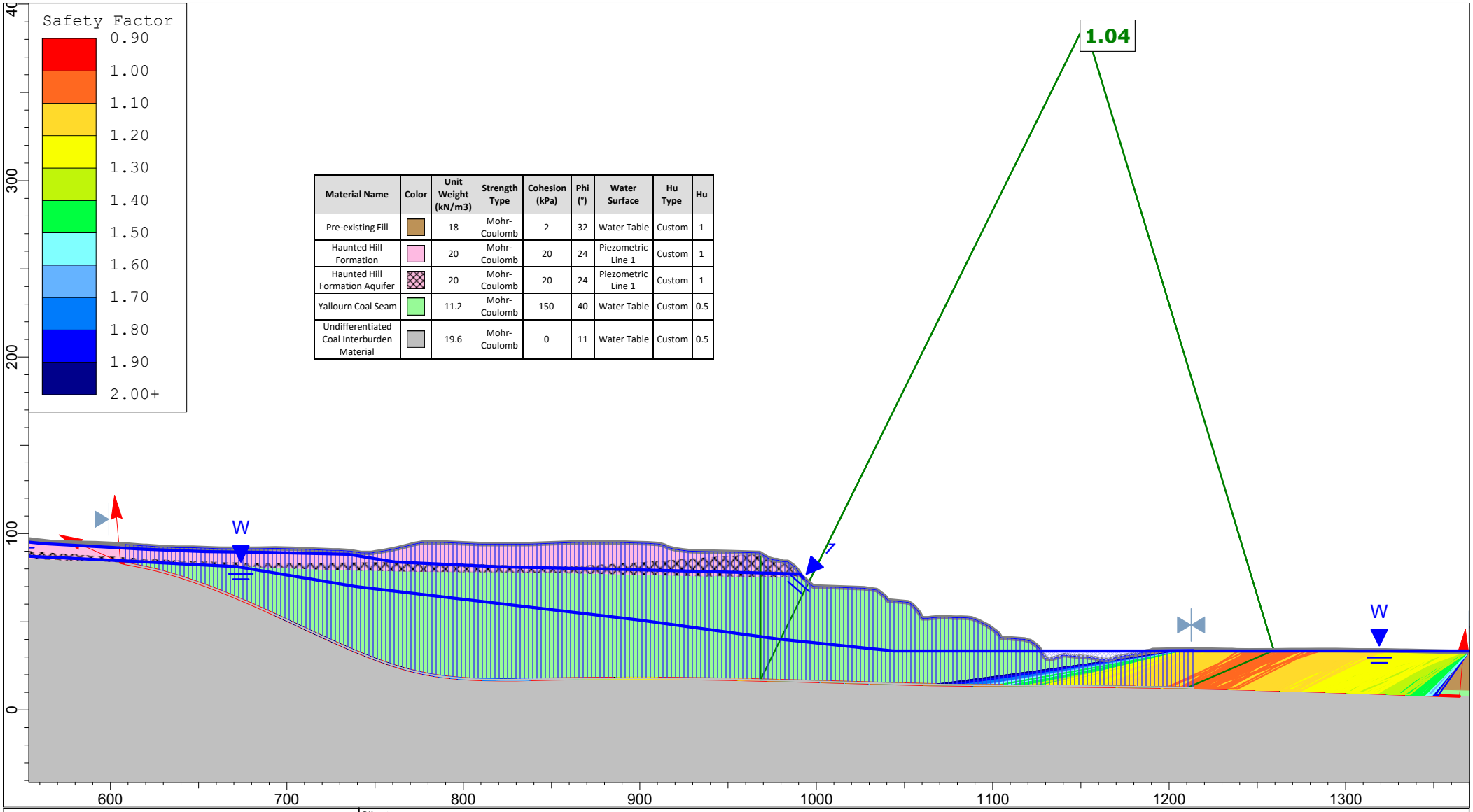
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



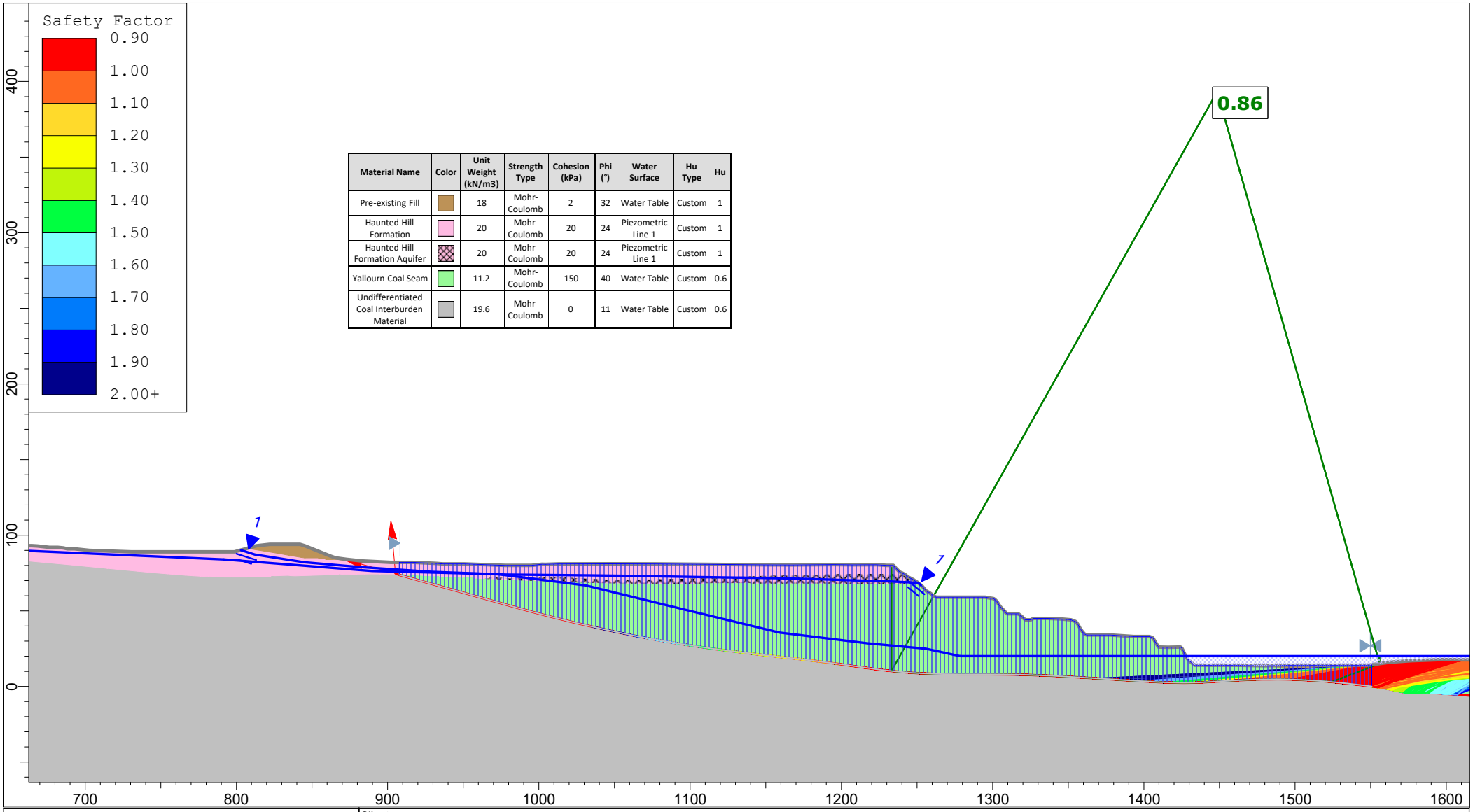
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SB
Section:	Section 19	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



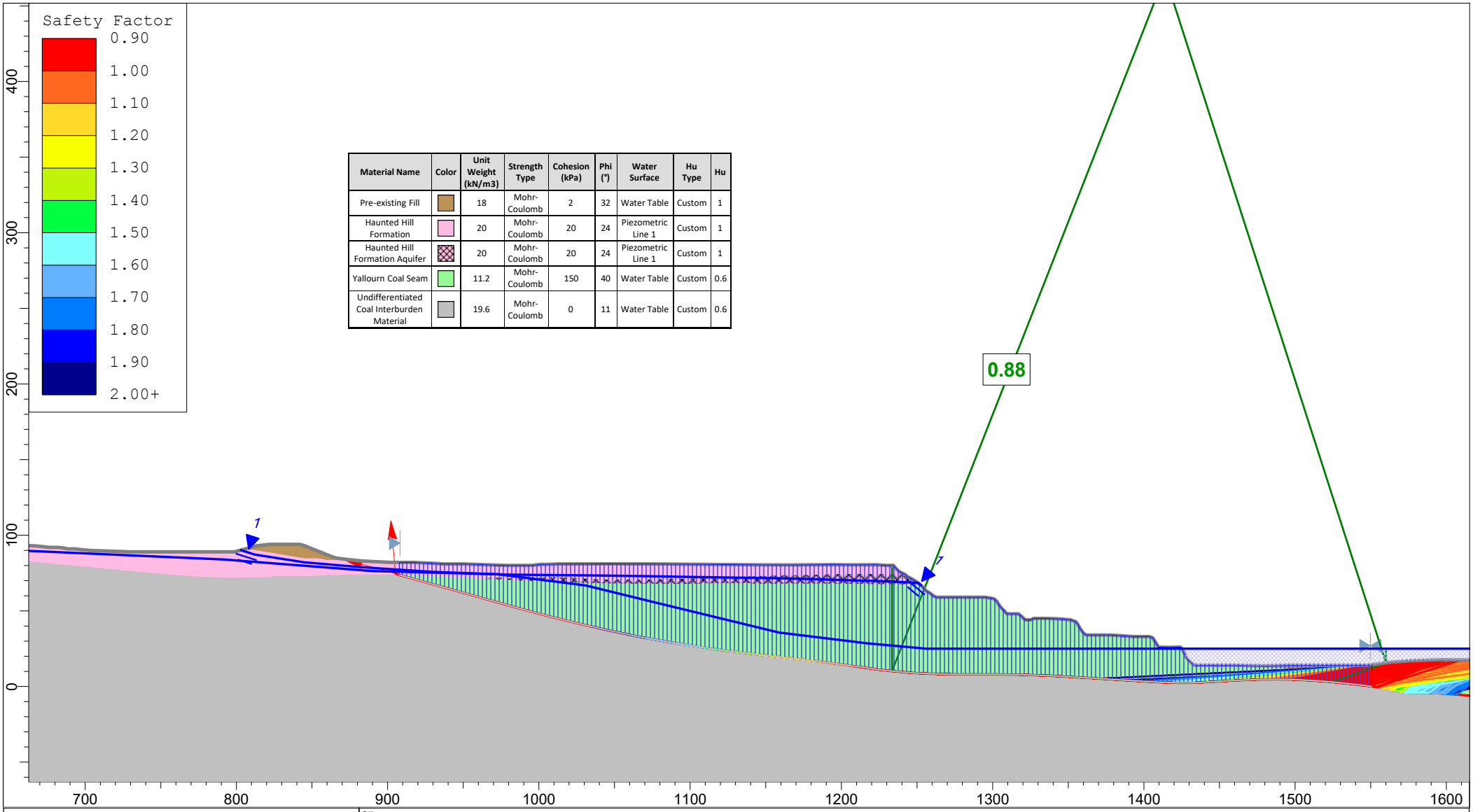
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (South)
Section:	Section 22	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



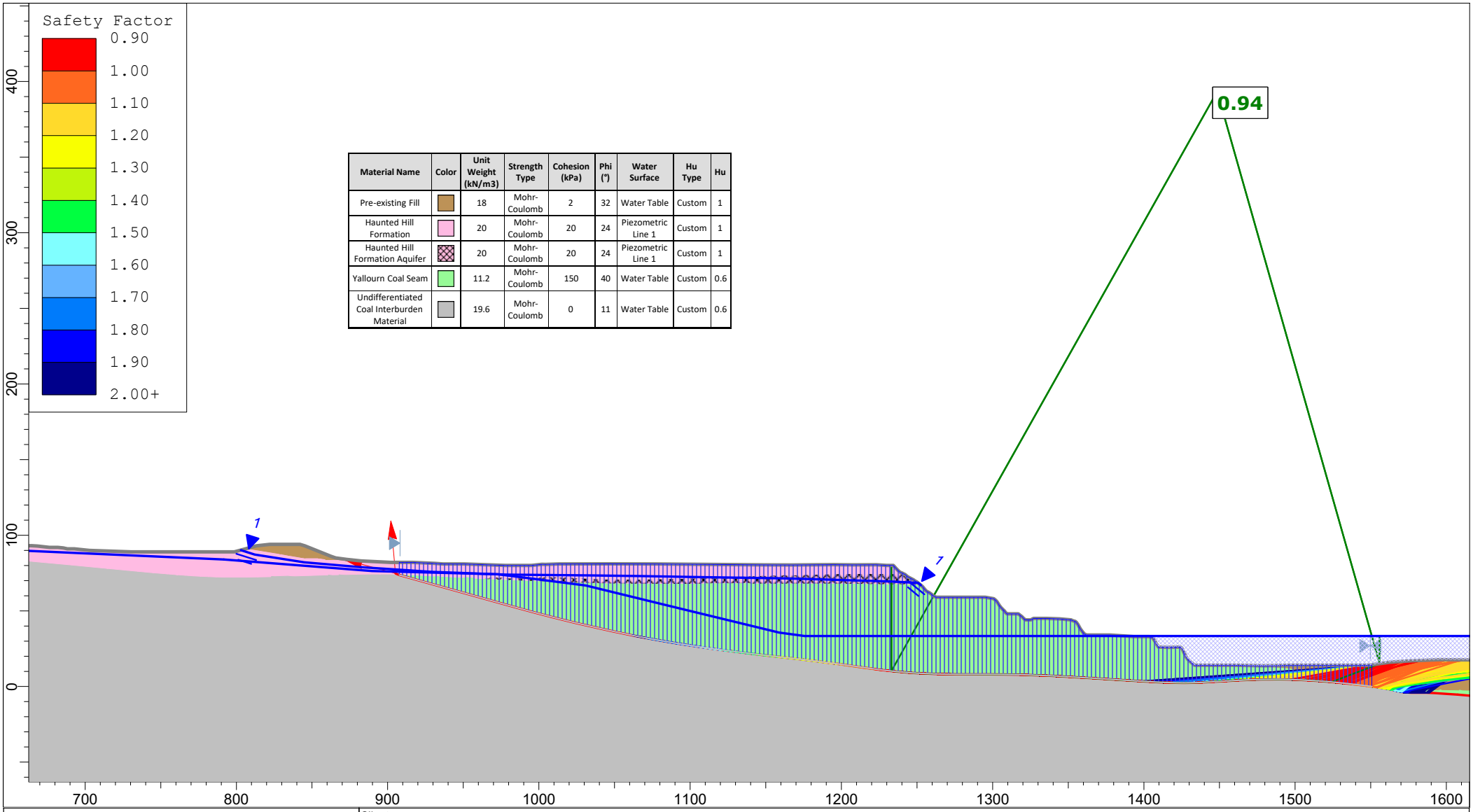
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



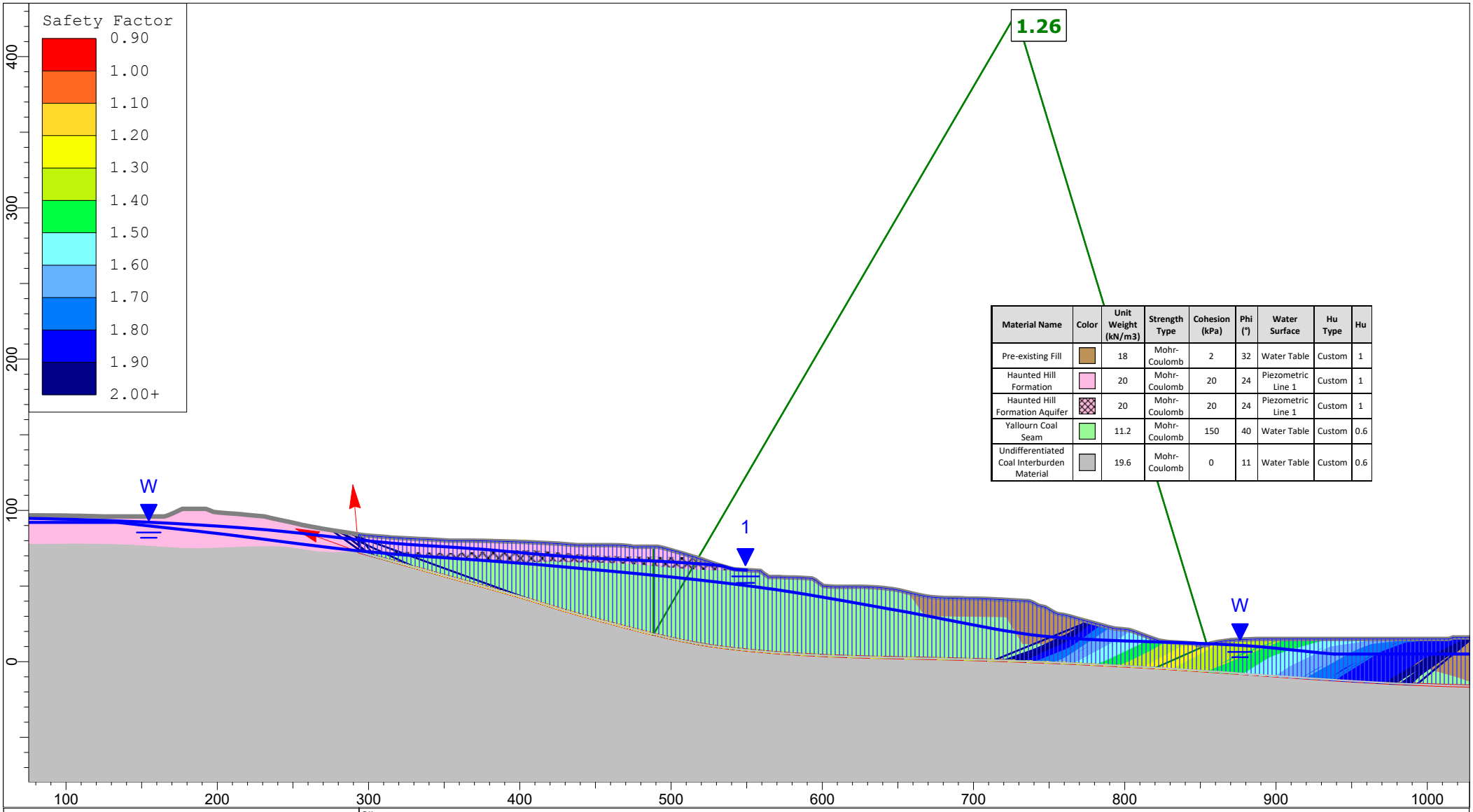
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



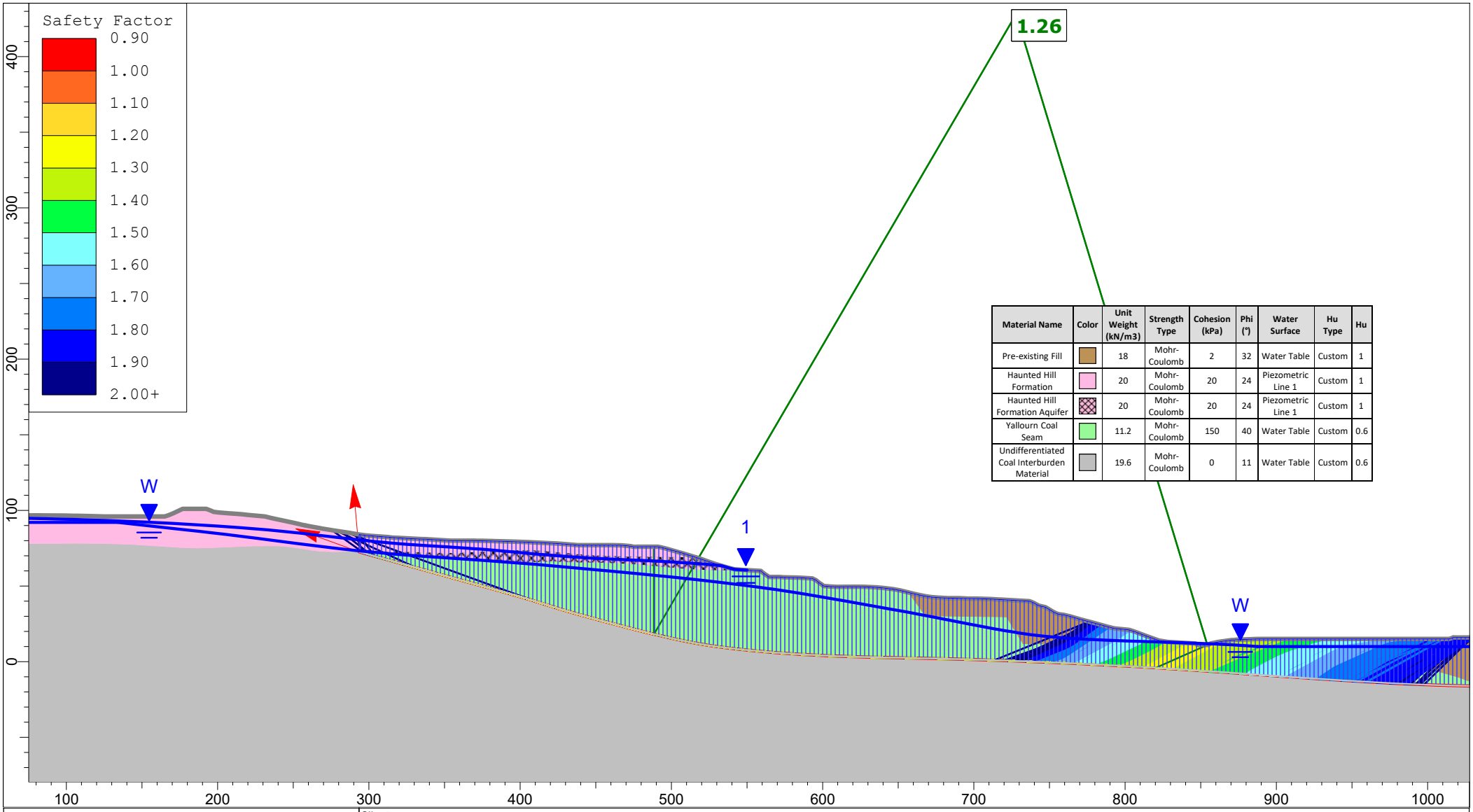
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



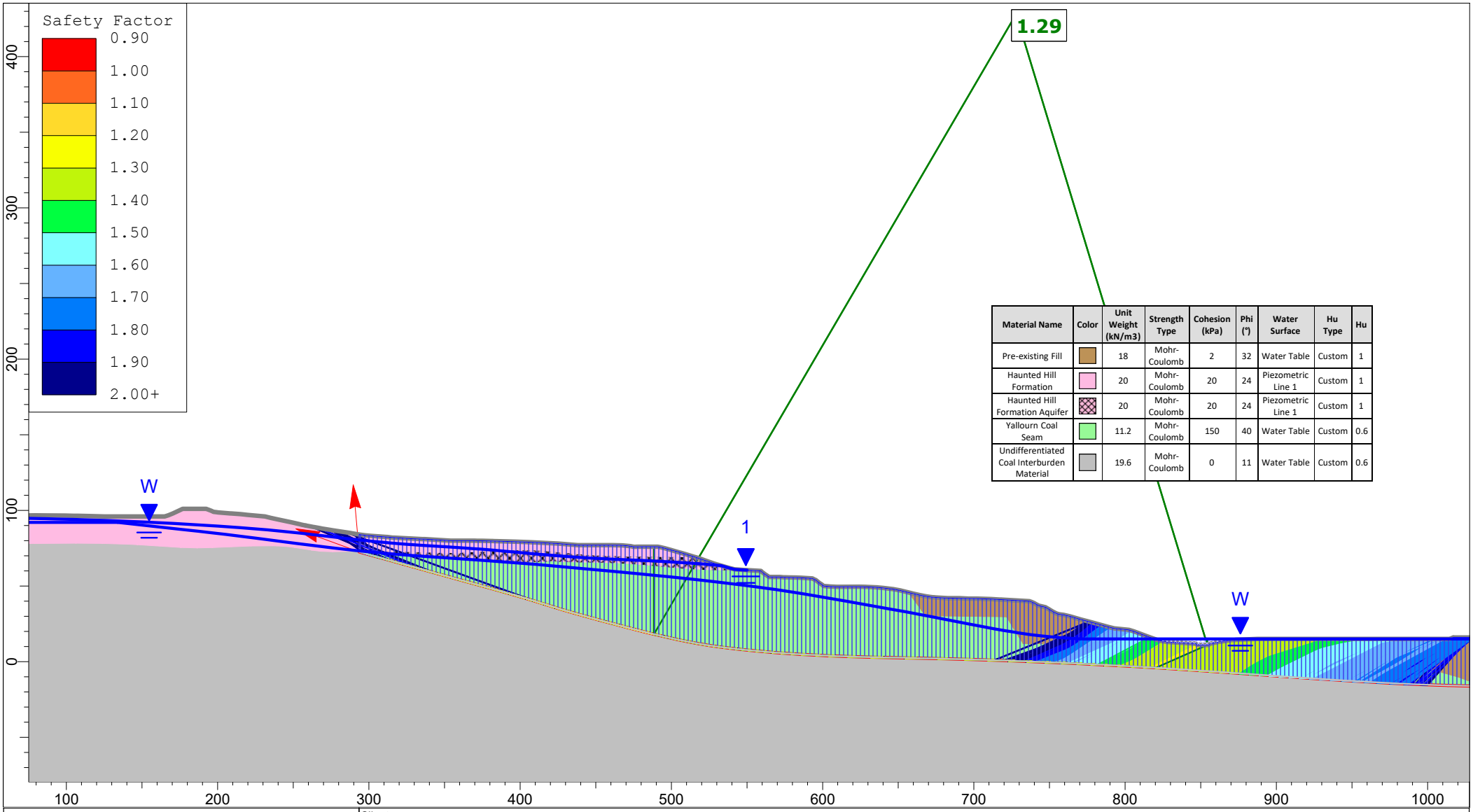
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



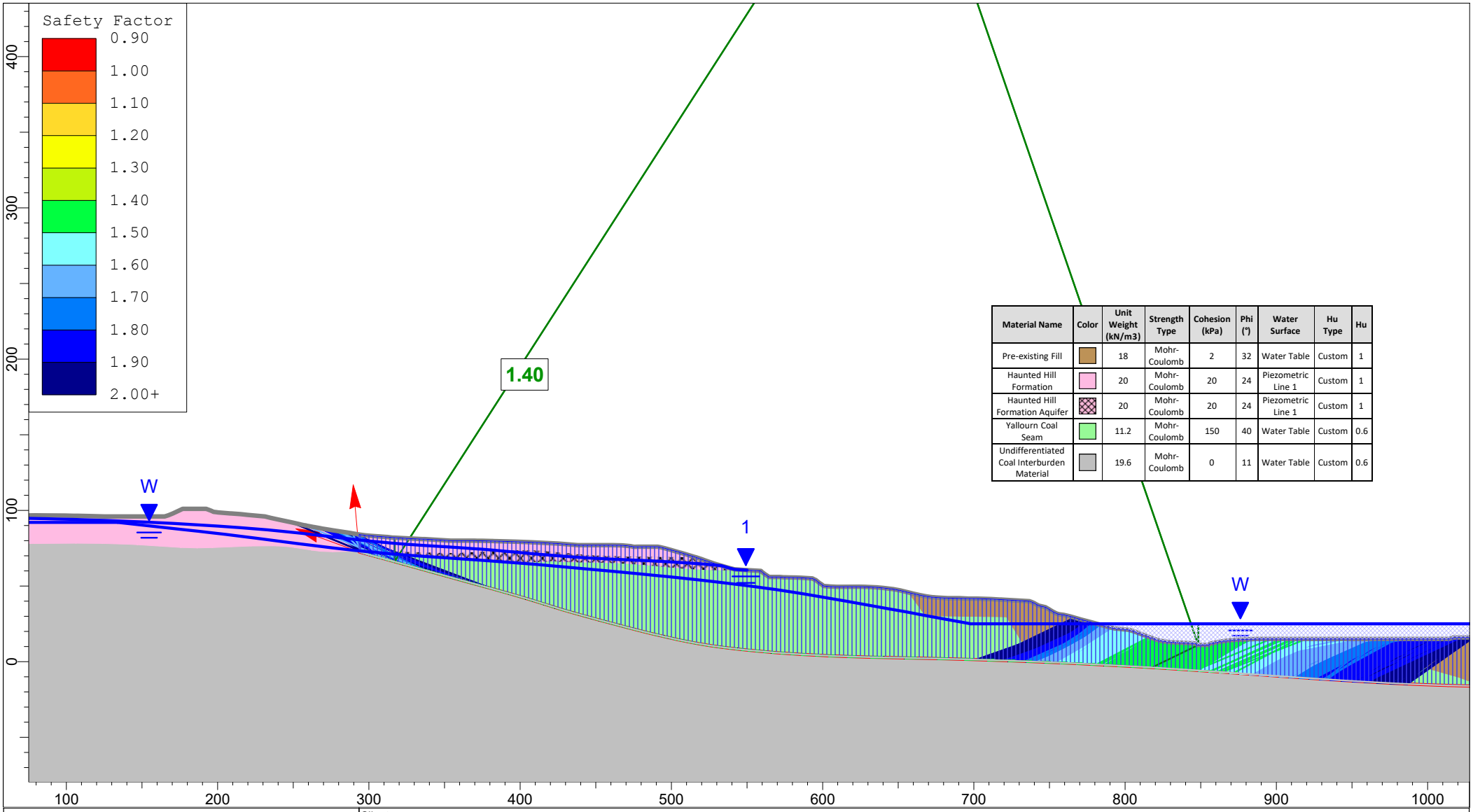
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



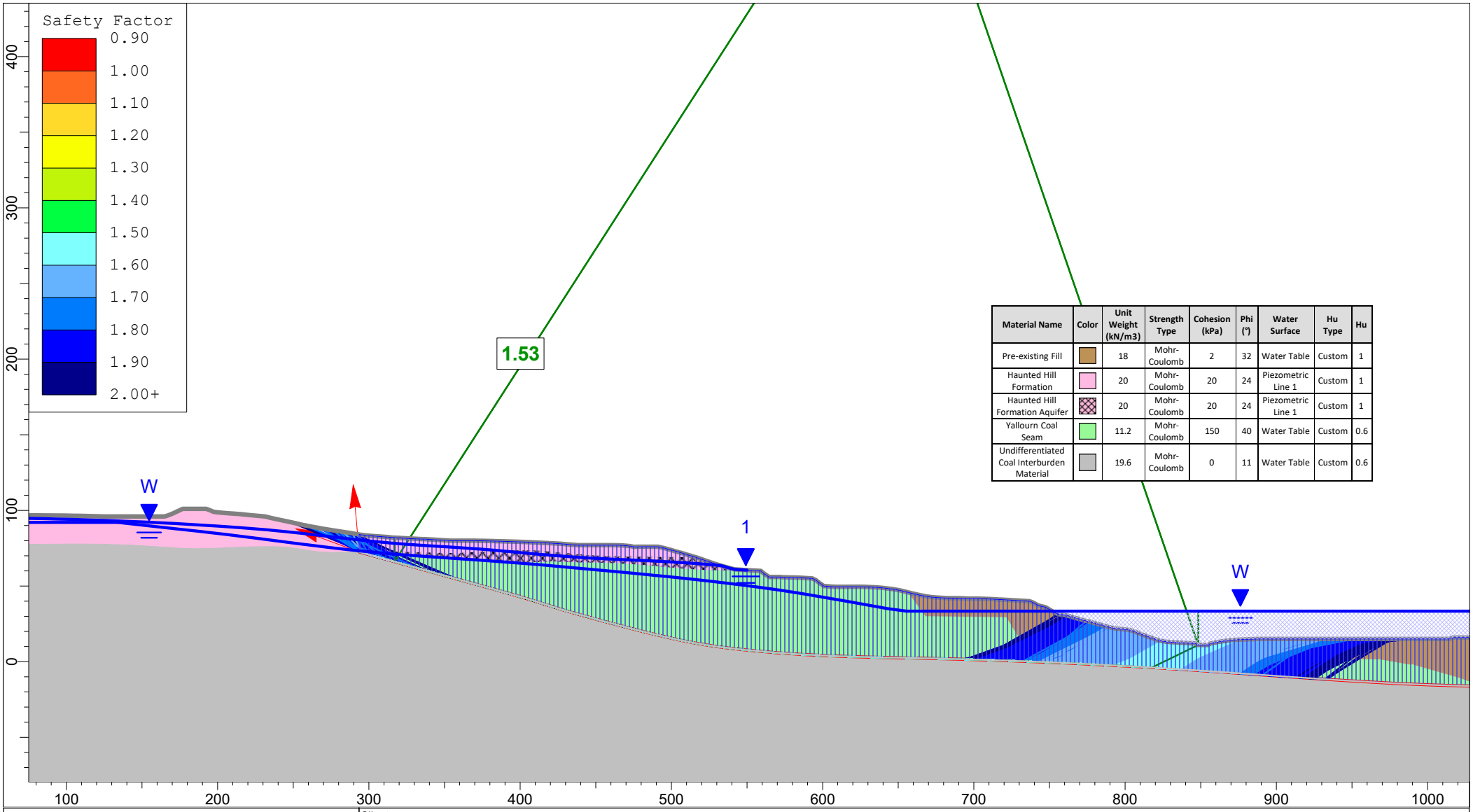
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



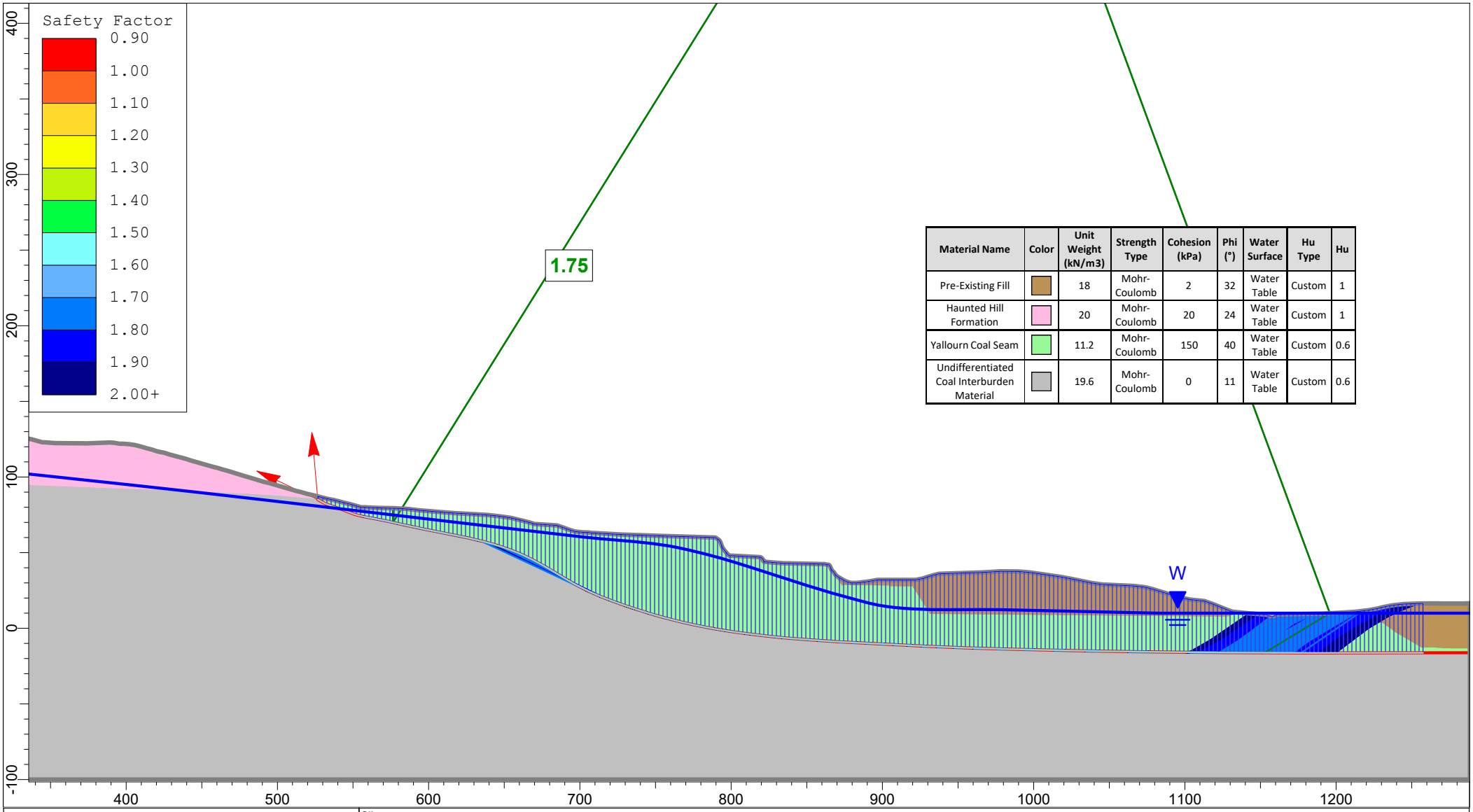
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



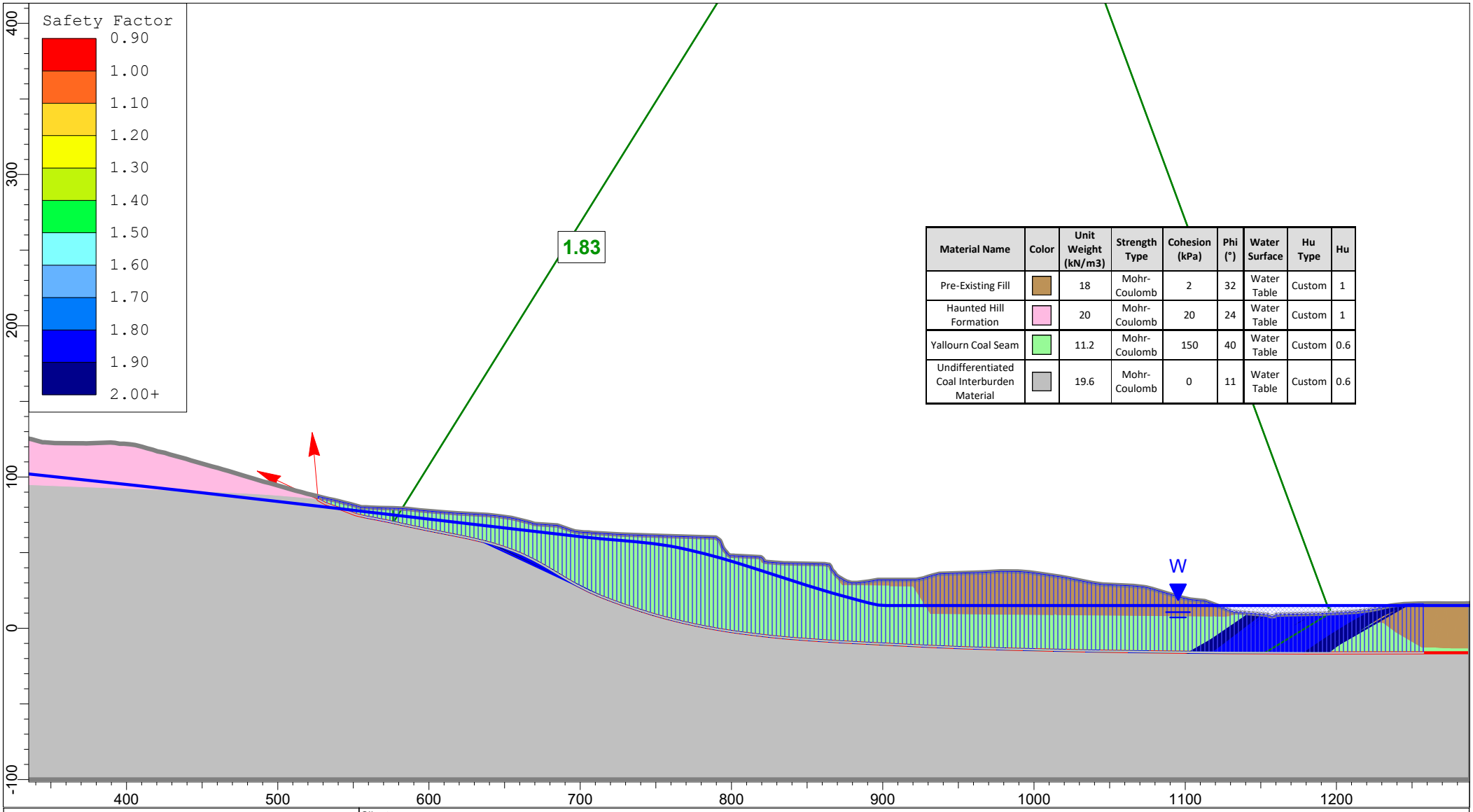
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



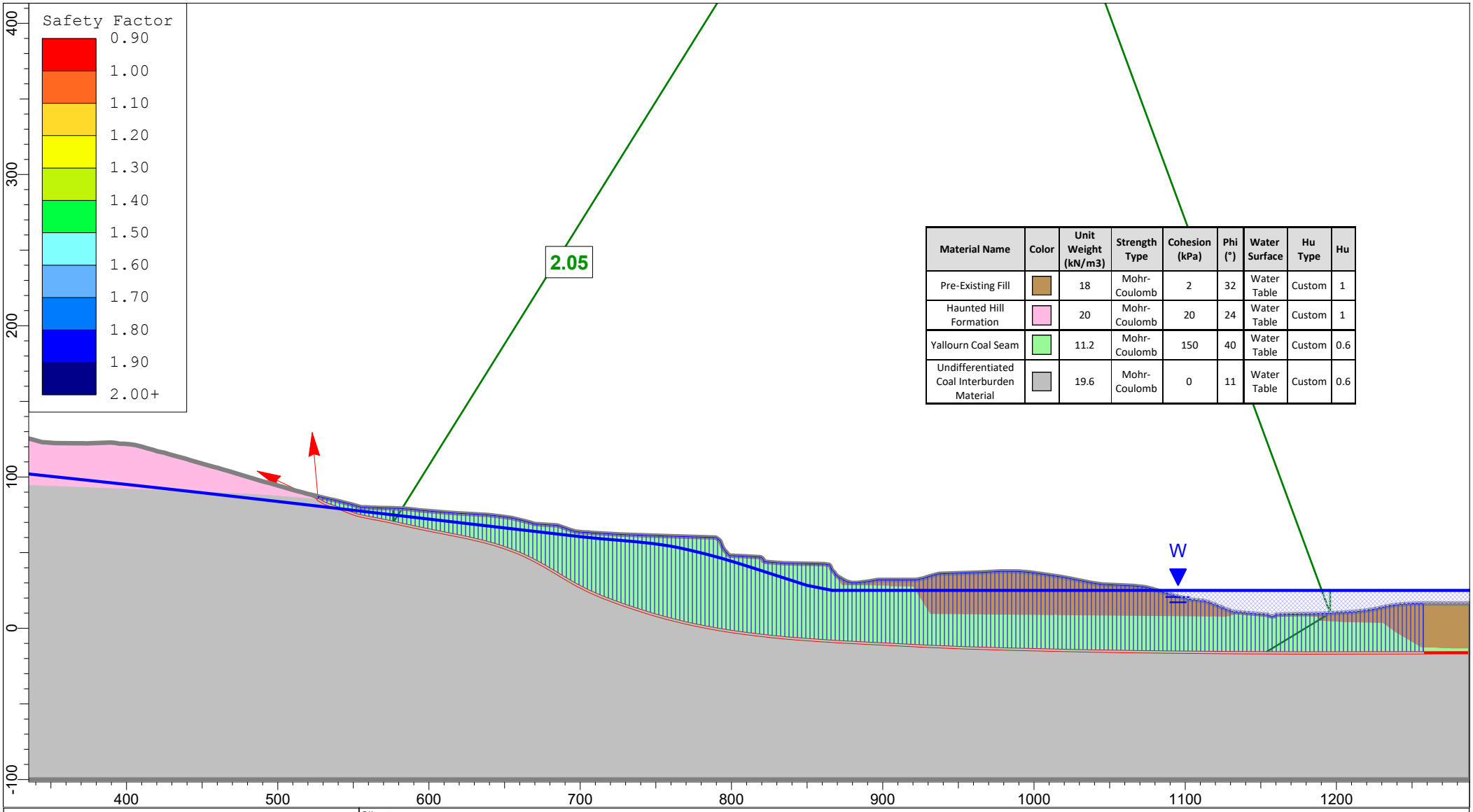
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



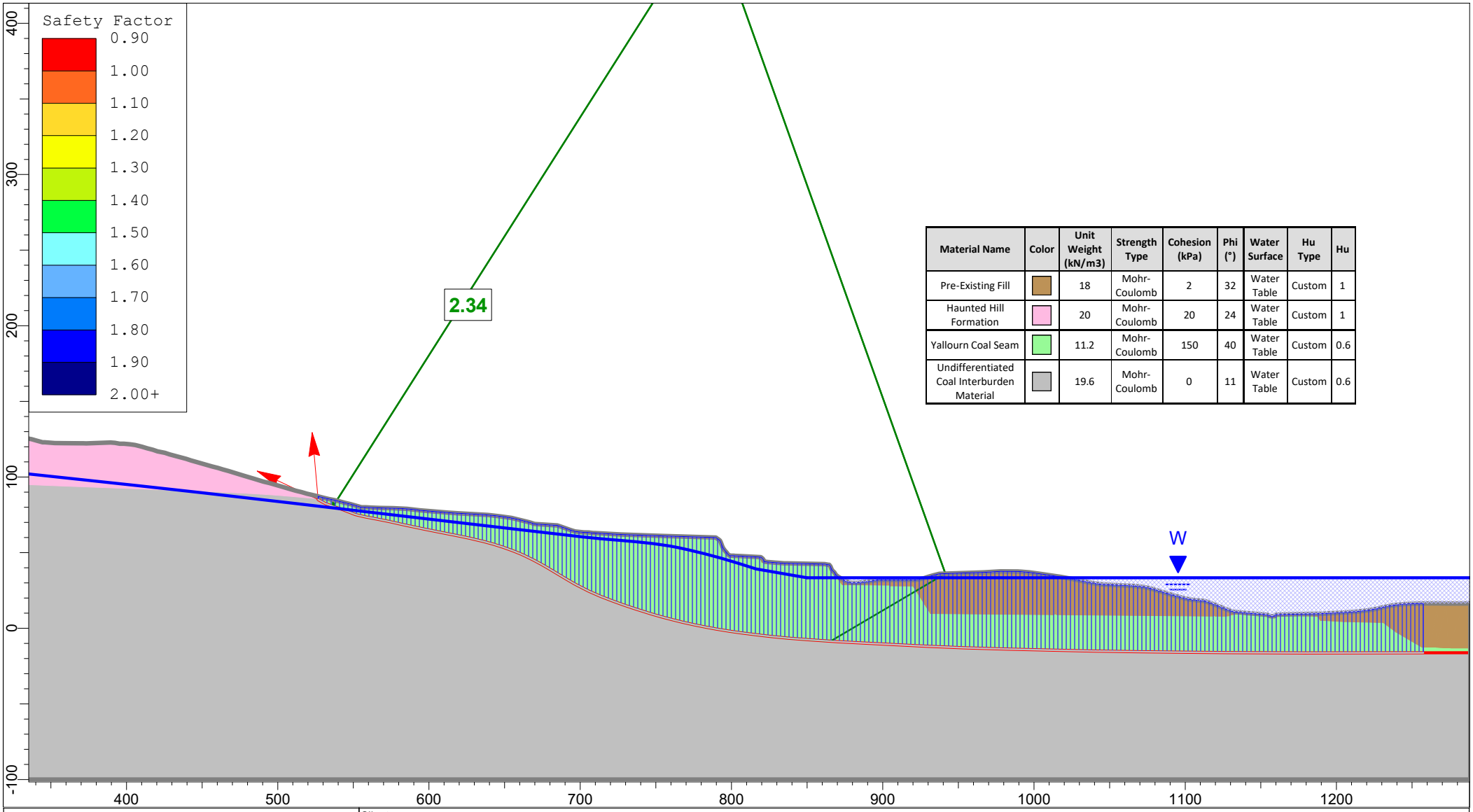
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



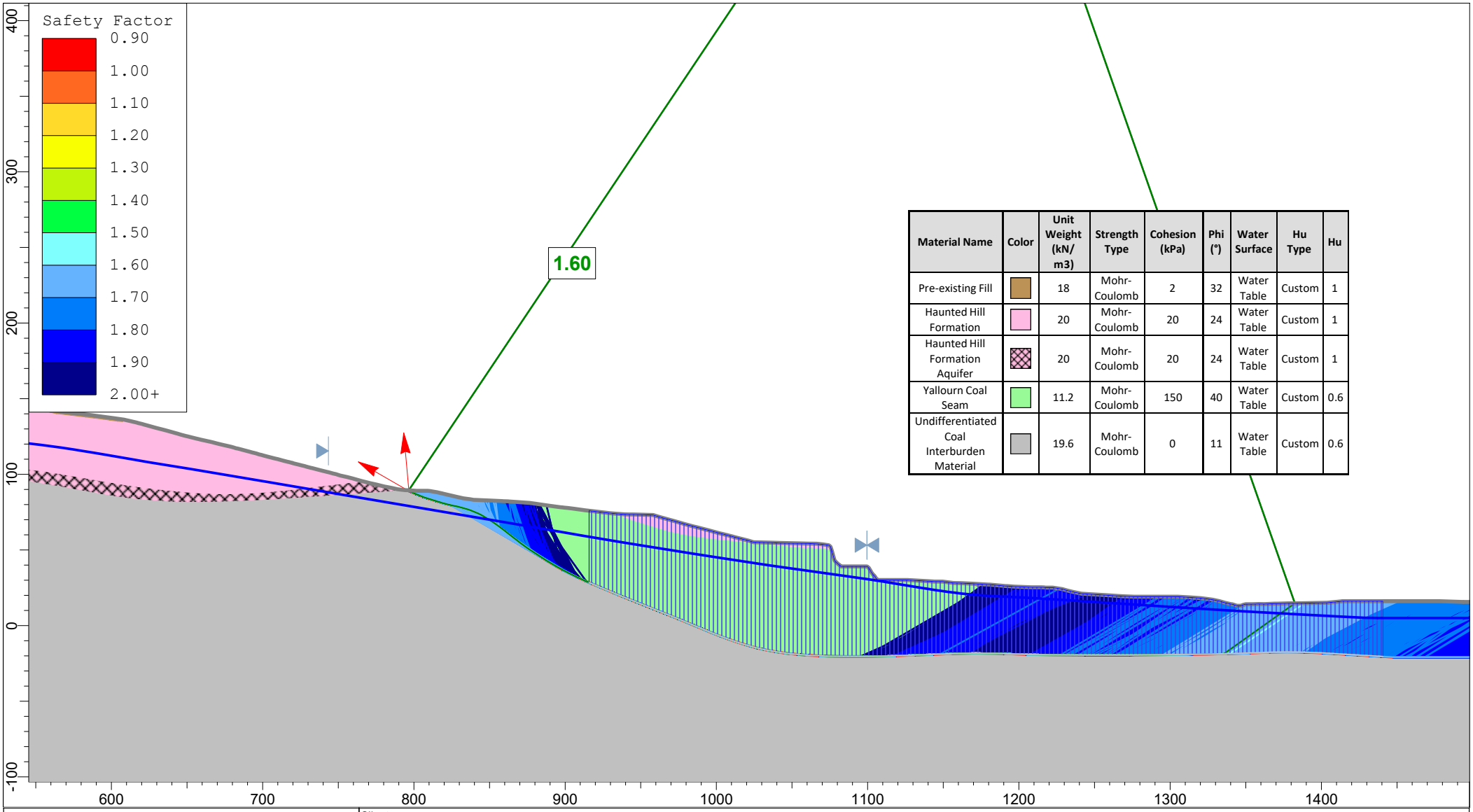
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



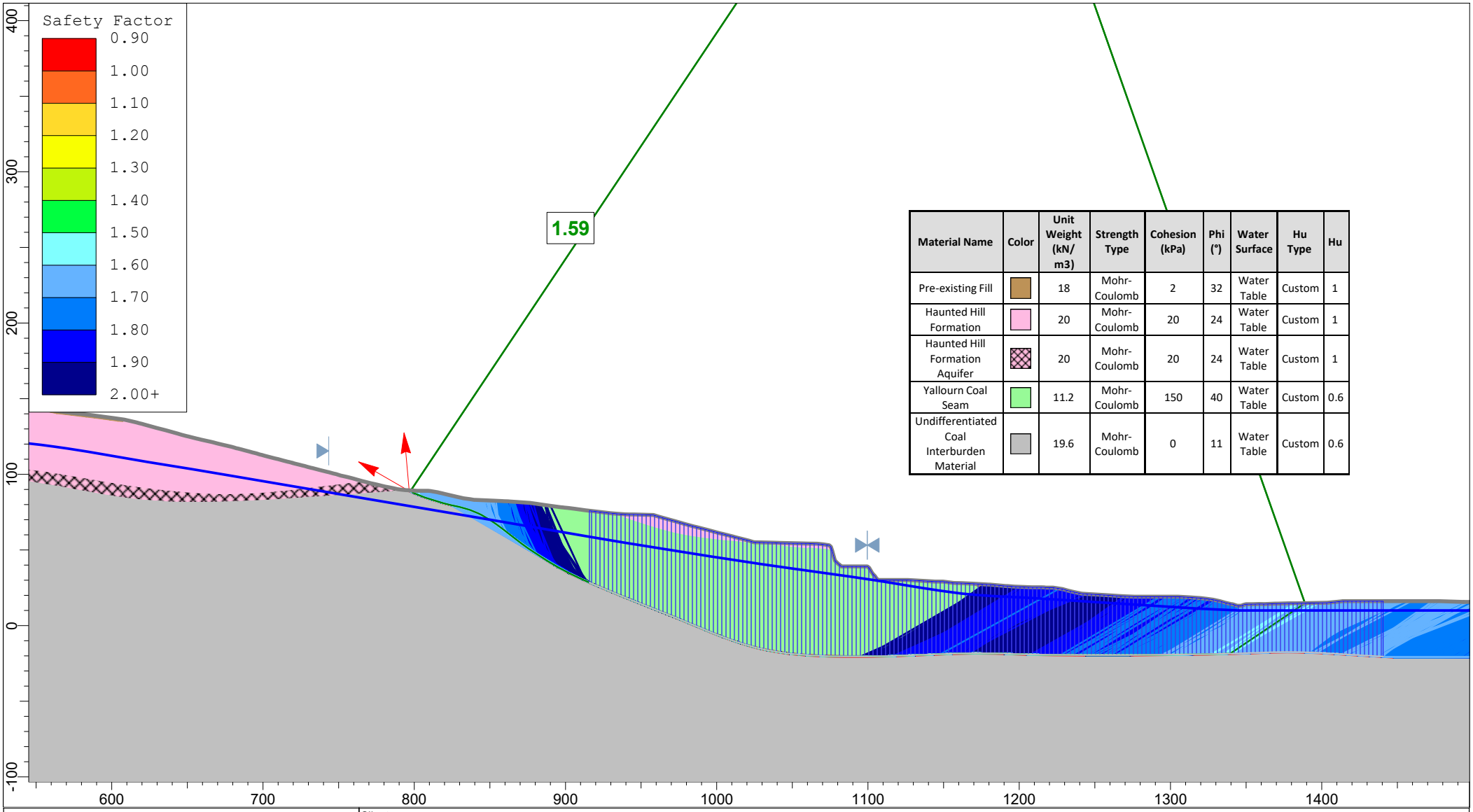
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



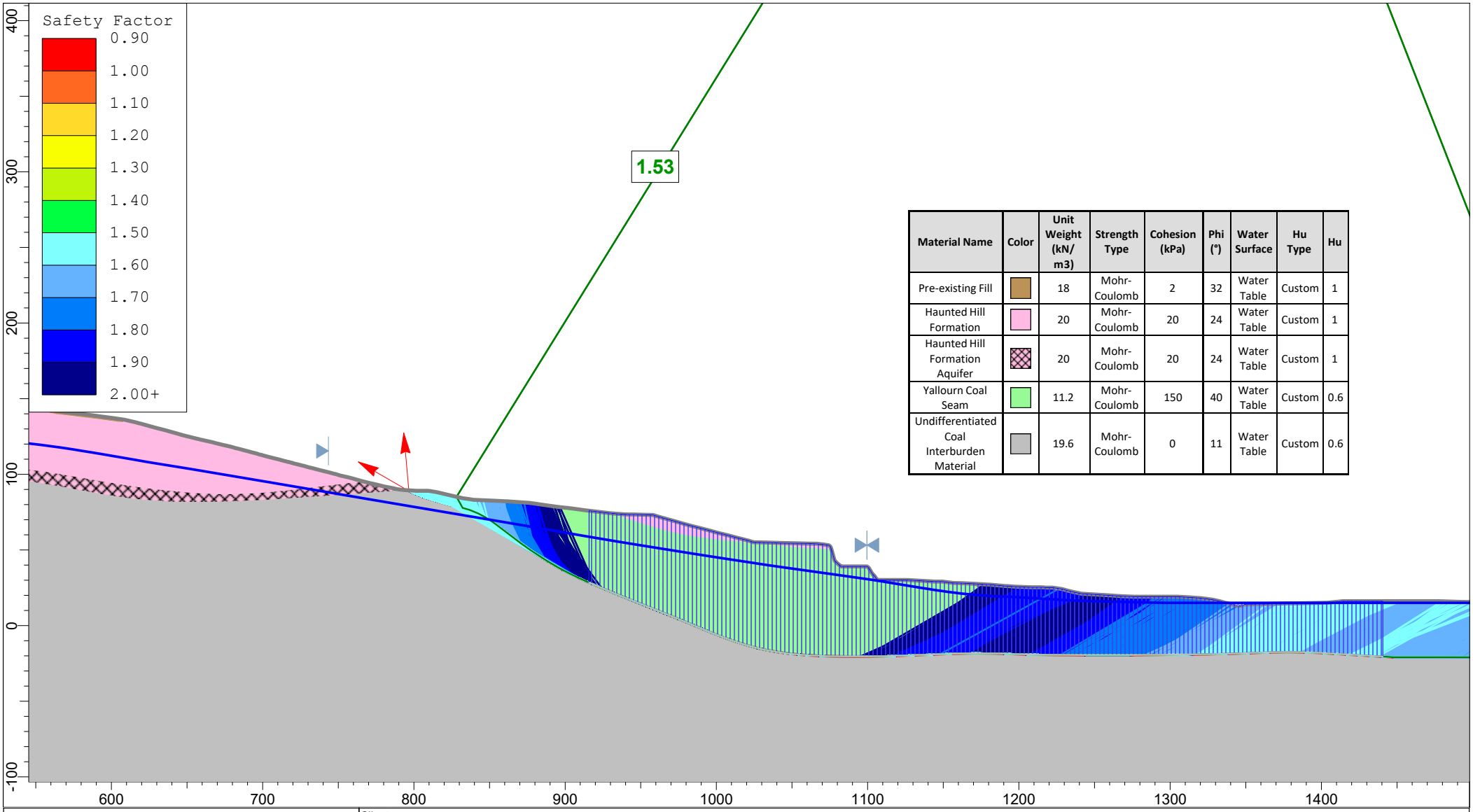
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



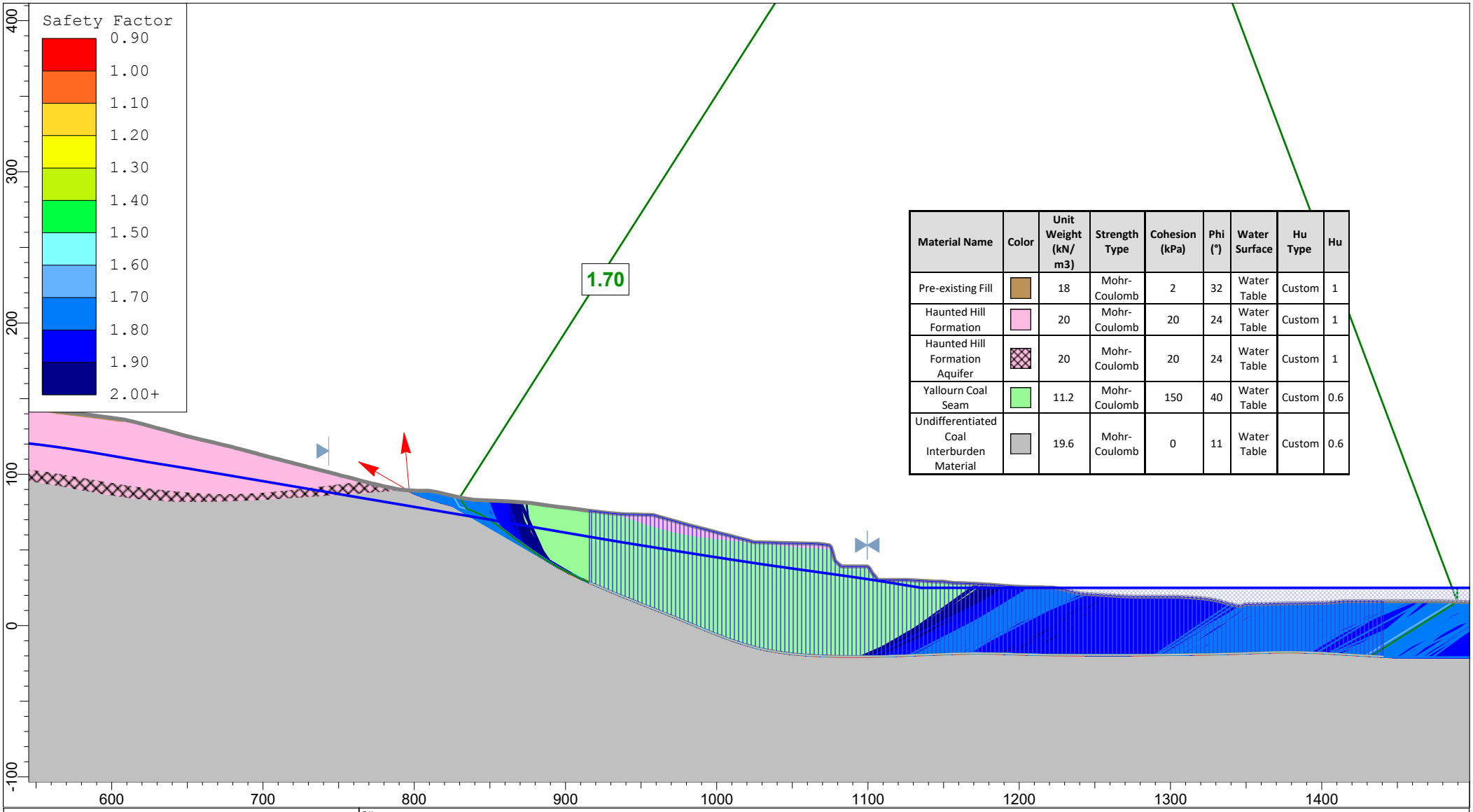
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



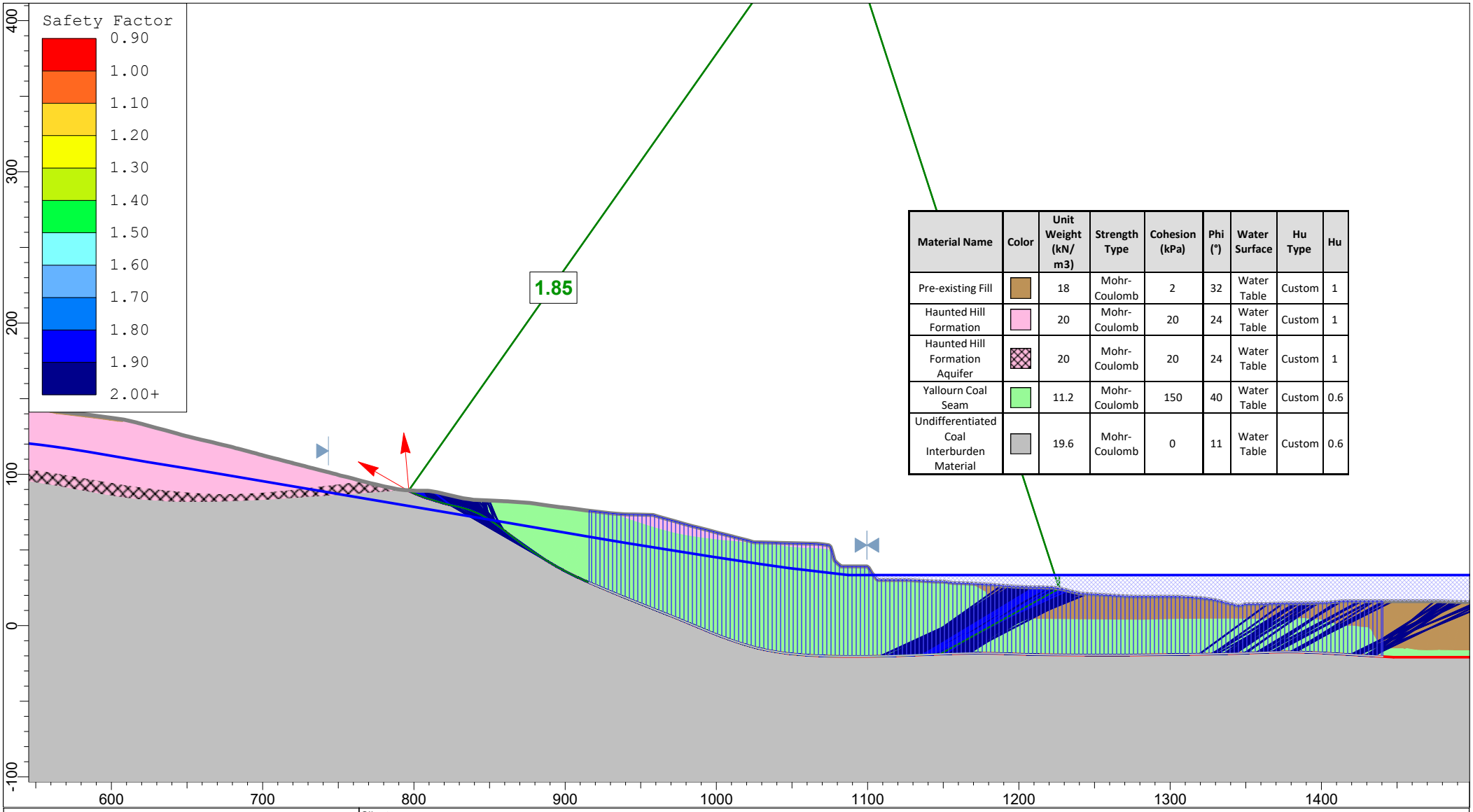
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



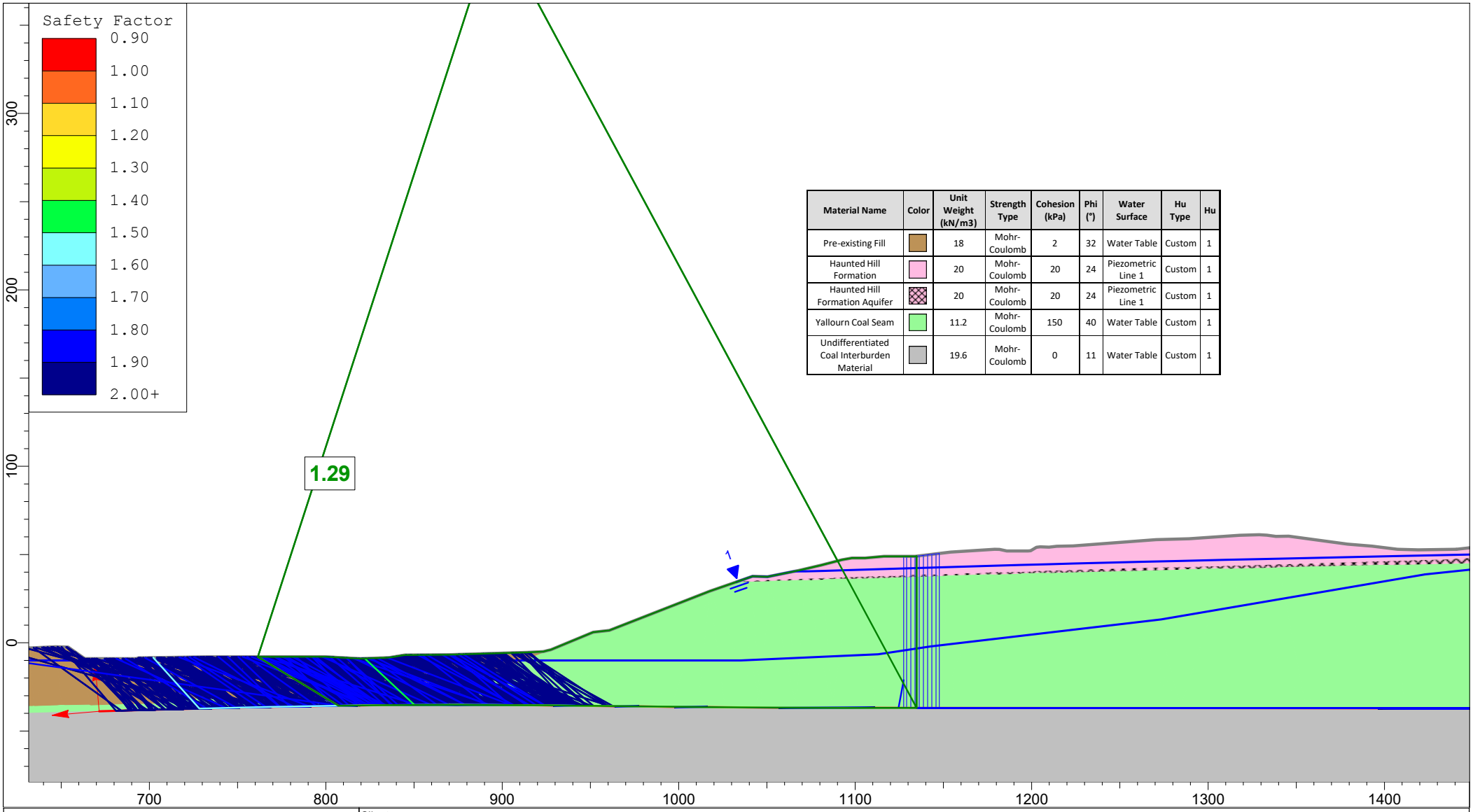
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



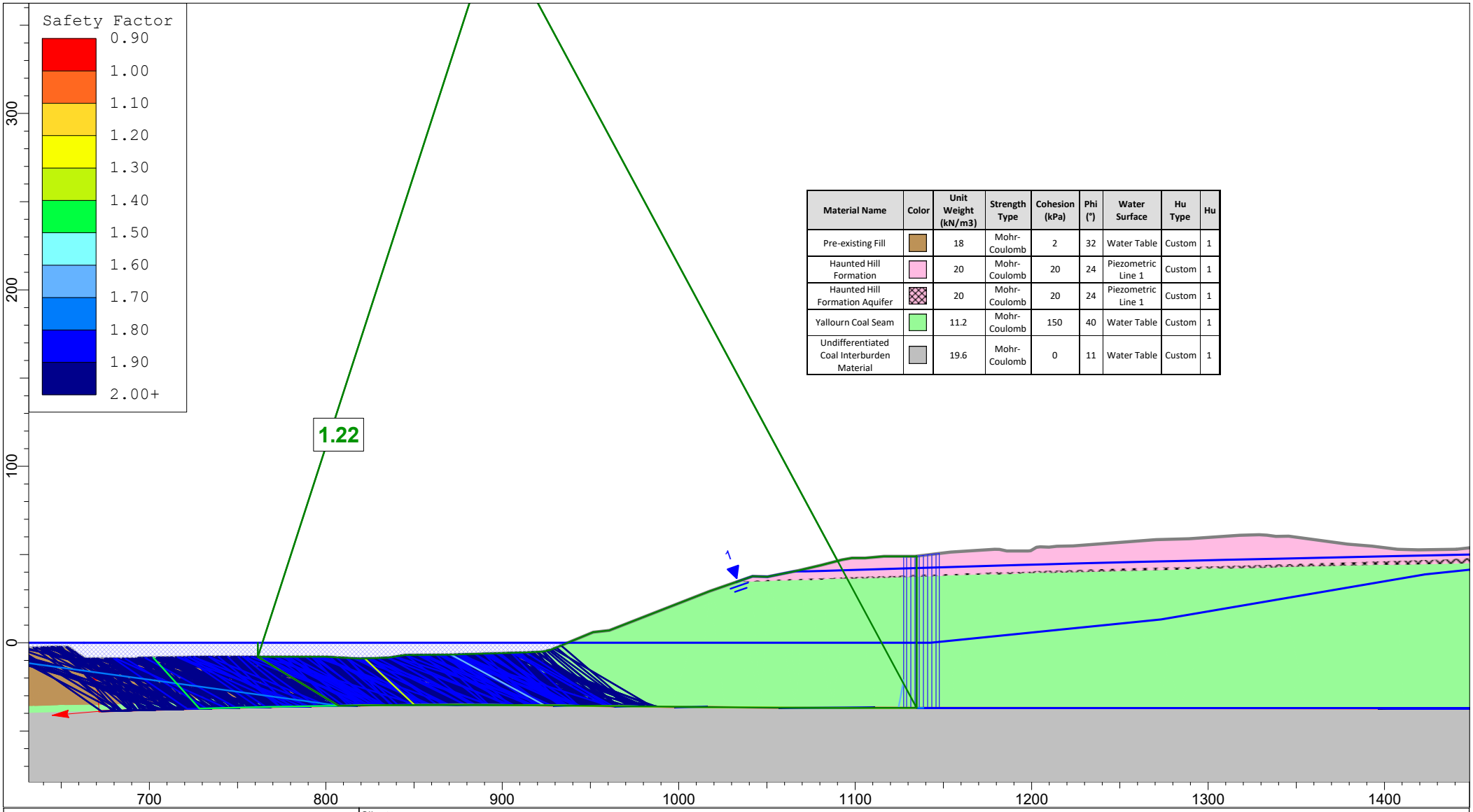
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



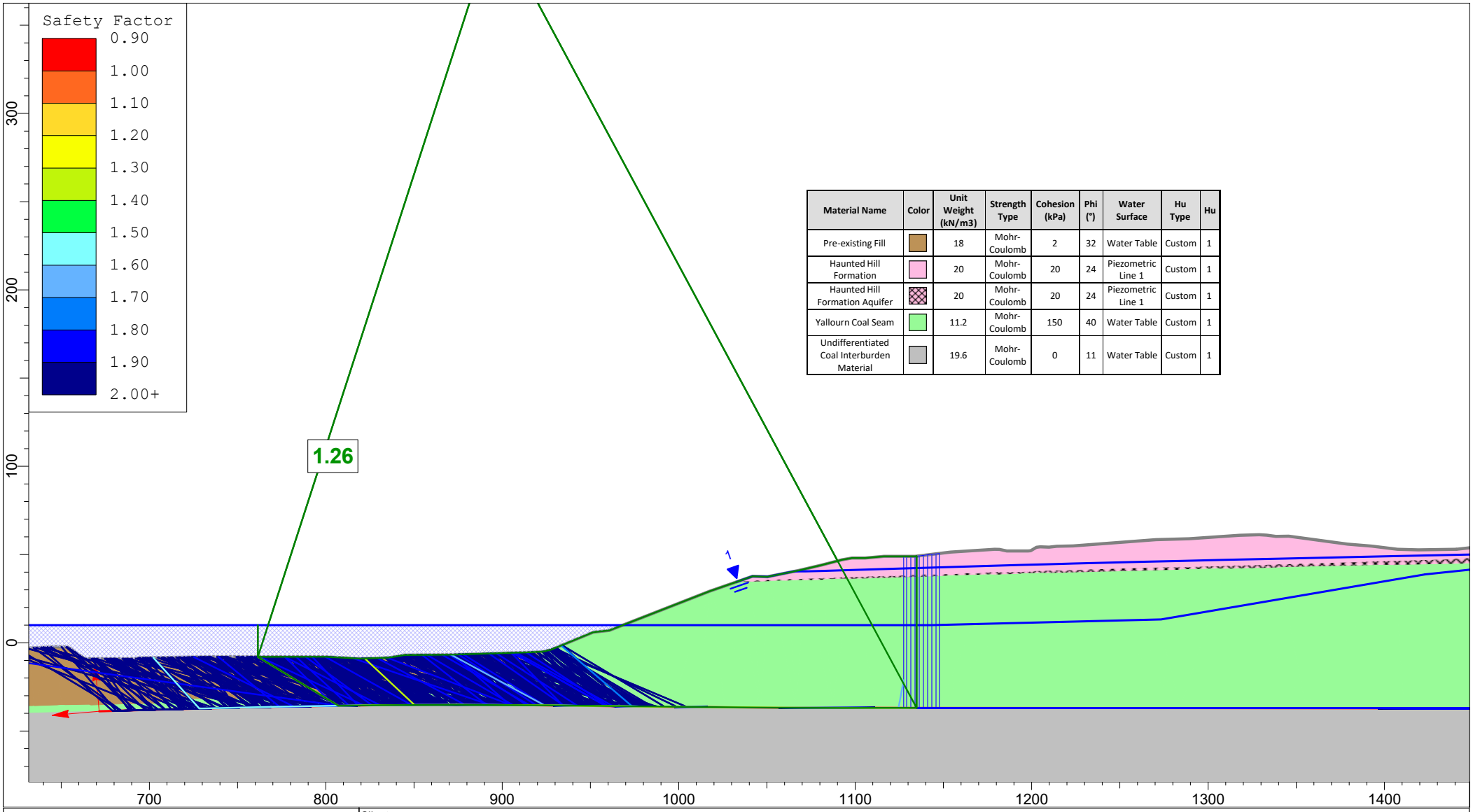
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07b	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



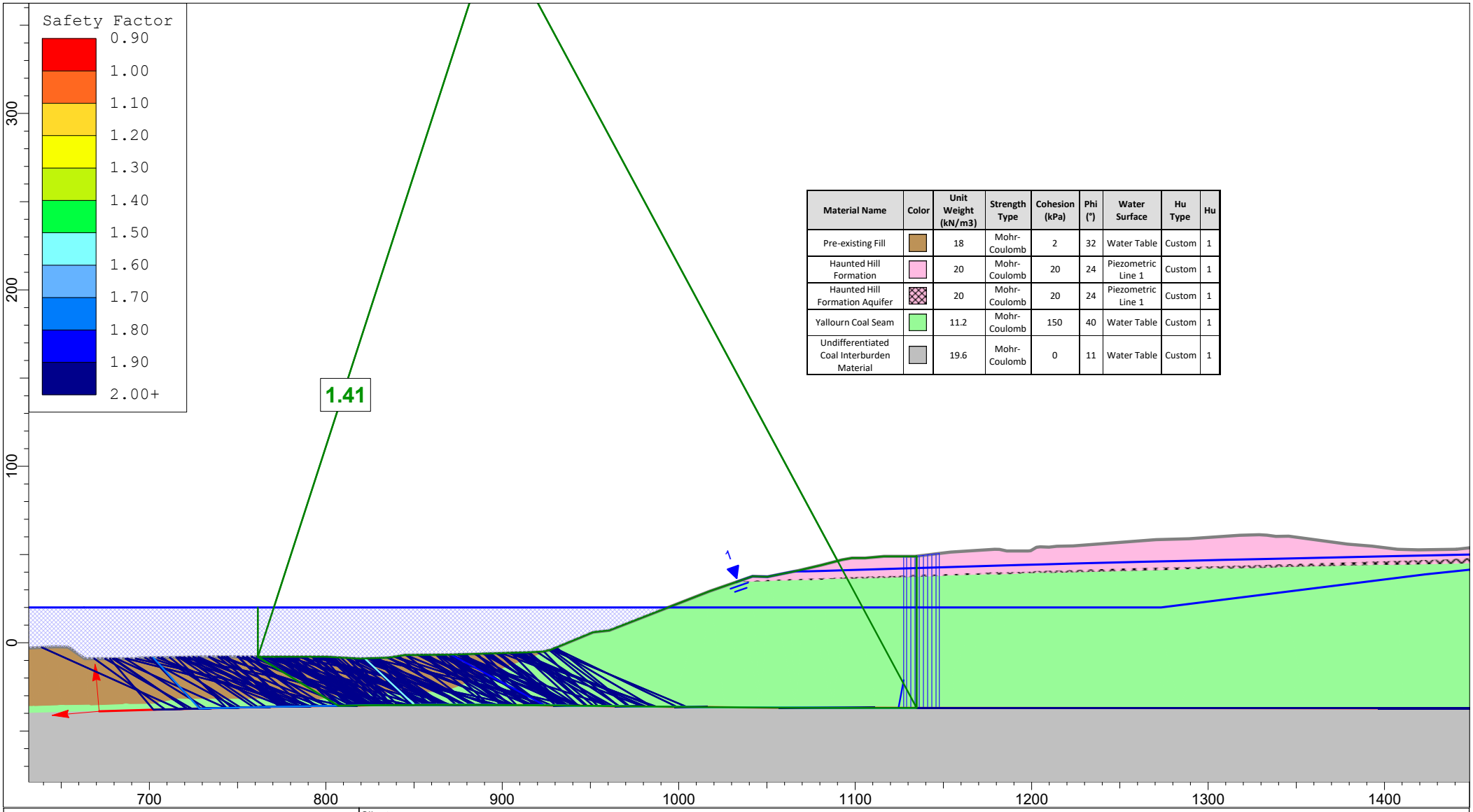
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07b	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



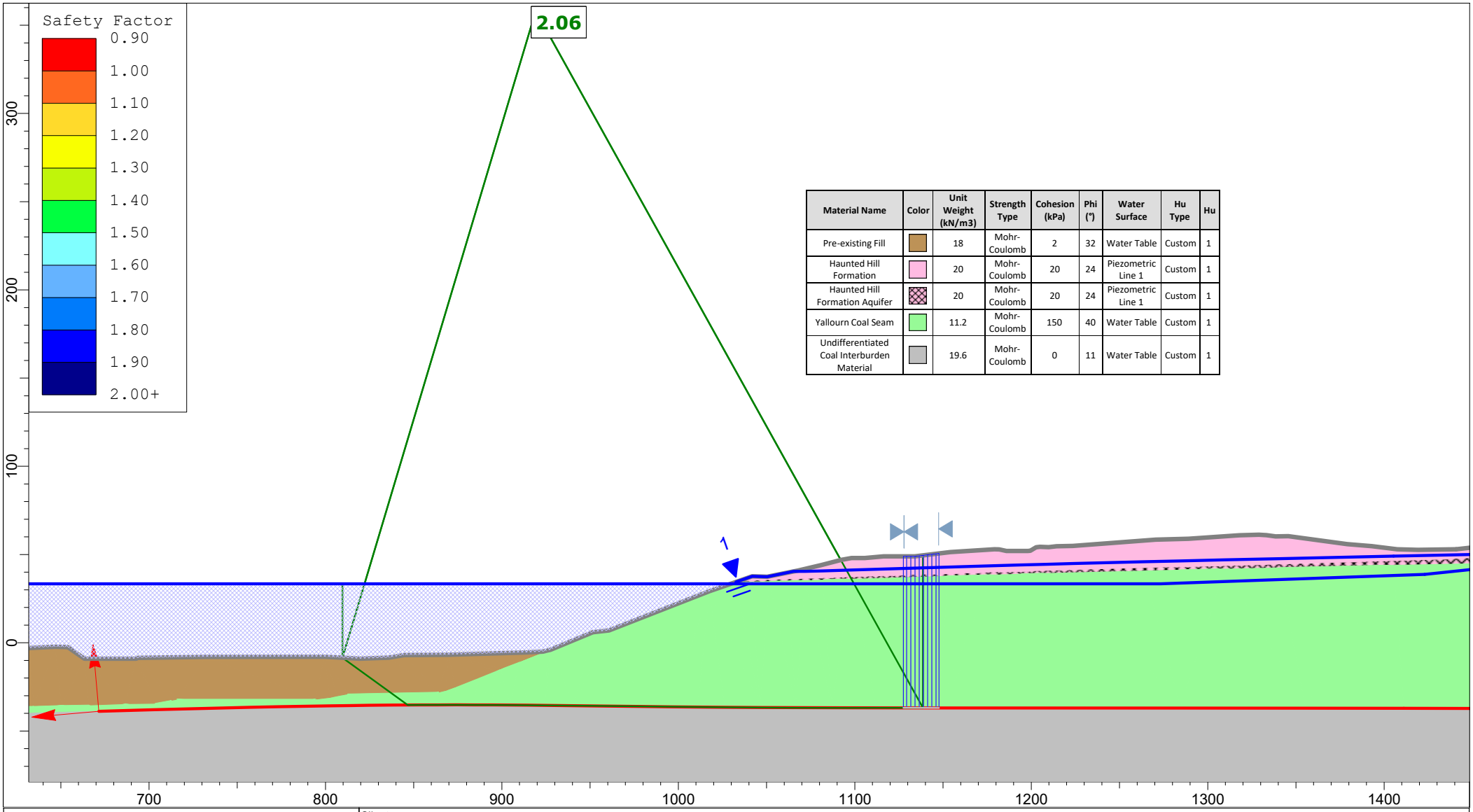
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07b	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



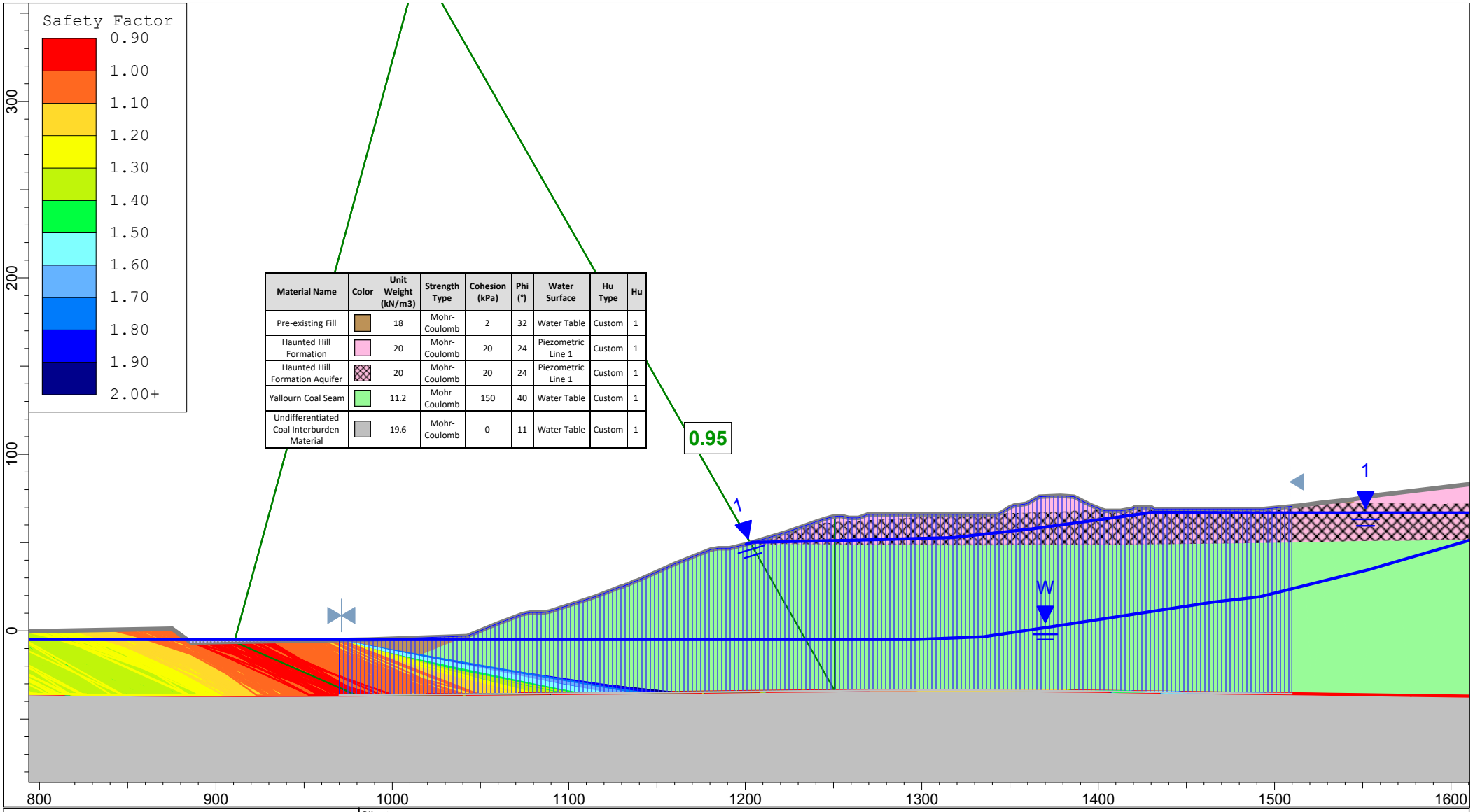
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07b	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



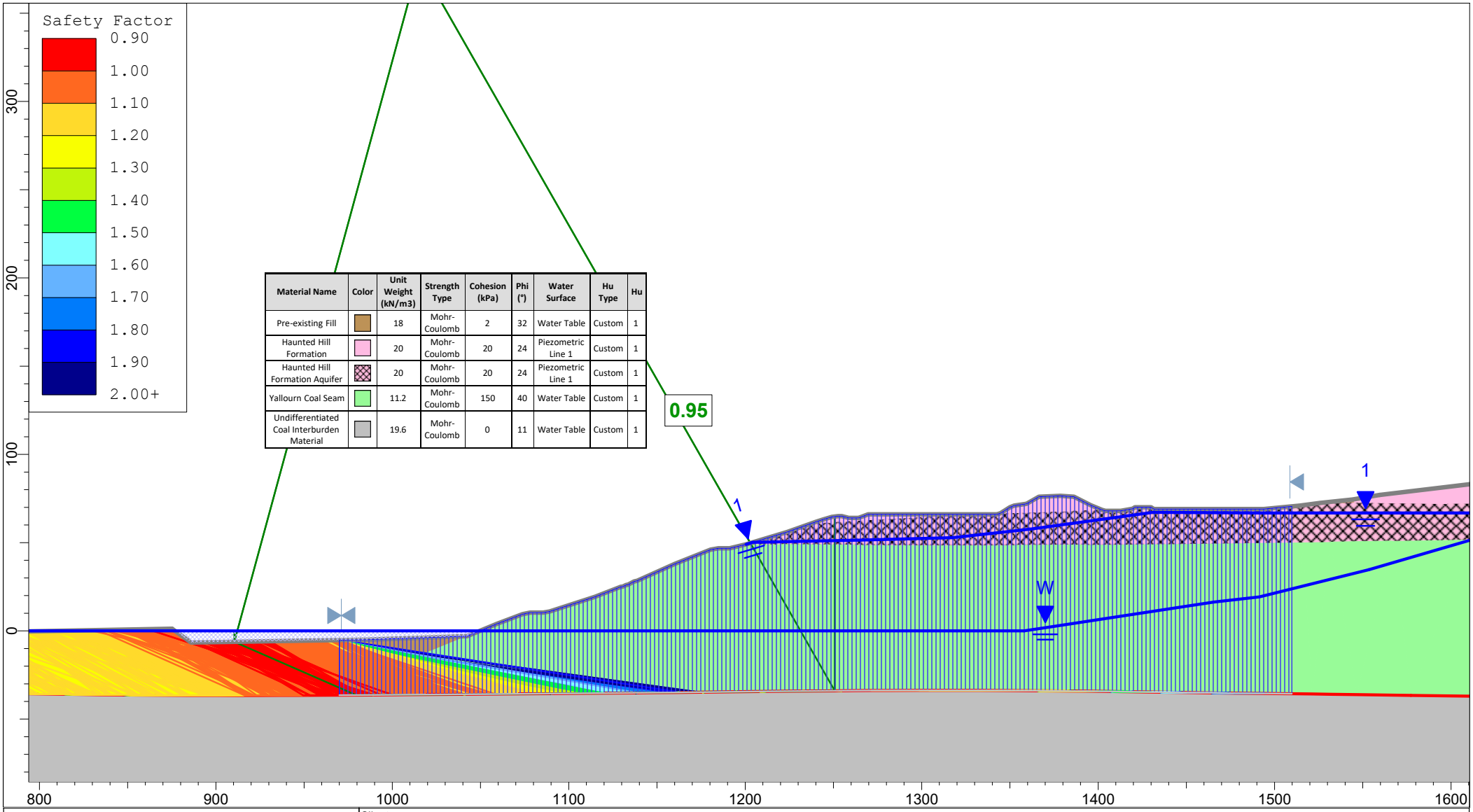
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07b	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



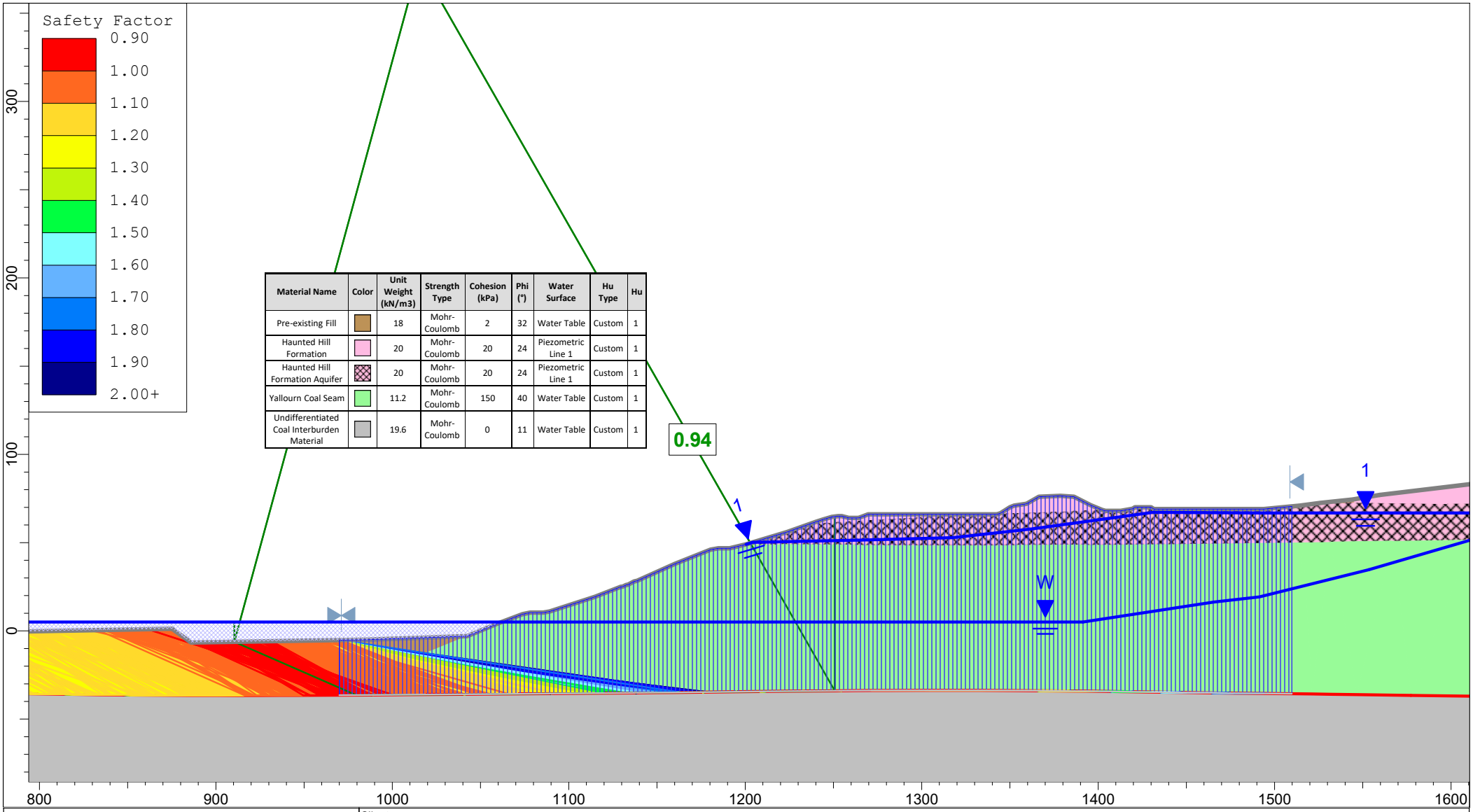
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



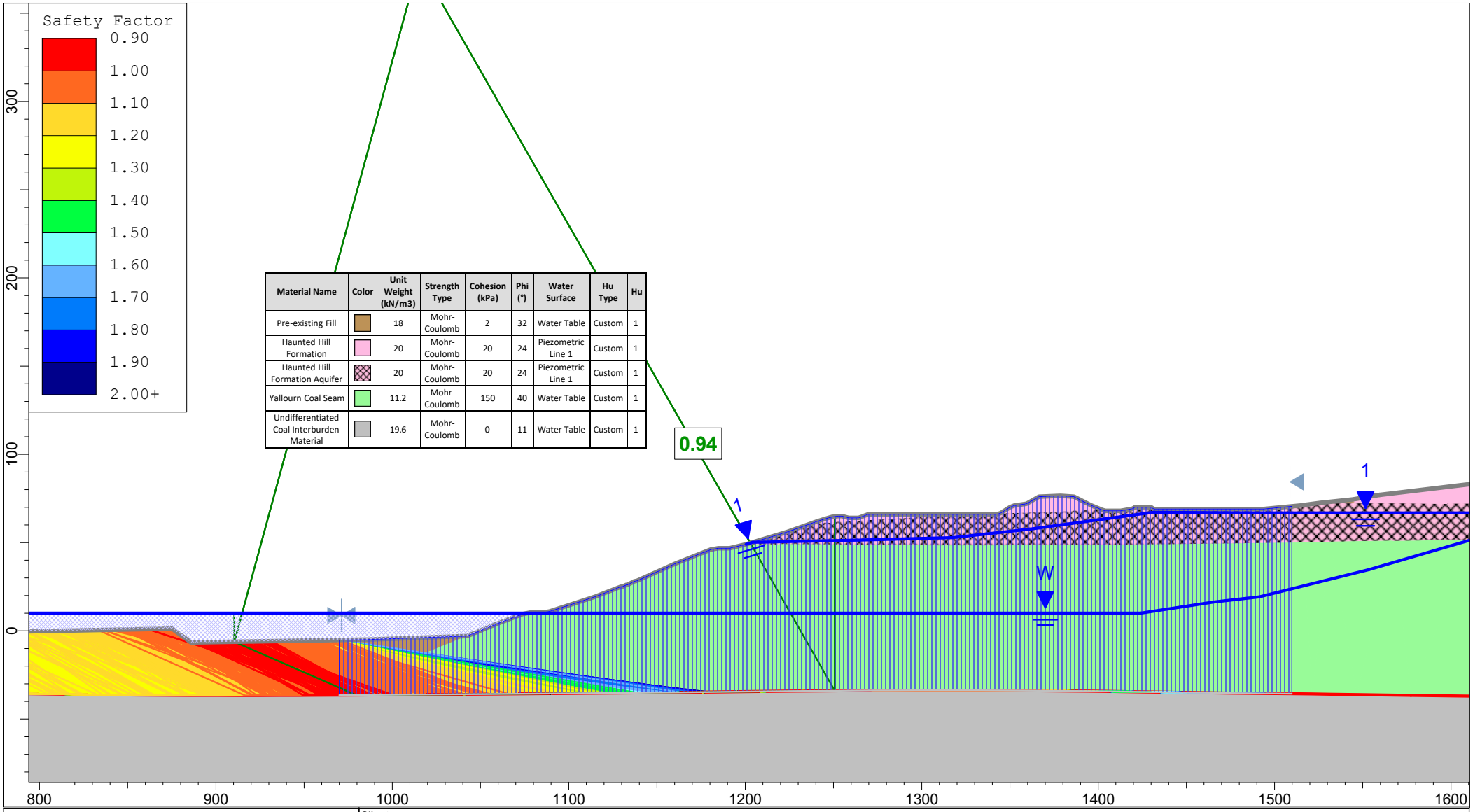
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



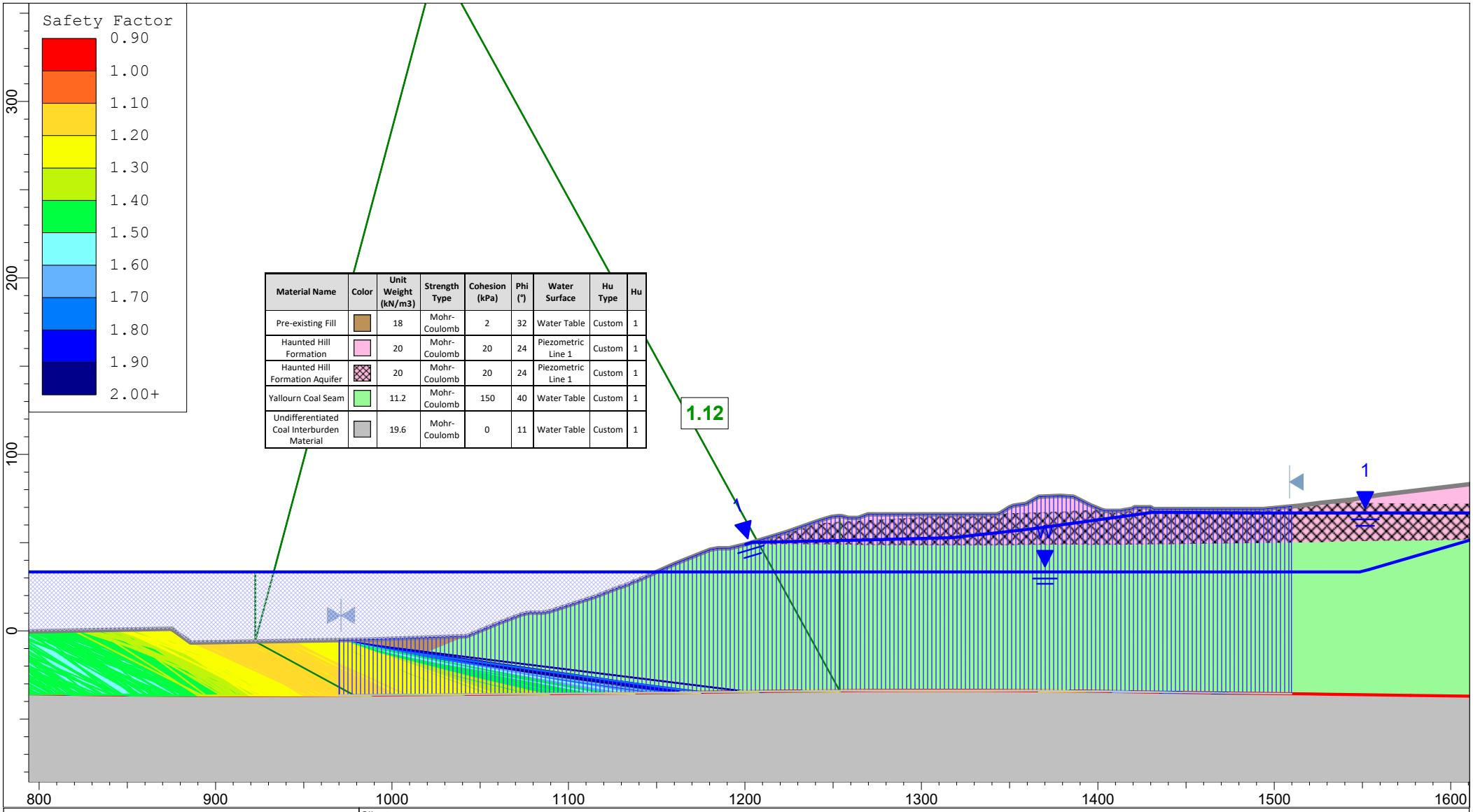
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



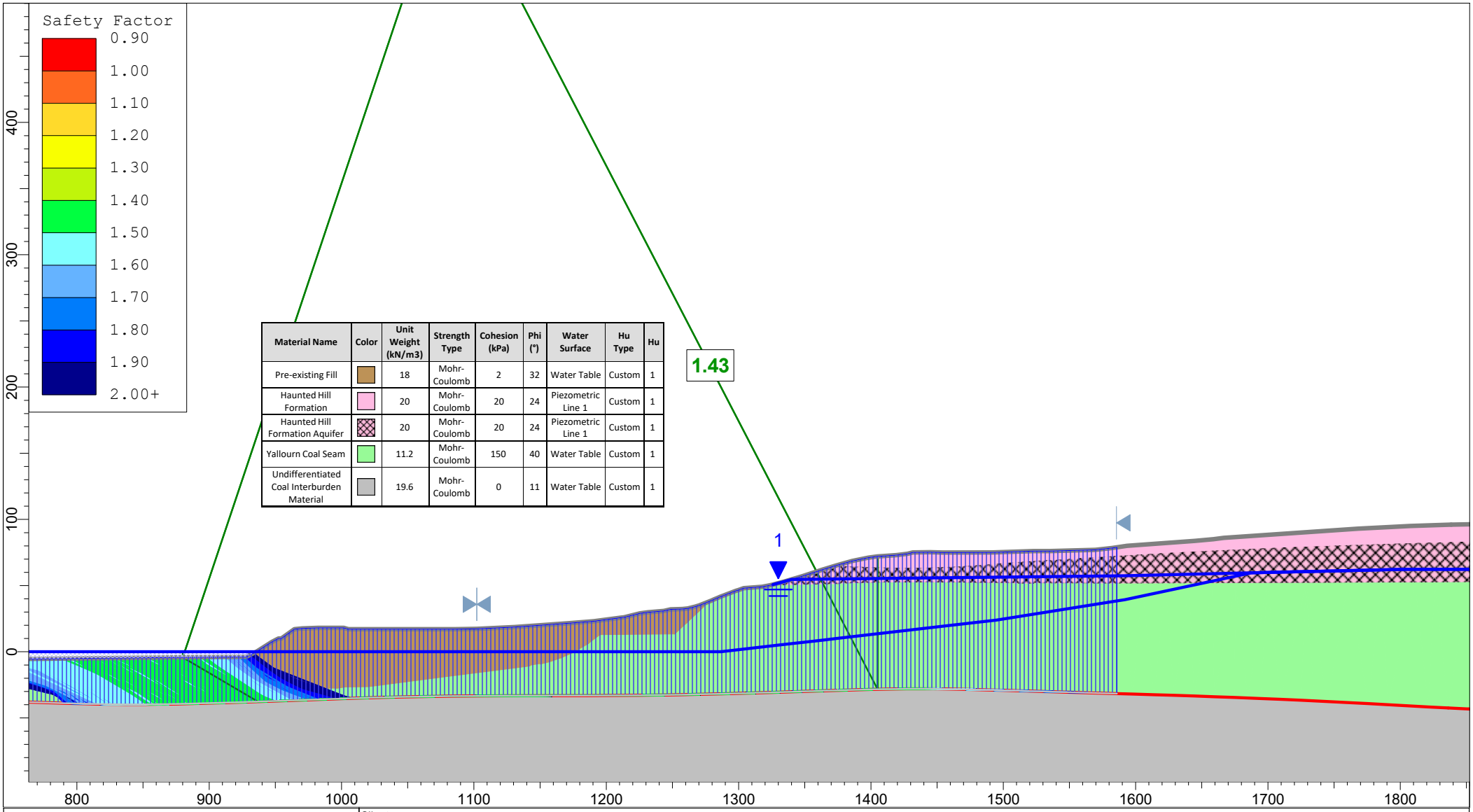
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



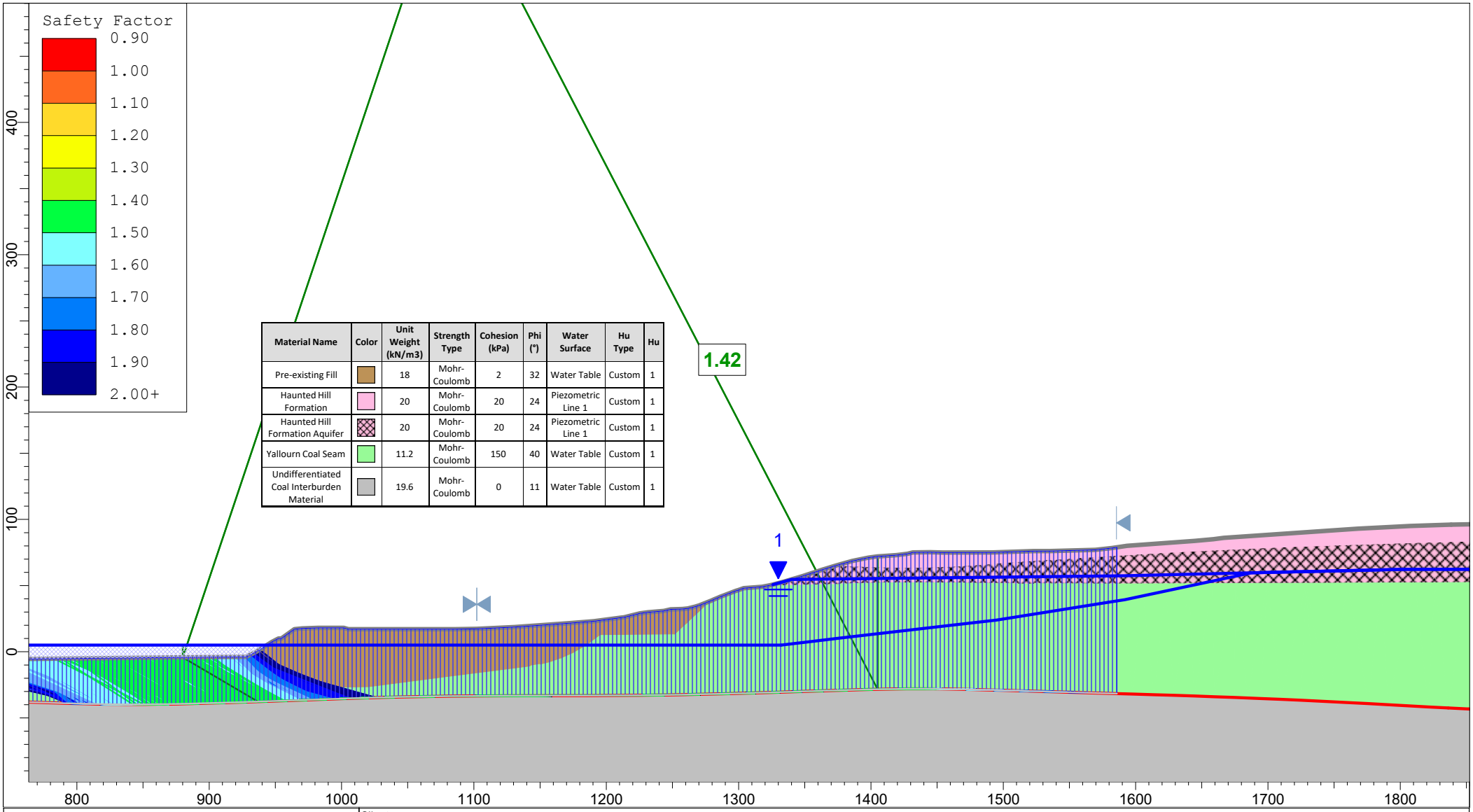
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



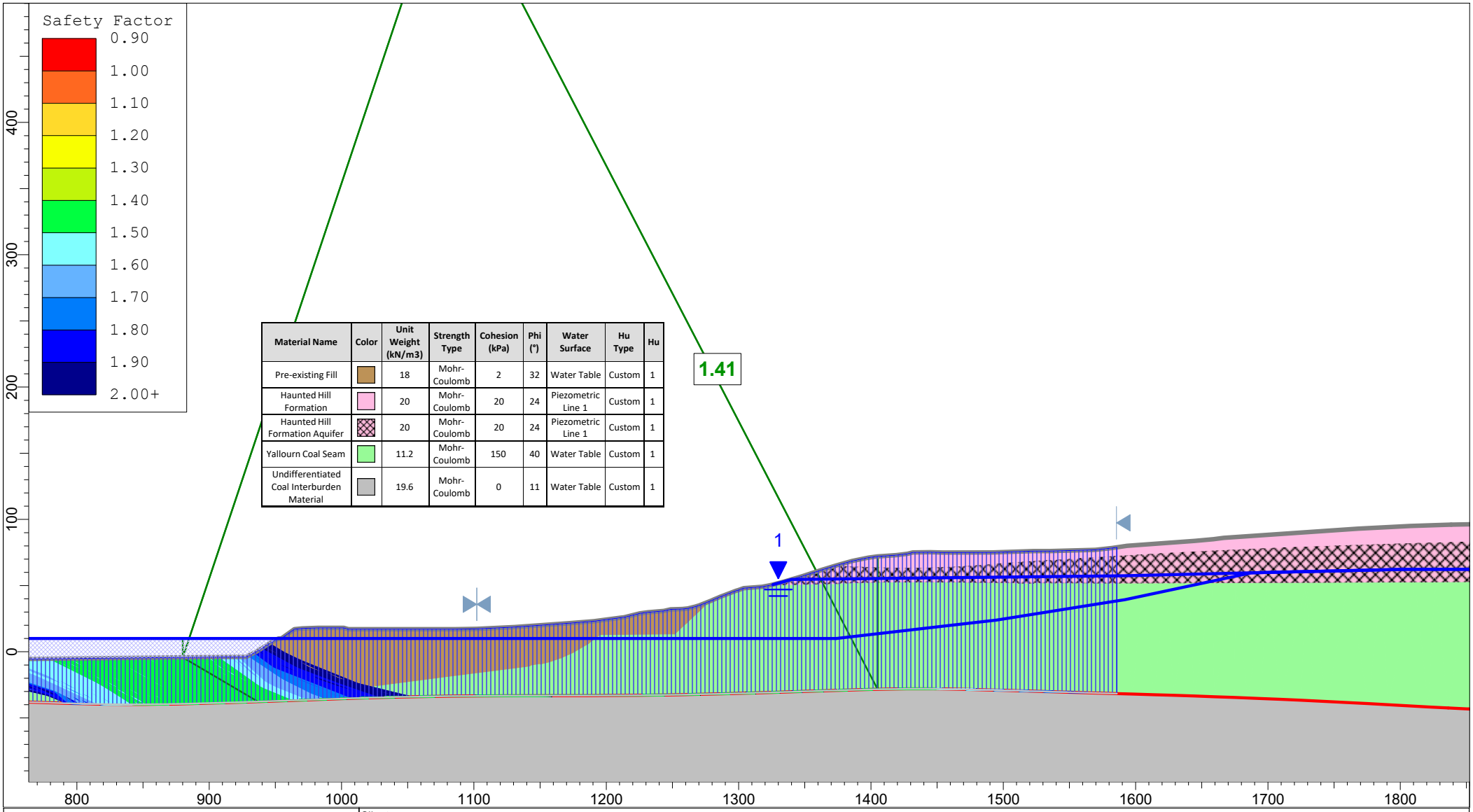
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



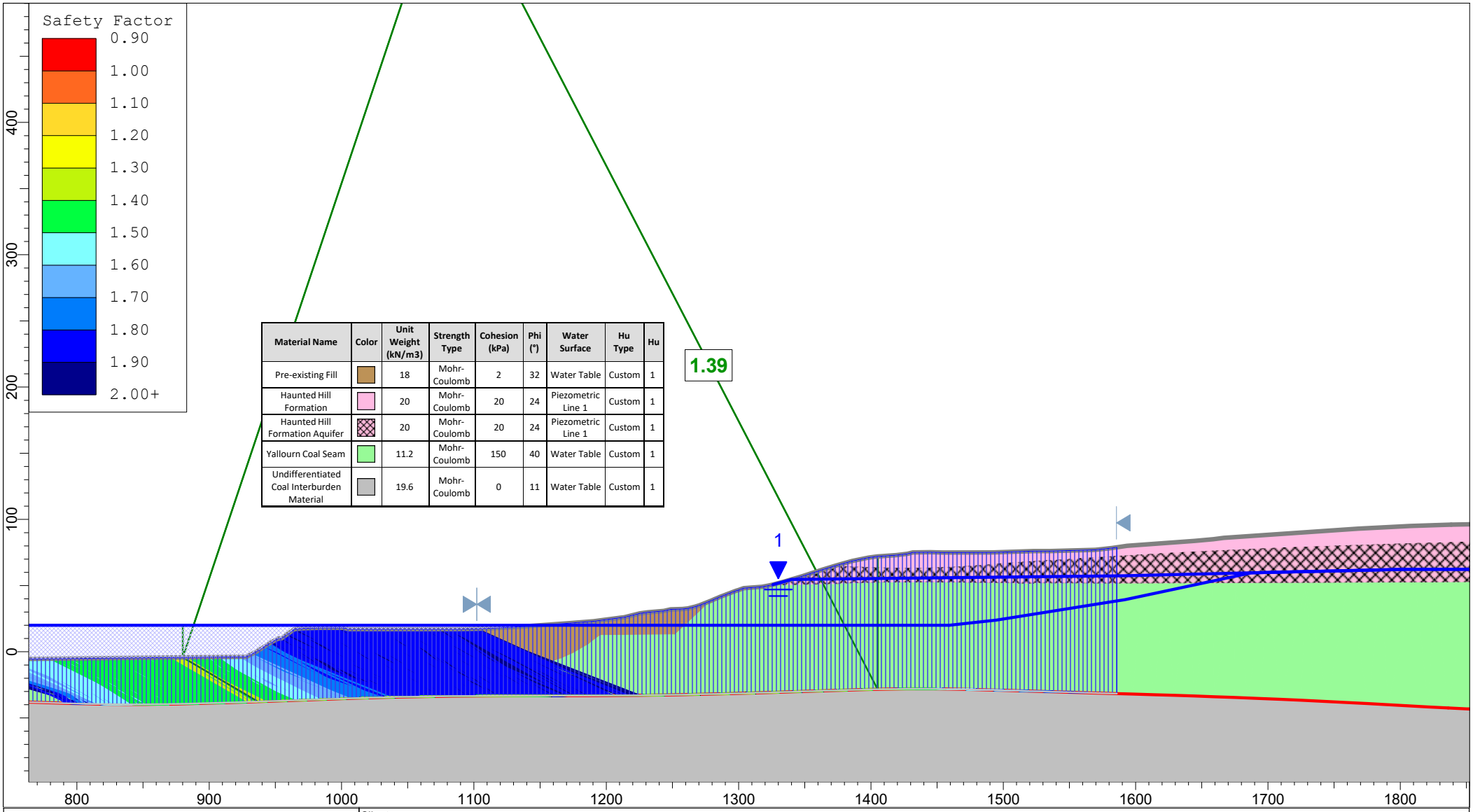
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



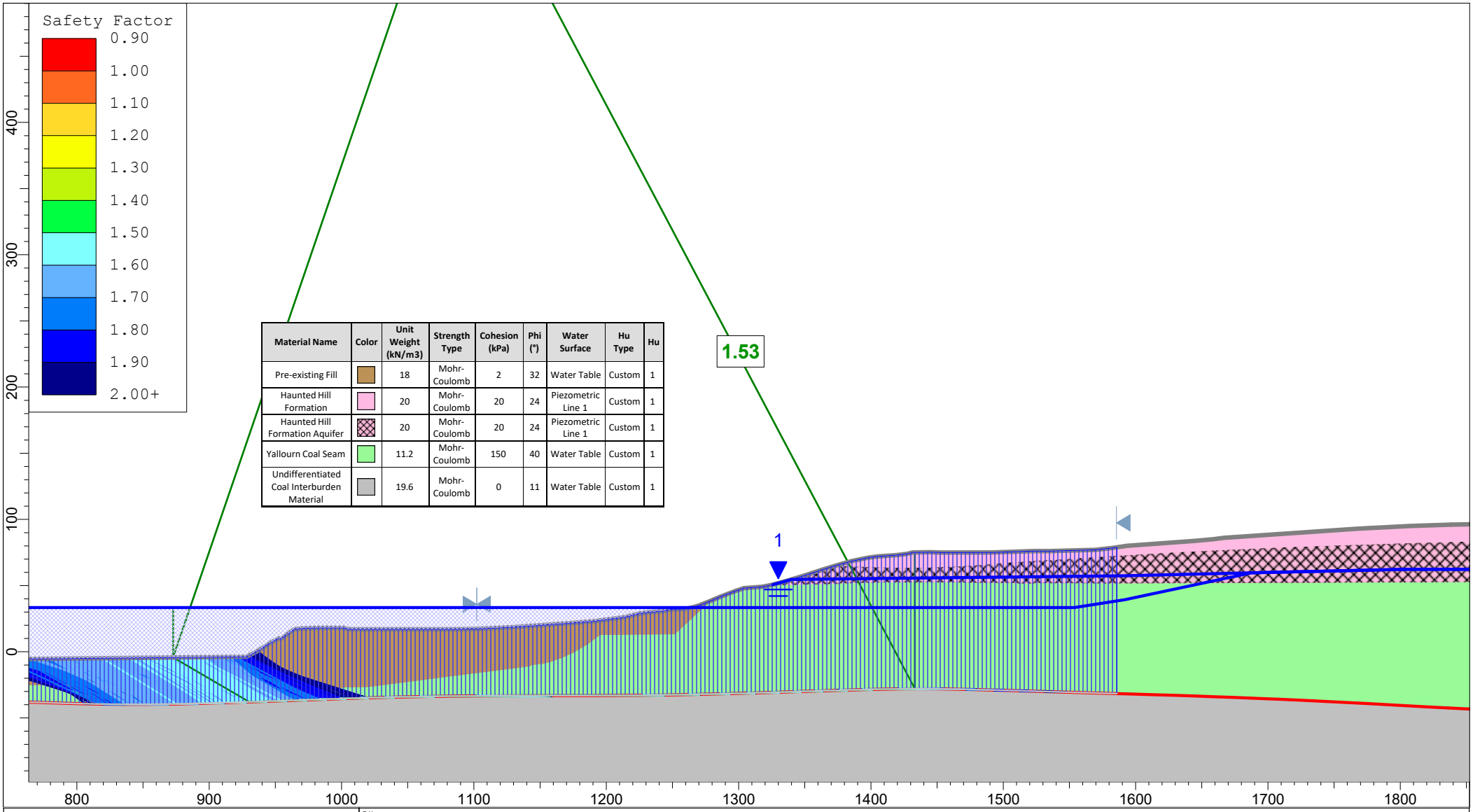
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



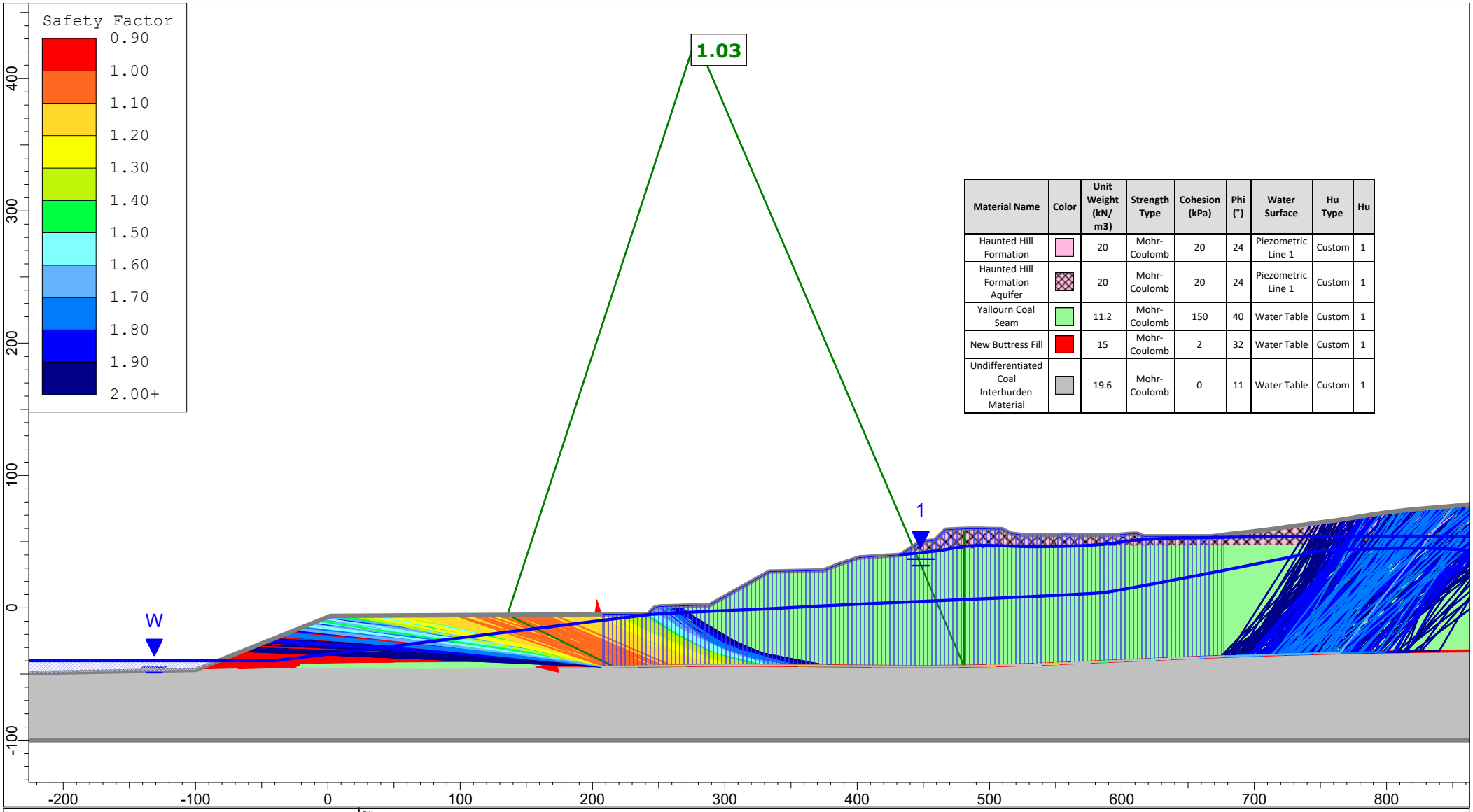
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



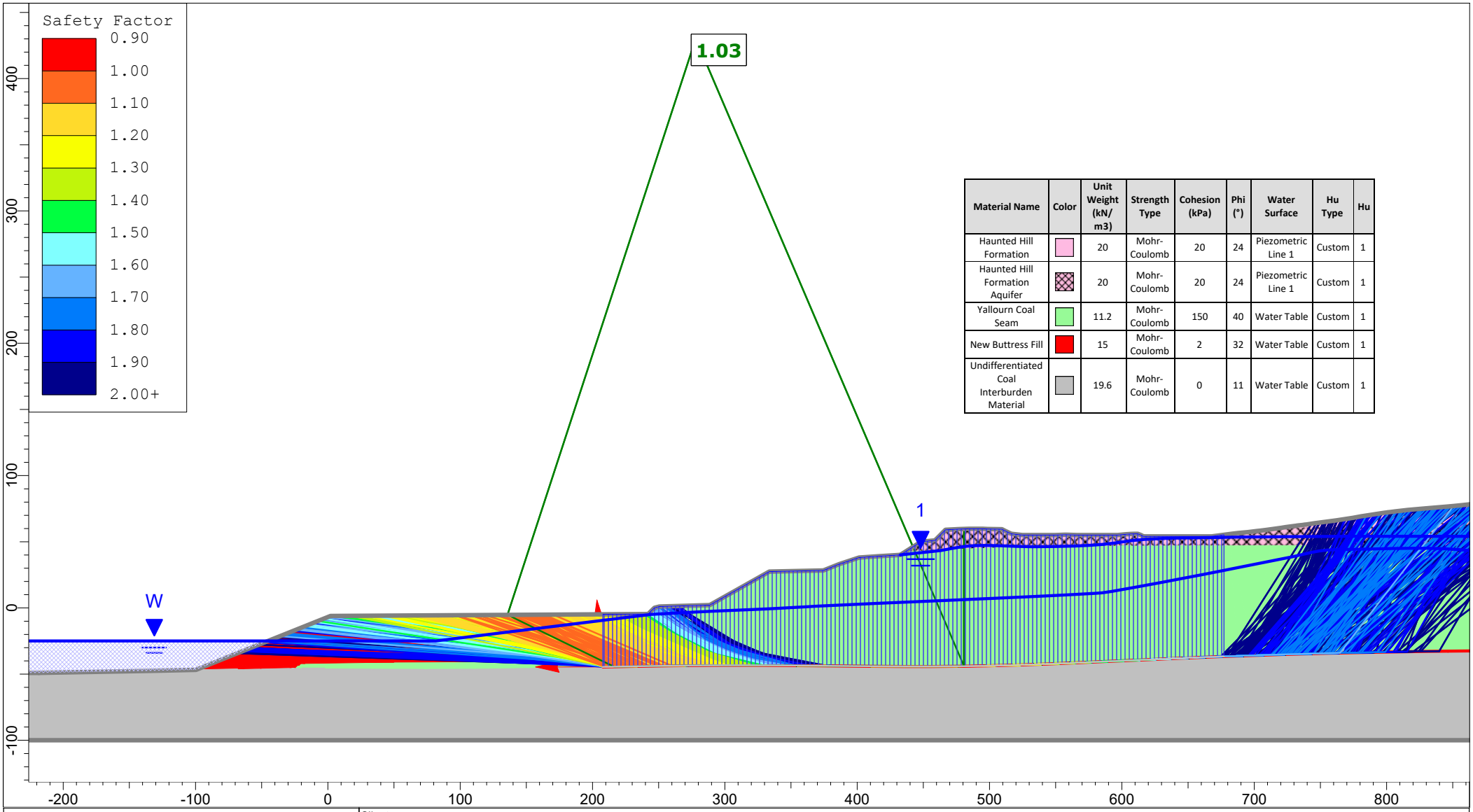
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YEFX-SB**
Section:	**Section 10**	Case:	**Block slide with full TC - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 33.4 mRL**
Notes:	**Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface**		



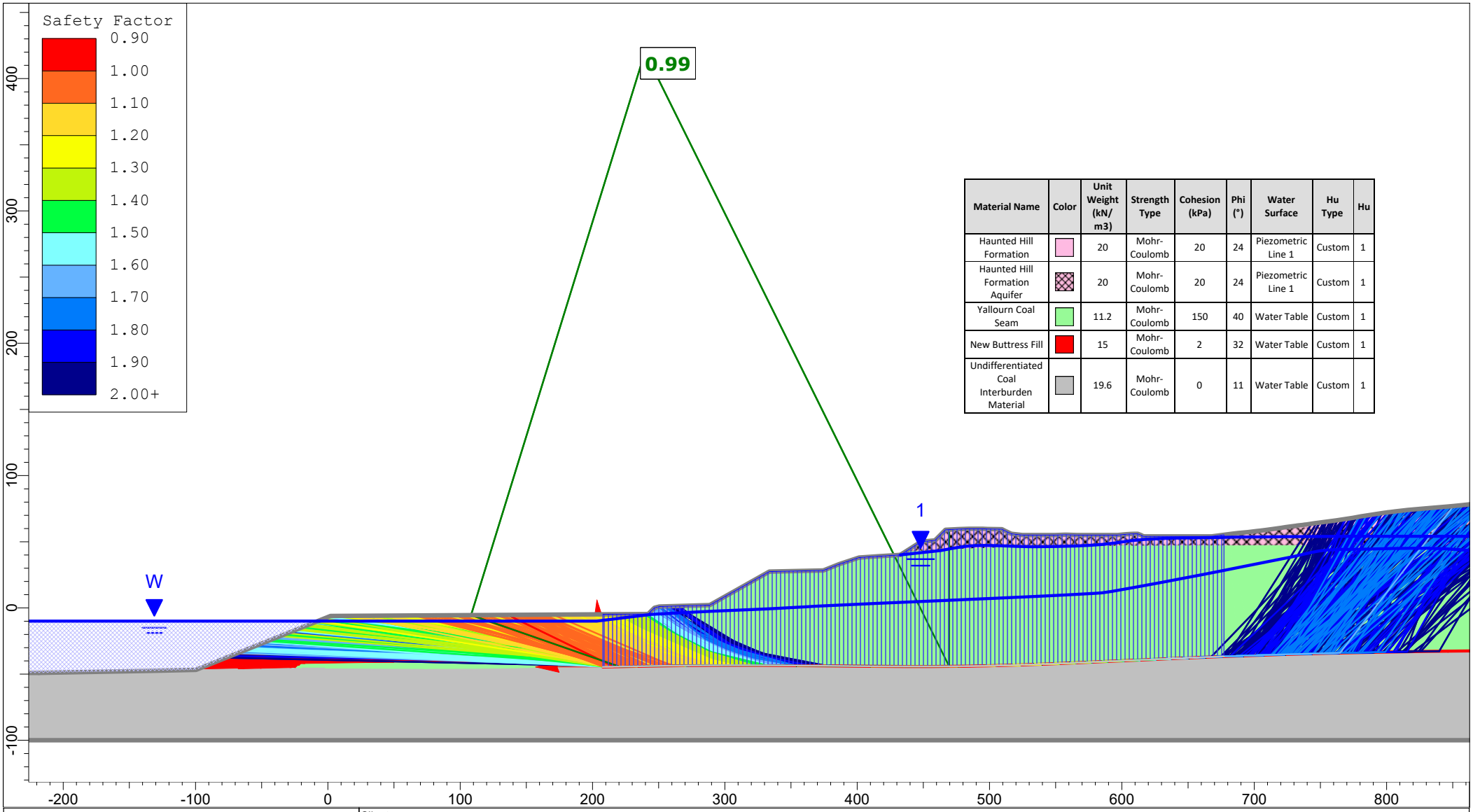
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -40 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



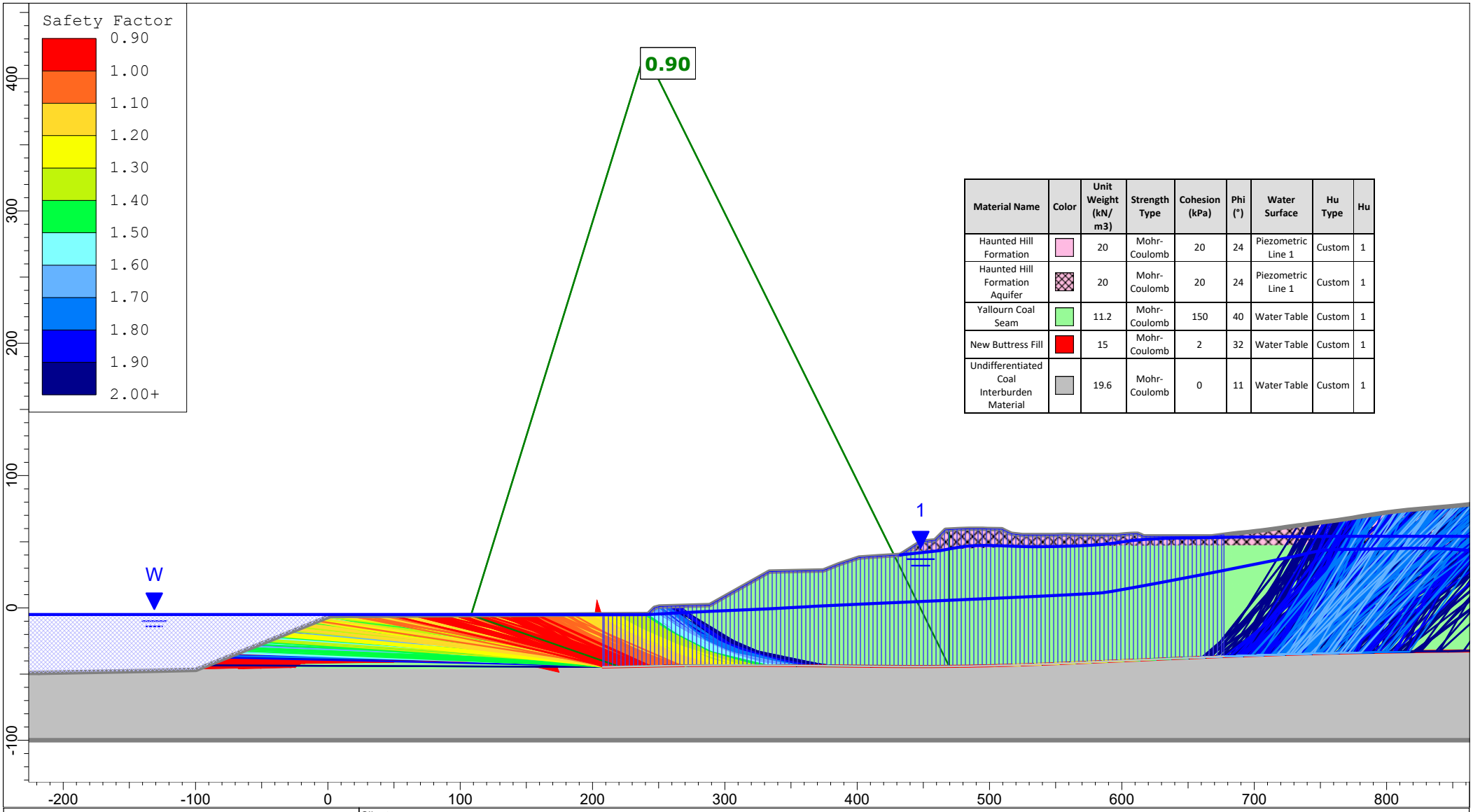
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



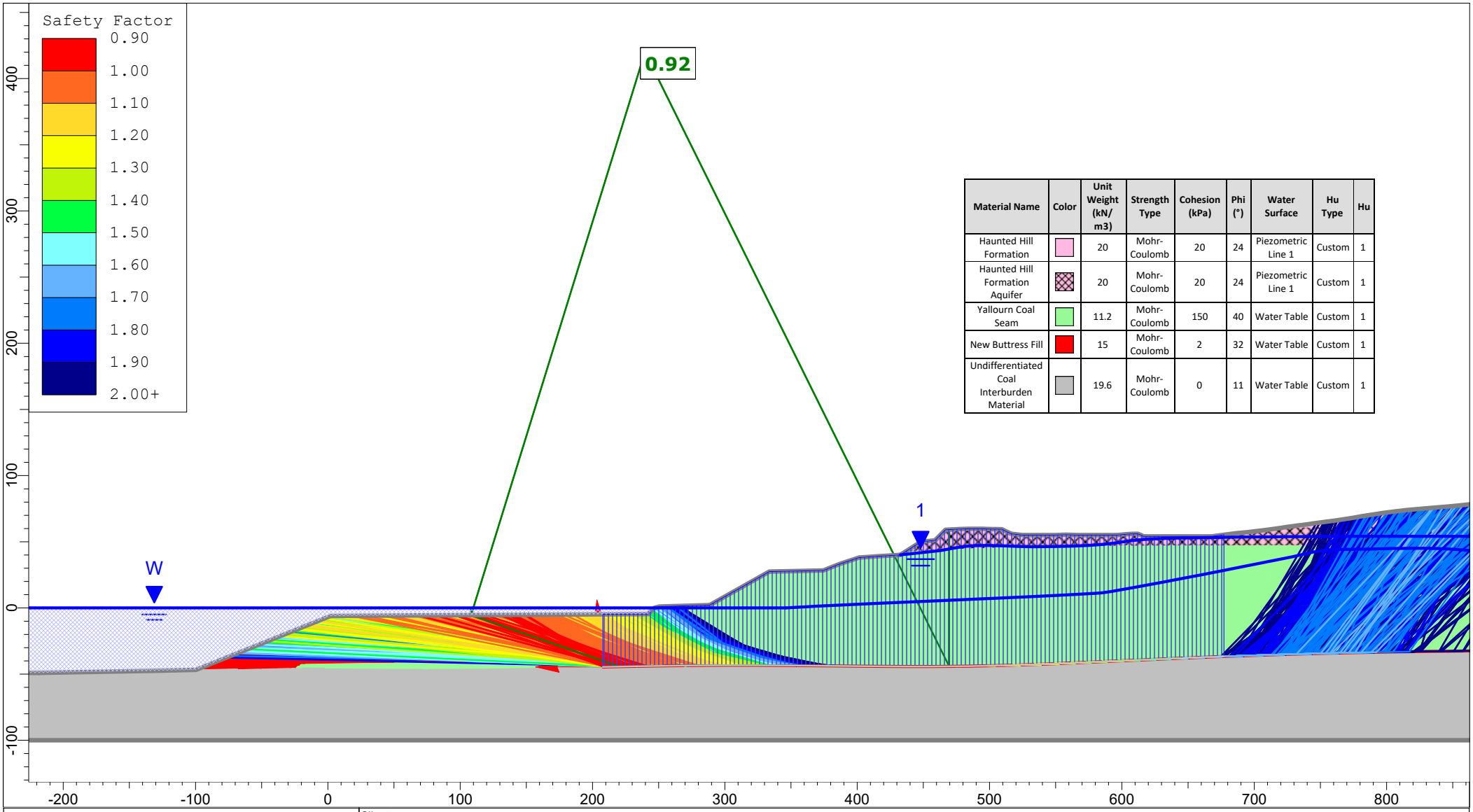
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



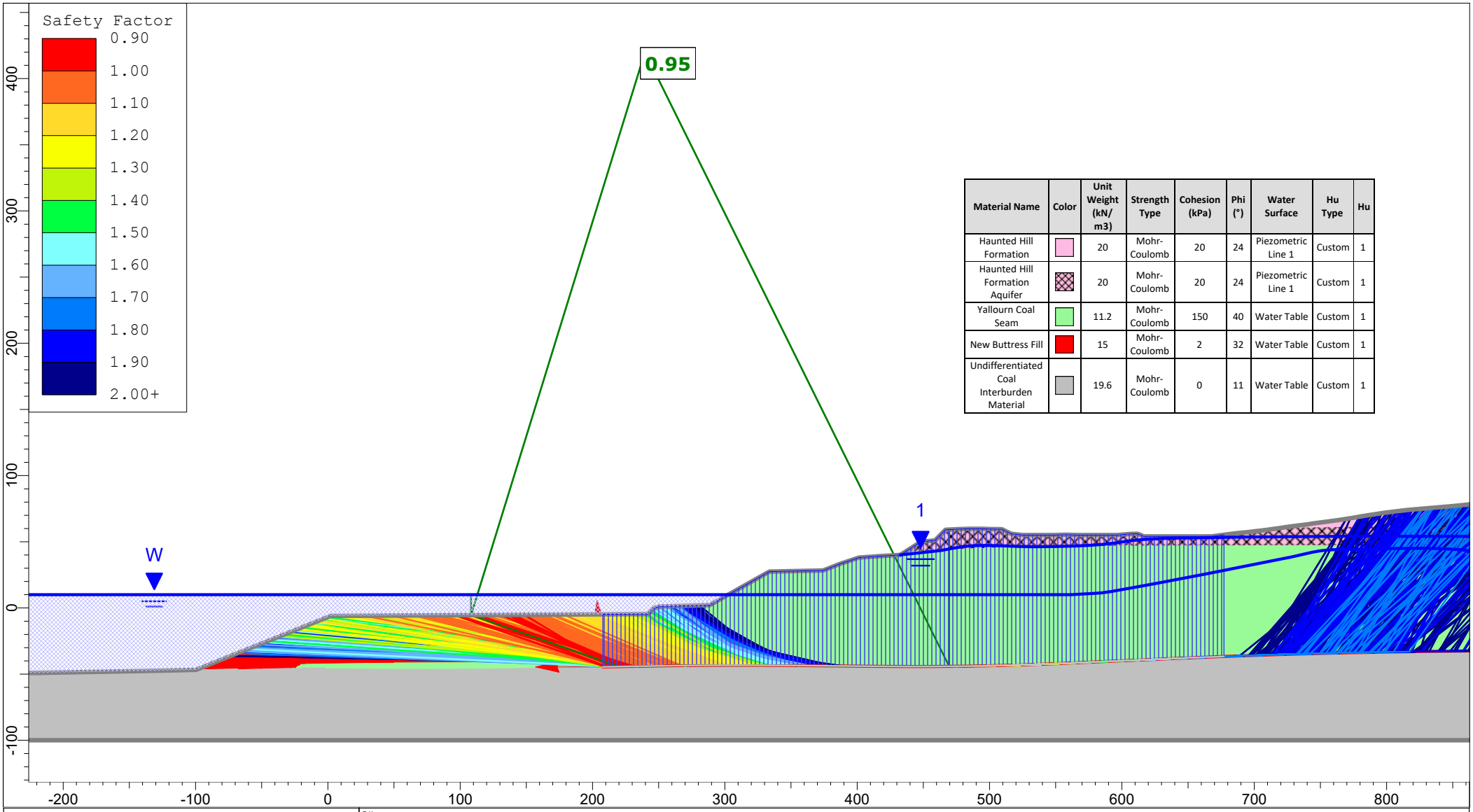
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



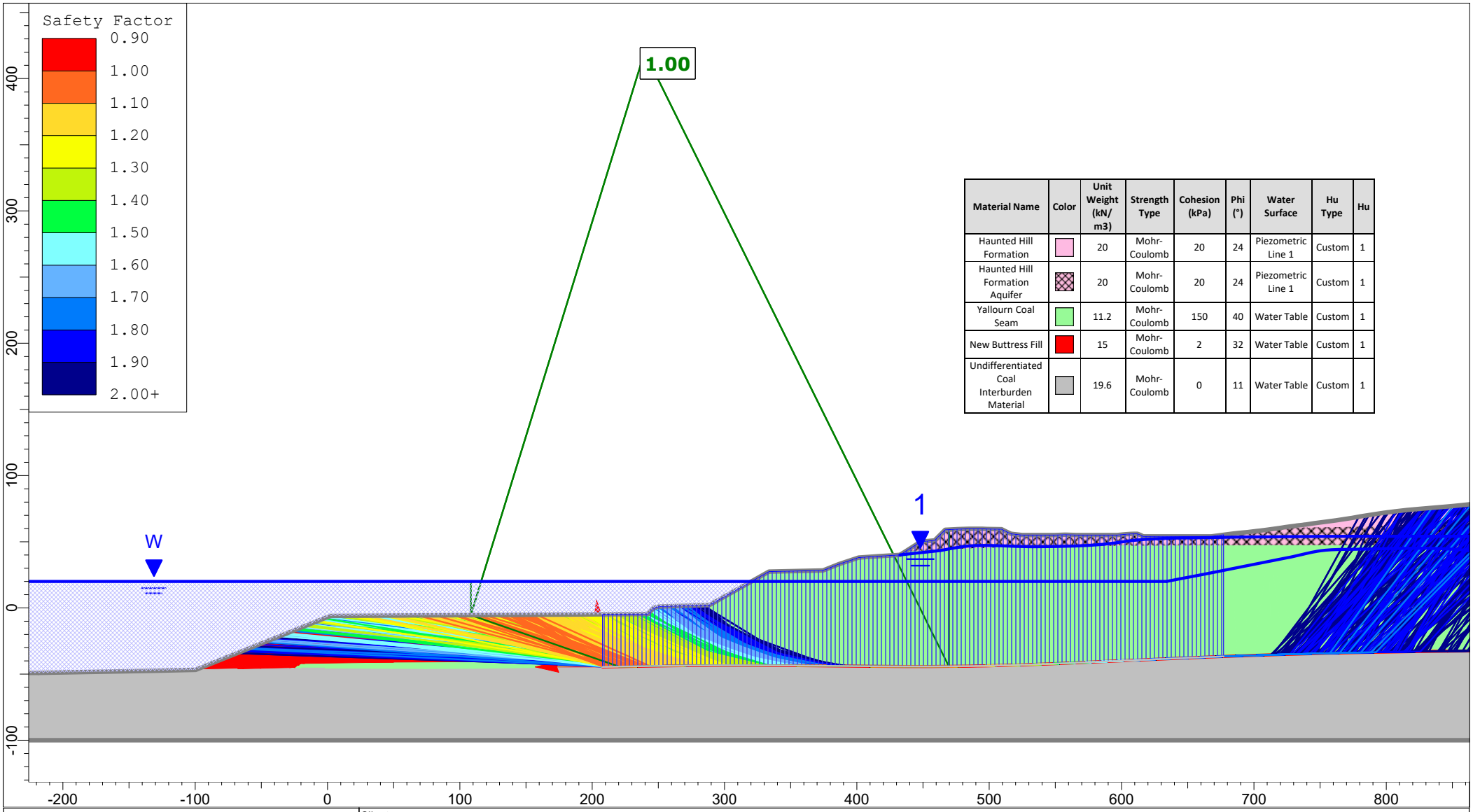
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



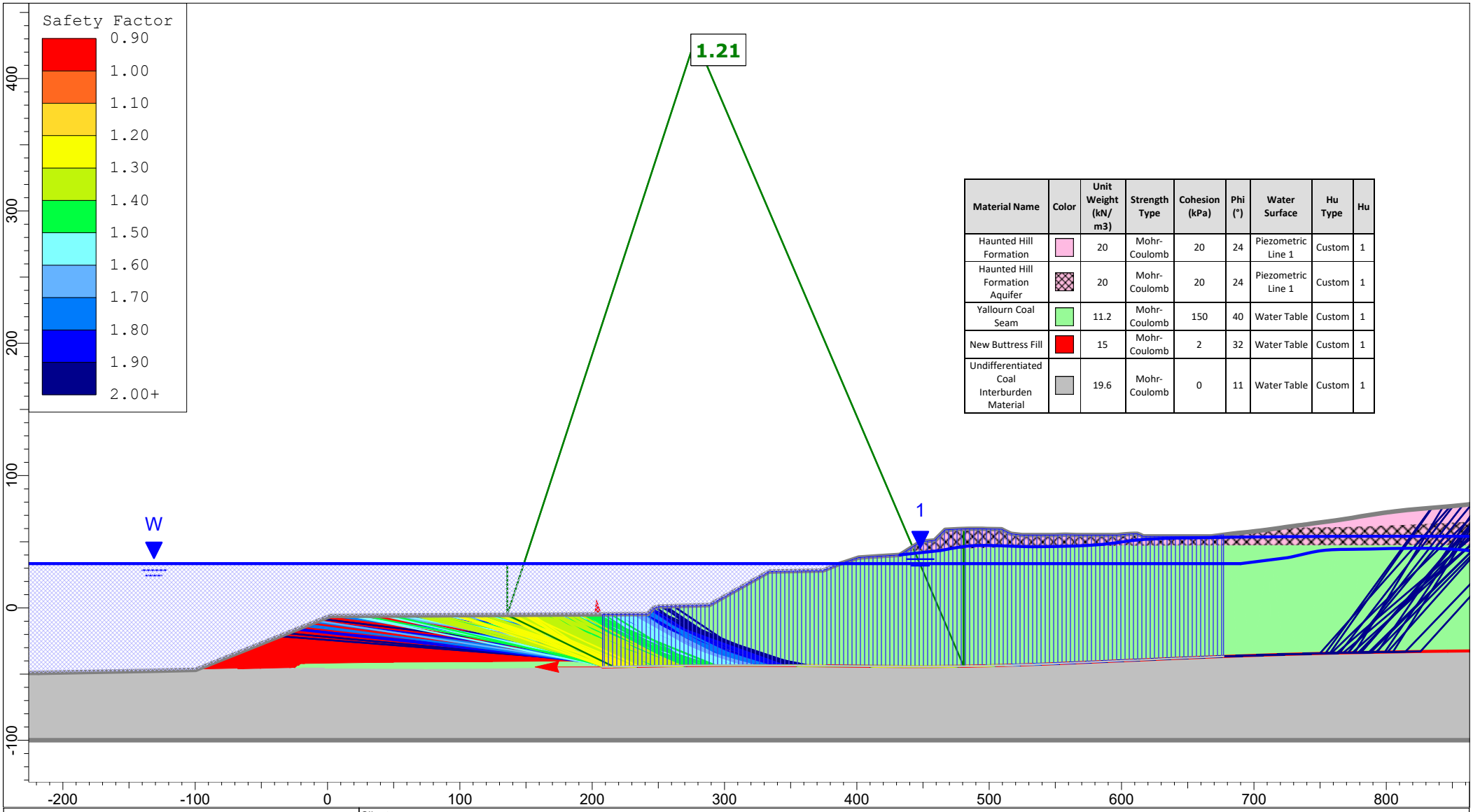
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



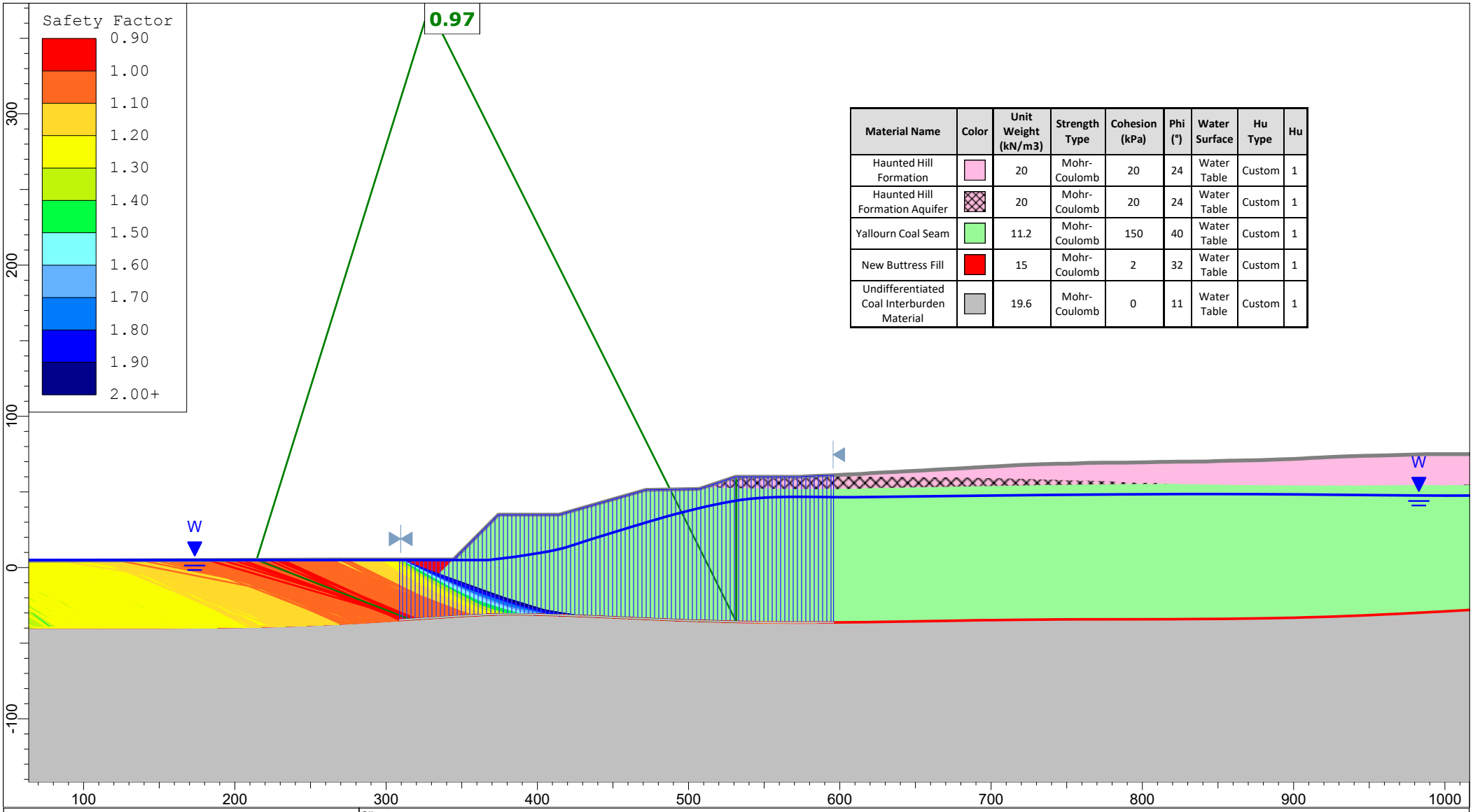
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



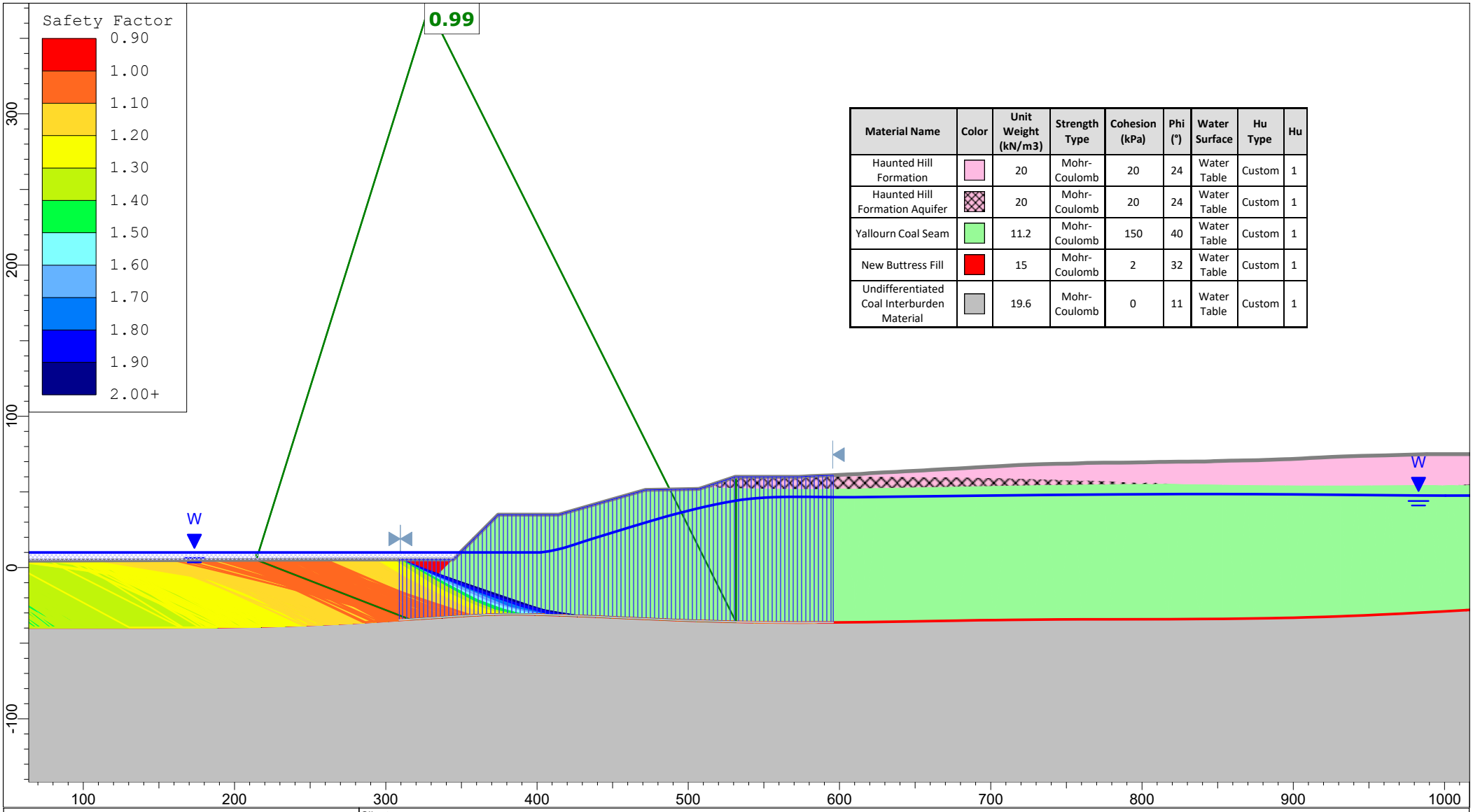
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



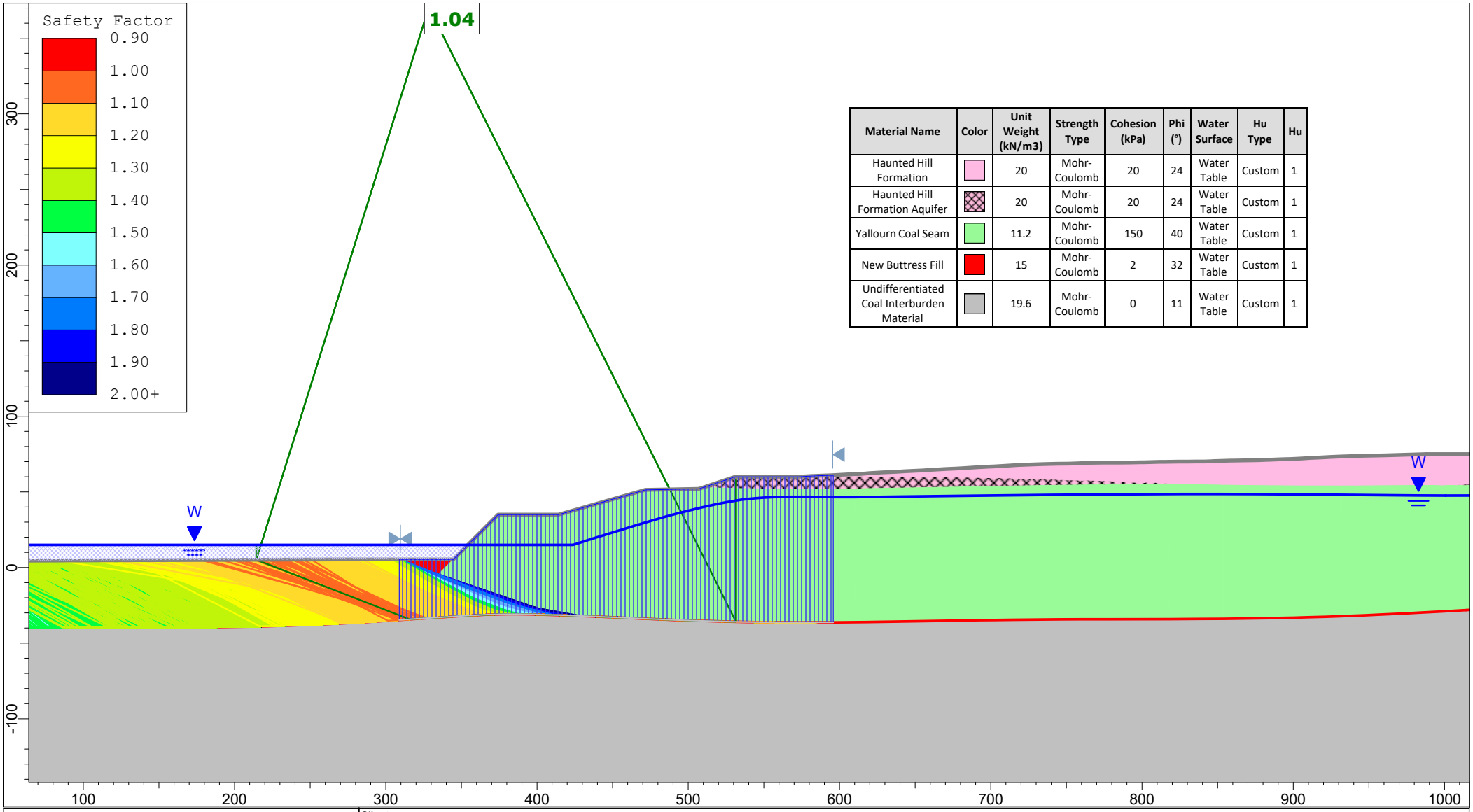
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



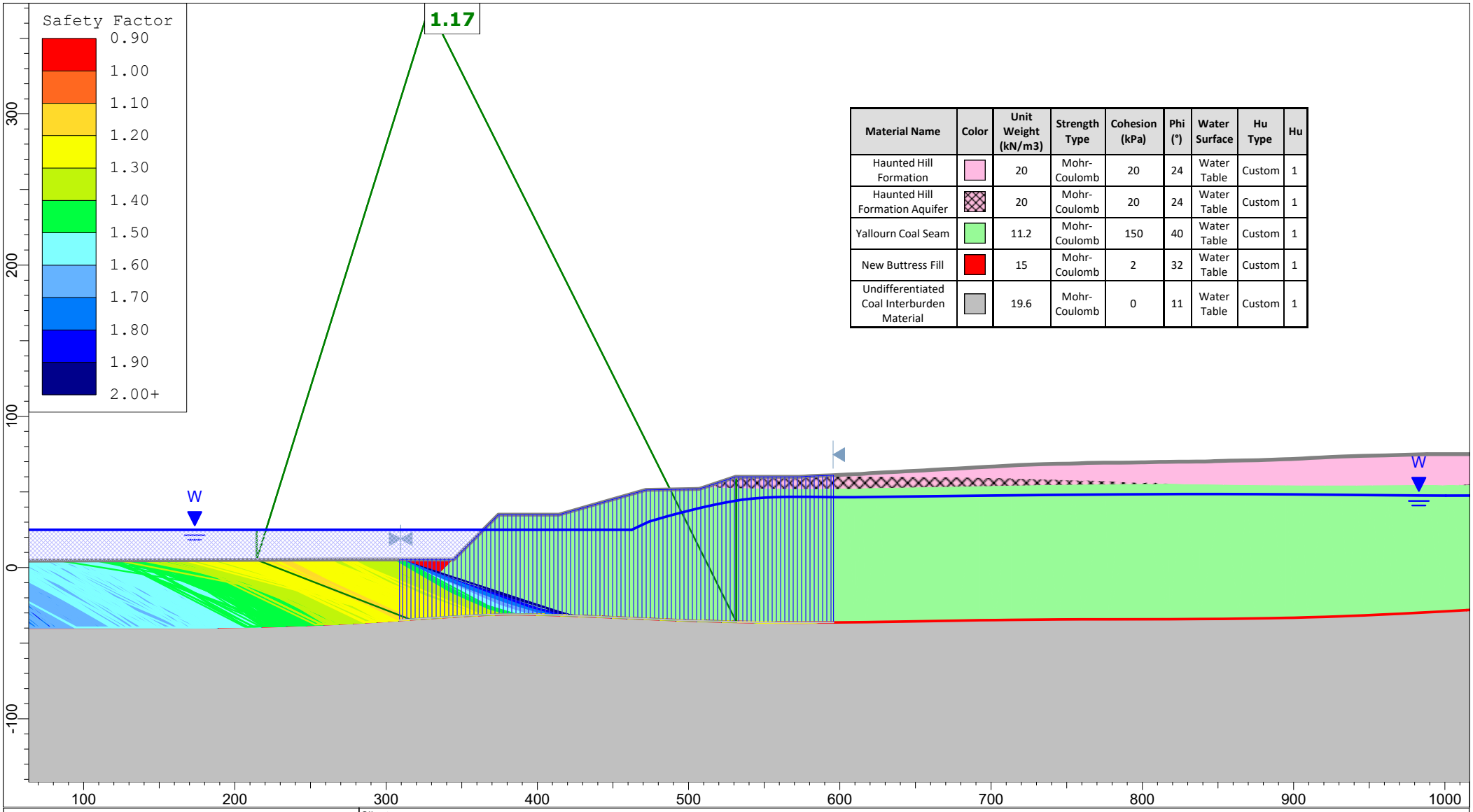
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



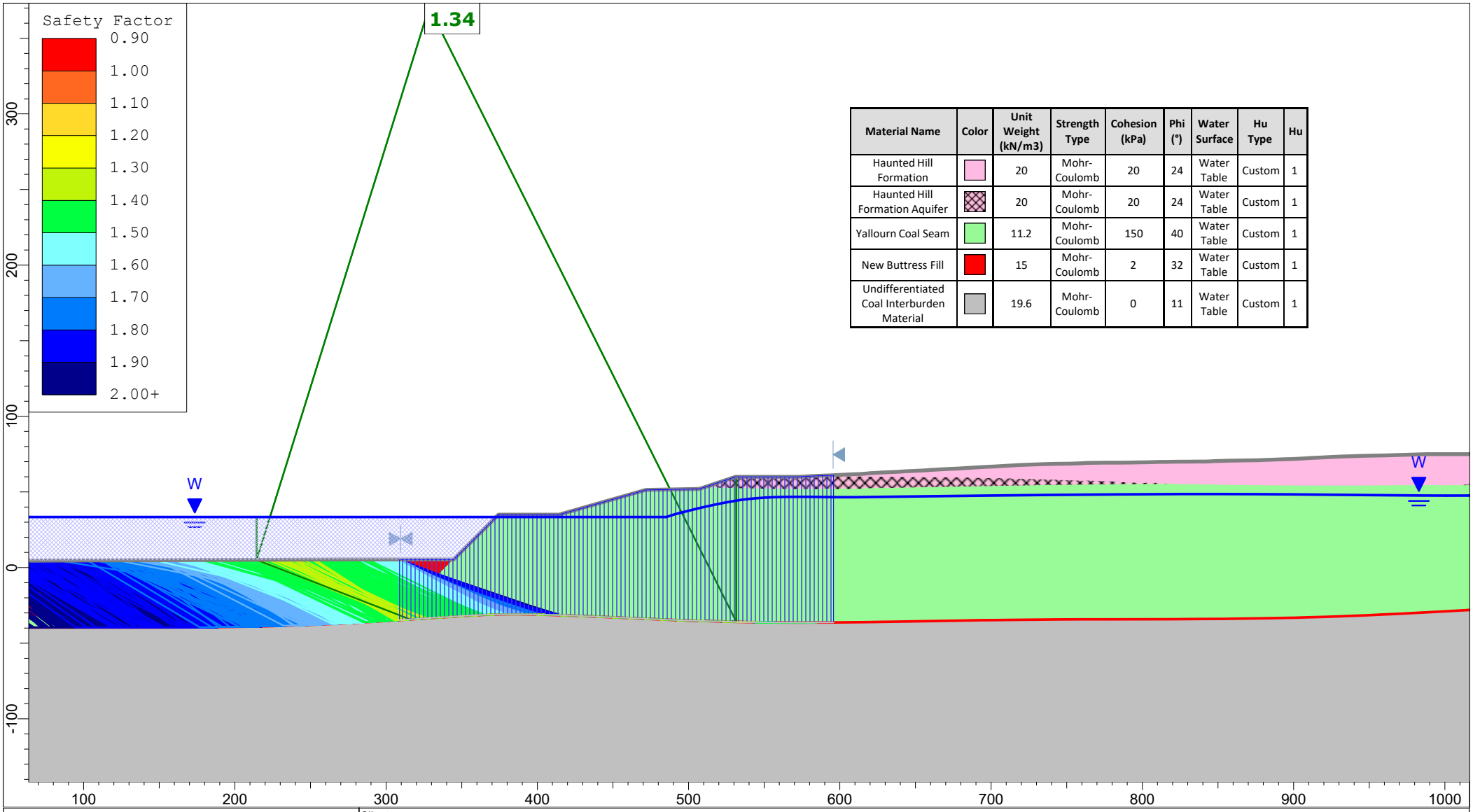
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



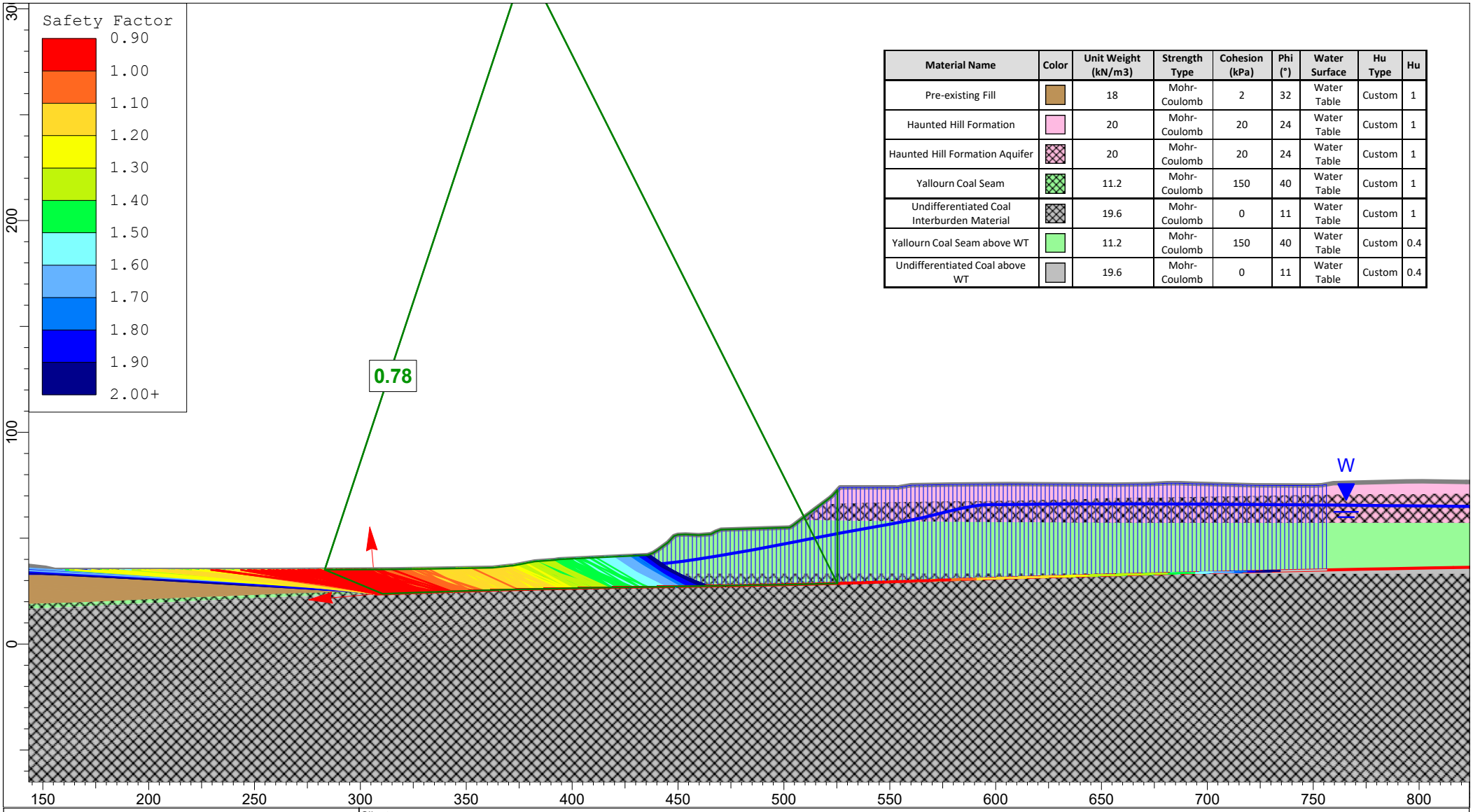
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



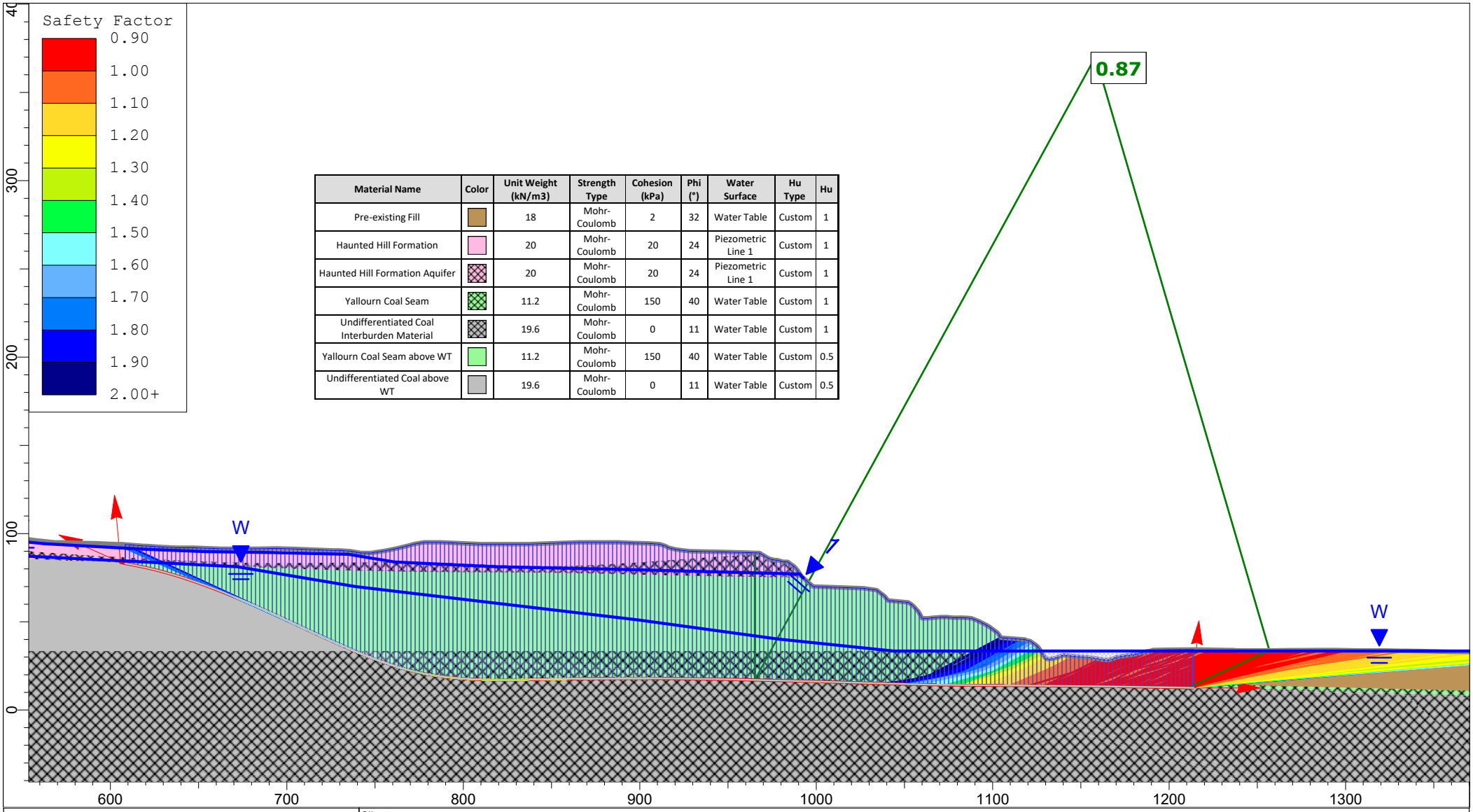
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



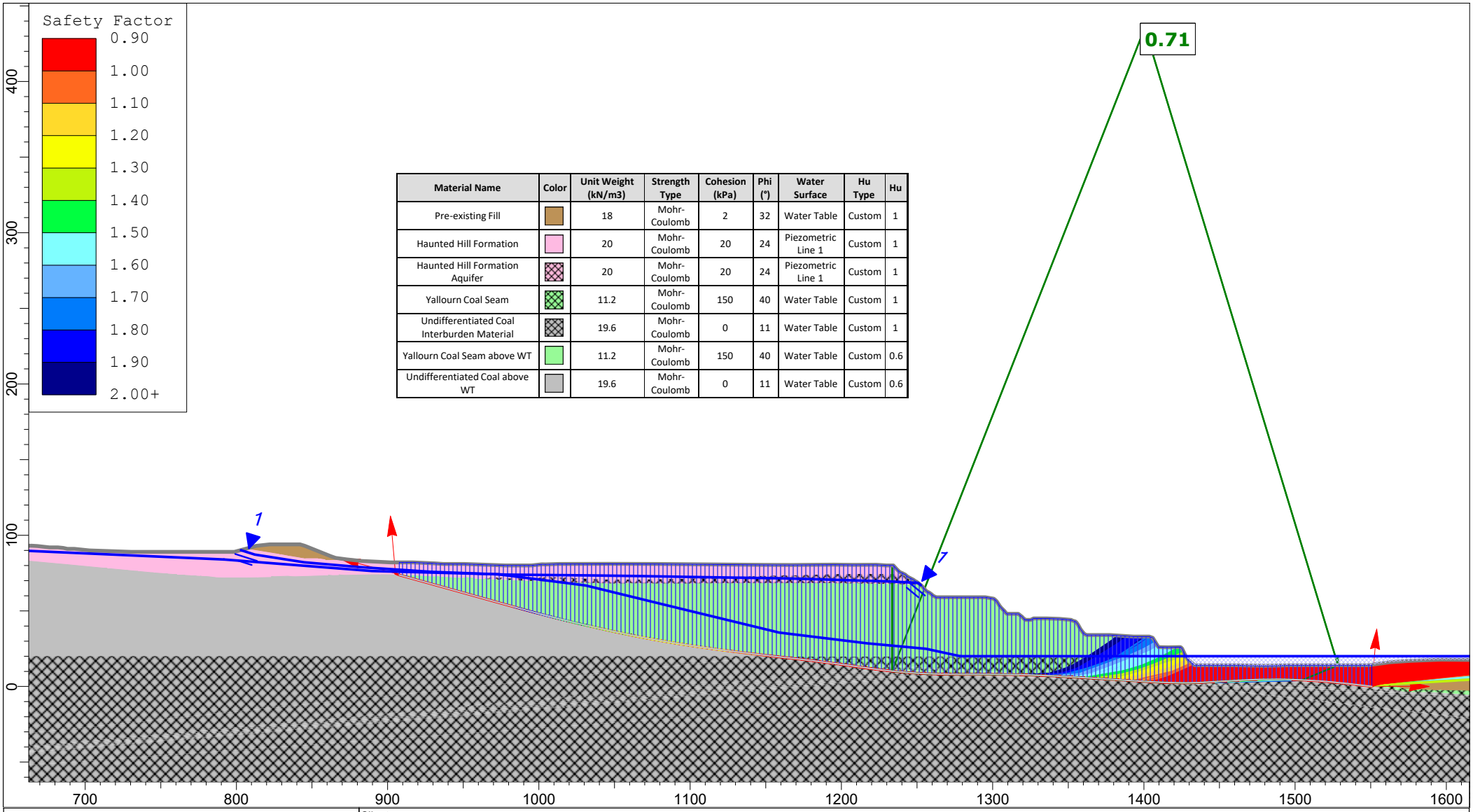
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SB
Section:	Section 19	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



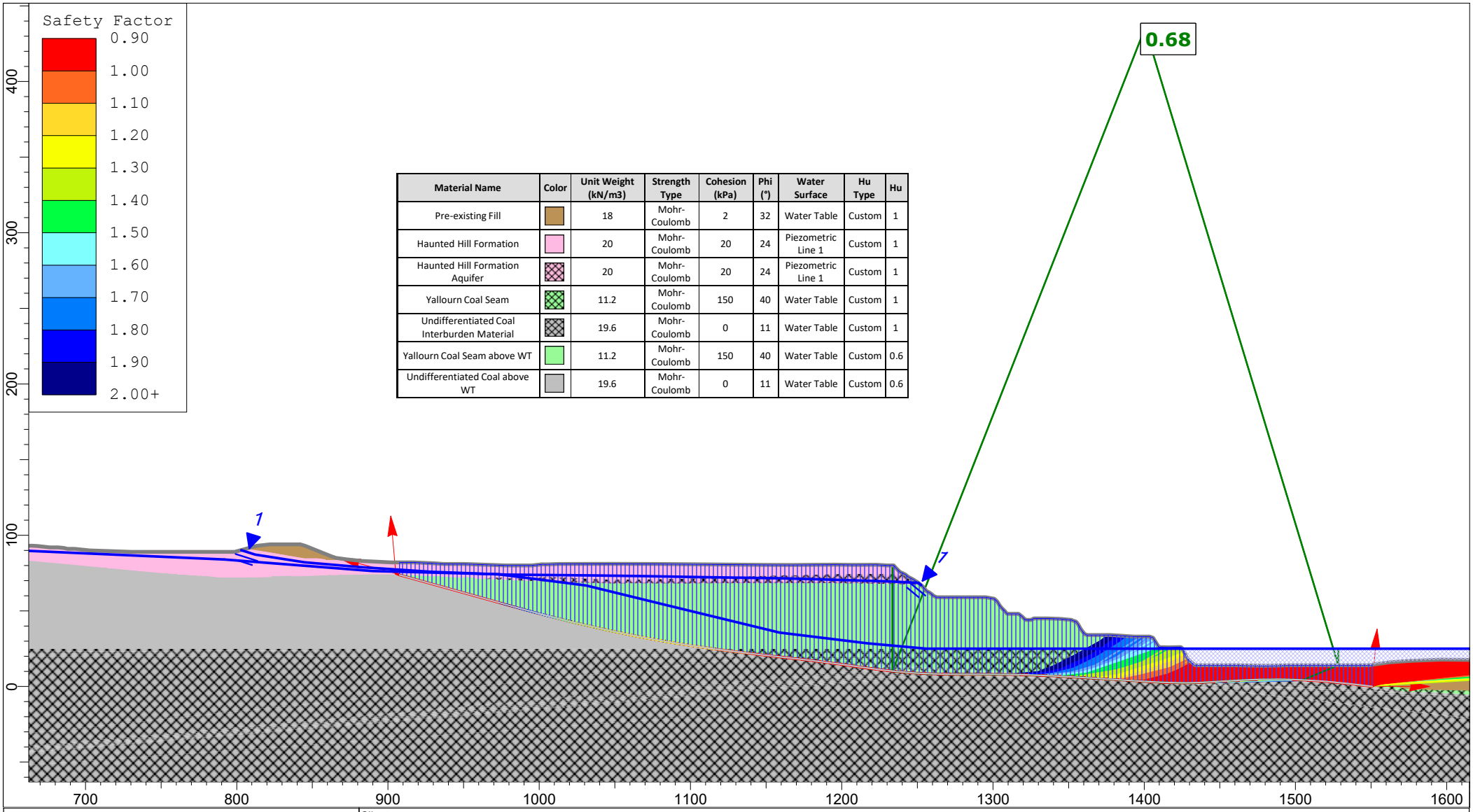
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (South)
Section:	Section 22	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



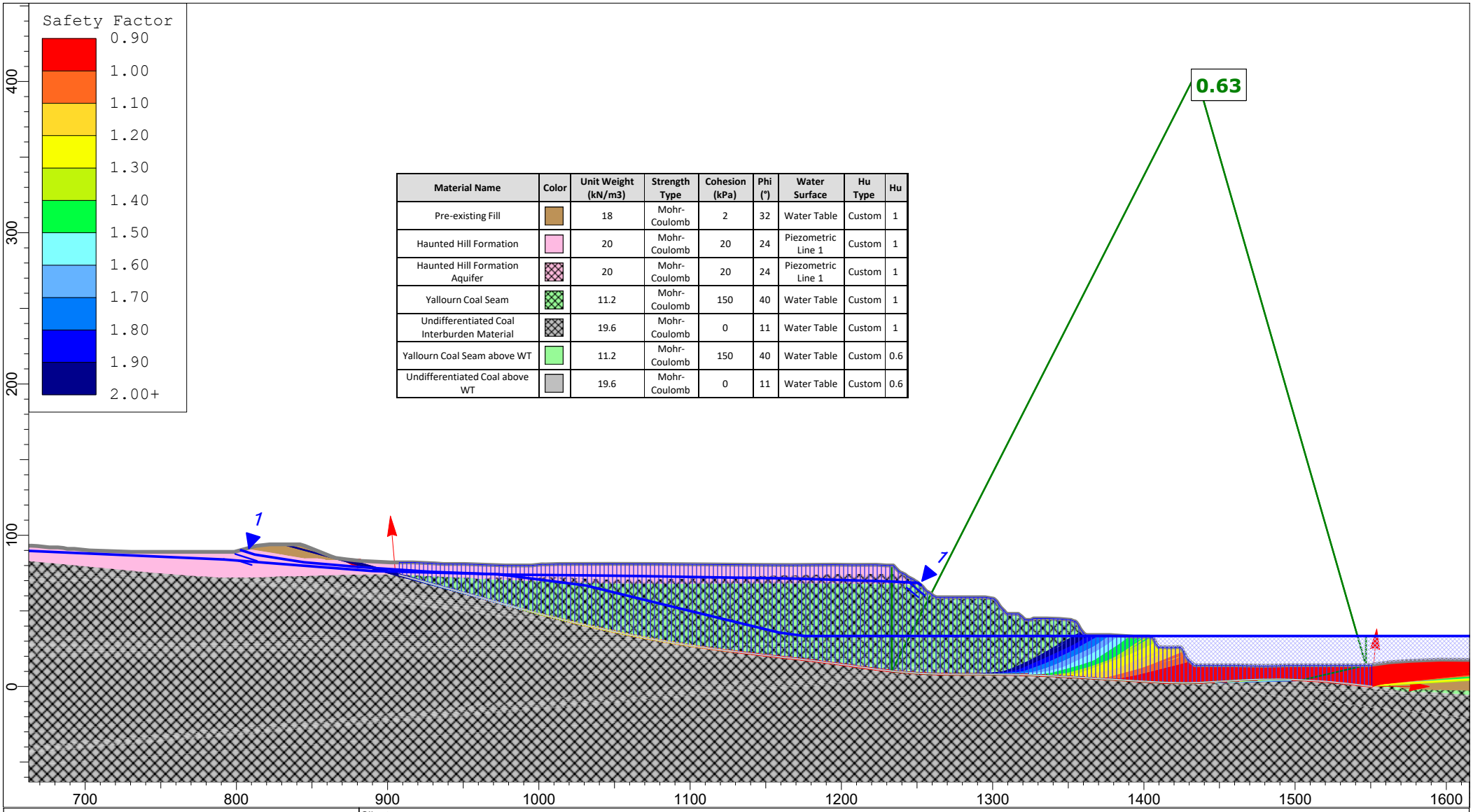
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



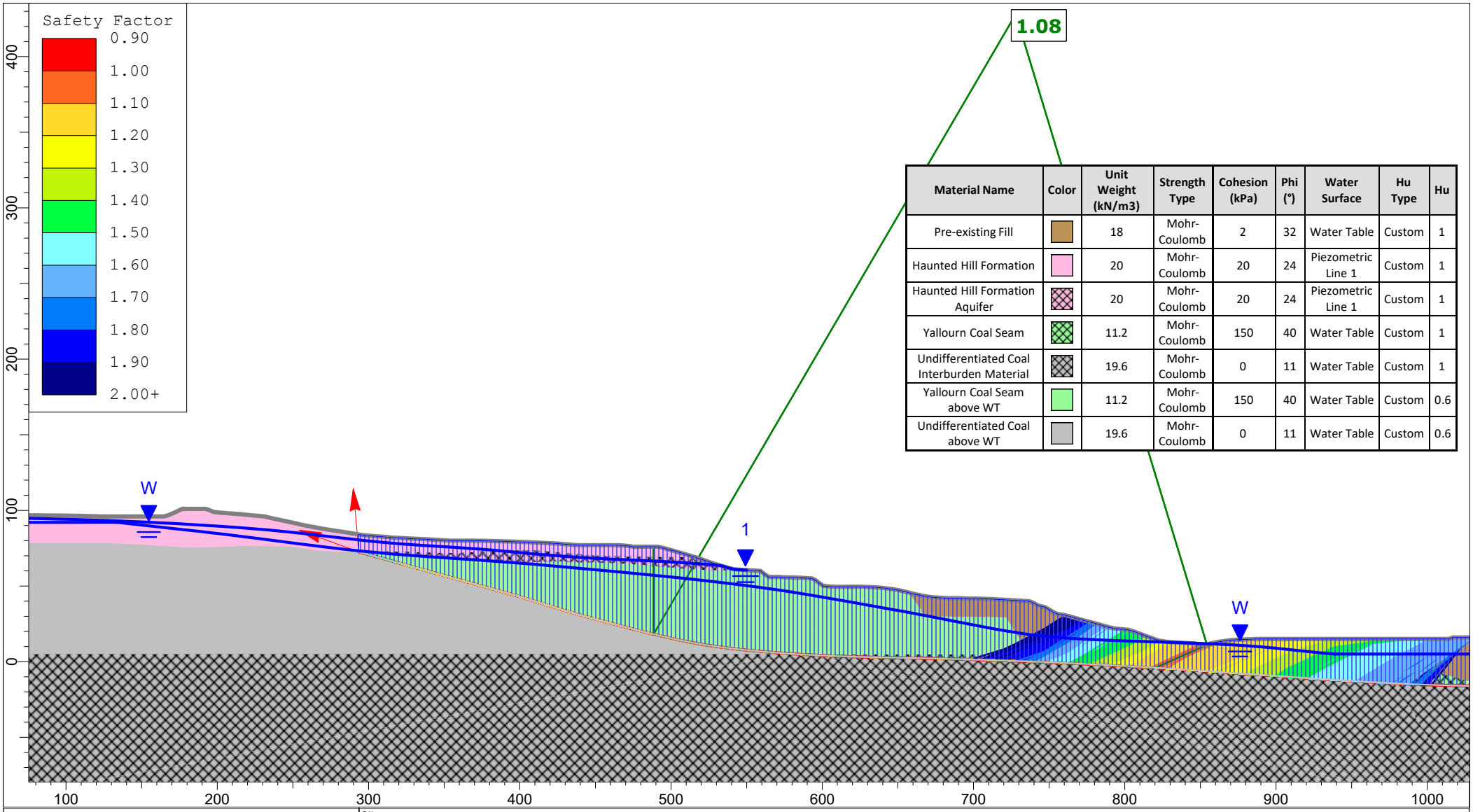
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



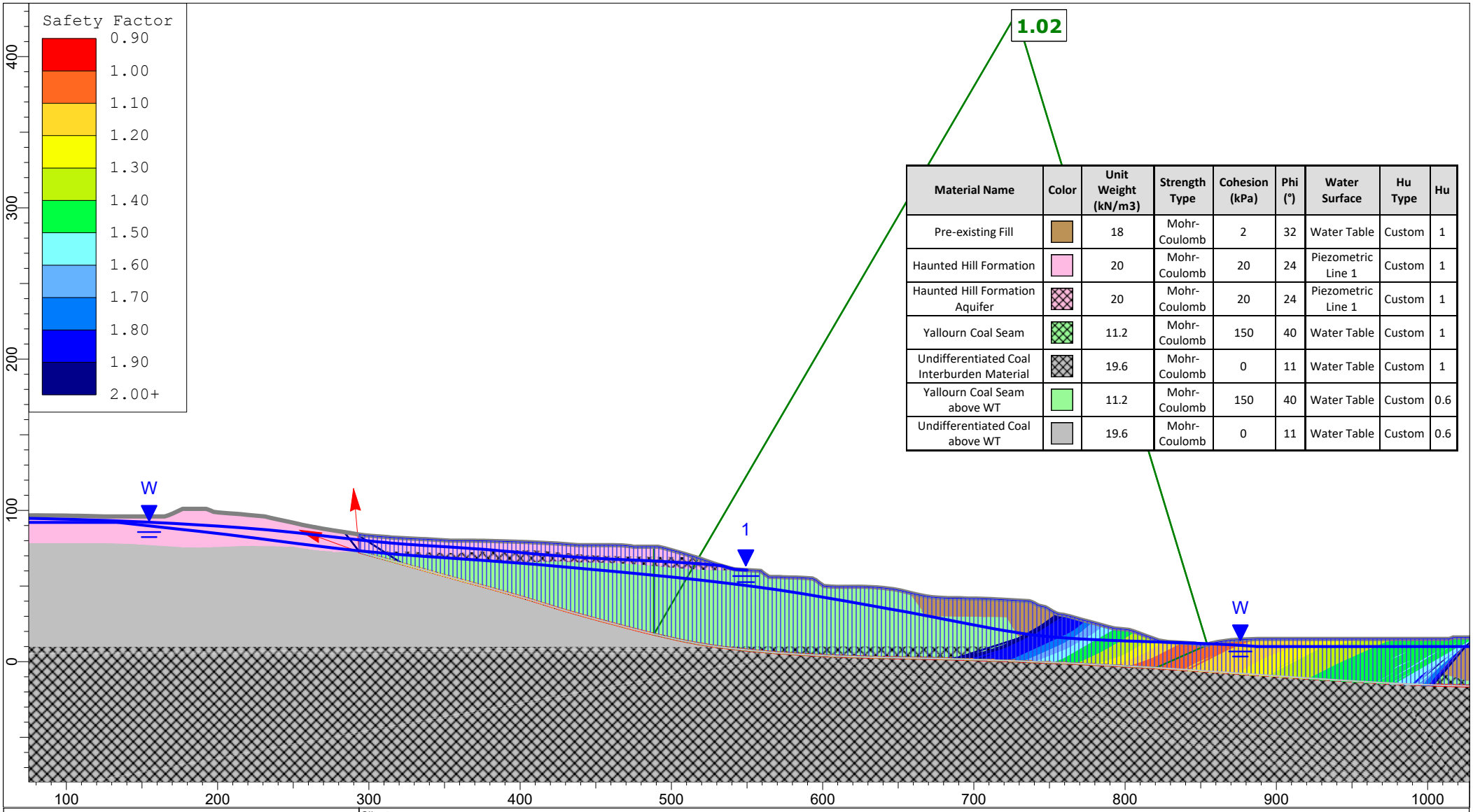
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



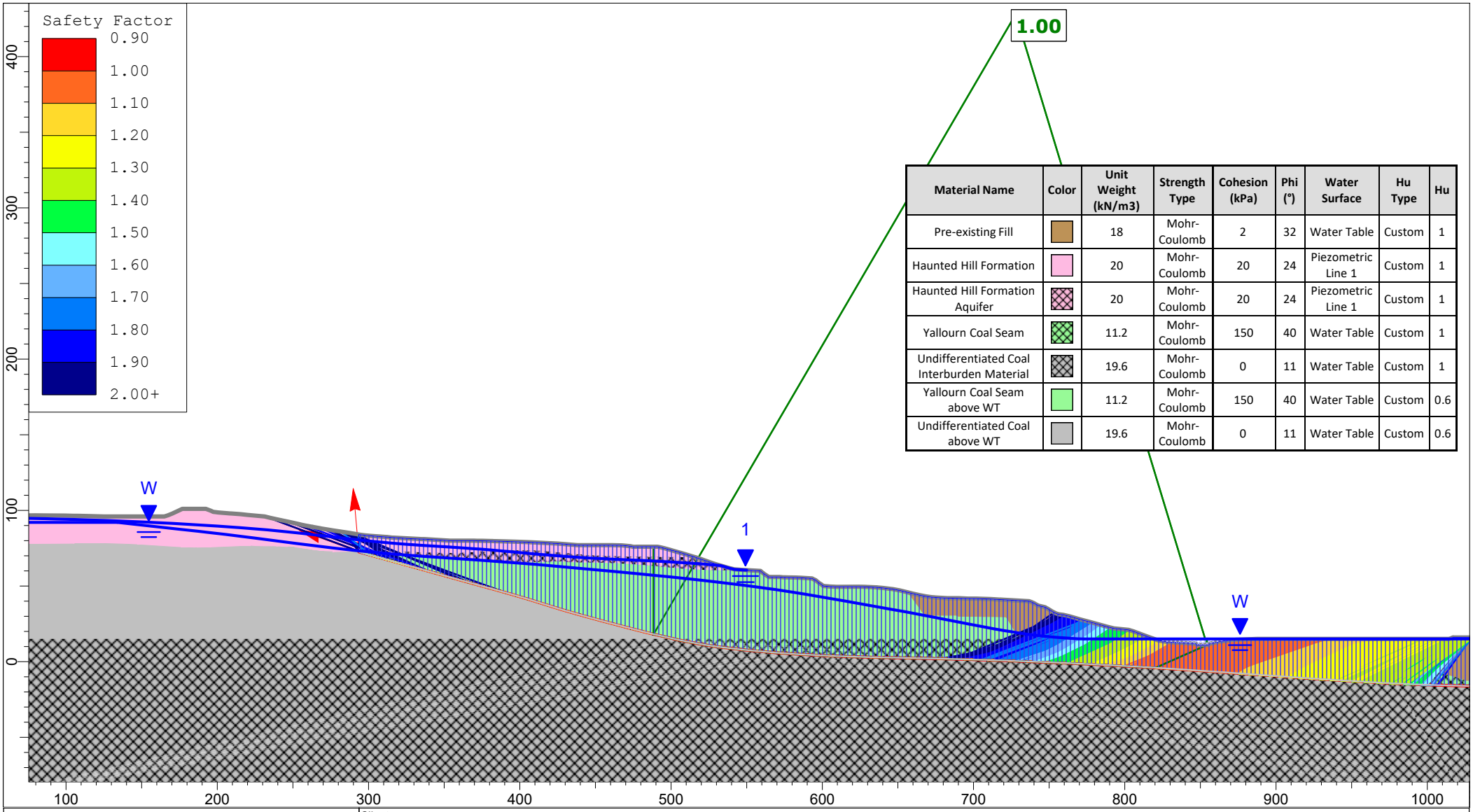
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



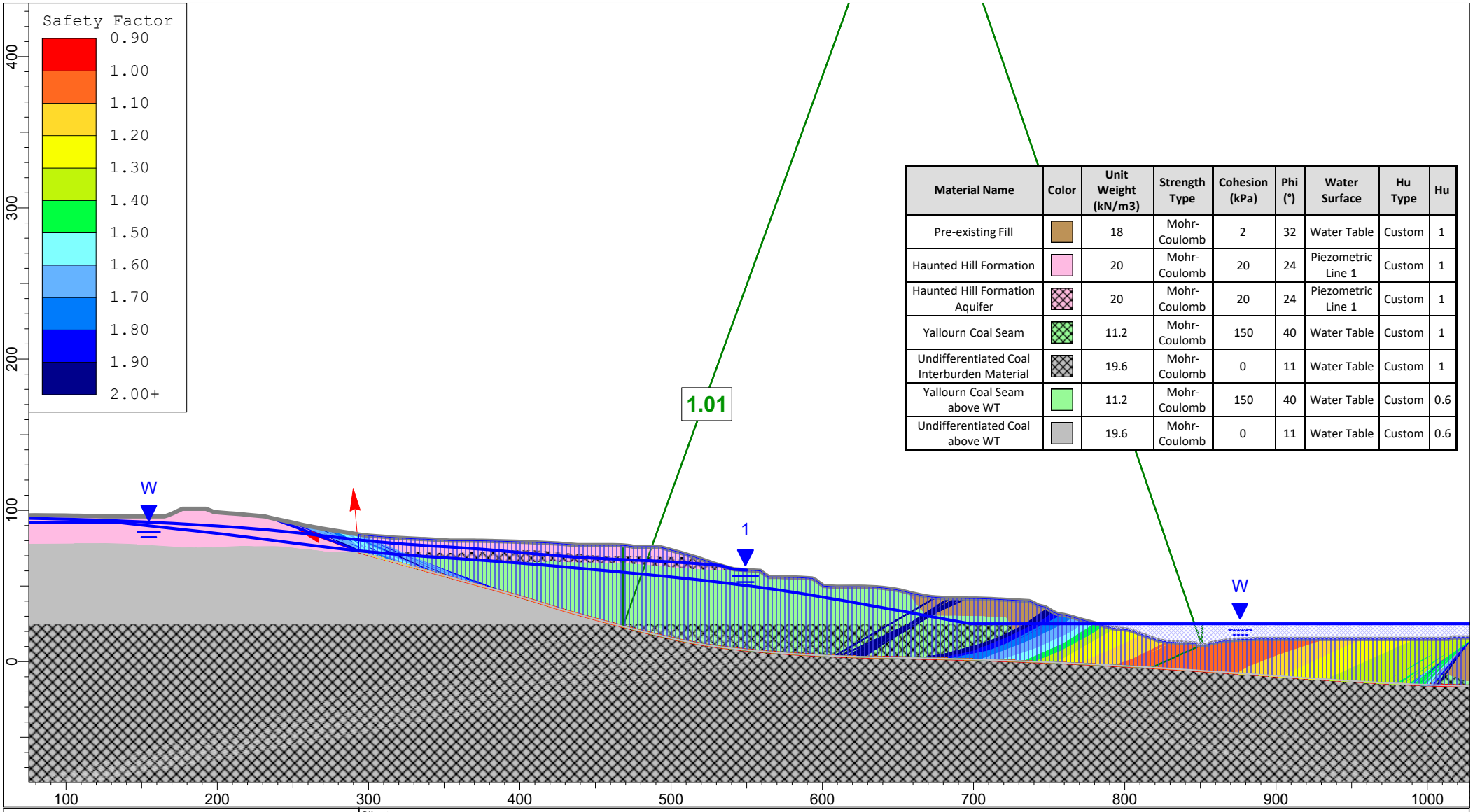
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



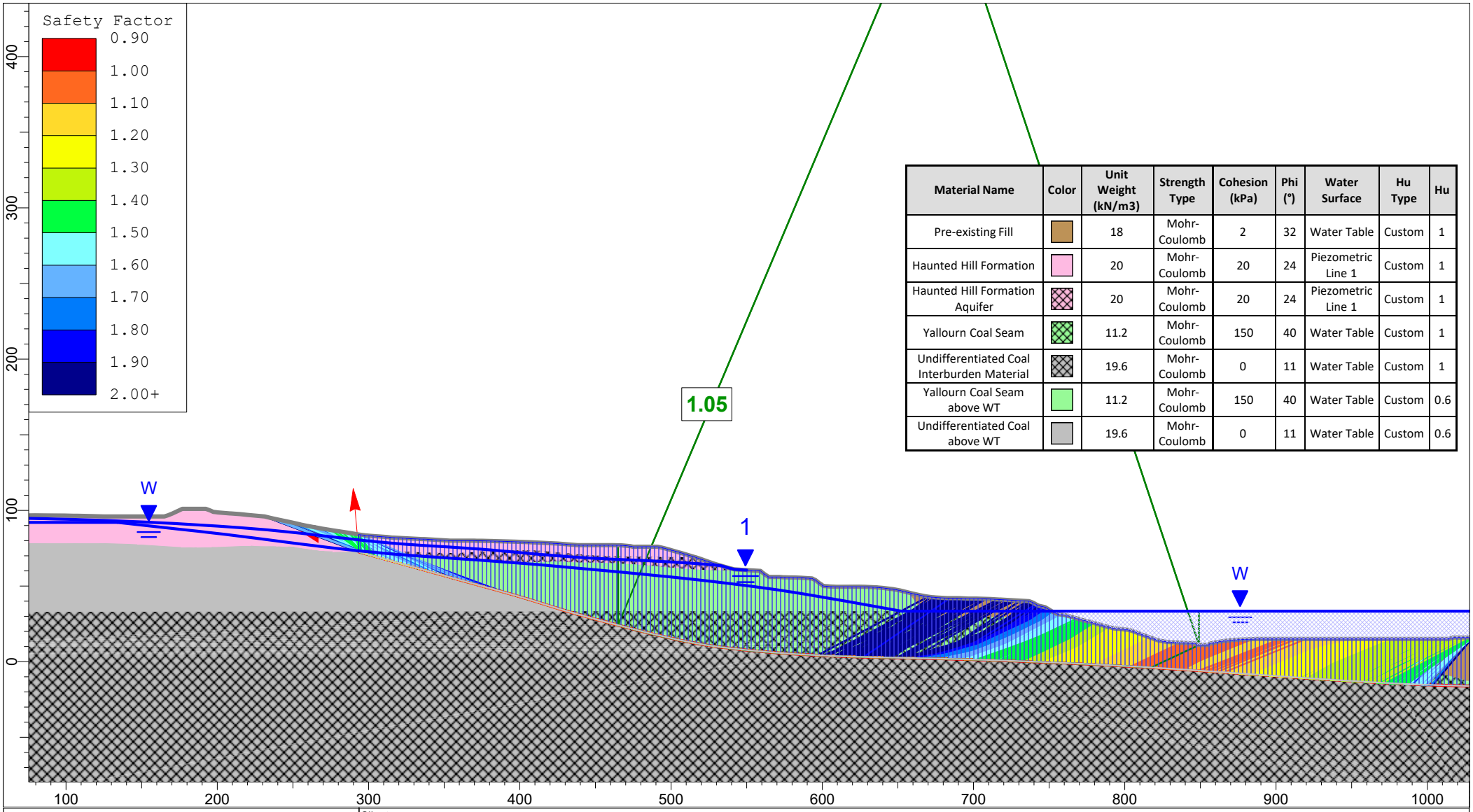
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



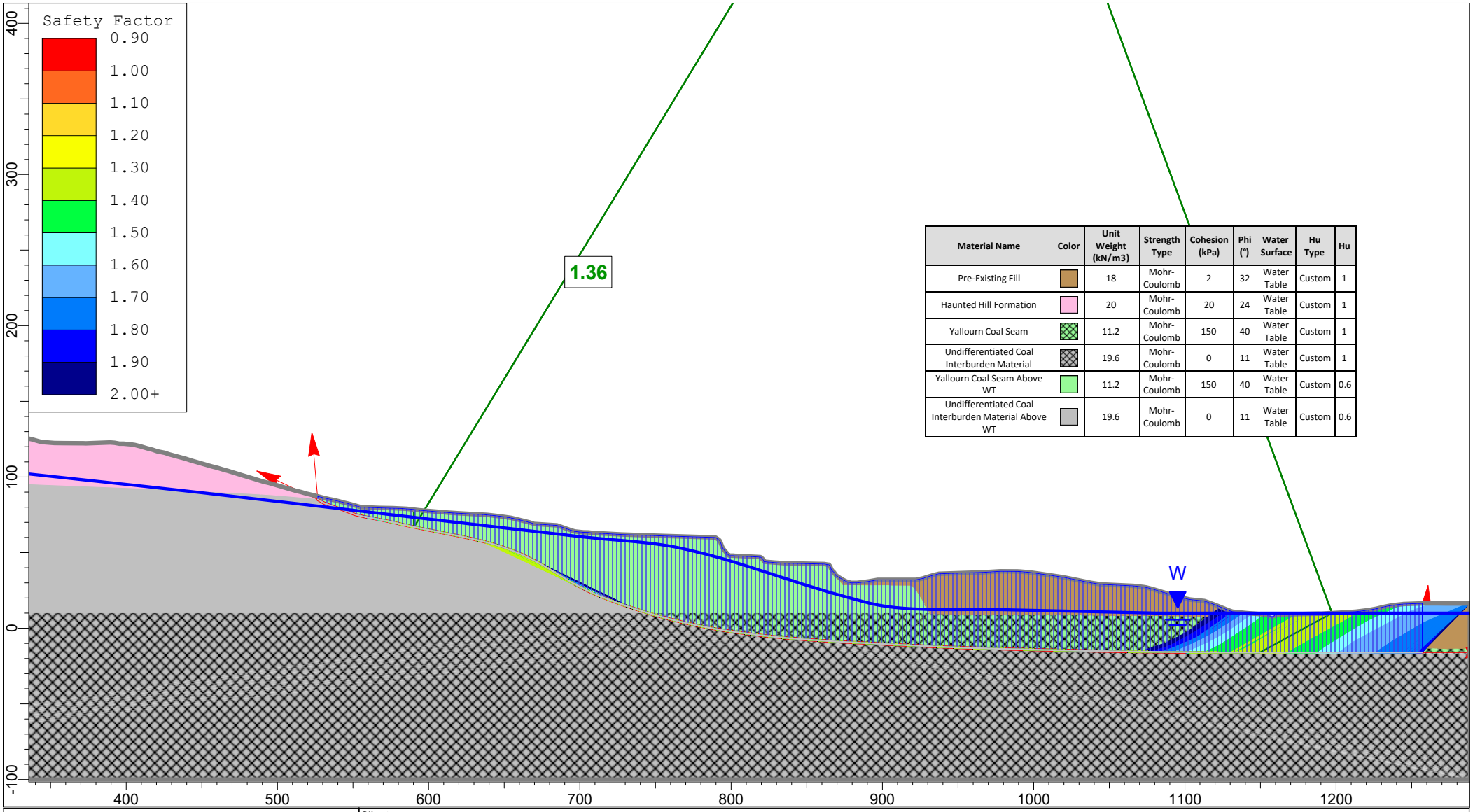
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



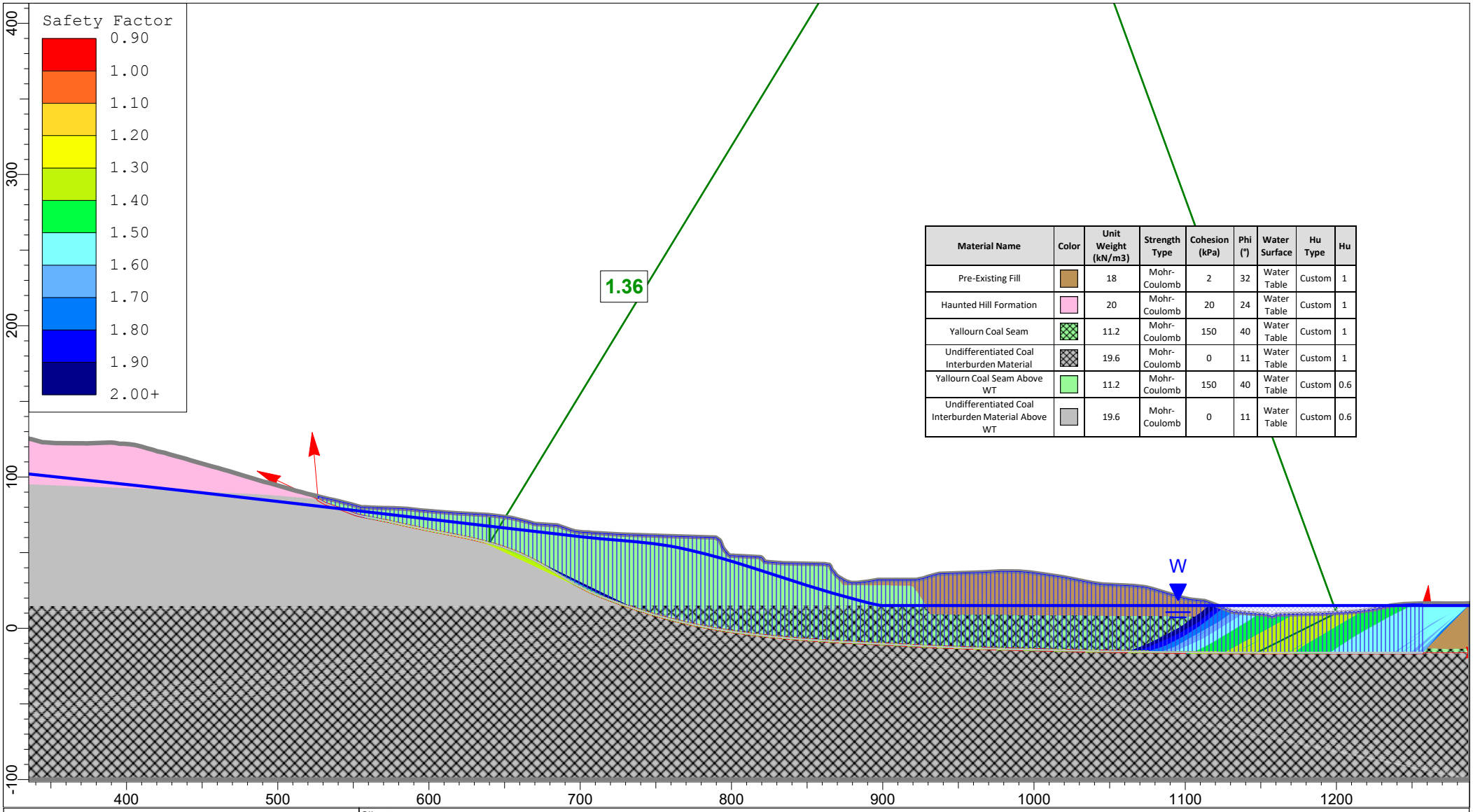
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



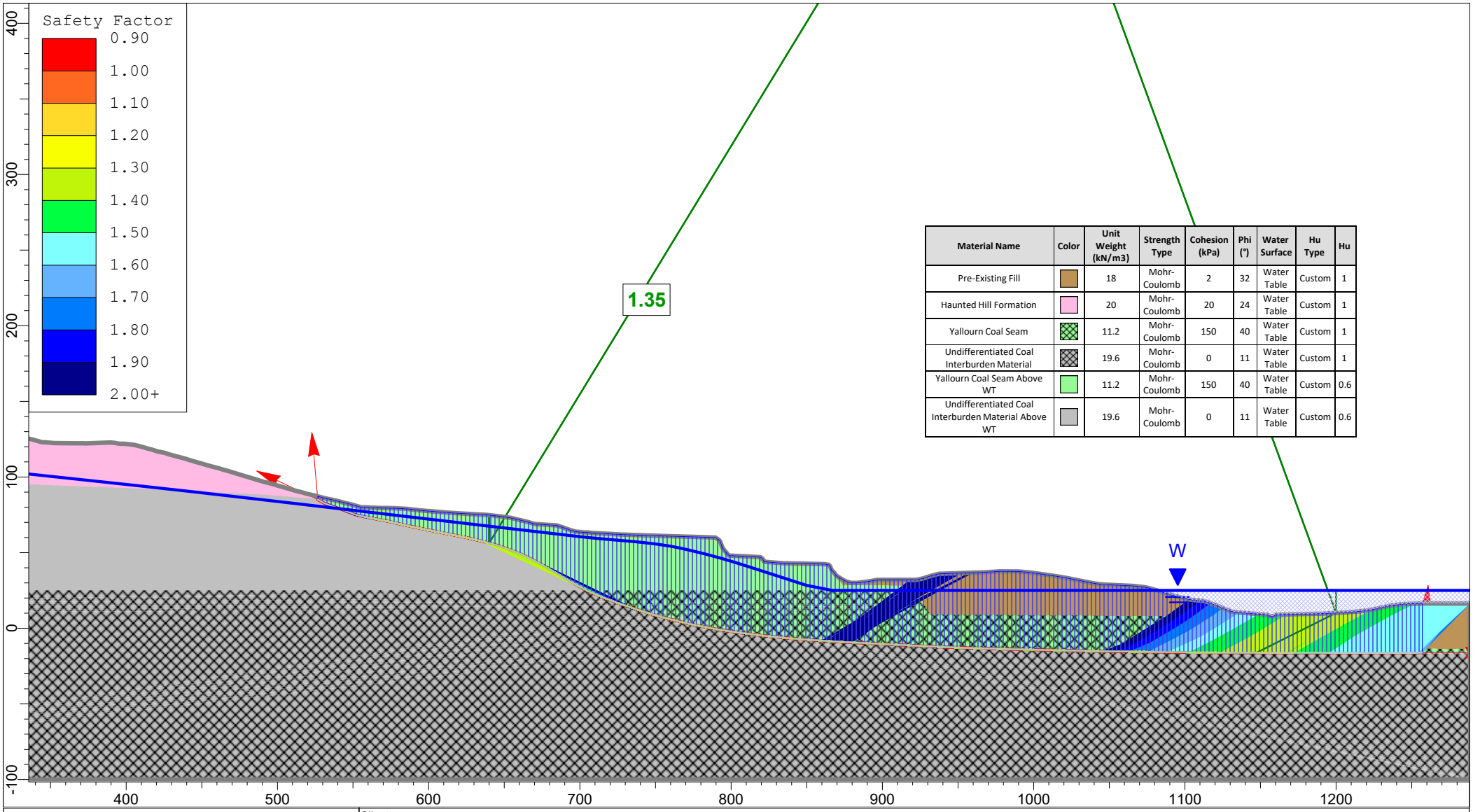
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam Above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material Above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



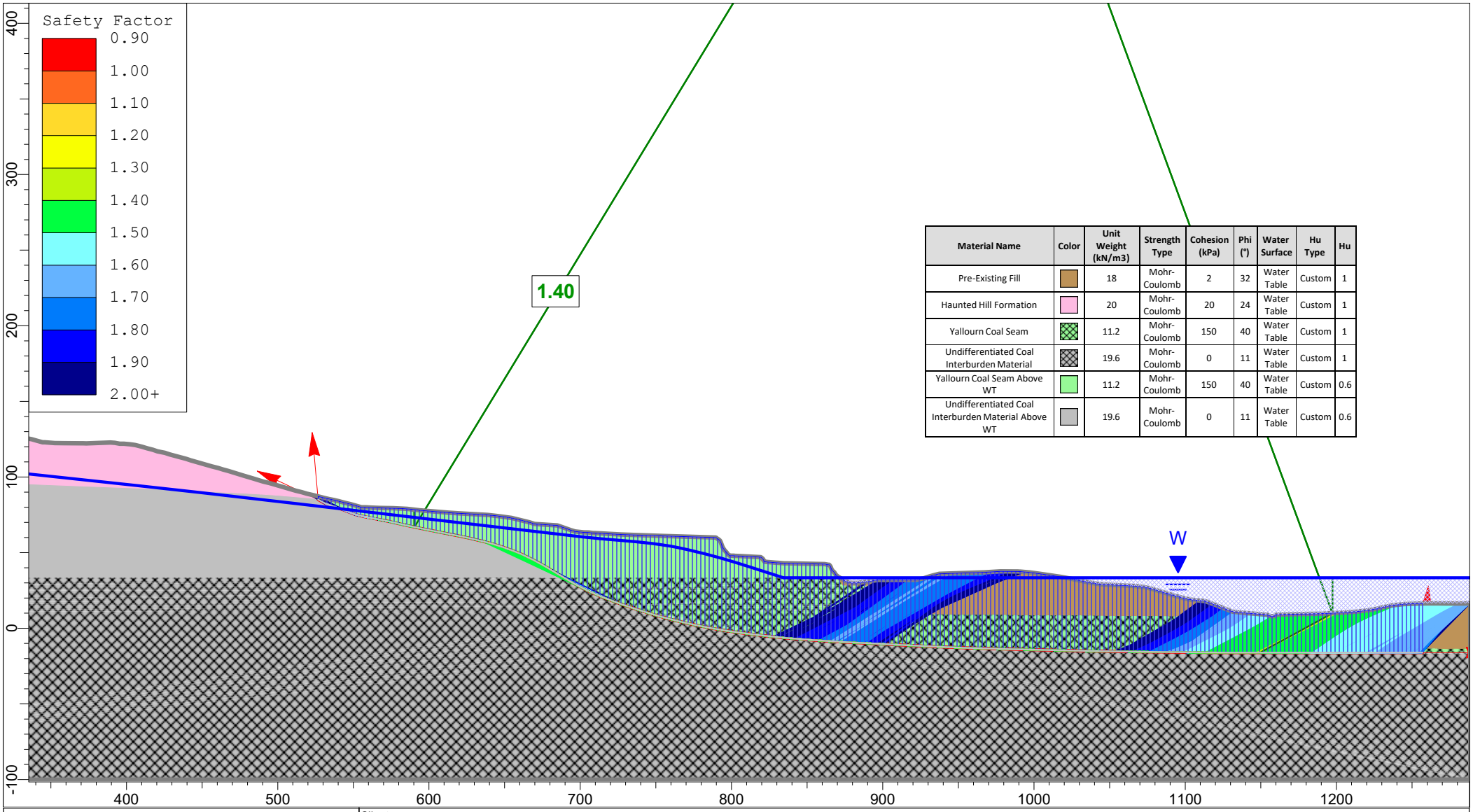
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam Above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material Above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



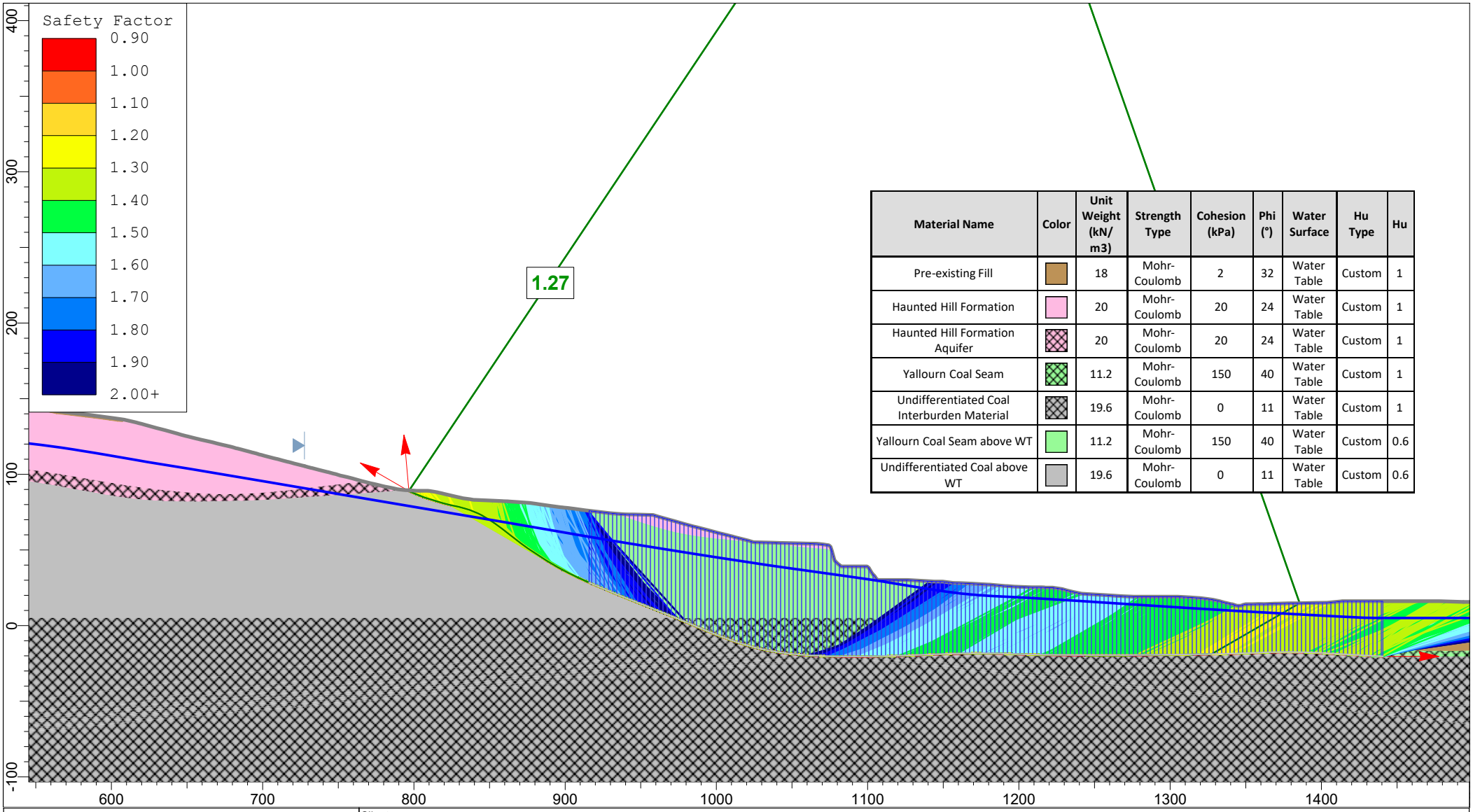
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam Above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material Above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



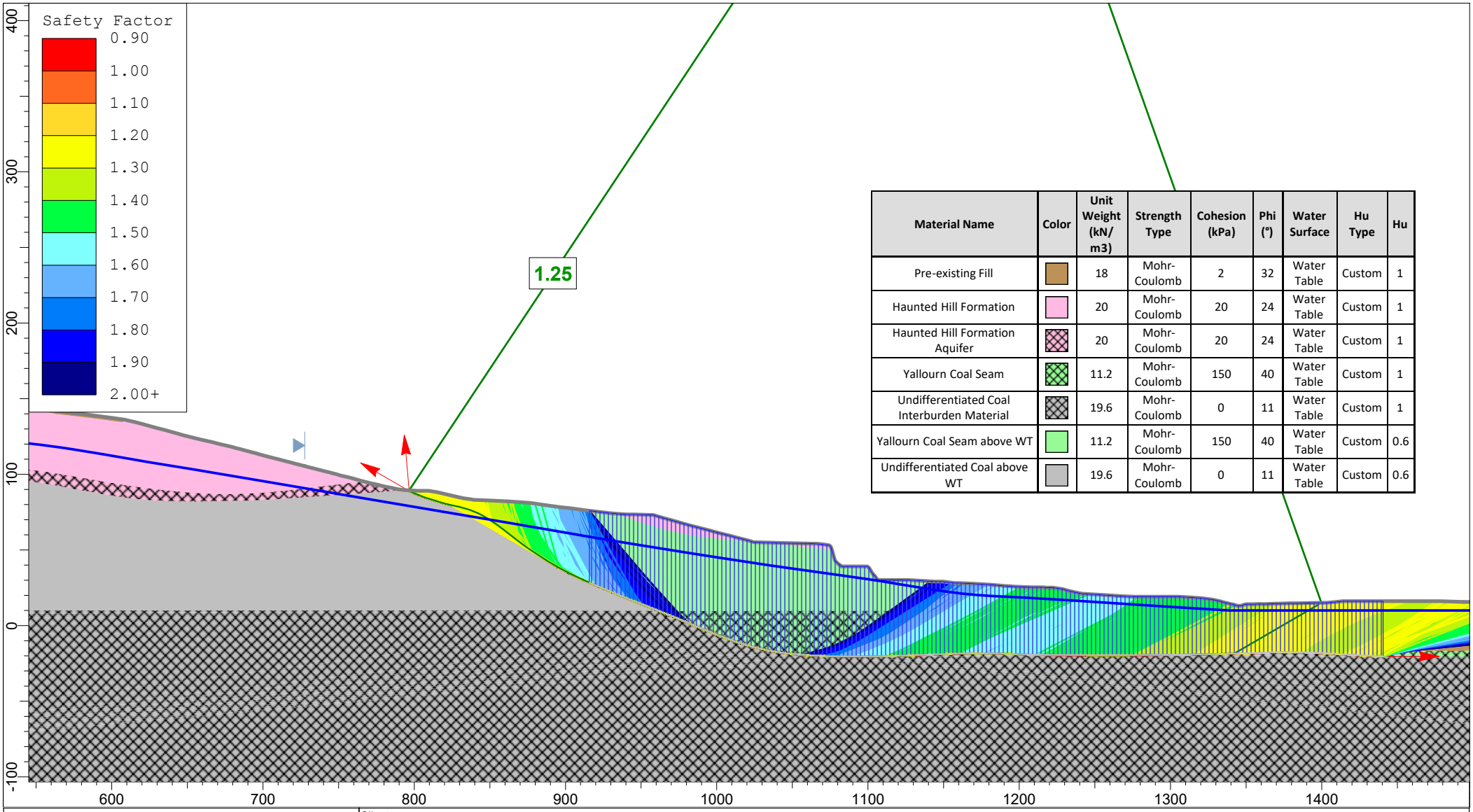
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam Above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material Above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



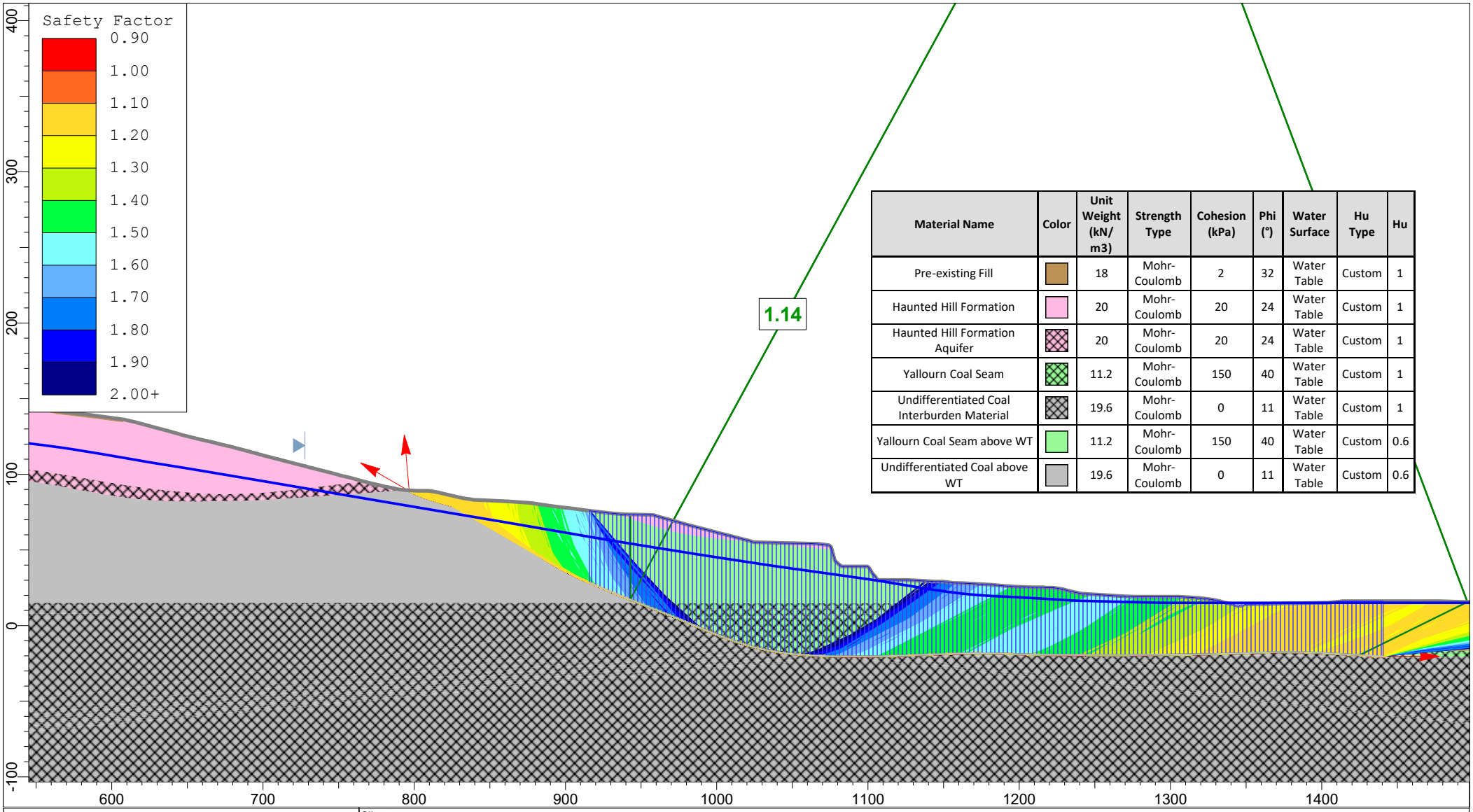
Material Name	Color	Unit Weight (kN/ m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



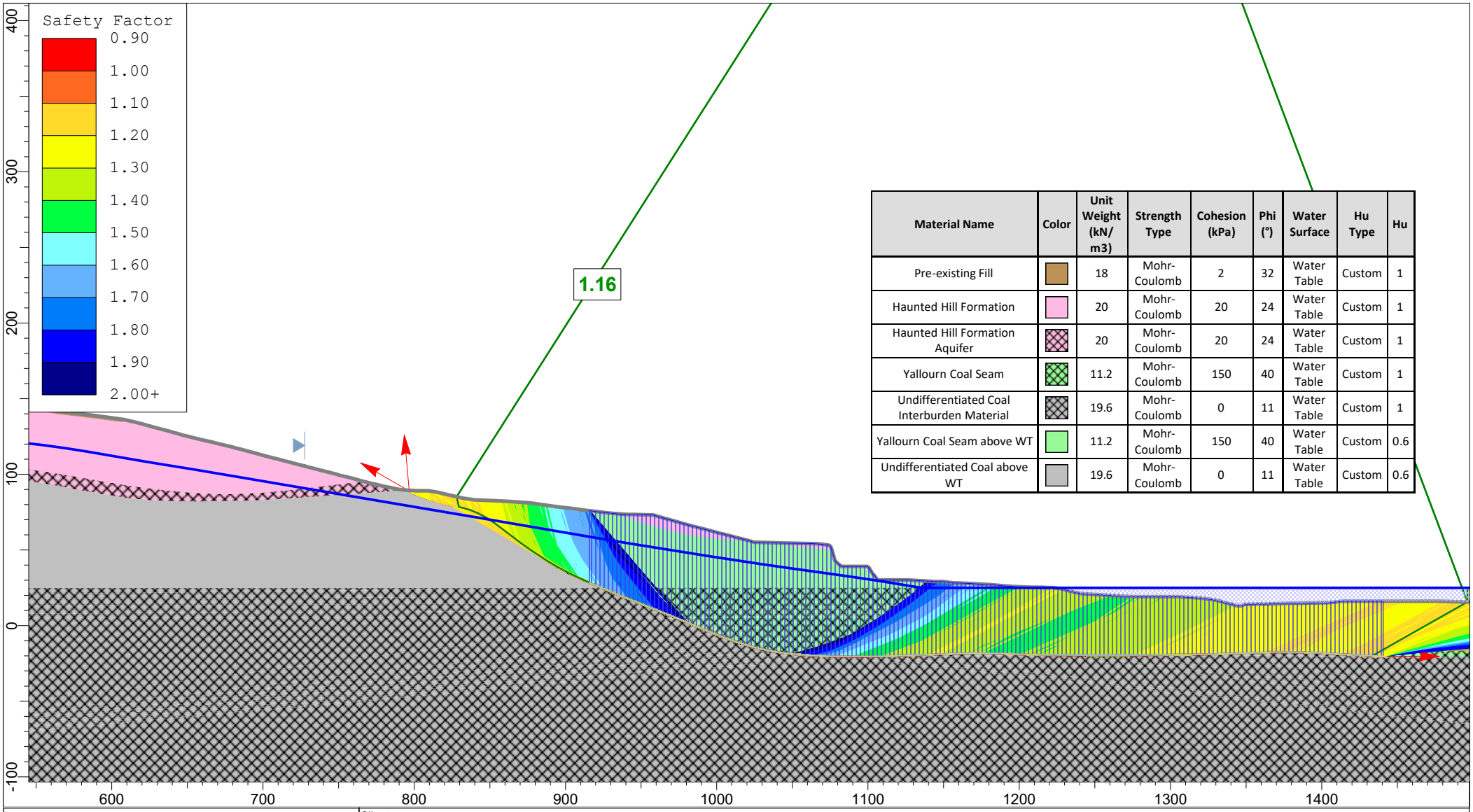
Material Name	Color	Unit Weight (kN/ m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



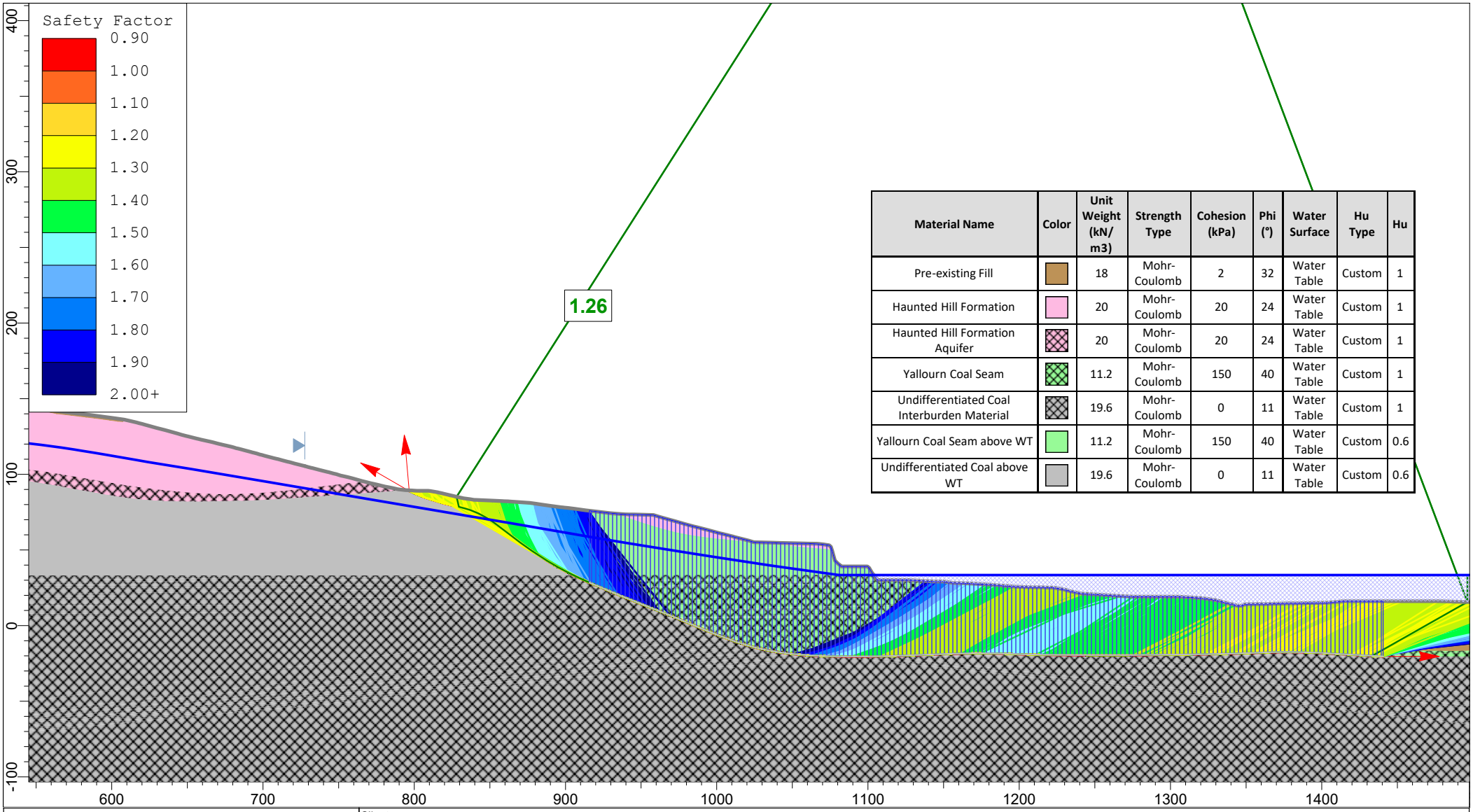
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



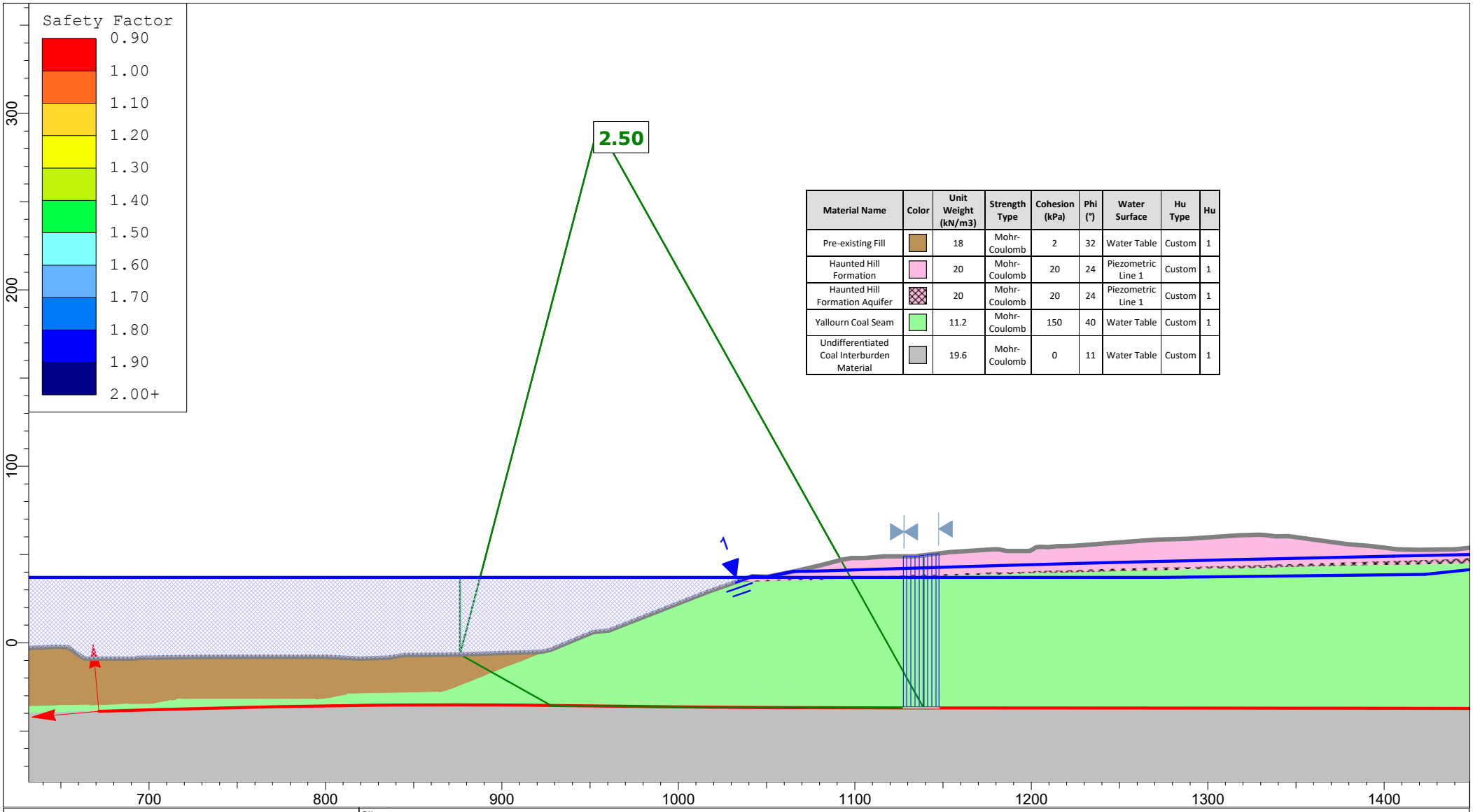
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



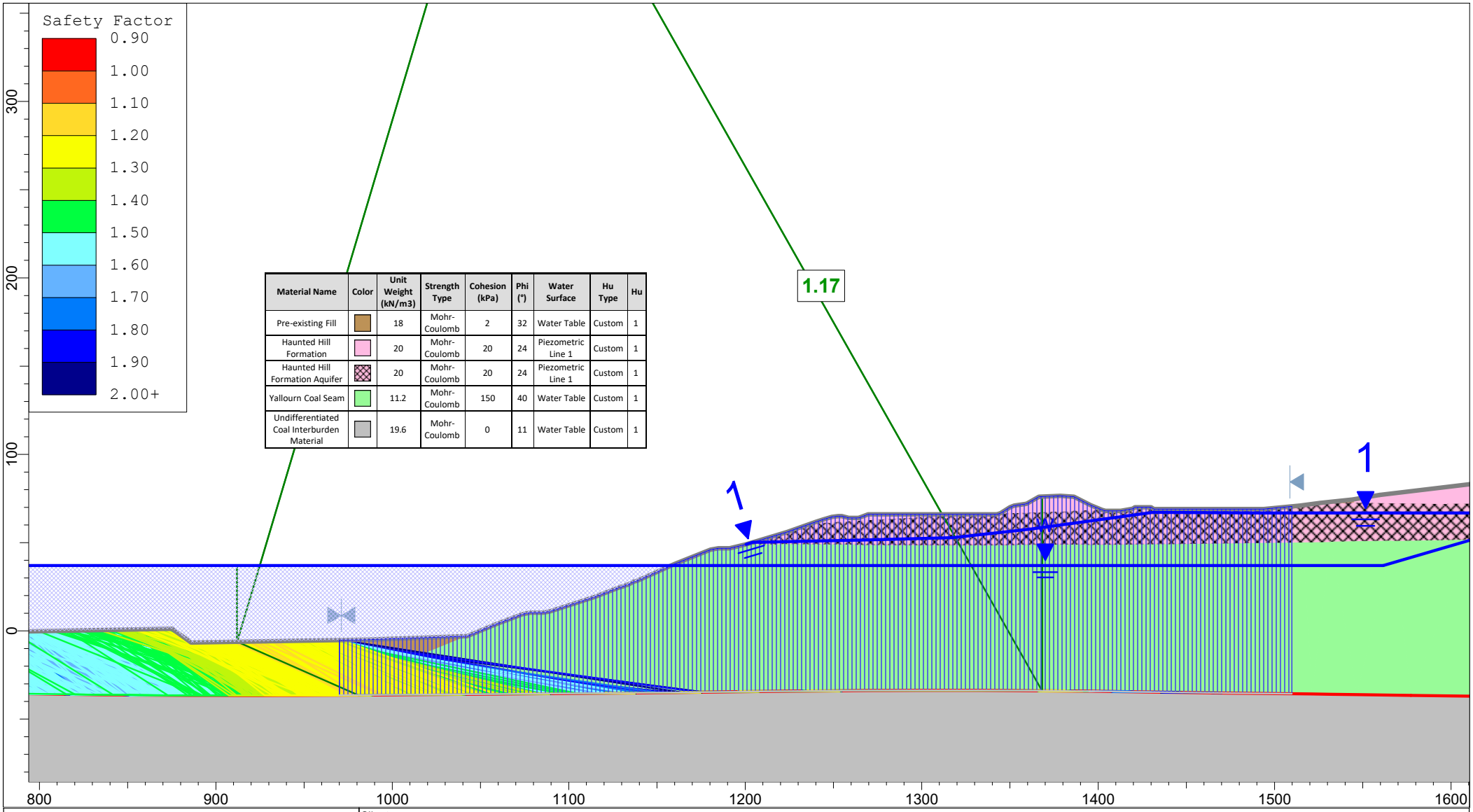
Material Name	Color	Unit Weight (kN/ m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



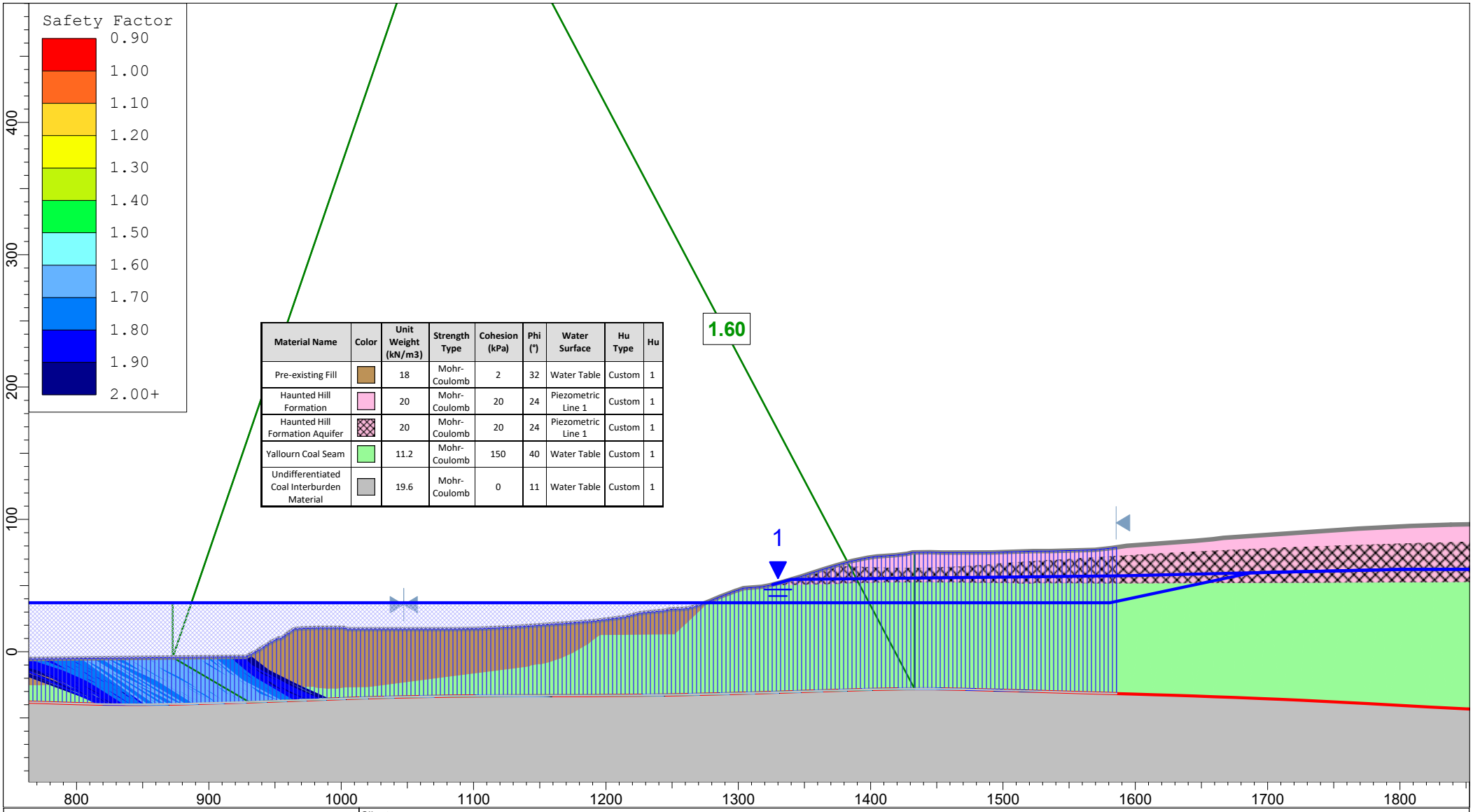
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07b	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



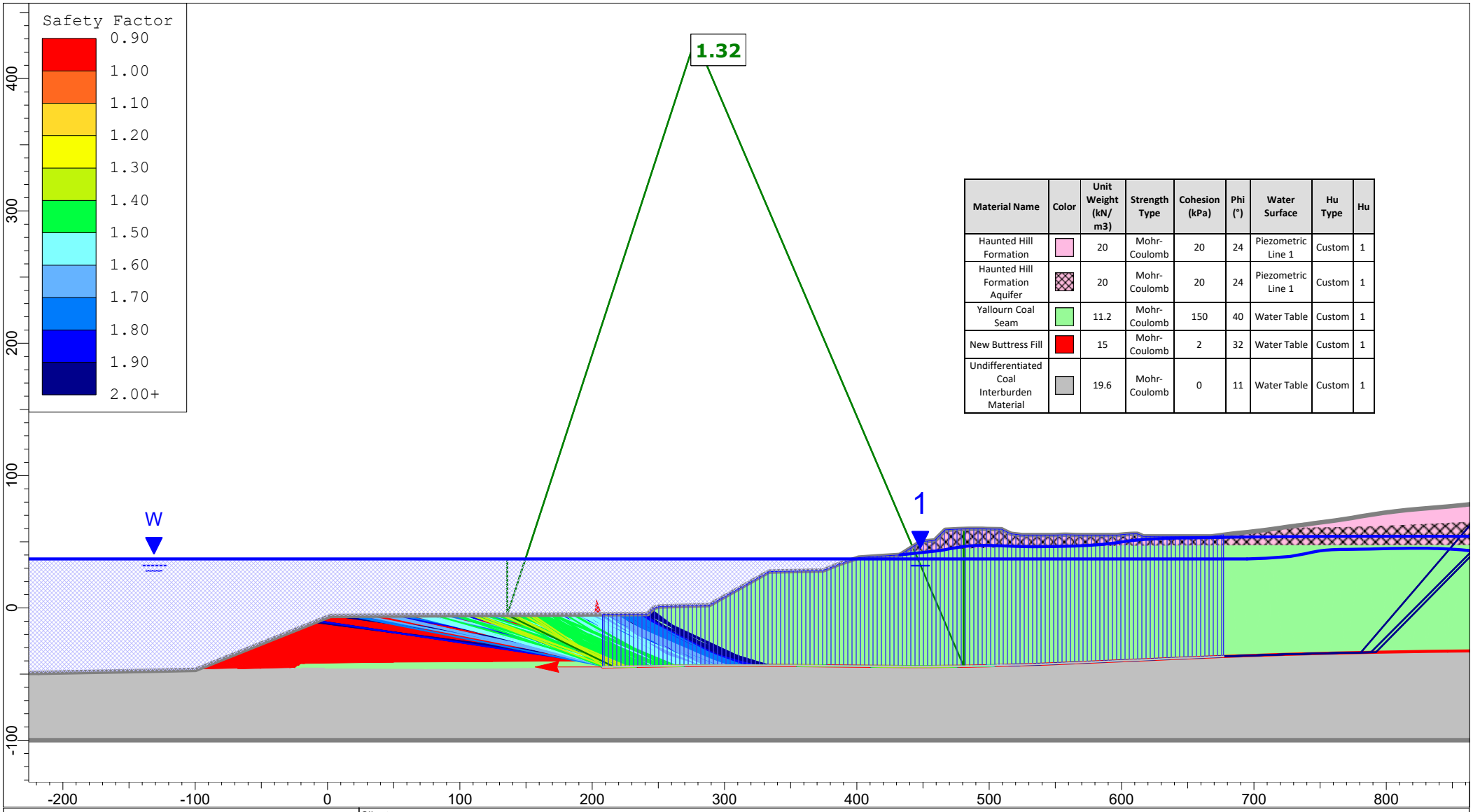
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



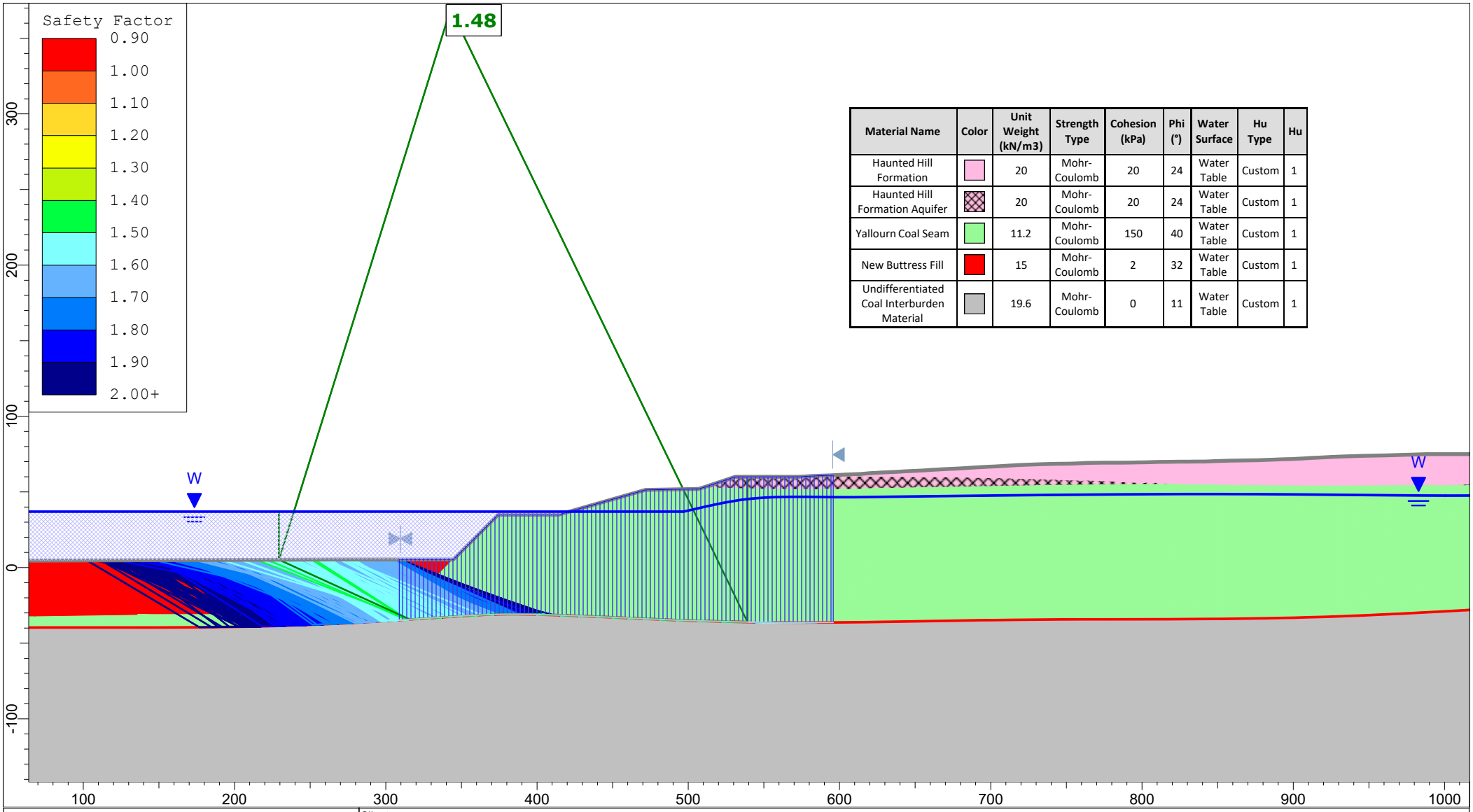
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YEFX-SB**
Section:	**Section 10**	Case:	**Block slide with full TC - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake full - lake level at 37 mRL**
Notes:	**Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface**		



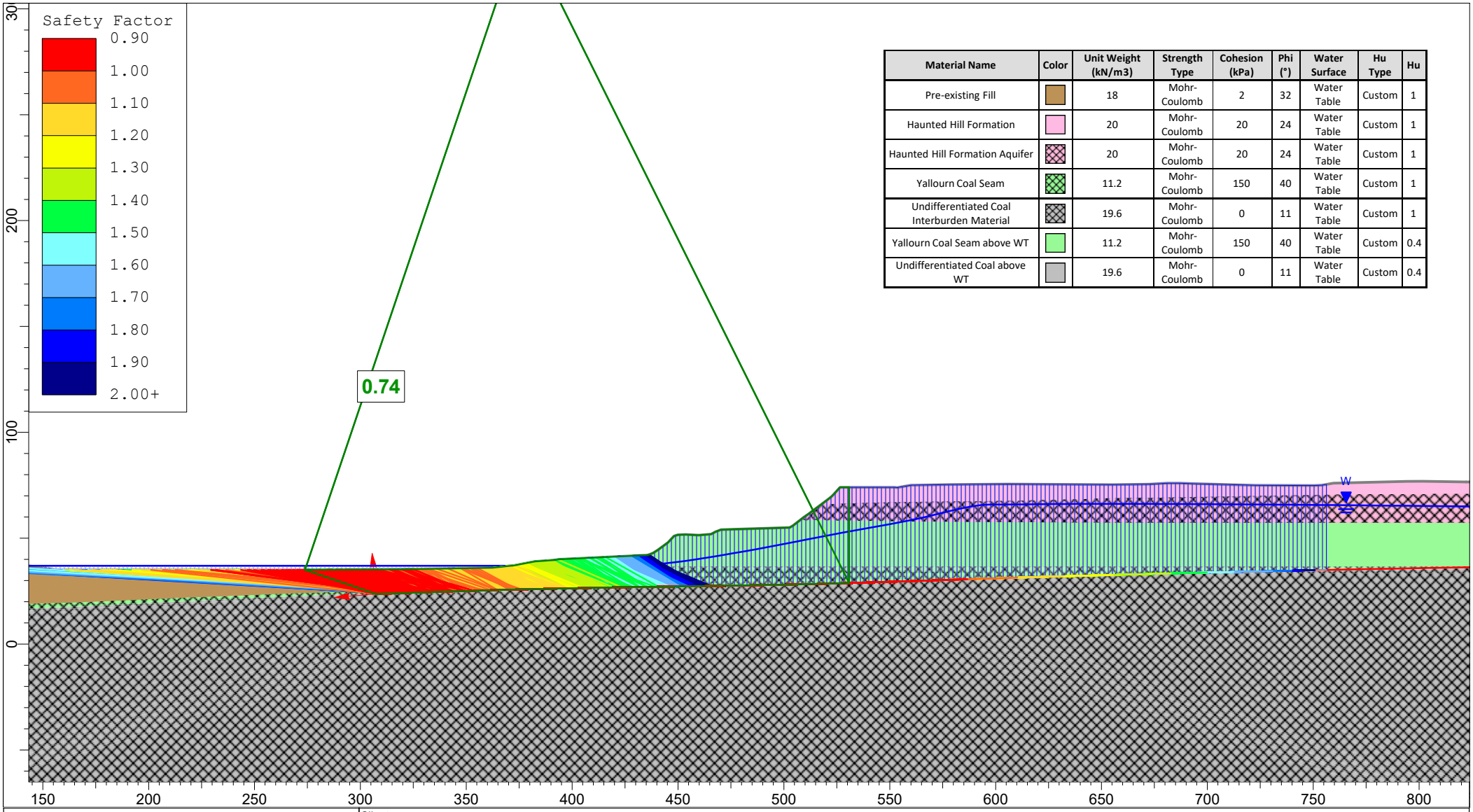
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



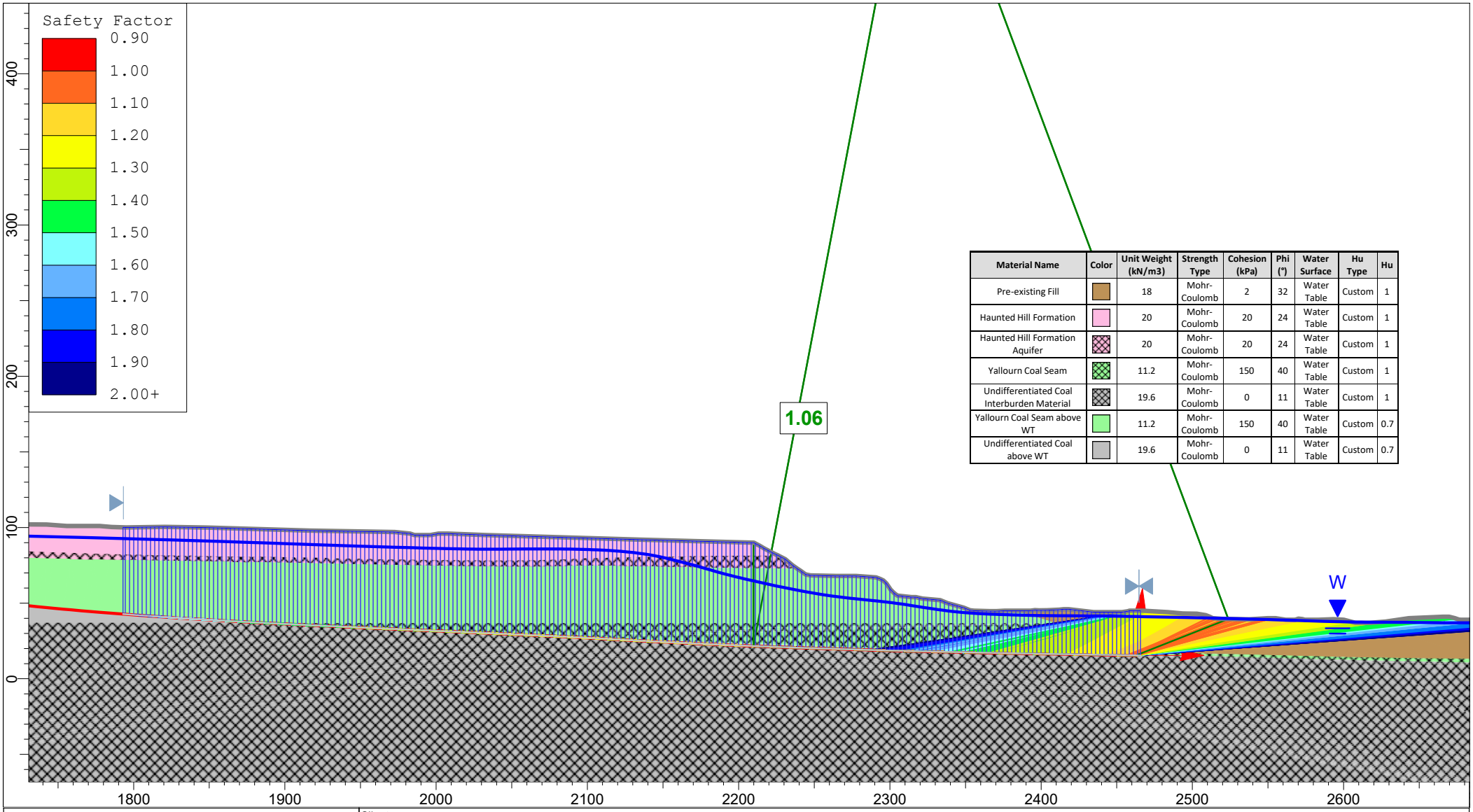
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



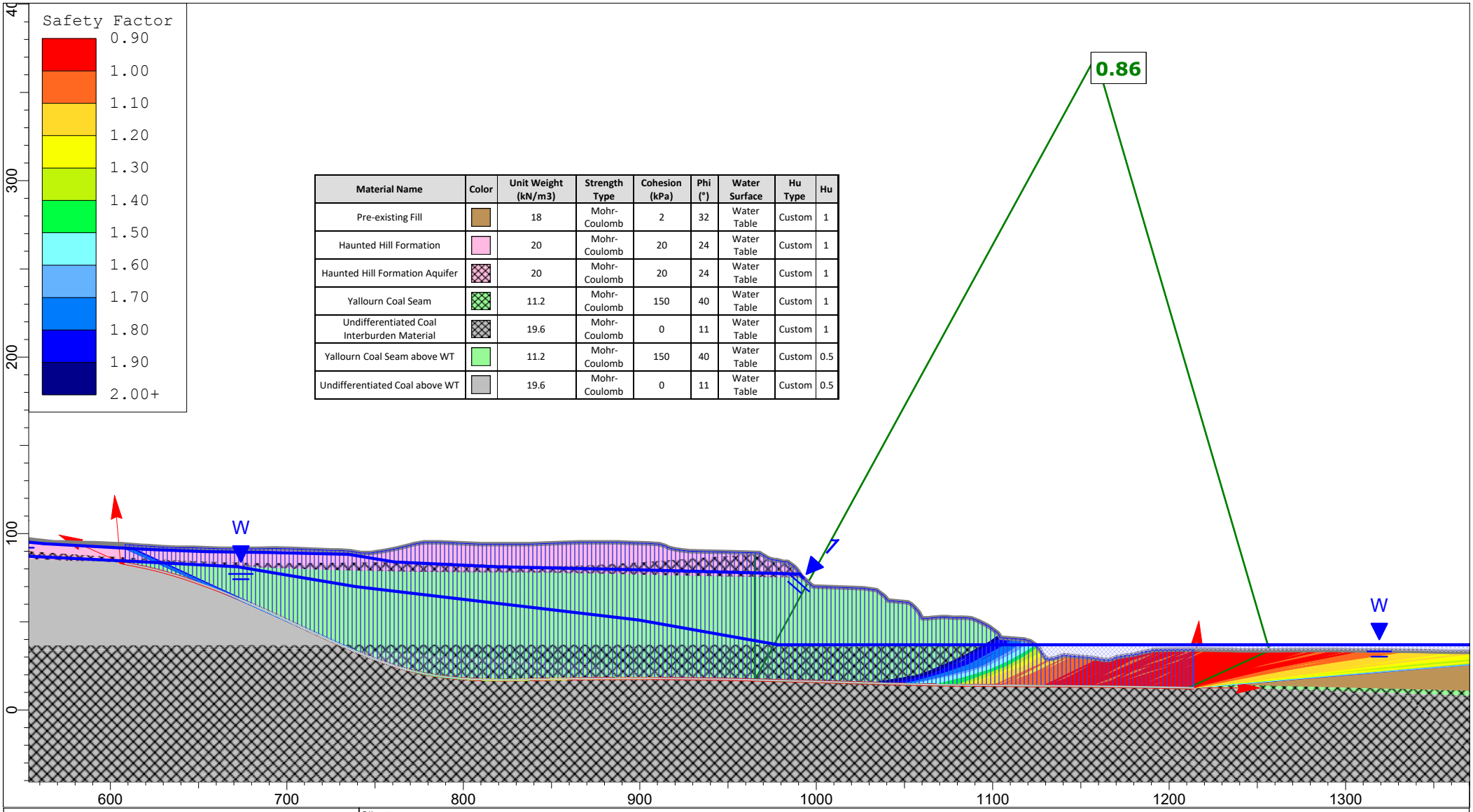
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SB
Section:	Section 19	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



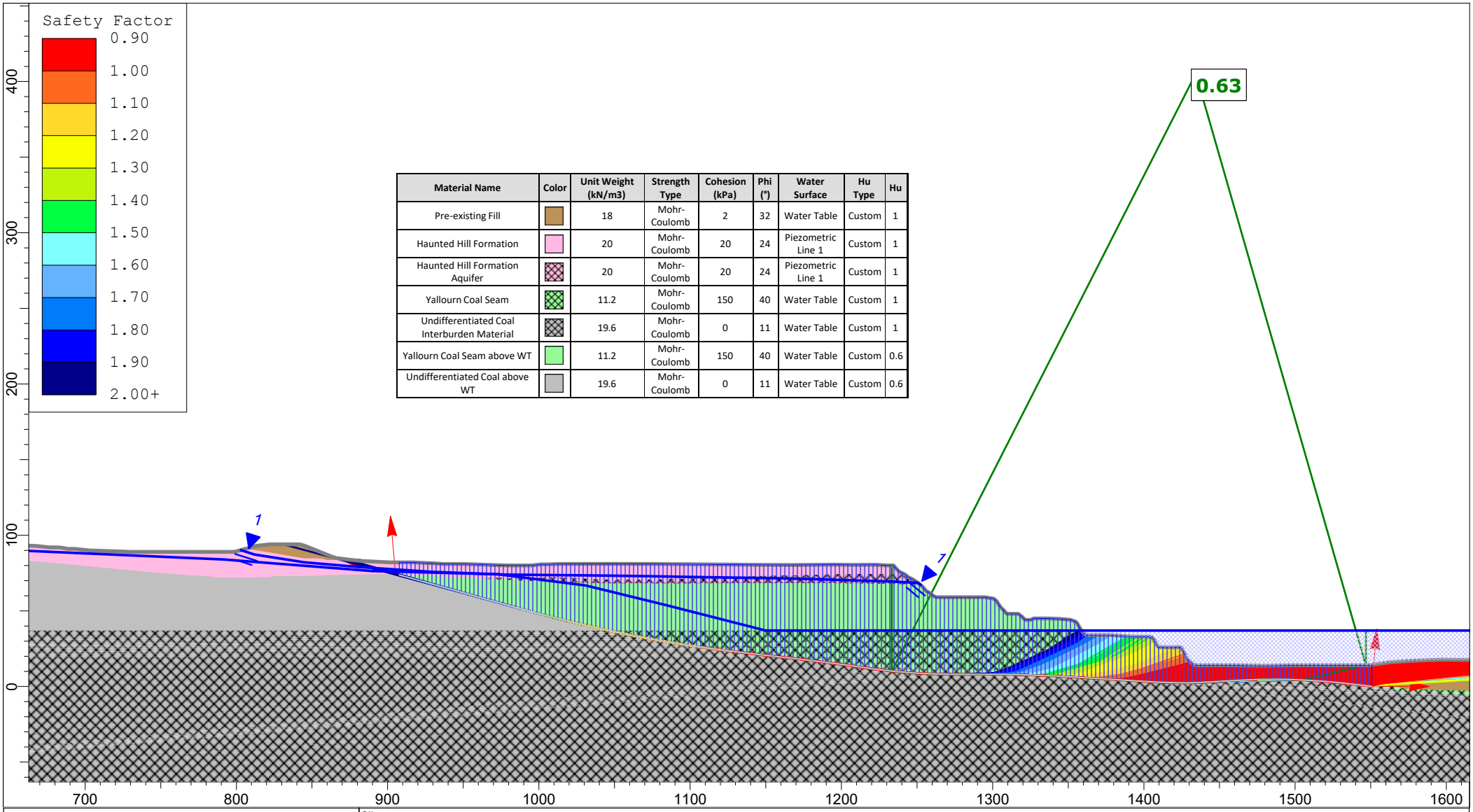
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 20	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



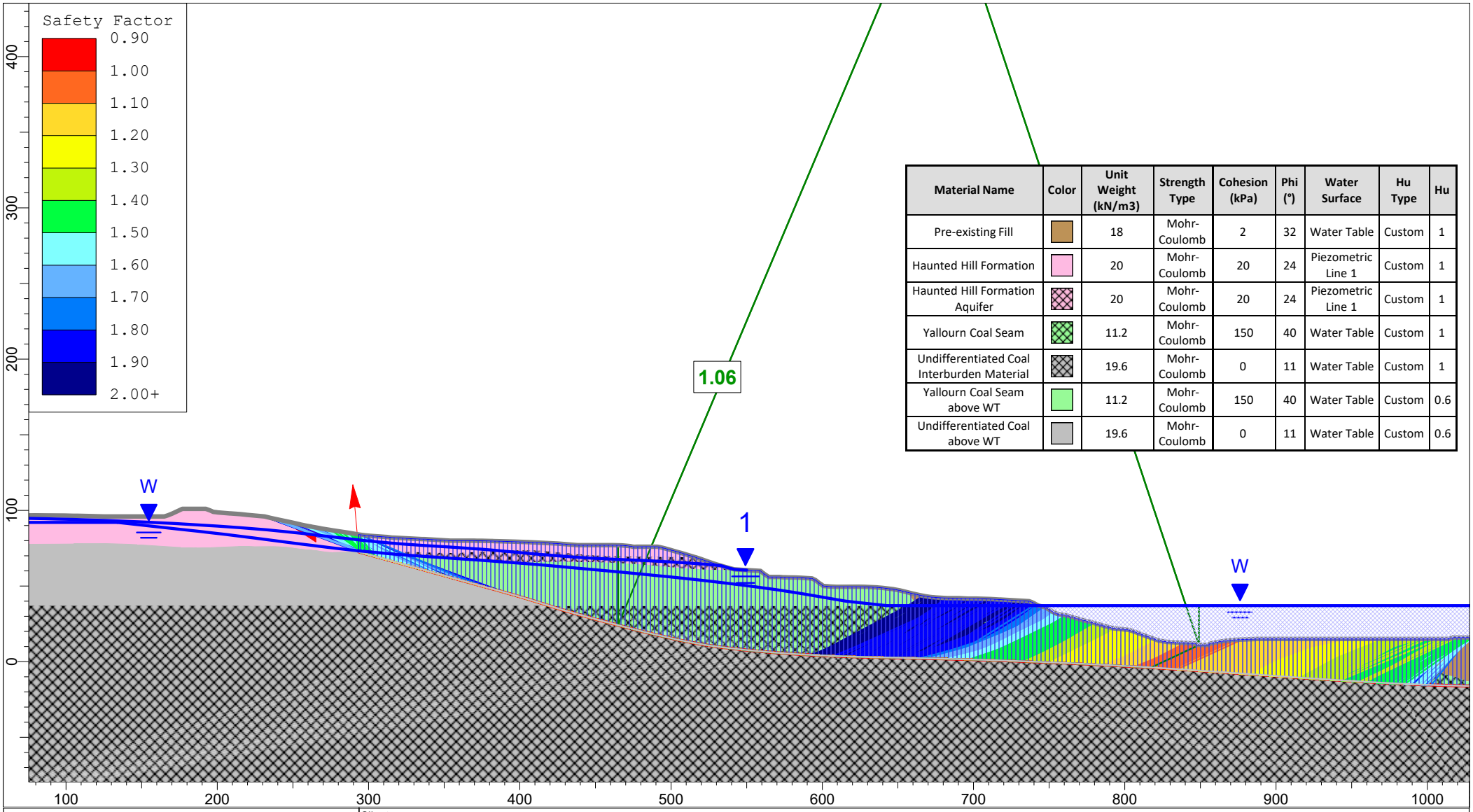
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (South)
Section:	Section 22	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



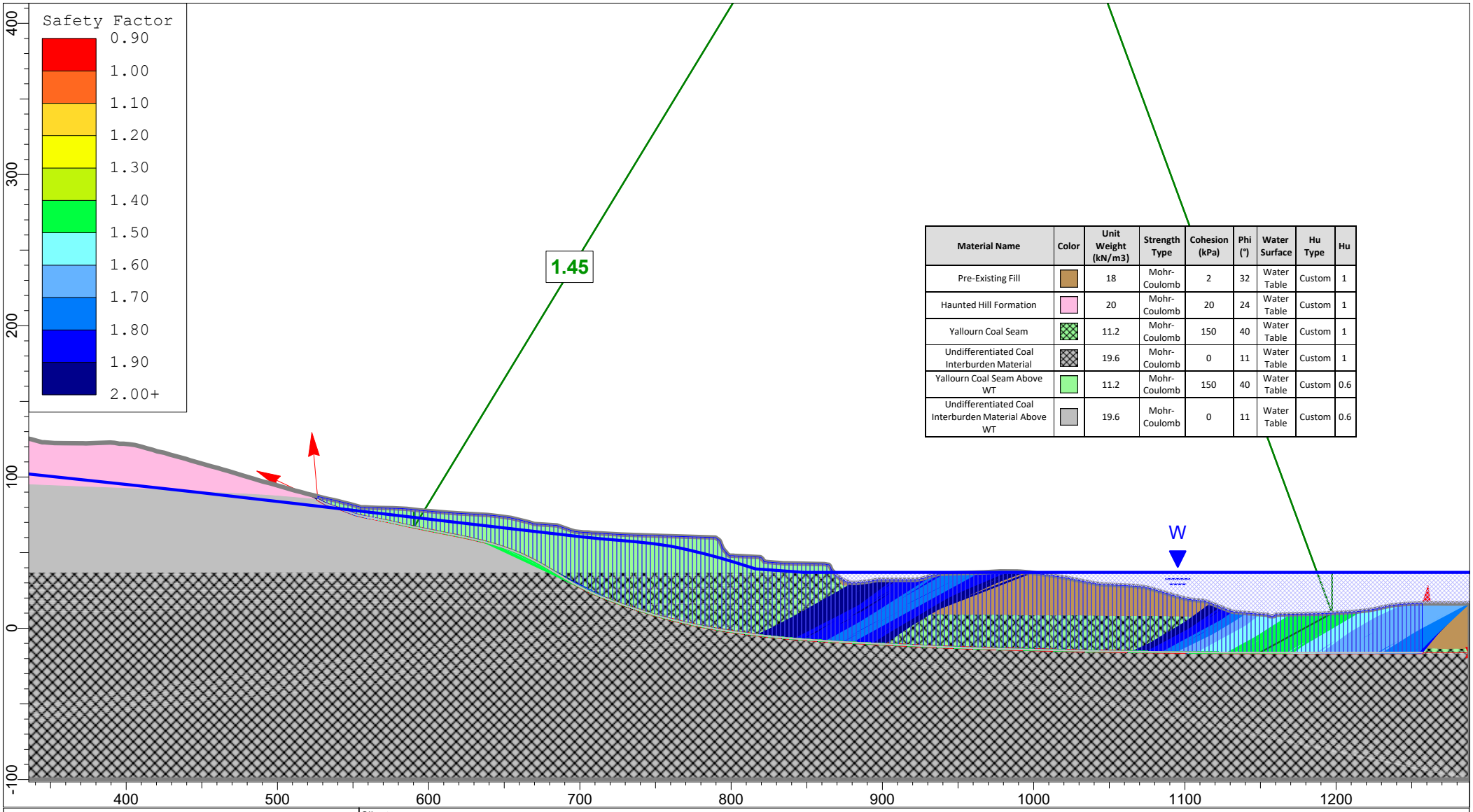
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



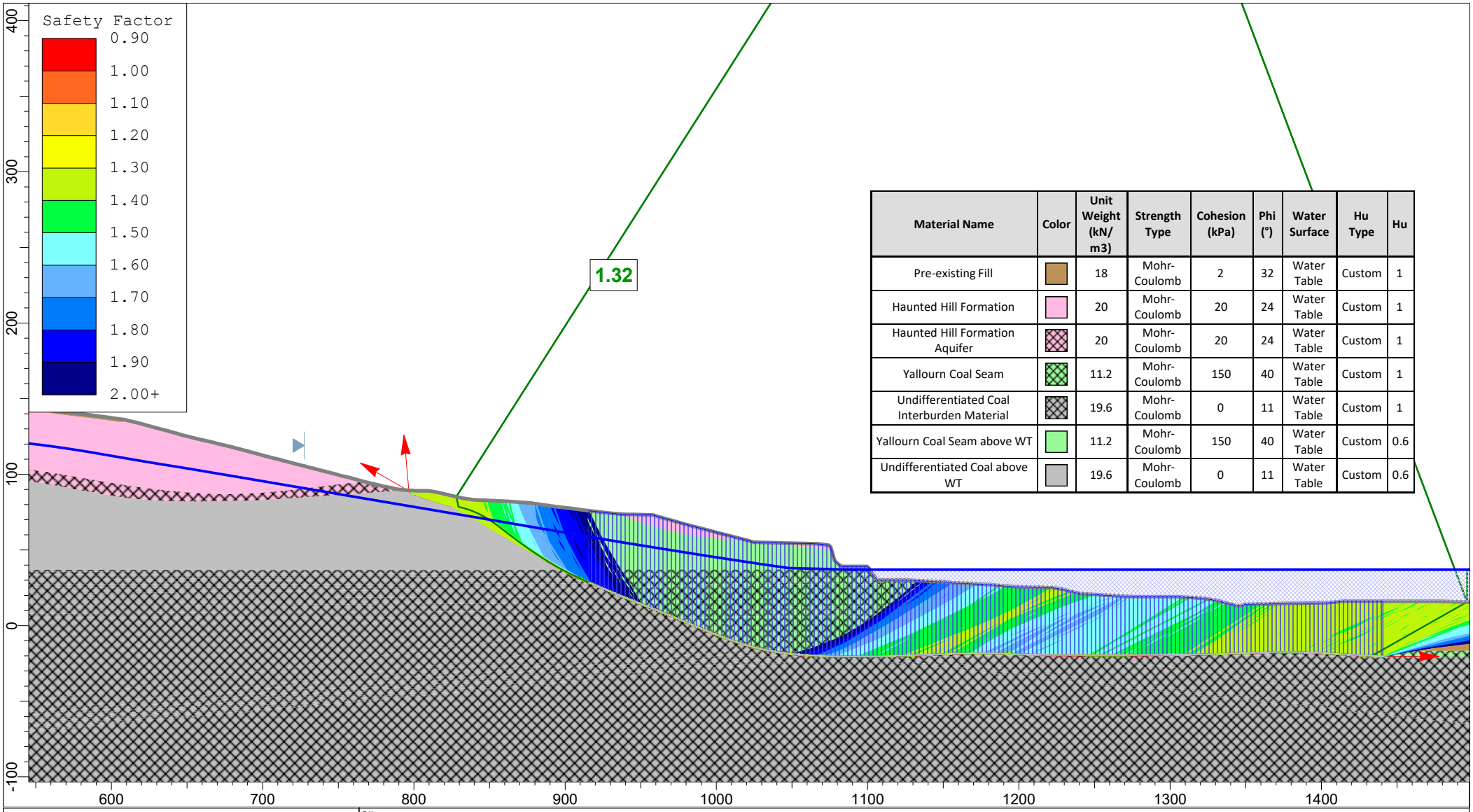
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam Above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material Above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

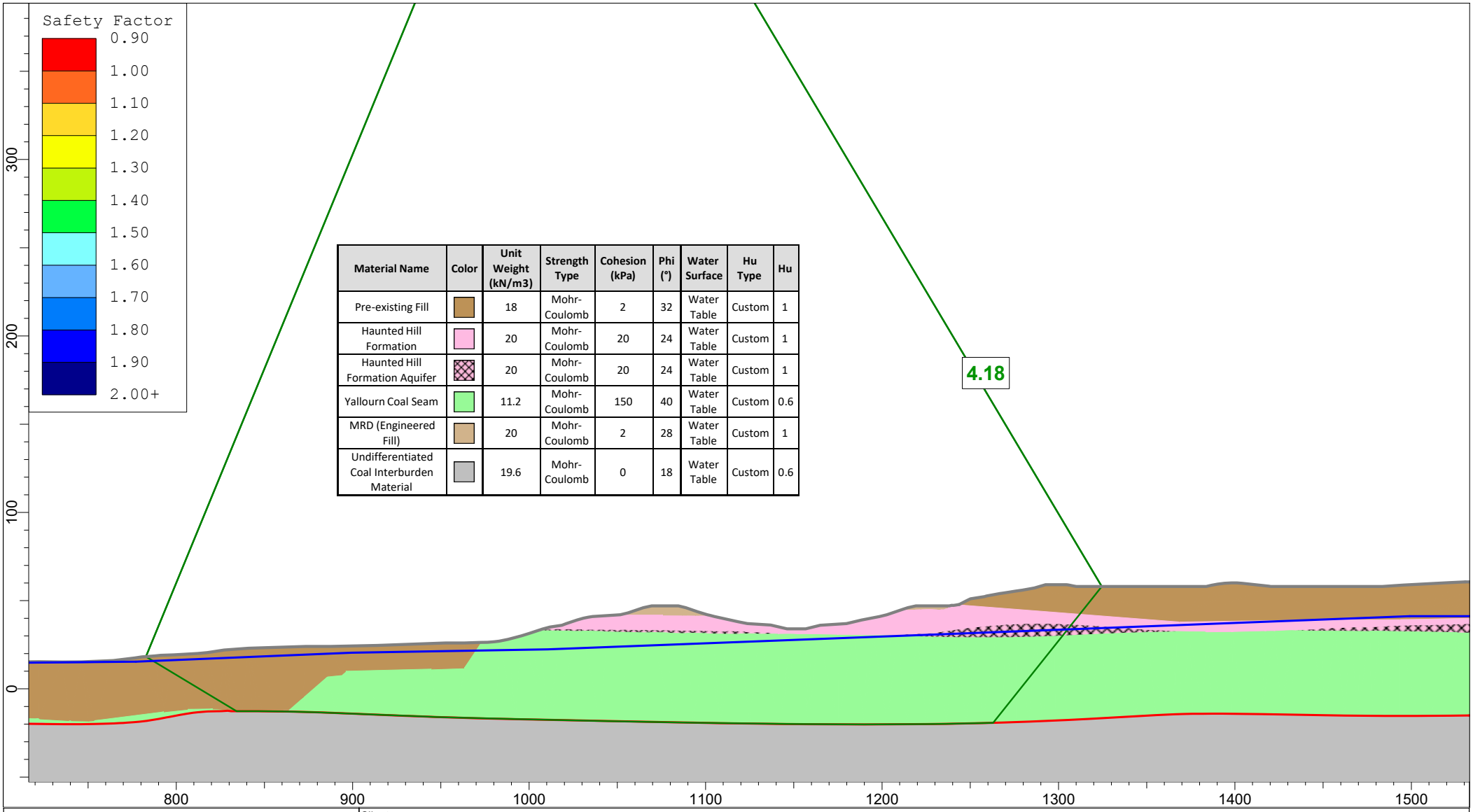
Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



Material Name	Color	Unit Weight (kN/ m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

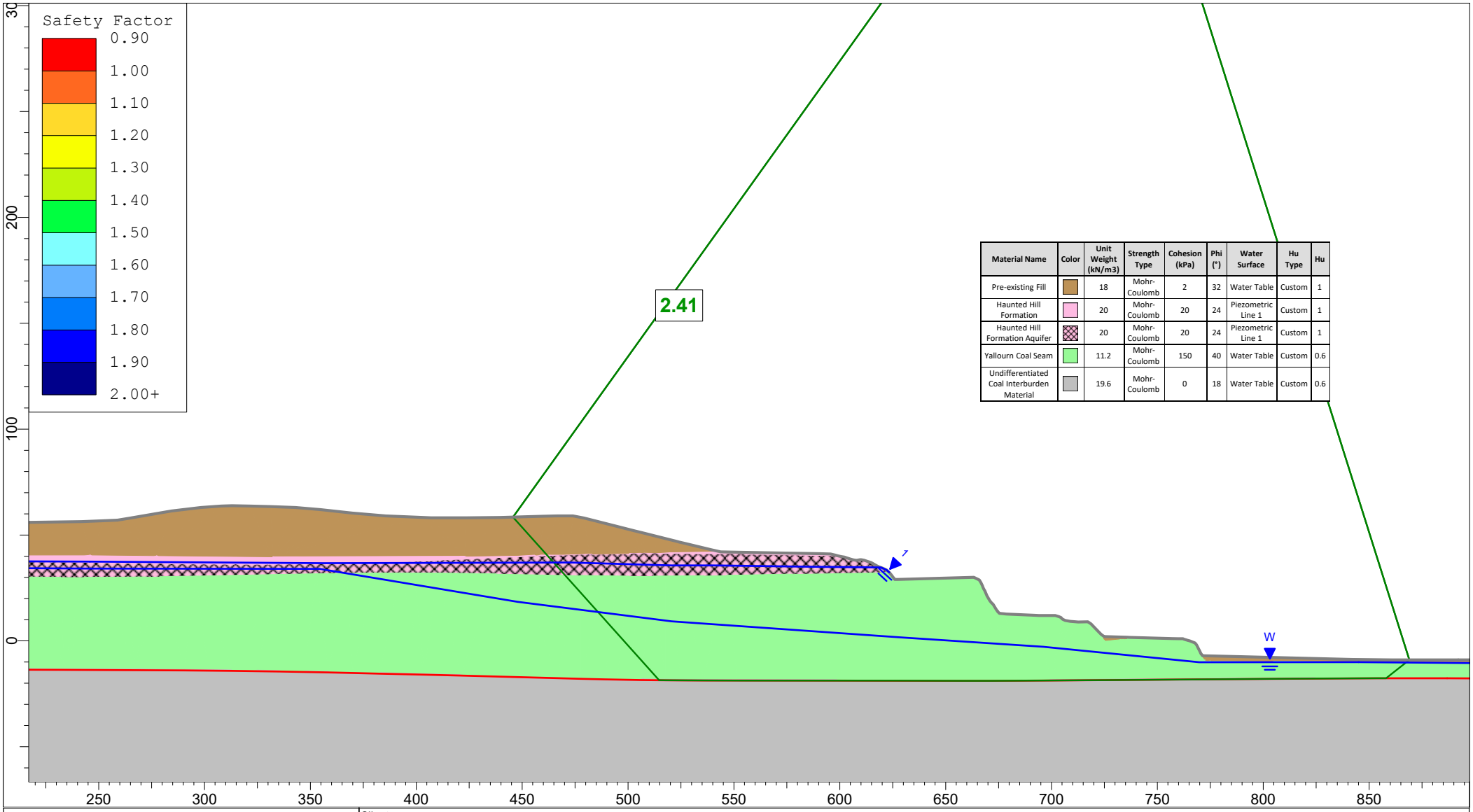
Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		

Appendix F.4
Sensitivity cases outputs



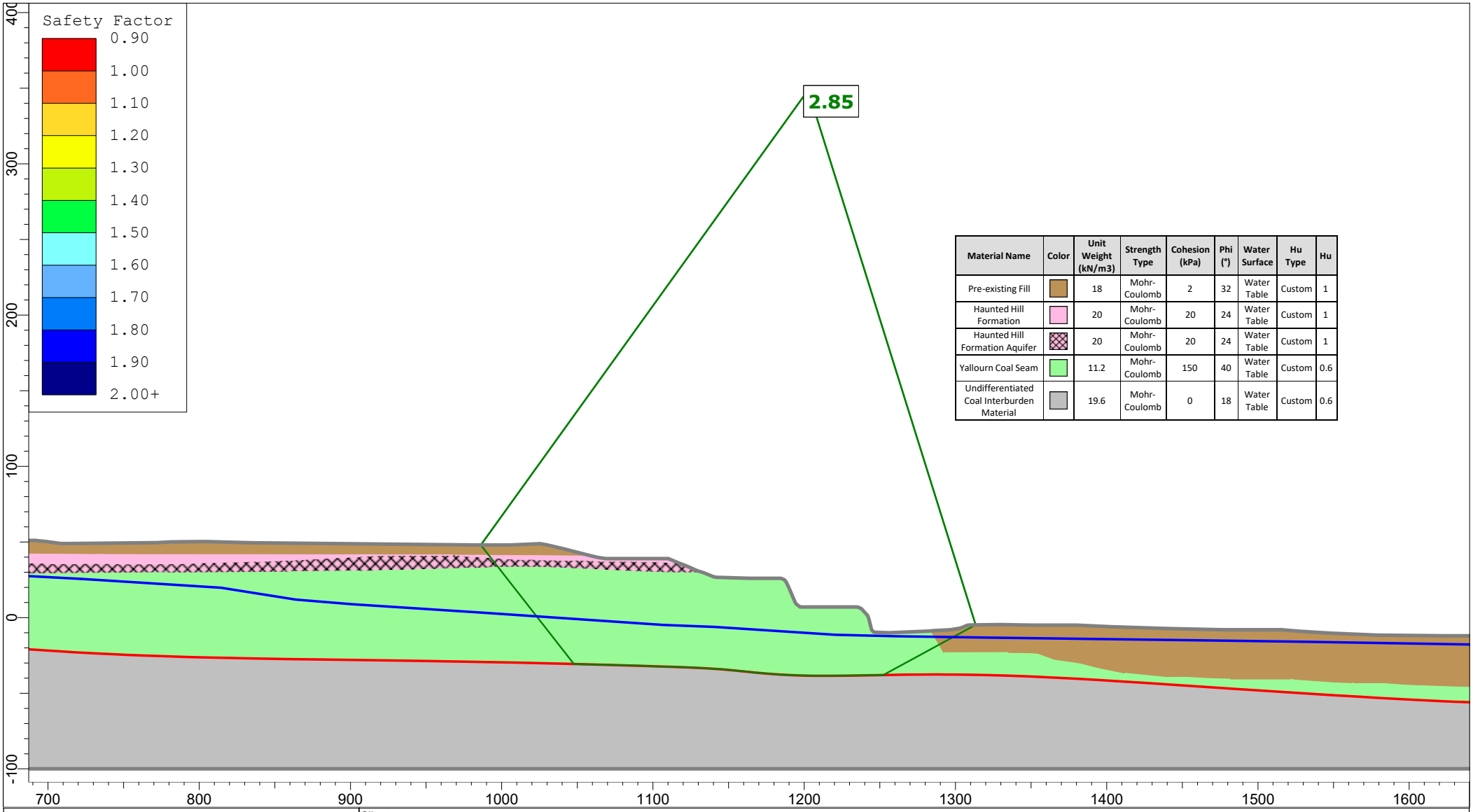
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



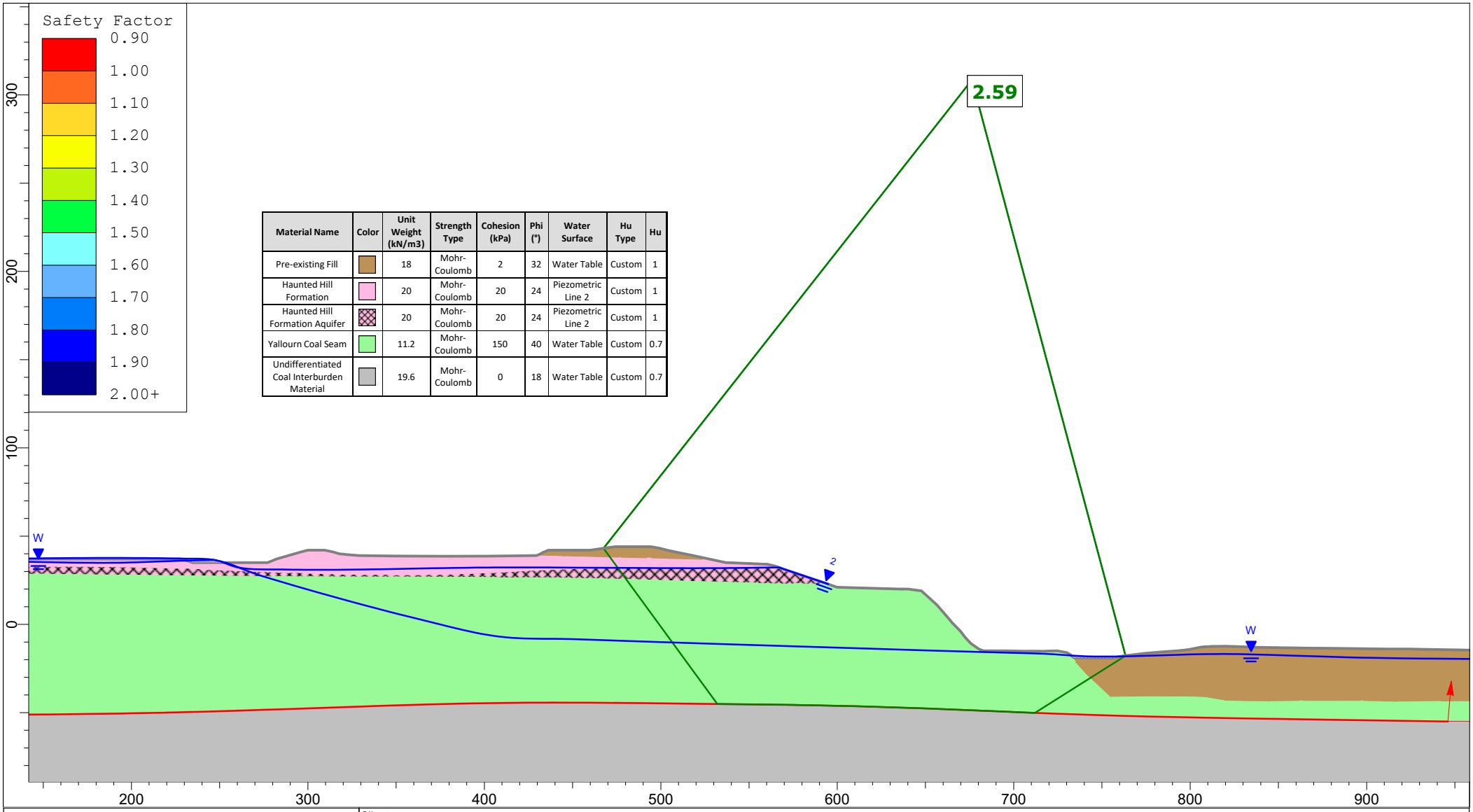
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 02	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



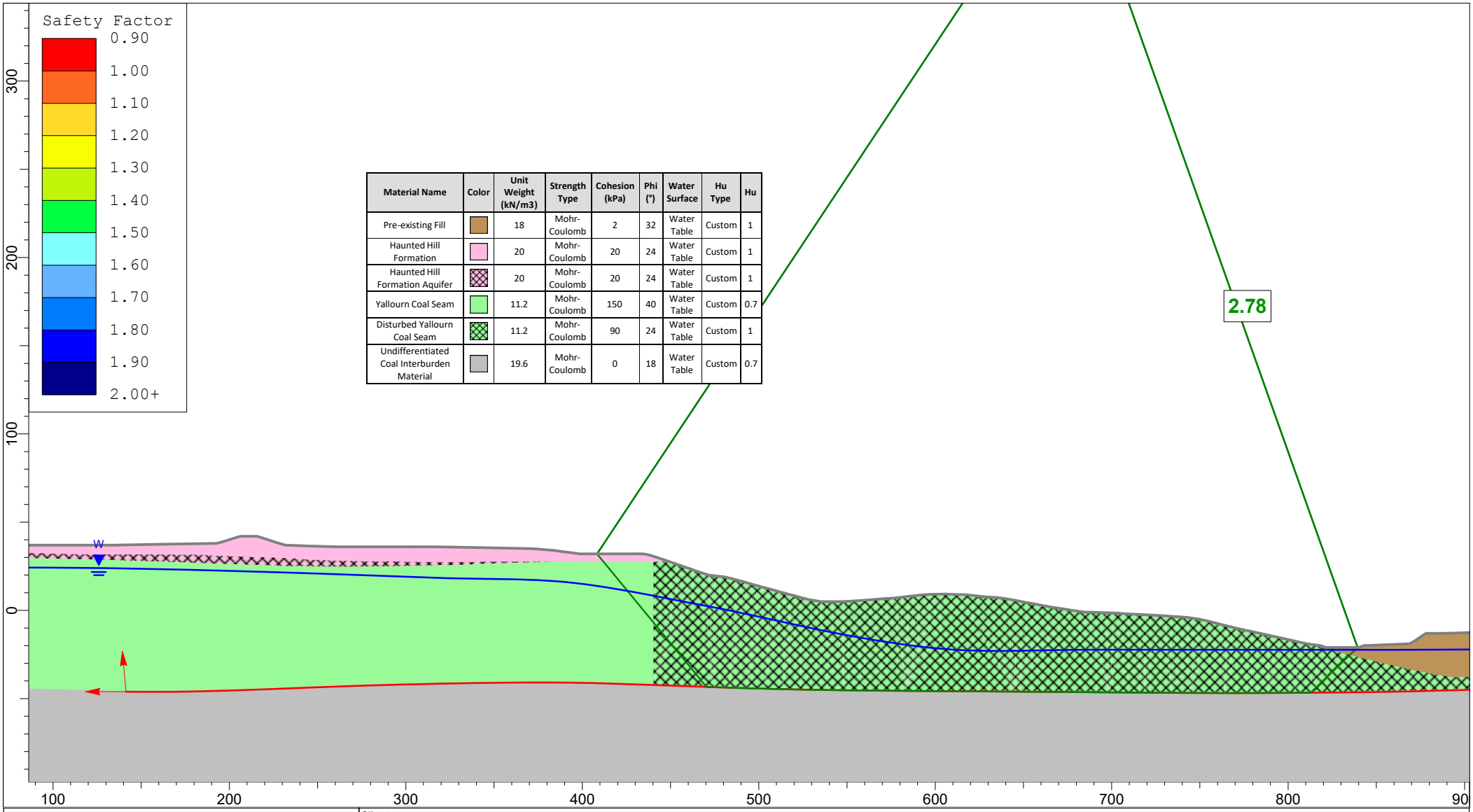
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (east)
Section:	Section 03	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



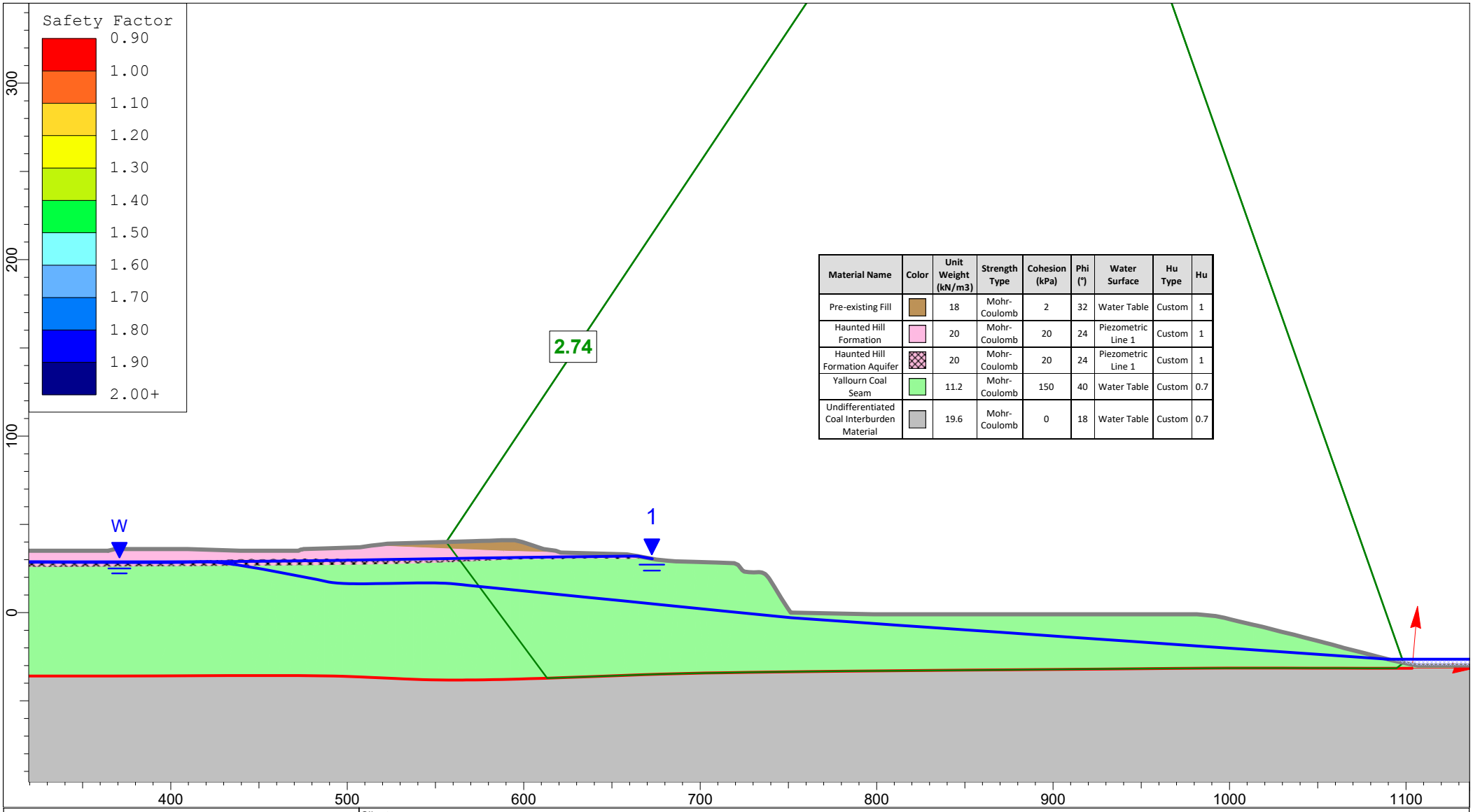
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



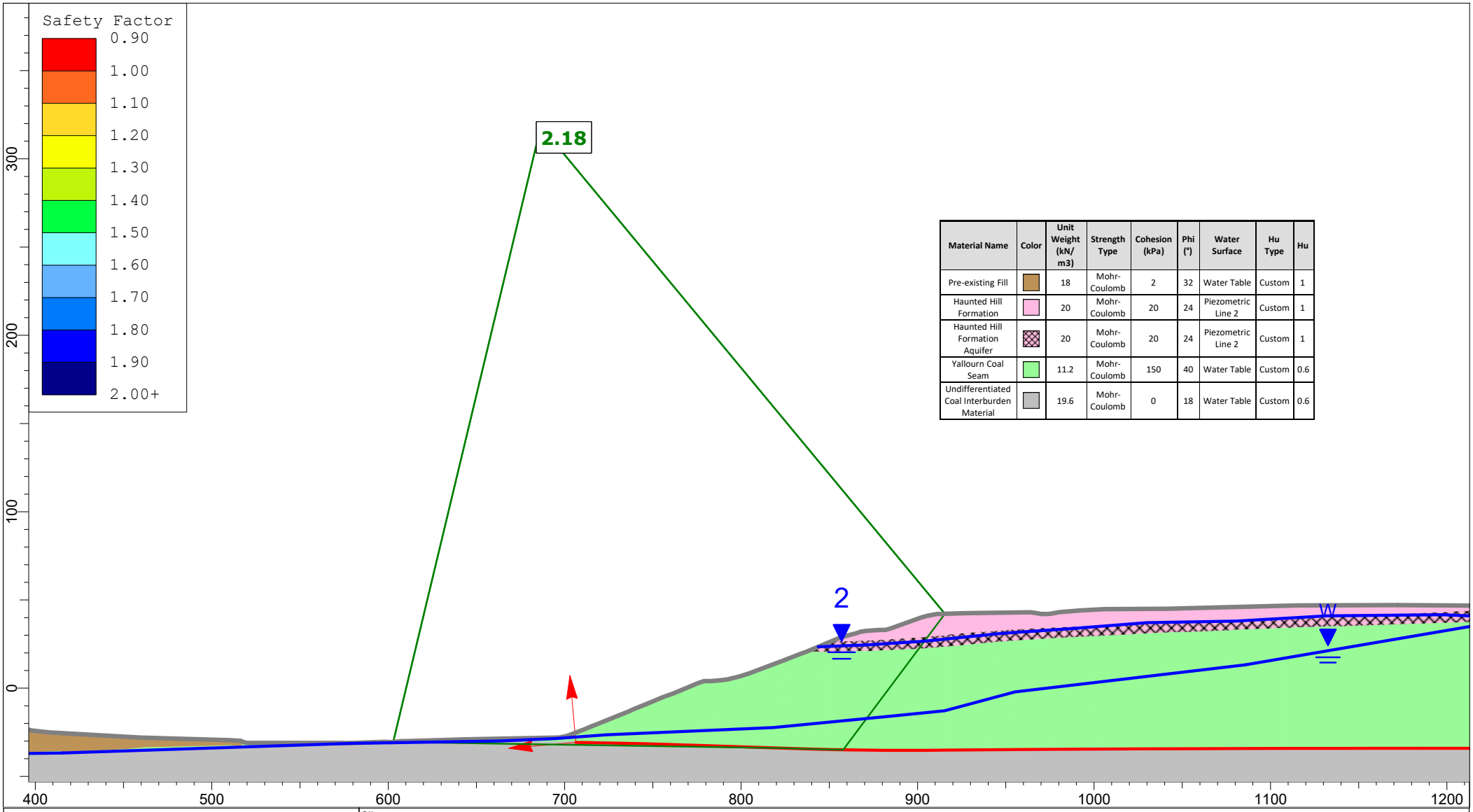
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



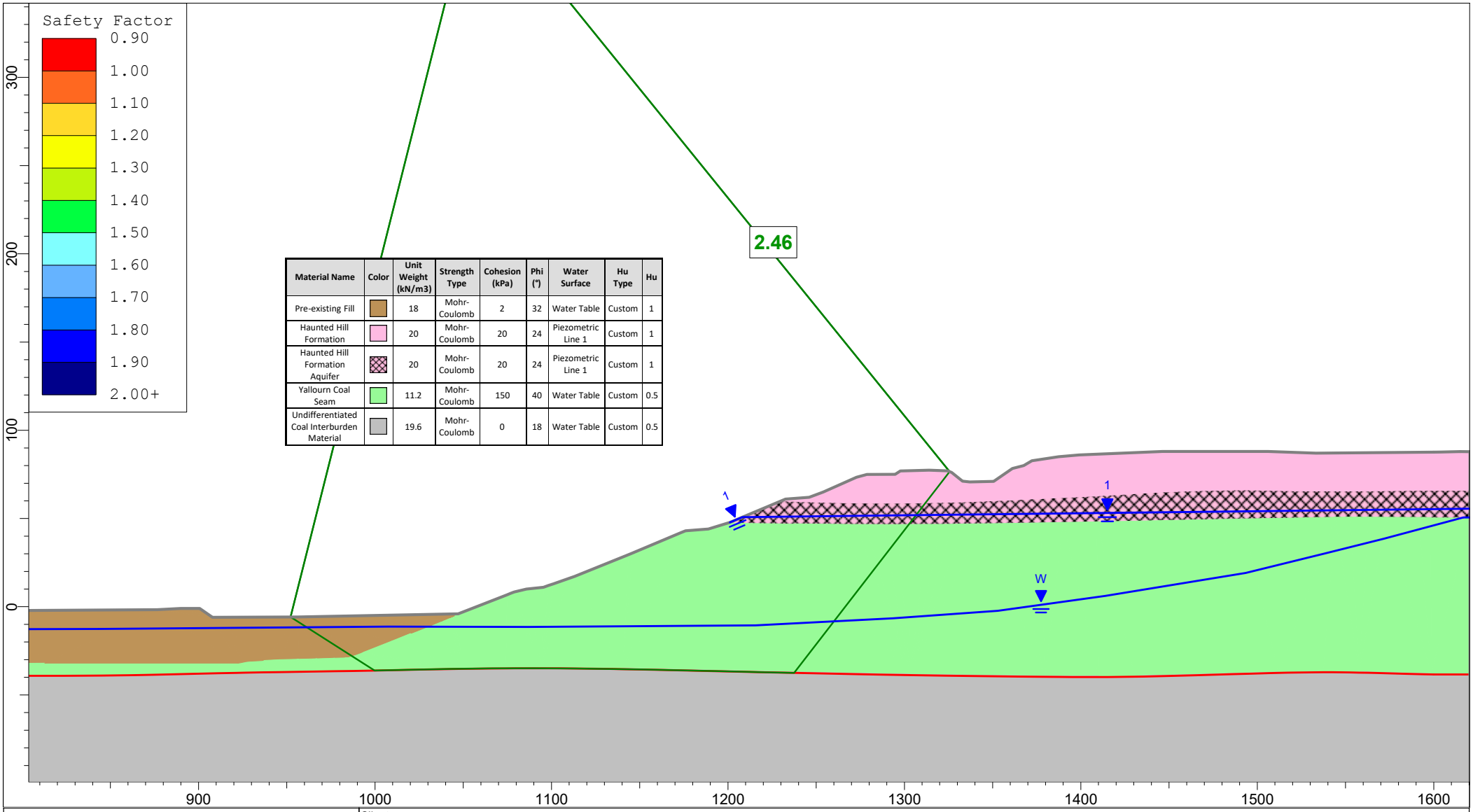
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



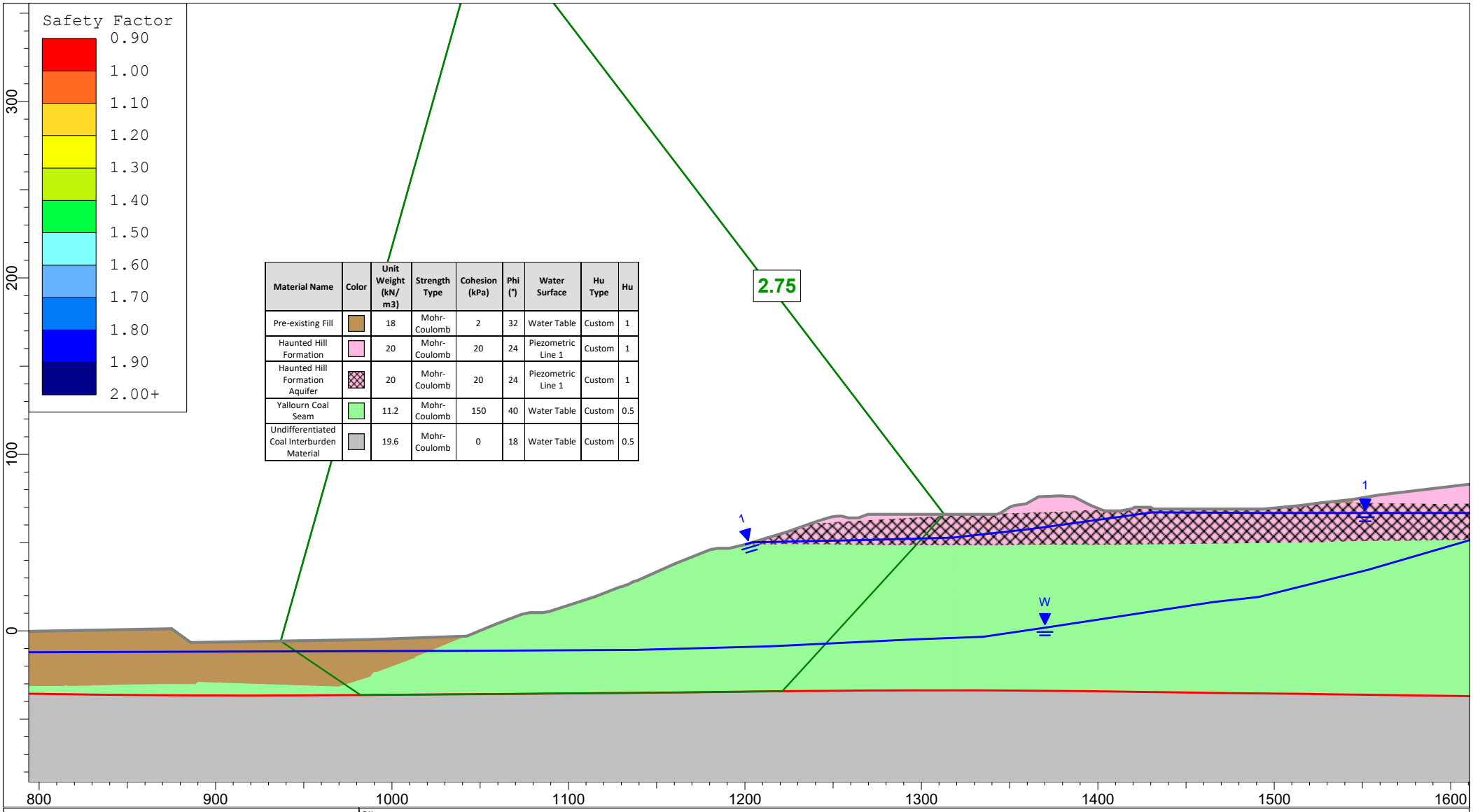
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



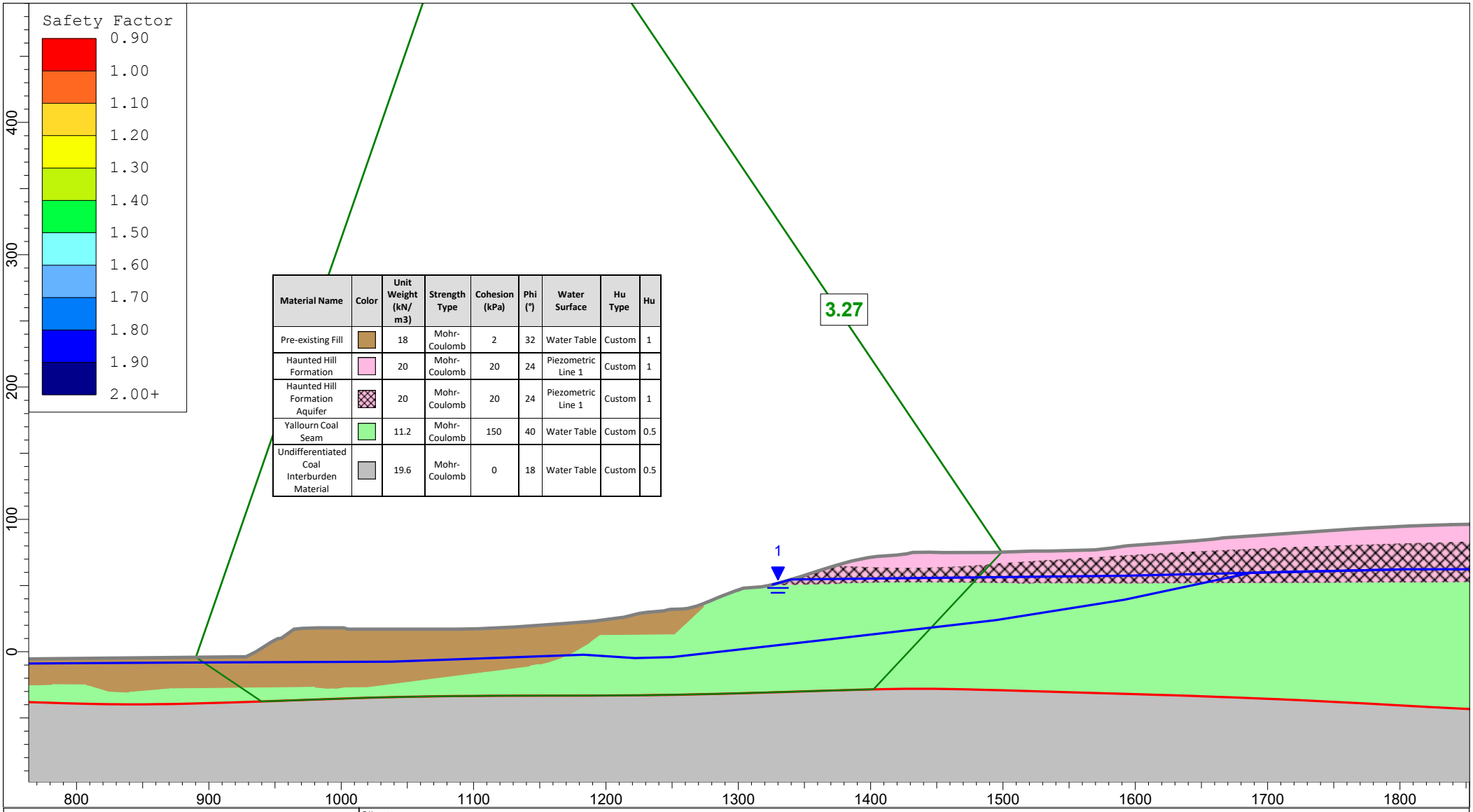
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



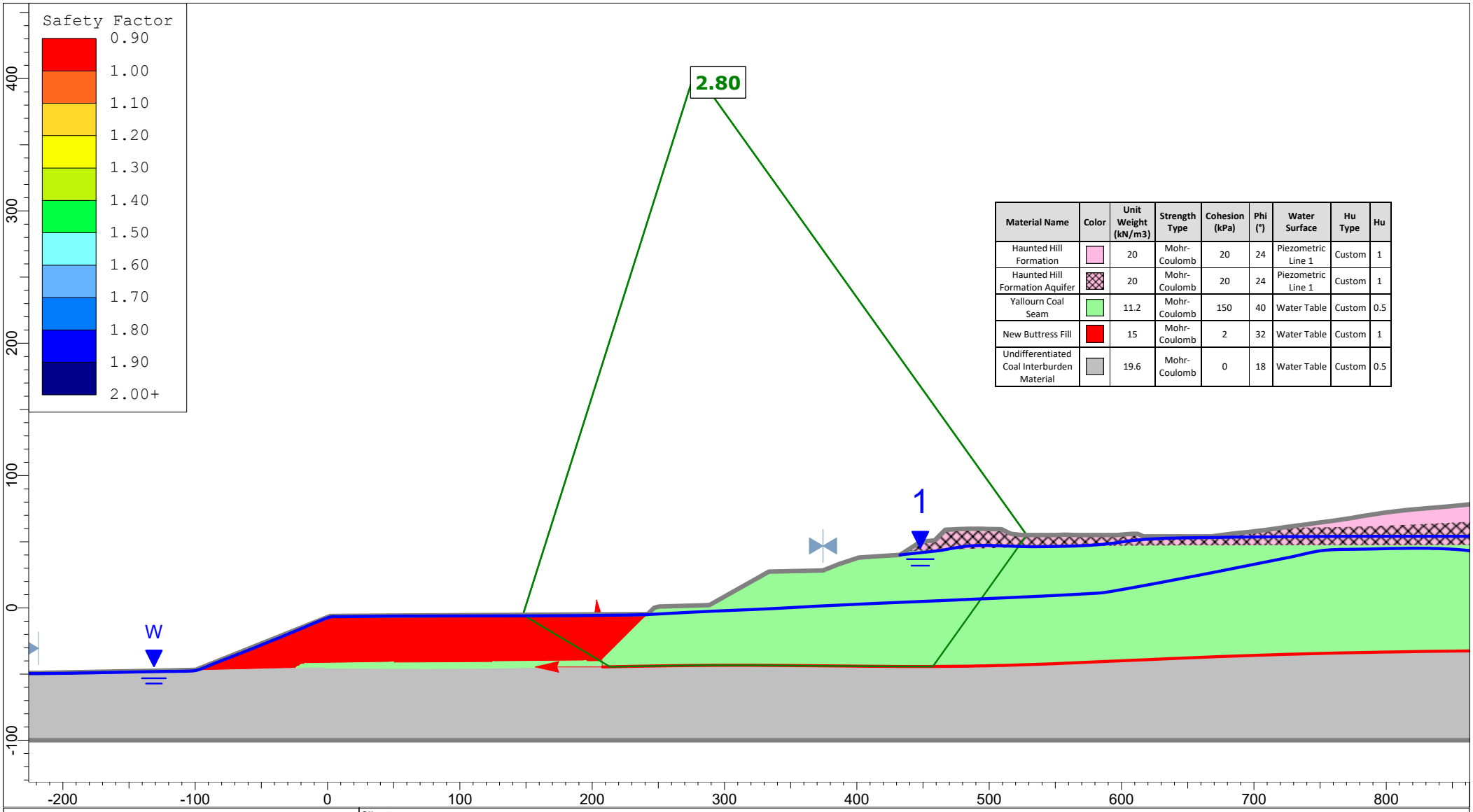
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



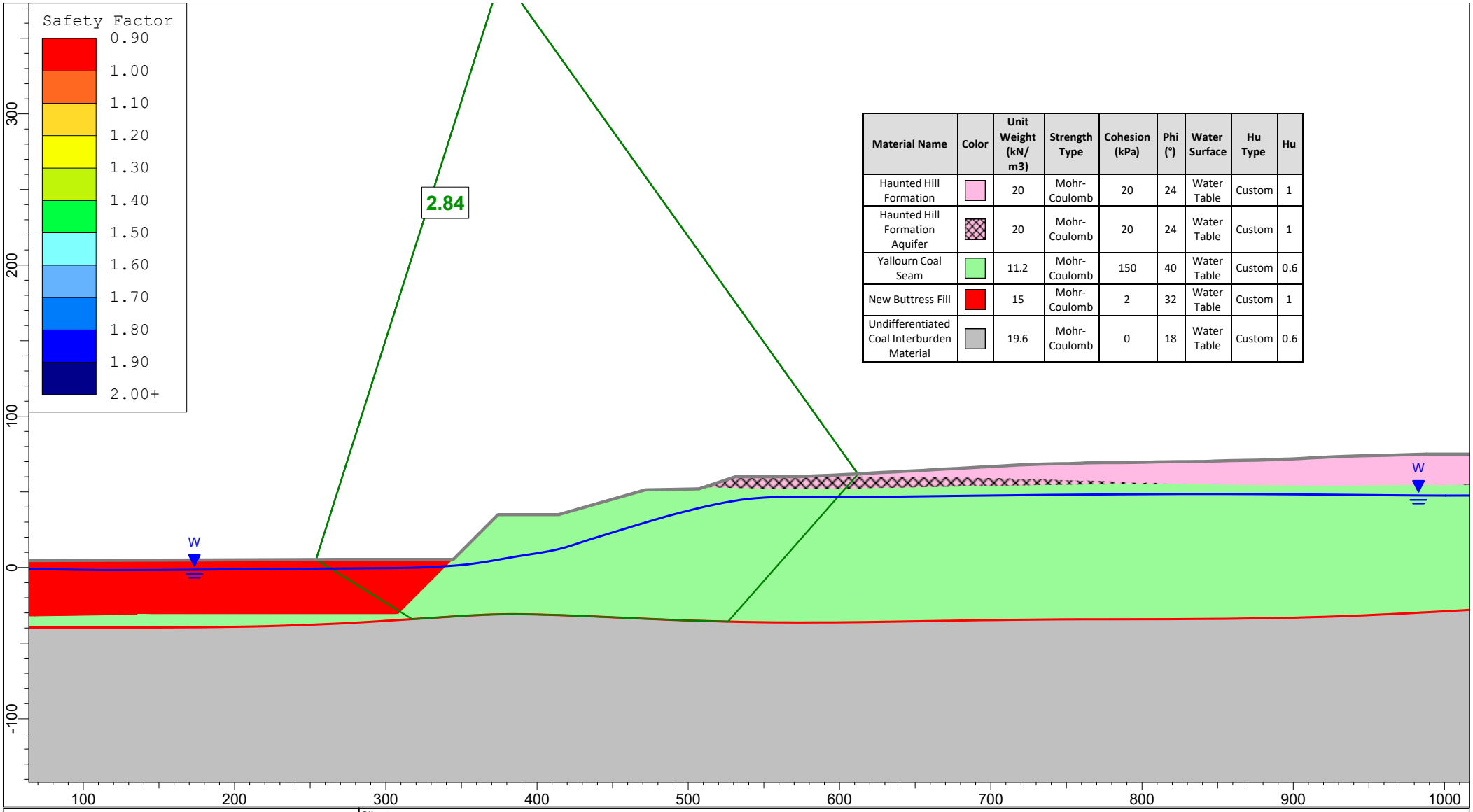
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



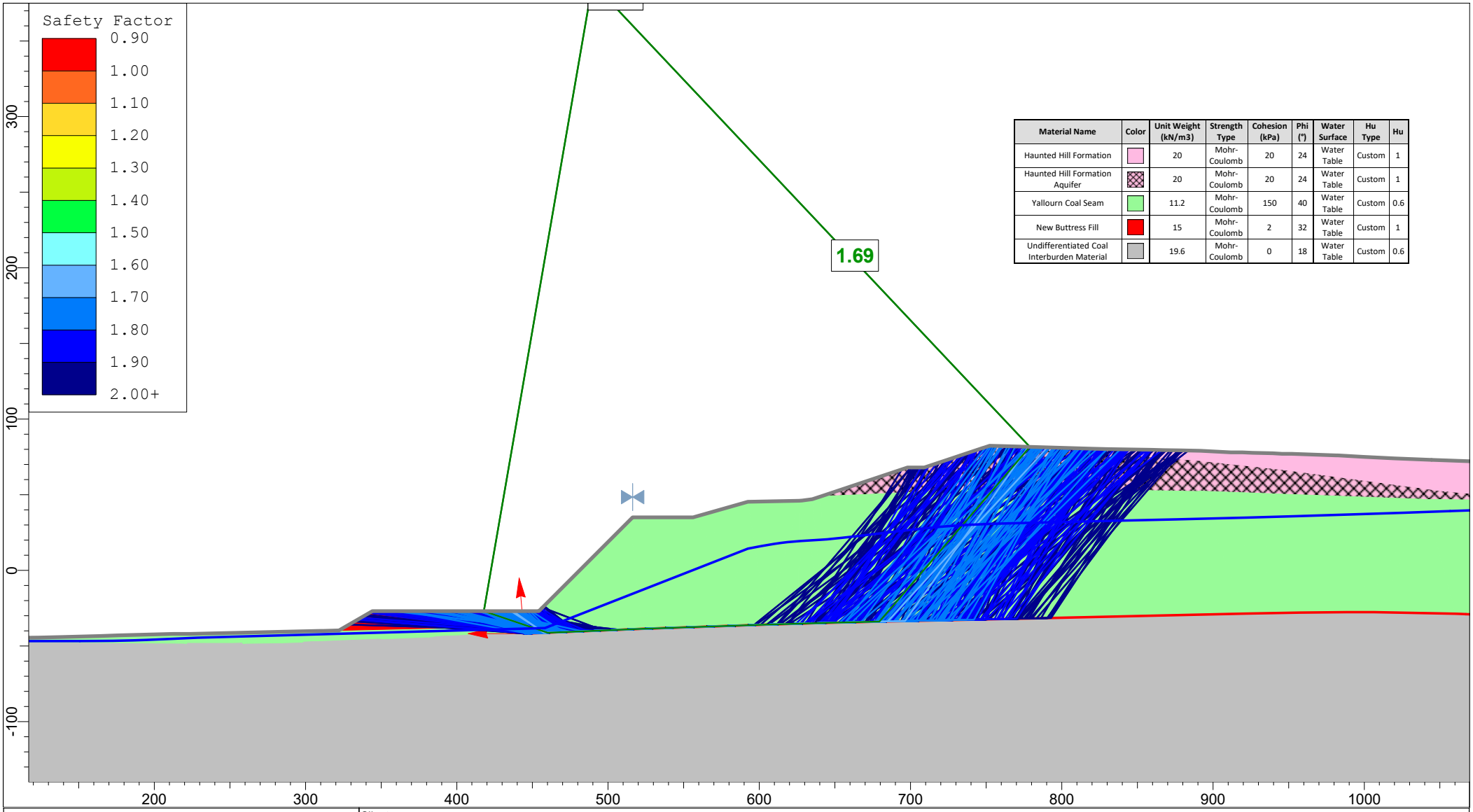
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



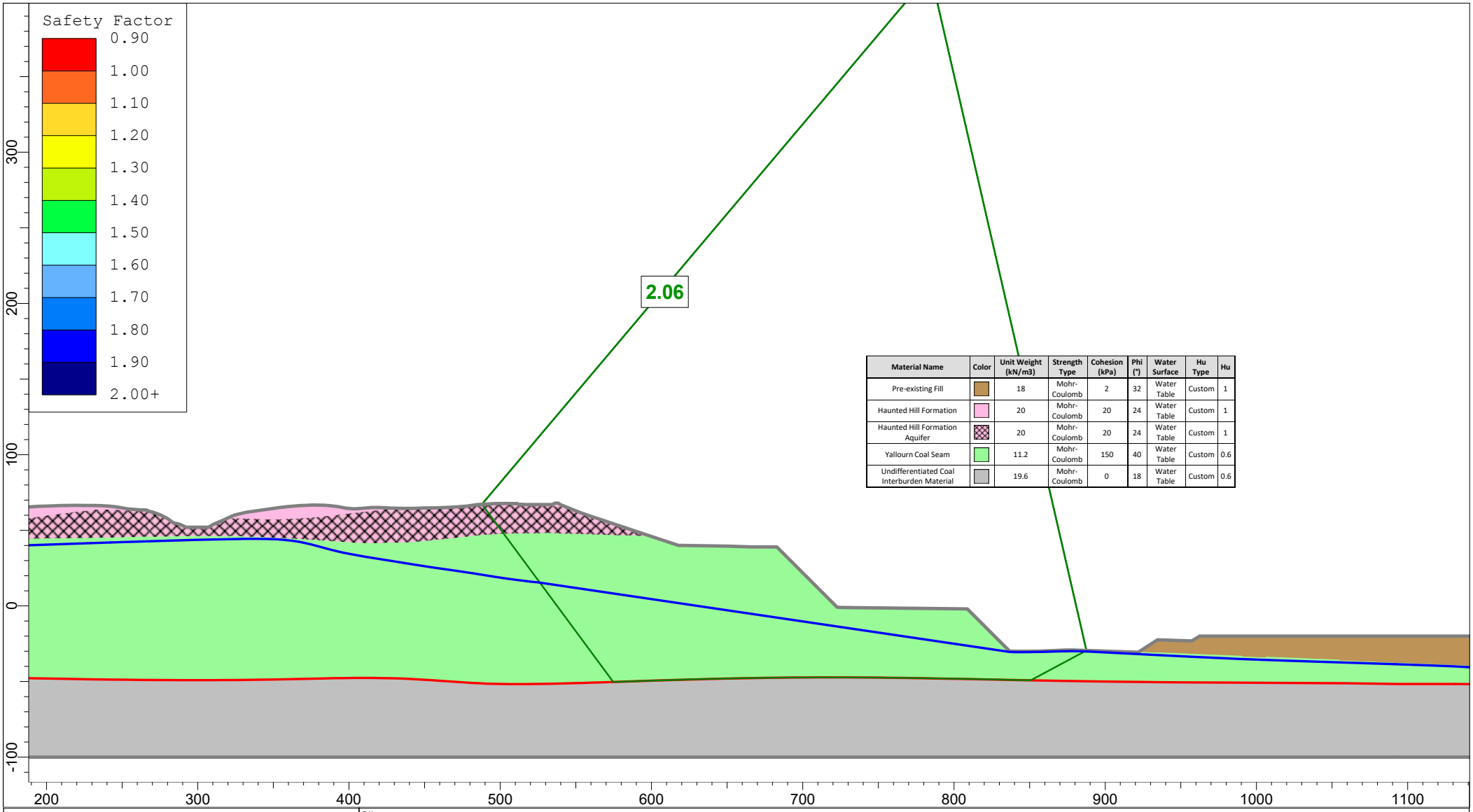
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



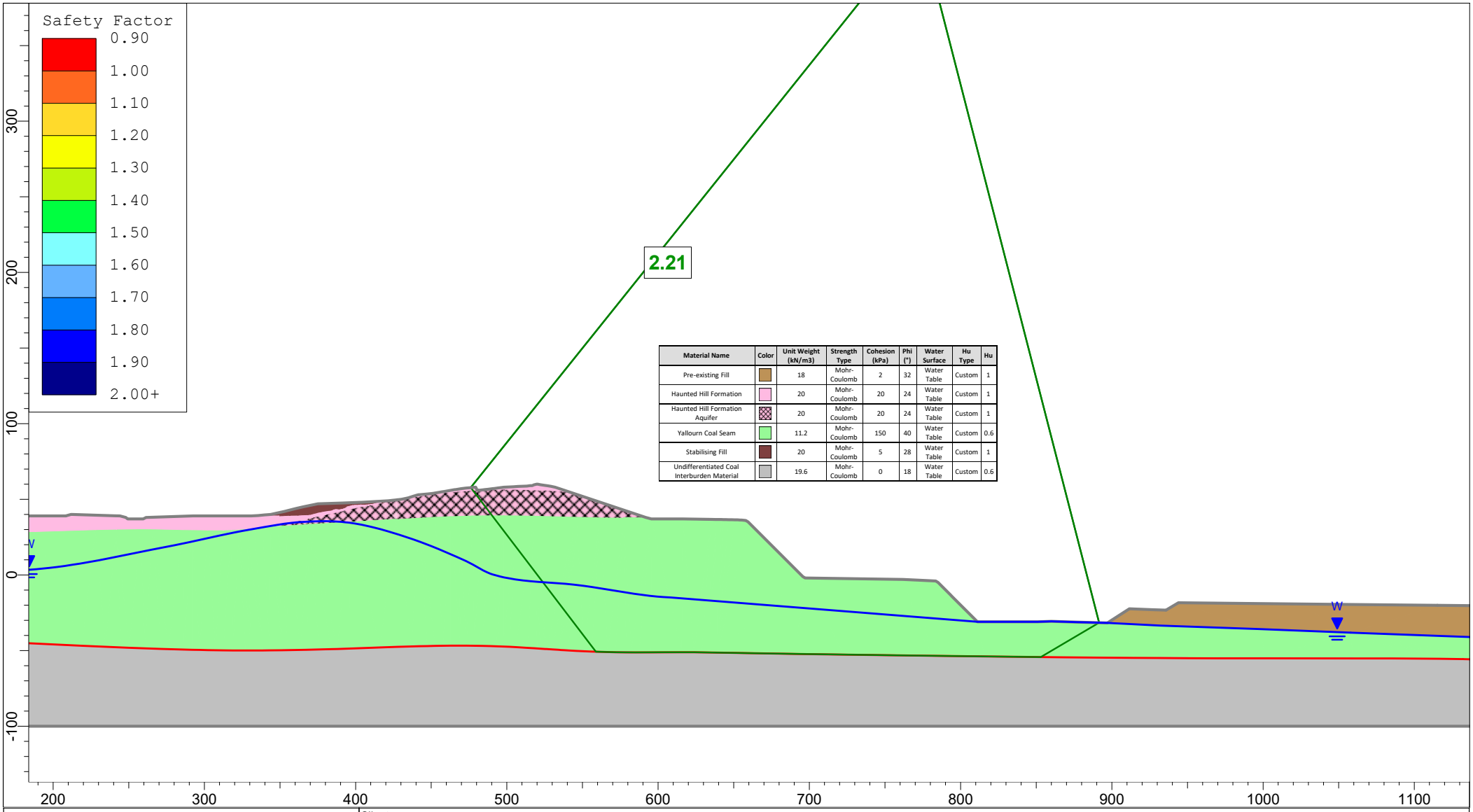
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



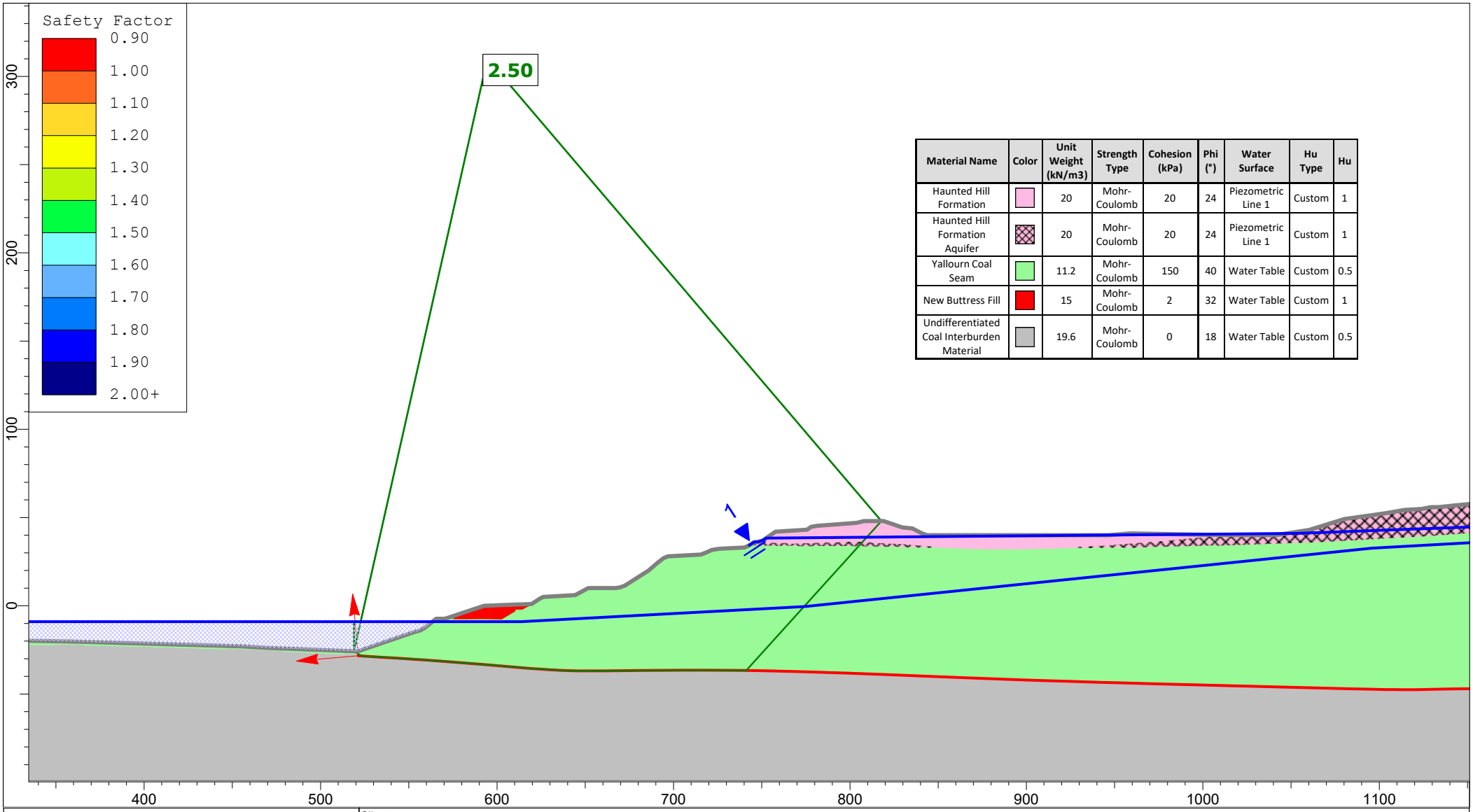
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 14	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



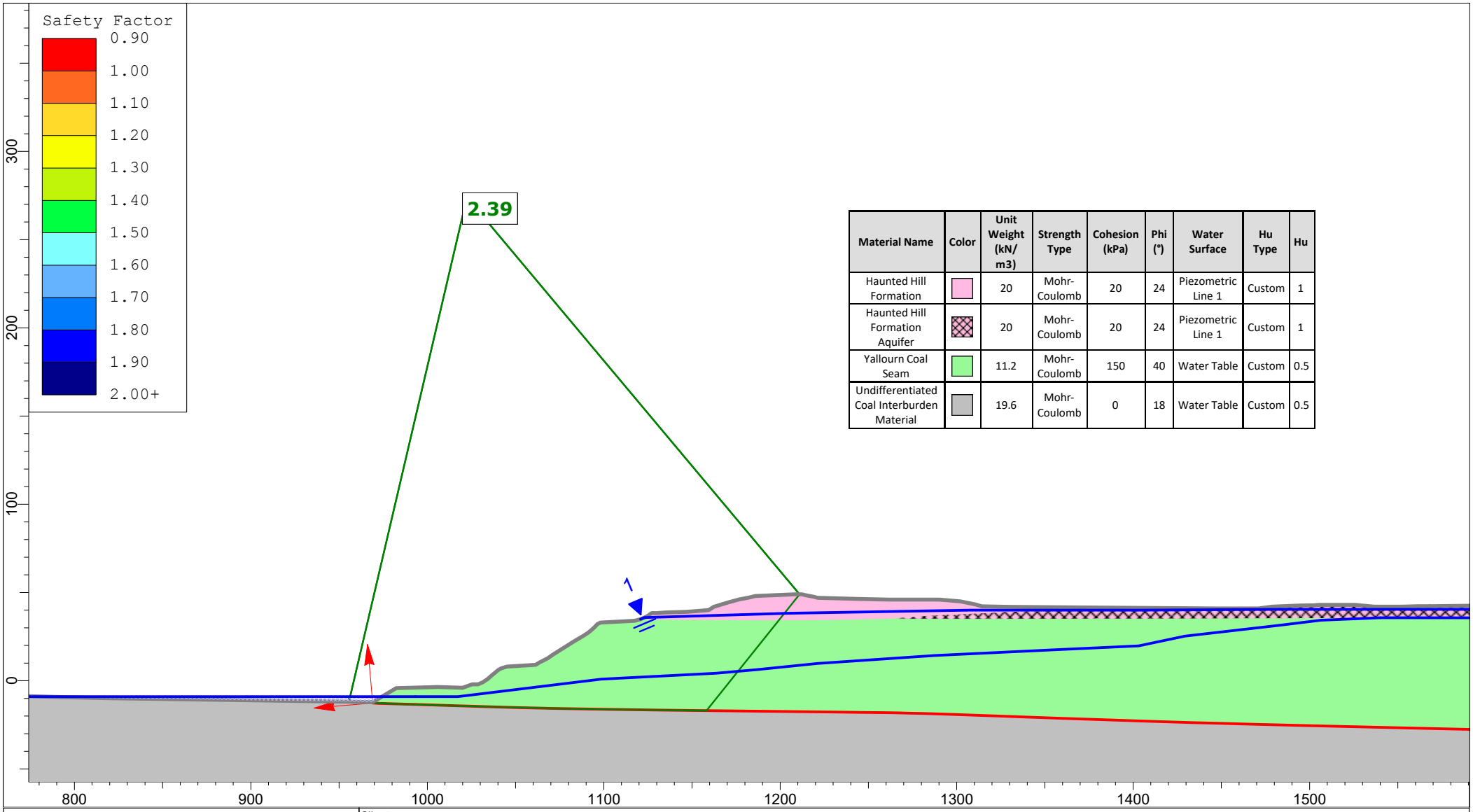
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Stabilising Fill		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 15	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



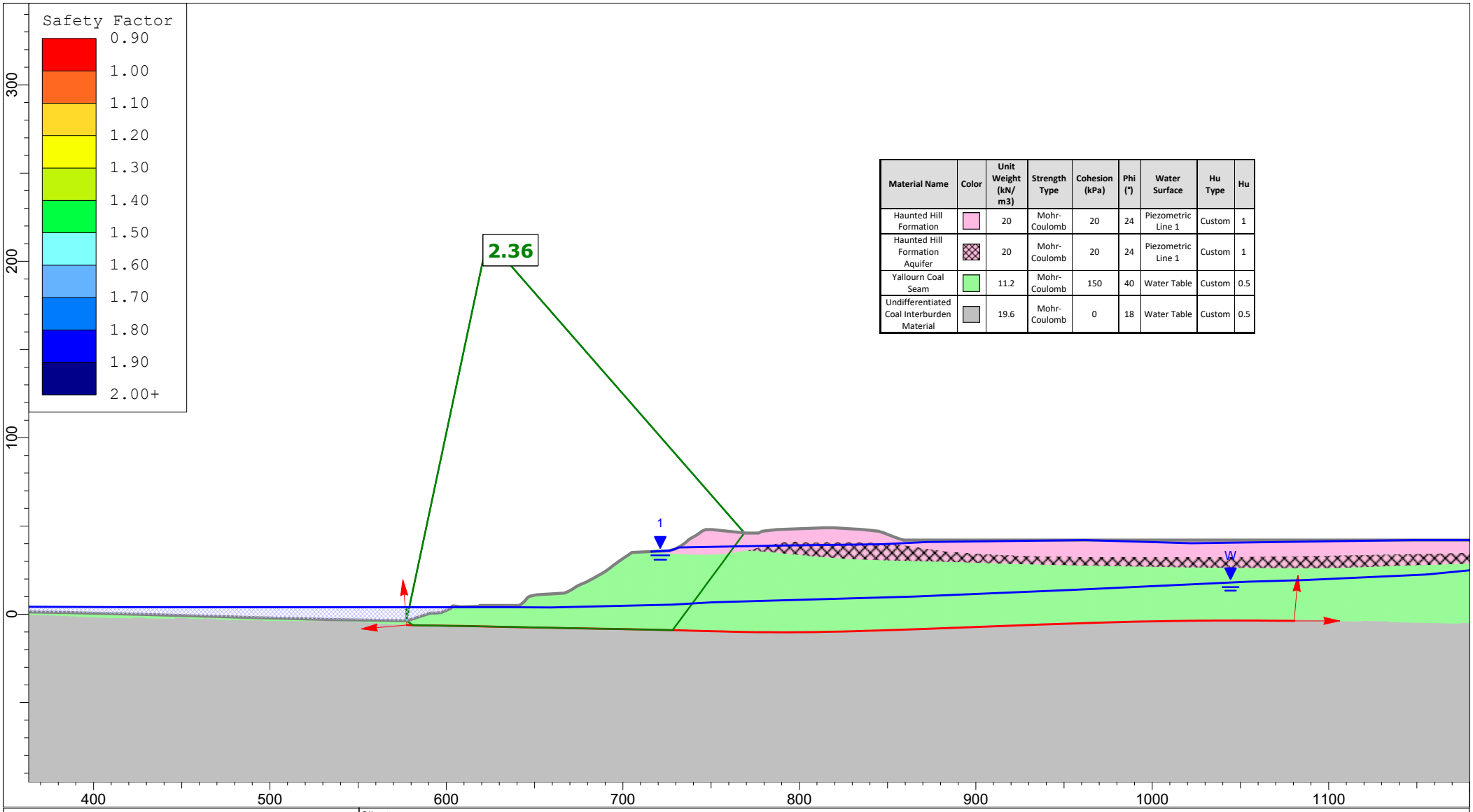
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



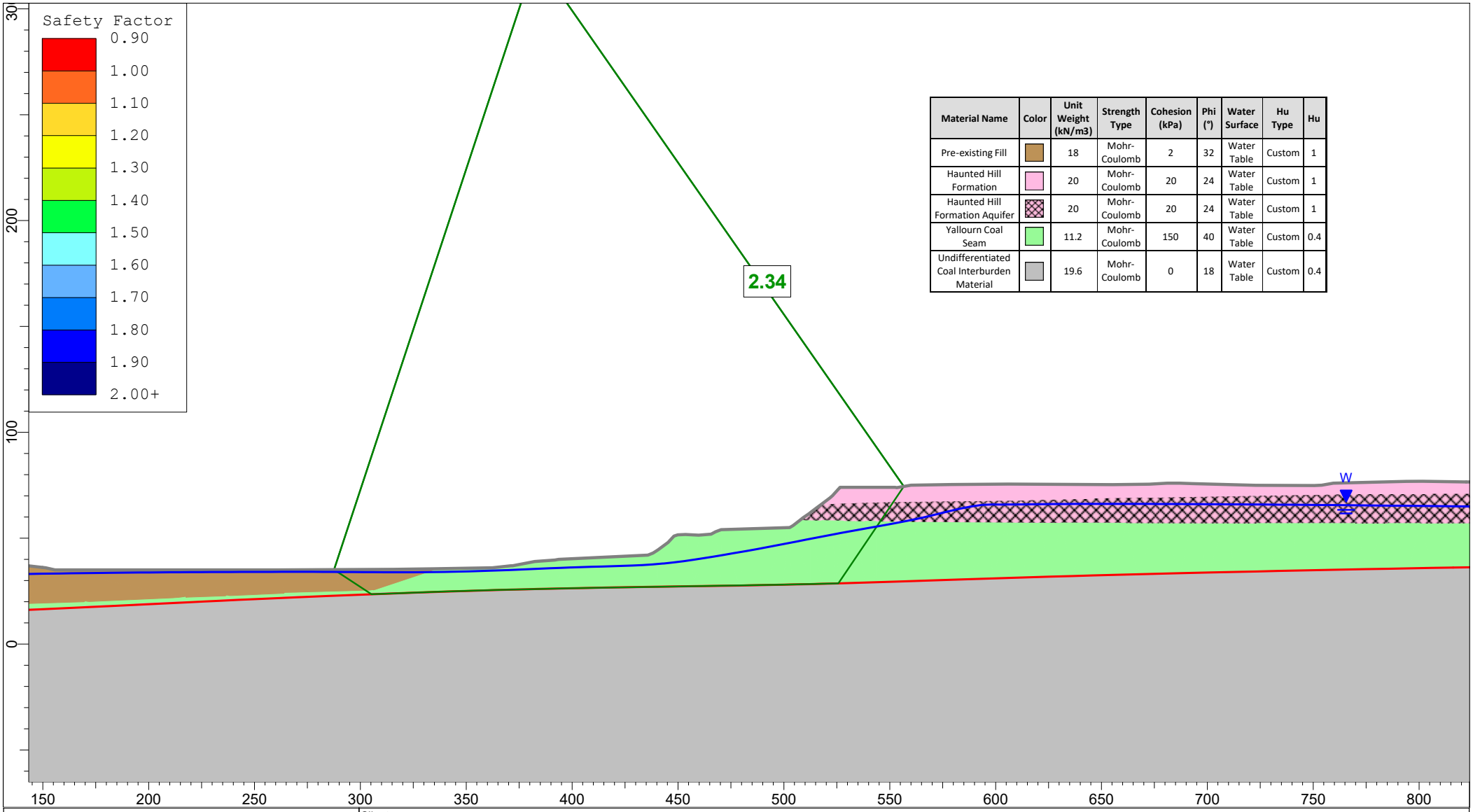
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



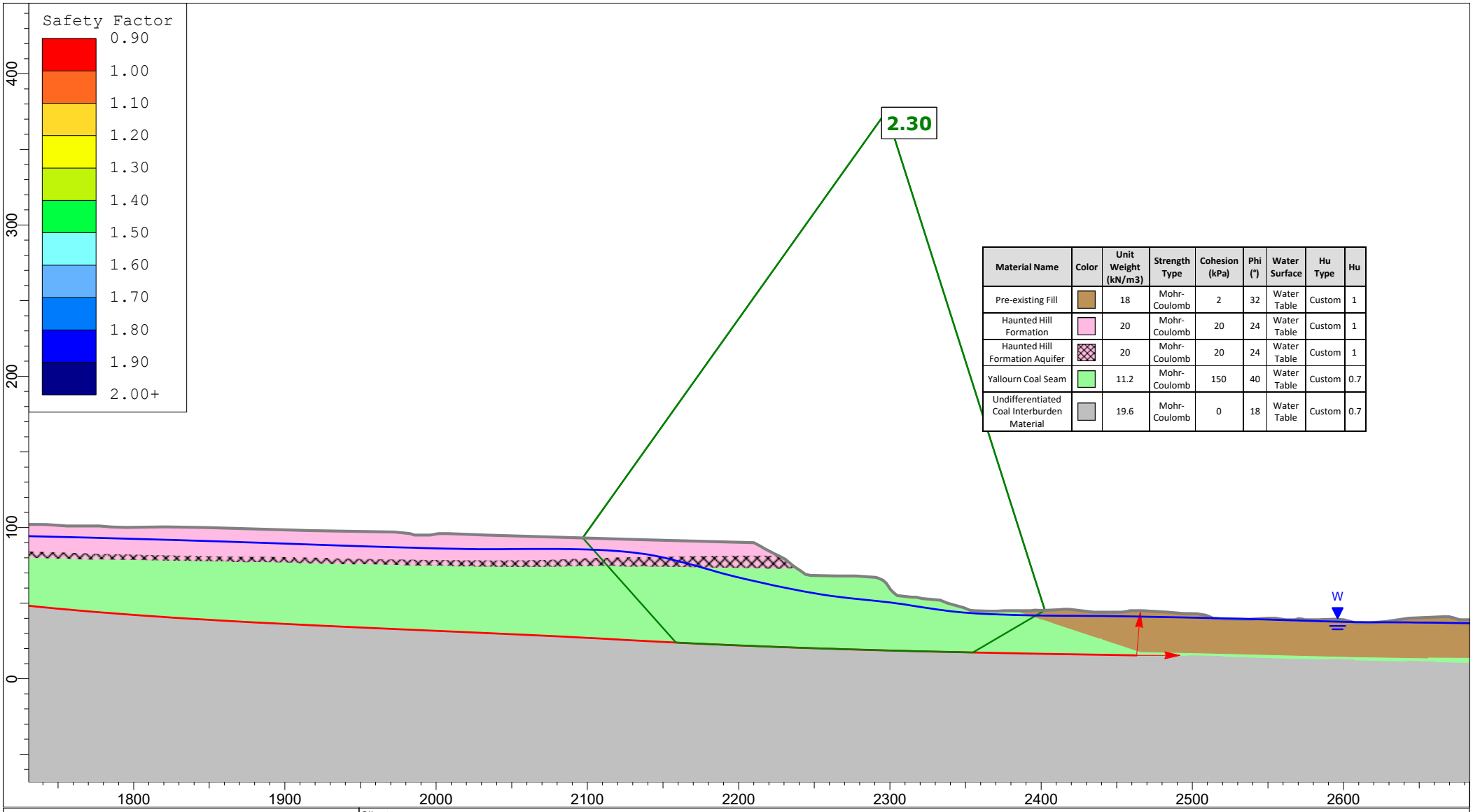
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



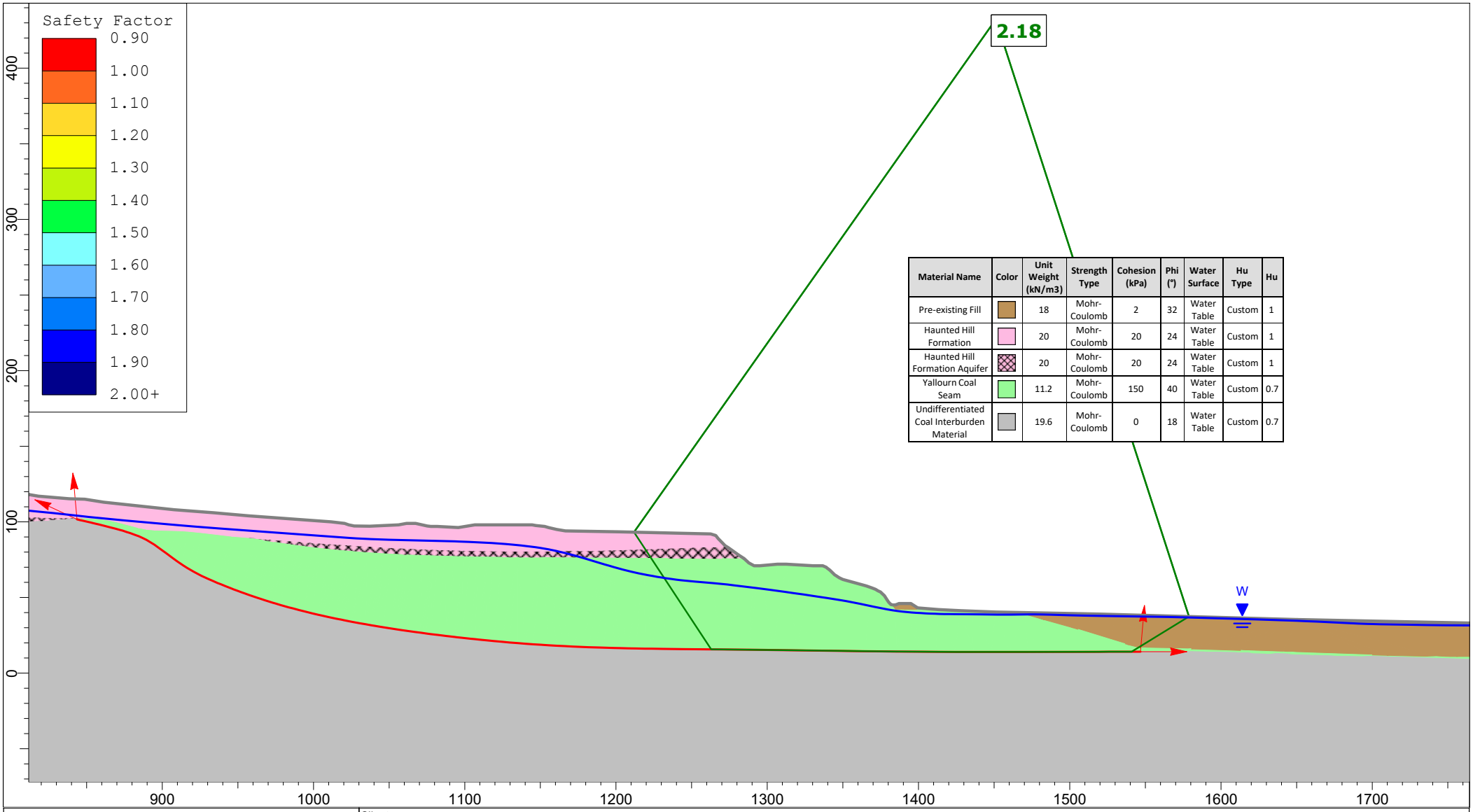
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SB
Section:	Section 19	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



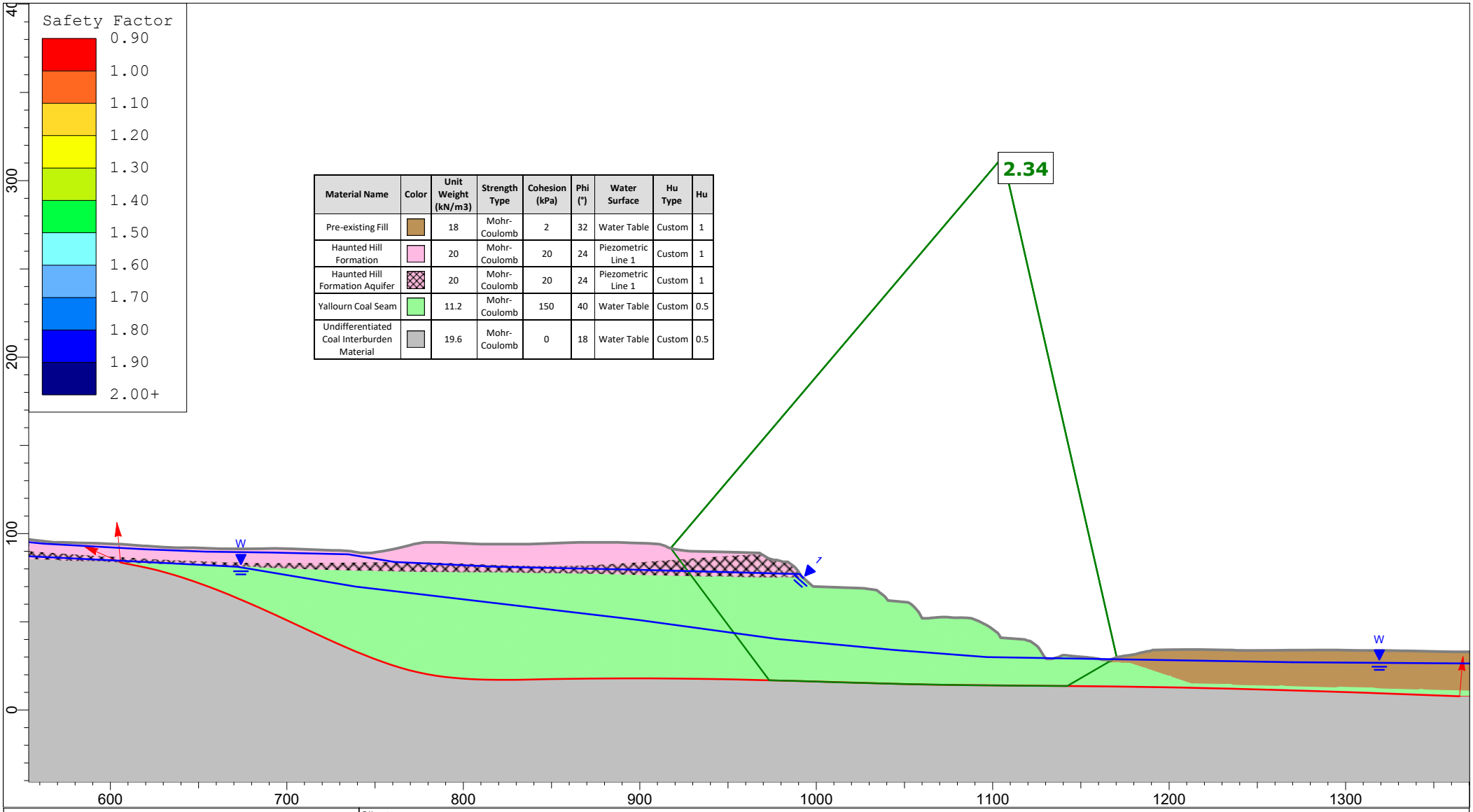
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 20	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



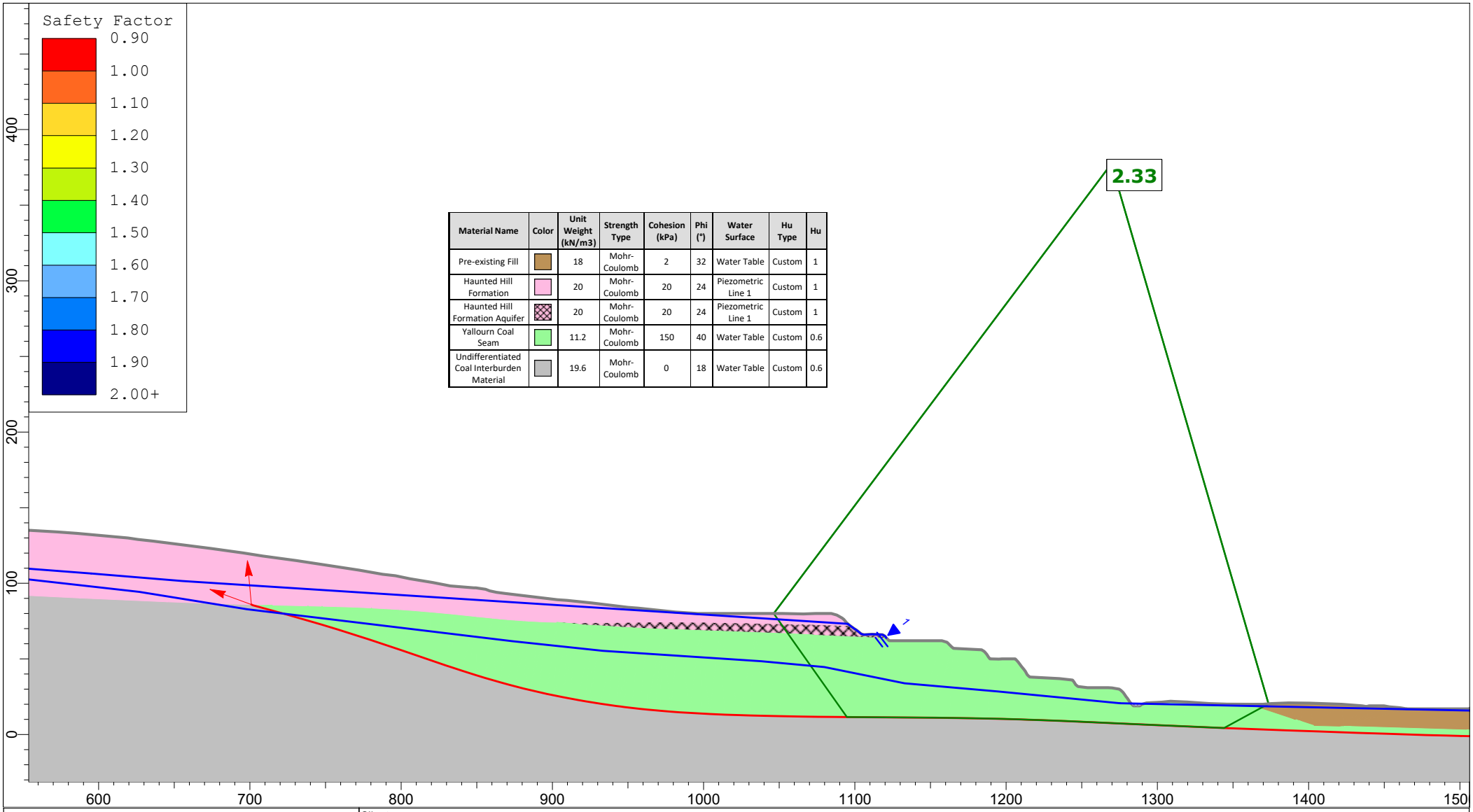
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 21	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



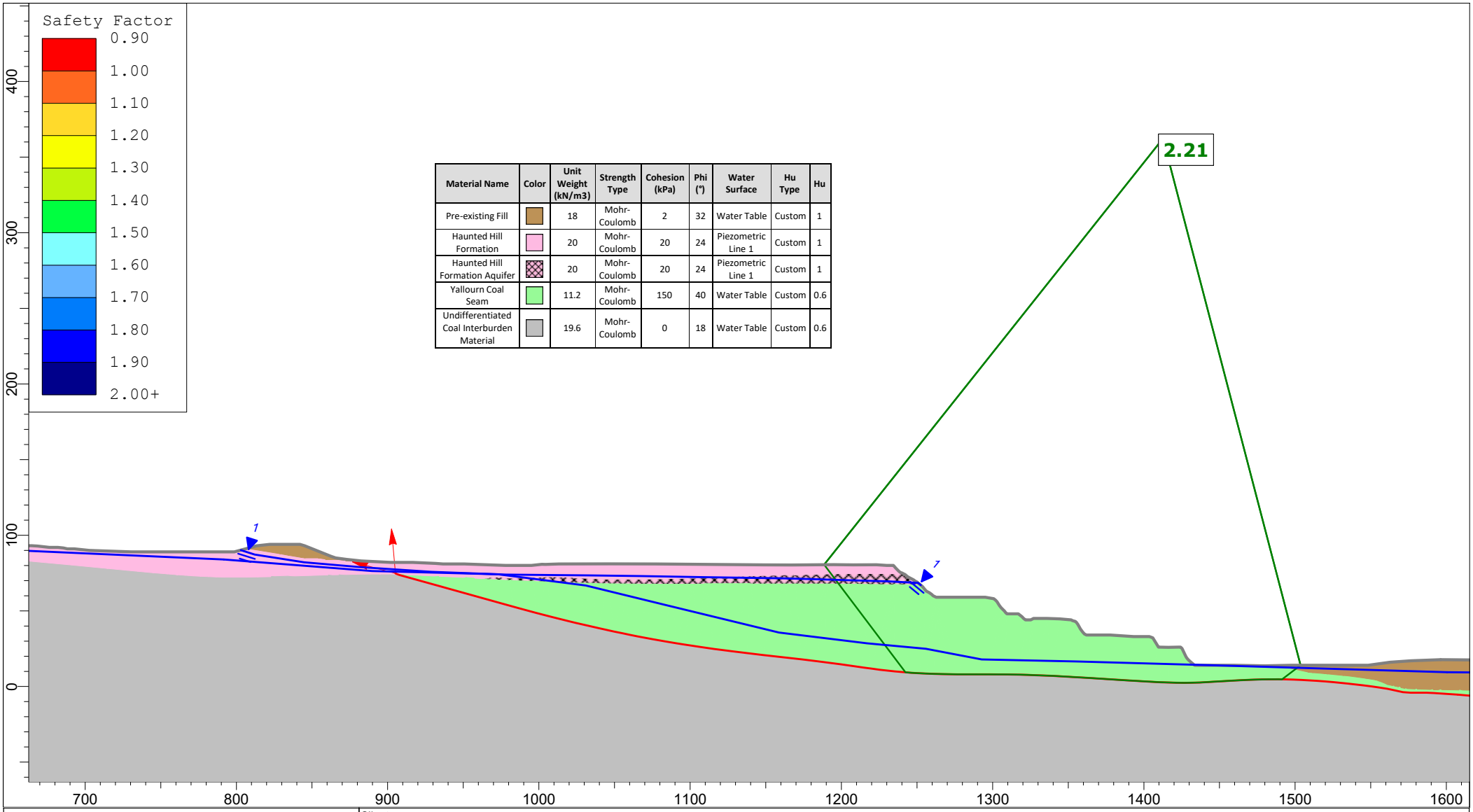
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (South)
Section:	Section 22	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



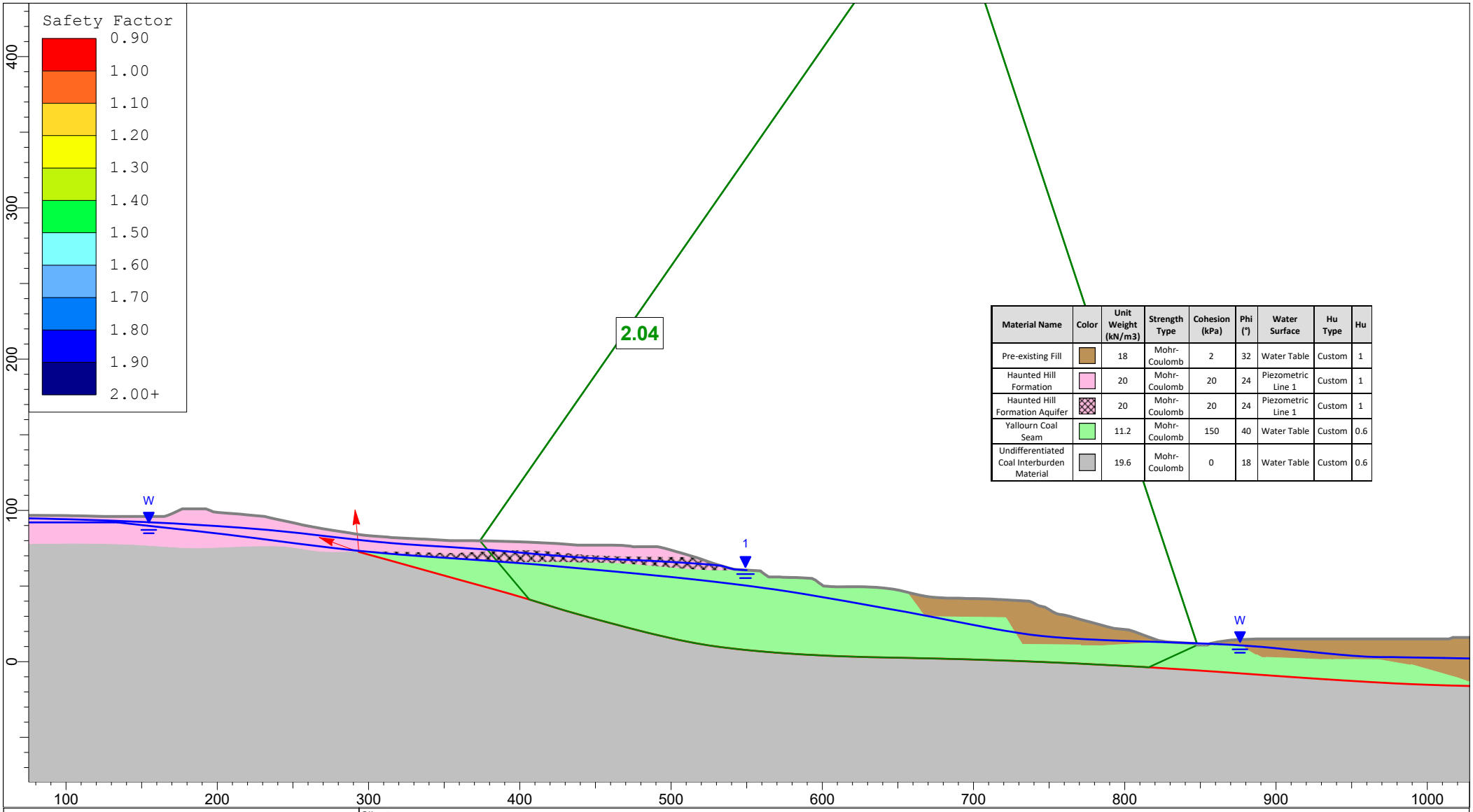
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 23	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



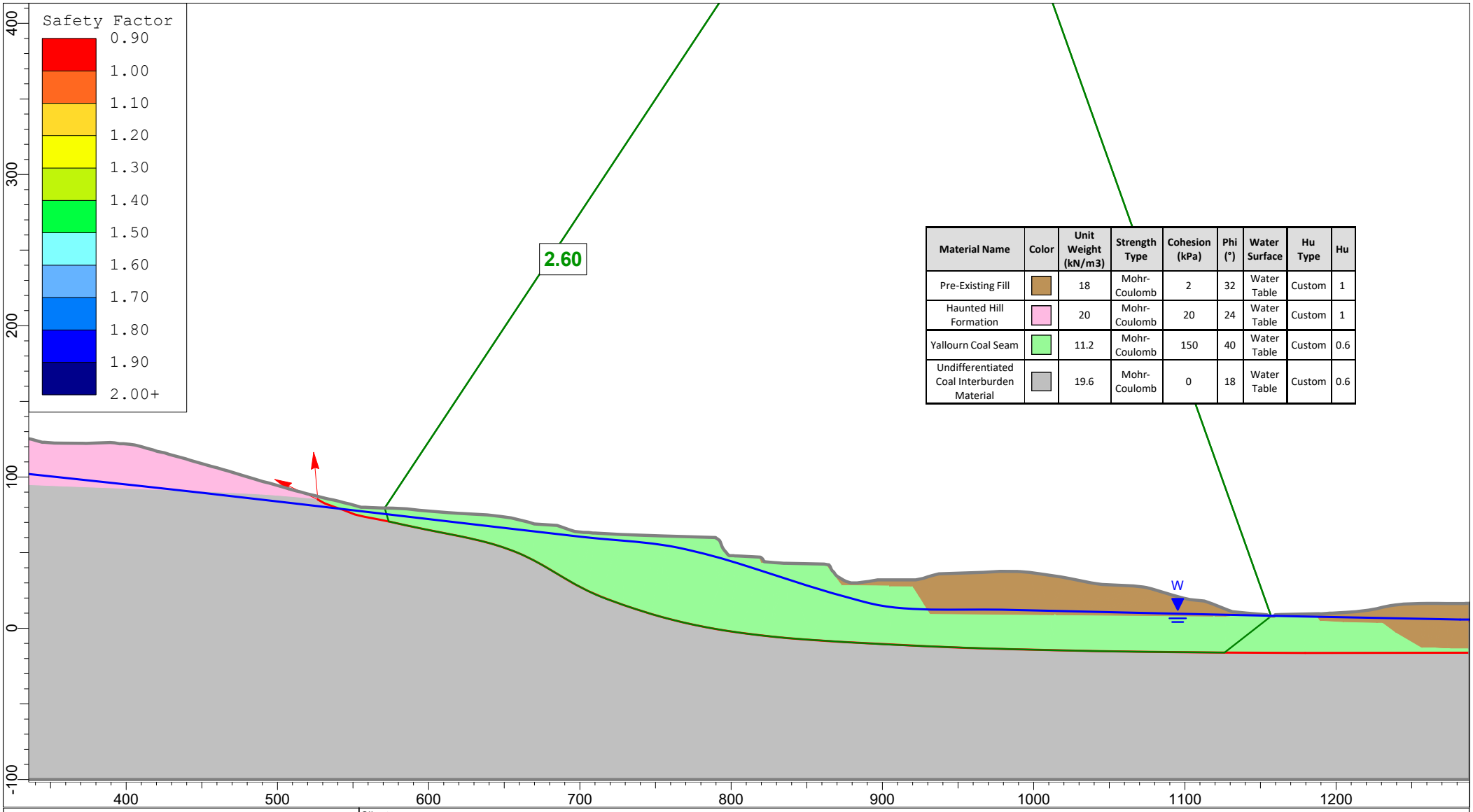
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



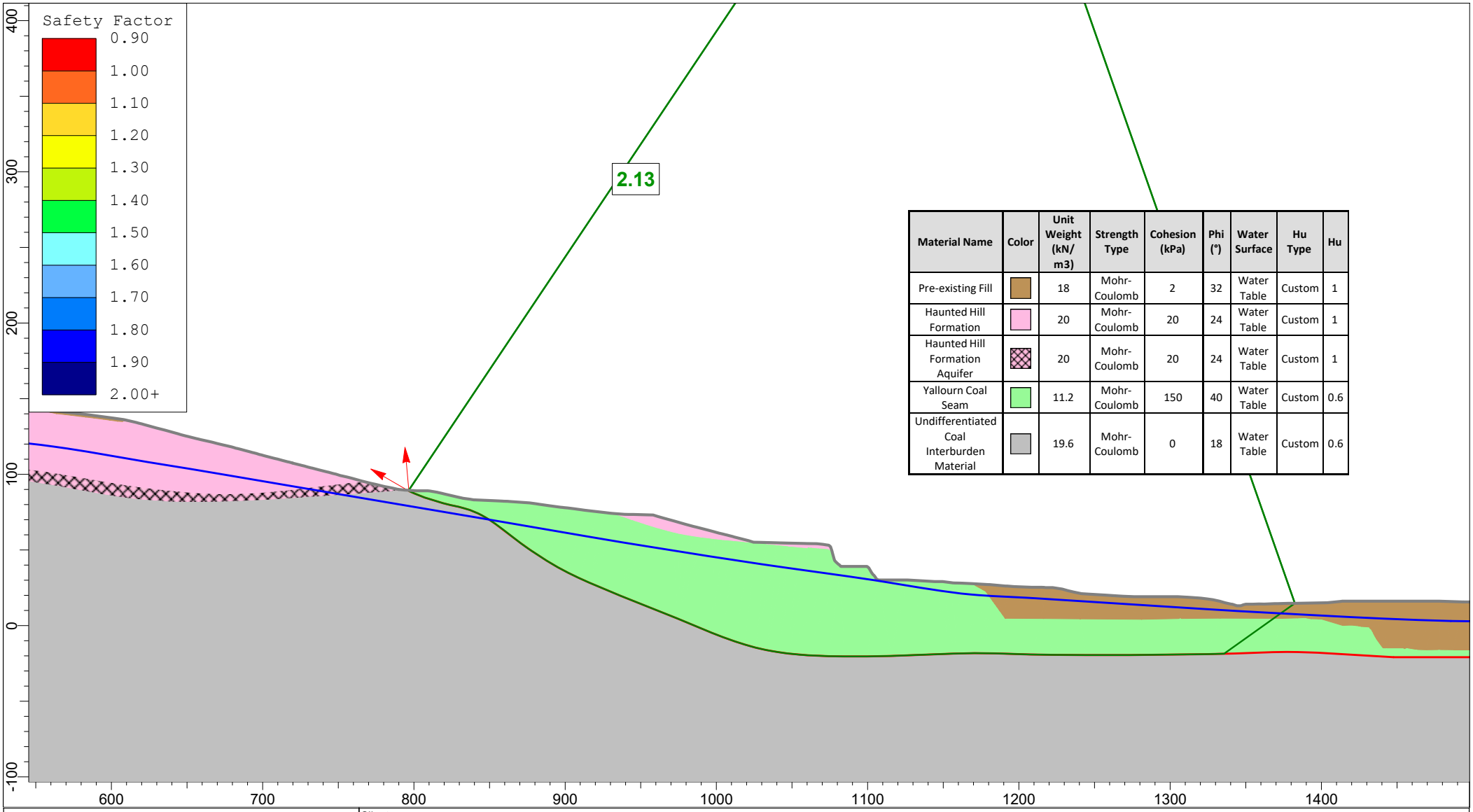
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



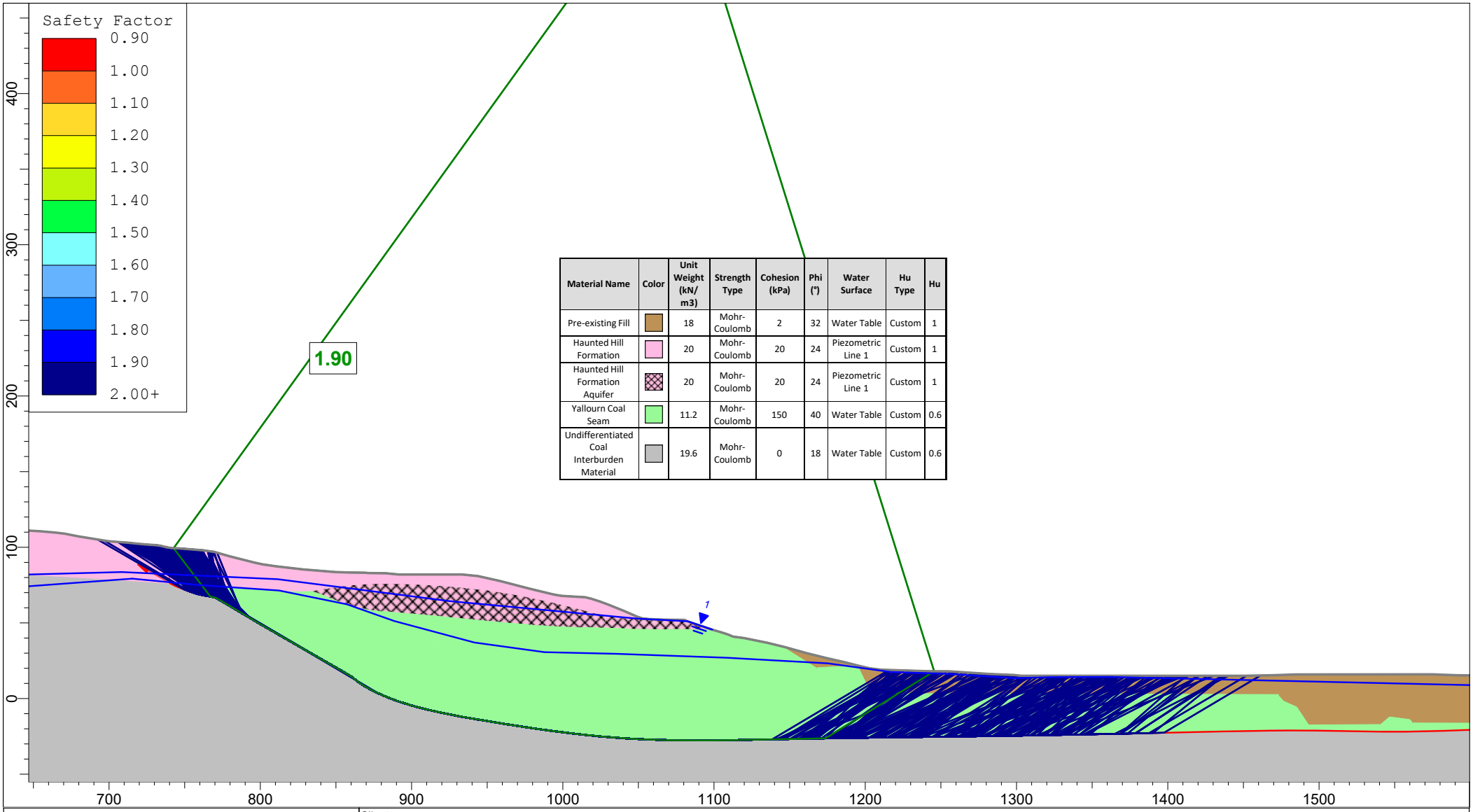
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



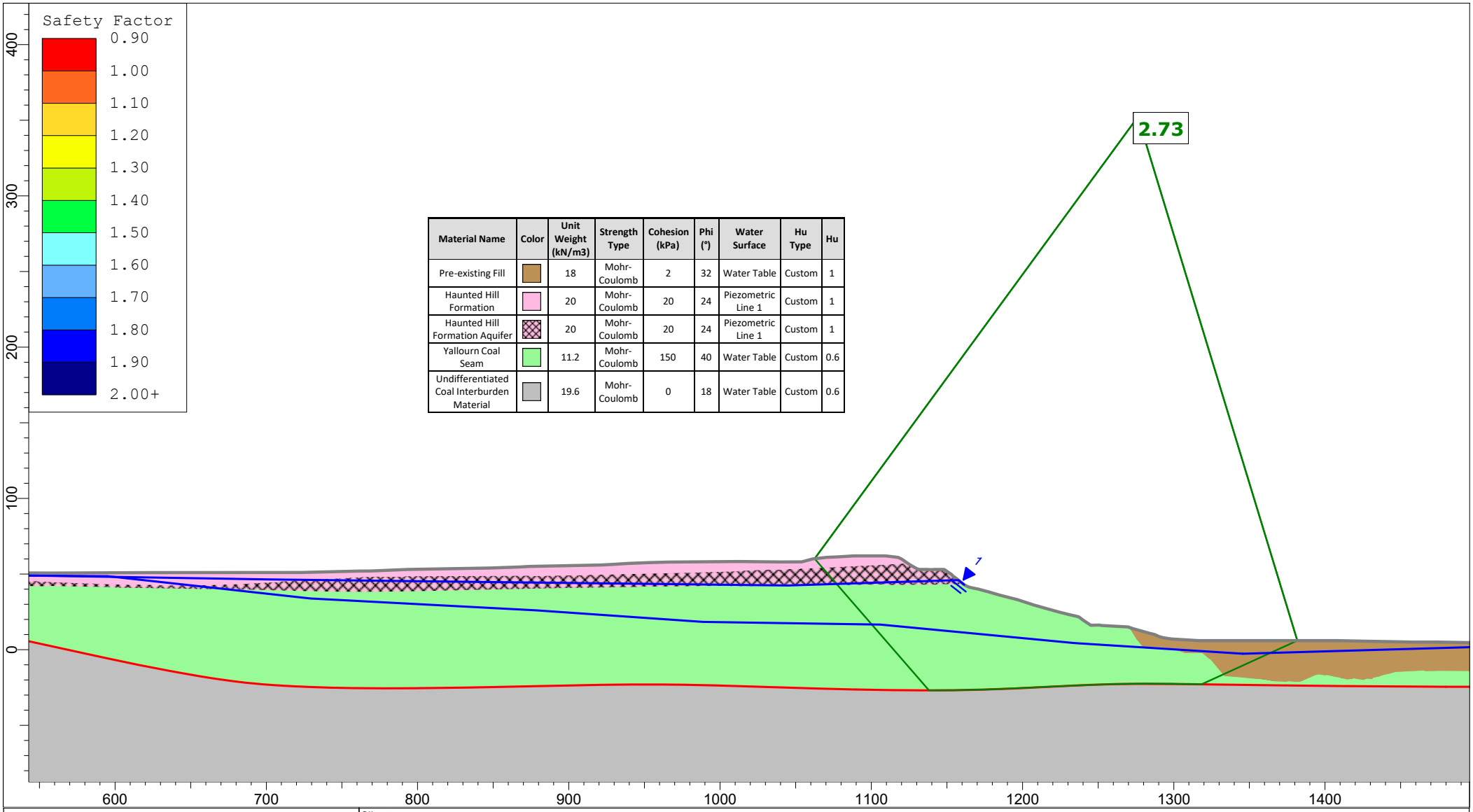
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



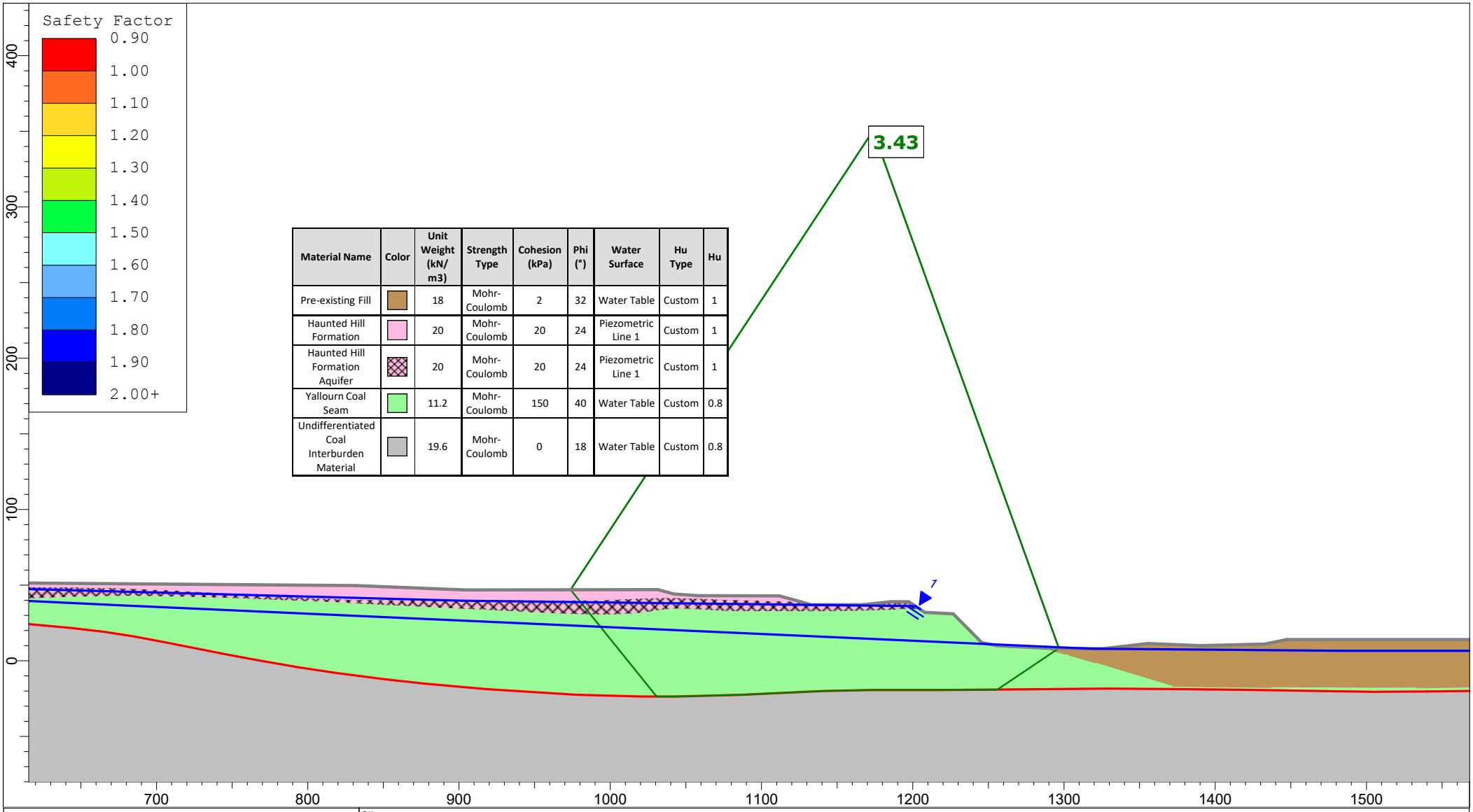
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



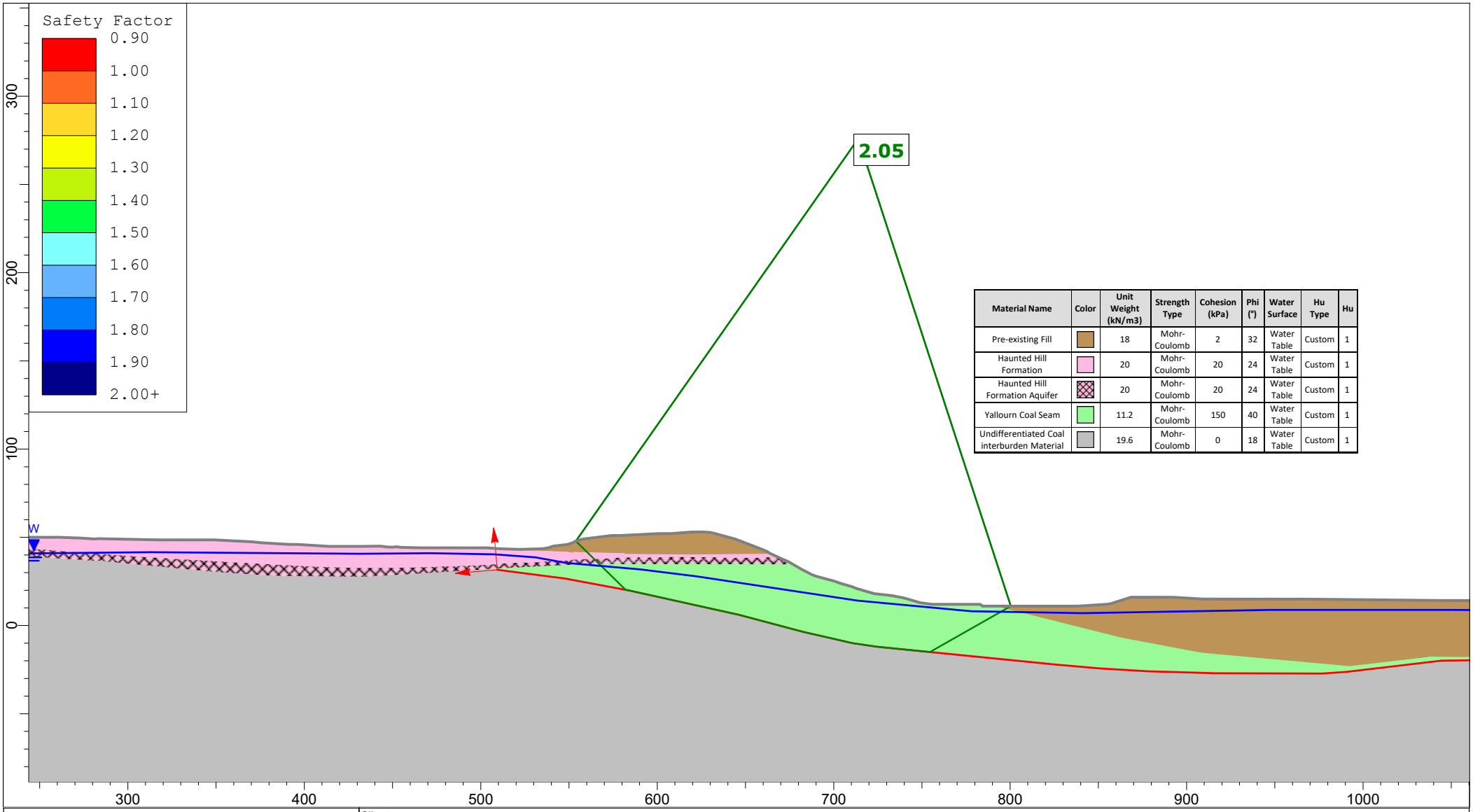
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-NB
Section:	Section 29	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



