

Latrobe Valley Regional Rehabilitation Strategy - Amendment

October 2023



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.

Introduction

Purpose

The Latrobe Valley Regional Rehabilitation Strategy (LVRRS)¹ and this Amendment have been prepared pursuant to Part 7B of the *Mineral Resources (Sustainable Development) Act 1990* (the MRSD Act). The LVRRS was released on 26 June 2020 and sets out the Victorian Government strategy in relation to:

- the safety, stability and sustainability of coal mine land and any adjacent land²
- the planning for the Latrobe Valley region in relation to the rehabilitation of coal mine land and any adjacent land, and the relationship between each mine void
- the development of a plan for the monitoring and evaluation of coal mine land after rehabilitation of that land is complete.

Section 84AZO of the MRSD Act requires the LVRRS to be reviewed at least once every 3 years after publication. Regular reviews of the LVRRS ensure it remains relevant and fit for purpose.

This Amendment updates the LVRRS, taking into account new information and knowledge gained through the implementation of the strategy, including technical studies and associated stakeholder engagement, and considers the latest regulatory and operational context. The Amendment better facilitates regional rehabilitation planning by refining policies in the LVRRS and provides increased clarity on the process for integrated rehabilitation planning. This will inform the preparation of declared mine rehabilitation plans (DMRPs) due by 1 October 2025.

The amended LVRRS comprises the LVRRS (2020) and this document. Where there is ambiguity between the LVRRS (2020) and this Amendment, this Amendment takes precedence.

¹ Department of Jobs, Precincts and Regions & Department of Environment, Land, Water and Planning, 2020, *Latrobe Valley Regional Rehabilitation Strategy*. https://earthresources.vic.gov.au/_data/assets/pdf_file/0011/558884/Latrobe-Valley-Regional-Rehabilitation-Strategy.pdf

² For the purpose of the strategy 'adjacent land' is land that is close to coal mine land and has the potential to be impacted by coal mining, rehabilitation or post-closure activities.

Contextual changes

Energy transition

Victoria has legislated renewable energy targets. By 2025, 40% of electricity generation is to be provided by renewable energy and by 2030, that target increases to 50%. In 2022, the Victorian Government announced its intention to legislate updated renewable energy targets of 65% by 2030 and 95% by 2035.

Since the release of the LVRRS in 2020, EnergyAustralia and AGL have announced earlier closure timeframes for Yallourn and Loy Yang A power stations respectively.

Early power station closure will reduce coal demand, resulting in smaller mine voids and bring forward rehabilitation. The final mine void sizes, shapes and rehabilitation timeframes will not be known until more detailed rehabilitation plans are prepared by the mine licensees. If a water-based mine rehabilitation option is proposed, less water may be needed to partially or fully fill smaller mine voids.

Change	Implication for LVRRS
The announced early closure of the Yallourn power station from 2032 to 2028.	As a result of early closure, the estimated volume of water required to fully fill Yallourn mine reduces from 725GL to an estimated 630GL.
The announced early closure of the Loy Yang A power station from 2048 to 2035.	AGL's Loy Yang mine provides coal to 2 power stations, Loy Yang A and Loy Yang B. The early closure of AGL's Loy Yang A will lower the volume of coal to be mined, reducing the overall mine void. At present, Alinta's Loy Yang B power station is scheduled to operate until 2047. If the Loy Yang mine was to close in 2035, the estimated volume of water required to fully fill it would be reduced from 1,418GL to 970GL.

Regulatory context

Specific reforms to the mine rehabilitation regulatory framework and general environment protection have occurred since the development of the 2020 LVRRS.

Mine rehabilitation and associated regulatory updates

Reform	Implications for rehabilitation of Latrobe Valley coal mines
Implementation of the revised <i>Environment Protection Act 2017</i> and introduction of the general environmental duty.	<p>The general environmental duty (GED) is at the centre of the <i>Environment Protection Act 2017</i>. It applies to all Victorians and all businesses located in Victoria. The GED says that any person engaging in an activity that can cause harm to public health or the environment from pollution or waste, must minimise those risks. From government to business and community, the GED applies to all Victorians.</p> <p>The GED makes it clear that businesses have a responsibility to reduce risk to human health and the environment. The expectation is that all Victorian businesses will manage their activities to avoid the risk of environmental damage. If pollution is caused, a response is required that restores the area and the EPA must be notified immediately.</p> <p>The introduction of the GED provides a clearer statement of requirement for environmental protection that all mine licensees will need to consider as part of rehabilitation planning. This is alongside the regulatory requirements under the MRSD Act and the vision, outcomes and principles of the LVRRS.</p>

Reform

Implications for rehabilitation of Latrobe Valley coal mines

Declared Mine Regulations came into effect (September 2022)

The *Mineral Resources (Sustainable Development) (Mineral Industries) Regulations 2019* (Declared Mine Regulations 2019 - DMRs) were amended in 2022 to include specific requirements for declared mines, consistent with the vision, outcomes and principles of the LVRRS. The DMRs (as amended) commenced on 30 September 2022.

The DMRs prescribe requirements for the rehabilitation of declared mine land including:

- the preparation, consideration and approval of DMRPs
- the preparation, consideration and approval of applications for a determination that closure criteria have been met
- the registration of declared mine land
- the determination of contributions to the Declared Mine Fund (DMF).

Changes include:

- matters that must be contained in a declared mine rehabilitation plan
- consultations that must be undertaken in relation to a plan
- information that must be provided with an application for a closure determination
- processes to be followed and matters to be considered by the Minister for Energy and Resources in deciding whether or not to make a determination.

The DMRs require the development and application of more detailed rehabilitation plans in relation to declared mine land. This will allow the Victorian Government to receive additional comprehensive information about operators' mine rehabilitation planning, and support more effective and transparent decision-making with greater community engagement.

