CHAPTER 3

Evolution of Hazelwood Closure Concept

1. Historical context and past approvals

Across recent decades a growing body of work has examined issues relevant to rehabilitation of brown coal mines in the Latrobe Valley. Relevant to Hazelwood Mine are studies and assessments undertaken by specialist consultants, ENGIE Hazelwood, the Latrobe Valley mining industry, and the Victorian Government. These investigations have examined alternatives for final landform, rehabilitation methodologies, and water sources, in particular.

The DMRP takes account of all the work undertaken to date and presents the most comprehensive and detailed rehabilitation understanding of the Hazelwood Mine site whilst continuing to identify potential technical knowledge gaps and areas for further works.

Past work has assessed a range of landform and water source alternatives to arrive at the preferred DMRP rehabilitation concept. Information on the project development and a summary of the assessment of alternatives to the final landform design were assessed and summarised in the HRP EES. All these processes continue to illustrate the potential benefits and essential elements of the full lake option.

1.1 1980S TO 2005

Since at least the 1980s, the concept for the final rehabilitation of the Hazelwood Mine has been to fill the mine void with water to form a full pit lake. In 1986, after consultation with Government agencies and local community groups, the SECV published its Rehabilitation Policy for Open Cuts and Overburden Disposal Areas. The principal objective of the policy was:

To ensure that land disturbed by coal-winning activities is stabilised and landscaped to blend into or complement existing natural features, allowing further beneficial use at the earliest practical time. Proposals will be developed in consultation with agencies, interest groups and the public.

The successor to the SECV, Generation Victoria, reviewed the policy after five years of implementation and published the Generation Victoria Rehabilitation Policy, under which the Morwell (now Hazelwood) Mine Rehabilitation Concept Master Plan was prepared.

At the time of privatisation in 1996, this rehabilitation concept was formally documented in MIN5004 and the associated approved mine 1996 Work Plan which built on the 1994 Concept Master Plan. The 1996 Work Plan contemplated a full lake; that is, a water body to the nominal Morwell River level of +45 m RL as shown in Figure 3.1.