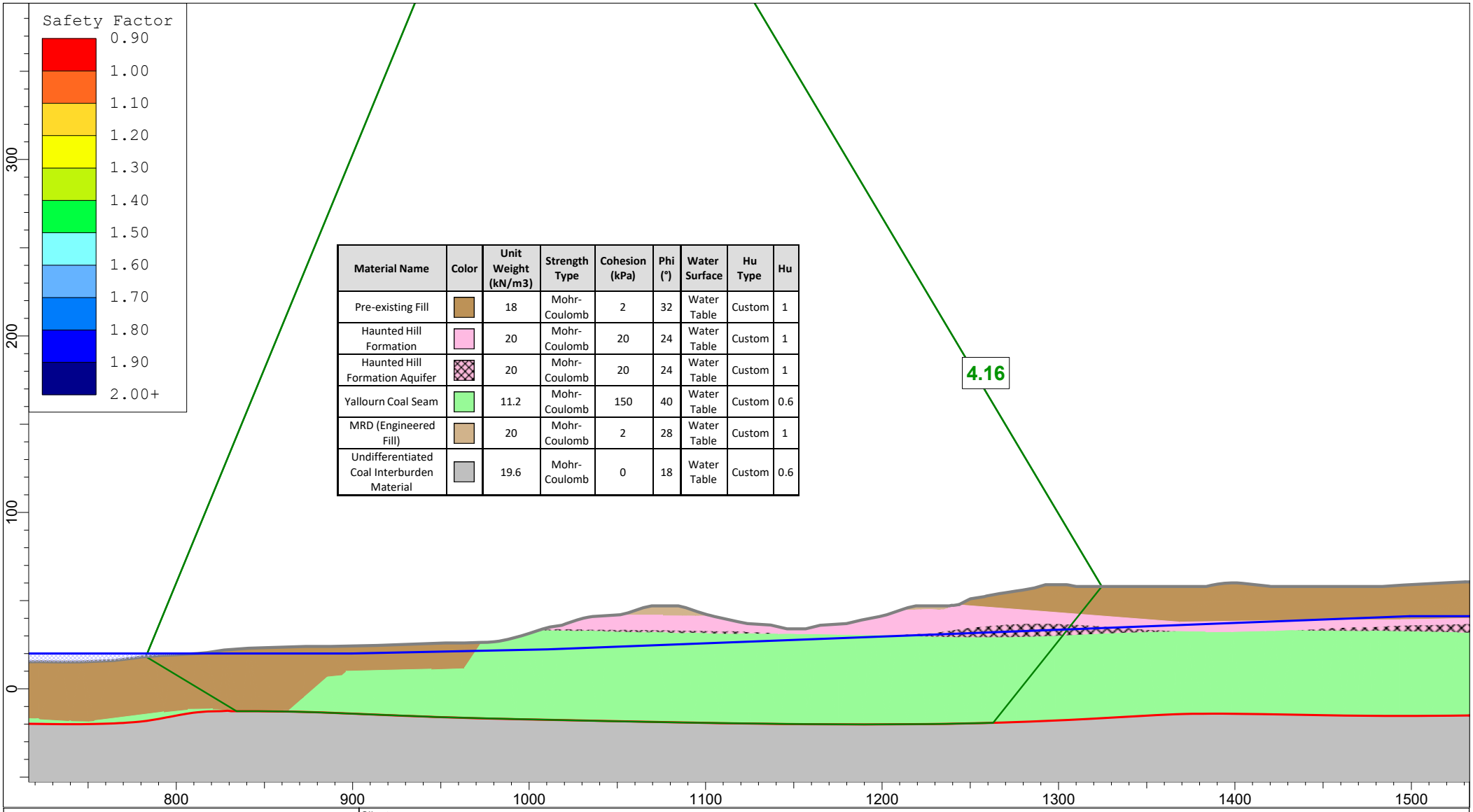
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.8
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.8

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



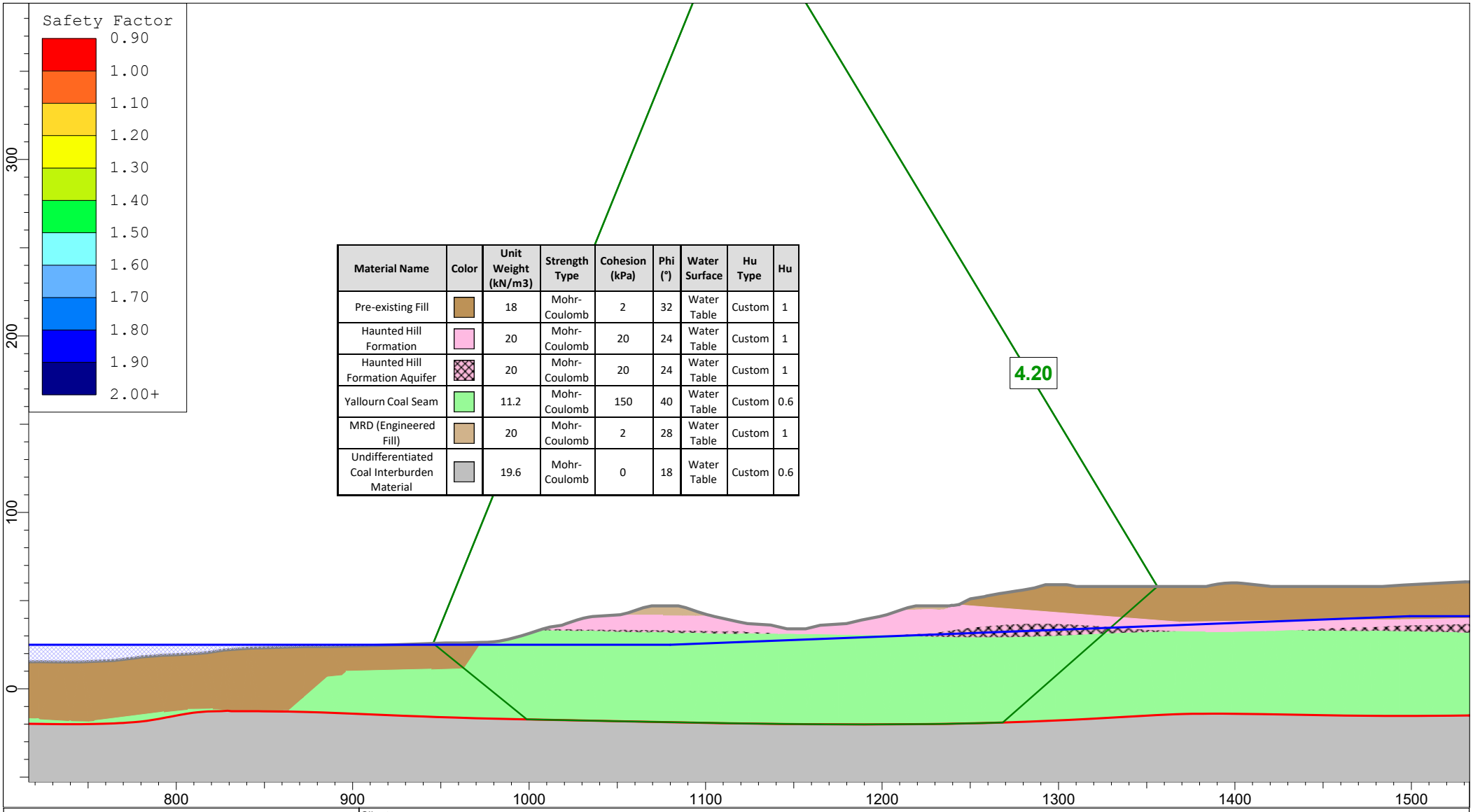
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-LS
Section:	Section 31	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



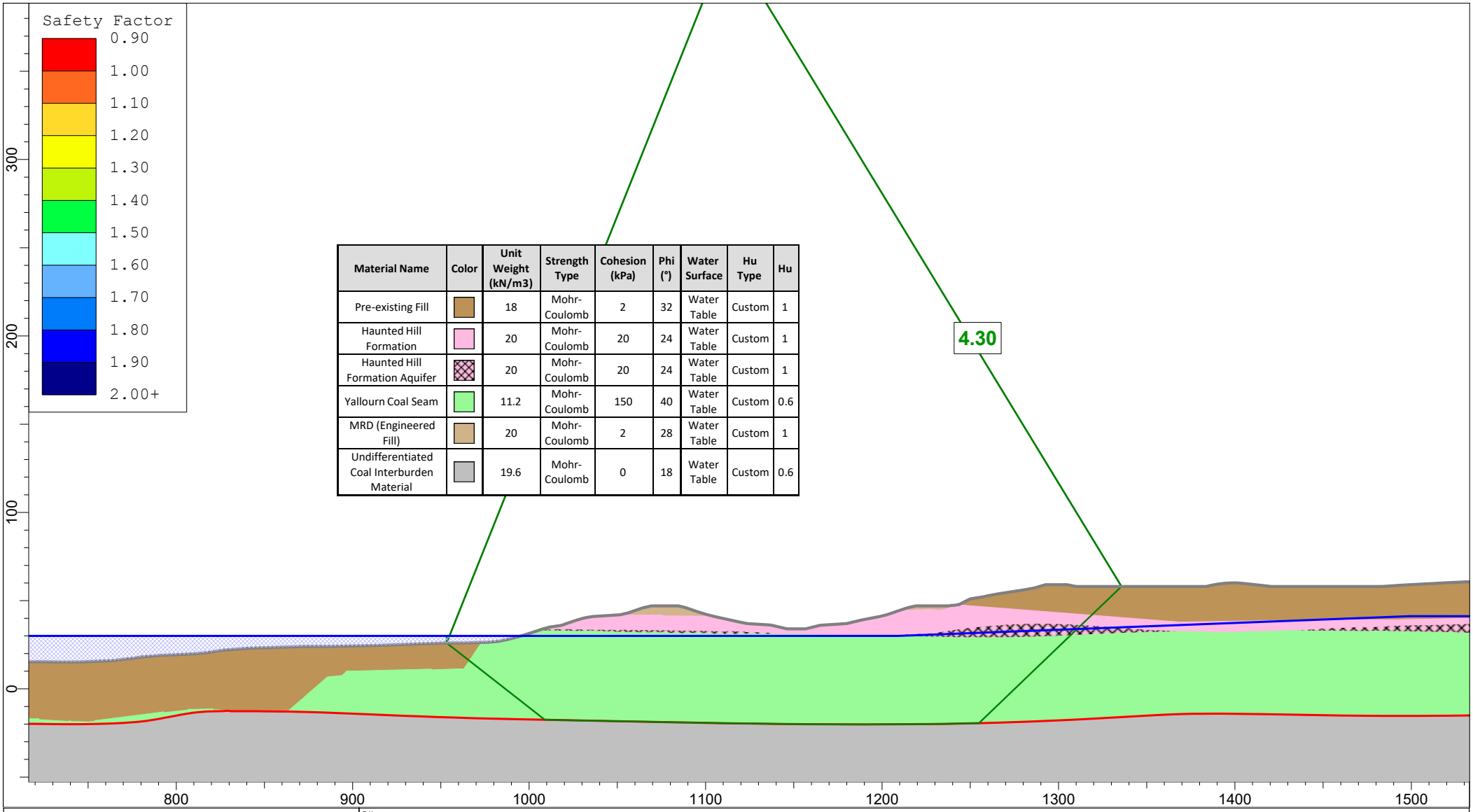
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



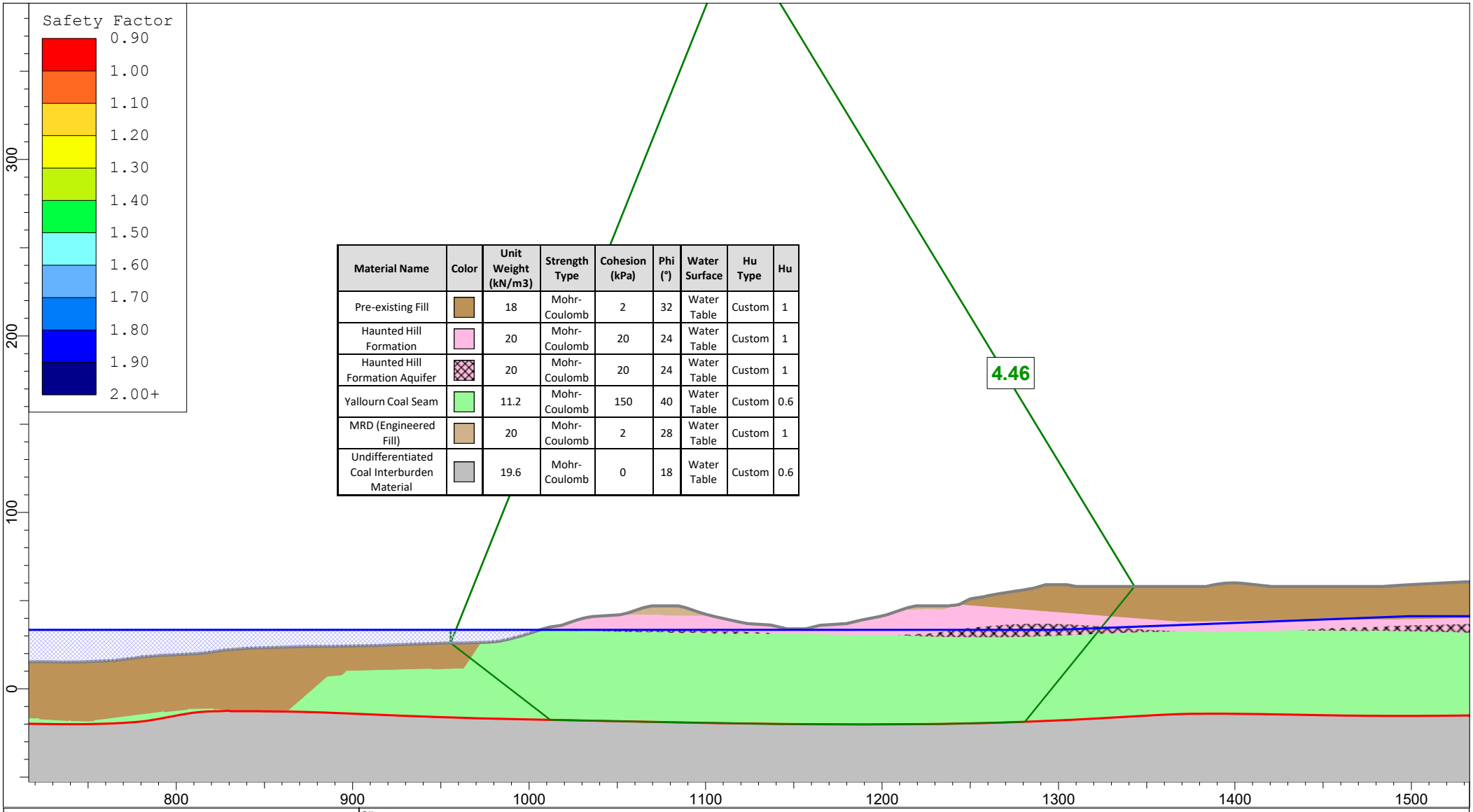
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength		



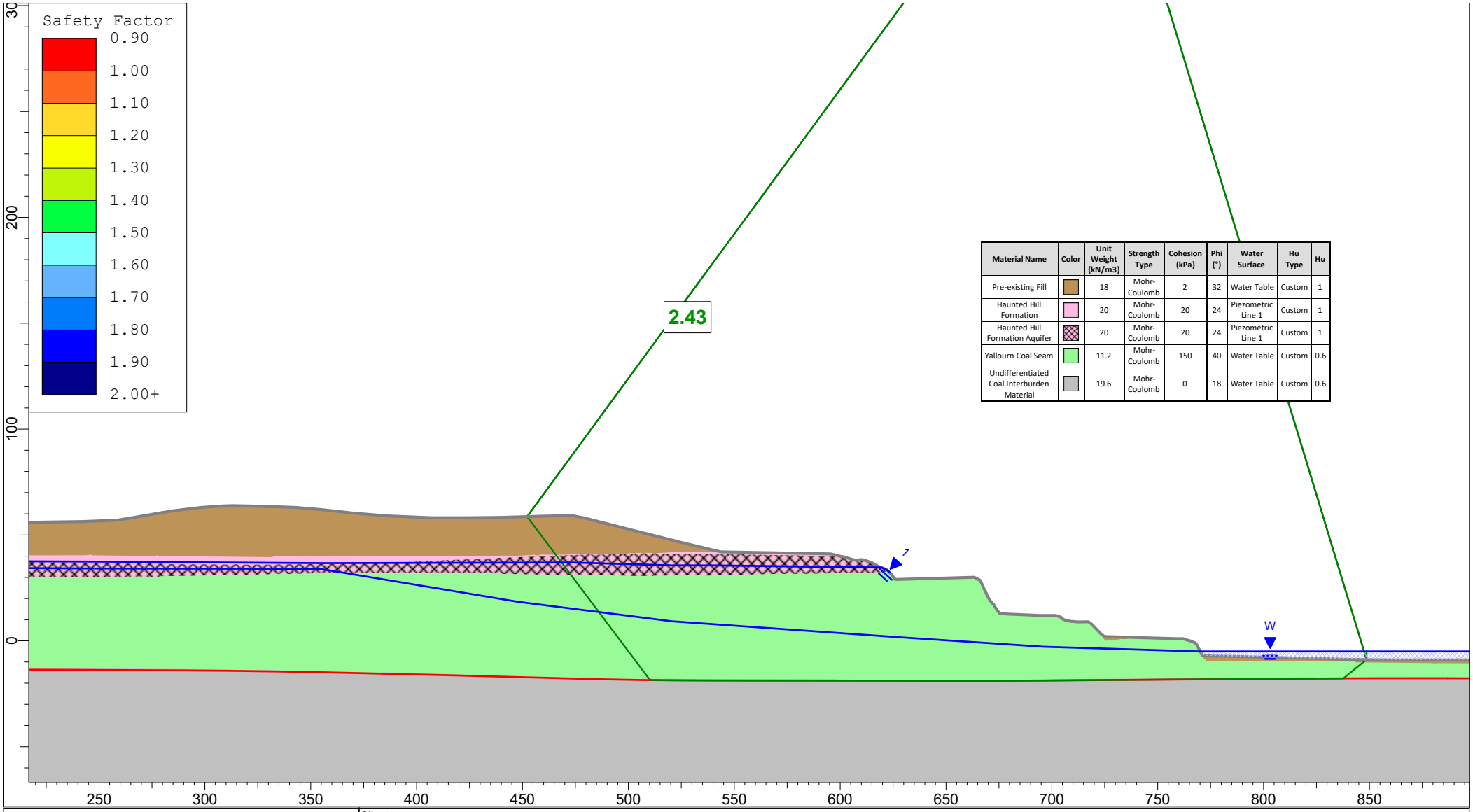
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 30 mRL
Notes:	Median Interseam Shear Strength		



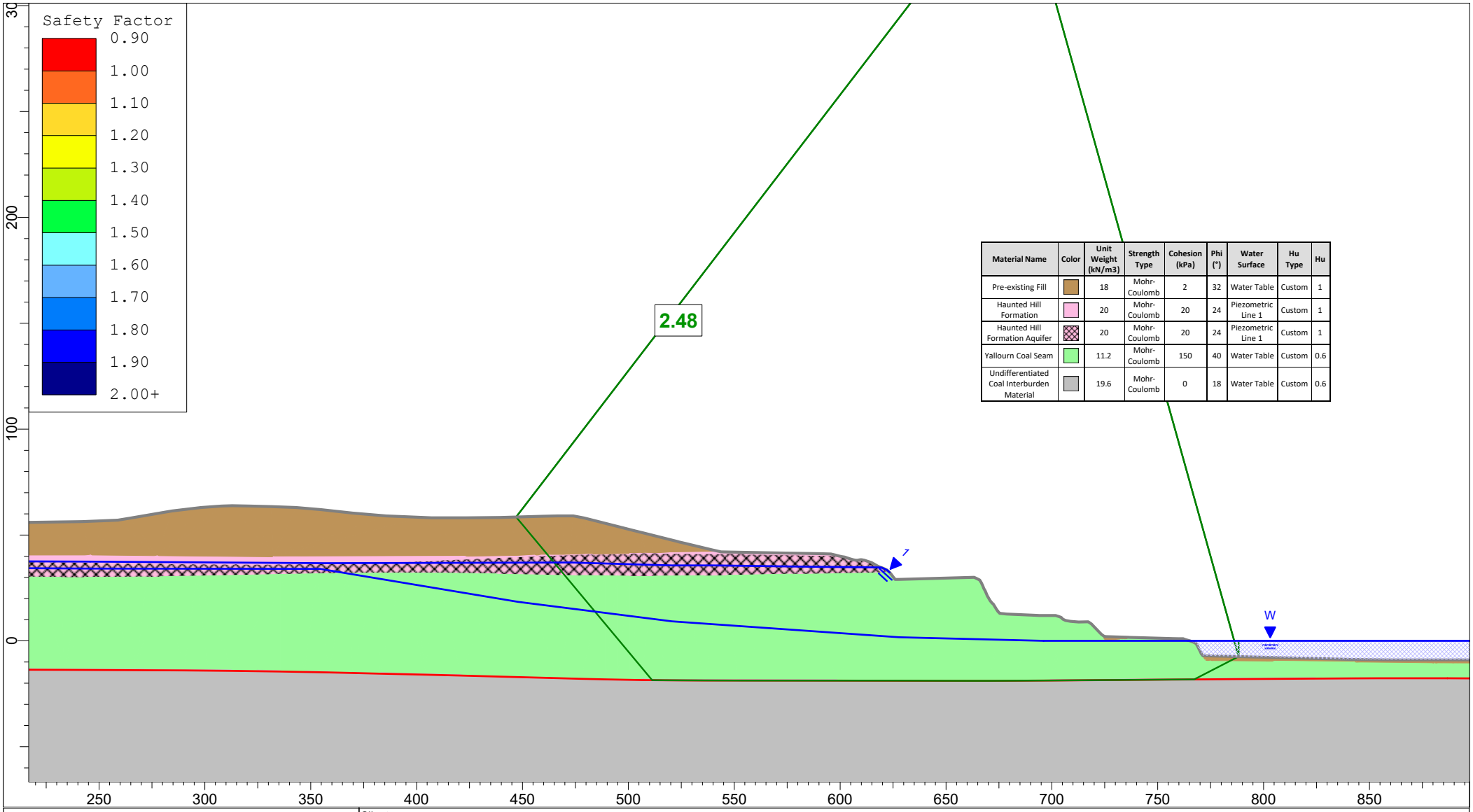
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



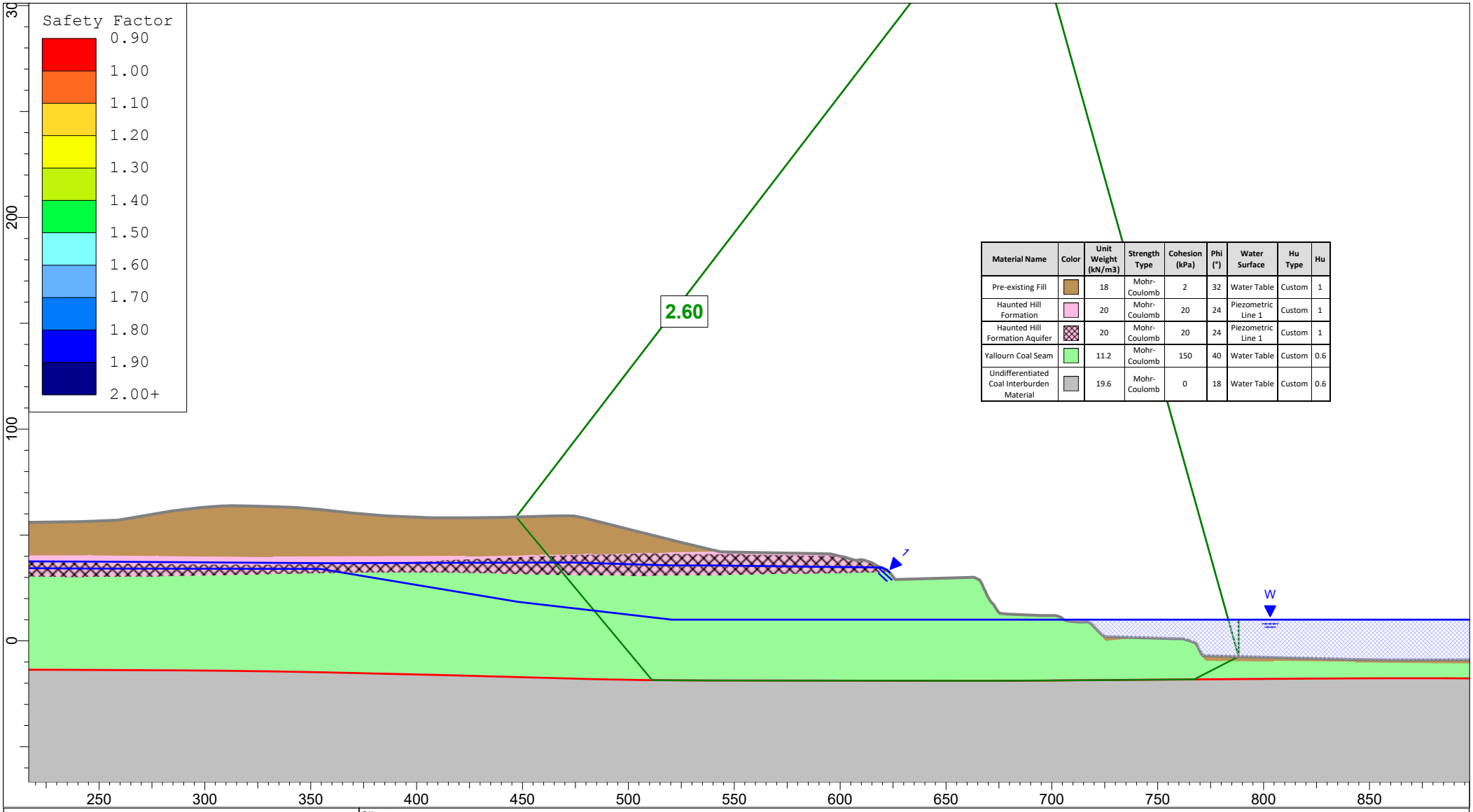
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 02	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Median Interseam Shear Strength		



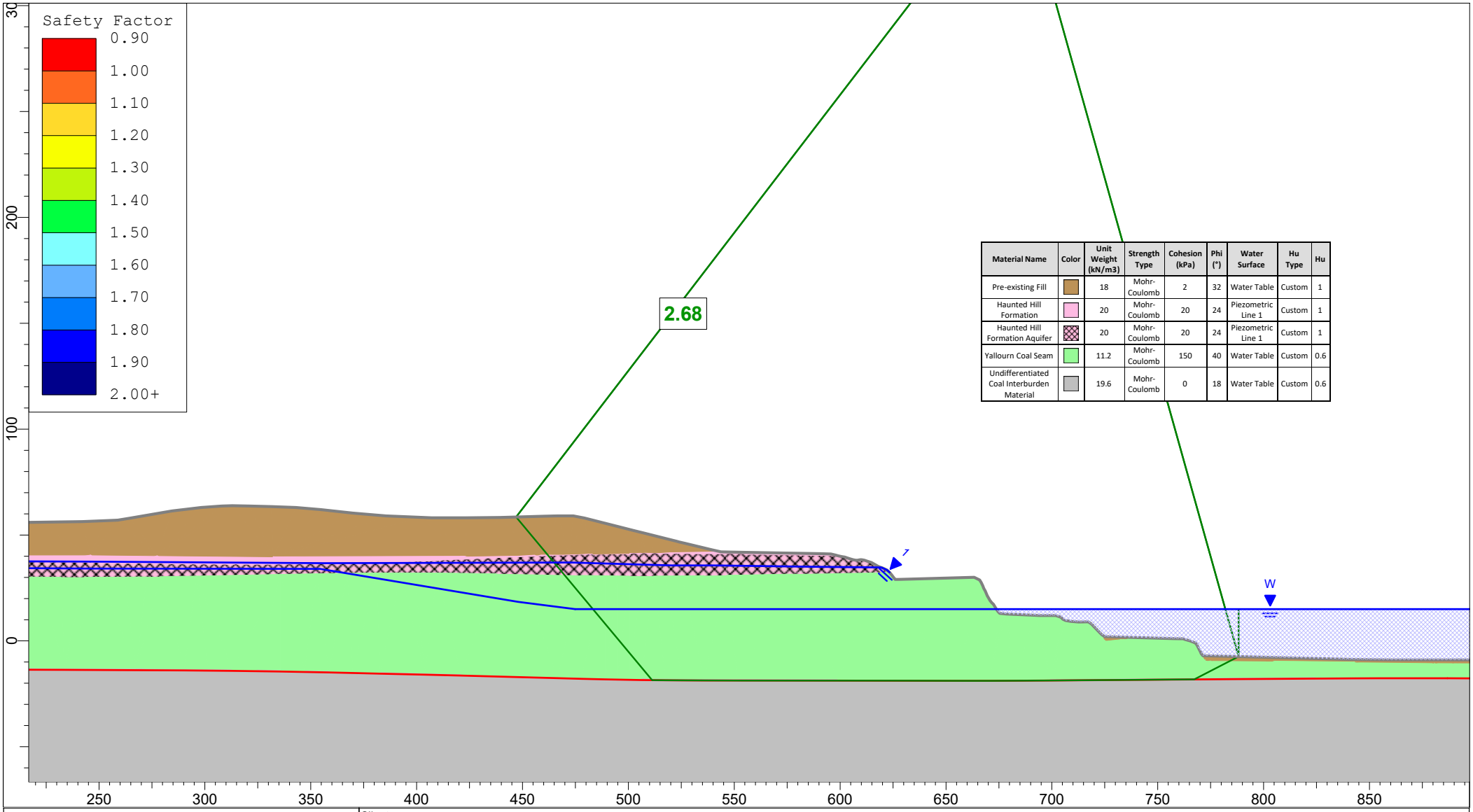
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 02	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Median Interseam Shear Strength		



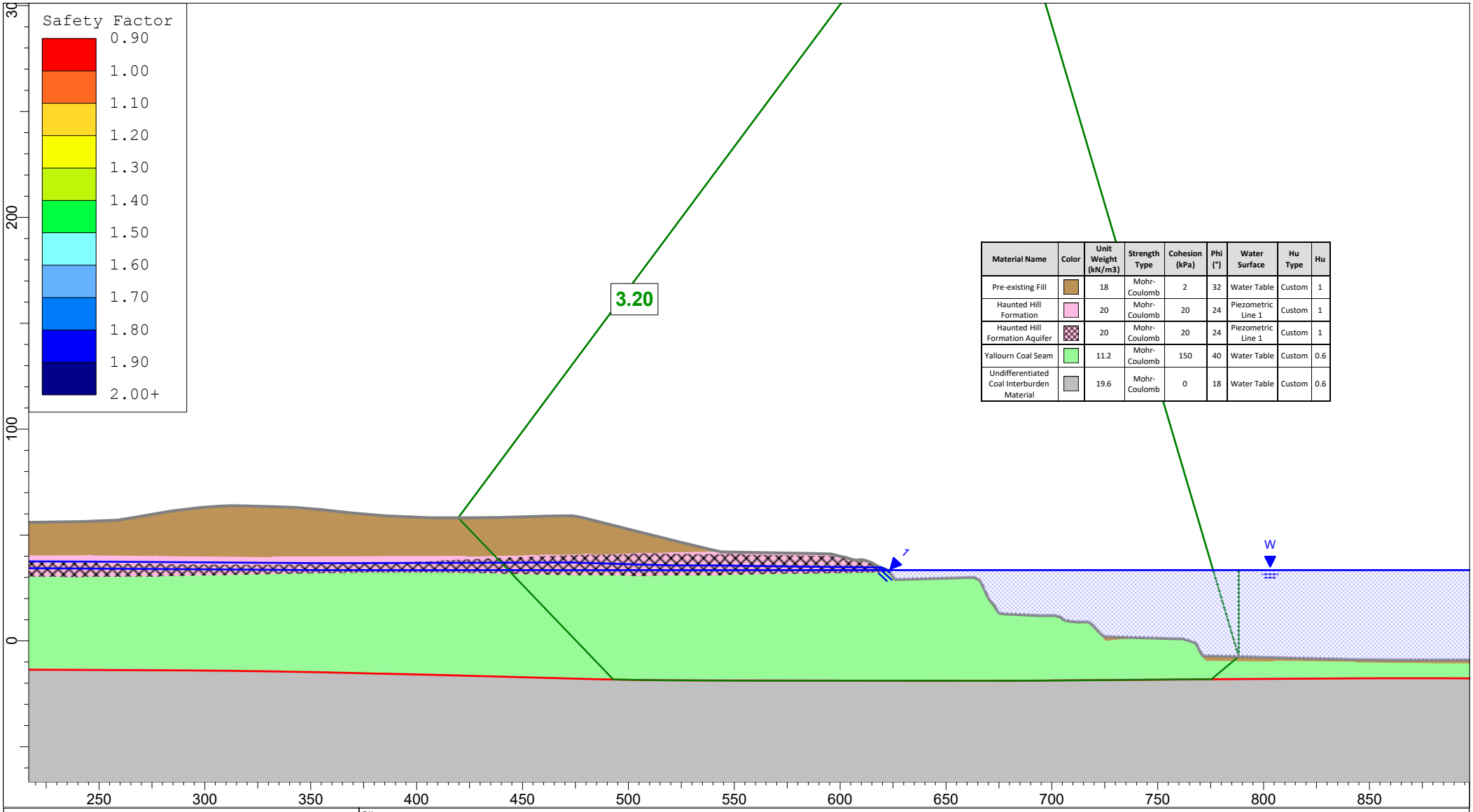
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 02	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



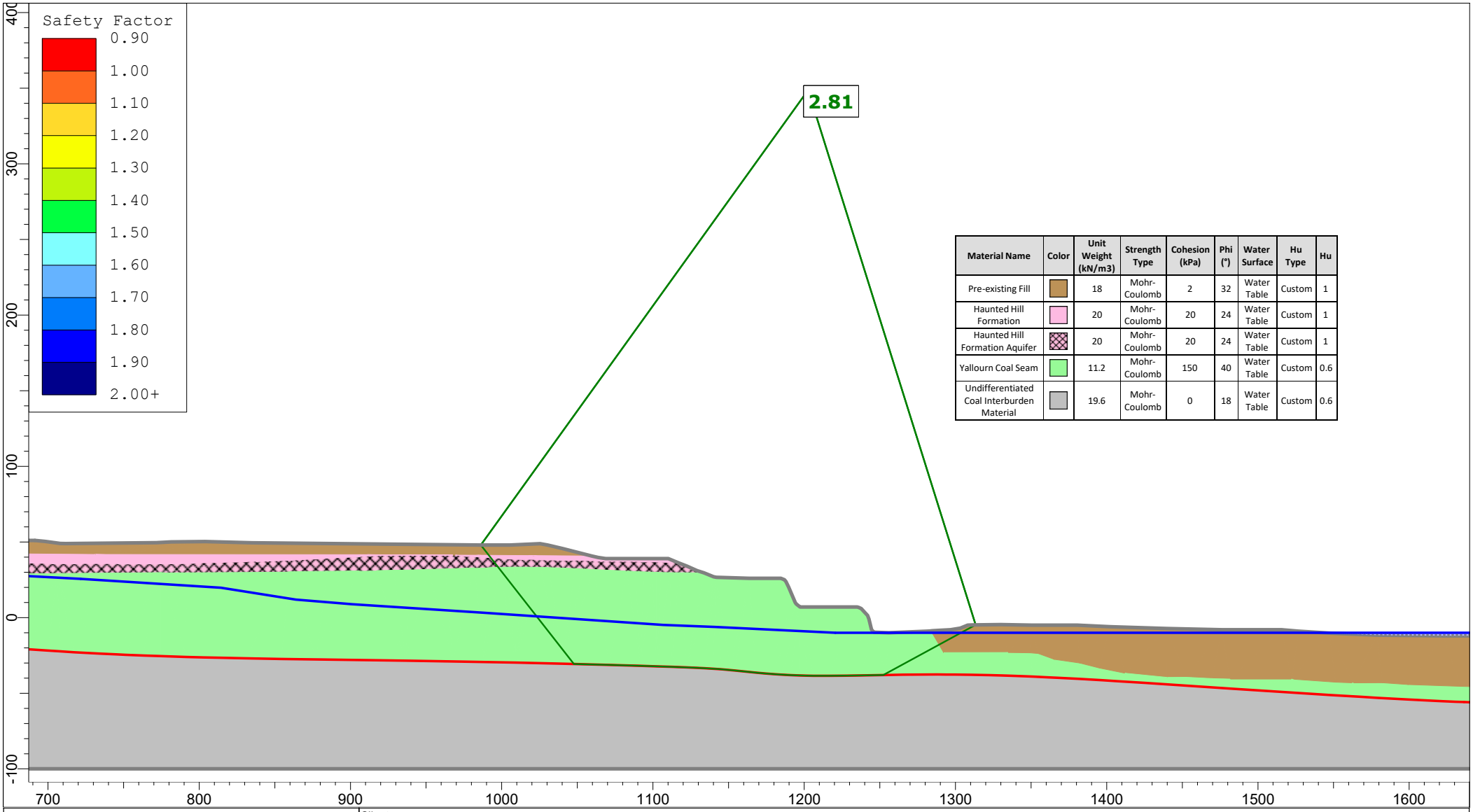
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YEF-NB (west)**
Section:	**Section 02**	Case:	**Multilinear - Hu specific**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 15 mRL**
Notes:	**Median Interseam Shear Strength**		



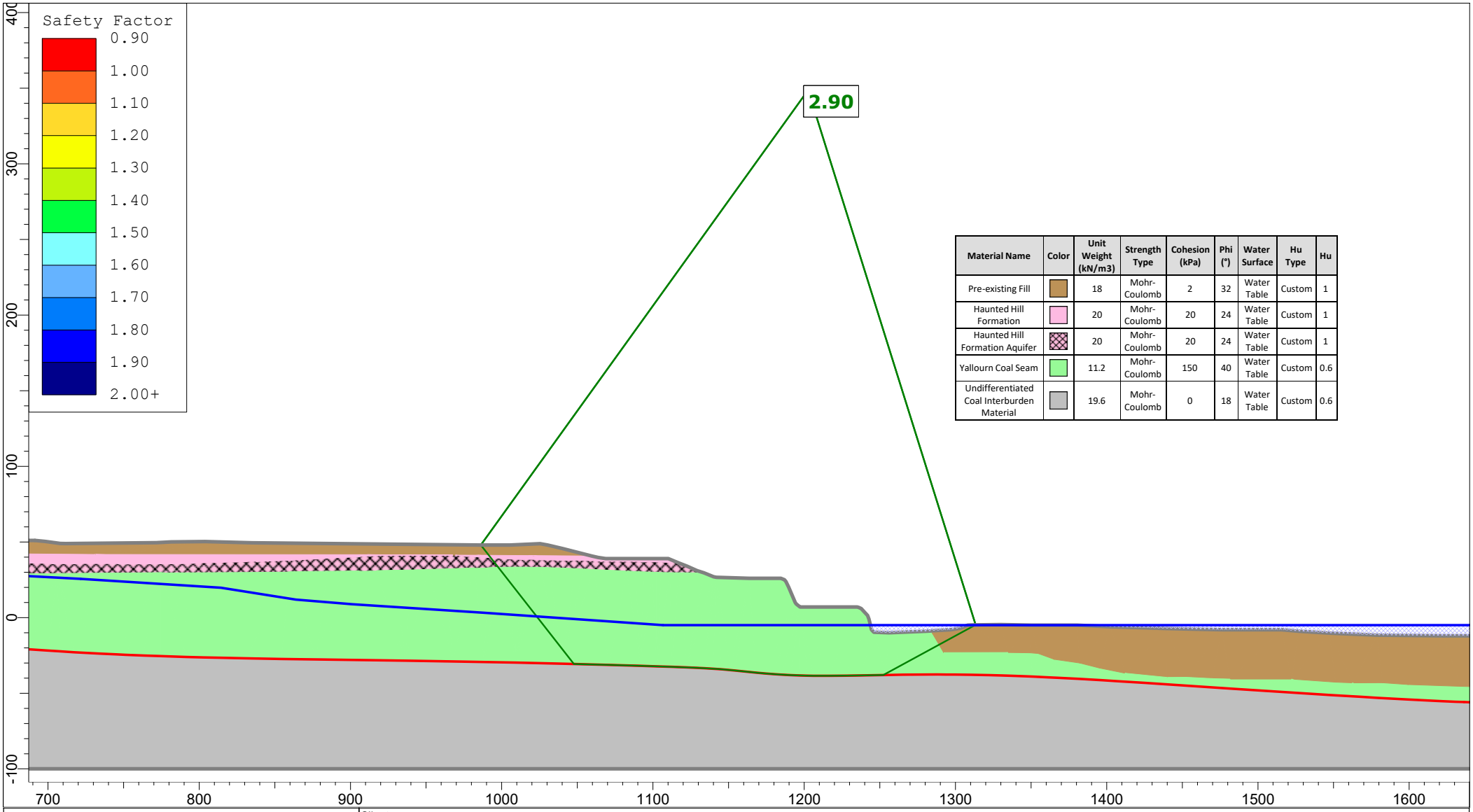
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 02	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



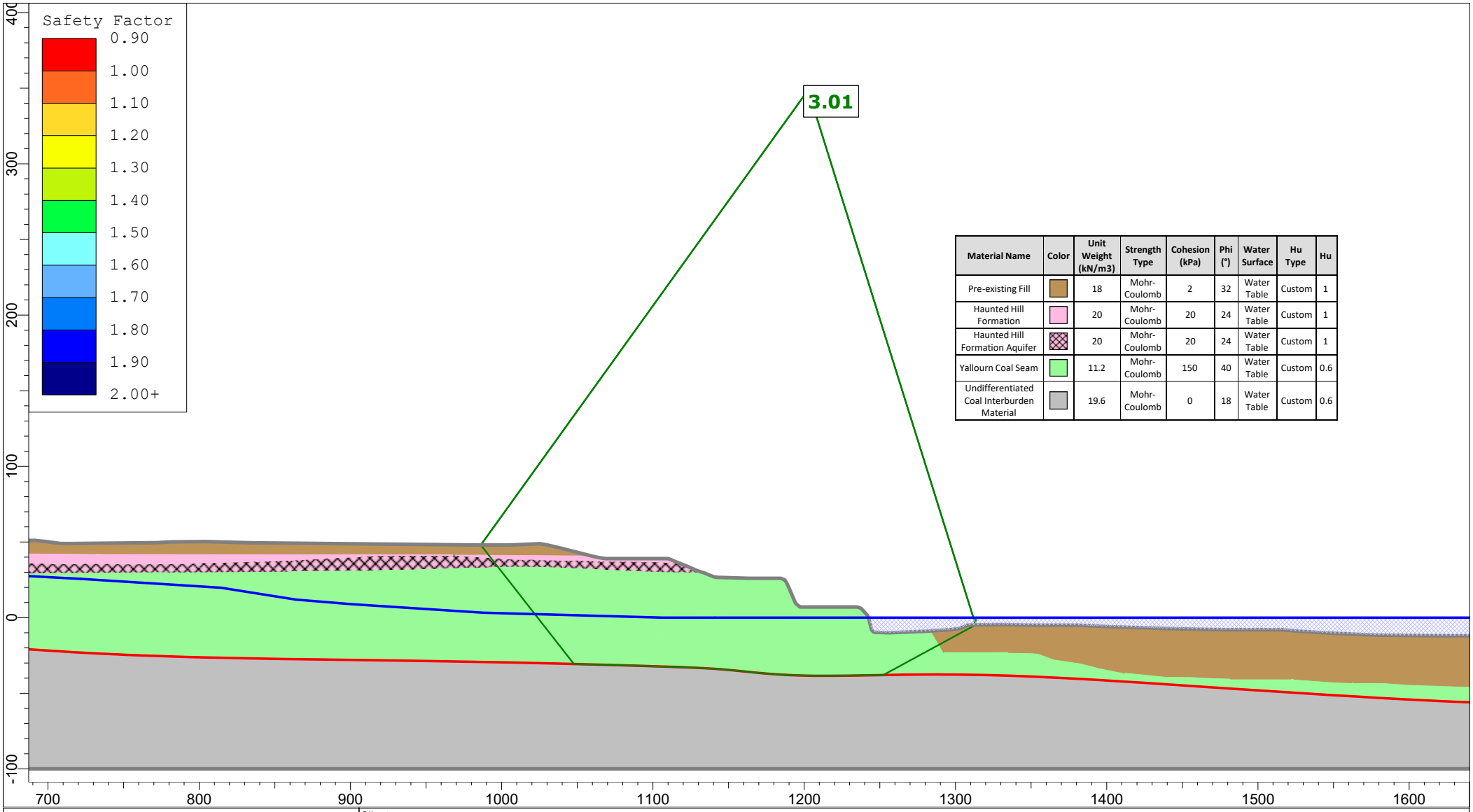
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (east)
Section:	Section 03	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Median Interseam Shear Strength		



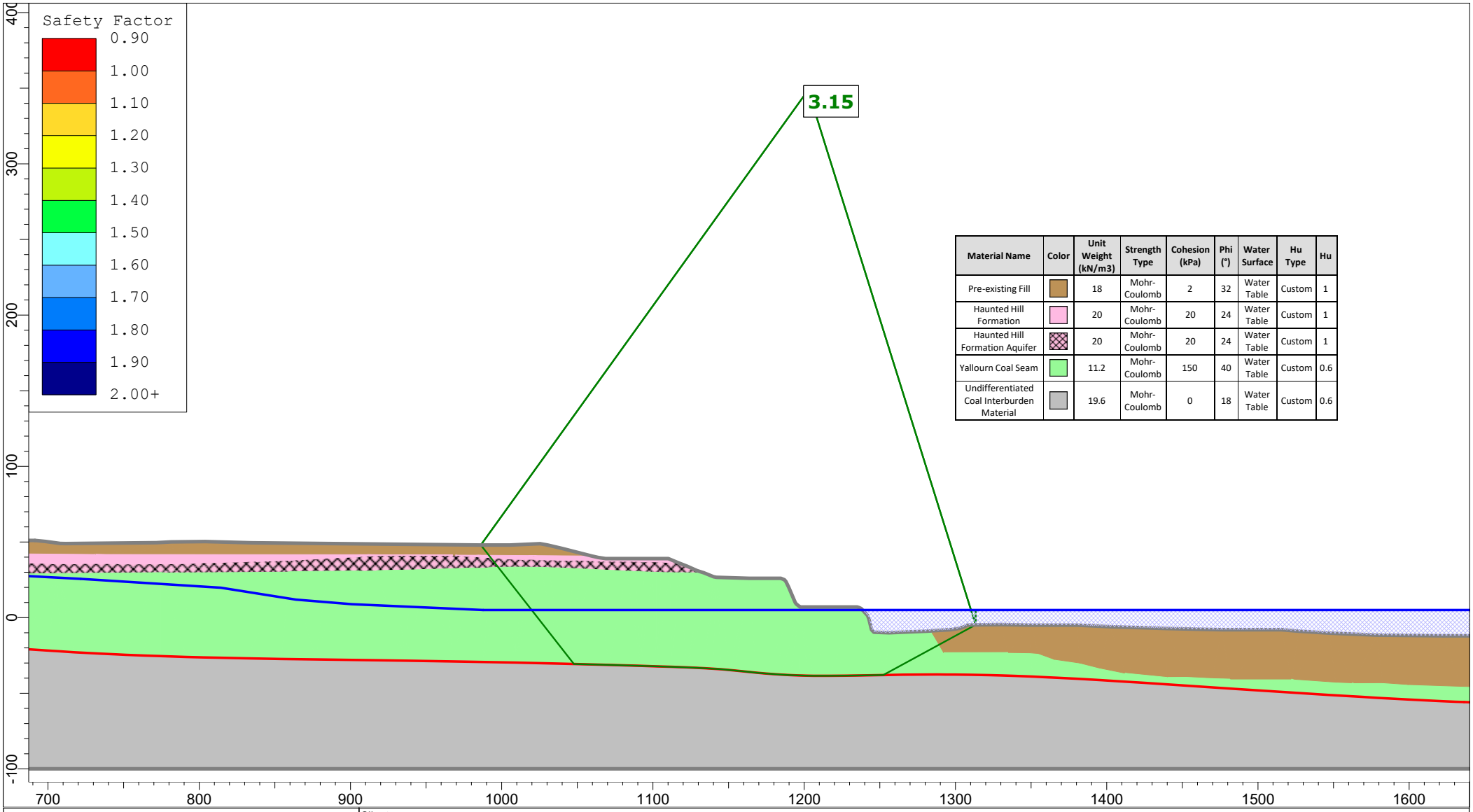
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (east)
Section:	Section 03	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Median Interseam Shear Strength		



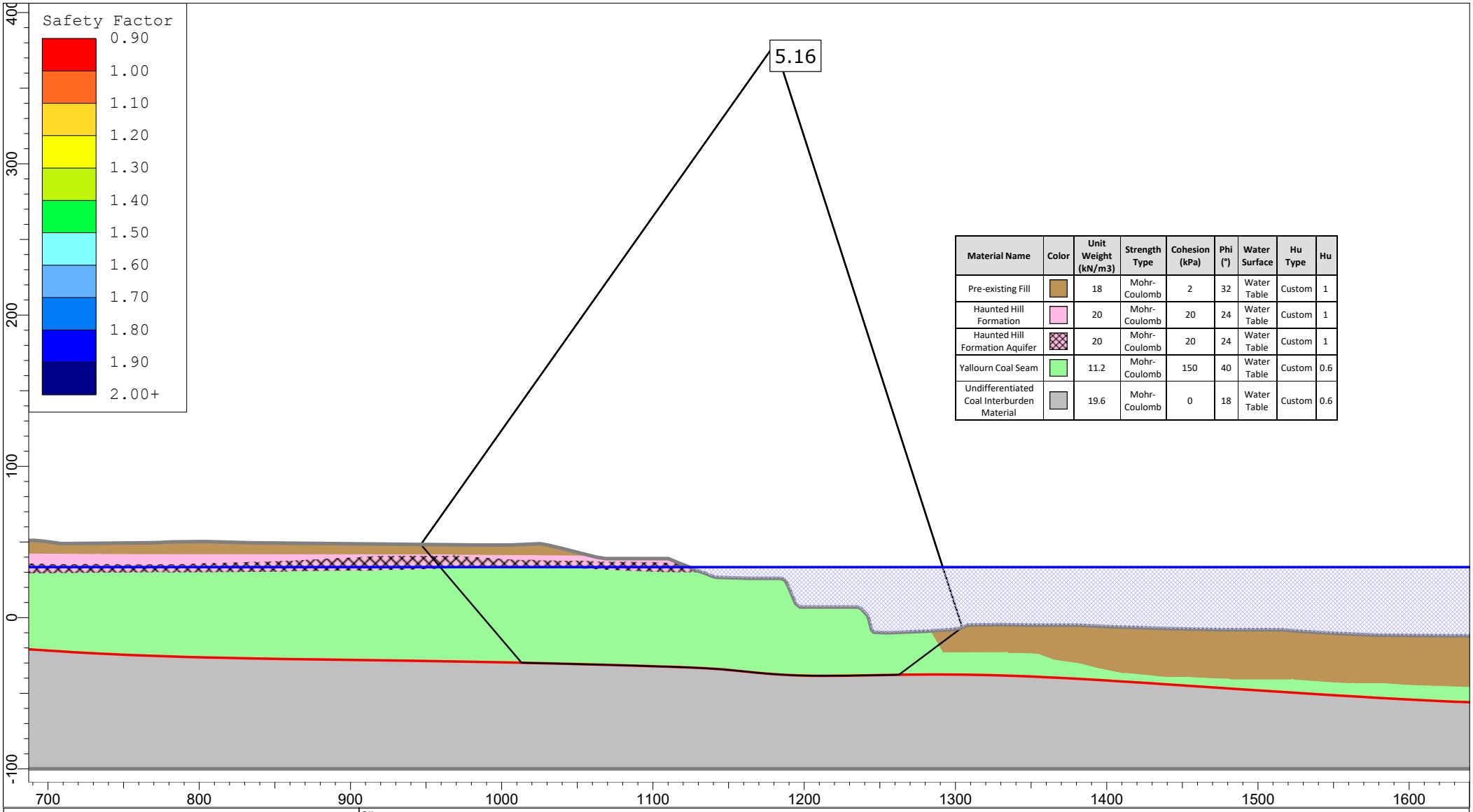
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (east)
Section:	Section 03	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Median Interseam Shear Strength		



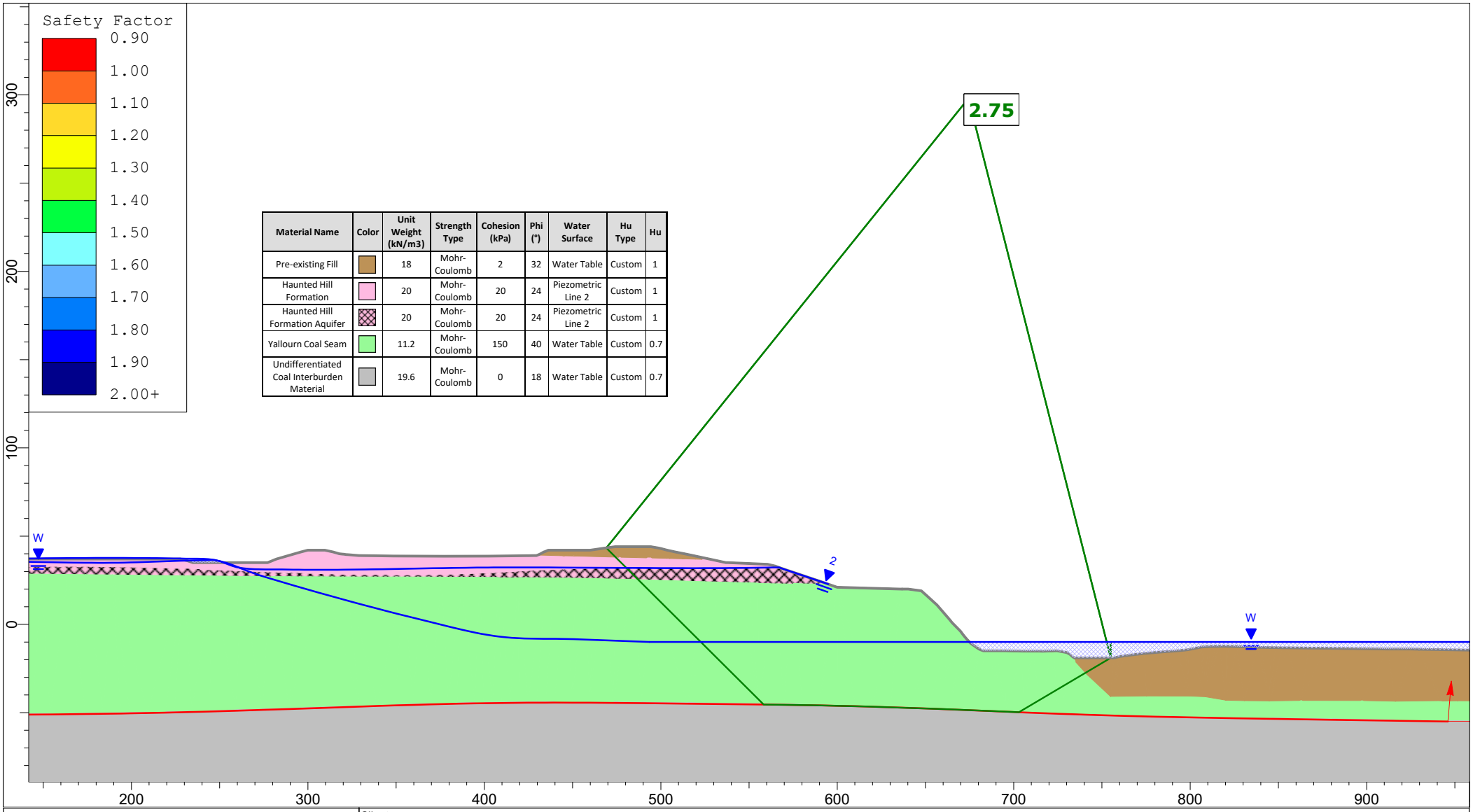
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (east)
Section:	Section 03	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Median Interseam Shear Strength		



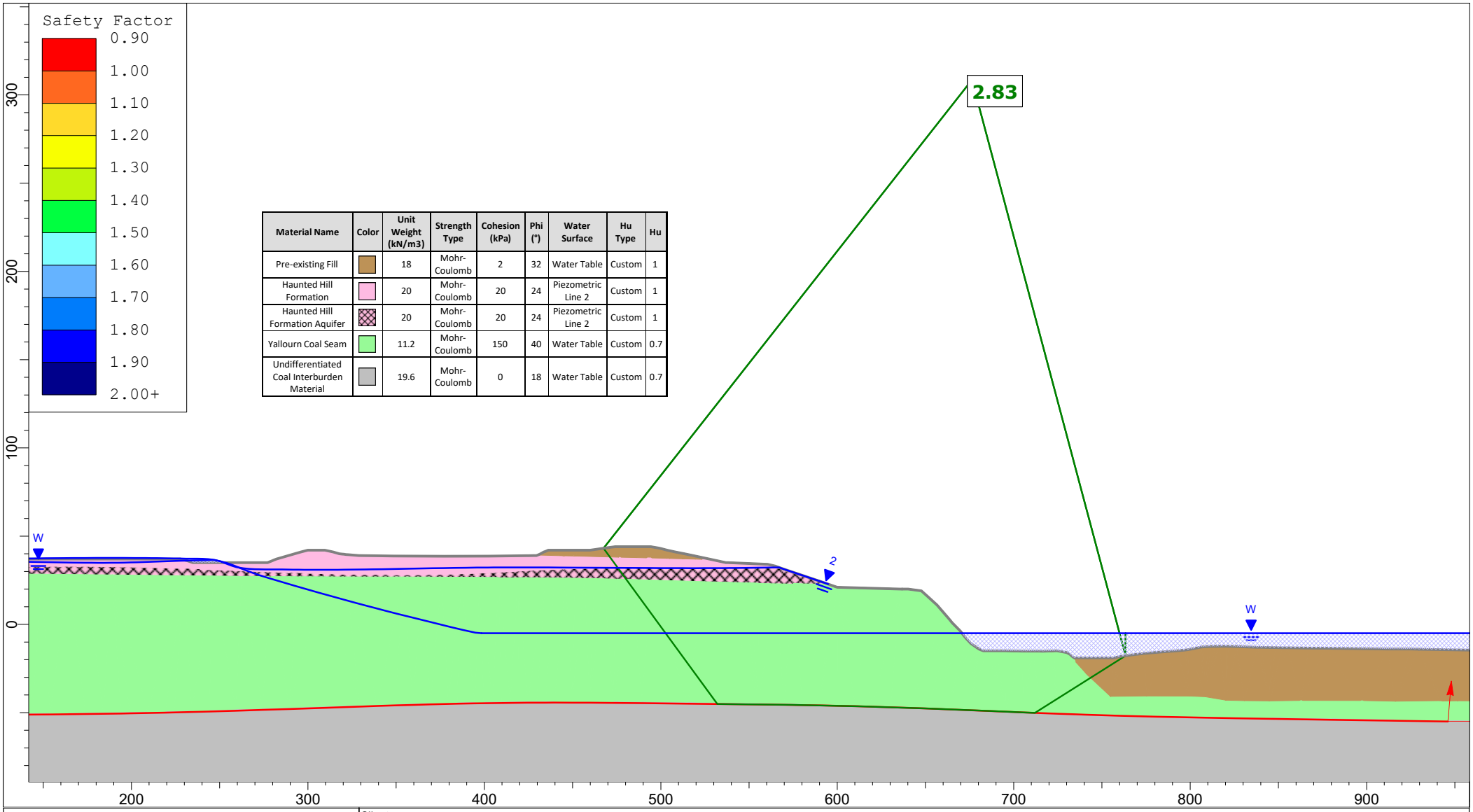
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (east)
Section:	Section 03	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



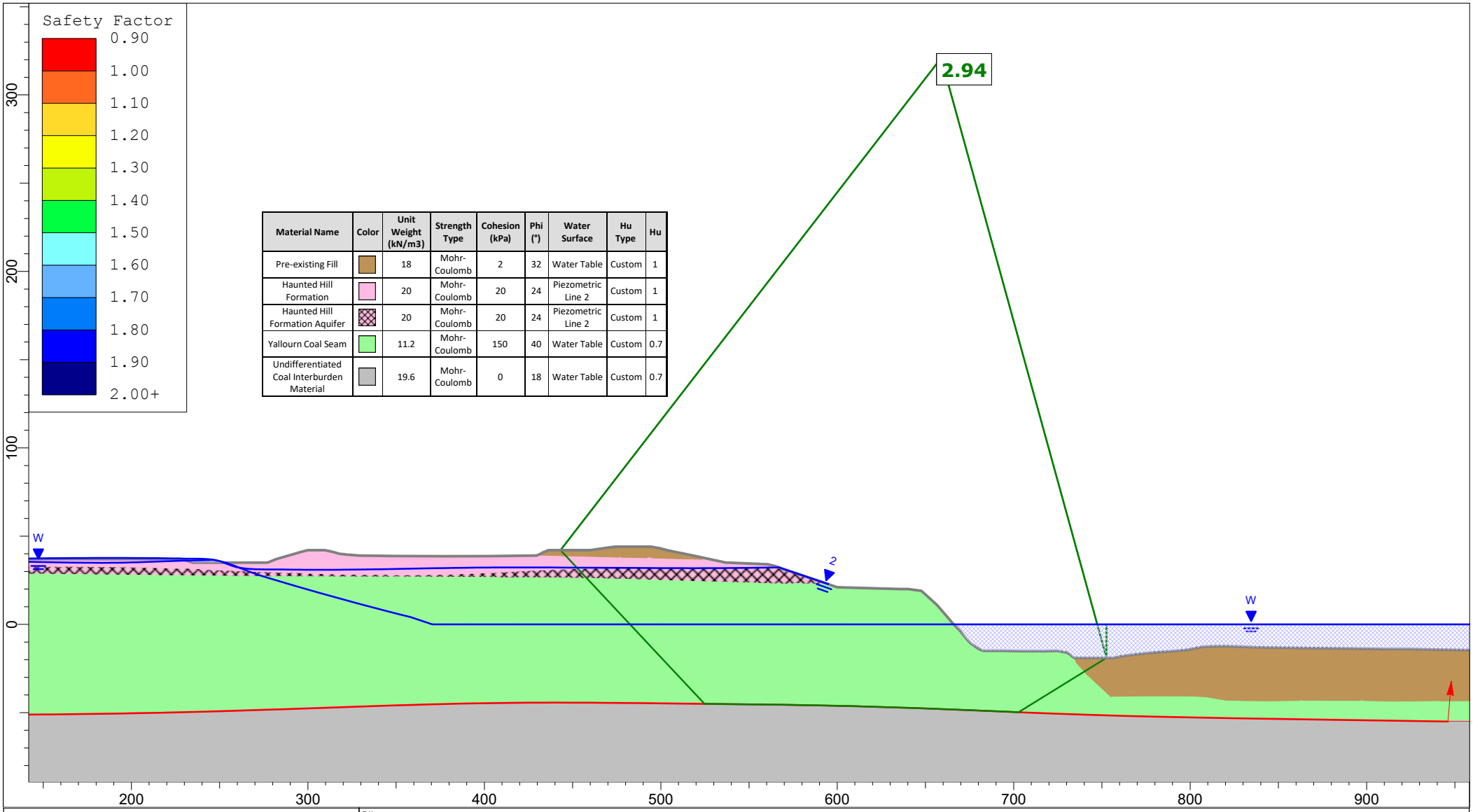
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Median Interseam Shear Strength		



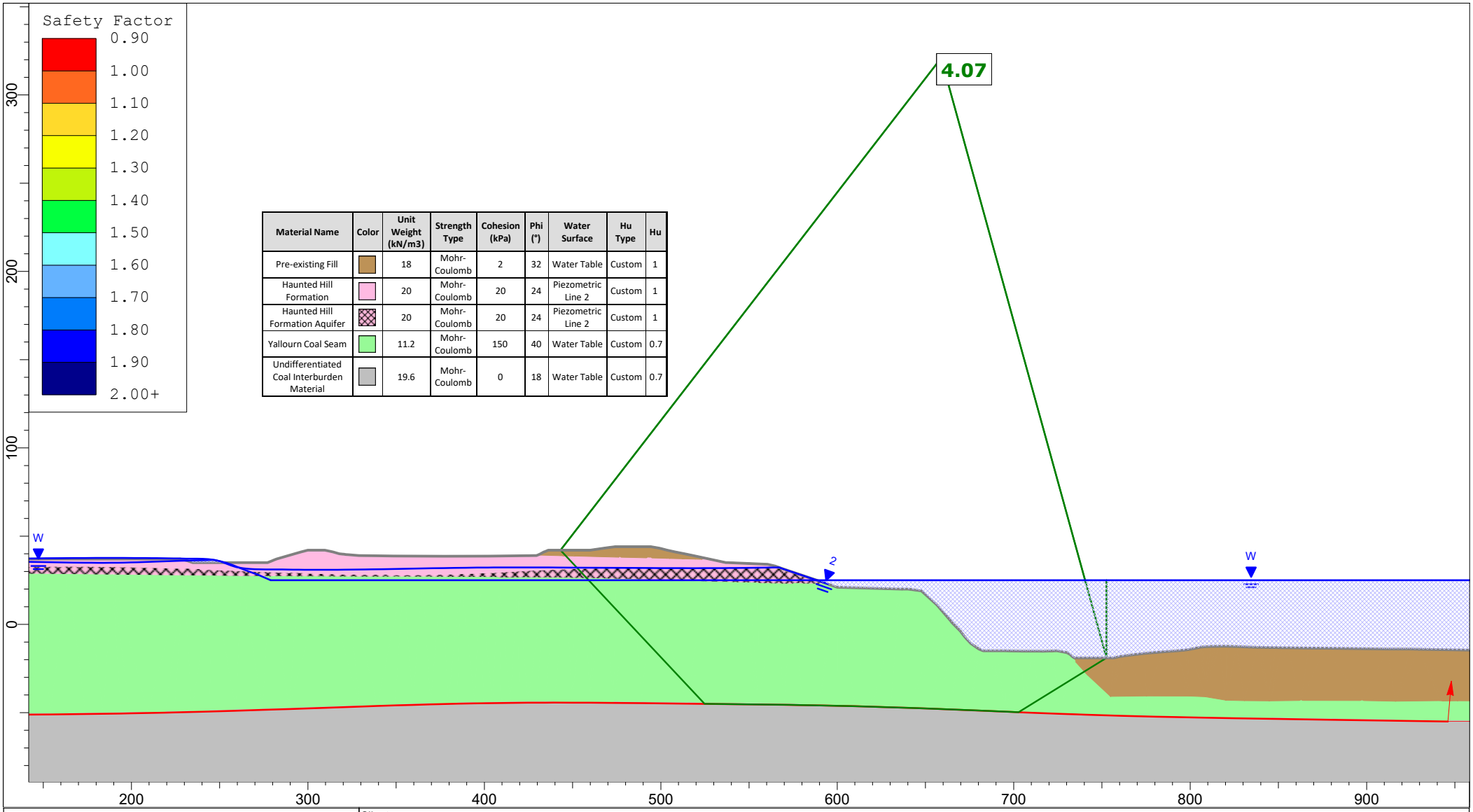
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Median Interseam Shear Strength		



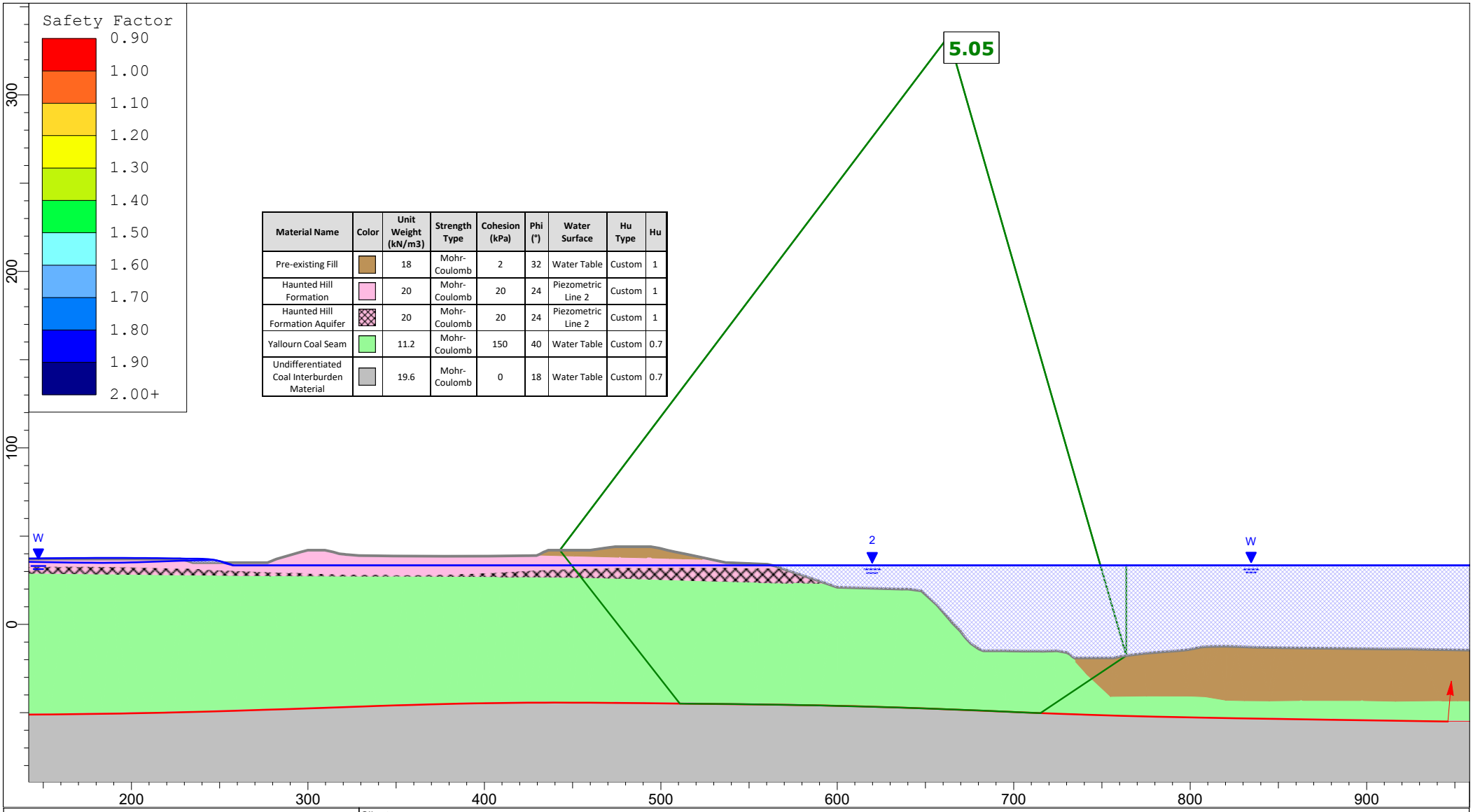
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Median Interseam Shear Strength		



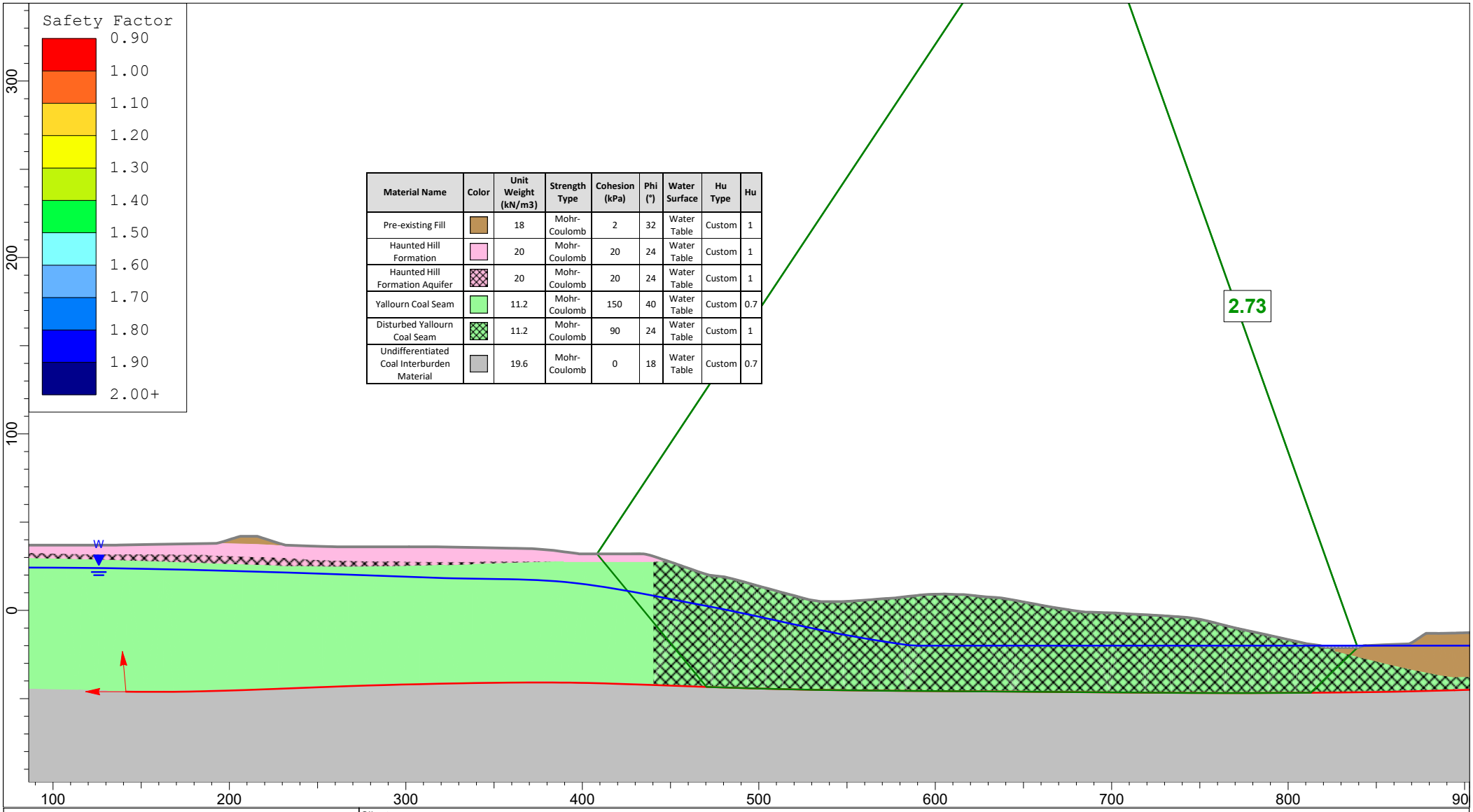
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength		



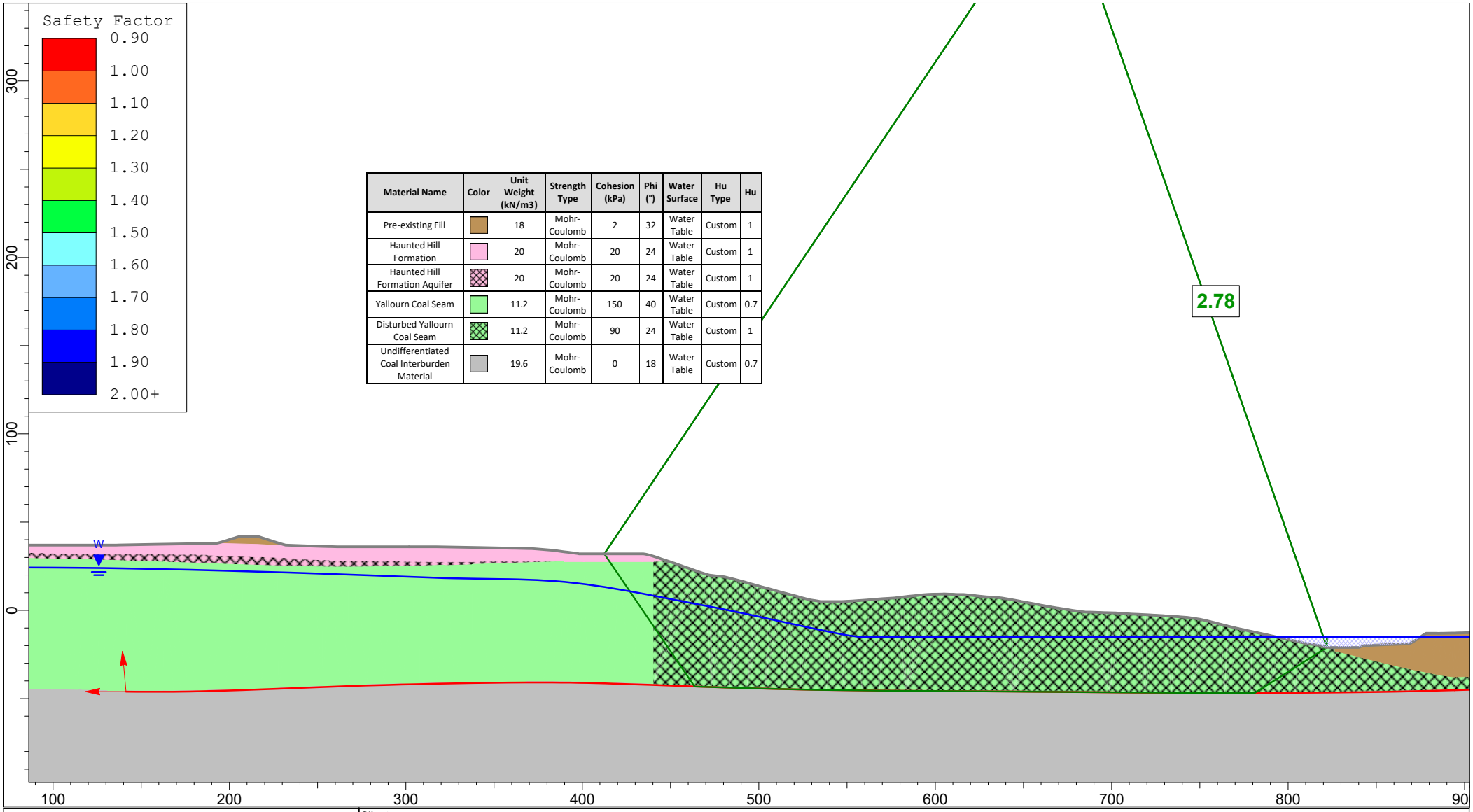
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



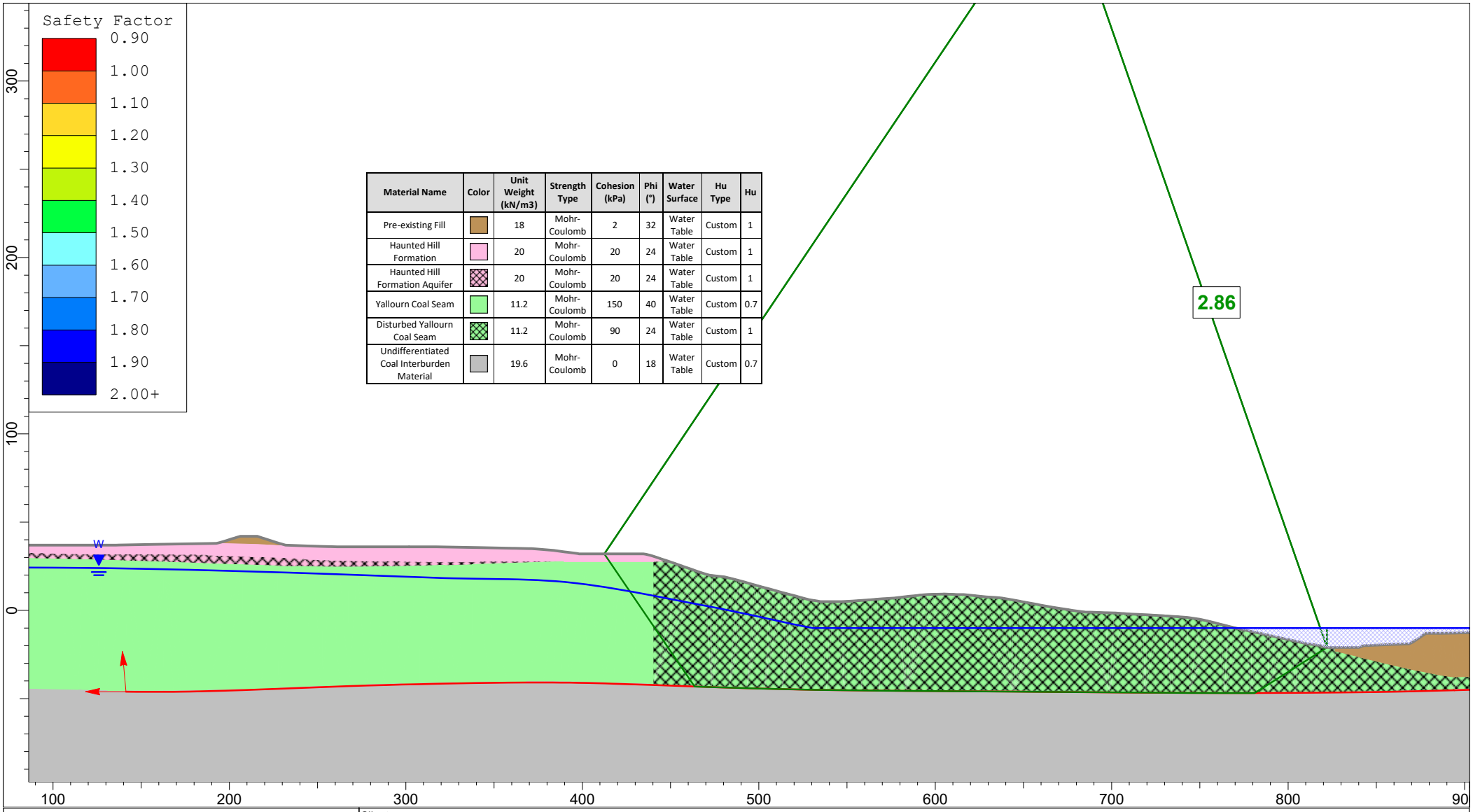
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -20 mRL
Notes:	Median Interseam Shear Strength		



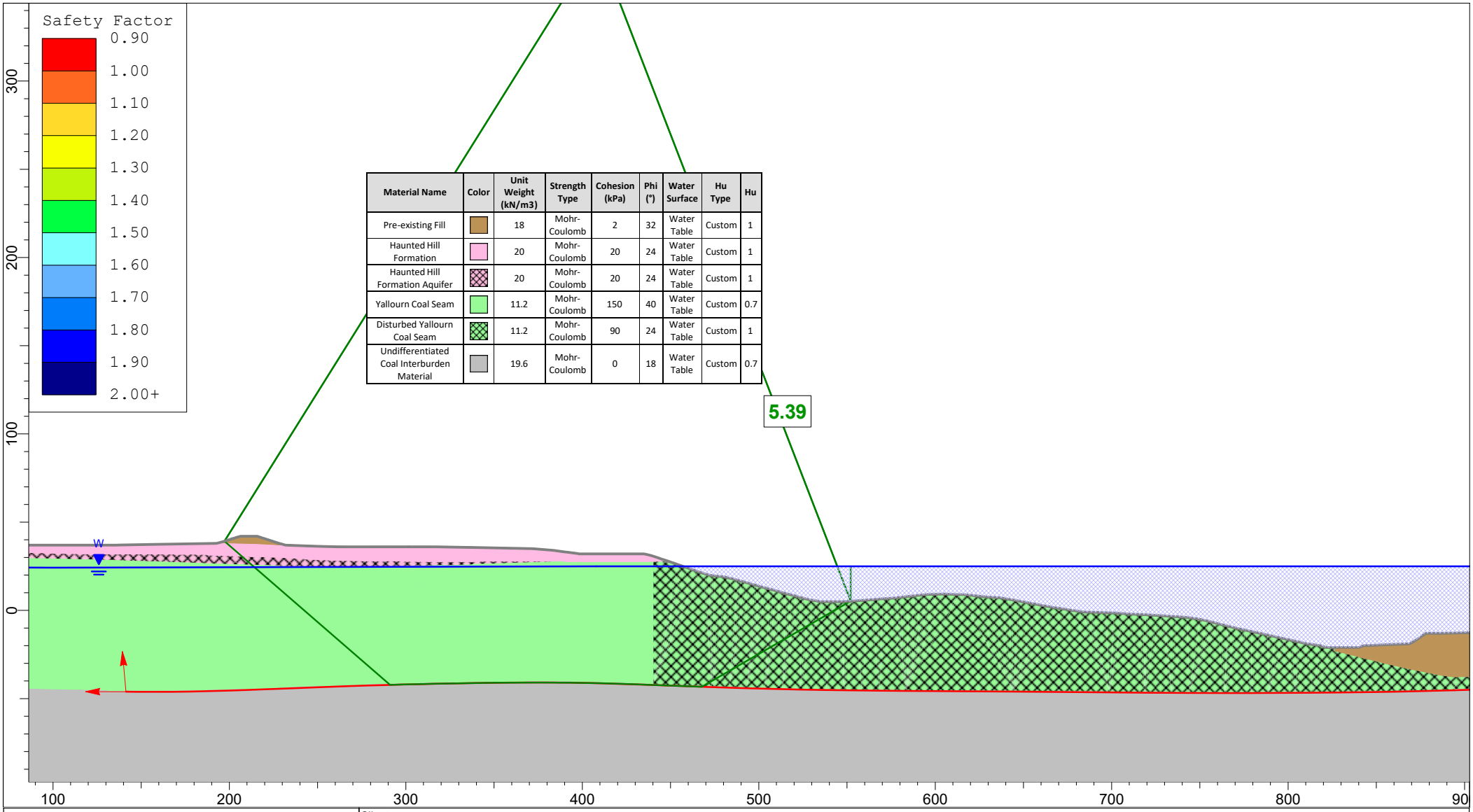
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -15 mRL
Notes:	Median Interseam Shear Strength		



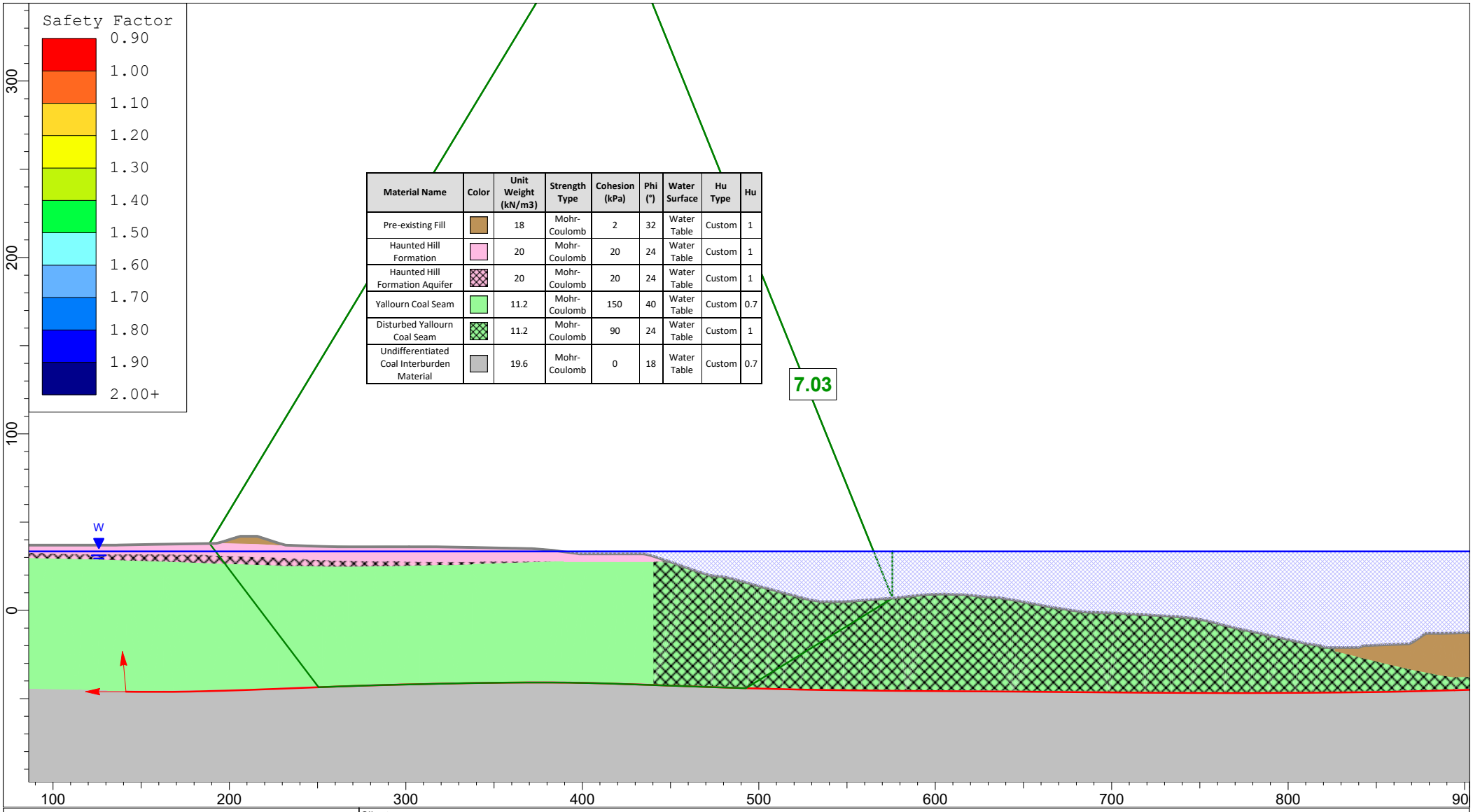
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Median Interseam Shear Strength		



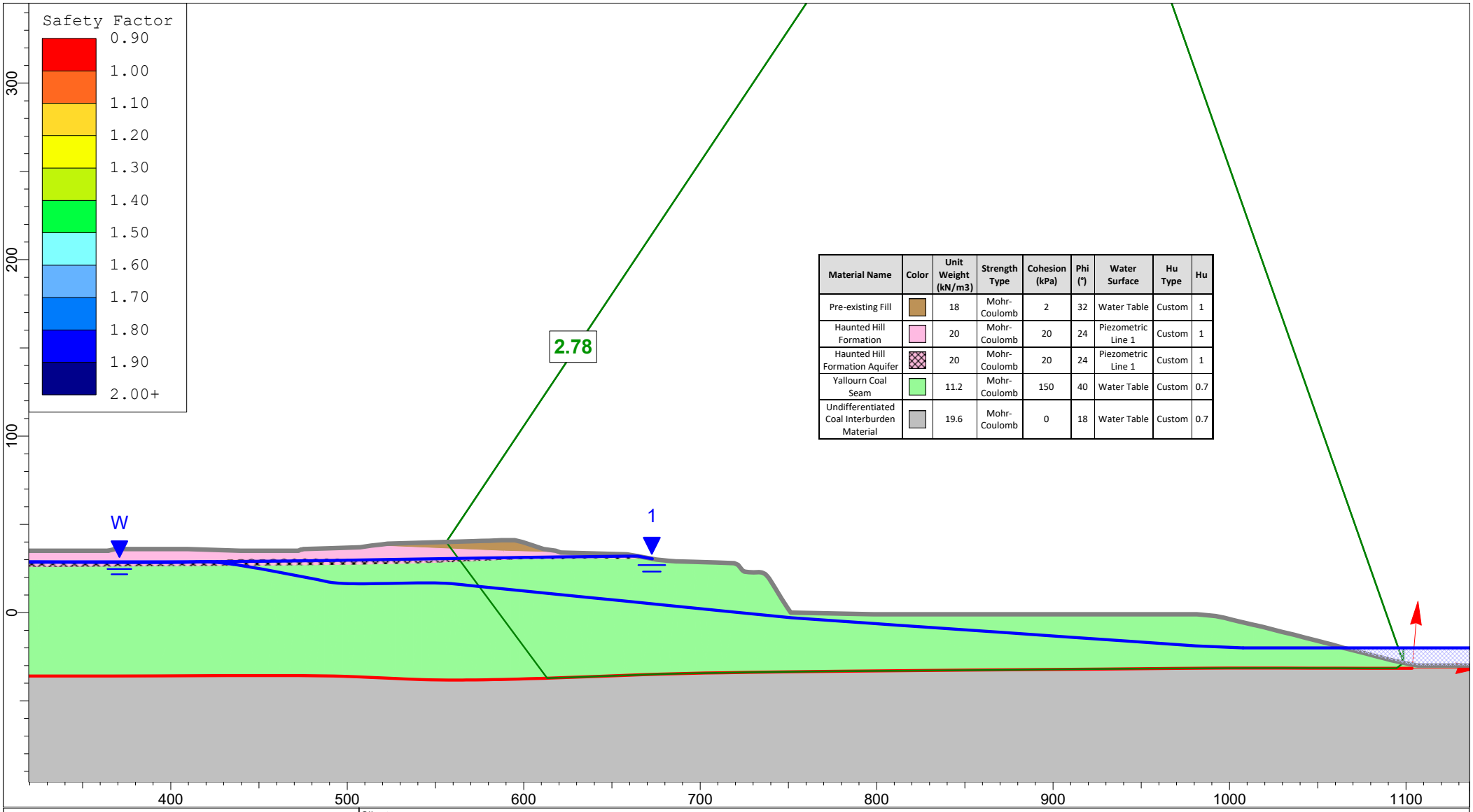
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength		



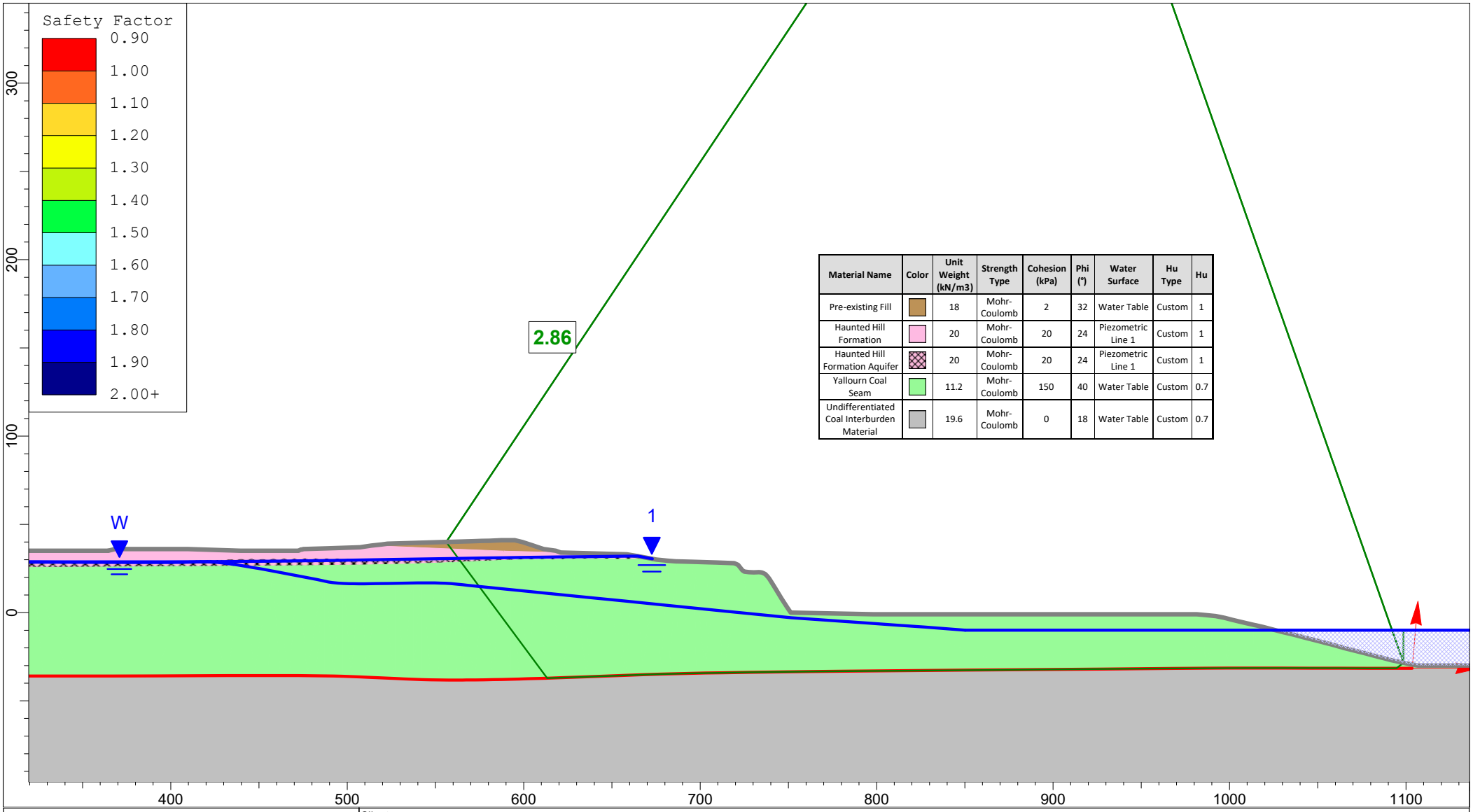
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



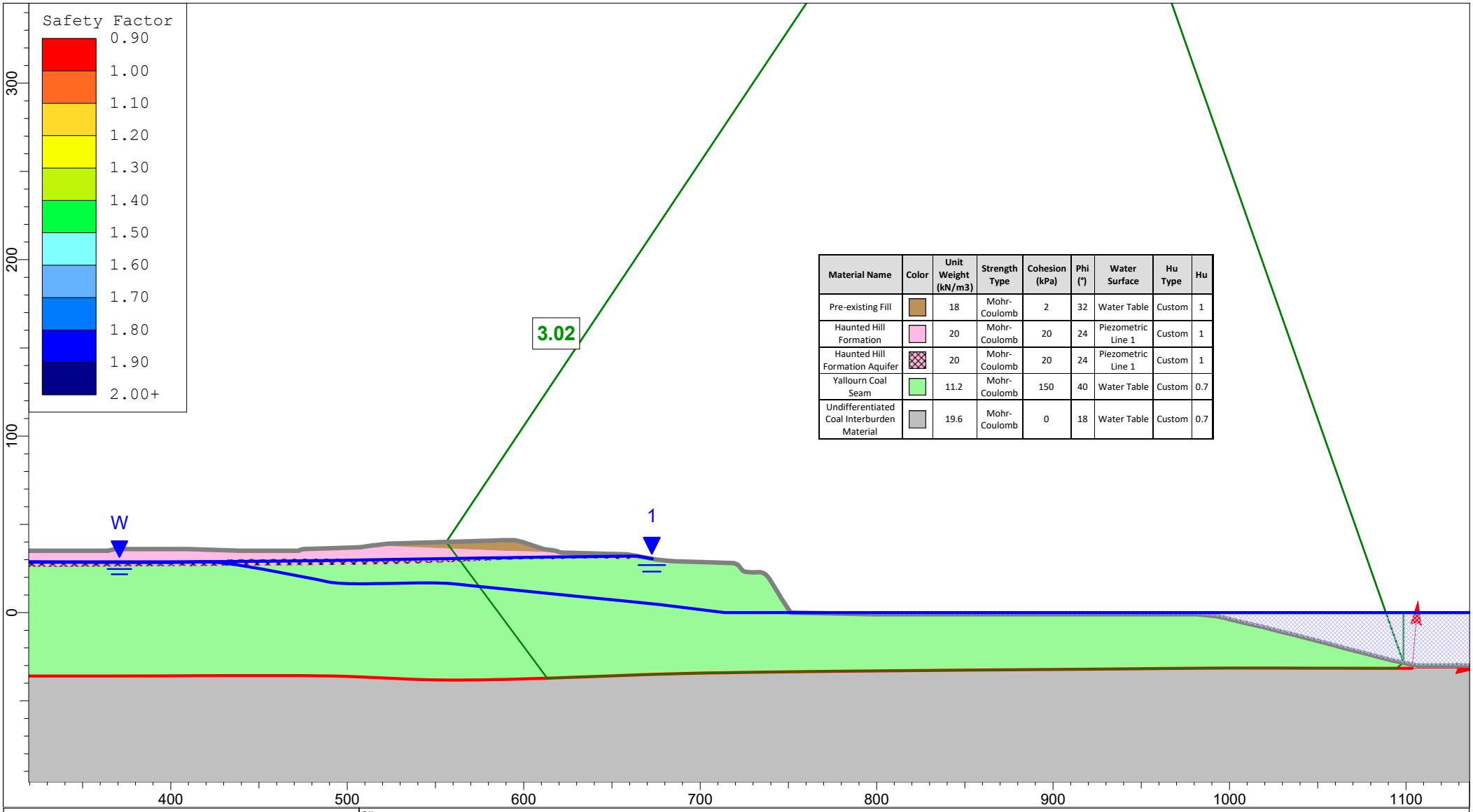
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -20 mRL
Notes:	Median Interseam Shear Strength		



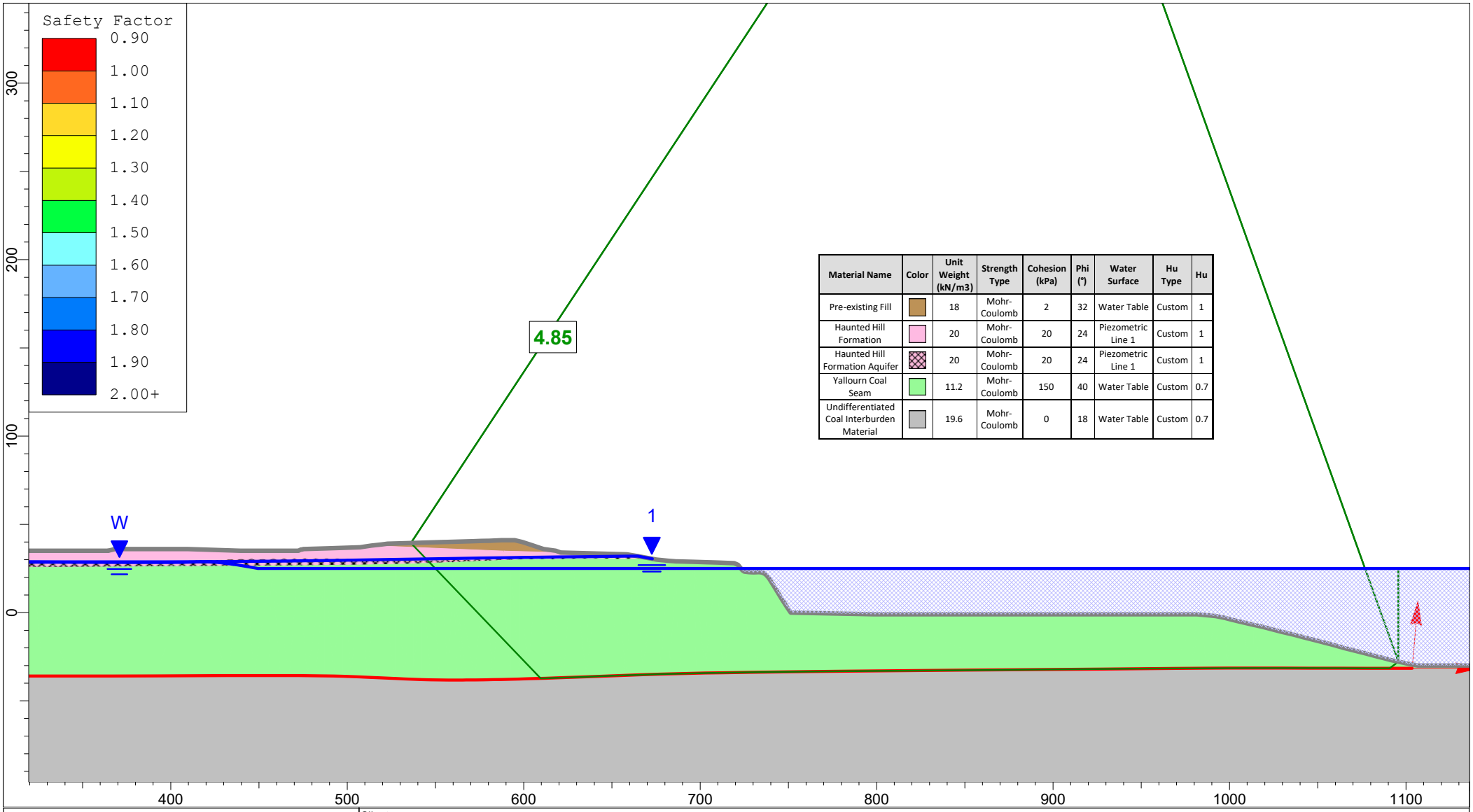
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Median Interseam Shear Strength		



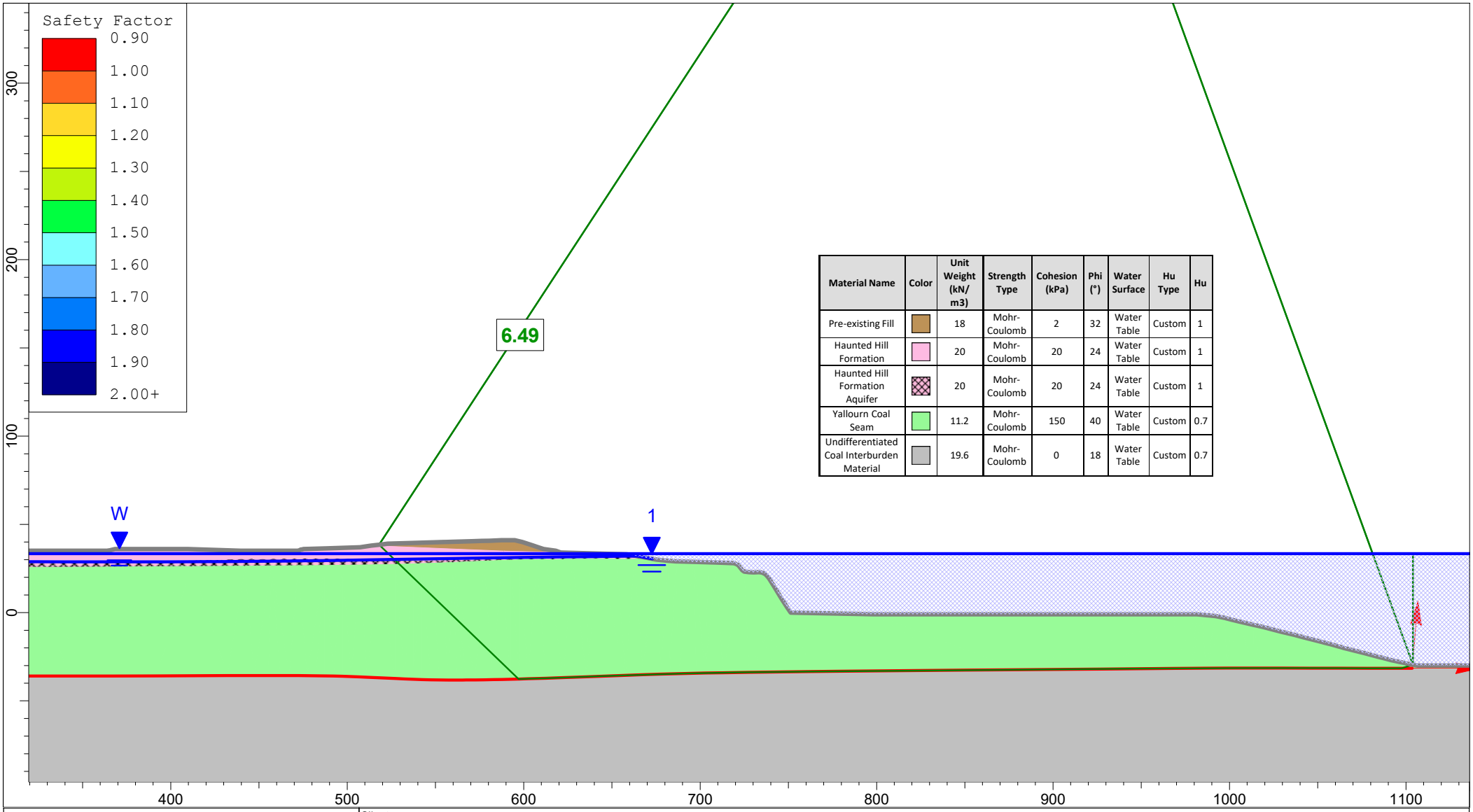
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Median Interseam Shear Strength		



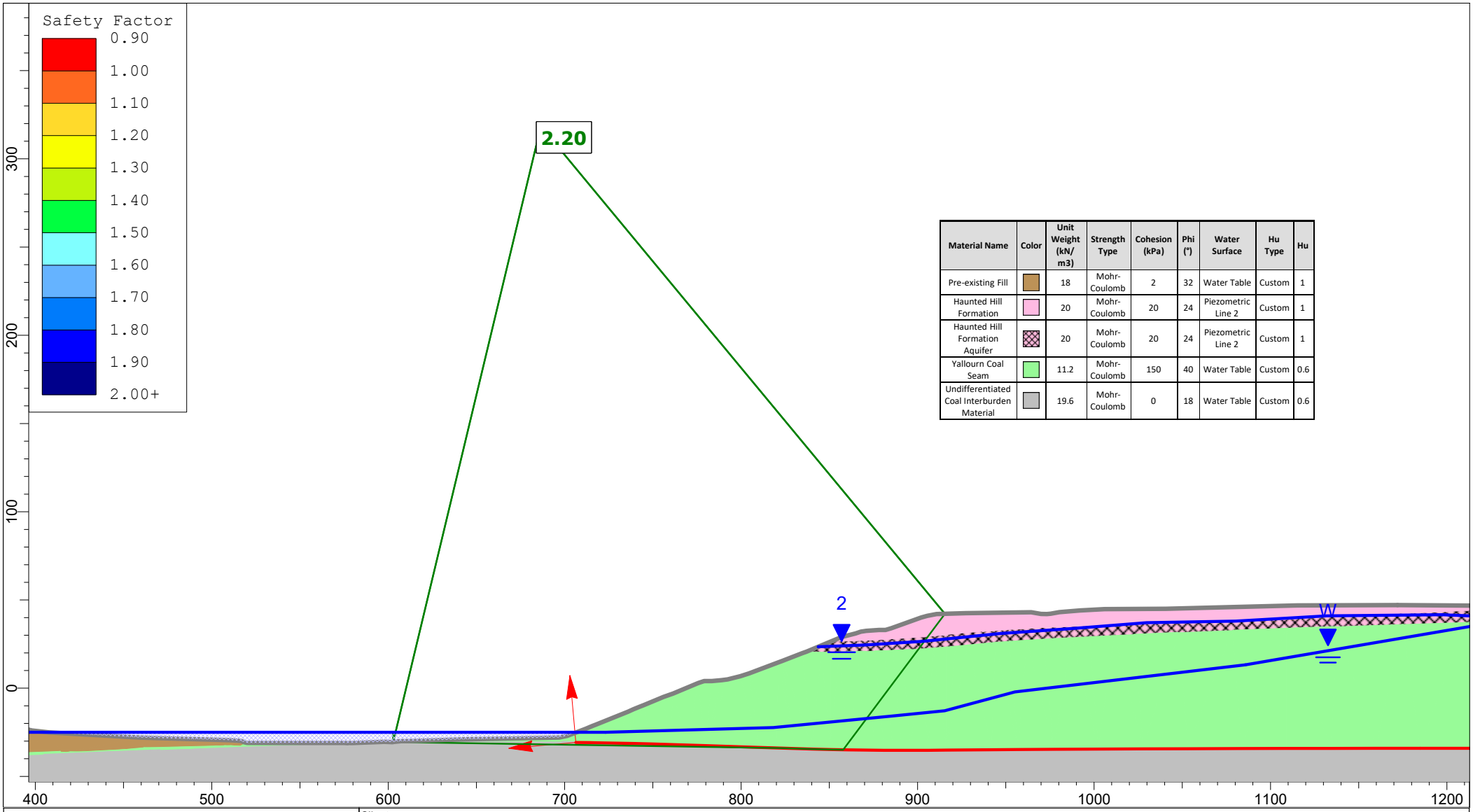
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength		



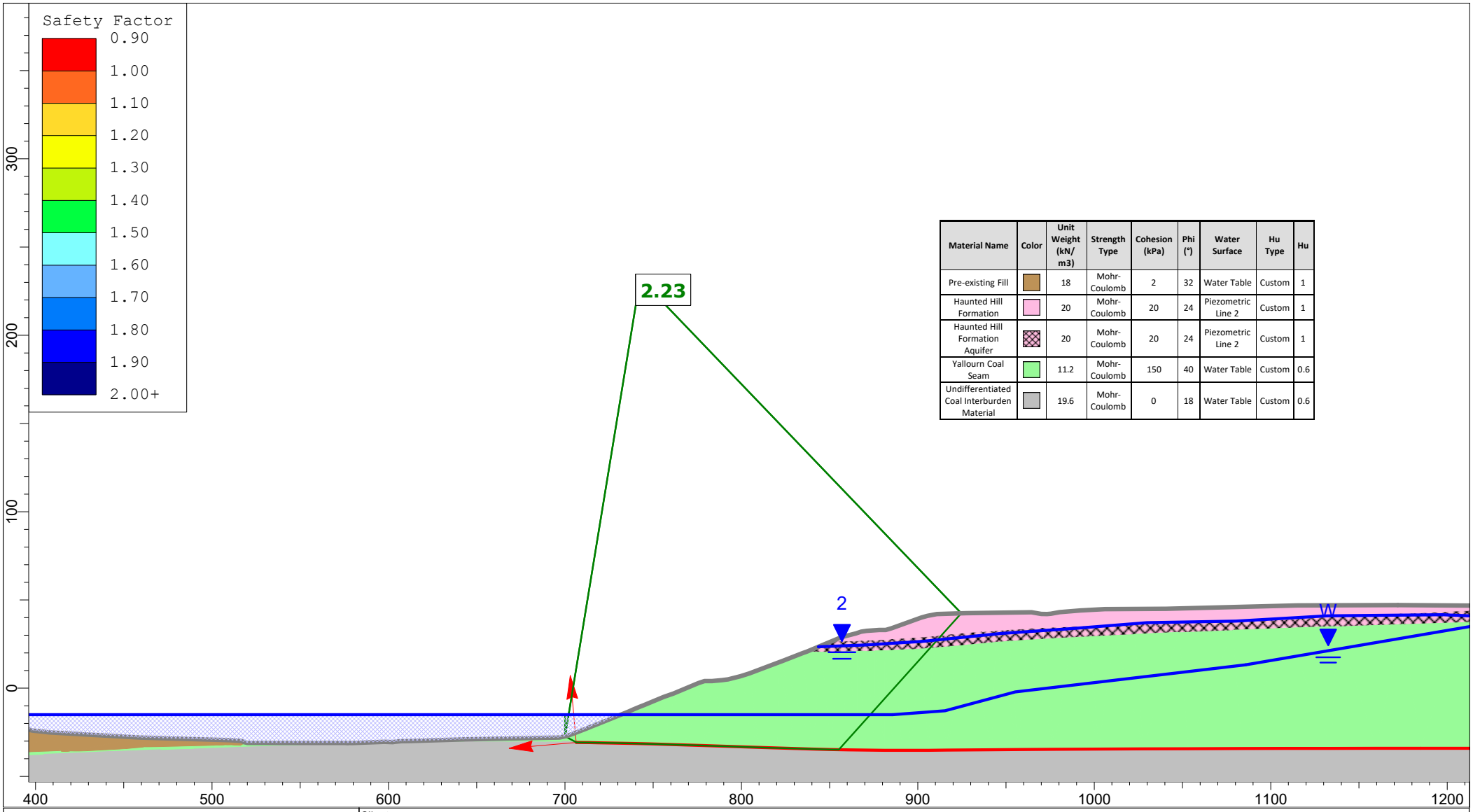
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4mRL
Notes:	Median Interseam Shear Strength		



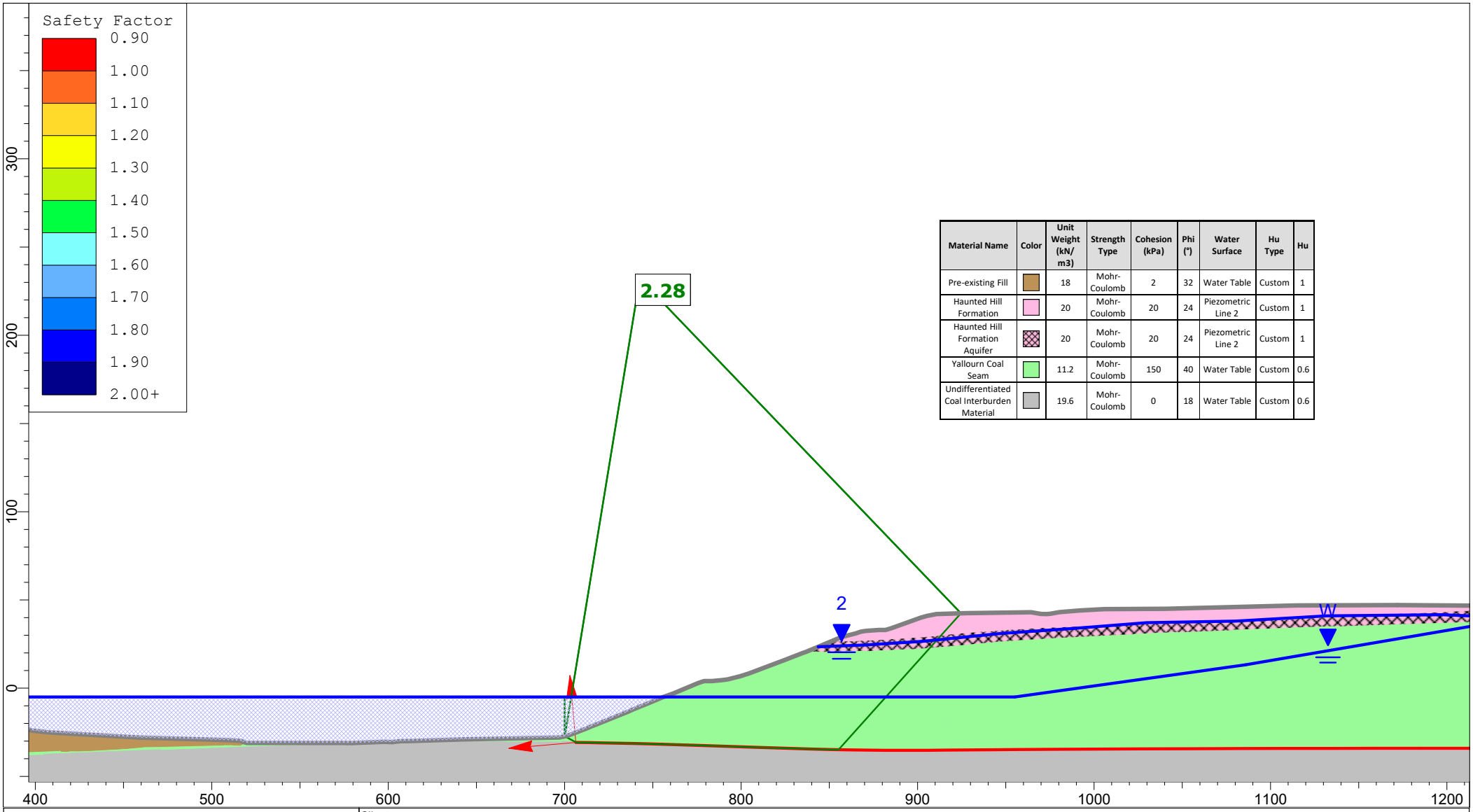
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -25 mRL
Notes:	Median Interseam Shear Strength		



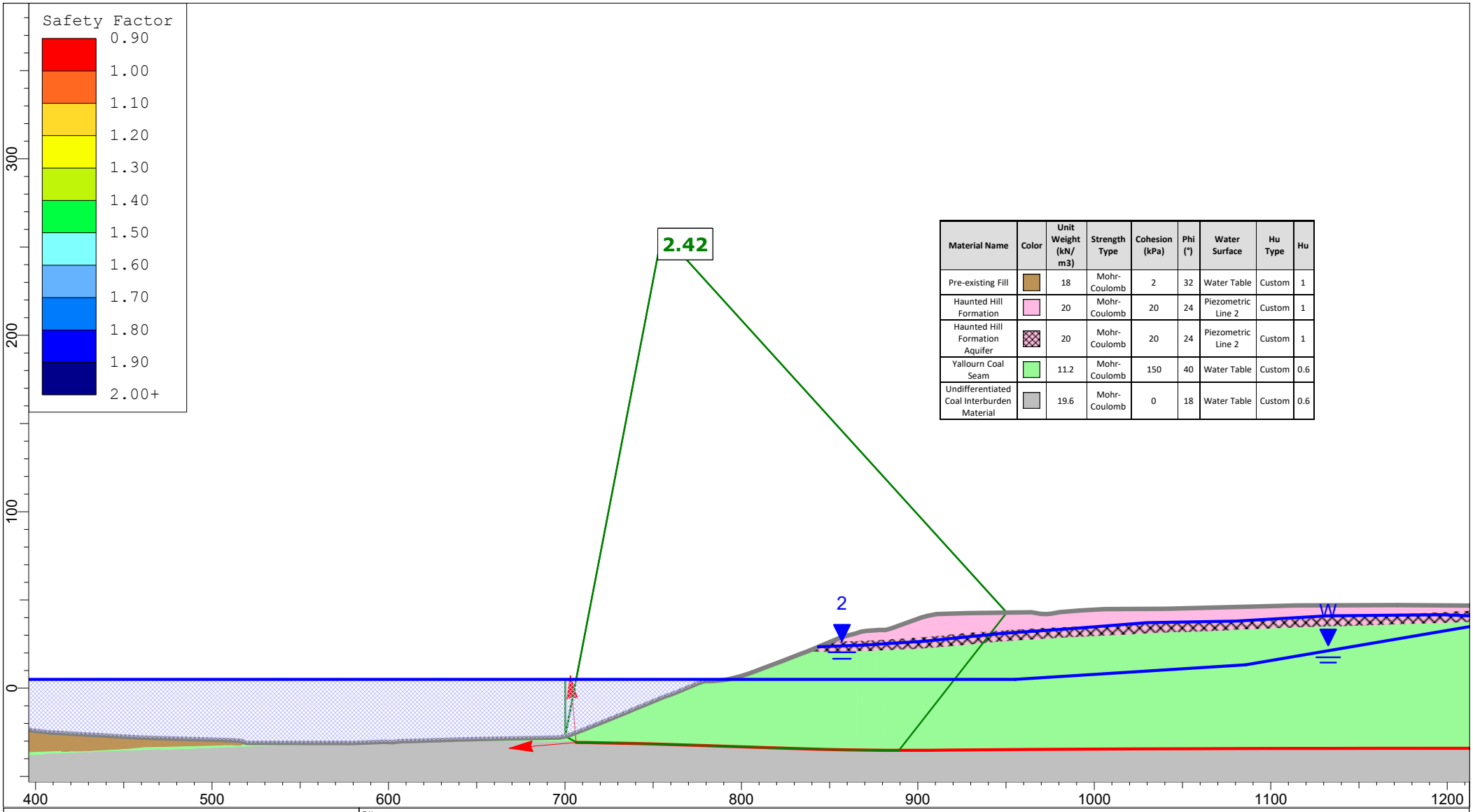
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -15 mRL
Notes:	Median Interseam Shear Strength		



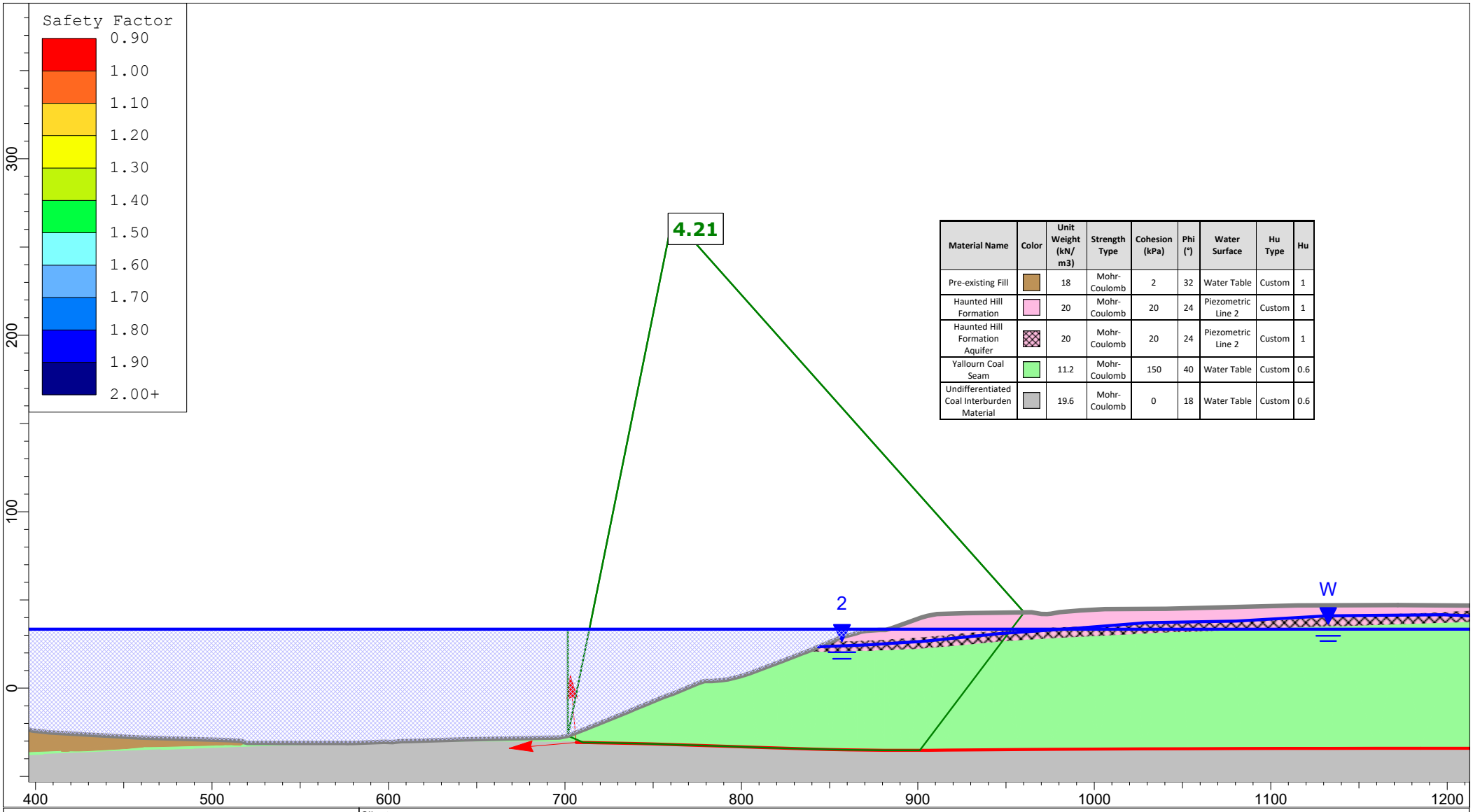
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Median Interseam Shear Strength		



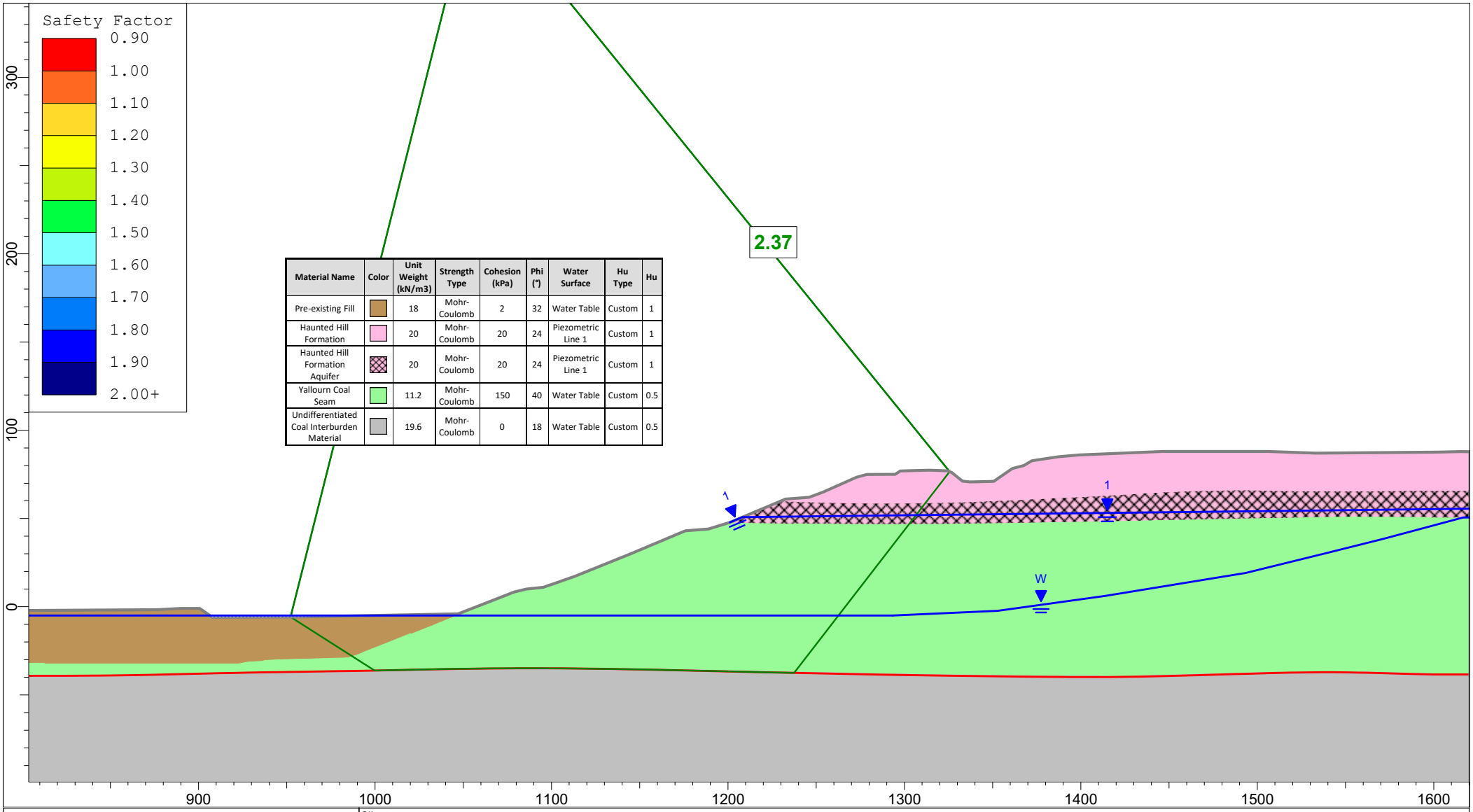
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Median Interseam Shear Strength		



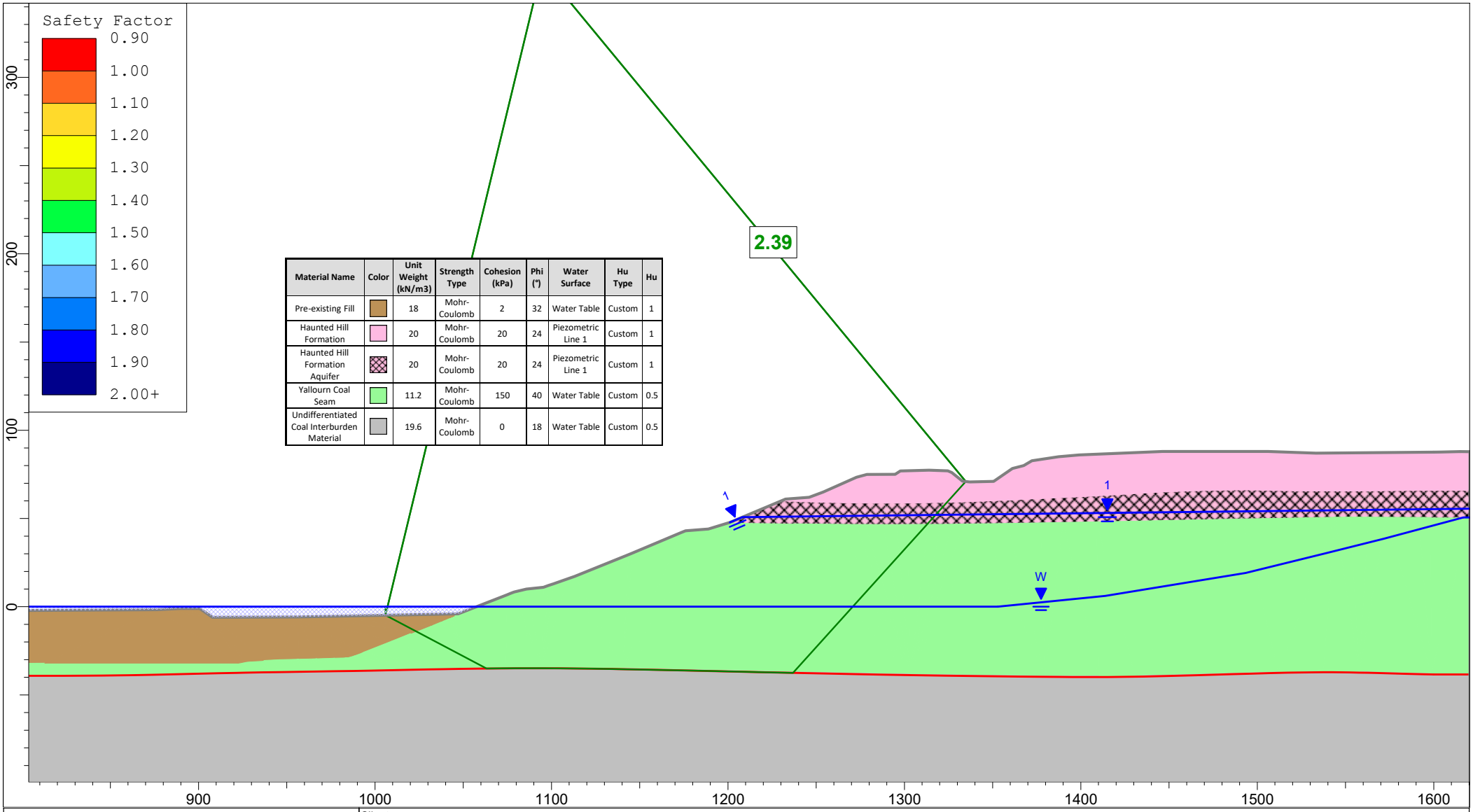
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



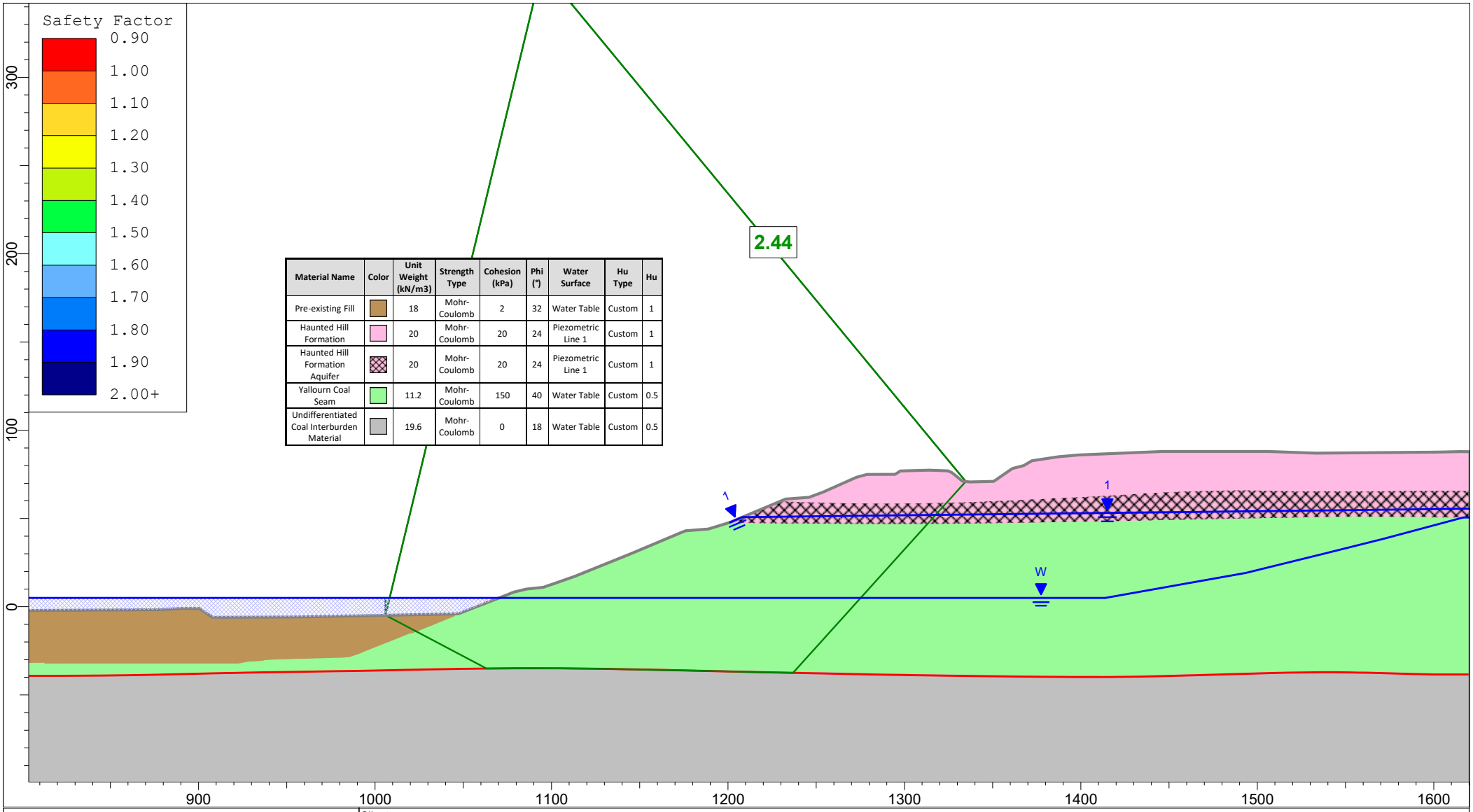
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Median Interseam Shear Strength		



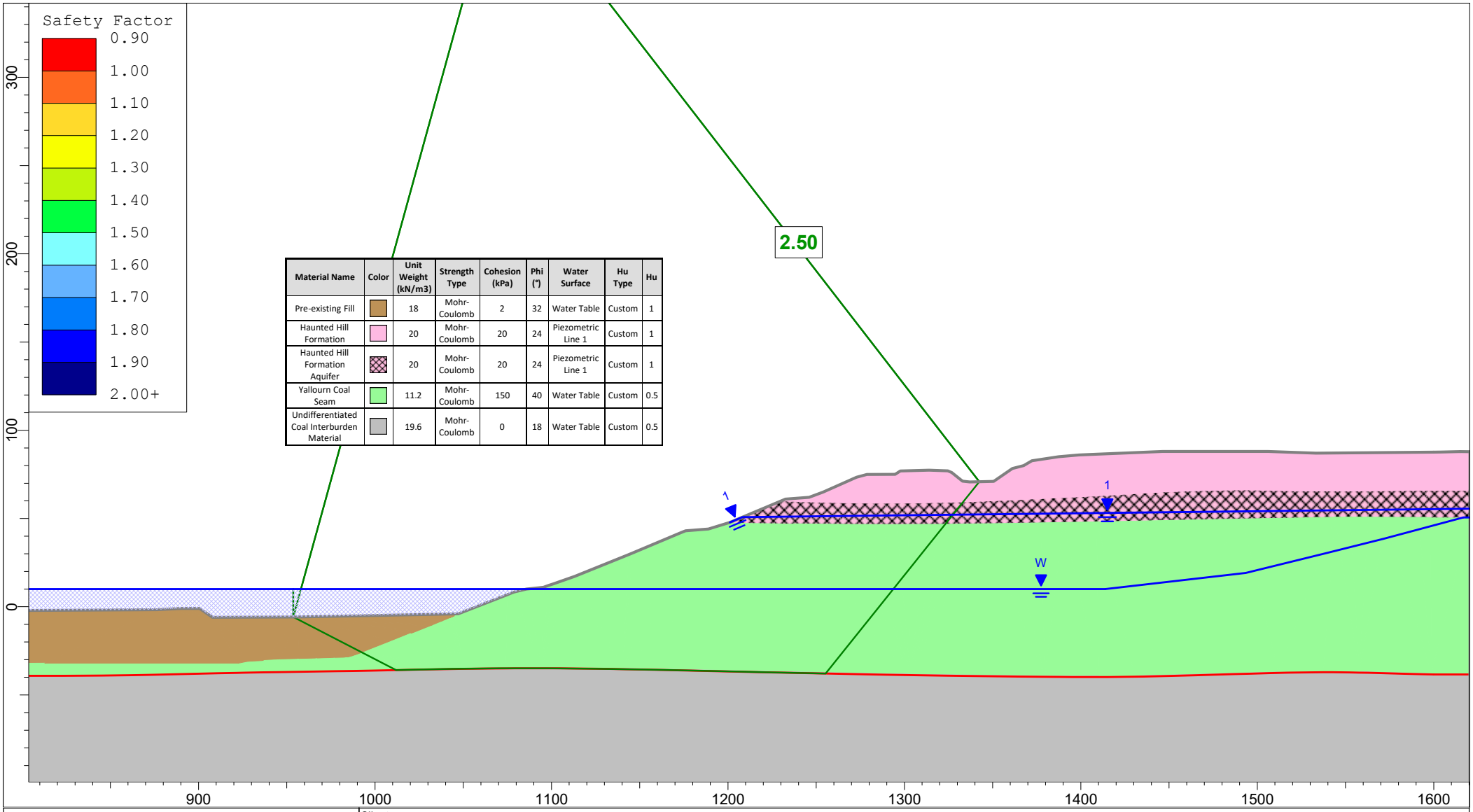
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Median Interseam Shear Strength		



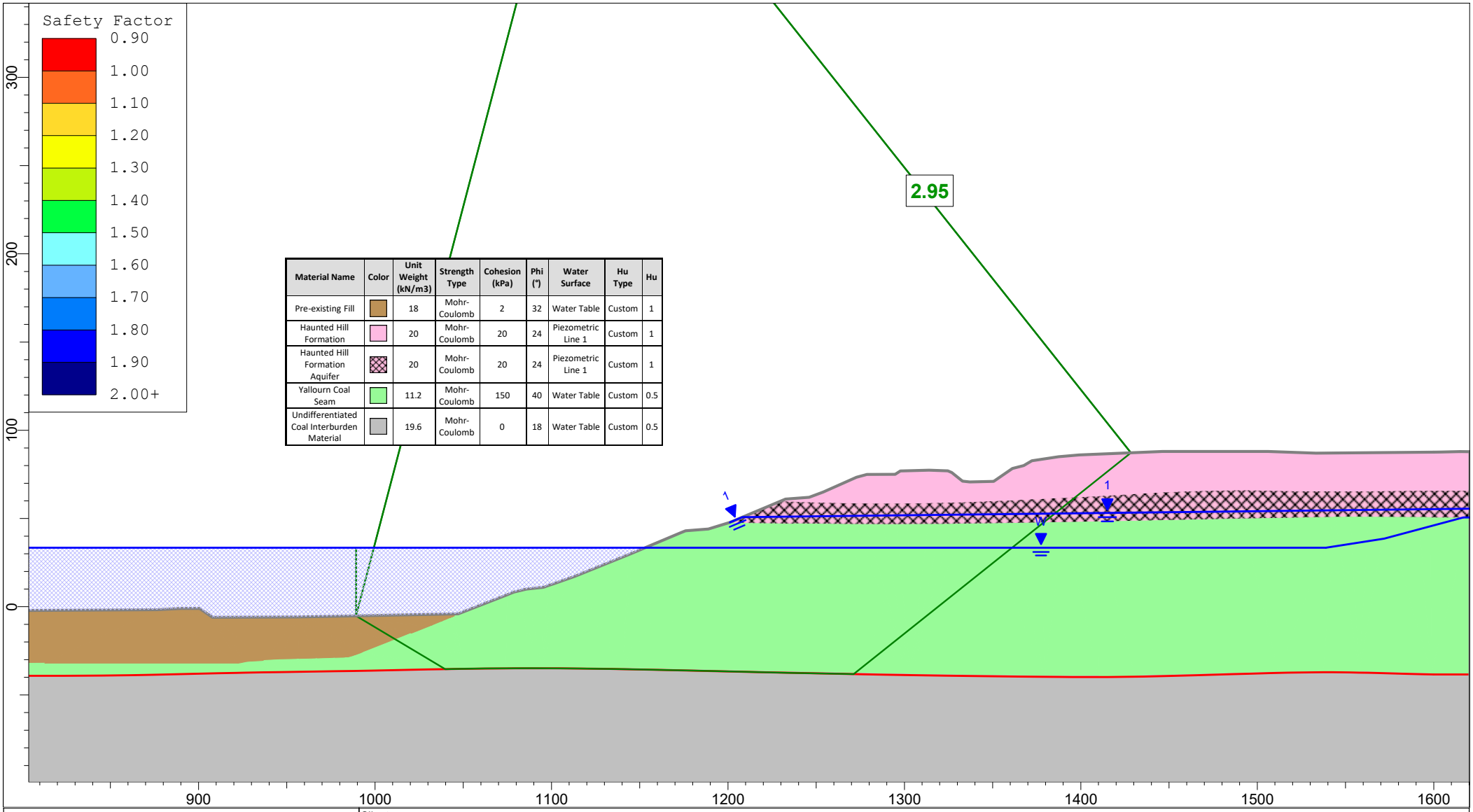
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Median Interseam Shear Strength		



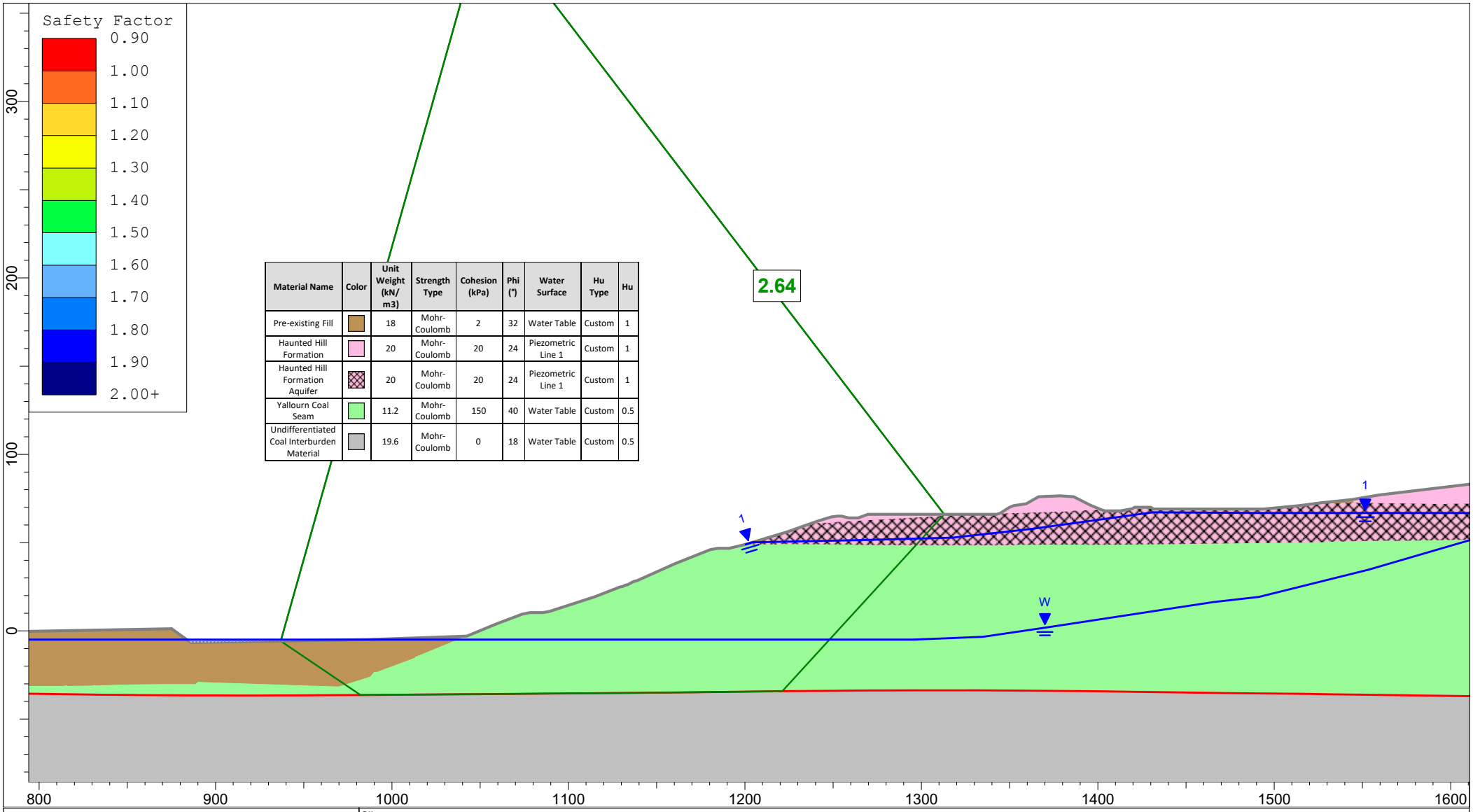
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



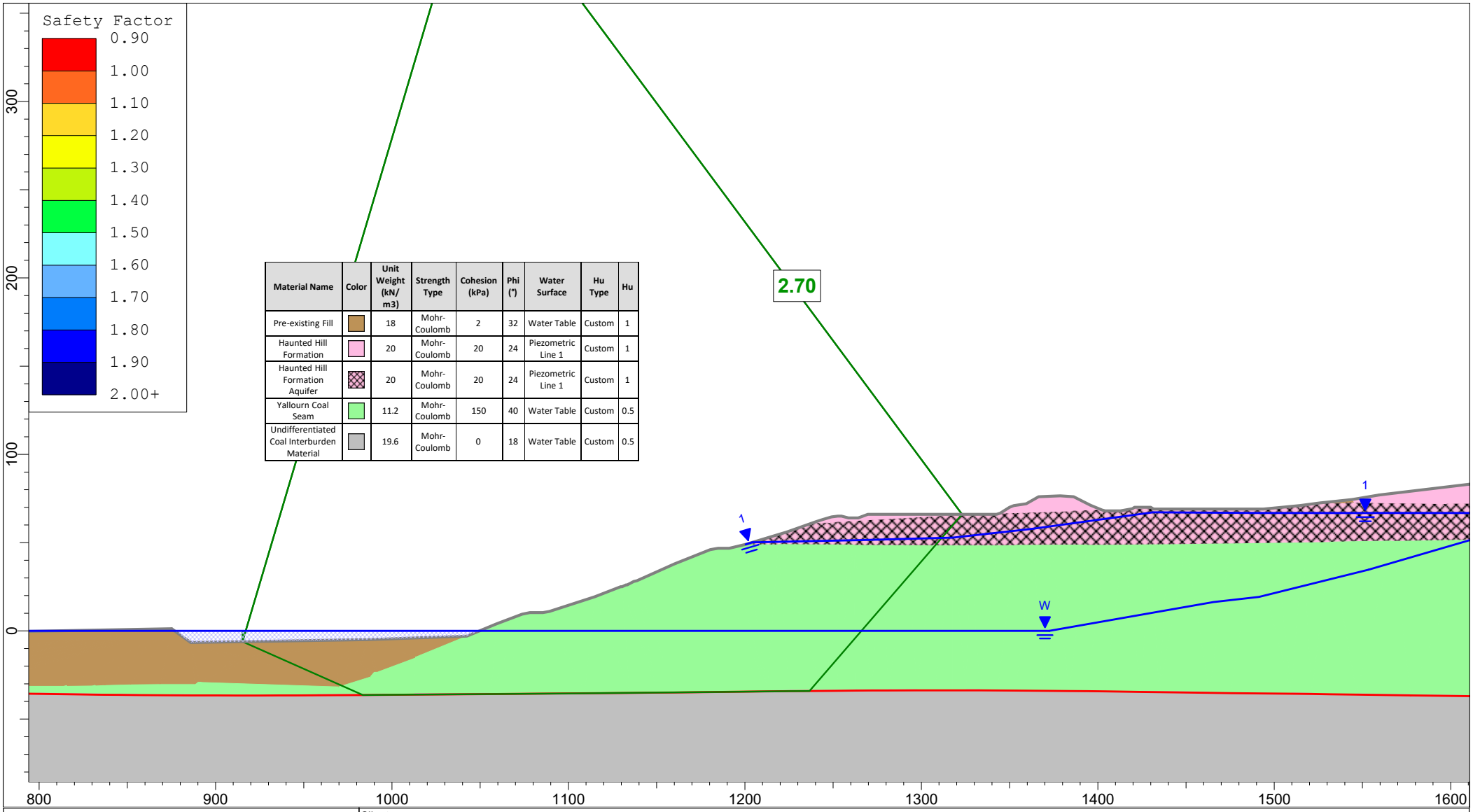
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



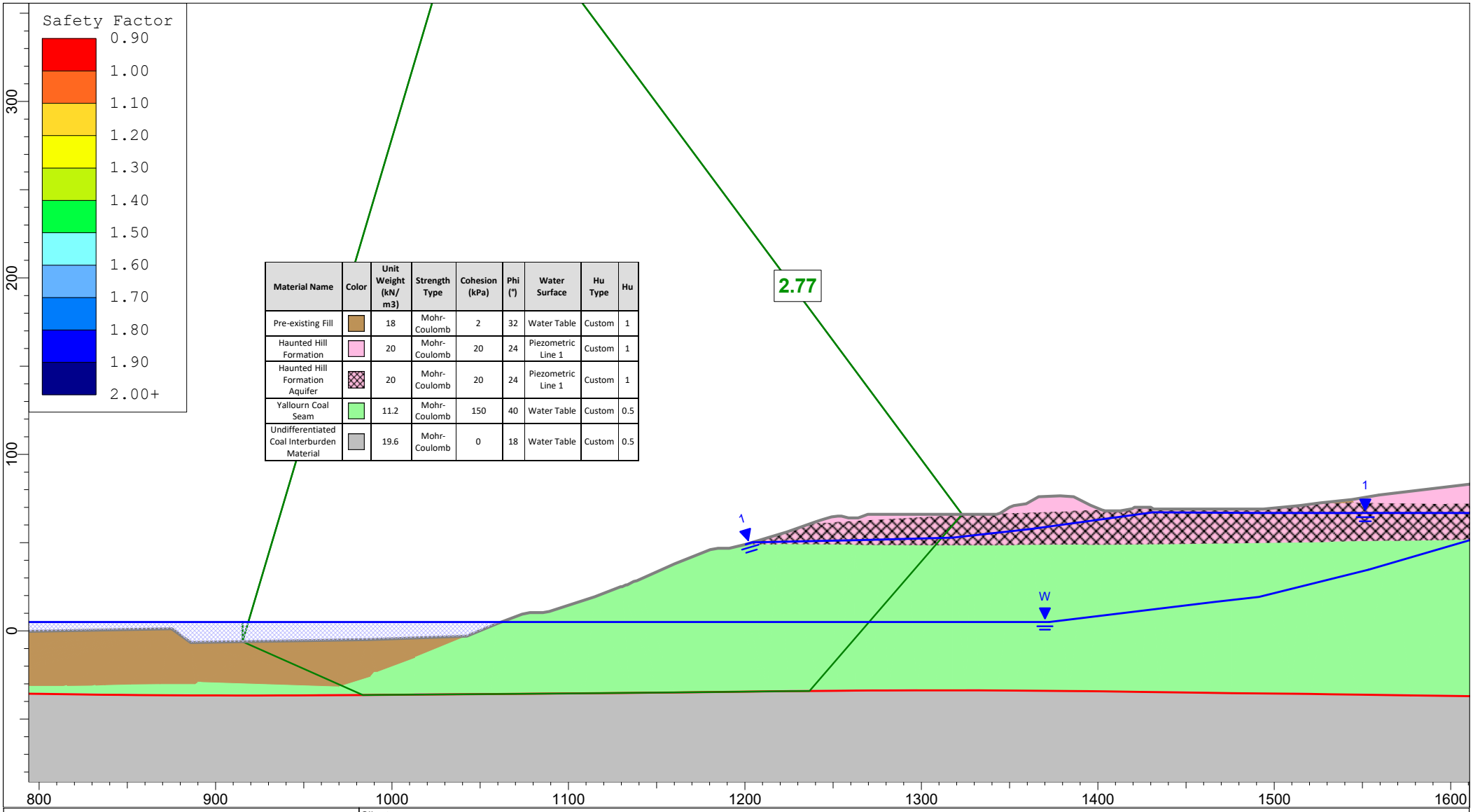
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Median Interseam Shear Strength		



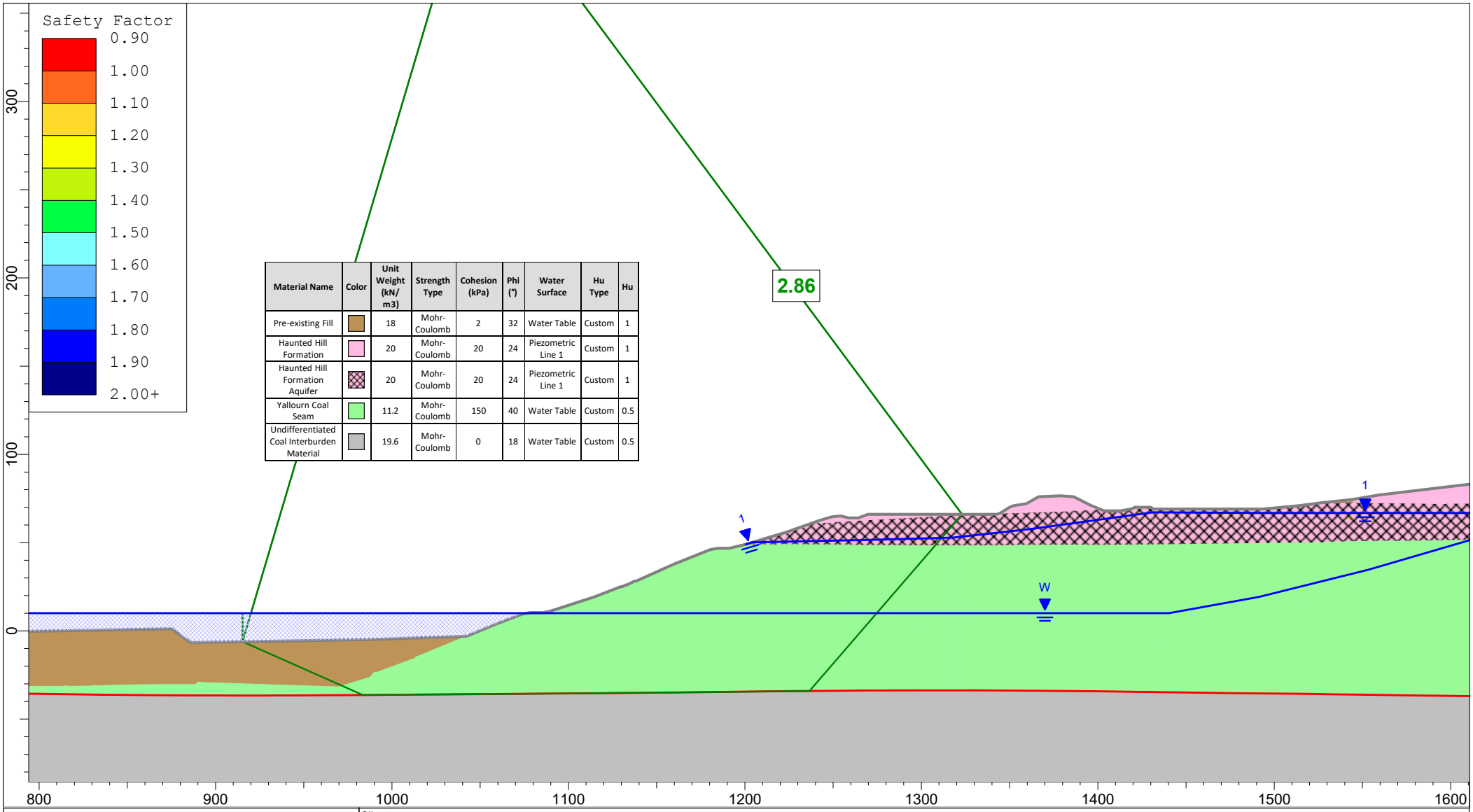
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Median Interseam Shear Strength		



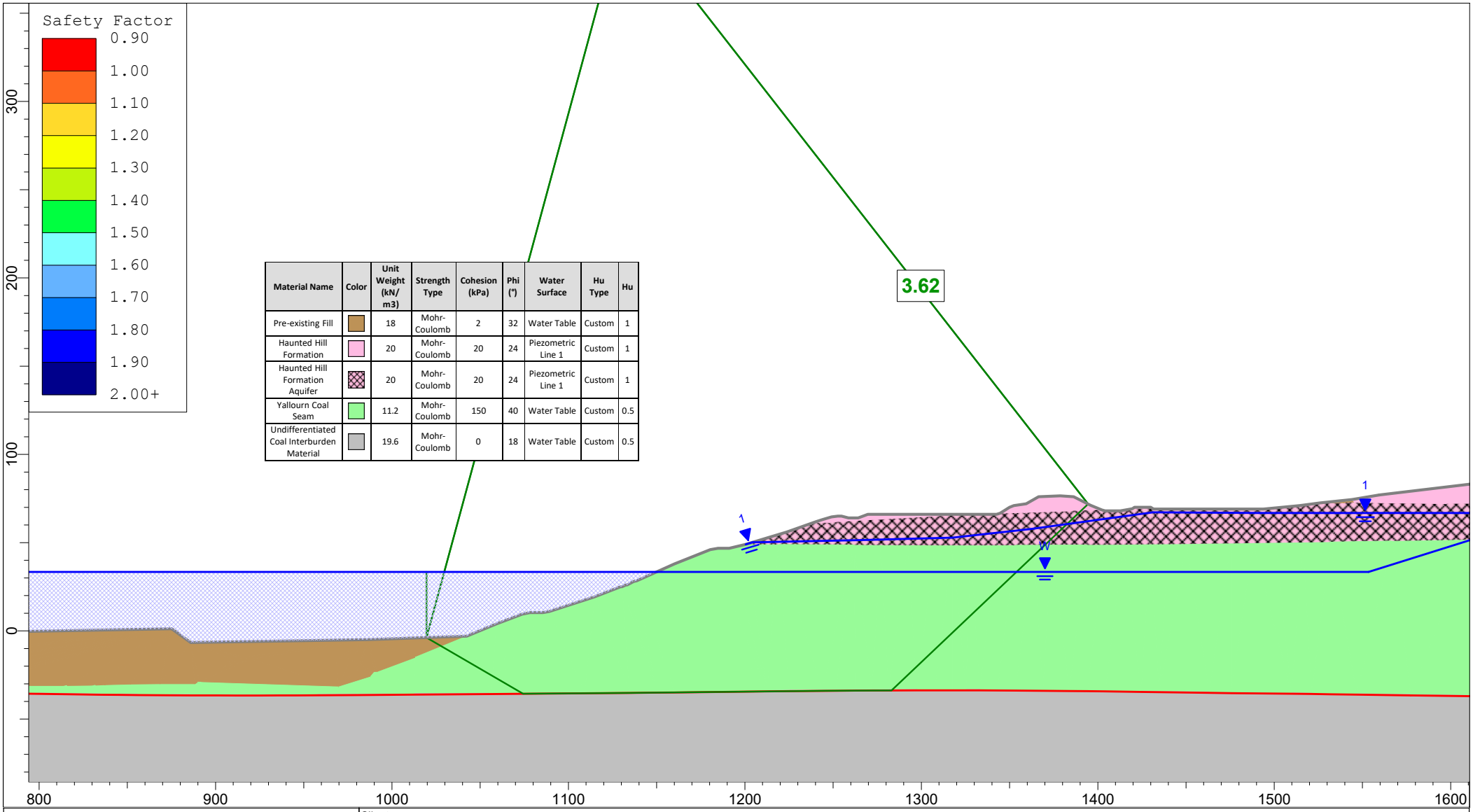
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Median Interseam Shear Strength		



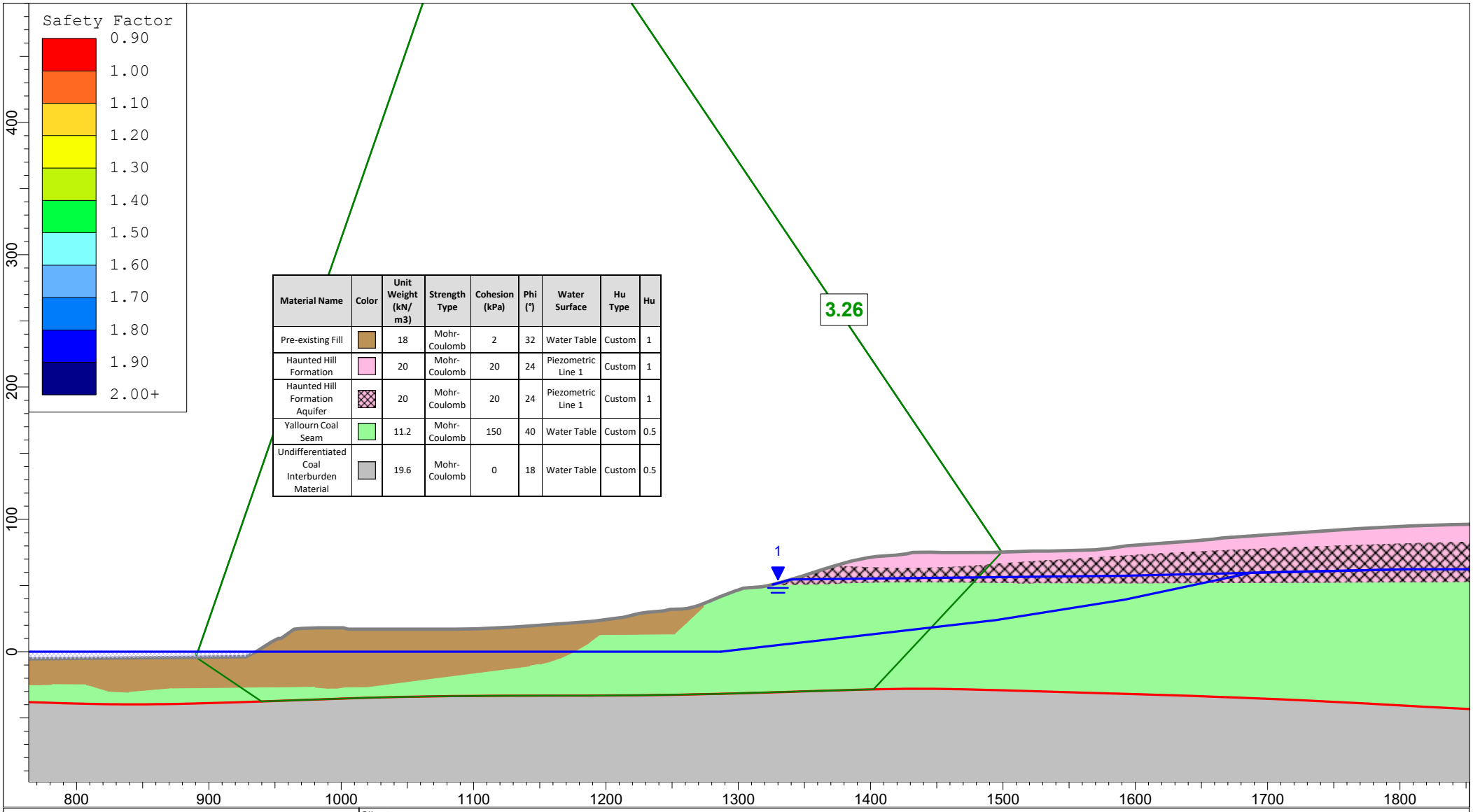
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



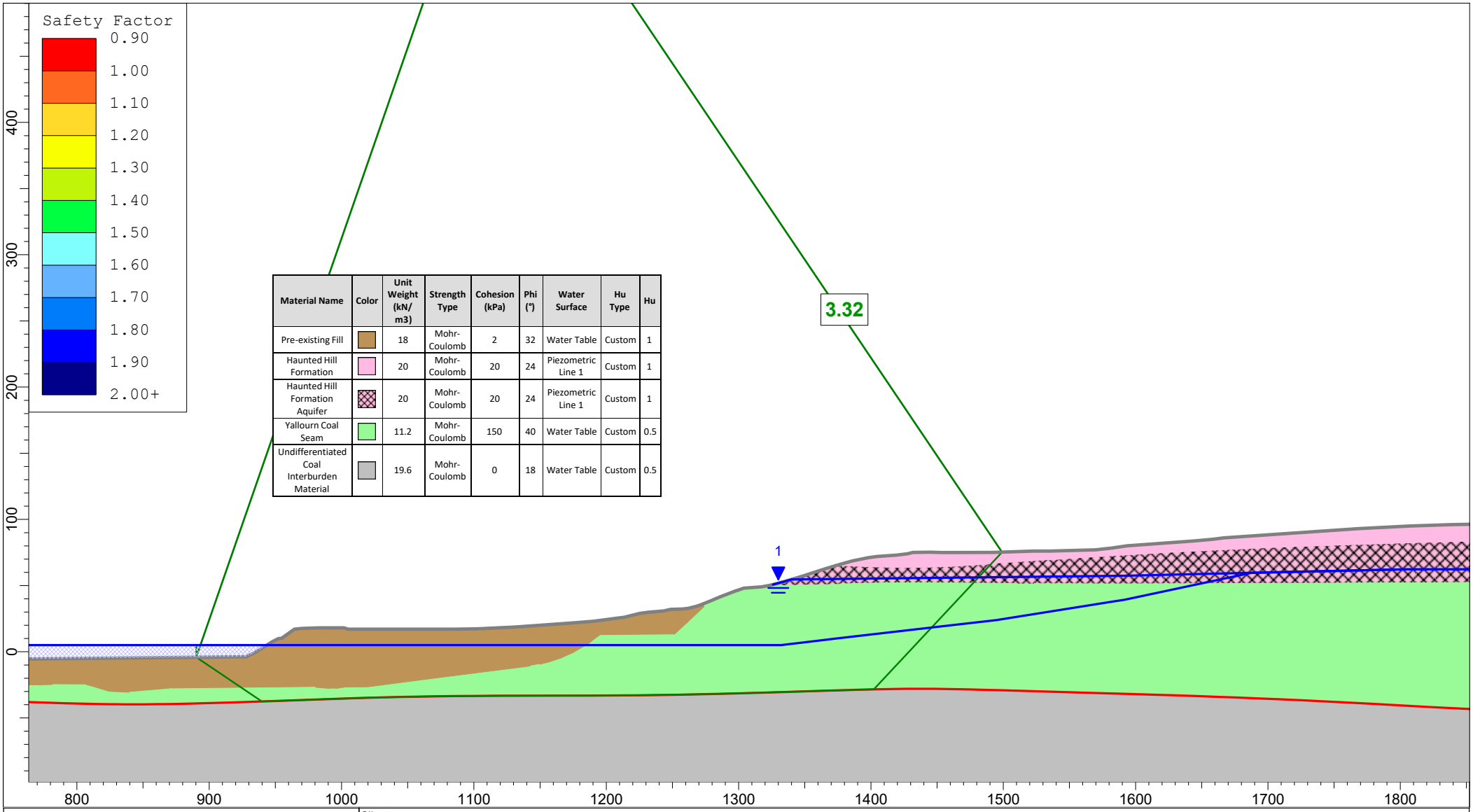
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



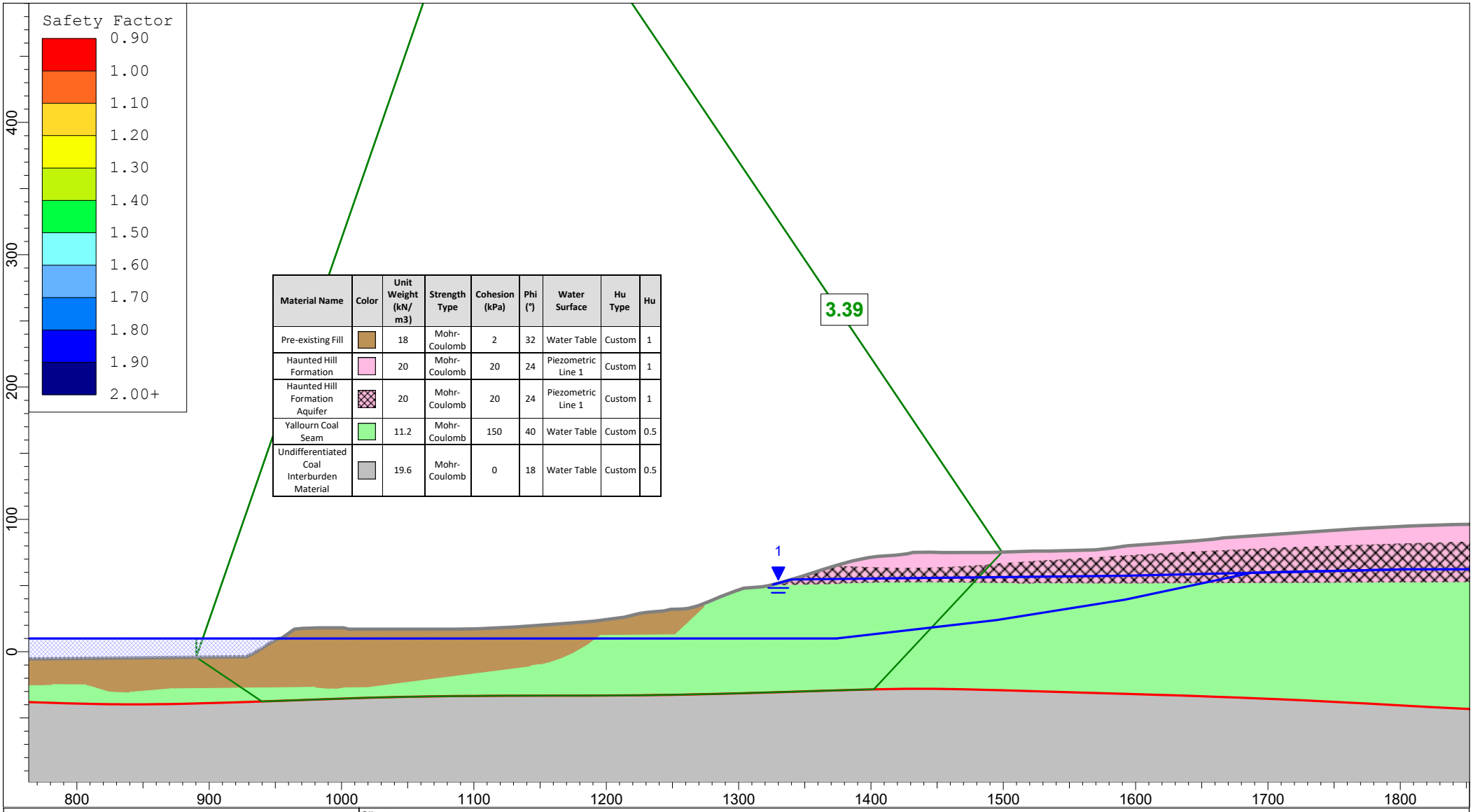
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Median Interseam Shear Strength		



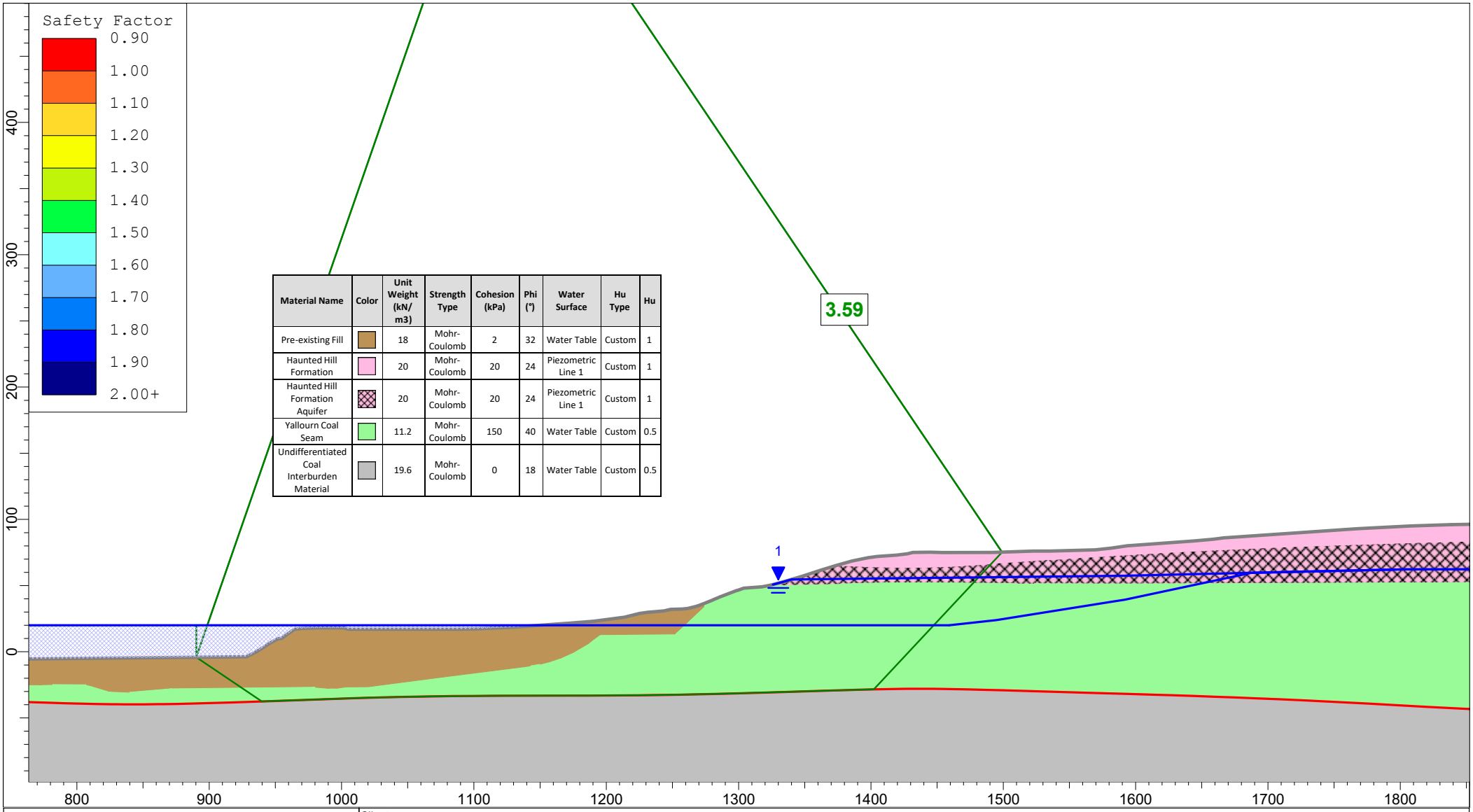
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Median Interseam Shear Strength		



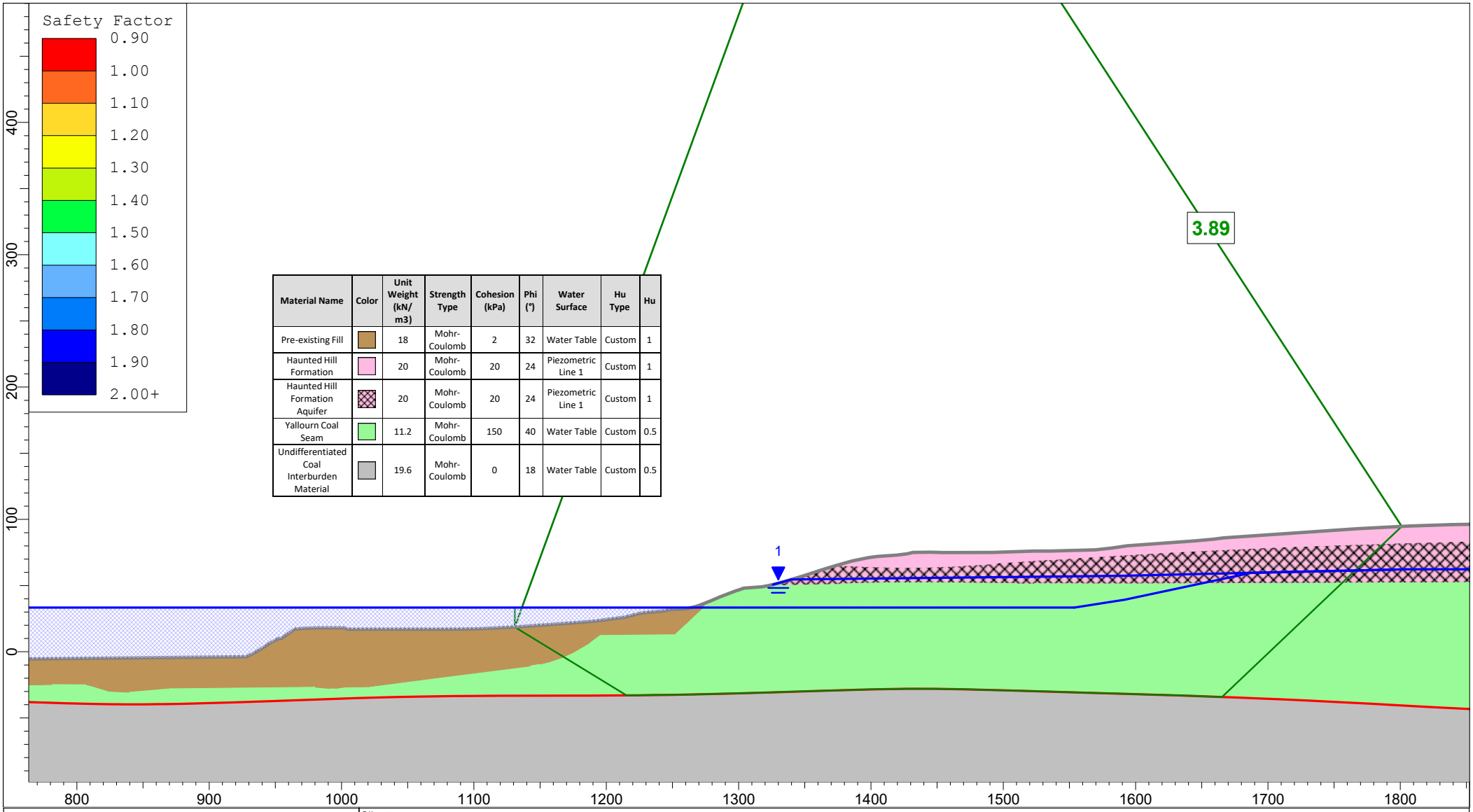
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



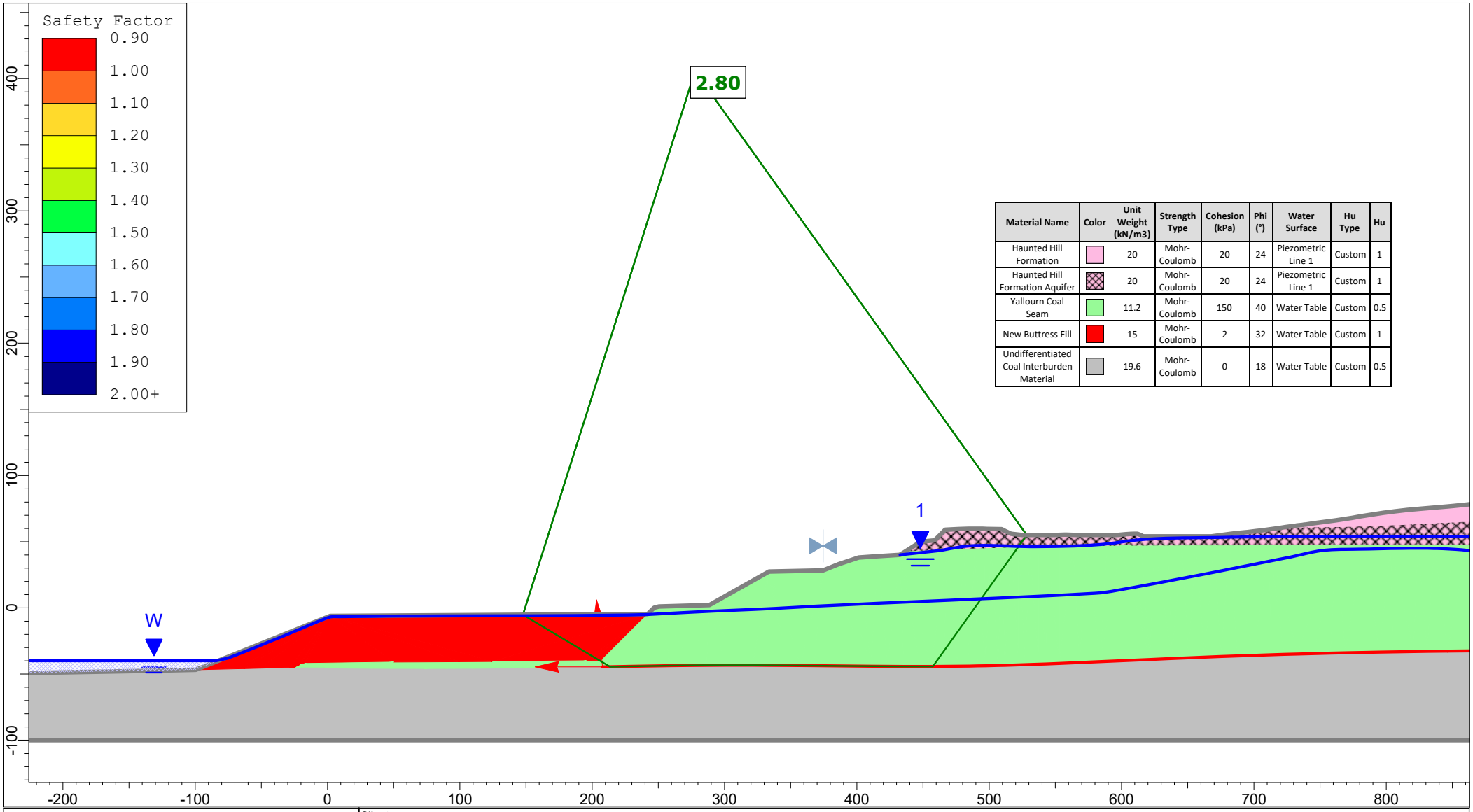
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



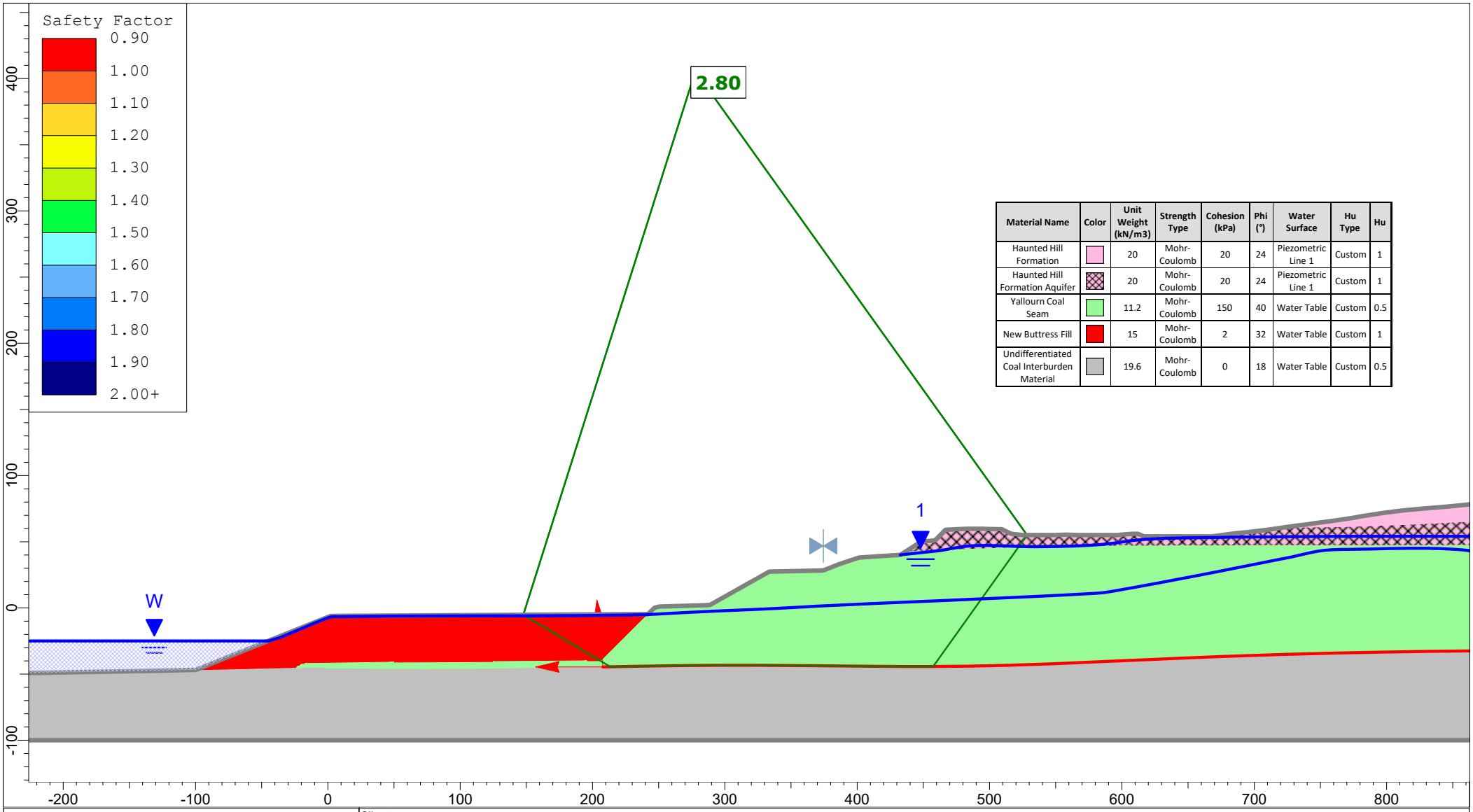
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



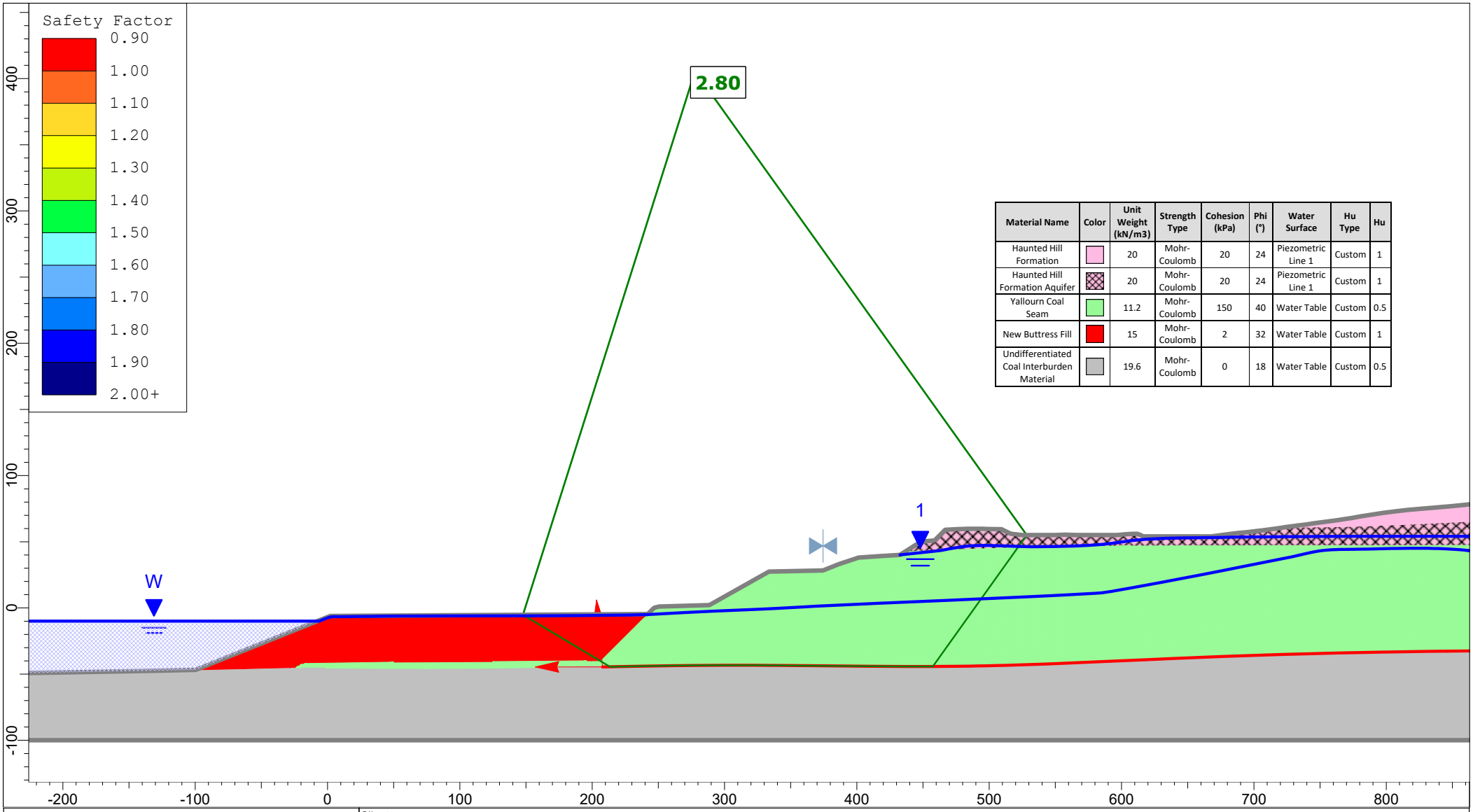
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -40 mRL
Notes:	Median Interseam Shear Strength		



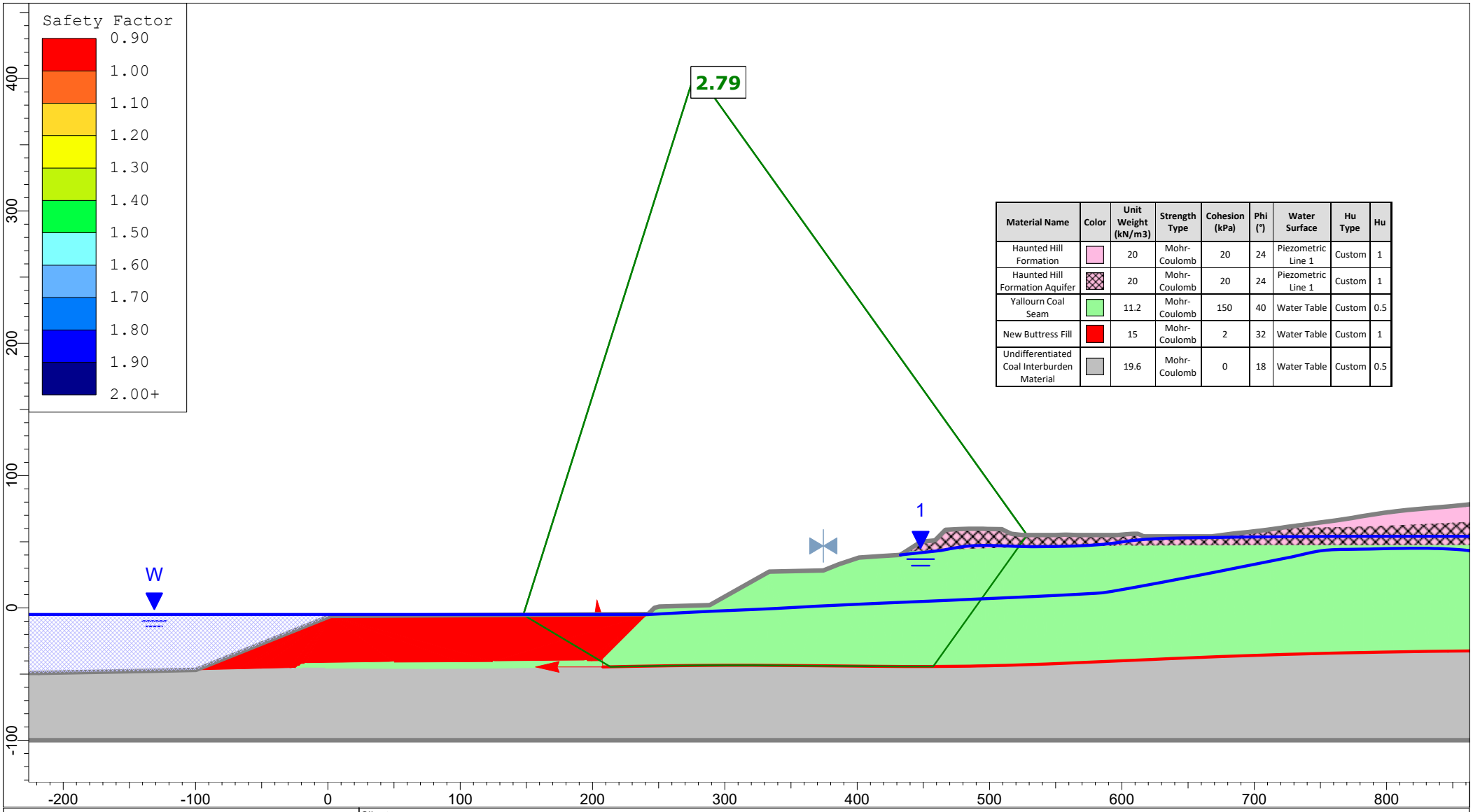
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -25 mRL
Notes:	Median Interseam Shear Strength		



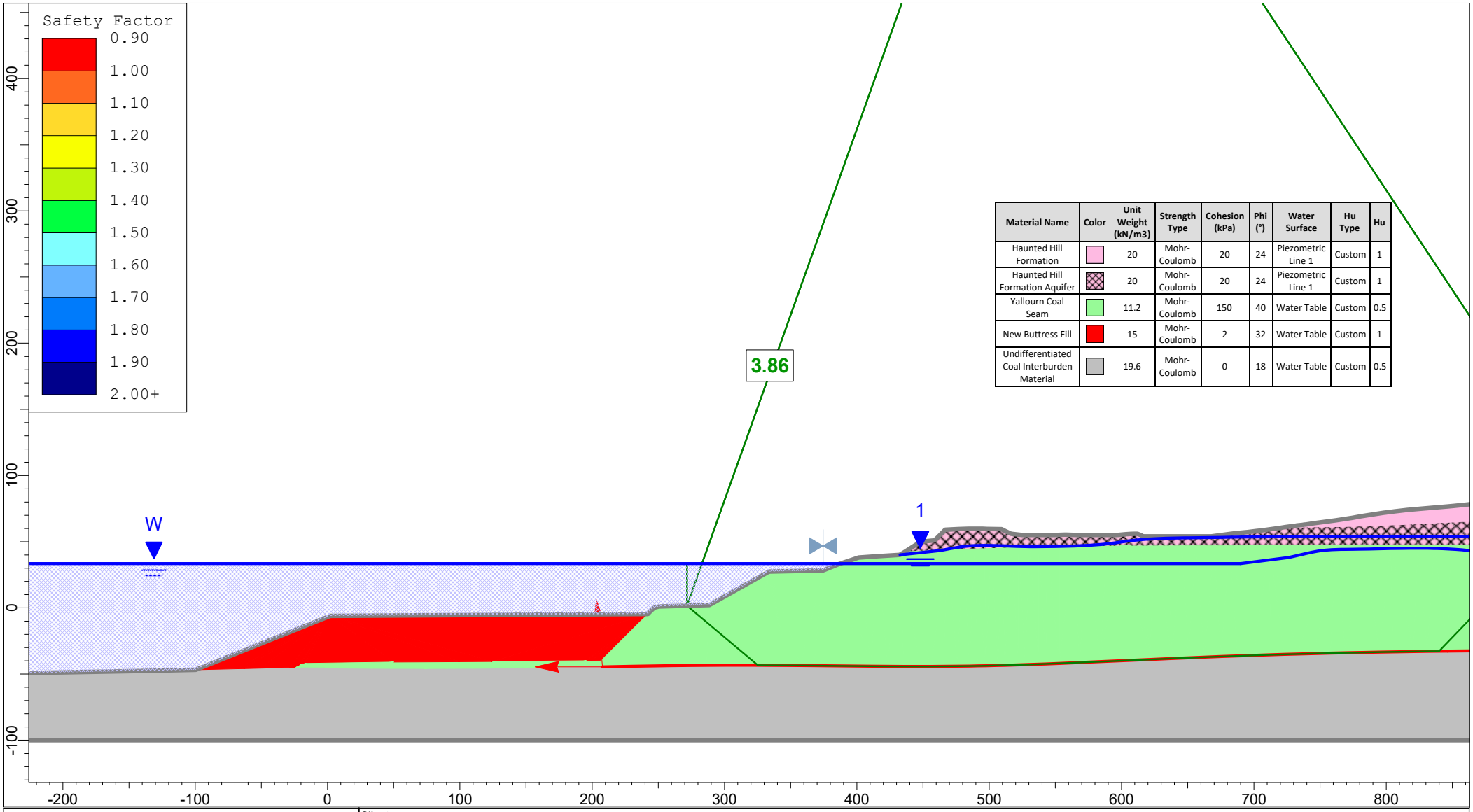
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Median Interseam Shear Strength		



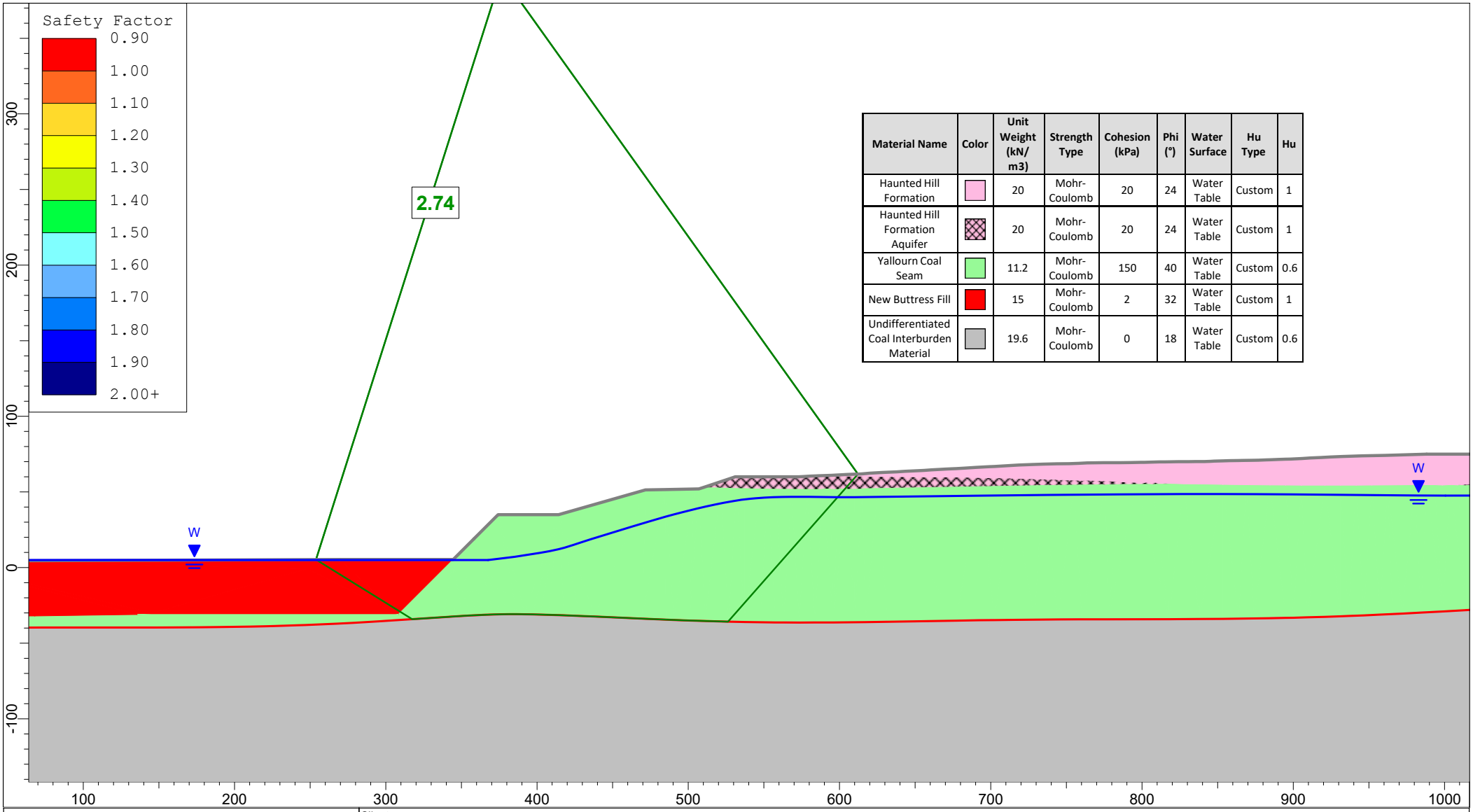
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Median Interseam Shear Strength		



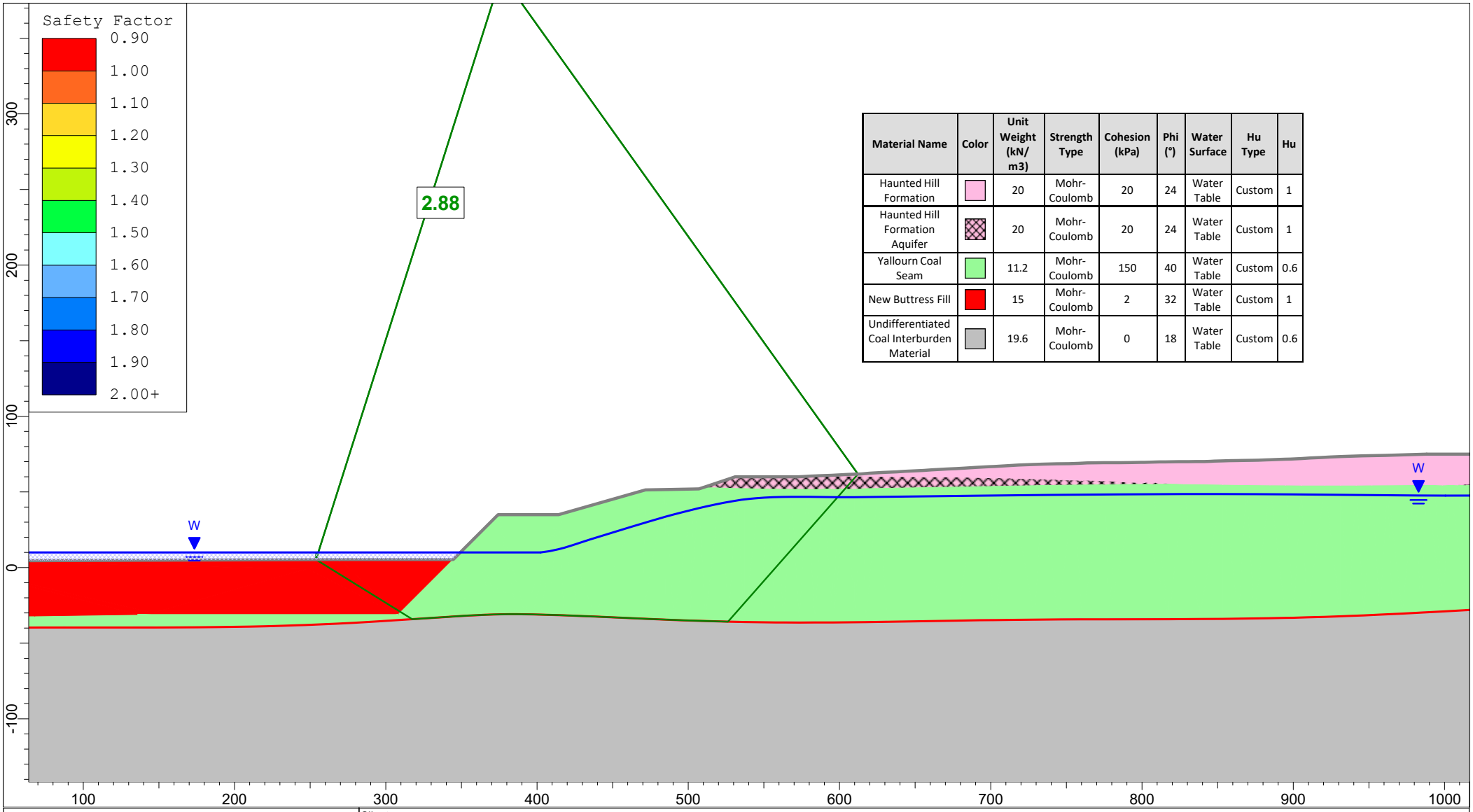
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



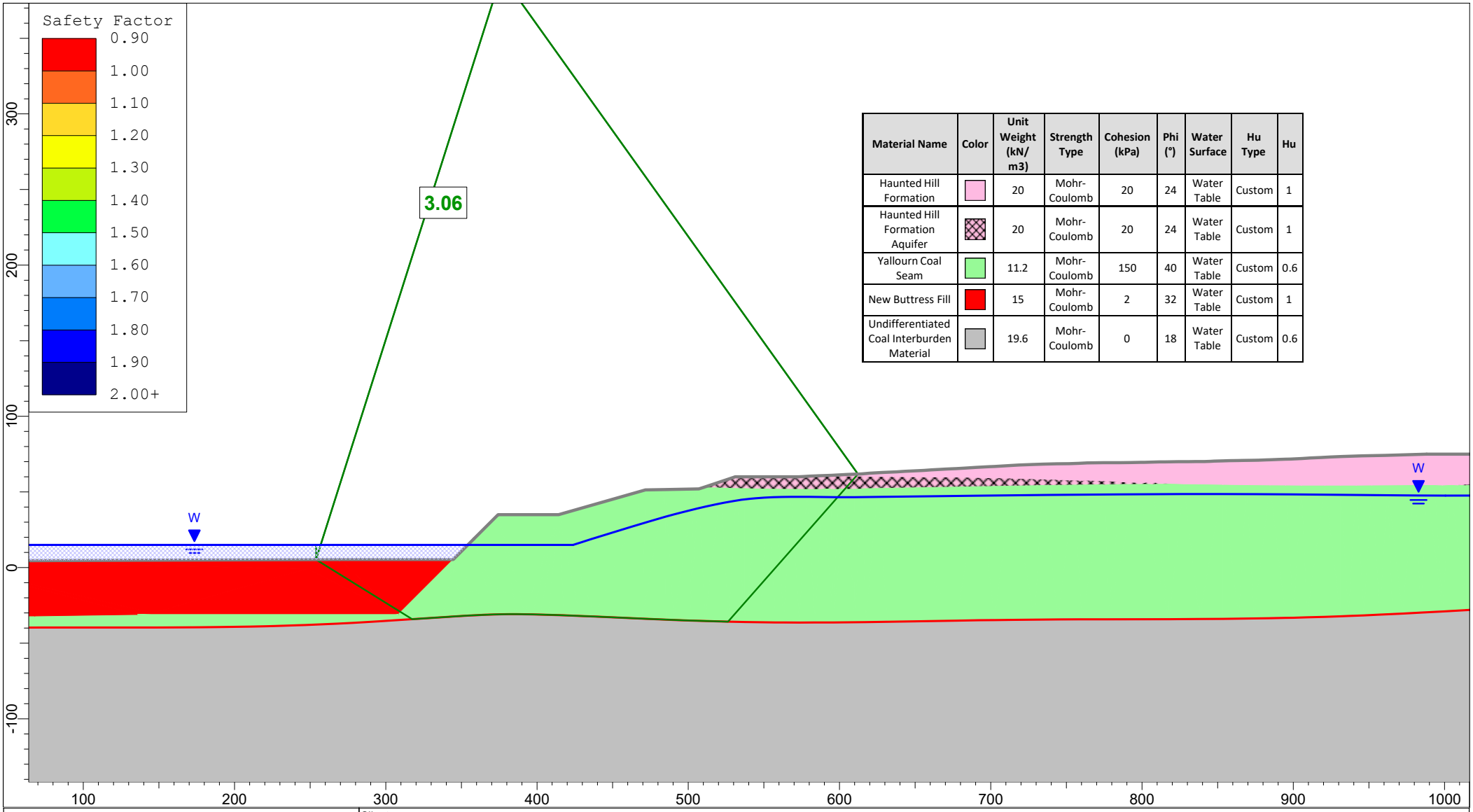
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Median Interseam Shear Strength		



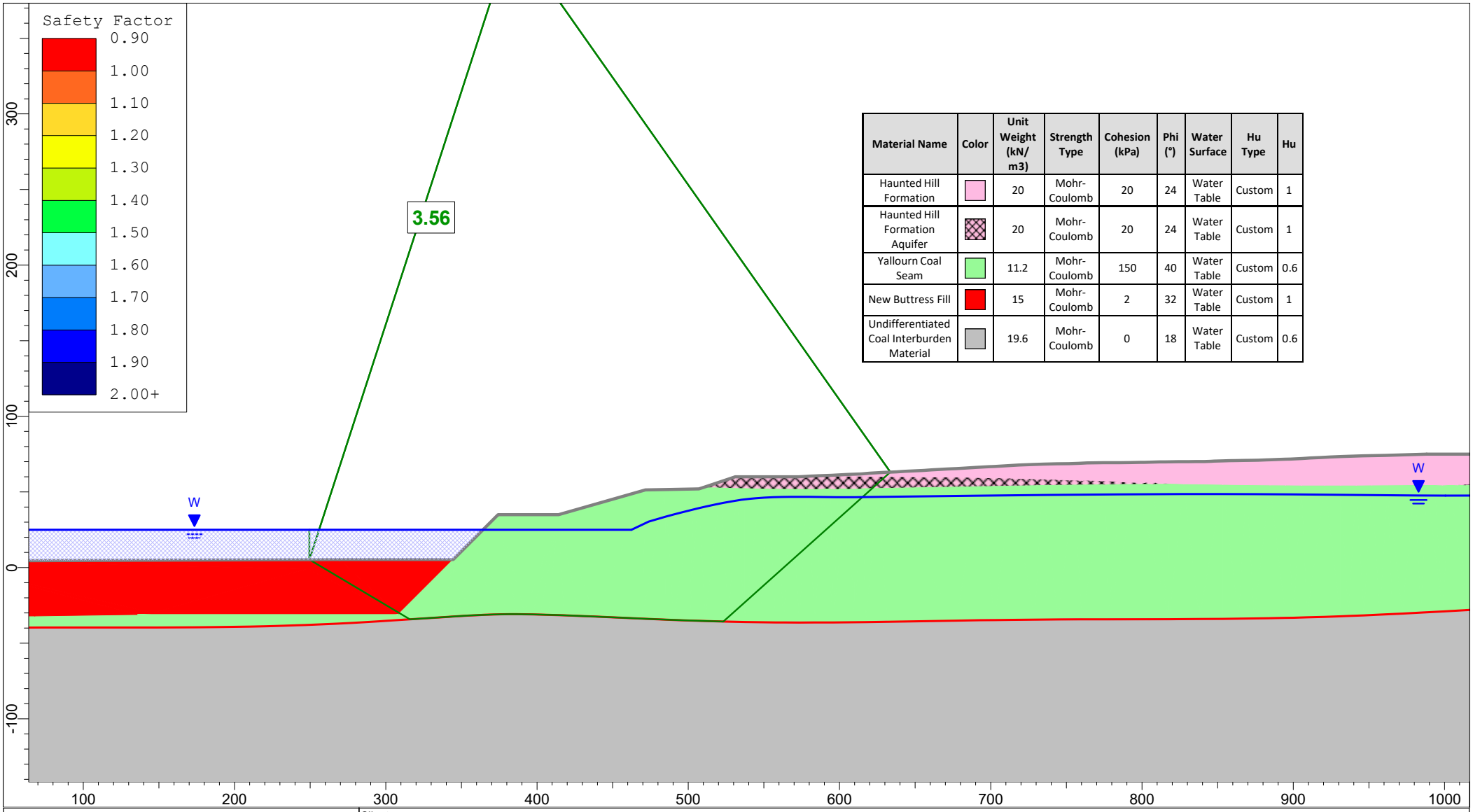
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



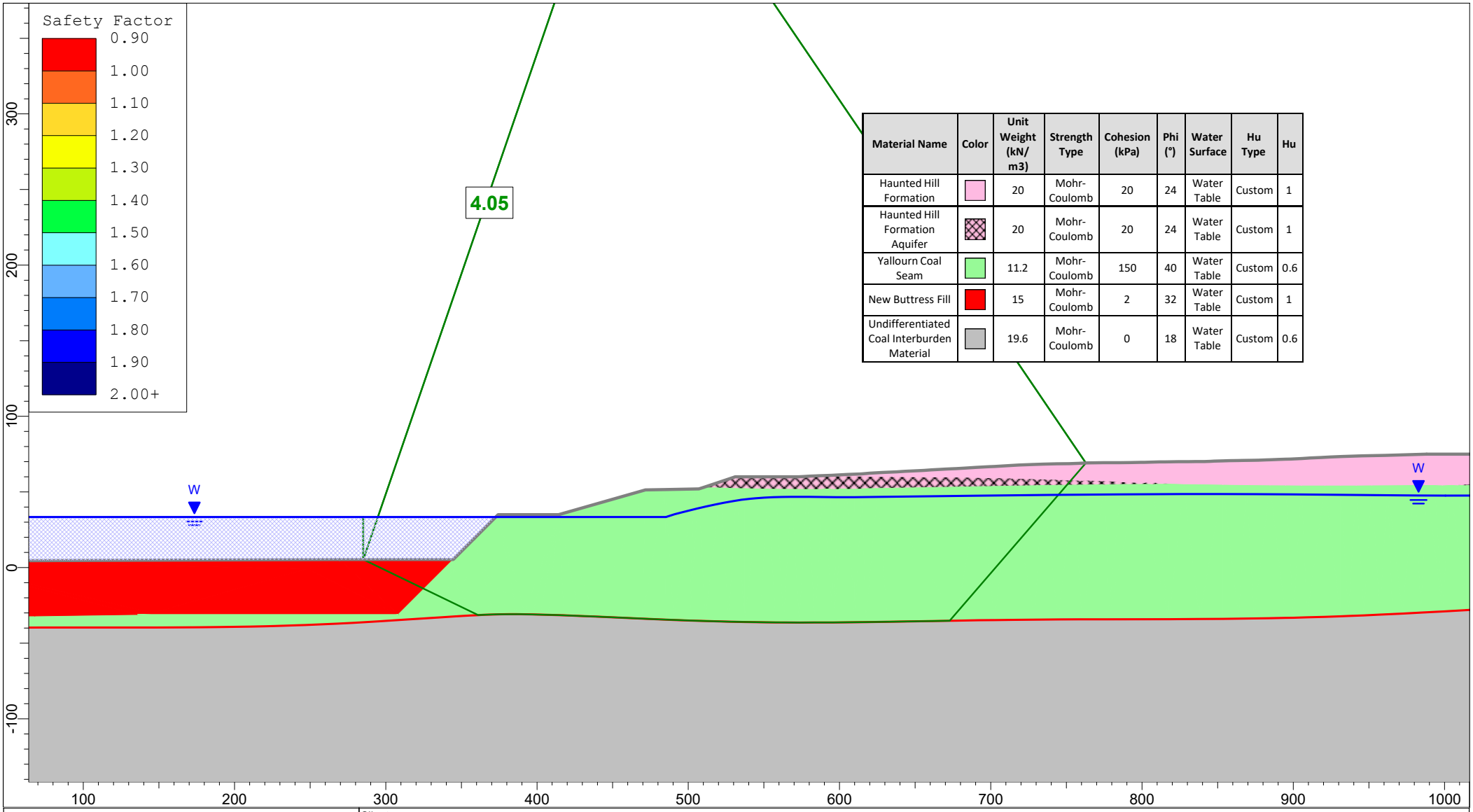
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Median Interseam Shear Strength		



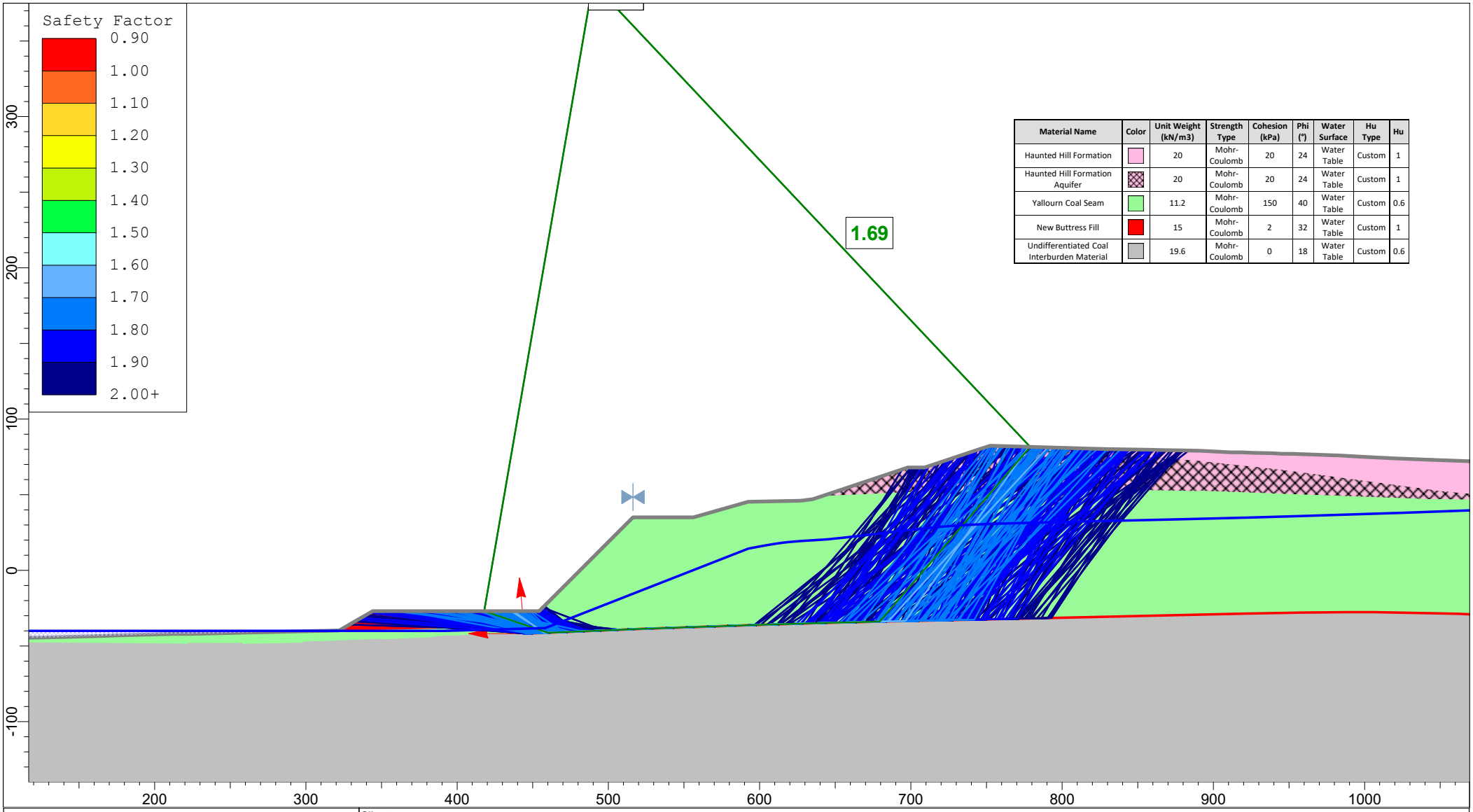
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength		



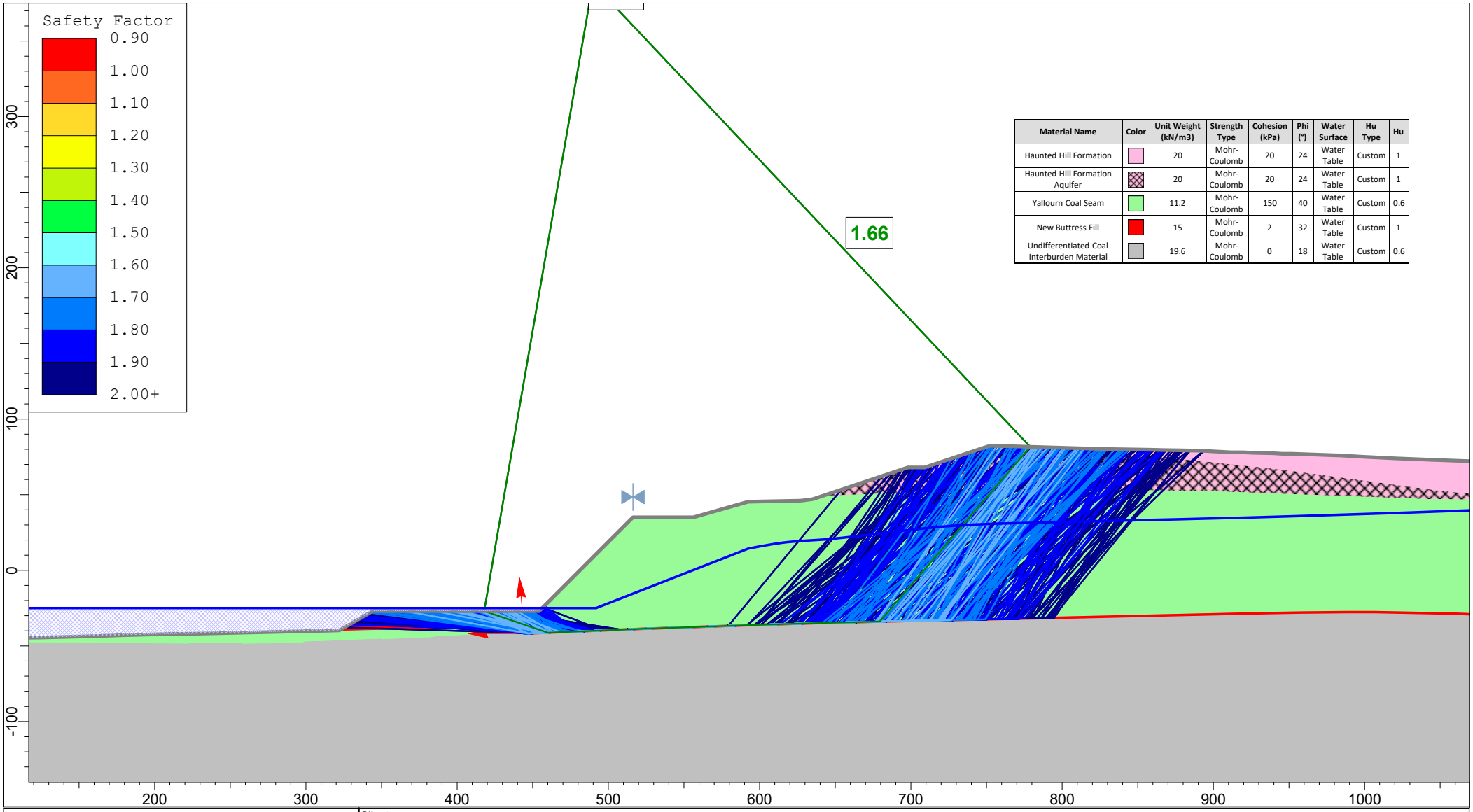
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



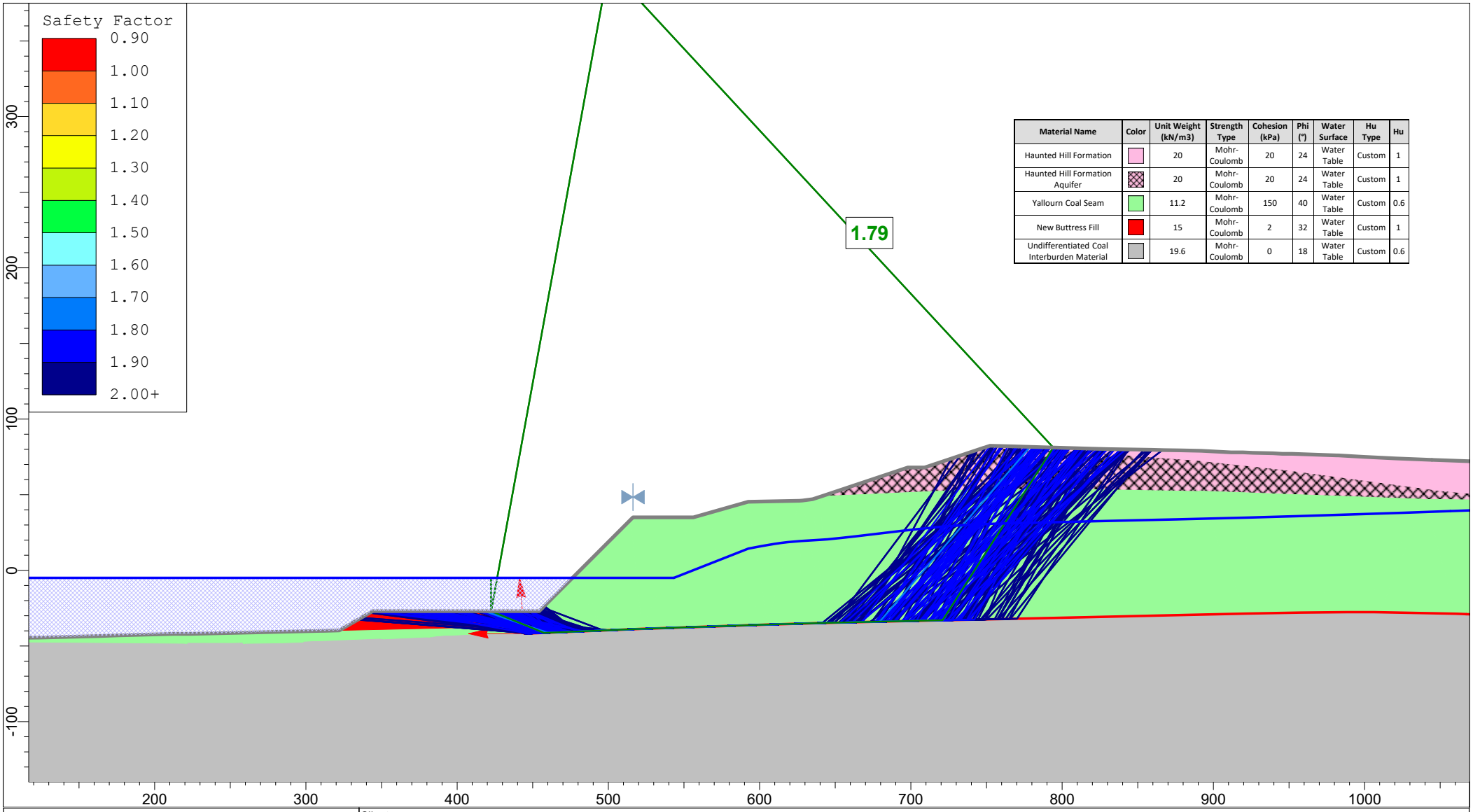
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -40 mRL
Notes:	Median Interseam Shear Strength		



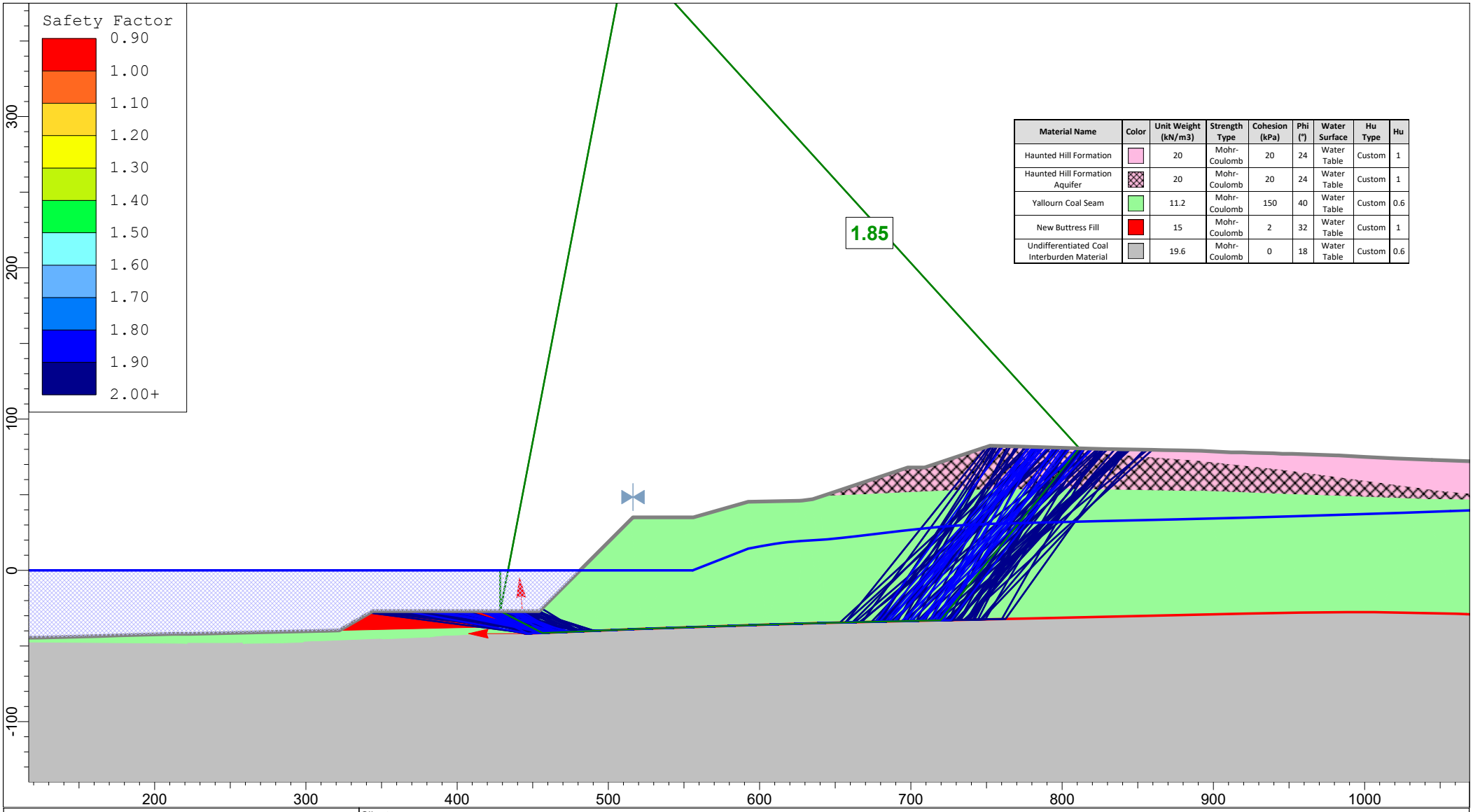
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -25 mRL
Notes:	Median Interseam Shear Strength		



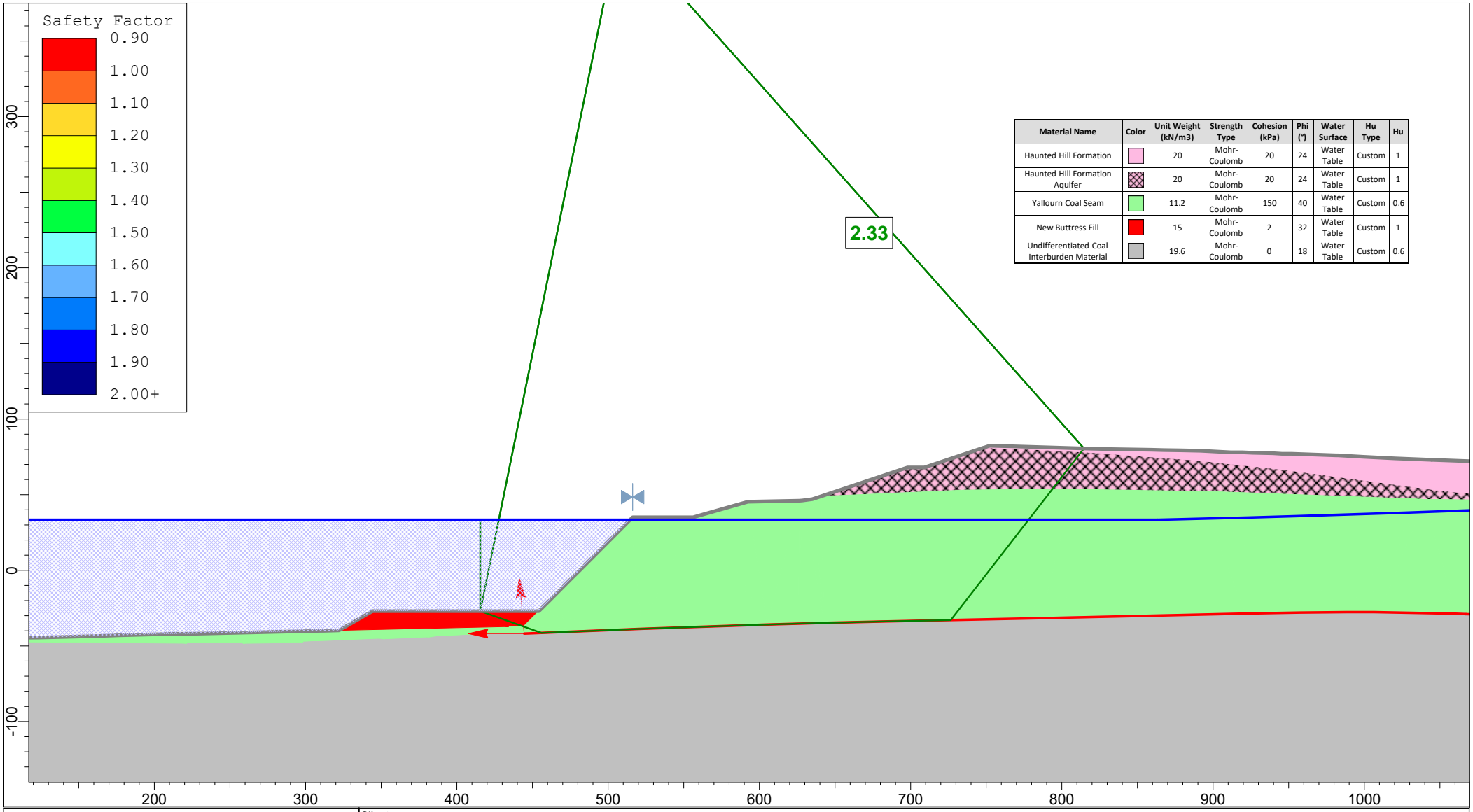
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL
Notes:	Median Interseam Shear Strength		



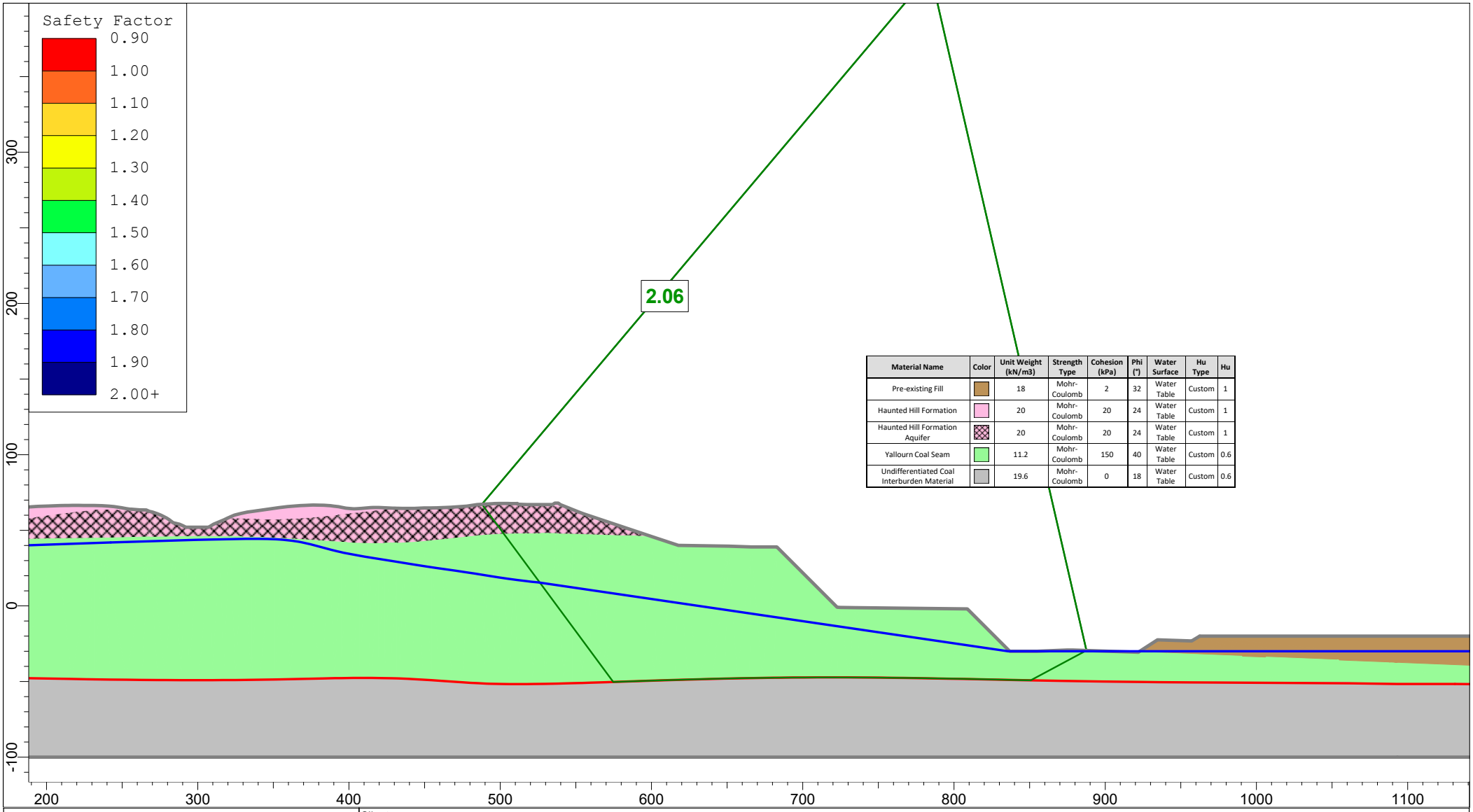
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Median Interseam Shear Strength		



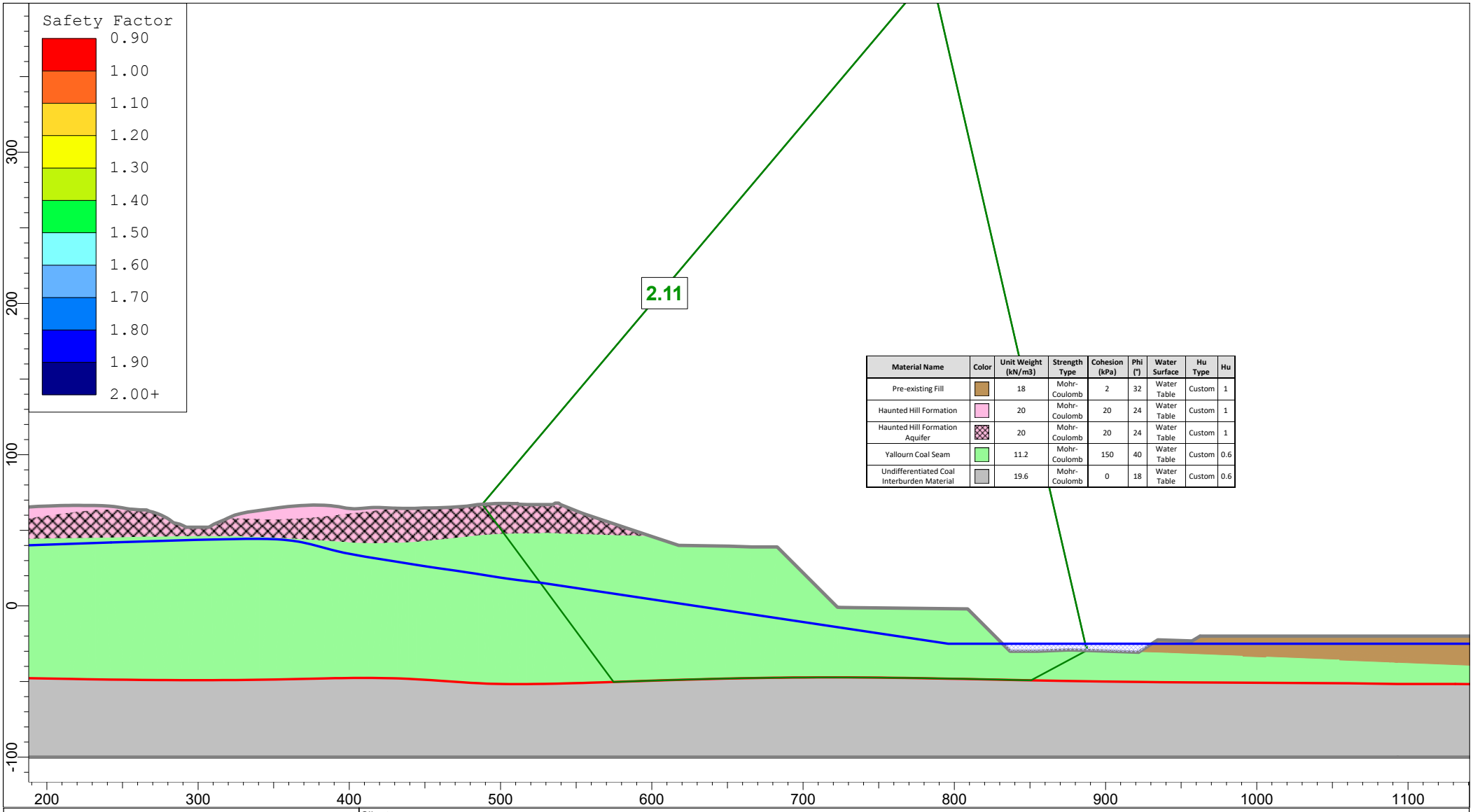
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



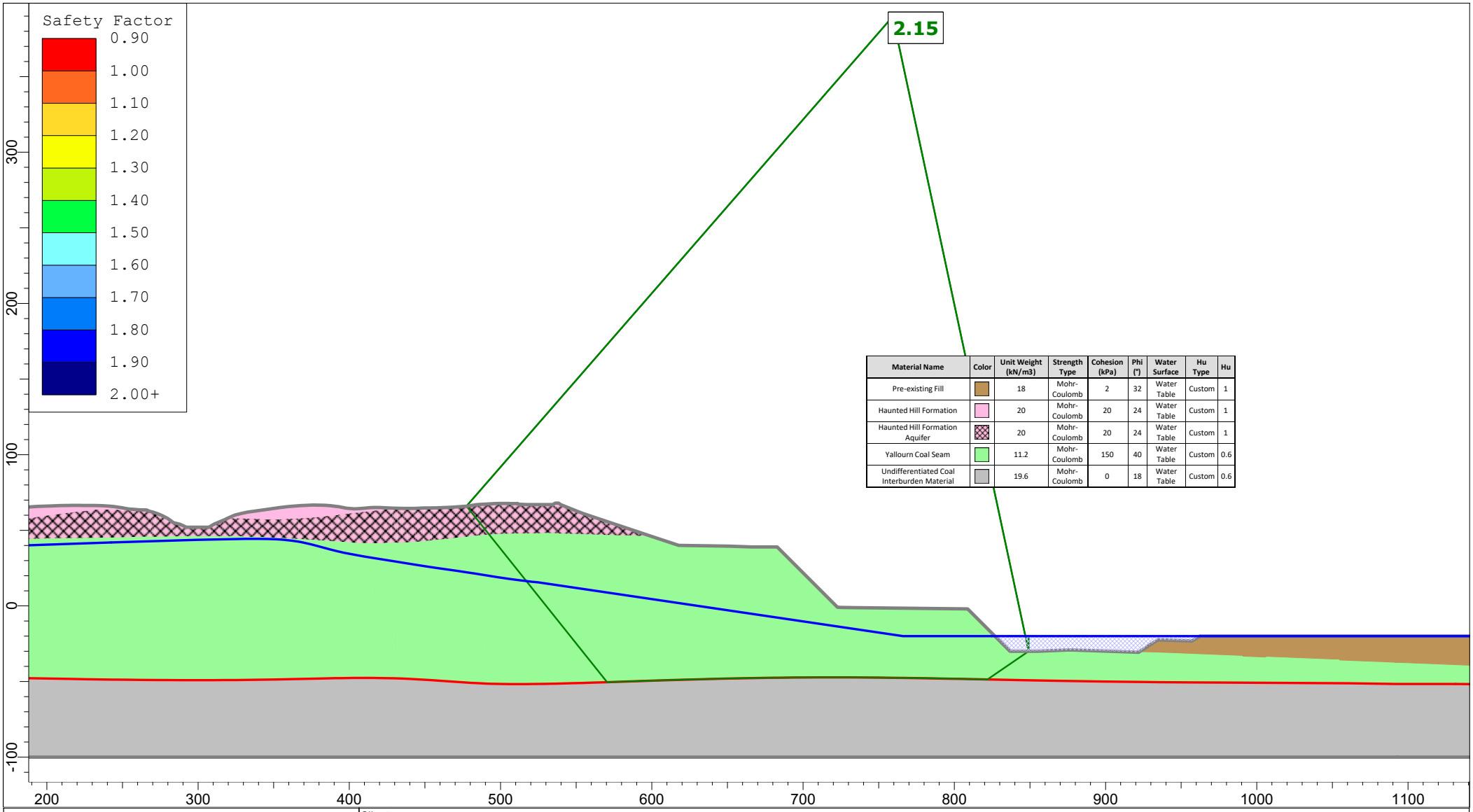
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**MVF-WB**
Section:	**Section 14**	Case:	**Multilinear - Hu specific**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at -30 mRL**
Notes:	**Median Interseam Shear Strength**		



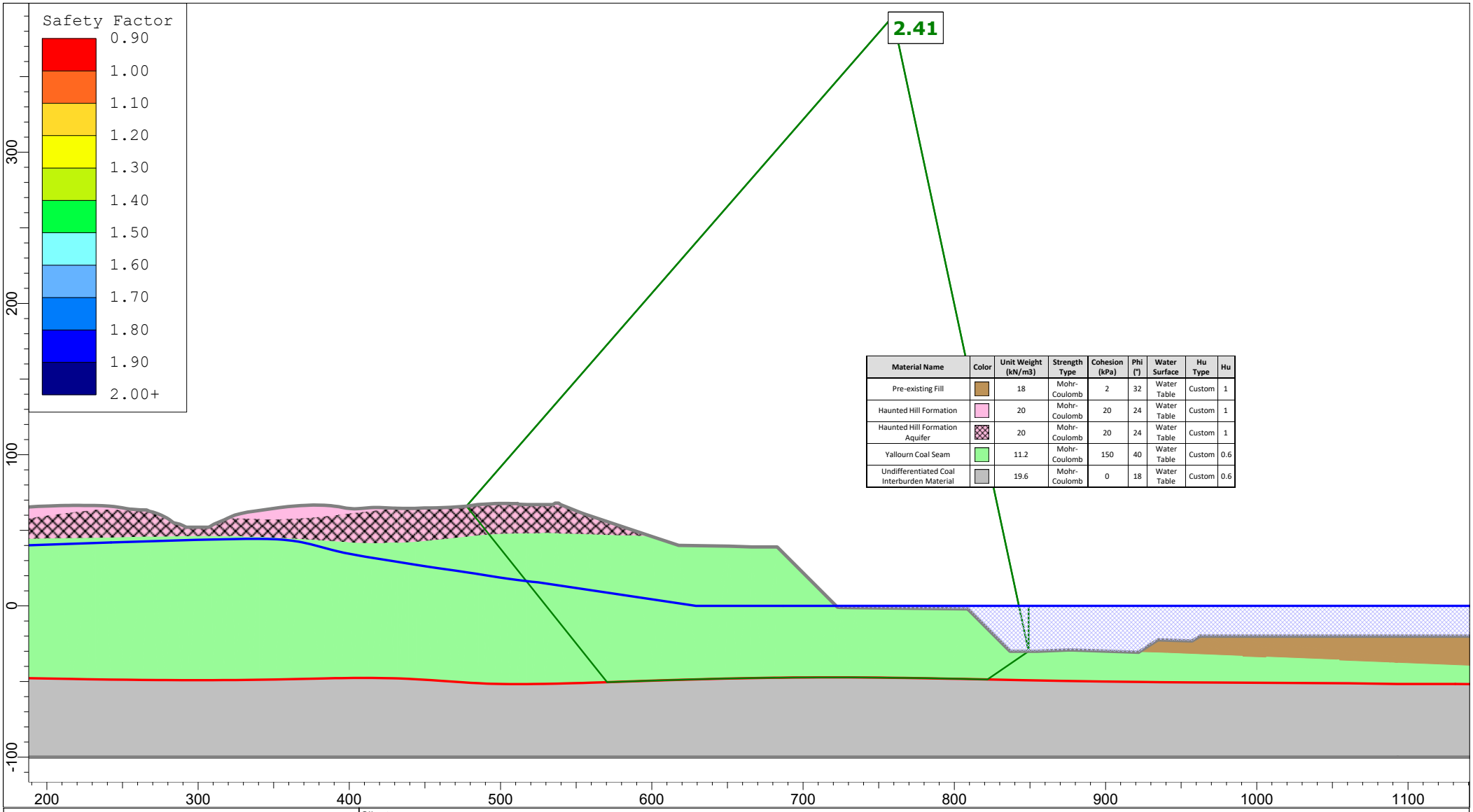
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**MVF-WB**
Section:	**Section 14**	Case:	**Multilinear - Hu specific**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at -25 mRL**
Notes:	**Median Interseam Shear Strength**		



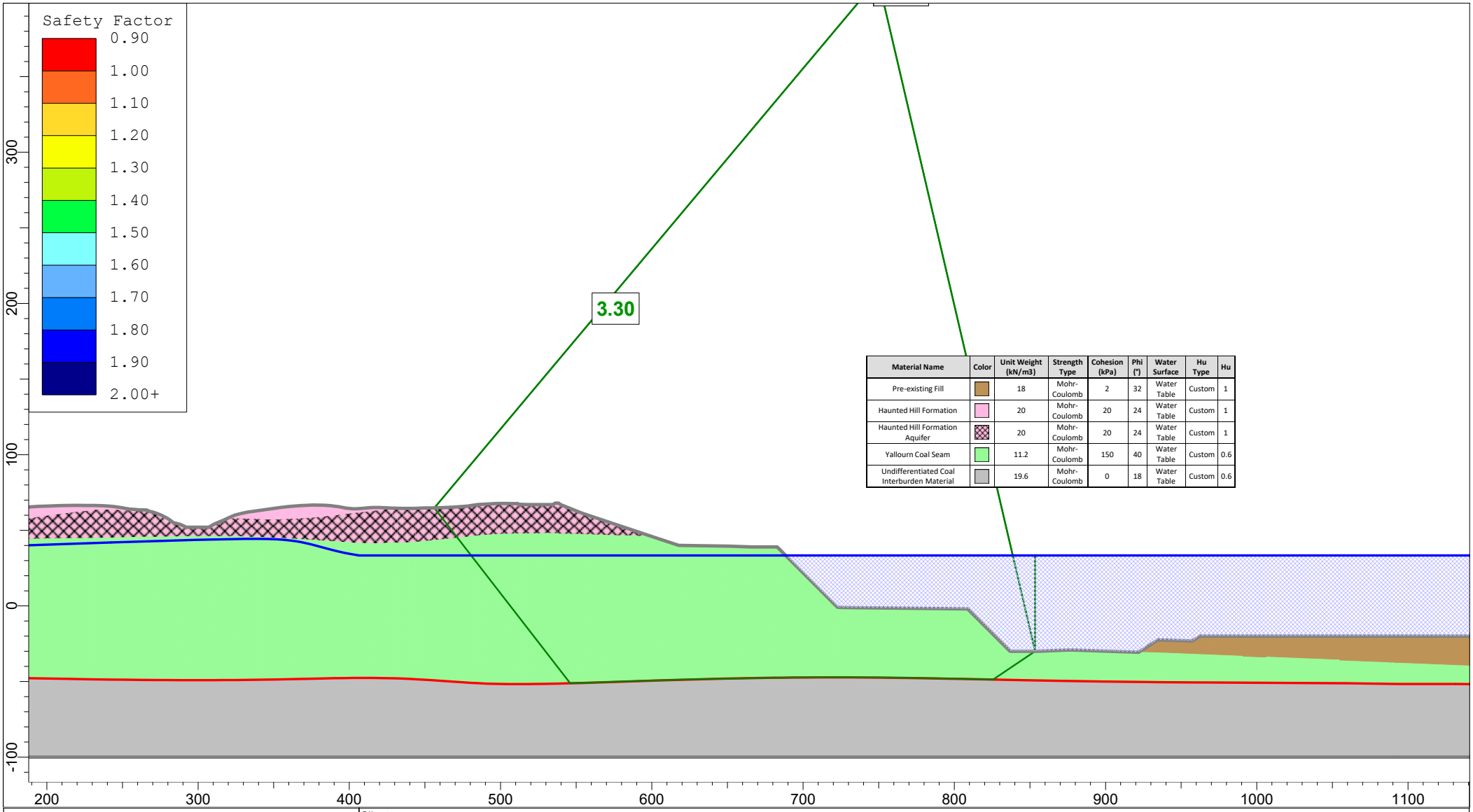
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 14	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -20 mRL
Notes:	Median Interseam Shear Strength		



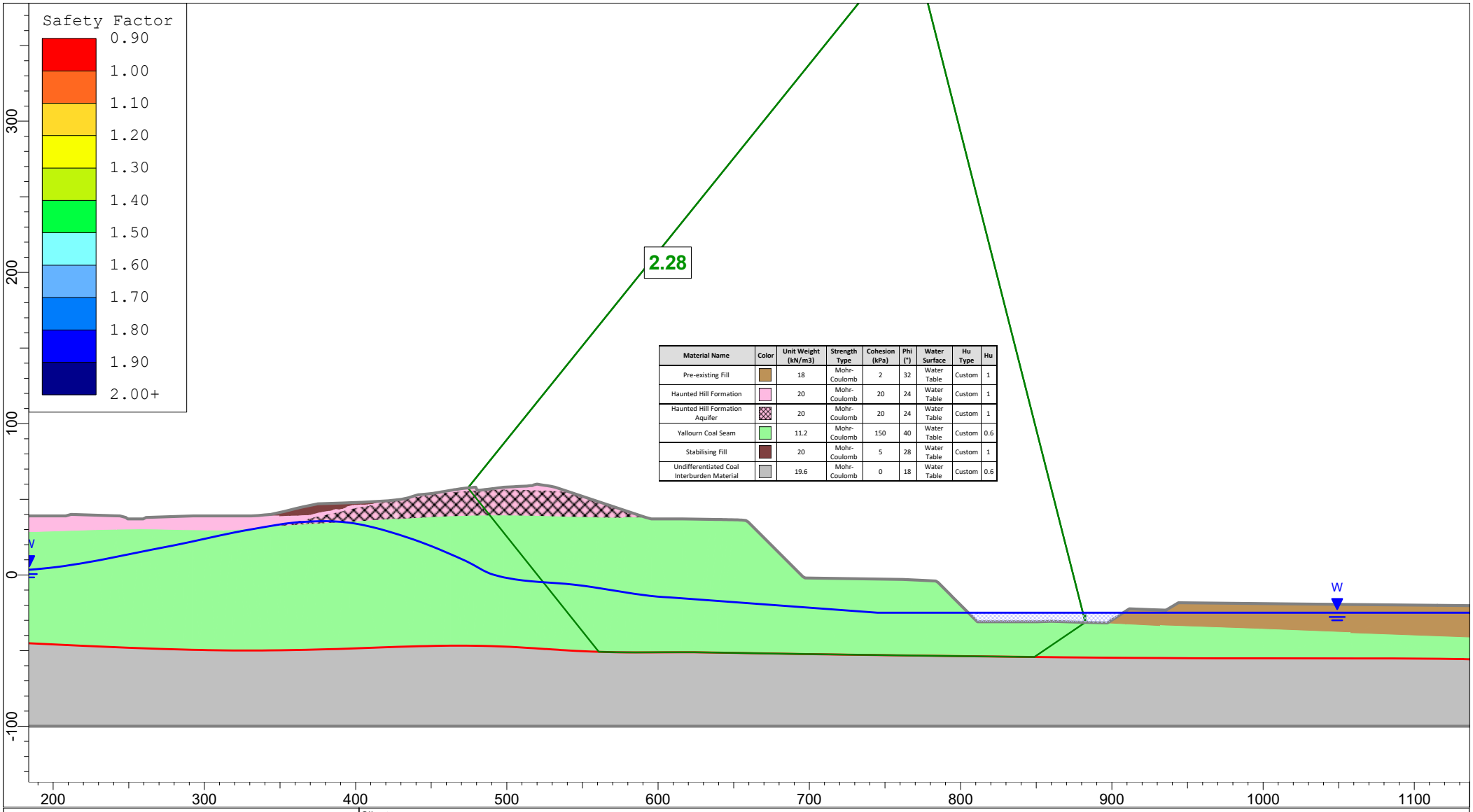
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 14	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Median Interseam Shear Strength		



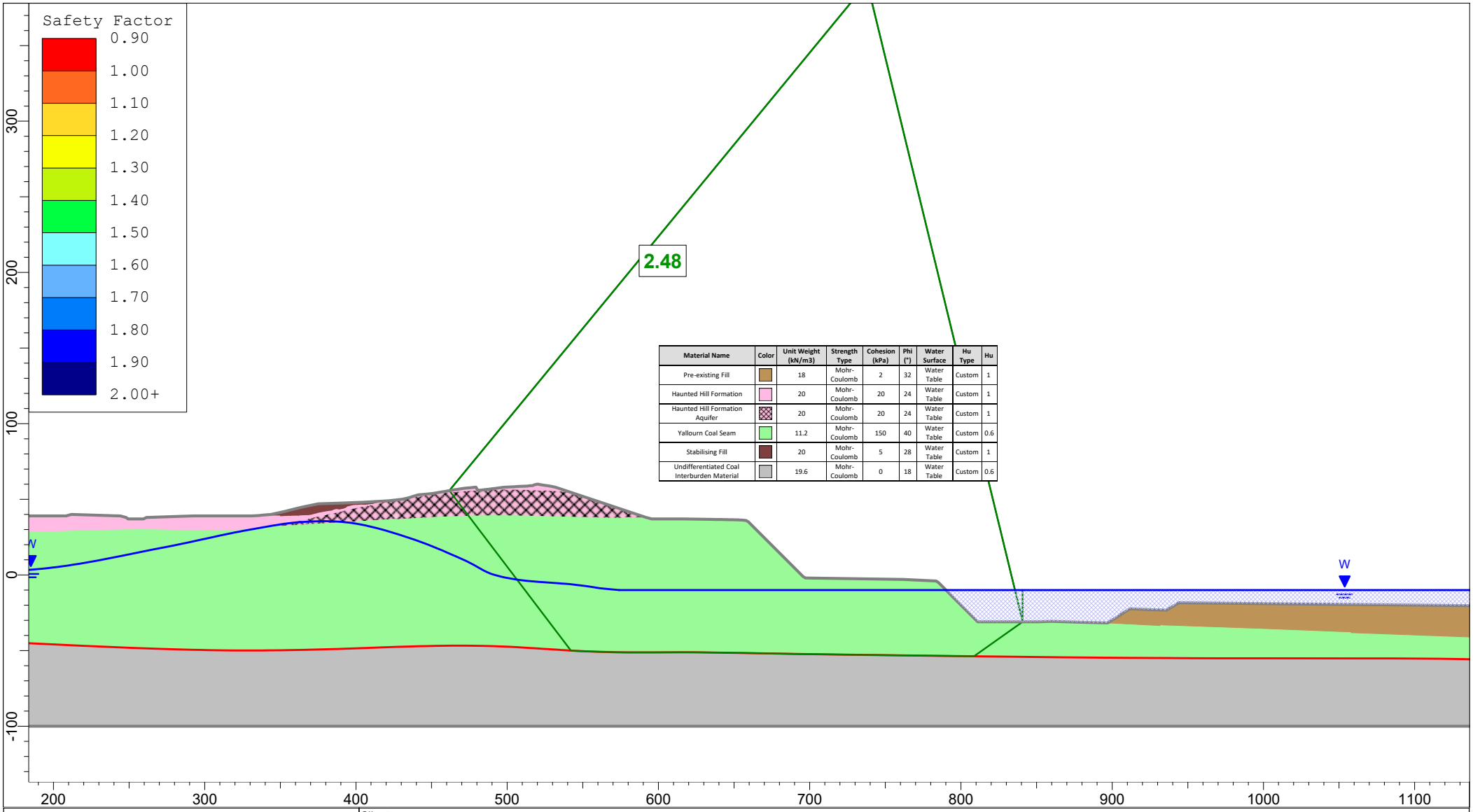
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**MVF-WB**
Section:	**Section 14**	Case:	**Multilinear - Hu specific**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 33.4 mRL**
Notes:	**Median Interseam Shear Strength**		



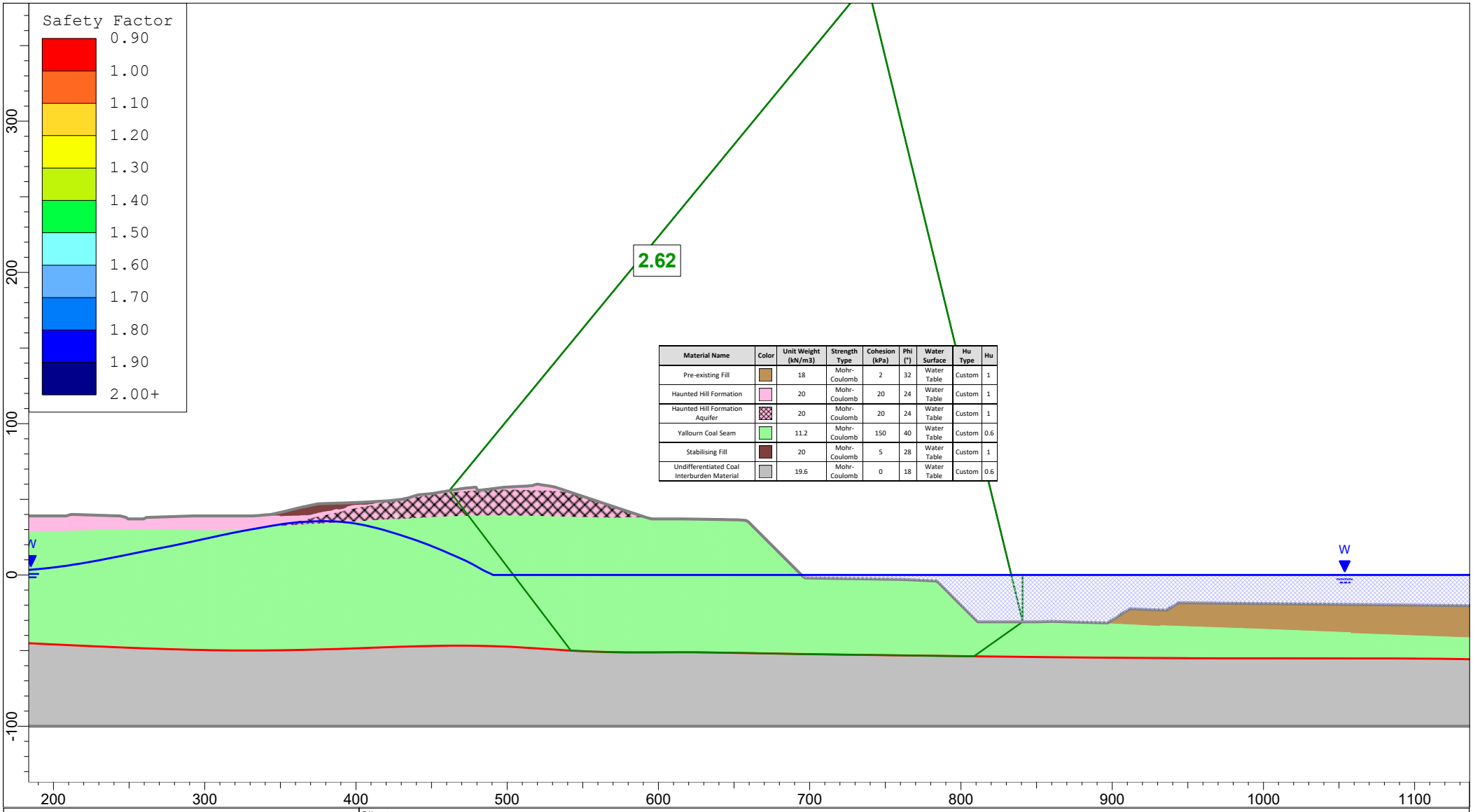
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Stabilising Fill		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 15	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -25 mRL
Notes:	Median Interseam Shear Strength		



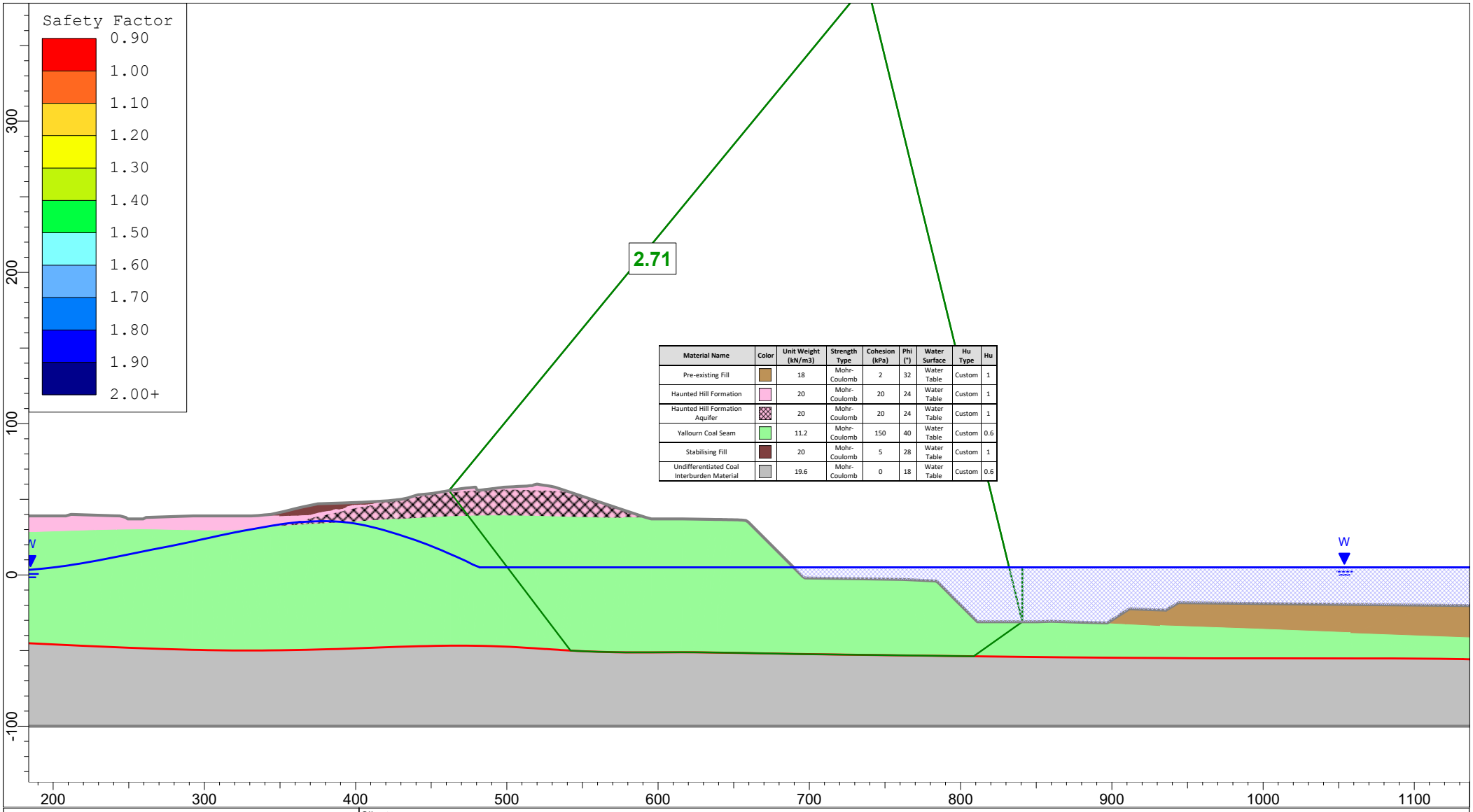
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Stabilising Fill		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 15	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Median Interseam Shear Strength		



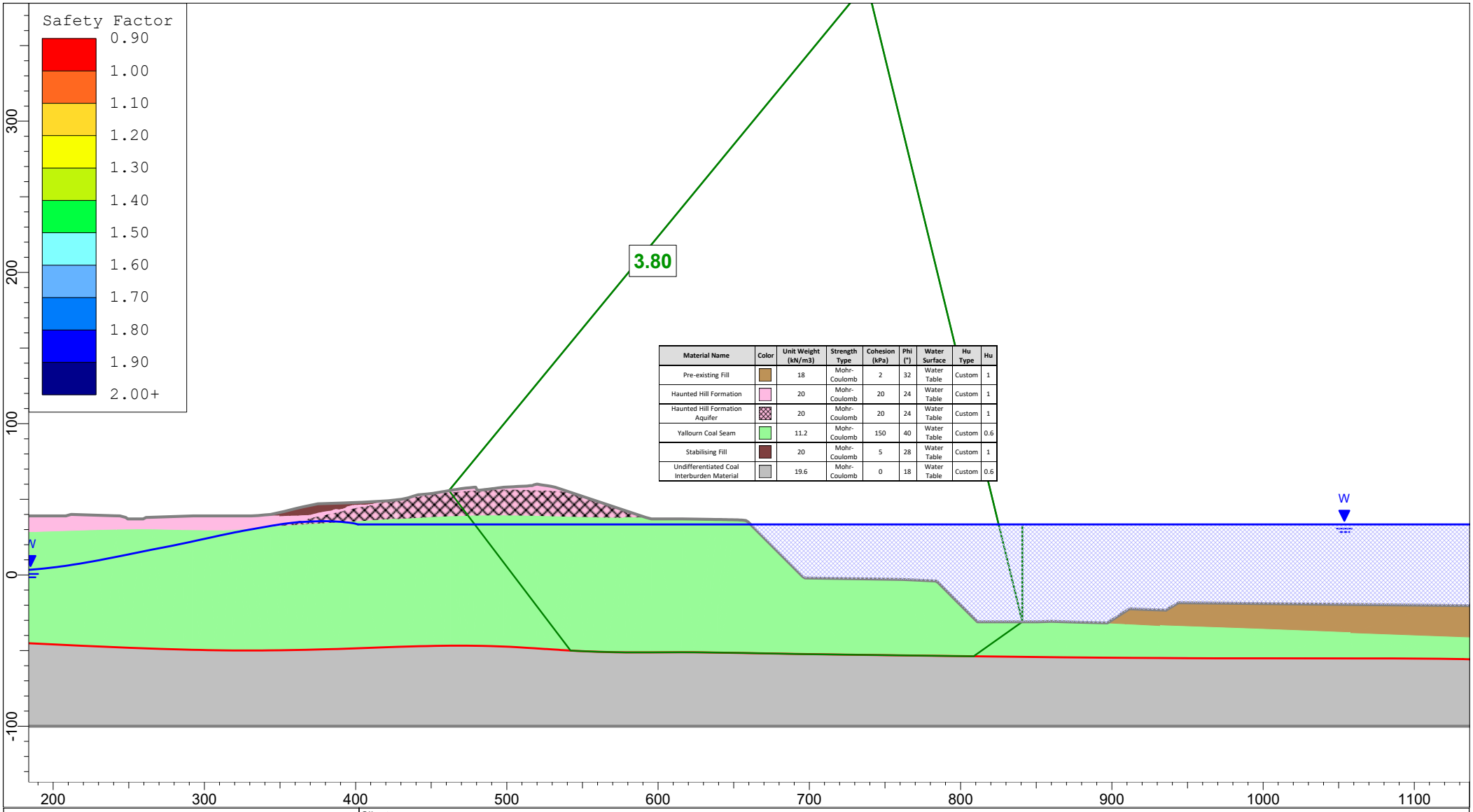
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Stabilising Fill		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 15	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Median Interseam Shear Strength		



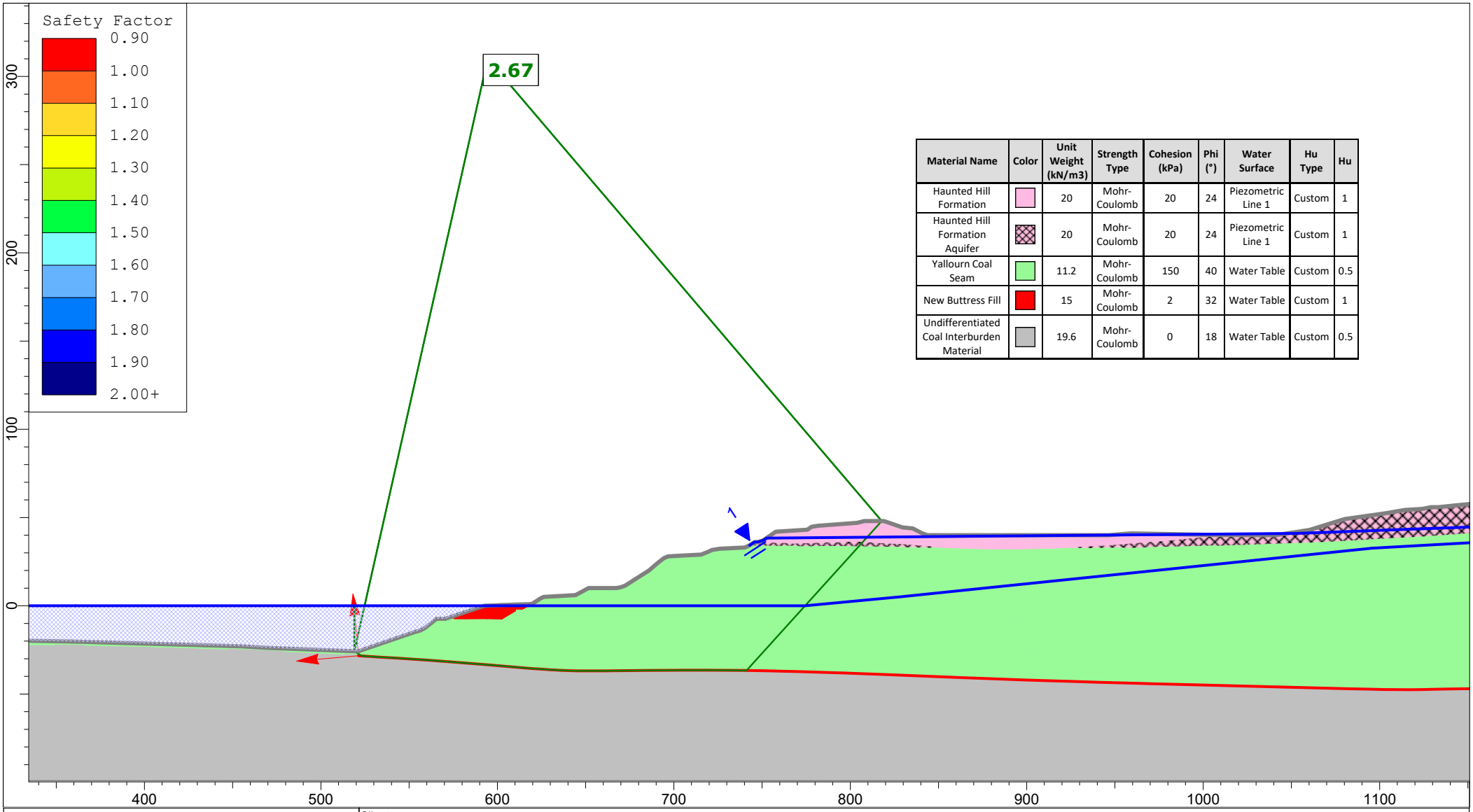
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Stabilising Fill		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 15	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Median Interseam Shear Strength		



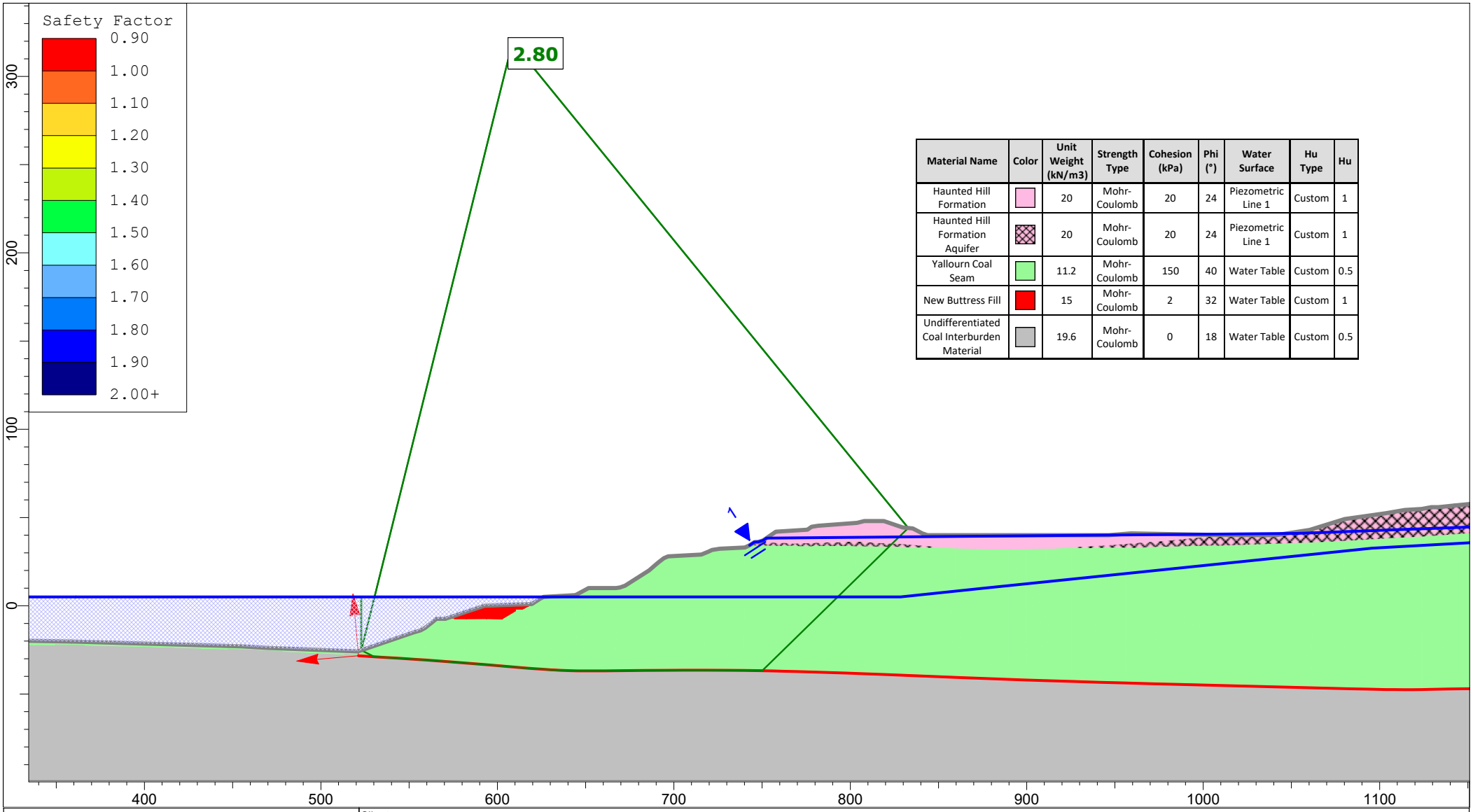
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Stabilising Fill		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 15	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



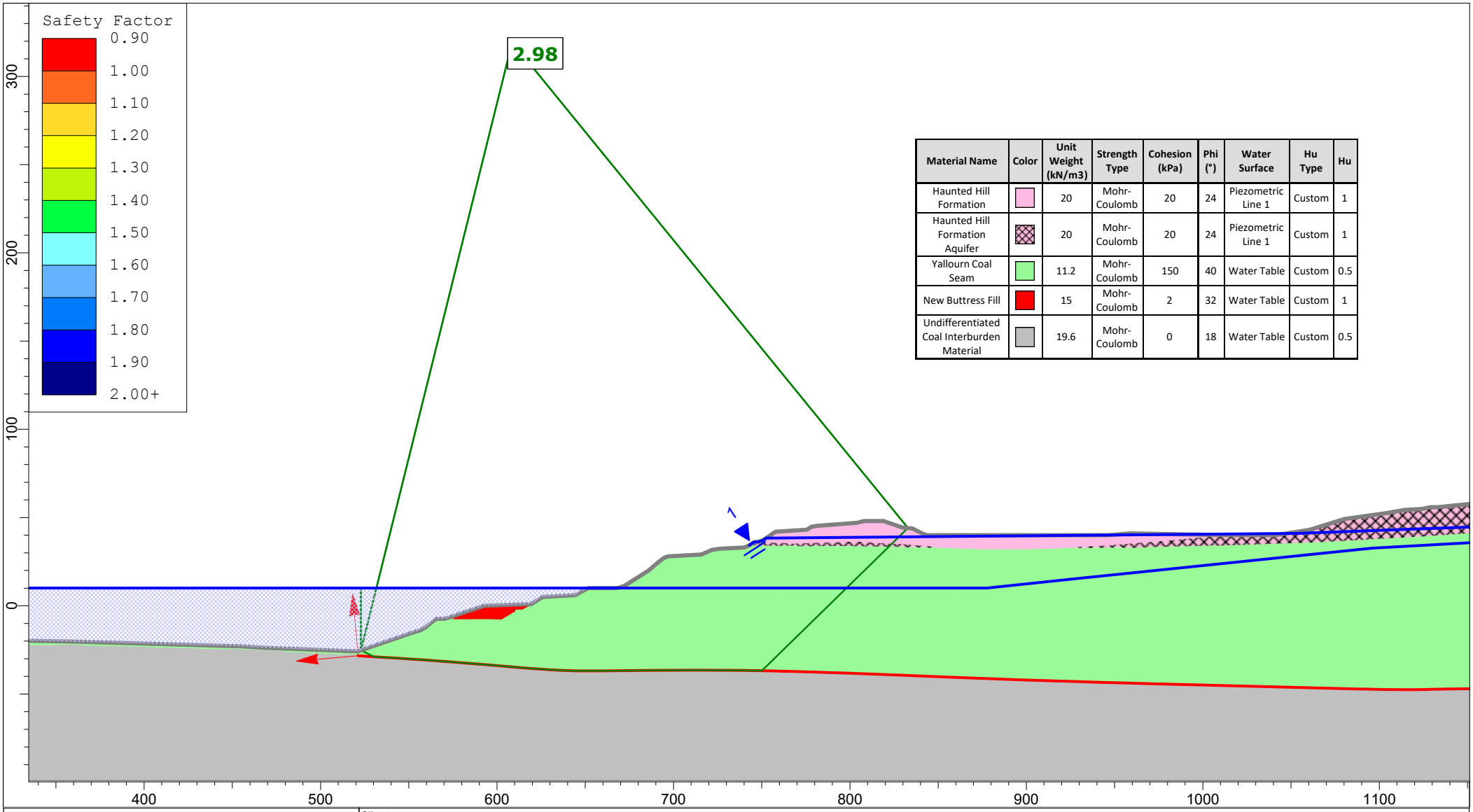
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Median Interseam Shear Strength		



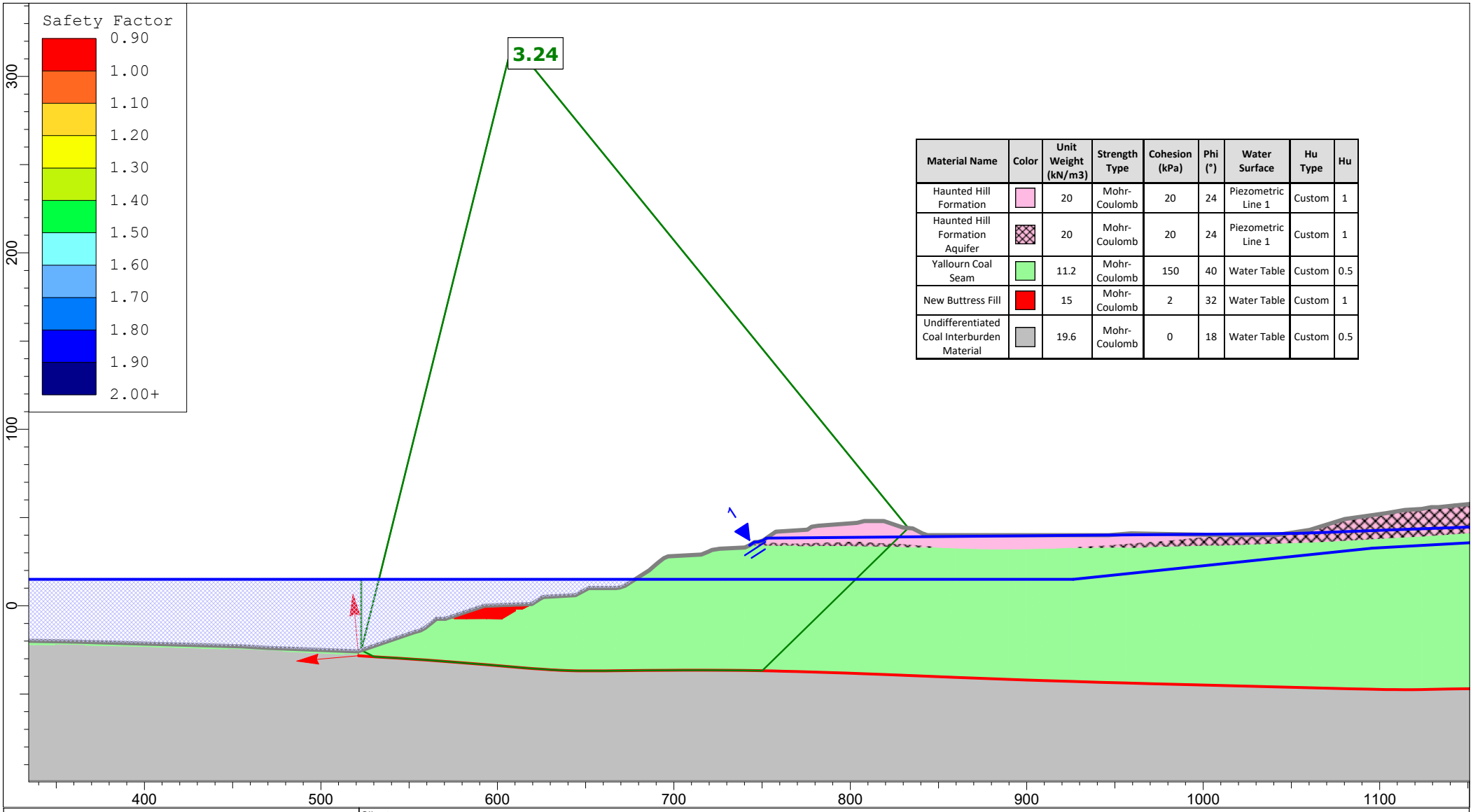
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Median Interseam Shear Strength		



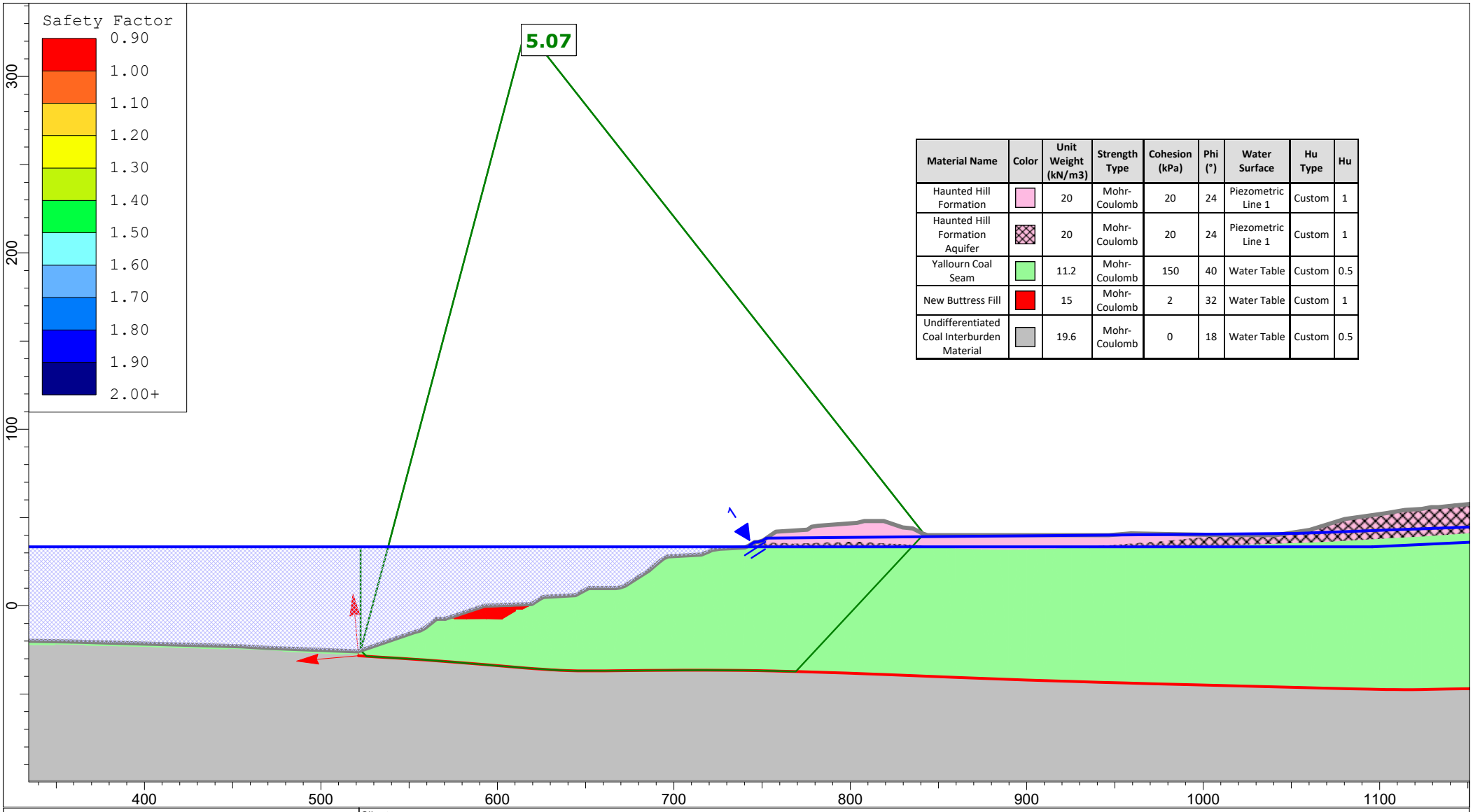
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



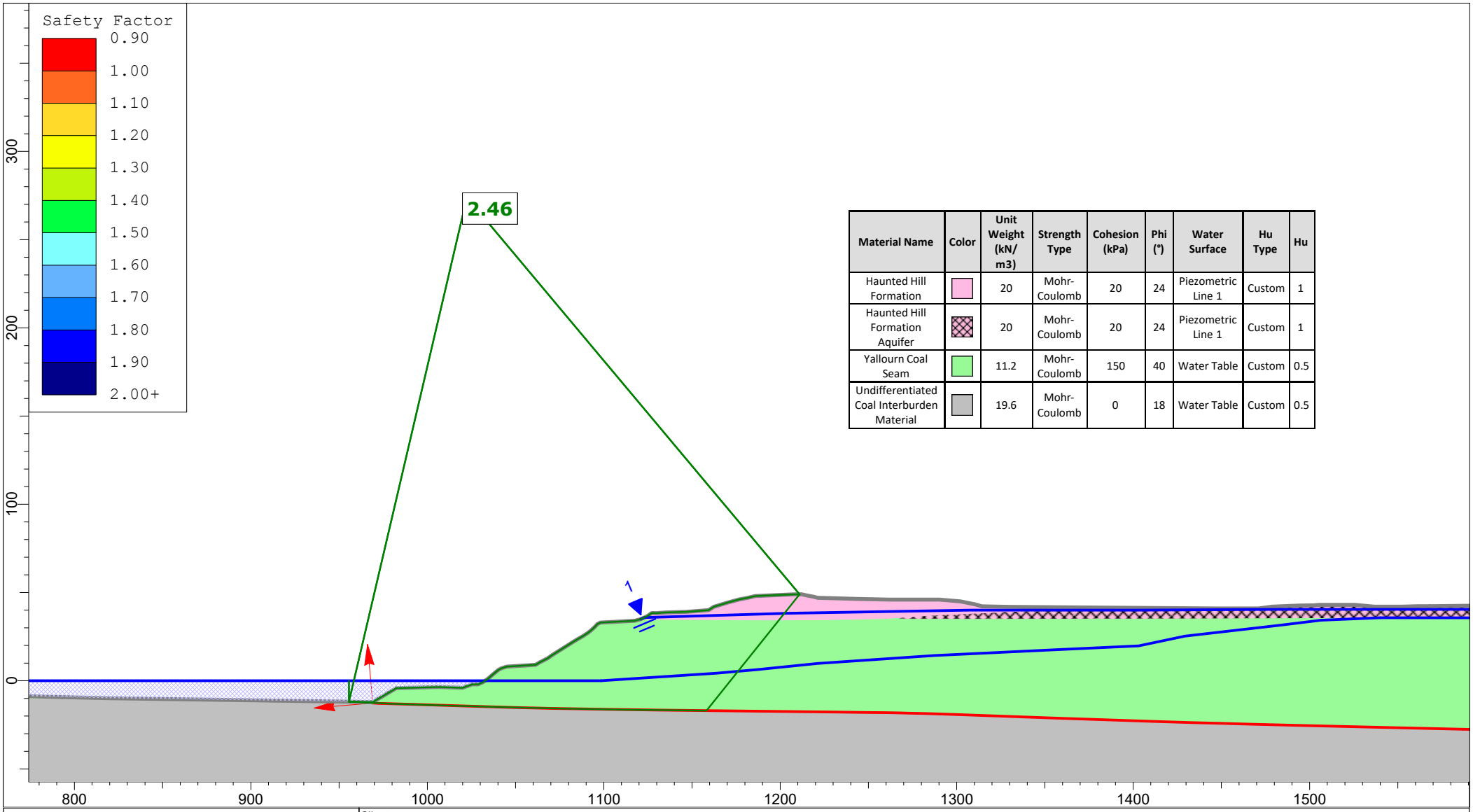
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Median Interseam Shear Strength		



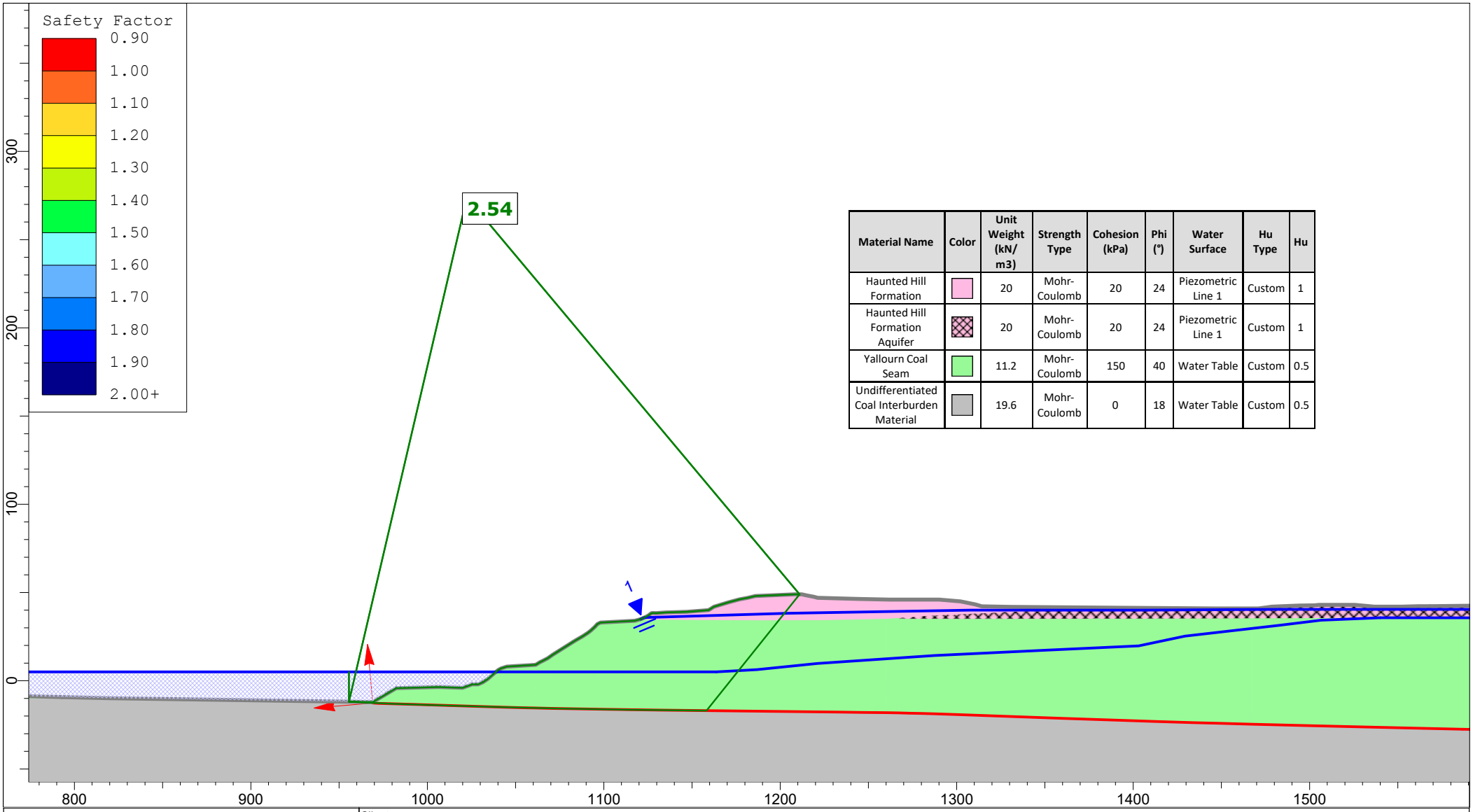
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



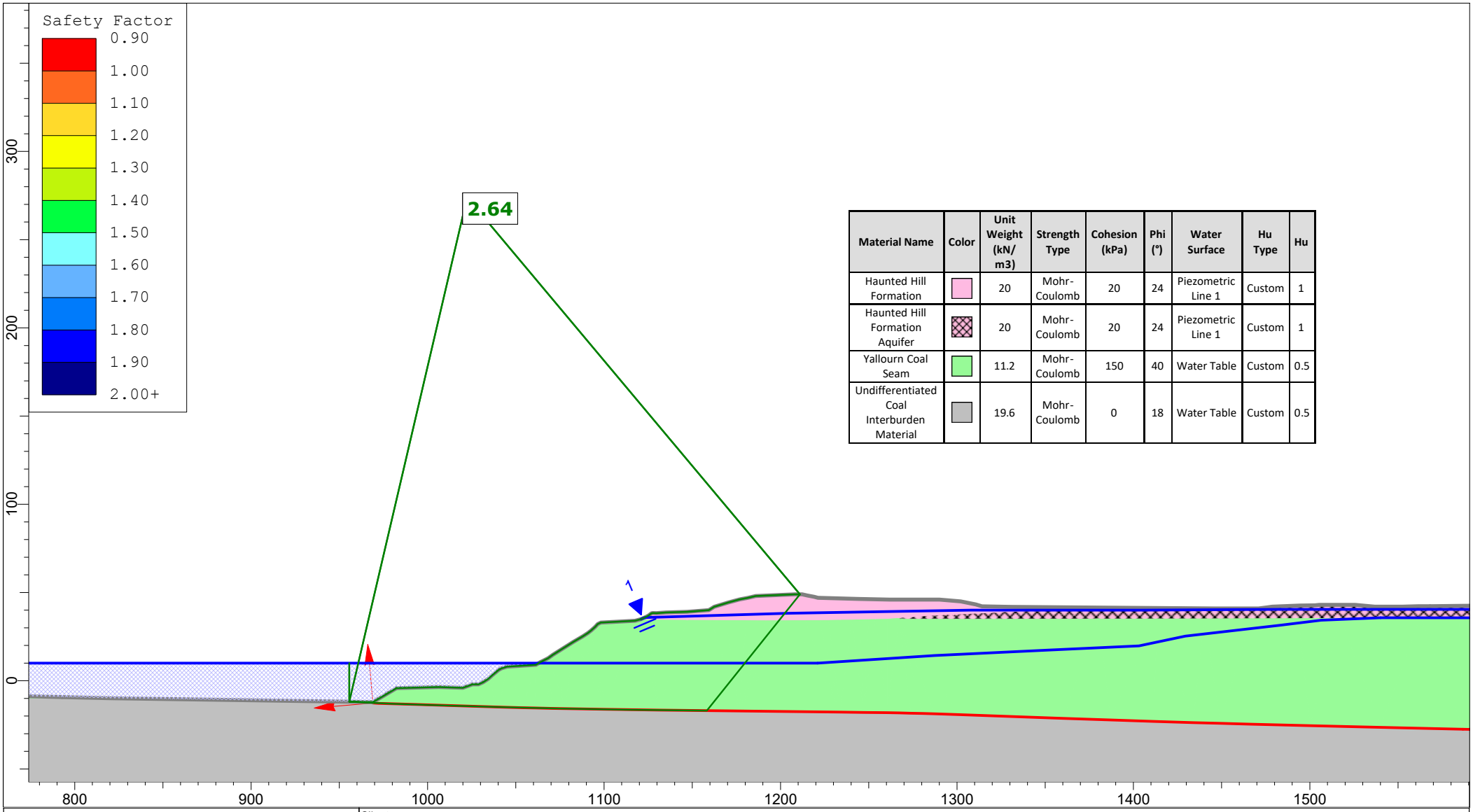
Material Name	Color	Unit Weight (kN/ m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Median Interseam Shear Strength		



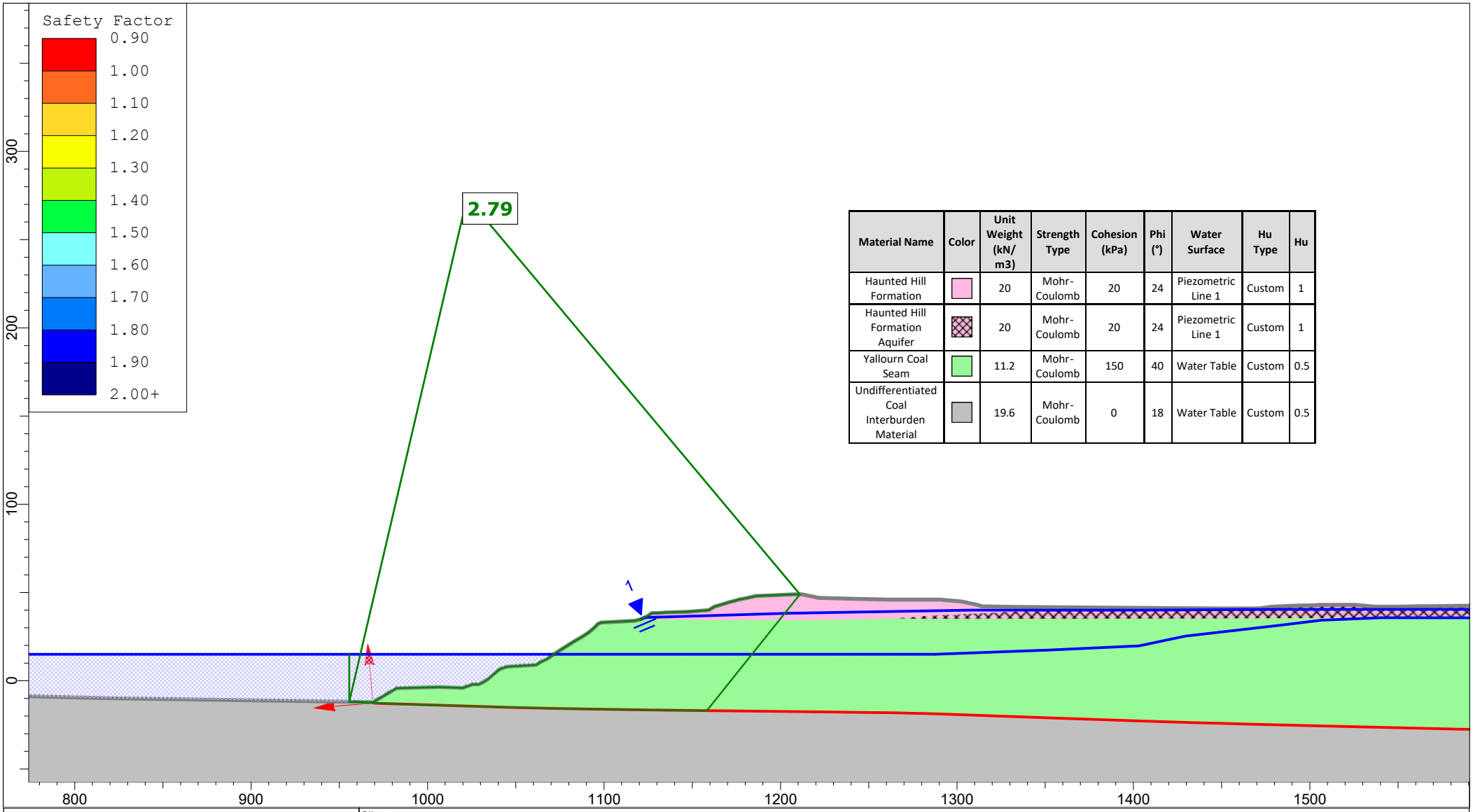
Material Name	Color	Unit Weight (kN/ m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Median Interseam Shear Strength		



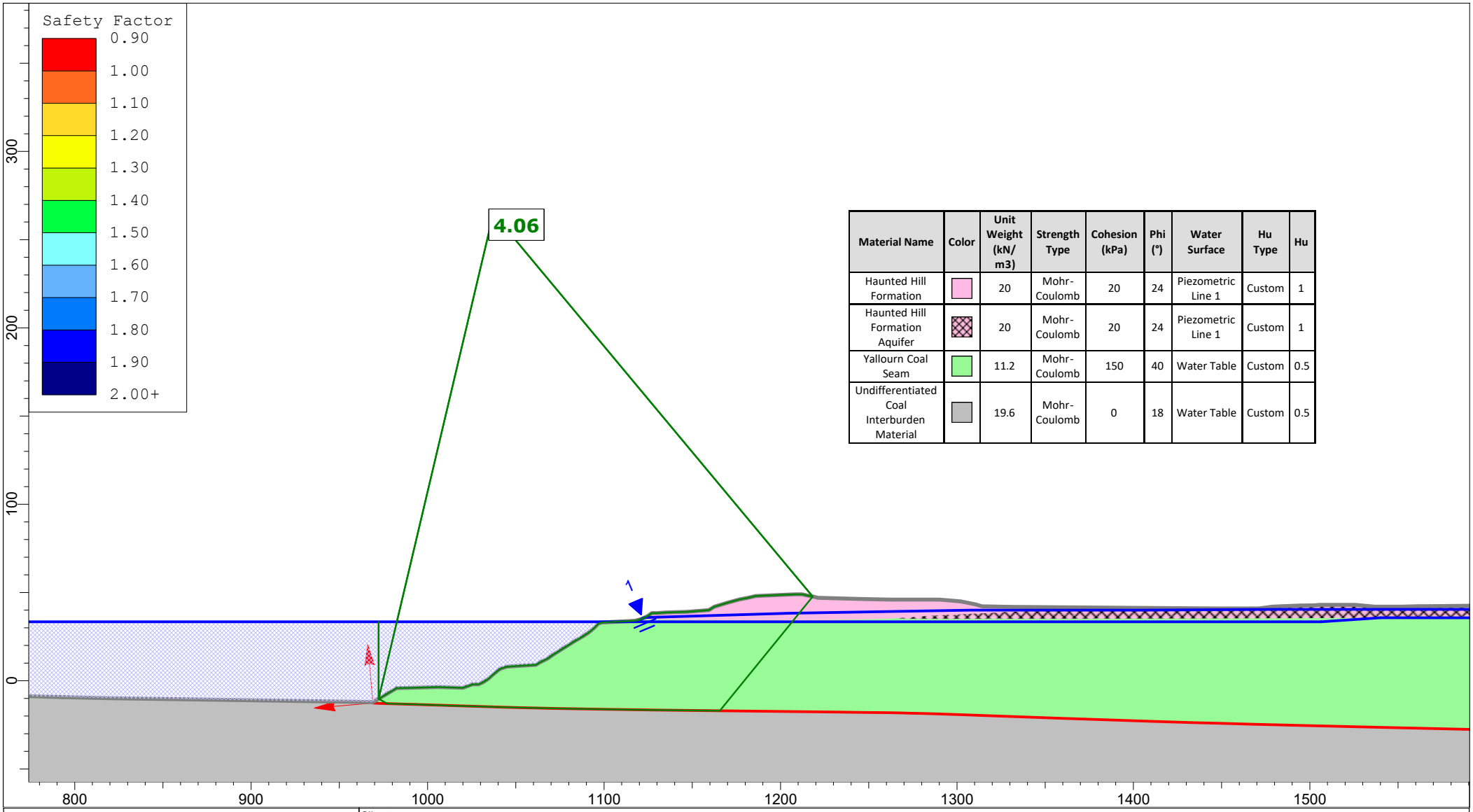
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



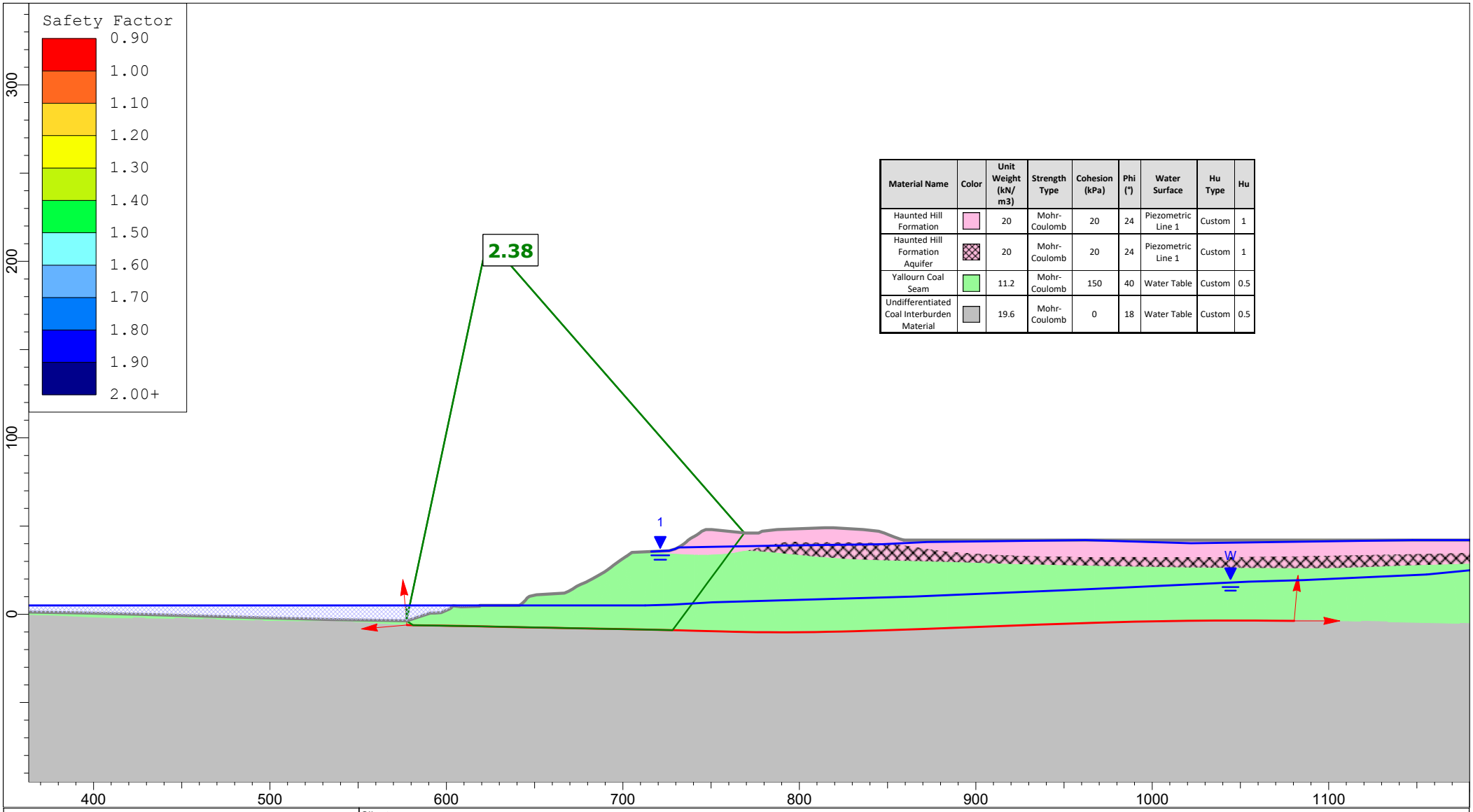
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Median Interseam Shear Strength		



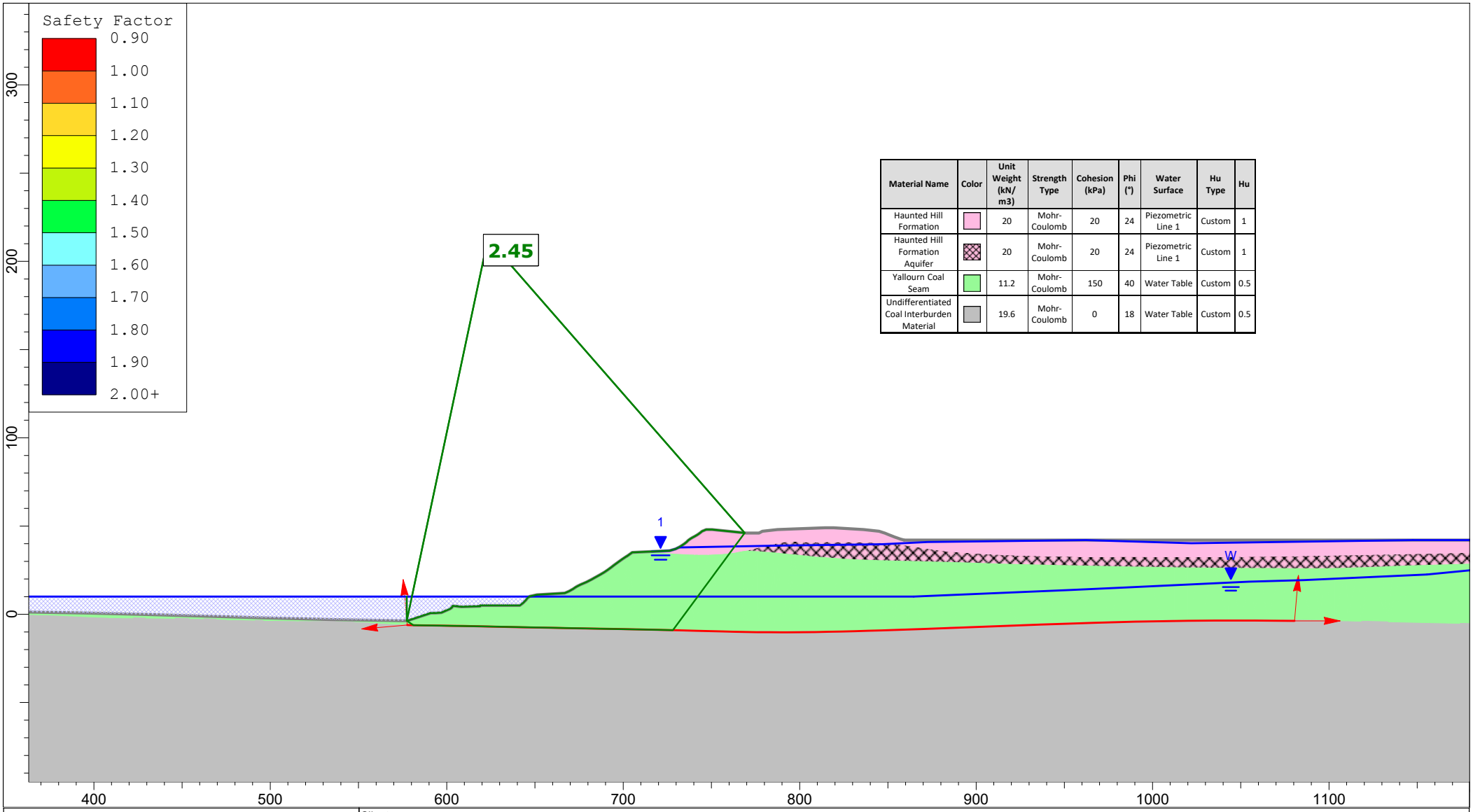
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



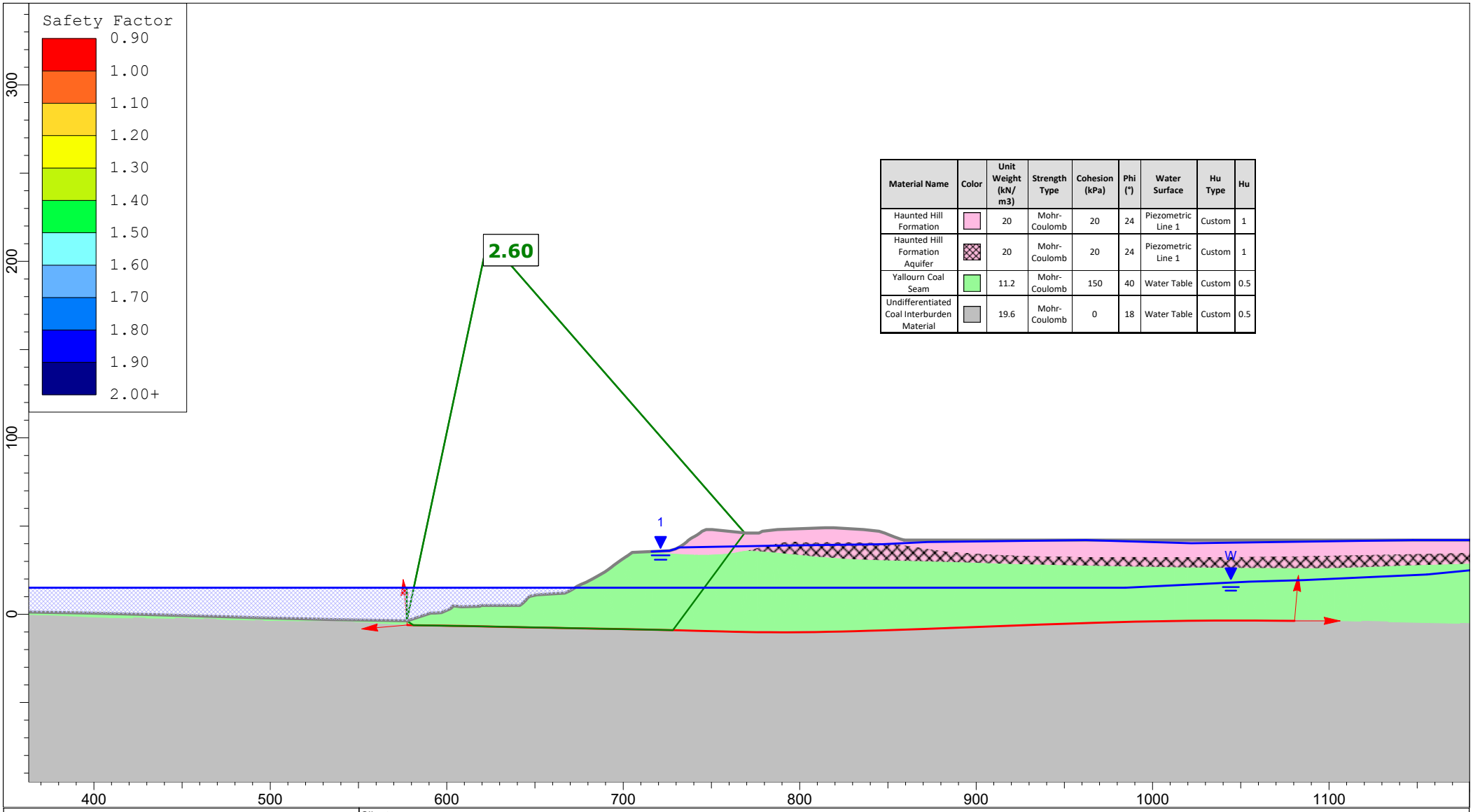
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Median Interseam Shear Strength		



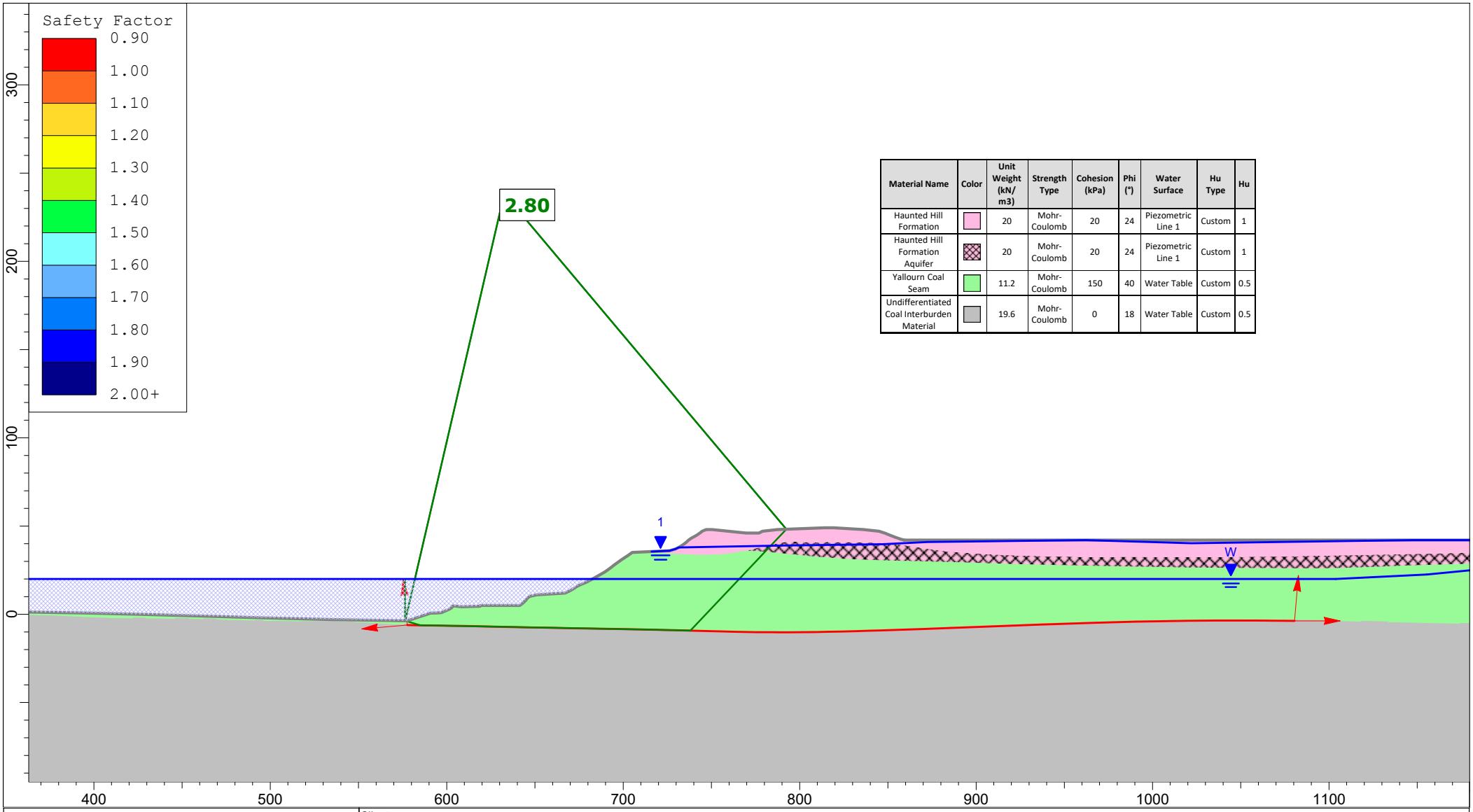
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



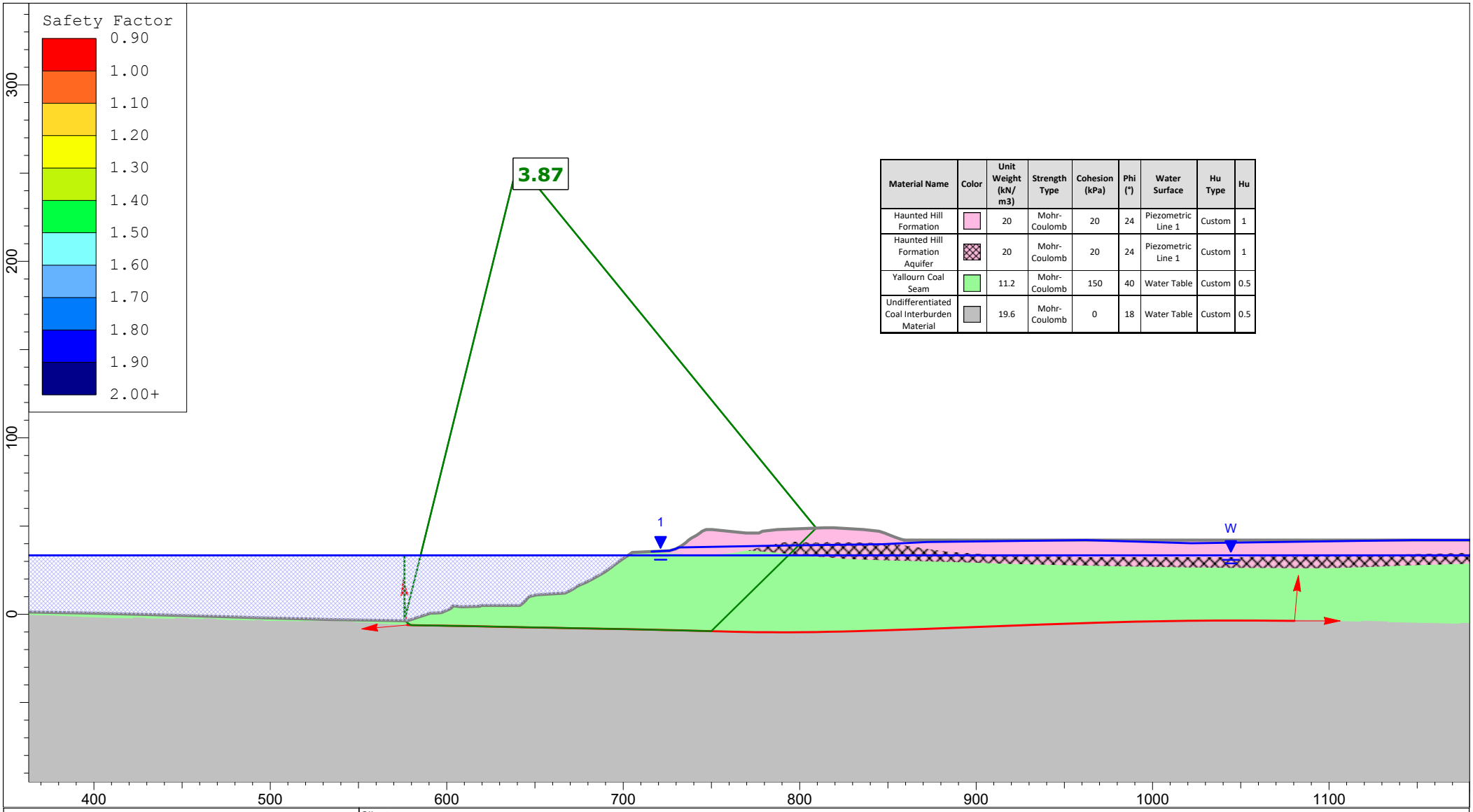
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Median Interseam Shear Strength		



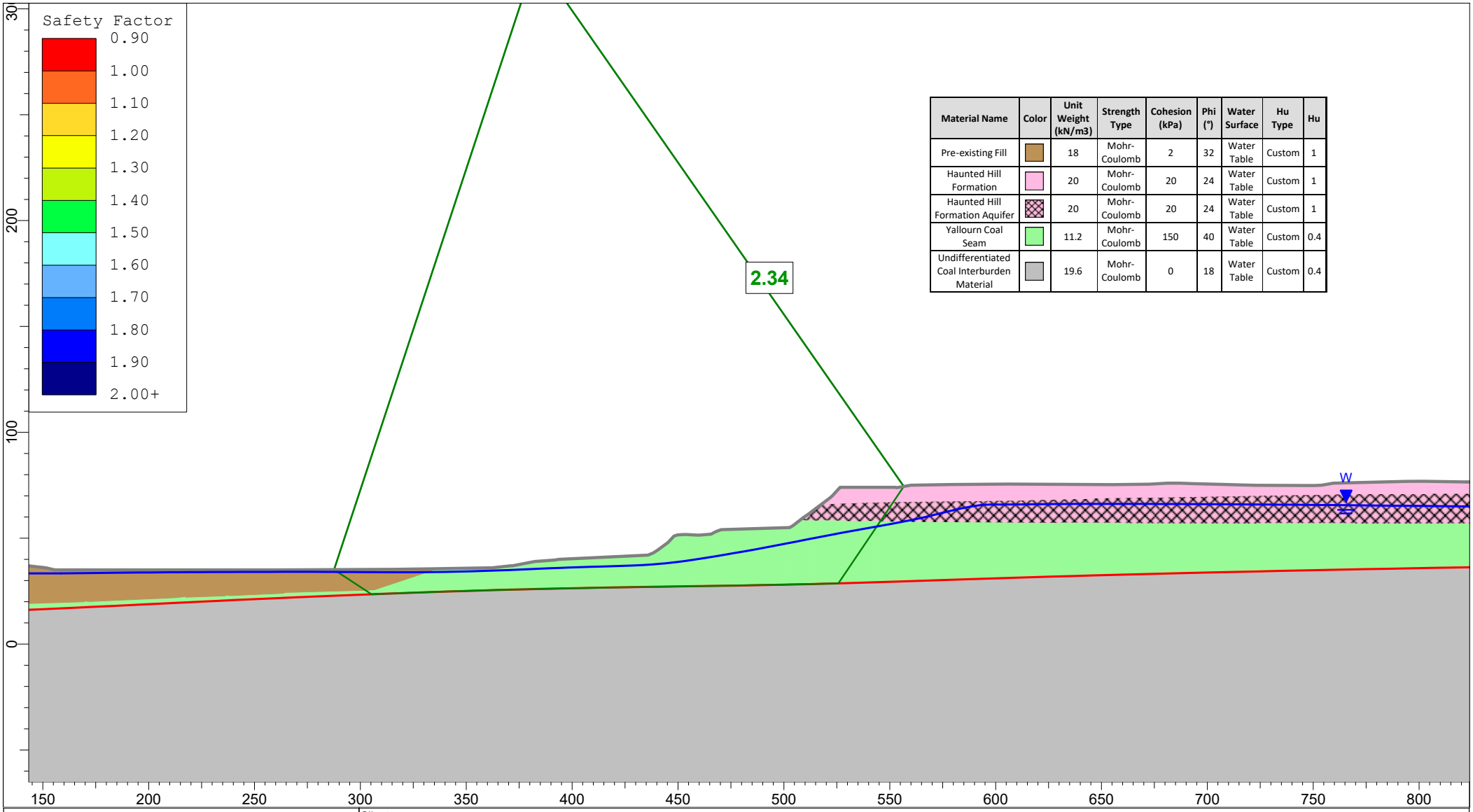
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



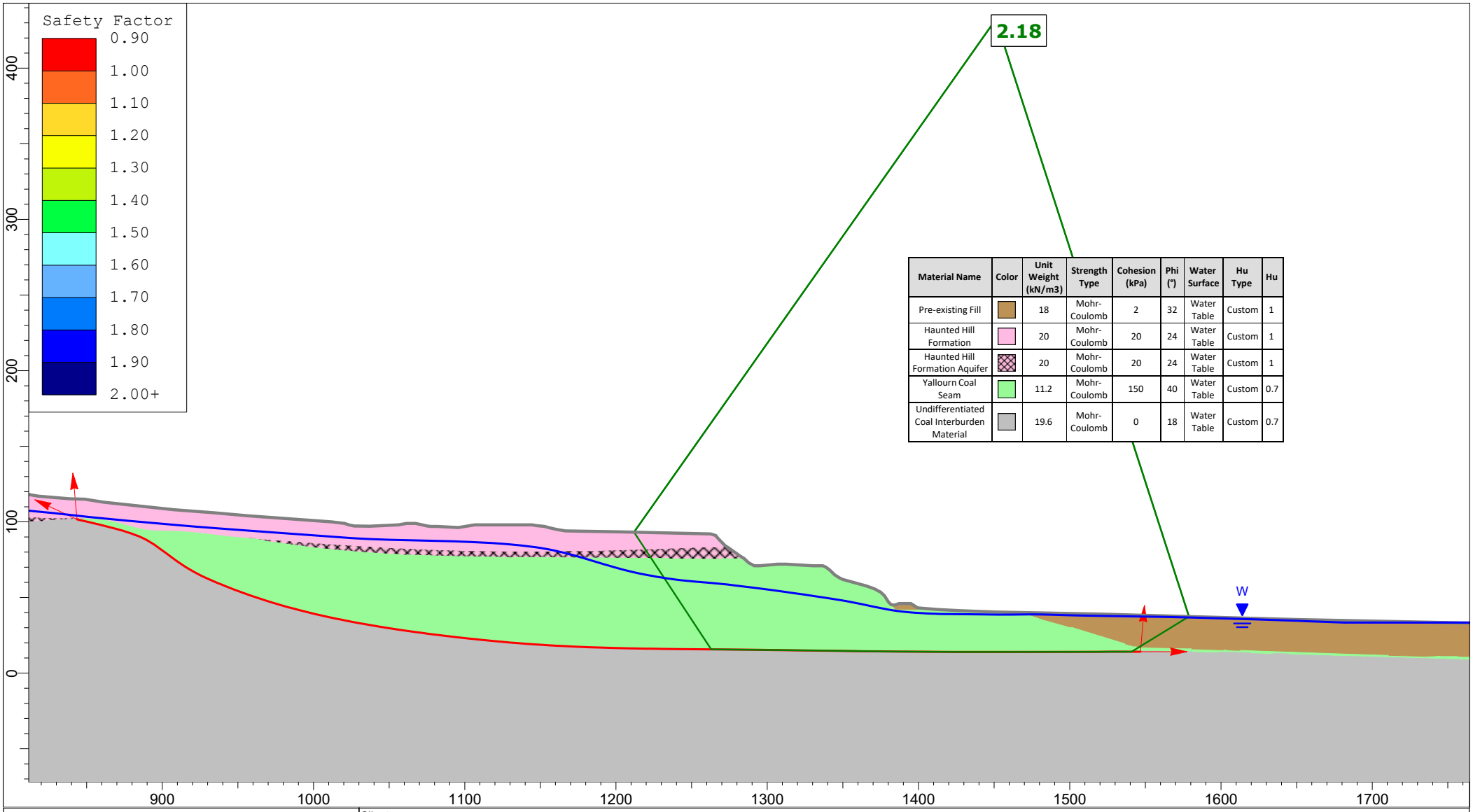
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



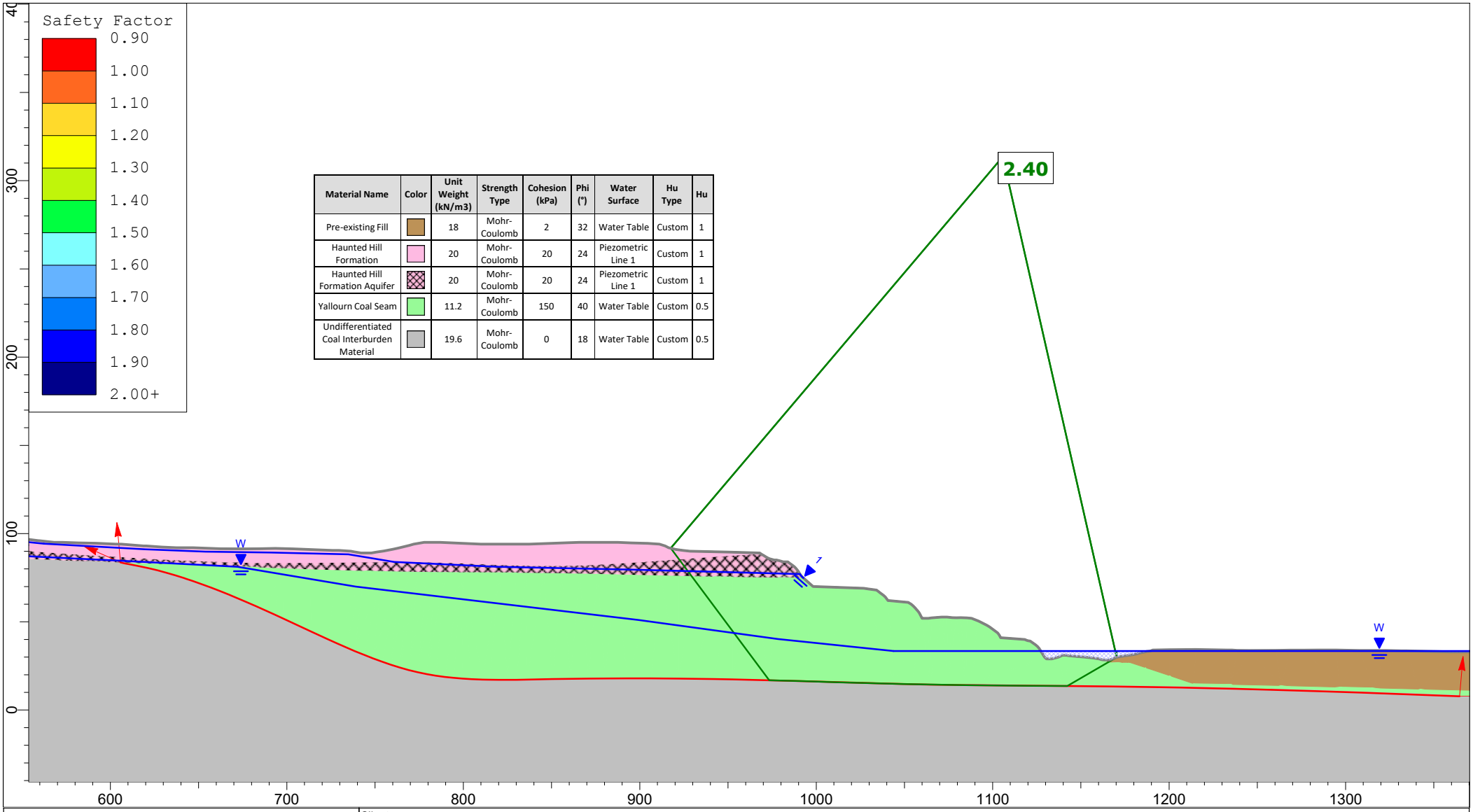
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SB
Section:	Section 19	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



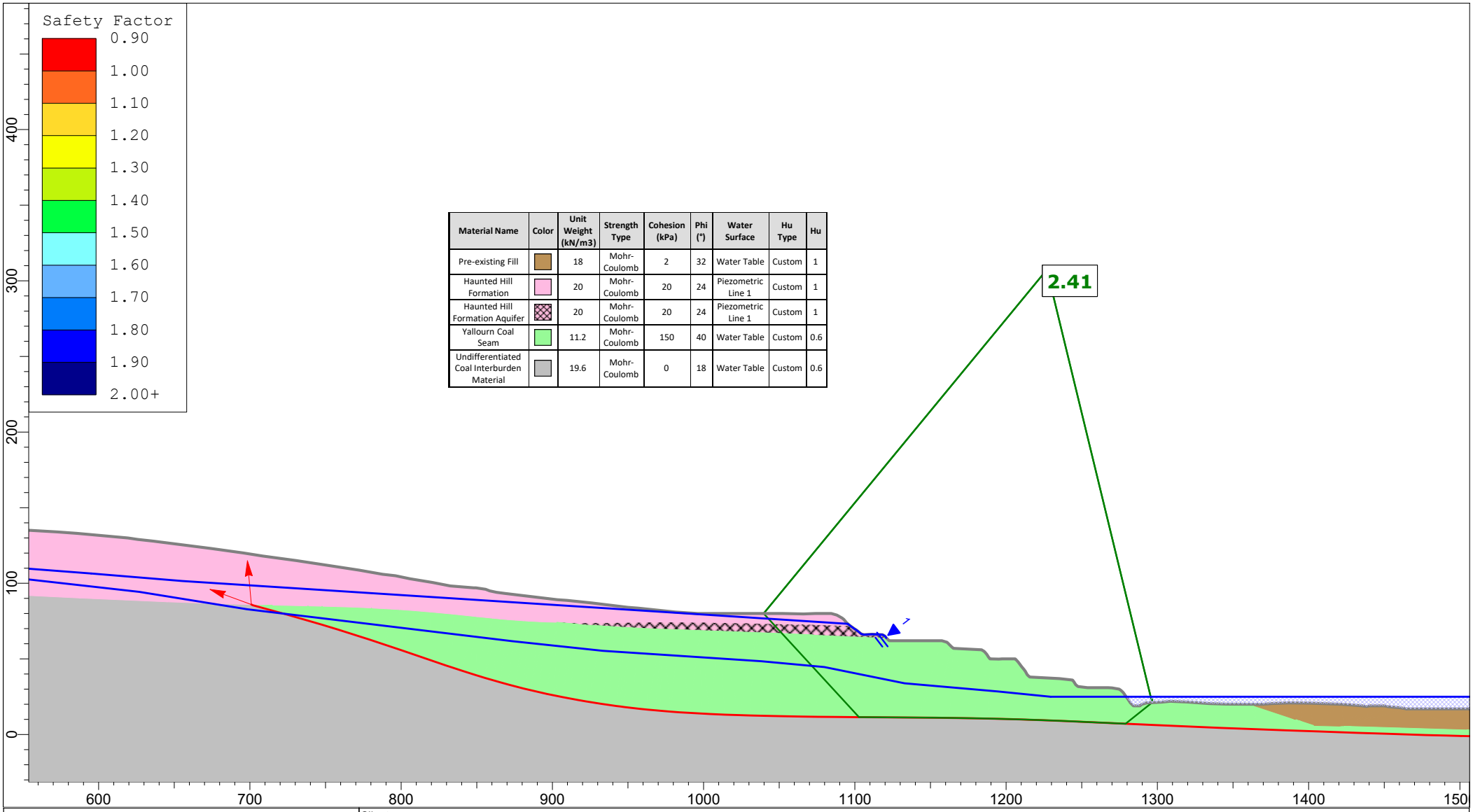
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 21	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



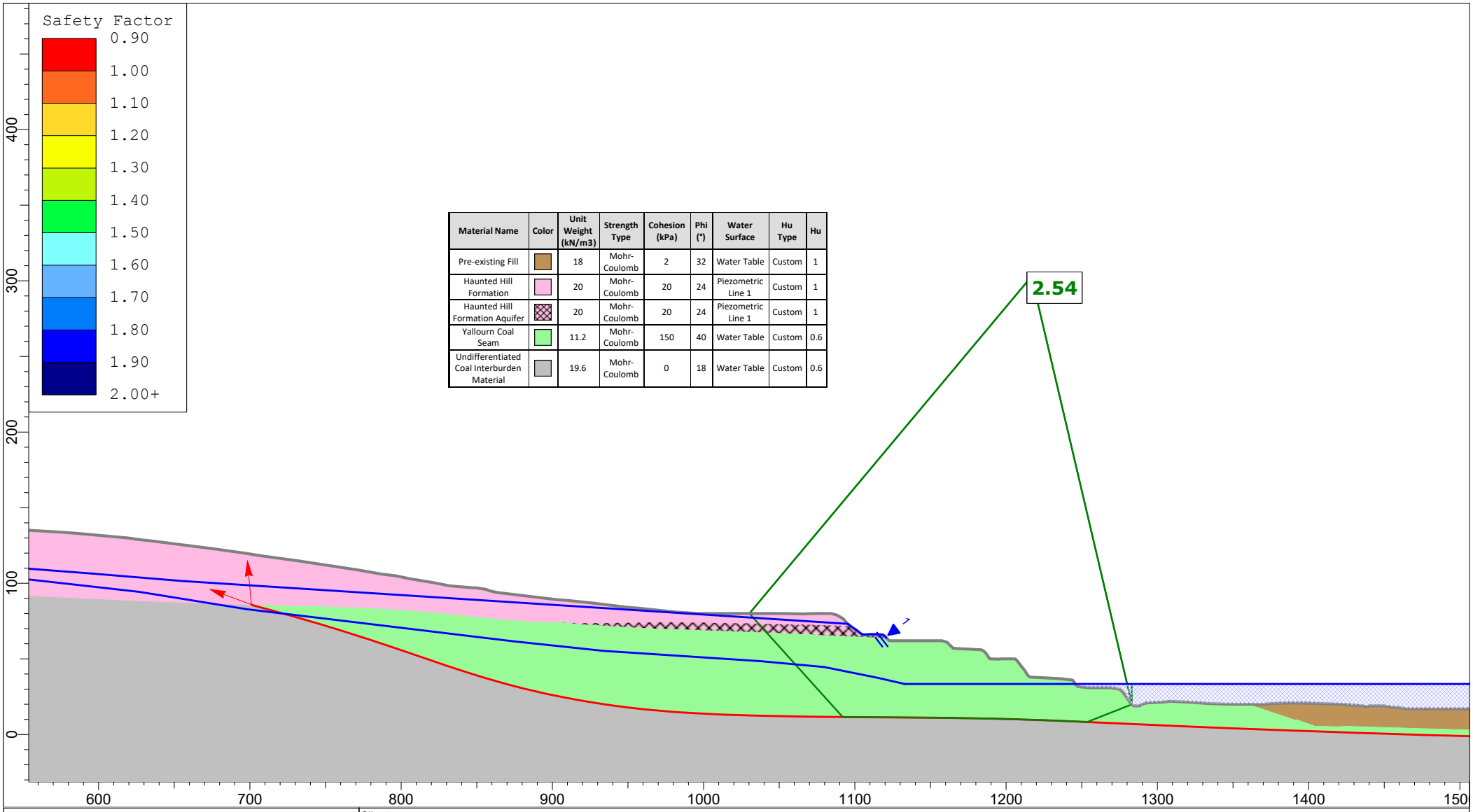
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (South)
Section:	Section 22	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



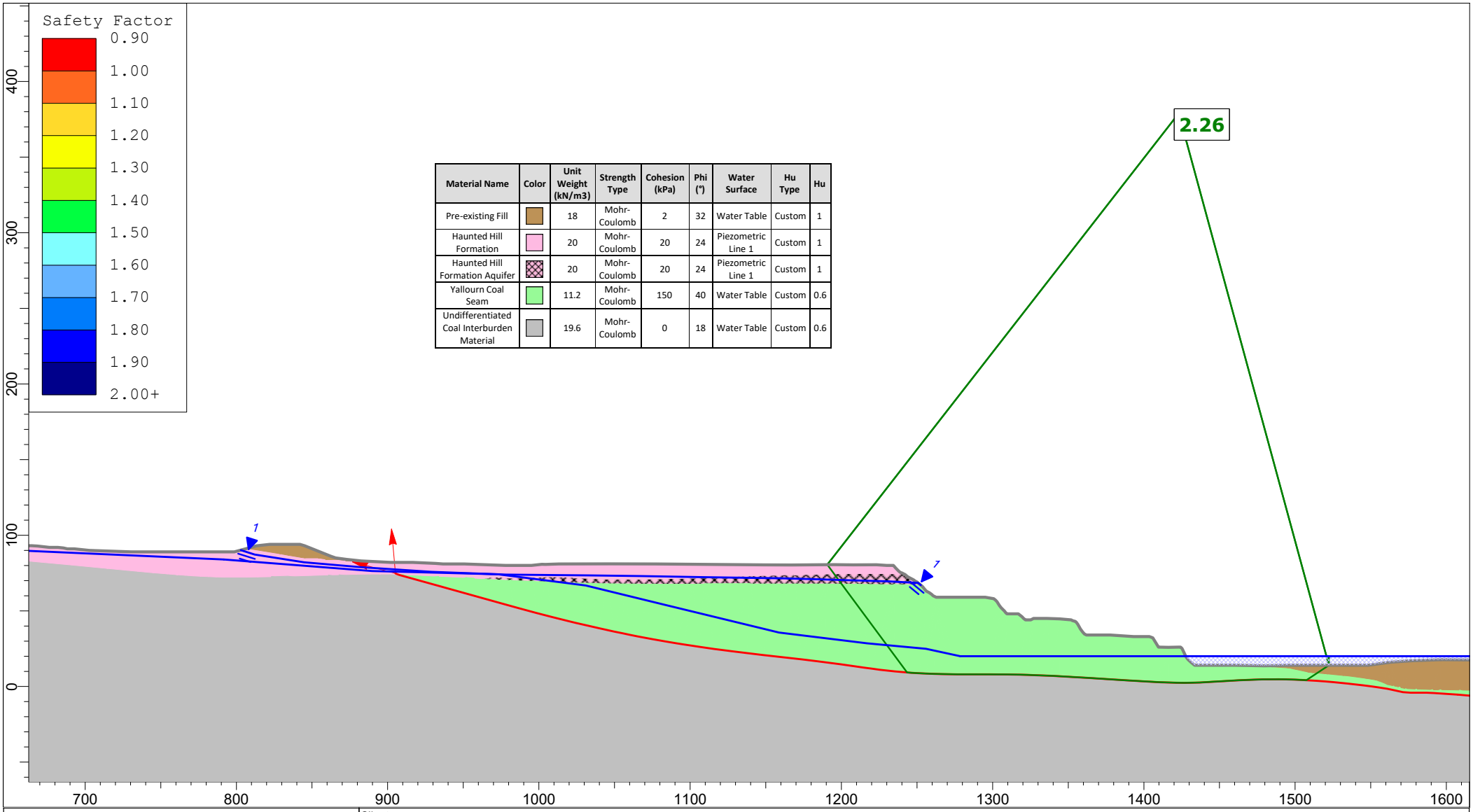
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 23	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength		



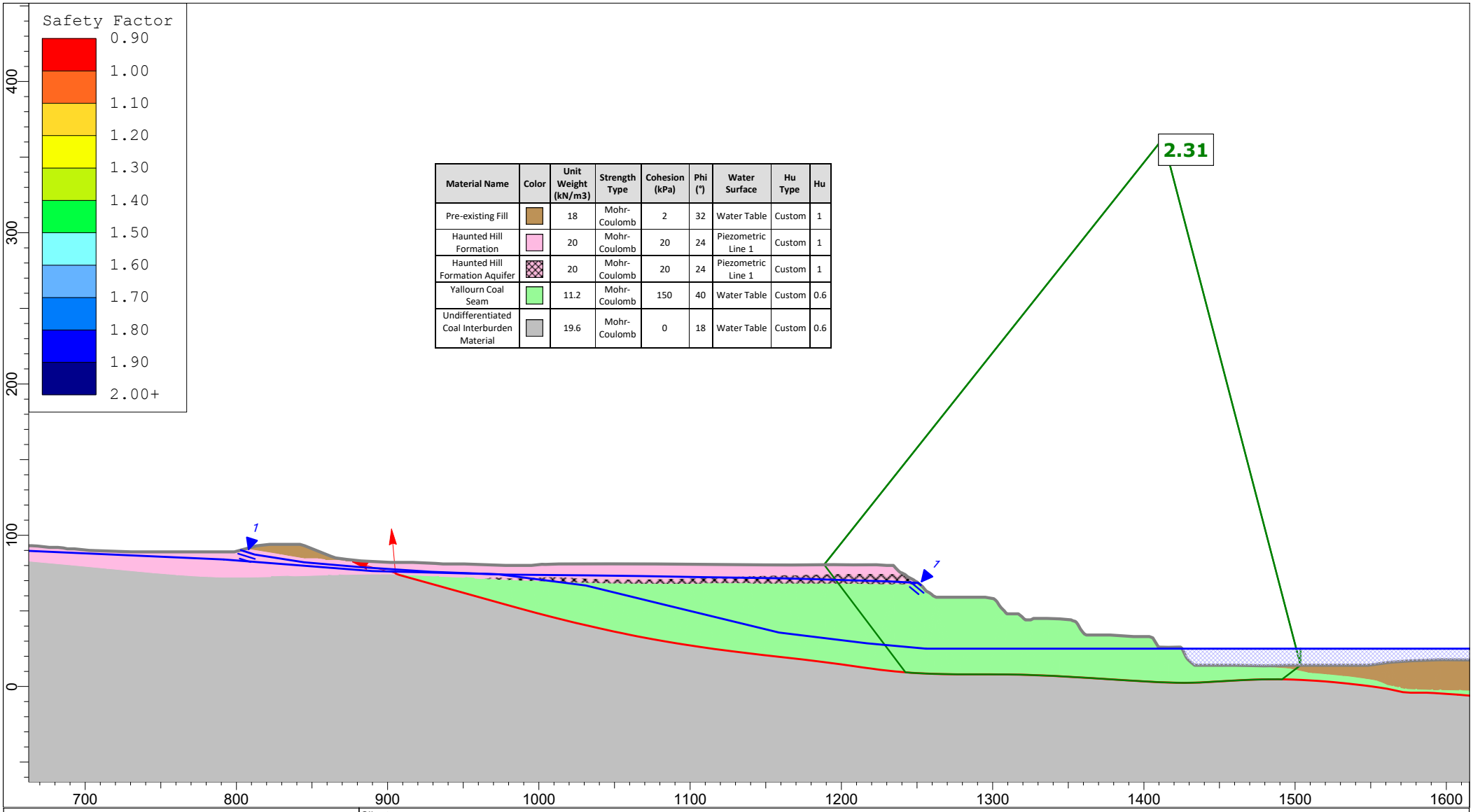
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 23	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



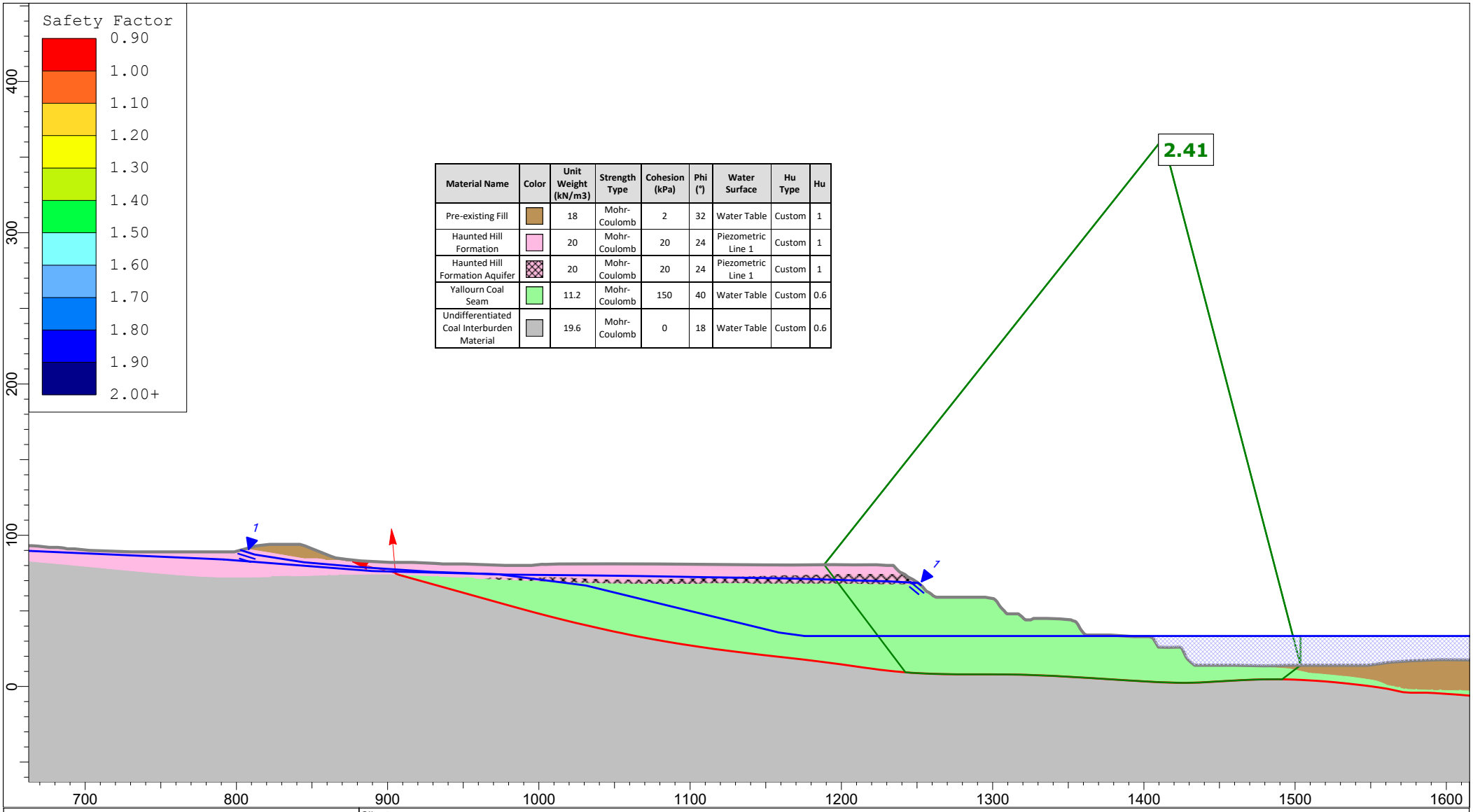
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



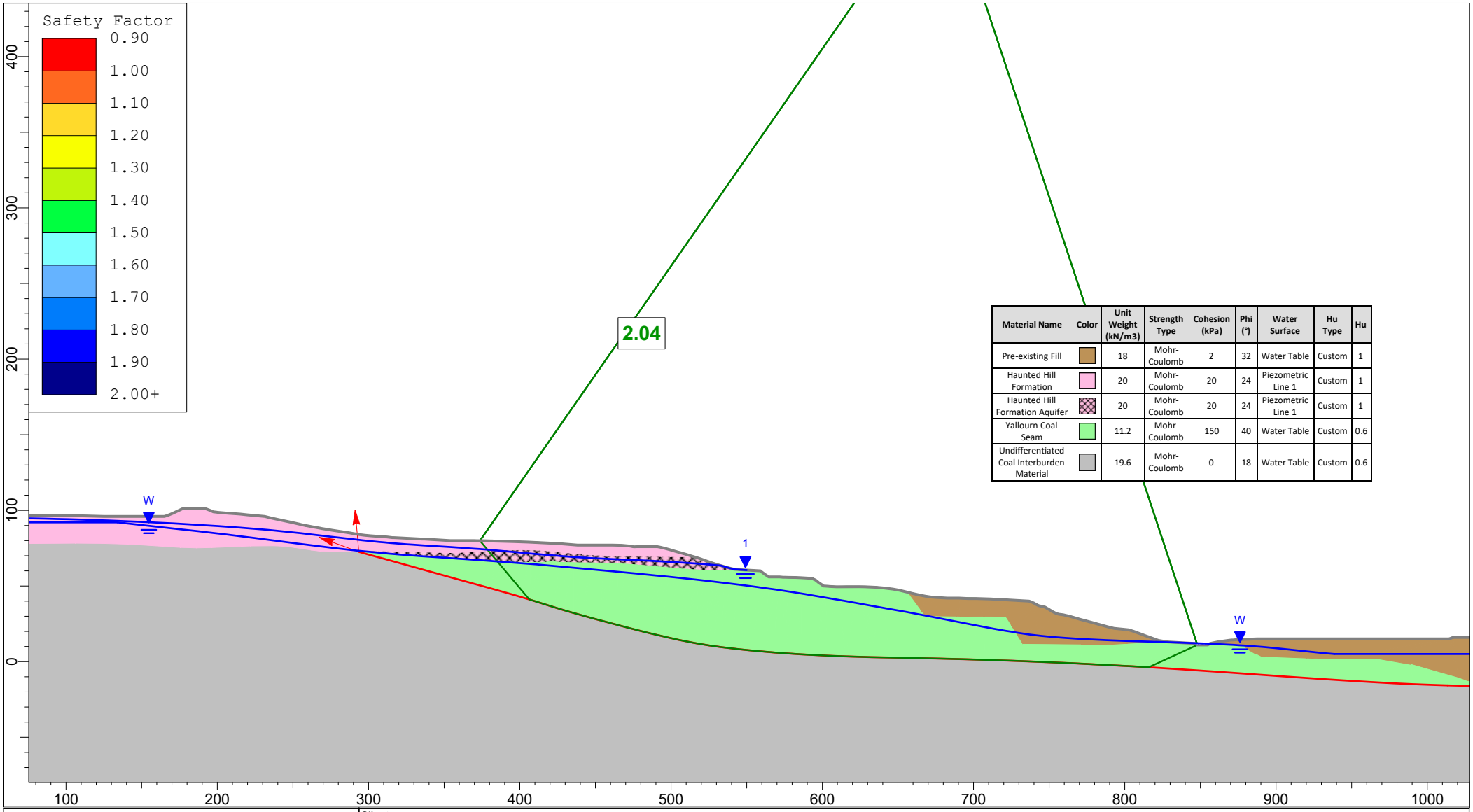
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength		



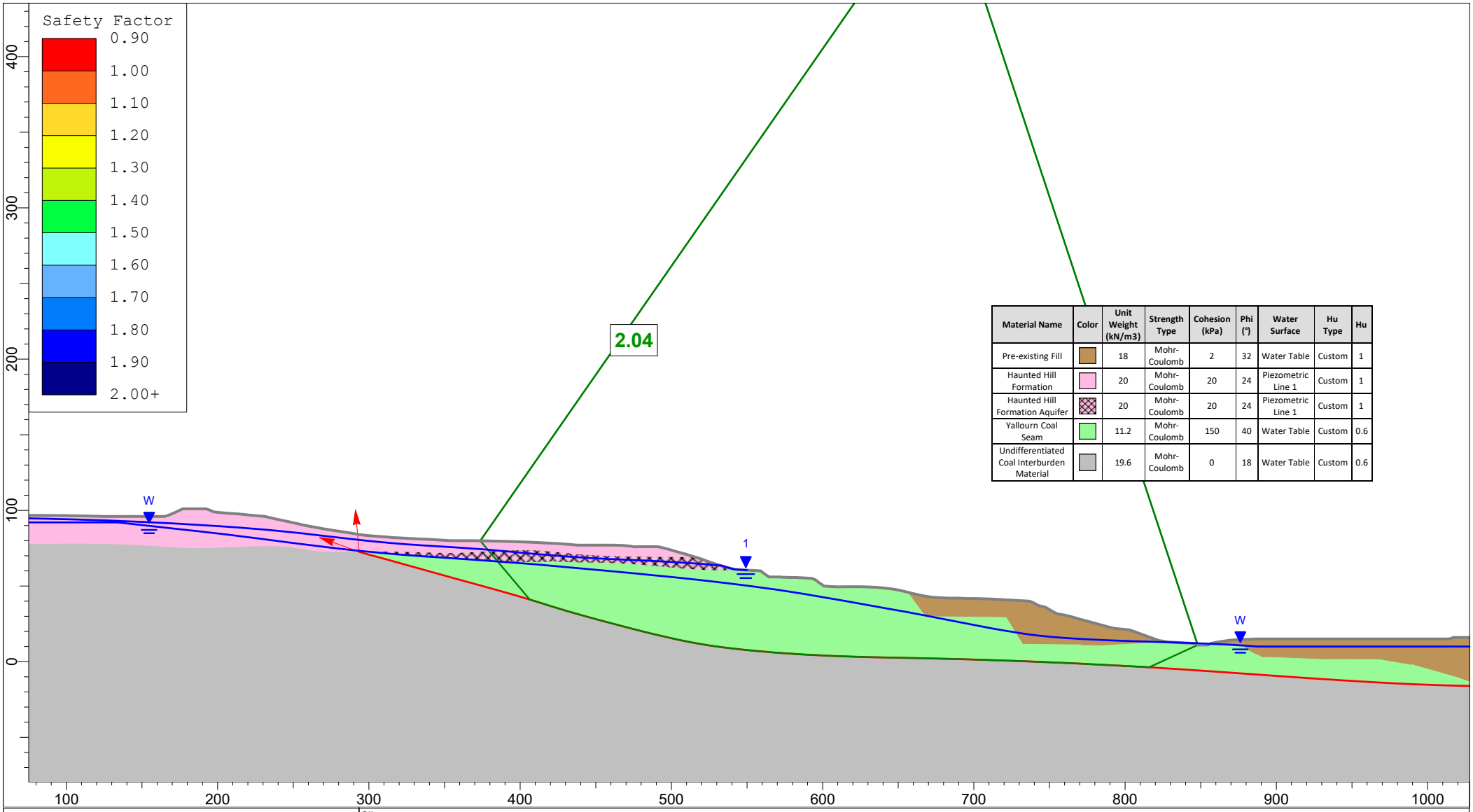
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



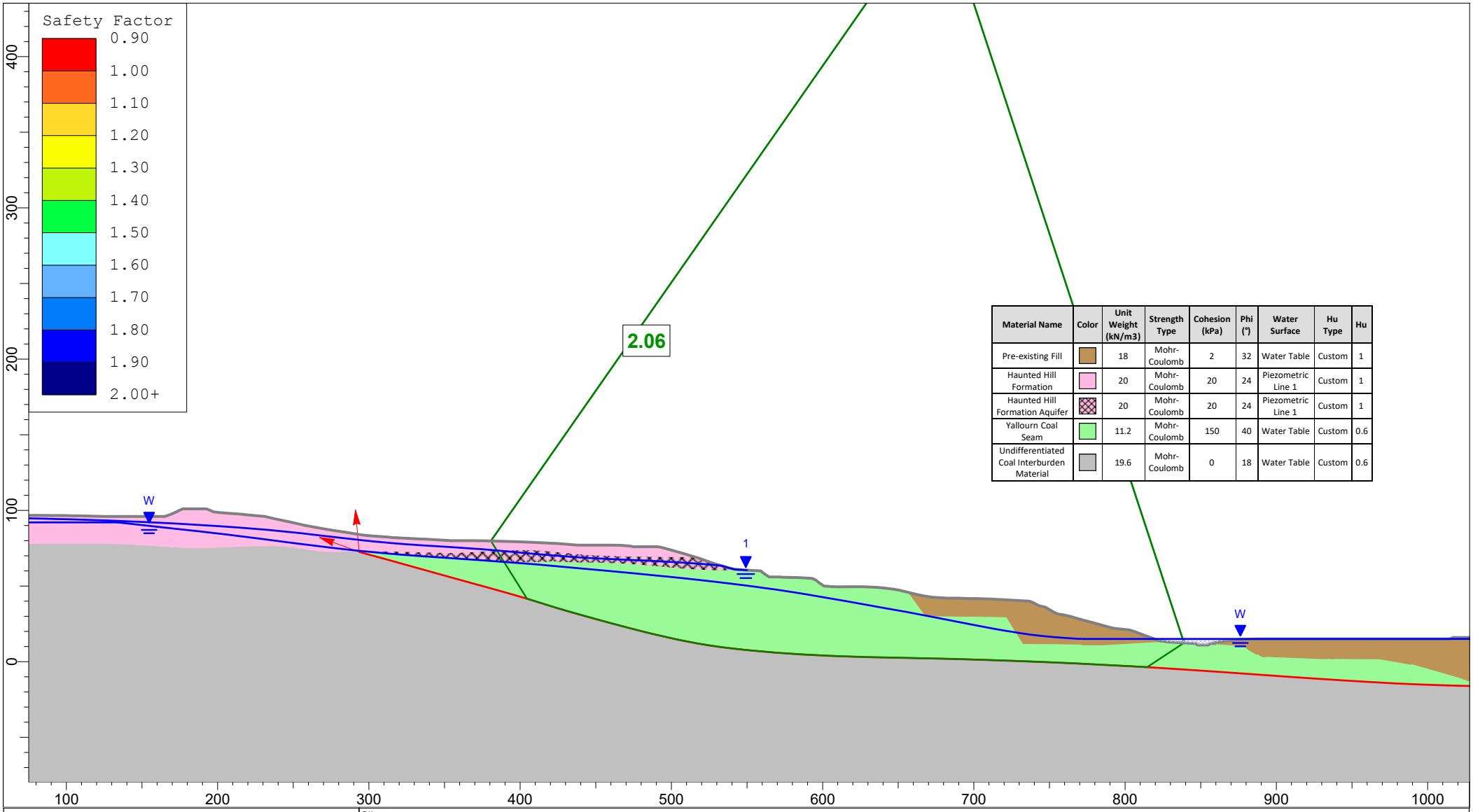
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Median Interseam Shear Strength		



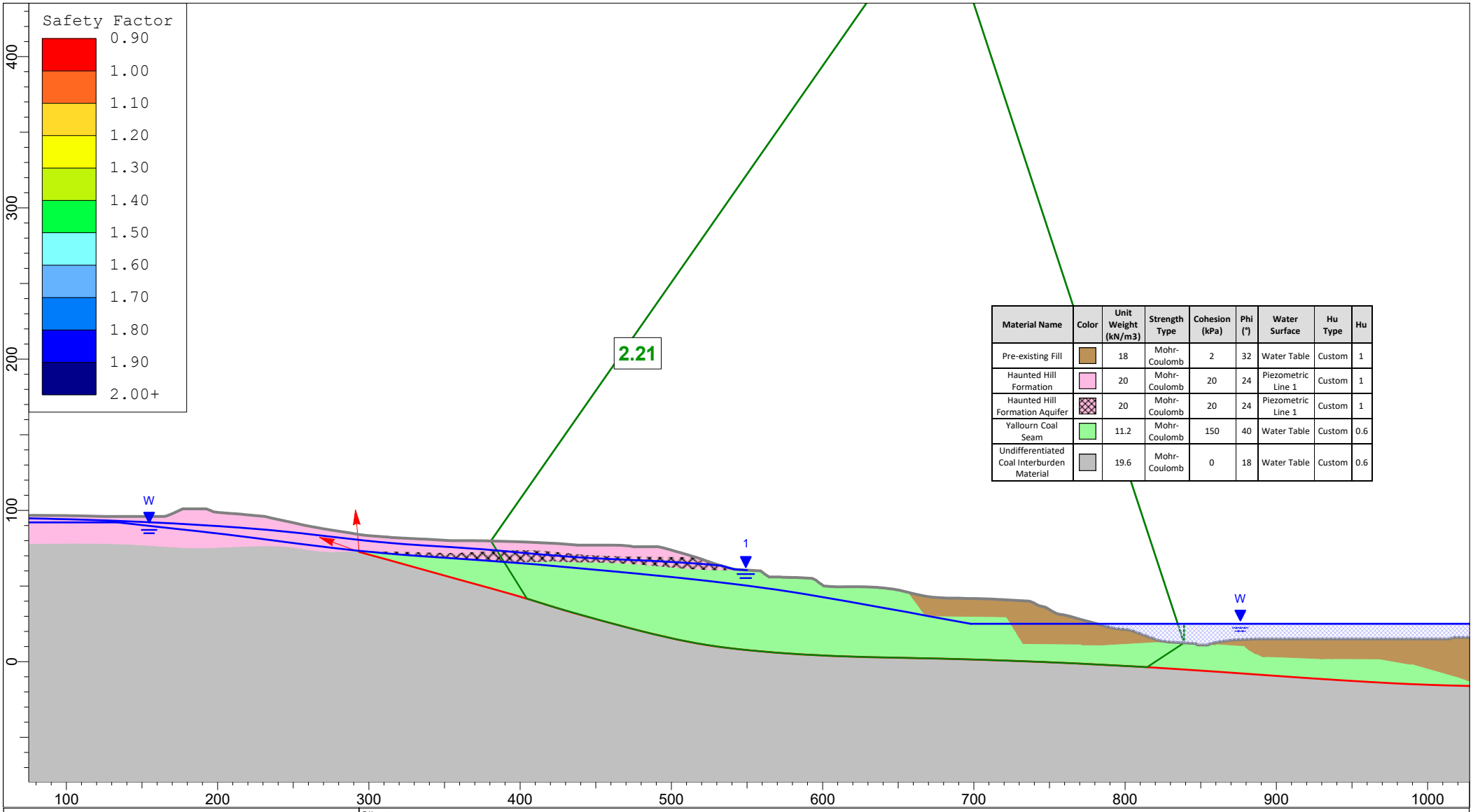
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



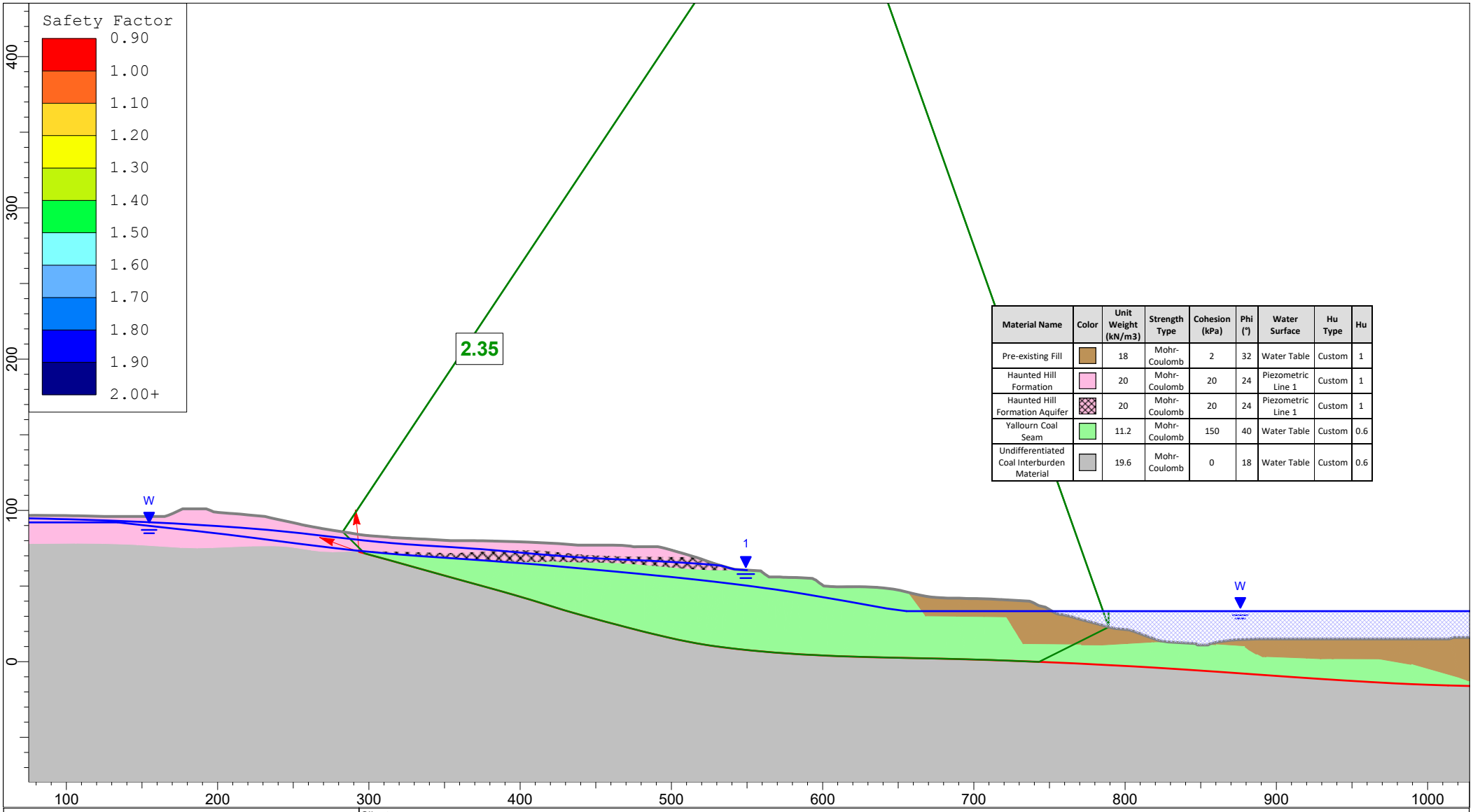
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Median Interseam Shear Strength		



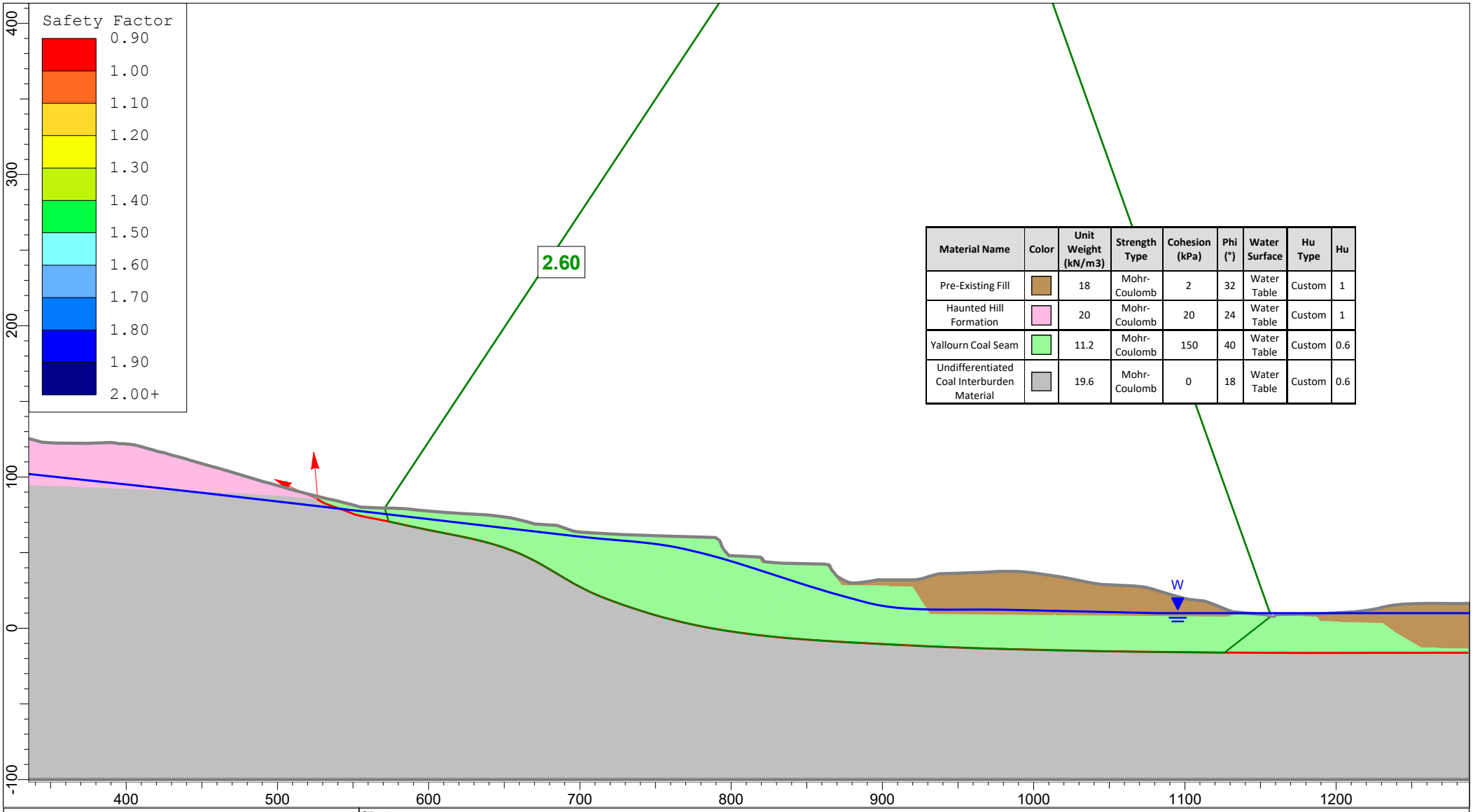
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength		



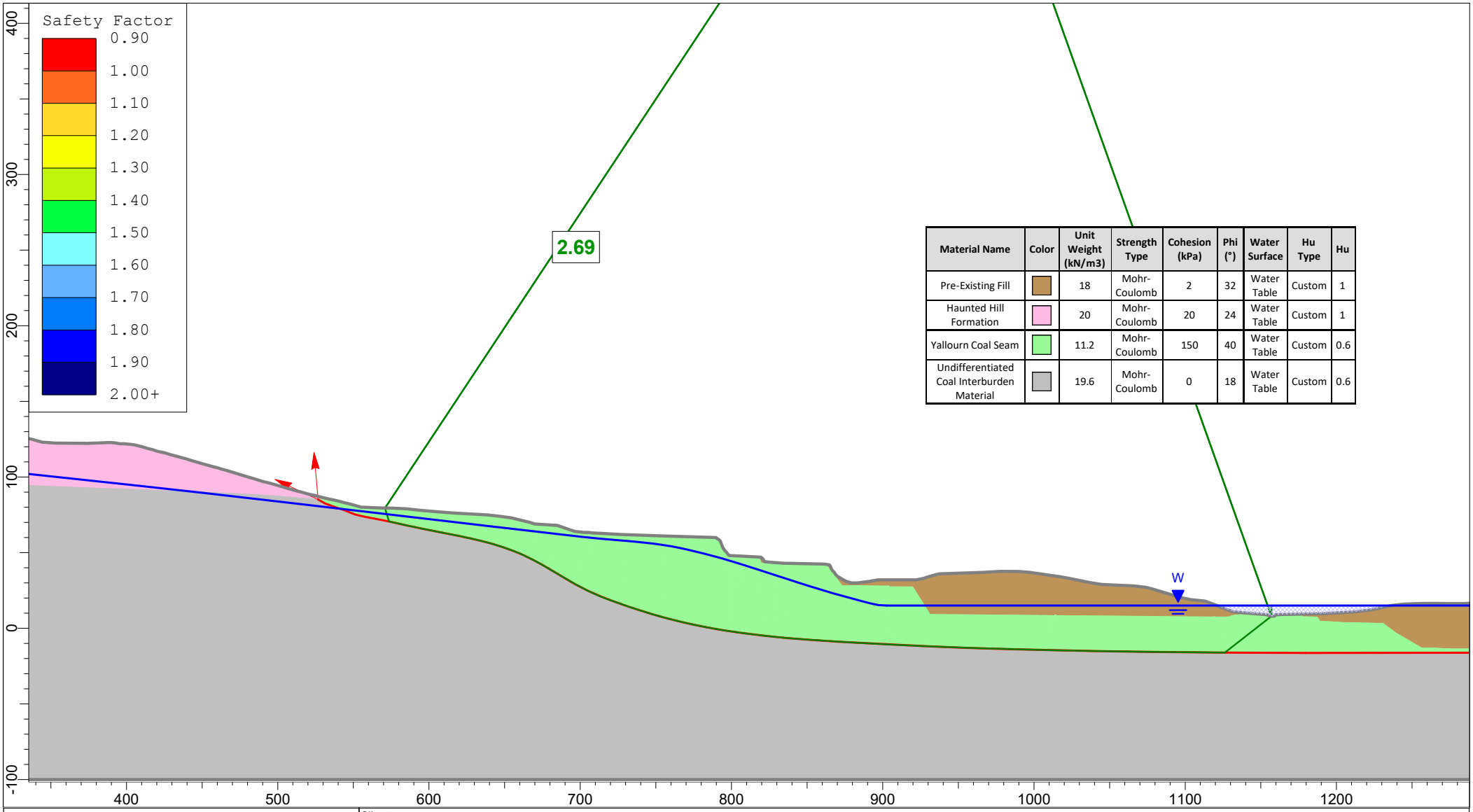
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



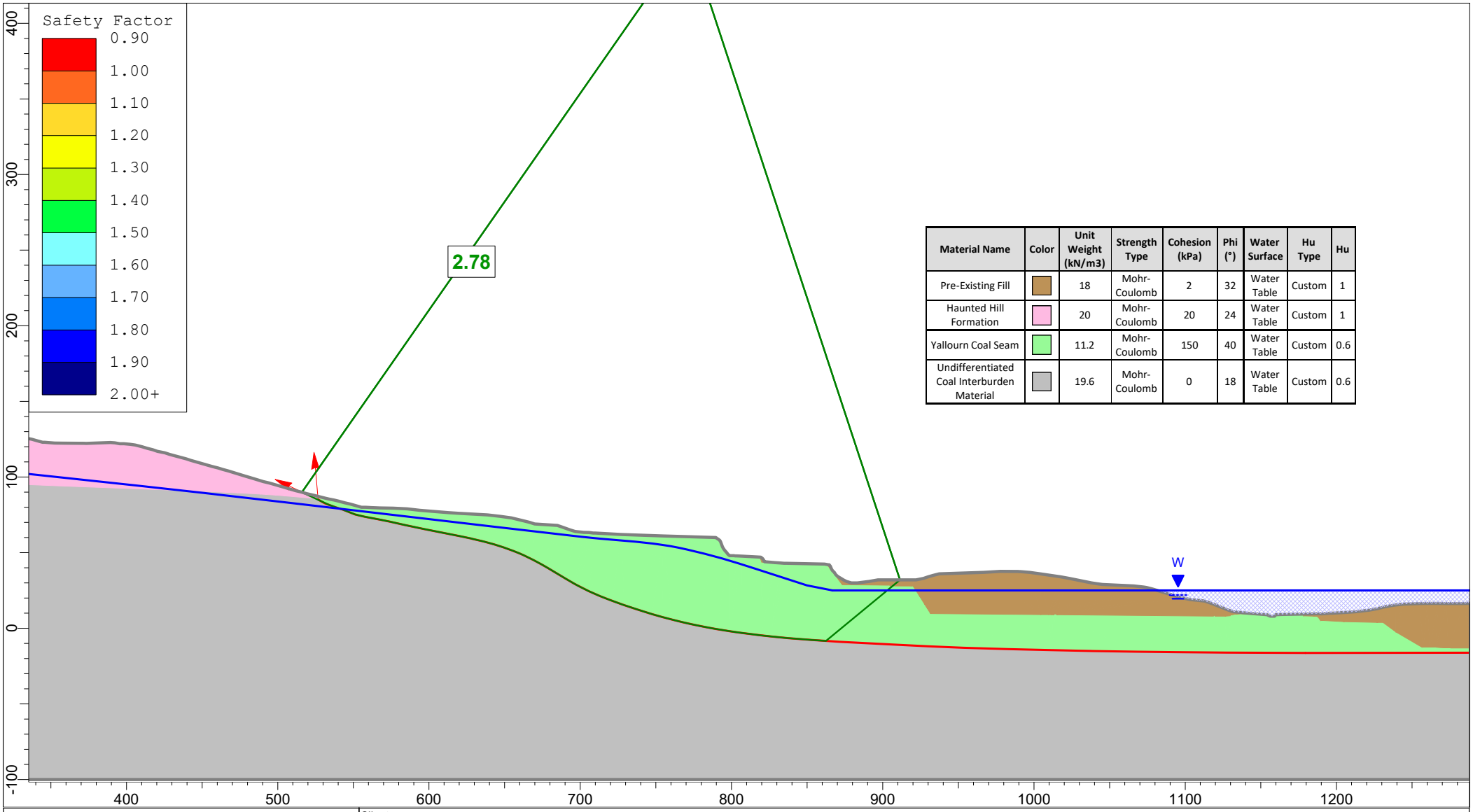
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



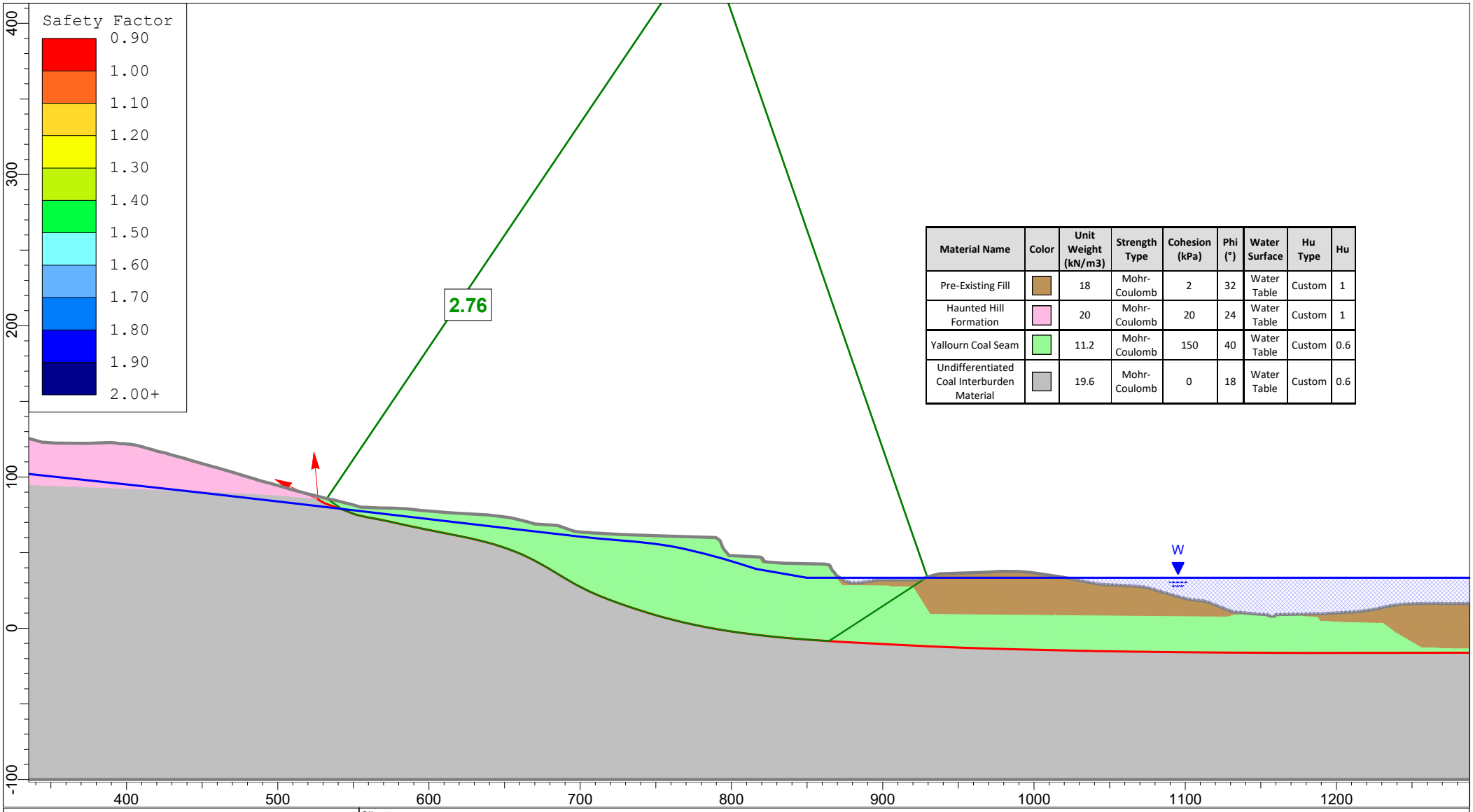
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Median Interseam Shear Strength		



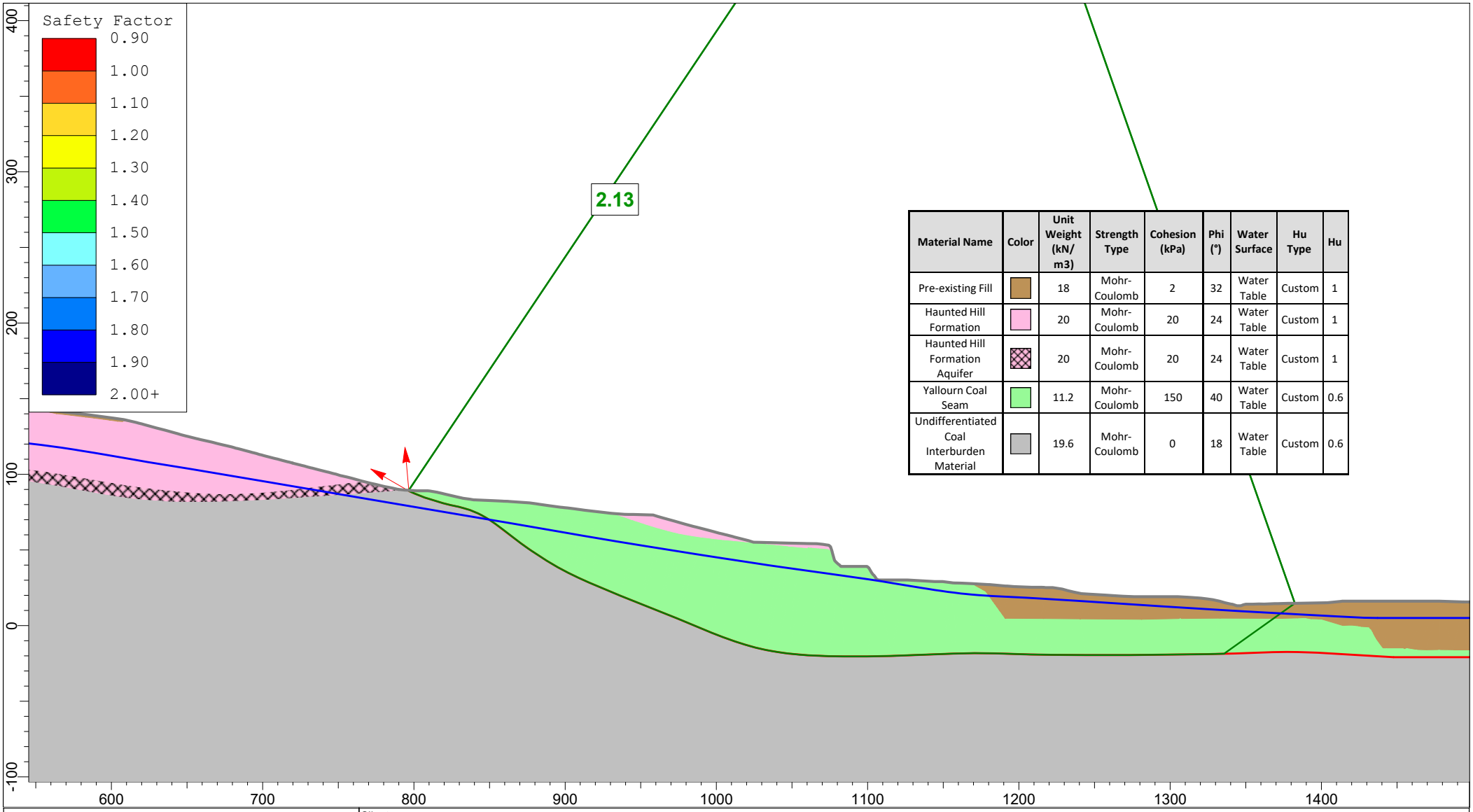
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength		



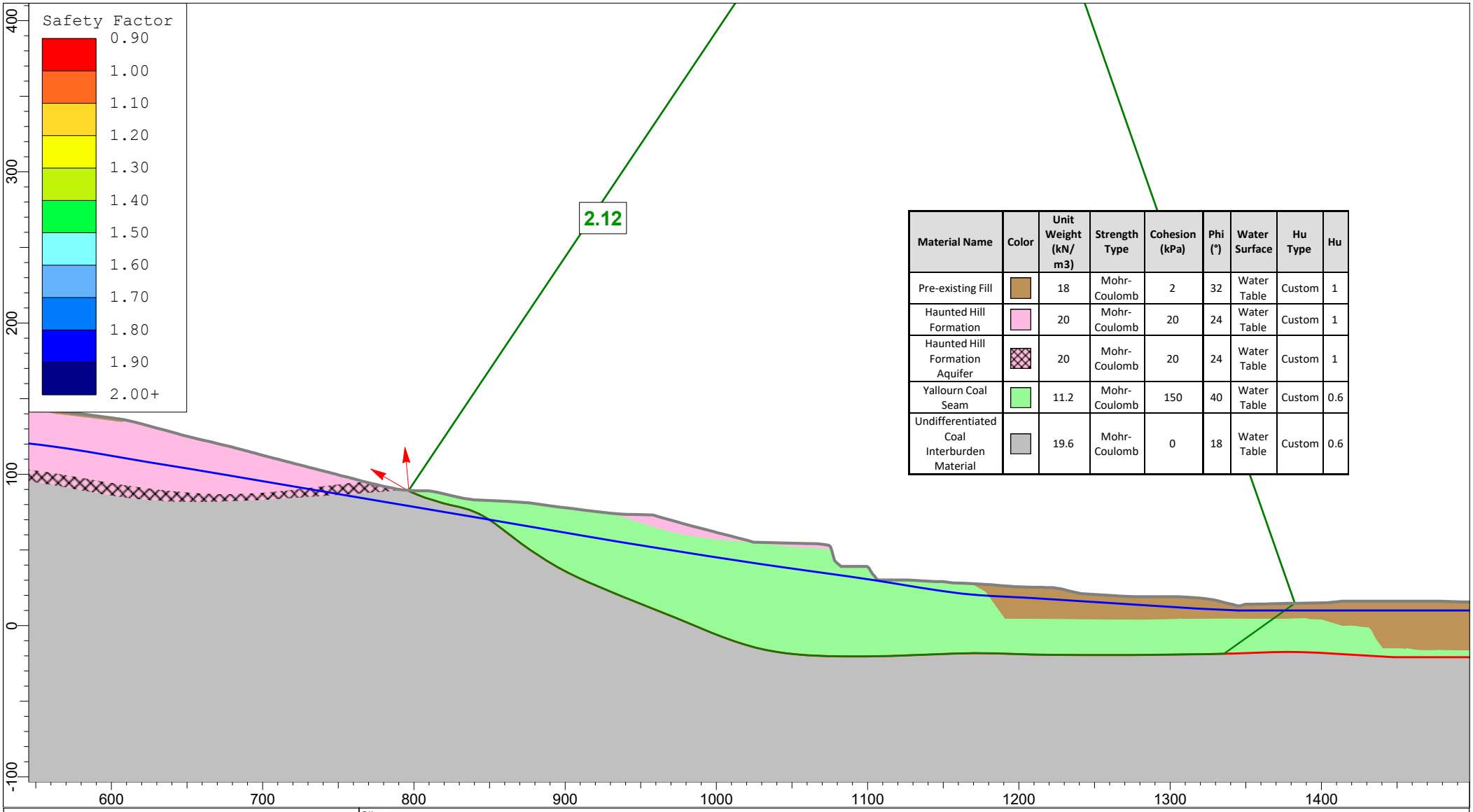
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



