Explanatory note: guidance on the type of access arrangements that could apply to surface water from the Latrobe River system for the purpose of mine rehabilitation

VICTORIA
State Government
Energy, Environment and Climate Action

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Sale Common Nature Conservation Reserve provided by Dr Andrea Ballinger.

We acknowledge and respect Victorian Traditional Owners as the original custodians of Victoria's land and waters, their unique ability to care for Country and deep spiritual connection to it.

We honour Elders past and present whose knowledge and wisdom has ensured the continuation of culture and traditional practices.

DEECA is committed to genuinely partnering with Victorian Traditional Owners and Victoria's Aboriginal community to progress their aspirations.

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Acknowledgement

The Victorian Government acknowledges and respects the rich culture of First Nations peoples in Victoria and pays respect to their Elders past, present and emerging. We acknowledge Aboriginal peoples as the first peoples in Australia, and as the Traditional Owners and custodians of the land and water on which we rely. We recognise and value the ongoing contribution of Aboriginal peoples and communities to Victorian life and how this enriches all Victorians. We embrace the spirit of reconciliation, working towards the equality of outcomes and ensuring an equal voice.

The Victorian Government recognises the Gunaikurnai people who are the Traditional Owners of a large area of Gippsland affected by the Latrobe Valley Regional Rehabilitation Strategy – the area spanning from Warragul in the west to the Snowy River in the east, and from the Great Dividing Range in the north to the coast in the south.

Executive summary

Over the coming decades the three Latrobe Valley coal mine sites will cease mining and undertake rehabilitation. This document supports the Amendment to the 2020 Latrobe Valley Regional Rehabilitation Strategy (LVRRS) released by the Victorian Government in October 2023. It provides guidance on potential surface water access from the Latrobe River system to support mine rehabilitation. It covers how water may be accessed for the purposes of Latrobe Valley mine rehabilitation at Yallourn and Loy Yang[1], including the type of conditions that may be placed on any water entitlements. It is important that the rehabilitation of Latrobe Valley coal mines results in positive outcomes for the community and region – this guidance will help to ensure the Latrobe Valley coal mines can be transformed to safe, stable and sustainable landscapes.

Preparing and implementing mine rehabilitation plans is the responsibility of mine licensees. This needs to be underpinned by robust assessment and well-informed decision-making. This guidance has been informed by a technical assessment and a stakeholder working group. The guidance important to inform mine licensees in the preparation and submission of their Declared Mine Rehabilitation Plans (DMRPs) by the due date of October 2025[2]. These DMRPs must consider climate change impacts to surface water availability and be resilient to a future potentially drier climate.

A lot has changed since the LVRRS was released in 2020, including the introduction of a strengthened regulatory framework, the planned earlier closures of the Yallourn and Loy Yang A power stations and the commencement of an Environment Effects Statement for the proposed Hazelwood Mine Rehabilitation Project. These changes are reflected in the LVRRS Amendment and in this supporting guidance document.

In September 2022, the Victorian Government released the Central and Gippsland Region Sustainable Water Strategy (CGRSWS) – setting directions and outlining actions to meet current and emerging water challenges, including in the Latrobe River and Gippsland Lakes system. The CGRSWS takes a long-term view – the next 50 years – to describe the water challenges and sets out actions to meet these challenges for communities, healthy rivers and wetlands, Traditional Owners, farmers, industries and tourism. The Latrobe Valley and Gippsland Transition Plan has also been released by the Latrobe Valley Authority in August 2023.

The LVRRS Amendment introduces guidance on potential water sources and access arrangements for mine licensees to undertake rehabilitation. This guidance aims to ensure that any surface water accessed for mine rehabilitation will not diminish the water entitlements of existing water users and values in Gippsland while providing an achievable way forward to reaching a safe, stable and sustainable rehabilitated landform within an acceptable timeframe, if a water-based rehabilitation plan is approved.

The LVRRS Amendment outlines the following surface water access conditions as guidance for Latrobe Valley mine rehabilitation planning:

a) a maximum period of surface water access of up to 30 years from the initial supply date at each mine or until 2065, whichever is earlier. This gives the community and stakeholders more certainty about the timing of when rehabilitation may be complete and when water could be returned to support other uses and values in the Latrobe River system.

b) limiting access to water in the Latrobe River system to winter and spring only (June to November), to avoid competition for water when irrigator and commercial water demand is typically high and when the river environment is most flow stressed.

c) a flow threshold to prevent winter - spring baseflow in the Latrobe River below 447 megalitres per day[3] from being diverted for mine rehabilitation. These baseflows are important for flushing sediment out of pools which in turn supports habitat for aquatic mammals and fish species. These flows also limit the encroachment of terrestrial vegetation, support emergent macrophyte vegetation and maintain dissolved oxygen levels in pools.

d) an annual release limit of 44 gigalitres per year from mine licensees shares of Blue Rock Reservoir to retain more water in storage in dry times, limiting the likelihood of using that water for mine rehabilitation during a series of dry years.

1 ENGIE has entered into a Supply by Agreement with Gippsland Water to access surface water for the purposes of mine rehabilitation.

2 Mineral Resources (Sustainable Development) (Mineral Industries) Regulations 2019, r 64A(a).

3 Measured at a new compliance point at Willow Grove on the Latrobe River.

These conditions support a maximum volume of surface water taken for mine rehabilitation equivalent to the average annual historical volume taken for Yallourn and Loy Yang power generation – up to around 63 GL per year. With this approach in place, the overall access to surface water for Yallourn and Loy Yang mine rehabilitation would be around 35 per cent less than the volume that could be accessed for power generation at these sites – this is about 34 GL per year less than the current water entitlement volumes held by the Yallourn and Loy Yang power generators.