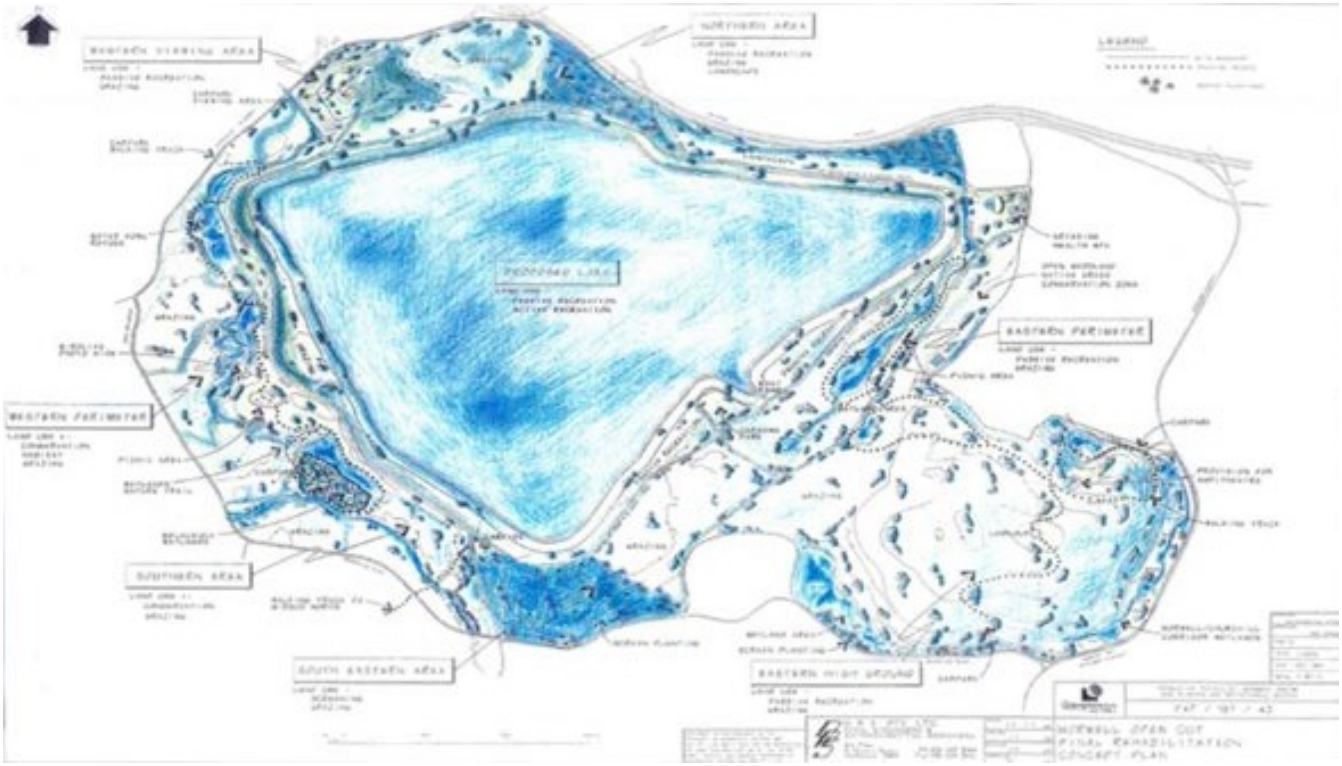

Figure 3.1 Hazelwood Mine final rehabilitation concept plan sketch with full lake (1996)

1.2 2004-2006 ENVIRONMENT EFFECT STATEMENT

An EES was completed for the West Field development to assess works required to expand the mine to the west and maintain an uninterrupted supply of coal to Hazelwood Power Station. This ensured a nominal commercial operating life of the business to 2031. Diversion of the Morwell River for a subsequent time was included in these assessments.

At the completion of the 2004-2006 EES, mining approvals were granted to construct the Hazelwood Ash Retention Area (HARA) and to establish in-pit overburden dumps. As part of the EES the goal of mine closure and rehabilitation concept was defined as:

The strategic rehabilitation and mine closure goal for the ultimate completion of Hazelwood Mine, including the West Field, is to provide a technically feasible, stable and sustainable landscape that reflects the aspirations of stakeholders within the constraints to rehabilitation.

The conceptual mine closure model and rehabilitation plan that was presented in the EES incorporates the alternative requirements for long-term stability and the revegetation of the mine and surrounds. This alternative proposal was not fully tested technically and represented a significant departure from earlier knowledge and international experience at the time but was an understandable option of interest in light of drought conditions at the time. It discussed options for the final void but presented a preferred option of the establishment of equilibrium through the placement of overburden from West Field operations and controlled groundwater pumping. This would have resulted in a post closure lake level of initially RL -22M that in time would have continued to rise until a (incorrectly calculated) natural equilibrium was met, initially expected at around RL +8M.

Importantly, this approach was not assessed in the context of the principles of safe, stable, and sustainable that are required in the context of this DMRP. The alternative option presented would also not have enabled passive management of the site long term as it would primarily rely on pumping to maintain equilibrium.

1.3 2006-2008 VARIOUS OTHER APPROVALS

During the period 2006 to 2008 the following approvals were granted under a range of legislative instruments specifically to enable diversion of the Morwell River and the relocation of the Strzelecki Highway, to support the development of the West Field:

- EPBC Act approval (vegetation)
- Planning Scheme amendments
- Crown land licence (and subsequent exchange agreement)
- Aboriginal cultural heritage permits

1.4 2009 WORK PLAN VARIATION

In 2009, a variation to the 1996 Work Plan was approved, which presented a final lake landform several tens of metres lower than the Morwell River level (at initially -22 m RL / eventually +8 m RL as discussed above). This revised lake depth was determined based on preliminary modelling which indicated that a lake of this depth would be sufficient to counterbalance deep aquifer water pressures and avoid heave of the base of the mine.

This change was driven by a desire to minimise water use not maximise stability, safety, and sustainability. The need for ongoing passive management was not considered a high priority at this time, and in the context of the millennial drought, this position was somewhat untestable in the absence of an immediate need to rehabilitate. This concept, shown in Figure 3.2, was proposed based on an expectation further scientific work would be undertaken to determine its suitability. Such work was not a priority at the time with no imminent plans to cease coal winning.

