

Feedback

Energy Australia Yallourn Draft Mine Rehabilitation Plan (DMRP)

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Introduction

Friends of Latrobe Water (**FLoW**) are active stakeholders with the Latrobe Valley Regional Rehabilitation Strategy (LVRRS) on coal mine rehabilitation. Consistently with its purpose, **FLoW** takes every opportunity to inform, educate and support Latrobe Valley and broader Gippsland community to take action to:

- a) ensure legacy contamination from the coal industry and other heavy industry are remediated; and
- b) facilitate a positive post-mining legacy in the Latrobe Valley, and for Victoria more broadly, to contribute to the future social and economic prosperity of the region in a manner that safeguards and protects the surrounding environment and the health of the community.

Our work revolves around good governance, transparency and accountability to inform appropriate and rational decision-making across multiple departments, regulators, agencies and mine operators.

Overview

The draft Declared Mine Rehabilitation Plan (DMRP) is a partisan document and there appears to be a significant attempt to put a good gloss on all issues such that the potential risks are diminished or deliberately underweighted. This seems to give the community a rosy view of the outcome when in fact a very different scenario is also possible or probable.

The last EES for the site was done in 2001 – there are significantly changed circumstances including the onset of climate change and also the EES for mine closure for Hazelwood where a Federal EPBC Act water trigger has been called. Victoria is also a respondent to the Ramsar convention to the Ramsar Convention and the proposed lake filling method of allowing the Morwell River Diversion (MRD) to fail and for the river to connect to the mine pit is an unacceptable change. It is not good enough to have a process conducted by EAY where local groups are cajoled and browbeaten behind closed doors.

At a community consultation in 2018, the lake proposal was presented to the local community without noting constraints, downstream impacts or broader regional impacts. It is not consultation when the miner tells the uninformed community what they want to hear – another lake to recreate on, selling an unattainable pipe dream to garner support.

The plan to reduce the existing levee structure to a much smaller rural levee to only allow environmental passing flow means less to the Latrobe River System which has profound implications for water accounting of the Latrobe system that is yet to be fully identified, acknowledged or understood.

A new EES process must be undertaken in a rigorous manner.

Limitations critique

The DMRP document is heavily caveated at the beginning that seriously devalues the veracity of the contents and information provided. This limitation includes the followings statements:

“Statements of fact in this DRMP are made as at June 2025 and are subject to change or updating from time to time. These statements are made on and are applicable as at, June 2025 and no representation is made as to their accuracy, completeness or reliability after this date.

Forward-looking statements are not statements of fact, guarantees, predictions or forecasts of future performance or outcomes, and are subject to both known and unknown risks, other uncertainties and may involve elements of subjective judgement and assumptions. These statements may be affected by limitations in data or methodologies, inaccurate assumptions or known and unknown risks, many of which may lie beyond EAY’s control

No representation or warranty, express or implied, is given as to the accuracy, completeness or correctness, likelihood of achievement or reasonableness of any forward-looking information contained in this DMRP.Past performance and outcomes cannot be relied on as a guide to future performance and outcomes.”

This publication may contain information of interest to you, but EAY, its affiliates, directors, officers, employees, and agents:

- do not guarantee that this DMRP is without flaw or error of any kind, or is appropriate for any purpose for which you may use it; and*
- to the extent permitted by law, disclaim all liability and responsibility for any decisions or actions which you may take and for any damage or losses you may suffer as a result of your use of, or reliance on, this material.*

One is left to wonder as to the total worth of the document as to any viable outcome – are they simply a bunch of desires that may never be realised???

The technical studies simply do not support pit lake option as the optimal *safe, stable, and sustainable solution* for the Yallourn mine site.

Fire Risk

EAY want to drown the coal to reduce the risk of a coal fire because the steep mined batters on many sides precludes covering the faces with overburden/topsoil. They have a real risk of unstable batters and fire risk yet creating full pit lakes risks collapse of the MRD. What will be the trade-off? This relates to the critical loss of Morwell River flows to the Latrobe River.

Clash of opinions

As a background, **FLoW's** previous submission (dated 15 December 2024) to AGL's application for a new bulk water entitlement (BWE) for mine rehabilitation,¹ again stated there are critical omissions with the Alluvium Technical Risk Report for water access² (Alluvium and HARC 2023) which underpins the Latrobe Valley Regional Rehabilitation Strategy (LVRRS) guidance amendment³ and the conditions set for miners to when and how they take water from the river system. That report failed to consider the critical loss of Morwell River inflows to the Latrobe River via changed flow conditions with the MRD.

