

# Latrobe Valley Regional **REHABILITATION STRATEGY**

Overview

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The Latrobe Valley Regional Rehabilitation Strategy will support planning and decision-making around rehabilitation of the Latrobe Valley coal mines, but it will not prescribe how they will be rehabilitated.

It will provide important information on the:

- regional risks that need to be considered and addressed in the mine operators' rehabilitation plans;
- feasibility of supplying water if required for safe, stable and sustainable rehabilitation; and
- possible future land uses for the rehabilitated sites in a regional context.

# 1. Introduction

## CONTEXT

In 2014 a fire took hold in the Hazelwood Coal Mine in Victoria's Latrobe Valley. The fire burned for 45 days and left lasting impacts on local communities.

The fire set in train a sequence of important actions by the Victorian Government, including the establishment of the Hazelwood Mine Fire Inquiry (Inquiry). The Inquiry found that using water to create 'pit lakes' in the excavated coal mine voids is likely to be the most viable way to achieve long-term safe and stable rehabilitation of the mines. However, the Inquiry recognised that significant knowledge gaps existed in relation to this rehabilitation option, and recommended further investigations be carried out to assess the feasibility of a water-based rehabilitation approach.

In response to the Inquiry's findings, the Victorian Government released a detailed Implementation Plan that included a commitment to develop the Latrobe Valley Regional Rehabilitation Strategy (the Strategy) covering the Latrobe Valley's three coal mines. This commitment was enshrined in legislation in 2017.<sup>1</sup>

Preparation of this document for consultation is one of a number of important steps to help inform that Strategy.

## WHAT IS THE STRATEGY?

The Government has a legislative commitment to prepare the Strategy by 30 June 2020 to address the following matters:

1. the safety, stability and sustainability of coal mine land and any adjacent land;

2. 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; and
3. the development of a plan for the monitoring and evaluation of coal mine land after rehabilitation of that land is complete.<sup>2</sup>

The Strategy is subject to review by the Minister for Resources every three years to ensure that it continues to be relevant and adaptive to changes in community values, climate, technology, and commercial and other circumstances.

The Strategy is intended to work with the legal and regulatory framework that applies to all major mining operations in Victoria, which includes the *Mineral Resources (Sustainable Development) Act 1990* and accompanying regulations, the *Water Act 1989* and Victoria's *Water Entitlement Framework*, the *Environment Protection Act 1970*, and various associated regulatory frameworks.

In practice, the Strategy will provide direction to mine operators and other stakeholders on matters that should be taken into consideration in planning for and undertaking rehabilitation of the Latrobe Valley's brown coal mines.

Evidence to support the Strategy's directions will also be included in the document. Development of this evidence has involved geotechnical, groundwater and surface water studies, the assessment of potential regional impacts on the environment, and the evaluation of future land use options. Key findings of these studies are set out in Chapter 2.

## OTHER VICTORIAN GOVERNMENT INITIATIVES

The Department of Jobs, Precincts and Regions (DJPR) is leading a comprehensive program to reform policy, legislation and regulatory practice for Victoria's coal mines. The program includes reforms to the *Mineral Resources (Sustainable Development) Act 1990* and associated regulations, and the commencement of a new Mine Land Rehabilitation Authority which will oversee implementation of the Strategy.

## HOW WILL THE STRATEGY GUIDE MINE REHABILITATION?

The Hazelwood Coal Mine closed in 2017 and the Yallourn and Loy Yang mines are planned to close by 2032 and 2048 respectively. Recent amendments to the *Mineral Resources (Sustainable Development) Act 1990* will require each of the Latrobe Valley coal mine operators to submit a Declared Mine Rehabilitation Plan, which includes a rehabilitation plan and post-closure plan (including closure criteria) to DJPR for approval.

