

EnergyAustralia Yallourn Pty Ltd Draft Declared Mine Rehabilitation Plan

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15 August 2025

Introduction

The only proposal since the inception of rehabilitation plans for the three coal mines has been to fully fill the pit voids. Yallourn's "overarching vision" is:

"To transform the Yallourn site into a landscape that enables ongoing prosperity and amenity for all. One that is an example of what can be achieved when business, government, communities, and custodians of the land work together."¹

To realise this vision the *Rehabilitation Master Plan for the project adopts the final concept of flooding the mine to form a large lake with interconnection to the local river systems. The depth of the lake will depend upon water availability at the end of the project.*" (Minister for Planning 2010).²

It must be noted that EnergyAustralia Yallourn (EAY)'s vision of a recreational lake is merely aspirational.³

Environmental Impacts

"The Latrobe River Basin in West Gippsland covers an area of approximately 4,700 square kilometres, stretching from the southern slopes of the Yarra Ranges to Lake Wellington, representing around 23 % of the total catchment draining into the Gippsland Lakes (Figure 2. 5)."⁴

The power stations have disrupted the natural flow patterns of all rivers and drained them of critical environmental flows. Consequently, Durt'Yowan (Latrobe River) is in a perilous condition due to chronic lack of environmental flows which is multiplying the increasing stress suffered by the **Ramsar** Gippsland Lakes, its ecosystems and biodiversity. This situation is completely unacceptable; it is neither safe nor sustainable. It is a breach of Australia's treaty obligations to the Ramsar Convention on Wetlands.

The DRMP believes that a full pit lake will "provide the highest likelihood of long-term stability."⁵ EAY proposes "a new BWE for 27,000 ML/year [27GL/year] from the System Waterway, using a combination of Lake Narracan, Blue Rock and run of river proportions",⁶ with conditions similar to AGL's BWE application.

¹ **Community and Stakeholder Engagement Plan** | 2025, p12/44

² EnergyAustralia Yallourn Pty Ltd, *Declared Mine Rehabilitation Plan (June 2025)* Mining Licences MIN 5003, MIN 5216, MIN 5304, p100/485, p40/485

³ 6.2 Vision Statement for Rehabilitation

⁴ Trop Water Pty Ltd, *Latrobe Valley Brown Coal Mine Pit Lake Water Quality Review*. 31 August 2022, p17/40

⁵ EnergyAustralia Yallourn Pty Ltd, *Declared Mine Rehabilitation Plan (June 2025)* Mining Licences MIN 5003, MIN 5216, MIN 5304, p100/485, p44/485

⁶ *Ibid.*, p49/485

Although the technical studies may support the pit lake option as the “optimal safe, stable, and sustainable solution” for the mine site, this option will have significant and lasting effects on the ecological integrity of the river system which sustains the Gippsland Lakes’s foodchain vital for the critically endangered Burrunan dolphins and other species, including the fish we eat. More than likely, it will bitterly disappoint those who have fallen for the fake “Lake Geneva” dream.

Environmental Impacts of Pit Lake Option

The following adverse impacts are well-known and understood:

Aquifers and Groundwater

“Groundwater at the Yallourn site comprises of complex natural systems that govern its behaviours and interactions with surface water systems and groundwater users. These systems have an integral role in all aspects of ground and environmental management of the mine site and its surrounding landform.”⁷ Notwithstanding the “long history of groundwater modelling”:

“There is a greater need to understand the effects of rehabilitation on the shallow groundwater system due to the mine’s proximity to major surface water features (such as the Morwell River and Latrobe River)”⁸.

The DRMP acknowledges that decades of groundwater pumping have depressurised aquifers and disrupted the natural groundwater flow directions.⁹ The potential for ongoing subsidence is real and can be exacerbated by seismic events.

Earthquakes

8.18 Summary of Modelling and Technical Studies states:

“Earthquakes will cause mine batters to move, however these displacements are within historical tolerances.”¹⁰

However, no one can say future seismic activity over fifty years or more will not exceed historic tolerances. This presents a risk to the pit lake infrastructure and the regional waterways system right to the Gippsland Lakes.

Morwell River Diversion (MRD)

The Morwell River functions as the natural headwaters of Durt’Yowan. The MRD, which converted a section of the Morwell into an industrial drain, has been a disaster for the health of the Durt’Yowan and its role in the regional waterways system and the Gippsland Lakes. EAY anticipates future collapse of the MRD due to “dynamic responses linked to stress changes”...[which will continue] “for or a significant period into mine rehabilitation”...[and lead to] *the progressive deterioration of the structure*.¹¹

Its mitigation measure post closure is to have the MRD function as a “rural levee running through the middle of two lakes...[the levels of which will be] at approximately the level of the

⁷ Ibid., p150/485

⁸ Ibid., p151/485

⁹ Ibid., pp100&152/485

¹⁰ Ibid., p360/485

¹¹ Ibid., p324&325/485

MRD low flow channel.”¹² What impacts this will have on water quality exiting the MRD due to MRD flows mixing with pit lake water are not discussed.

15.1.3 Post-Rehabilitation Monitoring and Maintenance

“The exact monitoring and maintenance requirements will be determined following final detailed rehabilitation design. The goal is to minimise the monitoring and maintenance efforts as far as practicable, bringing them to a level comparable to that of the surrounding land uses.”

The lack of any plan for ensuring the quality and quantity of environmental flows to Durt’Yowan is concerning. The perception is that the DRMP completely under-values the critical role of environmental water in the region’s socioeconomic prosperity.