The Victorian Government is committed to supporting the Latrobe Valley socio-economic transition. The reallocation of the Latrobe 3-4 Bench entitlement and the range of other complementary actions in the CGRSWS, coupled with existing and proposed new measures to manage impacts including the Latrobe Reserve and the above conditions are designed to mitigate potential impacts from surface water access for mine rehabilitation. Together these existing and proposed measures will build system resilience to climate change and drought conditions for all water uses and values.

The LVRRS Amendment also removes the previous requirement that mine licensees could only apply for access to water from the Latrobe River system for mine rehabilitation purposes (if needed) up to five years prior to ceasing mining operations at each site. This means that the community can plan holistically, and that assessments and decisions can better account for the cumulative regional impacts of access to water across all three Latrobe Valley mines. An earlier decision on access to water also provides greater certainty in rehabilitation planning and ensures that the transition from coal fired power generation to a rehabilitated landscape can occur within an acceptable timeframe (i.e., 30 years).

This document provides guidance on the types of conditions that could be applied to any water access entitlement to surface water for mine rehabilitation from the Latrobe River system. Specific conditions would be subject to mine licensees making an application for surface water access and subsequent approval consistent with the requirements under the *Water Act 1989*.

Contents

Introduction

Over the coming decades the three Latrobe Valley coal mine sites will cease mining and undertake rehabilitation. This document supports the Amendment to the 2020 Latrobe Valley Regional Rehabilitation Strategy (LVRRS) released by the Victorian Government in October 2023. It provides guidance on potential surface water access from the Latrobe River system to support mine rehabilitation. It covers how surface water may be accessed for the purposes of Latrobe Valley mine rehabilitation at Yallourn and Loy Yang[4] including the type of conditions that may be placed on any water entitlements. It is important that the rehabilitation of Latrobe Valley coal mines results in positive outcomes for the community and region – this guidance will help to ensure the Latrobe Valley coal mines can be transformed to safe, stable and sustainable landscapes.

Preparing and implementing mine rehabilitation plans is the responsibility of mine licensees. This needs to be underpinned by robust assessment and well-informed decision-making. This guidance has been informed by a technical assessment and a stakeholder working group. The guidance important to inform mine licensees in the preparation and submission of their Declared Mine Rehabilitation Plans (DMRPs) by the due date of October 2025[5]. These DMRPs must consider climate change impacts to surface water availability and be resilient to a future potentially drier climate.

A lot has changed since the LVRRS was released in 2020, including the introduction of a strengthened regulatory framework, the planned earlier closures of the Yallourn and Loy Yang A power stations and the commencement of an Environment Effects Statement for the proposed Hazelwood Mine Rehabilitation Project. These changes are reflected in the LVRRS Amendment and in this supporting guidance document.

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The LVRRS Amendment introduces guidance on potential water sources and access arrangements for mine licensees to undertake rehabilitation. This guidance aims to ensure that any surface water accessed for mine rehabilitation will not diminish the water entitlements of existing water users and values in Gippsland while providing an achievable way forward to reaching a safe, stable and sustainable rehabilitated landform within an acceptable timeframe, if a water-based rehabilitation plan is approved.

The LVRRS amendment also removes the previous requirement that mine licensees could only apply for access to water from the Latrobe River system for mine rehabilitation purposes (if needed) up to 5 years prior to ceasing mining operations at each site. This means that the community can plan holistically, and that assessments and decisions can better account for the cumulative regional impacts of access to water across all three Latrobe Valley mines. An earlier decision on access to water also provides greater confidence in rehabilitation planning and ensures that the transition from coal fired power generation to a rehabilitated landscape can occur within an acceptable timeframe – which the Government considers to be within 30 years.

This document provides guidance on the types of conditions that could be applied to any water access entitlement to surface water for mine rehabilitation from the Latrobe River system. Specific conditions would be subject to mine licensees making an application for surface water access and subsequent approval consistent with the requirements under the *Water Act 1989*.

4 ENGIE has entered into a Supply by Agreement with Gippsland Water to access surface water for the purposes of mine rehabilitation.

5 Mineral Resources (Sustainable Development) (Mineral Industries) Regulations 2019, r 64A(a).

Guidance on potential water sources and access arrangements for mine licensees to undertake rehabilitation

The Department of Energy, Environment and Climate Action (DEECA) has completed further analysis and identified the type of conditions that could guide how water from the Latrobe River system is allocated and accessed for the purposes of Latrobe Valley mine rehabilitation at Yallourn and Loy Yang[6]. This work focuses on Yallourn and Loy Yang mines as ENGIE – the operator of Hazelwood mine – already has access to surface water for mine rehabilitation under Gippsland Water's existing bulk entitlement to surface water from the Latrobe River system – this is via a commercial agreement between Gippsland Water and the Hazelwood mine licensee.

To develop these conditions, DEECA engaged with a working group experienced in the operations and with an understanding of the values in the Latrobe River system. This group met regularly between 2020 and 2023 and included representatives from:

- West Gippsland Catchment Management Authority
- Southern Rural Water
- Gippsland Water
- Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC)
- The Mine Land Rehabilitation Authority (as an observer).

