REFERRAL OF A PROJECT FOR A DECISION ON THE NEED FOR ASSESSMENT UNDER THE *ENVIRONMENT EFFECTS ACT 1978*

REFERRAL FORM

The *Environment Effects Act 1978* provides that where proposed works may have a significant effect on the environment, either a proponent or a decision-maker may refer these works (or project) to the Minister for Planning for advice as to whether an Environment Effects Statement (EES) is required.

This Referral Form is designed to assist in the provision of relevant information in accordance with the *Ministerial Guidelines for assessment of environmental effects under the Environment Effects Act 1978* (Seventh Edition, 2006). Where a decision-maker is referring a project, they should complete a Referral Form to the best of their ability, recognising that further information may need to be obtained from the proponent.

It will generally be useful for a proponent to discuss the preparation of a Referral with the Impact Assessment Unit (IAU) at the Department of Environment, Land, Water and Planning (DELWP) before submitting the Referral.

If a proponent believes that effective measures to address environmental risks are available, sufficient information could be provided in the Referral to substantiate this view. In contrast, if a proponent considers that further detailed environmental studies will be needed as part of project investigations, a more general description of potential effects and possible mitigation measures in the Referral may suffice.

In completing a Referral Form, the following should occur:

- Mark relevant boxes by changing the font colour of the 'cross' to black and provide additional information and explanation where requested.
- As a minimum, a brief response should be provided for each item in the Referral Form, with a more detailed response provided where the item is of particular relevance. Cross-references to sections or pages in supporting documents should also be provided. Information need only be provided once in the Referral Form, although relevant cross-referencing should be included.
- Responses should honestly reflect the potential for adverse environmental effects. A Referral will only be accepted for processing once IAU is satisfied that it has been completed appropriately.
- Potentially significant effects should be described in sufficient detail for a reasonable conclusion to be drawn on whether the project could pose a significant risk to environmental assets. Responses should include:
 - a brief description of potential changes or risks to environmental assets resulting from the project;
 - available information on the likelihood and significance of such changes;
 - the sources and accuracy of this information, and associated uncertainties.
- Any attachments, maps and supporting reports should be provided in a secure folder with the Referral Form.
- A USB copy of all documents will be needed, especially if the size of electronic documents may cause email difficulties. Individual documents should not exceed 10MB as they will be published on the Department's website.

- A completed form would normally be between 15 and 30 pages in length. Responses should not be constrained by the size of the text boxes provided. Text boxes should be extended to allow for an appropriate level of detail.
- The form should be completed in MS Word and not handwritten.

The party referring a project should submit a covering letter to the Minister for Planning together with a completed Referral Form, attaching supporting reports and other information that may be relevant. This should be sent to:

Postal address

<u>Couriers</u>

Minister for Planning PO Box 500 EAST MELBOURNE VIC 8002 Minister for Planning Level 16, 8 Nicholson Street EAST MELBOURNE VIC 3002

In addition to the submission of the hardcopy to the Minister, separate submission of an electronic copy of the Referral via email to <u>ees.referrals@delwp.vic.gov.au</u> is required. This will assist the timely processing of a referral.

PART 1 PROPONENT DETAILS, PROJECT DESCRIPTION & LOCATION

1. Information on proponent and person making Referral

Name of Proponents:	Hazelwood Power Corporation Pty Ltd and the Hazelwood Power Partnership (Hazelwood Pacific Pty Ltd, Australian Power Partners B.V., Hazelwood Churchill Pty Ltd and National Power Australia Investments Ltd) (together, ENGIE Hazelwood)
Authorised person for proponent:	Jamie Lowe
Position:	Head of Regulation, Compliance, and Sustainability
Postal address:	ENGIE Hazelwood
	Rialto South Tower, 525 Collins Street
	Melbourne VIC 3000
Email address:	jamie.lowe@engie.com
Phone number:	+61 (03) 9617 8415
Person who prepared Referral:	David Hyett
Position:	Industry Director – Environment
Organisation:	AECOM Australia Pty Ltd ('AECOM')
Postal address:	Collins Square, Level 10, Tower Two 727 Collins St Melbourne VIC 3008
Email address:	david.hyett@aecom.com
Phone number:	+61 (0) 419 421 246
Available industry & environmental expertise: (areas of 'in-house' expertise & consultancy firms engaged for project)	The ENGIE Hazelwood entities are the immediate owners/operators of the Hazelwood site, and hold key site licences and approvals. ENGIE Hazelwood's ultimate parent companies comprise:
	 ENGIE S.A, a global energy company with corporate headquarters in France; and
	 Mitsui & Co Ltd, a global company headquartered in Japan engaged in business across the energy, metals, chemicals, machinery and infrastructure, lifestyle and information and corporate development sectors.
	ENGIE Hazelwood has extensive site knowledge and experience, having operated the Hazelwood Mine and Power Station since they were privatised by the Victorian Government in September 1996. In the period since the site's operational closure in March 2017, ENGIE Hazelwood has safely progressed decommissioning works, and undertaken interim rehabilitation works and numerous technical studies to inform the final rehabilitation and closure plans for the site the subject of this referral application. To complement this expertise, ENGIE Hazelwood has engaged consultants, AECOM, to assist with preparation of this referral, including preparing a preliminary biodiversity appraisal and a preliminary cultural

2. Project – brief outline

Project title: Hazelwood Rehabilitation Project (the Project)

Project location: (describe location with AMG coordinates and attach A4/A3 map(s) showing project site or investigation area, as well as its regional and local context).

The site of the former Hazelwood Mine and Power Station is in the Latrobe Valley in Victoria, immediately south of the township of Morwell, approximately 150 kilometres east of Melbourne (see Attachment 1 – Figure 1). The broader Hazelwood site comprises approximately 4,000 hectares, including 3,258 hectares covered by Mining Licence MIN5004 (comprising the 1,281-hectare former Hazelwood Mine, comprising a void between 70 and 130 metres deep and including the internal Hazelwood Ash Retention Area (**HARA**) ash landfill and overburden dump areas), operational SP AusNet Hazelwood Switchyard, decommissioned Hazelwood Power Station (the Power Block), and Hazelwood Cooling Pond (**HCP**) and various other lands.

The Hazelwood site comprises the following lands:

Description	Size
Area within MIN5004	3,258 hectares
Additional land areas	
Hazelwood Power Block	32 hectares
Hazelwood Cooling Pond (HCP)	550 hectares
Other lands	165 hectares
Total ENGIE Hazelwood landholding	4,005 hectares

The Project Area subject to this referral application consists of:

- The majority of lands within MIN5004;
- The HCP; and
- Immediately adjoining lands owned by ENGIE Hazelwood (see Attachment 1 Figure 2).

The Project Area excludes:

- The 32-hectare Power Block (comprising the decommissioned and demolished 1600megawatt Hazelwood Power Station, the adjacent and operating AusNet Services Hazelwood Switchyard); and
- Some minor land parcels (approximately 14 hectares) disconnected from the site (e.g. offsite commercial warehouses, Firmins' Lane Pumping Station).

Short project description (few sentences):

The Hazelwood Rehabilitation Project (the Project) involves the final rehabilitation of the former Hazelwood Mine to a safe, stable and sustainable landform capable of supporting productive land uses. The proposed final landform for the former Hazelwood Mine void is a lake to a relative level (RL) of +45 metres Australian Height Datum (+45m AHD). The proposed lake would provide for long term safety and stability of the Mine void (batters and floor), obviate a requirement for ongoing groundwater pumping into perpetuity, minimise fire risk in the M1 coal seam, and provide opportunities for future investment and uses that might be delivered by Government, the local community, or the private sector.

Key works for the Project include:

 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);
- Final decommissioning and drainage of the Hazelwood Cooling Pond (HCP) and restoration of the natural alignment of Eel Hole Creek;
- Decommissioning remaining redundant infrastructure, such as redundant roads, car parks, buildings, pumphouses on the HCP and Saline Water Outlet Pipeline (**SWOP**); and
- Construction and operation of infrastructure necessary to maintain lake depth and water quality following completion of fill including Morwell River interconnection, providing regional flood mitigation opportunities.

3. Project description

Aim/objectives of the project (what is its purpose / intended to achieve?):

The objectives of the Project are to:

- Further rehabilitate the former Hazelwood Mine by creating a safe, stable and sustainable landform
- Enable productive future use of the site that provides benefits to communities in the Latrobe Valley region.

Background/rationale of project (describe the context / basis for the proposal, eg. for siting):

The site has been used for mining and power generation since 1949. Operational closure of the Mine and Power Station occurred in March 2017. The Project is part of ENGIE Hazelwood's ongoing series of works to decommission redundant mining and power generation infrastructure, and finally rehabilitate the site of the former Hazelwood Mine and Power Station. A timeline of key works and approvals for the site is provided in Attachment 2 – Key works, events and approvals.

Rehabilitation and demolition activities at Hazelwood began in March 2017 after the operational closure of the former Hazelwood Mine and Power Station. Demolition works at the Power Block are anticipated to be completed by early 2022 with further minor site works thereafter.

Under section 84AZU(3)(b) of the *Mineral Resources (Sustainable Development) Act 1990* (Vic), (**MRSD Act**) a Declared Mine Rehabilitation Plan (DMRP) must be prepared by the declared mine licensee to facilitate the "closure" of the mine on declared mine land.

The Project would address the geotechnical and hydrogeological factors within the Mine void that (without active management) pose a significant risk to public safety, the environment and/or infrastructure. This requires the final decommissioning, rehabilitation and change of land use on which the Project is situated.

Future Land Use Vision and Concept Master Plan

A Concept Master Plan was developed by ENGIE Hazelwood in 2019 (copy at Attachment 3) in consultation with the Victorian Government and key stakeholders to articulate the potential opportunities for the rehabilitated site and included a vision to transform the Mine and its surrounds into land that is suitable for a mix of tourism, agriculture, industry, passive recreation uses and the conservation of natural ecosystems.

The Concept Master Plan drew on all available technical studies and international mine rehabilitation experiences to build upon the:

- Morwell (Hazelwood) Mine Rehabilitation Concept Master Plan developed by the State Electricity Commission of Victoria (SECV) in 1994 in connection with the privatisation process, which contemplated a Mine lake;
- Final rehabilitation and closure concept for the Mine lake explained in the previous EES Report produced in 2004 in connection with the West Field Project (**2004 EES**); and
- The Strength Led Transition work undertaken by the Latrobe City Council to recognise the fundamental changes that have been, and to continue to, take place across the Latrobe Valley region during the course of the energy transition.

Drawing on the site land uses and preferred approach, wider economic context, and the vision and key principles, a concept framework has been developed which centres on dividing the site into three key areas:

1 **The Tourism Belt** will provide a centre for tourism, recreation and small-scale agriculture, centred around the filled mine void lake. The key drivers behind the Tourism Belt are proximity to the identified growth hub of Morwell, strong site connectivity to road and rail infrastructure, and a lower topography around the lake edge.