Therefore, the Alluvium and HARC 2023 report is not credible and the LVRRS Guidance Amendments are flawed because flows in the Latrobe River system are over-stated.

This paragraph in the DMRP is a concern as EAY explicitly implies Alluvium and HARC 2023 are under-stating water flows which therefore overstates environmental risks, whereas EAY state the risk is low.

Figure 11-9: Environment risks assessed across all phases⁴

There is one scenario related to reduced / changed water use and associated impacts on downstream environments that retains a high risk ranking throughout the phases with the risk rated as per Type of conditions that could apply to water access for Latrobe Valley mine rehabilitation and associated risks and benefits (Alluvium and HARC 2023). It is noted that EA Risk Assessment scopes don't align with Alluvium assessing the river system in its entirety with cumulative impacts and EAs take being about 2-3% of actual passing flows. Whilst Alluvium rate risk to the environment as high, Yallourn's isolated impact could be considered as low. Furthermore – whilst shifting from the existing Bulk Water Entitlement to the Rehab Bulk Water Entitlement gives improved conditions in the Latrobe River, the risk remains high and unchanged.

This is what happens when government and consultants do not use or been made aware of all the facts as facts matter.

¹ <https://engage.vic.gov.au/project/potential-water-access-for-latrobe-mine-rehabilitation/page/submissions-and-feedback-report>

² https://www.water.vic.gov.au/_data/assets/pdf_file/0031/684445/Technical-report-Latrobe-surface-water-access.pdf

³ The LVRRS Amendment provides guidance to ensure that any surface water accessed for Latrobe Valley mine rehabilitation will not diminish the water entitlements of existing water uses and values in Gippsland, if a water-based rehabilitation plan is approved.
https://resources.vic.gov.au/_data/assets/pdf_file/0004/984082/Latrobe-Valley-Regional-Rehabilitation-Strategy-Amendment.pdf

⁴ DMRP PDF p402/485

MRD structural integrity

The DMRP is flawed as it does not discuss the structural integrity of the MRD in a precise, comprehensive and considered way, particularly under a drowned lake scenario. The MRD is constructed of locally sourced sodic, slaking and dispersive material and in which there have been a number of known failures due to either piping, block failure or overtopping events. Severe rilling and sheet erosion are also evident in overburden dumps and exposed batters. The MRD's long-term structural integrity **must be maintained** to protect flow connectivity and ecosystem links to the Latrobe River and Gippsland Lakes.

The draft DMRP has two specific intents for the Morwell River Diversion:

1. prepare the MRD levee for rehabilitation which EAY have proposed to be full pit lakes; and
2. sustain the MRD levee into perpetuity.

This creates two distinct pathways of action but multiple mechanisms for failure. It is relevant to reference the 2012 collapse of the MRD and subsequent 2013 Seddon report, *Review of Failure of Morwell River Diversion*⁵ (Seddon 2013) highlighting past systemic failures and key lessons that have been applied to this DMRP to minimise the risk of a similar event in the future. Simply, the loss of the MRD would be catastrophic for the whole river system to the Gippsland Lakes.

Seddon 2013 emphasised the use of incorrect materials, lack of soil assessments, a failure to fully integrate design aspects into risk assessments, too steep batters and total failure to apply construction compaction. Basically, the construction of the MRD did not follow correct procedural compliance to construct a levee of this size.

Yet, 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.*⁶ Are EAY making the same mistakes again as evidenced in this DMRP.

In short, the levee was never designed to retain water with soil and water natural enemies, but the different cross-section soil zones remain the same with the same dispersive soils. The main remedial works done in 2012, 2014 and 2021 were clearly insufficient to allow the MRD levee to transport Morwell River full flow inputs into the Latrobe River. The defence mechanisms hypothesised in the DMRP are, themselves, pathways to MRD batter failures.

Sodic soils

Overburden in Township Field is sodic also containing high sulfates causing sulfuric acid lowering pH. Lower pH mobilises heavy metals leading to highly acidic and toxic water.