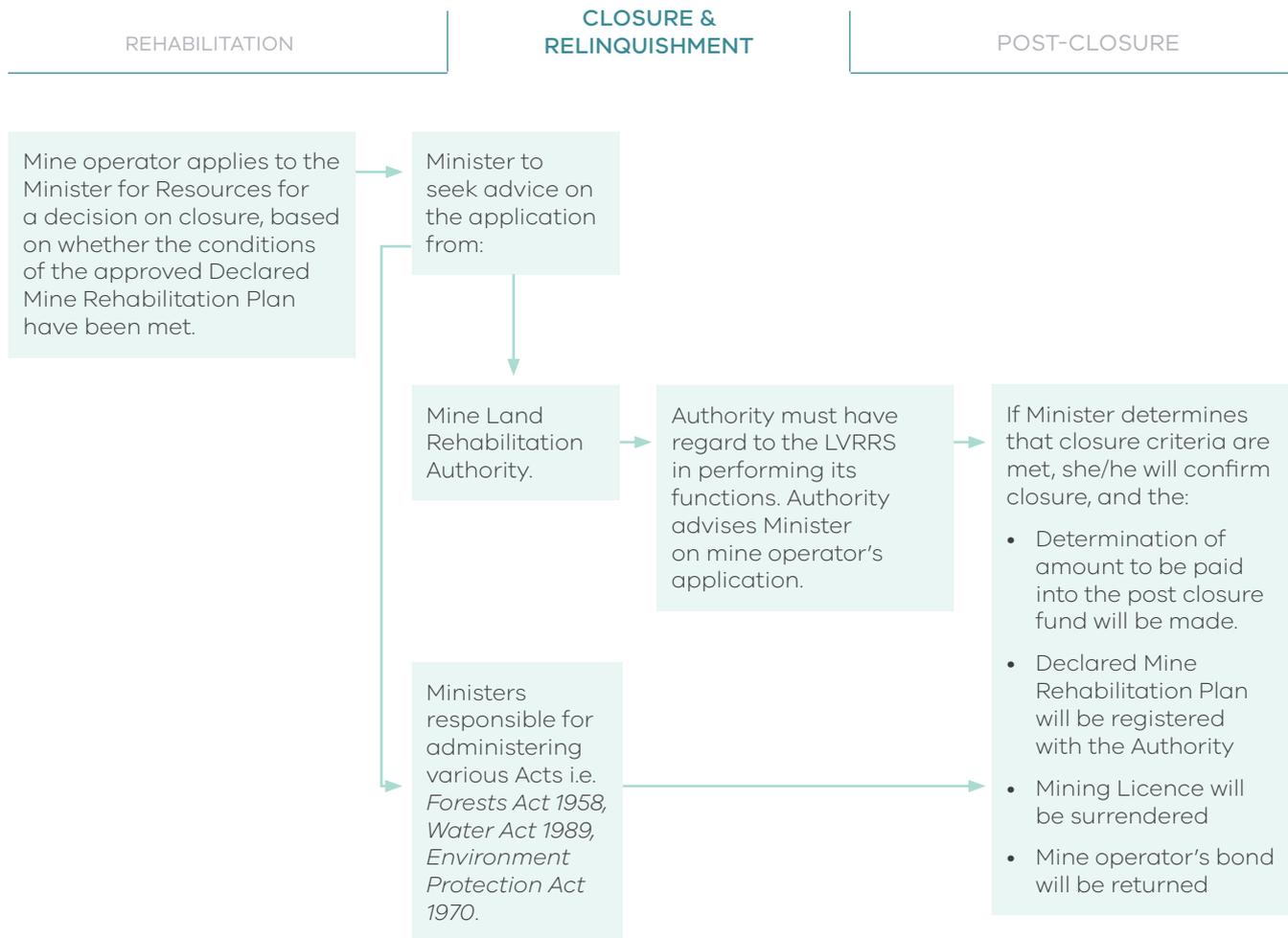
Once a Declared Mine Rehabilitation Plan is submitted, DJPR will consult with the new, independent Mine Land Rehabilitation Authority (Authority) on the Plan, including how it is aligned to the Strategy. After receiving comments from the Authority and other relevant Ministers, DJPR will then either approve, request amendments to, or refuse the Declared Mine Rehabilitation Plan.

The diagram on page 4 shows the new process for closure and relinquishment for Latrobe Valley coal mines. Similar to the process for approving a Declared Mine Rehabilitation Plan, the Strategy will also be used as a basis for assessing whether closure criteria have been met and a Mining Licence may be surrendered.

1 *Mineral Resources (Sustainable Development) Act 1990*, s 84AZM

2 *Mineral Resources (Sustainable Development) Act 1990*, s 84AZM

## CLOSURE & RELINQUISHMENT PROCESS OF A DECLARED MINE



Note: Closure is the point of which rehabilitation is complete and closure criteria (in the Declared Mine Rehabilitation Plan) have been met

## 2. Land stability, fire, water and planning considerations

Between 2017 and 2019, the Victorian Government undertook a number of studies to investigate:

- the stability and fire risks associated with the coal mine voids
- whether those risks could be mitigated by supplying water to fill the voids to a level that achieves stability
- whether filling the mines with water could result in adverse impacts within and around them.