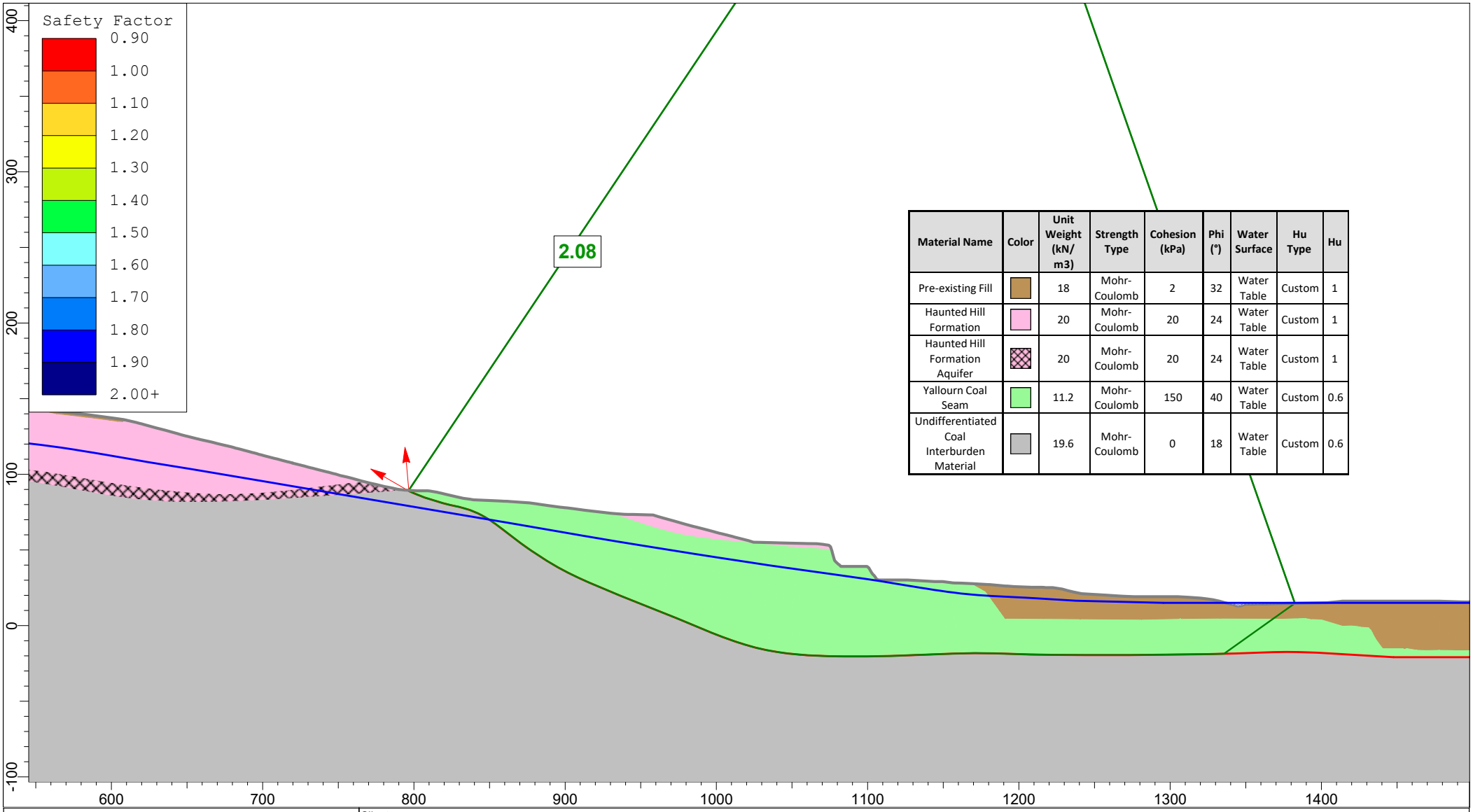
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL
Notes:	Median Interseam Shear Strength		



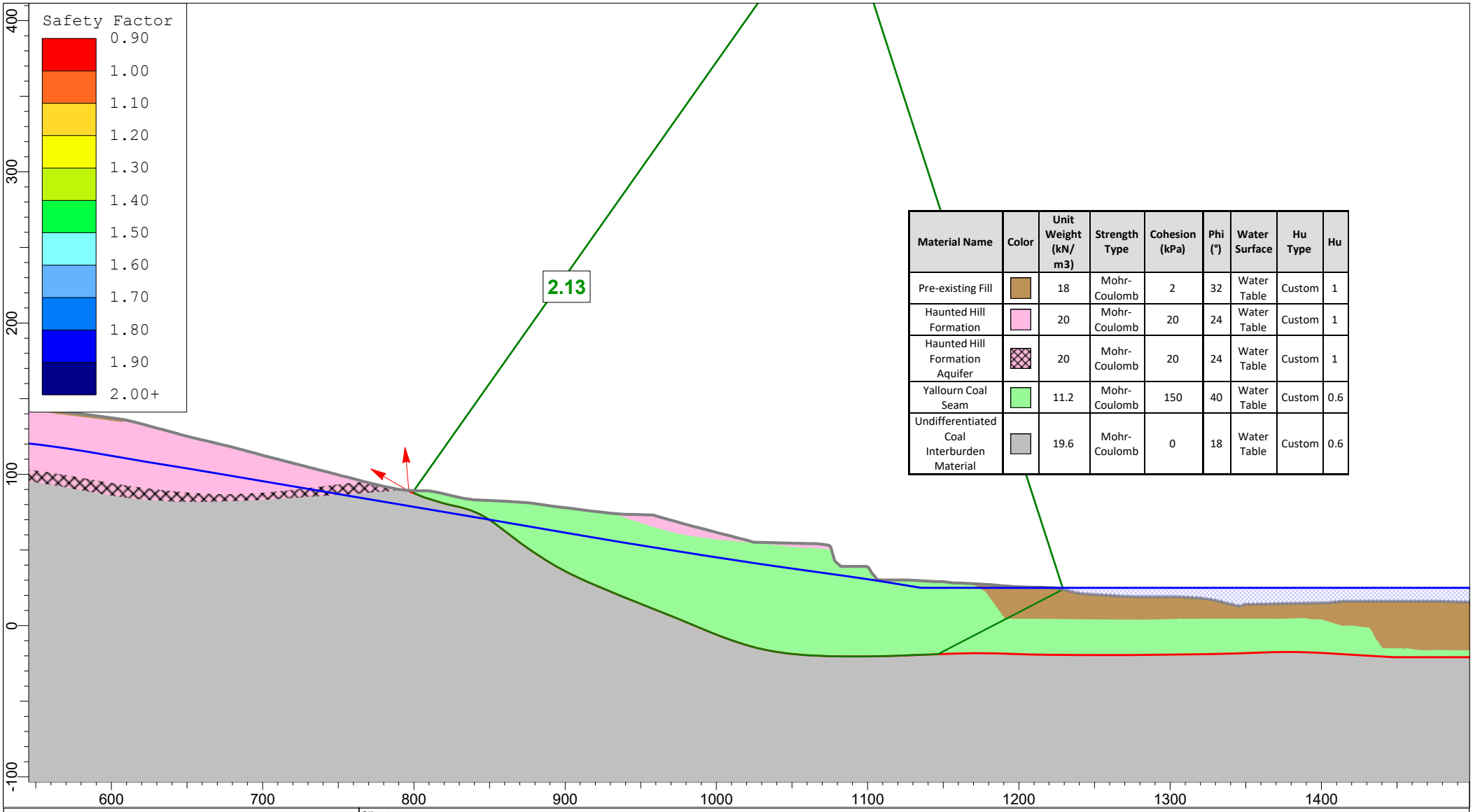
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



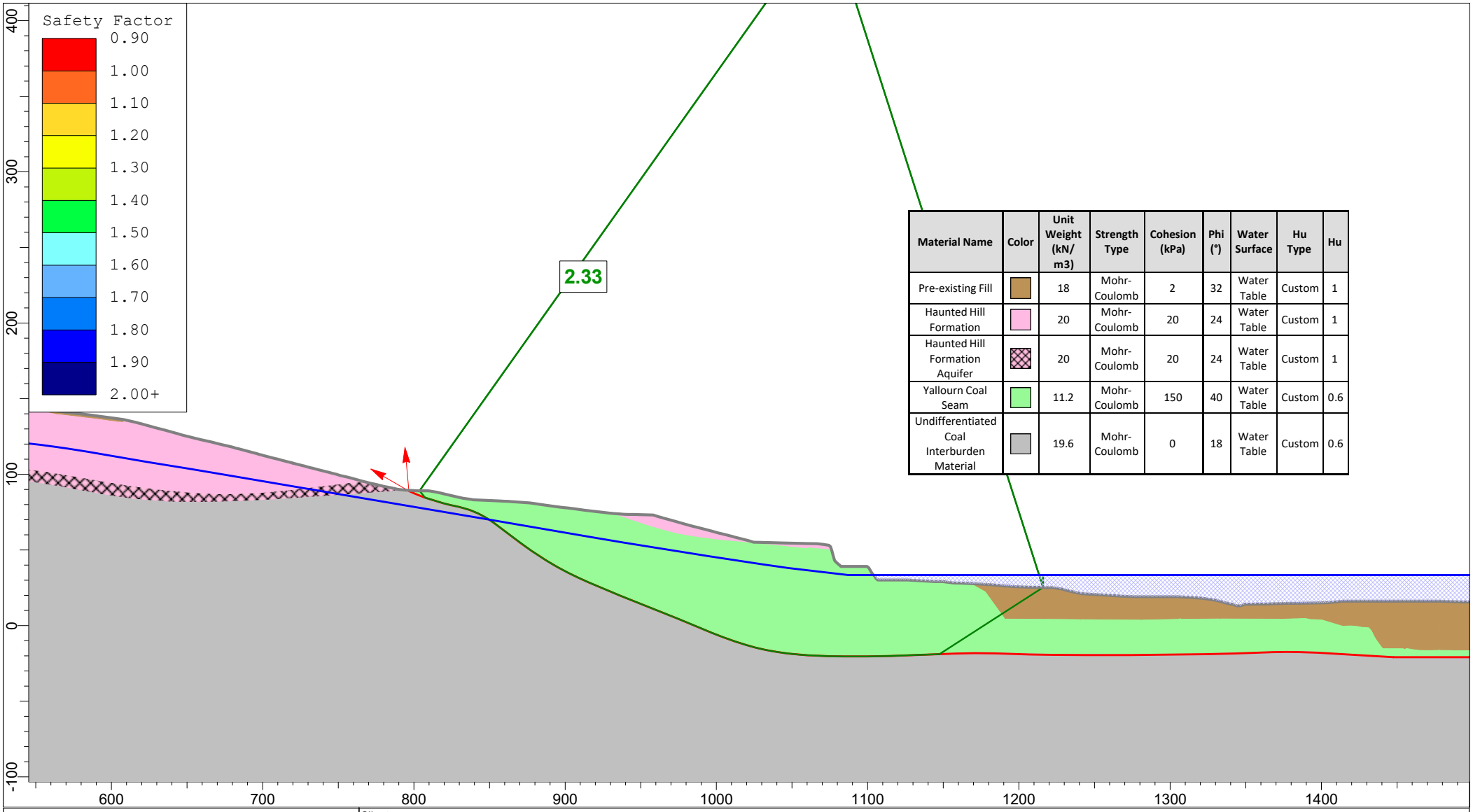
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Median Interseam Shear Strength		



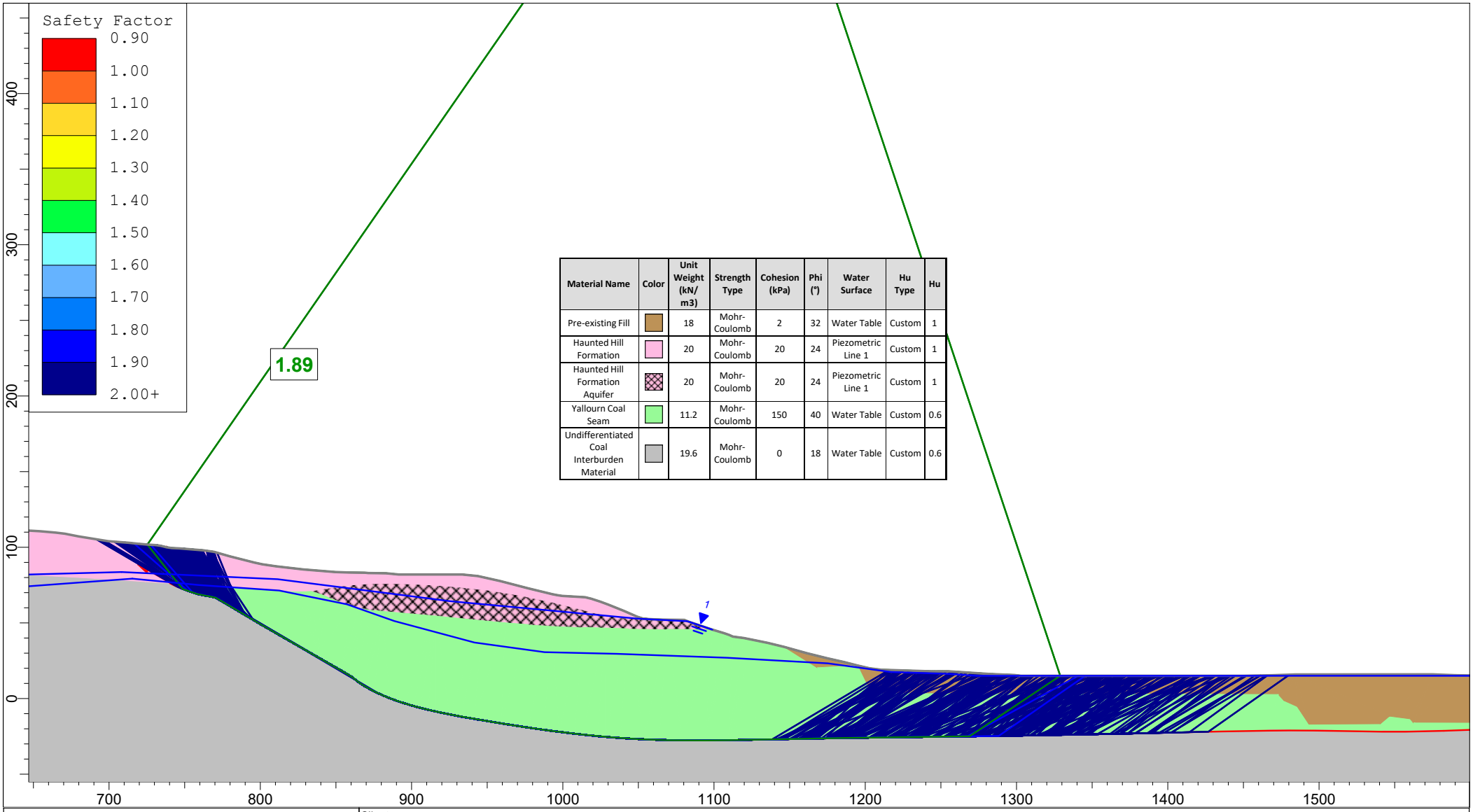
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength		



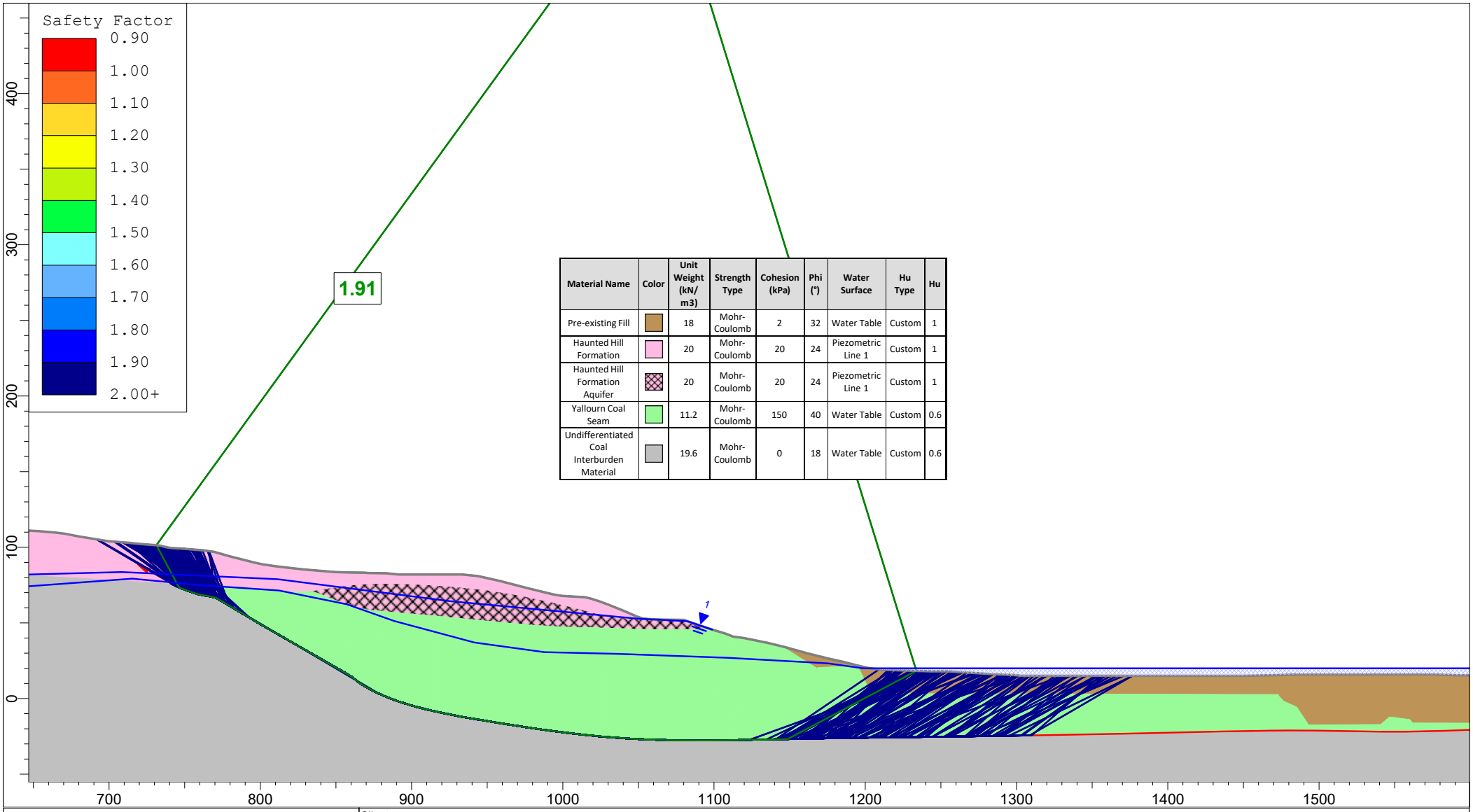
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



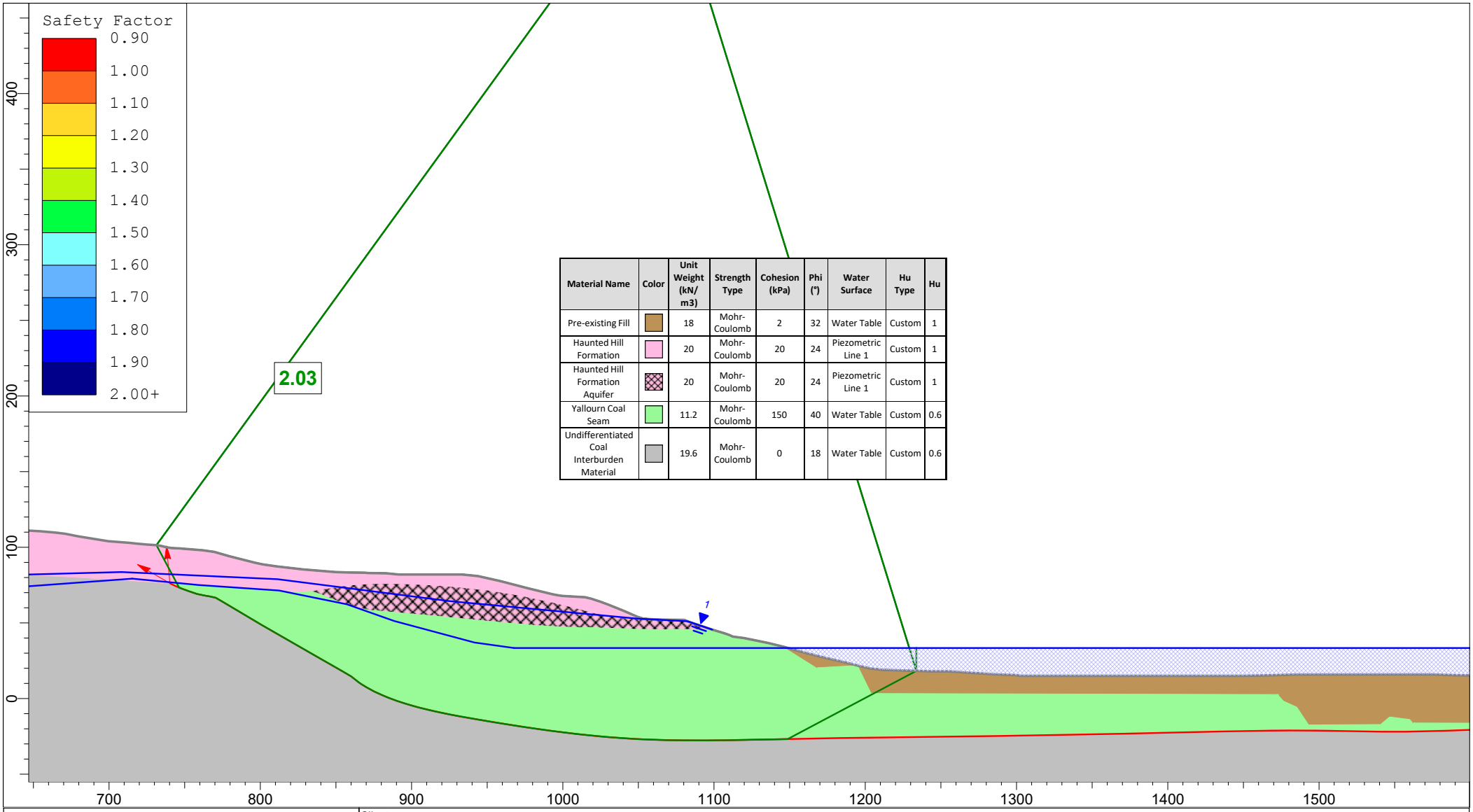
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Median Interseam Shear Strength		



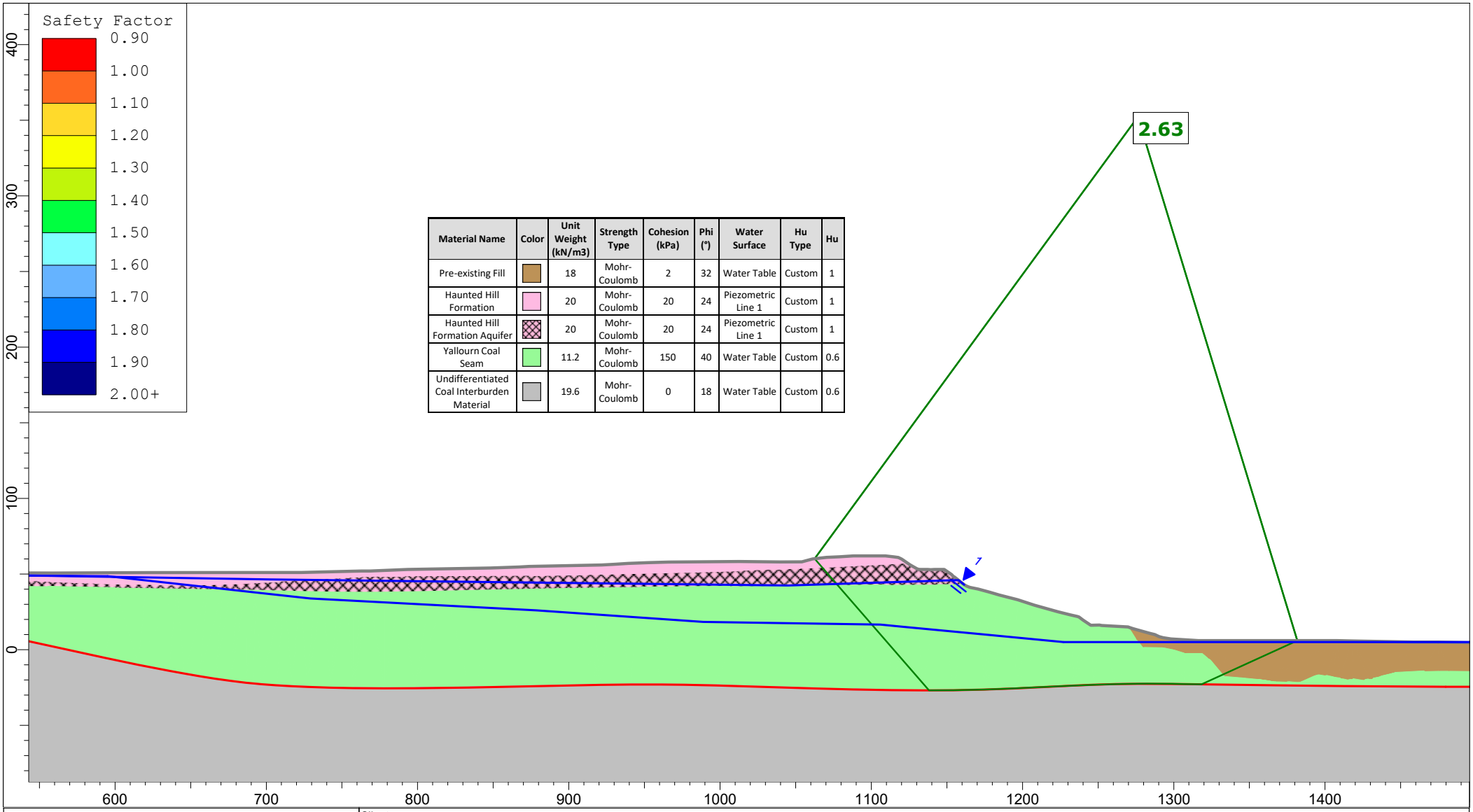
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



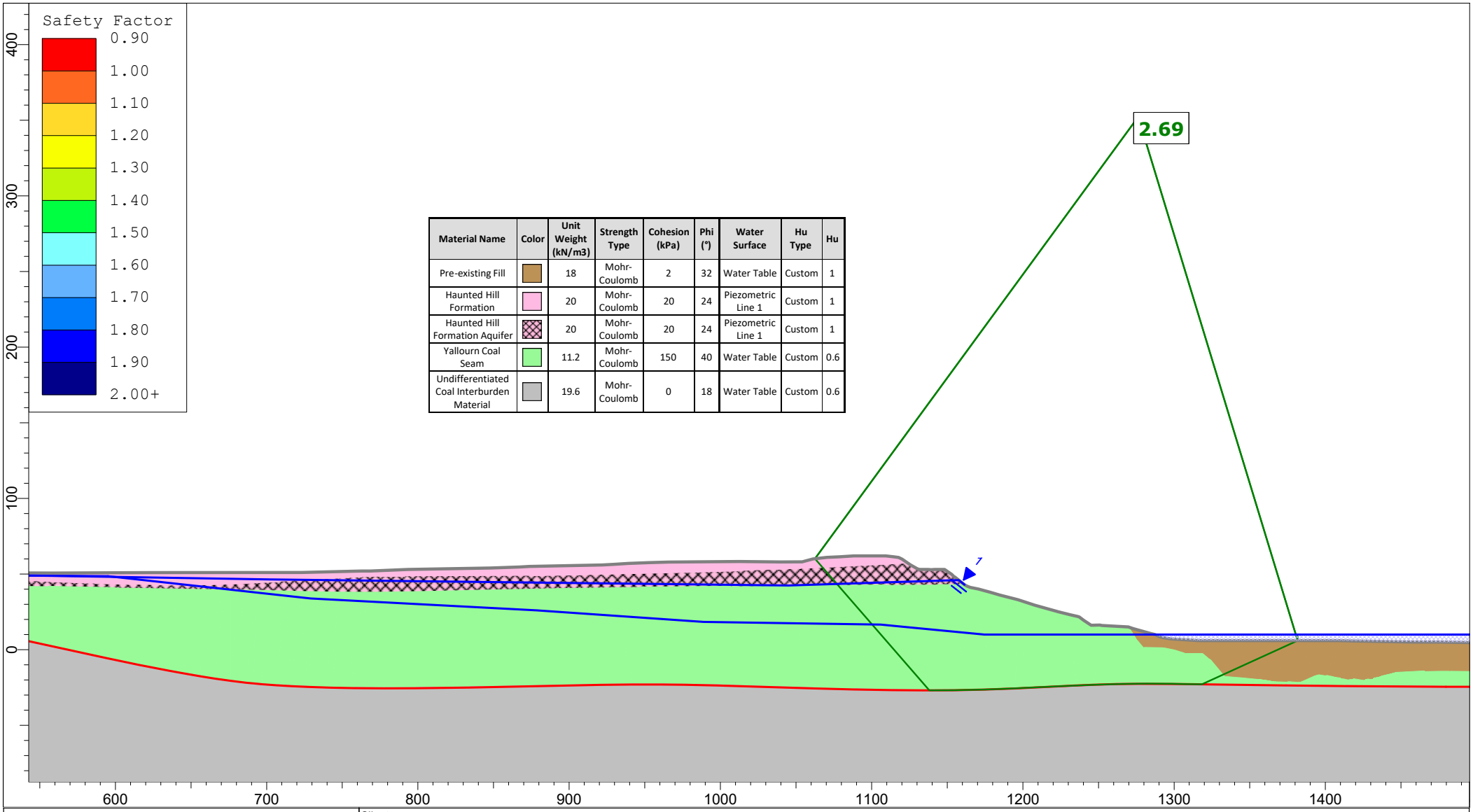
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



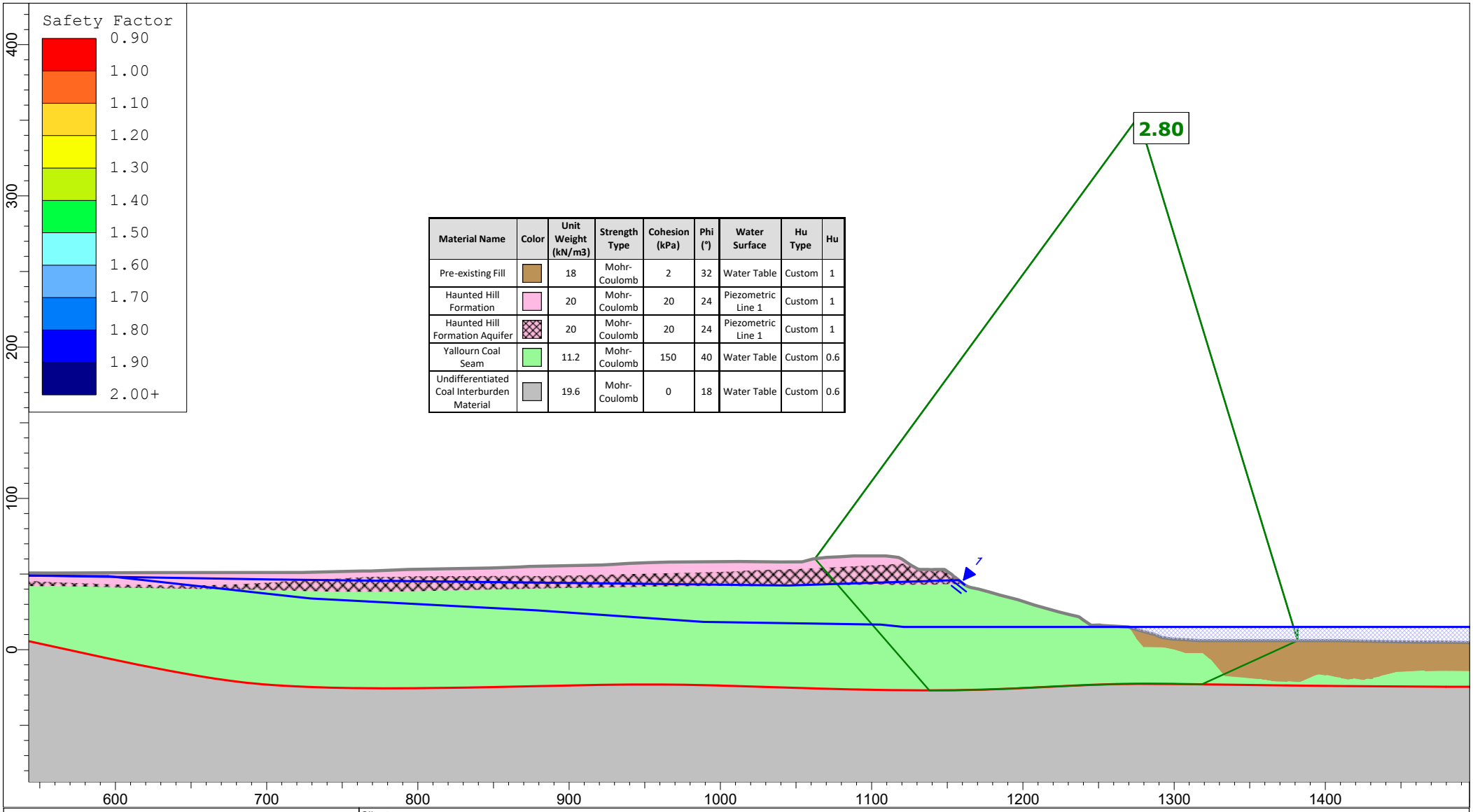
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YTF-NB**
Section:	**Section 29**	Case:	**Multilinear - Hu specific**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 5 mRL**
Notes:	**Median Interseam Shear Strength**		



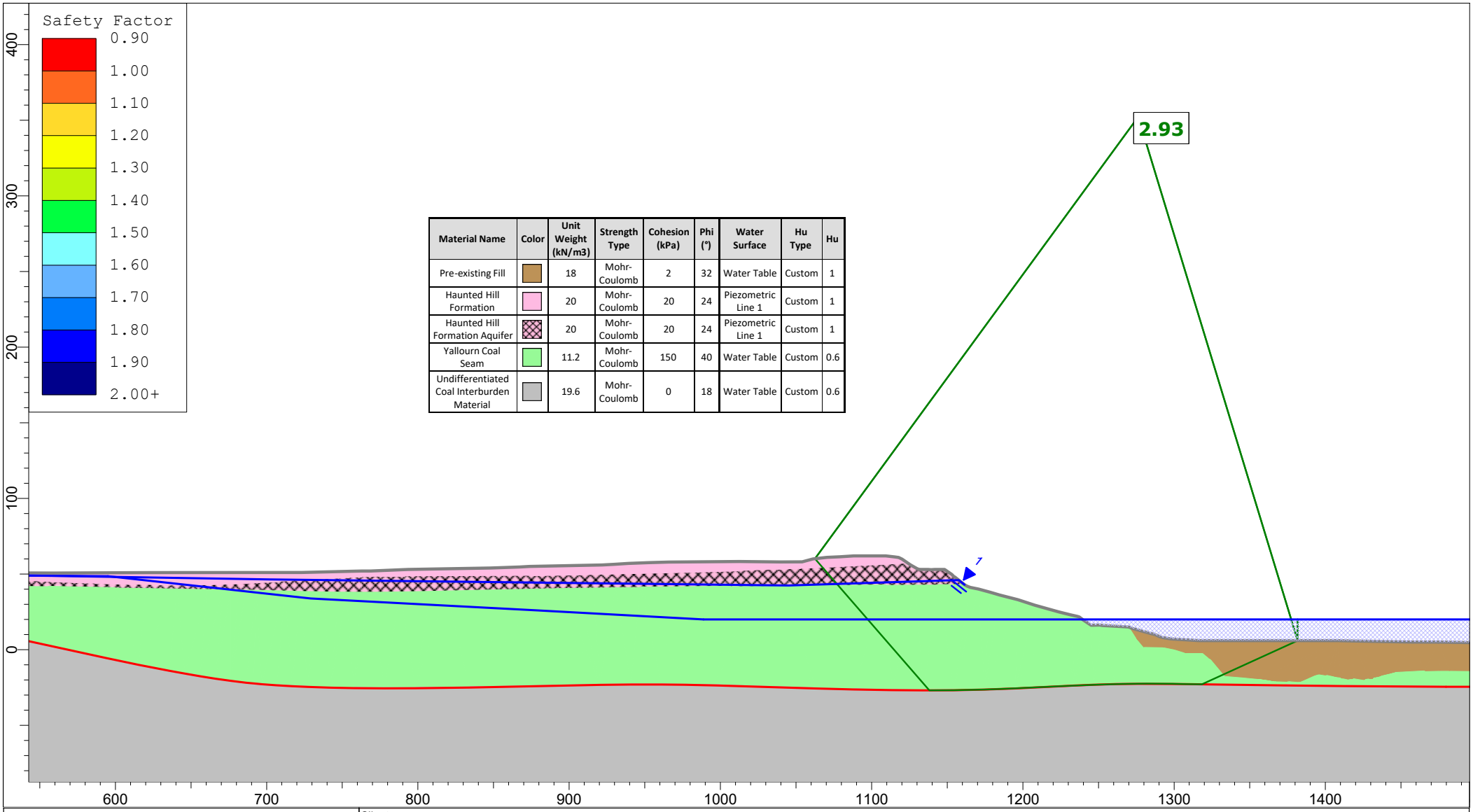
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-NB
Section:	Section 29	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



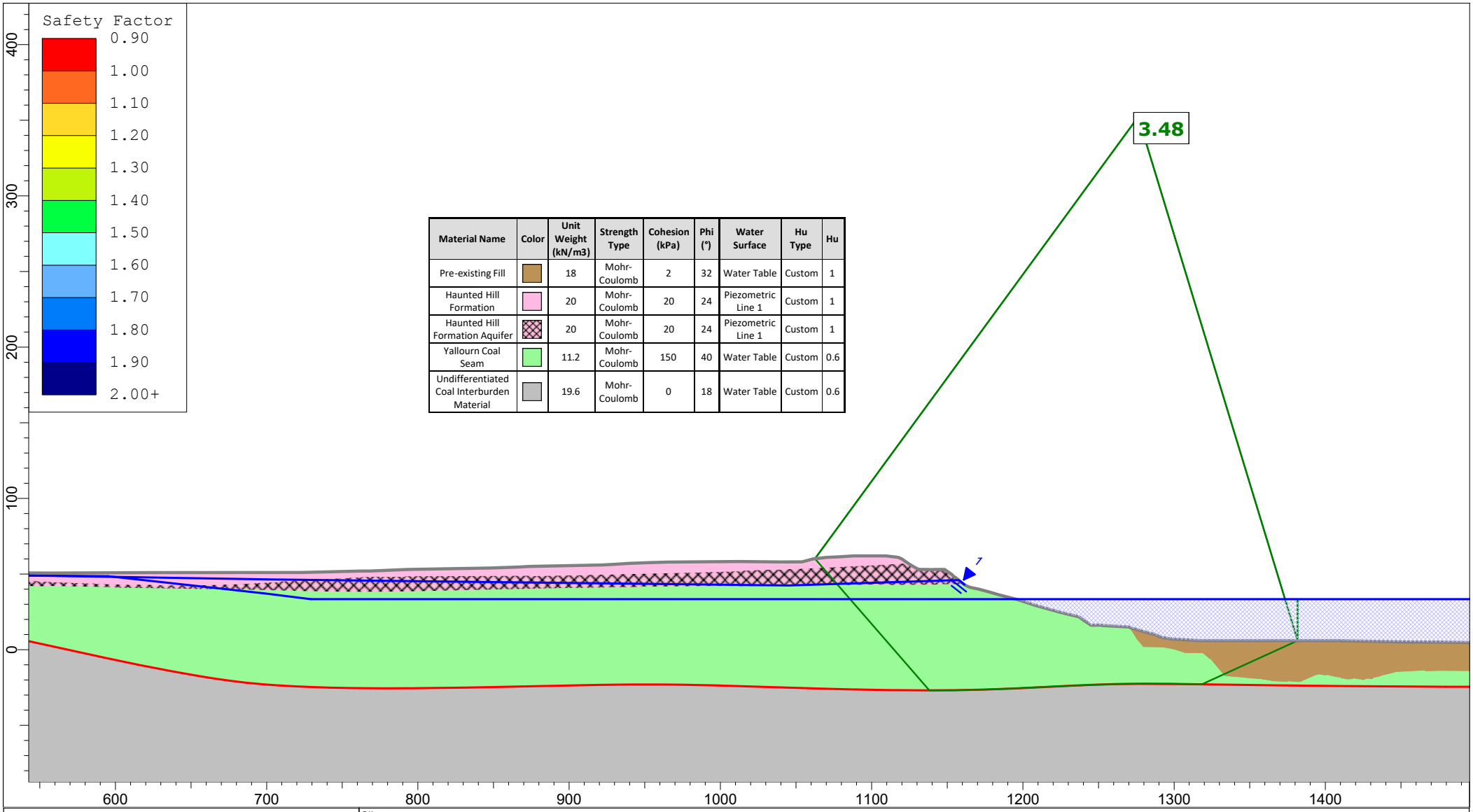
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-NB
Section:	Section 29	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Median Interseam Shear Strength		



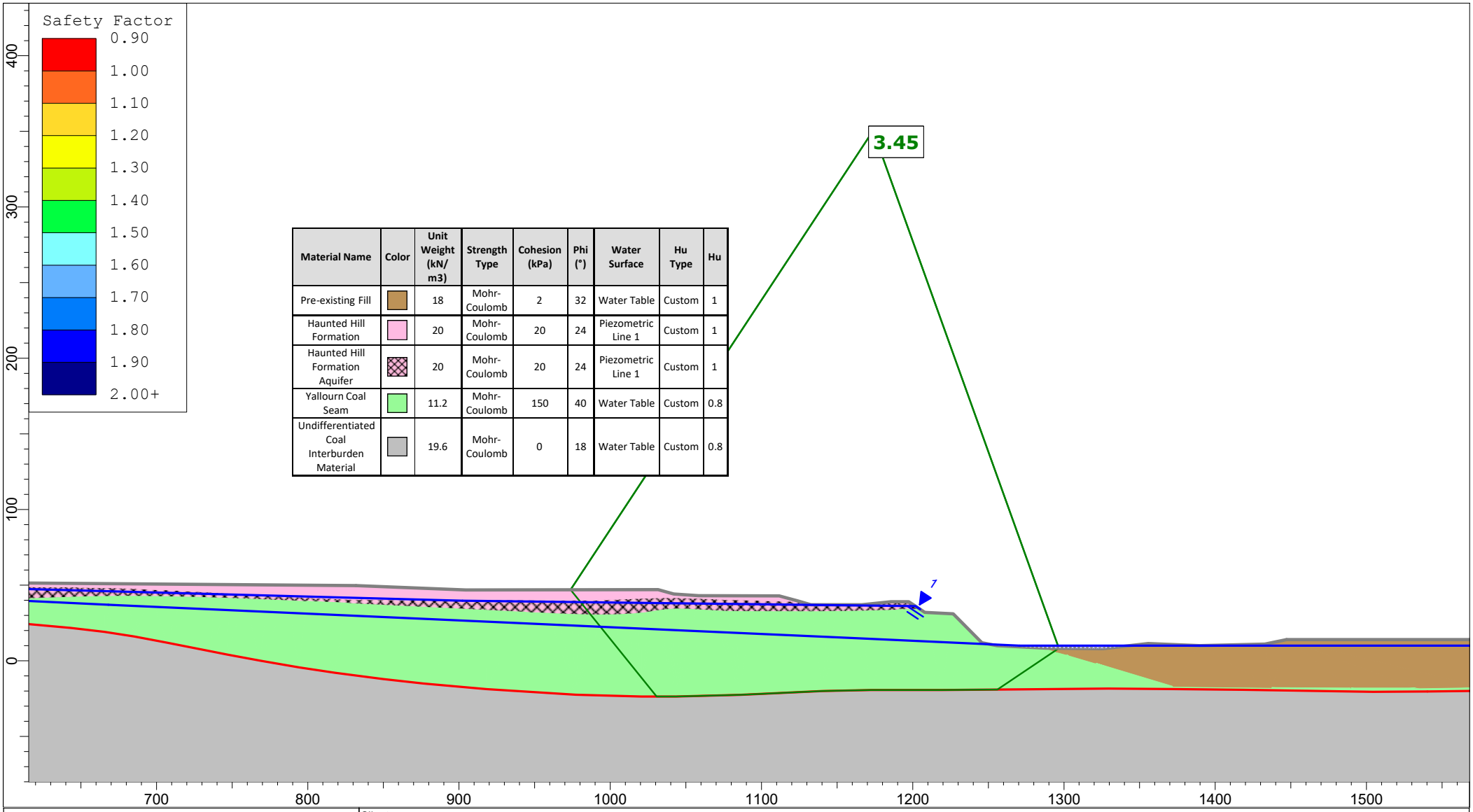
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-NB
Section:	Section 29	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



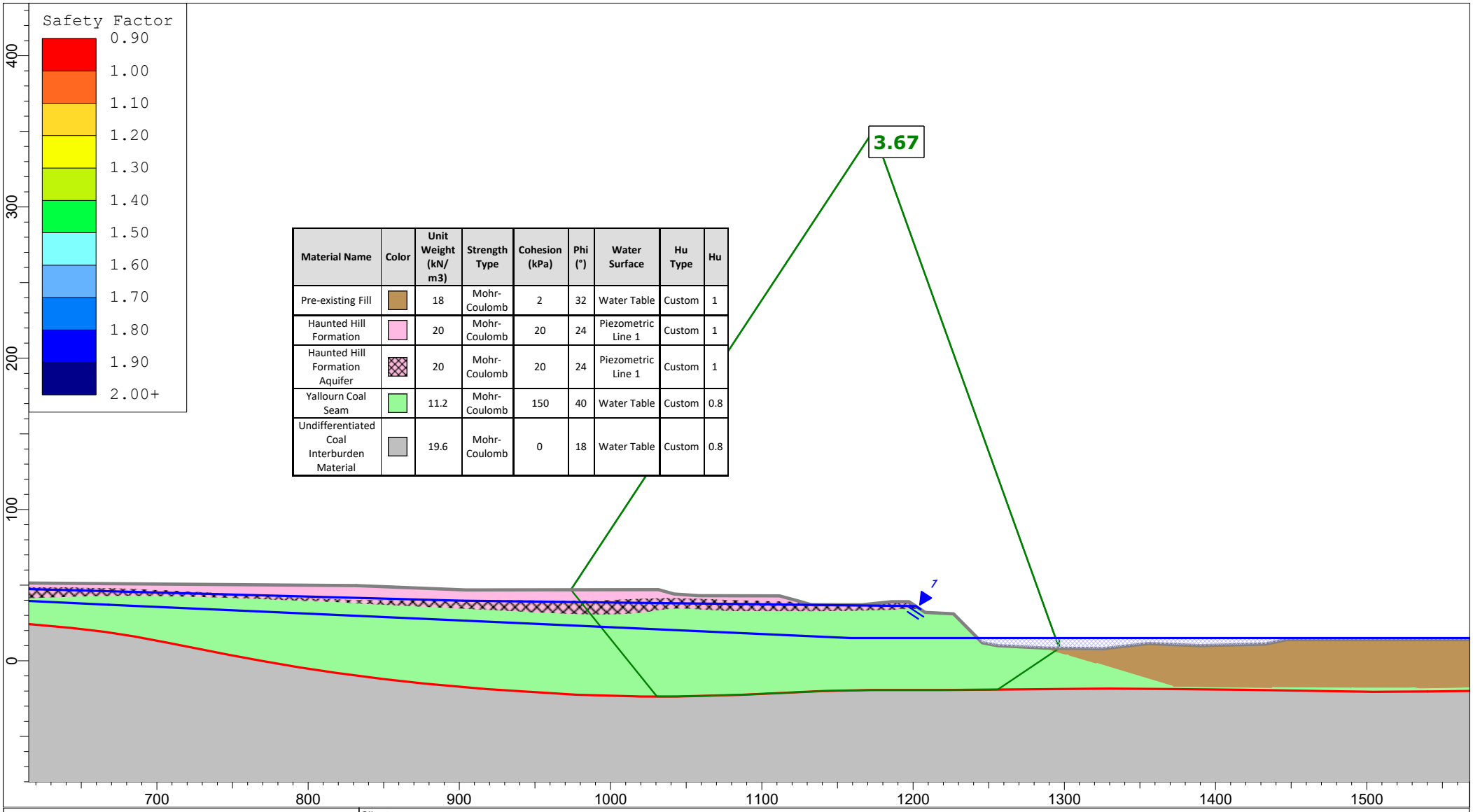
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-NB
Section:	Section 29	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



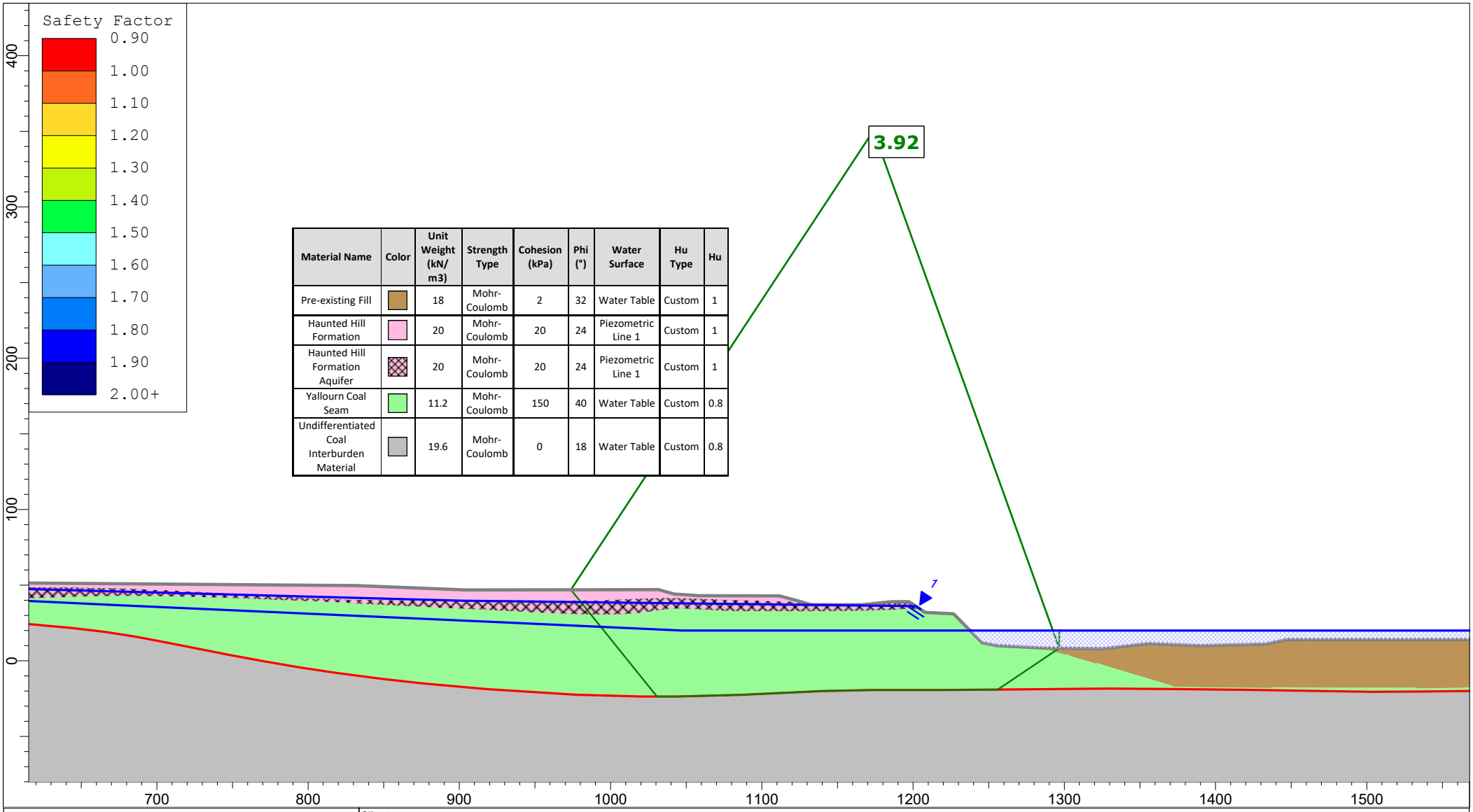
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.8
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.8

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



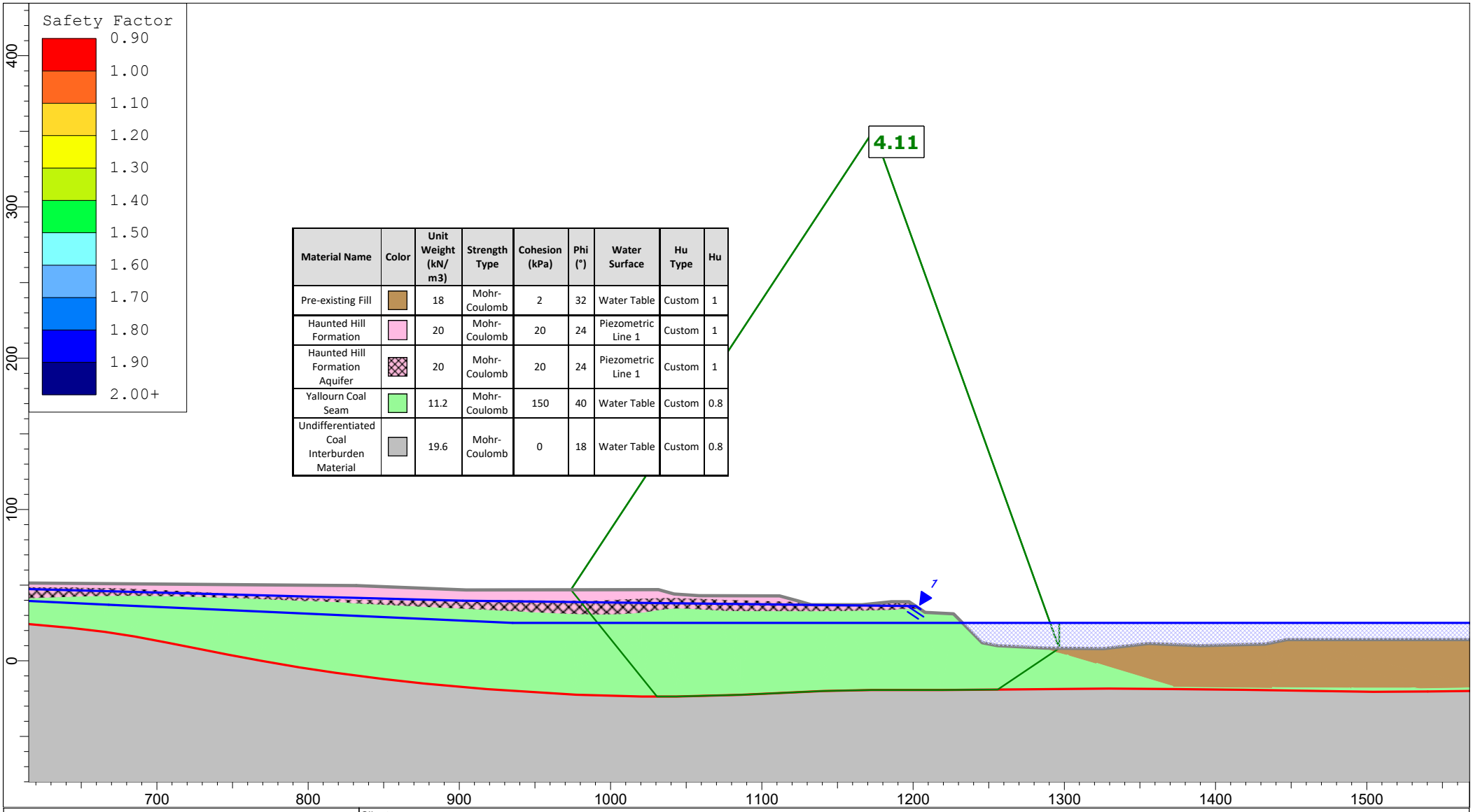
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.8
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.8

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Median Interseam Shear Strength		



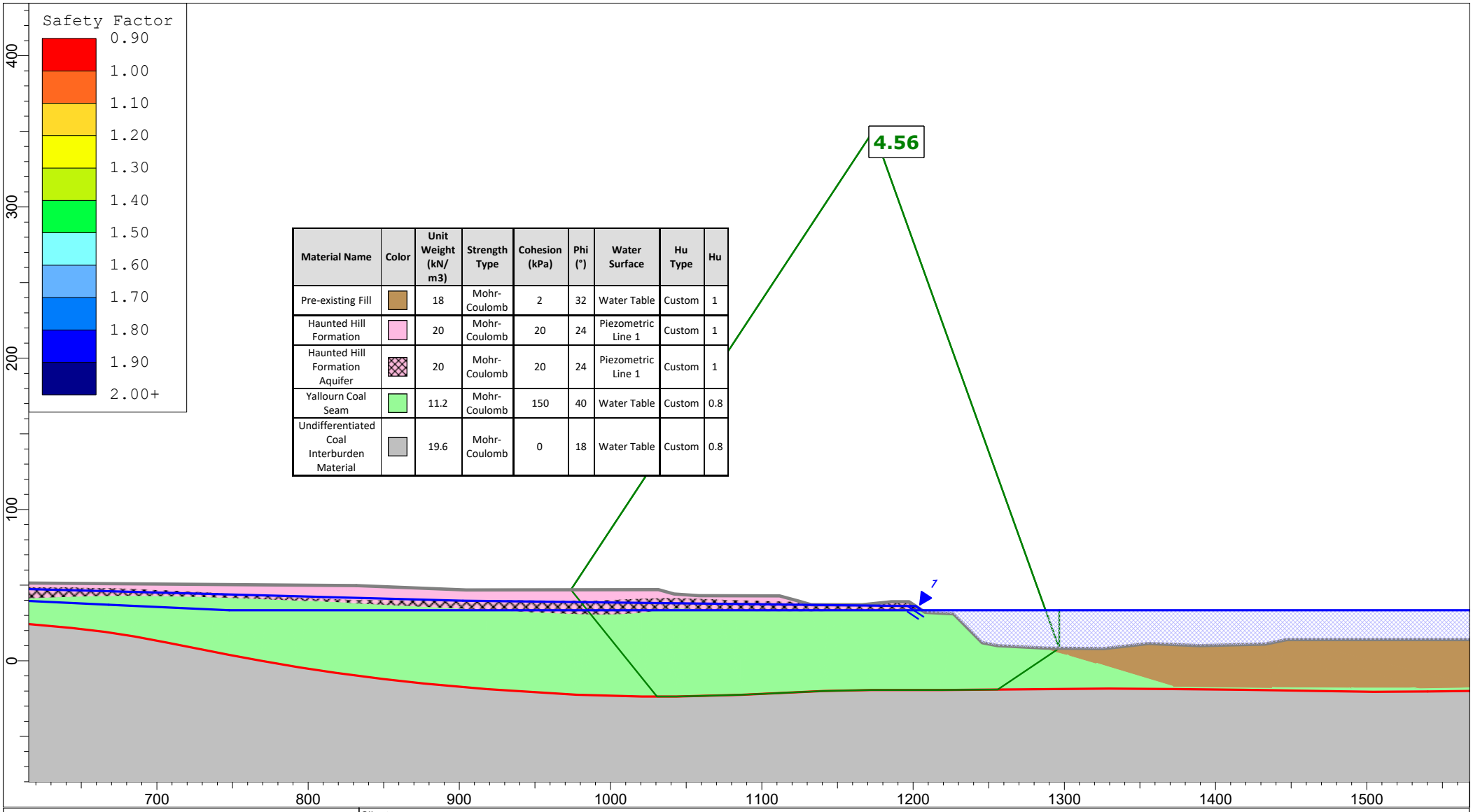
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.8
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.8

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



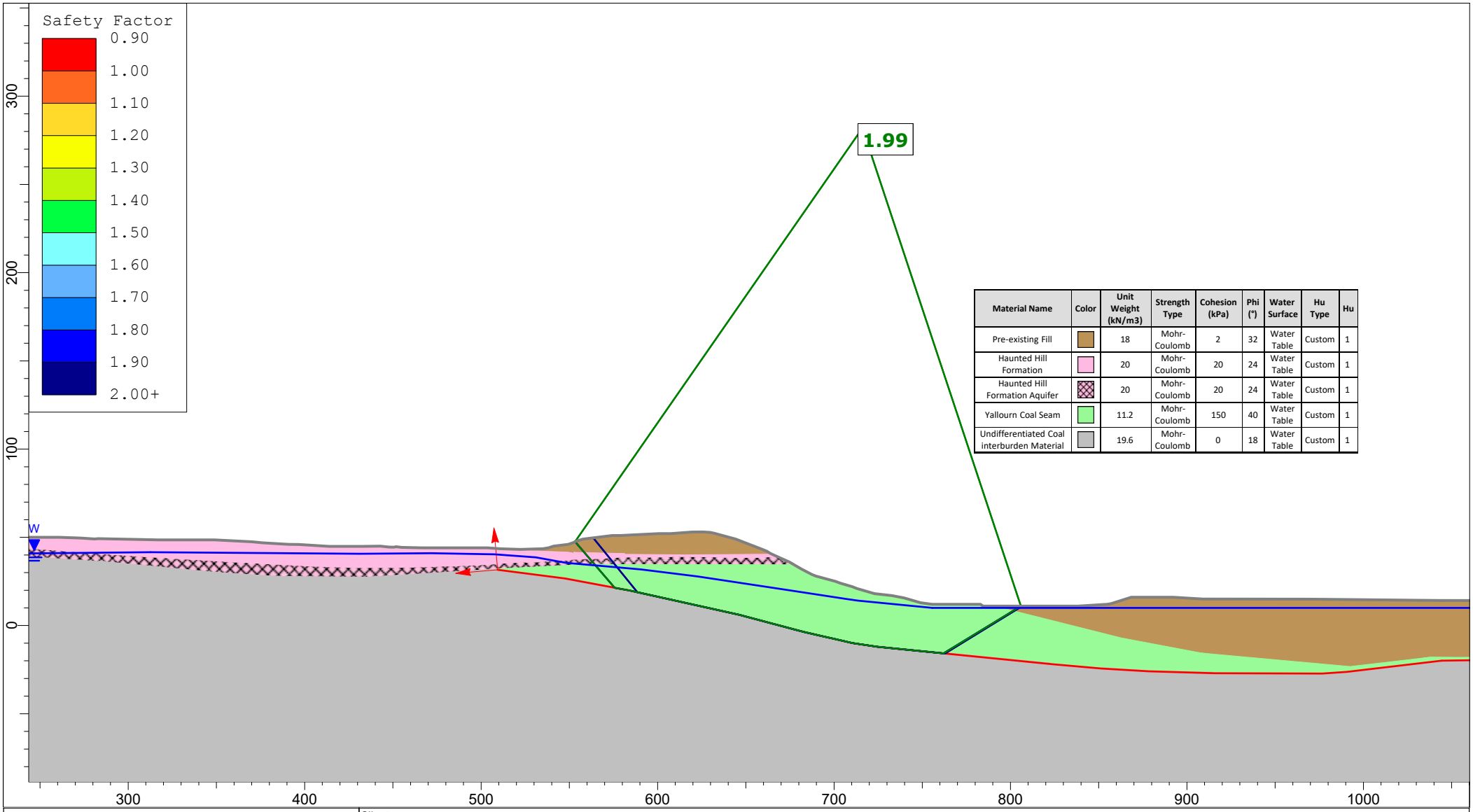
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.8
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.8

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength		



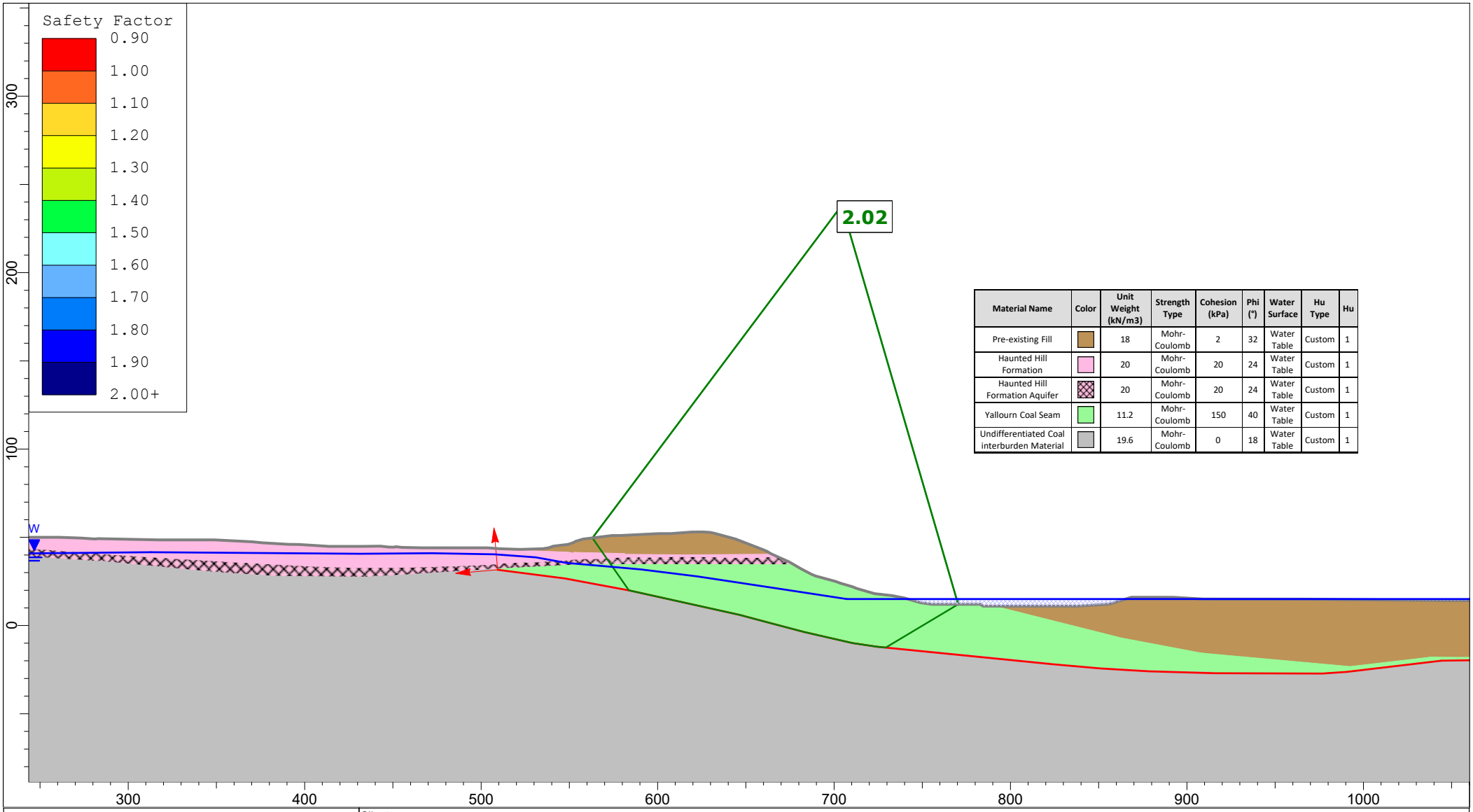
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.8
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.8

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



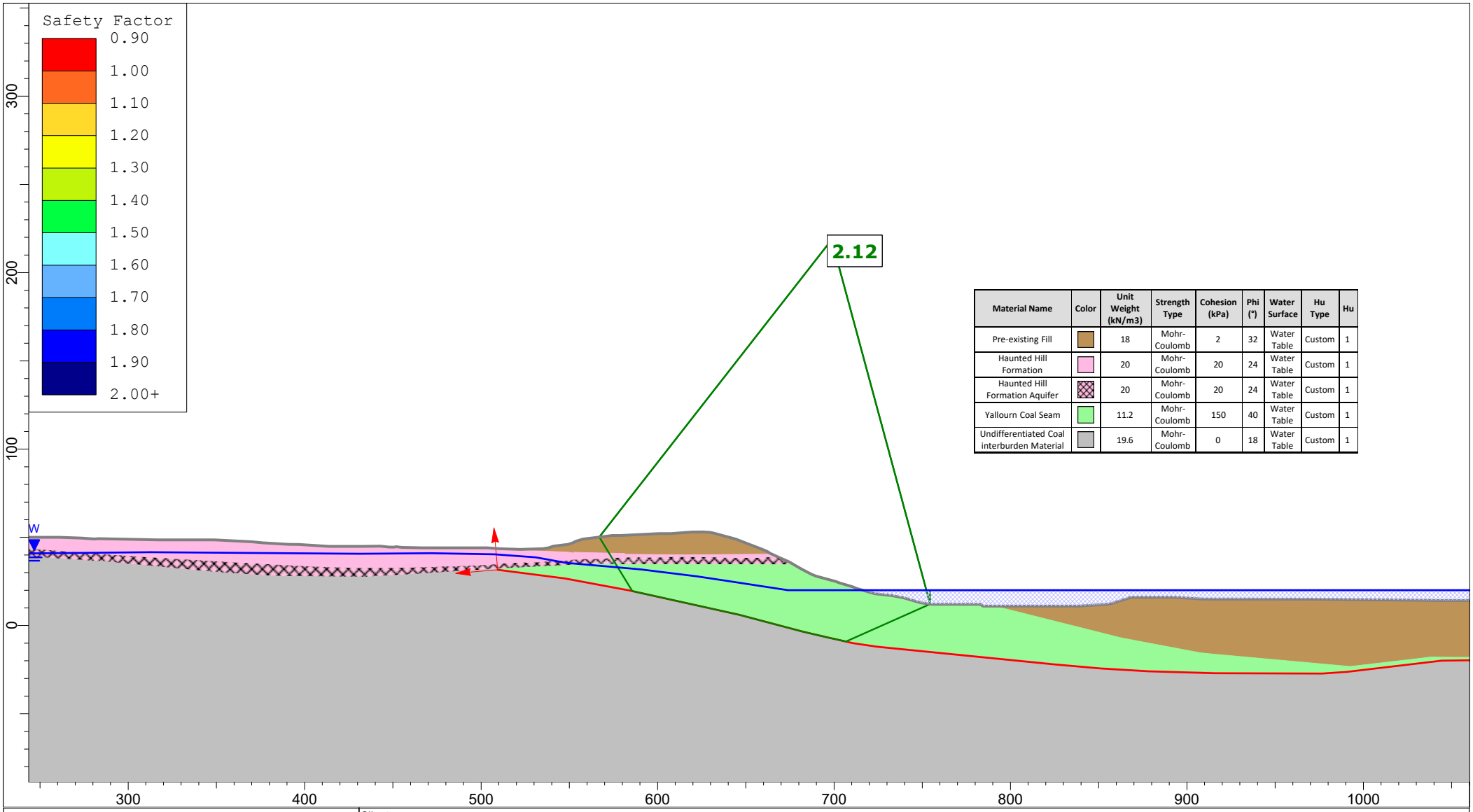
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YTF-LS**
Section:	**Section 31**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 10 mRL**
Notes:	**Median Interseam Shear Strength**		



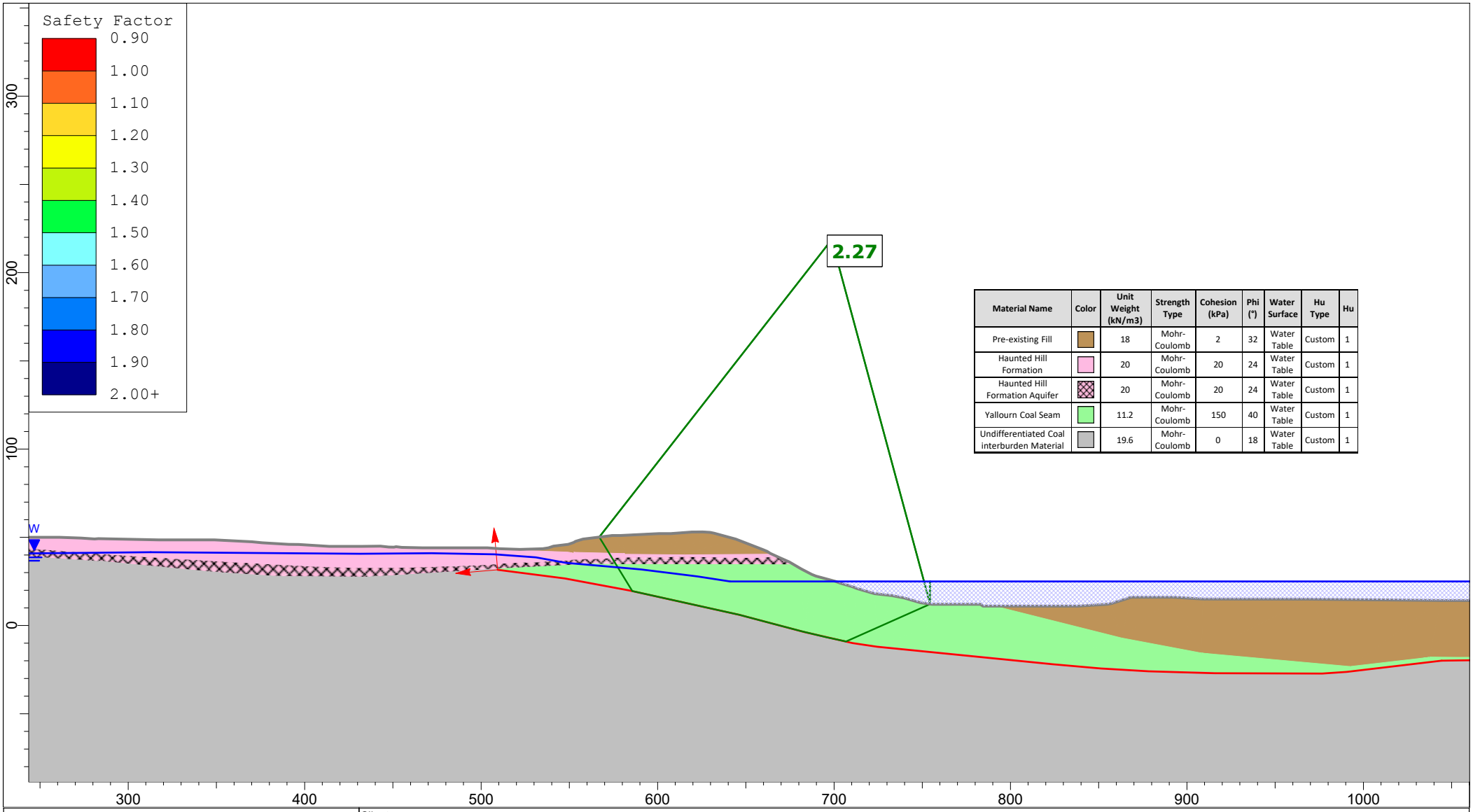
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-LS
Section:	Section 31	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Median Interseam Shear Strength		



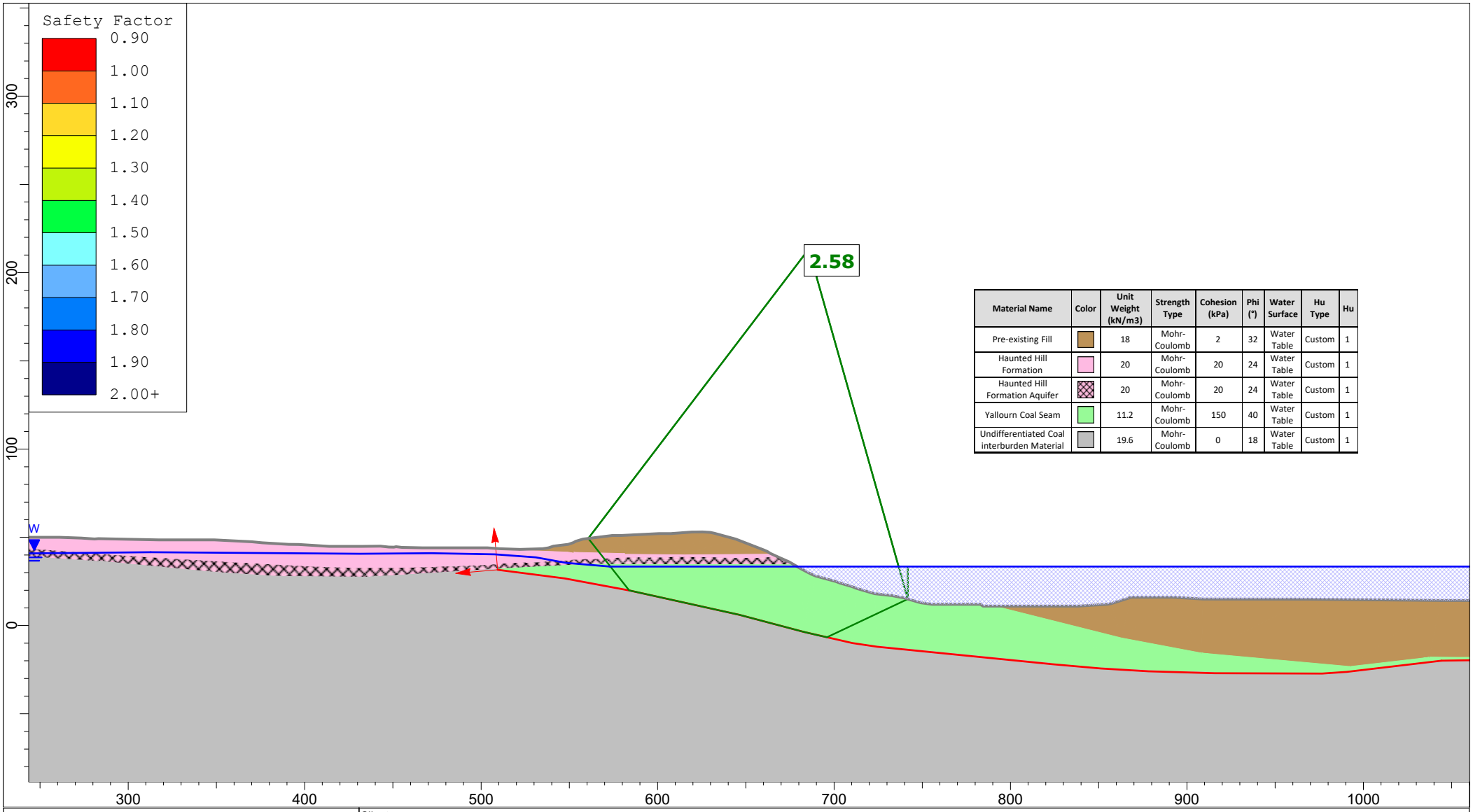
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-LS
Section:	Section 31	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



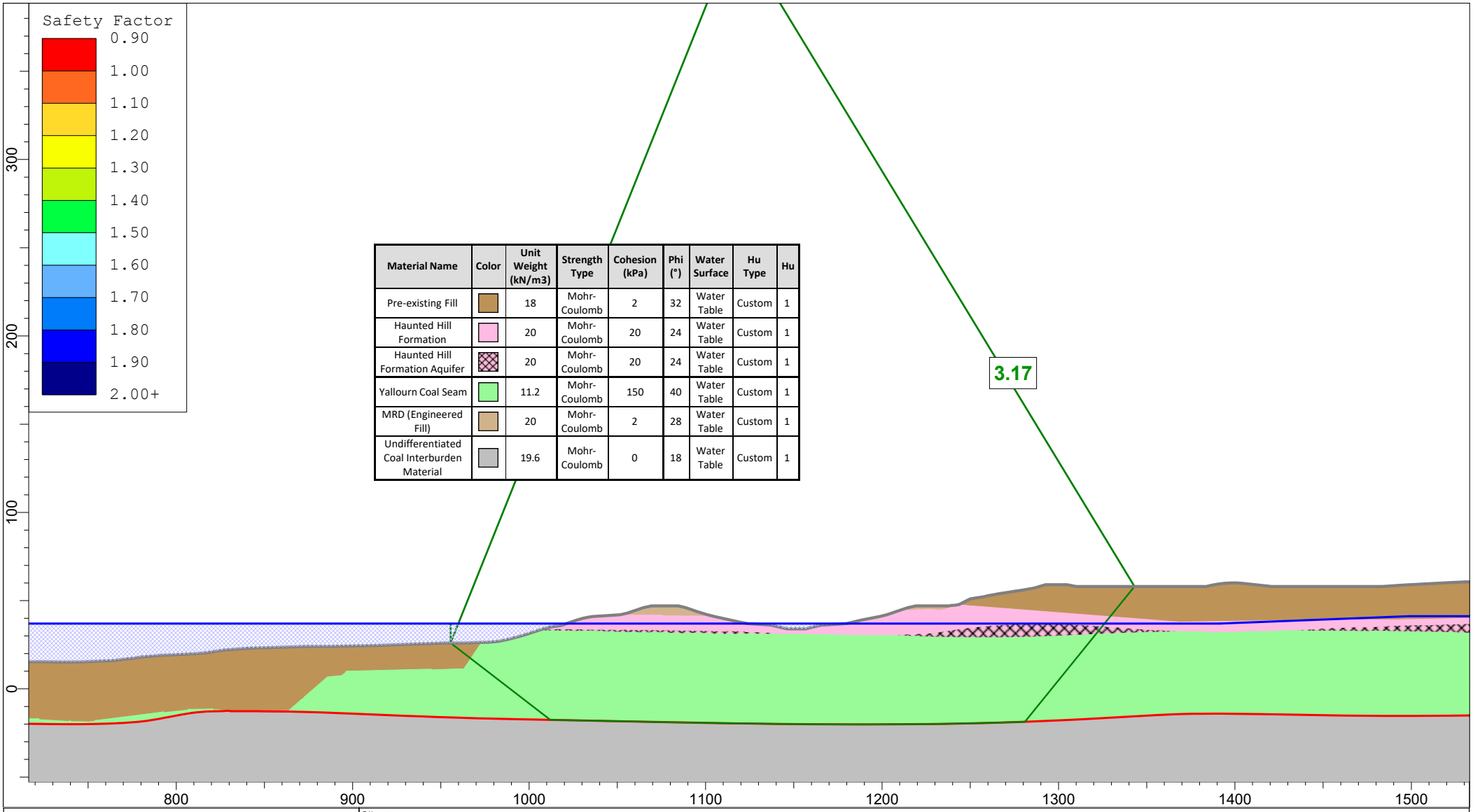
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YTF-LS**
Section:	**Section 31**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 25 mRL**
Notes:	**Median Interseam Shear Strength**		



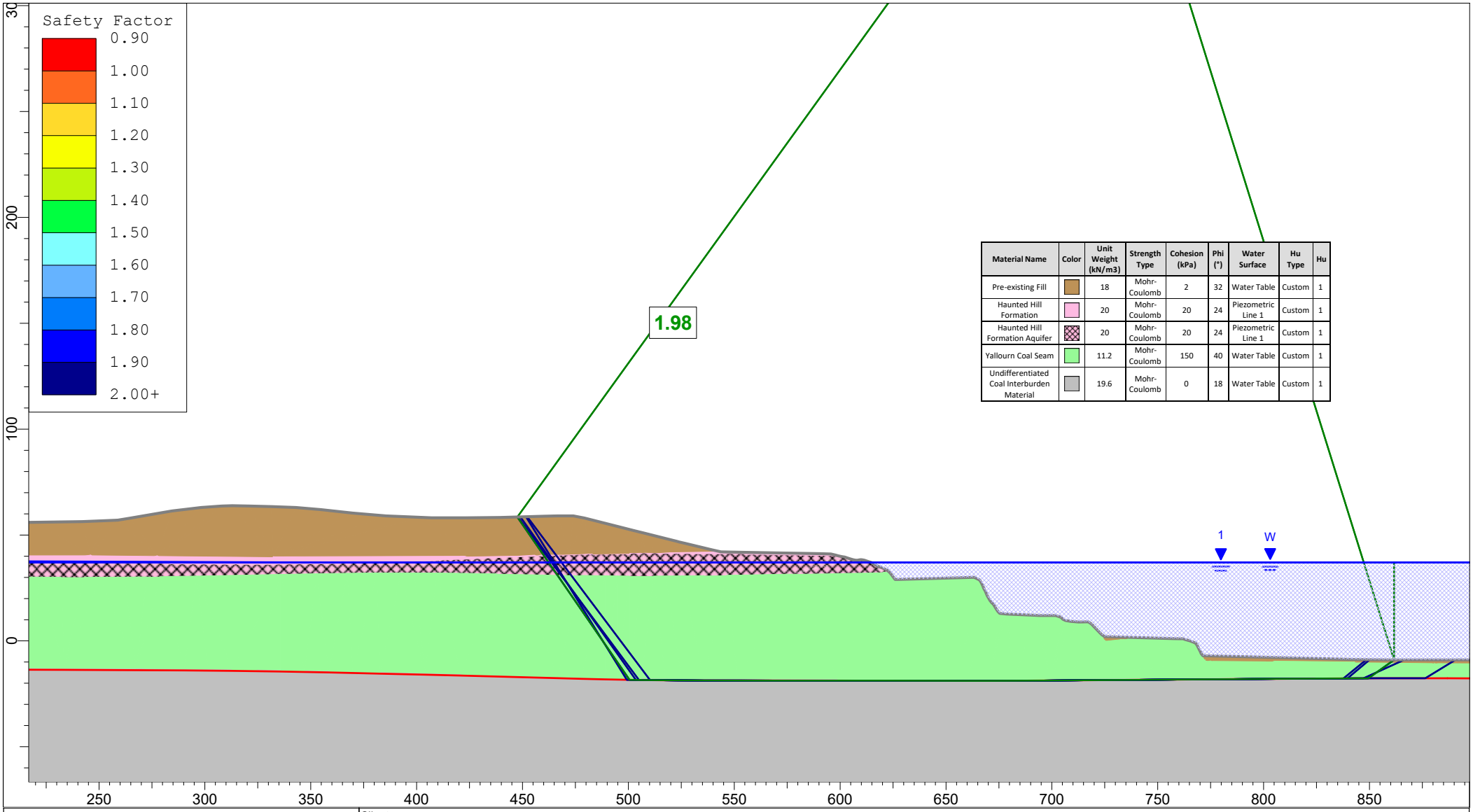
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-LS
Section:	Section 31	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



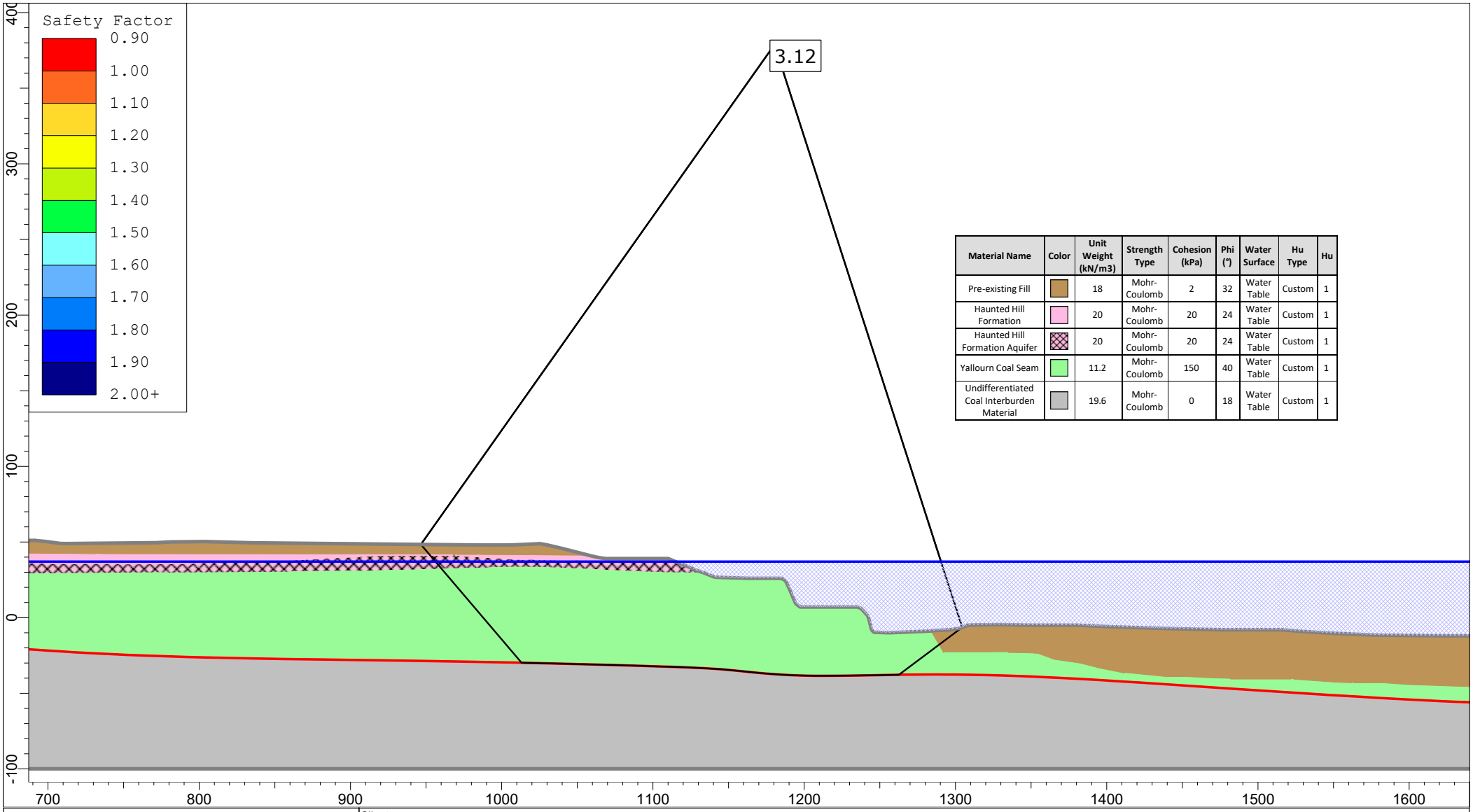
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



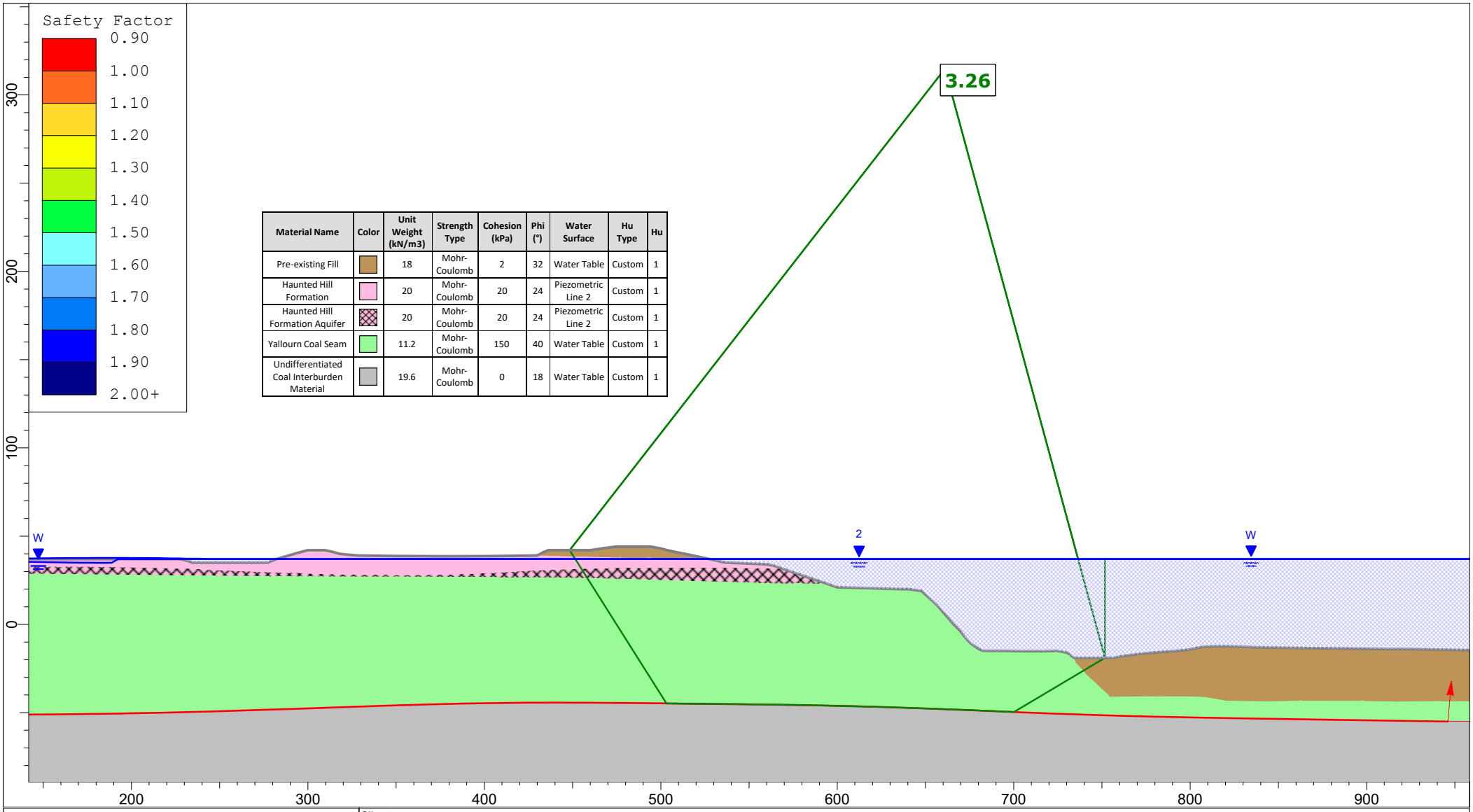
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 02	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



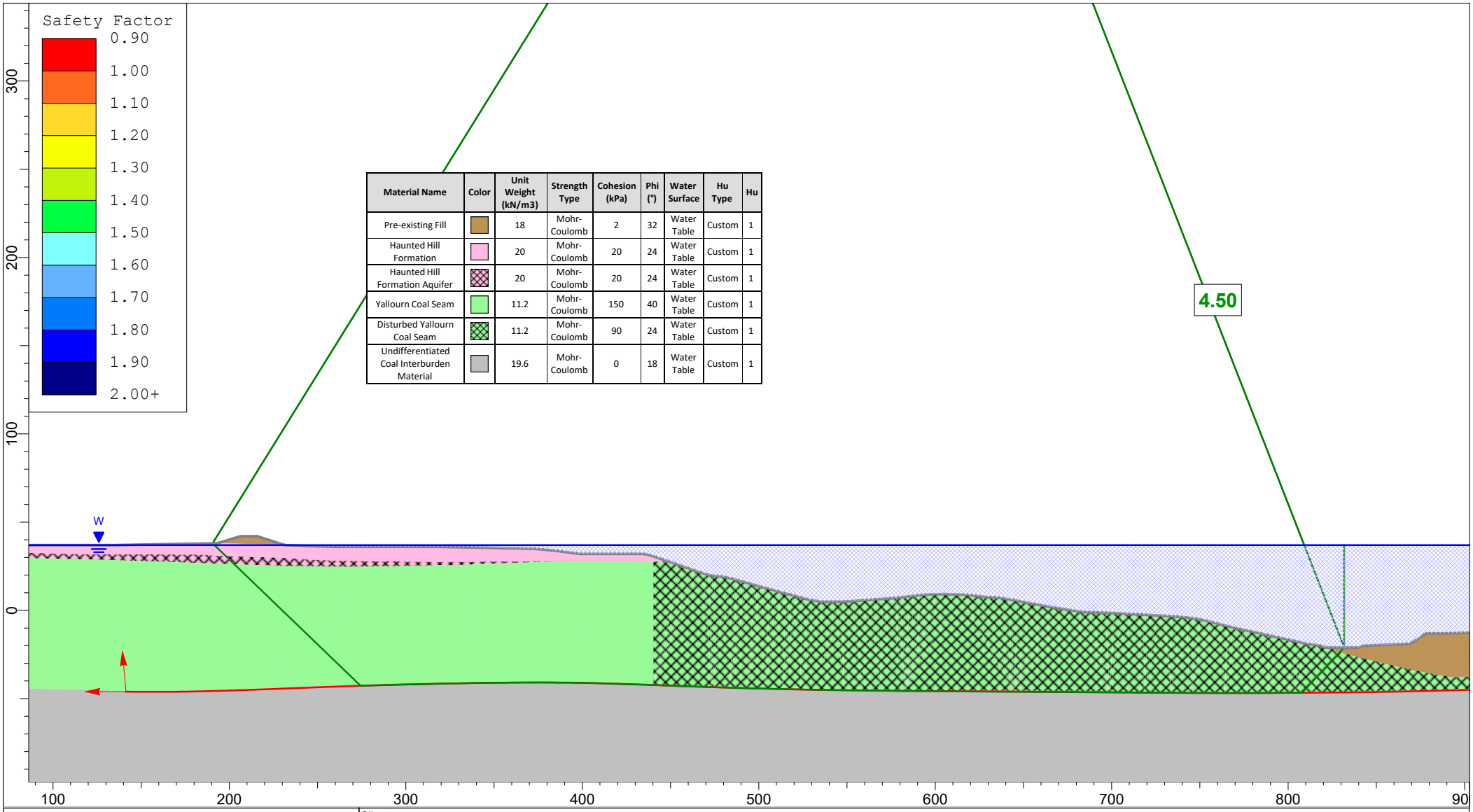
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YEF-NB (east)**
Section:	**Section 03**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake full - lake level at 37 mRL**
Notes:	**Median Interseam Shear Strength**		



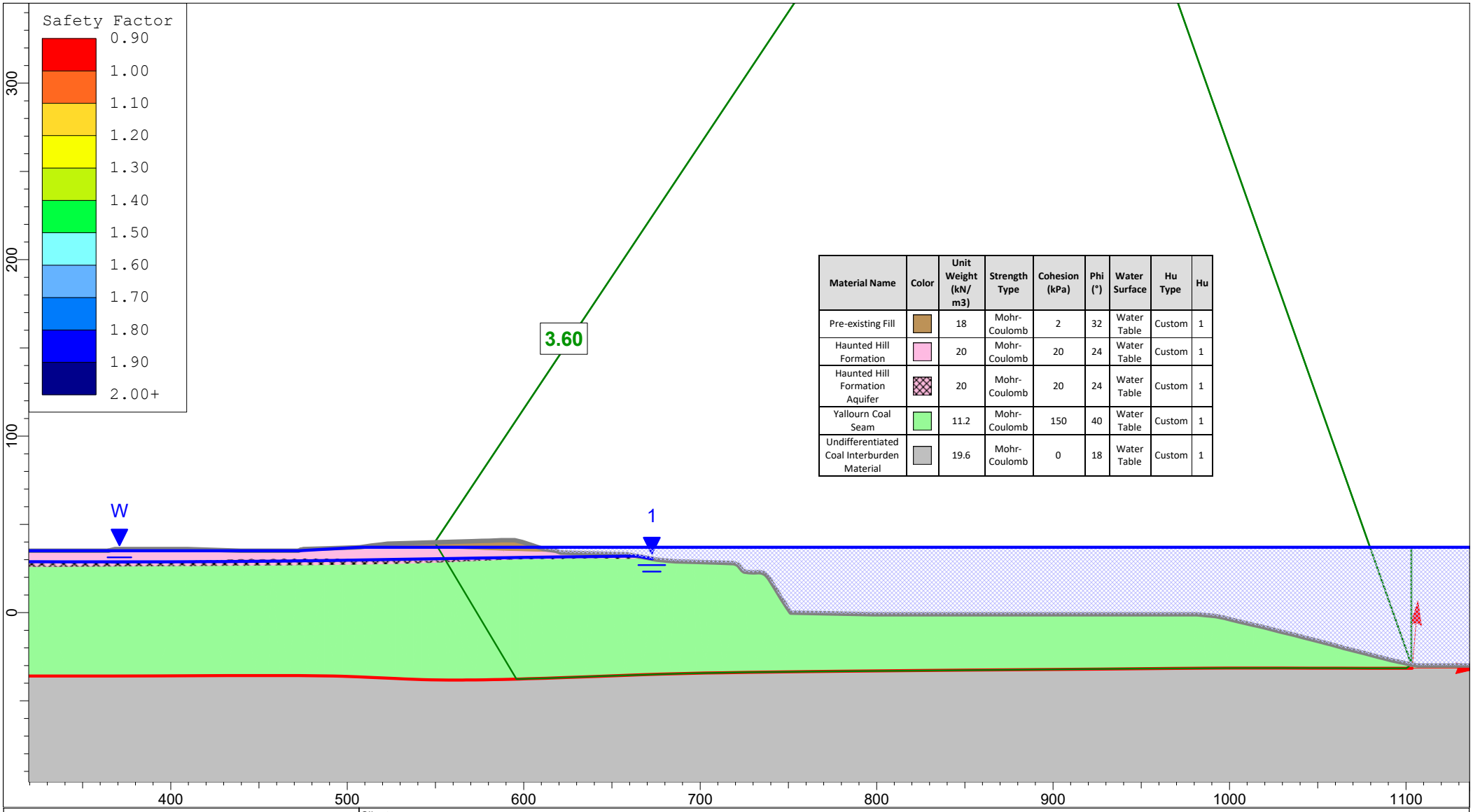
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



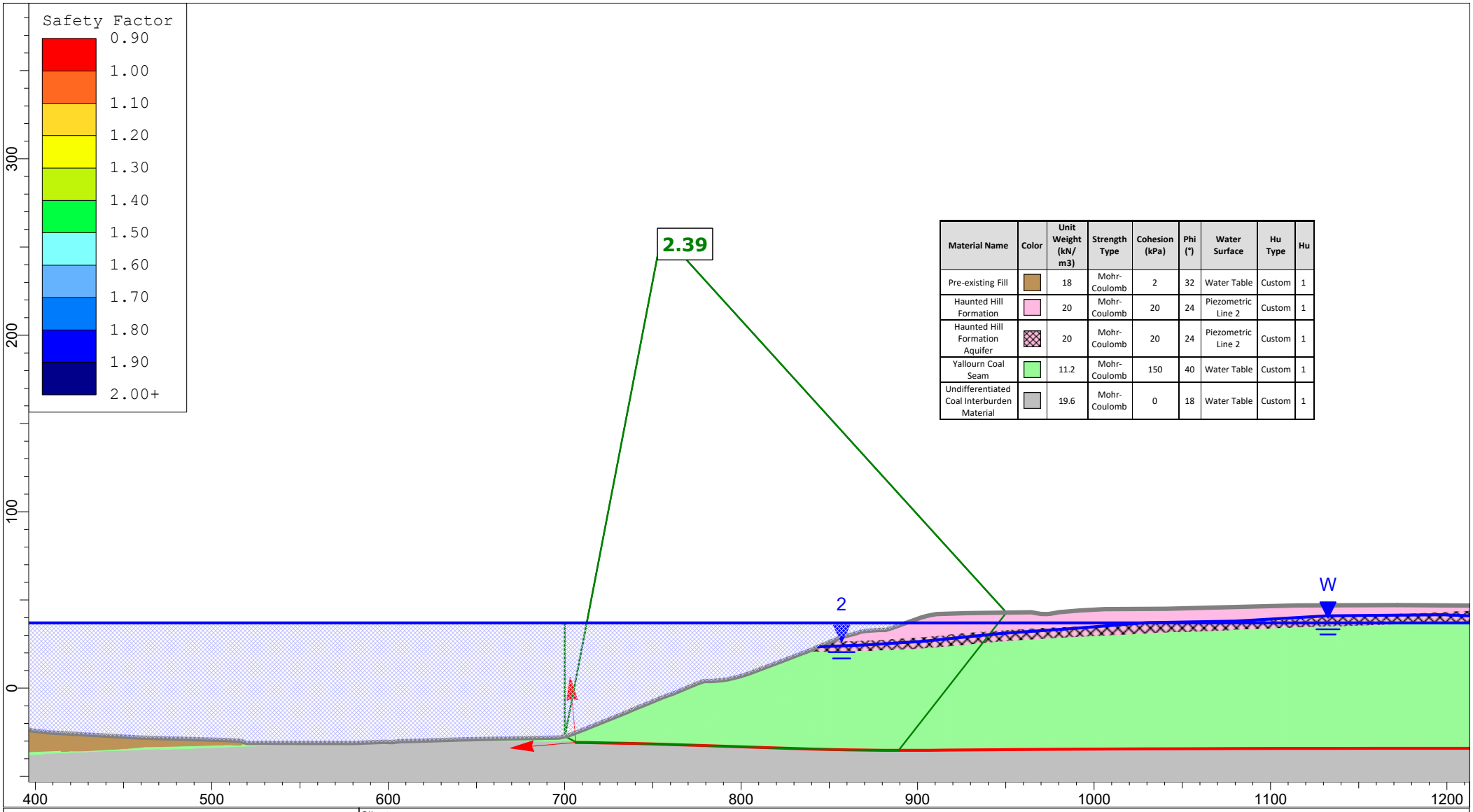
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



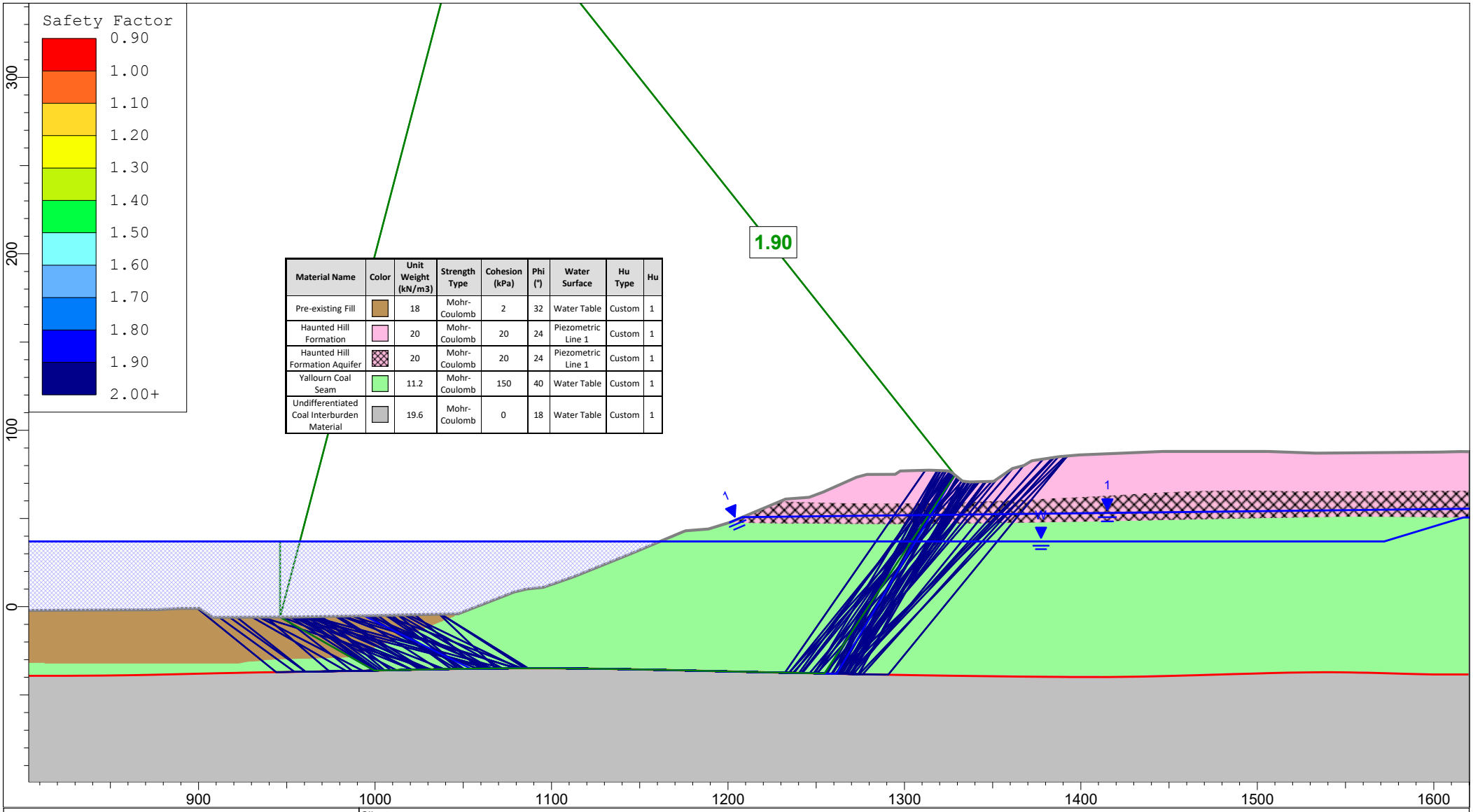
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



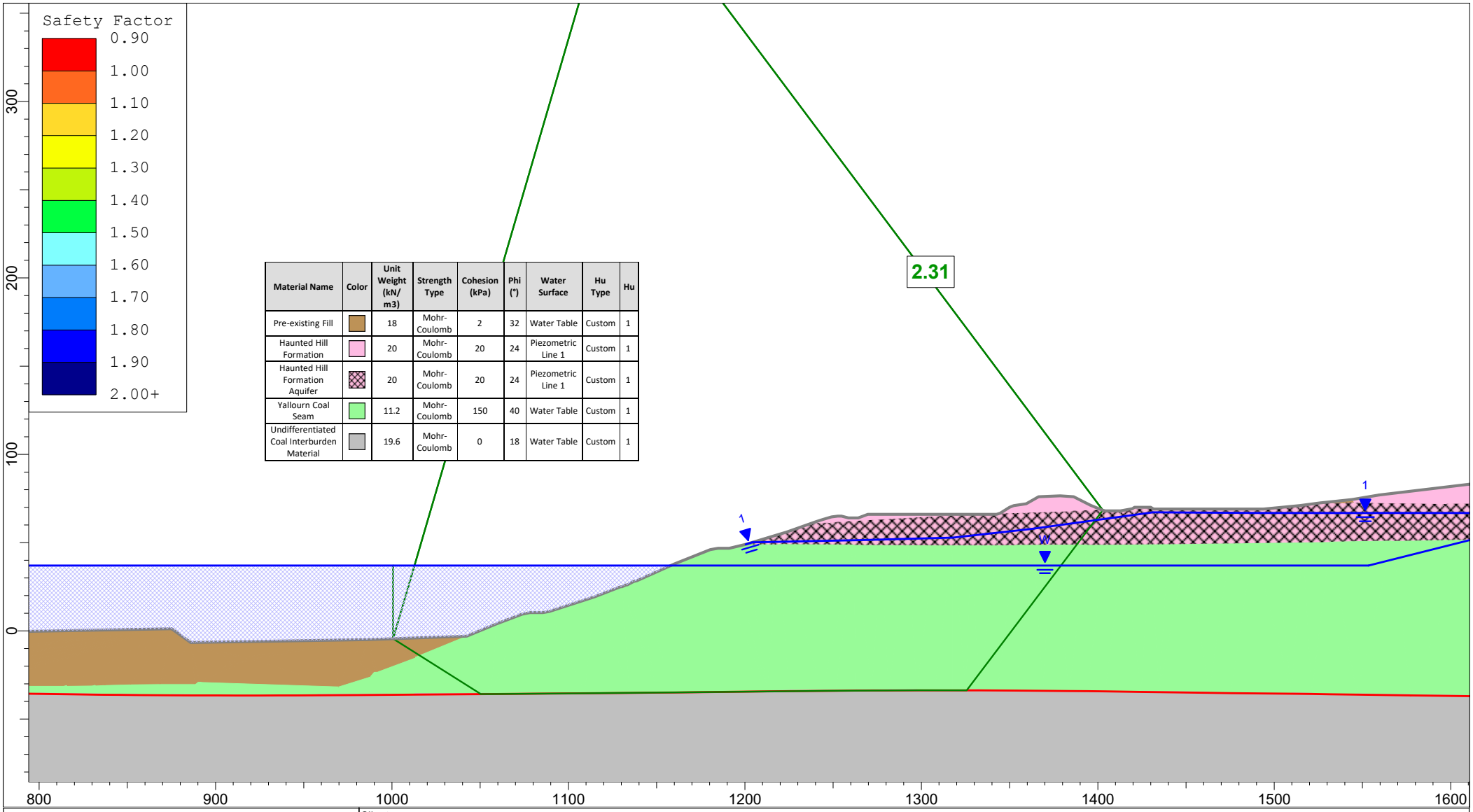
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



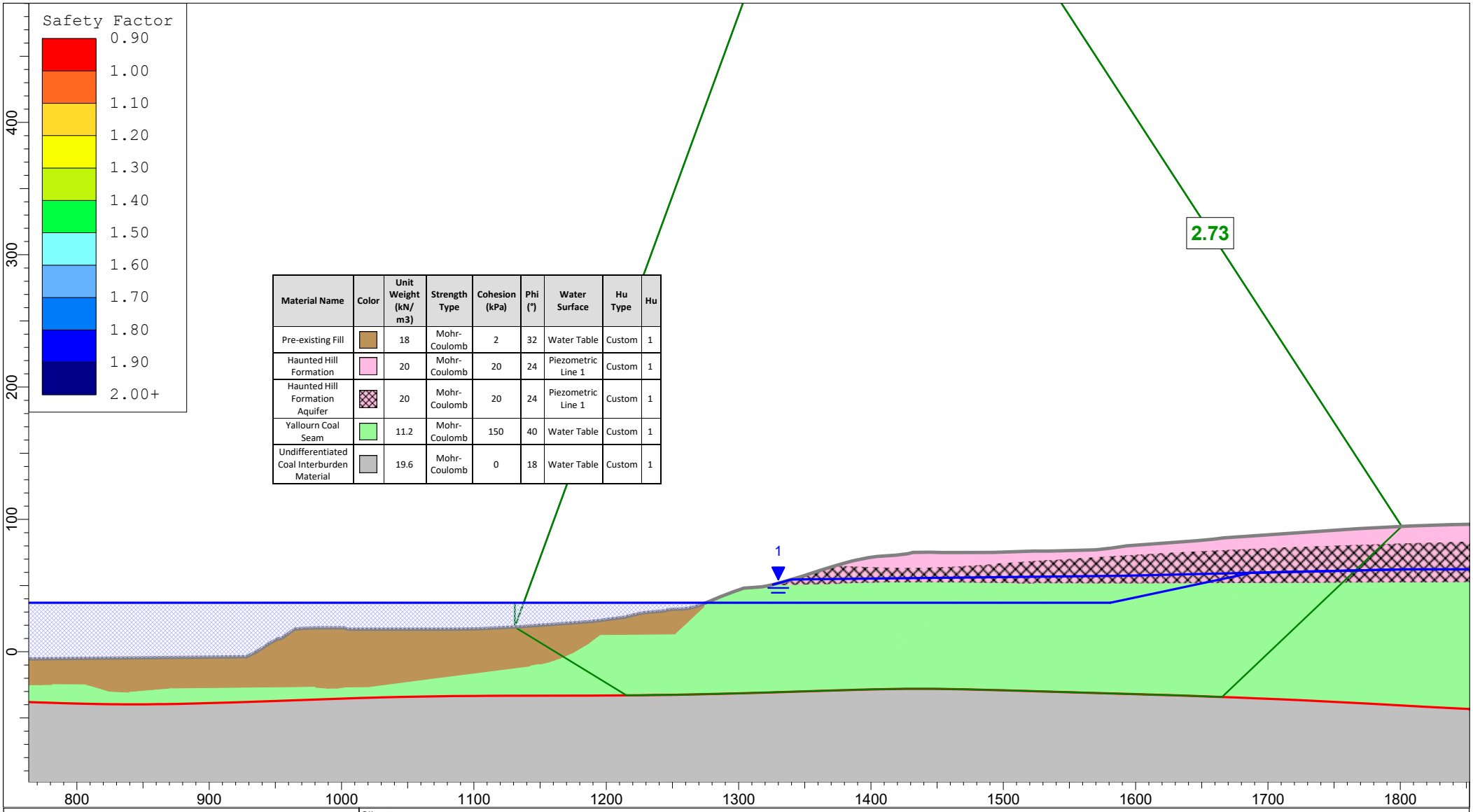
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



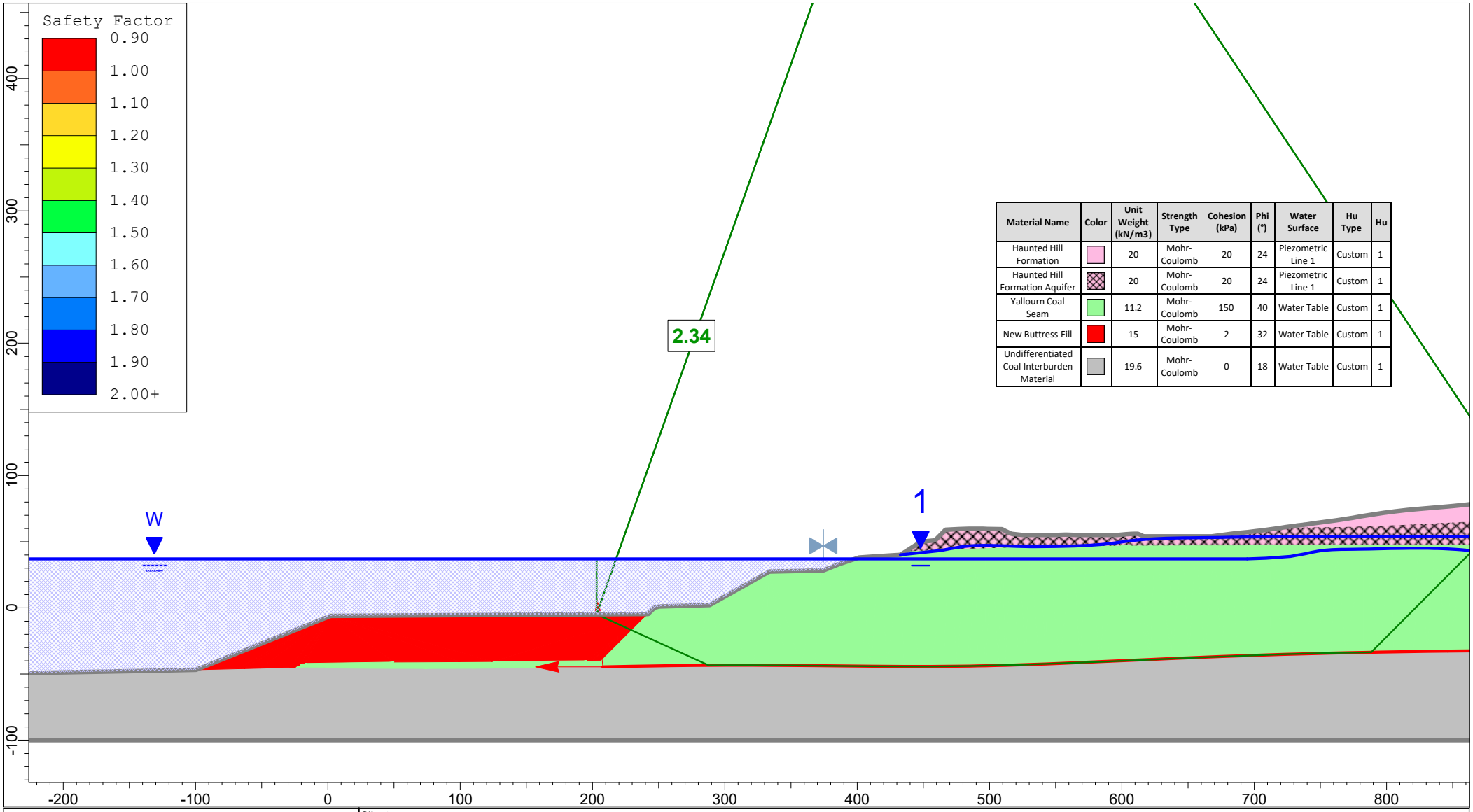
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



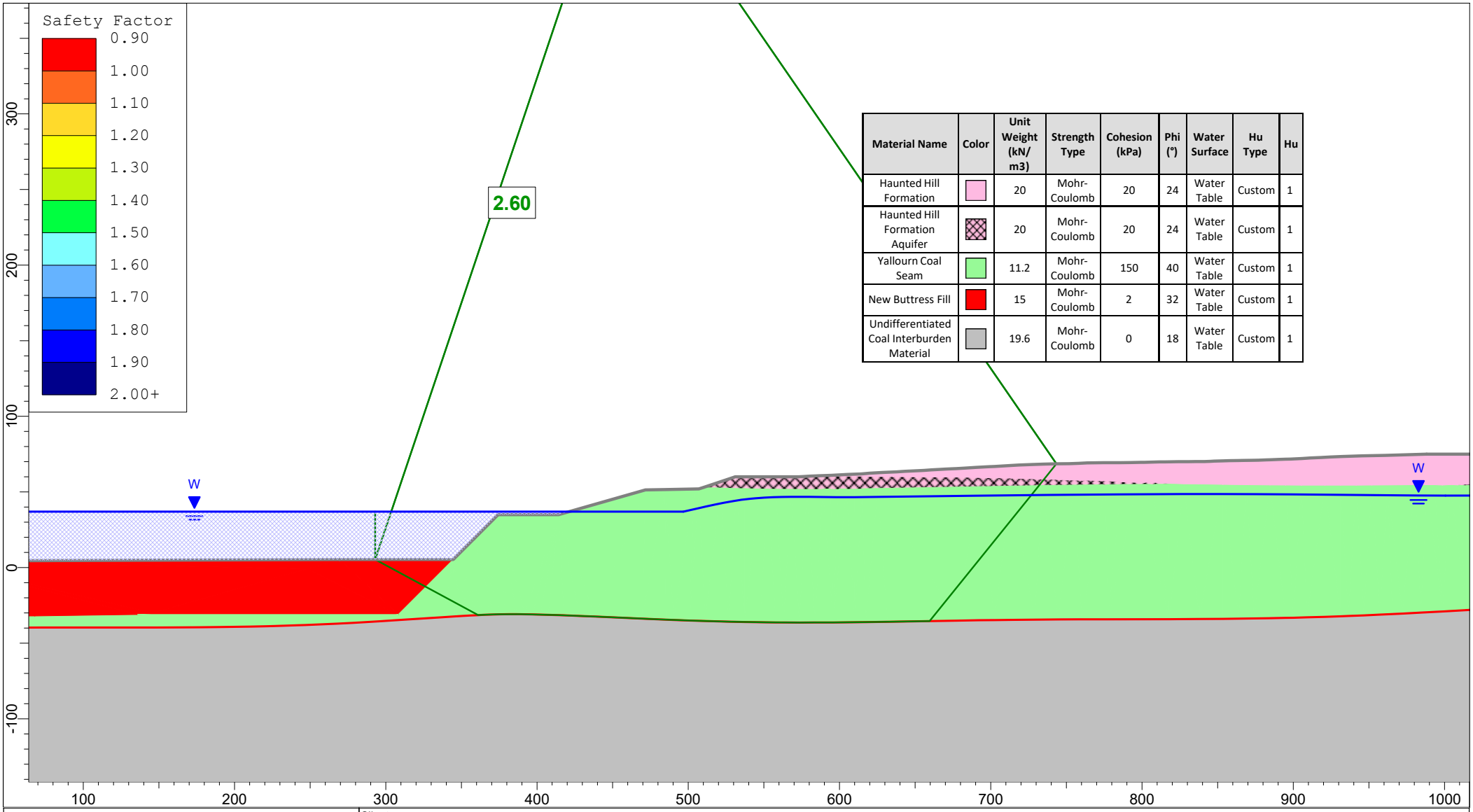
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-SB
Section:	Section 10	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



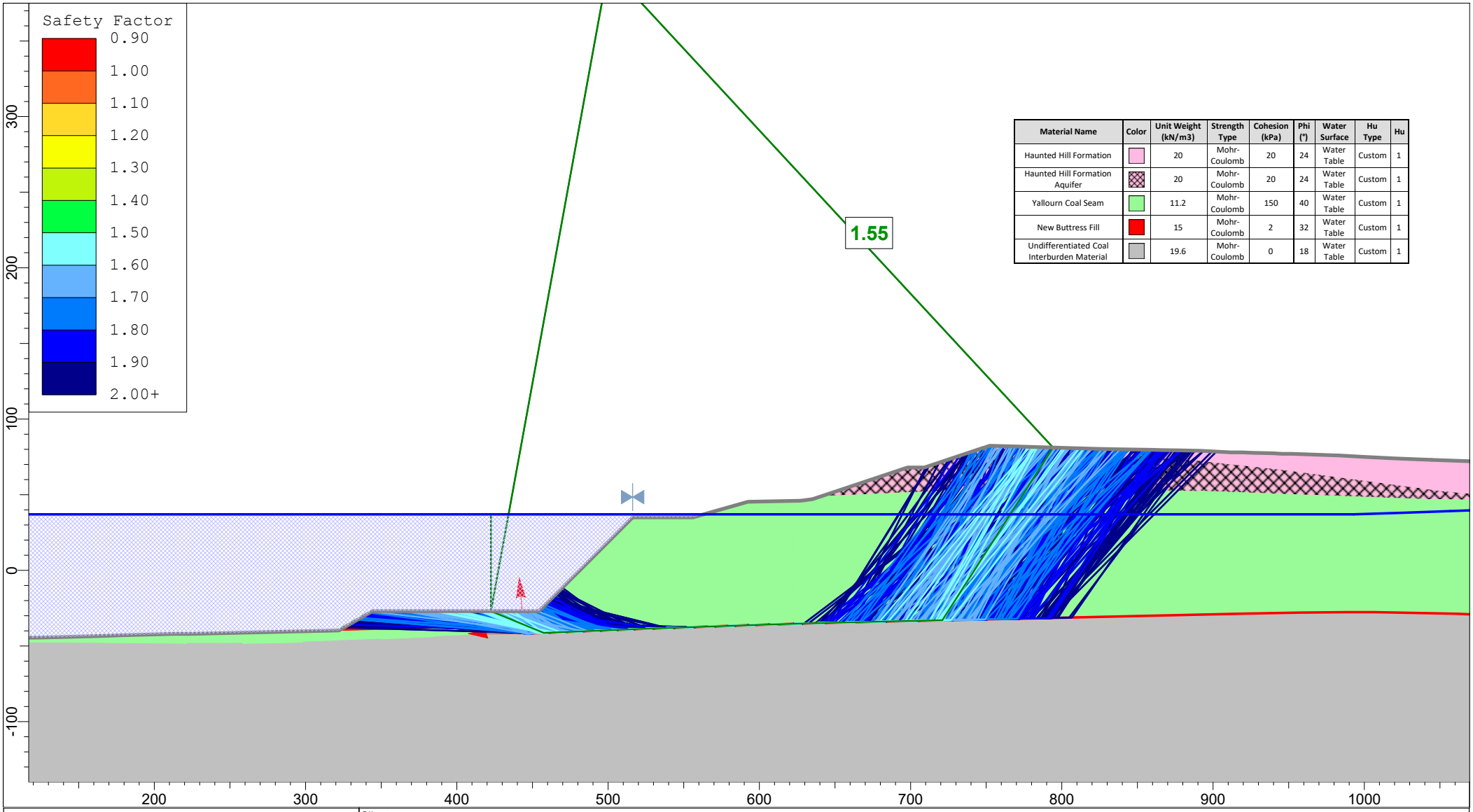
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



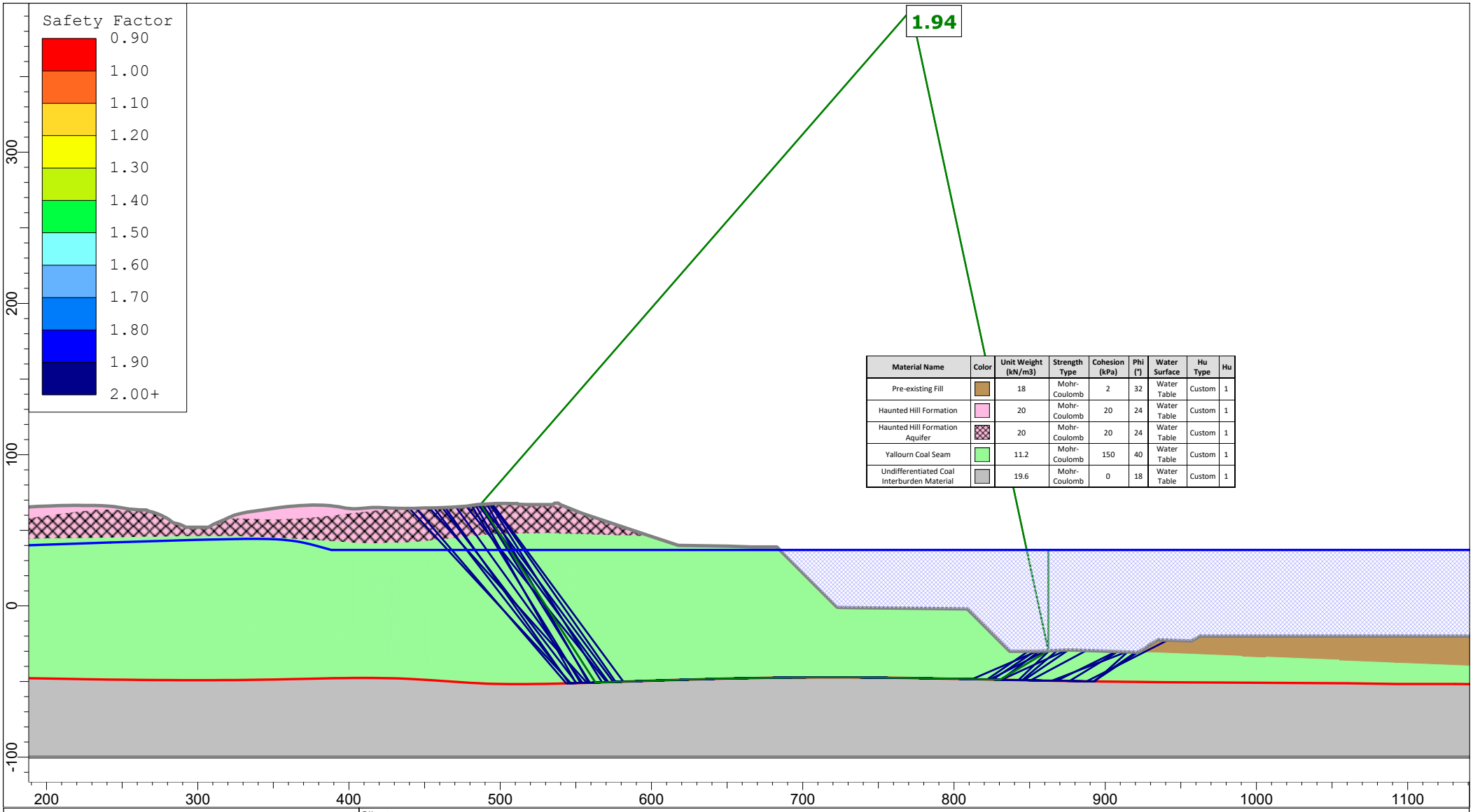
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 12	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



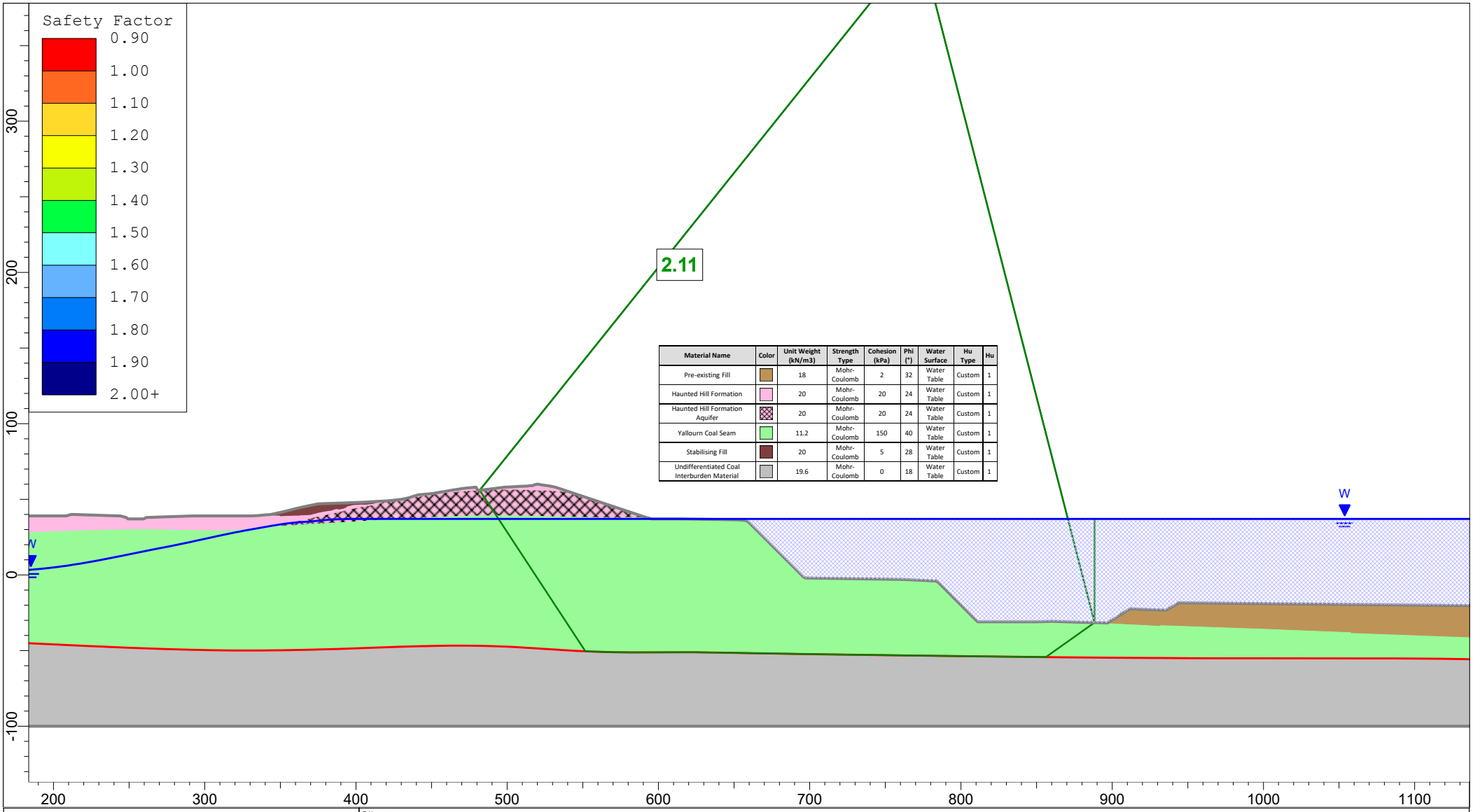
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



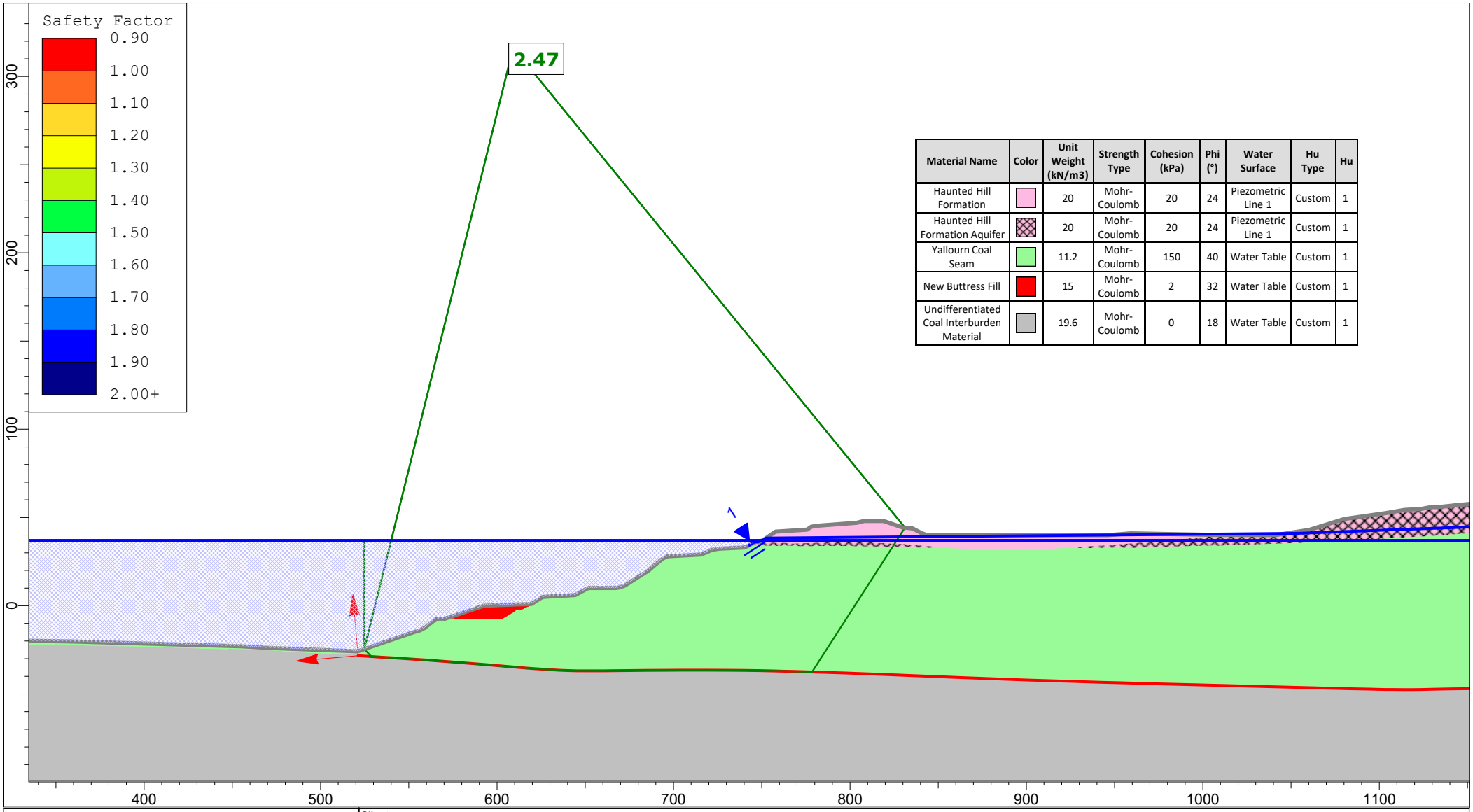
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 14	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



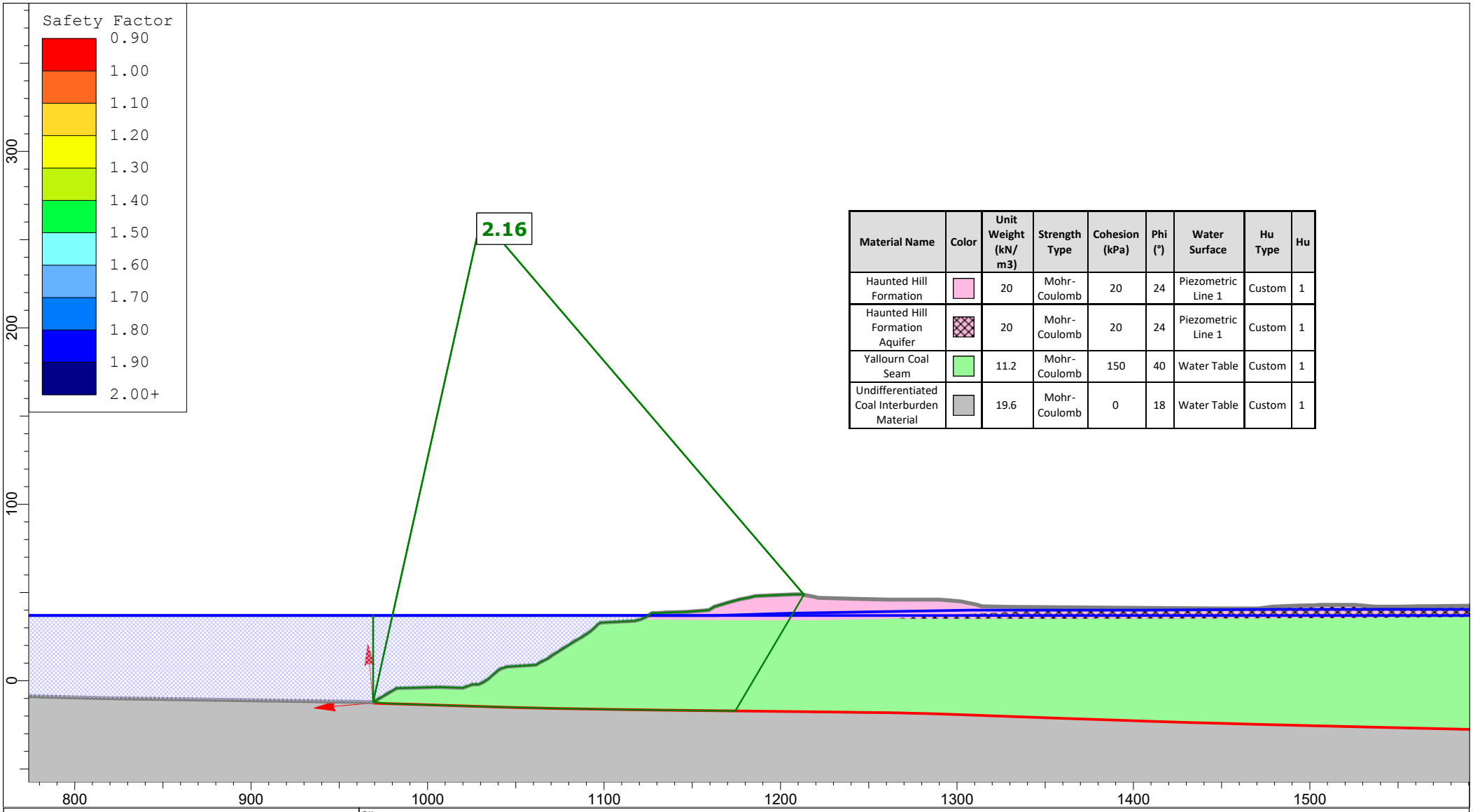
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Stabilising Fill		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**MVF-WB**
Section:	**Section 15**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake full - lake level at 37 mRL**
Notes:	**Median Interseam Shear Strength**		



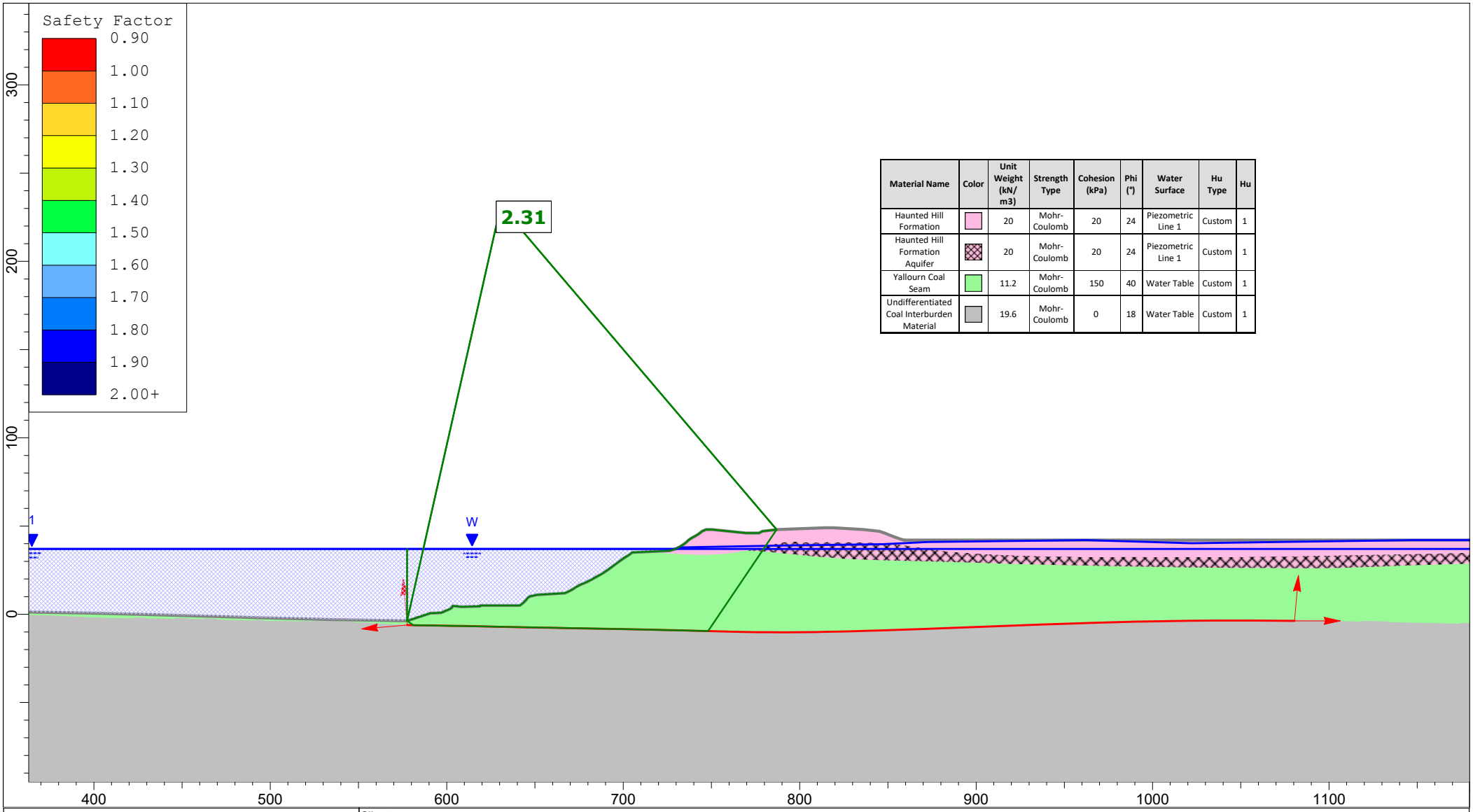
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



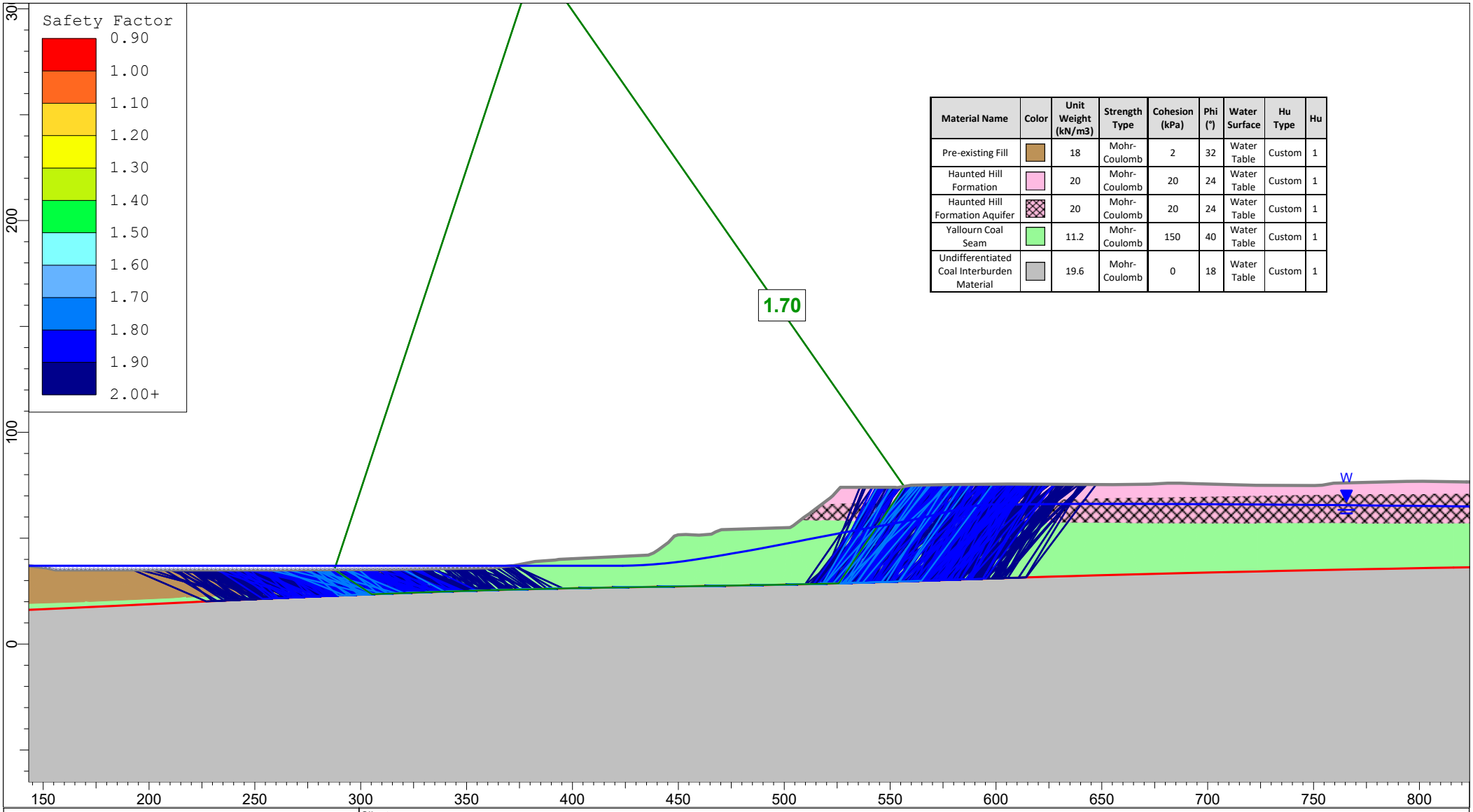
Material Name	Color	Unit Weight (kN/ m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



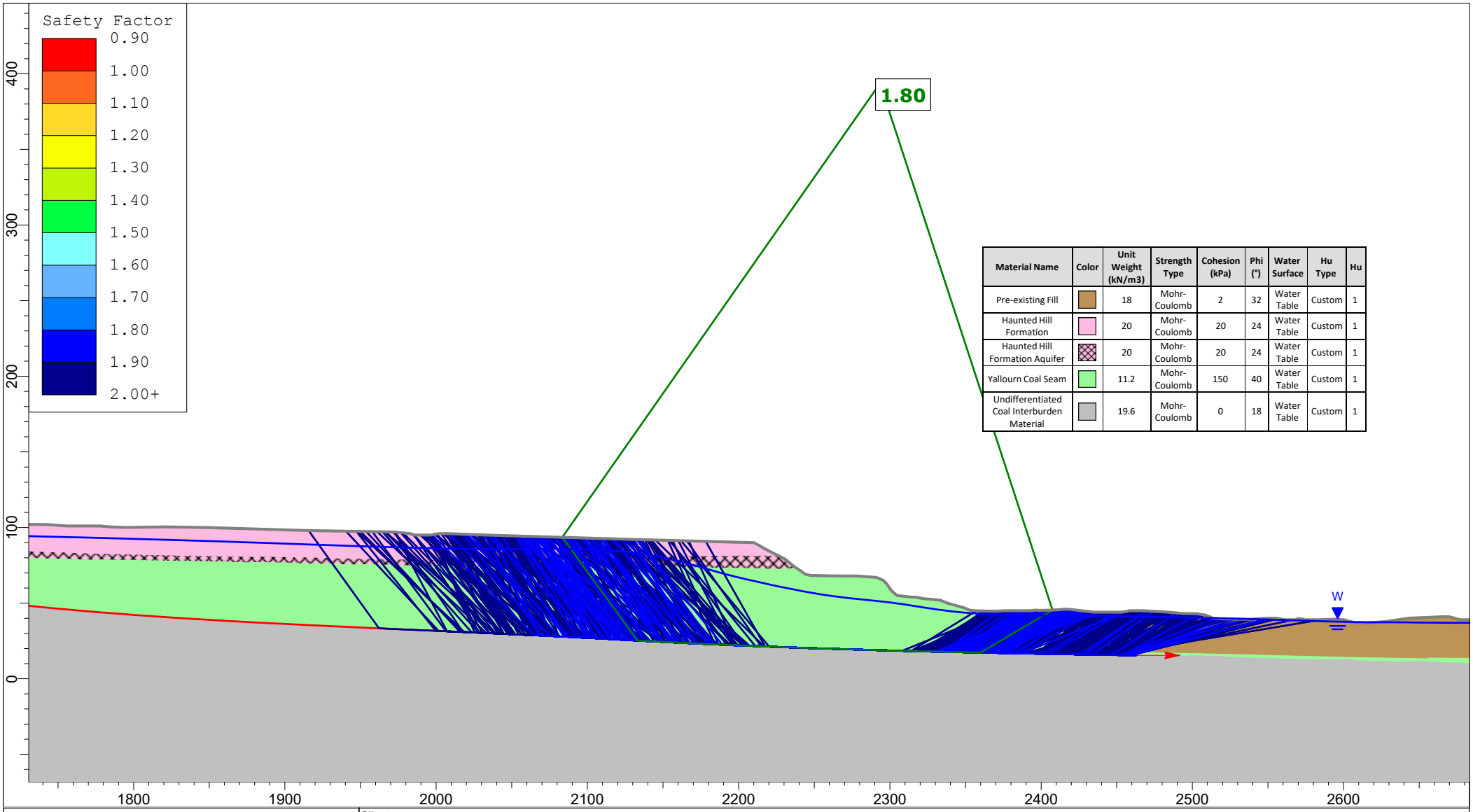
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



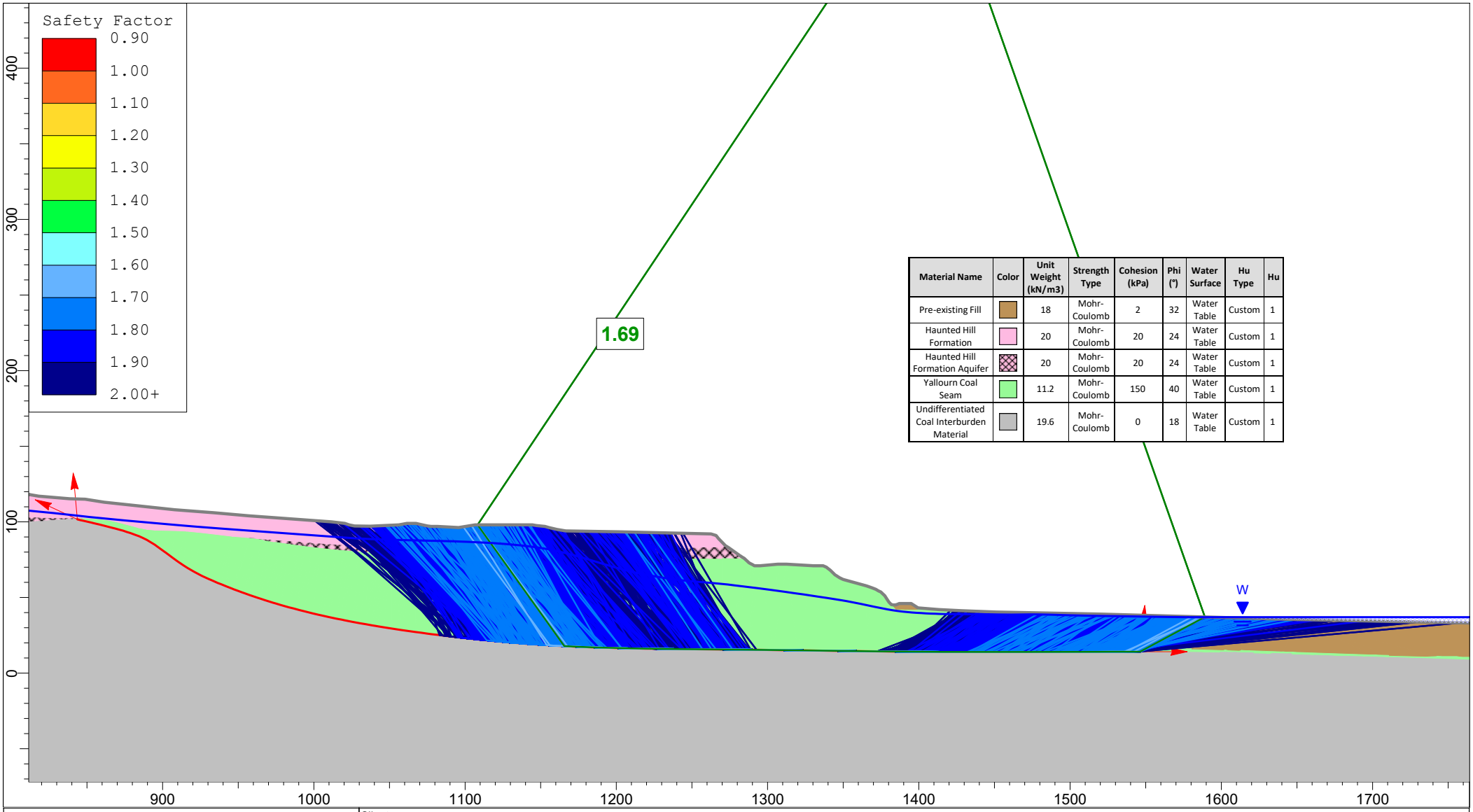
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SB
Section:	Section 19	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



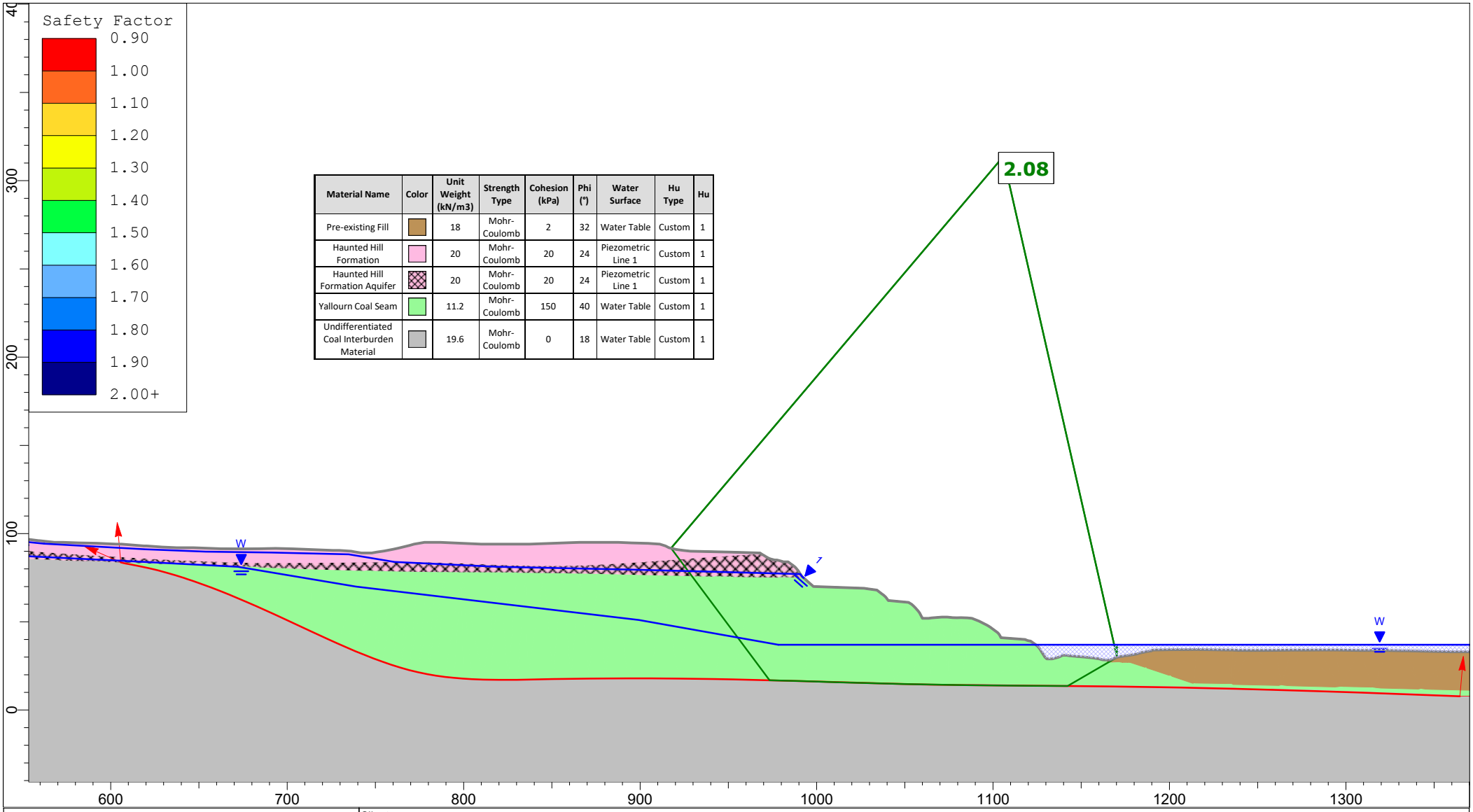
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 20	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



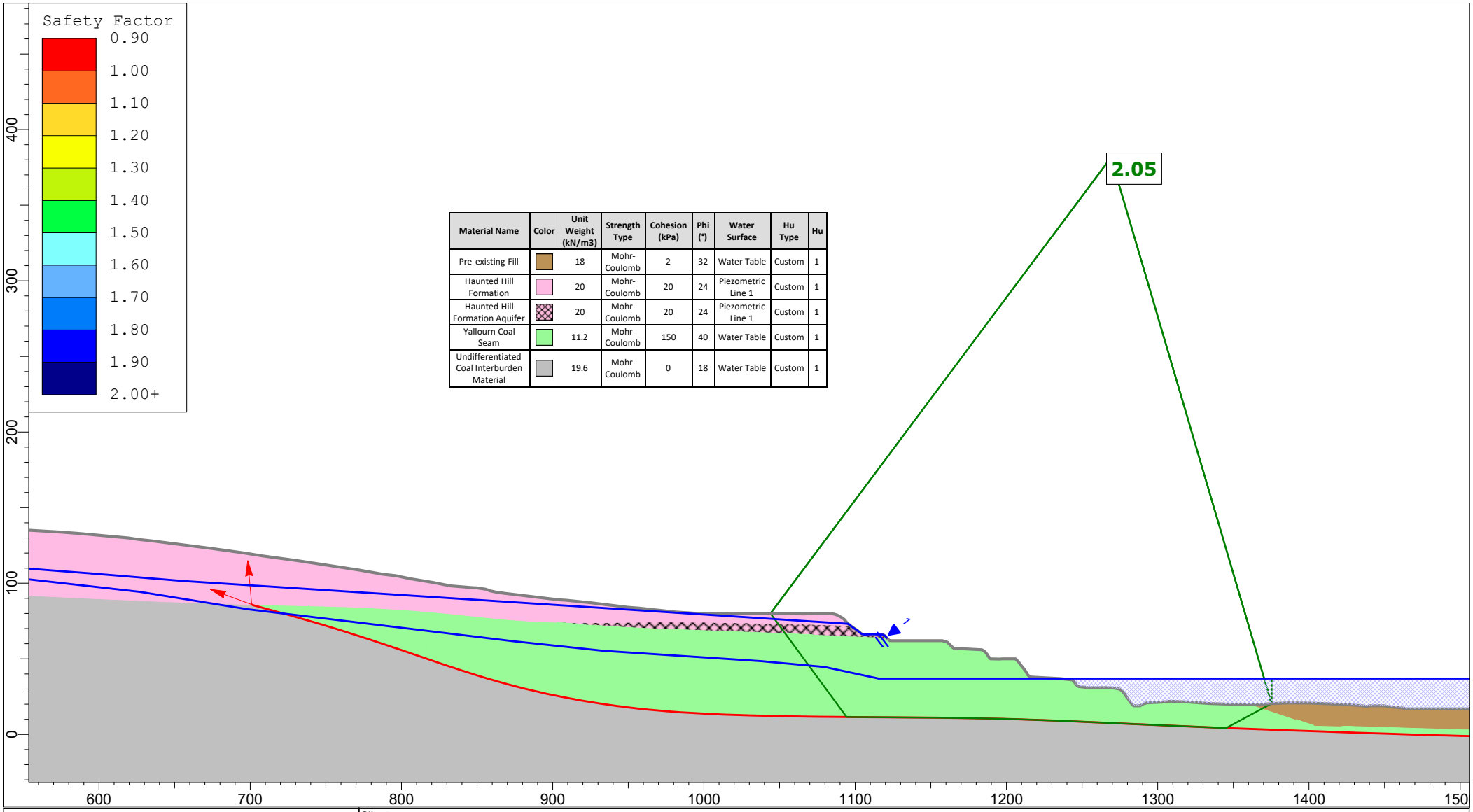
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YTF-SWB**
Section:	**Section 21**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake full - lake level at 37 mRL**
Notes:	**Median Interseam Shear Strength**		



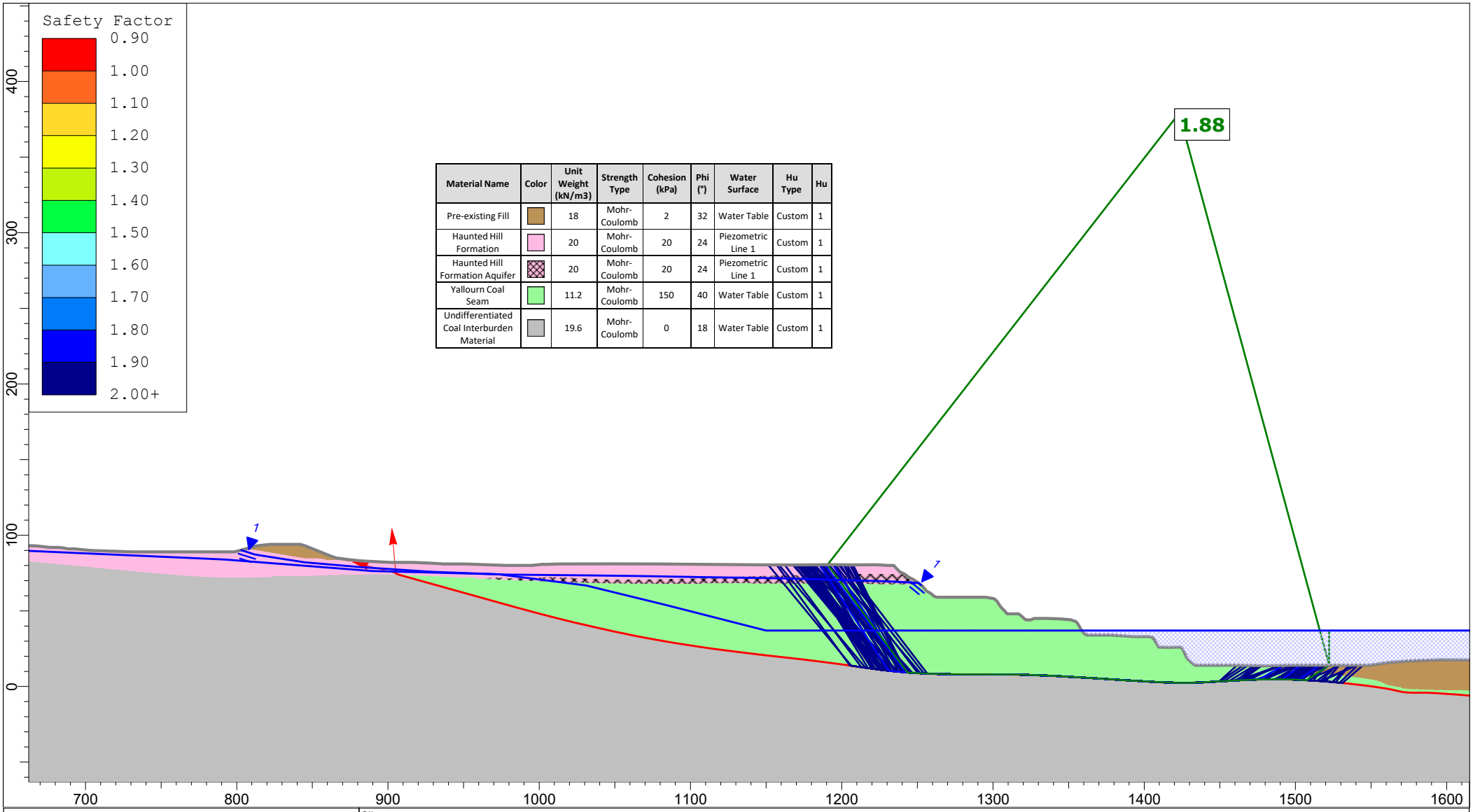
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (South)
Section:	Section 22	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



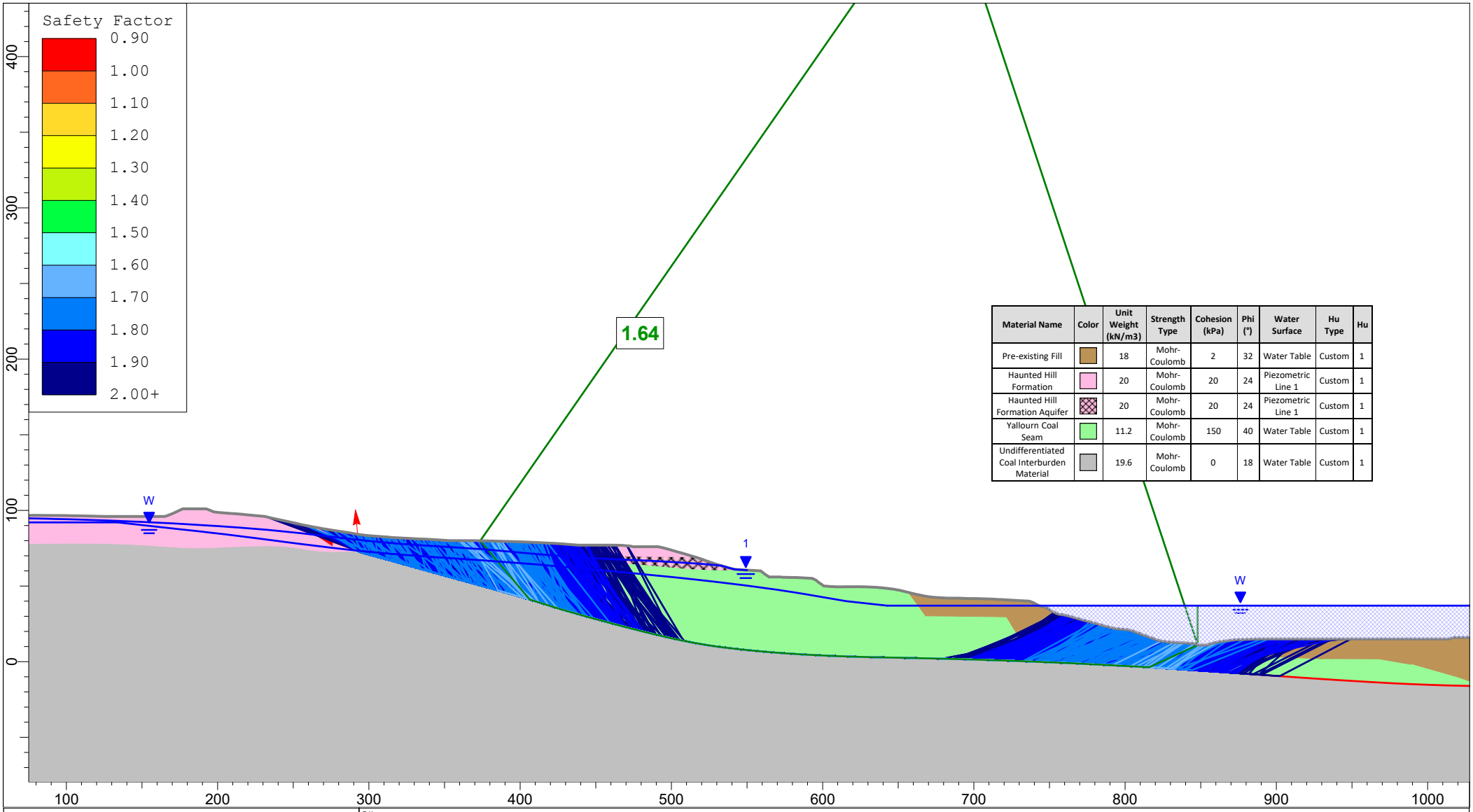
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 23	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



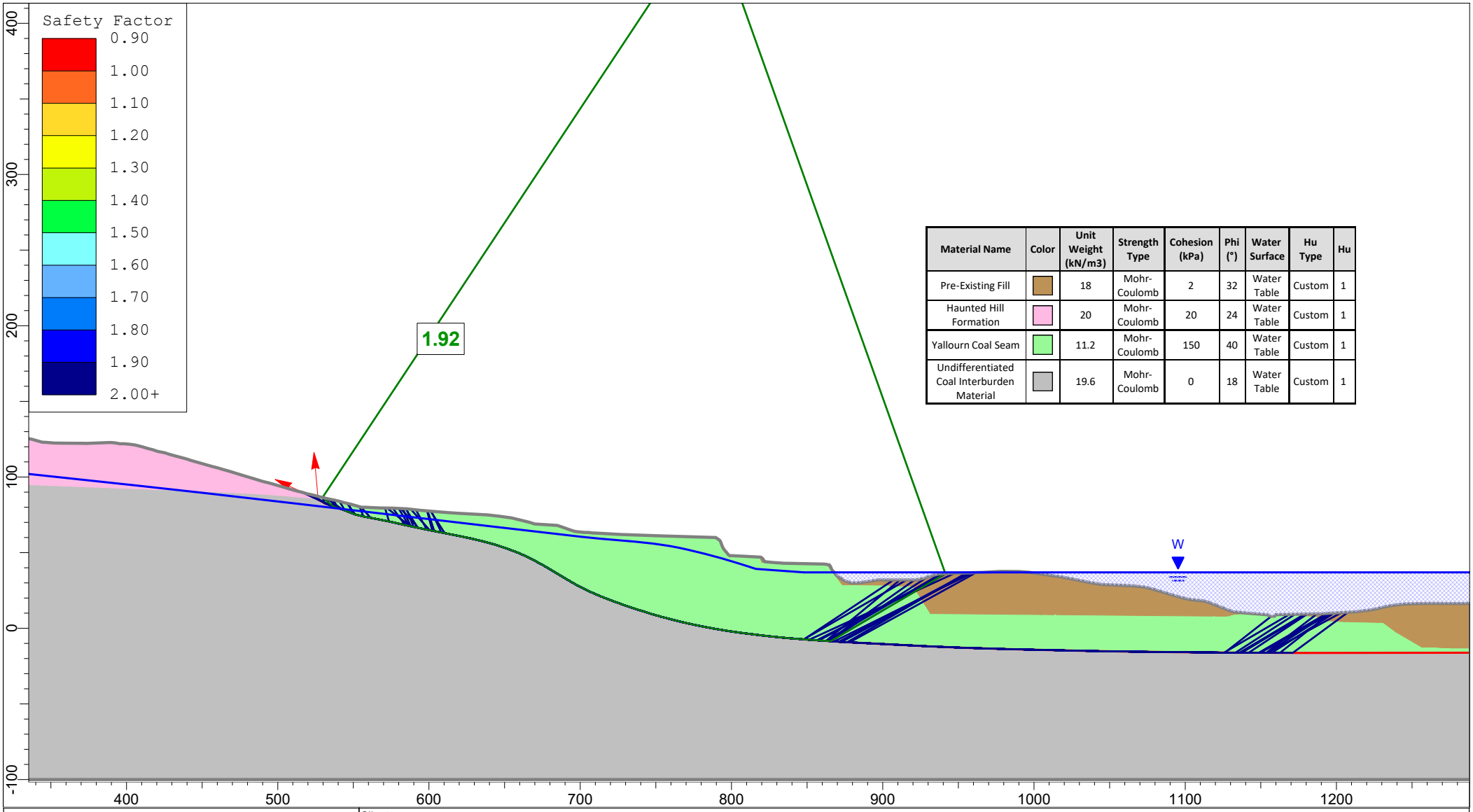
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



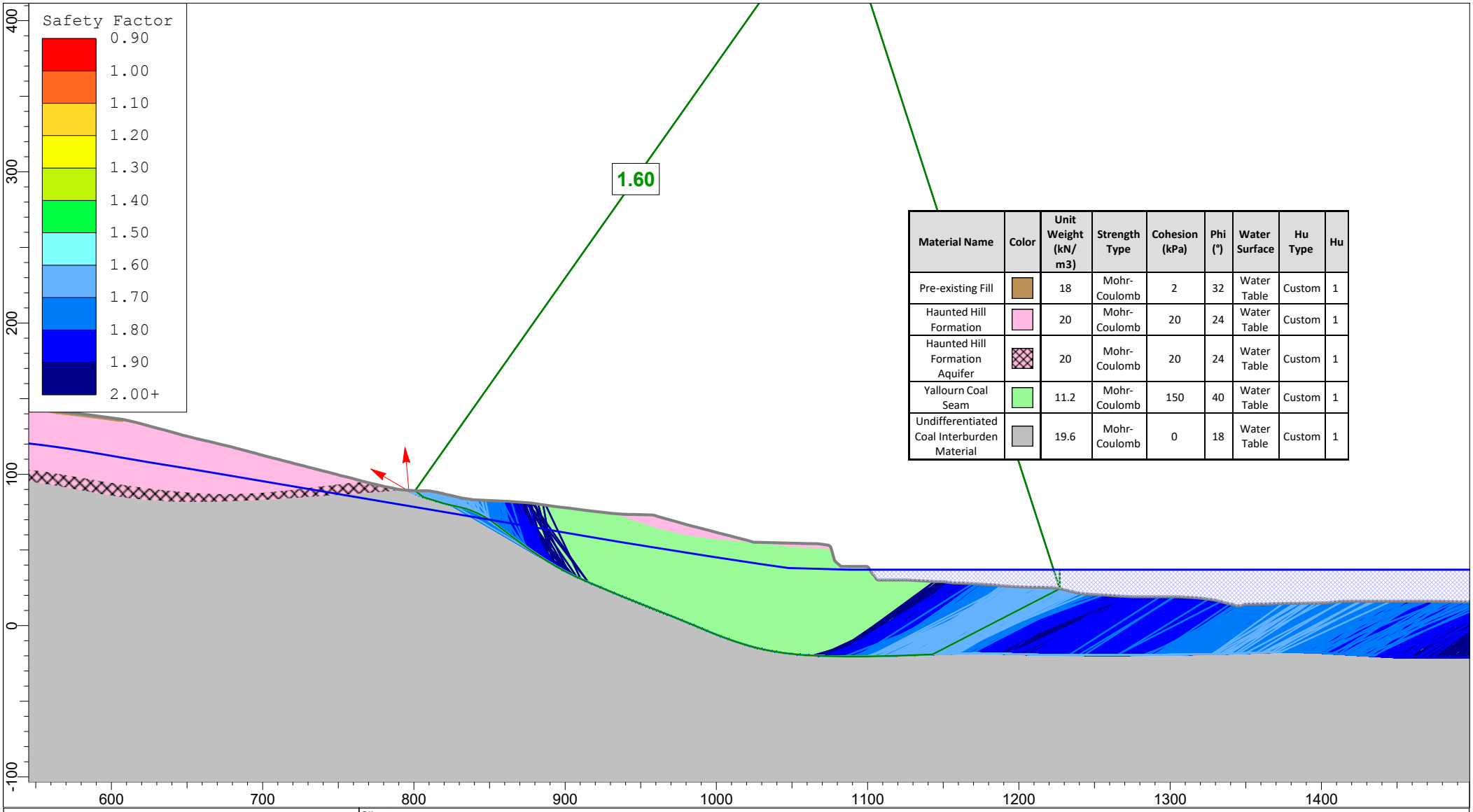
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



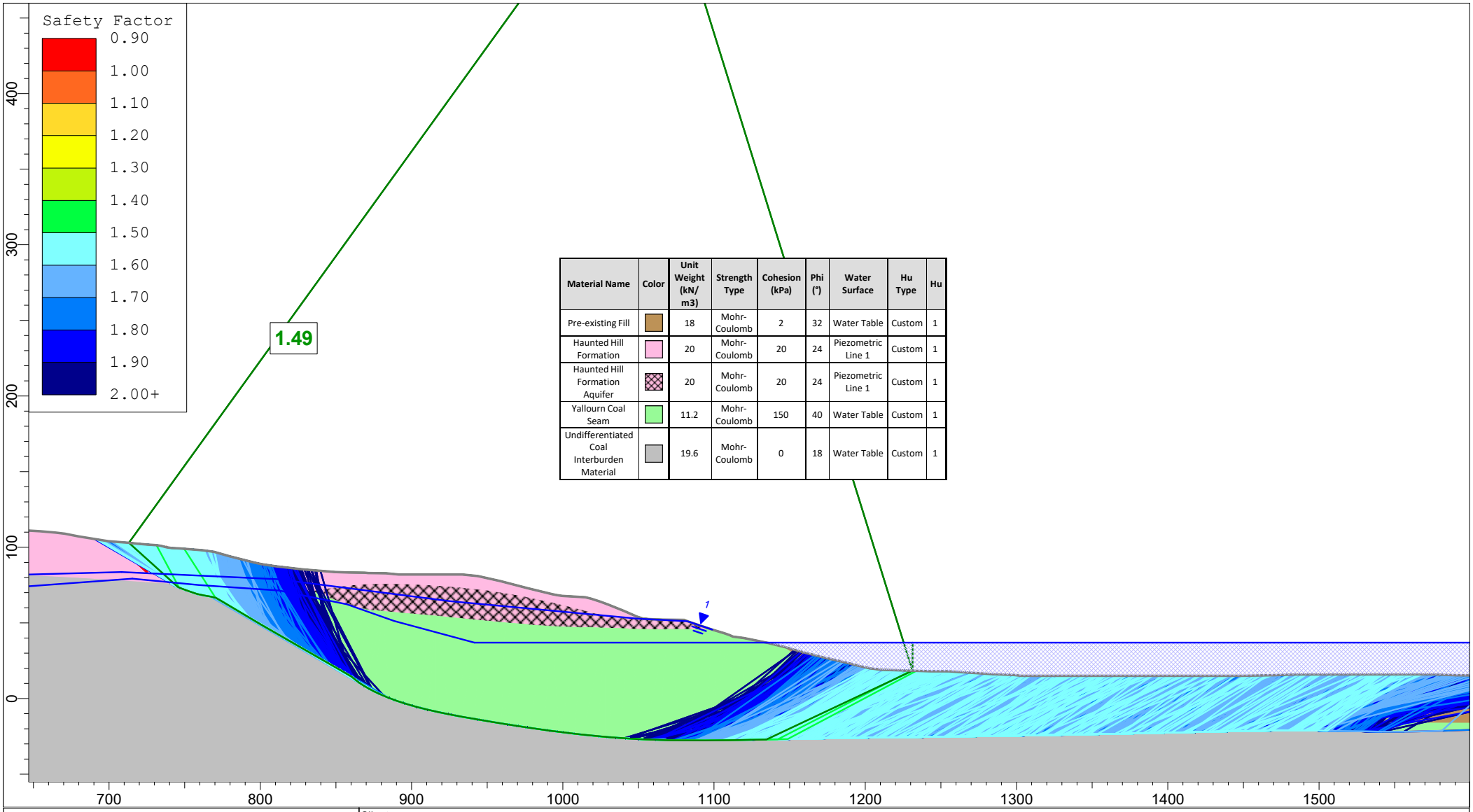
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



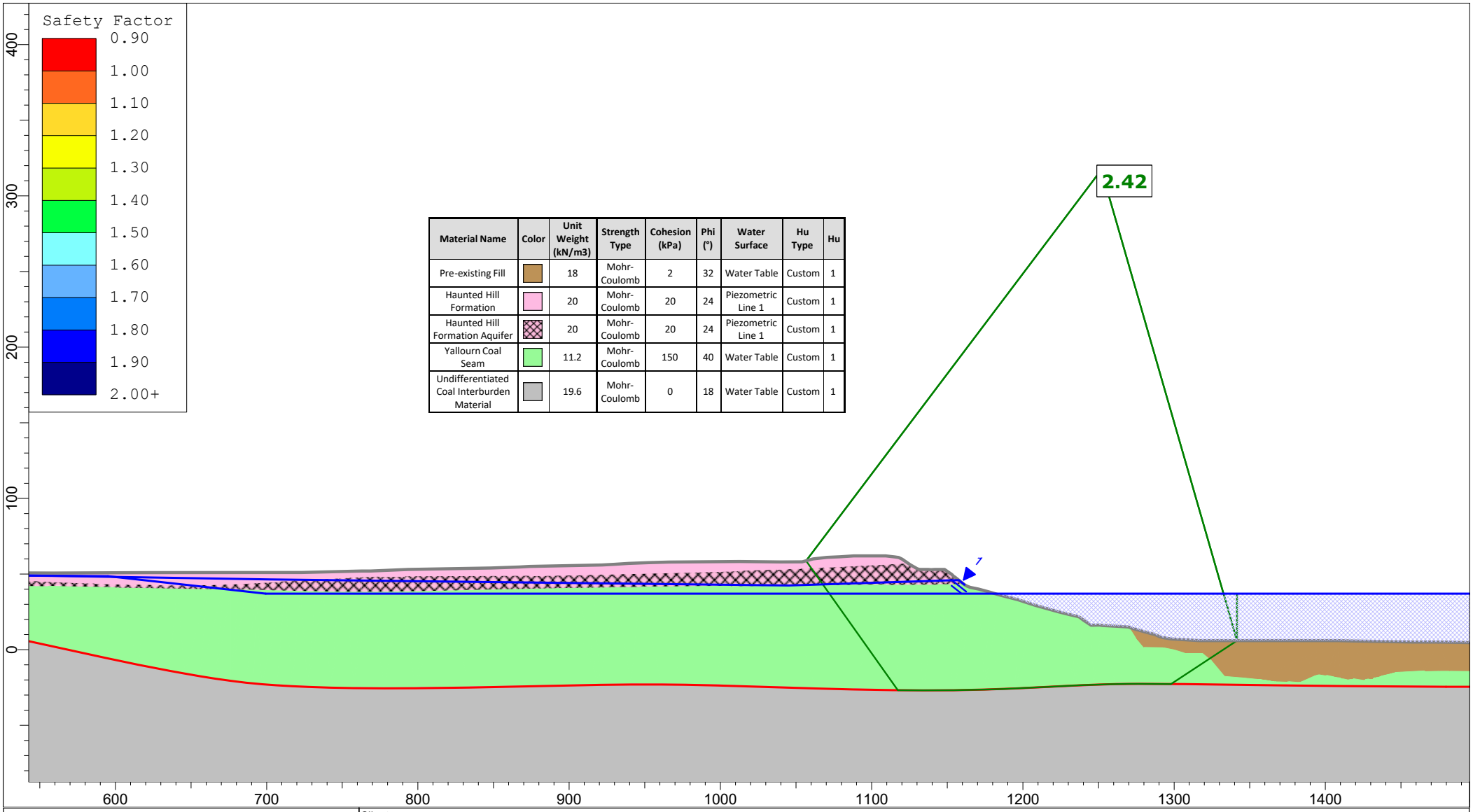
Material Name	Color	Unit Weight (kN/ m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



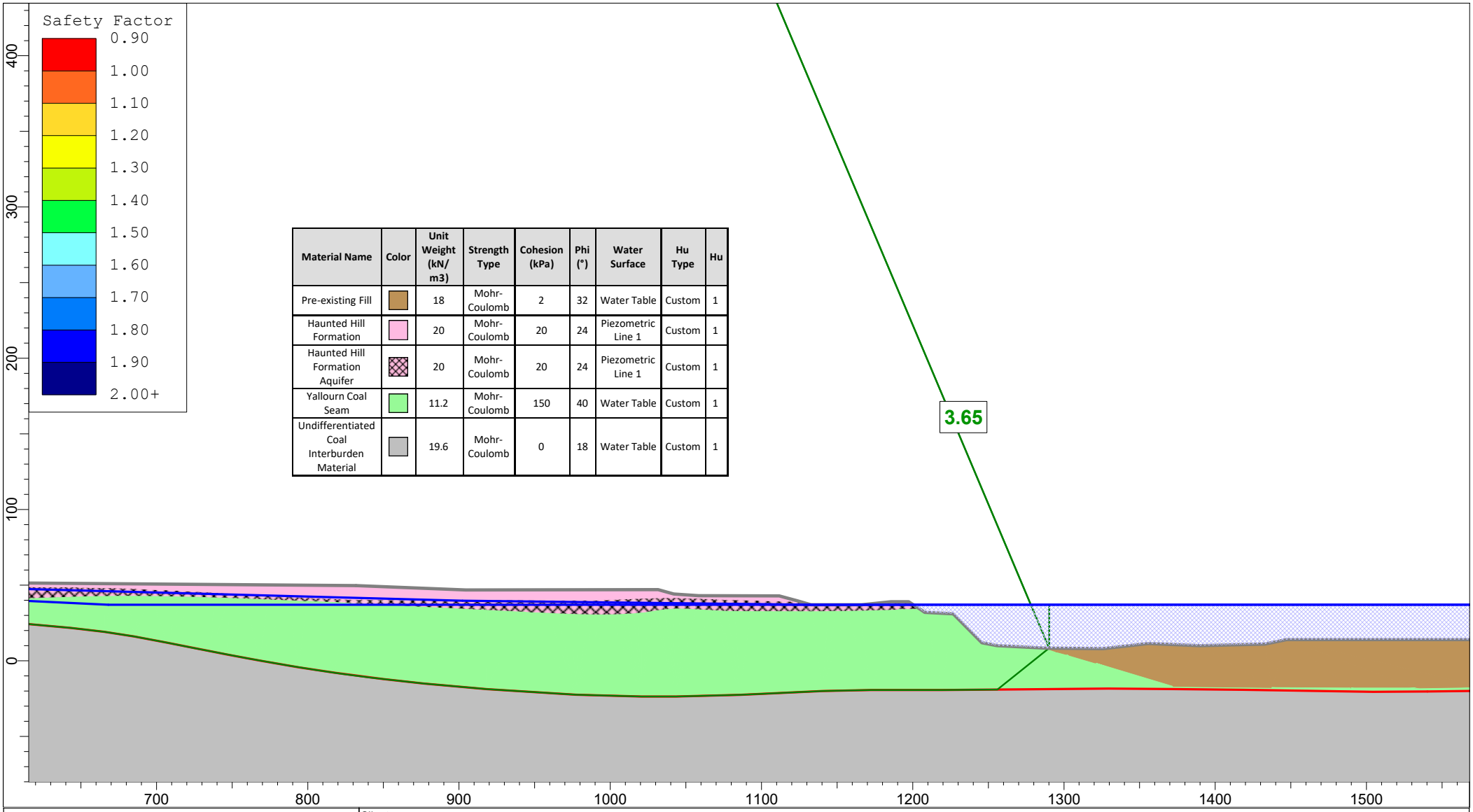
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



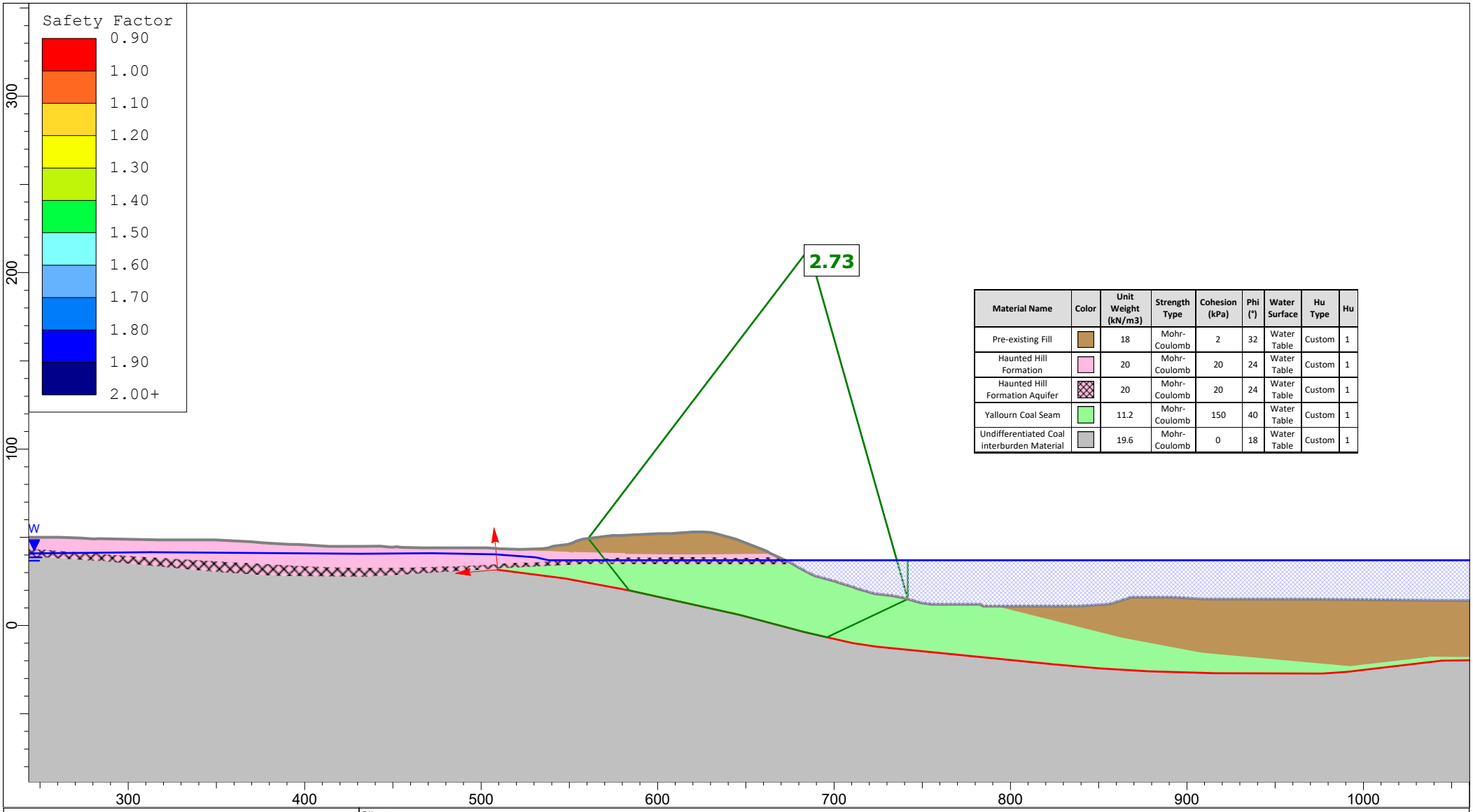
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-NB
Section:	Section 29	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



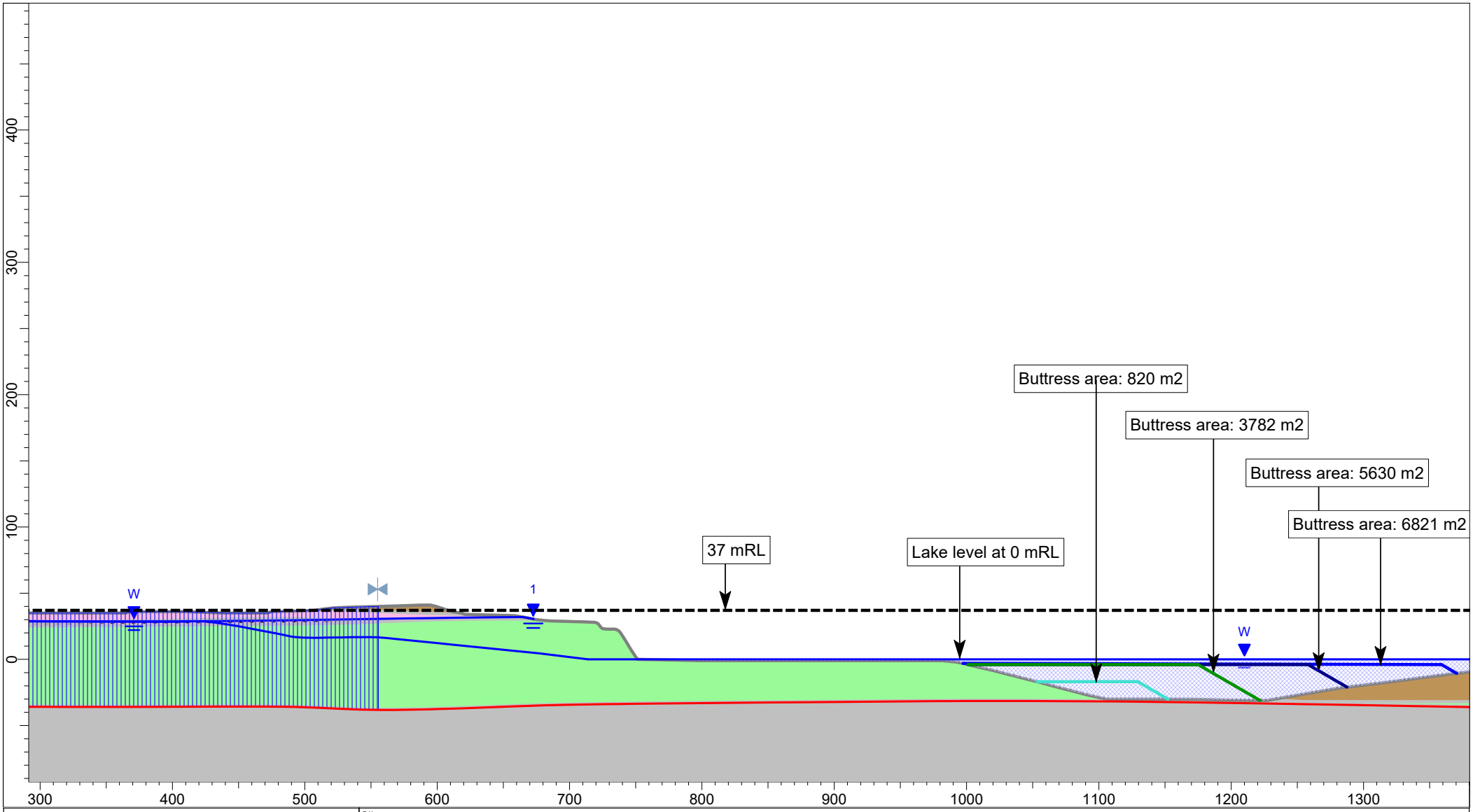
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		

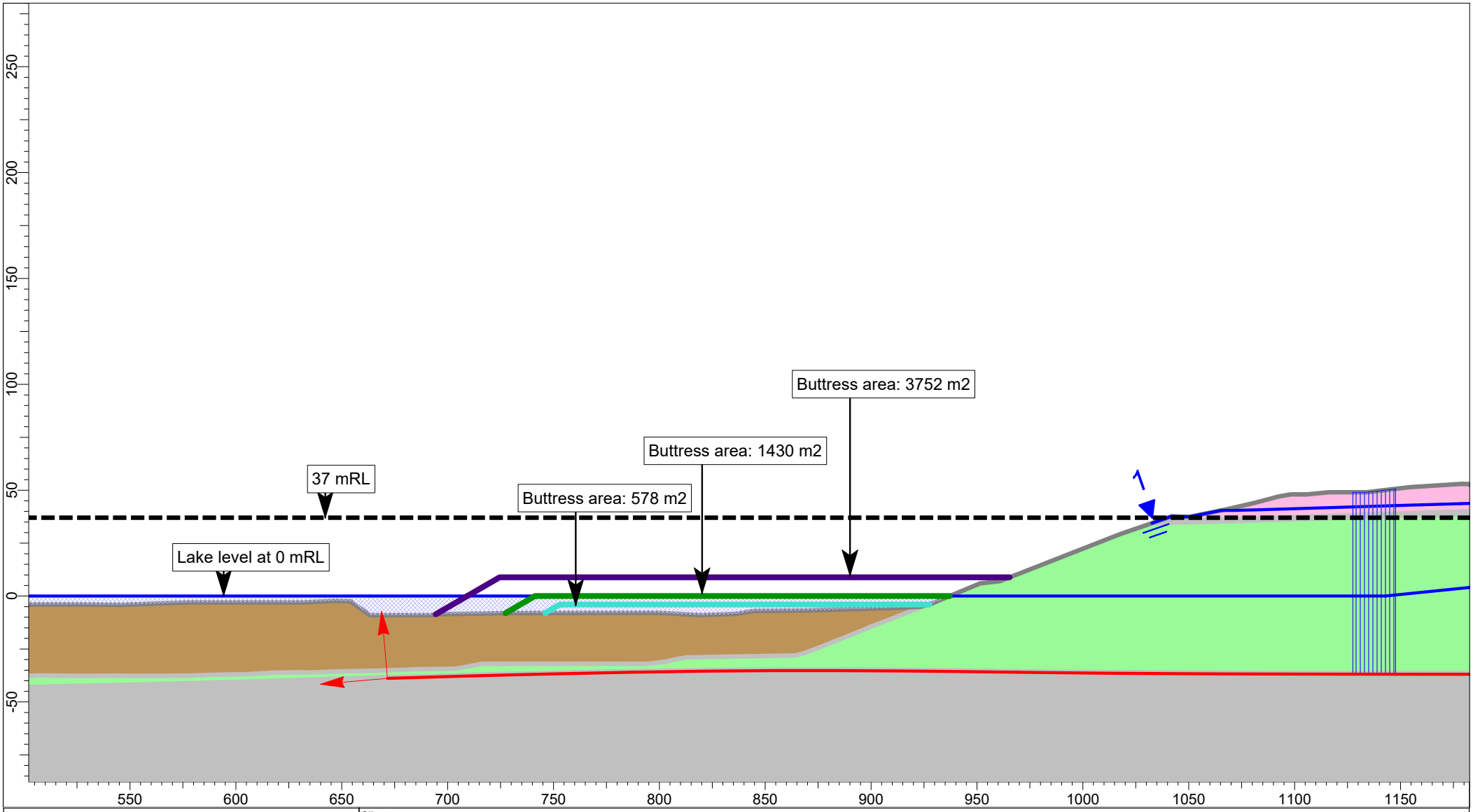


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

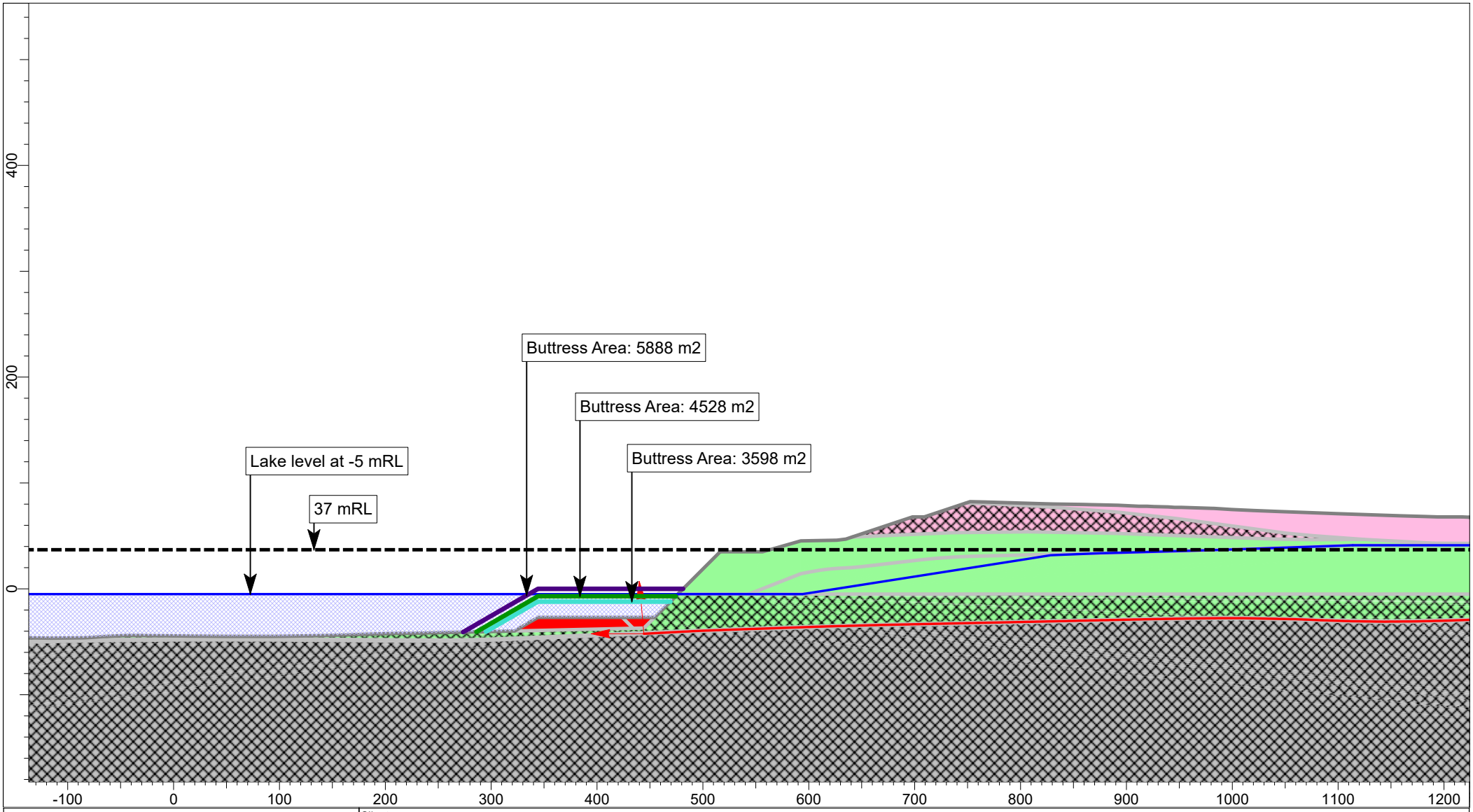
Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YTF-LS**
Section:	**Section 31**	Case:	**Multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake full - lake level at 37 mRL**
Notes:	**Median Interseam Shear Strength**		



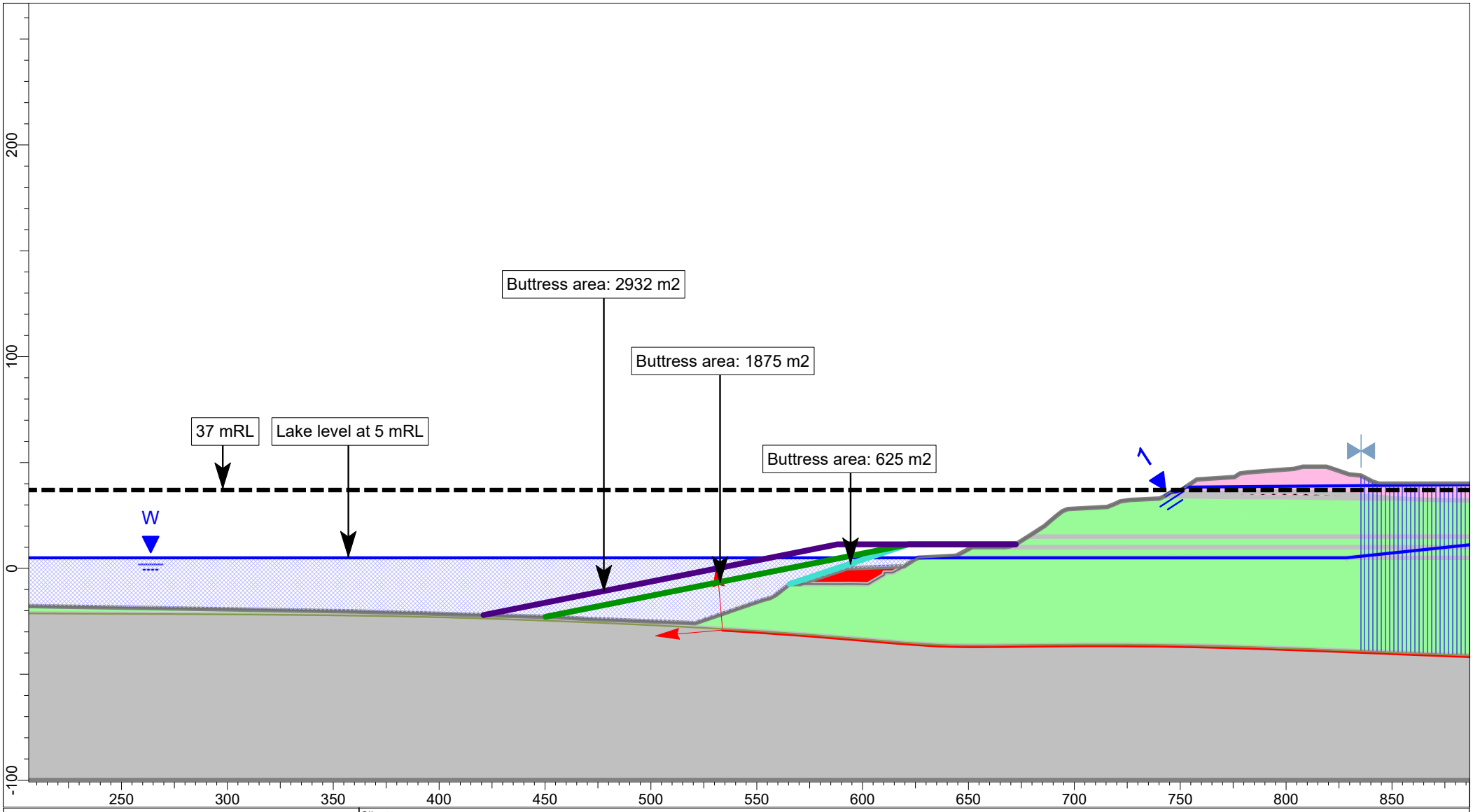
Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



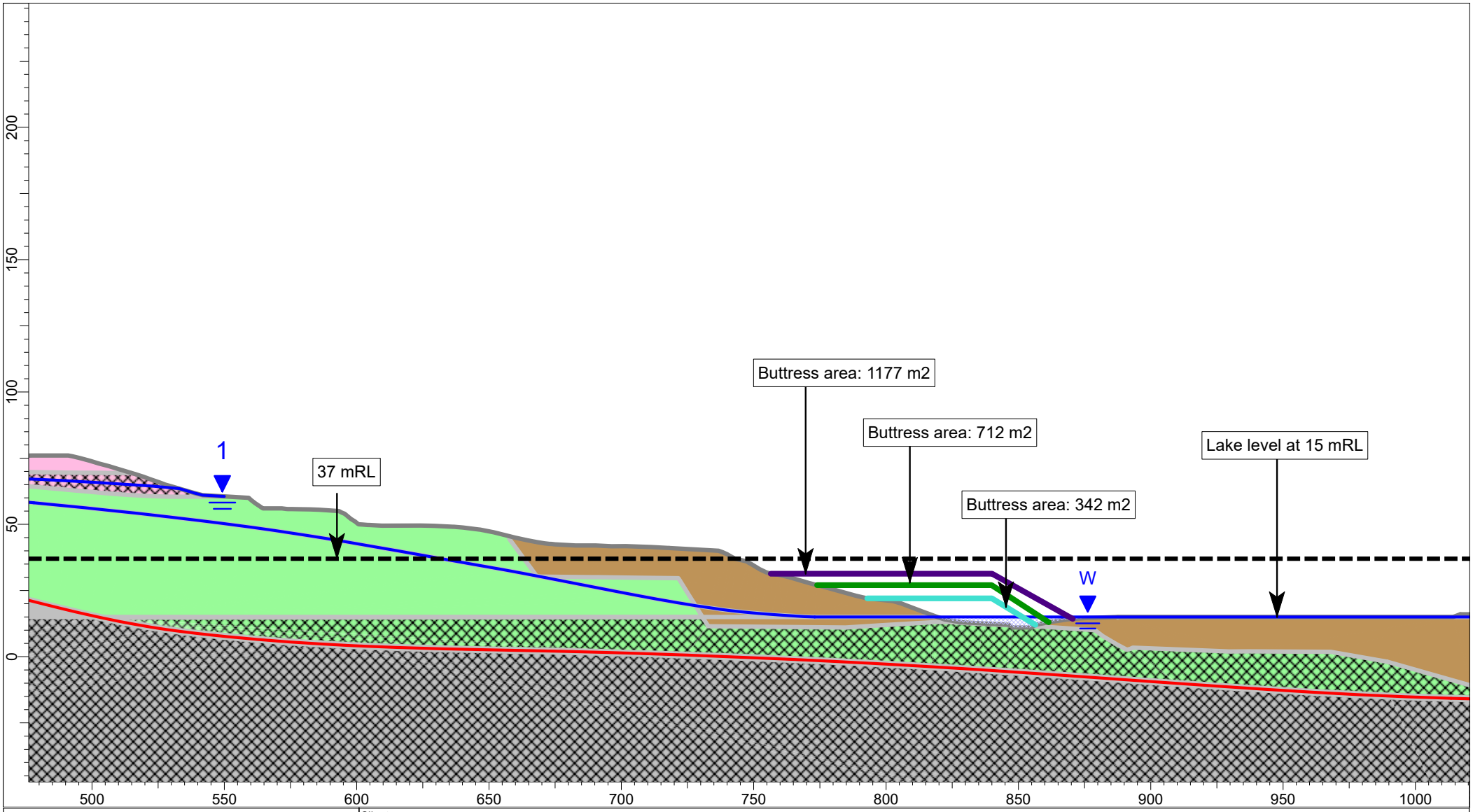
Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07b	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



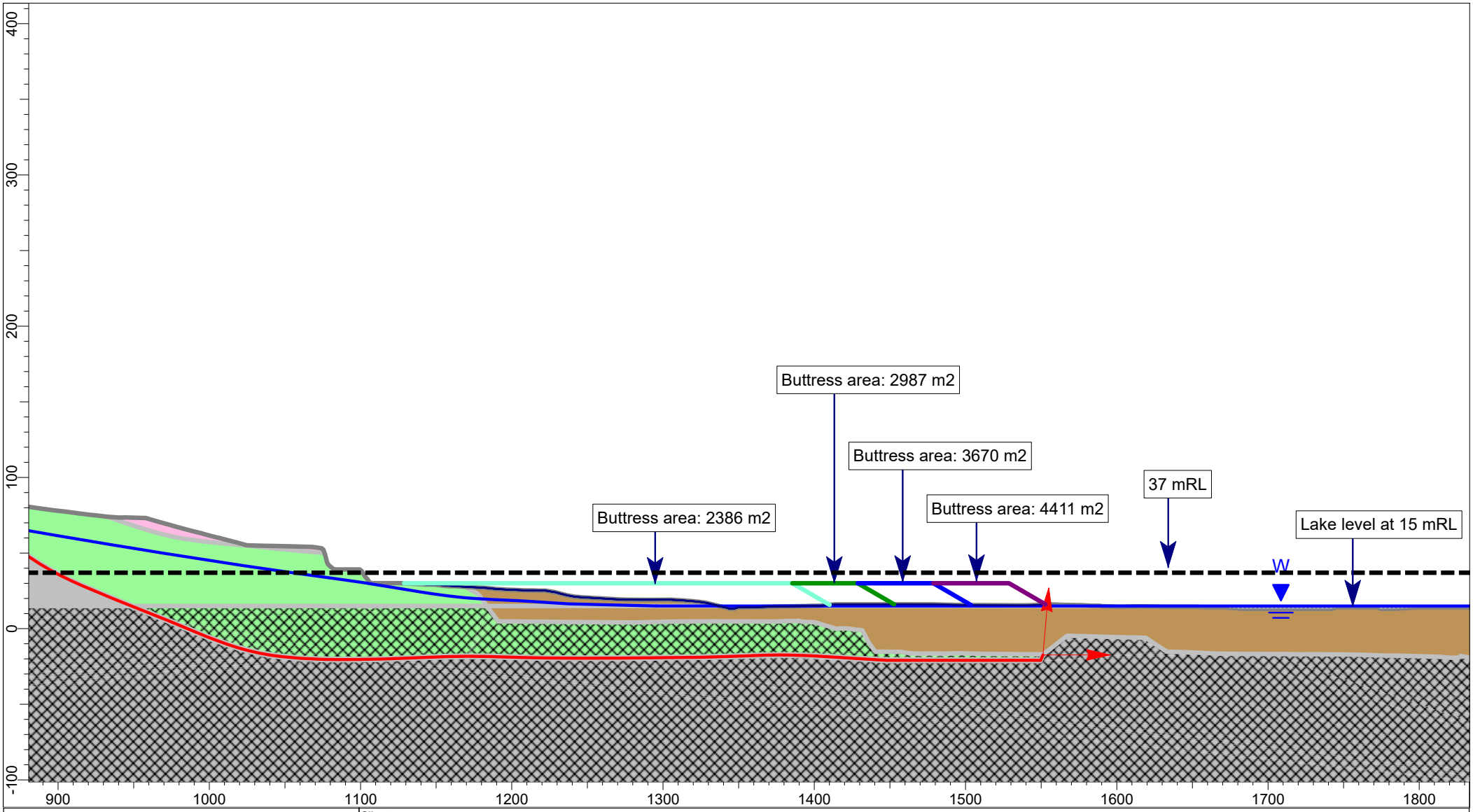
Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength		



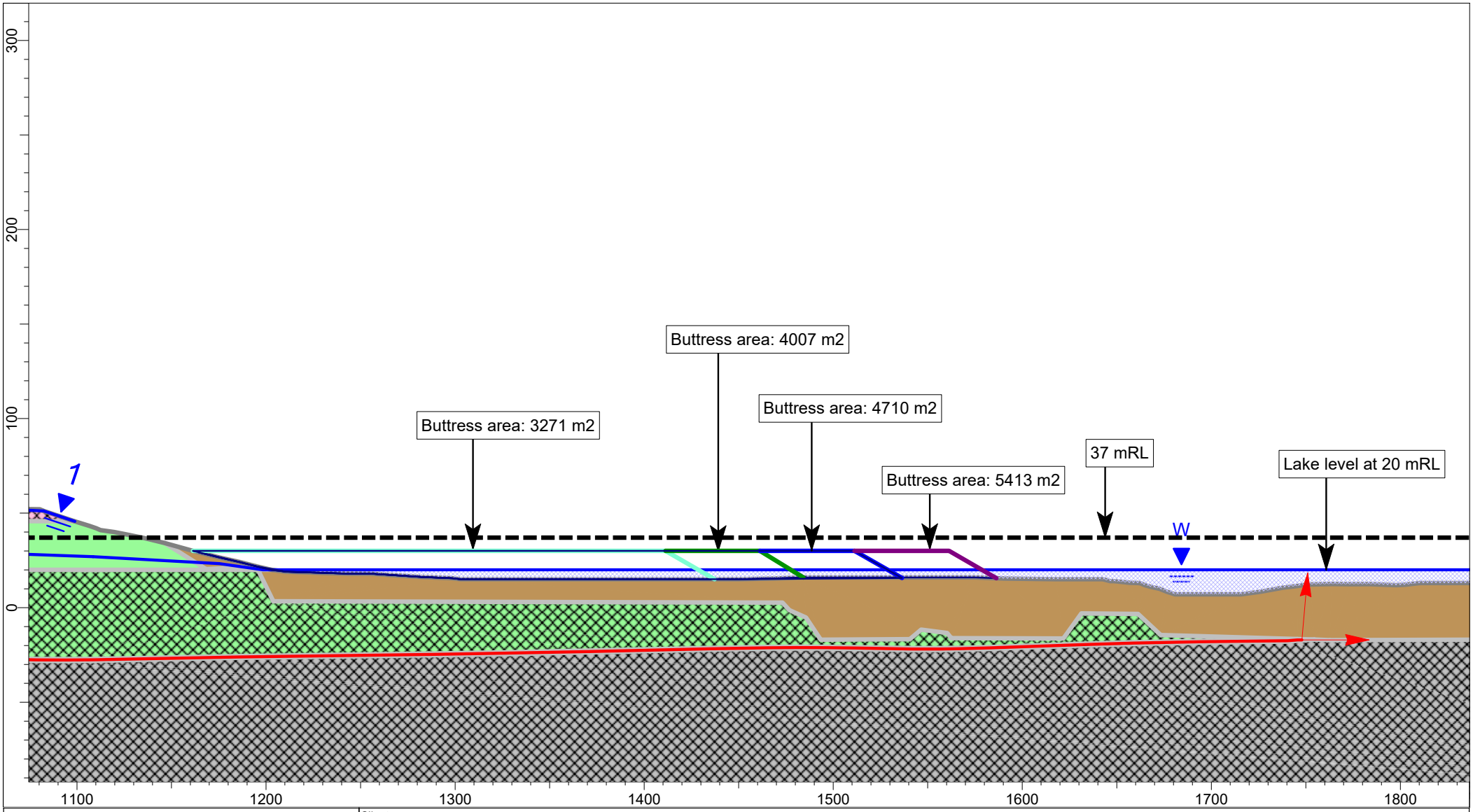
Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



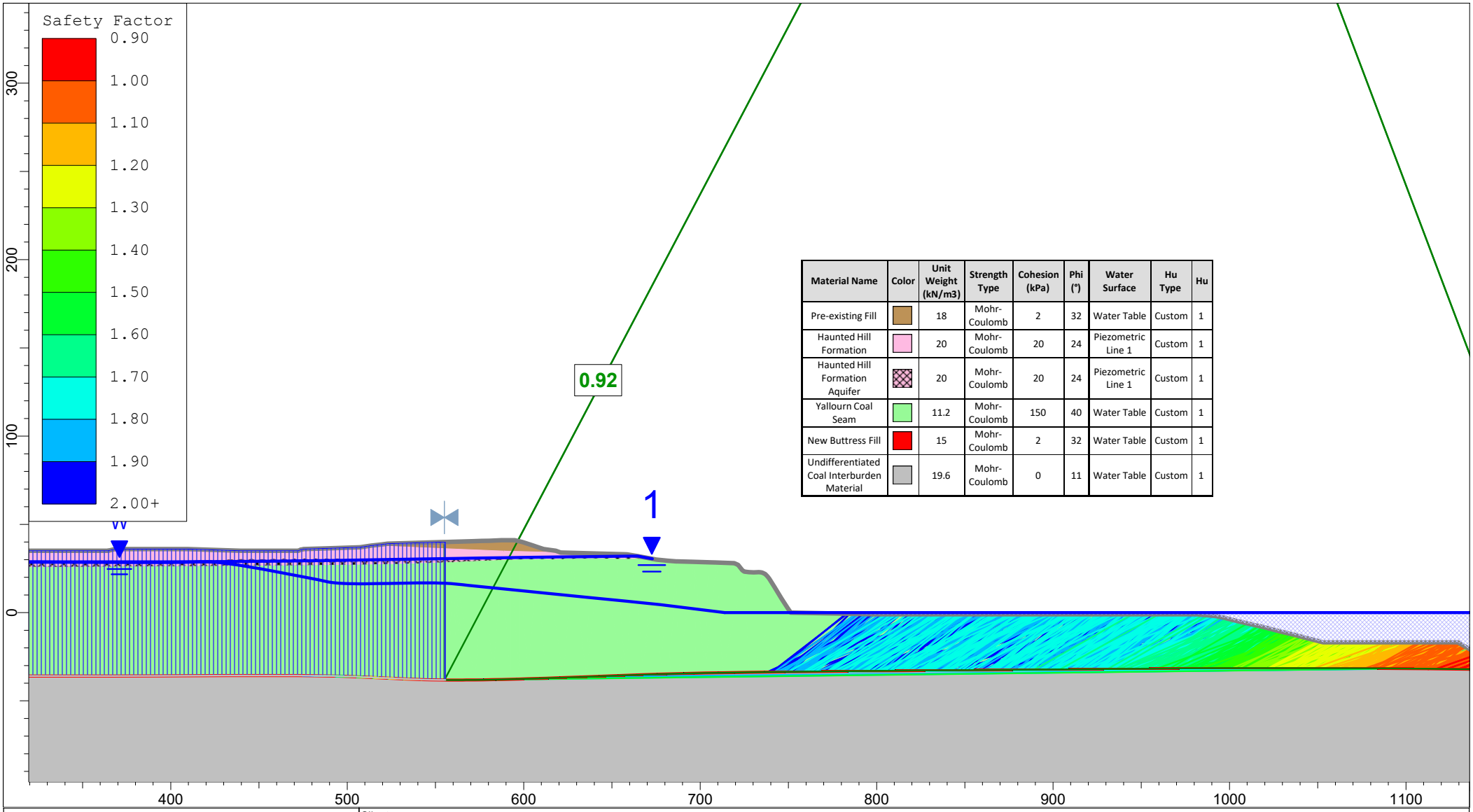
Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength		



Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength		

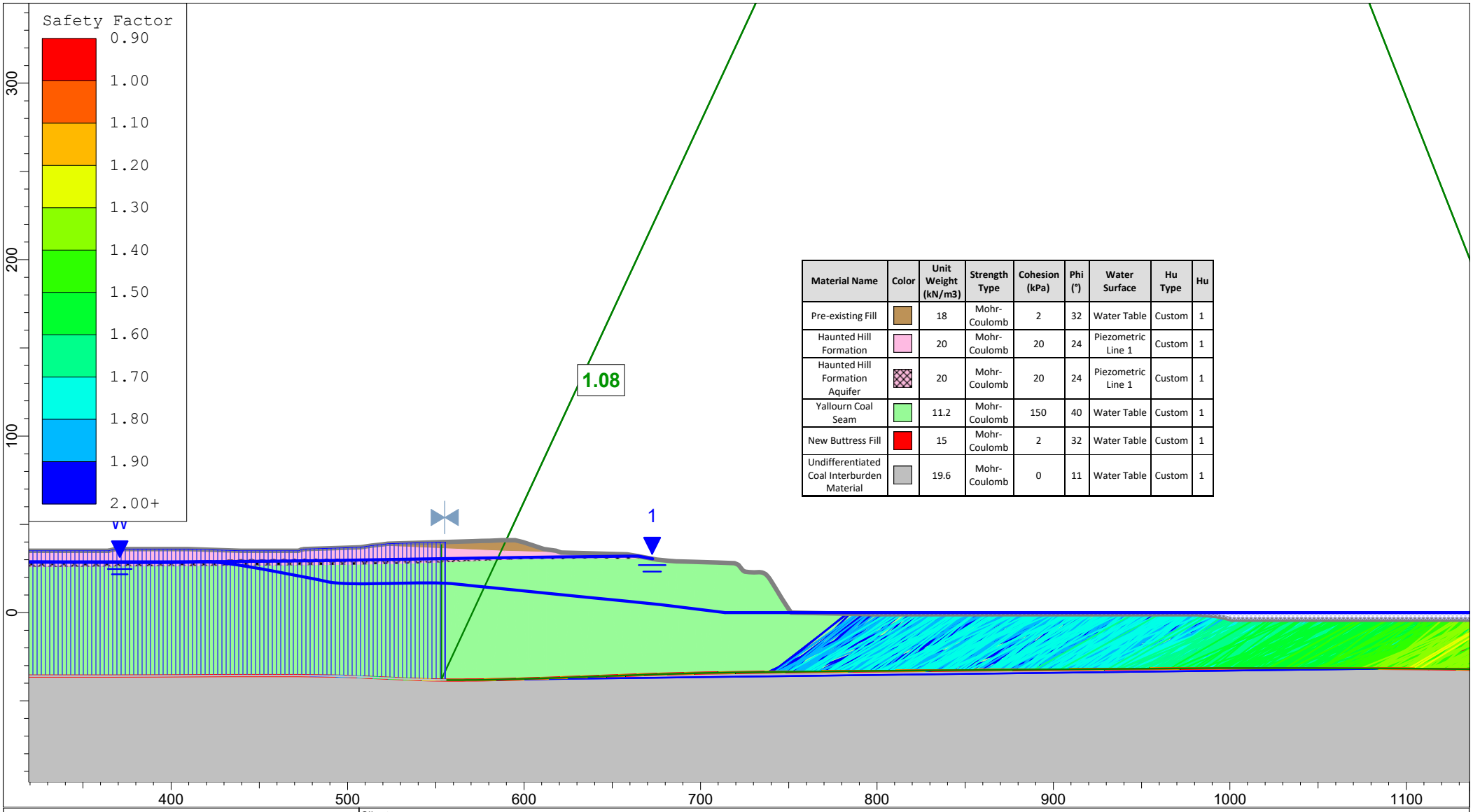


Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength		



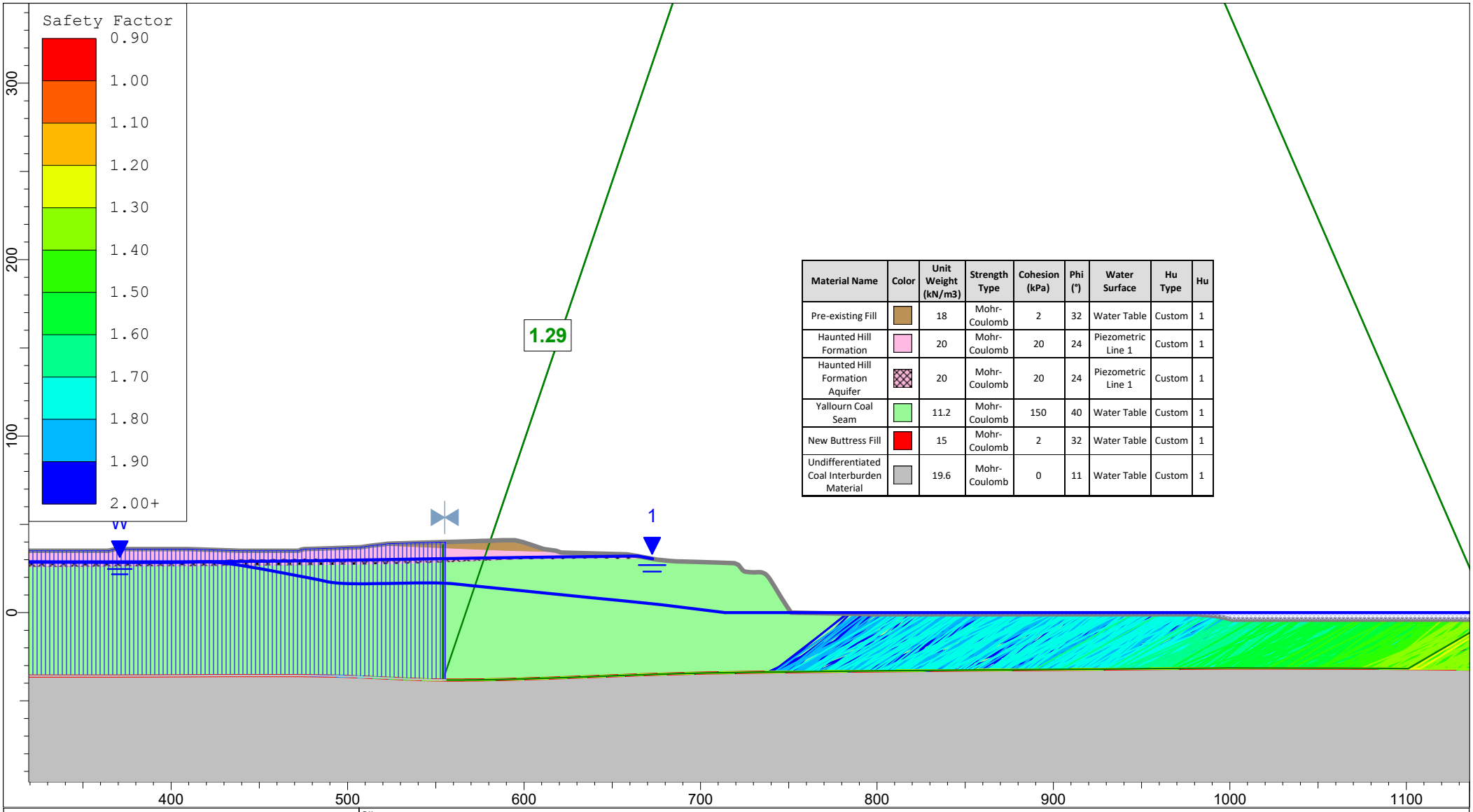
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - Lake level at 0 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Buttress Area 820 m2		



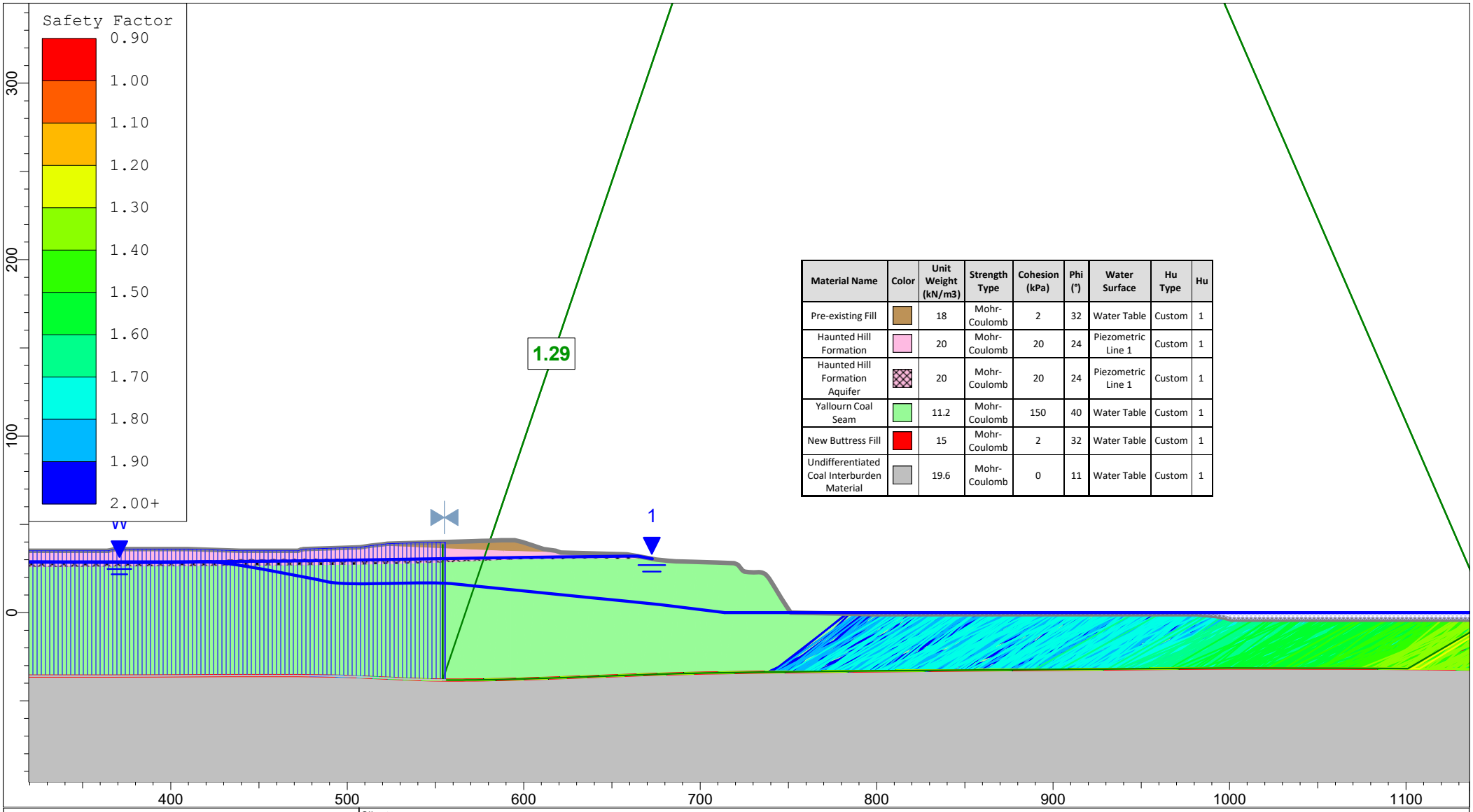
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - Lake level at 0 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Buttress Area 3782 m2		



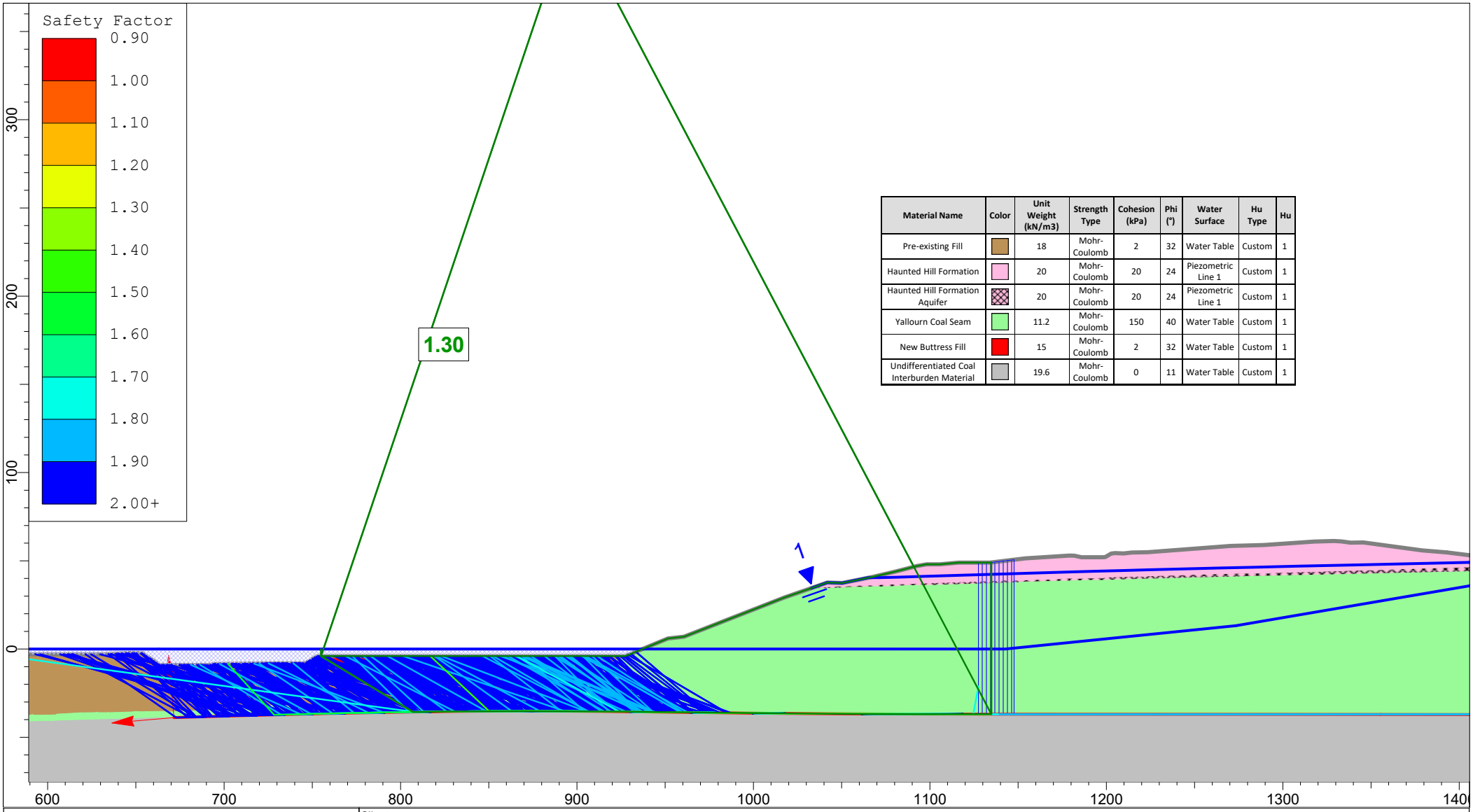
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - Lake level at 0 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Buttress Area 5630 m2		



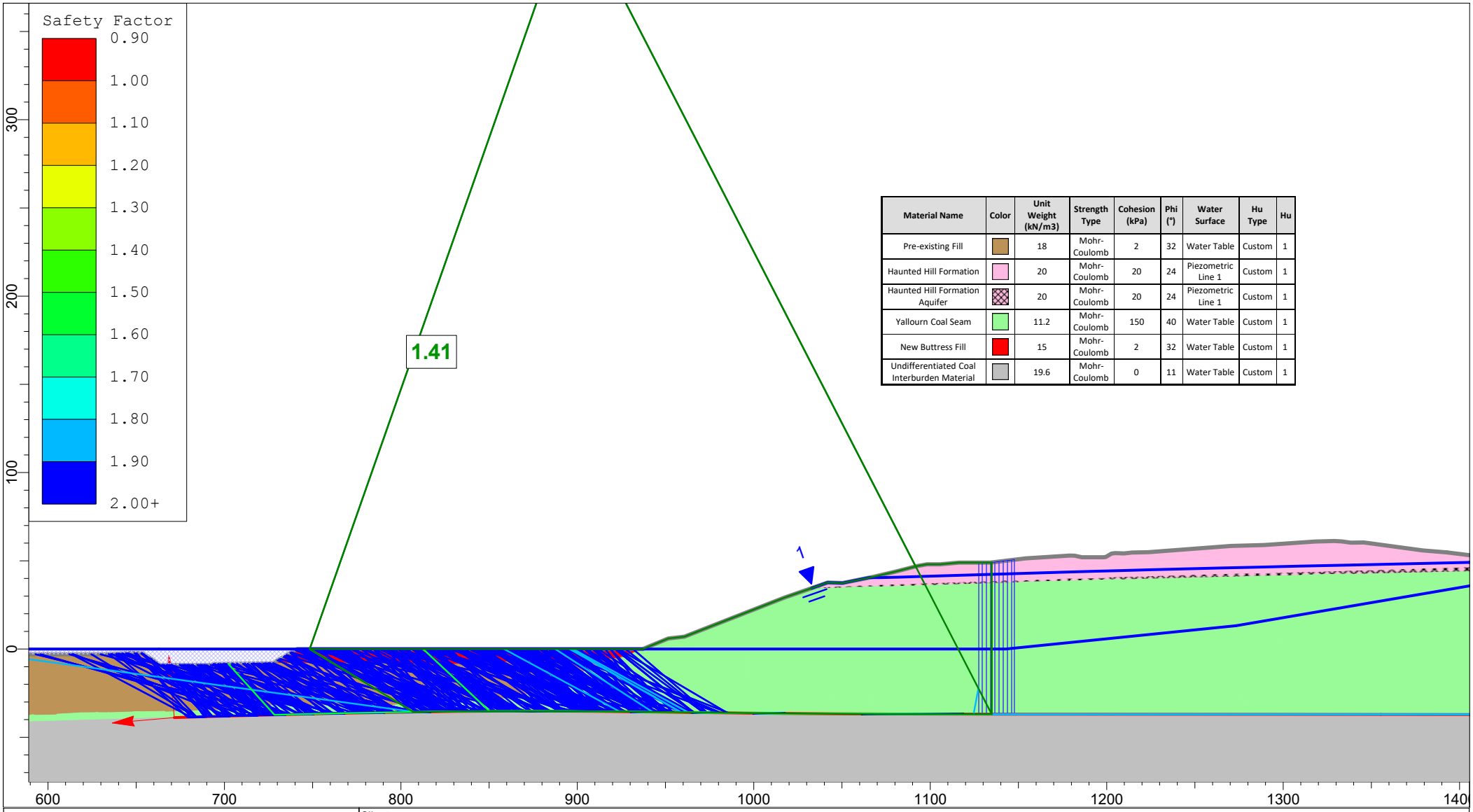
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - Lake level at 0 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Buttress Area 6821 m2		



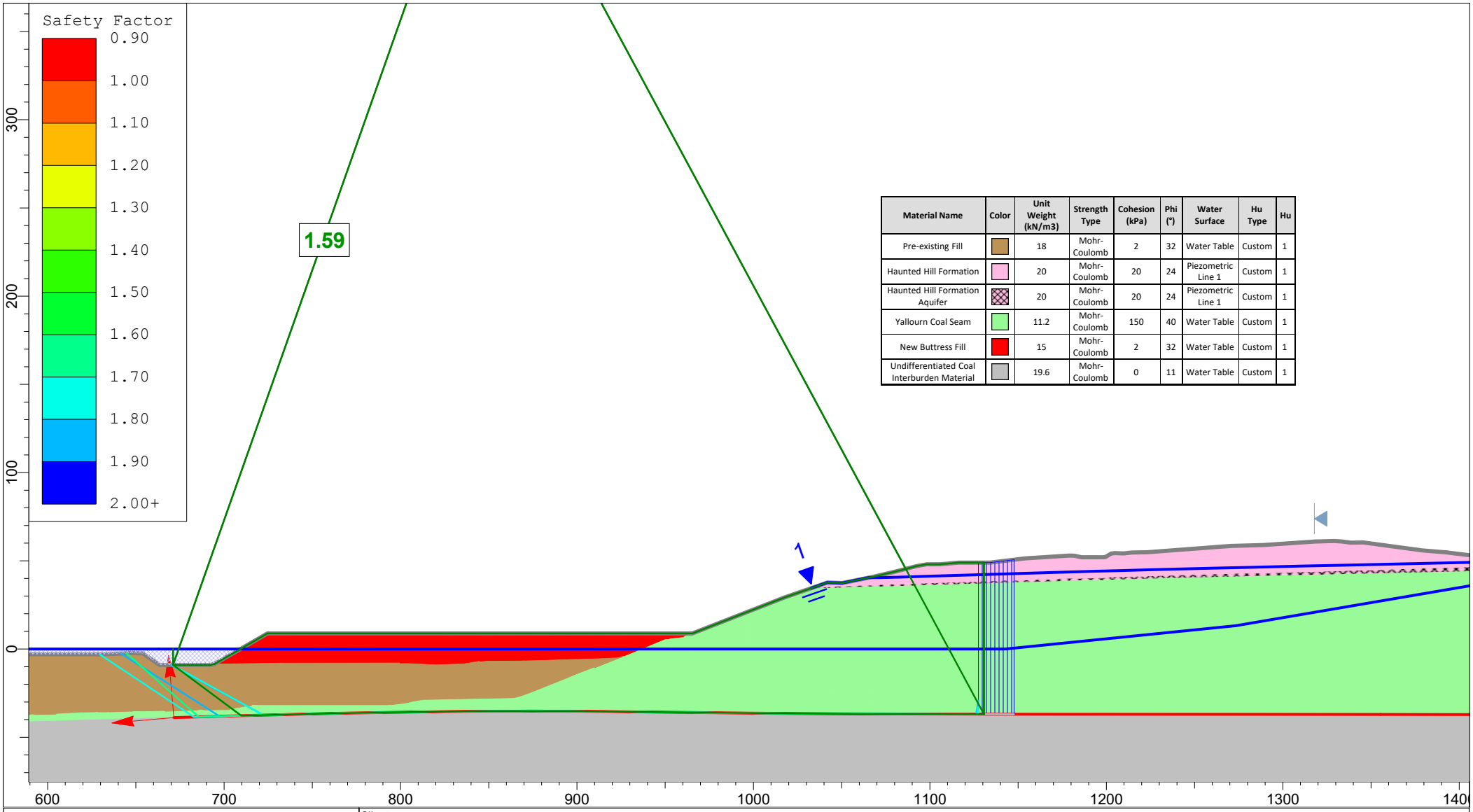
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07b	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - Lake level at 0 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Buttress Area 578 m2		



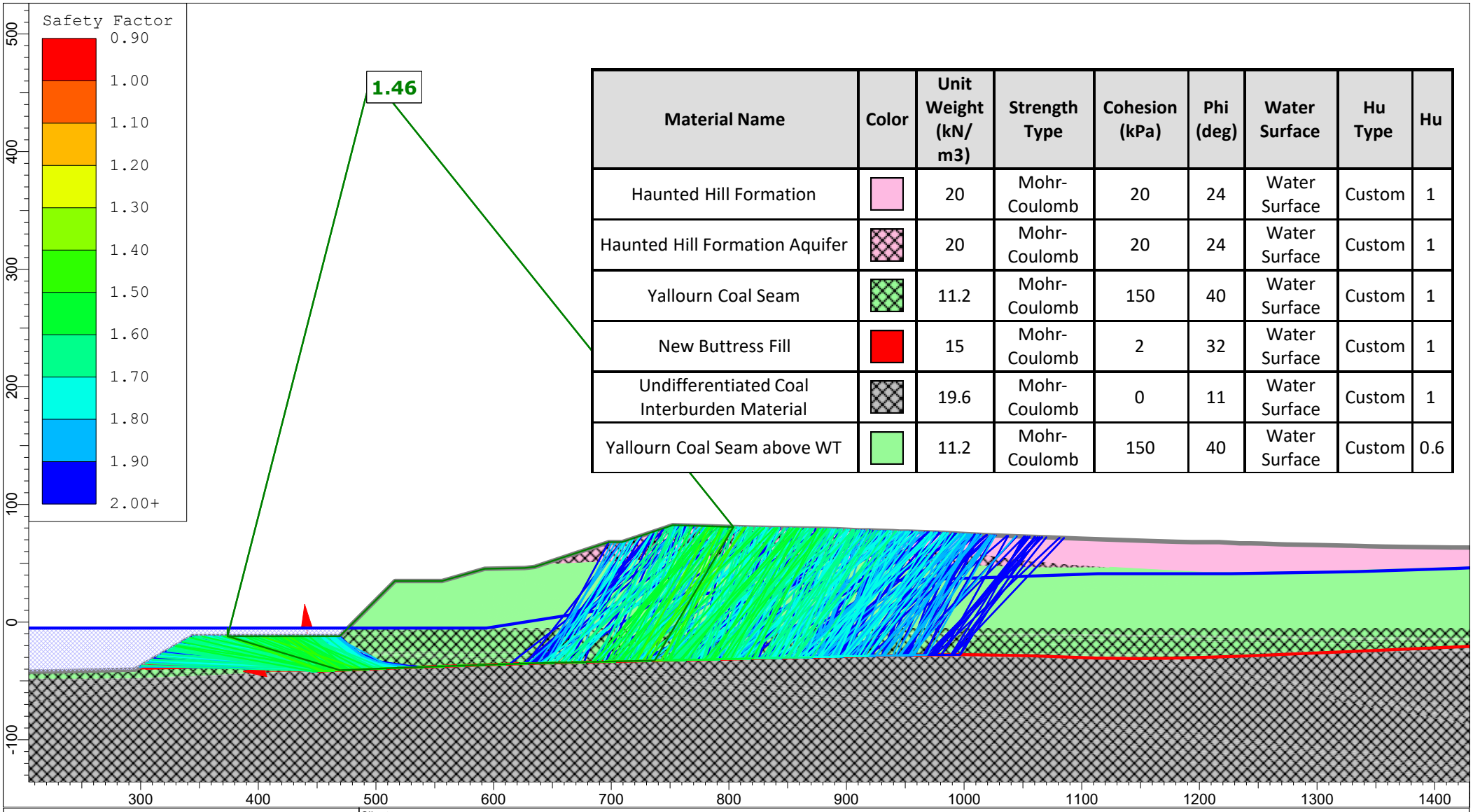
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07b	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - Lake level at 0 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Buttress Area 1430 m2		



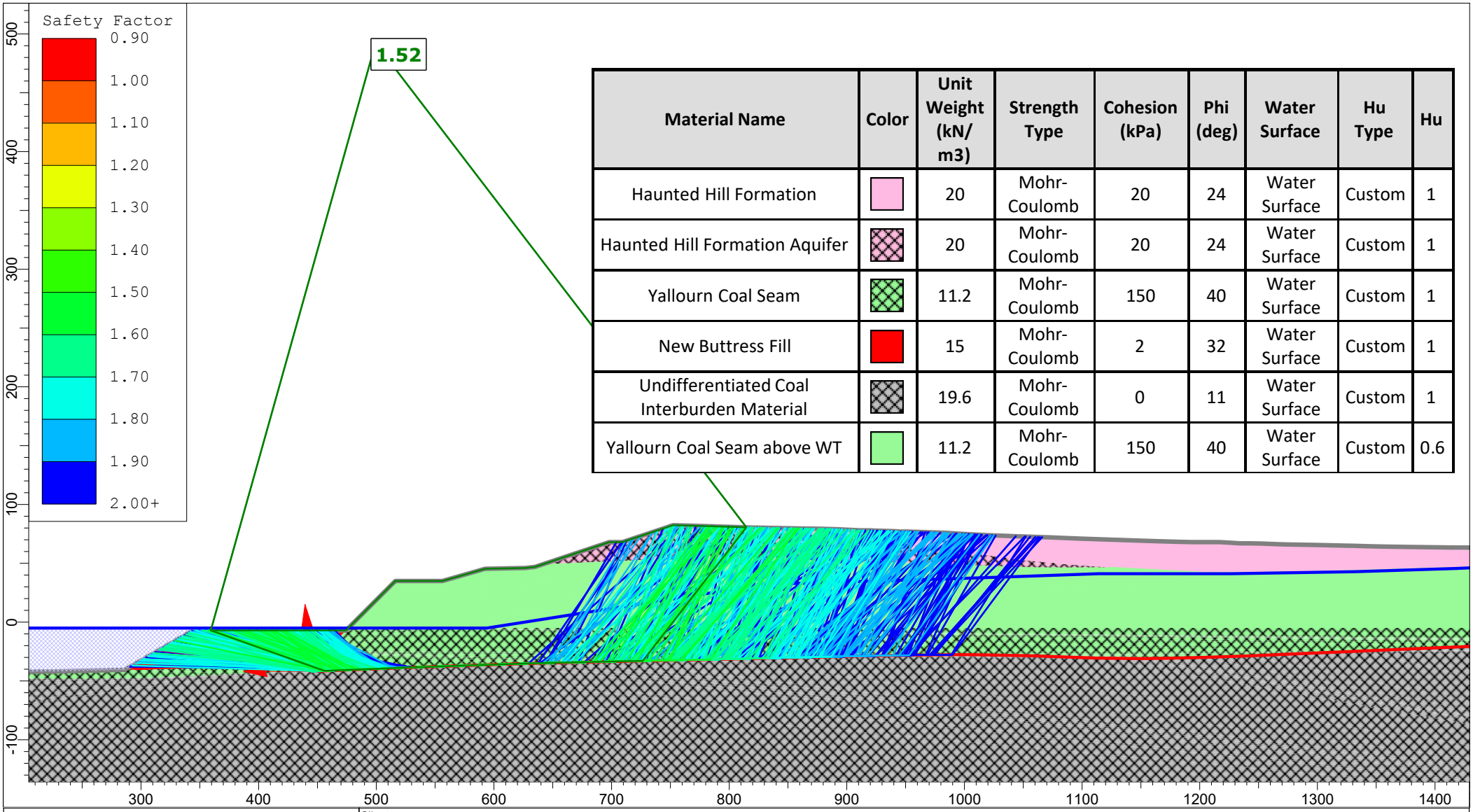
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07b	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - Lake level at 0 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Buttress Area 3752 m2		



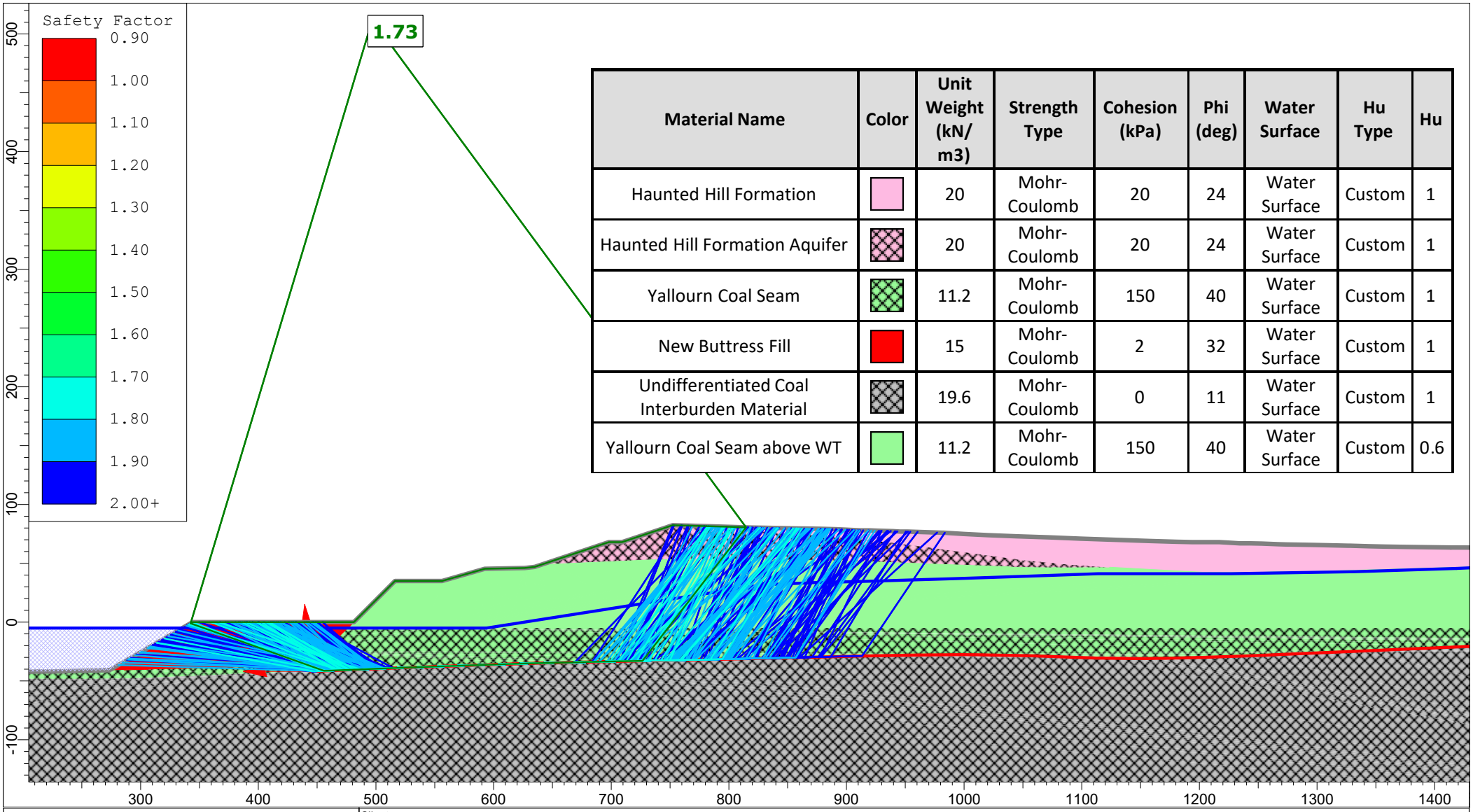
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Surface	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Surface	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Surface	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Surface	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Surface	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Surface	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength - Buttress Area 3598 m2		



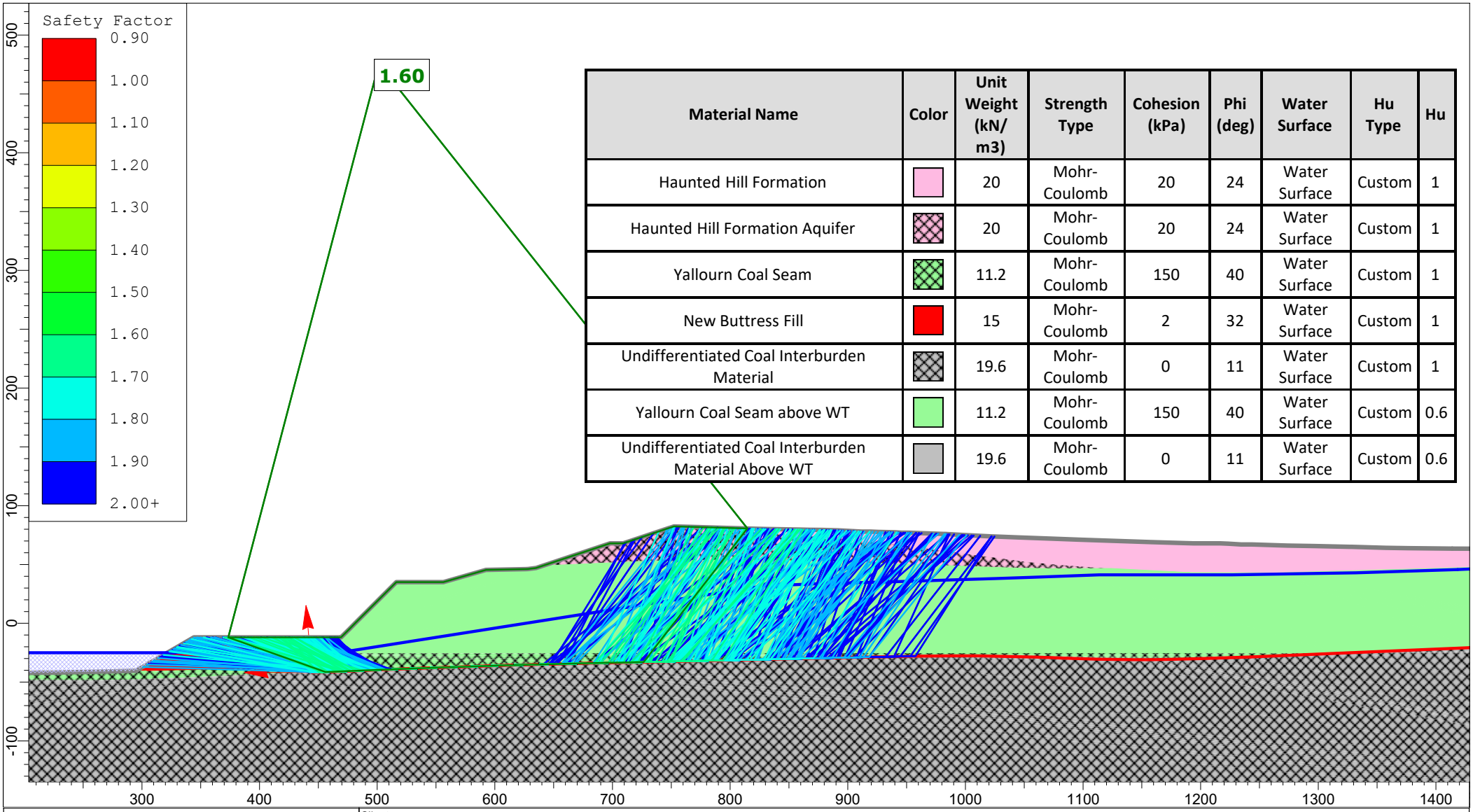
Material Name	Color	Unit Weight (kN/ m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Surface	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Surface	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Surface	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Surface	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Surface	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Surface	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength - Buttress Area 4528 m2		



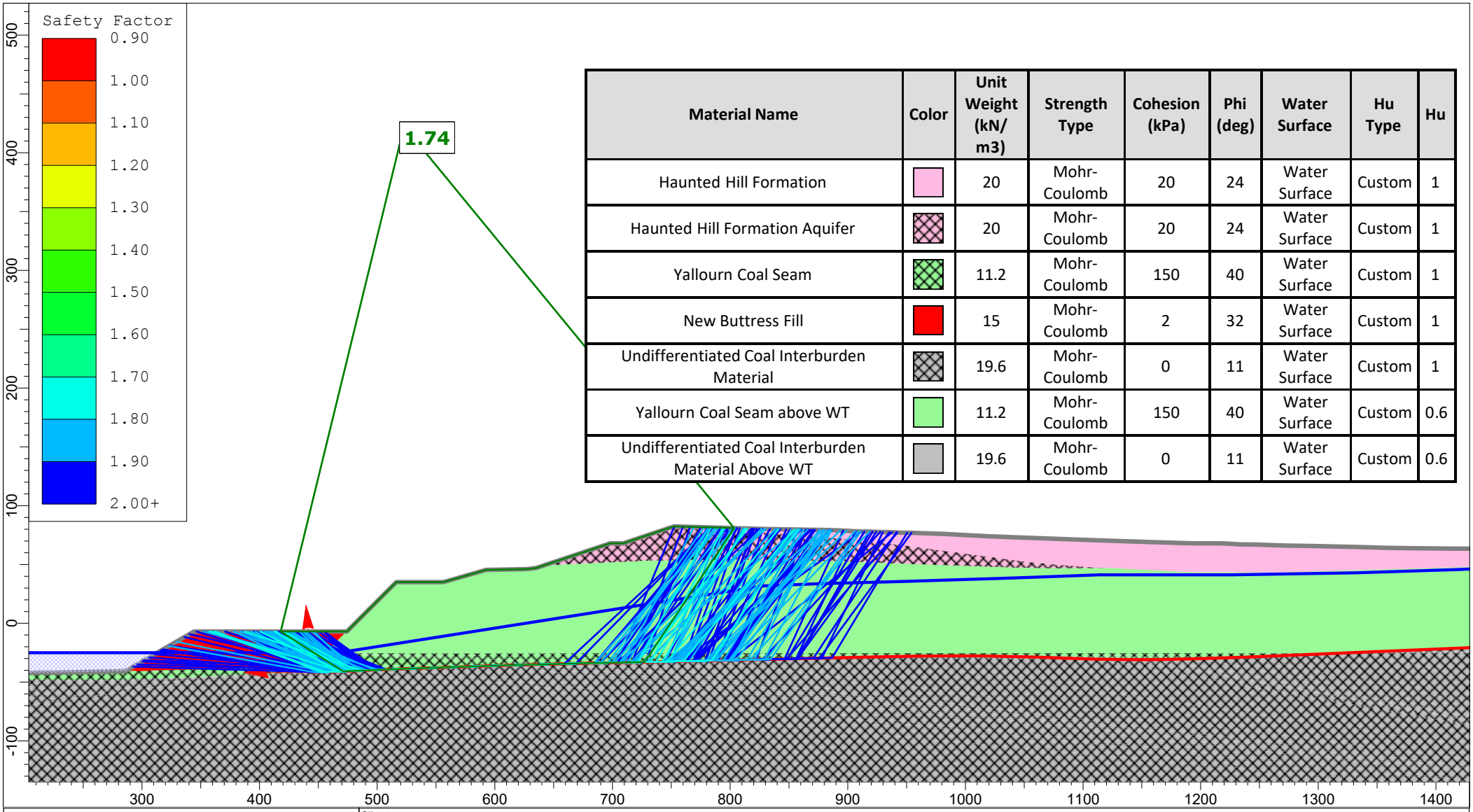
Material Name	Color	Unit Weight (kN/ m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Surface	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Surface	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Surface	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Surface	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Surface	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Surface	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at -5 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength - Buttress Area 5888 m2		



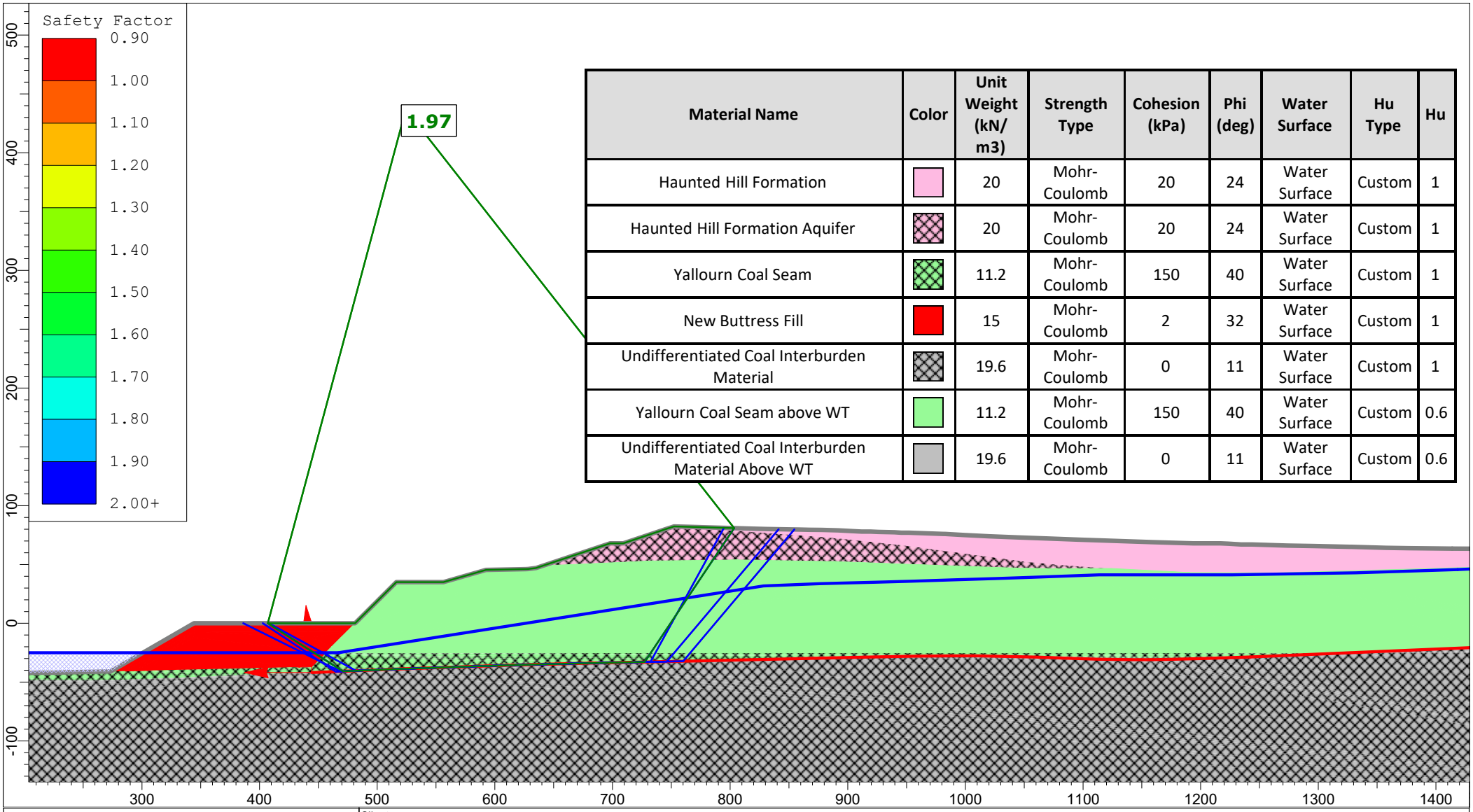
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Surface	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Surface	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Surface	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Surface	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Surface	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Surface	Custom	0.6
Undifferentiated Coal Interburden Material Above WT		19.6	Mohr-Coulomb	0	11	Water Surface	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at -25 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength - Buttress Area 3598 m2		



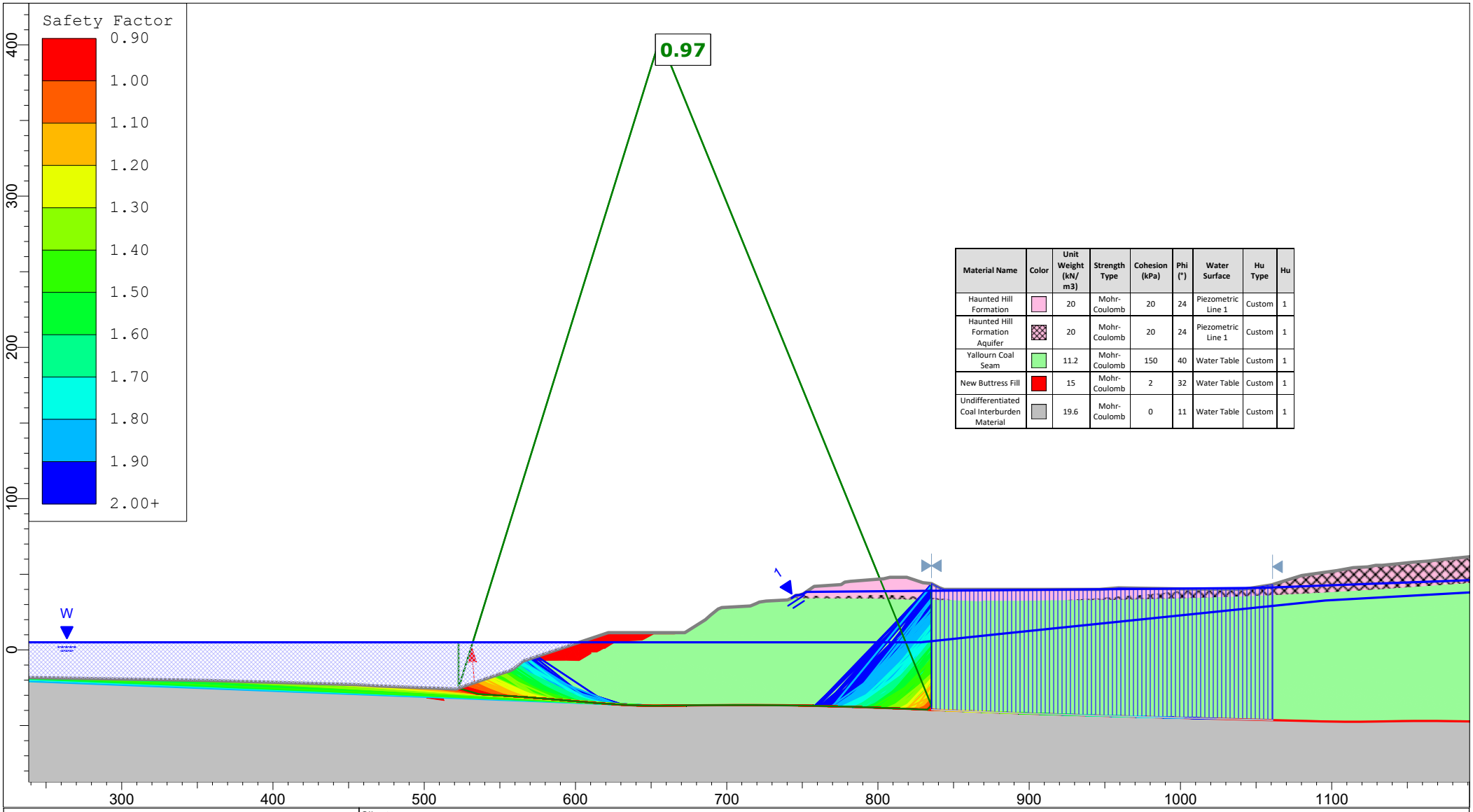
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Surface	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Surface	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Surface	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Surface	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Surface	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Surface	Custom	0.6
Undifferentiated Coal Interburden Material Above WT		19.6	Mohr-Coulomb	0	11	Water Surface	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at -25 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength - Buttress Area 4528 m2		



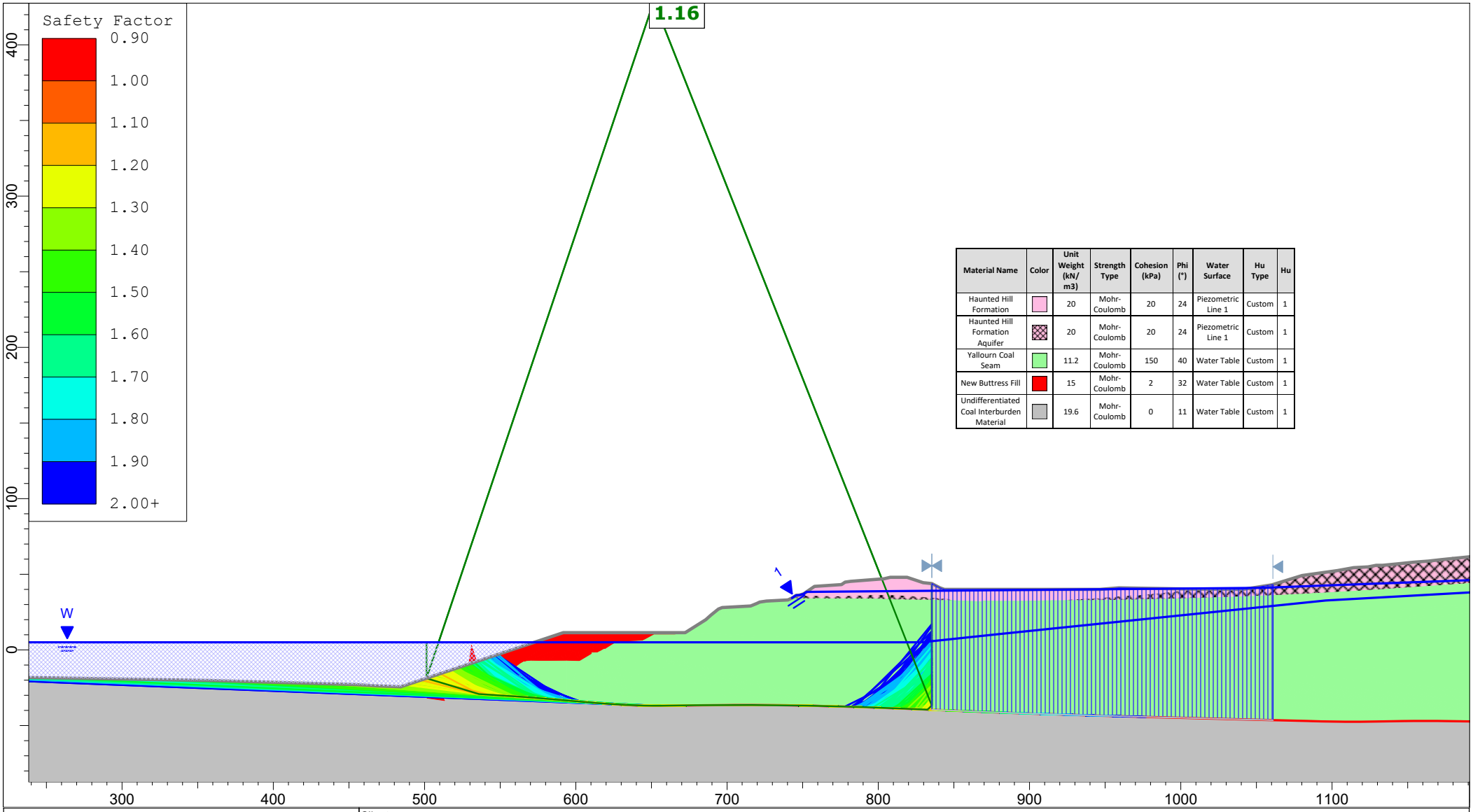
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Surface	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Surface	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Surface	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Surface	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Surface	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Surface	Custom	0.6
Undifferentiated Coal Interburden Material Above WT		19.6	Mohr-Coulomb	0	11	Water Surface	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-SB
Section:	Section 13	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at -25 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength - Buttress Area 5888 m2		



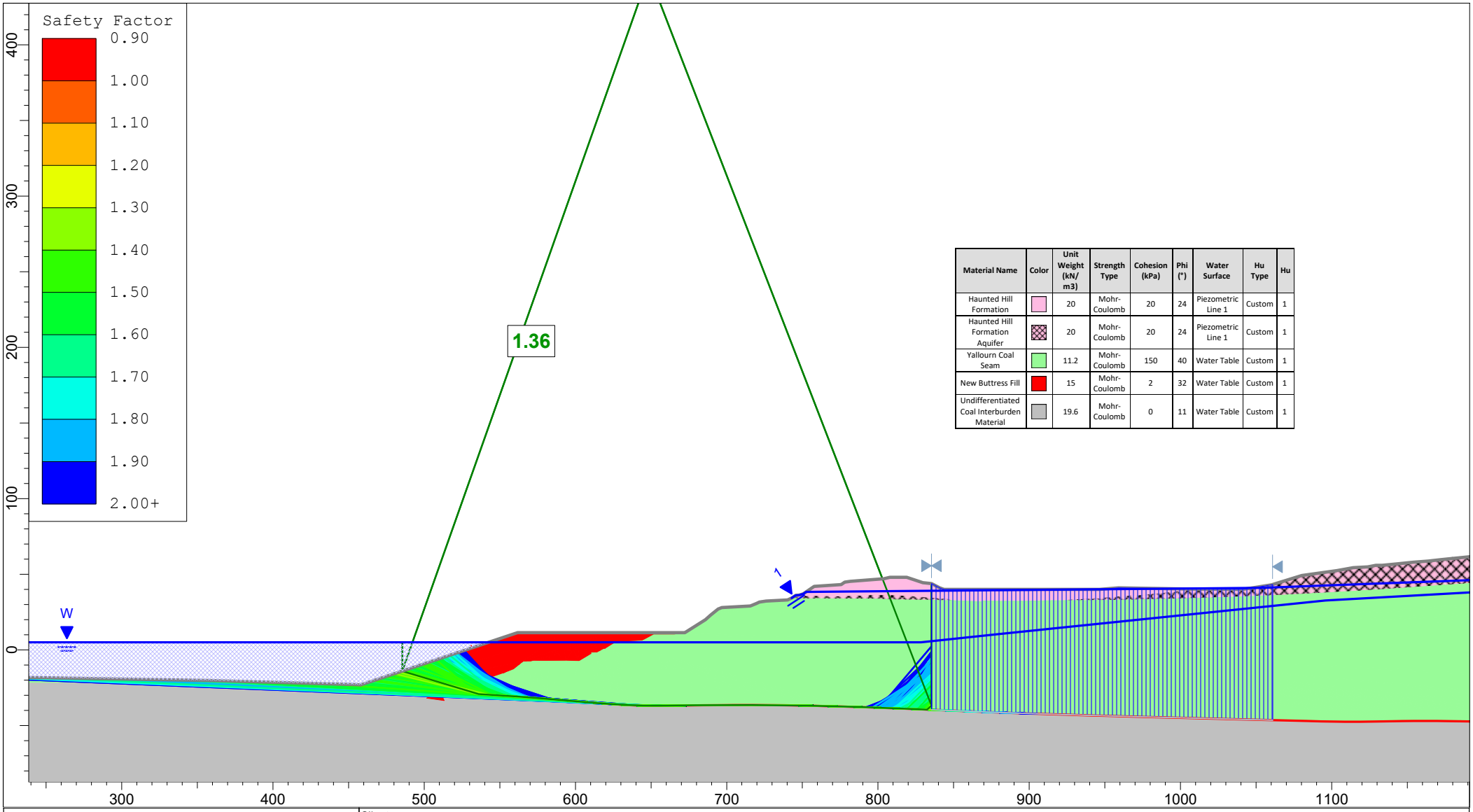
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Buttress Area 625 m2		



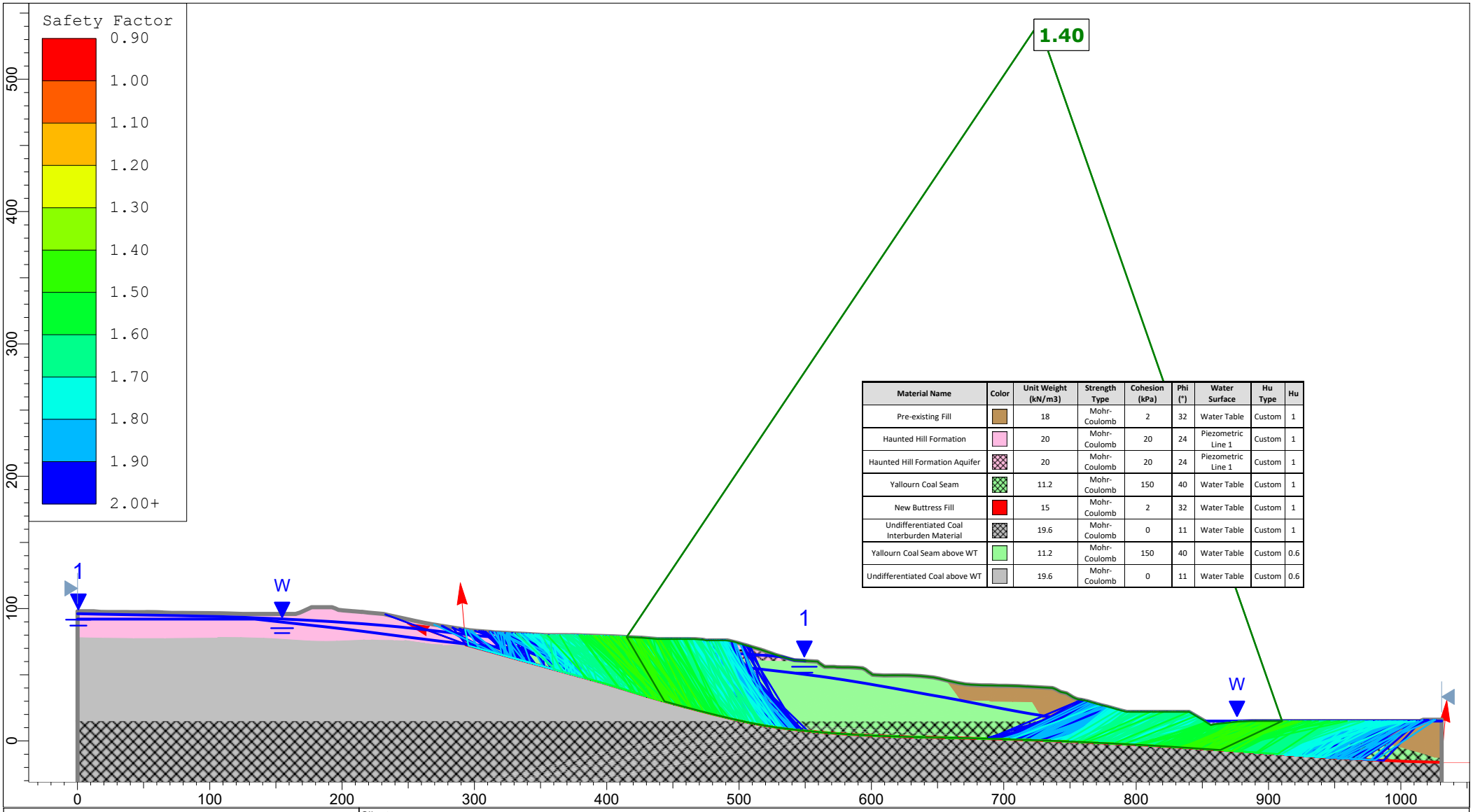
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Buttress Area 1875 m2		



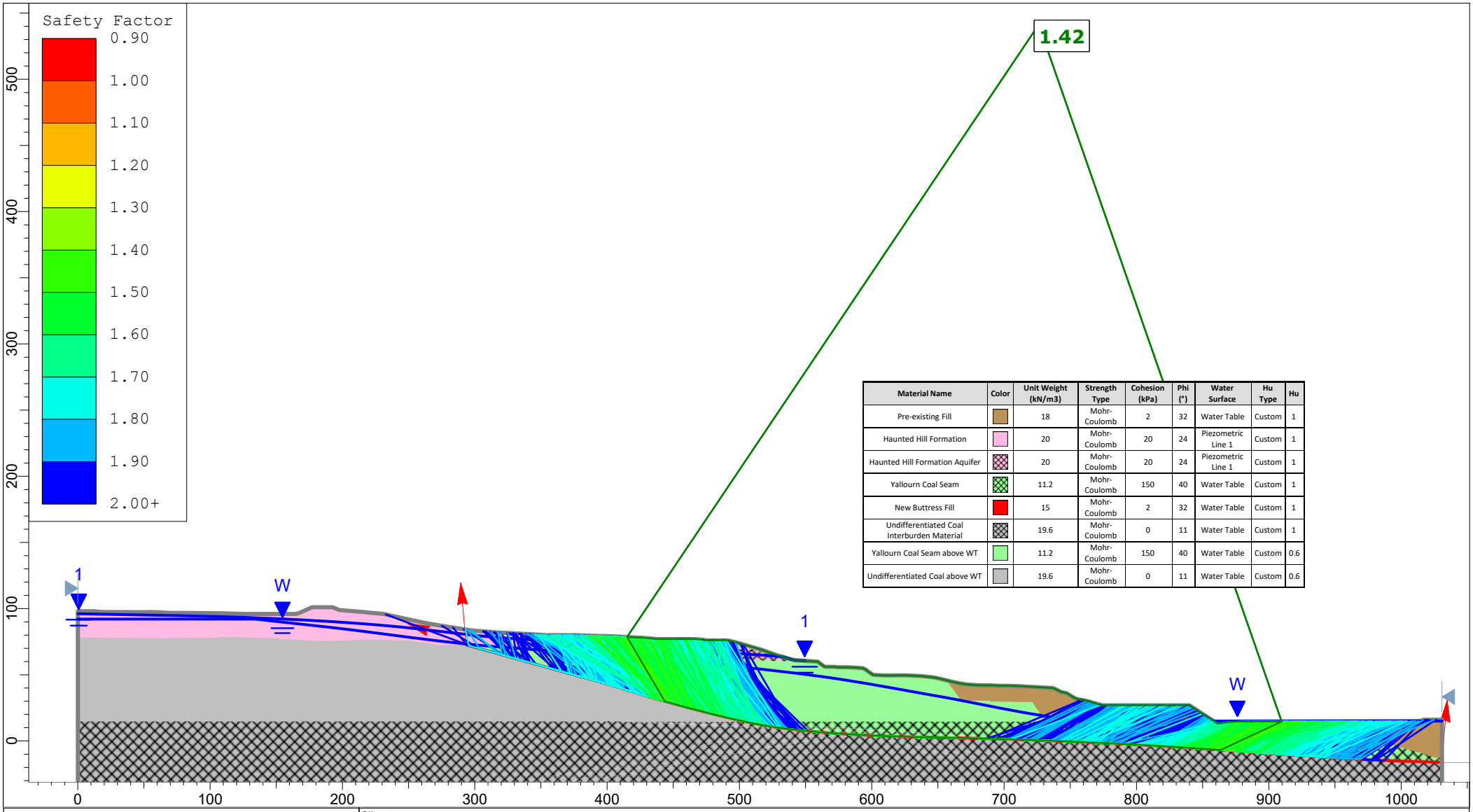
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 5 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Buttress Area 2932 m2		



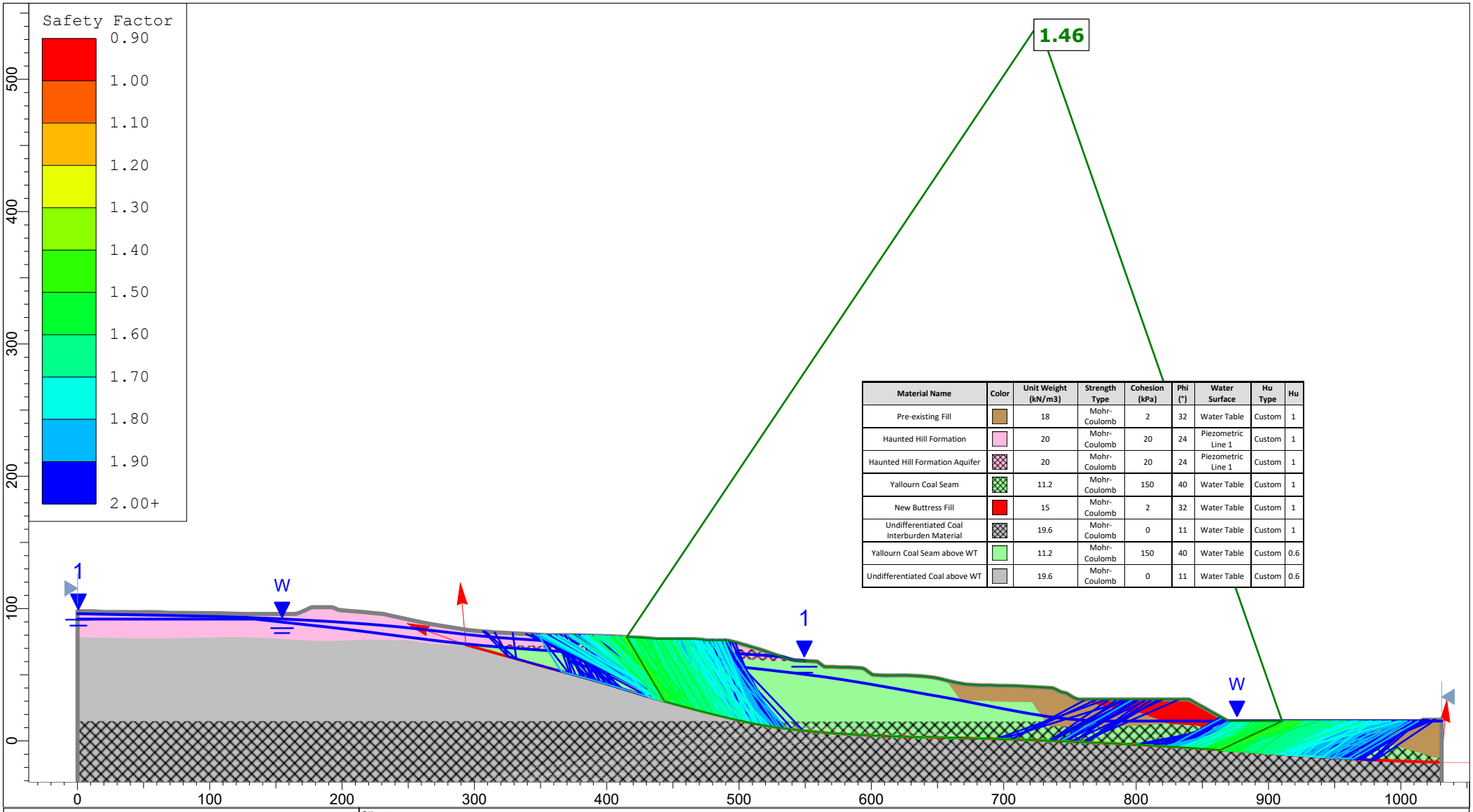
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength - Buttress Area 342 m2		



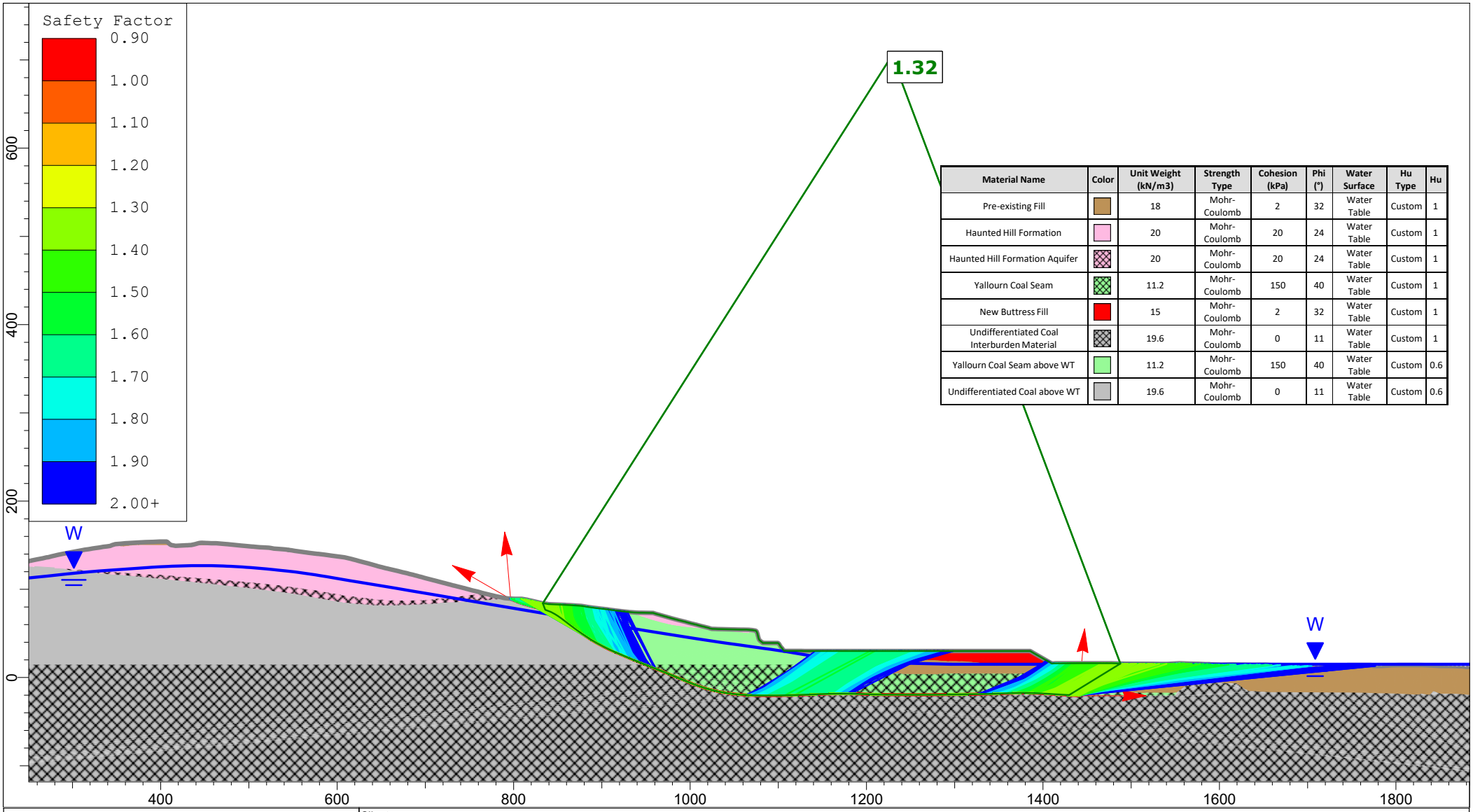
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength - Buttress Area 712 m2		



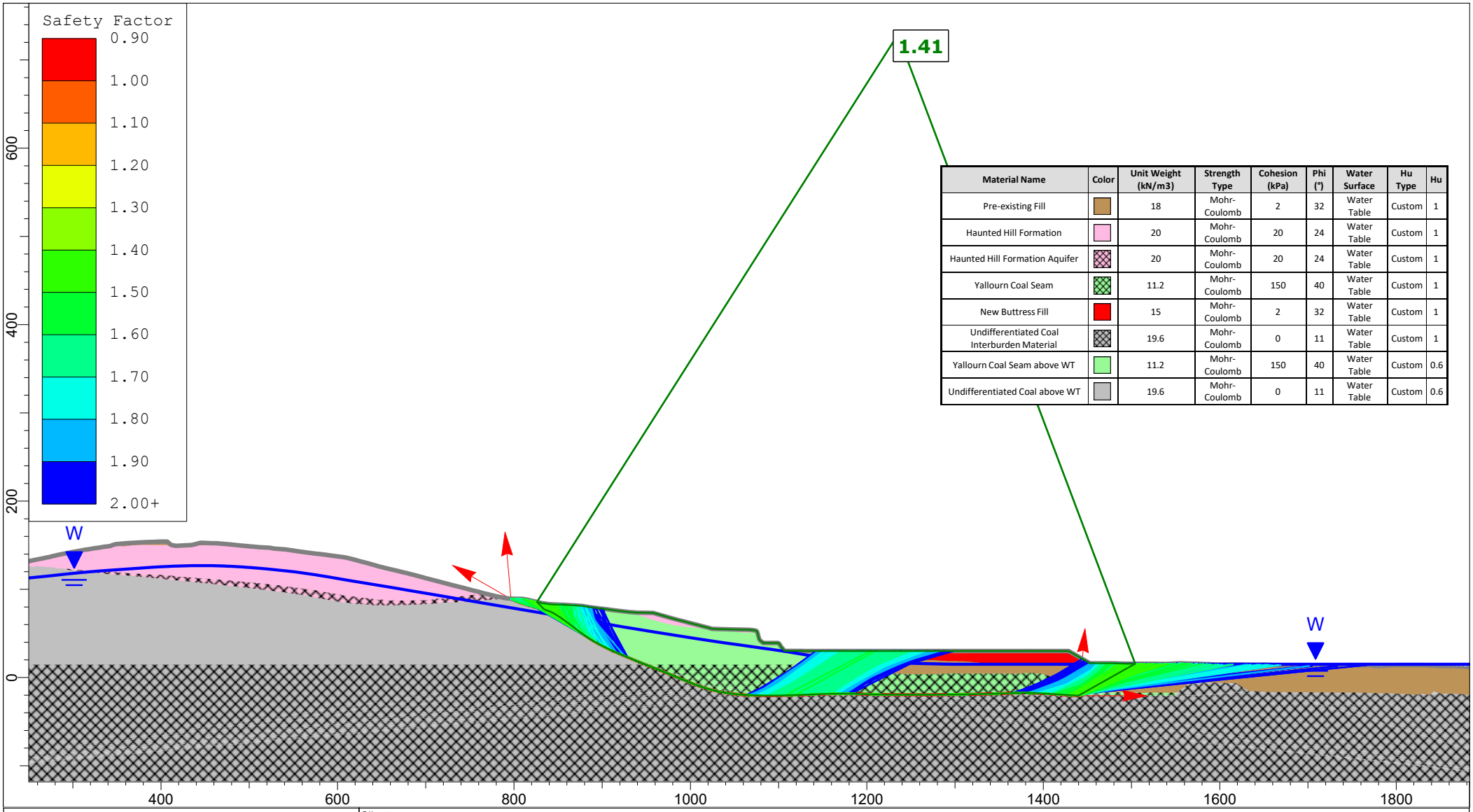
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength - Buttress Area 1177 m2		



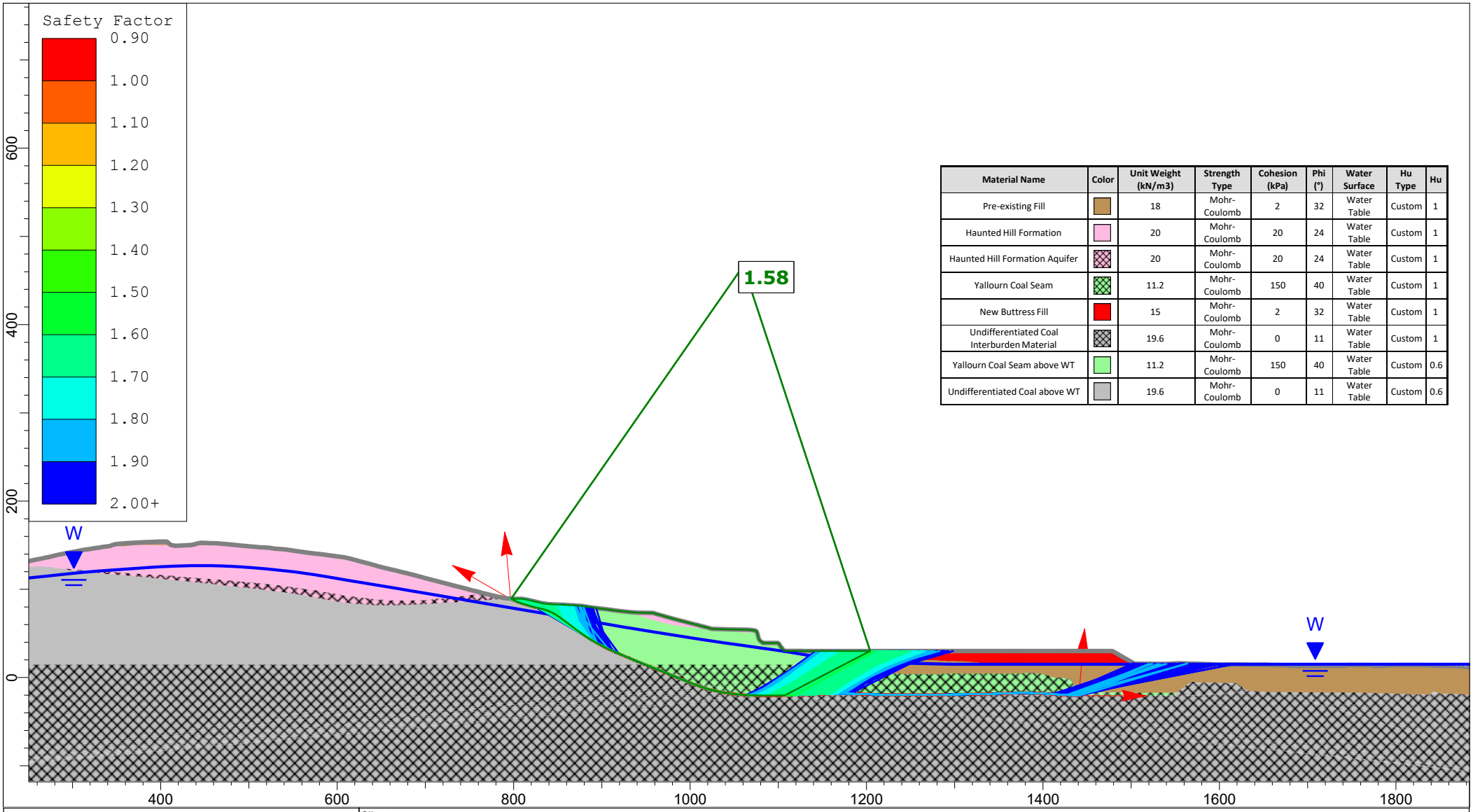
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength - Buttress Area 2386 m2		



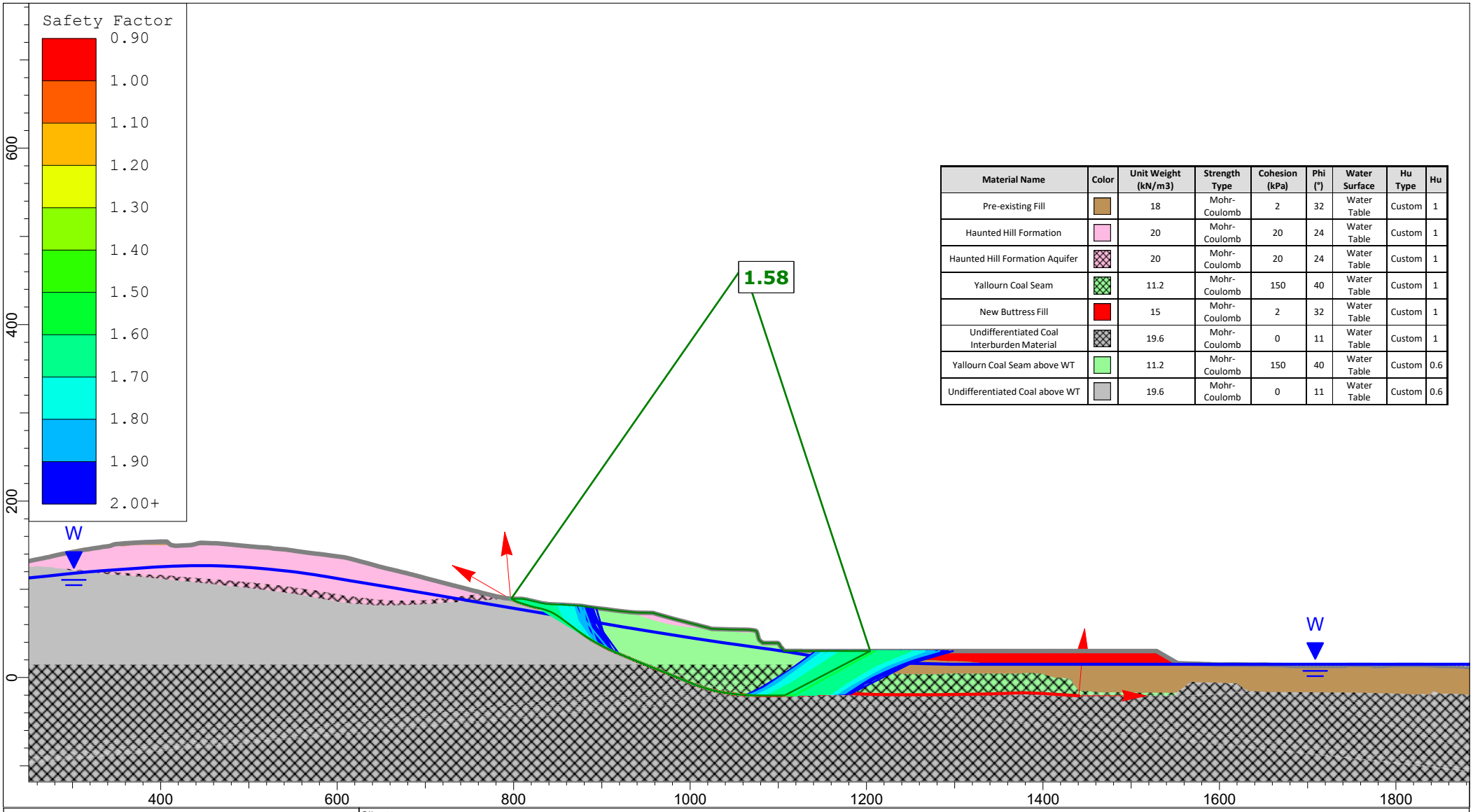
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength - Buttress Area 2987 m2		



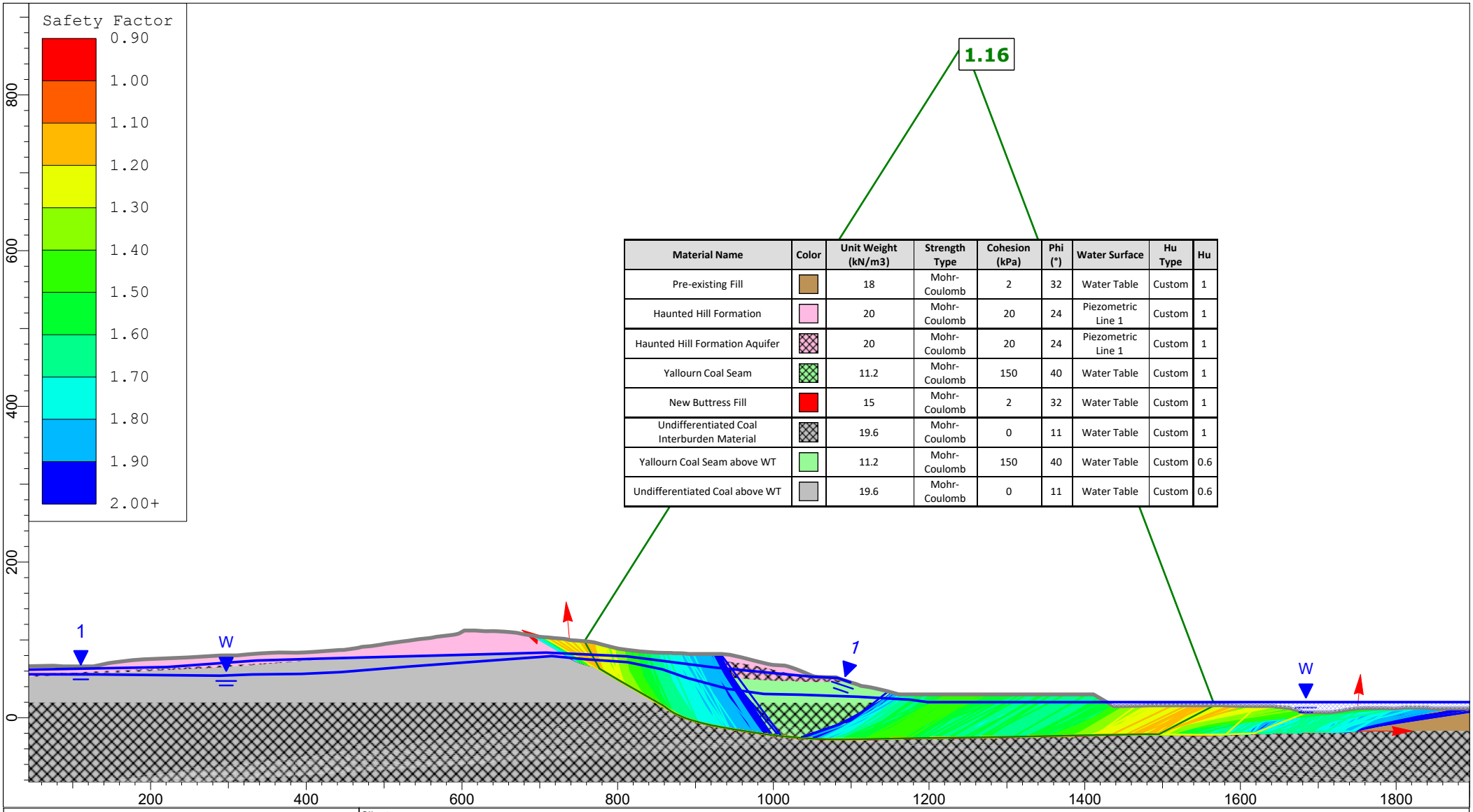
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength - Buttress Area 3670 m2		



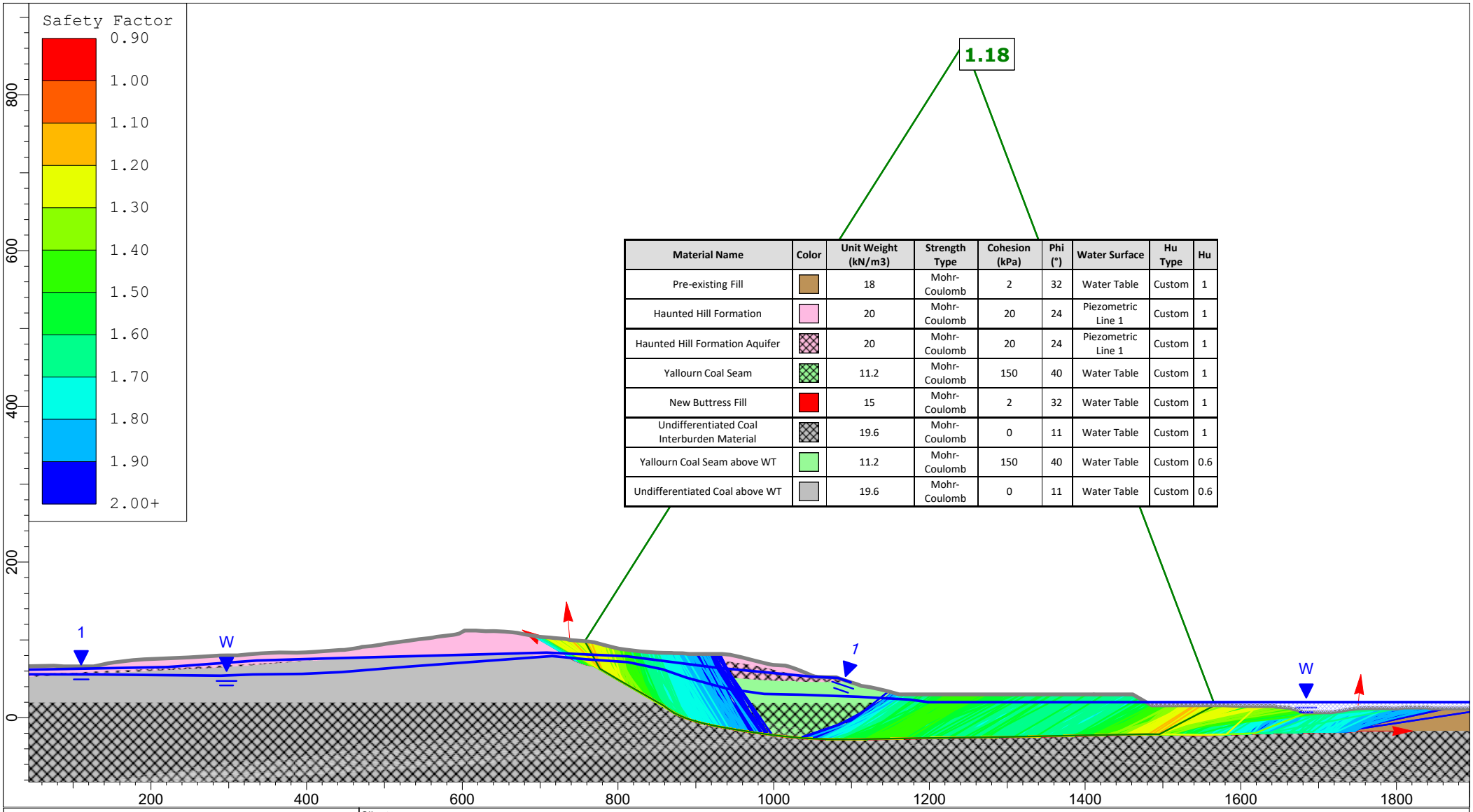
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength - Buttress Area 4411 m2		



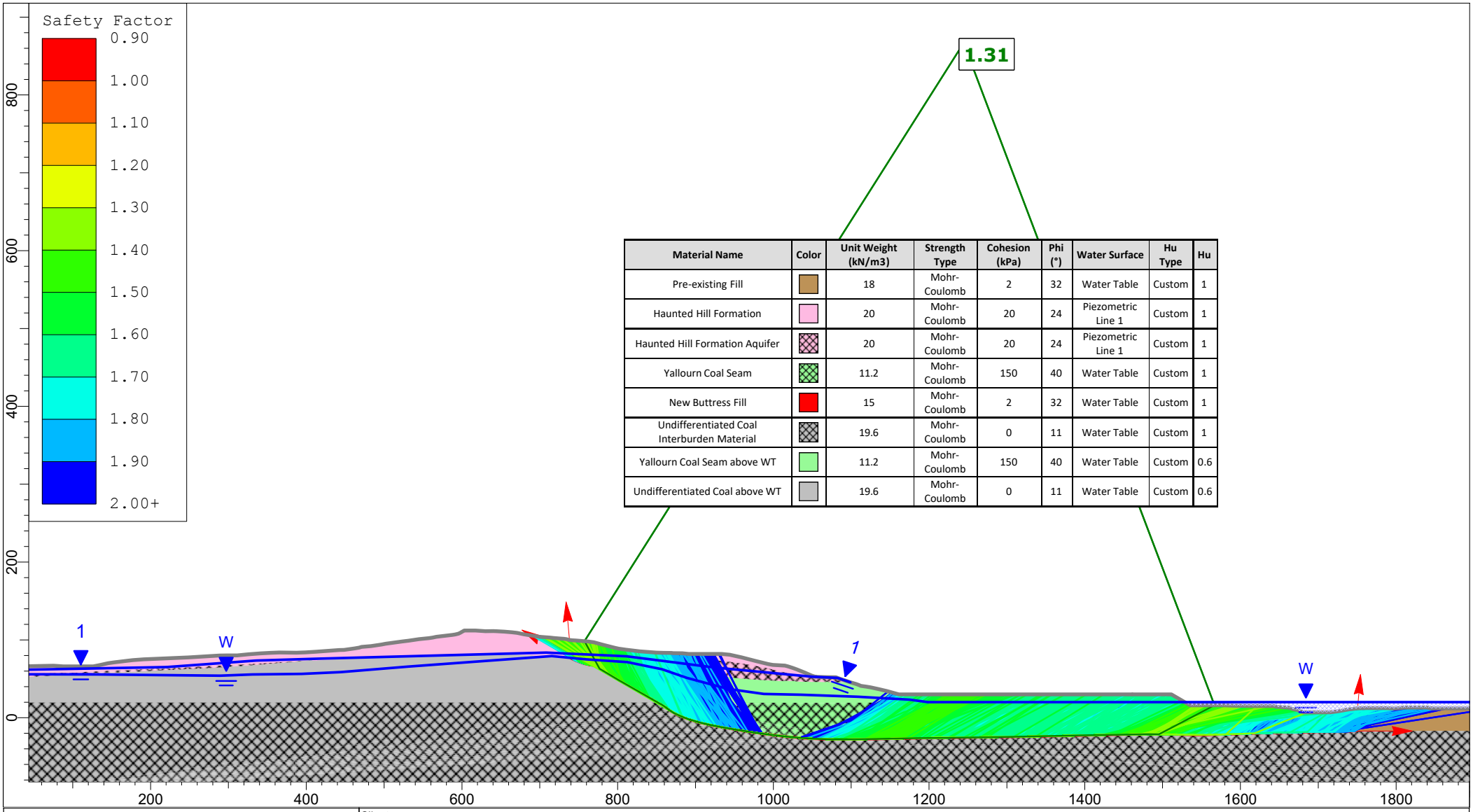
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - Lake level at 20 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength - Buttress Area 3271 m2		



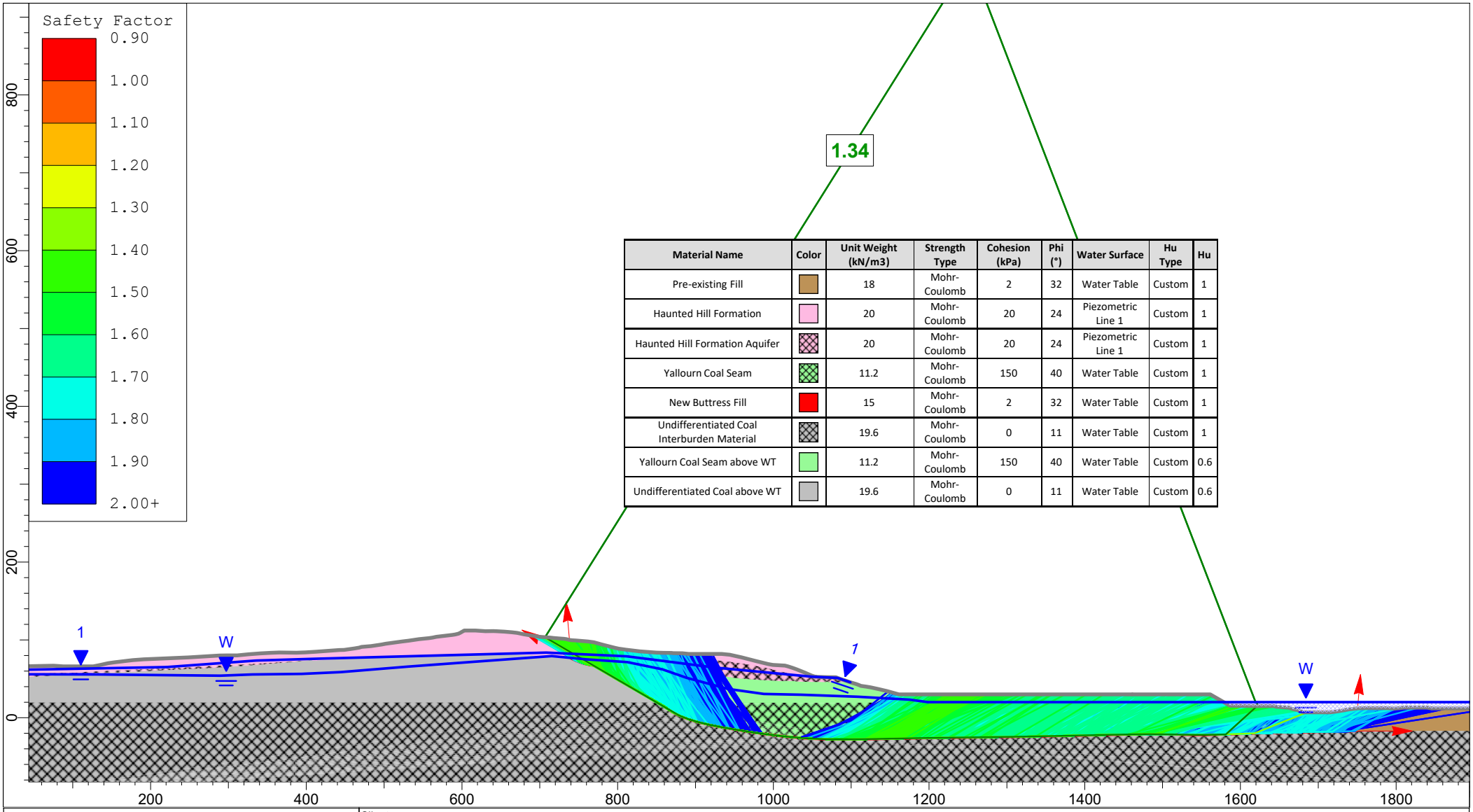
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - Lake level at 20 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength - Buttress Area 4007 m2		



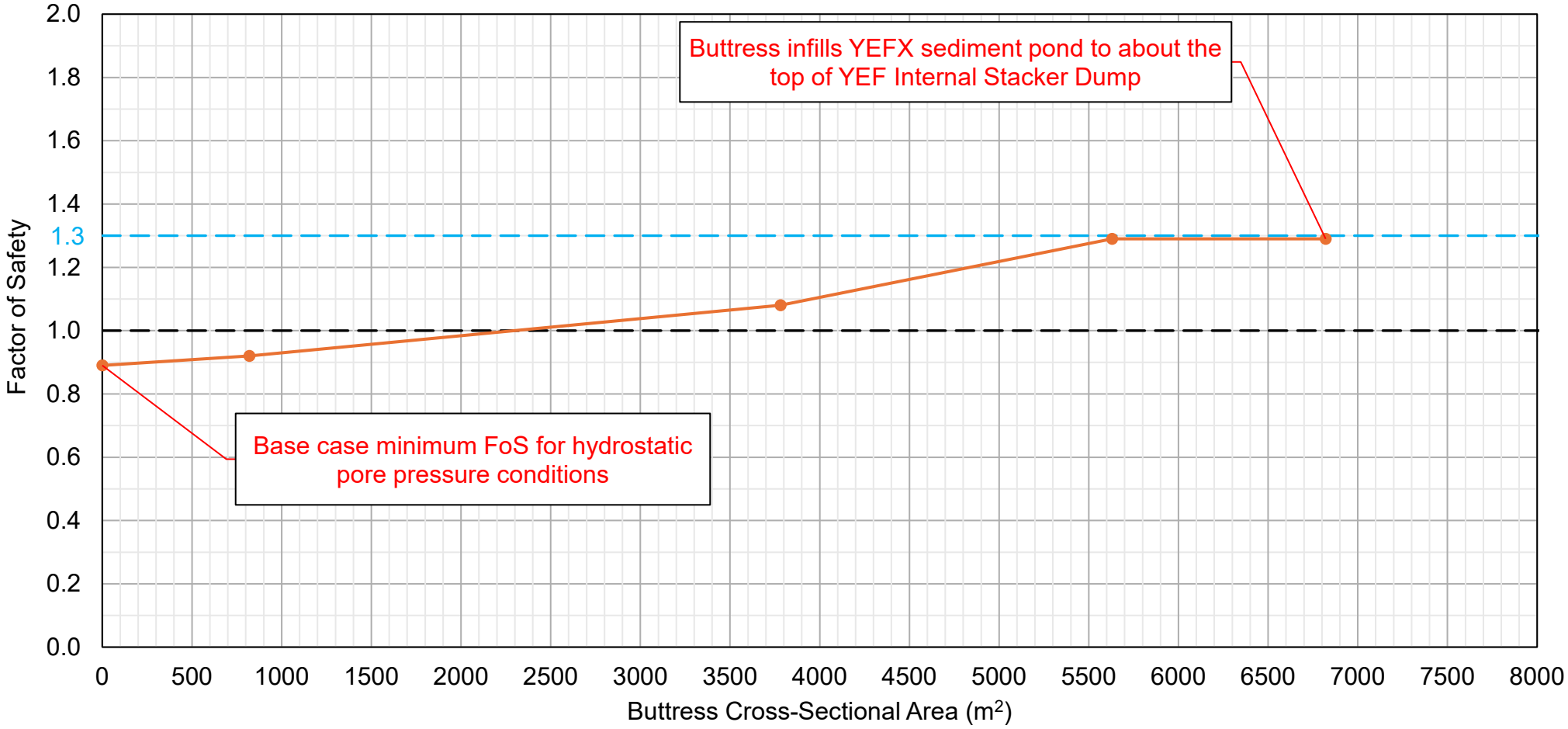
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - Lake level at 20 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength - Buttress Area 4710 m2		



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake filling - Lake level at 20 mRL with buttress
Notes:	Lower Bound Interseam Shear Strength - Buttress Area 5413 m2		



Notes:

1. Block slide failure mechanism analysed
2. Hydrostatic pore pressure conditions
3. Lake level at RL 0 m during filling (minimum FoS for base case analysis)

EnergyAustralia

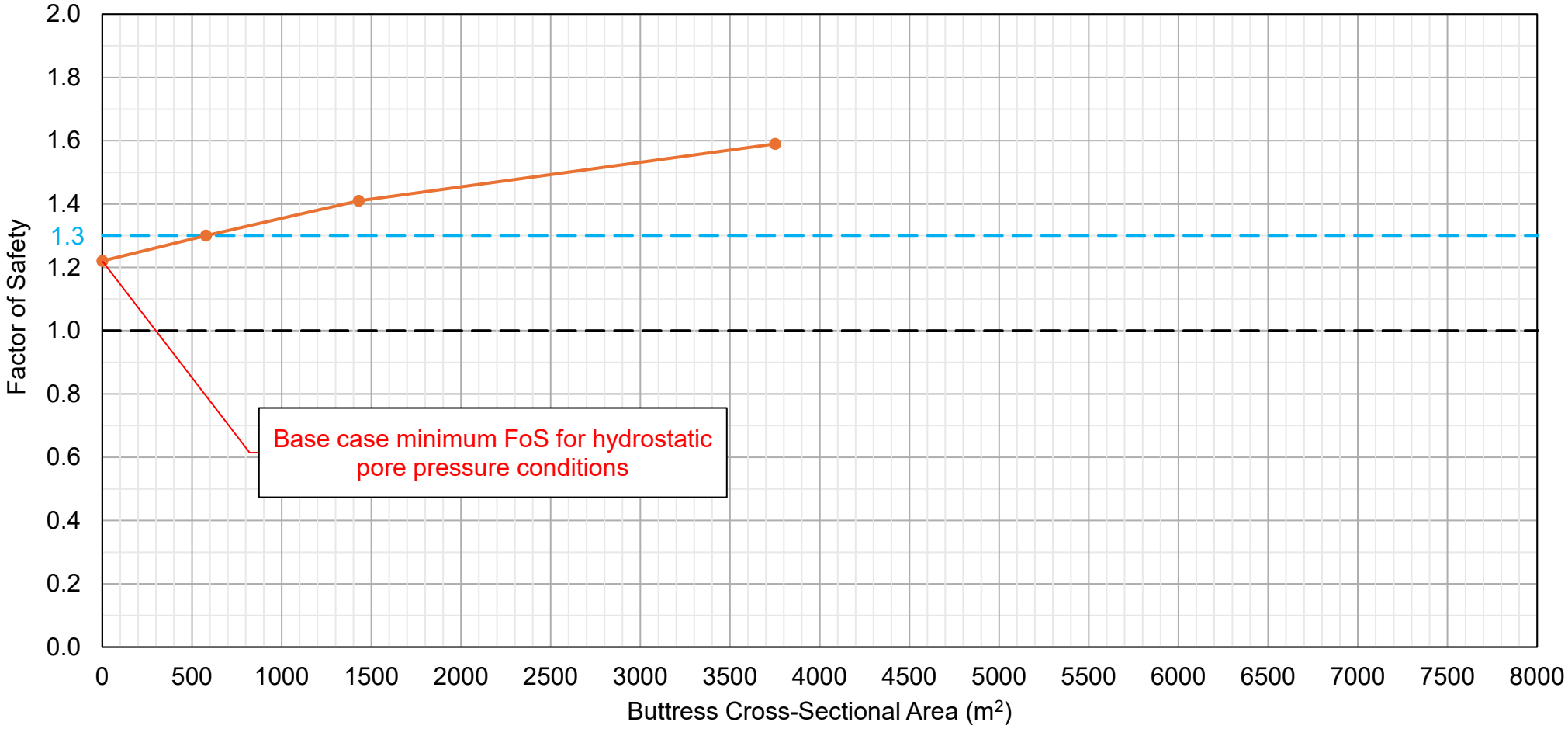
Yallourn Mine

Feasibility Rehabilitation Design

FOS VERSUS BUTTRESS AREA SECTION 6

PSM4487-140R	Figure

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\8. Buttressing\2. Slide Outputs\FoS Vs Buttress Area Chart\[FoS vs Buttressing Area_v2.xlsm]Section 16



Notes:

1. Block slide failure mechanism analysed
2. Hydrostatic pore pressure conditions
3. Lake level at RL 0 m during filling (minimum FoS for base case analysis)

EnergyAustralia

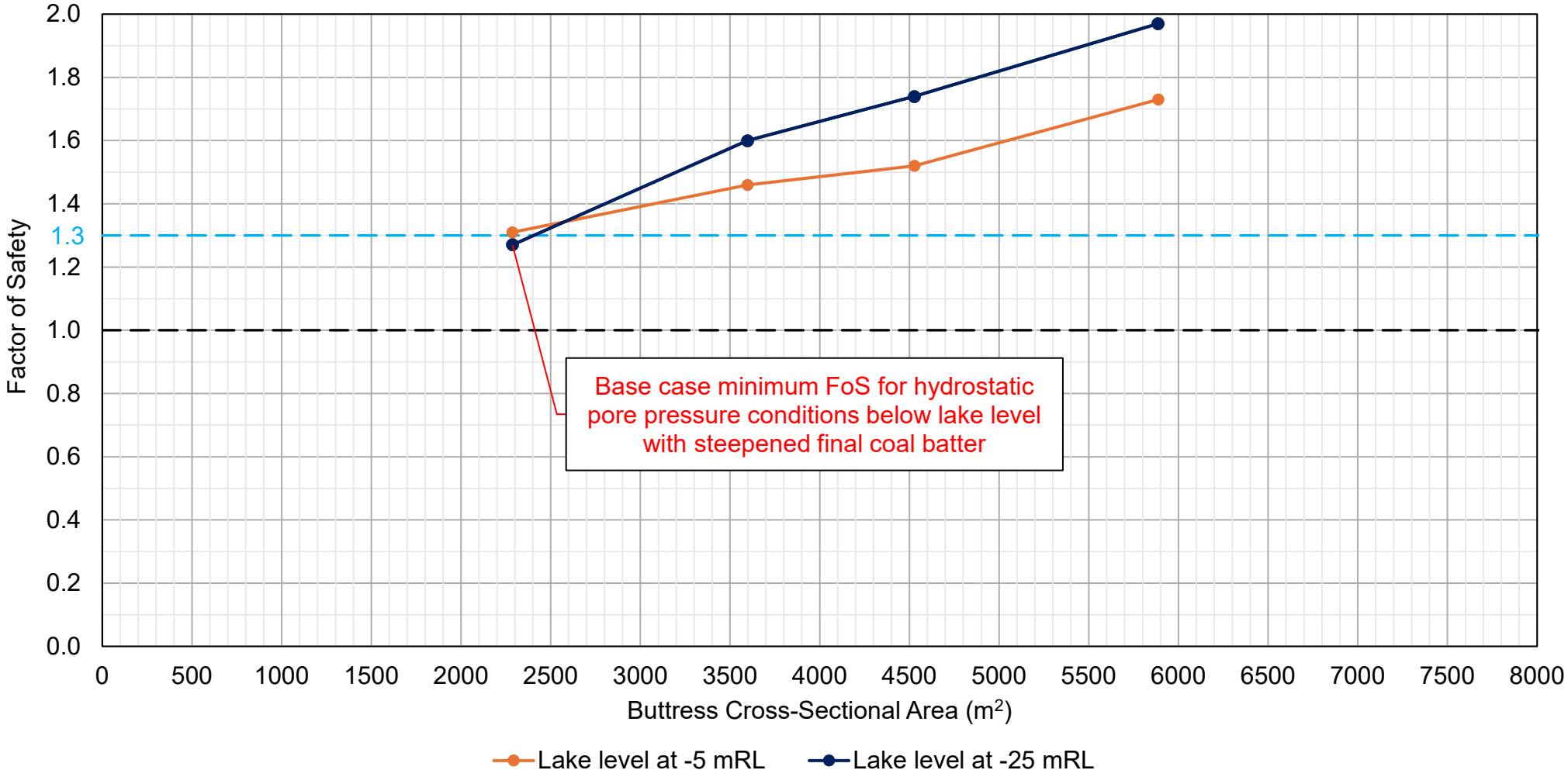
Yallourn Mine

Feasibility Rehabilitation Design

FOS VERSUS BUTTRESS AREA
SECTION 7B

PSM4487-140R	Figure

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\8. Buttressing\2. Slide Outputs\FoS Vs Buttress Area Chart\[FoS vs Buttressing Area_v2.xlsm]Section 16



Notes:

1. Multilinear failure mechanism analysed
2. Hydrostatic pore pressure conditions below lake level

EnergyAustralia

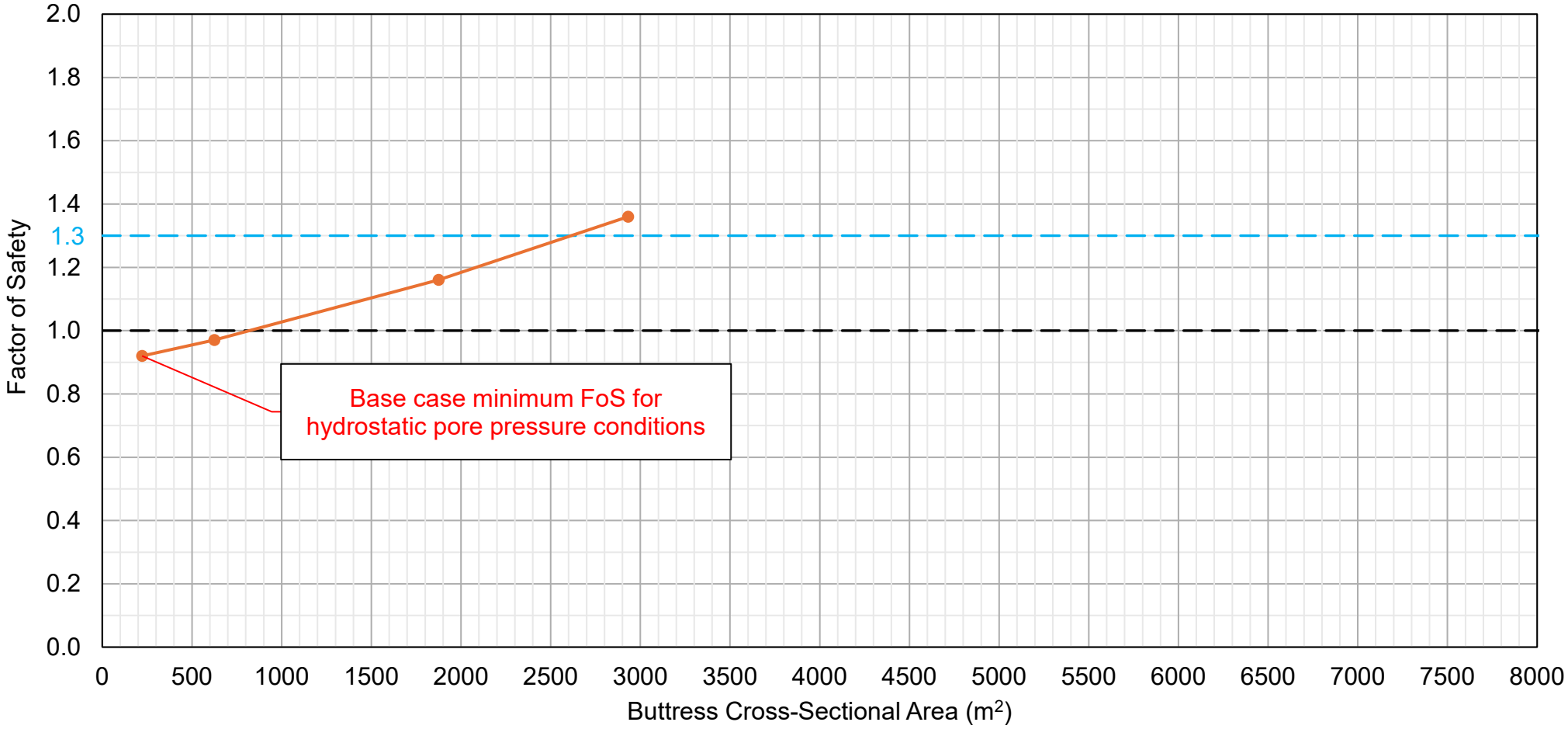
Yallourn Mine

Feasibility Rehabilitation Design

FOS VERSUS BUTTRESS AREA SECTION 13

PSM4487-140R	Figure

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\8. Buttressing\2. Slide Outputs\FoS Vs Buttress Area Chart\[FoS vs Buttressing Area_v2.xlsm]Section 16



Notes:

1. Block slide failure mechanism analysed
2. Hydrostatic pore pressure conditions
3. Lake level at RL 5 m during filling (minimum FoS for base case analysis)

EnergyAustralia

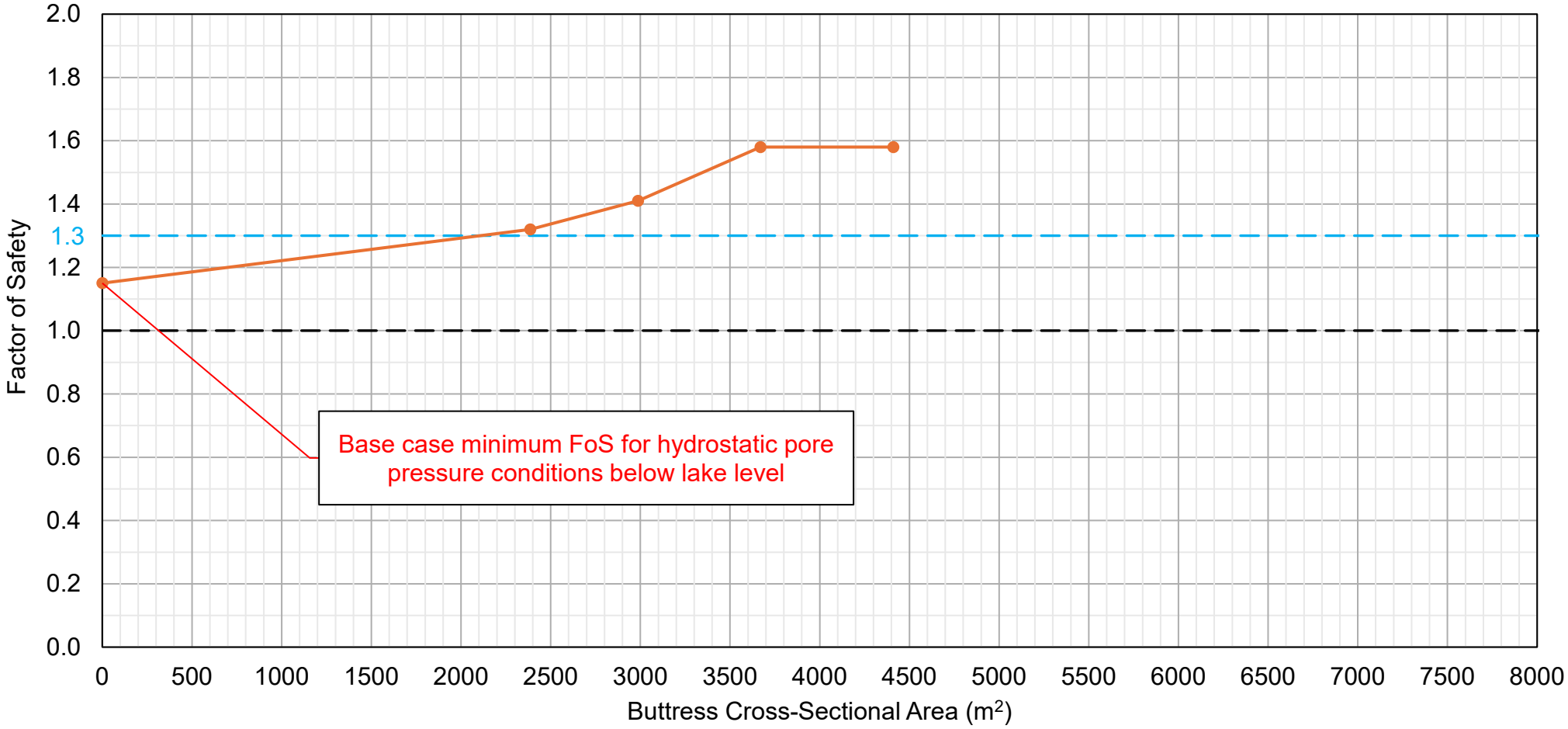
Yallourn Mine

Feasibility Rehabilitation Design

FOS VERSUS BUTTRESS AREA SECTION 16

PSM4487-140R	Figure

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\8. Buttressing\2. Slide Outputs\FoS Vs Buttress Area Chart\[FoS vs Buttressing Area_v2.xlsm]Section 16



Notes:

1. Multilinear failure mechanism analysed
2. Hydrostatic pore pressure conditions below lake level
3. Lake level at RL 15 m during filling (minimum FoS for base case analysis)

EnergyAustralia

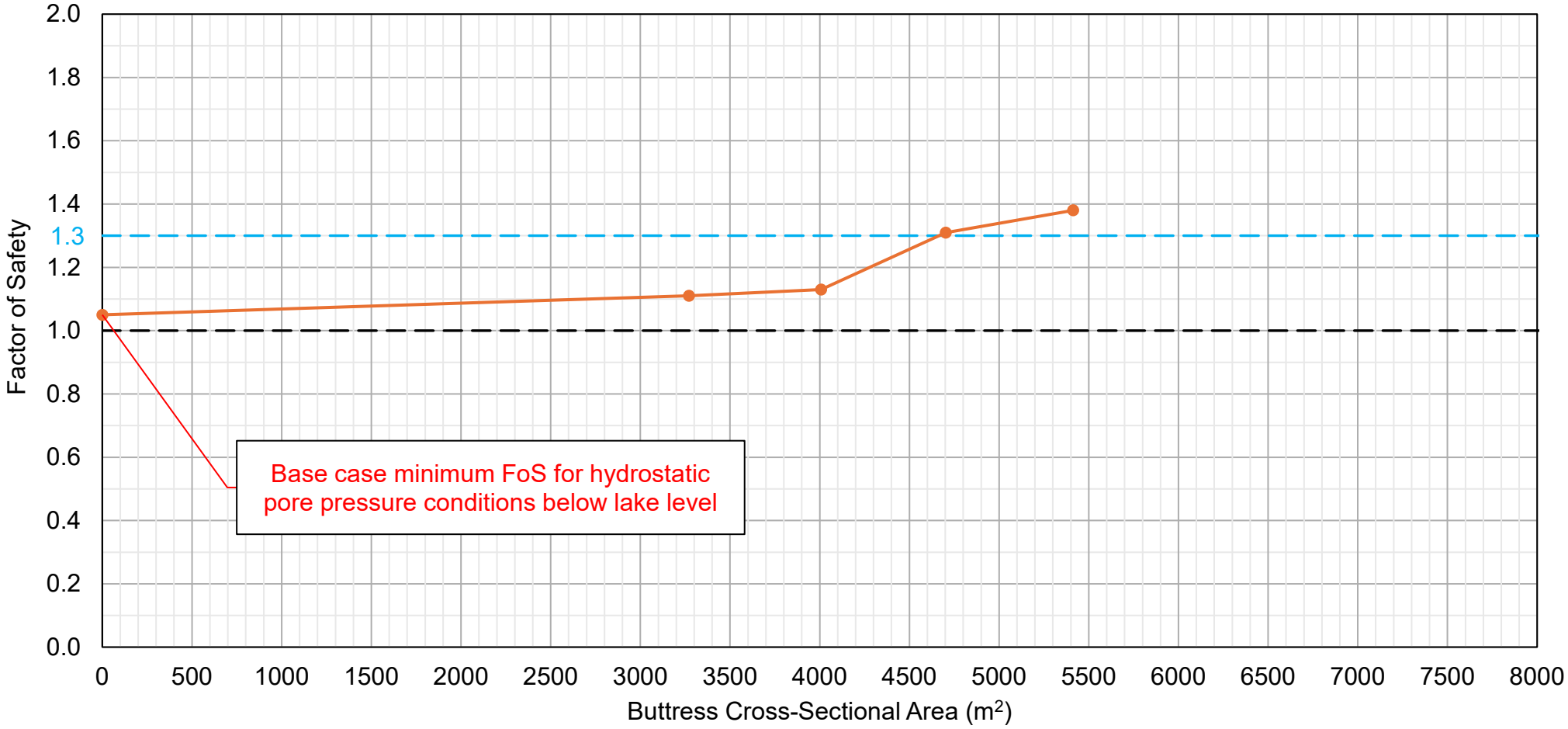
Yallourn Mine

Feasibility Rehabilitation Design

FOS VERSUS BUTTRESS AREA
SECTION 27

PSM4487-140R	Figure

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\8. Buttressing\2. Slide Outputs\FoS Vs Buttress Area Chart\[FoS vs Buttressing Area_v2.xlsm]Section 16



Notes:

1. Multilinear failure mechanism analysed
2. Hydrostatic pore pressure conditions below lake level
3. Lake level at RL 20 m during filling (minimum FoS for base case analysis)

EnergyAustralia

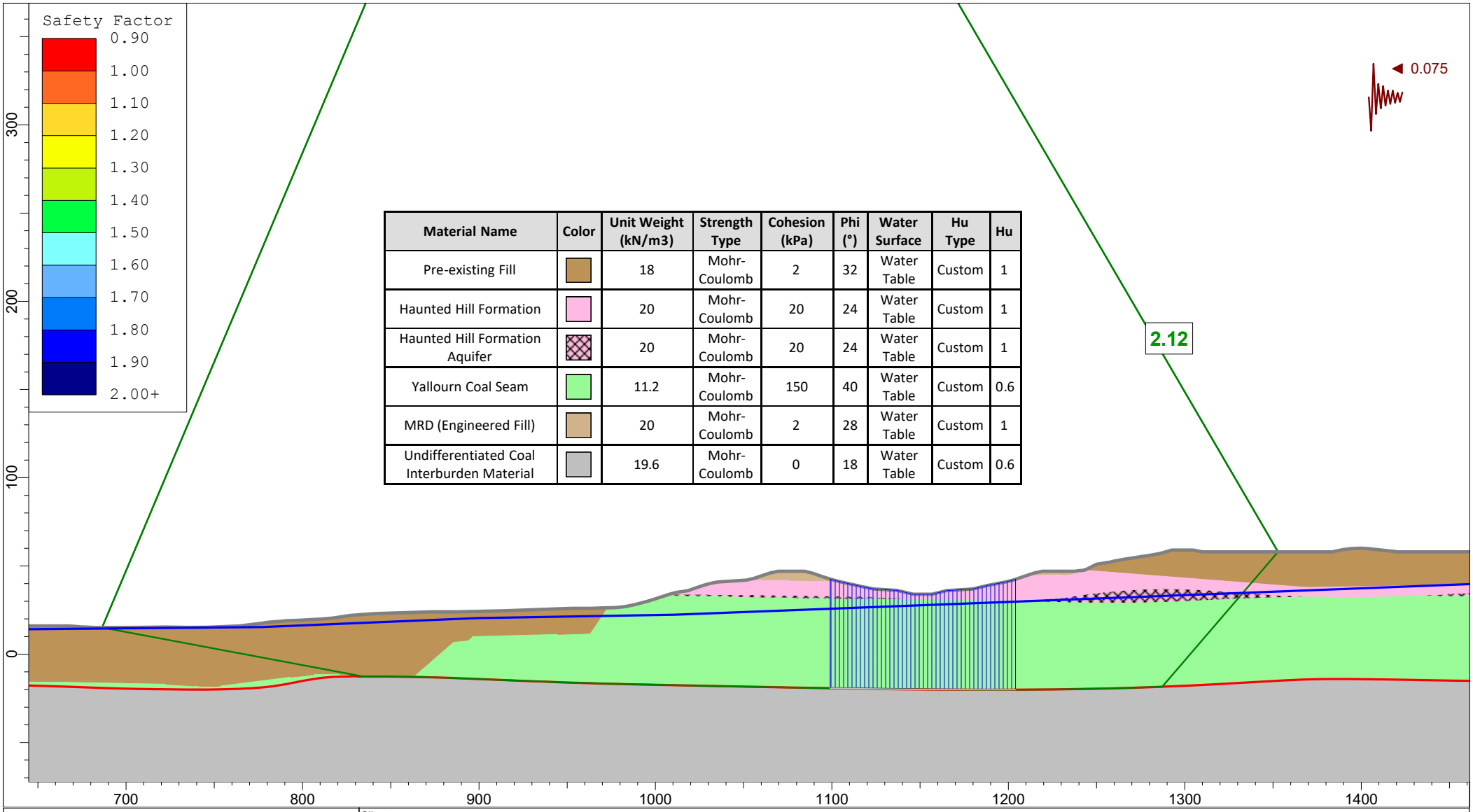
Yallourn Mine

Feasibility Rehabilitation Design

FOS VERSUS BUTTRESS AREA
SECTION 28

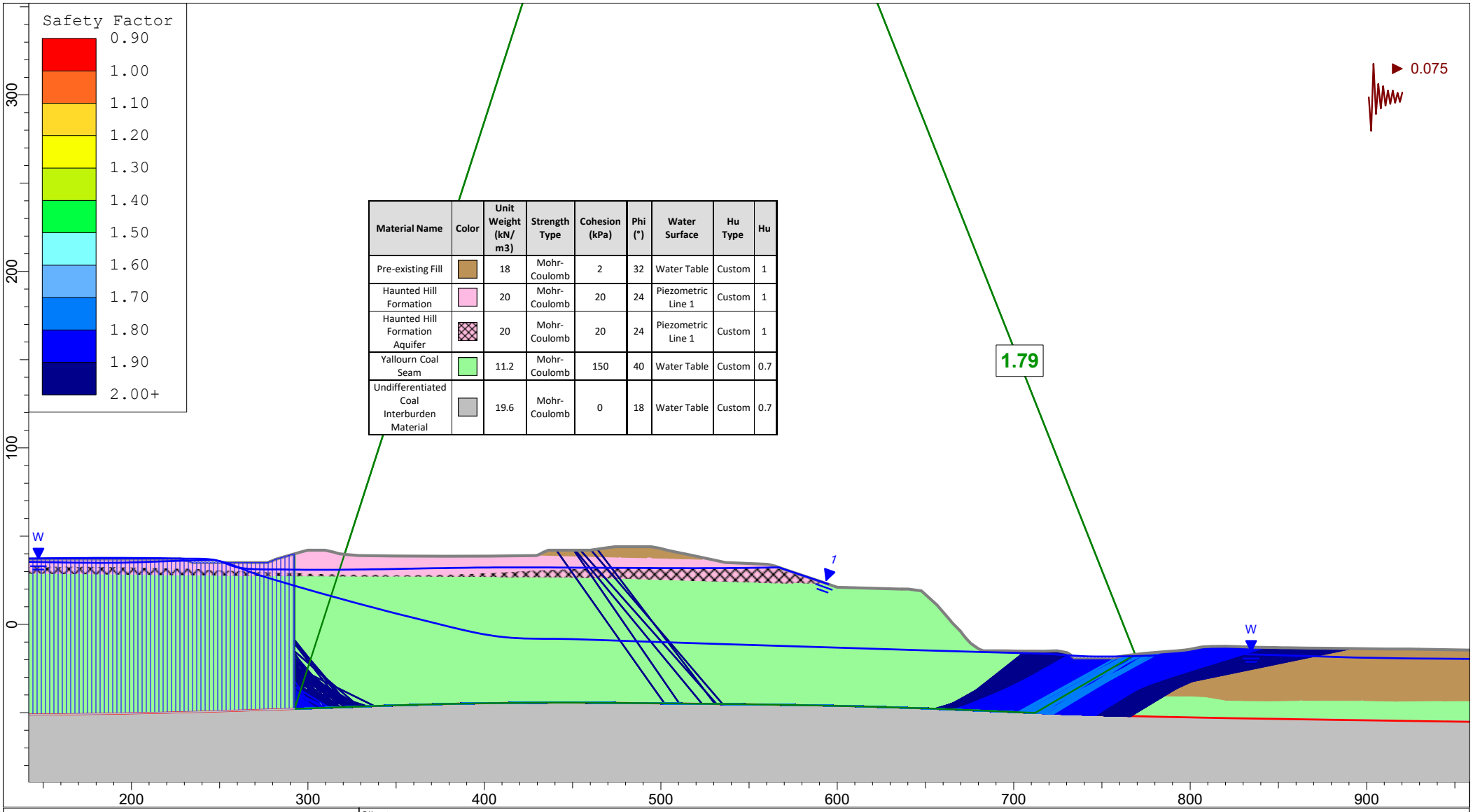
PSM4487-140R	Figure

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\8. Buttressing\2. Slide Outputs\FoS Vs Buttress Area Chart\[FoS vs Buttressing Area_v2.xlsm]Section 16



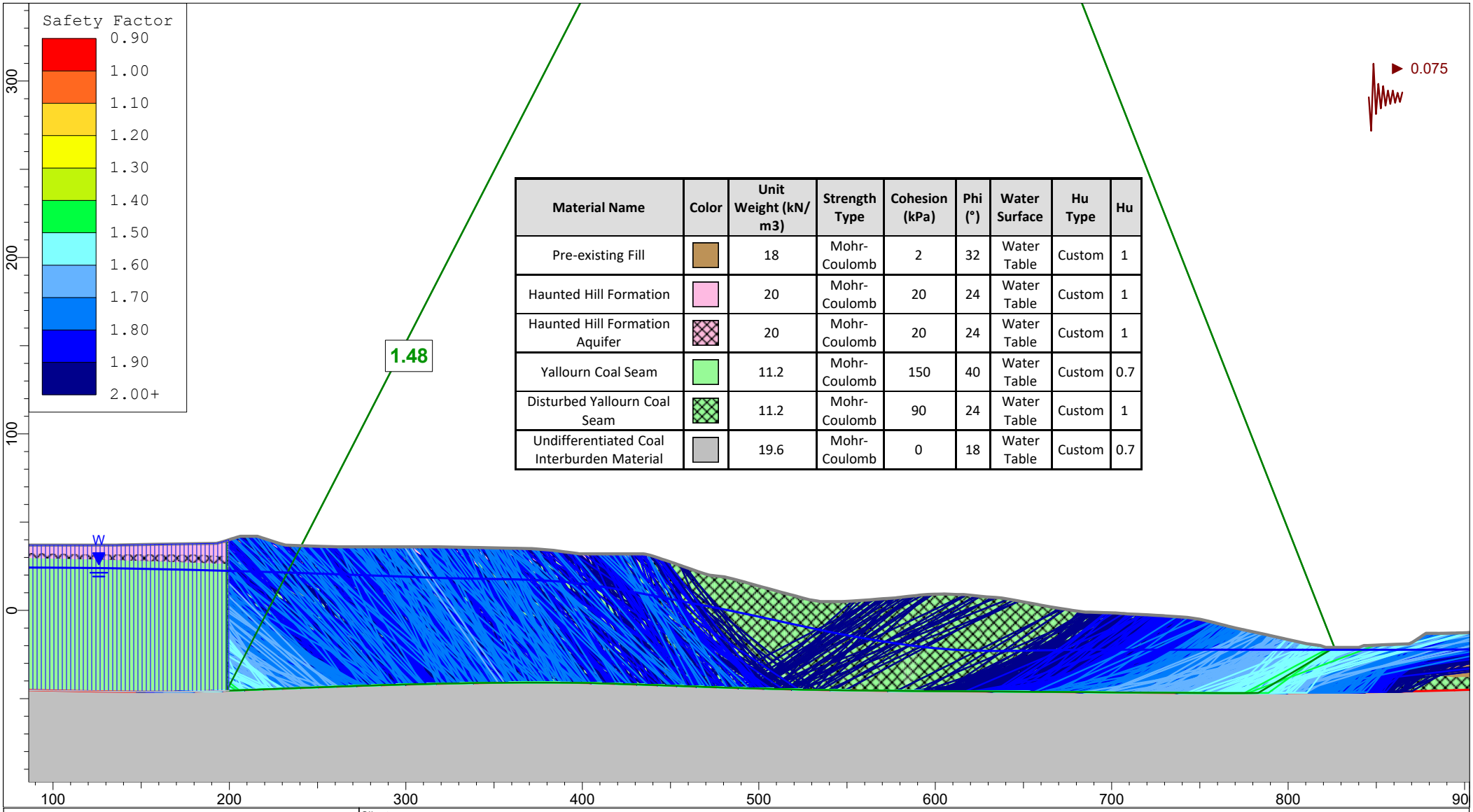
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



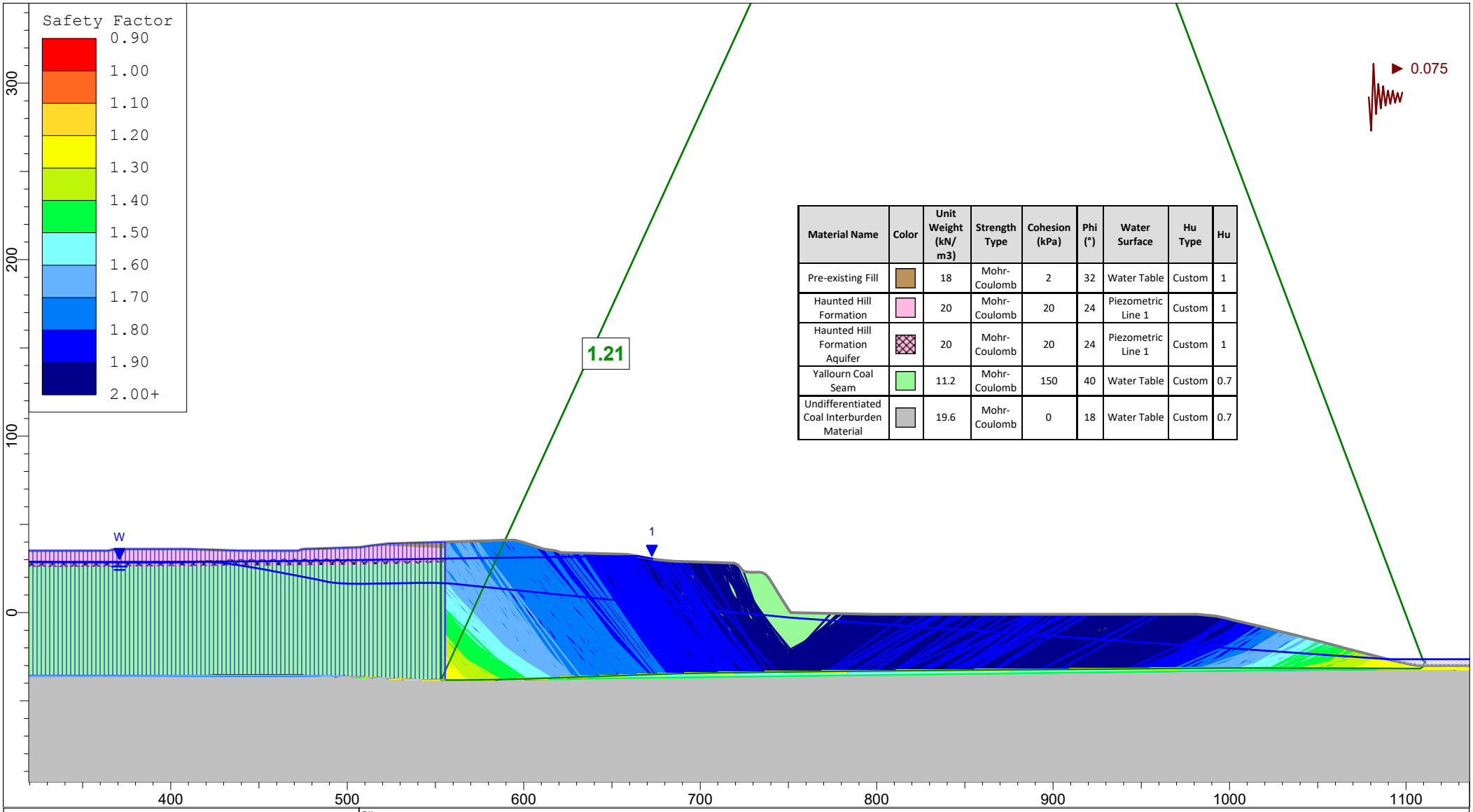
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



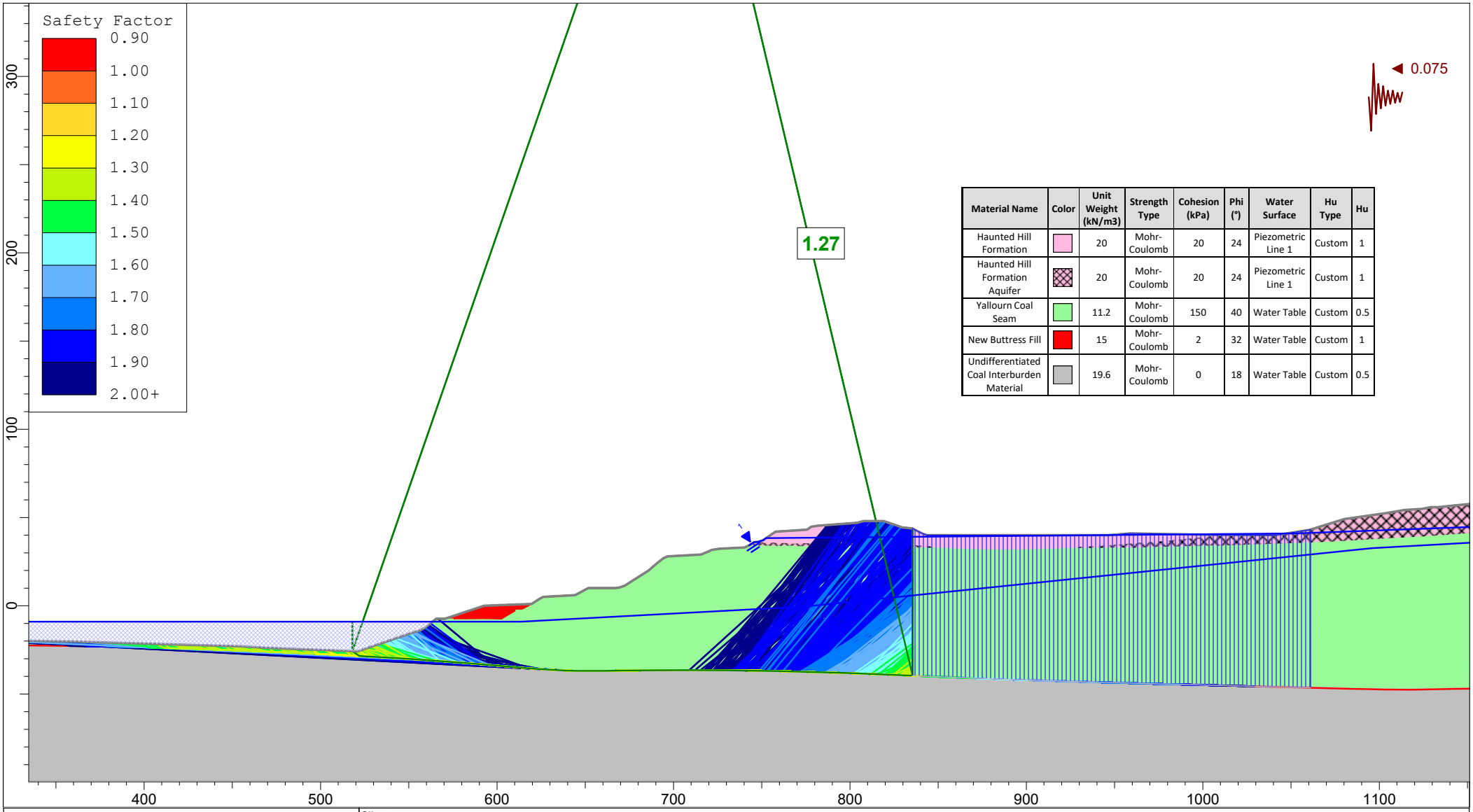
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



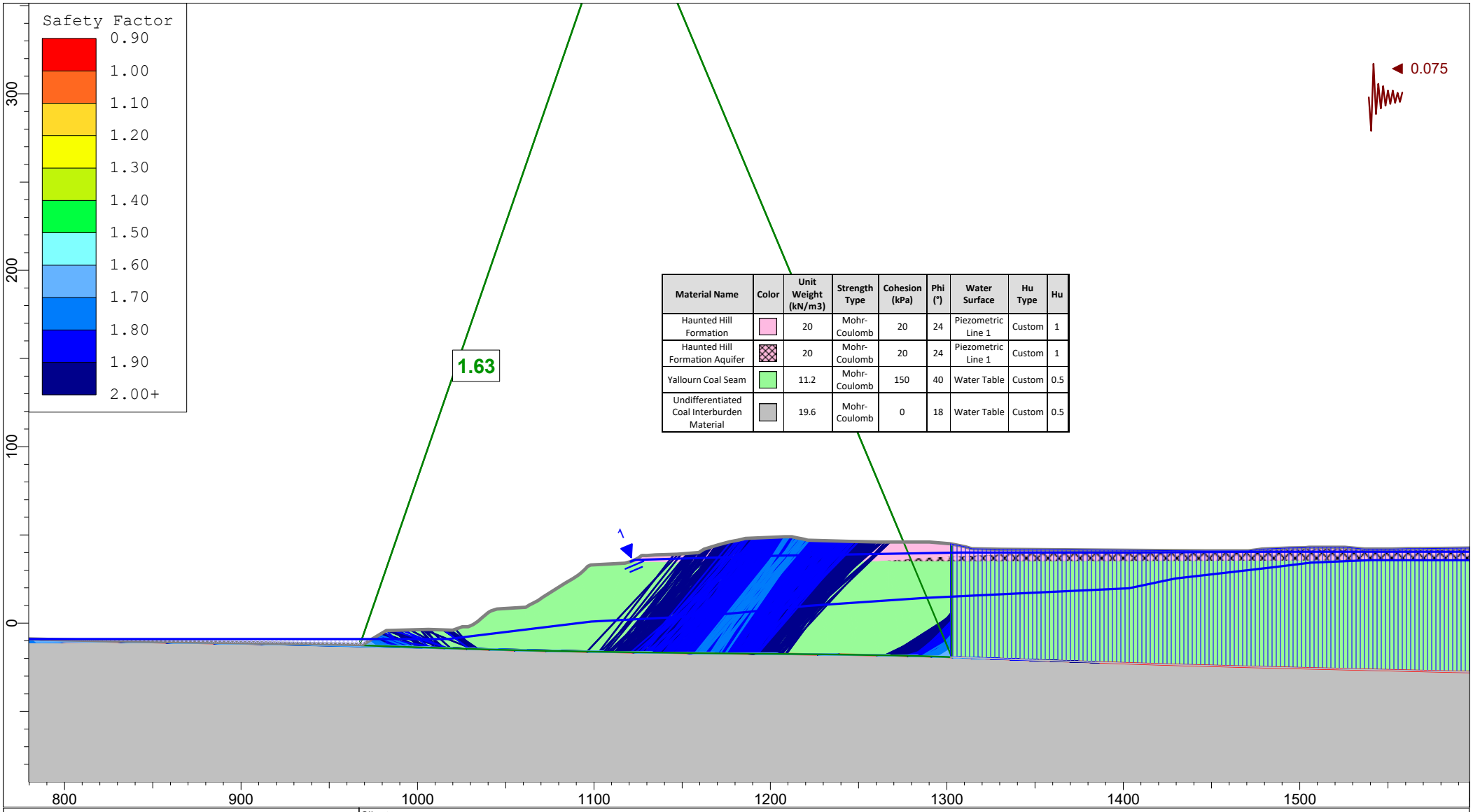
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



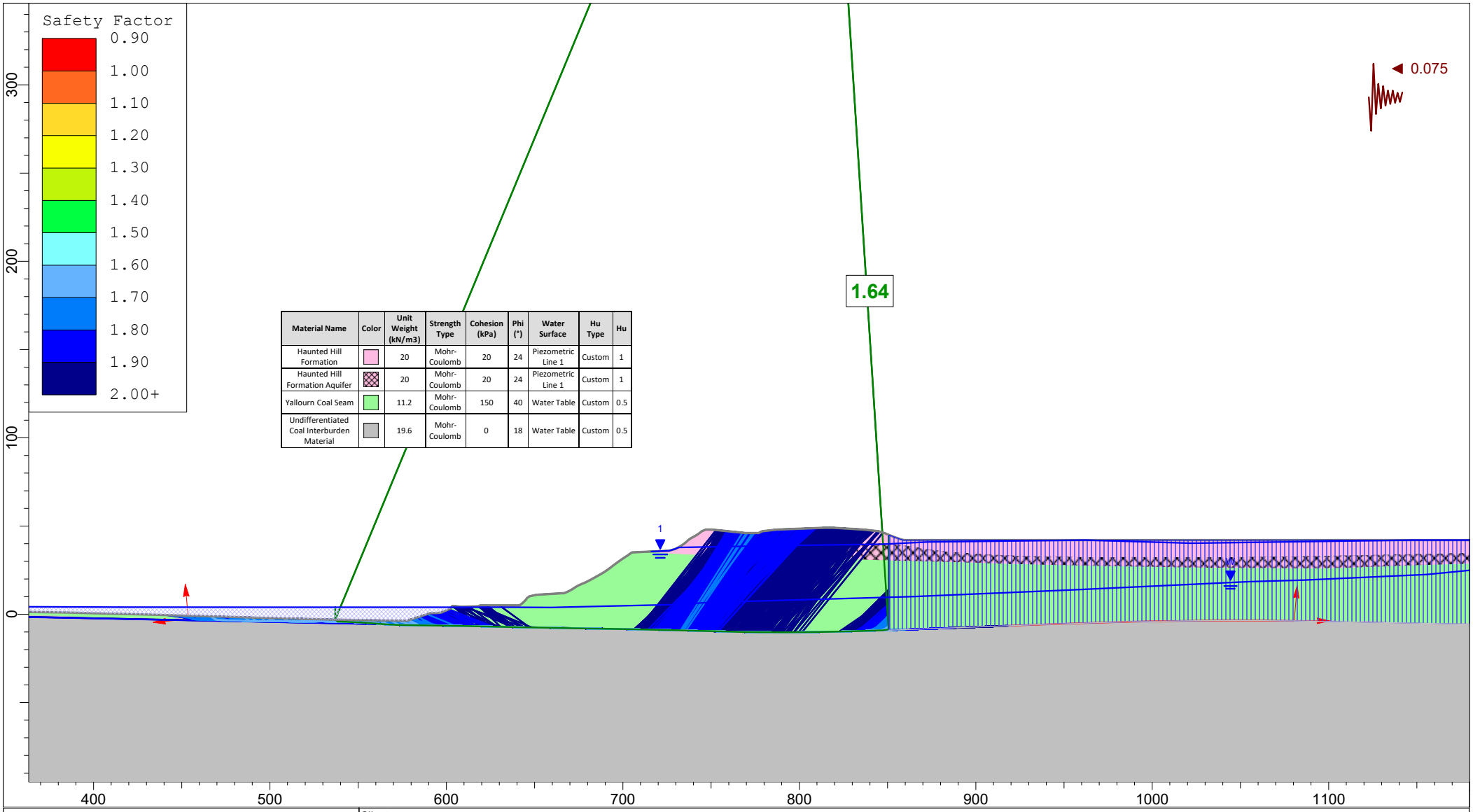
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



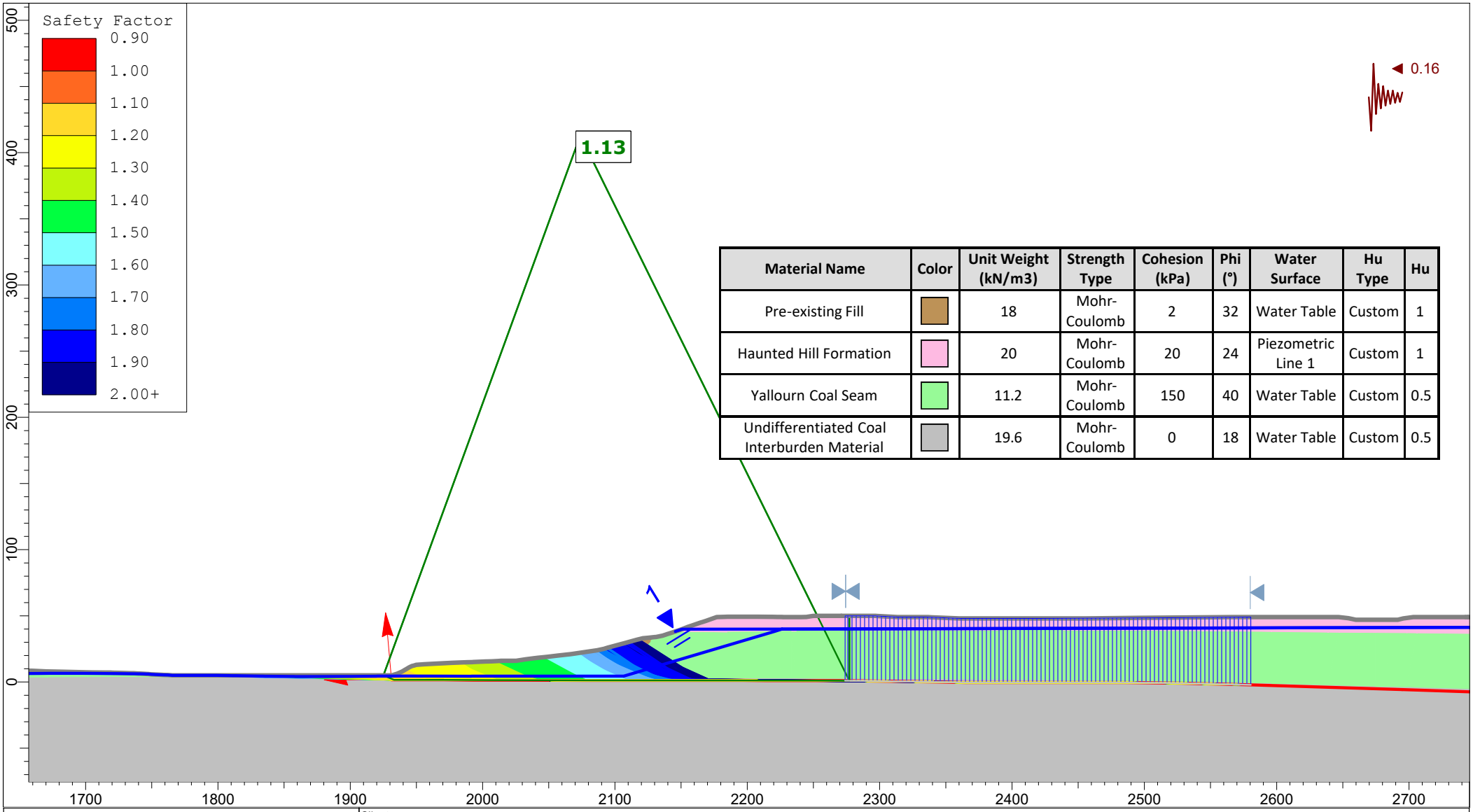
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



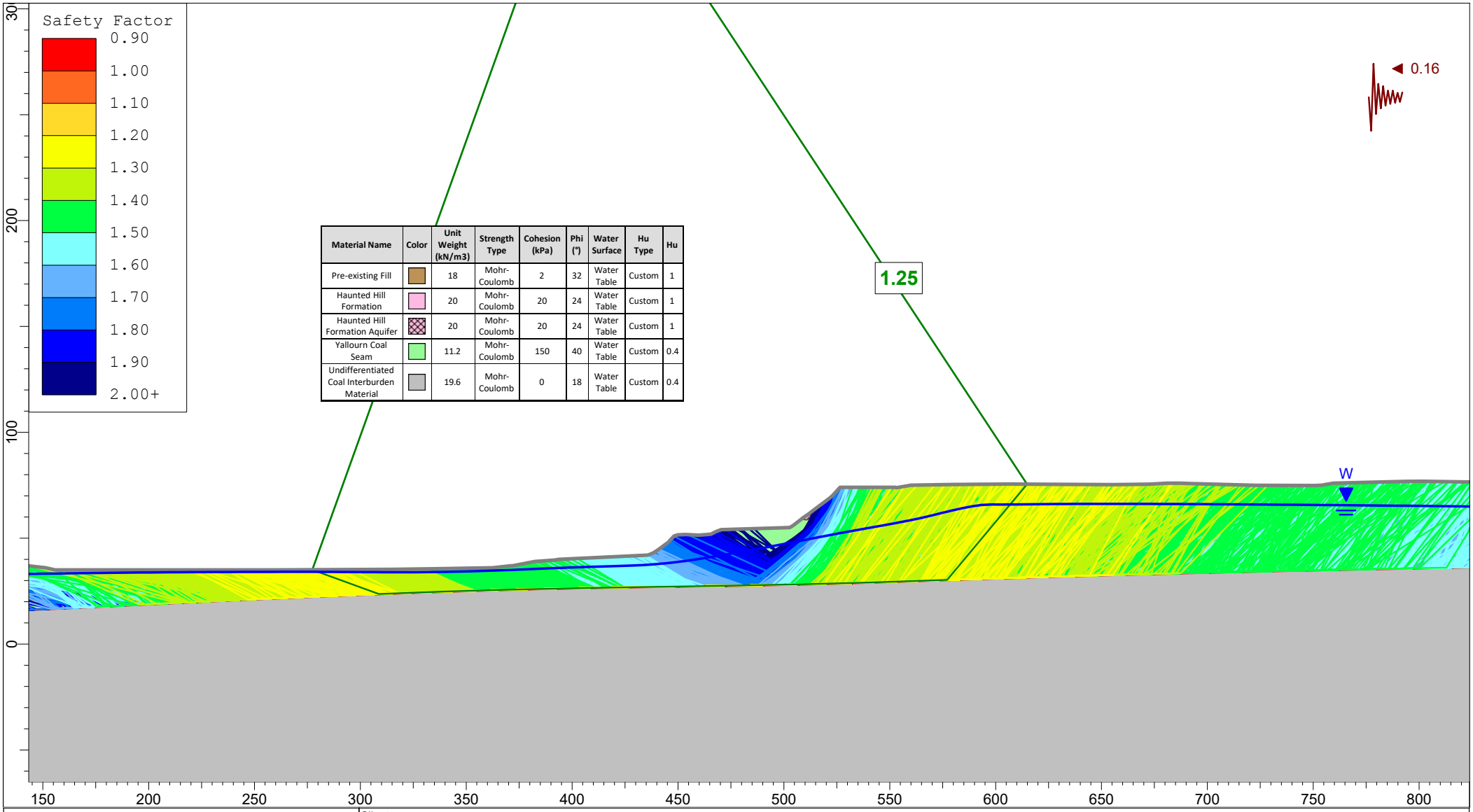
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



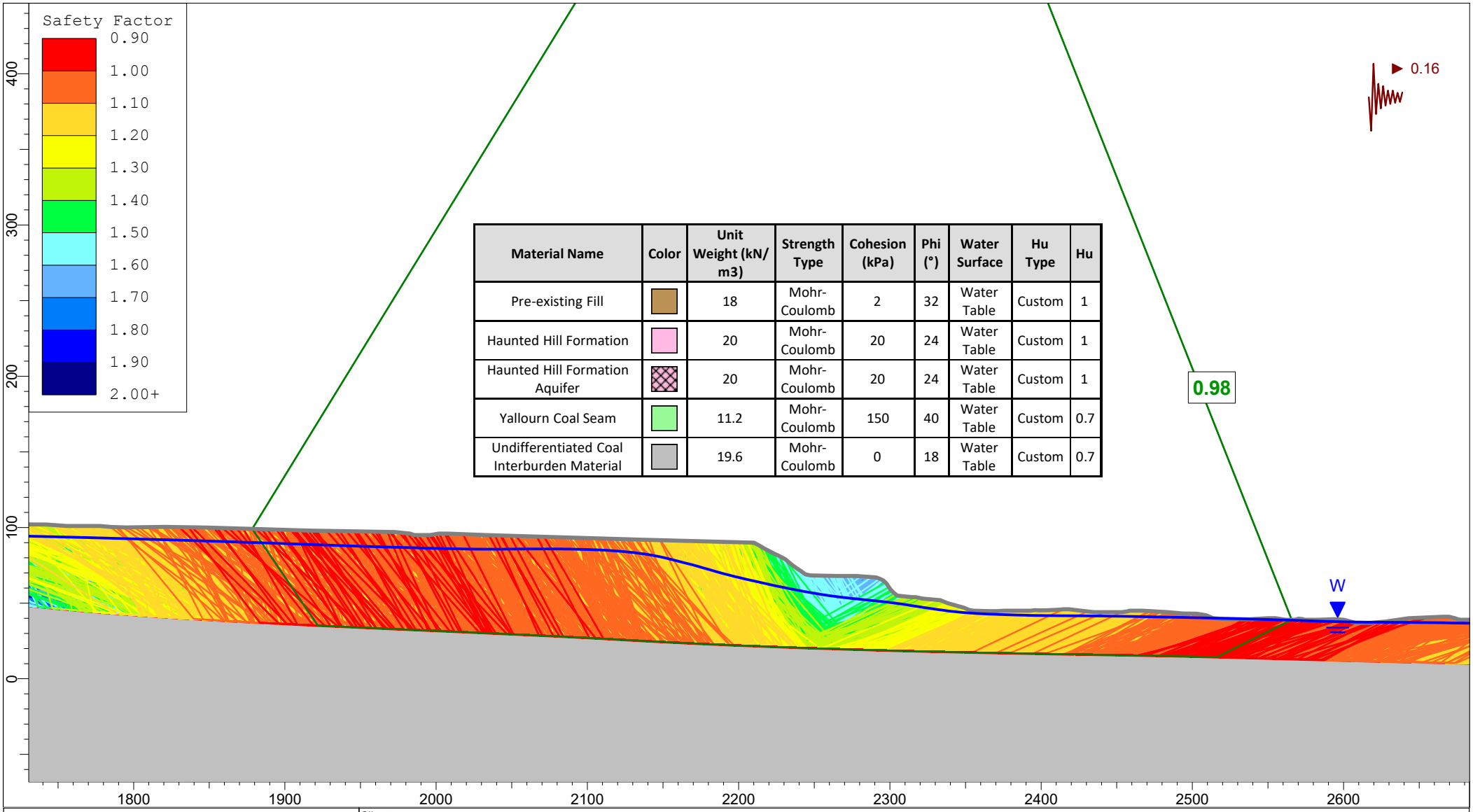
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



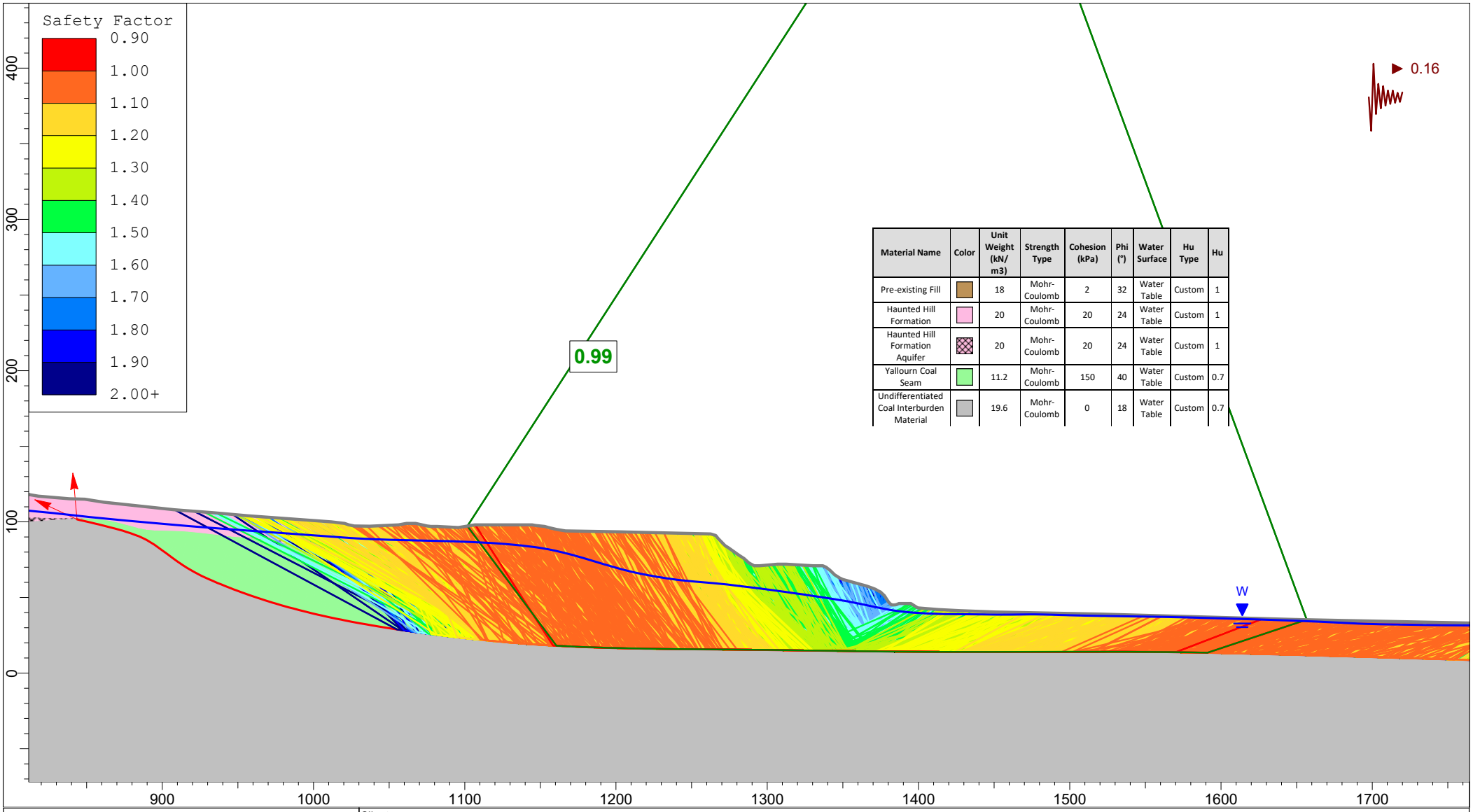
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SB
Section:	Section 19	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



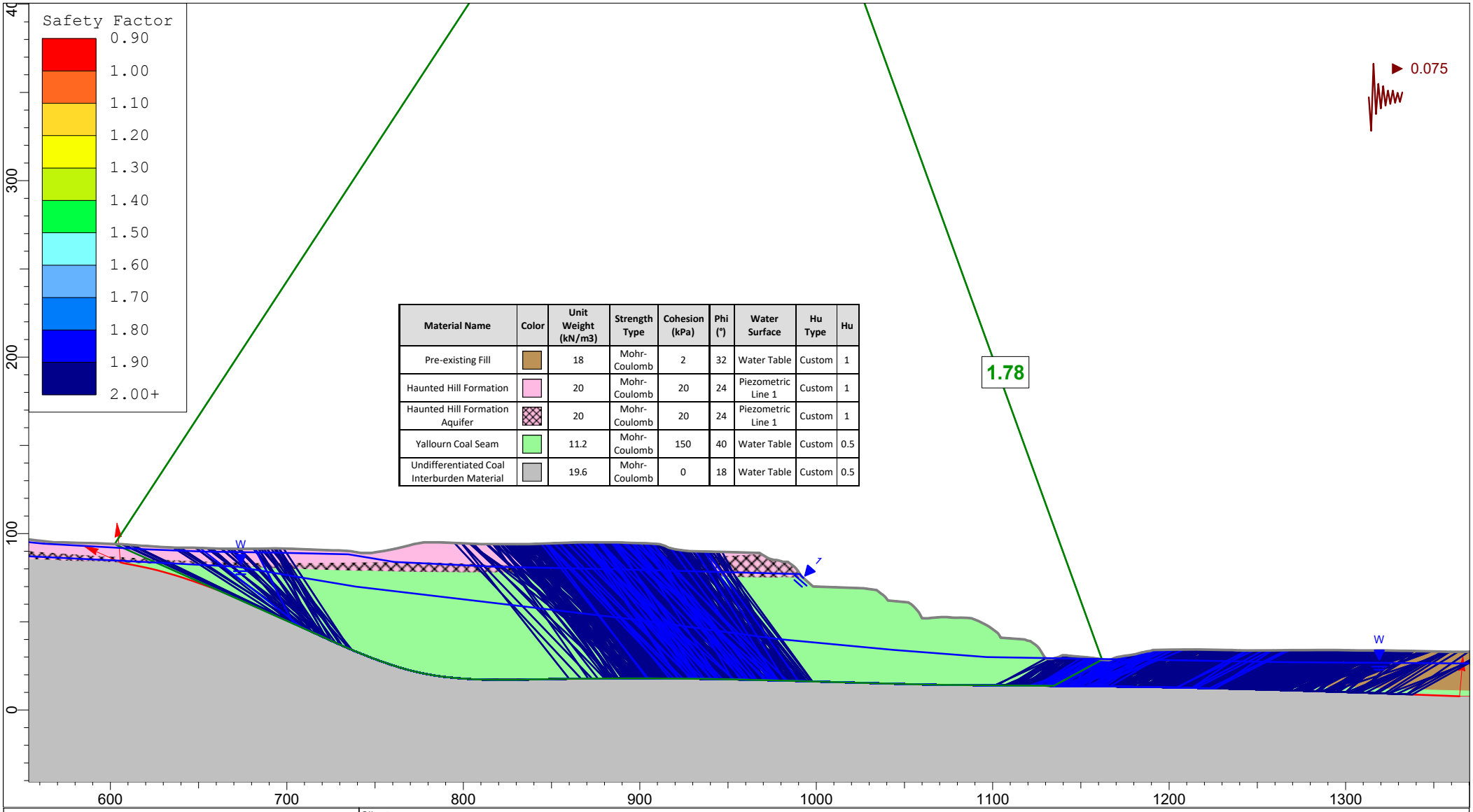
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 20	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



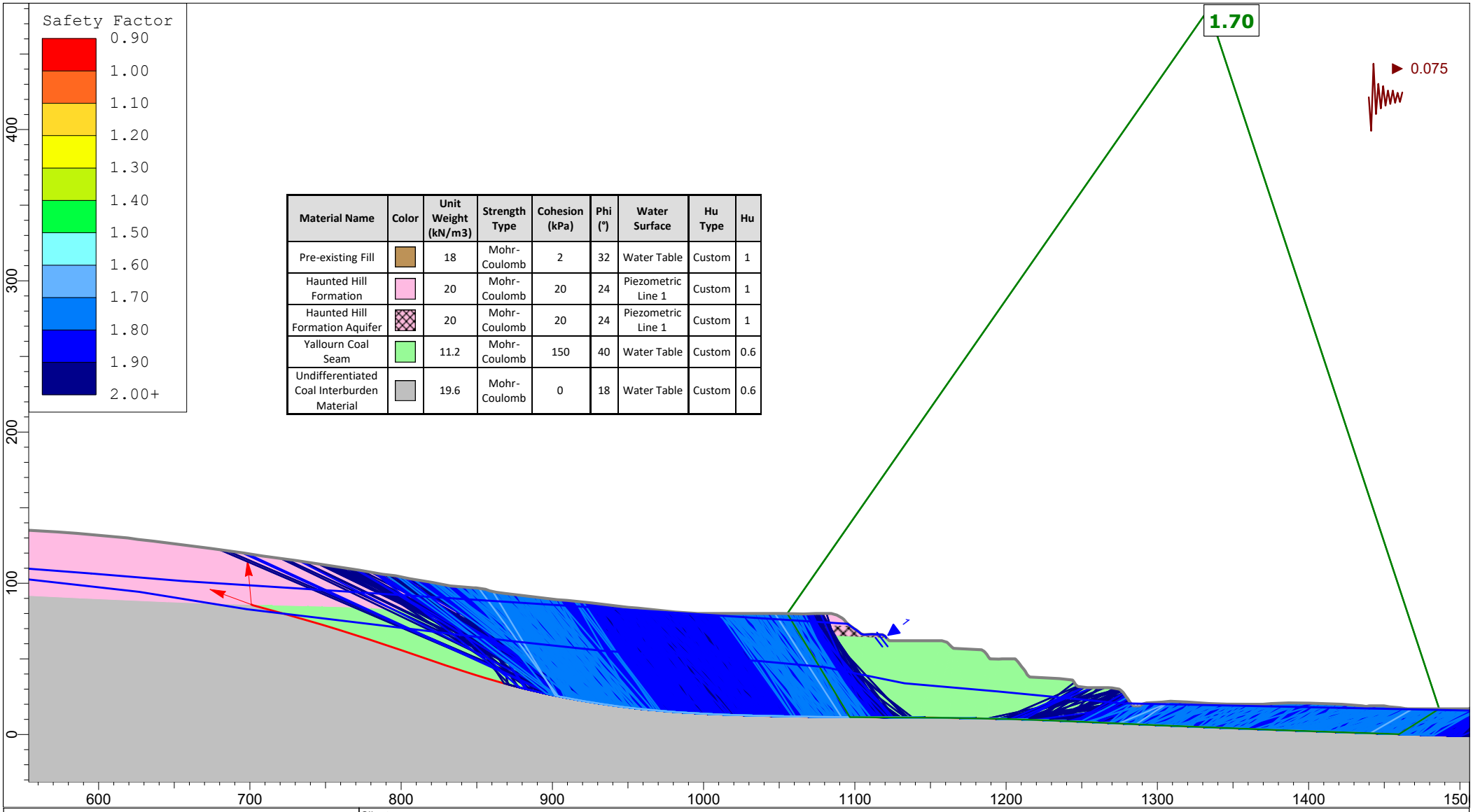
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 21	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



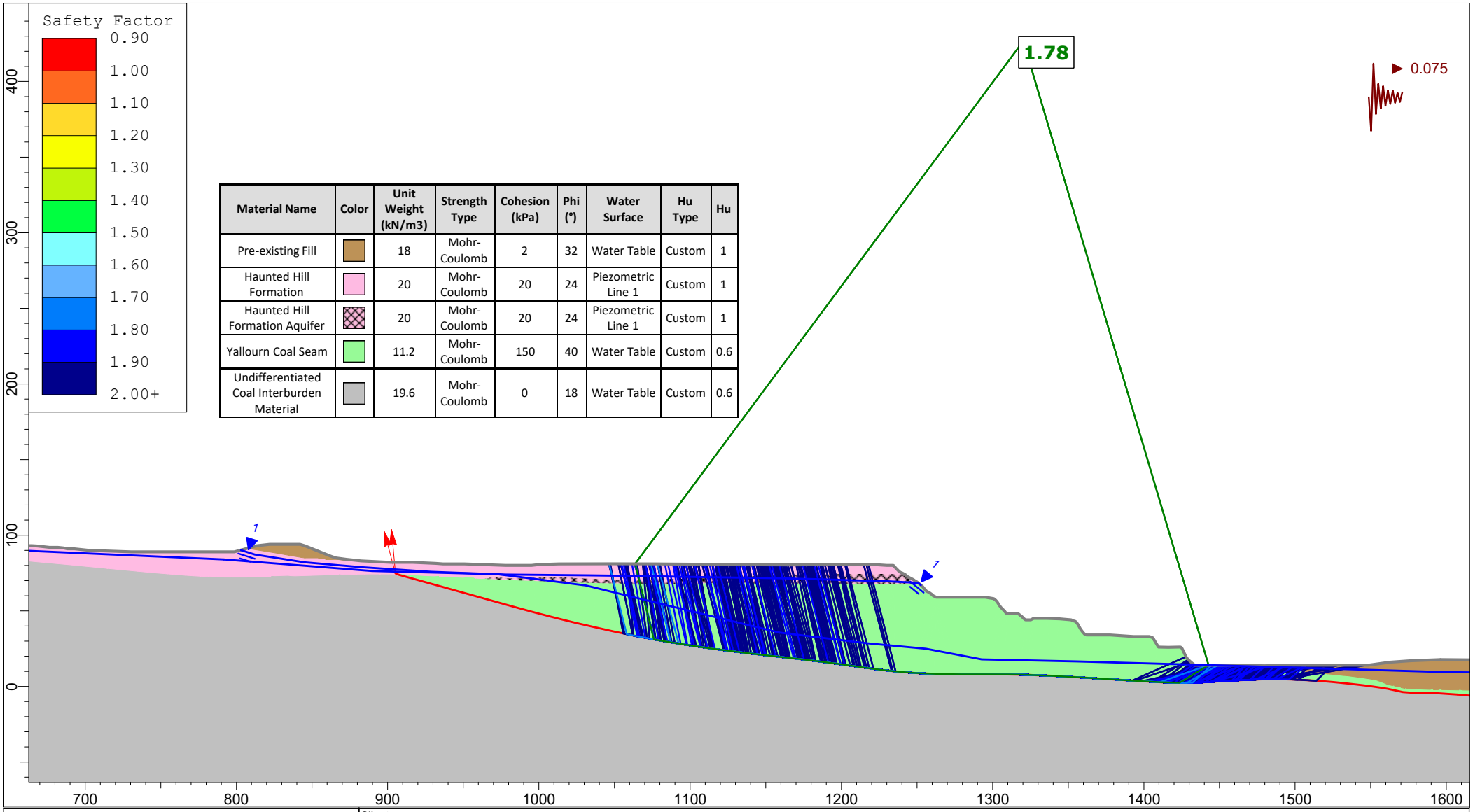
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (South)
Section:	Section 22	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