⁵ <https://web.archive.org/web/20170311180535/http://earthresources.vic.gov.au/earth-resources-regulation/information-for-community-and-landholders/mining-and-extractives/latrobe-valley-coal-mines/regulatory-reviews/yallourn-coal-mine-inquiries/review-of-failure-of-morwell-river-diversion>

⁶ DMRP p324&325/485

The reliance on lime for stabilisation in the absence of full geochemistry material analysis and evaluation is irresponsible as geotechnical and geomechanically reviewed design plans are linked specifically to that disciplines field of expertise which are to compliment and provide supportive evidence how each can function as one. Shortcuts are not acceptable when potential for failure is high and impacts outside of mine licence boundary are totally foreseeable.

The levee floodplain is built of dispersive and sodic soils with vegetation required to help prevent erosion. Landloch 2022 noted erosion may become an issue across the site if soils have not had gypsum incorporated. Sodicyty degrades soil properties by weakening the bond between soil particles, prevent dispersion of soil particles and accelerates erosion which can cause gullies and tunnels to name a few. It is not stated if gypsum will be applied across the site.

The DRMP does not guarantee the integrity of the MRD

The arrangement put forward in the DRMP will almost certainly bring about the failure of the MRD through the side caste weir arrangement leading to catastrophic failure. It appears that no soil science expertise (as distinct from geotechnical) has been engaged to provide advice. One of the major design principles in sodic soils is not to have any overtopping of top of banks or levees, as catastrophic failure including scouring and mass slumping will be rapid. The design of the side caste weirs seems imprudent.

- The cross section of the proposed MRD treatment at these overflow points gives very little confidence the designers understand the risks of the proposed design
- Failure of the MRD is foreseeable but is not discussed at all. There should be no side casting into the township or East Field pits at all – except through a sustainable hard engineered structure. The current HDPE pipeline overbank structure to the Yallourn Fire pit from the Morwell River flood plain is noted and if considered a long-term viable structure retained.
- Similarly, there is no discussion on the performance of the MRD as an engineered earthen structure under ponded water conditions. There has been some discussion on overall settlement of the structure in a dry form but nothing as a drowned structure. This is a serious omission. It is suspected that slumping will increase under saturation conditions
- The discussion of wave impact on the structure does not consider the erosion and dispersion of the sodic soils under wave conditions as the lake fills to various levels. Is the proposed rock beaching going to be applied continually as the lake fills? If not significant erosion of the batters is likely.
- It is foreseeable that the proposed arrangement of side caste weirs will result in the catastrophic failure of the MRD and hence direct connection of the Morwell River to the mine void rather than via a viable and sustainable MRD. This is not discussed or analysed and is barely rated as a risk under risk management. The three side caste weirs must be deleted, and the levee profiling subjected to independent review by eminent soil scientists, structural and geotechnical experts.

- Simply the MRD must be made sustainable and be retained to see the conveyance of a minimum 100 Year ARI event for the Morwell catchment (minus any flood skimming upstream for both Hazelwood and the Yallourn township fields), without structural failure.
- The proposed approach of lowering the existing MRD levees is counter intuitive to the sustainable retention of the MRD through the mine as regular over topping, will surely accelerate and bring about catastrophic failures of the whole MRD structure. This will result in total loss of the integrity of a connection of the Morwell River through to the Latrobe River. The levees must be retained and have clear freeboard against the projected floods.
- The proposed treatment of the conveyor tunnel conduit with inserting of HDPE in a back fill proposal, in the final arrangement is liable to collapse failure. A more robust method of grouting of pipelines for structural integrity must be provided.
- The true threats and risks to mine batters from slumping, especially the proposed reshaping of the MRD have not been identified so the seismic modelling is unreliable.

Other stability issues

The SEC is on record of expressing concern about the need to surcharge the overburden on the western batters of the YTF to mitigate a radial slip failure risk of the western batters from the fault line of the Haunted Hills – this appears to have been not completed. The risk of an underwater subsidence has not been evaluated in the DRMP.

- The unconsolidated overburden/fill placed on the YTF has never been dressed or finished and is uneven and subject to through runoff and also groundwater disturbances. Concern is expressed about the stability of this material as in drowned conditions - it will slump.
- No connection to the void should be provided for the Latrobe River flood – except via the far north easter interface with the Latrobe River and this must only be via an engineered structure similar to that at Hazelwood.

Discharging floodwater

Under the DMRP, MRD levee integrity is to discharge floodwaters into the Yallourn Township Field (YTF) and provide flood protection via construction of 3 spillways. This is contentious and there are ways of improving the structural integrity of the MRD.

However, EAY may not want to invest in the MRD or part of a prearranged deal!