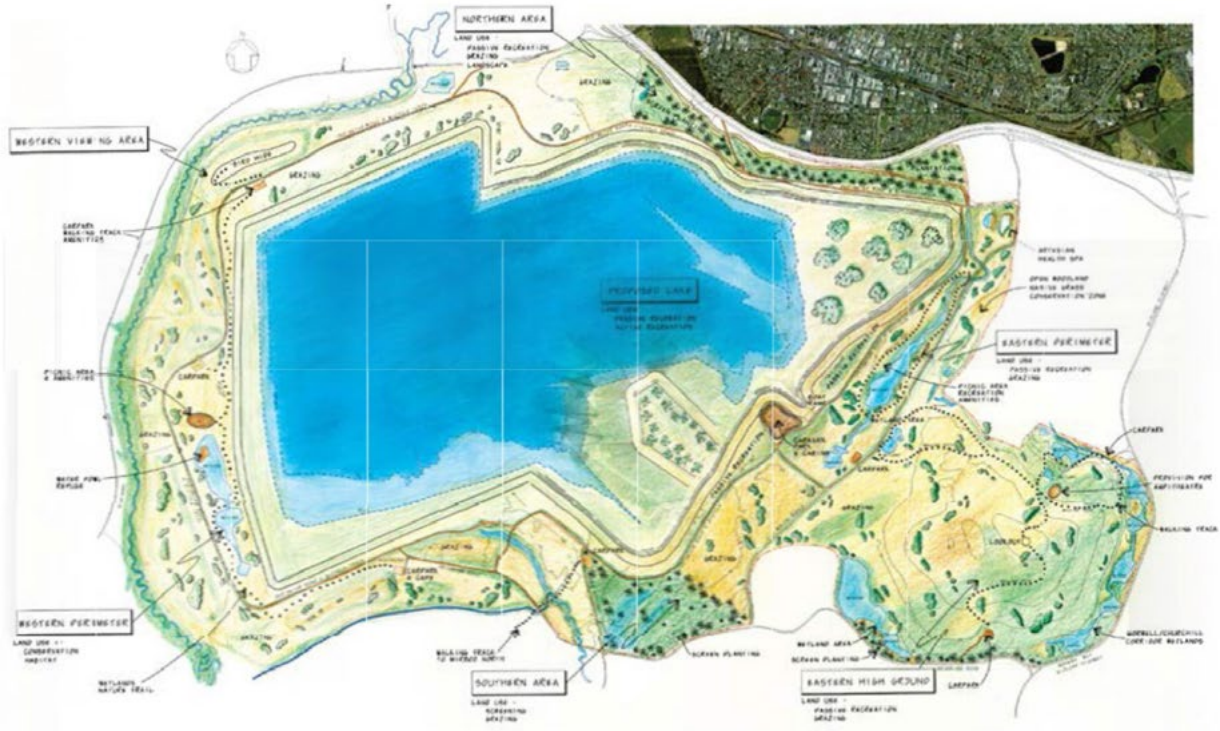

Figure 3.2 Hazelwood Mine final rehabilitation concept plan sketch from West fields EES with partial lake

1.5 2015/2016 LATROBE VALLEY MINES FIRE INQUIRY

As a result of a coal fire at Hazelwood in 2014, an inquiry was established by the State Government. An assessment of rehabilitation options for all three Latrobe Valley mines (Hazelwood, Yallourn and Loy Yang) was undertaken by Jacobs Australia for the Board of Inquiry. Findings are summarised in the Hazelwood Mine Fire Inquiry Report 2015/2016 Volume IV - Parts 5 and 6

A key conclusion of the assessment was that pit lake rehabilitation was the most viable option for all three coal mines. This conclusion was based on the assessment of key risks (e.g. fire mitigation, slope stability and access to water) and the relative costs of implementation, compared with other options that were considered.

Whilst joint experts reached general agreement with the findings of the Jacobs assessment, the inquiry report to the Hazelwood Mine Fire Inquiry Board specified that an altogether more detailed and individual approach to rehabilitation would be necessary for each of the Latrobe Valley mines.

1.6 2017-2021 KEY WORKS AND APPROVALS

Since prior to the conclusion of coal winning and power generation at Hazelwood in 2017, ENGIE Hazelwood has invested significant effort in progressing rehabilitation concept planning and has initiated several statutory approval processes. Figure 3.3 - Key Works and Approvals (2017-2021) summarises the key milestones during this period, each of which are further described below.