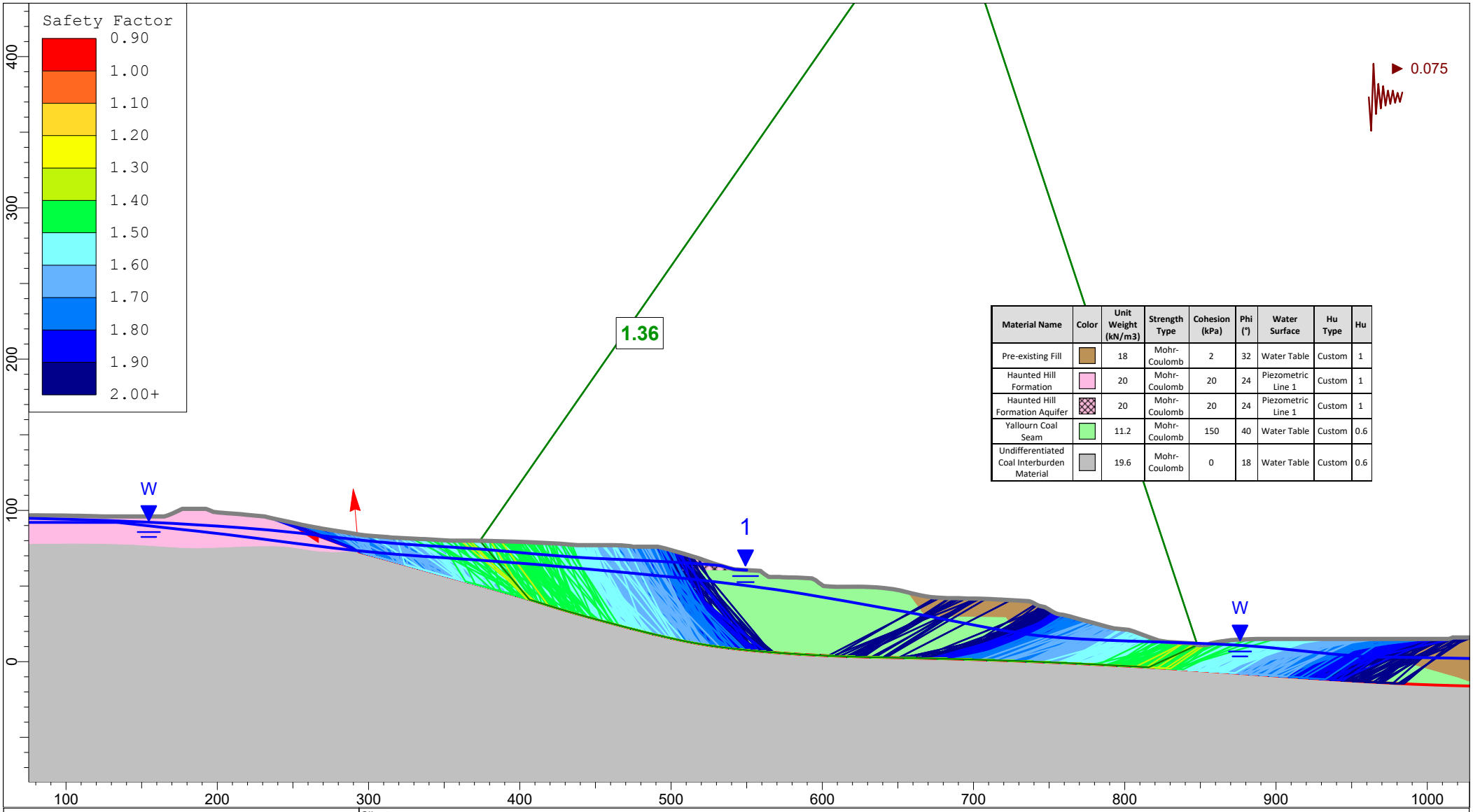
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 23	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



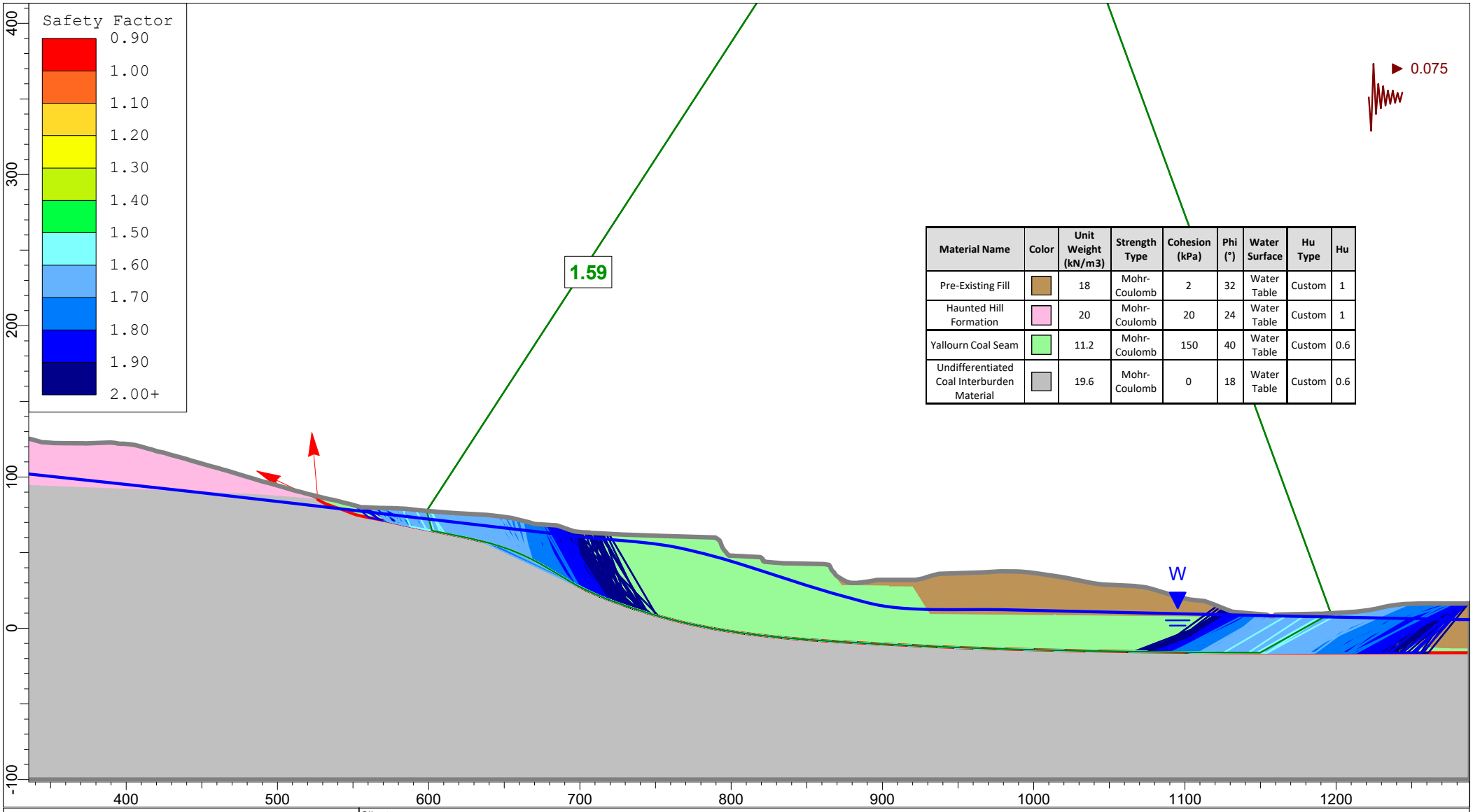
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



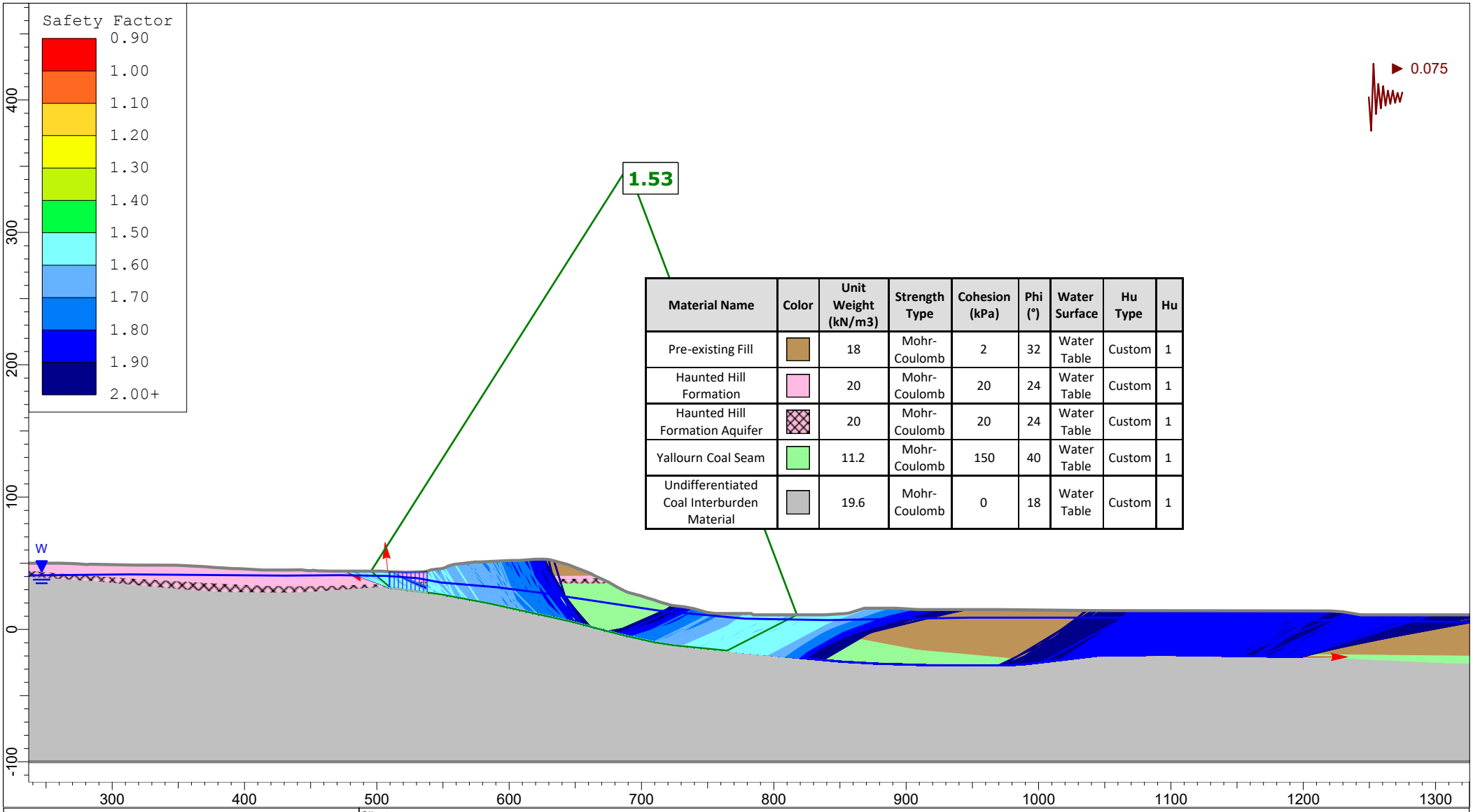
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



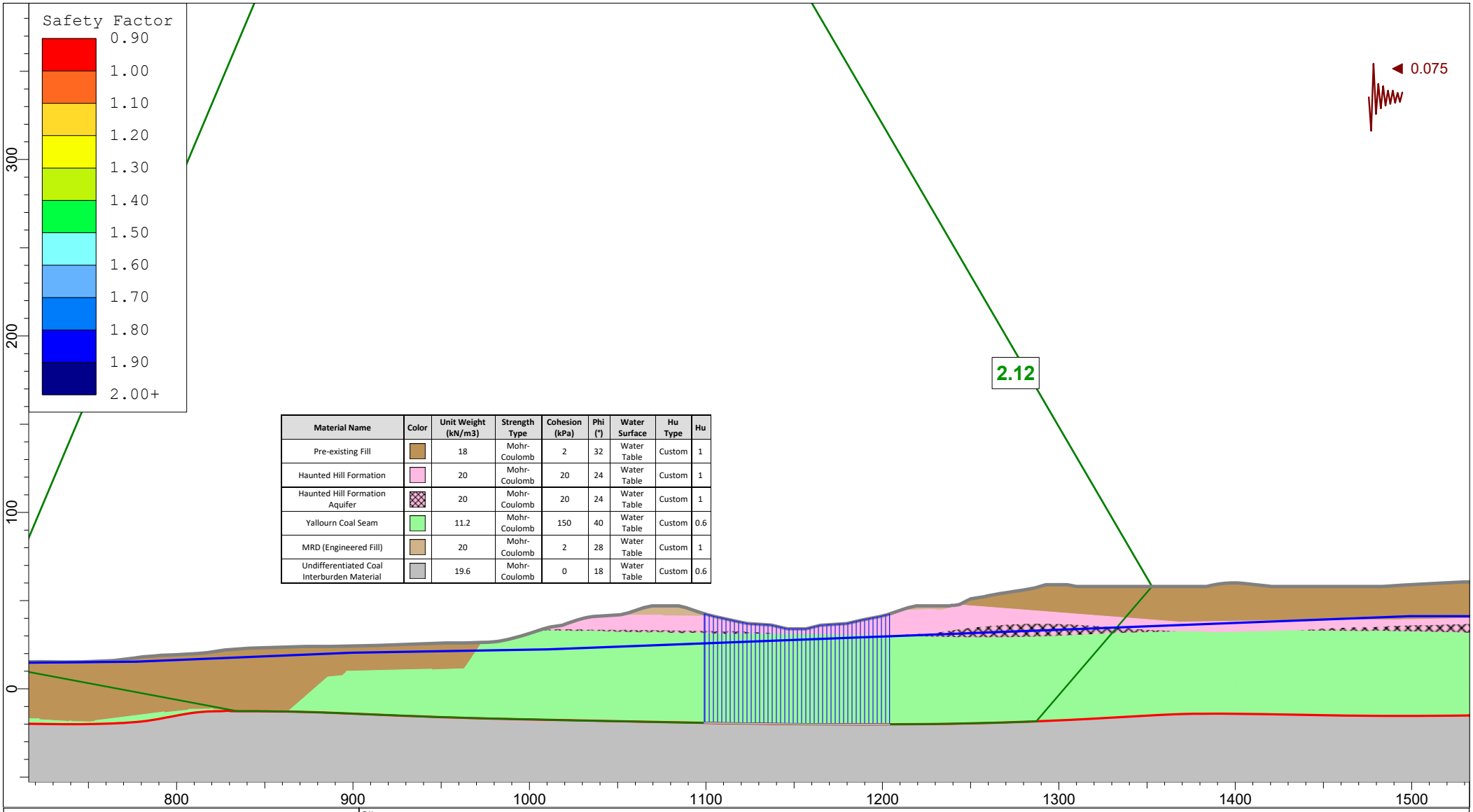
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



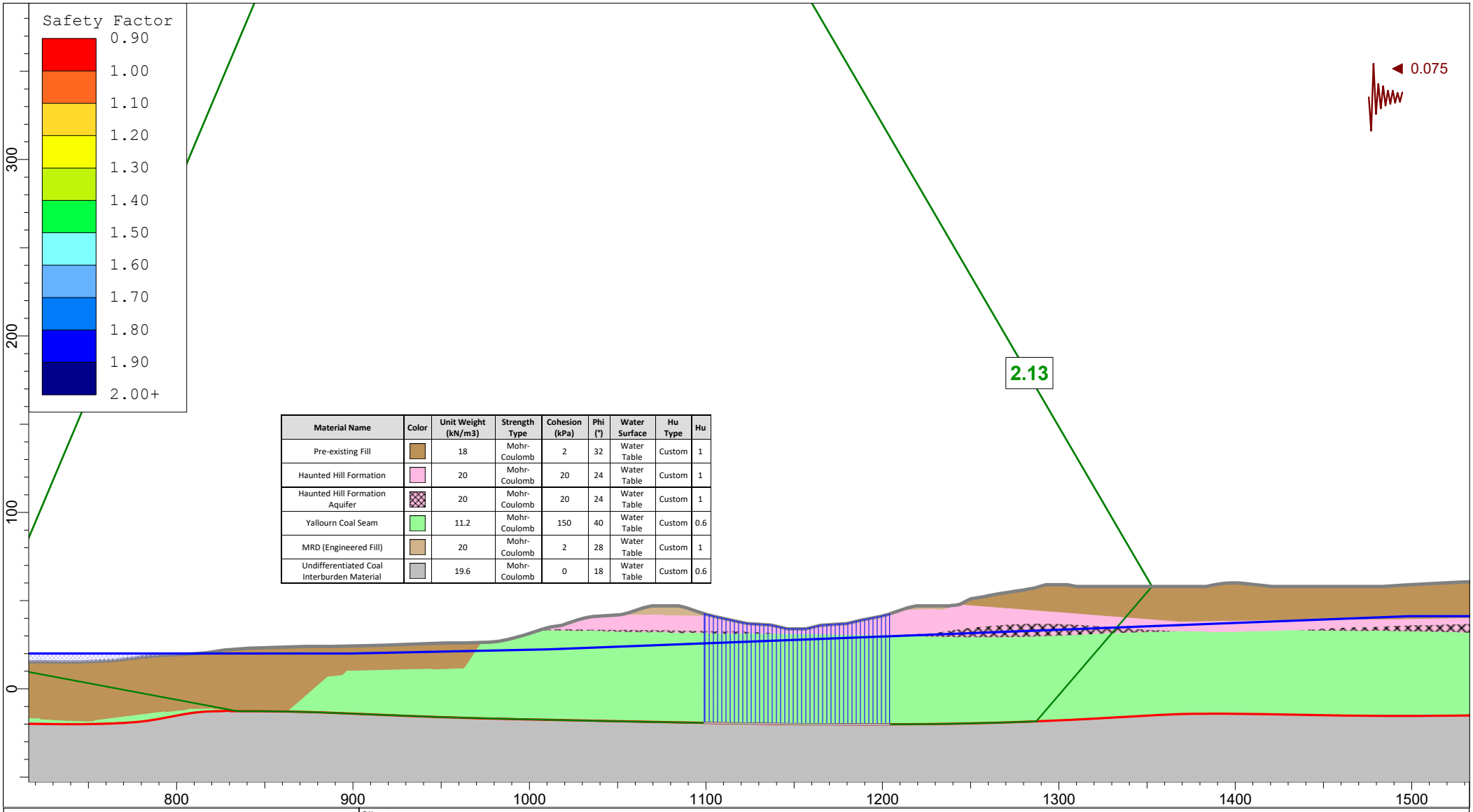
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-LS
Section:	Section 31	Case:	Seismic block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



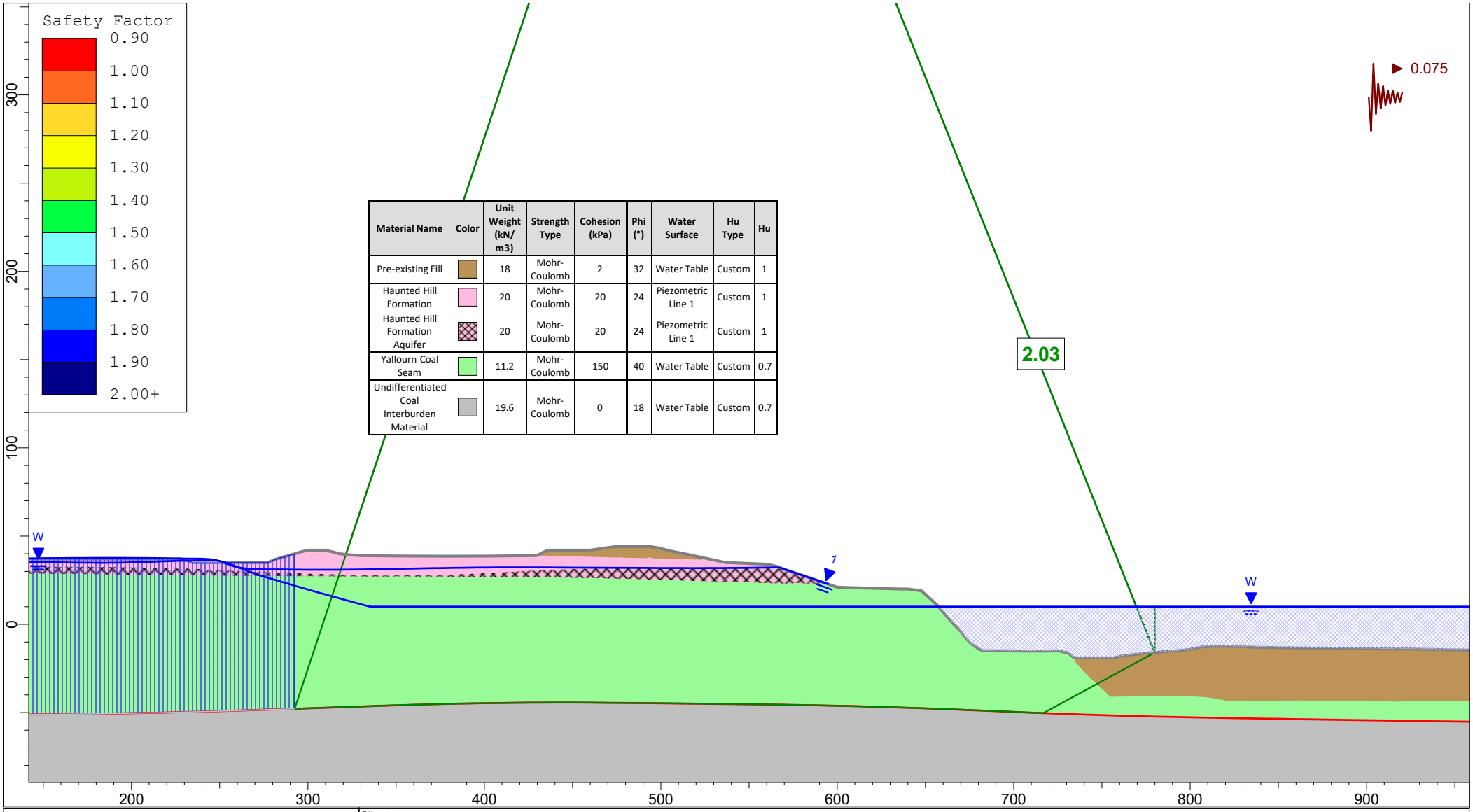
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YEF-NB (west)**
Section:	**Section 01**	Case:	**Seismic multilinear - Hu specific**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 10 mRL**
Notes:	**Median Interseam Shear Strength**		



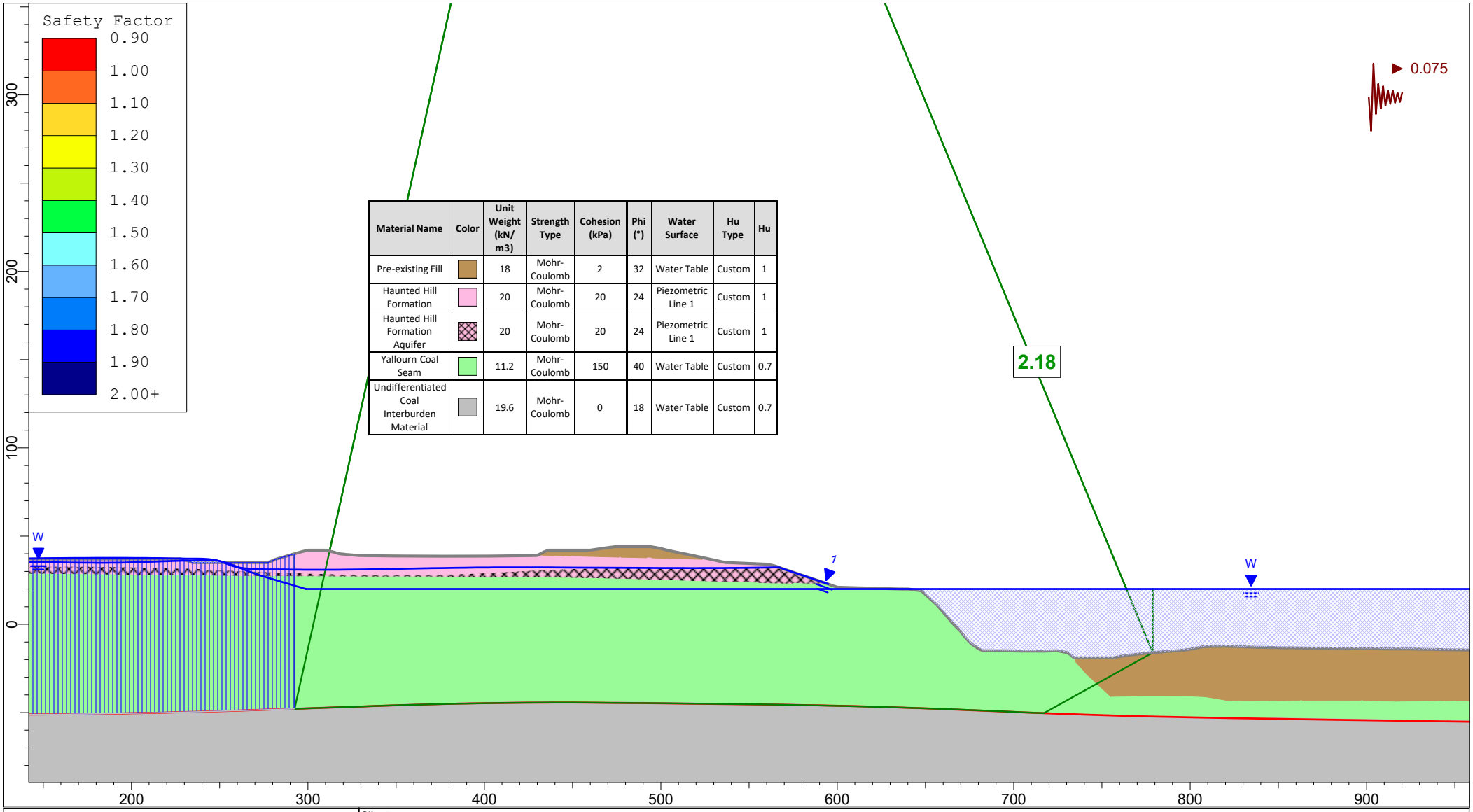
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YEF-NB (west)**
Section:	**Section 01**	Case:	**Seismic multilinear - Hu specific**
Job No:	**PSM4487**	Run:	**Lake filling - lake level at 20 mRL**
Notes:	**Median Interseam Shear Strength**		



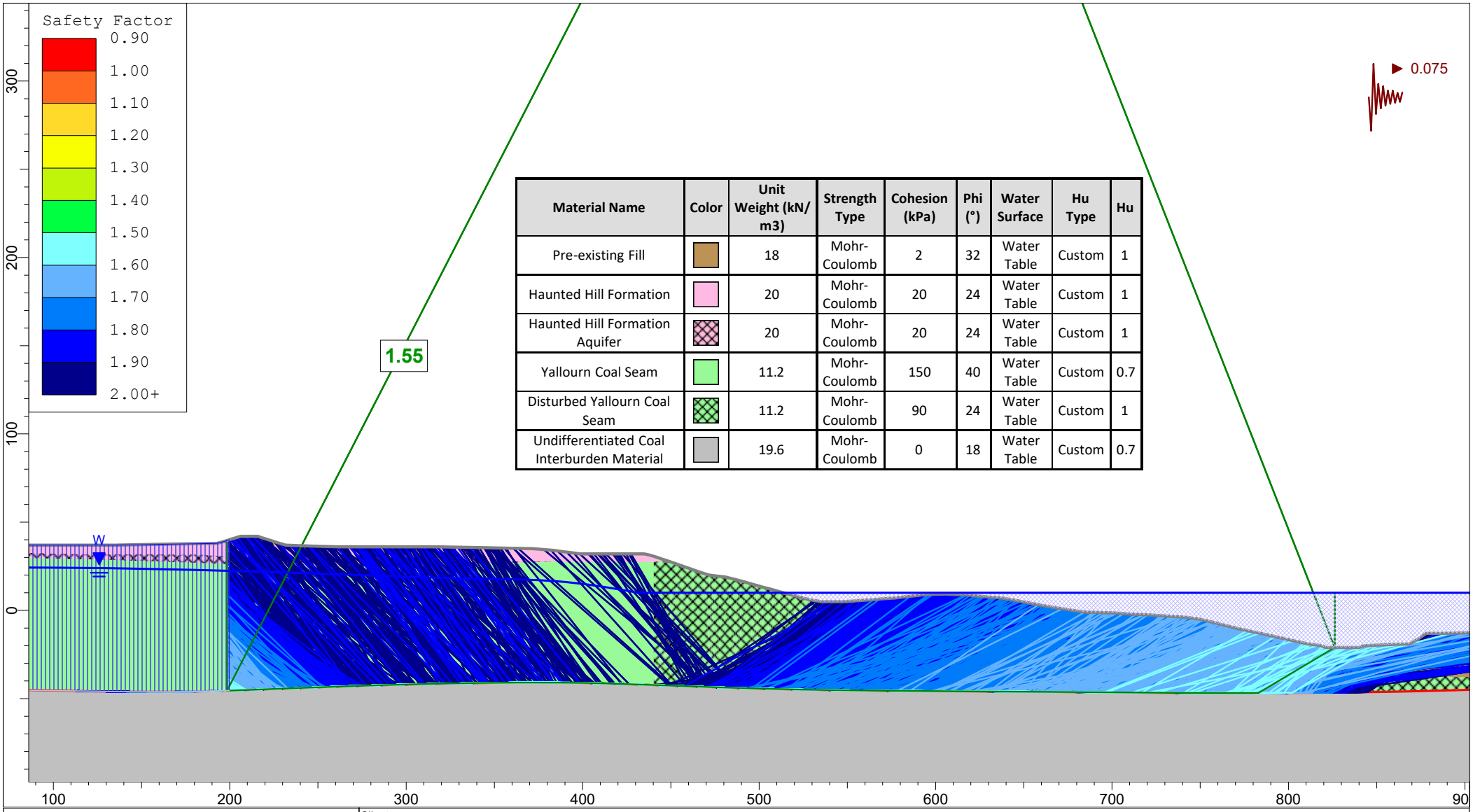
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



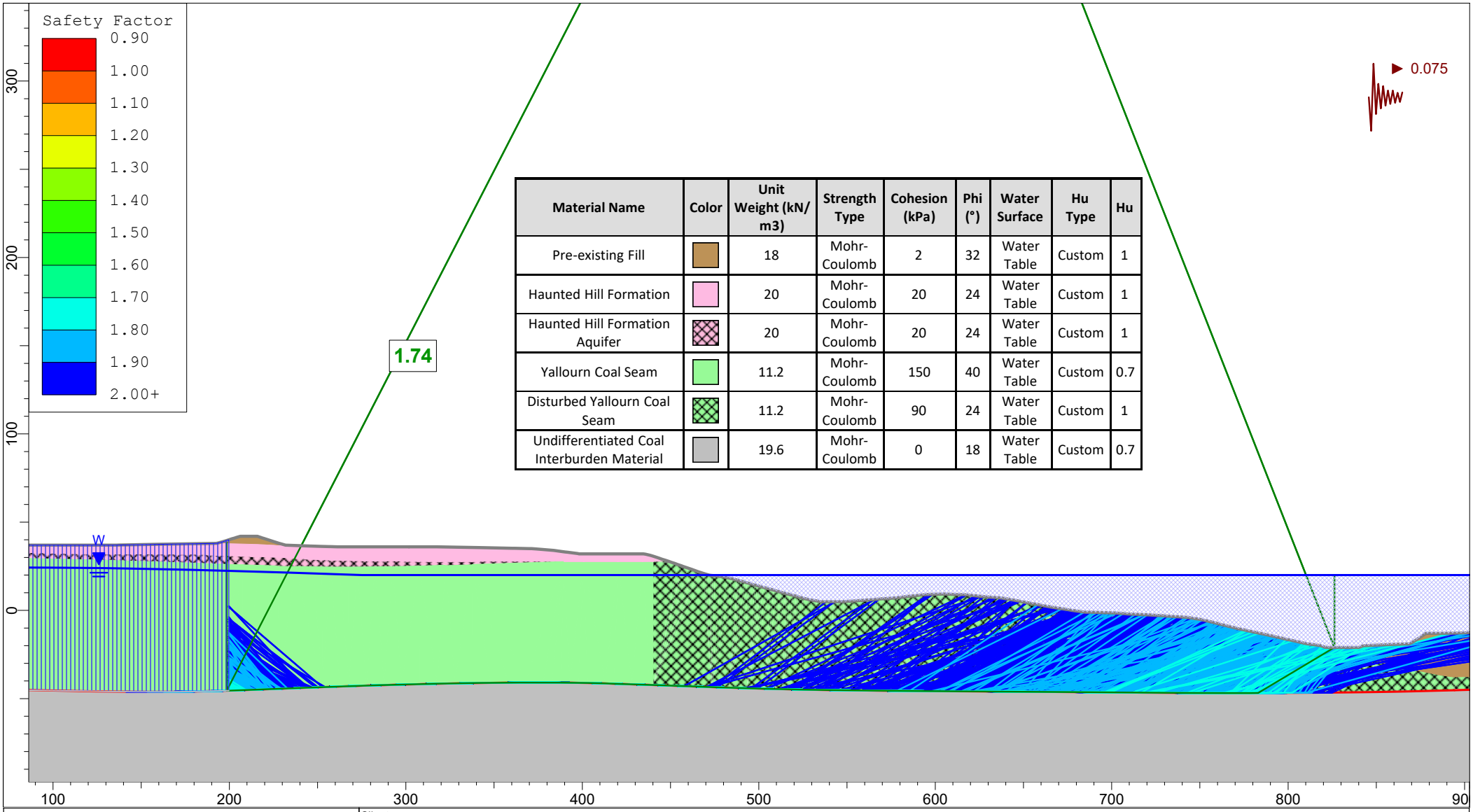
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



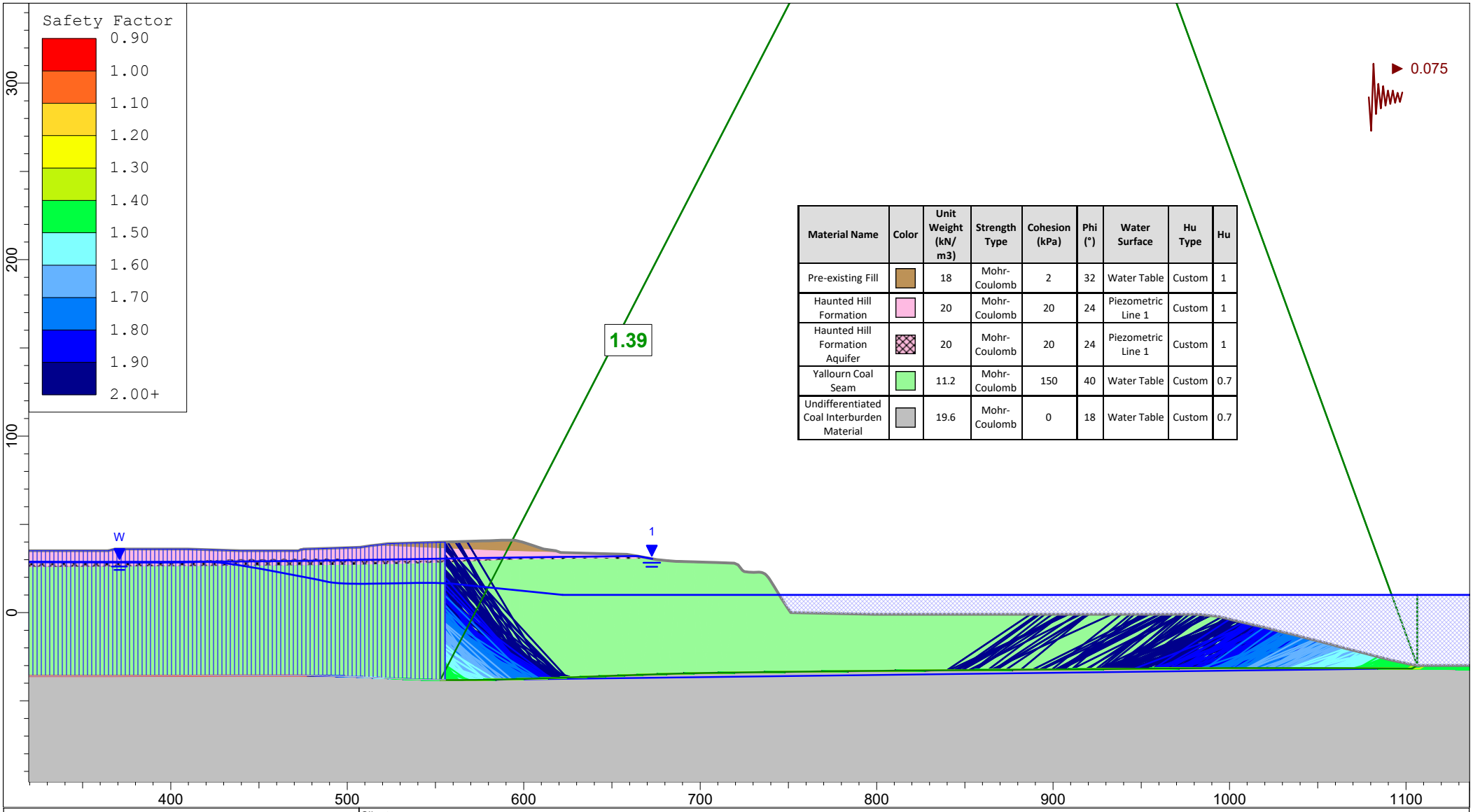
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



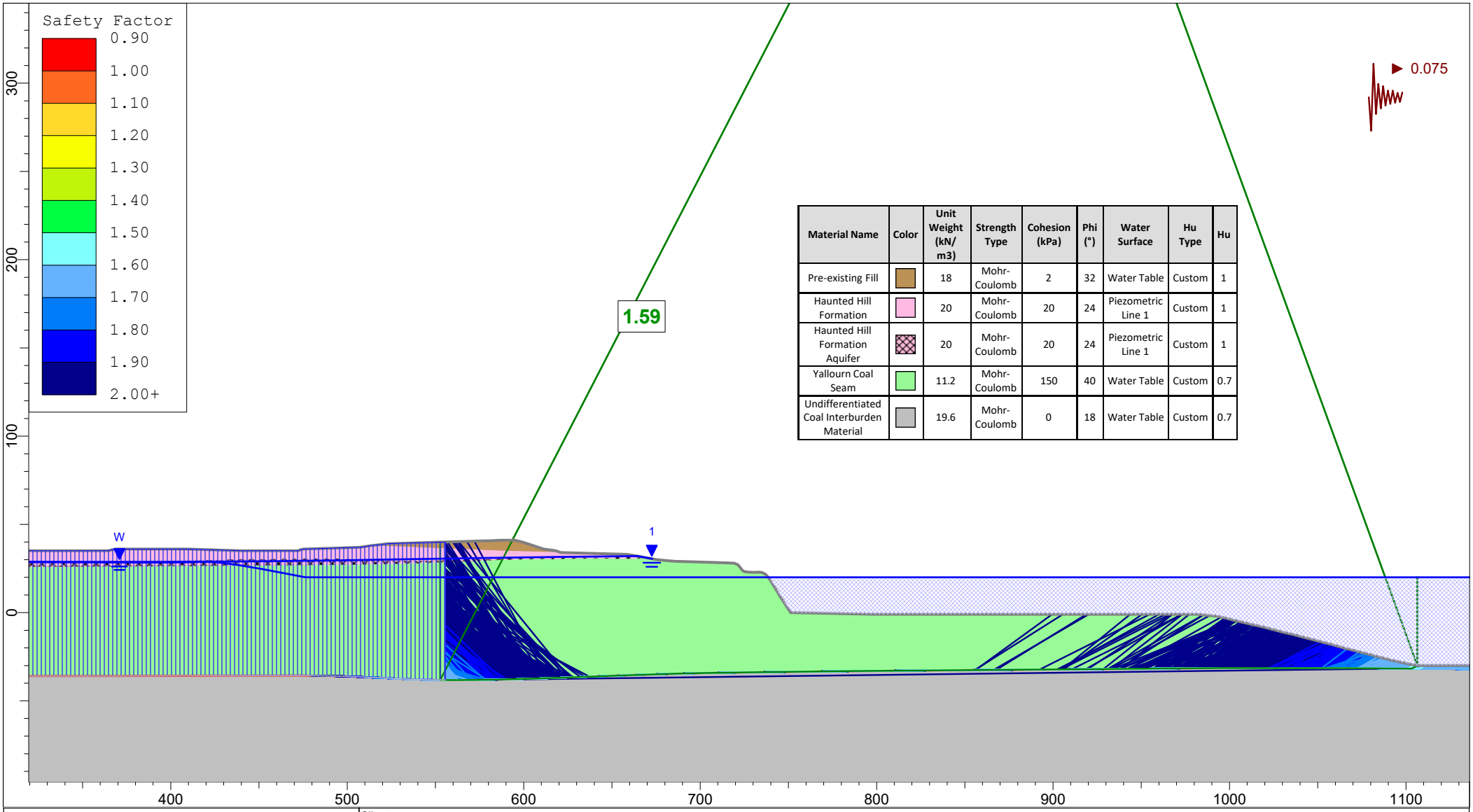
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



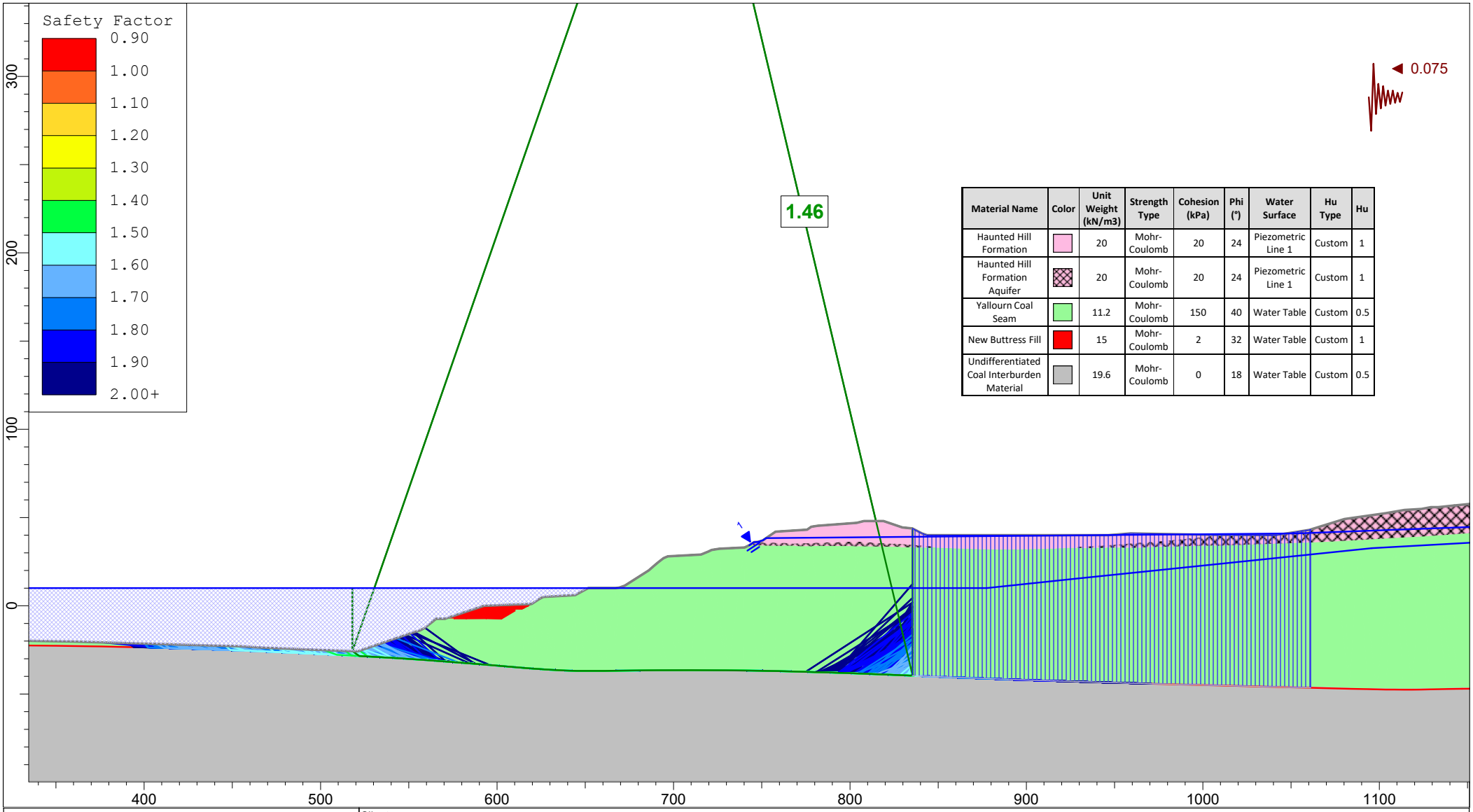
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



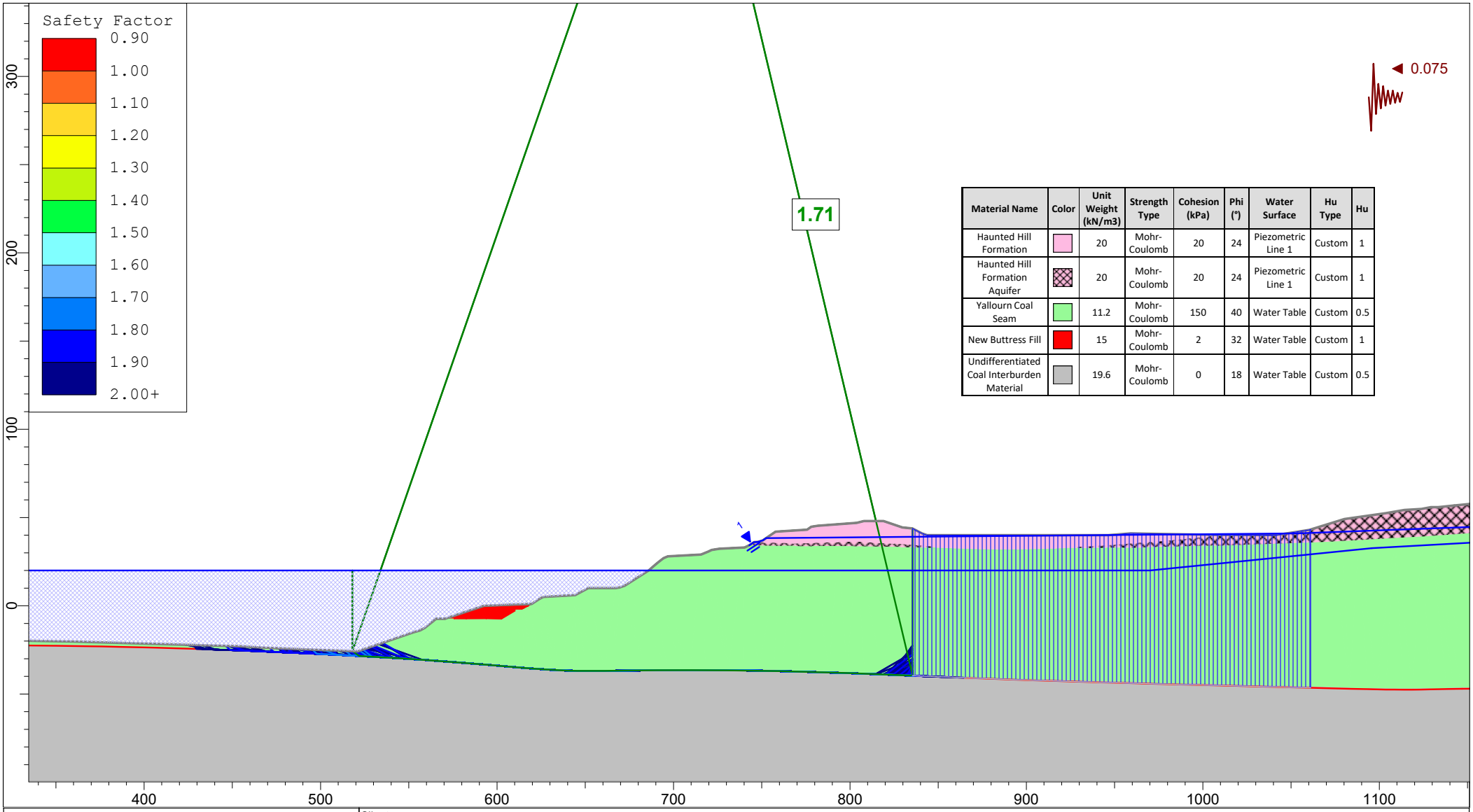
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



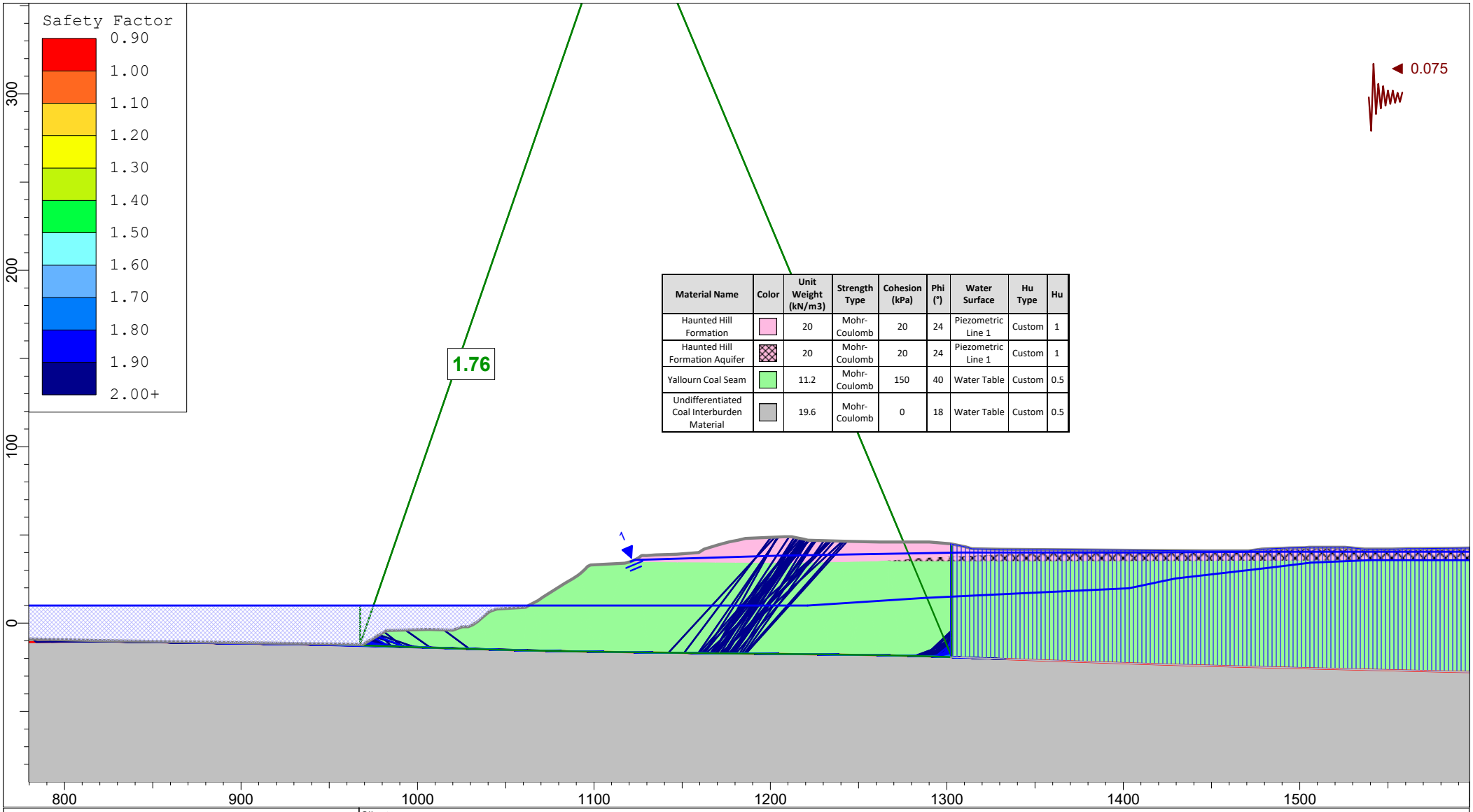
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



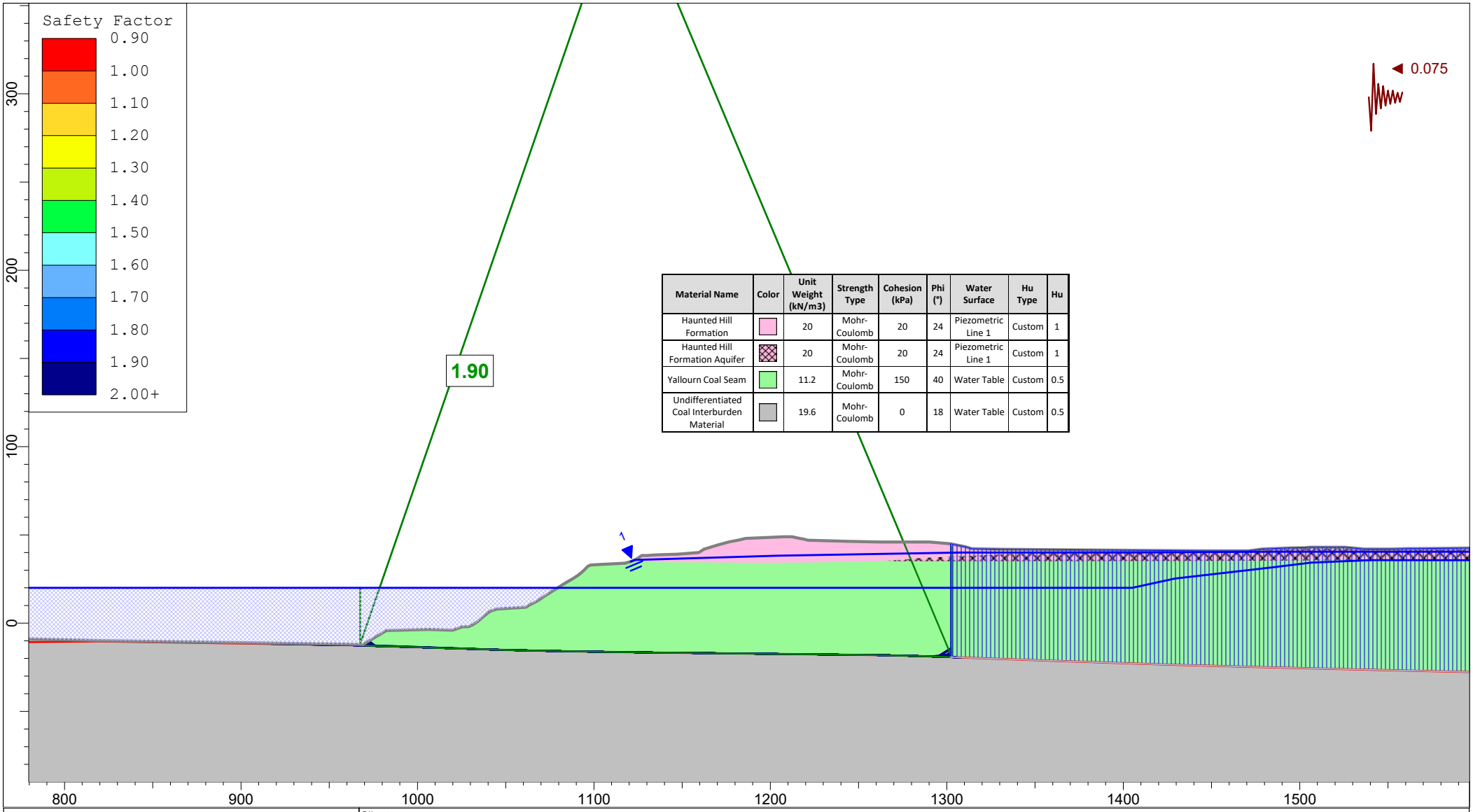
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



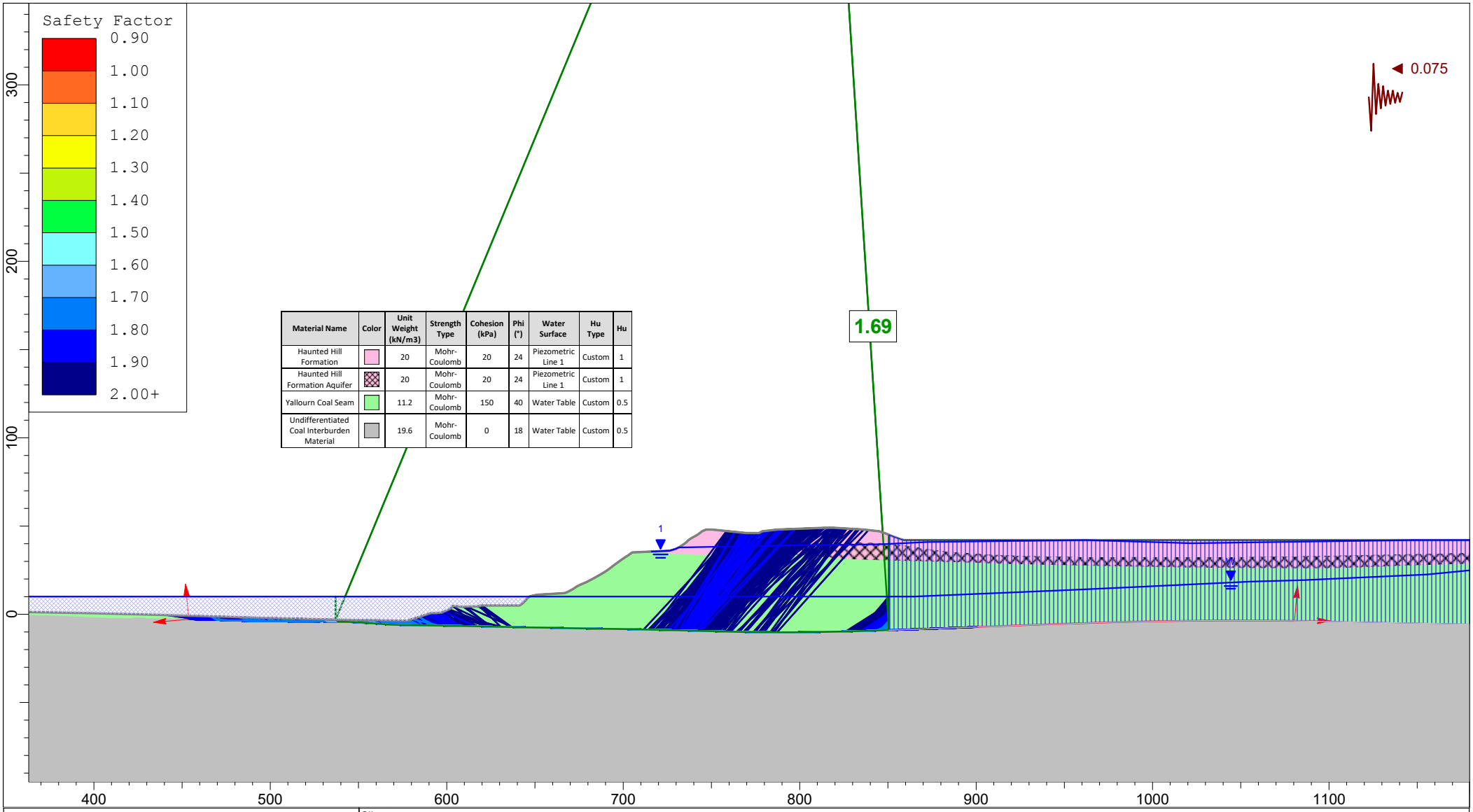
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



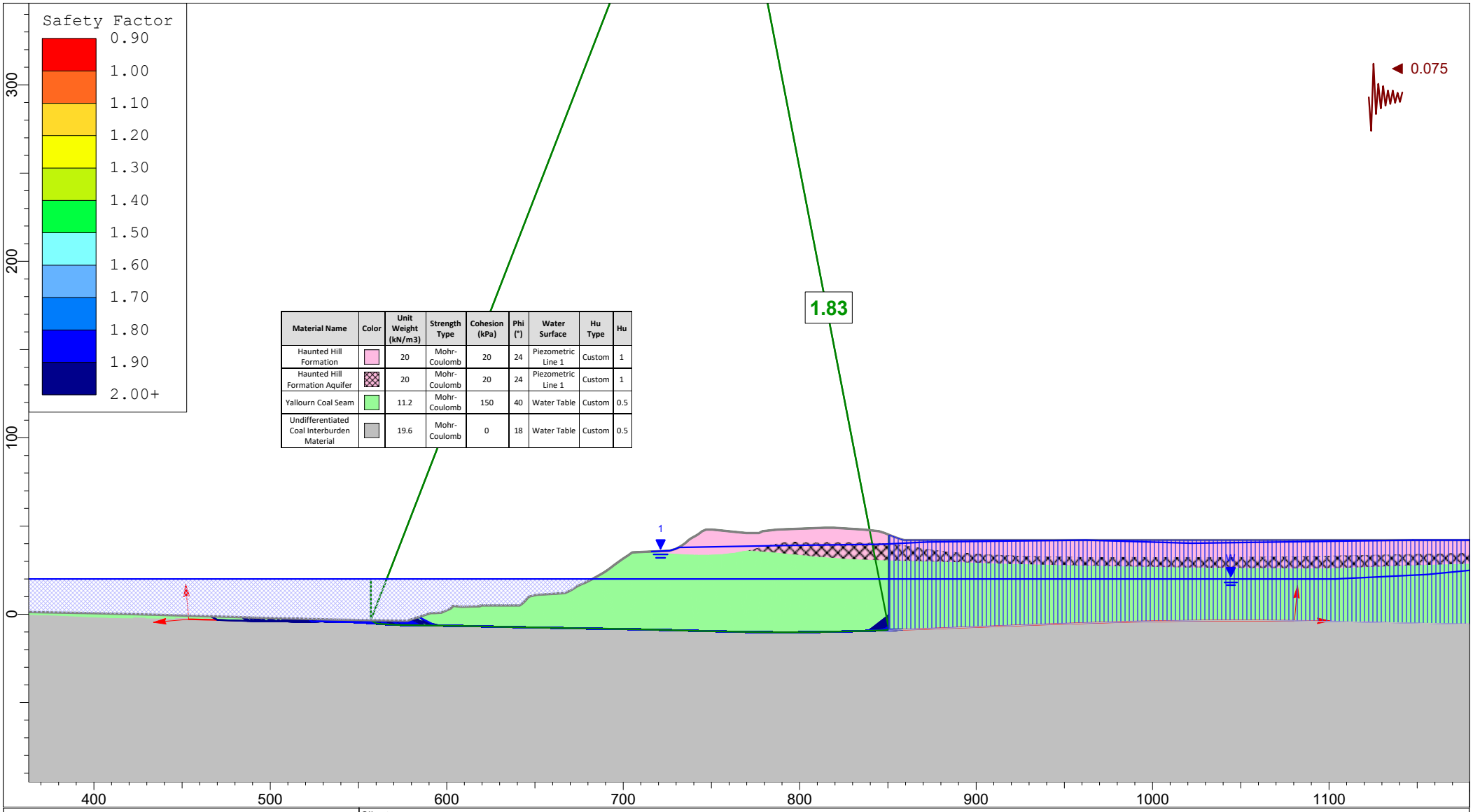
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



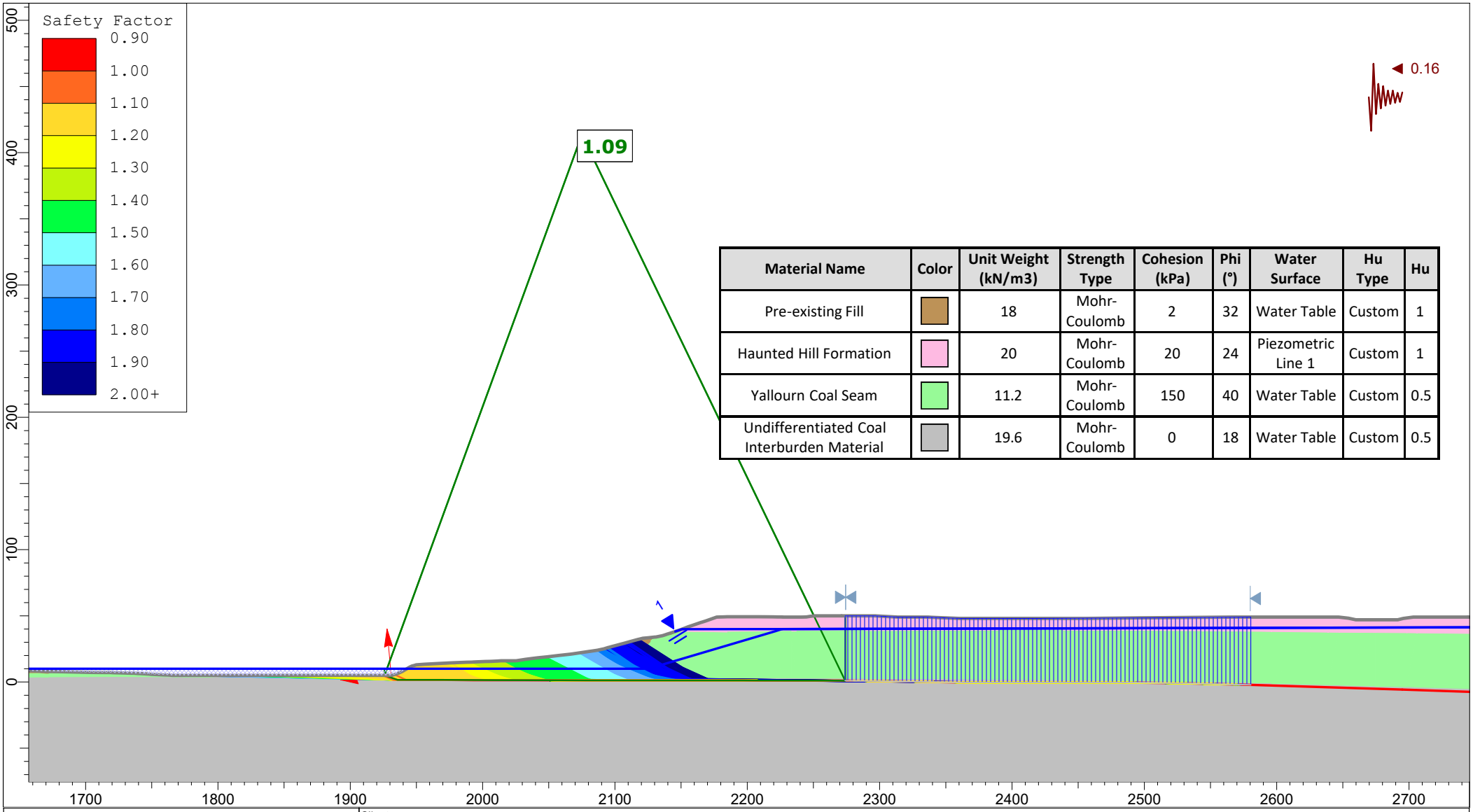
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



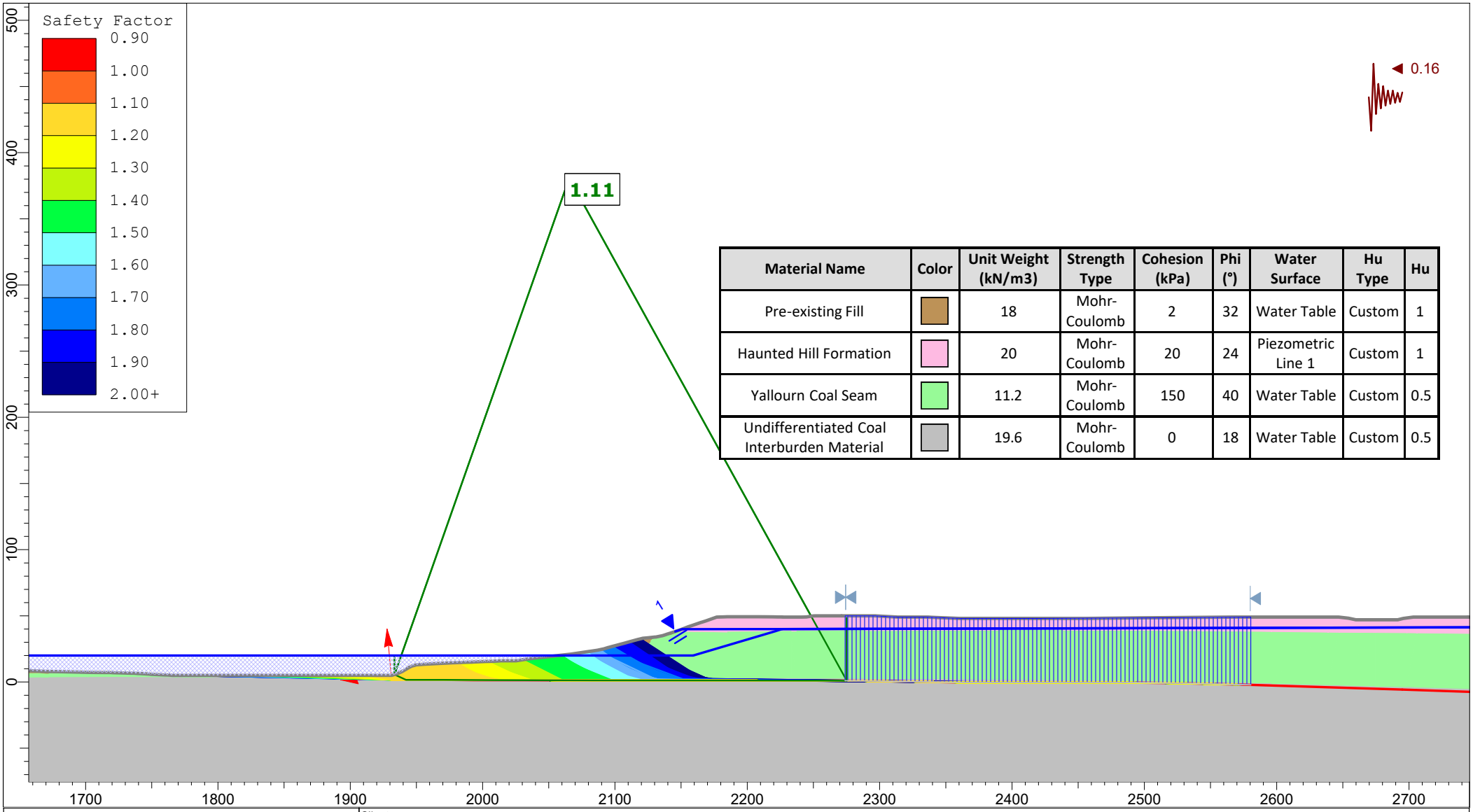
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



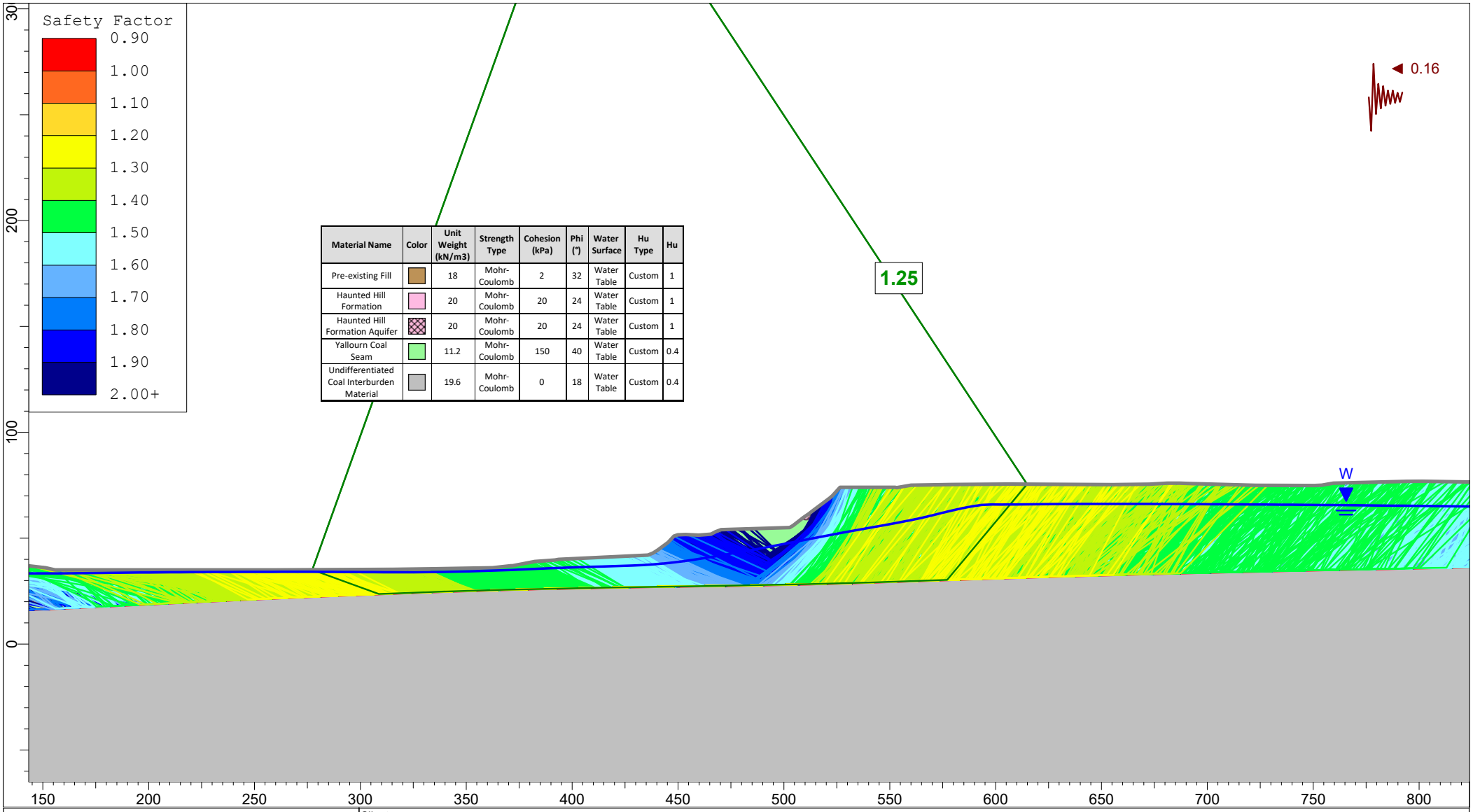
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



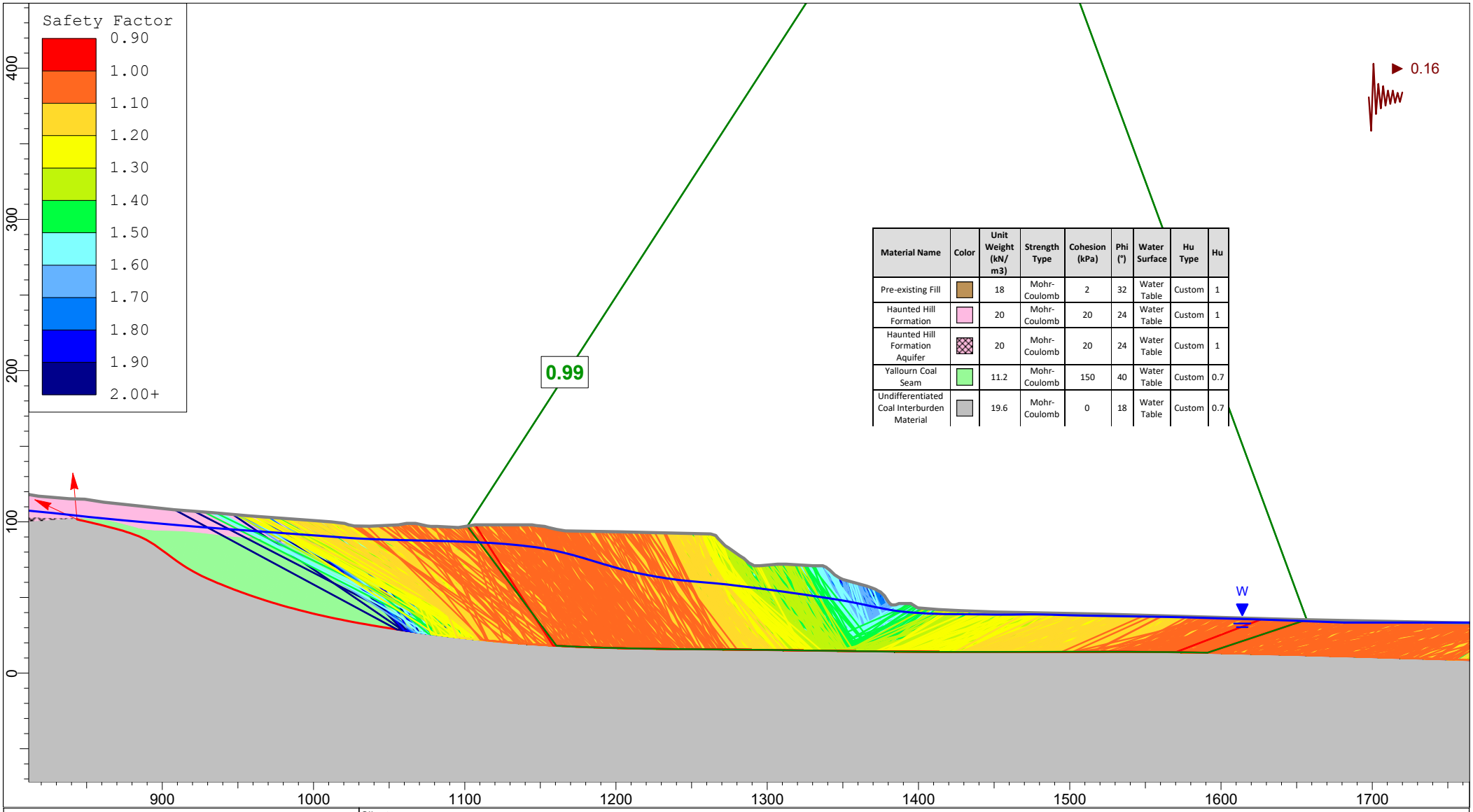
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Seismic block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



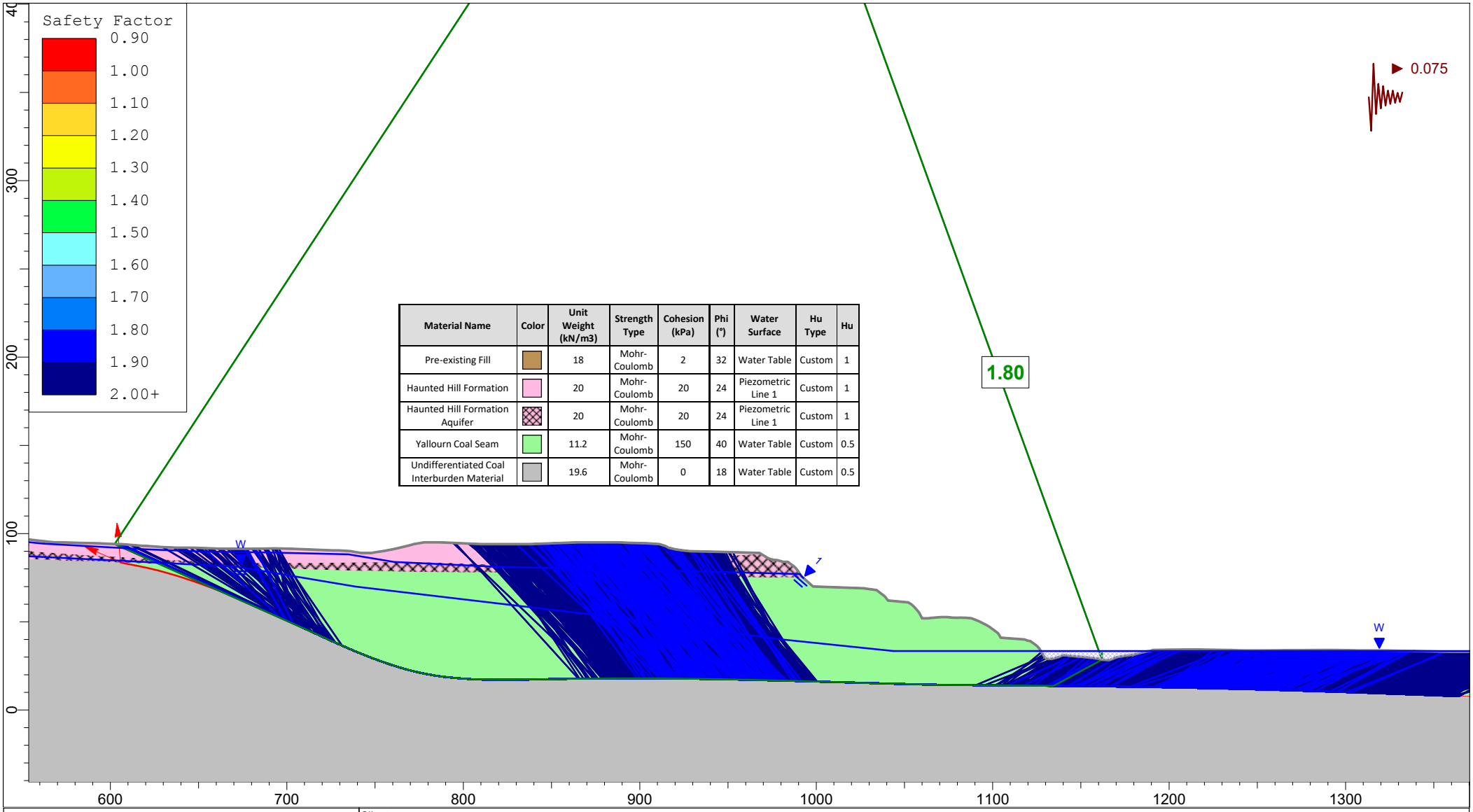
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SB
Section:	Section 19	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4mRL
Notes:	Median Interseam Shear Strength		



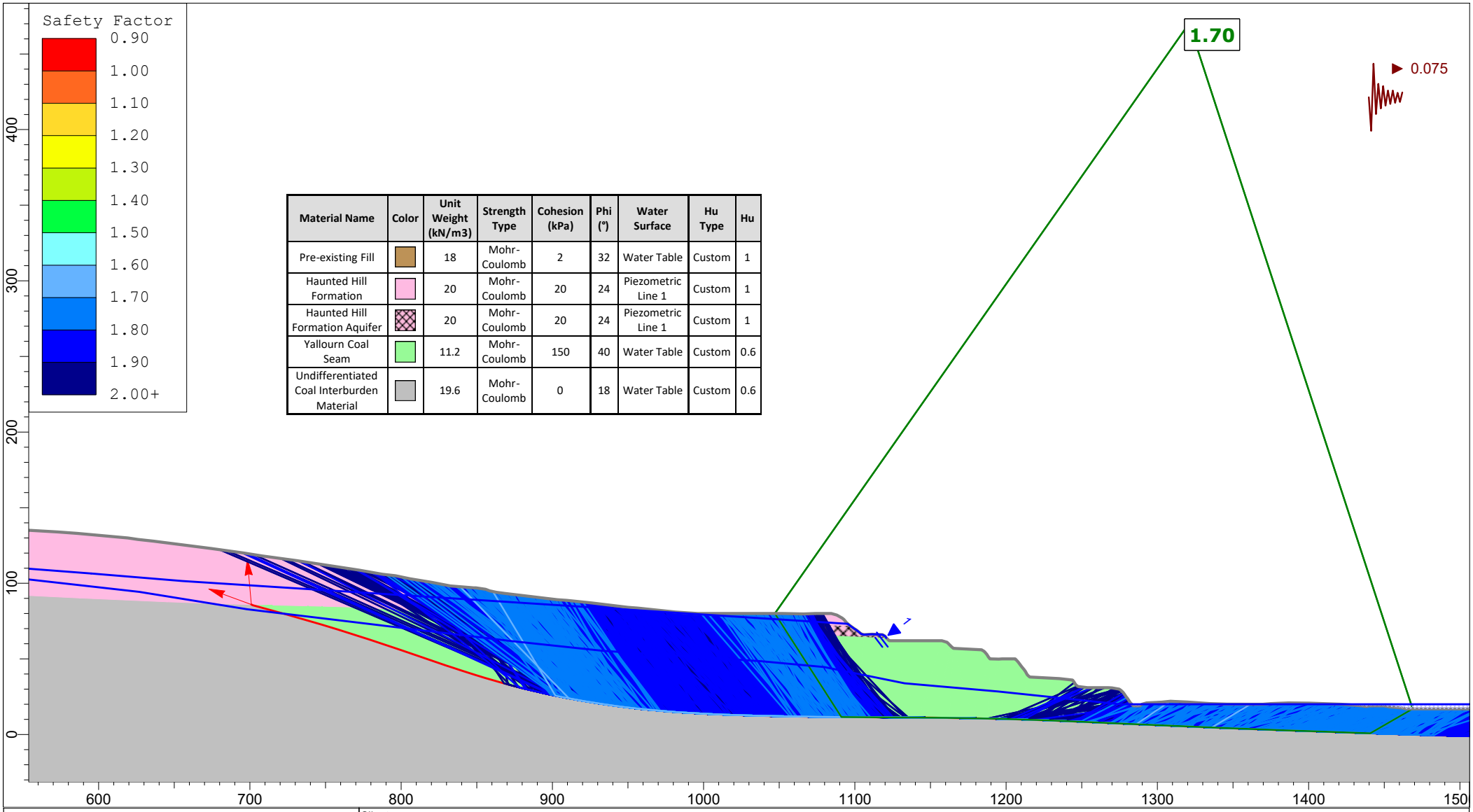
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 21	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - Lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



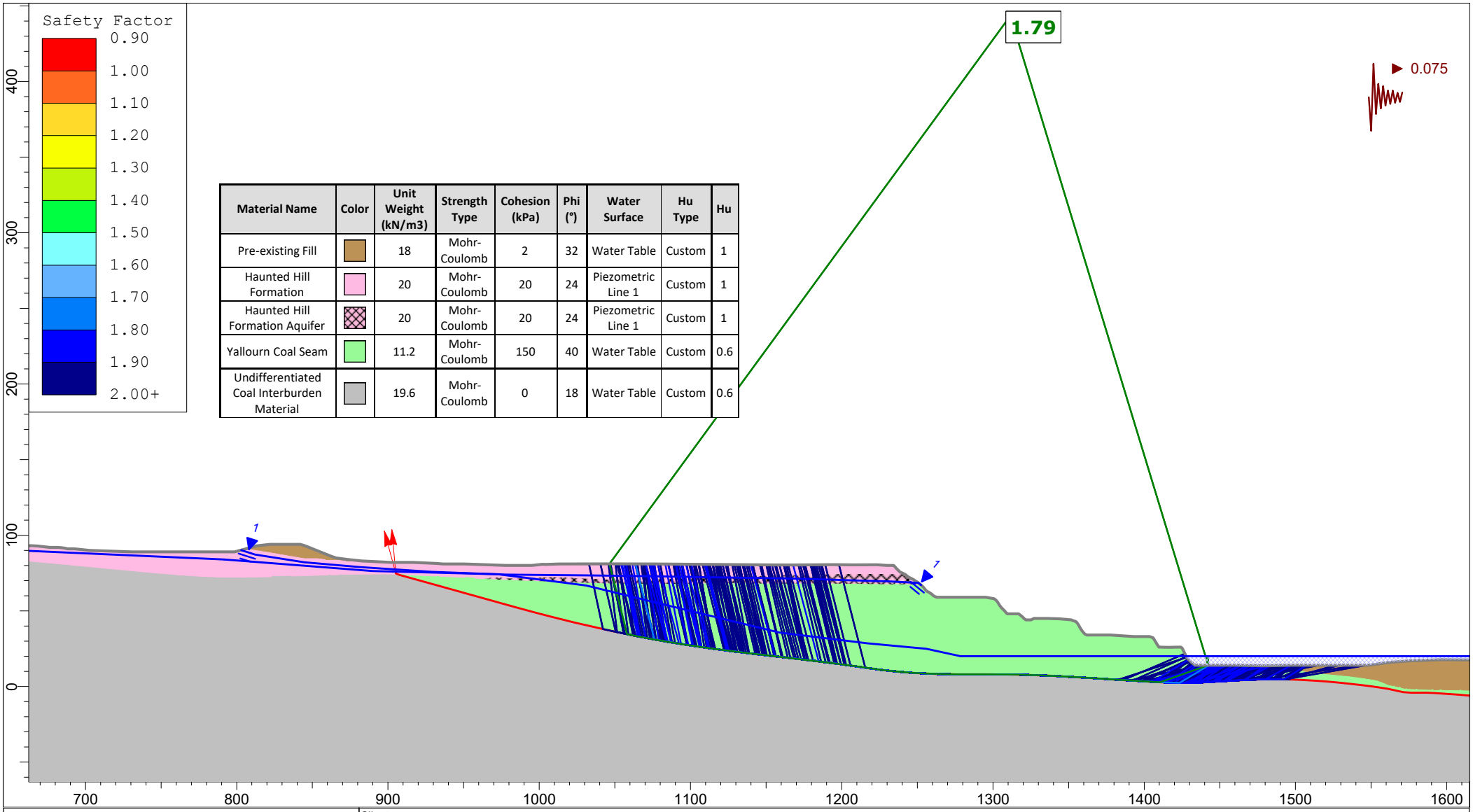
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (South)
Section:	Section 22	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



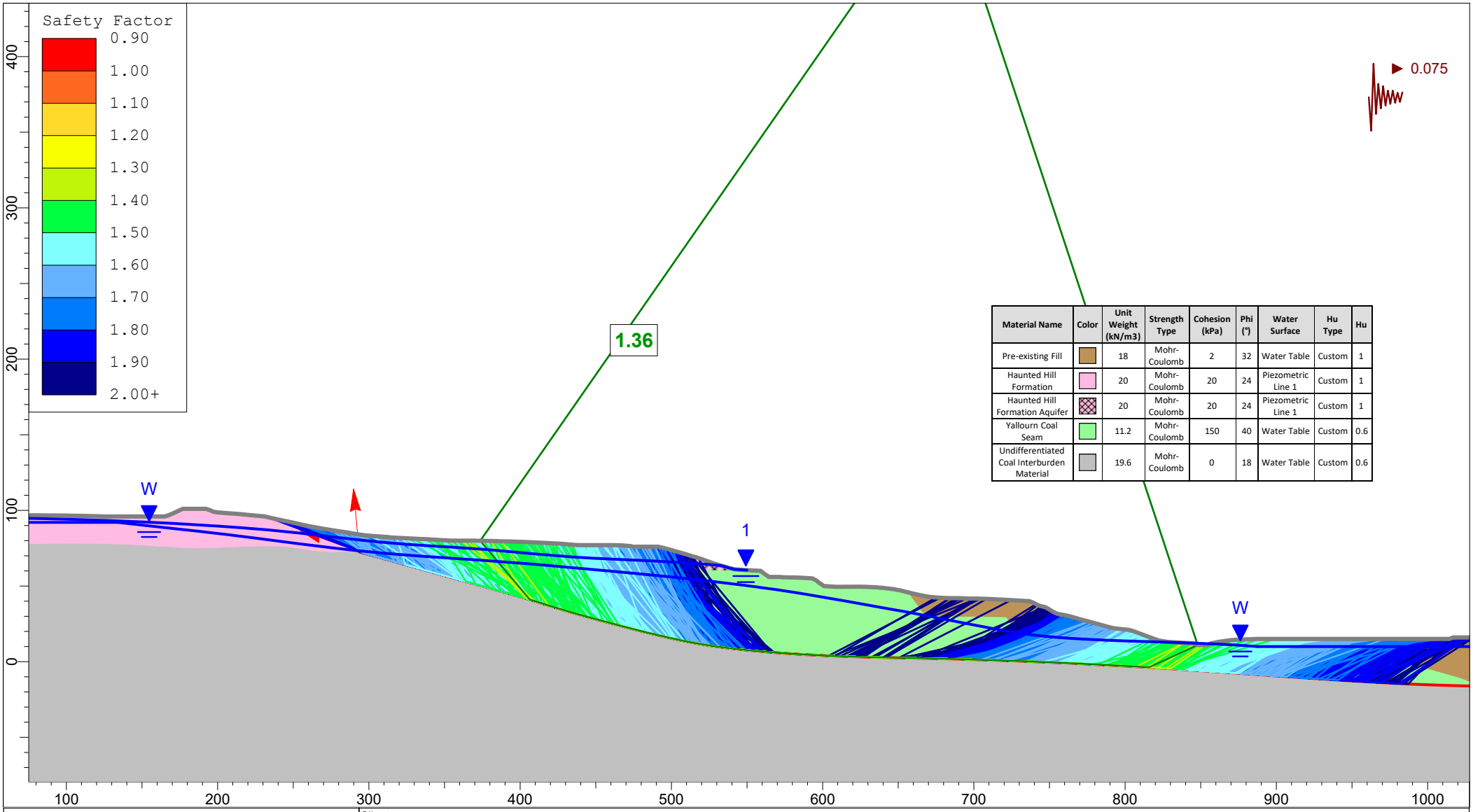
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 23	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



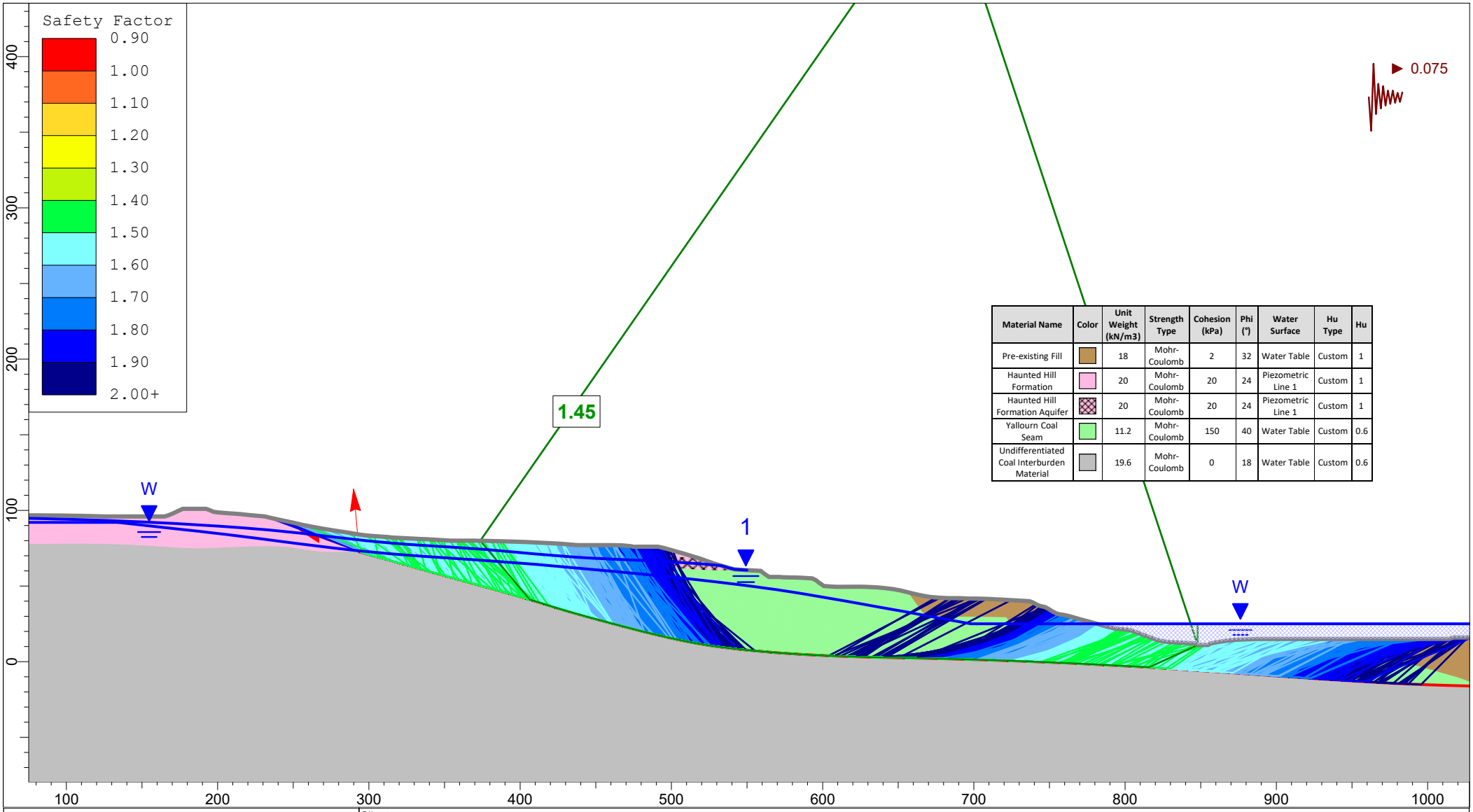
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



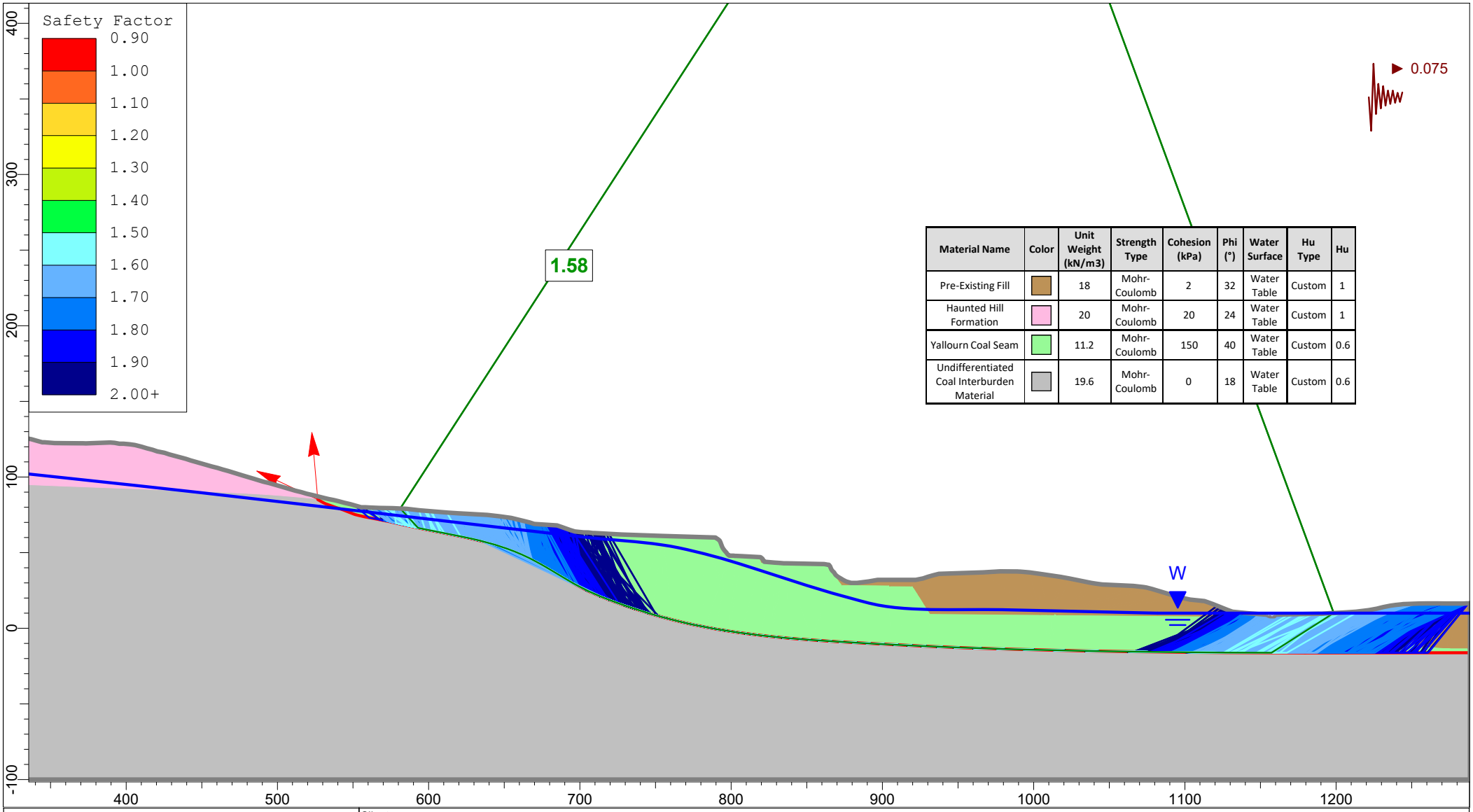
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



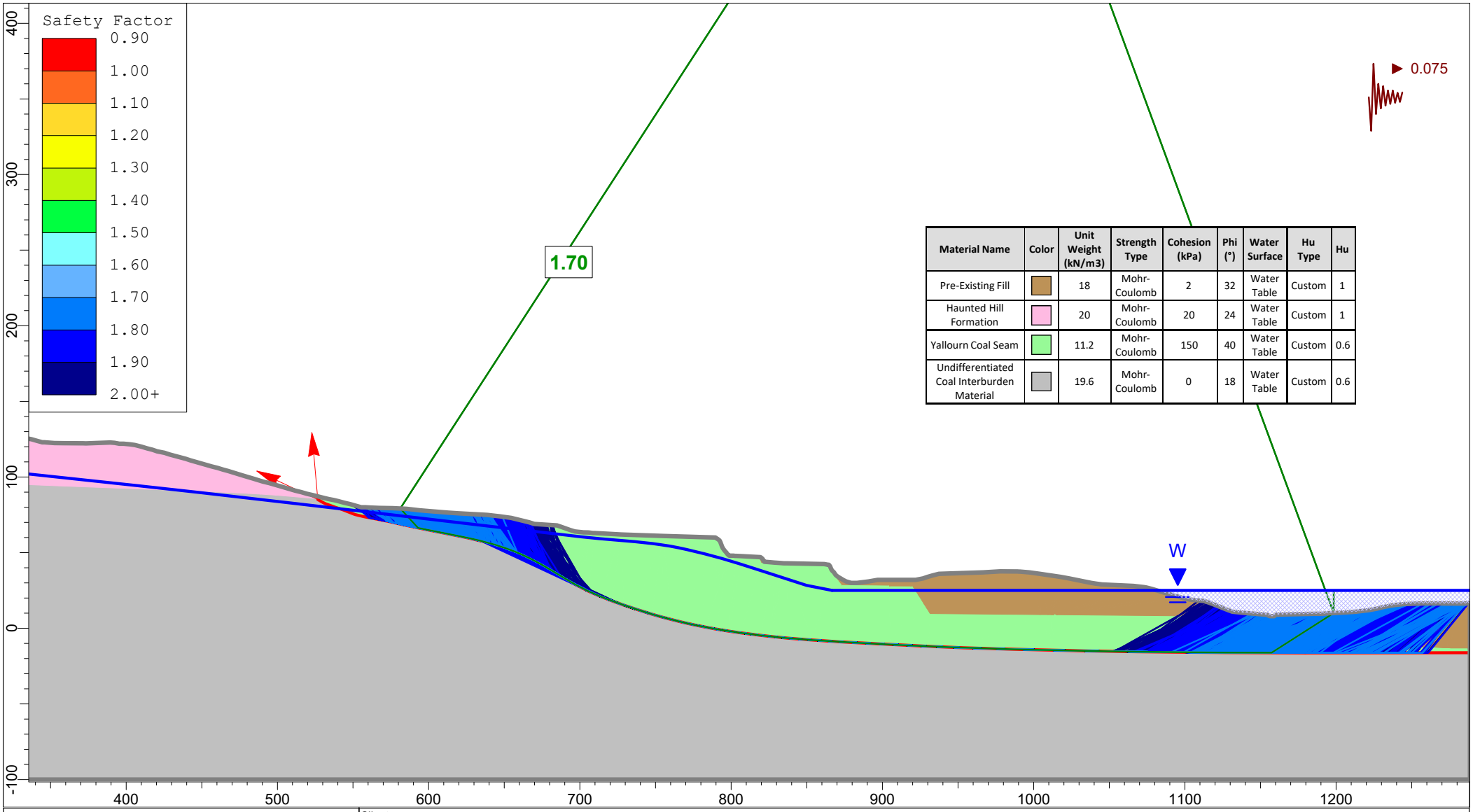
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength		



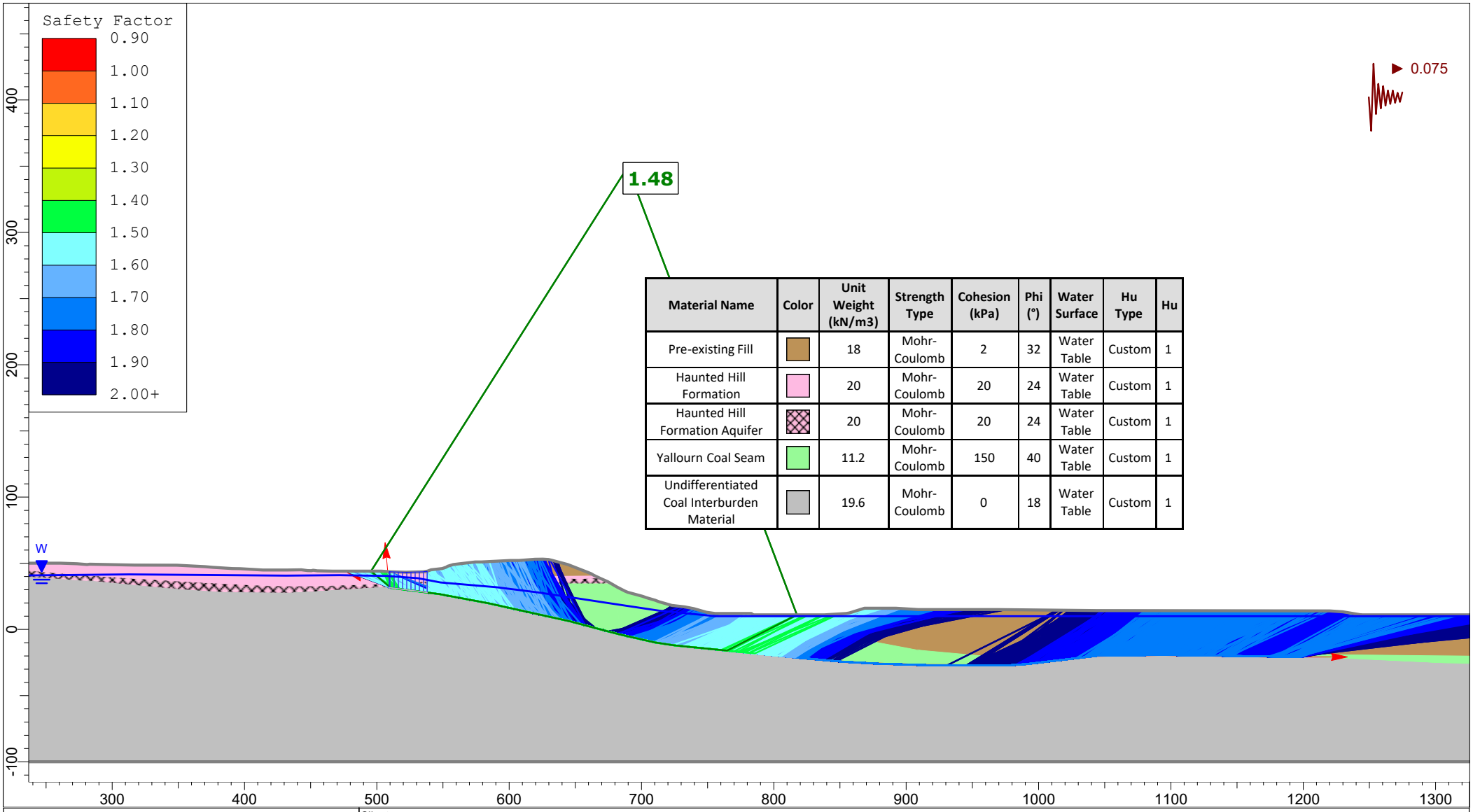
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



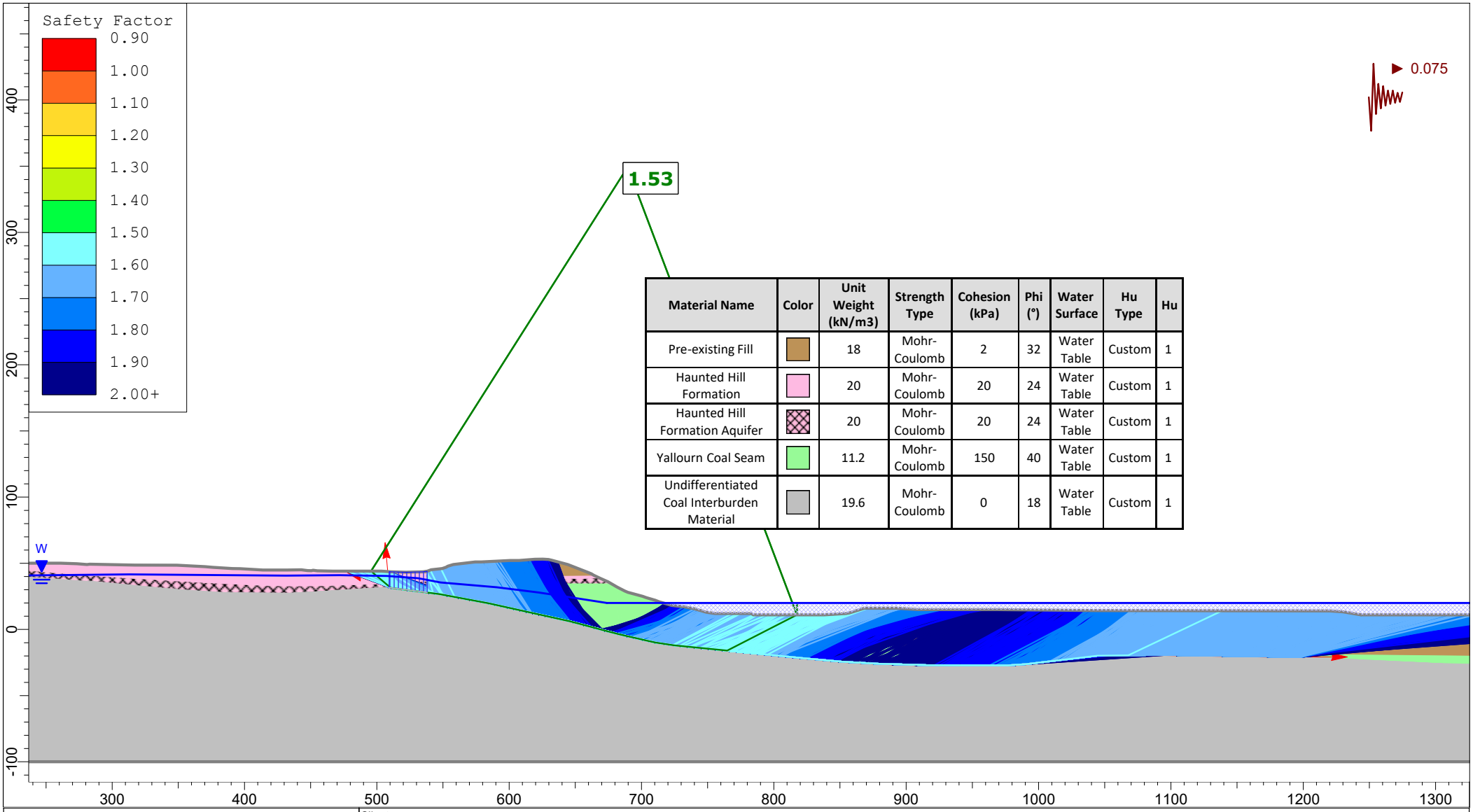
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-Existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength		



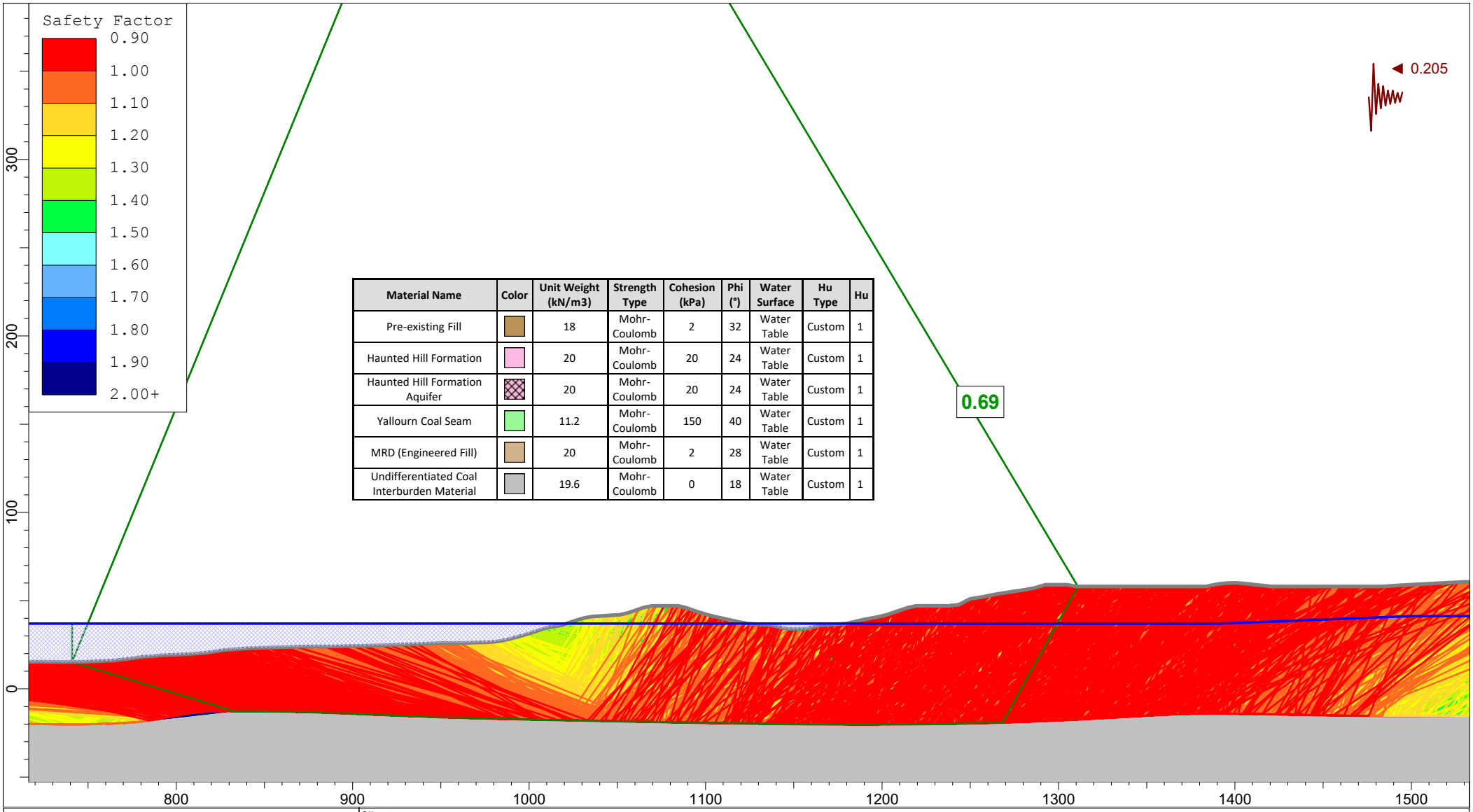
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-LS
Section:	Section 31	Case:	Seismic block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



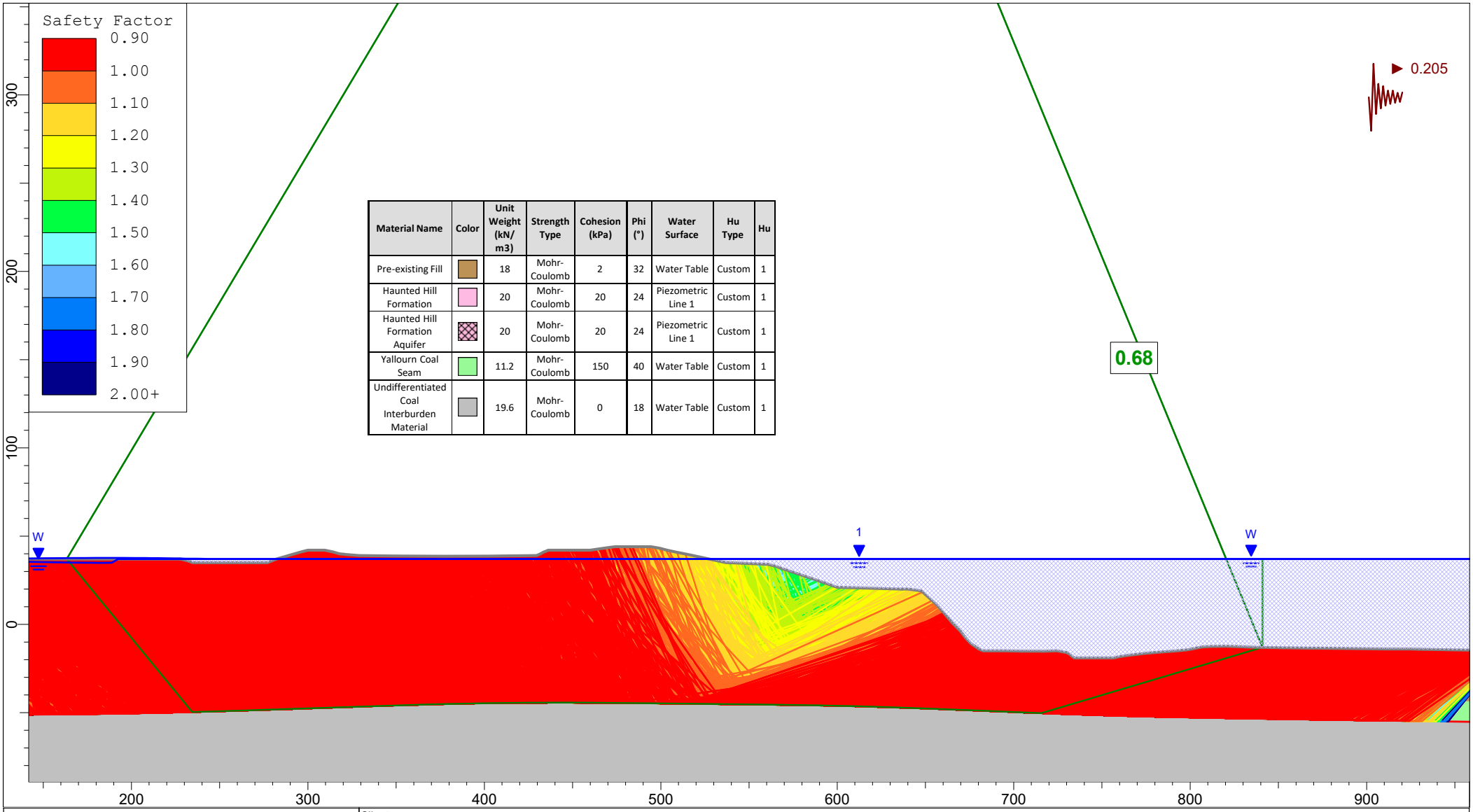
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-LS
Section:	Section 31	Case:	Seismic block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



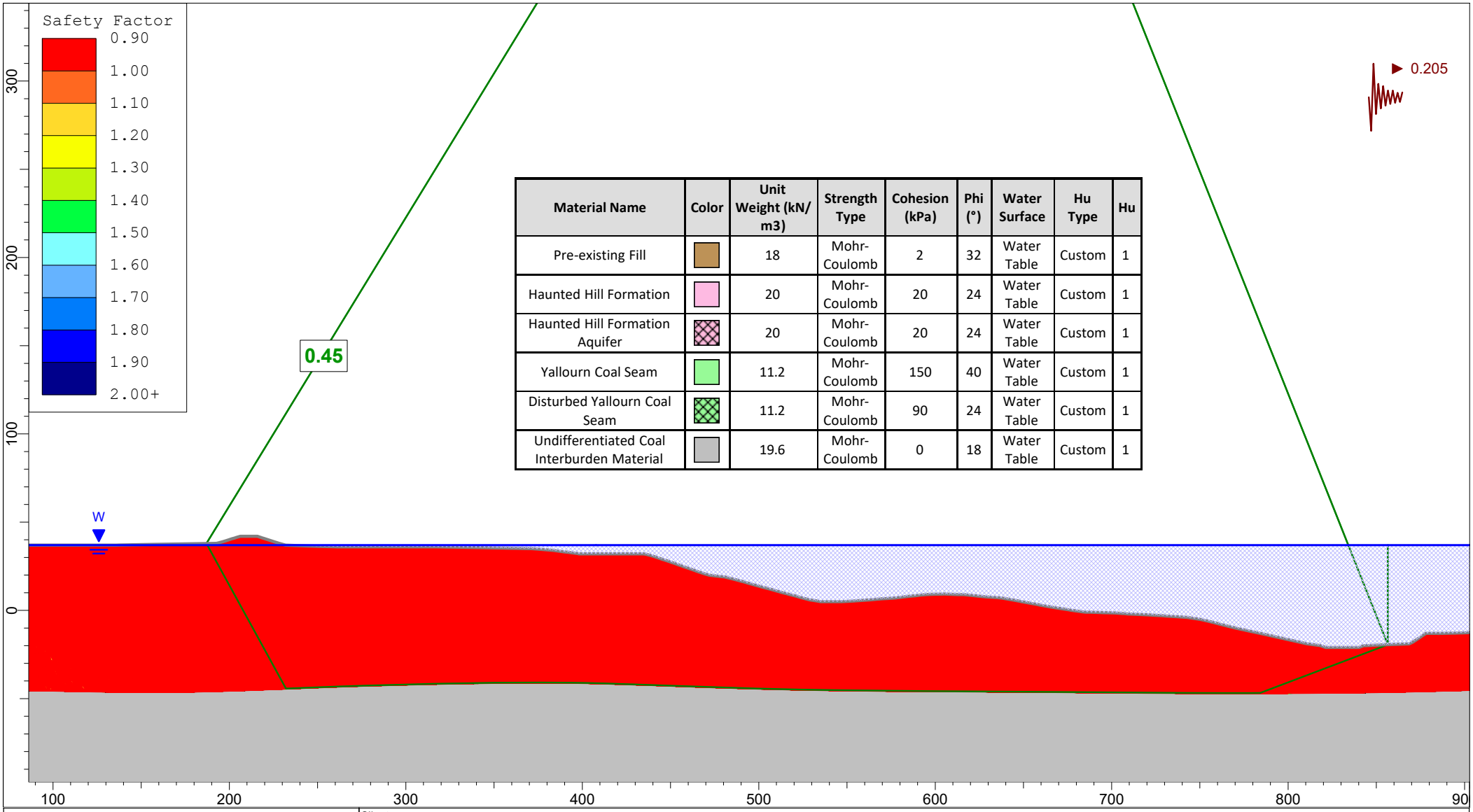
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	2	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (west)
Section:	Section 01	Case:	Seismic multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



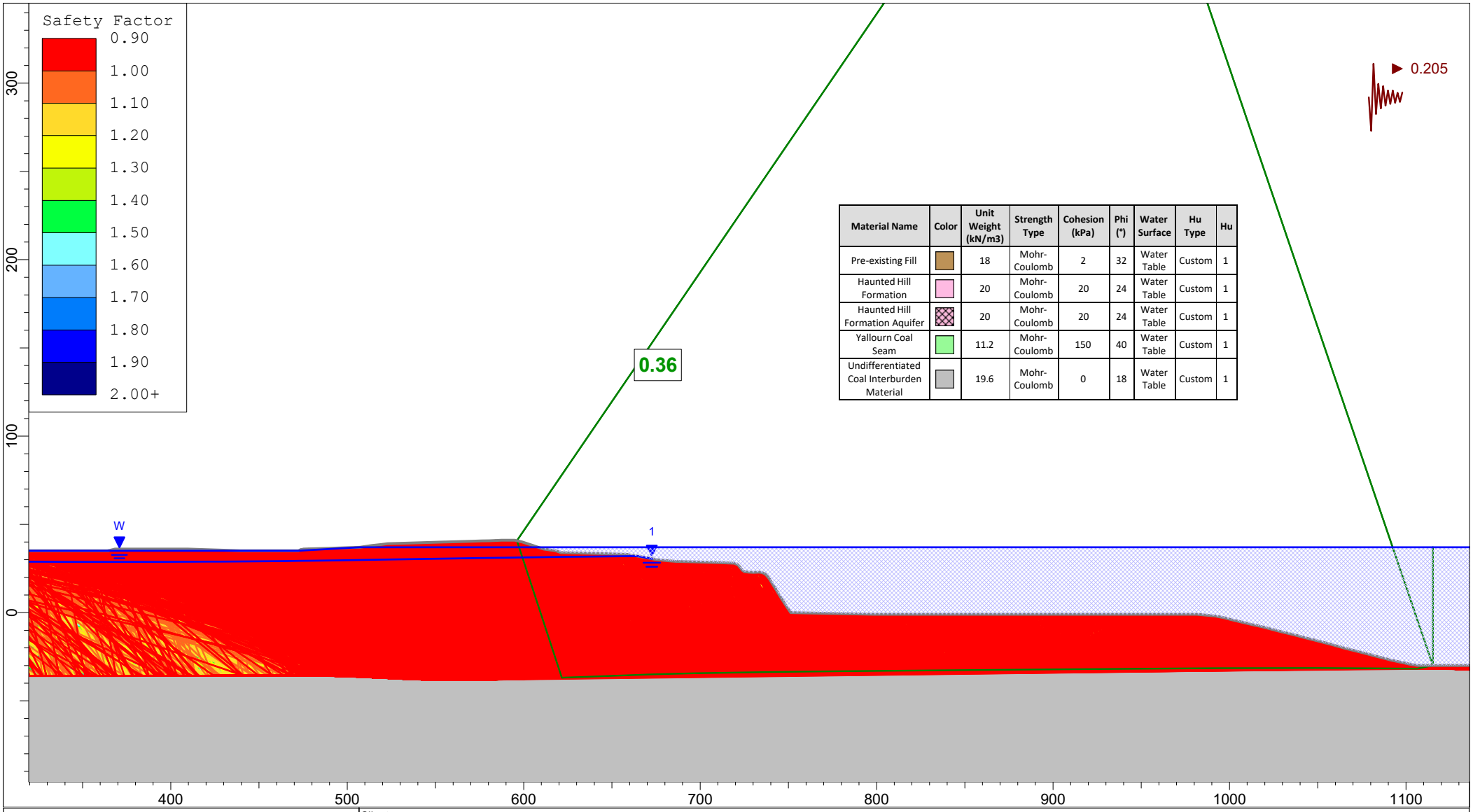
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Seismic multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



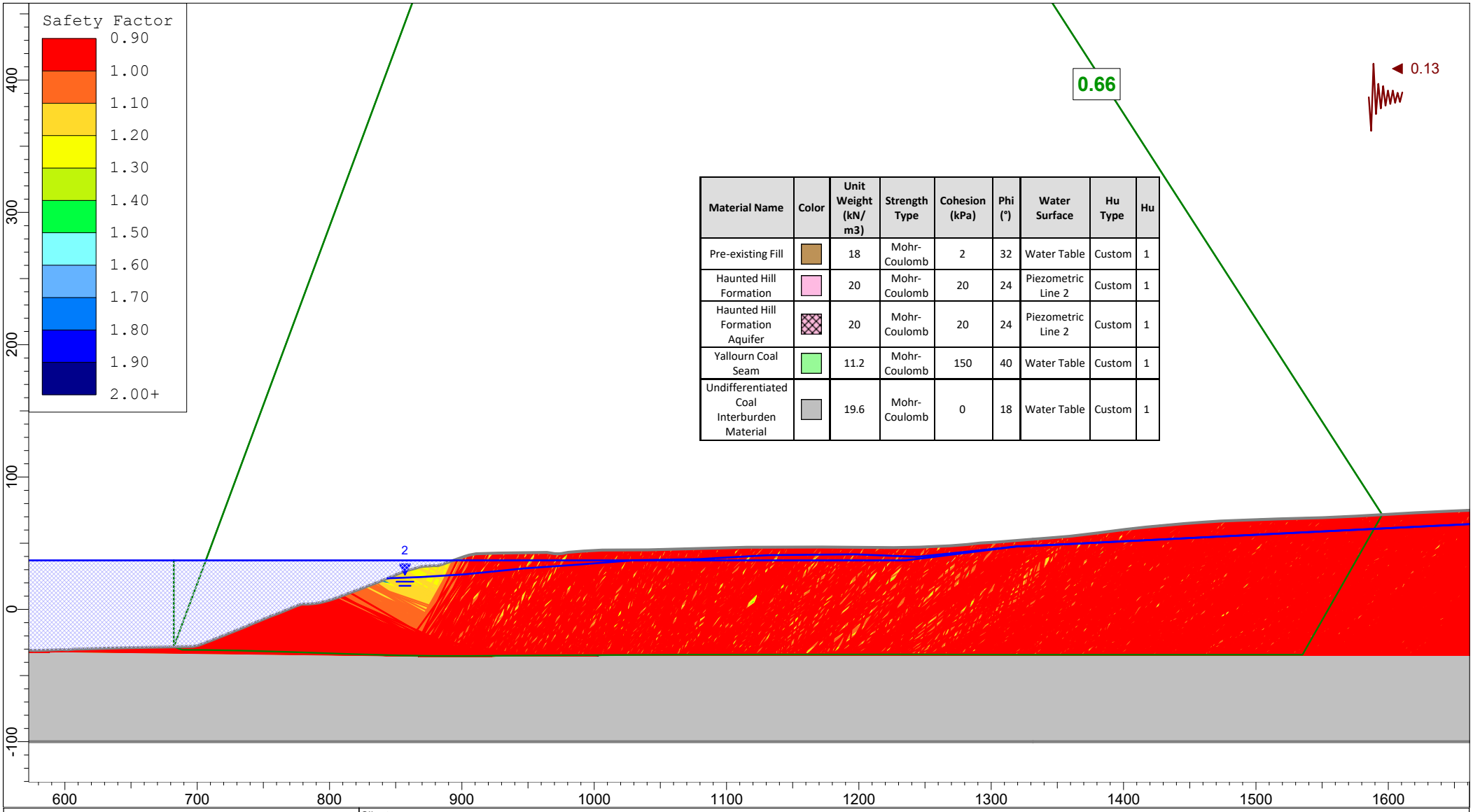
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Seismic multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



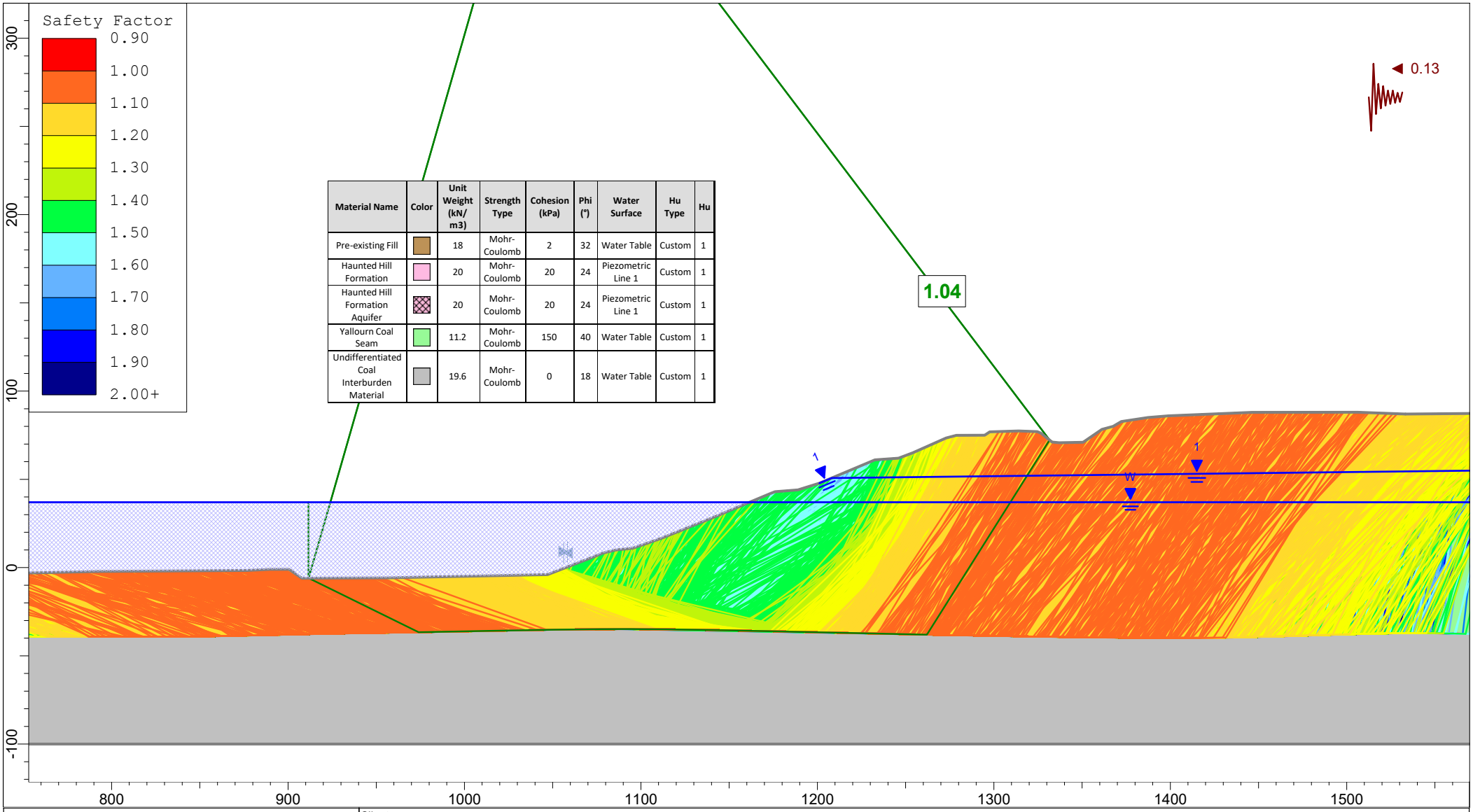
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Seismic multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



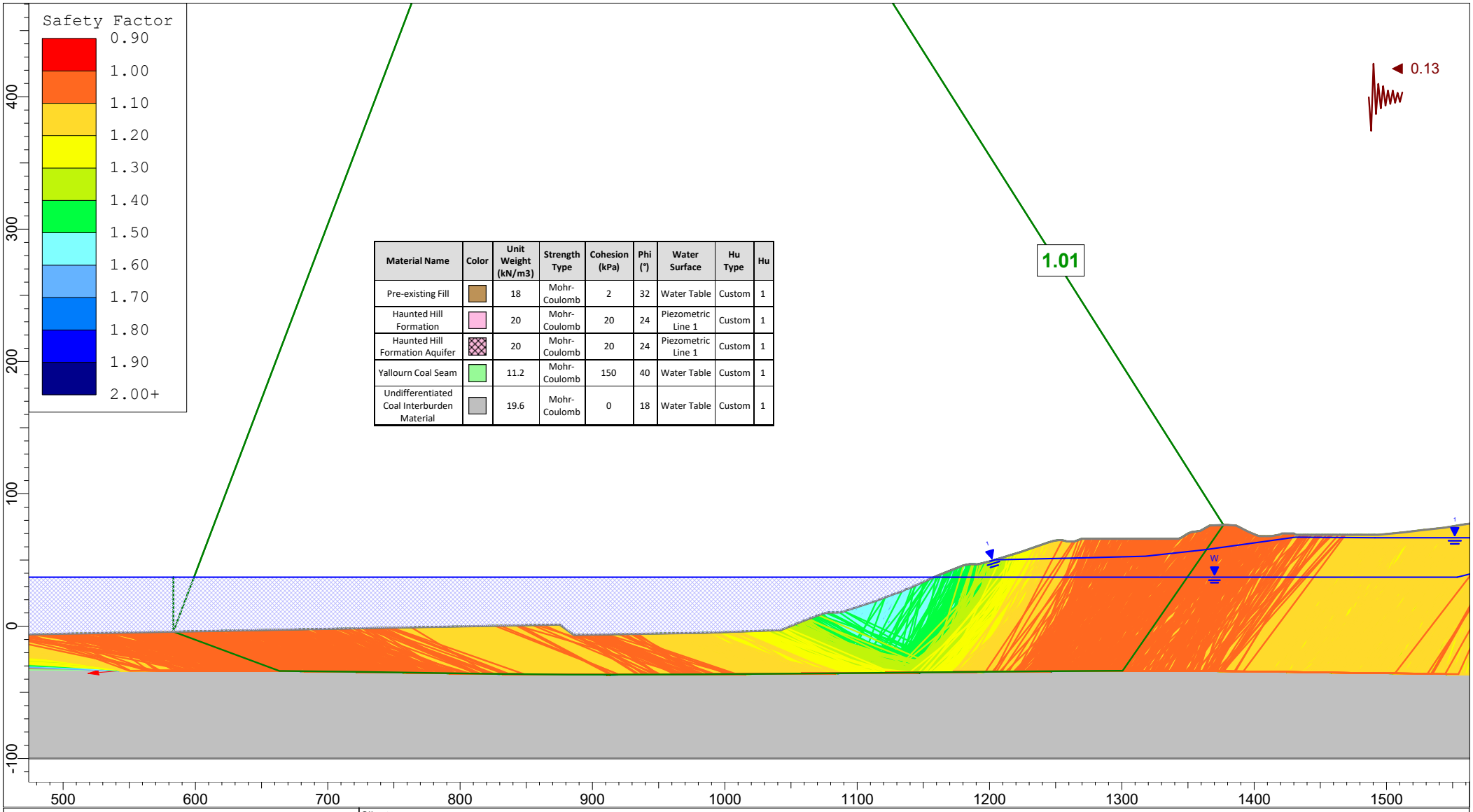
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Seismic multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



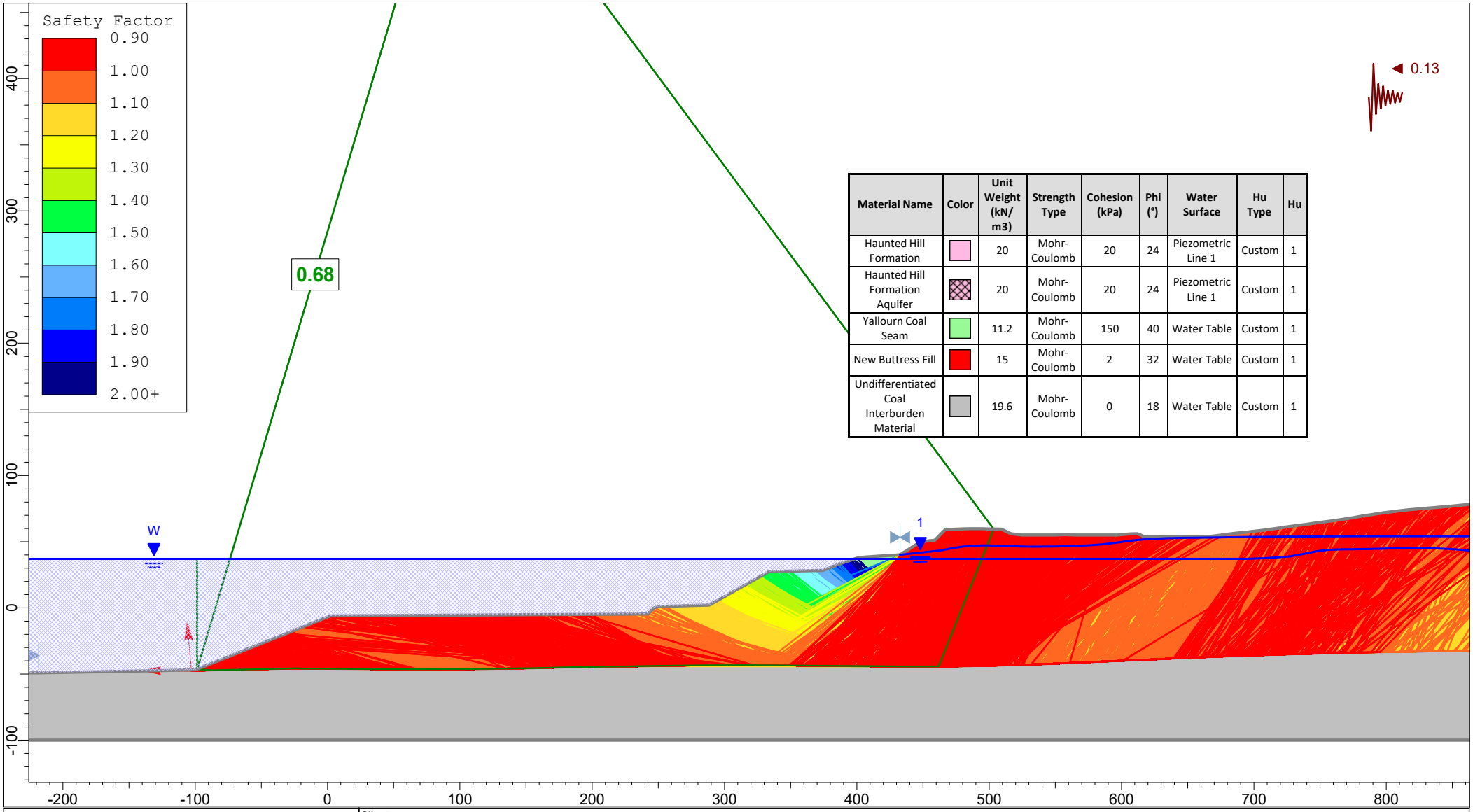
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Seismic multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



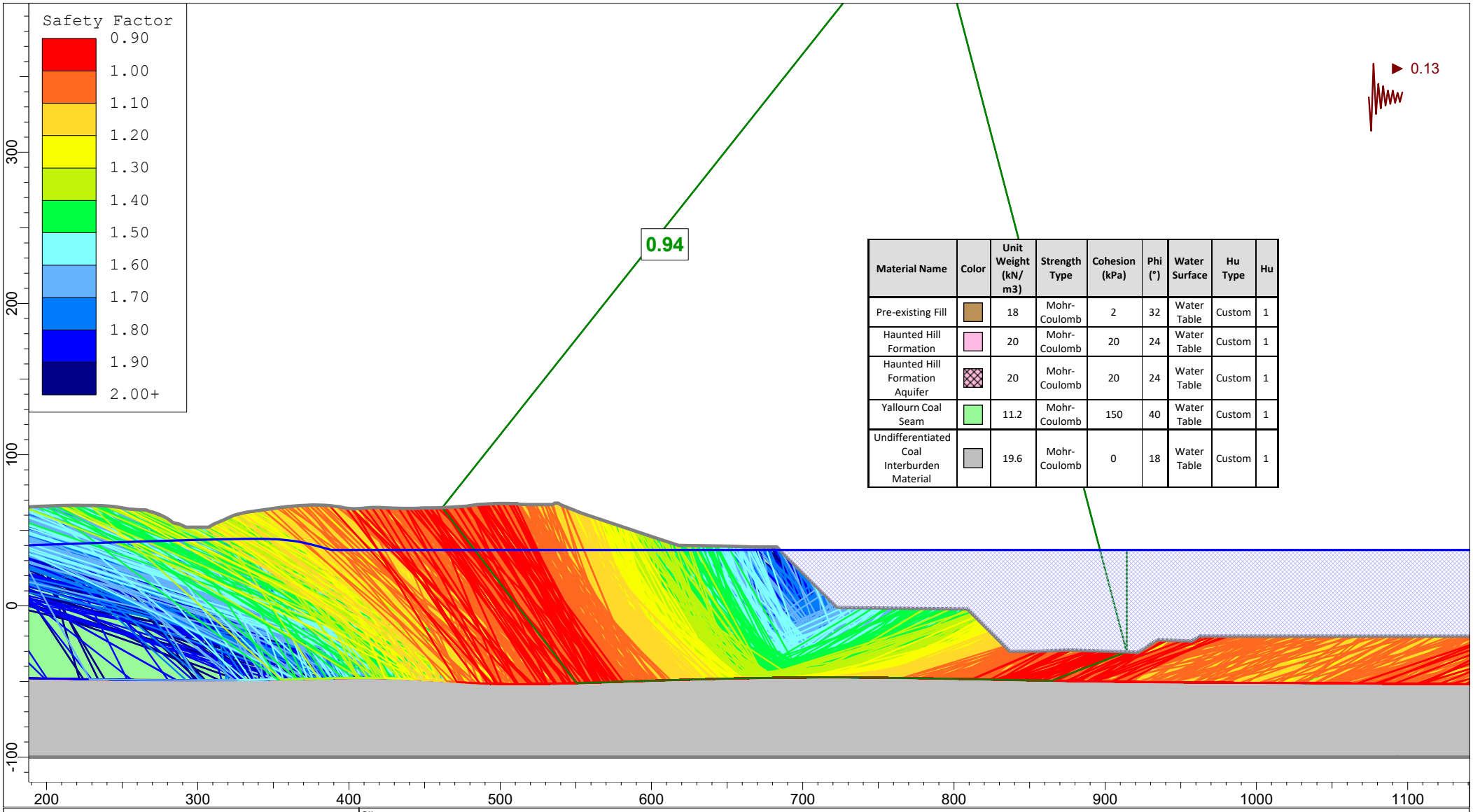
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Seismic multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



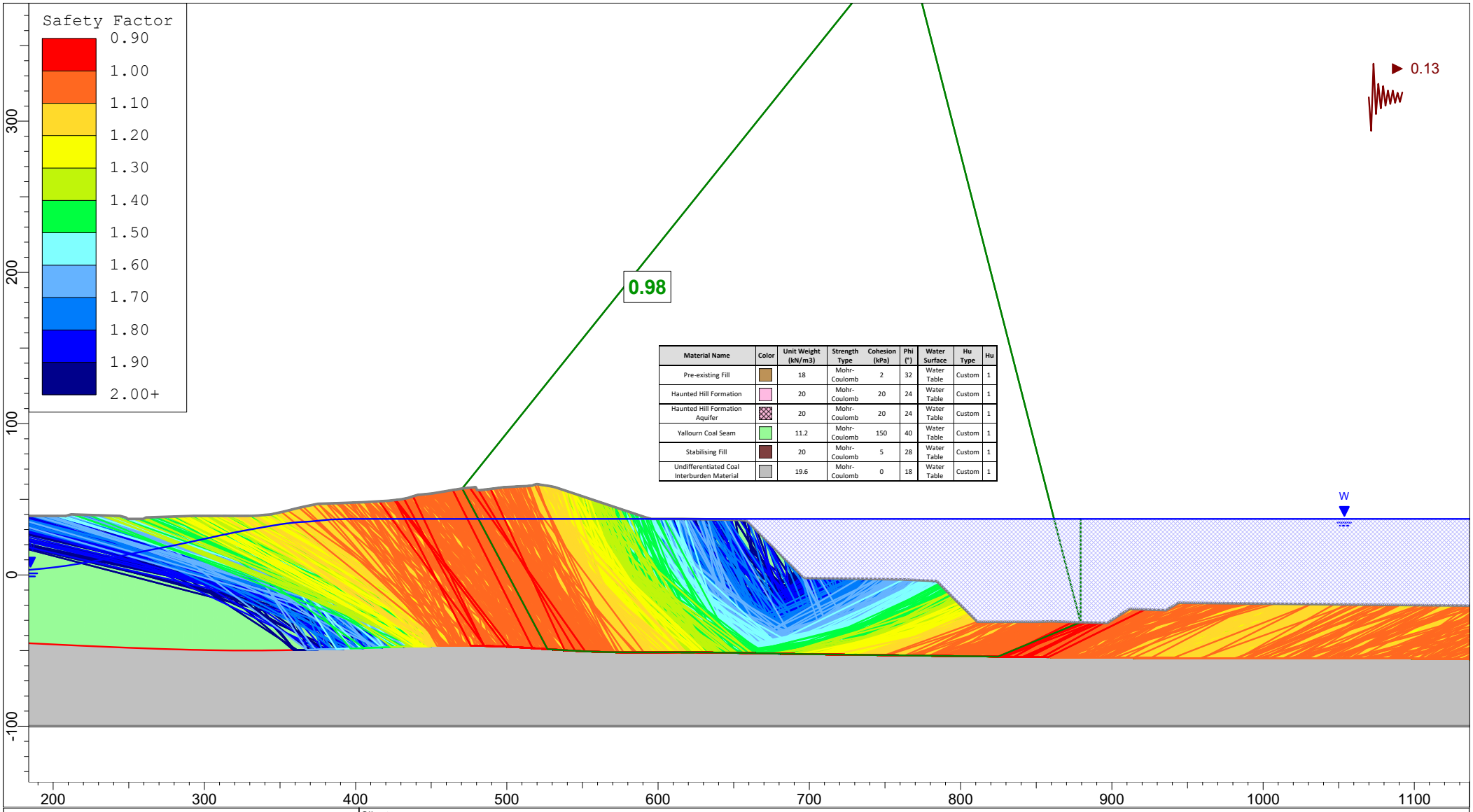
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-EB
Section:	Section 11	Case:	Seismic multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



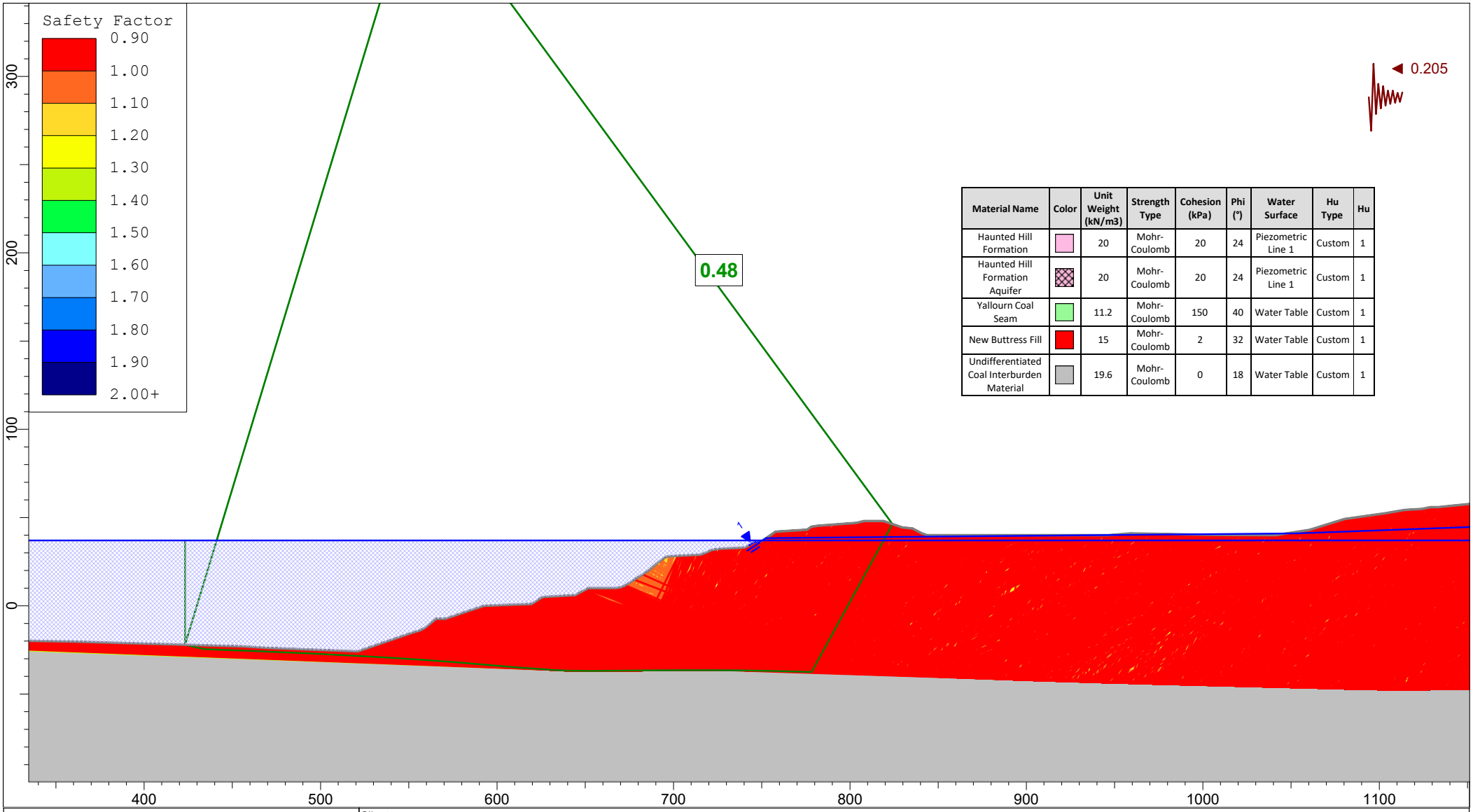
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 14	Case:	Seismic multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



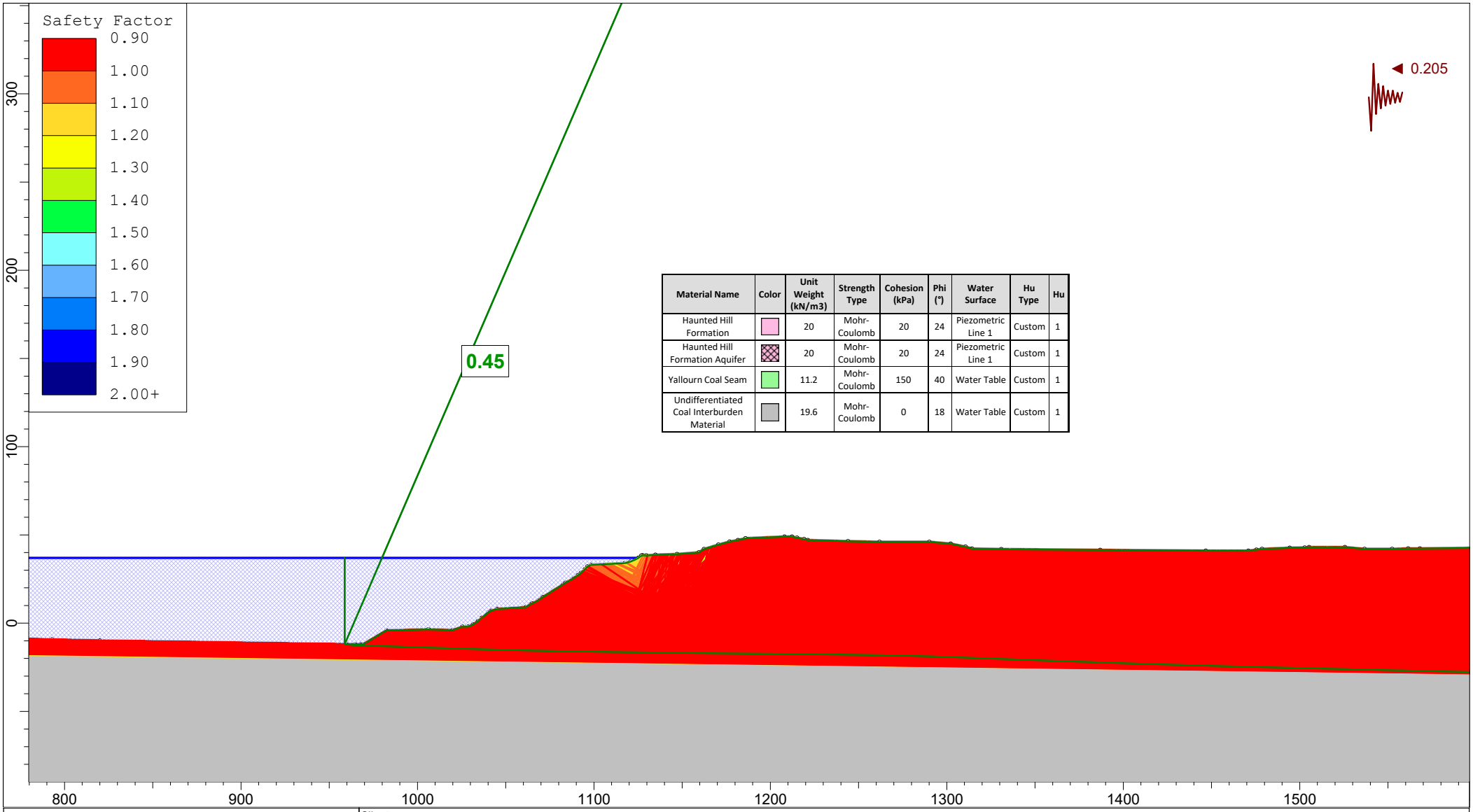
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Stabilising Fill		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**MVF-WB**
Section:	**Section 15**	Case:	**Seismic multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake full - lake level at 37 mRL**
Notes:	**Median Interseam Shear Strength**		



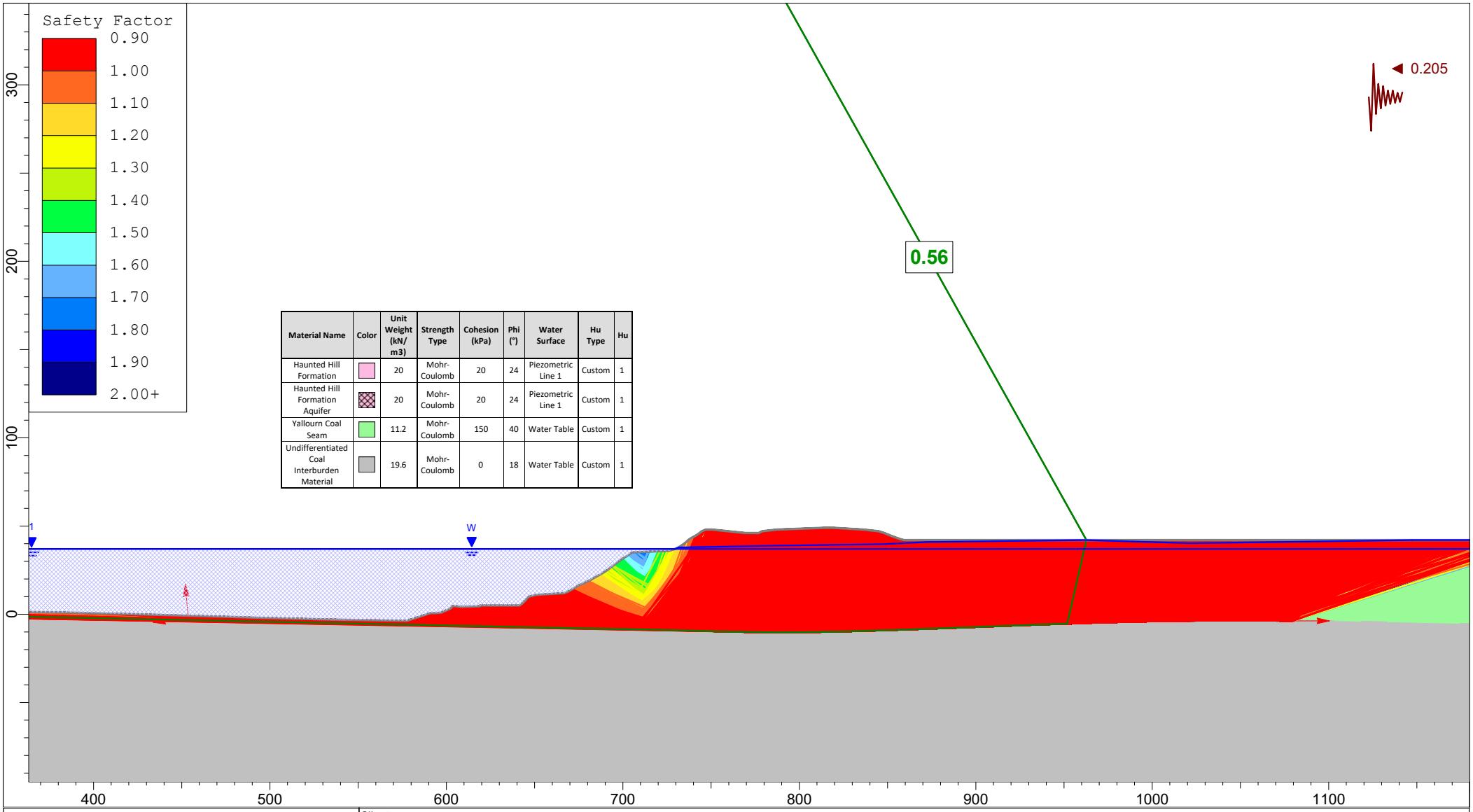
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
New Buttress Fill		15	Mohr-Coulomb	2	32	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Seismic multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



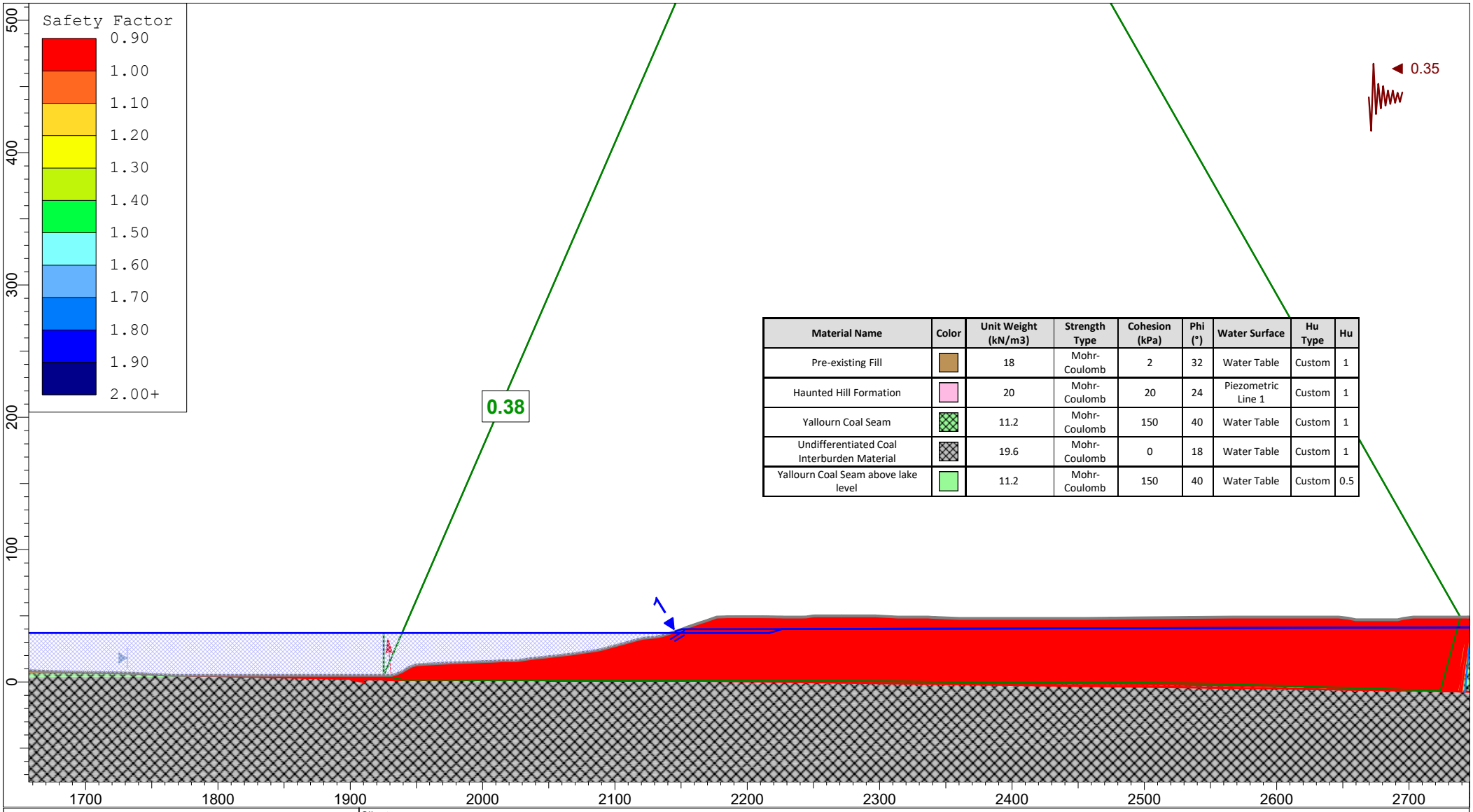
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Seismic multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



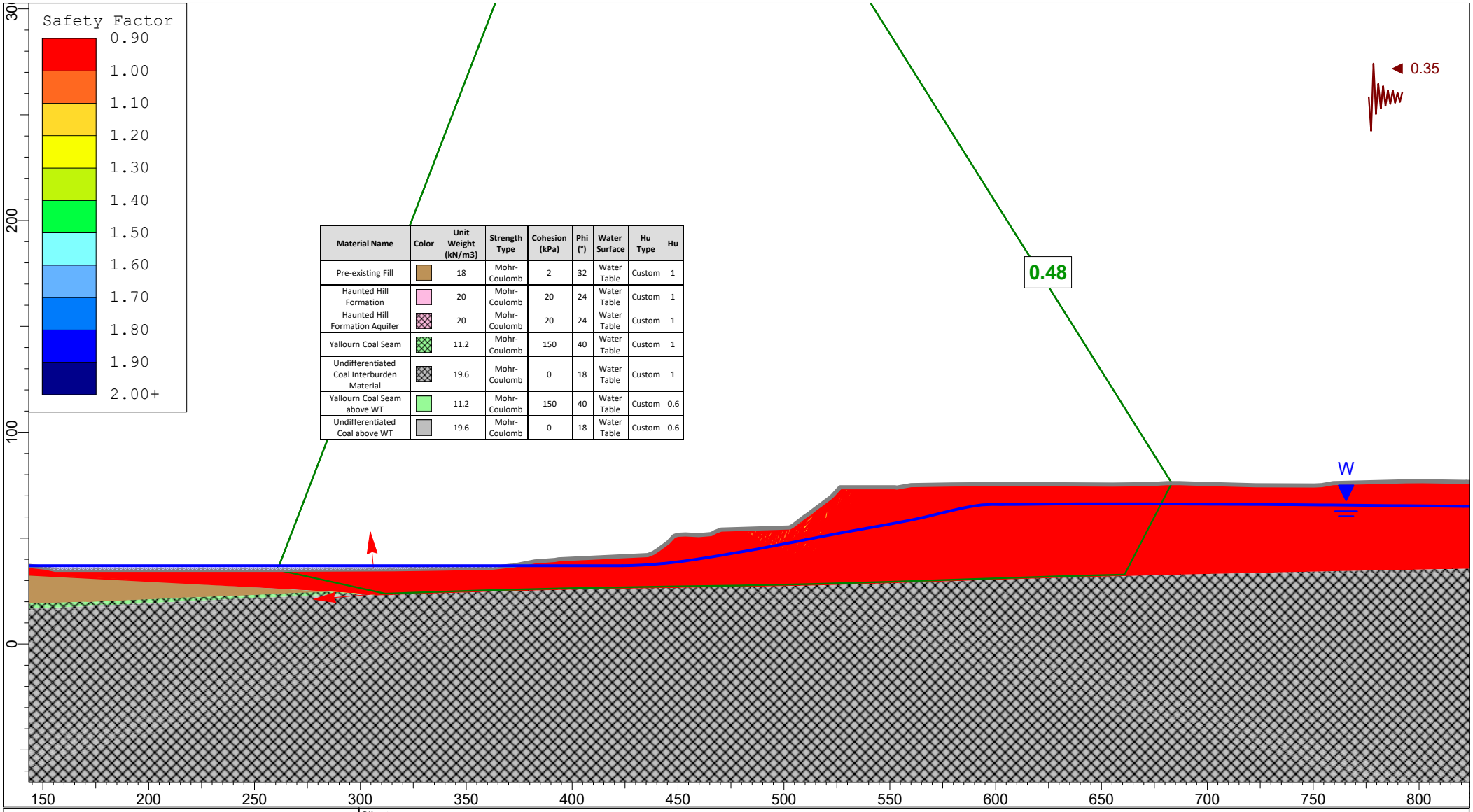
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	**EnergyAustralia Yallourn Mine**		
Project:	**Feasibility Rehabilitation Design**	Domain:	**YTF-FPB**
Section:	**Section 18**	Case:	**Seismic multilinear - Hu = 1**
Job No:	**PSM4487**	Run:	**Lake full - lake level at 37 mRL**
Notes:	**Median Interseam Shear Strength**		



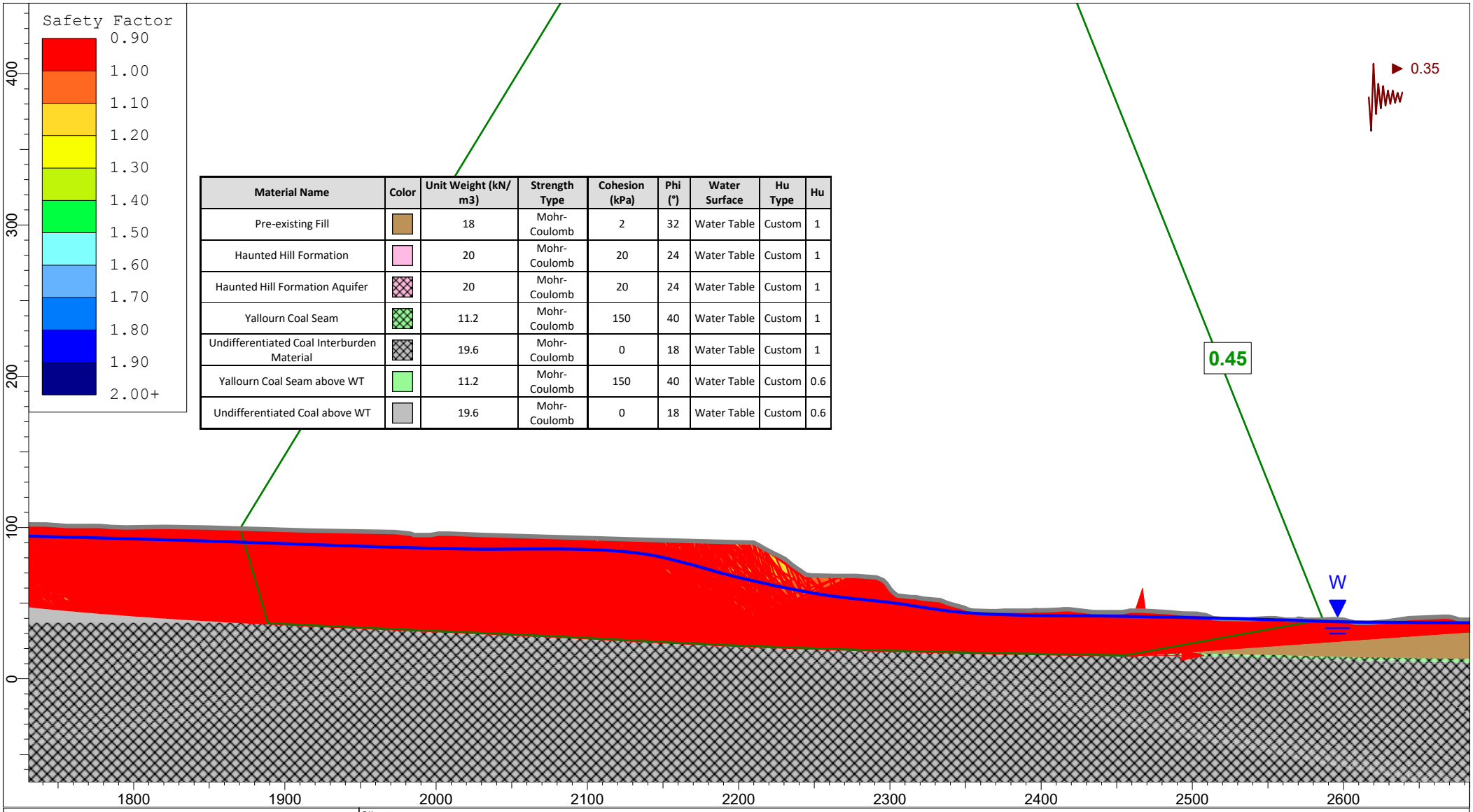
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1
Yallourn Coal Seam above lake level		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18b	Case:	Seismic block slide with full TC - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



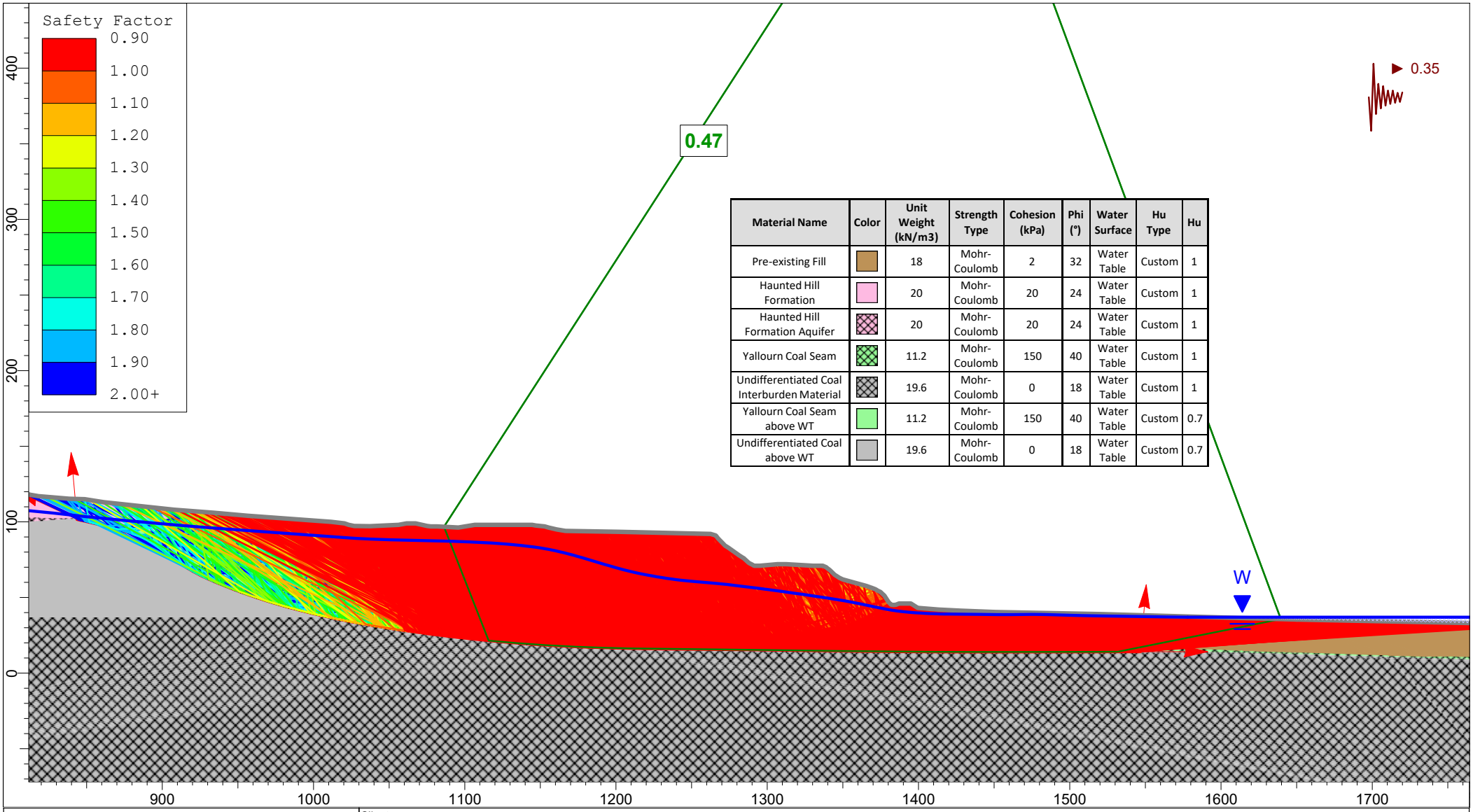
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SB
Section:	Section 19	Case:	Seismic multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



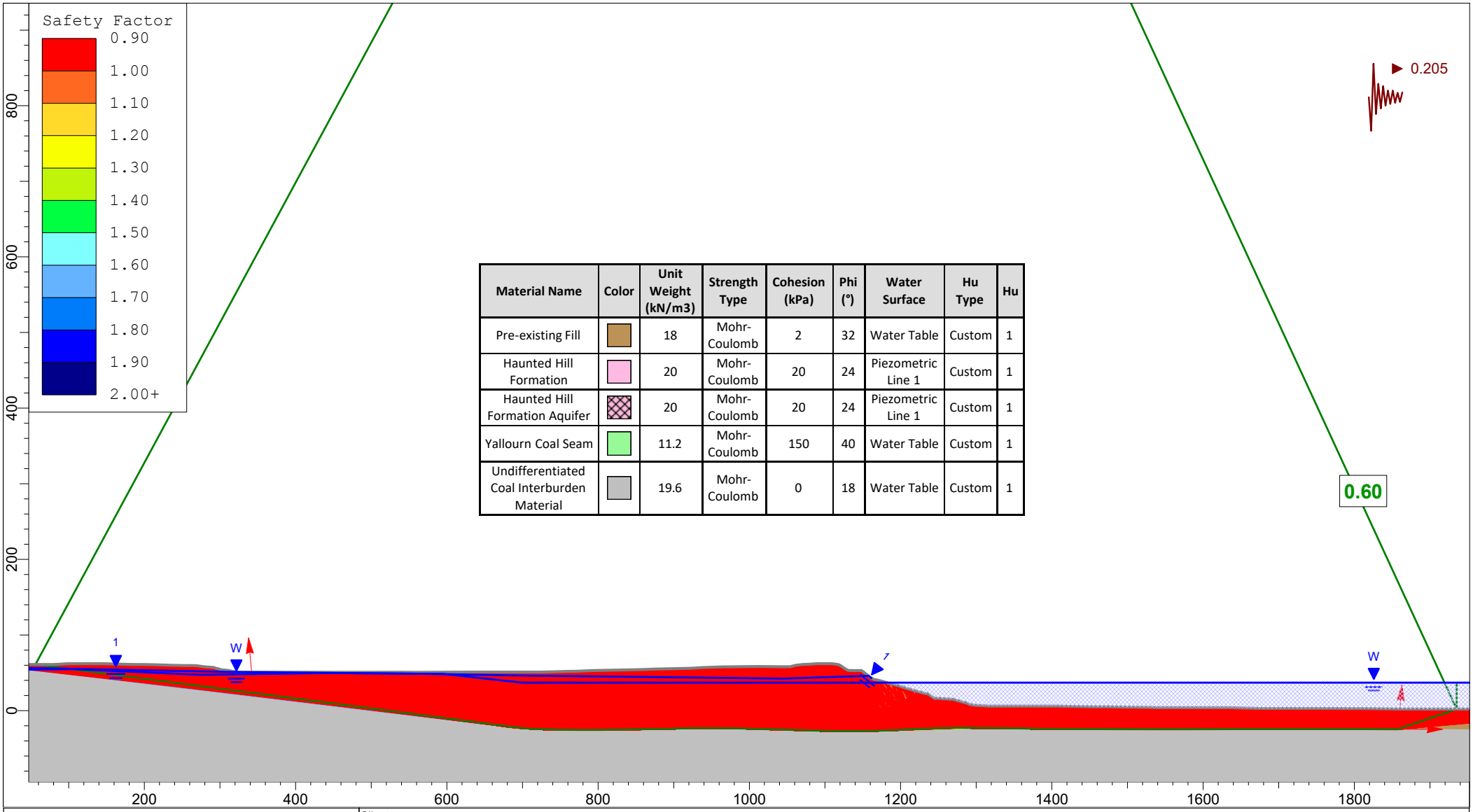
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 20	Case:	Seismic multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



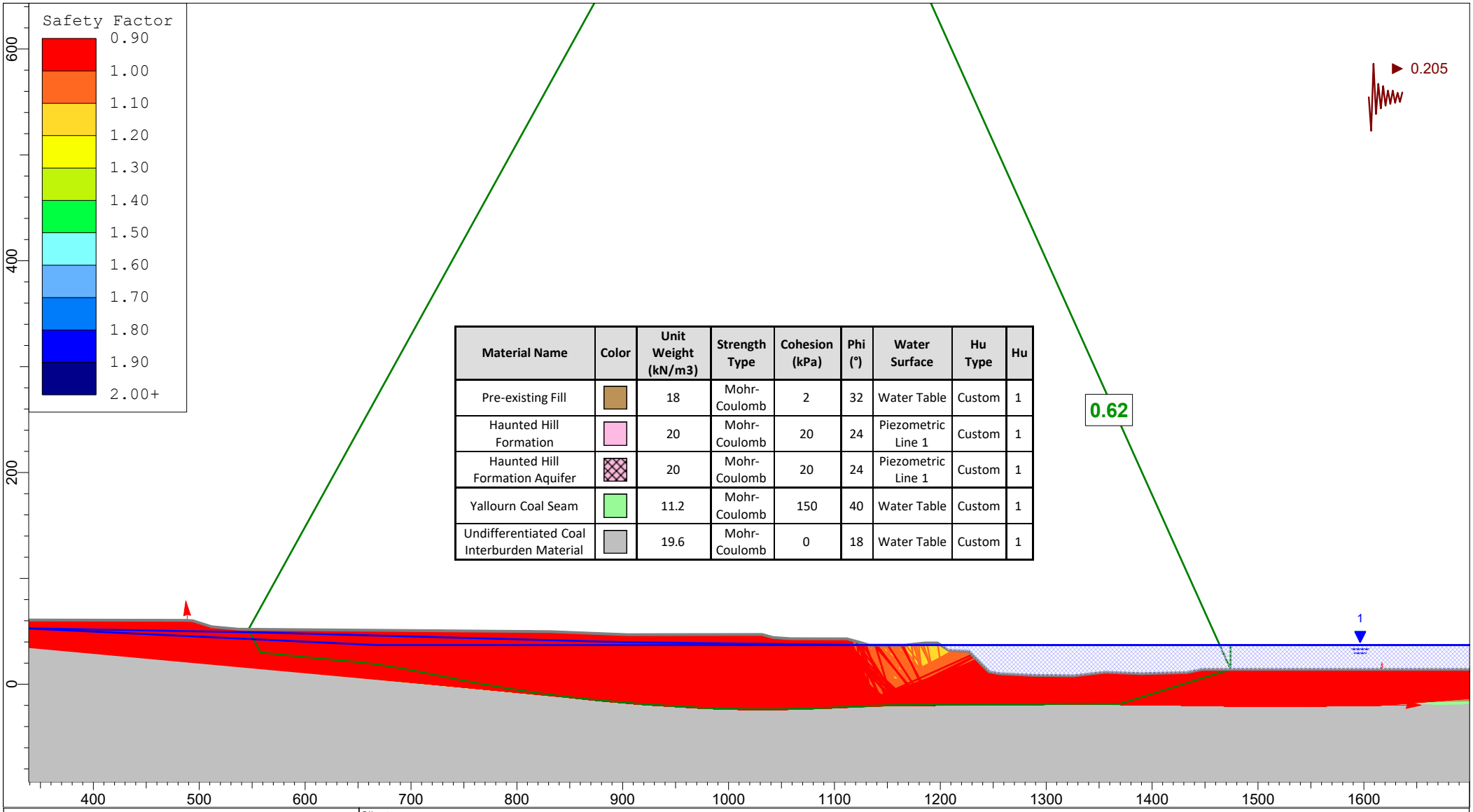
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1
Yallourn Coal Seam above WT		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal above WT		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 21	Case:	Seismic multilinear - Hu = 1 below lake level
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



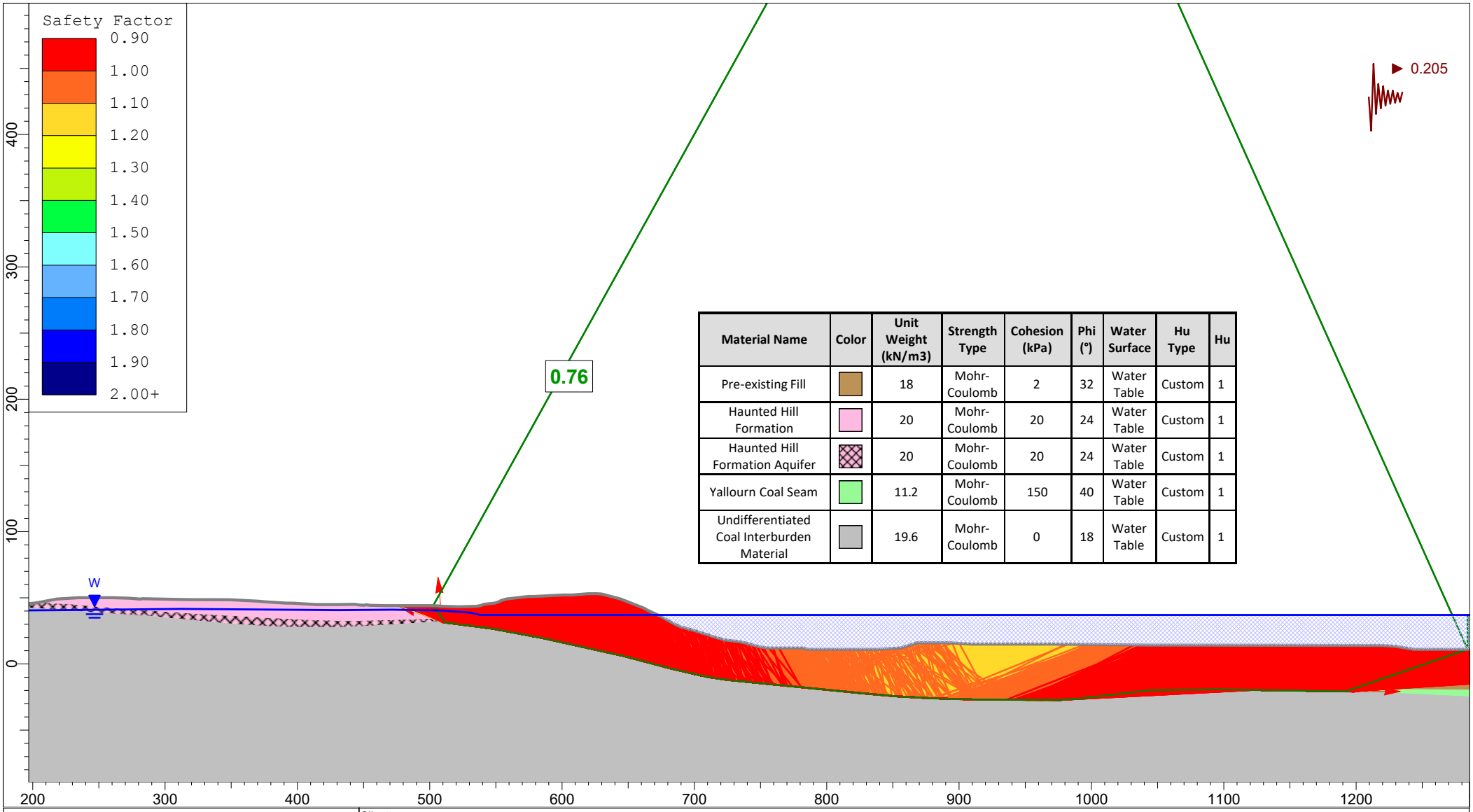
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-NB
Section:	Section 29	Case:	Seismic multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

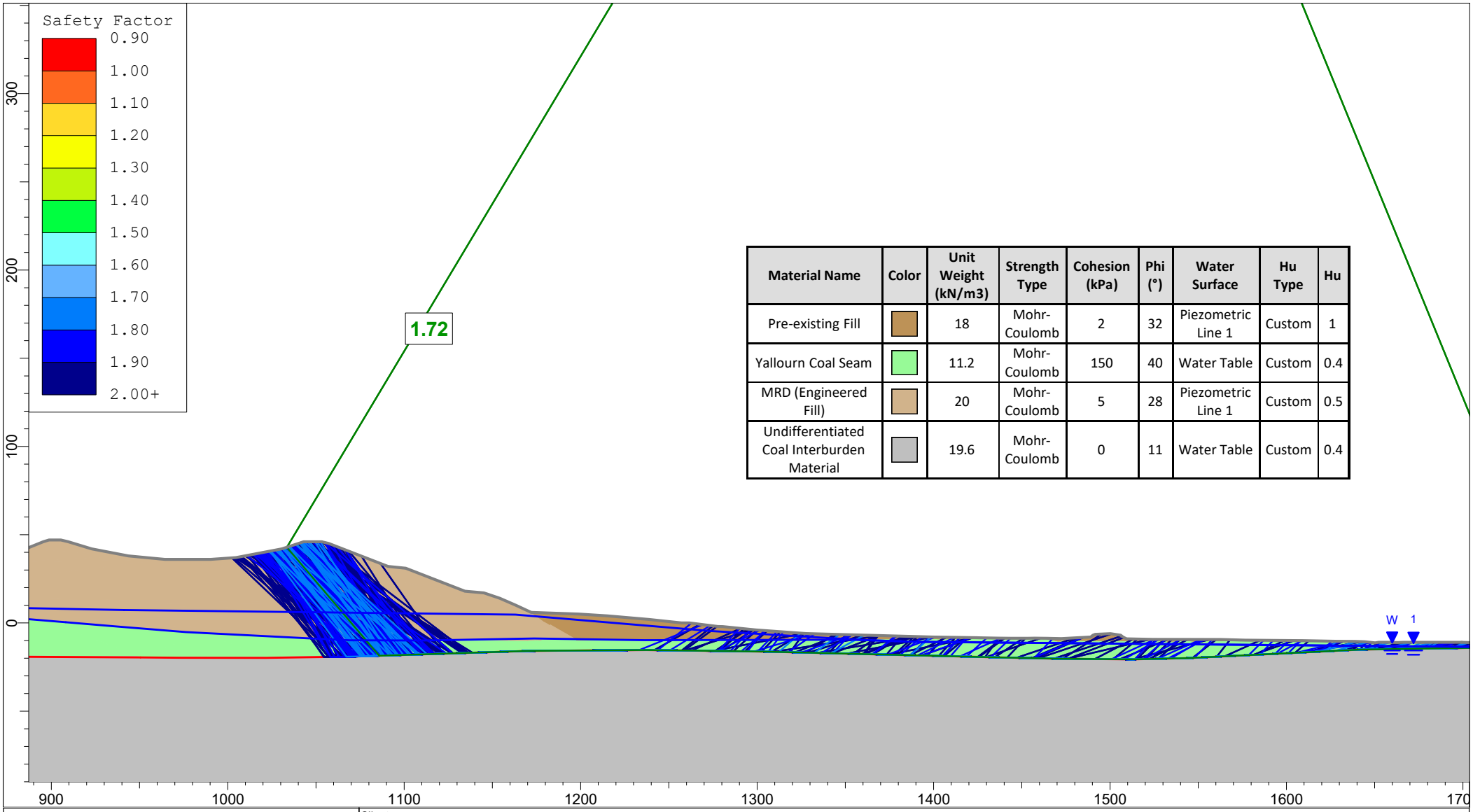
Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Seismic multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

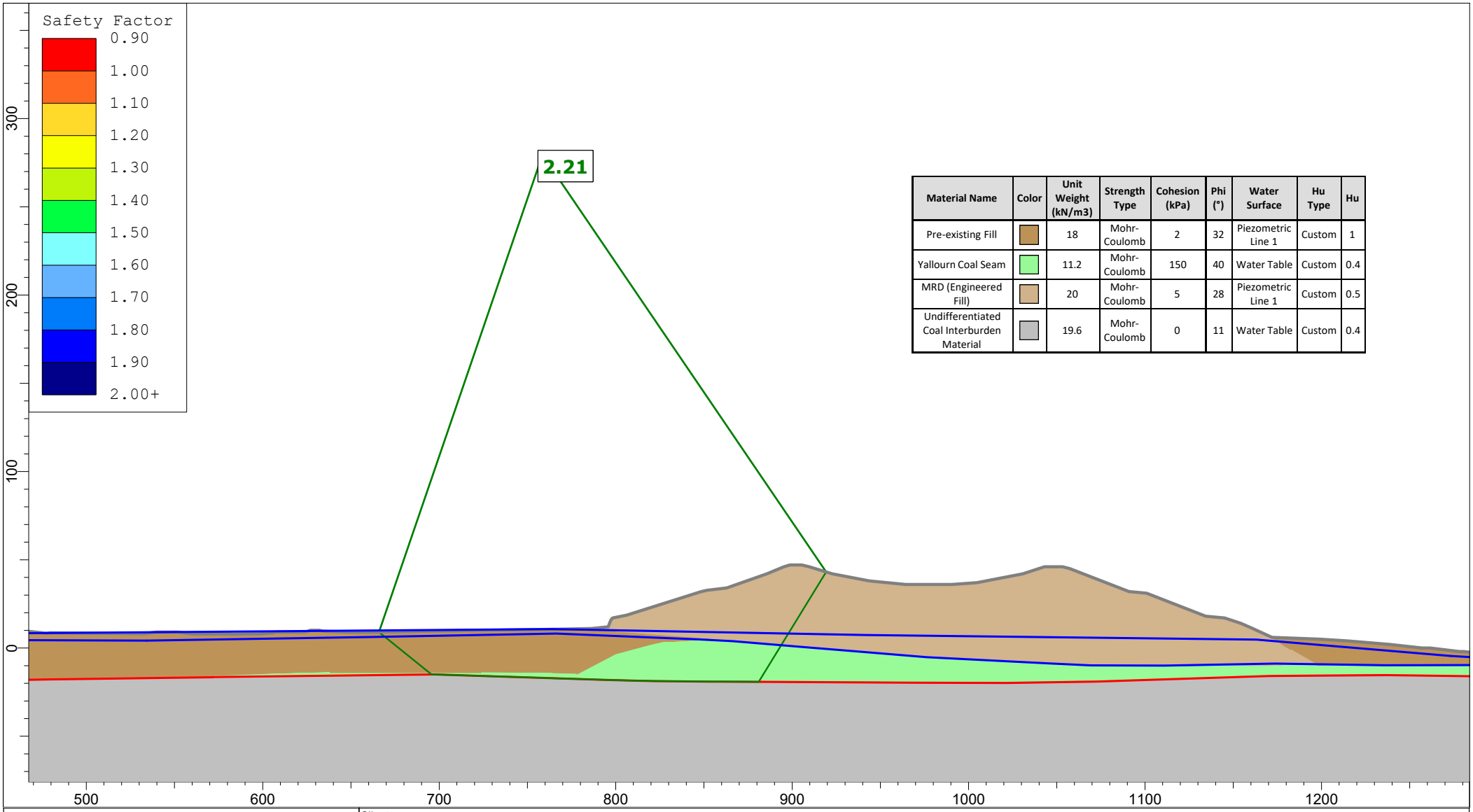
Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-LS
Section:	Section 31	Case:	Seismic multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		

Appendix F.5
MRD global stability base case outputs



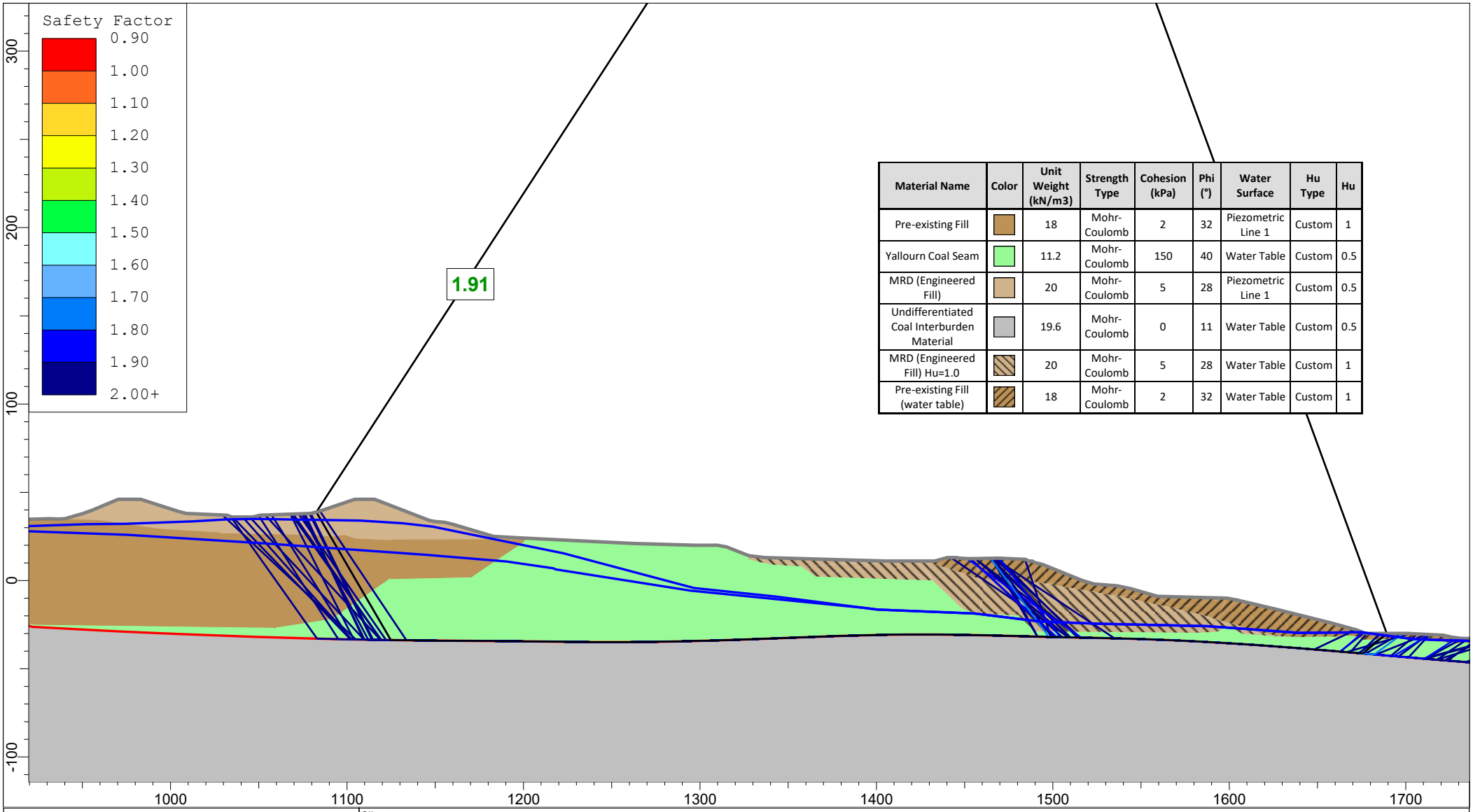
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



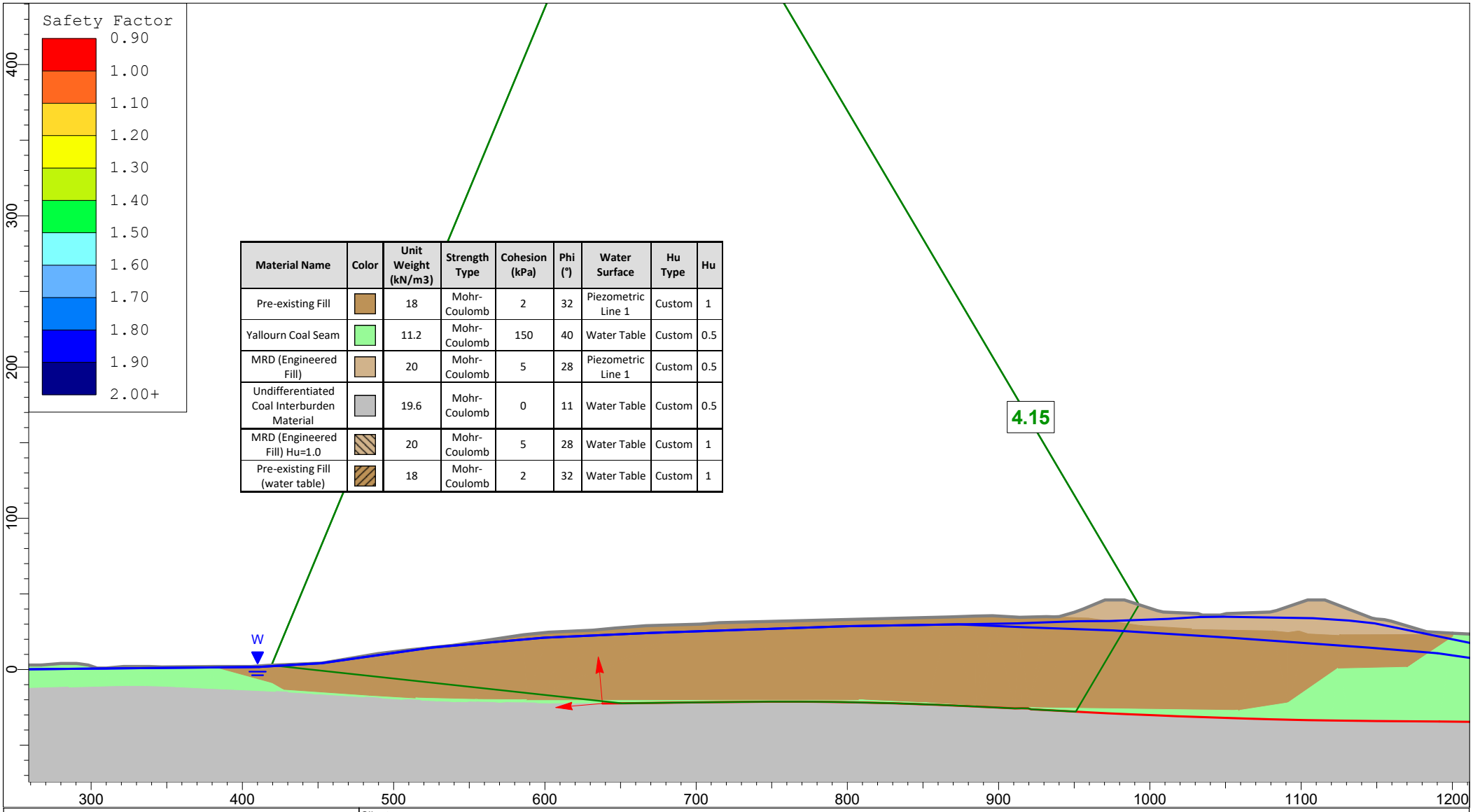
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength - Right To Left Failure		



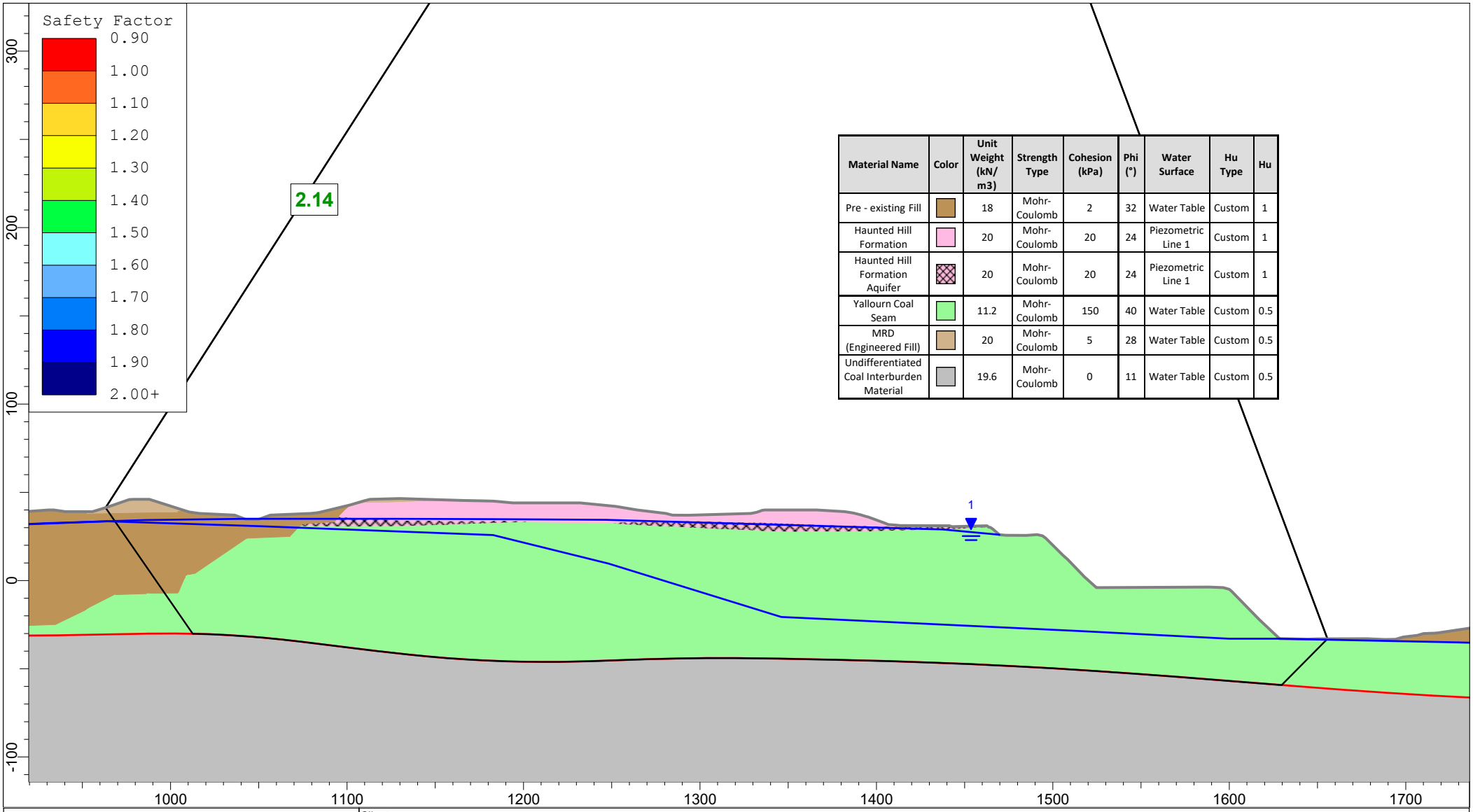
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



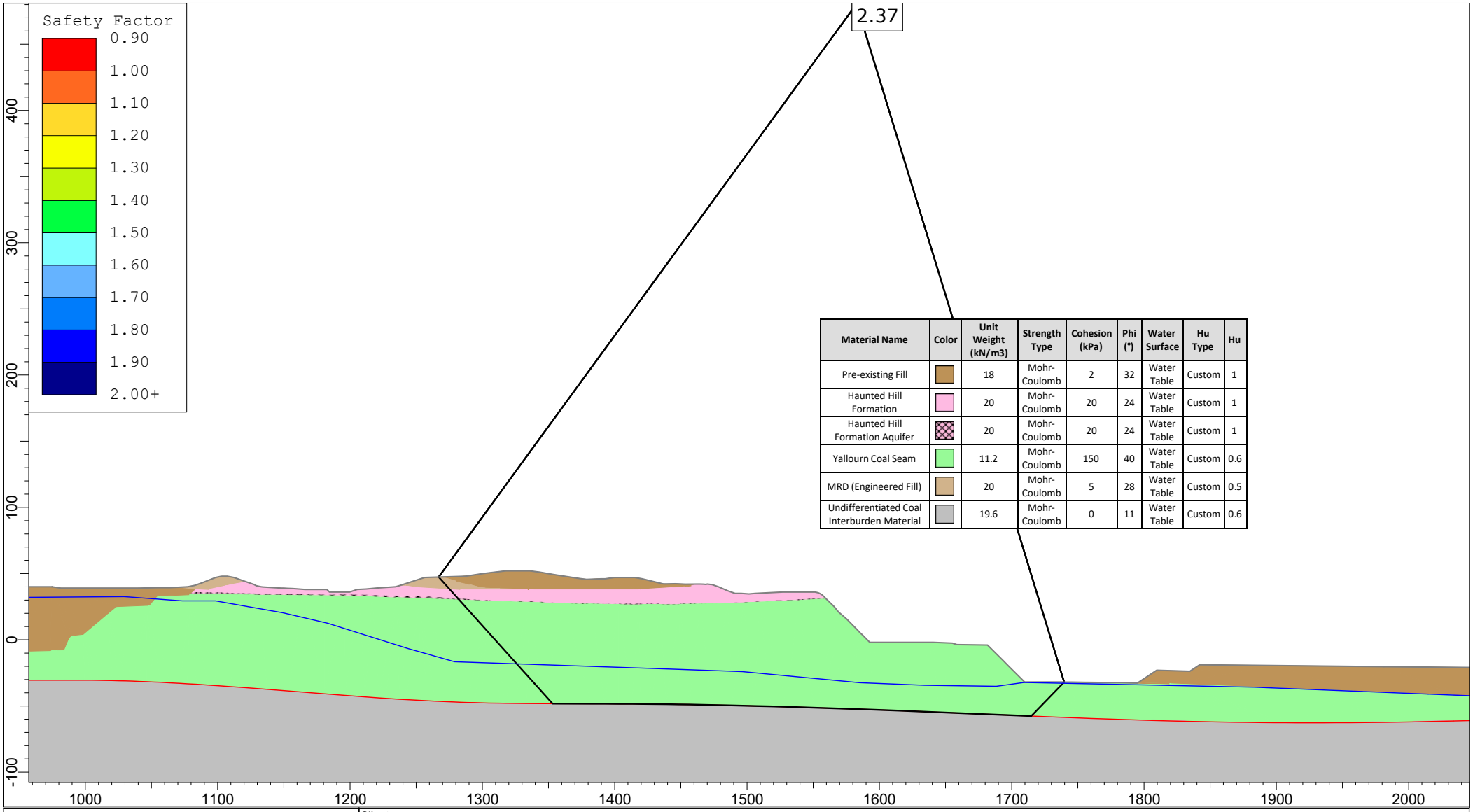
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength - Right To Left		



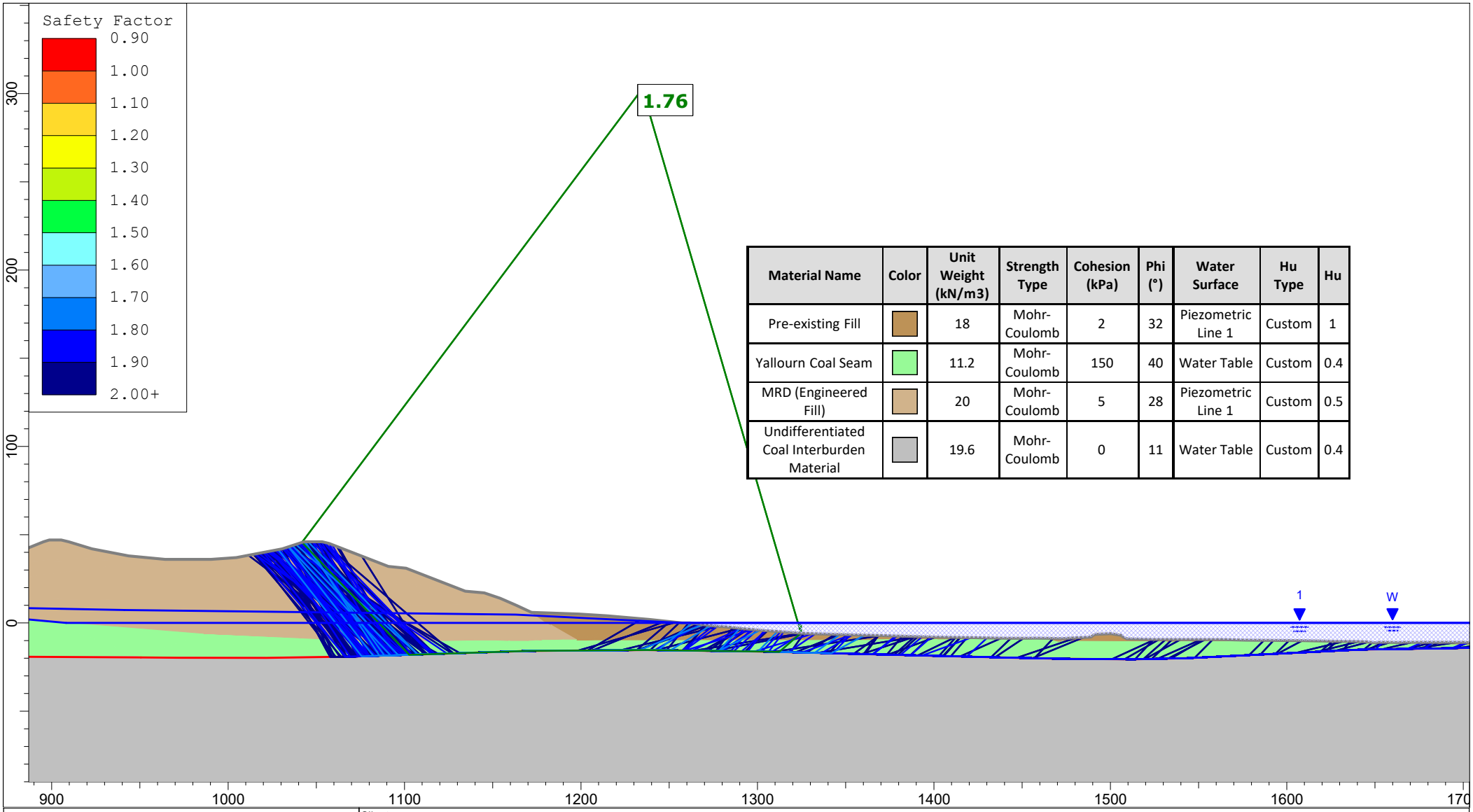
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



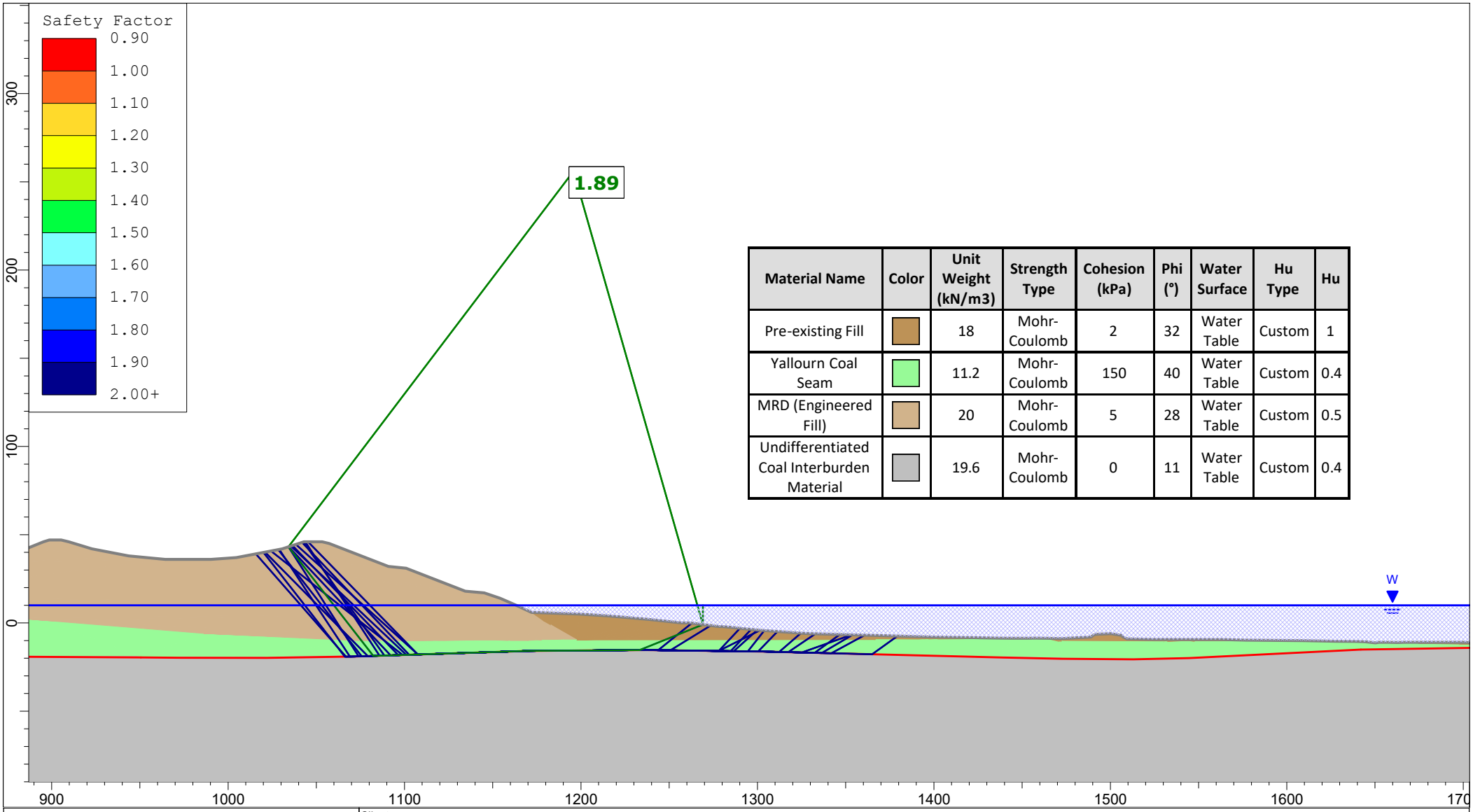
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



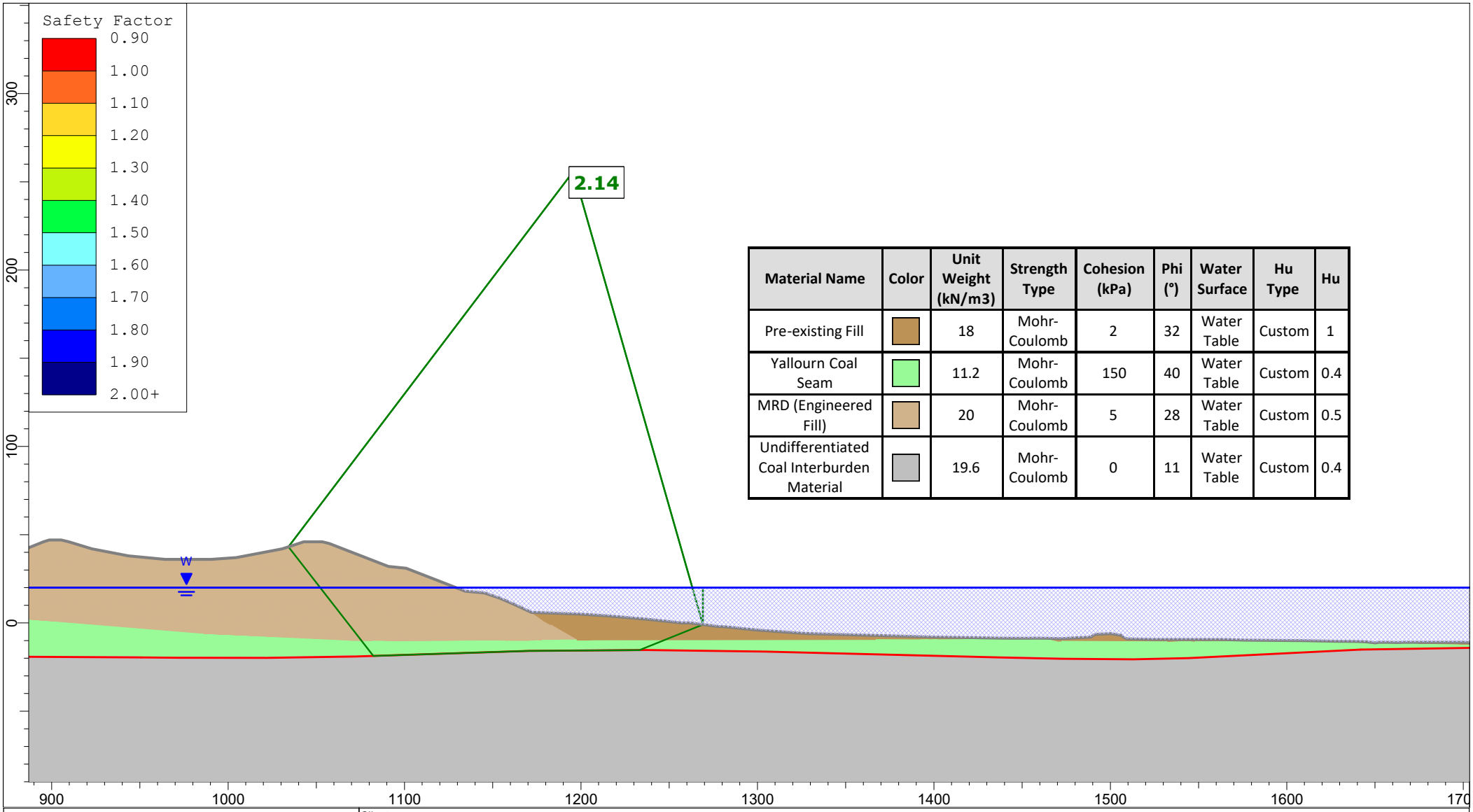
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



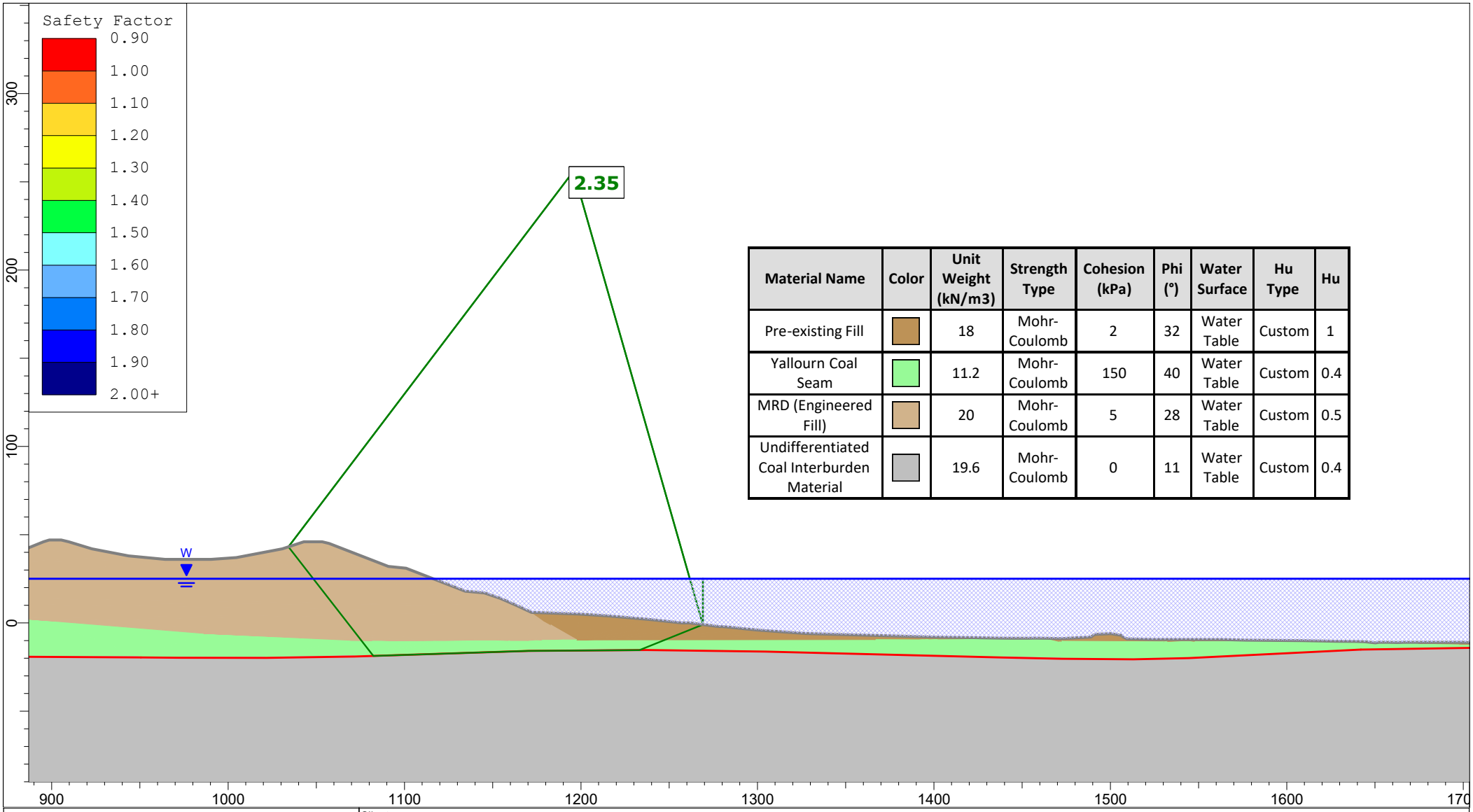
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



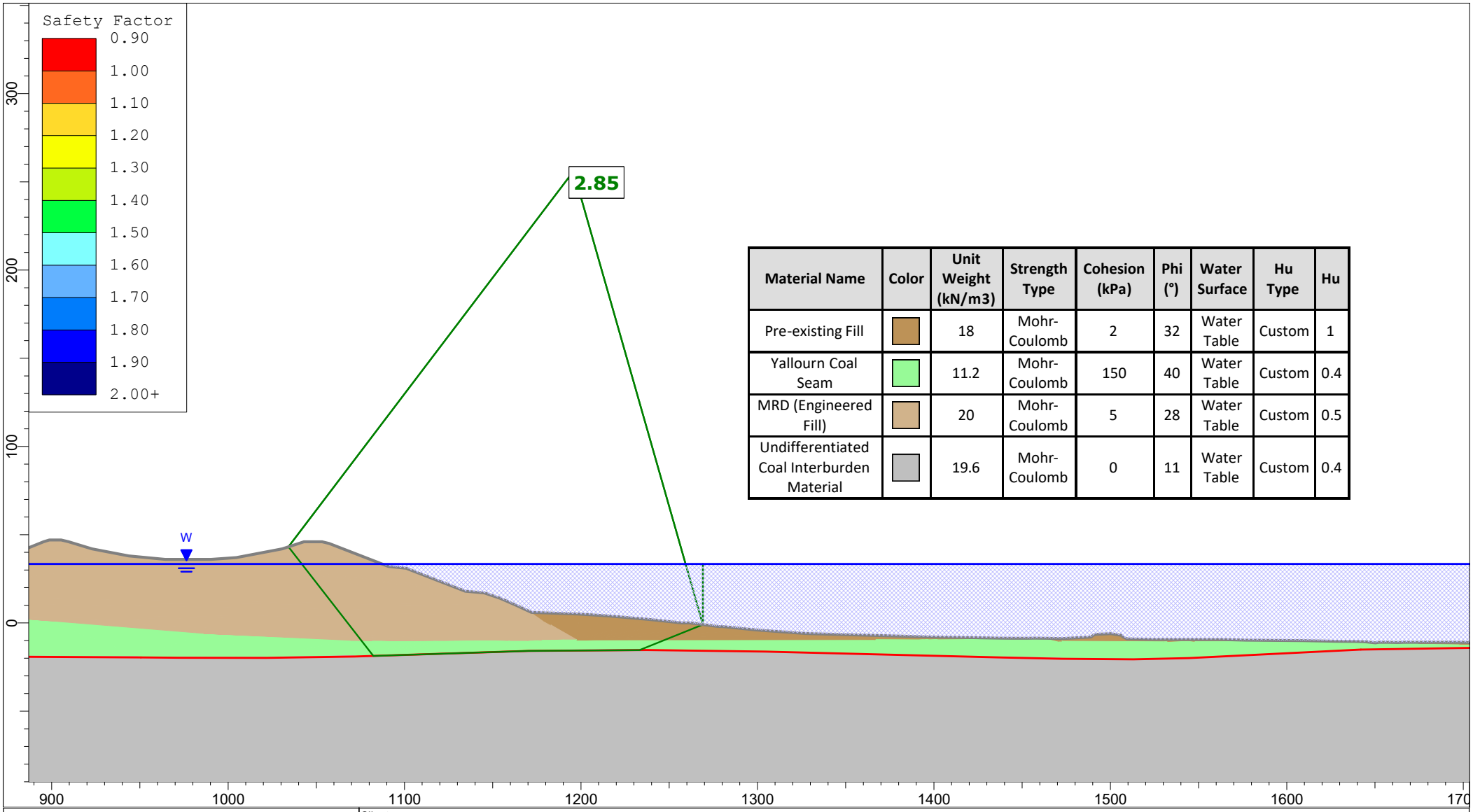
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



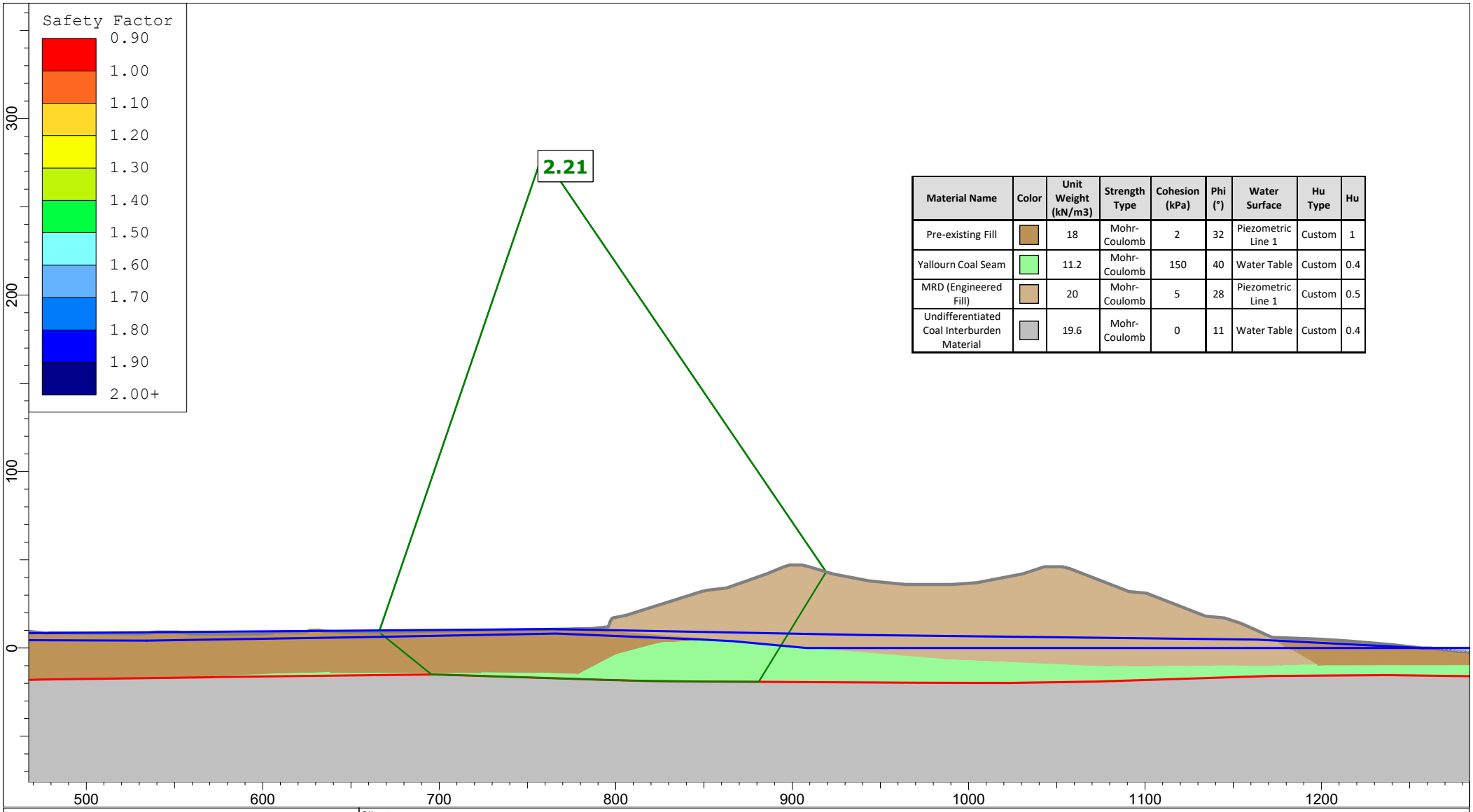
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



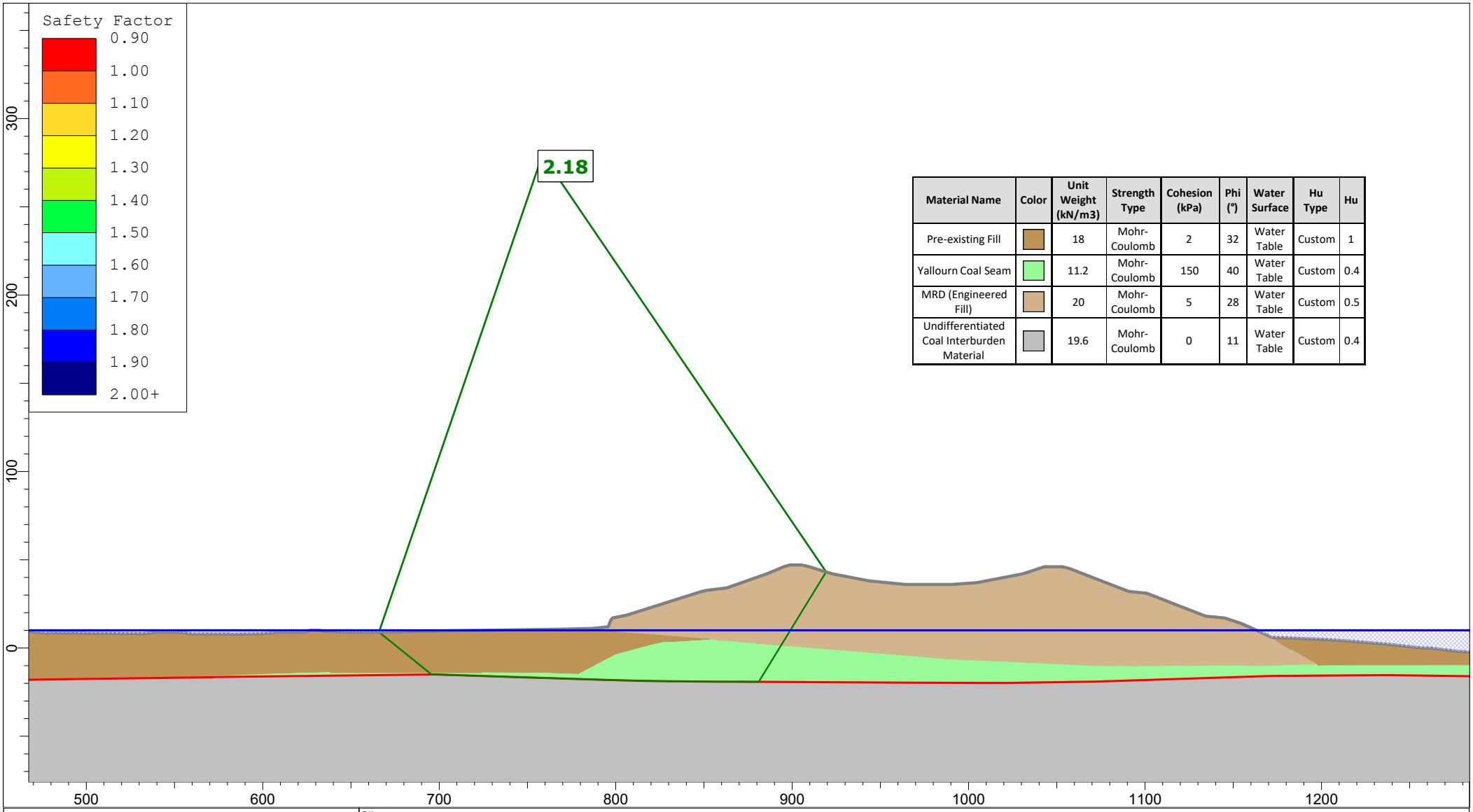
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



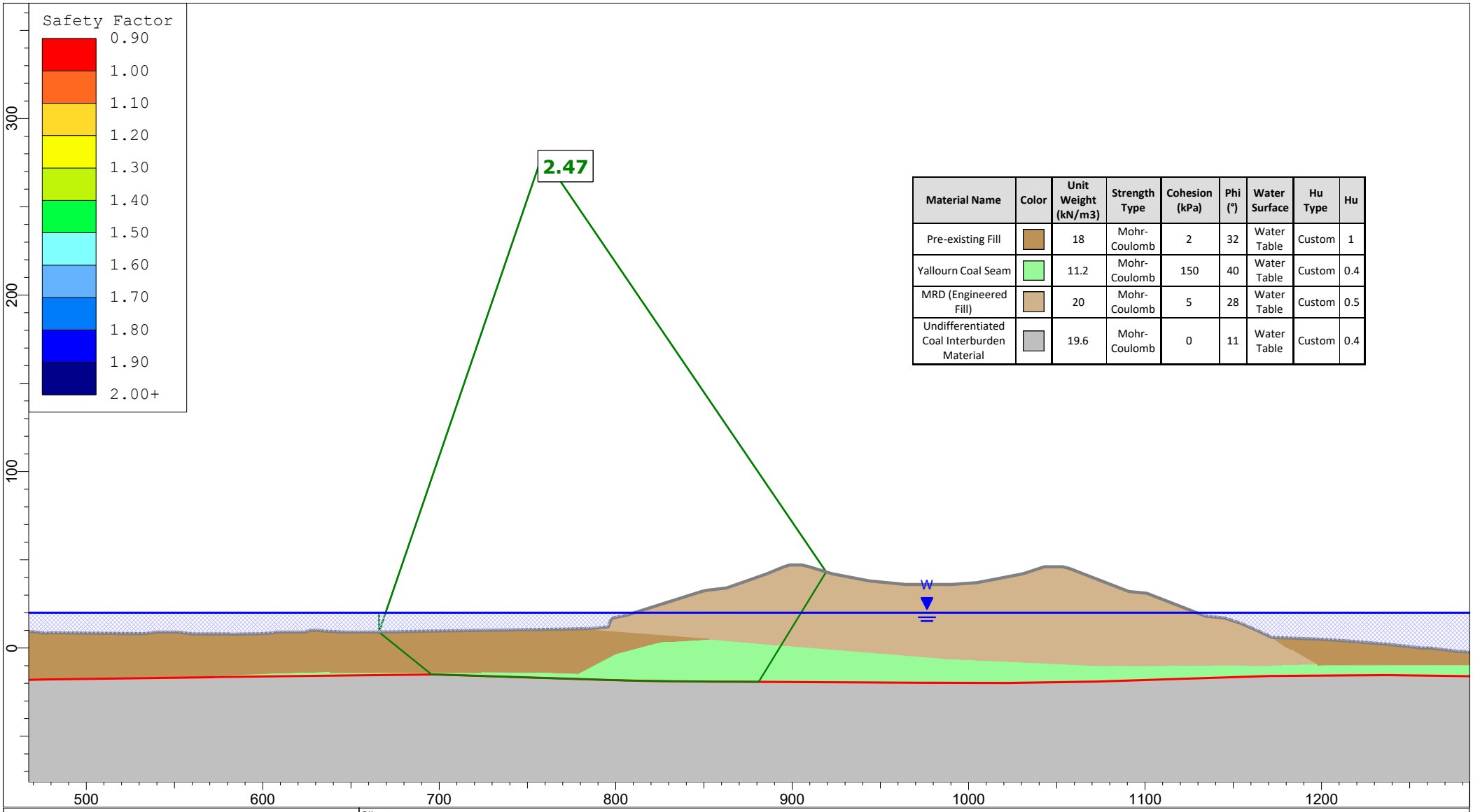
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength - Right To Left Failure		



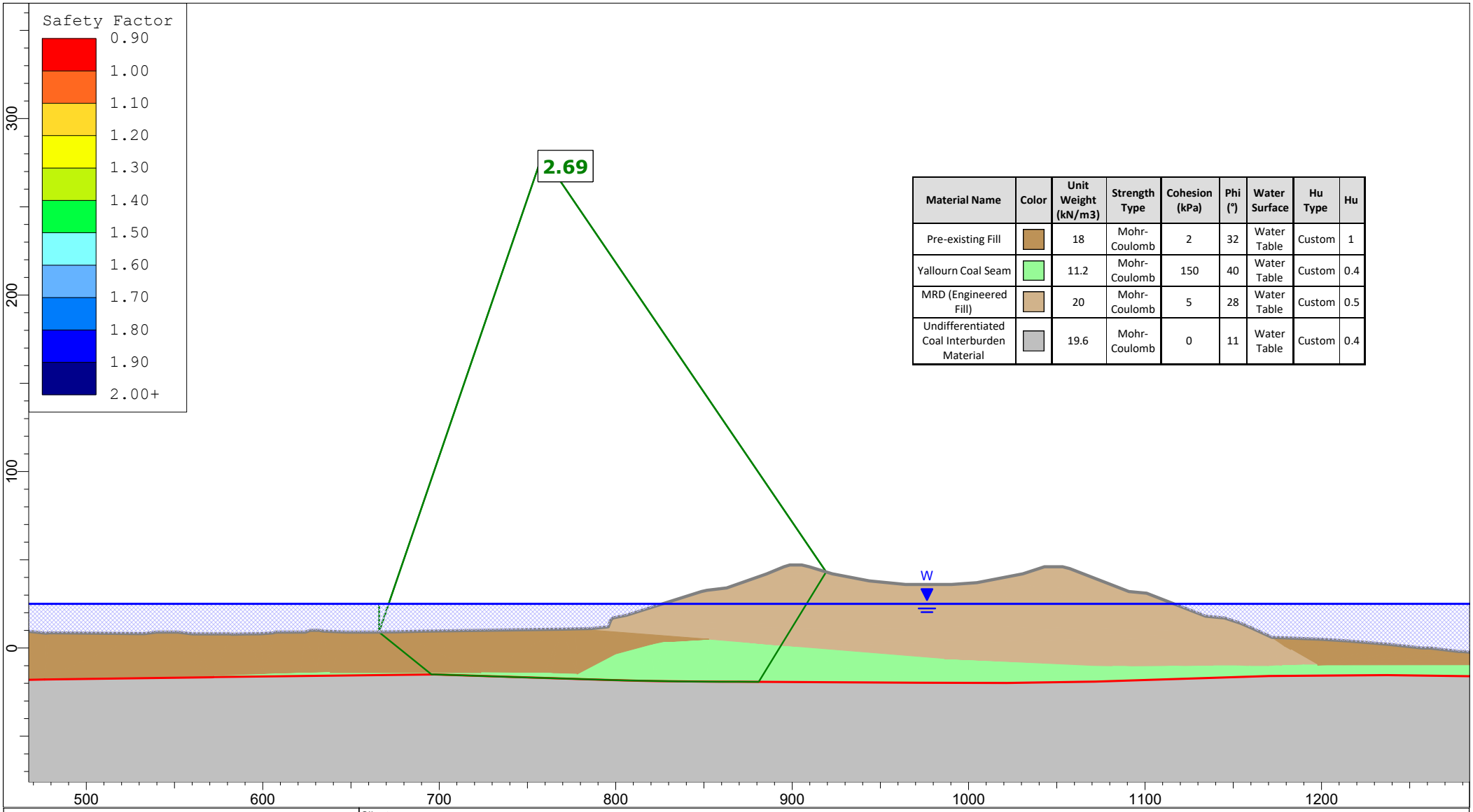
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength - Right To Left Failure		



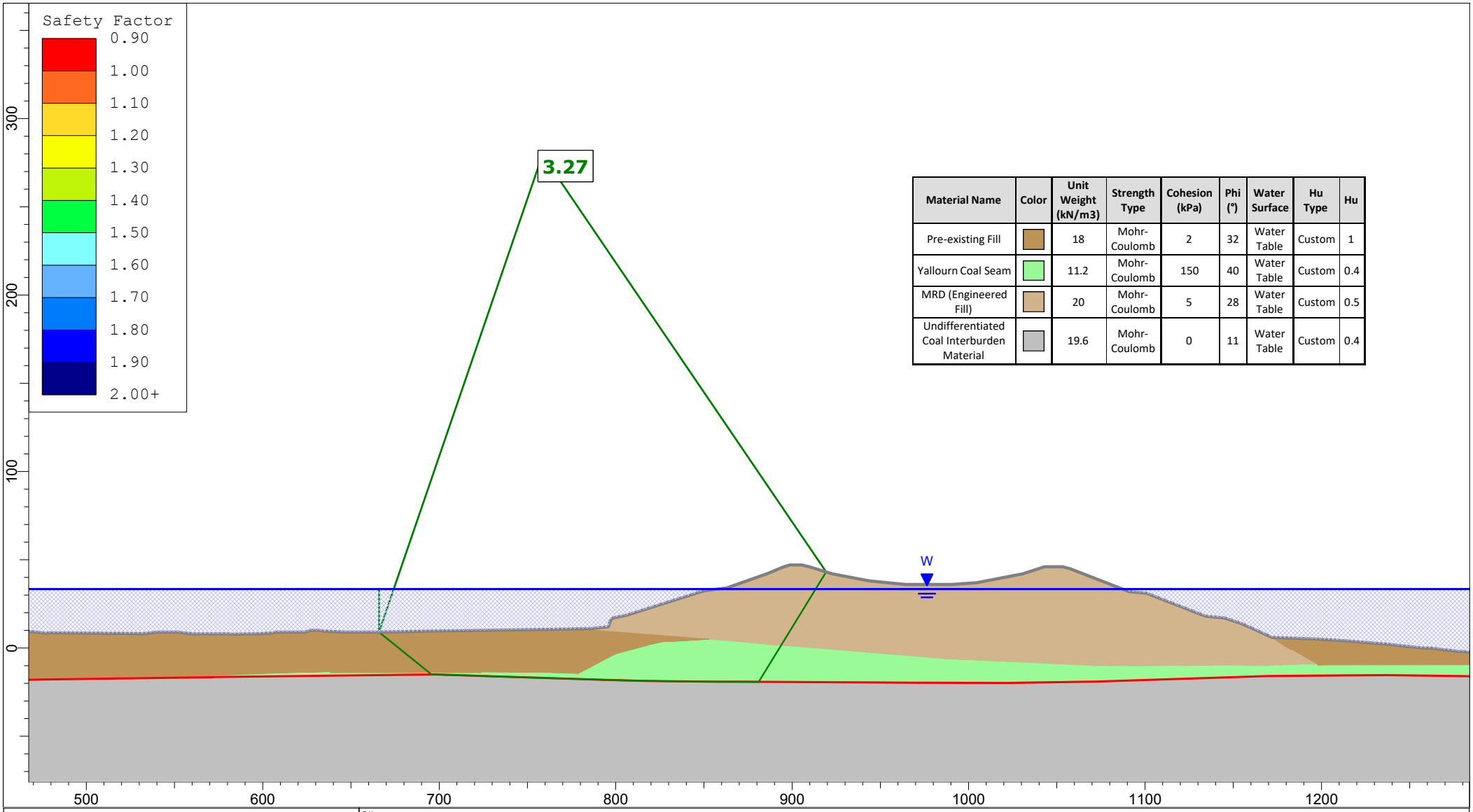
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength - Right To Left Failure		



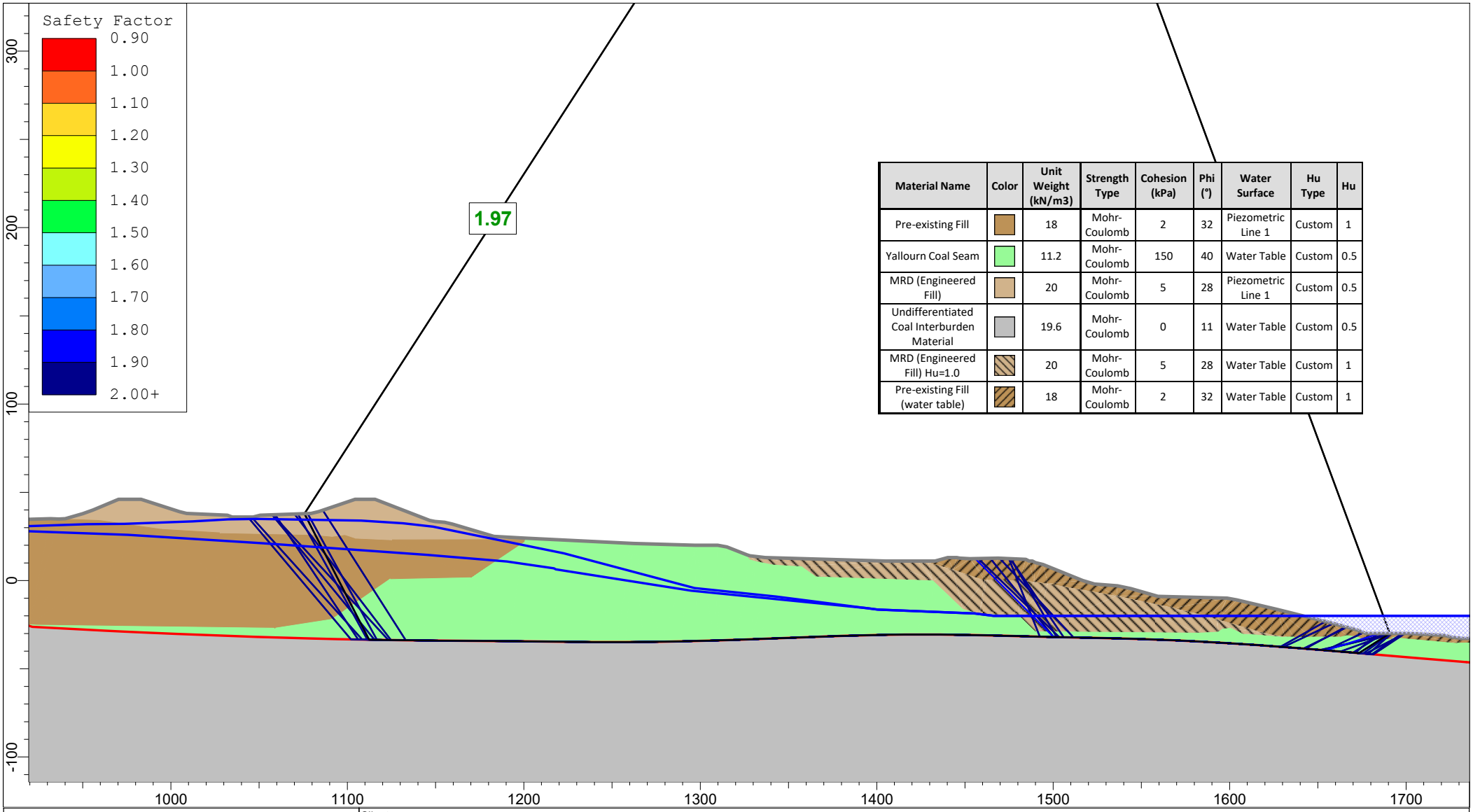
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength - Right To Left Failure		



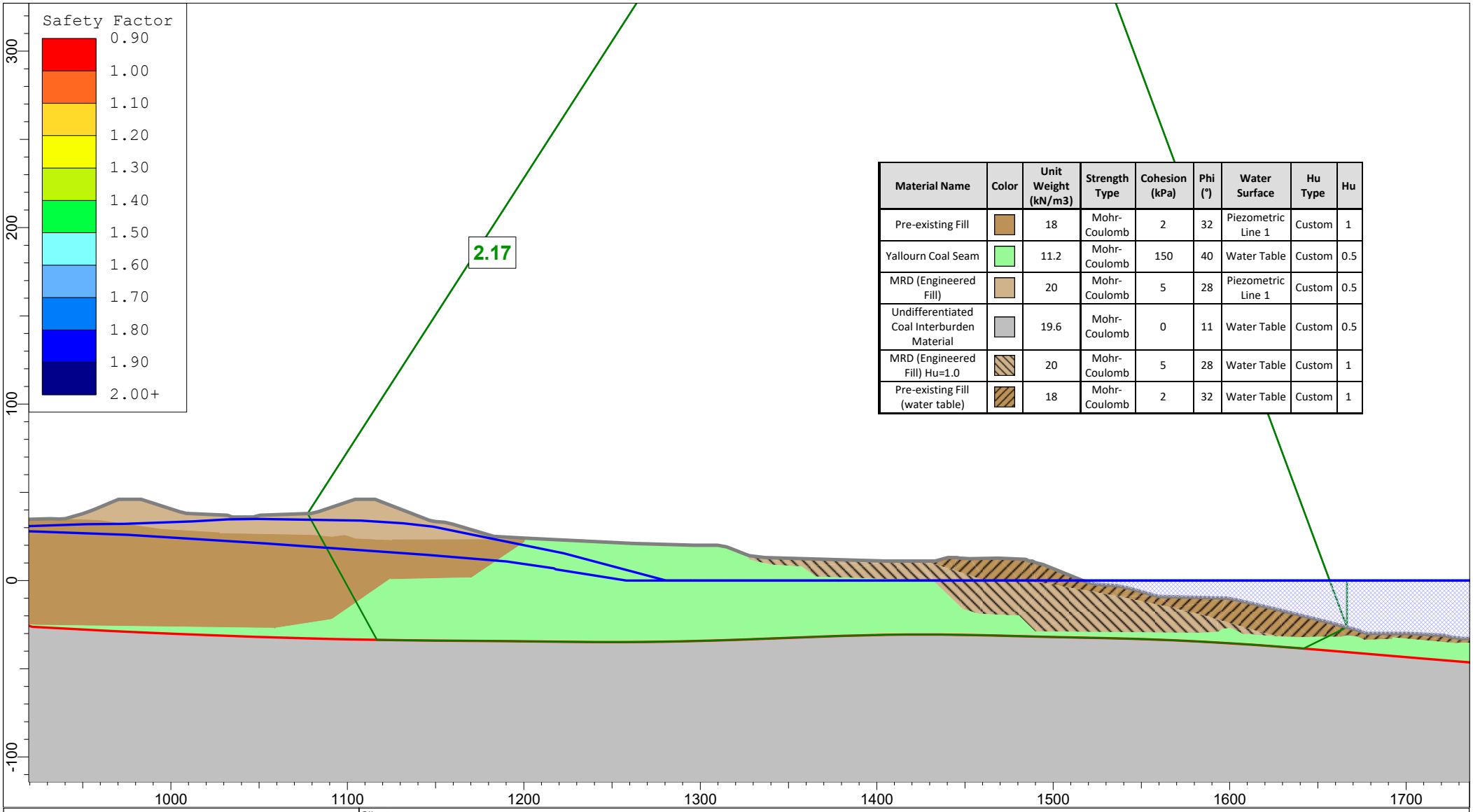
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength - Right To Left Failure		



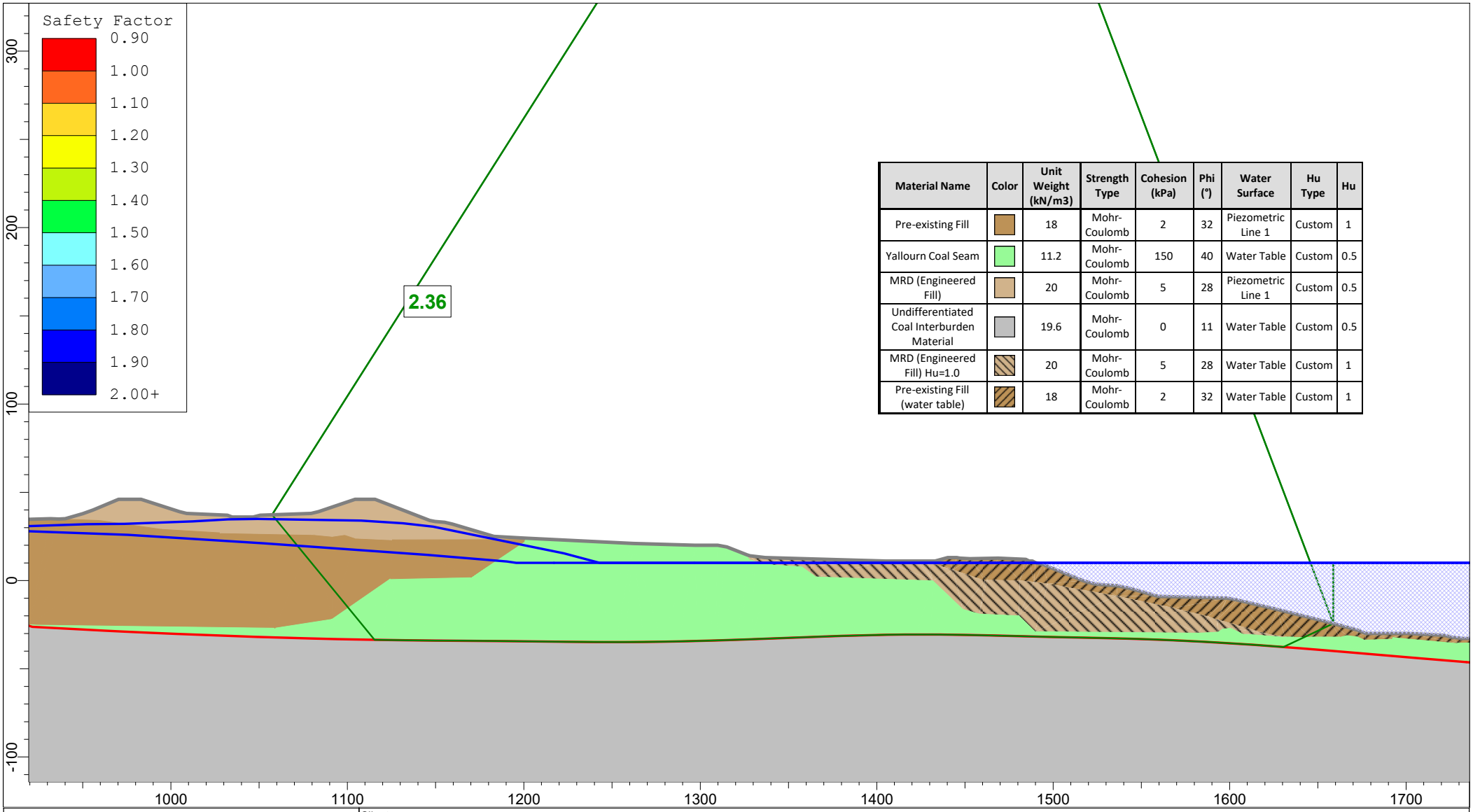
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -20 mRL
Notes:	Lower Bound Interseam Shear Strength		



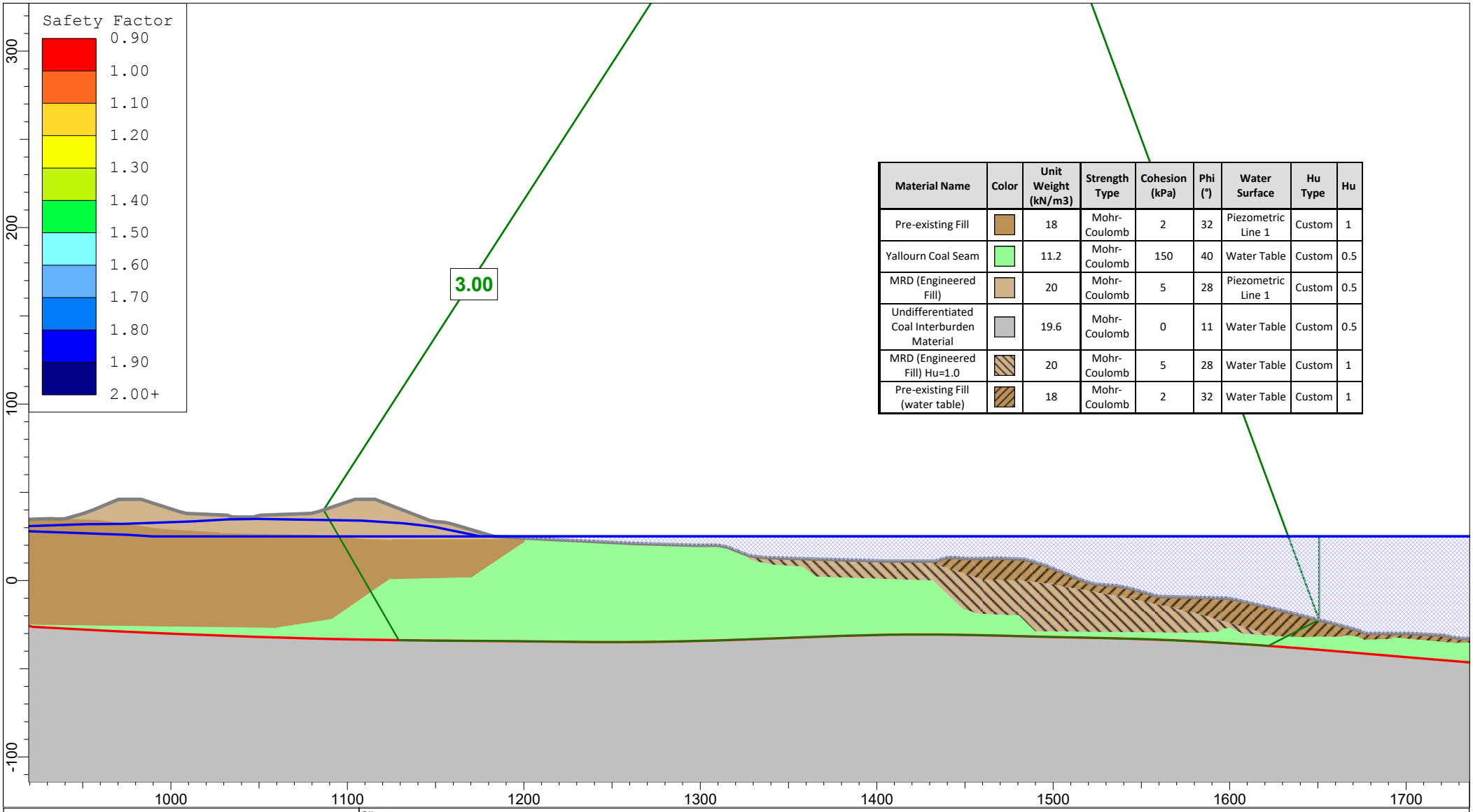
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



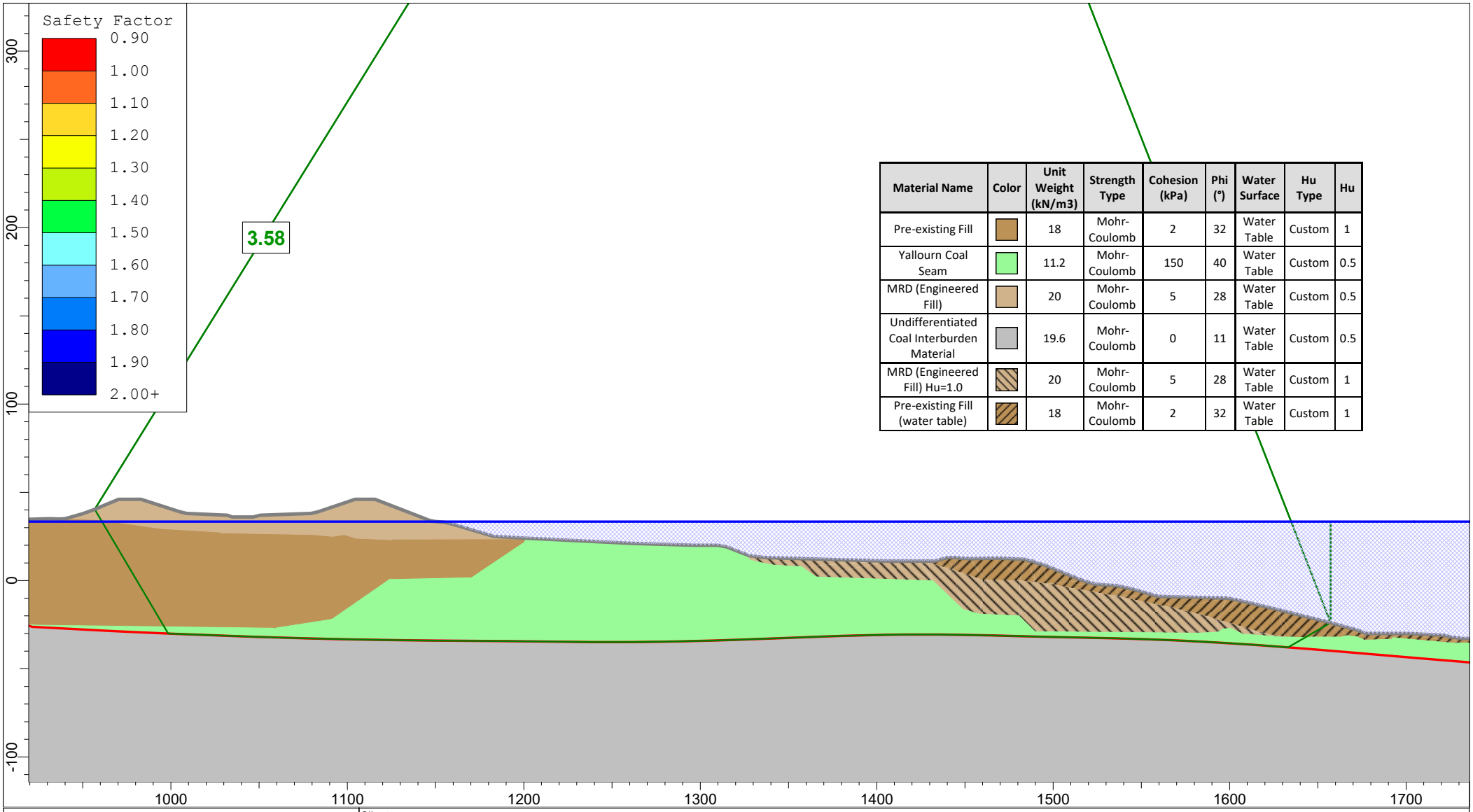
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



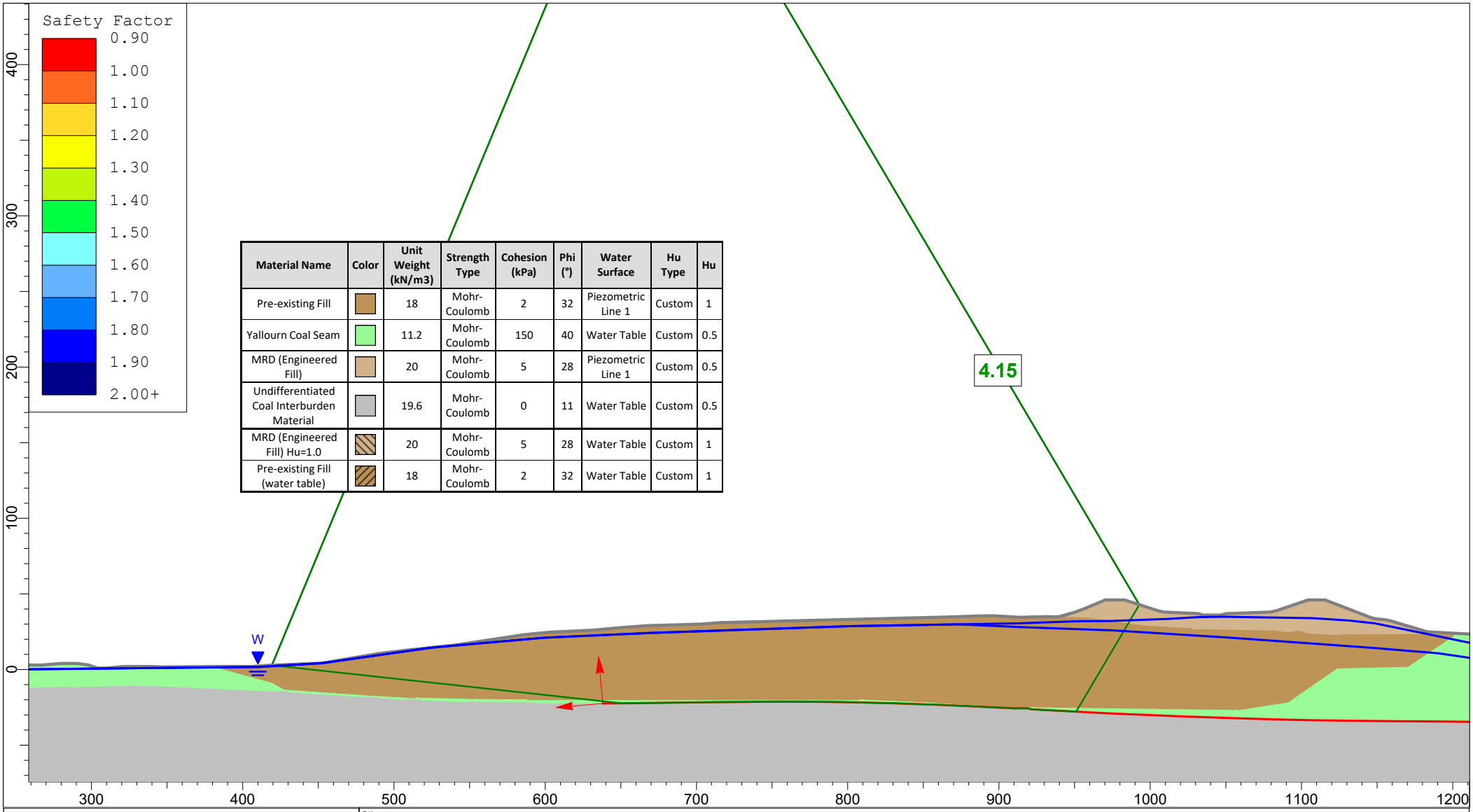
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



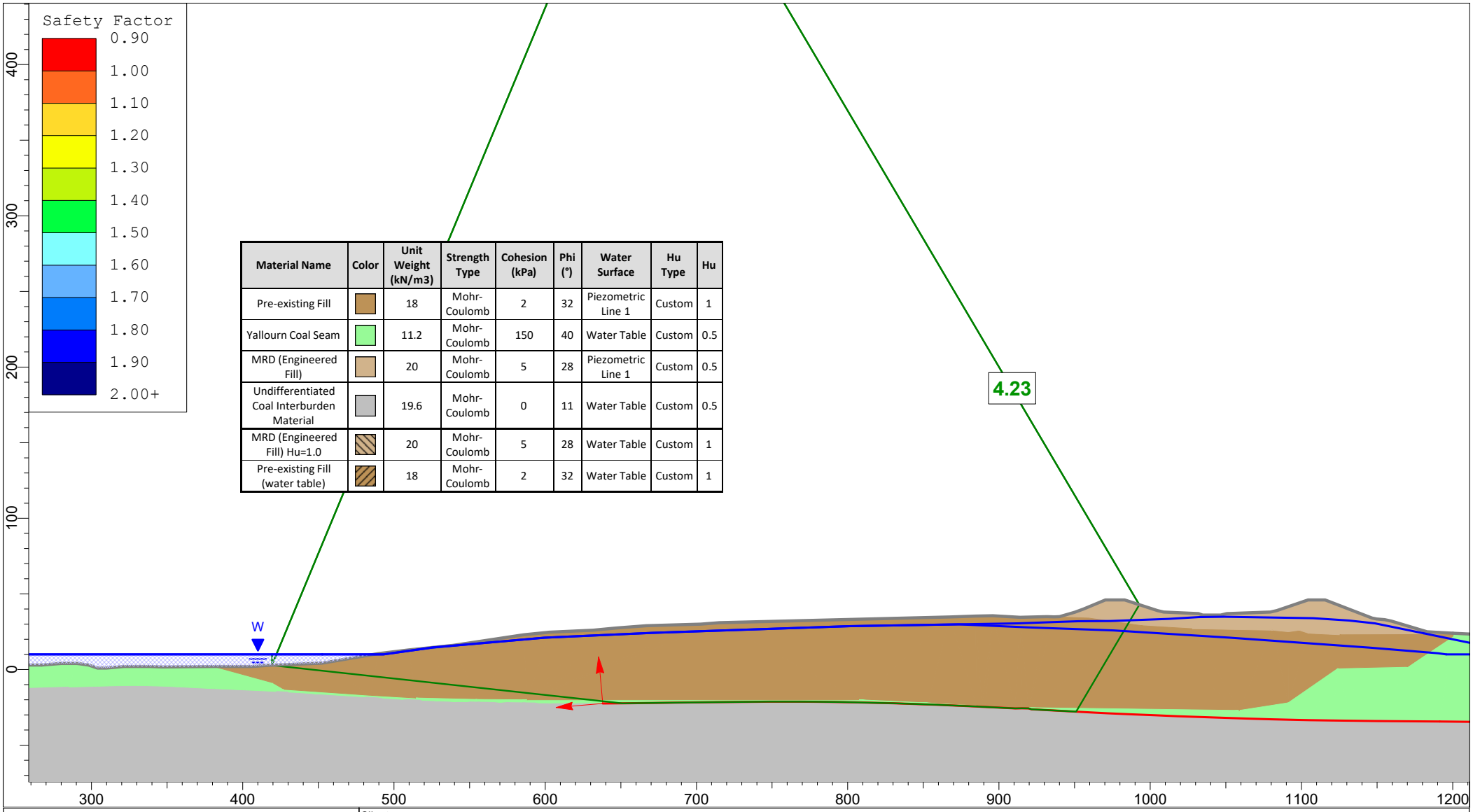
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



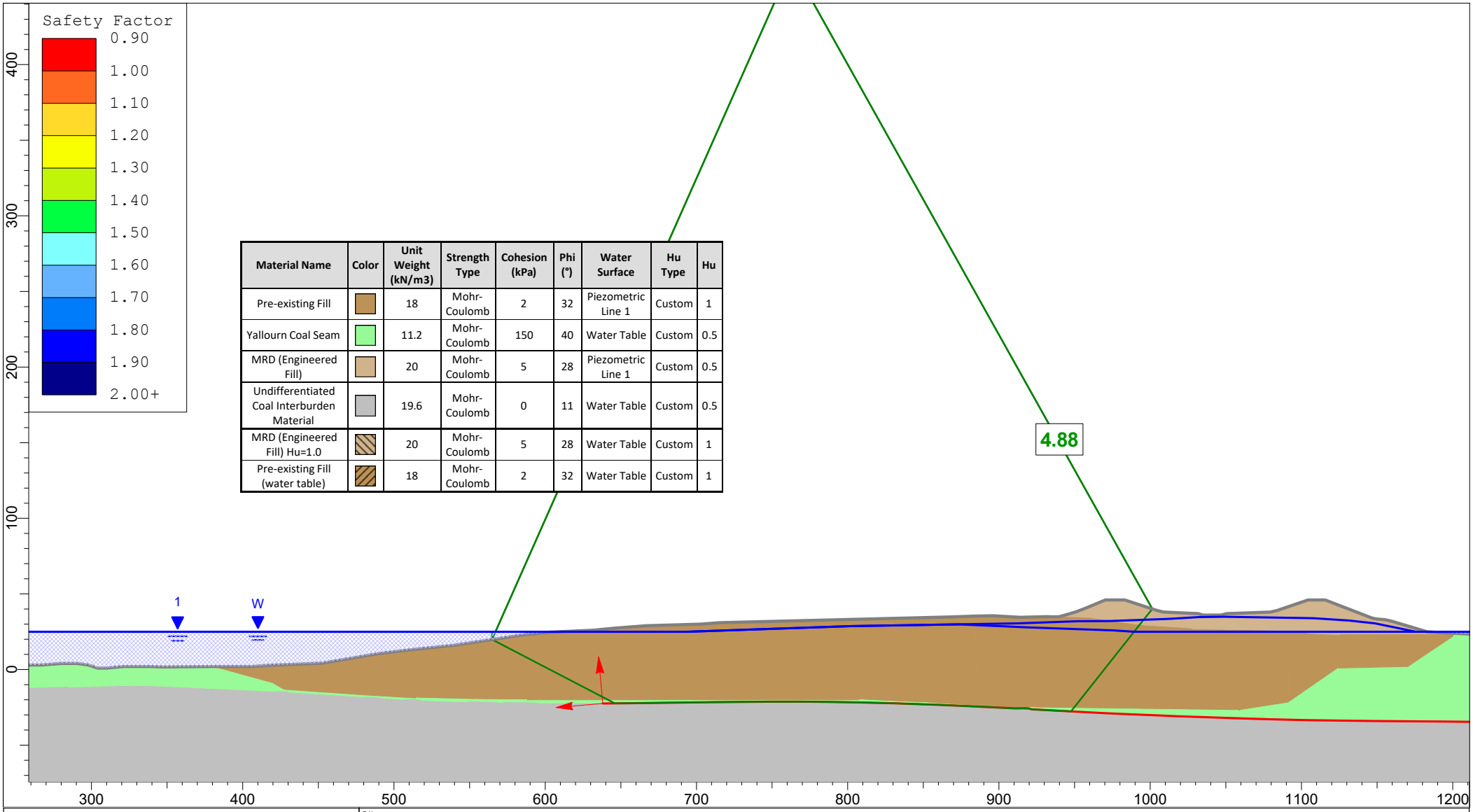
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength - Right To Left		



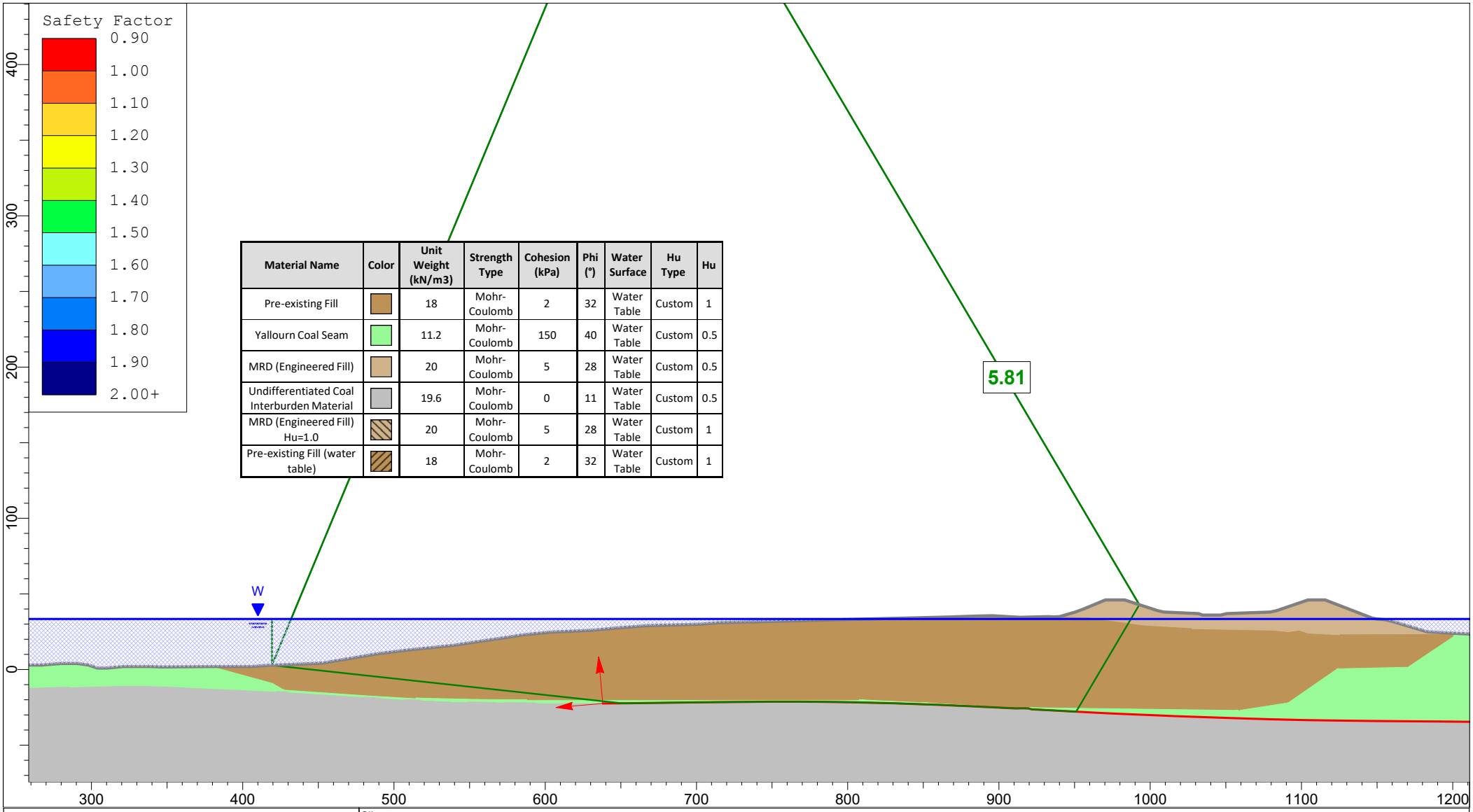
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength - Right To Left		



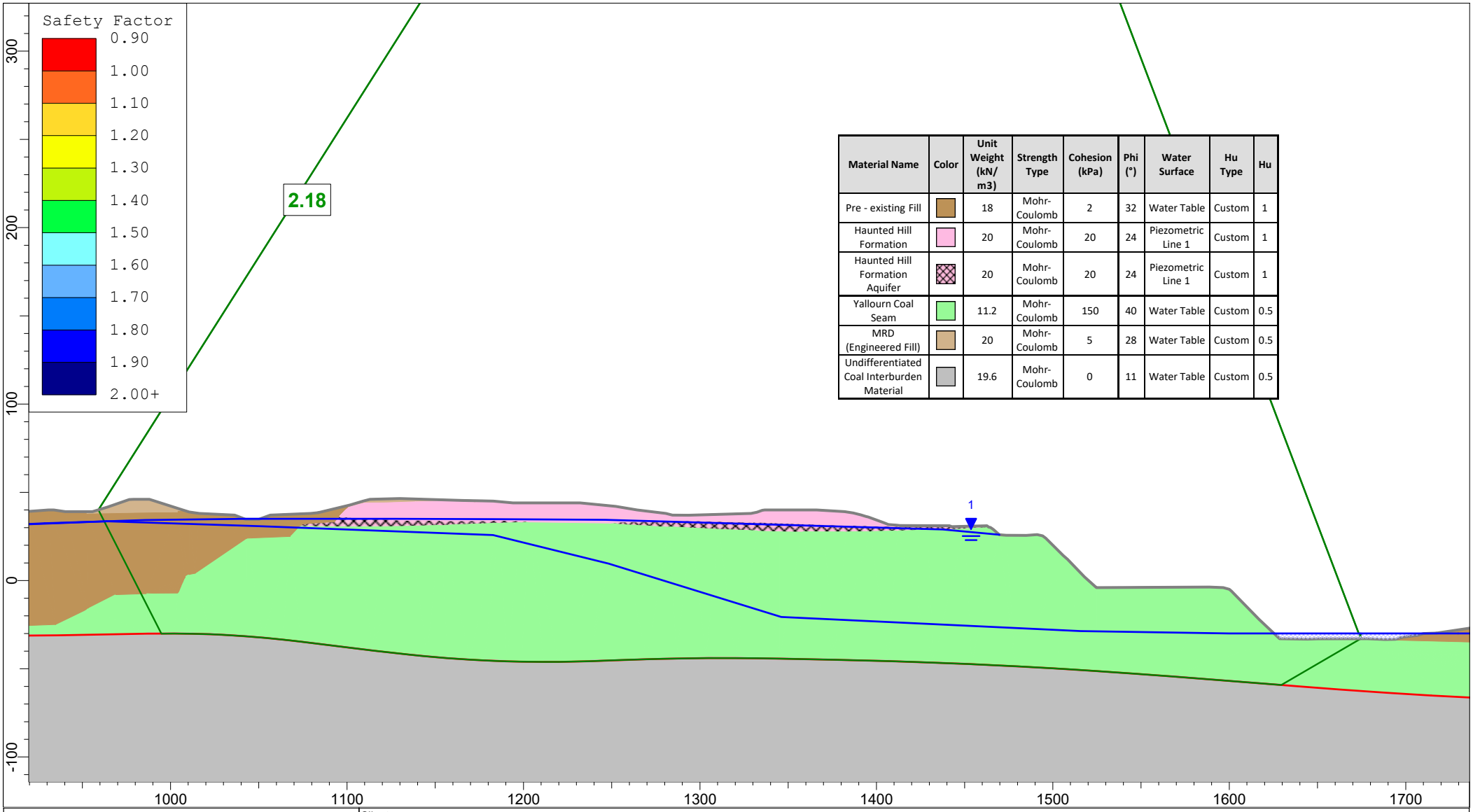
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength - Right To Left		



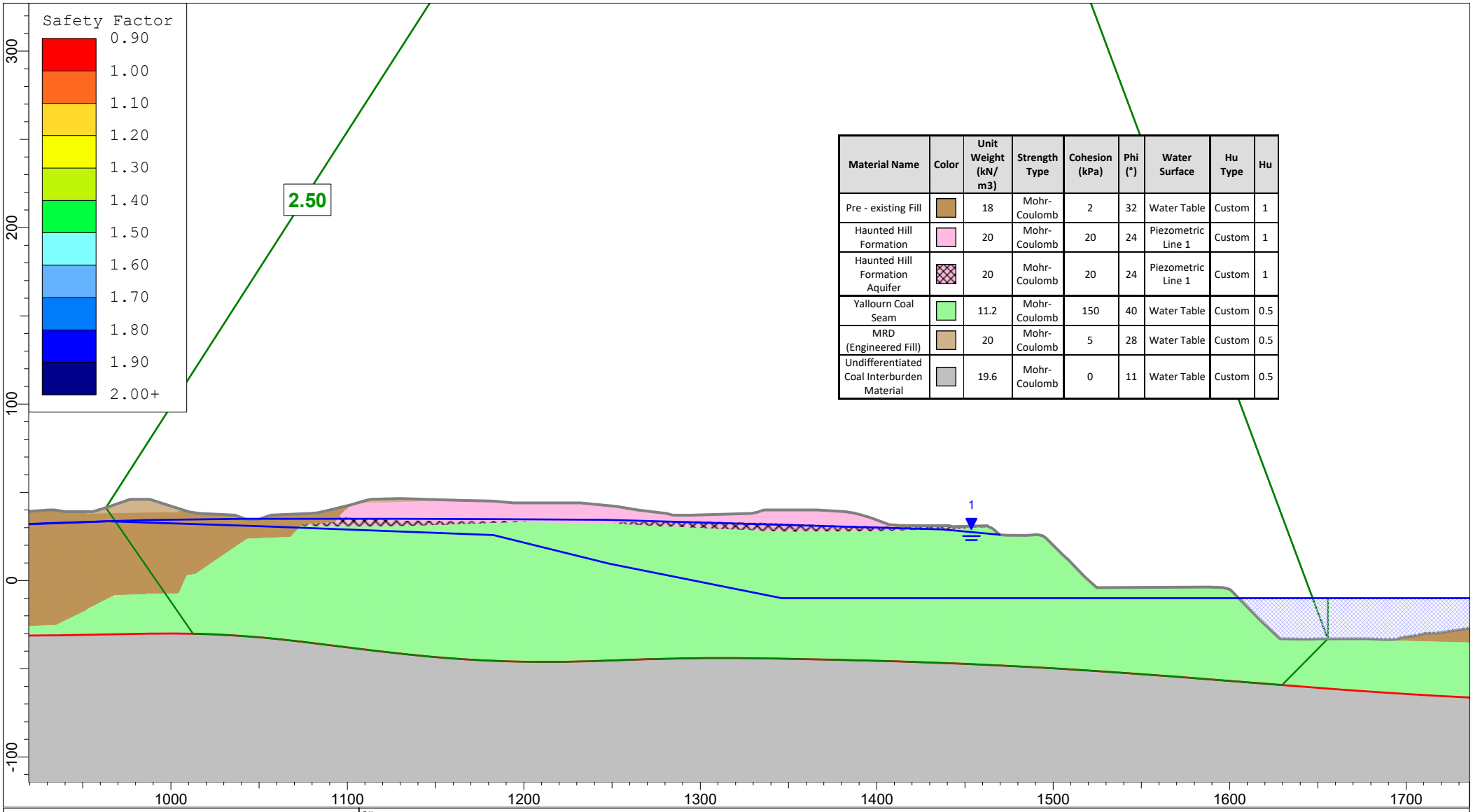
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength - Right To Left		



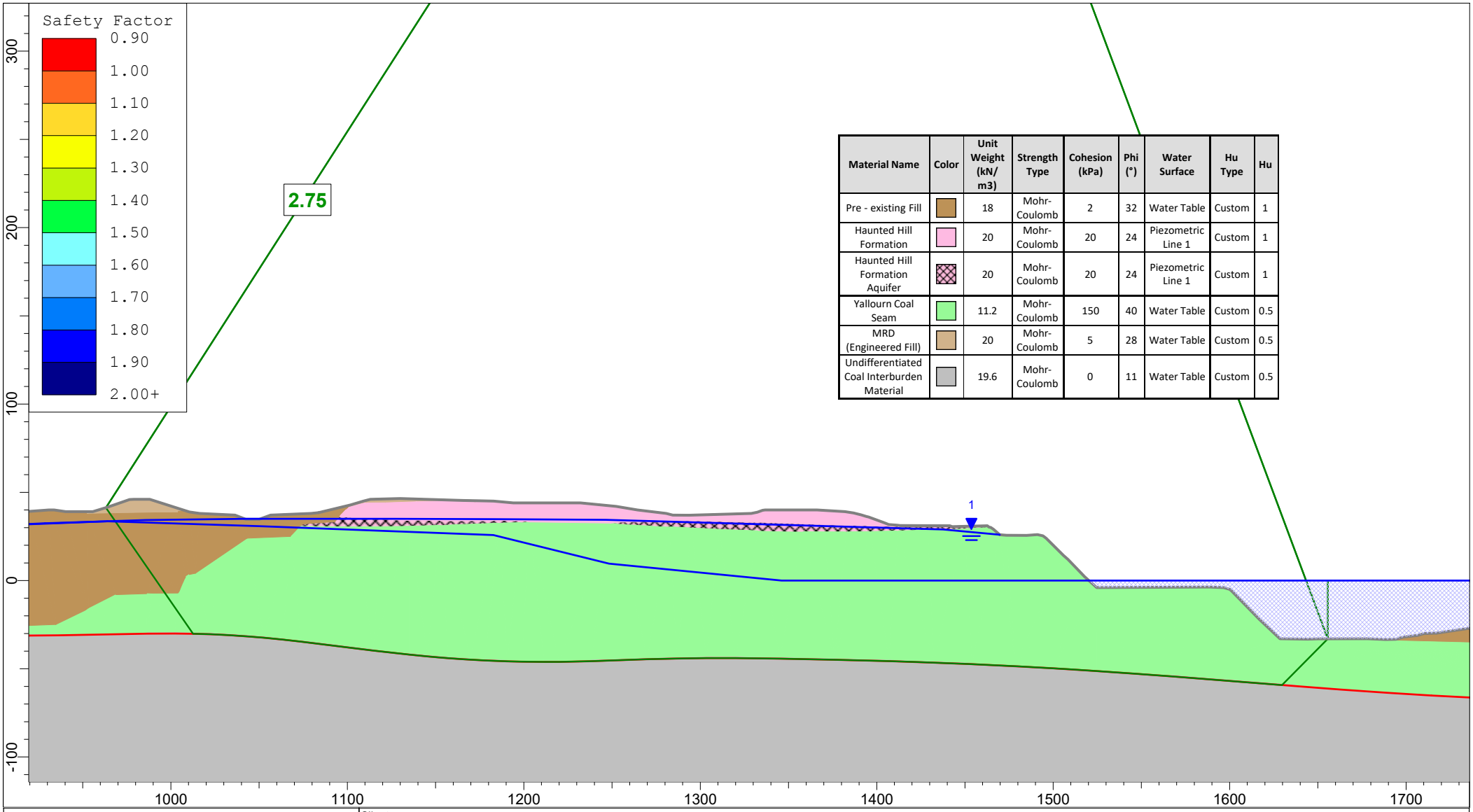
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -30 mRL
Notes:	Lower Bound Interseam Shear Strength		



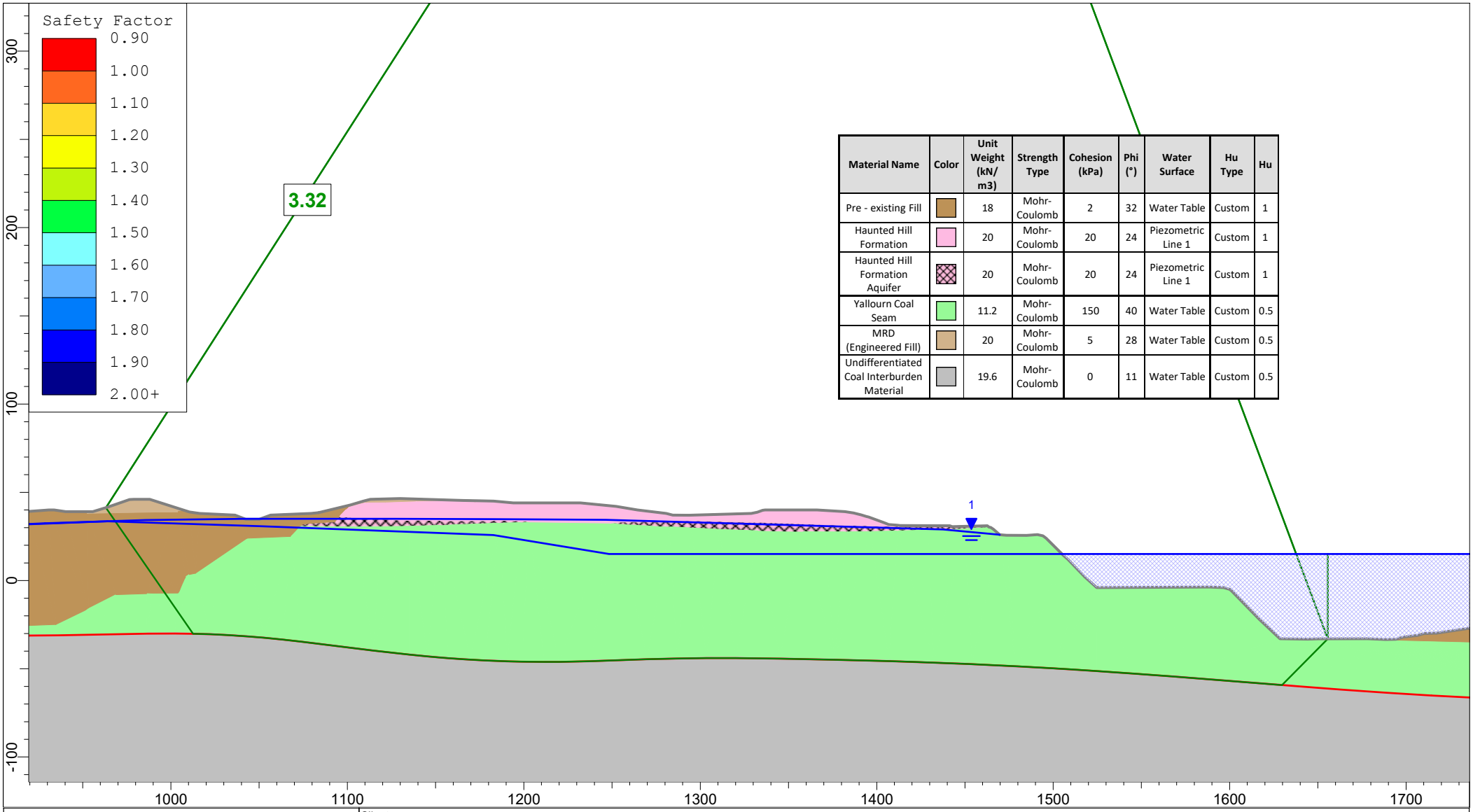
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength		



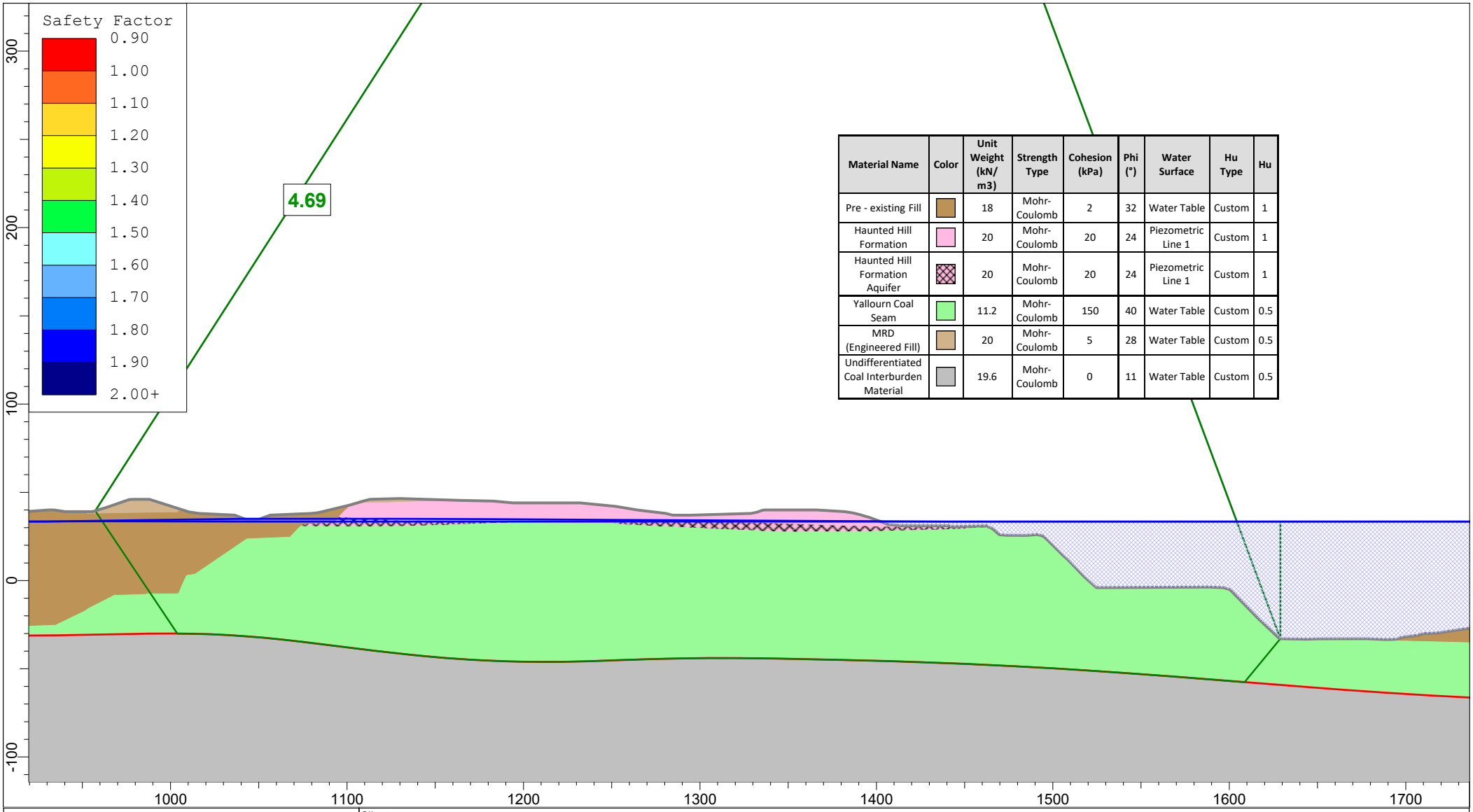
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



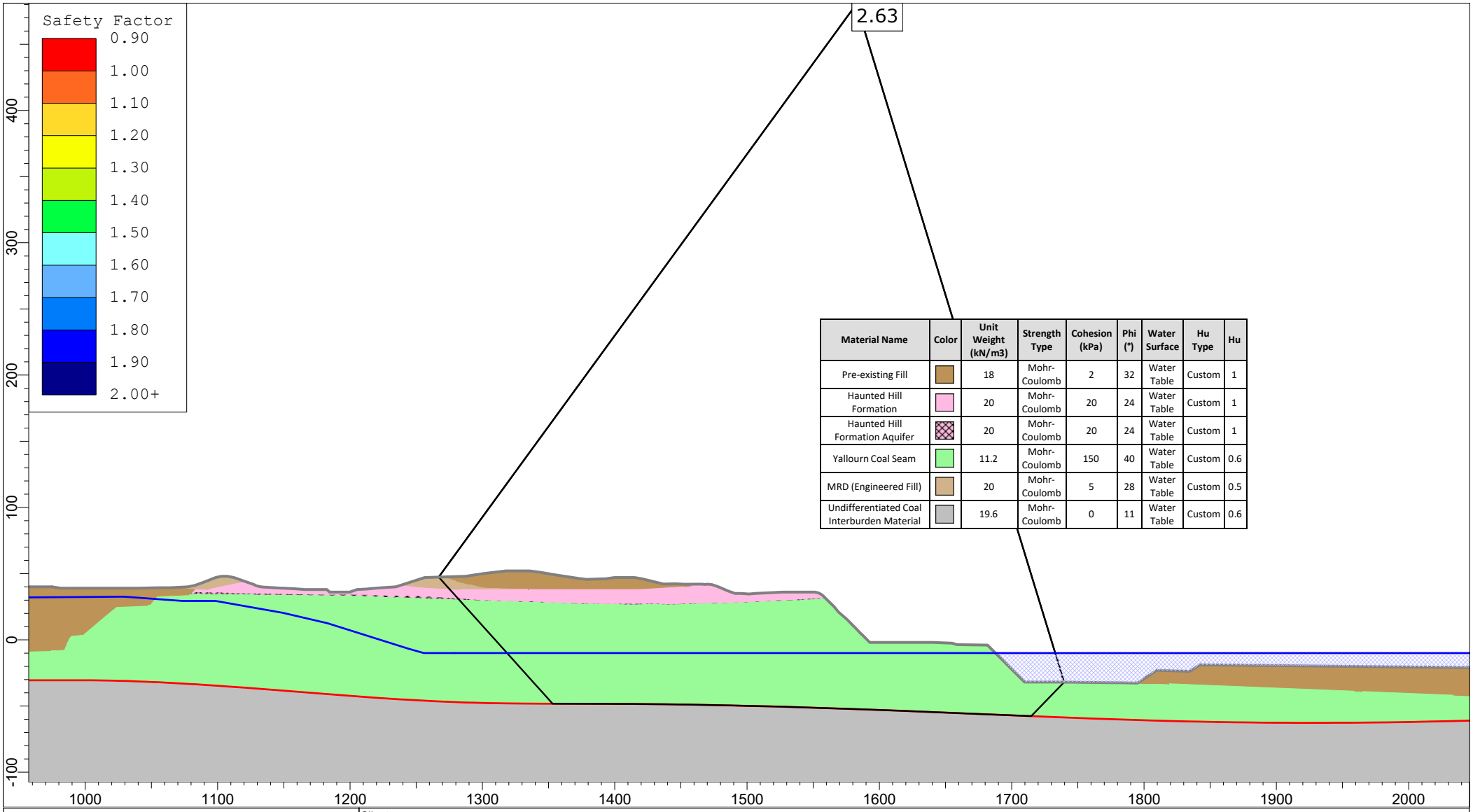
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



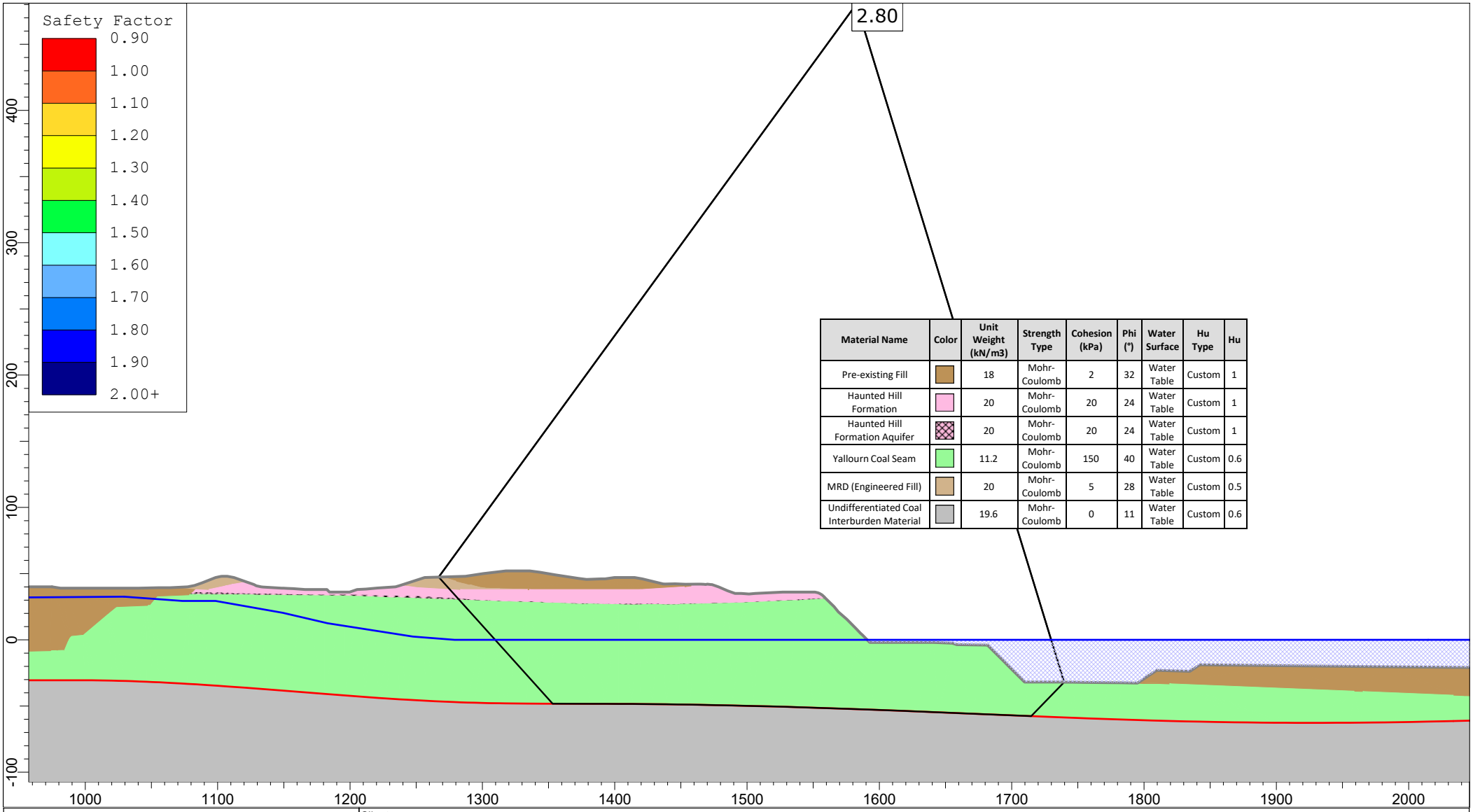
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



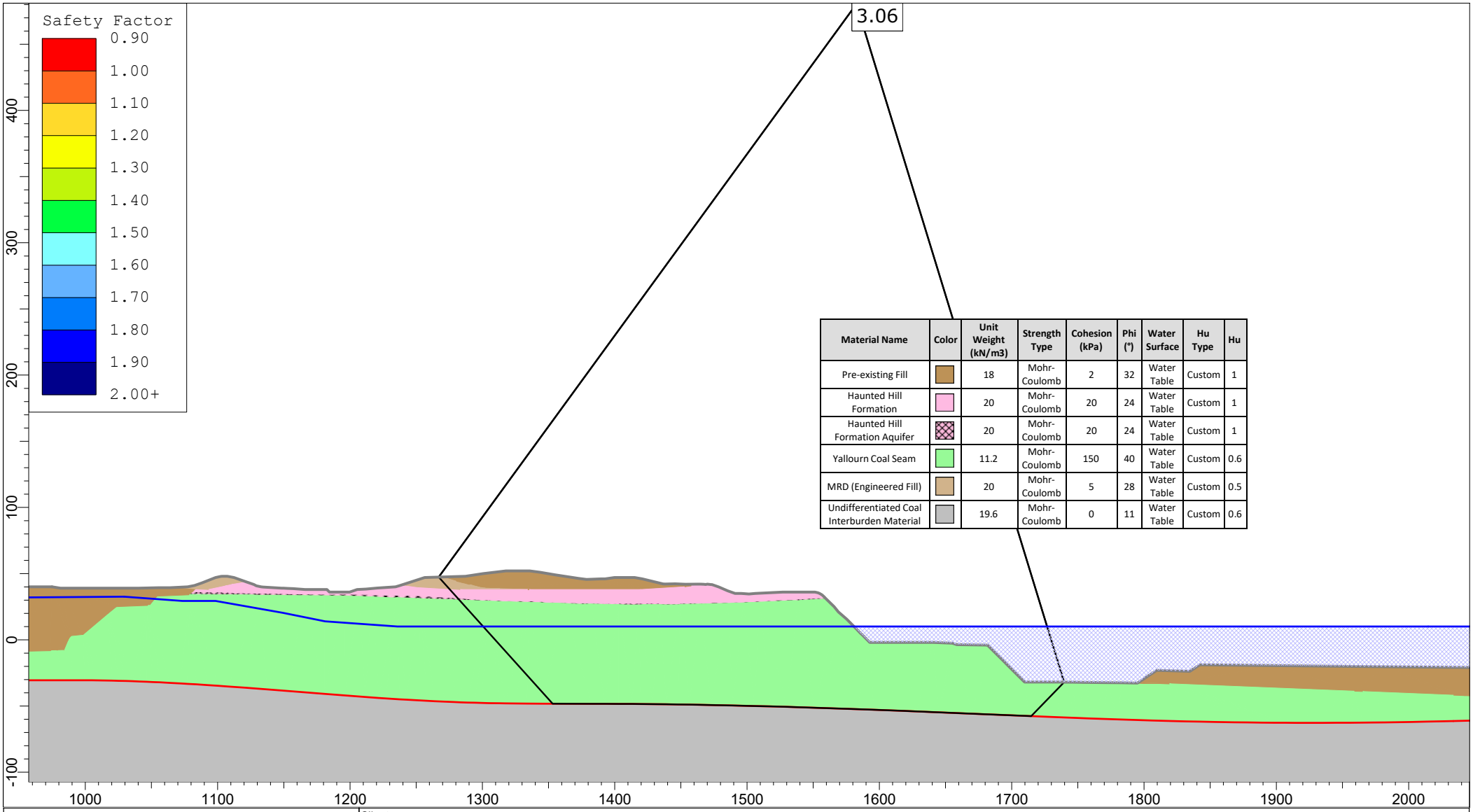
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength		



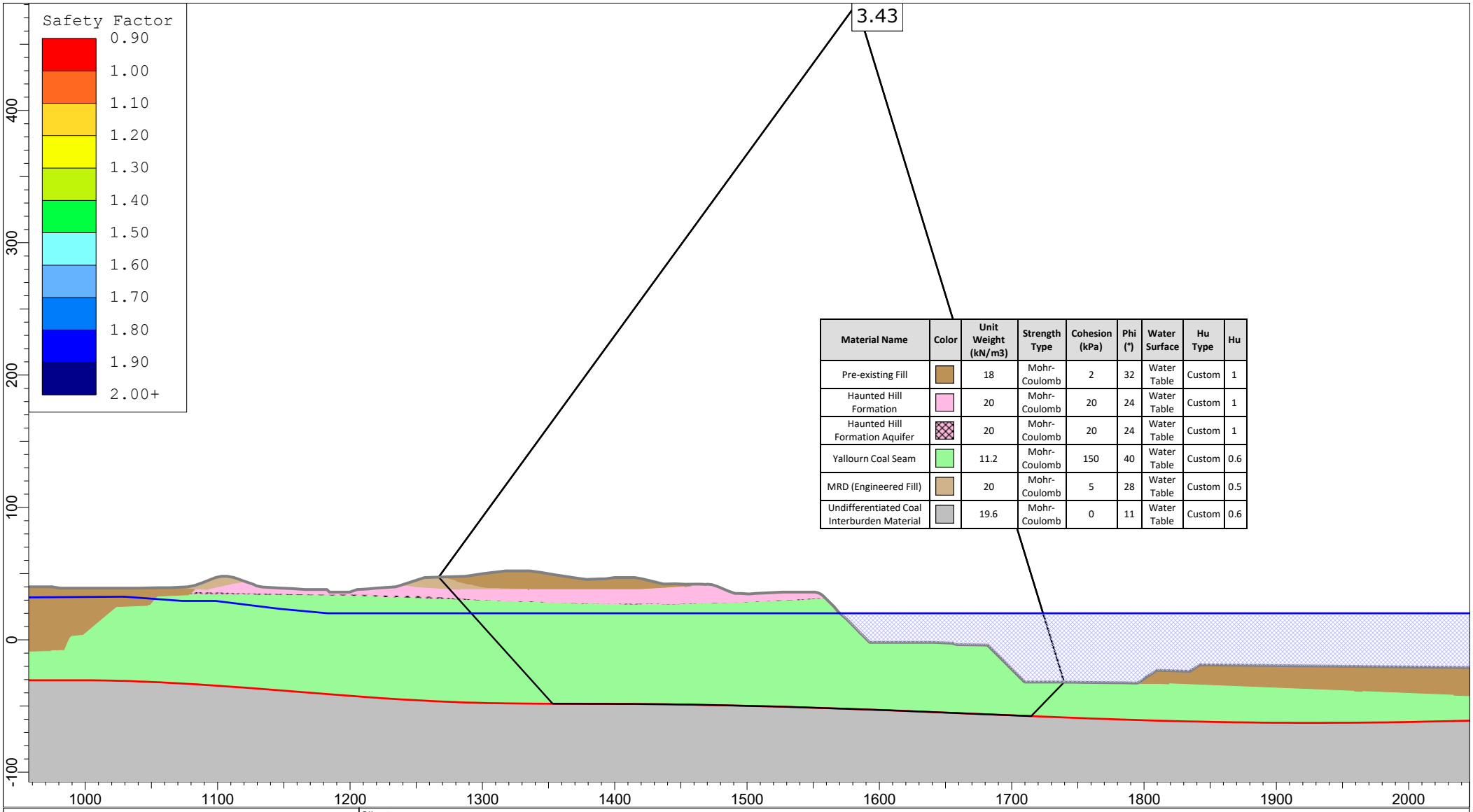
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



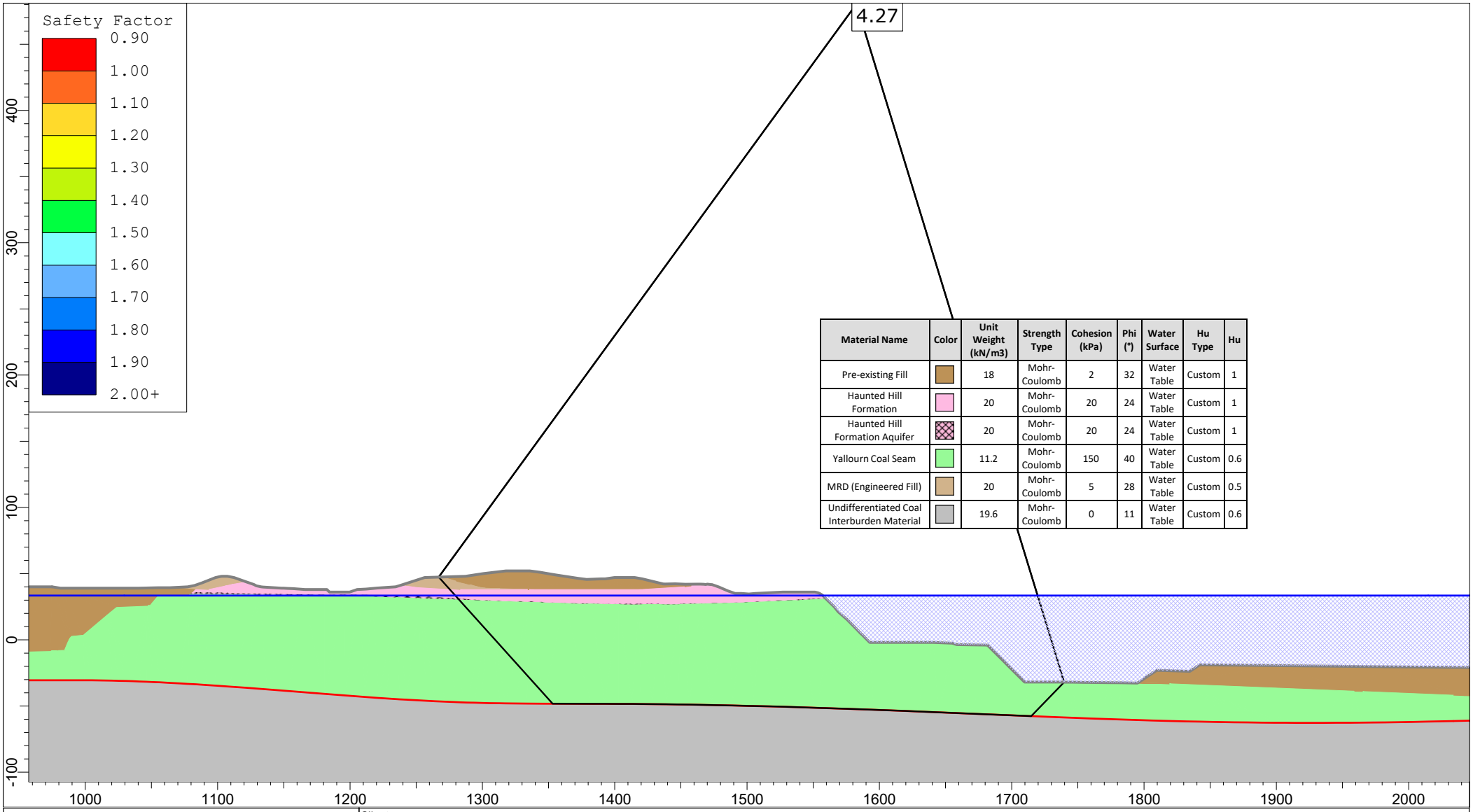
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



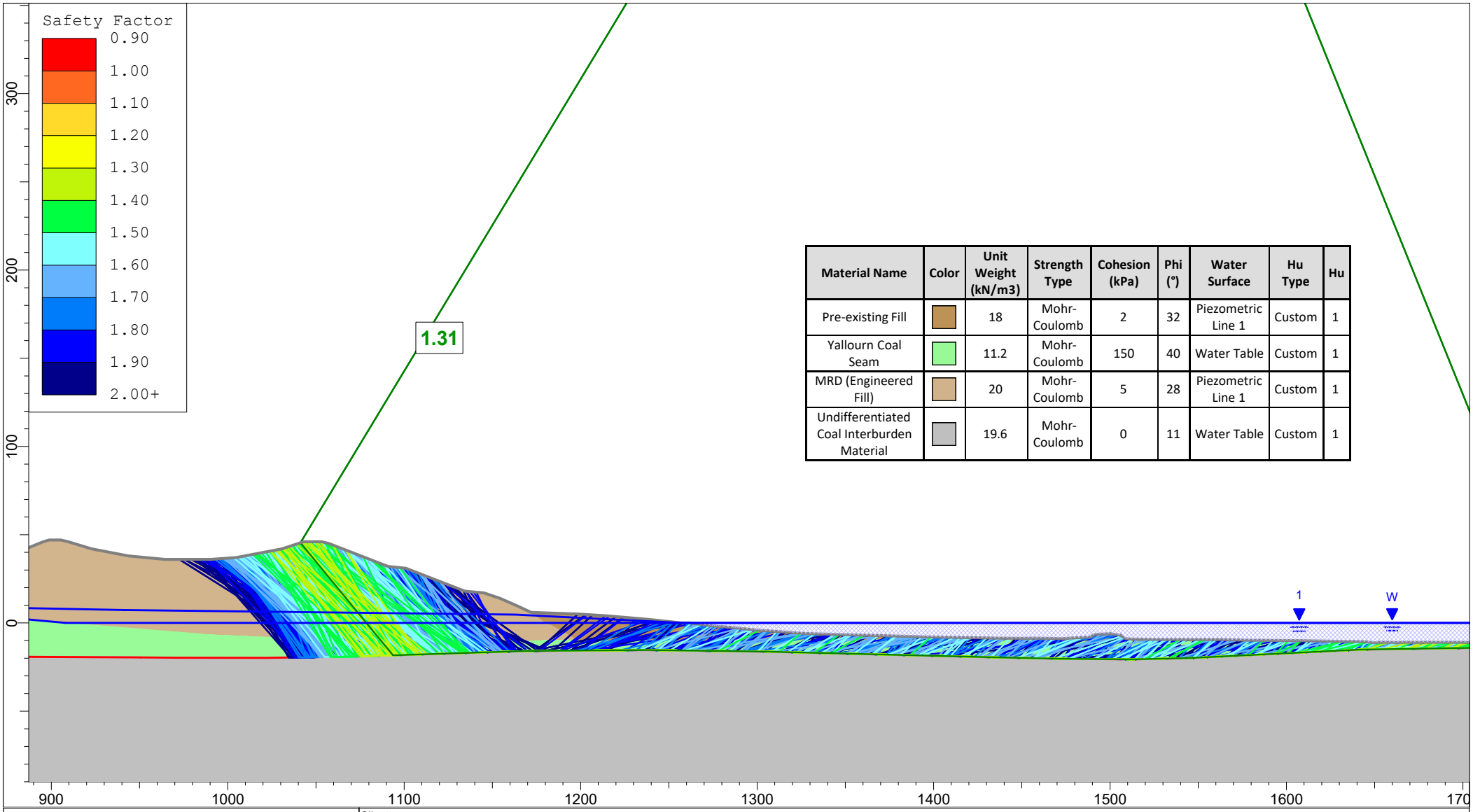
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



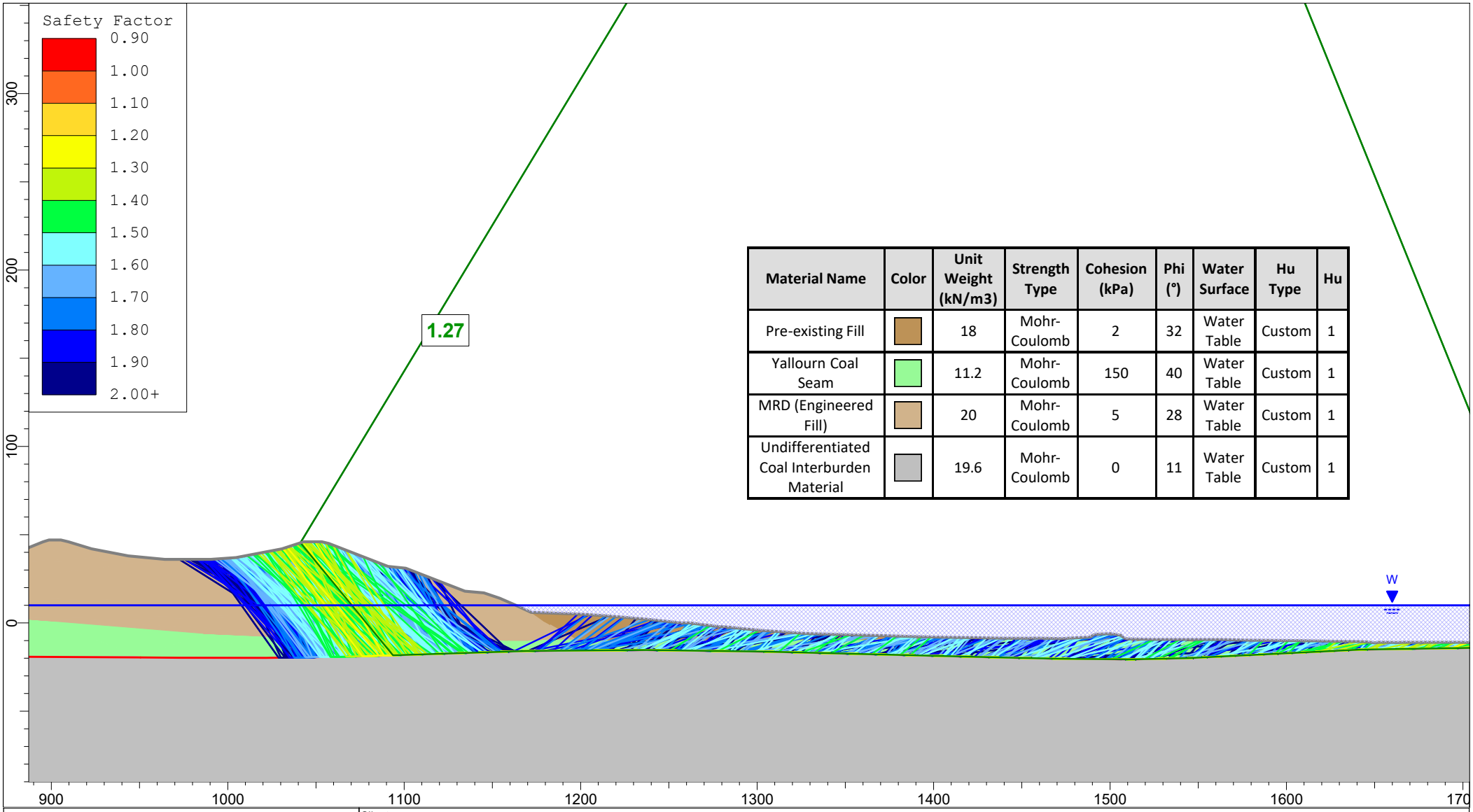
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



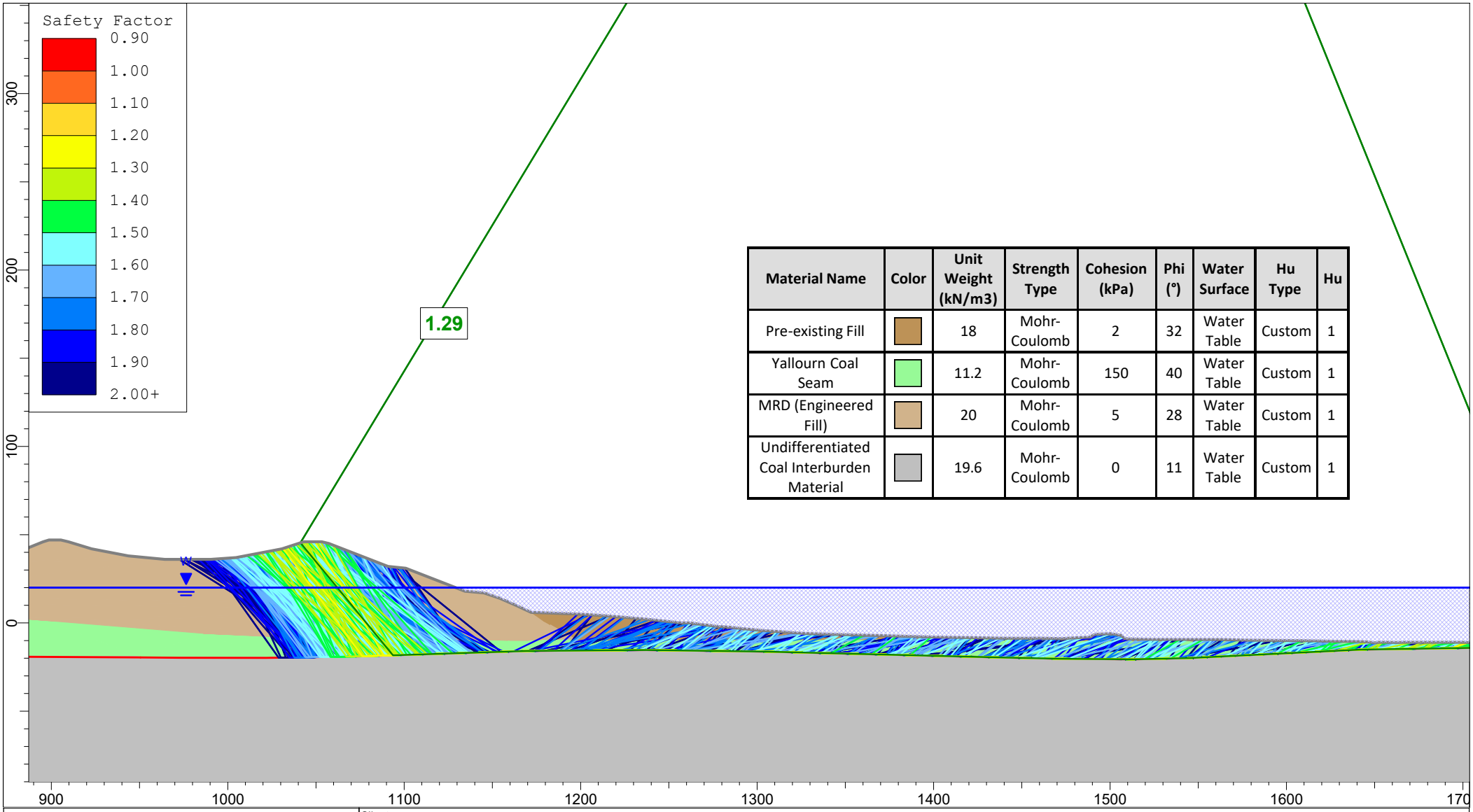
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



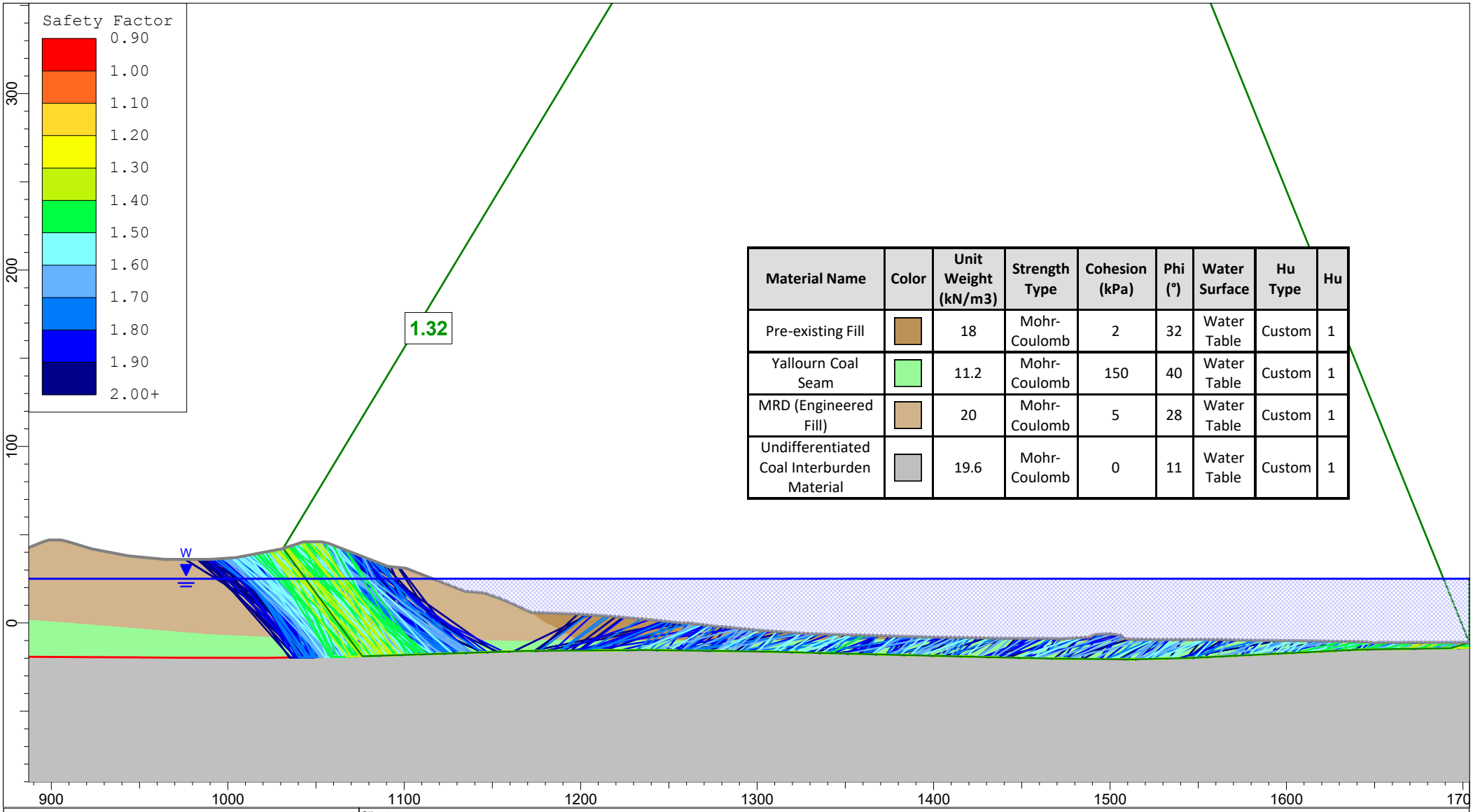
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



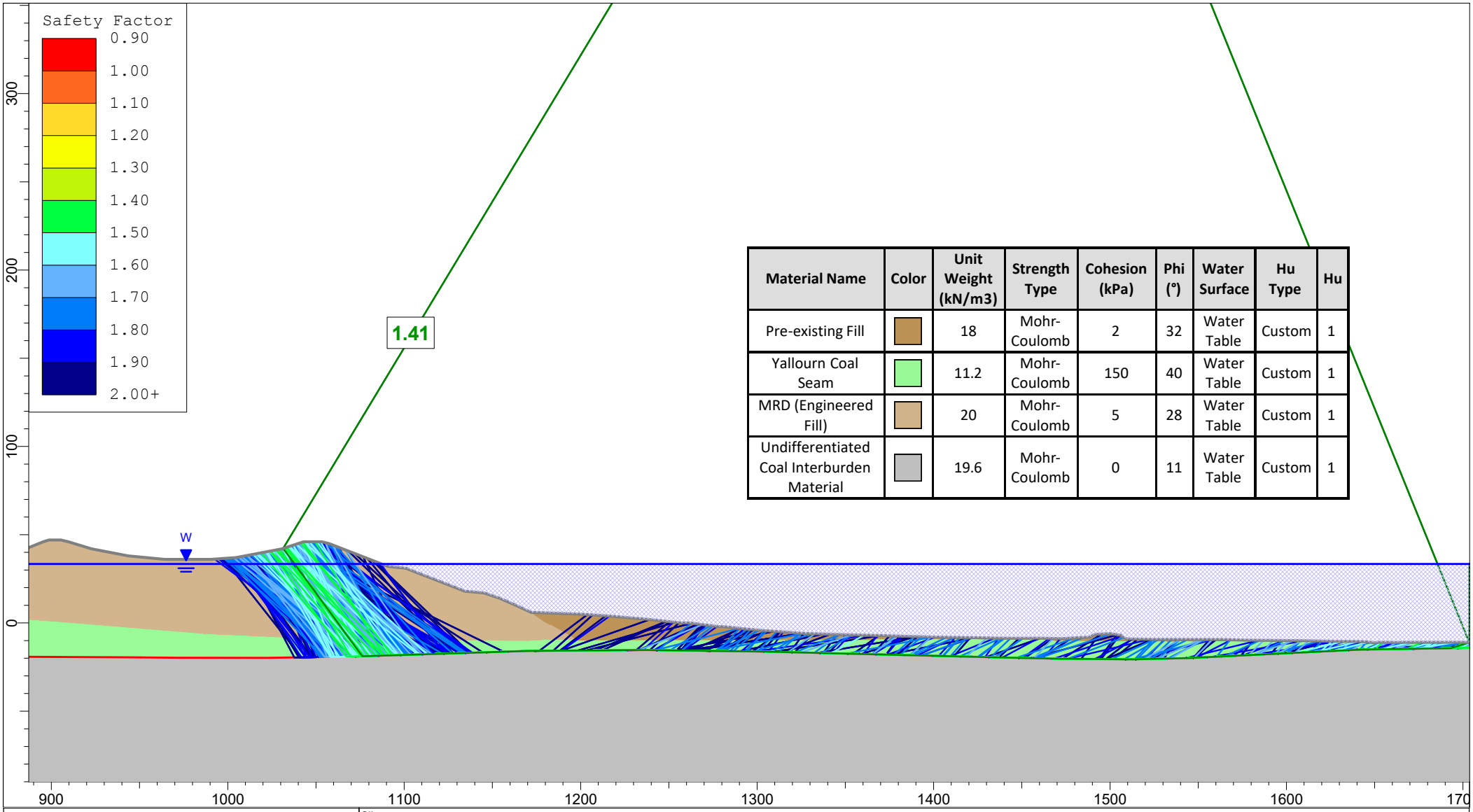
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



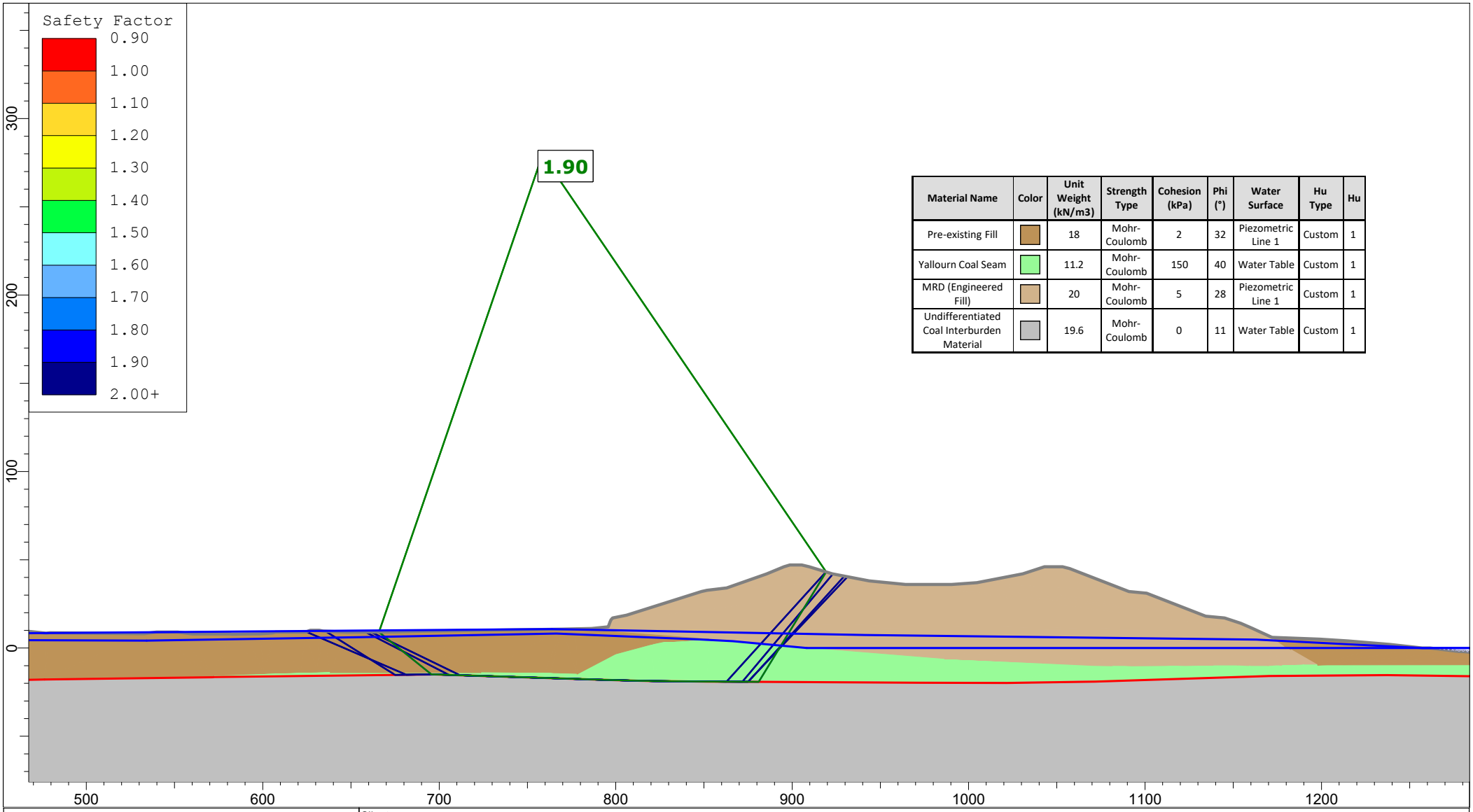
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



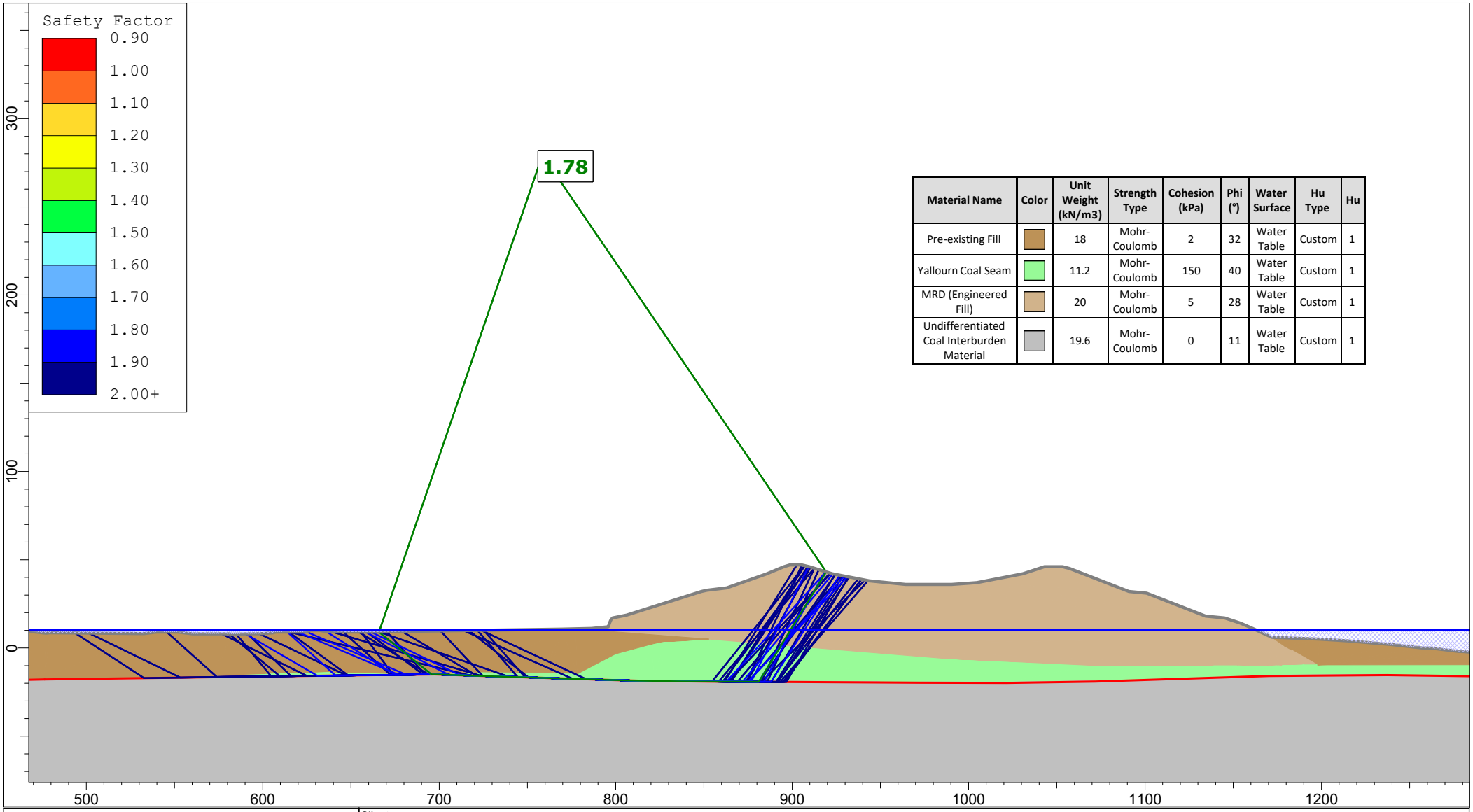
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



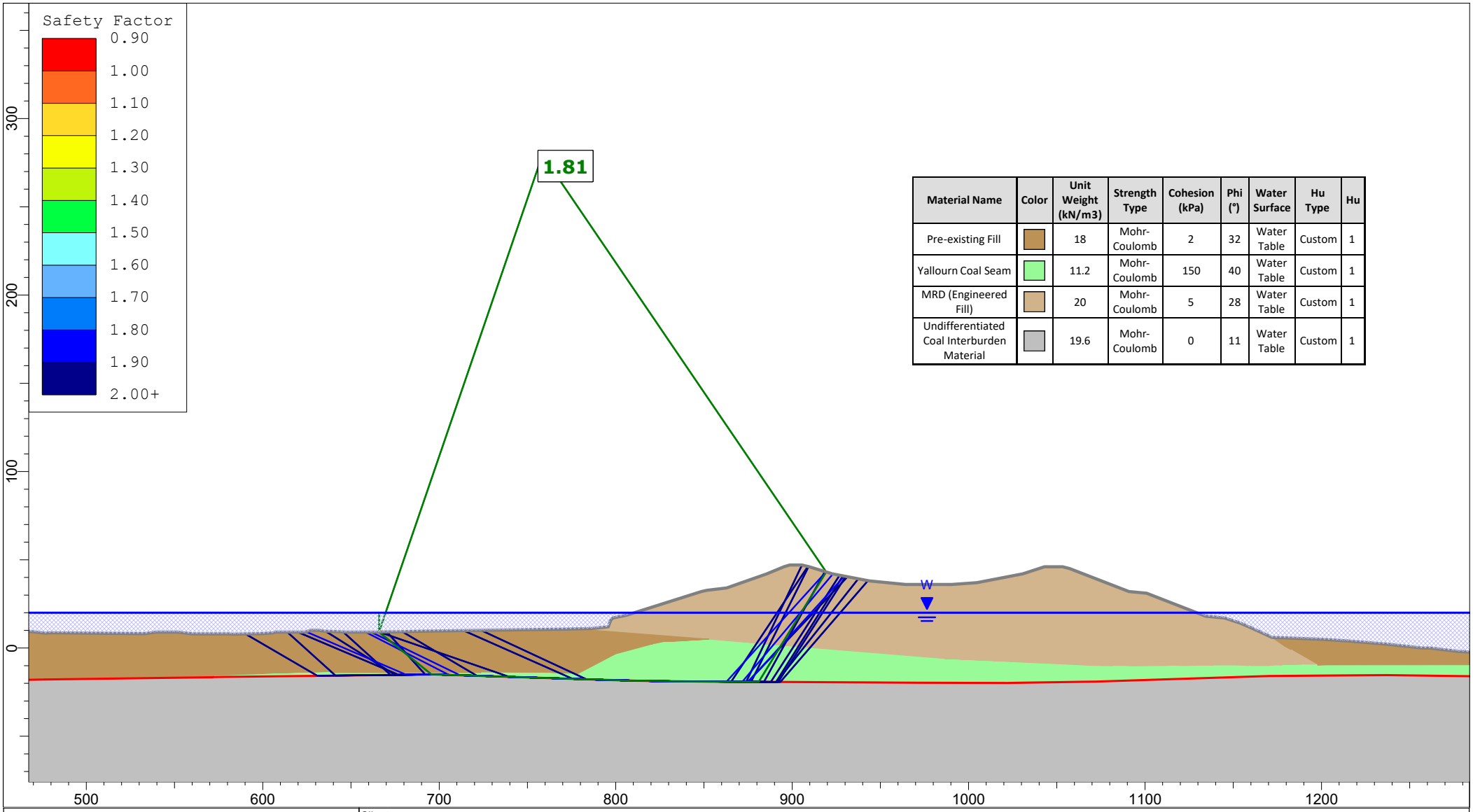
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength - Right To Left Failure		



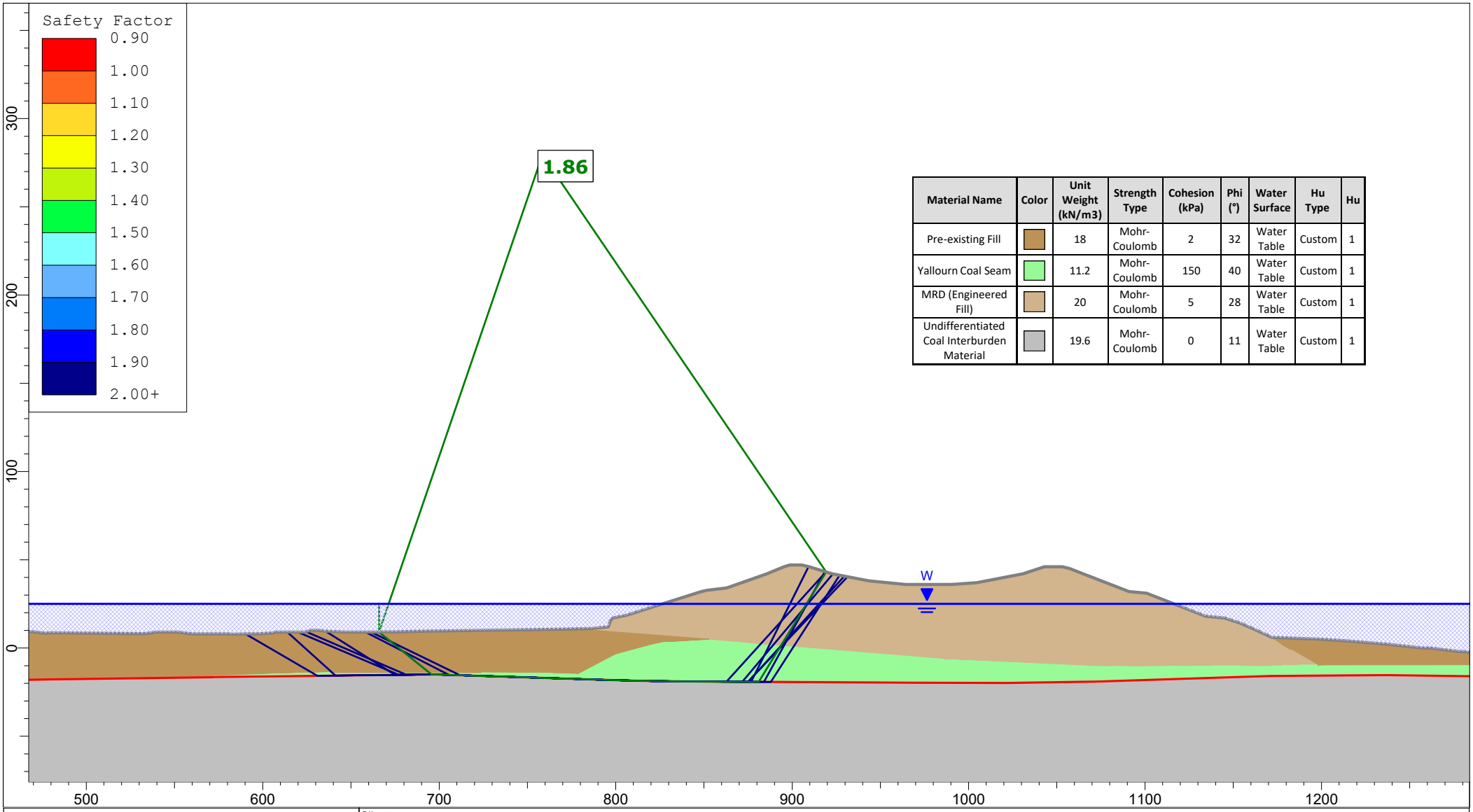
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength - Right To Left Failure		



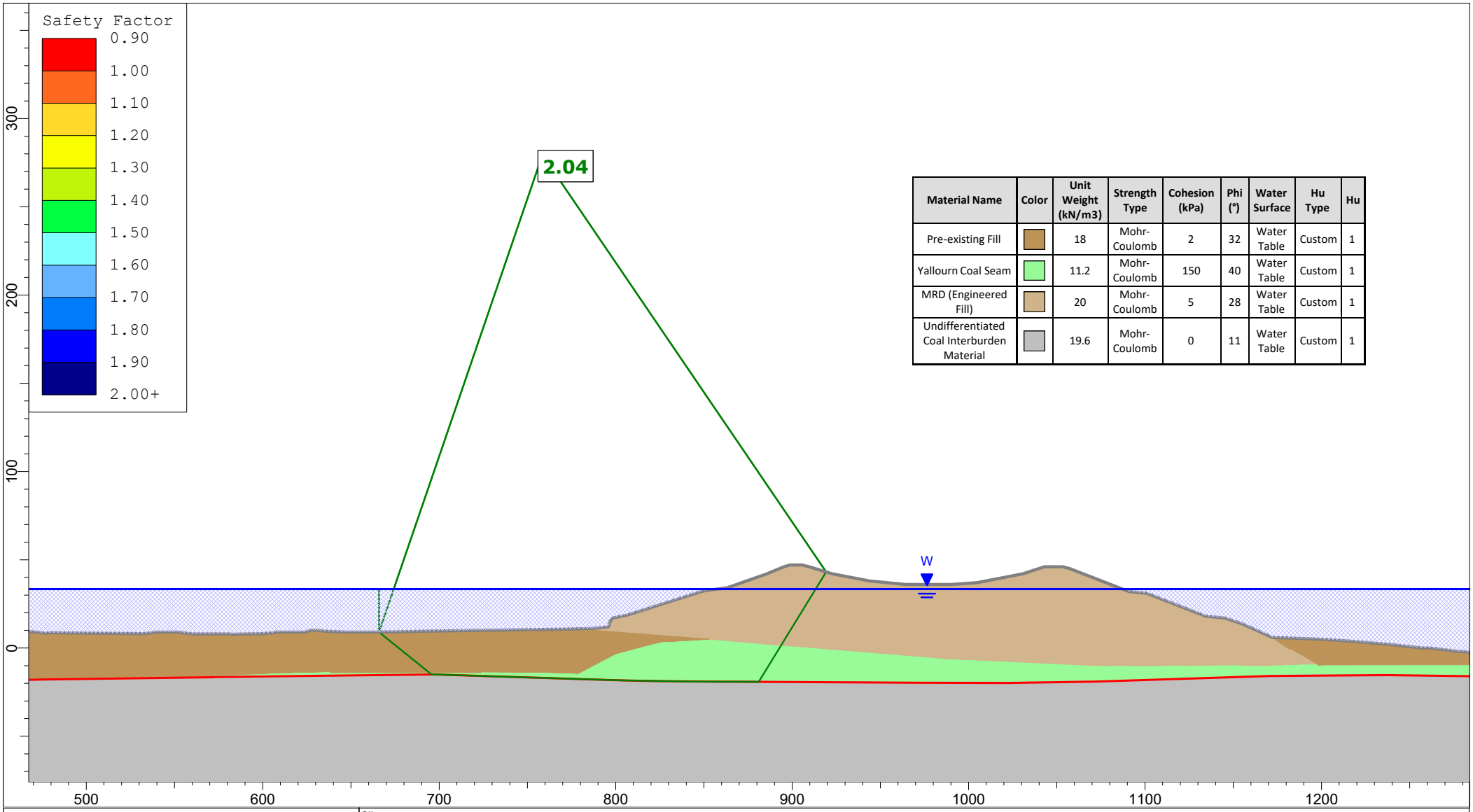
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength - Right To Left Failure		



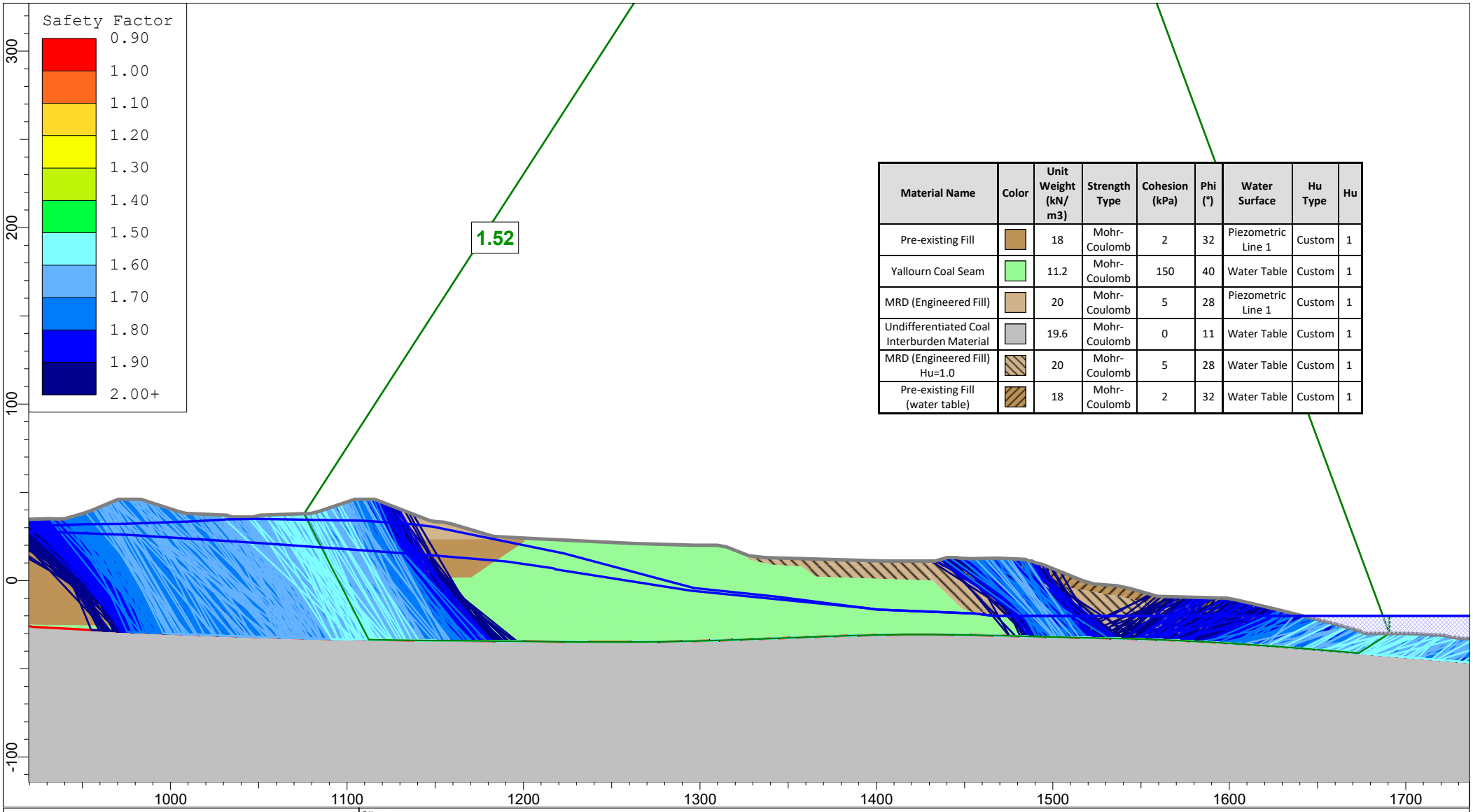
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength - Right To Left Failure		



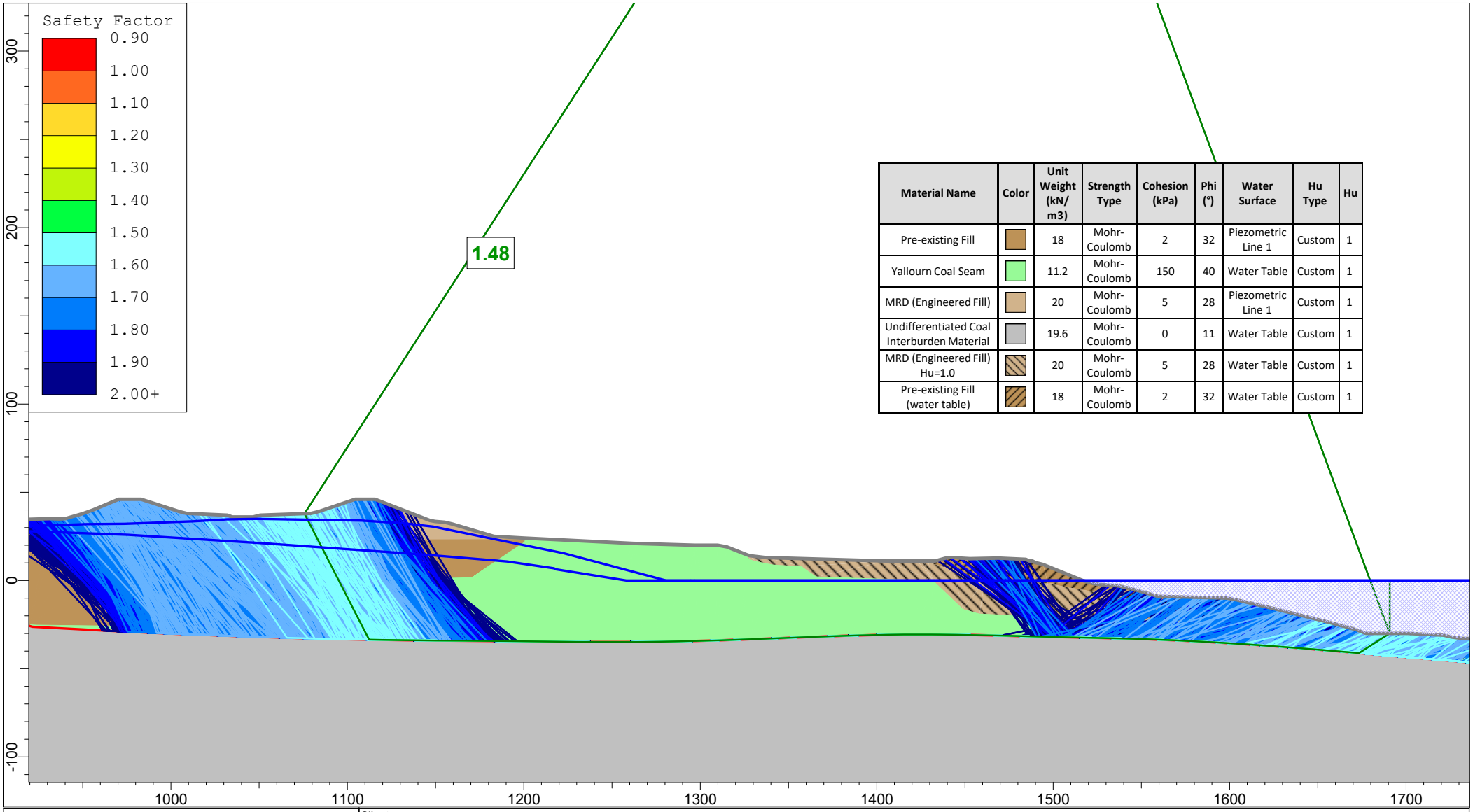
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength - Right To Left Failure		



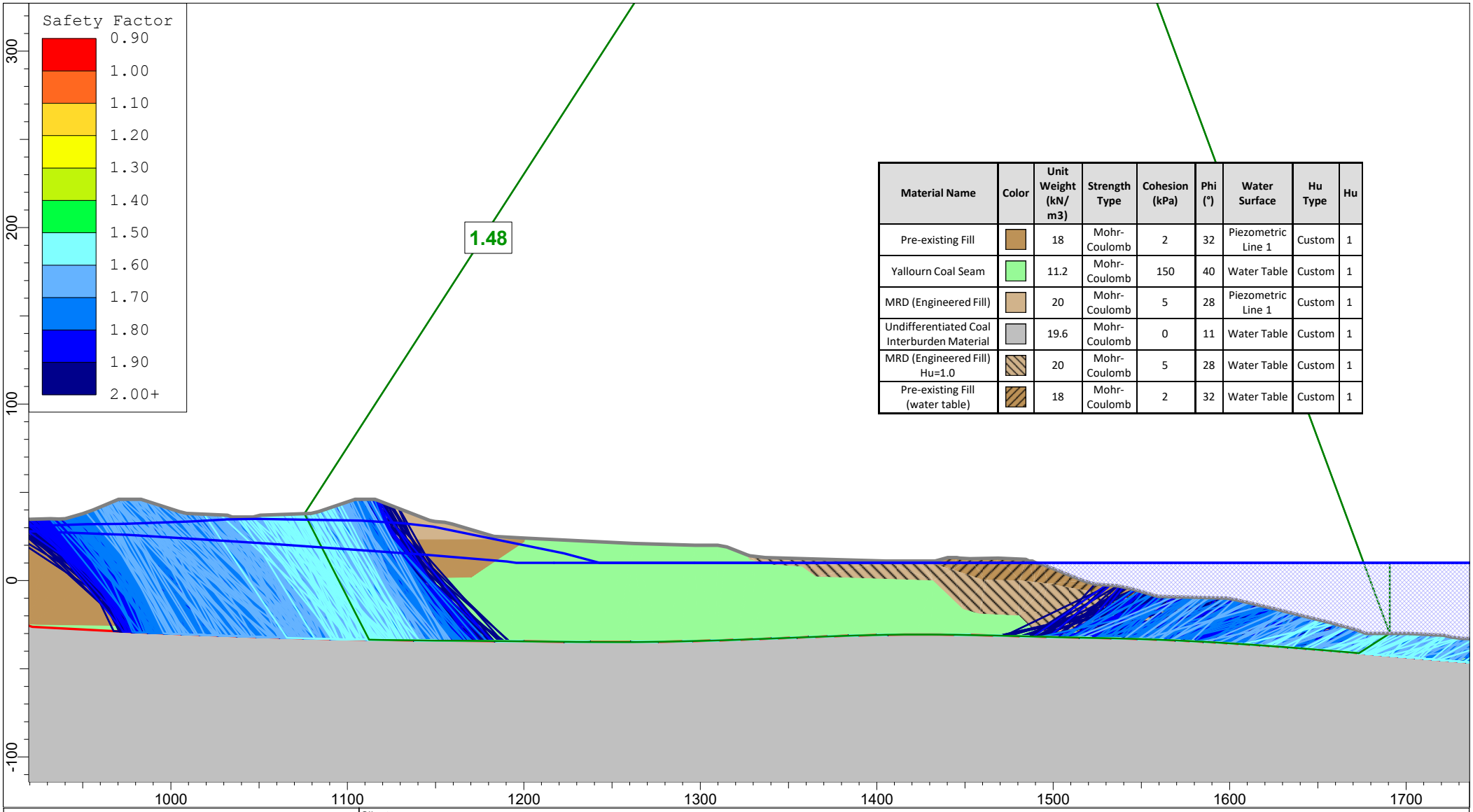
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -20 mRL
Notes:	Lower Bound Interseam Shear Strength		



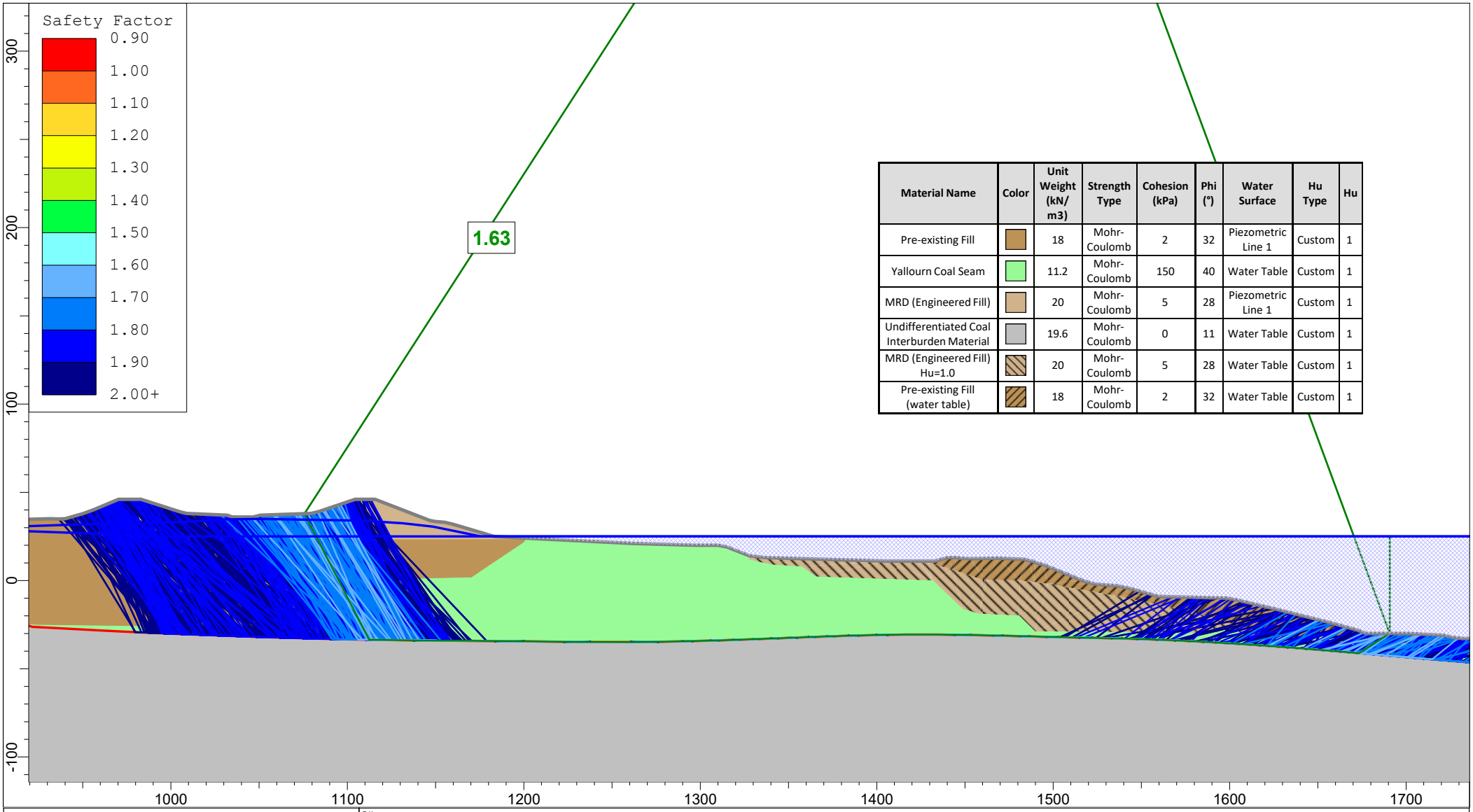
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



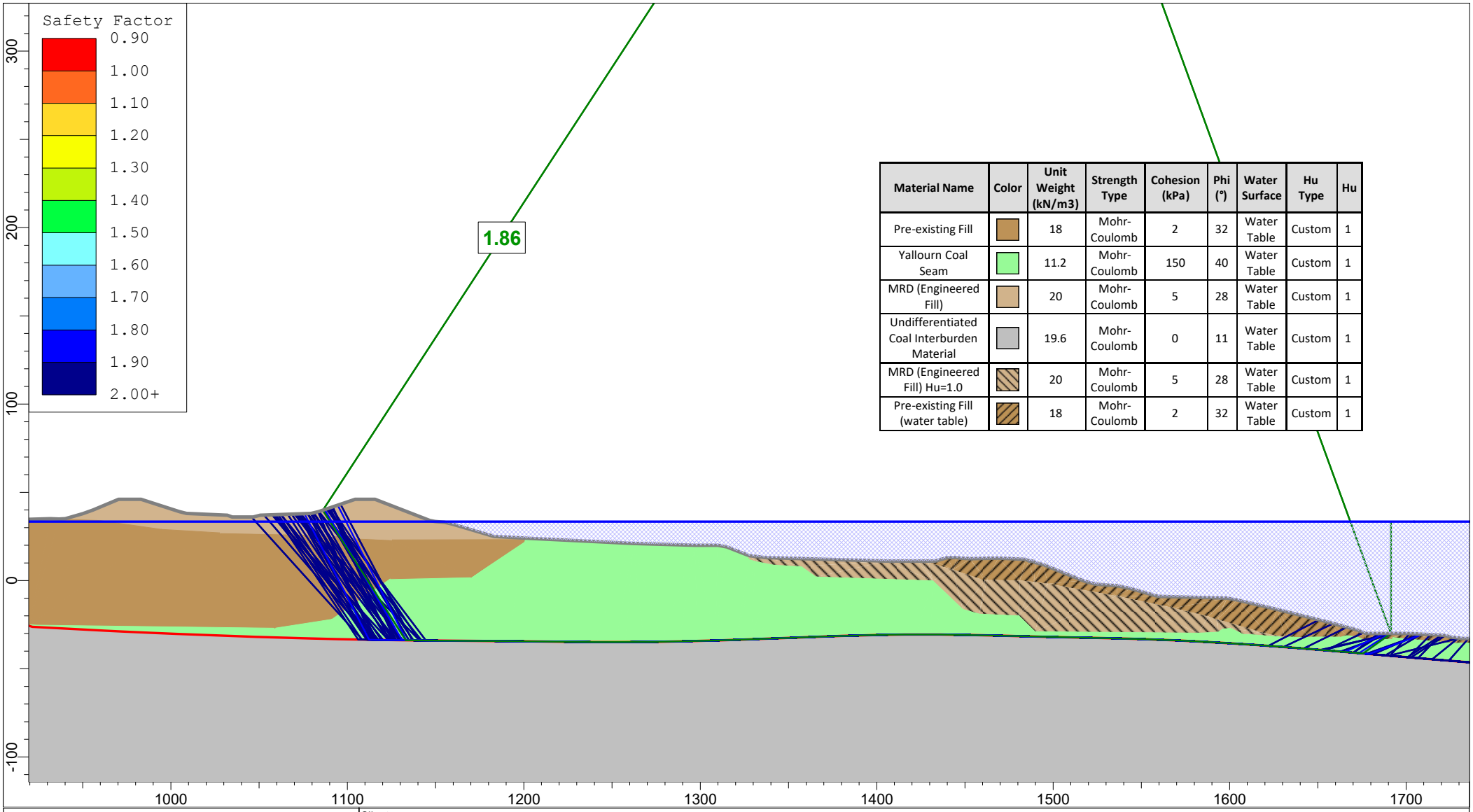
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



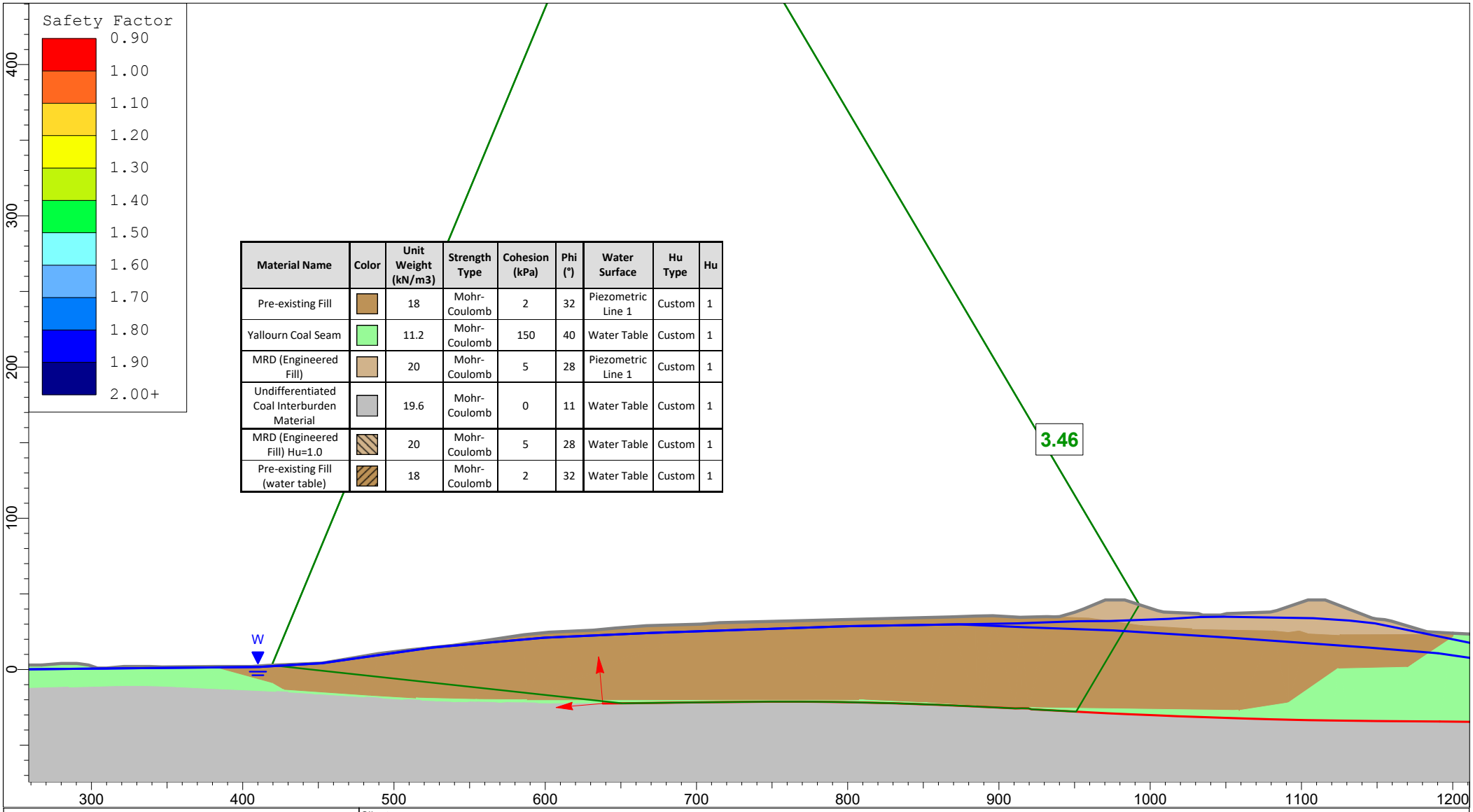
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



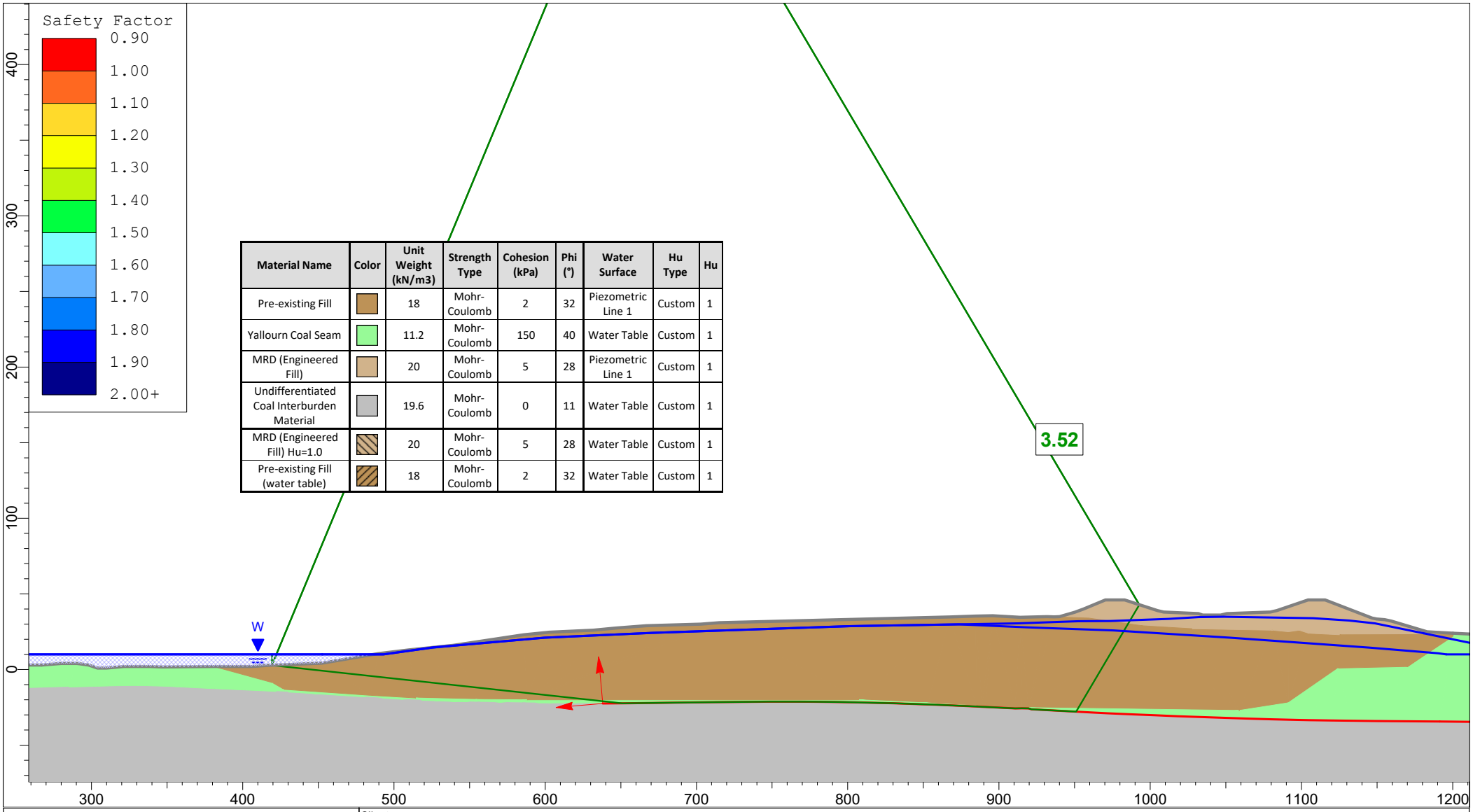
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



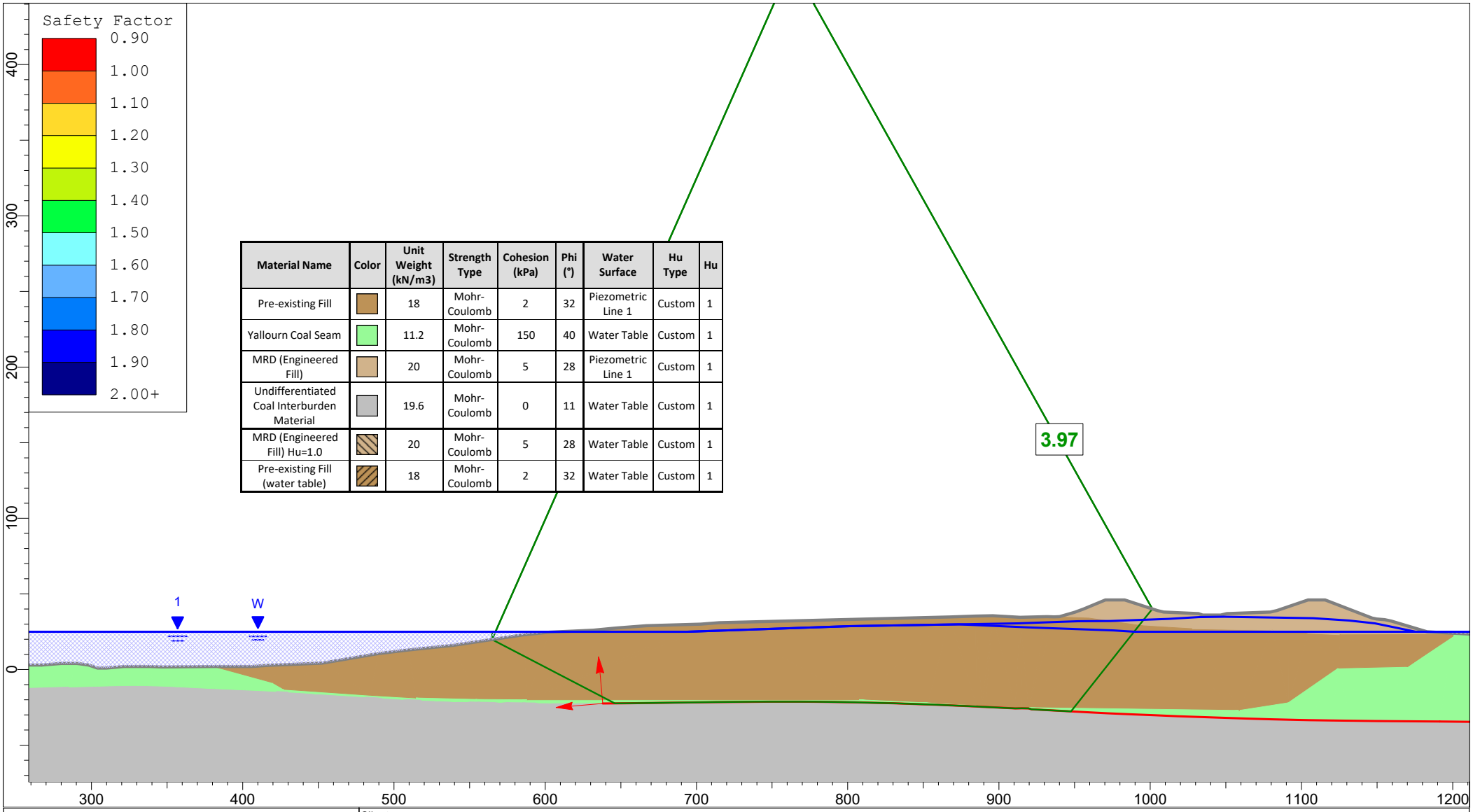
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength - Right To Left		



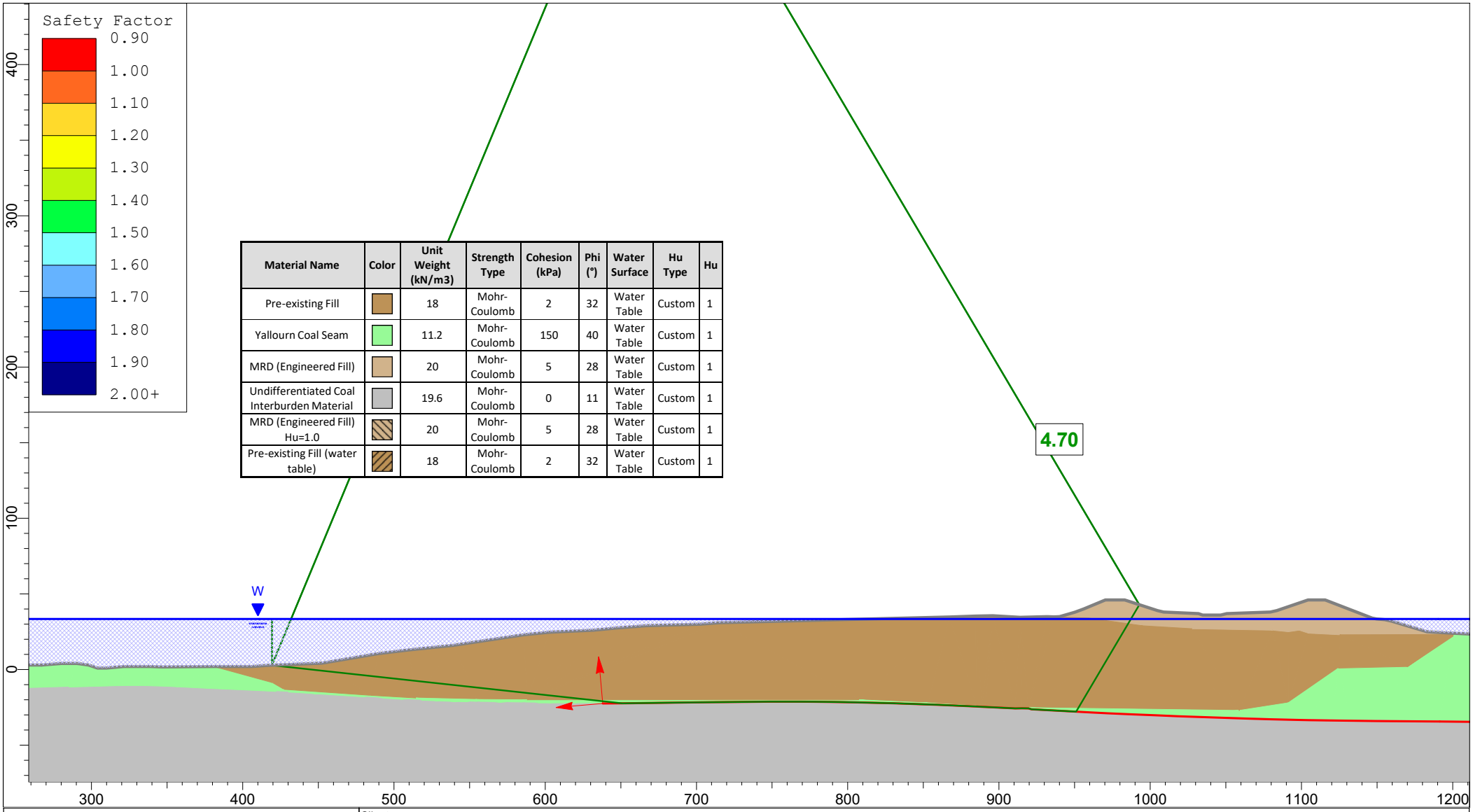
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength - Right To Left		



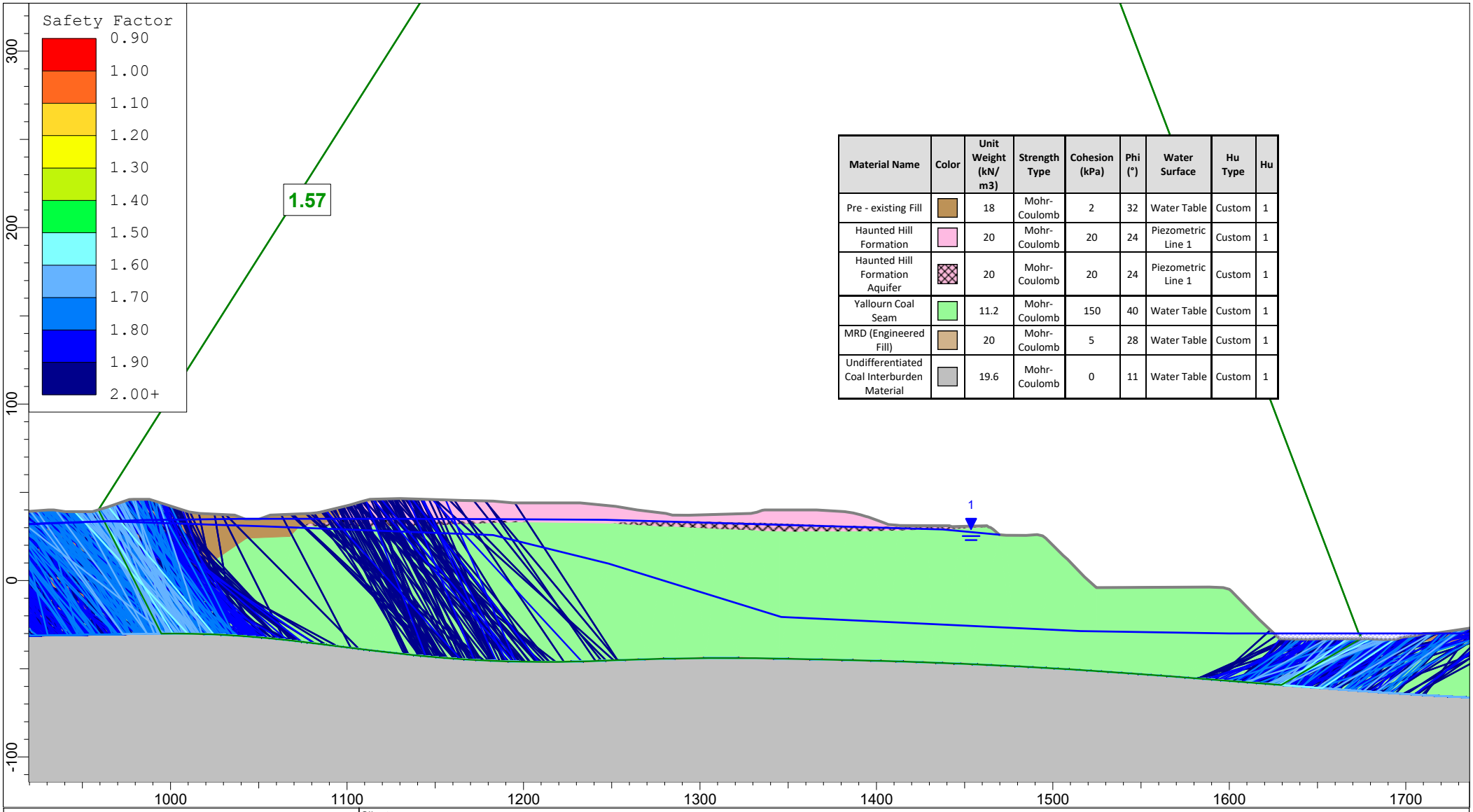
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength - Right To Left		



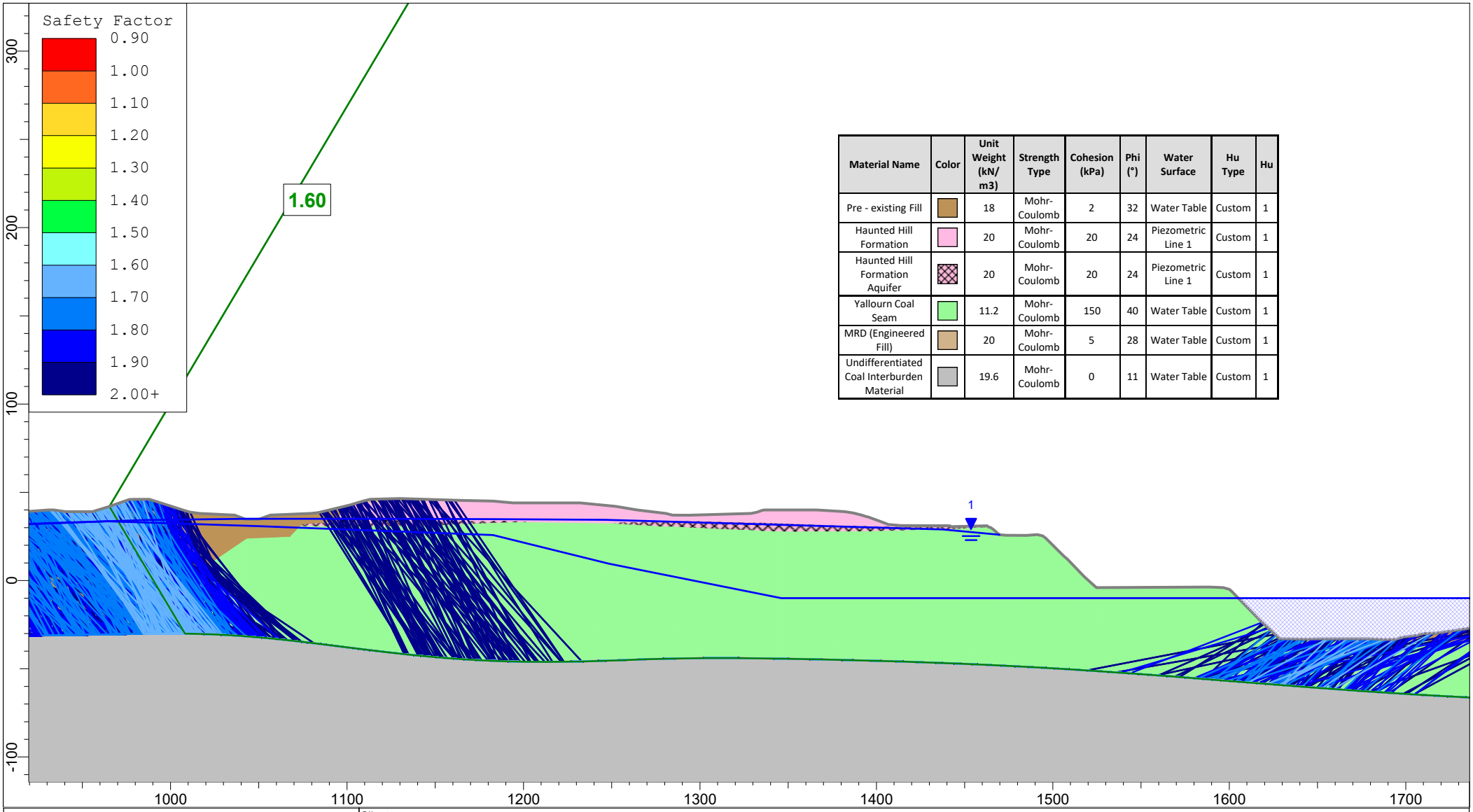
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength - Right To Left		



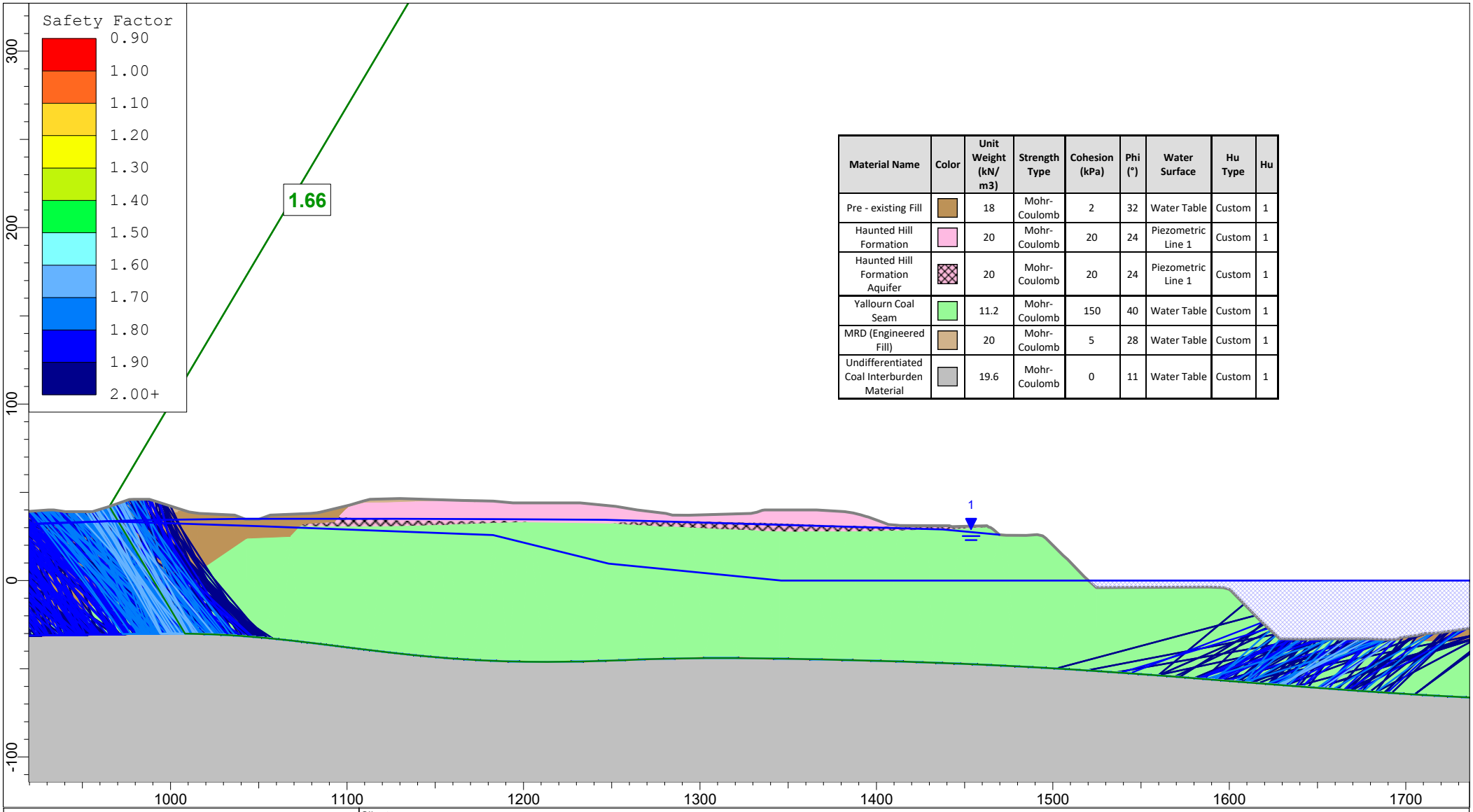
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -30 mRL
Notes:	Lower Bound Interseam Shear Strength		



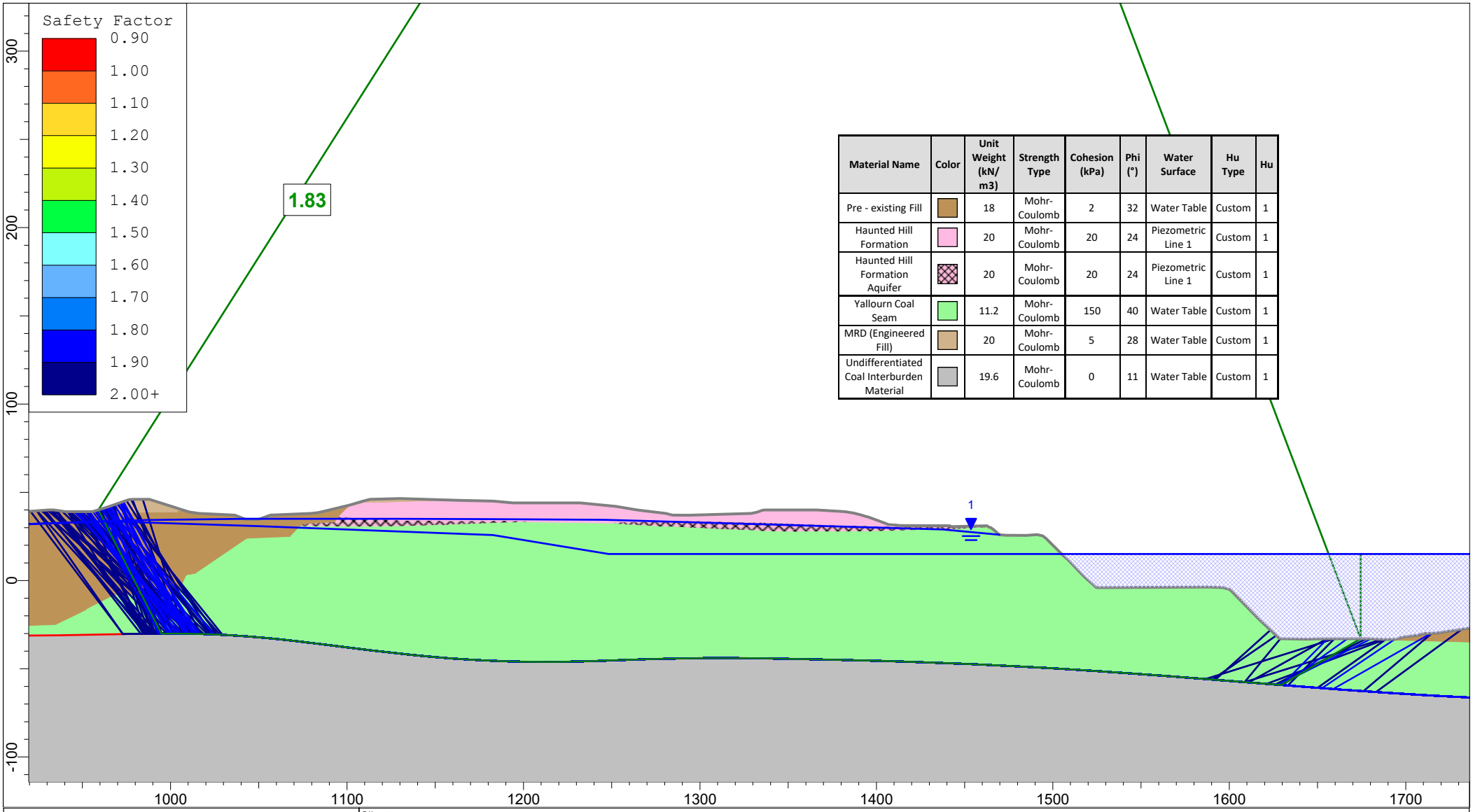
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength		