Guidelines will be prepared to assist declared mine operators with meeting their obligations under the DMRs.

Victorian Government's intention to introduce a trailing liabilities scheme for declared mines

On 6 May 2022, the Victorian Government announced its intention to amend Victoria's MRSD Act to include a trailing liability regime for declared mines. This will allow the Victorian Government to issue remedial directions to 'call back' former title holders or other related parties to complete rehabilitation works when a current title holder fails or is unable to do so.

The trailing liability provision provides an extra level of surety that rehabilitation of mines will be resourced appropriately in the long term.

This is an additional regulatory provision of last resort to support responsible rehabilitation alongside mine rehabilitation planning and delivery consistent with the LVRRS' vision, outcomes and principles. A consultation paper on the proposal was released in January 2023. The Department of Energy, Environment and Climate Action (DEECA) is currently assessing submissions to the consultation paper and will consider relevant issues when drafting the proposed trailing liabilities legislation.

State and Australian Government environmental assessment processes

Detailed rehabilitation planning, particularly for Hazelwood mine, has progressed, increasing stakeholder insights on the requirements for state and Australian Government approval processes.

Environmental Assessment Process	Implications for rehabilitation of Latrobe Valley coal mines
<p>The Hazelwood Rehabilitation Project requires an Environment Effects Statement (EES) under the <i>Environment Effects Act 1978</i> (EE Act)</p>	<p>The Hazelwood Rehabilitation Project involves the rehabilitation of the former Hazelwood mine to a safe, stable and sustainable landform capable of supporting productive land uses.</p> <p>In response to a requirement in the licence conditions, Hazelwood mine licensee ENGIE referred the rehabilitation project to the Minister for Planning for consideration. In February 2022, the Minister for Planning determined that an EES is required for the project due to the potential for significant impacts on environmental values, including effects on:</p> <ul style="list-style-type: none">• river and groundwater resources• land use and landscape values• the Gippsland Lakes Ramsar site• native vegetation• listed ecological communities• Aboriginal and non-Aboriginal heritage values• the potential for cumulative adverse effects on the environment.

The Hazelwood Rehabilitation Project requires an assessment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

On 20 February 2023, the Australian Minister for Environment determined that the Hazelwood Rehabilitation Project was a controlled action for the purposes of the EPBC Act because of the project's potential impact on:

- Ramsar wetlands
- listed threatened species and communities
- listed migratory species
- a water resource, in relation to a large coal mining development or coal seam gas development (also known as the 'water trigger').

This is the first time that 'water trigger' has been applied in respect to coal mine rehabilitation. Where a project is a controlled action under the EPBC Act, the Australian Minister may authorise the Victorian EES process to be used as an accredited assessment pathway under the Australia/Victoria bilateral agreement. This enables a single assessment process to be applied to meet both Victorian and Australian Government requirements for an environmental assessment under the EE Act and the EPBC Act. When used to assess a controlled action, the EES process will include an evaluation of matters of national environmental significance (MNES).

Under the EES process, Victoria will refer this assessment to the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining (IESC) for advice, per clause 6.3(c) of the Australia/Victoria bilateral agreement. Upon completion of the EES process, the Minister for Planning will issue an assessment report on the project and its effects, including the MNES. This is provided to Victorian decision-makers and to the Australian Minister to inform their respective decision-making processes. On receiving the assessment report, the Australian Minister must decide whether to approve subject to conditions, or not approve the taking of controlled action. This decision must be made within 30 business days of receiving the assessment report, or a longer period specified in writing by the Australian Minister (s 130, EPBC Act).

Hazelwood Rehabilitation Project: Environment Effects Statement

An Environment Effects Statement (EES) process for the proposed Hazelwood Mine Rehabilitation Project is underway. The EES process will provide an integrated and transparent assessment of the project's potential environmental impacts and how they can best be managed. This will inform decision-making for required approvals.

The Hazelwood Mine Rehabilitation Project proposes filling the mine void with water to create a full waterbody. To achieve this, several sources of water would be required, which may include groundwater and river water. ENGIE Hazelwood has entered into a commercial agreement to access surface water for the purposes of mine rehabilitation. The project would also consider the re-establishment of the original course of the Morwell River through the site once the full waterbody is assured.

As the mine licensee, ENGIE Hazelwood is responsible for preparing the EES and undertaking the necessary technical studies, assessments, investigations and consultation. Through its EES consultation plan ENGIE needs to:

- undertake effective engagement that enables the public and stakeholders to understand both the EES process and where there are opportunities for engagement
- provide appropriate opportunities for input and feedback from different stakeholders on the project and EES investigations.

The draft scoping requirements for the EES were released for community comment in April 2023 and more than 100 submissions were received. The Victorian Department of Transport and Planning is refining the scoping requirements to respond to the community's feedback.

Regional planning and strategies

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. The Central and Gippsland Region Sustainable Water Strategy (CGRSWS), released in September 2022, contains actions and policy directions to support water access for other water users and values in the Latrobe Valley. The LVRRS and CGRSWS are further complemented by the Latrobe Valley and Gippsland Transition Plan, released in August 2023 by the Latrobe Valley Authority.

