Latrobe Valley Regional REHABILITATION STRATEGY

Latrobe Valley Mine Rehabilitation Advisory Committee

MEETING #09 MINUTES (WITH CONFIDENTIAL INFORMATION REDACTED)

THURSDAY 9 AUGUST 2018

CENTURY INN, 5 AIRFIELD ROAD TRARALGON VICTORIA 3844

ATTENDEES

Ms Susan Lloyd (Chairperson), Latrobe Valley Community

Mr Roland Davies, Latrobe Valley Community

Mr James Faithful, Latrobe Valley Mine Operators (ENGIE Hazelwood)

Mr Ron Mether, Latrobe Valley Mine Operators (EnergyAustralia Yallourn)

Cr Graeme Middlemiss, Latrobe City Council

Mr Terry Flynn, Southern Rural Water

Ms Gail Gatt, Latrobe City Council (new member awaiting confirmation of appointment)

Mr Trevor Williams, Gippsland Trades and Labour Council (new member awaiting confirmation of appointment)

Ms Jane Burton, Department of Economic Development, Jobs, Transport and Resources (DEDJTR)

Ms Anna May, Department of Environment, Land, Water and Planning (DELWP) (new member awaiting confirmation of appointment)

Dr Grace Mitchell, Department of Environment, Land, Water and Planning (DELWP)

Emeritus Professor Rae Mackay (Observer), Latrobe Valley Mine Rehabilitation Commissioner

Mr Brett Millsom (Secretariat), Department of Economic Development, Jobs, Transport and Resources (DEDJTR)

APOLOGIES

Mr Alan Freitag, Department of Environment, Land, Water and Planning (DELWP)

Mr John Krbaleski, Department of Economic Development, Jobs, Transport and Resources (DEDJTR) (new member awaiting confirmation of appointment)

Ms Sarah Gilbert, Latrobe Valley Mine Operators (AGL Loy Yang)

Mr Angelo Saridis, Gippsland Water (new member awaiting confirmation of appointment)

GUESTS

Mr Anthony Feigl, Senior Project Manager, Latrobe Valley Regional Rehabilitation Strategy (LVRRS), Department of Economic Development, Jobs, Transport and Resources (DEDJTR)

Mr Michael Mozina, Geotechnical Work Stream Lead, Latrobe Valley Regional Rehabilitation Strategy (LVRRS), Department of Economic Development, Jobs, Transport and Resources (DEDJTR)

Dr Brett Davis, Senior Manager, Latrobe Valley Regional Water Study, Department of Environment, Land, Water and Planning (DELWP)

VICTORIA State Government

Latrobe Valley Mine Rehabilitation Advisory Committee

Meeting 09 Minutes (with confidential information redacted)

Agenda Item	Minutes

1 Definition of Regional Rehabilitation Scenarios

Delivered by: Anthony Feigl, Senior Project Manager, Latrobe Valley Regional Rehabilitation Strategy (LVRRS), Department of Economic Development, Jobs, Transport and Resources (DEDJTR)

Anthony Feigl provided an overview of the regional rehabilitation scenarios to be tested as part of the Latrobe Valley Regional Rehabilitation Strategy (LVRRS).