Whilst the LVRRS studies reviewed the risks associated with maintaining the coal mine voids in their current state, and how those risks might be mitigated by use of water as fill material, the study findings can be applied to filling the voids with other inert materials (e.g. sediment or rock). However, the potential to utilise materials other than water to rehabilitate the mines is not considered feasible at this point in time, due to the vast volumes required.<sup>3</sup>

### LAND STABILITY AND FIRE

#### Achieving a safe and stable landform for the long term

Active engineering controls, such as groundwater pumps, surface water diversions, and extensive monitoring systems, are required to maintain safe operating conditions at the current Latrobe Valley coal mines. Nonetheless, coal mining has created land movement since it began in the Latrobe Valley. This has ranged from small, continuous movements of the mine walls (known as batters) up to several major batter failures extending beyond the mine crest. Exposed coal has caught fire a number of times, causing impacts to communities and the mines, most notably during the 2014 Hazelwood Mine Fire.

<sup>3</sup> Also see *Hazelwood Mine Fire Inquiry report 2015/2016 Volume IV – Mine Rehabilitation*.

Mining induced ground movements of significance to rehabilitation include:

1. Block sliding<sup>4</sup>
2. Sinkhole formation<sup>5</sup>
3. Floor heave<sup>6</sup>
4. Subsidence<sup>7</sup>

Each of these ground movements can occur separately or together, depending on the conditions prevailing in the mine. While block sliding typically results in rapid movements after onset, sinkhole formation, floor heave and subsidence are all longer time processes that occur over weeks to decades.

Passive controls that avoid the need for ongoing action in managing risks from these ground movements and coal ignition are identified as the preferred option for rehabilitation; this is achieved through landform design. Passive design elements include the use of material weight (e.g. water or rock/sediments) to counteract groundwater pressures and utilisation of erosion and fire-resistant materials as barriers to prevent coal ignition by external sources.

<sup>4</sup> 'Block sliding' refers to elevated groundwater pressures behind the coal face in an open-cut mine 'pushing' large blocks of coal into the void.

<sup>5</sup> 'Sink holes' can occur when surface water or groundwater flows are concentrated into cracks in the coal, initiating a sub-surface erosion process. Such an erosion process may develop into a void large enough to create a collapse in the overlying ground surface.

<sup>6</sup> 'Floor heave' can occur if upward pressures from aquifers below the mine floor exceed the remaining weight of coal and sediments above the aquifer. Floor heave in the Latrobe Valley coal mines is prevented by pumping large quantities of groundwater out of the aquifers (termed 'aquifer depressurisation').

<sup>7</sup> Pumping large quantities of groundwater out of the aquifers in the Latrobe Valley to prevent floor heave also induces land level subsidence. The subsidence is centred around the mines and reduces radially.

#### Stable floors and batters

The studies found that:

- The pit lake rehabilitation option can achieve a safe, stable and sustainable landform through a largely passive control by:
  - Providing a counterweight to upward pressures from aquifers below each mine, thereby preventing instability caused by 'floor heave' and eliminating the current need to pump groundwater (around 30 GL/year in total, across all three mines) from the aquifers to maintain stability.
  - Applying an outward horizontal force on the mine walls (batters), thereby reducing the current need to actively control batter movement through groundwater drainage and surface water management.
- Extended fill times arising from limited water availability, or not filling to a level that provides the required counterweight for lateral pressures, present stability challenges that would need to be managed.
- Minimisation of seepage inflow through the management of surface waters and coal cover materials, in addition to coal groundwater pressure control through drainage boreholes, may be required to maintain low ground movement risks. Controls will be required during the filling period, and potentially on an ongoing basis for any coal batters extending above the final water level.
- Areas outside of the pit requiring ongoing management and/or planning controls would be reduced compared to current requirements if water levels are at or above the minimum required to achieve counterweight to future vertical and horizontal groundwater pressures.

- Ground movements will occur in response to filling a mine with water, due to the outward horizontal force applied by the water on the surrounding ground. These are not expected to have adverse impacts but will need to be monitored to ensure that if any impacts arise to existing and future infrastructure, they are addressed as part of the mine rehabilitation process.

### Ground subsidence and rebound

The studies found that:

- Groundwater extraction for mine stability has led to gradual land subsidence across the region.
- Land subsidence is expected to cease, and reverse (rebound) to some extent, if groundwater extraction for mine stability can be stopped as part of the mine rehabilitation process. The magnitude of the rebound is expected to be less than the subsidence that has occurred and it is anticipated that this rebound would occur gradually over many decades and relatively evenly across the region. This issue will be further investigated as part of rehabilitation planning.

### Managing fire risk

The studies found that:

- Coal fire risk is best managed by covering exposed coal.
- If water is provided for ground stability control it would cover large areas of exposed coal. Accordingly, active controls on fire risks would be significantly reduced for the final rehabilitated landform if the water levels required to passively control ground movement are achieved.
- Coal coverage above the water line can be achieved by providing a suitable soil-vegetation cover system that is resistant to erosion. Where vegetated soil or other materials are used to cover coal, a long-term cover maintenance plan is recommended.