- 2 The Productivity Hub centres around the key asset of the Hazelwood Switchyard. It will be home to a range of industrial, energy producing and agricultural uses that use and take from, and feed into the grid. Access to clean water and connectivity to road and rail infrastructure are also important to the Productivity Hub, as well as links to existing industry, energy and agricultural uses. This includes concepts like a possible large utility scale battery on site, to maximise opportunities which present from proximate electricity transmission infrastructure (e.g. AusNet Services' Hazelwood Switchyard).
- 3 The Mine Lake will be the heart of the rehabilitated Hazelwood site. It will be much more than just a water body, supporting a range of recreation activities (including possibly boating, and competitive water activities) and possible energy-related activities. This vision is informed by strong feedback from the local community, including having regard to the decommissioning of the Hazelwood Cooling Pond. Ultimately, future uses of the Mine lake will be informed by a range of factors including Government and/or third party investment, accessibility, topography, future water access and final lake quality, about which there is ongoing investigation.

Latrobe Valley Regional Rehabilitation Strategy

ENGIE Hazelwood rehabilitation plans have been informed by:

- The expert evidence within, and final report of, the independent board in the 2015-2016 Hazelwood Mine Fire Inquiry which in Terms of Reference 8 – 10, Final Report Volume IV considered the final rehabilitation of all three Latrobe Valley coal mines (Hazelwood, Yallourn and Loy Yang); and
- The Victorian Government's Latrobe Valley Regional Rehabilitation Strategy (LVRRS) report released in June 2020 and Government actions thereafter which provided guidance to mine operators, along with other stakeholders, as to the issues that must be considered in planning for and undertaking rehabilitation of the Latrobe Valley mines.

The LVRRS was itself informed by supporting technical studies that addressed knowledge gaps with respect to mine rehabilitation, with a particular focus on water availability and geotechnical stability. These technical studies also drew from work undertaken by ENGIE Hazelwood, and shared in order to inform the process, including a detailed numerical groundwater model.

The closure of the Hazelwood Mine in March 2017 has meant that ENGIE Hazelwood's planning for mine rehabilitation has occurred in parallel with the LVRRS process, with the work not concluded at the date of submission of this referral.

Main components of the project (nature, siting & approx. dimensions; attach A4/A3 plan(s) of site layout if available):

The key rehabilitation works to be completed as part of the Project comprise:

- **The Mine (pit) void** to be filled with water to a final lake level of RL +45m AHD, with a maximum depth of 116m and covering an area of 1,145ha;
- Mine batters (the inclined sections of the pit wall) and internal overburden dumps –
 ongoing works to reshape and reprofile Mine batters to geotechnically stable landforms
 above the Mine lake level, and ensure adequate drainage. Lower level earthworks are
 largely complete, and the construction of a number of surcharges is either complete or
 underway, through existing approvals);
- Watercourse and drainage diversion structures a future interconnection of the Morwell River is proposed to be constructed to create a 'flow through' river system towards the end of the Mine lake filling process;
- **Decommissioning of redundant infrastructure** e.g. Pumphouses 50 and 53 on the HCP, remaining Mine buildings and facilities, rehabilitation of redundant Mine depots, car parks, roads, electricity and pipework infrastructure (including the SWOP); and
- HCP to be drained and Eel Hole Creek to be reinstated.

Mine lake

The Mine lake would be primarily filled with groundwater and commercially available surface water. The lake filling would require approximately 637GL of water and has a target fill period of between 10 and 20 years under most reasonable scenarios.

The Mine lake is proposed to have an interconnection with external watercourses following the completion of filling to maintain the lake level, with the possibility of re-establishing the currently diverted Morwell River to its original pathway through the site (the current Hazelwood West Field), noting that it has been diverted on a number of occasions previously both at Hazelwood and "downstream" at the Yallourn mine. This would involve fully interconnecting the Morwell River to the south-west section of the Mine void and constructing an outflow along the previous alignment of the Morwell River to the north-west of the Mine void.

It is anticipated that the full interconnection of the Morwell River to the Mine lake would maintain the lake level once full and provide future flood mitigation opportunities. Alternatively, filling infrastructure may be constructed and/or maintained following lake filling to maintain the lake level. As such, there are multiple options to manage long-term evaporation management for "topup", which is considered desirable at this stage.

Creation of stable landforms

As noted on page 2 of Attachment 2, significant earthworks have already been undertaken within the Mine pursuant to existing approvals including the 2017 Work Plan Variation (**2017 WPV**) and standalone Earth Resources Regulation (**ERR**) approvals.

Remaining works include reprofiling coal batters and overburden batters above the final lake level to a geotechnically 'stable' batter profile and ensuring adequate drainage, including on the East Field East Batters (EFEB), South East Field South Batters (SEFSB), South East Field West Batters (SEFWB), West Field West Batters (WFWB), North Field North Batters (NFNB), South West Field North Batters (SWFNB).

Other earthworks are to be undertaken on the Eastern Overburden Dump (**EOD**) and surrounds to both remediate landfills (discussed below) and ensure adequate drainage.

Pursuant to previous approvals, the ongoing construction of surcharge dumps on the East Field North Batters (**EFNB**), EFEB, and West Field South Batters (**WFSB**) will also be completed. Surcharge dumps are compacted dumps placed at the toe (i.e. base) of and upon some of the mine batters to provide increased stability during mine filling.

Erosion management works will be undertaken to protect batters and surcharges as necessary whilst the void is filling. Above the proposed final lake level, earthworks will be conducted to ensure adequate drainage, and rock beaching will be installed for future foreshore protection.

The remaining out of void (external) overburden dumps e.g. the Western Overburden Dump (**WOBD**), are fully rehabilitated (support vegetation) and there are no further rehabilitation or closure works planned.

HCP drainage and reinstatement of Eel Hole Creek

The HCP, which is external to the Mining Licence area, has a current capacity of approximately 20 GL and will remain a water supply for fire prevention and mitigation purposes for the initial timeframe in which the Mine lake is filling. After Mine lake filling has progressed to a sufficient depth, the fire protection requirements will be met from pumping from the Mine lake – such that the HCP and its supporting pumps can be decommissioned.

As Mine lake levels increase, and following the re-engineering of the Mine fire service system (MFSS), to be entirely supplied from within the Mine void, the HCP would be drained. The HCP water may then be diverted into the Mine lake as a contribution towards fill. The HCP and its associated infrastructure (e.g. Pumphouses 50 and 53) would then be decommissioned, and the underlying land rehabilitated to reinstate the alignment of Eel Hole Creek. This would link the existing, ephemeral Eel Hole Creek alignment upstream of the HCP with the culverts to be

upgraded at Yinnar Road, including re-establishing fish passage. The existing culvert at Yinnar Road would be upgraded to achieve flood immunity.

Ancillary components of the project (e.g. upgraded access roads, new high-pressure gas pipeline; off-site resource processing):

To deliver the water to the Mine lake, the following water supply pipelines and/or inlets have been previously constructed pursuant to existing regulatory approvals and agreements:

- A 25GL/year capacity pipeline from the Gippsland Water Buckley's Hill pipeline to "C and D tanks", which form a critical part of the MFSS. This connection matches the previous contribution from the Clean Water Pump Station (CWPS) formally on the floor of the Mine but (as noted above) recently decommissioned as part of the Morwell River Flood Diversion (MRFD) works. This water is fed through the reticulation systems into the Mine void as a fire mitigation measure, and thereafter retained in the Mine lake.
- A 20GL/year capacity pipeline from Gippsland Water Moondarra pipeline directly to a water inlet structure in the Mine void.
- The construction of further groundwater bores (and associated pumping infrastructure) essential to maintain safe and stable conditions within the Mine, throughout the filling process. Namely: 10 bores within the M1 aquifer and eight bores within the M2 aquifer around the perimeter of the Mine void. Four production bores in the M2 aquifer and connection of these to water inlet structures in the mine void are still to be constructed.

To prevent heave of the Mine floor (in circumstances where, following the previous removal of overburden and coal as part of the open cut mining operations, the weight of the strata overlying groundwater aquifers needs to be countered by reducing aquifer pressures), groundwater pumping would need to continue throughout the filling operation.

Subsurface drainage systems (horizontal bores) will also continue to be used where this is essential to relieve hydrostatic pressure in coal joints within the batters.

Re-engineering of water management and reticulated fire service system

The MFSS provides a water supply for use in fire prevention, mitigation and dust suppression activities.

The current water management system would be decommissioned and replaced with a new MFSS which would perform at the equivalent level to the presently operating mine water pump system. This would include relocatable floating diesel pumps within the Mine lake once it is of sufficient depth and volume to support the infrastructure, and the Gippsland Water supply connection (not dependent upon external power supplies) to C and D tanks.

The Mine's existing reticulated fire service system would be progressively decommissioned as the Mine becomes inundated with water.

Rehabilitation of ash and asbestos landfills

Rehabilitation of ash and asbestos landfills is being undertaken in accordance with EPA Operational Licence OL0046436 and ongoing statutory environmental audits and landfill management obligations, subject to the approved Landfill Environment Management Plan (LEMP) and CUNs (#90010255, #900102721 issued 30/7/2019, and #90010272, #90010273 issued 17/3/2020, EAN-00001388, EAN-00001391, EAN-00001392, and EAN-00001393 issued 12/10/21); issued under the *Environment Protection Act 1970* (Vic) (and being transitioned to notices instruments under the *Environment Protection Act 2017* (Vic) (EP Act)), each overseen by EPA Victoria.

Significant works on the open landfills include rehabilitation and capping of the Hazelwood Ash Pond (**HAP**) 1 (repurposed as Asbestos Landfill No. 4), HAP 2, HAP 4, HARA and reshaping and capping Asbestos Landfill No. 3.

The status of the uncapped landfills is summarised below. Whilst works at these landfills are continuing under EPA supervision, all of the landfills listed in the table are within the indicative area to be rehabilitated as part of the referred project and therefore may interface with referred project.

Landfill site	Description	Current & future activities
HARA	Ash waste retention area in eastern section of Mine void. Closed and uncapped, with dust suppression (water sprays) and active leachate collection. Located in the Mine void.	Discussion with EPA on future design outcome relating to and aligned with the final rehabilitation plans for the Mine void. Proposed inundation in full Mine lake scenario. To submerge the HARA a volume of 372GL is required to reach RL +19m AHD.
HAP4	Closed and uncapped above ground ash pond located in the north-east of site, with dust suppression (mulch) and active leachate collection. Located in the northern extent of the EOD.	Cap design and audit complete for approved cap. Pre-cap ash shaping to final profile complete with settlement monitoring in place. Cap construction period of 2 years commencing Jan 2021 with completion 2024.
HAP1 (Asbesto s Land fill No. 4)	Main active landfill on site, receiving Category C Waste – asbestos (all forms) and ceramic based fibres, uncapped. Located in the western area of the EOD.	Asbestos containing material and synthetic mineral fibres placement from power station and site rehabilitation works. Expected rehabilitation completion 2025.
HAP2A	Closed & uncapped ash pond, with active leachate collection. Located in the southern section of EOD.	Cap design and audit complete for approved cap. Pre-capping profile shaping undertaken and settlement monitoring. Cap construction in 2022 and rehabilitation expected to be complete in 2024.
Asbesto s Landfill No. 3 (ASL3)	Closed asbestos landfill, with interim cap in place. Located in the southern section of EOD.	Cap design and audit complete for approved cap. Rehabilitation aligned to HAP2A for commercial tendering in 2022 with rehabilitation complete 2024.

Key construction activities:

Key earthworks and planting activities that are required to construct the final landforms at the Hazelwood site include:

- Ongoing batter re-profiling and surcharge dump construction works (noting that these works have been significantly progressed and are continuing under previous approvals, including the 2017 WPV, amendments to MIN5004, and other ERR batter design approvals);
- Ash and asbestos landfill rehabilitation and environmental remediation works, including design and installation of approved landfill cover and bore construction and civil drainage works as needed in accordance with the statutory environmental audit process; and
- Application and seeding of topsoil in applicable areas
- Mine lake shoreline erosion protection.