- There's been a large program of targeted stakeholder consultation undertaken to inform the development of the regional rehabilitation scenarios and identify regional receptors. This includes in the order of 20 workshops with approximately 25 stakeholder groups represented.
- The LVRRS will test the potential impacts of various pit lake scenarios on regional receptors and is due in June 2020.
- The key goal of the LVRRS scenarios development is to define a sufficiently wide range of scenarios to test the feasibility of pit lakes. Stakeholder feedback indicated a desire to see a wide range of scenarios tested. This has been addressed by bookending scenarios, i.e. testing the two ends of the spectrum of rehabilitation scenarios (a three full pit lakes scenario and a three minimum water level pit lakes scenario).
- In undertaking stakeholder engagement activities, one of the key issues that has consistently come up is the water level in the pit lakes.
- The Committee discussed whether or not the rehabilitated batters would be able to support large trees and other plant life. It is unlikely there will be large blue gum forests growing on batters, but rehabilitated batters are more likely to be able to support smaller native species.
- There is lots of discussion regarding water quality. Does the LVRRS project team know what the water quality of the final rehabilitated pit lakes might be. This is currently being investigated.
- Coal is a relatively inert material. The main source of any contaminants that would affect water quality would be acid sulphate soils in overburden dumps. It was noted that salinity and acidity may be minor water quality issues initially, but these should be able to be managed. Between the partial and full pit lake states, a partial terminal pit lake with no through-flow would result in a deterioration of water quality over time, while a full pit lake with through-flow would likely result in improved water quality over time (to be qualified as part of the Regional Water Studies – pit lake water quality modelling).
- Once water levels are defined, there's three key areas of interest that have emerged from the stakeholder consultation undertaken to date:
  - Pit lake connectivity
  - Access to the pit lake and the uses that could potentially be supported
  - The rate of fill.
- There needs to be a distinction made between natural fill and forced fill for the pit lake scenarios.
- The five scenarios being tested as part of the LVRRS are:
  - Minimum water level in all pits
  - Maximum water level in all pits
  - Optimised water level in all pits
  - One maximum water level and two minimum water level pit lakes
  - One minimum water level and two maximum level pit lakes.
- There are other scenarios outside the five defined. Latrobe City Council expects that some part of government will consider the other available options and model these.
- A large body of evidence was presented to the Hazelwood Mine Fire Inquiry regarding the full spectrum of rehabilitation options. All of this information is publicly available.
- The Yallourn North Extension has reached a point of equilibrium and is self-sustaining. It was noted that this is the minimum water level scenario.
- Yallourn is in a much better position than Hazelwood and Loy Yang when it comes to mine rehabilitation, because it has a much larger catchment area in relation to the lake area, compared with the other two mines.
- Each of the scenarios have been prepared utilising several general assumptions:

  - Batter design will be based on final design water level and the particular geotechnical properties of each batter; and
  - Cover type and depth will respond to the water level in each mine and the need for fire risk mitigation for exposed coal batters above the water level.
- It was suggested that use of the word optimised for the scenarios would better described as intermediate or managed pit lake level.

2 Identification of recognised regional receptors

Delivered by: Anthony Feigl, Senior Project Manager, Latrobe Valley Regional Rehabilitation Strategy (LVRRS), Department of Economic Development, Jobs, Transport and Resources (DEDJTR)

This presentation provided an overview of the regional receptors to be considered as part of the LVRRS.

- Receptors have been categorised into four broad areas:
  - Aboriginal and cultural heritage
  - Environment
  - Land uses
  - Water
- The objective of this piece of work was to describe the receptors within the LVRRS study area and to identify which of those have material links to LVRRS scenarios.
- The receptors identified are the same under all LVRRS scenarios and are based on the current environment.
- A spatial database of recognised regional receptors has been developed which includes information about the receptor's type, location and custodianship of the receptor.
- Work is continuing to identify those receptors that may have a material link to LVRRS scenarios and therefore should be subject to quantitative impact assessment (where possible).

3 Round-the-table updates

James Faithful, Latrobe Valley mine operators (ENGIE)

- ENGIE is currently awaiting the peer review of GHD's report regarding the structural assessment of the Hazelwood Pondage.
- There's been lots of talk in recent days regarding Hazelwood's approach to fire risk management and the adequacy of it. This is an issue that ENGIE takes very seriously.
- Technical studies as part of the rehabilitation and closure plan development are continuing.
- ENGIE recently hosted another of its community information forums with approximately 60 people in attendance.
- Earthworks at the Hazelwood site will shortly recommence as we enter into spring.

Ron Mether, Latrobe Valley mine operators (EnergyAustralia)

- Yallourn's Mining Licence has recently been extended.
- Yallourn has recently submitted its workplan variation which is currently with Earth Resources Regulation for review.
- Yallourn is currently preparing its submission for the Environment Protection Authority's (EPA) review of power station licences.

Jane Burton, Department of Economic Development, Jobs, Transport and Resources (DEDJTR)

- Anthony Feigl, Senior Project Manager for the LVRRS will be attending the Mine Rehabilitation conference in Germany in September in 2018.

Grace Mitchell, Department of Environment, Land, Water and Planning (DELWP)

- Anna May, the newly appointed Director, Water Resource Assessment and Planning within the Department of Environment, Land, Water and Planning will be filling the role previously occupied by Grace Mitchell on the Advisory Committee.
- There's lots of work going on across the state regarding water resource management, particularly in light of the dry conditions being experienced.

Roland Davies, Latrobe Valley community

- The Gippsland Regional Partnership's Regional Assembly was held in late June 2018 in Wonthaggi. More than 200 people attended as well as a number of Victorian Government Ministers, including the Premier.
- The Assembly voted on three key initiatives from a variety of priorities. One of those selected in the top three was a Regional Carbon Innovation Centre.