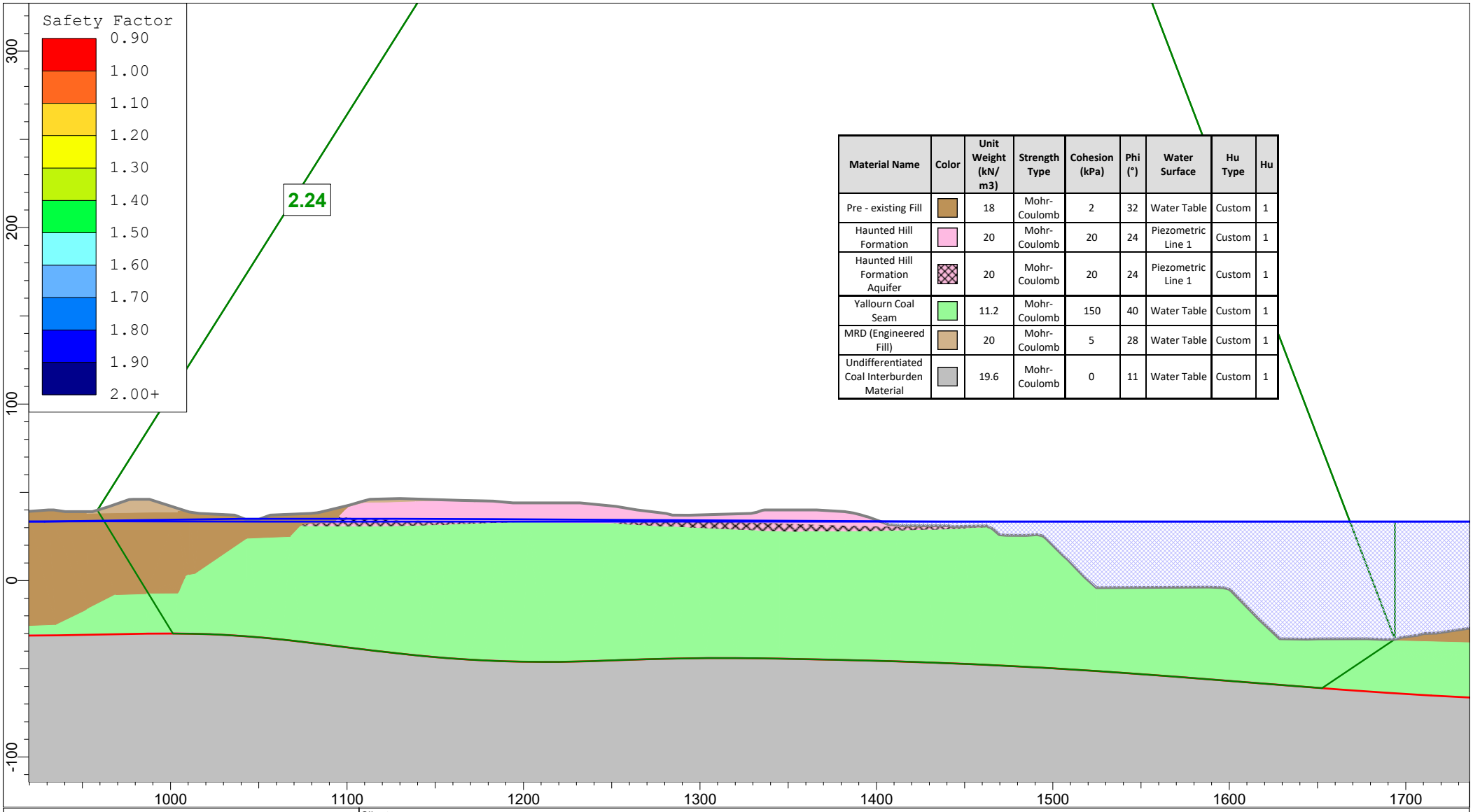
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



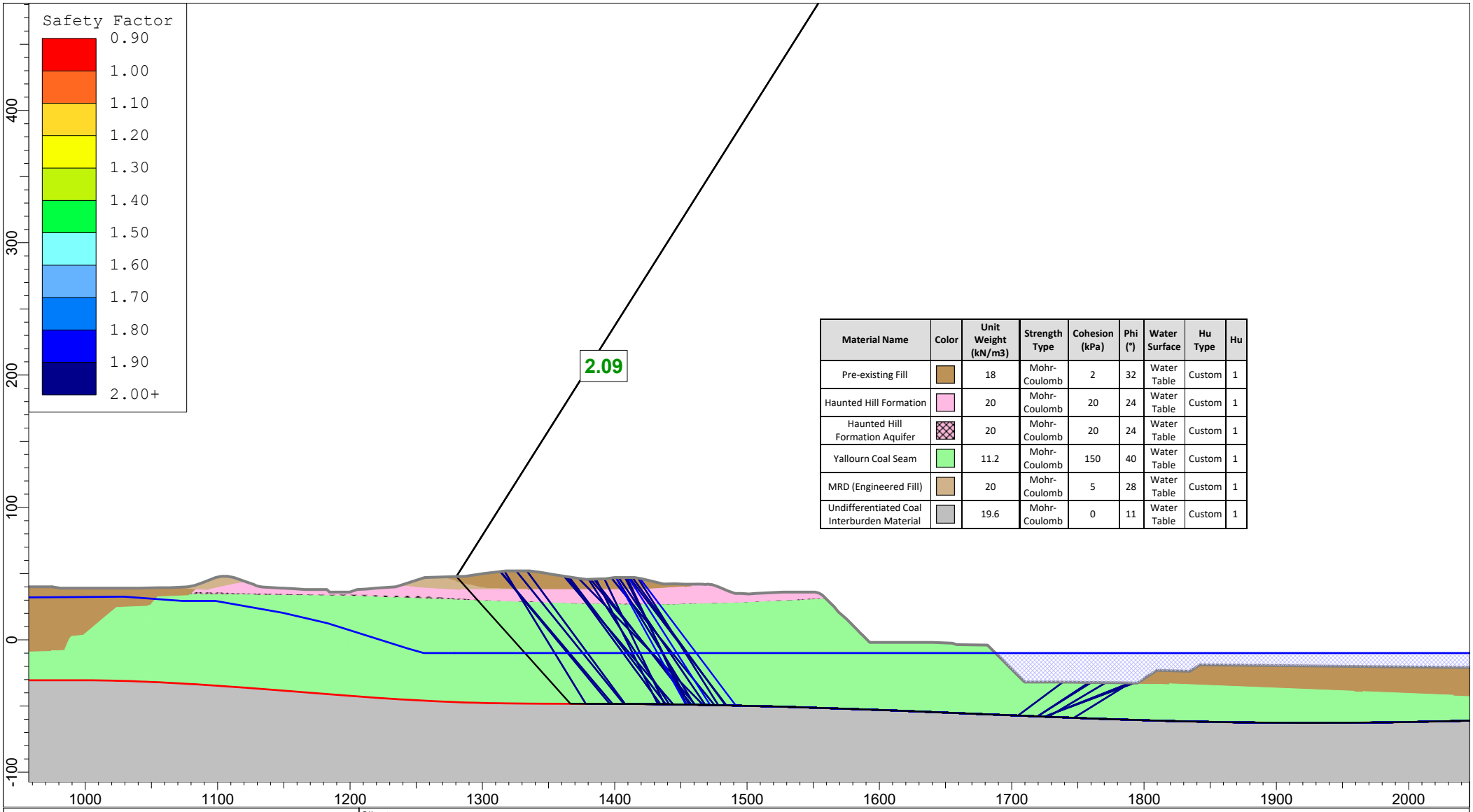
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength		



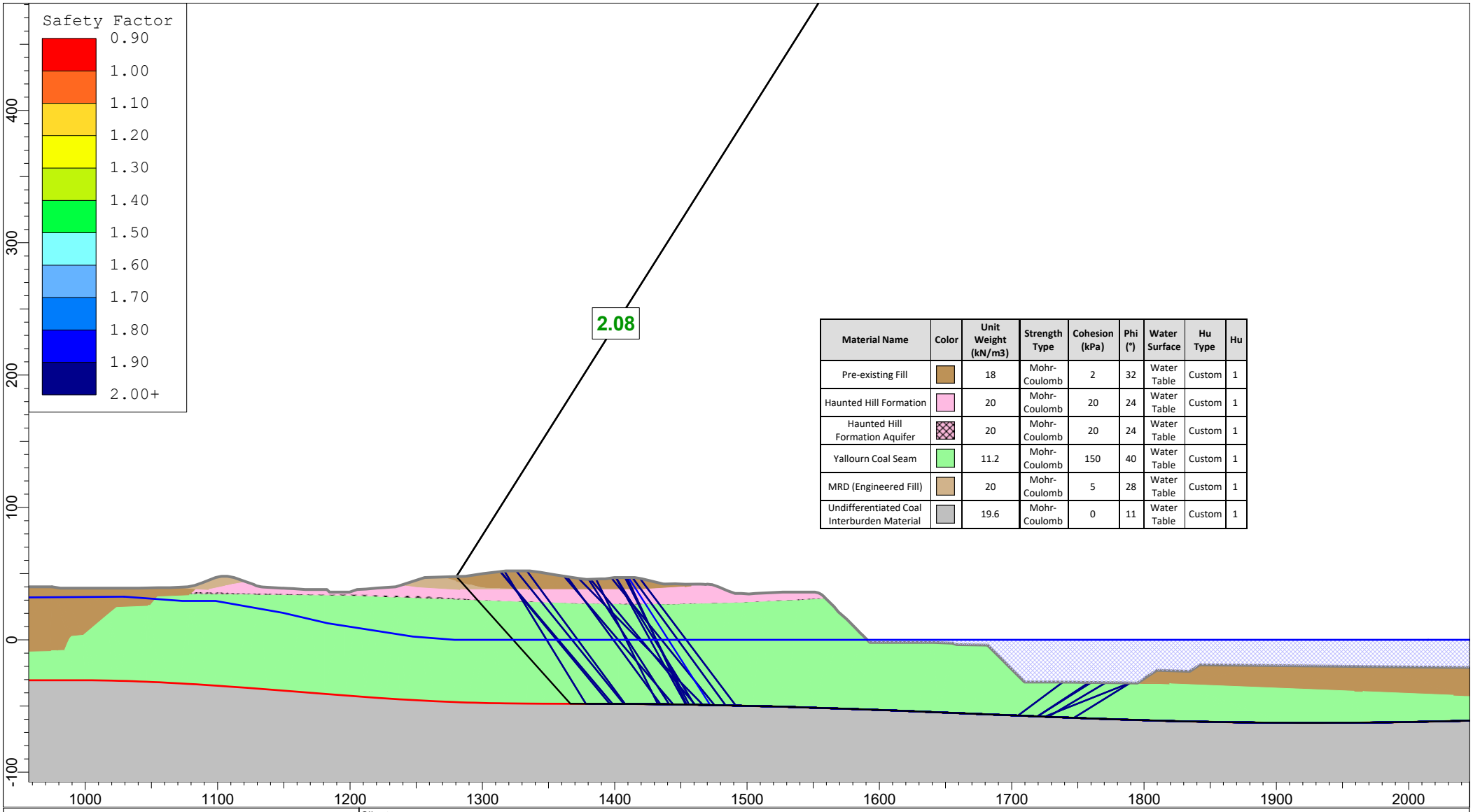
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



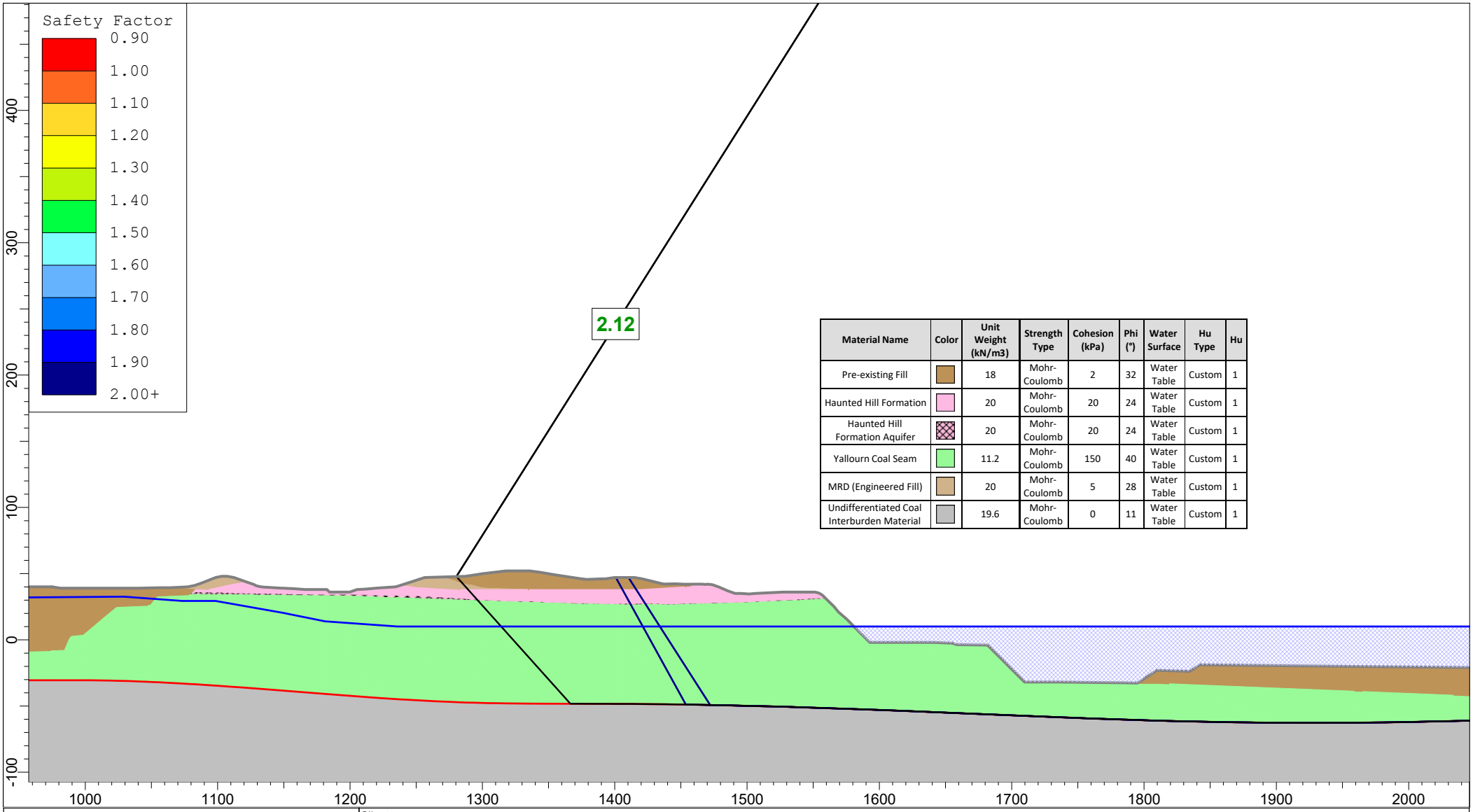
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength		



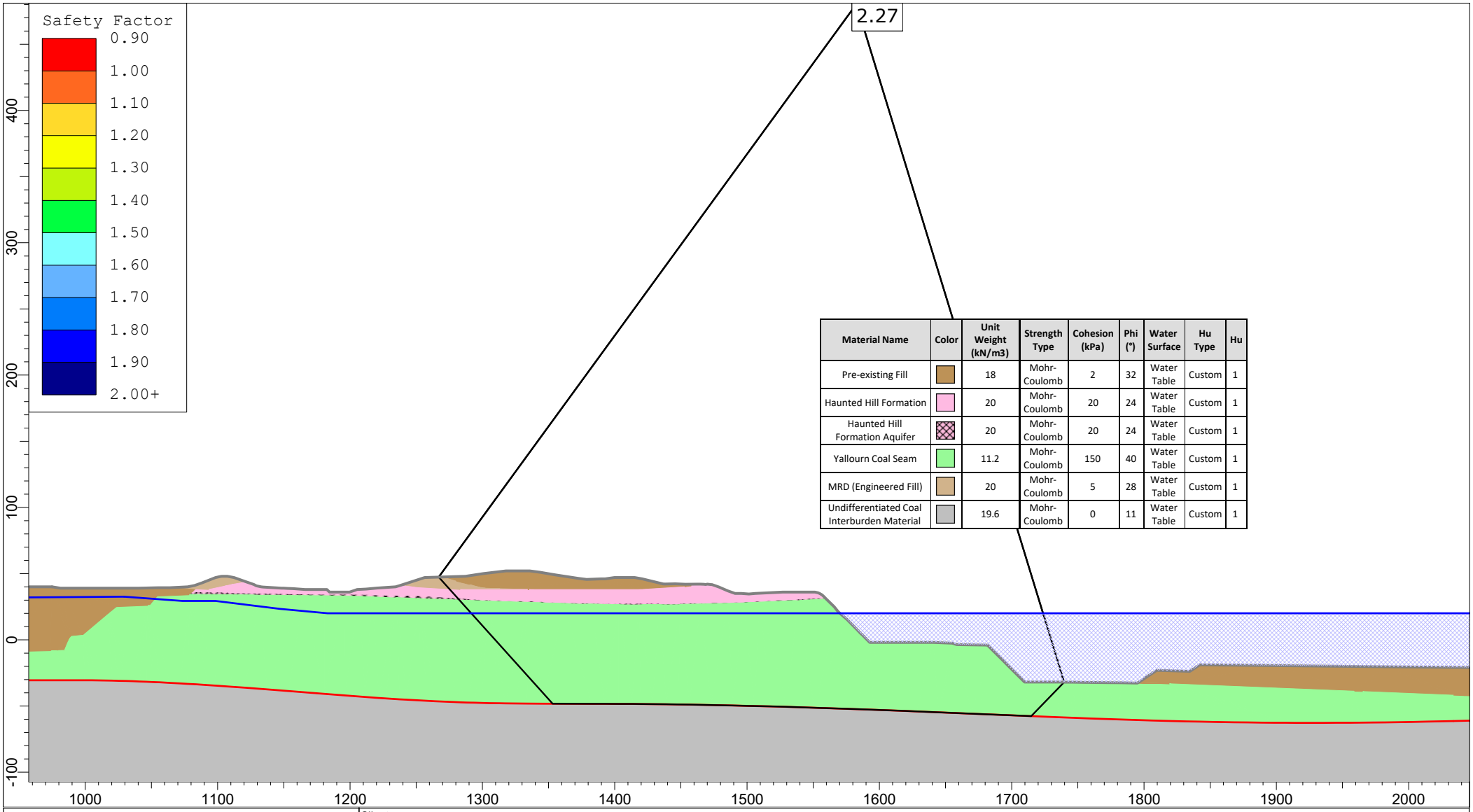
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



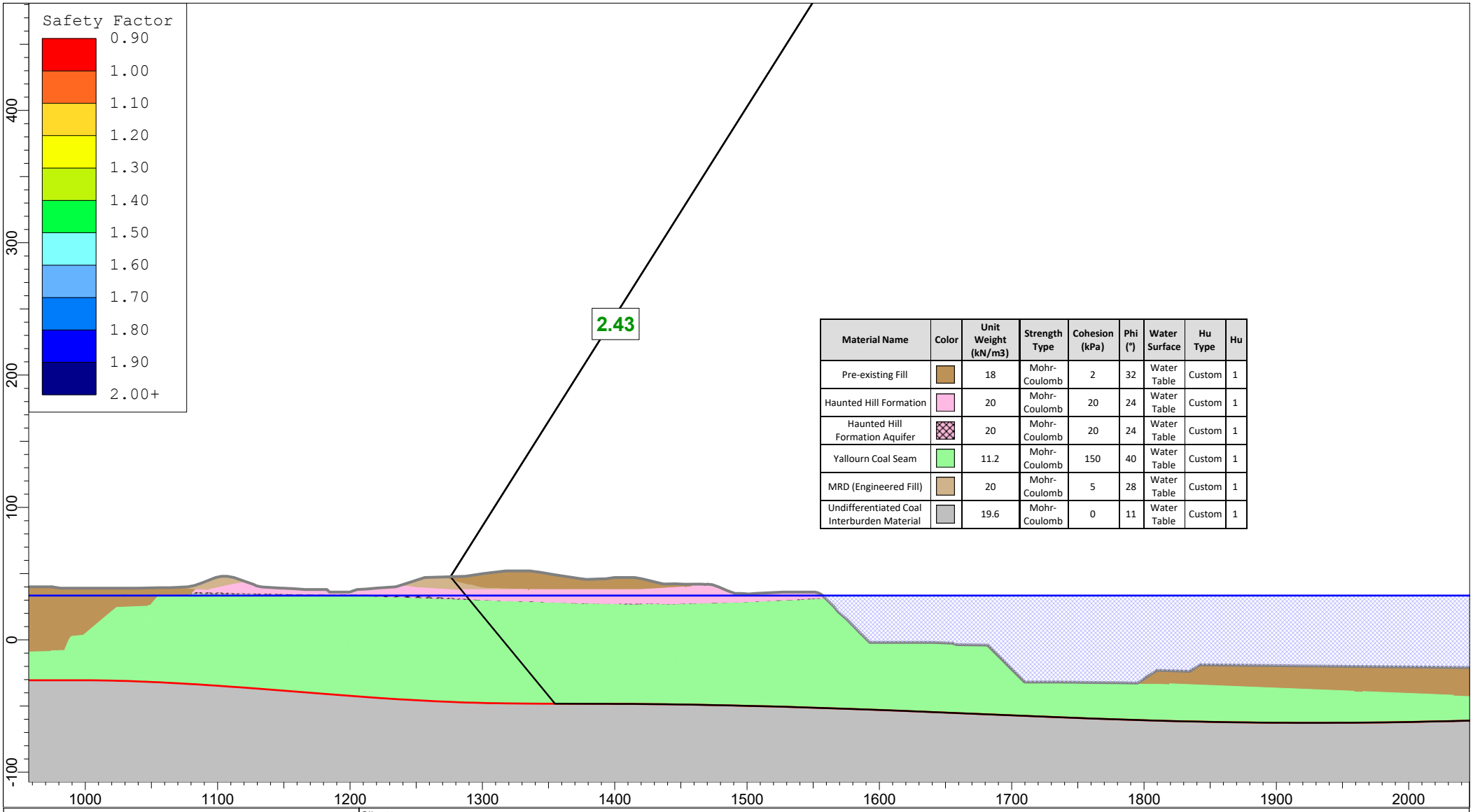
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



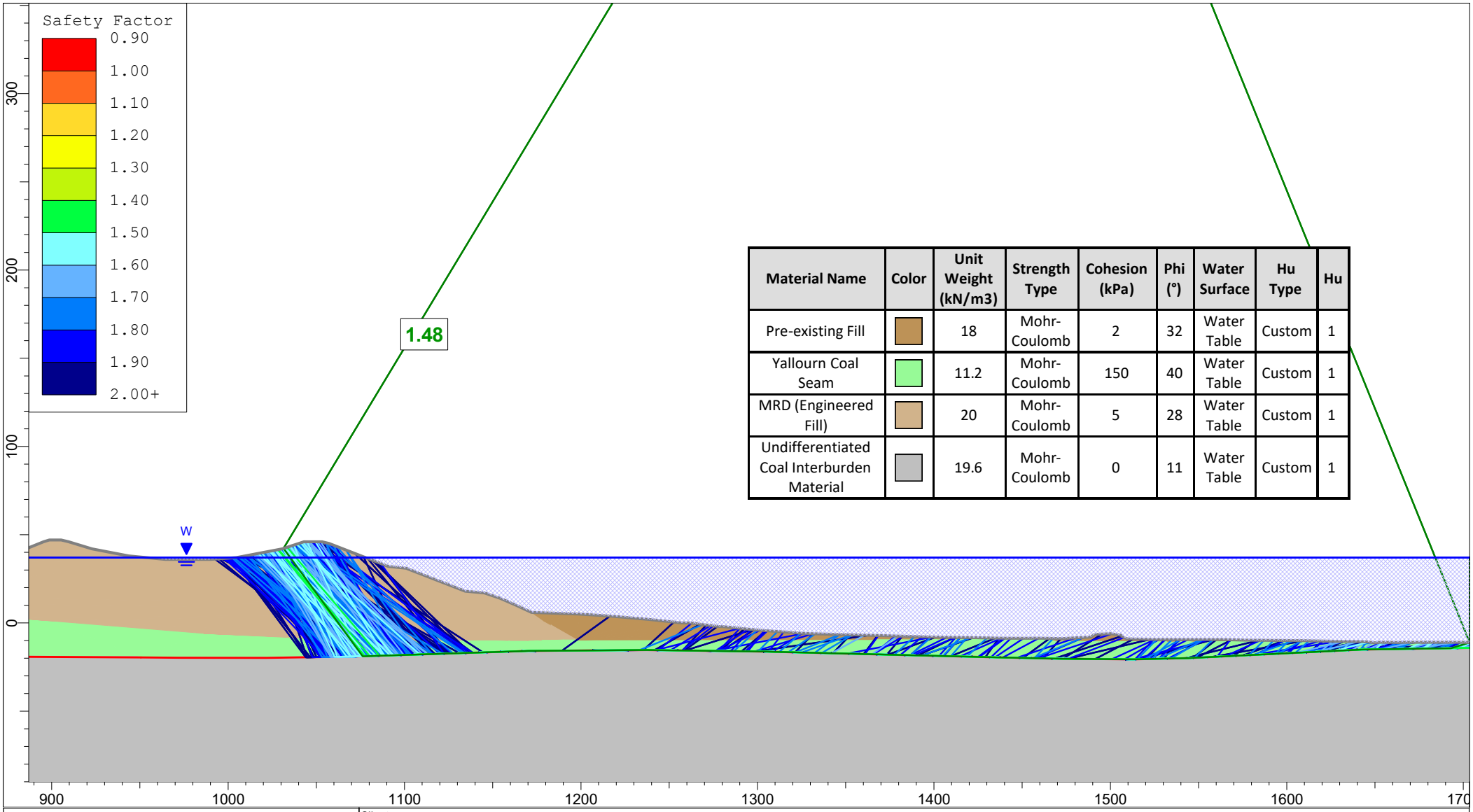
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



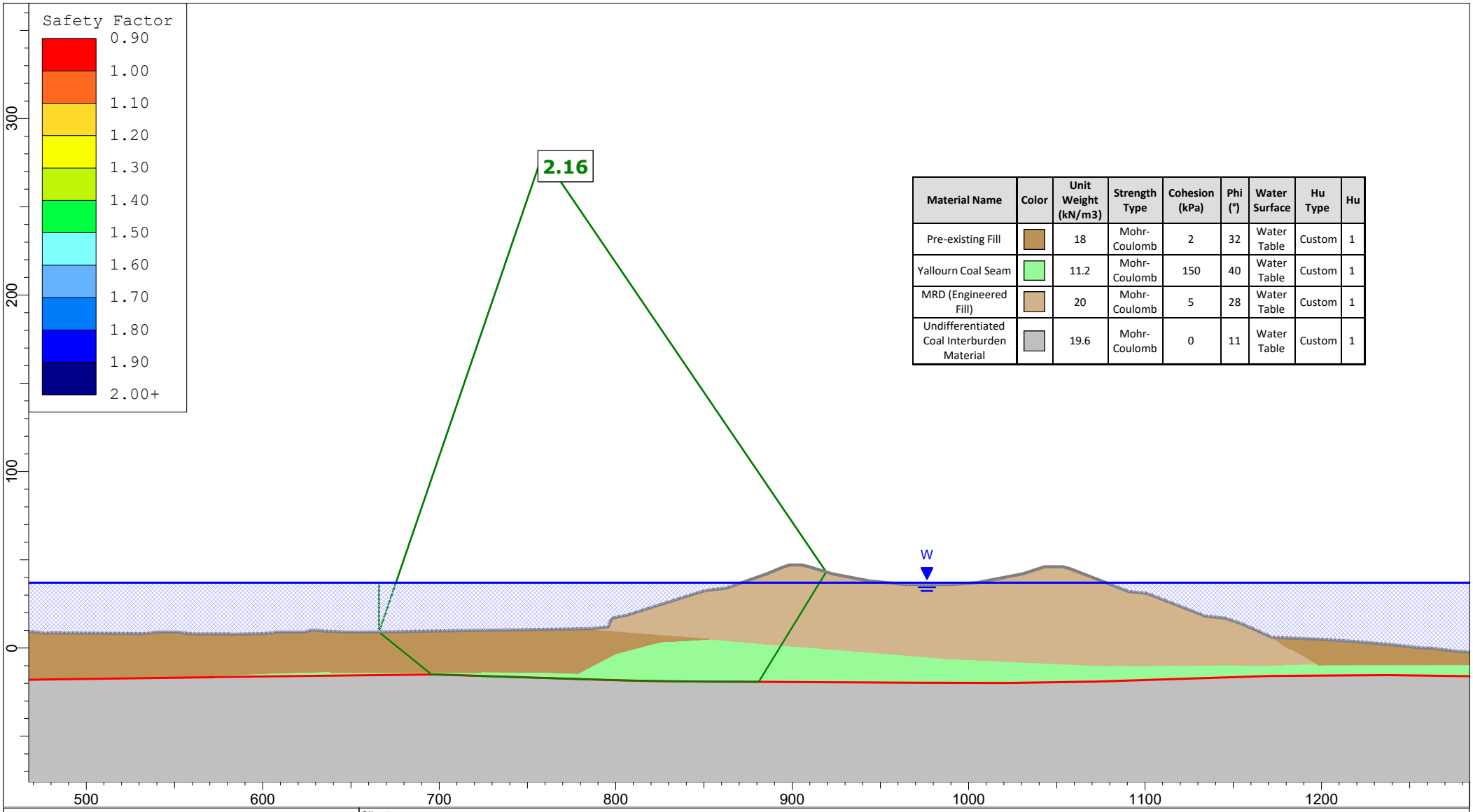
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



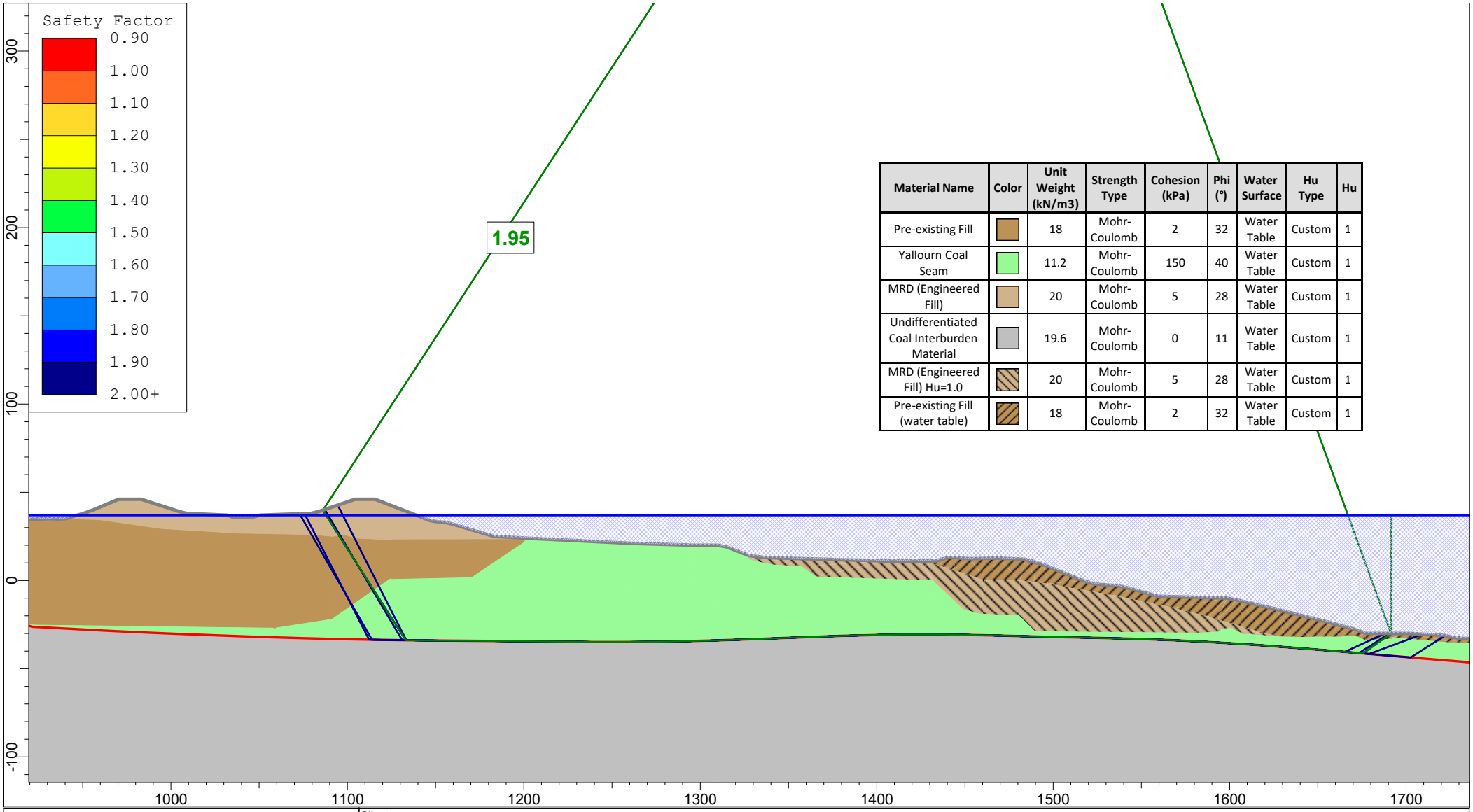
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



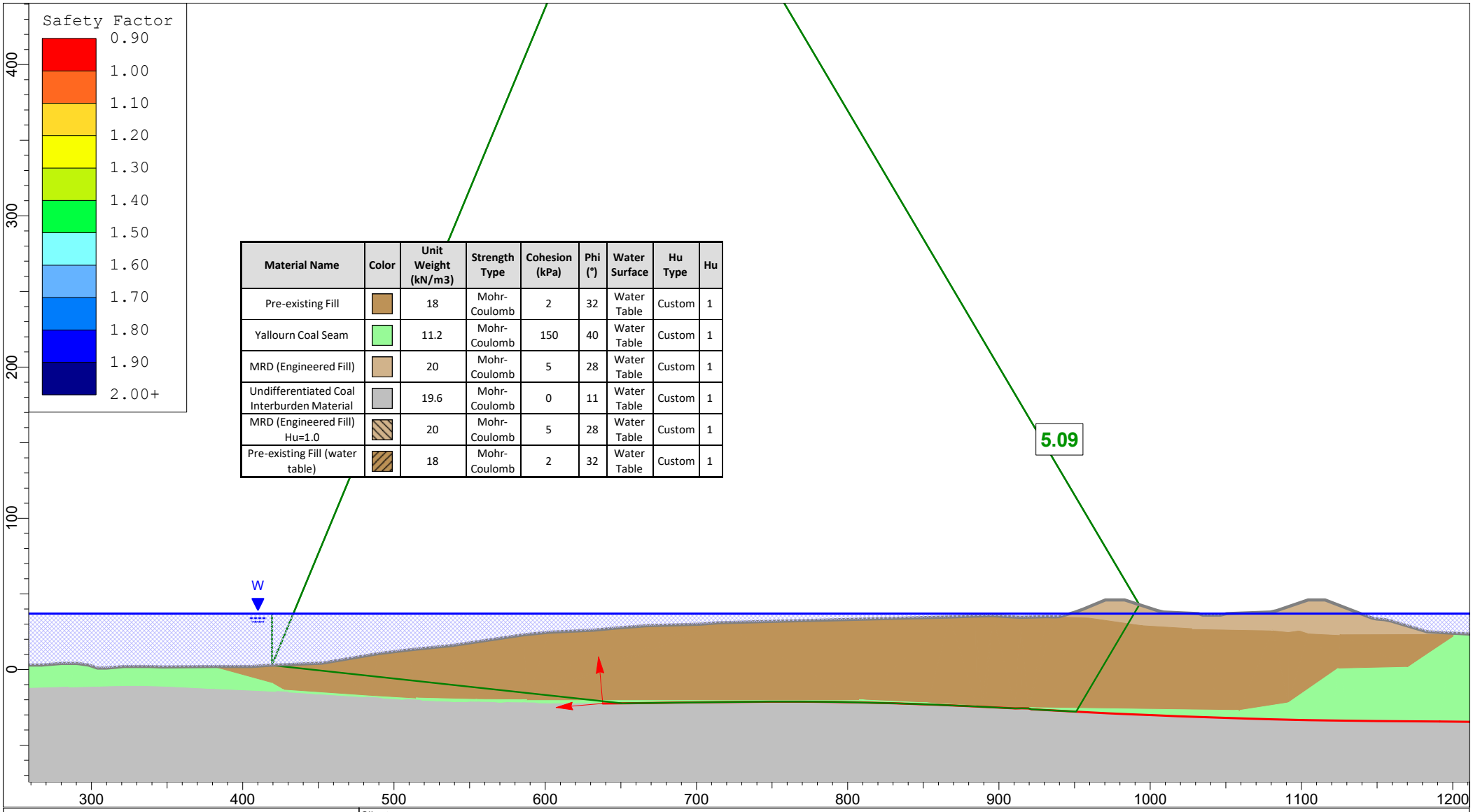
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength - Right To Left Failure		



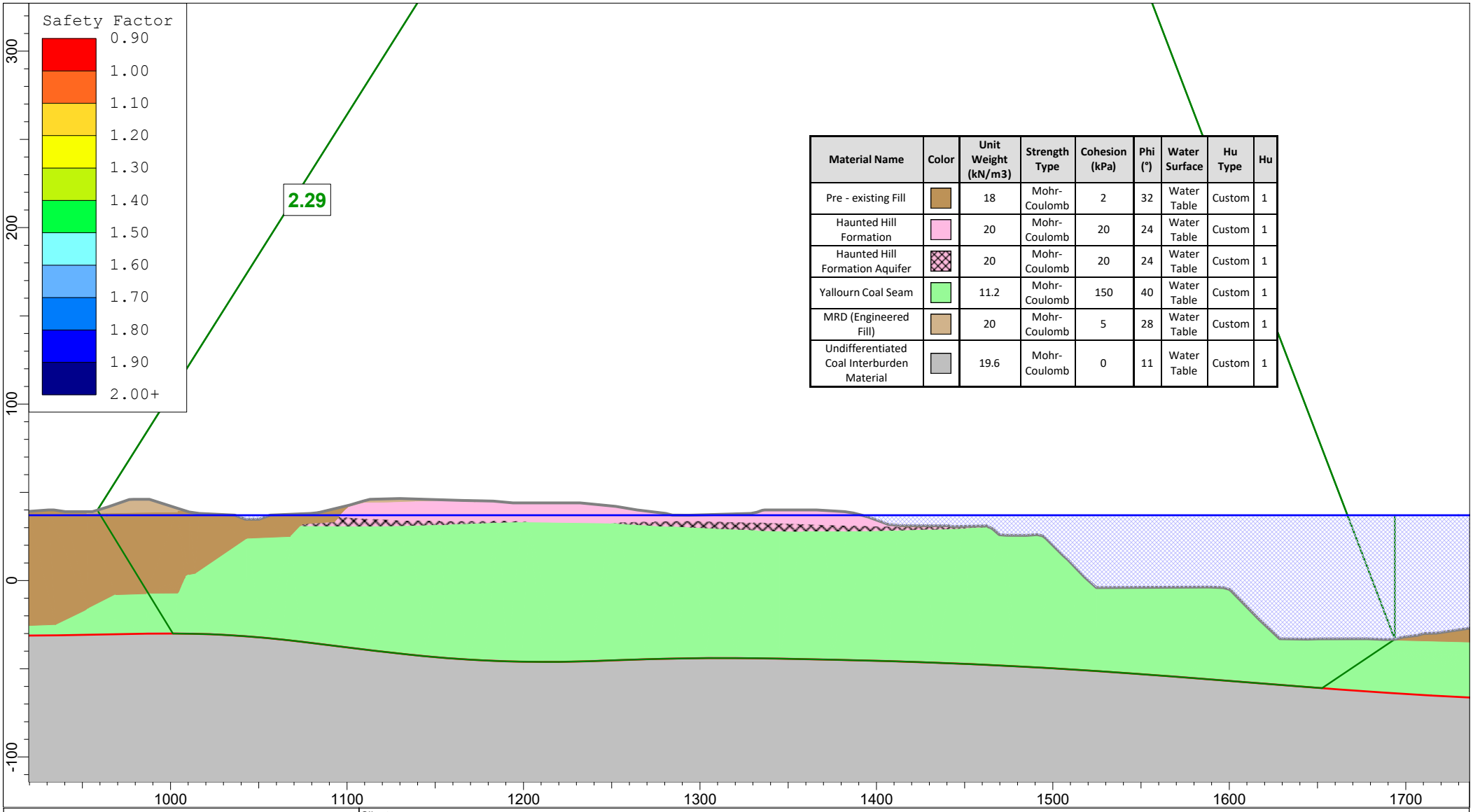
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



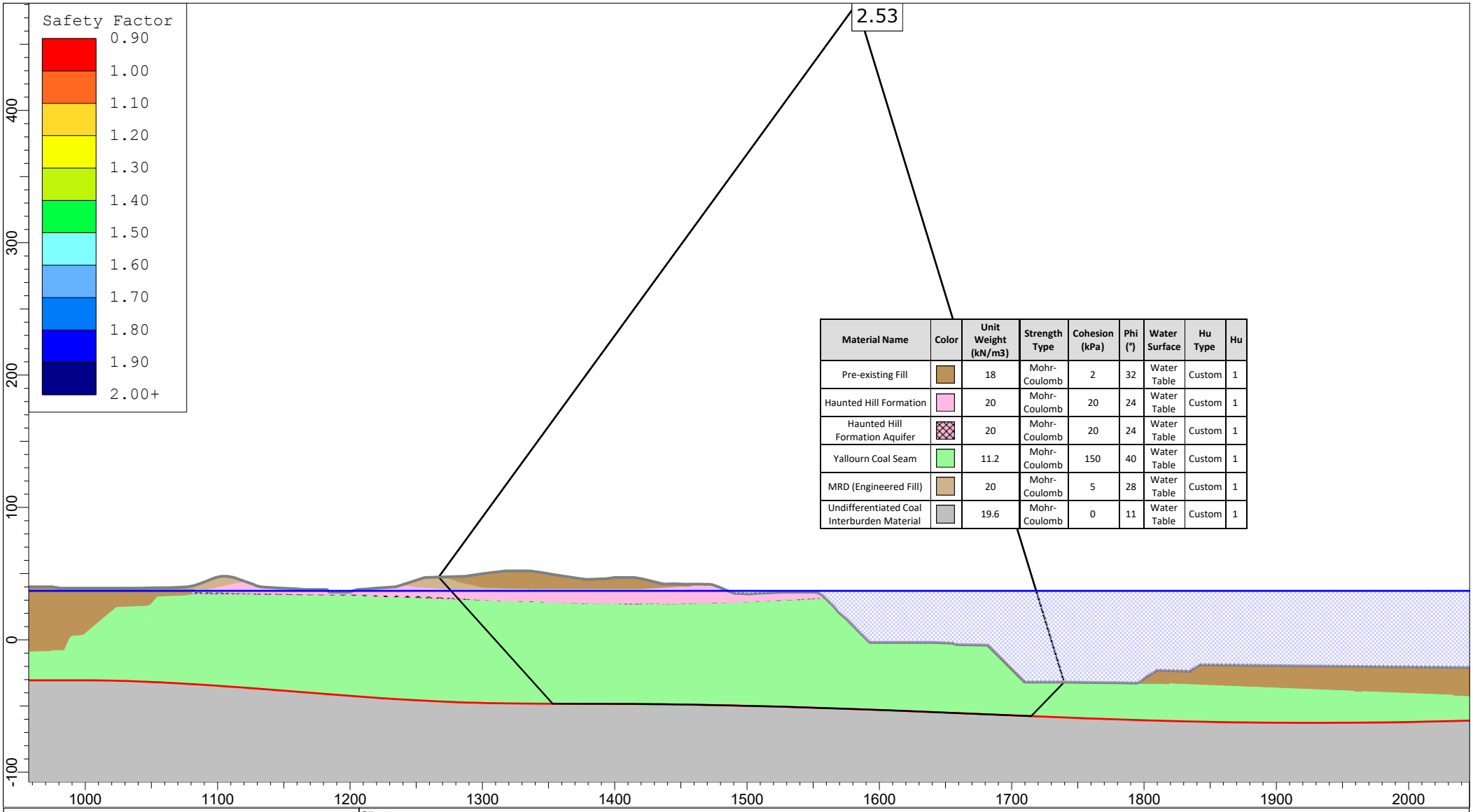
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength - Right To Left		



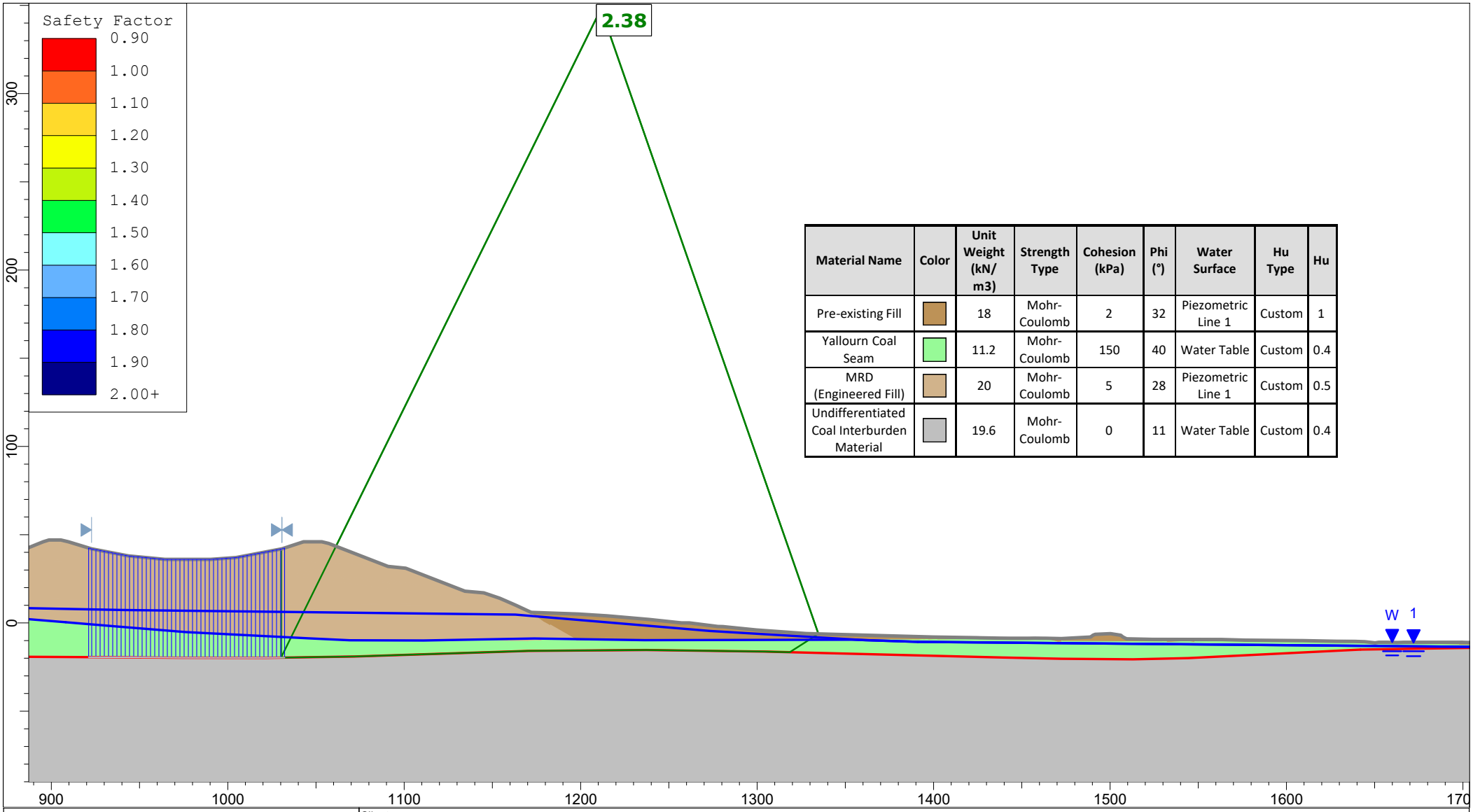
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



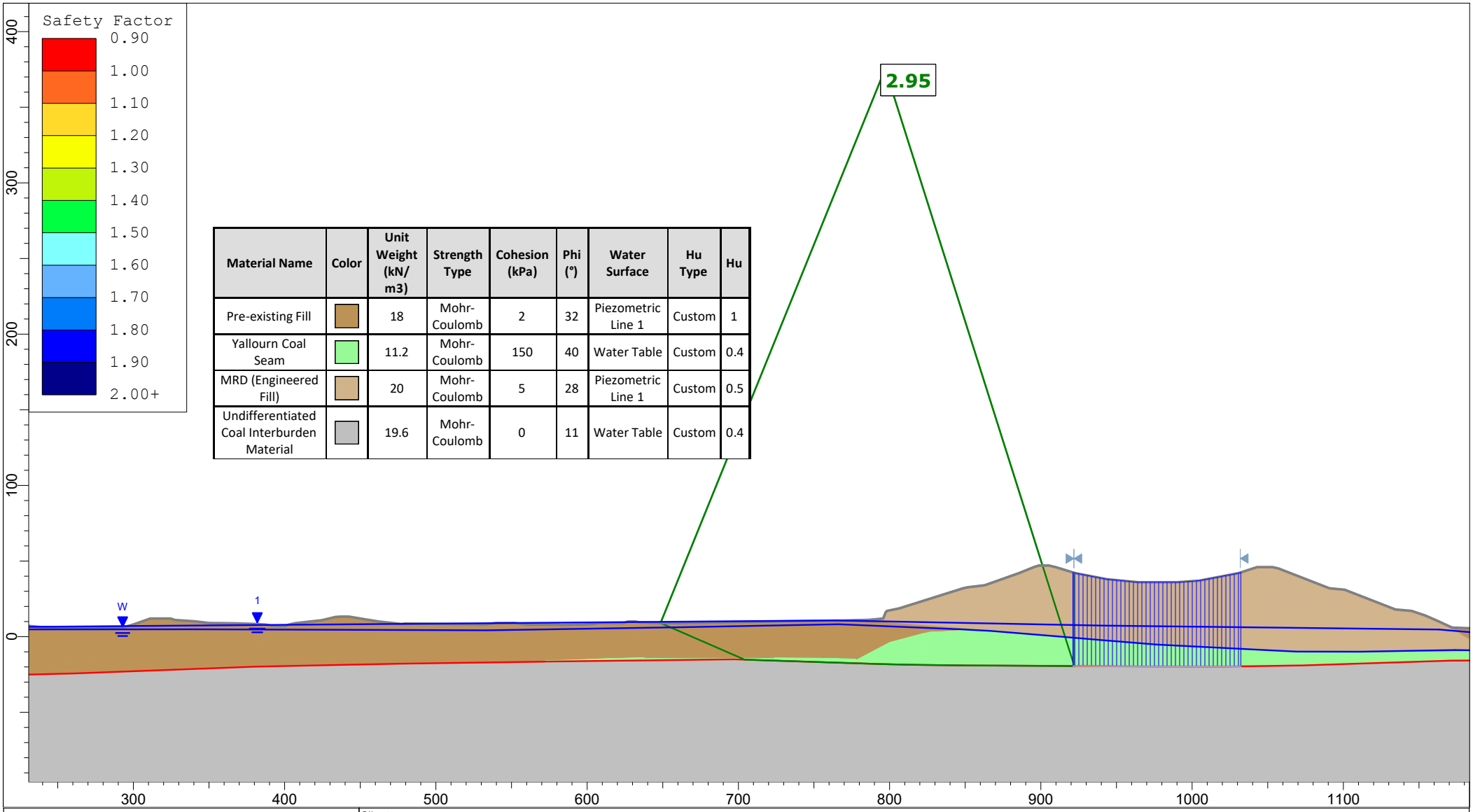
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		



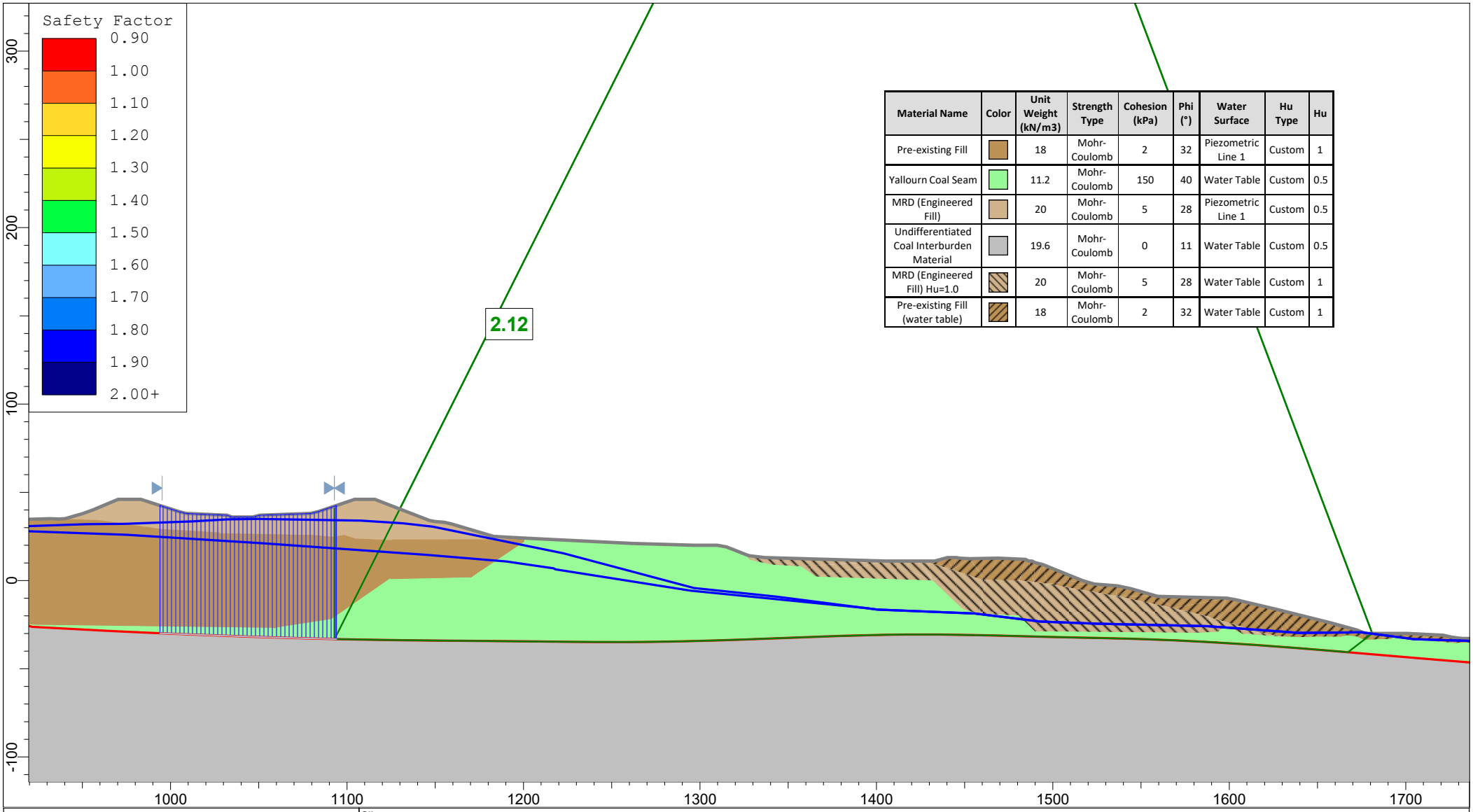
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



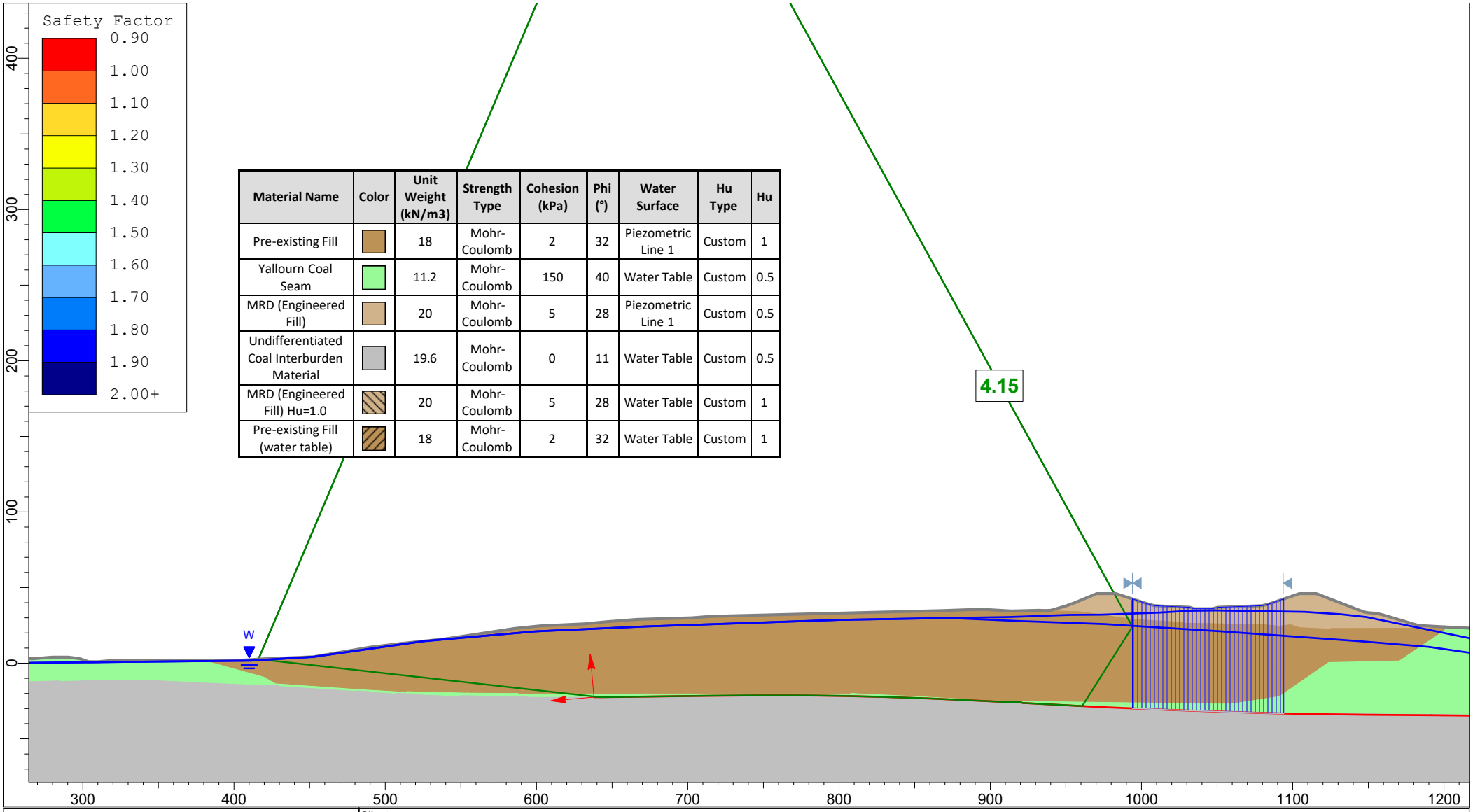
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left Failure		



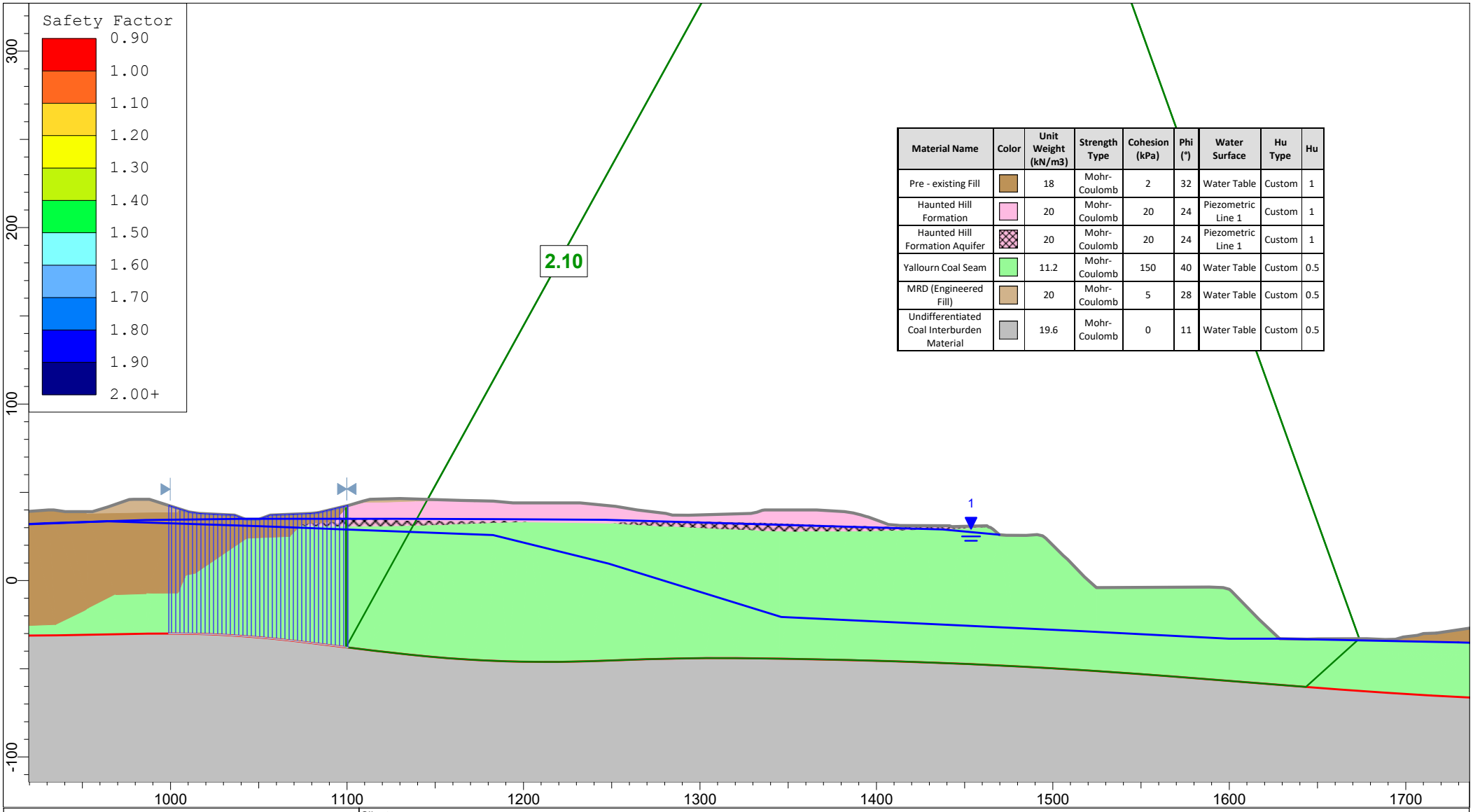
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



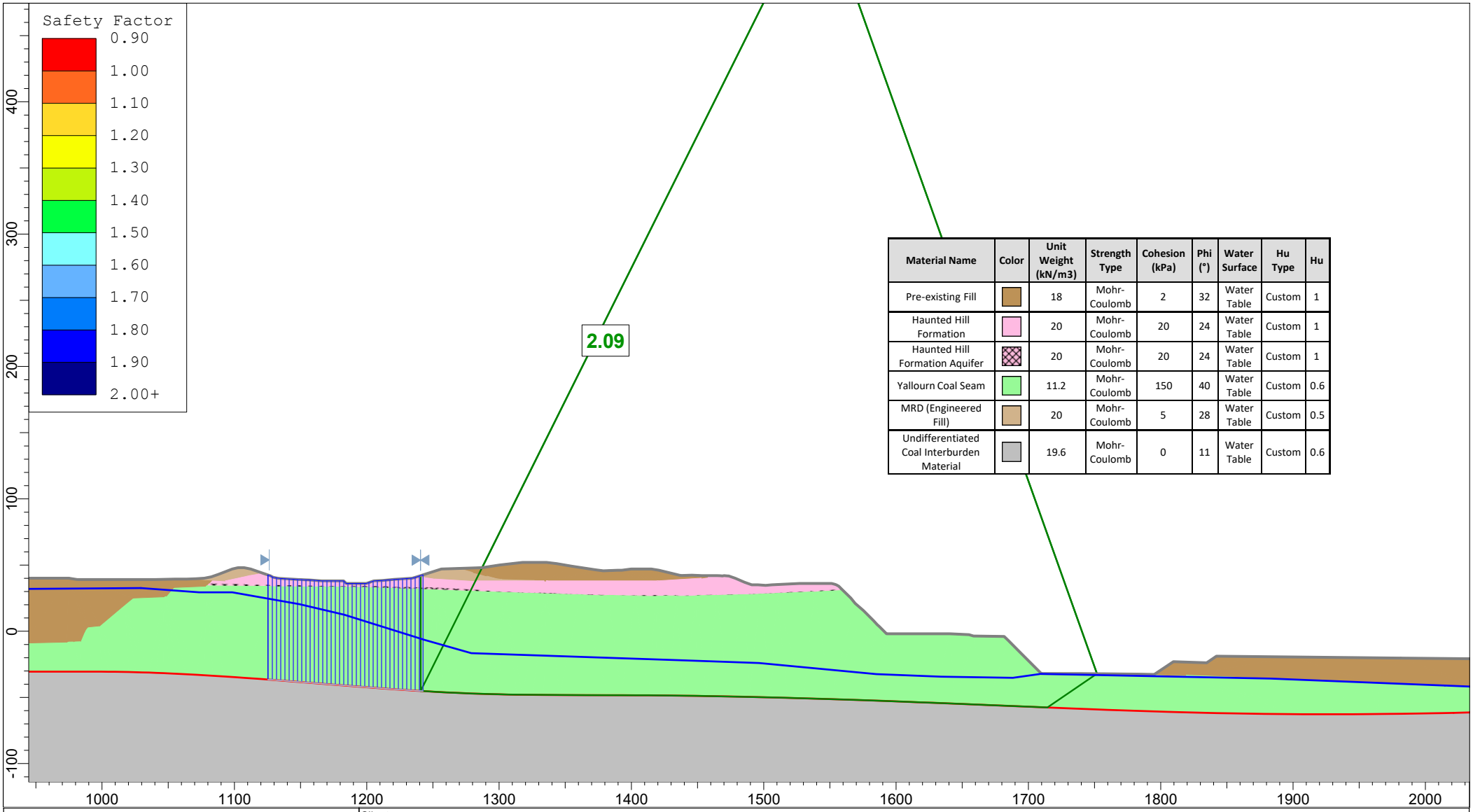
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left		



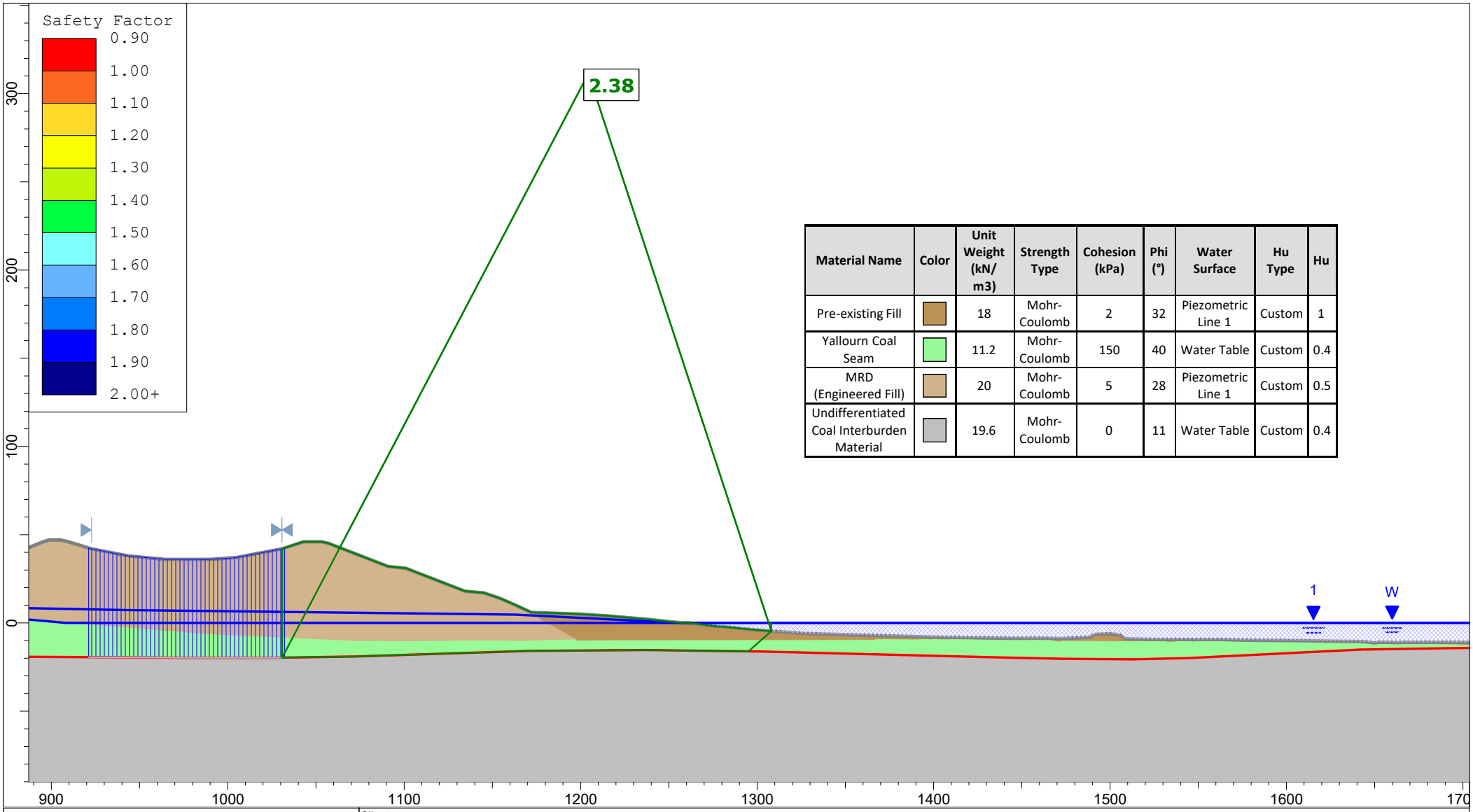
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



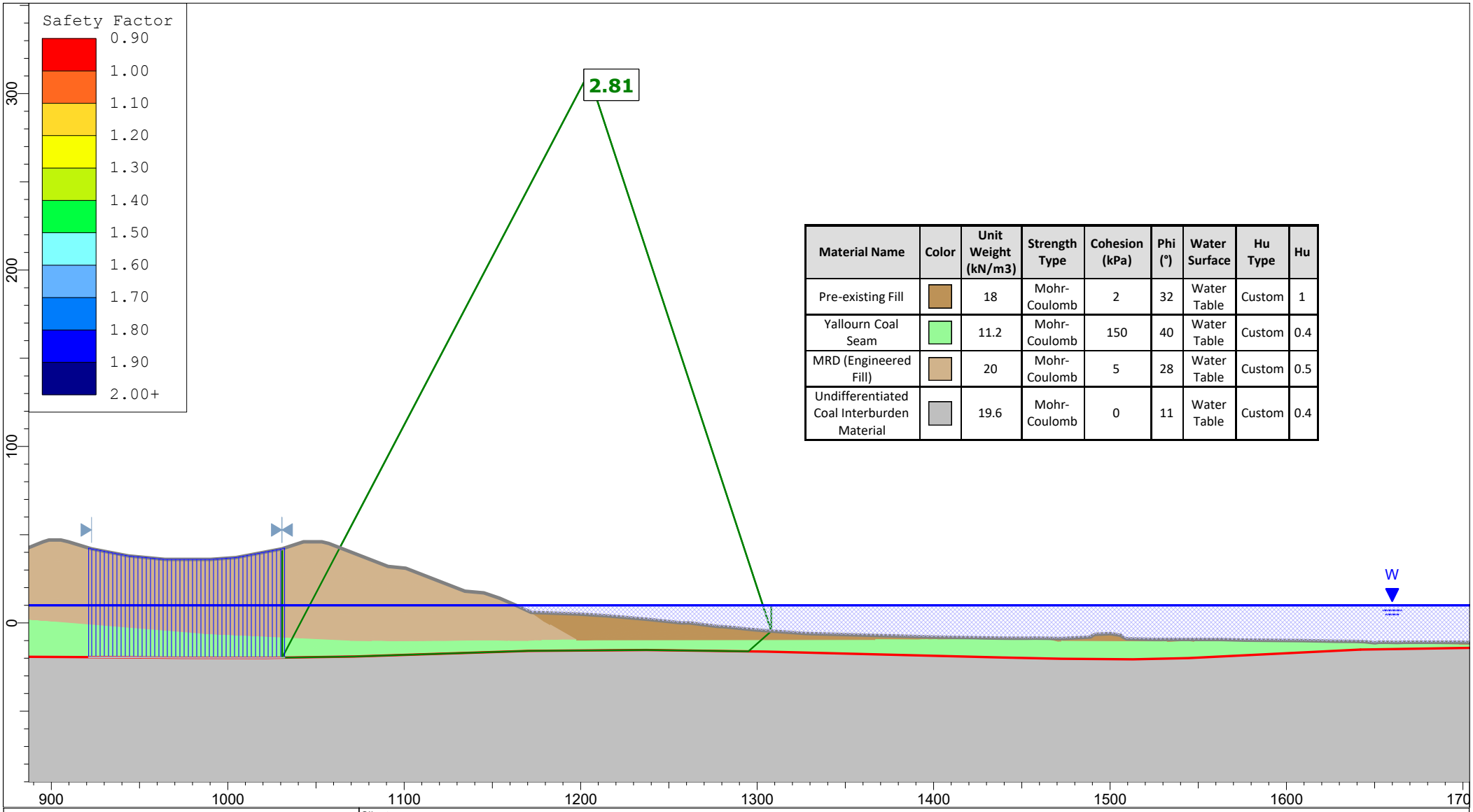
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



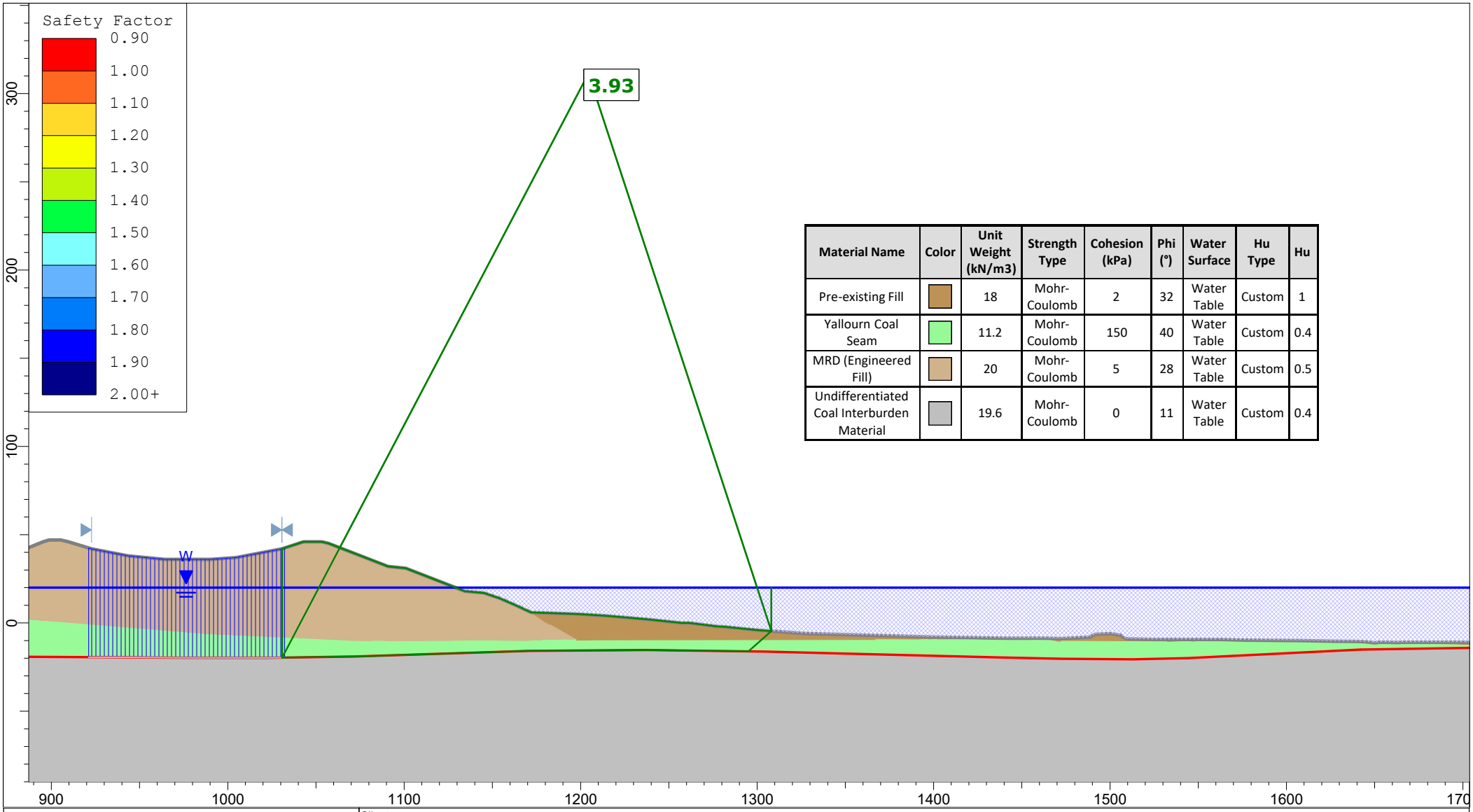
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



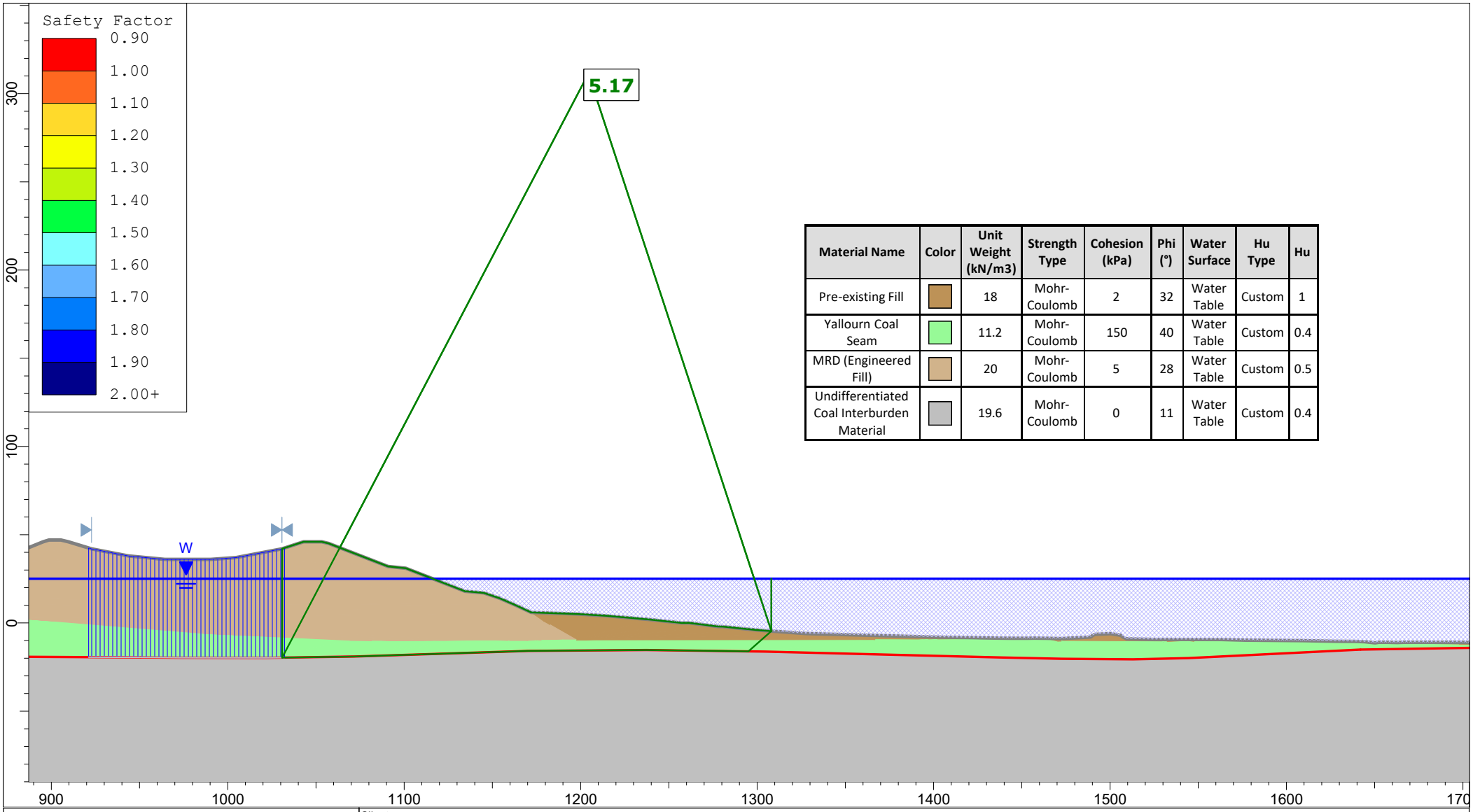
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



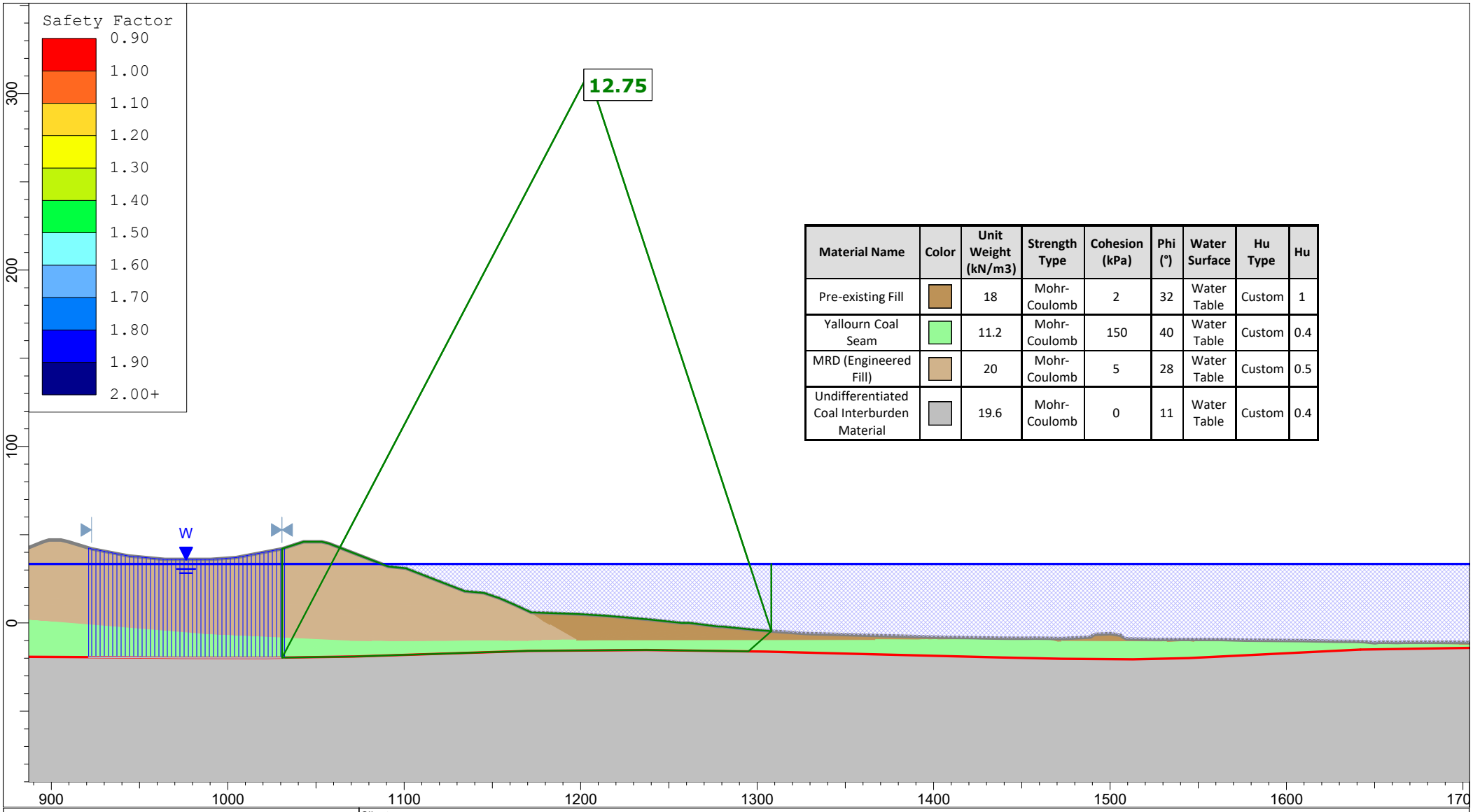
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



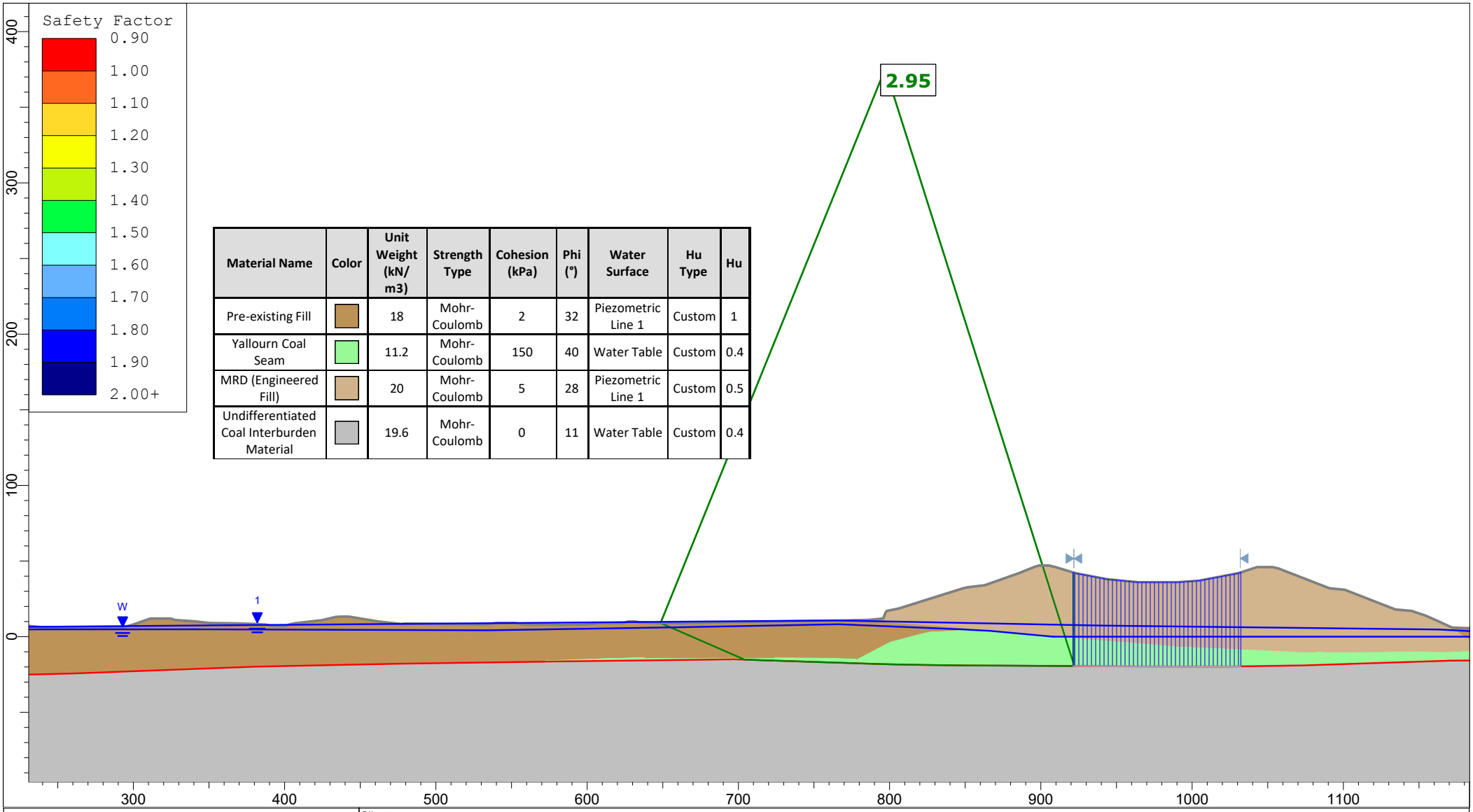
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



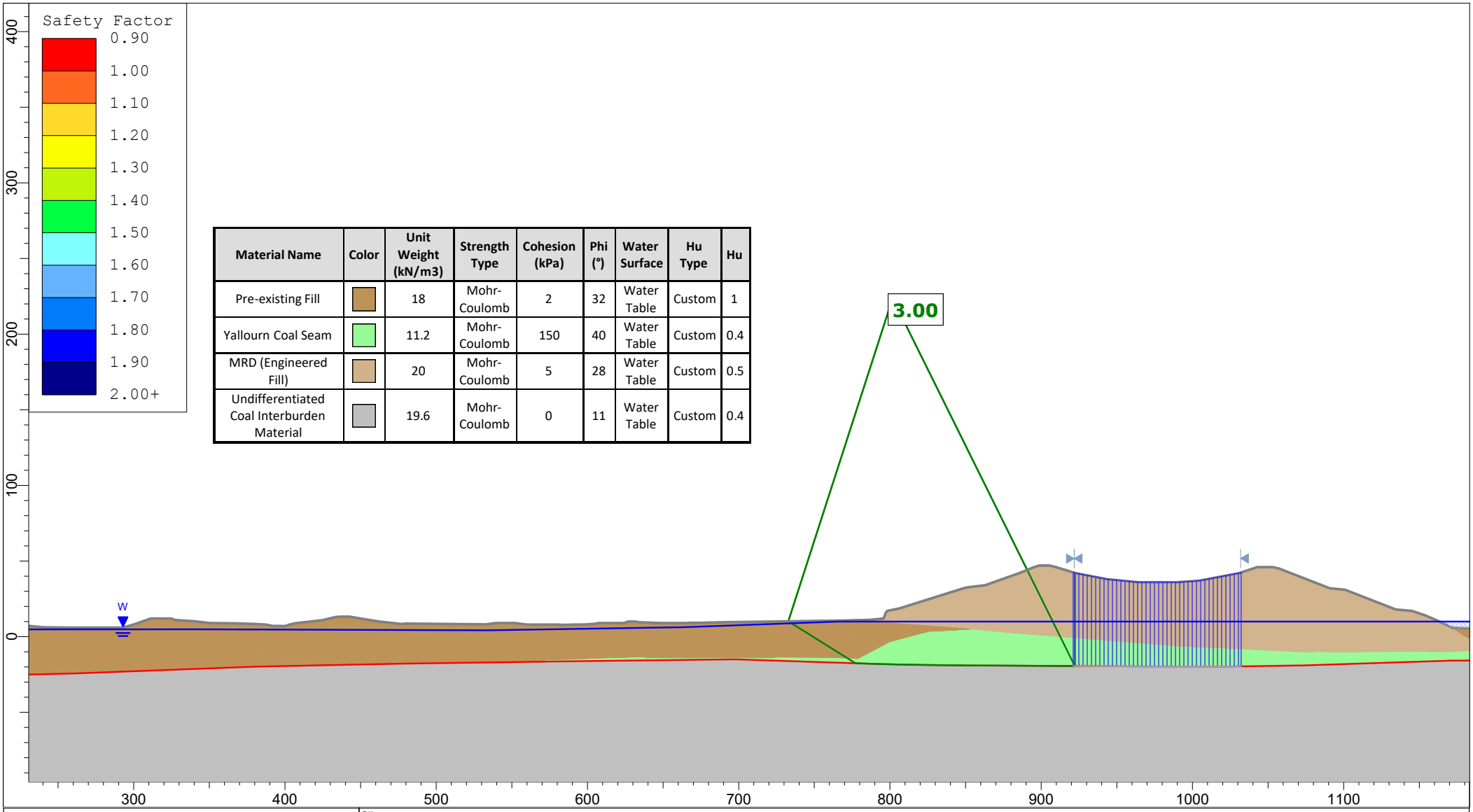
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



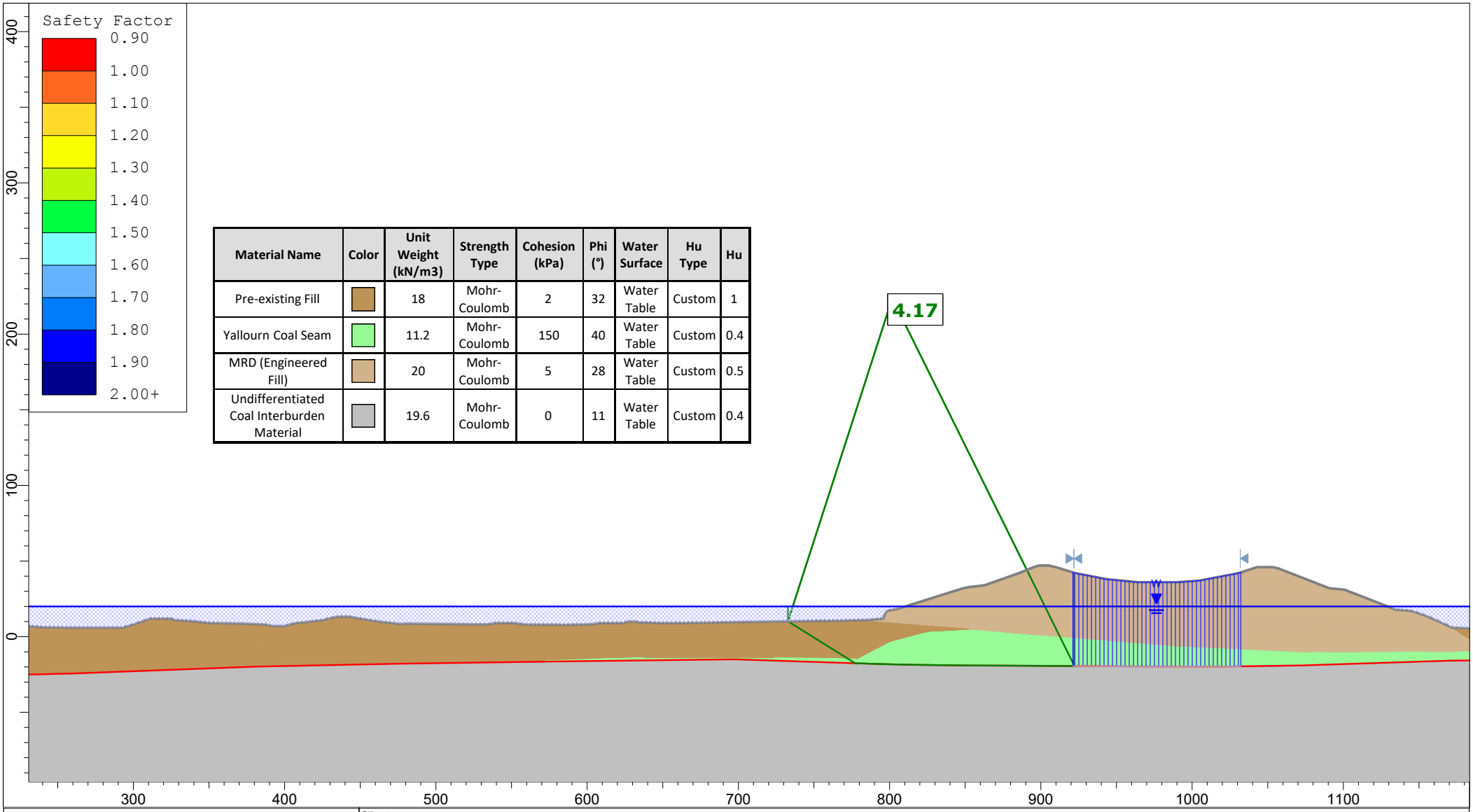
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left Failure		



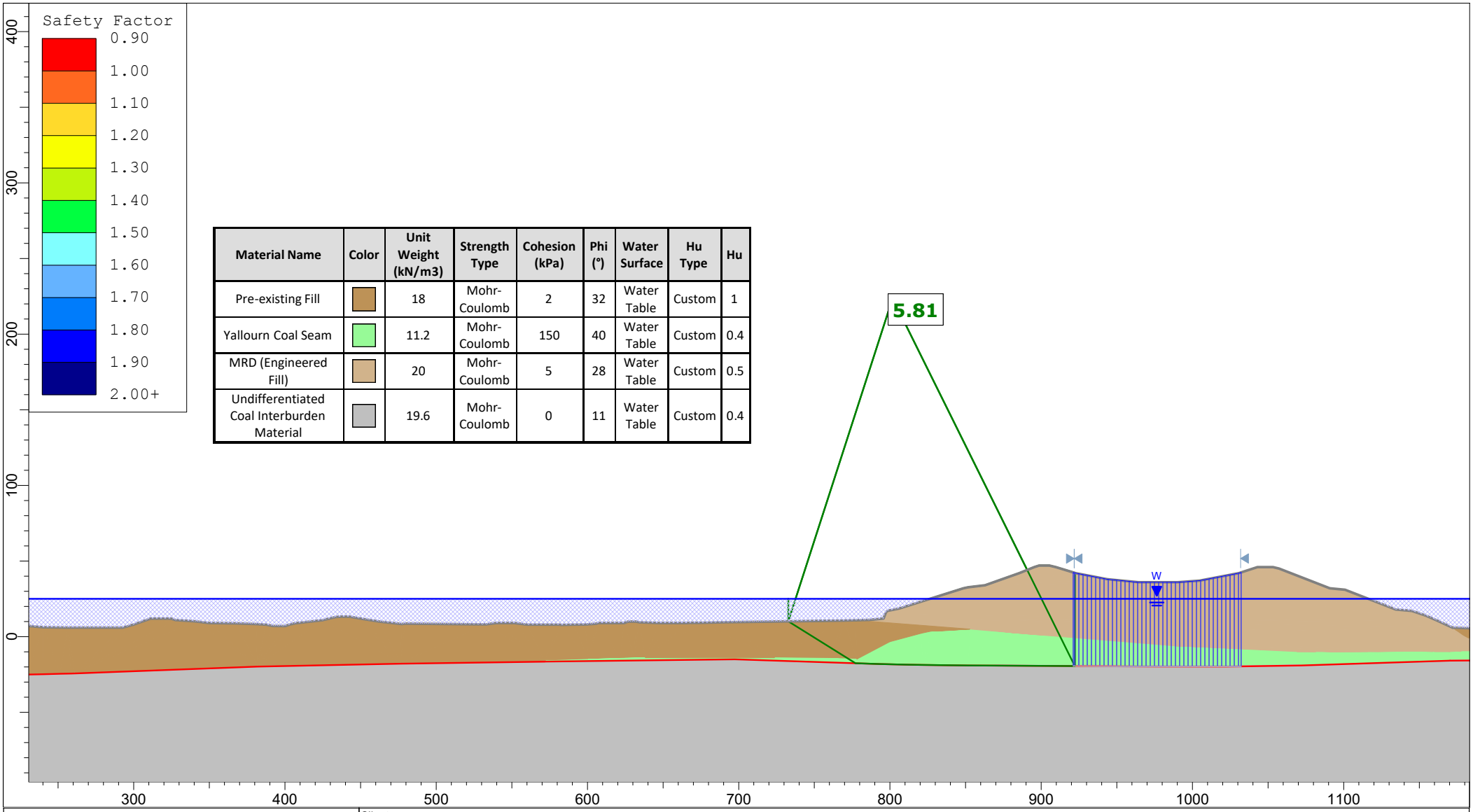
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left Failure		



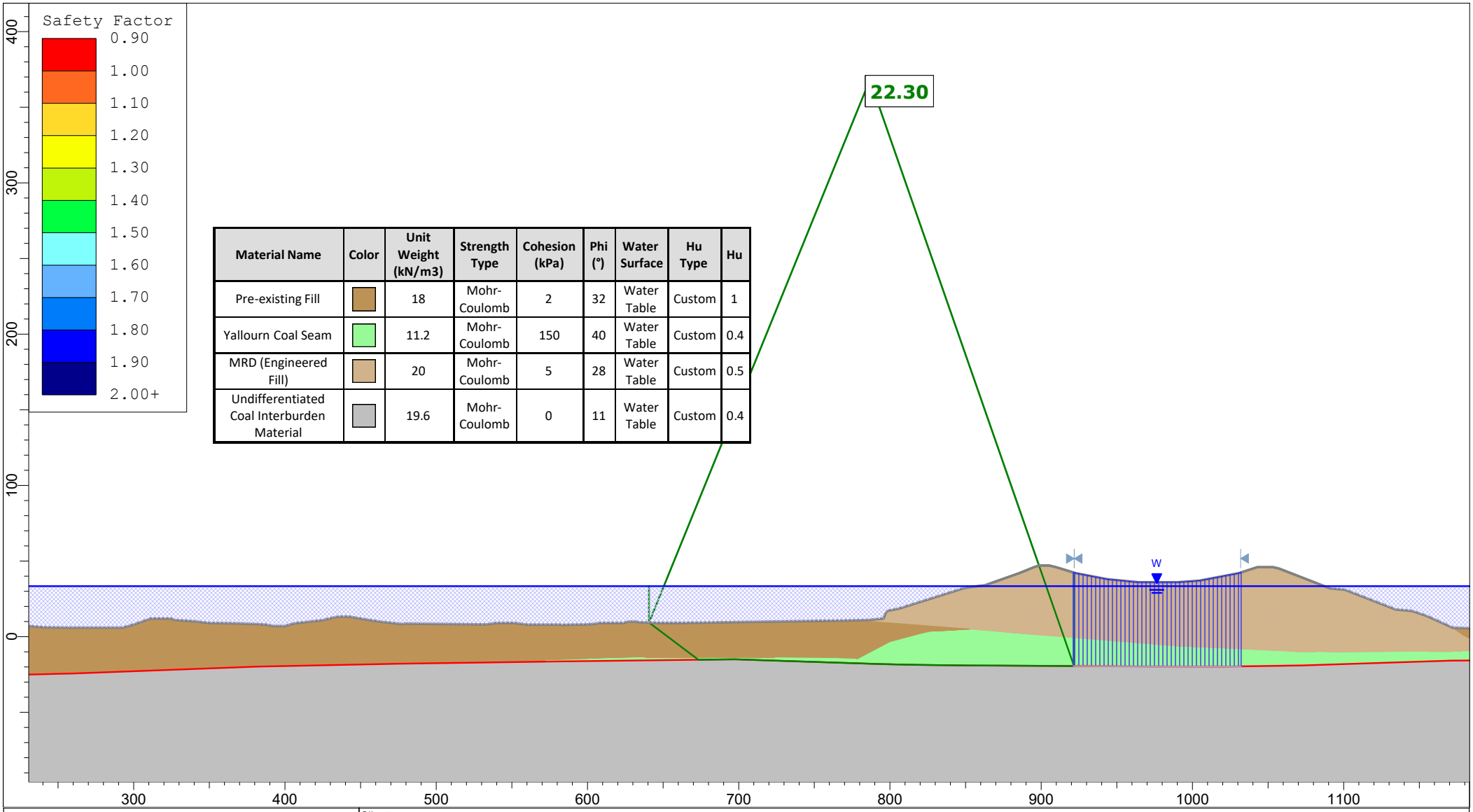
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left Failure		



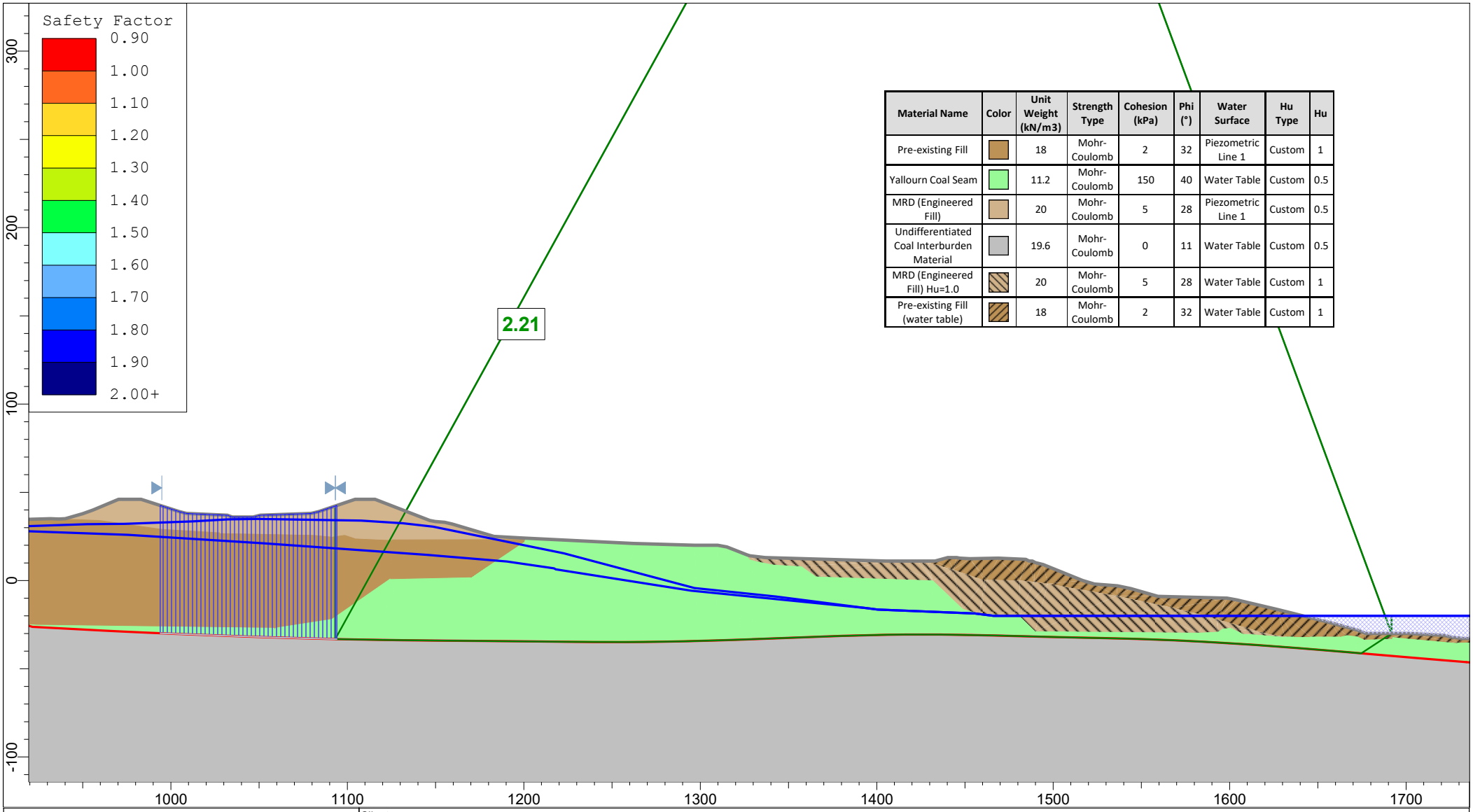
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left Failure		



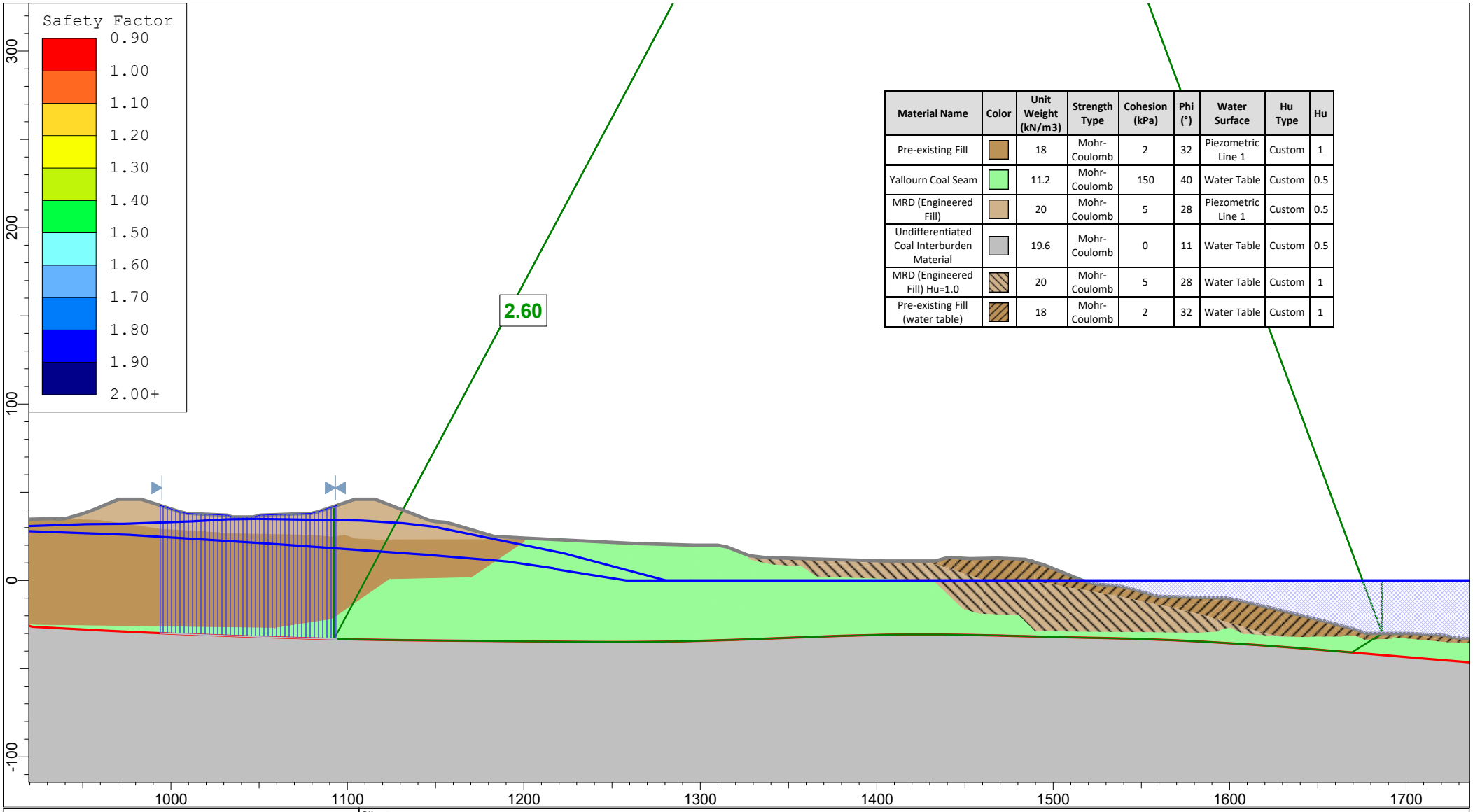
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left Failure		



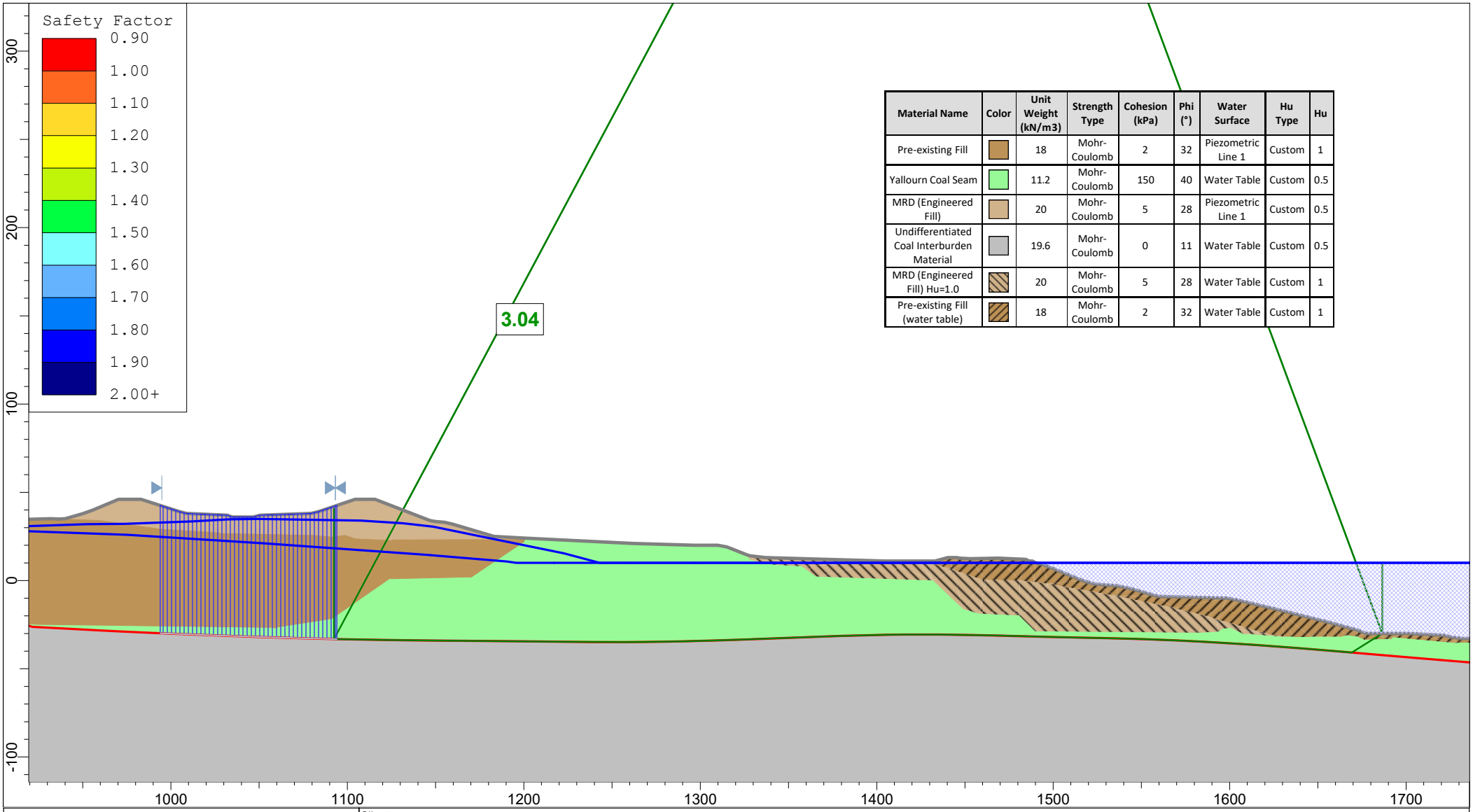
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



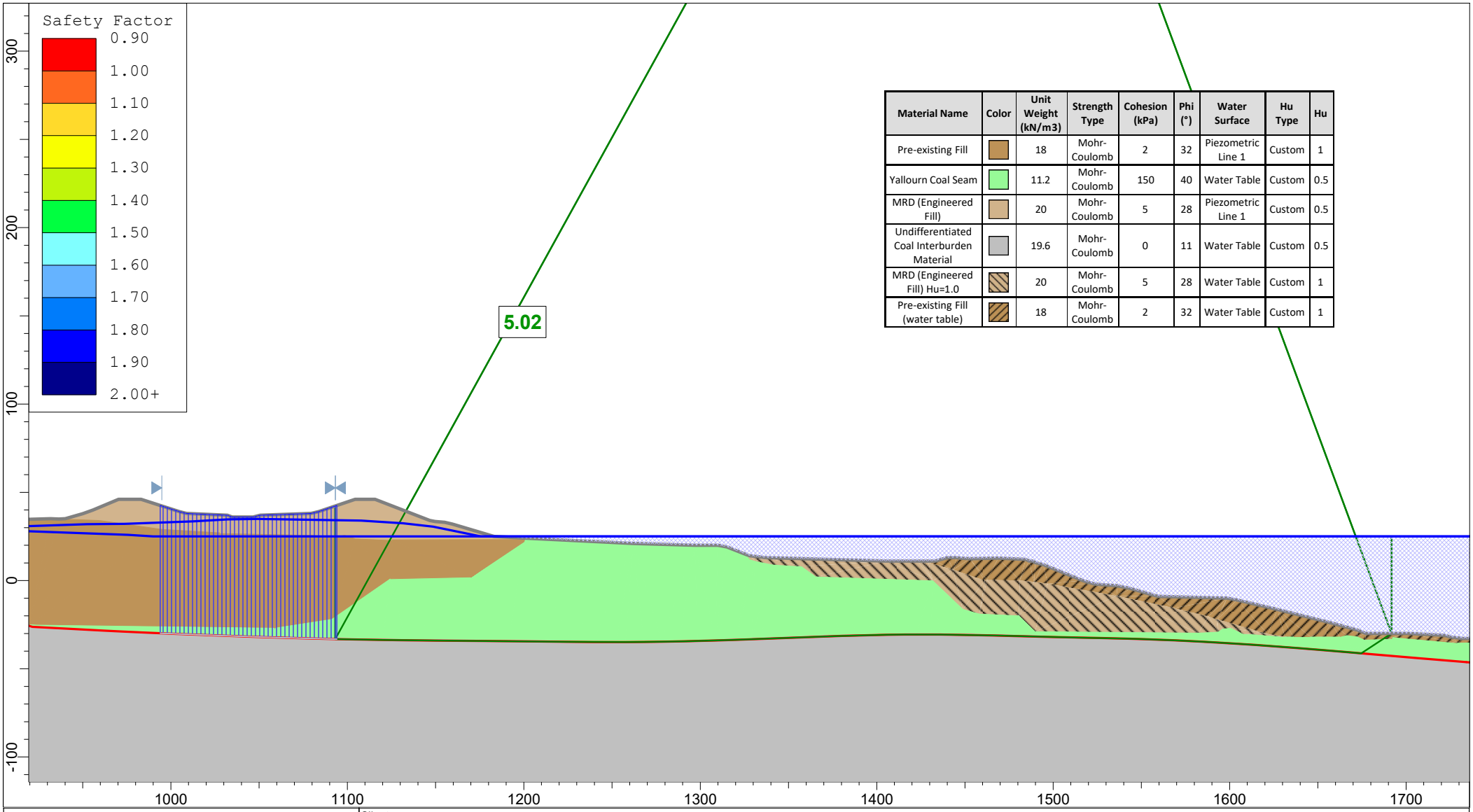
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



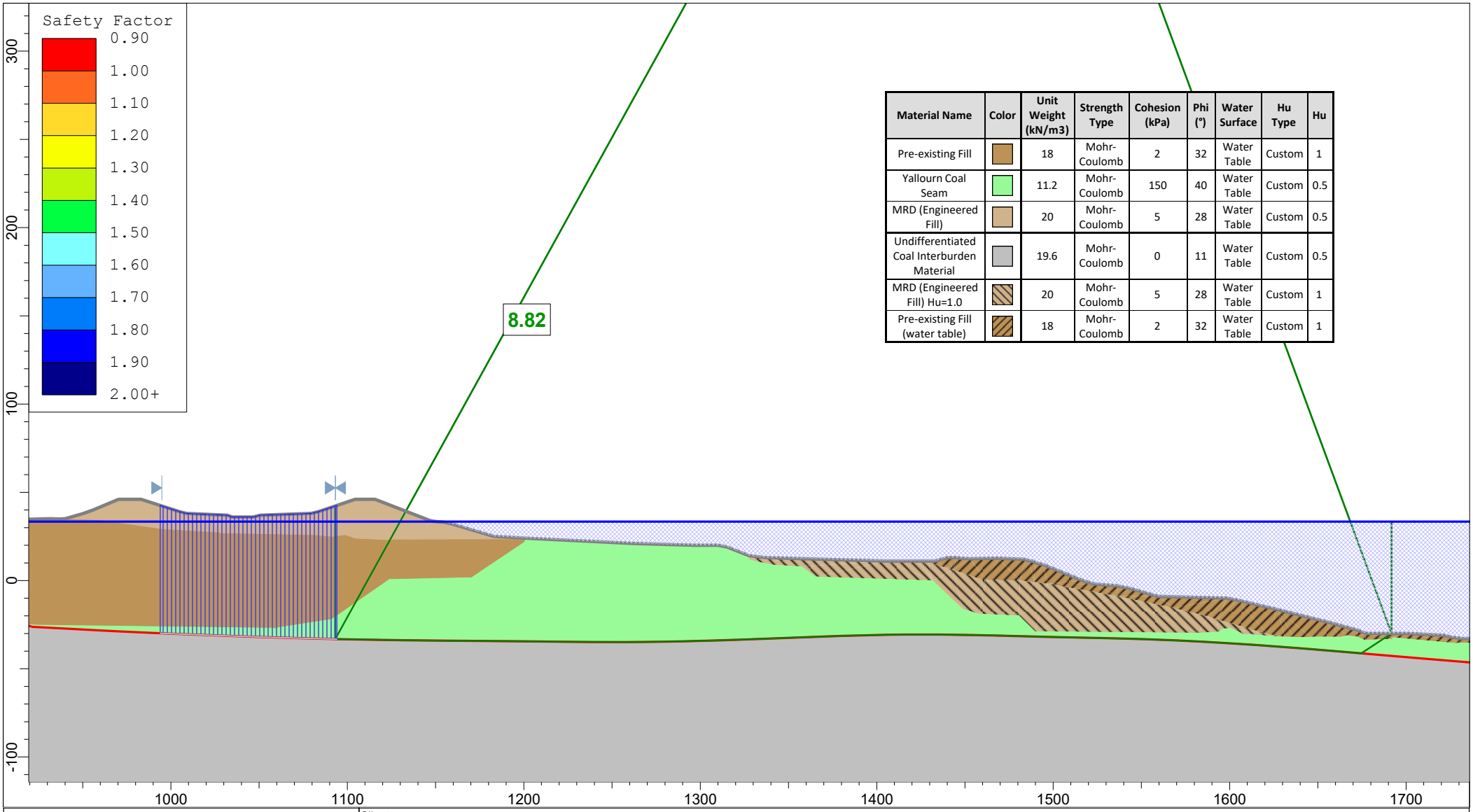
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



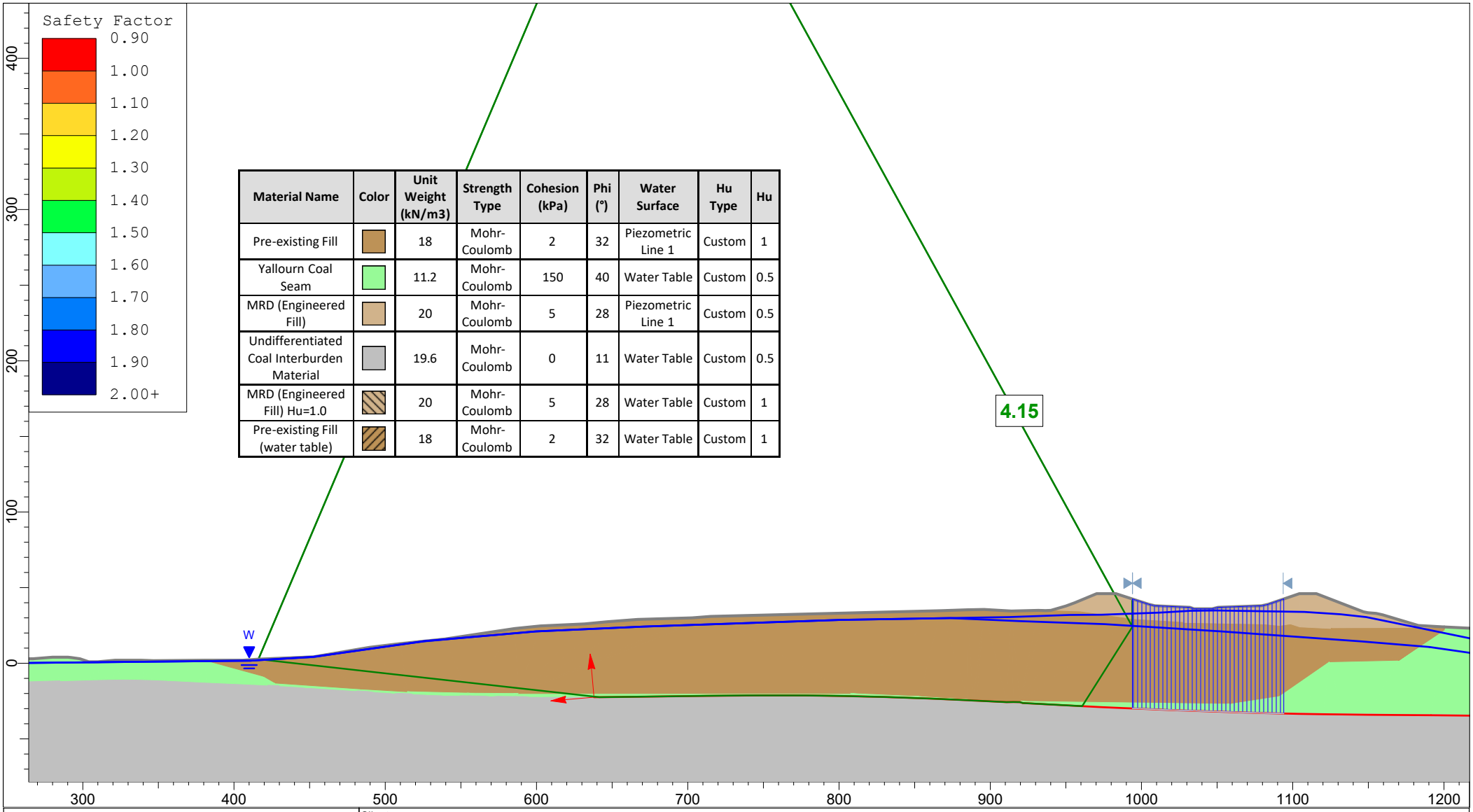
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



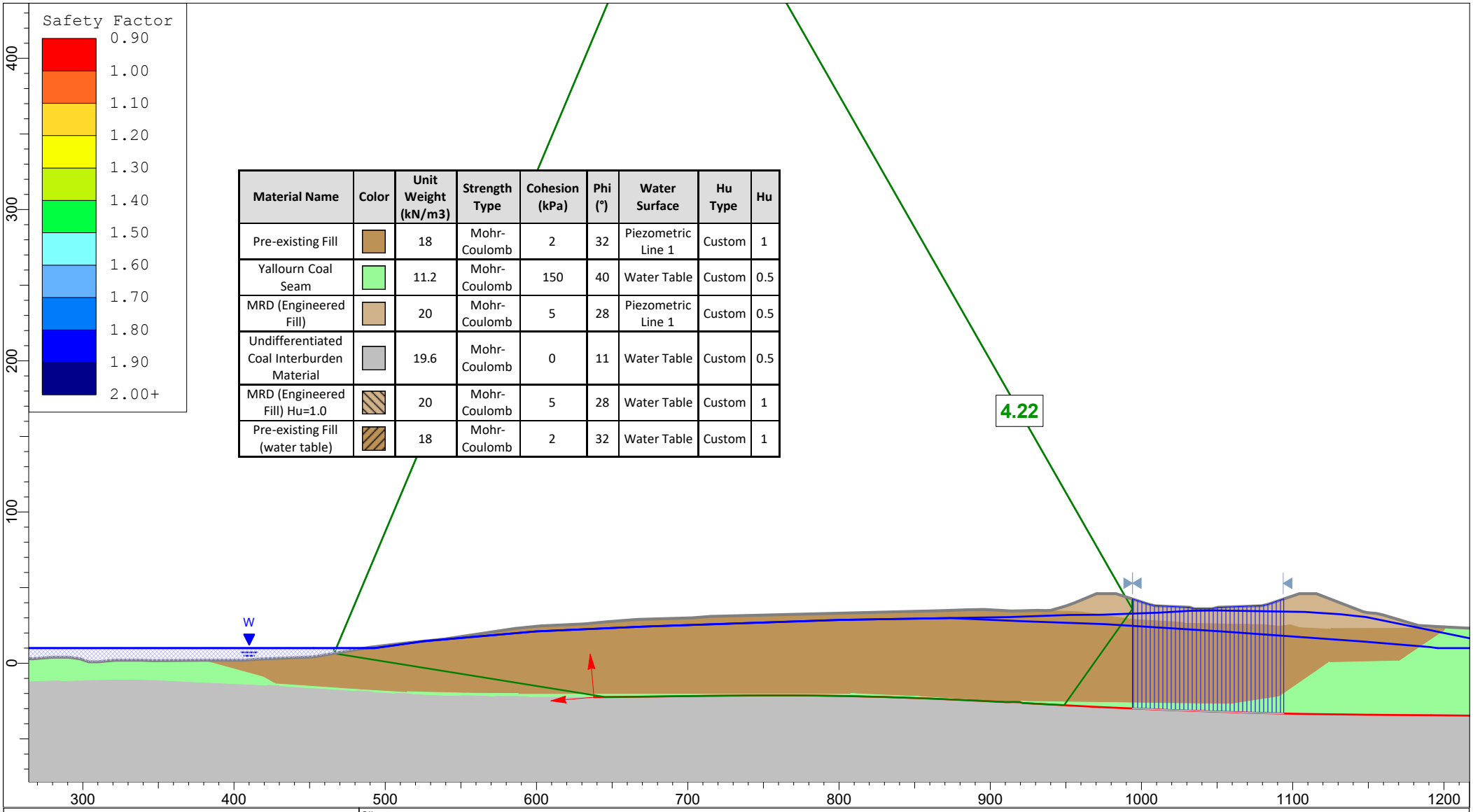
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



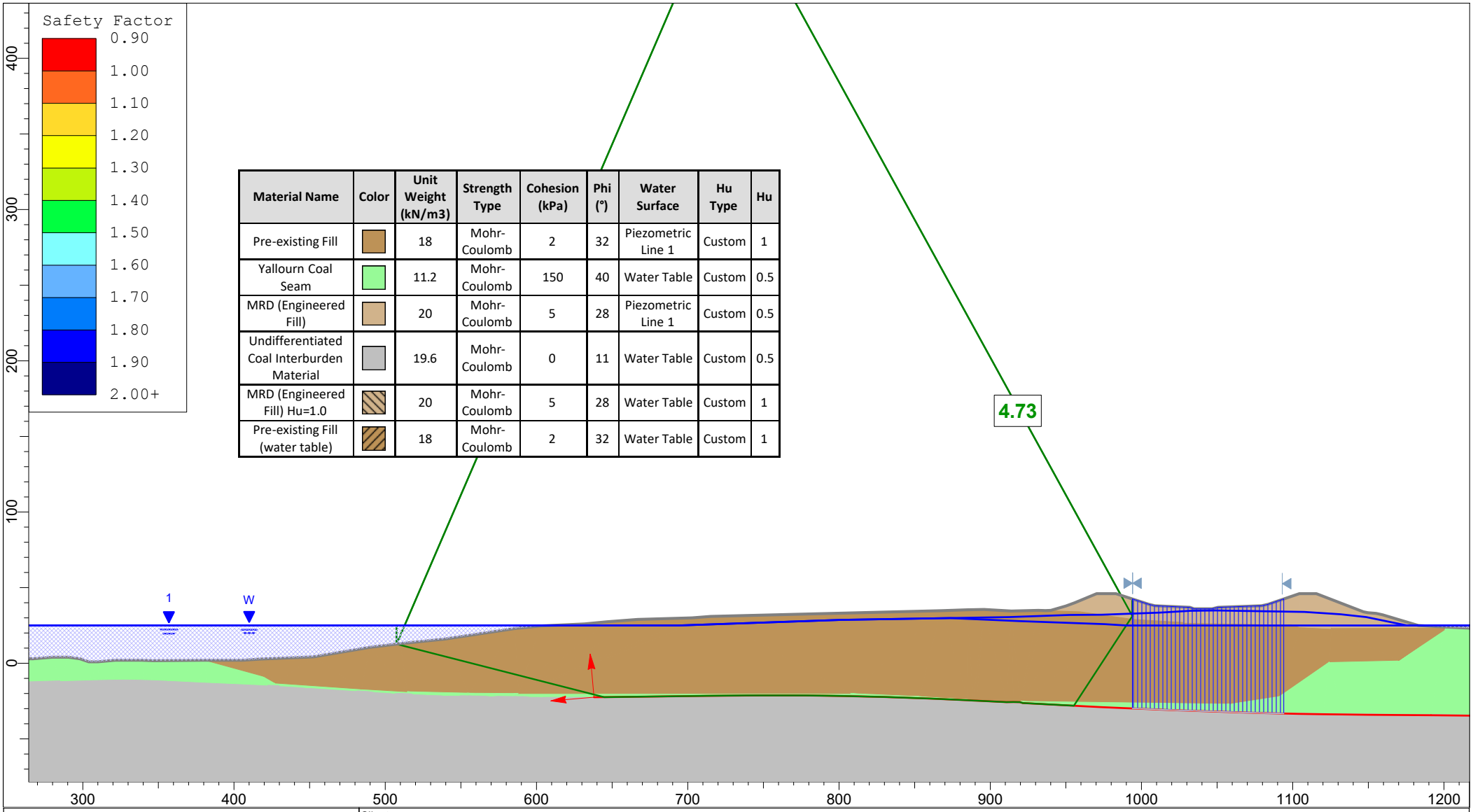
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left		



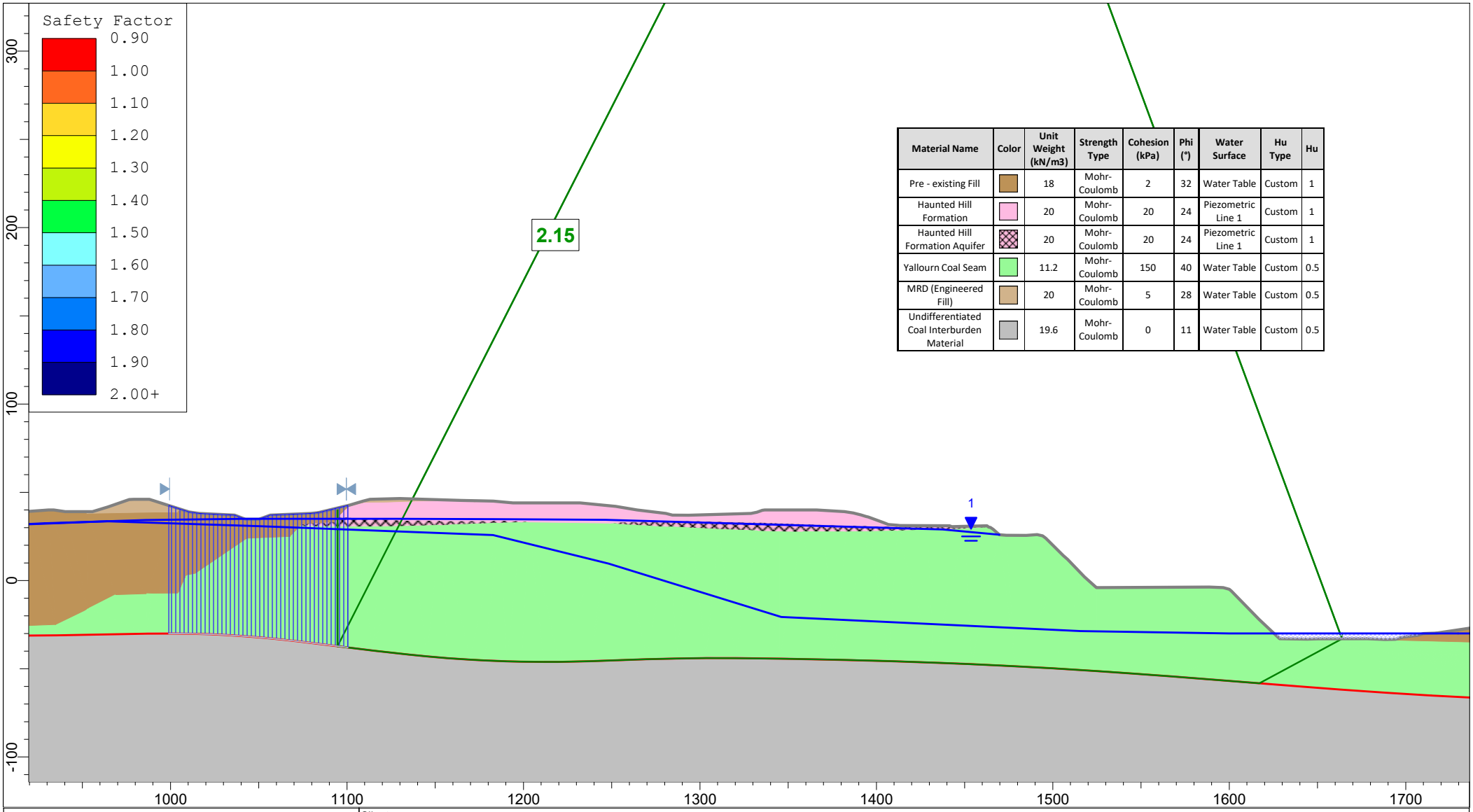
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left		



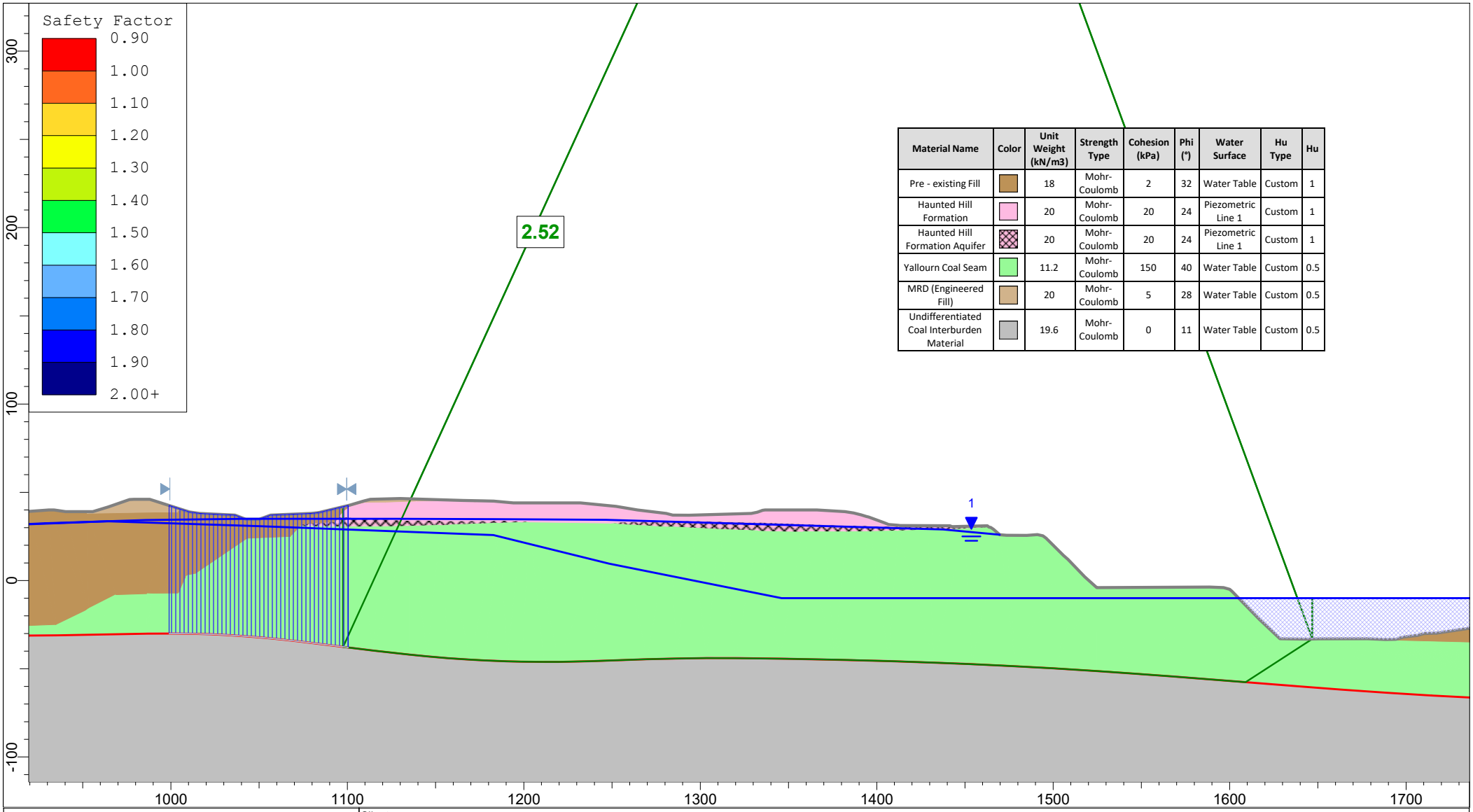
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left		



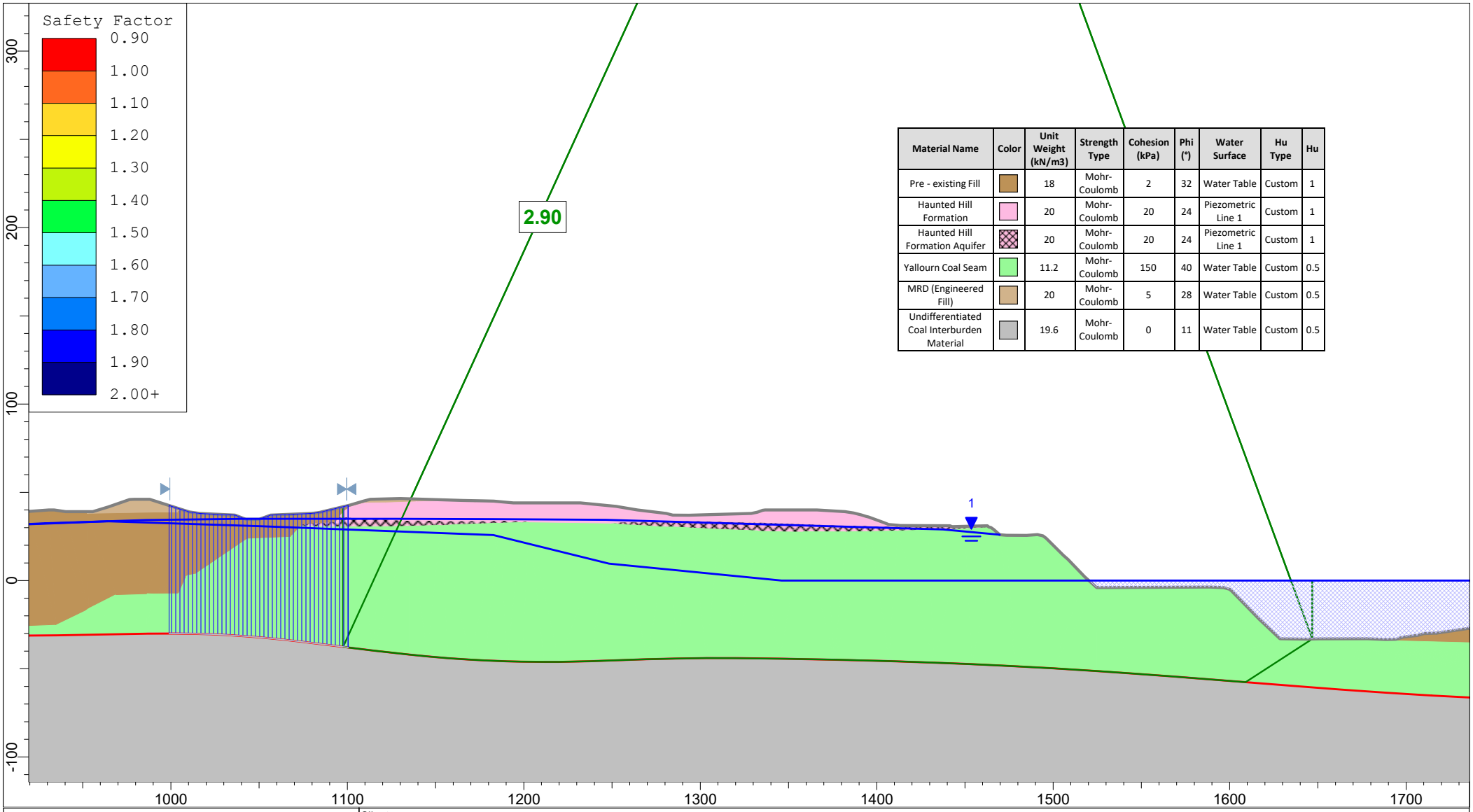
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -30 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



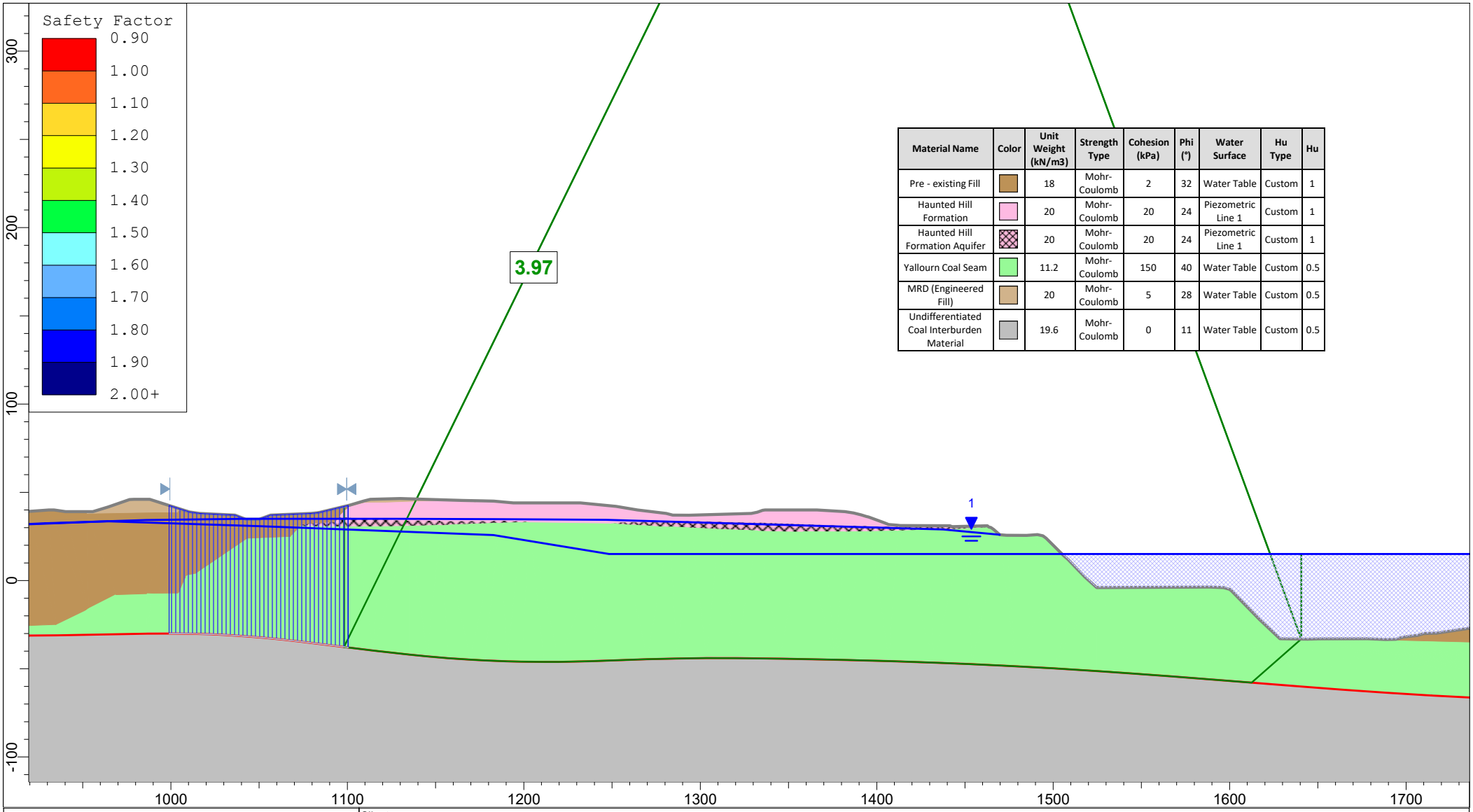
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



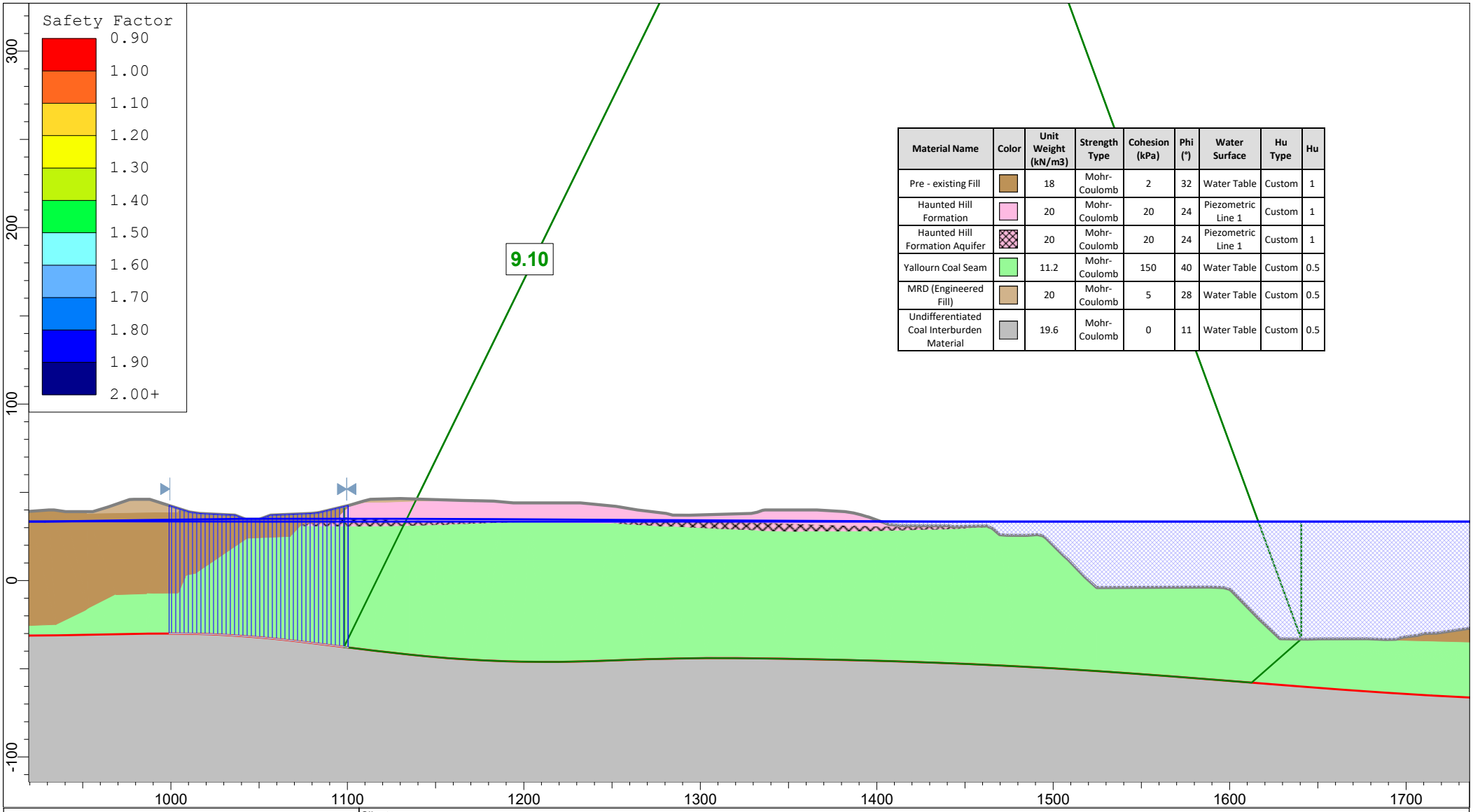
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



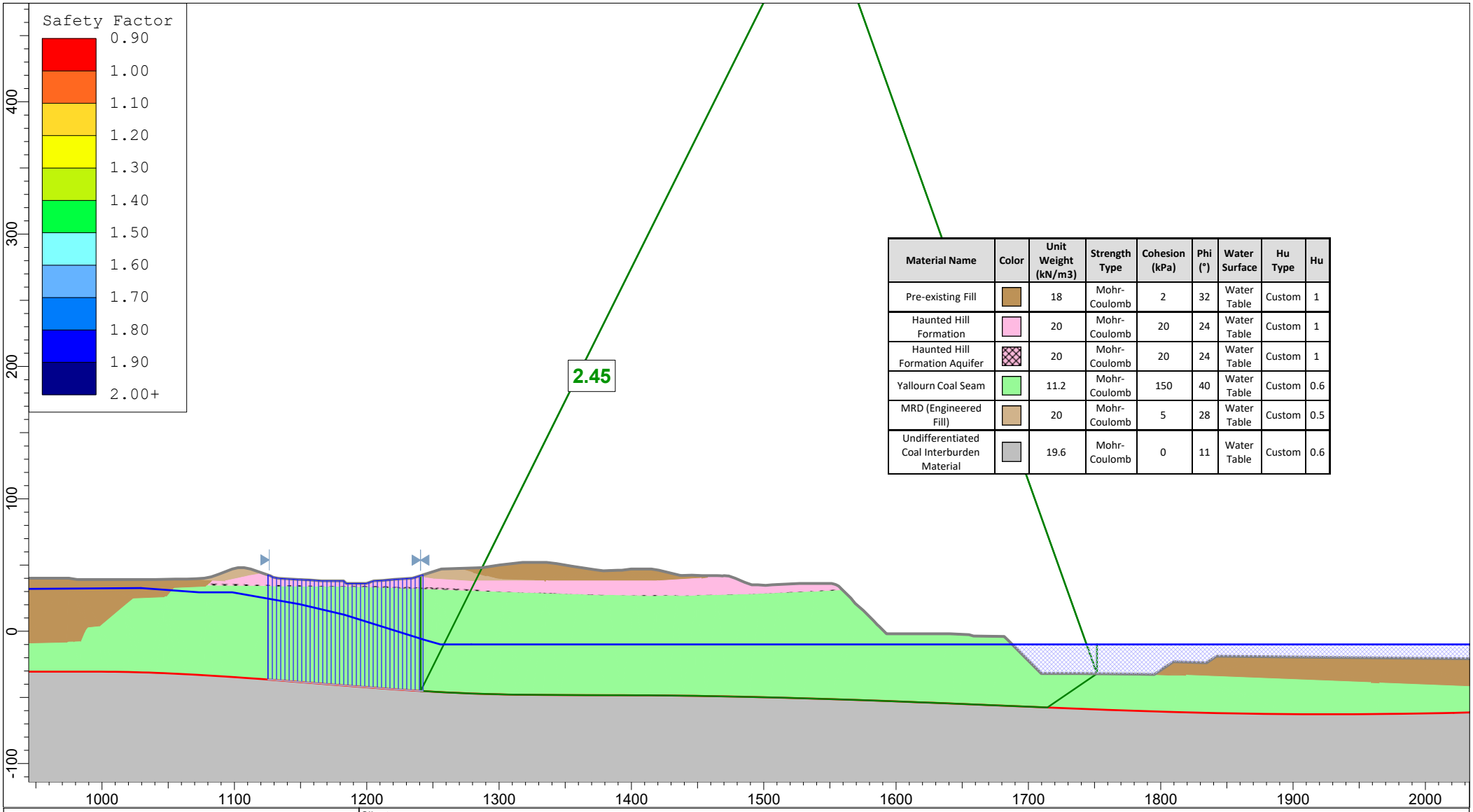
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



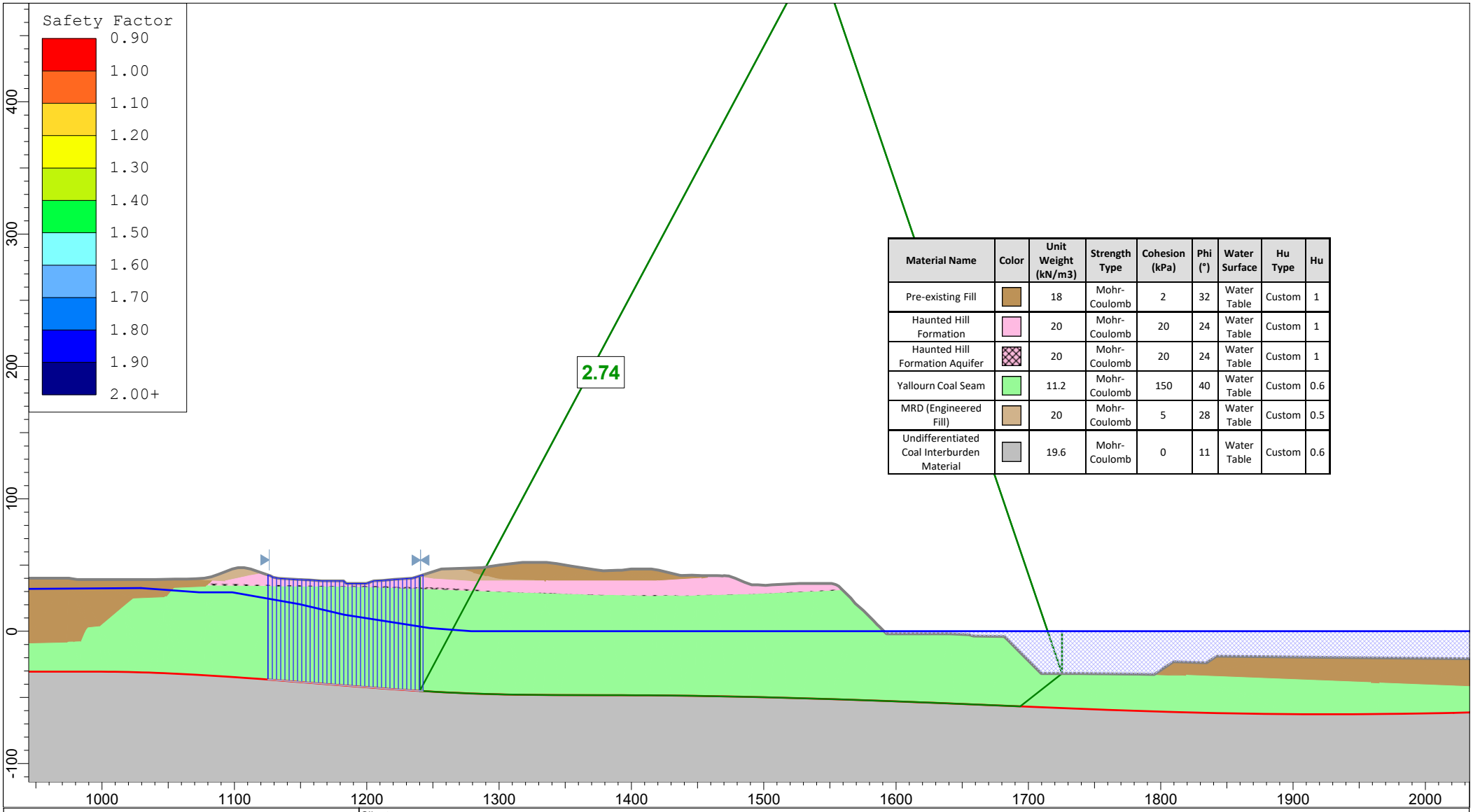
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



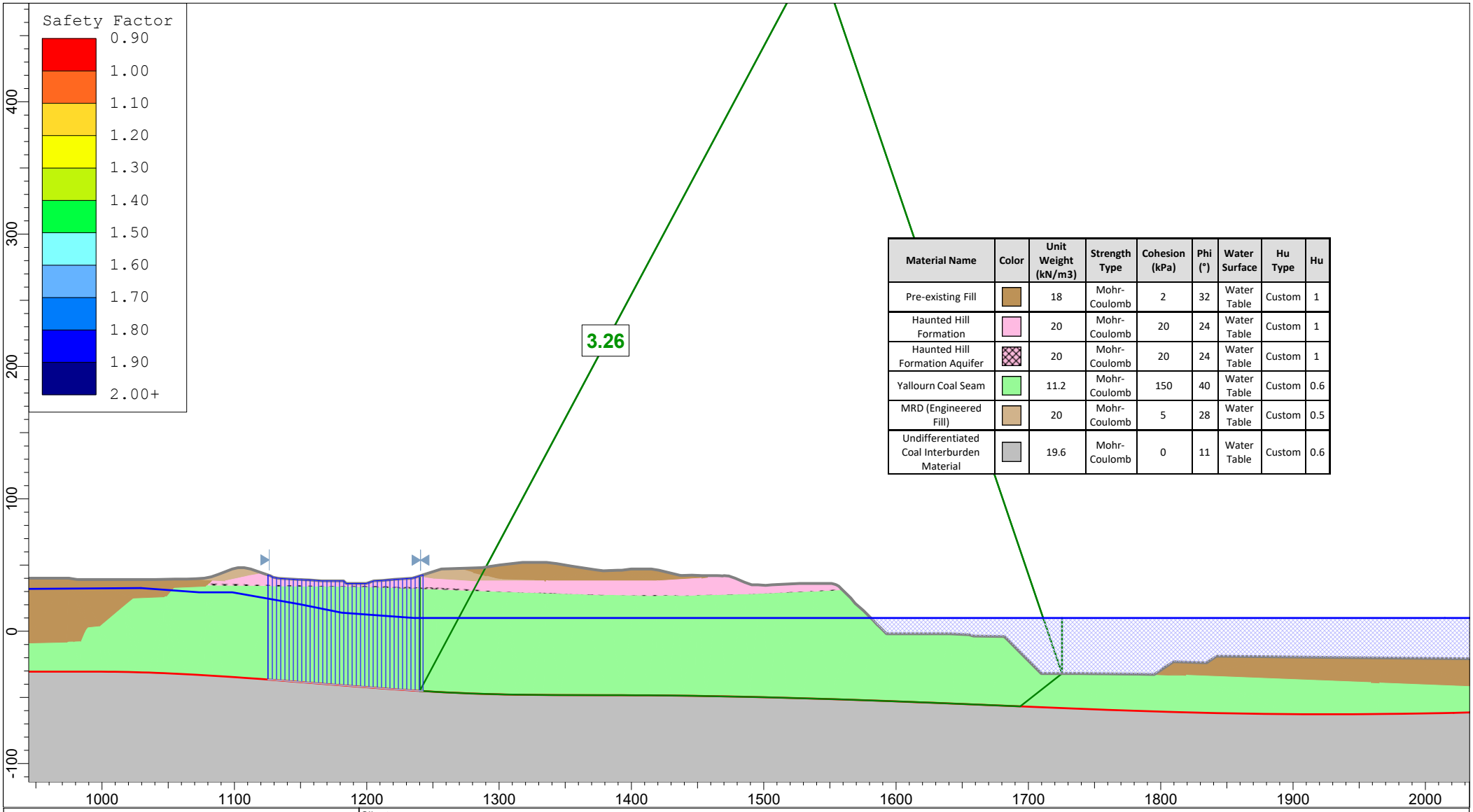
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



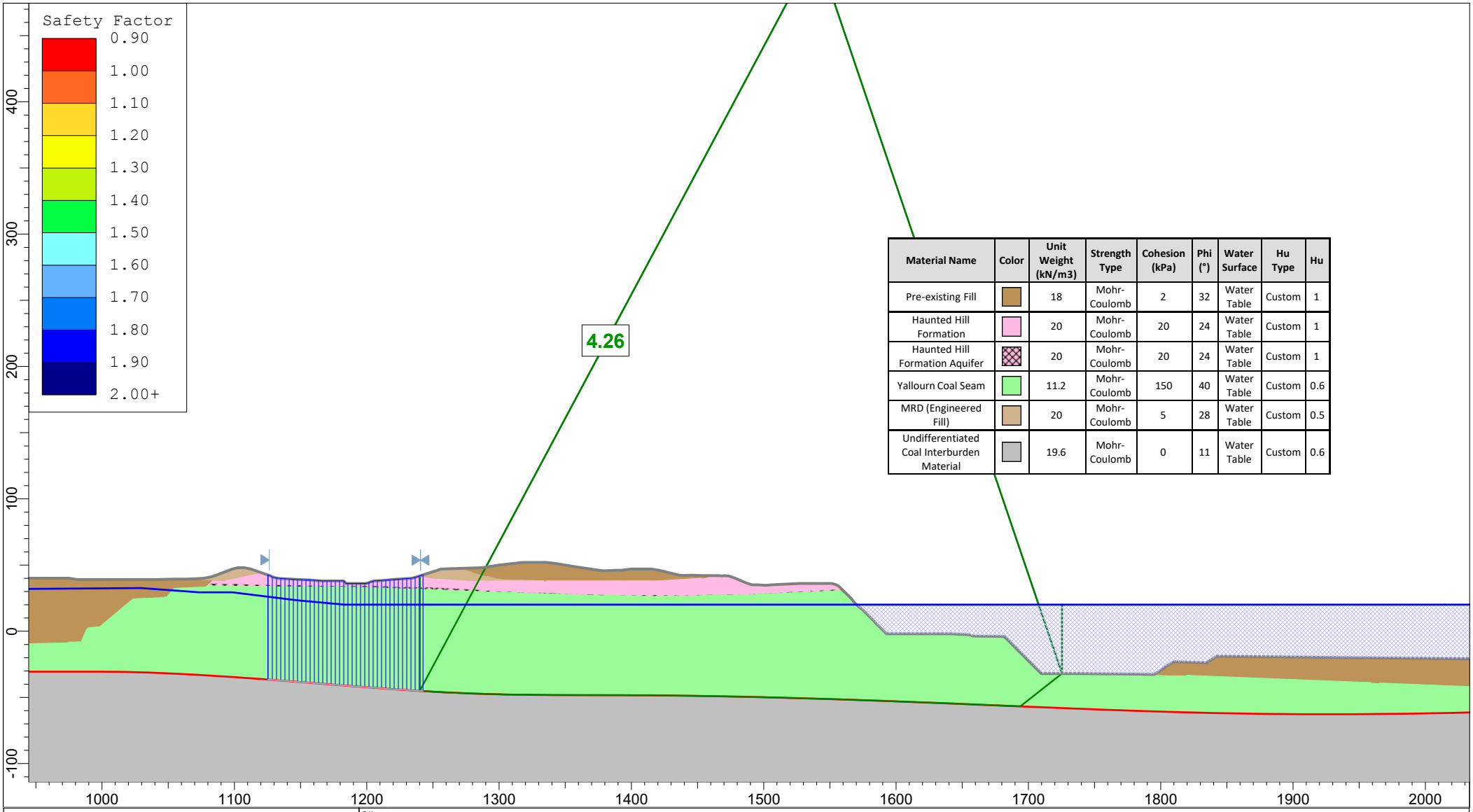
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



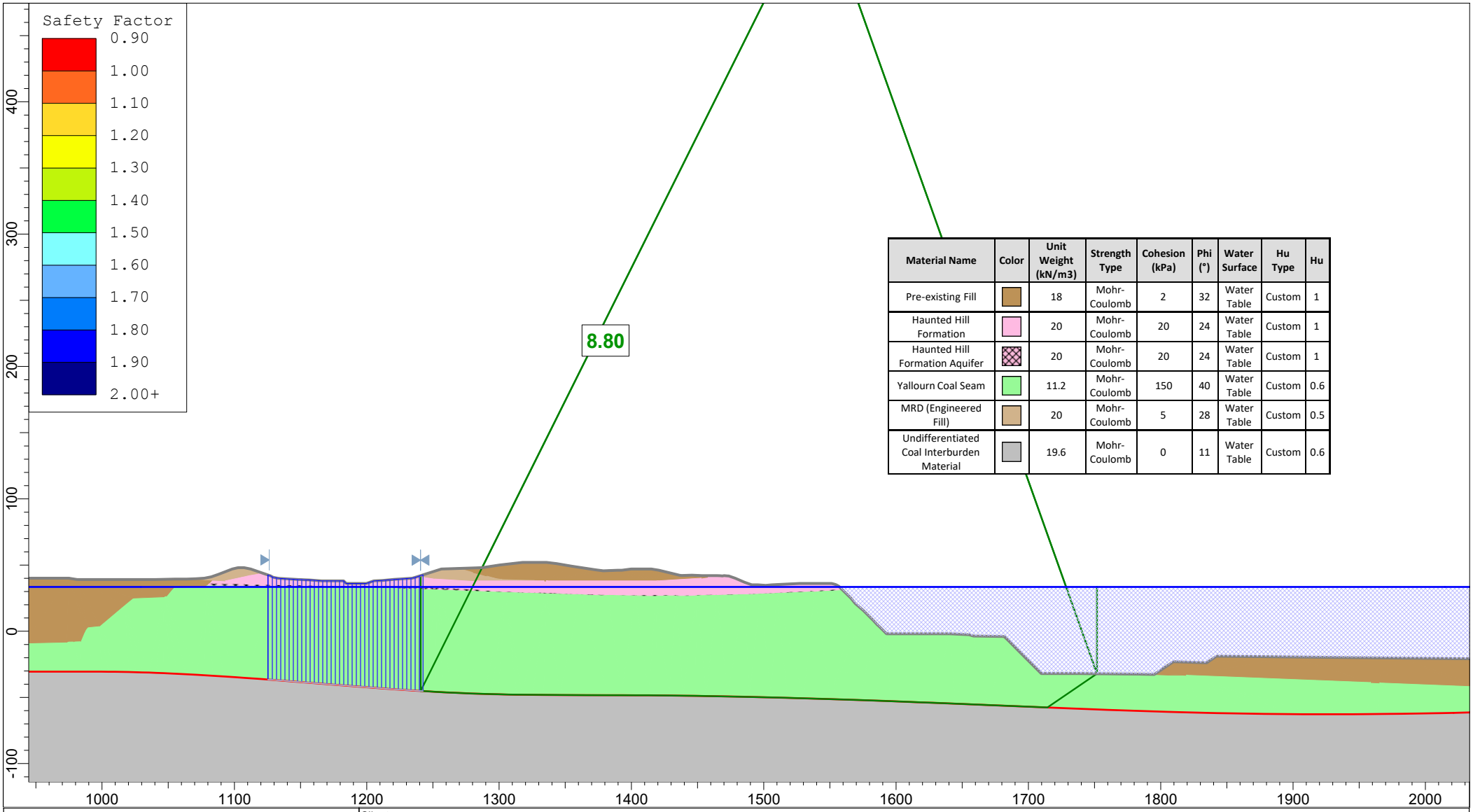
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



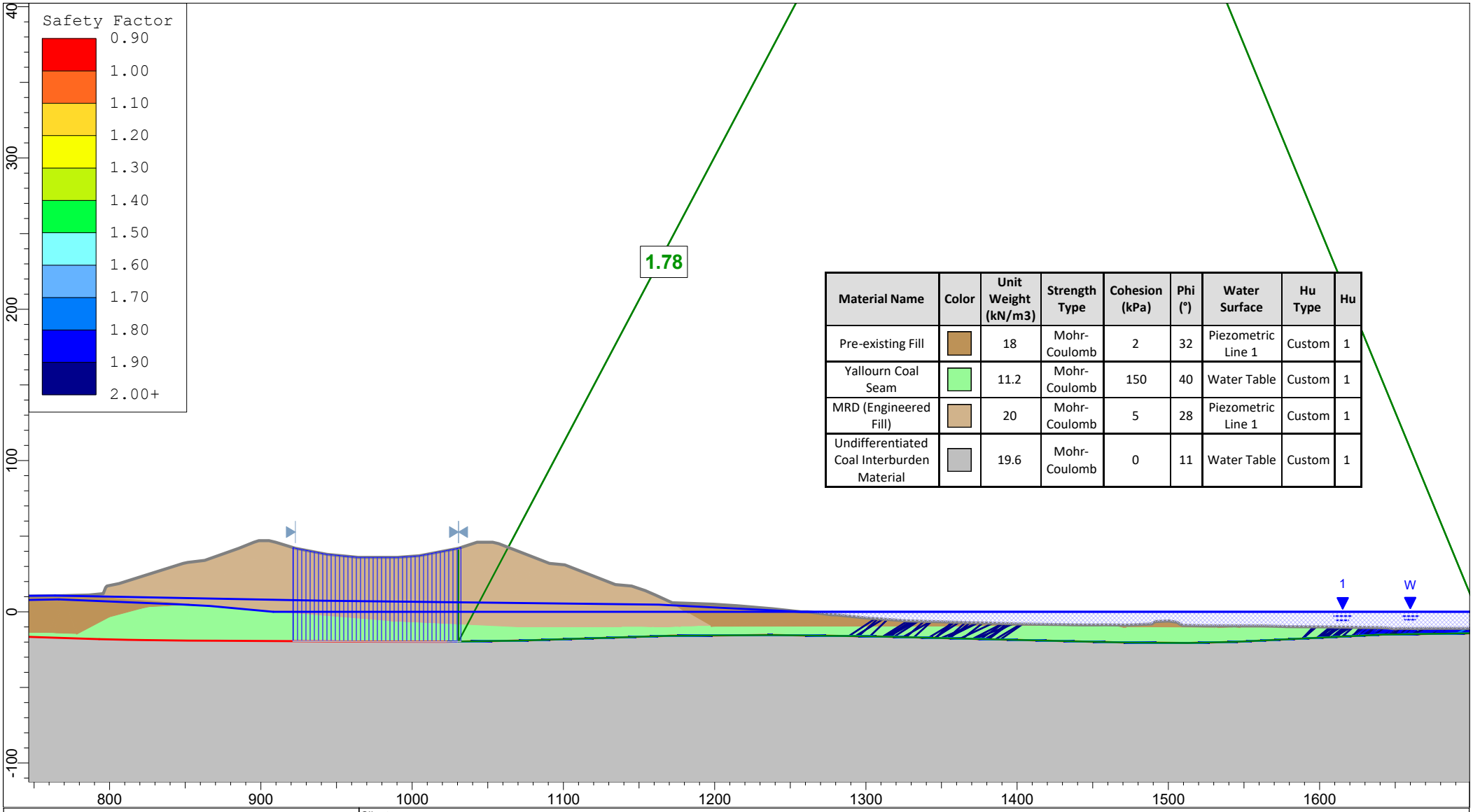
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



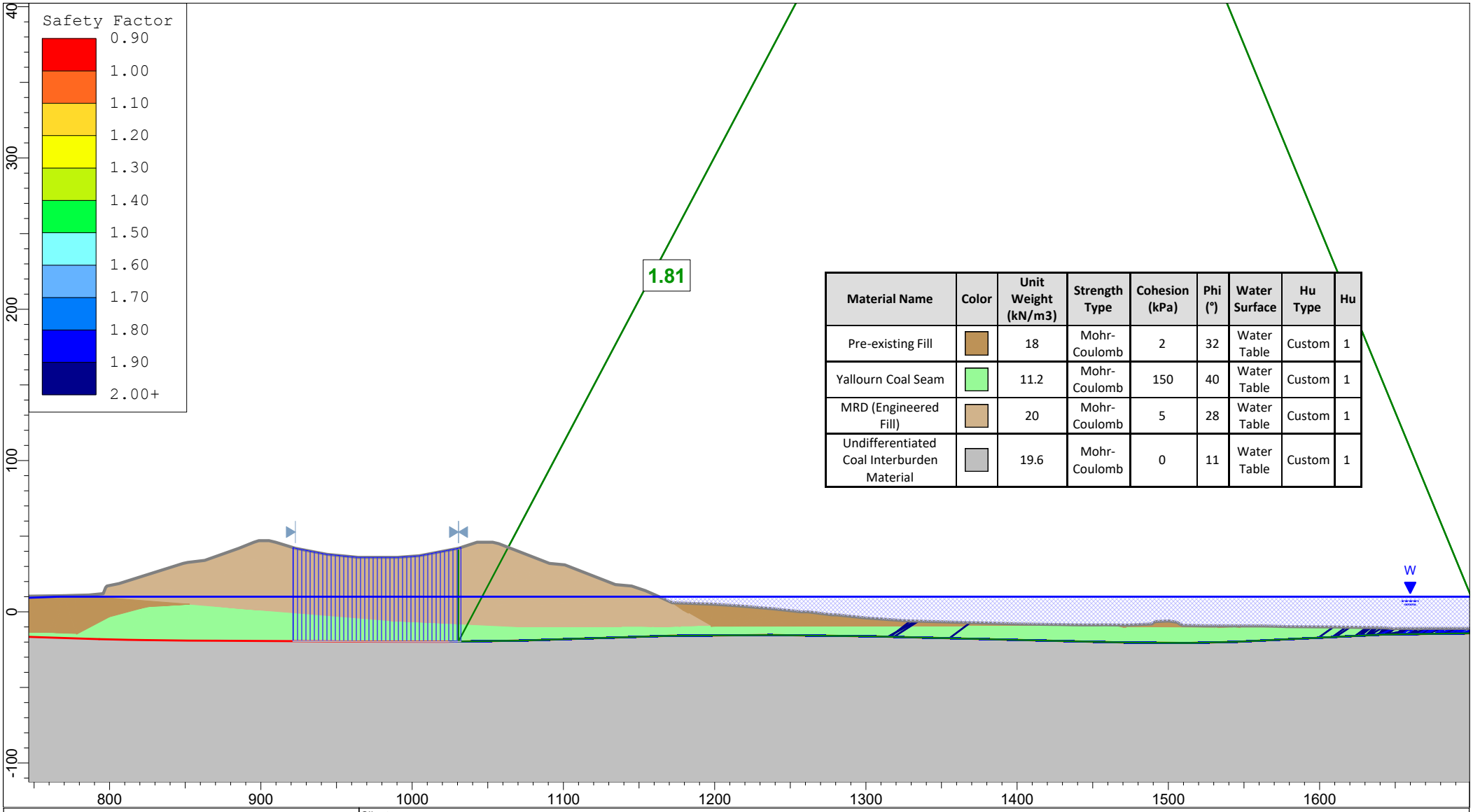
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Block slide with full TC - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



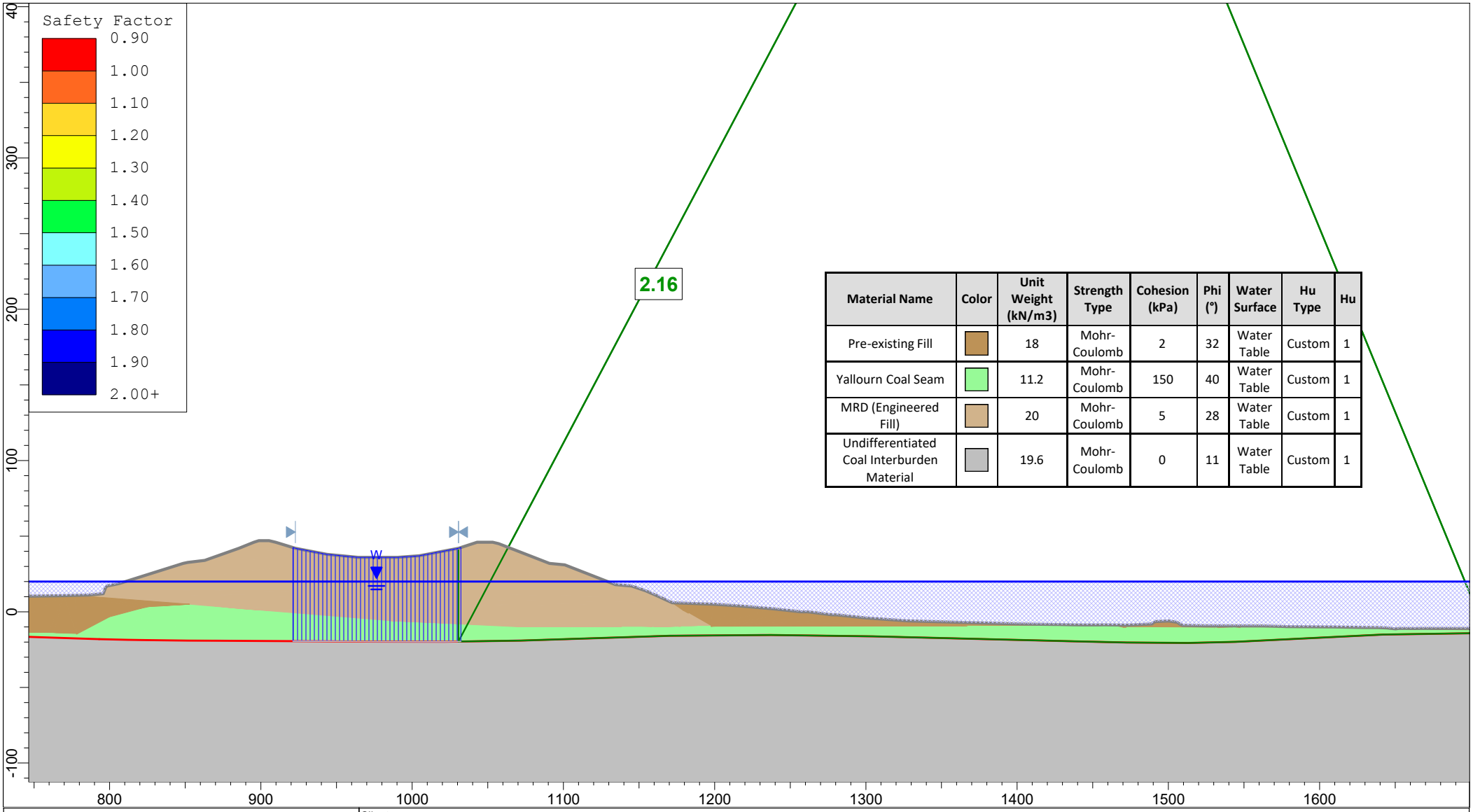
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



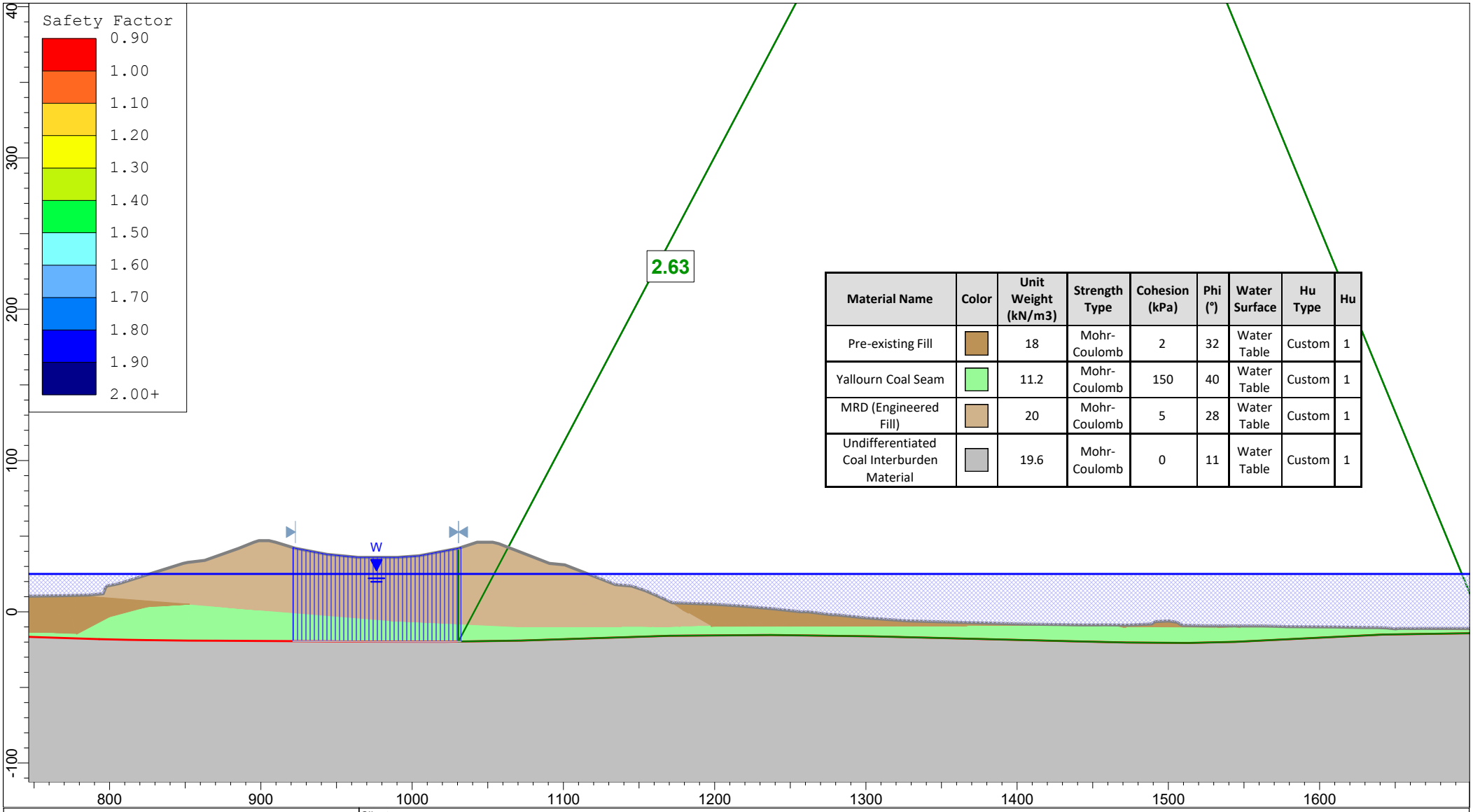
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



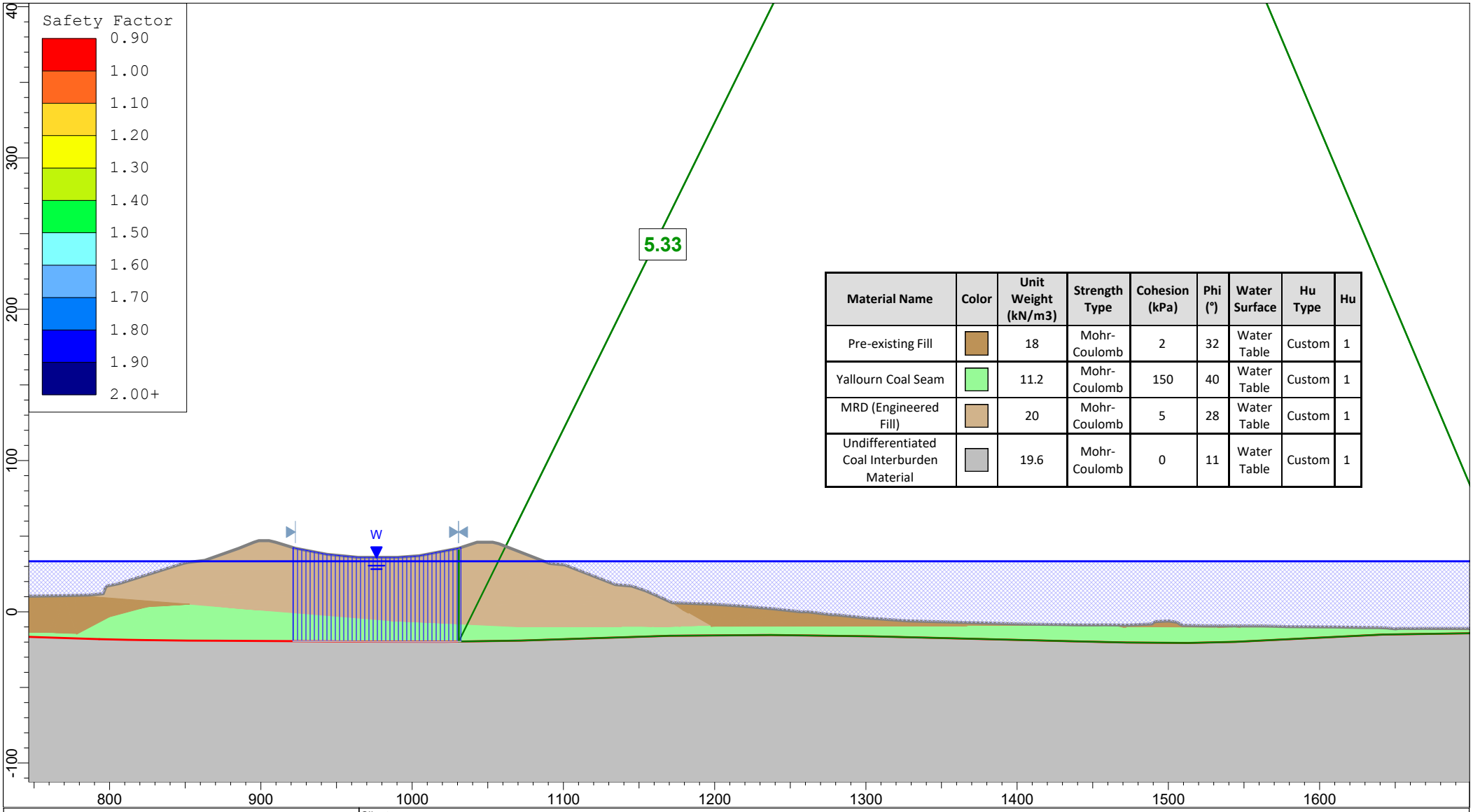
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



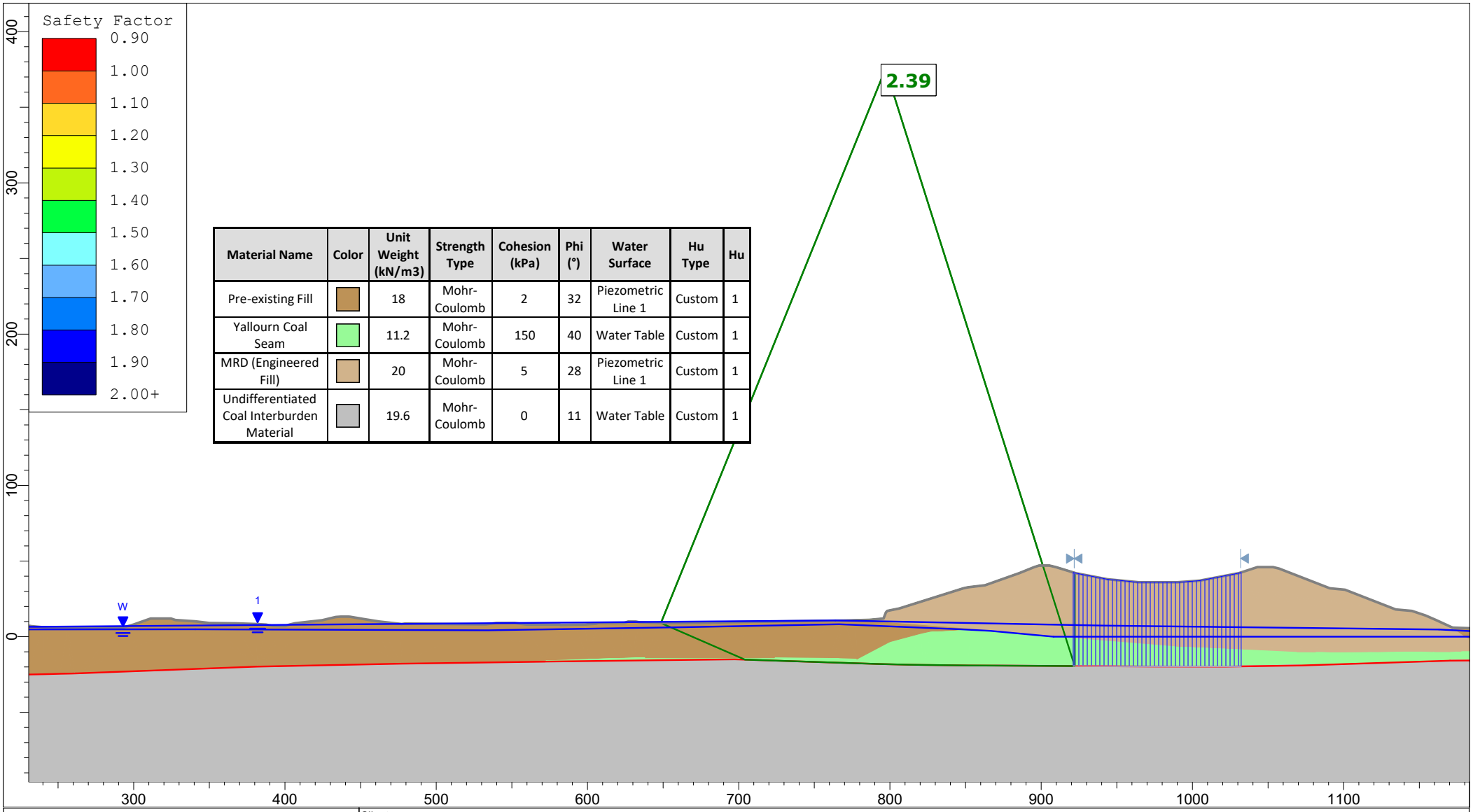
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



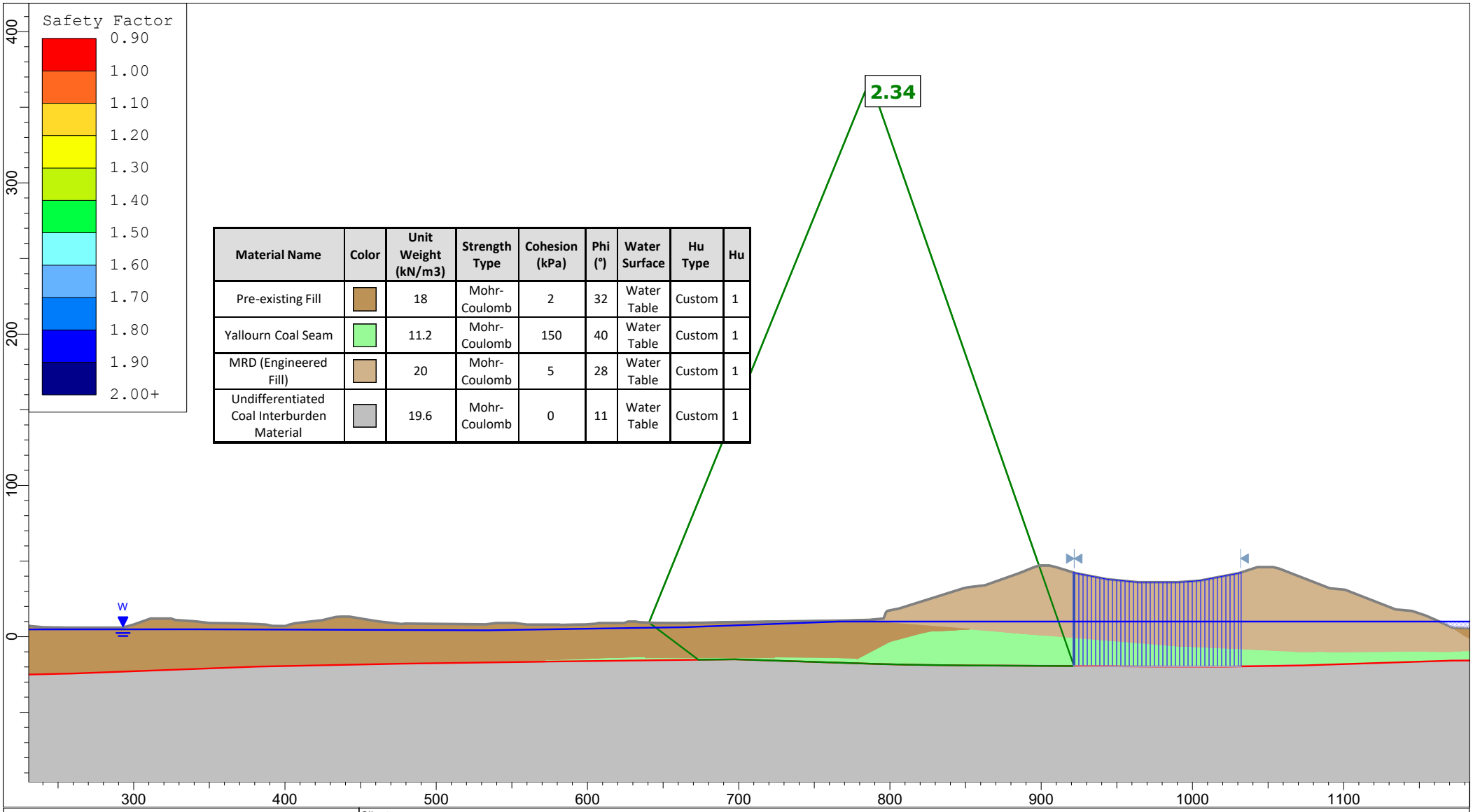
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



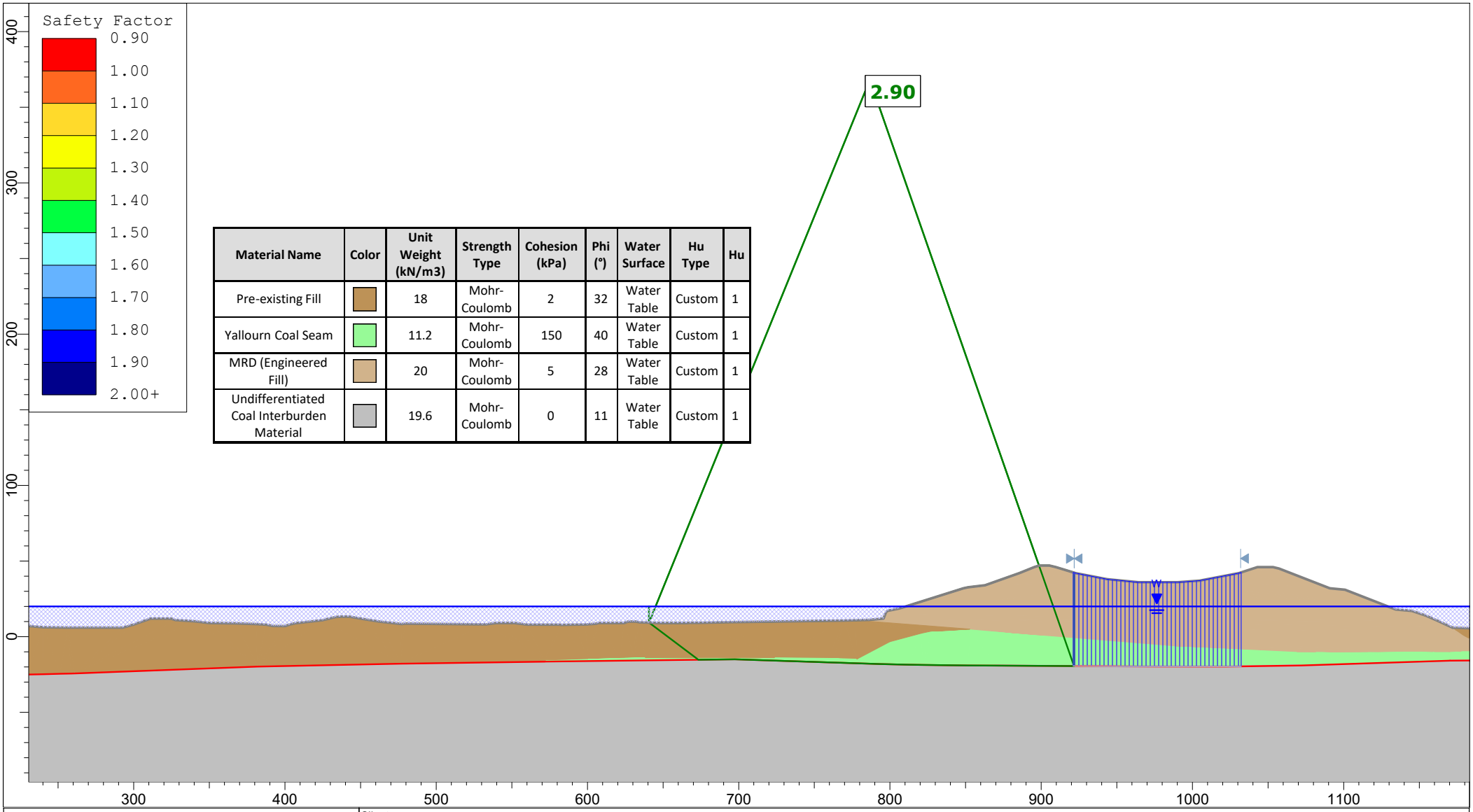
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left Failure		



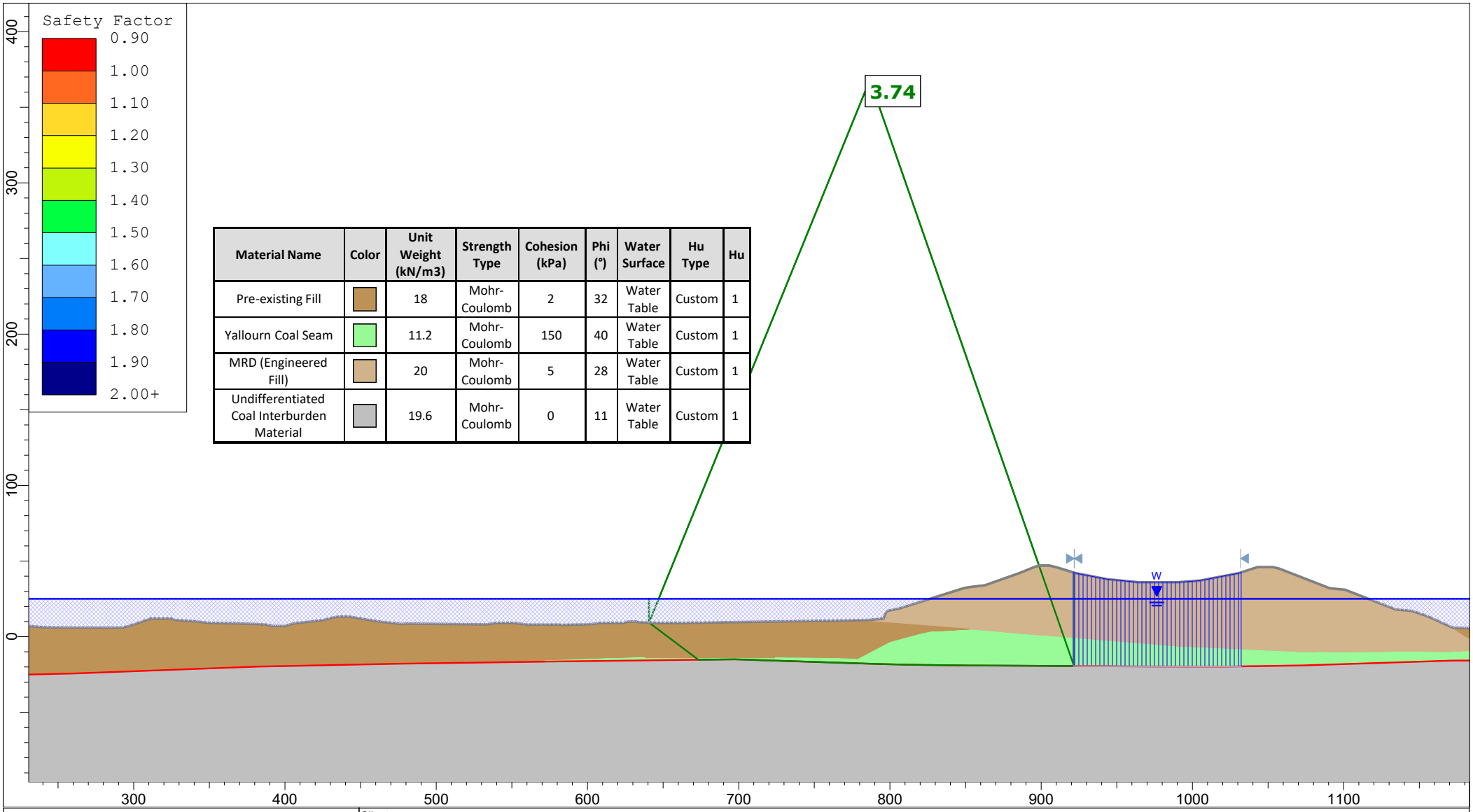
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left Failure		



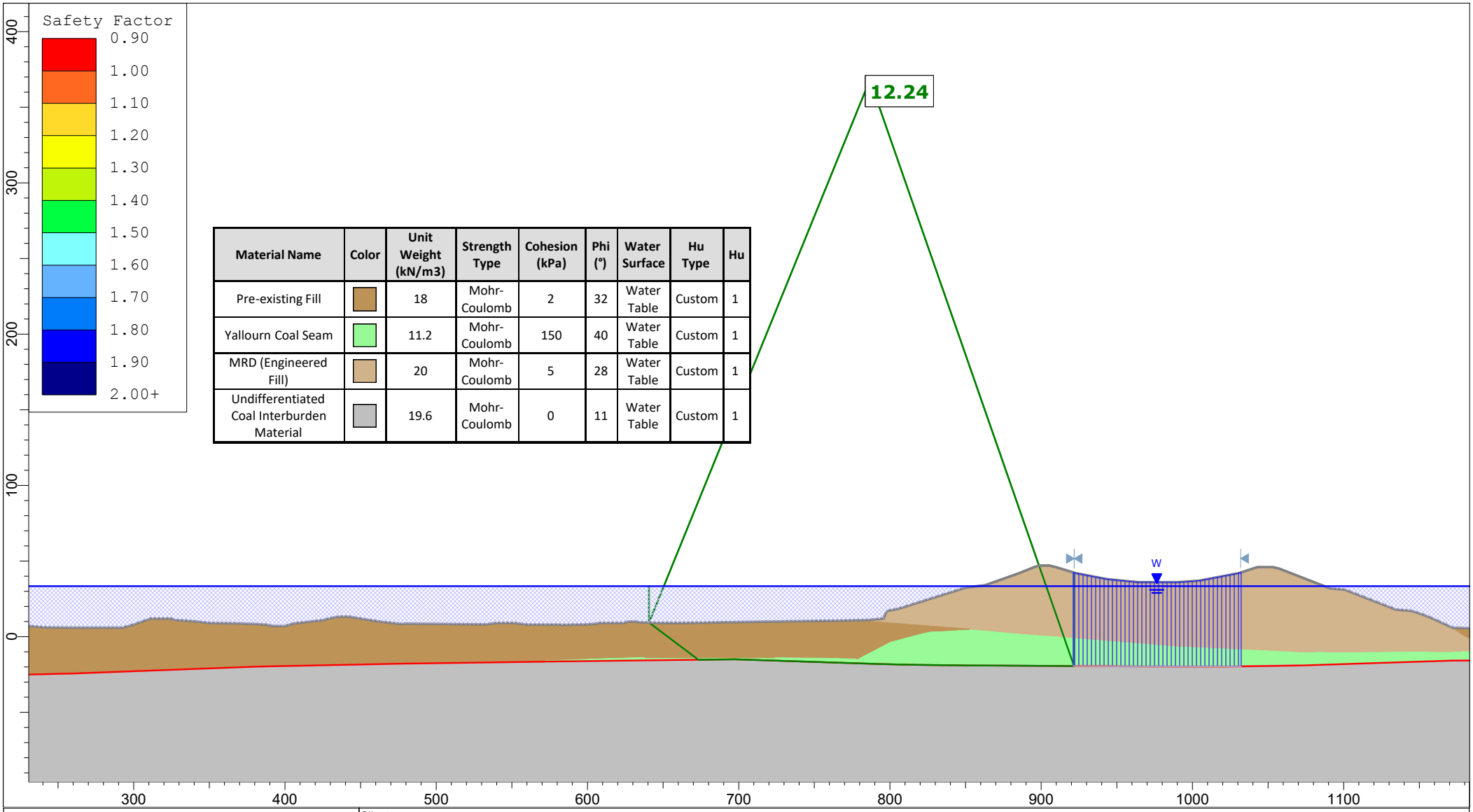
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left Failure		



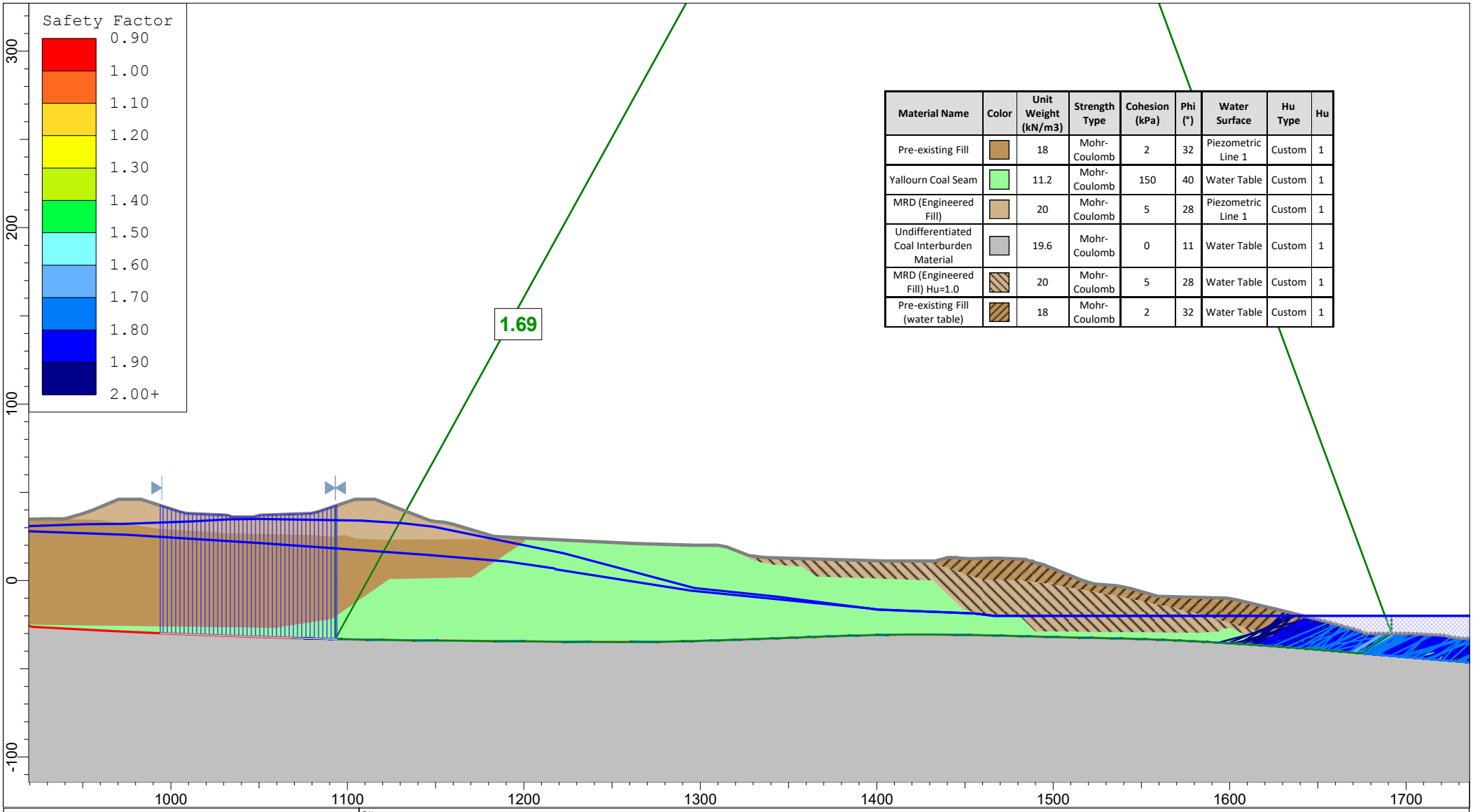
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left Failure		



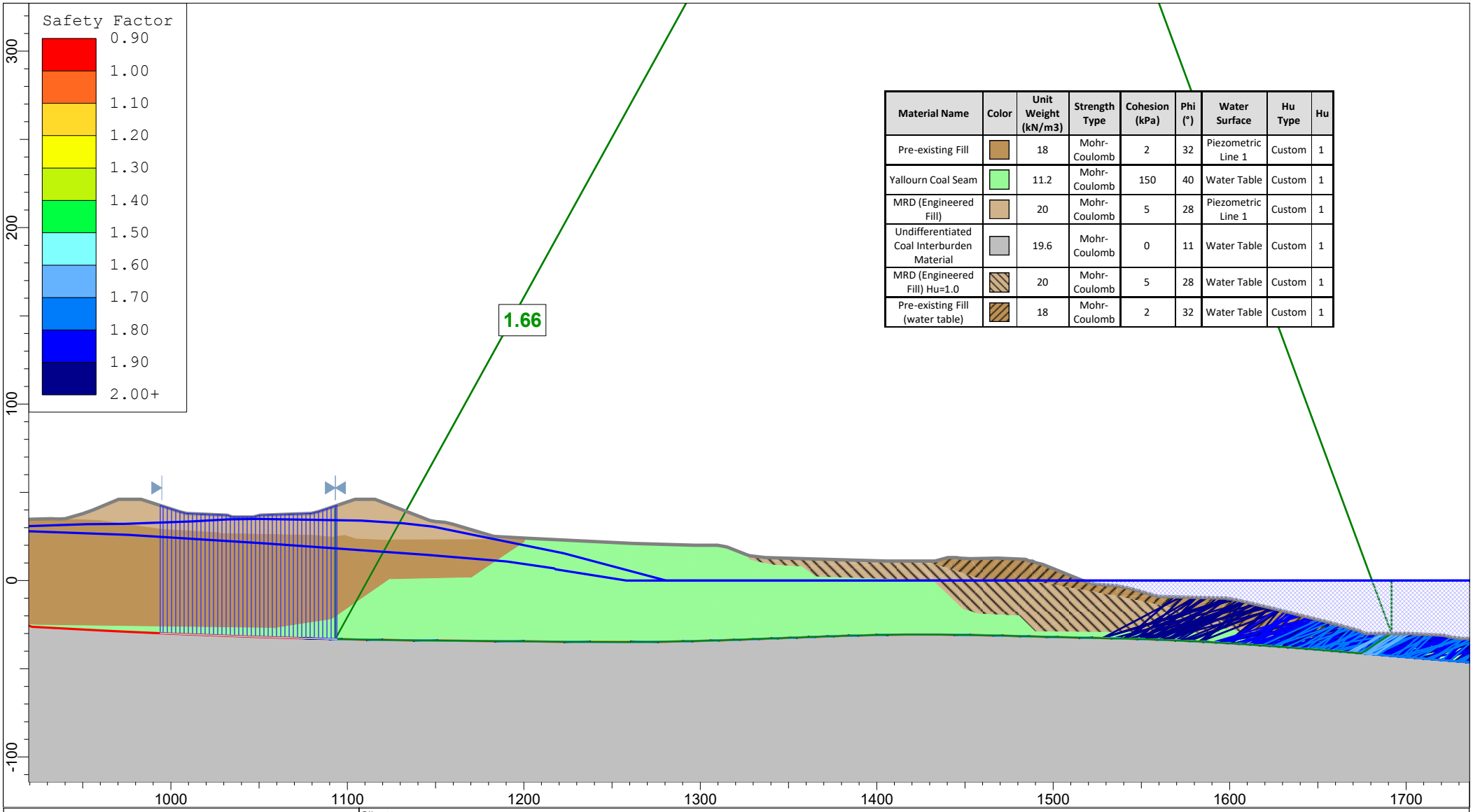
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left Failure		



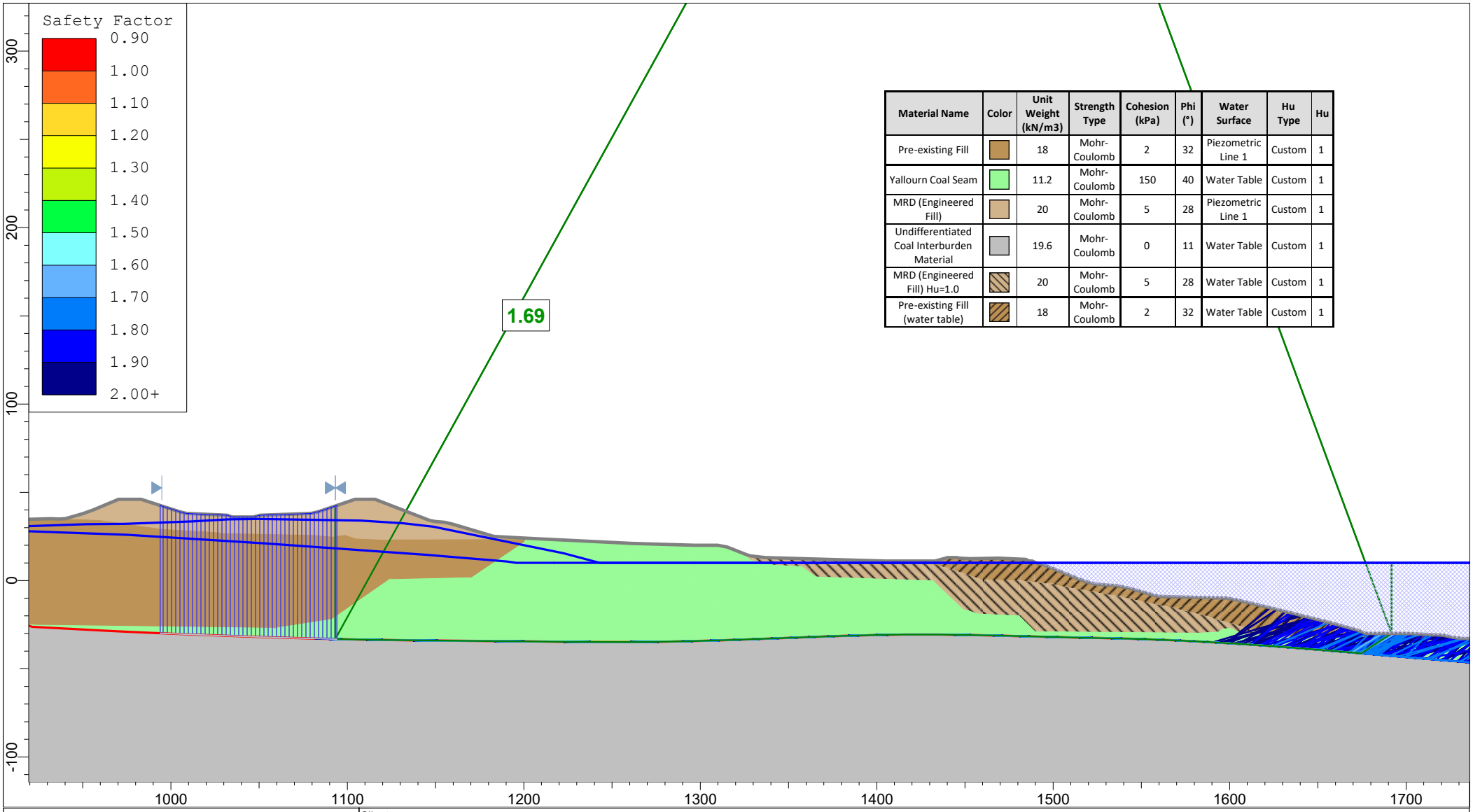
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



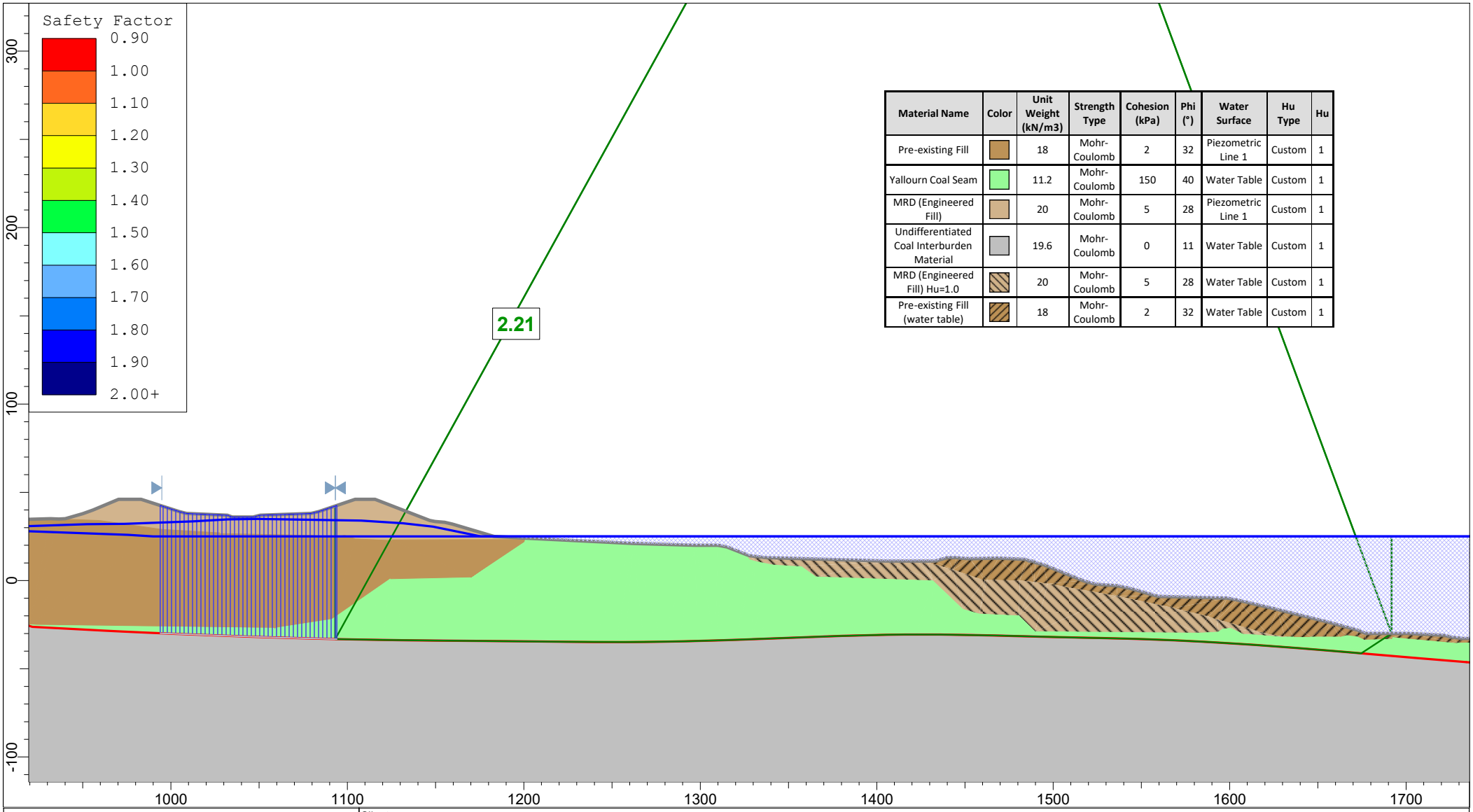
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



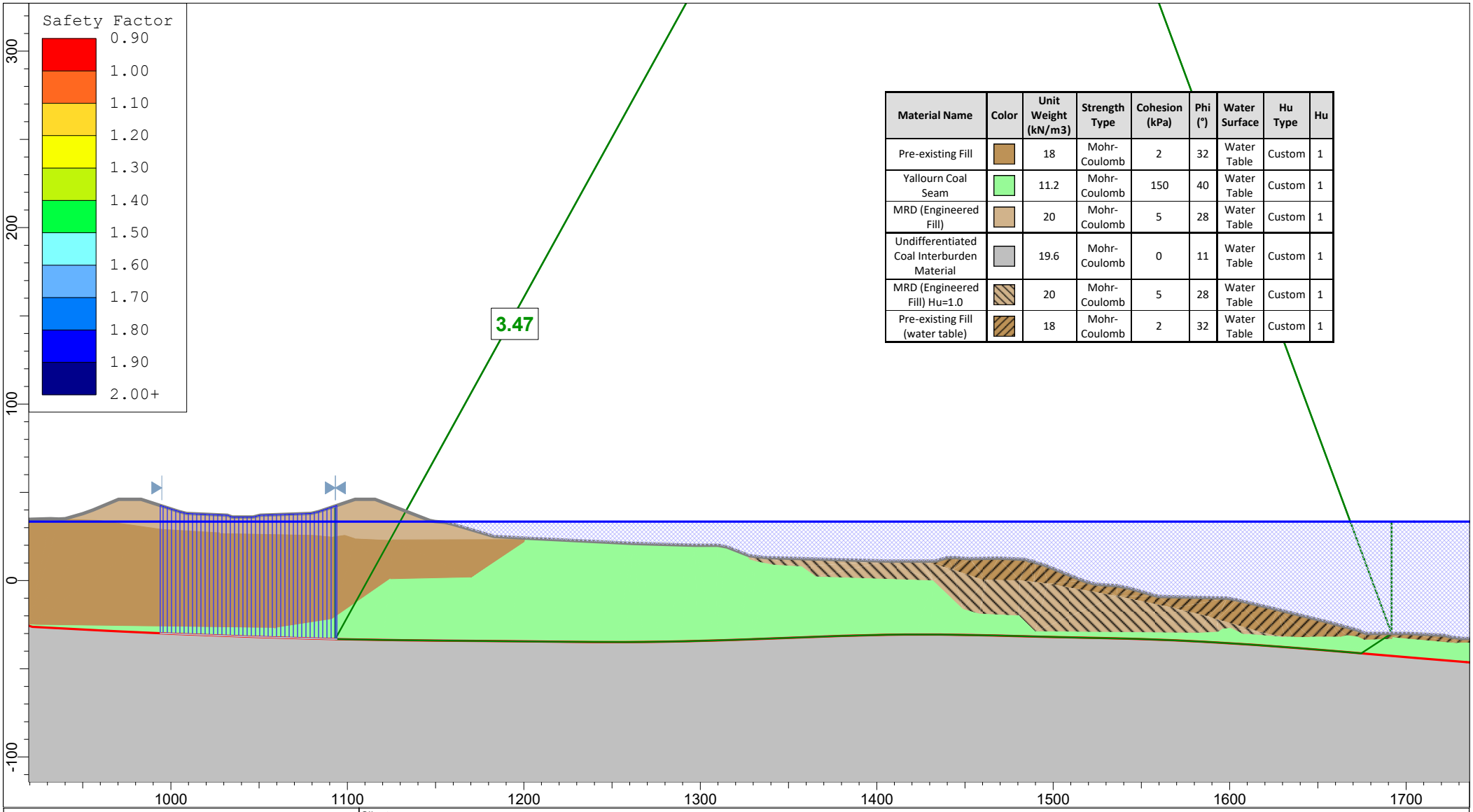
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



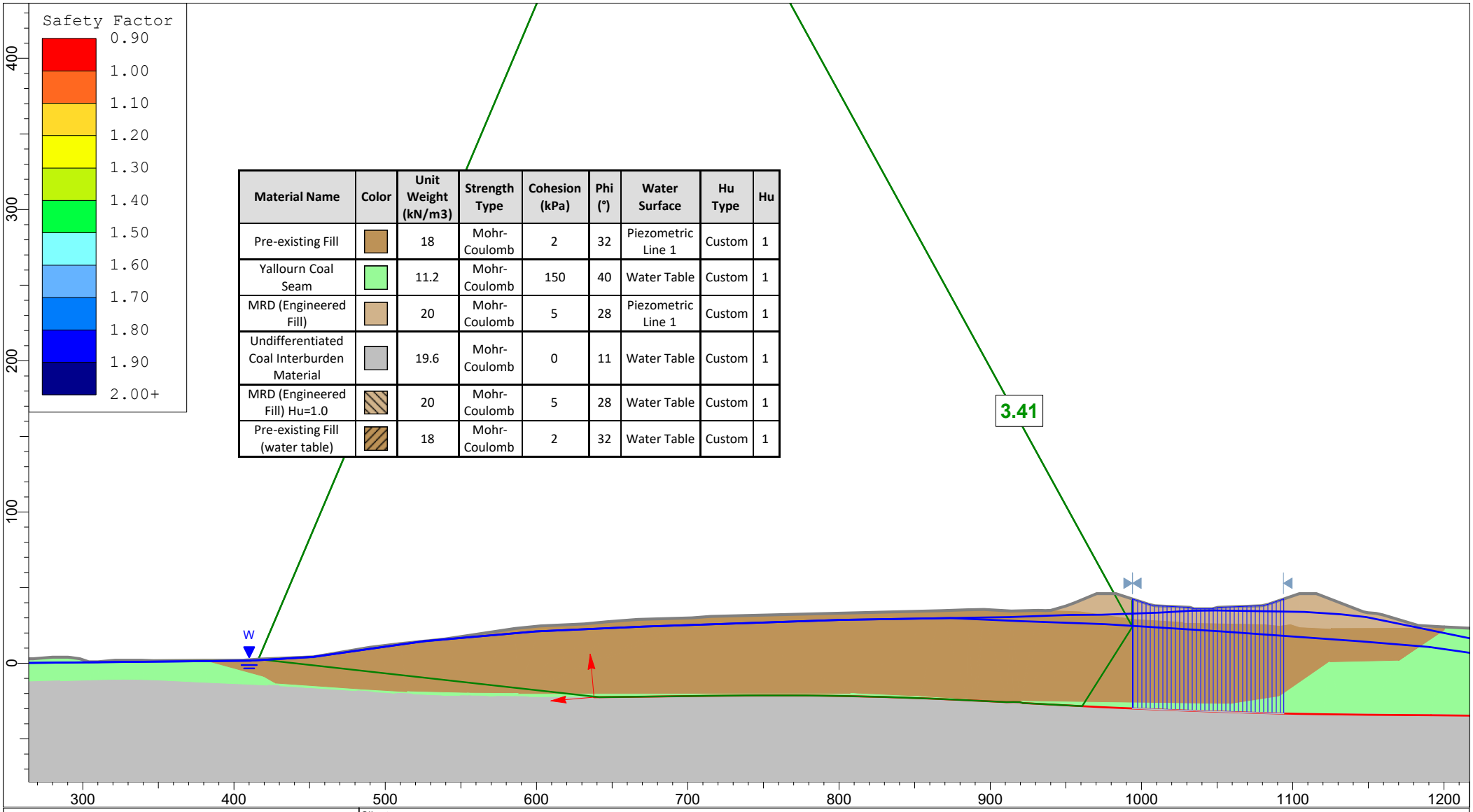
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



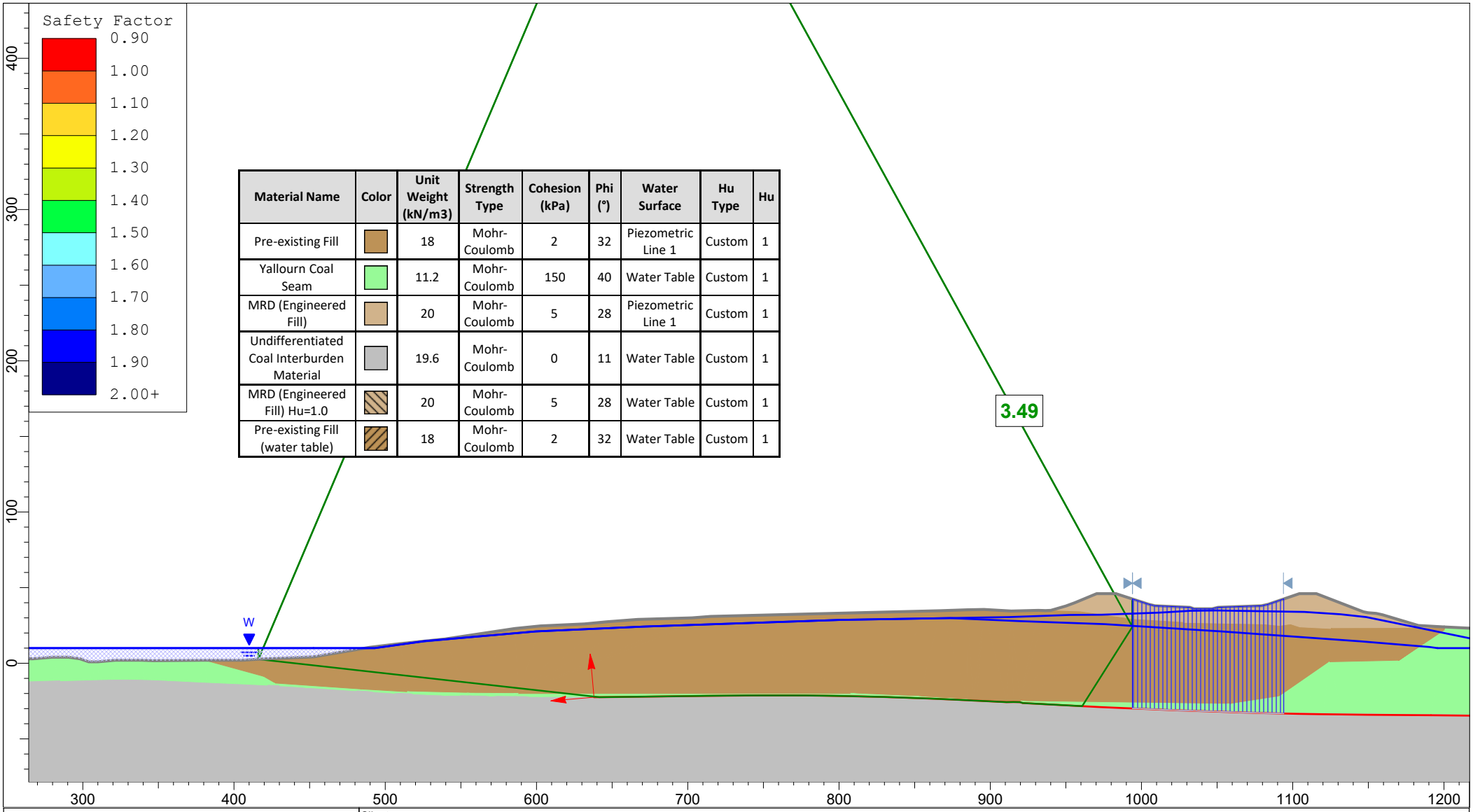
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



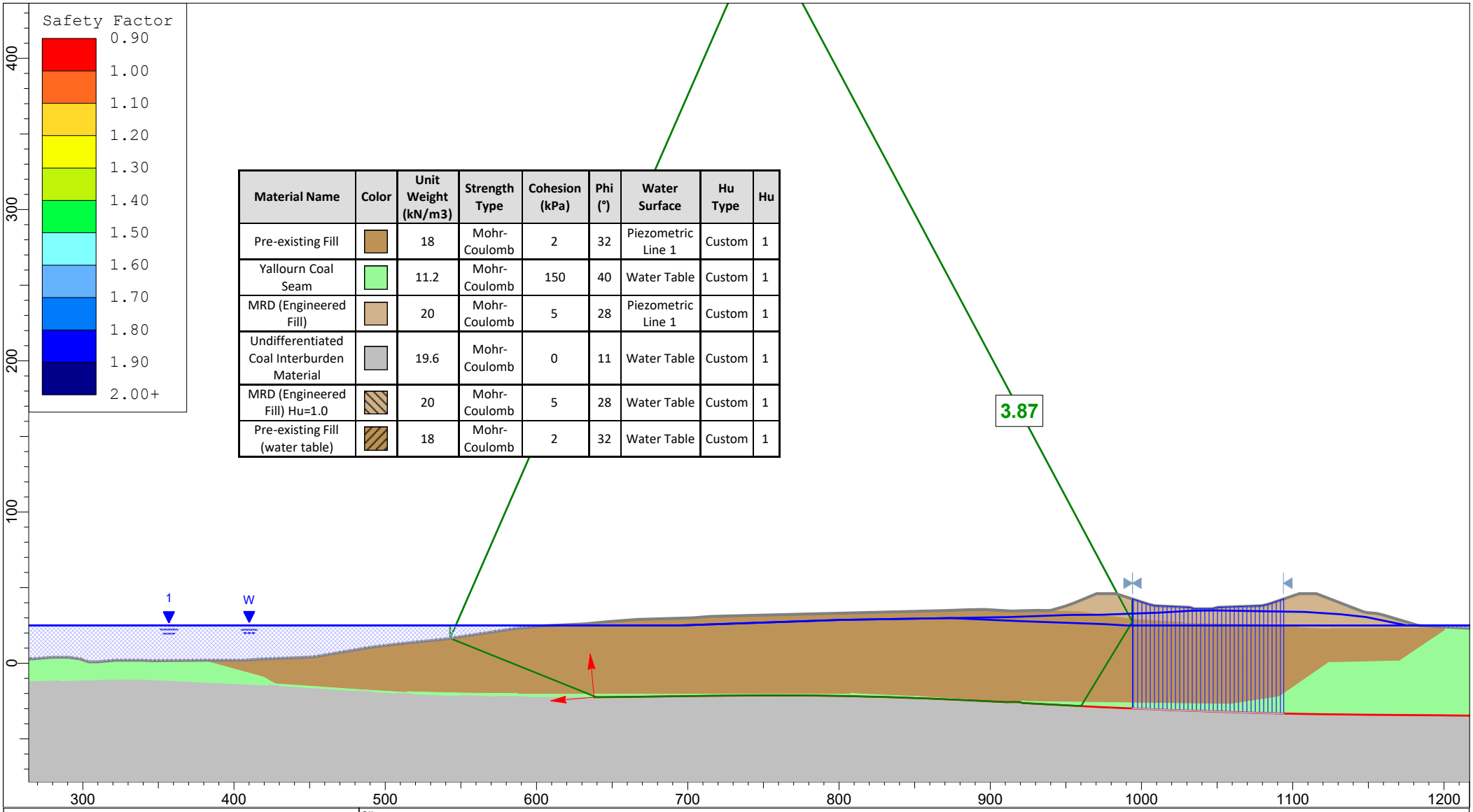
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left		



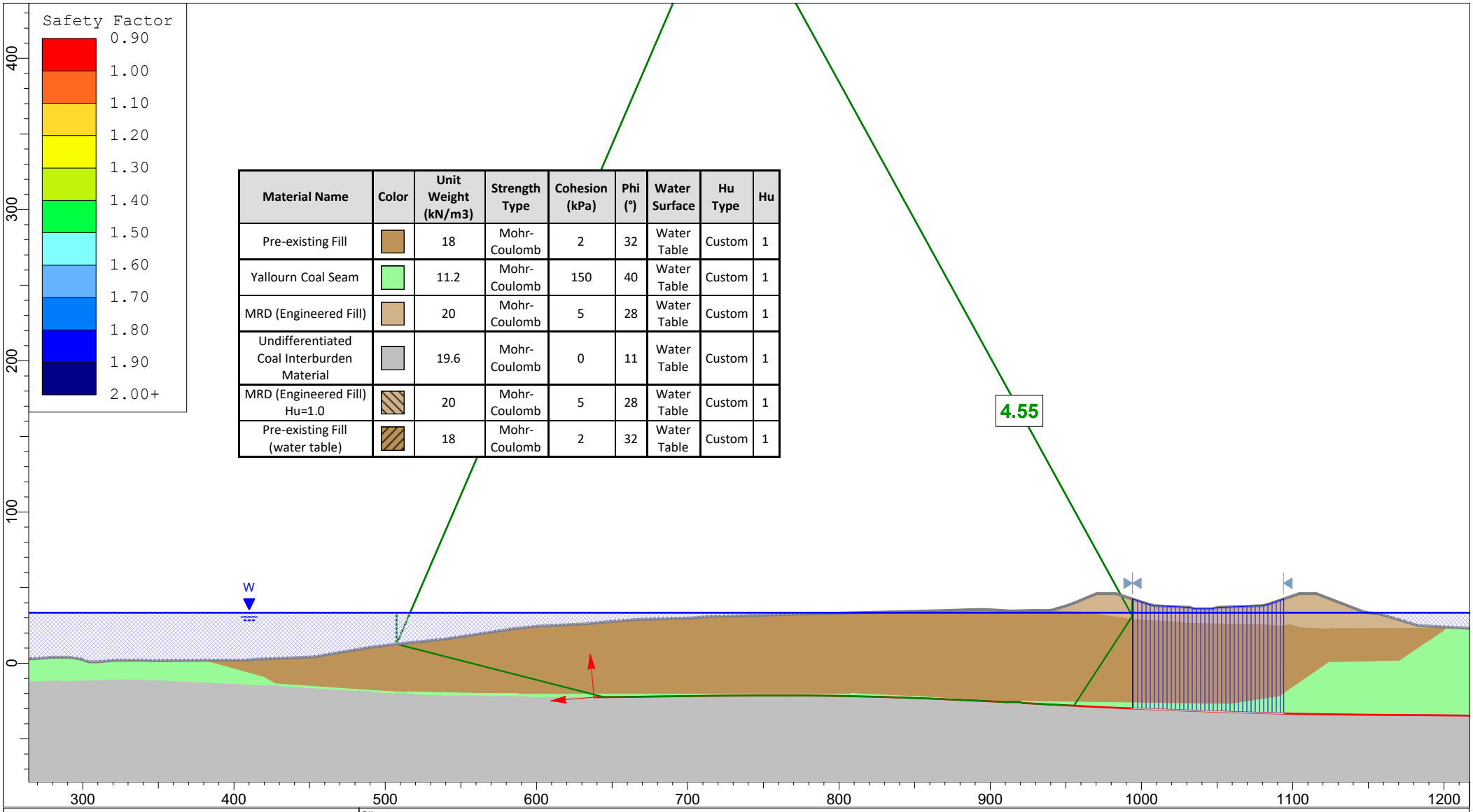
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left		



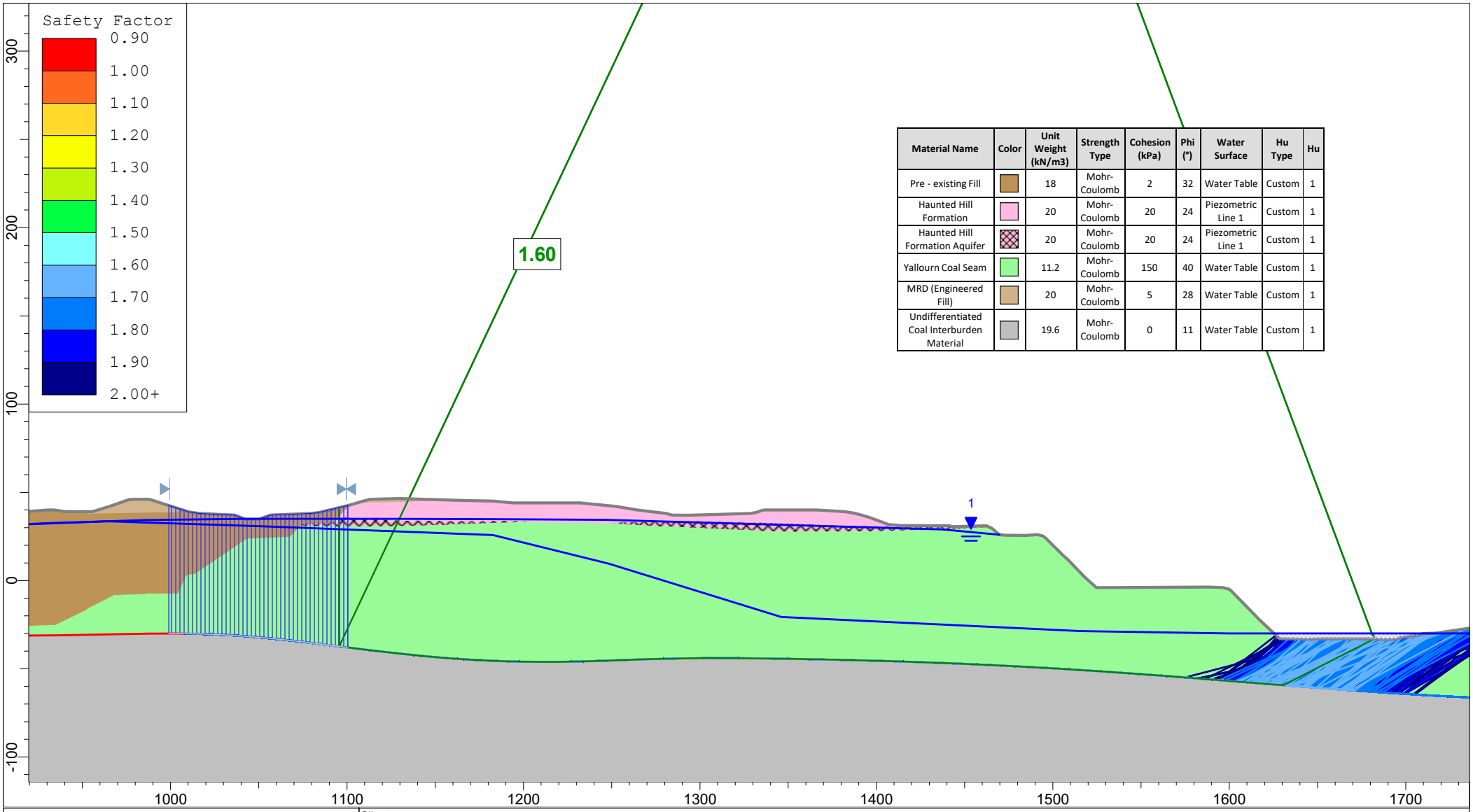
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left		



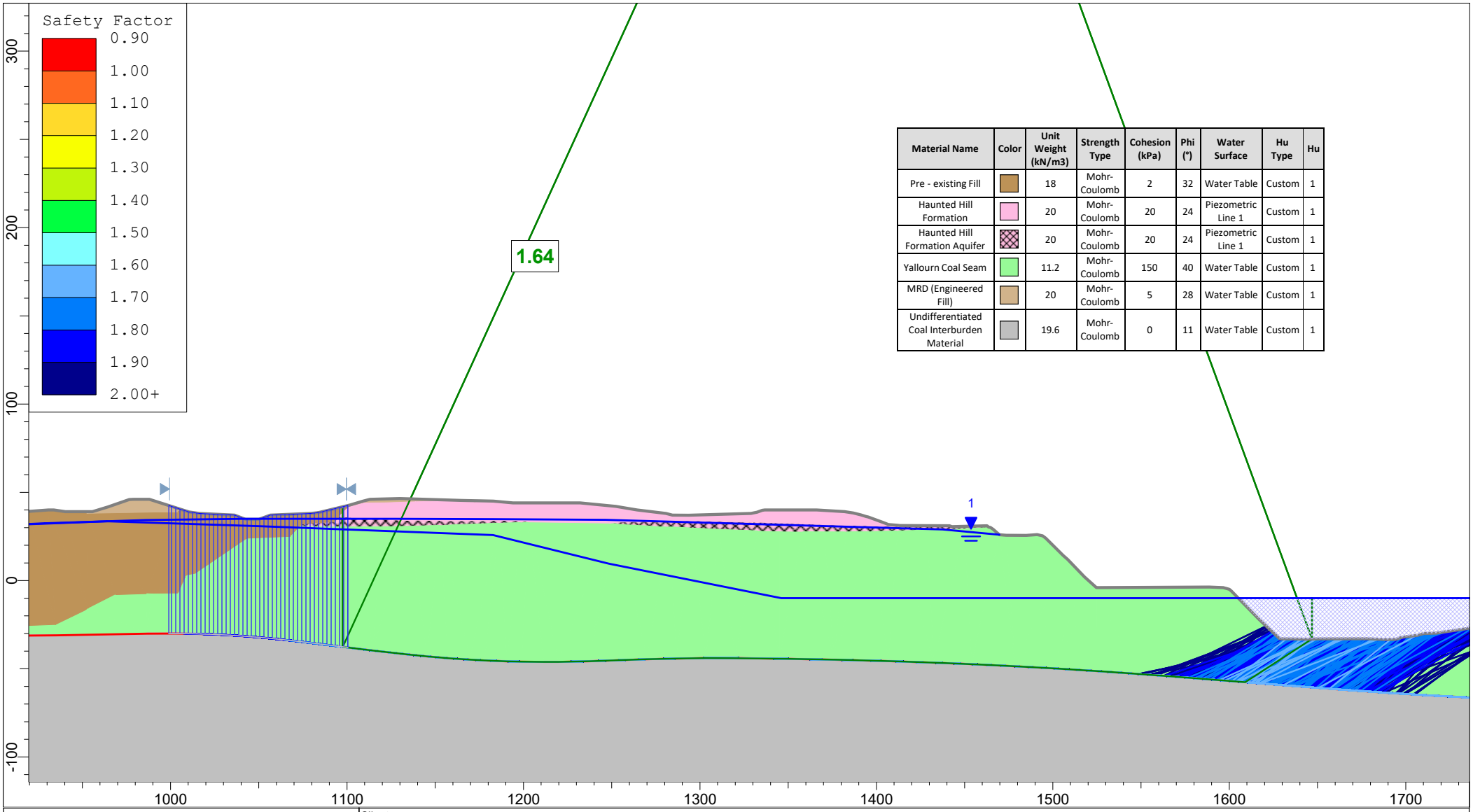
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left		



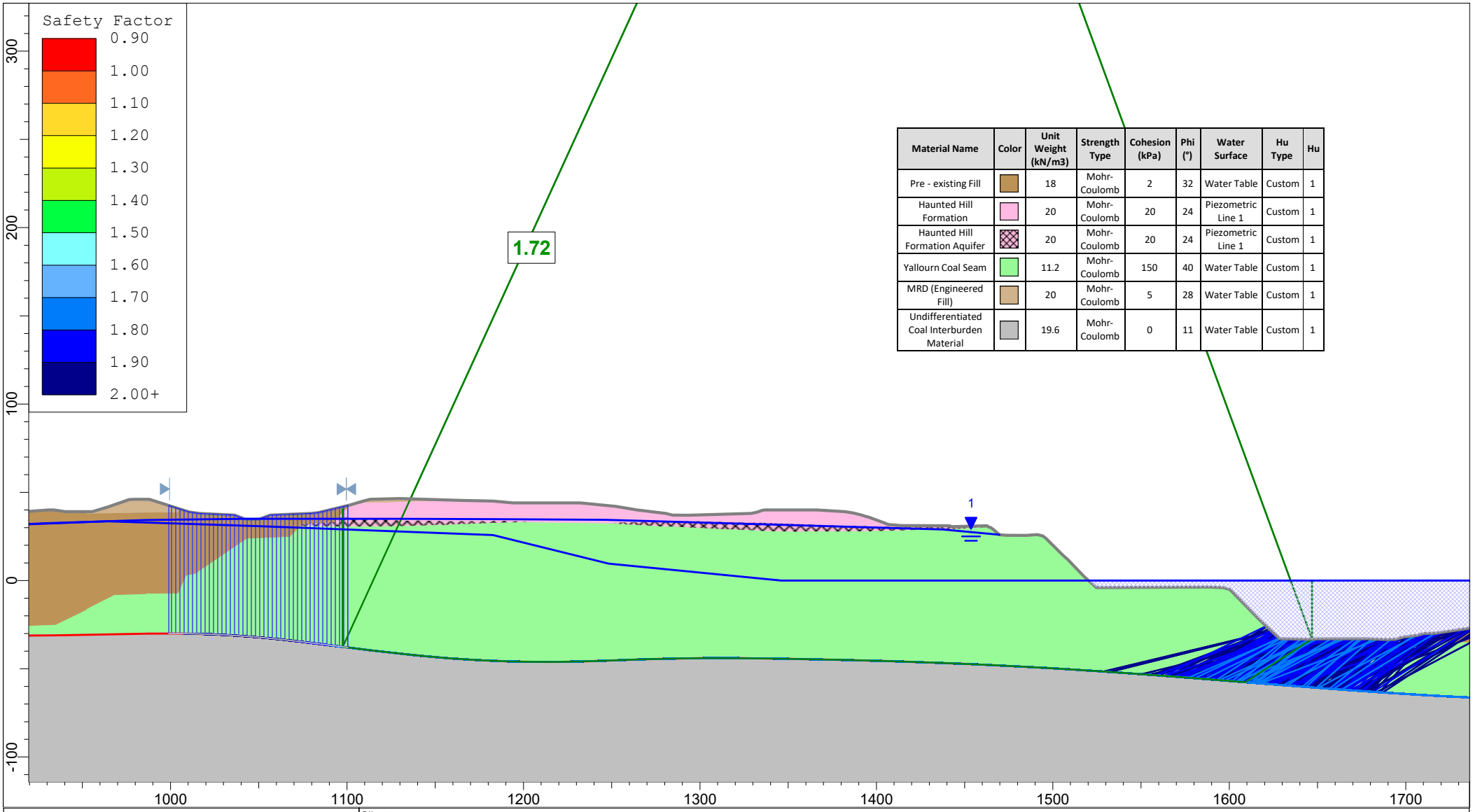
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -30 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



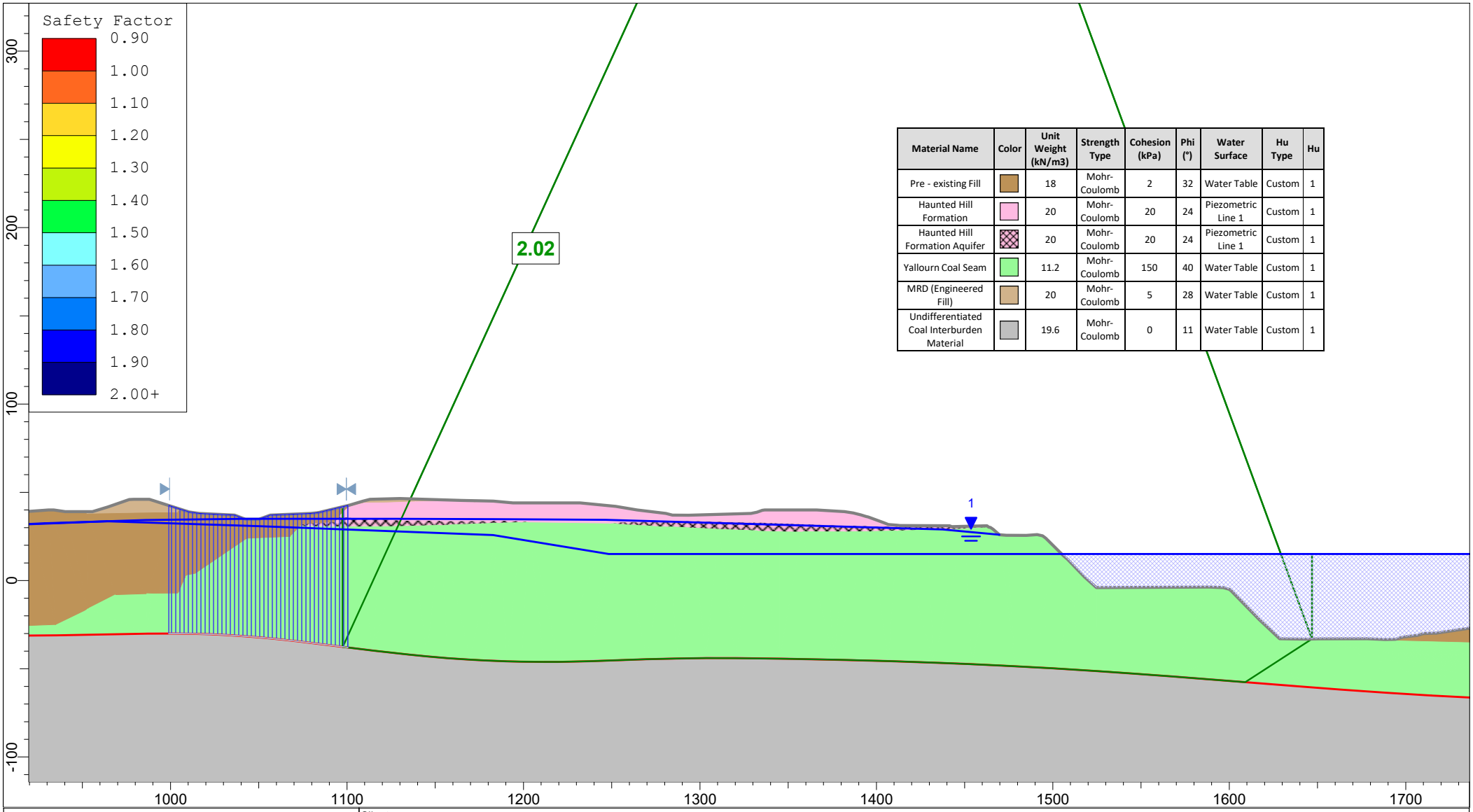
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



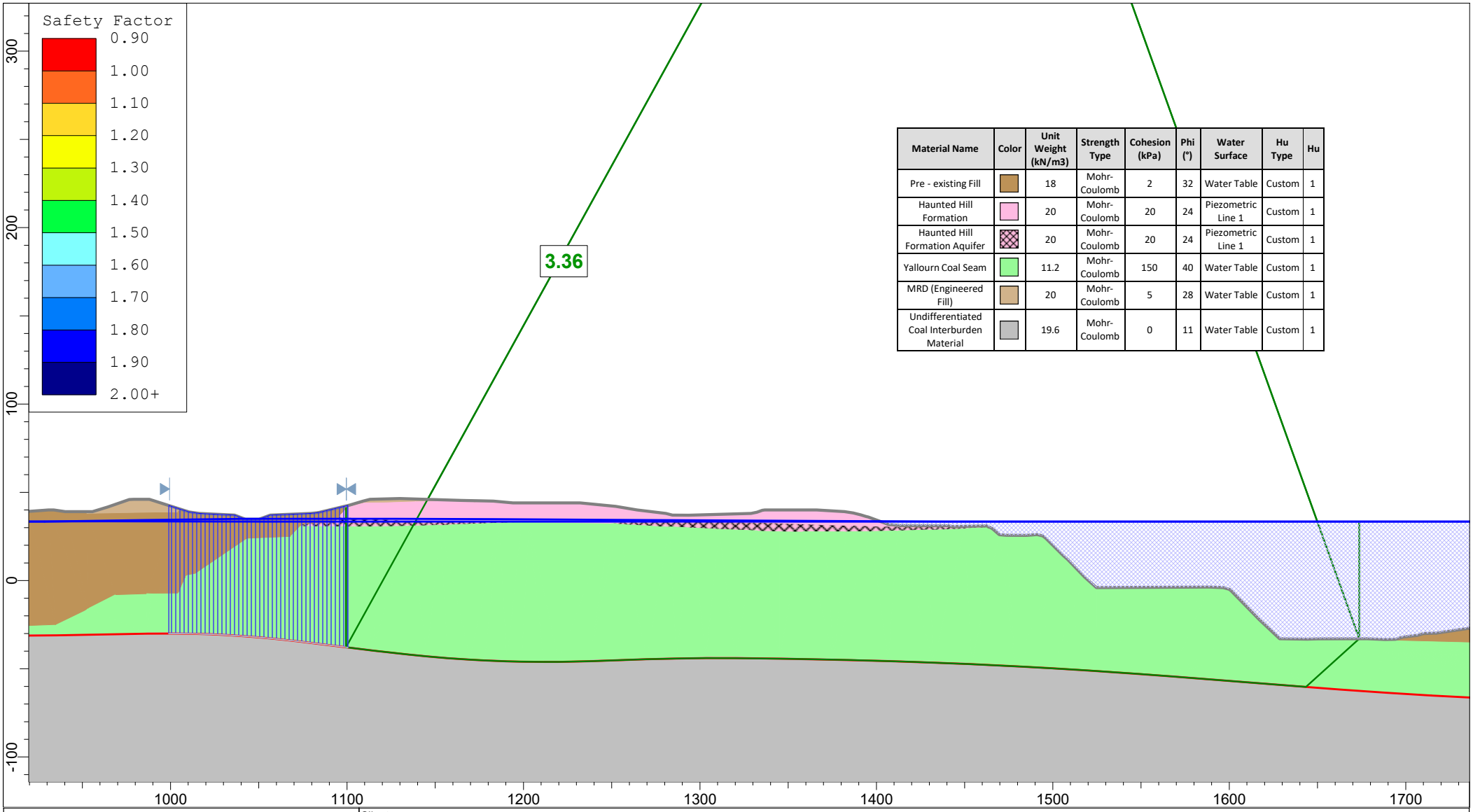
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



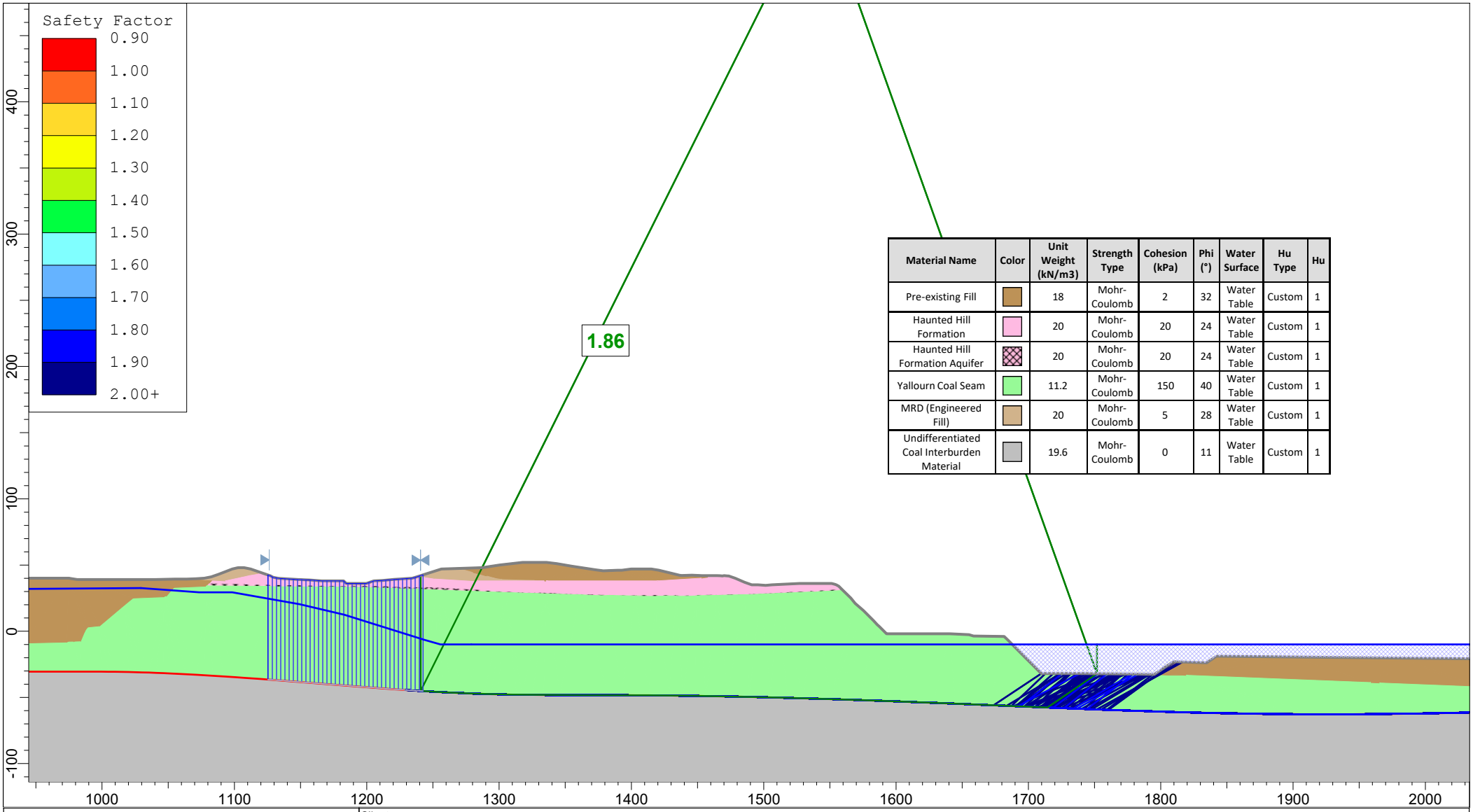
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



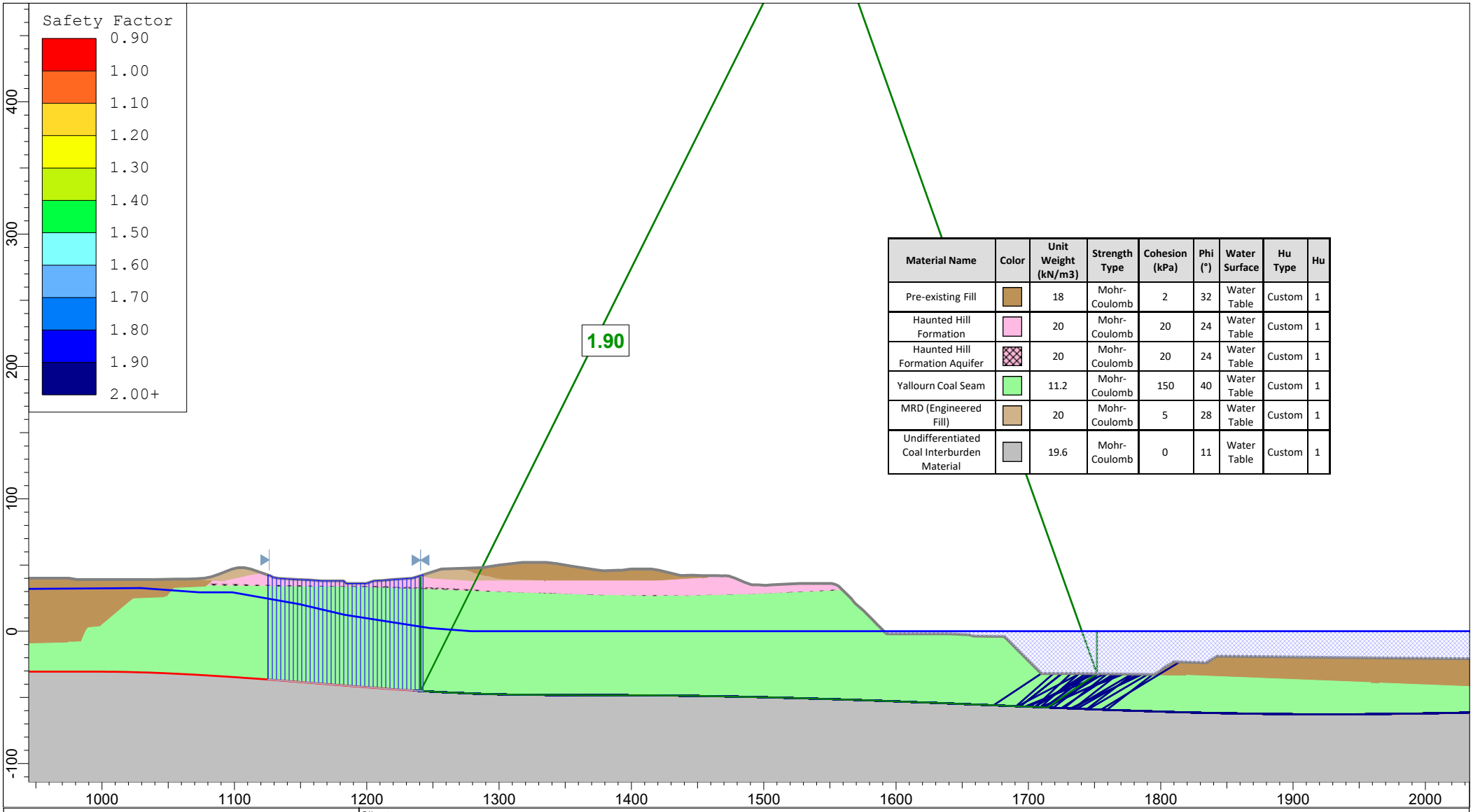
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



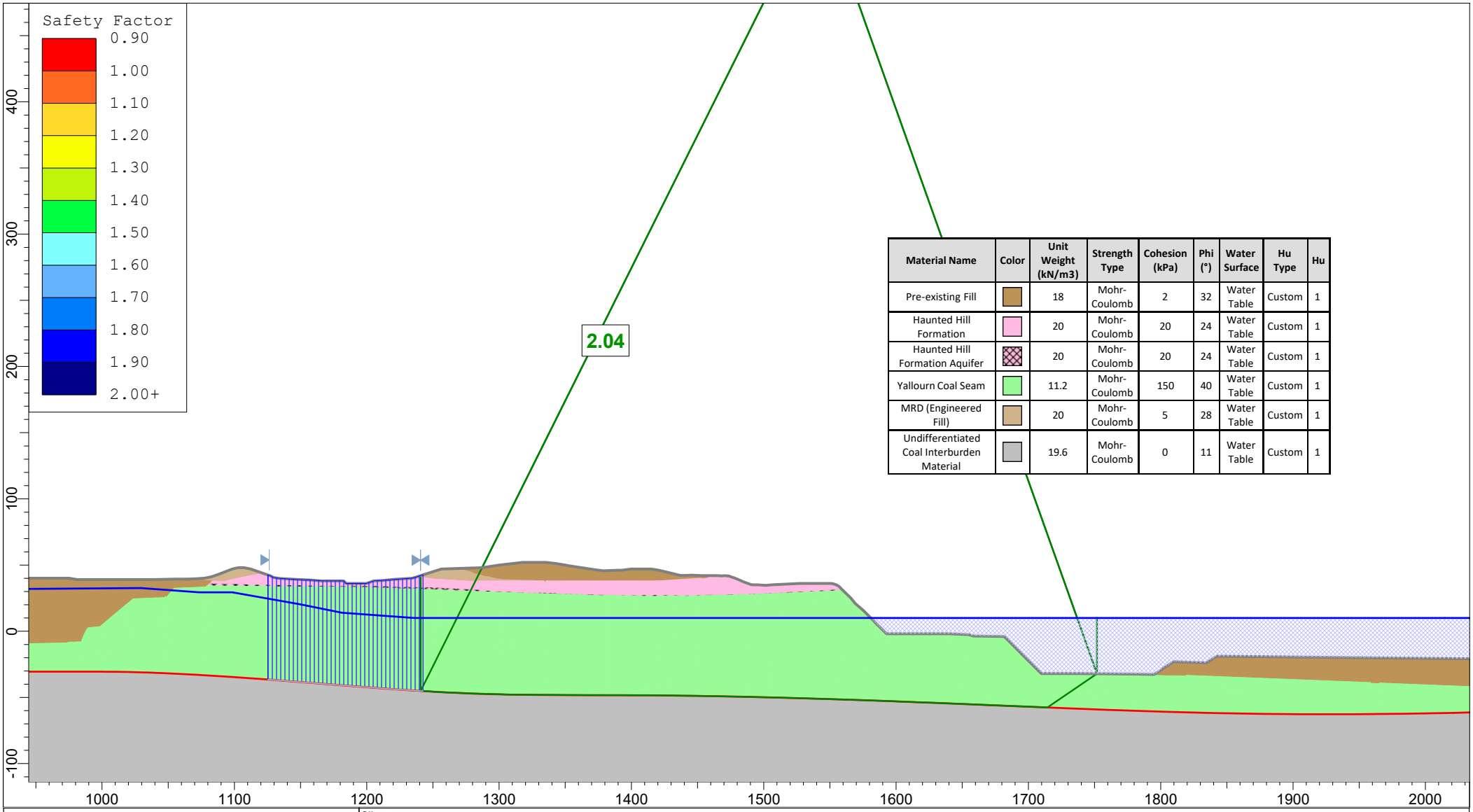
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



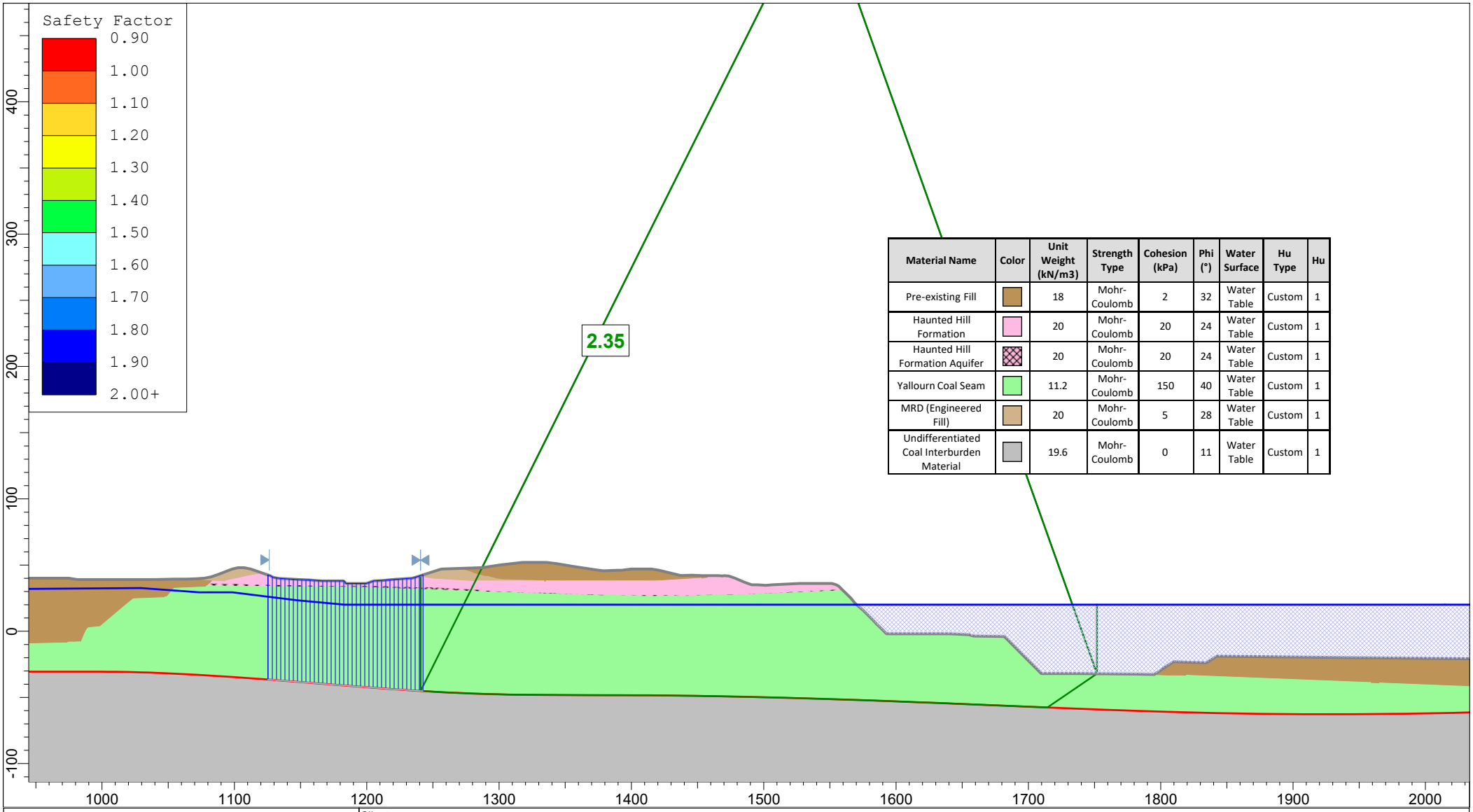
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



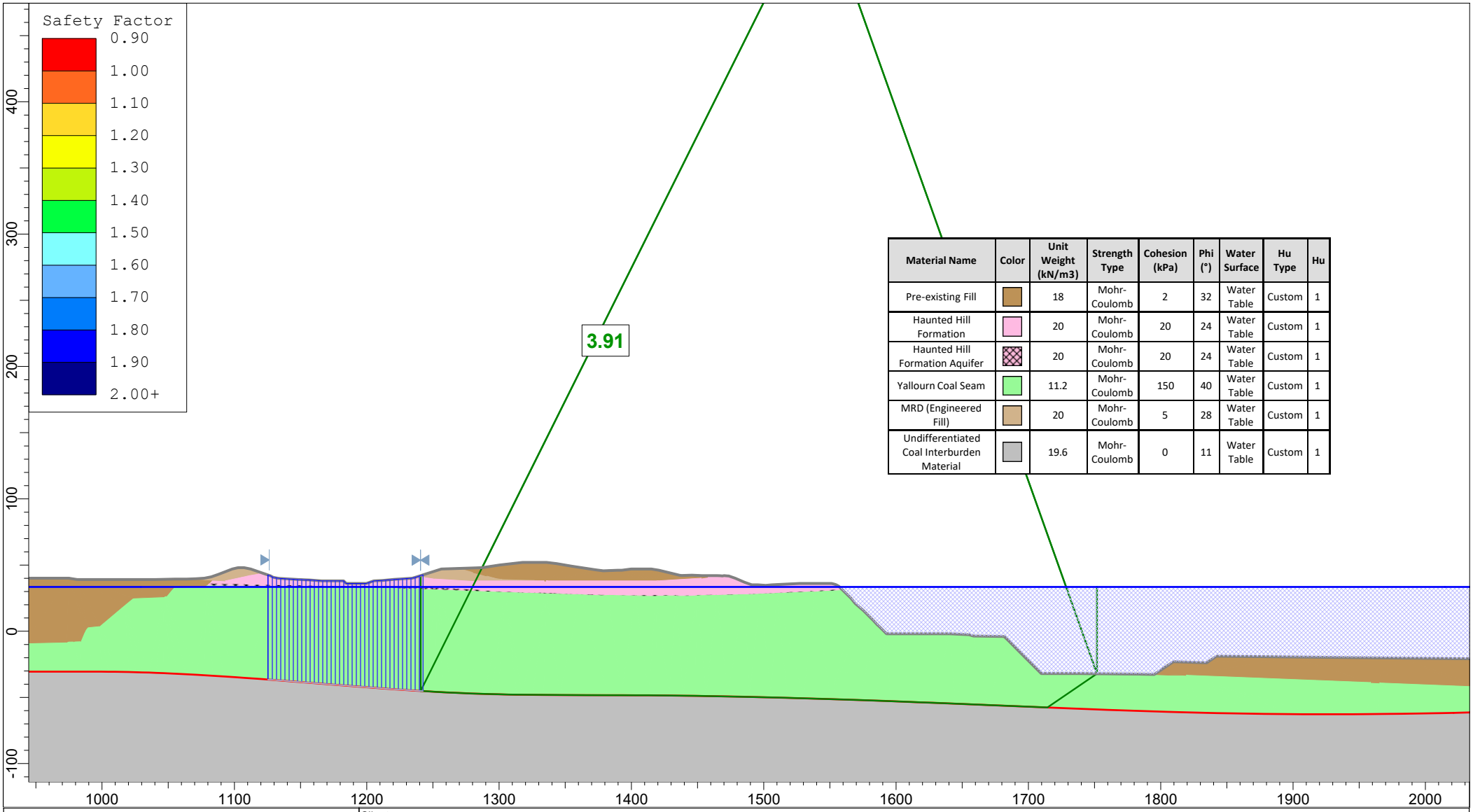
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



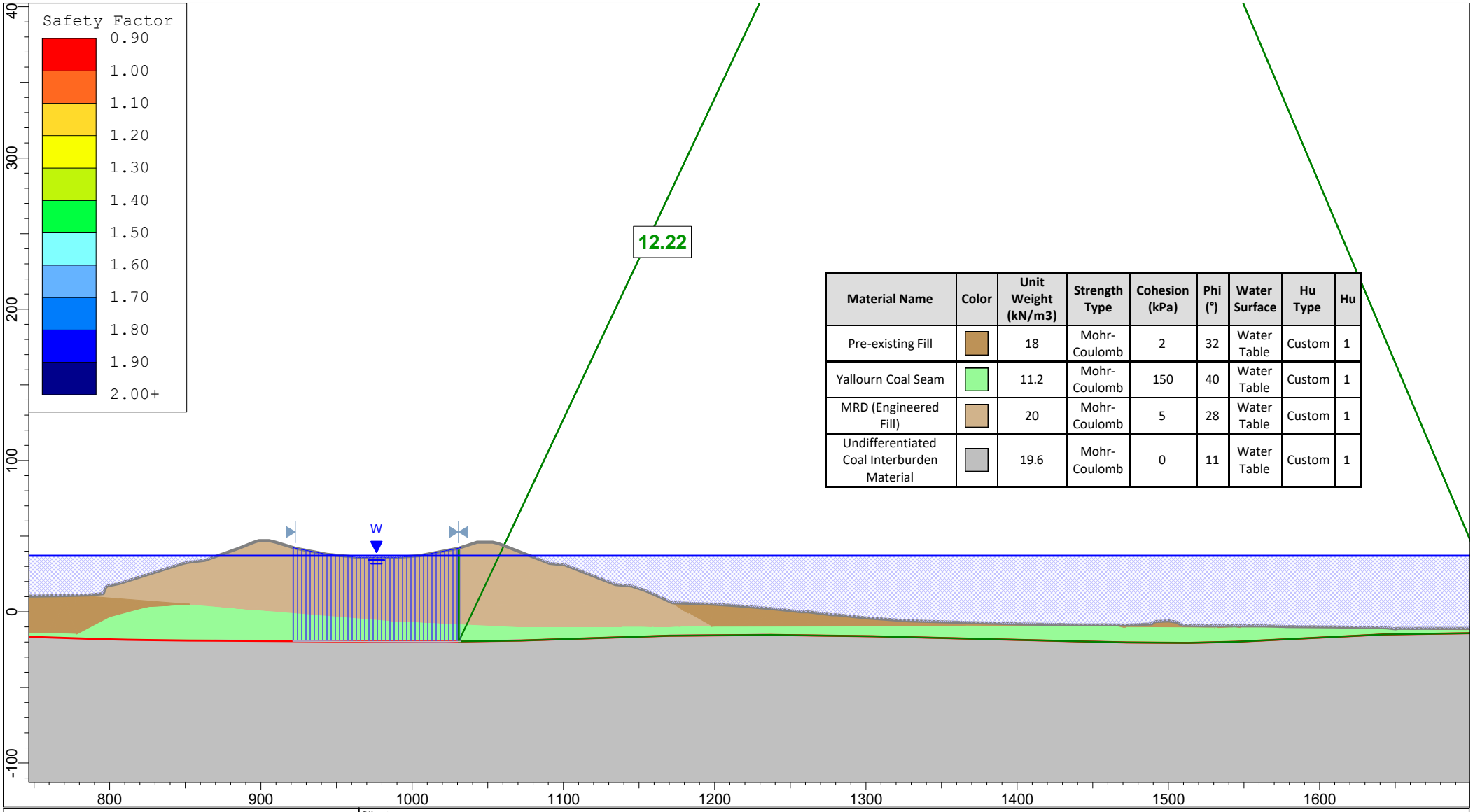
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



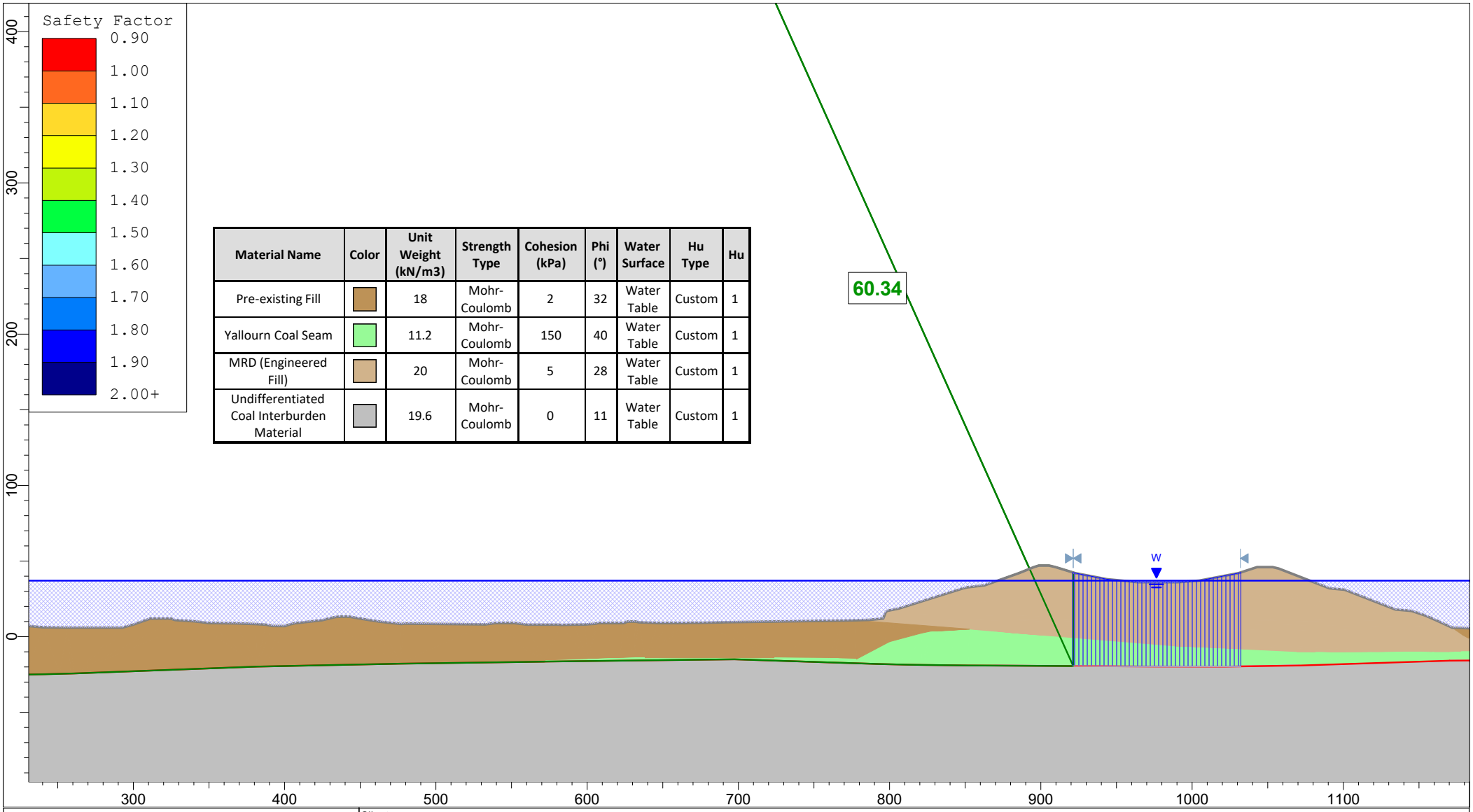
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



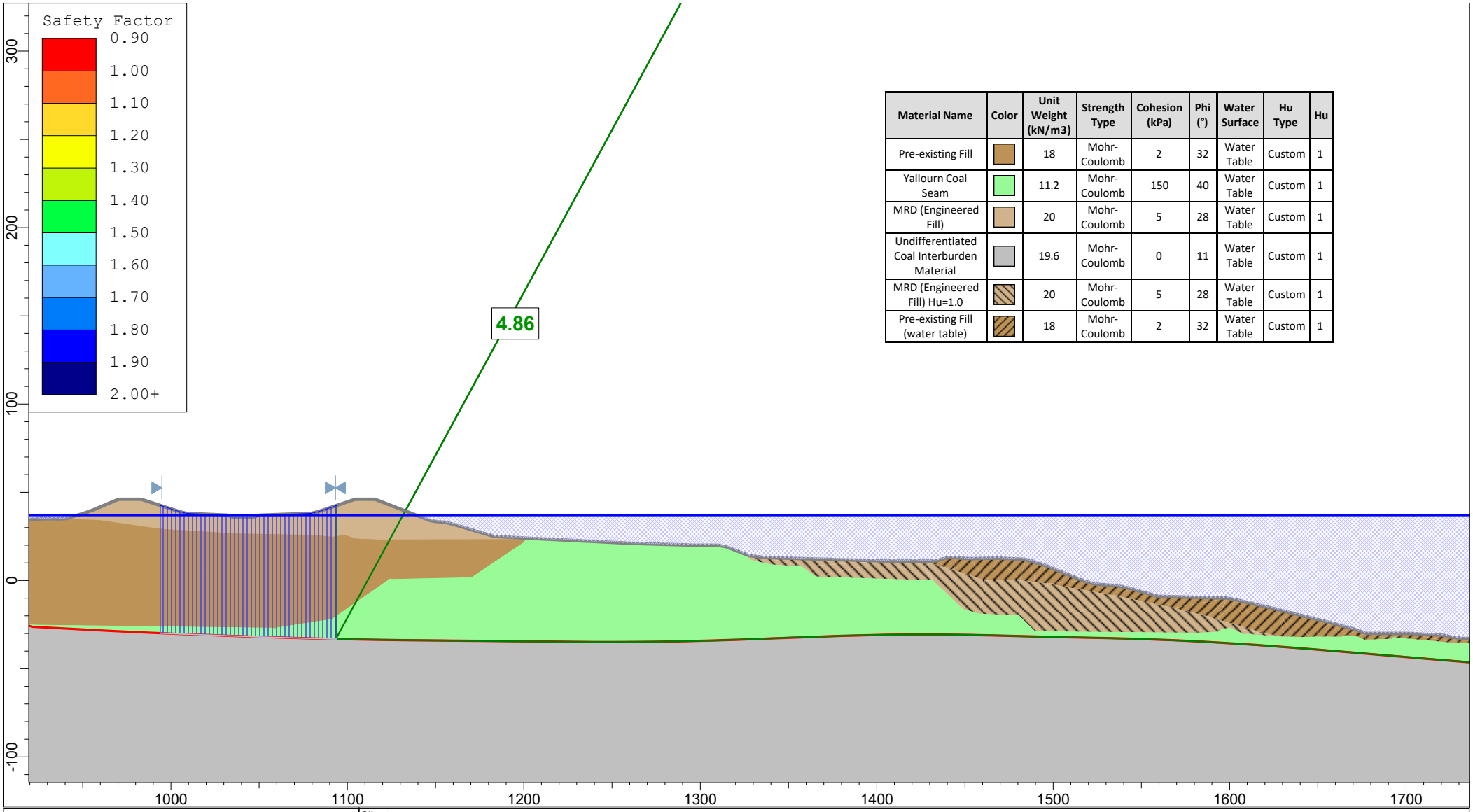
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



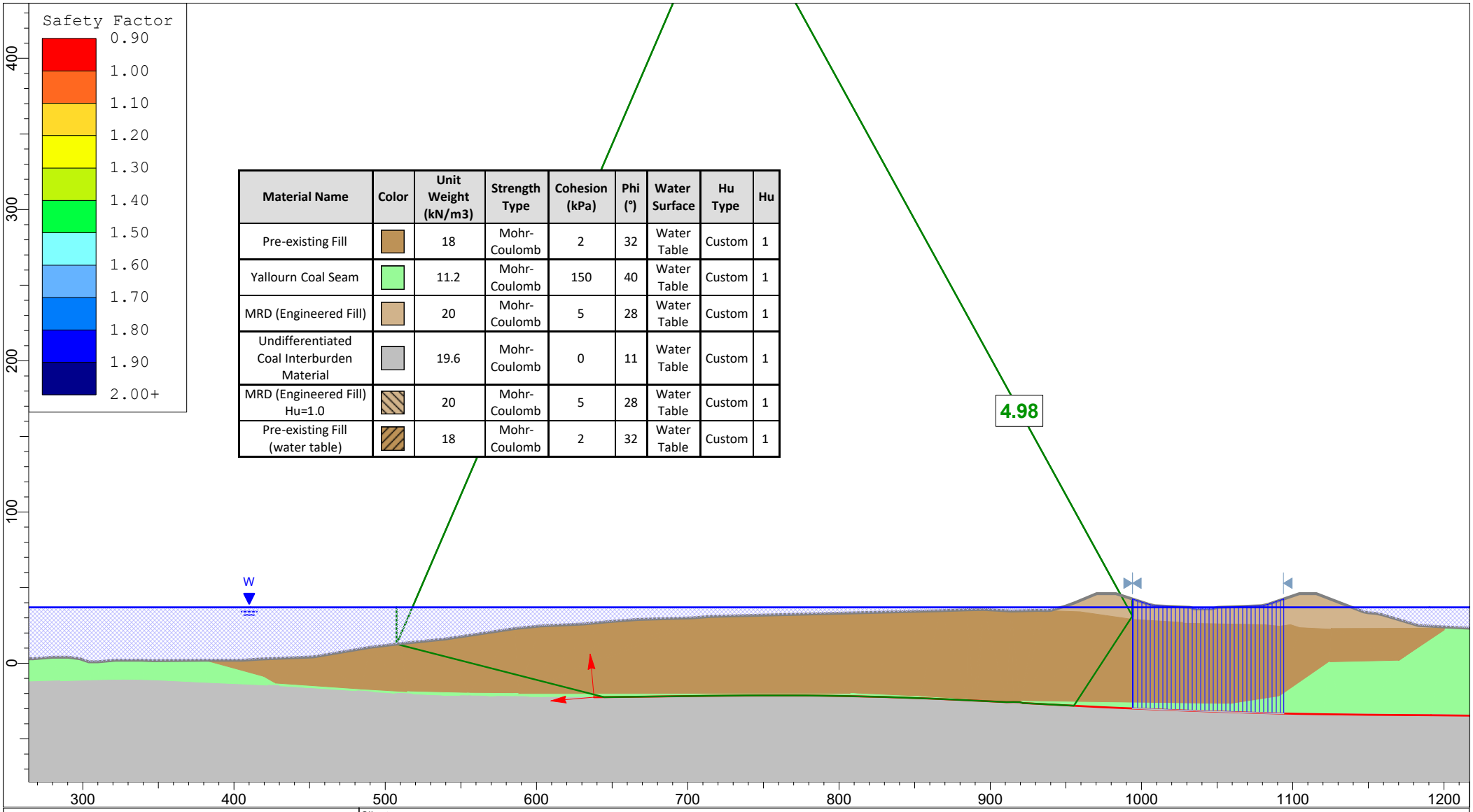
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left Failure		



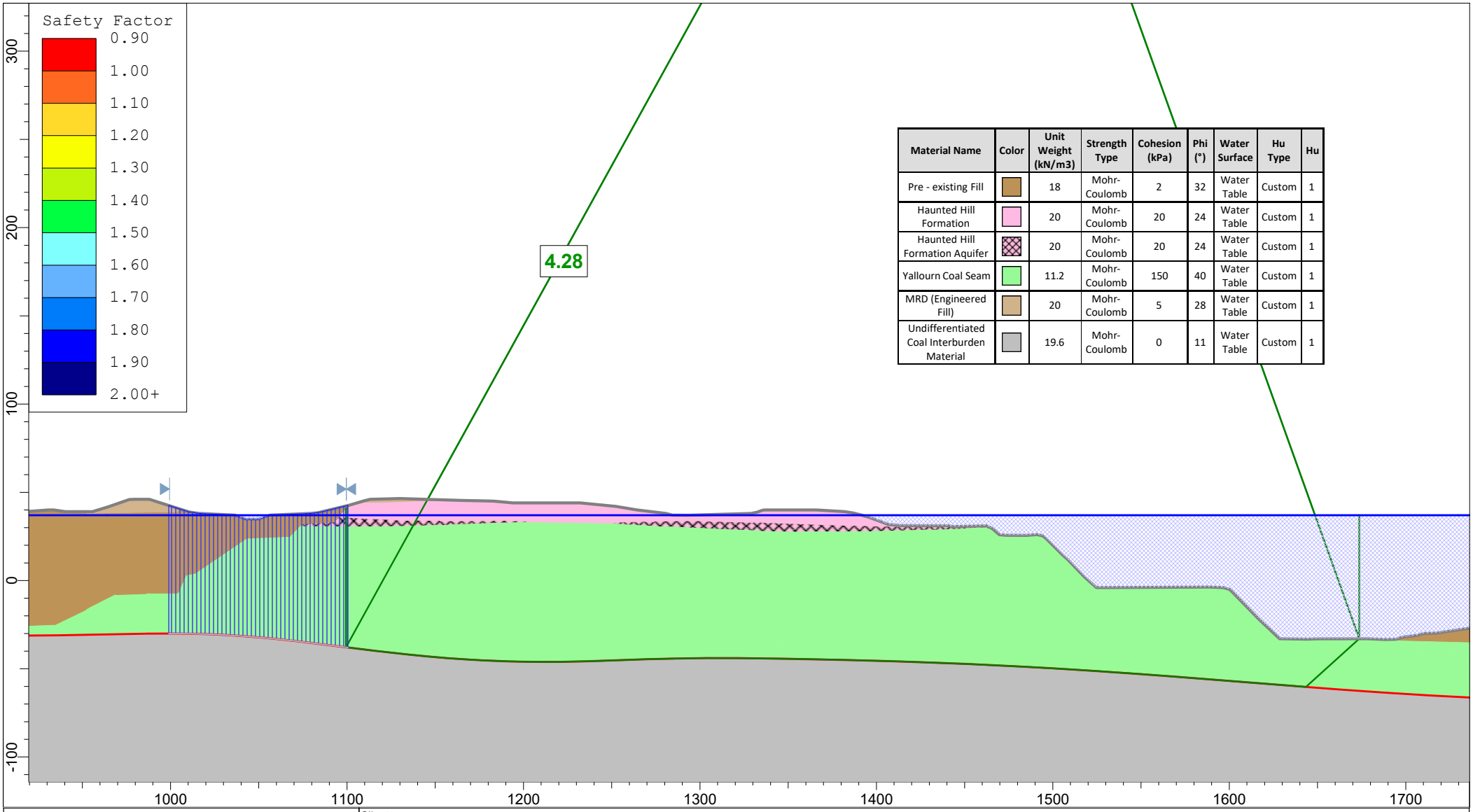
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



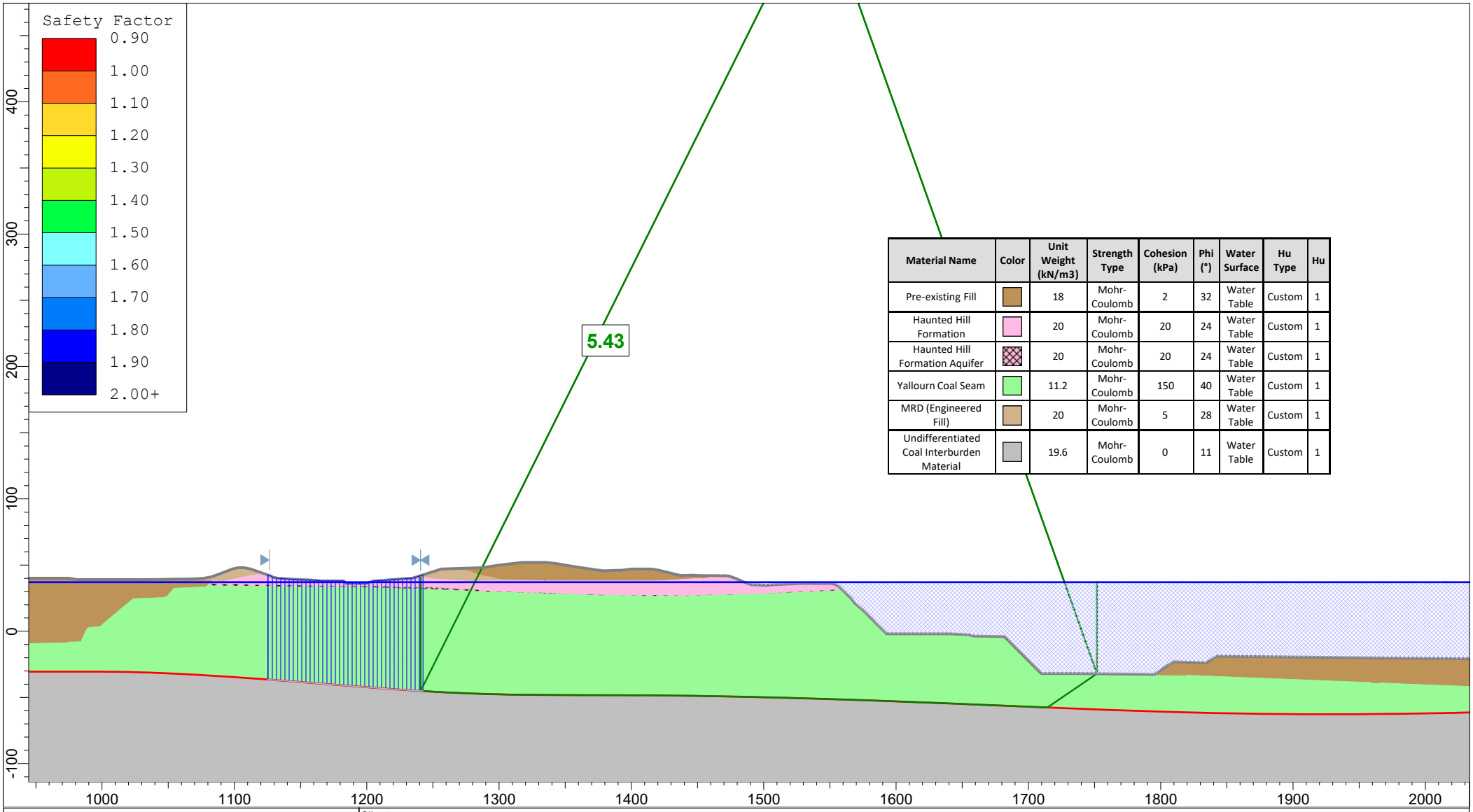
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface - Right To Left		



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

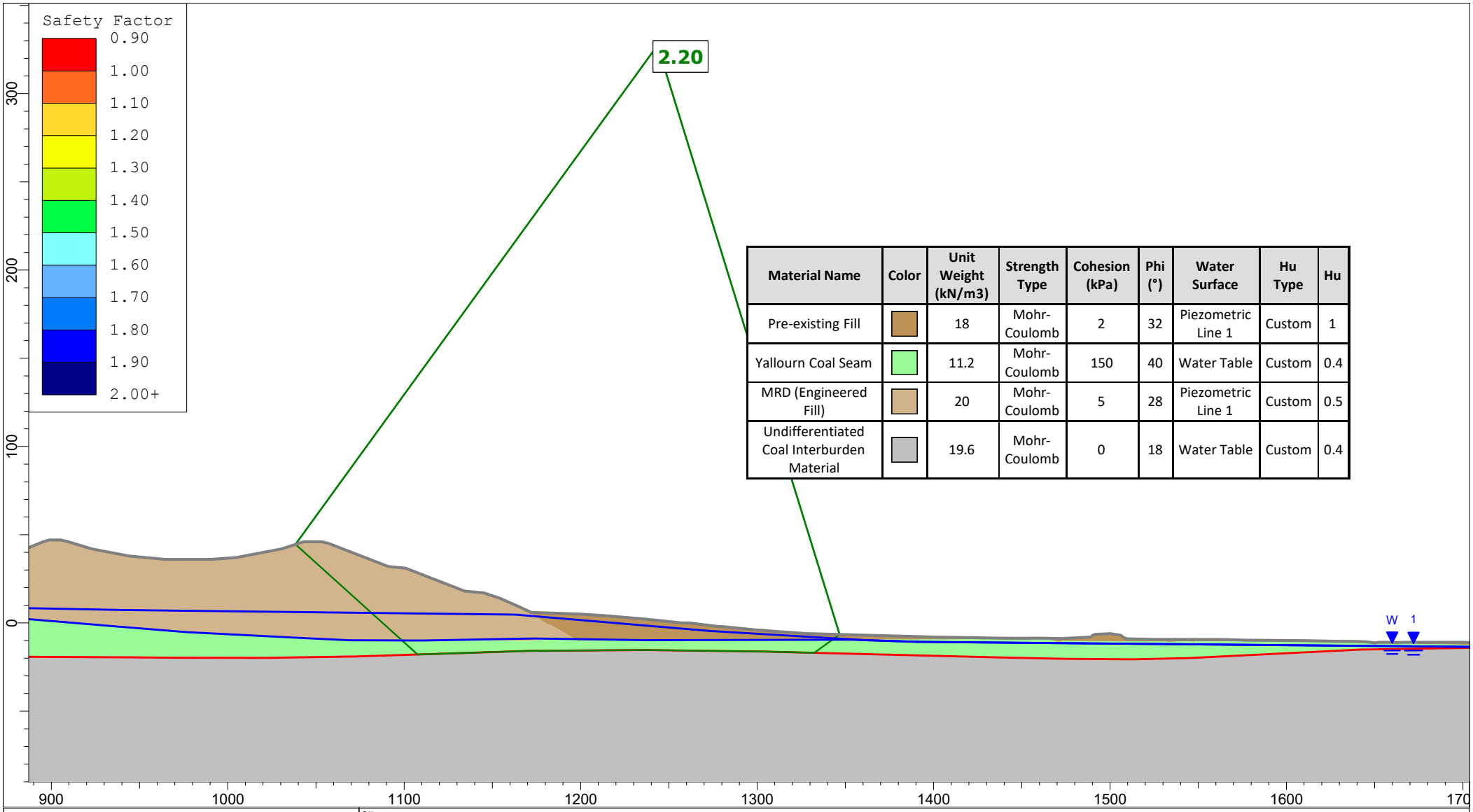
Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

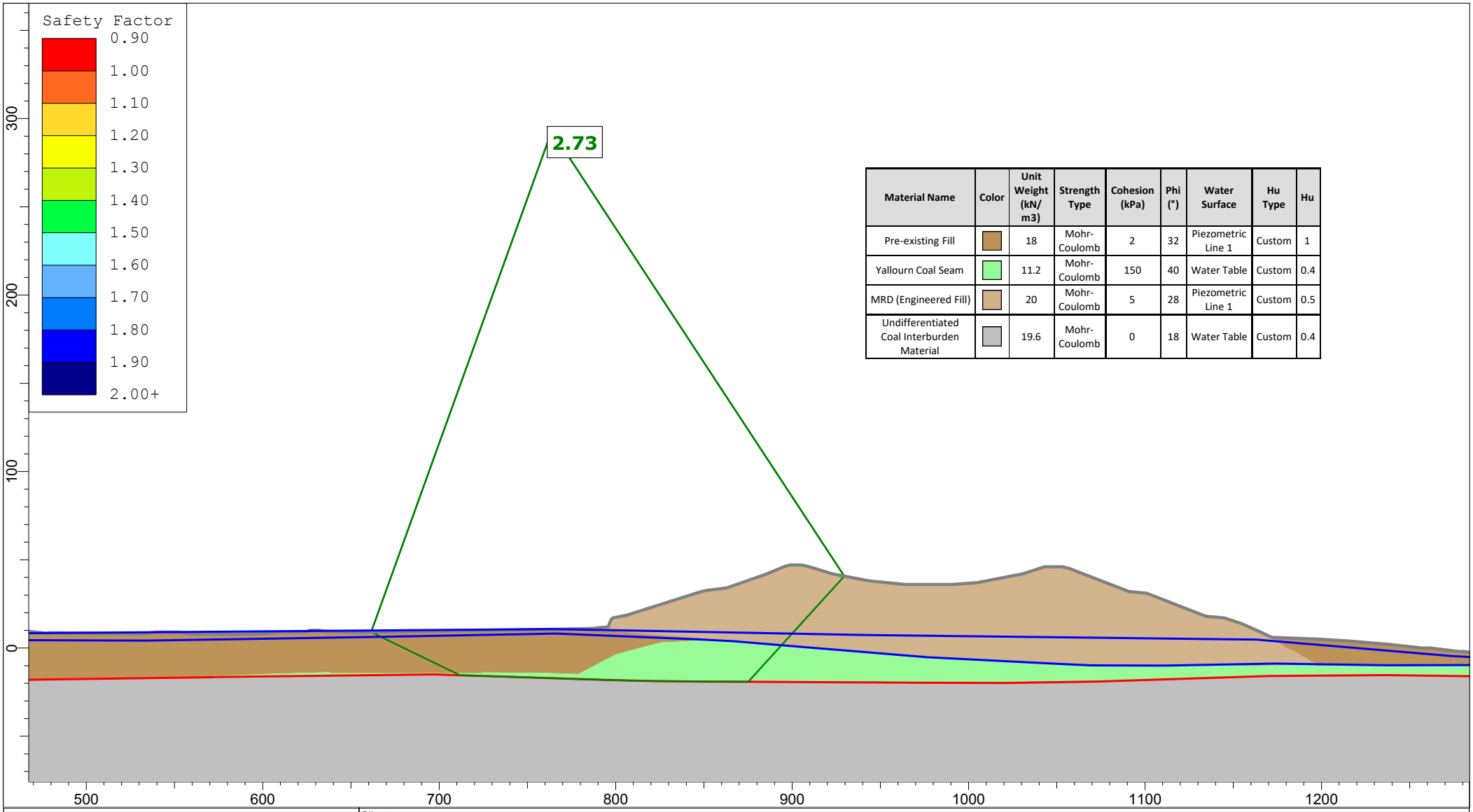
Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Block slide with full TC - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength And Tension Cracks Filled To The Ground Surface		

Appendix F.6
MRD global stability sensitivity cases outputs



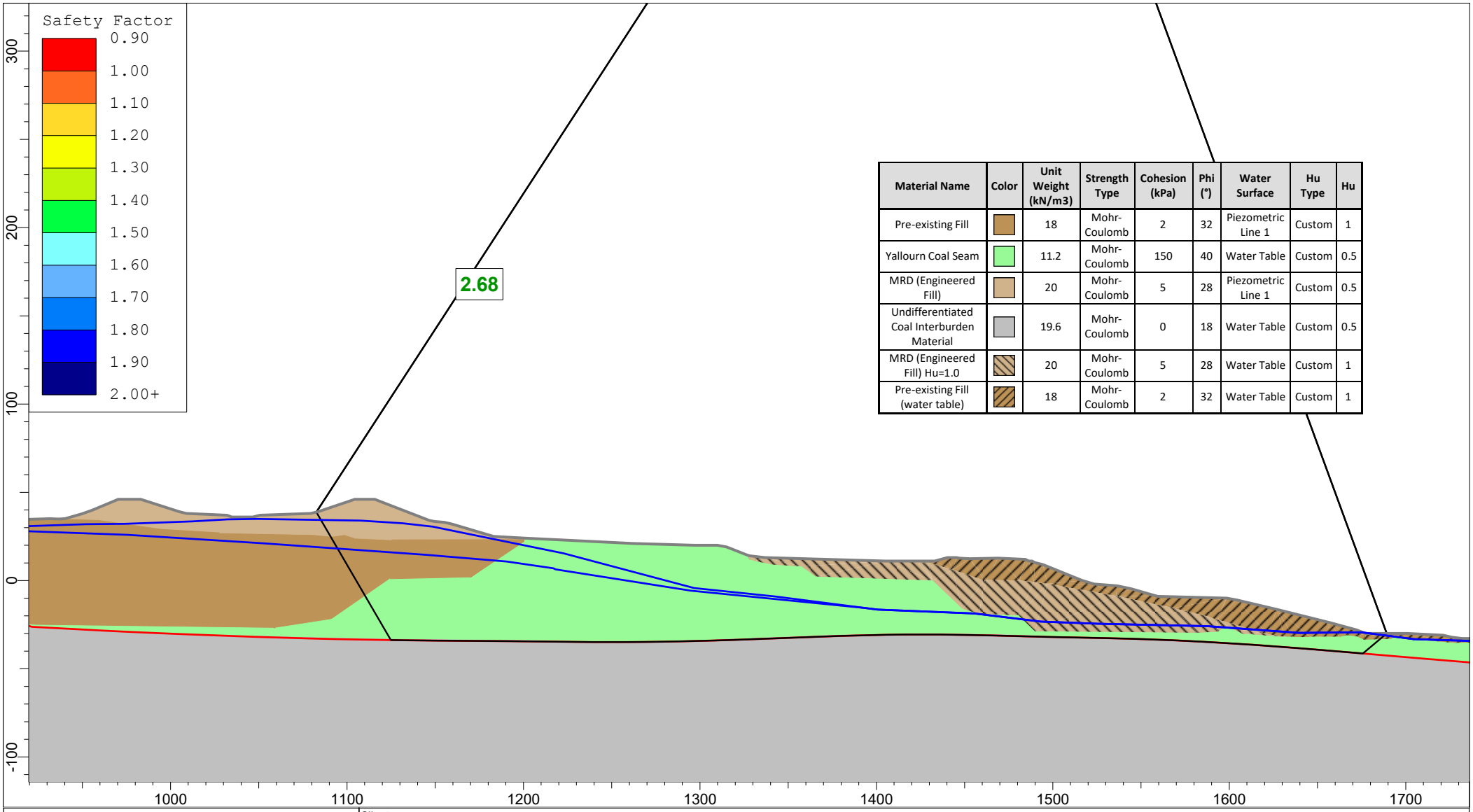
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



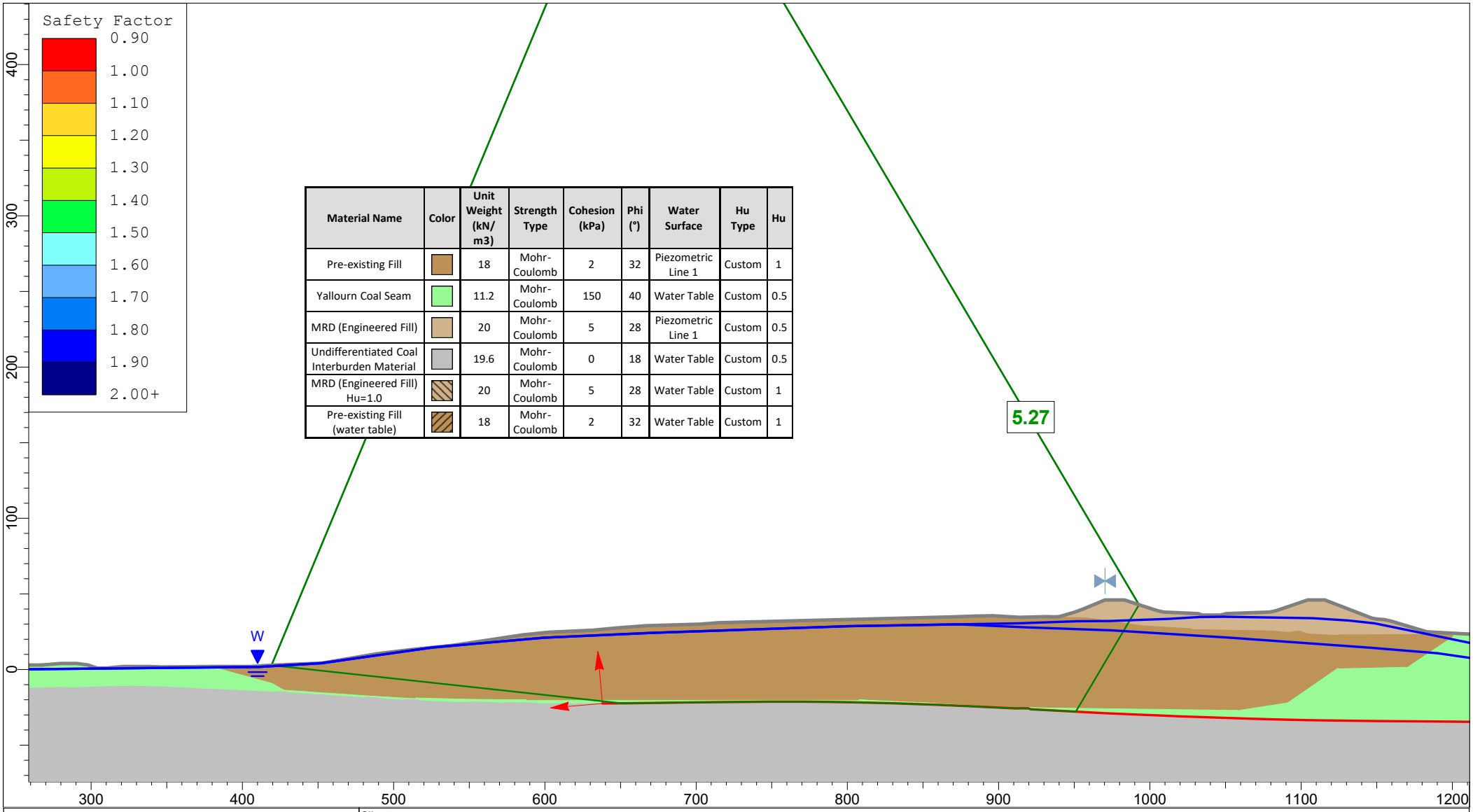
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength - Right To Left Failure		



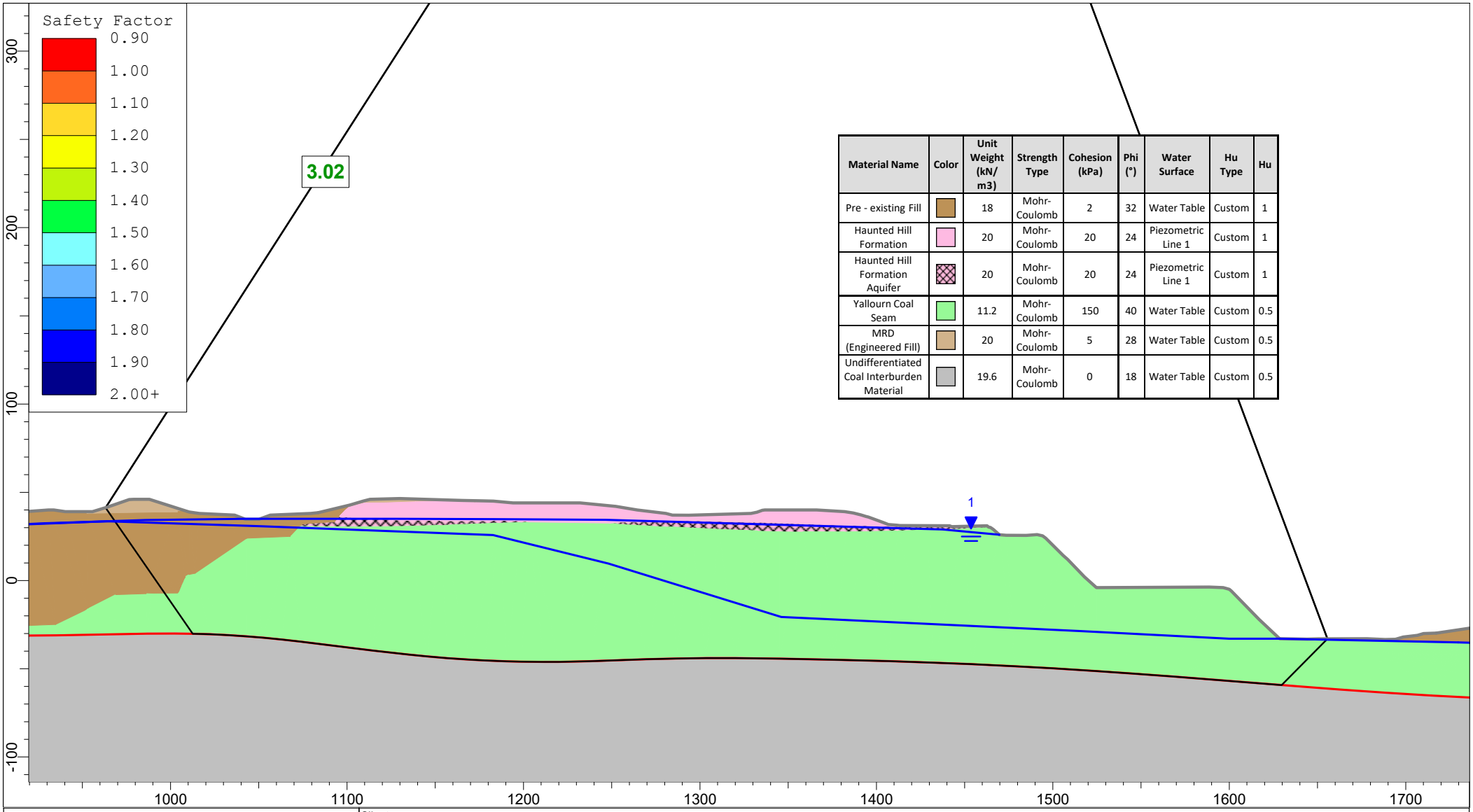
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



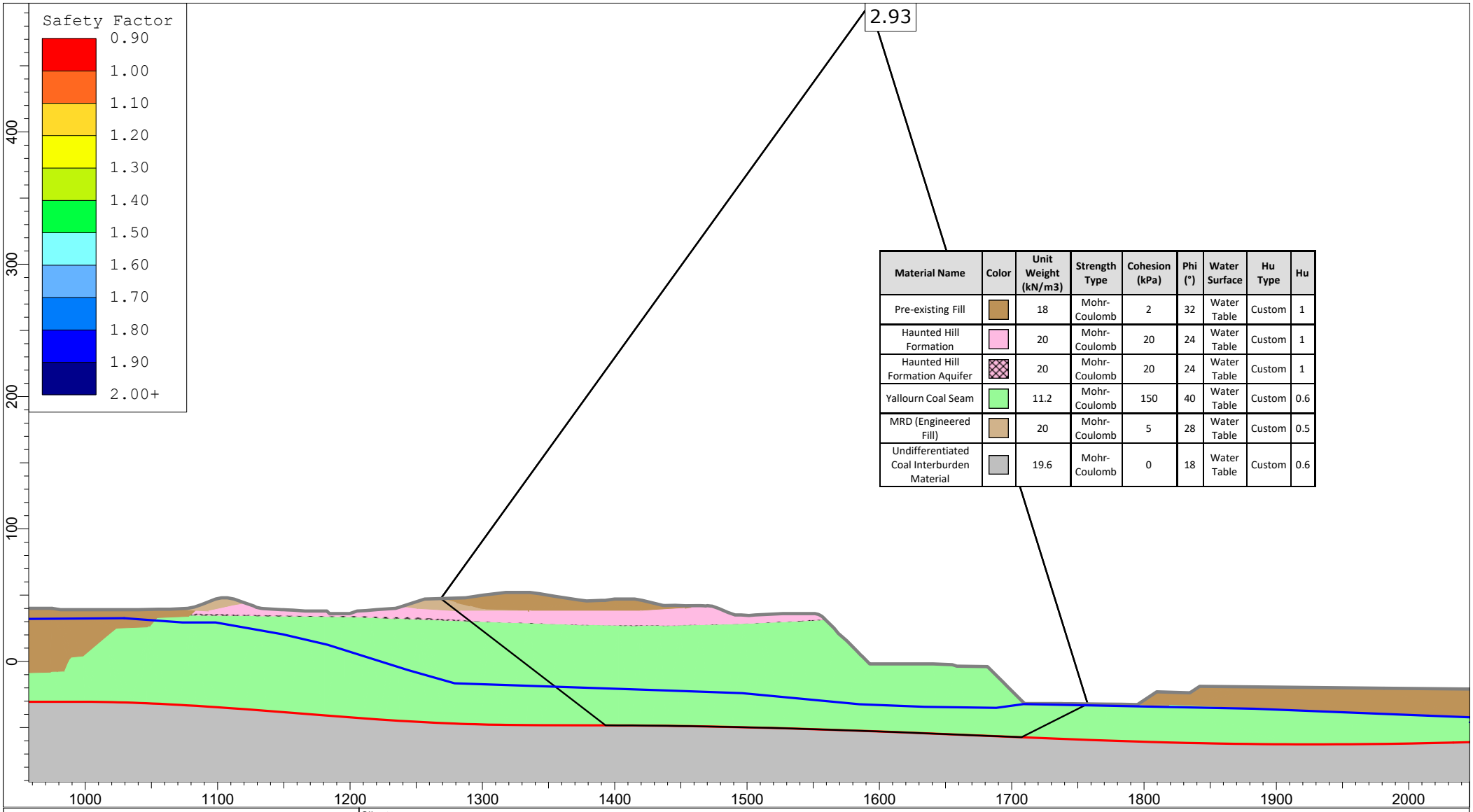
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength - Right To Left Failure		



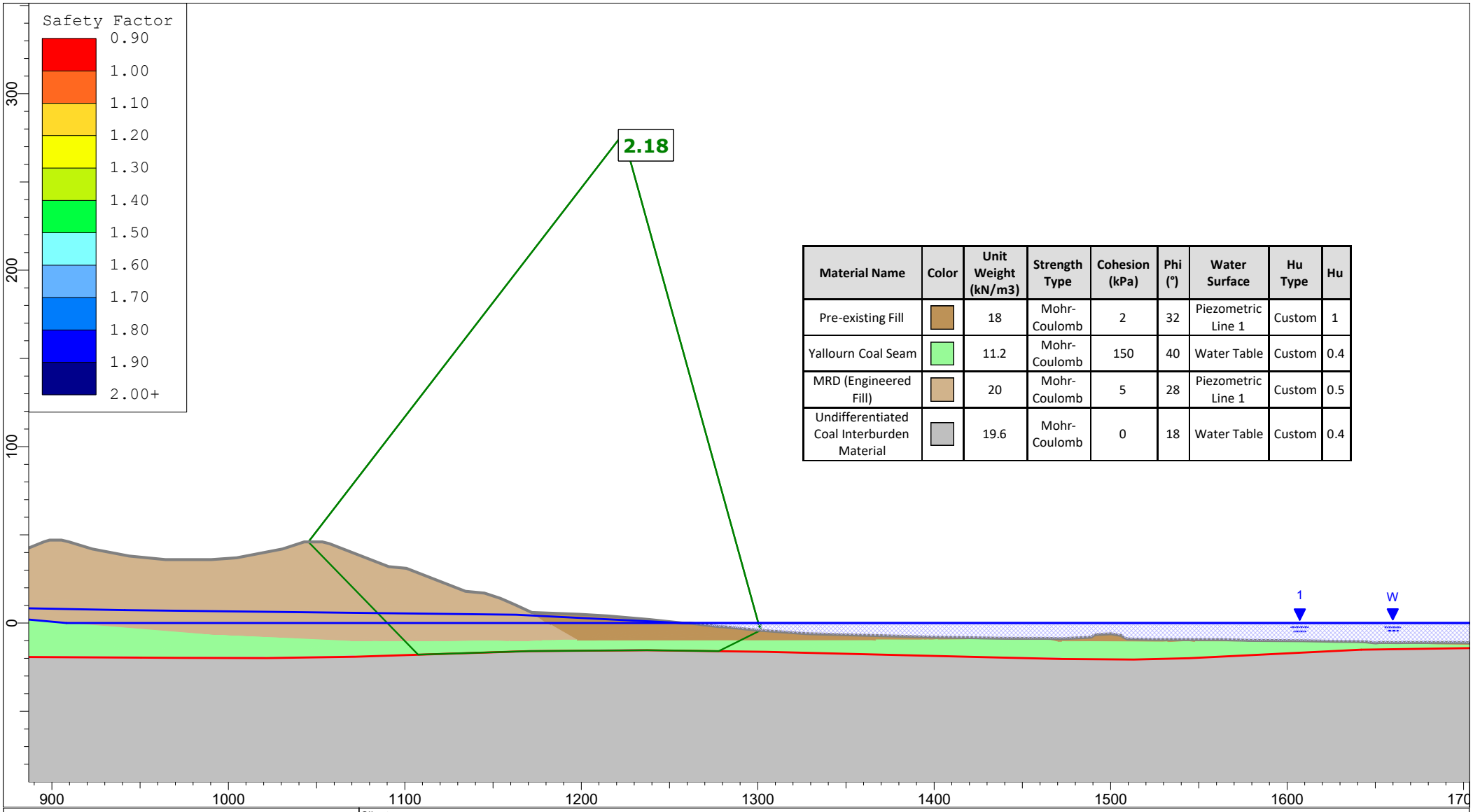
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



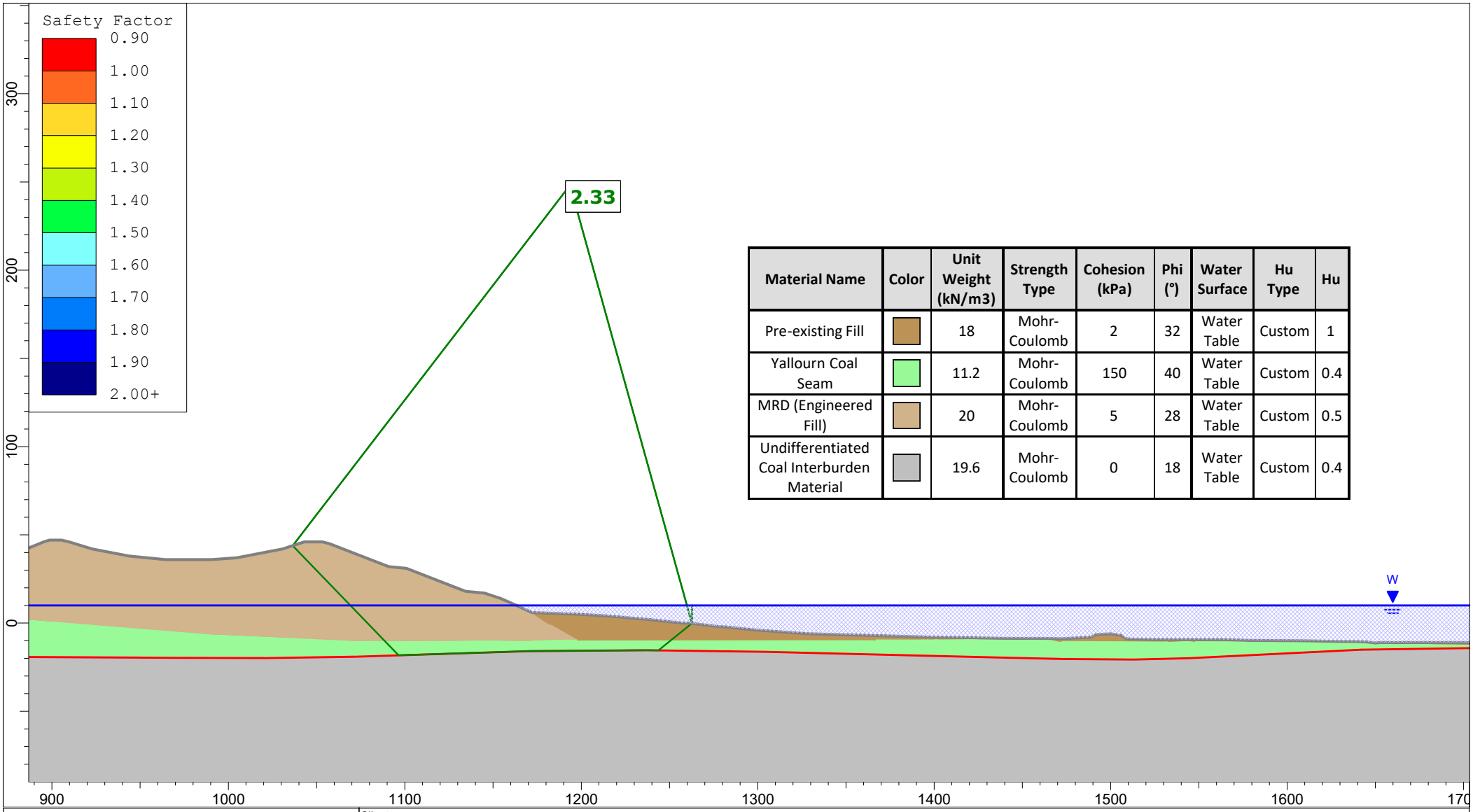
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



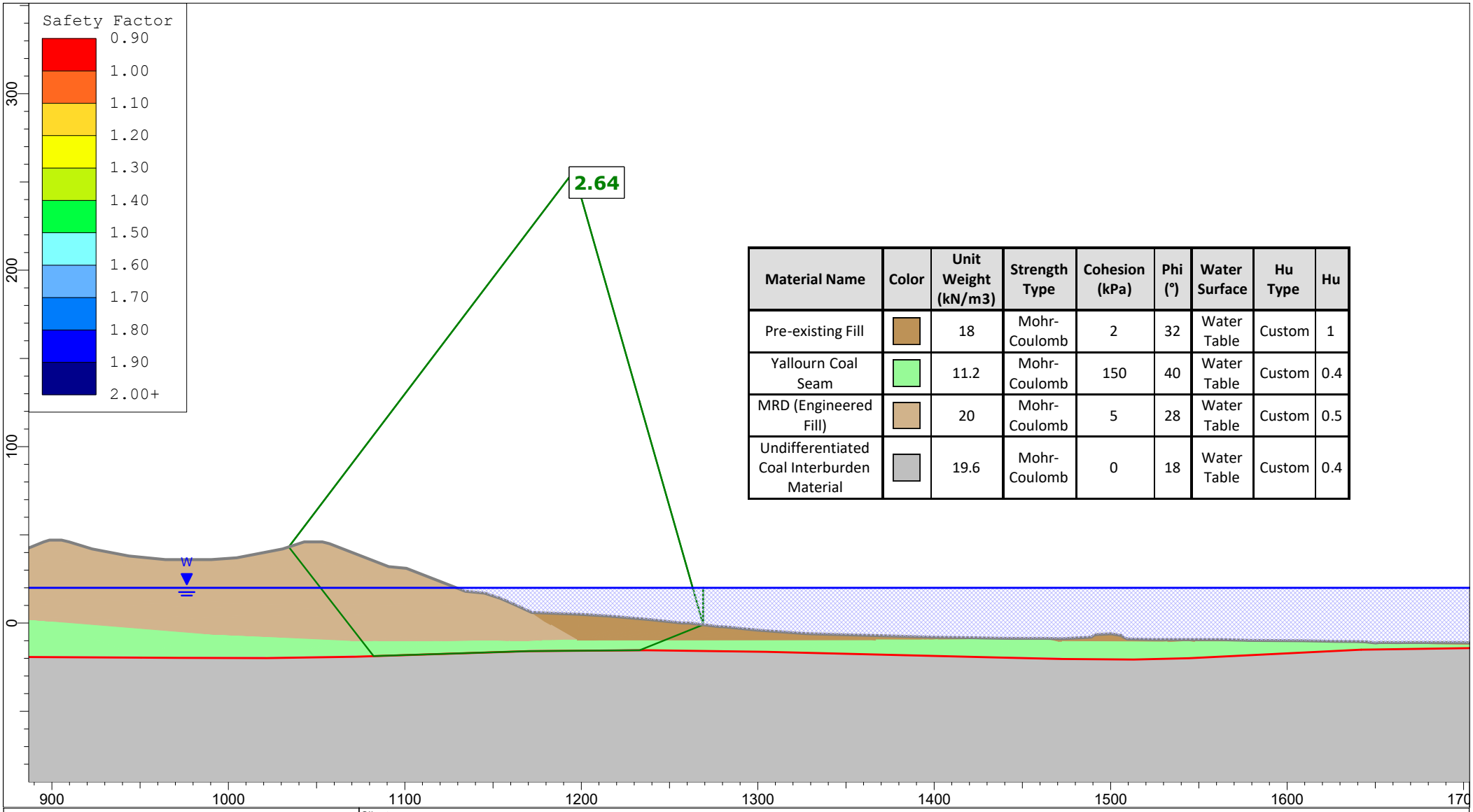
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Median Interseam Shear Strength		



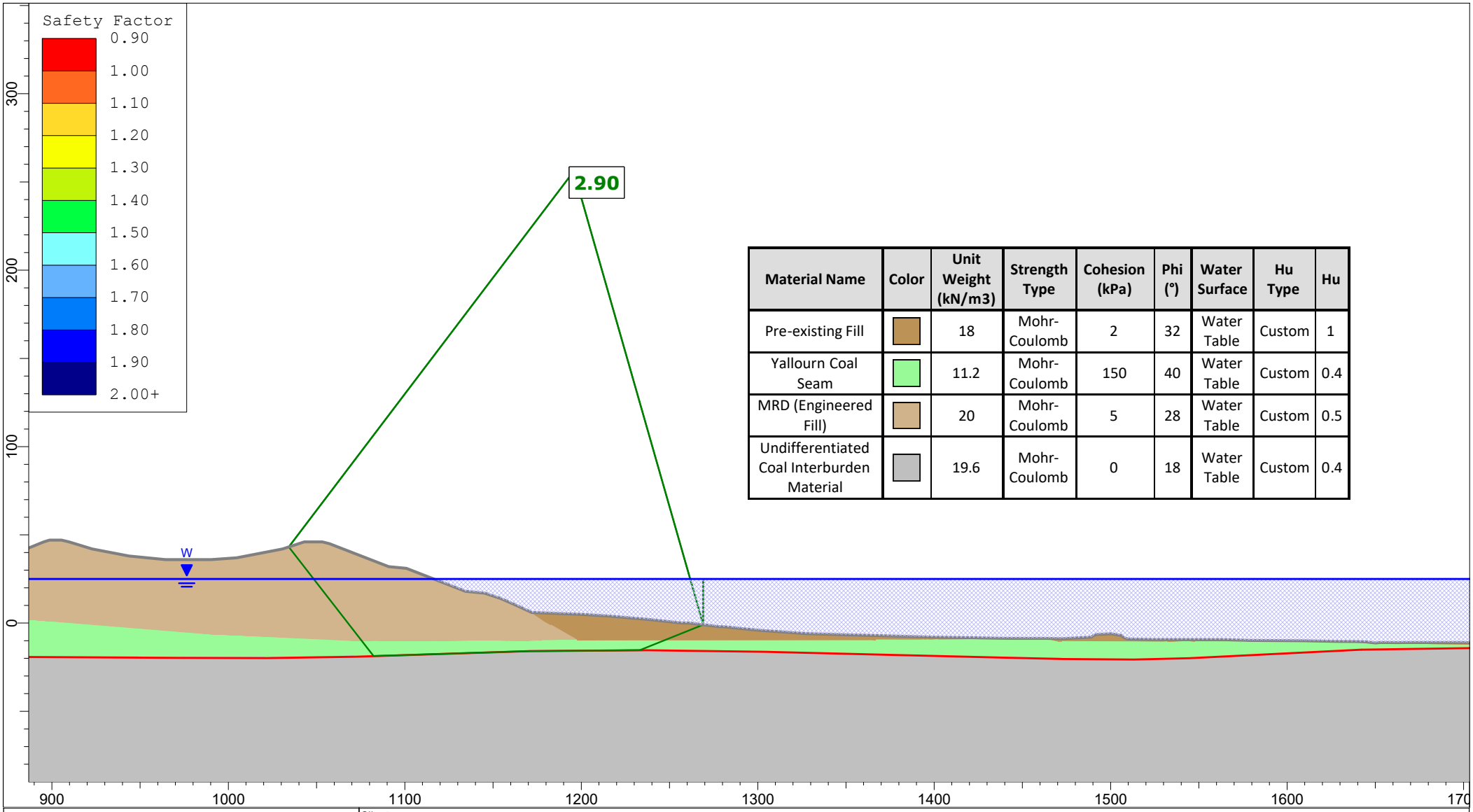
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



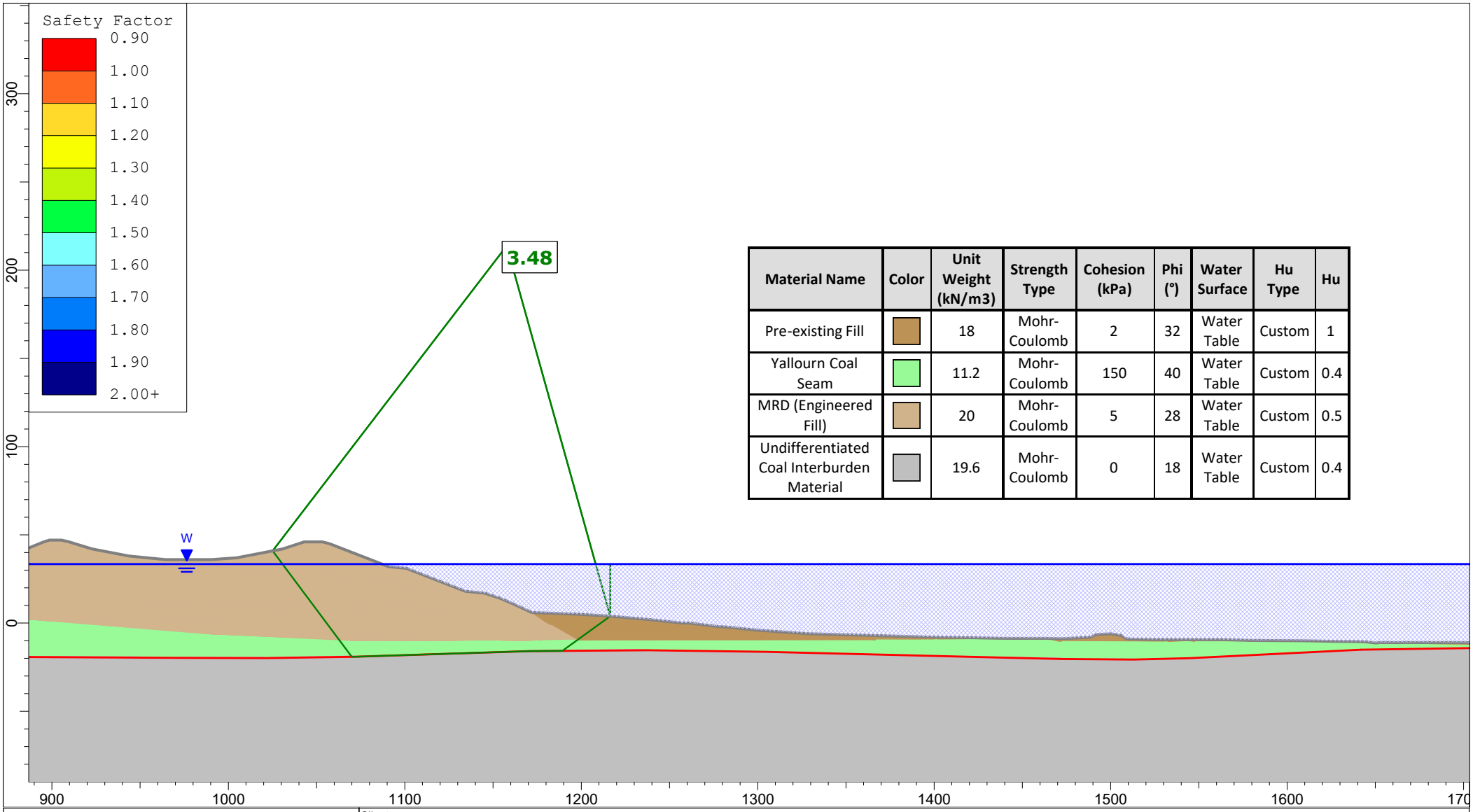
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



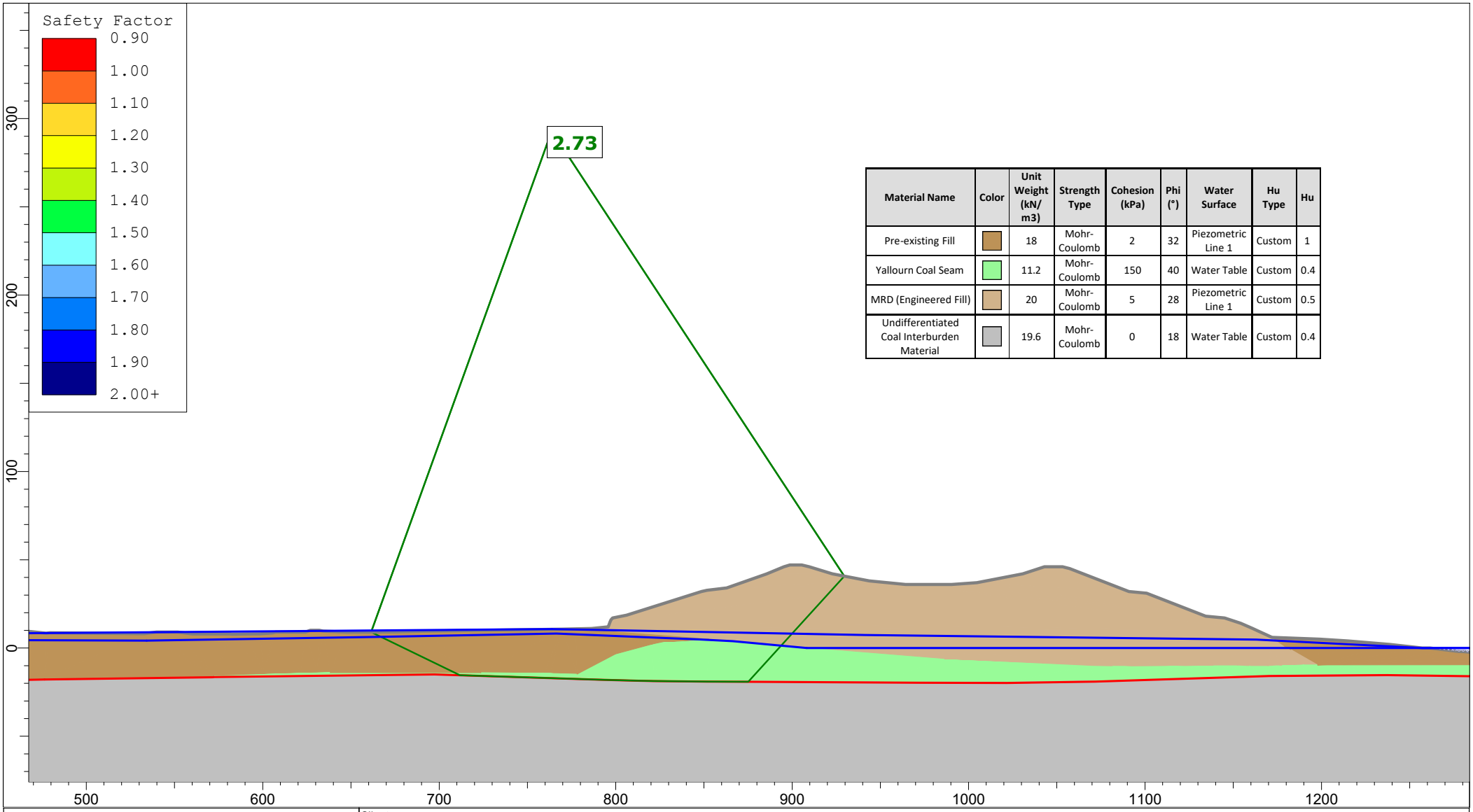
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength		



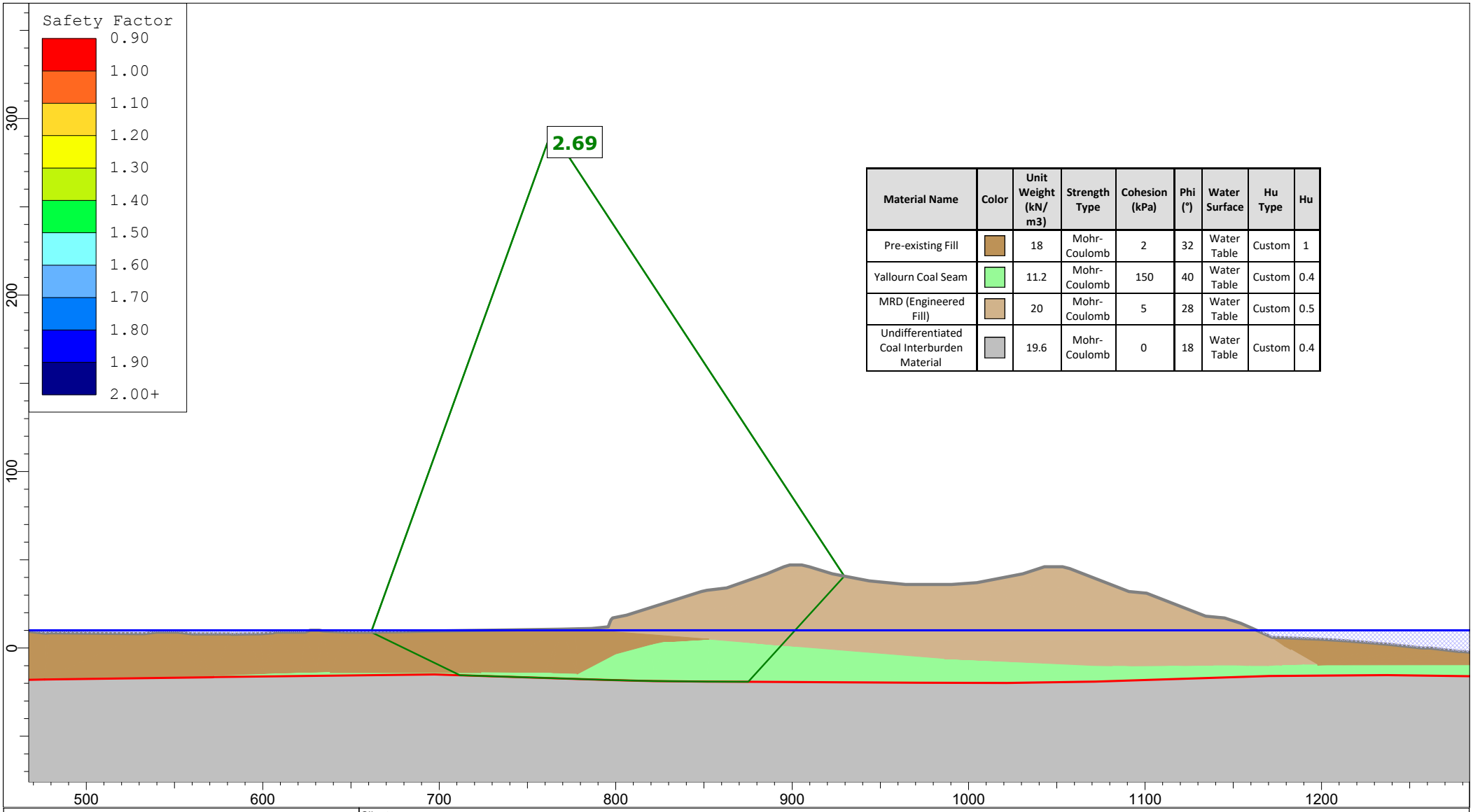
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



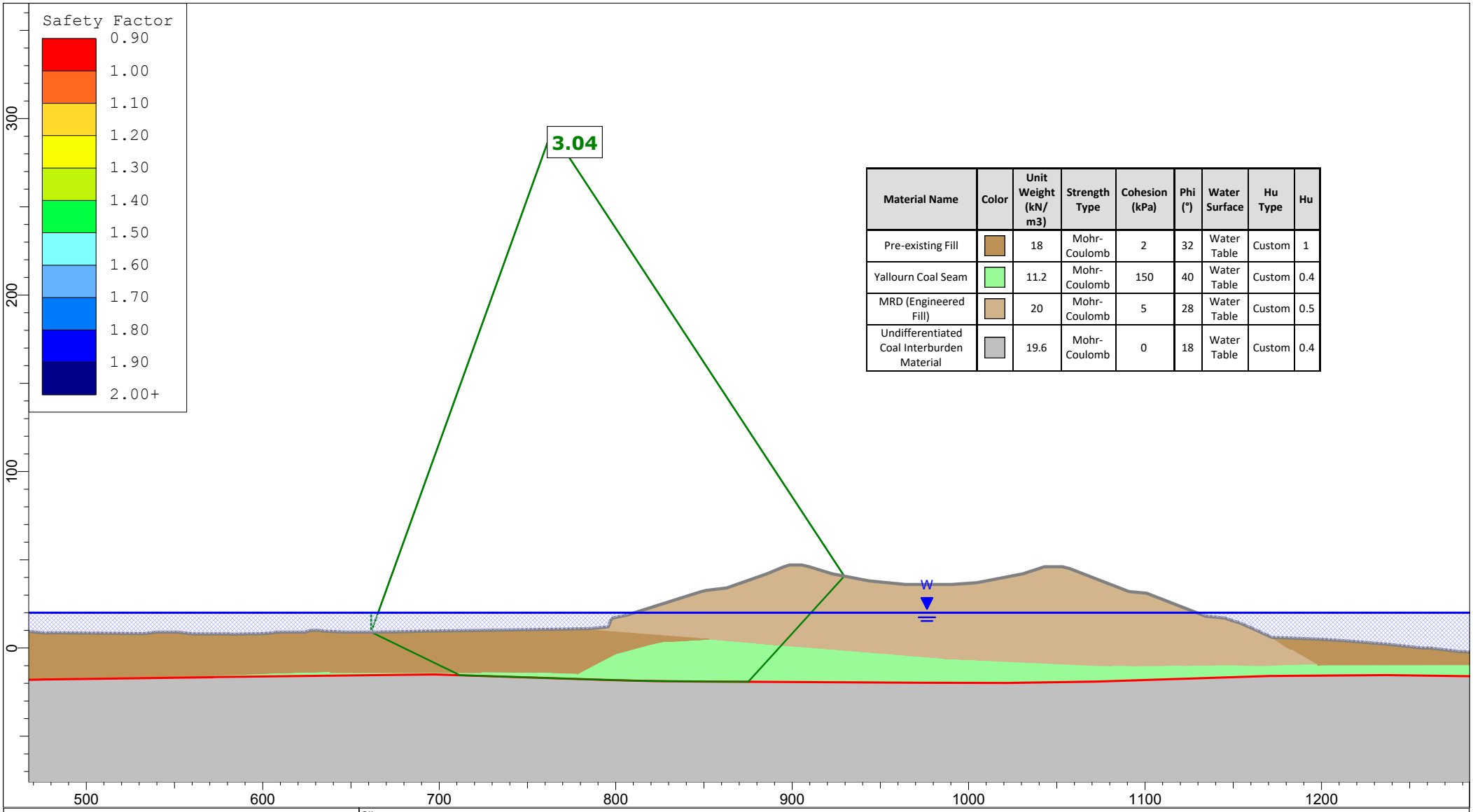
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Median Interseam Shear Strength - Right To Left Failure		



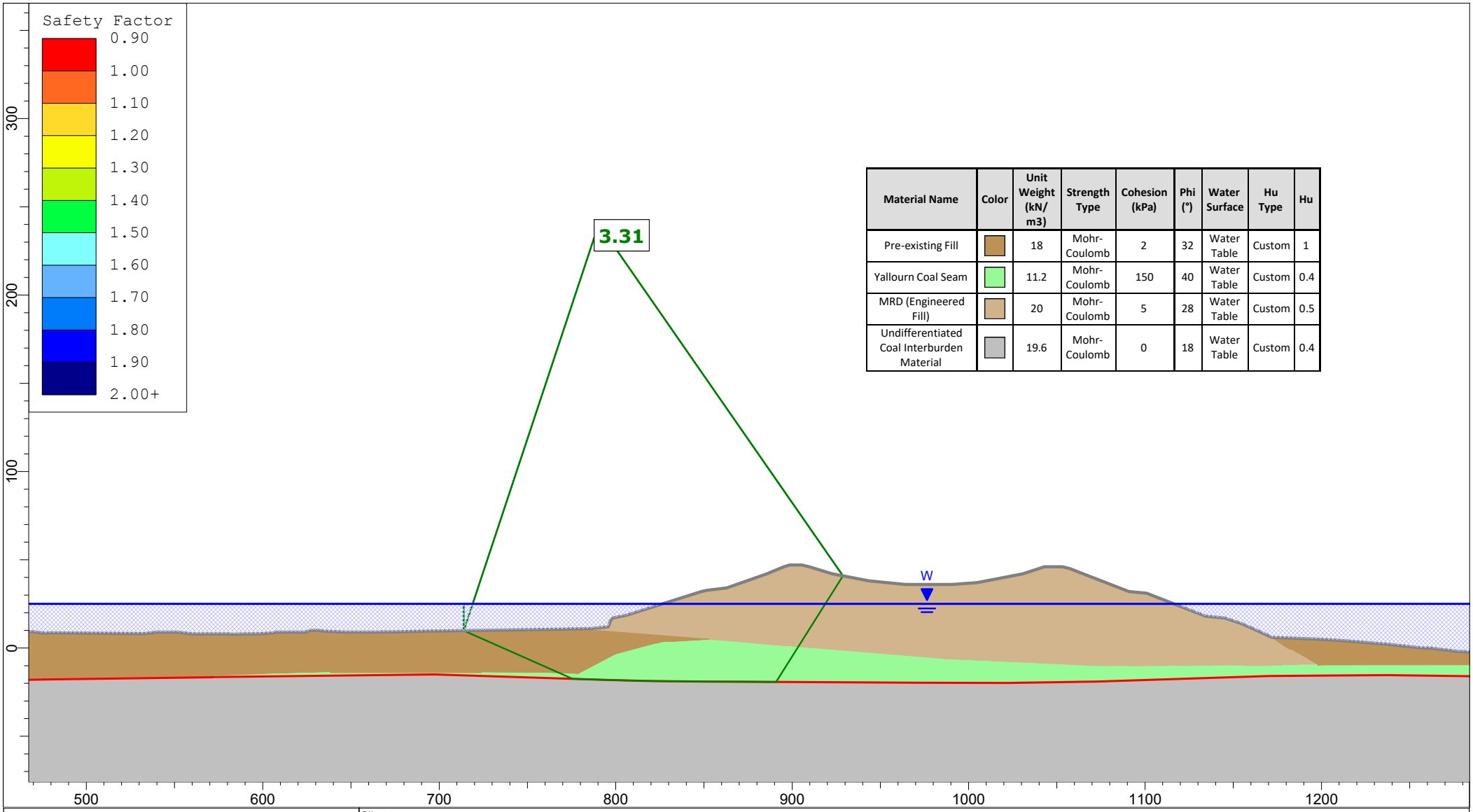
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength - Right To Left Failure		



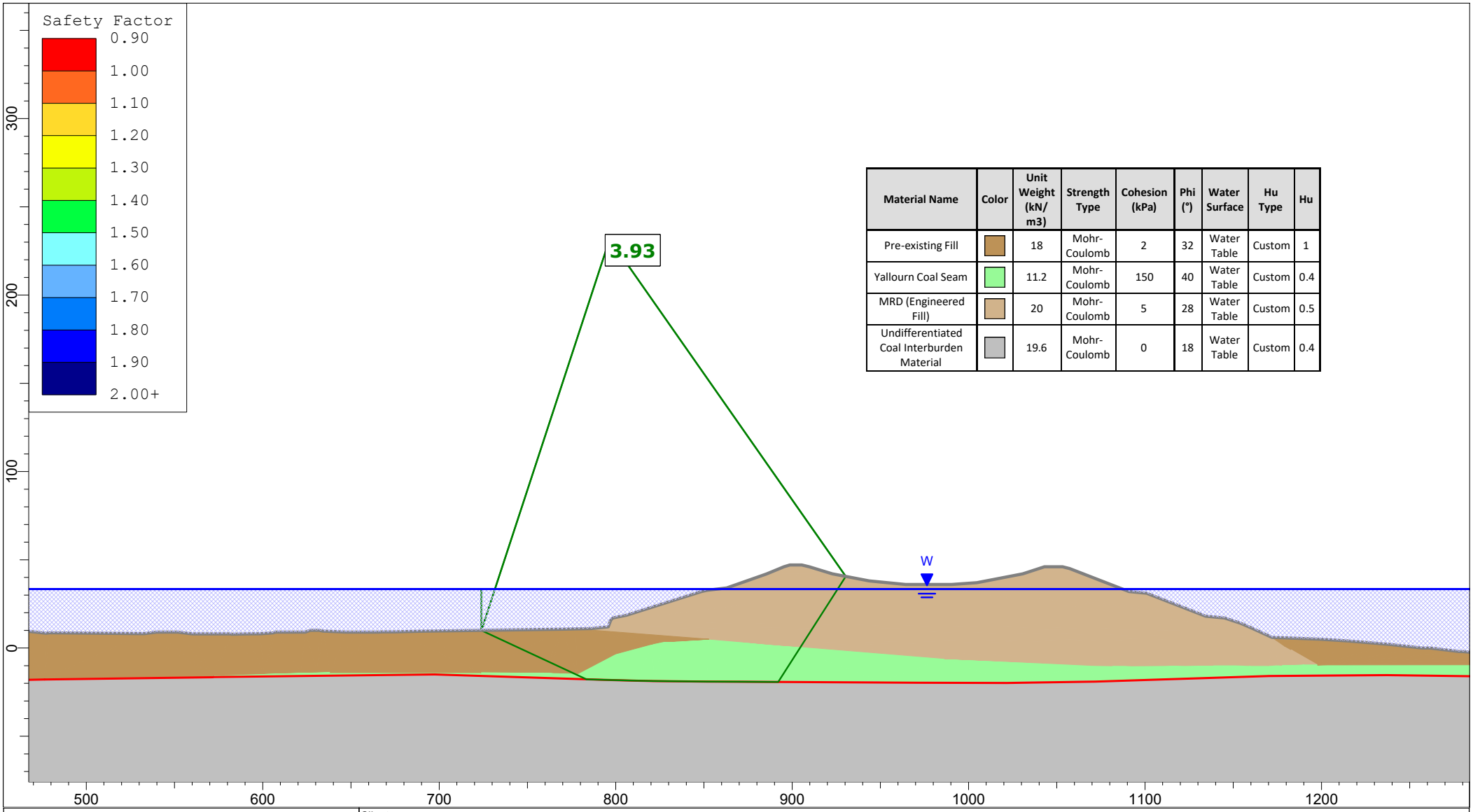
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength - Right To Left Failure		



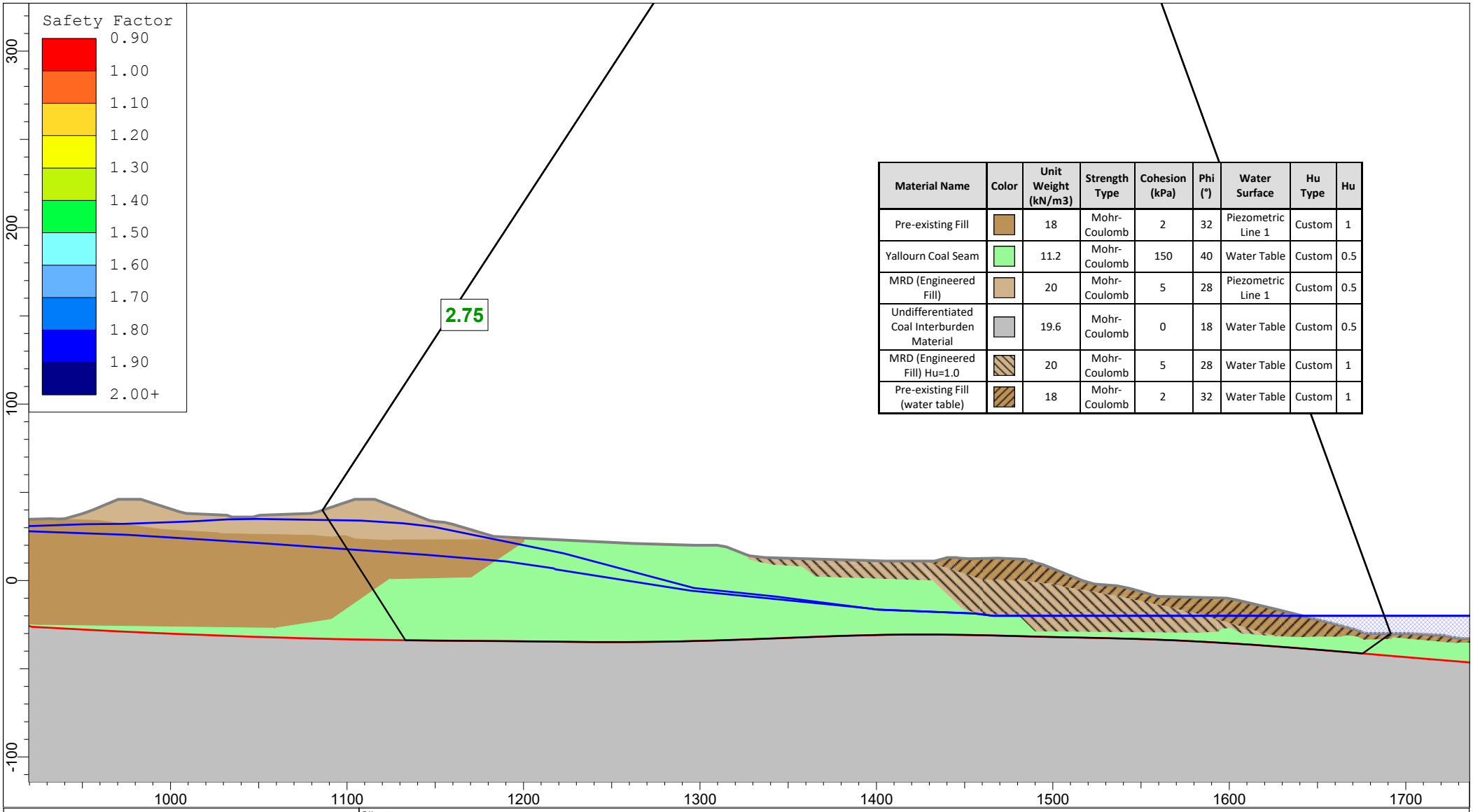
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength - Right To Left Failure		



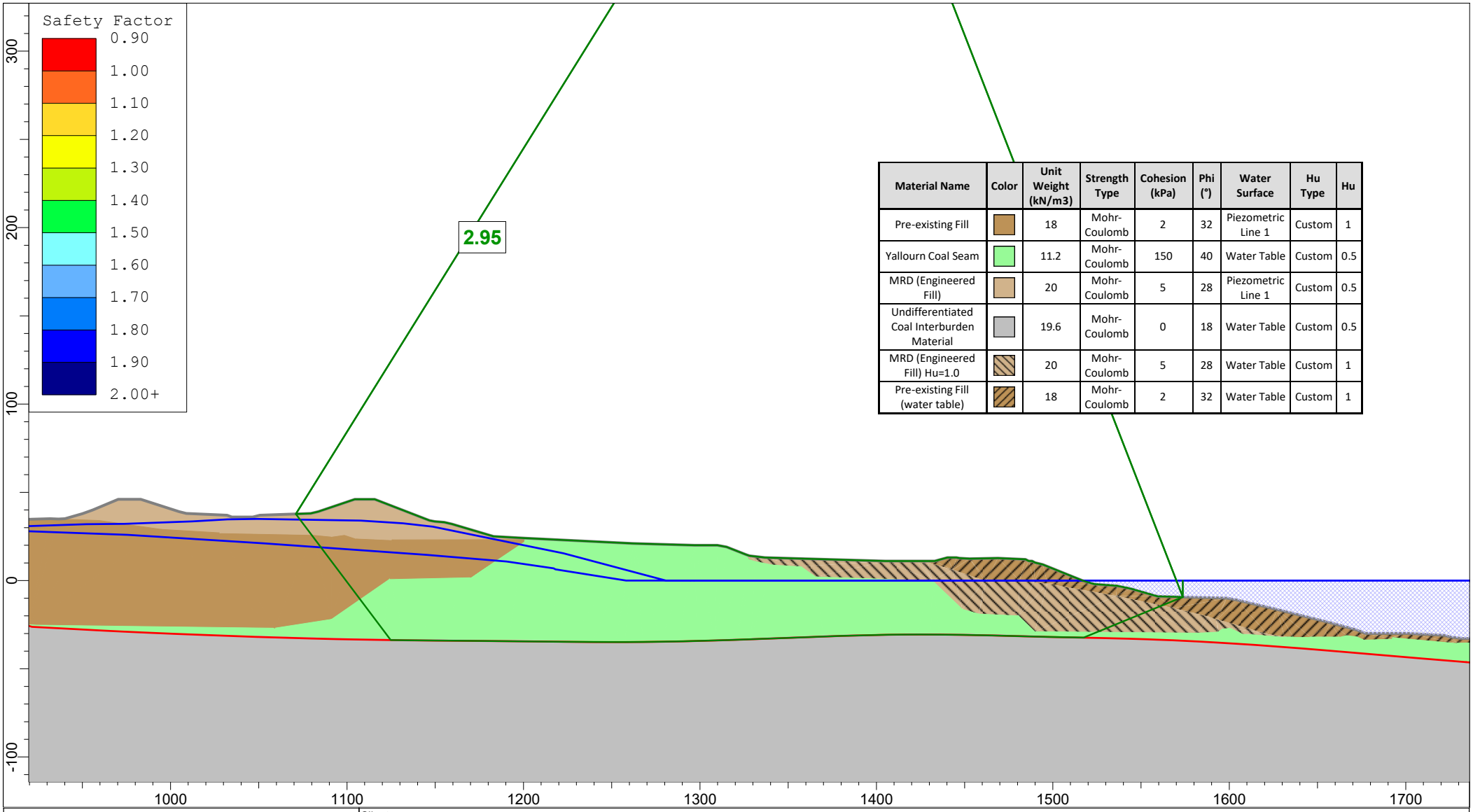
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength - Right To Left Failure		



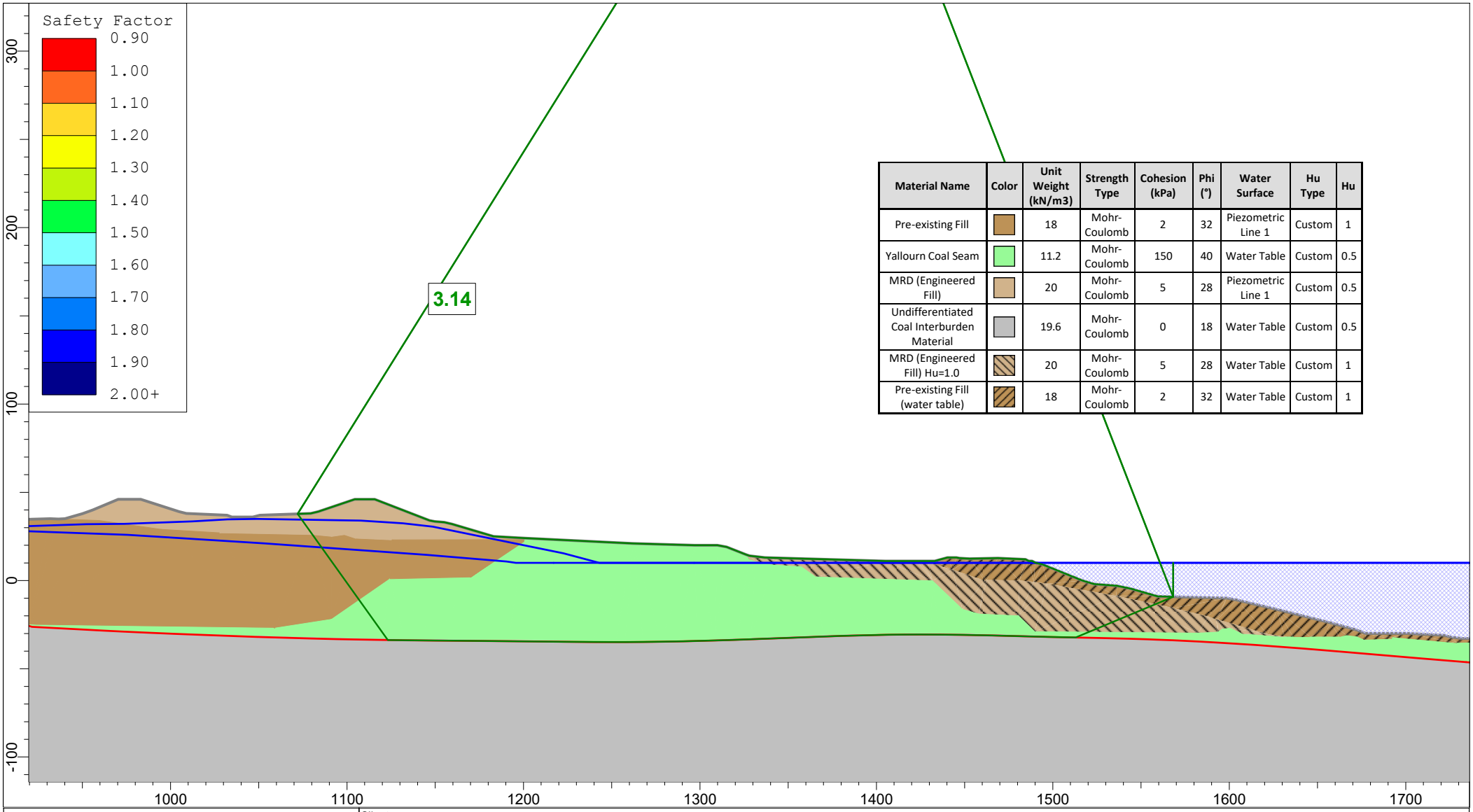
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -20 mRL
Notes:	Median Interseam Shear Strength		



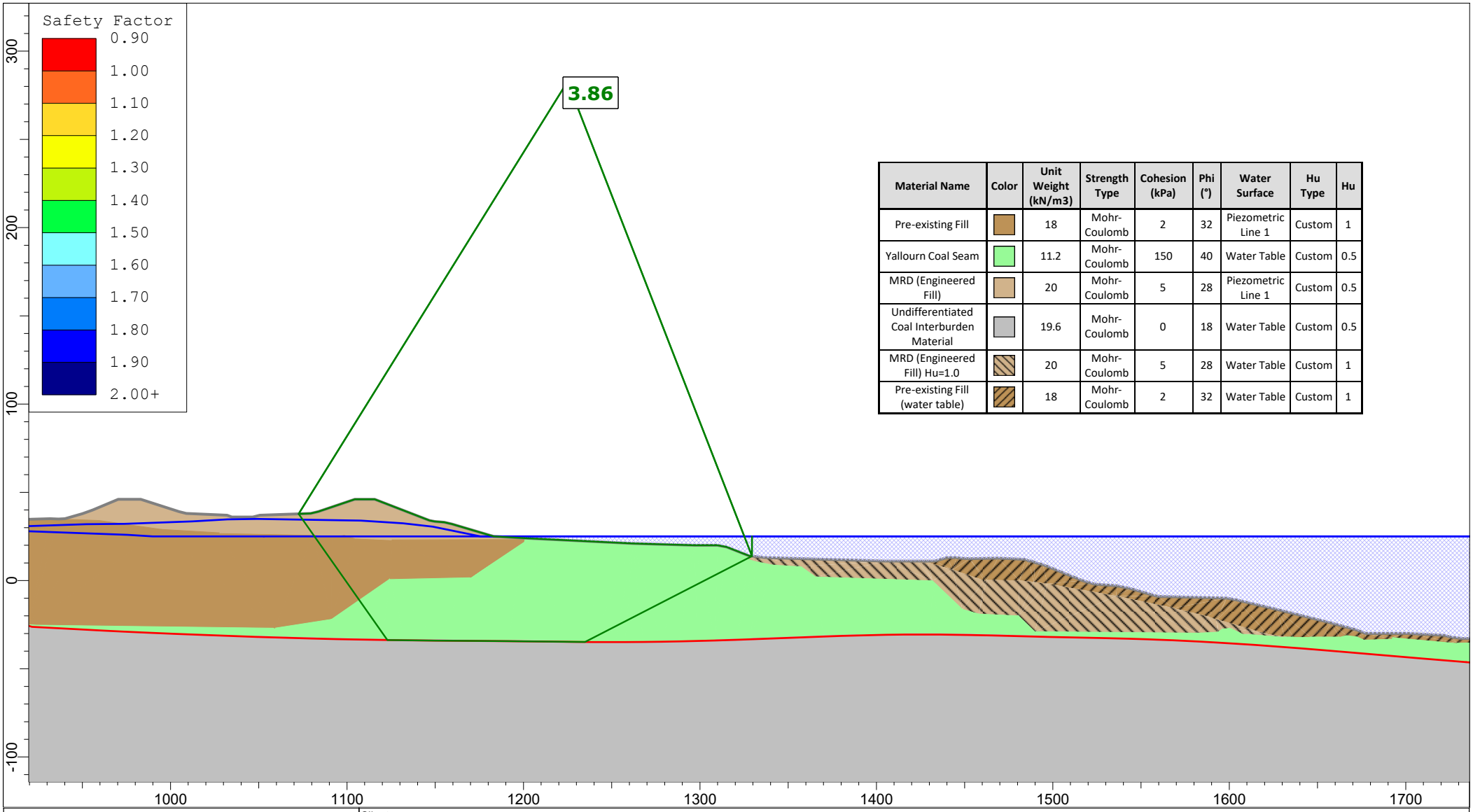
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Median Interseam Shear Strength		



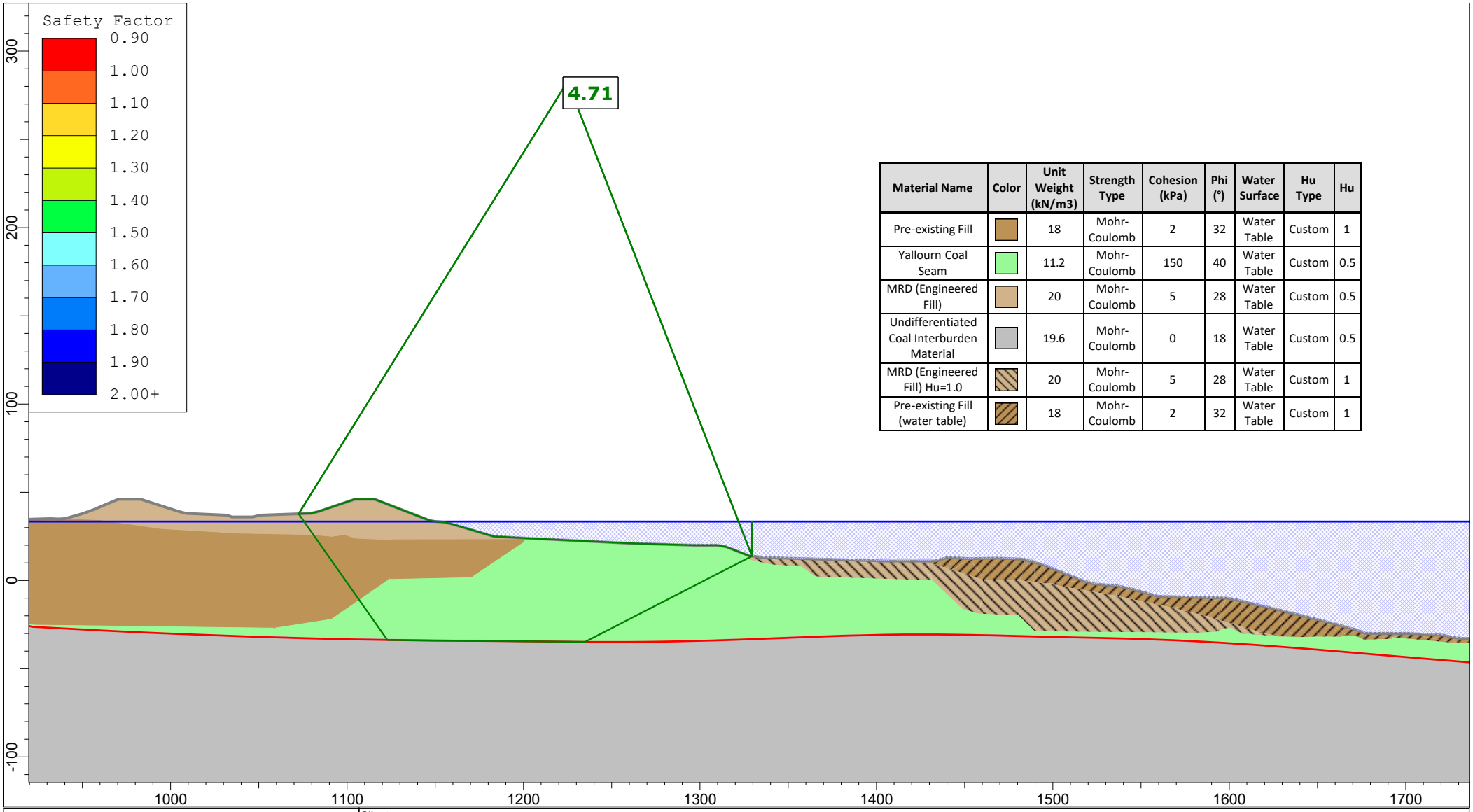
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



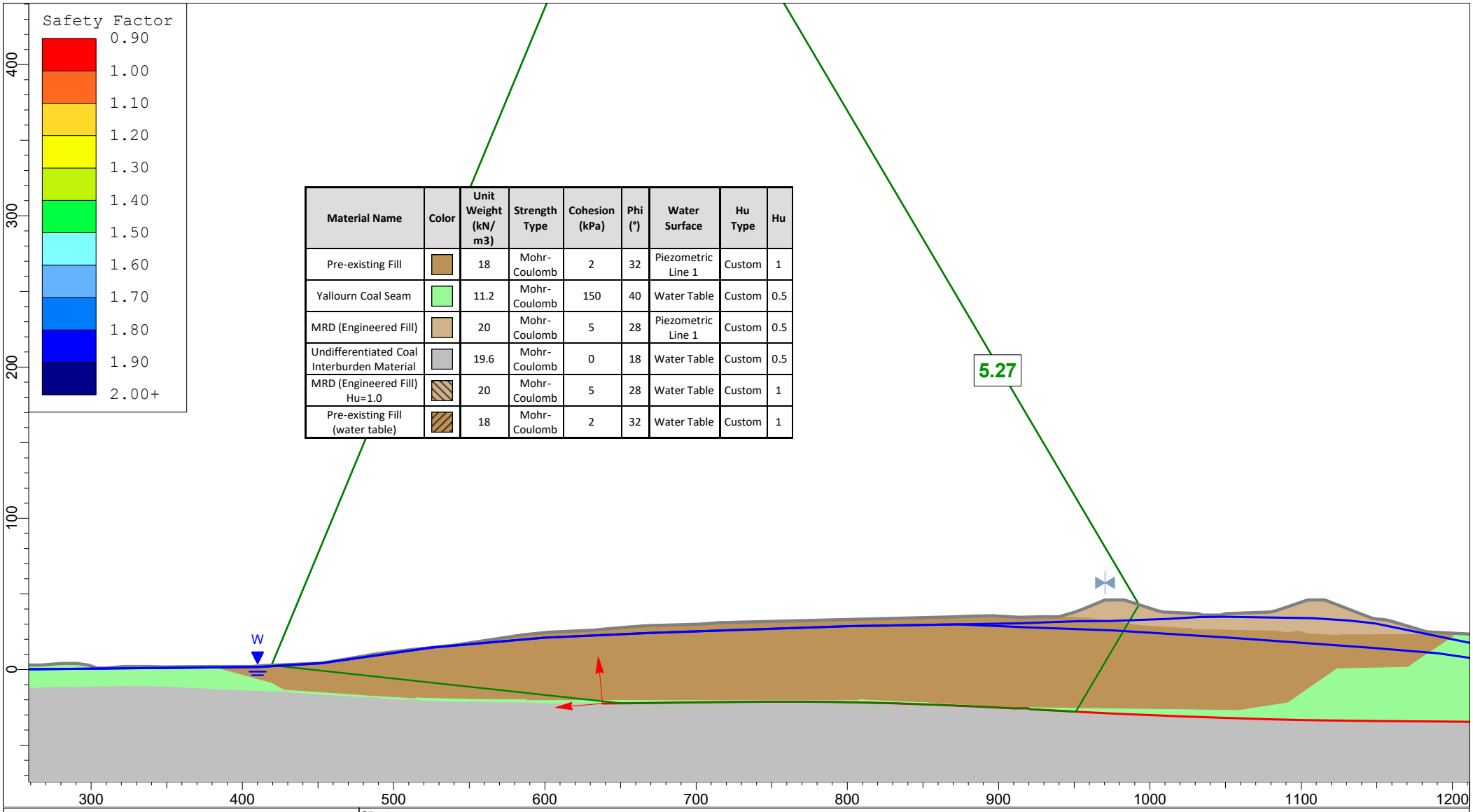
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength		



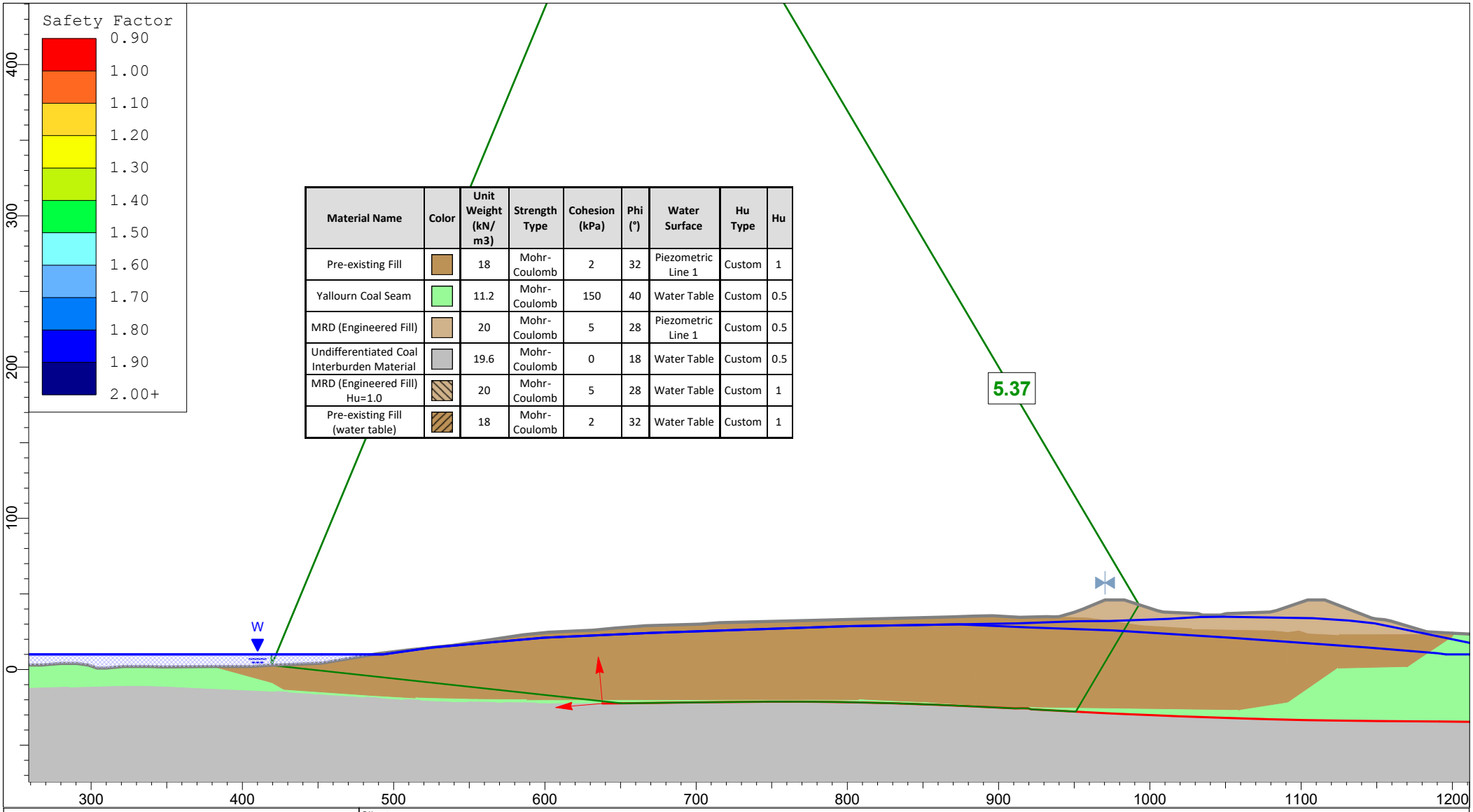
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



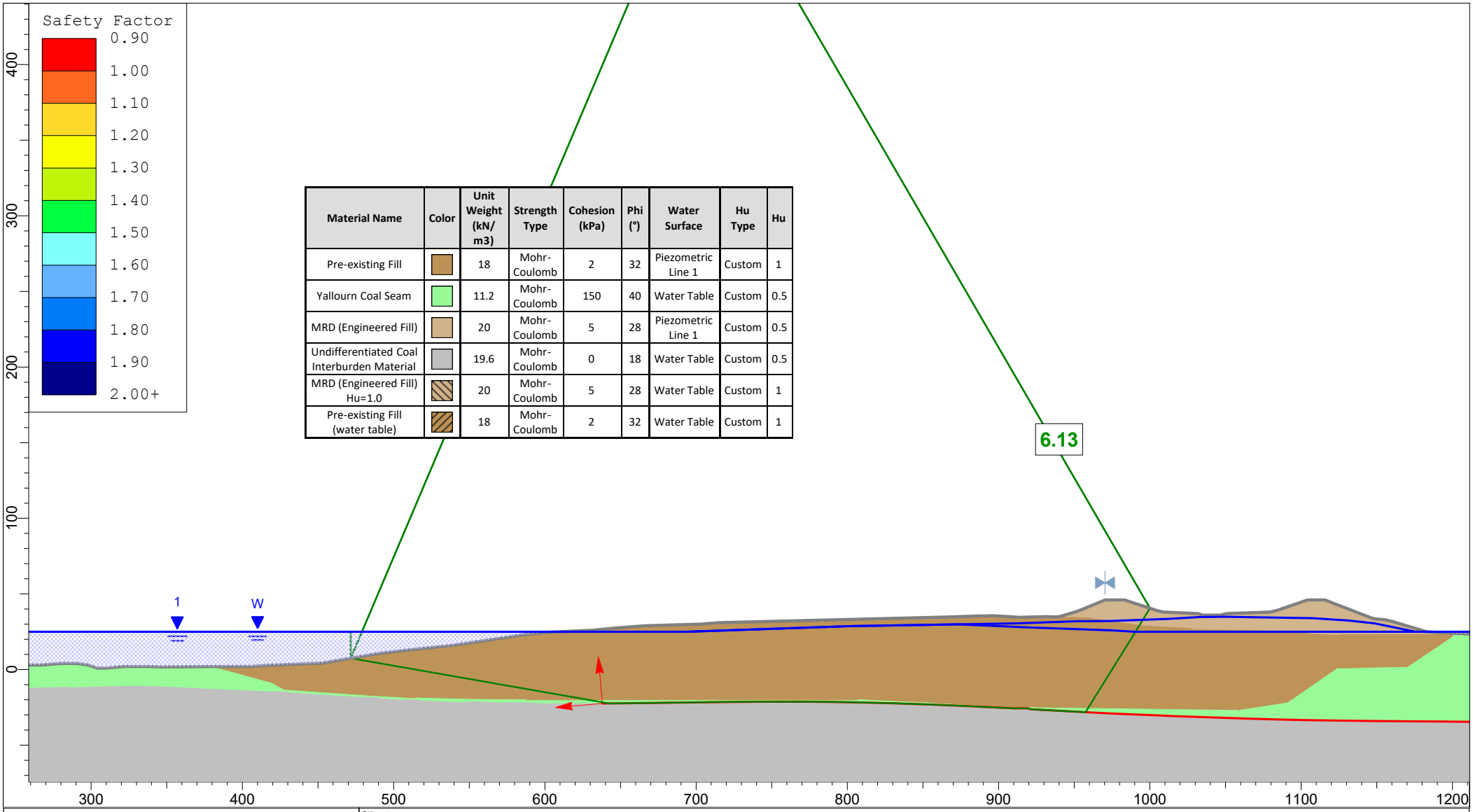
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Median Interseam Shear Strength - Right To Left Failure		



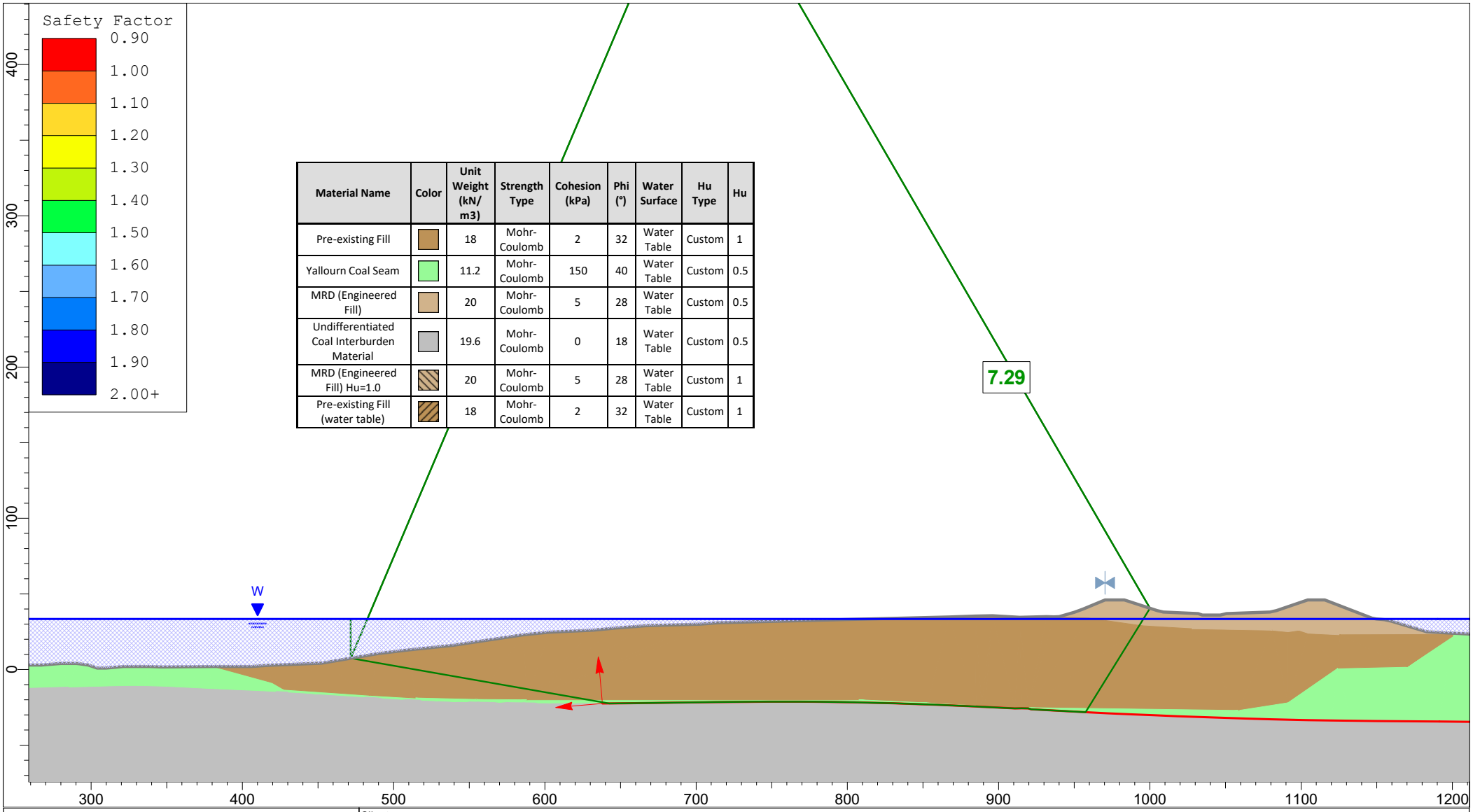
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength - Right To Left Failure		



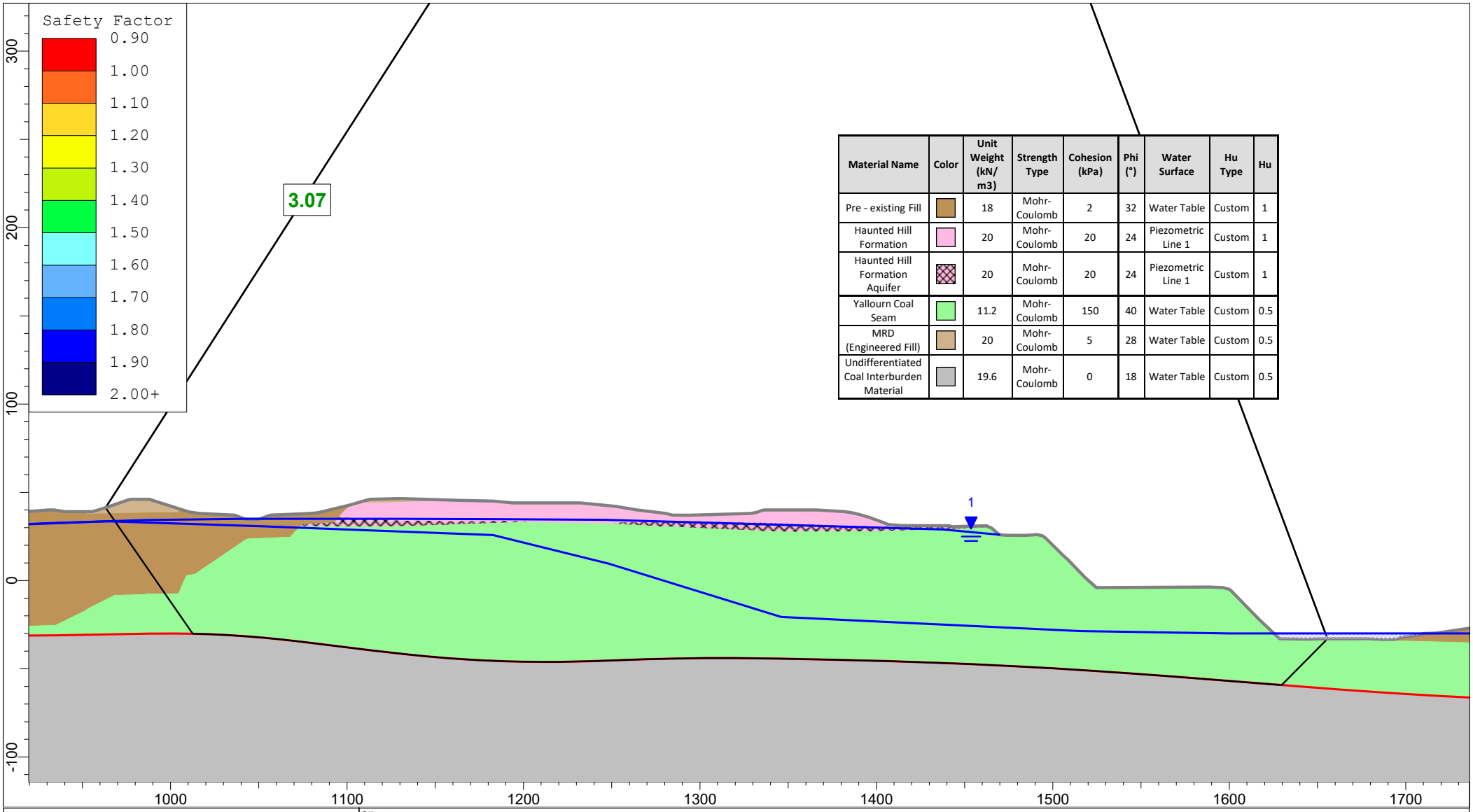
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength - Right To Left Failure		



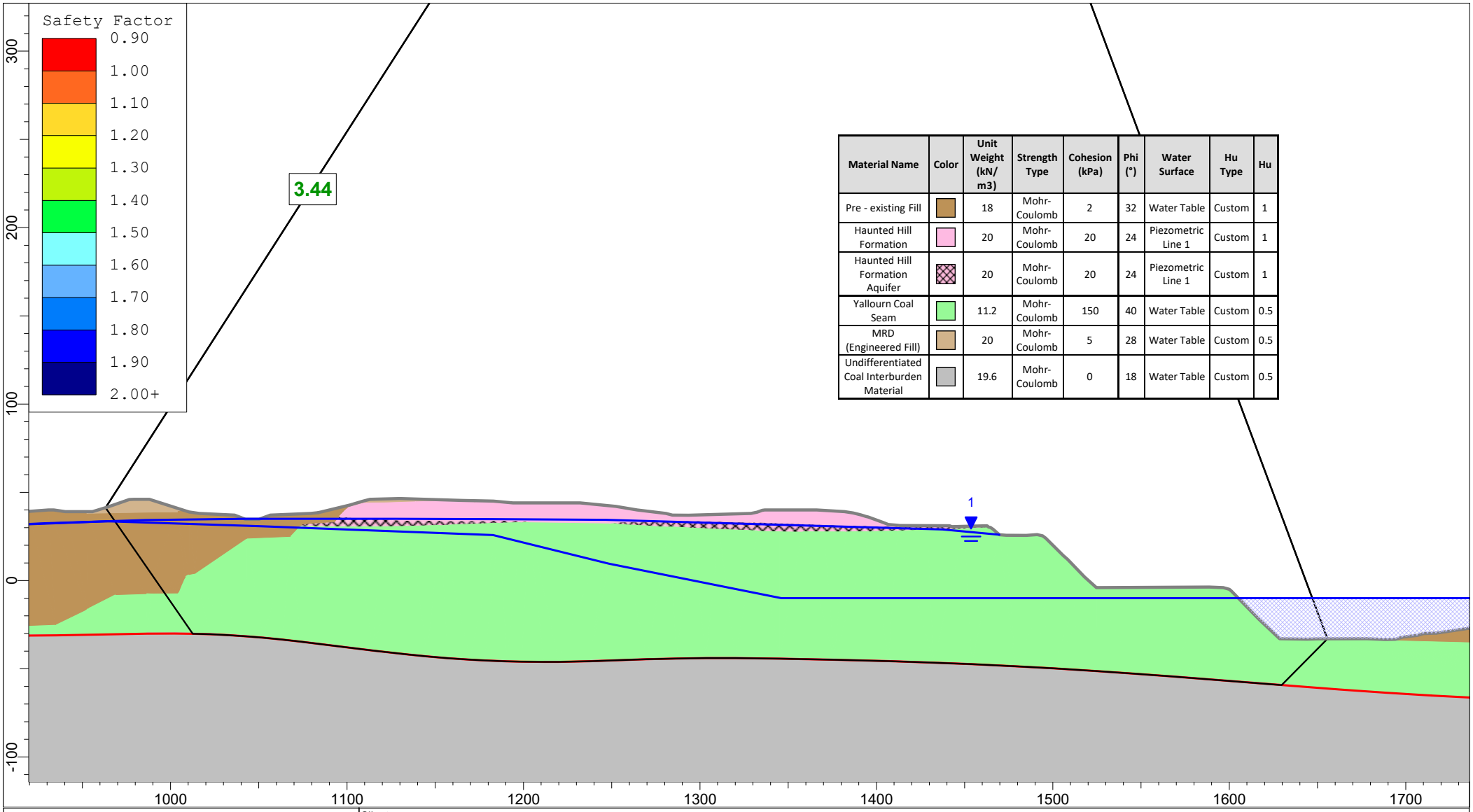
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength - Right To Left Failure		