1.7 2016 NO REGRETS WORK

From late 2016, and later captured by the subsequent 2017 WPV, ENGIE Hazelwood commenced 'no regrets work'. This concept refers to works conducted with approval or consent, without knowing which landform will ultimately be approved; and related to works that are needed to be done irrespective of the final landform that is ultimately approved (i.e. needed for a full lake or partial pit lake) – so there are no regrets associated with getting on with them.

1.8 2017 OPTIONS AND STRATEGIES REPORT

ENGIE Hazelwood and GHD prepared an 'Options and Strategies Report' in May 2017, which addressed three final landform options for the MIN5004 area: empty mine void, partial pit lake, and full pit lake. ENGIE Hazelwood carried forward the partial and preferred full pit lake landform options into the 2017 WPV as part of its conceptual rehabilitation and closure planning.

Figure 3.3- Key Works and Approvals (2017-2021)

1.9 2017 WORK PLAN VARIATION (WPV)

ENGIE Hazelwood submitted the 2017 WPV which was approved on 12 May 2017. This WPV provided detail in respect of preliminary rehabilitation works which were proposed to be undertaken in the period between the cessation of coal production in 2017 and ERR's approval of a final mine rehabilitation and closure plan. The 2017 WPV approved initial stage rehabilitation works during a period described as the immediate post station closure and closure planning (IPSCCP) period, including:

- rehabilitating upper mine batters (reshaping, capping with overburden and soil and revegetating) consistent with works required to enable fill to RL +45M;
- decommissioning and demolishing certain redundant mine infrastructure;
- reconfiguring certain mine infrastructure, to be in a form and/or location which facilitates necessary rehabilitation works; and
- remediation and capping of landfills and placement of overburden on the floor and against the walls of certain mine batters to stabilise the landform.

The 2017 WPV also incorporated an updated and revised risk assessment management plan (RAMP). The RAMP identified the potential risks in respect of the mine in the post coal production period and proposed preliminary rehabilitation works and detailed the systems and procedures through which those risks will be eliminated or reduced (so far as reasonably practicable). The 2017 WPV contemplated a proposed final landform of either a partial mine lake to RL +8M consistent with the 2009 concept or full mine lake to RL +45M in recognition that further analysis was required. the submission included a commitment to further assess each option and the potential interconnection of a mine lake with the Morwell River.

The 2017 WPV is the current approved mine work plan registered against MIN5004 and remains the most recent statutory approval for the mine under the MRSD Act. Notwithstanding this, there have been amendments and addendums to the 2017 WPV.

1.10 2019 HAZELWOOD CONCEPT MASTER PLAN

The Hazelwood Concept Master Plan was developed by ENGIE Hazelwood in 2019, in consultation with Government and stakeholders, to convey the extent of the redevelopment opportunity and set out future land use possibilities for a rehabilitated Hazelwood site, including possible residential, agricultural, recreational, and industrial uses. The Concept Master Plan was prepared as an options paper for site usage but based on a full lake final landform of RL +45M. The Concept Master Plan was informed by the growing body of technical work and the experiences with completed full lakes in Germany, at that time.

The Concept Master Plan provided an initial framework for Government, communities, developers and investors to consider their potential role or interests in a redeveloped site. The Concept Master Plan was also seen a precursor to an updated WPV which would request approval for a RL +45M pit lake which was being prepared at the time. The release of the Concept Master Plan provided an opportunity to discuss the benefits and challenges of returning to the full lake concept that was in previously in place. Figure 3.4 from the 2019 Concept Master Plan illustrates these potential land uses. The Concept Master Plan is not a formal approval but informs the DMRP and end land usage.