Emeritus Professor Rae Mackay, Latrobe Valley Mine Rehabilitation Commissioner

- A new director has been appointed to the Geotechnical and Hydrogeological Engineering Research Group at Federation University. Associate Professor Thomas Baumgartl will commence in the role on Monday 13 August 2018.
- The Traralgon Bypass remains a big issue of focus for the Commissioner, particularly in relation to stability impacts associated with the Loy Yang Mine.
- The Commissioner and his office will be delivering a number of forums and public lectures next week as part of National Science Week. These are being delivered in partnership with the Gippsland Tech School.

Graeme Middlemiss, Latrobe City Council

- Council voted to defer a decision on Monday night regarding the asbestos cell associated with demolition of the Energy Brix Power Station. Council is reluctant to accept an asbestos cell so close to the local community.

Trevor Williams, Gippsland Trades and Labour Council

- The Gippsland Trades and Labour Council does not want to see medium to long term opportunities to use the Latrobe Valley's coal resource diminished.
- From a communications and engagement perspective, consideration should be given to going to community groups, rather than expecting them to come to you.

4 **Geotechnical-related metrics and thresholds for impact assessment on recognised regional receptors**

Delivered by: Michael Mozina, Geotechnical Work Stream Lead, LVRRS, DEDJTR

This presentation provided an update on the specific geotechnical metrics and thresholds that will be applied in measuring potential impacts on relevant regional receptors.

- The objective of this study was to define the metrics and thresholds that can be used to determine the material impact of regional rehabilitation scenarios on recognised geotechnical-related receptors within the LVRRS study area.
- The defined receptors' metrics and thresholds will be used to inform recommendations for ground movement monitoring requirements required for a preferred regional rehabilitation scenario.
- The work is being undertaken in five steps:
  - **Step one** – collate recognised regional receptors.
  - **Step two** – consult with geotechnical-related receptor custodians to propose recognised and materially impacted receptors.
  - **Step three -** Literature review of geotechnical related receptor metrics including overview of existing and accepted metrics used for the geotechnical-related dependent receptors.
  - **Step four –** identify metrics and thresholds to describe the potential impact of geotechnical concern and identify best metrics to measure current condition and trends for receptors.
  - **Step five –** high level recommendations for ground movement monitoring needs.
- Economic, social and cultural receptors are out of scope for this particular study as these are being considered by the land use study being led by the Department of Environment, Land, Water and Planning.
- 'Materiality' as defined for this study, is the threshold of likely or potential cumulative impact on receptors based on contextual information and is based on judgement following consideration of proximity, causal pathway and expected level of exposure. Where receptors are not linked to events, are too far away, only briefly exposed or only impacted by one mine, the impacts may not be material to this regional cumulative impact assessment.
- There are several different types of ground movement that may have implications for regional receptors:

  - **Subsidence (rebound)** – consolidation of soil material from depressurisation and potentially reversed when groundwater levels restore.
  - **Horizontal/Vertical ground movement around mines** – stress relief effects
  - **Block movements in mine batters** – hydrostatic and pore pressure processes
- Open cut mining creates an imbalance of (in situ) ground stress conditions which results in batter movement (horizontal or vertical ground movement) towards pit.
- Movement occurs in operating mines when coal joints (from mining/stress relief) fill with water. Water in coal joints creates pressures that can initiate block movement (within or below the coal seam).
- Subsidence has occurred through the dewatering processes employed by each of the Latrobe Valley coal mines over a number of decades.
- Subsidence will continue to occur with the continuation of coal mining in the Latrobe Valley. Generally, this subsidence has been very uniform.
- With the cessation of aquifer depressurisation, groundwater levels will begin to increase which is likely to result in some rebound or heave.
- Increased weight within the pit during and post filling may change the stress field under and around the mine (reservoir induced seismicity) producing ground movement (on an inter-mine scale).
- Increased groundwater pore pressure from ceasing aquifer depressurisation and presence of the pit lakes may decrease the shear or normal stress on an existing fault or coal-interseam face, increasing potential for ground movement.
- The stability of exposed batters will still need to be managed by minimising build-up of hydrostatic pressure in coal block joints (for those that can be balanced with pit lake pressures).
- The receptors report has identified those receptors likely to be impacted by ground movement processes. Most of the potential impacts are likely to be attributable to subsidence or reservoir induced seismicity.
- Metrics being used are:
  - Strain, angular distortion, defection ratio, radius of curvature
  - Factor of Safety (FoS) and Probability of Failure (PoF)
  - Differential settlement mm.
- Descriptive impacts being used:
  - Structural defects/architectural damage
  - Functional/operational impacts, serviceability decline
  - Increased maintenance
  - Person discomfort/level of uneasiness.
- Using many thresholds will depend on knowing the build standard of structures, what materials were used, the level of maintenance received and whether modification occurred. Different ‘build’ features will have different thresholds.
- It’s worth noting that the thresholds and metrics reports don’t actually make any assessment of impacts.
- There’s a range of modeling approaches and tools that can be utilised to predict and monitor ground movement processes and impacts. Existing ground movement monitoring, and to be complemented in the future, include:
  - **Extensometers –** monitor subsurface ground movement
  - **Inclinometers –** monitor lateral ground movement
  - **Survey pins –** monitor ground movement
  - **Piezometers –** measure groundwater behavior and pore water pressures
  - **Tiltmeters –** monitor change in title of existing structures.