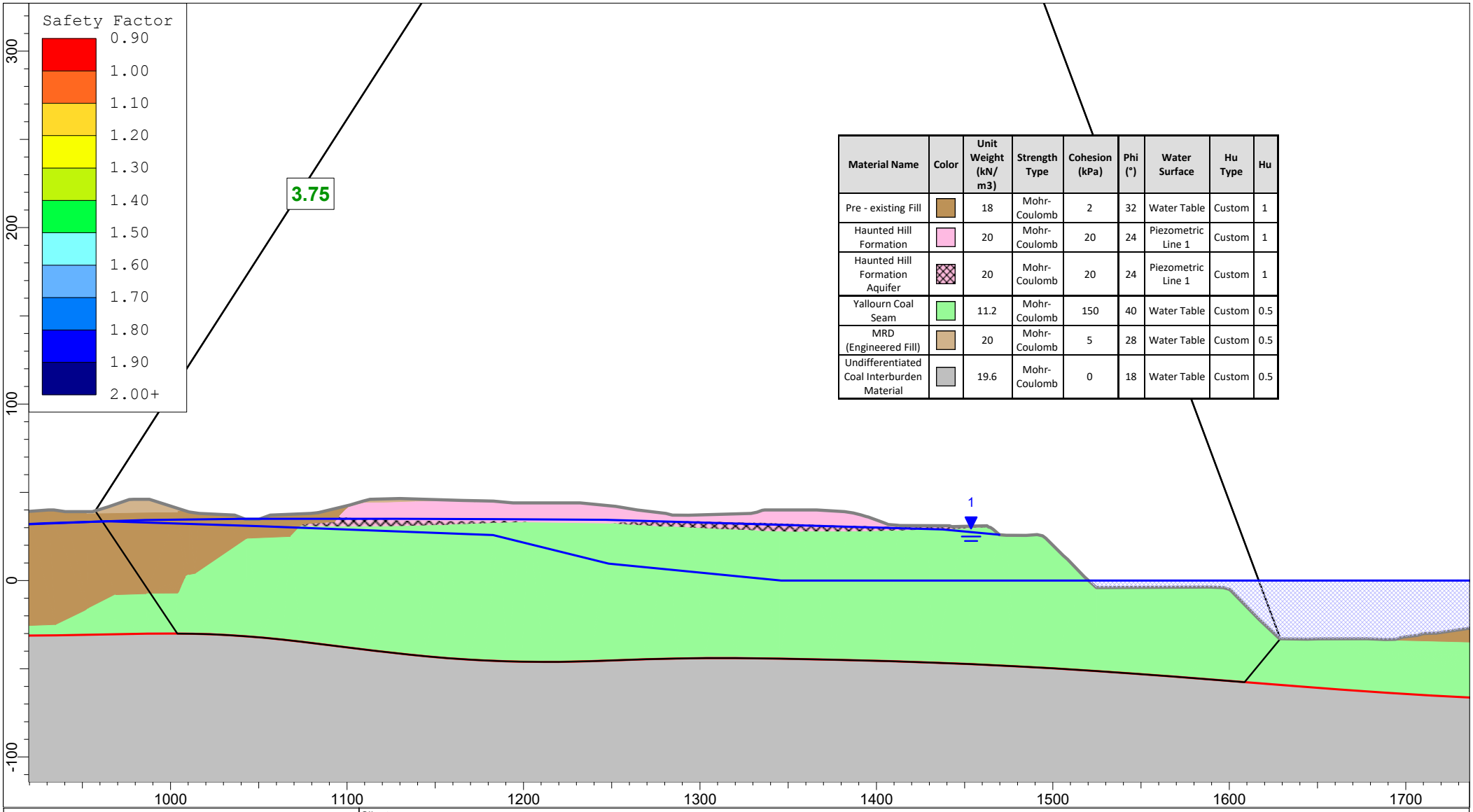
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -30 mRL
Notes:	Median Interseam Shear Strength		



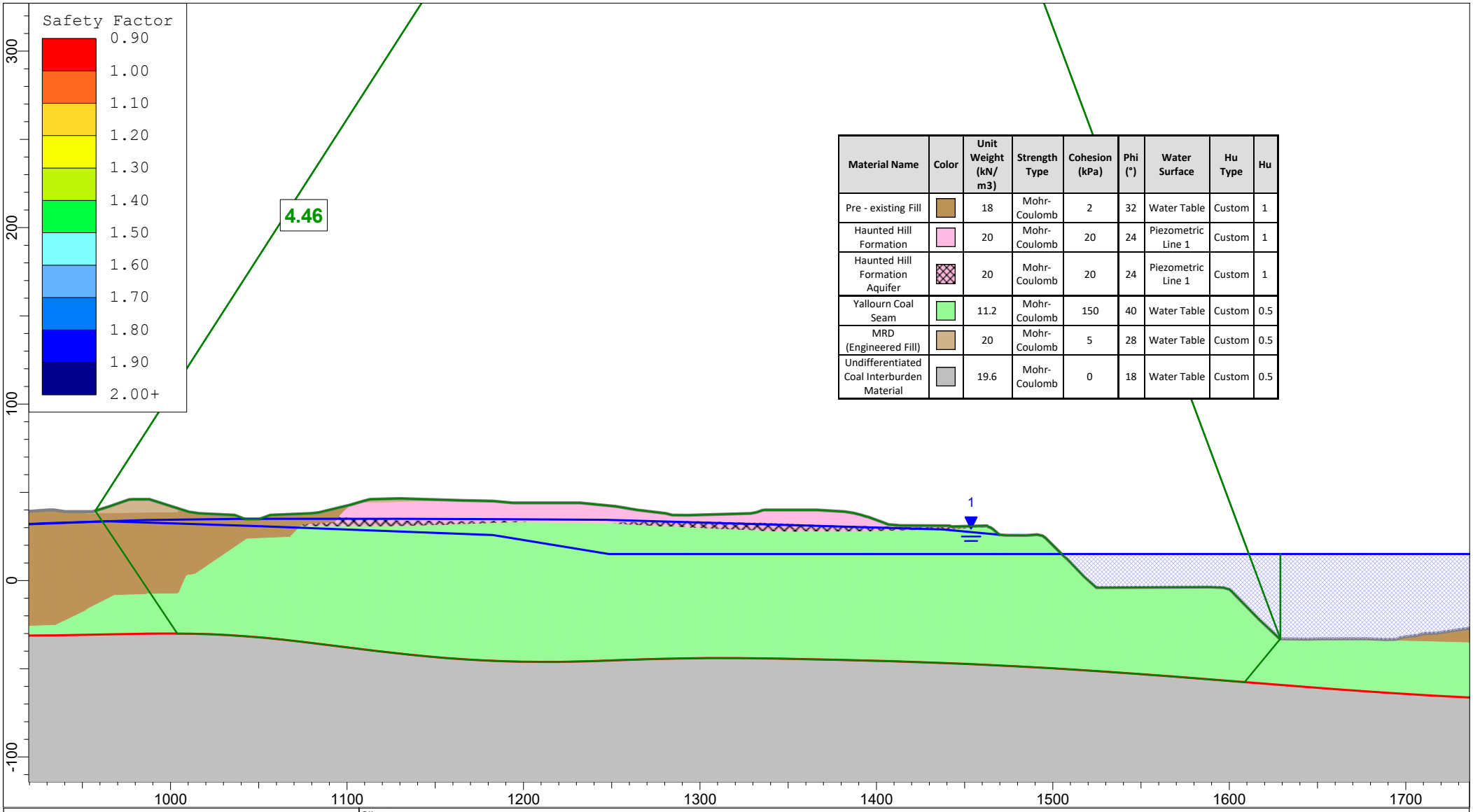
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Median Interseam Shear Strength		



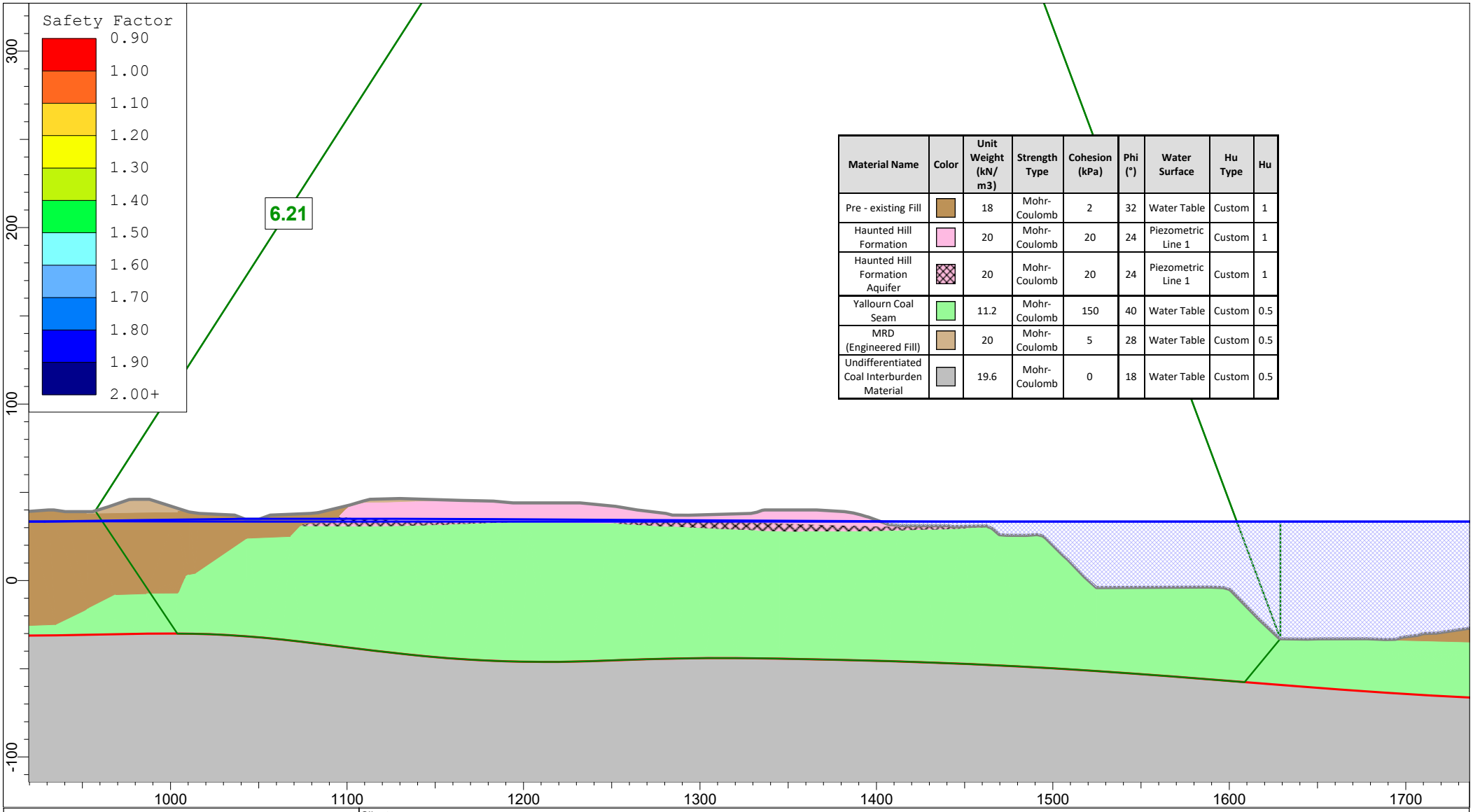
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Median Interseam Shear Strength		



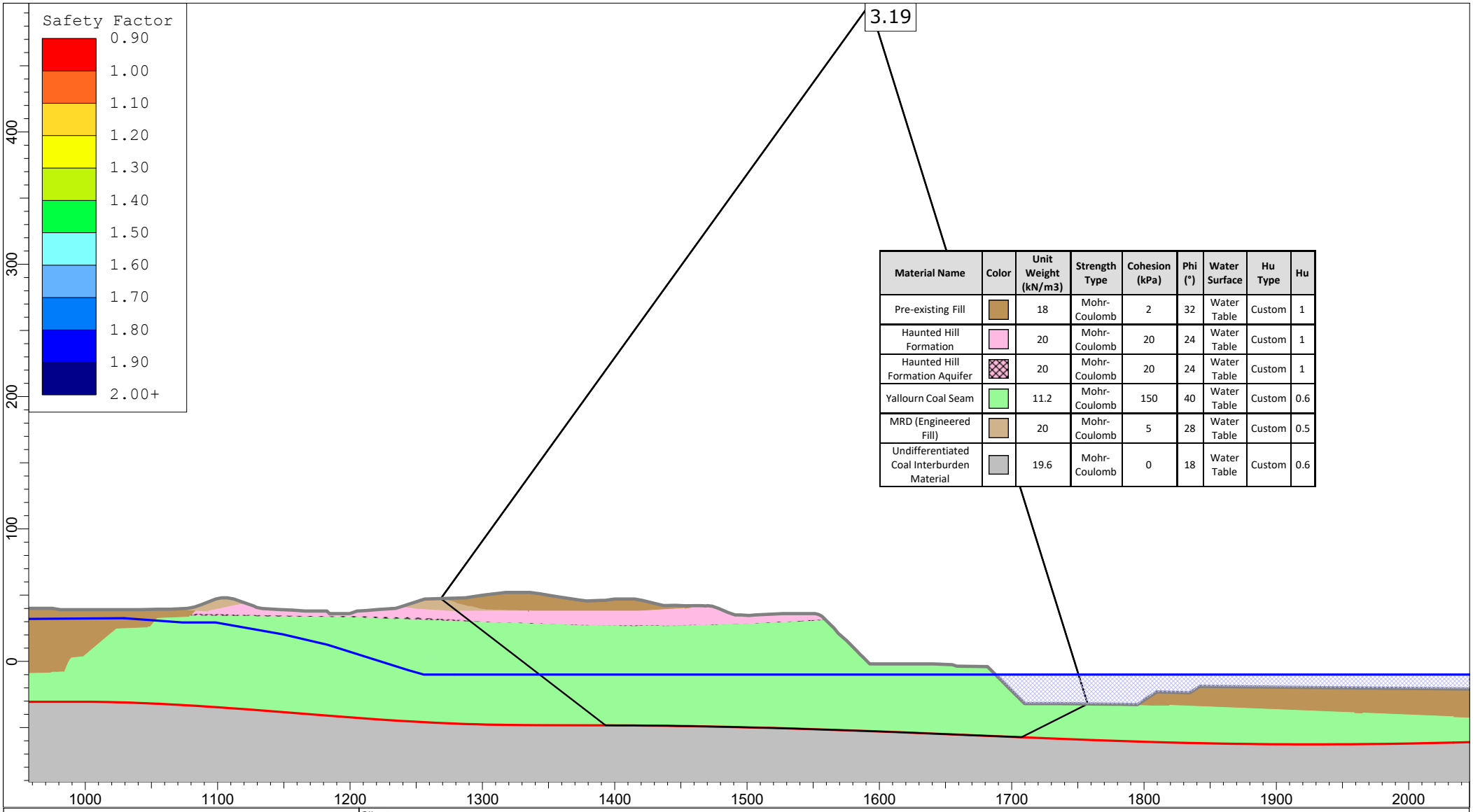
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Median Interseam Shear Strength		



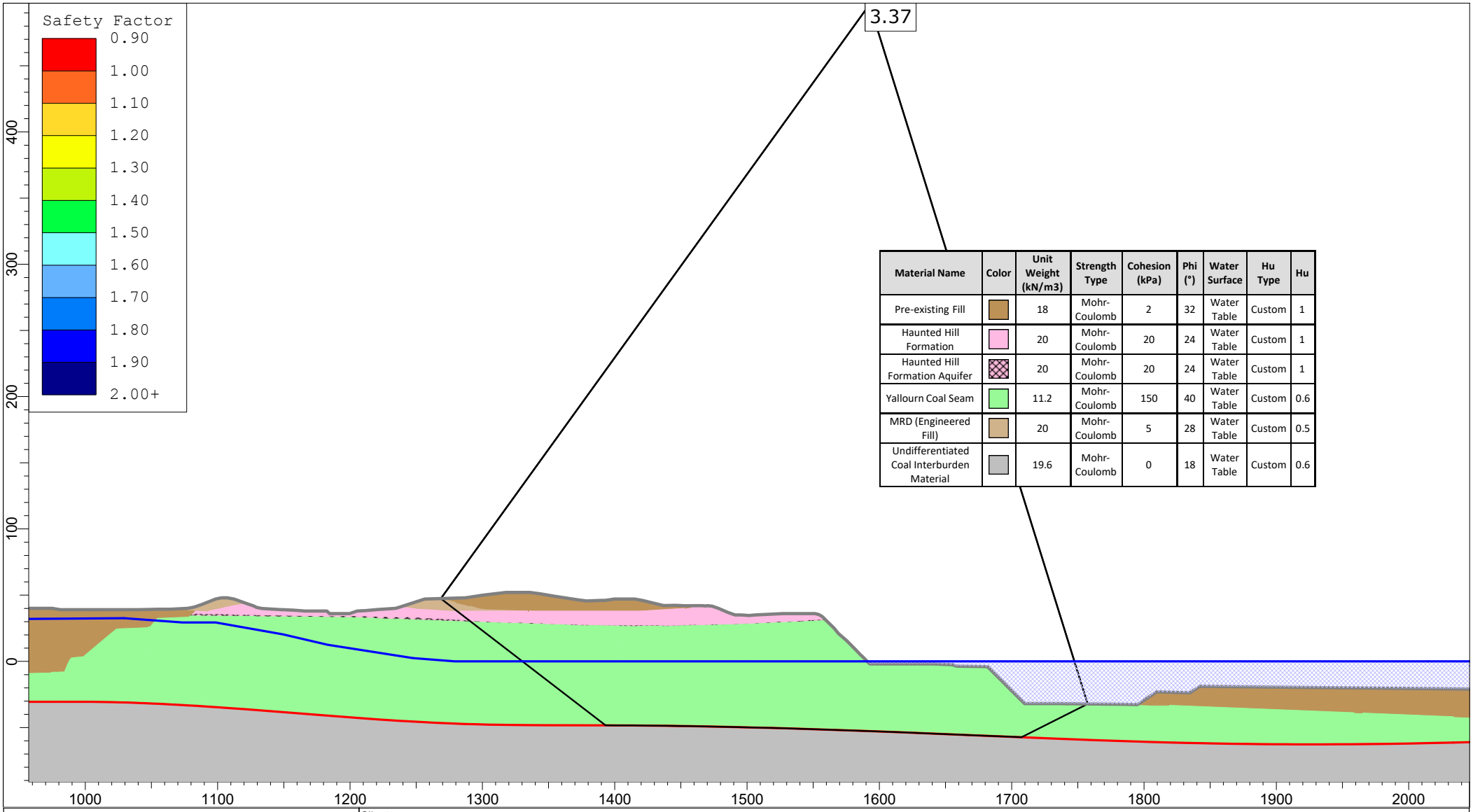
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



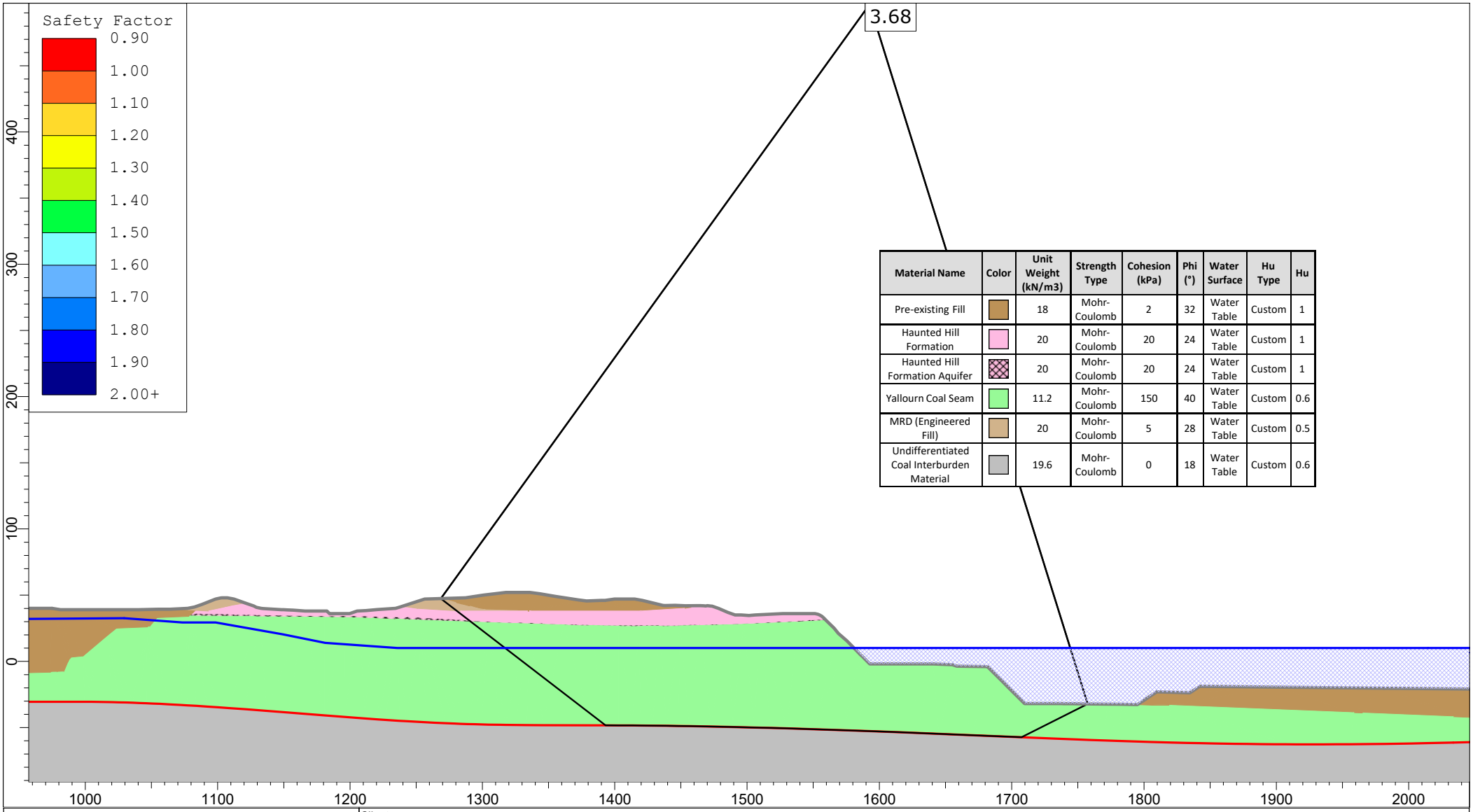
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Median Interseam Shear Strength		



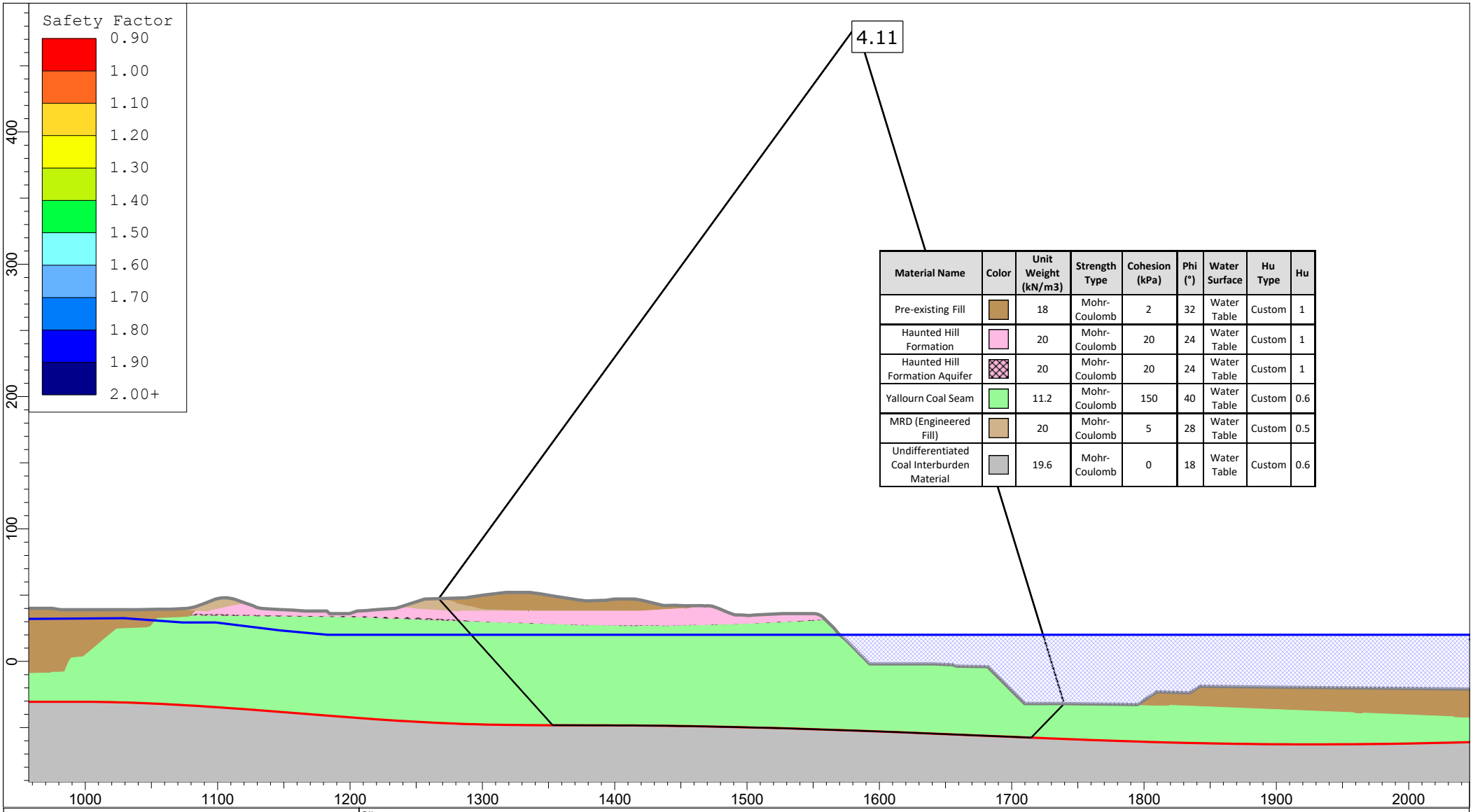
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Median Interseam Shear Strength		



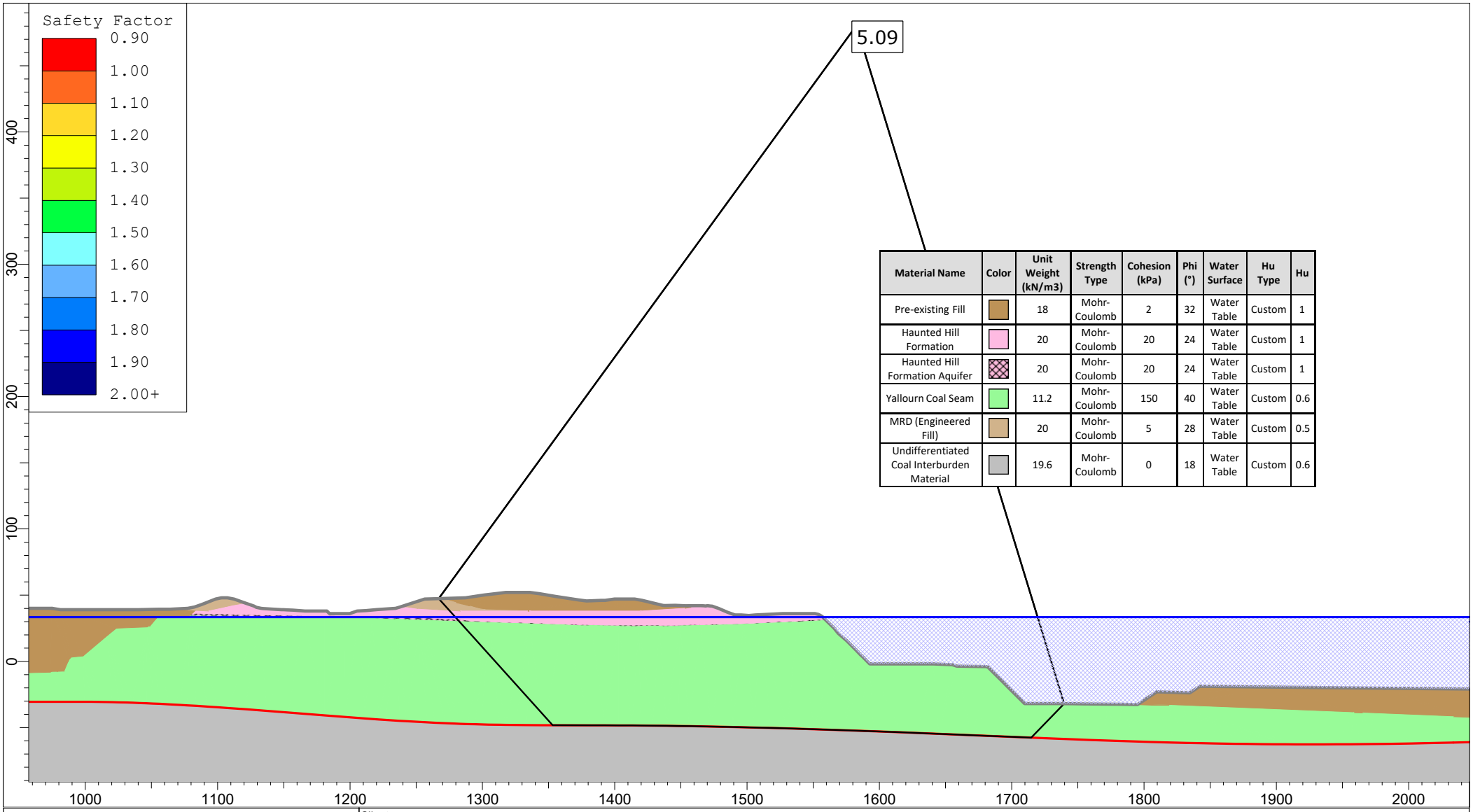
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



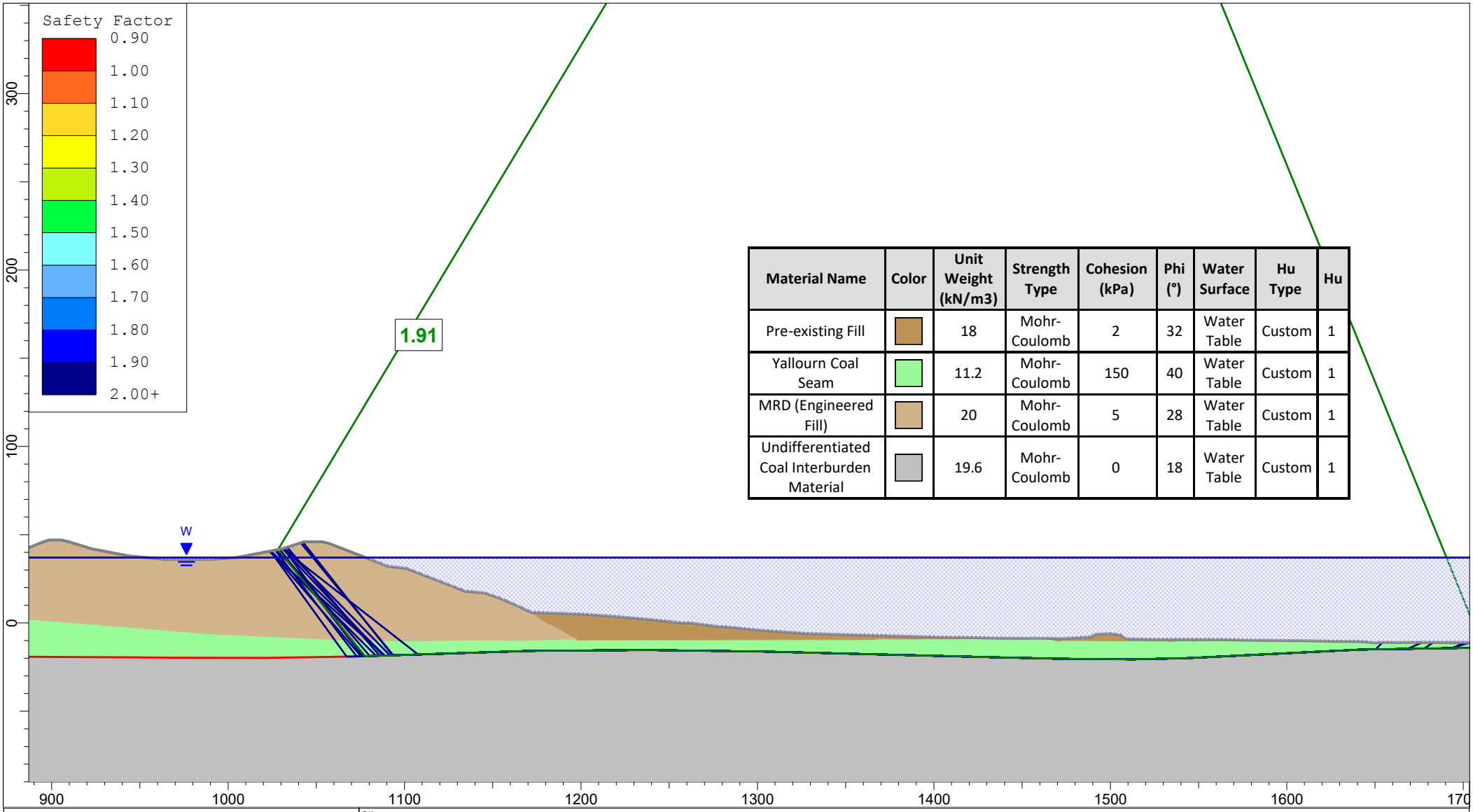
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



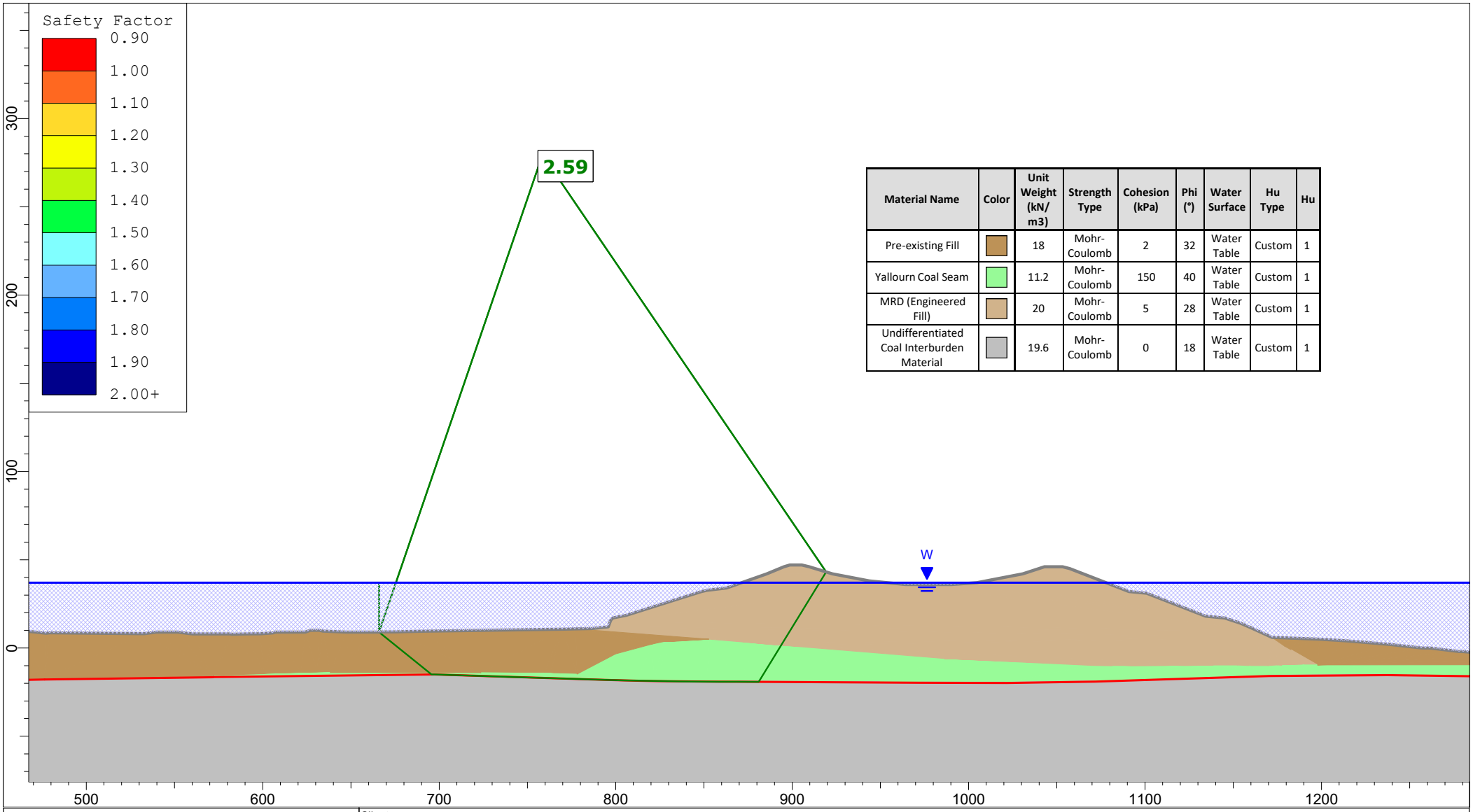
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Median Interseam Shear Strength		



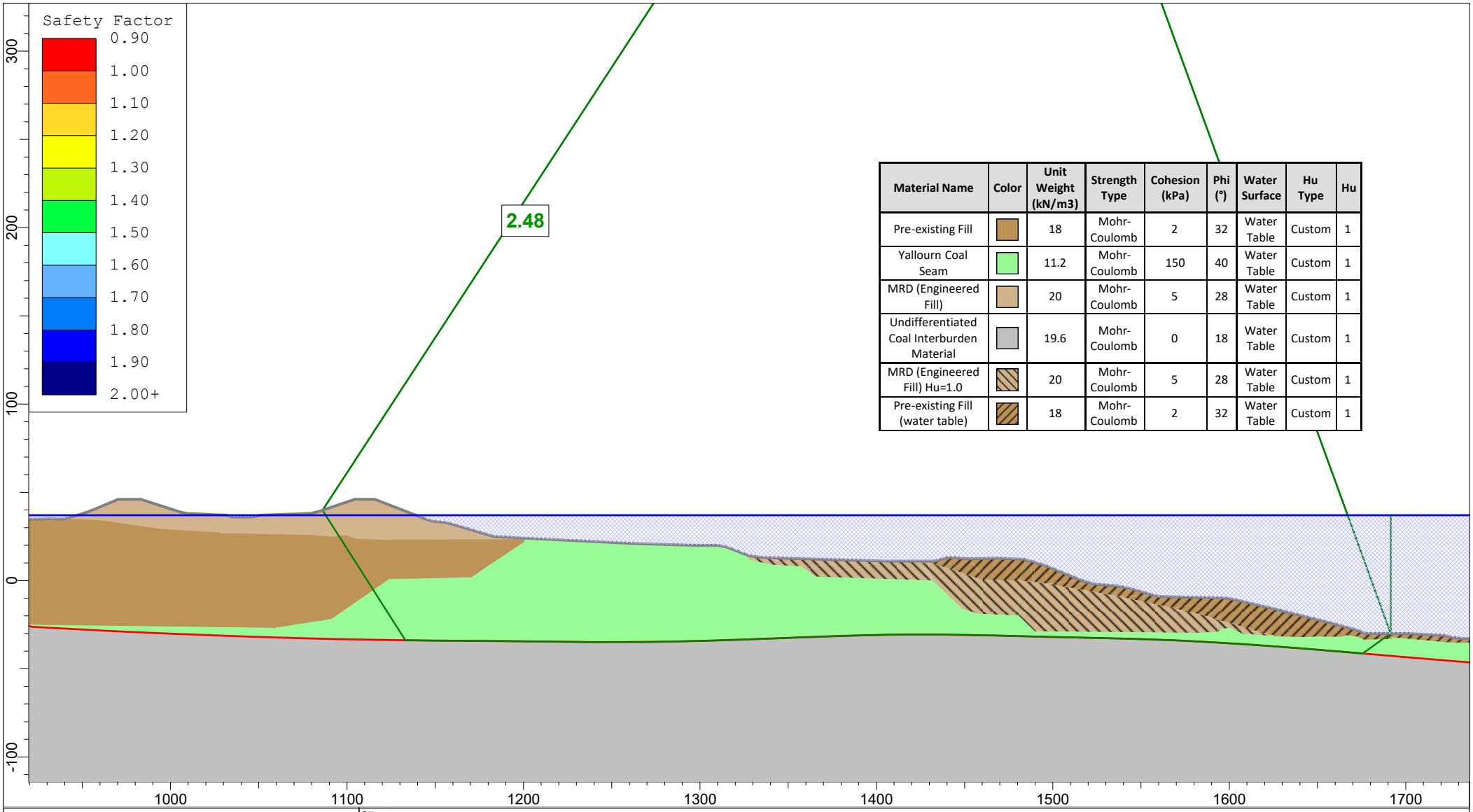
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



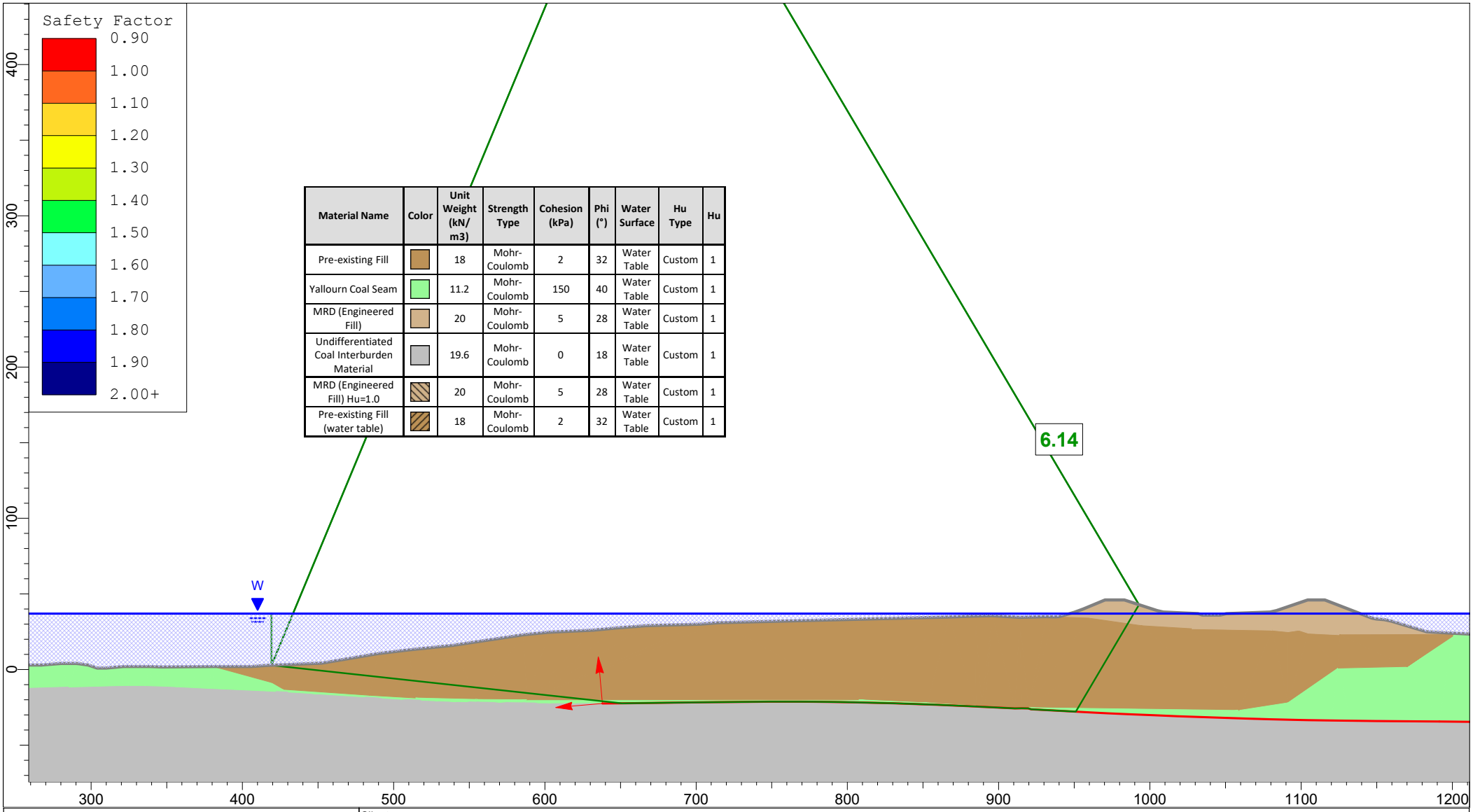
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength - Right To Left Failure		



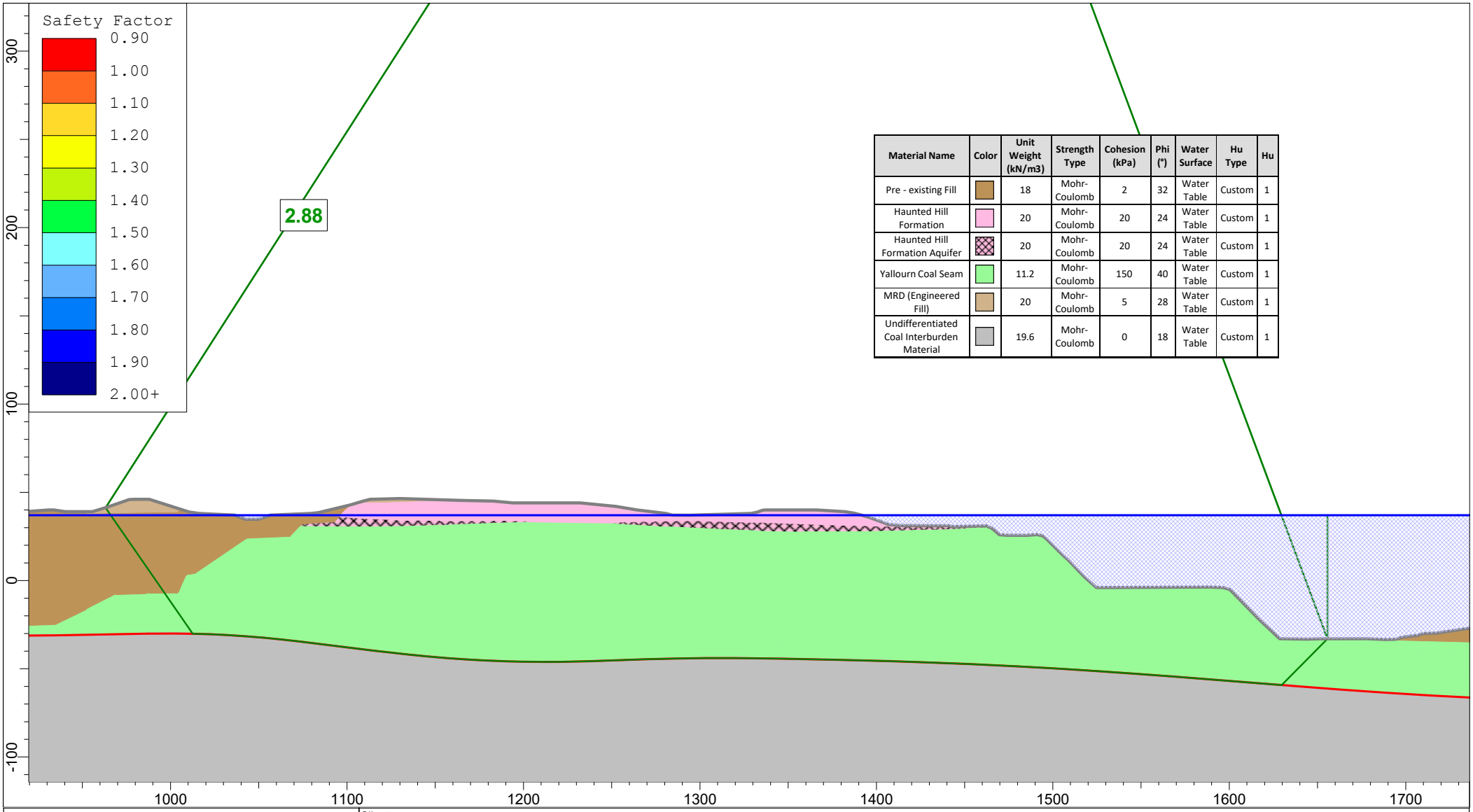
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



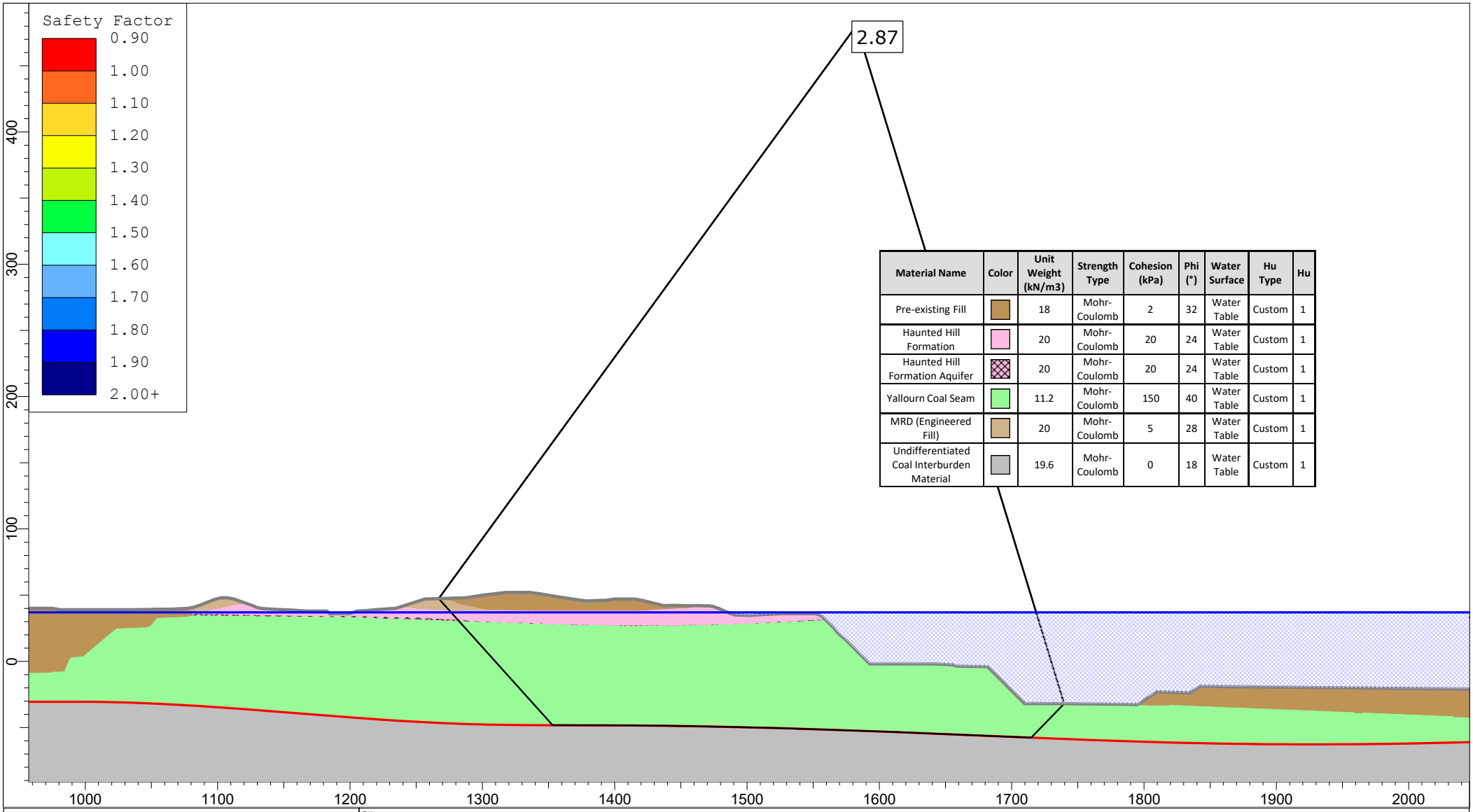
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength - Right To Left Failure		



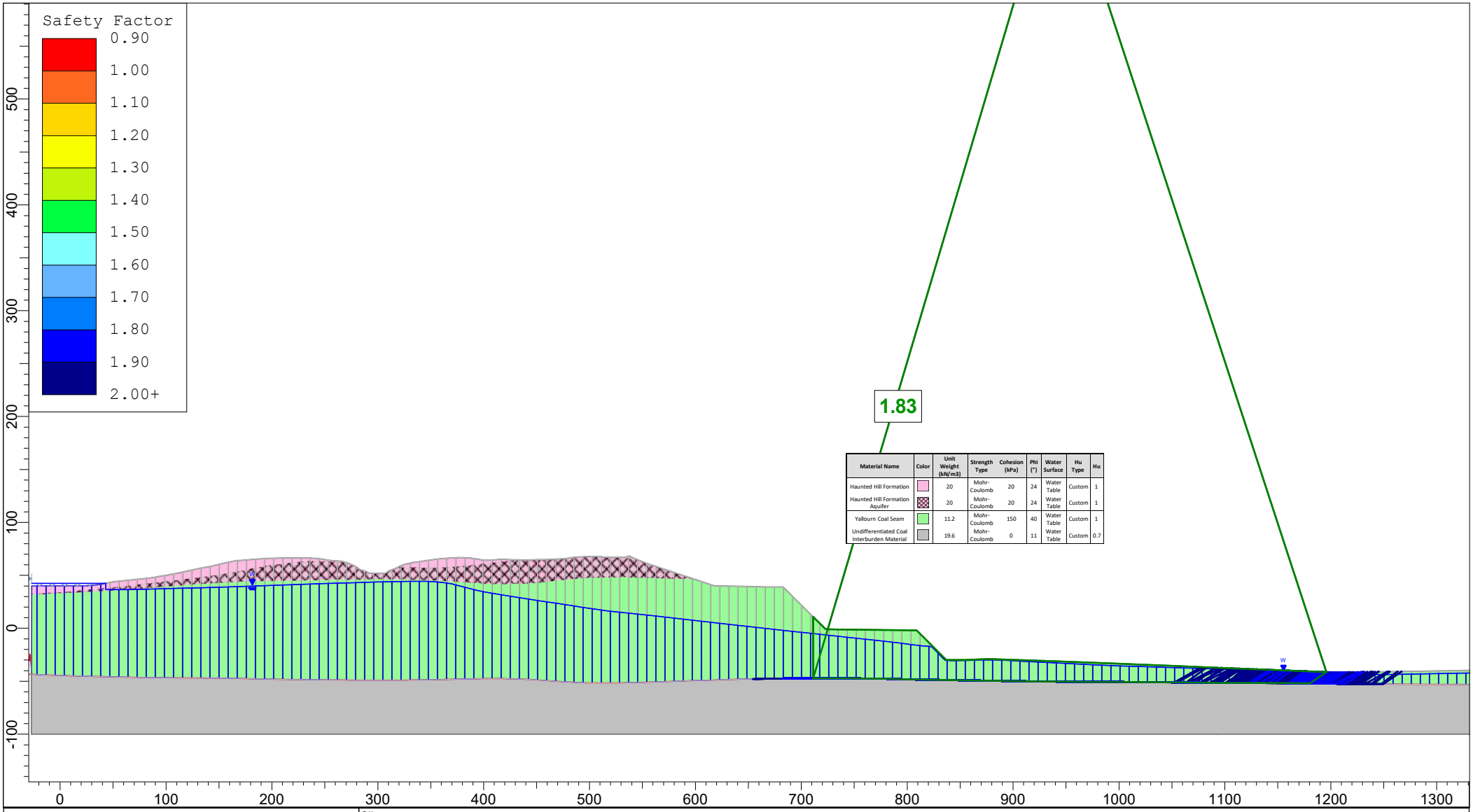
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		

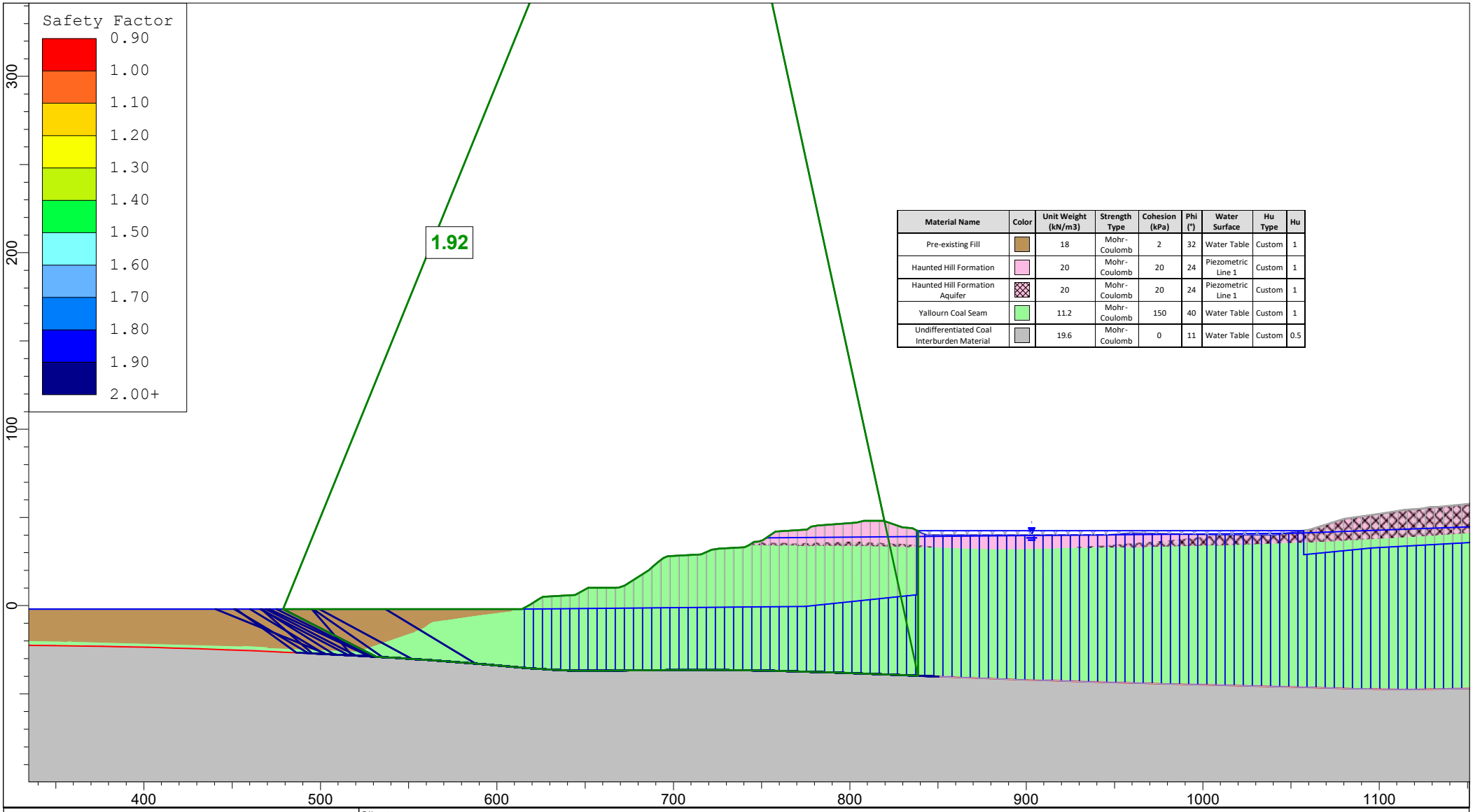


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		

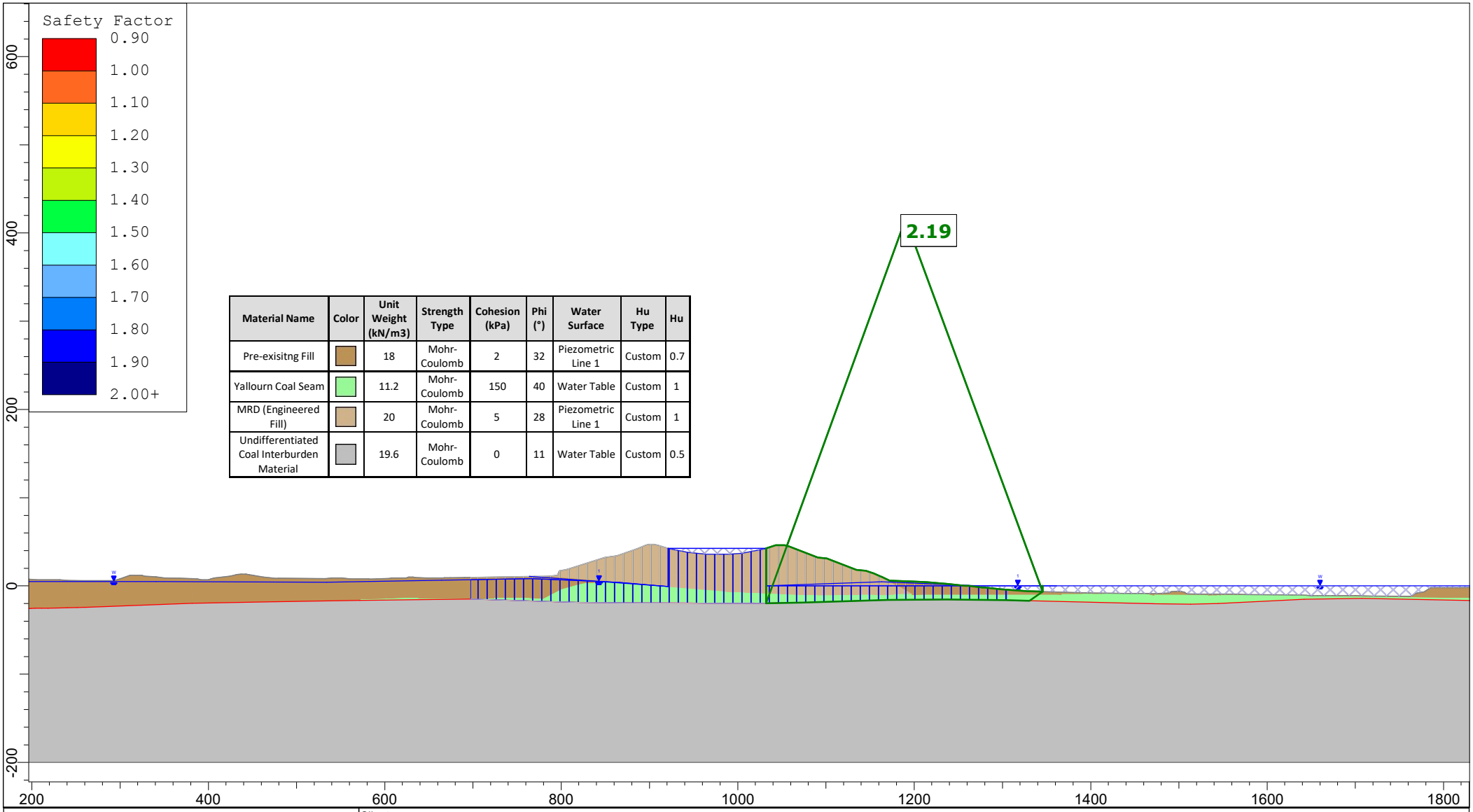


Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MVF-WB
Section:	Section 14	Case:	A3. Mine Closure
Job No:	PSM4487	Run:	Run 15 - Closure conditions
Notes:	Lower Bound Interseam Shear Strength and tension cracks filled to the water table		



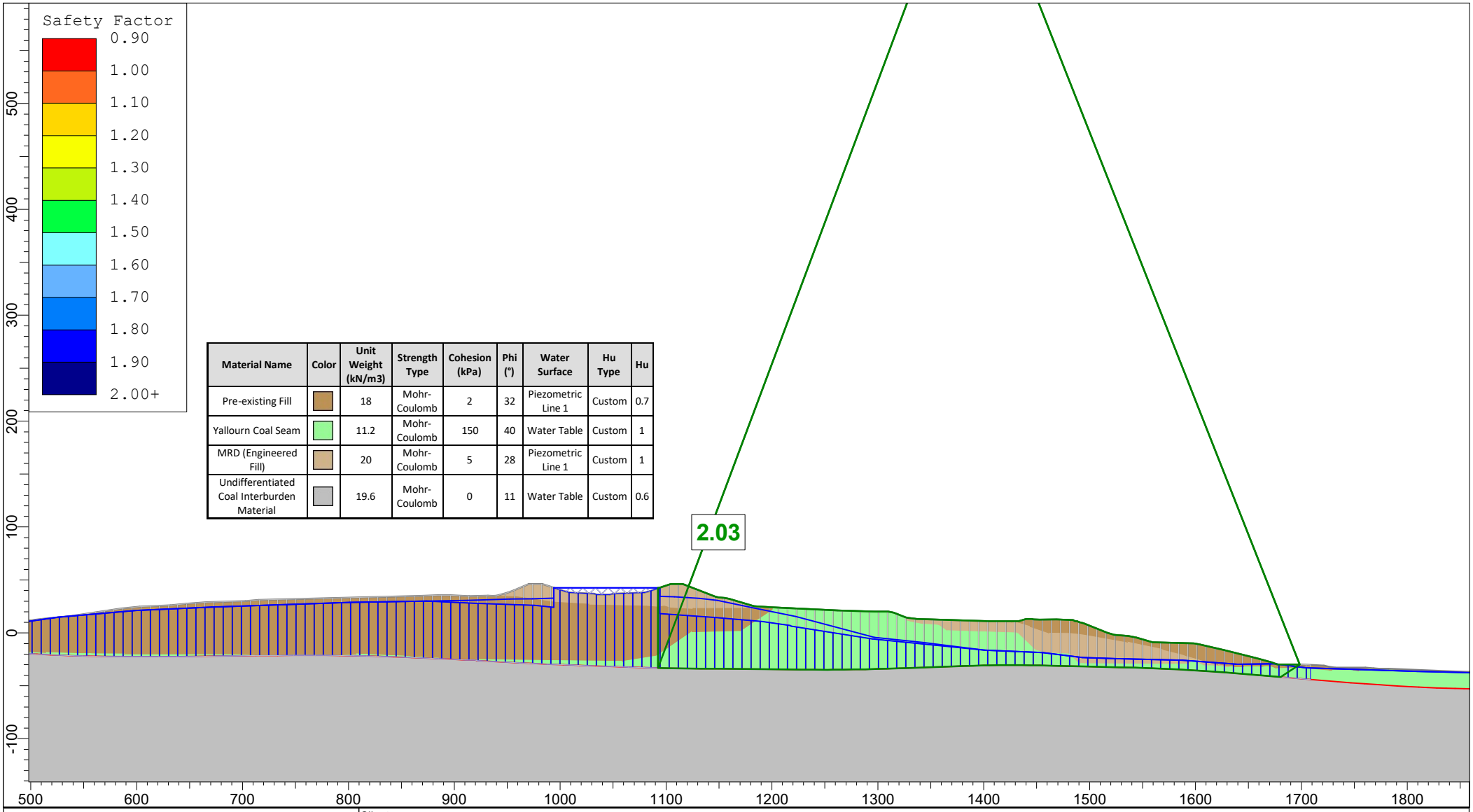
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	A3. Mine Closure
Job No:	PSM4487	Run:	Run 15 - Closure Conditions
Notes:	Lower Bound Interseam Shear Strength and tension cracks filled to the water table		



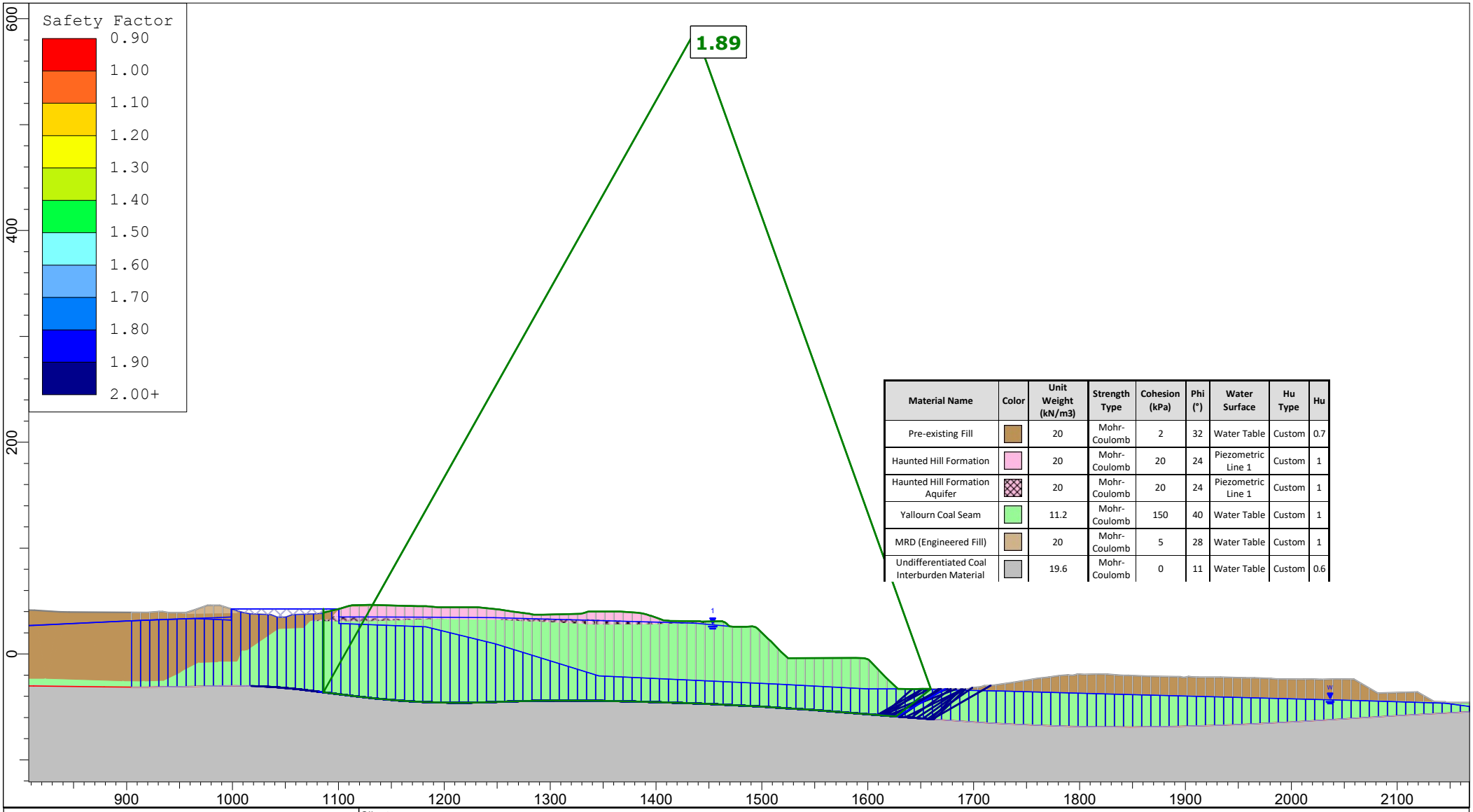
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-exisitng Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	0.7
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Tunnel E410
Section:	Section 32	Case:	A3. Mine Closure
Job No:	PSM4487	Run:	Run16 - Lake at 0 mRL
Notes:	Lower Bound Interseam Shear Strength + Tension Crack Filled to Water Table		



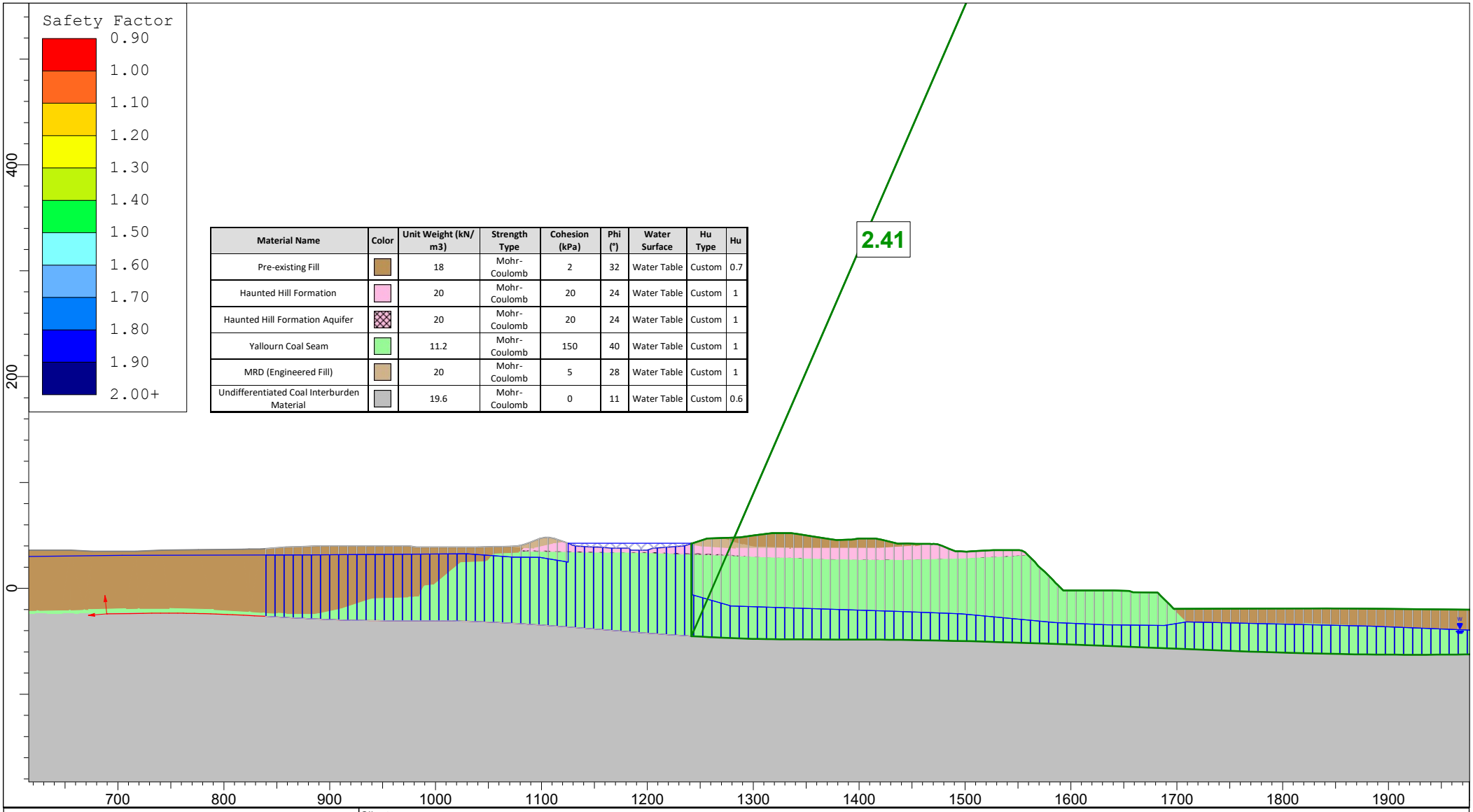
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	0.7
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	A3. Mine Closure
Job No:	PSM4487	Run:	Run15 - Mine Closure
Notes:	Lower Bound Interseam Shear Strength + Tension Crack Filled to Water Table		



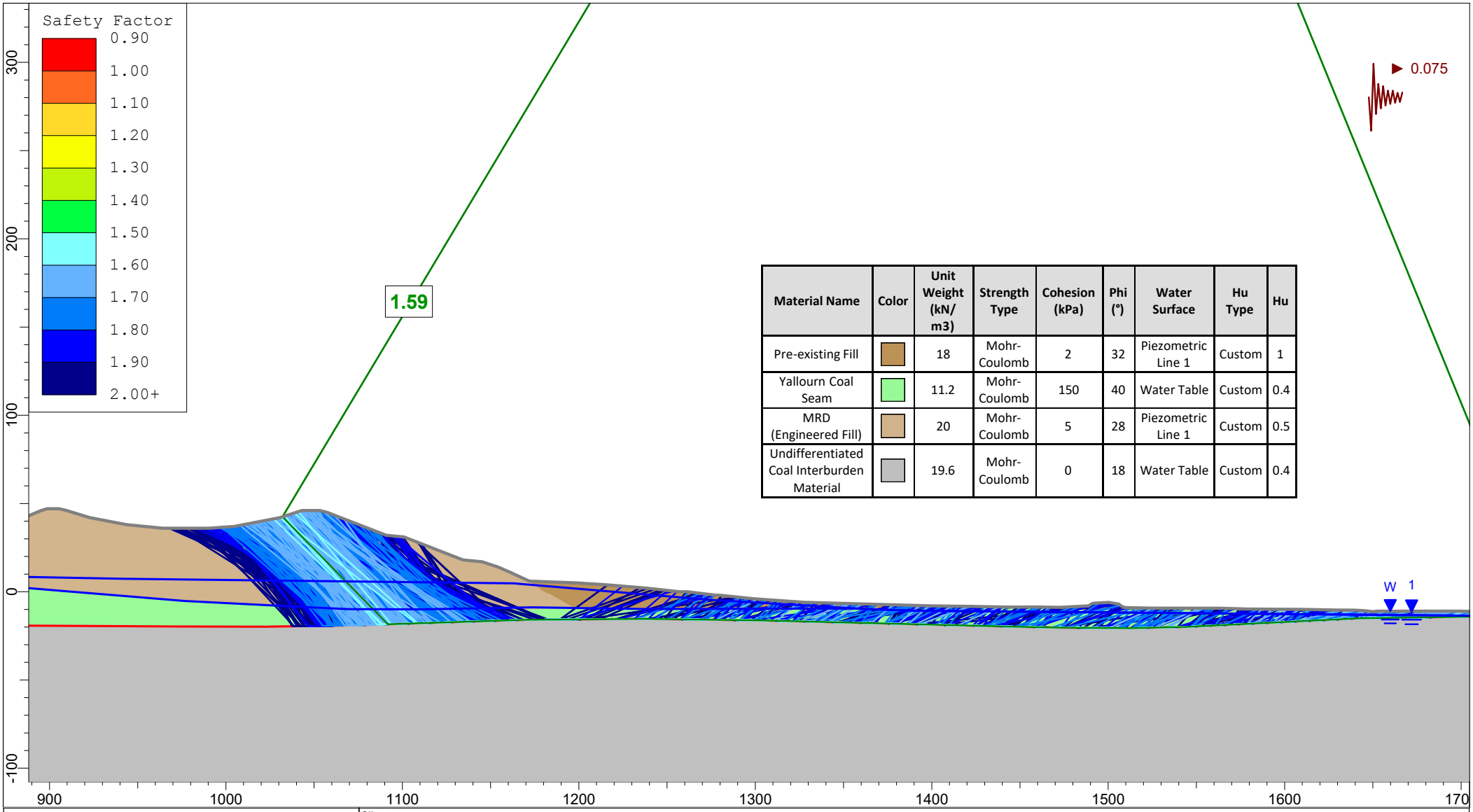
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		20	Mohr-Coulomb	2	32	Water Table	Custom	0.7
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	A3. Mine Closure
Job No:	PSM4487	Run:	Run15. Mine Closure
Notes:	Lower Bound Interseam Shear Strength + Tension Crack Filled to Water Table		



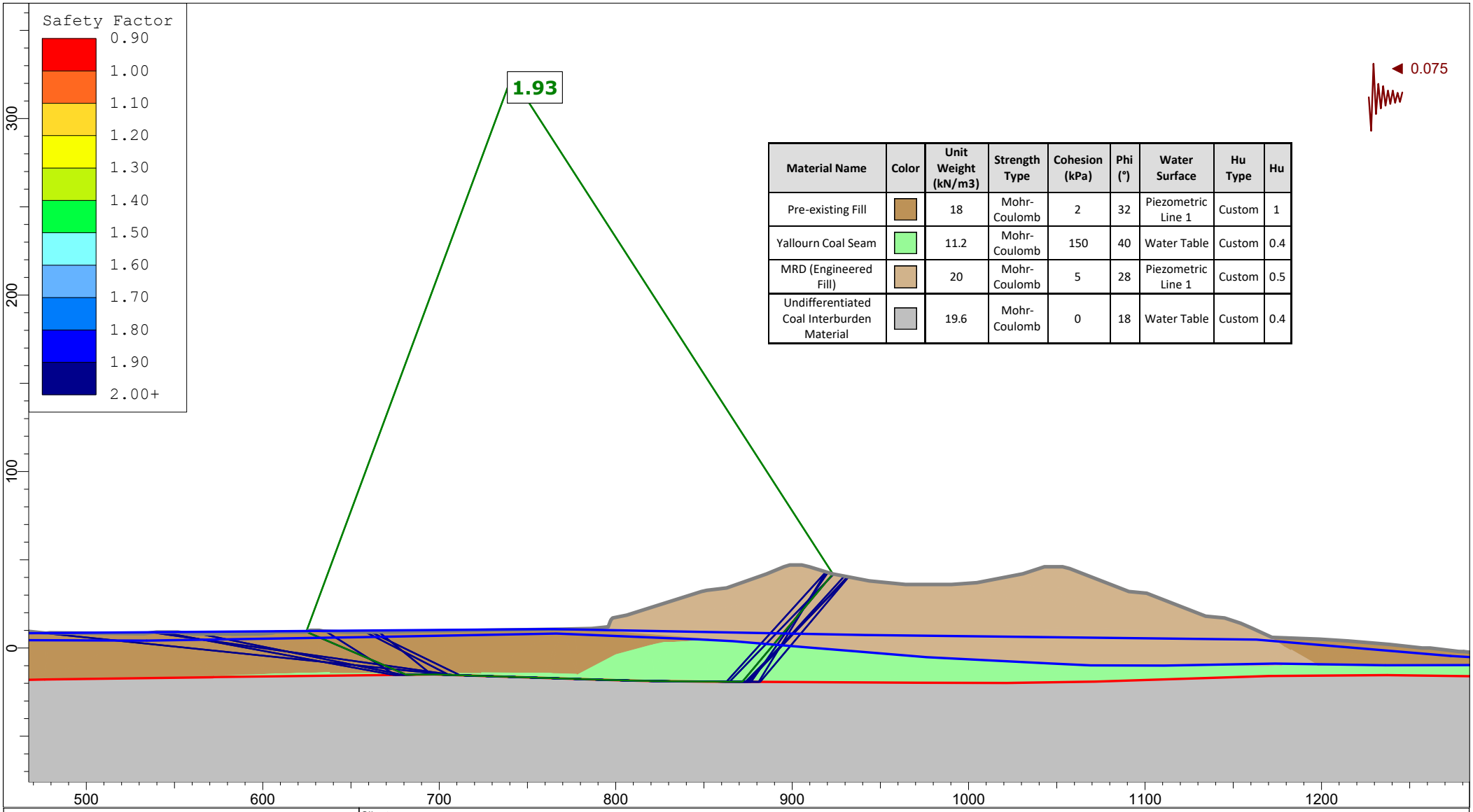
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	0.7
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	A3. Mine Closure
Job No:	PSM4487	Run:	Run15 - Mine Closure
Notes:	Lower Bound Interseam Shear Strength + Tension Crack Filled to Water Table		



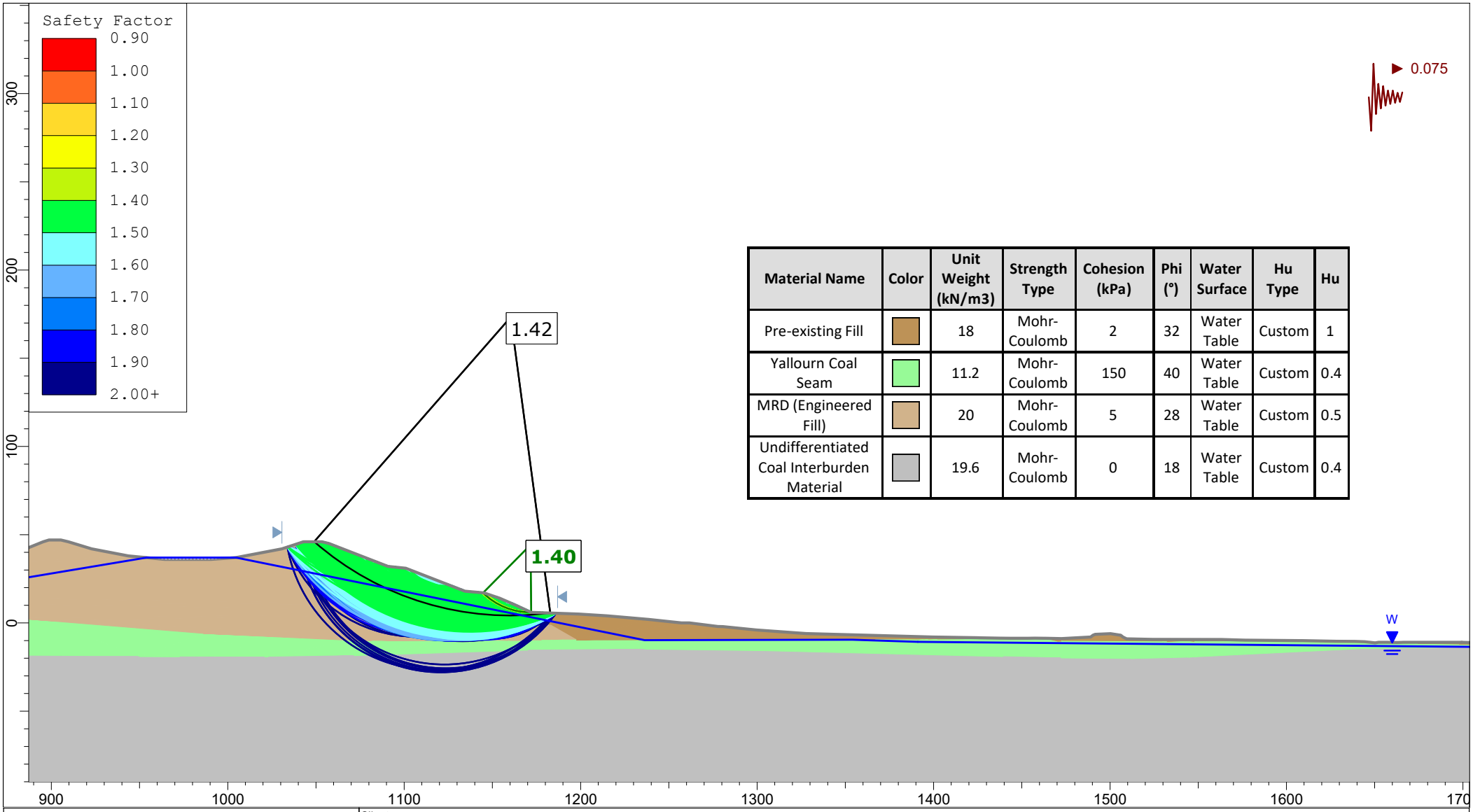
Material Name	Color	Unit Weight (kN/ m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



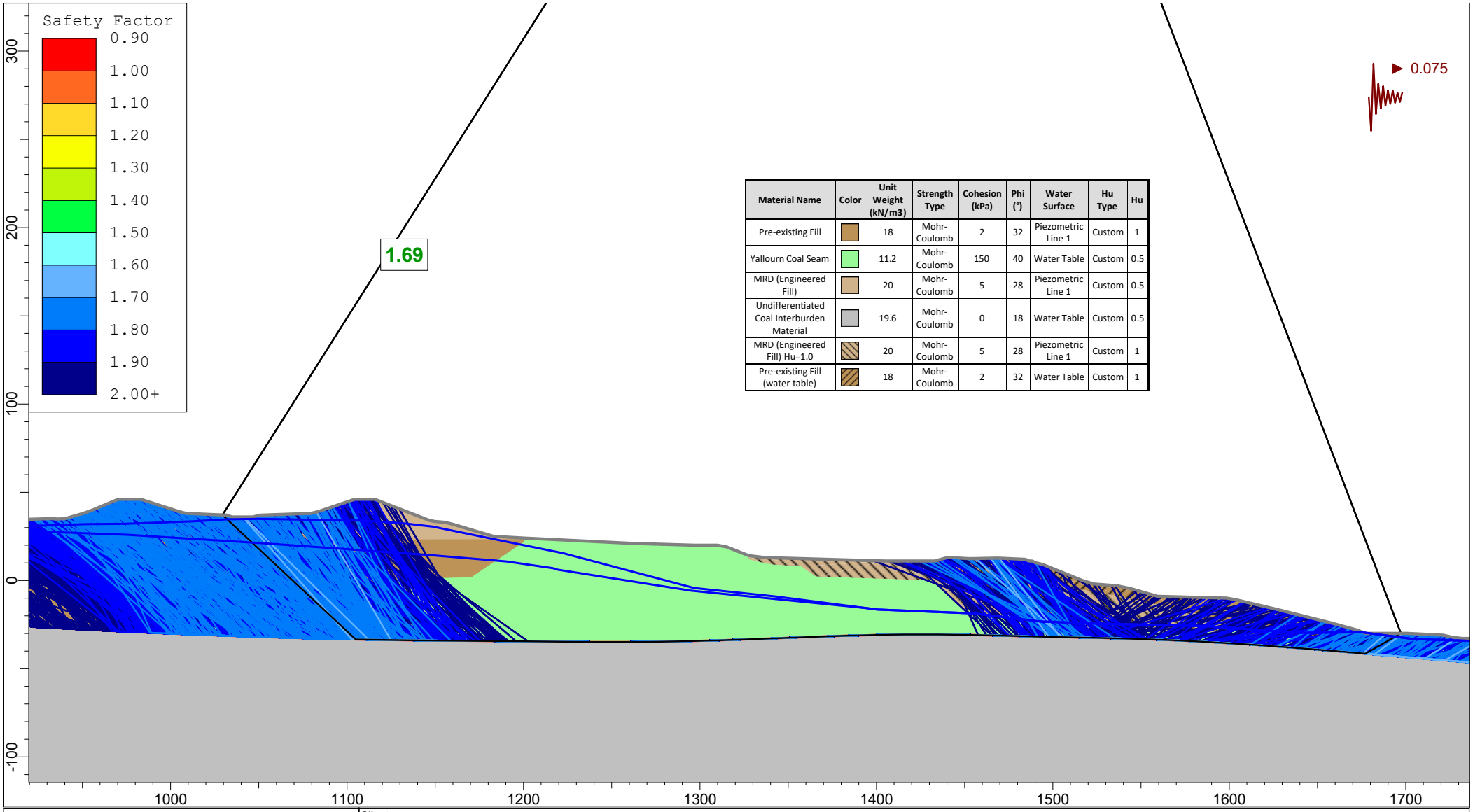
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength - Right To Left Failure		



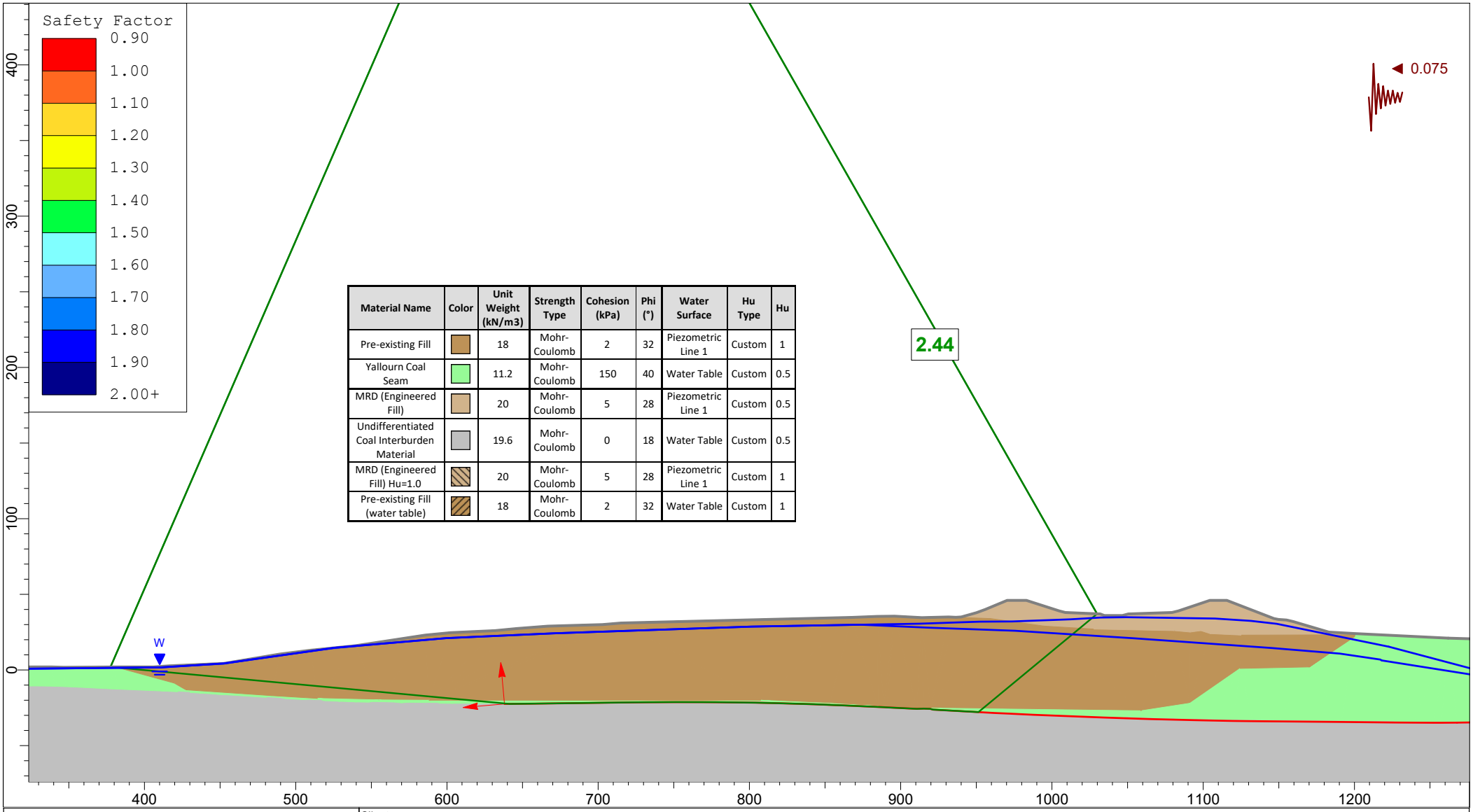
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Seismic Circular - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



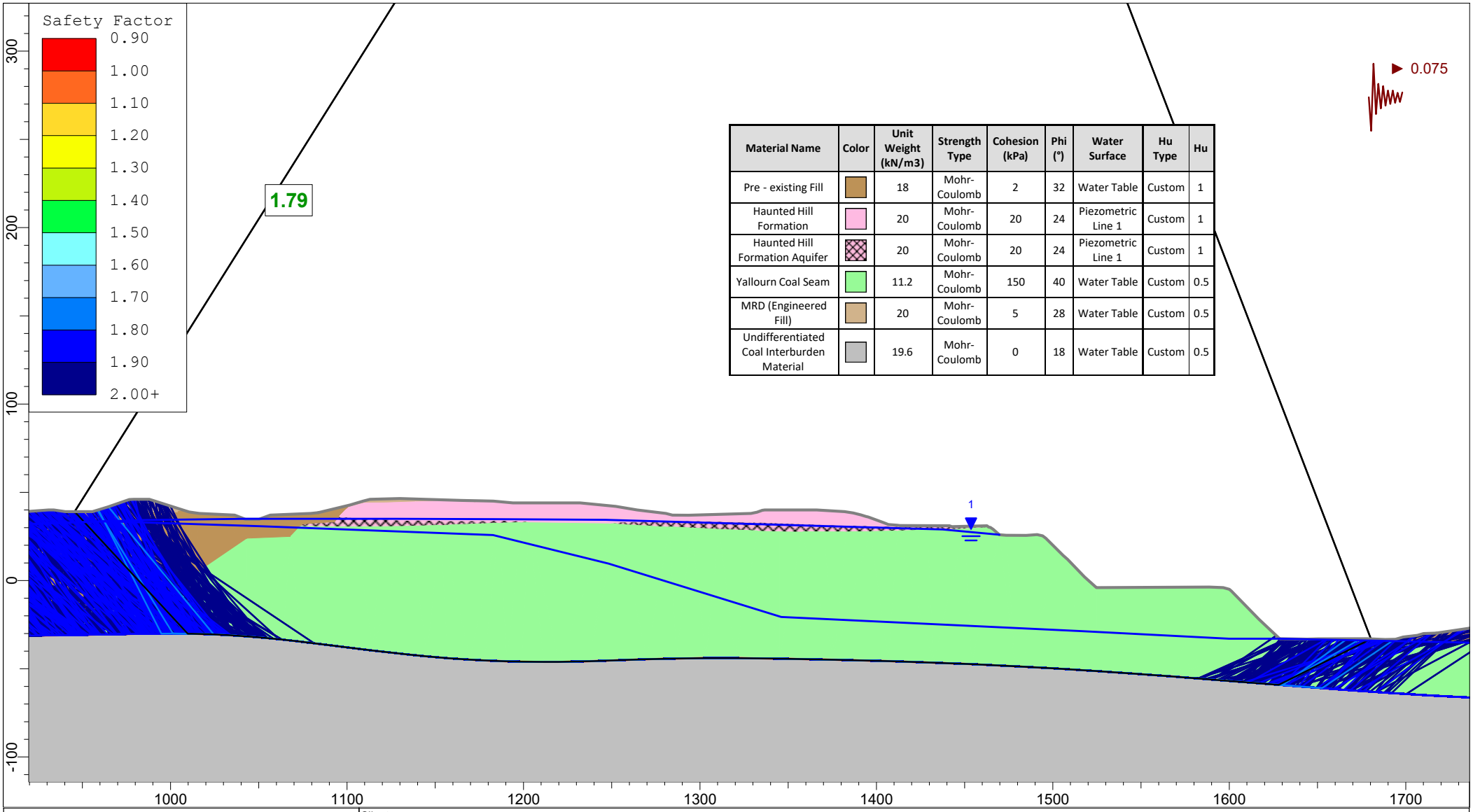
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



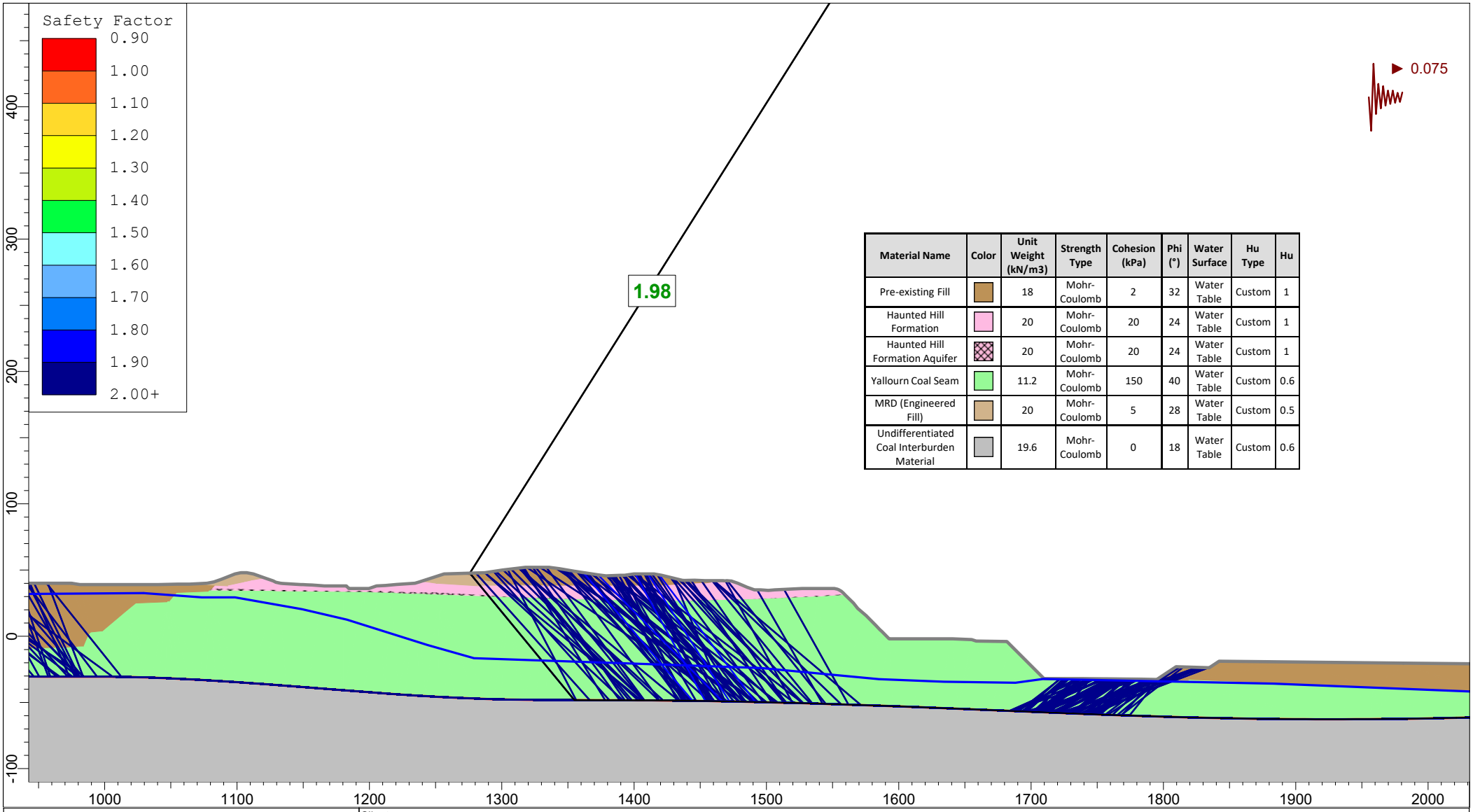
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength - Right To Left		



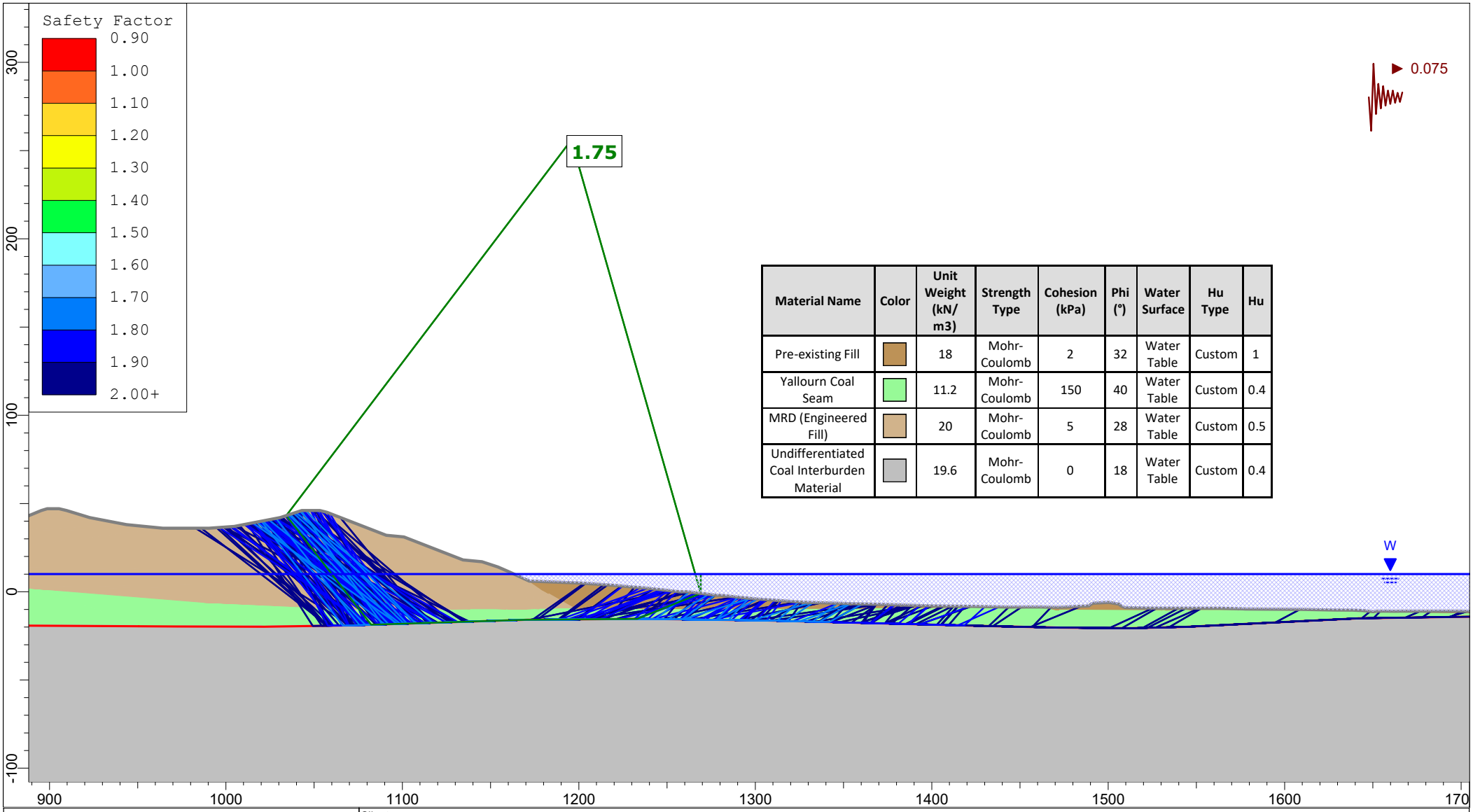
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



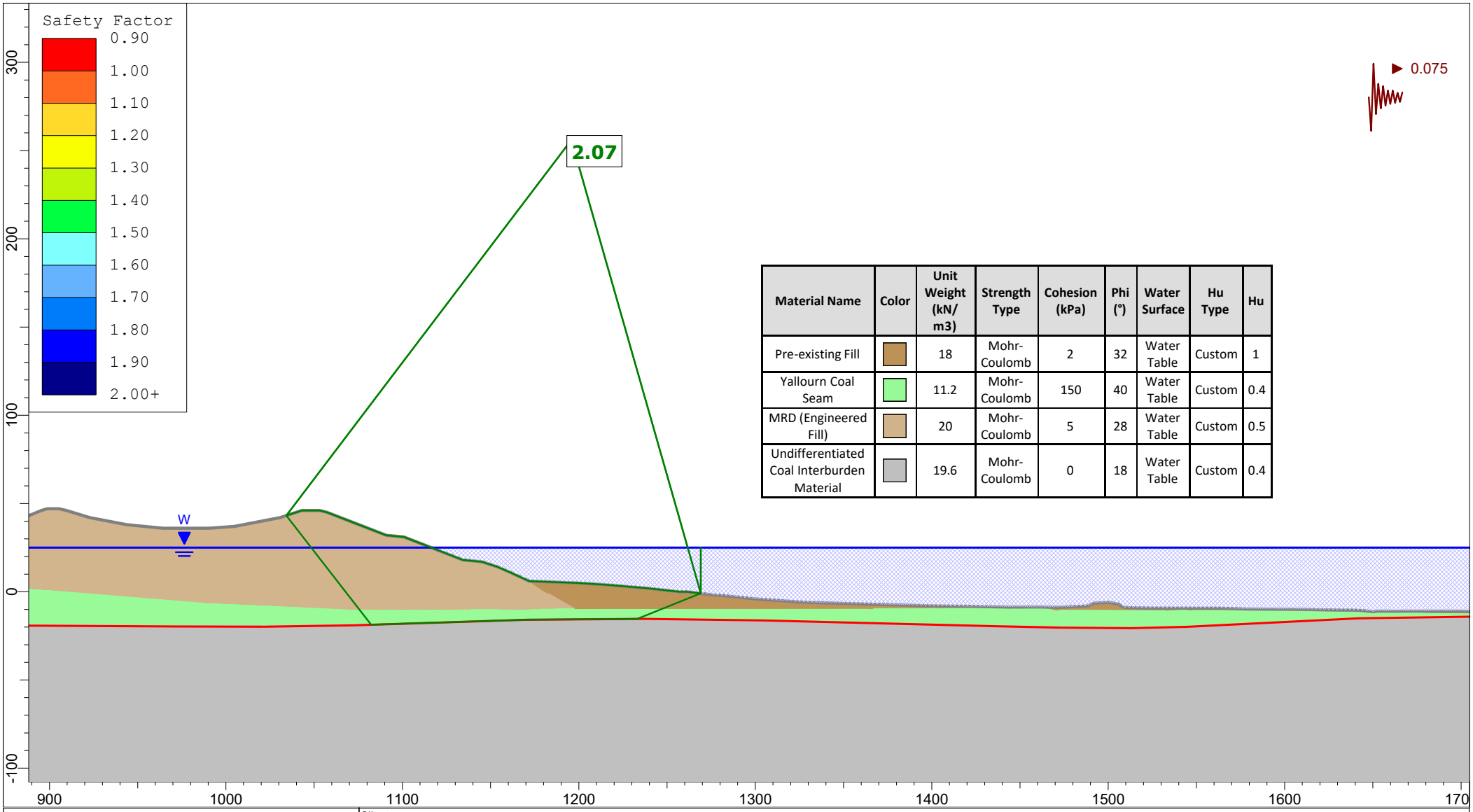
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Median Interseam Shear Strength		



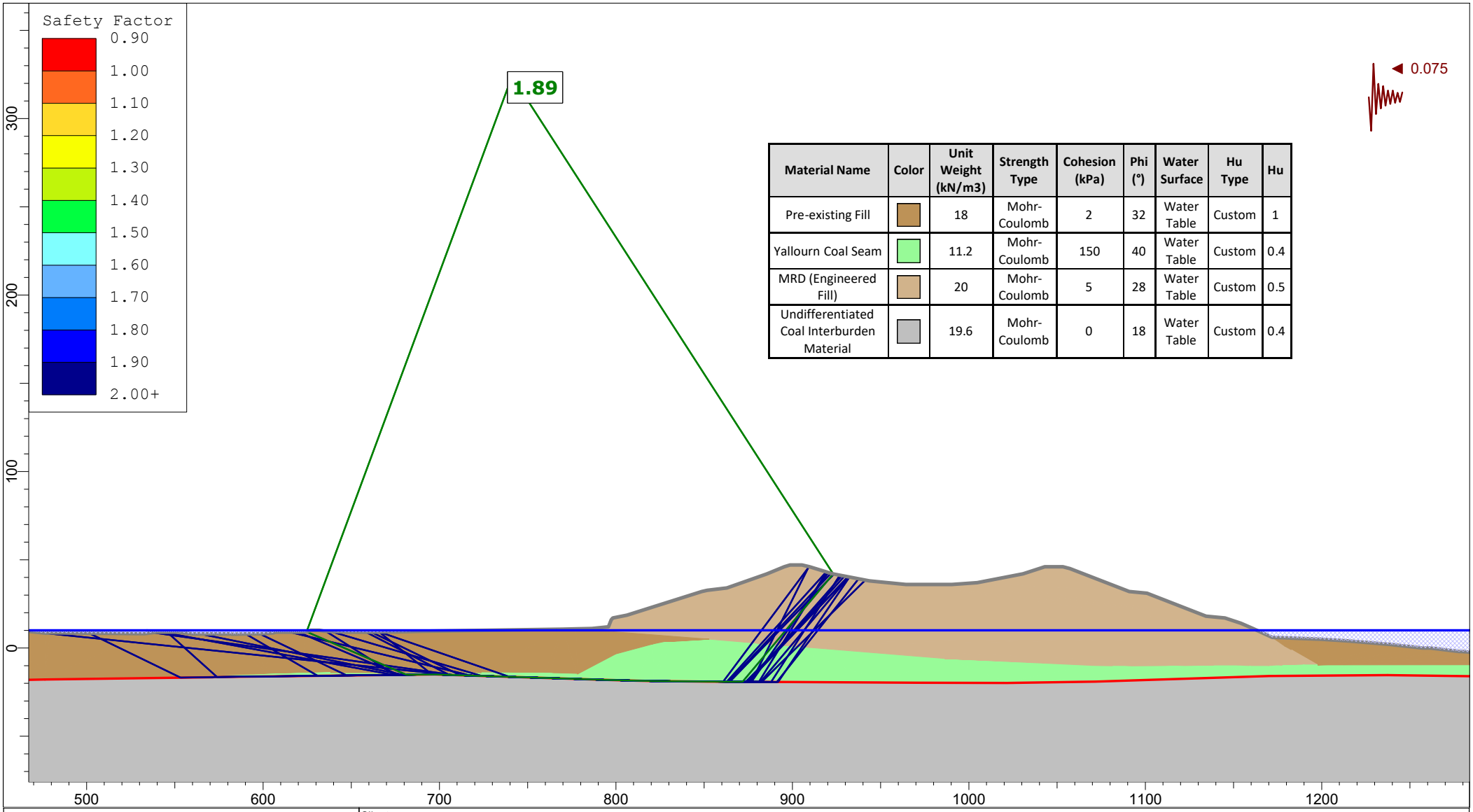
Material Name	Color	Unit Weight (kN/ m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



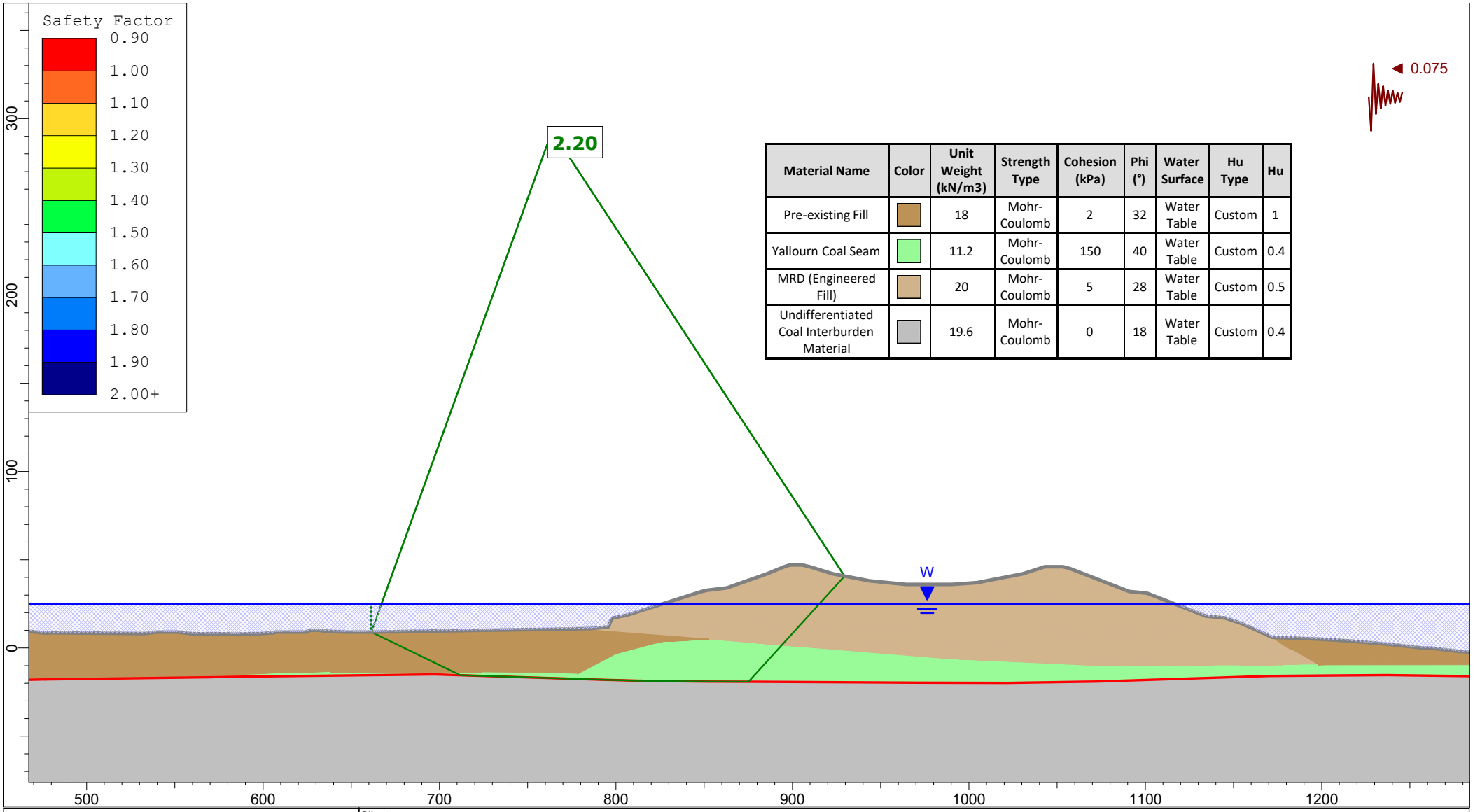
Material Name	Color	Unit Weight (kN/ m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength		



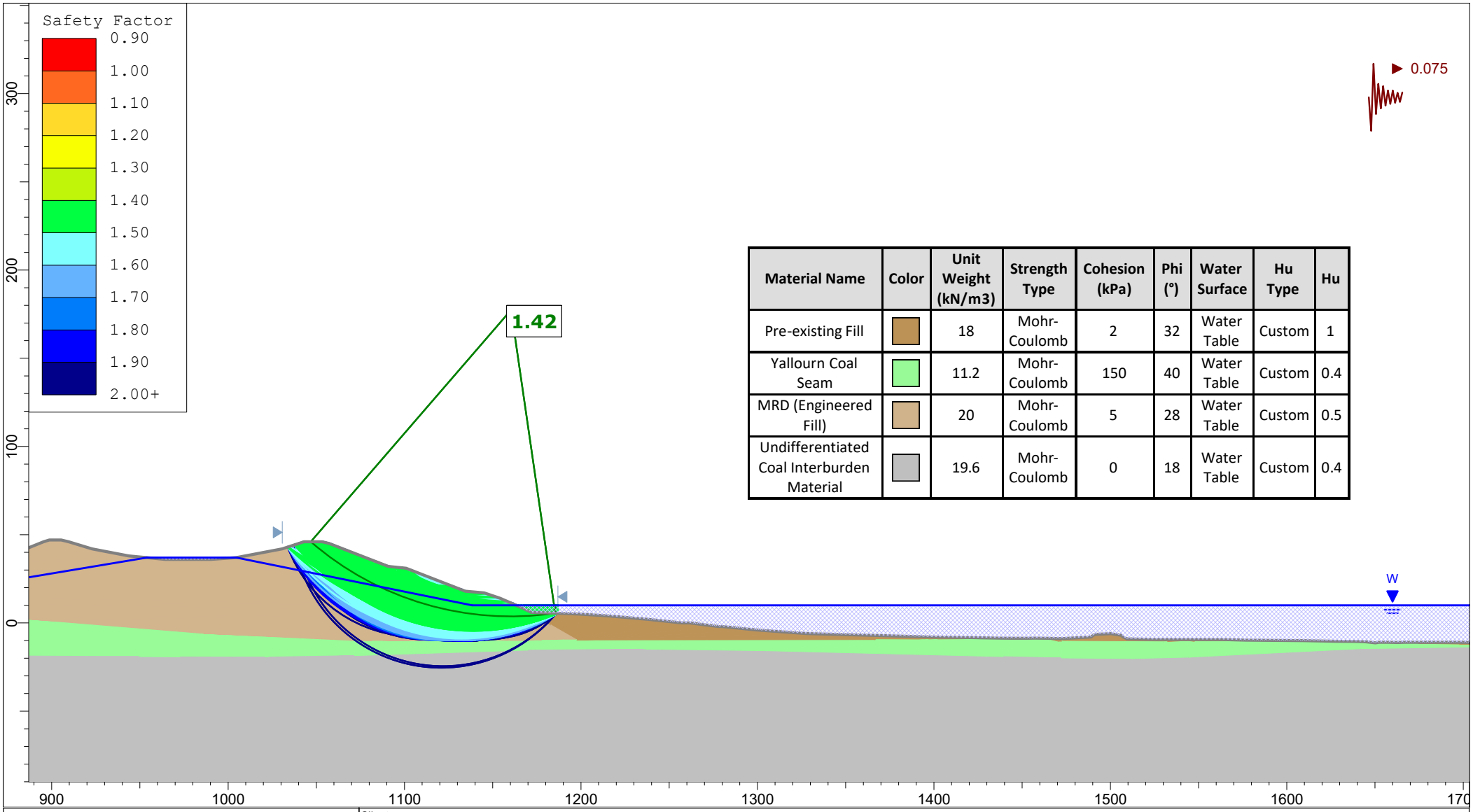
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength - Right To Left Failure		



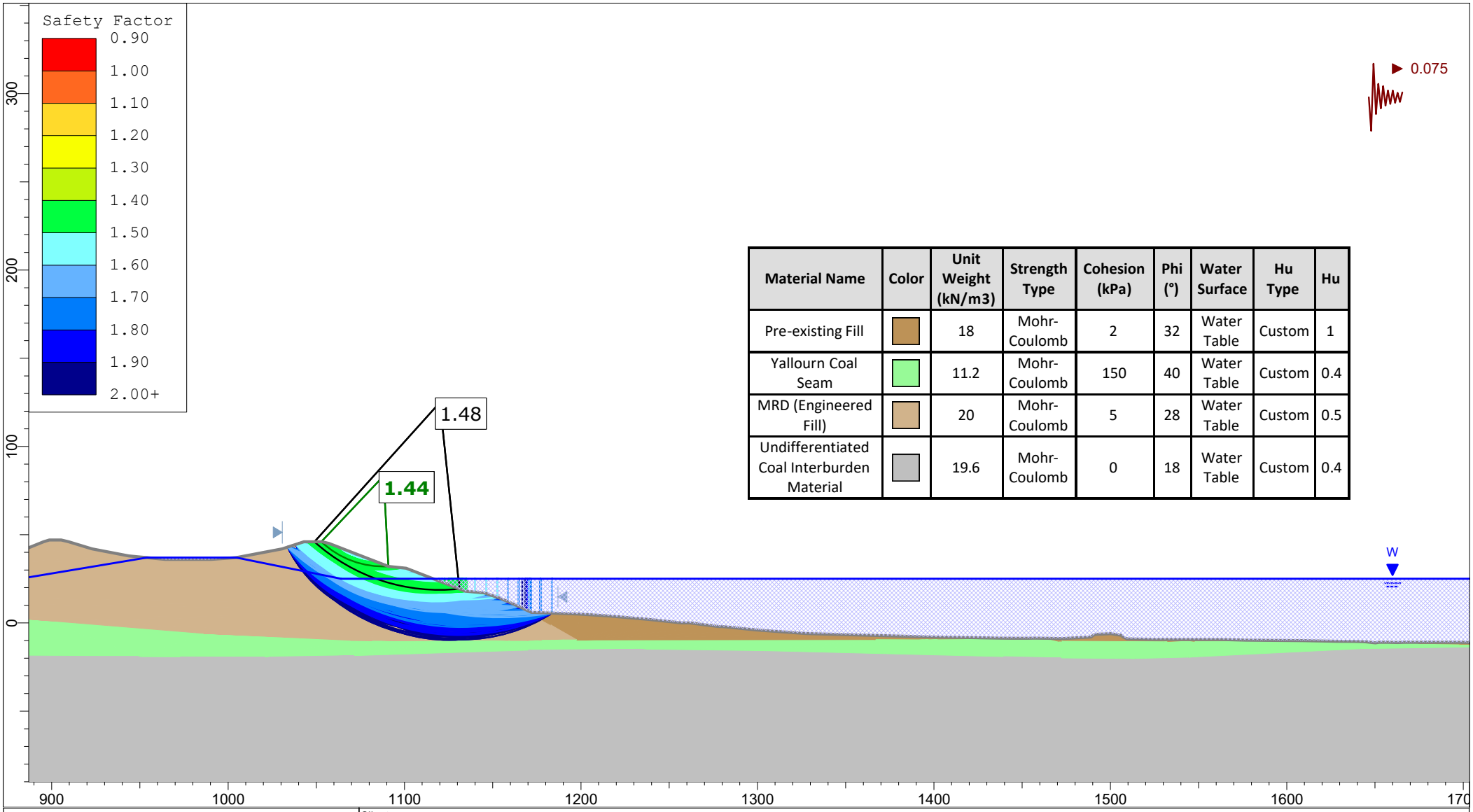
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength - Right To Left Failure		



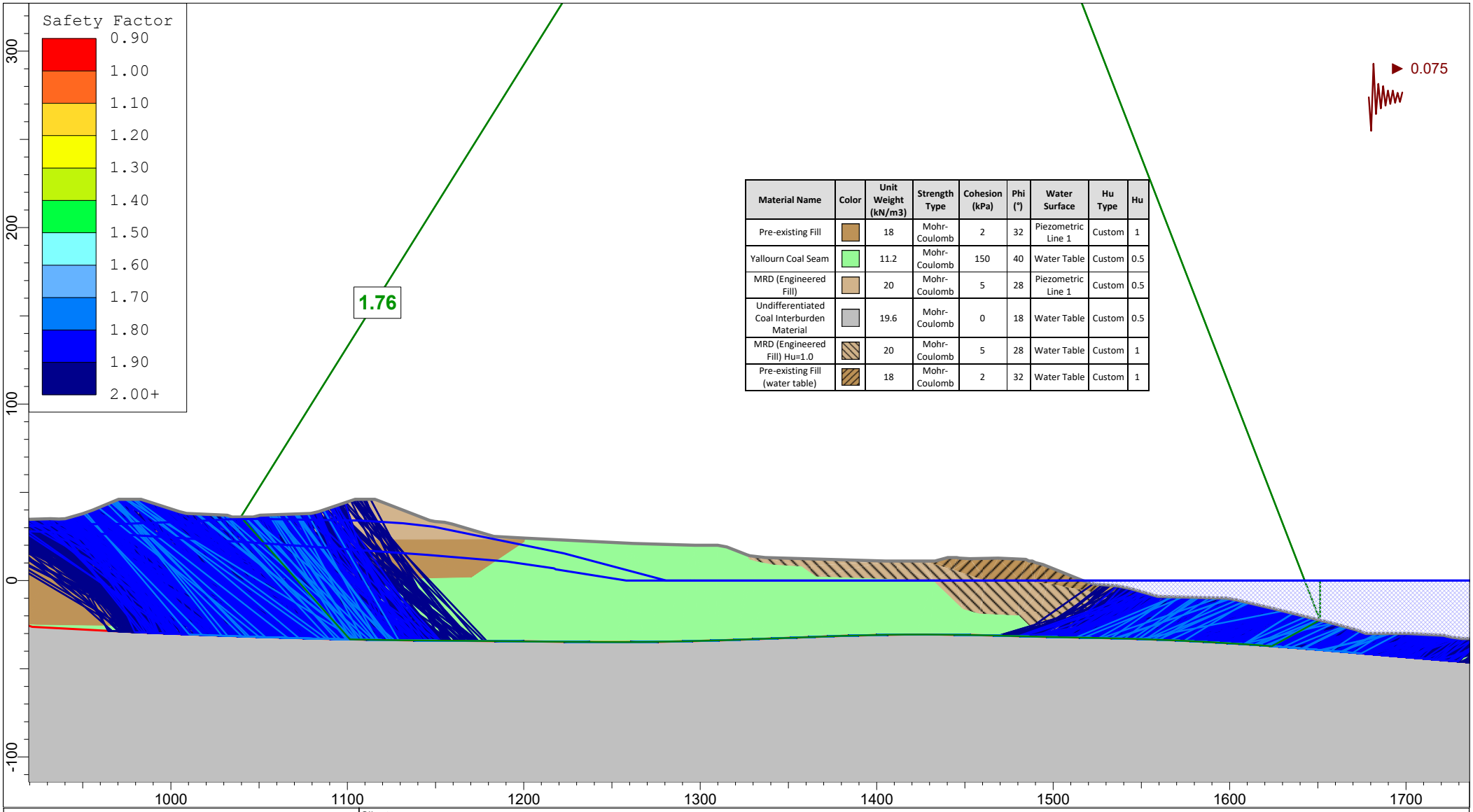
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Seismic Circular - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Median Interseam Shear Strength		



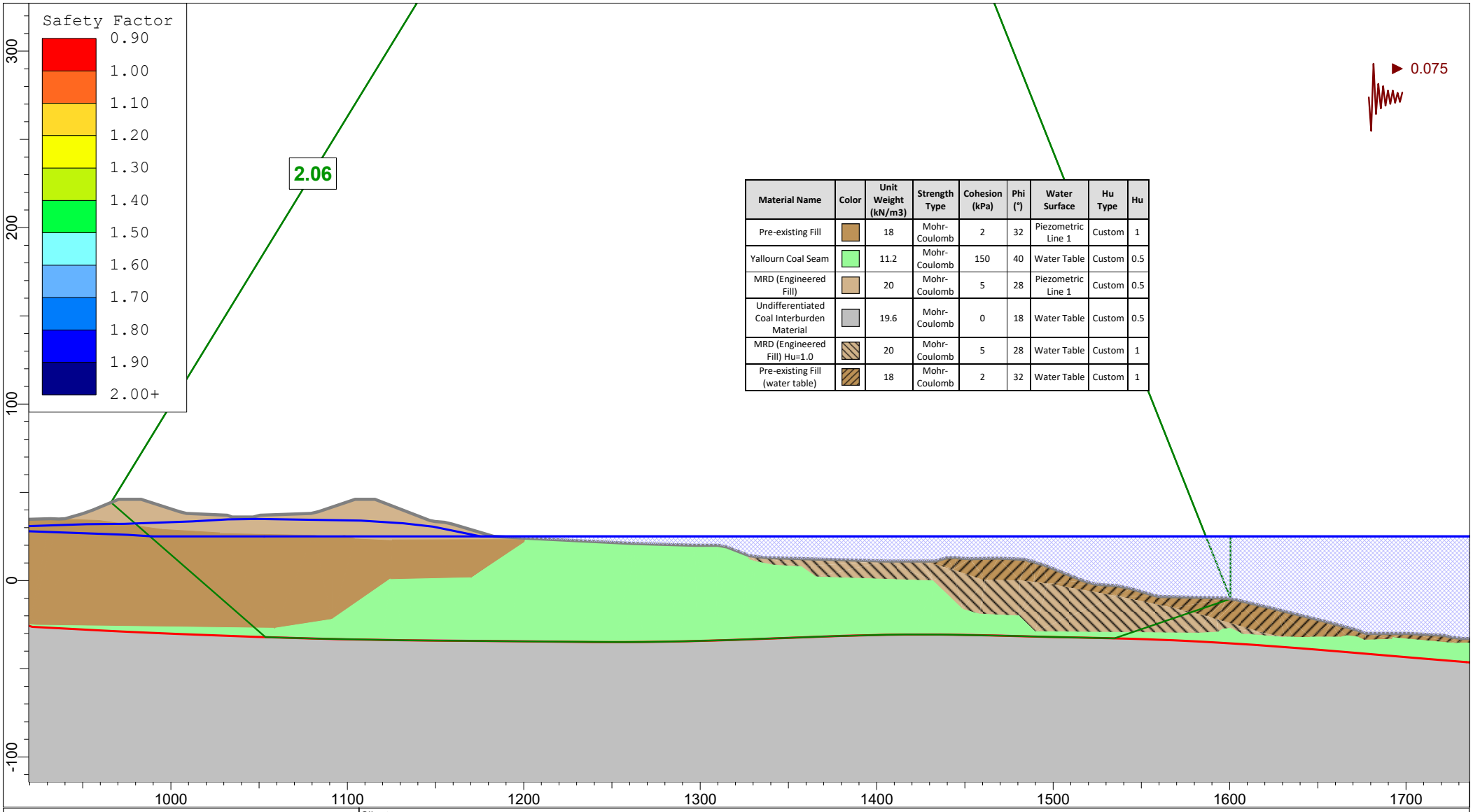
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Seismic Circular - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength		



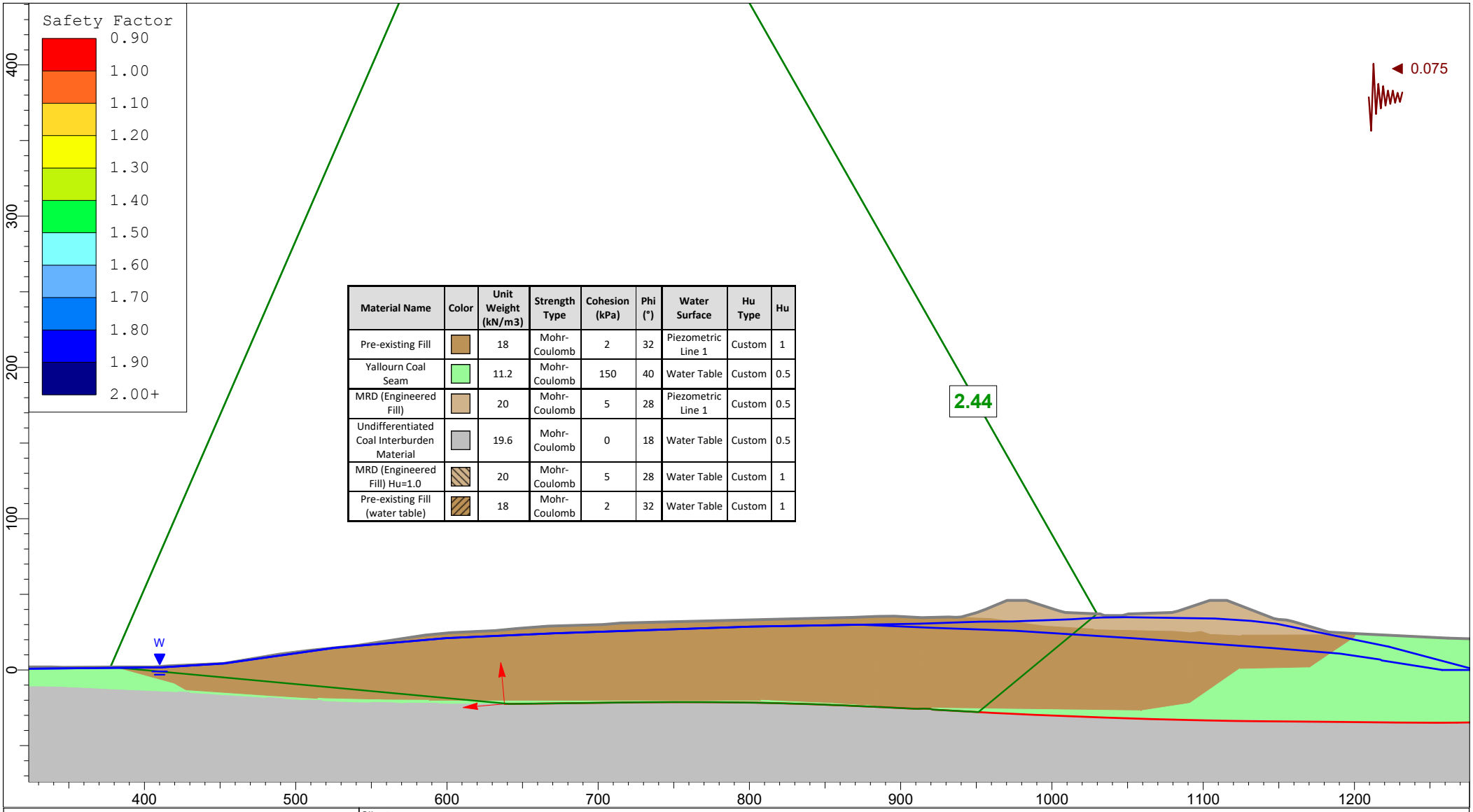
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Median Interseam Shear Strength		



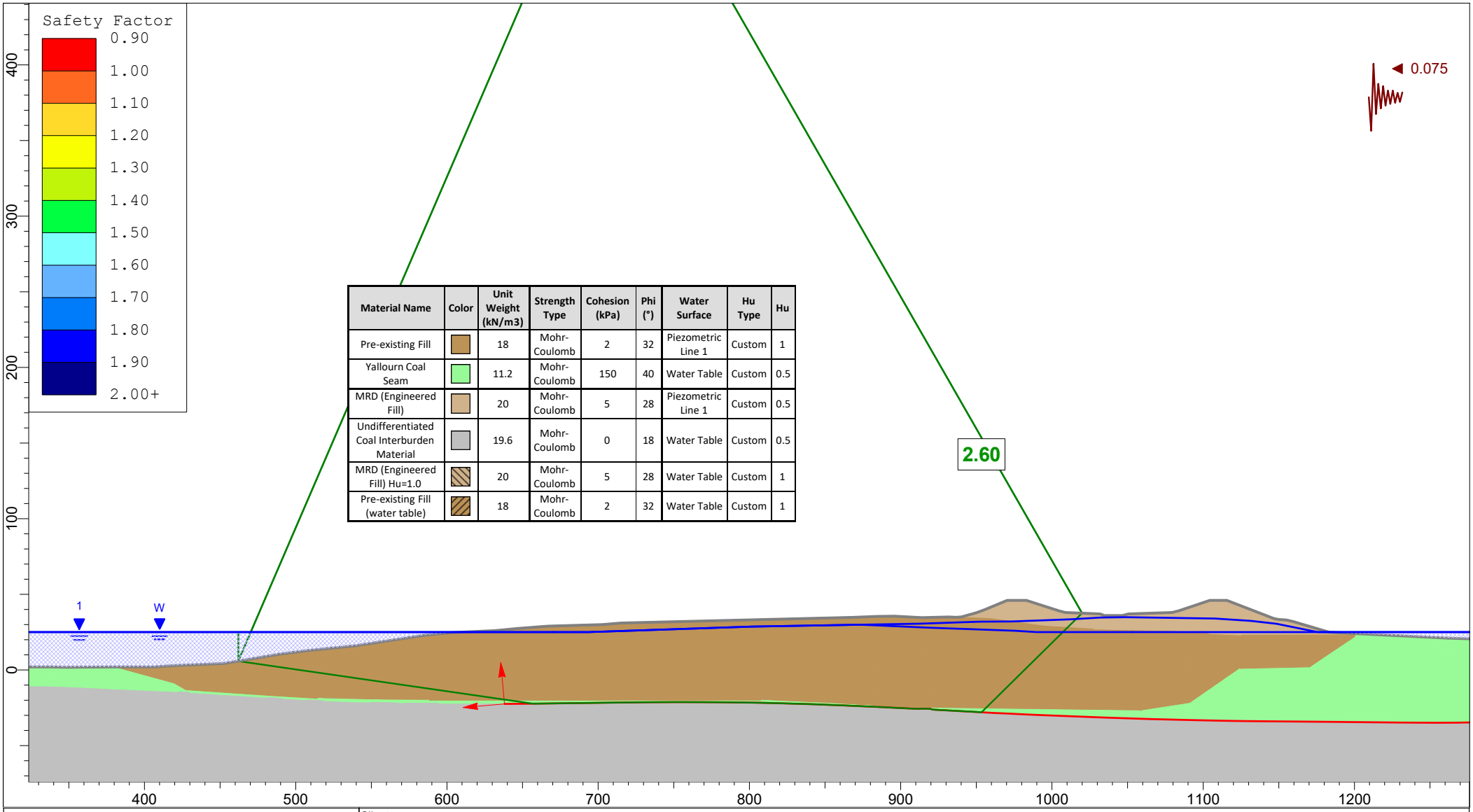
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength		



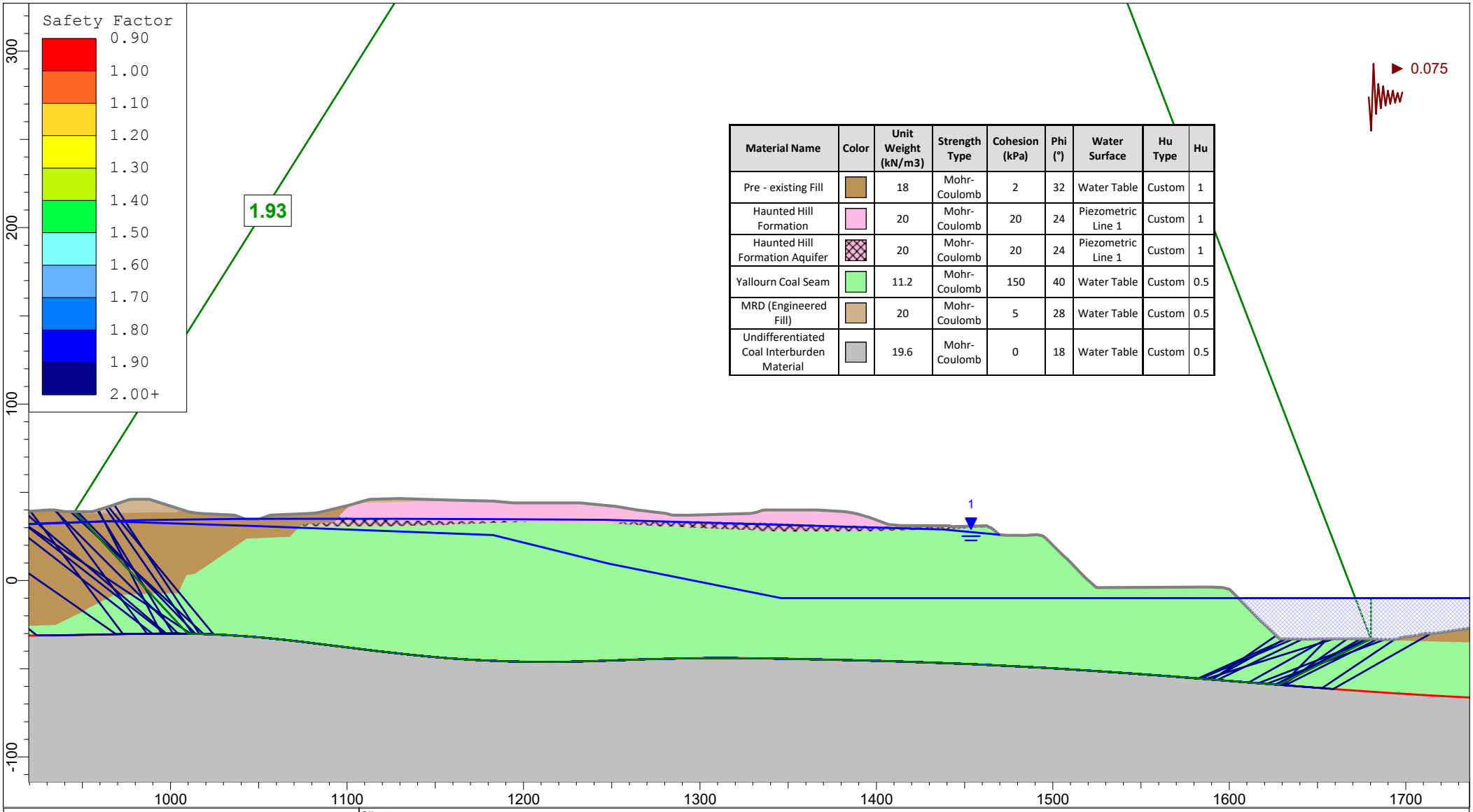
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Median Interseam Shear Strength - Right To Left		



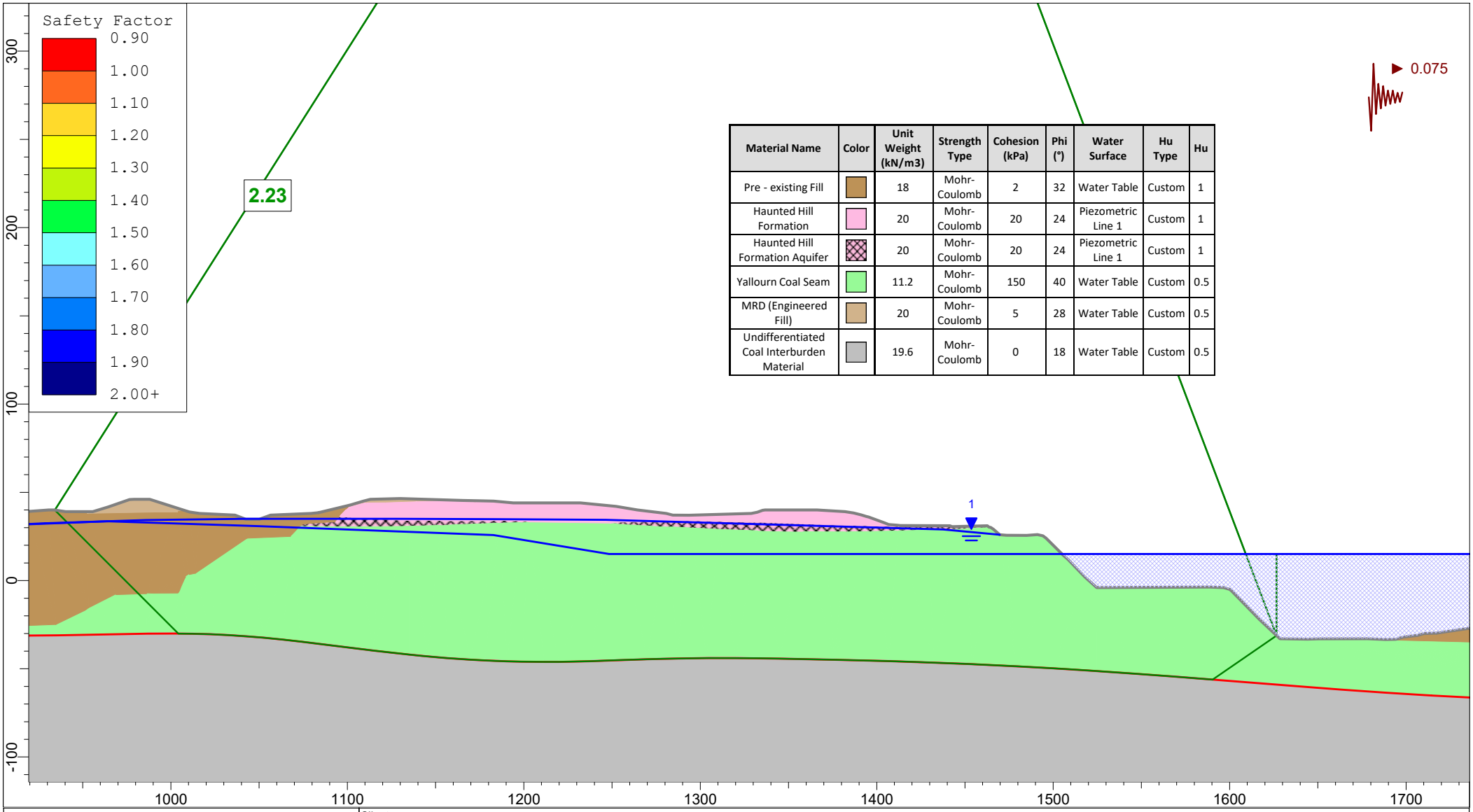
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Median Interseam Shear Strength - Right To Left		



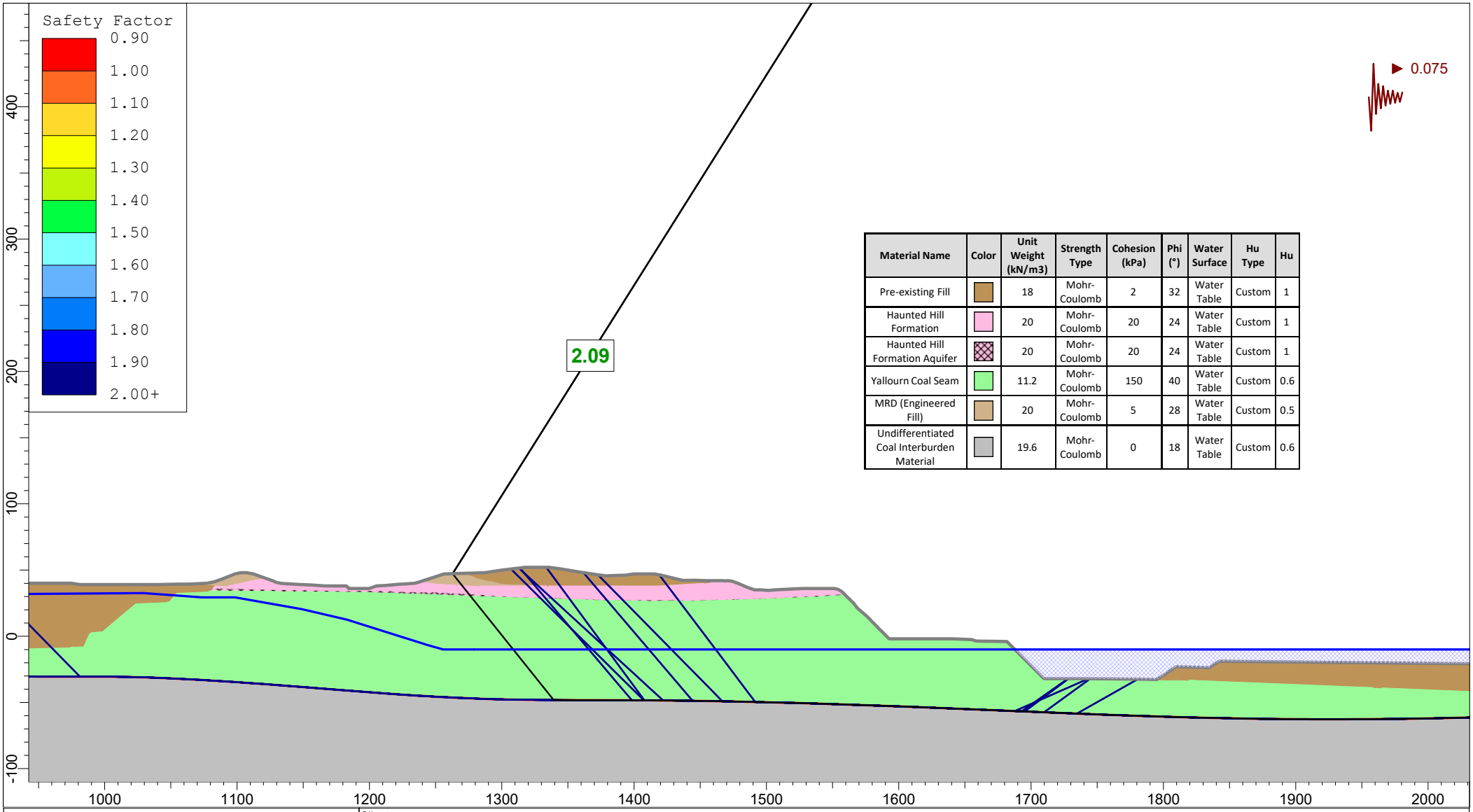
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Median Interseam Shear Strength		



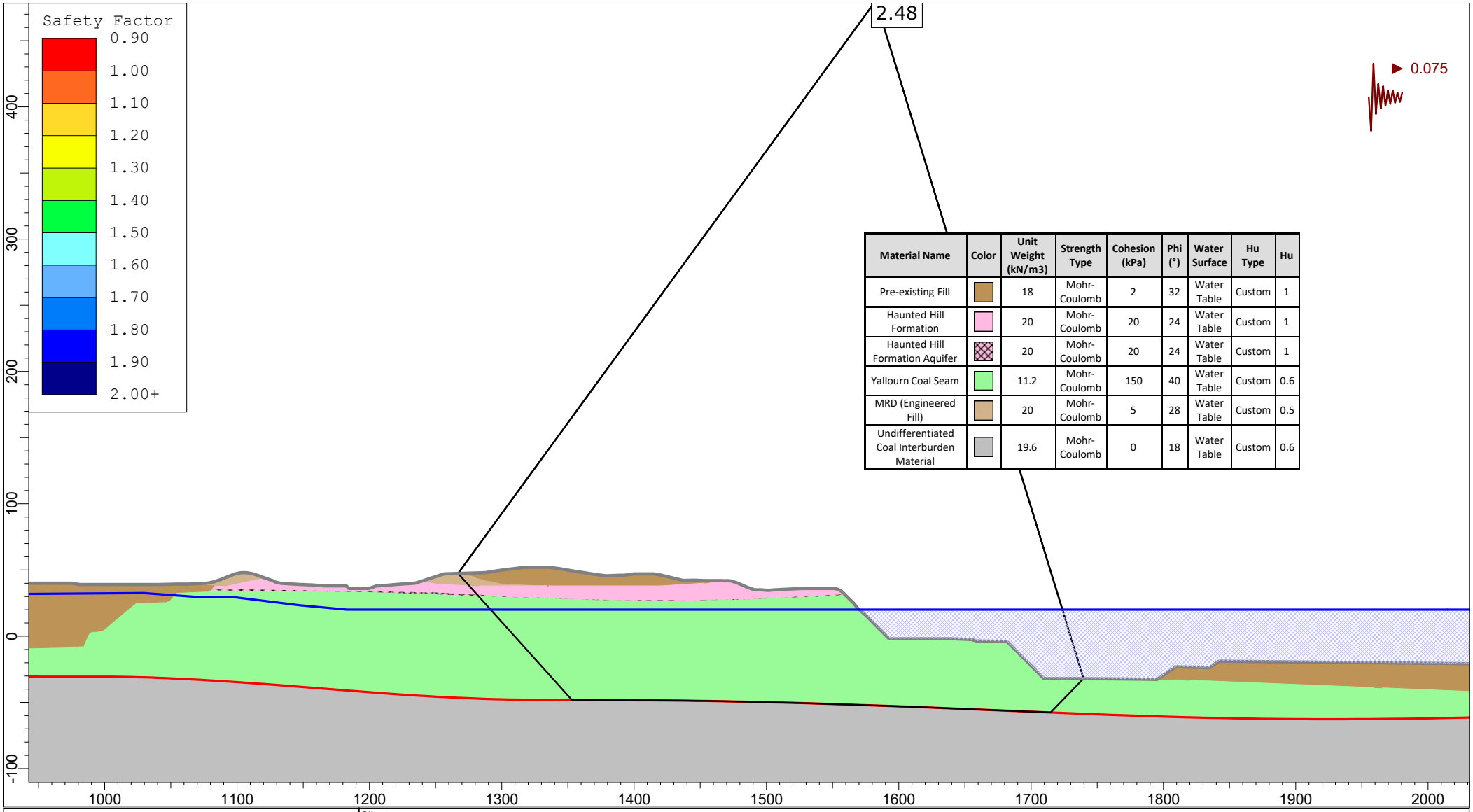
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 15 mRL
Notes:	Median Interseam Shear Strength		



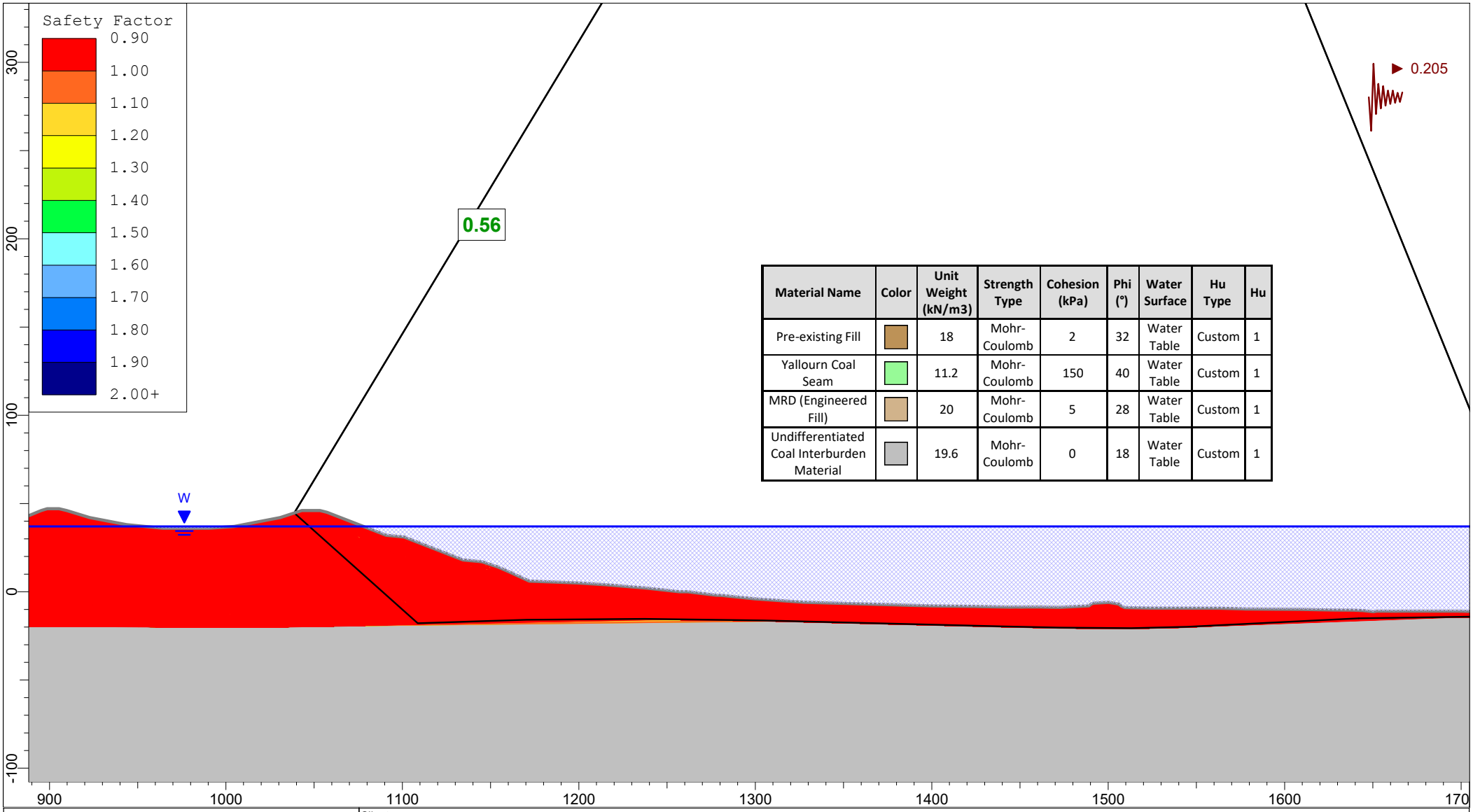
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at -10 mRL
Notes:	Median Interseam Shear Strength		



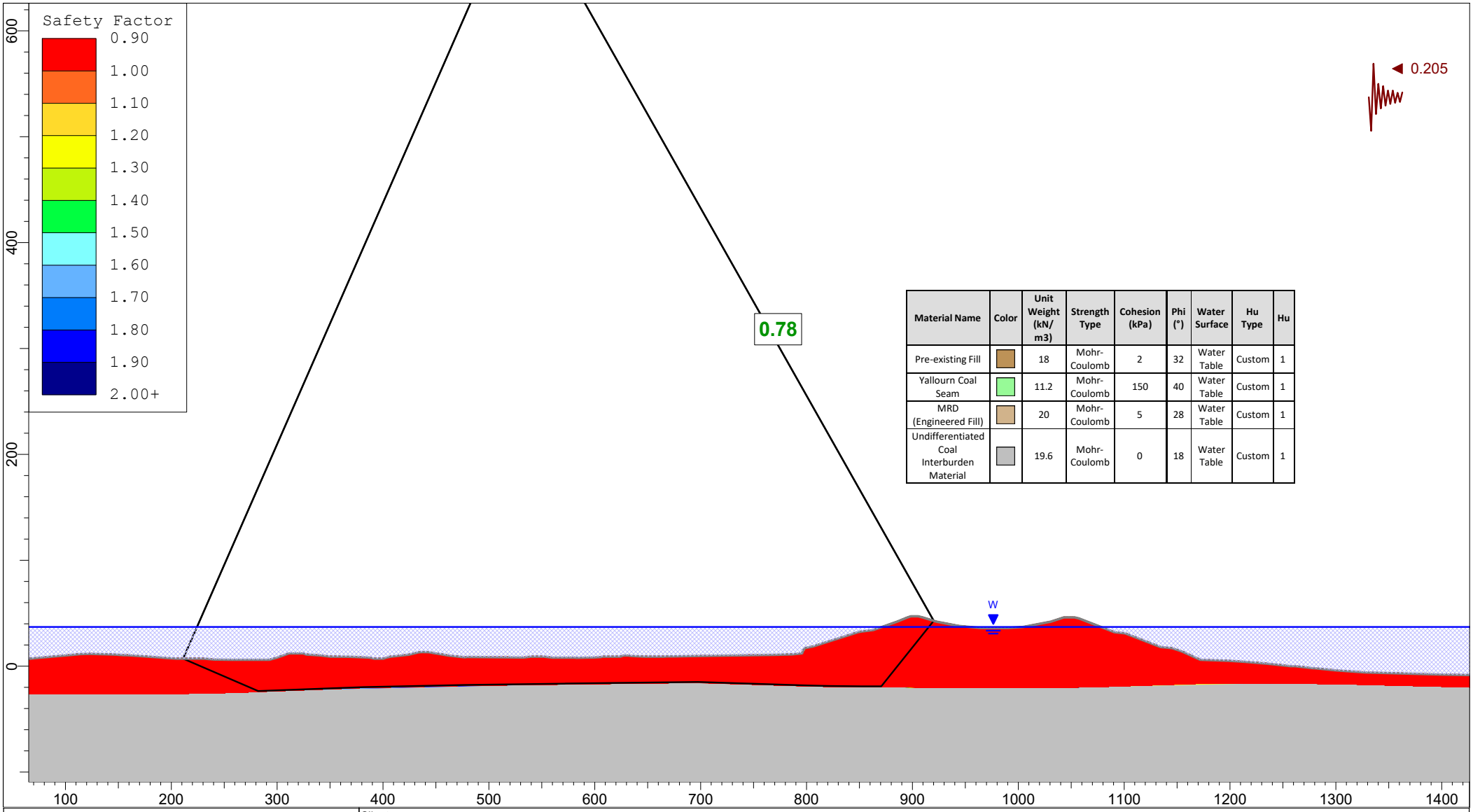
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Seismic multilinear - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Median Interseam Shear Strength		



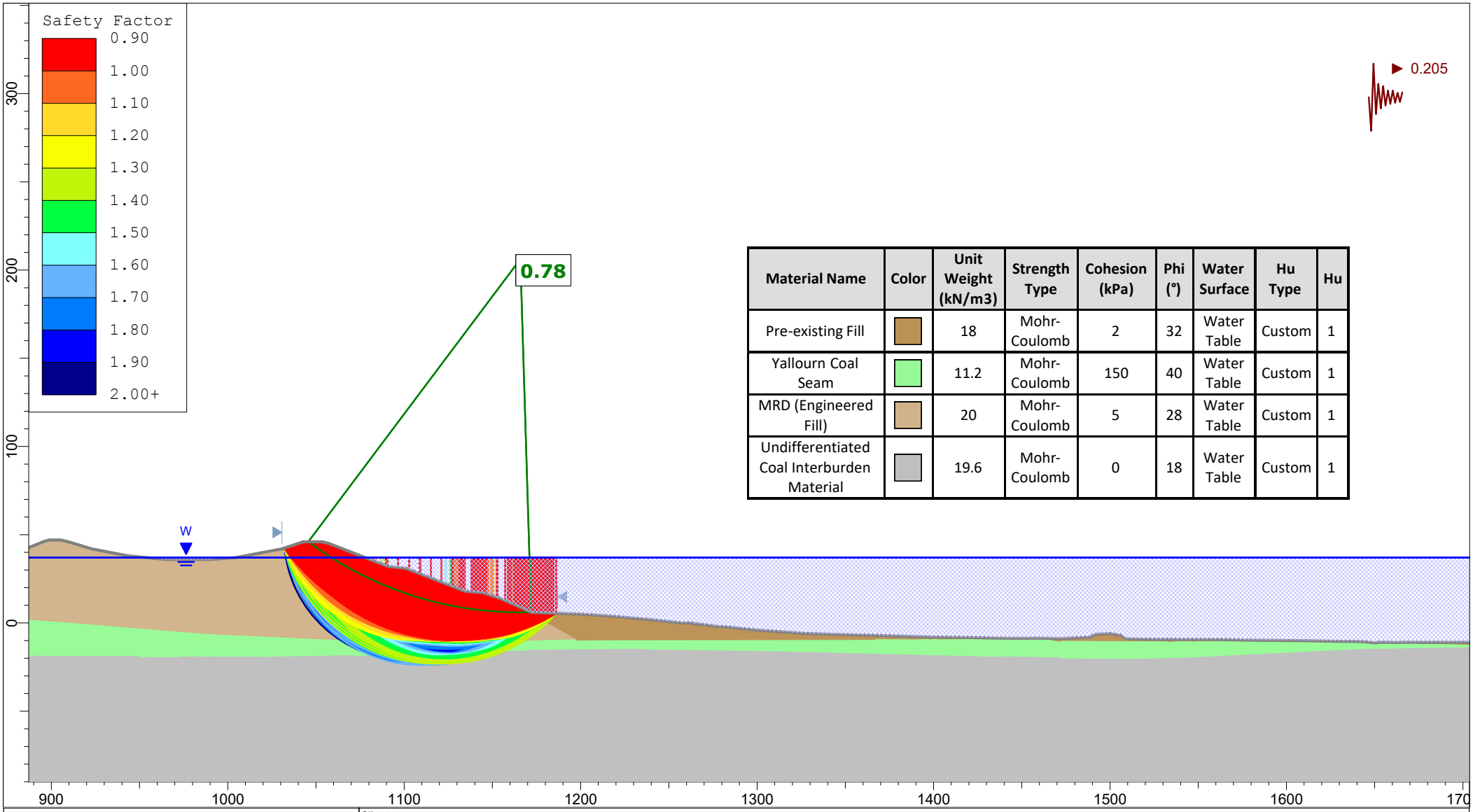
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Seismic multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



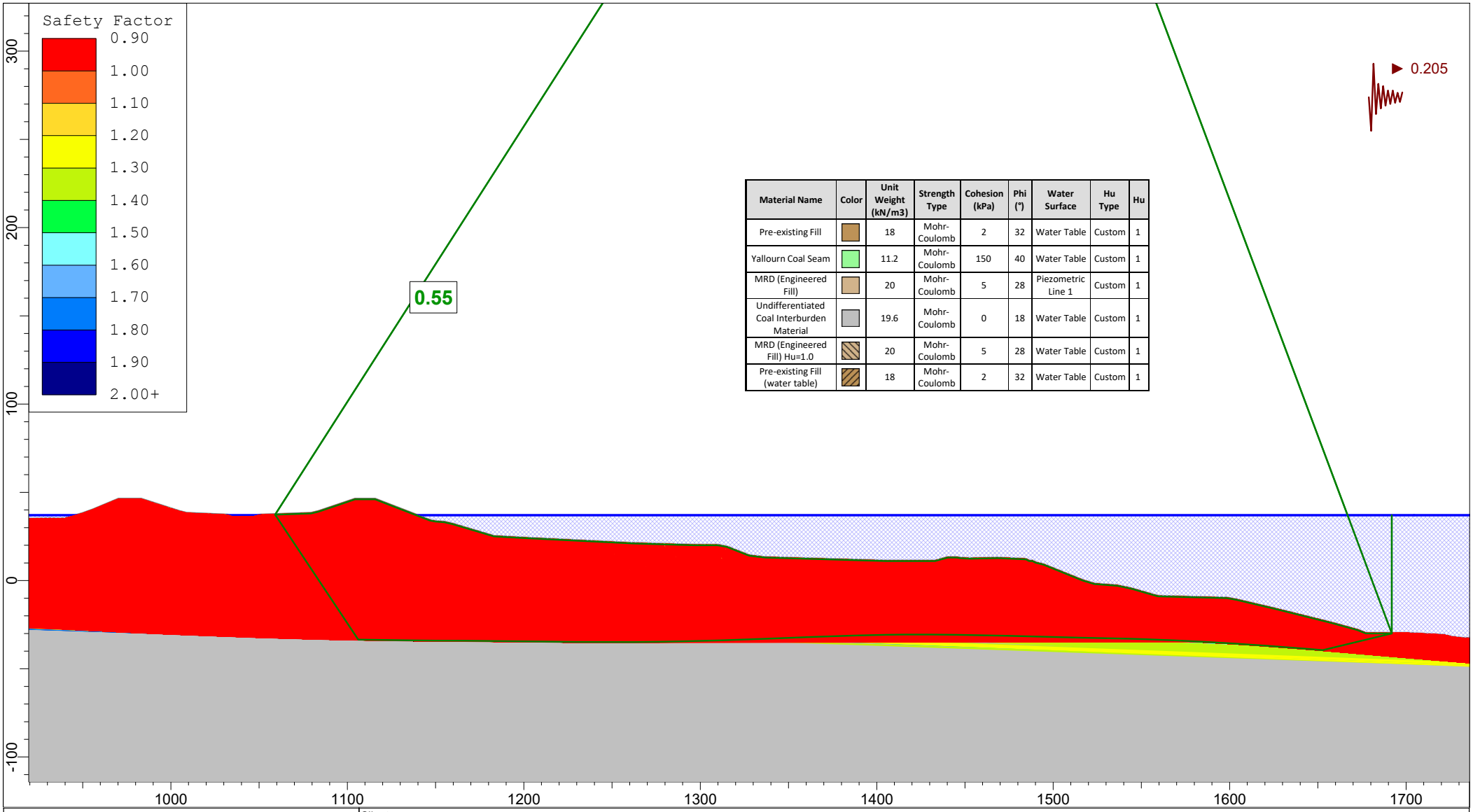
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Seismic multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength - Right To Left Failure		



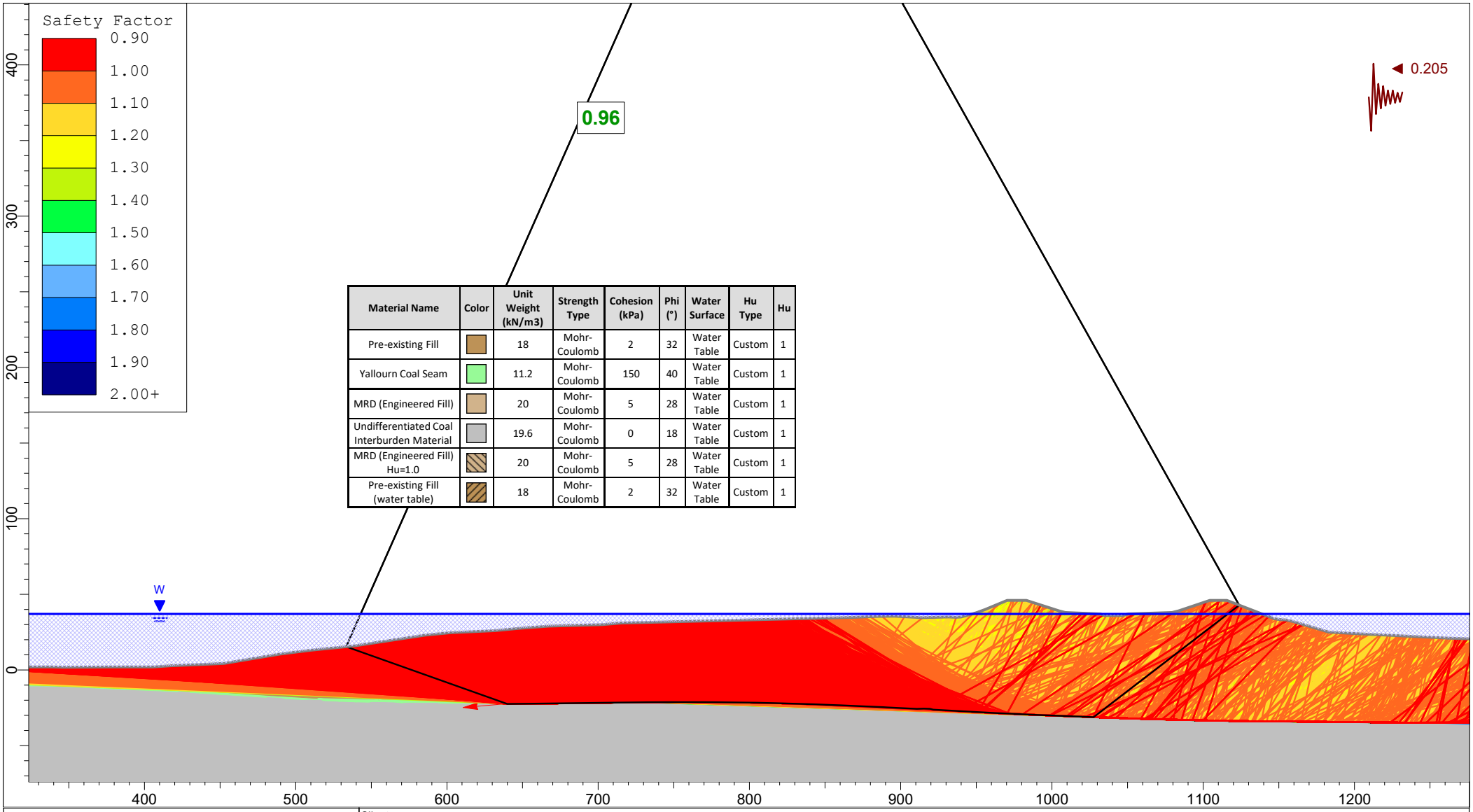
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Seismic Circular - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



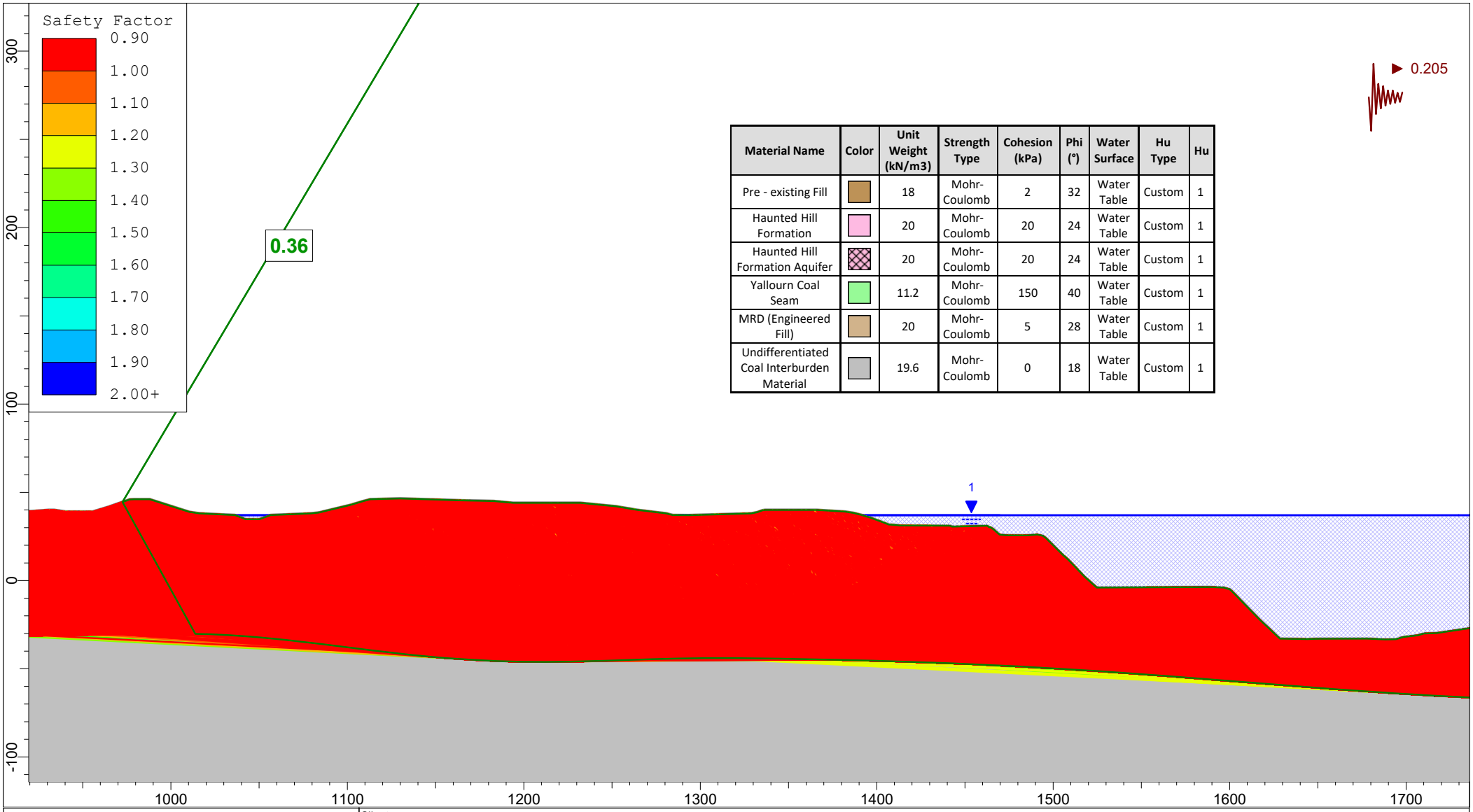
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Seismic multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



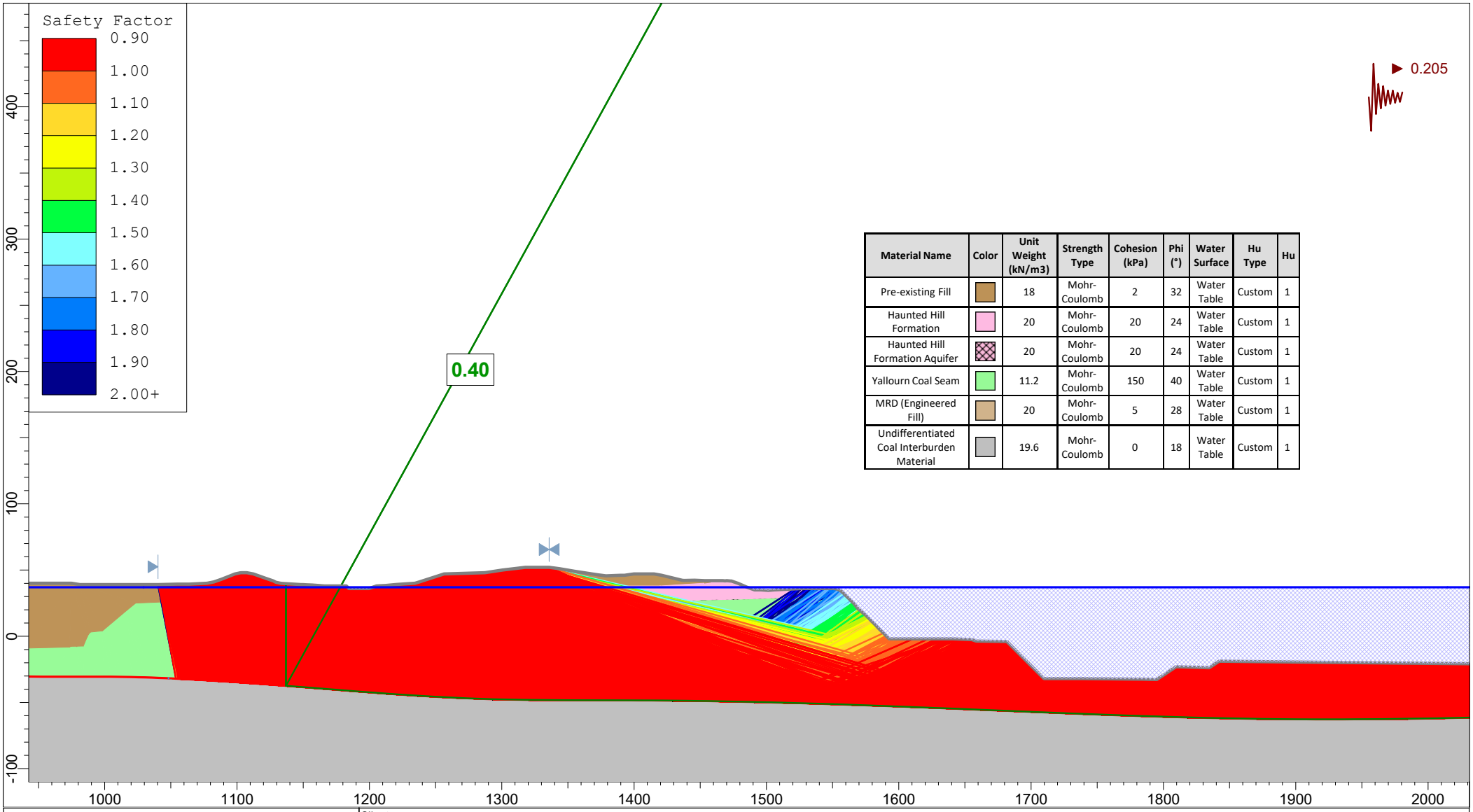
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1
MRD (Engineered Fill) Hu=1.0		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Pre-existing Fill (water table)		18	Mohr-Coulomb	2	32	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 33	Case:	Seismic multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength - Right To Left		



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre - existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

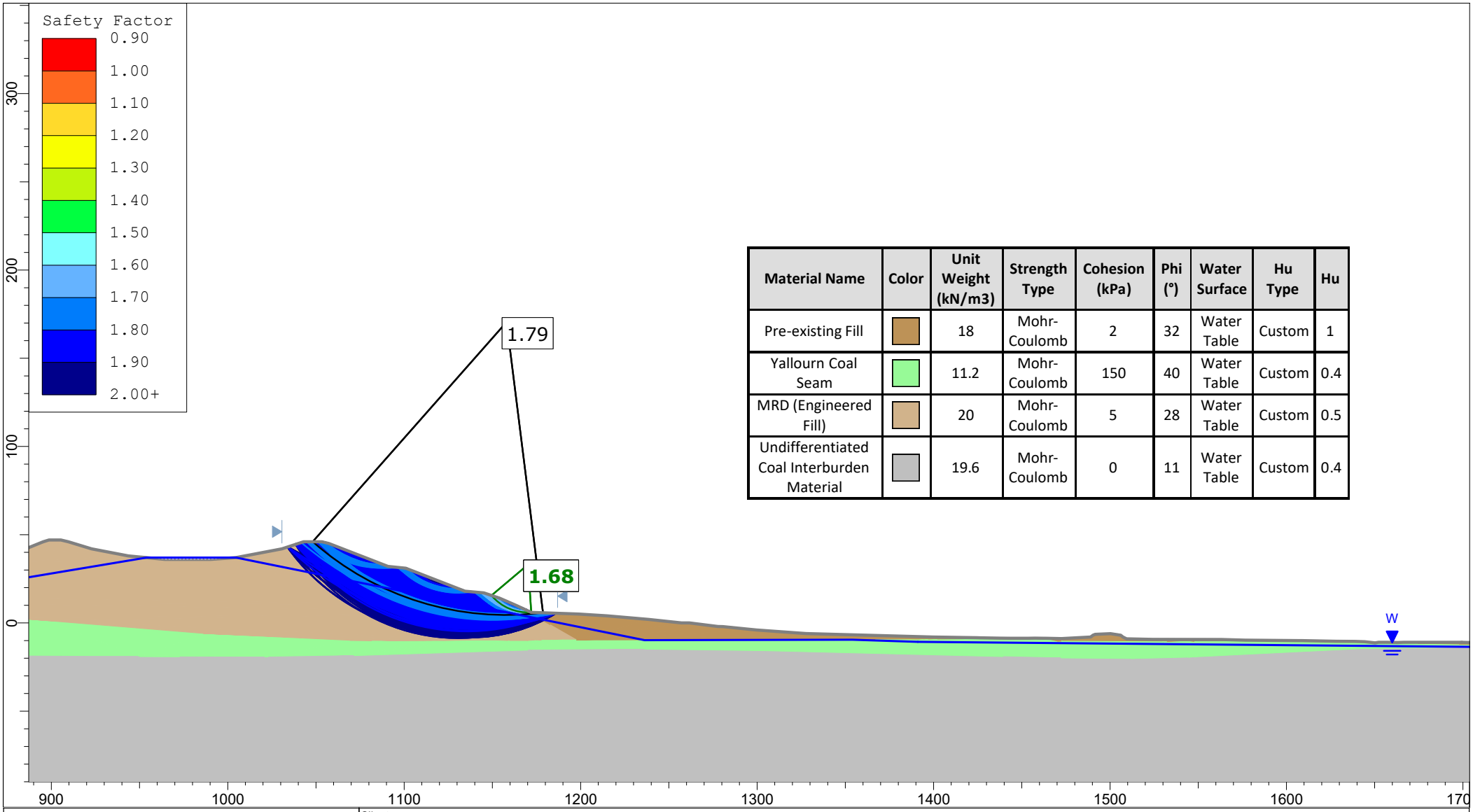
Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Fill
Section:	Section 34	Case:	Seismic multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

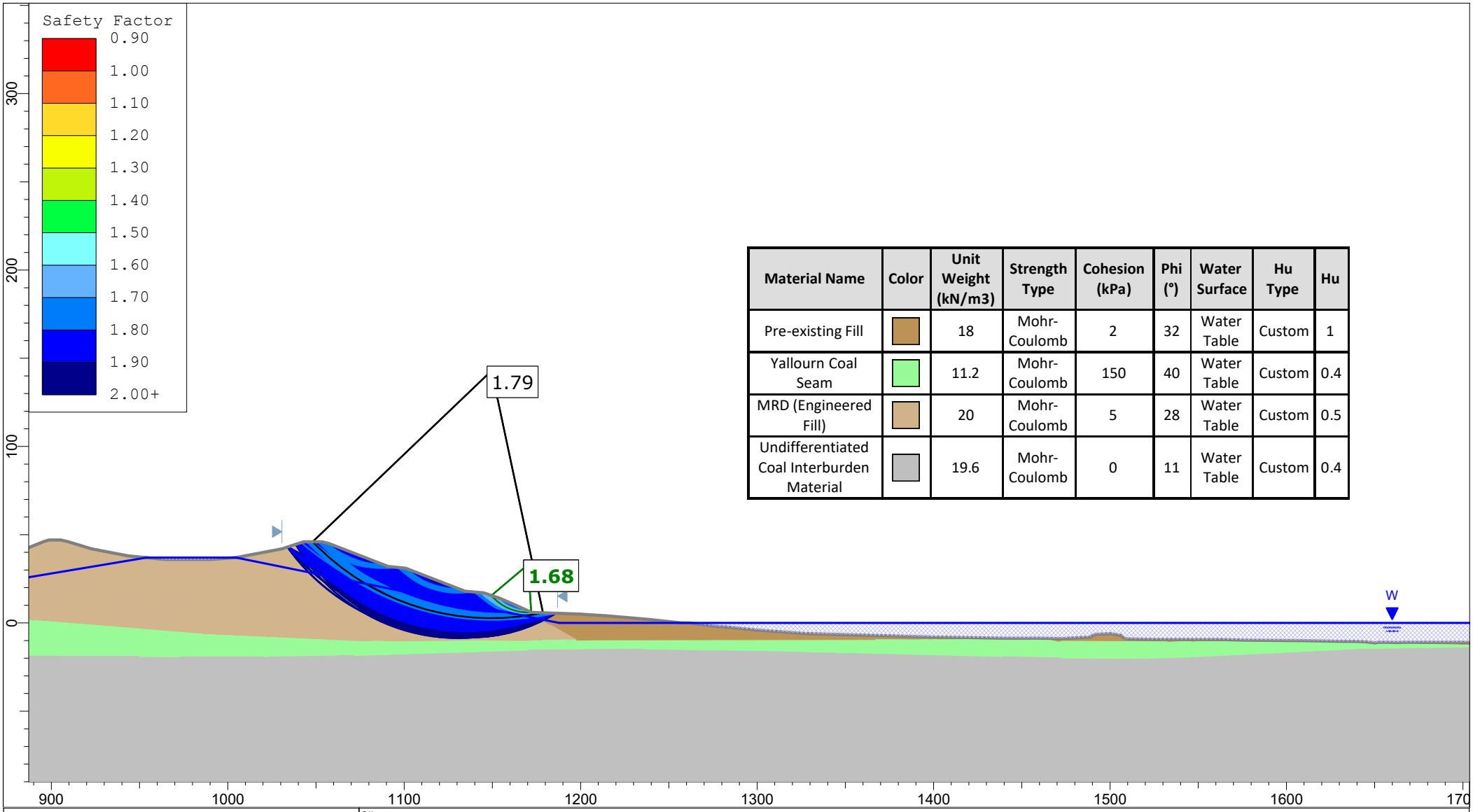
Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD CUT (South)
Section:	Section 35	Case:	Seismic multilinear - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Median Interseam Shear Strength		

Appendix F.7
MRD embankment local stability circular failure



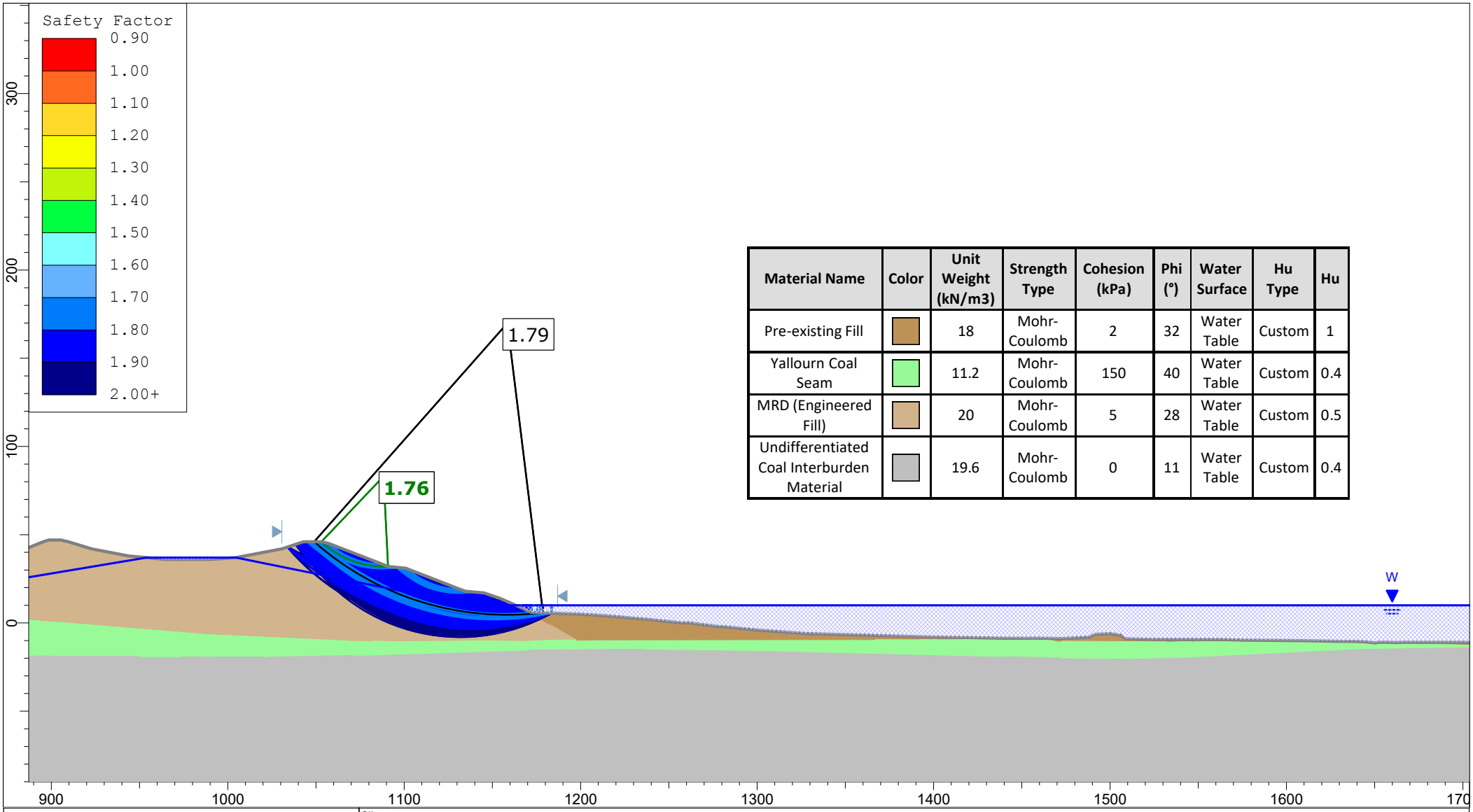
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Circular - Hu specific
Job No:	PSM4487	Run:	End of mining
Notes:	Lower Bound Interseam Shear Strength		



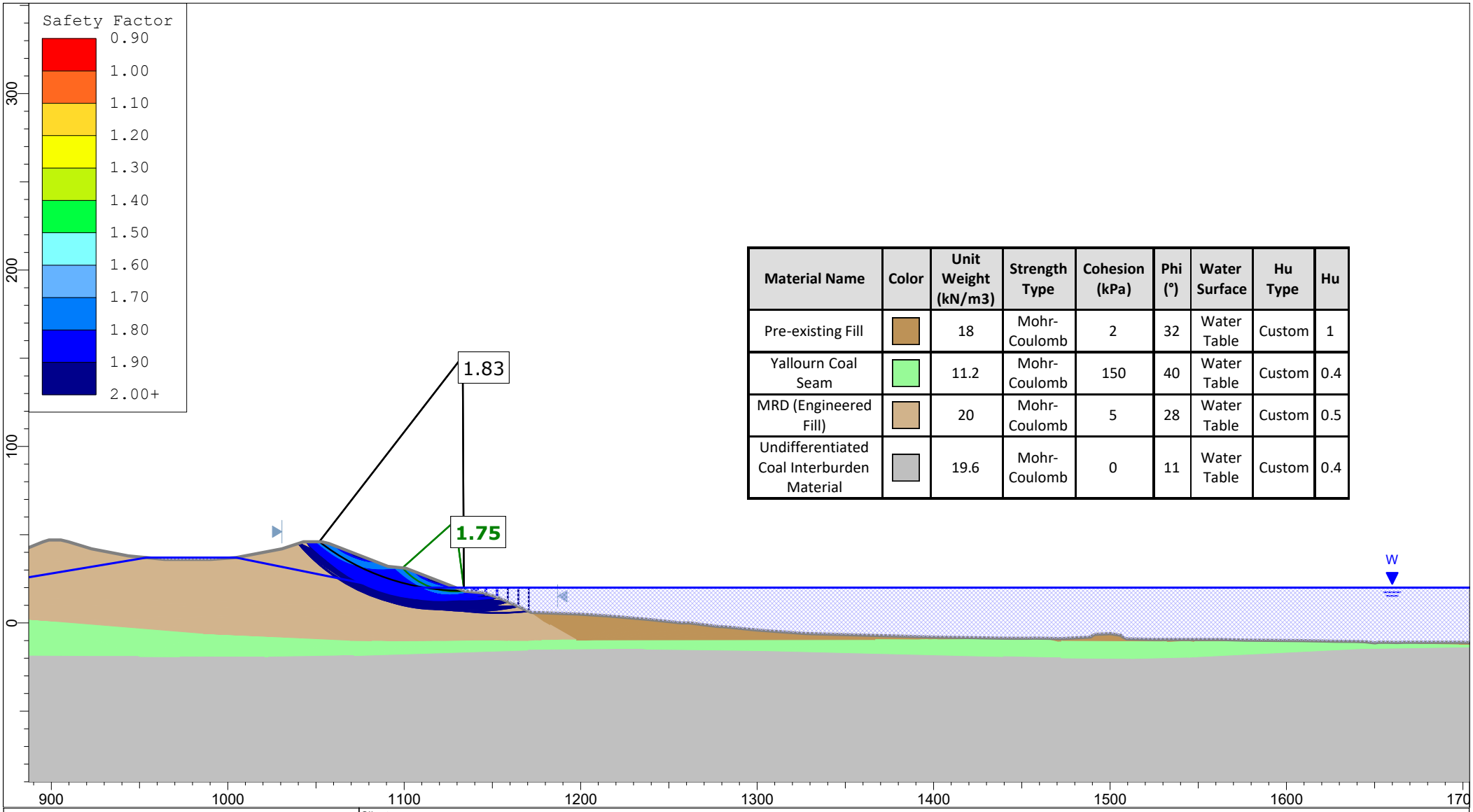
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Circular - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



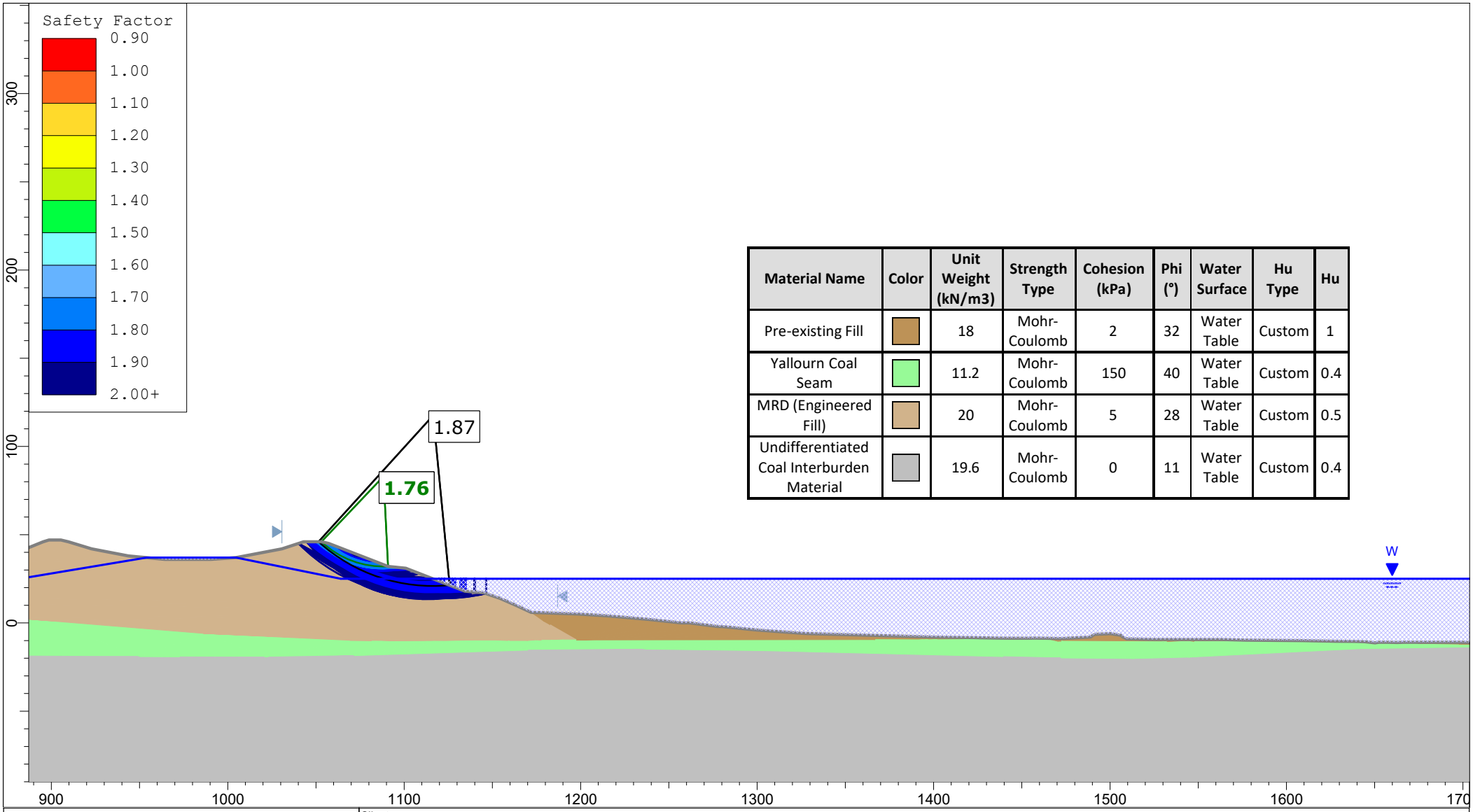
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Circular - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



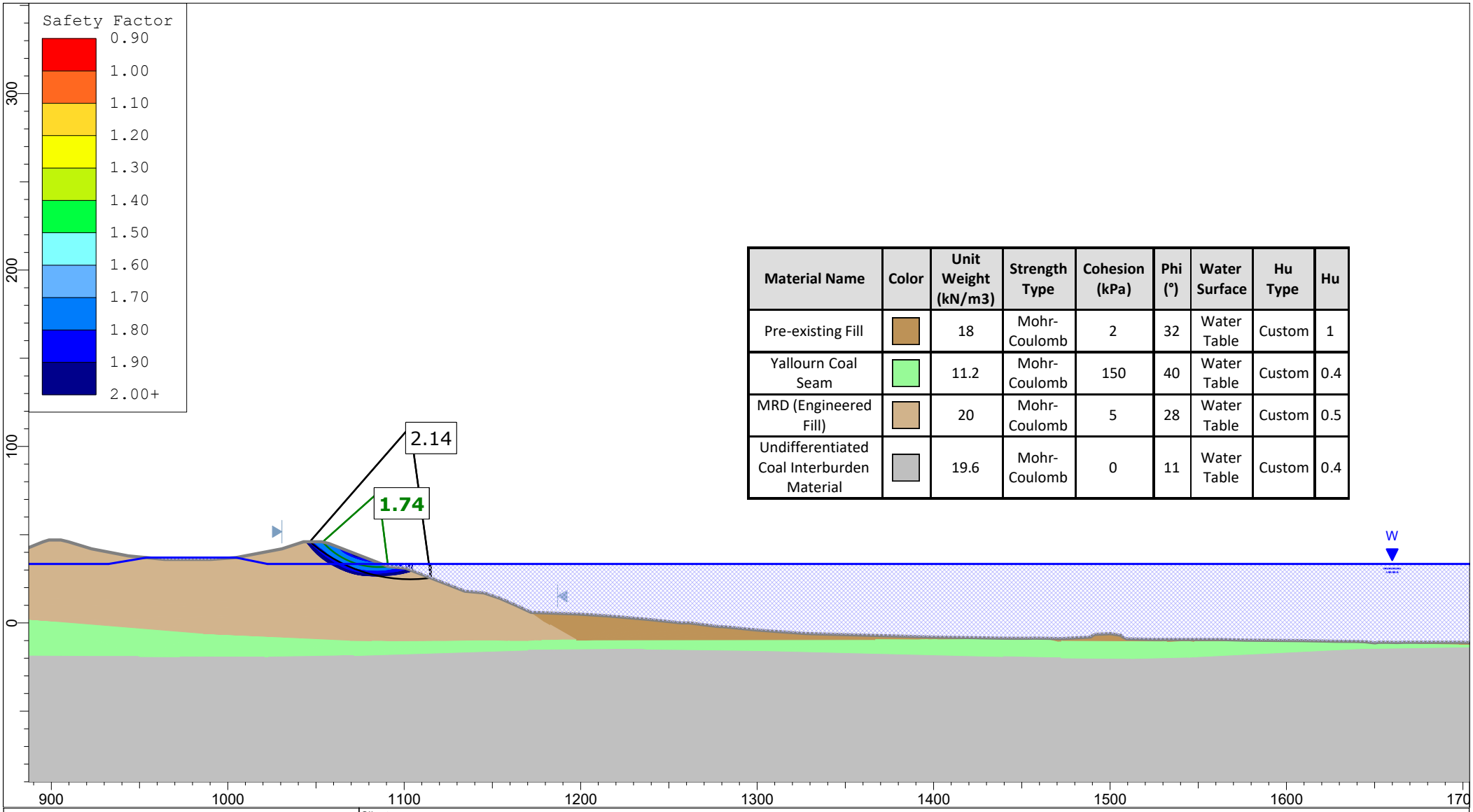
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Circular - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



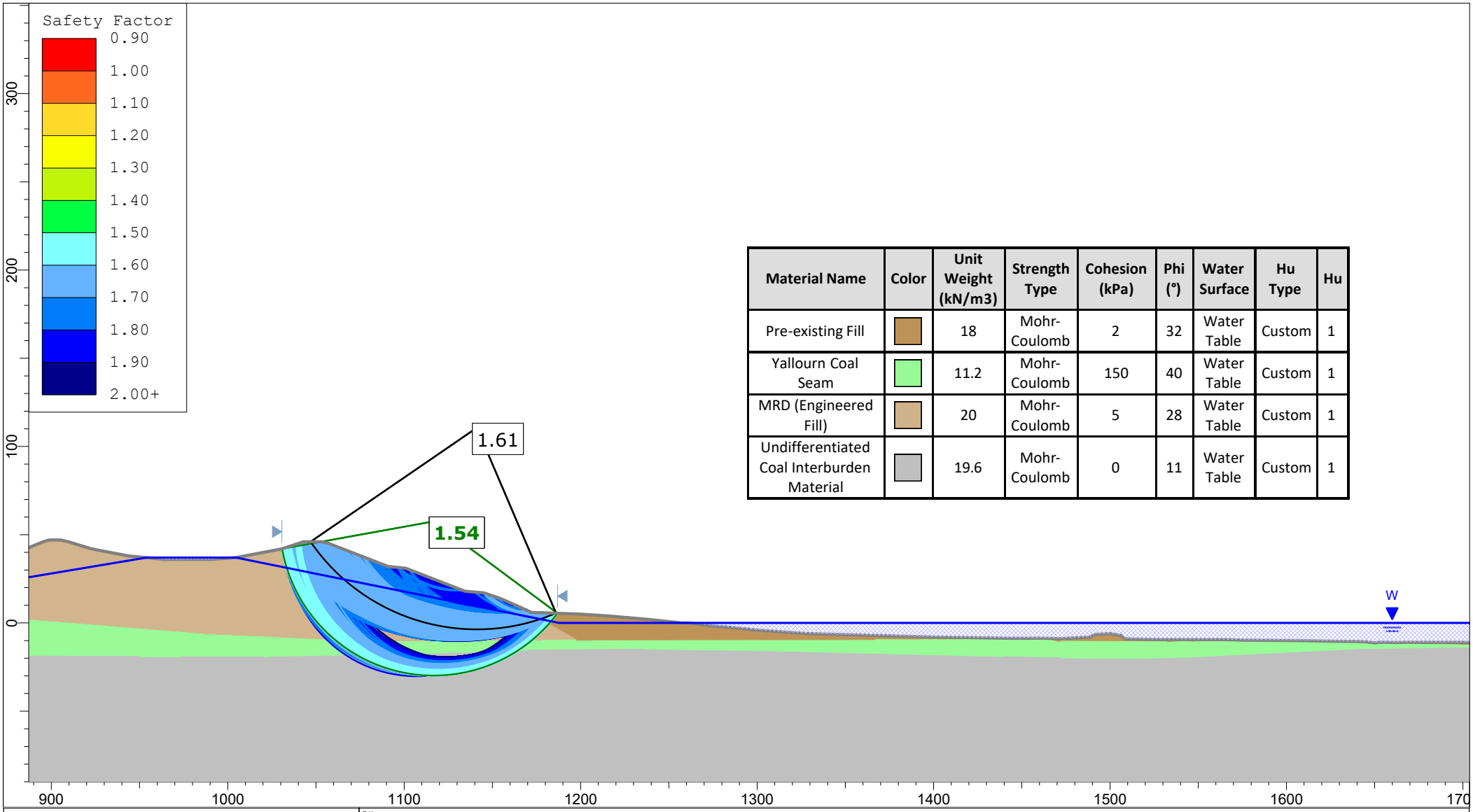
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Circular - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



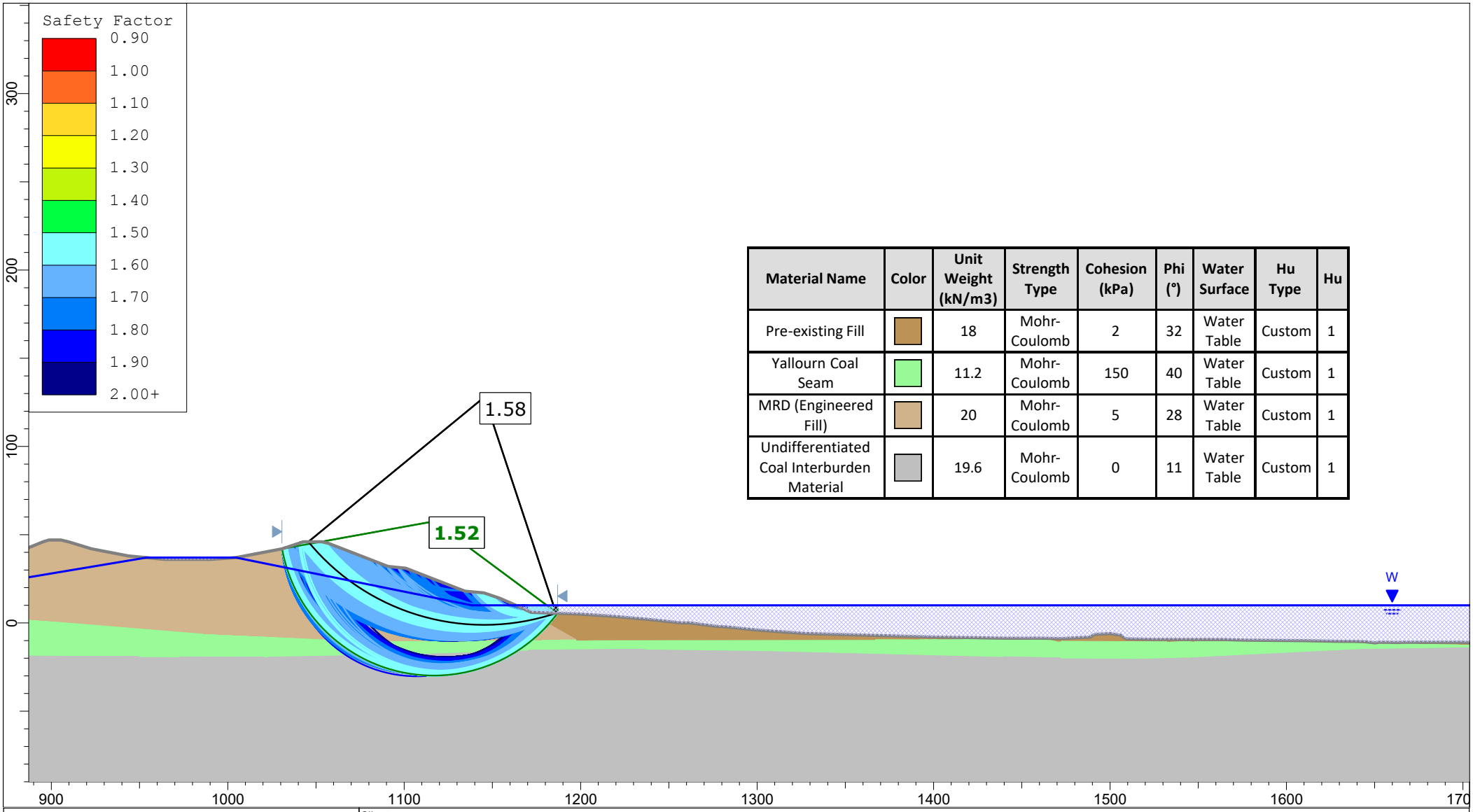
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Circular - Hu specific
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



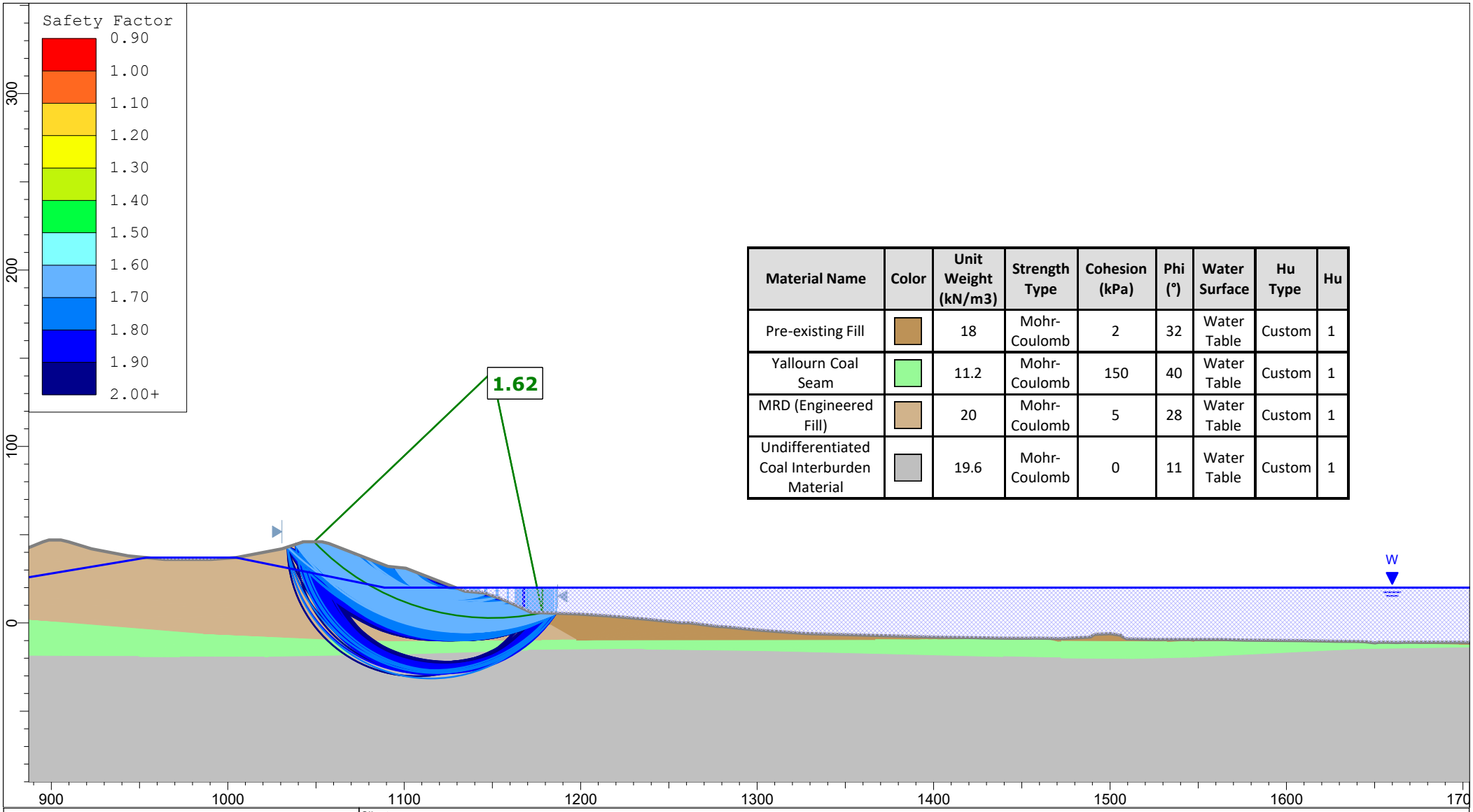
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Circular - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 0 mRL
Notes:	Lower Bound Interseam Shear Strength		



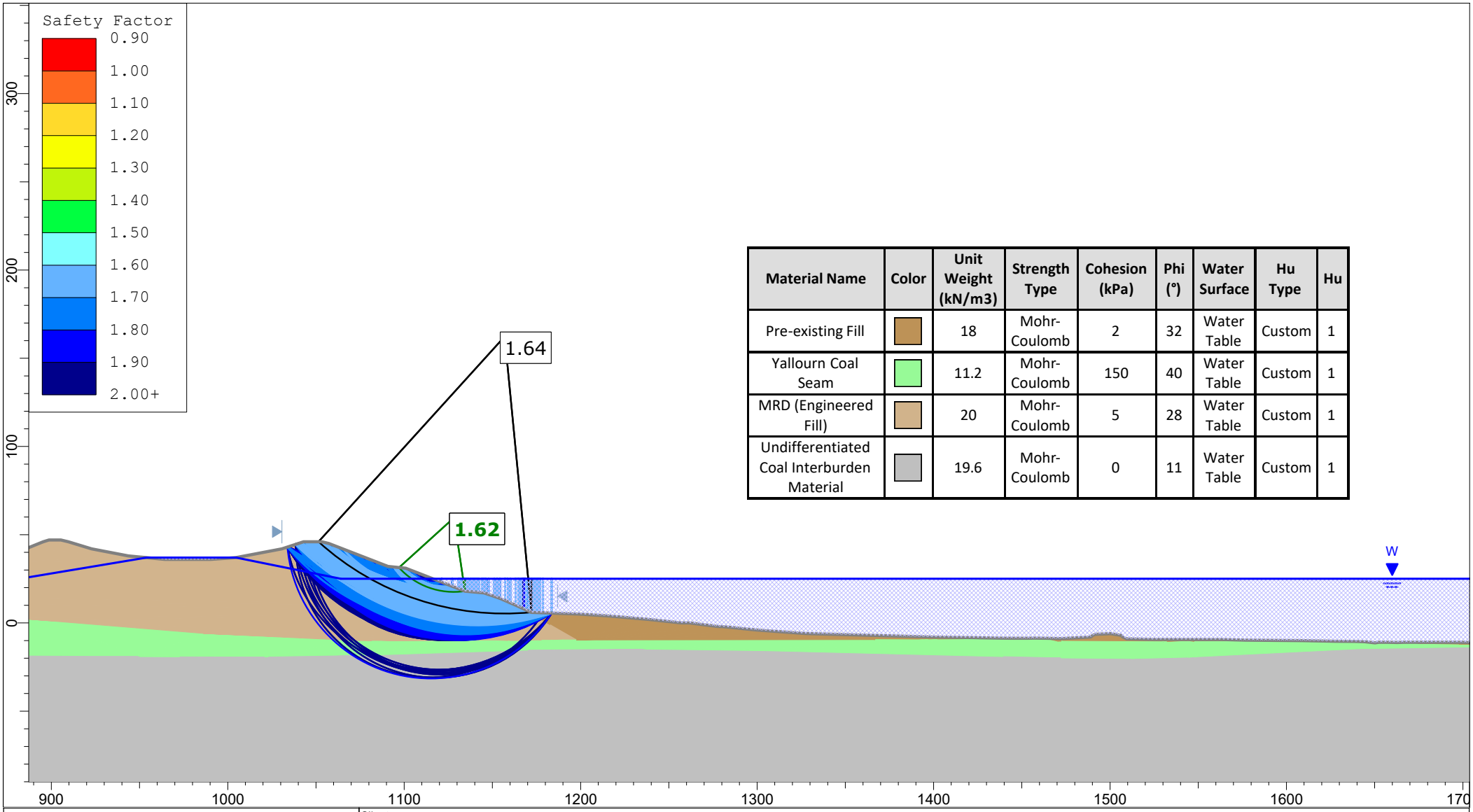
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Circular - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 10 mRL
Notes:	Lower Bound Interseam Shear Strength		



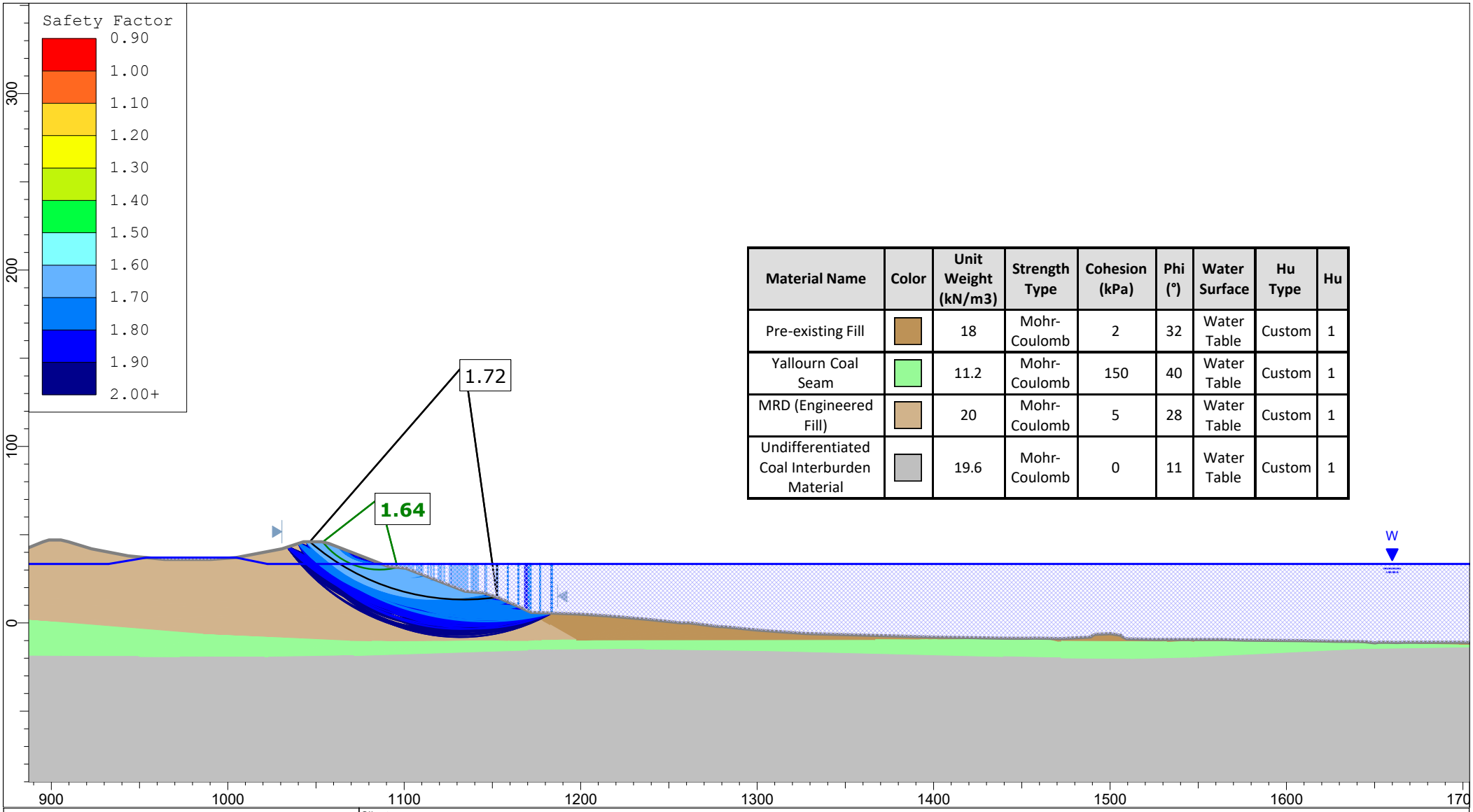
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Circular - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 20 mRL
Notes:	Lower Bound Interseam Shear Strength		



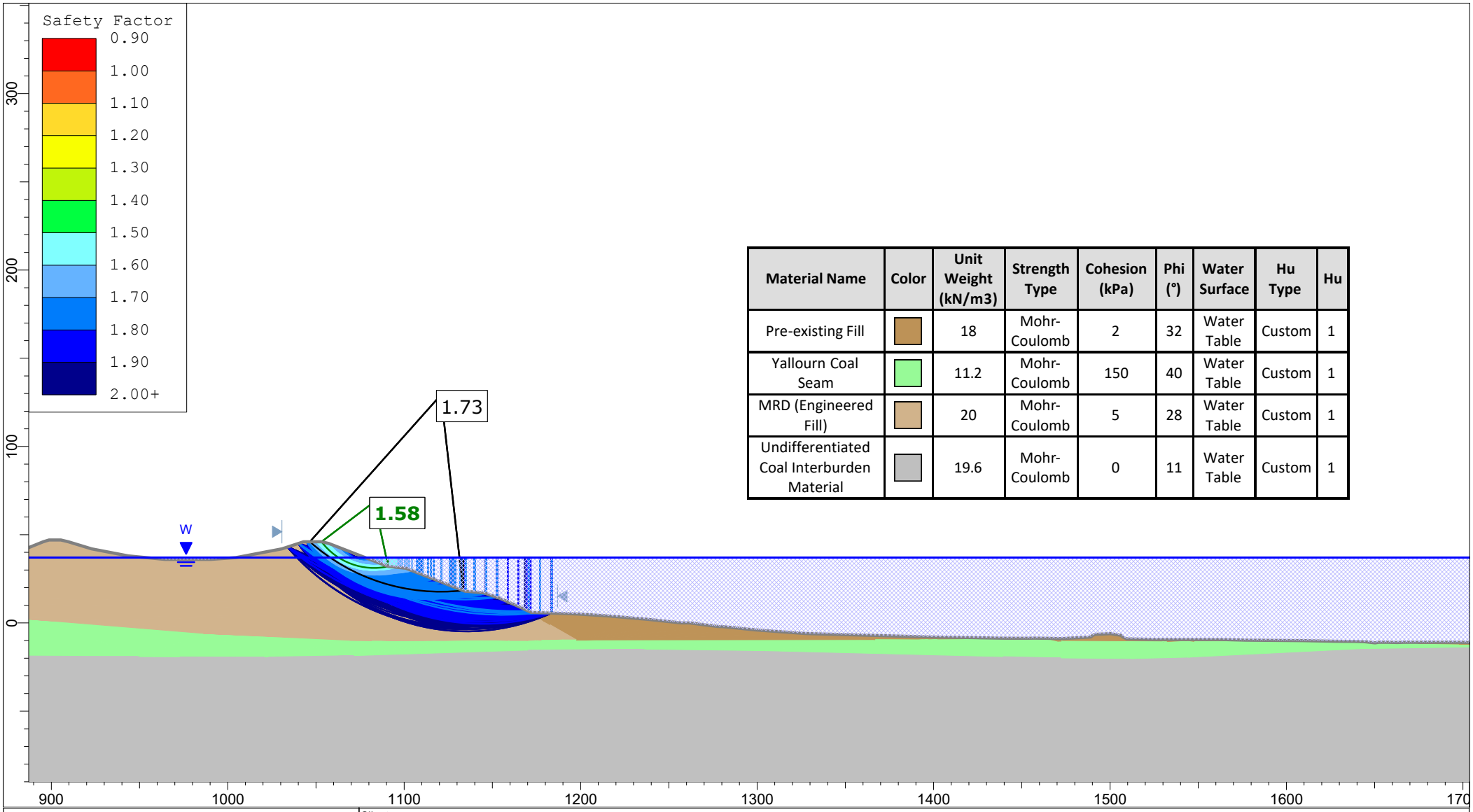
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Circular - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 25 mRL
Notes:	Lower Bound Interseam Shear Strength		



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

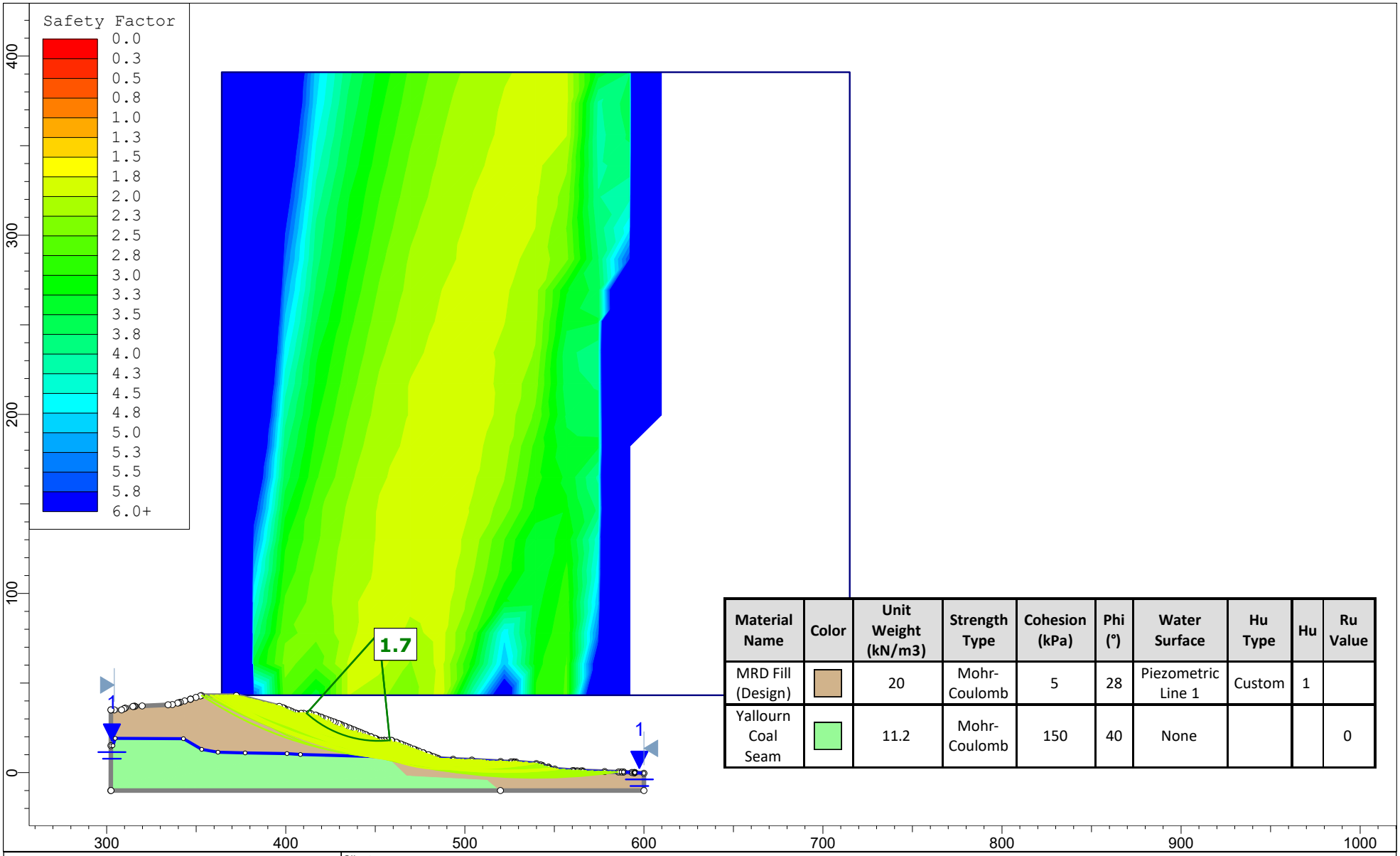
Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Circular - Hu = 1
Job No:	PSM4487	Run:	Lake filling - lake level at 33.4 mRL
Notes:	Lower Bound Interseam Shear Strength		



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
MRD (Engineered Fill)		20	Mohr-Coulomb	5	28	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

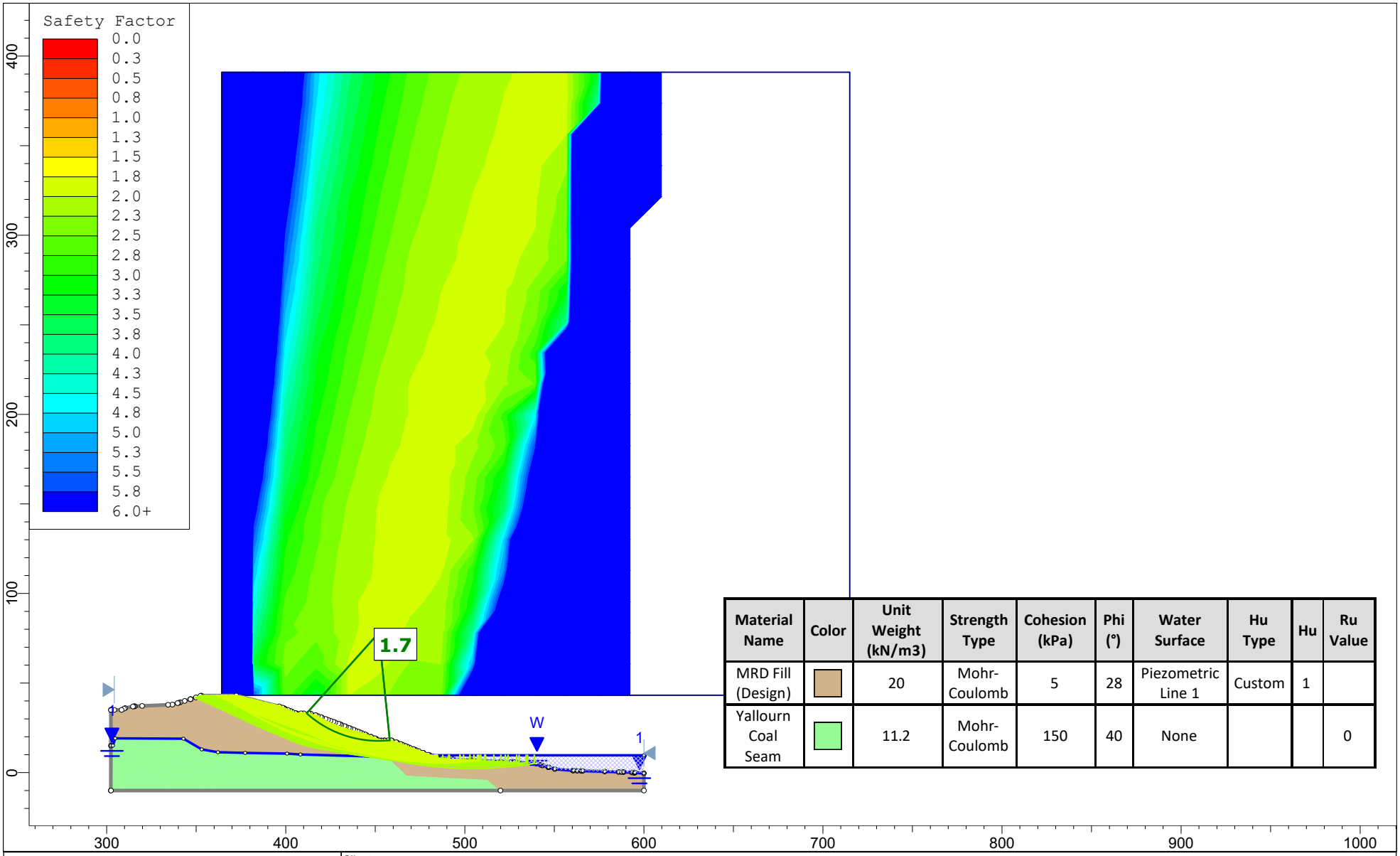
Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD Repair
Section:	Section 32	Case:	Circular - Hu = 1
Job No:	PSM4487	Run:	Lake full - lake level at 37 mRL
Notes:	Lower Bound Interseam Shear Strength		

Appendix F.8
MRD levee stability circular failure outputs



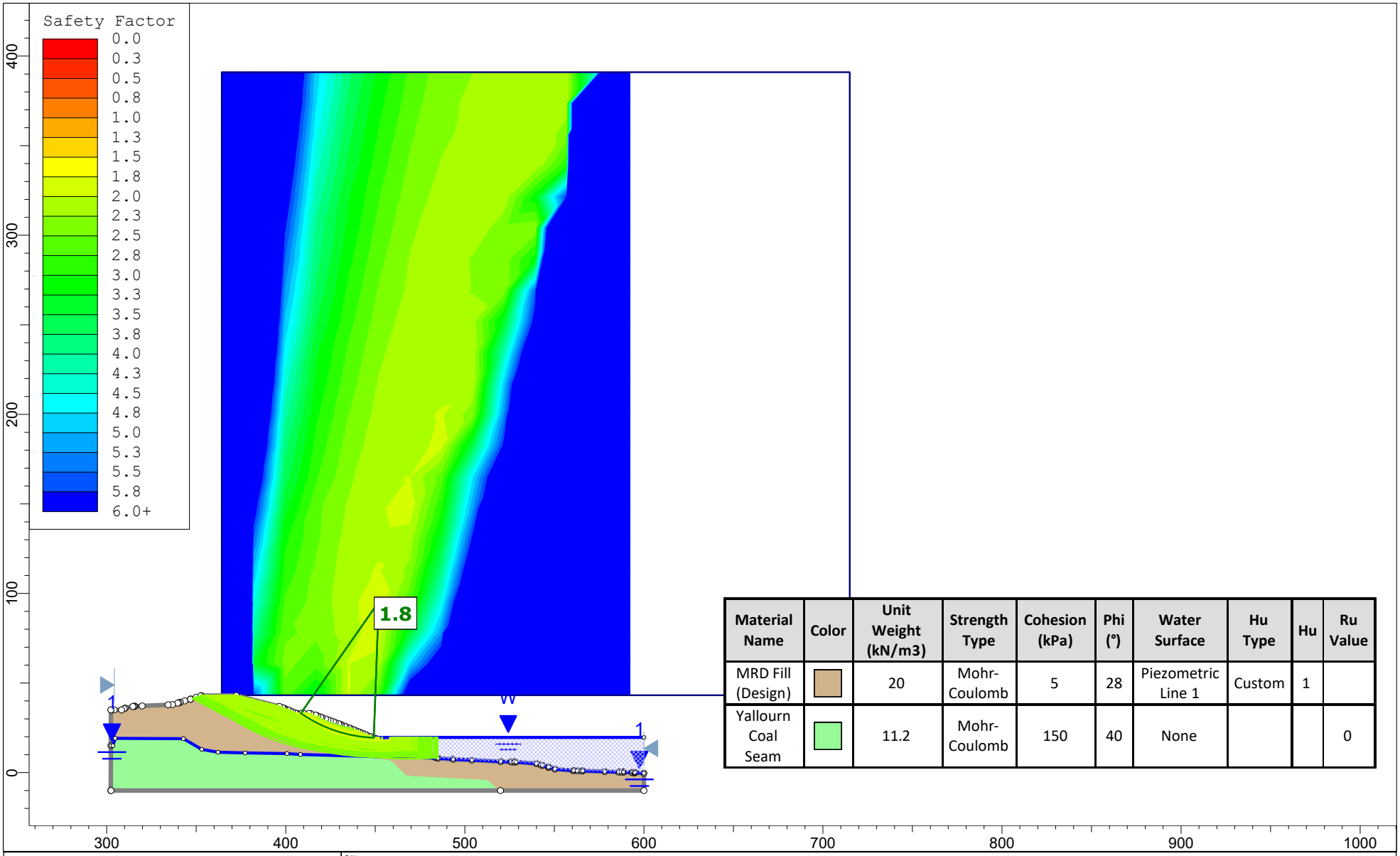
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
MRD Fill (Design)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1	
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	None			0

Client:	EnergyAustralia		
Project:	MRD Design Report	Domain:	Eastern Embankment
Section:	Yallourn Mine Rehabilitation	Case:	C1 Slope Stability
Job No:	PSM4487	Run:	Run 1 - Lake at 0 mRL
Notes:	Design Material Parameters		



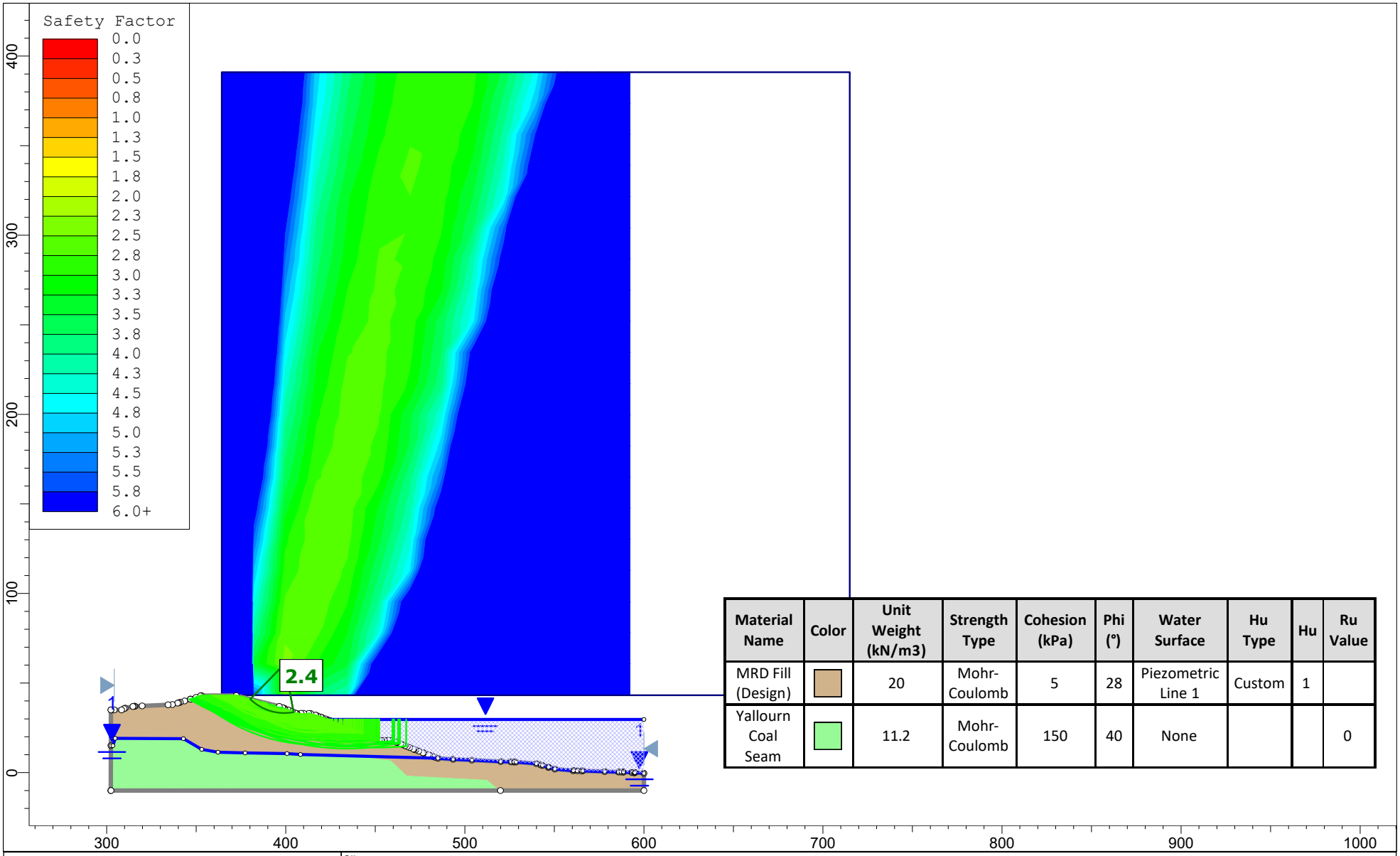
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
MRD Fill (Design)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1	
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	None			0

Client:	EnergyAustralia		
Project:	MRD Design Report	Domain:	Eastern Embankment
Section:	Yallourn Mine Rehabilitation	Case:	C1 Slope Stability
Job No:	PSM4487	Run:	Run 2 - Lake at 10 mRL
Notes:	Design Material Parameters		



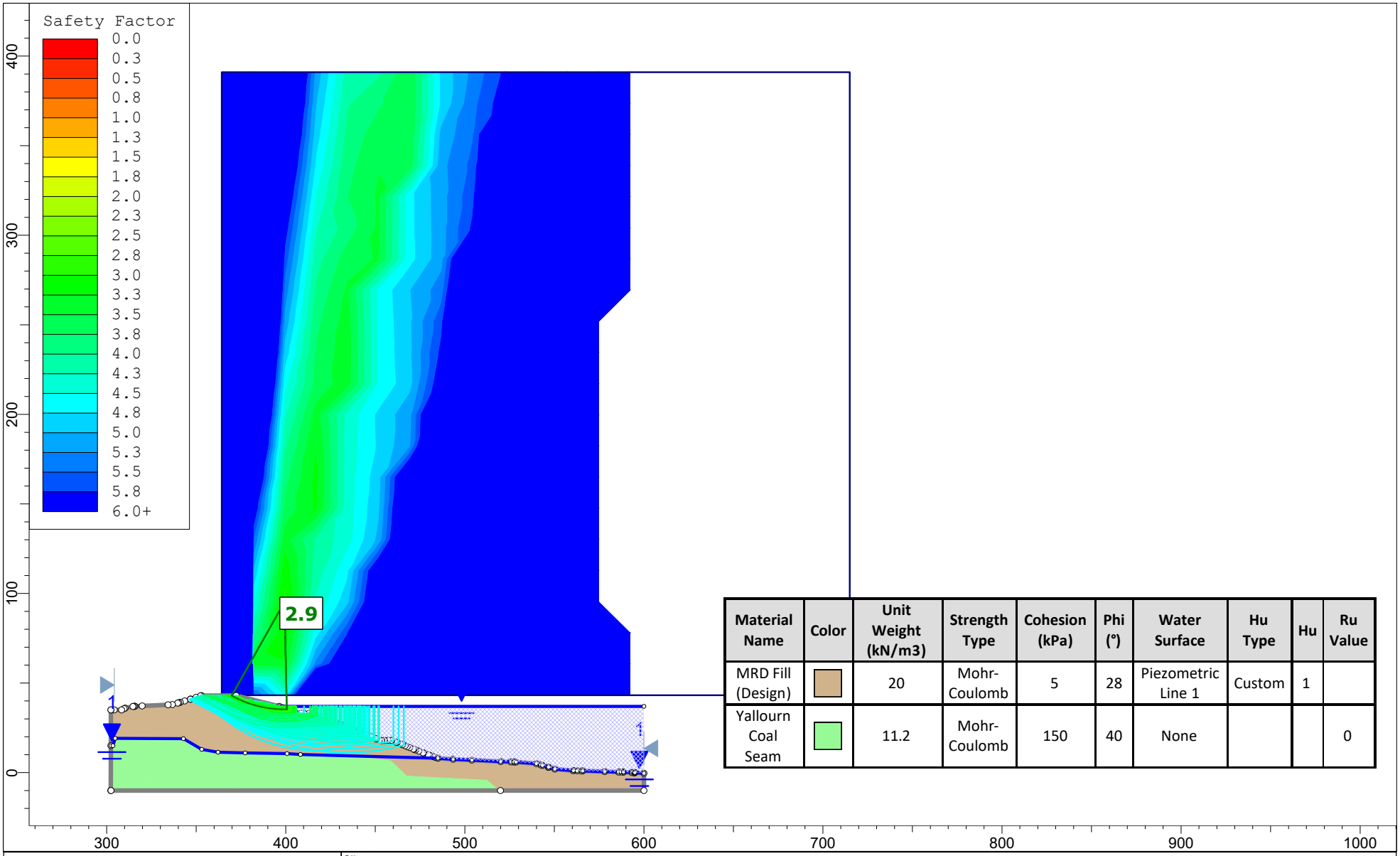
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
MRD Fill (Design)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1	
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	None			0

Client:	EnergyAustralia		
Project:	MRD Design Report	Domain:	Eastern Embankment
Section:	Yallourn Mine Rehabilitation	Case:	C1 Slope Stability
Job No:	PSM4487	Run:	Run 3 - Lake at 20 mRL
Notes:	Design Material Parameters		



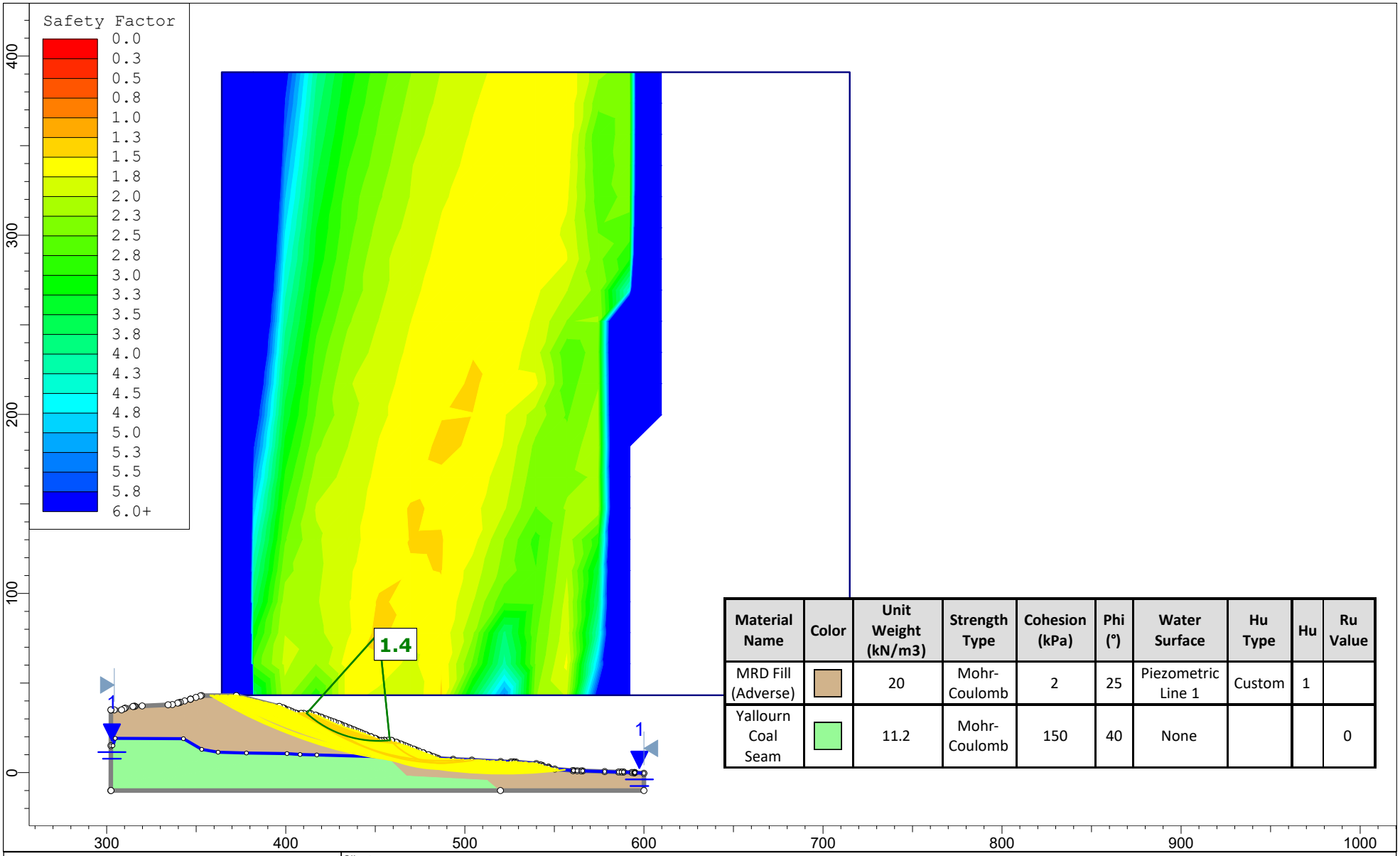
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
MRD Fill (Design)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1	
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	None			0

Client:	EnergyAustralia		
Project:	MRD Design Report	Domain:	Eastern Embankment
Section:	Yallourn Mine Rehabilitation	Case:	C1 Slope Stability
Job No:	PSM4487	Run:	Run 4 - Lake at 30 mRL
Notes:	Design Material Parameters		



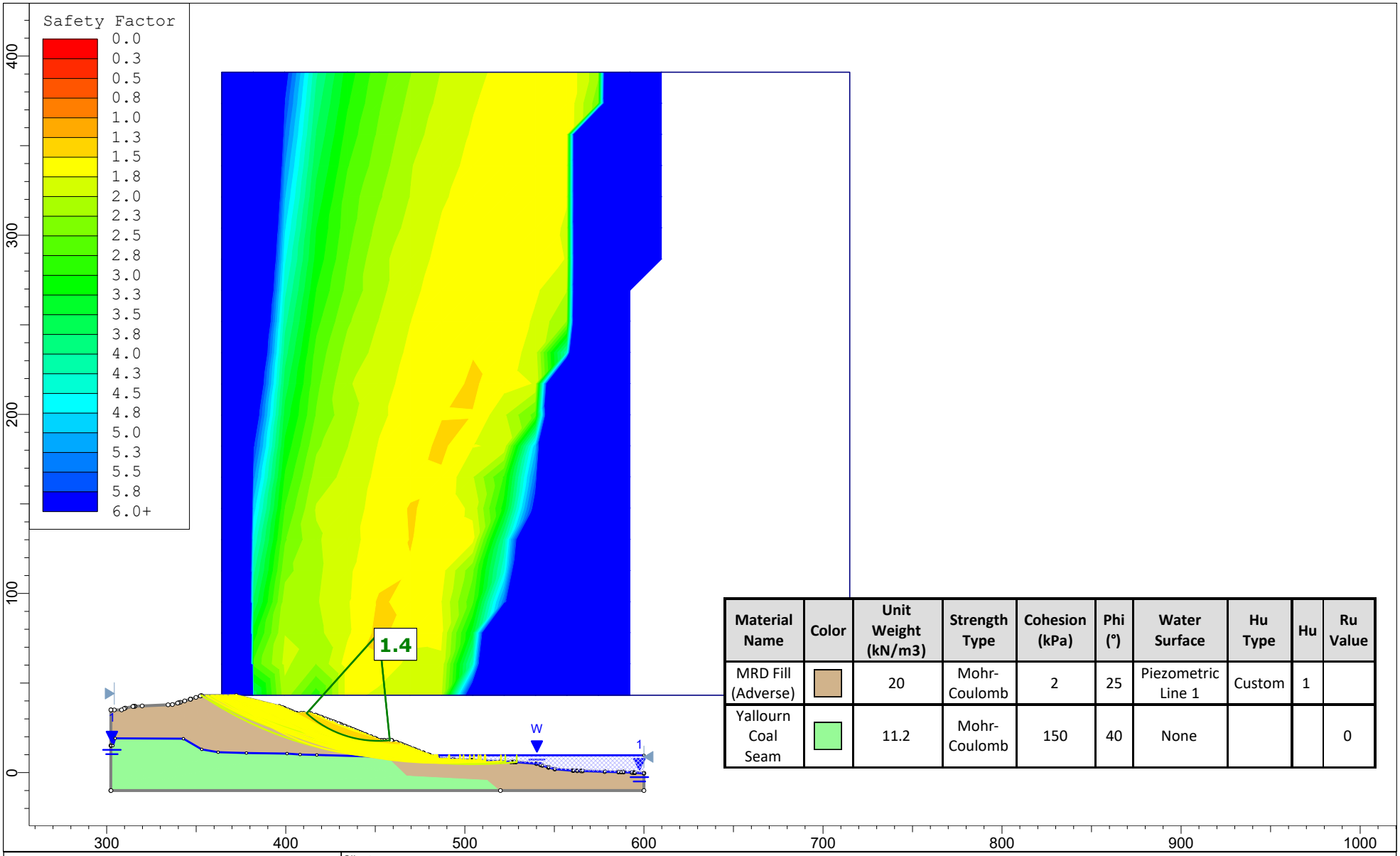
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
MRD Fill (Design)		20	Mohr-Coulomb	5	28	Piezometric Line 1	Custom	1	
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	None			0

Client:	EnergyAustralia		
Project:	MRD Design Report	Domain:	Eastern Embankment
Section:	Yallourn Mine Rehabilitation	Case:	C1 Slope Stability
Job No:	PSM4487	Run:	Run 5 - Lake at 37 mRL
Notes:	Design Material Parameters		



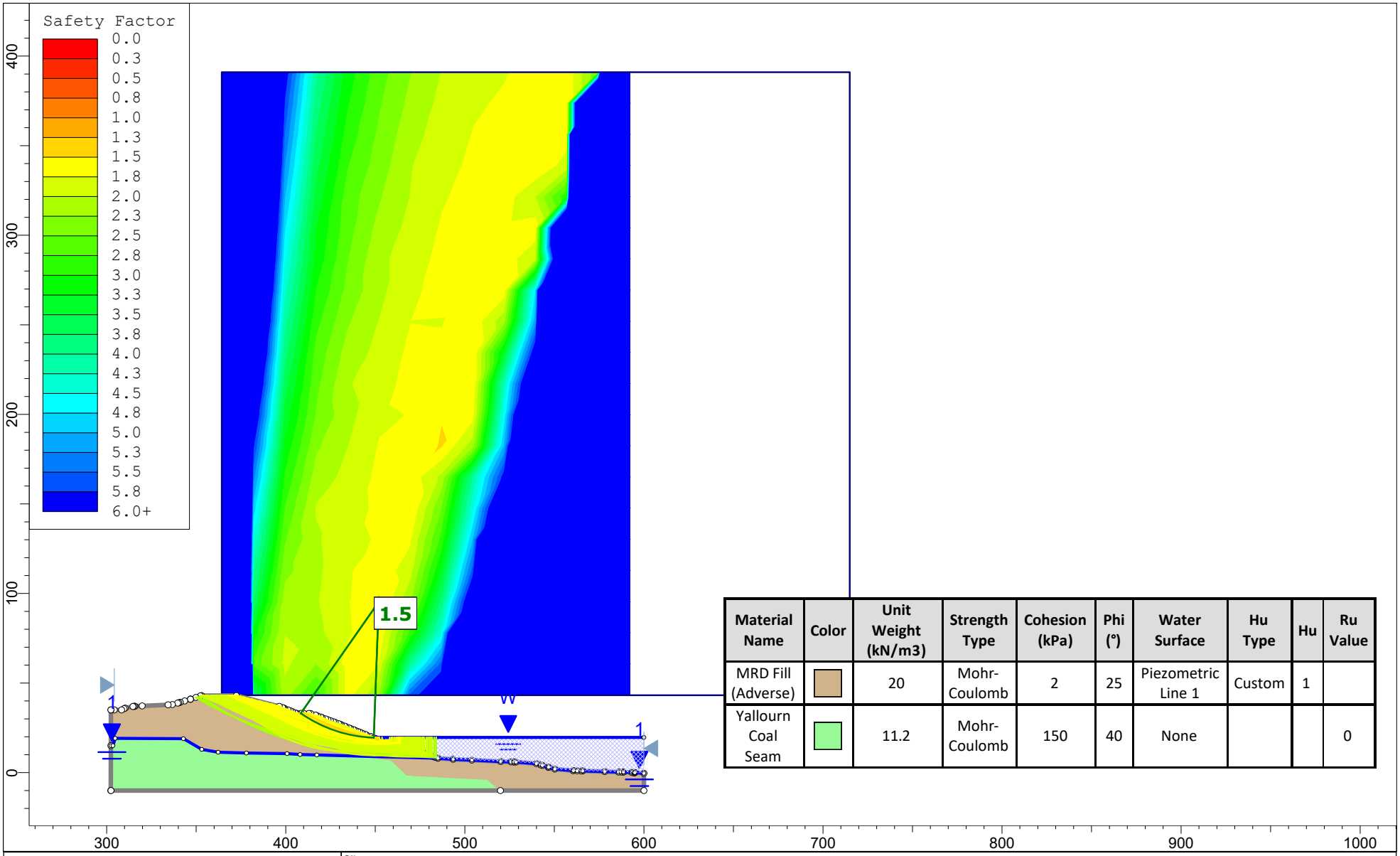
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
MRD Fill (Adverse)		20	Mohr-Coulomb	2	25	Piezometric Line 1	Custom	1	
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	None			0

Client:	EnergyAustralia		
Project:	MRD Design Report	Domain:	Eastern Embankment
Section:	Yallourn Mine Rehabilitation	Case:	C1 Slope Stability
Job No:	PSM4487	Run:	Run 1 - Lake at 0 mRL
Notes:	Adverse Material Parameters		



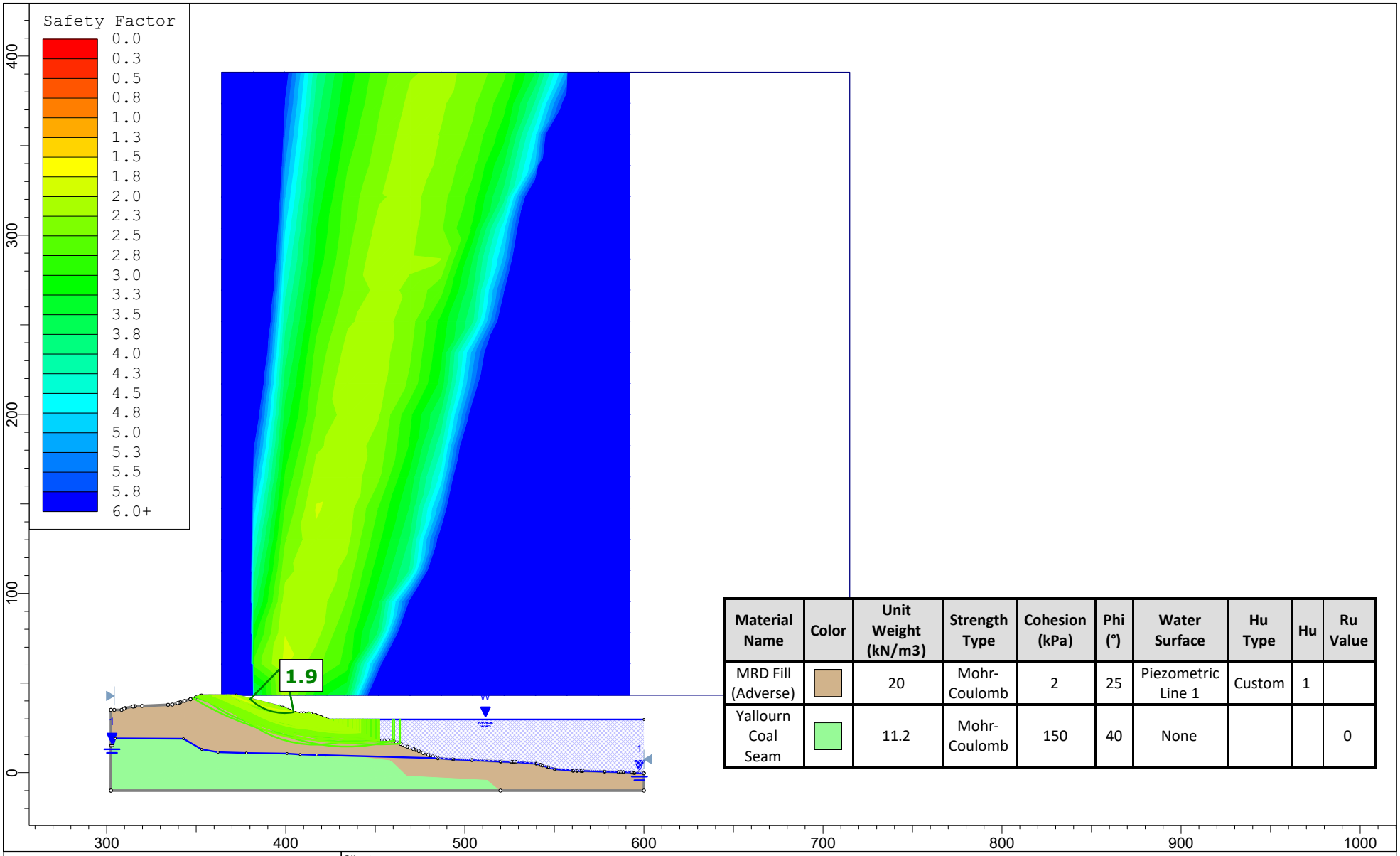
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
MRD Fill (Adverse)		20	Mohr-Coulomb	2	25	Piezometric Line 1	Custom	1	
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	None			0

Client:	EnergyAustralia		
Project:	MRD Design Report	Domain:	Eastern Embankment
Section:	Yallourn Mine Rehabilitation	Case:	C1 Slope Stability
Job No:	PSM4487	Run:	Run 2 - Lake at 10 mRL
Notes:	Adverse Material Parameters		



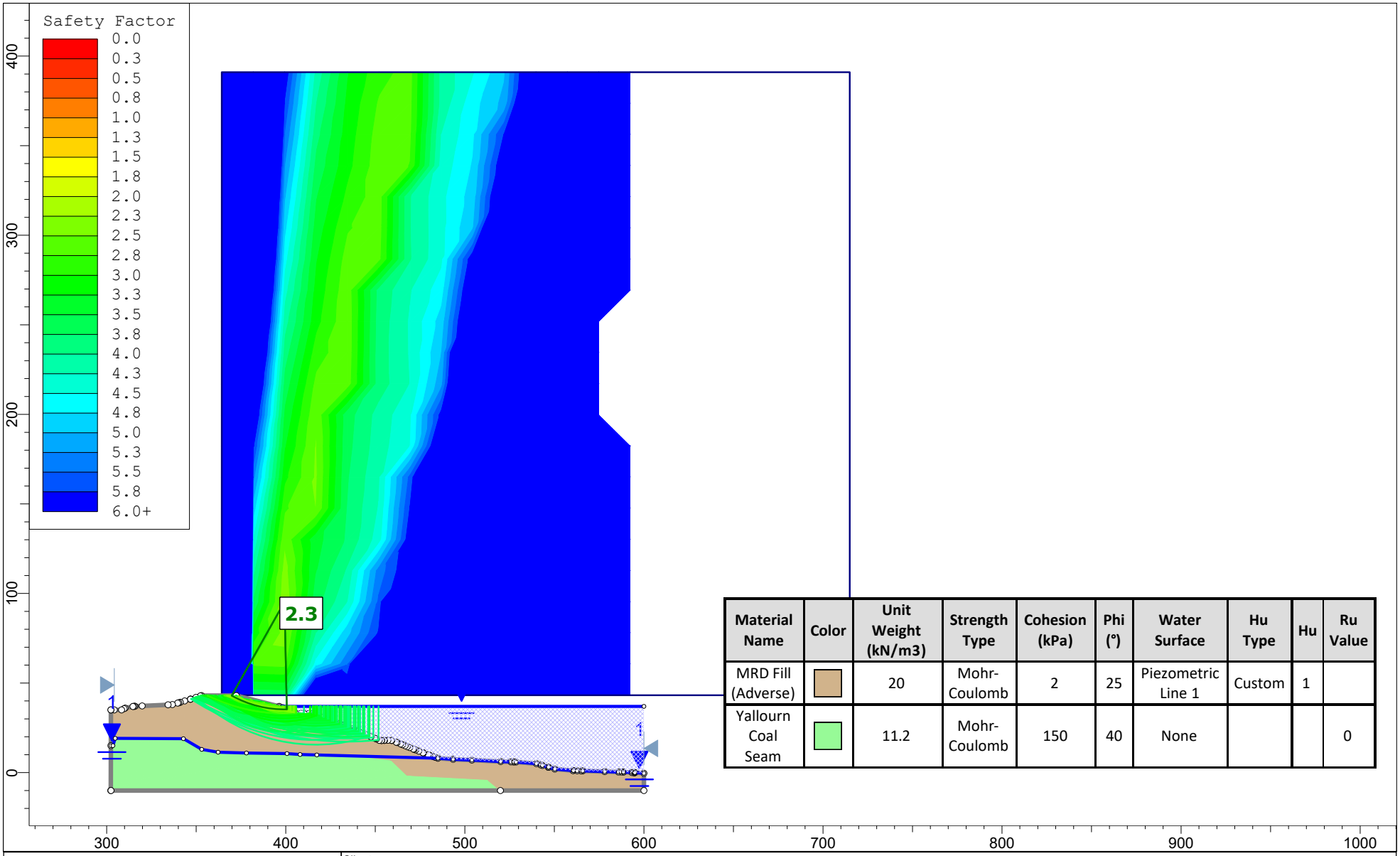
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
MRD Fill (Adverse)		20	Mohr-Coulomb	2	25	Piezometric Line 1	Custom	1	
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	None			0

Client:	EnergyAustralia		
Project:	MRD Design Report	Domain:	Eastern Embankment
Section:	Yallourn Mine Rehabilitation	Case:	C1 Slope Stability
Job No:	PSM4487	Run:	Run 3 - Lake at 20 mRL
Notes:	Adverse Material Parameters		



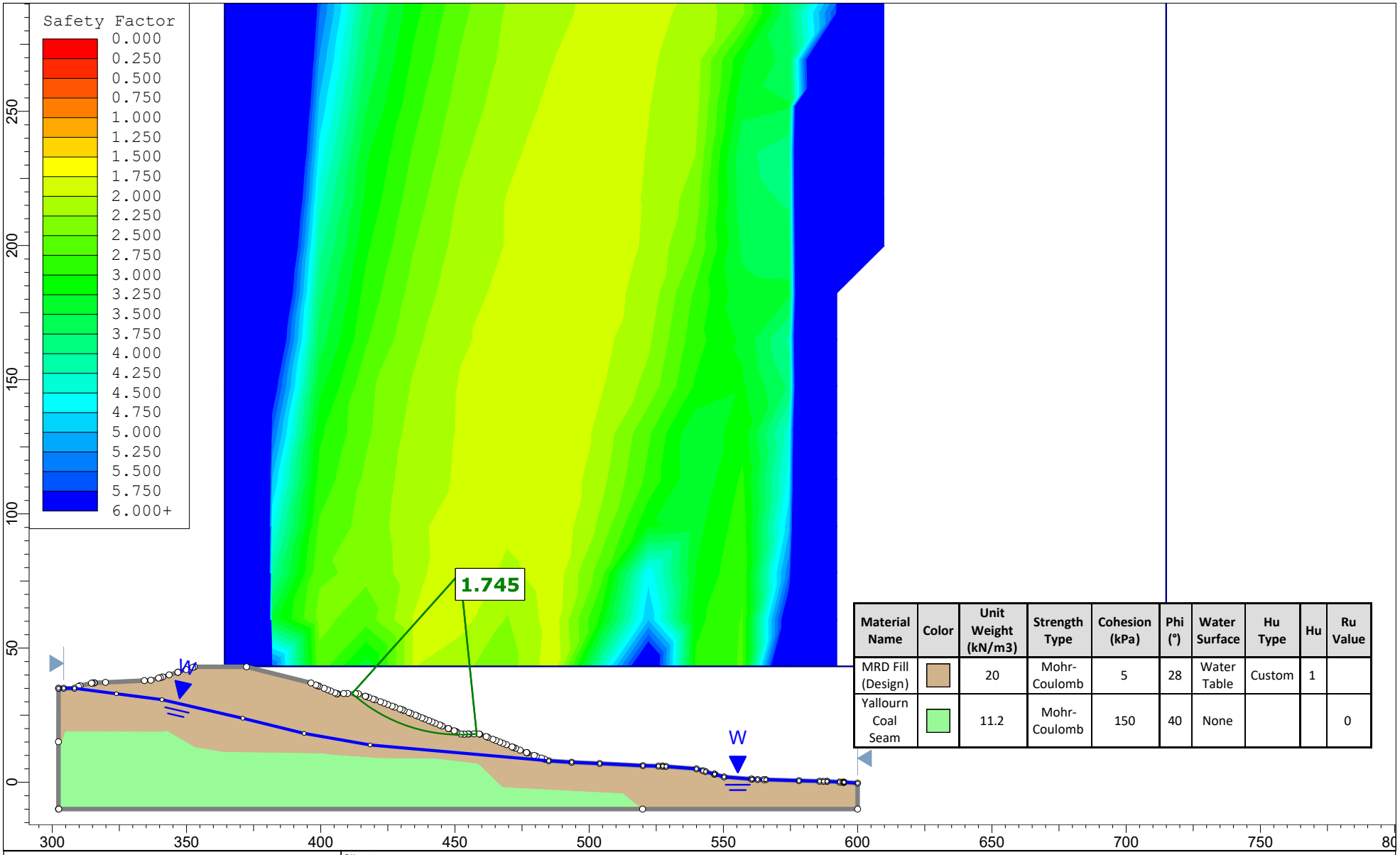
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
MRD Fill (Adverse)		20	Mohr-Coulomb	2	25	Piezometric Line 1	Custom	1	
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	None			0

Client:	EnergyAustralia		
Project:	MRD Design Report	Domain:	Eastern Embankment
Section:	Yallourn Mine Rehabilitation	Case:	C1 Slope Stability
Job No:	PSM4487	Run:	Run 4 - Lake at 30 mRL
Notes:	Adverse Material Parameters		



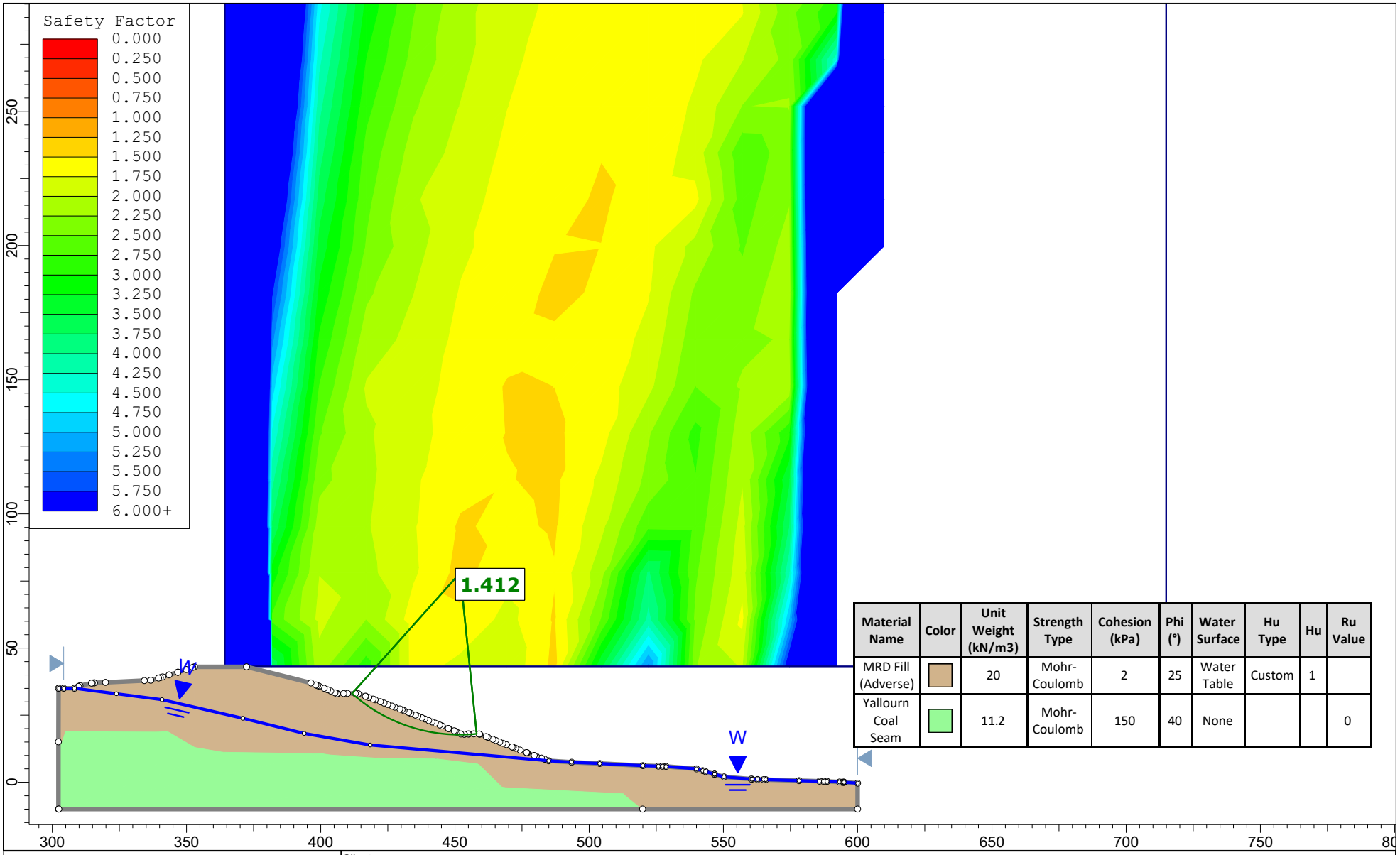
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
MRD Fill (Adverse)		20	Mohr-Coulomb	2	25	Piezometric Line 1	Custom	1	
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	None			0

Client:	EnergyAustralia		
Project:	MRD Design Report	Domain:	Eastern Embankment
Section:	Yallourn Mine Rehabilitation	Case:	C1 Slope Stability
Job No:	PSM4487	Run:	Run 5 - Lake at 37 mRL
Notes:	Adverse Material Parameters		



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
MRD Fill (Design)		20	Mohr-Coulomb	5	28	Water Table	Custom	1	
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	None			0

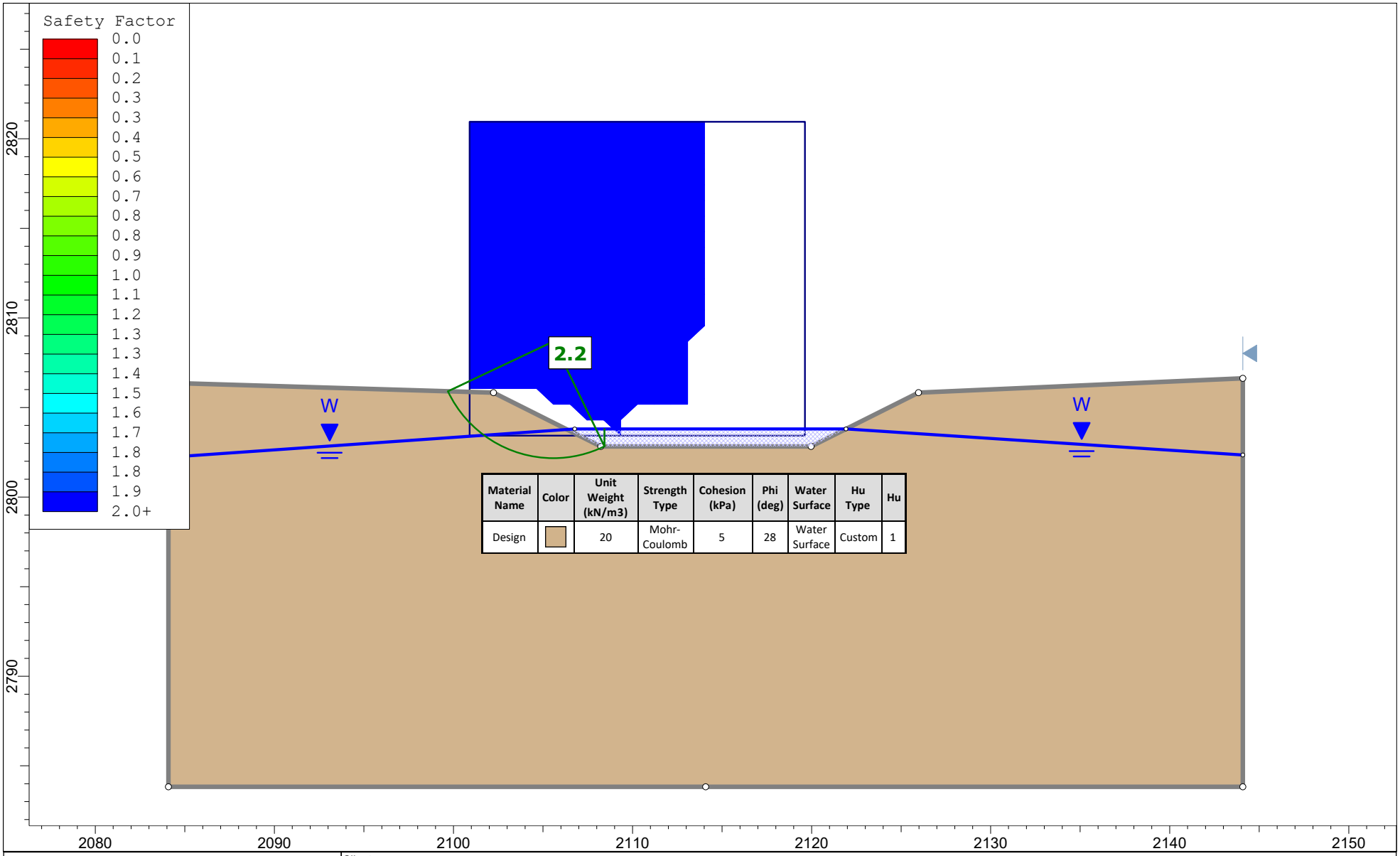
Client:	EnergyAustralia		
Project:	MRD Design Report	Domain:	Eastern Embankment
Section:	Yallourn Mine Rehabilitation	Case:	C2 Global Stability
Job No:	PSM4487	Run:	Design Parameters
Notes:	Design Material Parameters		



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
MRD Fill (Adverse)		20	Mohr-Coulomb	2	25	Water Table	Custom	1	
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	None			0

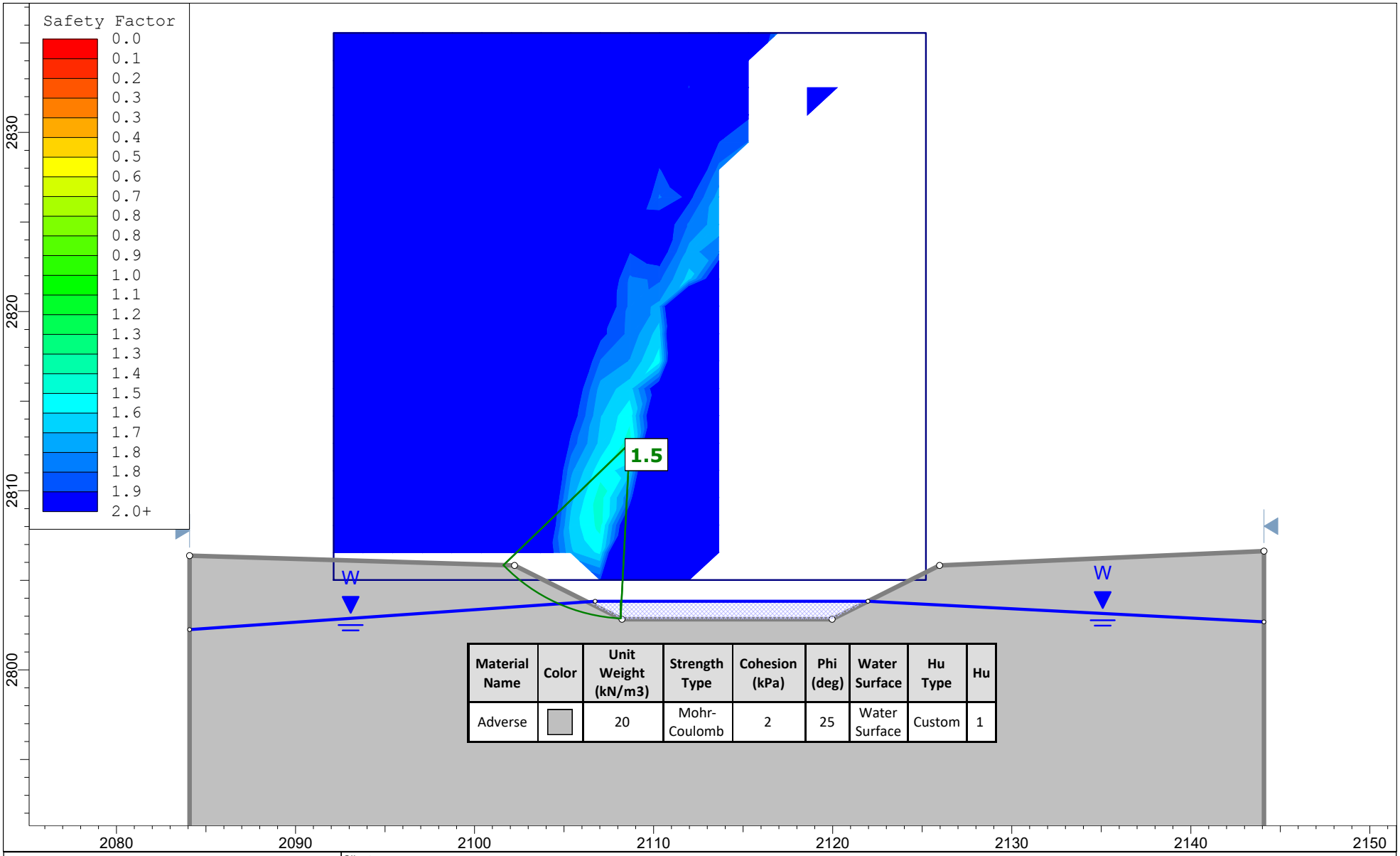
Client:	EnergyAustralia		
Project:	MRD Design Report	Domain:	Eastern Embankment
Section:	Yallourn Mine Rehabilitation	Case:	C2 Global Stability
Job No:	PSM4487	Run:	Adverse Parameters
Notes:	Adverse Material Parameters		

Appendix F.9
MRD low flow channel stability outputs



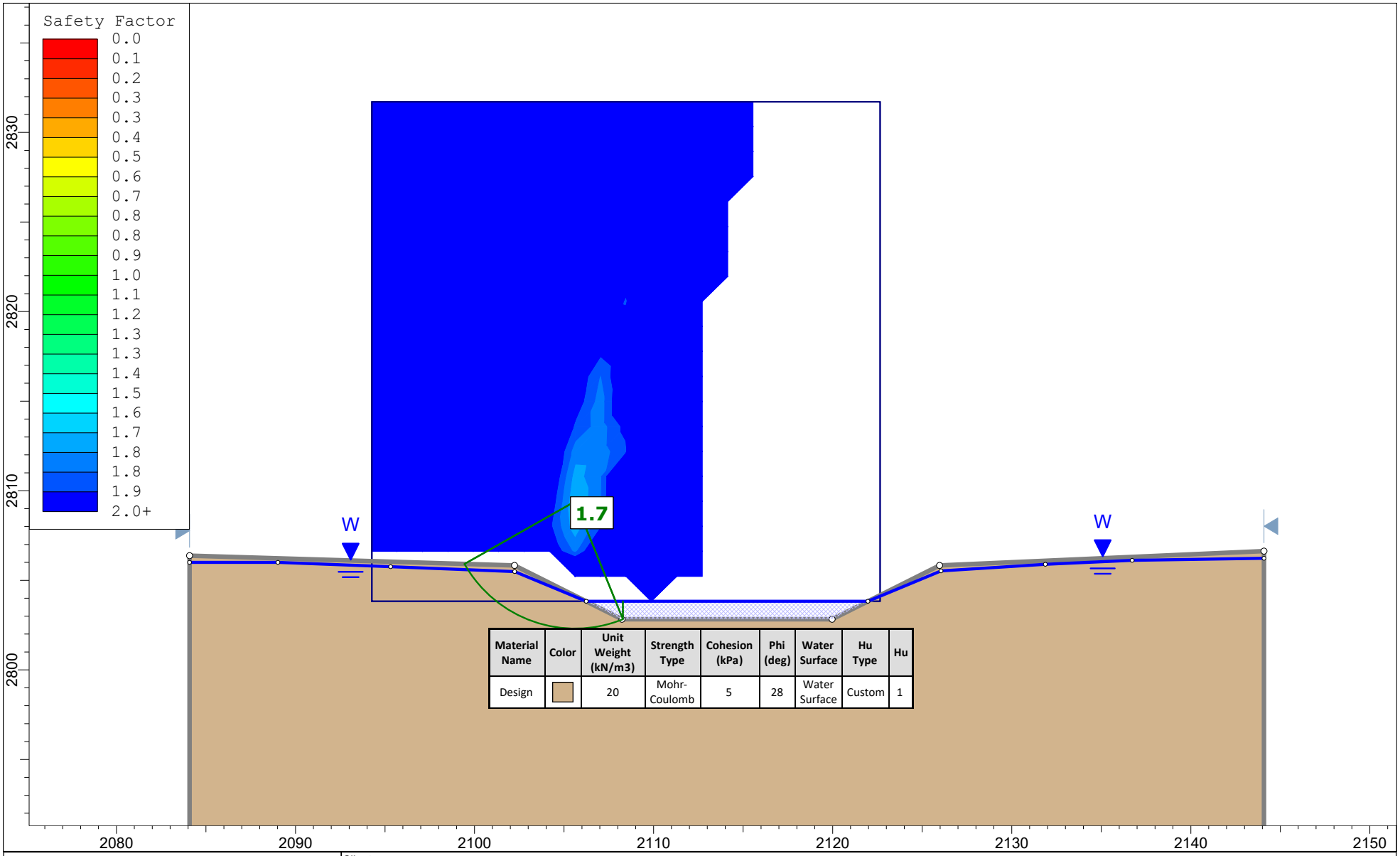
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Design		20	Mohr-Coulomb	5	28	Water Surface	Custom	1

Client:	Energy Australia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD
Section:	Low Flow Typical	Case:	2H:1V Slope
Job No:	PSM4487	Run:	Design Paramaters, No Drawdown
Notes:			



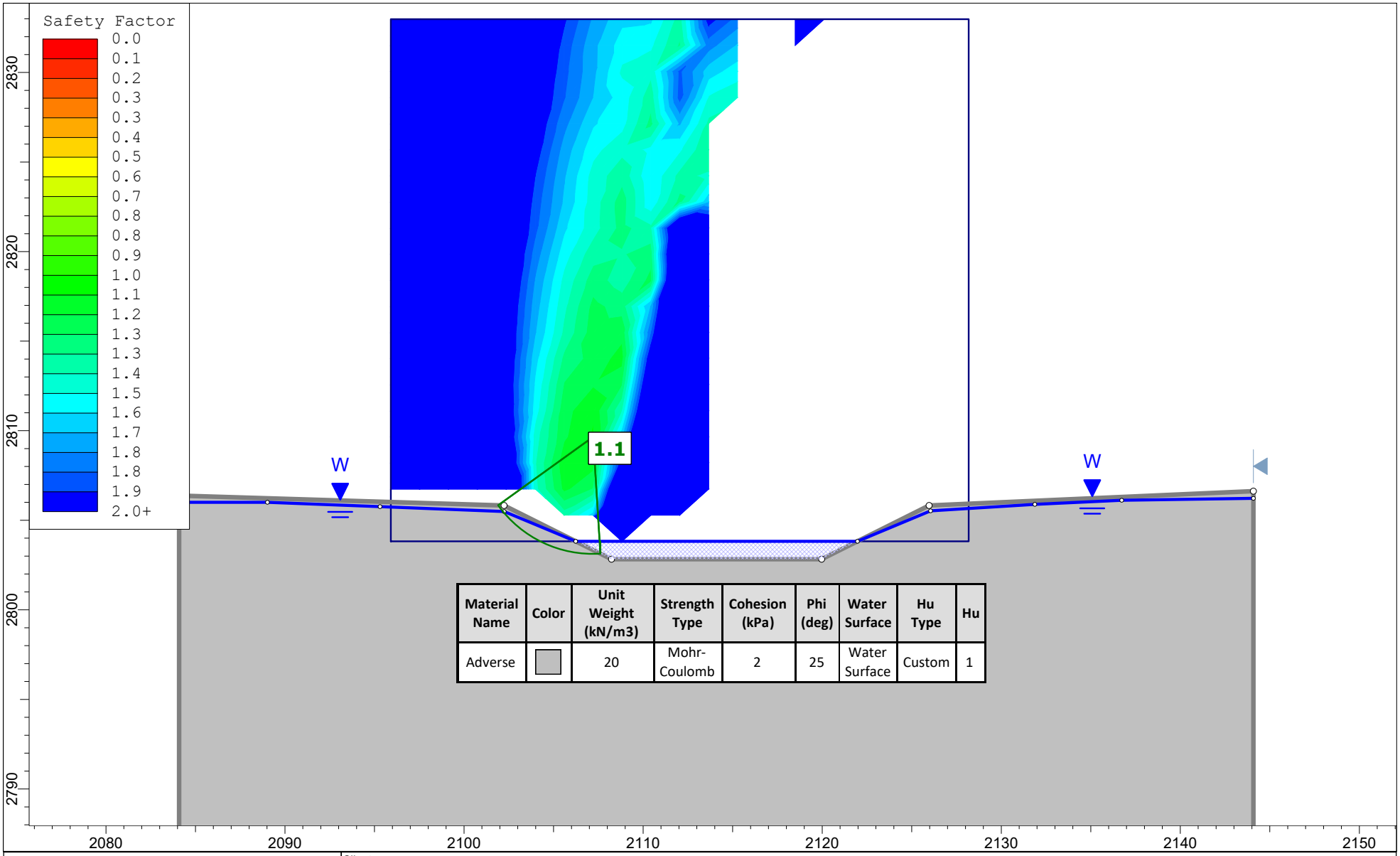
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Adverse		20	Mohr-Coulomb	2	25	Water Surface	Custom	1

Client:	Energy Australia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD
Section:	Low Flow Typical	Case:	2H:1V Slope
Job No:	PSM4487	Run:	Adverse Paramaters, No Drawdown
Notes:			



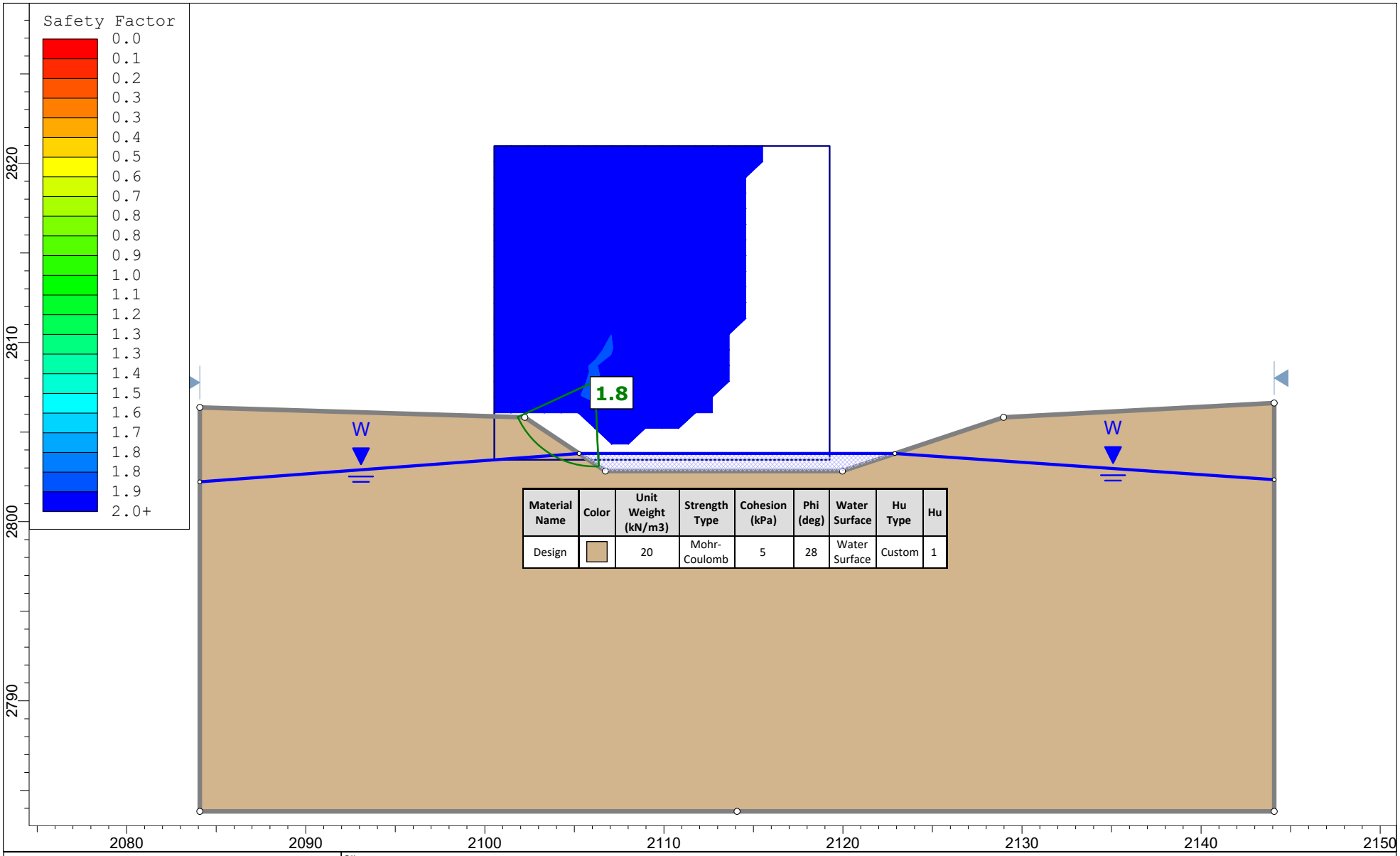
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Design		20	Mohr-Coulomb	5	28	Water Surface	Custom	1

Client:	Energy Australia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD
Section:	Low Flow Typical	Case:	2H:1V Slope
Job No:	PSM4487	Run:	Design Paramaters, Considers Drawdown
Notes:			



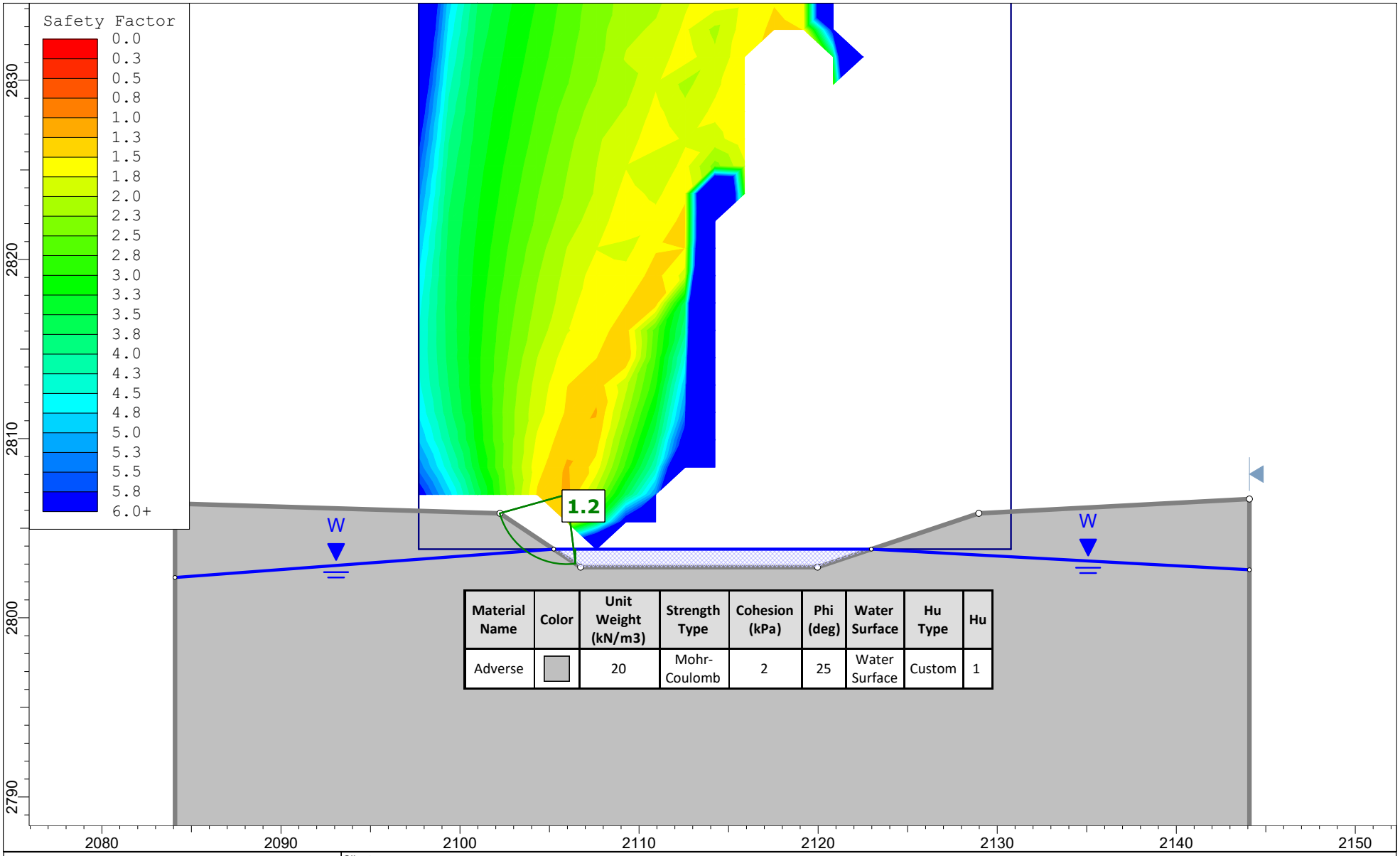
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Adverse		20	Mohr-Coulomb	2	25	Water Surface	Custom	1

Client:	Energy Australia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD
Section:	Low Flow Typical	Case:	2H:1V Slope
Job No:	PSM4487	Run:	Adverse Paramaters, Considers Drawdown
Notes:			



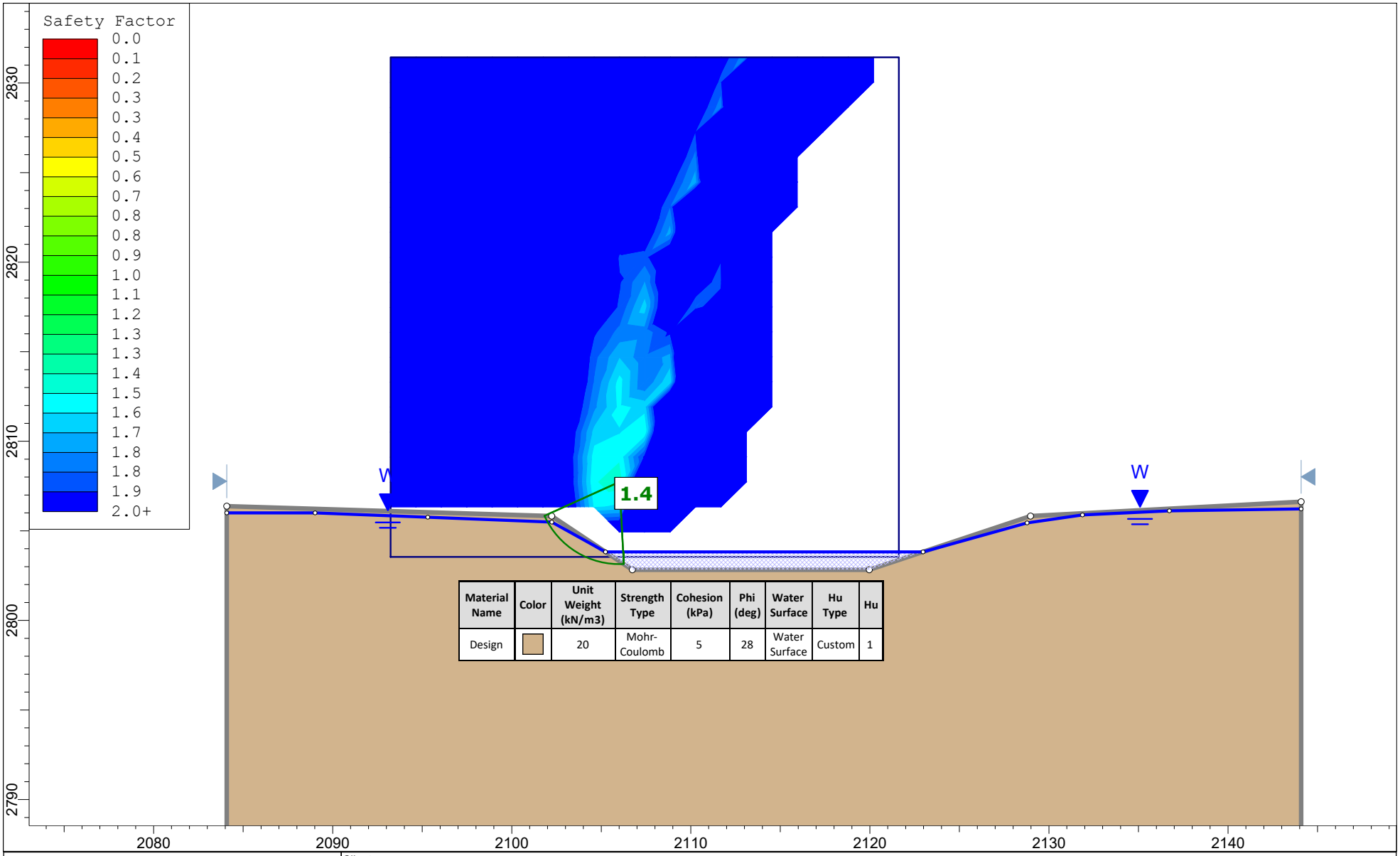
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Design		20	Mohr-Coulomb	5	28	Water Surface	Custom	1

Client:	Energy Australia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD
Section:	Low Flow Typical	Case:	1.5H:1V Slope
Job No:	PSM4487	Run:	Design Paramaters, No Drawdown
Notes:			

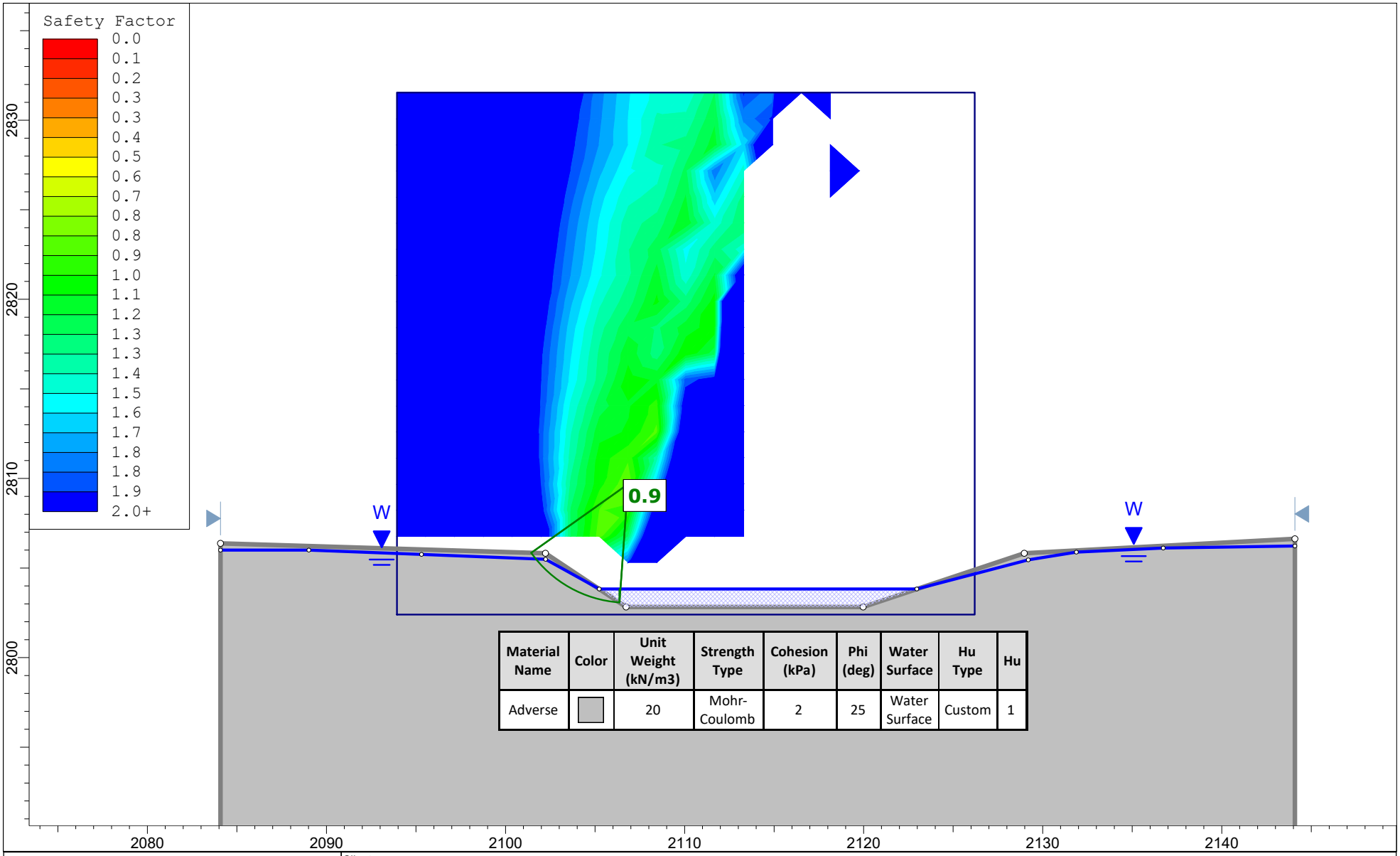


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Adverse		20	Mohr-Coulomb	2	25	Water Surface	Custom	1

Client:	Energy Australia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD
Section:	Low Flow Typical	Case:	1.5H:1V Slope
Job No:	PSM4487	Run:	Adverse Paramaters, No Drawdown
Notes:			



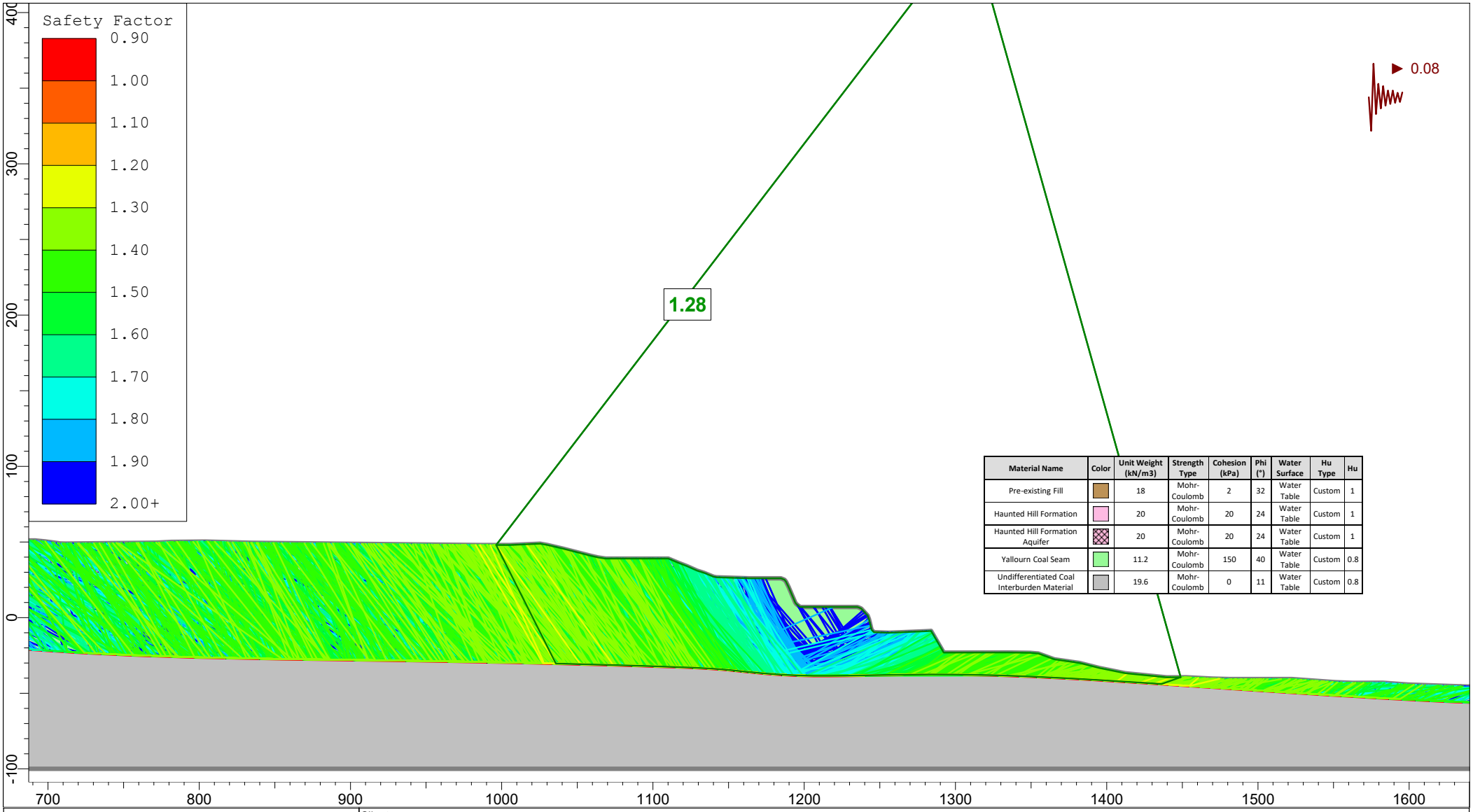
Client:	Energy Australia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD
Section:	Low Flow Typical	Case:	1.5H:1V Slope
Job No:	PSM4487	Run:	Design Paramaters, Considers Drawdown
Notes:			



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
Adverse		20	Mohr-Coulomb	2	25	Water Surface	Custom	1

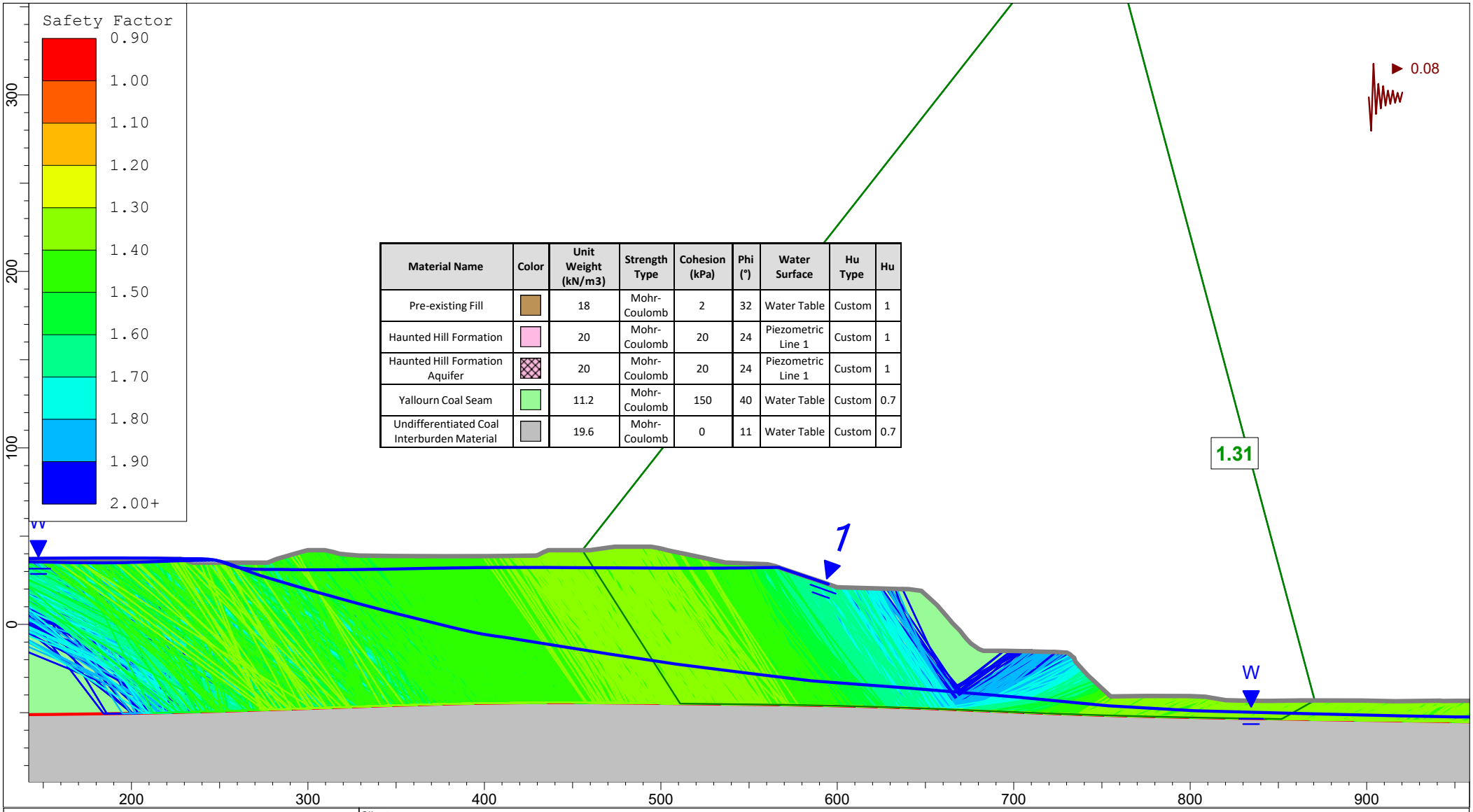
Client:	Energy Australia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	MRD
Section:	Low Flow Typical	Case:	1.5H:1V Slope
Job No:	PSM4487	Run:	Adverse Paramaters, Considers Drawdown
Notes:			

Appendix F.10
2012 Earthquake back-analysis



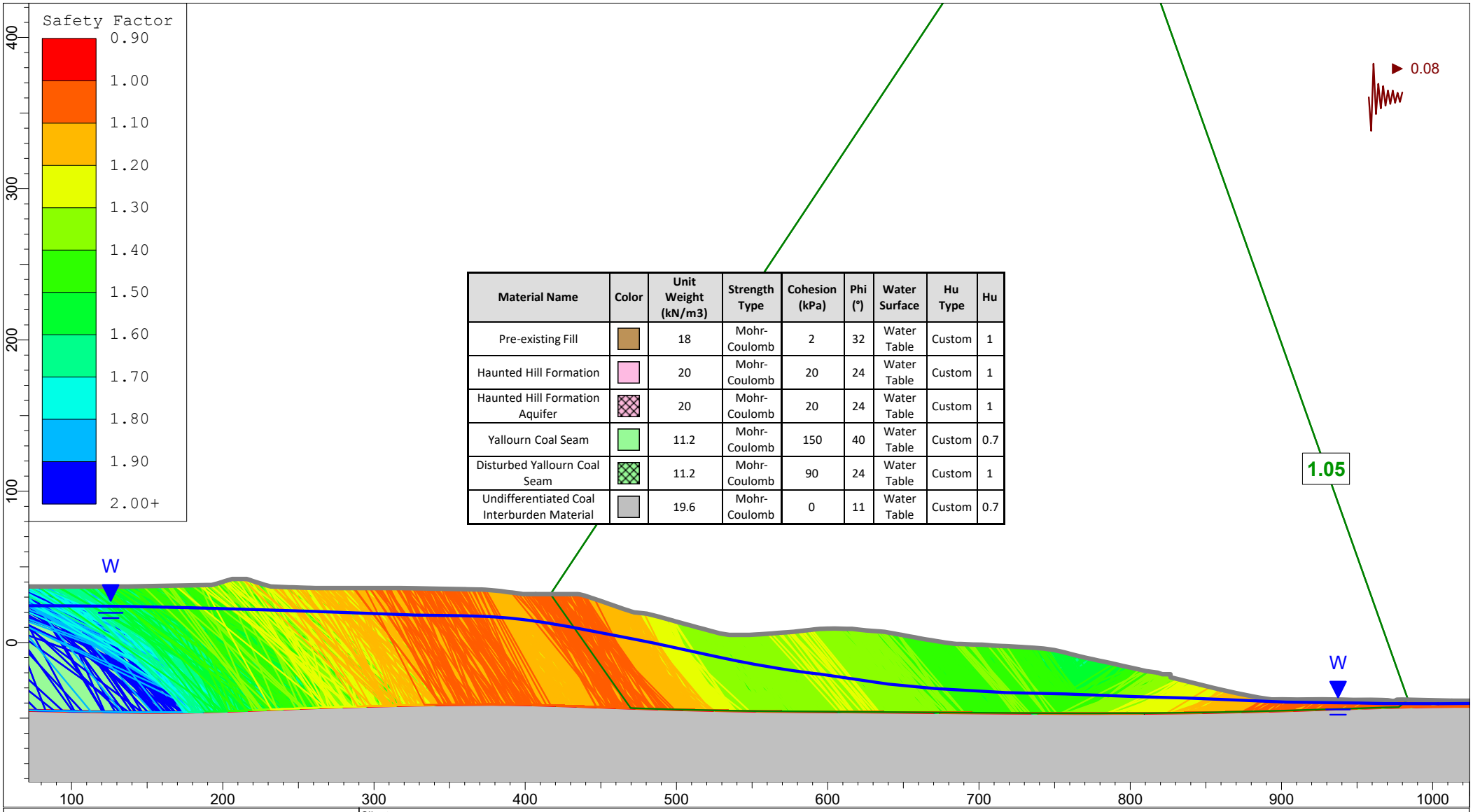
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.8
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.8

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (east)
Section:	Section 03	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



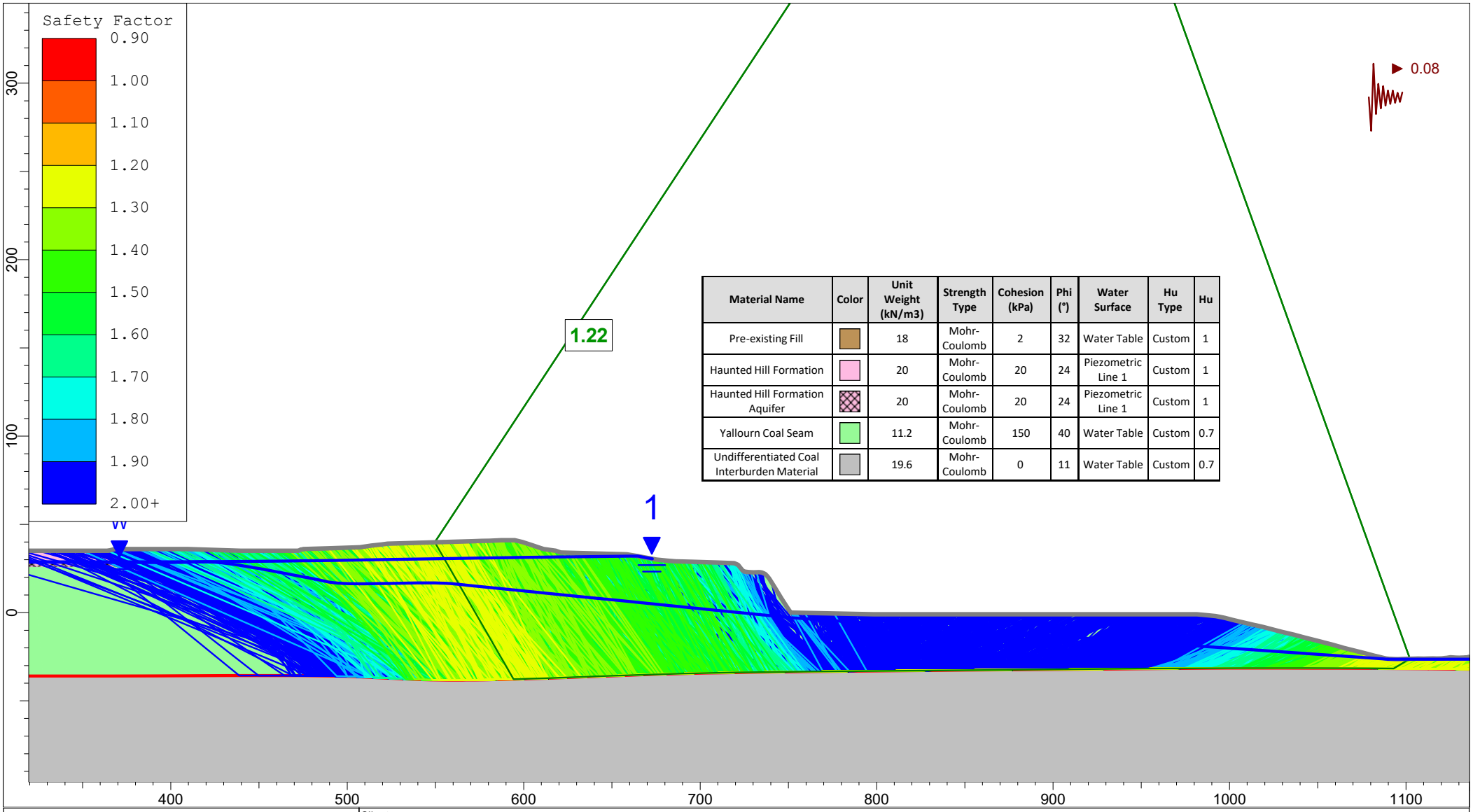
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



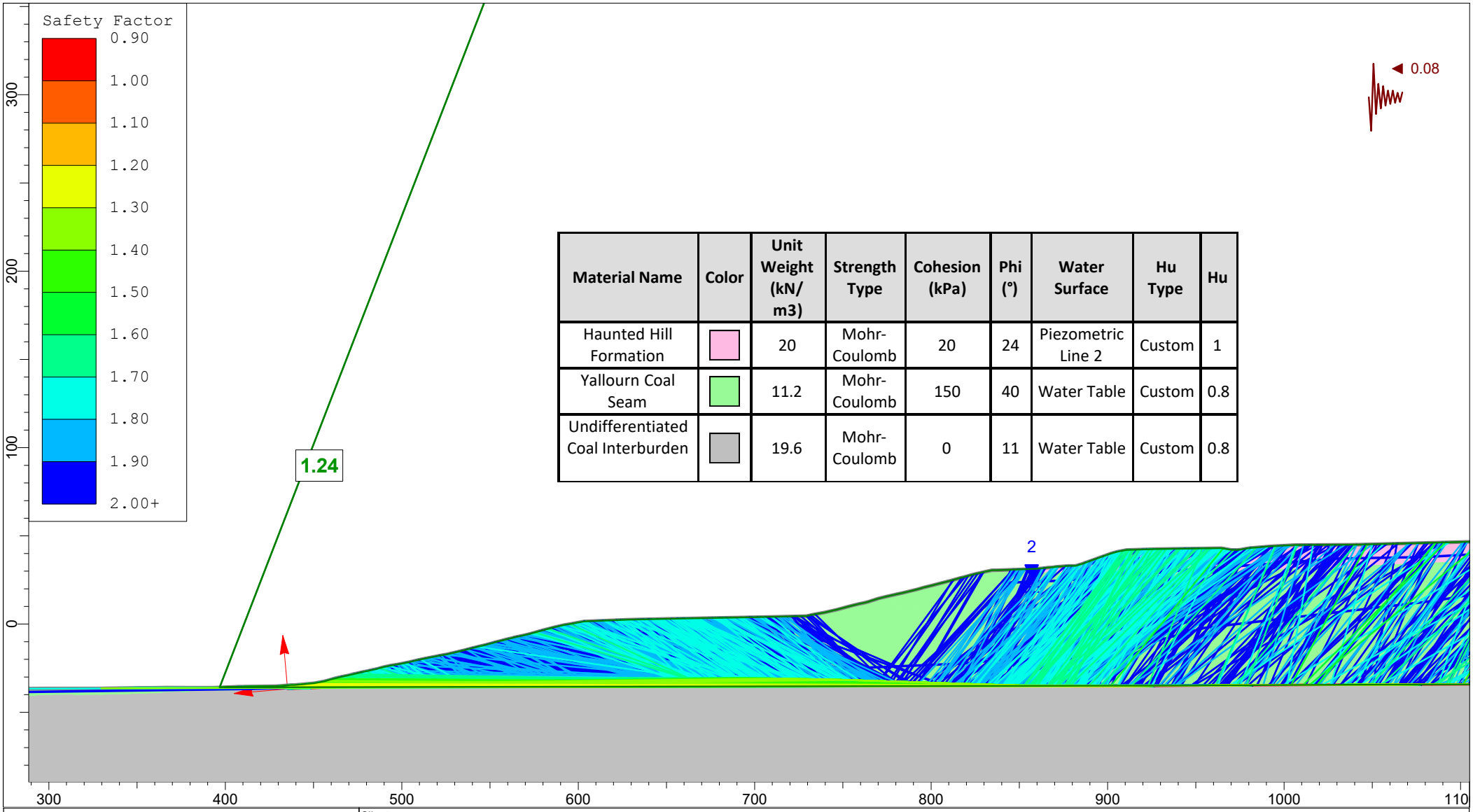
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



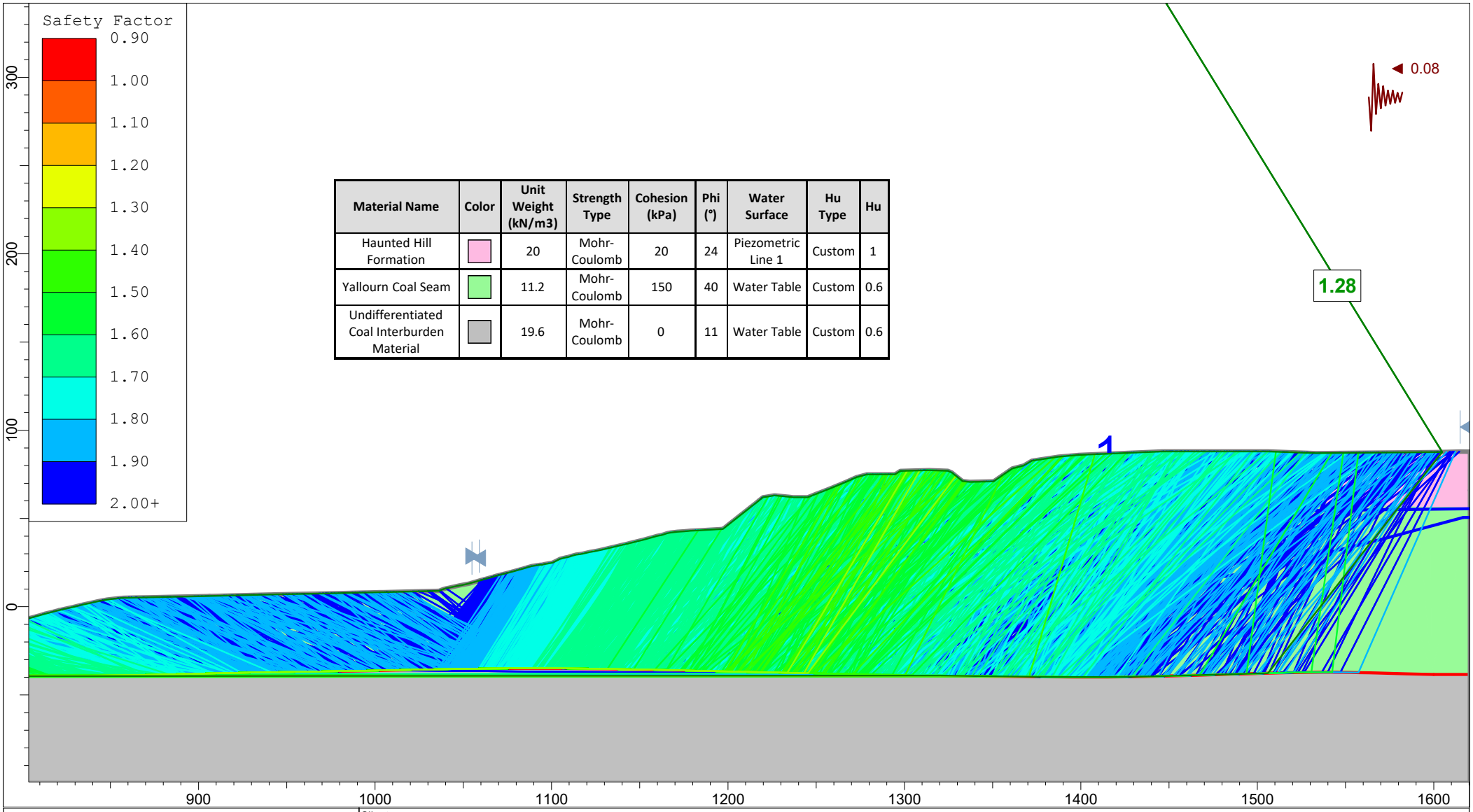
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



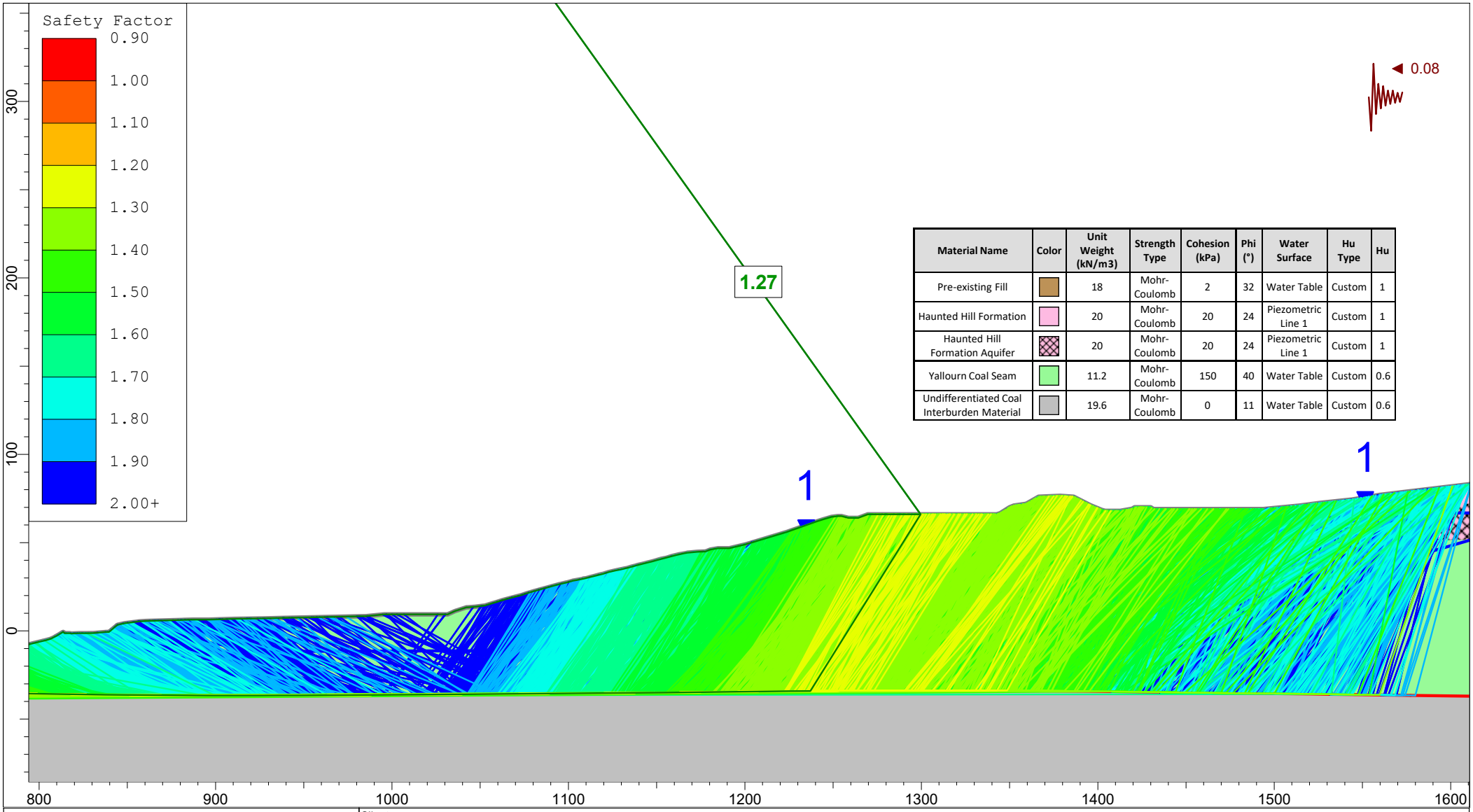
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.8
Undifferentiated Coal Interburden		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.8

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



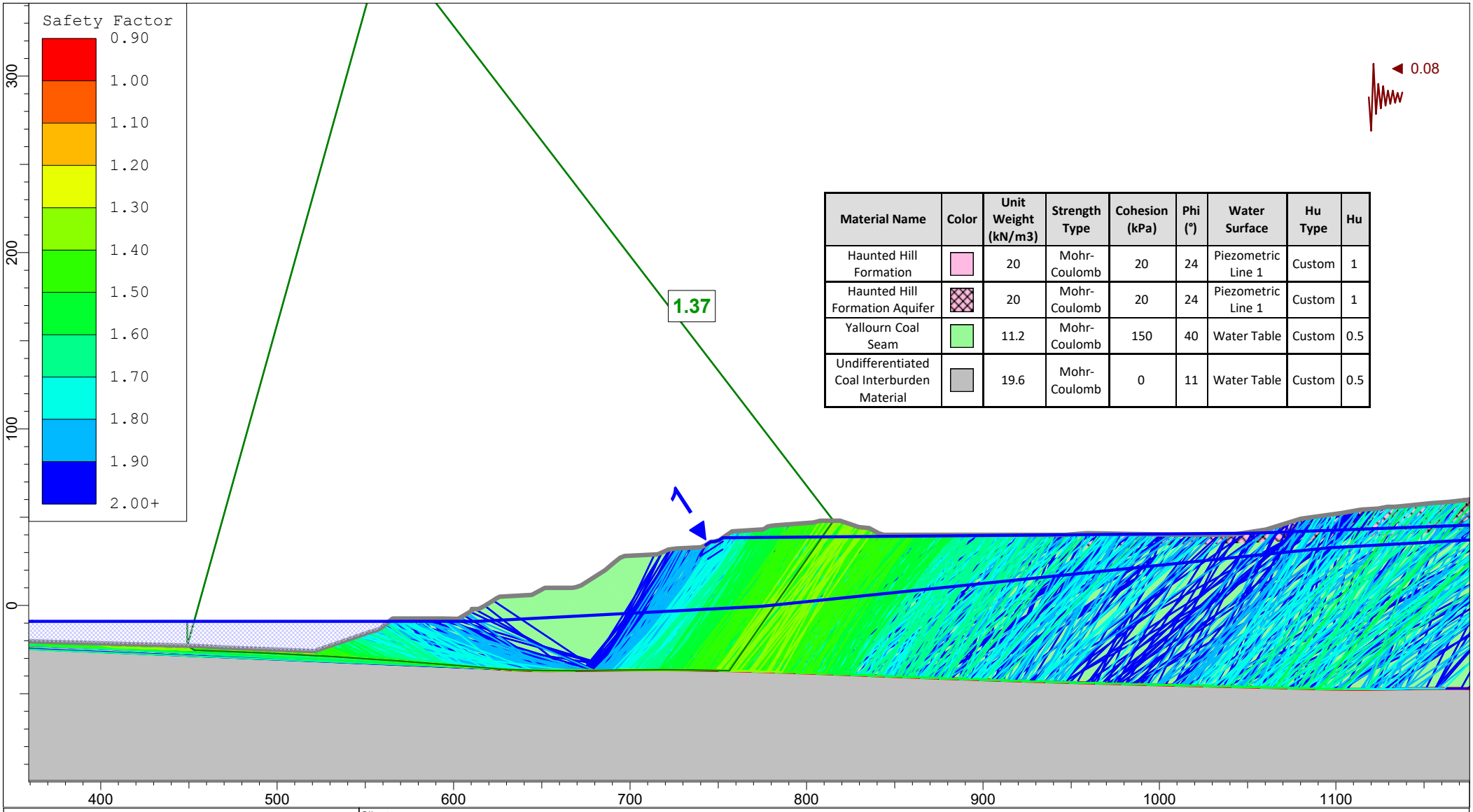
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



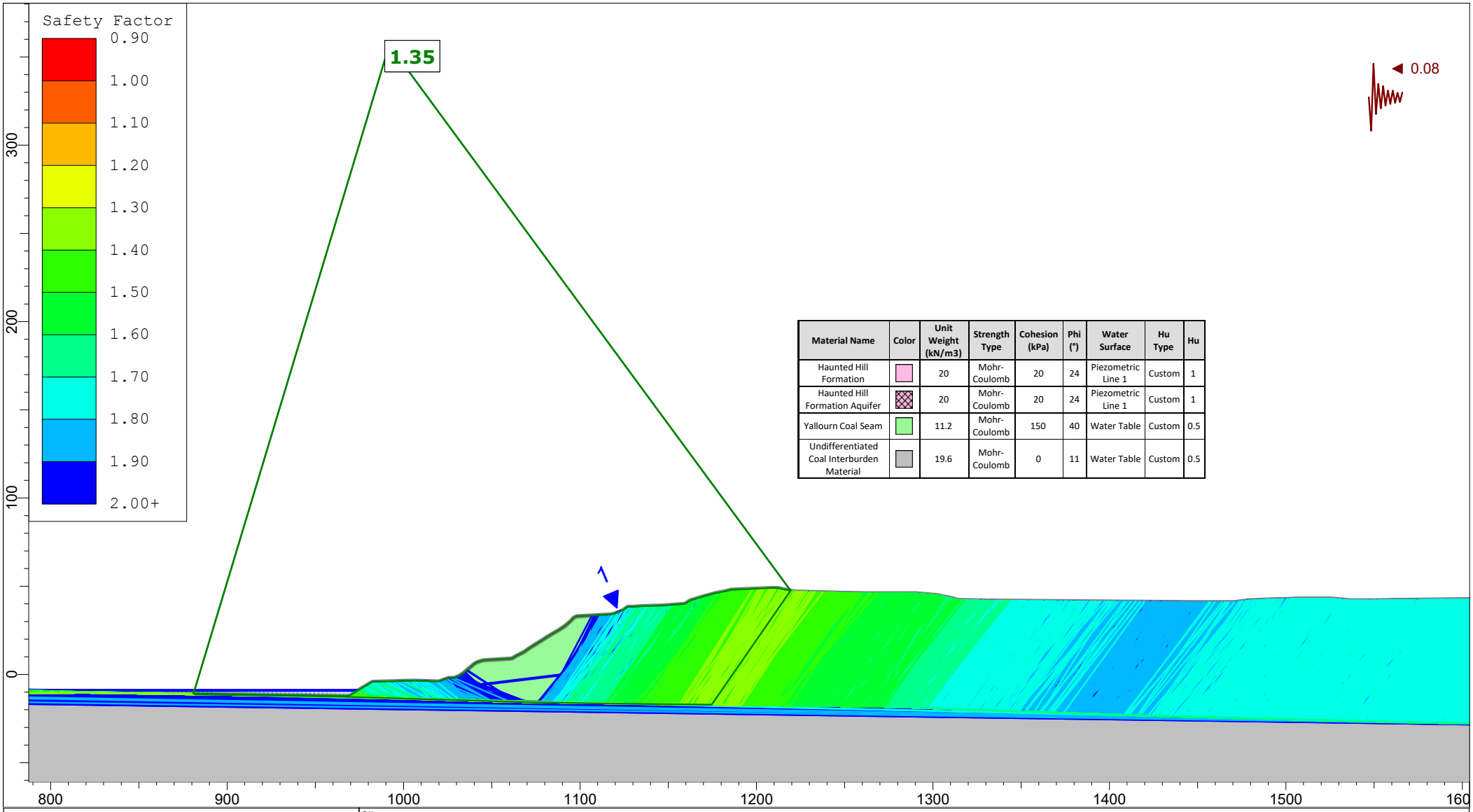
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



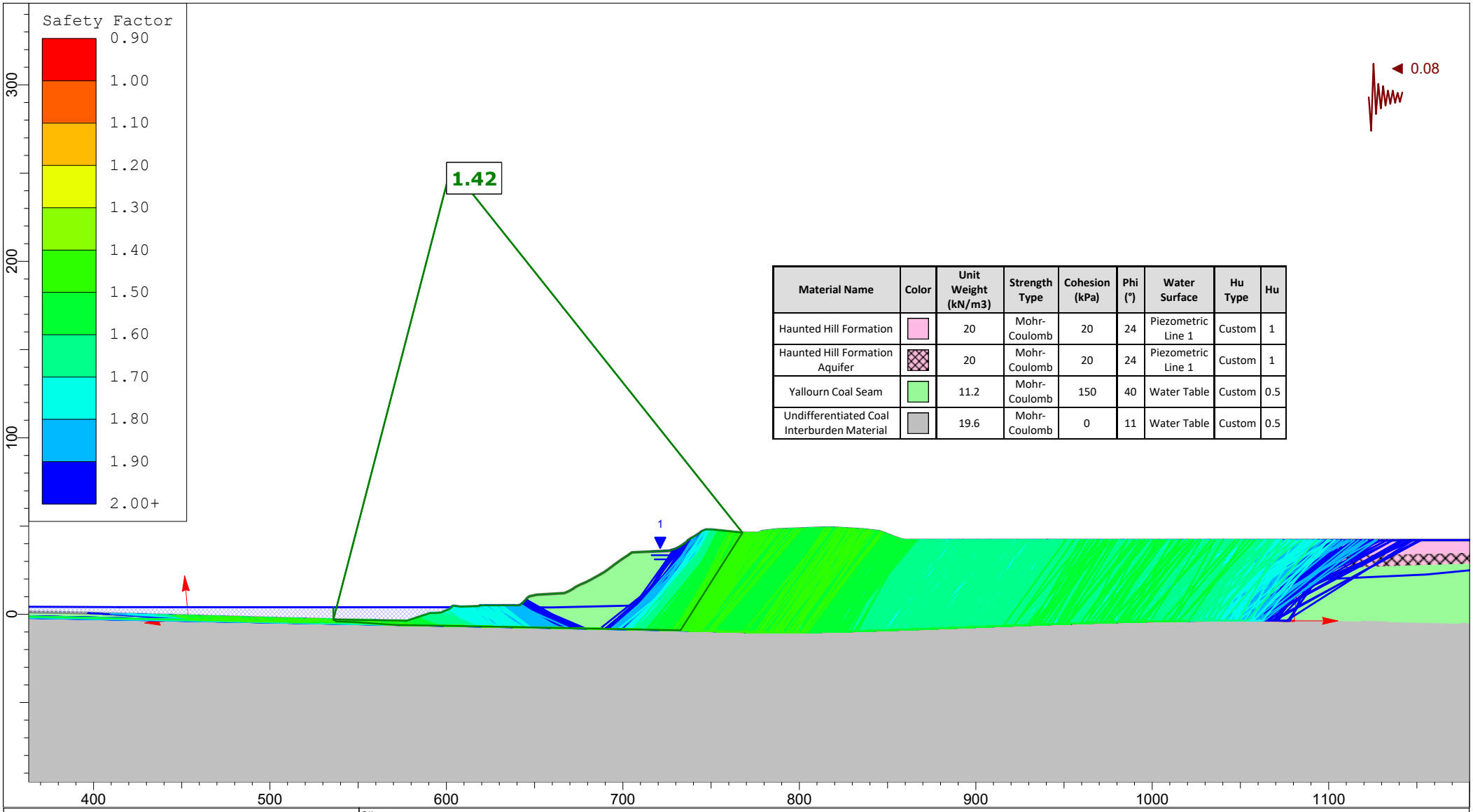
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



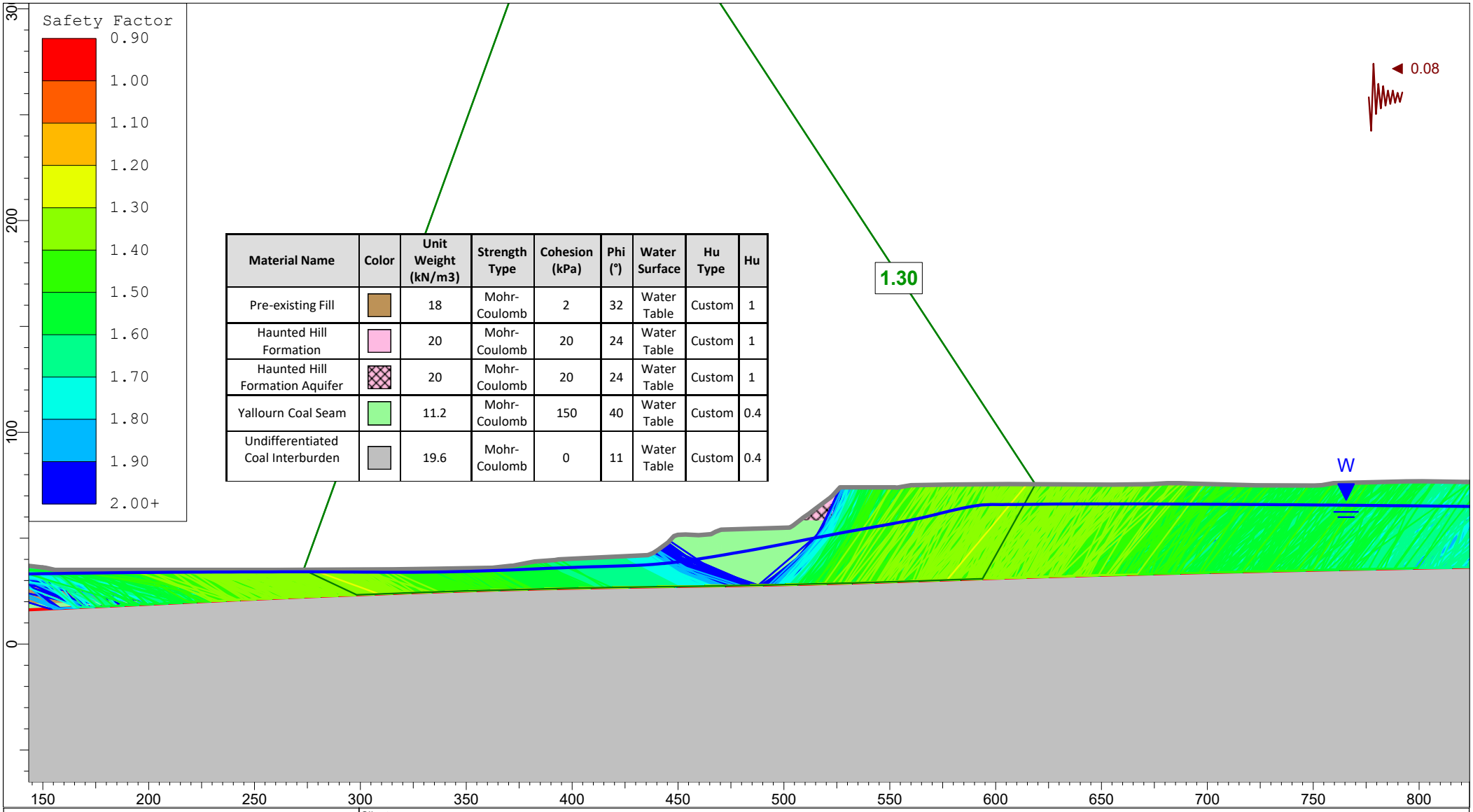
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



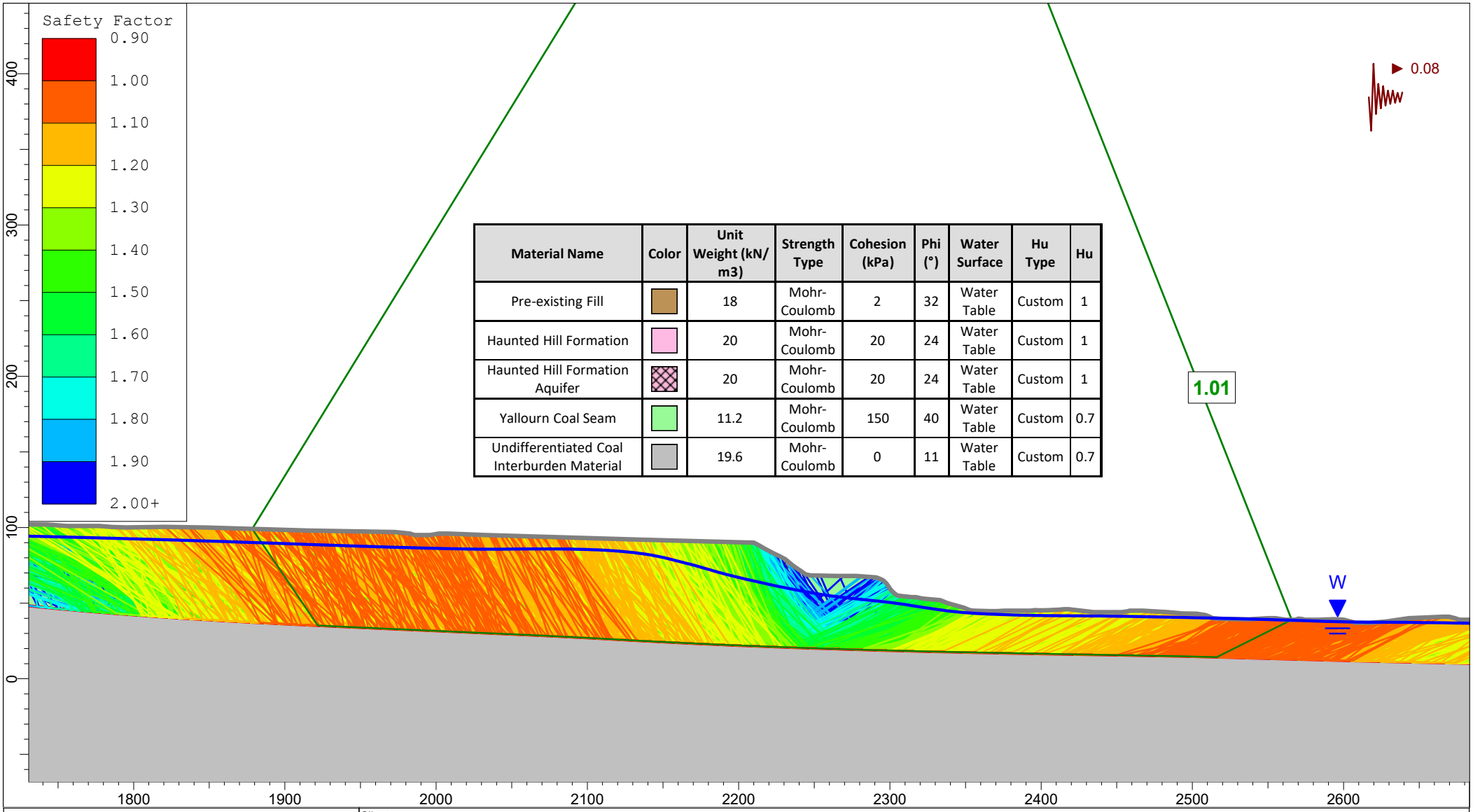
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



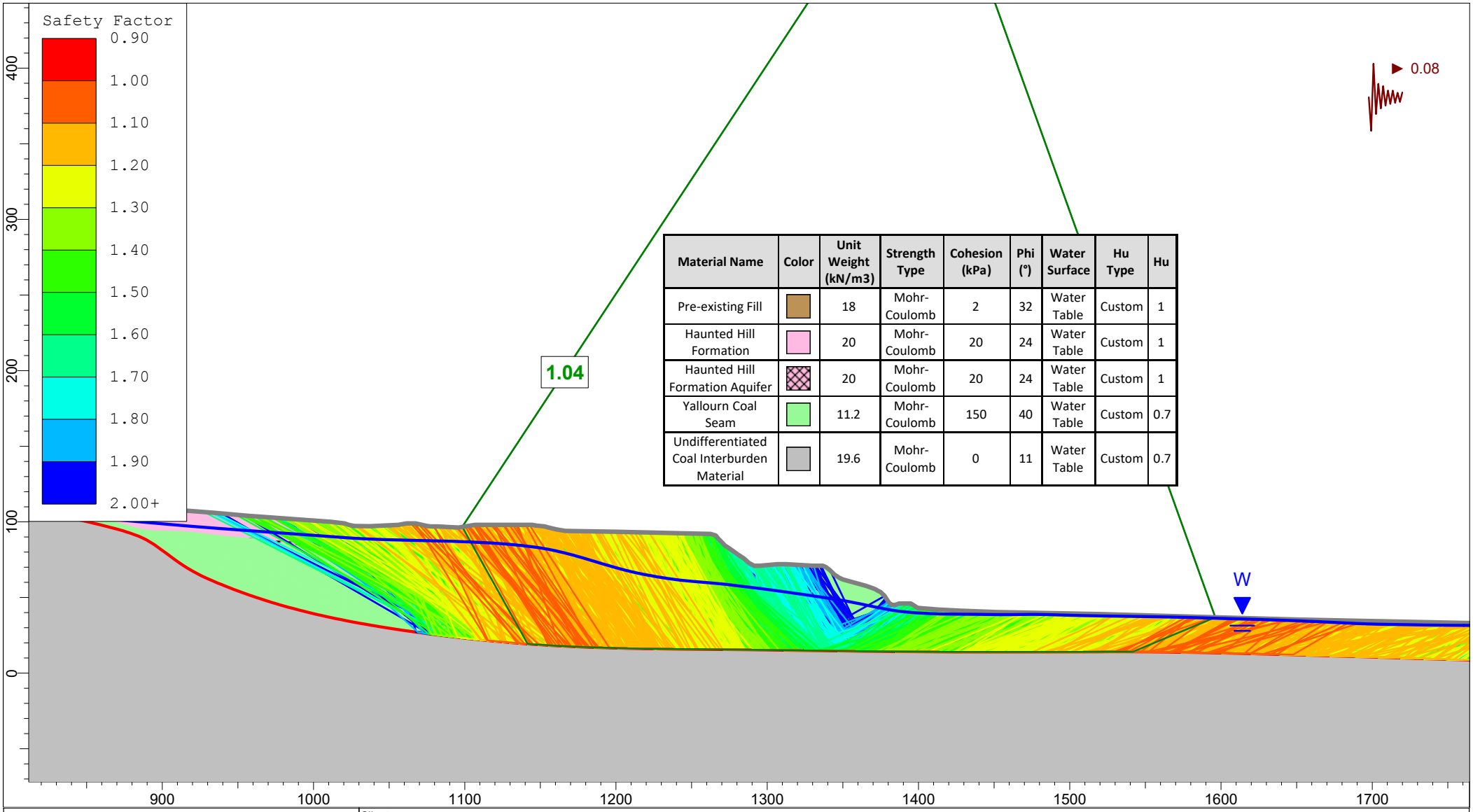
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
Undifferentiated Coal Interburden		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SB
Section:	Section 19	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



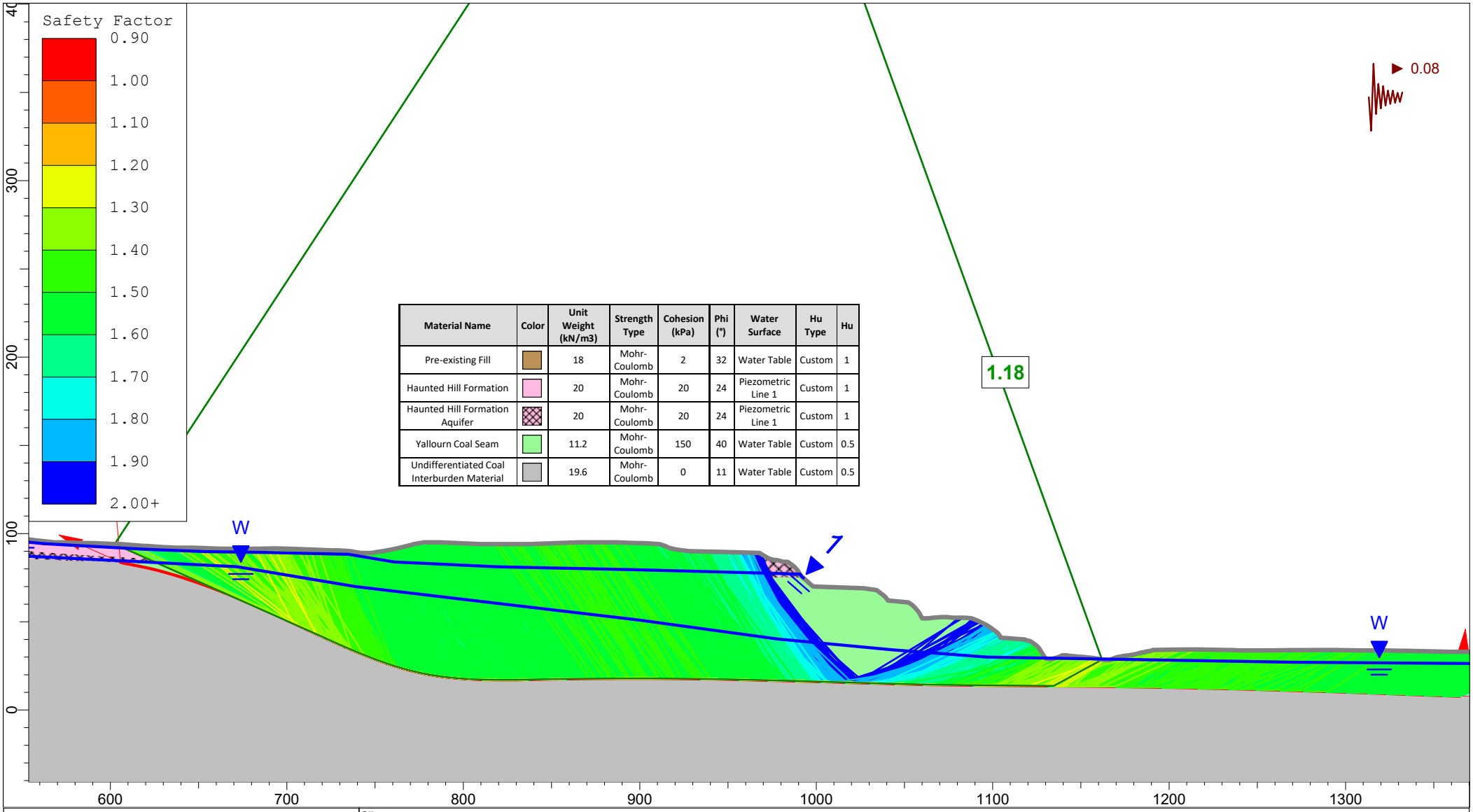
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 20	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



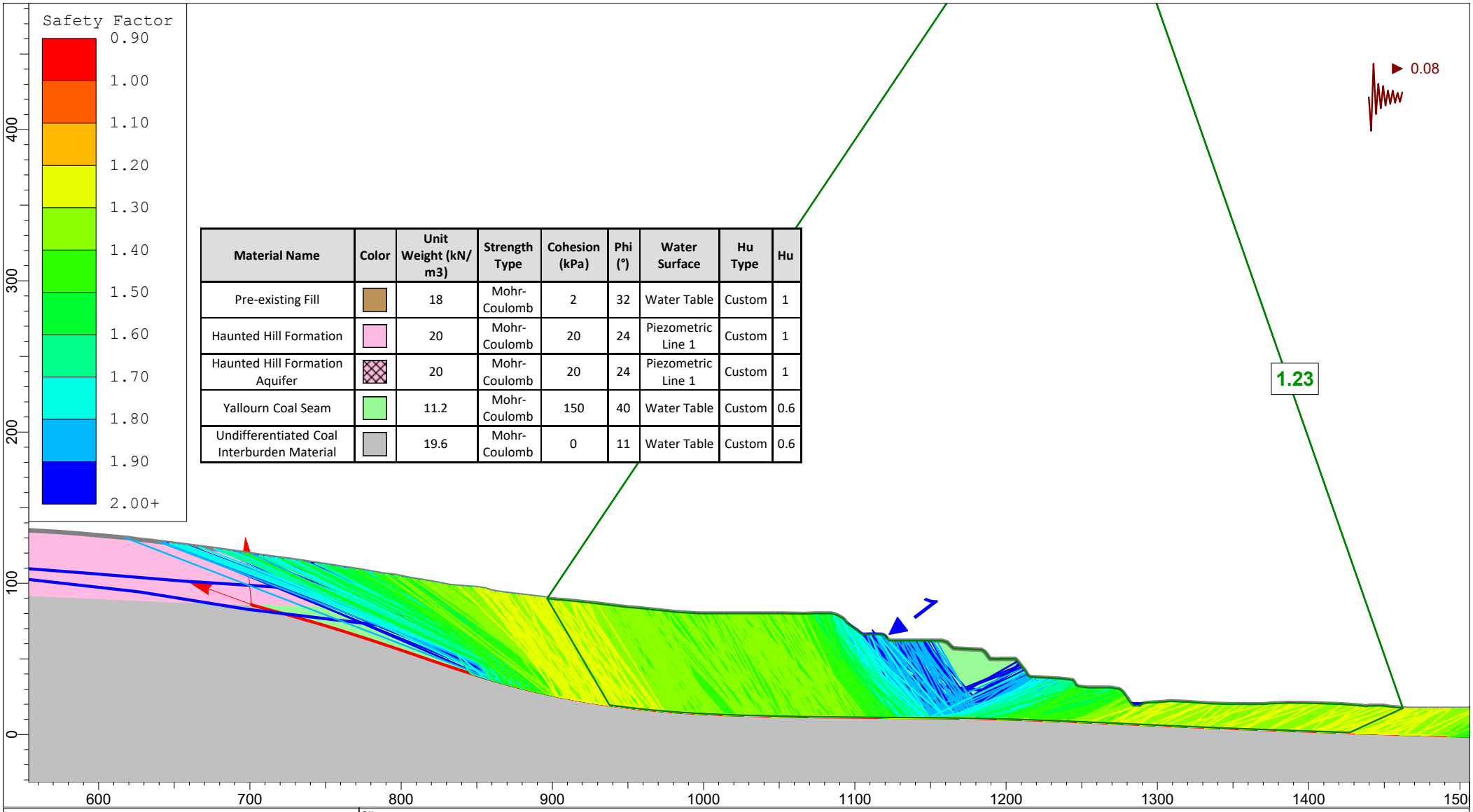
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 21	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



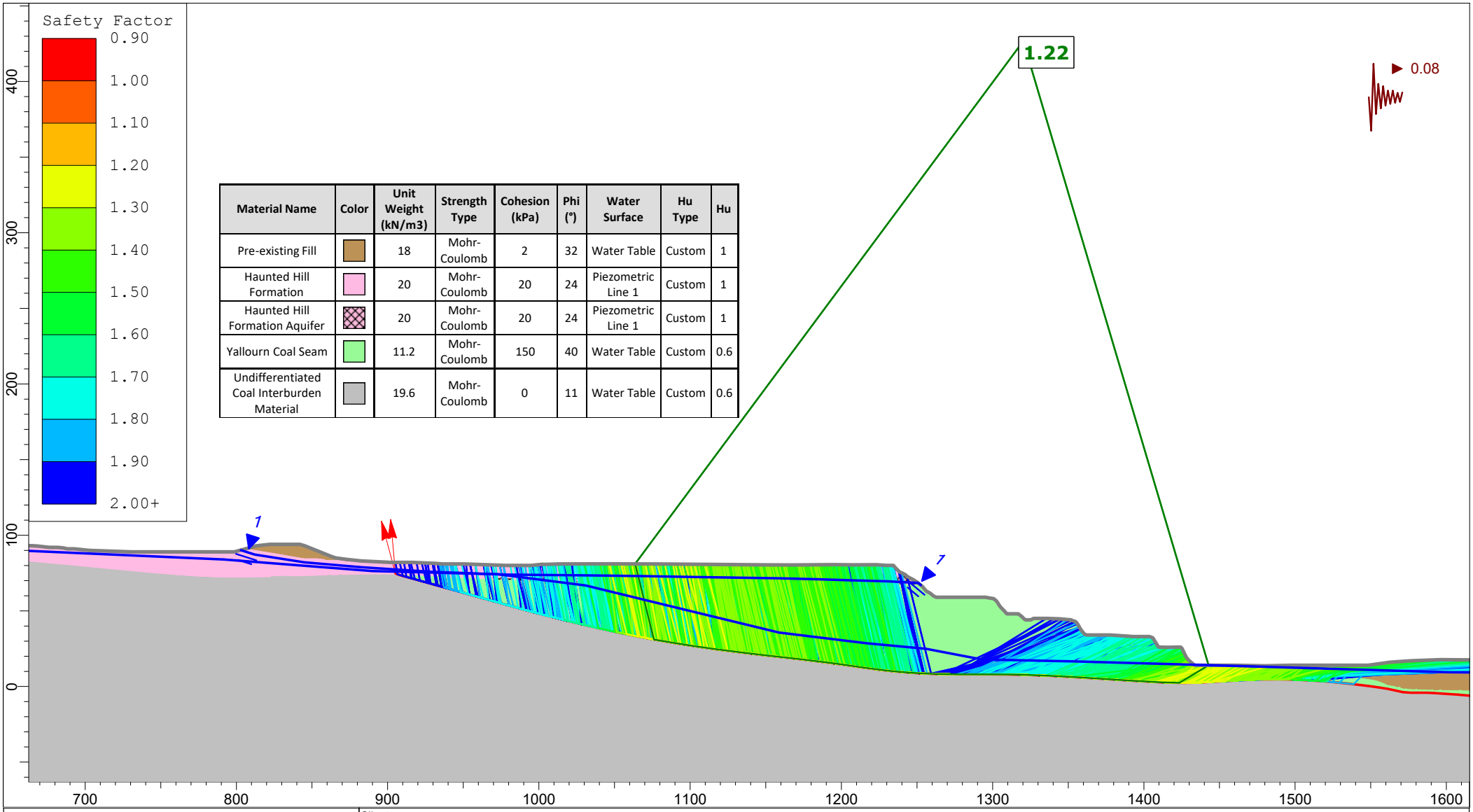
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (South)
Section:	Section 22	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



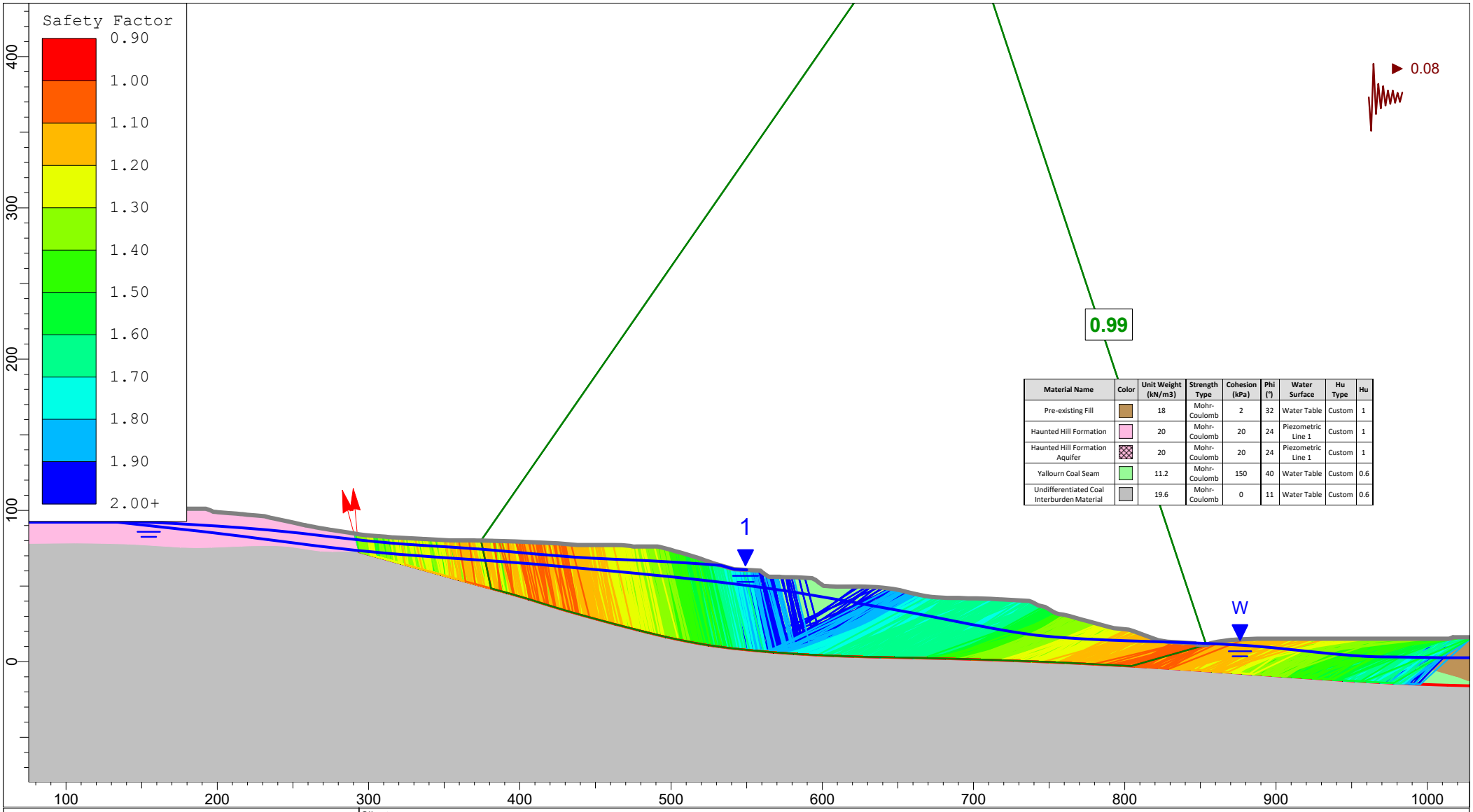
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 23	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		

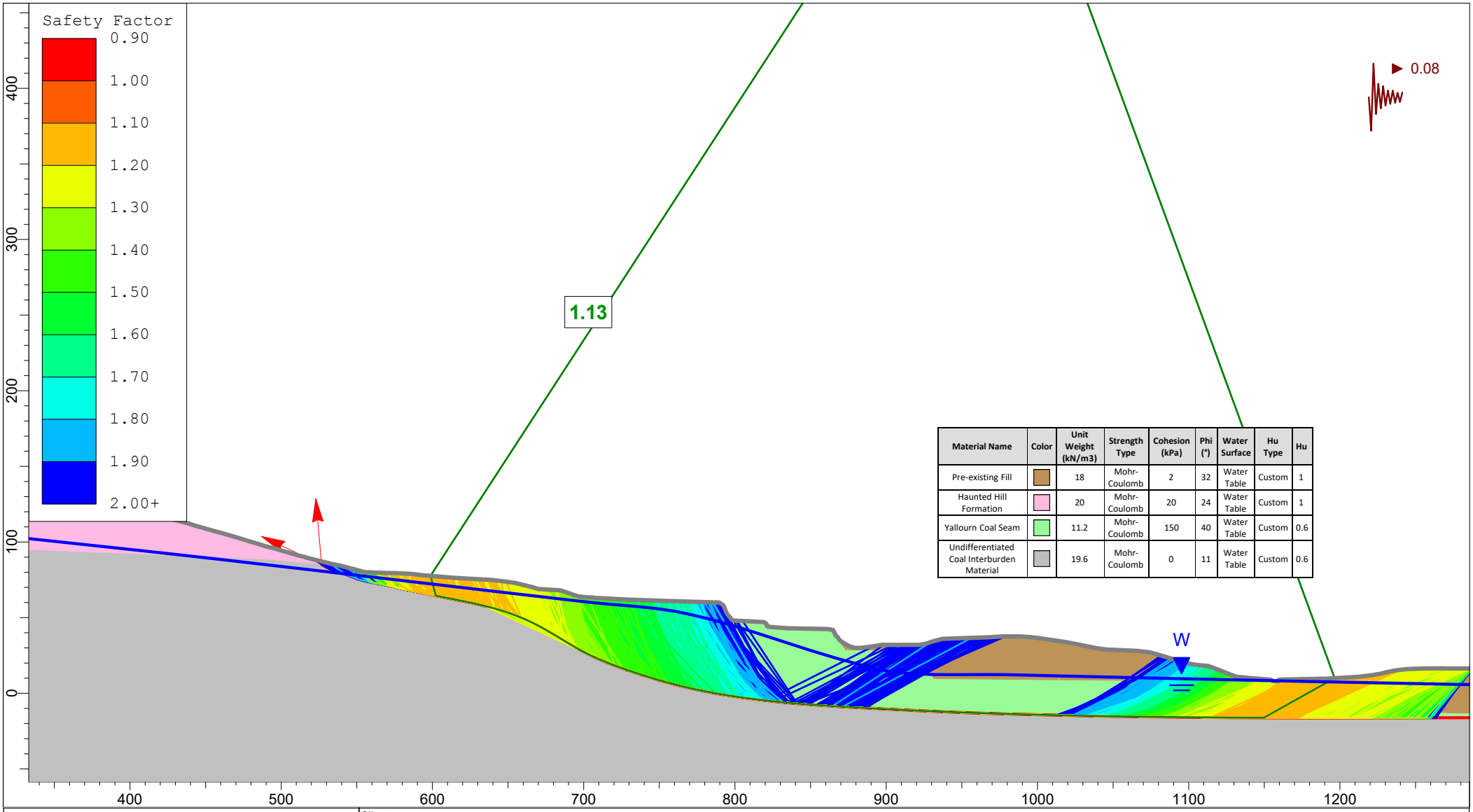


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		

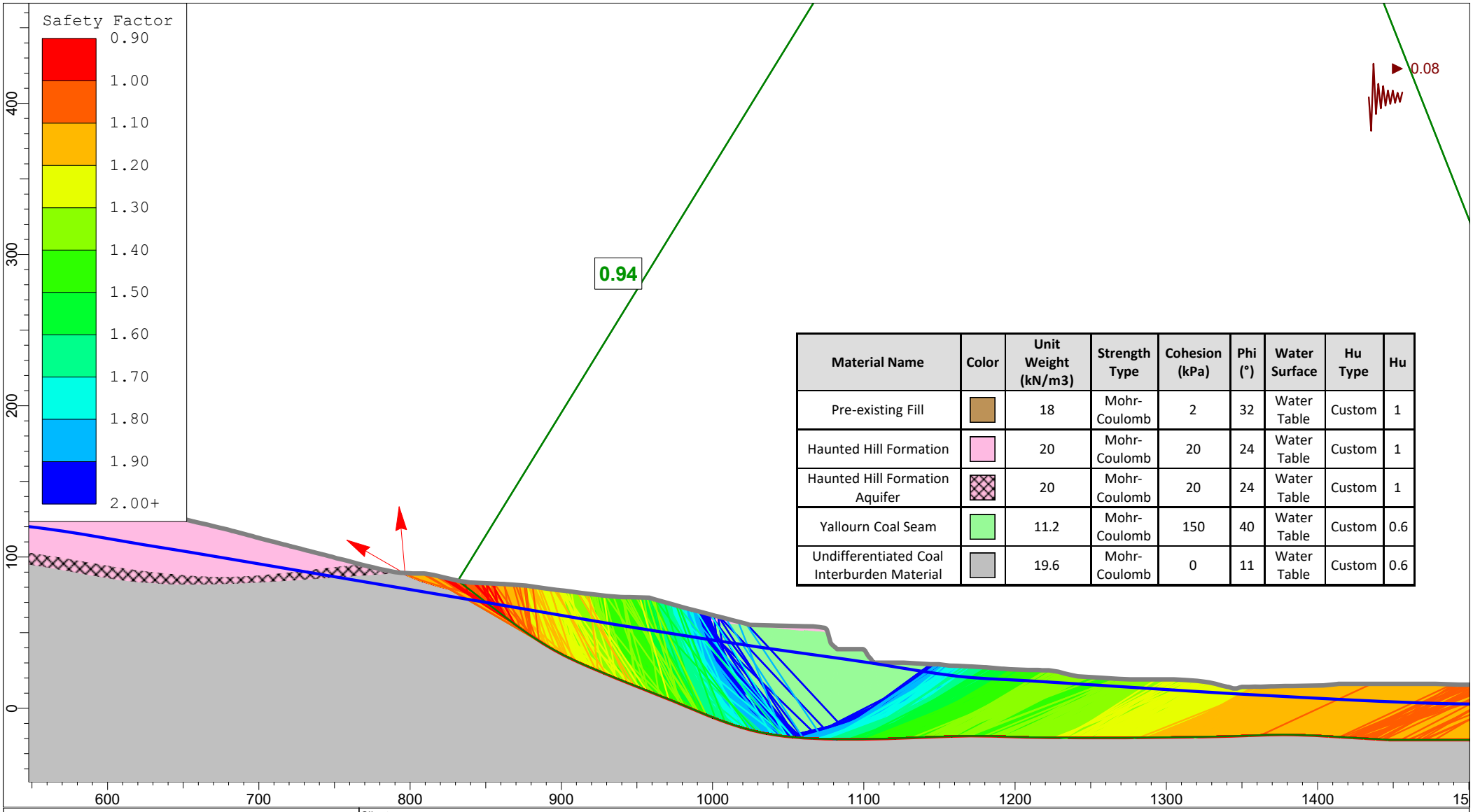


Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



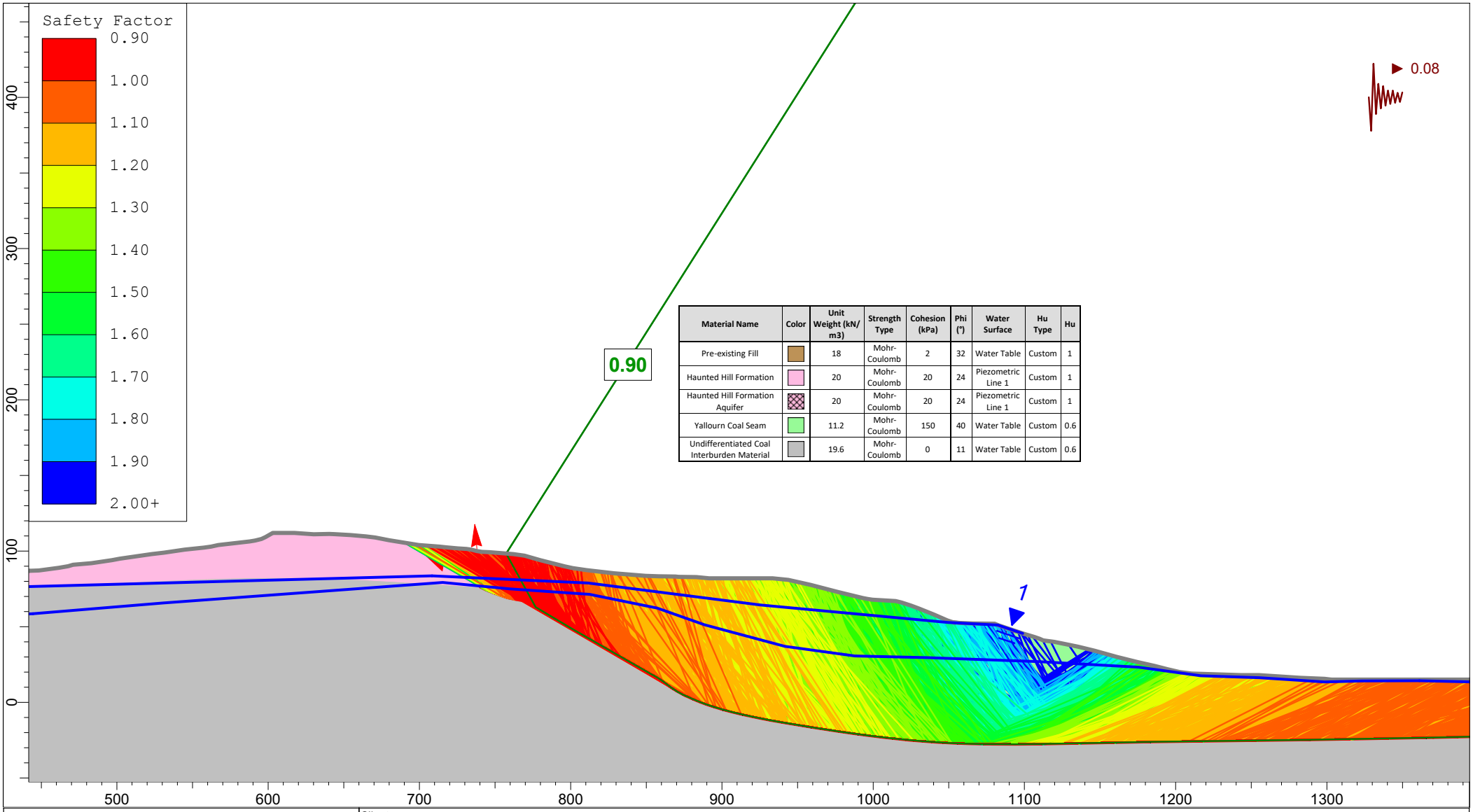
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



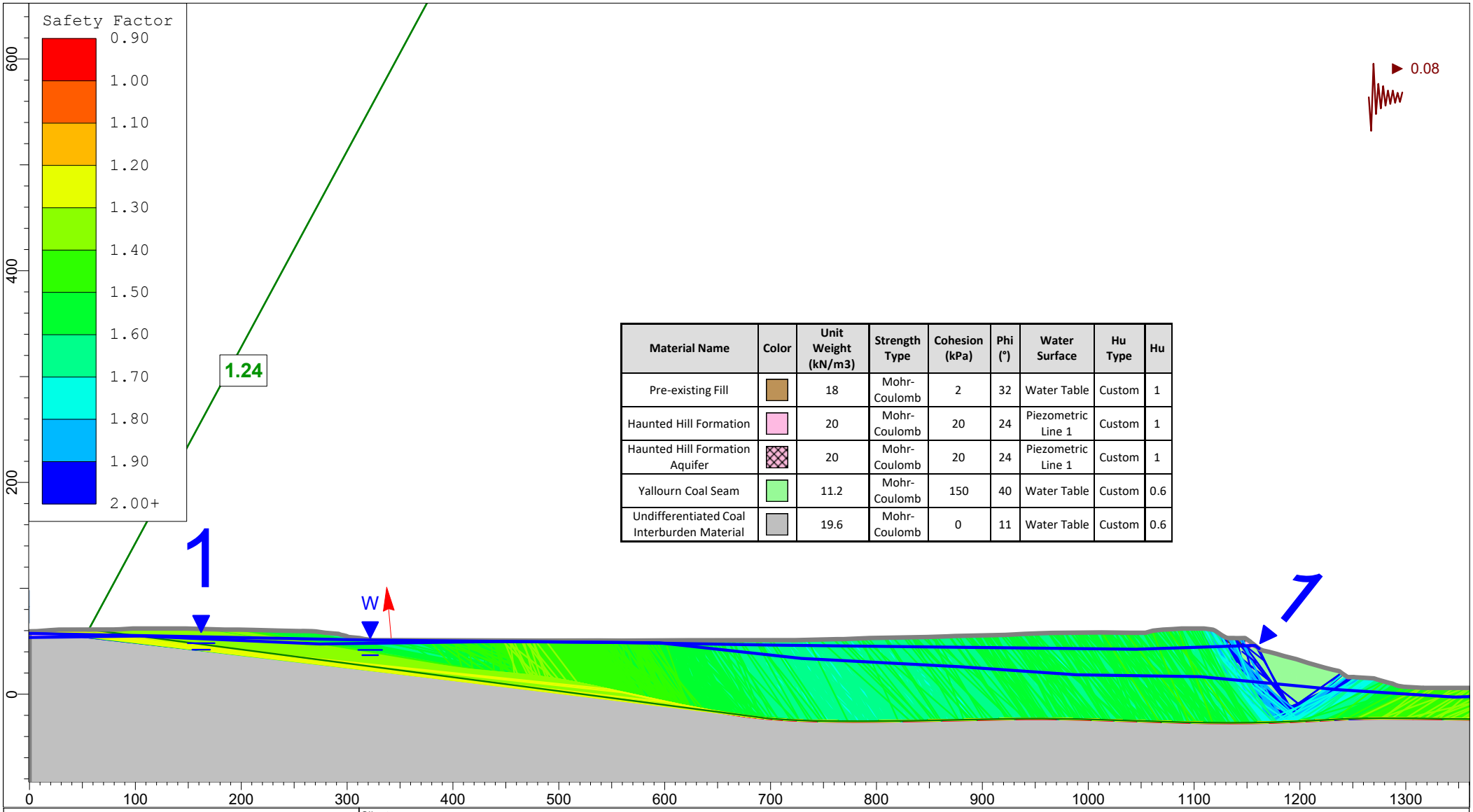
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



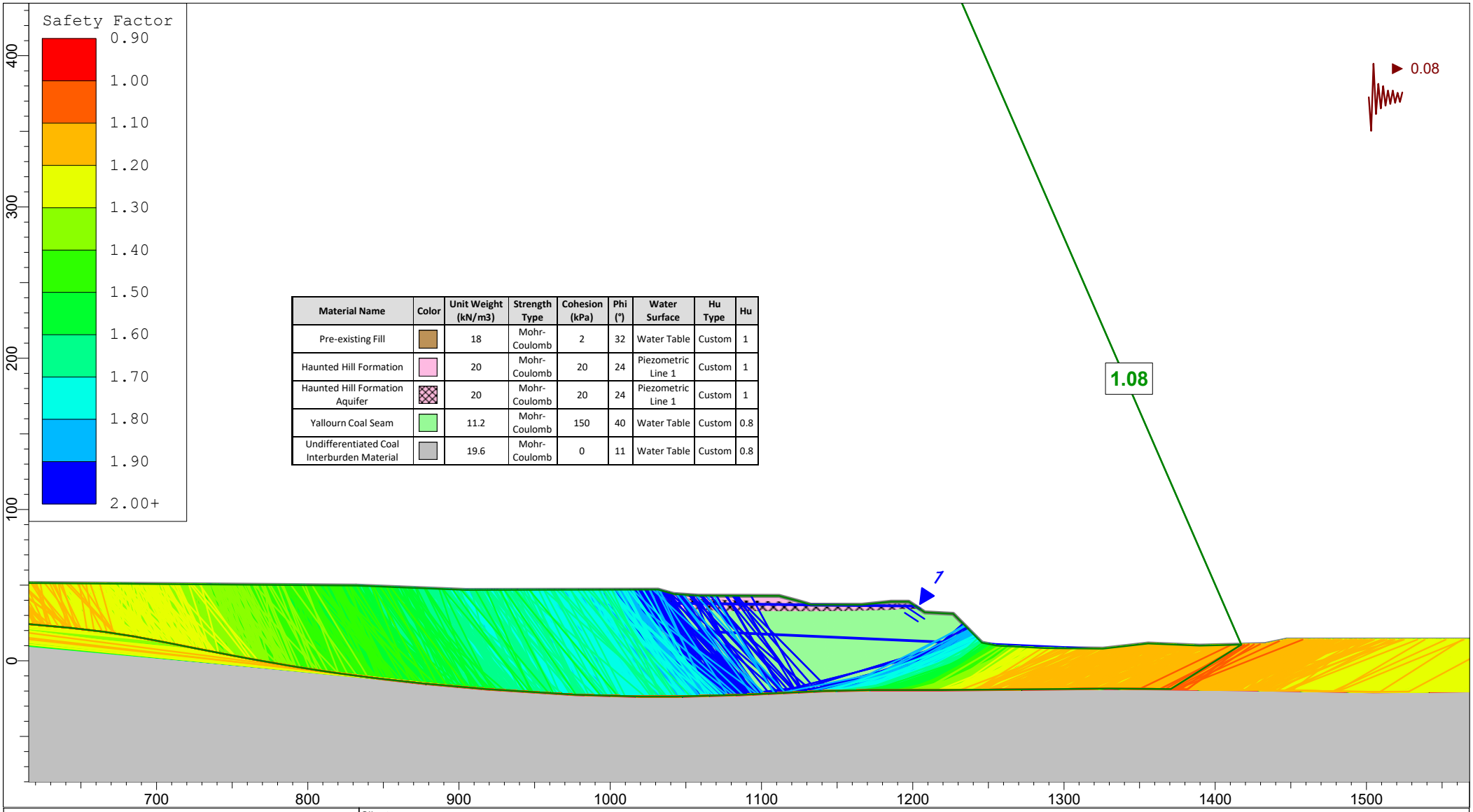
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



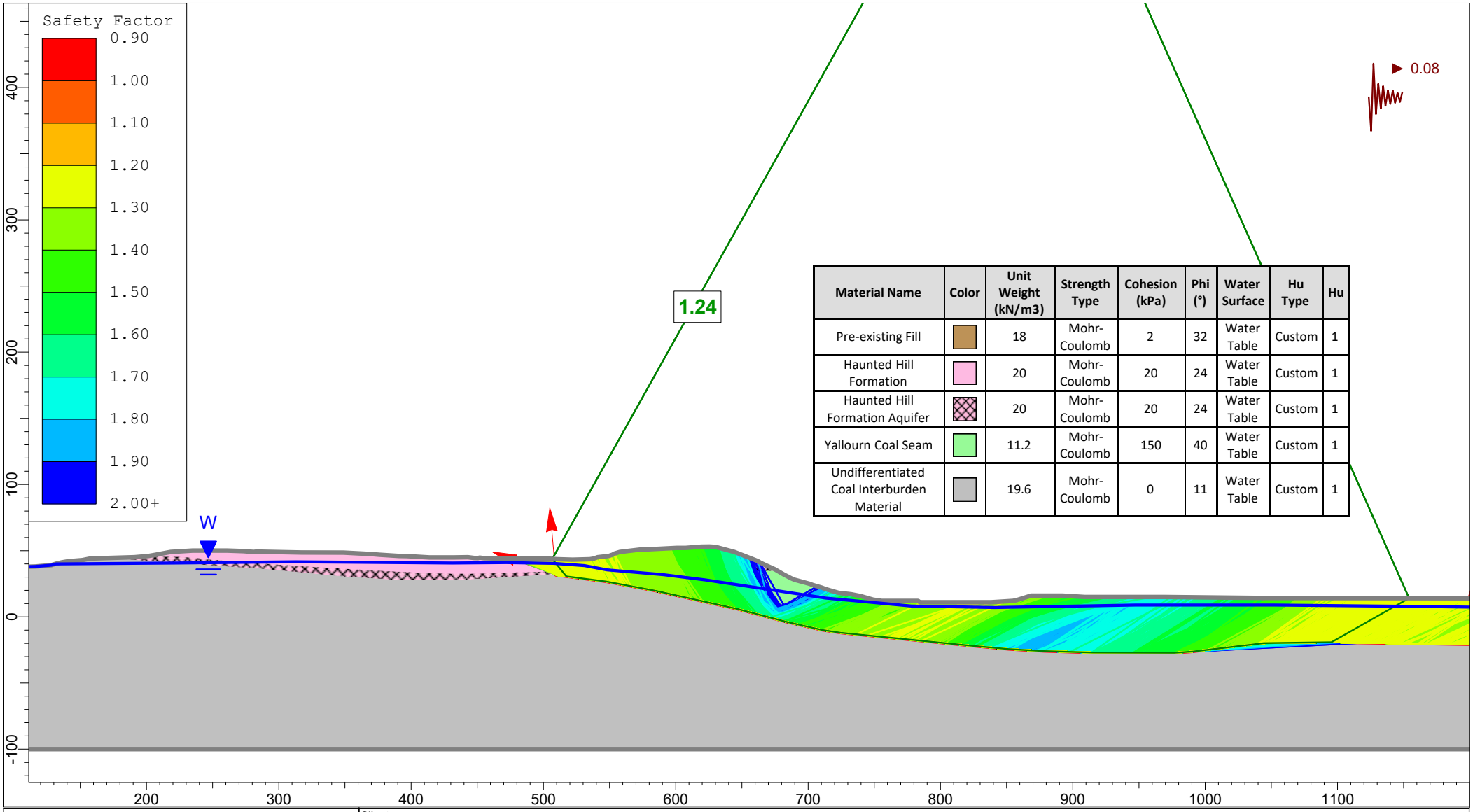
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-NB
Section:	Section 29	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



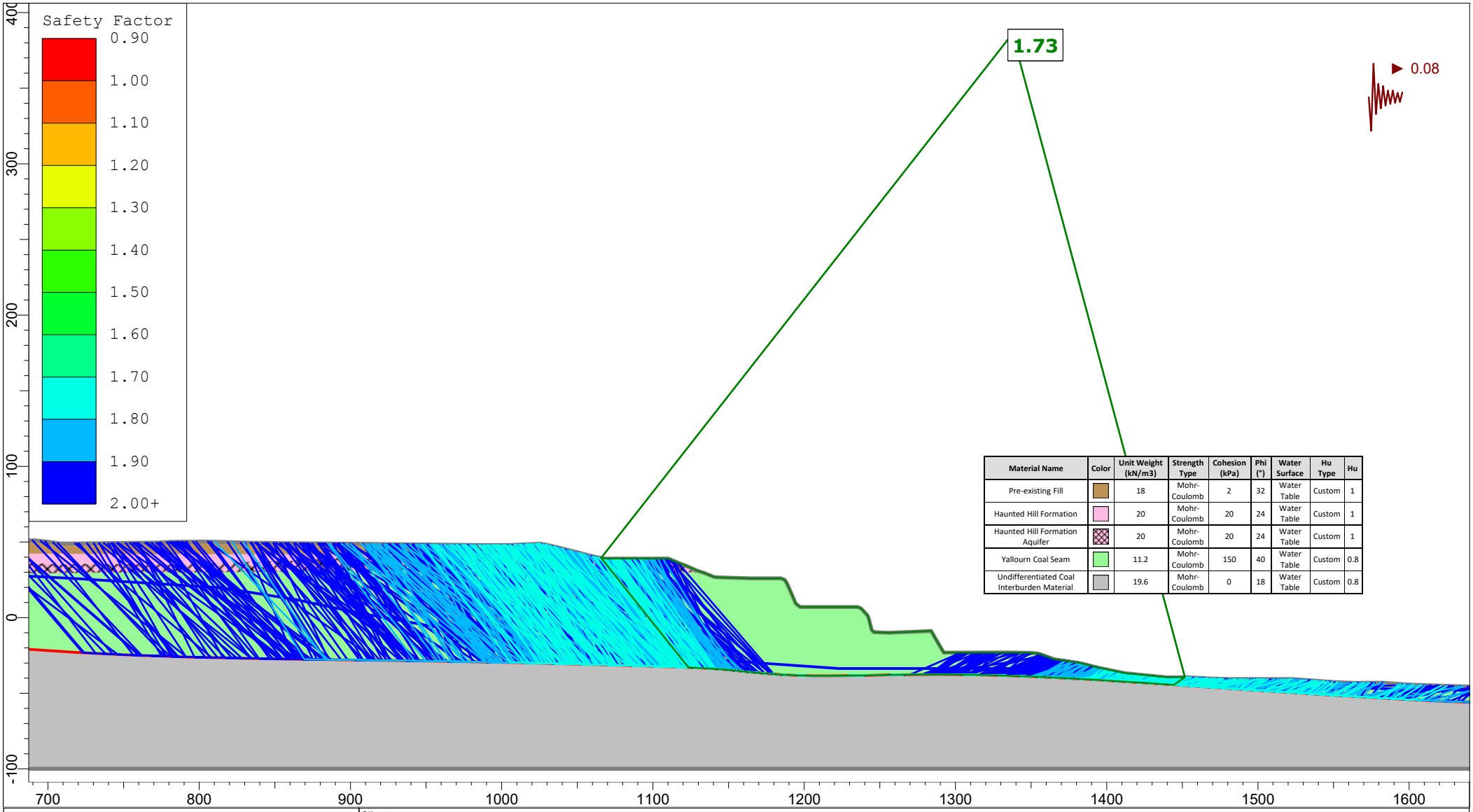
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.8
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	0.8

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



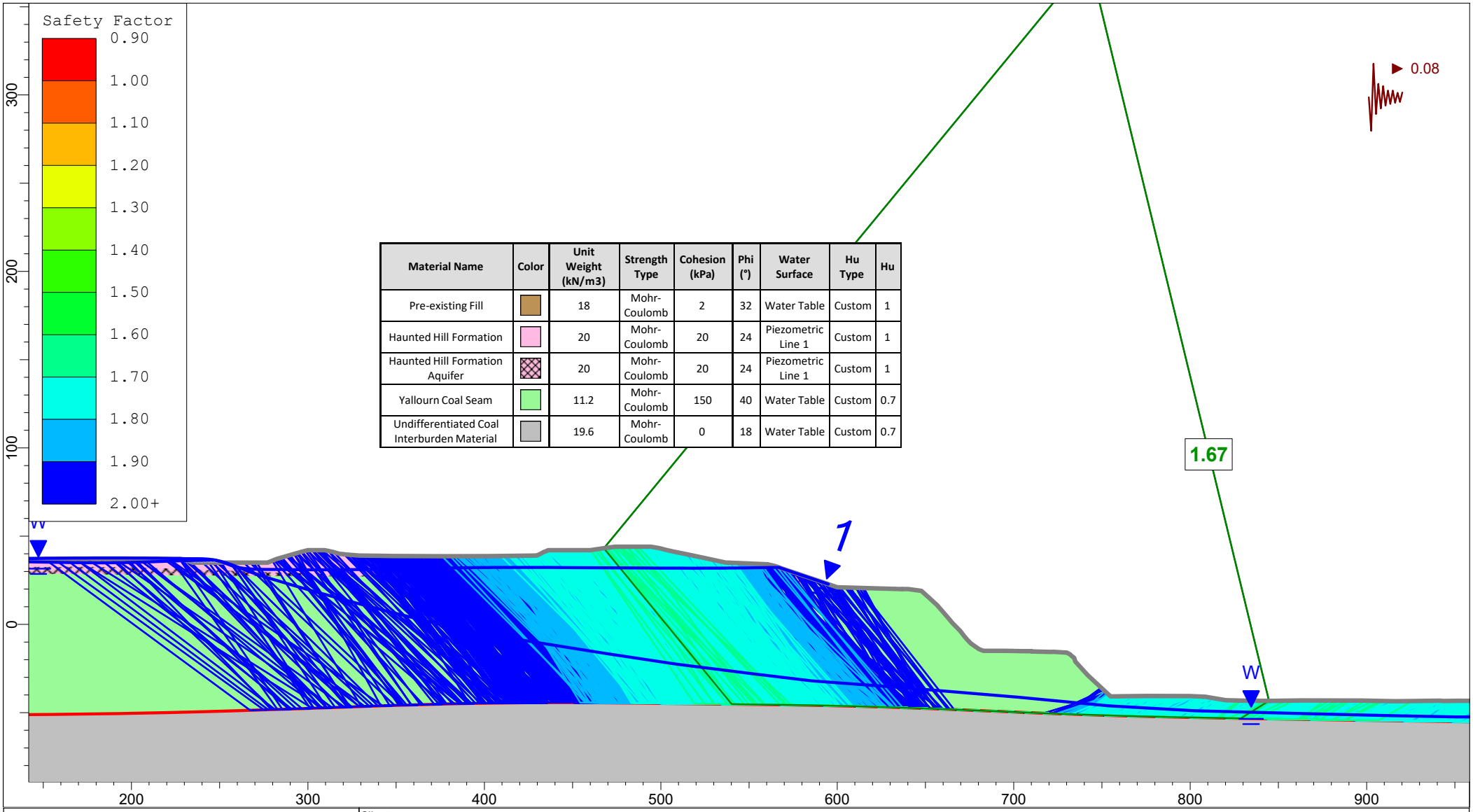
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	11	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-LS
Section:	Section 31	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Lower Bound Interseam Shear Strength		