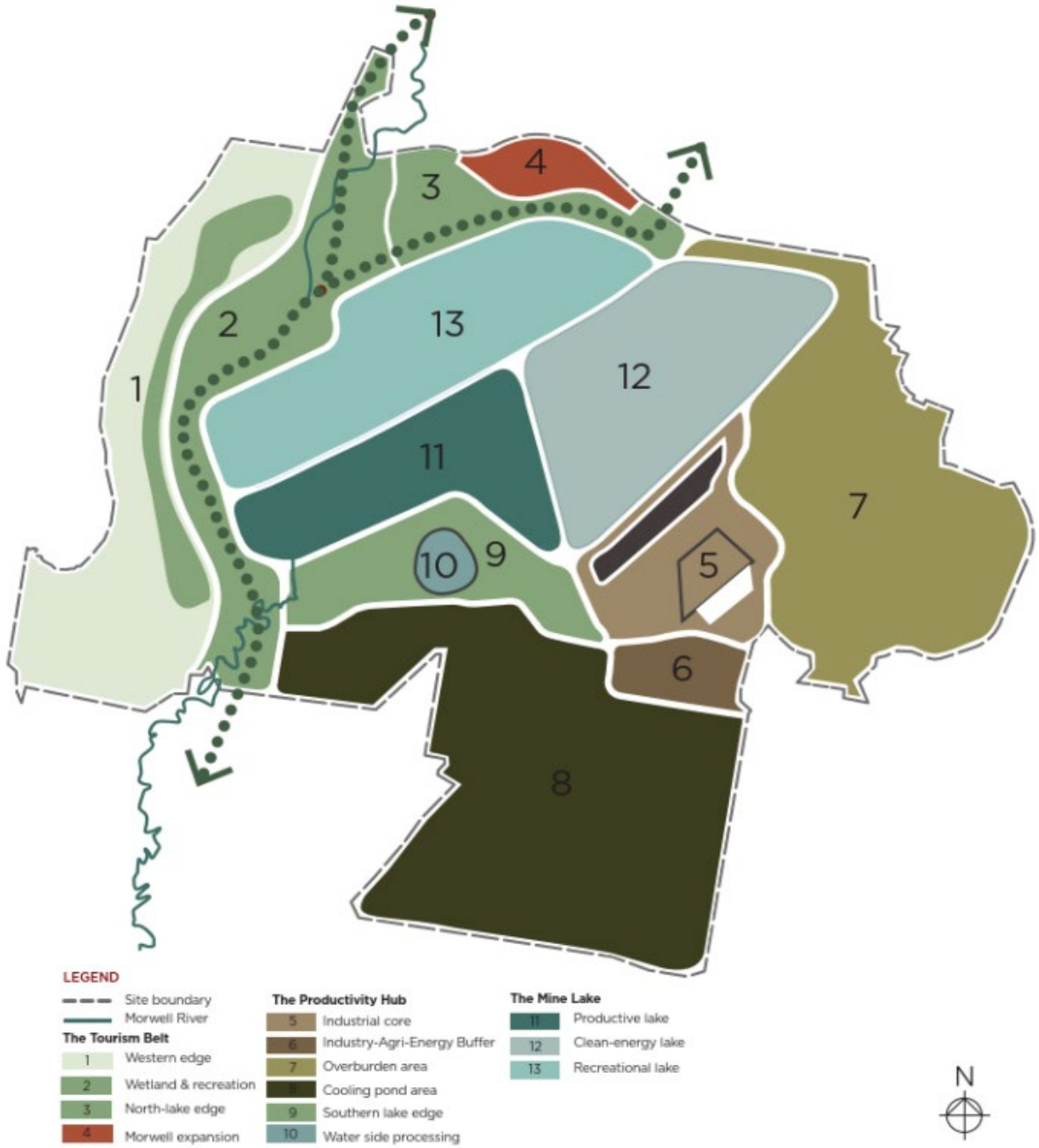

Figure 3.4 - Hazelwood Concept Master Plan (2019)

1.11 2019 EPA CLEAN UP NOTICES

EPA Victoria issued clean up notices for the Hazelwood site between July 2019 and October 2021, requiring environmental audits to be completed. In summary, ENGIE Hazelwood was required to:

satisfy the requirements of section 53V of the EP Act for the Hazelwood mine itself; and
satisfy the requirements of section 53X of the EP Act for the remainder of the Hazelwood site.

The actions and outcomes of the EPA clean-up notices have informed the preparation of the DMRP with respect to contaminated land and licenced facilities. Where specific actions or commitments relating to enforcement or licencing under the EP Act relate to rehabilitation, the EP Act takes precedence. These activities and commitments are not replicated in the DMRP.