Batter re-profiling

Coal batters and overburden batters above the final lake level of RL +45m AHD would be excavated back to a 3 horizontal to 1 vertical (3H:1V) slope profile. This profile has been selected as it represents a geotechnically "stable" batter profile that can be managed comfortably with the use of mobile plant. The batter is shallow enough to enable users of mobile plant, tractors for slashing, excavators for drainage, to access the batter to maintain and manage the slope.

Overburden is being stripped from North Field and West Field borrow pits with truck and shovel and dozer operations and placed in surcharge dumps under existing approvals. Generally, Version 7: March 2020 surcharge dumps would be no steeper than 3H:1V and typically retain the existing surface drainage (including horizontal bores) installed on the benches.

Where required, overburden is brought into the area to encapsulate any exposed remnant coal before being reshaped to the final landform. As the water level rises within the Mine lake, the exposed coal areas would progressively reduce by either being progressively covered by water or covered with clay as part of rehabilitation and batter stabilisation works.

Coal above the RL +45m AHD level would be reprofiled and covered with overburden with loose coal being transported and buried within the internal overburden dump. The stripping areas will ultimately form an undulating topography adjacent to the full Mine lake. The area would be profiled, sloping down to facilitate surface drainage back into the Mine void. Topsoil is being recovered prior to overburden removal and would be directly reapplied to shaped batters rather than stockpiled.

Capping and rehabilitation of ash and asbestos landfills

Environmental investigations and clean-up works, water management (collection, treatment, monitoring, reporting) and landfill operation, management and remediation are being undertaken in accordance with existing LEMPs approved under EPA Operational Licence OL0046436, and CUNs.

Appropriate designs to cap the waste disposal sites typically include a leachate collection system, earthen cover, geosynthetic clay liner, sub-base, topsoil, vegetation requirements and surface stormwater infrastructure considerations. To provide a suitable foundation for capping, any ponding water associated with these areas is required to be drained. This has progressively occurred during operations and has since been accelerated with closure specifically for the HARA, HAP4 and HAP2. Fibrous mulch has also been used as a temporary capping previously on HAP4 to mitigate dust emissions, with water suppression also applied on the HARA for dust mitigation while capping designs are finalised.

The final landform for each waste disposal site has been designed to ensure it will readily shed storm water, therefore reducing water percolation into the waste mass. The nature of the waste, preparation of the ash and cap foundation, and the cap design itself, would limit any differential settlement and therefore reduce the risk of water ponding. Settlement analysis of the waste and slope stability assessments for both proposed landforms and existing embankments would be undertaken as part of the detailed design of the caps. The need for additional levels of protection for those parts of the landfill caps which are flatter than 5%, will be assessed as necessary.

Application of topsoil

During life of Mine operations, ENGIE Hazelwood has stockpiled topsoil across the site. These stockpiles generally do not exceed 2m in height in order to protect from erosion, maintain biological activity and soil structure. There is enough available topsoil to complete rehabilitation activities to achieve the full Mine lake scenario, however, to achieve suitable capping requirements in accordance with the EPA Landfill Licensing Guidelines (EPA 2016), additional topsoil is needed for landfill capping requirements. The proposed topsoil extraction areas are included in the indicative areas to be disturbed (Attachment 1 – Figure 5).

Seeding of topsoil

Progressive seeding of rehabilitated areas would be undertaken to assist in erosion and dust control, stability and support the final land use. ENGIE Hazelwood has developed a site-specific species planting guide, the '*Revegetation Code of Practice*' for non-agricultural land use areas. All species recommended for revegetation of non-agricultural land use areas within the Revegetation Code of Practice are indigenous to the area and are chosen from the relevant Ecological Vegetation Class (**EVC**).

Mine lake shoreline erosion protection

Shore protection, such as coir blankets, would be installed and functional prior to the water levels within the Mine void reaching the shoreline.

Wind speed and direction, wave height, and slope and treatment conditions would be measured/monitored as Mine lake filling progresses, to gain confidence in the adopted erosion management options and to determine where further remediation is required.

Key operational activities:

The key 'operational' activity, the subject of this referral application, is the filling of the Mine lake. The Mine lake is proposed to be filled from the following primary water sources:

- Groundwater obtained under an existing operational licence from Southern Rural Water noting (as above) that ongoing groundwater pumping (depressurisation) from the M1 and M2 aquifers underlying the Mine is vital to maintain the stability of the Mine floor and batters and is an activity that must continue independently of the rehabilitation works; and
- Surface water entitlements obtained under an existing *Water Services Agreement* with Gippsland Water, and additional commercial agreements as available.

While groundwater volumes can be readily forecast during the fill period, each of the known surface water sources, currently contracted and not contracted, are likely to vary significantly on an annual basis.

Therefore, while ENGIE Hazelwood maintains a realistic target fill range of 10 to 20 years this could vary. For example, a significant flood event could accelerate this period or extended drought, changing climatic conditions, or evolving usage expectations could extend this period. Indicative annual volumes expected to be available are presented below:

Water source	Indicative annual volumes available	ENGIE Target Rate (GL/year)	Comment
Groundwater	22GL (existing Southern Rural Water groundwater extraction licence)	17-19	Fill rate is below the extraction volumes currently permitted under the existing licence issued by Southern Rural Water from M1 (approximately 1GL) and M2 (approximately 17GL) aquifers, noting this excludes major pumping outages. Historically, groundwater pumping quantities have varied significantly. There are minimum extraction requirements to maintain geotechnical stability (unless and until weight is returned to the Mine void through the establishment of a lake).
Surface water	Commercial agreements	8-24.5	The precise range may vary year to year. ENGIE Hazelwood has a commercial agreement in place that provides for variable supply, based both on historical usage and modelled capability over a 10-year period. Other commercial agreements under negotiation are not included here.

ENGIE Hazelwood has identified scenarios based on existing water entitlements and commercial contracts (i.e., excluding other potential commercial sources) noting these timelines will reduce if additional commercial sources can be secured. The chart below has been developed that shows a range for the filling period.



An accelerated filling process, is sought to be implemented in a controlled manner, where:

- Geotechnical studies indicate that the Mine batters present a slightly higher stability risk during stages of the filling (with the lake landform becoming highly stable at a depth of RL +35m AHD and above);
- International experience in the rehabilitation of brown coal (lignite) mines, particularly in East Germany, demonstrates that filling with water delivers optimal stability outcomes; and
- Accelerated fill times will significantly mitigate the risk of fire in exposed coal (noting that the Mine's reticulated Fire Service System will be maintained throughout the filing process, in accordance with the approved Fire Risk Management Plan).

Other potential sources (subject to further investigation) towards fill comprise:

- Flood flows diverted from the Morwell River, however as volumes are dependent upon relevant rainfall (flood) incidents, these would be occasional and highly variable;
- Water drained from the HCP (once decommissioned, or required to be operationally lowered to maintain stability); and
- Rainwater runoff from the Morwell Main Drain into the Mine void.

Monitoring and maintenance

As is shown on page 3 of Attachment 2, following demonstration of successful completion of the Project works (Mine fill), as assessed in reference to completion criteria defined in the approved DMRP, an aftercare plan would be developed to address ongoing monitoring and maintenance requirements, including to provide for:

- Monitoring the environment both locally and regionally (water quality, geotechnical and hydrogeological, erosion and ecological monitoring and management).
- Maintaining water supply capacity sufficient to maintain the final Mine lake water level at RL +45m AHD, including operation and maintenance of any watercourse interconnections and/or top-up infrastructure;

- Management of the areas above the final Mine lake level from a drainage and erosion
 perspective to maintain the integrity of the clay capping material over the coal seams and to
 support the protection of long-term geotechnical and hydrogeological monitoring systems;
 and
- Ongoing leachate monitoring (bores, water quality, inspections) and the pumping network. The long-term management of leachate, including monitoring, recovery, treatment and discharge for site, is being further considered as part of the site water management strategy review.

During both the course of the course of the Project works, and as part of the aftercare plan, a Land Management Plan (LMP) would be implemented to manage weeds and pests at the site. Any noxious weeds identified would be prioritised for treatment. Where significant weed outbreaks are identified, a suitable plan of management would be developed and implemented.

ENGIE Hazelwood will continue to work with the Mine Land Rehabilitation Authority across all elements of the Project with specific regard to monitoring and maintenance at the conclusion of the proposed Project works.

Key decommissioning activities (if applicable):

Removal of infrastructure

ENGIE Hazelwood has decommissioned and demolished a range of redundant mining plant and infrastructure. This includes decommissioning and removal of the following infrastructure:

- Clean Water Pump Station and pipelines;
- Dirty Water Pump Station and pipelines;
- Redundant aquifer bores and pipework;
- Various on-site buildings;
- Some road infrastructure; and
- Some power infrastructure.

Decommissioning of the Recirculation Pond, Transfer Point 5 and Transfer Point 8, Energy Brix Ditch Bunker Loader and Carbonation Pond has already occurred. The Overburden Treatment Pond has been decommissioned and rehabilitated to feature as a wetland to service the northern EOD surface water catchment.

Water pipelines, fittings and concrete footings that have been made redundant and are no longer required for either reuse or recycling below RL+45m AHD would be left in-situ and progressively decommissioned as the Mine lake fills, and as exposed coal is progressively covered by water.

To date, all infrastructure on the Mine floor has been decommissioned in preparation for inundation in connection with the MRFD infrastructure works.

All redundant pipework, fittings and concrete above RL +45m AHD will be removed.

Redundant infrastructure at the HCP would be decommissioned when no longer required to support mine operations (including spillway, embankment walls and reticulated fire service Pumphouses 50 and 53).

"Dirty water" sector ponds (established to collect and settle particulates from surface water runoff) located within the Mine void (and footprint of the Mine lake) have been decommissioned and will be engulfed by the rising water level.

Roads above the crest of the Mine that have no specific post relinquishment use would be ripped, topsoiled and revegetated.

Once the target Mine lake depth is met, any redundant filling infrastructure would also be decommissioned, if not required in future for the purpose of maintaining the depth of the Mine lake.

Some access roads may be retained post-relinquishment to enable access and for use in fire and other land management and emergency activities. Water management structures and sediment control structures would either be retained as wetland habitat / water features or decommissioned and rehabilitated.

The SWOP is a saline wastewater facility operated by EnergyAustralia, AGL and ENGIE. It receives saline water and leachate from the Yallourn and Hazelwood sites, which is conveyed to an offsite facility at Firmins Lane. The water is then pumped to Loy Yang for treatment with further wastewater. The SWOP would remain in operation until there is no leachate off the HAPs and then the Hazelwood sections would be decommissioned.

Is the project an element or stage in a larger project?

No \times Yes If yes, please describe: the overall project strategy for delivery of all stages and components; the concept design for the overall project; and the intended scheduling of the design and development of project stages).

The site has been used for mining and power generation since 1949. Operational closure of the Mine and Power Station occurred in March 2017. The Project is part of ENGIE Hazelwood's ongoing series of works to decommission redundant mining and power generation infrastructure, and finally rehabilitate the site of the former Hazelwood Mine and Power Station. A timeline of key works and approvals for the site is provided in Attachment 2 – Key works, events and approvals.