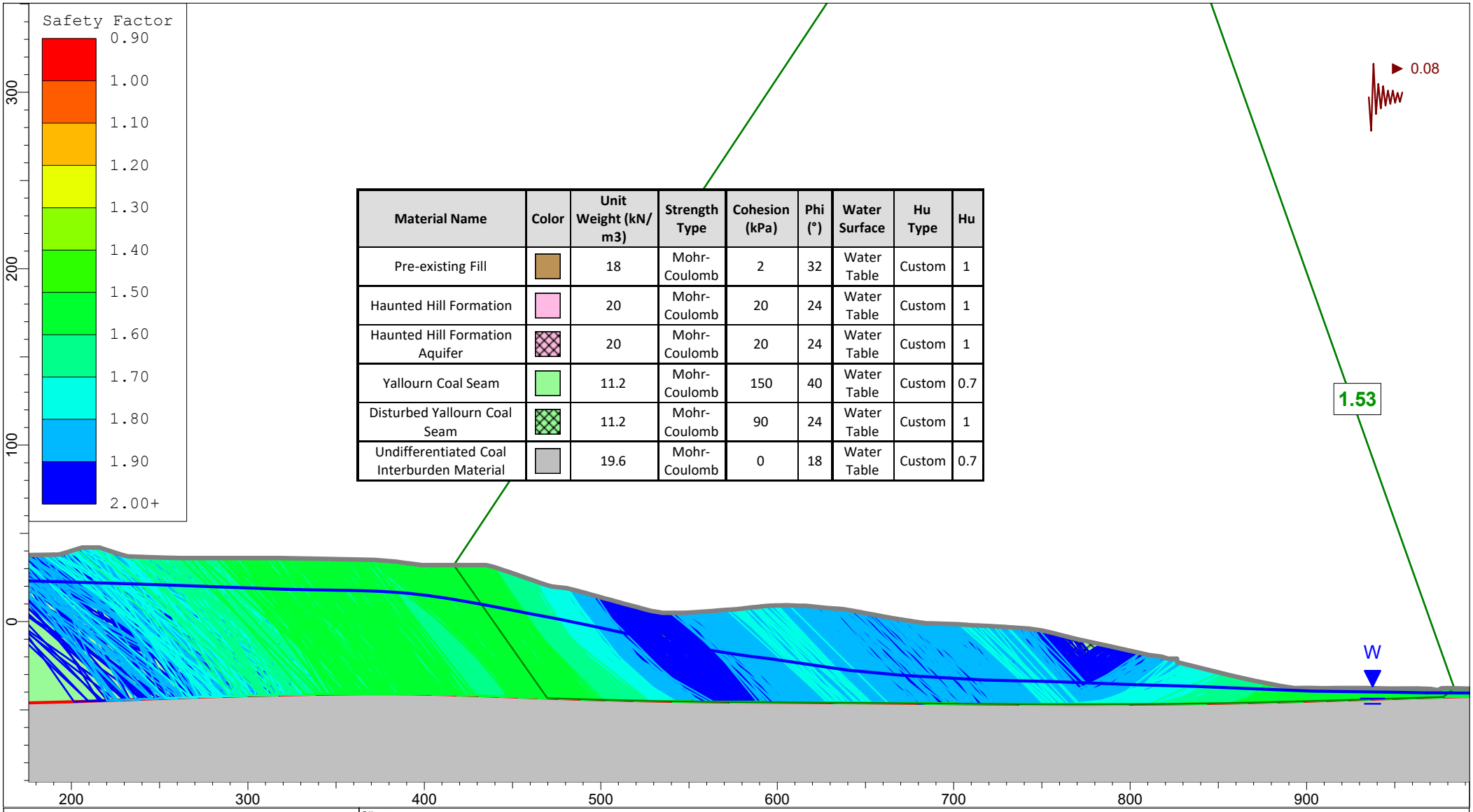
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.8
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.8

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-NB (east)
Section:	Section 03	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



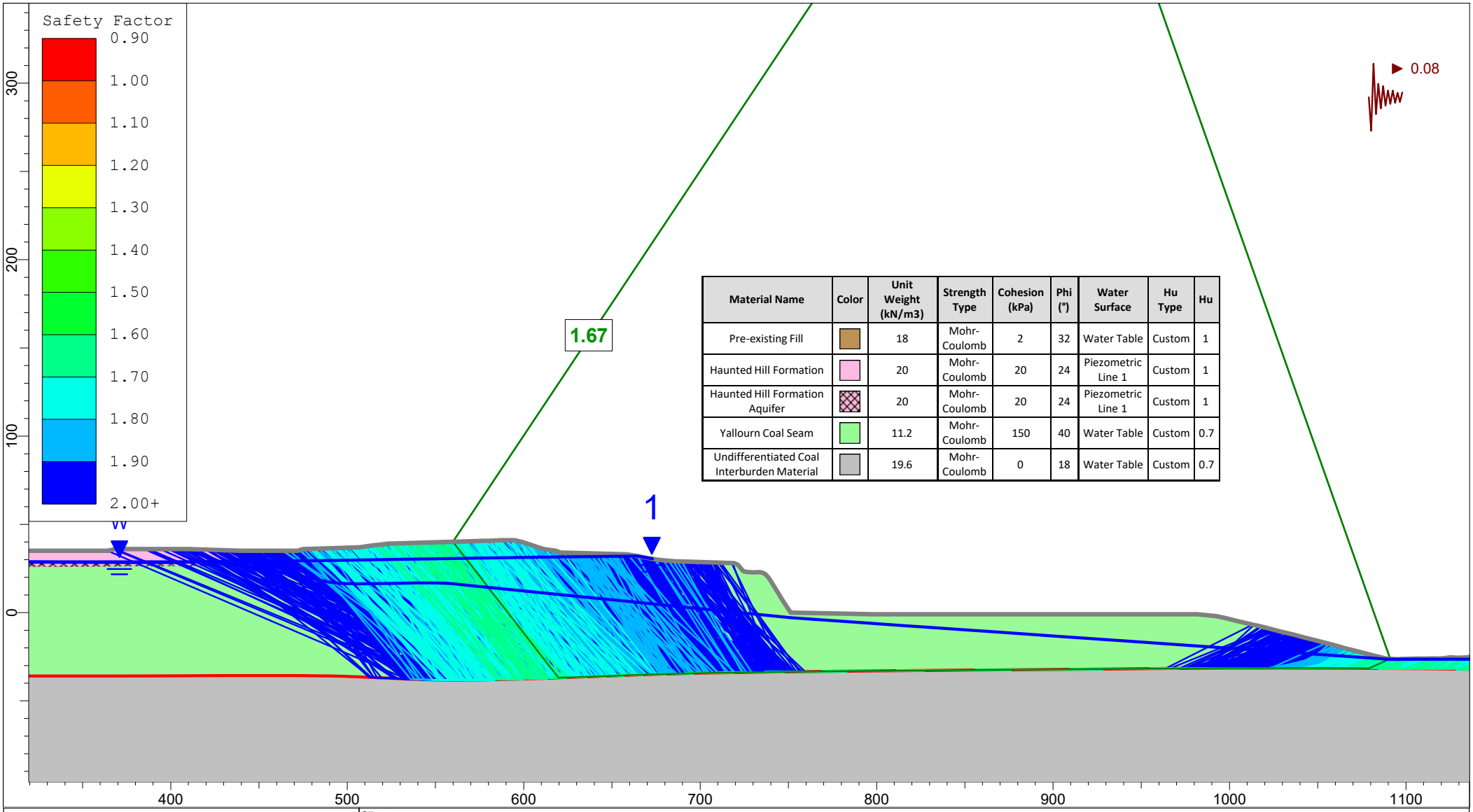
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 04	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



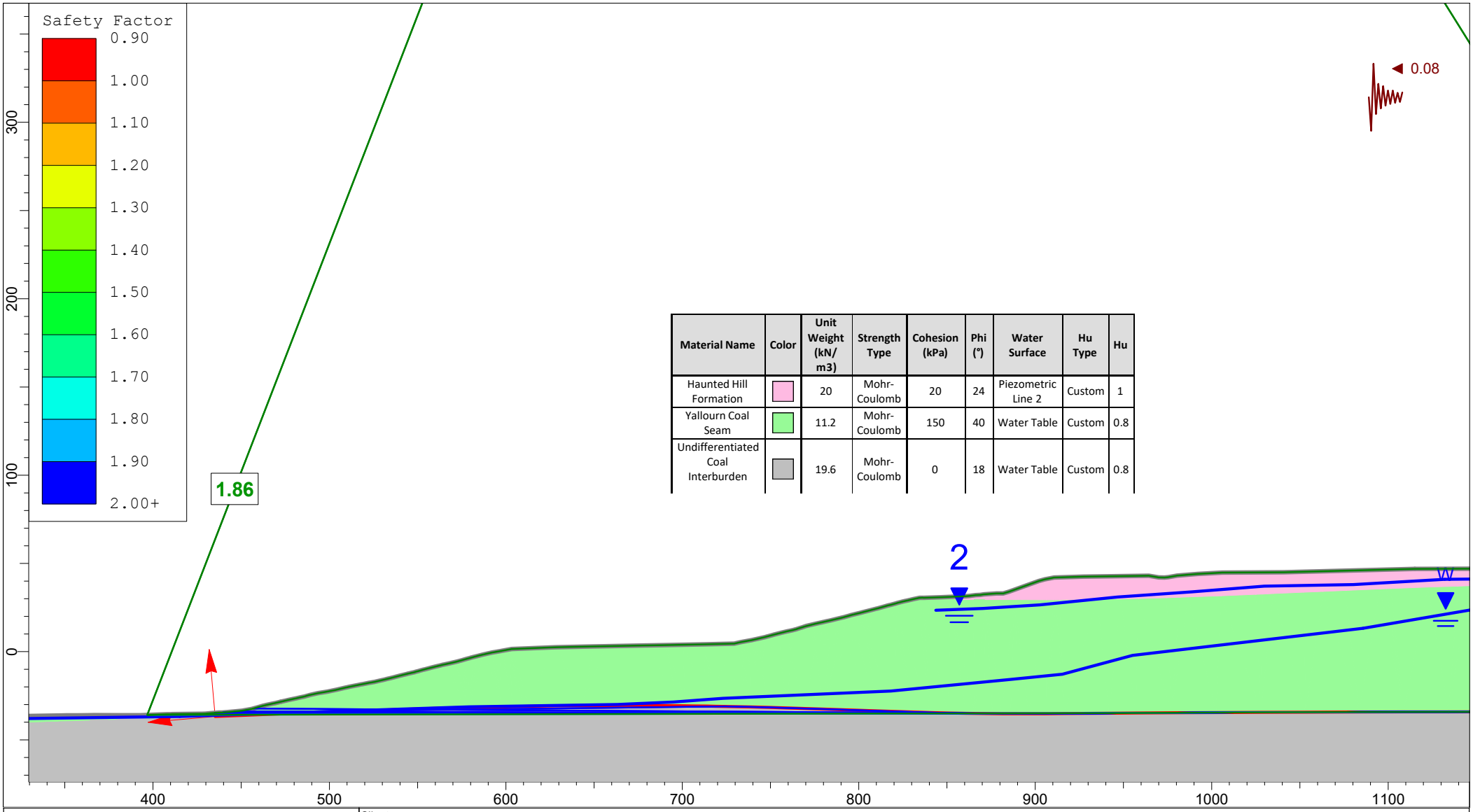
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Disturbed Yallourn Coal Seam		11.2	Mohr-Coulomb	90	24	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 05	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



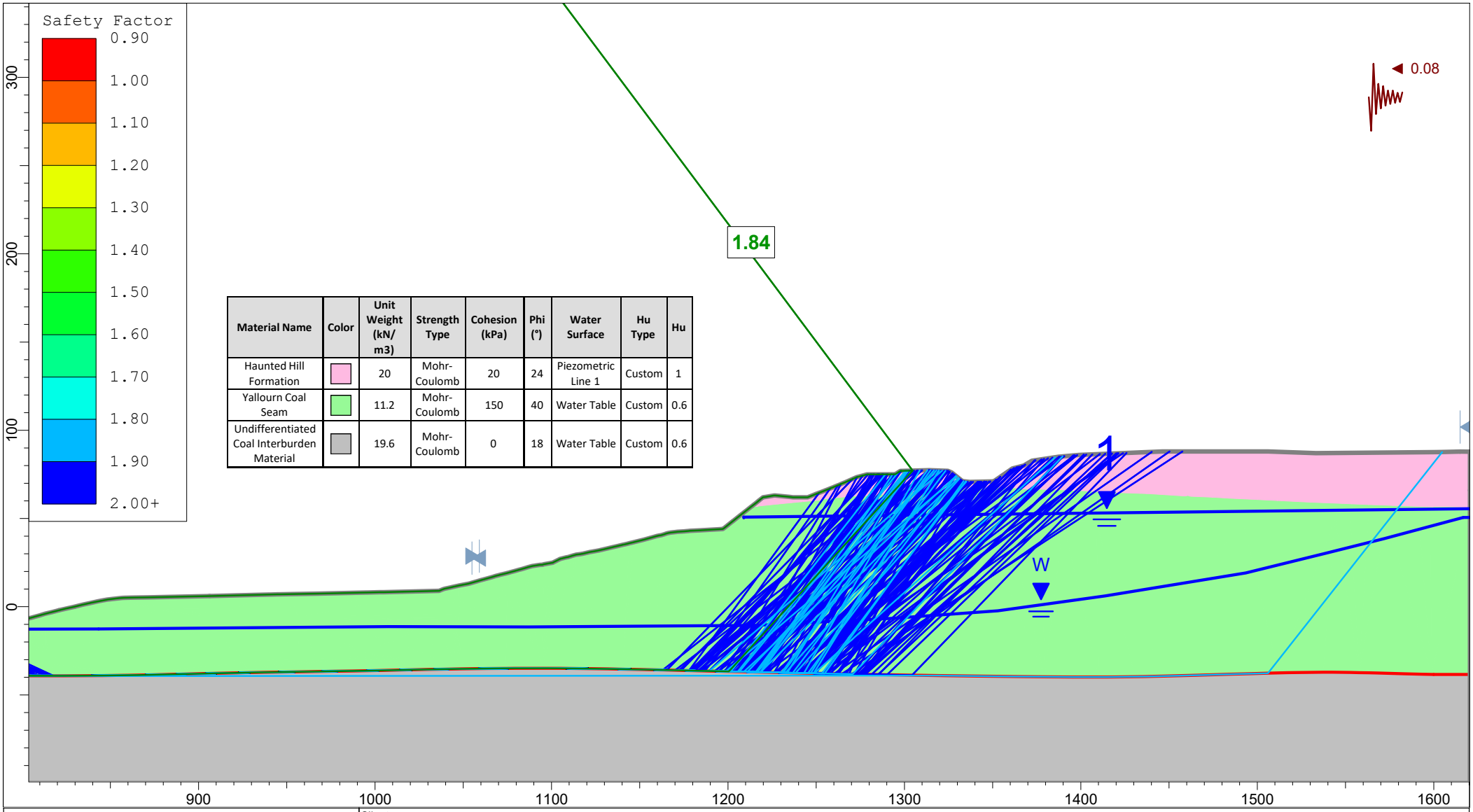
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEF-LRB
Section:	Section 06	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



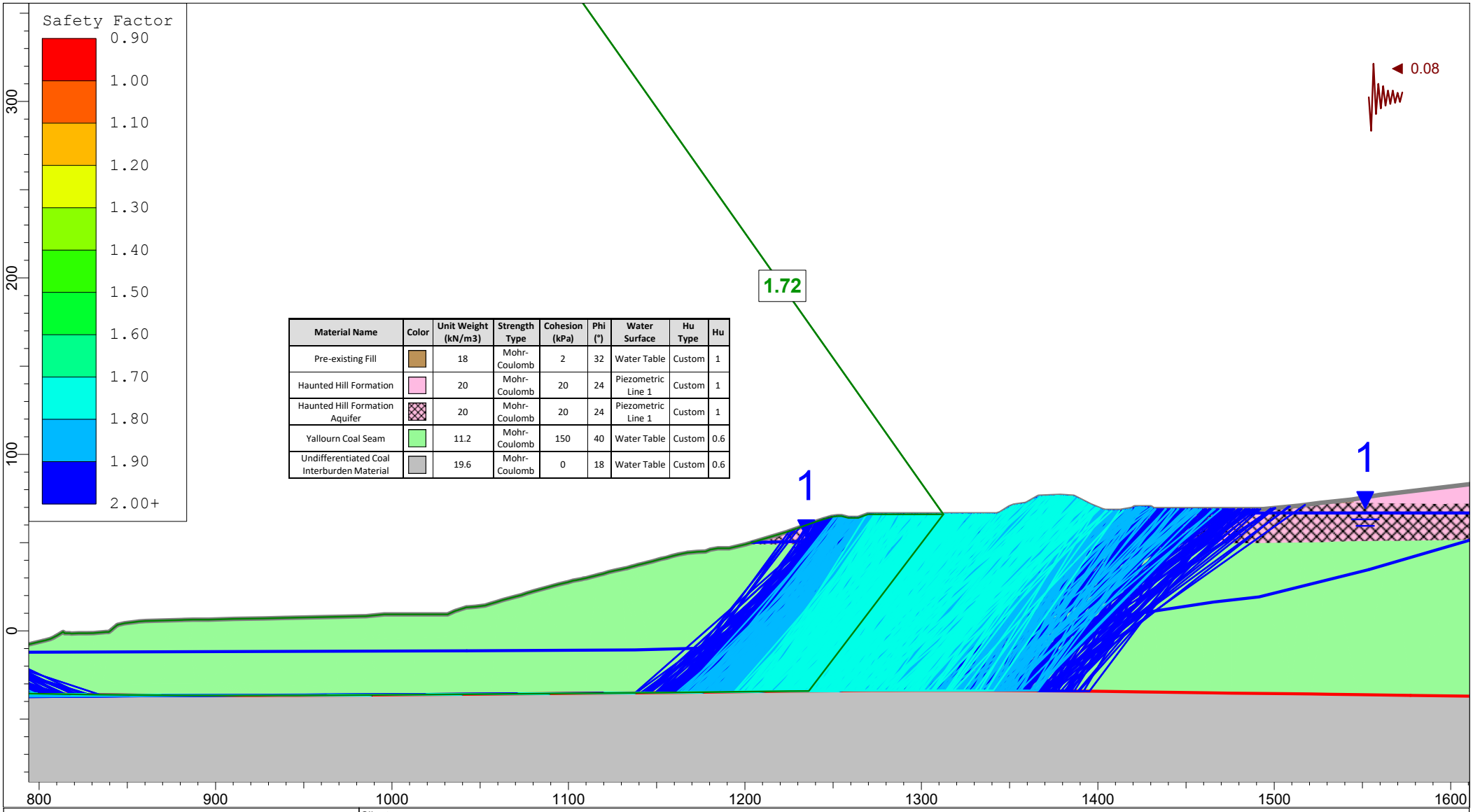
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 2	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.8
Undifferentiated Coal Interburden		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.8

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (north)
Section:	Section 07	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



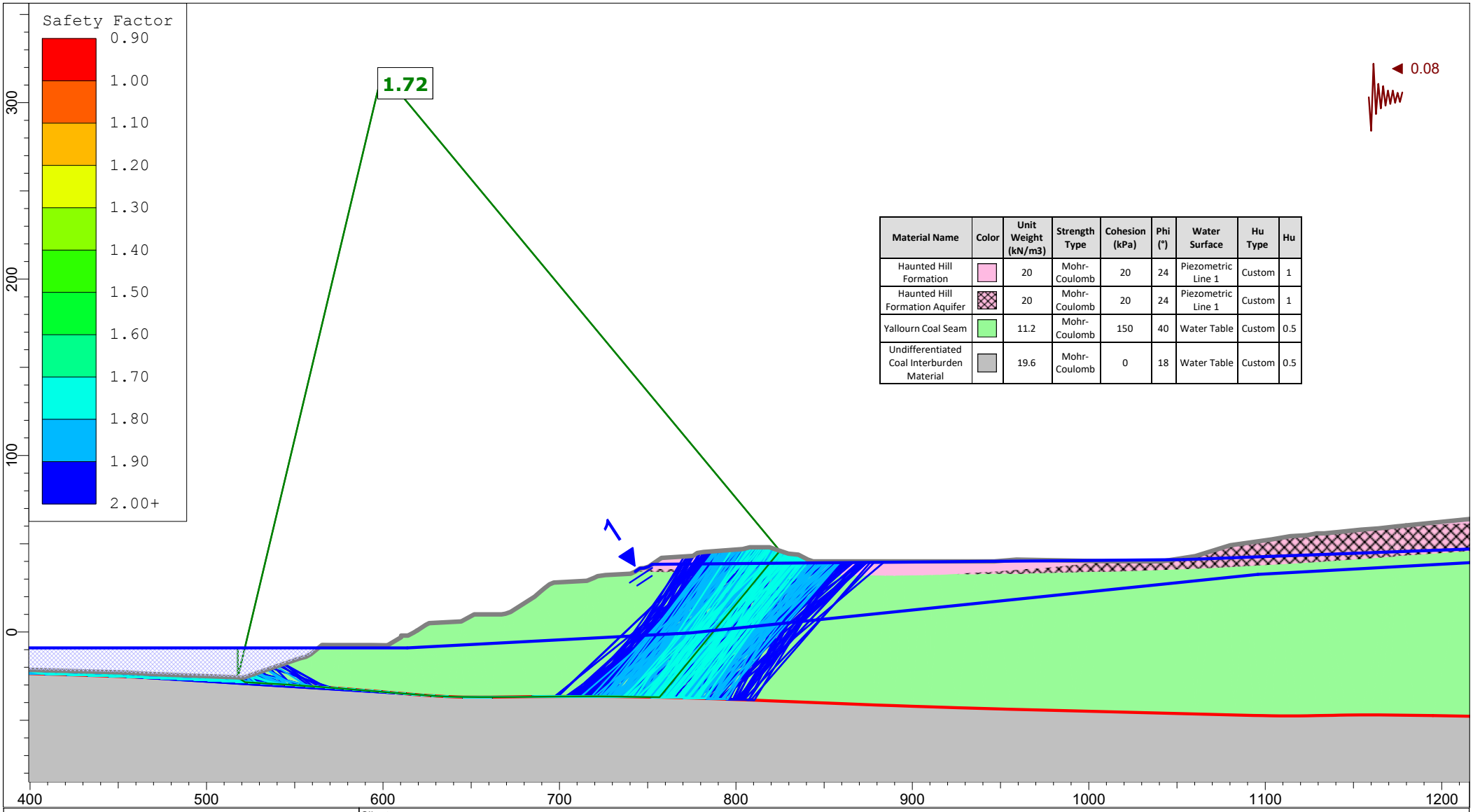
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 08	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



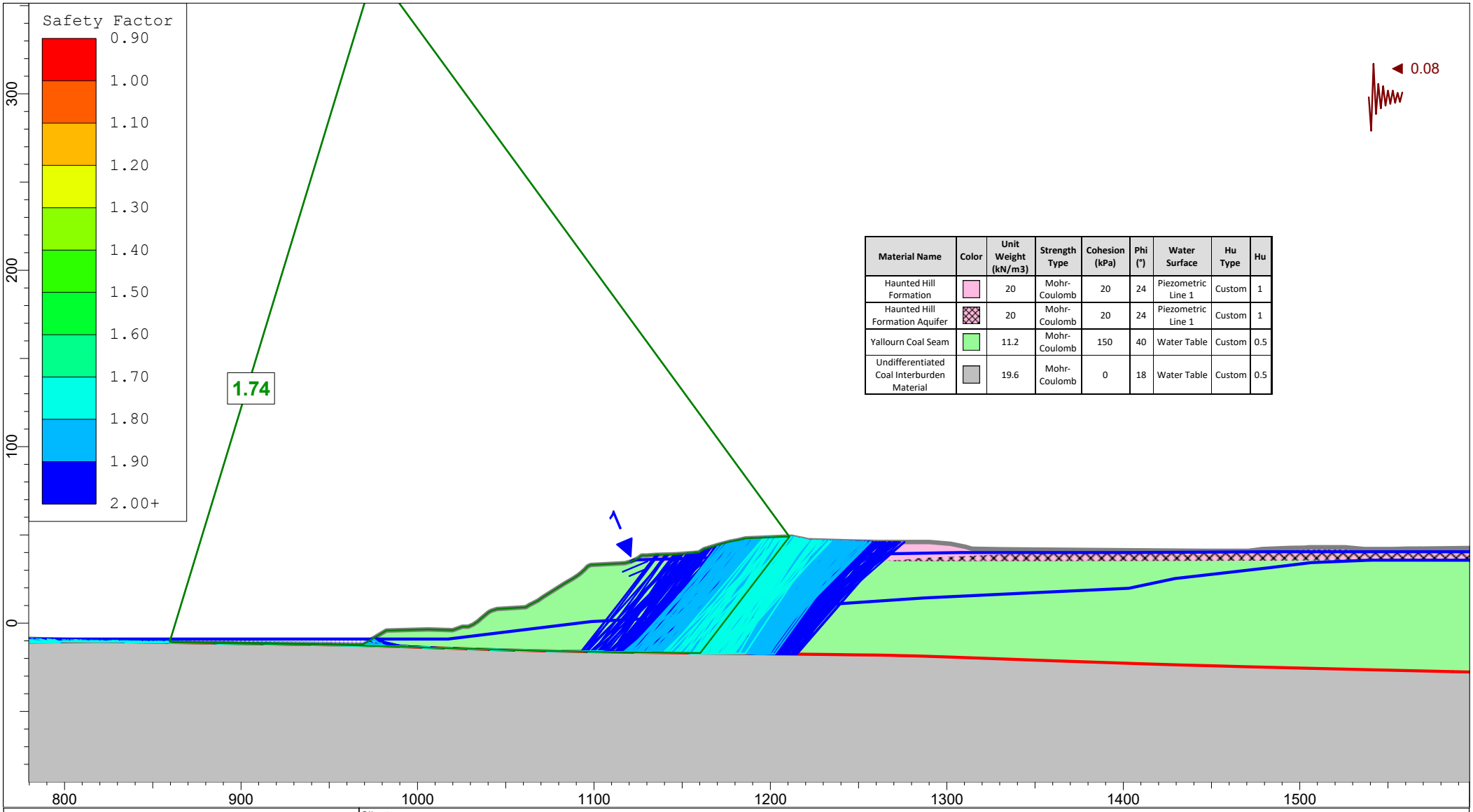
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YEFX-LREB (south)
Section:	Section 09	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



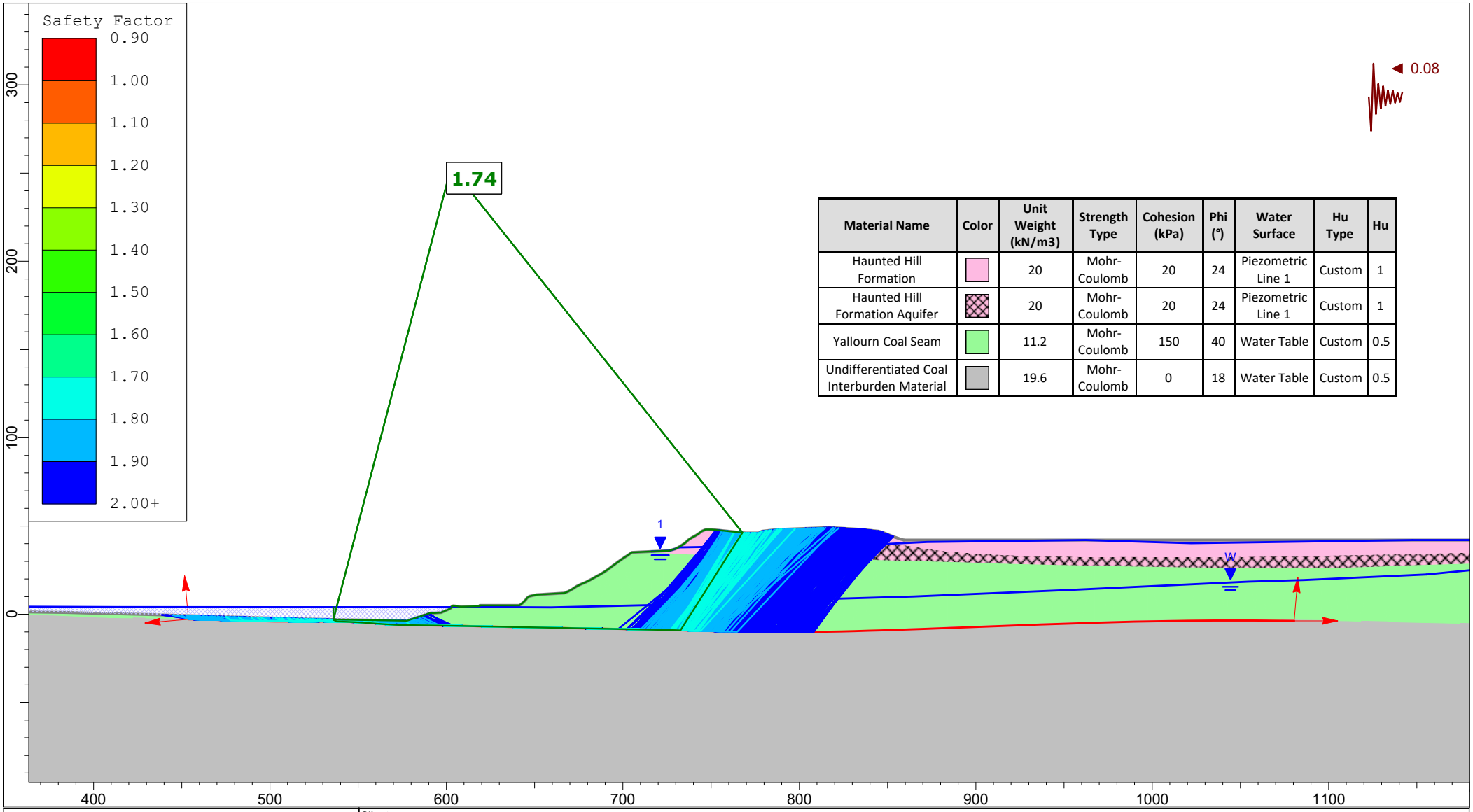
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FSPB
Section:	Section 16	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



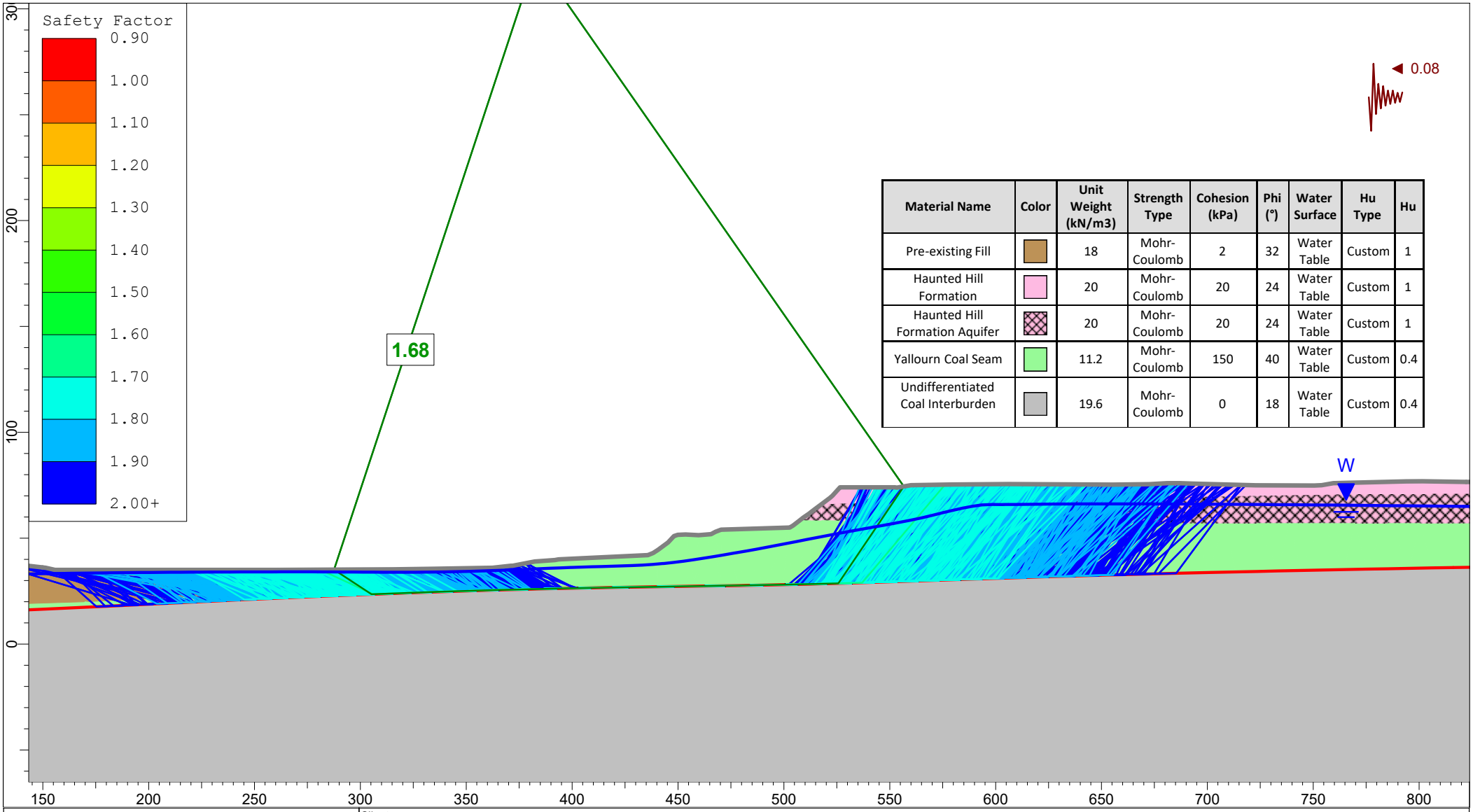
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 17	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



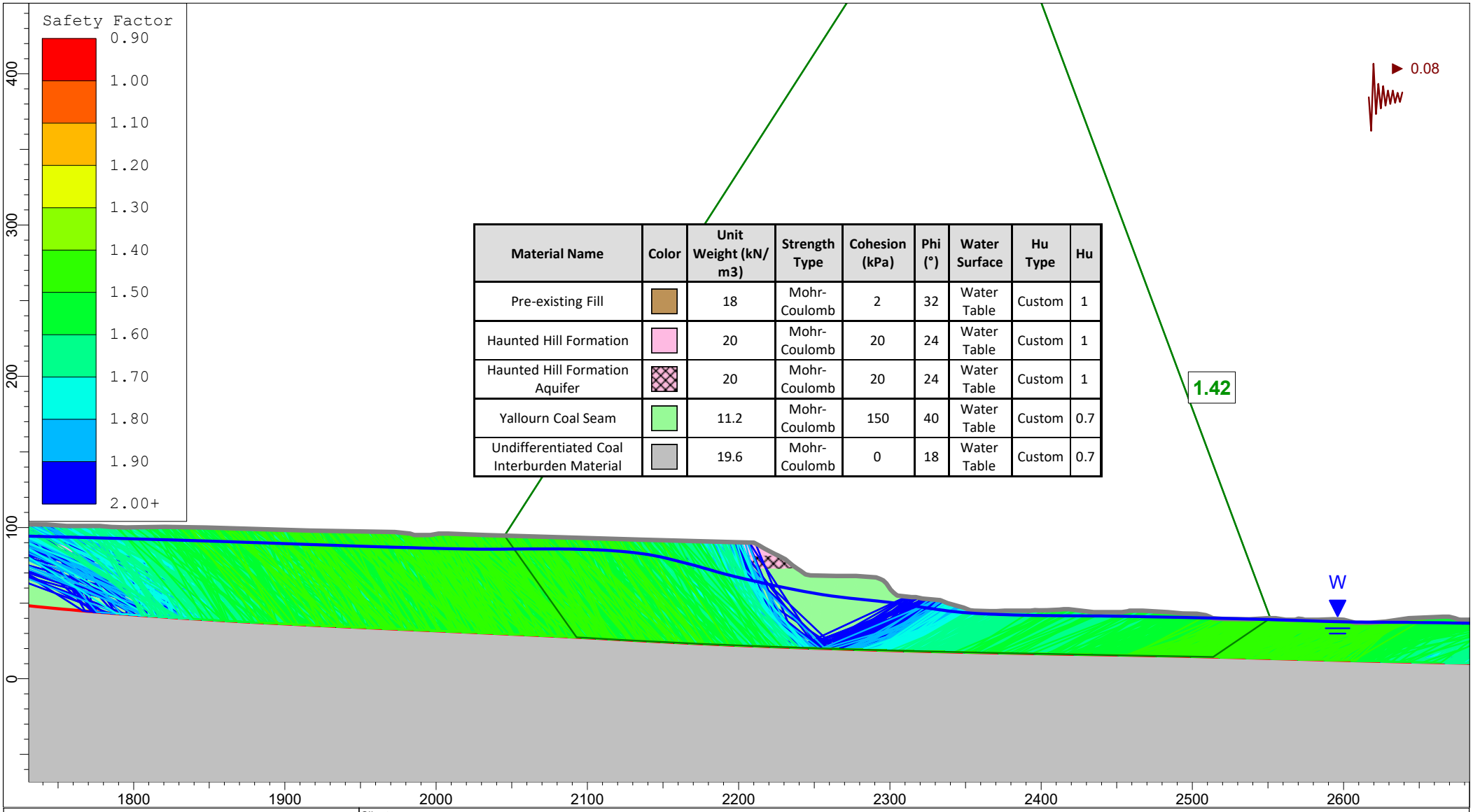
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-FPB
Section:	Section 18	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



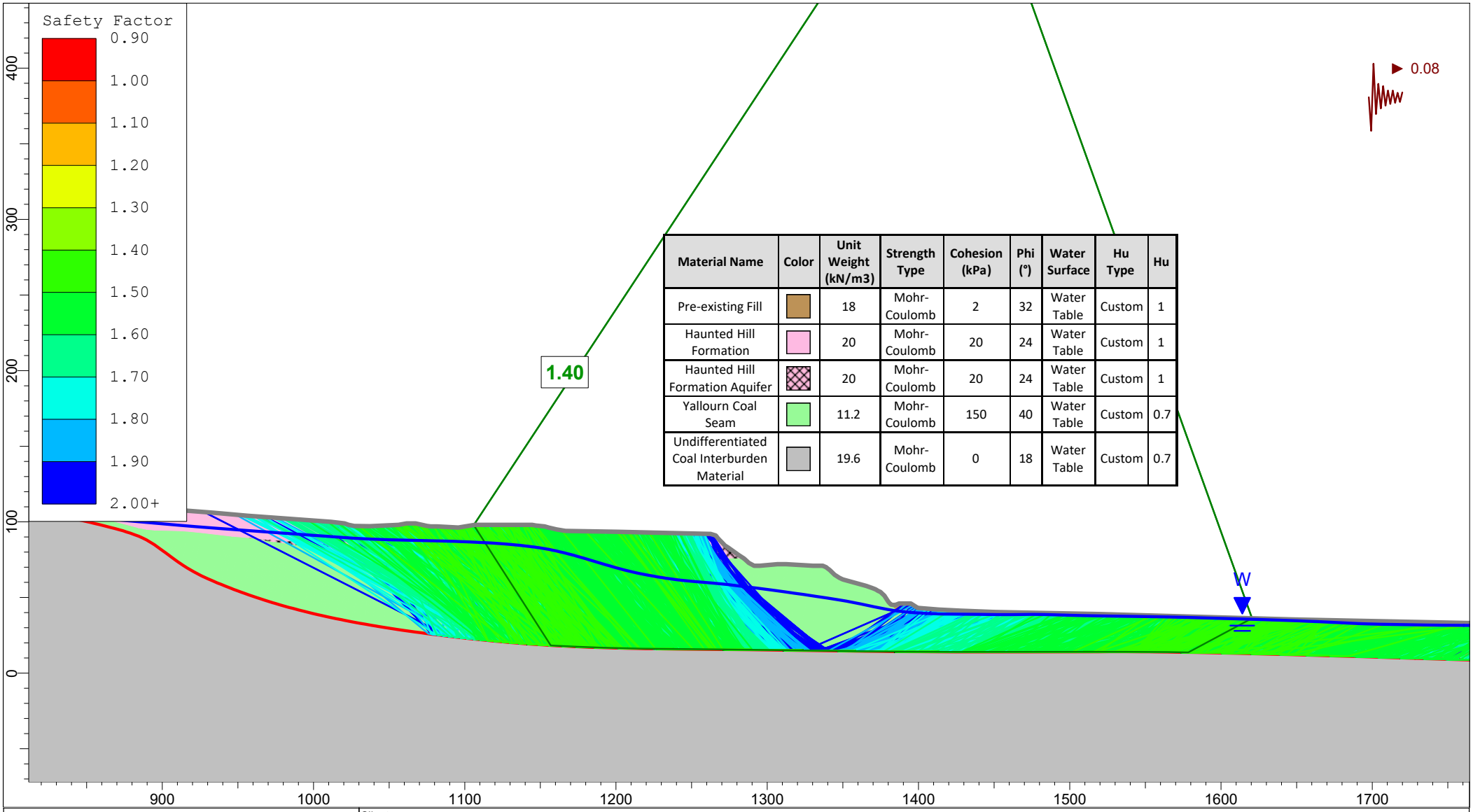
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.4
Undifferentiated Coal Interburden		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.4

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SB
Section:	Section 19	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



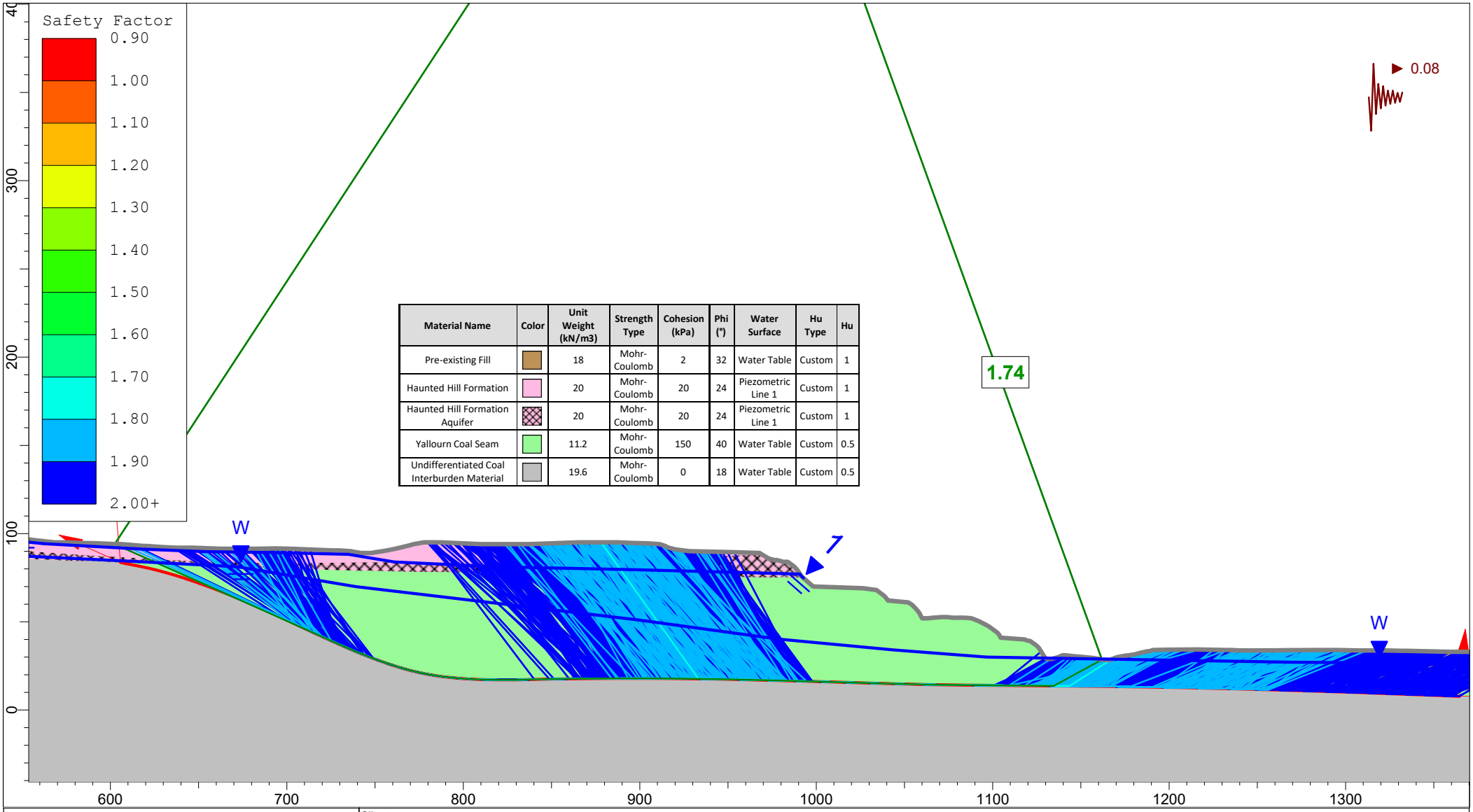
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 20	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



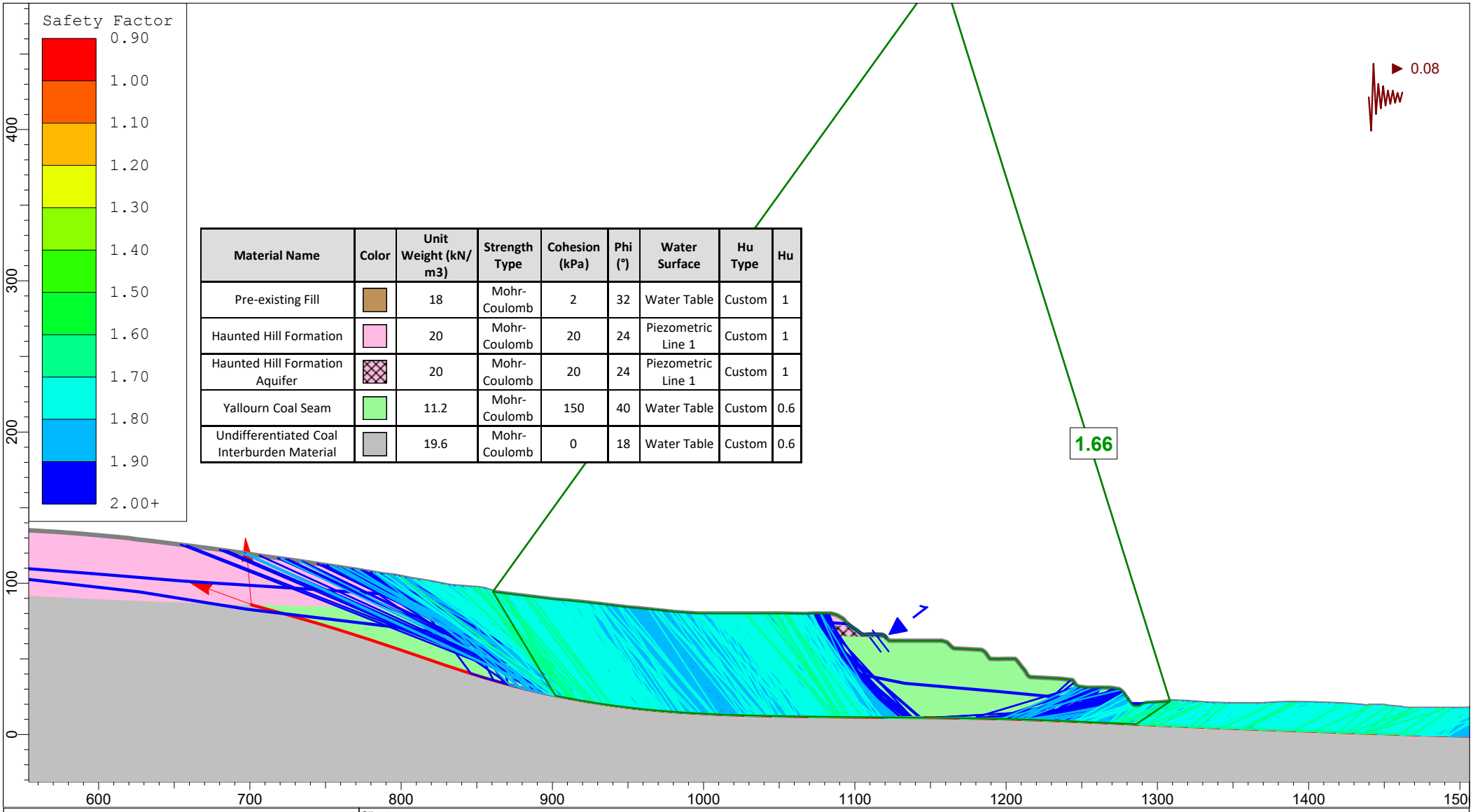
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.7
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.7

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-SWB
Section:	Section 21	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



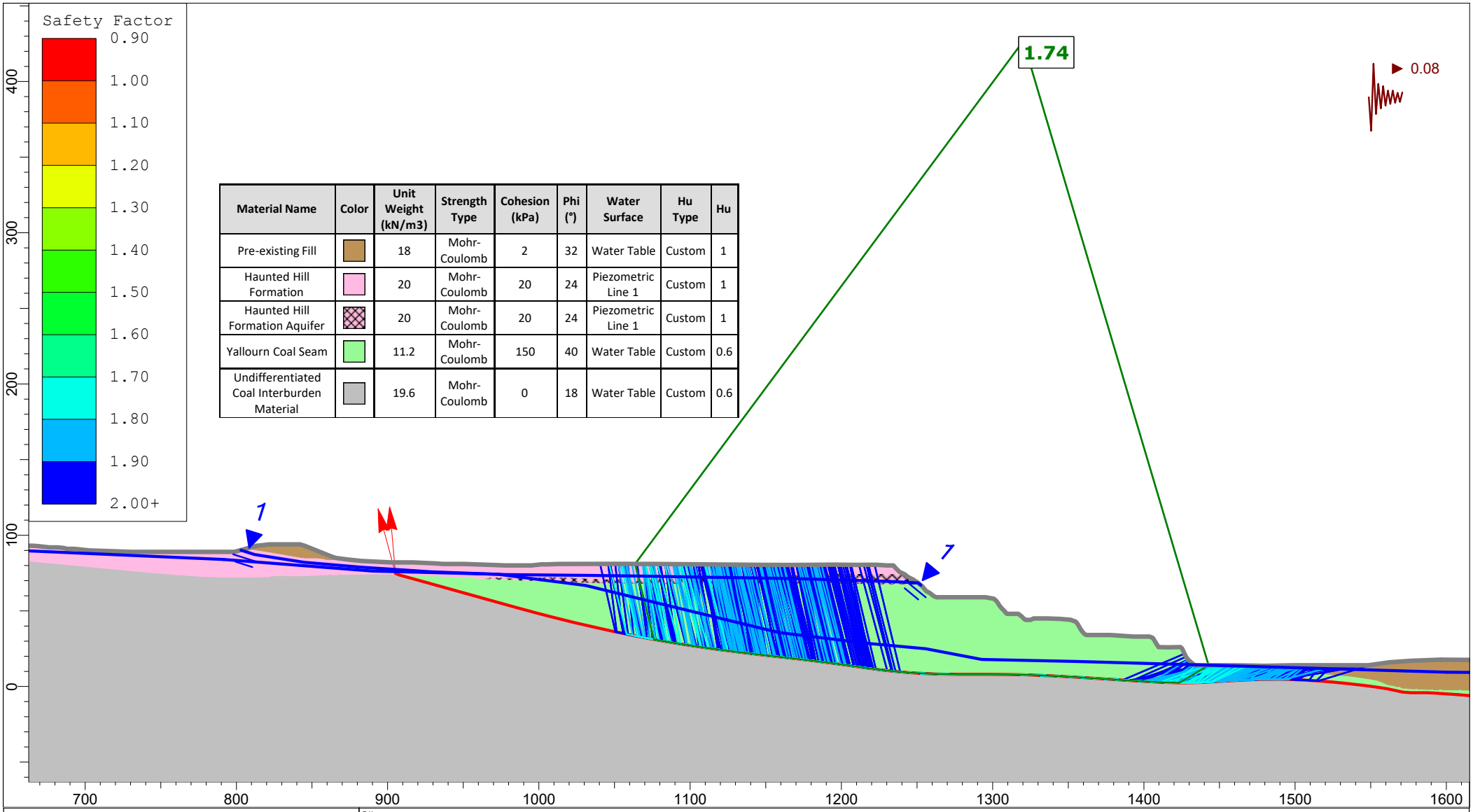
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.5
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.5

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (South)
Section:	Section 22	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



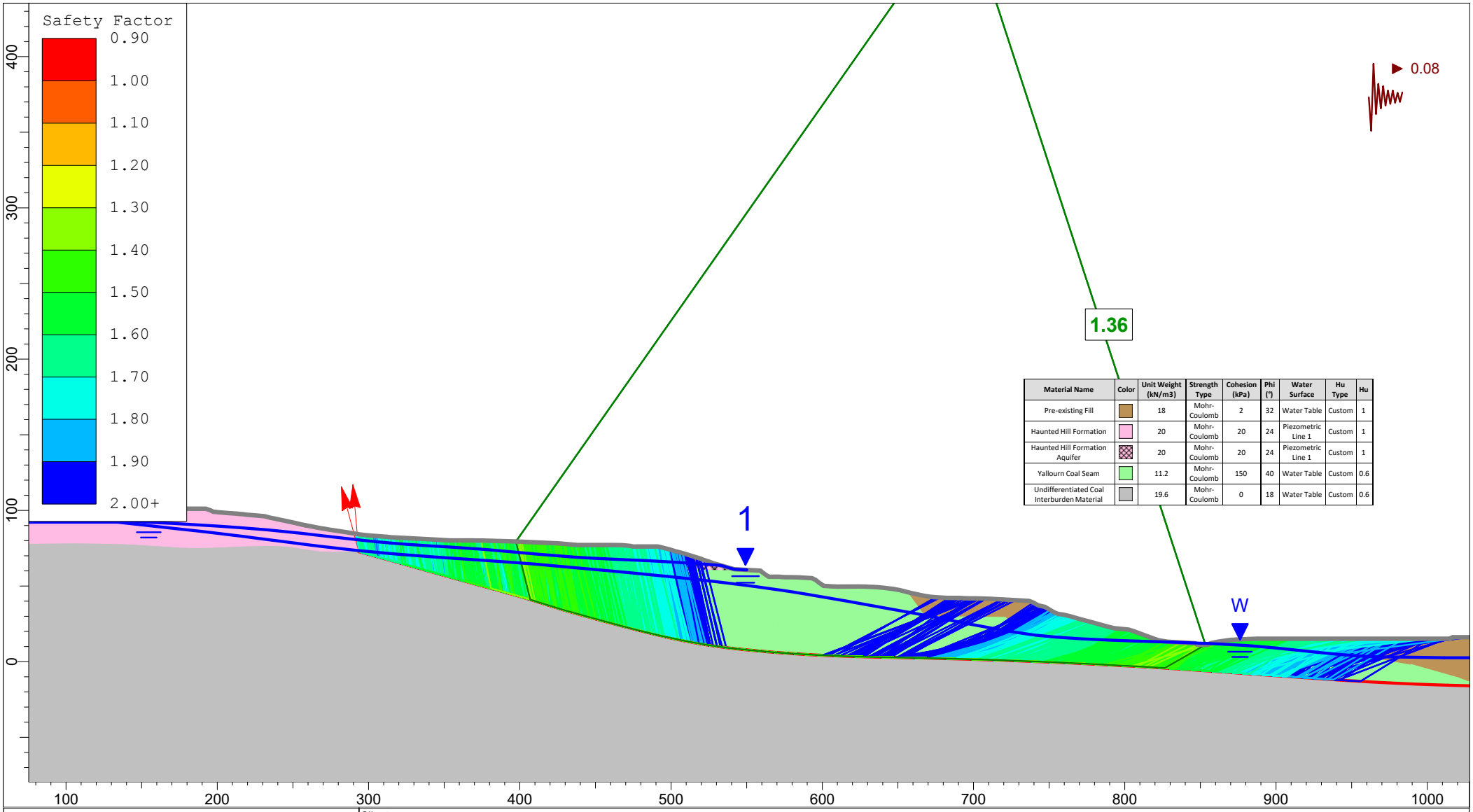
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 23	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



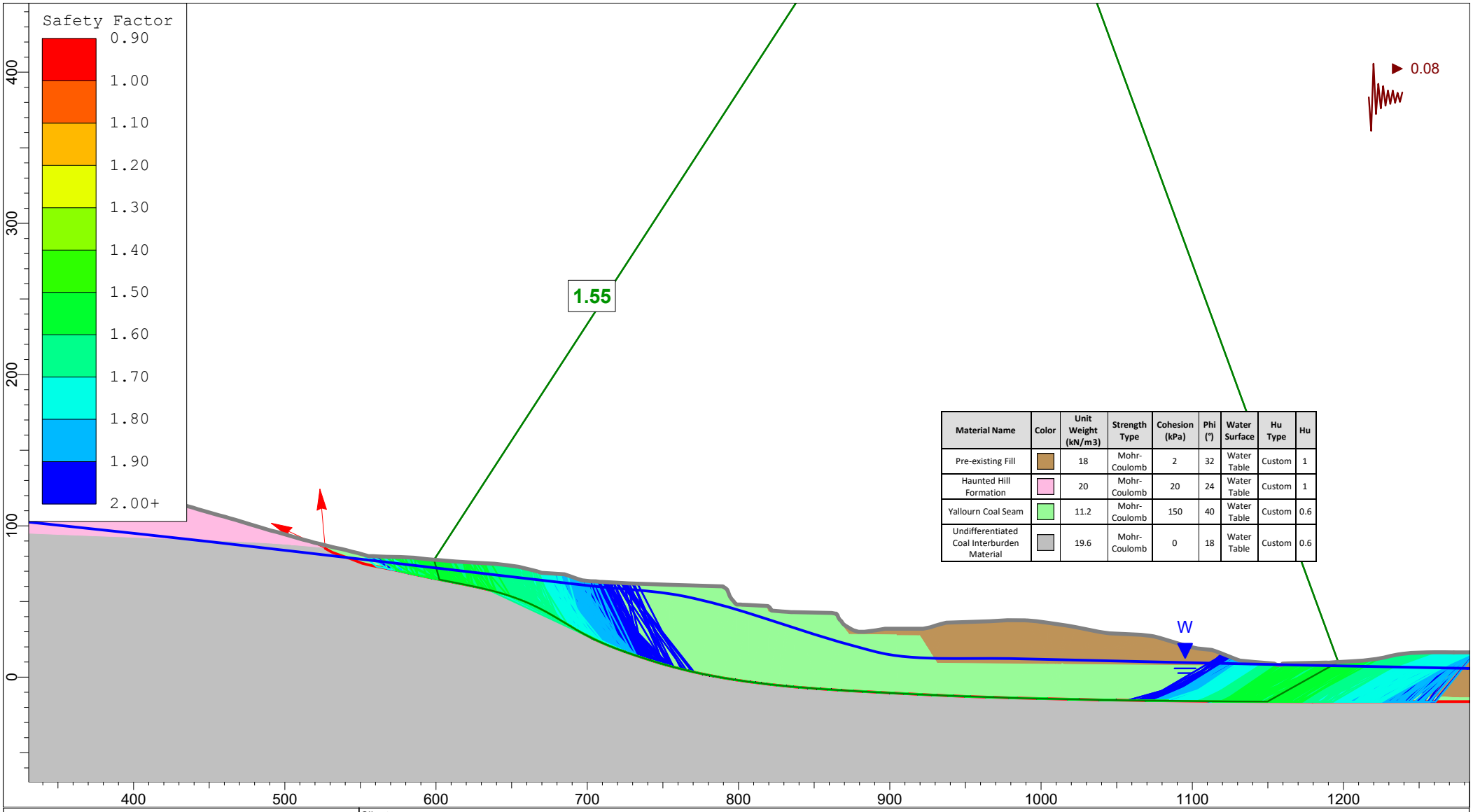
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-HOB (North)
Section:	Section 24	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



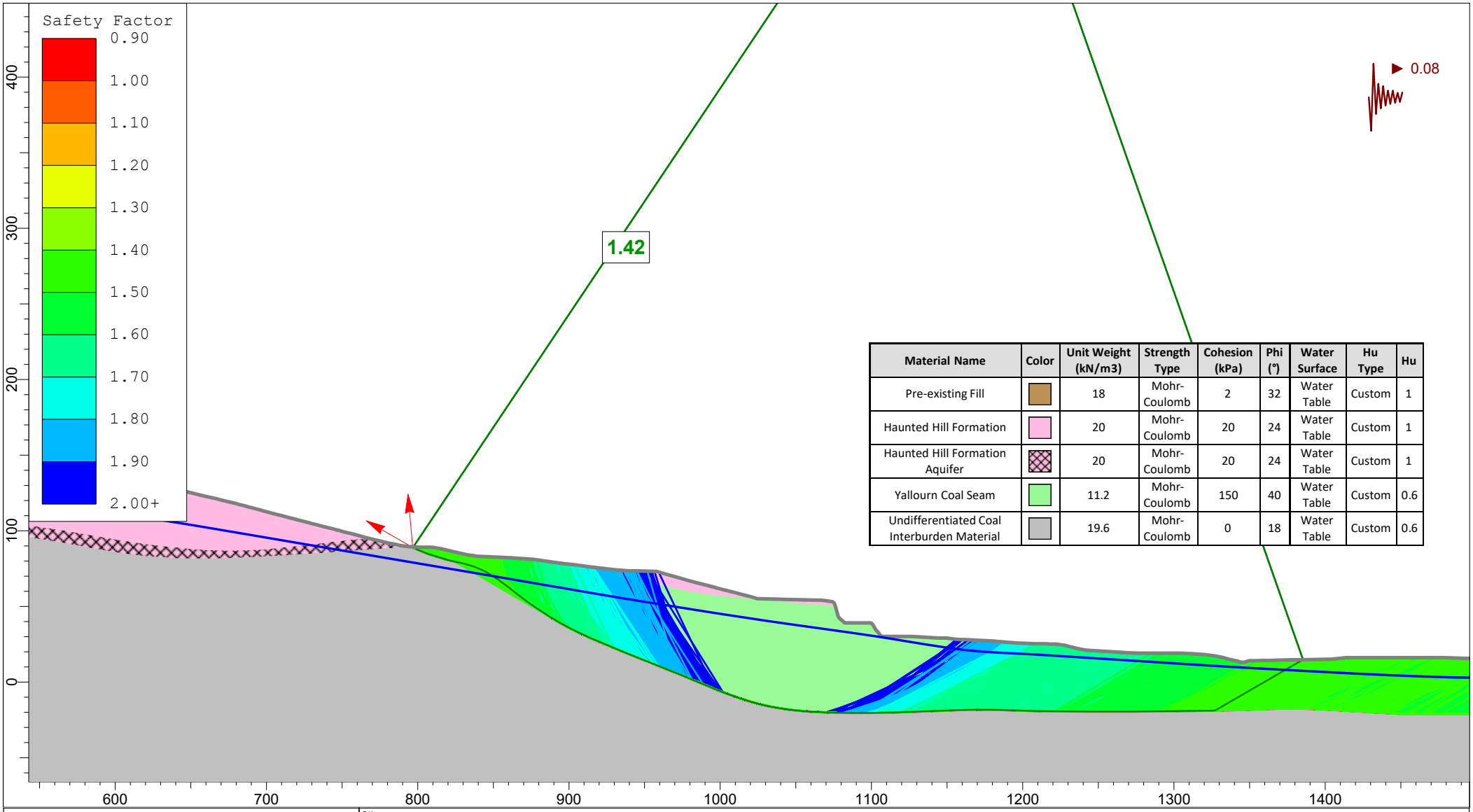
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 25	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



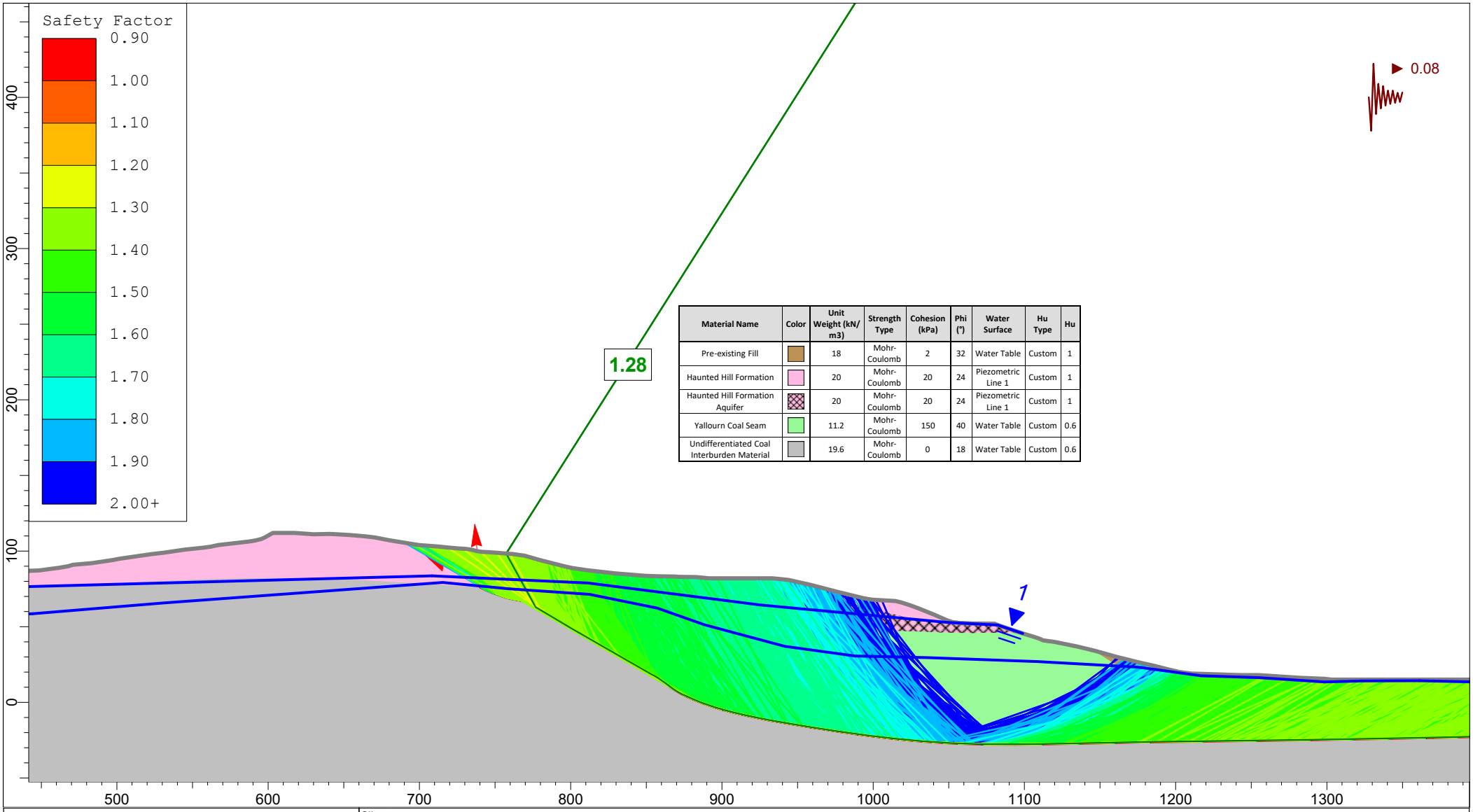
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 26	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



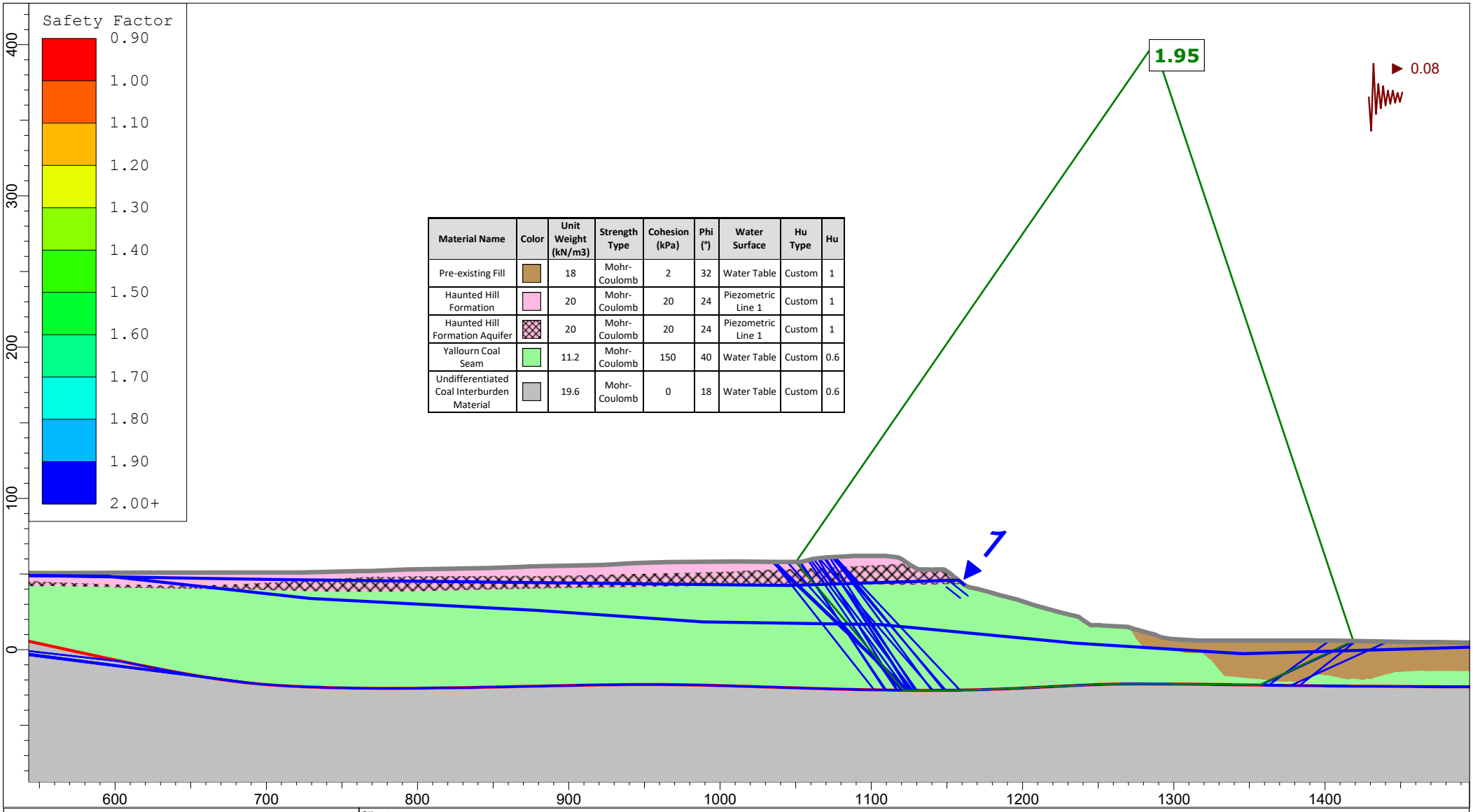
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 27	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



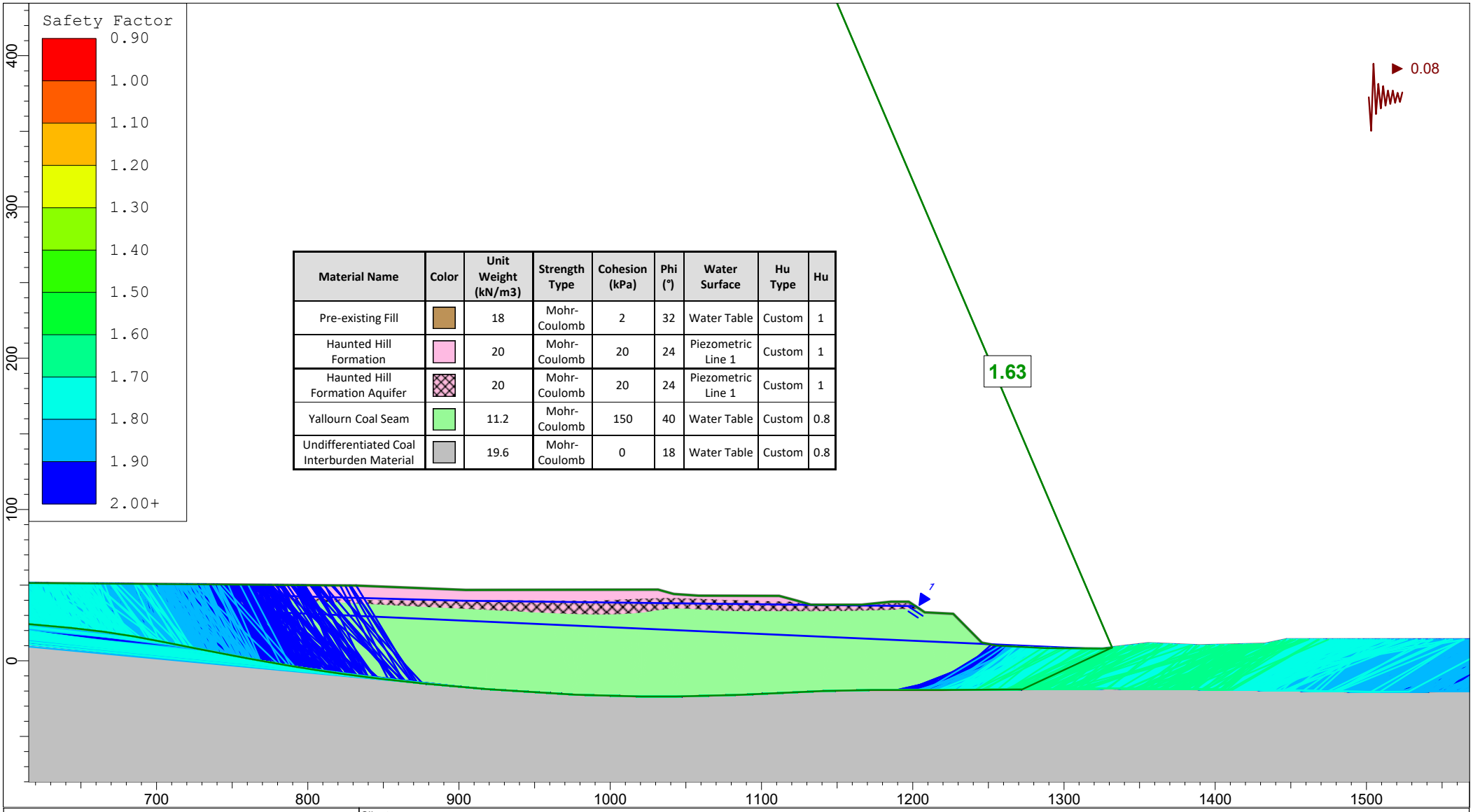
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-WB
Section:	Section 28	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



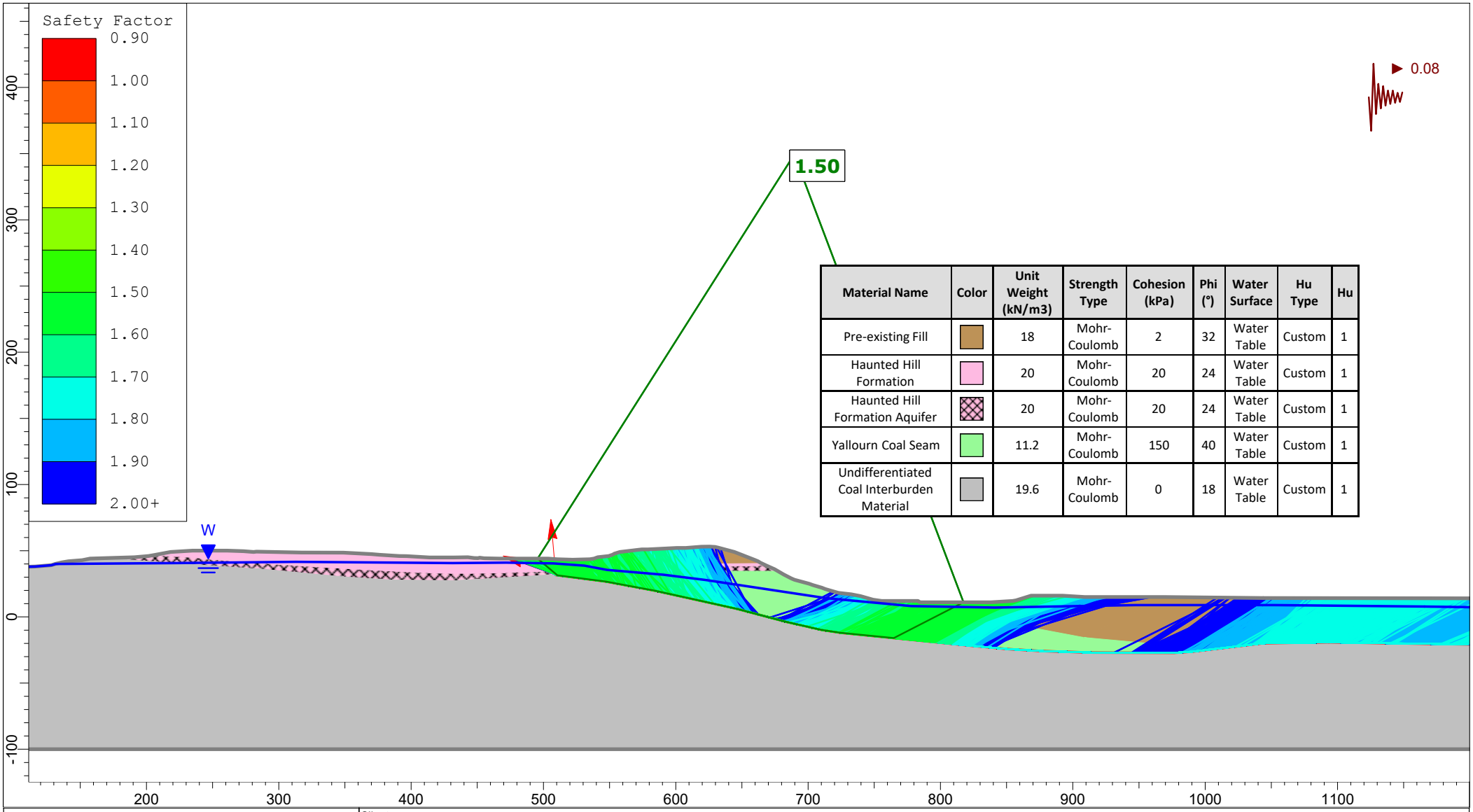
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.6
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.6

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-NB
Section:	Section 29	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Piezometric Line 1	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	0.8
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	0.8

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-RCB
Section:	Section 30	Case:	Multilinear - Hu specific
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type	Hu
Pre-existing Fill		18	Mohr-Coulomb	2	32	Water Table	Custom	1
Haunted Hill Formation		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Haunted Hill Formation Aquifer		20	Mohr-Coulomb	20	24	Water Table	Custom	1
Yallourn Coal Seam		11.2	Mohr-Coulomb	150	40	Water Table	Custom	1
Undifferentiated Coal Interburden Material		19.6	Mohr-Coulomb	0	18	Water Table	Custom	1

Client:	EnergyAustralia Yallourn Mine		
Project:	Feasibility Rehabilitation Design	Domain:	YTF-LS
Section:	Section 31	Case:	Multilinear - Hu = 1
Job No:	PSM4487	Run:	2012 Earthquake Back Analysis
Notes:	Median Interseam Shear Strength		

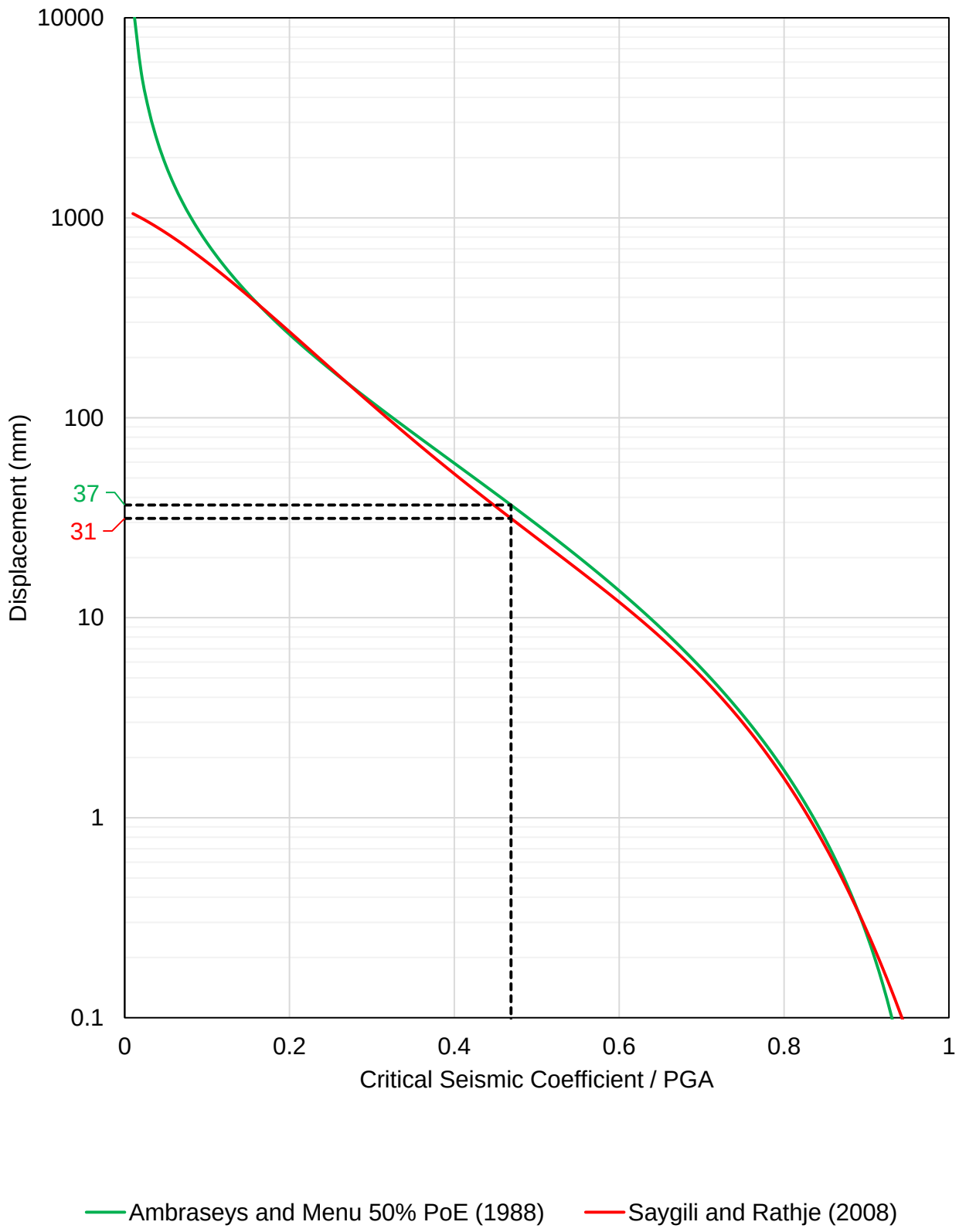
Appendix G
Empirical Co-Seismic Displacement Assessment

G1. Displacement for sections with FOS < 1 at end of mining

G2. Displacement for sections with FOS <1 during lake filling

G3. Displacement for sections with FOS <1 at lake full

Appendix G.1
Displacement for sections with FOS < 1 at end of mining



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.15
4. PGA = 0.32

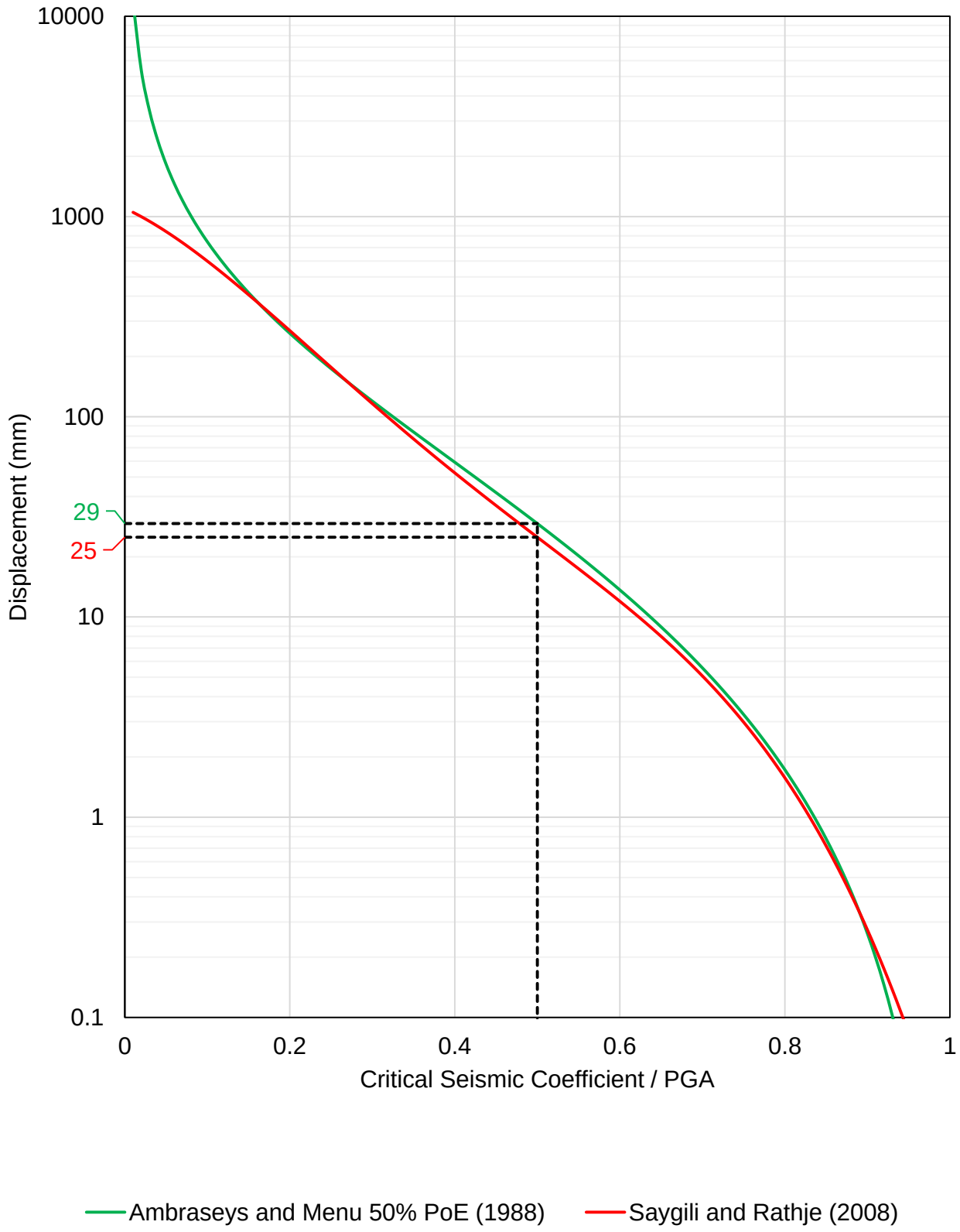
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

END OF MINING SEISMIC DISPLACEMENT ASSESSMENT - SECTION 20

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.16
4. PGA = 0.32

EnergyAustralia

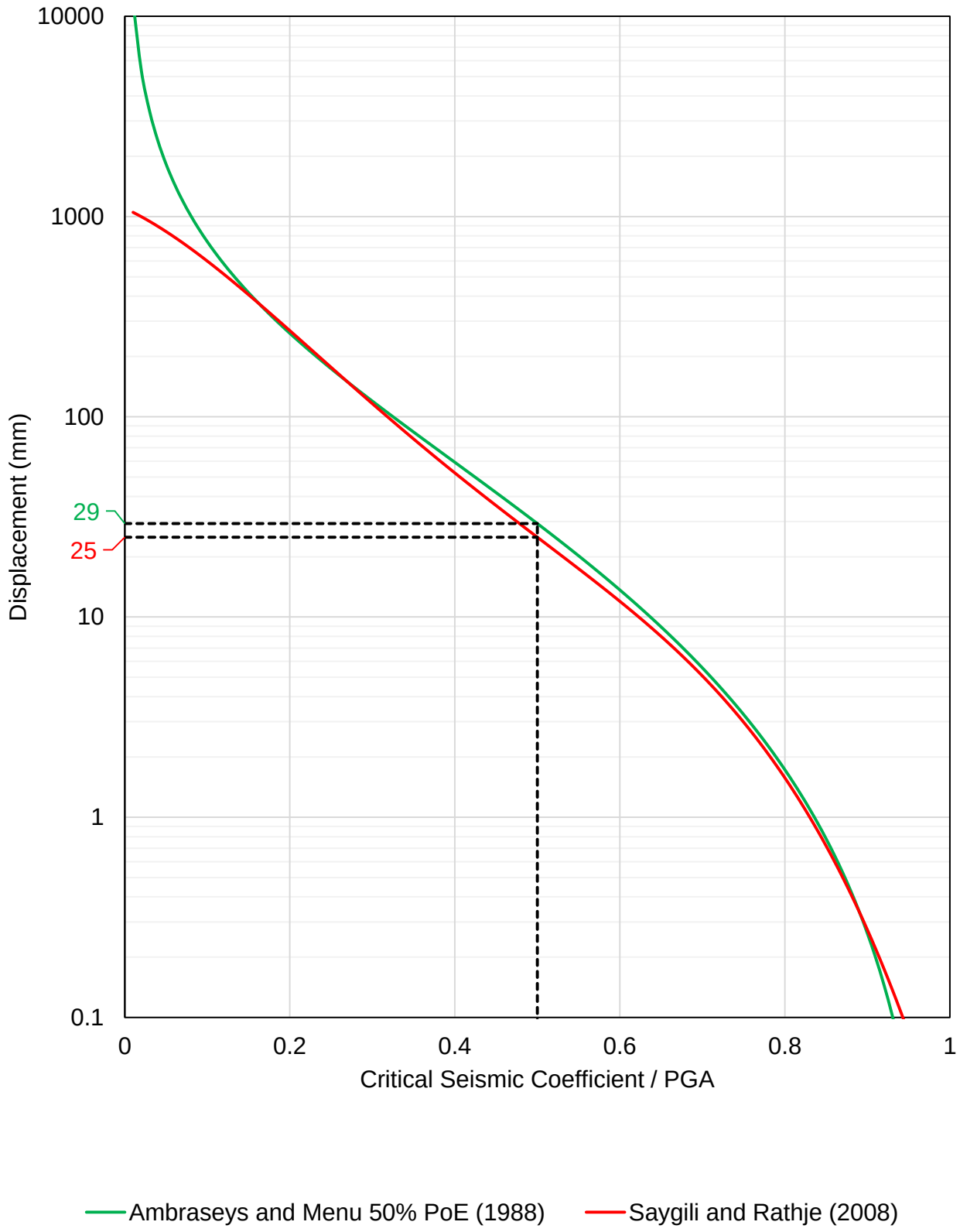
Yallourn Mine

Feasibility Rehabilitation Design

END OF MINING SEISMIC DISPLACEMENT ASSESSMENT - SECTION 21

PSM4487-200R	Appendix G

Appendix G.2
Displacement for sections with FOS <1 during lake filling



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.16
4. PGA = 0.32

EnergyAustralia

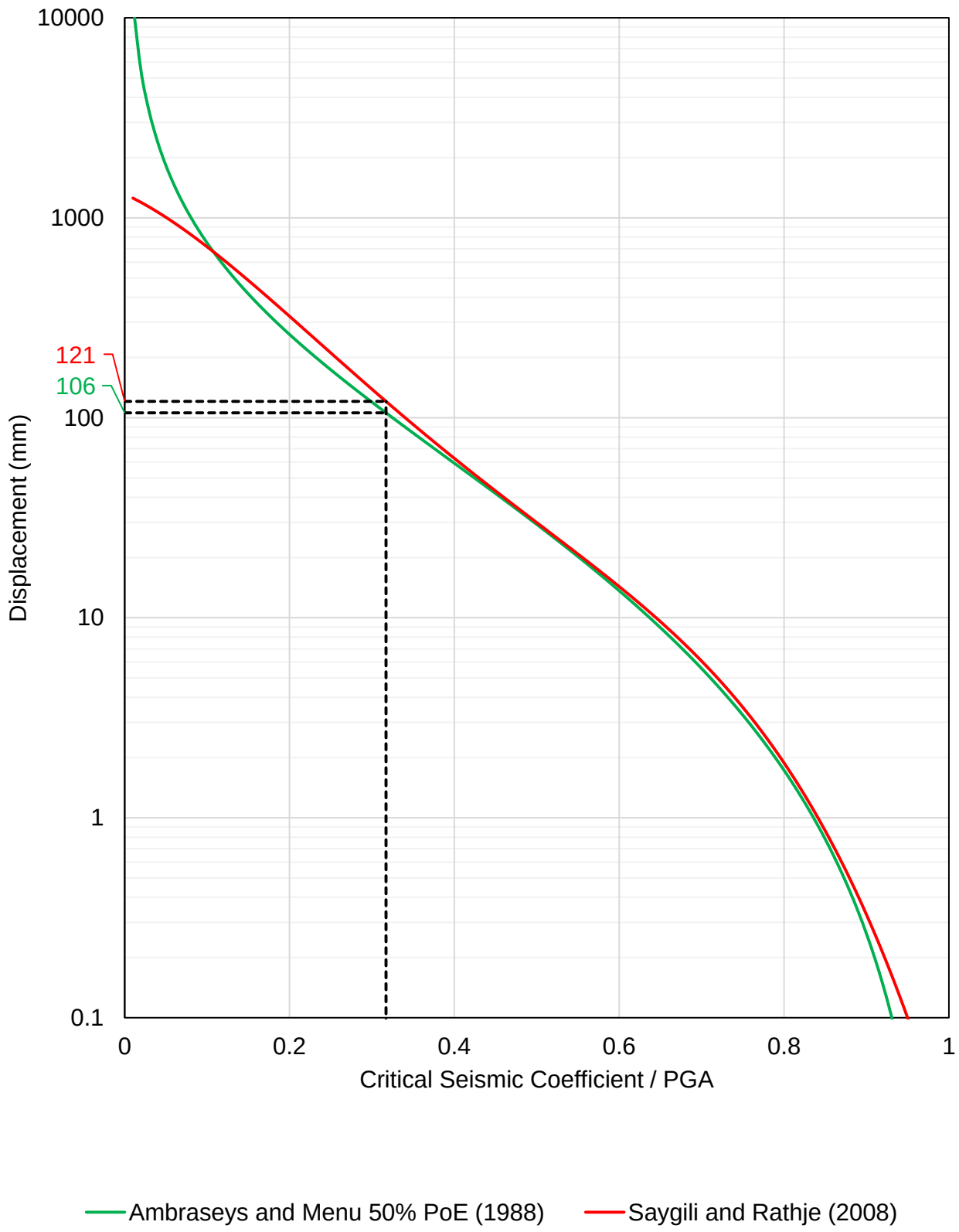
Yallourn Mine

Feasibility Rehabilitation Design

LAKE FILLING SEISMIC DISPLACEMENT ASSESSMENT - SECTION 21

PSM4487-200R	Appendix G

Appendix G.3
Displacement for sections with FOS <1 at lake full



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.13
4. PGA = 0.41

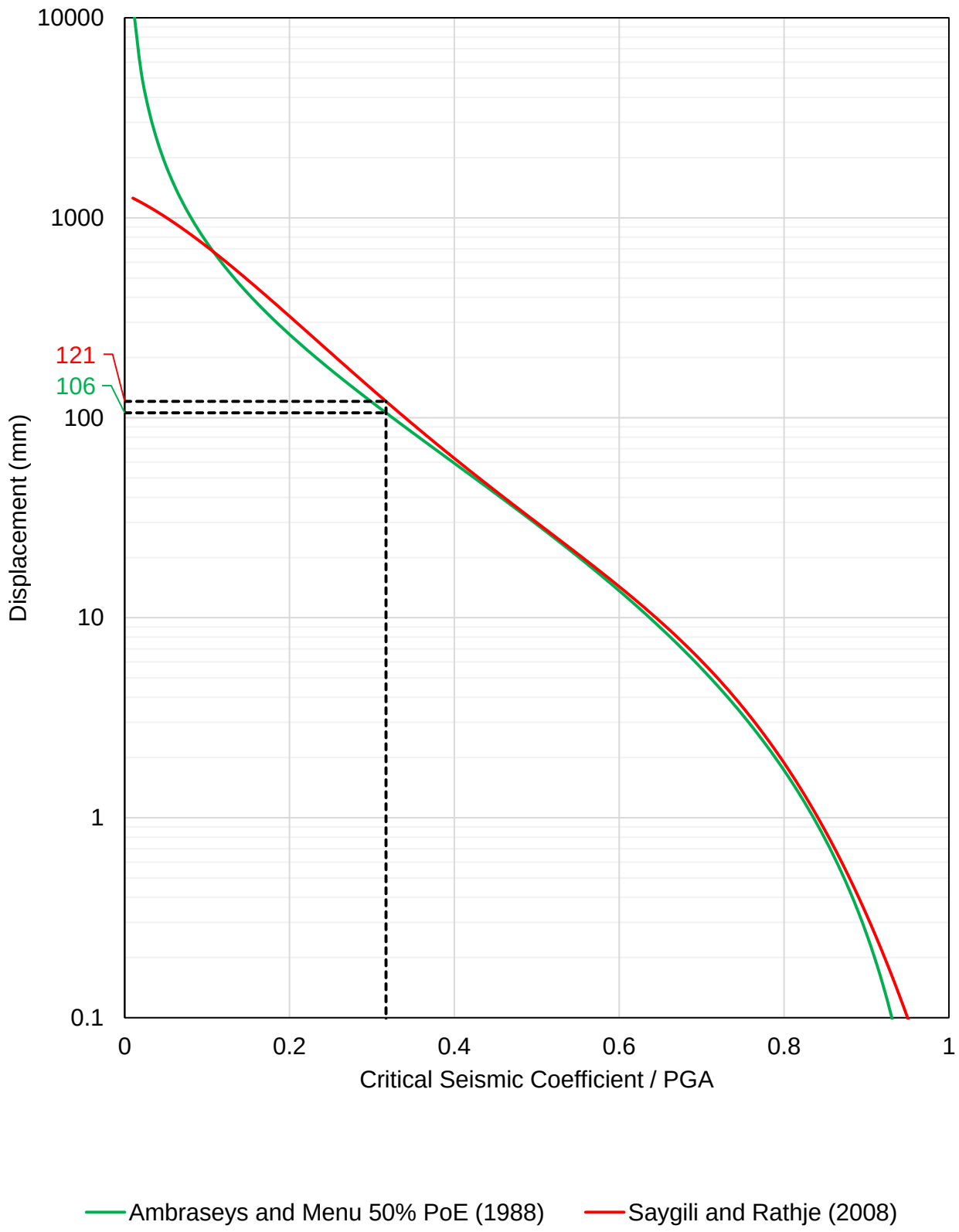
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 1

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.13
4. PGA = 0.41

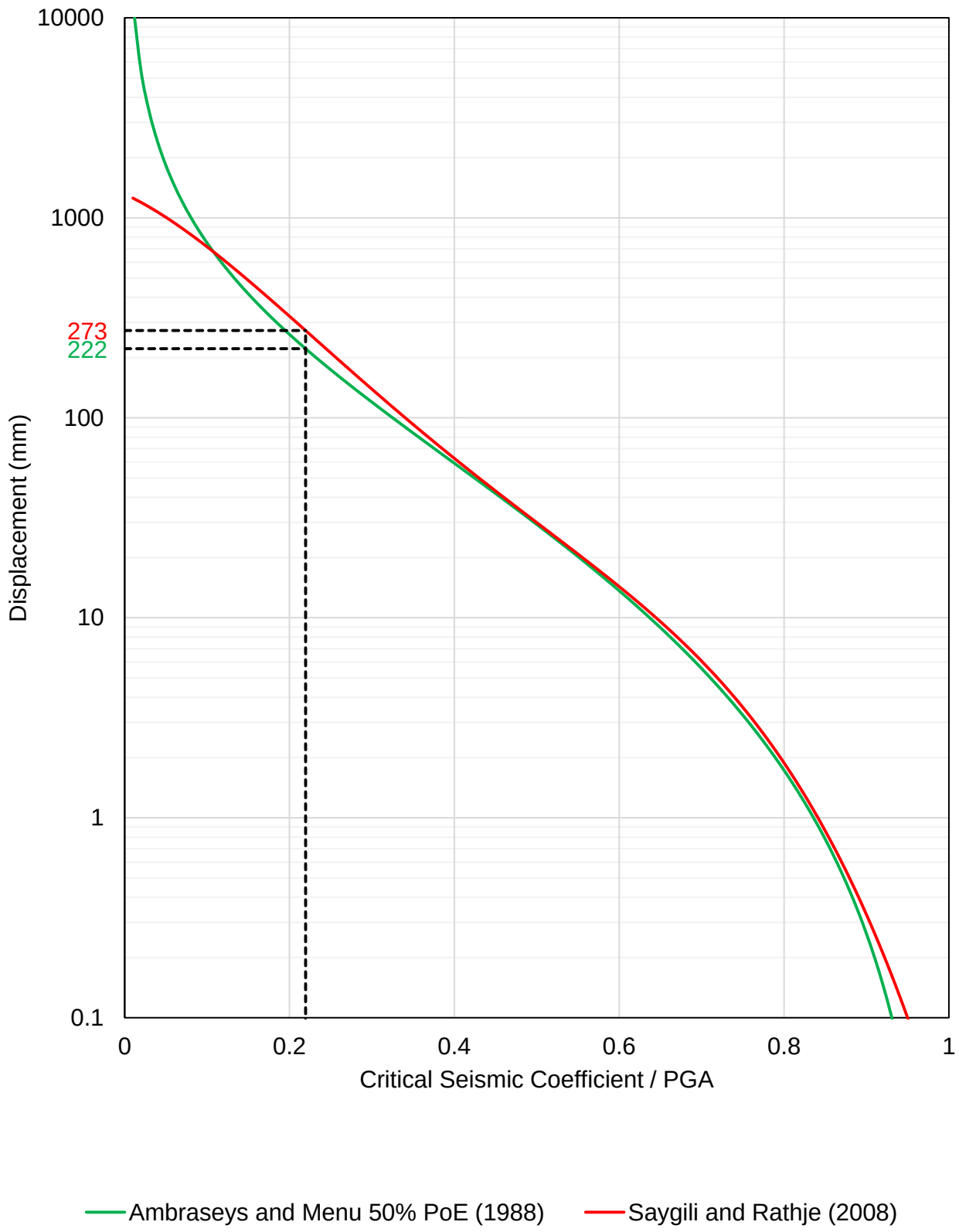
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 4

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.09
4. PGA = 0.41

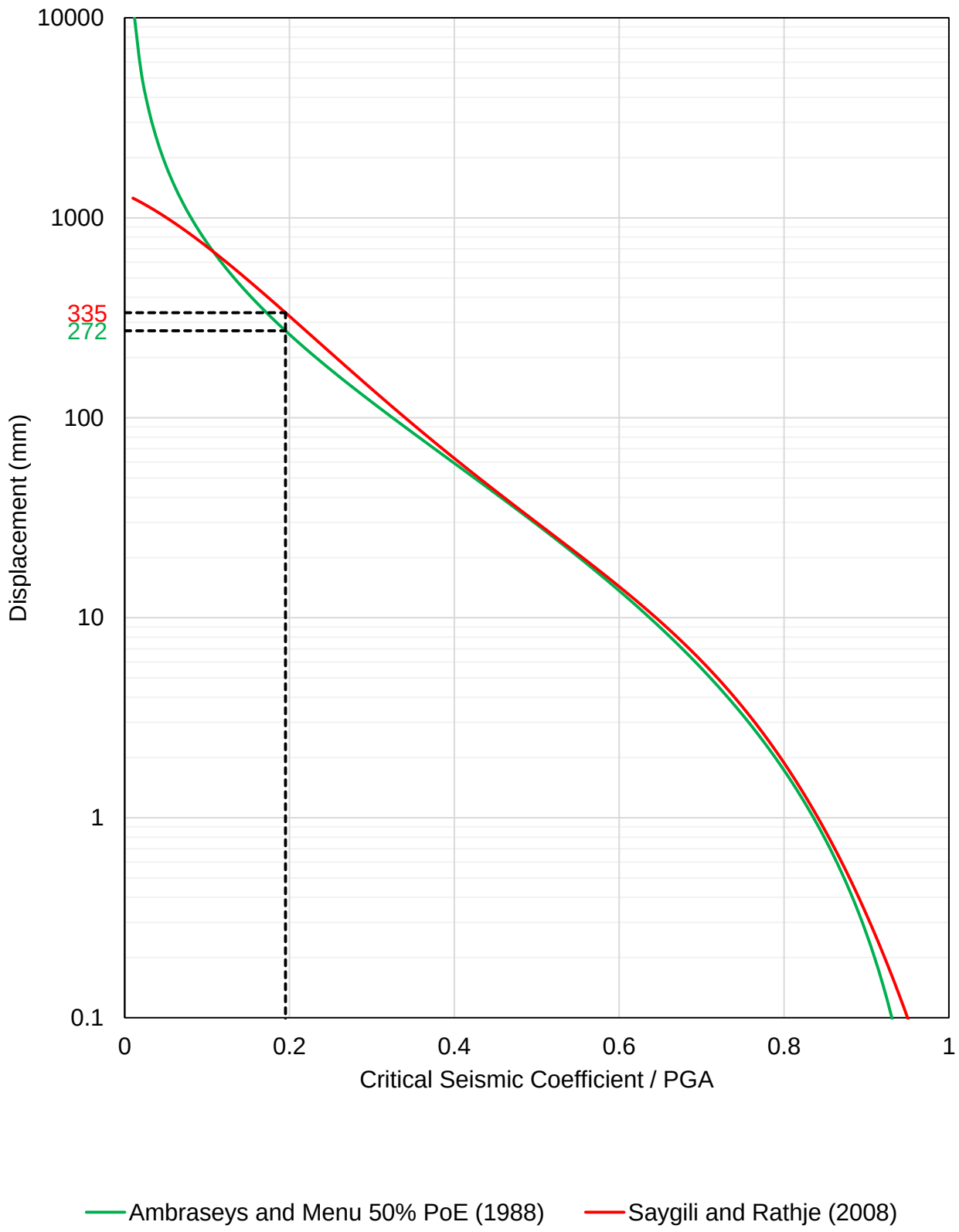
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 5

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.08
4. PGA = 0.41

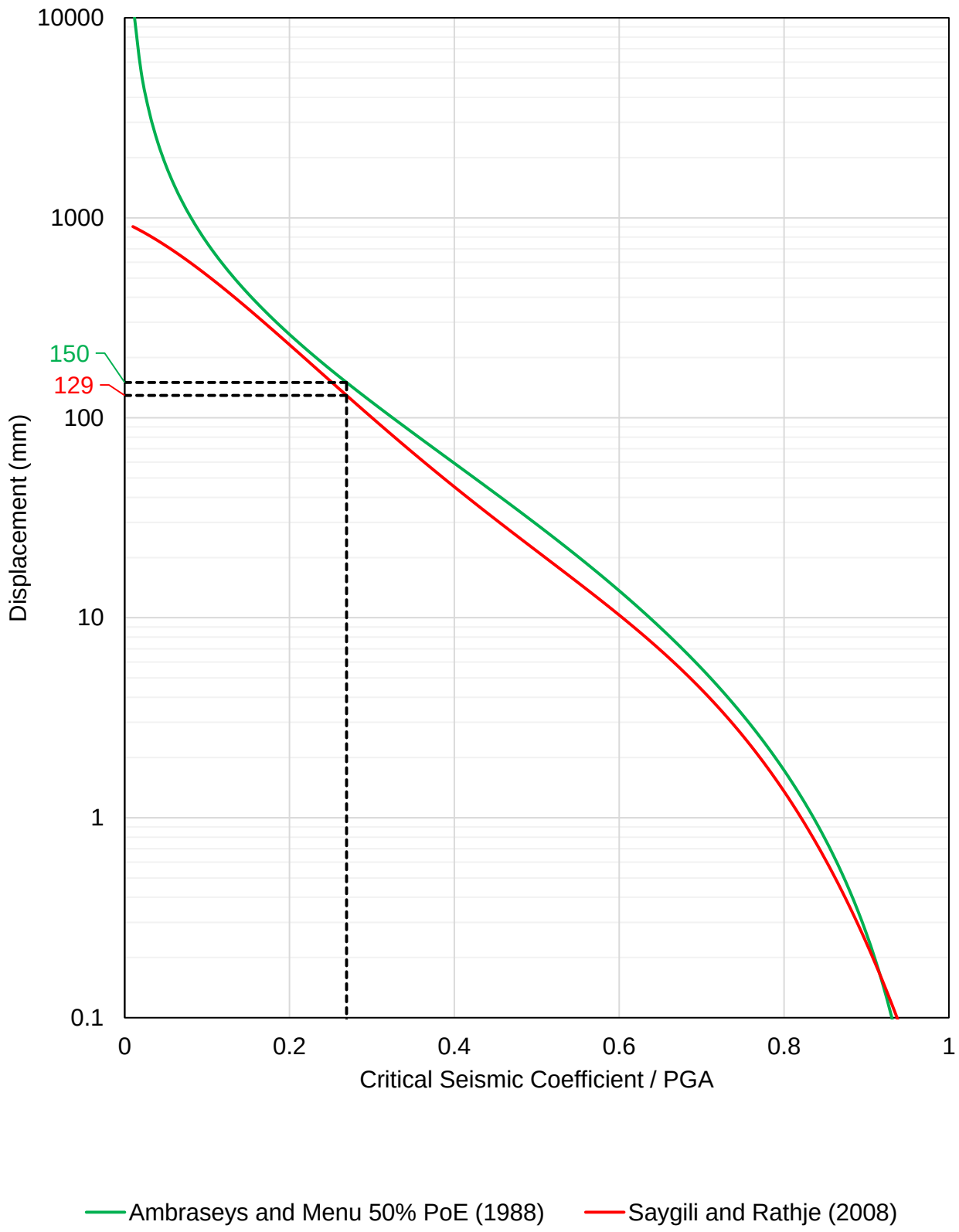
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 6

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.07
4. PGA = 0.26

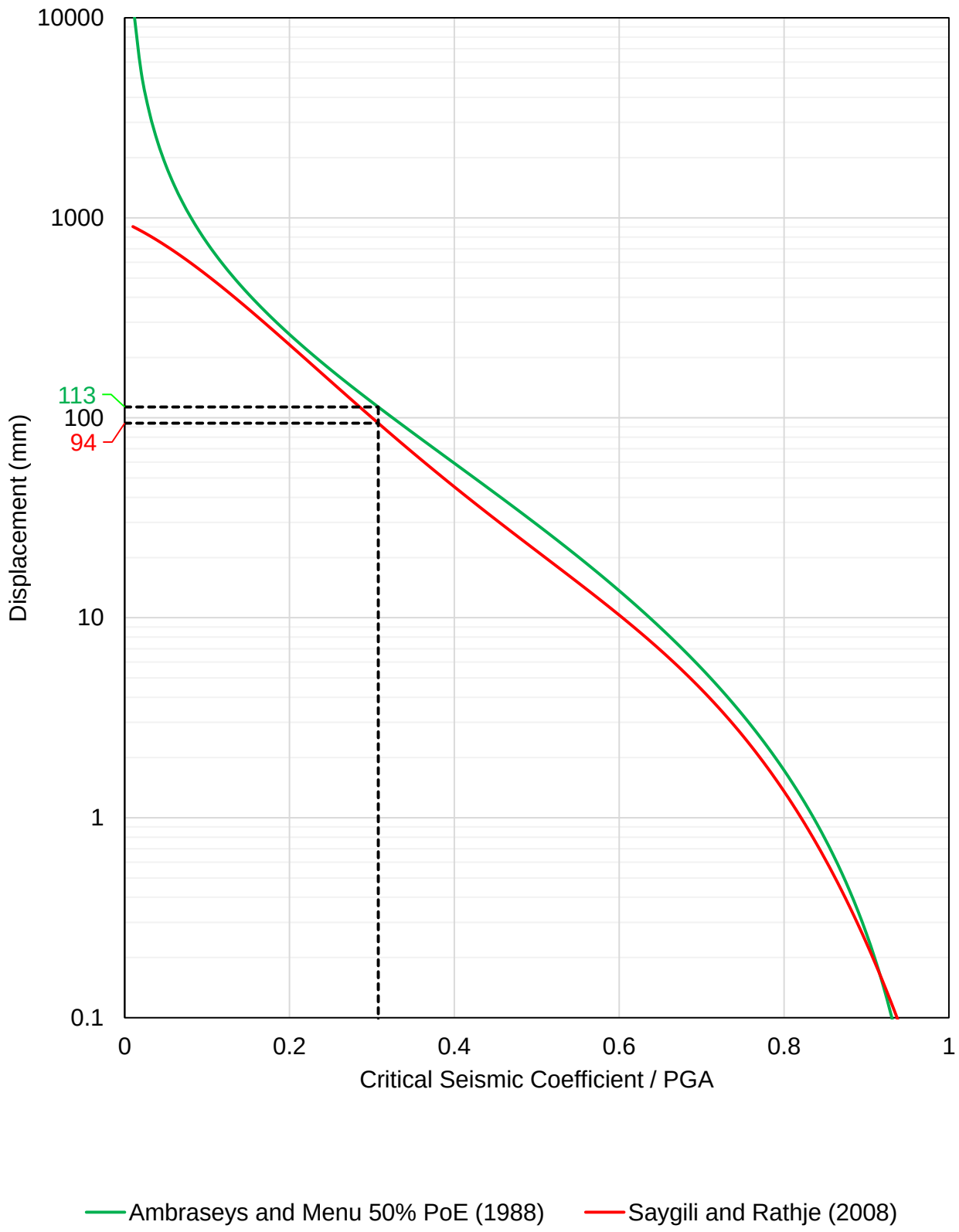
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 7

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.08
4. PGA = 0.26

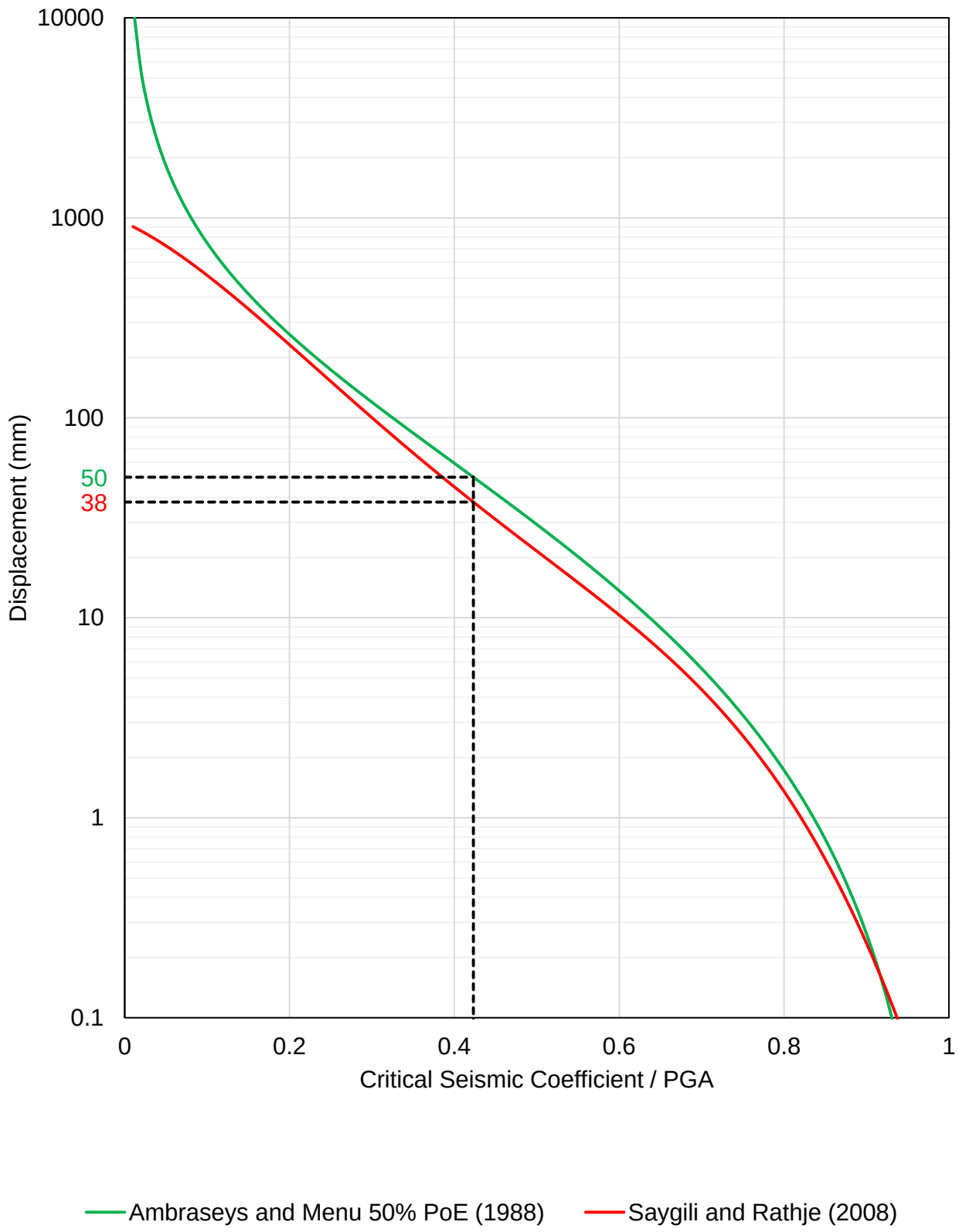
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 11

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.11
4. PGA = 0.26

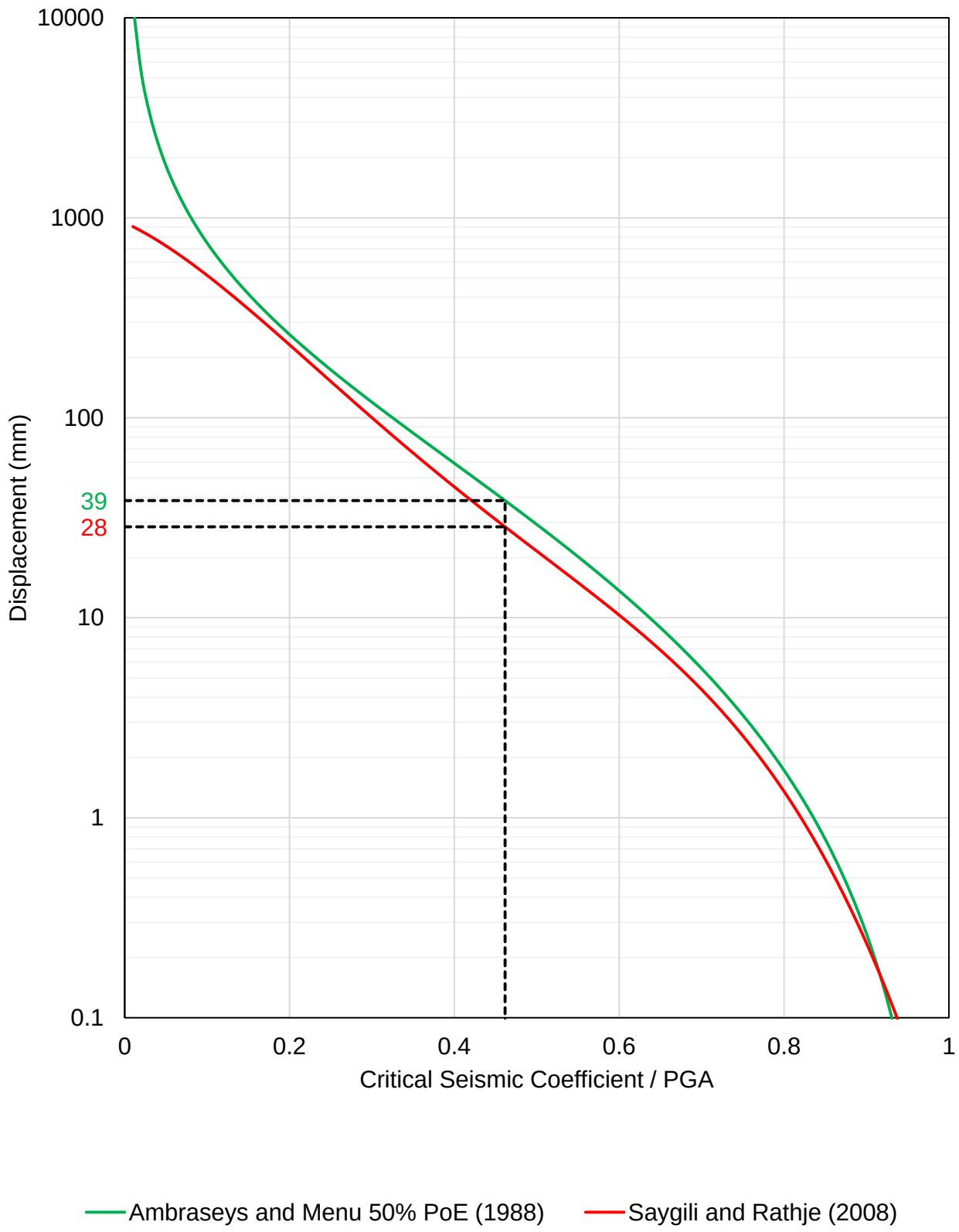
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 14

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.12
4. PGA = 0.26

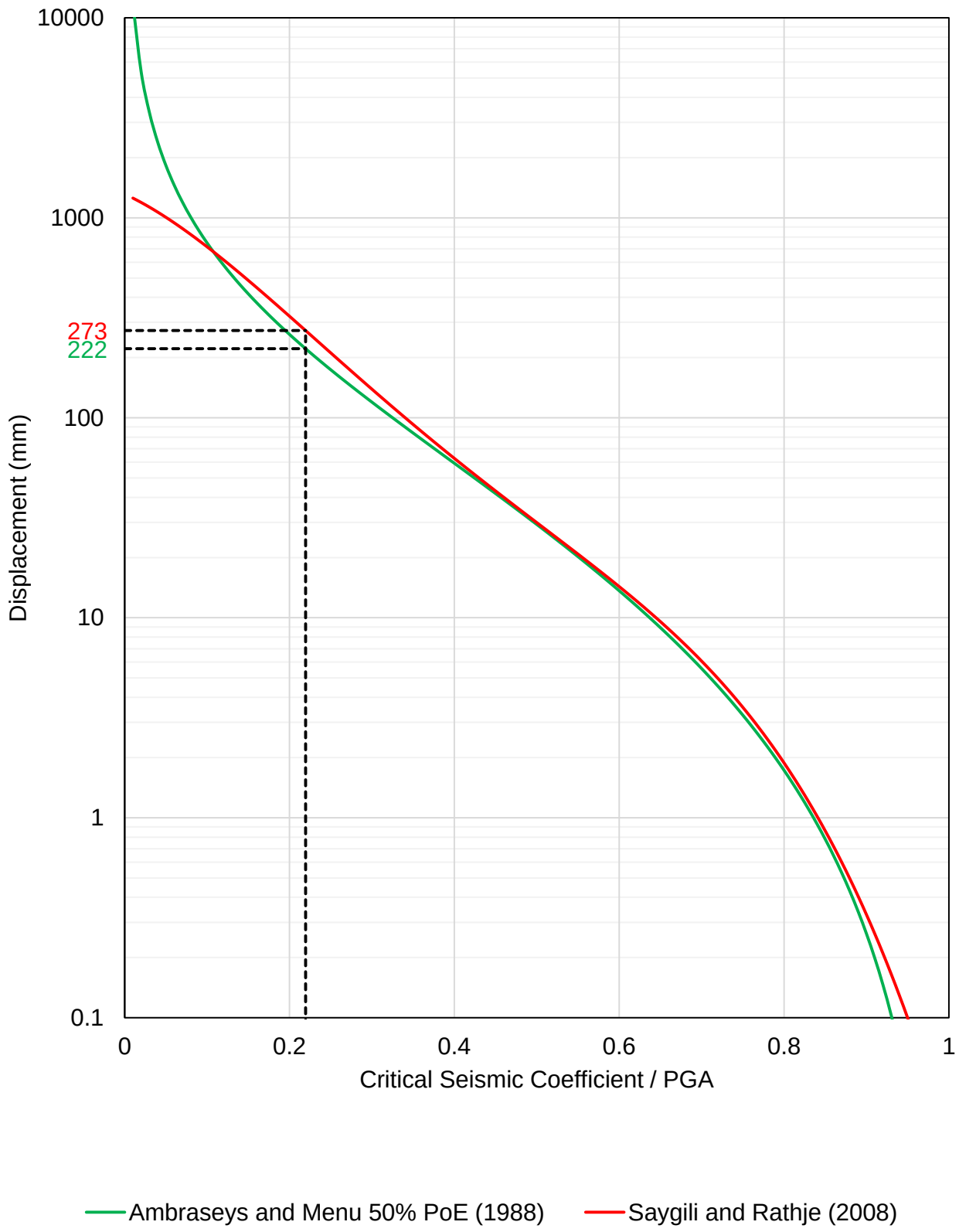
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 15

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.09
4. PGA = 0.41

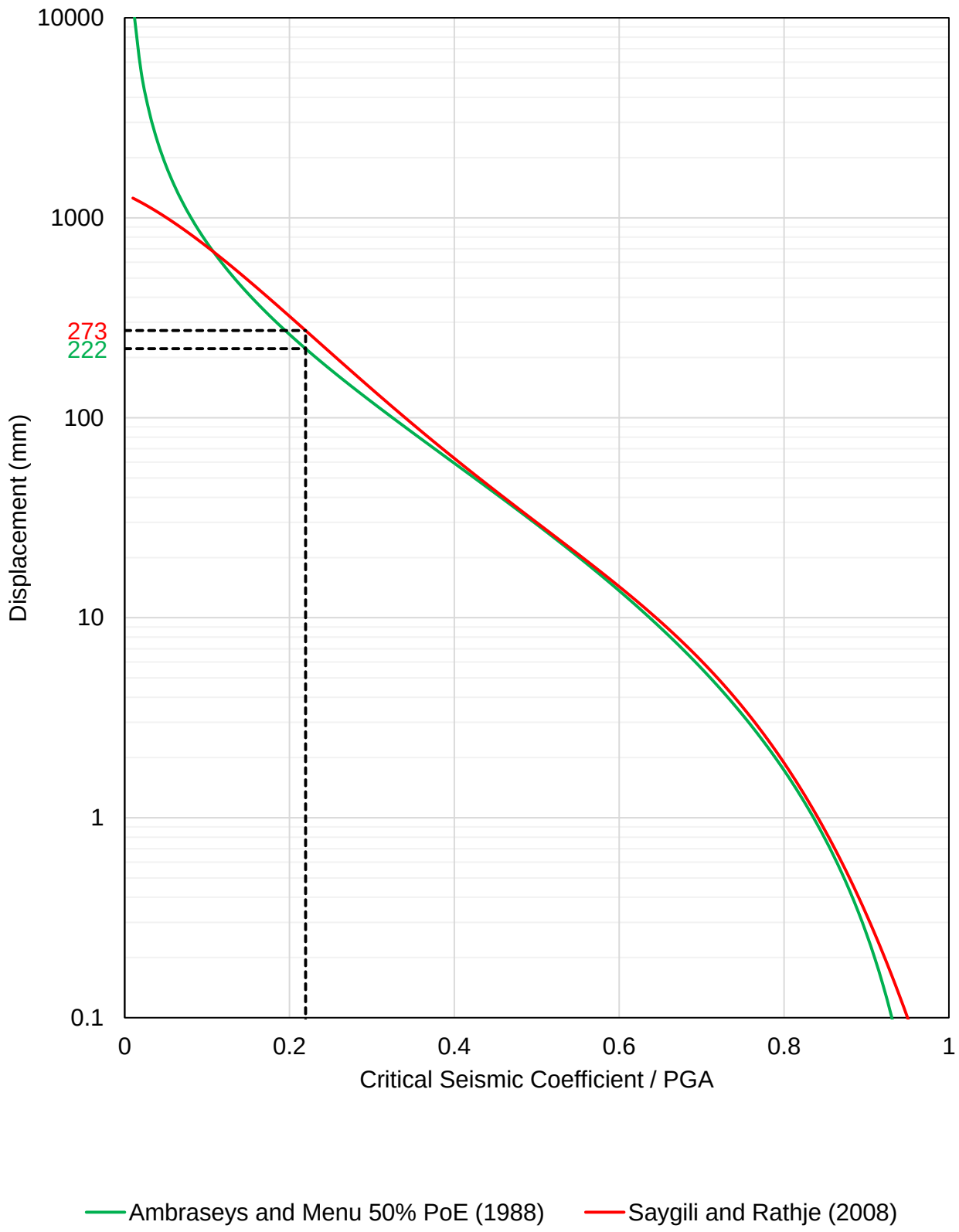
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 16

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.09
4. PGA = 0.41

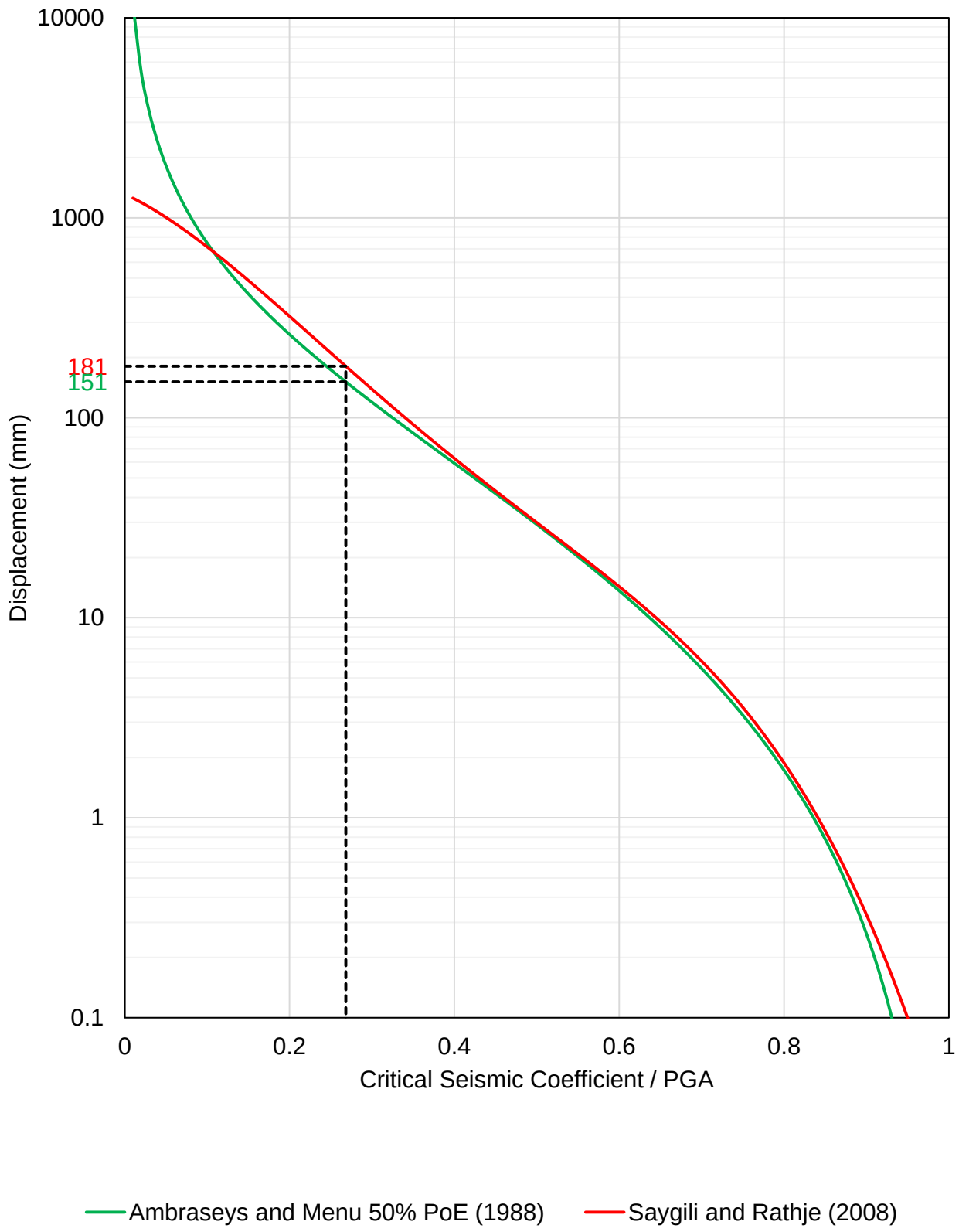
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 17

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.11
4. PGA = 0.41

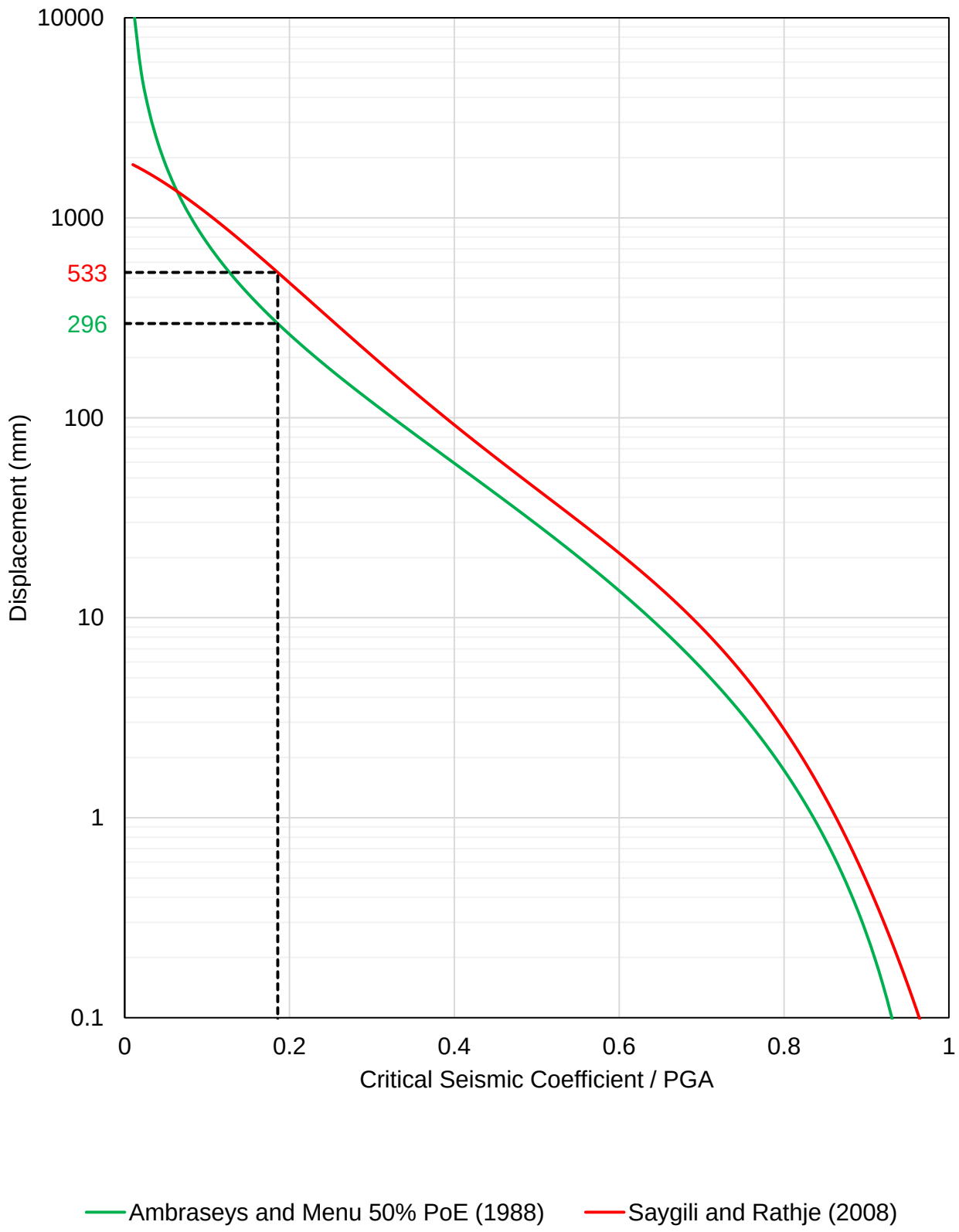
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 18

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.13
4. PGA = 0.7

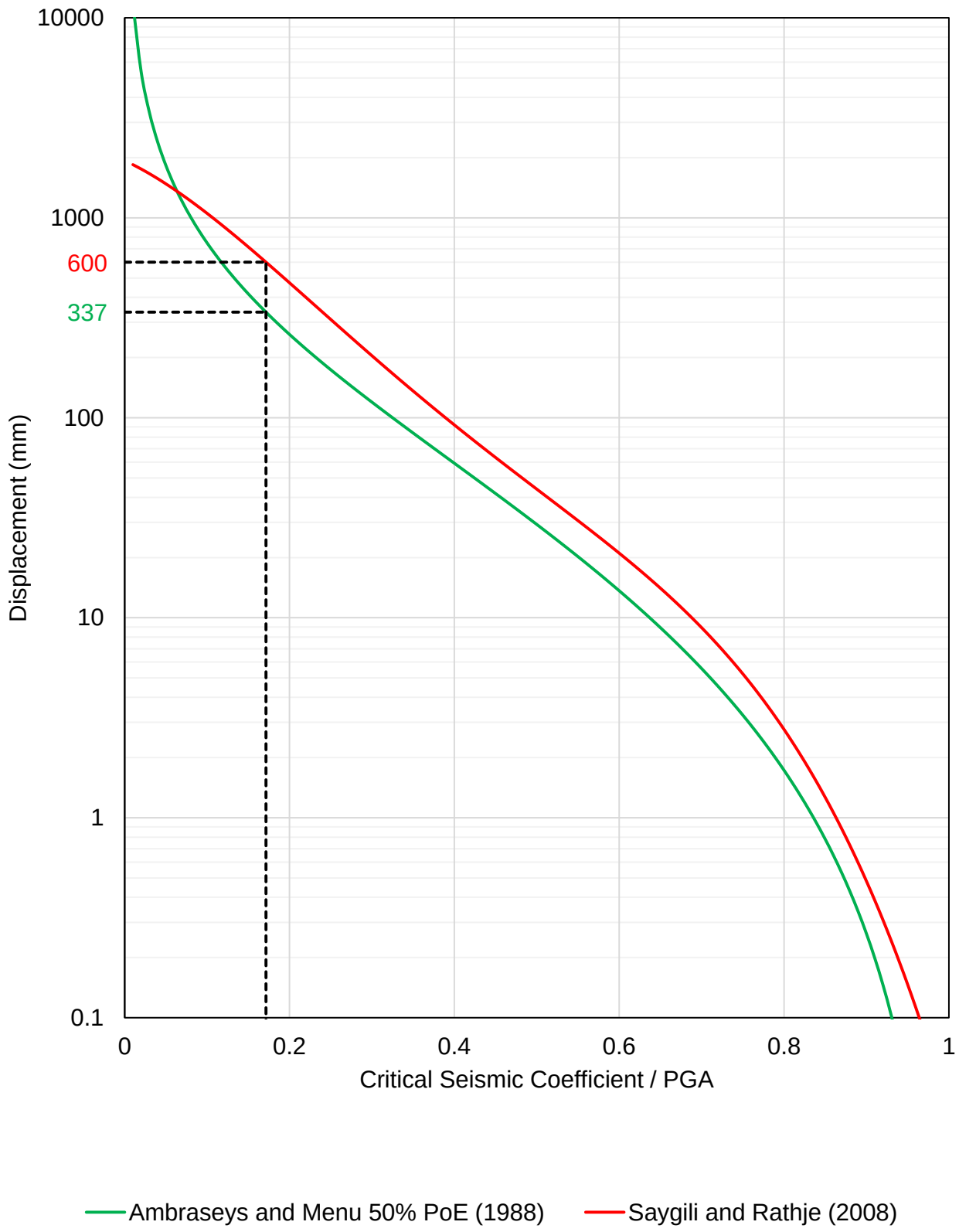
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 18B

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.12
4. PGA = 0.7

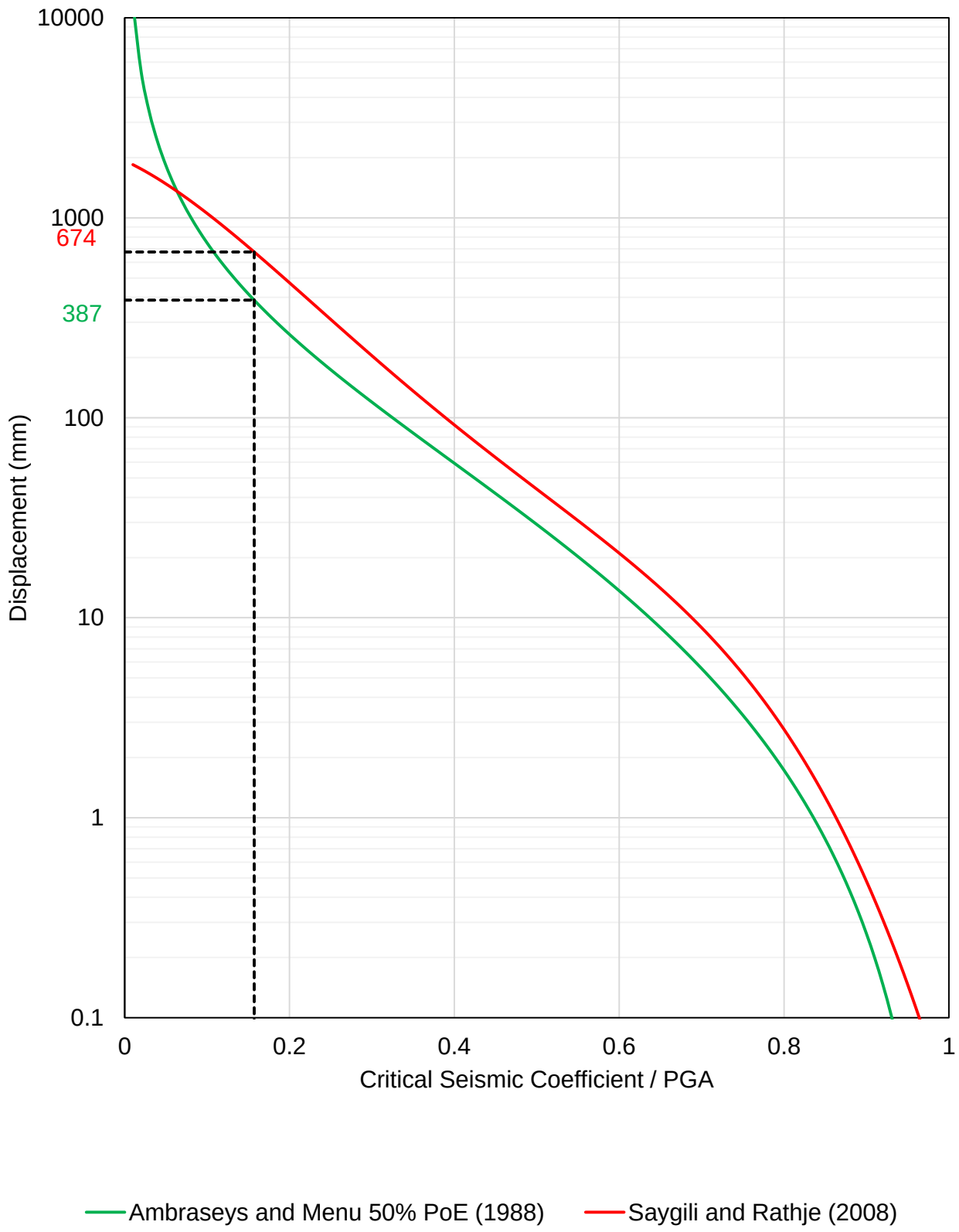
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 19

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.11
4. PGA = 0.7

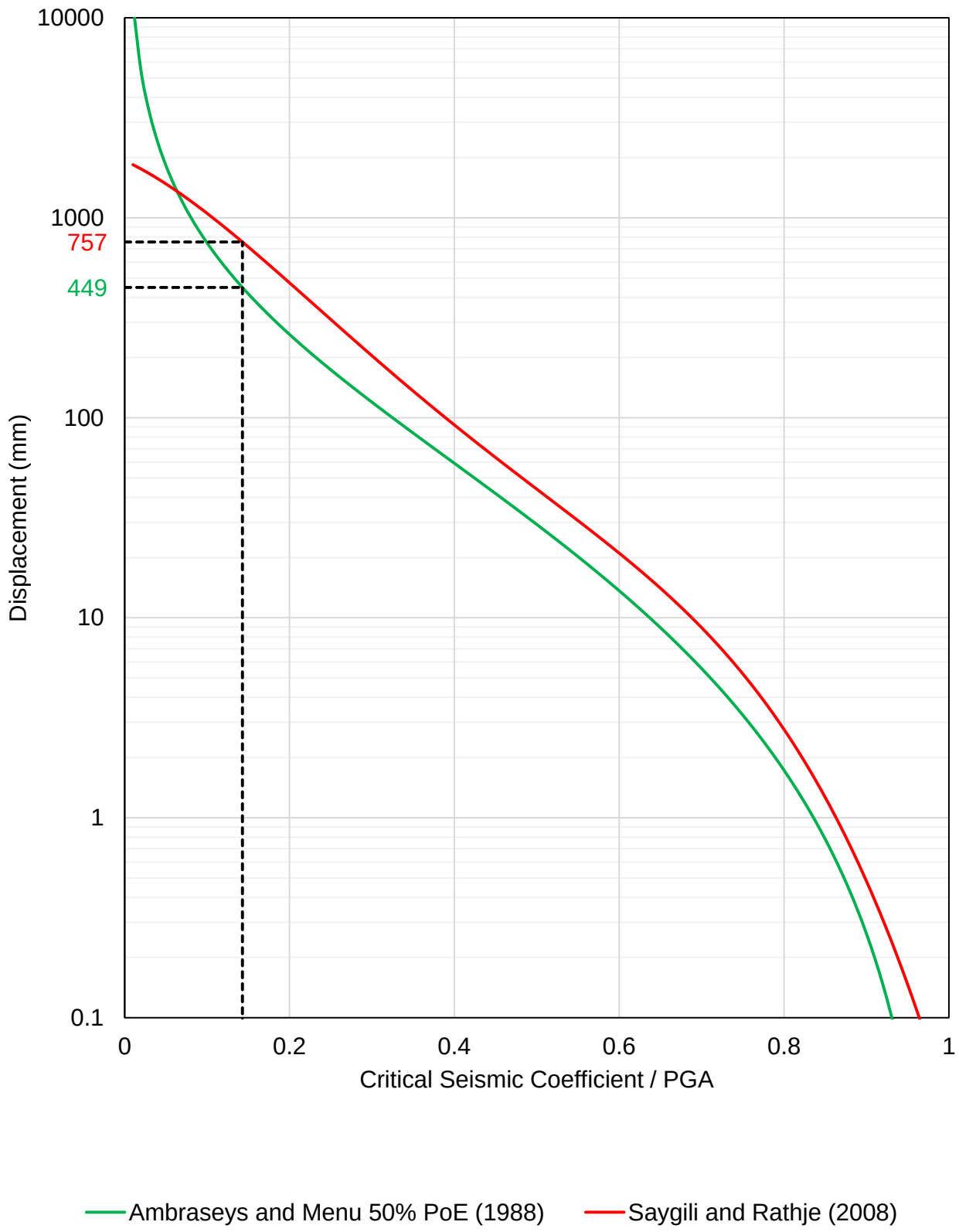
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 20

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.1
4. PGA = 0.7

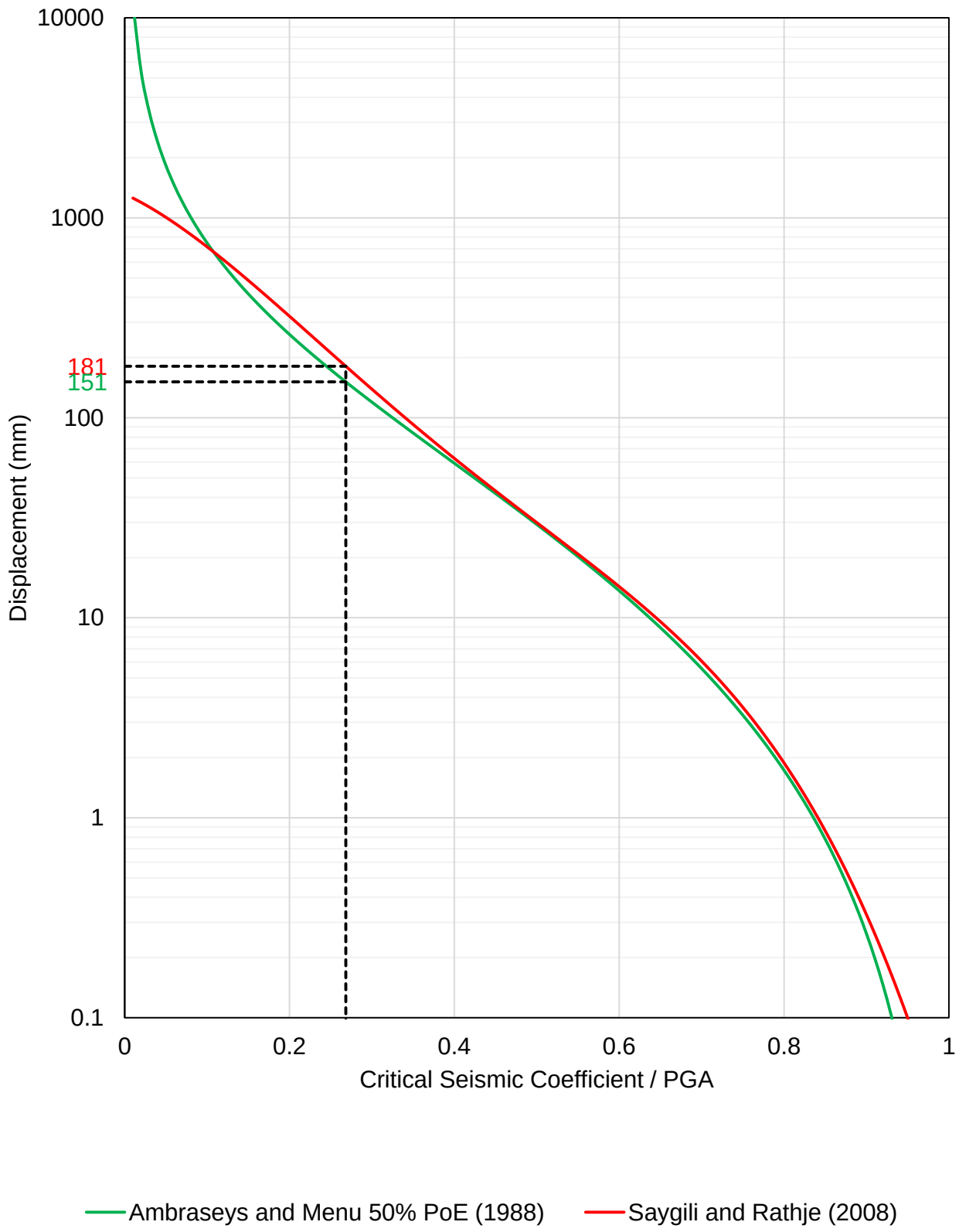
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 21

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.11
4. PGA = 0.41

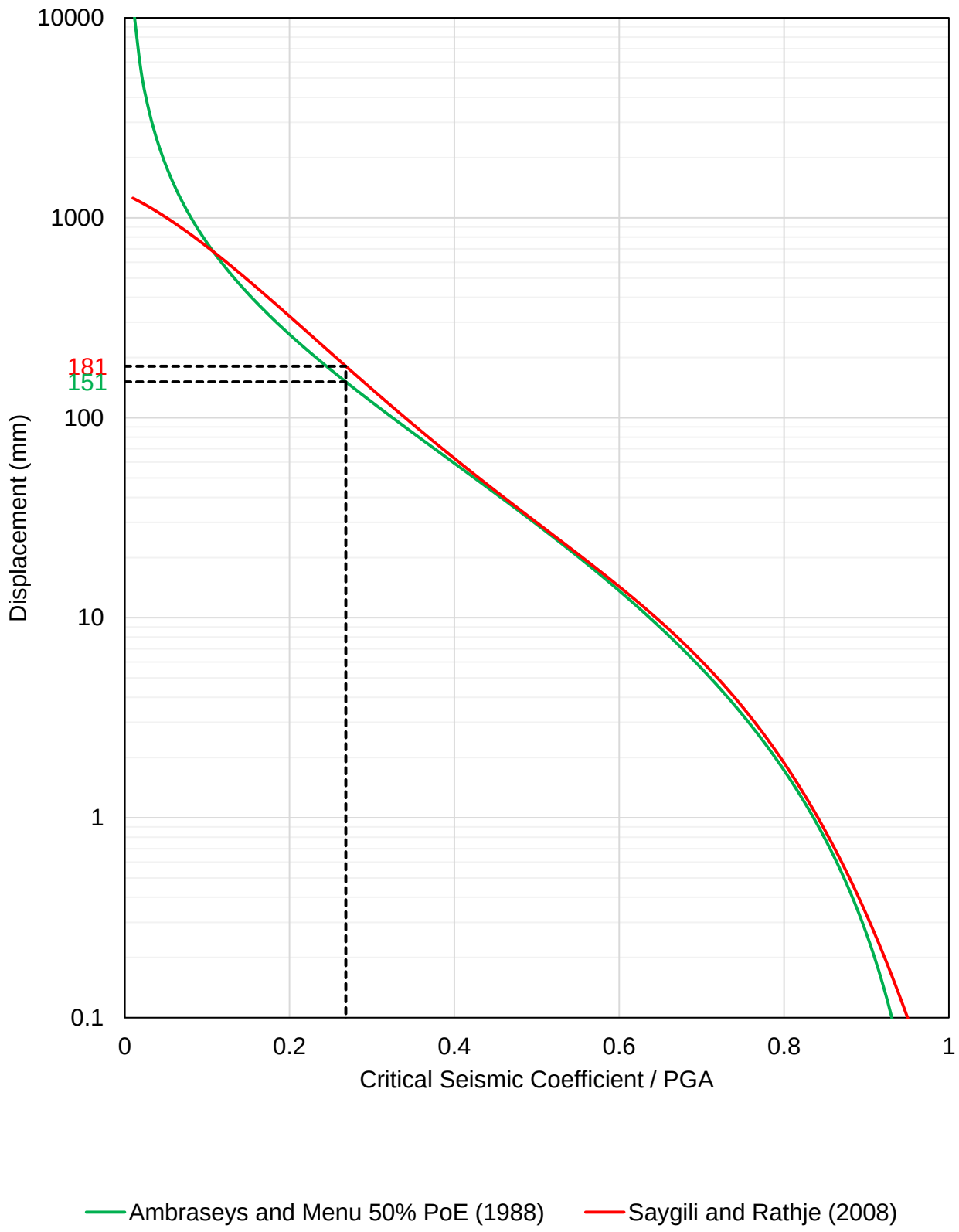
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 29

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.11
4. PGA = 0.41

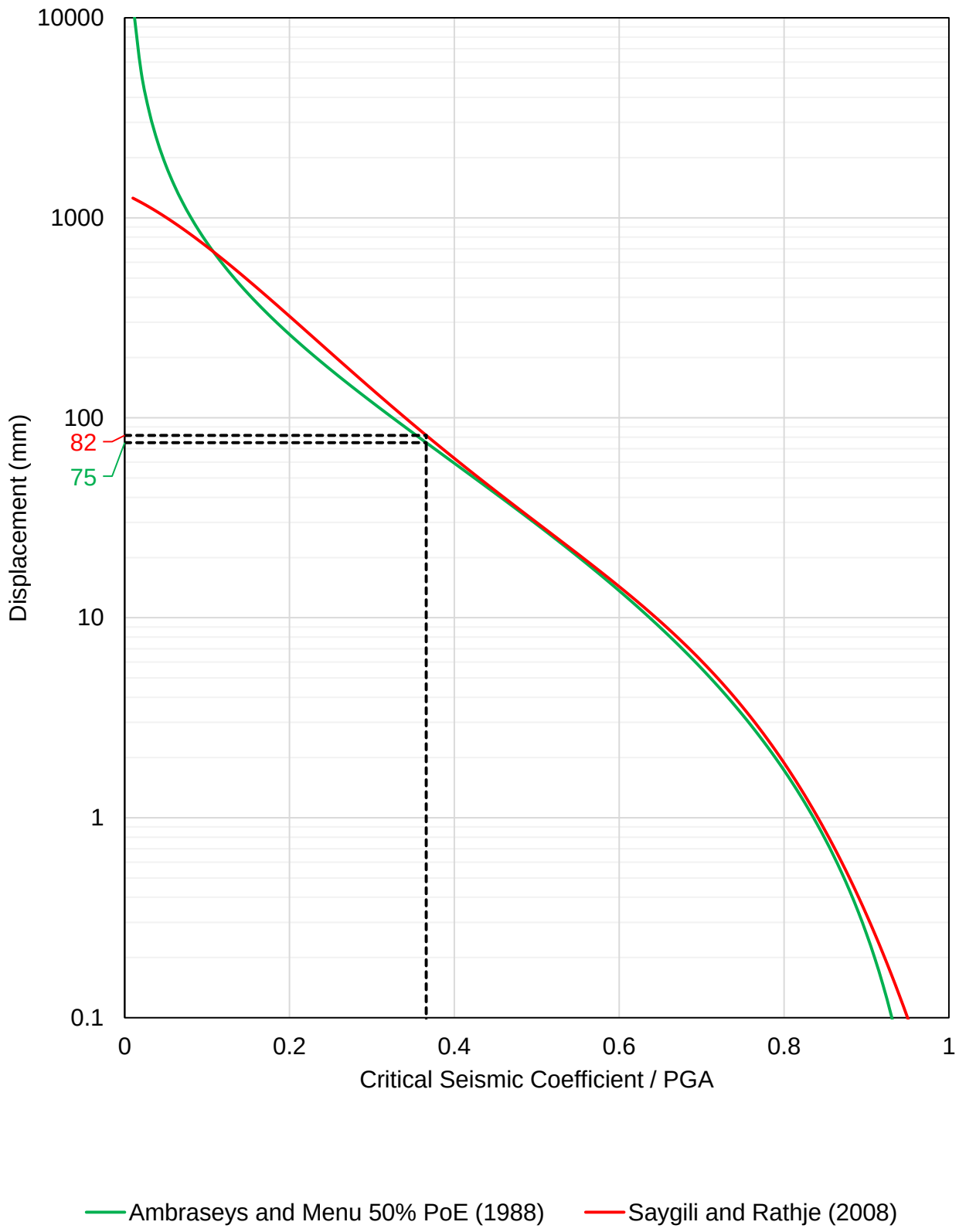
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 30

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.15
4. PGA = 0.41

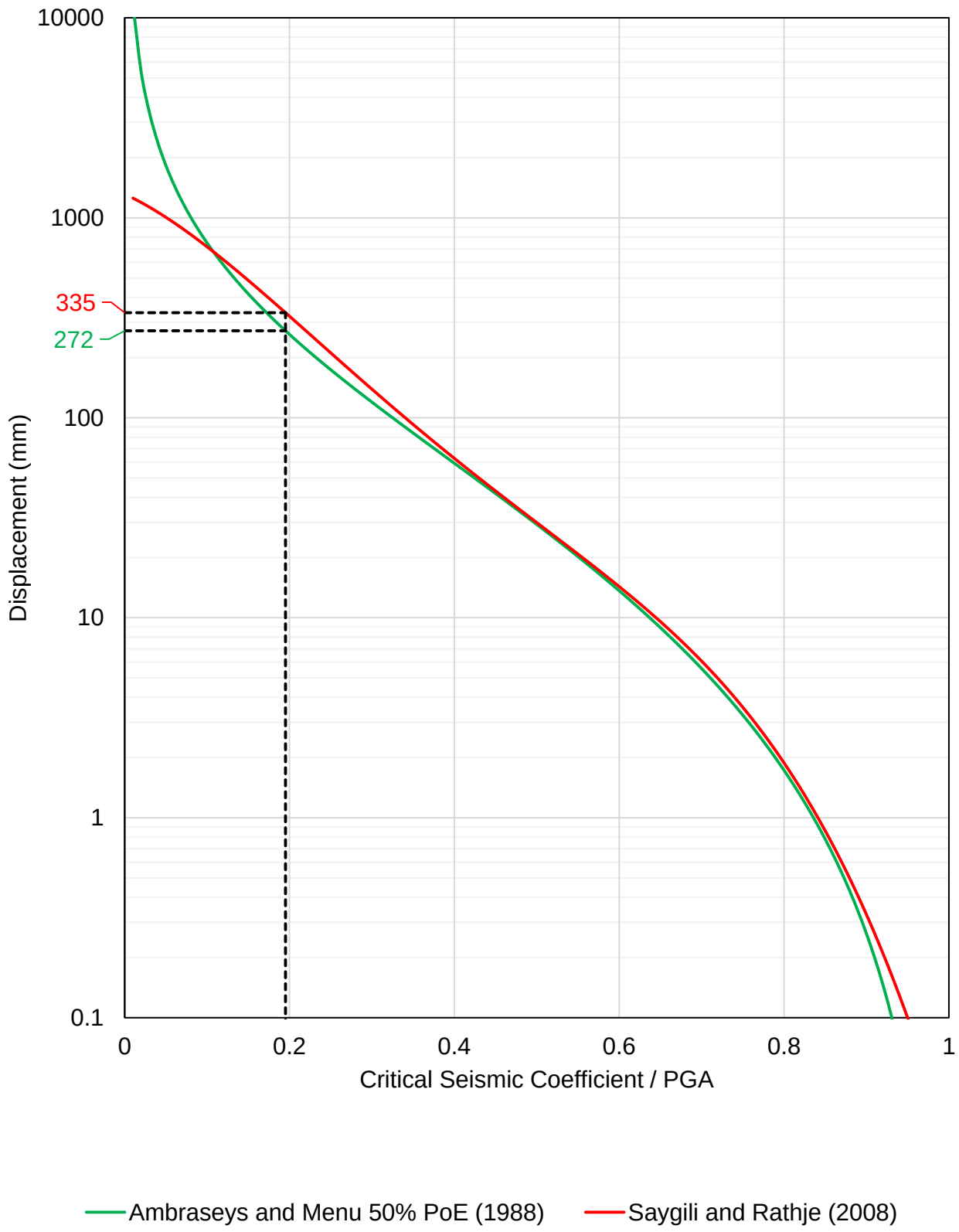
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 31

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.08
4. PGA = 0.41

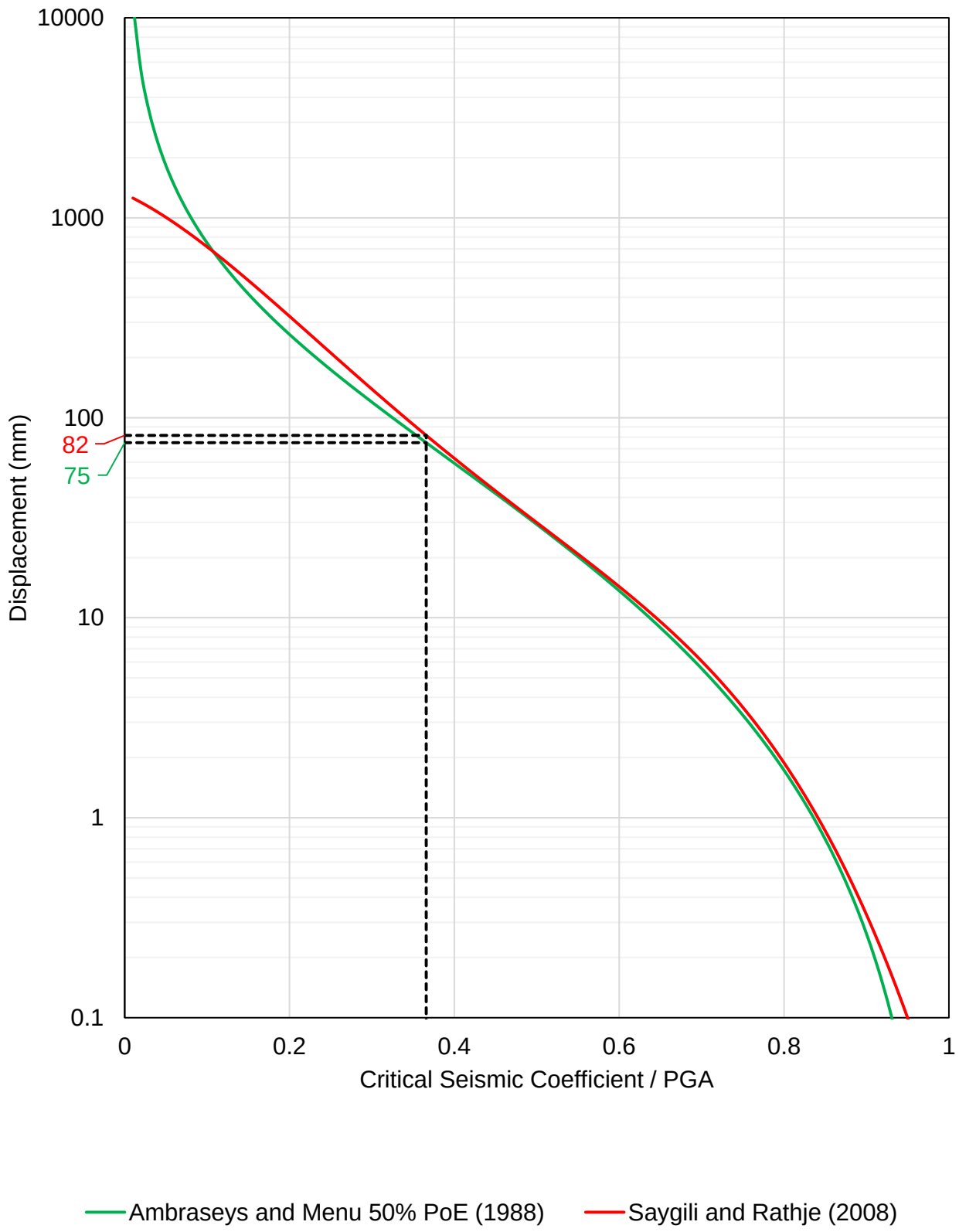
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 32

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.15
4. PGA = 0.41

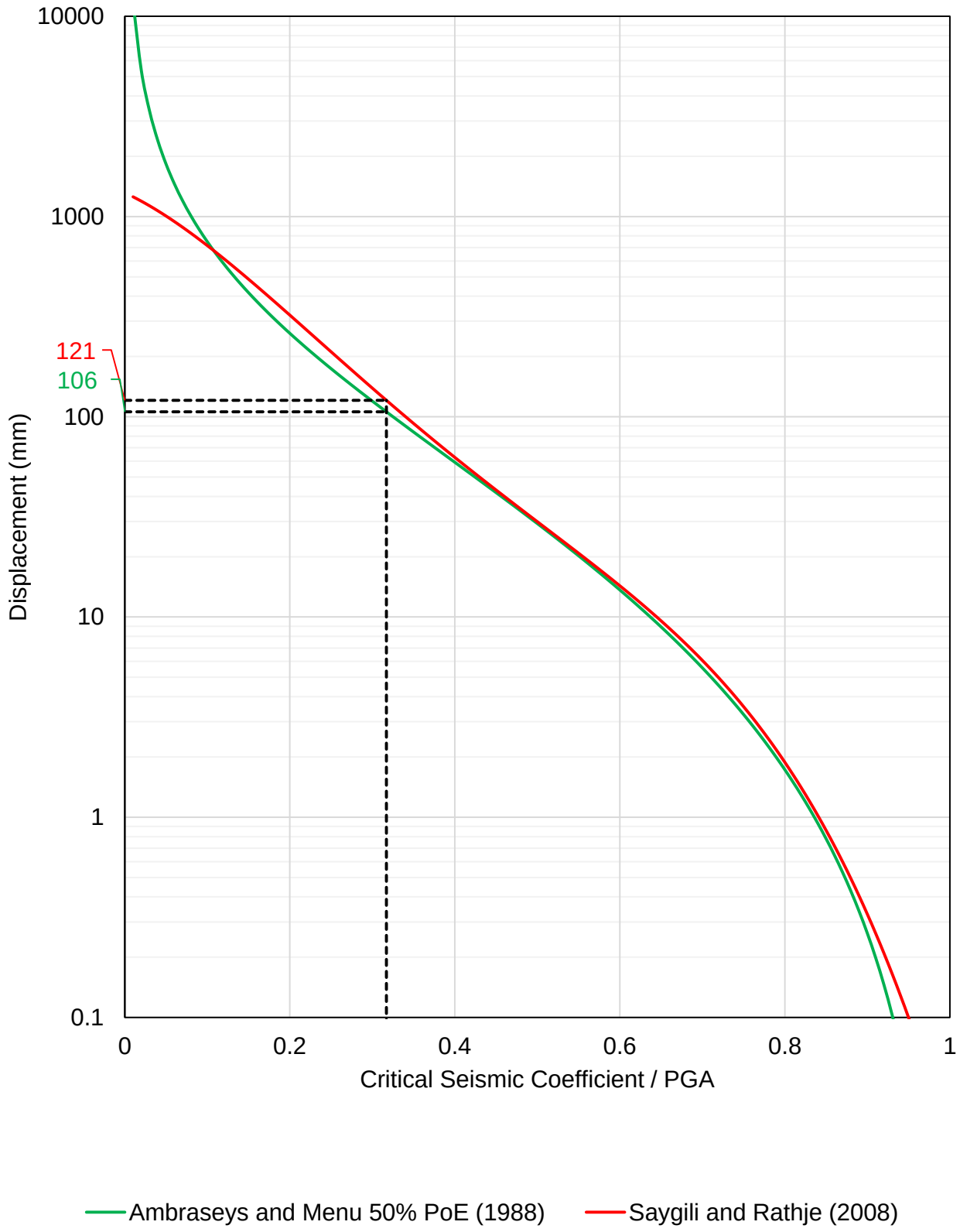
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT
SECTION 32 - RIGHT TO LEFT FAILURE

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.13
4. PGA = 0.41

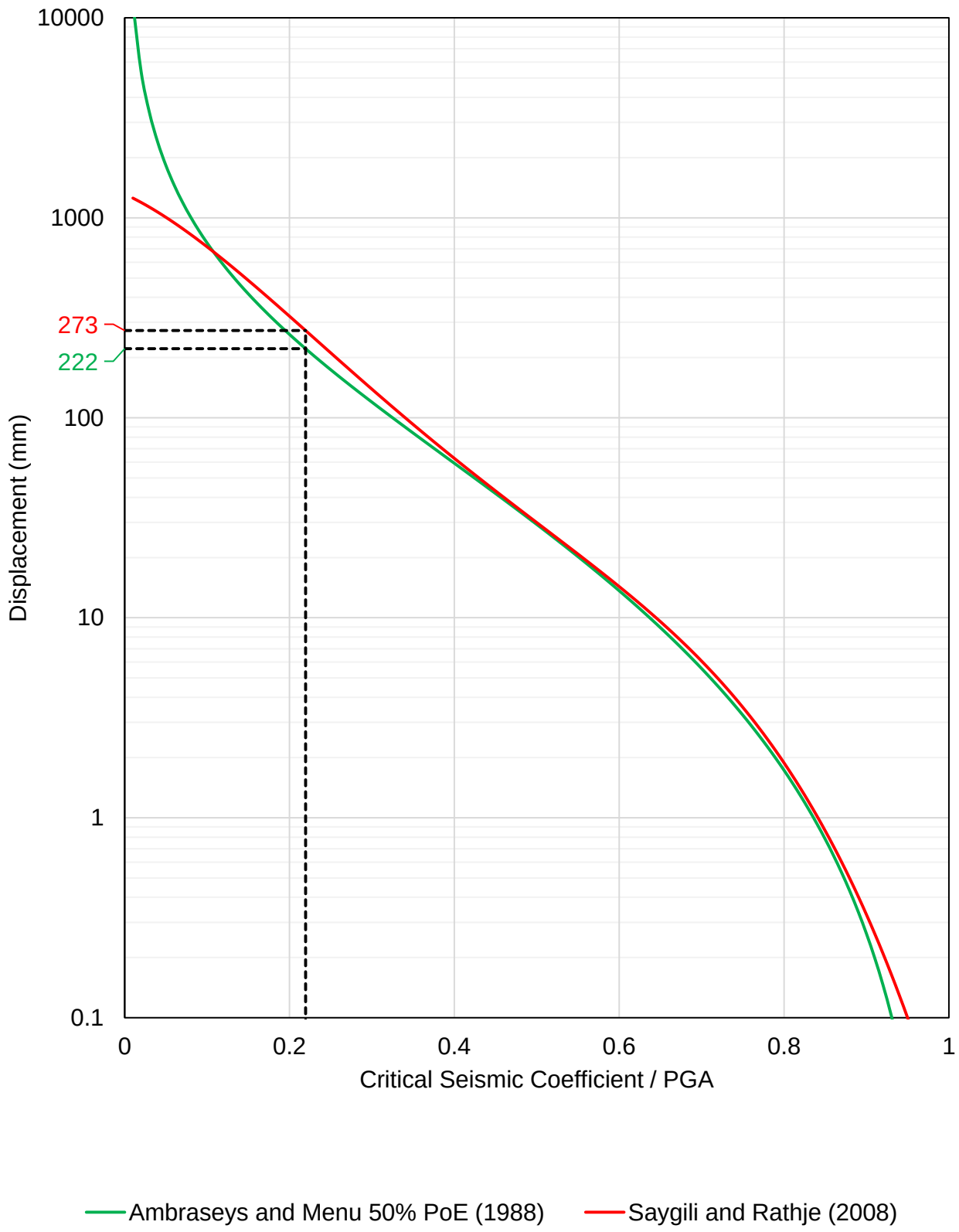
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT
SECTION 32 - CIRCULAR FAILURE

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.09
4. PGA = 0.41

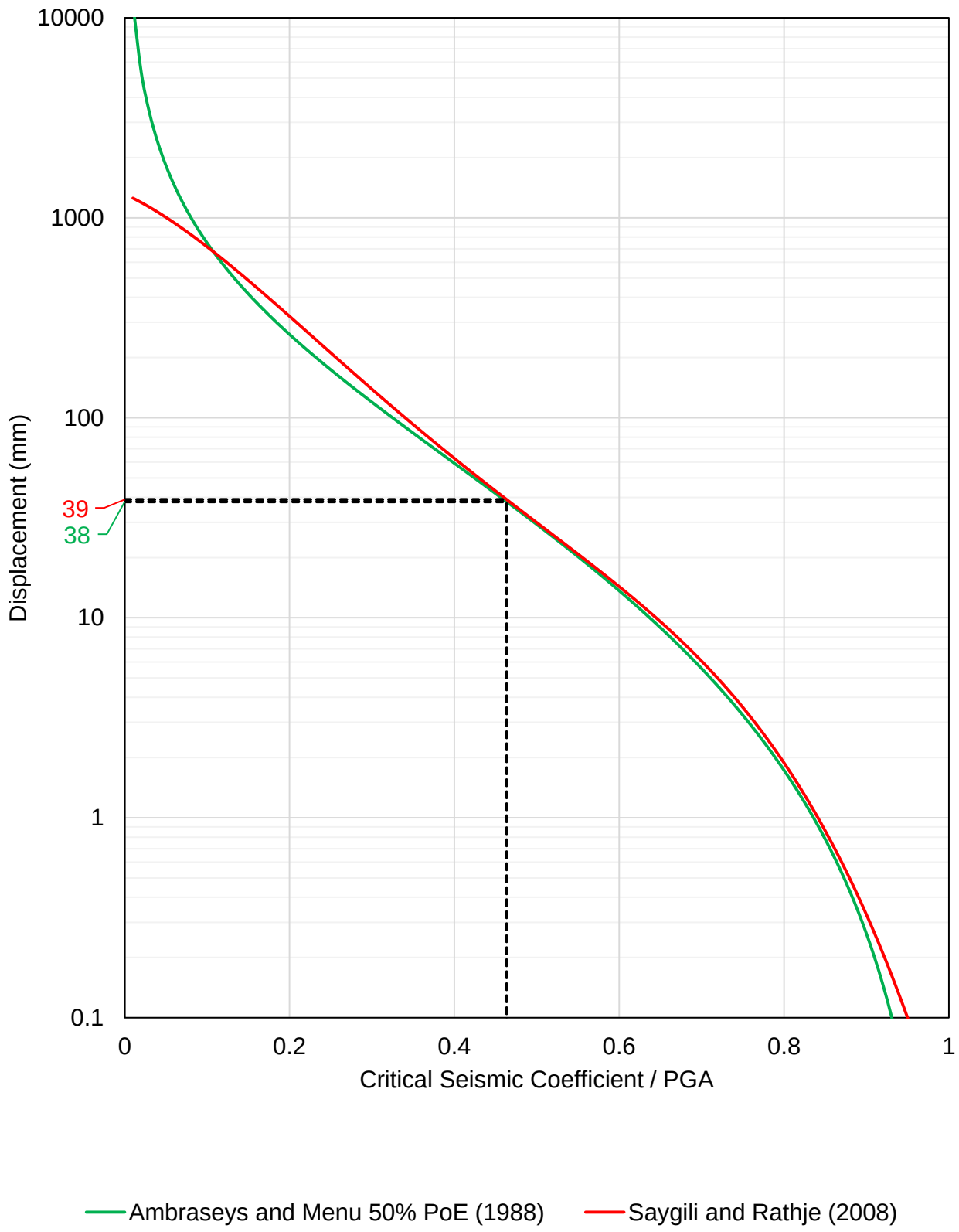
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 33

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.19
4. PGA = 0.41

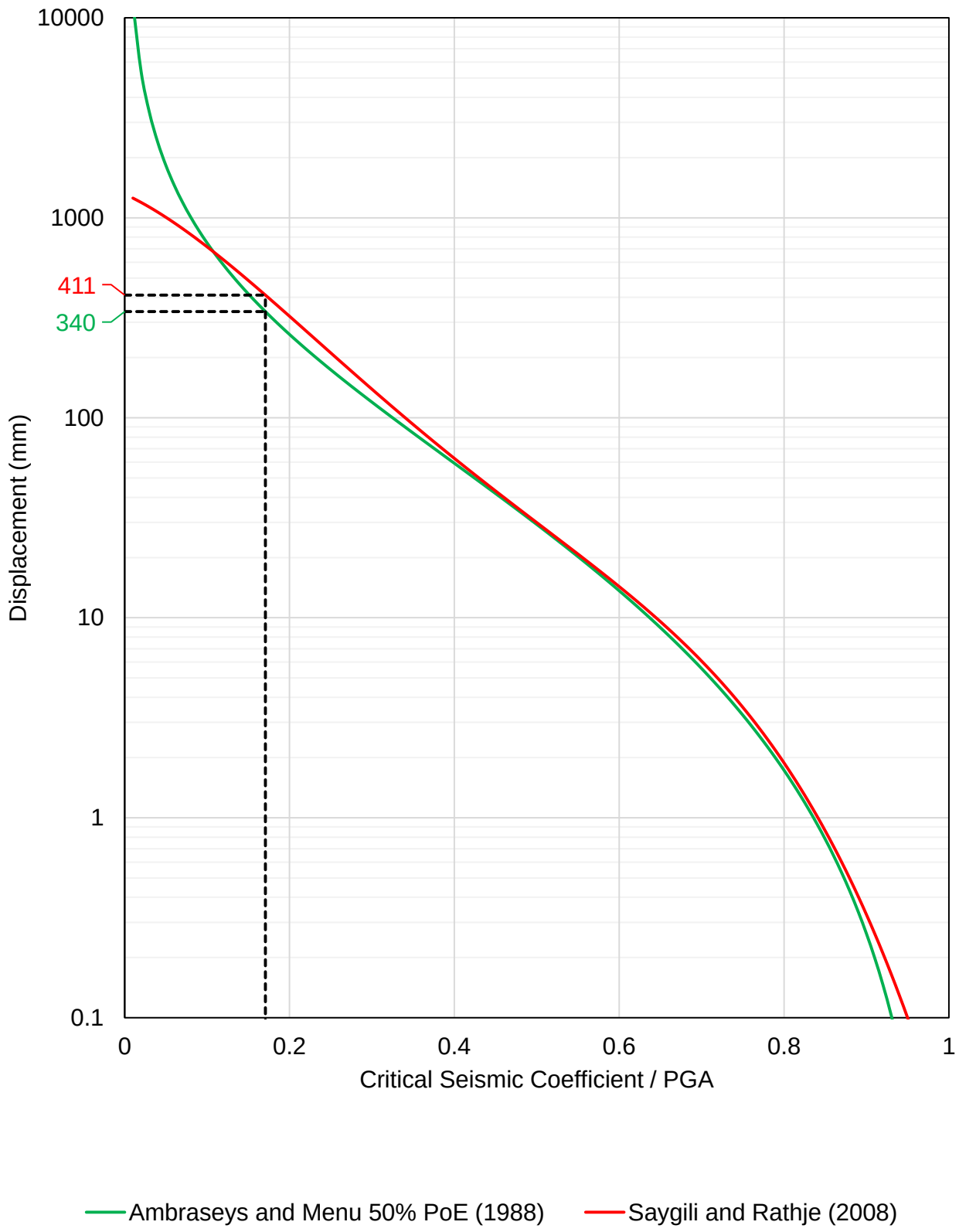
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT
SECTION 33 - RIGHT TO LEFT FAILURE

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.07
4. PGA = 0.41

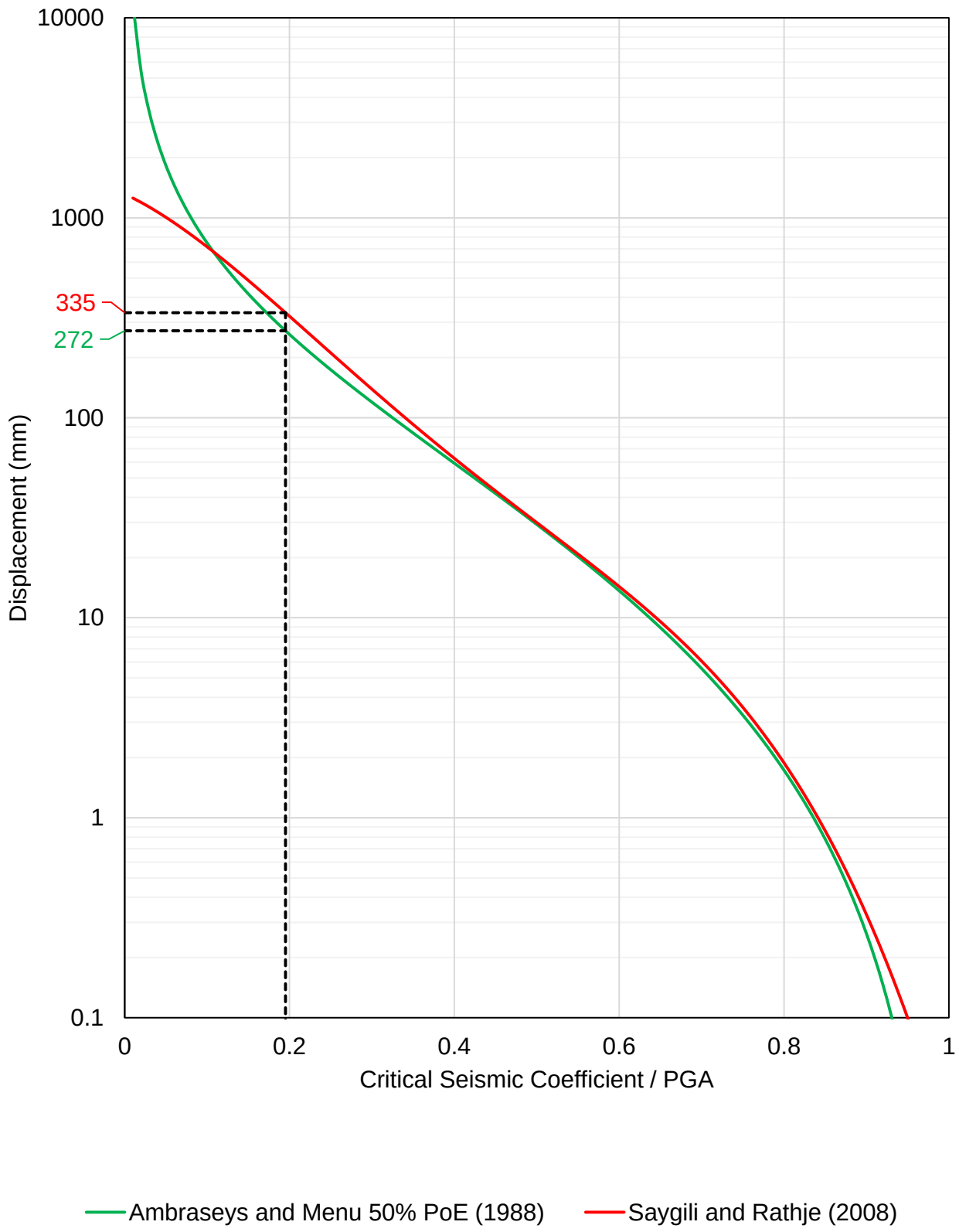
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 34

PSM4487-200R	Appendix G



Notes:

1. Assumes permanent displacement of rigid block
2. PoE = Probability of exceedance
3. Critical seismic coefficient = 0.08
4. PGA = 0.41

EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

LAKE FULL SEISMIC DISPLACEMENT ASSESSMENT - SECTION 35

PSM4487-200R	Appendix G

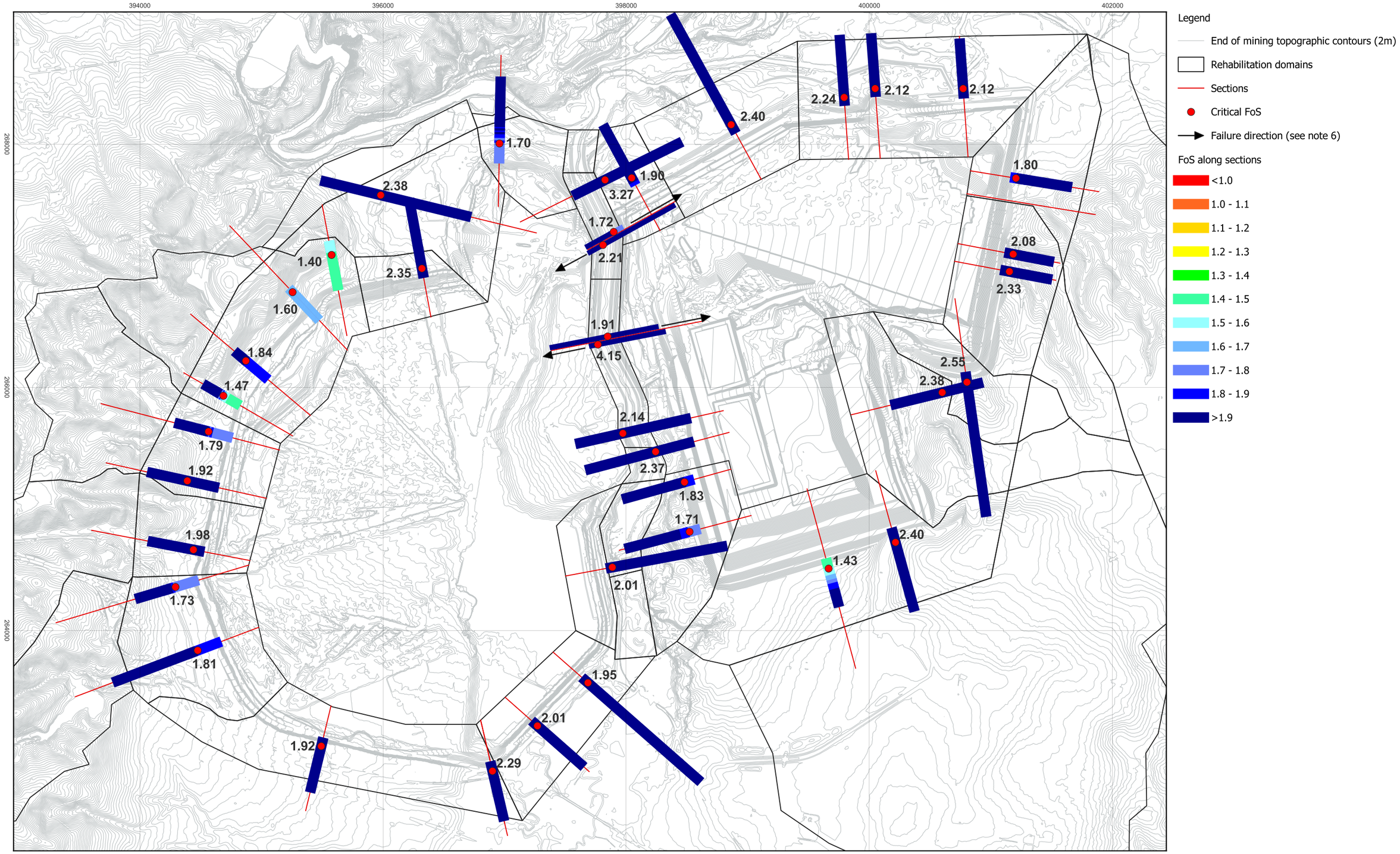
Appendix H
Stability Analyses Summary Plans and Interpretive Plots

H1. FOS summary plans

H2. FOS versus lake level plots

H3. FOS vs crest in section plots

Appendix H.1
FOS summary plans



NOTES:
1. Multilinear failure mechanism assessed
2. Pit lakes at end of mining levels
3. End of mining pore pressure conditions (domain-specific Hu)
4. Critical FoS is the minimum FoS for the section
5. The critical FoS of MRD sections is the minimum FoS that occurs within the MRD
6. Section 32 and 33 in the MRD channel analysed for slope stability in both directions

N

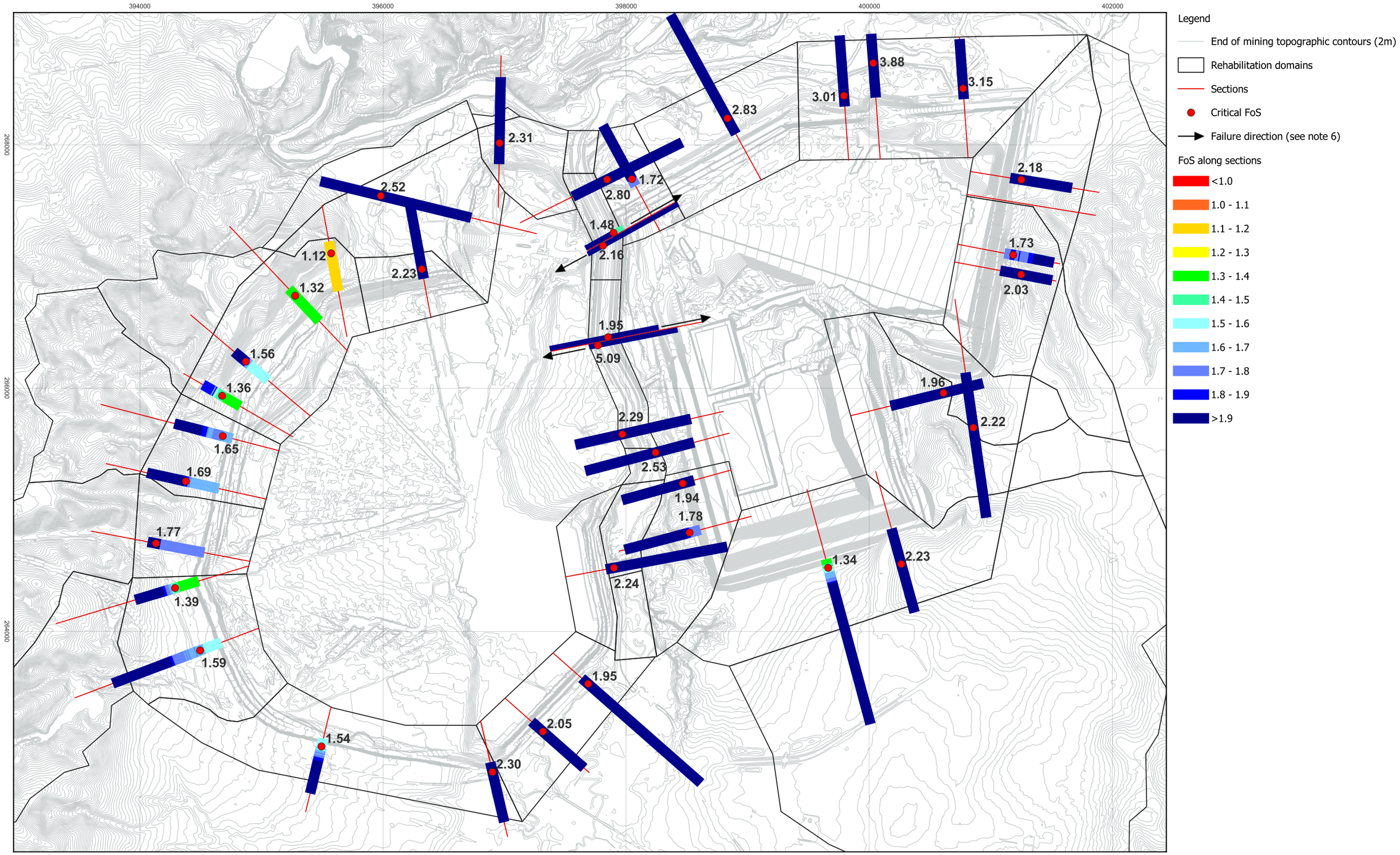
Scale 1:30,000

0 500 1,000 m

Local Mine Grid: SECV

Created By: MC	Revision: A	EnergyAustralia Yallourn Mine Rehabilitation Design Stability Analysis DISTRIBUTION OF FOS FOR MULTILINEAR FAILURE AT END OF MINING
Date: 27 Mar 2025	Paper Size: A3	PSM4487-200R / Appendix H

C:\Users\Elvis.Huang\Pells Sullivan Meynink\GIS - PSM4487\03_Figures\PSM4487-140R\FoS Along Sections.qgz Layout: A1 (No TC) - Mine Closure



NOTES:
1. Multilinear failure mechanism assessed
2. Pit lake level at RL 37m
3. Hydrostatic pore pressure conditions (Hu = 1) below piezometric line (sections 1 to 18 and 29 to 35)
4. Hydrostatic pore pressure conditions (Hu = 1) below lake level line (sections 19 to 28)
5. Critical FoS is the minimum FoS for the section
6. The critical FoS of MRD sections is the minimum FoS that occurs within the MRD
7. Section 32 and 33 in the MRD channel analysed for slope stability in both directions

N

Scale 1:30,000

0 500 1,000 m

Local Mine Grid: SECV

P S M

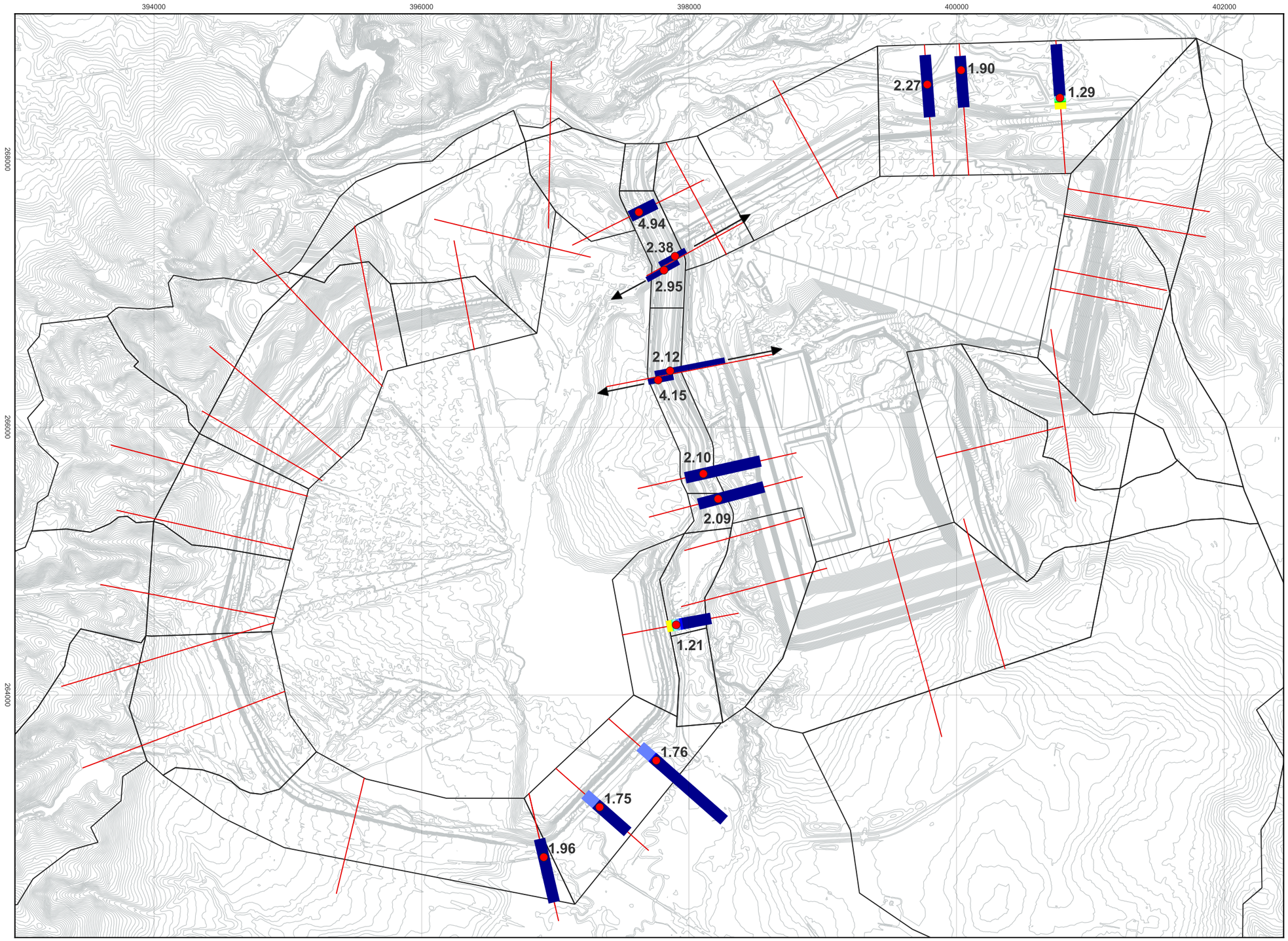
Created By:	Revision:
MC	A
Date: 27 Mar 2025	Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation Design
Stability Analysis

DISTRIBUTION OF FOS FOR MULTILINEAR FAILURE AT FINAL LAKE LEVEL

PSM4487-200R | Appendix H

C:\Users\Elvis.Huang\Pells Sullivan Meynink\GIS - PSM4487\03_Figures\PSM4487-140R\FoS Along Sections.qgz Layout: A1 (No TC) - Lake Full



Legend

- End of mining topographic contours (2m)
- Rehabilitation domains
- Sections
- Critical FoS
- Failure direction (see note 7)

FoS along sections

- <1.0
- 1.0 - 1.1
- 1.1 - 1.2
- 1.2 - 1.3
- 1.3 - 1.4
- 1.4 - 1.5
- 1.5 - 1.6
- 1.6 - 1.7
- 1.7 - 1.8
- 1.8 - 1.9
- >1.9

NOTES:
1. Block slide failure mechanism assessed
2. Pit lakes at end of mining levels
3. End of mining pore pressure conditions (domain-specific Hu)
4. Critical FoS is the minimum FoS for the section
5. Block slide results are only plotted for sections where it is feasible to have water-filled tension cracks
6. The critical FoS of MRD sections is the minimum FoS that occurs within the MRD
7. Section 32 and 33 in the MRD channel was analysed for slope stability in both directions

N

Scale 1:30,000

0 500 1,000 m

Local Mine Grid: SECV

P S M

Created By: MC

Revision: A

Date: 27 Mar 2025

Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation Design
Stability Analysis

DISTRIBUTION OF FOS FOR
BLOCK SLIDE FAILURE AT
END OF MINING

PSM4487-200R

Appendix H

C:\Users\Elvis.Huang\Pells Sullivan Meyrinki\GIS - PSM4487\03_Figures\PSM4487-140R\FoS Along Sections.qgz Layout: A4 (Filled TC) - Mine Closure

394000 396000 398000 400000 402000

288000 286000 284000

22.83 15.41 5.71 4.81 12.22 60.34 4.86 4.98 4.28 5.43 2.13 2.69 2.21 1.93

Legend

End of mining topographic contours (2m)

Rehabilitation domains

Sections

Critical FoS

Failure direction (see note 7)

FoS along sections

- <1.0
- 1.0 - 1.1
- 1.1 - 1.2
- 1.2 - 1.3
- 1.3 - 1.4
- 1.4 - 1.5
- 1.5 - 1.6
- 1.6 - 1.7
- 1.7 - 1.8
- 1.8 - 1.9
- >1.9

NOTES:
1. Block slide failure mechanism assessed
2. Pit lake level at RL 37m
3. Hydrostatic pore pressure conditions (Hu = 1) below piezometric line
4. Critical FoS is the minimum FoS for the section
5. Block slide results are only plotted for sections where it is feasible to have water-filled tension cracks
6. The critical FoS of MRD sections is the minimum FoS that occurs within the MRD
7. Section 32 and 33 in the MRD channel was analysed for slope stability in both directions

N

Scale 1:30,000

0 500 1,000 m

Local Mine Grid: SECV

P S M

Created By:	Revision:
MC	A
Date: 27 Mar 2025	Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation Design
Stability Analysis

DISTRIBUTION OF FOS FOR BLOCK SLIDE FAILURE AT FINAL LAKE LEVEL

PSM4487-200R | Appendix H

C:\Users\Elvis.Huang\Pells Sullivan Meyrinki\GIS - PSM4487\03_Figures\PSM4487-140R\FoS Along Sections.qgz Layout: A4 (Filled TC) - Lake at 37 mRL

394000 396000 398000 400000 402000

268000 266000 264000

1.87
1.75
1.26
0.85
1.13
1.20
1.04
1.56
1.26
1.84
1.30
1.40

Legend

End of mining topographic contours (2m)

Rehabilitation domains

Sections

Critical FoS

FoS along sections

<1.0
1.0 - 1.1
1.1 - 1.2
1.2 - 1.3
1.3 - 1.4
1.4 - 1.5
1.5 - 1.6
1.6 - 1.7
1.7 - 1.8
1.8 - 1.9
>1.9

NOTES:
1. Block slide failure mechanism assessed
2. Pit lakes at end of mining levels
3. End of mining pore pressure conditions (domain-specific Hu)
4. Critical FoS is the minimum FoS for the section
5. Block slide results are only plotted for sections where it is feasible to have water-filled tension cracks

N

Scale 1:30,000

0 500 1,000 m

Local Mine Grid: SECV

P S M

Created By: MC

Revision: A

Date: 27 Mar 2025

Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation Design
Stability Analysis

DISTRIBUTION OF FOS FOR BLOCK SLIDE FAILURE AT END OF MINING

PSM4487-200R

Appendix H

C:\Users\Elvis Huang\Pells Sullivan Meyminh\GIS - PSM4487\03_Figures\PSM4487-140R\FoS Along Sections.qgz Layout: A4 (Filled TC) - Mine Closure Additional Sections

394000
396000
398000
400000
402000
288000
266000
244000

1.44
1.45
1.06
0.63
0.86
1.06
0.74
2.50
1.17
1.60
1.32
1.48

Legend

End of mining topographic contours (2m)

Rehabilitation domains

Sections

Critical FoS

FoS along sections

- <1.0
- 1.0 - 1.1
- 1.1 - 1.2
- 1.2 - 1.3
- 1.3 - 1.4
- 1.4 - 1.5
- 1.5 - 1.6
- 1.6 - 1.7
- 1.7 - 1.8
- 1.8 - 1.9
- >1.9

NOTES:
1. Block slide failure mechanism assessed
2. Pit lake level at RL 37m
3. Hydrostatic pore pressure conditions (Hu = 1) below piezometric line
4. Critical FoS is the minimum FoS for the section
5. Block slide results are only plotted for sections where it is feasible to have water-filled tension cracks

N

Scale 1:30,000

0 500 1,000 m

Local Mine Grid: SECV

P S M	Created By: MC	Revision: A	EnergyAustralia Yallourn Mine Rehabilitation Design Stability Analysis
	Date: 27 Mar 2025	Paper Size: A3	DISTRIBUTION OF FOS FOR BLOCK SLIDE FAILURE AT FINAL LAKE LEVEL
			PSM4487-200R | Appendix H

C:\Users\Elvis.Huang\Pells Sullivan Meyninki\GIS - PSM4487\03_Figures\PSM4487-140R\FoS Along Sections.qgz Layout: A4 (Filled TC) - Lake at 37 Additional Sections

394000 396000 398000 400000 402000

288000 266000 264000

1.53 1.79 1.48 1.21 2.12 1.59 1.93 1.69 2.44 1.79 1.98 1.27 1.63 1.64 1.13 1.25 1.59 1.36 1.78 1.70 1.78 0.99 0.98

Legend

End of mining topographic contours (2m)

Rehabilitation domains

Sections

Critical FoS

Failure direction (see note 7)

FoS along sections

- <1.0
- 1.0 - 1.1
- 1.1 - 1.2
- 1.2 - 1.3
- 1.3 - 1.4
- 1.4 - 1.5
- 1.5 - 1.6
- 1.6 - 1.7
- 1.7 - 1.8
- 1.8 - 1.9
- >1.9

Overall domain consequence rating - EOM

- Severity 1 - Insignificant
- Severity 2 - Minor
- Severity 3 - Moderate
- Severity 4 - Major
- Severity 5 - Critical

NOTES:
1. Pseudostatic limit equilibrium analysis with domain-specific 30-year design intent period PGA.
2. Mean interseam shear strengths (18°)
3. End of mining pore pressure conditions (domain-specific Hu)
4. Pit lakes at end of mining levels
5. Seismic results analysed for sections with a consequence factor equal to or greater than 4
6. Critical FoS is the minimum FoS for the section and the critical FoS of MRD sections is the minimum FoS that occurs within the MRD
7. Section 32 and 33 in the MRD channel was analysed for slope stability in both directions

N

Scale 1:30,000

0 500 1,000 m

Local Mine Grid: SECV

P S M

Created By: MC

Revision: A

Date: 27 Mar 2025

Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation Design
Stability Analysis

DISTRIBUTION OF FOS FOR CRITICAL FAILURE MECHANISM AT END OF MINING & 30 YEAR SEISMIC LOAD

PSM4487-200R

Appendix H

C:\Users\Elvis.Huang\Pells Sullivan Meynink\GIS - PSM4487\03_Figures\PSM4487-140R\FoS Along Sections.qgz Layout: Critical Failure Mechanism EOM

394000 396000 398000 400000 402000

288000 286000 284000

0.60 0.76 0.62 0.69 0.57 0.78 0.55 0.96 0.36 0.40 0.98 0.94 0.48 0.47 0.45 0.48 0.56 0.45 0.38 0.68 0.45 0.36 0.66 1.04 1.01 0.68

Legend

End of mining topographic contours (2m)

Rehabilitation domains

Sections

Critical FoS

Failure direction (see note 8)

FoS along sections

- <1.0
- 1.0 - 1.1
- 1.1 - 1.2
- 1.2 - 1.3
- 1.3 - 1.4
- 1.4 - 1.5
- 1.5 - 1.6
- 1.6 - 1.7
- 1.7 - 1.8
- 1.8 - 1.9
- >1.9

Empirical co-seismic displacement (see note 7)

- 500-1000mm
- 200-500mm
- 100-200mm
- 50-100mm
- <50mm

Overall domain consequence rating - Lake full

- Severity 1 - Insignificant
- Severity 2 - Minor
- Severity 3 - Moderate
- Severity 4 - Major
- Severity 5 - Critical

NOTES:
1. Pseudostatic limit equilibrium analysis and co-seismic displacement estimate with domain-specific 100-year design intent period PGA.
2. Mean interseam shear strengths (18°).
3. Hydrostatic pore pressure conditions (Hu=1) below piezometric line for sections 1 to 18 and 29 to 35, and below lake level for sections 19 to 28.
4. Final pit lake level (RL37m).
5. Seismic results analysed for sections with a consequence factor equal to or greater than 3.
6. Critical FoS is the minimum FoS for the section and the critical FoS of MRD sections is the minimum FoS that occurs within the MRD.
7. Maximum co-seismic displacement of either Ambraseys and Menu (1988) or Saygili and Rathje (2008) presented for sections with a FoS < 1.
8. Section 32 and 33 in the MRD channel was analysed for slope stability in both directions.

N

Scale 1:30,000

0 500 1,000 m

Local Mine Grid: SECV

P S M

Created By: MC

Revision: A

Date: 27 Mar 2025

Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation Design
Stability Analysis

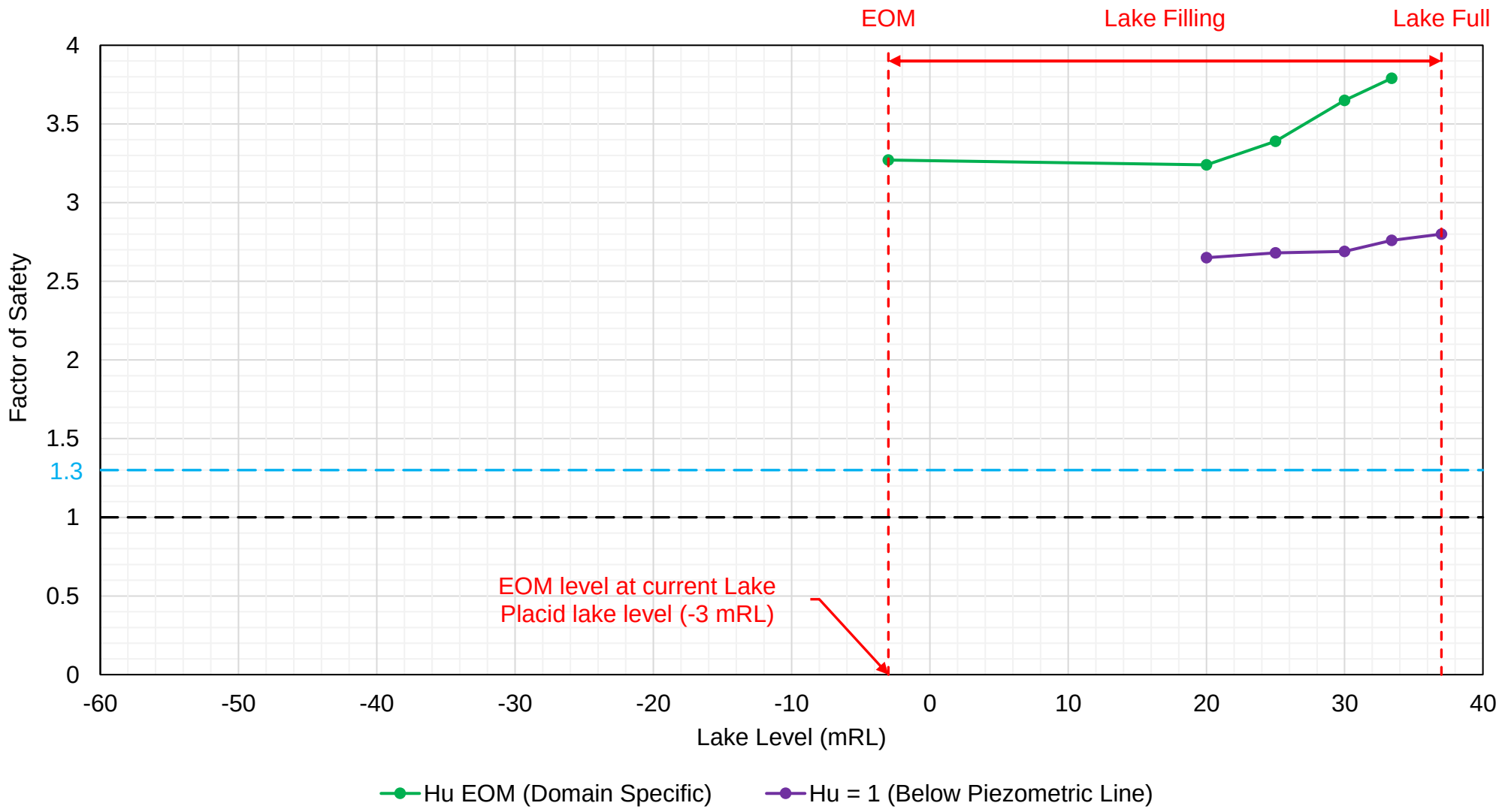
DISTRIBUTION OF FOS FOR CRITICAL FAILURE MECHANISM POST LAKE FILLING & 100 YEAR SEISMIC LOAD

PSM4487-200R

Appendix H

C:\Users\Elvis.Huang\Pells Sullivan Meyninki\GIS - PSM4487703_Figures\PSM4487-140R\FoS Along Sections.qgz Layout: Empirical Newmark Lake Full - combined with FoS

Appendix H.2
FOS versus lake level plots



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

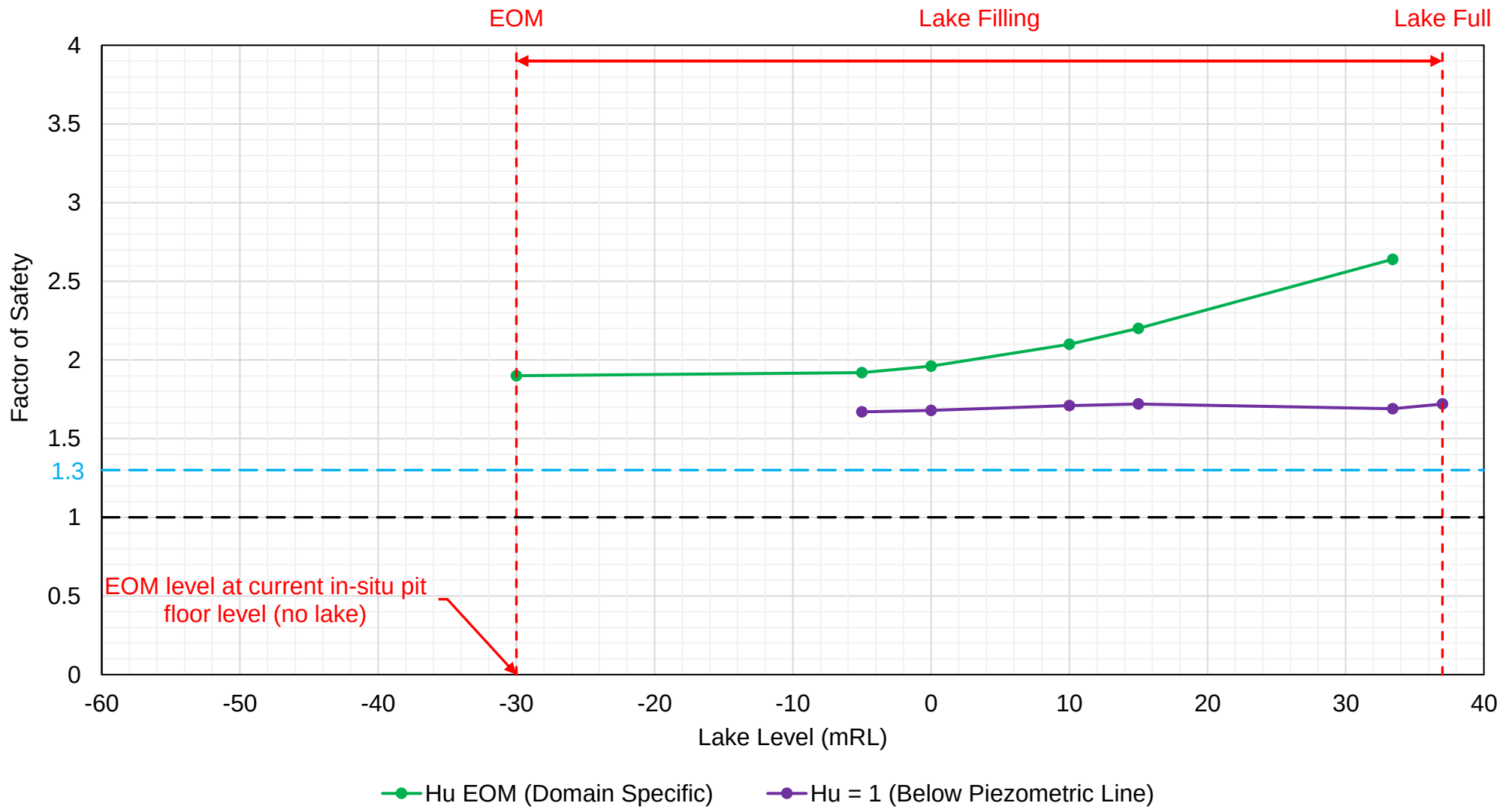
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 1

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

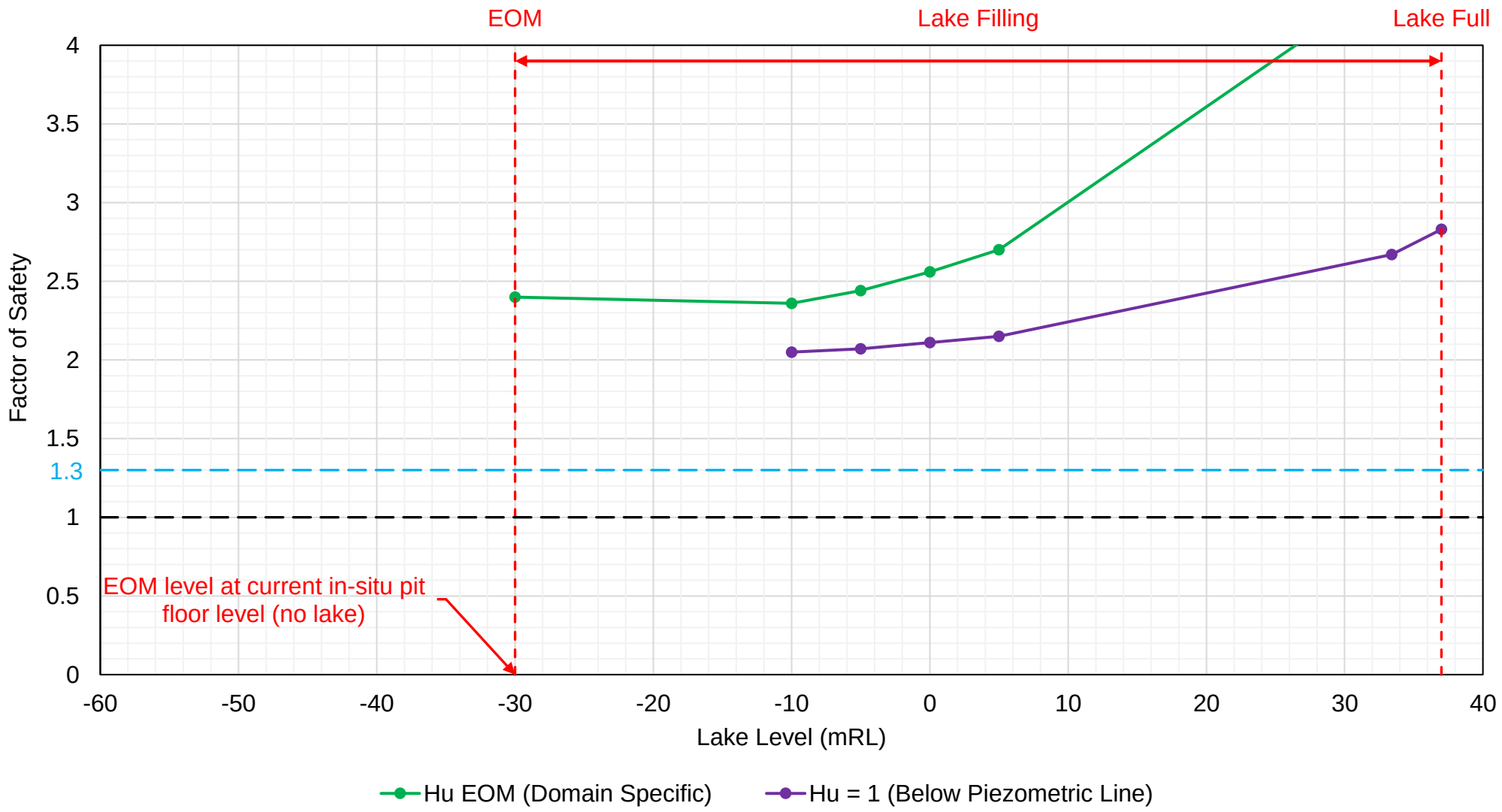
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 2

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear
2. FoS > 4.0 is not displayed on plot

EnergyAustralia

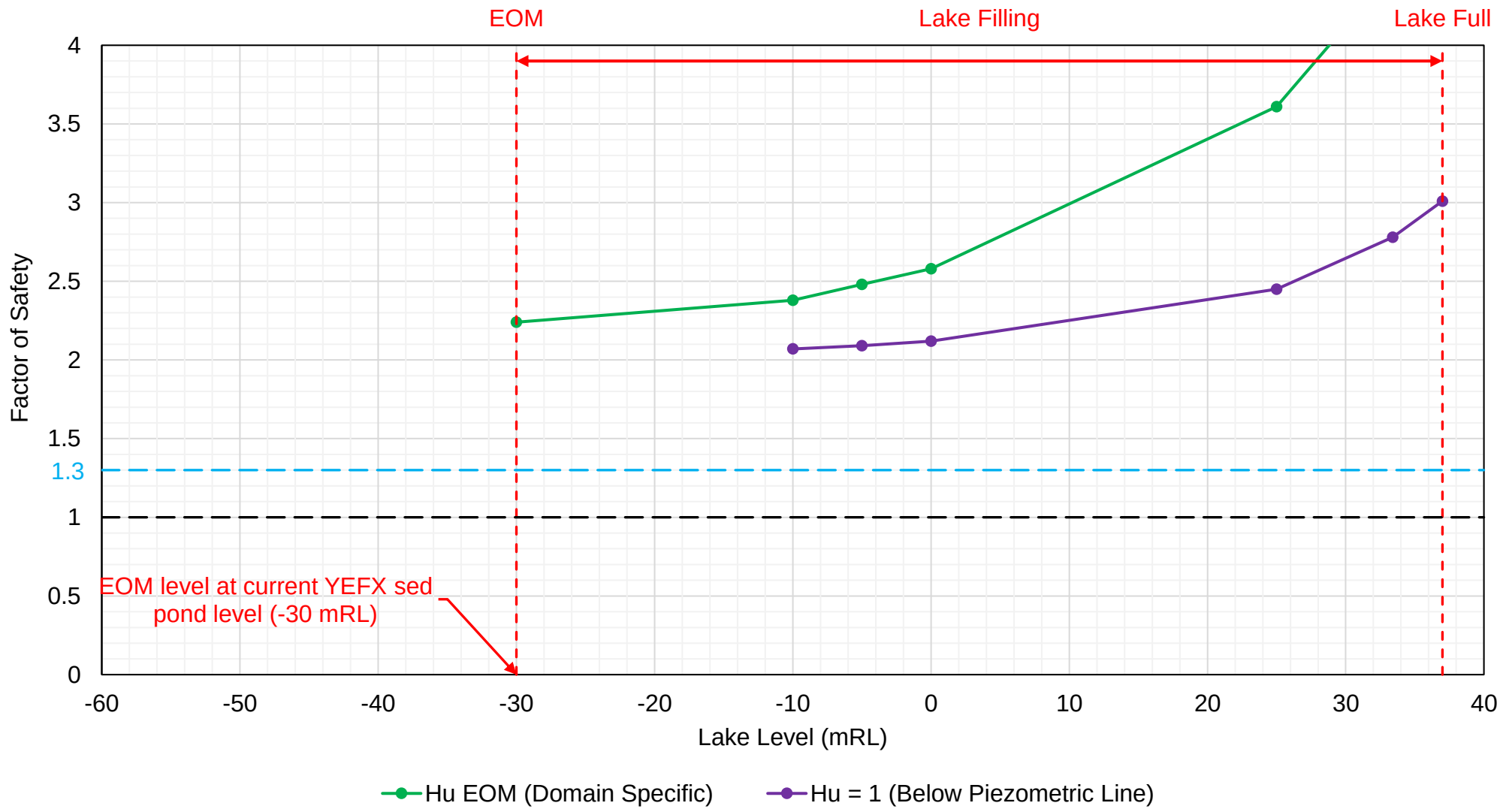
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 3

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear
2. FoS > 4.0 is not displayed on plot

EnergyAustralia

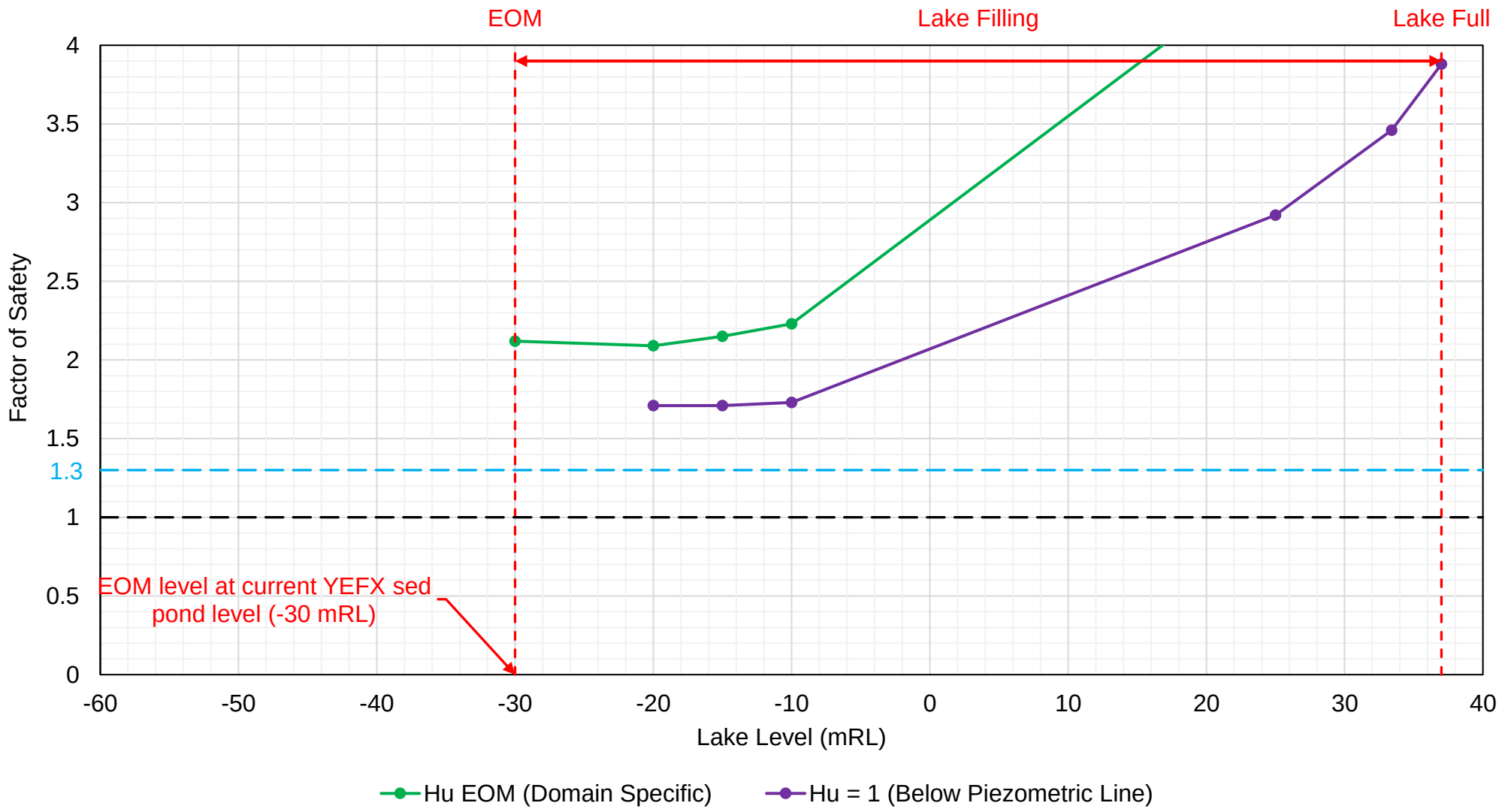
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 4

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear
2. FoS > 4.0 is not displayed on plot

EnergyAustralia

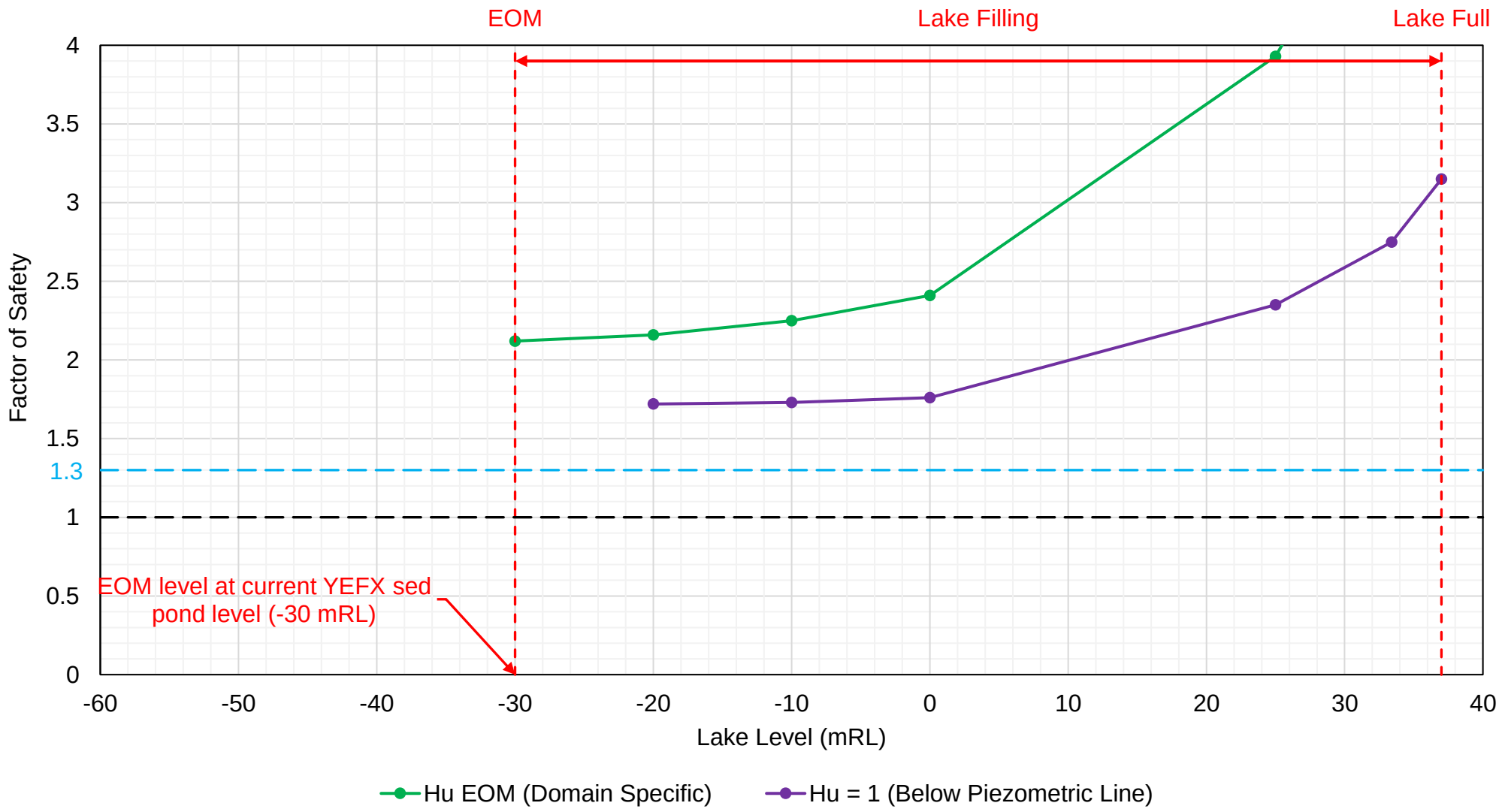
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 5

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear
2. FoS > 4.0 is not displayed on plot

EnergyAustralia

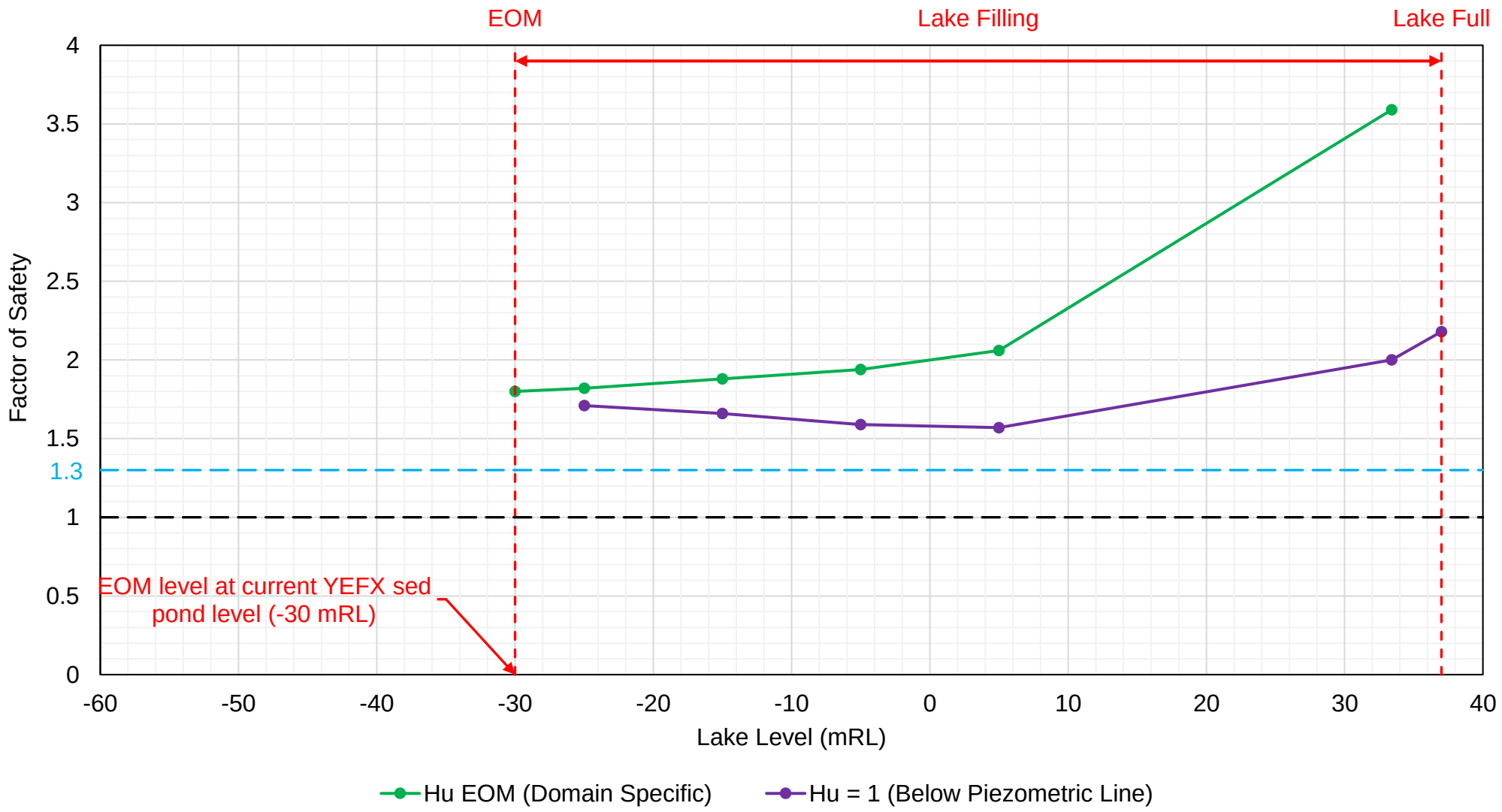
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 6

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

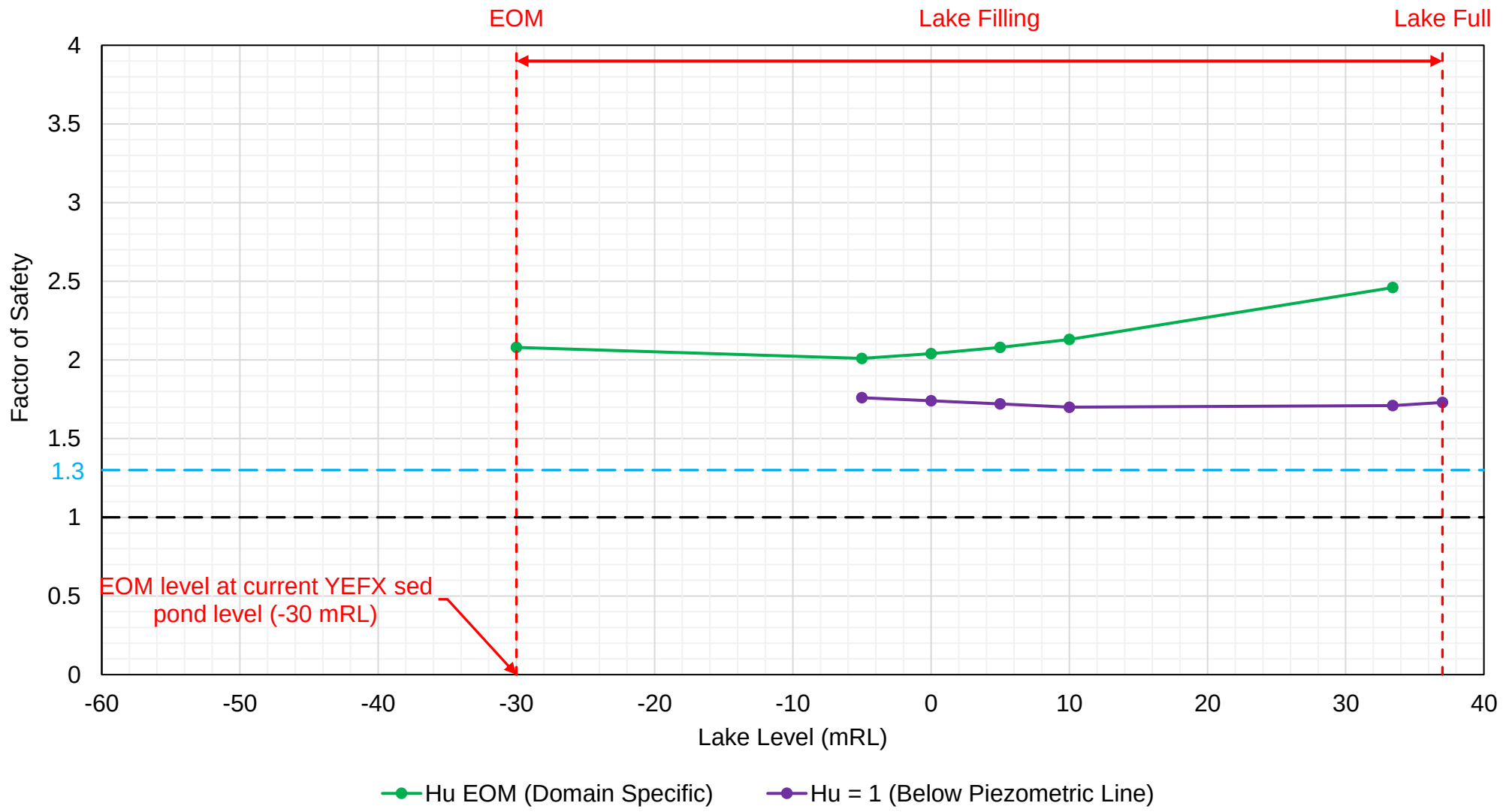
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 7

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

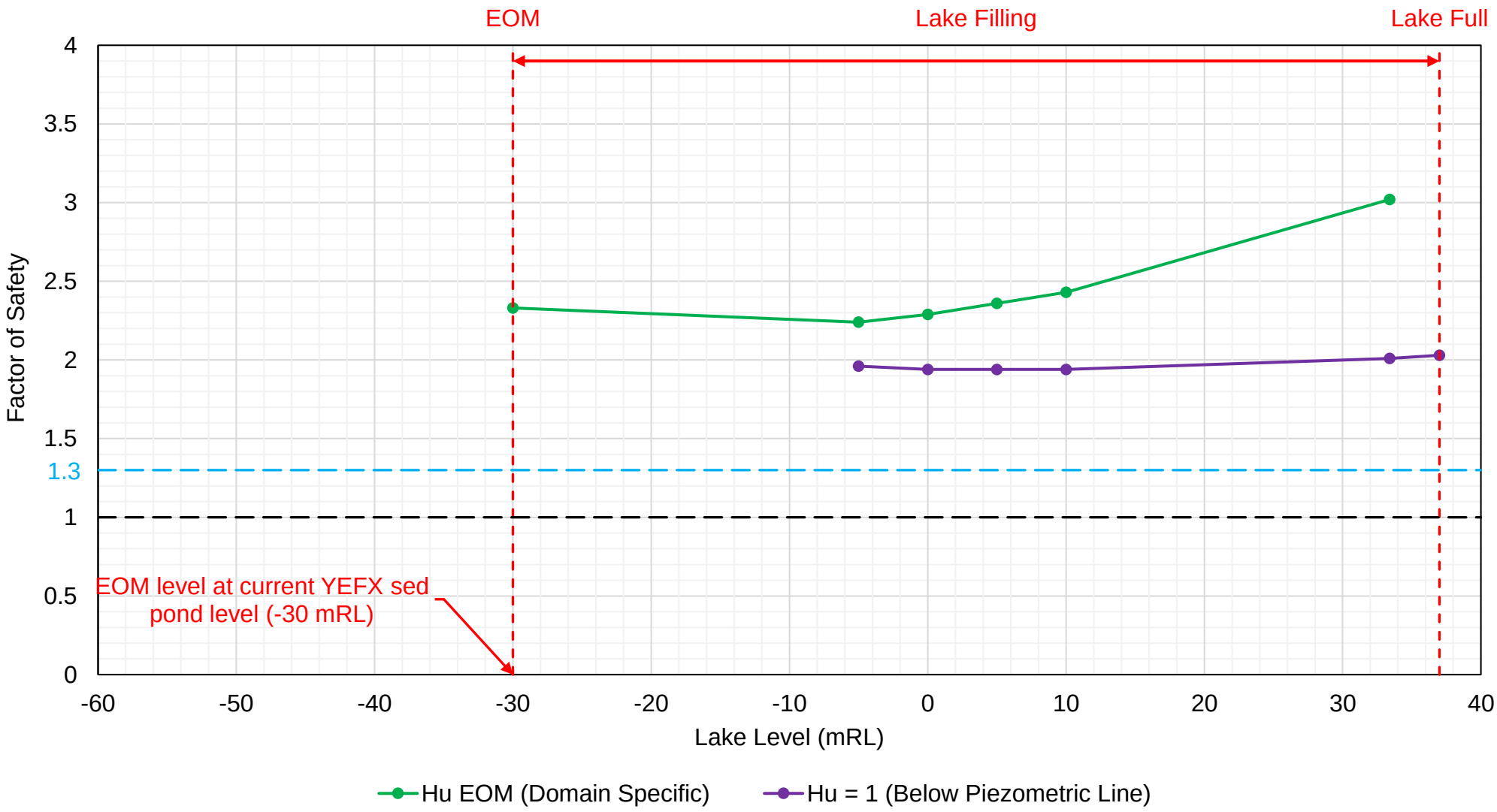
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 8

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

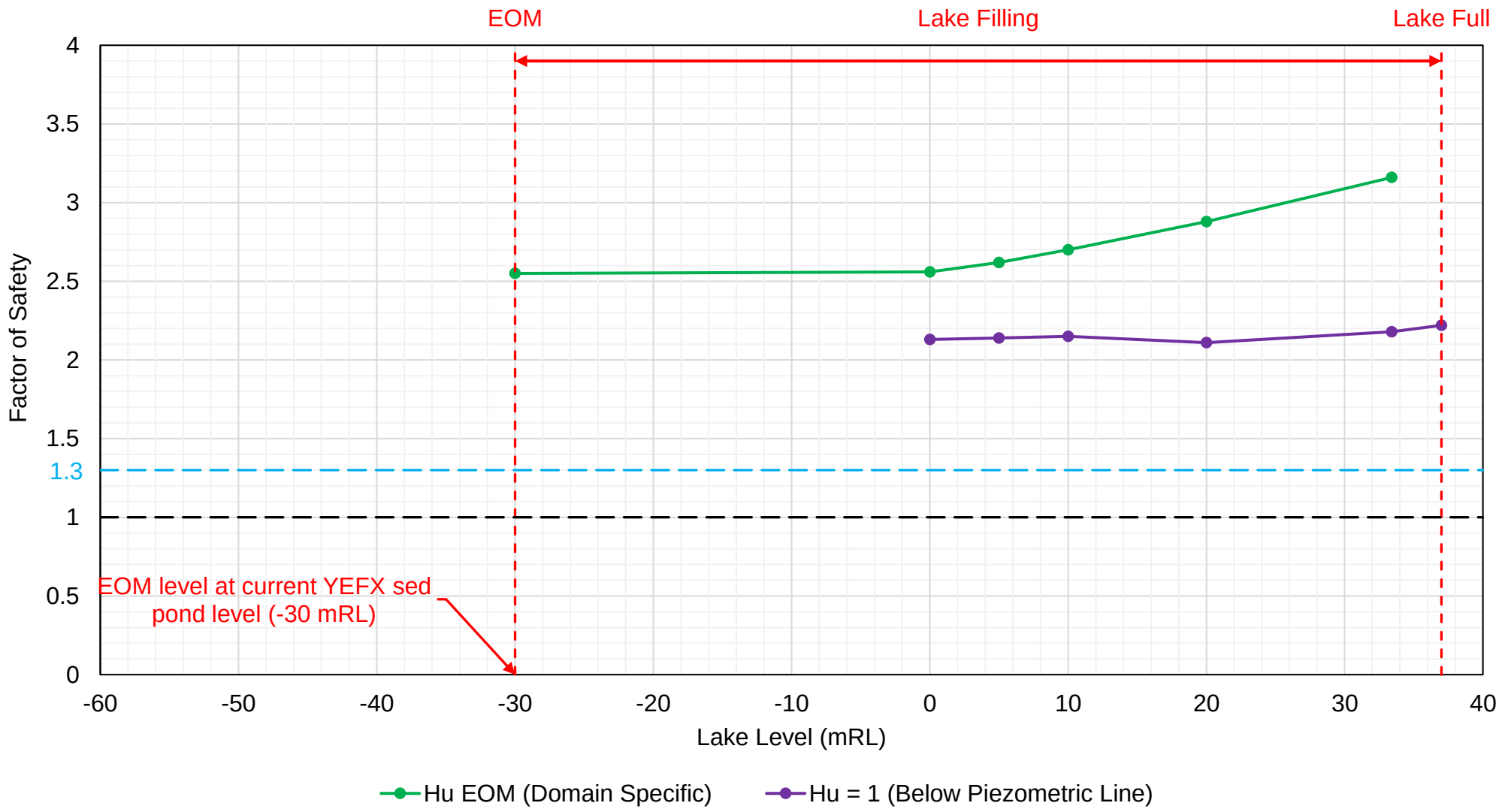
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 9

PSM4487-200R | Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

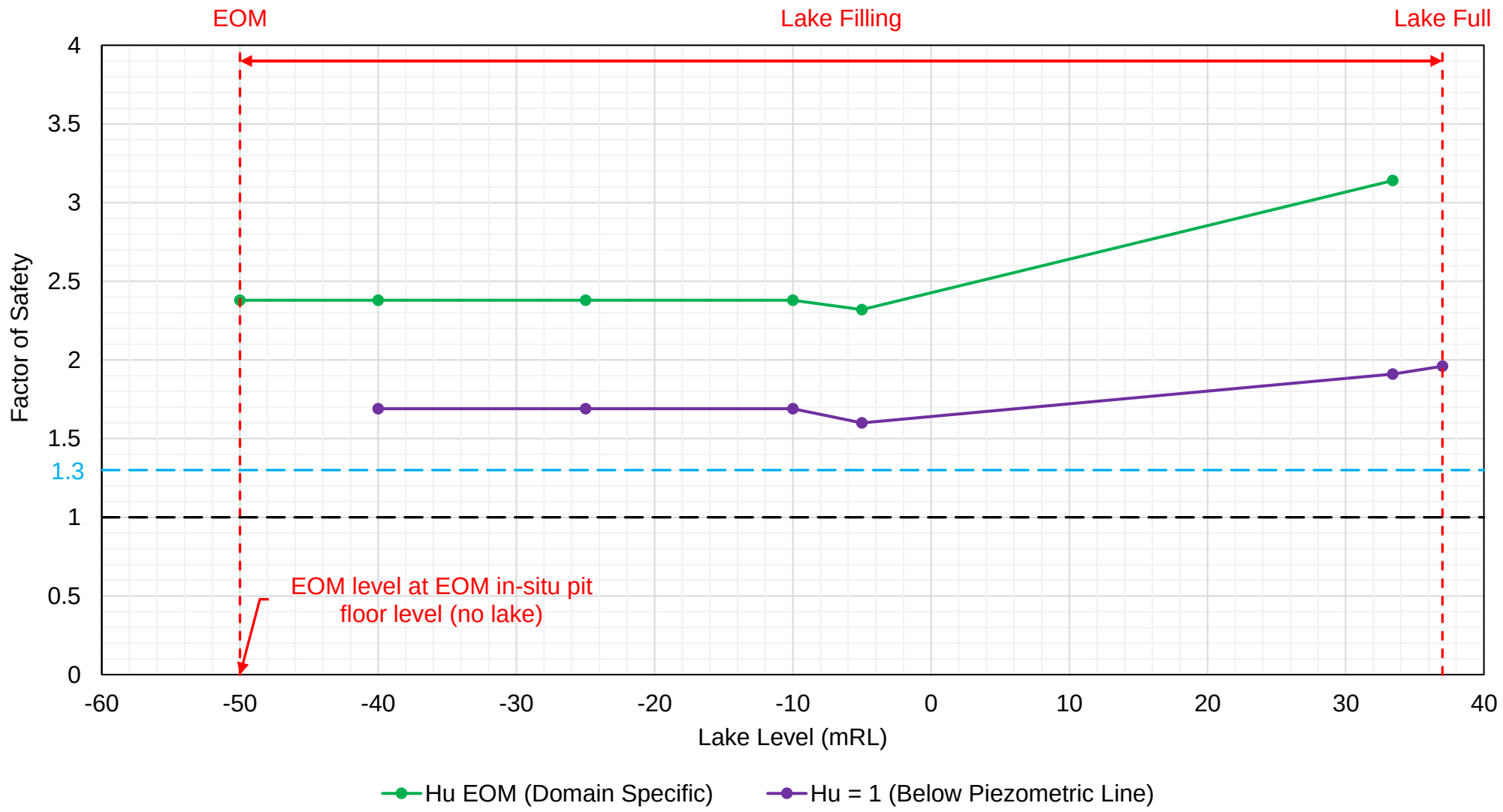
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 10

PSM4487-200R | Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

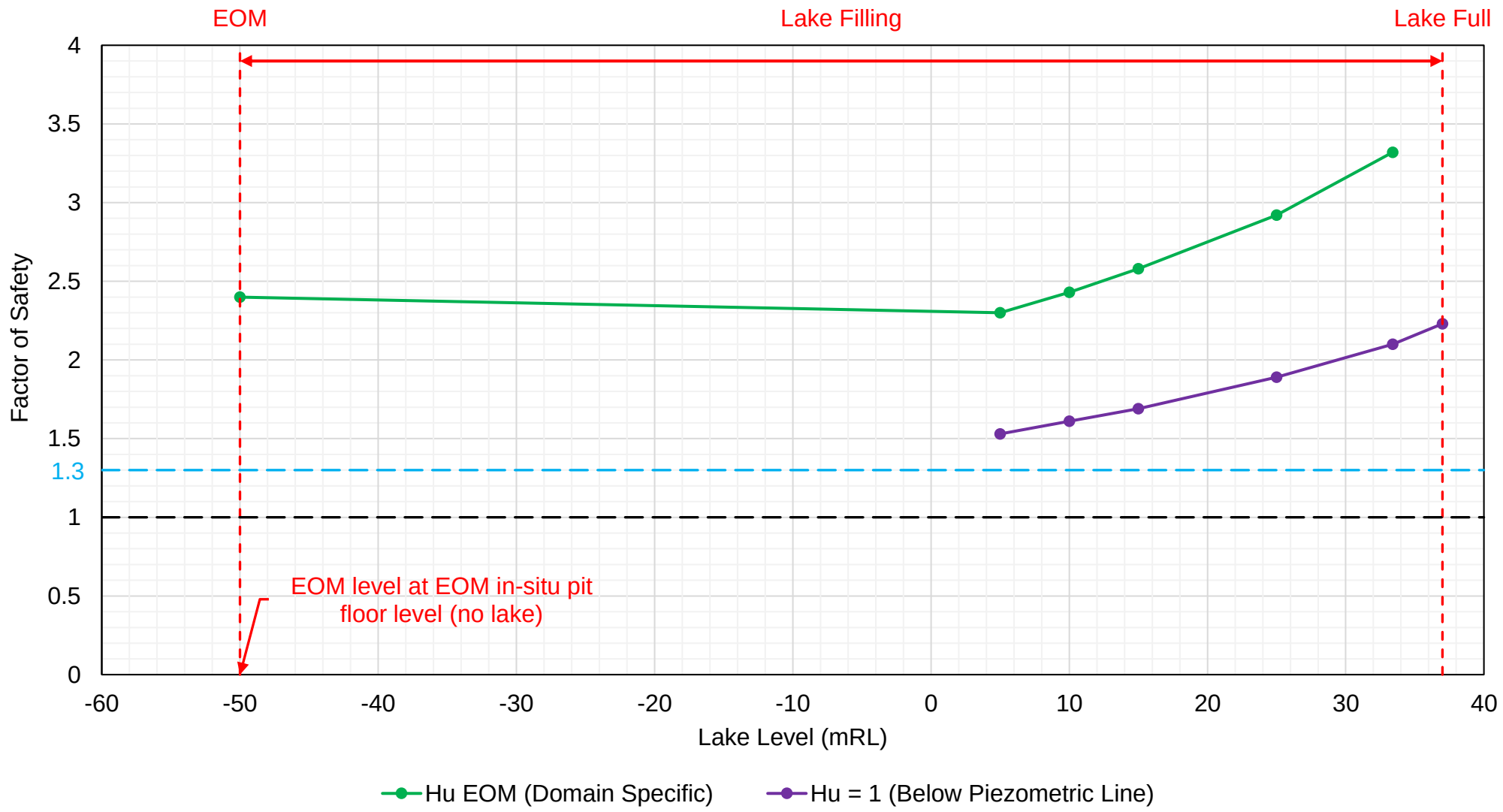
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 11

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32

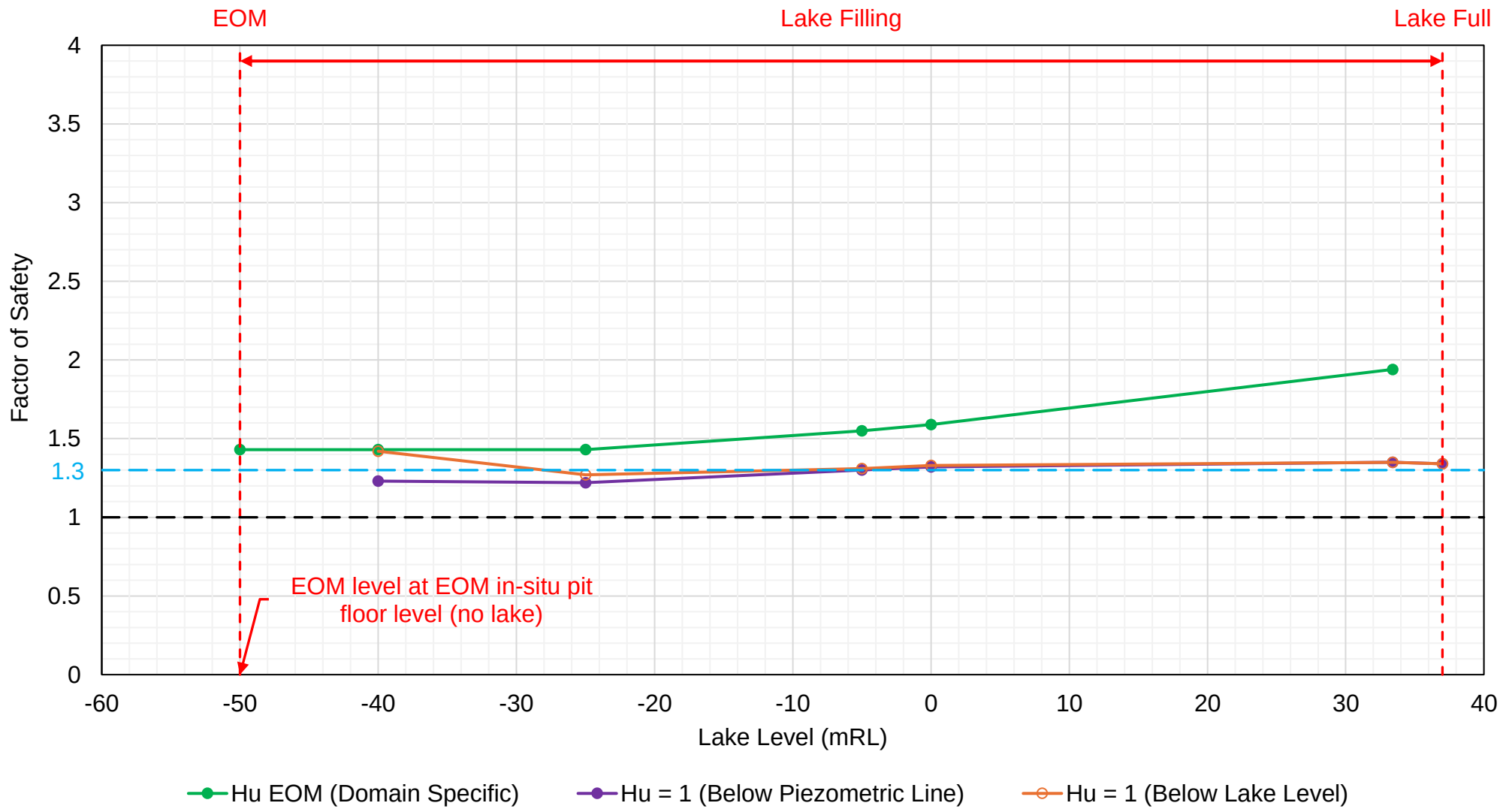


Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia Yallourn Mine Feasibility Rehabilitation Design FOS VARIATION WITH LAKE LEVEL SECTION 12	
PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

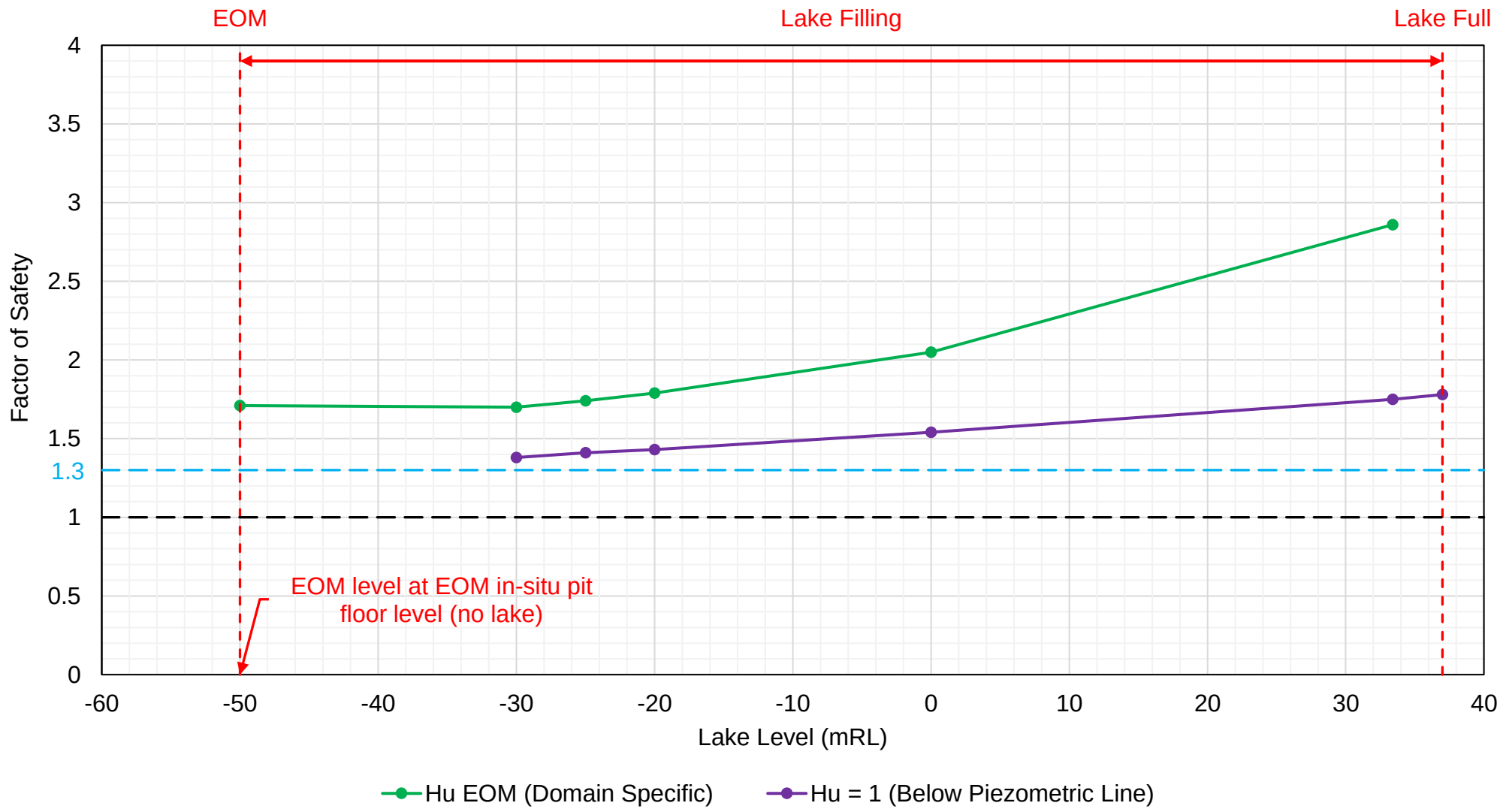
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 13

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

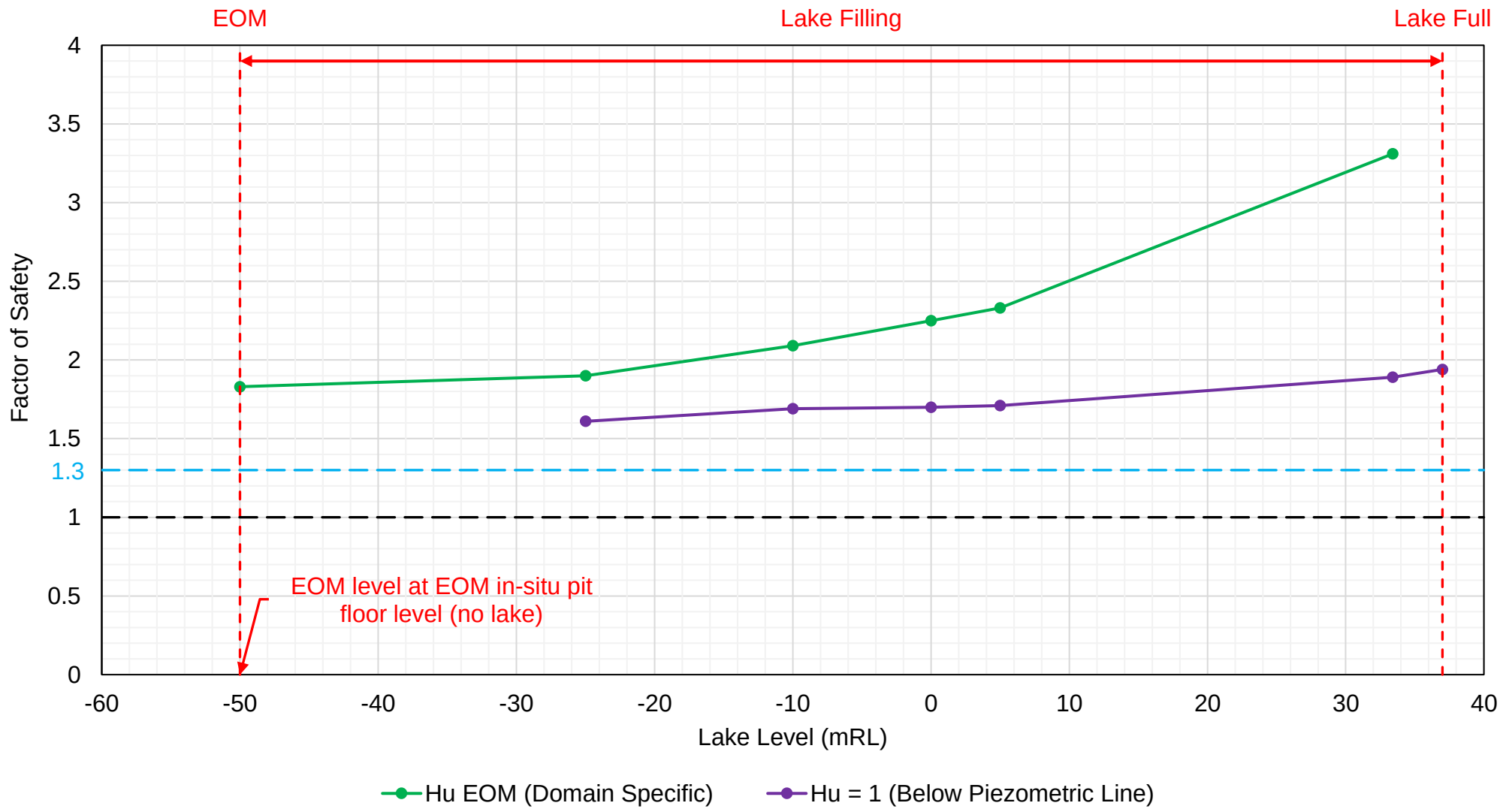
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 14

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

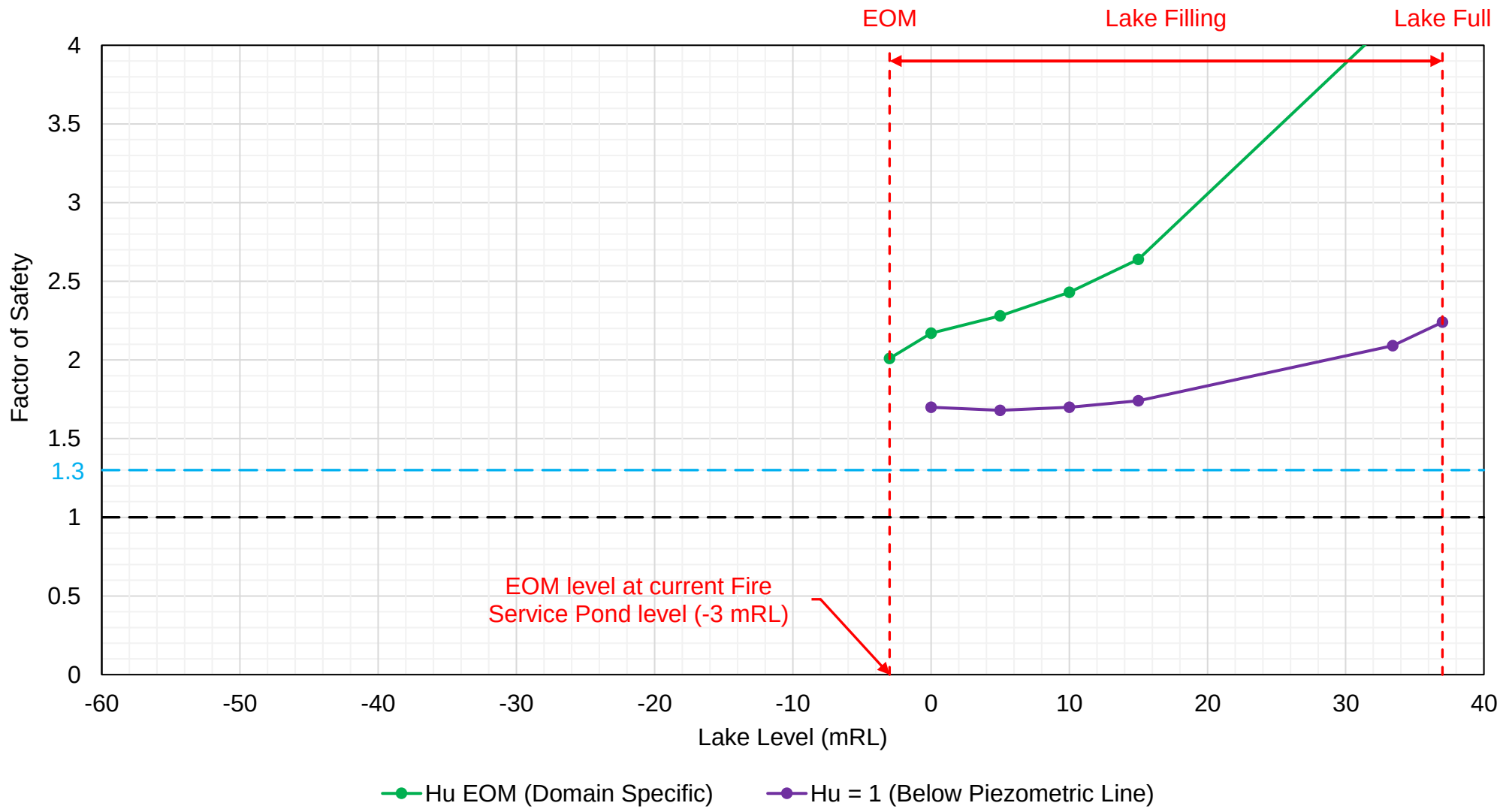
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 15

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear
2. FoS > 4.0 is not displayed on plot

EnergyAustralia

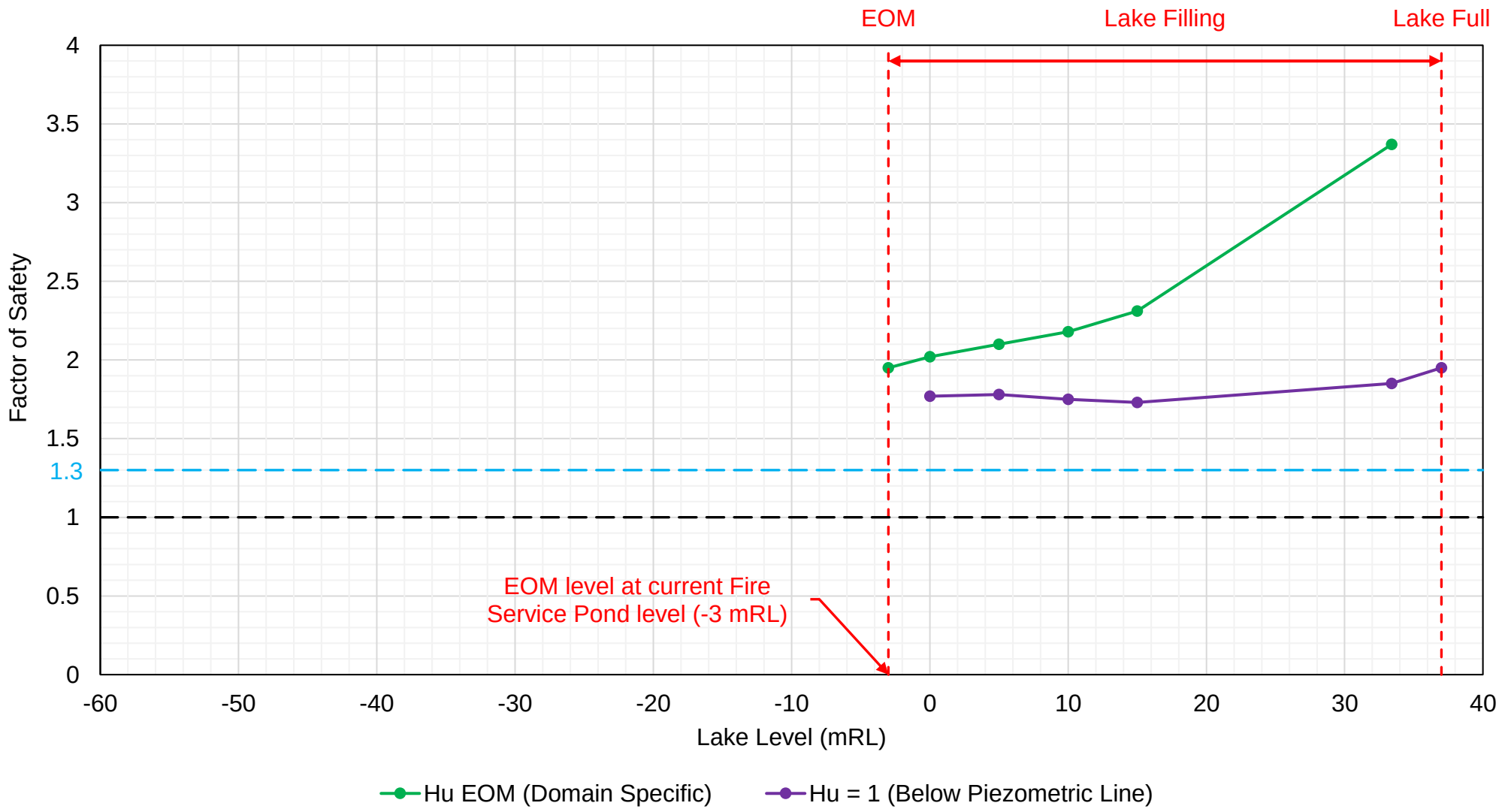
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 16

PSM4487-200R | Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

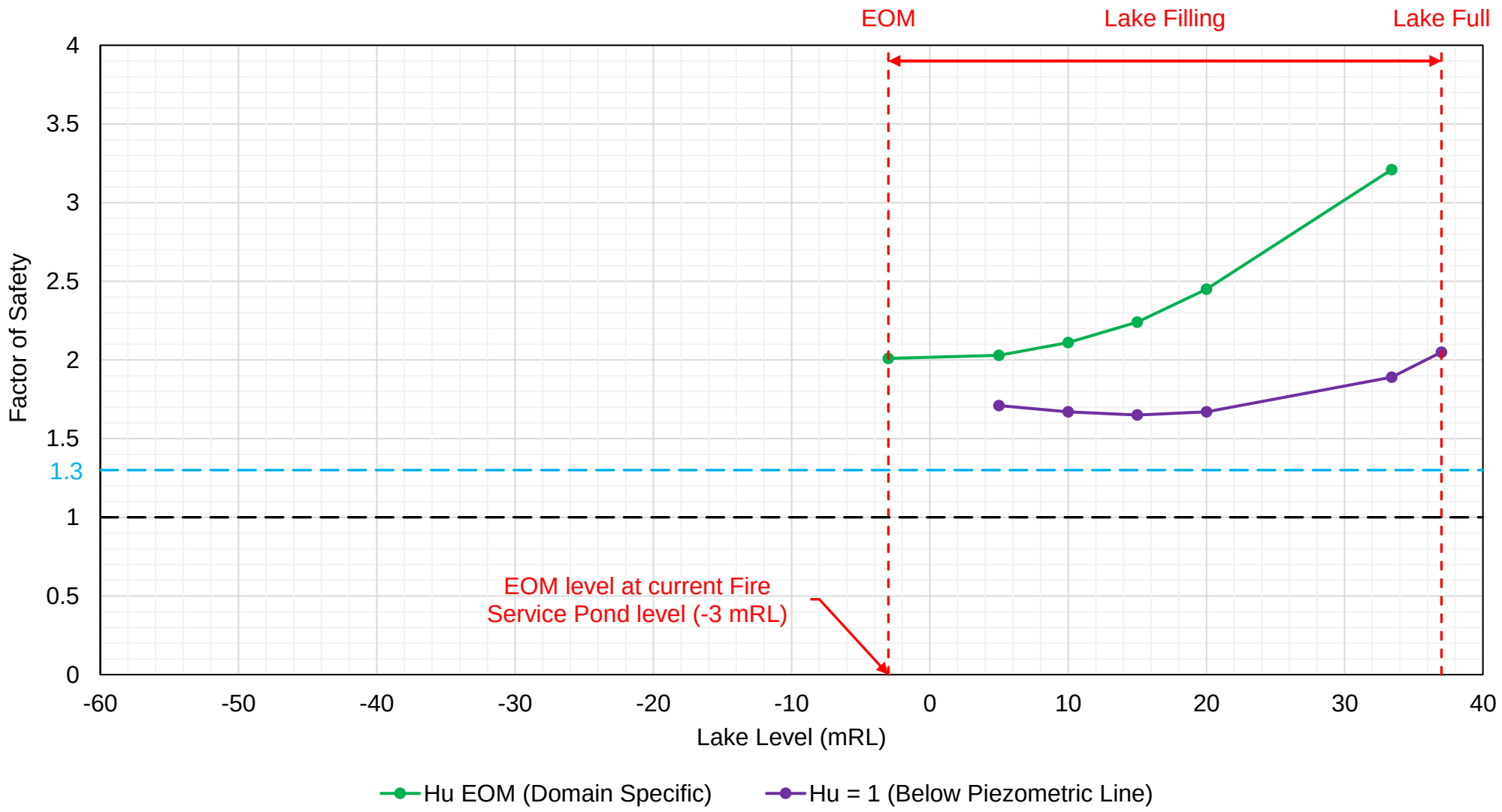
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 17

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

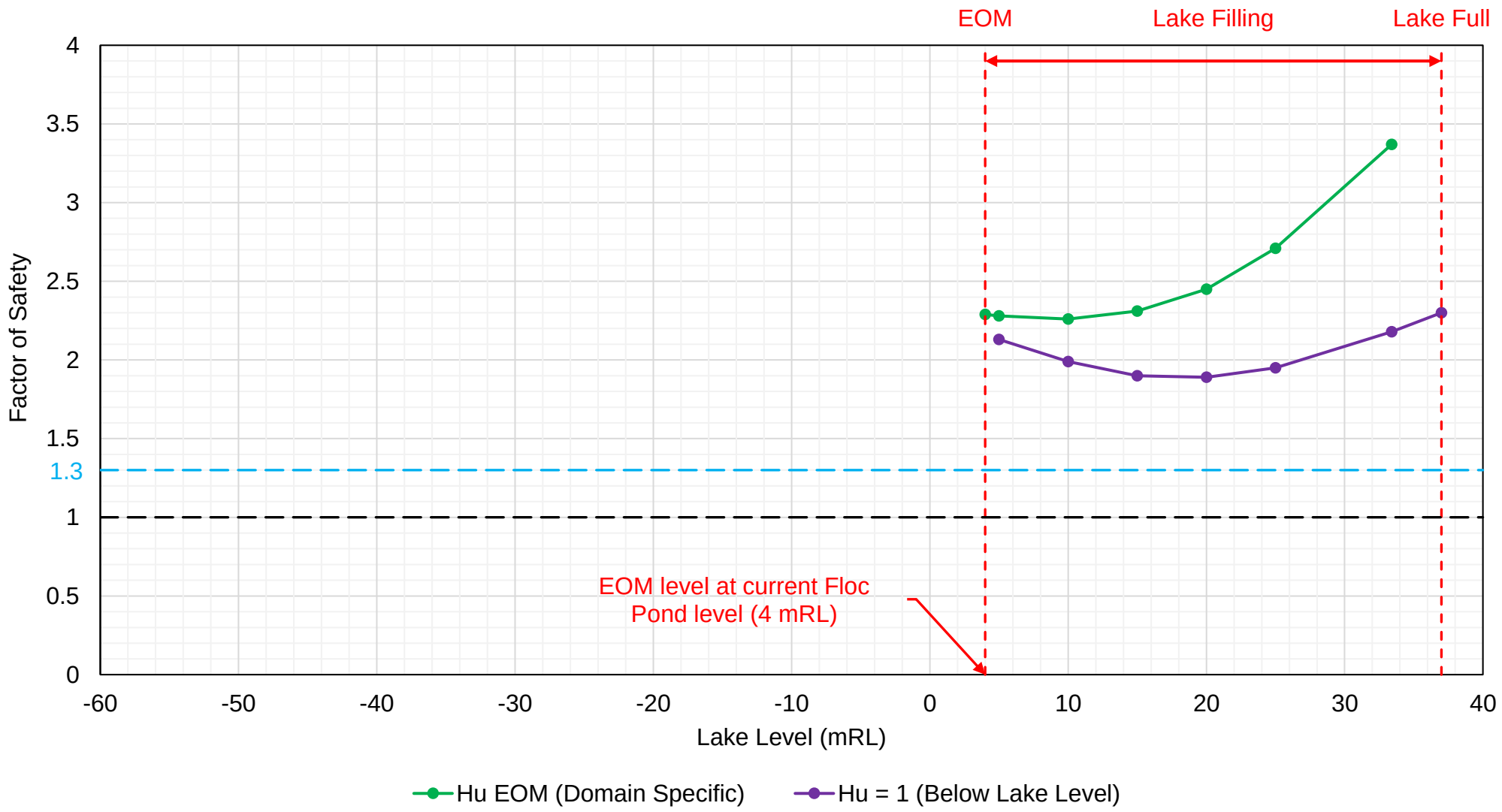
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 18

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

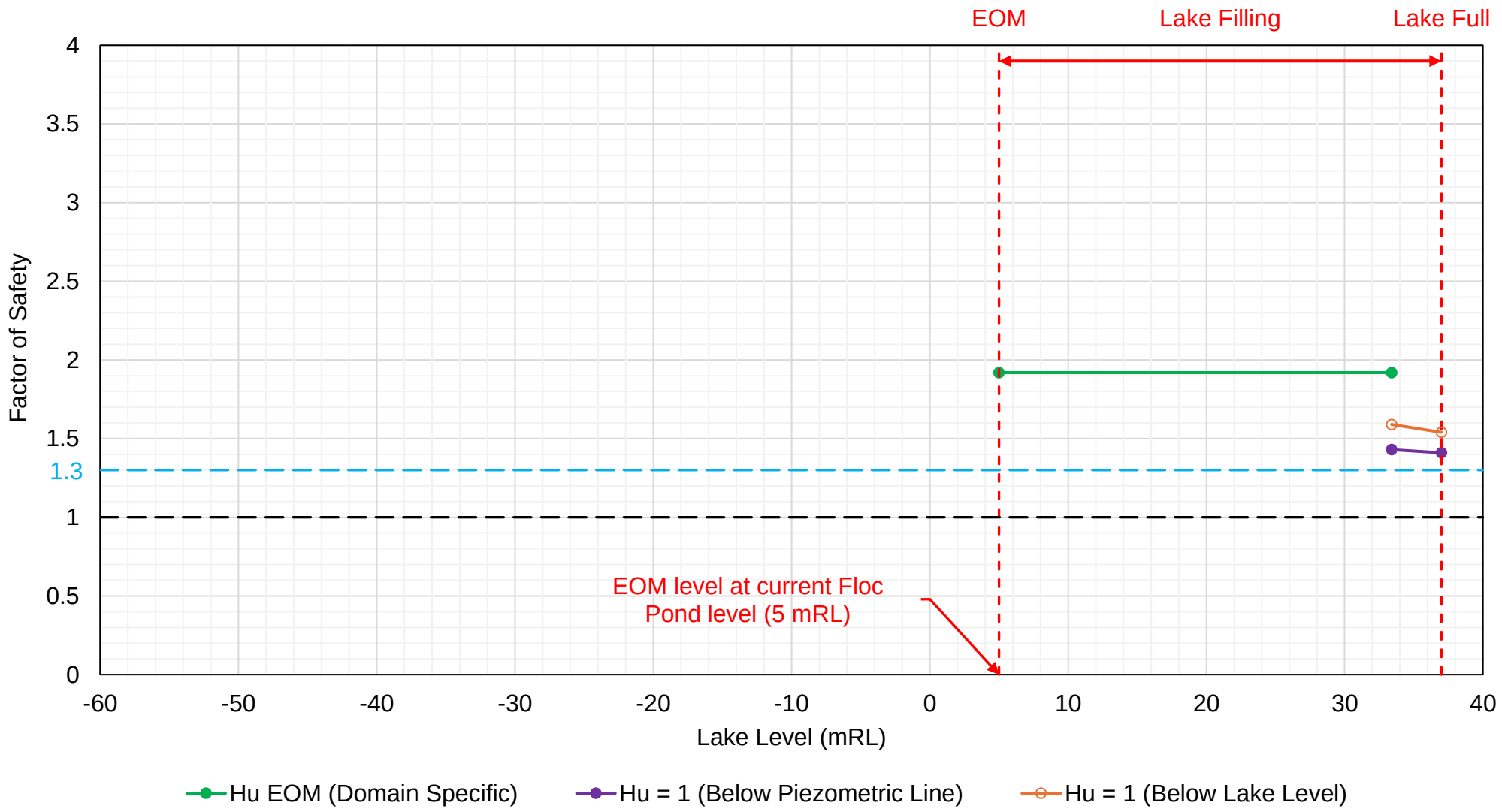
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 18B

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

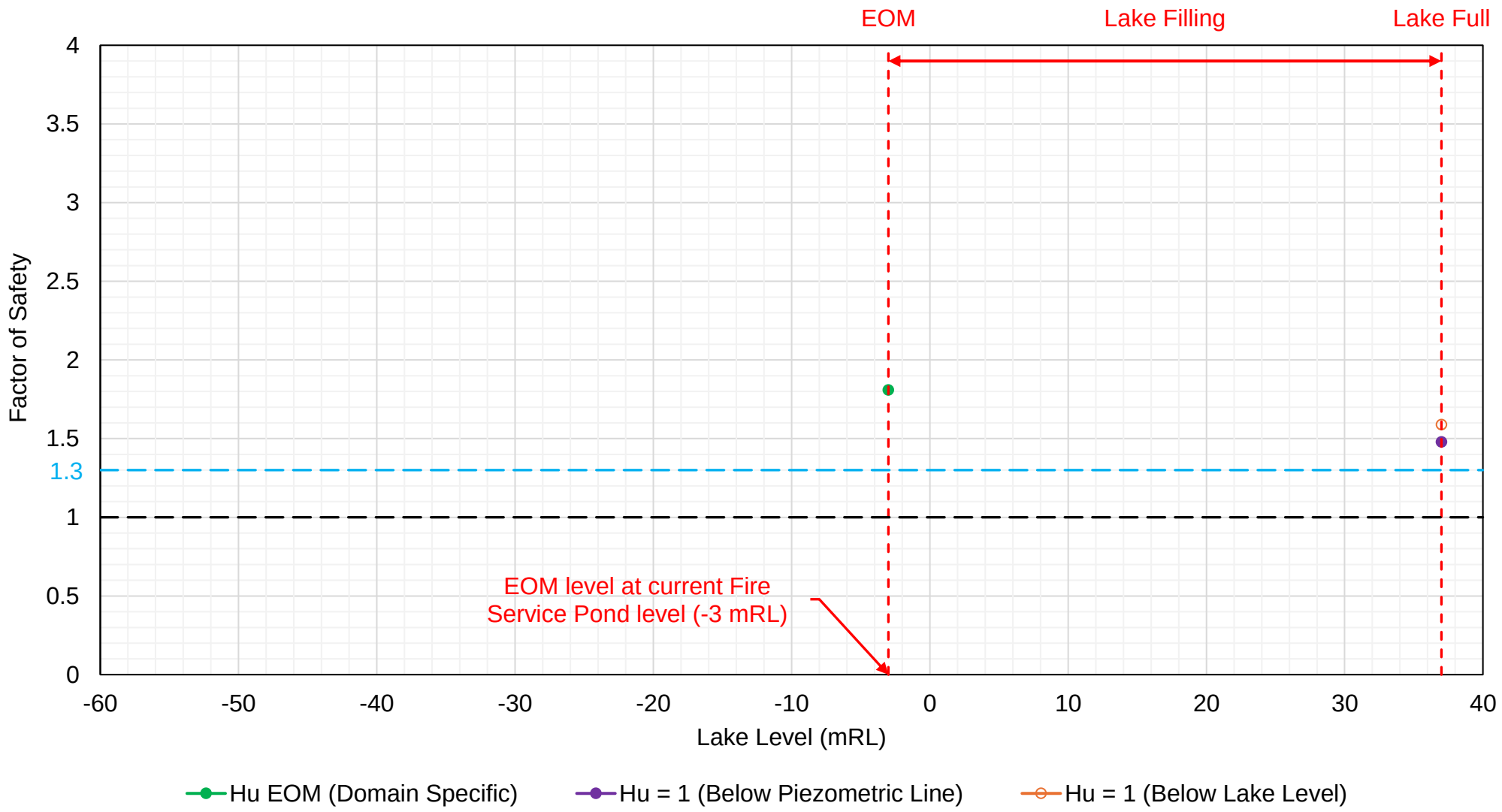
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 19

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

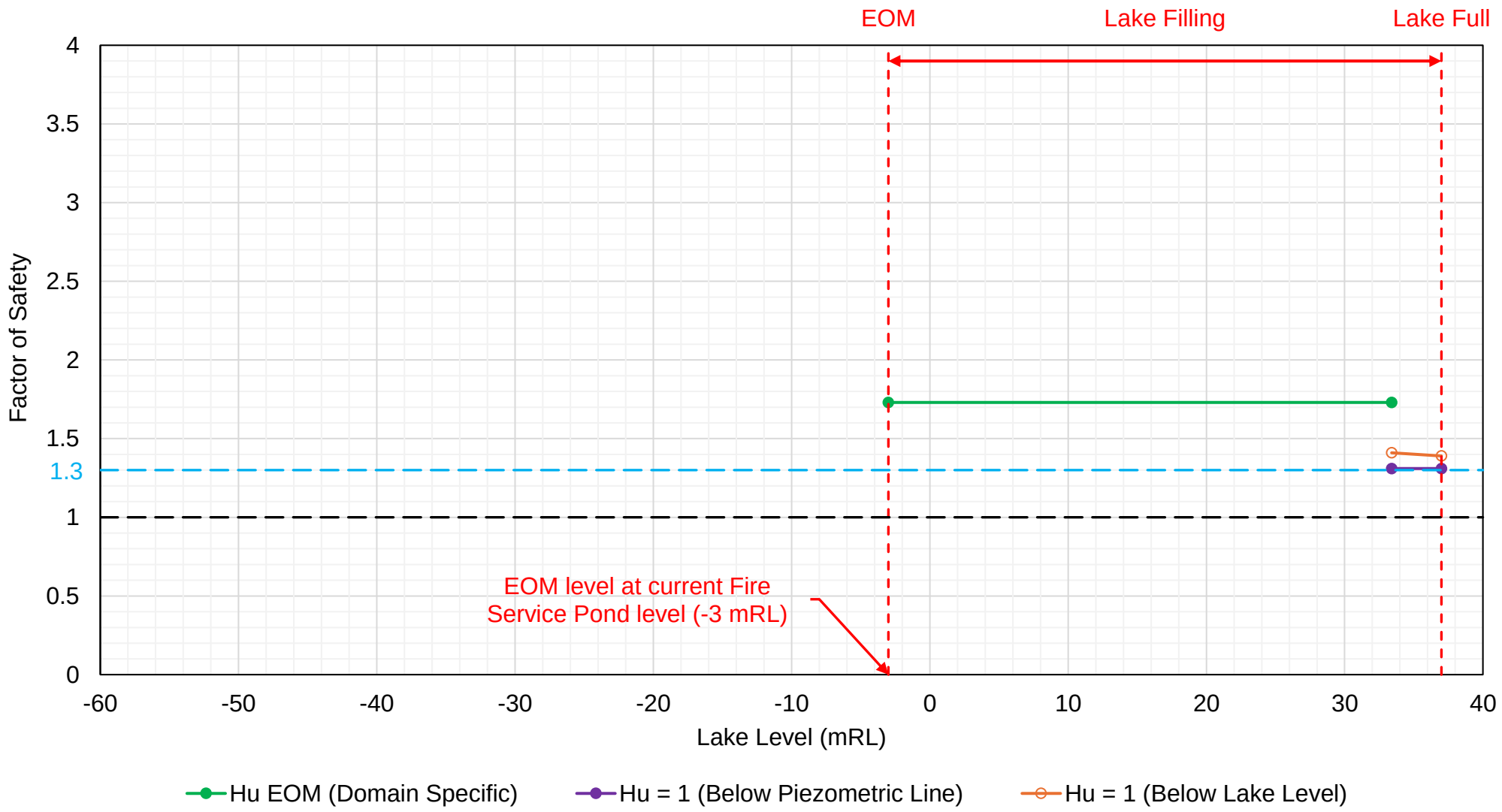
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 20

PSM4487-200R | Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

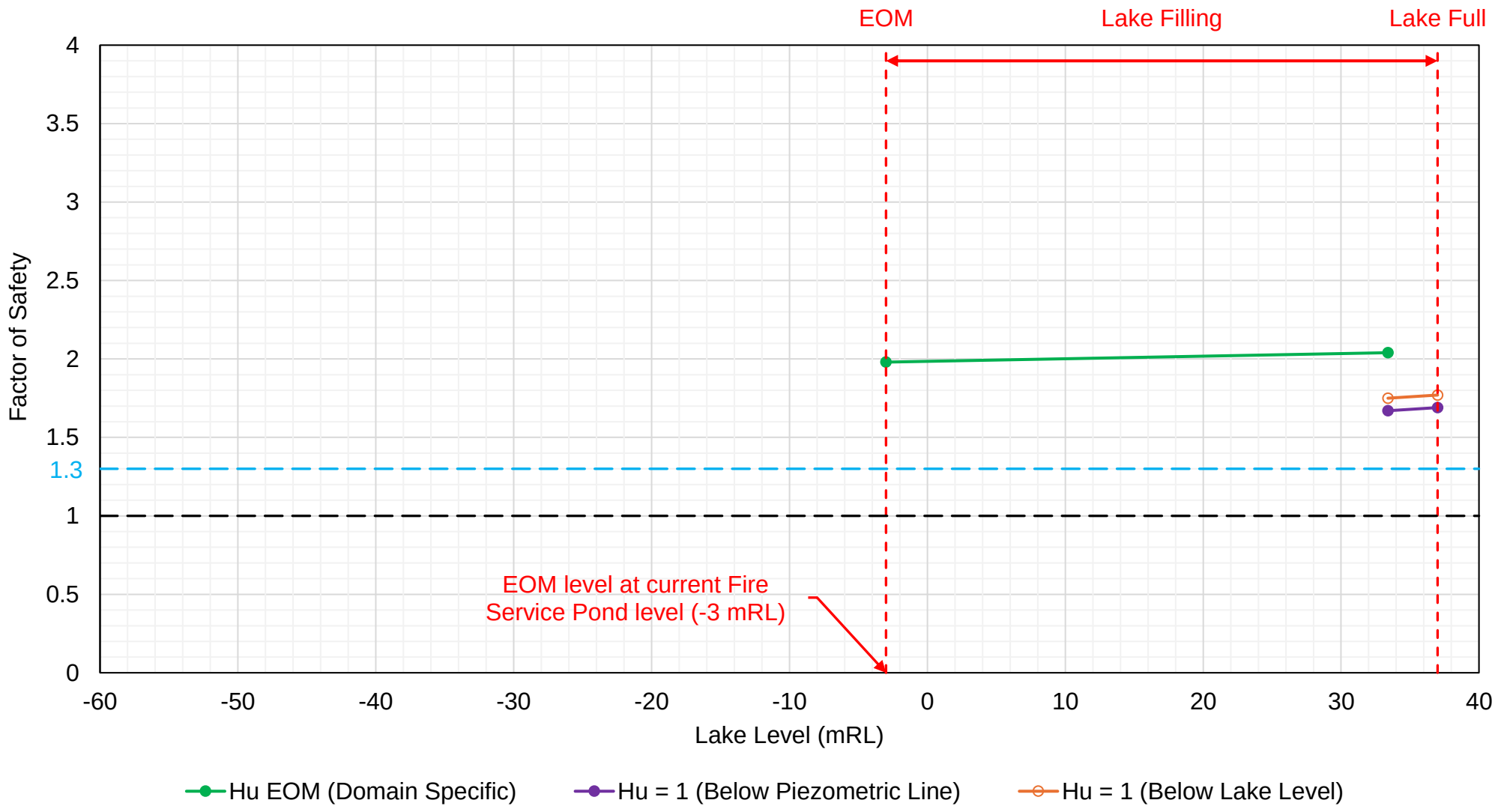
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 21

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

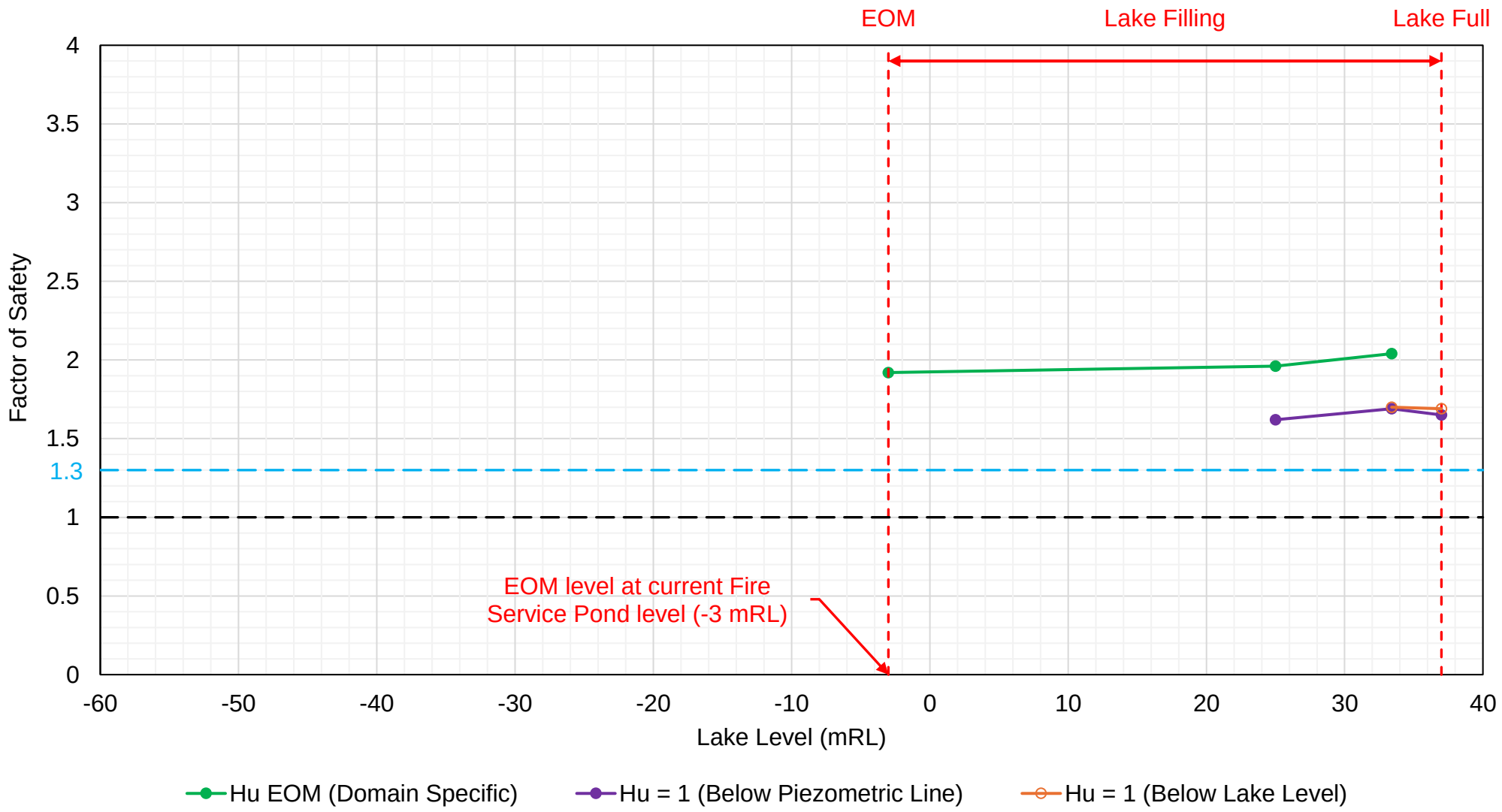
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 22

PSM4487-200R | Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

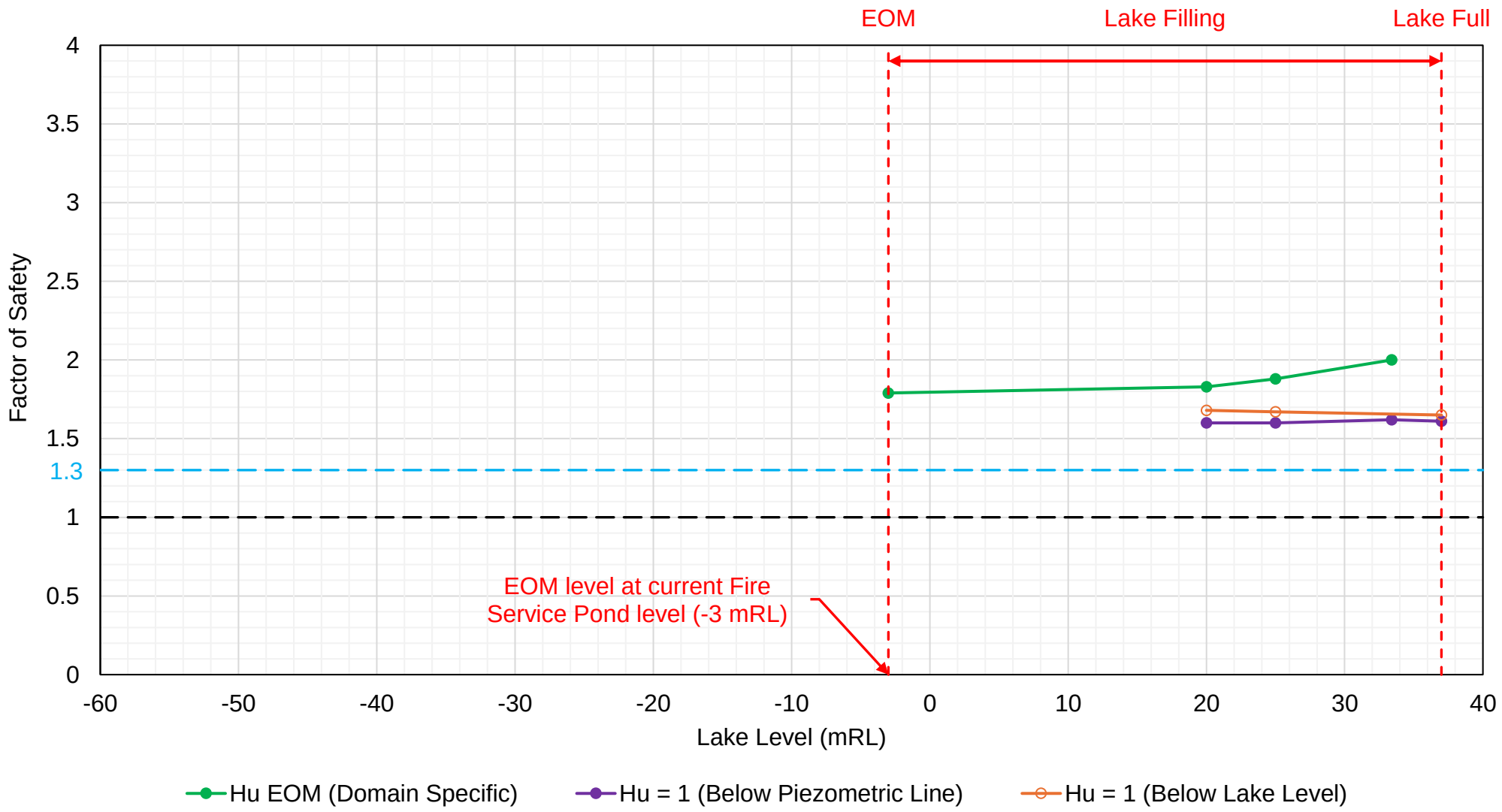
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 23

PSM4487-200R | Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

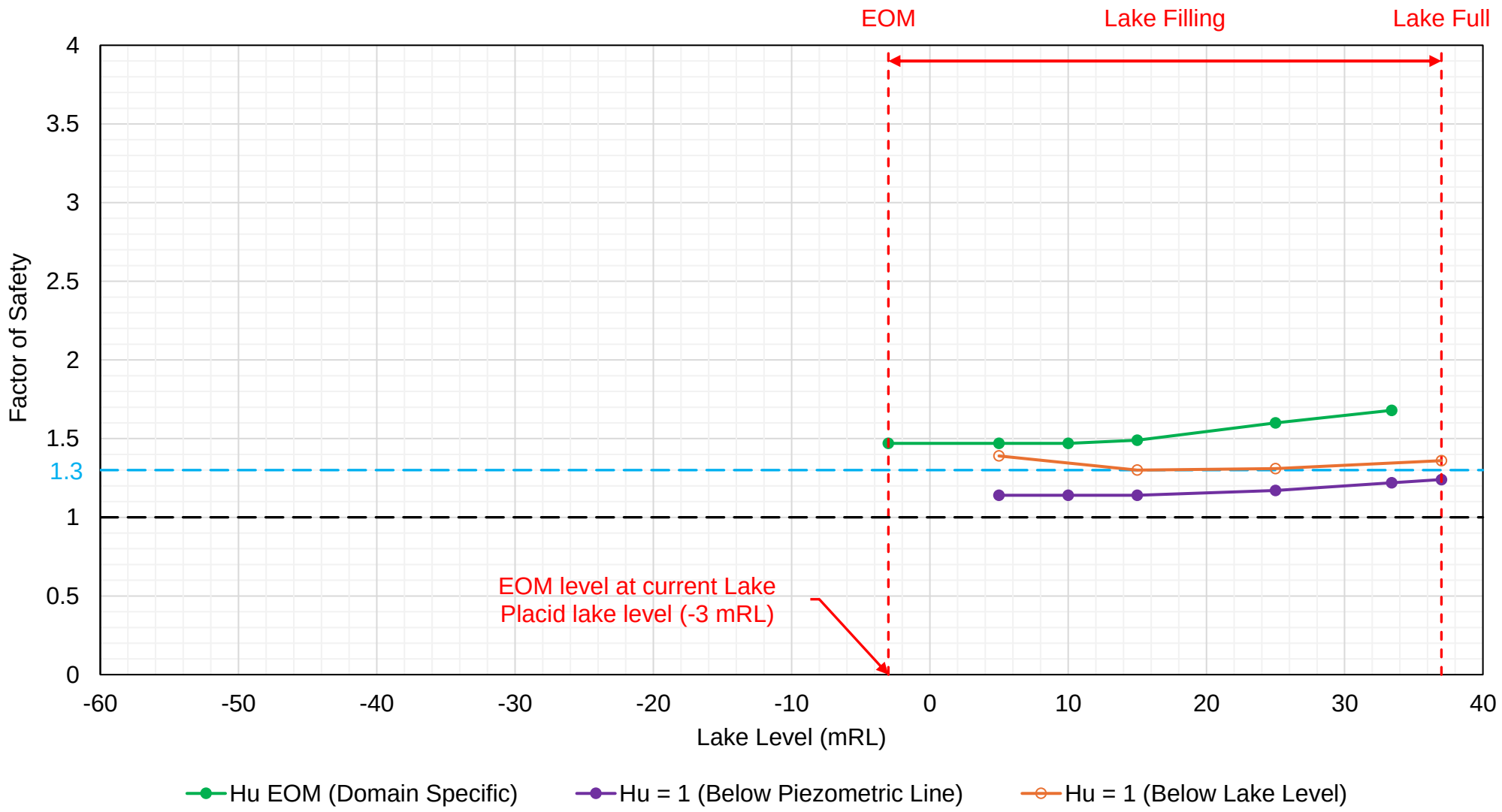
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 24

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

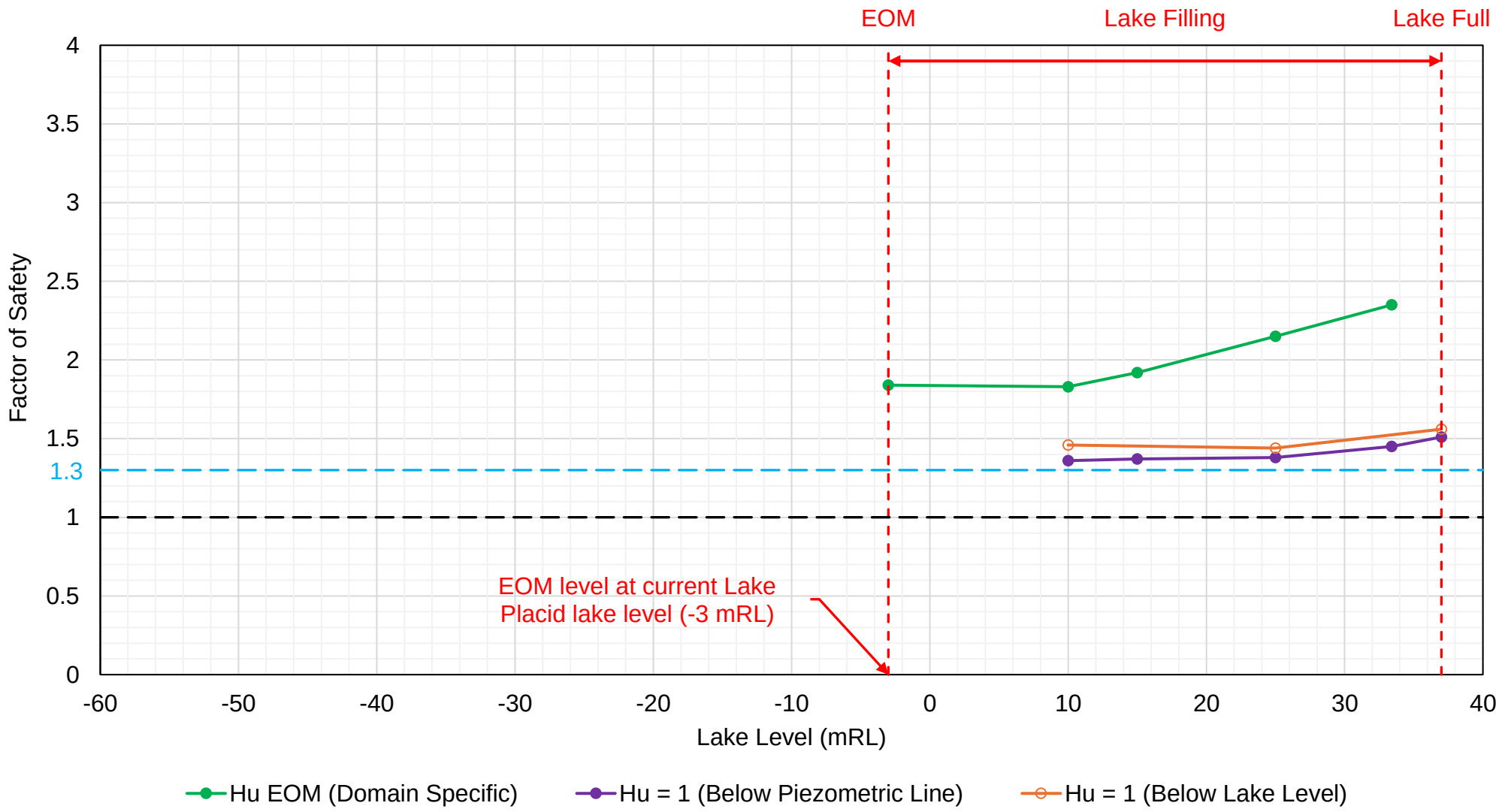
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 25

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

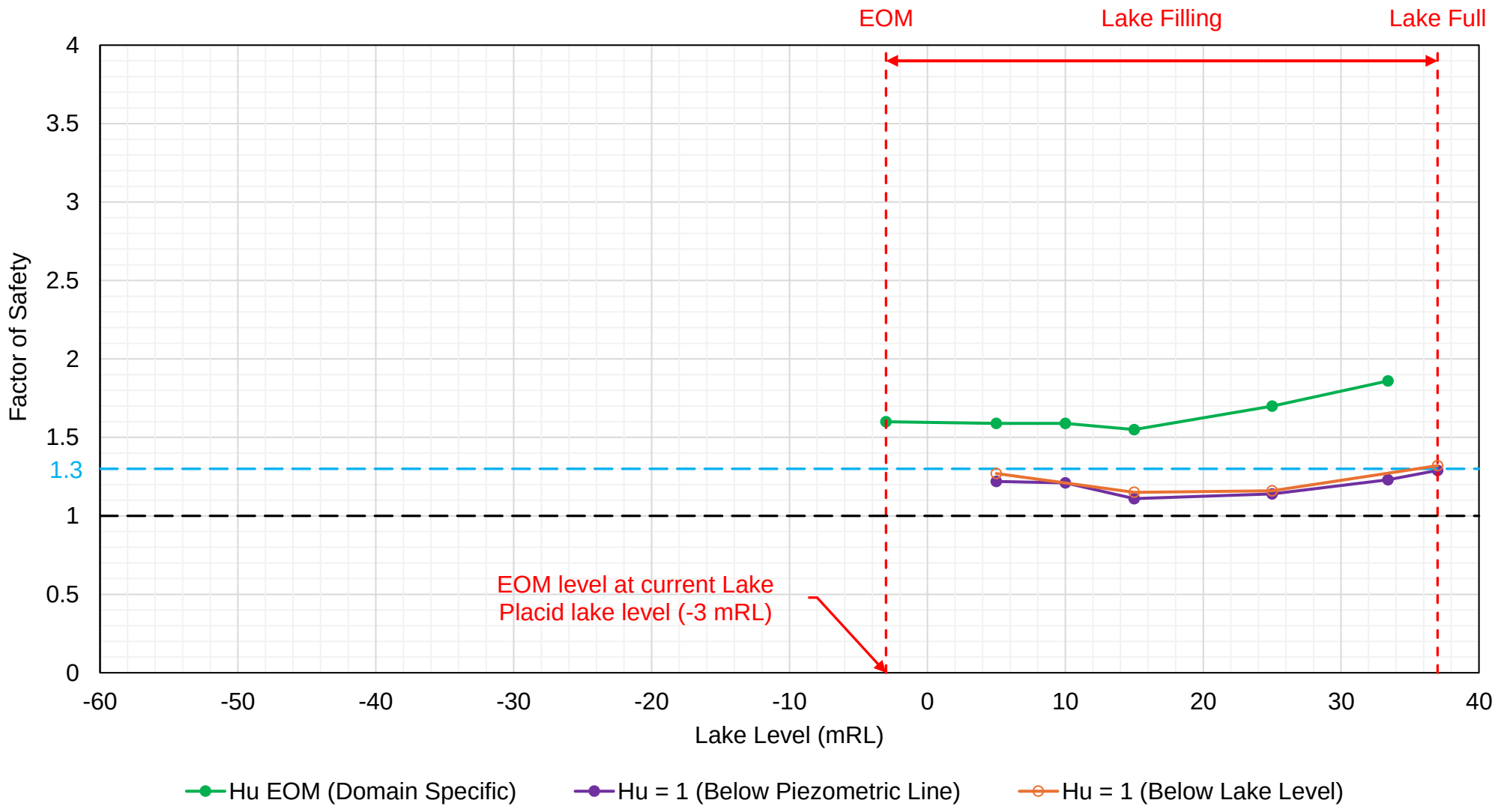
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 26

PSM4487-200R | Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

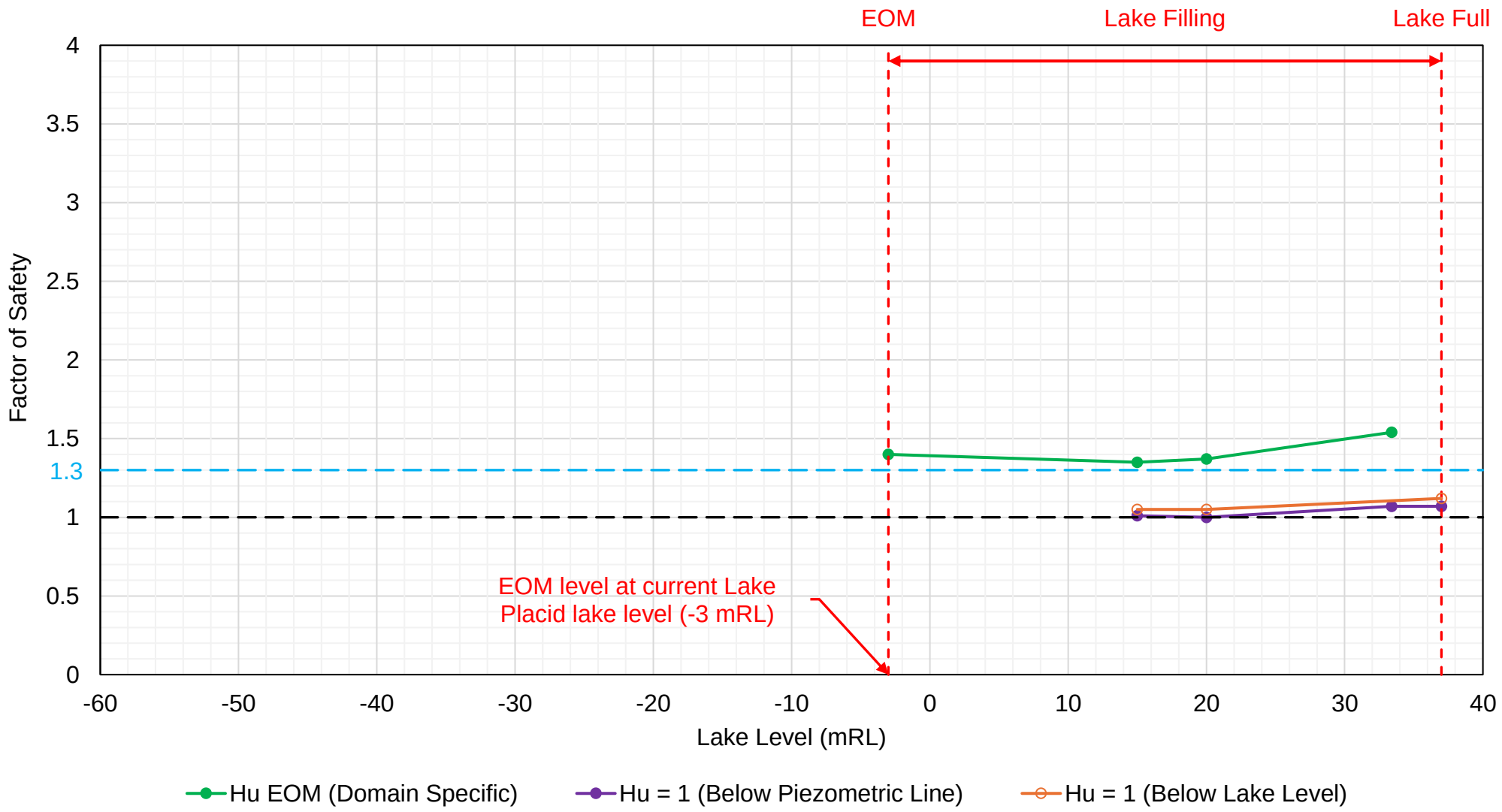
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 27

PSM4487-200R | Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

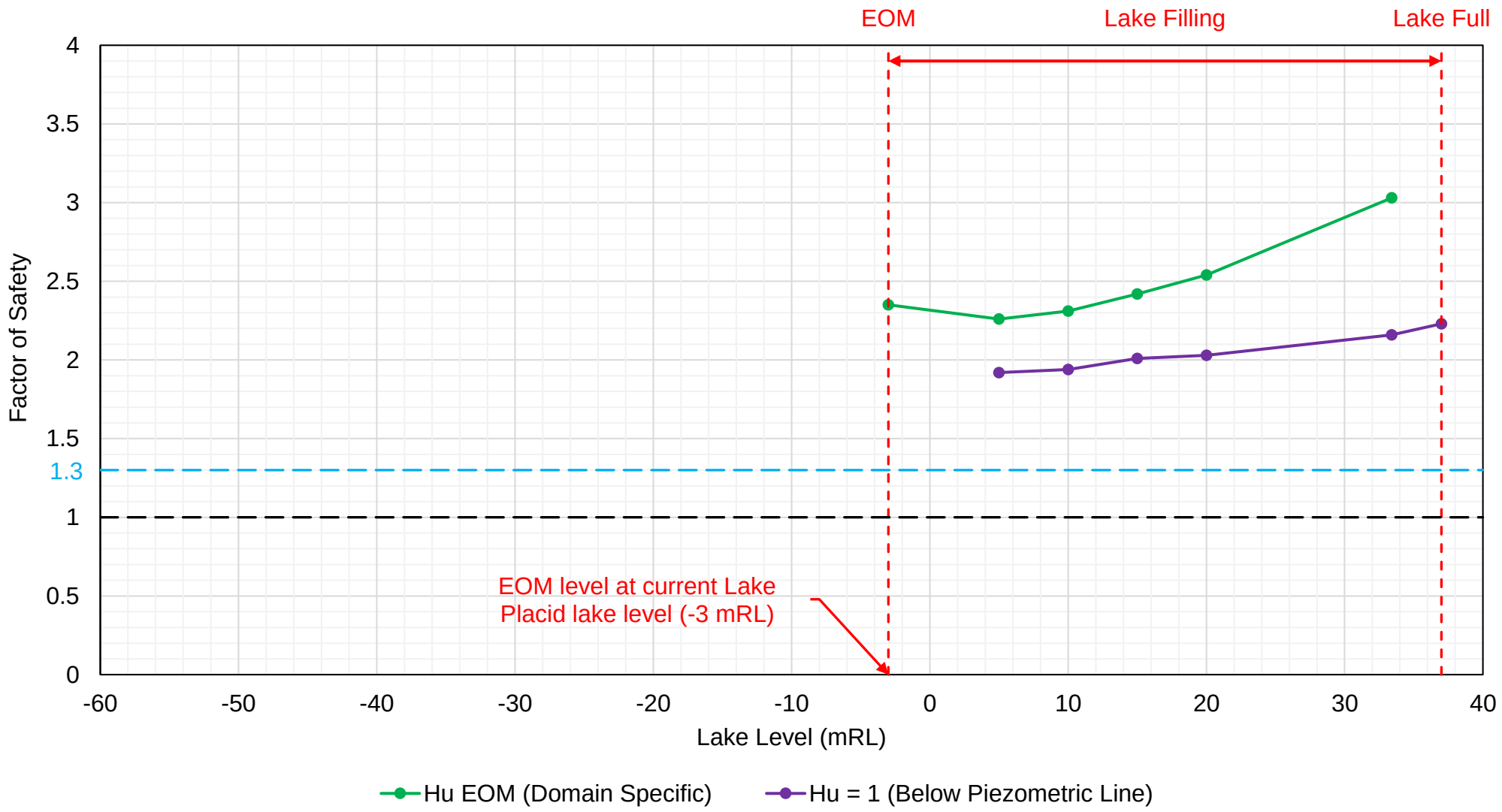
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 28

PSM4487-200R | Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

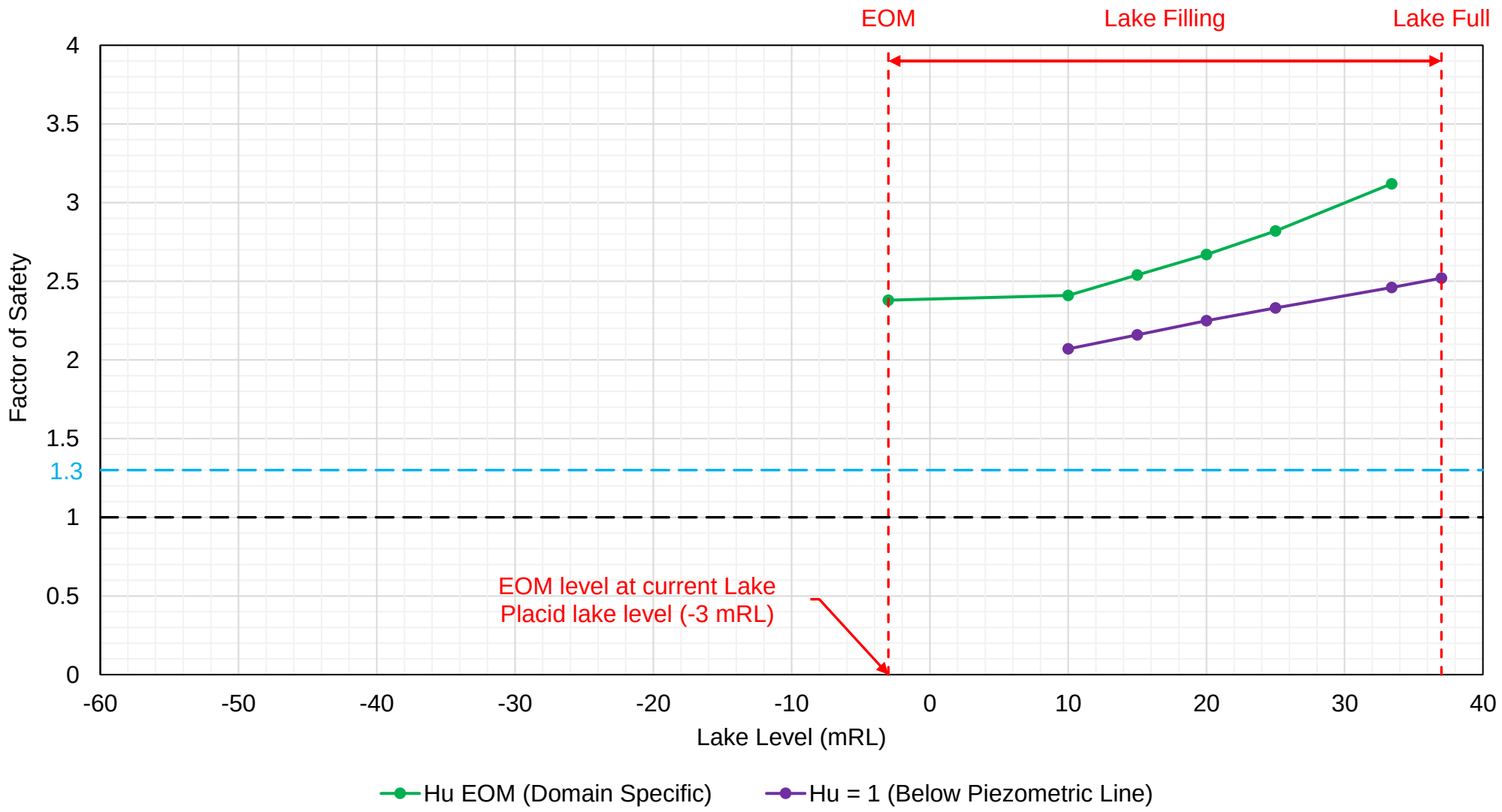
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 29

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

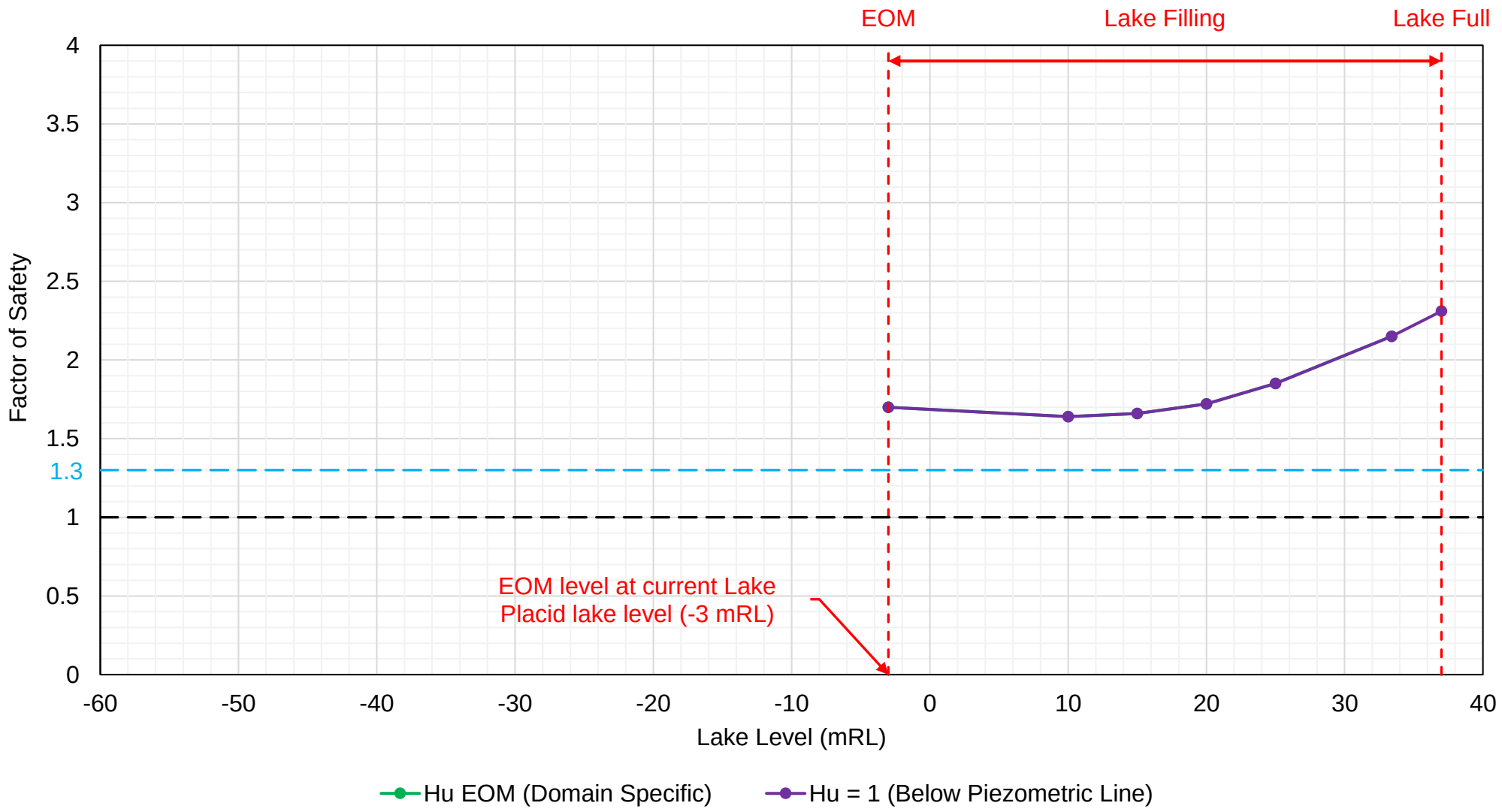
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 30

PSM4487-200R | Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

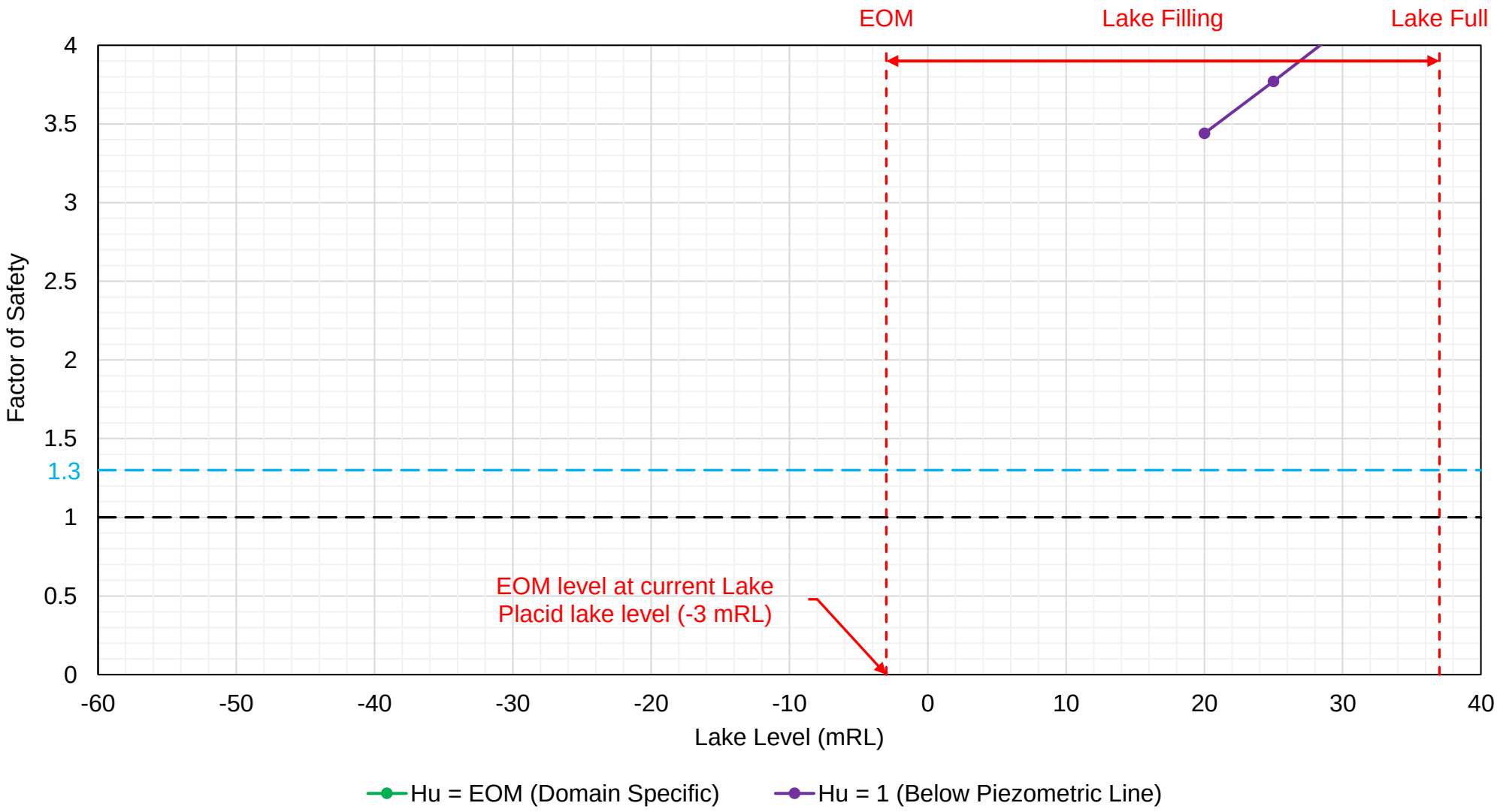
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 31

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. FoS > 4.0 is not displayed on plot

EnergyAustralia

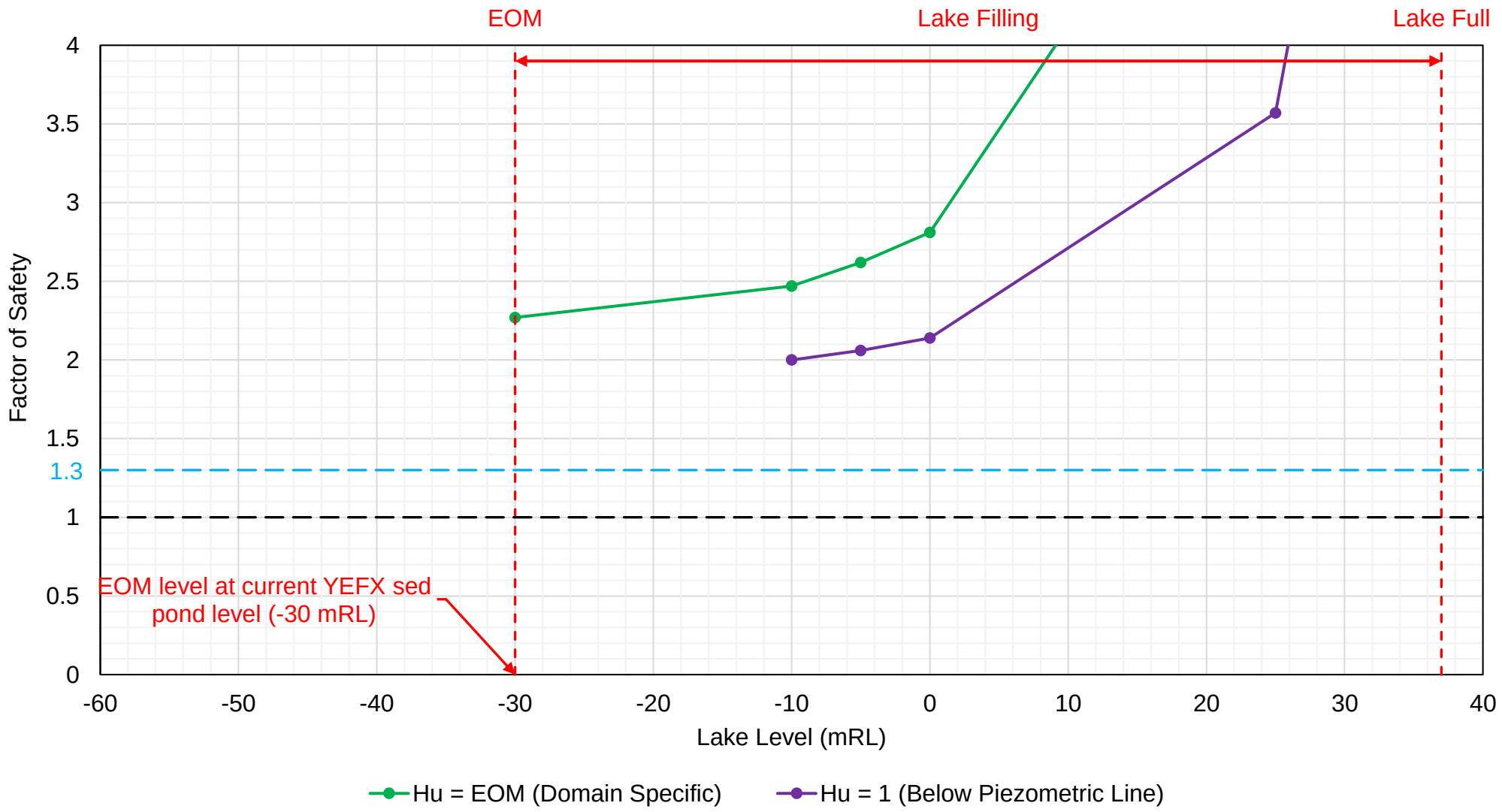
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 1

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 1



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. FoS > 4.0 is not displayed on plot

EnergyAustralia

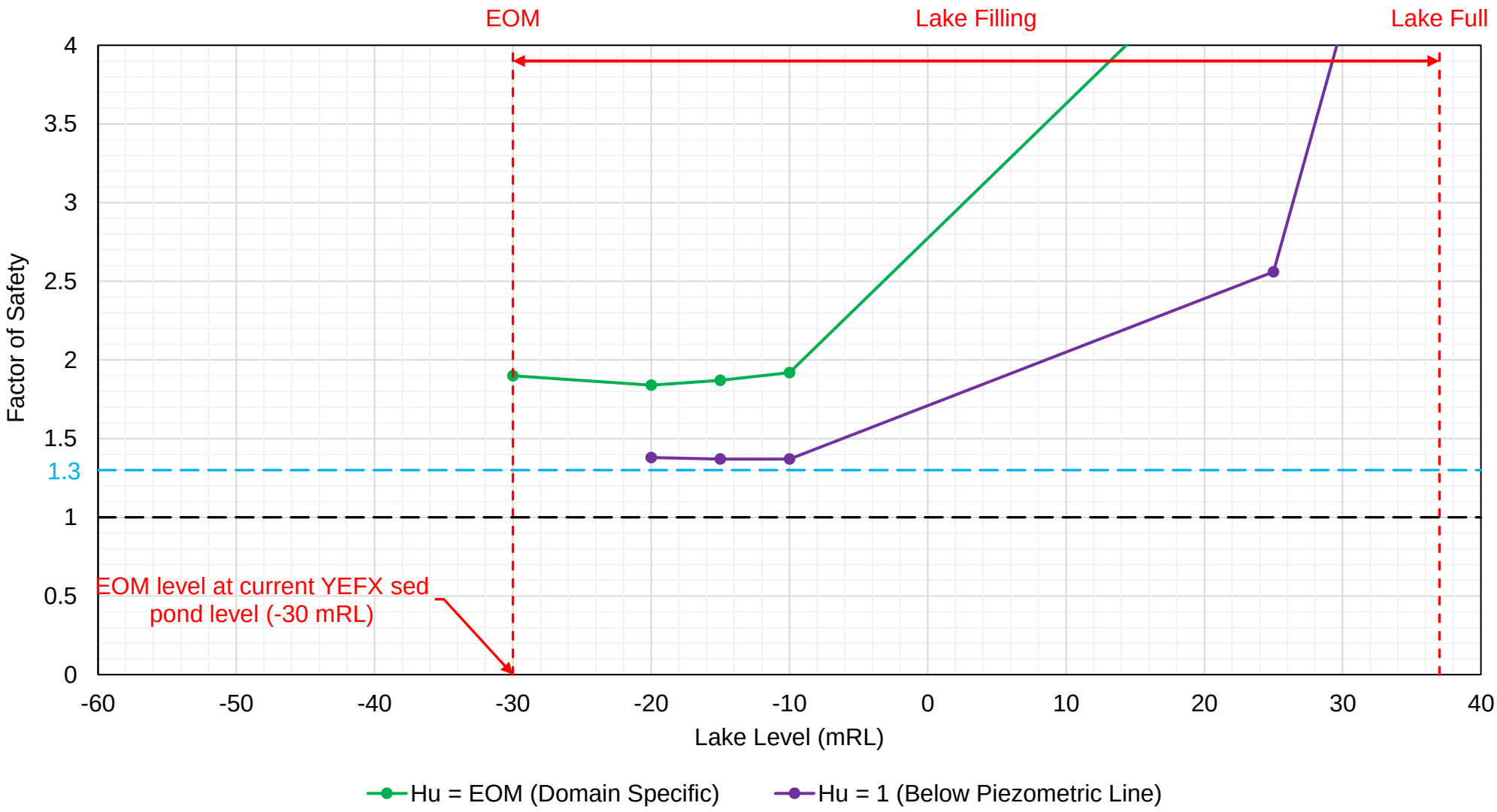
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 4

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 1



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. FoS > 4.0 is not displayed on plot

EnergyAustralia

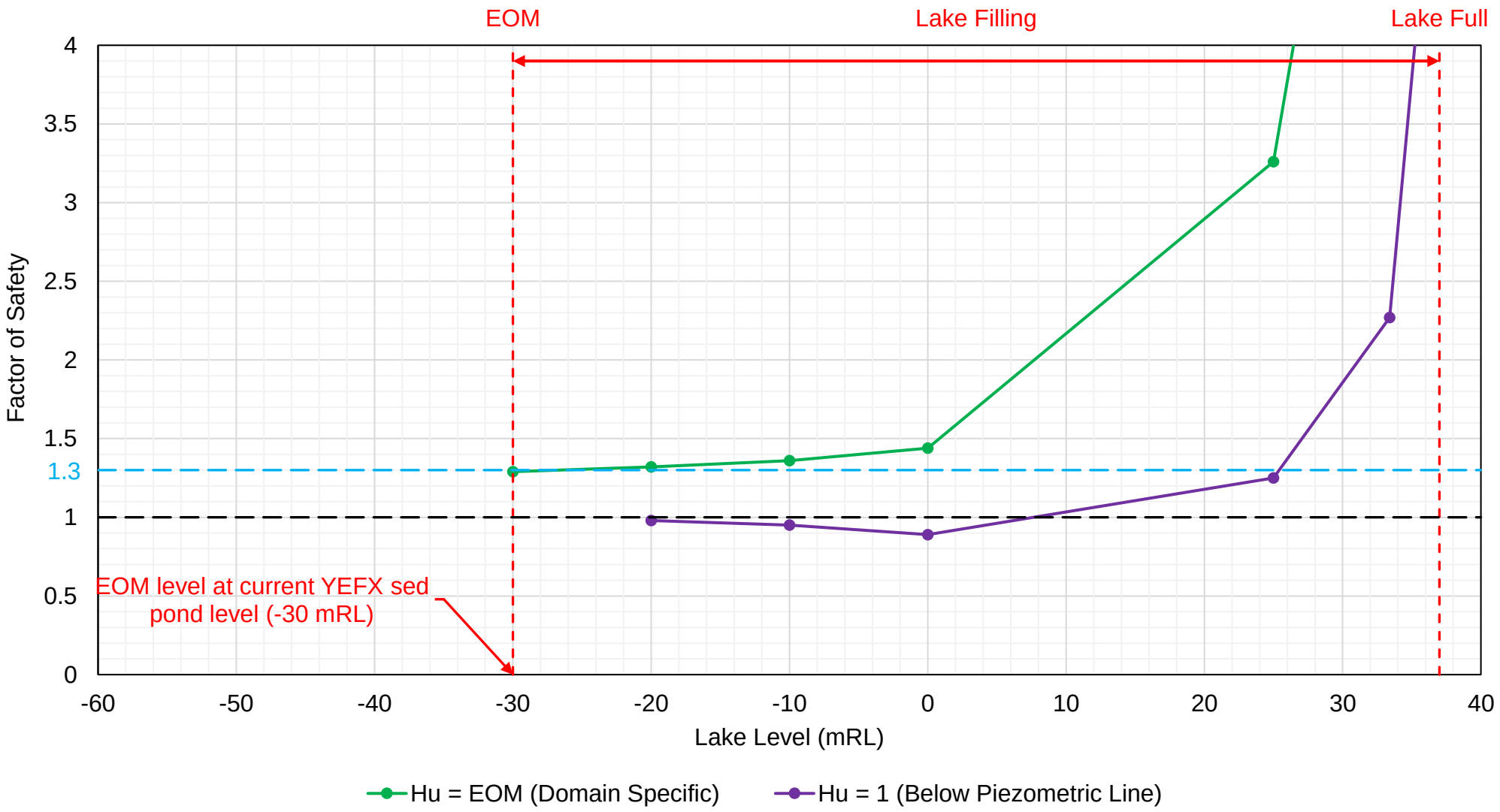
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 5

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 1



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. FoS > 4.0 is not displayed on plot

EnergyAustralia

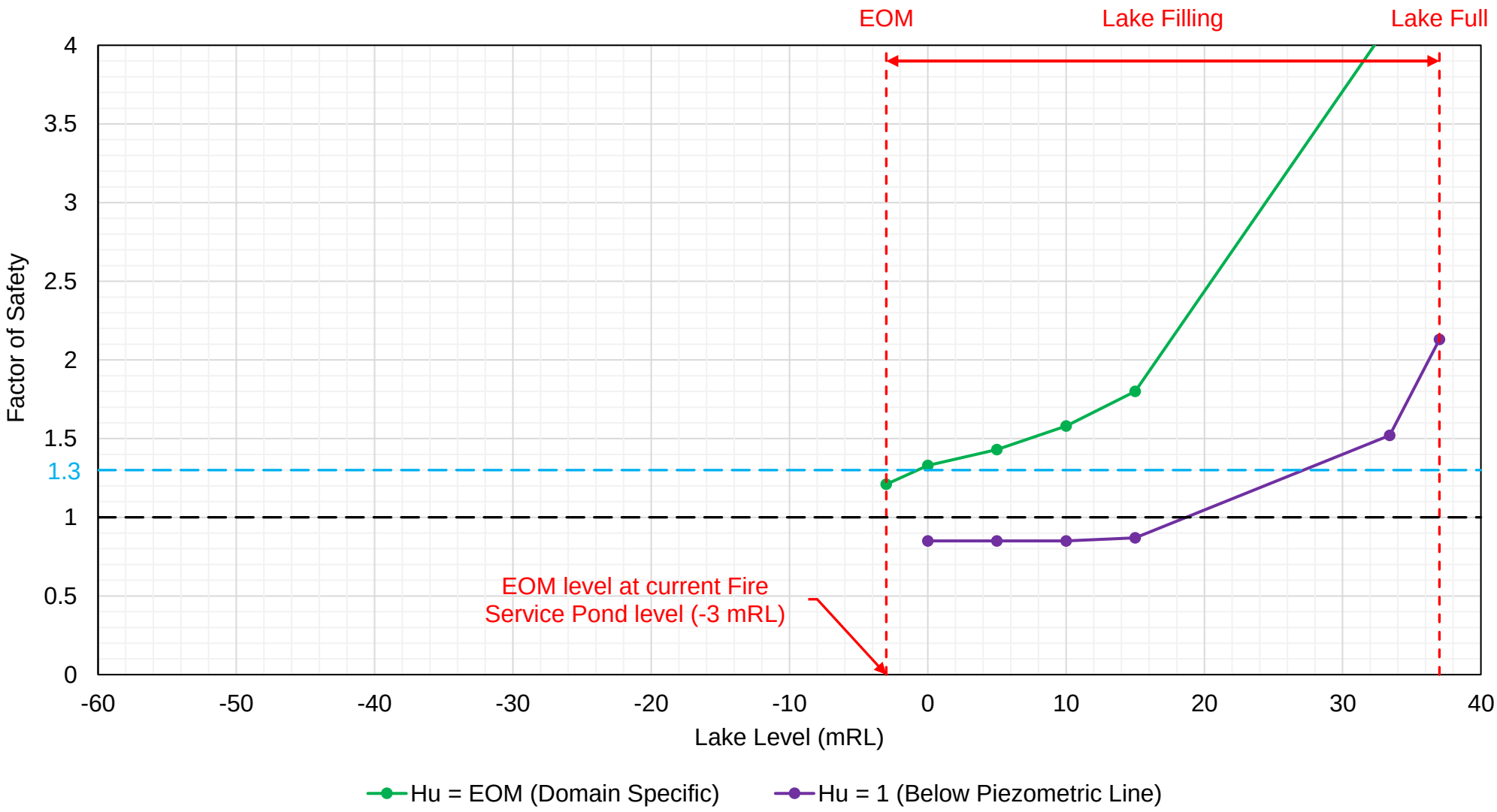
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 6

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 1



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. FoS > 4.0 is not displayed on plot

EnergyAustralia

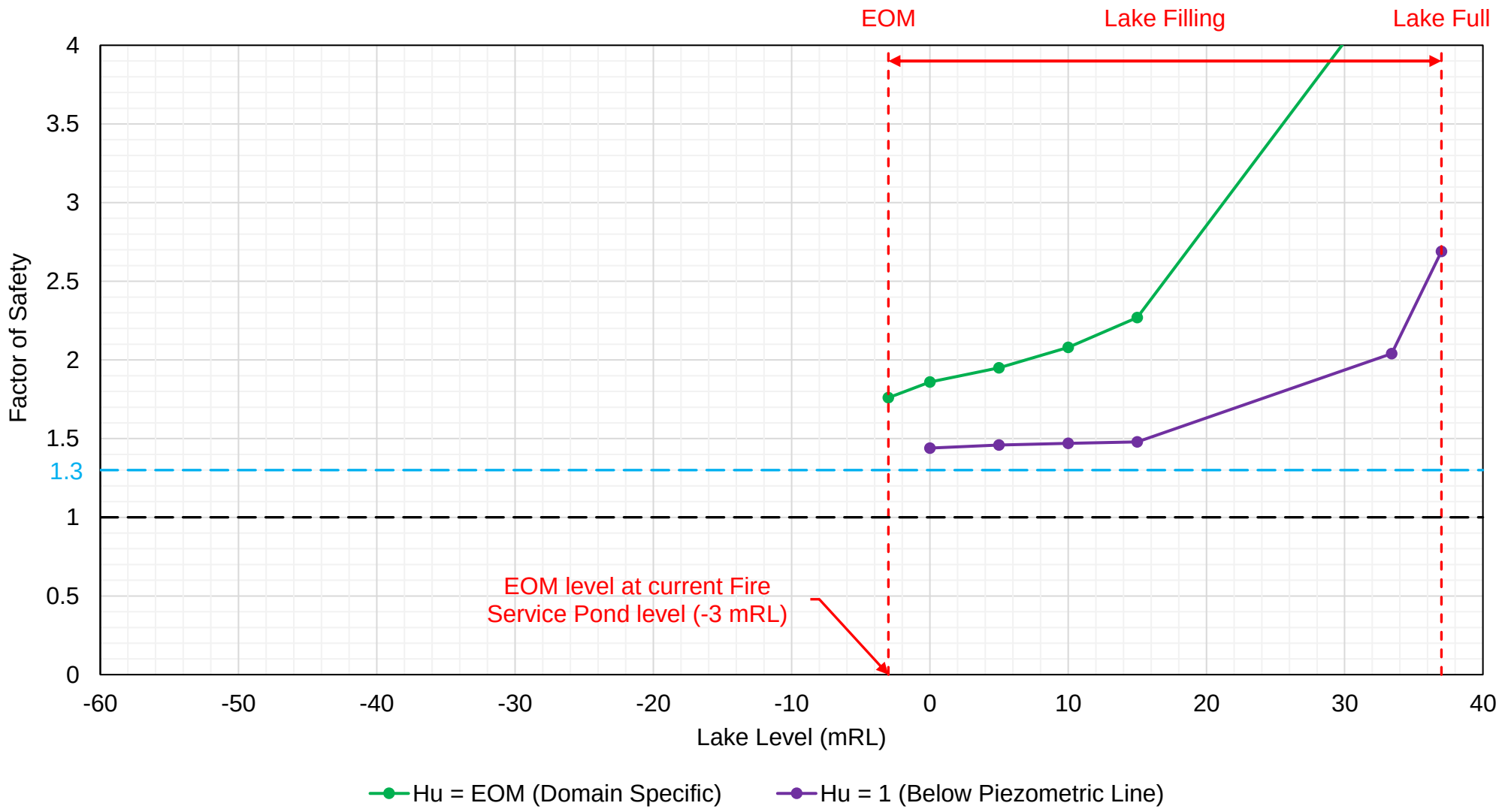
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 16

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 1



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. FoS > 4.0 is not displayed on plot

EnergyAustralia

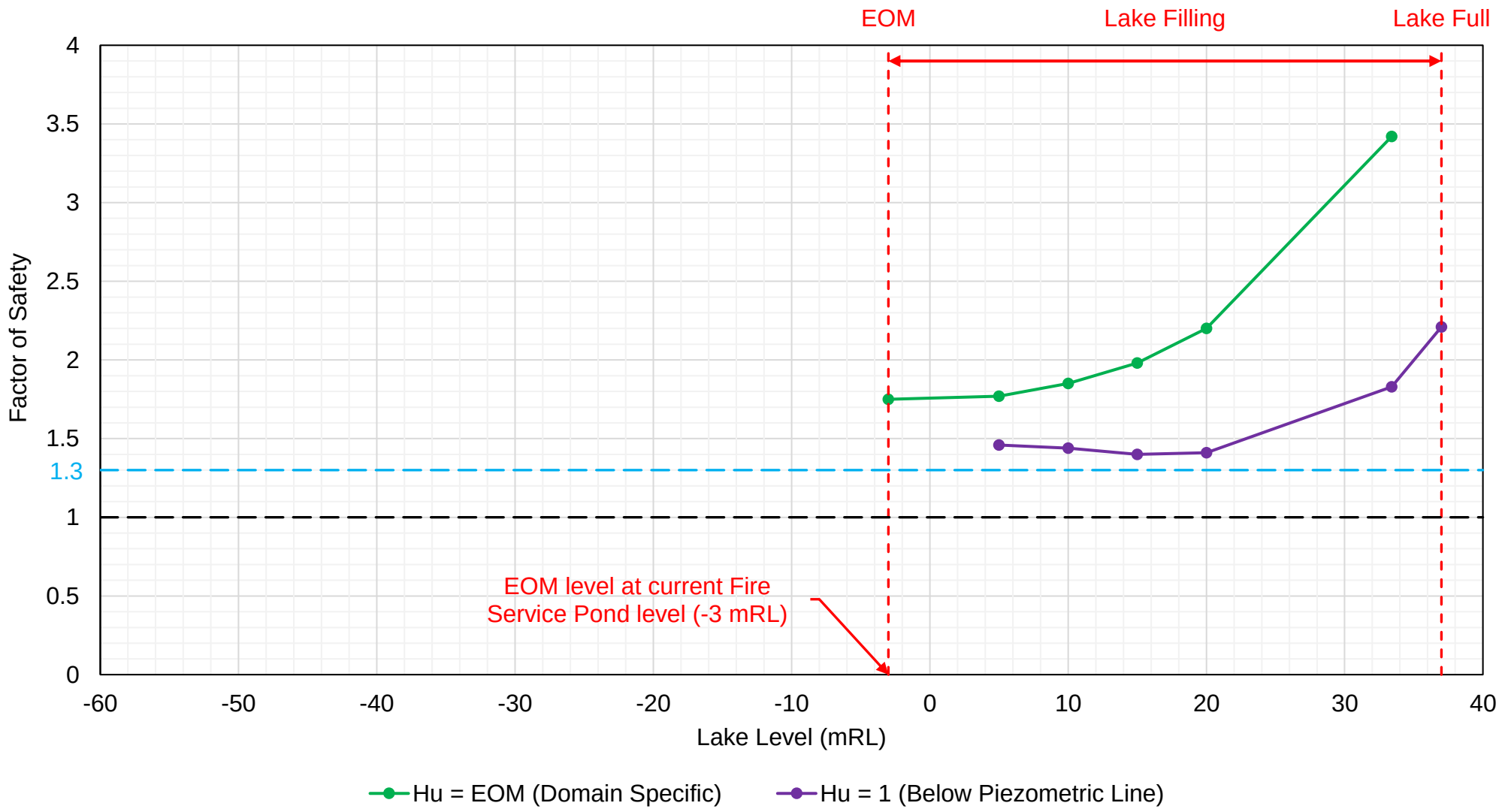
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 17

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 1



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks

EnergyAustralia

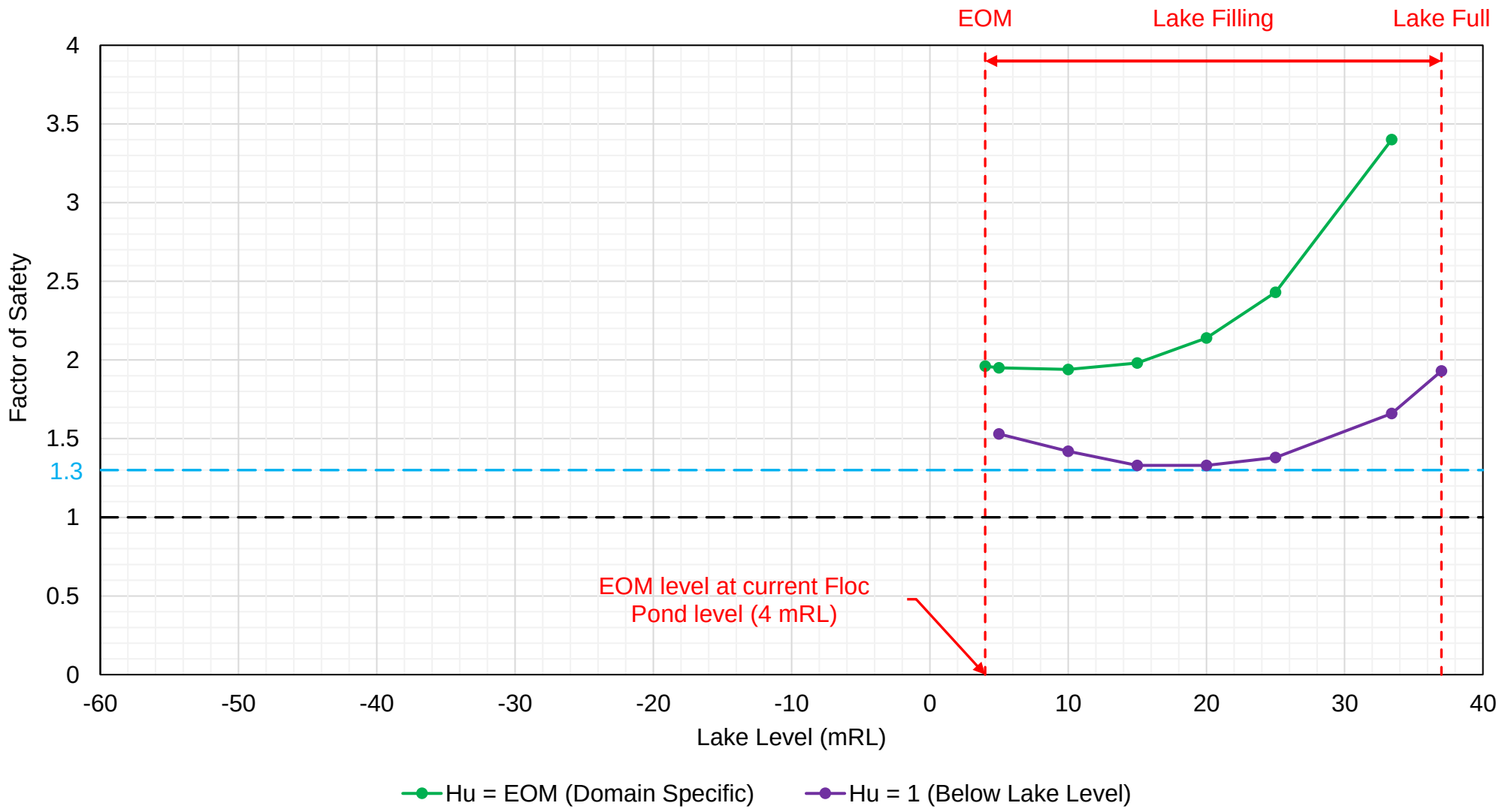
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 18

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 1



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks

EnergyAustralia

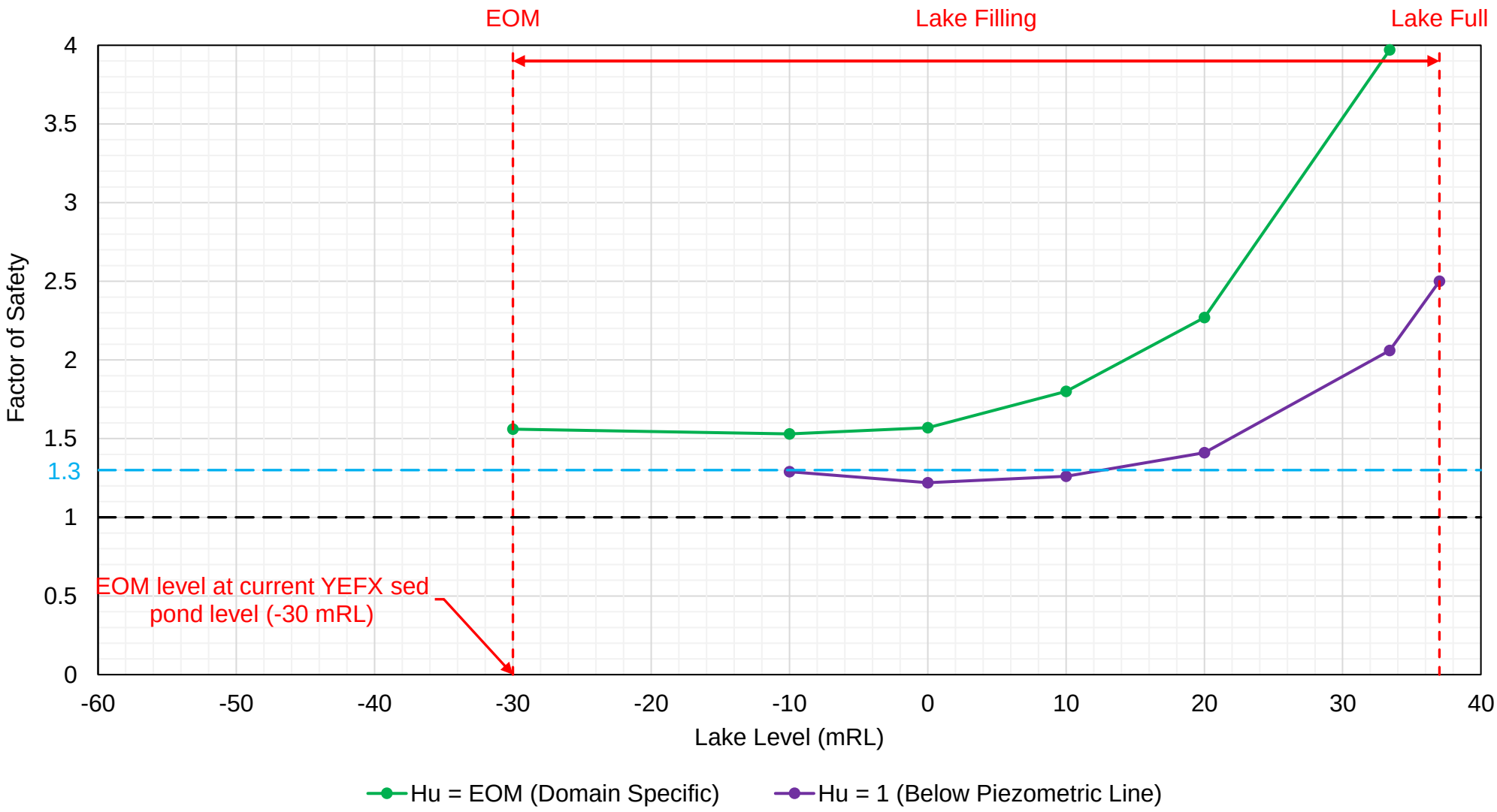
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 18B

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 1



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks

EnergyAustralia

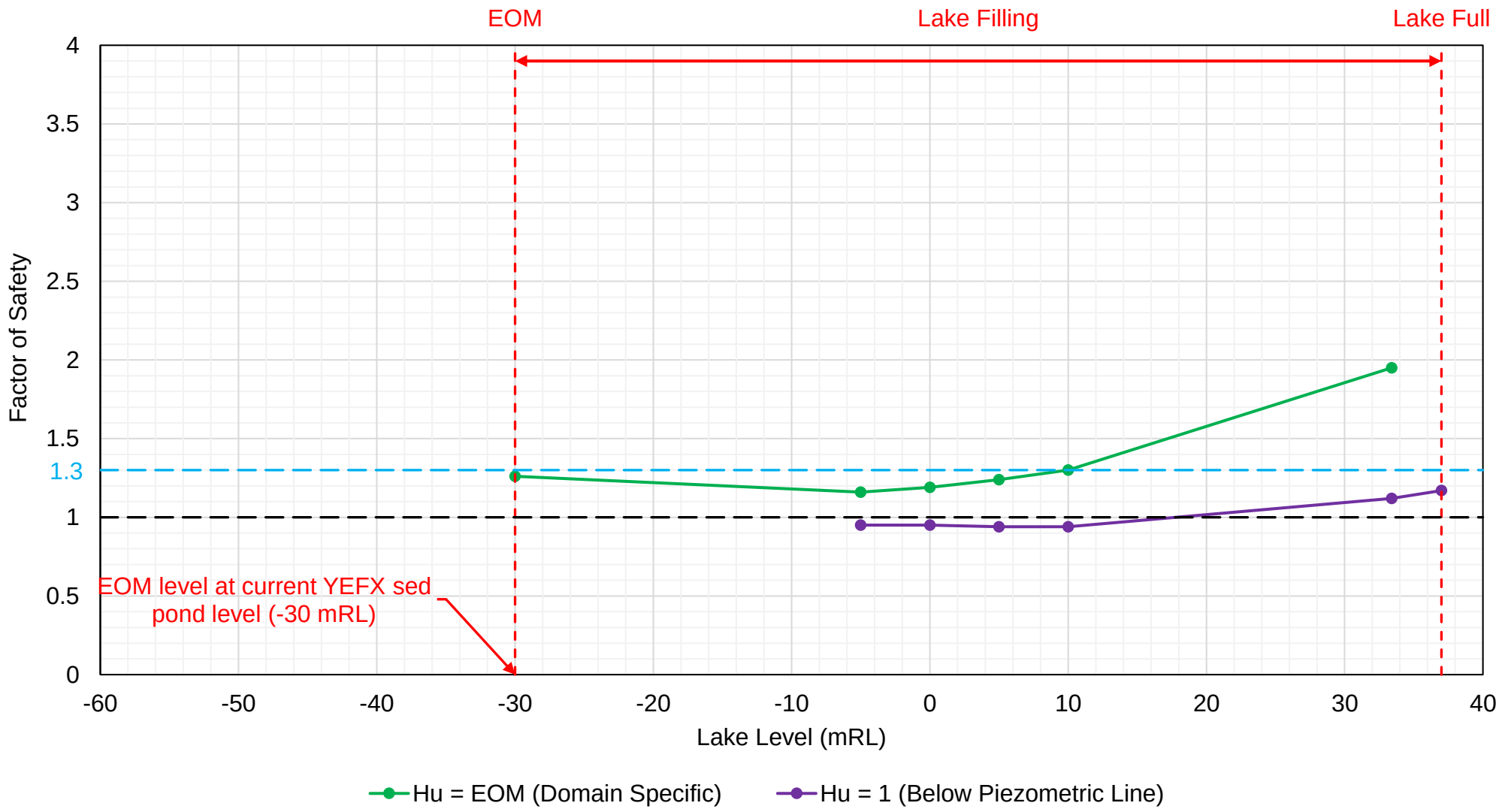
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 7B

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 1



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks

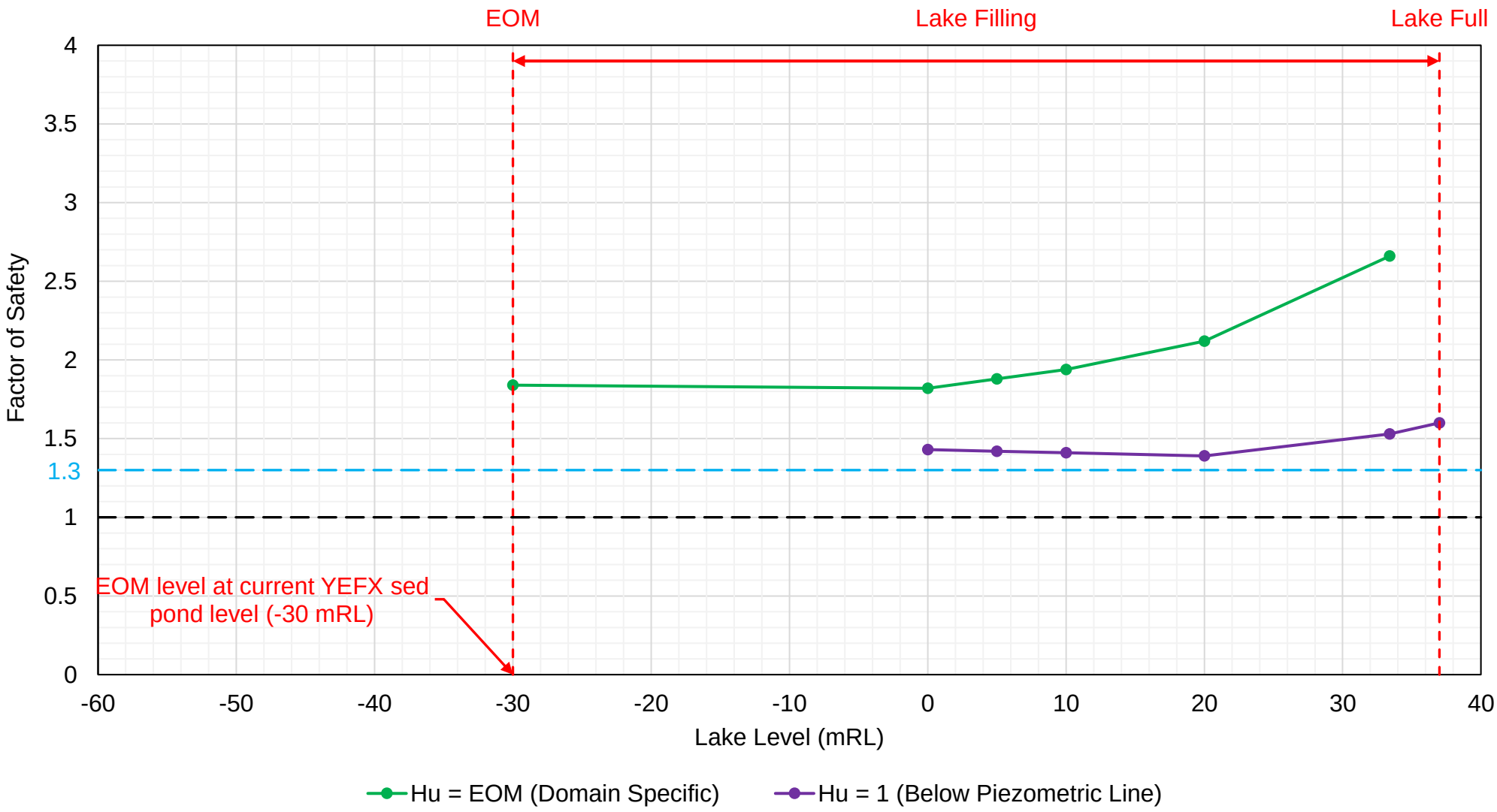
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 9

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks

EnergyAustralia

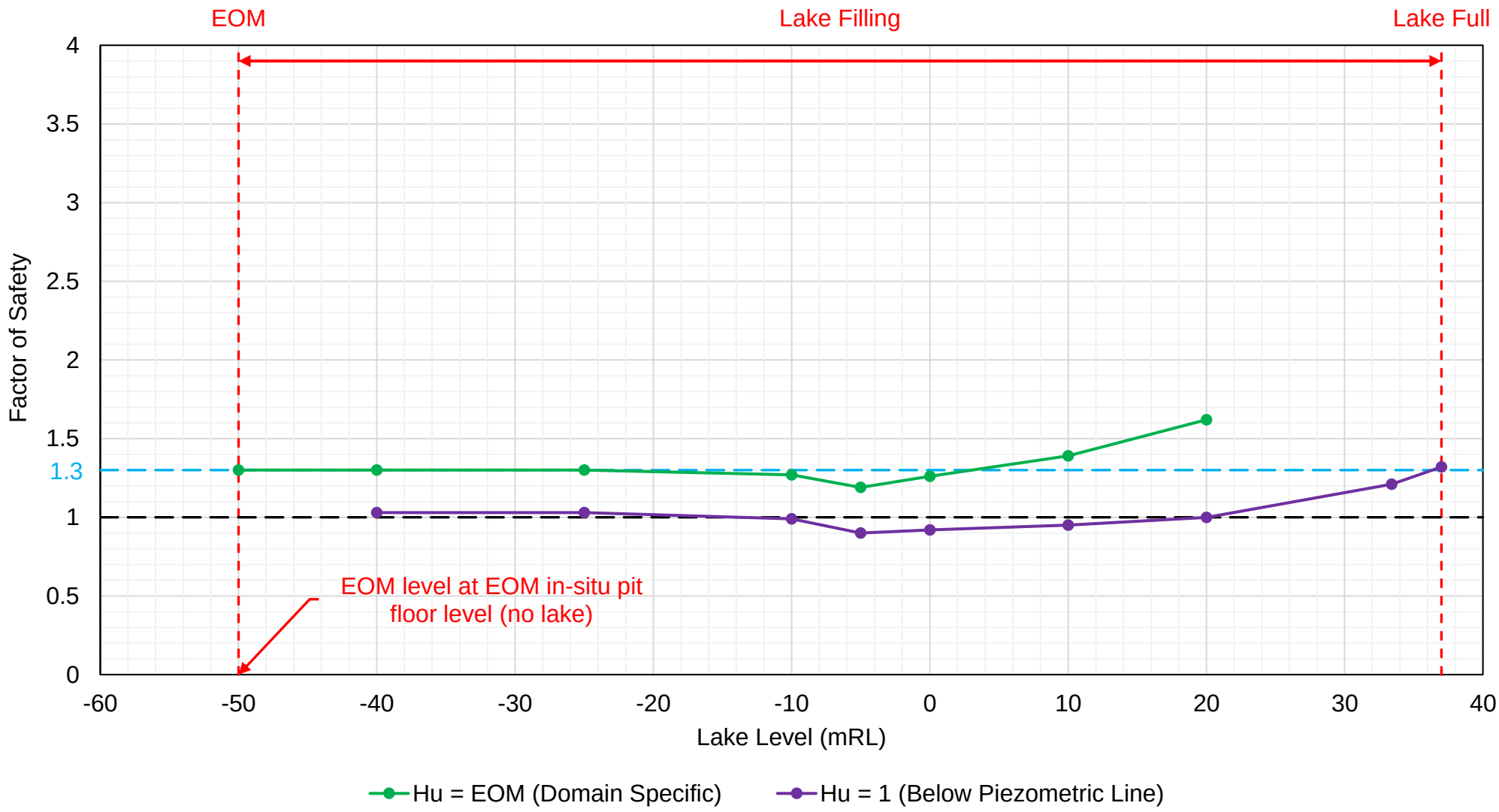
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 10

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\13. Additional Block Slide Analysis\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 10



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks

EnergyAustralia

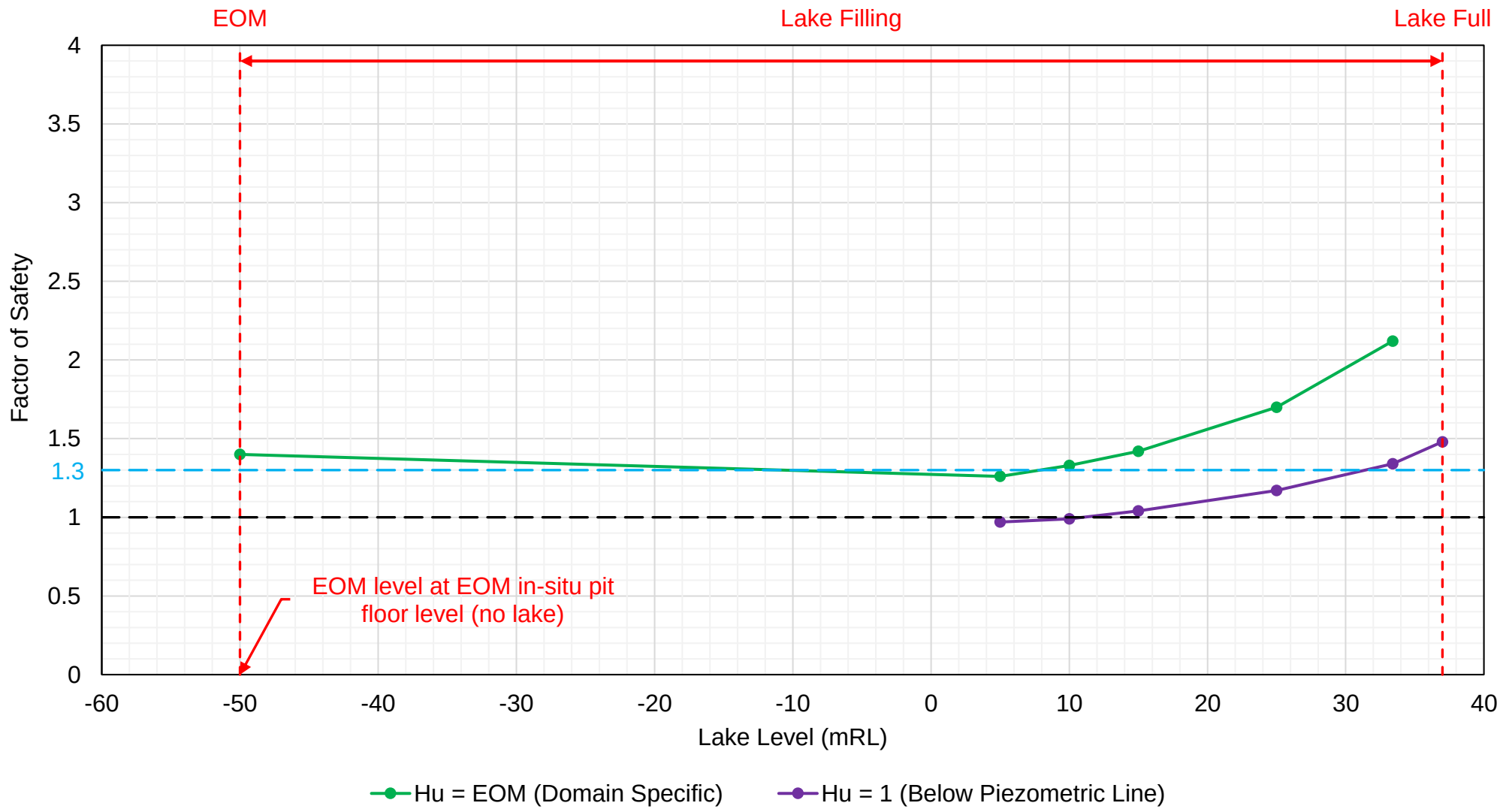
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 11

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\13. Additional Block Slide Analysis\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 11



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks

EnergyAustralia

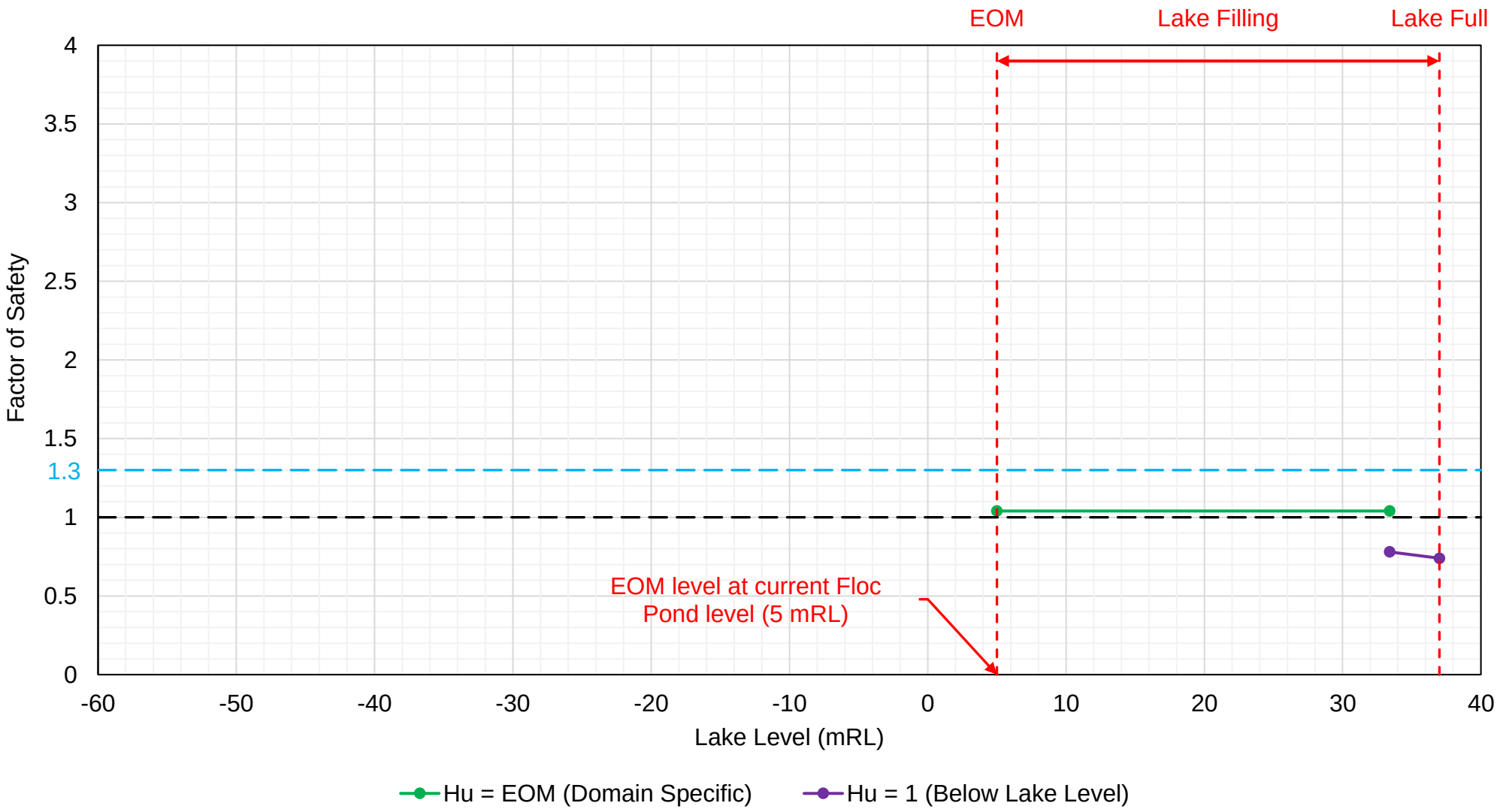
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 12

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\13. Additional Block Slide Analysis\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 12



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks

EnergyAustralia

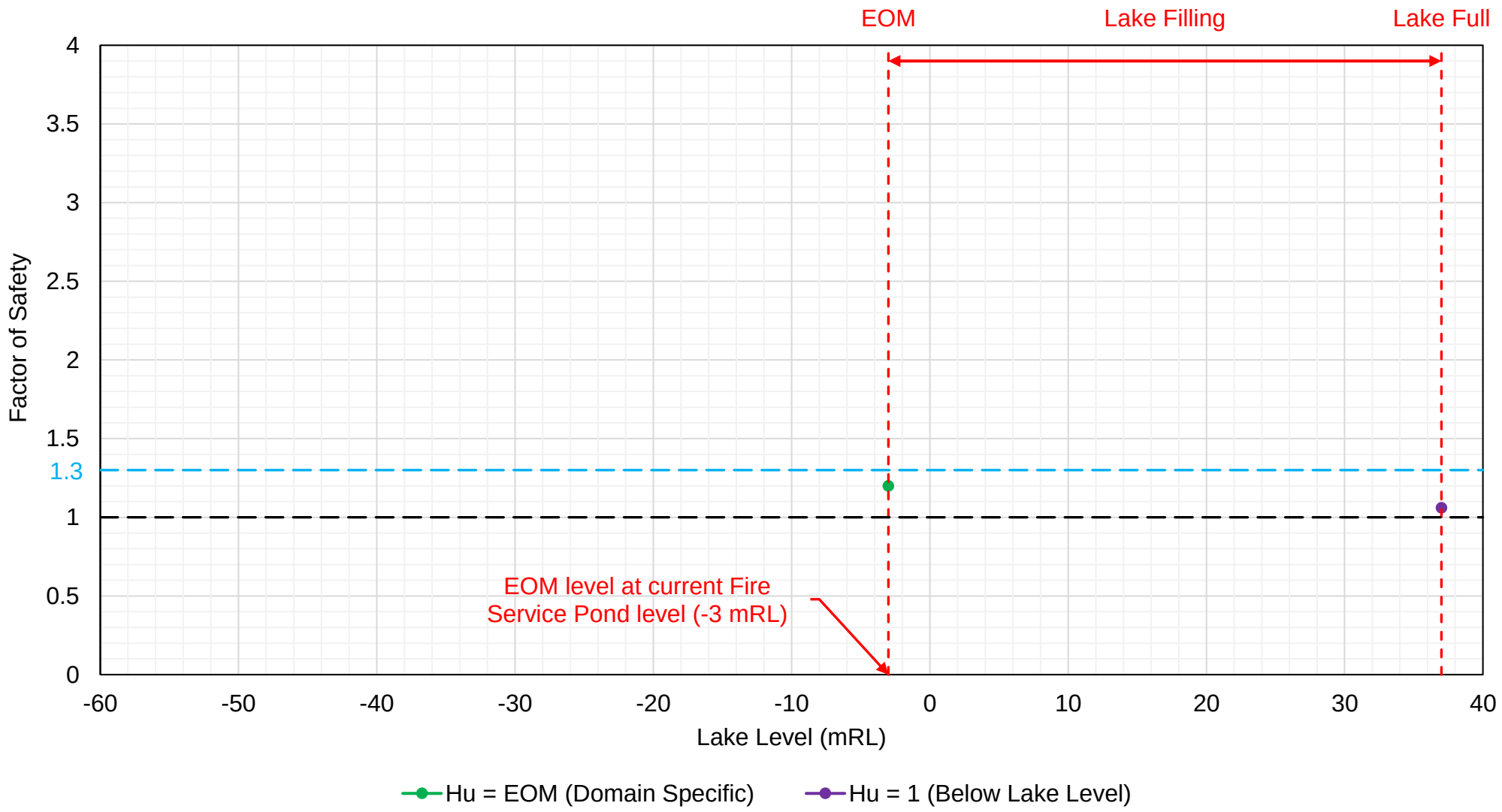
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 19

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\13. Additional Block Slide Analysis\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 19



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks

EnergyAustralia

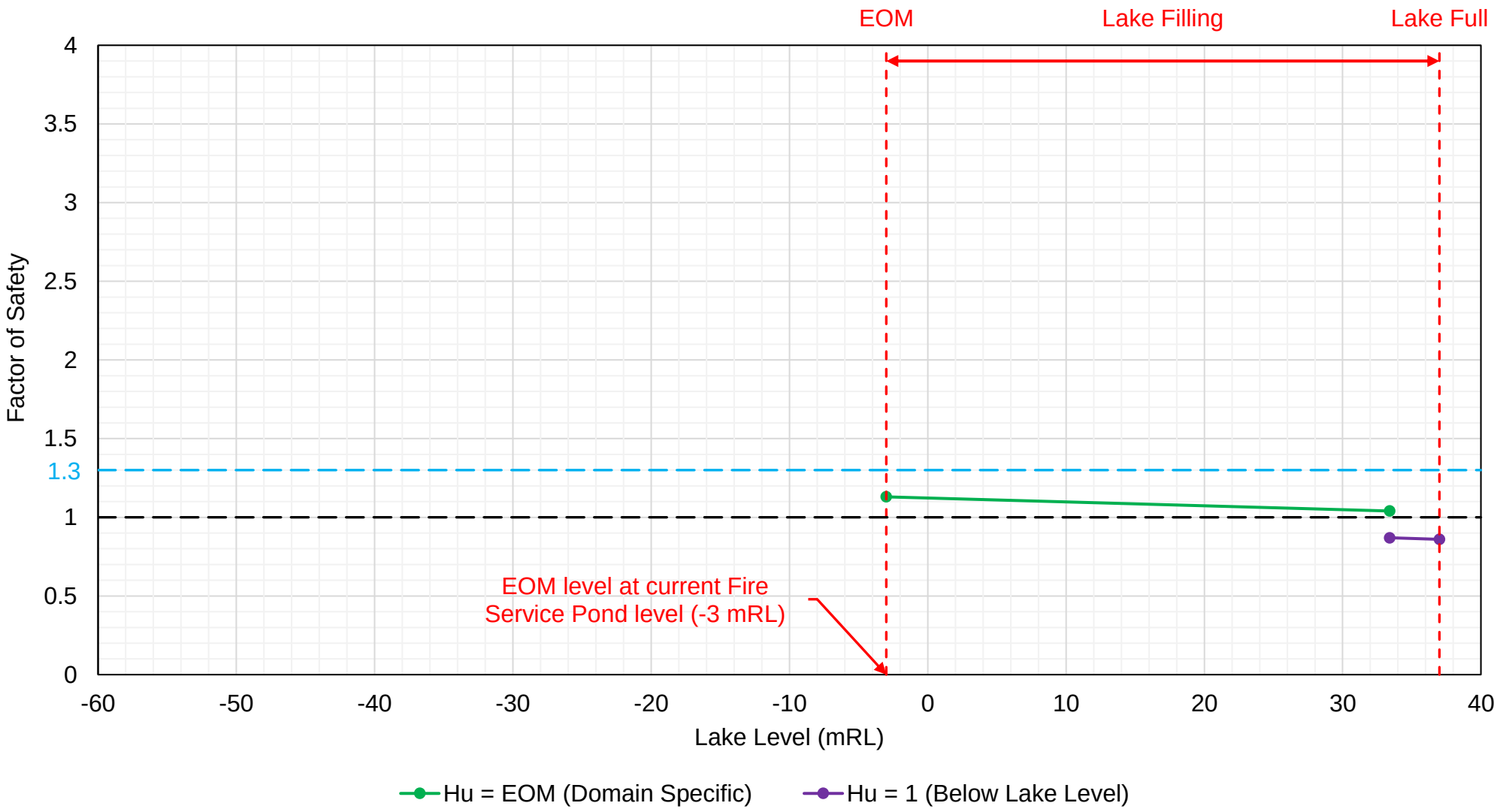
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 20

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\13. Additional Block Slide Analysis\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 20



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks

EnergyAustralia

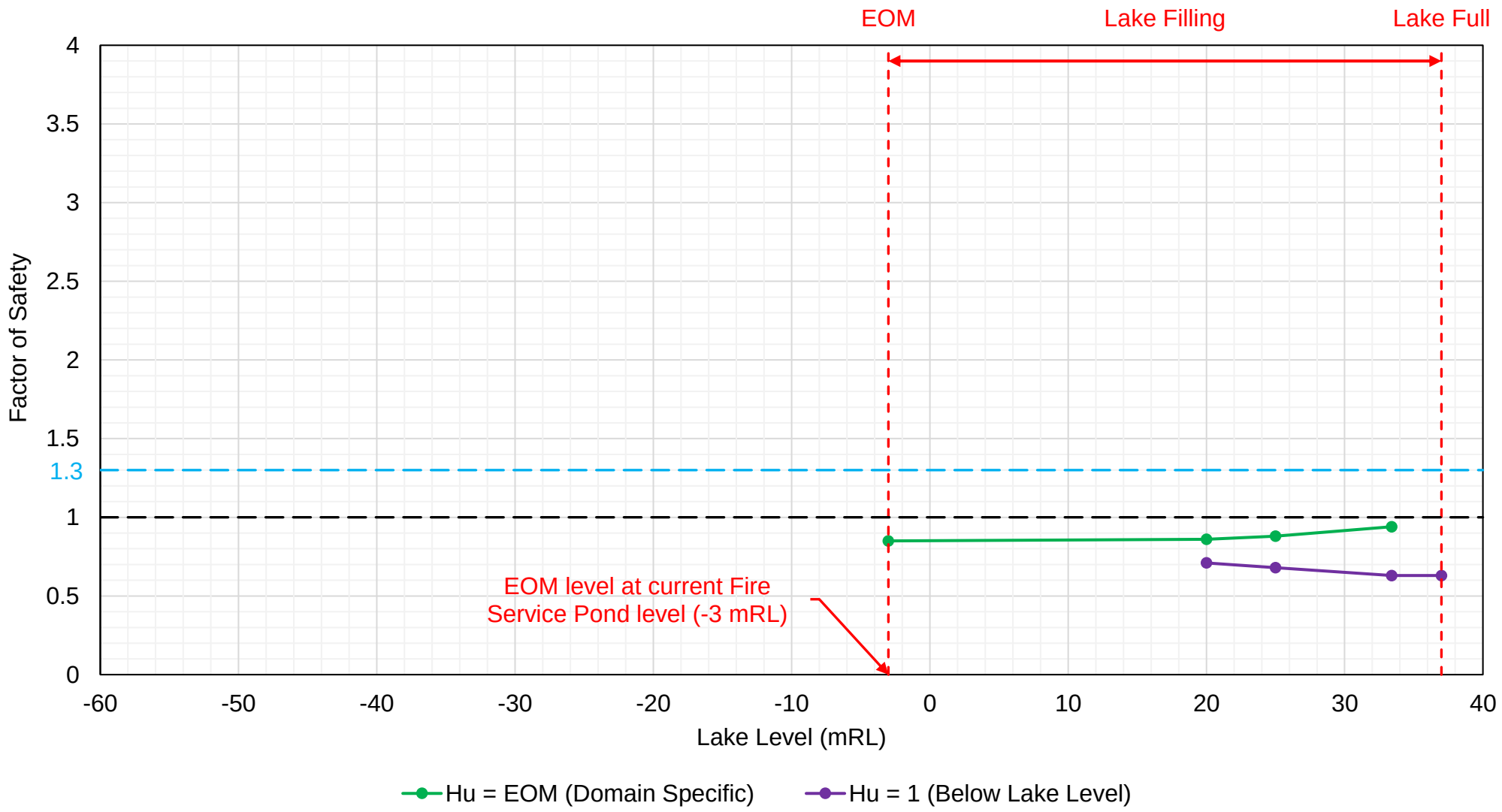
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 22

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\13. Additional Block Slide Analysis\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 22



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks

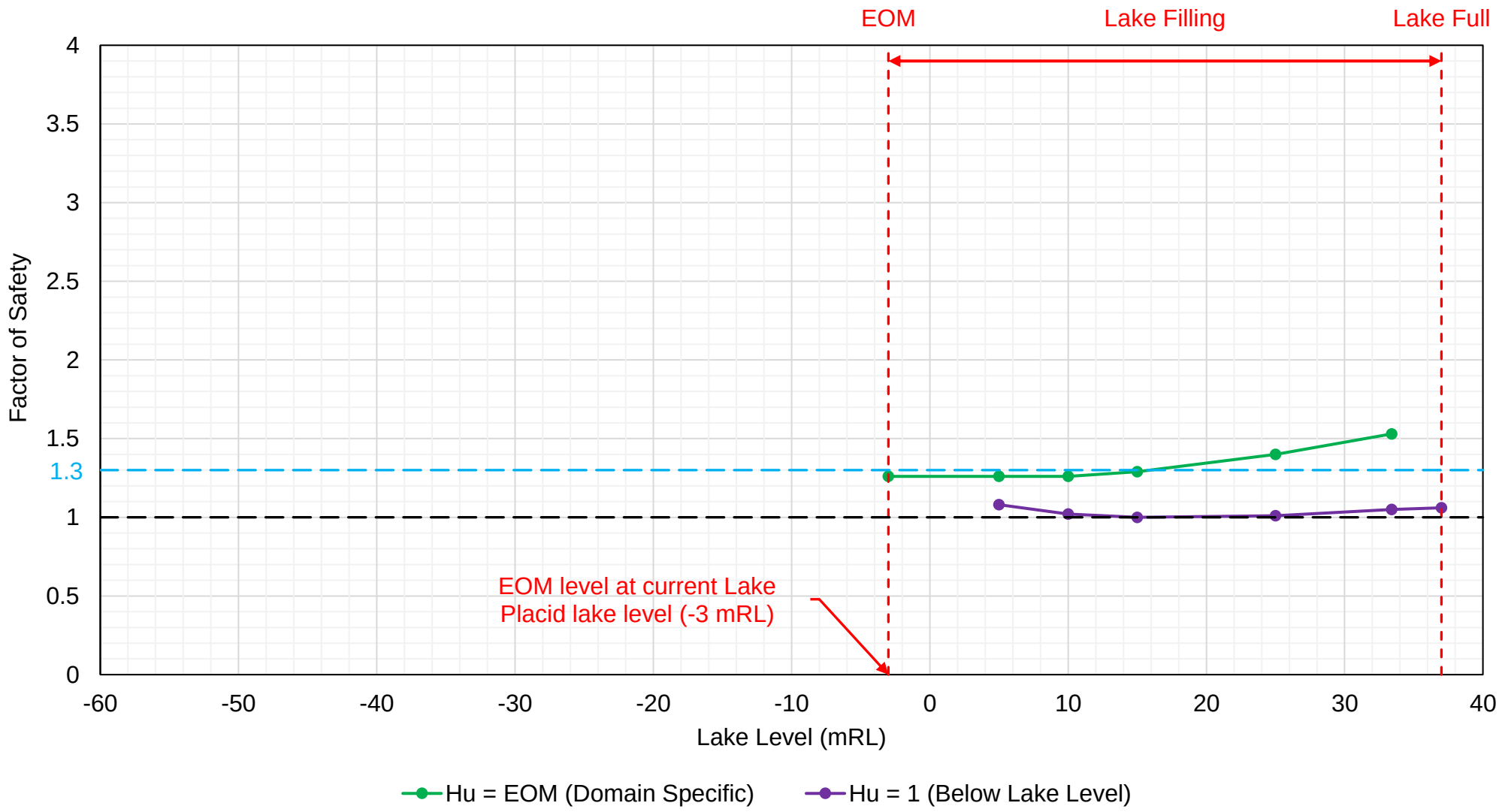
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 24