Avoiding negative impacts from mine rehabilitation is one aspect of good stewardship of the Latrobe River system and Gippsland Lakes that complements the Victorian Government's broader policy for water security. The Latrobe River system is an important source of water for the Ramsar-listed wetlands of the Gippsland Lakes system – including the lower Latrobe wetlands. These internationally recognised wetlands have significant ecological value and are habitat to threatened species, such as the Australasian Bittern and Australian Grayling.

Historically, mine licensees have not used the full water entitlement available to them for power generation and have returned regular volumes of water to the river system (return flows). The environment and other water users have benefited from these under-used water entitlements and return flows. These incidental benefits will attenuate as power generation ends. In developing the guidance, the Government has been sensitive to this historical experience of water users and sought to minimise the impact of the cessation of these incidental benefits when power generation ends at these sites.

Coal-fired electricity generation in the Latrobe Valley has required large volumes of high-reliability surface water. The potential use of water for mine rehabilitation does not have the same demands for reliability and continuity as power generation, so there is greater flexibility around when water can be extracted from the system.

Placing conditions on access to surface water for the purpose of mine rehabilitation can link water availability for mine rehabilitation with prevailing climatic conditions more closely, and avoid impacts to other users and values in line with these broader policy aims. This will help mitigate the expected future impacts of a drier climate future and climate variability.

Unlike historic power generation, water for mine rehabilitation can be constrained to a set period after which water can be returned to other uses and values in the Latrobe River System.

The LVRRS Amendment outlines the following surface water access conditions as guidance for Latrobe Valley mine rehabilitation planning:

a) a maximum period of surface water access of up to 30 years from the initial supply date at each mine or until 2065, whichever is earlier. This gives the community and stakeholders more certainty about the timing of when rehabilitation may be complete and when water could be returned to support other uses and values in the Latrobe River system.

6 ENGIE has entered into a Supply by Agreement with Gippsland Water to access surface water for the purposes of mine rehabilitation.

b) limiting access to water in the Latrobe River system to winter and spring only (June to November), to avoid competition for water when irrigator and commercial water demand is typically high and when the river environment is most flow stressed.

c) a flow threshold to prevent winter - spring baseflow in the Latrobe River below 447 megalitres per day[7] from being diverted for mine rehabilitation. These baseflows are important for flushing sediment out of pools which in turn supports habitat for aquatic mammals and fish species. These flows also limit the encroachment of terrestrial vegetation, support emergent macrophyte vegetation and maintain dissolved oxygen levels in pools.

d) an annual release limit of 44 gigalitres per year from mine licensees shares of Blue Rock Reservoir to retain more water in storage in dry times, limiting the likelihood of using that water for mine rehabilitation during a series of dry years.

Put simply, these conditions on access to water for the purpose of mine rehabilitation will:

- Allow water availability for mine rehabilitation to better reflect climatic conditions, mitigating potential future impacts of a drier climate.
- Ensure that mine rehabilitation will not diminish the water entitlements of existing water users and values in Gippsland.
- Mean mine licensees could access more water during wet periods, but no more than the historical volumes used for power generation, and less water when it is dry or under drought conditions.

These conditions collectively support a maximum volume of surface water taken for mine rehabilitation equivalent to the average annual historical volume taken for Yallourn and Loy Yang power generation – up to around 63 GL per year (see Table 1). With this approach in place, the overall access to surface water for Yallourn and Loy Yang mine rehabilitation would be around 35 per cent less than the volume that could be accessed for power generation at these sites and or around 34 GL per year less than the current water entitlement volumes held by the Yallourn and Loy Yang power generators.

Table 1 - Annual diversion limit volumes corresponding to current entitlements for power generation, and the average volume of water historically taken for power generation.

Power generator	Current entitlements held for power generation – maximum volume of water available (GL/year)	Estimated average volume of water historically taken for power generation (gross historical use)
Yallourn	36.5	27
Loy Yang A	40.0	21
Loy Yang B	20.0	15
Sub-total Loy Yang	*60.0*	*36*
Total	96.5	**63**

[7] Measured at a new compliance point at Willow Grove on the Latrobe River.

How do mine licensees obtain access to water for mine rehabilitation?

If mine licensees plan to access water as part of their rehabilitation plan, they may apply to the Minister for Water for either a new water entitlement or an amendment to an existing one.

If a mine licensee applies to the Minister, the application will be publicly advertised and submissions from the public invited. This means that the community and stakeholders can have their say.

When considering an application for water, the Minister for Water must consider the matters listed in section 40 of the *Water Act 1989.* These include: all submissions received; the existing and projected availability of water in the area; any adverse effect that the allocation or use of water proposed in the application is likely to have on existing authorised uses of water, waterways and the environmental reserve; the need to protect the environment; and government policies concerning the preferred allocation or use of water resources. In reaching a decision, the Minister must also be aware of the broader context of the *Water Act 1989* which has a purpose of ensuring that Victoria's water resources and waterways are managed in a way that considers Aboriginal cultural values and uses of waterways; and the social and recreational uses and values of waterways.

The LVRRS amendment and the technical reports that support it will be considered by the Minister for Water in their decision-making when determining any application for access to surface water for mine rehabilitation.

Rationale for the guidance

Updated regional water planning

The LVRRS (2020) and the Amendment (2023) provide policy guidance to mine licensees, stakeholders and the community on a holistic approach to rehabilitating Victoria's three brown coal mines and the surrounding land to safe, stable and sustainable landforms. While the LVRRS is focused on mine rehabilitation, it forms only one part of the Victorian Government's long-term planning for the Latrobe Valley region.