Plan or Strategy	Implication for LVRRS
<p>Latrobe Valley and Gippsland Transition Plan (2023)</p>	<p>The Latrobe Valley and Gippsland Transition Plan has been developed in collaboration with the community. It sets out a shared vision for the community in 2035 including:</p> <ul style="list-style-type: none"> • education and training pathway options that link to future employment • appealing, meaningful local jobs and employment pathways • a thriving economy • a healthy, attractive and sustainable natural environment • safe, welcoming and vibrant communities • a lifestyle that attracts new residents to the region and encourages existing residents to stay • coordinated action across industry, education, community and governments that demonstrates clear roles and responsibilities • acknowledgment of a proud history and bright future in vital industries. <p>The transition plan is guided by the following principles:</p> <ul style="list-style-type: none"> • People are at the heart of the transition process • Equity and inclusion • A sustainably developed future • Building on identified strengths and advantages • Adopting an evidence-informed approach • A coordinated approach across industry, education, communities and government. <p>The transition plan and the LVRRS vision, outcomes and principles are strongly aligned.</p>

Plan or Strategy	Implication for LVRRS
Central and Gippsland Region Sustainable Water Strategy (2022)	<p>The main objective of the Central and Gippsland Region Sustainable Water Strategy (CGRSWS) is to secure the region's long-term water supplies to protect jobs, farms, ecosystems, communities and the cultural values of Traditional Owners in the region. It sets environmental water recovery targets for the Latrobe River system and commits to reallocate 16GL from the Latrobe 3-4 Bench bulk entitlement to support the region's socio-economic transition and build its resilience to climate change and to achieve three key outcomes:</p> <ul style="list-style-type: none"> • 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 Gunaikurnai Traditional Owners • underpin the continued resilience and future growth of irrigated agriculture <p>It notes that guidance on water access for mine rehabilitation, will be considered through the LVRRS.</p> <p>Key actions relevant to the Latrobe Valley, Latrobe River system and Ramsar-listed Gippsland Lakes system include:</p> <ul style="list-style-type: none"> • reallocating the Latrobe 3/4 Bench bulk entitlement by 2024 • upgrading watering infrastructure at the lower Latrobe wetlands to deliver freshwater flows into the wetlands more efficiently • investigating options to provide fish passage in the Tyers River below Moondarra Reservoir • investing in complementary works to maximise environmental outcomes • introducing new environmental water recovery targets for the Durt-Yowan (Latrobe River) system • looking into opportunities for new irrigation development • reviewing the Latrobe Reserve water entitlement by 2028 • developing a vision and plan for the water future of the Latrobe Valley

Yallourn energy emergency 2021

Cracking of the Morwell River Diversion (MRD) at Yallourn mine in June 2021 was the third major stability incident at Yallourn mine in 16 years. It increased the understanding of the challenges involved in maintaining the MRD in the future and is informing rehabilitation planning for the Yallourn mine.

Responding to the Yallourn energy emergency

In June 2021, flooding of the Latrobe and Morwell rivers led to cracking in the MRD, which threatened to flood the active part of the mine and impact coal-fired power production at Yallourn power station. With the power station providing up to 22% of Victoria's energy supply, a state energy emergency was declared. This allowed for immediate works to stabilise the MRD and longer-term repairs to guard against the impacts of further flooding – the first time a declaration of this nature had been declared in the state.

The Victorian Government established a multi-agency Yallourn Emergency Response and Recovery Project to ensure the mine operator took appropriate measures to progressively reduce risks to energy supply, the environment and mine stability.

Over a period of 18 months, EnergyAustralia, the Yallourn mine licensee:

- constructed a series of structures to temporarily divert Morwell River flood flows to enable assessment and repairs
- repaired a section of the MRD by replacing and enhancing the clay liner and grading to improve surface water run-off
- repaired cracking in both the low and high-flow channels of the MRD, returning those sections to service.

An additional water diversion channel was constructed upstream at the Hazelwood mine by mine licensee ENGIE. This enabled the temporary diversion of flood flows into the Hazelwood mine pit during the licensed repair period. The upstream diversion of flood waters during a wet 2022 was crucial in enabling the assessment and repair of the MRD.

Rainfall, some groundwater and flood flows diverted from the Morwell River during 2022 remain in the Hazelwood mine pit. This water is covering the exposed coal on the floor of the mine and will reduce fire risk over summer. These emergency actions have no bearing on the final rehabilitation outcome for the Hazelwood mine.

Throughout the repair works, EnergyAustralia and ENGIE met strict conditions set by the Victorian Government relating to community safety, water entitlements and the environment.

The Victorian Government did not contribute financially to the construction of the approved water management works or any elements of the MRD repair.

The repair works required to safeguard the MRD structure for the remaining 5-year period of Yallourn mine's operation are now complete and will not influence the long-term rehabilitation outcomes for the Yallourn or Hazelwood mines.

The 2021 Yallourn energy emergency highlights the need for a long-term plan for the MRD (e.g. improvement or decommissioning) as part of the rehabilitation of the Yallourn mine into a safe, stable and sustainable landform.

Implementation of the LVRRS

The LVRRS sets out principles and actions to guide regional rehabilitation planning for the Latrobe Valley coal mines and adjacent land within a regional context. This section summarises engagement by government as part of the implementation of the LVRRS, progress on and findings of the implementation actions and associated amendments to LVRRS principles.

Stakeholder engagement

Mine Land Rehabilitation Authority (MLRA) webinars

In February 2021, the MLRA hosted 2 webinars on the LVRRS implementation actions with guest speakers from the former Department of Environment, Land, Water and Planning and the Department of Jobs, Precincts and Regions (now combined into DEECA).

The first webinar addressed:

- climate change scenarios for water resource planning in Victoria
- guidance on potential water sources and access arrangements for mine licensees to undertake rehabilitation.

The second webinar addressed:

- the feasibility of alternative water sources that could be used for mine rehabilitation
- alternative/contingency rehabilitation options to manage land stability and fire risks if sufficient water is not available.

Targeted stakeholder engagement on preliminary findings

In late 2021 and early 2022, the preliminary technical results from 3 of the implementation actions were tested with representative stakeholder groups:

1. Guidance on potential water sources and access arrangements for mine licensees to undertake rehabilitation
2. The feasibility of alternative water sources that could be used for mine rehabilitation
3. Alternative/contingency rehabilitation options to manage land stability and fire risks if sufficient water is not available.