The EPA clean-up notices were subsequently transitioned to environmental action notices, served under the EPA Act 2017, requiring the completion of environmental audits which satisfy section 208 of the EP Act 2017. Works to complete the audits on site are 100% complete for the Hazelwood mine void below RL+45, and approximately 60% complete (as of April 2025) for the remainder of the site. The statutory due date for the completion of assessment, remediation, and auditor verification is February 2026 for the majority of areas designated within the environmental action notices. Any works, including remediation efforts or earthworks, which are required to satisfy the requirements of the environmental action notices will take precedent.

The following two Environmental action notices (issued to multiple entities) are currently valid for the ENGIE Hazelwood Power complex (including MIN5004 land and surrounds and HCP):

ENVIRONMENTAL ACTION NOTICE 1.	REQUIREMENTS
Risk from activity EAN-00002227 – Australia Power Partners B.V. EAN-00002228 – Hazelwood Churchill Pty Limited EAN-00002229 – Hazelwood Pacific Pty Ltd EAN-00002230 – National Power Australia Investments Limited	• By 23/02/26 you must have completed the remediation of the premises as per the document dated 24/06/21 and titled 'Hazelwood Clean Up Plan–Hazelwood Power Complex', produced by Environmental Resources Management Australia Pty Ltd. • By 23/02/26 you must have supplied to the EPA an environmental audit report, prepared in accordance with section 208 of the Act, and consistent with the audit scope dated 17/03/22 and titled 'EA001181 – Environmental Audit Scope'.
ENVIRONMENTAL ACTION NOTICE 2	**REQUIREMENTS**
Land suitability EAN-00002231 – Australian Power Partners B.V. EAN-00002232 – Hazelwood Churchill Pty Limited EAN-00002233 – Hazelwood Pacific Pty Ltd EAN-00002234 – Nation Power Australia Investments Limited	• By 23/02/26 you must have completed the remediation of the premises as per the document dated 24/06/21 and titled 'Hazelwood Clean Up Plan–Hazelwood Power Complex', produced by Environmental Resources Management Australia Pty Ltd. • By 23/02/26 you must have supplied to the EPA an environmental audit report, prepared in accordance with section 208 of the Act, and consistent with the audit scope dated 17/03/22 and titled 'EA001181 – Environmental Audit Scope'.

Table 3.1: – Environmental Action Notices

1.12 2019 WORK PLAN VARIATION & REHABILITATION AND CLOSURE PLAN

The 2019 WPV and a detailed 2019 Rehabilitation and Closure Plan (RCP) were accepted by ERR in January 2020 (ENGIE Hazelwood paid, and ERR accepted, a fee following receipt of these approval applications). The 2019 RCP was drafted to comply with the MRSD(MI) Regulations 2019, which included enhanced requirements for the preparation of rehabilitation plans.

The detailed 2019 RCP was informed by a significant number of geotechnical, hydrological, hydrogeological, environmental, and socioeconomic studies completed by suitably qualified technical consultants. After 10 months of consideration, ERR informed ENGIE Hazelwood that the 2019 WPV and 2019 RCP had not been assessed due to an absence of planning approvals. This position was inconsistent with earlier requests. Subsequently, ENGIE Hazelwood was directed to undertake a section 42a assessment on aspects of the 2019 WPV and 2019 RCP.

1.13 2021 SECTION 42A REPORT

Given ERR's decision not to assess the 2019 WPV and 2019 RCP, ENGIE Hazelwood attempted to get stage 1 of the 2019 WPV approved in isolation before submitting further stages as separate approvals. Under this approach, ENGIE Hazelwood never intended to 'pause' filling at RL -7m AHD, including due to geotechnical stability issues associated with maintaining a partial lake at this level. Instead, it expressly proposed "continuous" filling but was not seeking stage 2 approval at this time. This approach was seen as least-worst approach given ERR's inability to assess the preferred approvals.

The s42a assessment was submitted but this and other processes surrounding the 2019 WPV and 2019 RCP never progressed given the rainfall event and the 2021 flooding of the Yallourn Mine, the subsequent emergency approvals, and amendment of MIN5004 to require ENGIE Hazelwood to undertake EES and EPBC assessments.

1.14 2021 HAZELWOOD CLEAN UP PLAN

As an outcome of the former Clean up notices (now environmental action notices) issued by EPA Victoria in 2019 with respect to the Hazelwood site, ENGIE Hazelwood was required to prepare a Clean Up Plan (CUP) for approval by EPA Victoria. The CUP was required to "restore beneficial uses of the premises for ongoing use", as required by the action notices.