Central and Gippsland Region Sustainable Water Strategy

The Central and Gippsland Region Sustainable Water Strategy (CGRSWS), released in September 2022, sets the policy direction and outlines actions for securing the region's long-term water supplies to protect the jobs, farms, ecosystems, communities and the Traditional Owners that rely on them. It identifies threats to water availability and water quality, and proposed policies and actions to help water users, water corporations and catchment management authorities (CMAs) manage and respond to those threats over the next 50 years. The LVRRS and CGRSWS are further complemented by the Latrobe Valley and Gippsland Transition Plan, released in August 2023 by the Latrobe Valley Authority.

The CGRSWS includes the following actions specific to the Latrobe region:

- Reallocation of two-thirds (around 16 GL) of the Latrobe 3-4 Bench bulk entitlement to support the region's socio-economic transition and build its resilience to climate change. Three key outcomes will be achieved to:
    - provide priority environmental flows to support native fish species, macroinvertebrates, and platypus as well as supporting the many values and uses of the connected Gippsland Lakes system and Ramsar-listed wetlands
    - support cultural values and self-determined outcomes for Traditional Owners
    - underpin the continued resilience and future growth of irrigated agriculture

The remaining one-third of the entitlement (or up to 9 GL) will be retained by government to provide continued flexibility to respond to emerging needs, including Victoria's future energy needs.

- Review the future need for the Latrobe Reserve as the Latrobe Valley transitions away from coal-fired electricity generation. The timing of the review aligns with the expected closure of the Yallourn Power Station in 2028. The review will consider how to adapt to changes in water use in the Latrobe system including the consequences of the closure of power stations and to water availability due to a drying climate. The review will make recommendations for any entitlement rule changes.
- West Gippsland water sector and GLaWAC will work with the Victorian Government and the Latrobe Valley community and stakeholders to develop and implement a collaborative vision and work plan for the future of the Latrobe Valley and its waterways. The plan will determine the optimal water infrastructure arrangements to meet emerging environmental, cultural, economic and social water demands.
- The Victorian Government will return up to 7.3 gigalitres of water for the environment in the Durt-Yowan (Latrobe River) by 2027 to improve waterway health by maintaining water quality in pools and increasing habitat for native fish, turtles and platypus populations in currently deliverable reaches.
- The Victorian Government will return up to an additional 7.7 gigalitres of water for the environment in the Durt-Yowan (Latrobe River) to improve waterway health in the whole river by 2029. This will maintain water quality in refuge pools and increase habitat for native fish, turtles and platypus, pending the outcomes of the Latrobe constraints investigation.
- The Victorian Government, West Gippsland Catchment Management Authority and GLaWAC will investigate options to remove constraints to the delivery of water for the environment in the Durt-Yowan (Latrobe River) downstream of Rosedale and, pending the outcomes of this investigation, prioritise options for implementation. This will significantly improve the effectiveness of environmental releases into the Durt-Yowan (Latrobe River).
- The Victorian Government will work with the West Gippsland Catchment Management Authority to upgrade watering infrastructure at the lower Latrobe wetlands to deliver freshwater flows into the wetlands more efficiently. This will improve the health of the wetlands in the medium term, and allow time to plan for the long-term, in accordance with Australia's international obligations under the Ramsar Convention. The wetlands are a priority site for Traditional Owners and the local community.
- The Victorian Government will investigate options to provide fish passage in the Tyers River below Moondarra Reservoir (addressing existing fish barriers between Moondarra and Latrobe confluence) to improve native fish migration and breeding and improve effectiveness of future environmental entitlements.
- The Victorian Government will investigate opportunities to sustainably develop new irrigation areas in the lower Latrobe region and in the Avon and Macalister systems.

These actions are important for understanding the broader picture and what options are available in the future to manage ongoing risks to the Latrobe River system during the transition to mine rehabilitation from power generation and in the context of a predicted drying climate.

Victorian Waterway Management Strategy

The Victorian Waterway Management Strategy released in 2013 provided a detailed policy framework for managing the health of Victoria's rivers, wetlands, estuaries and floodplains – collectively called waterways – over an eight-year period. A new Victorian Waterway Management Strategy is currently being prepared to ensure we have strong policies in place for managing Victoria's waterways, particularly in the face of our changing population and climate conditions. The next round of formal public consultation is expected to take place in 2024 with the release of the draft Victorian Waterway Management Strategy for public comment. The updated Victorian Waterway Management Strategy is expected to be released in 2025 and will provide further direction to waterway management in the Gippsland region.

Gippsland Lakes Ramsar Site Management Plan

The Gippsland Lakes Ramsar Site Management Plan 2015-2023, prepared by the East Gippsland Catchment Management Authority, sets out appropriate, evidence-based strategies for maintaining the ecological character of the Ramsar site. These strategies are designed to maintain the ecological character of the site as it was at the time of listing. The Gippsland Lakes Ramsar Site Management Plan is currently being reviewed in line with the seven-year timeframe of the plan and a renewed Gippsland Lakes Ramsar Site Management Plan is due to be finalised in early 2024.

Improved understanding of potential water needs for mine rehabilitation

This guidance has been informed by the outcomes of other LVRRS implementation actions which assessed the feasibility of access to alternative water resources (which we generally refer to as manufactured water) and land stability and fire risk management options should a dry void be the preferred rehabilitation option.