The Project comprises all remaining rehabilitation activities to the point where the Project Area is ready for divestment and conversion to productive future uses (following demonstration that relevant closure criteria having been satisfied). It builds on a range of other rehabilitation activities that are approved and underway or completed.

The specific nature of productive future uses will be determined in consultation with Victorian Government, business and the community and these proposals would be subject to their own planning and environmental approvals once details are known.

Is the project related to any other past, current or mooted proposals in the region?

The Project is part of ENGIE Hazelwood's ongoing series of works to decommission redundant mining and power generation infrastructure, and finally rehabilitate the site of the former Hazelwood Mine and Power Station following their operational closure in March 2017.

Past rehabilitation proposals for the Project Area include:

- (As noted above) the *Morwell (Hazelwood) Mine Rehabilitation Concept Master Plan* developed by the SECV in 1994 in connection with the privatisation process, which included a final rehabilitated concept of a mine lake;
- The final rehabilitation and closure concept for the Mine within the 2004 EES of a mine lake;
- A 2009 Work Plan Variation (**2009 WPV**), which detailed progressive and final rehabilitation plans for the Mine (including a proposed mine lake); and
- 2017 WPV, which addressed decommissioning and rehabilitation works to be conducted in the mine in the initial approximately 3-5 years post closure.

The various WPVs referenced above were submitted to and approved by the mining regulator from time to time (presently known as the Department of Jobs, Precincts and Regions (**DJPR**) Earth Resources Regulation (**ERR**)) under the MRSD Act.

Most recently, on 31 January 2020, ENGIE Hazelwood sought approval from ERR for the next planned stage of rehabilitation works, through the submission of a WPV application under the MRSD Act known as the 2019 WPV (**2019 WPV**). This submission is to be updated to reflect changes in the MRSD Act (i.e. address DMRP requirements which have subsequently commenced under amendments to the MRSD Act) and respond to referral agency feedback.

The 2019 WPV sought approval for "Stage 1" lake filling to RL -7m AHD), being a depth below the HARA. The 2019 WPV was accompanied by a detailed overarching Rehabilitation and Closure Plan (**RCP**), which outlined further stages of proposed rehabilitation works (to be the subject of subsequent Work Plan approval applications under the MRSD Act, and relevant environmental referrals) and demonstrated that they could be conducted safely and a number of risk management plans which are required to accompany a work plan under the MRSD Act.

What is the estimated capital expenditure for development of the project?

The current rehabilitation bond held by the State of Victoria for the final rehabilitation of the MIN5004 area is \$289 million, with ENGIE Hazelwood almost 5 years into its works program.

4. Project alternatives

Brief description of key alternatives considered to date (eg. locational, scale or design alternatives. If relevant, attach A4/A3 plans):

Assessment of closure options

ENGIE Hazelwood has considered three possible final landforms for the MIN5004 area. The three scenarios considered drew on existing knowledge presented during the 2015/2016 Hazelwood Mine Fire Inquiry and during the development of the LVRRS and comprised: 1) an empty void; 2) partial Mine lake; and 3) a full Mine lake. The evaluation of these alternatives indicates that a full Mine lake is the preferred option.

Whilst the analysis of these options has not completely concluded, technical studies conducted to date indicate that an empty void may not be a practical or feasible rehabilitation scenario in the context of Hazelwood, since:

- The void would have to be dewatered in perpetuity (ongoing aquifer depressurisation) for stability purposes (floor of the mine is below natural groundwater level);
- An empty void would require long-term management of significant horizontal drainage systems to maintain the void in a stable state;
- There is not enough fill material locally to be placed in the Mine void for stability purposes or to manage fire risk; and
- An empty void would constitute a long-term fire risk requiring active manning and infrastructure management, and offer little if any community benefit from an access or amenity perspective.

In the case of a partial lake landform, technical studies conducted by ENGIE Hazelwood and in the context of the LVRRS indicated that a partial Mine lake would also require ongoing aquifer depressurisation into perpetuity to ensure stability. A reduced surface area of the coal faces would be inundated, requiring additional earthen/ other coal cover or active fire mitigation activities. In addition, it was indicated that a partial Mine lake may have decreased water quality in comparison to a full Mine lake, and therefore potentially limit future post relinquishment land uses.

A full Mine lake scenario therefore appears to be the preferred final landform. It has a number of advantages in relation to ground subsidence (local and regional), reduced risk of Mine floor and batter instability (including heave, stress relief and coal block movements) and significant reduced fire risk due to the inundation or covering of the exposed coal faces.

Alternative water sources

In recognition that three major coal mines would be closed in the Latrobe Valley before 2050, considerable work has been done by the Victorian Government to investigate rehabilitation strategies that address the needs of the entire Latrobe Valley mining industry (Hazelwood, Loy Yang and Yallourn).

The Latrobe Valley Regional Water Study (DELWP, 2020) included a semi-quantitative assessment of the feasibility of using alternative sources to fill the mine voids with water, such as desalinated water, recycled water and/or stormwater. The assessment concluded that as at the time of the report, there were no new or alternative water sources that would be more economically or technically feasible for mine rehabilitation than water sourced from the Latrobe River system and Latrobe Valley aquifers. This conclusion was drawn primarily from the basis that the new or alternative water sources surveyed were deemed to be comparatively more expensive and many years away from realisation even if proven viable. The study did note, however, that alternative water sources may become more feasible or attractive in the future and that long-term predictions of water availability in the Latrobe River system (consistent with certain climate change projections) would likely significantly limit rehabilitation progress in the case of the three Latrobe Valley mines.

In the event that water-based rehabilitation is ultimately pursued for the Yallourn Mine (anticipated closure in 2026) and Loy Yang Mine (anticipated closure in 2047), ENGIE Hazelwood continues to work with Mine operators and the Victorian Government to investigate any additional water availability options that may become available to support the Latrobe Valley mining industry in the future. This could include further quantitative assessment of the environmental, cultural, social and economic benefits and costs of alternative water sources.

Brief description of key alternatives to be further investigated (if known):

As outlined above, ENGIE Hazelwood is willing to continue working with industry, and participate in Government-led investigations into alternative water sources for Mine filling in the event this approach is adopted for Yallourn and Loy Yang mines; however, where such water sources are not yet available, they are not within the scope of this referral.

In addition to the proposed primary water sources available to fill the Mine lake, ENGIE Hazelwood will further investigate other water sources available in the site's vicinity, such as from draining of the HCP, the Morwell Main Drain, and other commercial opportunities.

5. Proposed exclusions

Statement of reasons for the proposed exclusion of any ancillary activities or further project stages from the scope of the project for assessment:

A range of rehabilitation activities are currently approved and being progressed under previous and separate regulatory approvals including:

- 1. The demolition of the Hazelwood Power Block and redundant mine infrastructure;
- Construction of the Hazelwood MRFD emergency flood diversion infrastructure, to assist in safeguarding the Yallourn Mine, under recent amendments to MIN5004 and standalone approvals;
- 3. Ongoing site management activities, including:
 - a. Water management (collection, treatment, monitoring, reporting);
 - b. Hydrogeological and geotechnical monitoring and reporting;
 - c. Maintaining and operating infrastructure necessary to maintain safe and stable conditions (e.g. fire service pumps, aquifer bores and pumps);
 - d. Management of landfills and related audits and reporting to EPA Victoria under existing EPA Operational Licence OL0046436; and
 - e. Environmental monitoring and management.
- 4. Batter reprofiling works and surcharge construction works separately approved by ERR under the 2017 WPV, recent amendments to MIN5004 and standalone approved designs;
- 5. Environmental investigations and remediation works being undertaken pursuant to postclosure CUNs issued by EPA Victoria, requiring that environmental audits be completed:
 - a. In the case of the mine void satisfying the requirements of s. 53V of the Environment Protection Act 1970 (Vic)
 - b. In the case of the remainder of the Hazelwood site satisfying the requirements of s. 53X of the *Environment Protection Act 1970* (Vic),

(noting that discussions and processes are underway to transition these statutory processes across to new regulatory processes under the EP Act).

- 6. Overburden dump earthworks to create a final landform and ensure adequate drainage, previously approved under the 2017 WPV and correspondence with ERR and EPA Victoria.
- 7. Landfill remediation works, pursuant to standalone EPA Victoria approvals.

6. Project implementation

Implementing organisation (ultimately responsible for project, ie. not contractor):

ENGIE Hazelwood

Implementation timeframe:

Rehabilitation works and filling of the mine void with groundwater have commenced at the site in accordance with existing approvals.

It is envisioned that Project works covered by this referral would commence in 2022/2023.

A target Mine filling period of between 10 and 20 years is being pursued with a fill of up to 35 years under a worst-case scenario. Following this phase of the Project and demonstration of successful performance of the rehabilitation works, an aftercare plan would be developed to address ongoing monitoring and maintenance requirements in order to facilitate relevant land rezoning and transfers and the relinquishment of the Mining Licence.

The proposed implementation timeframe for key works include:

- Works to stabilise and reshape landforms, including landfills are expected to be completed within 5 years watercourse and drainage infrastructure (civil) will also be completed in this timeframe; however, may depend on final reshaped and approved landforms;
- Final decommissioning of remaining redundant infrastructure in the first 5 years of the Project;
- Final decommissioning of the HCP following approximately 3-5 years of fill commencing, when sufficient depth in the Mine lake is reached to to support the reticulated fire service system infrastructure; and
- The Morwell River interconnection and/or filling infrastructure to maintain water depth and quality with the Mine lake would occur around the time of lake filling completion.

Proposed staging (if applicable):

Phase 1 of the Project would involve filling of the mine lake and final rehabilitation works. Phase 2 of the Project would involve aftercare and maintenance at the site while future productive uses for the site are being determined.

7. Description of proposed site or area of investigation

Has a preferred site for the project been selected?

 \times No \times Yes If no, please describe area for investigation.

If yes, please describe the preferred site in the next items (if practicable).

The site for the Project will be the area as shown in Attachment 1 – Figure 2.

General description of preferred site, (including aspects such as topography/landform, soil types/degradation, drainage/ waterways, native/exotic vegetation cover, physical features, built structures, road frontages; attach ground-level photographs of site, as well as A4/A3 aerial/satellite image(s) and/or map(s) of site & surrounds, showing project footprint):

The site was an operating open cut coal Mine and Power Station from 1964 to 2017 and has been undergoing demolition and rehabilitation works since closure. A number of areas both within the MIN5004 boundary and external to the boundary are leased out, mainly for agricultural use. The Project Area is bounded by the Princes Freeway (Morwell Bypass) to the immediate north, the Strzelecki Highway to the immediate west, Monash Way to the east of the site, Brodribb Road in

the south-east and Switchback Road to the south of the HCP. Yinnar Road is located to the north of the HCP, separating it from the MIN5004 area.

The current Morwell River Diversion (**MRD**) runs through the western portion of the site and Eel Hole Creek, a tributary of the Morwell River, is located in the south of the site, receiving flows from the HCP. The Morwell Main Drain (initially constructed as a cut off drain in 1949) runs along the northern site boundary to collect surface runoff from the southern portion of the Morwell township, the Morwell Industrial Estate, the Princes Freeway, and a small catchment on the Hazelwood site. The Morwell Main Drain discharges into the Morwell River wetlands to the north west of the Project Area.