Whilst overtopping of the banks towards the southern end has been mooted as being key, it is FLOW's position that the MRD should be treated with chemical fixation methods to lower dispersibility and slaking of the embankment.

Once the mine pit lake forms, the dispersive and slaking material of the MRD formation will inevitably disperse, erode and totally fail.

Under this scenario, which is highly foreseeable, low flows up to the 2year ARI and environmental flows will cease connection to the Latrobe River.

EAY and its contractors were publicly forthcoming that their design approach to the MRD when the Maryvale and East Fields were progressed would save up to \$80M⁷ – but at what cost long-term? There is still a case for the creation of an eastern diversion channel around the Mine as originally projected.

Coal Pit Lake water quality

There is a substantial lack of detailed analysis and scientific interrogation of likely water quality of such a deep and poorly mixed Lake. There are many assertions as to outcomes without the necessary independent supportive information. No mention is made of the fact that the lake will suffer from differential stratification, and the lower levels will be anoxic leading to poor redox conditions and liberation of metal species in acidic conditions. The acidic conditions are liable to be the result of sulphate reduction in the stratified and anoxic lake. Brown coal and the groundwater or leaching seam water is high in Sulphates. The notion of lime treatment is a bit farcical as no discussion is made to the likely amounts of lime needed to treat the whole lake – it will be huge!!!

Who is going to add lime into perpetuity?

- No mention is made of the likely Mercury and Nickel contamination issues from the coal and if the lake takes catchment waters. The EPA has recorded the presence of Mercury and Nickel in the catchments.⁸
- It is foreseeable that the Lake will not be conducive to supporting a sustainable invertebrate and fish assemblage and may be essentially abiotic. There is no substantive analysis to support the claims that the lake will be a viable ecosystem and have high recreational values.
- If the lake receives large volumes of catchment water the lake is likely to progress to Eutrophic state over time – progressively cycling into green, then blue green as it matures and accumulates
- There is little discussion of the likely performance of the overburden dumps and uncompleted fills of the Yallourn Township Field (YTF). It is foreseeable that all fill and batter cover material will contribute to a highly turbid Lake.

⁷ RTL entered into an alliance agreement with the owner, resubmitted the EES, obtained revised planning approval, overcame technical difficulties associated with the foundation materials, negotiated a new site agreement and undertook construction of the works for completion within the original time frame and at a saving of some \$80m to the client.

MORWELL RIVER DIVERSION PROJECT Howard Spark1 Laurice Temple2

⁸ Elevated lead, nickel and mercury results found are most likely due to local geology
<https://www.epa.vic.gov.au/about-epa/publications/1697>

- The presence of significant amounts of vegetation (particularly in the Township field will contribute to anoxia when drowned.

Mine water discharges and Latrobe River water quality

In 2012, EAY received an emergency discharge licence under Section 30A (Environment Protection Act 1970) from the Victorian EPA to discharge water from the Township Field Fire Services Pond (FSP) to the Latrobe River up to the end of August 2021.

This was required in preparation for necessary repairs to a section of the Morwell River Diversion (MRD) because of flood damage during June 2021. Jacobs⁹ (Jacobs 2021) conducted a water quality monitoring program in the Latrobe River commencing June 15th – August 13th, 2021, to monitor any potential water quality related impacts from the EAY's Fire Service Pond (FSP) discharge.

Of course, what's relevant, Jacob did not collect their own monitoring verification data to prepare the report rather acquired data from EAY or other sources and presumed accurate. The report has a lot of presumptions and there is no reference to sediment testing.

The interesting point of the EPA discharge licence is that the failure of the MRD structure resulted in a large volume of water entering the Yallourn Coal Mine that needed to be discharged to Latrobe River via an EPA emergency discharge licence – why? Because the surface water that was discharged via a coal pit is deemed of poor quality to achieve water quality objectives to protect environmental values of waters for the Latrobe River.

Not OK then but OK in the future under the DMRP to discharge waters via a flooded coal pit when there is clear evidence of ongoing deterioration of water quality.

As a background, when enquiring about the plans for a new Waste to Energy plants at Australian Paper, **FLoW** was made aware in 2018 that the regional Traralgon EPA office has no sediment monitoring data (baseline and ongoing) for the Latrobe River. Yet the Latrobe River is treated like a drain to discharge EPA approved licence discharge of pollutants and toxicants from numerous industries.

Even with review of SEPPS in 2018, Government appears happy that Latrobe River remains a blind spot for toxic and cumulative pollution transparency and accountability.