This work demonstrated the limitations to mine rehabilitation approaches that either rely solely on manufactured water – or rely on the voids remaining dry or partially filled. In summary, this work found:

- Supplying manufactured water in the amounts needed to fill the mine voids is costly, complex and requires infrastructure that will take a long time to deliver – meaning mine rehabilitation will take longer.
- Dry or partially filled voids could pose significant public safety and environmental challenges and will require significant active management strategies.

Considering this guidance in the context of these findings of the LVRRS implementation actions and the LVRRS implementation principles (see Figure 1) suggests that local surface water may need to play a critical role to help with the transition from coal fired power generation to a rehabilitated landscape within an acceptable timeframe (i.e. 30 years). This guidance is needed to consider how water from the Latrobe River system could be accessed if required for a water-based – partial fill or full-fill, mine rehabilitation approach.

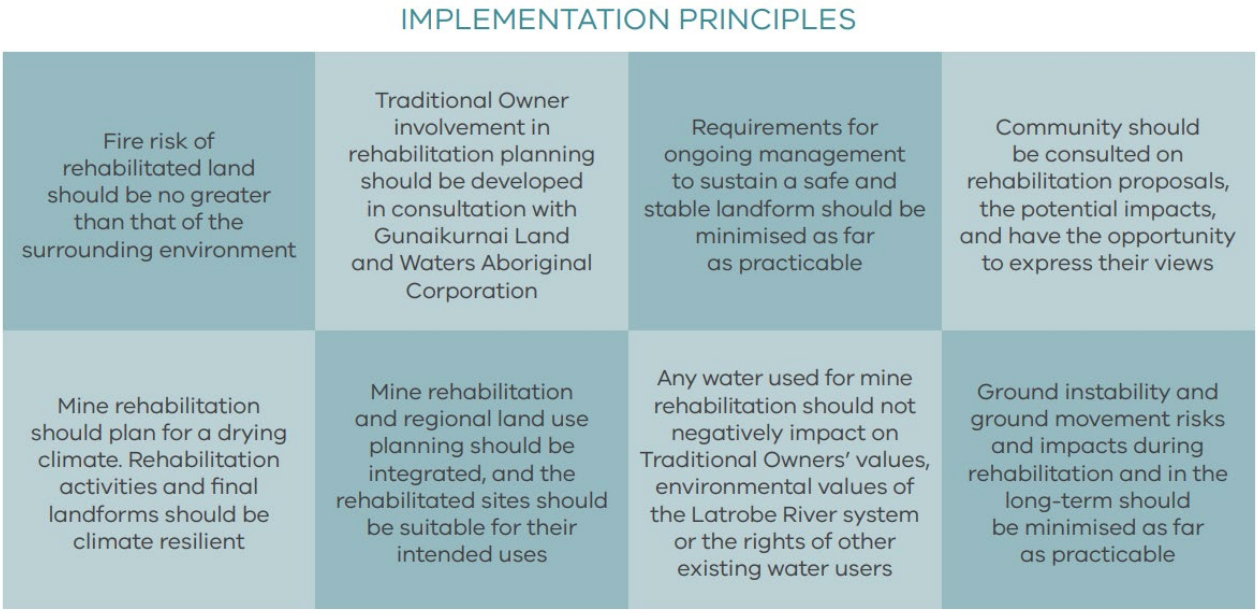

Figure 1 - Implementation principles of the LVRRS.

Updated evidence base on the impacts of surface water access

DEECA commissioned Alluvium Consulting Australia Pty Ltd (Alluvium) to undertake an independent technical assessment to understand potential future implications of surface water access for mine rehabilitation on consumptive users including towns, industries, and farms, as well as to Traditional Owners and environmental values in the Latrobe River system[8].

Scope of the independent technical assessment

The independent technical assessment included identifying potential surface water access conditions for mine rehabilitation, and testing the implications of these conditions to existing uses and values in a water resource model of the Latrobe River system. Based on these conditions, the impacts on other consumptive water users, including irrigators, were assessed using metrics derived from the water resource model results.

8 Alluvium and HARC (2023). Type of conditions that could apply to water access for Latrobe Valley mine rehabilitation and associated risks and benefits, Report prepared for the Department of Energy, Environment and Climate Action, East Melbourne, Victoria.

The technical assessment also included a risk assessment for Traditional Owner and environmental values, and evaluation of the measures under a range of climate change projections.

The scope of this project was informed by the *Latrobe Valley Regional Rehabilitation Strategy: Indicative Conditions Technical Working Group* (Technical Working Group), experienced in the operations and with an understanding of the values in the Latrobe River system. The Technical Working Group included representatives from DEECA, GLaWAC, Southern Rural Water (SRW), West Gippsland Catchment Management Authority, and Gippsland Water. The Mine Land Rehabilitation Authority (MLRA) was an observer.

The water resource model used for the assessment represents entitlements as of 2023, and includes major reservoirs, farm dams, and urban, commercial, industrial, rural, power generation and environmental water use. Infrastructure, operating rules, and consumptive demands are as of 2020[9]. The water resource model assumptions and the scenarios were developed in conjunction with the project Technical Working Group. The model was then adapted to represent a range of potential scenarios for access to surface water for the purpose of mine rehabilitation.

The scenarios were modelled over the post-1975 historic climate reference period the *Guidelines for Assessing the Impact of Climate Change on Water Availability in Victoria* (DELWP, 2020). This climate period is inclusive of the step changes in climate behaviour observed since around 1997, and incorporates a wide range of natural climate variability, including the Millennium Drought, the 1982–83 drought and several relatively wet years.