The feedback from these sessions was considered in the final technical studies.

Engagement with mine licensees to enhance technical studies

Over the LVRRS implementation period, DEECA (Resources and Water) held several workshops with mine licensees to better comprehend the individual characteristics of the mines that would influence rehabilitation. This included understanding stability issues, assessment of likely hazards, provision of data and discussion of water needs for various rehabilitation options. The information was used to scope, inform and refine the technical studies.

Latrobe Valley Mine Rehabilitation Advisory Committee

The Latrobe Valley Mine Rehabilitation Advisory Committee comprises representatives from a broad range of stakeholder groups with an interest in mine rehabilitation in the Latrobe Valley.

The committee was established in late 2016 to support the development of the LVRRS. It played a key role in community engagement and acted as a conduit for broader stakeholder engagement during the preparation of the LVRRS. Since June 2020, the committee has supported the implementation of the LVRRS and provided feedback on the progress of implementation actions. The committee's meeting minutes and annual reports are available at: <https://earthresources.vic.gov.au/projects/lvrrs/advisory-committee>

Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC)

The Victorian Government will continue to involve GLaWAC in region-wide planning for rehabilitation and encourage mine licensees to engage with GLaWAC in the Latrobe Valley as they progress their rehabilitation planning.

Since the release of the LVRRS, the Central and Gippsland Region Sustainable Water Strategy has incorporated a water sector statement of commitment to Traditional Owners. The statement reflects the collective commitment of water managers to a restorative justice approach for Country – water and lands – to the Traditional Owners in this region.

GLaWAC participated in a working group which considered guidance on potential water sources and access arrangements for mine licensees to undertake rehabilitation. This working group gave advice on the proposed access arrangements, including the type of indicative conditions that could be placed on water access for mine rehabilitation to protect other uses and values of the Latrobe River system. The advice took account of system operations, and other existing and emerging water uses and values – including current and emerging risks to Traditional Owner values for water.

GLaWAC also shared Gunaikurnai cultural objectives for Durt-Yowan (Latrobe River system) and wetlands and the relevant flow objectives that support these values in the 2020 Latrobe Environmental Water Requirements Investigation.³

More broadly, *Water is Life: Traditional Owner Access to Water Roadmap* sets out the Victorian Government's commitments and policy pathways to increase Traditional Owner management of water landscapes.⁴ *Water is Life* recognises the importance of the relationship between Traditional Owners and First Nations and Country. It begins with the actions that increase Traditional Owners' ability to give effect to their obligations to care for Country. The Gunaikurnai Nation Statement in *Water is Life* includes Traditional Owners' vision to 'seek water restoration from the Latrobe Valley as the valley transitions away from coal power generation.'⁵

GLaWAC was part of the consultative committee for the Central and Gippsland Region Sustainable Water Strategy (CGRSWS) released in September 2022. In this strategy, the Victorian Government committed to reallocate 16GL of the Latrobe 3/4 Bench bulk entitlement by 2024 to deliver 3 key outcomes, including returning water to GLaWAC to support cultural values and self-determination outcomes for Gunaikurnai Traditional Owners.

Future engagement with GLaWAC is outlined in the next steps and future opportunities for engagement section.

LVRRS implementation actions – progress and findings

Provide guidance on the use of climate change scenarios for water resources planning for mine rehabilitation

The Guidelines for Assessing the Impact of Climate Change on Water Availability in Victoria (the Guidelines) were released in November 2020.⁶ They set out scenarios for assessing the impact of climate change on water availability, supply and demand across Victoria, taking into account changes in temperature, potential evapotranspiration, rainfall, runoff and groundwater recharge.

The Guidelines have been adopted by the Victorian water sector to inform water planning activities across the state.

³ West Gippsland Catchment Management Authority, 2020. Latrobe Environmental Water Requirements Investigation. https://www.water.vic.gov.au/_data/assets/pdf_file/0027/476730/LVRRS-Environmental-Flow-Recommendations-Study-.pdf

⁴ Department of Environment, Land, Water and Planning, 2022. *Water is Life: Traditional Owner Access to Water Roadmap*. <https://www.water.vic.gov.au/aboriginal-values/the-aboriginal-water-program>

⁵ Department of Environment, Land, Water and Planning, 2022. *Water is Life: Traditional Owner Access to Water Roadmap – Section B: Traditional Owner Nation Statements*. https://www.water.vic.gov.au/_data/assets/pdf_file/0038/599393/Water-is-Life-Section-B-Traditional-Owner-Nation-Statements.pdf

⁶ Department of Land, Water and Planning, 2020. Guidelines for Assessing the Impact of Climate Change on Water Availability in Victoria. https://www.water.vic.gov.au/_data/assets/pdf_file/0023/502934/GuidelinesClimateChangeWaterAvailVic_2020_FINAL.pdf

In December 2020, the Water and Catchments Group of the then Department of Environment, Land, Water and Planning (DELWP, now DEECA) held 2 workshops with mine licensees, the Mine Land Rehabilitation Authority and the Resources Group (within the former Department of Jobs, Precincts and Regions) to support the application of the Guidelines by mine licensees when preparing their DRMPs. These sessions involved the scientists who contributed to the Guidelines and covered a range of topics including:

- the science behind the Guidelines
- how they could apply to long-term planning across the industry
- how they can be used in the context of mine rehabilitation.

By attending the DELWP workshops and applying the Guidelines, mine licensees are now well placed to undertake mine rehabilitation planning that builds on the existing evidence base of potential future water availability across a range of possible future climate scenarios.