Almost all redundant mining and power generation infrastructure has now been removed or demolished through existing approvals under the MRSD Act and *Building Act* 1993 (Vic). Some infrastructure ancillary to the Hazelwood Power Station is required to remain operational during at least the initial stages of rehabilitation works under this referral, including water capture and treatment ponds, landfills, and access roads and power lines. The adjacent Hazelwood Switchyard operated by AusNet Services is to be remain in operation, with the underlying land having to be transferred into AusNet Services' ownership.

The Project Area has largely been cleared for mining and agricultural use, and only scattered and isolated areas with the original vegetation cover remain. These areas of remnant vegetation vary in condition from relatively intact indigenous vegetation with low weed levels to stands of trees with a completely exotic understory. Areas of pasture generally support mature, hollow-bearing eucalypts.

The site is enclosed within a continuously fenced boundary that is appropriately signed to deter unauthorised access. Access to the mine site is controlled and monitored to ensure safety of the public and workers at the site. Vehicle access is generally confined to a controlled access gate off Hazelwood Drive.

Mine void

As a large void within a low-relief landscape, the void of 1,281 hectares between 70 and 130 metres deep is not readily visible from ground level but is visible from distant, elevated viewpoints at MacDonalds Track and Yallourn North. The mine void contains two internal overburden dumps.

The Mine floor (West Field) is approximately 455 hectares, and contains the Mine's reticulated fire services pipes, arterial and secondary mine roads and the Hazelwood Overhead Feeder (power infrastructure).

The Former East Field Internal Overburden Dump (**MF-FEID**) covers approximately 83 hectares. The MF-FEID was developed in the 1980s and is approximately 26 metres high. The MF-FEID forms the base of the 22 metre high Hazelwood Ash Retention Embankment (**HARE**) wall for the 10-metre deep HARA, which were constructed on top of the overburden dump between 2003 and 2005. Pipelines and pumps to manage leachate from the HARA remain in place and is being actively managed and monitored in accordance with site operational procedures. The surface of the dump is irregular and, through self-seeding, is grassed.

The South East Field Internal Dump (SEF3) is approximately 237 hectares and 20-28 metres high.

The mine floor also contains six gravity-fed settling ponds (Sector Ponds 4-9), with the intervening embankments up to 10 metres high, covering an area of approximately 160 hectares.

Some of the Mine batters are stable with established vegetation. Some coal is exposed on the batter faces. Overburden is being mined from the NFNB and WFWB located in the north-western area of the MIN5004 boundary to support toe surcharge works.

External overburden dumps

A number of out-of-void dumps are located within the Project Area, containing remnant coal, ash and asbestos in licenced landfills, hard rubbish (non-putrescible waste) dumps and overburden.

These dumps are generally rehabilitated with coverings of self-generating grasses and shrubs. Dumps include:

- The EOD in the East Field 75% rehabilitated by the mid-1990s, approximately 50 metres high over 285 hectares rehabilitation works are being undertaken on HAP 2 and 4, and a portion in the south-west is currently grazed. The landfill portions of the EOD are the subject of the EPA Licence and EPA's separate regulatory oversight and will require long-term management under EPA's landfill aftercare requirements.
- The WOBD rehabilitated with grass and mature trees, approximately 22-28 metres in height over approximately 28 hectares.
- The South East Field Screening Dump (**SEFSD**) rehabilitated, approximately 20 metres high over 59 hectares.

Seven vegetated screening mounds are present along the north-western, western and southwestern pit perimeter edges, constructed of overburden in the late 2000s.

Water infrastructure

A number of ponds exist on the site external to the mine void to contain and treat water used or collected from the former coal mine and power station.

The recirculation pond is located immediately east of the Power Station and has been operational since the 1970s. The recirculation pond receives leachate and is part of the capture and processing SWOP system for the ash ponds.

The WEP is located on the southern boundary of the MIN5004 area, adjacent to the HCP. It has been in operation since 1970s and is approximately 9.5 hectares.

The overburden runoff treatment pond was developed in the 1980s and covers a catchment area of approximately 82 hectares with 2.4 hectares of water body.

The carbonation pond, covering an area of approximately 4.5 hectares, is located immediately east of the Hazelwood power station and is part of the HAP 1 pond. It has been decommissioned with remediation in progress.

The HCP is a manmade lake with constructed earthen embankments on two sides created to store water for the former Power Station cooling system, and as a former repository for groundwater from the M1 and M2 aquifer dewatering operations. Whilst the HCP has a nominal capacity of 30GL; the water level has been lowered to ensure compliance with Australian National Committee On Large Dams (**ANCOLD**) Guidelines applicable to dams of the size of the HCP (i.e. demonstrate stability tolerances in seismic conditions), such that it presently holds approximate 20GL. Potential further lowering to support flood mitigation is the subject of further discussion with the Victorian Government.

Watercourse diversion structures

The fifth MRD completed in the early 2000s is located for part of its course within the western boundary of the Hazelwood Mine. The length is approximately 7,000 metres long with a width of 125 metres and depth of 25 metres. Works are currently underway in the south-west of the Project Area to construct the temporary MRFD emergency works structure.

Eel Hole Creek Diversion including the Eel Hole Creek-Morwell Creek backwater levee is 33.3 hectares in size and discharges into the Morwell River upstream of the earthen embankment. A section of remnant vegetation along Eel Hole Creek has been protected by fencing, which include the threatened Strzelecki Gum.

The Wilderness Creek Diversion located in the western corner of MIN5004 comprises a 2,600metre long low-flow, meandering channel in a relatively narrow, deeply incised floodplain with alternating in-channel benches. Wilderness Creek was relocated to discharge into the Morwell River downstream of its earthen embankment. Wilderness Creek receives runoff from a local catchment. The Morwell Main Drain consists of a buried low flow pipe and overflow channel and collects water from the southern region of Morwell township, the Industrial Estate south of the Princes Freeway and areas east of the Mine and the Princes Freeway (Morwell Bypass) and discharges to swamp lands to the north-west of the mine.

Bennetts Creek is located on the eastern side of the MIN5004 area. It is approximately 110 metres inside the MIN5004 boundary. Bennetts Creek is a tributary of the east-flowing Latrobe River. The Overburden Run-off Pond was constructed to treat runoff from the overburden sump for discharge off-site into Bennetts Creek. Several wetlands have been established to restore ecological functionality to the floodplains of Bennetts Creek. Patches of undisturbed remnant vegetation grow along the riparian zone of the waterway.

Flora planted during rehabilitation works of watercourse diversion structures between 2008 and 2013 comprised a total of 63 species representative of local indigenous vegetation, including Swamp Gum (*Eucalyptus ovata*), Strzelecki Gum (*Eucalyptus strzeleckii*), Silver Wattle (*Acacia dealbata*), Sweet Bursaria (*Bursaria spinosa*), Running Postman (*Kennedia prostrata*) and Spinyheaded Mat-rush (*Lomandra longifolia*).

Conservation areas

The Hazelwood Mine also manages ecological conservation areas on and off the Project Area to meet its legal obligations for biodiversity offsets and general enhancement of conservation values beyond those requirements. The net gain conservation areas were developed as a result of removal of Strzelecki Gum during the West Field Project. These areas are located in the Eel Hole Creek Offset Area (which achieved a net gain of 1.54 habitat hectares) and Strzelecki Highway Conservation Area. The Eel Hole Creek Offset Area is located both within and outside of the MIN5004 area and protects listed EVCs described as Riparian Forest/Warm Temperate Forest and Plains Grassy Forest. The conservation area adjacent to the Strzelecki Highway is outside of the MIN5004 area on two parcels of land owned by ENGIE Hazelwood and was established to conserve land colonised by populations of Strzelecki Gum.

For more detailed information on the topography/landform, soil types/degradation and native/exotic vegetation cover of the preferred site, please see 8. Existing Environment.

Site area (if known): ...approximately...4,000...... (hectares)

Route length (for linear infrastructure) (km) and width (m)

Current land use and development:

The Project Area comprises a former open cut coal mine. Current land uses within the Project Area are industrial and are primarily related to the management of:

- 1. The Mine void
- 2. Other materials extraction areas (e.g. borrow pits)
- 3. Drainage and water diversion infrastructure (drains, levees)
- 4. Landfills and waste disposal areas (ash, overburden, hard rubbish)
- 5. Water storage and treatment facilities (ponds, dams, tanks)
- 6. Equipment and materials storage areas
- 7. Offices, gatehouses, buildings and warehouses
- 8. Roads and carparks
- 9. Supporting infrastructure e.g. fences, roads, electricity lines and substations, pumps pipelines.

The site areas summarised in items (1) - (9) have been the subject of decommissioning and rehabilitation works in the period since the operational closure of the Hazelwood Mine and Power Station in March 2017.

Some isolated areas of the approximately 4,000-hectare Hazelwood landholding are the subject of leases to third parties, for:

• Infrastructure purposes (e.g. Gippsland Water, AusNet Services); and

• Grazing and agricultural purposes (including as a bushfire fuel reduction measure).

No residential land occurs within the Project Area.

Description of local setting (eg. adjoining land uses, road access, infrastructure, proximity to residences & urban centres):

The Hazelwood Mine is located in the City of Latrobe on the southwest side of the Princes Freeway as it bypasses Morwell (less than 100 metres north of the Hazelwood Mine). Moe and Traralgon lie approximately 12 kilometres to the northwest and northeast of the mine respectively, with Churchill and Yinnar some five kilometres south-east and south-west of the Power Station and Mine respectively. The main access to Morwell is via the Gippsland railway line, the Princes Freeway and the Strzelecki Highway. In the 2016 census, the population of Morwell was 13,771, and in the City of Latrobe the population was 73,257 and has grown since then.

In the surrounding area, and outside of the townships, the dominant land uses of the Morwell River catchment are power generation, open cut coal mining, agriculture (mainly dairying and grazing) and extensive hardwood and softwood plantation forestry. The main power generators in the Latrobe Valley include Loy Yang A (2,000 MW, approximately 14 kilometres east), Loy Yang B (1,000 MW, approximately 14 kilometres east) and Yallourn (1,450 MW, approximately 3 kilometres north). The main open cut mines in the vicinity of the Hazelwood Mine include the Loy Yang open cut (approximately 14 kilometres east), the Yallourn open cut (approximately three kilometres north) and the Maryvale open cut (approximately five kilometres north).

Planning context (eg. strategic planning, zoning & overlays, management plans):

The Project Area is located wholly within the municipal boundary of the Latrobe City Council and therefore subject to the provisions of the Latrobe Planning Scheme (the **Planning Scheme**). The Planning Scheme sets out the relevant planning policies that a responsible authority must consider when administering the use and development of land.

Planning Policy Framework

The Planning Policy Framework (**PPF**) includes State, Regional, and Local policies, and comprises general principles for land use and development of land. The PPF also outlines specific policies in relation to settlement, environment, housing, economic development, infrastructure, and particular uses.

State policies are the same in all Victorian planning schemes and must be taken into account when responsible authorities are assessing planning permit applications. Regional policies can traverse across multiple municipal boundaries and seek to deliver outcomes that are region specific, such as settlement or employment. Local policies are specific to each individual planning scheme and they include key strategic planning, land use and development objectives for each municipality and the strategies and actions for achieving those objectives. Regional and Local planning policies must seek to achieve outcomes that are consistent with the State policies and demonstrate how State polices are to be considered in each local municipality.