Loss of flows to dilute pollutant discharges

Regular and normal water sampling of the Latrobe River surface water downstream of Yallourn to Thoms Bridge appears to not always be after timed wastewater discharges from the mine. Where a range of flow conditions can be captured it may not include the heavier mine discharge pollutant loading. Counter to this is where flows are important for modelling that discharge volumes can be significantly skewed.

⁹ Jacobs Water Quality Assessment of Emergency Discharges from Morwell River Diversion to Latrobe River

It is extremely frustrating where all reports duck-shove reasons for higher or elevated concentrations of certain pollutant indicators but no one regulator enforces mandatory all-of-system data testing and follow-up analysis of report assumptions. The only poorly executed reactive option is to provide dilution from upstream flows to reduce and disperse pollutants concentrations in the mixing zone of the Latrobe River. This is EPA condoned but not best practice and certainly not managed.

(d) (Issues with mixing zones) the adoption of more stringent environmental quality indicators, particularly with respect to electrical conductivity and toxicant objectives, will inevitably result in greater emphasis upon, and prevalence in the use of, more complex attenuation measures, particularly mixing zones. In this regard:

(iii) requiring greater use of mixing zones will have the unintended consequence of exacerbating pressure on already stretched water resources, and this will become more pronounced as the need to demonstrate continuous improvement increases the required dilution factor, potentially requiring greater volumes of water to be fed into the system, or fewer flows reaching the Morwell River particularly during summer.¹⁰

The Jacobs report noted an assumed dilution ratio of the emergency discharge for the average volume of 63 ML/d, with a maximum of 90 ML/d,... Passing flows in the Latrobe River ranged from 1000 ML/d to 3500 ML/d with Sinclair Knight Merz's Environmental Risk Assessment of the same collapse (SKM 2012) notes,

EnergyAustralia estimates that the average daily flow rate of water through the Morwell River diversion is more than half a gigalitre, which equates to more than 200 Olympic-sized swimming pools which was normal for the winter period.

The point is dilution requirements are essential from coal pit discharged waters to the Latrobe River to meet Water Quality Objectives. Low flows result in incomplete mixing that has not been addressed in the DMRP. The 2012 ecological risk assessments for the emergency discharges note turbidity as problematic.

The longer the duration that turbidity is elevated the higher the likelihood of environmental impact and the longer the recovery time needed. Additional dilution from downstream tributaries further reduces any risk to Lake Wellington.¹¹

The whole mine site catchment area is riddled with stagnant water, contaminated soils & sediment loading from decades of coal mining and demolition materials with diesel and fuel/chemical storages, PFAS, PCBs Polychlorinated bi-f-nals (PCBs) which are carcinogens from substations, asbestos fibres, thousands of tons of coal ash, naturally occurring radioactive elements and heavy metals like mercury, selenium, cadmium, manganese.

This is the makeup of the future recreation lake for swimming, boating, aquatic life. Much is made of the proposition that the Pit Lake will form a wonderful community asset when full!

¹⁰ EnergyAustralia 2018 State Environment Protection Policy (Waters) Review

¹¹ SINCLAIR KNIGHT MERZ 2012 Morwell River Diversion Collapse Environmental Risk Assessment p4 of 105

The draft DMRP is EAY's plan to make the mine site safe, stable and sustainable, filling the mine voids with water with a view to creating a lake that locals and visitors can enjoy, and wildlife can call home.¹²

Coal ash dumps

There is mention of coal ash in relation to risks but it was hard to discern if there is a specific section on management of coal ash dumps and contaminated land rehabilitation. Section 11.5.9 Yallourn North Open Cut (YNOC)¹³ notes the following which should be in this plan given the need for priority of works/tasks checklist and clarity of DMRP's interaction with other regulatory processes. Specifically, FLoW has experience with EPA's past management of coal ash dumps and remedial actions for historical contamination over the 3 mine sites and find even EPA's current best practice for ash dumps treated as landfill is totally inappropriate.

The YNOC contains the Twin Ash Ponds, Ash Landfills and an Industrial Waste Landfill which are managed under EPA licences and as such, this area was subject to a separate assessment and is treated as a separate domain for the purposes of rehabilitation.

Peak pollution from coal ash dumps occur 70-100 years after operators stop and risks associated with this should be clearly defined by operators in the case that land is transferred to new landowners or relevant authorities.