To project possible future impacts of climate change on rainfall, evaporation and runoff, modelling was performed for the low, medium and high climate change scenarios (representing the 10th, 50th and 90th percentile outcomes from 42 different global climate models) under a high Representative Concentration Pathway (RCP8.5) emissions scenario, which is a suitably precautionary scenario for water resources planning. All of these climate change projections are considered equally plausible and therefore none of these climate change scenarios can be considered more or less likely than the others.

Relevant metrics from the water resource modelling results were used to inform how changes in water availability could impact outcomes for existing water users, including irrigators, for the surface water access for mine rehabilitation scenarios.

The Latrobe Environmental Water Requirements Investigation (Alluvium 2020) identified a set of environmental values and their objectives that represent the values that the community seeks to improve or maintain with water for the environment. The environmental values adopted for the risk assessment are fish, birds, frogs, turtles, aquatic mammals, submerged and emergent vegetation, and riparian and floodplain vegetation.

Understanding the changes in risk required the development of a robust and transparent approach specific to this project – this included an expert risk panel for the environmental values and working with the GLaWAC for the Traditional Owner value components of the assessment. These values include agriculture, aquaculture, Bunjil tambun (fishing), floodplain billabongs, gathering, historical and traditional connection, localised tourism, native title, original/natural waterways and wetland flows, quarenook (meeting place – lower Latrobe wetlands), quarenook (meeting place – other sites), RAP access, river based tourism, river water quality, water based tourism (e.g. camping, tours etc), wetland based tourism, wetland water quality and woorngan (hunting). These are summarised in further detail in the independent technical assessment.

What the independent technical assessment told us

The impacts to consumptive users and risks to environmental and Traditional Owner values across five possible mine rehabilitation scenarios were compared to existing impacts and risks under a reference scenario consistent with average water access for power generation and entitlements in the Latrobe River system as of 2023.

The impacts on consumptive users identified by the independent technical assessment are summarised as follows:

- Under existing conditions, power generators have historically used less water than their full entitlement and returned regular volumes of water back to the Latrobe River system as ‘return flows’.

[9] Note that in some cases notional demands have been used in the modelling approach.

This positively impacts irrigators and urban users under the reference scenario– resulting in a high reliability to supply (98 per cent and >99 per cent respectively).

- Across the five mine rehabilitation scenarios, the conditions cannot offset the loss of incidental benefits that irrigators have historically experienced due to return flows that power generation provided. This is because the return flows from power stations are 'climate resilient' – i.e. they flow throughout the course of the year regardless of the prevailing climate conditions. The mine rehabilitation scenarios suggest that, while irrigator water availability will slightly increase overall[10], the reliability of supply will decrease compared to the reference scenario[11].
- Across the five mine rehabilitation scenarios there is no impact on reliability of supply to urban water users, including industrial customers compared to the reference scenario.

Understanding the changes in risk to Traditional Owner and environmental values required development of an approach specific to the project. For this assessment, the risk was defined as the effect of a water management scenario on Traditional Owner and environmental values in the Latrobe River system. These environmental and Traditional Owner values, although different, have been assessed according to the flow components of the Latrobe River system to provide an understanding of the overall risk of the scenarios to these different values. The opportunities and risks identified by the independent technical assessment to Traditional Owner and environmental values in the Latrobe River system and Gippsland Lakes are summarised as follows:

- The risks to environmental values and Traditional Owner values under existing conditions in the reference scenario are high. The system is already experiencing flow stress, with flows insufficient to support fish, aquatic mammals, vegetation and birds in the Latrobe River, estuary and lower Latrobe wetlands. Where flow components are not fully provided under existing conditions in the reference scenario, there are risks to Traditional Owner values.
- The risks will increase compared to the reference scenario if access to water for mine rehabilitation was equivalent to the current entitlement volume held for power generation (see Table 1 for volumes) – this is because historical use has been much less than the current entitlements held for power generation.
- Restricting water access for mine rehabilitation to a volume equivalent to the average annual net historic use by power generators (taking into consideration historic underuse of power generation entitlements and return flows from mine sites) – results in no overall increase in risk to environmental and Traditional Owner values compared to the reference scenario. Introducing the suite of conditions has a positive impact and reduces some risks to environmental and Traditional Owner values compared to the reference scenario for the technical assessment.
- If the suite of conditions that form part of this guidance on access to surface water for the purpose of mine rehabilitation were applied, then access volumes can be increased from net historical take to gross historic take (taking into consideration historic underuse of power generation entitlements, see Table 1 for volumes) with no overall increase in risk to Traditional Owner and environmental values compared to the reference scenario for the technical assessment – noting that these risks vary across the different reaches in the Latrobe River System – i.e. the Latrobe River and the Latrobe estuary may see increases in the provision of some flow components – such as summer-autumn freshes, while the Tanjil River (downstream of Blue Rock Reservoir) may experience benefits from increased provision of winter-spring baseflows but may experience a decline in winter-spring freshes, bankfull and overbank flow events.

The conditions on surface water access collectively support a maximum volume of surface water access for mine rehabilitation equivalent to the average annual historical volume (gross historical use) taken for Yallourn and Loy Yang for power generation. The amount of water available each year under individual entitlements is subject to a range of factors, including prevailing climatic conditions, water usage patterns, storage drawdown, and volumes of spills from other water users.

[10] Note that this is due to differences in access to unregulated flows, as well as changes in internal spills to other entitlement holders in Blue Rock Reservoir, as a result of changing patterns and volumes of use – from power generation to mine rehabilitation.