A drier future and more variable climate

Consistent with the LVRRS, there is inherent uncertainty around future surface water availability due to climate change and variability. This poses a risk to water-based rehabilitation approaches that will need to be managed, as surface water may not be available in the volumes required or at the times needed for a safe and stable mine void. The LVRRS found that there is significant uncertainty about whether water required for rehabilitation would be available from the Latrobe River system under a range of plausible climate change scenarios. The uncertainty is forecast to increase over time, with average projected water availability declining later in the century. There is comparatively more average projected availability if water for rehabilitation is required earlier in the period. Although there are continual improvements in scientific knowledge, the risk of a drier climate future as described in the LVRRS remains current and real.

Climate change projections suggest that Victoria will continue to become warmer and drier in the future.⁷ For the Latrobe River system, compared to the post-1975 historic climate reference period, average annual runoff is projected to reduce by up to 42% by 2065 (for a high projection).⁸ Climate projections are periodically updated to incorporate the latest science, including the work of the Intergovernmental Panel on Climate Change in 2022 and 2023.⁹ These continue to suggest an ongoing drying trend in this region.

⁷ Department of Environment, Land, Water and Planning 2019, Victoria's Climate Science Report 2019, Department of Environment, Land, Water and Planning. [climatechange.vic.gov.au/ data/assets/pdf_file/0029/442964/Victorias-Climate-Science-Report-2019.pdf](https://climatechange.vic.gov.au/data/assets/pdf_file/0029/442964/Victorias-Climate-Science-Report-2019.pdf).

⁸ Guidelines have been developed by the Victorian Government for assessing the impact of climate change on water availability in Victoria. Low, medium and high climate change scenarios have been developed to represent current and projected future climate and streamflow. These scenarios are derived for river basins for the years 2040 and 2065, under a high Representative Concentration Pathway (RCP8.5). The RCP8.5 scenario incorporates high rates of greenhouse gas emissions and is suitably precautionary for water supply planning applications. It considers global climate modelling uncertainty and uncertainty around future greenhouse gas emissions and concentrations. These scenarios (low, medium and high) represent the 10th, 50th and 90th percentile outcome from the 42 available global climate models (GCMs).

⁹ Intergovernmental Panel for Climate Change Sixth Assessment Report, including IPCC 2023, AR6 Synthesis Report: Climate Change 2023. <https://www.ipcc.ch/report/sixth-assessment-report-cycle/>

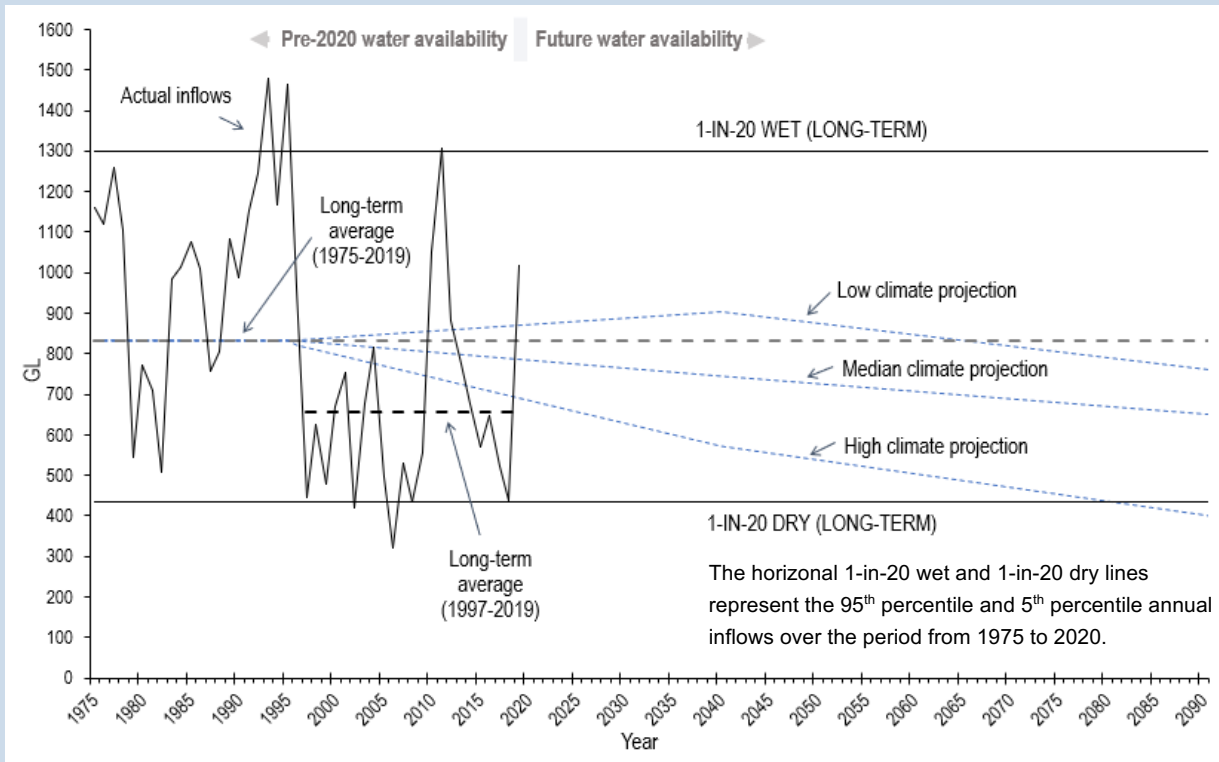


Figure 2. Historical water availability (total inflows upstream of the Latrobe River and Thomson River confluence) and future climate projections of average annual water availability in the Latrobe River system.

Historically, Victoria has had a highly variable climate, both across the state and over time, and it is expected that climate conditions will become even more inconsistent in the future.