The Hazelwood CUP, finalised on 24 June 2021, includes an end land use plan proposing for the site to be relinquished as a combination of land uses including modified ecosystems, agriculture, industrial and managed landfills (see Figure 3.5 Clean Up Plan – End Land Use Plan (2021)). The following potential land uses are worth noting:

- A significant portion of land surrounding the mine void is proposed to be used for agricultural purposes
- A large portion of land to the south-east of the mine void is proposed to be used as industrial land
- Small portions of land to the north and south-east of the mine void are proposed to be retained as modified ecosystems.

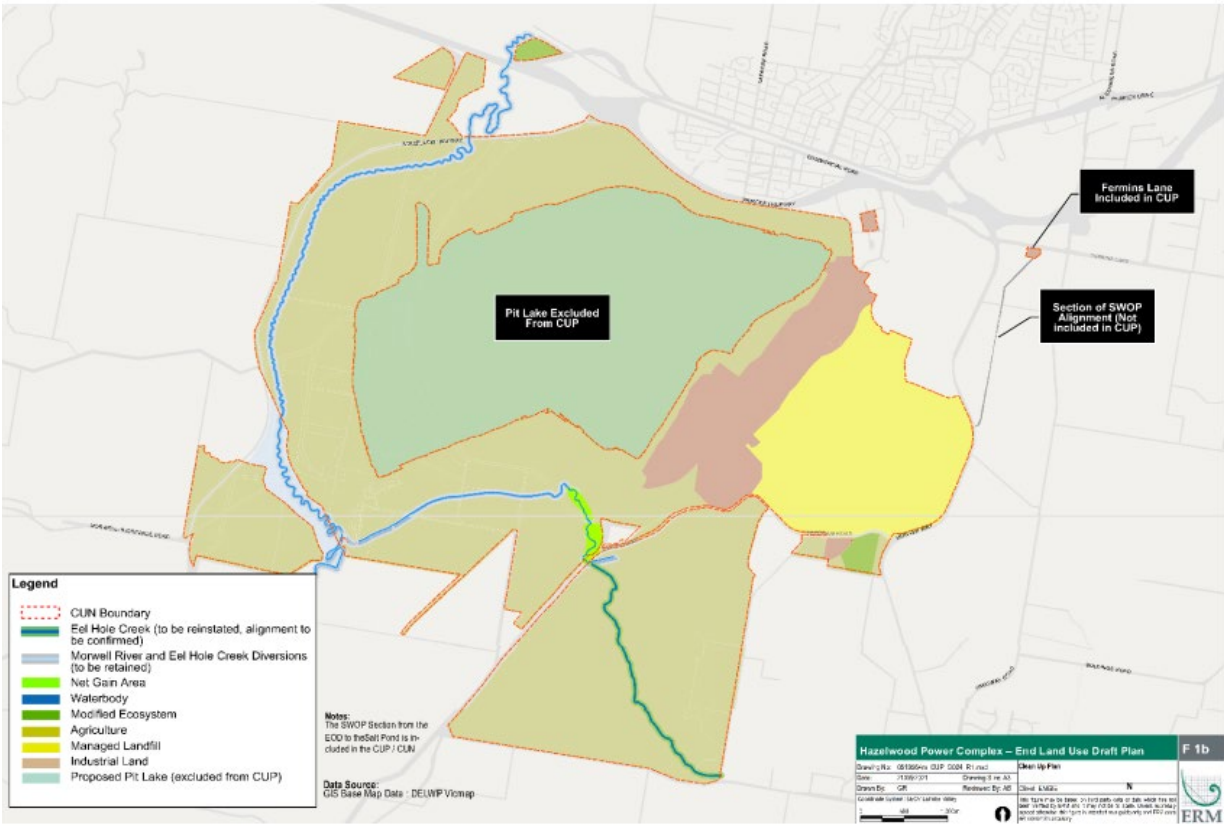

Figure 3.5 Clean Up Plan – End Land Use Plan (2021)

1.15 MORWELL RIVER FLOOD DIVERSION AND 2021 MINING LICENCE AMENDMENTS

The Mining Licence MIN5004 was amended in 2021 to authorise emergency works *(Minister for Energy, 2021)* to support Yallourn Mine's repairs to their Morwell River Diversion embankment that became unstable due to excessive rainfall and flooding in 2021. New conditions 15A–15C were inserted into MIN5004 to enable Morwell River Flood Diversion (MRFD) emergency works, to provide flood mitigation to assist Yallourn manage risk to damaged sections of the Morwell River Diversion.