5 **Water-related metrics and thresholds for impact assessment on recognised regional receptors**

Delivered by: Dr Brett Davis, Senior Manager, Latrobe Valley Regional Water Study, Department of Environment, Land, Water and Planning (DELWP).

This presentation covered information about the specific water metrics and thresholds that will be applied in measuring potential impacts on relevant regional receptors.

- The objective of the water metrics thresholds report is find out what metrics are currently available to assess potential impacts and benefits and identify the best metric(s) relevant to each receptor.

- The report also seeks to identify the current status, trends and critical impact thresholds for recognised regional surface water and groundwater receptors and identify those receptors with inadequate information about their status, trend or critical impact thresholds.
- It was asked if the Gippsland Lakes are being included as part of this assessment. It was noted that potential impacts to the Gippsland Lakes will be considered as part of the LVRRS.
- It was noted that water thresholds for infrastructure receptors are minimal, if any. Most of the potential impacts on infrastructure receptors are geotechnical.
- It was asked if discussions had been had with those groups that utilise the wetlands, such as field and game. It was noted that it's still early days and an appropriate level of information is not yet available to engage with these groups.
- It was noted that coal fired power generation does not seem to be considered for water related impacts. While the power generators have a water entitlement, that entitlement is to water that's available. Previously, generators have had to purchase water.

6 Climate change projections method report and user guidance

Delivered by: Dr Brett Davis, Senior Manager, Latrobe Valley Regional Water Study, DELWP

This presentation provided an overview of the climate change projections through to 2100 (and in some instances out to 2300) and the implications these projections may have for mine rehabilitation.

- This piece of work is a discrete deliverable action in the Victorian Government's *Hazelwood Mine Fire Inquiry Victorian Government Implementation Plan June 2016.*
- This work aimed to develop the conceptual approach and method to be applied to understanding climate change based on a consensus of expert's opinions. It is worth noting that modeling and information relating to climate change is varied and contested, for example, there are 42 different climate models.
- While climate change modelling extends to 2300, our knowledge and modelling of climate change projections post 2100 is limited.
- Changes to climate to 2100 are to be quantified by applying scaling factors to historical data.
- Climate change has the potential to affect the long-term water balance of established pit lakes.
- There are two representative emission scenarios; one where the emissions-related climate forcing continues to 2100 and then stabilises, and a high emissions scenario where forcing (e.g. temperatures) continues to increase beyond 2100.
- Annual rather than seasonal factors are being used in modelling. Seasonal scaling tended to overestimate both extreme dry and extreme wet conditions.
- Uncertainties from other sources could have a greater influence on the choice of rehabilitation strategies than streamflow factors. These include:
  - Changes in frequency and distribution of rainfall
  - Changes in water demand by irrigators and industry
  - Changes in severity and sequencing of multi-year wet and dry periods
  - Increased bushfire risk and other land-use changes to streamflow.
- A key message from the projections to 2300 is that it is very unlikely that the mean climate will become wetter than in the 20th century.
- The response in temperature, evaporation and rainfall, as well as many extreme events is dependent on the emissions pathway the world follows.
- Decisions need to be framed under a risk management framework. The change under a very low scenario could be considered a 'minimum' case to plan for, and the strongest projected change under a high scenario could be considered a low-probability high impact case.

7 Other business and next meeting

Next meeting scheduled for Wednesday 19 September 2018.