Relevant clauses of the State (S) and Regional (R) Planning Policy Framework

State and Regional Planning Policy Framework		
11.01-1S	Settlement	
11.01-1R	Settlement – Gippsland	
11.02-2S	Structure Planning	
11.03-2S	Growth Areas	
11.03-5S	Distinctive Areas and Landscapes	
11.03-6S	Regional and Local Places	
12.01-1S	Protection of biodiversity	
12.01-2S	Native vegetation management	
12.03-1S	River corridors, waterways, lakes and wetlands	
12.03-1R	High value water body assets – Gippsland	
12.05-1S	Environmentally sensitive areas	
12.05-2S	Landscapes	

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13.01-1S	Natural hazards and climate change
13.02-1S	Bushfire planning
13.03-1S	Floodplain management
13.04-1S	Contaminated and potentially contaminated land
13.04-2S	Erosion and landslip
13.05-1S	Noise abatement
13.06-1S	Air quality management
13.07-1S	Land use compatibility
13.07-2S	Major hazard facilities
14.01-1S	Protection of agricultural land
14.01-2S	Sustainable agricultural land use
14.01-3S	Forestry and timber production
14.02-1S	Catchment planning and management
14.02-2S	Water quality
14.02-3S	Protection of declared irrigation districts
14.03-1S	Resource exploration and extraction
14.03-01R	Resource exploration and extraction – Gippsland Coal Resource
15.01-1S	Urban design
15.01-6S	Design for rural areas
15.03-1S	Heritage conservation
15.03-2S	Aboriginal cultural heritage
17.01-1S	Diversified economy
17.01-1R	Diversified economy – Gippsland
17.04-1S	Facilitation tourism
17.04-1R	Tourism – Gippsland
19.01-1S	Energy supply
19.02-6S	Open space
19.03-3S	Integrated water management

Local Planning Policy Framework

The Latrobe Planning Scheme covers key matters relating to the environment, landscape and heritage, environmental risk, natural resource management, economic development, transport and infrastructure.

Relevant clauses of the Local (L) Planning Policy Framework

Local Planning Policy Framework		
02.01	Context	
02.02	Vision	
02.03	Strategic directions	
02.04	Strategic framework plans	
12.01-1L	Protection of biodiversity	
12.03-1L	River corridors and waterways	
13.02-1L-1PBMO	Planning in the bushfire management overlay	
13.02-1L-2BPA	Bushfire prone areas	
13.03-1L	Floodplain management	
14.01-1L-1PAL	Protection of agricultural land	
14.03-1L	Coal resources	
15.03-1L	Heritage conservation	
17.04-1L	Facilitating rural tourism	
19.02-6L	Open space	
19.03-3L	Integrated water management	

Land Use Terms

To address the various environmental factors within the mine that pose a significant risk to public safety, the environment and/or infrastructure, the Project requires the decommissioning, rehabilitation of the land on which the Project is situated.

A Concept Master Plan was developed by ENGIE Hazelwood in 2019 to articulate the potential opportunities at the rehabilitated Hazelwood site, with a future vision to transform the mine and surrounds into land uses that are suitable for a mix of tourism, agriculture, industry, passive recreation and conservation of natural ecosystems. To achieve this future outcome, the Hazelwood Rehabilitation Project seeks the **rehabilitation** of the former Hazelwood Mine to a safe, stable and sustainable landform. The proposed works include earthworks and water infrastructure associated with the filling of the Mine void with water for the purposes of rehabilitation.

In accordance with Clause 73.03 (Land Use Terms) of the Latrobe Planning Scheme, the Project **rehabilitation works** are associated with the use of land for **Earth and Energy Resources Industry**, inclusive of **Extractive Industry**, defined as follows:

Extractive Industry

- Land used for the extraction or removal of stone from land for commercial use, or to use the stone for building, construction, road or manufacturing works. It includes:
 - the rehabilitation of the land; and
 - the treatment of stone (such as crushing and processing) or the manufacture of bricks, tiles, pottery, or cement or asphalt products on, or adjacent to, the land from which the stone is extracted or removed.

Planning Permit requirements for the Project

Clause 52.08 (Earth and Energy Resources Industry) seeks to encourage land to be used and developed for exploration and extraction of earth and energy resources in accordance with acceptable environmental standards.

Clause 52.08-1 states a permit is required to use and develop land for earth and energy resources industry unless the table to this clause specifically states that a permit is not required. As the proposed works are defined as *Extractive Industry*, the table of exemptions is applicable as follows:

No permit is required to use or develop land for earth and energy resources industry if the
following conditions are met:Extractive industryComplies with Section 77T of the MRSD Act.

Section 77T of the MRSD Act sets out:

77T Environment Effects Statement

If under a planning scheme a permit is required to be obtained for carrying out an extractive industry on the land covered by an extractive industry work authority in accordance with that work authority, the holder of the work authority is not required to obtain a permit if—

- a) an Environment Effects Statement has been prepared under the Environment Effects Act 1978 (Vic) (**EE Act**) on the work proposed to be done under the work authority; and
- b) an assessment of that Statement by the Minister administering the EE Act has been submitted to the Minister; and
- c) the work authority was granted by the Minister following the Minister's consideration of that assessment.

Therefore, **no planning permits are required** pursuant to the *Planning and Environment Act 1987* if approvals are granted under the MRSD Act (refer *s77T* of the MRSD Act) following an assessment undertaken under the EE Act.

If these conditions are not met, a **Planning Permit may be required** as detailed in the following sections.

Zones and Overlays

An assessment of the relevant zones and overlays of the Latrobe Planning Scheme that will apply to the Project has been undertaken to identify permit triggers associated with *Earth and Energy Resources Industry (Extractive Industry).* Refer to Attachment 1 – Figures 3 and 4.

Zone	Zone purpose	Planning permit requirement	
Special Use Zone 1 (SUZ1) Hazelwood Mine areas	A Latrobe Valley specific zoning which recognises the importance of brown coal	Permit not required for the use if directly associated with the mining , processing, or treatment of brown coal, or the generation, transmission, or distribution of electricity.	
	resources and electricity generation.	Permit not required to construct a building or construct or carry out works for the following: Rearrange, alter, renew or maintain buildings or works (including associated plant) for use for or associated with brown coal mining , processing or treatment or electricity generation, transmission or distribution.	
Public Use Zone 1 (PUZ1) (Service and Utility)	To recognise public land use for public utility and community services and facilities.	Permit not required for the purpose described in the table to Clause 36.01-6 which corresponds to the notation on the planning scheme map. PUZ1 corresponds with Service and Utility.	
НСР		Permit not required to use land, or to construct a building or construct or carry out works on land, listed in a schedule to this zone, provided any condition in the schedule is complied with. Schedule to Clause 36.01 does not contain any conditions of relevance to the proposed works.	
Public Park and Recreation Zone (PPRZ)	To recognise areas for public recreation and open space and to protect and conserve areas of significance where appropriate.	 Permit not required for any use listed in Clause 62.01 if the requirements of Clause 62.01 are met. Clause 62.01 (Uses Not Requiring A Permit) states that any requirement in this scheme relating to the use of land does not apply to: The use of land for earth and energy resources industry if the conditions of Clause 52.08 are met (the conditions of Clause 52.08 are detailed above). 	
		As stated under Clause 36.02-1 (Table of uses), a permit is not required for <i>any other use not listed in Section 3</i> . As the proposed use is not a listed Section 3 use there in no permit requirement.	
		 A permit is required to construct a building or construct or carry out works other than (as relevant): Pathways, trails, seating, picnic tables, drinking taps, shelters, barbeques, rubbish bins, security lighting, irrigation, drainage or underground infrastructure. Playground equipment or sporting equipment provided these facilities do not occupy more than 10 square metres of parkland. Planting or landscaping. Fencing that is 1 metre or less in height above ground level. 	
		• A building of works shown in an incorporated plan which applies to the land.	

		A permit is also not required for a building or works carried out by or on behalf of a public land manager, Parks Victoria or the Great Ocean Road Coast and Parks Authority, under the Local Government Act 1989, the Reference Areas Act 1978, the National Parks Act 1975, the Fisheries Act 1995, the Wildlife Act 1975, the Forest Act 1958, the Water Industry Act 1994, the Water Act 1989, the Marine Act 1988, the Port of Melbourne Authority Act 1958 or the Crown Land (Reserves) Act 1978.
Road Zone – Category 1 (RDZ1)	To identify significant existing roads.	 Permit not required for any use listed in Clause 62.01 if the requirements of Clause 62.01 are met. Clause 62.01 (Uses Not Requiring A Permit) states that any requirement in this scheme relating to the use of land does not apply to: The use of land for earth and energy resources industry if the conditions of Clause 52.08 are met (the conditions of Clause 52.08 are detailed above). As stated under Section 2 of Clause 36.04-1 (Table of uses), a permit is required for any other use not in Section 1 or 3. If the proposed use does not meet the conditions of Clause 52.08, the proposed use is a Section 2 use and a permit is required.
		construct or carry out works for a use in Section 2 of Clause 36.04-1.
Road Zone – Category 2 (RDZ2)	To identify significant existing roads.	 Permit not required for any use listed in Clause 62.01 if the requirements of Clause 62.01 are met. Clause 62.01 (Uses Not Requiring A Permit) states that any requirement in this scheme relating to the use of land does not apply to: The use of land for earth and energy resources industry if the conditions of Clause 52.08 are met (the conditions of Clause 52.08 are detailed above).
		As stated under Section 2 of Clause 36.04-1 (Table of uses), a permit is required for <i>any other use not in Section 1 or 3</i> . If the proposed use does not meet the conditions of Clause 52.08, the proposed use is a Section 2 use and a permit is required.
		A permit is required to construct a building or construct or carry out works for a use in Section 2 of Clause 36.04-1.
Overlay	Overlay Purpose	Planning Permit Requirement
Bushfire Management	To identify areas where the bushfire	No permit requirements specified for the proposed use.

Overlay (ESO1)	development of land may be affected by environmental constraints and to ensure that development is compatible with identified environmental values.	 Maintenance or rehabilitation of existing works under the control of public authority A permit is required to: Construct a building or construct or carry out works. Remove, destroy or lop any vegetation, including dead vegetation. The requirement to obtain a permit does not apply to: Extractive Industry: Vegetation that is to be removed, destroyed or lopped to the minimum extent necessary to enable the carrying out of extractive industry in accordance with a work plan approved under the MRSD Act and authorised by a work
		authority granted under that Act.
Land Subject to Inundation Overlay (LSIO)	To identify flood prone land and to minimise the potential impact of flood risk	 A permit is required to construct a building or to construct or carry out works, including: A fence. Roadworks, if the water flow path is redirected or obstructed. Bicycle pathways and trails.
Flood Overlay	To ensure that any	A permit is required to construct a building or to
(FO)	development maintains the free passage and temporary storage of floodwater and minimises flood damage	 construct or carry out works, including: A fence. Roadworks, if the water flow path is redirected or obstructed. Bicycle pathways and trails.
Road Closure Overlay (RXO)	To identify a road that is closed by an amendment to this planning scheme.	No permit requirements.
State Resource Overlay (SRO1)	To protect areas of mineral, stone and other resources, which have been identified as being of state significance.	No permit requirements.
Design and	To ensure that all	A permit is required to:
Development Overlay (DDO1)	buildings and works are sufficiently separated from high pressure pipelines to avoid a safety hazard	• Construct a fence within 3 metres of any pipeline. An application may also need to consider the buffer requirements associated with major pipeline infrastructure.