A total of 27 risk scenarios were assessed for YNOC.

The risk scenarios assessed for this area are:

- Contamination or degradation of water quality in the Latrobe River resulting from poor quality ground water flowing from YNOC to the river
- Contamination or degradation of water quality in the Latrobe River resulting from poor quality surface water flowing from YNOC to the river
- Contamination or degradation of water quality in the Latrobe River resulting from generation and release of gasses
- Contamination or degradation of air quality resulting from generation and release of gasses and odour into the atmosphere
- Contamination or degradation of air quality resulting from generation and release of dust into the atmosphere
- Generation of noise and vibration
- Fugitive lighting
- Uncontrolled release or spill of contaminants
- Surface water recharge
- Elevated groundwater levels
- Seismic
- Surface water recharge
- Elevated groundwater levels

¹² Executive summary draft DMRP

¹³ DMRP PDF p385/485

- Ignition of coal in YNOC

Impacts of a terminal Lake on the Morwell River, Latrobe River and Gippsland Lakes

The Morwell River **must not** end in a terminal Lake for the Morwell River, as there will be very little transfer of flows or critical organic matter connectivity into the Latrobe River systems. No amount of works on the Latrobe River will be able to offset or rehabilitate for the loss of organic matter (fine and coarse) plus fish, invertebrates and mammals needed for the maintenance of downstream reach ecosystems.

The Latrobe River will be a depauperate ecosystem as it is currently starved of all but dissolved organic matter due to the impacts of the impoundments of Lake Narracan, Blue Rock Reservoir and Moondarra Reservoir. The Morwell River provides important coarse particulate organic matter and must continue to do so.

- There has been no review or analysis of the flow contributions to the Latrobe River system and indeed Gippsland Lakes from Morwell River. In the event of a Lake forming at the end of the Morwell River, the impact on the already over diverted Latrobe River flow balance will be marked and lead to increased saline intrusion into Lake Wellington and the Lower Latrobe and Thomson Rivers and that of adjacent Ramsar Wetlands.
- The diversion of a significant portion of the Morwell River Mean Annual flows into a pit lake will have a significant impact on the ecosystem and sustainability of Gippsland Lakes and the Ramsar wetlands and in particular the need to purge marine water from Lake Wellington. There has been no discussion of this foreseeable outcome – a major omission and one that will require a full EES and also a water trigger under the EPBC Act.
- The base and flows up to 5 Year ARI must pass through unimpeded as this ensures connectivity of food webs and energetics critically needed by the Latrobe River and Lake Wellington for the maintenance of ecosystems. There should be no diversions into either the Township Fire Pond or the Maryvale/Eastfield area before this is achieved
- The loss of the majority of the Mean Annual Runoff of the Morwell River catchment through to the Latrobe River will see a substantial reduction in flows down the Latrobe River and also to the Gippsland Lakes. This threatens the Ramsar status of the Lakes and wetlands and constitutes a reportable action under the Ramsar Agreement. (Changed water regimes—alterations to the frequency, duration or season of inundation including river regulation, water extraction, drainage or changes to the catchment flow that interrupt the natural ebb and flow of the wetland system). The diversion of the majority of the flows of the Morwell River will also present a water trigger under the EPBC Act. A new referral must be made under this Act.
- It is apparent that diversion structures have been already installed into the southeast portion of the Township Field Pond.

- It is proposed to seek a new Bulk Entitlement from the Latrobe Water systems to provide 27GL/year of water to fill the lake. **This should not occur.** There are more critical and higher value/best uses of potable water in the Latrobe system including potable supply, maintaining the ecosystem and providing for controlled access for irrigation for food supply. The Minister for Water must not accede to such an application and must consider higher and better uses plus also consider price of water be it from the BWE or flood skimming and a low peak extraction rate far less than proposed by EAY. Seasonal diversion limits and controls must apply.
- Consideration must also be given to the externalities of the significant (total?) water take from the Morwell River for the Lake Proposal and hence in the overall Latrobe River system.
 - ❖ What if the MRD fails catastrophically and the Morwell River terminates in a pit lake?
 - ❖ Will this mean that the Thomson Bulk Entitlement must be reconsidered to increase the base flow by >100% to offset the flow losses from the Morwell River such that impact of a pit lake proposal on the Gippsland Lakes and the Ramsar wetlands is reduced.
 - ❖ This then affects the BWE balance of the Thomson with Melbourne having a reduced take for potable water. This is likely to impact on the price of water for Melbourne and the gross yield, potentially resulting in more Desal water being needed at a higher cost.
- The Pit Lake proposal will impact on the fisheries and will be felt as a loss of Tourism for the Gippsland Lakes ecosystem and its fishery– this will result in significant decline in the regional economy.
- It is apparent that the EGCMAs are not alert to the prospect of the MRD failing and its consequences.