Climate Change

“The guidelines state that confined aquifers generally respond slowly or very little to changes in climate and it is unlikely that any climate-induced changes would be discernible within the 50-year planning horizon of the guidelines. Therefore, the guidelines do not consider the effects of climate change on the confined aquifers.”¹³

A drier climate, calculated to reduce surface environmental water flows, will affect groundwater recharge. Therefore, the DRMP must consider that changes to groundwater volumes will occur. What the climate will be like 50 years’ time is really a matter of guesswork but, if the world is unable to significantly reduce emissions (which seems likely), the climate will be increasingly unstable with repeated bouts of extreme drought, flood and possibly cyclonic events. Consequently, historical rainfall records and 2025 projections are unreliable predictors of conditions half a century away.

The DRMP does recognise climate uncertainty and some of the adverse effects of the pit lake option. How they are to be avoided, minimised or managed is not fully articulated.

Factors Controlling Water Quality In Mine Pit Lakes

There is no doubt that a *“thorough understanding of long-term water quality and ecological aspects of pit lakes is required to comprehend the risks and opportunities pit lakes present as post-mine closure option (McCullough & Vandenberg, 2020).”¹⁴*

And, as Trop states: *“prior to geochemical modelling, hydrodynamic models need to be incorporated to account for mixing dynamics of the lake. Ideally, all the models need to be coupled to give a better understanding of the water quality. Such coupling needs to become the industry standard, but still require research and development (Schultze et al., 2022) and the collection of specific, relevant ‘hard’ data.”¹⁵*

Environmental risks listed include:

- Contamination of pit-lake water
- Poor pit-lake water quality pollutes Morwell River and Latrobe River
- Chemical risk from water quality in pit lake.¹⁶

¹² Ibid., 15.1.4 Morwell River Diversion

¹³ Ibid., p156/485

¹⁴ Cited in Trop Water Pty Ltd, *Latrobe Valley Brown Coal Mine Pit Lake Water Quality Review*. 31 August 2022, p18/40

¹⁵ Ibid., p18/40

¹⁶ Op. cit. EnergyAustralia Yallourn Pty Ltd, 11.5.6 Environmental

Yet, the DRMP only assures us, without evidence, that the pit lake water quality will be perfectly acceptable.

The fact that “overall” the quality of the treated mine water currently discharged to the Morwell River is “well-managed...with effective treatment processes in place to ensure compliance with regulatory standards and minimal impact on the receiving waters”¹⁷ is not indicative of pit lake water quality into the 50-year future.

The DRMP admits the pit lake will be contaminated with various toxins, e.g. flocculants, ash slurry and acidic wastewater.¹⁸ High acidity and high metal concentration are likely to be present.¹⁹ The control strategy is to use lime or “some equivalent treatment train to meet water quality requirements and/or guidelines (e.g. above pH 6).”²⁰ However, other treatments are more suitable for small projects, such as garden soils. The large quantities of lime needed to reduce acidity in such a body of water will be very expensive and possibly unobtainable.

The feasibility of creating a “non-polluting” pit lake that is safe for recreational use, e.g. fishing or swimming seems unrealistic.

Risk Assessment

The risk assessment process outlined in the DRMP is thorough; but realistic solutions proposed are unconvincing.

Conclusion.

The purpose of the DRMP is to address the fact Yallourn is a declared mine which, by definition, has “*geotechnical or hydrogeological factors within that pose a significant risk to public safety, the environment or infrastructure*”.²¹

EAY determines that these risks will be overcome by a full pit lake “*to achieve a safe, stable, sustainable and non-polluting landform*”.²² It states that this option embodies its commitment to the triple bottom line principles of meeting economic, social and environmental needs.²³

The only proposal since the inception of rehabilitation plans for the three coal mines has been to fully fill the pit voids. Partial fill is a recent concession in response to the need to protect the health of the regional waterways system from total collapse. Either way, this is a very unsatisfactory solution, especially for the environment but also for the Latrobe Valley communities. **But: The full pit lake option is the very worst outcome for the river system and the Gippsland Lakes.**

The DRMP displays a mindset stuck in the thinking of the mid-twentieth century. Its lack of imagination is uninspiring and, frankly, quite depressing. Other options must be explored. Given our evolving technological capacity, new engineering solutions are possible. Perhaps the voids could be reused for solar generation to utilise the existing transmission infrastructure, create jobs and enliven the social and economic life of the Valley. As it stands, transforming a dirty mine pit into a pristine Lake Geneva is a fanciful dream.

¹⁷ Op. cit. EnergyAustralia Yallourn Pty Ltd, p113/485

¹⁸ Op. cit. EnergyAustralia Yallourn Pty Ltd, p154/485

¹⁹ See Trop Water Pty Ltd, Table 3. 1: Host geology conditions and resultant pit lake water quality (adapted from McCullough, 2008; Johnson and Wright 2003), p19/40

²⁰ Op. cit. p409/485

²¹ Ibid., p7/485

²² 11.2 Objectives

²³ 1.3 EnergyAustralia Yallourn Pty Ltd, Values and Policies

The vast mine chasms are a cautionary reminder of how the benefits enjoyed over the past 50 years come at huge expense to future generations. We are now those future generations, charged with solving the problems the State Government never examined when it dug up the Valley for electricity. Inevitably, the generations to come will bear the consequences of decisions made today. So, our governments must ensure that mine rehabilitation does not result in even more environmental destruction.

It is essential that the risks associated with Yallourn's DRMP be assessed in the context of the cumulative effects of all the declared mine rehabilitation plans. Any water diverted to mine rehabilitation must not compromise the health of our rivers and the Lakes. Clean freshwater is the lifeblood of our communities, Traditional Owners and the other species who share Gippsland's bounty. Therefore, it is a fundamental imperative that the life source of Durt'Yowan and the mighty Gippsland Lakes is vigilantly protected and enhanced in perpetuity.

Only the future, when it comes to pass, will tell if we've done the right thing.