The intensity of some extreme rainfall events has increased and is expected to continue to increase in response to a warming climate. However, increased rainfall intensity does not always result in increased severity (magnitude) of floods outside of urban areas, because warmer temperatures and less rainfall overall means that catchments are drier and have a greater capacity to absorb rain when it does fall. More frequent flood events are likely to decrease in severity due to this greater capacity to absorb rain, while very rare and more extreme flood events are expected to increase in severity.¹⁰ Alongside this, the intensity and frequency of droughts is also predicted to continue to increase with ongoing warming, including a greater likelihood of heatwaves and droughts co-occurring by the end of the 21st century.¹¹

¹⁰ Wasko, C., Gui, D., Ho, M., Nathan, R., and Vogel, E. 2023. Diverging projections for flood and rainfall frequency curves. *Journal of Hydrology*. <https://doi.org/10.1016/j.jhydrol.2023.129403>

¹¹ Douville et al 2021, *Water Cycle Changes*. In *Climate Change 2021: The Physical Science Basis*. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.

Develop new Declared Mine Regulations (DMRs)

The Mineral Resources (Sustainable Development) (Mineral Industries) Regulations 2019 were amended through the Declared Mines - Mineral Industries Amendment Regulations 2022 (Amended Regulations) to include specific requirements for declared mines.

The Amended Regulations commenced on 30 September 2022. They require the development and implementation of, among other things, DMRPs, which will ensure rehabilitation of declared mine land to a safe, stable and sustainable state and allow risks to be appropriately managed. The DMRPs provide the Victorian Government with more comprehensive information about operators' mine rehabilitation planning. They also support more effective and transparent decision-making, monitoring and engagement with community.

Guidelines will be prepared in consultation with stakeholders to assist declared mine operators to meet their obligations under the DMRs.

More information on the regulations is available at: <https://earthresources.vic.gov.au/legislation-and-regulations/regulation-review-and-reform/mineral-industries-regulations>

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

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 Yang¹². 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. The group included representatives from:

- West Gippsland Catchment Management Authority
- Southern Rural Water
- Gippsland Water
- Gunaikurnai Land and Waters Aboriginal Corporation
- 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.

The Central and Gippsland Region Sustainable Water Strategy sets out the government's plan for sustainable management of water resources, including commitments to support healthy waterways, climate-resilient agriculture and self-determined outcomes for Traditional Owners. The strategy has informed DEECA's work under this implementation action and importantly, aligns with the LVRRS principle:

'Any water used for mine rehabilitation should not negatively impact on Traditional Owners' values, environmental values of the Latrobe River system or the rights of other existing water users.'

Historically, mine licensees have not used the full water entitlement available to them for power generation and have returned large 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.

Coal-fired electricity generation in the Latrobe Valley has required large volumes of high-reliability 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 water for the purpose of mine rehabilitation can link water availability for mine rehabilitation with prevailing climatic conditions more closely, ensuring that any surface water accessed for mine rehabilitation will not diminish the water entitlements of existing water users and values in Gippsland

¹² ENGIE has entered into a Supply by Agreement with Gippsland Water to access surface water for the purposes of mine rehabilitation.

in line with these broader policy aims. Put simply, more river water could be available for mine rehabilitation during wet periods and less during dry times. This would help mitigate the expected future impacts of a drier climate future and climate variability.

These conditions could collectively support a total volume of surface water taken for mine rehabilitation up to the average annual historical volume taken for power generation. The type of surface water access conditions identified through the analysis include:

- a. restricting take to the wettest months of the year (June to November)
- b. a threshold to prevent winter-spring baseflow in the Latrobe River from being diverted
- c. a limit on annual releases from Blue Rock Reservoir
- d. a maximum period of water access for mine rehabilitation purposes of up to 30 years from the initial supply date at each mine or until 2065, whichever is earlier.

With this approach in place, the overall access to surface water for Yallourn and Loy Yang mine rehabilitation could be around 63GL per annum – equivalent to the average volume of water historically taken for power generation at these sites. This would be around 34GL per year (or approximately 35%) less than the current full water entitlement volumes held by the Yallourn and Loy Yang power generators. These existing entitlements can be used for the purposes of electricity generation works, this use does not extend to mine rehabilitation.

This guidance refines the LVRRS' principles '*to guide rehabilitation planning for each Latrobe Valley coal mine in a regional context*' and can be used by mine licensees to inform preparation of their DMRPs. The specific conditions for any future water access will be determined by the Minister for Water, following a mine licensee's application for access to water for mine rehabilitation as part of the statutory process.

Further assess the feasibility of manufactured water sources that could be used for mine rehabilitation

DEECA has completed further analysis on the feasibility of manufactured water for mine rehabilitation in collaboration with mine licensees, the Mine Land Rehabilitation Authority, Environment Protection Authority Victoria, water corporations and a range of other stakeholders.

This analysis involved a high-level assessment of the feasibility and potential costs associated with a variety of potential options for sourcing manufactured water for mine rehabilitation and considered a range of locations and sources including desalinated seawater and recycled water. Actual costs would be influenced by several factors, some of which would become more certain over time. Specifically, the annual demand and total demand for manufactured water would influence the capacity and cost of any manufactured water supply scheme. These demands in turn would be affected by the mine rehabilitation timeframe, final void size, void fill level, climate and associated surface water availability. The analysis confirmed that while a manufactured water supply for mine rehabilitation is feasible, it remains complex and expensive.

In preparation of their DRMPs, mine licensees may consider that a manufactured water supply is needed as a primary source – as a contingency under a dry climate scenario or drought conditions – or not needed at all. Sourcing a manufactured water supply would require further detailed assessment and – if it is required to implement an approved DMRP – would remain the obligation of the mine licensee. The MRSD Act places responsibility for rehabilitation of individual mine sites on mine licensees, including planning, rehabilitation works and associated costs.