[11] Note that in drier years, where irrigation demand is higher and water scarcer, the water access conditions are not able to fully offset the loss of return flows. This is because in very dry years, the return flows constitute a large proportion of river flow available.

Historically, irrigators and the environment have shared access to climate resilient year-round return flows to the Latrobe River system from mine sites. When power generation ceases, return flows are also expected to significantly reduce or cease which will impact irrigators and the environment.

Placing the suite of conditions to restrict access to water for the purpose of mine rehabilitation will significantly mitigate these impacts. However, they do not replace the climate resilient return flows that irrigators and the environment have benefited from in the Latrobe River system which will significantly reduce or cease when coal fired power generation transitions out of the Latrobe Valley.

In the Latrobe River system, existing arrangements can mitigate the impacts to irrigators in dry years through access to the Latrobe Drought Reserve (an entitlement held by Southern Rural Water) which sets aside water for periods of water shortages and drought to underpin the reliability of water supply in the Latrobe system.

In addition, there is a entitlement called Latrobe 3-4 Bench which was originally intended to support expansion of coal fired power generation, which is currently unused. Through the CGRSWS, the Victorian Government committed to the reallocation of two-thirds (16 GL) of the Latrobe 3-4 Bench entitlement, to provide water for irrigators and the environment.

The Victorian Government is committed to supporting the Latrobe Valley socio-economic transition. There are a range of complementary actions in the CGRSWS including reallocation of the Latrobe 3-4 Bench entitlement and review of the Latrobe Drought Reserve. Together with the proposed water access conditions which are designed to mitigate potential impacts from surface water access for mine rehabilitation, these existing and proposed measures will build system resilience to climate change and drought conditions for all water uses and values.

Adaptive planning

Ongoing adaptive planning and management will be important to managing future uncertainty and to achieve optimal long-term mine rehabilitation outcomes for the Latrobe Valley and the broader Victorian community. The risk under future drier climates to Traditional Owner values, environmental values of the Latrobe River system and Gippsland Lakes, and consumptive water uses (water for towns, farms and industry) highlight the importance of ongoing adaptive management as part of the broader Latrobe Valley transition. This will include regular monitoring of changes to water availability, assessment of the implications of these changes to the environment values and appropriate management (and possible policy) responses to best manage these changes.

Section 84AZO of the *Mineral Resources (Sustainable Development) Act 1990* requires the LVRRS to be reviewed at least once every three years after publication – these regular reviews of the LVRRS ensure it remains relevant and fit for purpose well into the future.

The Victorian Government follows an ongoing adaptive planning approach for long-term water management – which continuously improve our planning through a suite of regional tools and processes (the relationship between these planning tools and processes are summarised in Figure 2).

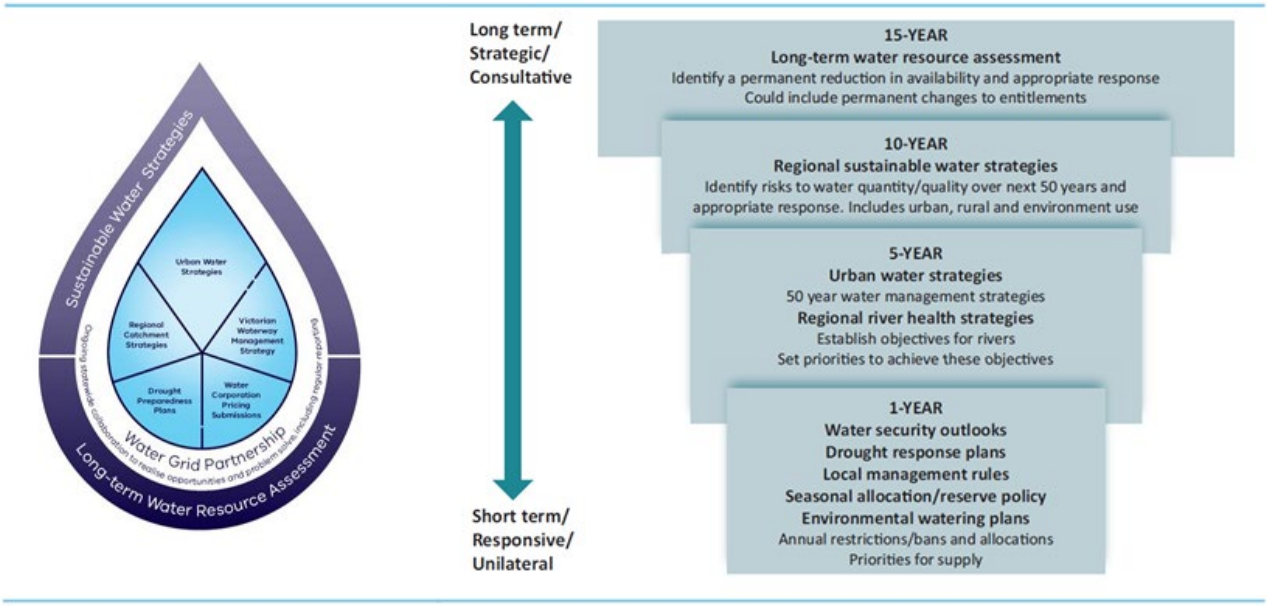

Figure 2 – Key planning tools and processes in Victoria (DELWP, 2021).