Groundwater

Declining groundwater levels

Groundwater within the Gippsland Basin originates from rainfall-derived recharge (and locally from stream leakage), which drives the regional groundwater flow from elevated areas onshore to lower areas offshore. But levels of groundwater extraction from the Latrobe Aquifer are well in excess of annual recharge with pumping of groundwater for mining and offshore oil and gas being the main culprits for aquifer depletion.

Knowledge gaps exist on all 3 coal mines increasing groundwater extraction concurrently in a predicted drying climate with less rainfall for the already flow stressed Latrobe River system and reduced connectivity with groundwater systems, stream leakage and reduced baseflow discharges to wetlands.

Yallourn's DMRP Hydrogeological Conceptual Model Report by GHD¹⁴ notes the following,

...The implication of these water management activities is that the nature of surface water – groundwater interactions, particularly the baseflow behaviour, can be difficult to characterise. Studies undertaken by the Victorian Government indicate that major water courses, such as the Latrobe River and Morwell River, are dominantly gaining systems despite the long-term depressurisation effects of the coal mines and power stations (GHD, 2015a). This is consistent with the conceptualisation that thick sequences of coal within the Yallourn Formation and Morwell Formation act as effective regional aquitards, minimising the effect of depressurisation at depth on shallow groundwater that is maintained by recharge.

Surface water studies have also been completed as part of the LVRRS investigations (Alluvium, 2020), which concluded from previous studies that baseflow to the Latrobe River from Lake Narracan to Scarnes Bridge accounted for 24% of the average daily streamflow and the reach has been classified as an overall losing stream with the largest losses occurring when the stream flows were the highest (GHD, 2013b). Groundwater was estimated to have contributed to 72% of daily flow to the Morwell River in the upper reaches (SKM, 2012) and surface water - groundwater interactions are likely to be negligible in the lower reaches, with the depressurisation at the Hazelwood Mine resulting in locally losing stream conditions close to the mine.

- the Morwell River is losing surface water to groundwater due to the lowering of groundwater levels from dewatering the M1 and M2 groundwater aquifers and further likely that with any increased groundwater approved take, the Morwell River will be disconnected from the groundwater system. It is unknown how the drawdown impacts from Hazelwood will affect the Morwell River and surface water total flows into Latrobe River.
- the Latrobe River system is under significant stress from water shortage, and future projections on water availability in the Latrobe River system indicating there will be insufficient water available to meet environmental demands. This would add to reducing the current or future utility of the water resource for third party uses, including environmental and other public benefit outcomes.

Seismic risks

The true threats and risks to mine batters from slumping, especially the proposed reshaping of the MRD have not been identified so the seismic induced modelling is unreliable.

The following 2 points are a concern when considering Melbourne's drinking water supply.

The Thomson reservoir case is relevant for Yallourn as it is located 35 km north of the mine and the fault understood to be associated with the main event (magnitude 5.0) in 1996 is the Yallourn Monoclinial Fault which runs close to Yallourn.