Particular Provisions

- **Clause 52.02** (Easements, Restrictions and Reserves) seeks to ensure that easements and restrictions are applied appropriately so as to facilitate development that is consistent with the provisions and directions of the planning scheme, while balancing the interests of affected parties. A permit is required before a person proceeds:
 - Under Section 23 of the Subdivision Act 1988 to create, vary or remove an easement or restriction or vary or remove a condition in the nature of an easement in a Crown grant.

- Under Section 24A of the Subdivision Act 1988.
- Under Section 36 of the Subdivision Act 1988 to acquire or remove an easement or remove a right of way.

A number of exemptions may apply.

- **Clause 52.08** (Earth and Energy Resources Industry) seeks to encourage land to be used and developed for exploration and extraction of earth and energy resources in accordance with acceptable environmental standards.

As discussed above, Clause 52.08 sets out conditions for the requirement of a permit associated with the Earth and Energy Resources Industry.

- Clause 52.17 (Native Vegetation) seeks to ensure that there is no net loss to biodiversity as a result of the removal, destruction or lopping of native vegetation, in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation* (DELWP, 2017). The Guidelines provide instruction on how an application for a permit to remove native vegetation is to be assessed under the P&E Act. This includes requirements to undertake a site assessment and methodology, and specific conditions that may form part of a granted permit, such as offsetting. In accordance with Clause 52.17-1, a permit is required to remove, destroy or lop native vegetation, including dead native vegetation.
- **Clause 52.29** (Land Adjacent to a Road Zone, Category 1, or a Public Acquisition Overlay for a Category 1 Road) aims to manage the impacts of proposed land use and development on identified existing and planned roads. In accordance with Clause 52.29-2, a permit is required to create or alter access to a road or subdivide land adjacent to a road in a Road Zone, Category 1.

General Provisions

- **Clause 65** – Decision Guidelines - The responsible authority must decide whether the proposal will produce acceptable outcomes in terms of the decision guidelines of this clause.

Local government area(s):

Latrobe City Council

8. Existing environment

Overview of key environmental assets/sensitivities in project area and vicinity (cf. general description of project site/study area under section 7):

Topography/landform

Landforms in the study region consist of dissected slopes, foothills and streams and terraces on the eastern side of the Strzelecki Range. The dominant features within the study area are the Morwell River and its tributaries in the east, and the foothills, fans and slopes of the Haunted Hills in the west separated by a broad gently undulating plain. The Morwell River and its floodplain are incised into the plain between higher alluvial terraces. The river is likely to have flowed within this incised area for at least the last 5000 years, with the river changing course several times leaving evidence of numerous prior channels, meanders, oxbows and swampy depressions. In the west the Haunted Hills foothills form fans and slopes immediately above the undulating plain, deeply incised by streams, gullies and channels. Wilderness Creek drains from west of the study area through a low valley in the undulating plain at much the same level as the Morwell River. Eel Hole Creek flows from the east through a complex series of valleys and levees to join the Morwell River south of the open cut.

Soils

Soils are mainly fine-grained and clay-rich with minor sand increasing to the west. Soil structure decline is evident under intensive grazing and cultivation. The soils can be characterised as:

- Sandy silts and clayey silts generally make up the surface soils to 1.2 metres.
- Silty clay and clayey silts are widespread from 0.2 to 10 metres below the surface, with bed thicknesses ranging from 2 to in excess of 8 metres.
- Between 2.8 and 5.8 metres below the surface, sand content gradually increases with depth.
- Below 4 metres, coarse sands and sand-dominated beds are generally encountered.
- Alkalinity increases slightly with depth.
- Depth to coal ranged from 7.4 to 19.1 metres, and coal was encountered in all boreholes.

Regional geology

Hazelwood Mine is located within the Latrobe Valley sub-basin which is part of the greater (onshore) Gippsland Sedimentary Basin. The onshore Gippsland Sedimentary Basin extends from Darnum through the Latrobe Valley to the coast between Gelliondale and Orbost. The Latrobe Valley hosts the Hazelwood, Yallourn and Loy Yang coal mines; making the Latrobe Valley Victoria's main deposits of brown coal. The major Latrobe Valley coal reserves comprise three formations:

- Traralgon Formation (Eocene Age, 37 to 53 million years ago);
- Morwell Formation (Oligocene and early Miocene Age, 15 to 37 million years ago); and
- Yallourn Formation (mid-Miocene Age, 5 to 11 million years ago).

Hazelwood Mine has extracted coal from the Morwell 1A and Morwell 1B coal seams. The Morwell Formation generally consists of a complex unit of thick coal seams and lesser clay-sand sequences, which conformably overlies the Traralgon Formation in the Latrobe Valley depression. The Morwell Formation includes Morwell 2, Morwell 1B and Morwell 1A seams, which locally split or merge depending on their location relative to the major coal deposition centres.

The Morwell 2 seam is the oldest seam and has a maximum thickness of 140 metres (Yallourn and Glengarry); however, at the Hazelwood Coal Mine, Morwell 2 is overlain by the younger, Morwell 1 seam and the Yallourn seam. The Morwell 1B seam overlies the Morwell 2 seam, typically with interseam separations of clay and sand varying between 2 and 30 metres. In the Morwell-Driffield area, the Morwell 1B and overlying Morwell 1A seams combine with the Morwell 2 seam to form up to 230 metres of continuous low ash coal.

At Hazelwood most of the Yallourn group sediments have been removed due to erosion, leaving the thick Morwell 1 seam beneath a relatively thin layer of overburden approximately 9 to 16 metres thick.

Hydrogeology

Before mining commenced, groundwater existed within localised aquifers in the overburden strata. Groundwater is dewatered from the mine by pumping water from underlying confined aquifers (M1 and M2), creating a cone of depression around the mine.

There is a downward vertical hydraulic gradient from the shallow aquifer system to the underlying M1 and M2 aquifers. Vertical hydraulic connectivity between the M1 and M2 aquifers is generally limited by the presence of the M2 seam, which also acts as an aquitard.

The underlying M1 aquifer is divided into four separate sand layers (A01, A1, A2 and A3). The aquifers range from poorly to moderately sorted fine quartz sands to gravels. The upper sand units (A01 to A1) are thin and discontinuous, compared to the A3 which is continuous and considered the main M1 Aquifer unit.

The M2 aquifer is up to 200m thick beneath Hazelwood Coal Mine and consists of 6 groups of sand layers (2A, 2B, 2C, 2D, 2E and 2F). The aquifers range from well sorted, fine to medium gravel. There is intermittent weathered basalt (Thorpdale Volcanics), which act as an aquitard below the 2A sands. The 2A sand is a fine to medium grained sand, while 2B and 2C sands are typically fine with low permeability. The 2D sands are comprised of coarse sand and gravel and is

the main M2 sand with the highest yield and transmissivity. The 2D sand can be greater than 12 metres thick and in isolated areas more than 20 metres thick. The 2E and 2F sands are generally low permeability.

Hydrology

The Hazelwood Mine is located within the Morwell River catchment. The Morwell River catchment is 650 square kilometres (km²). The Morwell River is part of the Latrobe River basin and West Gippsland catchment and flows all year round. It flows from the Strzelecki Ranges in the south in a northerly direction, joined by two minor tributaries (Eel Hole Creek and Wilderness Creek) before reaching its confluence with the Latrobe River.

The Latrobe River provides an essential source of freshwater to the Gippsland Lakes Ramsar site, of which Lake Wellington and the Lower Latrobe Wetlands (Dowd Morass, Heart Morass and Sale Common) are important components. The catchment area of the Latrobe River is approximately 4900km² representing approximately 23% of the total catchment of the Gippsland Lakes.

The long-term annual average yield for the Latrobe River downstream of the Latrobe Valley is reported to be around 844GL. The upper Latrobe catchment and the inflow into Blue Rock Reservoir contributes around 489GL per year. The major tributaries (Morwell River, Tyers River, Narracan Creek and Traralgon Creek) contribute around 355GL into the Latrobe River per year. Further downstream, the Thomson and Macalister Rivers contribute an additional estimated 390GL per year. Additional (smaller) tributaries also contribute around 34GL into the Latrobe River, giving a total annual average yield for the Latrobe River at Lake Wellington to be 1,268GL (Alluvium, 2020).

There are three major storages present in the Latrobe catchment: Lake Narracan located on the Latrobe River upstream of the Yallourn power station (8,600ML), Blue Rock Reservoir on the Tanjil River (198,280ML) and Moondarra Reservoir on the Tyers River (30,300ML). Surface water extraction and storage in Latrobe River basin have impacted the hydrology of the system. This flow regulation has decreased the volume and variability of downstream flow, affecting sediment transport and disconnecting floodplains throughout the entire river. The Latrobe River system is a flow stressed system and is currently over-extracted. In particular, the development on the adjoining floodplains for Hazelwood power station, Loy Yang power station, and Yallourn power station have compromised the stream condition through ongoing water extractions and diversions from the Latrobe River and its tributaries.

The water quality of the Latrobe River catchment is described as having lowland reaches of poor water quality (elevated nutrients and turbidity), attributed to various historical activities, including irrigation drainage, sewage treatment plant discharges, runoff from intensively farmed areas, industrial discharges, urbanisation and erosion.

To the west of the Mine is an engineered diversion of the Morwell River (the MRD). The Morwell River catchment upstream of the Mine void (a sub-catchment area of approximately 434km²) has been diverted to the west at the point where it intersects the south-western corner of the Mine void. The Morwell River and its tributary Eel Hole Creek have been reshaped a number of times to allow access to brown coal and for flood protection.

An assessment of the Morwell River flow rates between 6/12/2017 and 17/06/2021 showed average flow rates between 63ML/day and 300ML/day for 90% of the time. These data were acquired from monitoring stations located on the Morwell River, just before its entrance into the diversion structure, close to the western boundary of the Hazelwood Mine.

The Project Area has a local catchment area of approximately 10km², which drains to the Mine void itself. This local catchment consists of overburden and rehabilitated areas, compacted areas and undisturbed areas.

Pre-establishment of the Hazelwood Power Station and Mine site, Eel Hole Creek ran in a north westerly direction from the area west of Churchill before intersecting with the Morwell River. The creek has been diverted to stay clear of the mining area and now feeds into the input end of the MRD channel. The HCP site sits across the original Eel Hole Creek pathway; hence the creek

now flows into the HCP (with such flows being ephemeral in nature). Flows in Eel Hole Creek enter the HCP at the south-east corner. A HCP discharge system is set up on the north-west of the HCP and discharges to the original Eel Hole Creek pathway, which then traverses to the creek diversion channel and into the MRD. The HCP is still required as a water storage for the Mine's reticulated fire service system, with Pumphouses 50 and 53 positioned on the HCP an important supply of water and pressure.

Terrestrial ecosystems

The site is located within the Gippsland Plain Bioregion of Victoria, which extends east from Melbourne to Lakes Entrance and includes the Mornington Peninsula and South Gippsland.

A desktop review and preliminary assessment for the entire MIN5004 site area identified 46 references to native vegetation (either remnant patches or scattered trees), where the ecological value was "Known" to occur within the site. Native vegetation modelling (DELWP, 2018; DELWP, 2019) suggests that there is up to 79.9 hectares of native vegetation on site, and a further 578.22 hectares occupied by wetland. The desktop review identified six references to native vegetation offsets, with four of these ecological values "Known" to occur within the site. Refer to Section 12 for a breakdown of the modelled EVC data.