- Extended fill times arising from limited water availability present stability challenges and fire risks (due to the extended period of exposed coal) that would need to be managed, compared to a shorter fill time.
- If final water levels vary, a zone of exposed coal may occur between the water level and the soil-vegetation cover at or above the maximum water level. Assessment will be needed of the fire risks arising from the exposed coal and a suitable fire risk management plan developed.

### Considerations for rehabilitation planning

The geotechnical study highlights that water could support the long-term rehabilitation of the mine voids if available in the volumes required to fill and maintain pit water levels into perpetuity. A water filled mine void would reduce the need for ongoing active management of ground movement and fire risk. The study also shows that there are issues that remain unresolved at the present time in relation to water level fluctuations, spontaneous combustion, seismic risk, lake loading and ground surface rebound.

Further information on land stability constraints and mitigations is provided in the Strategy's Regional Geotechnical Study Synopsis Report, which can be accessed at [earthresources.vic.gov.au/projects/lvrrs](http://earthresources.vic.gov.au/projects/lvrrs).

## WATER

The Latrobe Valley Regional Water Study assessed the feasibility of filling the mine voids with water, continuing to make the mine voids safe and stable, without affecting the reliable access to water for residents, industry, farming, emergencies and the environment – including the water needs of rivers, wetlands and the Gippsland Lakes system.

The water study improves Government's understanding of projected water availability and use in the Latrobe River system, potential alternative sources of water to those currently available; how water quality may change in the mine pits should water be required for mine rehabilitation and the water needs of rivers and wetlands.

The study found that surface water availability in the Latrobe River system has decreased significantly in the past 20 years, from a long-term average of about 800 gigalitres a year to about 600 gigalitres a year since 1997. It found there are uncertainties associated with climate change and projected water availability. This means any potential water supply for mine rehabilitation will need to account for uncertainty around future climate and water availability and plan for the expectation of a drier future.

If dry conditions experienced in Gippsland continue into the future and surface water is used to fill the mine voids to achieve a safe and stable landform, there is a risk of regional impacts if the mines are filled too quickly. However, water security for other water users including the environment could be protected if filling the voids took place slowly – or only during wetter periods. Currently, there are no alternative sources of water that would significantly hasten the filling of the mine voids or considered more feasible for rehabilitation than pumped groundwater extraction and surface water from the Latrobe River system when available, though this may change in the future. Water quality risks should be monitored but are expected to be manageable.

Water access arrangements for mine rehabilitation would need to be adaptive and well-informed, and under conditions that protect other water users, the environment, Aboriginal and non-Aboriginal cultural and other values. Under these conditions it may take decades to fill each mine void. It also means filling the voids would need to be restricted or halted during dry conditions to protect access for other users and the environment.

Any water taken for mine rehabilitation should not impact the minimum flows required to maintain the Latrobe River and any affected tributaries.

### **If water is needed for mine rehabilitation, how much would be needed?**

Depending on when each mine closes and if each void needs water, up to 3,000 gigalitres could be required. In comparison, in 2017–18 Gippsland Water supplied towns (excluding industry) with 12.8 gigalitres of water.

The estimated ongoing volume of water needed due to evaporation is dependent on the future climate change, though it is estimated to be around 5-7 gigalitres per year for each mine, under current conditions.

One of the main purposes of the Regional Water Study was to understand whether the supply of these sorts of volumes of water from surface water and groundwater sources is achievable once water ceases to be used for power generation, considering climate change and the needs of other water users and the environment.

The Latrobe Valley power stations have historically accessed around 100 gigalitres per year of surface water from the Latrobe River system for power generation, and the operations have extracted around 30 gigalitres per year of groundwater to maintain the stability of mine voids.

The Regional Water Study found that filling the mine voids with water would pose significant demands on the Latrobe River system. It may, however, be feasible to fill the mine voids over a number of decades if filling is restricted or halted under dry and drought conditions in order to prevent impacts on water security, other water users, rivers, the Lower Latrobe wetlands and Gippsland Lakes.

Due to the likelihood of a drier climate, the volume of water available, timeframe and extent to which each mine could be filled with water is uncertain, as is the availability of water needed to make up for evaporation from a pit water body, if created.

### **Planning for the future**

The Latrobe Valley Regional Water Study will help determine if and how water might have a role in the future rehabilitation of the Latrobe Valley's coal mines once mining operations cease – to achieve a safe, stable and sustainable rehabilitation.

The Latrobe Valley has experienced drying conditions since 1997. Under recent conditions or a potentially drier future climate, average water availability could be less than that needed to supply all environmental and consumptive demands as well as mine rehabilitation, should water be needed for this purpose.

This highlights the need to plan for continued dry conditions to ensure that the needs of other water users and the environment are protected.