The amended conditions also:

- authorised decommissioning of further redundant mine infrastructure (e.g. clean and dirty water pumps) and groundwater infrastructure on the floor of the mine
- required referrals to be made under the EE Act and the EPBC Act of the proposed final rehabilitation works, particularly lake filling.

The requirement to undertake an EES was a condition inserted into the MIN5004 pursuant to the 2021 MRFD approvals, by which water would enter the mine in significant quantities through the MRFD, and retention of operational waters would continue. As such, it was agreed between ENGIE Hazelwood and the State to establish a requirement to undertake an EES within MIN5004 and also include the relevant factors of safety and probability of failure against which a preferred final landform should be assessed.

1.16 2021 REFERRALS OF FINAL REHABILITATION WORKS FOR HAZELWOOD MINE UNDER EE AND EPBC ACTS

In 2021, ENGIE Hazelwood was required by Government to refer the rehabilitation project under the EE Act and EPBC Act, to assess the potential environmental effects of the final rehabilitation concept.

Key rehabilitation activities that informed the referrals were:

- Filling of the mine void to a final level of up to RL +45m AHD using predominately groundwater, surface water and any other approved water sources.
- Final rehabilitation and reprofiling works on the upper mine batters (i.e. above the surface of the future mine lake).
- Decommissioning remaining redundant infrastructure, such as redundant roads, car parks, buildings, and pumphouses on the HCP and the saline water outlet pipeline (SWOP).
- Final decommissioning and drainage of the Hazelwood cooling pond (HCP) and restoration of the natural alignment of Eel Hole Creek.
- Infrastructure necessary to maintain lake depth and water quality following completion of fill including possible Morwell River interconnection, providing regional flood mitigation opportunities.

The EES process will assist in informing the following approvals:

Primary:

- Declared Mine Rehabilitation Plan (DMRP) pursuant to the MRSD Act.
- Development licence for water discharges from site (*Environment Protection Act 2017* (Vic)).
- Licence to construct works to deviate a waterway pursuant to the *Water Act 1989* (Vic) (Water Act).
- Cultural Heritage Management Plan (CHMP) pursuant to the *Aboriginal Heritage Act 2006* (Vic).
- Approval to undertake works pursuant to the *Planning and Environment Act 1987* in accordance with the Latrobe Planning Scheme.

Secondary:

- Licence to take and use groundwater to fill the mine lake pursuant to the *Water Act 1989* (if necessary to vary the existing groundwater licence).
- Permit to take protected flora and fauna pursuant to the *Flora and Fauna Guarantee Act 1988* (Vic).
- Authorisation for taking of wildlife pursuant to the *Wildlife Act 1975* (Vic).
- Licence for removal of soil that is likely to contain any part of a noxious weed pursuant to the *Catchment and Land Protection Act 1994* (Vic).
- Permit or consent for management of impacts to historic heritage under the *Heritage Act 2017* (Vic).

1.17 2022 HAZELWOOD REHABILITATION INVESTIGATION REPORT

Around September 2022 (there were multiple iterations), and in the assessment of the 2019 WPV and RCP, advice was sought by the then Minister for Resources, the Hon, Jaala Pulford MP, from the Mine Rehabilitation Commissioner, Dr Rae Mackay on a range of relevant matters via the 'Hazelwood Rehabilitation Investigation Report'.

The MLRA Report contained several geotechnical and hydrogeological recommendations in respect of the final rehabilitation of the mine. In response, ENGIE Hazelwood:

- has considered and addressed these matters as part of the development of the DMRP and/or conduct of the relevant EES technical studies; and
- has engaged with the MLRA as to how the various recommendations are being addressed.

On the issue of the water which was (by that time) already in the Mine void following the MRFD works, Dr Mackay stated: "The MLRA is of the opinion that preference should be to avoid dewatering the lake once rehabilitation is underway" and went on to outline the range of challenges that would arise if dewatering was pursued.