Adaptive management will also be important for the Ramsar-listed wetlands of the lower Latrobe and Gippsland Lakes system. Victoria has two main environmental water monitoring programs: the Victorian Environmental Flows Monitoring and Assessment Program, and the Wetland Monitoring and Assessment Program for environmental water. Both programs include monitoring that relates to the long-term objectives and targets outlined in Environmental Water Management Plans (EWMP) prepared by Victoria's CMA's and annual objectives detailed in Seasonal Watering Plans prepared by the VEWH.

The results and learning from the Victorian Environmental Flows Monitoring and Assessment Program and Wetland Monitoring and Assessment Program for environmental water are fed into decisions and management of Victoria's waterways. Results from monitoring at each site are communicated to the CMAs' environmental water reserve managers. Managers can then adjust their planning for the delivery of environmental water as necessary. This cycle, shown in Figure 3, supports decisions for the best use of environmental entitlements to delivery of priority outcomes for Victoria's rivers.

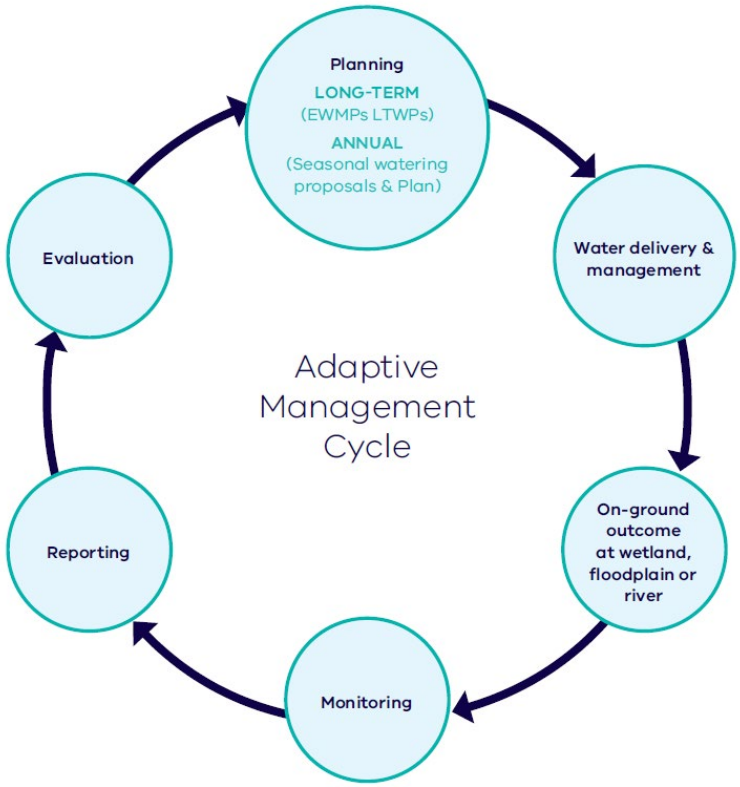

Figure 3 – Adaptive management cycle for environmental water (DELWP, 2019) (EWMPs – Environmental Water Management Plans; LTWPs – Long-Term Watering Plans (Northern Victoria)).

Next steps

The guidance on the type of access arrangements that could apply to surface water from the Latrobe River system for the purpose of mine rehabilitation will be important to inform mine licensees' applications for access to surface water (if they apply) and preparation and submission of their Declared Mine Rehabilitation Plans (DMRPs) by their due date of October 2025. These DMRPs must consider climate change impacts to surface water availability and be resilient to a future potentially drier climate.

There are remaining risks to the Latrobe River System that will need to be adaptively managed in the future. The complementary actions outlined in the CGRSWS already begin to address some of these risks. Figures 1 and 2 outline the key adaptive planning tools that will be important in continuing to manage these risks.

Risks associated with a water-based rehabilitation solution, if they eventuate, will be realised during the mine rehabilitation period. Completion of rehabilitation within a maximum 30-year timeframe will allow for surface water from the Latrobe River system to be returned to the river system and shared to support Traditional Owners' values, the environmental values of the Latrobe River and Gippsland Lakes system, and for consumptive needs of the Latrobe Valley and broader community. In contrast, safety and stability risks associated with a dry-void rehabilitation solution will exist in perpetuity.

As planning for mine rehabilitation continues, there will be further opportunities for community and other stakeholders to have input into:

- mine licensee's preparation of the Hazelwood Mine Rehabilitation Project Environment Effects Statement
- mine licensees' drafting of a potential future Environment Effects Statement(s) for the Yallourn and Loy Yang Mine Rehabilitation Project
- permissioning processes (if required) under the *Environment Protection Act 2017*
- cultural management heritage plans (CMHP) that involve an assessment of potential impacts of proposed activities on Aboriginal cultural heritage

- Yallourn and Loy Yang mine licensees' applications for surface water access for mine rehabilitation and subsequent decisions by the Minister for Water
- the creation and release of the Declared Mine Regulation Guidelines
- mine licensees' provision of declared mine plans.

Community and stakeholders are encouraged to visit the LVRRS webpage at https://earthresources.vic.gov.au/projects/lvrrs to access further information on the status of rehabilitation of Latrobe Valley coal mines.

Through the Latrobe Valley Regional Rehabilitation Strategy Amendment (2023), the Victoria Government has recommitted to achieving the LVRRS vision of a transformation of the Latrobe Valley coal mines and adjacent lands to safe, stable and sustainable landform which supports the next land use. This work will continue to provide the guidance to contribute towards this vision. The LVRRS Amendment (2023) provides a significant update to surface water access policy that balances the need to deliver on mine rehabilitation in a timely way and which also minimises risks to the community and our waterways.

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