The Latrobe Valley Regional Rehabilitation Strategy will help the Government to plan for the future by guiding mine operators for the transition to a safe, stable and sustainable landform for the Latrobe Valley when mines are closed. This guidance includes how water may be allocated and accessed in the Latrobe Valley if determined to be required for mine rehabilitation.

The guidance will need to ensure any access to a water supply for the rehabilitation of the mine voids can be adaptive, depending on future climate trends, well informed and subject to conditions that protect all water users and the environment in dry times.

If water is proven to be essential for safe and stable mine rehabilitation, the mines' rehabilitation and closure plans will need to demonstrate how water levels are to be maintained in perpetuity (accounting for evaporative loss). Conditions on water access for this purpose would apply that prevent or minimise impacts on other consumptive users, the environment, cultural and other values.

### **Other water considerations**

The water quality of any pit waterbody, if created, would mainly be influenced by the water sources used to fill the voids.

Acceptable water quality standards are therefore expected to be achievable by the mine operators, and any discharge would be regulated by the Victorian Environment Protection Authority.

Minimum flow requirements in the Latrobe River need to be maintained to protect the highly valued Ramsar wetlands and other fringing environments of the lower Latrobe River and Lake Wellington and the Gippsland Lakes system.

Groundwater pumping at the mine sites is needed to maintain stability and will need to be continued by the mine operators until a stable landform is achieved.

Further information on water constraints and opportunities is provided in the Strategy's Regional Water Study Synopsis Report, which can be accessed at [earthresources.vic.gov.au/projects/lvrrs](http://earthresources.vic.gov.au/projects/lvrrs).

## LAND USE PLANNING

In October 2019, the Victorian Government released the Strategy's *Draft Preliminary Land Use Vision (PLUV)*<sup>8</sup> which captures community values and aspirations heard through consultation in 2018 and 2019. It sets out opportunities for land use change on coal mining land and surrounding areas over the long timeframes associated with mine rehabilitation. The draft has been publicly exhibited and community and stakeholder comments received. The results of the feedback will be provided shortly.

The PLUV has been developed alongside, and coordinated with, the land stability, fire and water studies summarised earlier in this chapter. The PLUV also incorporates and aligns with relevant aspects of Latrobe City Council's *Live Work Latrobe* planning strategy.

Together these documents inform the development of the Strategy, which will include a land use framework. The land use framework will provide direction for future planning and development decisions and enable positive social, economic and environmental outcomes for the Latrobe Valley.

### Land use opportunities

The PLUV includes statements about desired land use outcomes over time as mine rehabilitation occurs, and as the local economy continues to change. These outcomes will help transform the Valley and identify the area as being a highly desirable place to live, visit, work and do business. The PLUV recognises the Valley as a key part of Victoria's food economy, a great place to eat and drink, a sustainable regional service hub and an educational attractor.

Rehabilitation of the Latrobe Valley's coal mine areas provides opportunities for change over the long term. The draft PLUV considers land use opportunities through four themes:

- **Theme 1: Tourism, Liveability, Recreation** includes industrial tourism, food and wine, creative arts, sporting events and more.
- **Theme 2: Industry, Business, Commerce** includes the importance of attracting major corporations and supporting smaller and local businesses through strong business support networks. The Vision sets out opportunities to develop engineering and other skilled businesses through improved, transport and digital connectivity.
- **Theme 3: Agriculture, Energy, Water** includes opportunities in establishing an agricultural corridor, driving diverse business activity for the transition of the Latrobe Valley, the manufacturing and maintenance of renewable energy generation, infrastructure and equipment, and opportunities for new resource-based projects and geothermal, wind and solar energy generation.
- **Theme 4: Services, Education, Training** includes becoming a centre of excellence across multiple industry sectors, reflecting a bold and aspirational vision that builds on existing assets, and which can drive education, business and employment activity into the future. Opportunities include better transport links between Morwell and Traralgon to the east and Churchill to the south; building technical skills and knowledge locally to effectively carry out this long-term task over three mine sites and other infrastructure initiatives will all provide broad opportunities for other businesses.

### Land Use Constraints

The rehabilitation of the mine voids and the adjoining land parcels held by the mine operators face a number of constraints. The sites

have materials which may be hazardous given their history of mining and industrial processes. Environmental management of the decommissioning of the power station sites and associated infrastructure will be important at each site. Areas of exposed coal are a managed risk on each of the mine sites given potential fire events.

The constraints and challenges of planning across the long timeframes associated with mine rehabilitation are considered within the PLUV. It identifies the need to remain flexible with respect to land use options given uncertainties about rehabilitation and sequencing.

Land use planning at the regional scale has also identified an approach to establish appropriate separation distances to account for land movement, fire and flood risks.