Identify alternative/contingency rehabilitation options to manage land stability and fire risks if sufficient water is not available

DEECA has undertaken investigation into retaining the mine voids dry. It confirmed the considerable requirements for construction and ongoing active engineering controls to maintain stability.

The analysis identified the potential need for hundreds of millions of tonnes of suitable fill material to be sourced from outside the mine licence areas to stabilise the mines and to cover the coal for fire protection. The current annual production from quarries across Victoria is approximately 70 million tonnes. This provides critical resources to the Victorian Government's building programs, including the 'Big Build.' The requirement for mine rehabilitation would be in addition to this, needing construction of many new quarries to provide tens of millions of tonnes of material each year over several decades.

If constructed, dry voids would require a high level of active management, including ongoing deep groundwater extraction (for Loy Yang and Hazelwood) to manage upward floor heave, shallow groundwater drainage to control mine wall stability and maintenance to address erosion and slumping/cracking of the clay/soil cover over coal for fire management. A dry void is considered the most susceptible to variabilities in ground conditions and to changes over time that could result in uncontrolled ground movements (i.e. collapses or 'failures').

Yallourn mine has specific risks because:

- the Morwell River has been diverted through the middle of mine site operations and the Latrobe River is located to the north of the mine void
- the Latrobe River is located in close proximity to the northern wall of the mine void.

This means a failure on the northern side of the mine or the Morwell River Diversion could result in the diversion of the Latrobe River or the Morwell River respectively, into the mine void until repaired.

Both the Morwell River Diversion itself and the northern walls of the mine have failed in the recent past, leading to flooding of the mine – even with intensive management in place and controls associated with an active mine.

Partially or fully filling mine voids with water provides the greatest likelihood of maintaining long-term stability. Fill material would still be required, but it is likely that this could be sourced from current mines or through additional quarries within the mine licence areas. A partial fill solution for any of the mines would require significant operational management, including ongoing groundwater drainage and cover maintenance. Both partial and full fill would require maintenance of water levels through regular top ups, along with water quality and cover maintenance at and above the water level once the target water level was reached.

The risk of an external ignition source starting a fire or coal spontaneously combusting would be eliminated beneath the water level in partial or full fill scenarios. A dry void and the areas above the water level in partially or fully-filled voids would rely on a cover of soil over areas of coal to reduce the risk of an ignition source starting a fire. That would reduce access to oxygen to feed a fire once it commenced and would reduce oxygen supply to coal that could spontaneously combust. Unless the voids were covered by water, coal fires would remain a risk.

Support Integrated Mines Research Group (IMRG)

DEECA has supported the IMRG by engaging Federation University to undertake specific stability studies:

- The effect of water quality on brown coal strength
- Numerical investigation of coal cover stability and long rehabilitated slopes in Latrobe Valley brown coal mines.

DEECA has also partnered with the Cooperative Research Centre for Transitions in Mining Economies (CRC-TiME) which was established in 2020, supporting research into:

- collaborative post-mining development planning for the Latrobe Valley (ongoing)
- climate change risks to soil covers in rehabilitated Latrobe Valley coal mines (ongoing).

Refining the process for integrated rehabilitation planning

The LVRRS provides foundational policy for integrated mine rehabilitation planning. Since the LVRRS was released, the strategic context has changed – closure dates for power stations have been brought forward; we have a stronger regulatory framework for mine rehabilitation; and broader planning for the Latrobe Valley’s transition away from coal-fired power is well advanced.

The LVRRS sets out a proposed process for mine rehabilitation planning and decision-making.¹³ This process included a policy position that mine licensees can 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 the site. The rationale for this policy was to promote the most up-to-date information being used in assessing any applications for water access for mine rehabilitation purposes. Under the *Water Act 1989*, the Minister for Water (or delegate) must have regard to a range of matters when considering an application for water access to determine if the allocation of Victoria’s water resources is equitable and sustainable. For example, when deciding on any application for a water entitlement under the *Water Act 1989*, the Minister (or delegate) must consider:

- the existing and projected availability of water in the area
- the needs of other potential applicants
- the requirement to protect the environment, including the riverine and riparian environment.¹⁴

Bringing forward the mine closure dates for Yallourn (from 2032 to 2028) and Loy Yang A (from 2048 to 2035) increases the potential of concurrent mine rehabilitation and provides greater certainty on water availability. In this context, there is merit in mine licensees making an application to the Minister for Water for access to water for mine rehabilitation (if needed) earlier than 5 years prior to ceasing mining operations at the site. This will mean assessments and decisions can better take into account the cumulative regional impacts of access to water across all 3 Latrobe Valley mines. An earlier decision on access to water also provides greater confidence in rehabilitation planning.

Mine licensees currently have groundwater licences for the purposes of maintaining mine safety and stability. These groundwater licences are due to expire in 2025 at Hazelwood and Yallourn and 2026 at Loy Yang. If mine licensees seek to renew these groundwater licences, applications should be made at least 12 months prior to expiry of the current licences. This will ensure adequate time for necessary assessment and consultation prior to renewal decisions in accordance with the *Water Act 1989*.

The requirement for referrals under the EE Act and EPBC Act at Hazelwood has created a presumption that referrals are likely to be required for the remaining mines to inform submission of DMRPs by their due date of October 2025. Decisions on water access do not predetermine the outcome of a potential EES process or which rehabilitation works will be approved in a DMRP.