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks

EnergyAustralia

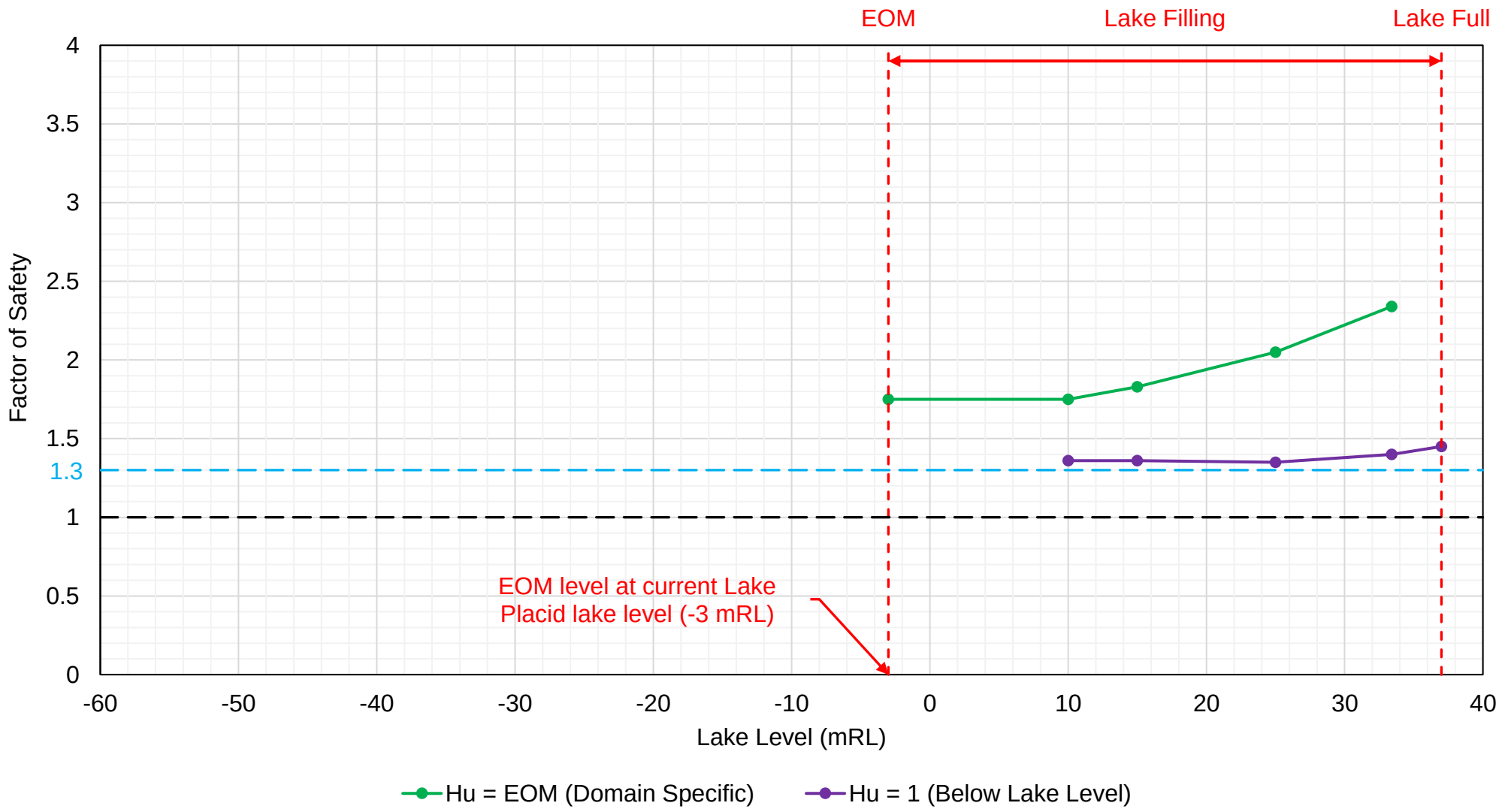
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 25

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\13. Additional Block Slide Analysis\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 25



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks

EnergyAustralia

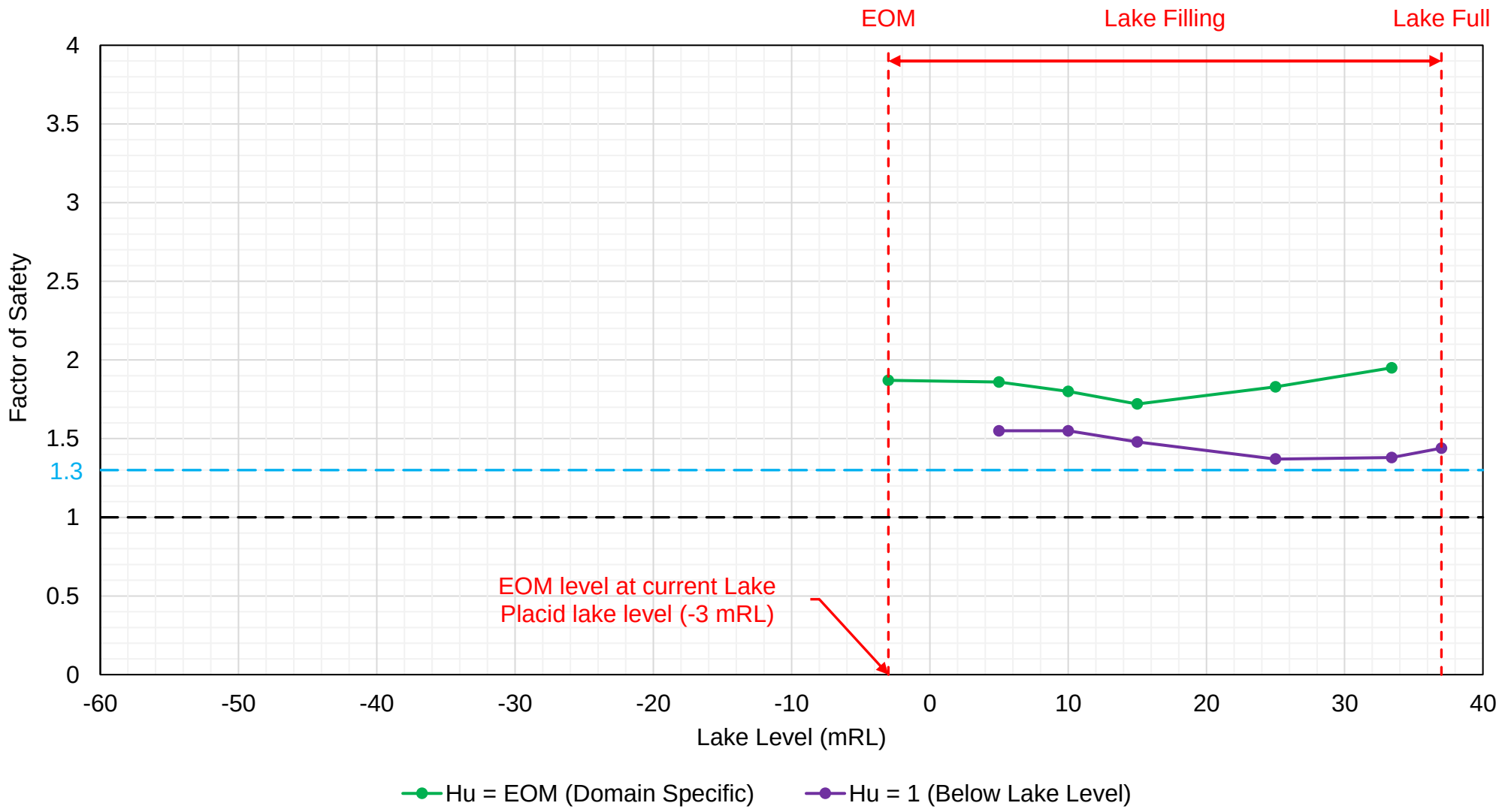
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 26

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\13. Additional Block Slide Analysis\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 26



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks

EnergyAustralia

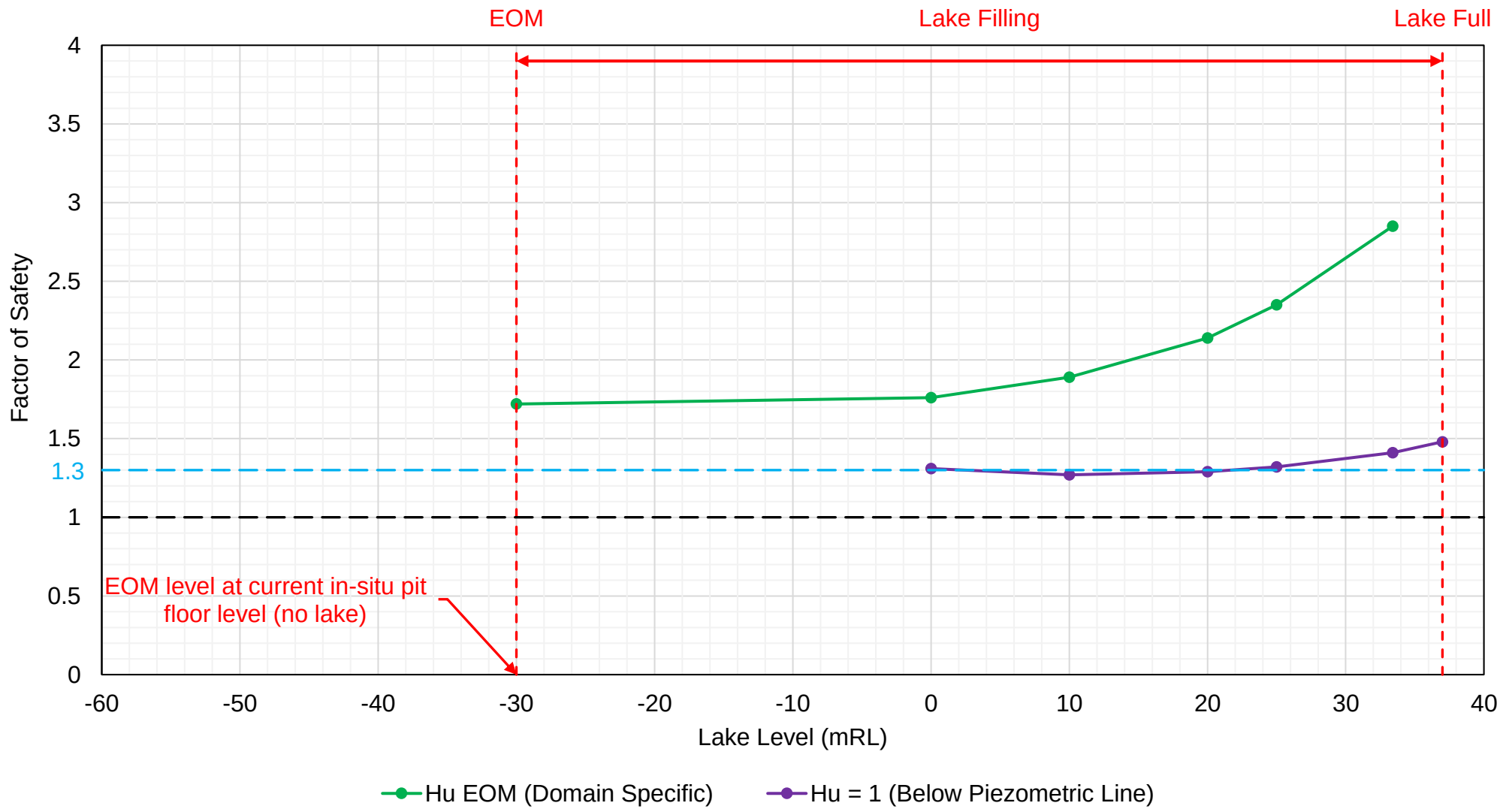
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 27

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\13. Additional Block Slide Analysis\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 27



Notes:

1. Scenario analysed is for Base Case - Multilinear

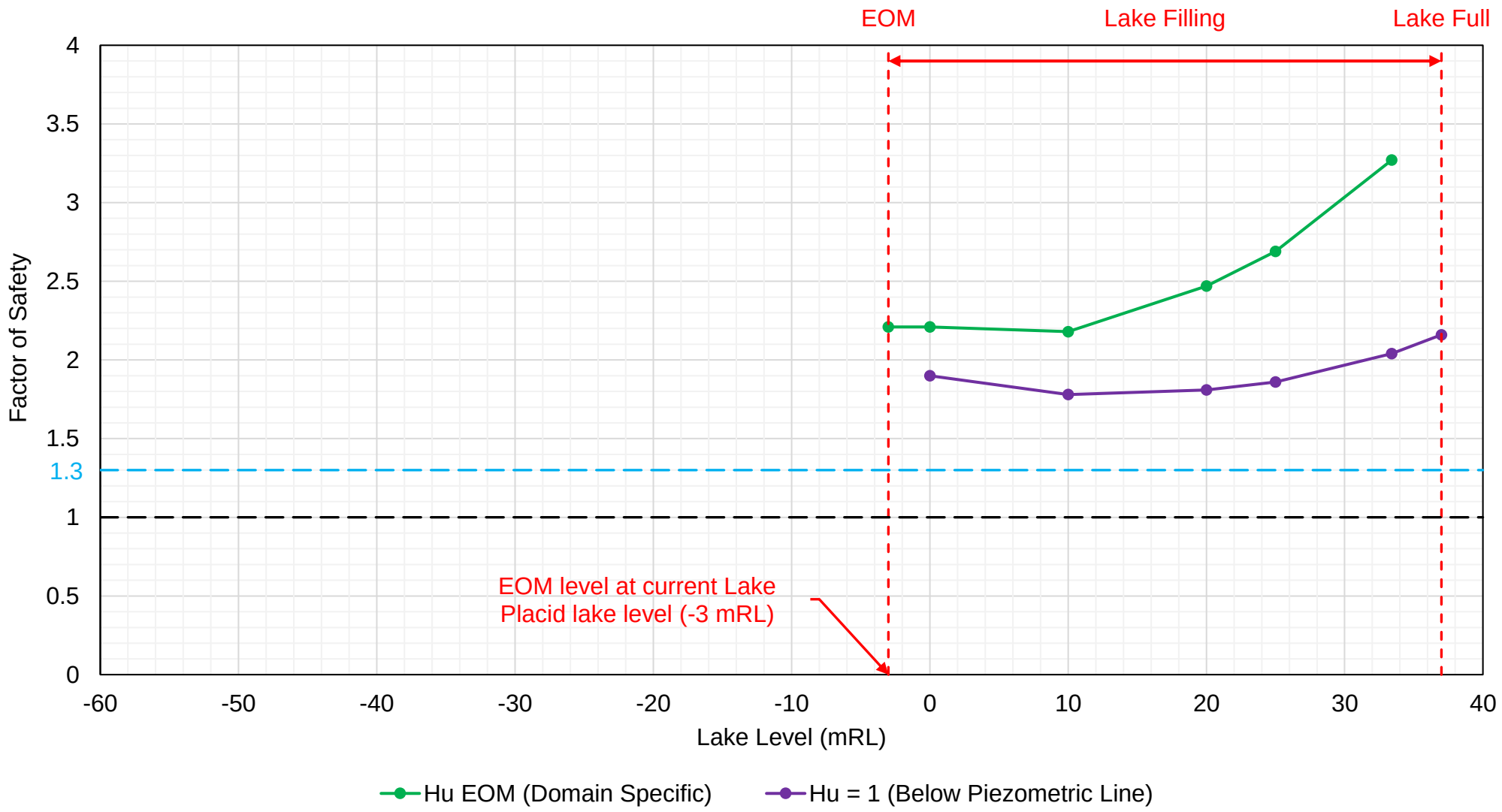
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 32

PSM4487-200R | Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

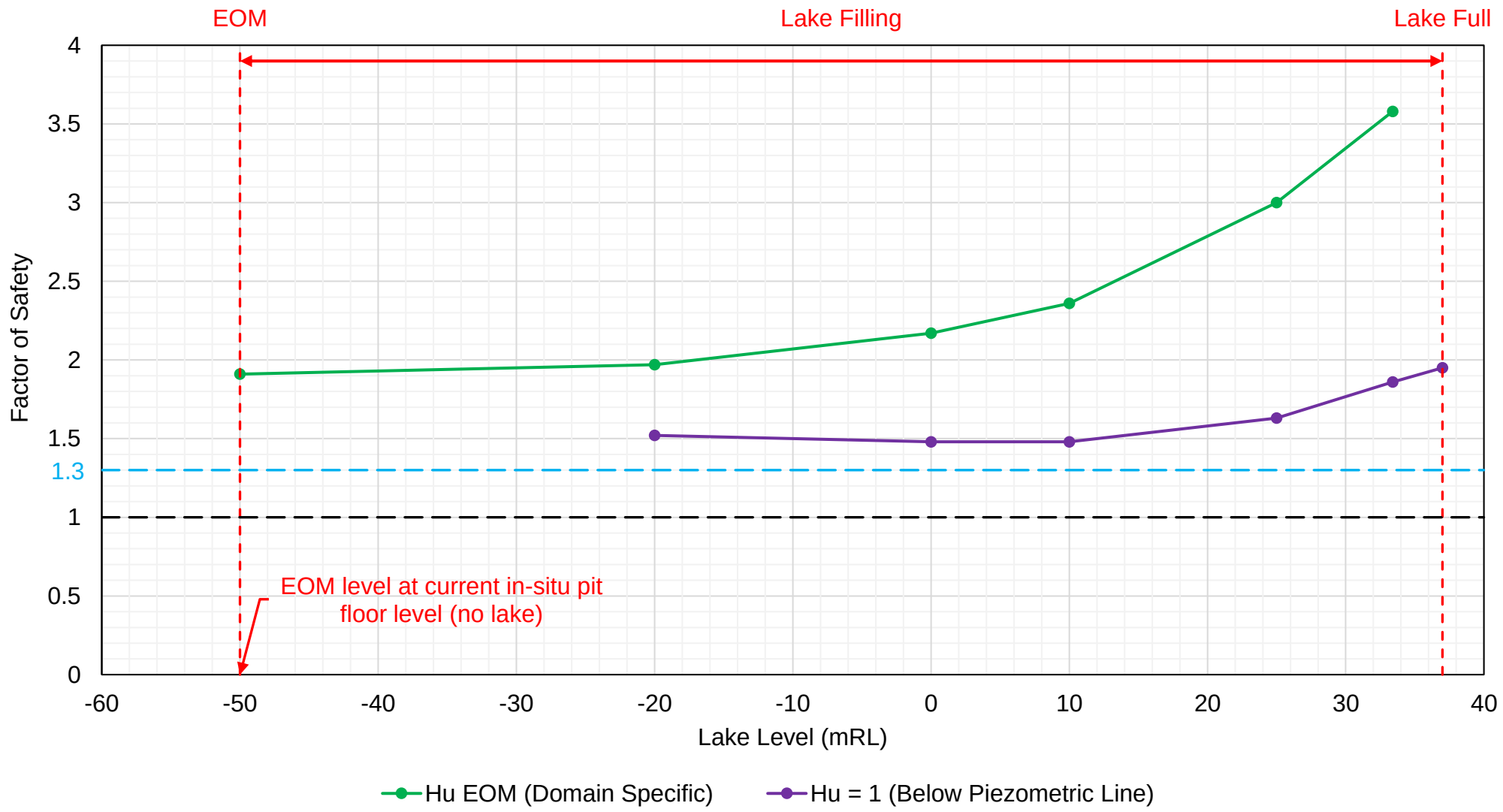
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 32 - RIGHT TO LEFT FAILURE

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear

EnergyAustralia

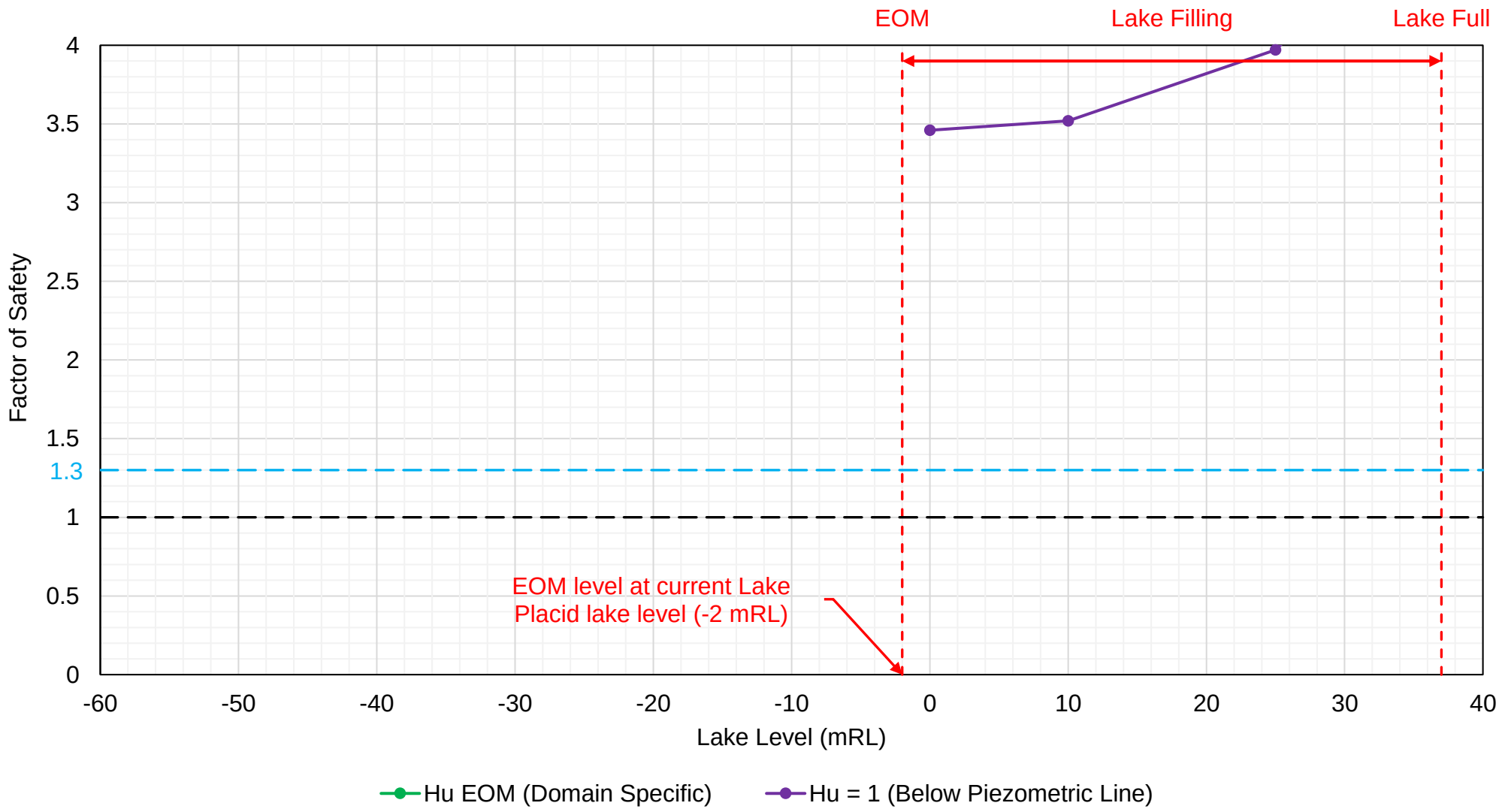
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 33

PSM4487-200R | Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear
2. FoS > 4.0 is not displayed on plot

EnergyAustralia

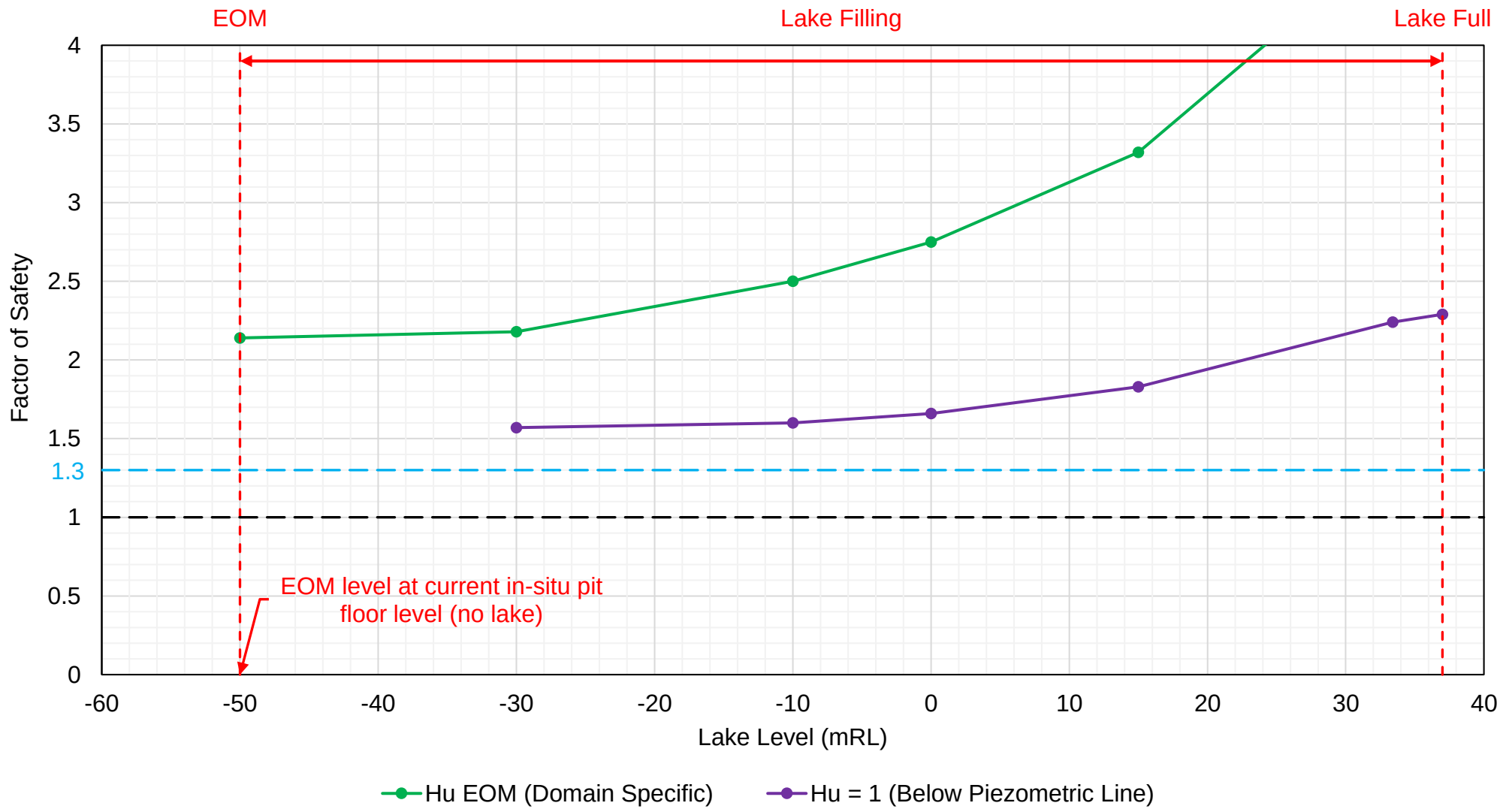
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 33 - RIGHT TO LEFT FAILURE

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear
2. FoS > 4.0 is not displayed on plot

EnergyAustralia

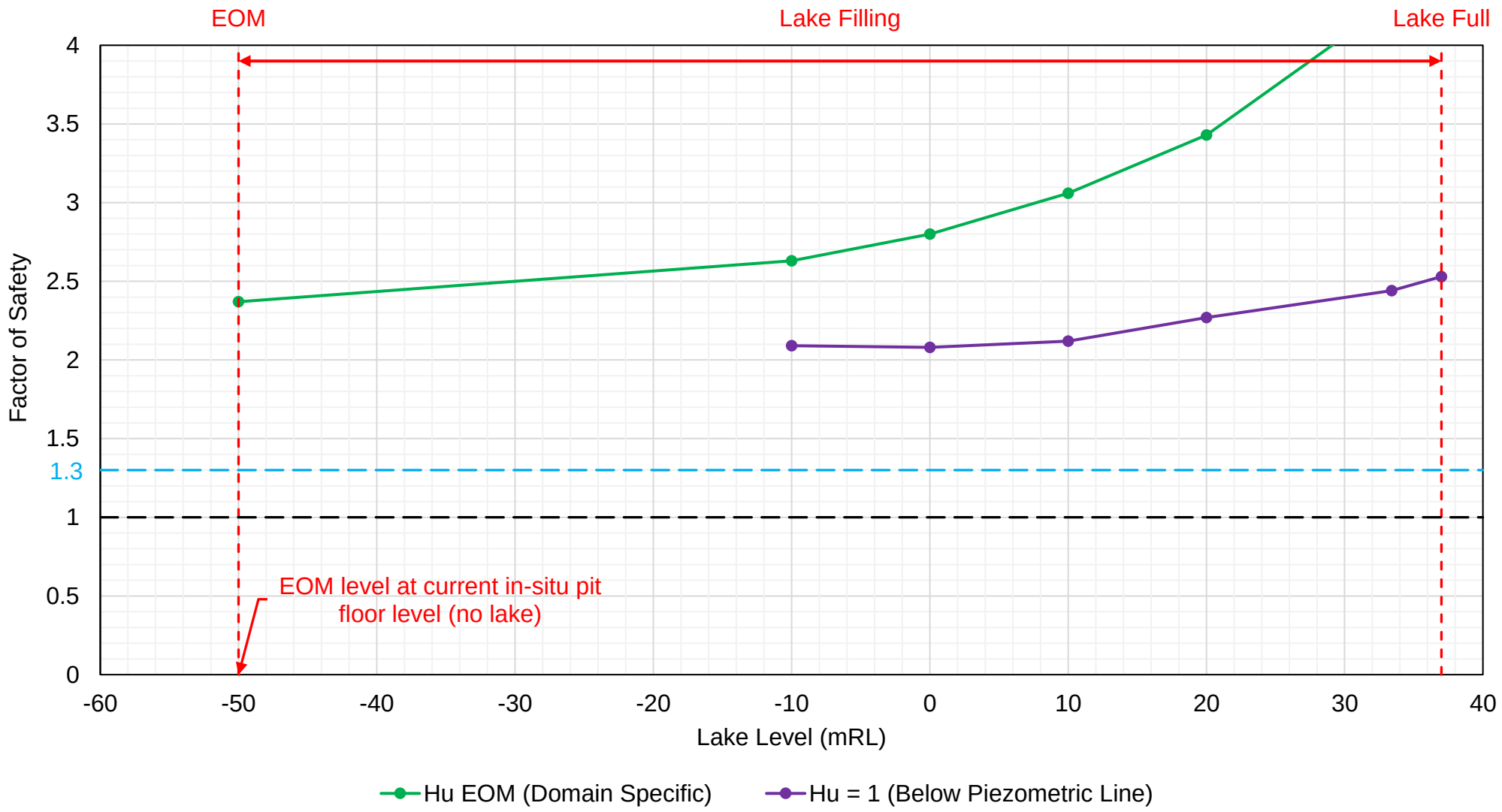
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 34

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Multilinear
2. FoS > 4.0 is not displayed on plot

EnergyAustralia

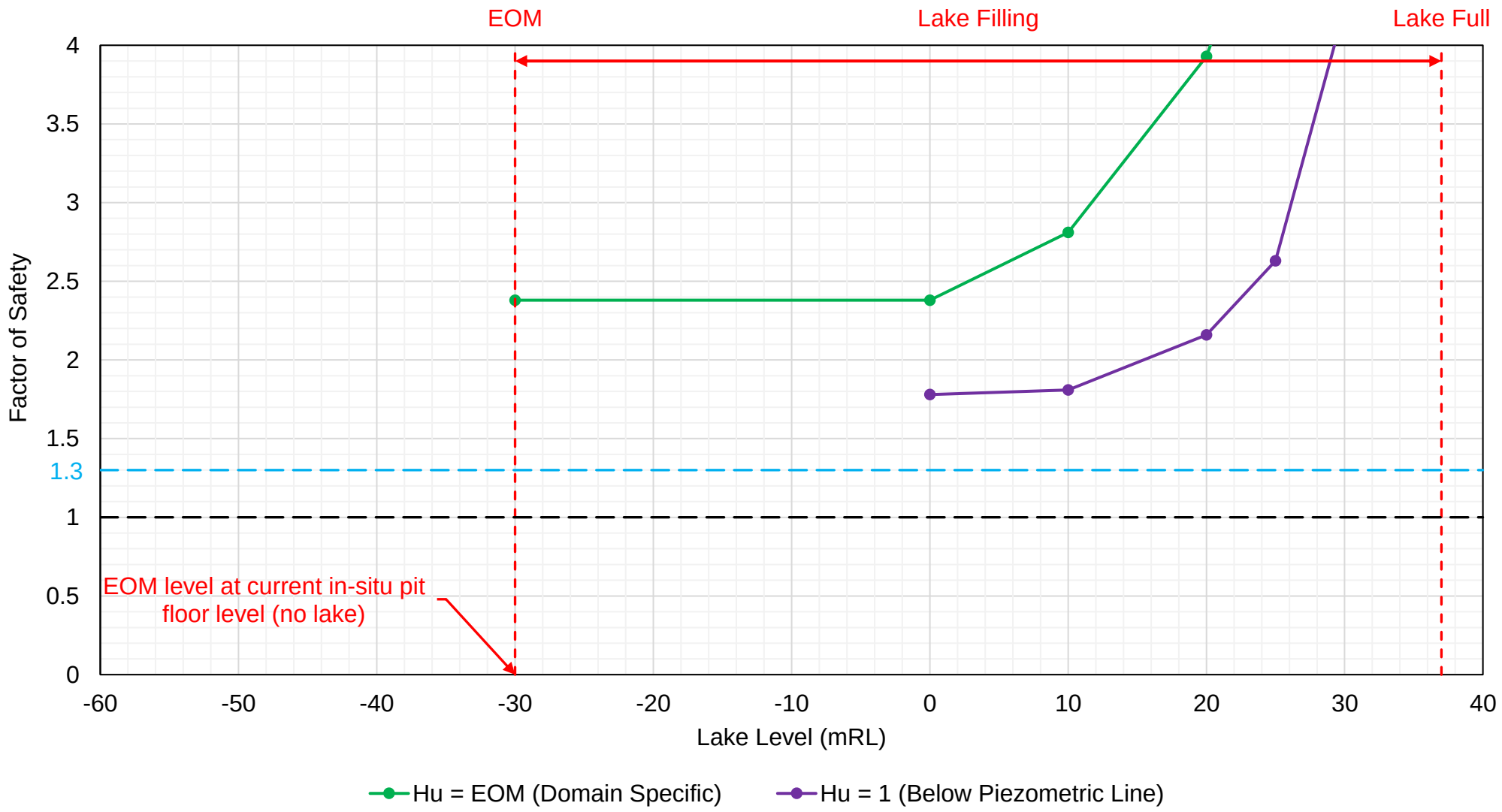
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 35

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Multilinear - A1\[FoS vs Lake Level - A1.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. FoS > 4.0 is not displayed on plot

EnergyAustralia

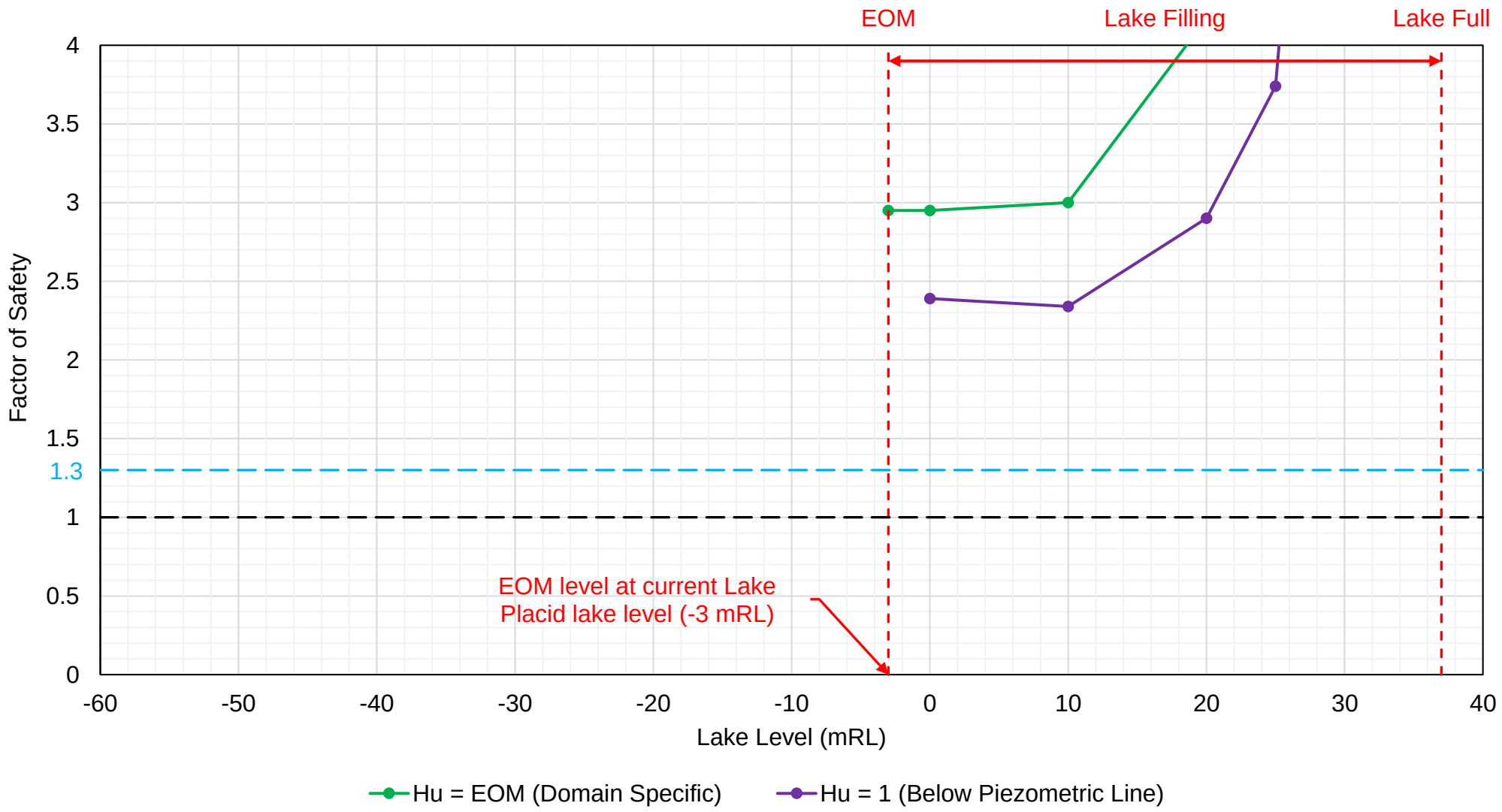
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 32

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. FoS > 4.0 is not displayed on plot

EnergyAustralia

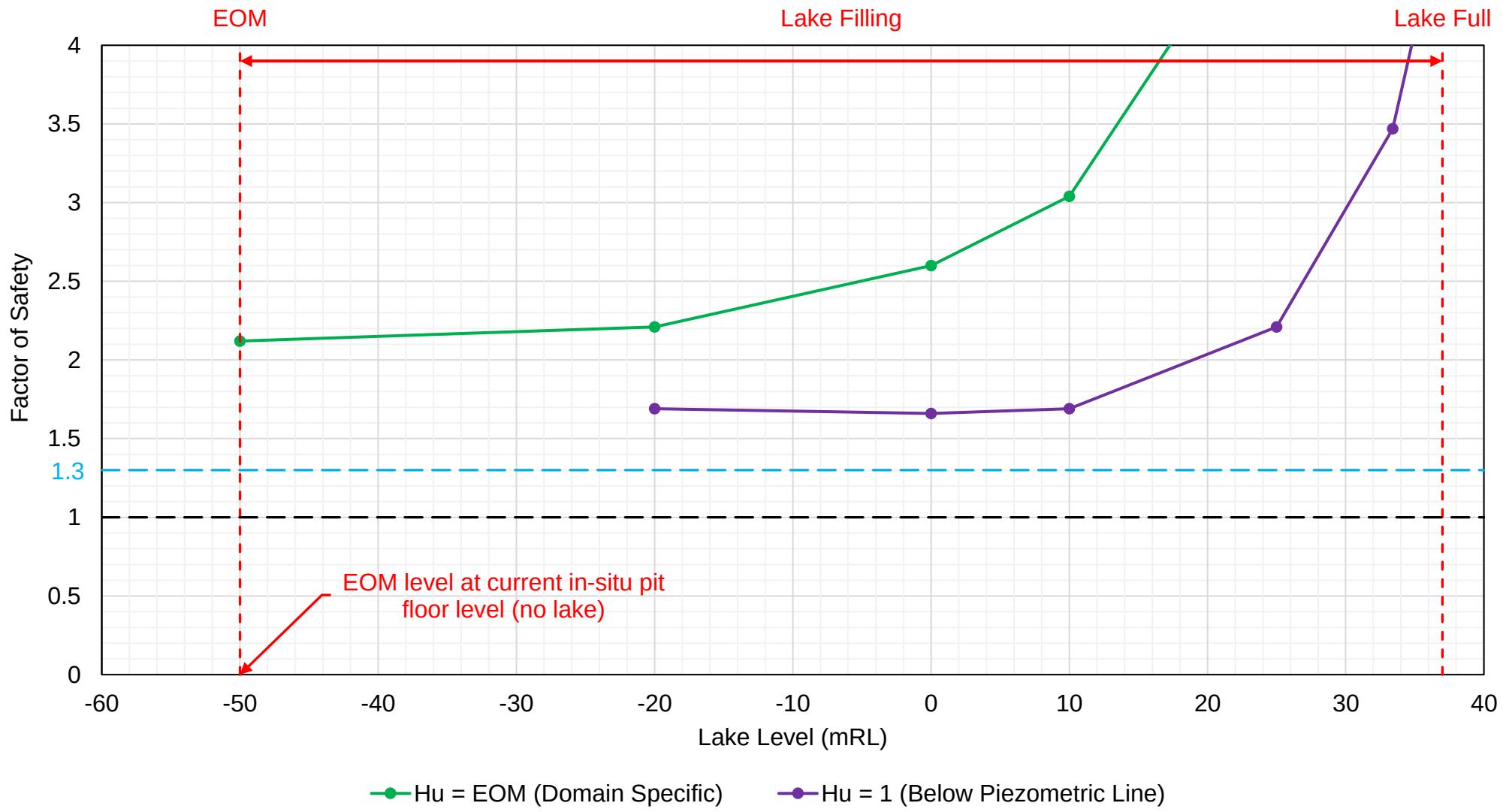
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 32 - RIGHT TO LEFT FAILURE

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. FoS > 4.0 is not displayed on plot

EnergyAustralia

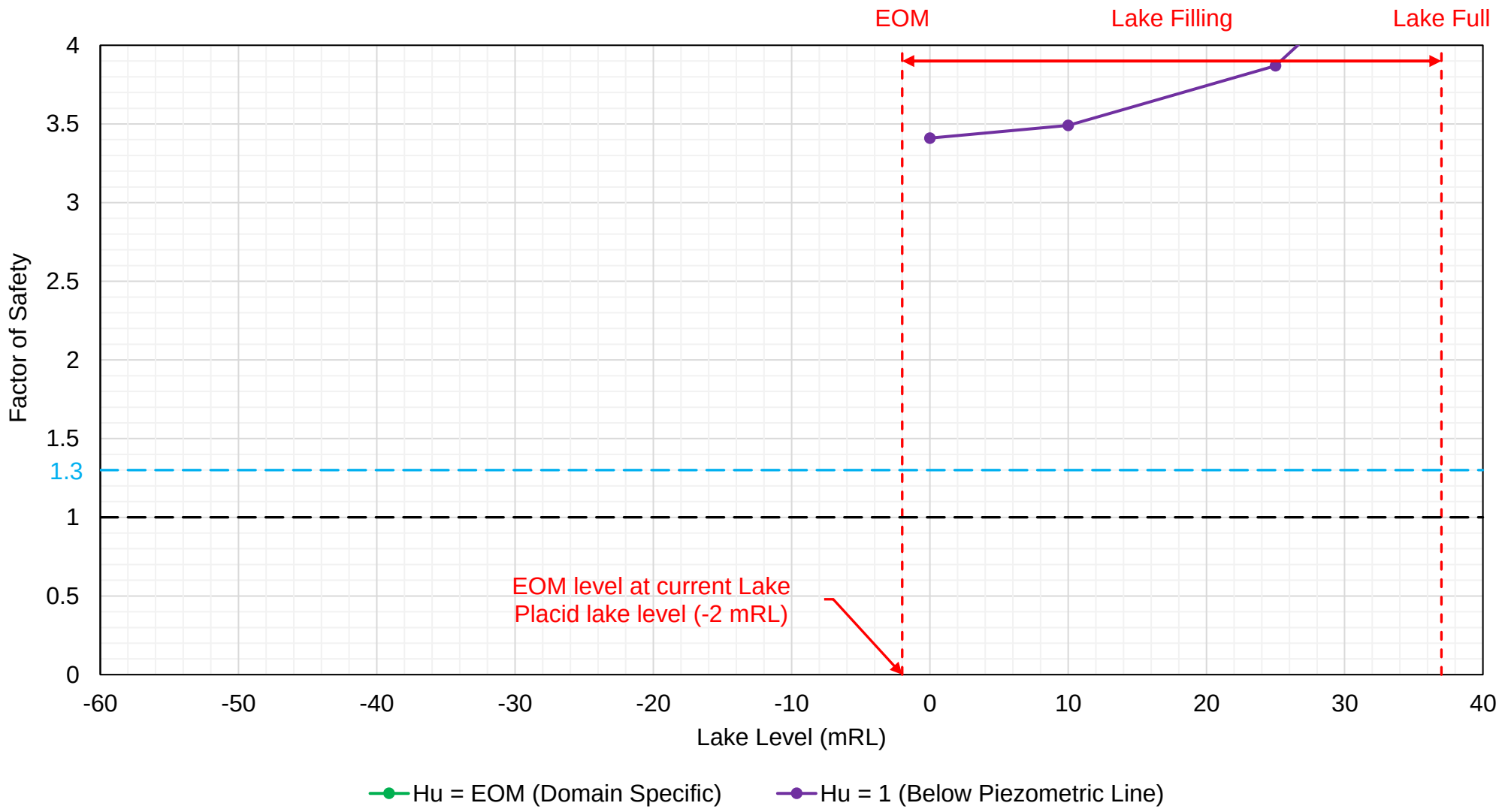
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 33

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. FoS > 4.0 is not displayed on plot

EnergyAustralia

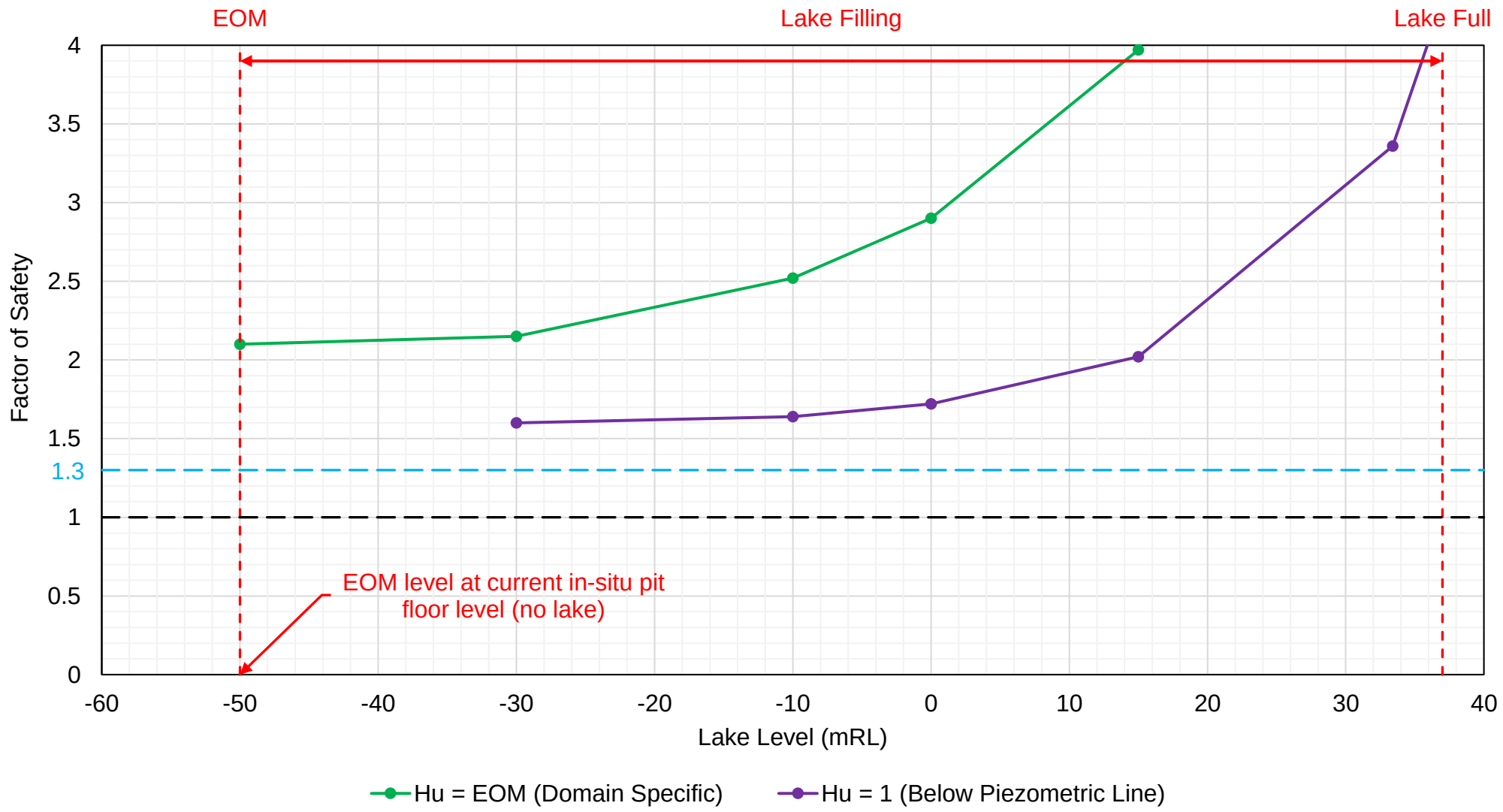
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 33 - RIGHT TO LEFT FAILURE

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. FoS > 4.0 is not displayed on plot

EnergyAustralia

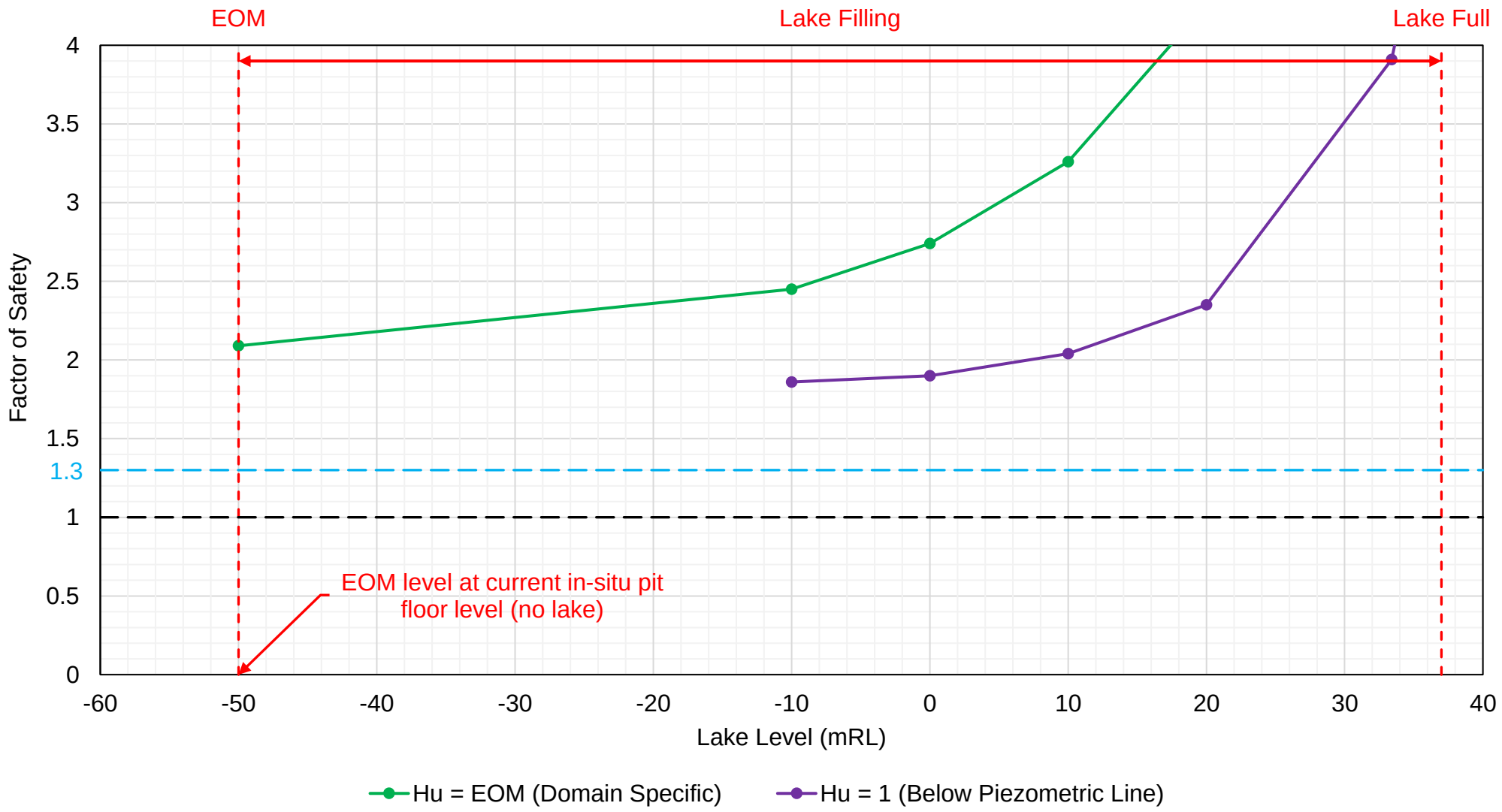
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL SECTION 34

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. FoS > 4.0 is not displayed on plot

EnergyAustralia

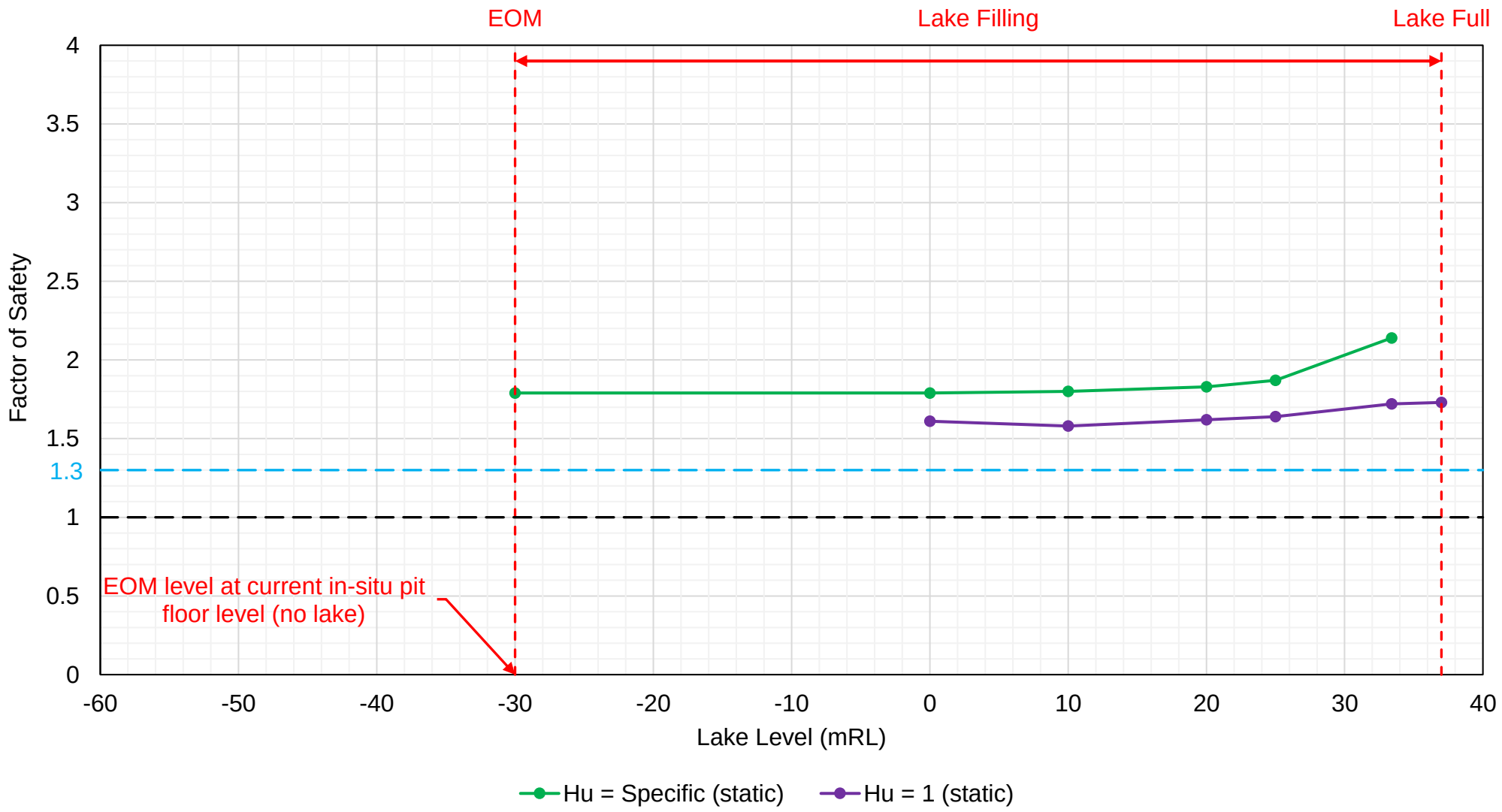
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 35

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\11. Base Case Optimization\3. FoS Vs Lake Level\FoS vs Lake Level - Block Slide - A4\[FoS vs Lake Level - A4.xlsx]Section 32



Notes:

1. Scenario analysed is for Base Case - Circular Failure

EnergyAustralia

Yallourn Mine

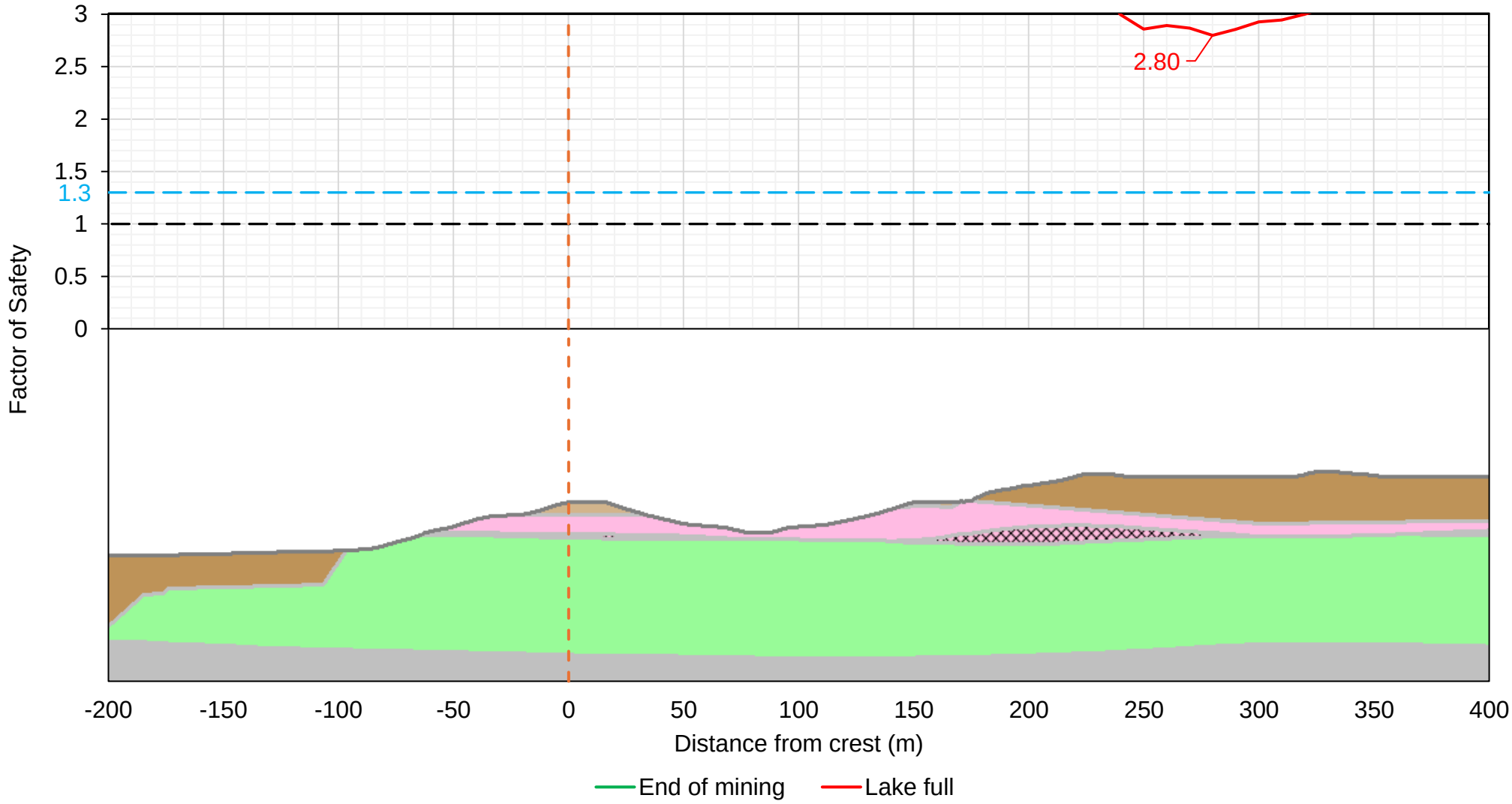
Feasibility Rehabilitation Design

FOS VARIATION WITH LAKE LEVEL
SECTION 32 - CIRCULAR FAILURE

PSM4487	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\3. Slope Stability Figures\FoS vs Lake Level Charts\Calculation Spreadsheets\[FoS vs Lake Level - A3.xlsx]Section 32

Appendix H.3
FOS vs crest in section plots



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.
3. Factor of safety for end of mining case exceed 3.0

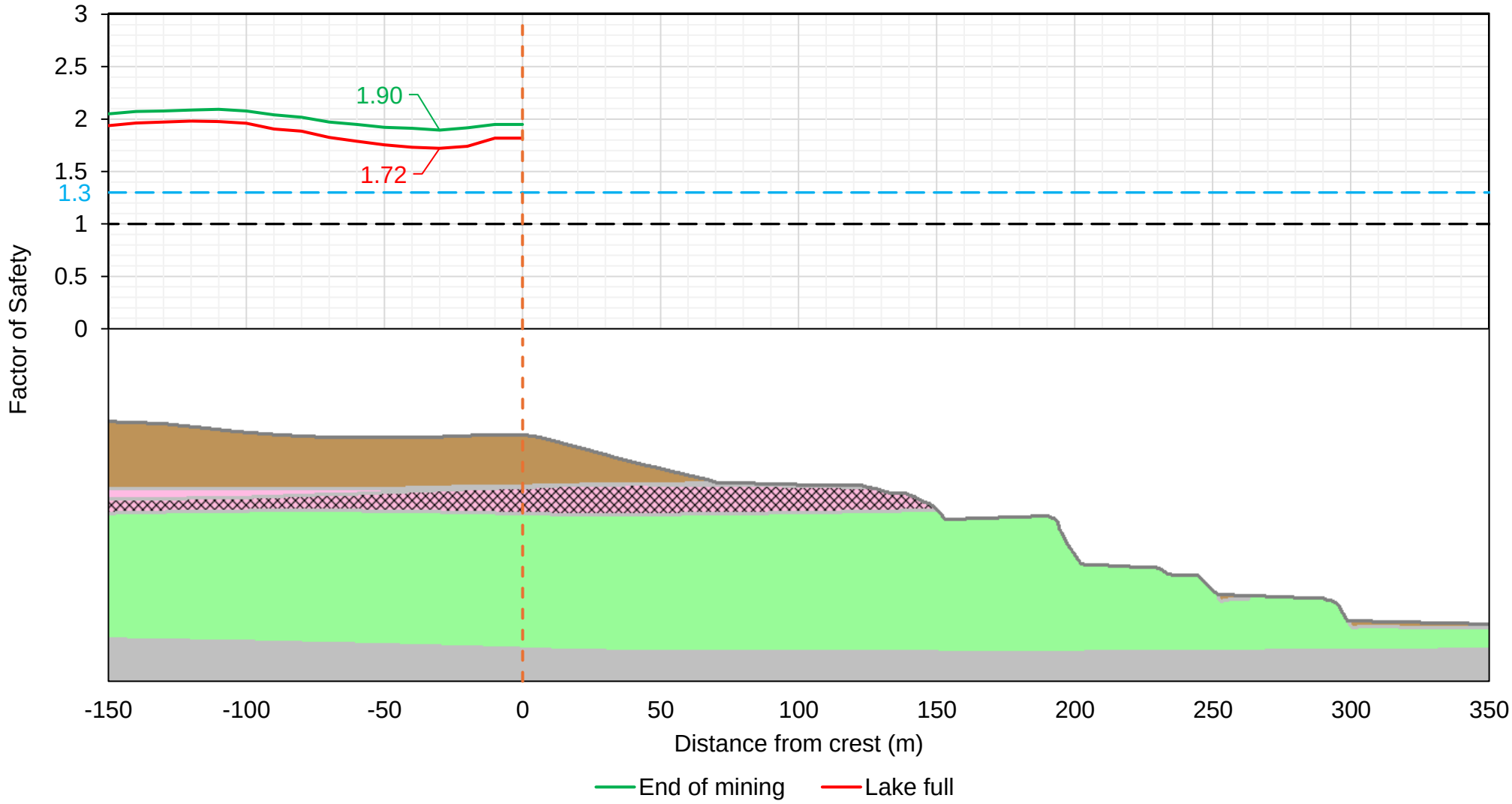
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 1

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

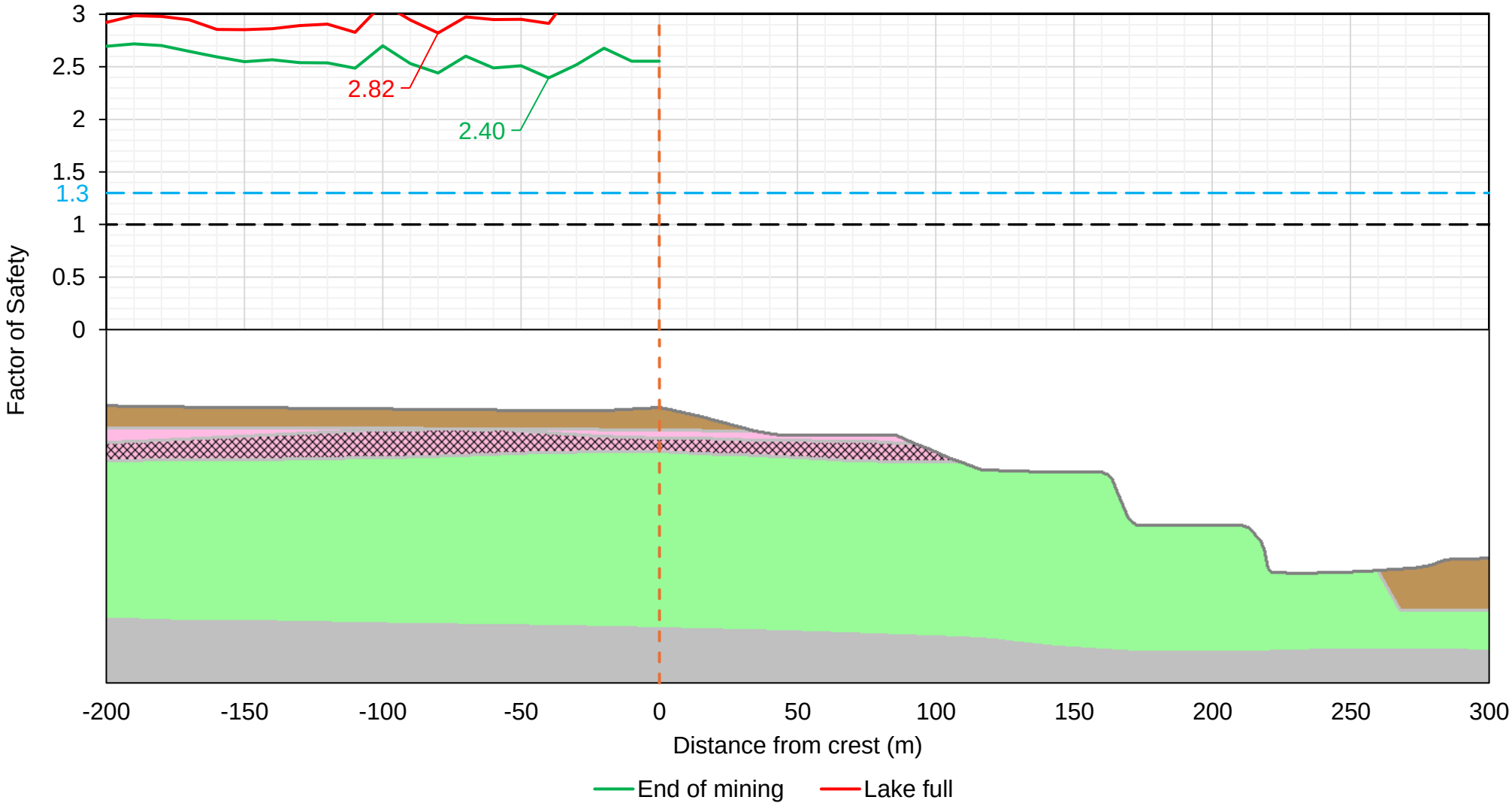
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 2

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

EnergyAustralia

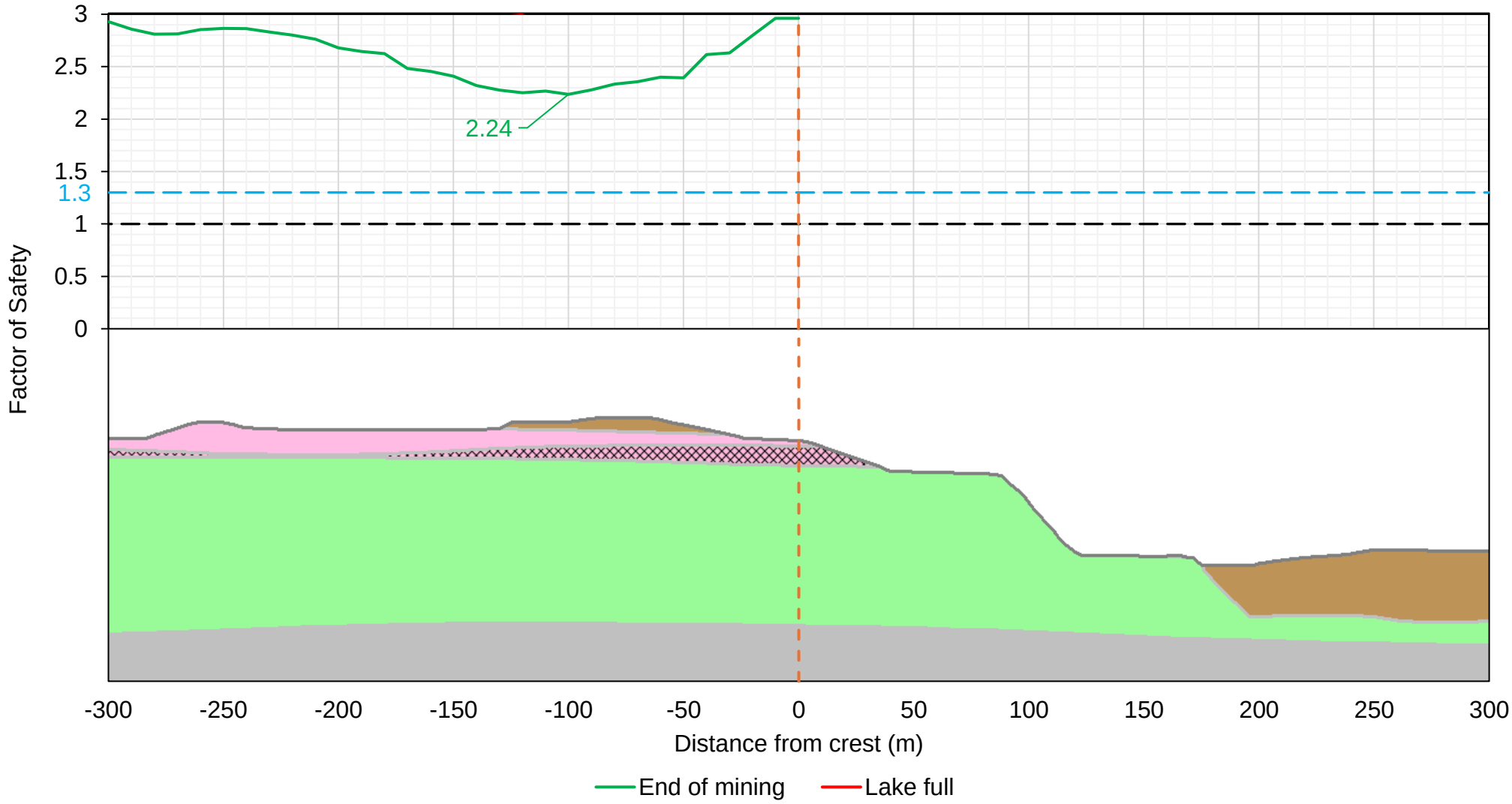
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 3

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\14. FoS vs distance behind crest\2. Multilinear failure mechanism\[FoS vs Distance behind pit crest - Multilinear.xlsx]Section 3



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.
3. Factor of safety for lake full case exceed 3.0

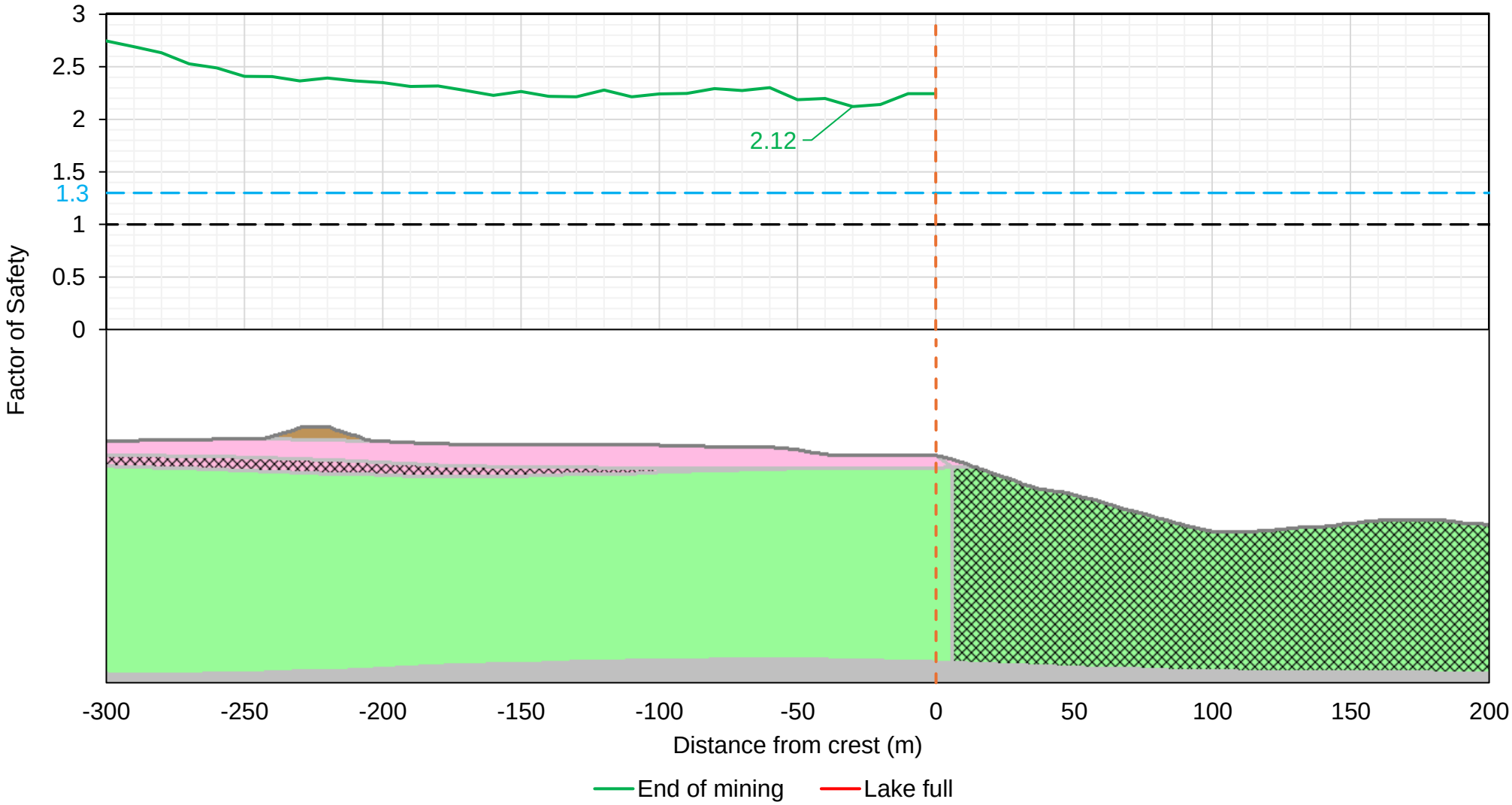
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 4

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.
3. Factor of safety for lake full case exceed 3.0

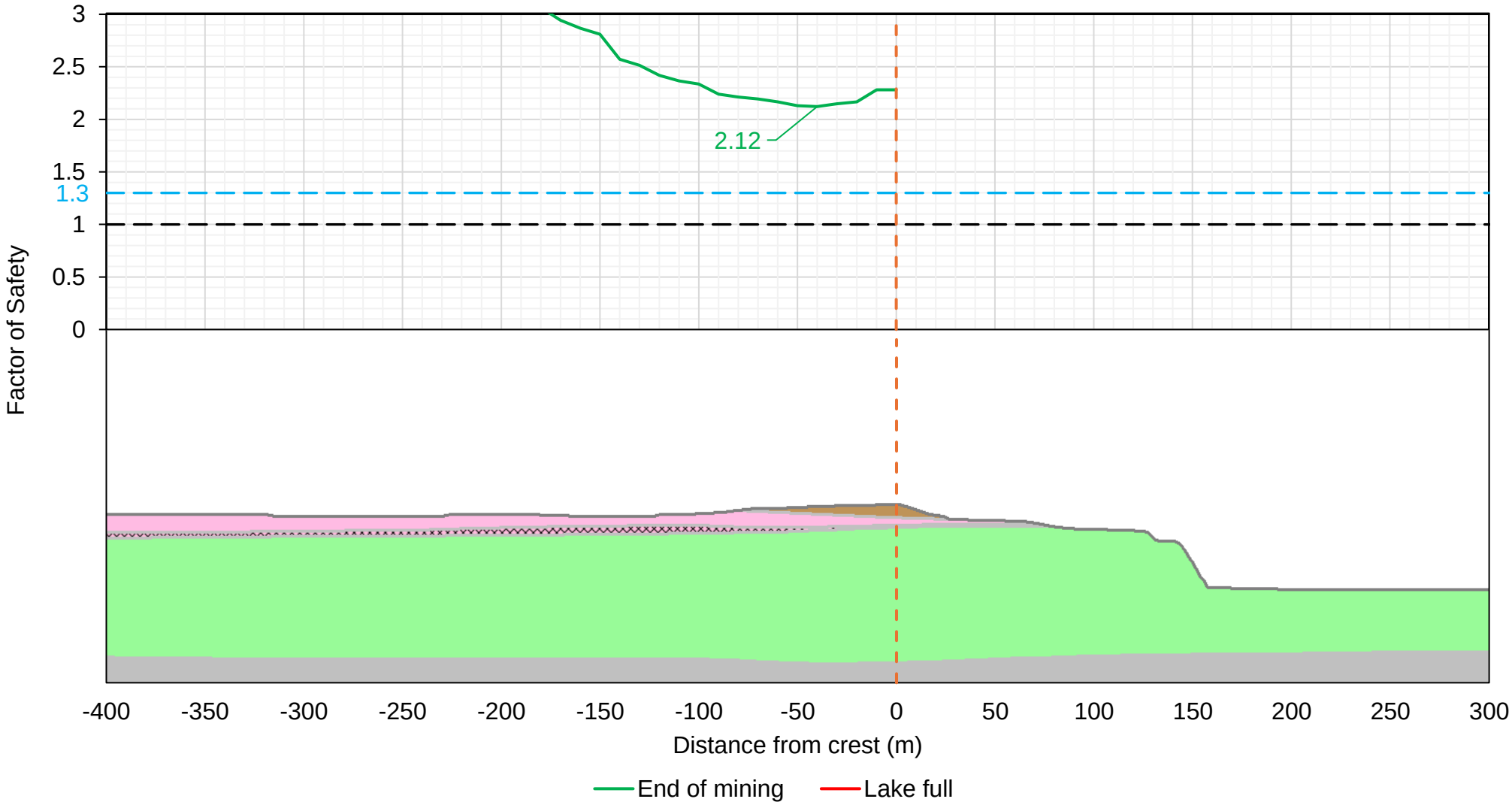
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 5

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.
3. Factor of safety for lake full case exceed 3.0

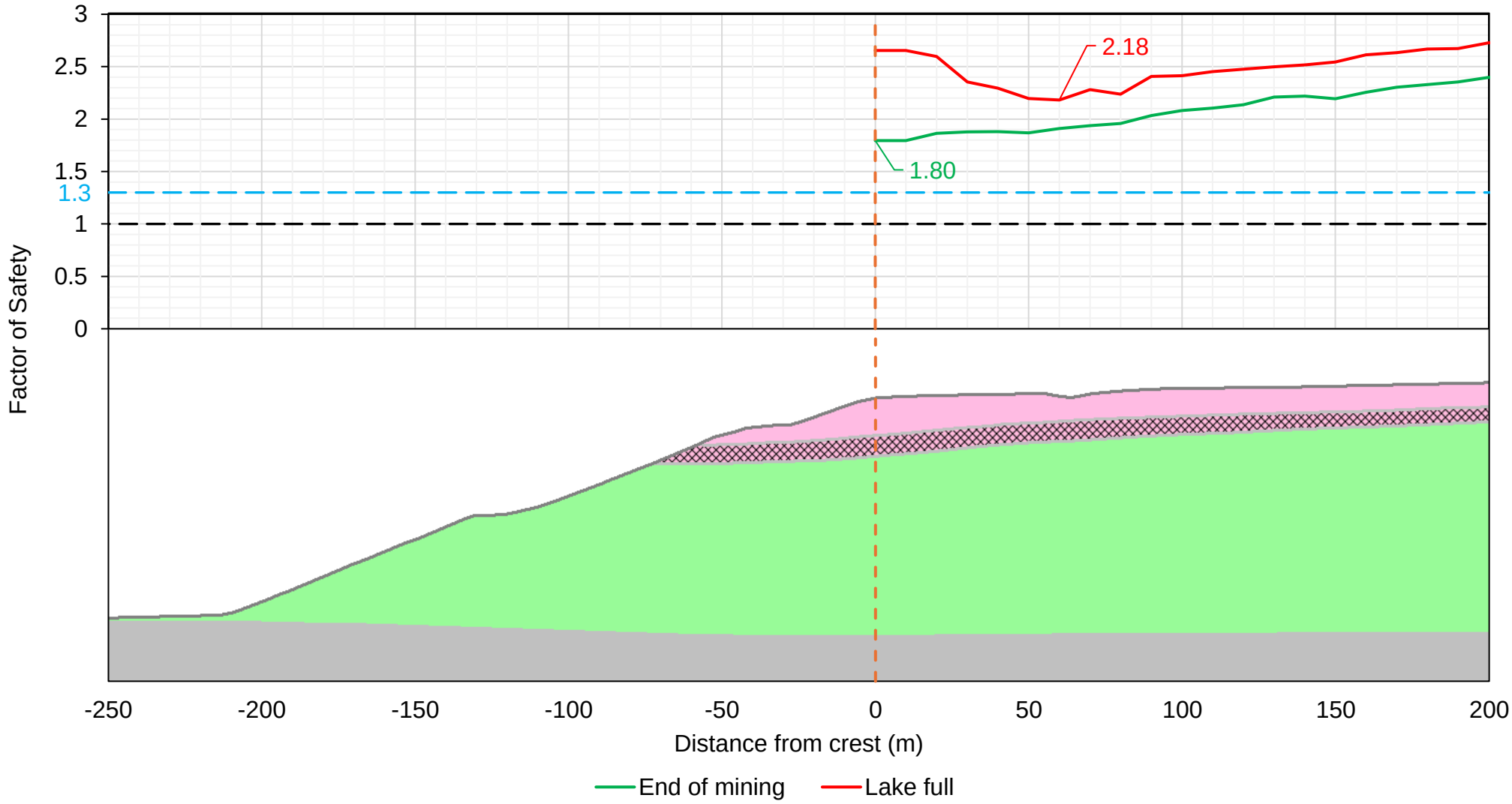
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 6

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

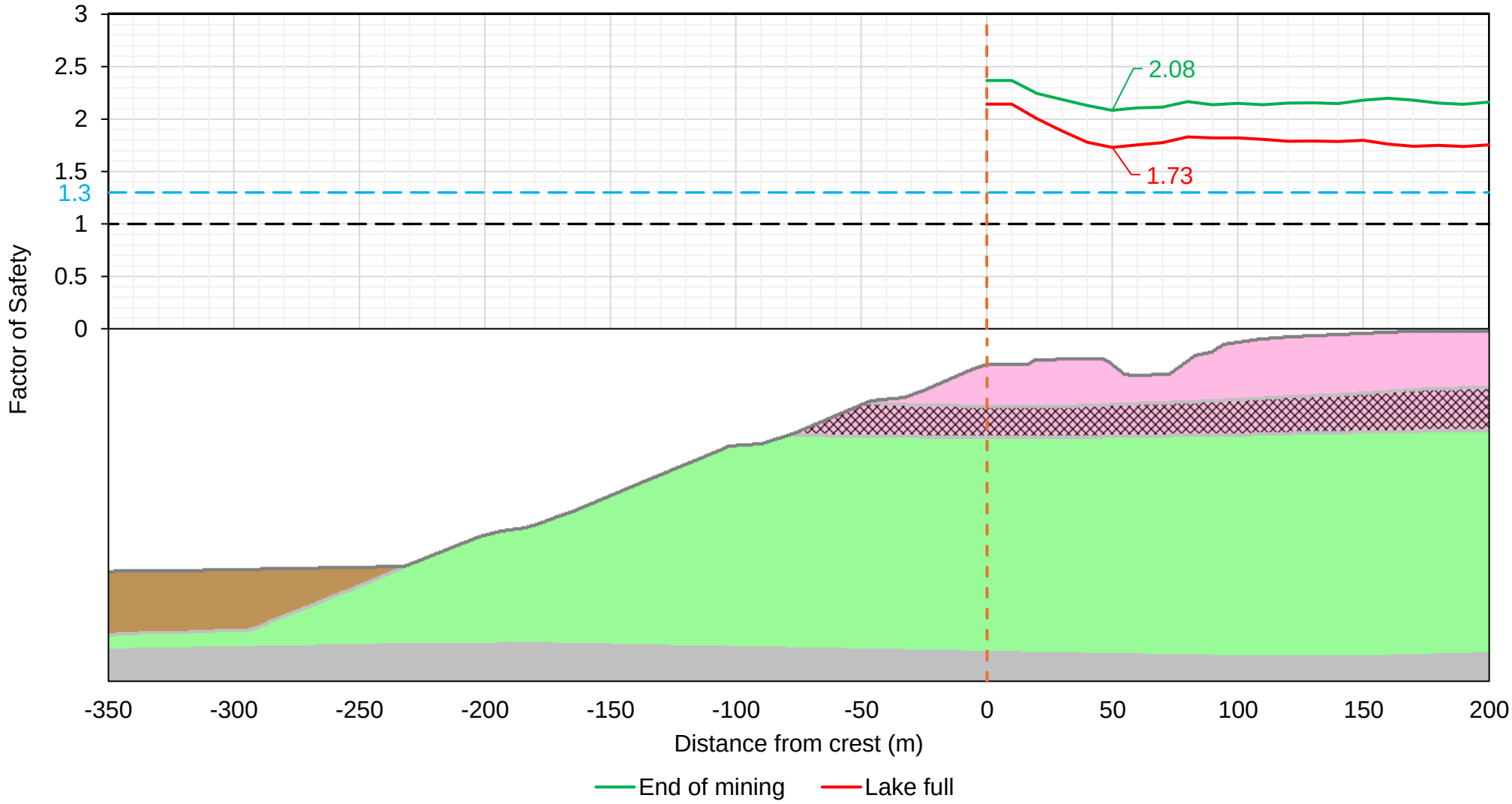
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 7

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

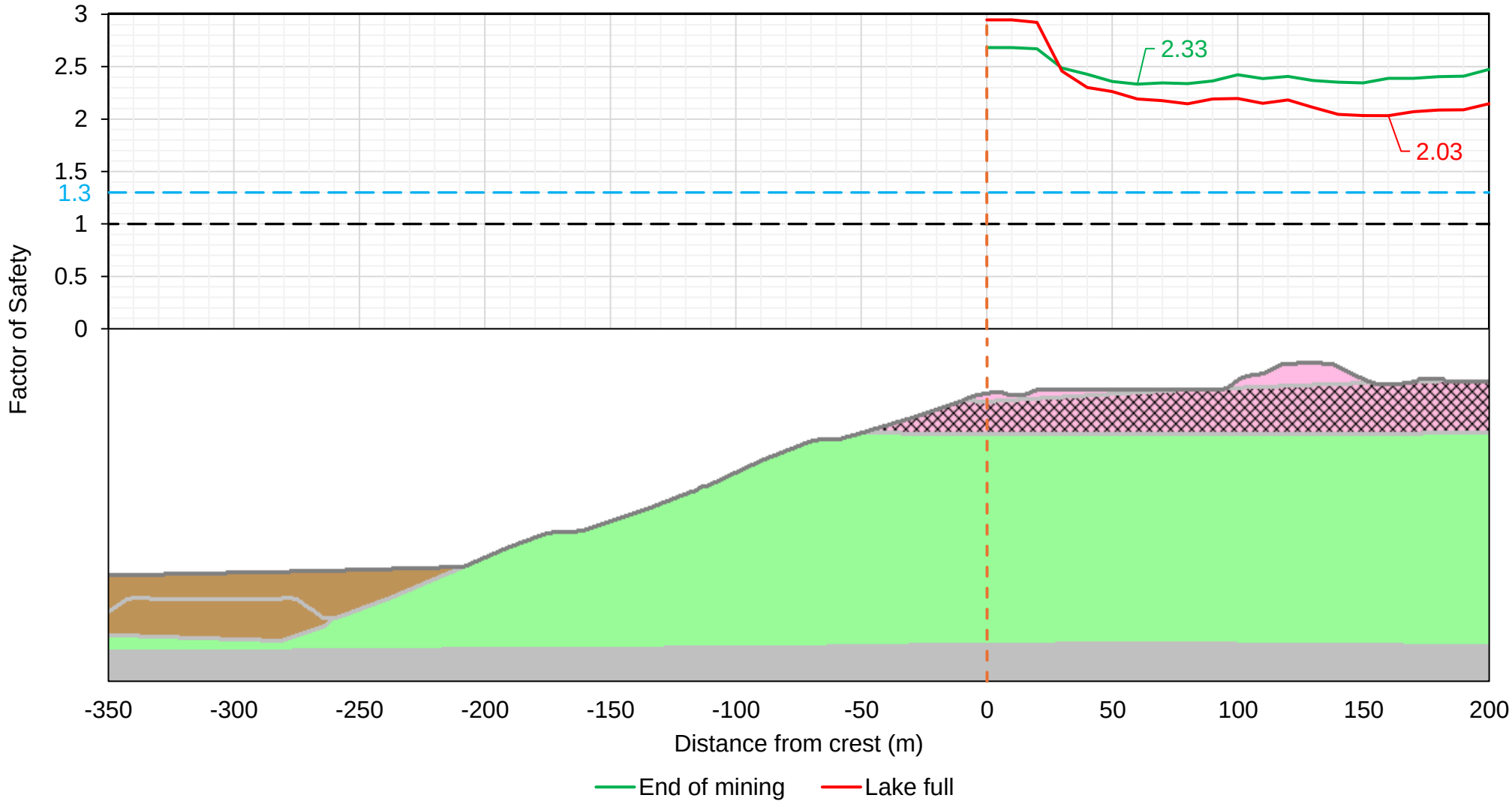
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 8

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

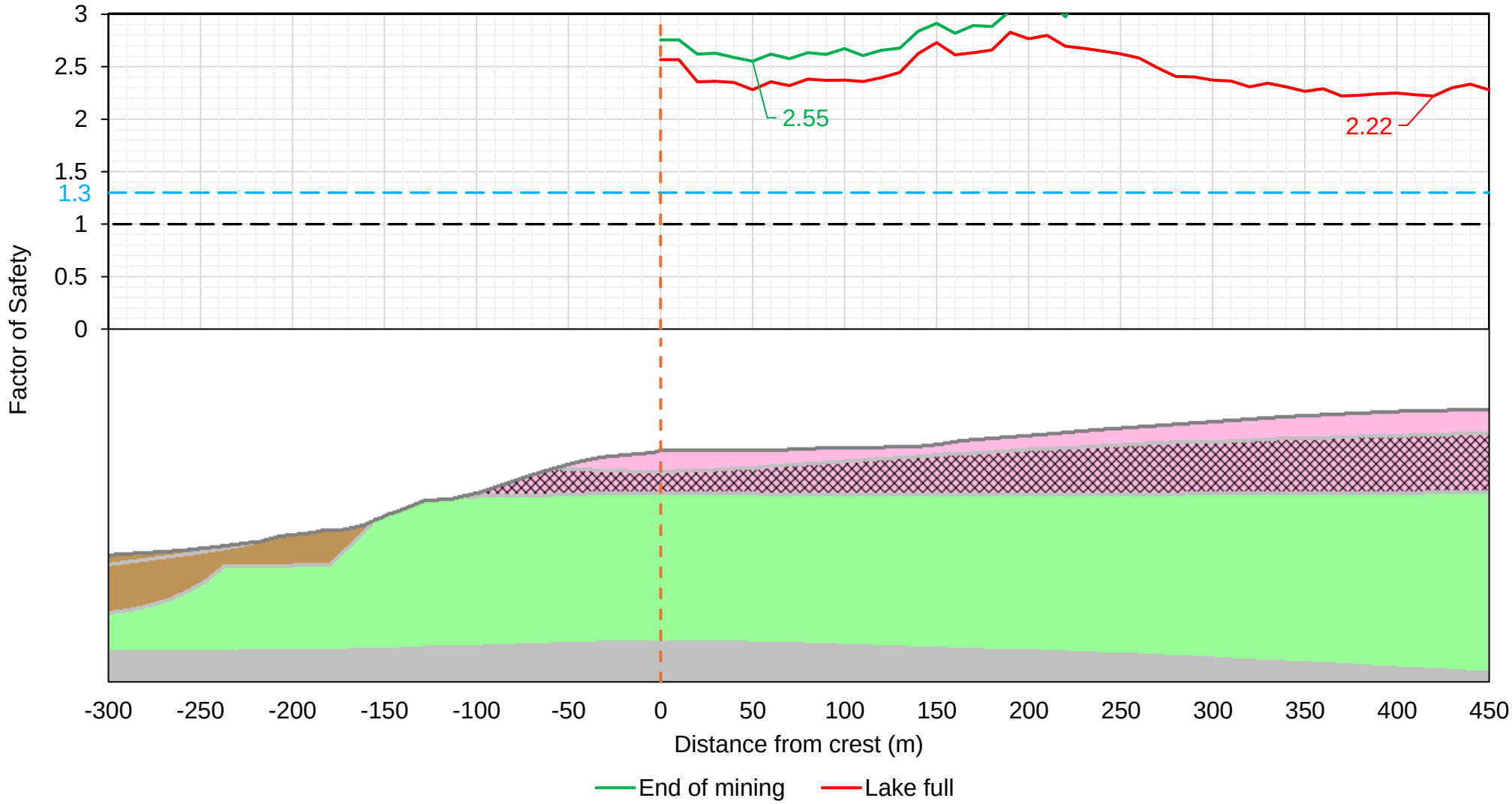
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 9

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

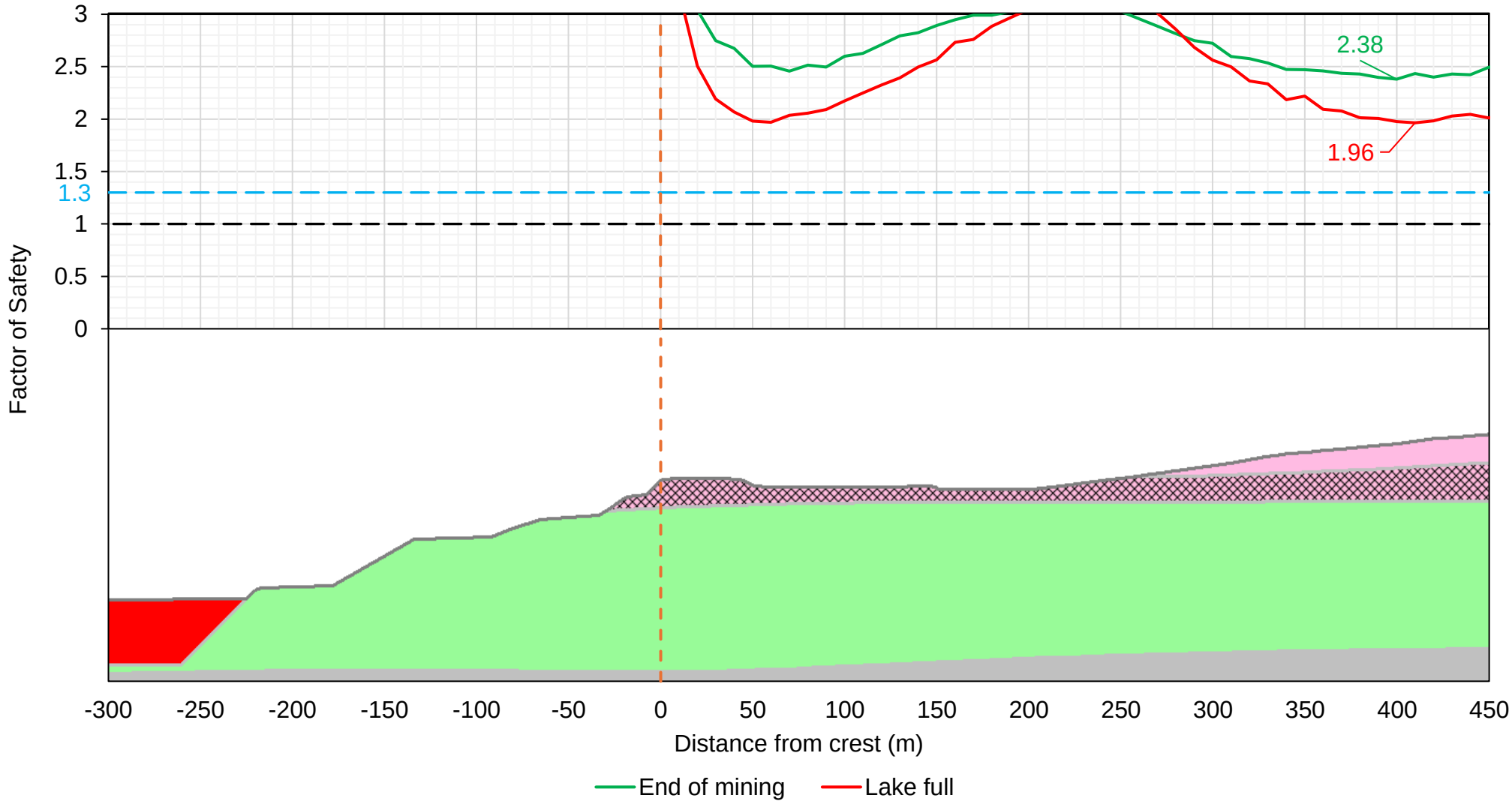
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 10

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

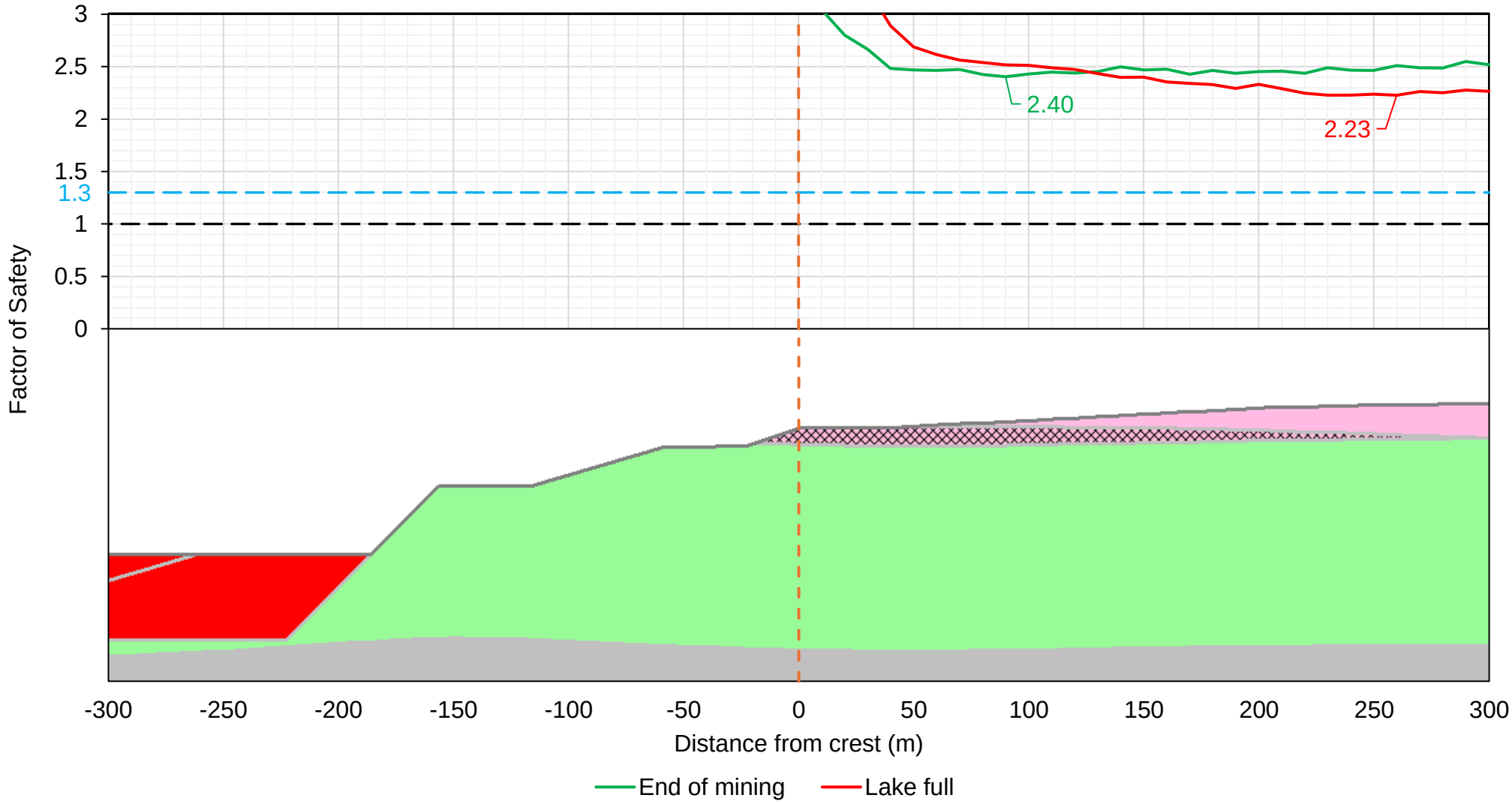
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 11

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

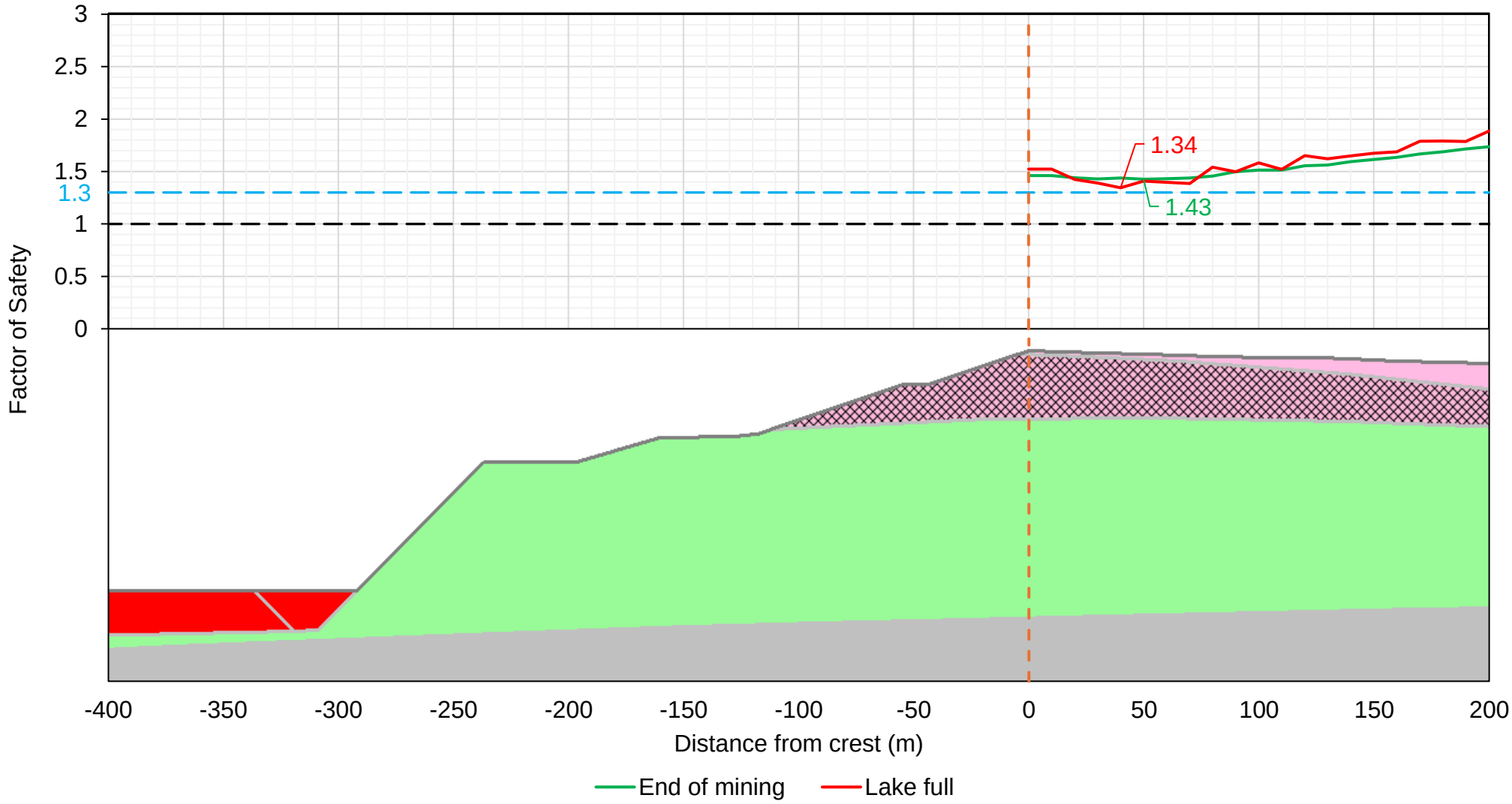
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 12

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

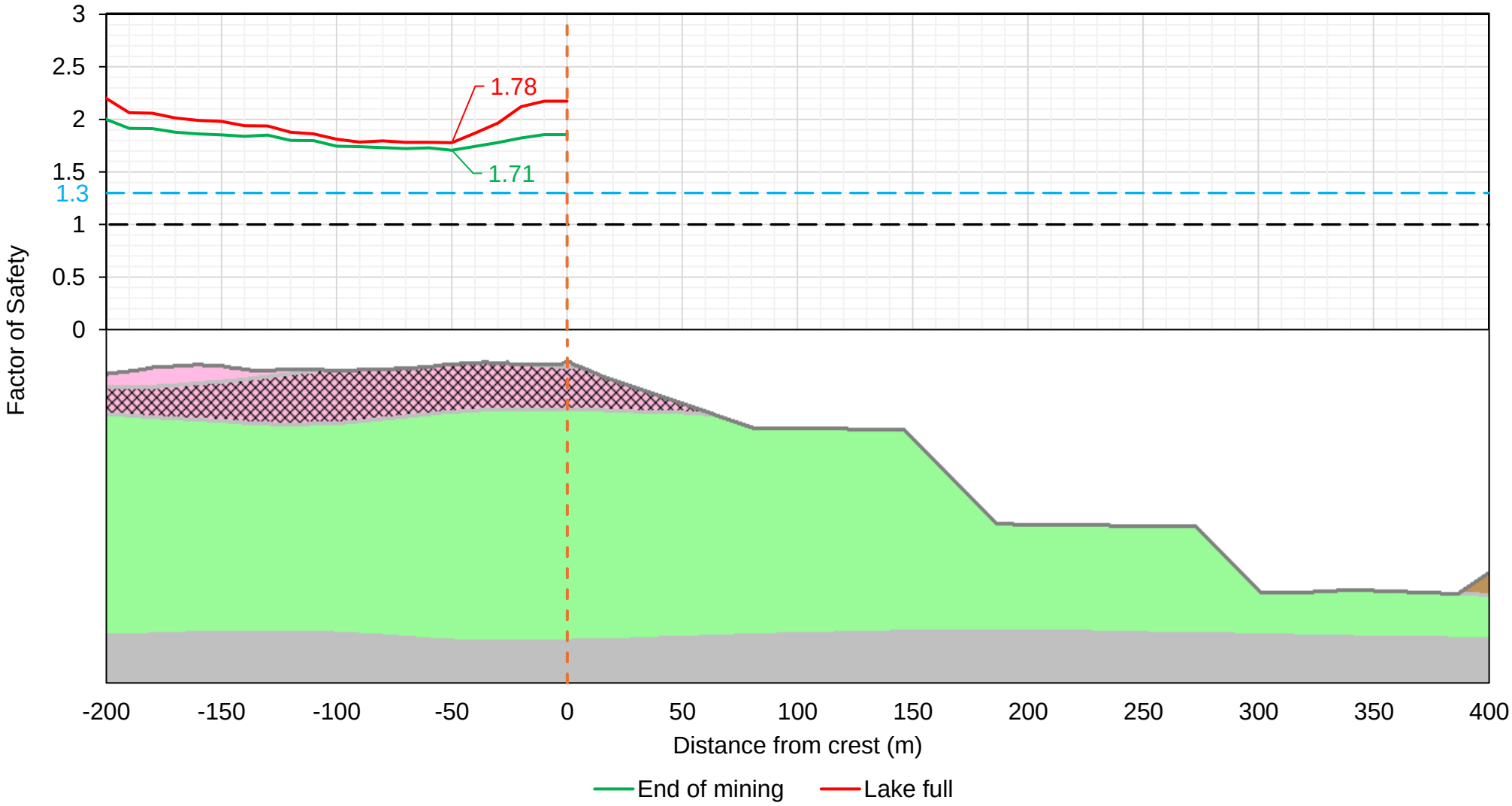
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 13

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

EnergyAustralia

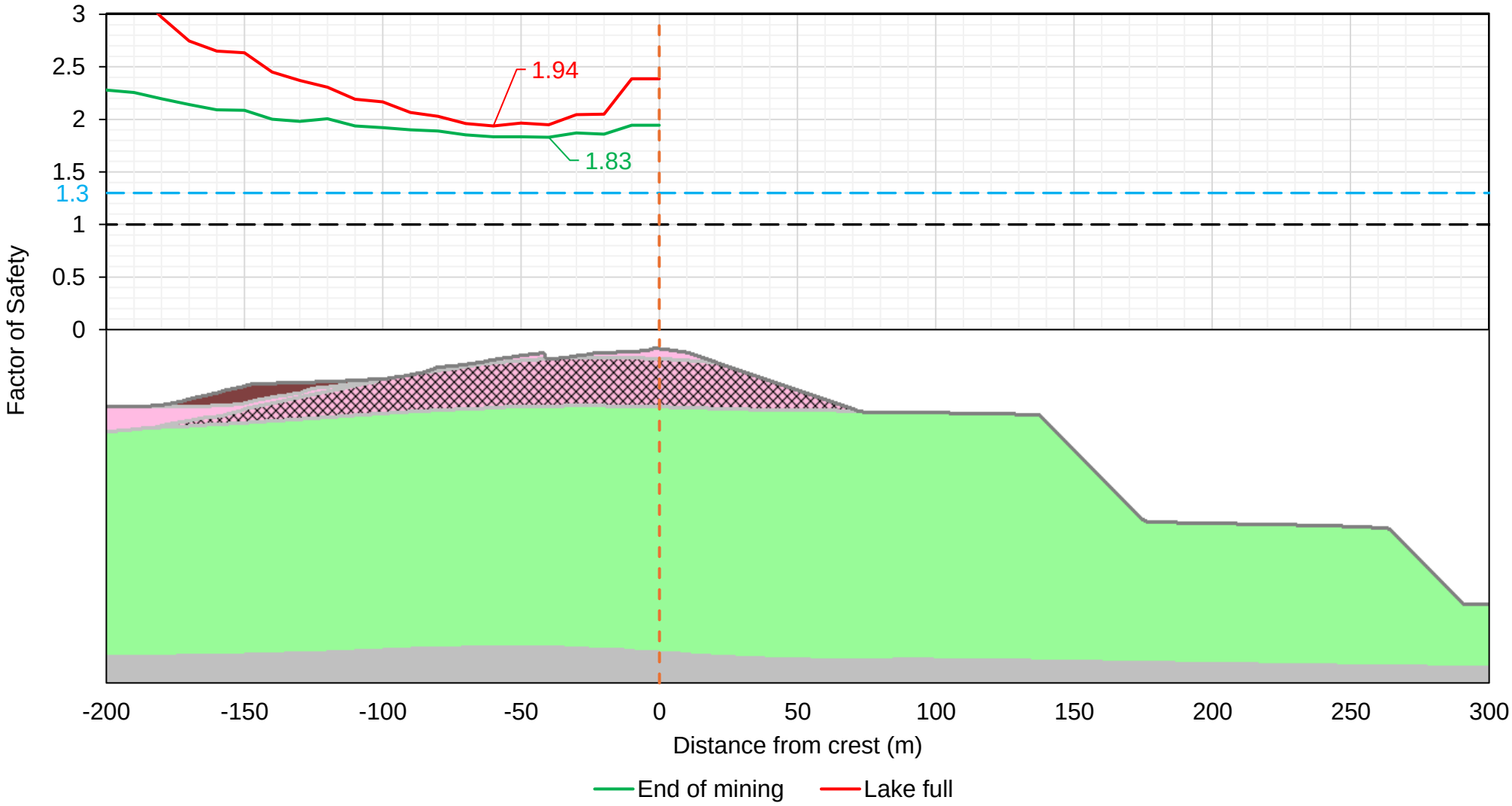
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 14

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\14. FoS vs distance behind crest\2. Multilinear failure mechanism\[FoS vs Distance behind pit crest - Multilinear.xlsx]Section 14



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

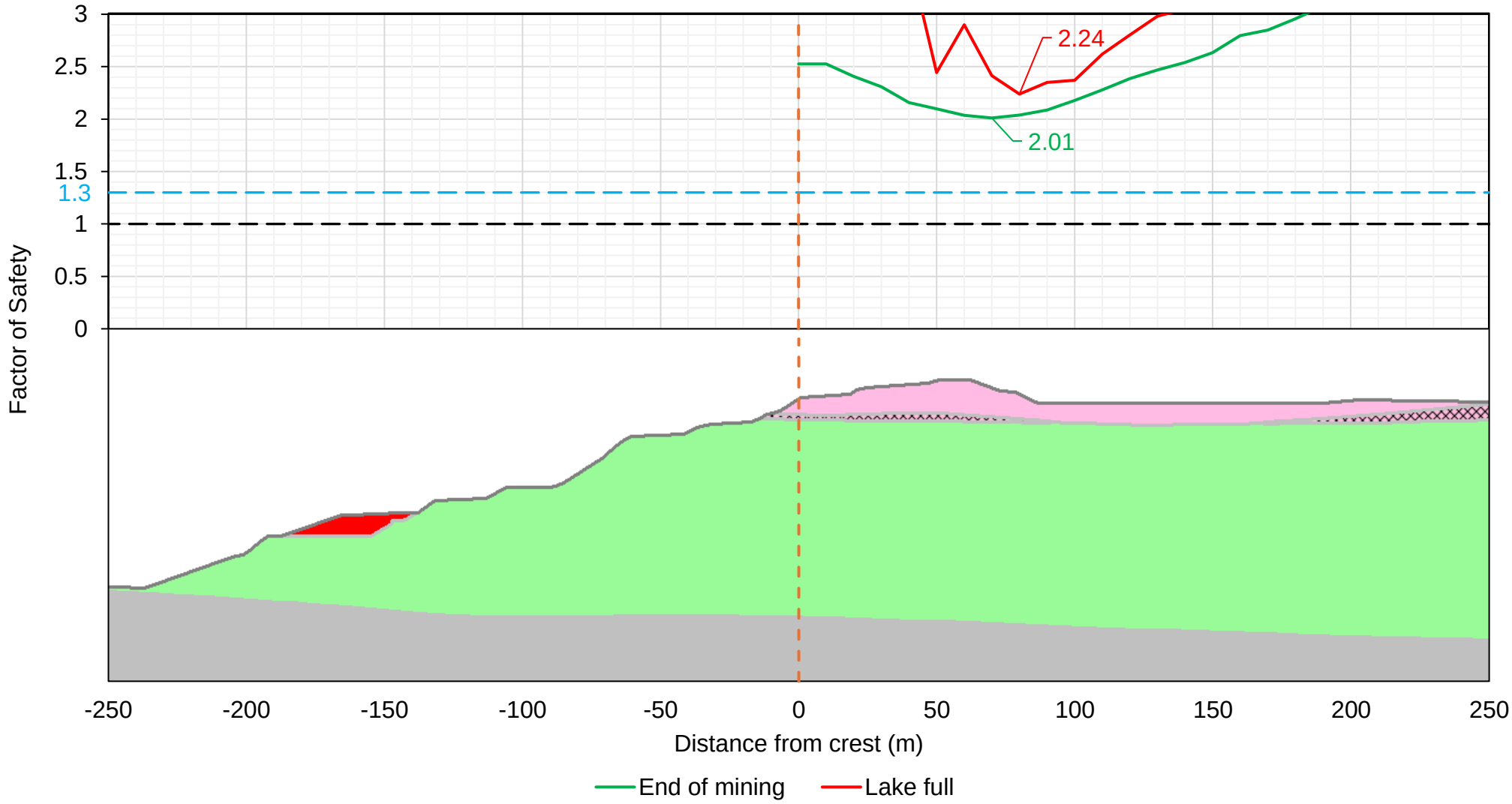
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 15

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

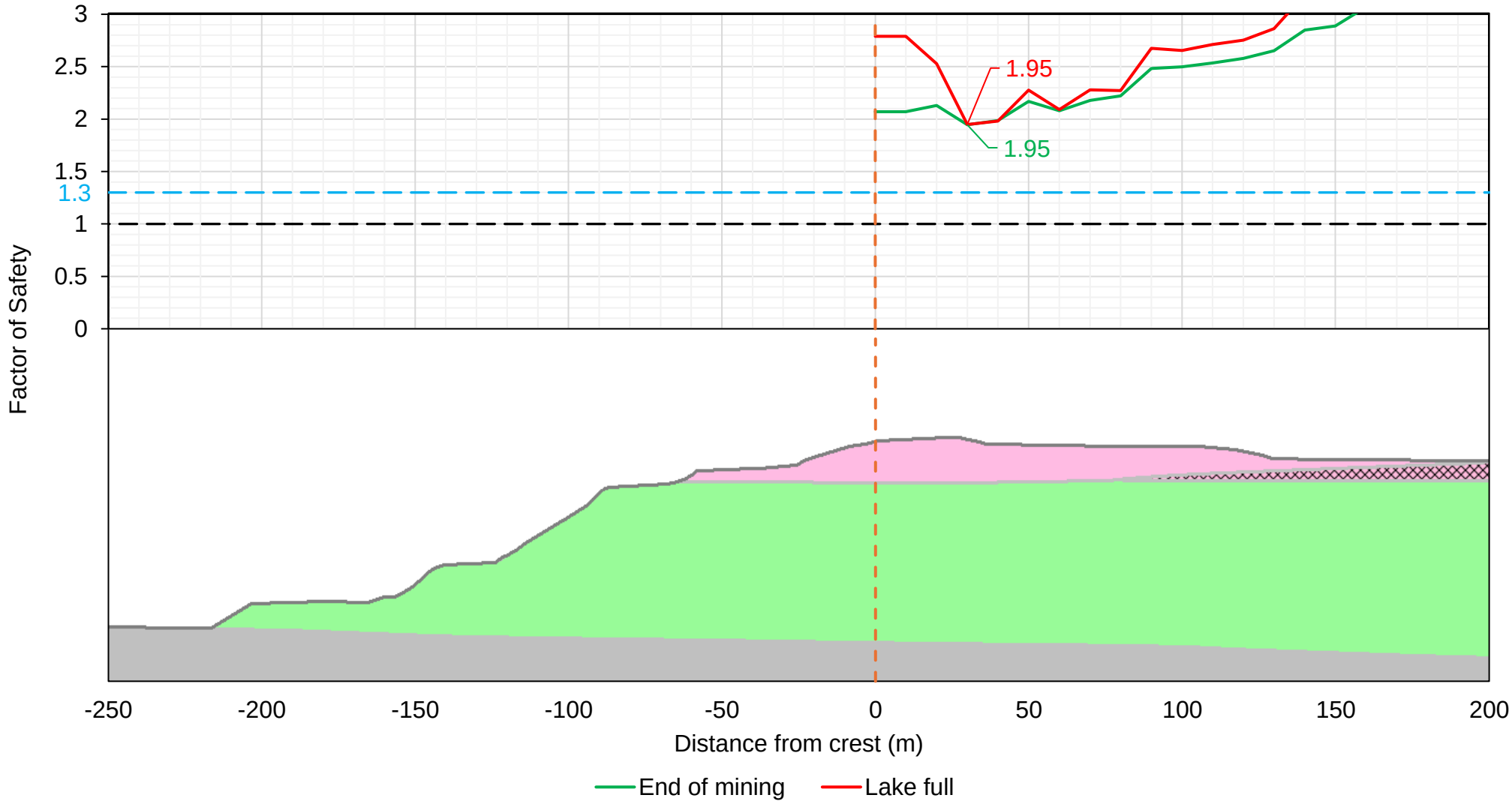
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 16

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

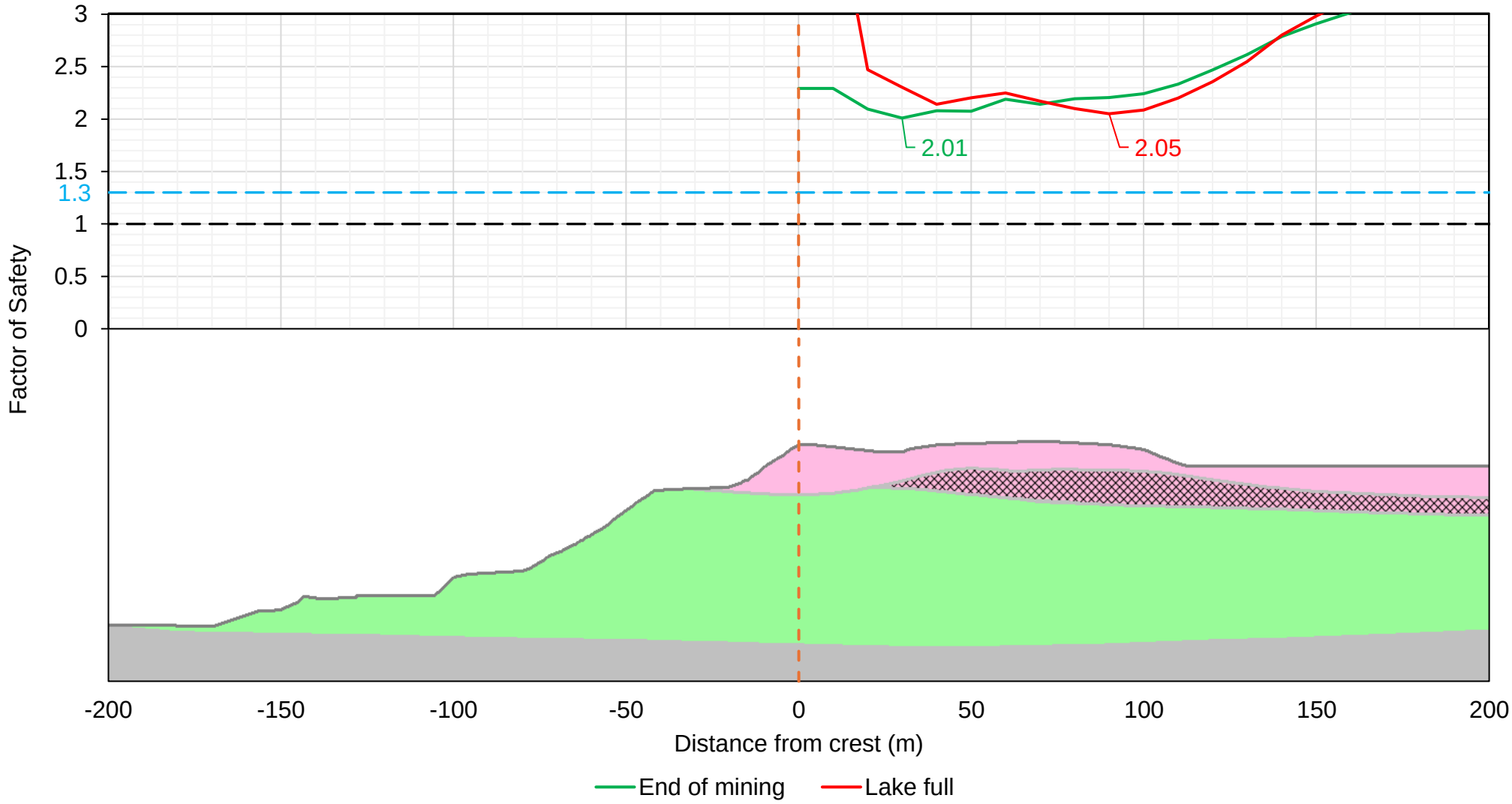
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 17

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

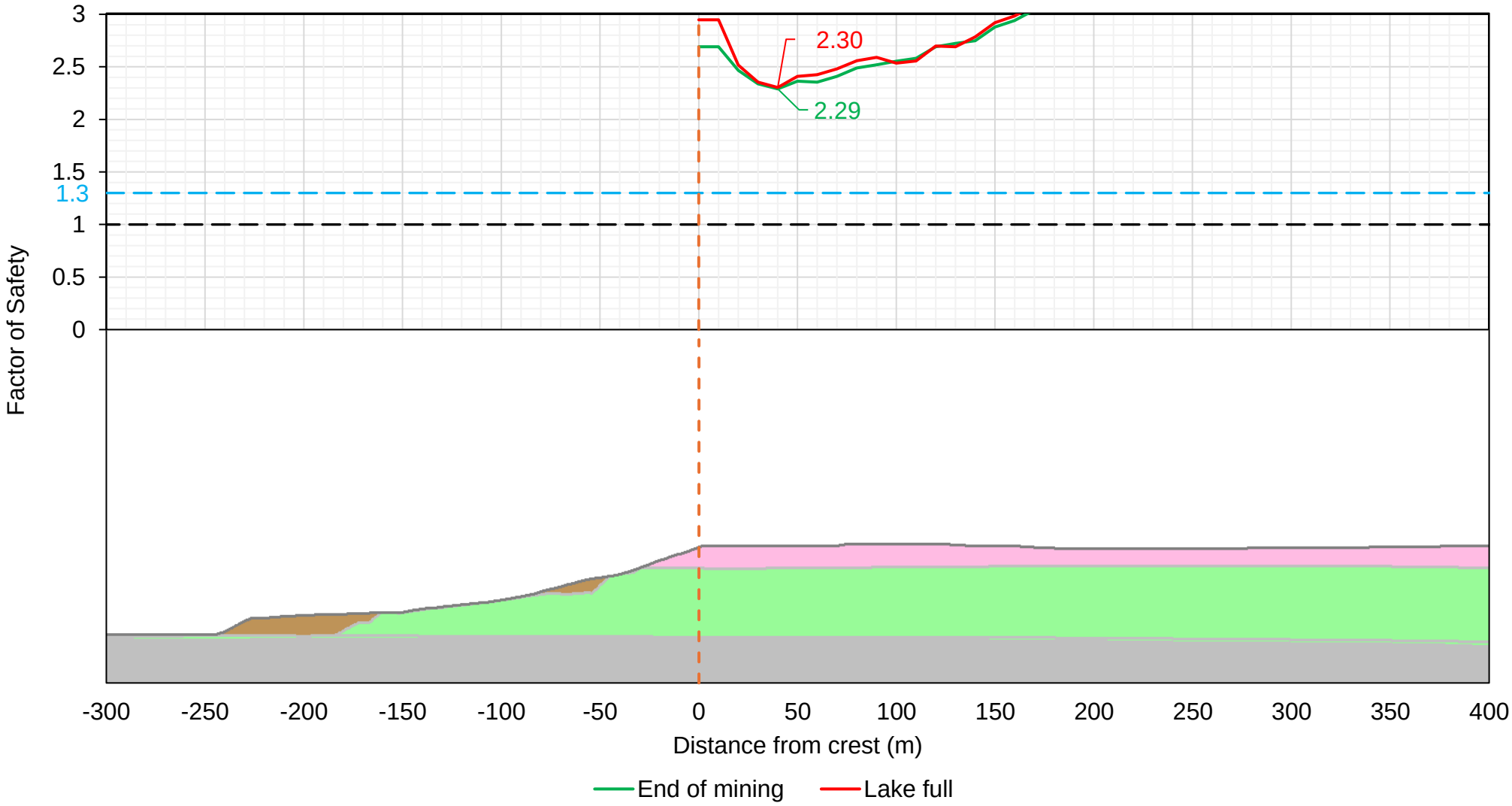
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 18

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

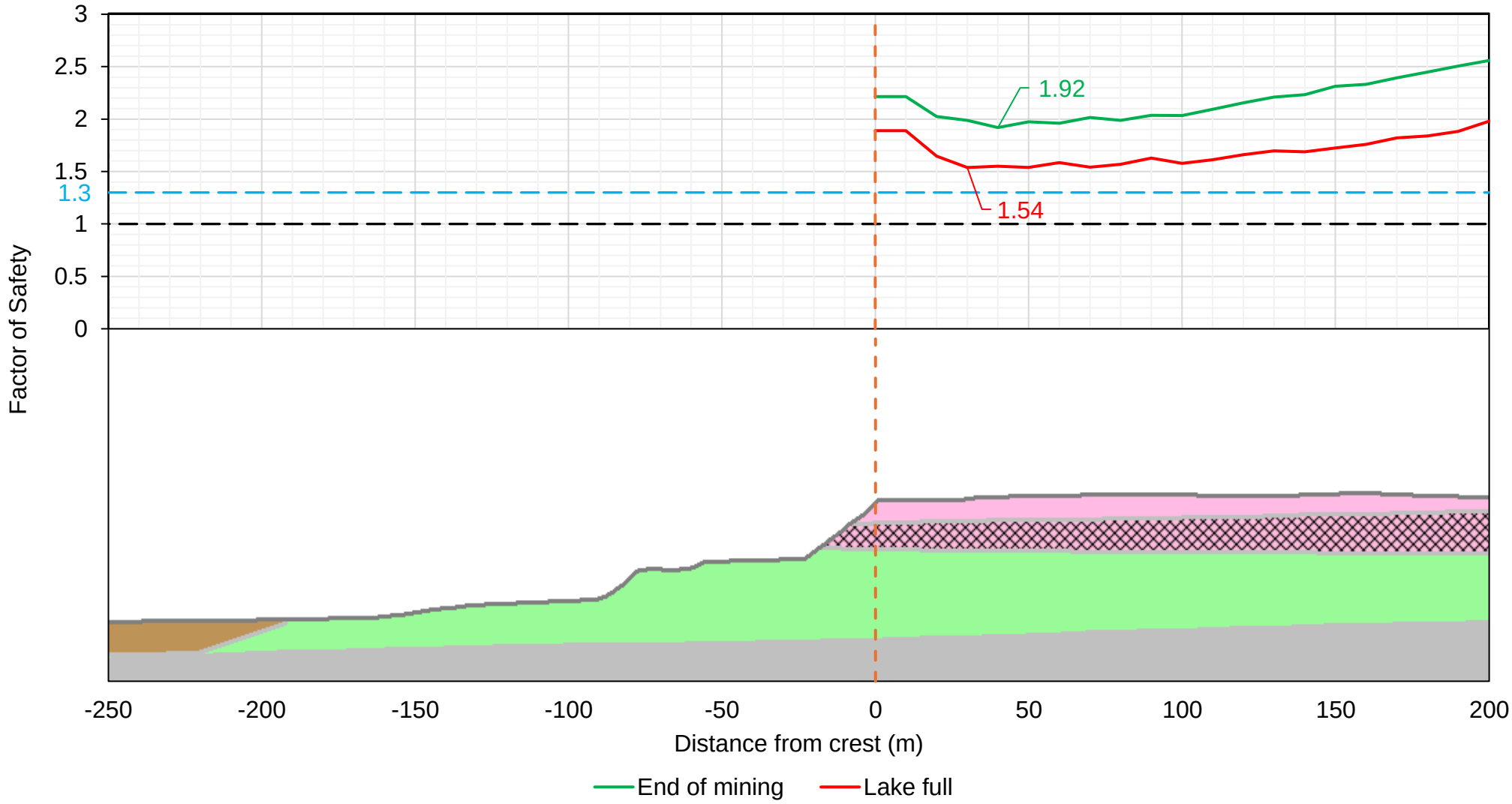
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 18B

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

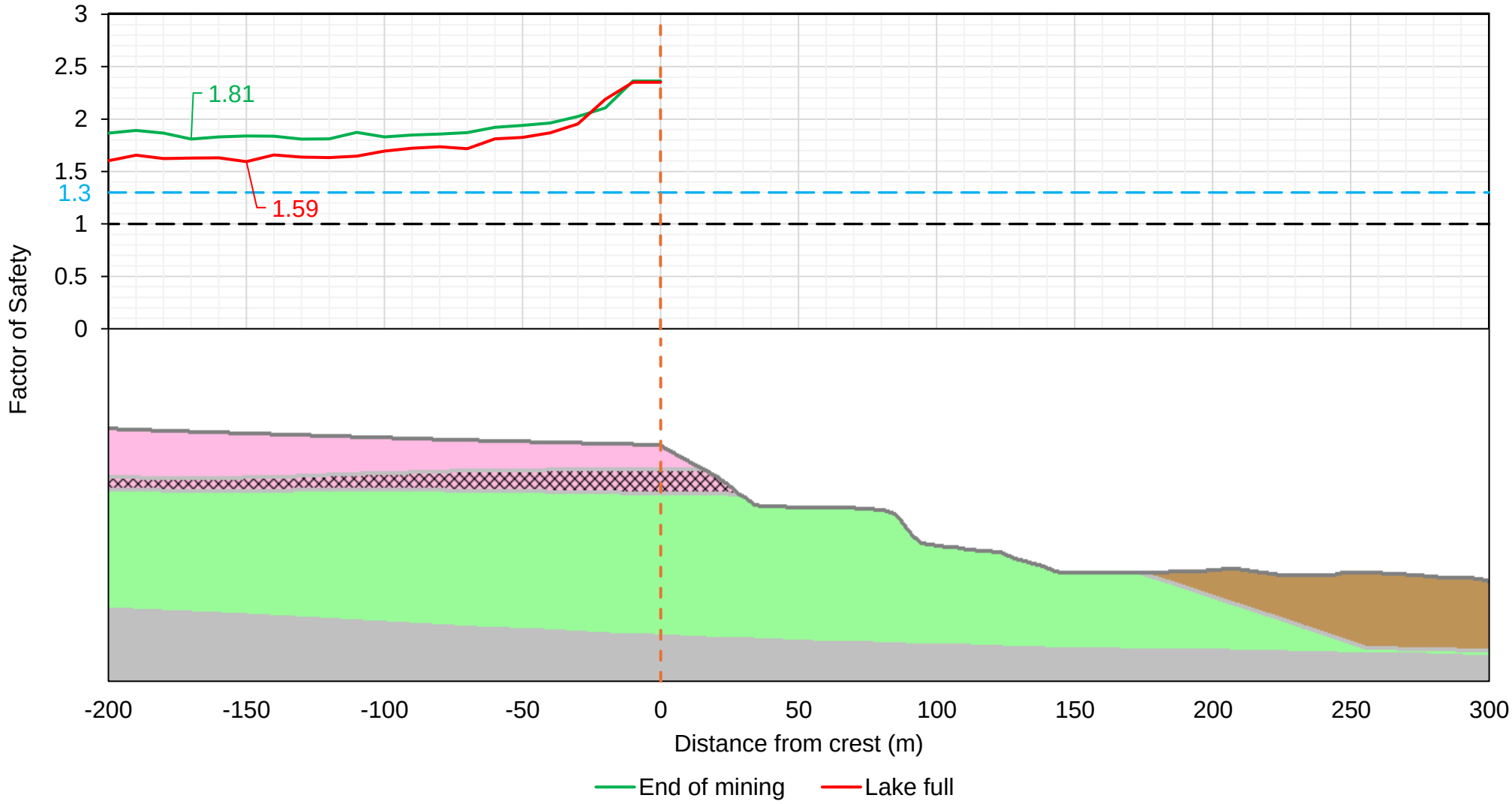
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 19

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

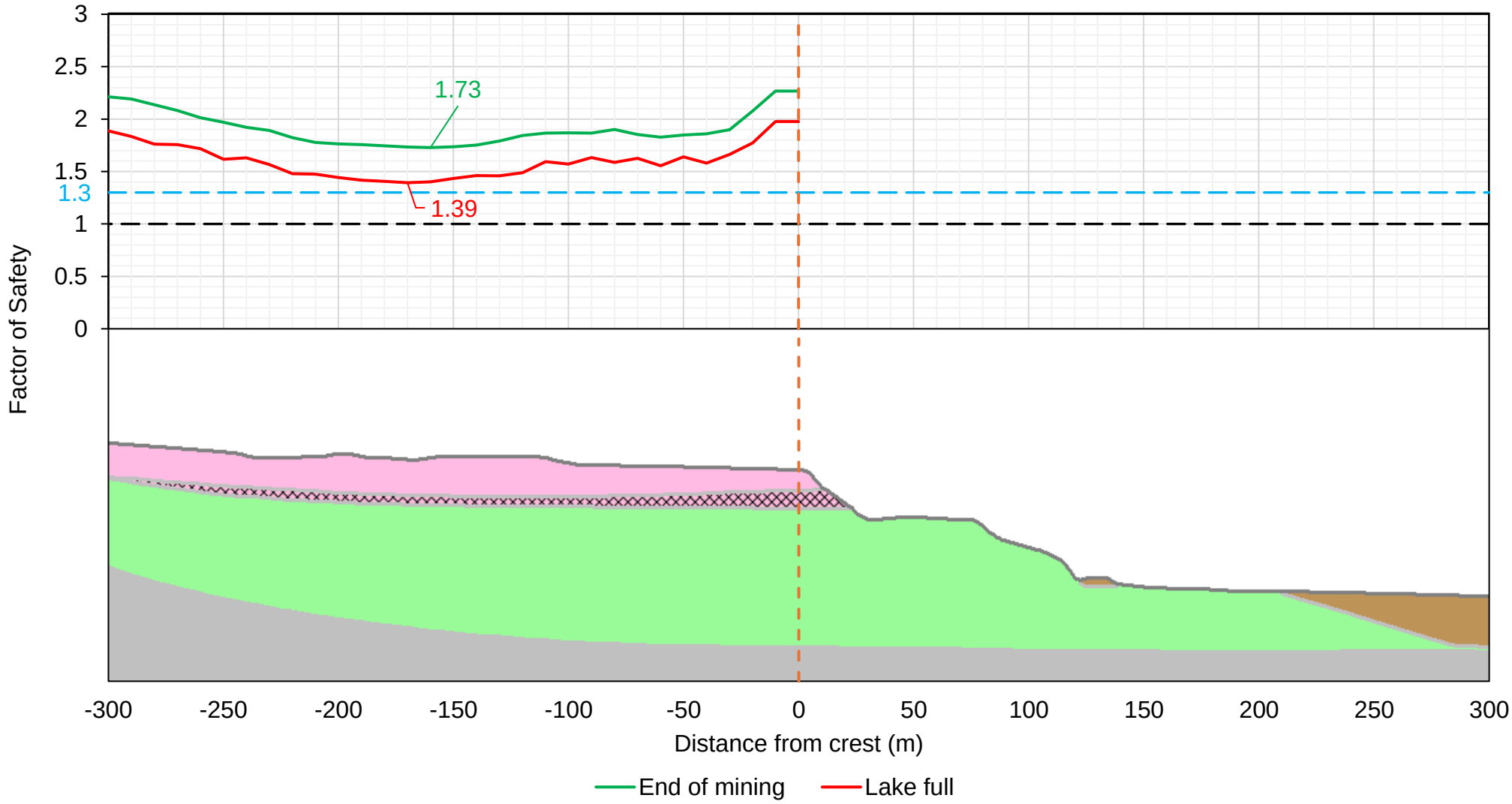
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 20

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

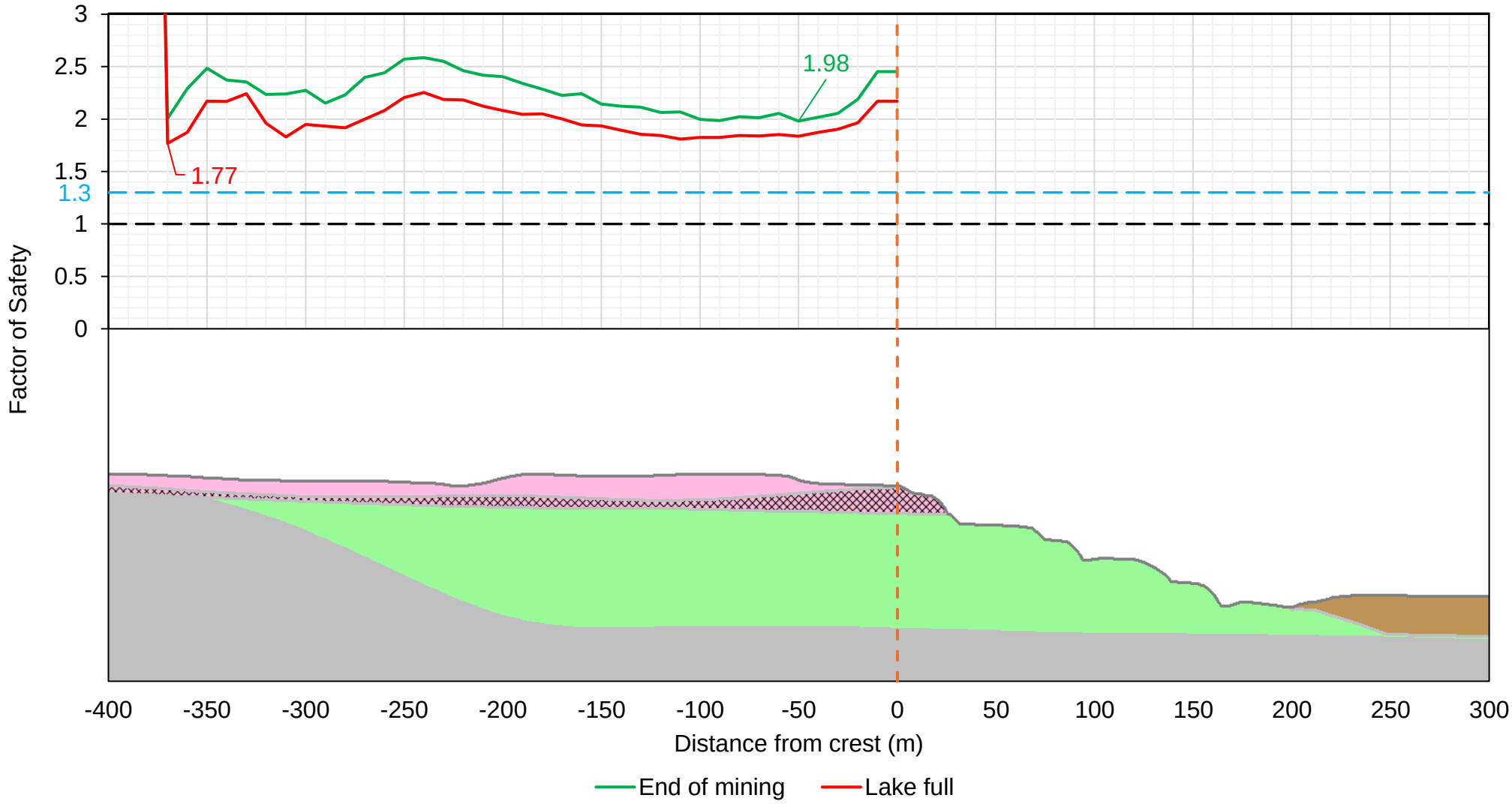
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 21

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

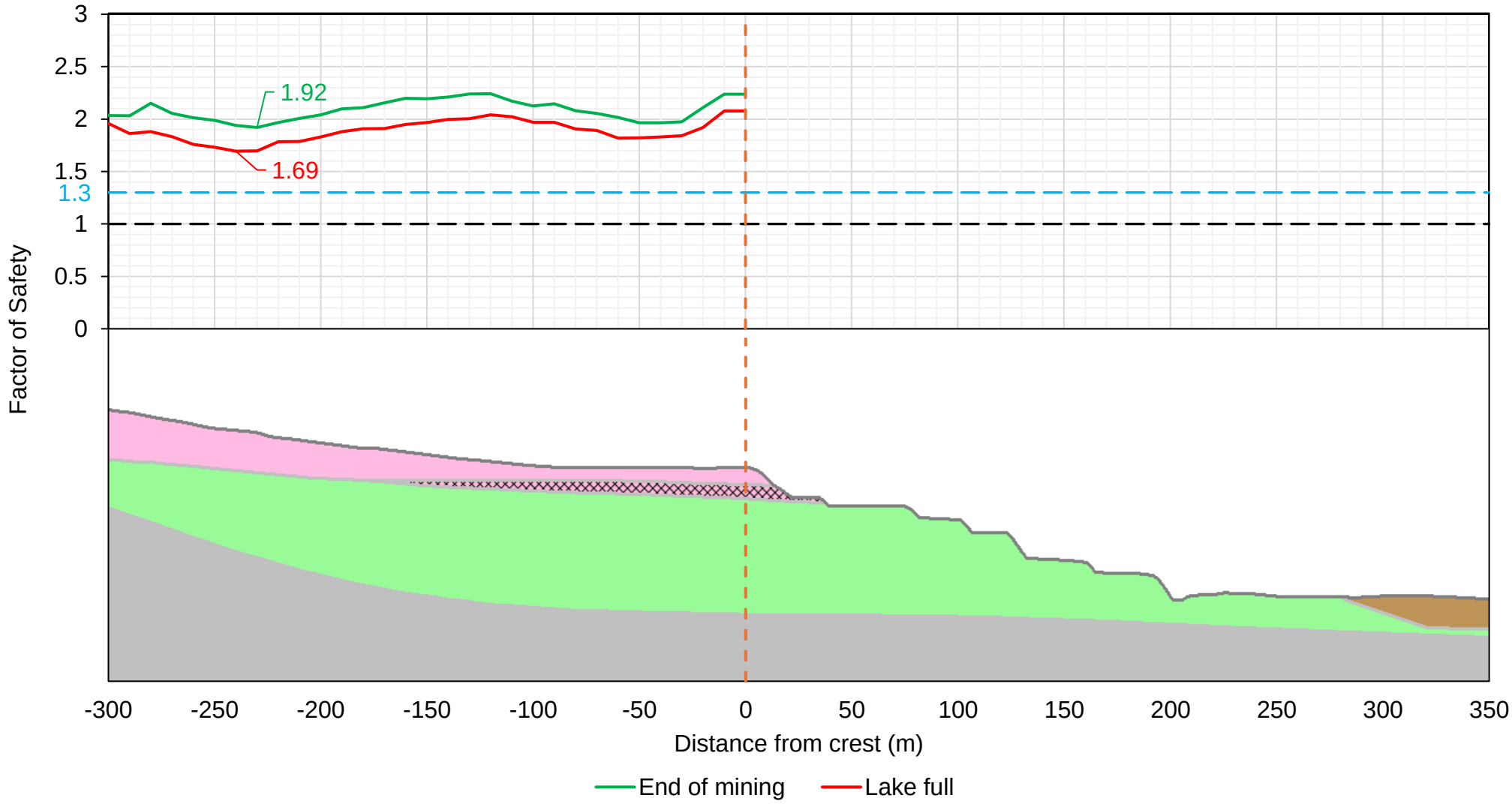
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 22

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

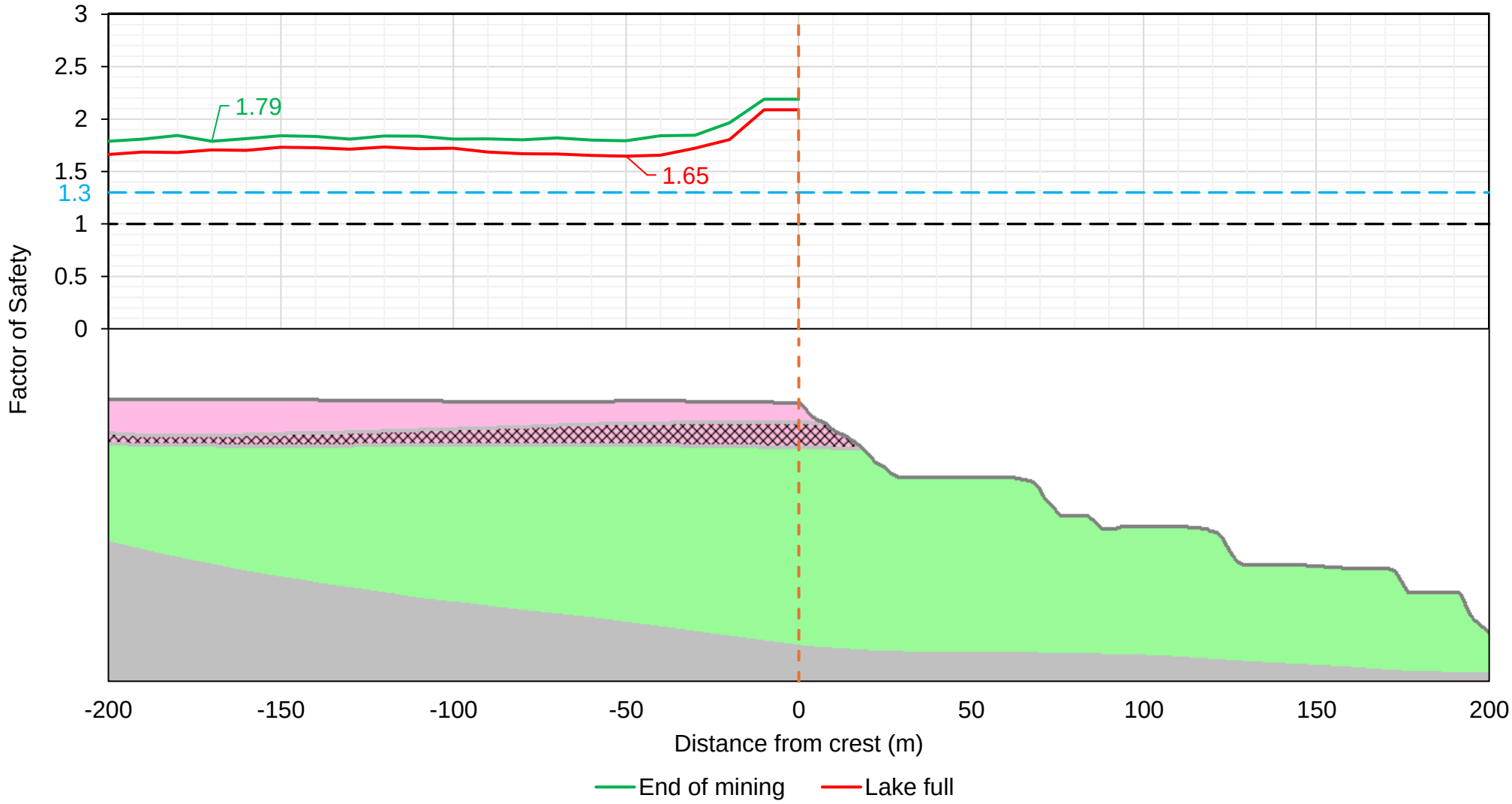
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 23

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

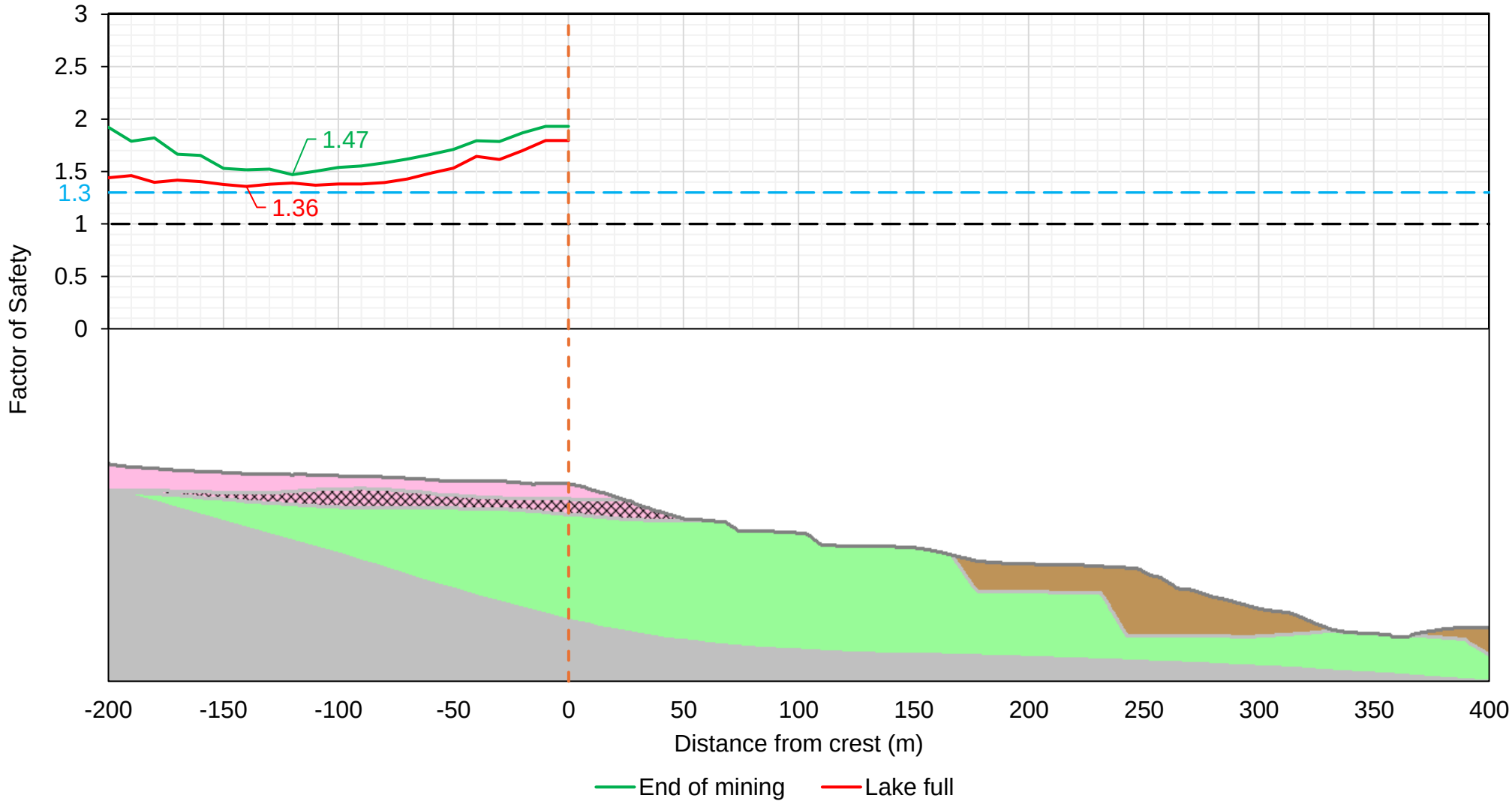
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 24

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

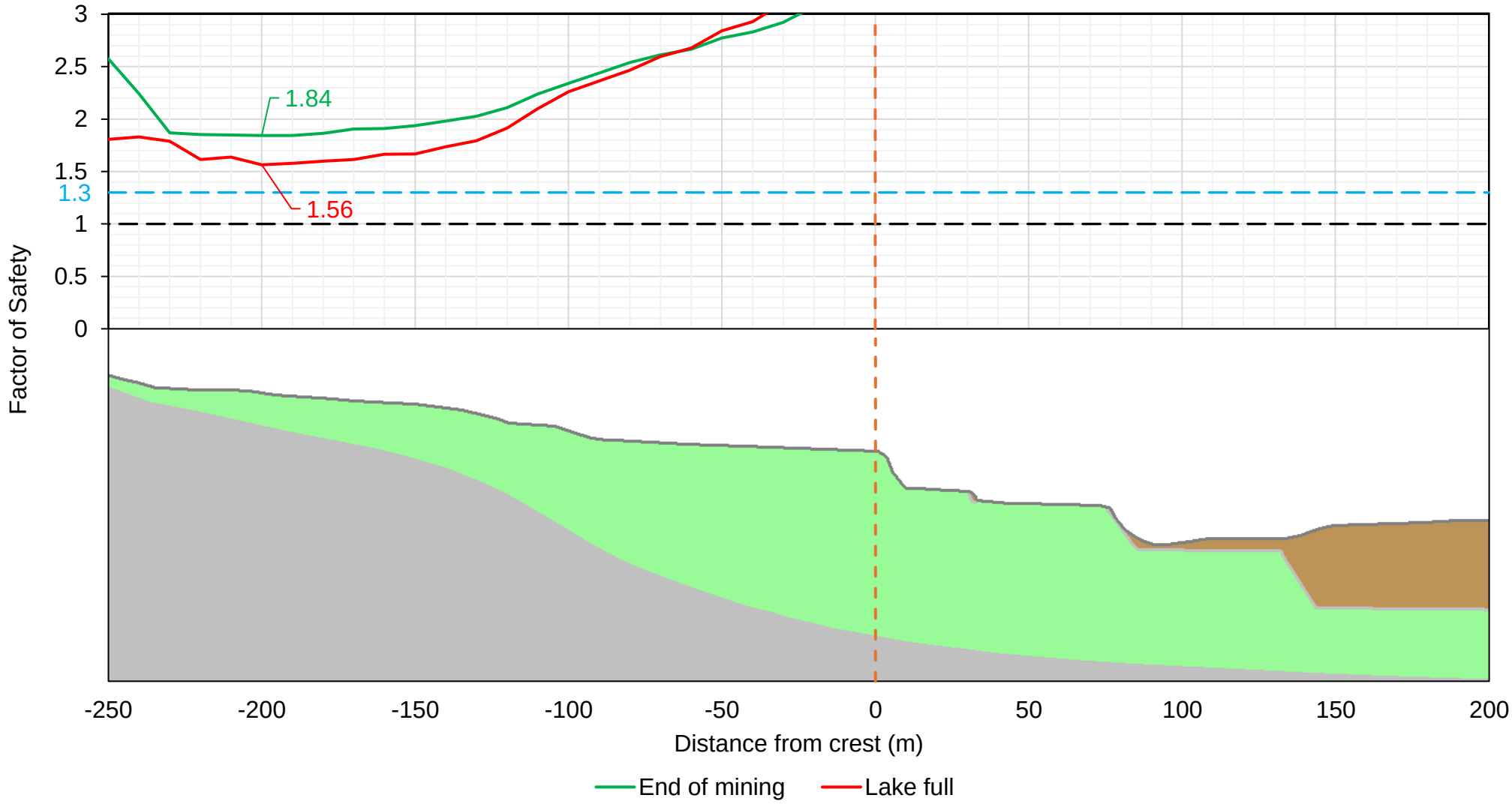
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 25

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

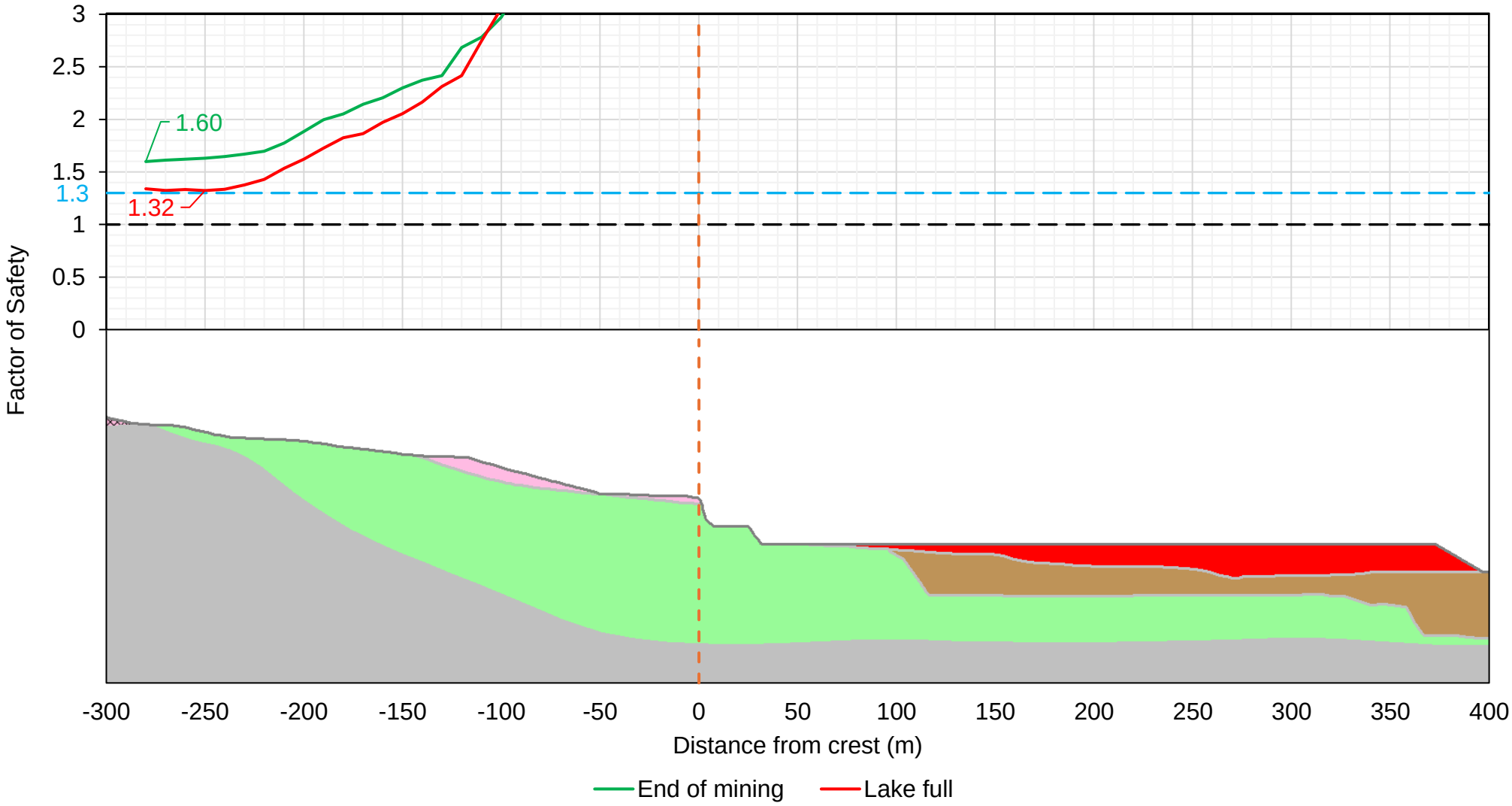
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 26

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

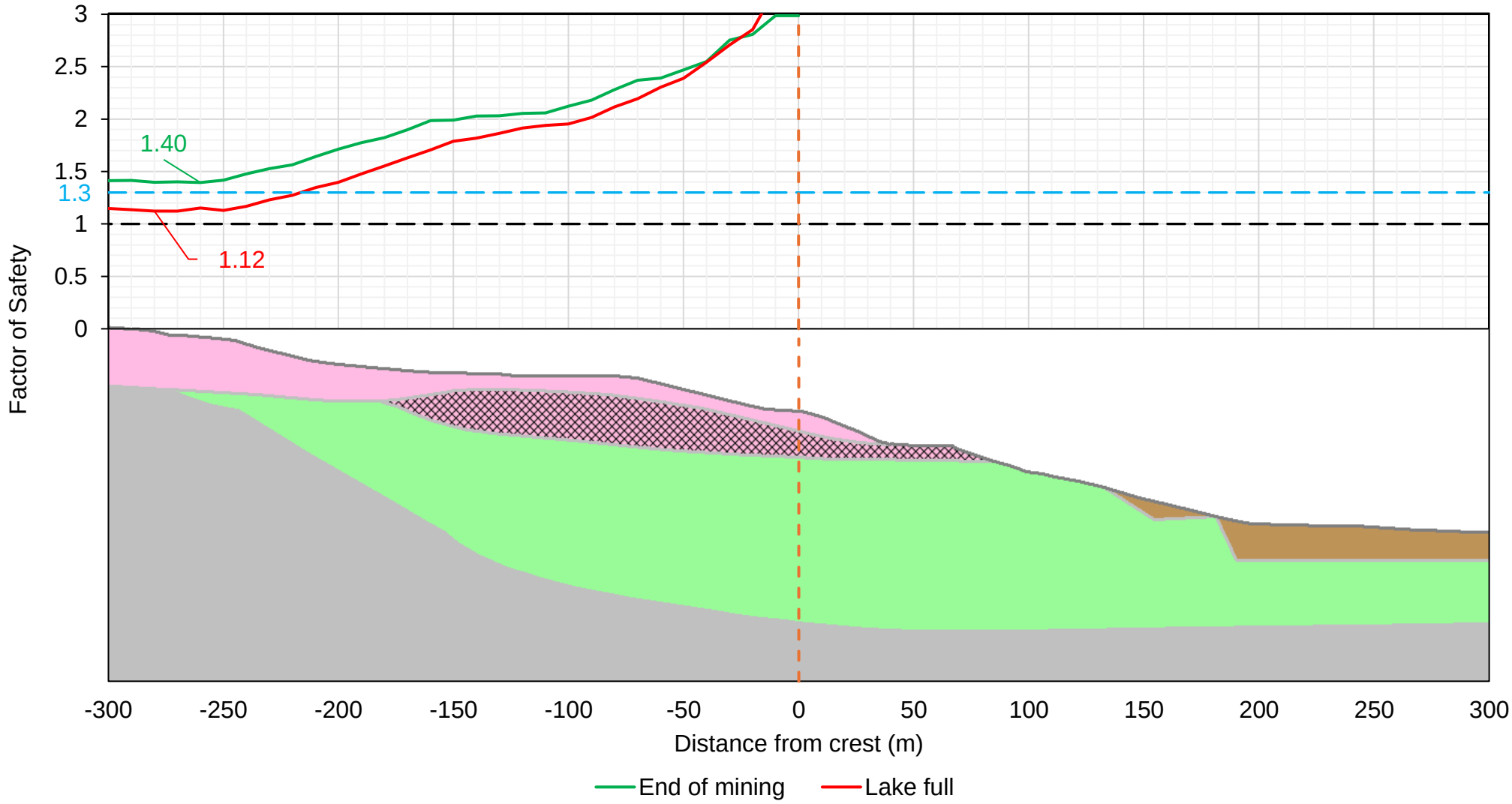
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 27

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

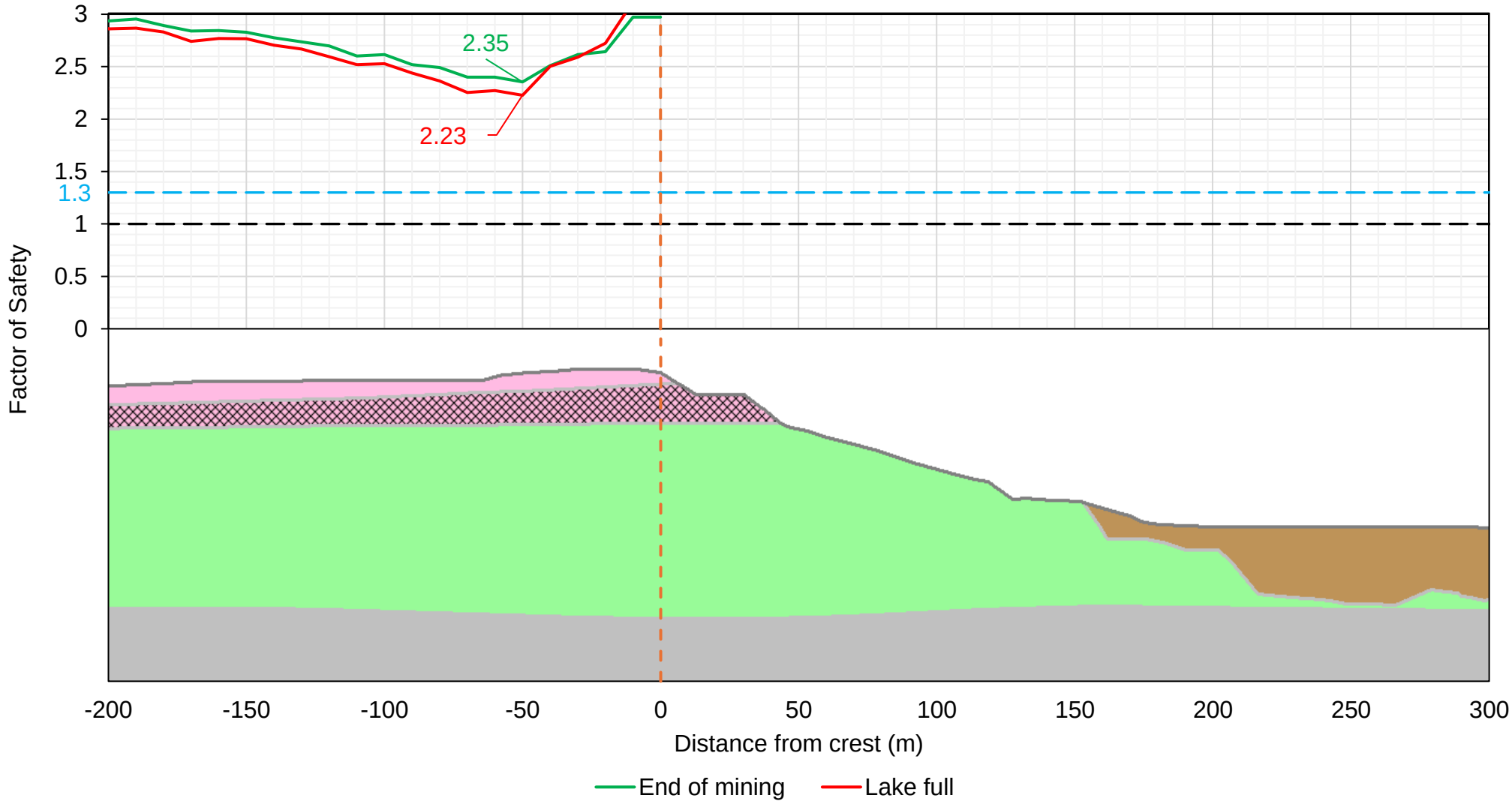
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 28

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

EnergyAustralia

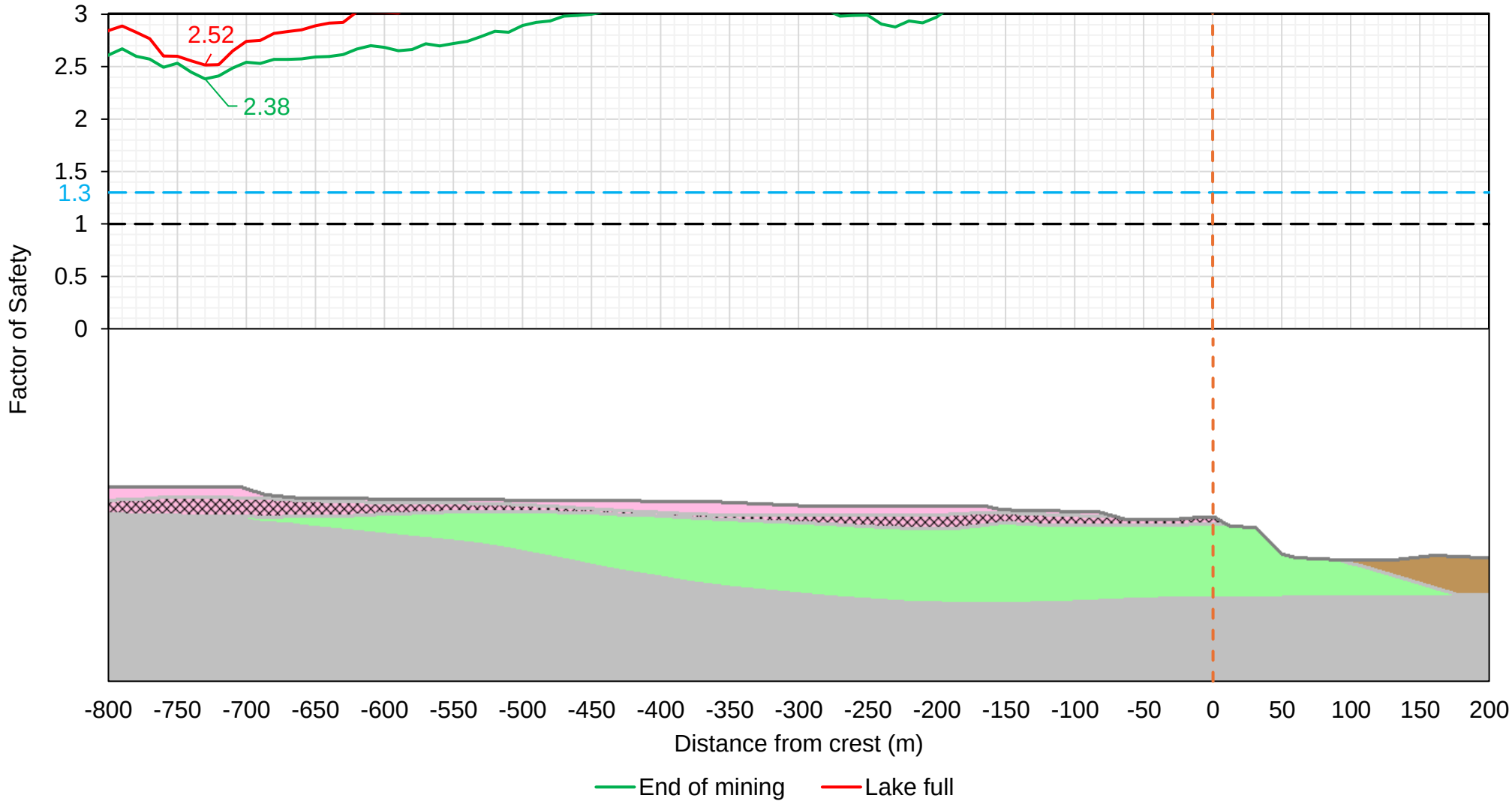
Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 29

PSM4487-200R	Appendix H

N:\PSM4487\Eng\08 Analyses\200R - Slide Stability Analysis\14. FoS vs distance behind crest\2. Multilinear failure mechanism\[FoS vs Distance behind pit crest - Multilinear.xlsx]Section 29



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

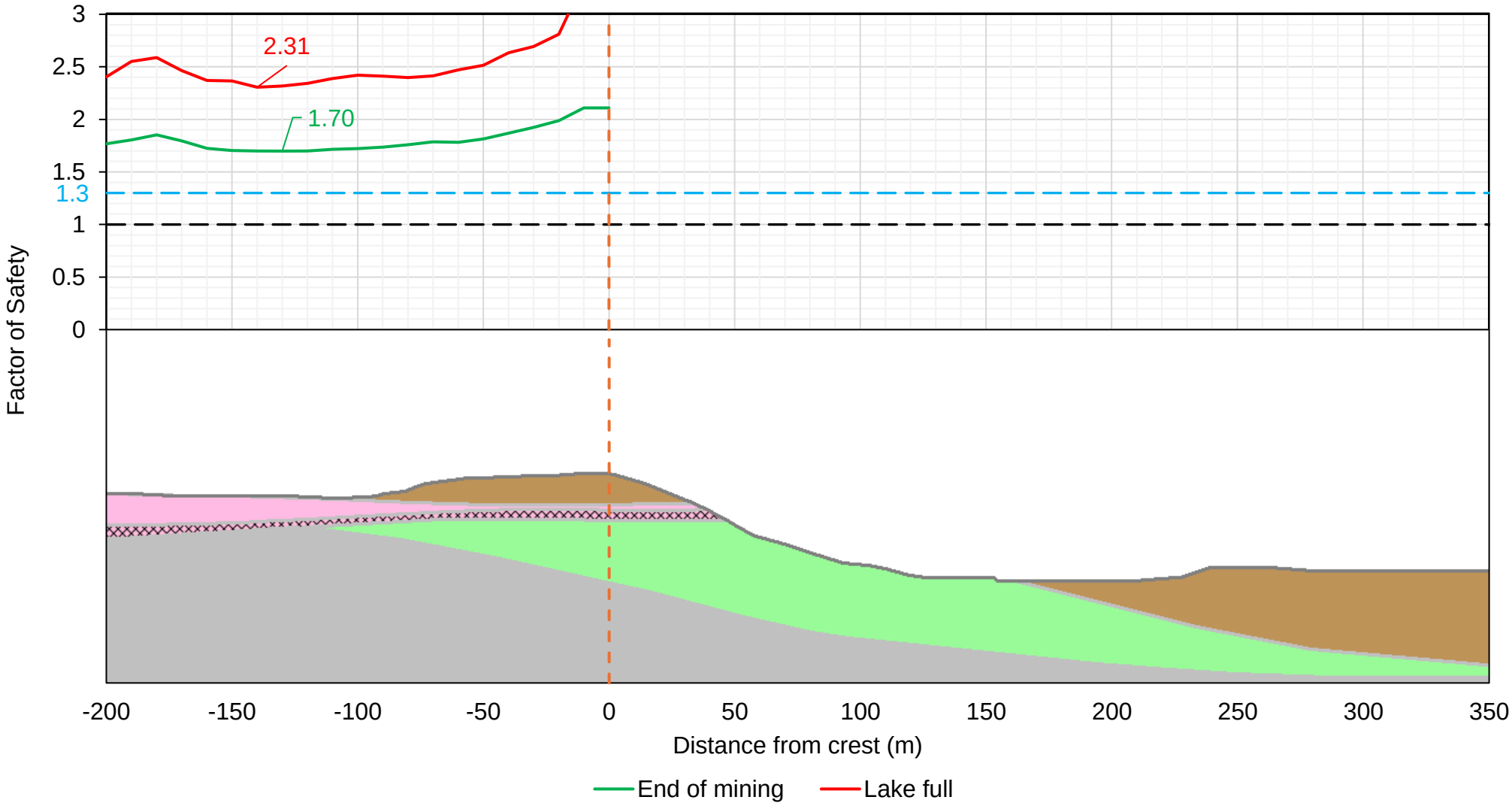
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 30

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Multilinear failure mechanism
2. Values displayed on the chart show the location where the critical factor of safety occurs.

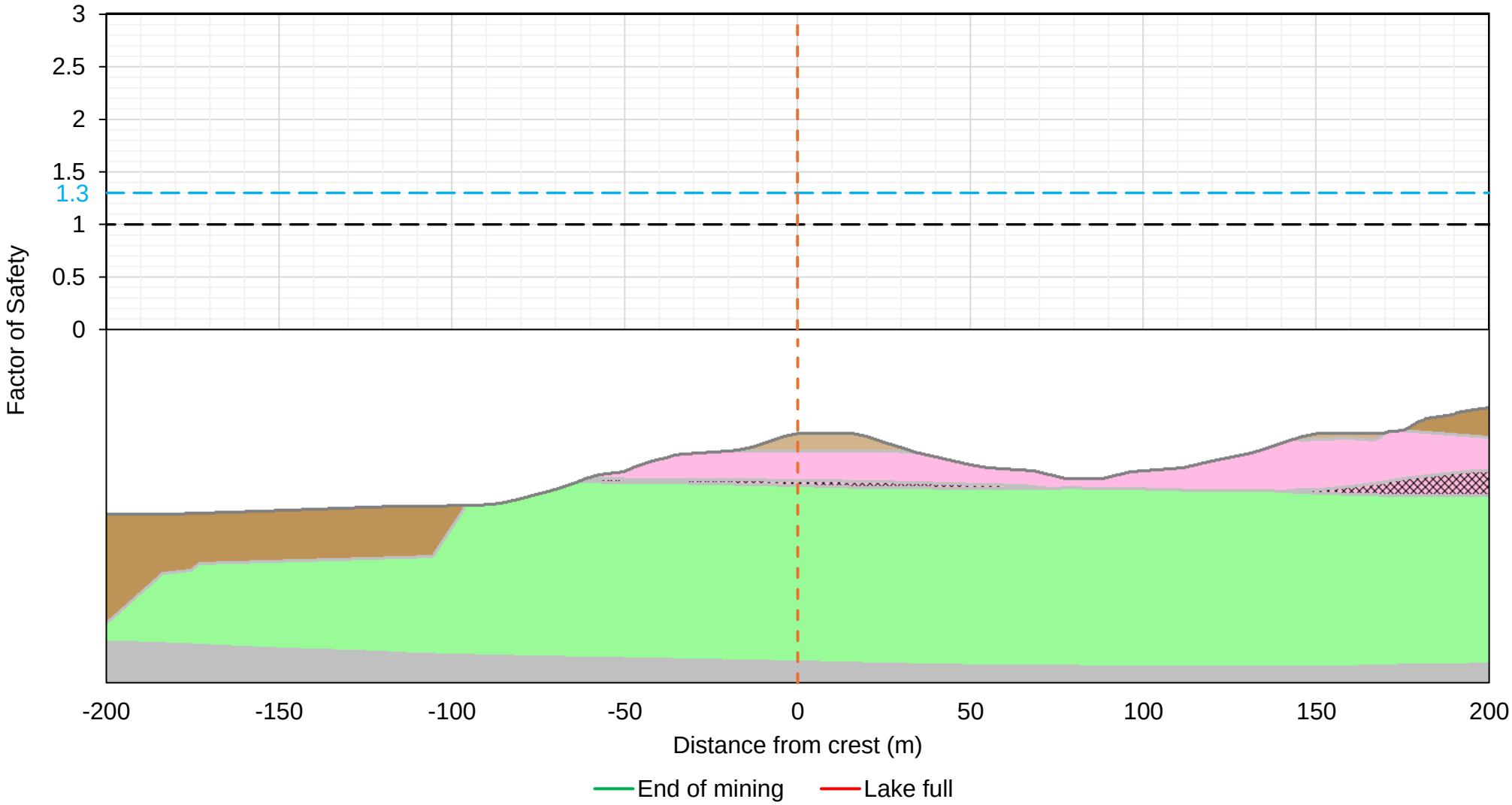
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 31

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. Values displayed on the chart show the location where the critical factor of safety occurs.
3. All factor of safety exceeds 3.0

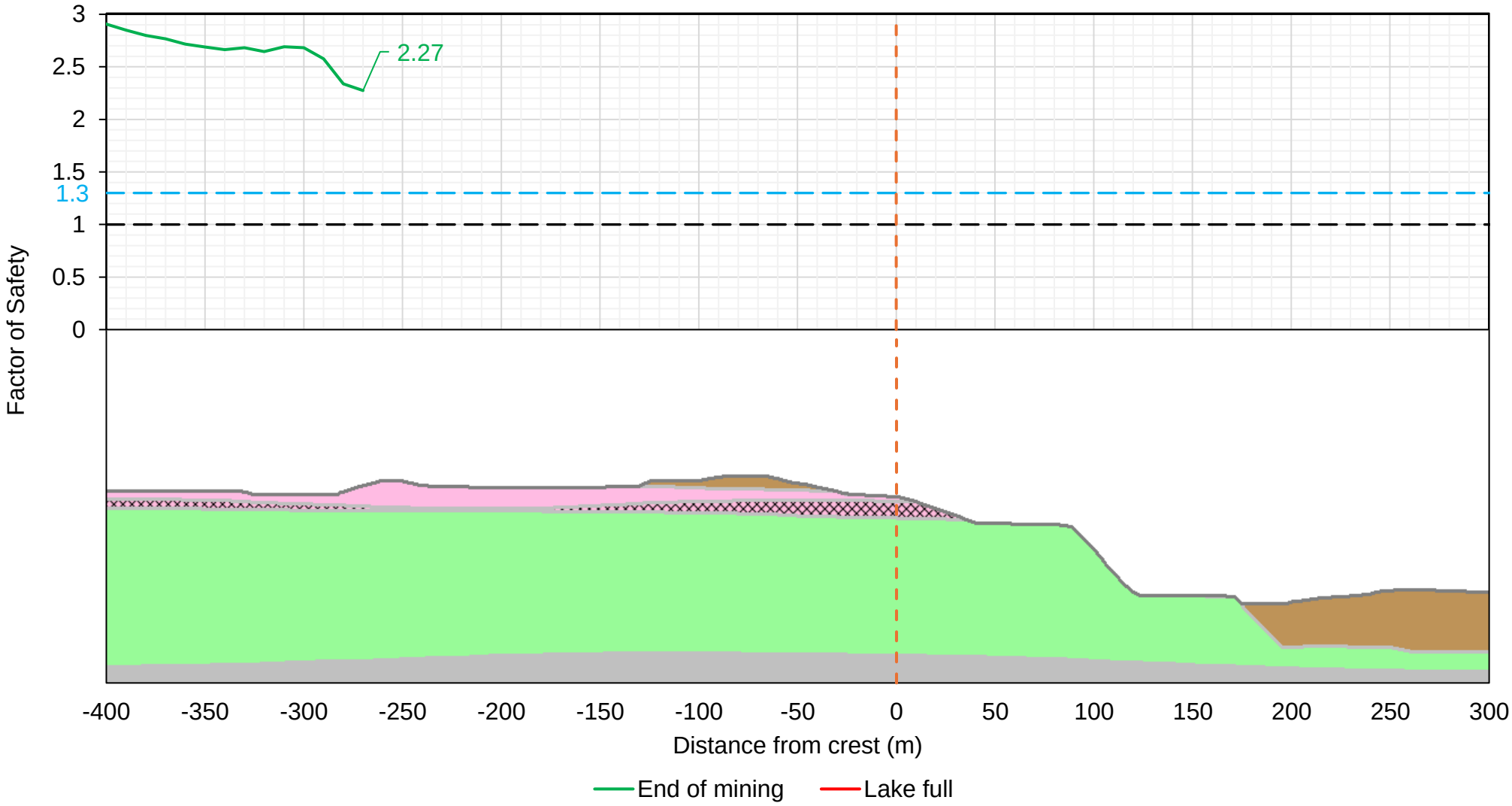
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 1

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. Values displayed on the chart show the location where the critical factor of safety occurs.
3. Factor of safety for lake full case exceeds 3.0

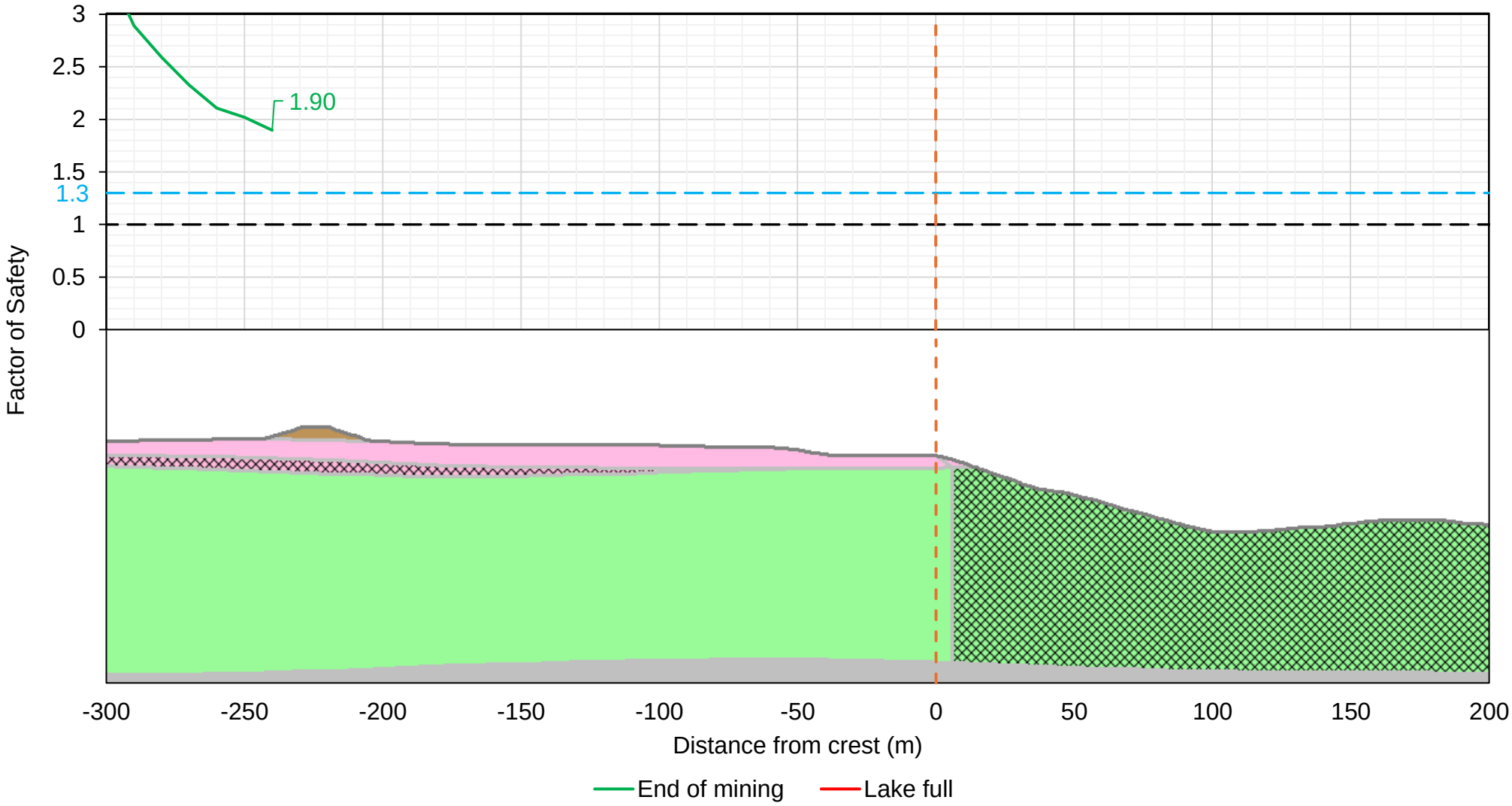
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 4

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. Values displayed on the chart show the location where the critical factor of safety occurs.
3. Factor of safety for lake full case exceeds 3.0

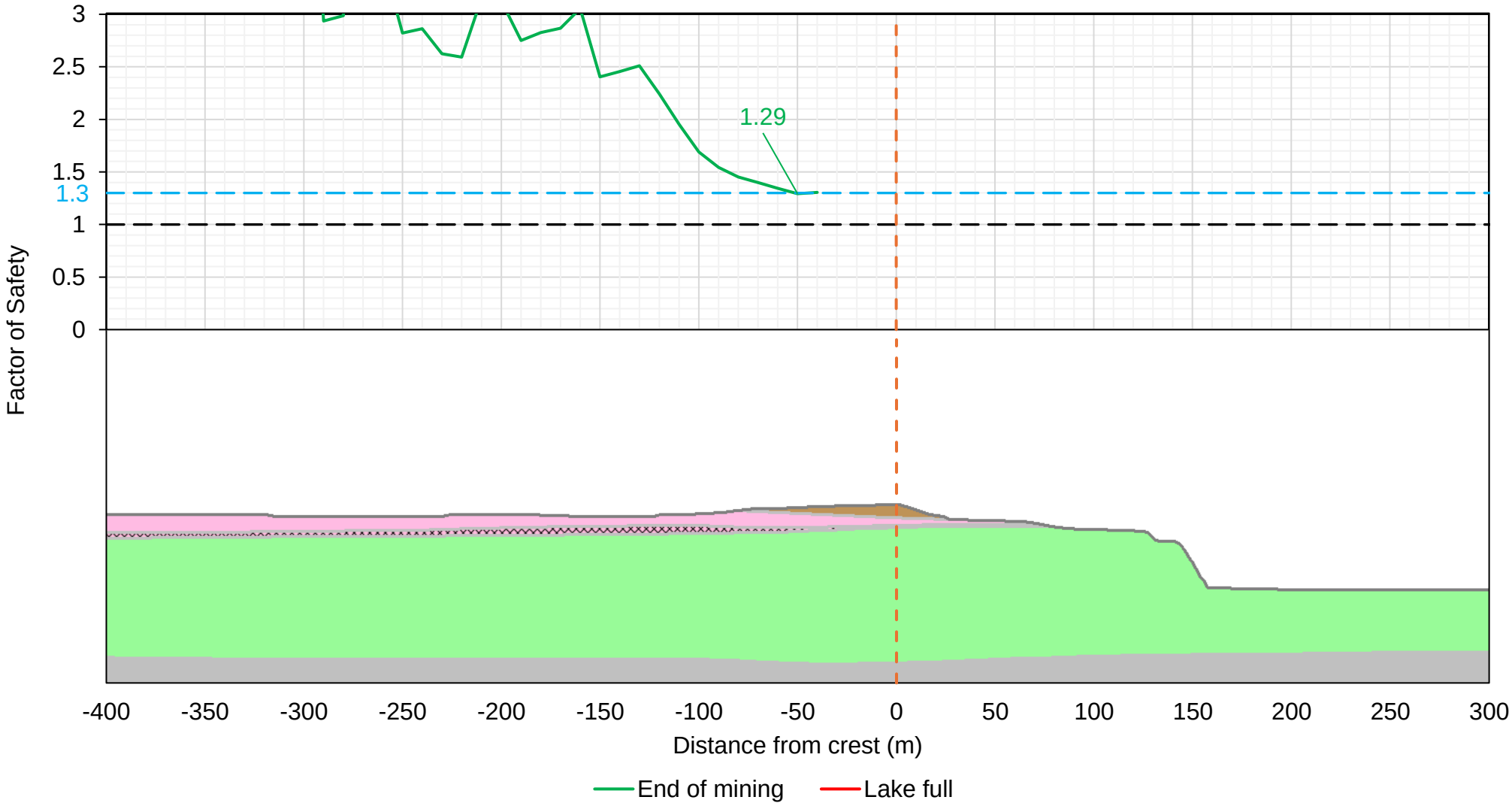
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 5

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. Values displayed on the chart show the location where the critical factor of safety occurs.
3. Factor of safety for lake full case exceeds 3.0

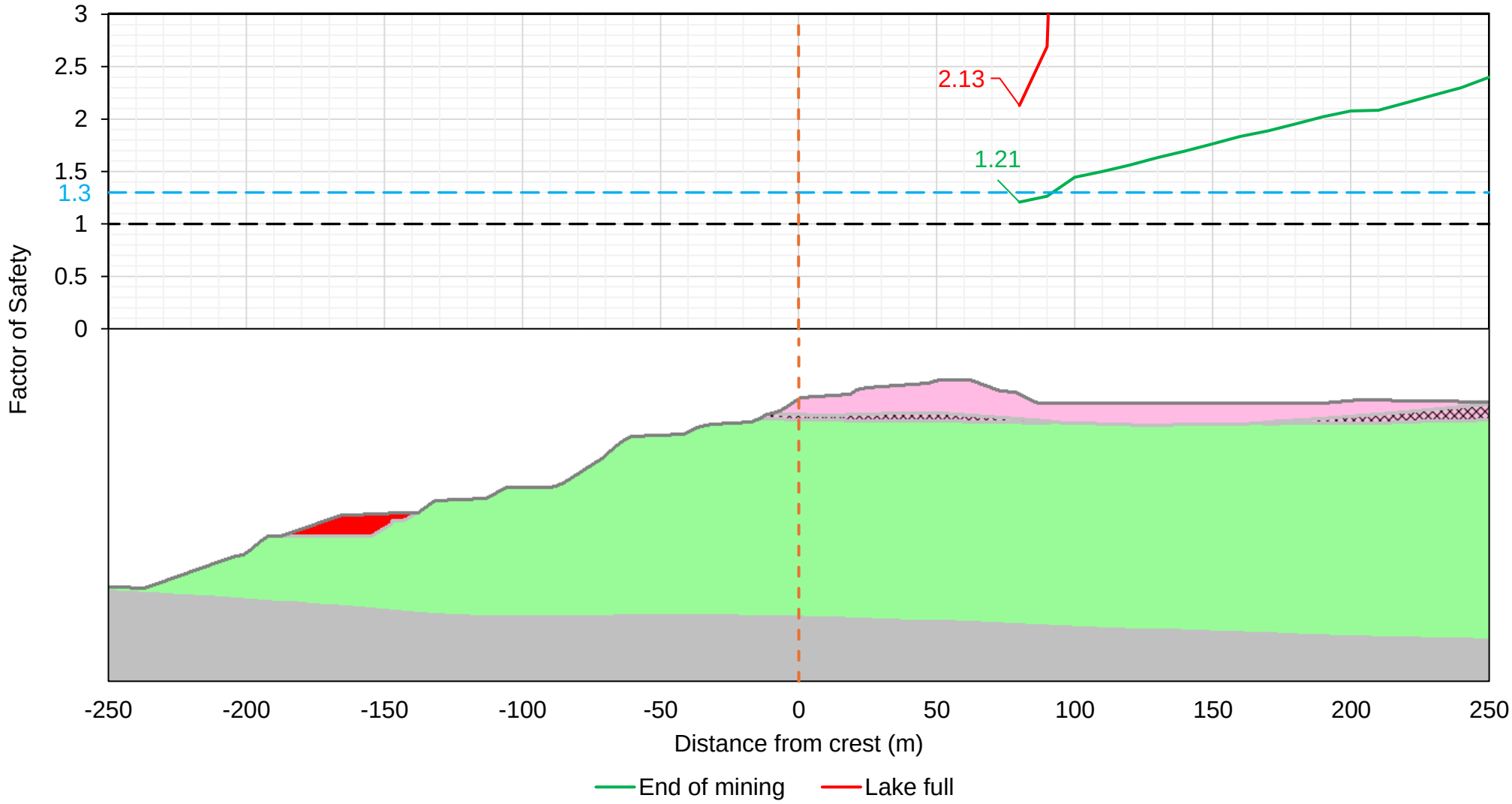
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 6

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. Values displayed on the chart show the location where the critical factor of safety occurs.

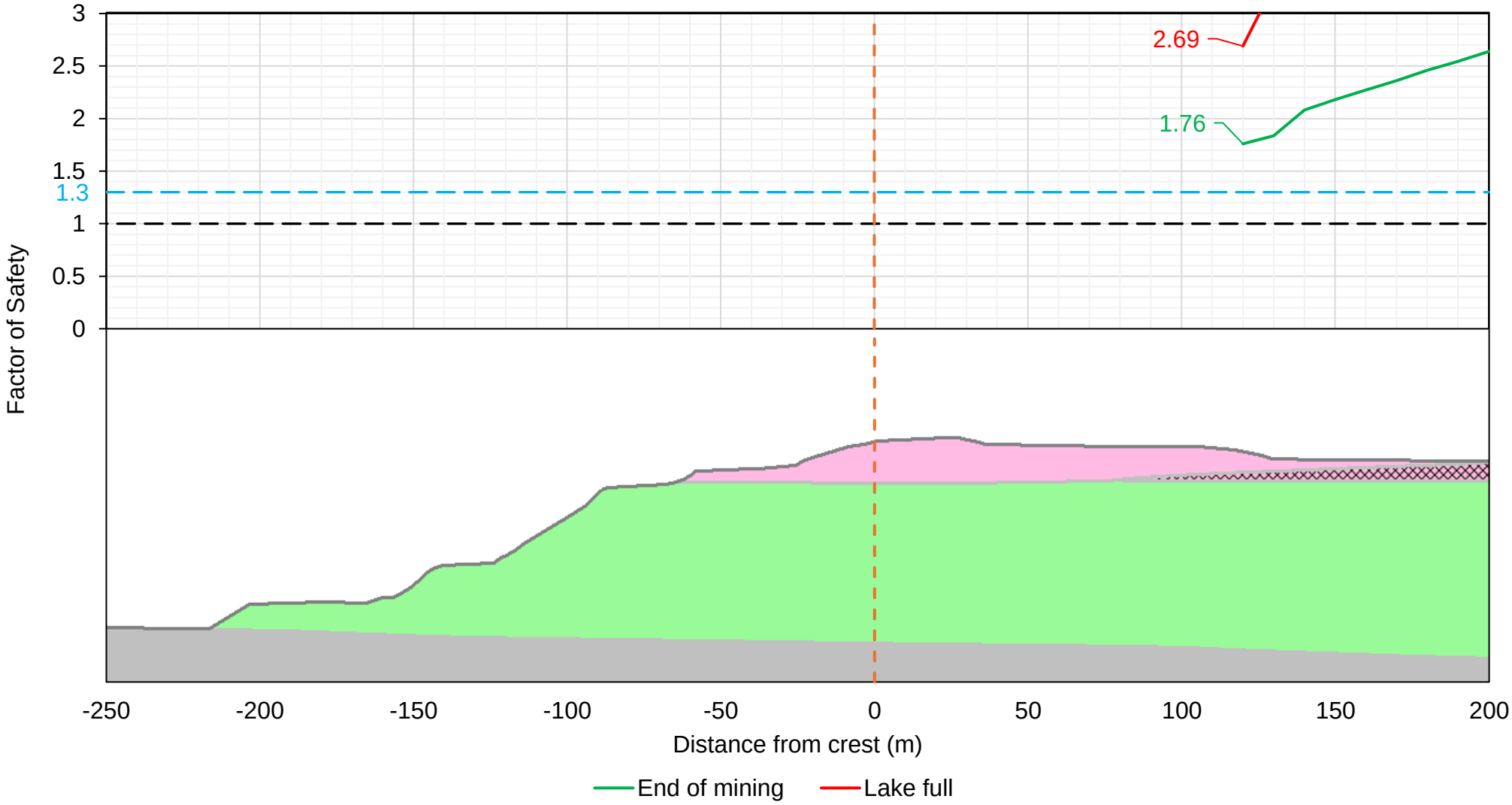
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 16

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. Values displayed on the chart show the location where the critical factor of safety occurs.

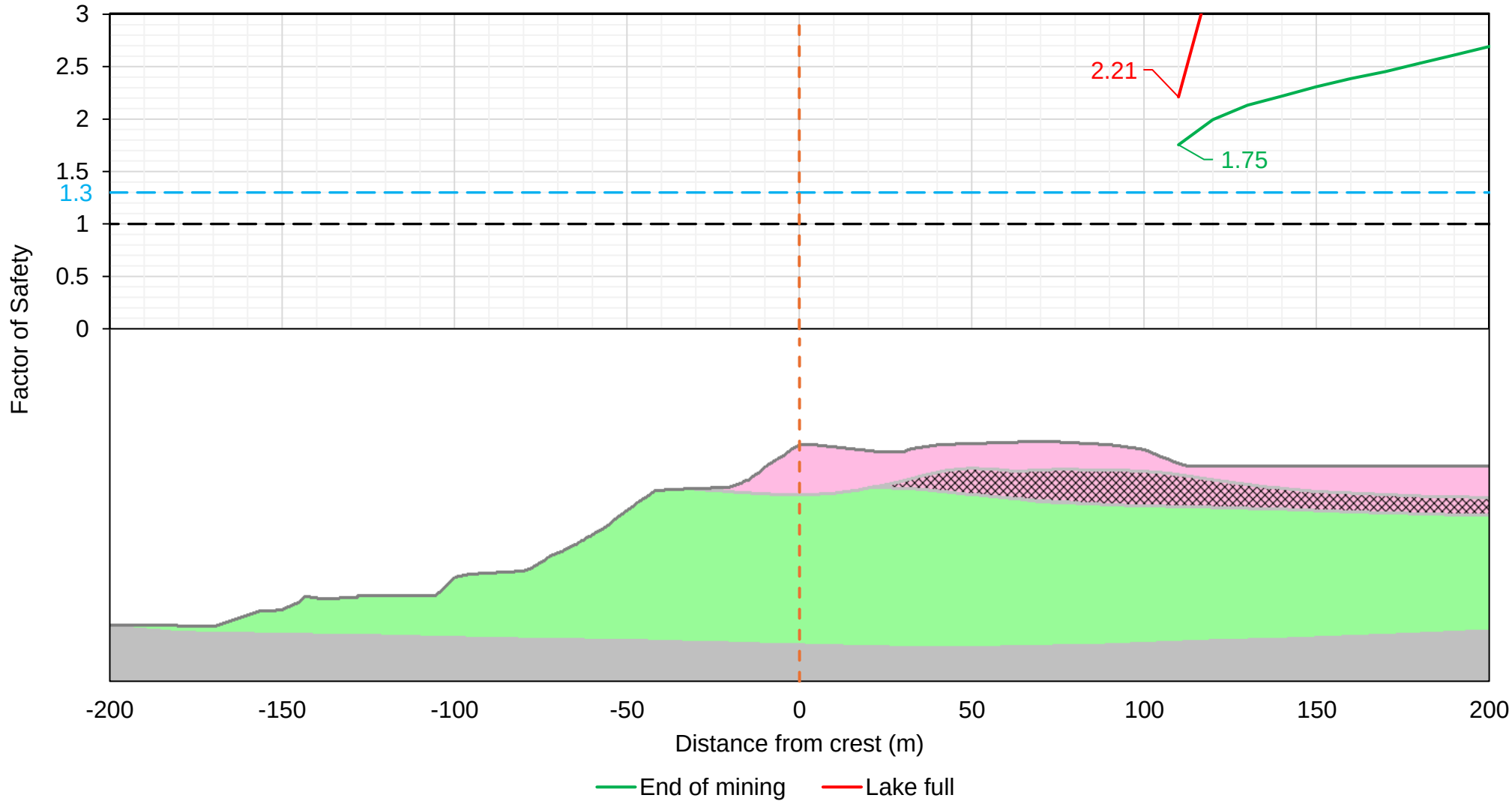
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 17

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. Values displayed on the chart show the location where the critical factor of safety occurs.

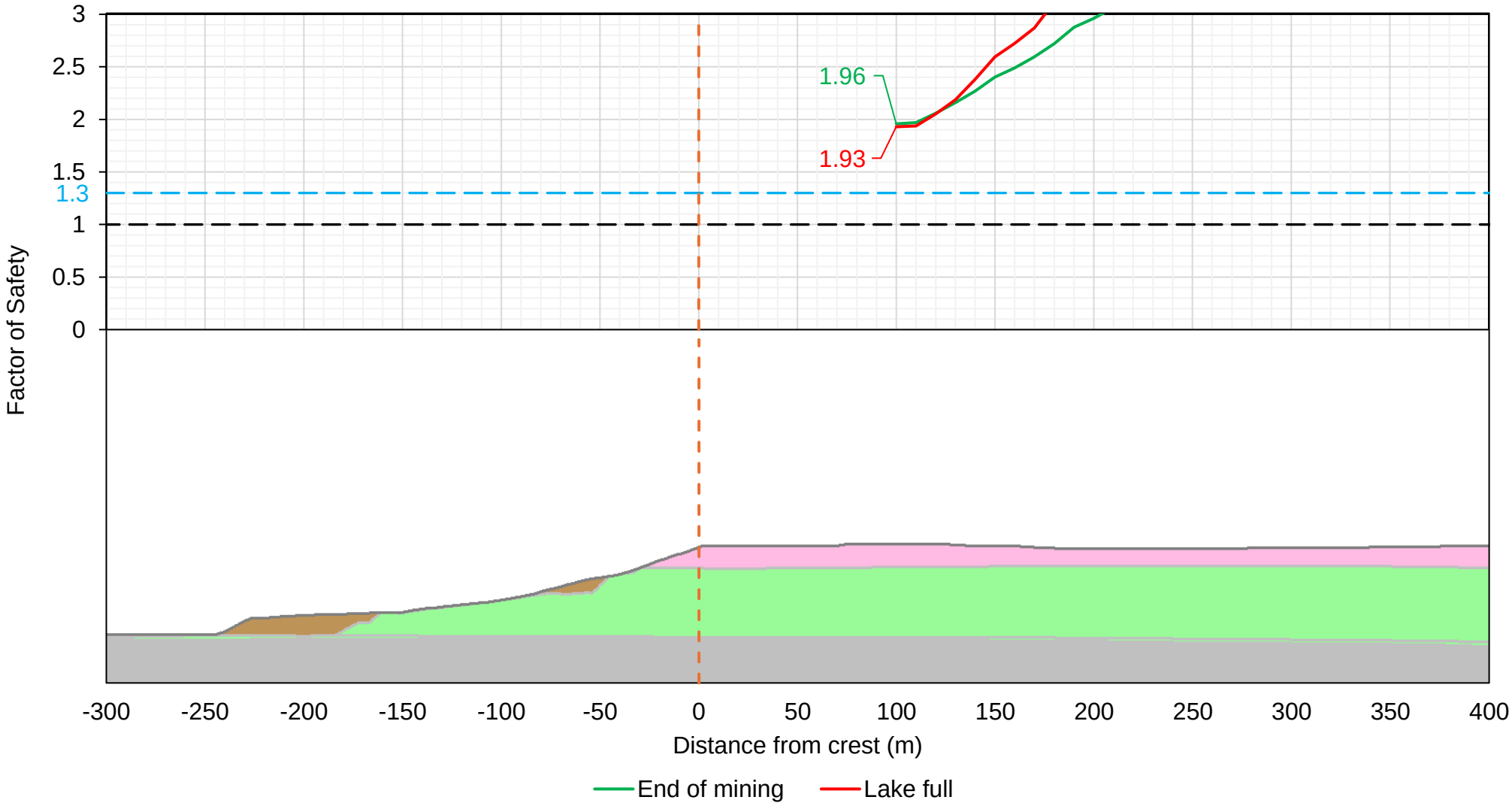
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 18

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. Values displayed on the chart show the location where the critical factor of safety occurs.

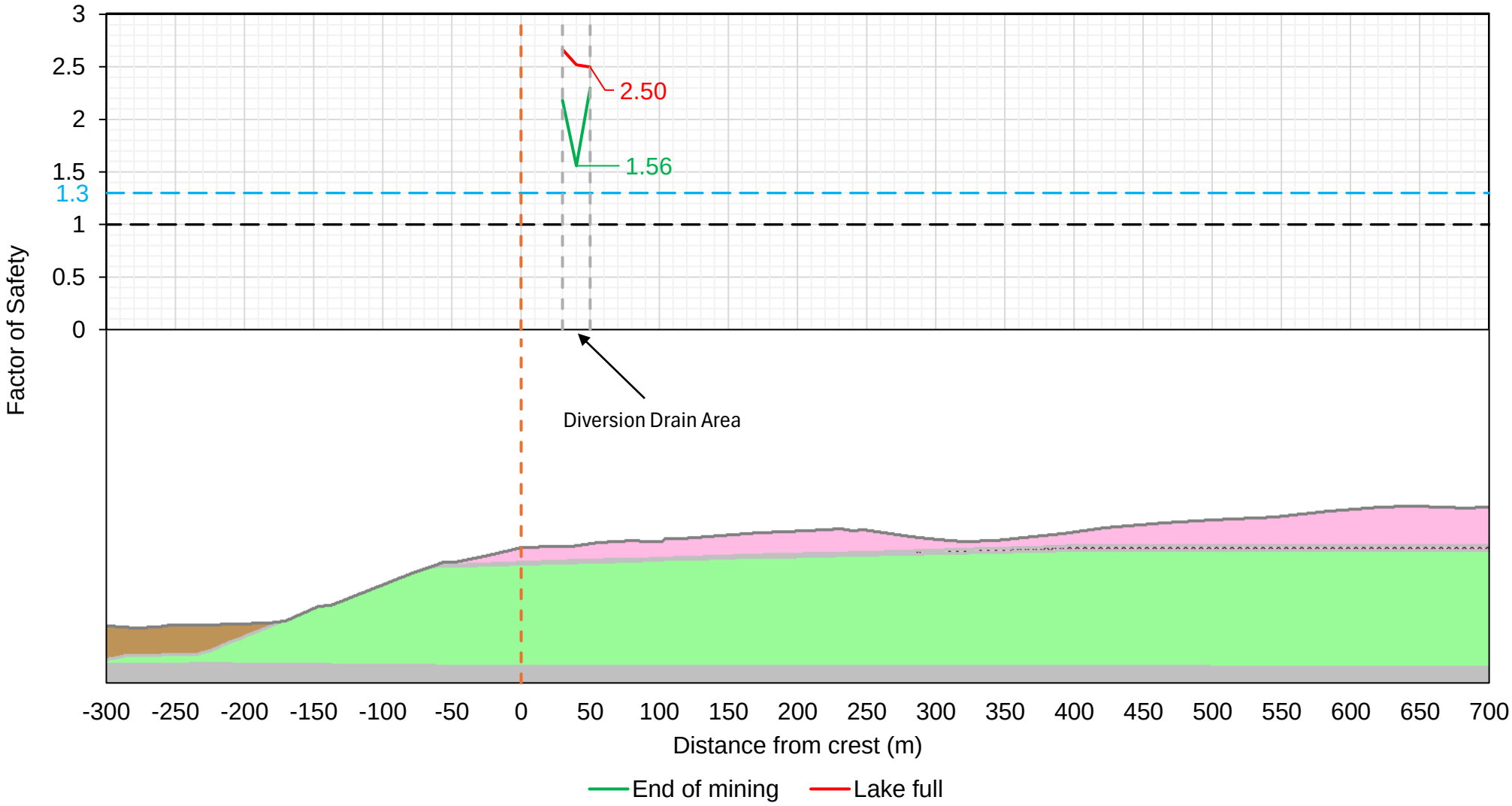
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 18b

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. Values displayed on the chart show the location where the critical factor of safety occurs.

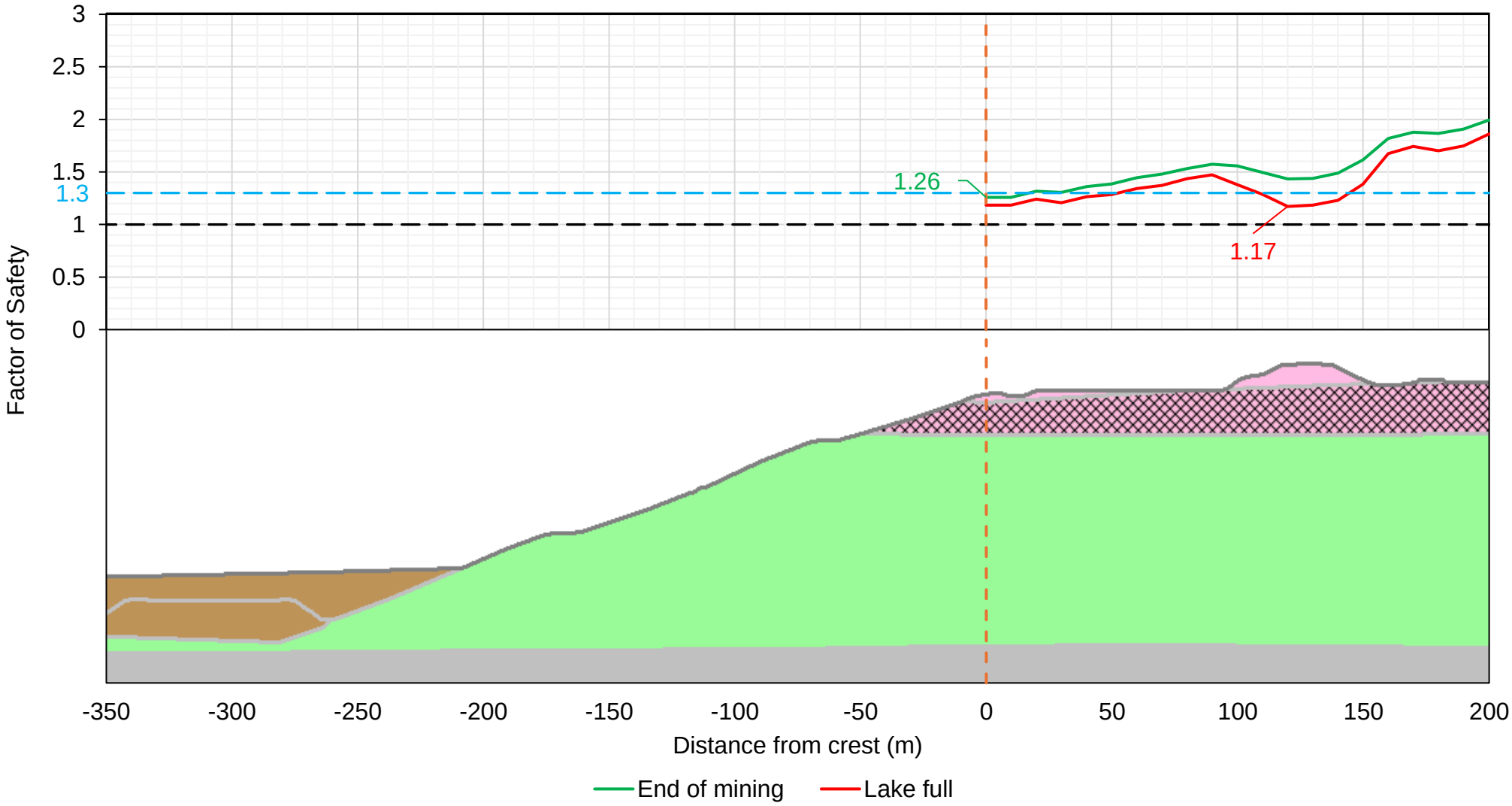
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 7b

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. Values displayed on the chart show the location where the minimum factor of safety occurs.

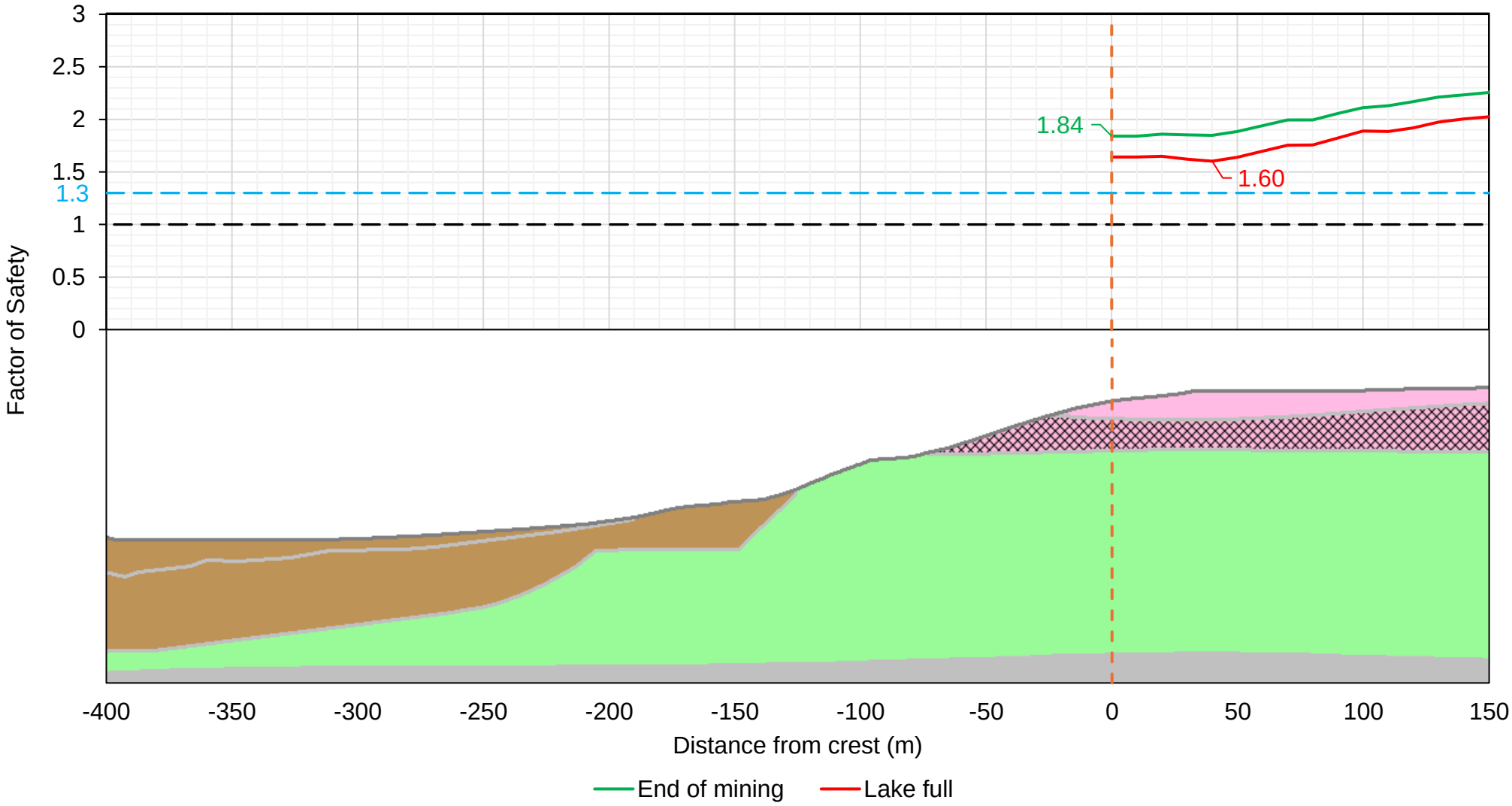
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 9

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. Values displayed on the chart show the location where the minimum factor of safety occurs.

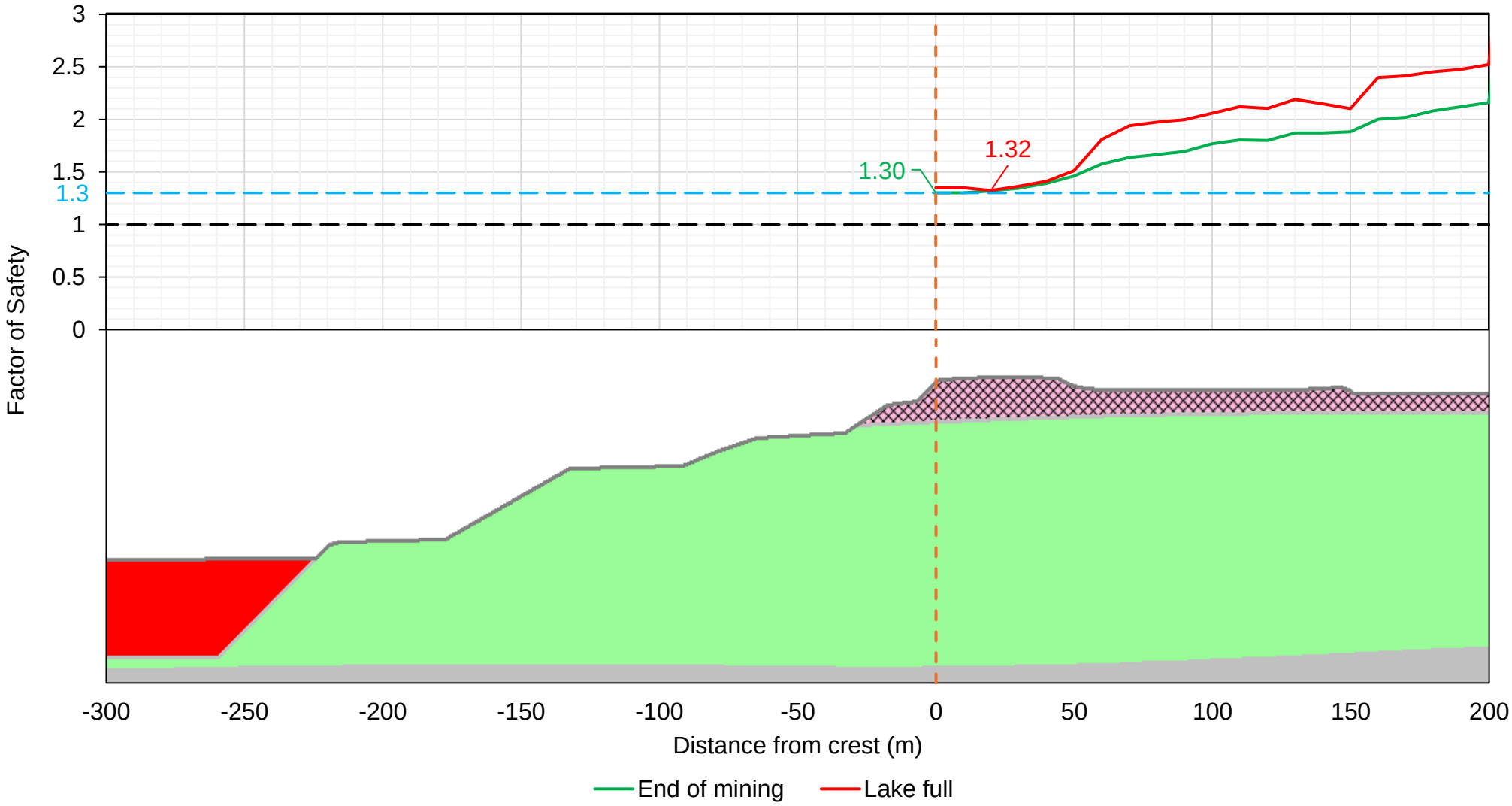
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 10

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. Values displayed on the chart show the location where the minimum factor of safety occurs.

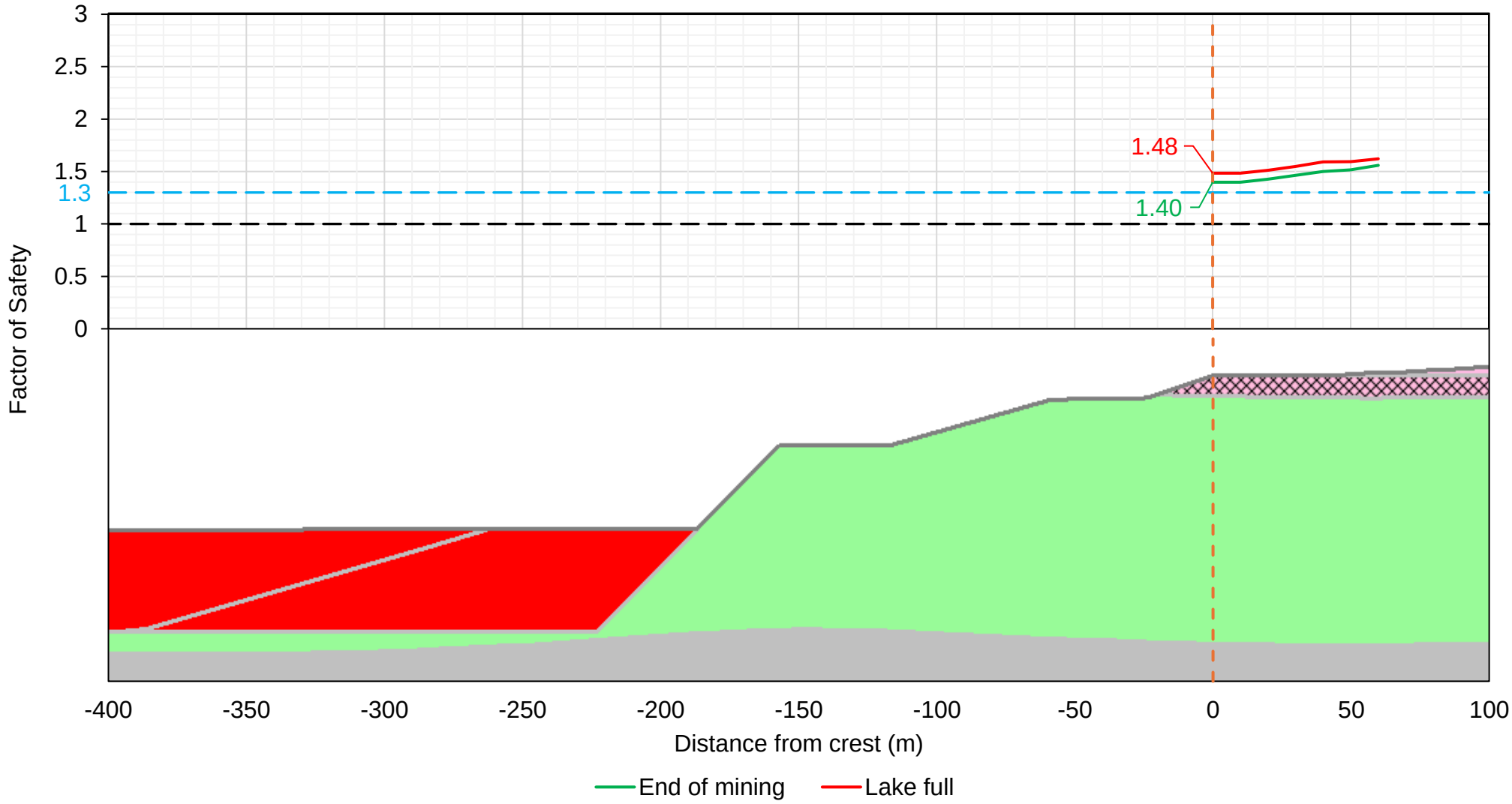
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 11

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. Values displayed on the chart show the location where the minimum factor of safety occurs.

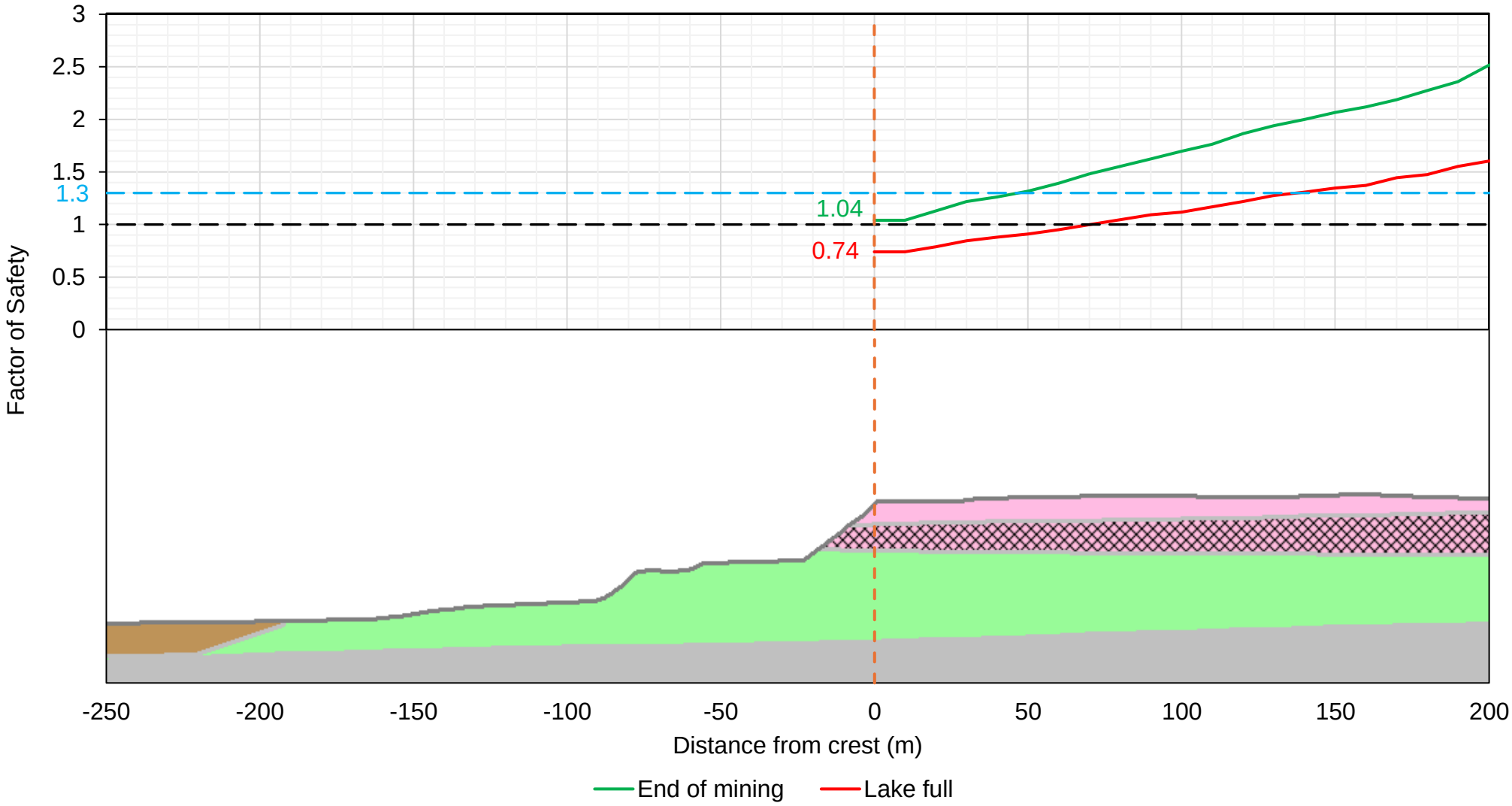
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 12

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. Values displayed on the chart show the location where the minimum factor of safety occurs.

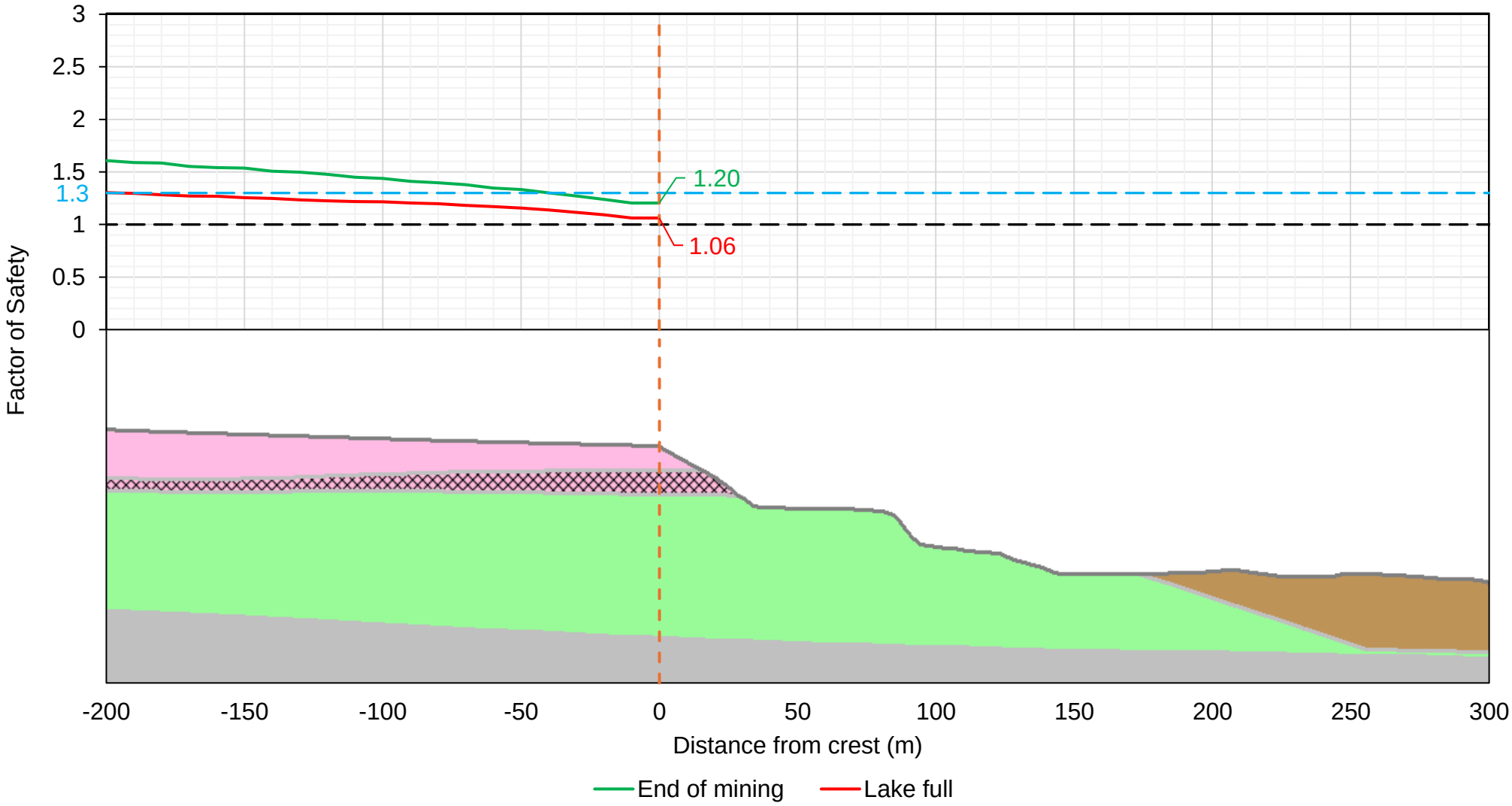
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 19

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. Values displayed on the chart show the location where the minimum factor of safety occurs.

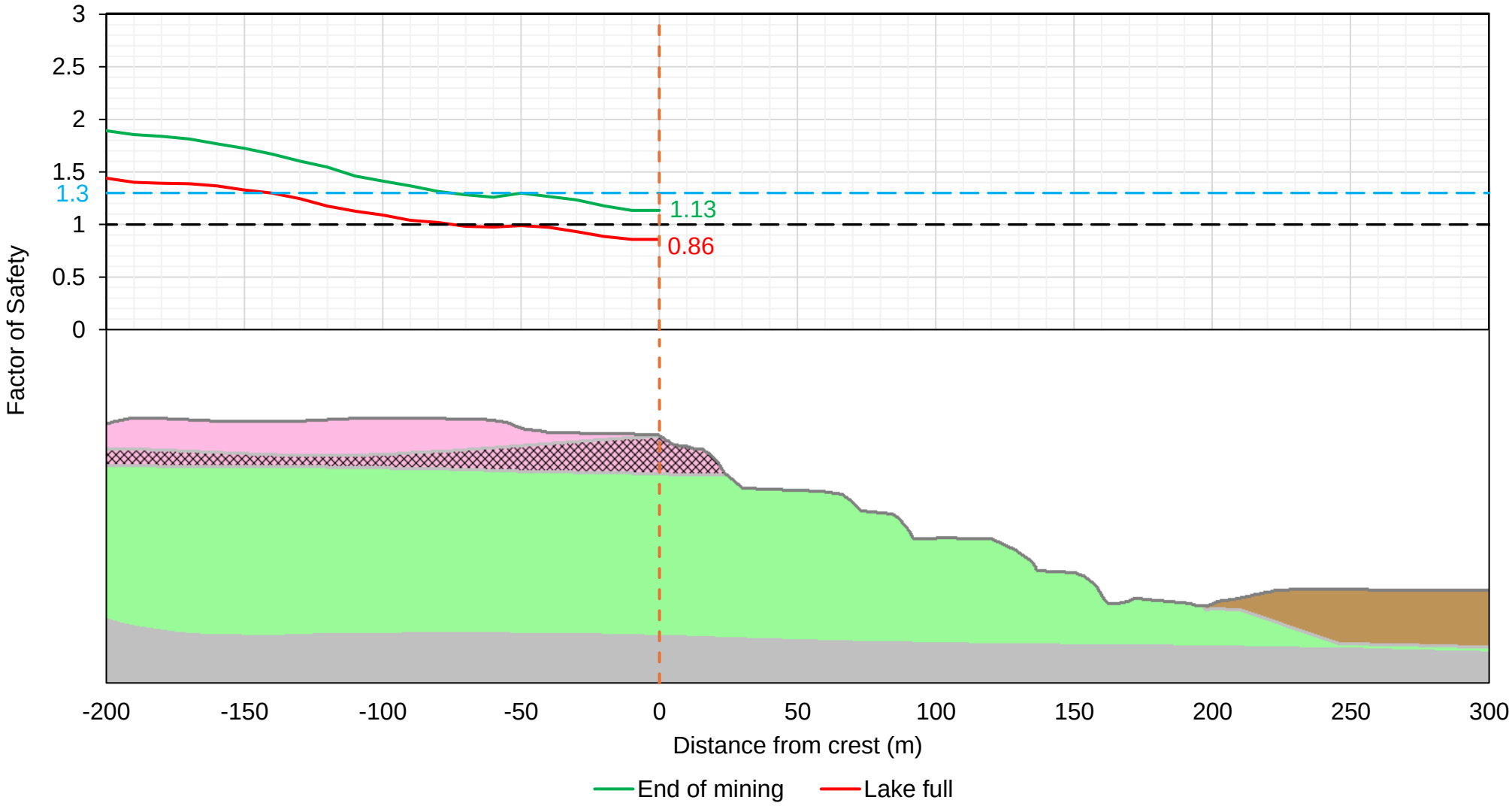
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 20

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. Values displayed on the chart show the location where the minimum factor of safety occurs.

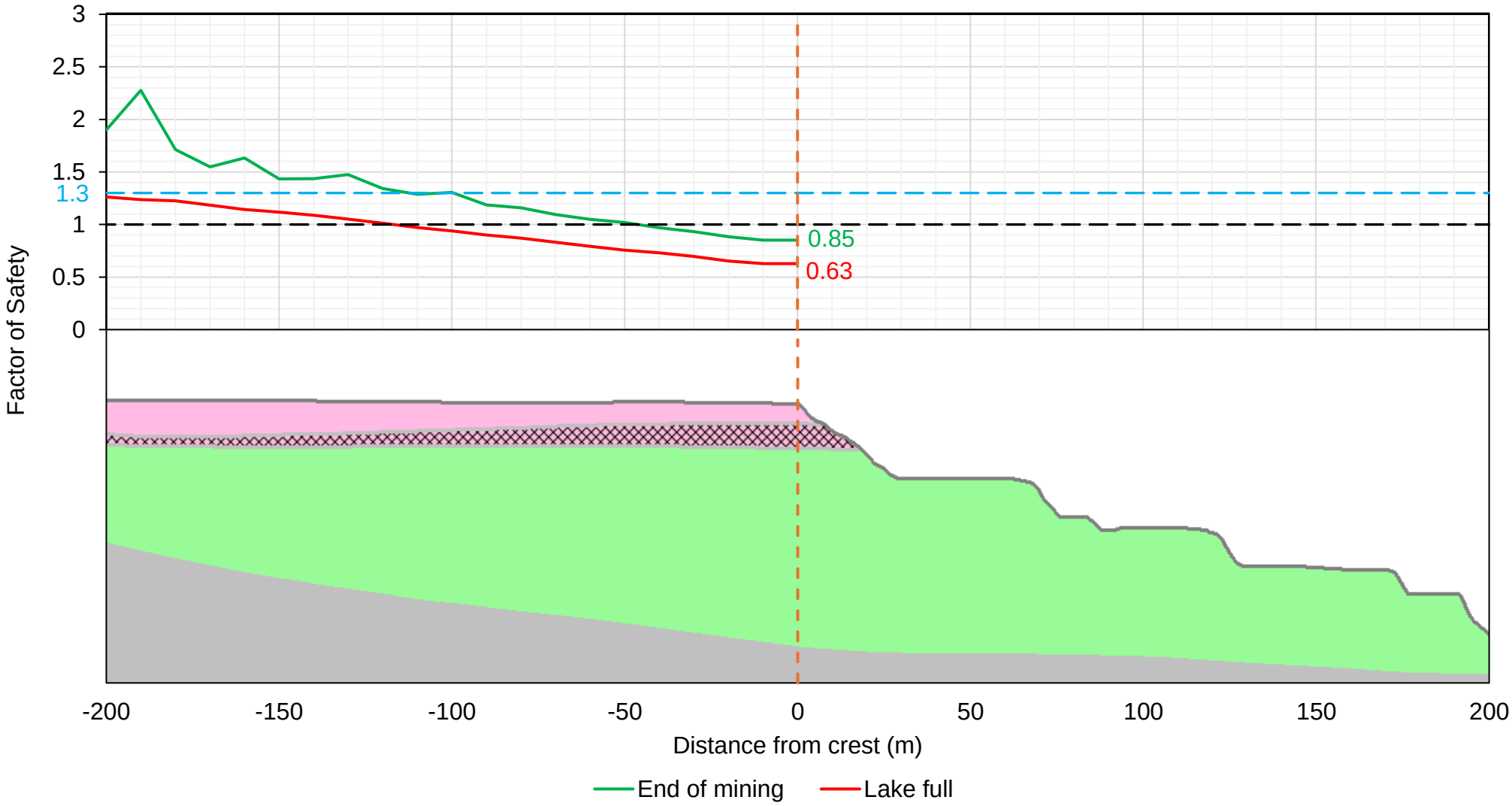
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 22

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. Values displayed on the chart show the location where the minimum factor of safety occurs.

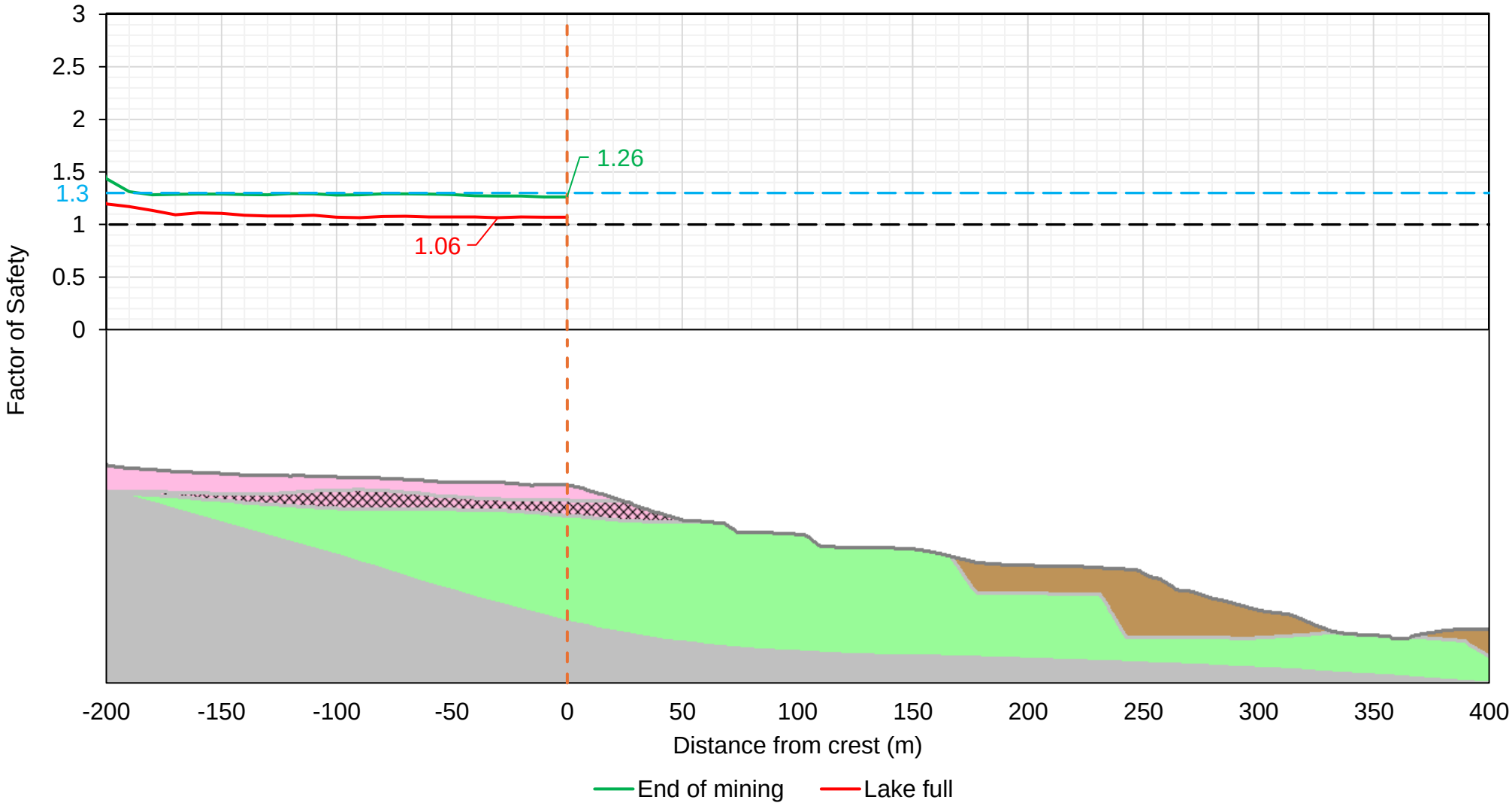
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 24

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. Values displayed on the chart show the location where the minimum factor of safety occurs.

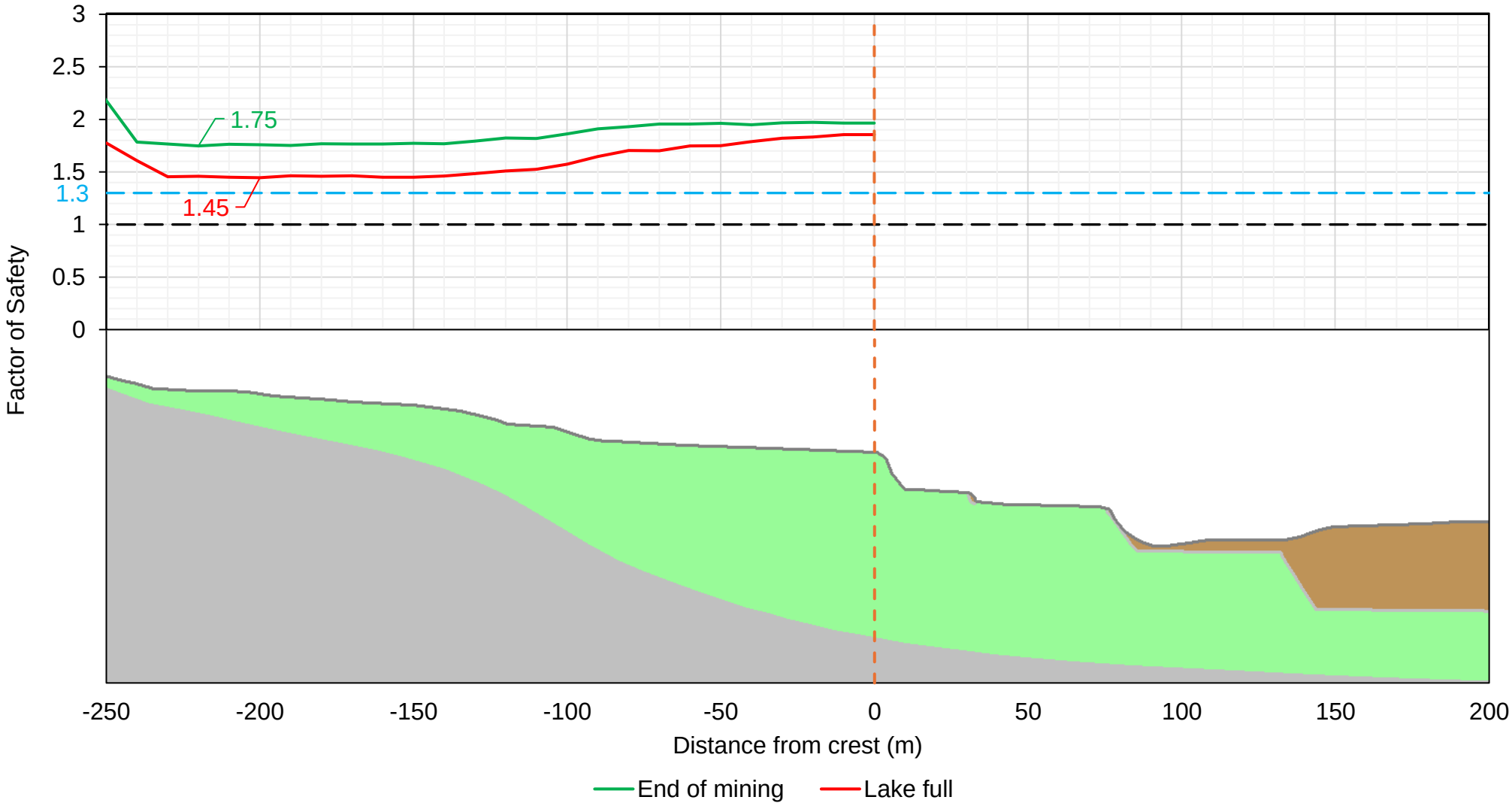
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 25

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. Values displayed on the chart show the location where the minimum factor of safety occurs.

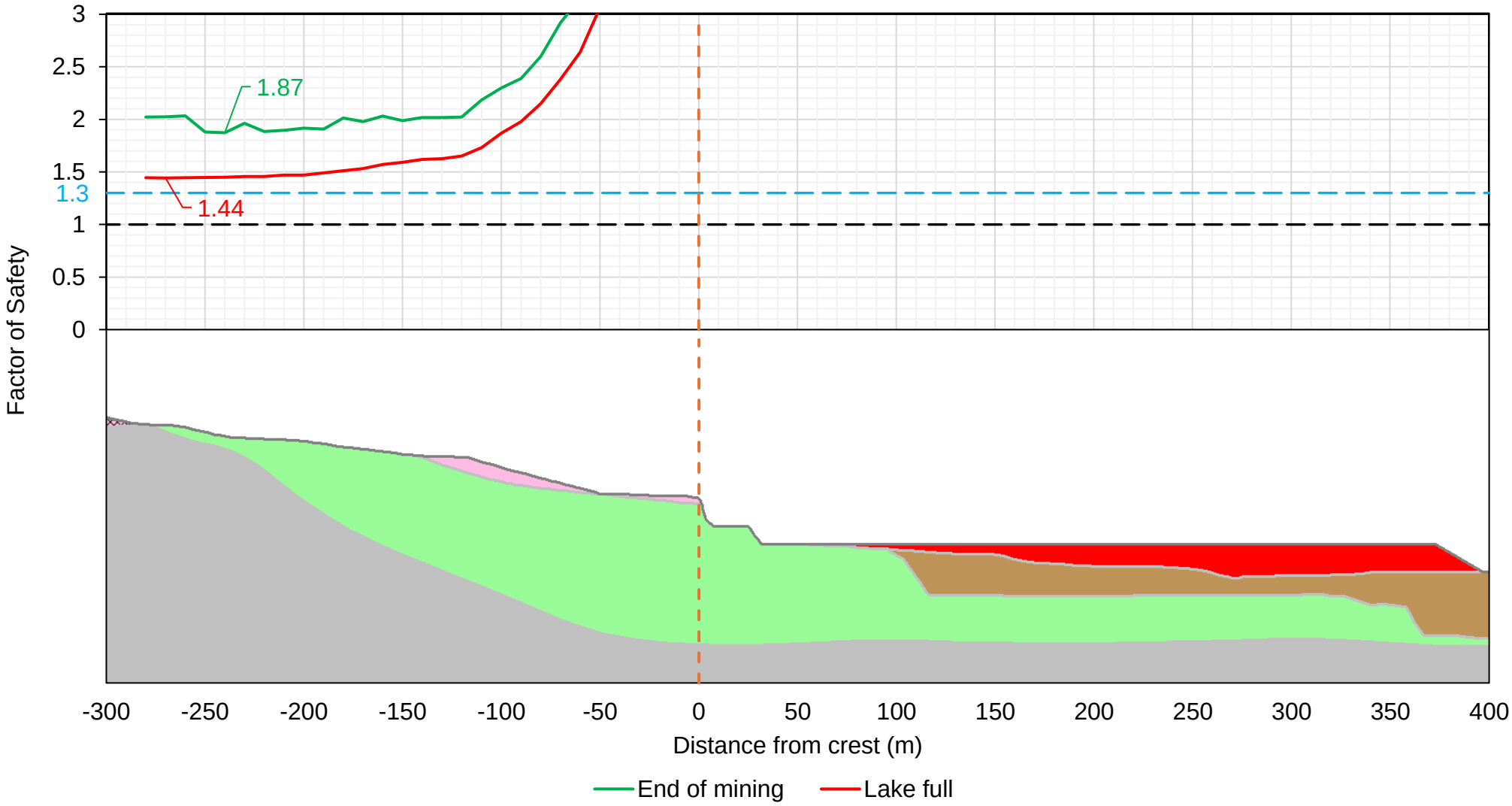
EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 26

PSM4487-200R	Appendix H



Notes:

1. Scenario analysed is for Base Case - Block slide with full tension cracks
2. Values displayed on the chart show the location where the critical factor of safety occurs.

EnergyAustralia

Yallourn Mine

Feasibility Rehabilitation Design

FOS VARIATION WITH DISTANCE BEHIND CREST - SECTION 27

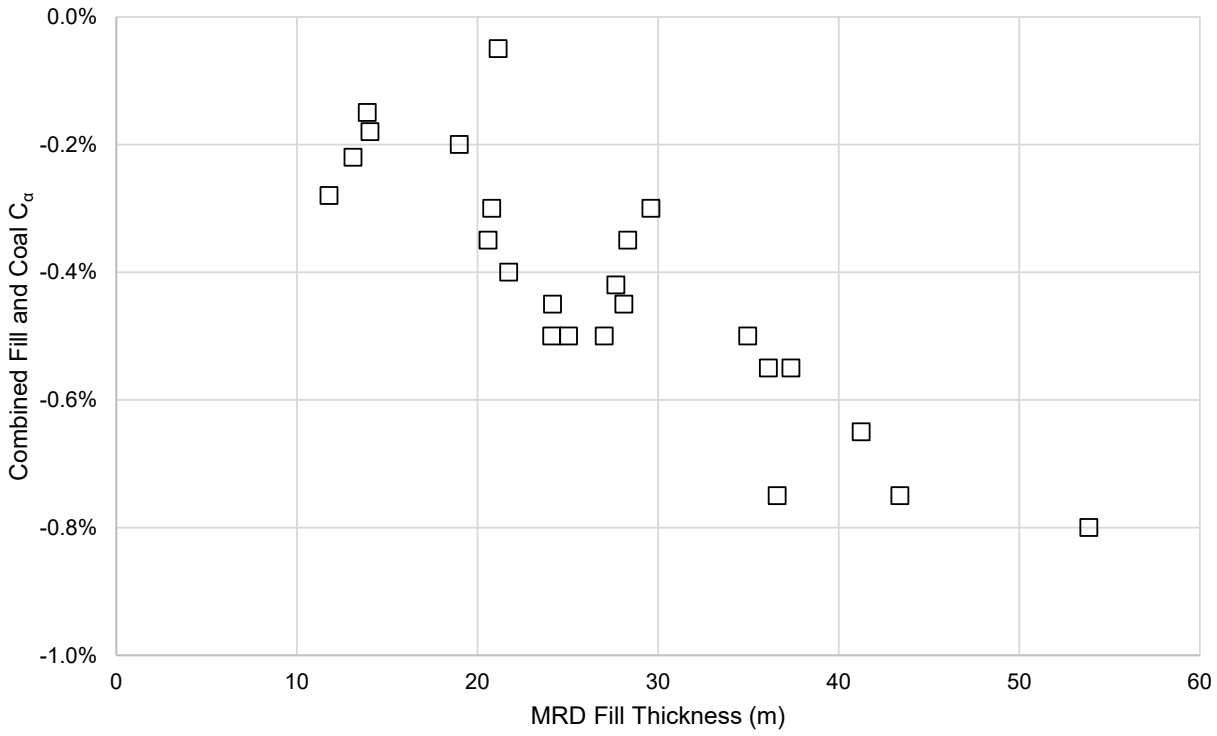
PSM4487-200R	Appendix H

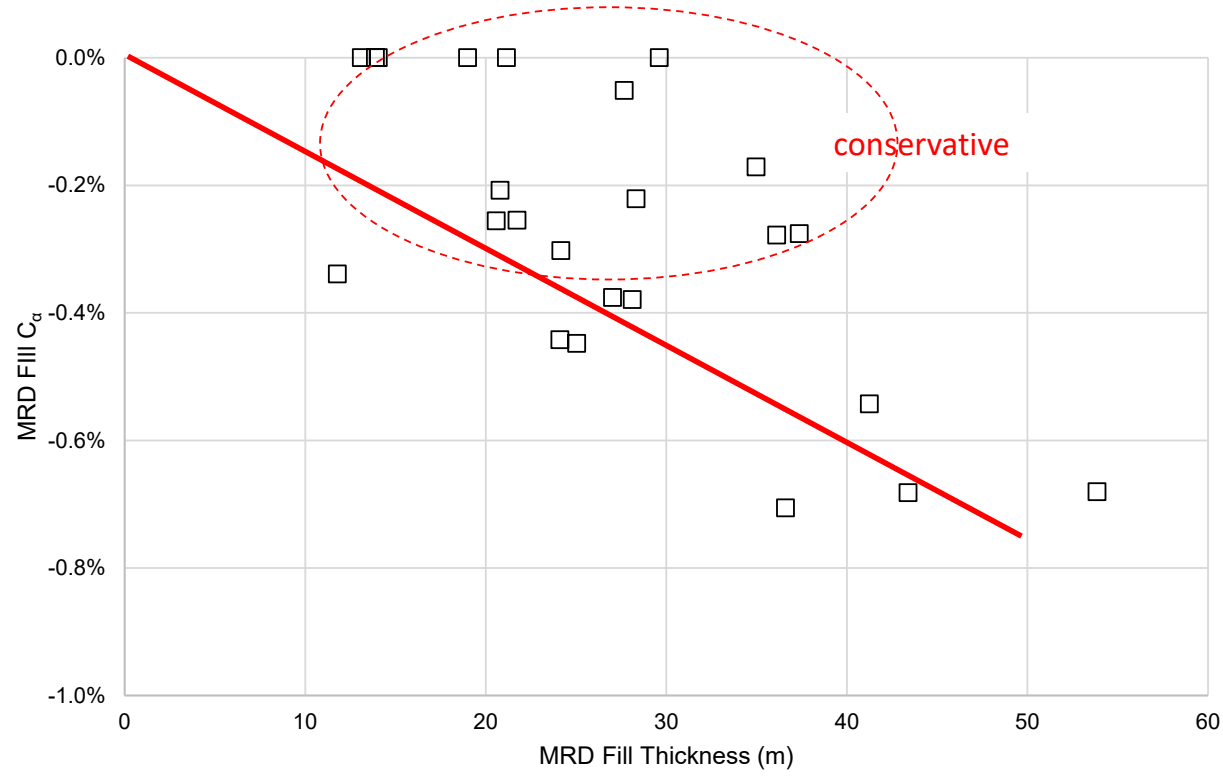
Appendix I
MRD Assessment

I1. MRD settlement assessment plots

I2. MRD liquefaction screening assessment plots

Appendix I.1
MRD settlement assessment plots



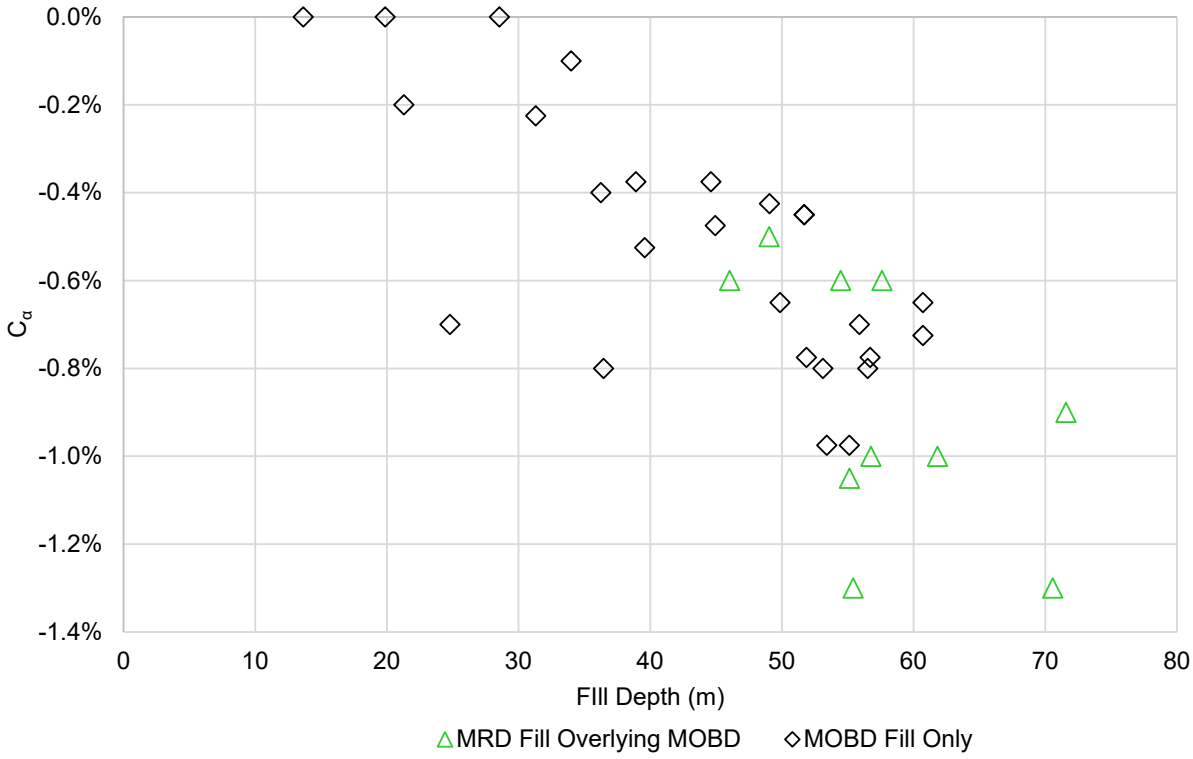


EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

Coal and MRD creep coeficcient

PSM4487-200R	Appendix I

N:\PSM4487\Eng\16 Rehab feasibility\02. MRD\MRD Monitoring\MRD over coal monitoring vba.xlsm



EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

MRD and MOBD Creep Coefficients

PSM4487-200R	Appendix I

Appendix I.2
MRD liquefaction screening assessment plots

Figure 1A - Material Descriptions

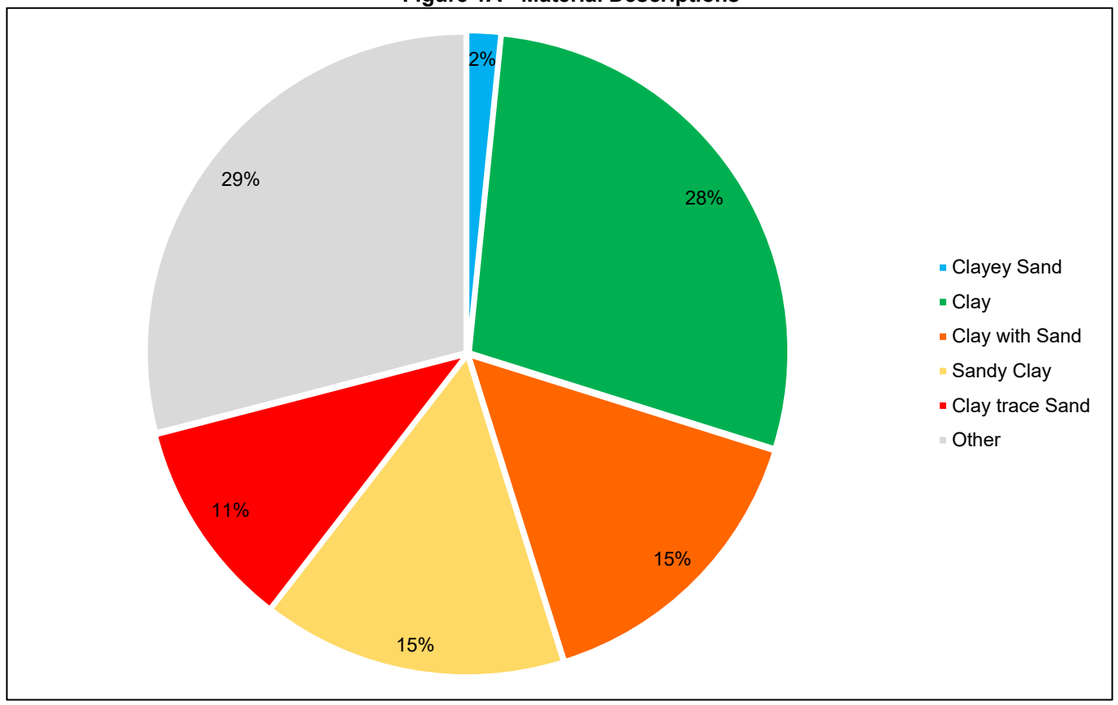


Figure 1B - Grading curves based on material description

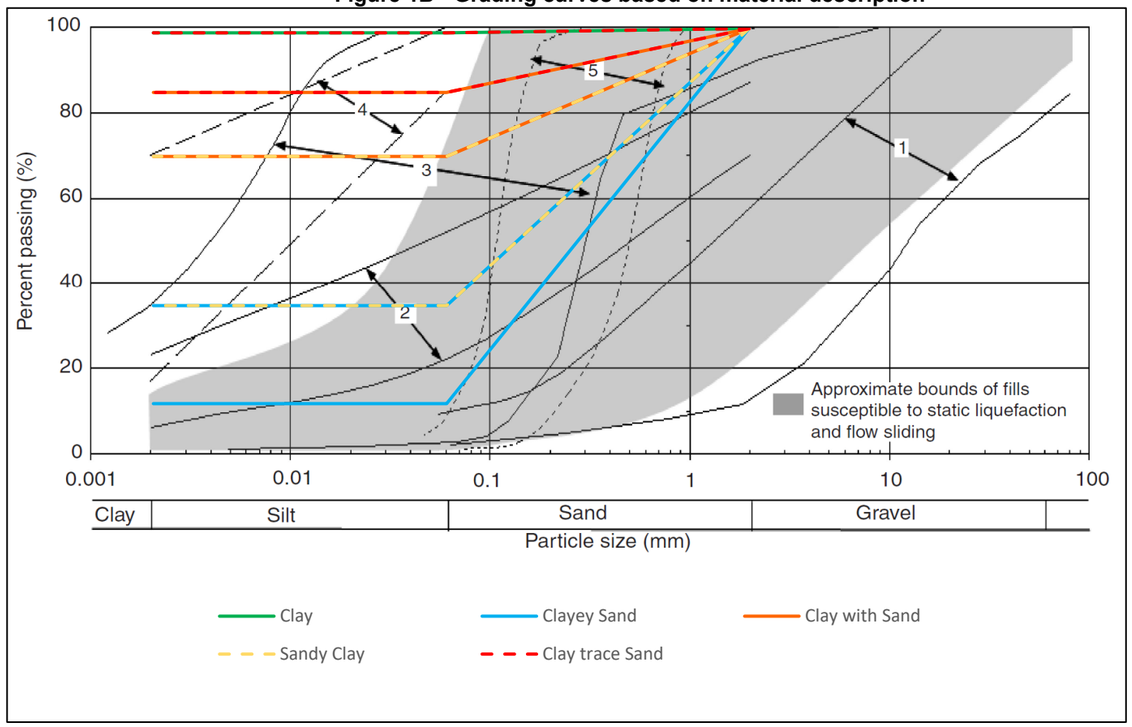
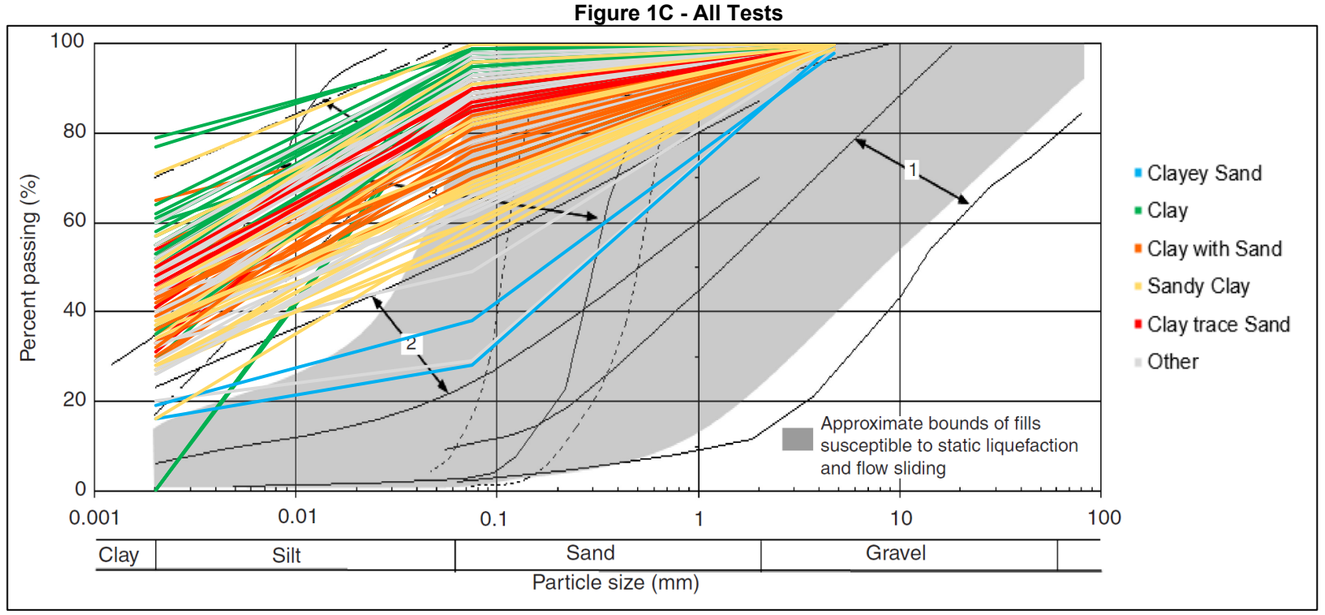


Figure 1C - All Tests



Notes:

1. Particle size gradation of soils susceptible to flow liquefaction under static and earthquake loading (Hunter and Fell, 2003) sourced from Geotechnical Engineering of Dams, Chapter 12.5 (Fell, 2015)

1- Coarse grained coal mine waste (Dawson et al., 1998; Taylor, 1984; Bishop et al., 1969; Hutchinson, 1986)
2- Loose silty sand fills, Hong Kong (upper and lower quartile of pre 1977 fills (HKIE, 1998))
3- Hydraulically placed mine tailings and fills in dam embankments (various published sources)
4- Sensitive clays (indicative limits from: Lefebvre, 1996; Bentley & Smalley, 1984; Mitchell & Markell, 1974; Hutchinson, 1961,1965)
5- Sub-aqueous slopes, natural and fill slopes (Koppejan et al., 1948; Kramer, 1988; Sladen & Hewitt 1989; Comforth et al., 1974)

P S M

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design
Liquefaction Screening
Zone 1B Grading Assessment

PSM4487-200R | Appendix I

\\anf.psm.local\ANF-FILES\4000\PSM4487\Eng\16 Rehab feasibility\02. MRD\Liquefaction Screening\[Liquefaction Screening.xlsx]Figure 1

Figure 2A - Material Description

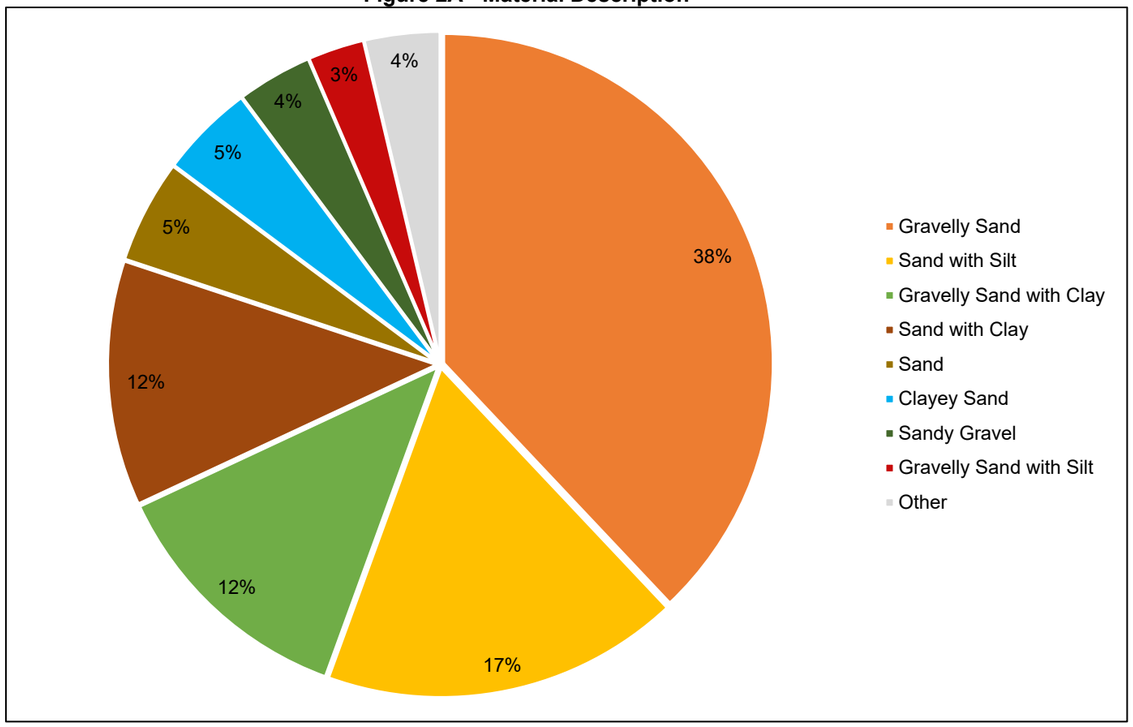


Figure 2B - Grading curves based on material description

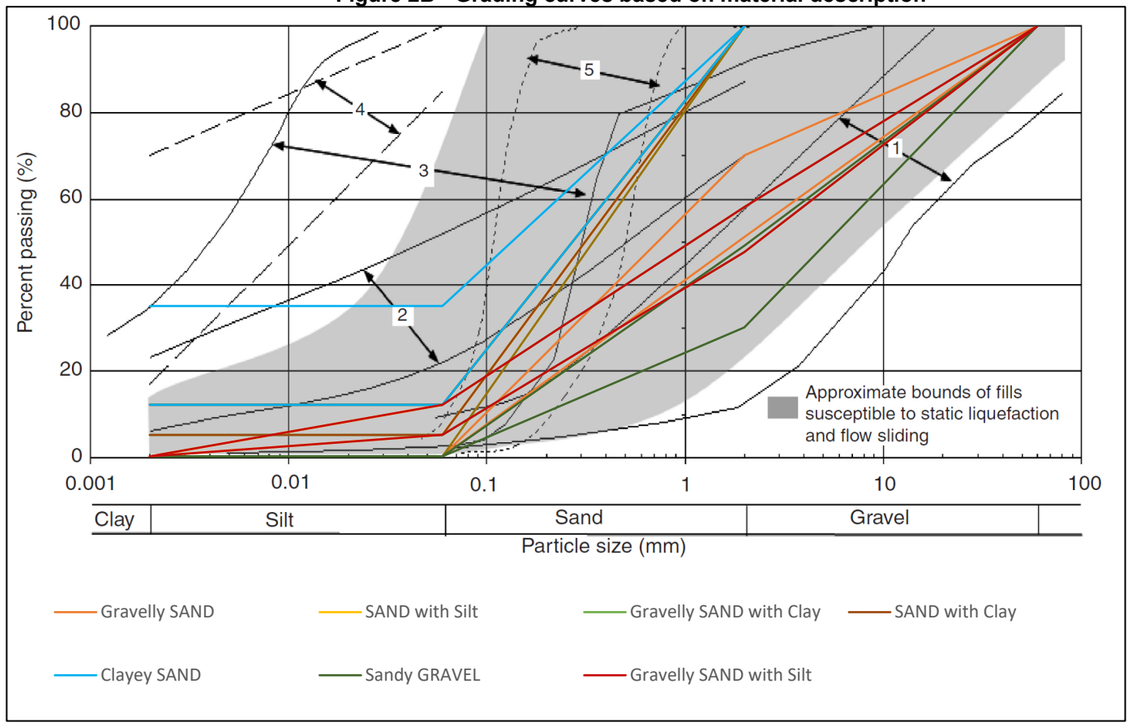
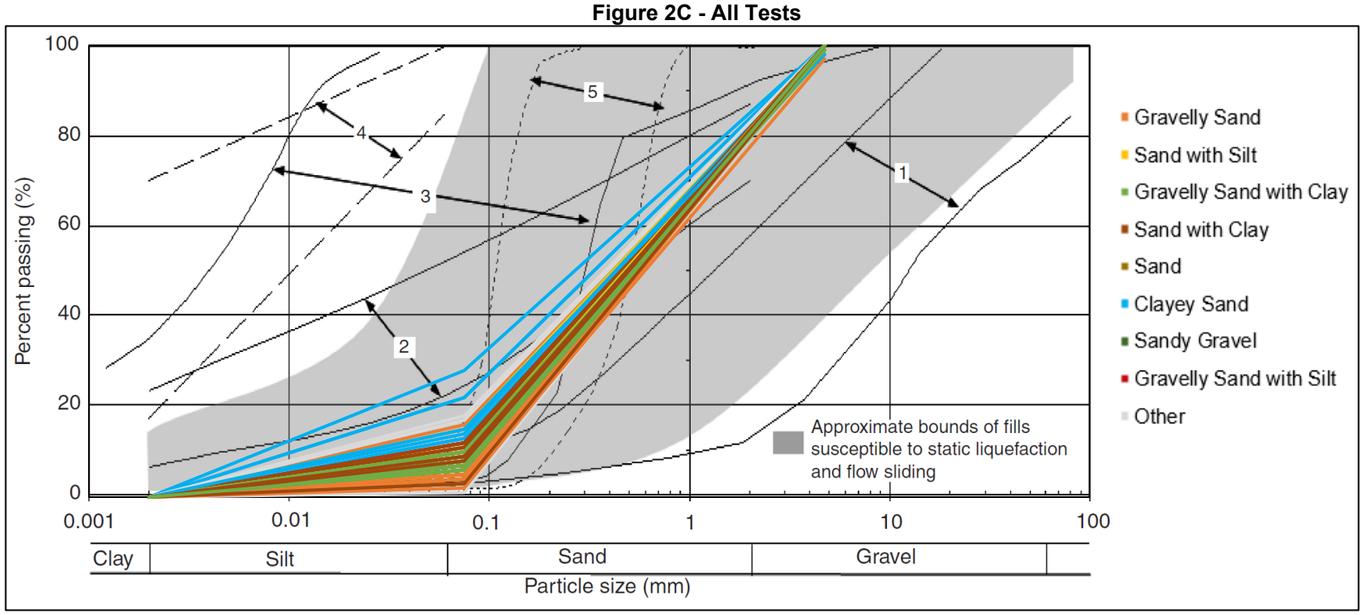


Figure 2C - All Tests



Notes:

1. Particle size gradation of soils susceptible to flow liquefaction under static and earthquake loading (Hunter and Fell, 2003) sourced from Geotechnical Engineering of Dams, Chapter 12.5 (Fell, 2015)

1- Coarse grained coal mine waste (Dawson et al., 1998; Taylor, 1984; Bishop et al., 1969; Hutchinson, 1986)
2- Loose silty sand fills, Hong Kong (upper and lower quartile of pre 1977 fills (HKIE, 1998))
3- Hydraulically placed mine tailings and fills in dam embankments (various published sources)
4- Sensitive clays (indicative limits from: Lefebvre, 1996; Bentley & Smalley, 1984; Mitchell & Markell, 1974; Hutchinson, 1961,1965)
5- Sub-aqueous slopes, natural and fill slopes (Koppejan et al., 1948; Kramer, 1988; Sladen & Hewitt 1989; Comforth et al., 1974)

P S M

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design
Liquefaction Screening
Zone 2 Grading Assessment

PSM4487-200R	Appendix I

Figure 3A - Material Description

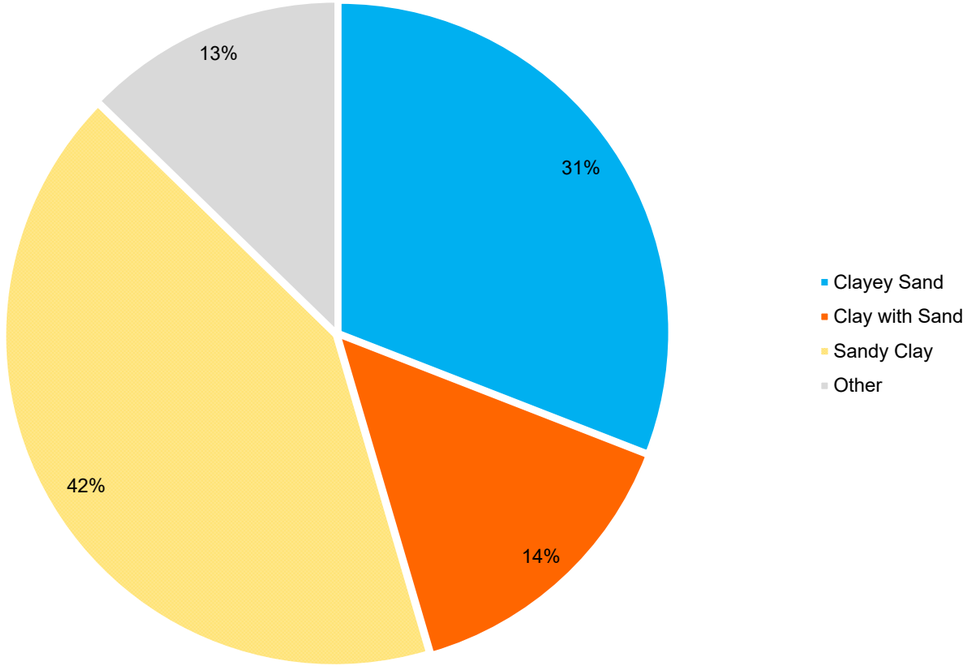


Figure 3B - Grading curves based on material description

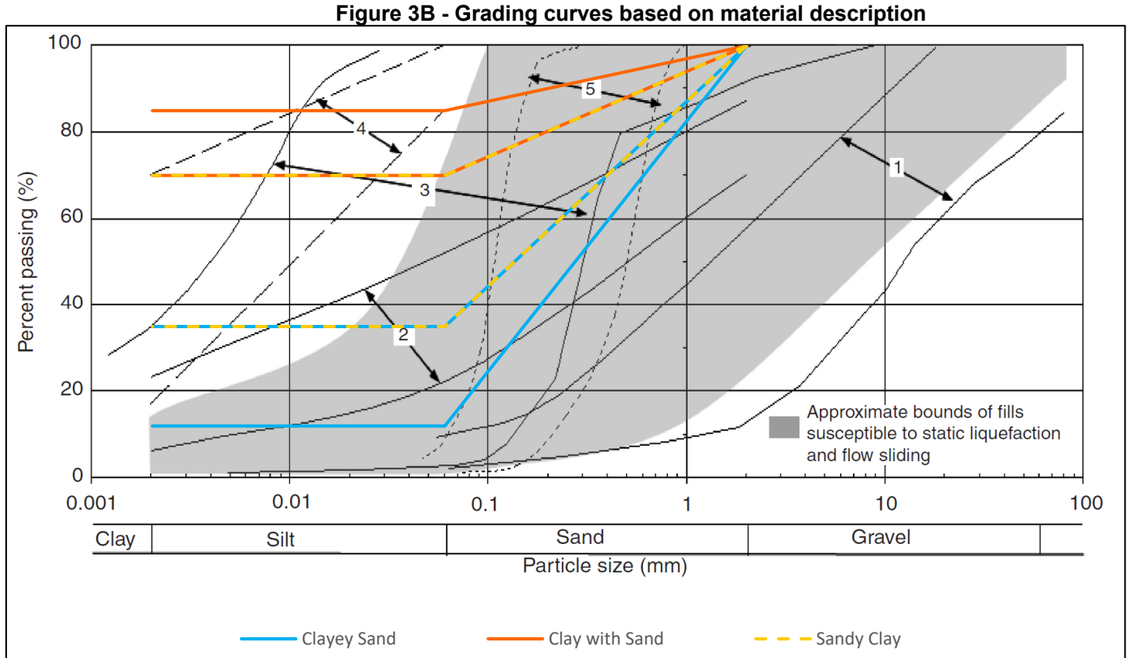
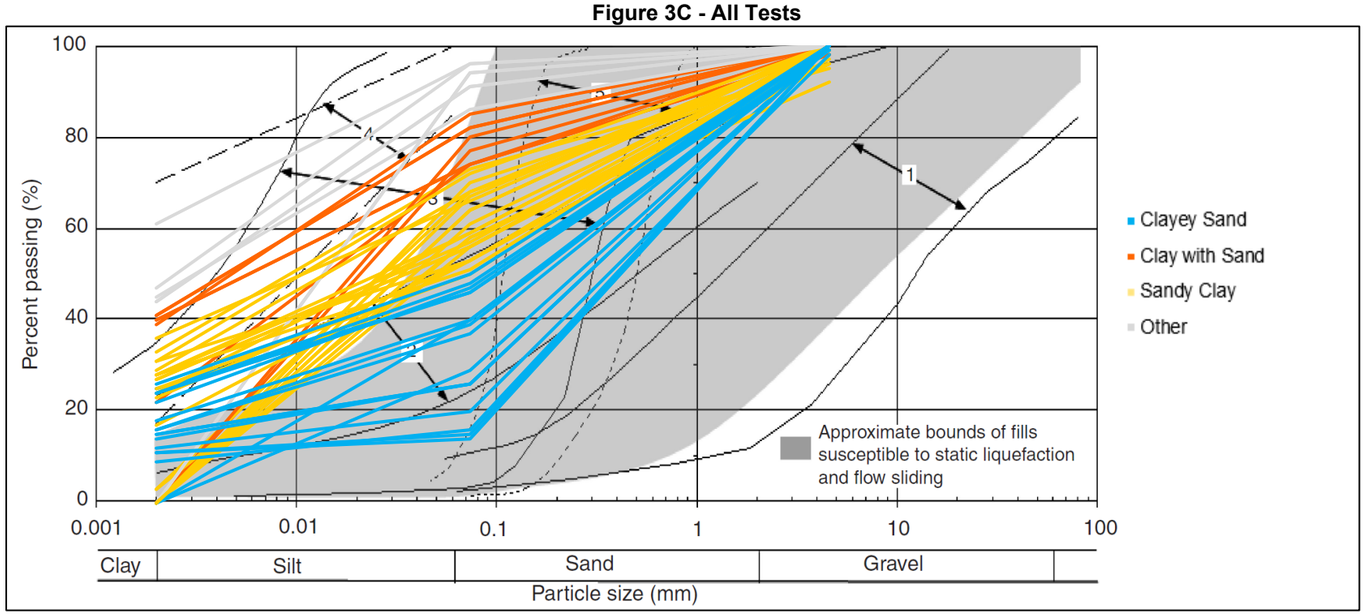


Figure 3C - All Tests



Notes:

1. Particle size gradation of soils susceptible to flow liquefaction under static and earthquake loading sourced (Hunter and Fell, 2003) from Geotechnical Engineering of Dams, Chapter 12.5 (Fell, 2015)

1- Coarse grained coal mine waste (Dawson et al., 1998; Taylor, 1984; Bishop et al., 1969; Hutchinson, 1986)
2- Loose silty sand fills, Hong Kong (upper and lower quartile of pre 1977 fills (HKIE, 1998))
3- Hydraulically placed mine tailings and fills in dam embankments (various published sources)
4- Sensitive clays (indicative limits from: Lefebvre, 1996; Bentley & Smalley, 1984; Mitchell & Markell, 1974; Hutchinson, 1961,1965)
5- Sub-aqueous slopes, natural and fill slopes (Koppejan et al., 1948; Kramer, 1988; Sladen & Hewitt 1989; Comforth et al., 1974)

P S M

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design
Liquefaction Screening
Zone 3 Grading Assessment

PSM4487-200R	Appendix I

Figure 4A

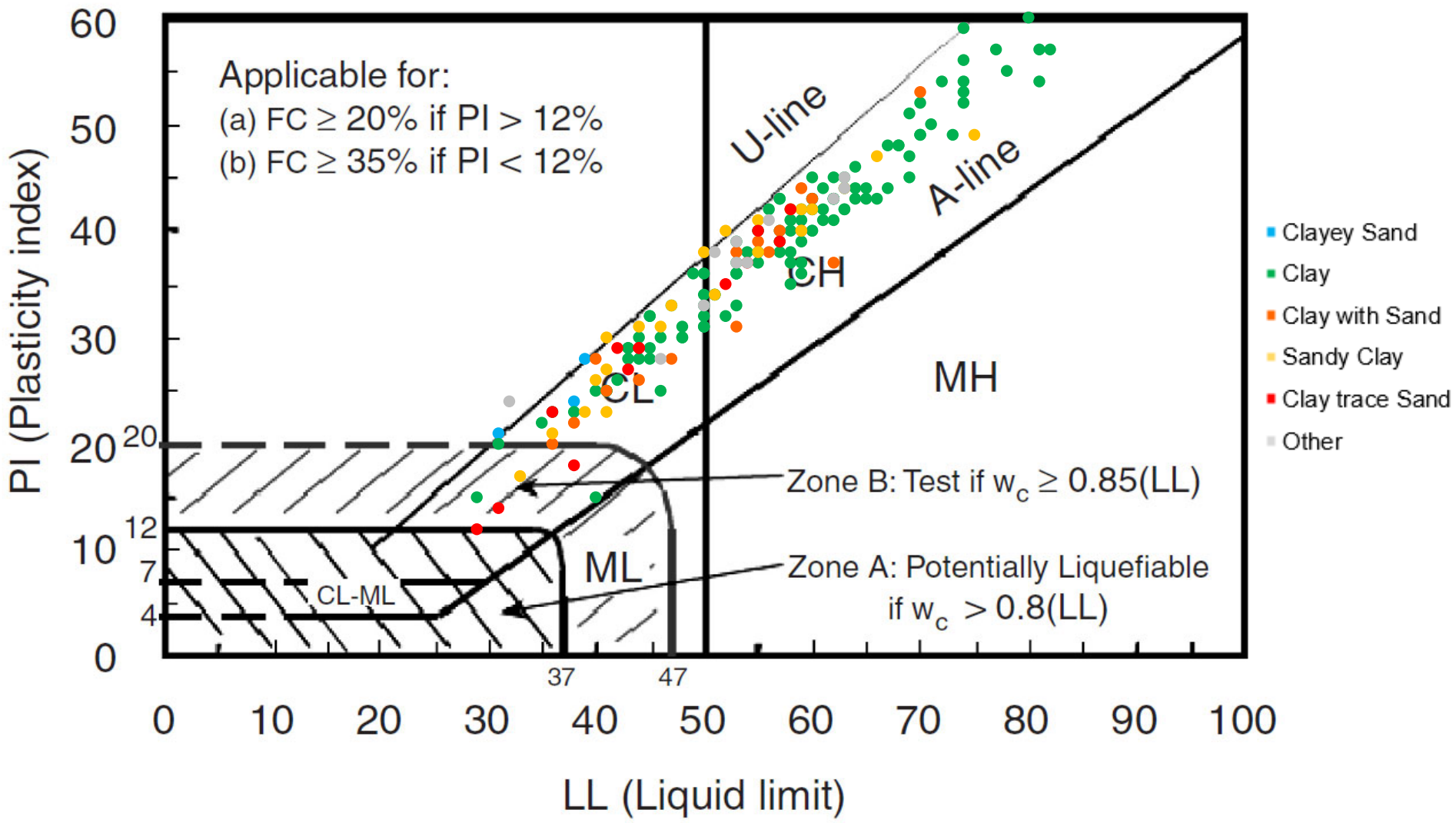
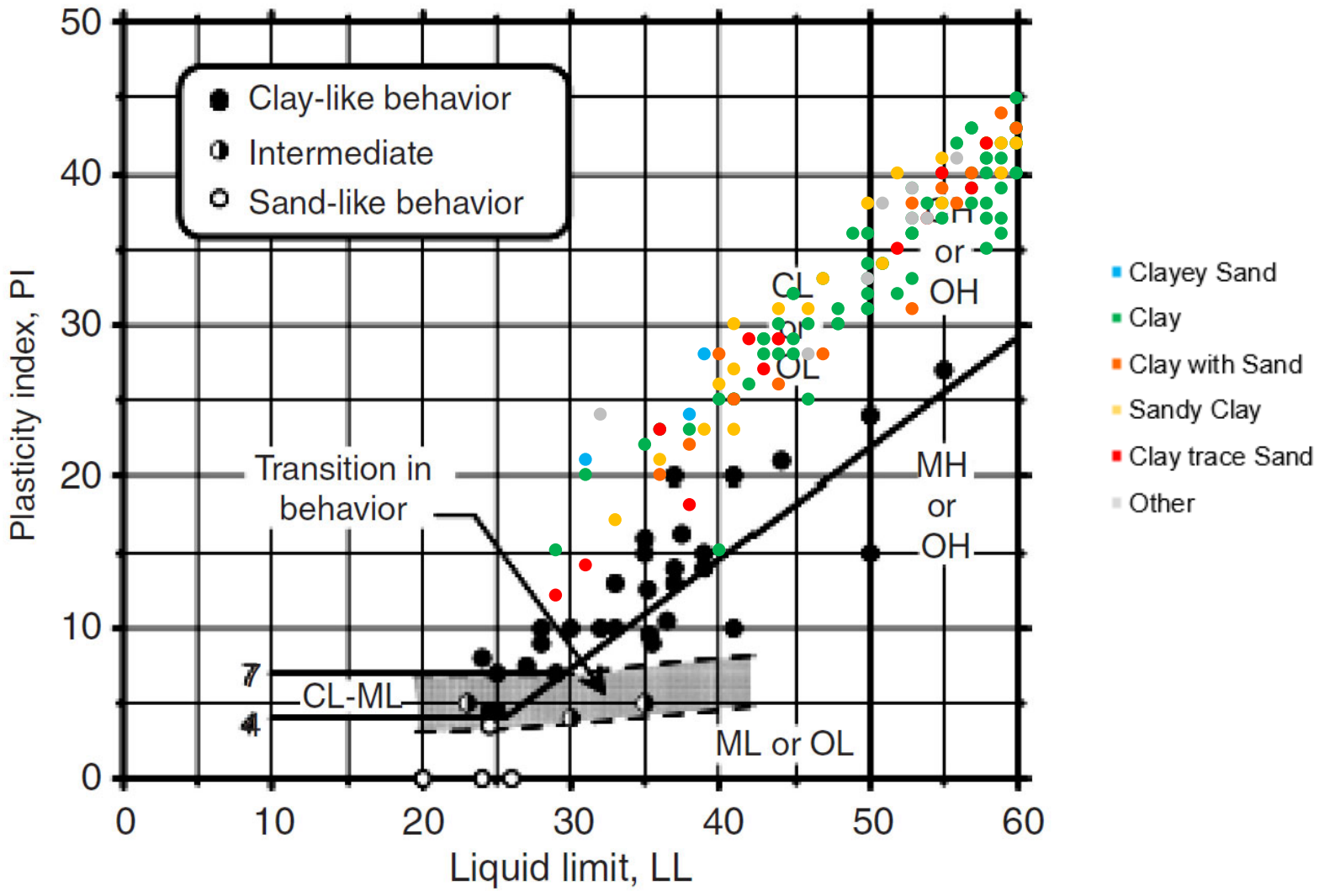


Figure 4B



Notes:

Figure 4A. Seed et al. (2003) method for assessing liquefiable soil types sourced from Geotechnical Engineering of Dams, Chapter 12.5 (Fell, 2015)

Figure 4B. Atterberg limits chart showing representative values for soils which exhibited clay-like; sand-like and intermediate behaviour in cyclic loading sourced from Geotechnical Engineering of Dams, Chapter 12.5 (Fell, 2015)

EnergyAustralia

Yallourn Mine Rehabilitation

Feasibility Design

Liquefaction Screening

Zone 1B - Plasticity Assessment

PSM4487-200R	Appendix I

N:\PSM4487\Eng\16 Rehab feasibility\02. MRD\Liquefaction Screening\[Liquefaction Screening.xlsx]Figure 3

Figure 5A

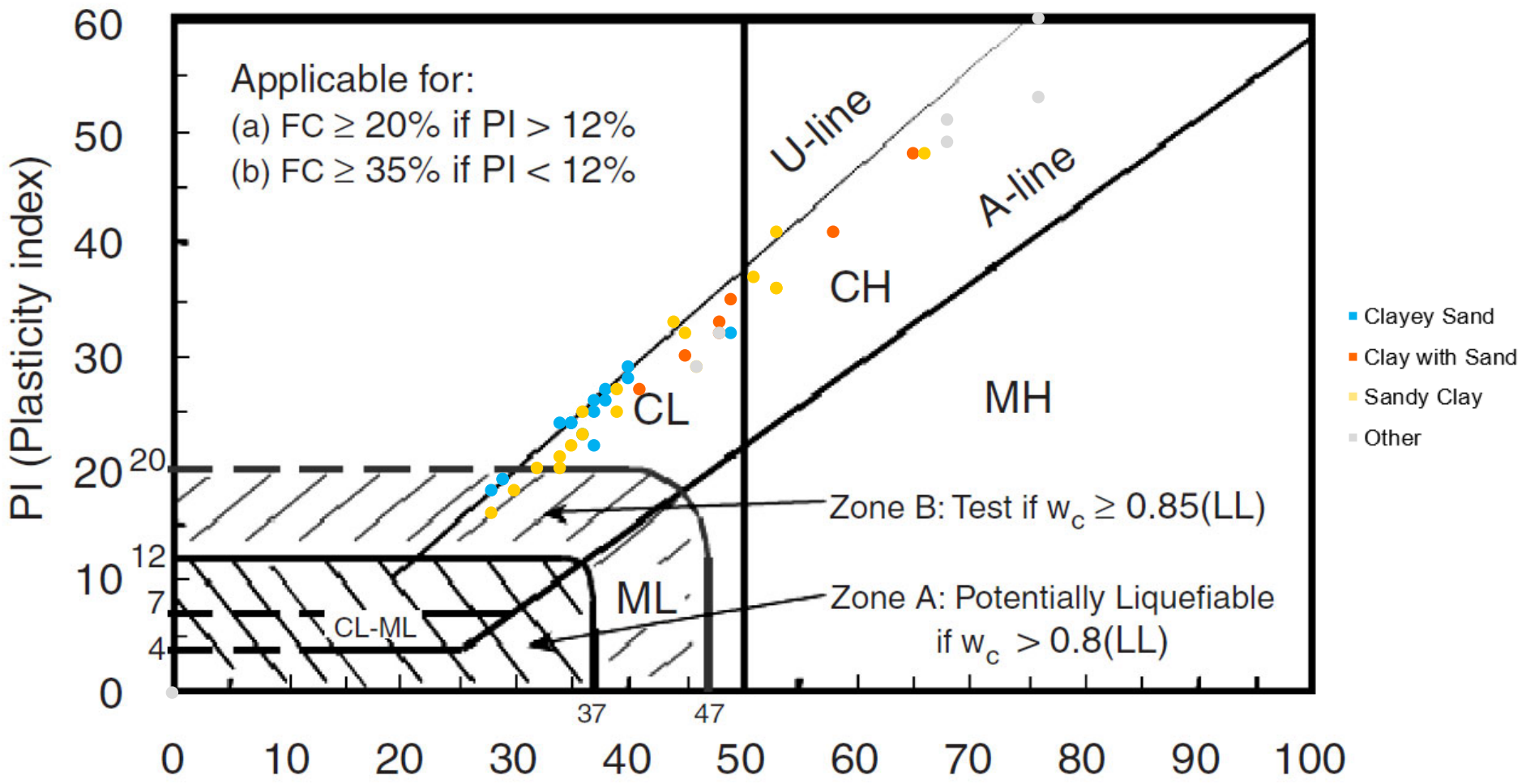
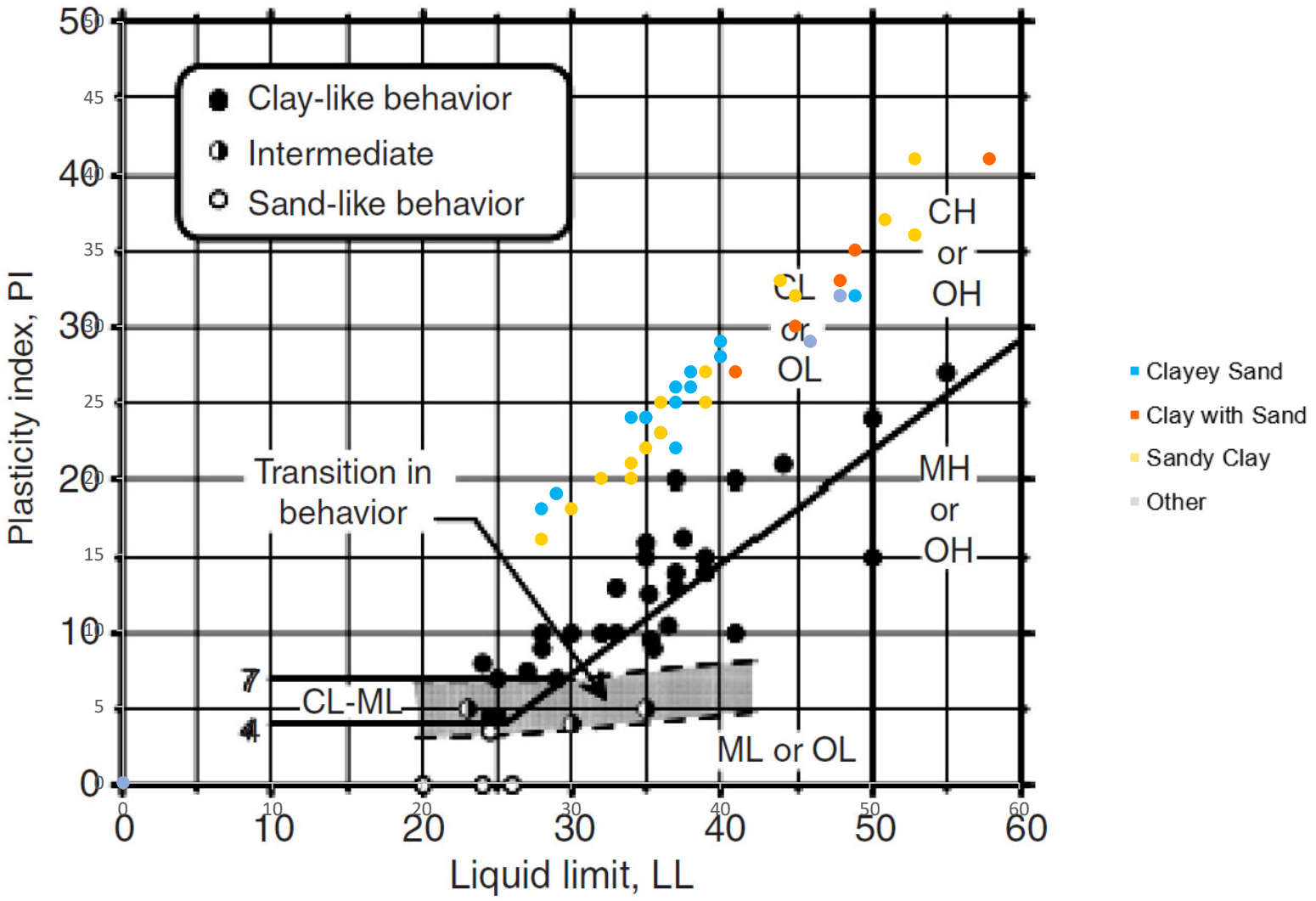


Figure 5B



Notes:

Figure 5A. Seed et al. (2003) method for assessing liquefiable soil types sourced from Geotechnical Engineering of Dams, Chapter 12.5 (Fell, 2015)

Figure 5B. Atterberg limits chart showing representative values for soils which exhibited clay-like; sand-like and intermediate behaviour in cyclic loading sourced from Geotechnical Engineering of Dams, Chapter 12.5 (Fell, 2015)

EnergyAustralia

Yallourn Mine Rehabilitation

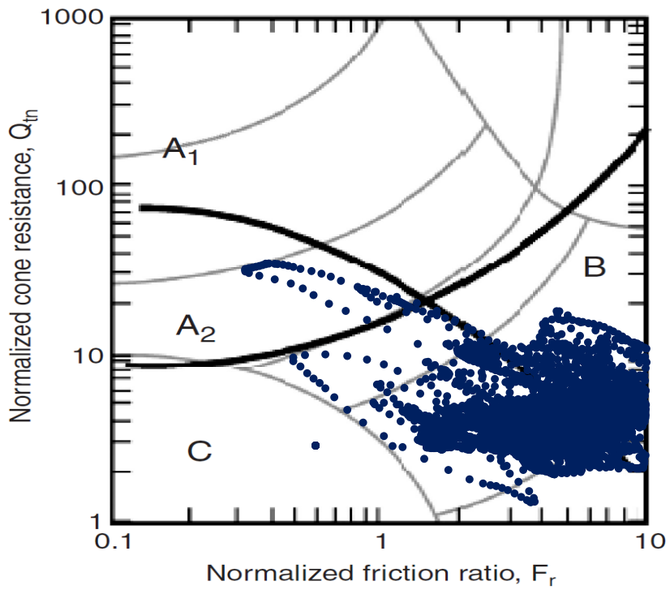
Feasibility Design

Liquefaction Screening

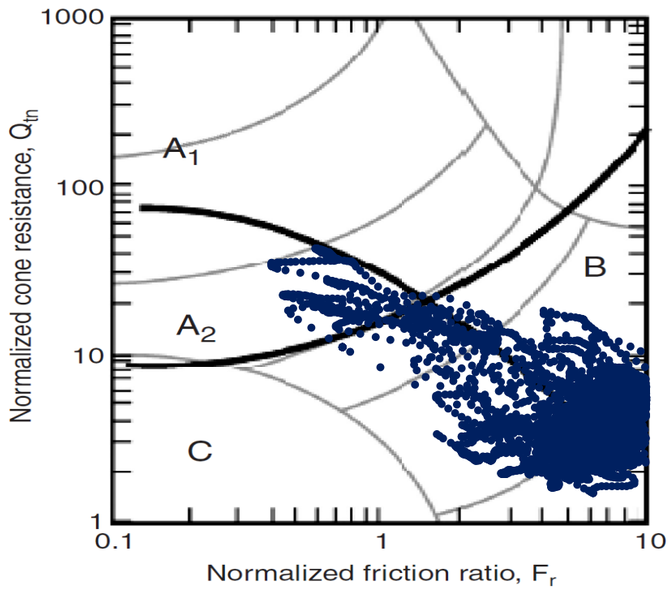
Zone 3 - Plasticity Assessment

PSM4487-200R | Appendix I

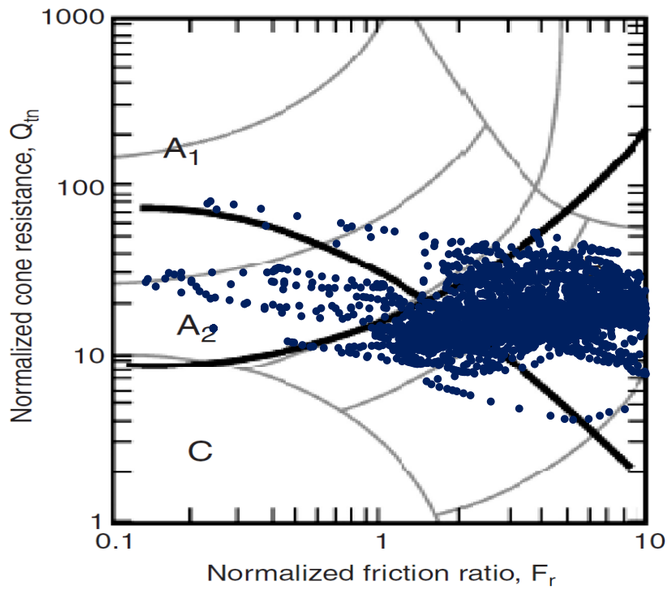
N7605



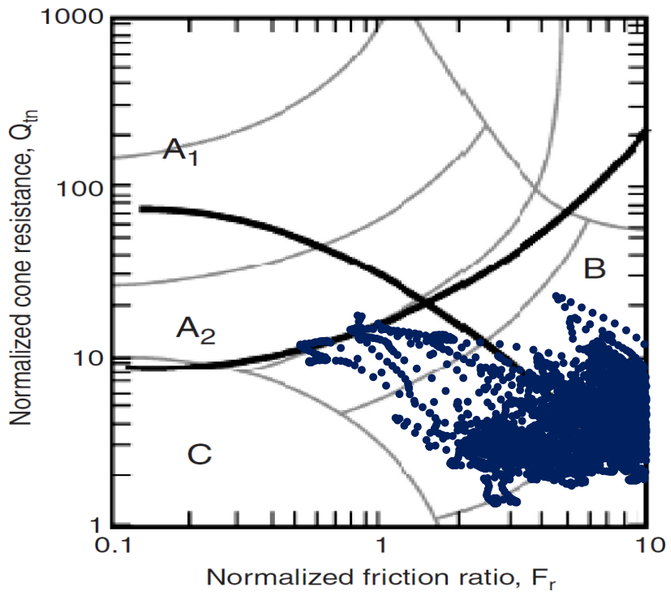
N7607



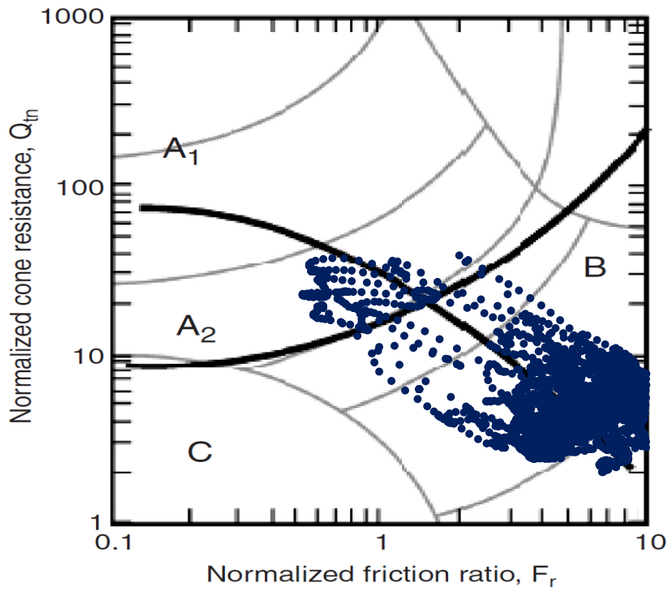
N7609



N7611



N7619



Legend

A1	cyclic liquefaction possible
A2	cyclic liquefaction possible and flow liquefaction
B	cyclic softening possible
C	cyclic softening and flow liquefaction possible depending on soil sensitivity

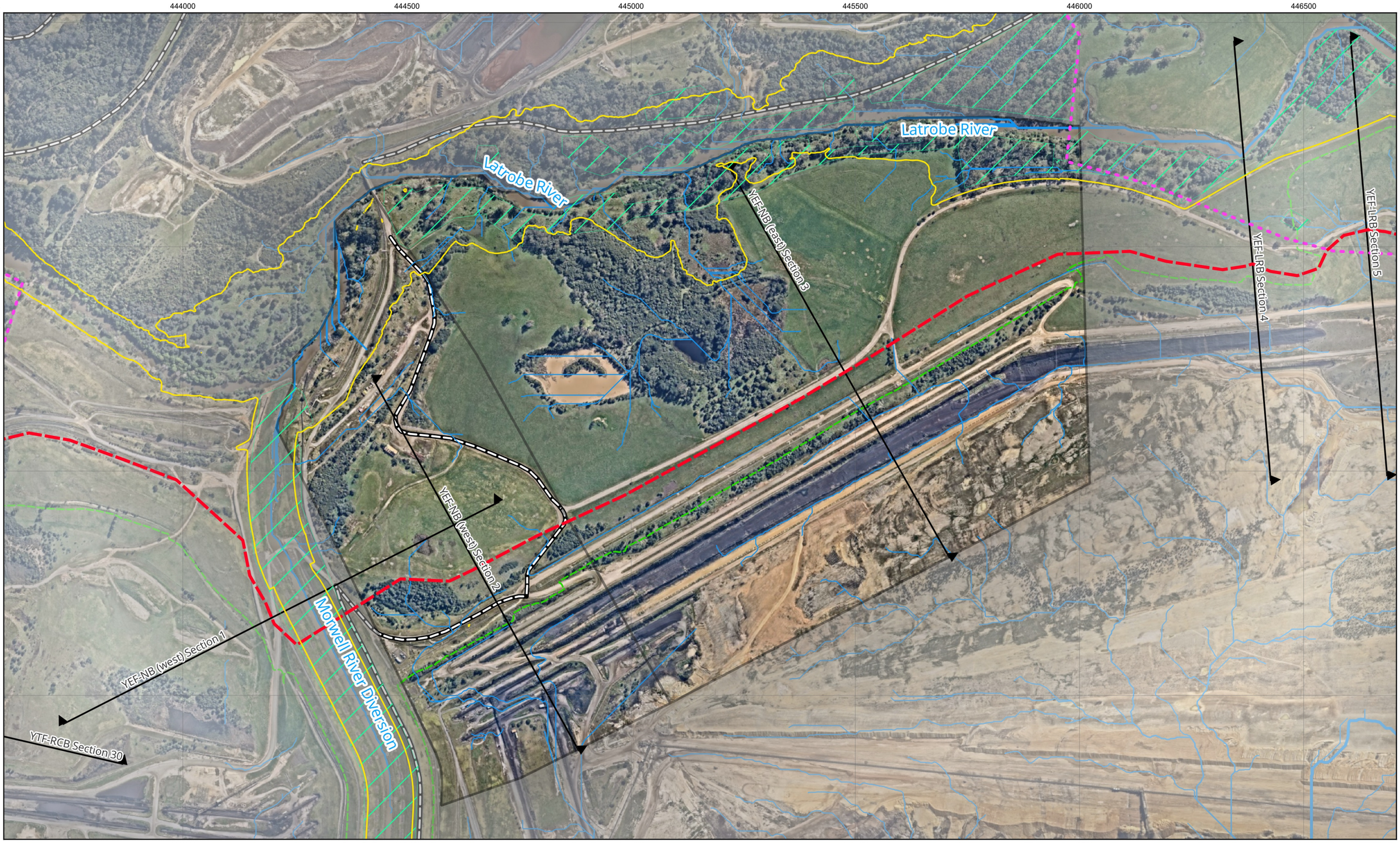
Notes:

1. Cone Penetration Test/Soil Behaviour Type chart for liquefaction and cyclic softening (Robertson, 2010) scourced from Geotechnical Engineering of Dams, Chapter 12.5 (Fell, 2015)

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design
Liquefaction Screening
CPT Assessment

PSM4487-200R | Appendix I

Appendix J
Peripheral Catchment Arrangement



LEGEND

- Catchment Boundary
- Conservation Areas
- Major Streamlines
- Life of Mine Pit Crest
- Roadways
- Geotechnical Feasibility Design Sections
- Yallourn Mine License Boundary
- 37 mRL Contour
- 42 mRL Contour

Notes:
42m RL Contour corresponds to the peak water level during 2021 flood.

Scale 1:8,000

N

125 0 125 250 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M

Created By: PSM

Revision: A

Date: 09 May 2025

Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YEF-NB CURRENT DRAINAGE

PSM4487-200R

APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-172L YEF-NB Domain Overview

444000 444500 445000 445500 446000 446500

5775500 5775000 5774500 5774000

Latrobe River

Latrobe River

YEF-NB (east) Section 3

YEF-LRB Section 4

YEF-LRB Section 5

YEF-NB (west) Section 2

YEF-NB (west) Section 1

YTF-RCB Section 30

Morwell River Diversion

LEGEND

- Catchment Boundary
- Conservation Areas
- Major Streamlines
- Life of Mine Pit Crest
- Roadways
- Geotechnical Feasibility Design Sections
- Yallourn Mine License Boundary
- 1m Contour
- 37 mRL Contour
- 42 mRL Contour

Notes:
42m RL Contour corresponds to the peak water level during 2021 flood.

Elevation
80m
30m

Scale 1:8,000

N

125 0 125 250 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M

Created By: PSM

Revision: A

Date: 09 May 2025

Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YEF-NB CURRENT DRAINAGE AND LANDFORM ELEVATION

PSM4487-200R

APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-172L YEF-NB Domain Overview DEM

446000 446500 447000 447500 448000 448500

5775500

5775000

5774500

Latrobe River

Latrobe River

Latrobe River

Latrobe River

Thoms Bridge

YEF-NB (east) Section 3

YEF-LRB Section 4

YEF-LRB Section 5

YEF-LRB Section 6

YEFX-LREB (north) Section 7

YEFX-LREB (north) Section 7b

446000 446500 447000 447500 448000 448500

LEGEND

- Catchment Boundary
- Conservation Areas
- Major Streamlines
- Life of Mine Pit Crest
- Roadways
- Geotechnical Feasibility Design Sections
- 37 mRL Contour
- Yallourn Mine License Boundary
- 2015 HVP Diversion Drain
- HVP Drain
- Thoms Bridge Streamflow Gauge

Scale 1:8,000

N

125 0 125 250 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	
	Date: 09 May 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YEF-LRB CURRENT DRAINAGE

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-172L YEF-LRB Domain Overview

446000 446500 447000 447500 448000 448500

5775500

5775000

5774500

Latrobe River

Latrobe River

Latrobe River

Latrobe River

Thoms Bridge

YEF-LRB Section 3

YEF-LRB Section 4

YEF-LRB Section 5

YEF-LRB Section 6

YEFX-LREB (north) Section 7

YEFX-LREB (north) Section 7b

446000 446500 447000 447500 448000 448500

LEGEND

- Catchment Boundary
- Conservation Areas
- Major Streamlines
- Life of Mine Pit Crest
- Roadways
- Geotechnical Feasibility Design Sections
- 37 mRL Contour
- Yallourn Mine License Boundary
- 2015 HVP Diversion Drain
- HVP Drain
- 1m Contour
- Thoms Bridge Streamflow Gauge
- Conceptual YEF Pit Spillway Location

Elevation

80m

30m

Scale 1:8,000

N

125 0 125 250 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M

Created By:	Revision:
PSM	A
Date:	Paper Size:
09 May 2025	A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YEF-LRB CURRENT DRAINAGE AND LANDFORM ELEVATION

PSM4487-200R | APPENDIX J

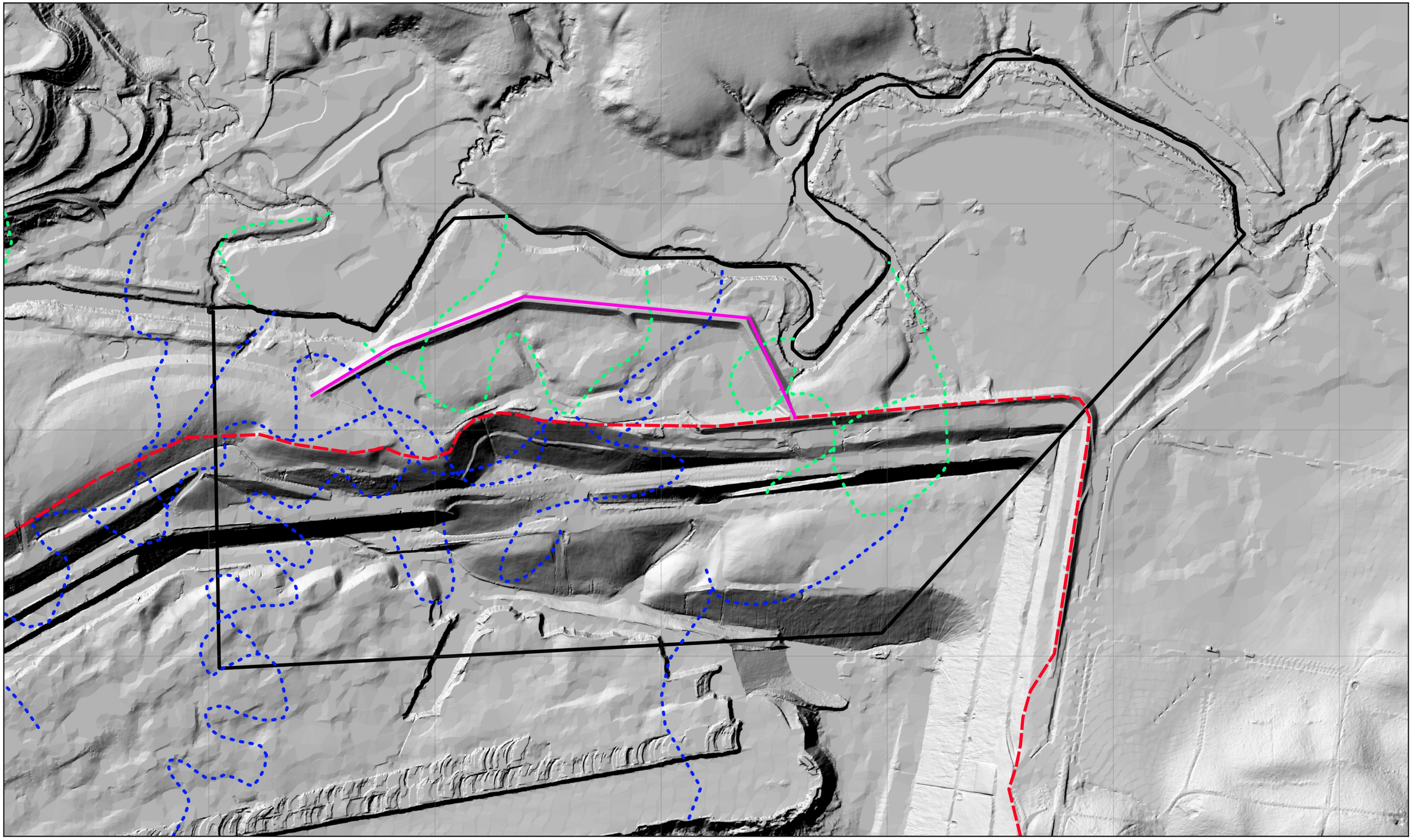
N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-172L YEF-LRB Domain Overview DEM

446000 446500 447000 447500 448000 448500

5775500

5775000

5774500



LEGEND

- Latrobe River Meanders
- Morwell River Meanders
- Domain Boundary
- Flood Protection Levee
- Life of Mine Pit Crest

Note:

Historical meanders extracted from SECV drawing GE 6/7/5: Yallourn Open Cut - East Field Diversion of Morwell River Geological Plan.

Scale 1:8,000

N

100 0 100 200 300 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	
	Date: 28 Apr 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YEF-LRB HISTORICAL MEANDERS

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-172L YEF-LRB Historical Meanders

445000 446000 447000 448000 449000 450000 451000

5775000 5774000 5773000 5772000

YEF-NB (east) Section 3
YEF-LRB Section 4
YEF-LRB Section 5
YEF-LRB Section 6
YEFX-LREB (north) Section 7
YEFX-LREB (north) Section 7b
YEFX-LREB (south) Section 8
YEFX-LREB (south) Section 9
YEFX-SB Section 10
MVF-EB Section 11
MVF-SB Section 12
MVF-WB Section 14
MVF-WB Section 15

Culvert 03
Culvert 04
Culvert 05
Culvert 06
Culvert 07
Culvert 09
Culvert 26
Culvert 27

LEGEND

- Catchment Boundary
- Conservation Areas
- Major Streamlines
- Life of Mine Pit Crest
- Roadways
- Culverts
- Geotechnical Feasibility Design Sections
- 37 mRL Contour
- Yallourn Mine License Boundary
- Region Reporting to Latrobe River
- 2015 HVP Diversion Drain
- HVP Drain
- Remnant Morwell West Drain

Scale 1:18,000

N

300 0 300 600 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	
	Date: 09 May 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YEFX-LREB (NORTH)
CURRENT DRAINAGE

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-173R Figure 14 - YEFX-LREB (North) Current Drainage

445000 446000 447000 448000 449000 450000 451000

5775000 5774000 5773000 5772000

YEF-NB (east) Section 3
YEF-LRB Section 4
YEF-LRB Section 5
YEF-LRB Section 6
Culvert 03
YEFX-LREB (north) Section 7
Culvert 04
YEFX-LREB (north) Section 7b
Culvert 05
Culvert 06
YEFX-LREB (south) Section 8
YEFX-LREB (south) Section 9
Culvert 07
YEFX-SB Section 10
Culvert 09
Culvert 26
Culvert 27
MVF-EB Section 11
MVF-SB Section 12
MVF-WB Section 15
MVF-WB Section 14

445000 446000 447000 448000 449000 450000 451000

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-173R Figure 15 - YEFX-LREB (North) Current Drainage and Landform Elevation

LEGEND

- Catchment Boundary
- Conservation Areas
- Major Streamlines
- Life of Mine Pit Crest
- Roadways
- Culverts
- Geotechnical Feasibility Design Sections
- 37 mRL Contour
- Yallourn Mine License Boundary
- 2m Contours
- 2015 HVP Diversion Drain
- HVP Drain
- Remnant Morwell West Drain

Elevation
160m
40m

N

Scale 1:18,000

300 0 300 600 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	
	Date: 09 May 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YEFX-LREB (NORTH)
CURRENT DRAINAGE AND
LANDFORM ELEVATION

PSM4487-200R | APPENDIX J

447500 447750 448000 448250

5774250 5774000

YEFX-LREB (north) Section 7

YEFX-LREB (north) Section 7b

Culvert 4

LEGEND

- Conservation Areas
- Life of Mine Pit Crest
- Roadways
- Geotechnical Feasibility Design Sections
- 37 mRL Contour
- Yallourn Mine License Boundary
- HVP Drain
- Lined down batter drain to top of coal
- Potential Latrobe Road Culvert 4 upgrade

Scale 1:2,000

N

25 0 25 50 75 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A
	Date: 12 May 2025	Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YEFX-LREB (NORTH)
CLOSURE DRAINAGE OPTION 1

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-173R Figure 14 - YEFX-LREB (North) Closure Drainage Option 1

447250 447500 447750 448000 448250 448500 448750 449000

5775000 5774750 5774500 5774250

YEF-LRB Section 6

Culvert 3

YEFX-LREB (north) Section 7

Culvert 4

YEFX-LREB (north) Section 7b

447250 447500 447750 448000 448250 448500 448750 449000

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-173R Figure 14 - YEFX-LREB (North) Closure Drainage Option 2

LEGEND

- Conservation Areas
- Life of Mine Pit Crest
- Roadways
- Geotechnical Feasibility Design Sections
- 37 mRL Contour
- Yallourn Mine License Boundary
- HVP Drain upgrade for YEFX-LREB (North), grass lined
- HVP Drain upgrade for YEFX-LREB (South), grass lined
- Potential Latrobe Road Culvert 4 upgrade
- Culvert 3
- Conceptual YEF Pit Spillway Location

Scale 1:5,000

N

50 0 50 100 150 200 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M

Created By:	Revision:
PSM	A
Date:	Paper Size:
12 May 2025	A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YEFX-LREB (NORTH) CLOSURE DRAINAGE OPTION 2

PSM4487-200R | APPENDIX J

446500 447000 447500 448000 448500 449000 449500

5774000 5773500 5773000 5772500

Culvert 04
Culvert 05
Culvert 06
YEFX-LREB (south) Section 8
YEFX-LREB (south) Section 9
Culvert 07
YEFX-SB Section 10
Culvert 09
Culvert 26
Culvert 27
MVF-EB Section 11

LEGEND

- Catchment Boundary
- Conservation Areas
- Major Streamlines
- Life of Mine Pit Crest
- HVP Drain
- Remnant Morwell West Drain
- Roadways
- Culverts
- Geotechnical Feasibility Design Sections
- 37 mRL Contour
- Yallourn Mine License Boundary

Scale 1:9,000

N

125 0 125 250 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	
	Date: 09 May 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YEFX-LREB (SOUTH)
CURRENT DRAINAGE

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-173R Figure 53 - YEFX-LREB (South) Current Drainage

447000 448000 449000

5774000 5773000

Culvert 04
Culvert 05
Culvert 06
YEFX-LREB (south) Section 8
YEFX-LREB (south) Section 9
Culvert 07
YEFX-SB Section 10
Culvert 09
Culvert 26
Culvert 27
MVF-EB Section 11

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-173R Figure 54 - YEFX-LREB (South) Current Drainage and Landform Elevation

LEGEND

- Catchment Boundary
- Conservation Areas
- Major Streamlines
- Life of Mine Pit Crest
- HVP Drain
- Remnant Morwell West Drain
- Roadways
- Culverts
- 1m Contours
- 37m RL Contour
- Geotechnical Feasibility Design Sections
- Yallourn Mine License Boundary

Elevation
130m
70m

Scale 1:9,000

N

125 0 125 250 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	
	Date: 09 May 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YEFX-LREB (SOUTH) CURRENT DRAINAGE AND LANDFORM ELEVATION

PSM4487-200R | APPENDIX J

447000 448000 449000 450000

5774000 5773000

Culvert 05
Culvert 06
Culvert 07
Culvert 09
Culvert 26
Culvert 27

LEGEND

- Major Streamlines
- Culvert 05 Catchment Area
- Culvert 06 Catchment Area
- Culvert 07 Catchment Area
- Culvert 09 Catchment Area
- Culvert 26 Catchment Area
- Culverts

Scale 1:9,000

N

125 0 125 250 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

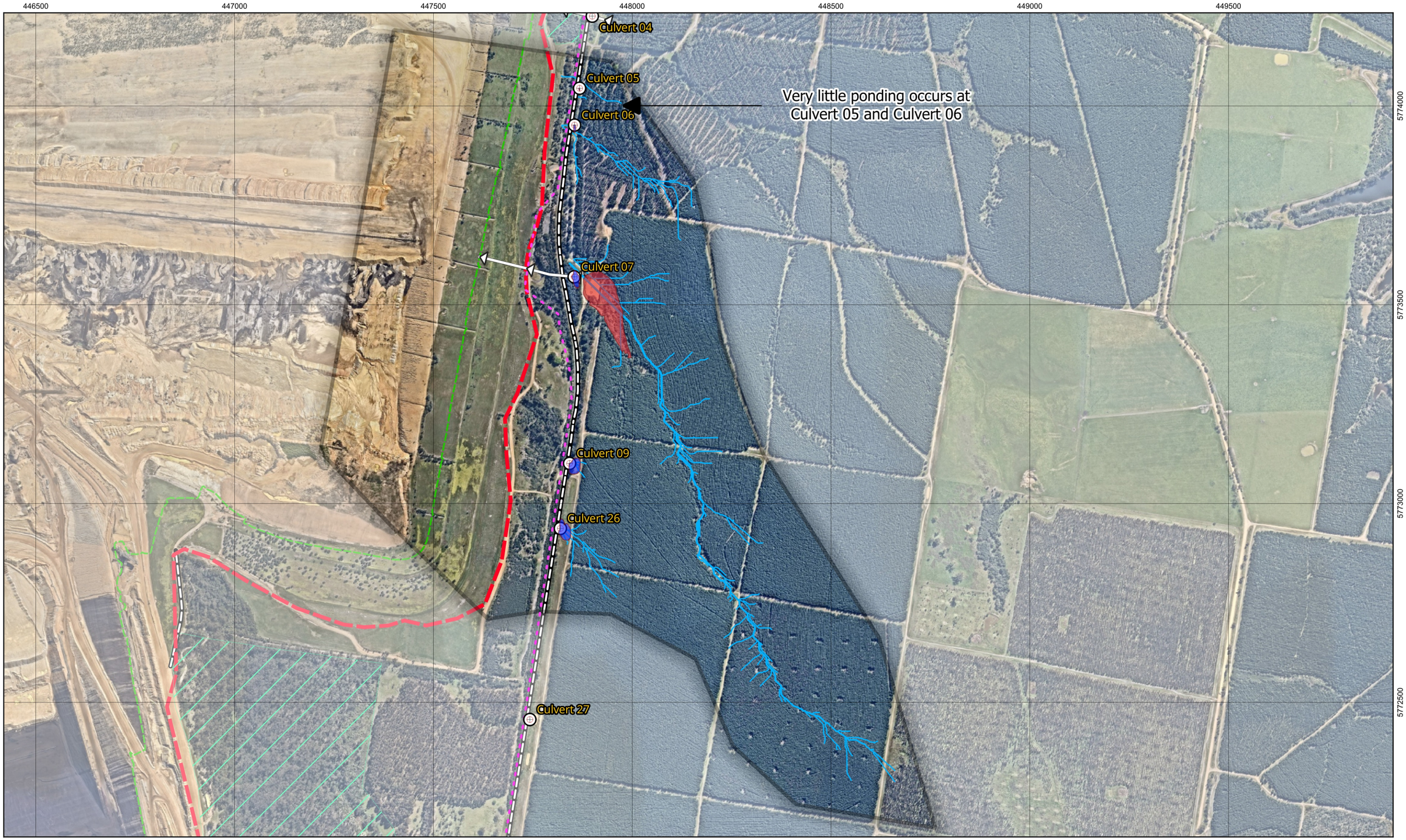
P S M	Created By: PSM	Revision: A	
	Date: 29 Apr 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YEFX-LREB (SOUTH) CURRENT LATROBE ROAD CULVERT SUB-CATCHMENTS

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-173R Figure 55 - YEFX-LREB (South) Current Latrobe Road Culvert Sub-Catchments



LEGEND

- Catchment Boundary
- Conservation Areas
- Major Streamlines
- Life of Mine Pit Crest
- Roadways
- Lined down batter drain to final lake level
- 37 mRL Contour
- Yallourn Mine License Boundary
- Culverts
- Sediment Pond Overtopping Extent
- Upstream Pooling Extent

Scale 1:9,000

N

125 0 125 250 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	
	Date: 12 May 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YEFX-LREB (SOUTH)
CLOSURE DRAINAGE FOR
GEOTECHNICAL STABILITY

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-173R Figure 70 LREB (South) Design Option

447000 447200 447400 447600 447800 448000 448200

5772800 5772600 5772400 5772200

MVF-EB Section 11

Latrobe Road

YEFX-SB Section 10

LEGEND

- Catchment Boundary
- Conservation Areas
- Forestry Areas
- Major Streamlines
- HVP Drain
- Remnant Morwell West Drain
- Life of Mine Pit Crest
- Roadways
- Culverts
- 37 mRL Contour
- Geotechincal Feasibility Design Section
- Yallourn Mine License Boundary

Scale 1:3,750

N 0 50 100 150 200 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M

Created By:	Revision:
PSM	A
Date: 09 May 2025	Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YEFX-SB CURRENT DRAINAGE

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-173R Figure 1 - YEFX-SB Current Drainage

447000 447300 447600 447900 448200

5772900 5772600 5772300

MVF-EB Section 11

Latrobe Road

YEFX-SB Section 10

LEGEND

- Catchment Boundary
- Conservation Areas
- Forestry Areas
- Major Streamlines
- Culverts
- HVP Drain
- Remnant Morwell West Drain
- Life of Mine Pit Crest
- Roadways
- 37 mRL Contour
- Geotechincal Feasibility Design Section
- Yallourn Mine License Boundary
- 1 m Contour Interval

Elevation
130m
70m

Scale 1:3,750

N

0 50 100 150 200 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M

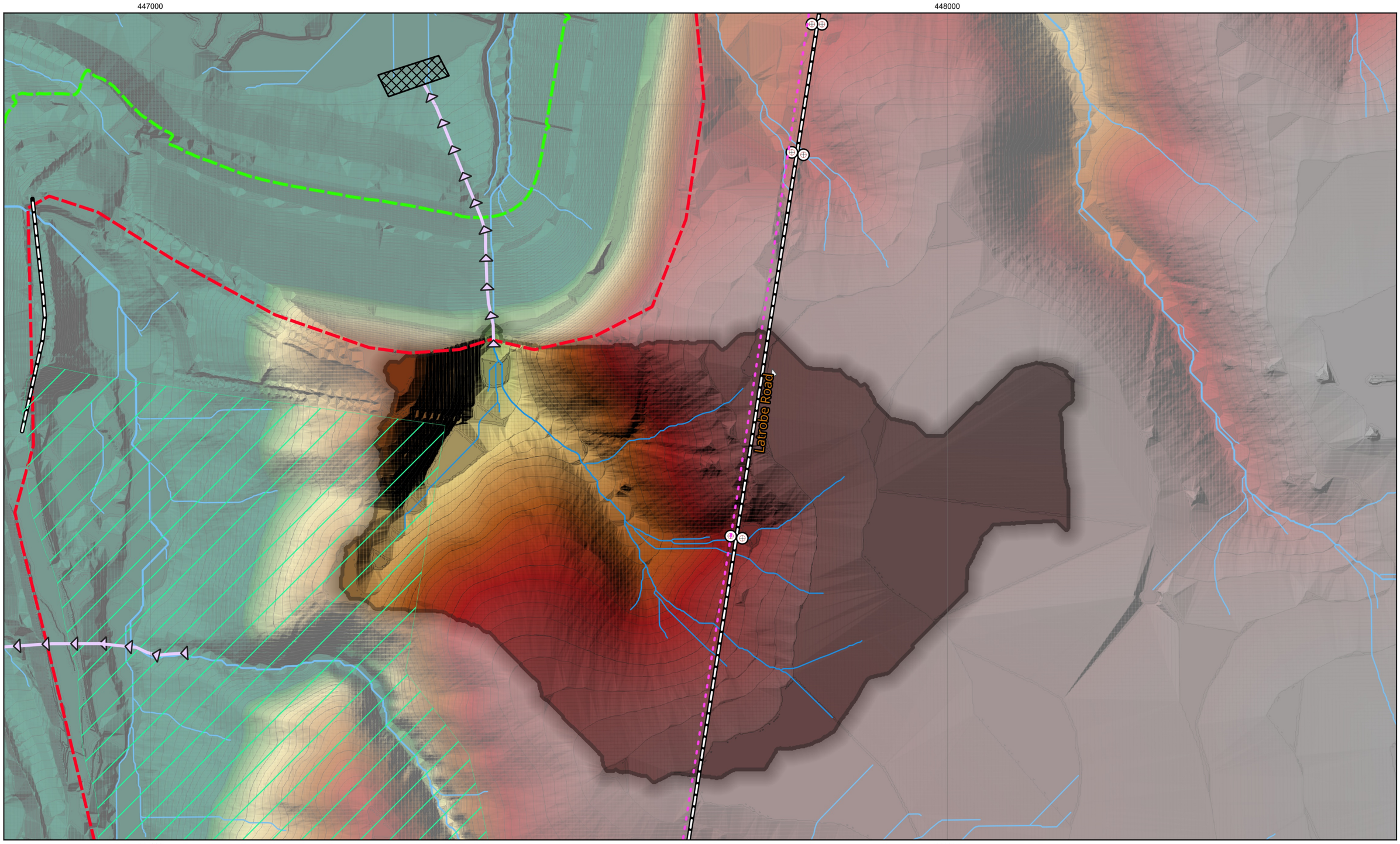
Created By:	Revision:
PSM	A
Date:	Paper Size:
09 May 2025	A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YEFX-SB CURRENT DRAINAGE AND LANDFORM ELEVATION

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-173R Figure 2 - YEFX-SB Current Drainage and Elevation Landform



LEGEND

- Catchment Boundary
- Conservation Areas
- Major Streamlines
- Life of Mine Pit Crest
- 37 mRL Contour
- Roadways
- 1 m Contour Interval
- Yallourn Mine License Boundary
- Culverts
- Down batter drain to in-pit dump level
- Dissipator

Elevation: 130m – 70m

Scale 1:4,500

N

75 0 75 150 m

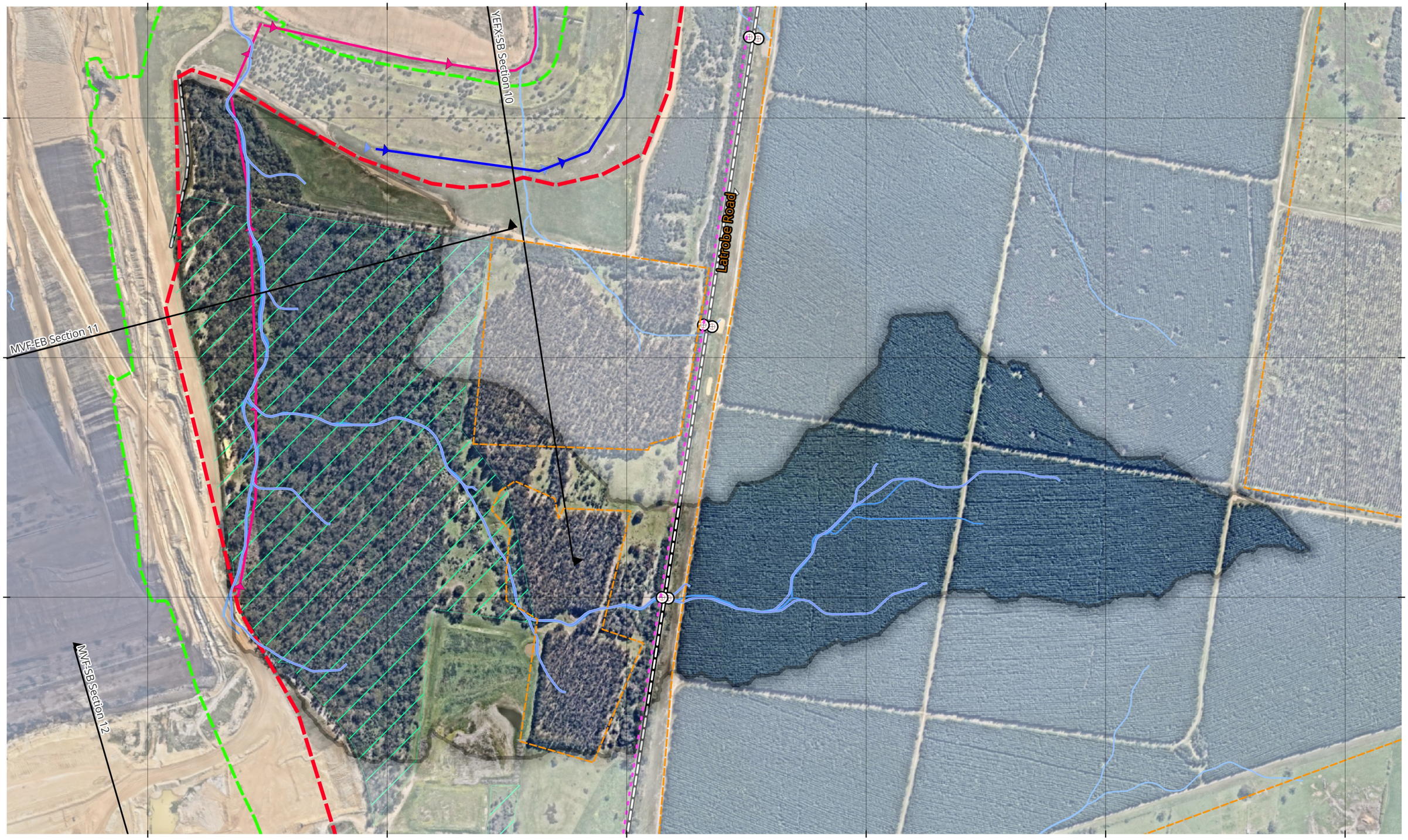
Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	
	Date: 12 May 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design
YEFX-SB
CLOSURE DRAINAGE FOR GEOTECHNICAL STABILITY

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-173R Figure 7 - YEFX-SB Recommended Drainage Layout



LEGEND

- Catchment Boundary
- Conservation Areas
- Forestry Areas
- Major Streamlines
- Life of Mine Pit Crest
- HVP Drain
- Remnant Morwell West Drain
- Roadways
- Yallourn Mine License Boundary
- Geotechnical Feasibility Design Sections
- 37m RL Contour
- Culverts

Scale 1:6,000

N

100 0 100 200 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	
	Date: 09 May 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

MVF-EB CURRENT DRAINAGE

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-160L MVF-EB Domain Overview

446800 447200 447600 448000 448400 448800

5772800 5772400 5772000

YEFX-SB Section 10

MVF-EB Section 11

MVF-SB Section 12

Latrobe Road

LEGEND

- Catchment Boundary
- Conservation Areas
- Forestry Areas
- Major Streamlines
- Life of Mine Pit Crest
- Roadways
- HVP Drain
- Remnant Morwell West Drain
- Geotechnical Feasibility Design Sections
- Yallourn Mine License Boundary
- 37m RL Contour
- 2m Contours
- Culverts

Elevation
150m
50m

N

Scale 1:6,000

100 0 100 200 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M

Created By: PSM
Revision: A
Date: 09 May 2025
Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

MVF-EB CURRENT DRAINAGE AND LANDFORM ELEVATION

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-160L MVF-EB Domain Overview DEM

446800 447200 447600 448000 448400 448800

5772800

5772400

5772000

Latrobe Road

Latrobe Road

LEGEND

- Catchment Boundary
- Conservation Areas
- Major Streamlines
- Yallourn Pit Crest
- 37m RL Contour
- Down batter drain to final lake level
- Contour Drain
- Roadways

Scale 1:6,000

N

100 0 100 200 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	
	Date: 12 May 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

MVF-EB
CLOSURE DRAINAGE OPTION 1

PSM4487-200R | APPENDIX J

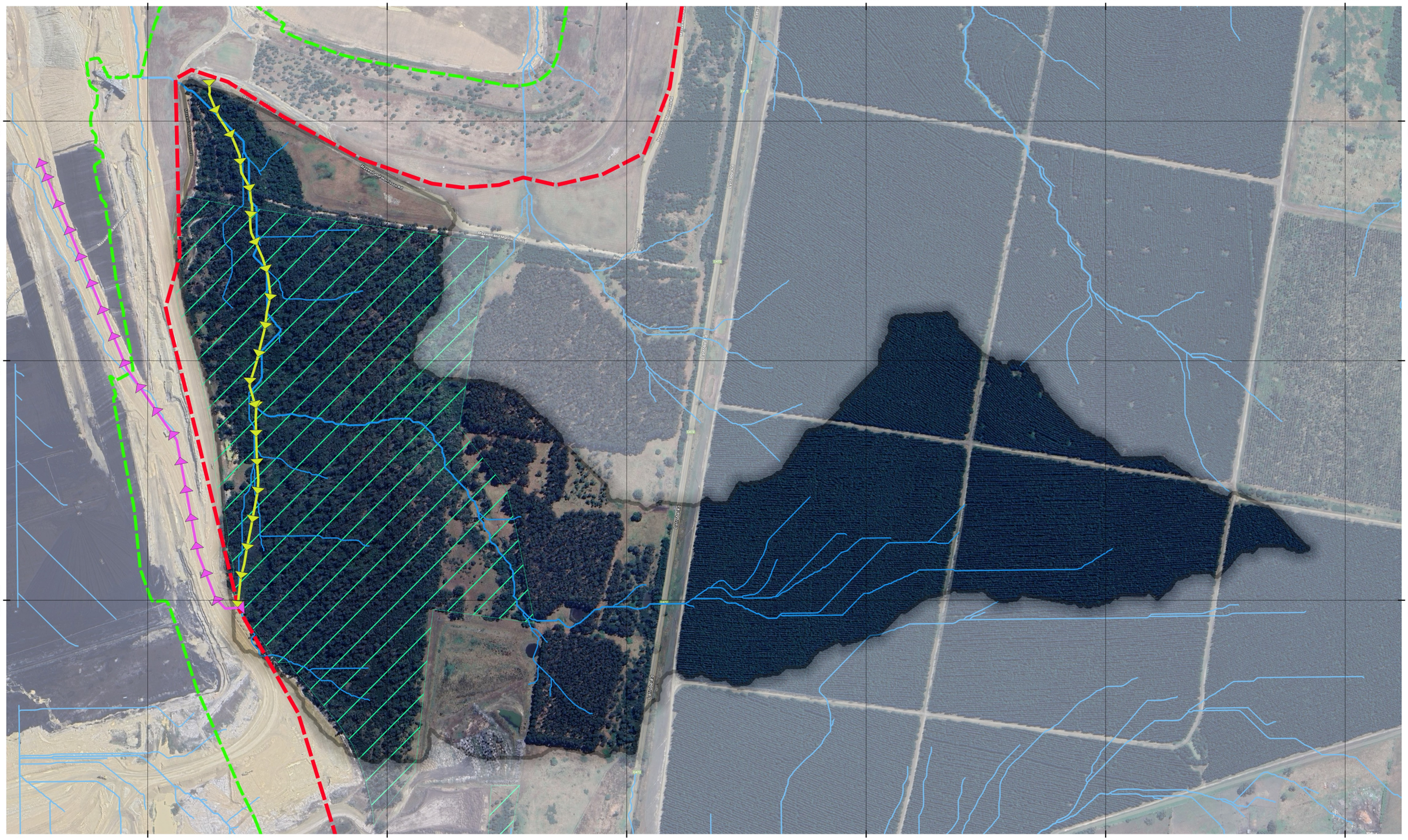
N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-160L MVF-EB Design Option DEM

446800 447200 447600 448000 448400 448800

5772800

5772400

5772000



LEGEND

- Catchment Boundary
- Major Streamlines
- Yallourn Pit Crest
- 37m RL Contour
- Conservation Areas
- Down haul road drain
- Reverse Remnant Morwell West Drain direction

Note:
Space for the haul road drain will be dependent on the above lake level closure landform adjustements.

Scale 1:6,000

N

100 0 100 200 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

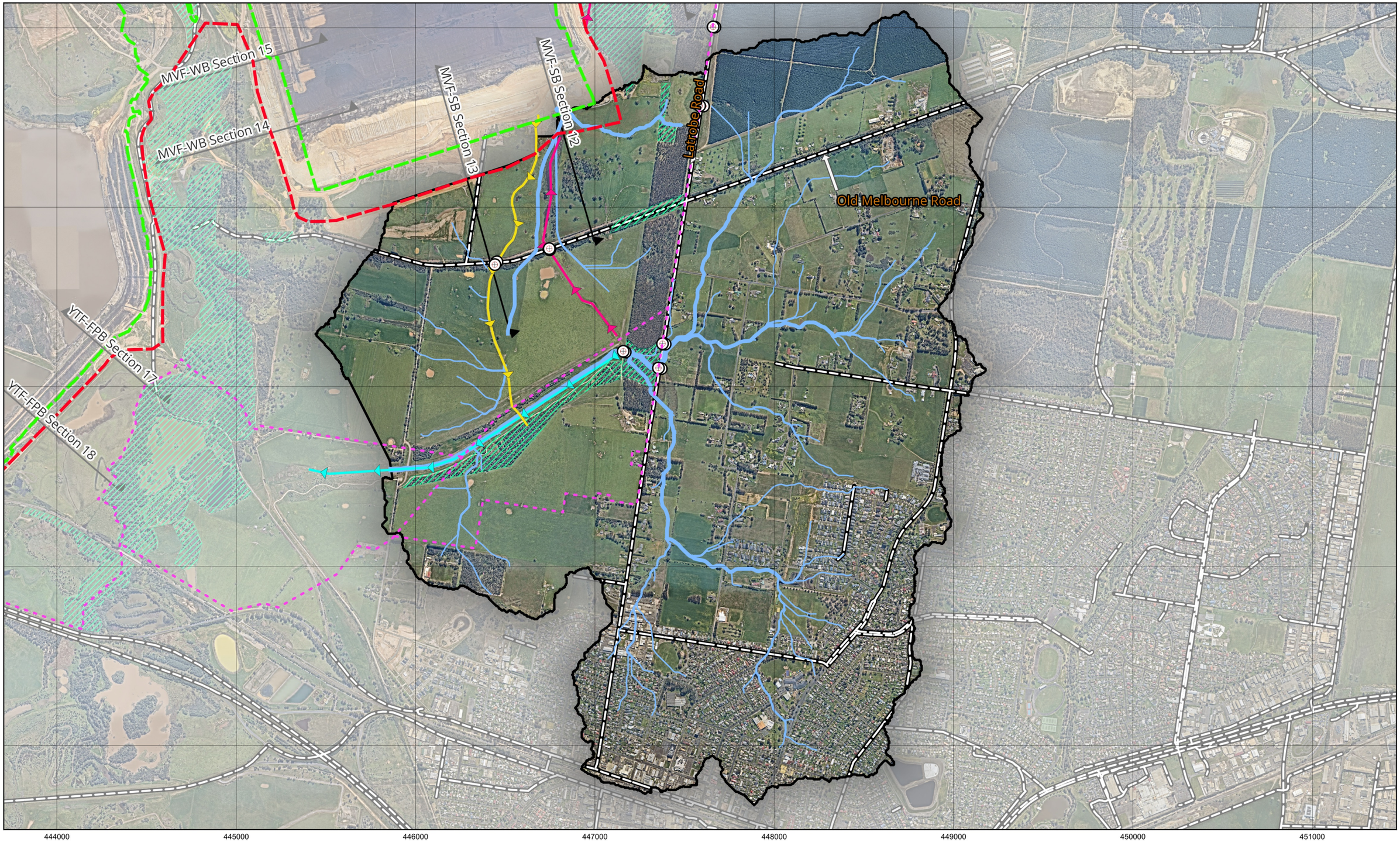
P S M	Created By: PSM	Revision: A	
	Date: 12 May 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

MVF-EB
CLOSURE DRAINAGE OPTION 2

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-160L MVF-EB Design Option



LEGEND

- 1 to 150 Drain
- Morwell West Drain
- Remnant Morwell West Drain
- Catchment Boundary
- Conservation Areas
- Major Streamlines
- Life of Mine Pit Crest
- Culverts
- Roadways
- Mine License Boundary
- 37 mRL Contour
- Geotechnical Feasibility Design Sections

Scale 1:20,000

N

300 0 300 600 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

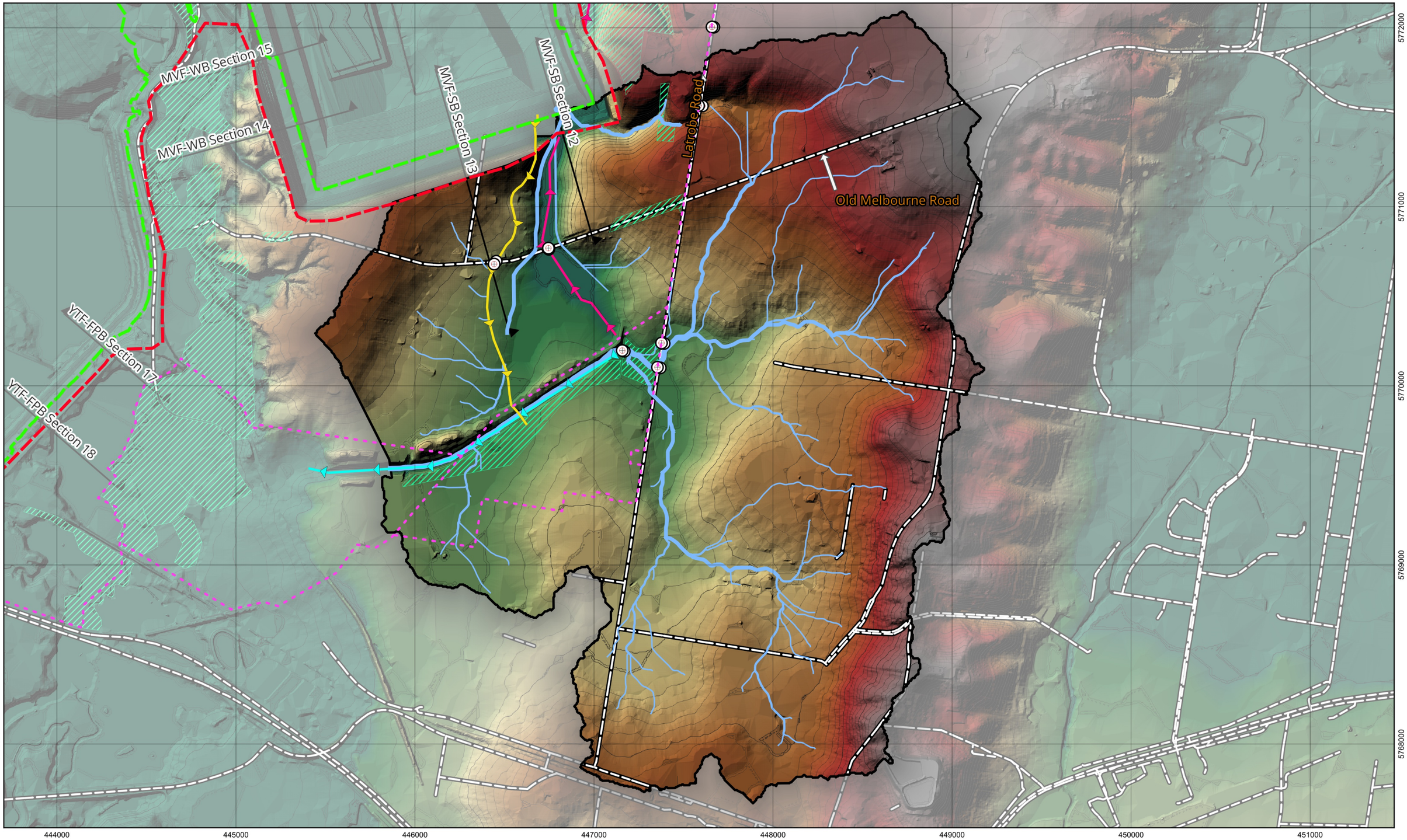
P S M	Created By: PSM	Revision: A	
	Date: 09 May 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

MVF-SB CURRENT DRAINAGE

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-159R Figure 1 - MVF-SB Current Drainage



LEGEND

- 1 to 150 Drain
- Morwell West Drain
- Remnant Morwell West Drain
- Catchment Boundary
- Conservation Areas
- Major Streamlines
- Life of Mine Pit Crest
- Culverts
- Roadways
- Mine License Boundary
- 37 mRL Contour
- 2m Contours
- Geotechnical Feasibility Design Sections

Elevation
150m
60m

Scale 1:20,000

N

300 0 300 600 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

Created By: PSM	Revision: A	EnergyAustralia Yallourn Mine Rehabilitation Feasibility Design	
Date: 09 May 2025	Paper Size: A3	MVF-SB CURRENT DRAINAGE AND LANDFORM ELEVATION	
		PSM4487-200R	APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-159R Figure 2 - MVF-SB Current Drainage and Elevation Landform

445500 446000 446500 447000 447500 448000 448500

5771500 5771000 5770500 5770000

MVF-WB Section 14

MVF-SB Section 13

MVF-SB Section 12

Latrobe Road

Old Melbourne Road

LEGEND

- 1 to 150 Drain
- Morwell West Drain
- Remnant Morwell West Drain
- Proposed Contour Drain
- Remnant Drain Catchment Boundary
- Conservation Areas
- Major Streamlines
- Life of Mine Pit Crest
- Culverts
- Roadways
- Mine License Boundary
- 37 mRL Contour
- Geotechnical Feasibility Design Sections
- Down batter drain to final lake level

Scale 1:9,000

N

150 0 150 300 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	
	Date: 12 May 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

MVF-SB
CLOSURE DRAINAGE FOR GEOTECHNICAL STABILITY

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-159R Figure 21 - Recommended Drainage Layout (During Lake Filling)

443500 444000 444500 445000 445500 446000 446500

5772000 5771500 5771000 5770500

MVF-WB Section 15

MVF-WB Section 14

MVF-SB Section 12

MVF-SB Section 13

VTF-FPB Section 17

LEGEND

- Catchment Boundary
- Conservation Areas
- Major Streamlines
- Life of Mine Pit Crest
- 37 mRL Contour
- 44 mRL Contour
- Geotechnical Feasibility Design Sections

Scale 1:9,000

N

150 0 150 300 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	
	Date: 09 May 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

MVF-WB CURRENT DRAINAGE

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-158L MVF-WB Domain Overview

443500 444000 444500 445000 445500 446000 446500

5772000 5771500 5771000 5770500

MVF-WB Section 15

MVF-WB Section 14

MVF-SB Section 12

MVF-SB Section 13

VTF-FPB Section 17

LEGEND

- Catchment Boundary
- Conservation Areas
- Major Streamlines
- Life of Mine Pit Crest
- 37 mRL Contour
- 44 mRL Contour
- Geotechnical Feasibility Design Sections
- 1m Contour Interval

Elevation
150m
50m

Scale 1:9,000

N

150 0 150 300 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M

Created By: PSM	Revision: A
Date: 09 May 2025	Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

MVF-WB CURRENT DRAINAGE AND LANDFORM ELEVATION

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models JG_VK.qgz Layout: PSM4487-158L MVF-WB Domain Overview DEM

441000 442000 443000

5770000

YTF-SWB Section 20

Culvert 3

Culvert 6

YTF-SB Section 19

Culvert 4

Culvert 5

Marretts Road

Culvert 7

M1 Princes Freeway

5769000

441000 442000 443000

LEGEND

- Diversion Drain
- Melbourne Swamp Diversion
- Culverts
- Life of Mine Pit Crest
- Roadways
- Railway
- Catchment Boundary
- Conservation Areas
- Major Streamlines
- 37 mRL Contour

Scale 1:8,000

N

100 0 100 200 300 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M

Created By: PSM

Revision: A

Date: 12 May 2025

Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YTF-SWB / YTF-SB DOMAIN OVERVIEW

PSM4487-200R

APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK.qgz Layout: PSM4487-157R YTF-SB / SWB Domain Overview (zoomed in)

438000 439000 440000 441000 442000 443000 444000

5771000 5770000 5769000 5768000

Culvert 1
Culvert 2
Culvert 3
Culvert 4
Culvert 5
Culvert 6
Culvert 7
YTF-SWB Section 21
YTF-SWB Section 20
YTF-SB Section 19
M1 Princes Freeway

LEGEND

- Diversion Drain
- Melbourne Swamp Diversion
- Culverts
- Life of Mine Pit Crest
- Roadways
- Railway
- Geotechnical Feasibility Design Sections
- Catchment Boundary
- Conservation Areas
- Major Streamlines
- 37 mRL Contour
- 1m Contours

Elevation
150m
60m

Scale 1:18,000

N

200 0 200 400 600 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

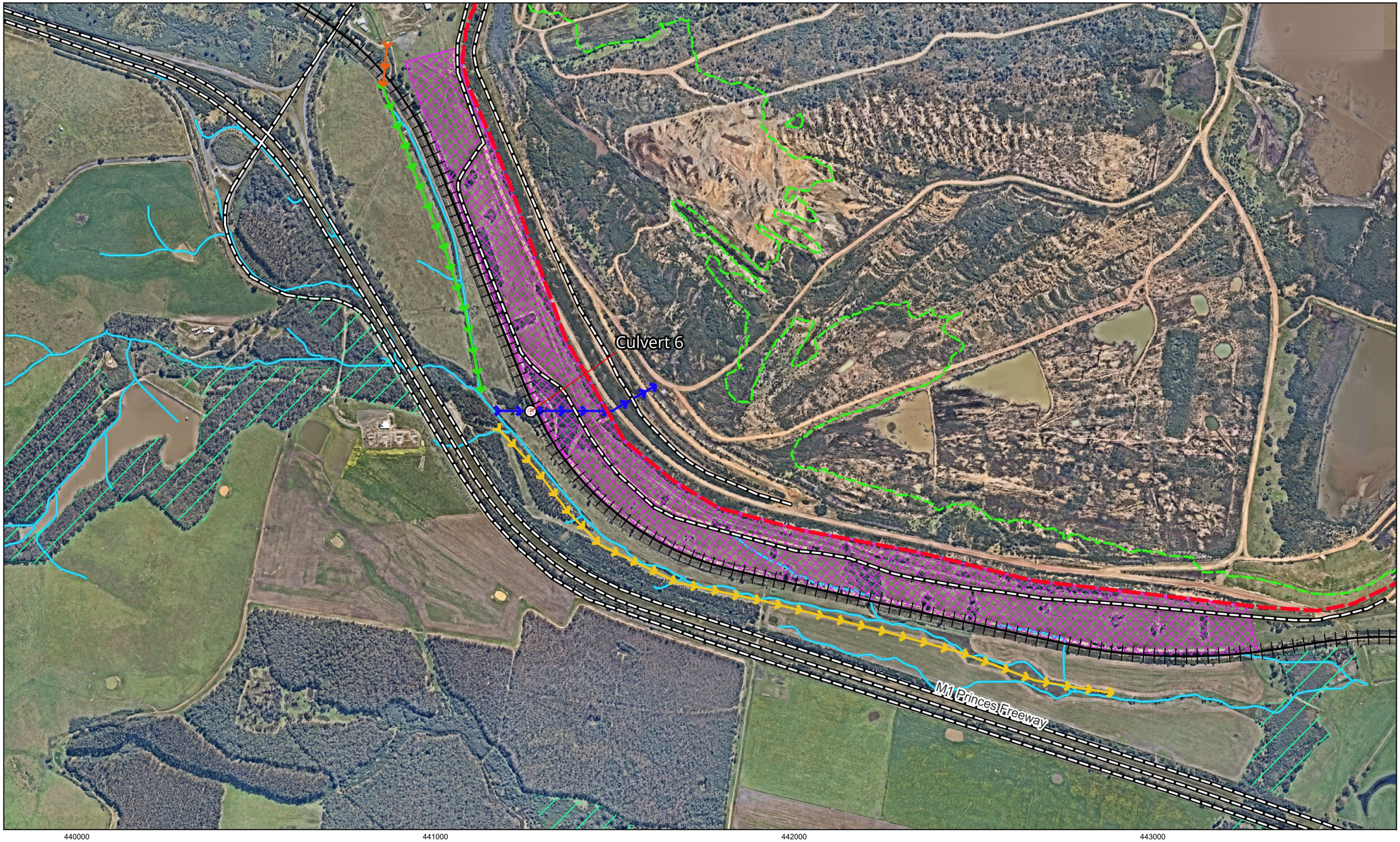
P S M	Created By: PSM	Revision: A	
	Date: 09 May 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YTF-SWB / YTF-SB DOMAIN OVERVIEW

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK.qgz Layout: PSM4487-157R YTF-SB / SWB Domain Overview DEM



LEGEND

- Life of Mine Pit Crest
- Conservation Areas
- Railway
- Roadways
- Regrade to drain towards pit edge
- 37 mRL Contour
- Streamlines
- Lined down batter drain to in-pit dump level
- Flows from YTF-HOB (SOUTH) disconnected
- Improved Melbourne Swamp Drainage to limit water leakage into slope
- Modified Melbourne Swamp Drain alignment (min 200 m offset to pit crest)

Scale 1:10,000

N

100 0 100 200 300 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A
	Date: 12 May 2025	Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YTF-SWB / YTF-SB CLOSURE DRAINAGE FOR GEOTECHNICAL STABILITY

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK.qgz Layout: PSM4487-157R YTF-SB / SWB Closure Drainage For Geotechnical Stability

438500 439000 439500 440000 440500 441000 441500

5772000 5771500 5771000 5770500 5770000

YTF-HOB (north) Section 23

YTF-HOB (south) Section 22

Haunted Hills Road

YTF-SWB Section 21

YTF-SWB Section 20

LEGEND

- Diversion Drain
- Melbourne Swamp Diversion
- Major Streamlines
- Culverts
- Life of Mine Pit Crest
- Roadways
- Railway
- Catchment Boundary
- Conservation Areas
- 37 mRL Contour
- Geotechnical Feasibility Design Sections

Scale 1:9,500

N

100 0 100 200 300 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	
	Date: 09 May 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YTF-HOB (South) DOMAIN OVERVIEW

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK.qgz Layout: PSM4487-157R HOB-SOUTH Domain Overview

438500 439000 439500 440000 440500 441000 441500

5772000 5771500 5771000 5770500 5770000

YTF-HOB (north) Section 23

YTF-HOB (south) Section 22

Haunted Hills Road

YTF-SWB Section 21

YTF-SWB Section 20

LEGEND

- Diversion Drain
- Melbourne Swamp Diversion
- Major Streamlines
- Culverts
- Life of Mine Pit Crest
- Roadways
- Railway
- Catchment Boundary
- Conservation Areas
- 37 mRL Contour
- Geotechnical Feasibility Design Sections
- 1m Contours

Elevation
150m
60m

Scale 1:9,500

N

100 0 100 200 300 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	
	Date: 09 May 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YTF-HOB (South) DOMAIN OVERVIEW

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK.qgz Layout: PSM4487-157R HOB-SOUTH Domain Overview DEM

438500 439000 439500 440000 440500 441000 441500

5772000 5771500 5771000 5770500 5770000

YTF-HOB (north) Section 23

YTF-HOB (south) Section 22

Haunted Hills Road

YTF-SWB Section 21

YTF-SWB Section 20

LEGEND

- Diversion Drain
- Melbourne Swamp Diversion
- Major Streamlines
- Culverts
- Life of Mine Pit Crest
- 37 mRL Contour
- Roadways
- Railway
- Catchment Boundary
- Conservation Areas
- Geotechnical Feasibility Design Sections
- Lined down batter drain down to in-pit dump level

Scale 1:9,500

N

100 0 100 200 300 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	
	Date: 12 May 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YTF-HOB (South) CLOSURE DRAINAGE FOR GEOTECHNICAL STABILITY

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK.qgz Layout: PSM4487-157R HOB-SOUTH Closure Drainage For Geotechnical Stability



LEGEND

- Diversion Drain
- Melbourne Swamp Diversion
- Life of Mine Pit Crest
- Streamlines
- 37 mRL Contour
- Culverts
- Roadways
- Catchment Boundary
- Conservation Areas
- Geotechnical Feasibility Design Sections

Scale 1:8,000

N

100 0 100 200 300 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	EnergyAustralia Yallourn Mine Rehabilitation Feasibility Design
	Date: 09 May 2025	Paper Size: A3	YTF-HOB (North) CURRENT DRAINAGE
			PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK.qgz Layout: PSM4487-156R HOB-NORTH Domain Overview

439000 439500 440000 440500 441000 441500

5773000 5772500 5772000

YTF-WB Section 26

YTF-WB Section 25

YTF-HOB (north) Section 24

Rifle Range Dam

YTF-HOB (north) Section 23

LEGEND

- Diversion Drain
- Melbourne Swamp Diversion
- Life of Mine Pit Crest
- Streamlines
- 37 mRL Contour
- Culverts
- Roadways
- Catchment Boundary
- Conservation Areas
- Geotechnical Feasibility Design Sections
- 1m Contours

Elevation
150m
60m

Scale 1:8,000

N

100 0 100 200 300 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	
	Date: 09 May 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YTF-HOB (North) CURRENT DRAINAGE AND LANDFORM ELEVATION

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK.qgz Layout: PSM4487-156R HOB-NORTH Domain Overview DEM

439000
440000
441000
5773000
5772000

YTF-WB Section 26
De Campo Drive
YTF-WB Section 25
YTF-HOB (north) Section 24
Rifle Range Dam
YTF-HOB (north) Section 23

LEGEND

- Diversion Drain
- Melbourne Swamp Diversion
- Life of Mine Pit Crest
- Streamlines
- 37 mRL Contour
- Culverts
- Roadways
- Catchment Boundary
- Geotechnical Feasibility Design Sections
- Lined down batter drain down to in-pit dump level

Note:
Swale drains to be utilised in other areas between the road and pit crest.

Scale 1:8,000

N

100 0 100 200 300 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M

Created By:	Revision:
PSM	A
Date: 12 May 2025	Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YTF-HOB (North)
CLOSURE DRAINAGE FOR
GEOTECHNICAL STABILITY

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK.qgz Layout: PSM4487-156R HOB-NORTH Closure Drainage For Geotechnical Stability

440500 441000 441500 442000 442500

5773500 5773000 5772500

De Campo Drive

YTF-WB Section 27

YTF-NB Section 28

YTF-WB Section 26

YTF-WB Section 25

YTF-HOB (north) Section 24

LEGEND

- Diversion Drain
- Life of Mine Pit Crest
- Streamlines
- 37 mRL Contour
- Culverts
- Roadways
- Catchment Boundary
- Conservation Areas
- Geotechnical Feasibility Design Sections
- De Campo Drive Culverts Flow Directions

Scale 1:6,500

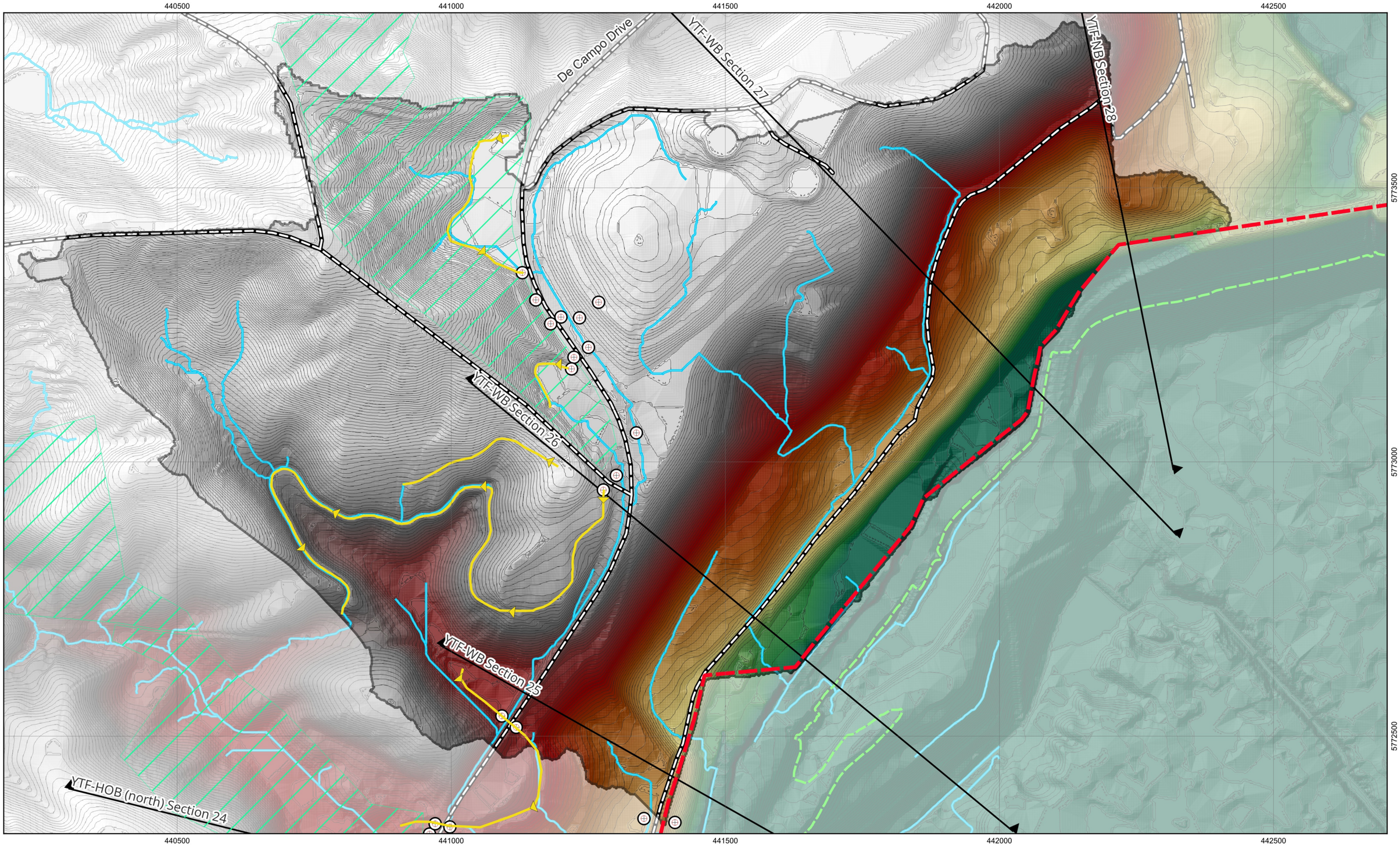
N

100 0 100 200 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	EnergyAustralia Yallourn Mine Rehabilitation Feasibility Design
	Date: 30 Apr 2025	Paper Size: A3	YTF-WB CURRENT DRAINAGE
			PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK.qgz Layout: PSM4487-156R YTF-WB Domain Overview



LEGEND

- Diversion Drain
- Culverts
- Geotechnical Feasibility Design Sections
- 1m Contours
- Life of Mine Pit Crest
- Roadways
- Streamlines
- Catchment Boundary
- 37 mRL Contour
- Conservation Areas

Elevation: 150m – 60m

Scale 1:6,500

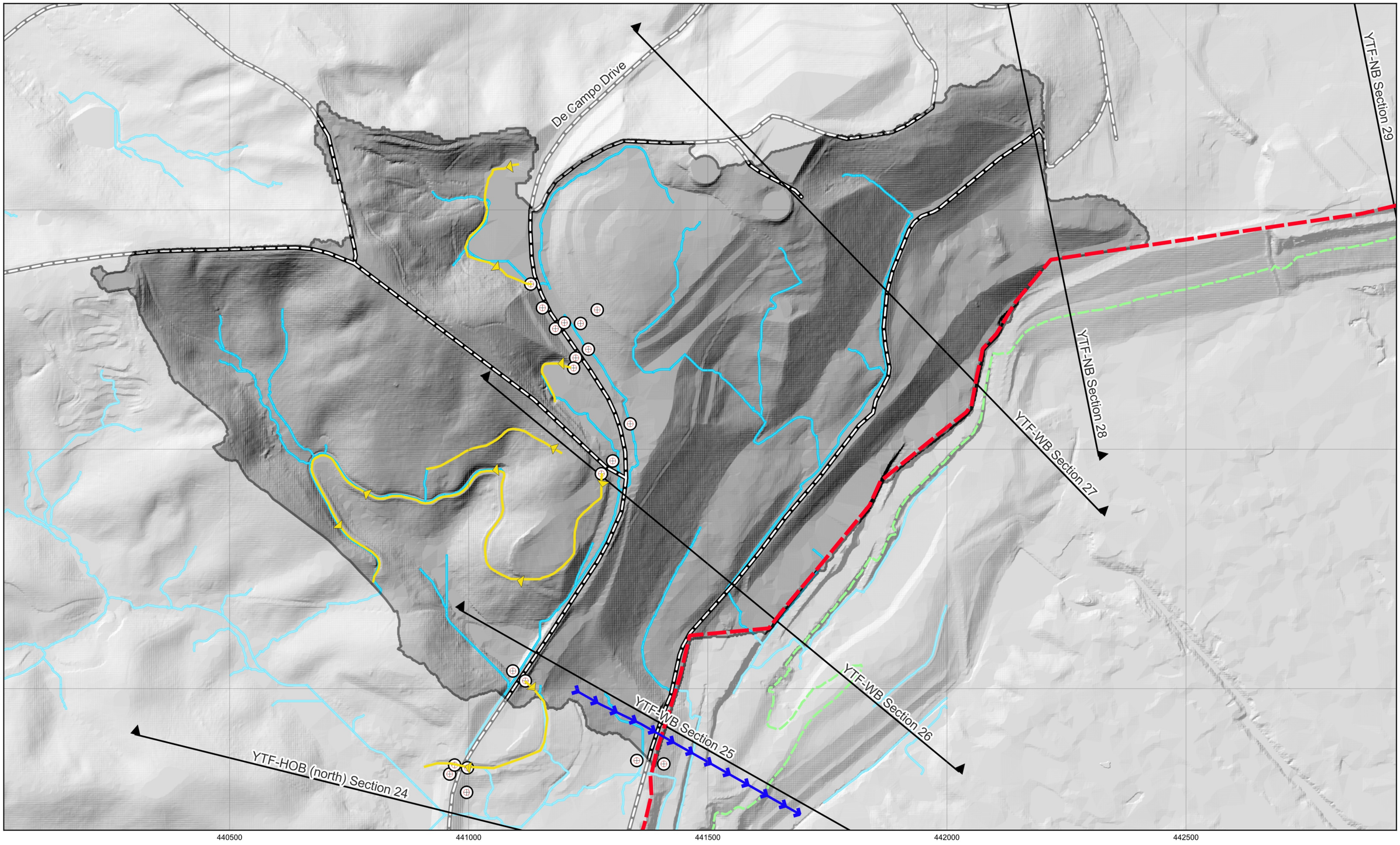
N

100 0 100 200 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

Created By: PSM	Revision: A	EnergyAustralia Yallourn Mine Rehabilitation Feasibility Design
Date: 30 Apr 2025	Paper Size: A3	YTF-WB CURRENT DRAINAGE AND LANDFORM ELEVATION
		PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK.qgz Layout: PSM4487-156R YTF-WB Domain Overview DEM



LEGEND

- Diversion Drain
- Life of Mine Pit Crest
- Streamlines
- 37 mRL Contour
- Culverts
- Roadways
- Geotechnical Feasibility Design Sections
- Catchment Boundary
- Lined down batter drain down to buttress toe

Note:
Swale drains to be utilised in other areas between the road and pit crest.

Scale 1:7,500

N

100 0 100 200 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	
	Date: 12 May 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YTF-WB
CLOSURE DRAINAGE FOR GEOTECHNICAL STABILITY

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK.qgz Layout: PSM4487-156R YTF-WB Closure Drainage For Geotechnical Stability

441500 442000 442500 443000 443500

5774500 5774000 5773500

Pool

YTF-LS Section 31

Coal Batters

YTF-RCB Section 30

Existing Concrete Access Ramp

YTF-WB Section 27

YTF-NB Section 28

YTF-NB Section 29

LEGEND

- Life of Mine Pit Crest
- 37 mRL Contour
- Streamlines
- Catchment Boundary
- Geotechnical Feasibility Design Sections
- Roadways

Scale 1:6,000

N

100 0 100 200 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	
	Date: 28 Apr 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YTF-NB / YTF-RCB CURRENT DRAINAGE

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK.qgz Layout: PSM4487-170R YTF-RCB Domain Overview

442000

443000

5774000

5774000

YTF-LS Section 31

YTF-RCB Section 30

YTF-WB Section 27

YTF-NB Section 28

YTF-NB Section 29

442000

443000

LEGEND

- Life of Mine Pit Crest
- 37 mRL Contour
- Streamlines
- Catchment Boundary
- Geotechnical Feasibility Design Sections
- Roadways
- 1m Contours

Elevation

150m

30m

Scale 1:6,000

N

100 0 100 200 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	
	Date: 28 Apr 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YTF-NB / YTF-RCB CURRENT DRAINAGE AND LANDFORM ELEVATION

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK.qgz Layout: PSM4487-170R YTF-RCB Domain Overview DEM

442500 443000 443500 444000

5775000 5774500 5774000

YTF-LS Section 31

Pool

Existing Waste Dump

Old Ash Pond

YEF-NB (west) Section 1

Coal Batters

YTF-RCB Section 30

LEGEND

- Life of Mine Pit Crest
- 37 mRL Contour
- Streamlines
- Roadways
- Geotechnical Feasibility Design Sections
- Catchment Boundary

Scale 1:5,000

N

100 0 100 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A
	Date: 28 Apr 2025	Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YTF-LS CURRENT DRAINAGE

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK.qgz Layout: PSM4487-170R YTF-LS Domain Overview

442500 443000 443500 444000

5775000 5774500 5774000

YTF-LS Section 31

Pool

Existing Waste Dump

Old Ash Pond

YEF-NB (west) Section 1

Coal Batters

YTF-RCB Section 30

LEGEND

- 37 mRL Contour
- Life of Mine Pit Crest
- Streamlines
- Roadways
- Geotechnical Feasibility Design Sections
- Catchment Boundary
- 1m Contours

Elevation 90m 30m

Scale 1:5,000

N

100 0 100 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A
	Date: 28 Apr 2025	Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YTF-LS CURRENT DRAINAGE AND LANDFORM ELEVATION

PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK.qgz Layout: PSM4487-170R YTF-LS Domain Overview DEM

443000 443500 444000 444500 445000

5770500

5770000

5769500



LEGEND

- Life of Mine Pit Crest
- 37 mRL Contour
- Streamlines
- Railway
- Catchment Boundary
- Conservation Areas

Scale 1:6,500

N

100 0 100 200 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M

Created By: PSM

Revision: A

Date: 09 May 2025

Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YTF-FPB DOMAIN OVERVIEW

PSM4487-200R

APPENDIX J

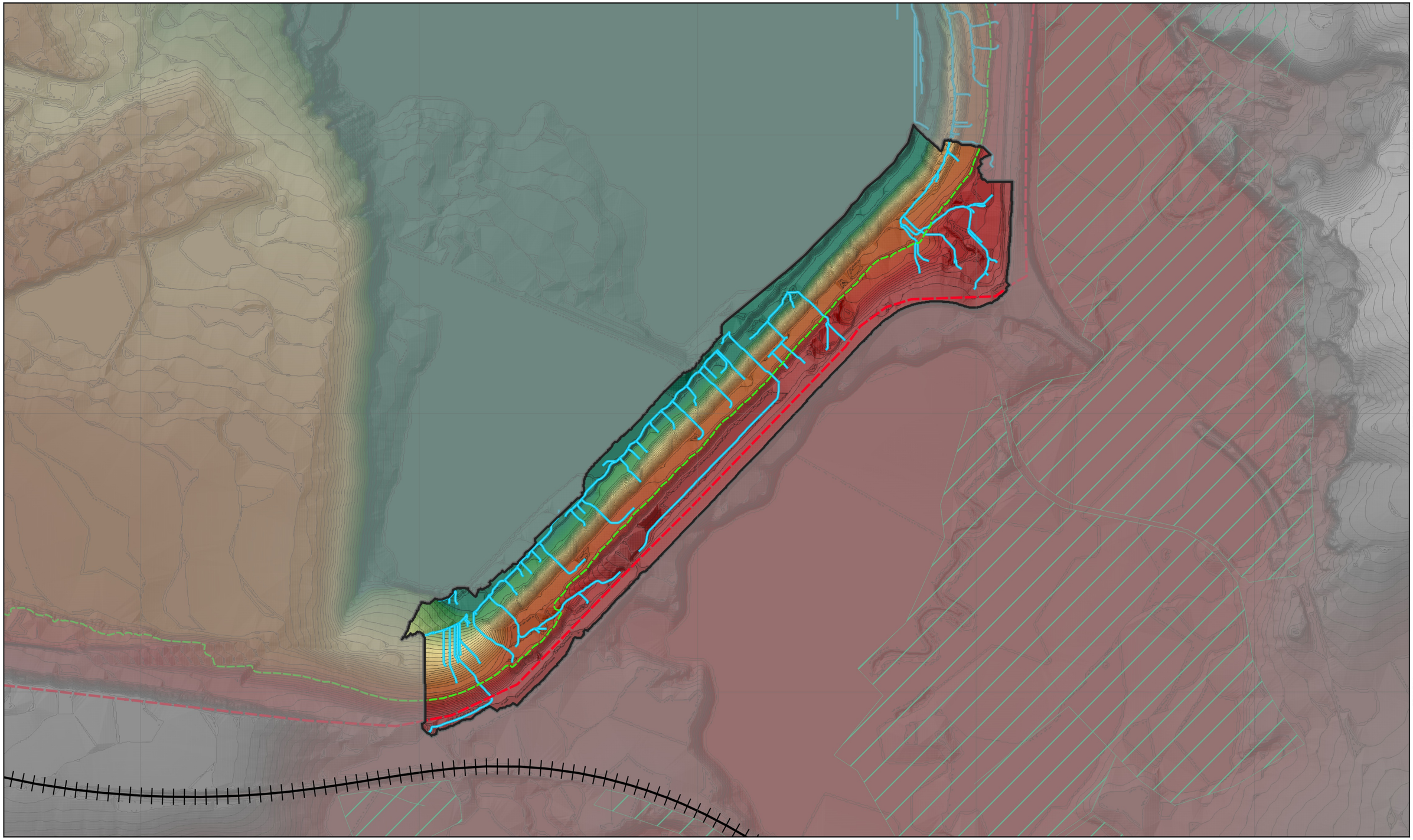
N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK.qgz Layout: PSM4487-171M YTF-FPB Domain Overview

443000 443500 444000 444500 445000

5770500

5770000

5769500



LEGEND

- Life of Mine Pit Crest
- 37 mRL Contour
- Streamlines
- Railway
- Catchment Boundary
- Conservation Areas
- 1m Contours

Elevation

100m

10m

Scale 1:6,500

N

100 0 100 200 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M	Created By: PSM	Revision: A	
	Date: 09 May 2025	Paper Size: A3	

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YTF-FPB DOMAIN LANDFORM ELEVATION

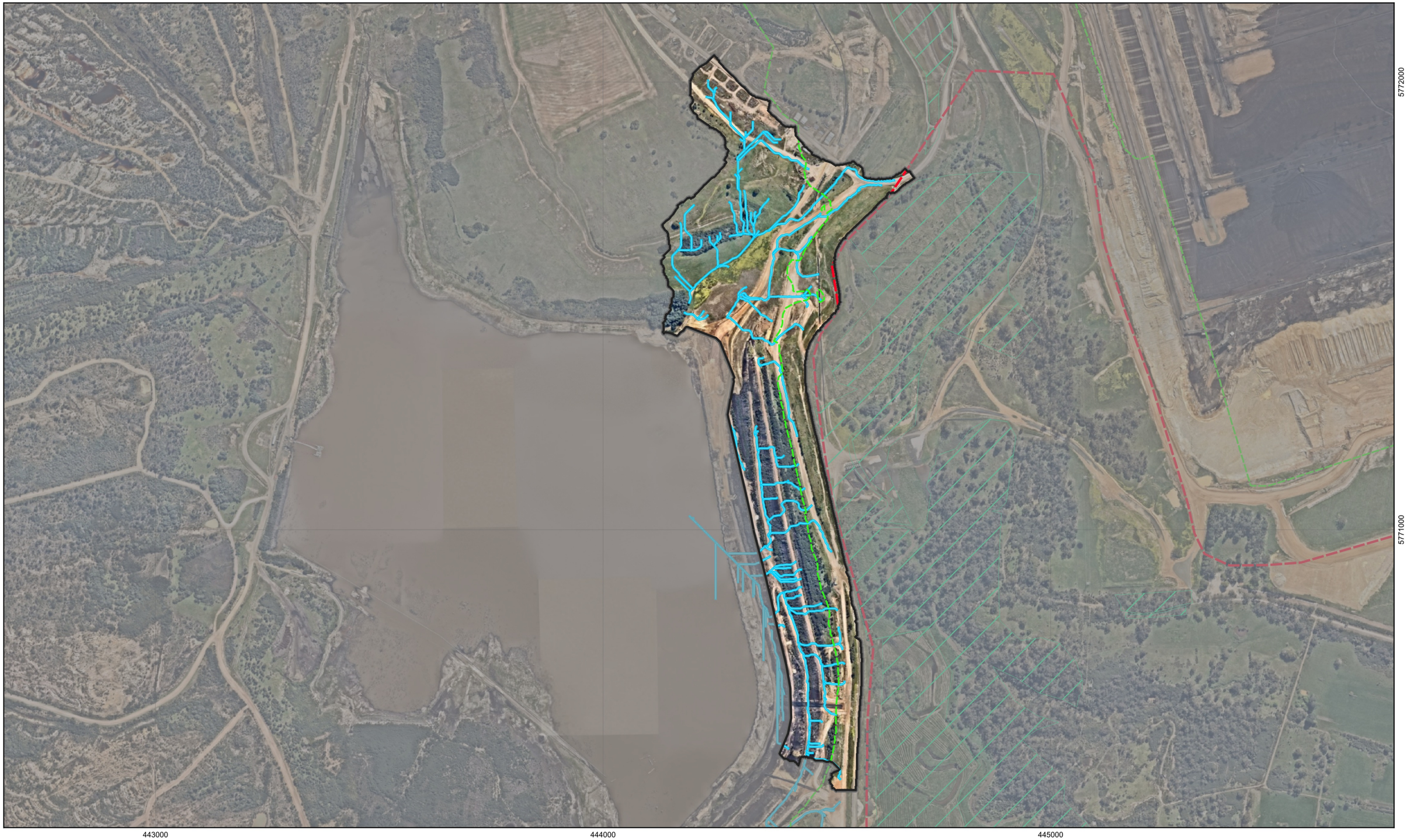
PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK.qgz Layout: PSM4487-171M YTF-FPB Domain Overview DEM

443000 444000 445000

5772000

5771000



443000 444000 445000

LEGEND

- Life of Mine Pit Crest
- 37 mRL Contour
- Streamlines
- Catchment Boundary
- Conservation Areas

Scale 1:8,000

N

100 0 100 200 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

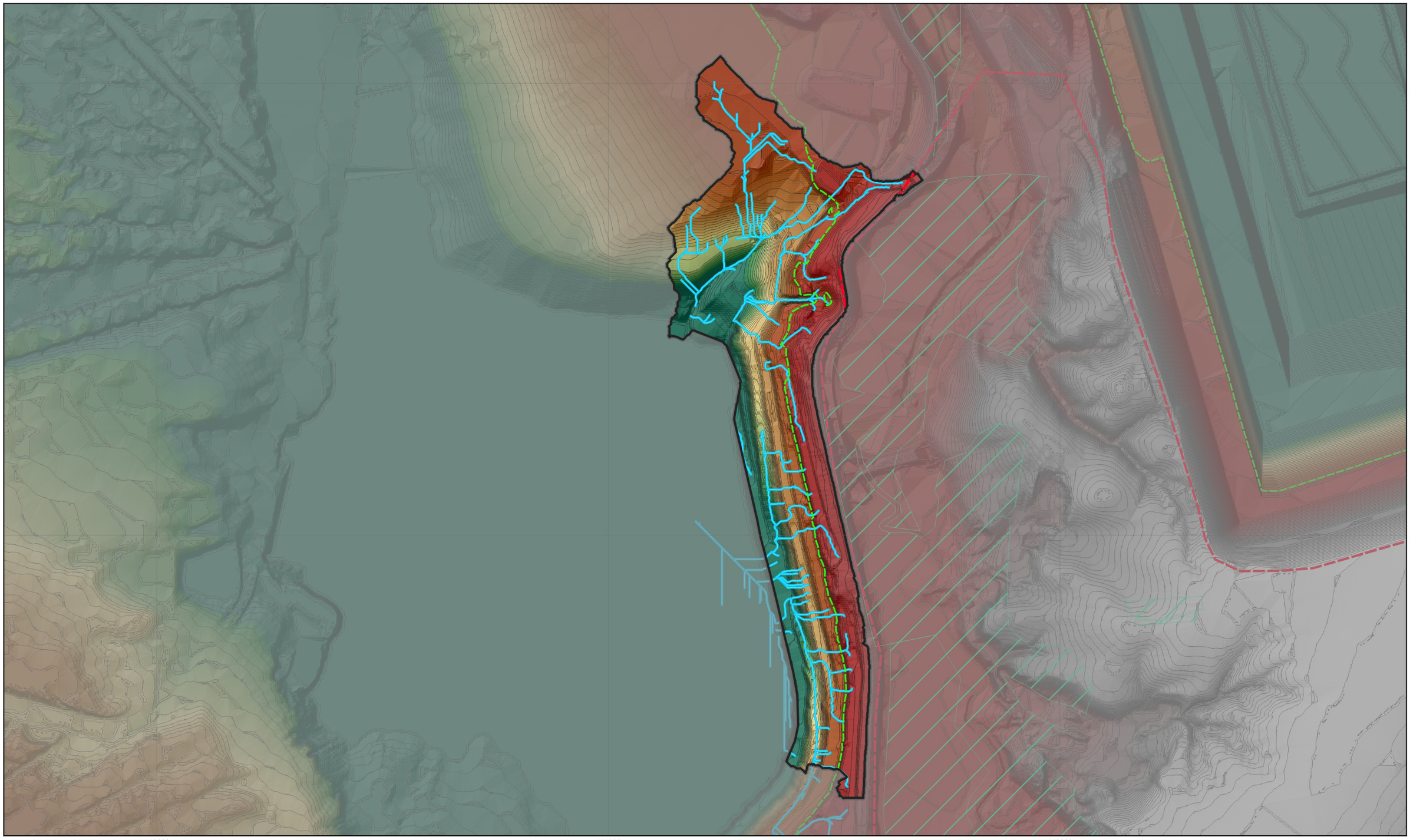
P S M	Created By: PSM	Revision: A	EnergyAustralia Yallourn Mine Rehabilitation Feasibility Design
	Date: 09 May 2025	Paper Size: A3	YTF-FSPB DOMAIN OVERVIEW
			PSM4487-200R | APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK.qgz Layout: PSM4487-171M YTF-FSPB Domain Overview

443000 444000 445000

5772000

5771000



443000 444000 445000

LEGEND

- Life of Mine Pit Crest
- Catchment Boundary
- 1m Contours
- 37 mRL Contour
- Conservation Areas
- Streamlines

Elevation

100m

10m

Scale 1:8,000

N

100 0 100 200 m

Map Projection: GDA2020 MGA Zone 55
EPSG:7855

P S M

Created By: PSM

Revision: A

Date: 09 May 2025

Paper Size: A3

EnergyAustralia
Yallourn Mine Rehabilitation
Feasibility Design

YTF-FSPB CURRENT DRAINAGE AND LANDFORM ELEVATION

PSM4487-200R

APPENDIX J

N:\PSM4487\Eng\07 Surface Water Review\01.GIS\01_MXDs\Yallourn RORB Models VK.qgz Layout: PSM4487-171M YTF-FSPB Domain Overview DEM