### Planning system responses

In principle, if the current planning controls and frameworks were unable to facilitate the preferred land use and development outcomes outlined in the Strategy's final land use vision, there may need to be planning system changes. The Latrobe Valley Regional Rehabilitation Strategy and its supporting technical studies and the consideration of Work Plan approvals, variations and the Rehabilitation Plans will all assist in the next stages of more detailed land use planning.

Specific geotechnical risks (block sliding; sink hole formation; floor heave; subsidence and rebound) may also require specific planning scheme responses to ensure risk is minimised. Short term impacts of the active rehabilitation stages may require some separation distances and careful monitoring of development in the vicinity of the mine voids. Specific impacts across mine sites and mine land holdings should not impact nearby sensitive uses. Clear indications of risk should be provided to the public, where these are known, and mitigation measures identified.

Potential planning system responses will be detailed in the final Strategy.

8 <https://engage.vic.gov.au/latrobe-preliminary-land-use-vision>

### 3. What we have heard to date

In addition to the studies undertaken to inform the Strategy, consultation has also been conducted with a range of stakeholders including the mine operators, water corporations, Traditional Owners and through the Latrobe Valley Mine Rehabilitation Advisory Committee.

Based on this consultation, key stakeholder groups have indicated their expectations of the Strategy.

The Latrobe Valley community is looking for confidence that Government has considered the rehabilitation of the Latrobe Valley brown coal mines on a regional scale and over the long timeframes that are likely to be associated with mine rehabilitation.

The Latrobe City Council will be looking for a Strategy that does not specifically rule out future uses of the mines and surrounding land, including future mining of the coal resource.

Latrobe Valley community members will be looking for the Strategy and other regulatory and policy measures to provide safeguards for the protection of health, property, environment and water security, as well as a process to allow them to be involved and engaged in rehabilitation planning for each of the region's coal mines.

The final Strategy needs to articulate how government has considered and assessed regional scale mine rehabilitation risks over the long-term. In addition, it needs to set the objectives for the rehabilitation of the mines in the region and include a description of the role of both government and the mine operators in achieving these objectives.

There are a range of varied views within the community and amongst other key stakeholders regarding the preferred mine rehabilitation option and final landform. These range from either full or partial pit lakes that support beneficial uses such as recreational activities, tourism, agriculture, and energy production, to a dry void that provides ready access for possible future coal mining. The Strategy should therefore allow for any final rehabilitated landform that can be demonstrated to be safe, stable and sustainable and meet all legislative and regulatory requirements. It should not prescribe a rehabilitation solution. In addition, the community and other key stakeholders expect the mine operators to consider a range of rehabilitation options (including options that don't require water) as part of the preparation of their rehabilitation plan.

The Latrobe Valley's coal mine operators are looking for the Strategy to deliver confidence that water and geotechnical issues on a regional scale have been considered, and that there is a clear pathway to plan for rehabilitation. The mine operators will also be looking to the Strategy to provide clarity on the conditions of access to water for mine rehabilitation.

Traditional Owners have expressed a desire that mine rehabilitation planning includes a process to ensure that their values are protected and ideally enhanced. This doesn't just include cultural heritage values but extends to business and economic development opportunities and objectives for Traditional Owners.

For water and environment-related stakeholders, it will be important that the Strategy provides clarity about how regional scale water and environmental issues and risks will be built into and considered as part of the rehabilitation planning process for each mine site.

## 4. For consultation – Overview of the Strategy

Drawing on the findings of the work done over the past three years and the views of stakeholders consulted to date, a set of principles have been developed upon which the Strategy will be based. Government seeks community and stakeholder feedback on these principles.

### STRATEGY PRINCIPLES

The Strategy principles have been developed based on the following considerations:

- All three mines are on privately owned land, and the rights and obligations of the current landholders apply, which means Government should not prescribe the rehabilitation solution at each site and cannot guarantee future public access to these sites.
- Government's role in mine rehabilitation should be limited to setting legislation, regulation, policy and guidance. It should not constrain the ability of the industry to find new and innovative solutions to mine rehabilitation.
- There are social, environmental and economic factors that may change the rehabilitation options available at future points in time, including the uncertainty associated with climate change and water availability.
- Rehabilitation is likely to take decades after the cessation of mining operations at each mine, and the community needs to have the opportunity to be involved over this timeframe.

The Strategy will take the form of a guidance document, meaning that the final landforms of the mines and surrounding regions will not be prescribed by the Strategy. Rather, the Strategy will set desired objectives and a clear pathway for decision-making to allow for the mine operators, community and Government to agree the best rehabilitation plan for each mine in light of the circumstances at the time of rehabilitation, noting this may be decades into the future.