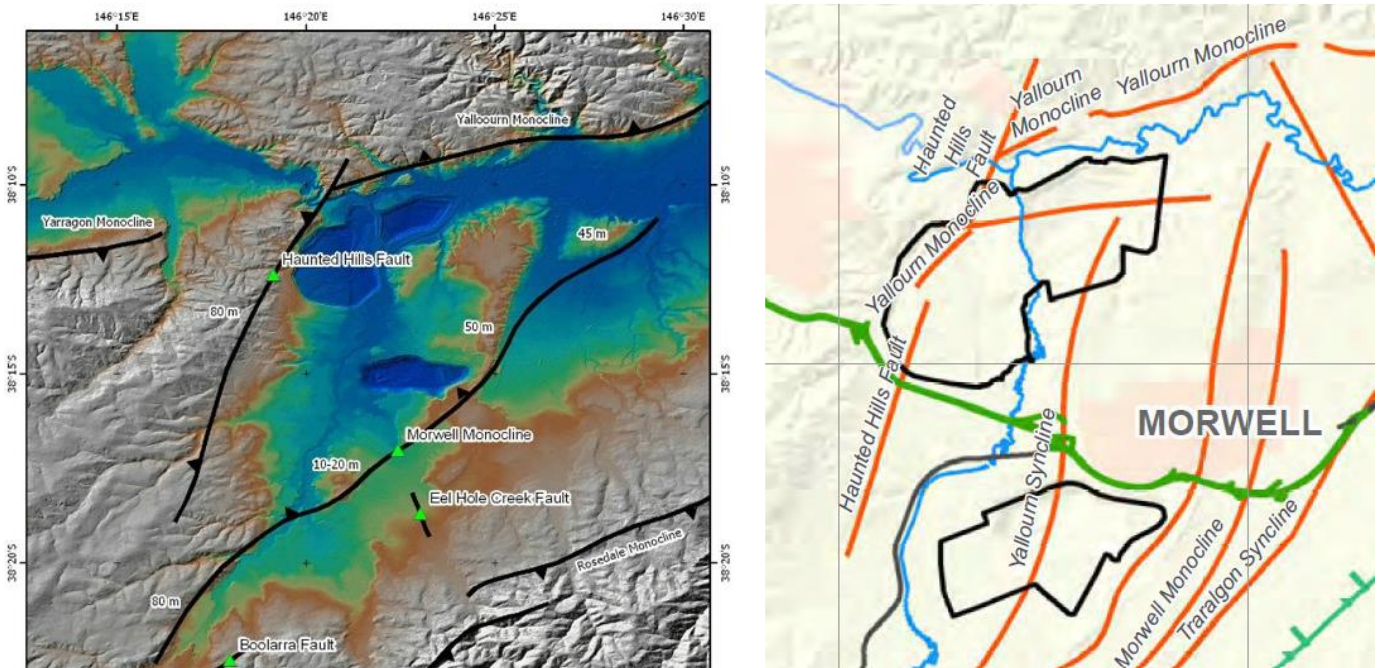
¹⁴ 2023 Yallourn Rehabilitation Hydrogeological Modelling Report PDF p44/139

The Thomson Reservoir is located on the hanging wall of the Yallourn Monoclinial Fault, whilst Yallourn is located on the footwall.

The location of the reservoir with respect to the fault is important. A reservoir existing on the footwall of a reverse or normal fault, or over one block of a strike-slip fault would generally have a stabilizing effect, while a reservoir existing on the hanging wall of a reverse or normal fault, or directly over a vertical strike-slip fault, would have a destabilizing effect.¹⁵

The DMRP Triggered seismicity section¹⁶ has irresponsibly ignored the very coincidental 2012 Moe/Thorpdale earthquake which occurred 2 weeks after a catastrophic failure of the MRD resulting in a sudden mass volume release of water (6 billions litres) entering the pit onto an unstable subsurface. The role this weight of water on pore pressure has strangely evaded further review from the preliminary investigation.¹⁷

The following snips highlight the numerous pathways geotechnical seismic pressures can undermine batter stability via earthquakes but more likely to be caused from mining induced slippage because miners excavated where they should not have.



Third St on the western batter is highlighted because the very practical way of naming streets numerically reveals First and Second St is missing – where?

¹⁵ PDF p356 of 485

¹⁶ DMRP 8.17 Lake Triggered Seismicity PDF p355/485

¹⁷ Conclusions *The preliminary aftershock study of the 2012 Moe/Thorpdale earthquake has identified two major phases of activity and provided some provisional constraints on the faults that generated the majority of events. One of the most interesting aspects of the aftershock sequence is the mode change that occurs shortly before the main aftershock. We have suggested that such a change is compatible with commencing of activity on a secondary structure set striking NNE, such as the Haunted Hill Fault.*

The 2012 Moe/Thorpdale earthquake: Preliminary investigation

Dan Sandiford, Gary Gibson, Tim Rawling <https://aes.org.au/wp-content/uploads/2013/11/25-SANDIFORD.pdf>

Slipped into the mine!



Conclusion

The DMRP has not given informed stakeholders any confidence its development is well considered. Certainly does not meet community expectations the cost burden in the near future will not be borne by tax payers with the Latrobe River system being the trade-off. The cumulative risks to the surface and subsurface of the natural regional boundary has been greatly understated. EAY have not demonstrated statutory obligation can be met nor the that the post-mining landform will not result in a decline or decreased economic value of broader environmental values.