¹³ Department of Jobs, Precincts and Regions & Department of Environment, Land, Water and Planning, 2020, Latrobe Valley Regional Rehabilitation Strategy, Figure 3, p 28-29.
https://earthresources.vic.gov.au/_data/assets/pdf_file/0011/558884/Latrobe-Valley-Regional-Rehabilitation-Strategy.pdf

¹⁴ Water Act 1989 (VIC) s 40(1).

Next steps and future opportunities for community and stakeholder engagement

Traditional Owners' participation

The Victorian Government is at an exciting phase of the Treaty process with formal Treaty negotiations set to commence. State-wide and Traditional Owner treaties will have wide-ranging impacts on the way government works with First Peoples. Victoria's Treaty process will provide a framework for the transfer of decision-making power and resources to support self-determining First Peoples communities to take control of matters that affect their lives. The Victorian Government is committed to ensuring that the Latrobe Valley Regional Rehabilitation Strategy is responsive to Victoria's Treaty outcomes.

Water is Life (2022) recognises the objectives of the Gunaikurnai regarding water restoration from the Latrobe Valley as it transitions away from coal power generation. Understanding Traditional Owners' innate responsibility to care for Country, the Victorian Government will continue to work with the Gunaikurnai Land and Waters Aboriginal Corporation to realise their objectives for land and water.

Further community and stakeholder participation

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 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.

Regulatory and legislative process	Engagement opportunities
Environment Effects Statement(s) under the <i>Environment Effects Act 1978</i>	Hazelwood Rehabilitation Project EES Public consultation was undertaken in April-May 2023 on the draft scoping requirements for the Hazelwood Mine Rehabilitation Project EES, with the Department of Transport and Planning now considering refinements to the scope in light of submissions received. The draft EES will be exhibited and public submissions invited. The exhibition is planned for early 2024. Any other EESs As the rehabilitation plans for Yallourn and Loy Yang are further developed, the experience with the Hazelwood Rehabilitation Project creates a presumption that referrals under the EE Act and EPBC Act are likely to be required. Any EESs that may be required for rehabilitation of Yallourn and Loy Yang mines will also go through community consultation processes.

Regulatory and legislative process	Engagement opportunities
<p>Mine licensees' preparation of cultural heritage management plans</p>	<p>The development of a DMRP will consider the need for a cultural heritage management plan (CHMP). A CHMP is a written report prepared by a heritage advisor pursuant to the <i>Victorian Aboriginal Heritage Act 2006 (AH Act)</i>. A CHMP is required in circumstances where a proposal requires an EES; meets the definition of a 'high impact activity' in the AH Act; or when the Minister for Aboriginal Affairs directs a proponent to prepare a CHMP before commencing an activity. A CHMP includes results of an assessment of the potential impact of a proposed activity on Aboriginal cultural heritage. It outlines measures to be taken before, during and after an activity to manage and protect Aboriginal cultural heritage in the activity area.</p> <p>If a CHMP is required for a mine rehabilitation project in the Latrobe Valley, GLaWAC must be notified of the intention of the proponent to prepare a CHMP. GLaWAC can elect to evaluate the plan, consult on the plan or participate in the assessment. If it elects to evaluate, the proponent must apply to GLaWAC for approval of the CHMP. GLaWAC must either approve or refuse to approve.</p> <p>A CHMP decision is informed by and follows an EES decision. If a CHMP is required, a DMRP (or work plan subject to EES scrutiny) cannot be approved until the CHMP decision has been made.</p>
<p>Applications for access to water for the purpose of mine rehabilitation under the <i>Water Act 1989</i></p>	<p>Amendment or re-issue of water access instruments.</p> <p>Whenever water entitlements are changed, such as re-allocation, amendment or re-issue of a water access instrument, the Victorian Government follows statutory consultation requirements.</p> <p>For example, consultation will be undertaken when the groundwater licences held by mine licensees are considered for renewal in 2025 and 2026. Similarly, an application for access to surface water for mine rehabilitation under section 36 or 51 of the <i>Water Act 1989</i> would be advertised and submissions invited.</p>

Mine licensees' preparation of DMRPs under the MRSD Act and *Declared Mine Regulations 2019*

DMRP guidelines

The DMRs (as amended) commenced on 30 September 2022. They require the development and implementation of, among other things, DMRPs which will ensure rehabilitation of declared mine land to a safe, stable and sustainable state and to allow risks to be appropriately managed. Guidelines will be prepared in consultation with stakeholders to assist declared mine operators in meeting their obligations under the DMRs.

In preparation of the guidelines, DEECA will engage with government departments and agencies, representative organisations across the Latrobe Valley region, industry and experts.

Declared mine rehabilitation plans (DMRPs)

The MRSD Act and DMRs outline a process of stakeholder engagement in relation to the development of DMRPs and ensures that the local community's views form an important part of the DMRP. The process encourages a diverse range of stakeholder engagement in relation to the rehabilitation of the declared mines including:

- responsible authorities under the *Planning and Environment Act 1987*
- responsible public sector bodies, owners and occupiers of the land adjacent to the declared mine
- identified Traditional Owner groups
- communities in the Latrobe Valley and Gippsland region.

The process involves ongoing stakeholder engagement both during the rehabilitation of a declared mine and during its closure. DMRP consultation recognises the significant impacts of mine closures on surrounding communities and the need to ensure sustainable mine land rehabilitation in the Latrobe Valley.

DEECA will also engage with community and stakeholders on the overall regulatory framework for rehabilitation of the Latrobe Valley mines to ensure that it is streamlined and robust, including environmental effects, water and resources. This will support community and stakeholders' understanding of the framework including opportunities for involvement and to raise any questions or concerns.

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. Alternatively, contact the LVRRS project team at any time at LVRRS@ecodev.vic.gov.au to ask questions or raise ideas on the transformation of Latrobe Valley's coal mines to safe, stable and sustainable landforms which support the next land use.