The proposed principles that will underpin the Strategy comprise:

- Part One: Objectives for the rehabilitation of the mines for the Latrobe Valley region
- Part Two: The role of Government in achieving those objectives
- Part Three: The role of mine operators in achieving those objectives.

The principles are set out below and presented schematically on page 12.

### PART ONE: OBJECTIVES OF THE STRATEGY

The Strategy is proposed to be developed based on the following objectives:

1. Long-term benefits to the community are maximised while costs to the community (including Government) are minimised, and opportunities for future economic, environmental, and social sustainability are optimised.
2. Traditional Owners have a clear role in the preparation of rehabilitation plans for the Latrobe Valley mines, and Aboriginal values are incorporated in rehabilitation plans where appropriate.
3. The fire risk at each mine void is no greater than that of the surrounding environment.
4. Risks and impacts associated with ground instability and ground movement during rehabilitation and post-closure are minimised as far as practicable, with control measures put in place.

5. If water is proposed to be supplied for mine rehabilitation, then the essential need for water to achieve a safe, stable, and sustainable rehabilitated final landform must be demonstrated.
6. Mine operators will need to assess alternative rehabilitation options including options that do not involve water and ones that use alternative water sources.
7. Any surface water or groundwater made available for mine rehabilitation will be the minimum volume necessary to achieve a safe, stable and sustainable landform. If water is proven to be essential for mine rehabilitation, and post-closure maintenance, mine operators will need to demonstrate how water levels are to be achieved and maintained in perpetuity, accounting for evaporative loss.
8. The impacts on other consumptive water users, the environment, cultural and other values will be prevented, or minimised, by conditions placed on the access to water for rehabilitation purposes.
9. Water quality in any potential mine pit water bodies is appropriate and can be managed over time for the intended beneficial use.
10. The mine voids do not pollute downstream waterways in the Latrobe River system.
11. Risks to infrastructure and valued assets are minimised through a range of measures. These include appropriate separation distances, having regard to the final rehabilitation and closure plan and the associated potential for land movement, fire and flood, and environmental and amenity protections.
12. Any future potential mining activities will be appropriately distanced from rehabilitated mines to ensure the safety and stability of the old and new mines.

13. The transitions from existing land use to future land uses are aligned with the phases of mine rehabilitation and stabilisation.
14. Stakeholders understand the long timelines for realising beneficial uses at the rehabilitated sites and are engaged over those timeframes.

## PART TWO: ROLE OF GOVERNMENT

The proposed role of Government in supporting the achievement of the above objectives is to provide, through the final Strategy and other legislative and regulatory instruments:

1. Information on the regulatory context the Strategy fits within, and how the Strategy is expected to be used by mine operators and Government to guide mine rehabilitation.
2. A statement of expectations with respect to engagement with Traditional Owners and incorporation of Aboriginal values in rehabilitation and closure plans.
3. Guidance on community engagement required to support the rehabilitation and closure process.
4. Evidence, from detailed investigations into regional land stability, fire risks, and water availability, to support Government decision-making, and to inform the activities of the mine operators, throughout the operation, rehabilitation, and post-closure periods for each mine.
5. A biophysical feasibility statement on regional ground movement considerations for rehabilitation design and implementation and filling the voids with water, partly or fully, as a rehabilitation option.
6. An action plan for the monitoring and management of regional land-level subsidence and rebound.
7. A high-level assessment of potential water sources and access arrangements for mine operators to undertake rehabilitation, if water is demonstrated to be essential for mine rehabilitation.

8. An assessment of future water availability scenarios and expected minimum environmental flow requirements in the Latrobe River system and its estuaries.
9. A summary of the potential future land-use constraints, based on the Strategy's technical studies along with identified timelines for potential Planning Scheme responses.
10. Identified potential land-use outcomes, and the future decision process including timelines, for decisions on next beneficial land uses.
11. A process to enable public access to the Government-funded technical information underpinning the preparation of the strategy.
12. A data management framework to ensure available evidence and knowledge used to inform development of the Strategy is securely retained and accessible for future strategy implementation and knowledge management requirements.

Note that some of the commitments will be acquitted in the final Strategy itself. For example, Principle One for Government will be acquitted through the description of the regulatory context in the final Strategy.

## PART THREE: ROLE OF MINE OPERATORS

The proposed role of mine operators in supporting the achievement of the above objectives is to:

1. Develop their rehabilitation and post-closure plans, in consultation with the community, as required by legislation and with consideration of the guidance and expectations set out in the Strategy.
2. Demonstrate that their final rehabilitation design, as submitted to Government, is based on a broad options analysis, including non-water-based stability options, and that future stability controls are appropriate to the residual risks.

3. Demonstrate that the final landform facilitates a range of uses and amenity over time.
4. Provide evidence that demonstrates that water is essential to achieve rehabilitation objectives, considering all reasonable alternatives, as well as the efficient use and management of water resources including the water level in the mine void to achieve stability.
5. Identify the pathway to access any water required for rehabilitation, consistent with *Water Act 1989* and *Water Entitlement Framework*, and how water levels will be maintained over the near and long term.
6. Articulate land-use options that are consistent with the objectives of planning in Victoria, and with State/Regional/Local Planning Policy and planning scheme provisions.

## 5. Next steps

Feedback is sought on the Strategy principles (Chapter 4 of this document) between 20 November 2019 and 17 January 2020.

A summary of the feedback received will be published along with the final Strategy.

# LVRRS Principles - for consultation

## Outcome

**TO ENABLE THE ACCEPTABLE TRANSFORMATION OF THE COAL MINE VOIDS AND ADJACENT LAND TO THE NEXT BENEFICIAL USE. SAFE, STABLE AND SUSTAINABLE LANDFORMS.**

## Thematic objectives

### LAND STABILITY & FIRE PREVENTION

The fire risk at each mine void is no greater than that of the surrounding environment.

Risks and impacts associated with ground instability and ground movement during rehabilitation and post-closure are minimised as far as practicable, with control measures put in place

### WATER RESOURCES

If water is proposed to be supplied for mine rehabilitation, then the essential need for water to achieve a safe, stable, and sustainable rehabilitated final landform must be demonstrated

Any surface water or groundwater made available for mine rehabilitation will be the minimum volume necessary to achieve a safe, stable and sustainable landform, in the context of a drying climate

The impacts on other consumptive water users, the environment, cultural and other values will be prevented, or minimised, by conditions placed on the access to water for rehabilitation purposes

The mine voids do not pollute downstream waterways in the Latrobe River system

Water quality in the mine pit water bodies is appropriate and can be managed over time for the intended beneficial use

### LAND USE PLANNING

Risks to infrastructure and valued assets are minimised through a range of measures. These include appropriate separation distances, having regard to the final rehabilitation and closure plan, and the associated potential for land movement, fire and flood, and environmental and amenity protections

The transitions from existing land use to future land uses are aligned with the phases of mine rehabilitation and stabilisation

Stakeholders understand the long timelines for realising beneficial uses at the rehabilitated sites and are engaged over those timeframes

Any future potential mining activities will be appropriately distanced from rehabilitated mines to ensure the safety and stability of the old and new mines

Long-term benefits to the community are maximised while costs to the community (including Government) are minimised, and opportunities for future economic, environmental, and social sustainability are optimised

Traditional Owners have a clear role in the preparation of rehabilitation and closure plans for the Latrobe Valley mines, and Aboriginal values are incorporated in rehabilitation plans where appropriate

## To achieve desired objectives the LVRRS will provide:

A biophysical feasibility statement on filling the voids with water, partly or fully, as a rehabilitation option, and regional ground movement considerations for rehabilitation design and implementation

An action plan for the monitoring and management of regional land-level subsidence and rebound

A data management framework to ensure all evidence and knowledge used to inform development of the strategy is securely retained and accessible for future strategy implementation and knowledge management requirements

The LVRRS will provide evidence to support Government decision-making and to inform the activities of the mine operators, throughout the operation, rehabilitation, and post-closure periods for each mine

The LVRRS will provide information on the regulatory context the strategy fits within, and how the strategy is expected to be used by mine operators and Government to guide mine rehabilitation

The LVRRS will provide guidance on the level of community engagement required to support the rehabilitation and closure process

The LVRRS will include a statement of expectations with respect to engagement with Traditional Owners and incorporation of Aboriginal values in rehabilitation and closure plans

Government-funded technical information underpinning the preparation of the strategy will be made available to the public

## To achieve desired objectives the mine operators will:

Demonstrate that their final rehabilitation design, as submitted to Government, is based on a broad options analysis, including non-water-based stability options, and that future stability controls are appropriate to the residual risks

Assess alternative rehabilitation options, including options that do not involve water and ones that use alternative water sources such as recycled water

Provide evidence that demonstrates a clear need for water, if required, to achieve rehabilitation objectives considering all reasonable alternatives and pathways to access water under the *Water Act 1989*, and demonstrate the efficient use and management of water resources over the near and long term including the water level in the mine void to achieve stability

If water is proven to be essential for safe, stable and sustainable mine rehabilitation and post-closure maintenance mine operators will need to demonstrate how water levels are to be achieved and maintained in perpetuity, accounting for evaporative loss

The mine operators must develop their rehabilitation and post-closure plans: in consultation with the community; as required by legislation; and with consideration of the guidance and expectations set out in the LVRRS

The LVRRS will focus on elements of future planning and implementation that are not covered by current or planned regulatory processes