In connection with approvals for the construction of the Hazelwood MRFD flood diversion infrastructure, a more detailed assessment of vegetation was undertaken in August 2021 for a small stretch of the Morwell River in the southwest of the site which identified 4 patches of Swampy Riparian Woodland, three large Scattered Trees, and one Large Tree in a Patch. Within this vegetation, the assessment identified nine Strzelecki Gum individuals comprising two large Scattered Trees one Large Tree in a Patch, and four small trees in a Patch.

Three threatened ecological communities were identified as having a likelihood to occur within the Project Area. These include the Gippsland Red Gum (*Eucalyptus tereticornis* subsp. *mediana*) Grassy Woodland (**GRGGW**) and Associated Native Grassland (*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (**EPBC Act**)-listed – Critically Endangered), Forest Red Gum Grassy Woodland Community (**FRGGWC**) (*Flora and Fauna Guarantee Act 1988* (Vic) (**FFG Act**)-listed) and Central Gippsland Plains Grassland Community (**CGPGC**) (FFG Act-listed).

Gippsland Red Gums may indicate presence of GRGGW and FRGGWC; however, the trees identified on the site were believed to have been planted and therefore the community was not considered present. The CGPGC may occur on site where Plains Grassy Woodland (EVC 55) is present.

As part of EPBC Act compliance for the West Field Project, ENGIE Hazelwood was required to provide replacement plantings of Strzelecki Gum on Crown Land beside Morwell River. The requirement was to 'Plant and Maintain not less than 160 *E. strzeleckii* Trees'. To meet this requirement ENGIE Hazelwood planted 371 Strzelecki Gum together with 150 Silver Wattle *Acacia dealbata*, on the west side of Morwell River, north of the MRD entry point in June 2006. In 2008, an additional 43 Strzelecki Gum were planted, bringing the total to 414 trees being planted in the plot. A limited number of these Strzelecki Gums were required to be removed in accordance with Latrobe City Council permit 2021/25 to facilitate the temporary MRFD works, but this loss has been offset by further commercial offset purchased by ENGIE Hazelwood (Native Vegetation Credit Register ID 2021-0656).

Aquatic ecosystems

As noted, a number of waterways intersect the site, which flow into the Latrobe River catchment. The Project Area contains multiple named watercourses including Morwell River, Waterhole Creek, Wilderness Creek, Eel Hole Creek and Bennetts Creek.

A search of the Bureau of Meteorology (BOM) National Atlas of groundwater dependent ecosystems (**GDEs**) identified 11 potential GDEs within two kilometres of the Hazelwood Mine that are mapped as Type 2 GDEs. Type 2 GDE are those ecosystems which are potentially reliant on the surface expression of groundwater. The identified GDEs include: Eel Hole Creek, Waterhole Creek, Morwell River, Bennetts Creek, Wilderness Creek and Deep marsh wetlands grouped together. A habitat and wetland avian species assessment was conducted for Sector Ponds 4 – 9 on the mine floor prior to Stage 1 of the Rehabilitation Closure Plan. The assessment identified three habitat types, emergent aquatic vegetation, muddy shoreline and open water. The habitat present in the Sector Ponds was considered to be potential habitat for Eastern Great Egret *Ardea alba modesta*, Hardhead *Aythya australis* and Latham's Snipe *Gallinago hardwickii* and Lewin's Rail *Lewinia pectoralis pectoralis*. Eastern Great Egret, Hardhead and Latham's Snipe are only expected to be visitors to the ponds while there may be potential breeding habitat for Lewin's Rail due to the vegetation present.

The Latrobe River system, comprising the Latrobe River, its tributaries and the Lower Latrobe Wetlands, supports plant and animal species of high conservation significance. The Lower Latrobe Wetlands are located on the floodplain of the Latrobe River between its confluence with Thomson River, and they form part of the Gippsland Lakes system. Almost all of the Gippsland Lakes is recognised under the Ramsar Convention as being of international importance for its wetlands and large bird populations.

The Gippsland Lakes Ramsar site is approximately 60,015 hectares in area and is located approximately 70km downstream, east of the Hazelwood Mine. Lake Wellington and its fringing wetlands are the largest single component in the Ramsar site and are listed as nationally important in the Directory of Important Wetlands in Australia. The wetlands include Lake Coleman, Heart and Dowd Morass (at the mouth of the Latrobe River), Clydebank Morass and Sale Common. The wetlands receive inflows from the catchment and backflows from Lake Wellington and salinities in the wetlands can range from hypersaline to fresh. The wetlands have high socio-economic values associated with tourism and recreational activities and support important environmental values and diverse habitats for waterbirds and other fauna.

For further information on the Gippsland Lakes Ramsar site, see Attachment 4 – Preliminary ecology appraisal report.

Air quality

Air quality in the Latrobe Valley is monitored at a regional level by an association referred to as the Latrobe Valley Air Monitoring Network (**LVAMN**). The LVAMN has undertaken ambient air quality monitoring in the Latrobe Valley since the 1980s. It operates three air monitoring stations located at Jeeralang Hill, Rosedale South and Traralgon. The LVAMN publishes daily graphs of its air quality information on its website (<u>http://lvamninc.com.au/graphs.php</u>).

The latest report on this data suggests that, in comparison with Melbourne and Geelong, air quality in the Latrobe Valley was relatively good due to lower concentrations of particulate matter and NO₂; except occasionally when higher daily PM_{10} and $PM_{2.5}$ concentrations occurred due to smoke from bushfires and controlled burns. The Latrobe Valley contained higher concentrations of sulfur dioxide due to larger sources from industry; however, the results from Traralgon were comparable to some parts of Melbourne and Geelong.

During 2019 ENGIE Hazelwood established an extensive air monitoring network based around its Rehabilitation Project activities. The associated ENGIE Hazelwood Air Quality Monitoring website (<u>https://hazelwoodrehabairquality.com.au/</u>) provides daily information from an extensive monitoring network across the site. The site includes the decommissioned power station, the EPA Licenced Asbestos Containment Area and the Hazelwood Mine. The air quality monitoring is focused on 4 areas – mine dust, demolition dust, demolition dust for hourly trends and asbestos monitoring.

There are seven air quality monitors for PM_{10} (coarse dust) and $PM_{2.5}$ (fine dust) located around the Hazelwood site. The most recent daily averages are shown and data collected over the previous week is presented in the graphs. The latest 24-hour average of PM_{10} and $PM_{2.5}$ is also calculated and presented daily.

There are an additional 16 air quality monitors for PM_{10} and $PM_{2.5}$ located around the former Hazelwood Power Station and Asbestos Containment Area. These devices monitor dust concentrations in real-time and are located close to activities that are associated with the

demolition of the Station. These dust monitors typically operate for eight hours each day to coincide with demolition works.

<u>Heritage</u>

In additional to environmental values, the Latrobe system supports cultural, social, recreational and economic values. The Gunaikurnai people are the traditional owners of Gippsland, and the Latrobe system. Waterways and wetlands in the region contain important ceremonial places and for thousands of years the Latrobe River provided resources such as food and medicines to the Gunaikurnai people.

In the history of mining at Hazelwood, the discovery of cultural heritage materials has been primarily limited to:

- Bones of primitive kangaroo species (paleontological material);
- Homestead sites from early European occupation including rubbish tips (archaeological material); and
- Aboriginal (predominately stone) artefacts (archaeological material).

It is likely that many of the archaeological sites identified within the MIN5004 boundary would no longer exist. A database search of the Victorian Aboriginal Heritage register (**VAHR**) indicated that 90 previously recorded Aboriginal cultural heritage places were located in the Project Area, consisting of Low Density Artefact Distributions (2%), quarries (3%), scarred trees (4%), earth features (7%) and artefact scatters (83%).

A desktop review of non-Aboriginal historic heritage sites has indicated there are a number of places listed on the Victorian Heritage Database (**VHD**), Planning Scheme Overlays and Victorian Heritage Inventory within and adjacent to the MIN5004 site. These items generally consisted of dwellings and ruins of dwellings associated with the early settlement of Morwell. There are two heritage places adjacent to the Project Area, being the Morwell Power Station and Briquette Factories and the Hazelwood Cemetery.

The 2004 West Field Mine EES archaeological survey identified seven new Aboriginal heritage sites which included five isolated artefact occurrences and two scarred trees. Most of these Aboriginal heritage sites were located along the terraces above the Morwell River. The location of the identified artefact scatters supported the initial predictive model for the distribution of Aboriginal places within the area, suggesting such sites were likely to occur in alluvial landscapes associated with locally significant watercourses. A more detailed survey and salvage was conducted in 2006 which identified a further 49 Aboriginal heritage sites comprising 30 isolated artefacts, 18 artefact scatters and one scarred tree. The non-Aboriginal heritage places identified in the local area included farm sheds, early homesteads, dairies, woolsheds, bridges, water control structures, schools and a disused railway alignment and railway station.

Another Aboriginal cultural heritage survey was conducted in 2019 and identified five distinct areas of Aboriginal artefacts along the pondage shoreline of the HCP, which had been exposed by the lowering of the HCP water level. Three sites were located on the eastern shore and two on the southern shore. Each of the artefact scatters have been entered on the Victorian Aboriginal Heritage Register and remain in situ and undisturbed.

For further information refer to Attachment 5 – Preliminary heritage appraisal report.

9. Land availability and control

le the proposal op, or partly op. Crown land?			
No X Yes If yes please provide details			
Current land tenure (provide plan, if practicable):			
The Project Area consists of the land within MIN5004, the HCP and surrounding properties owned by ENGIE Hazelwood. The vast majority of the Project Area is on freehold land including land associated with the use of the land for the Hazelwood Mine.			
Freehold Land			
The approximately 4,000-hectare Hazelwood site is owned in freehold title by companies within the ENGIE Hazelwood corporate group (and specifically: the four Hazelwood Power Partnership (HPP) entities, comprising Australian Power Partners B.V, Hazelwood Churchill Pty Limited, Hazelwood Pacific Pty Ltd, and National Power Australia Investments Limited.			
Crown Land (refer to inserted map for Crown Allotments)			
Approximately 178 hectares of the Project Area is Crown land, which has been occupied by ENGIE Hazelwood since at least approximately 2006. Where falling within the boundary of MIN5004, these Crown lands have been "fenced into" the Mine landholding.			
Crown land comprises the following:			
 Crown Allotment 2039 Vol 11740 Folio 212 and Crown Allotment 2049 Vol 11961 Folio 215 - road reserve of former/relocated Strzelecki Highway; Crown Allotment 2052 Vol 11977 Folio 643 - former alignment of diverted Morwell River: 			
 Crown Allotment 2042 Vol 11960 Folio 947 (likely a former road); Crown Allotment 2040 Vol 11980 Folio 560 (likely a former road); and Crown Allotment 2055 Vol 11968-545 and Crown Allotment F16A Vol 11740 Folio 193 (waterways or banks / beds thereof). 			
Vol 11740 Folio 212 and Vol 11961 Folio 215 and Vol 11977 Folio 643 are the subject of a <i>Crown Land Exchange Agreement</i> dated 4 October 2011 between the Minister for Environment and Climate Change, HPP and the Roads Corporation (VicRoads), in connection with the West Field extension of the Hazelwood Mine.			
Under this agreement, the parcels of Crown Land are overdue to be the subject of a freehold grant to ENGIE Hazelwood. ENGIE Hazelwood, in return, subdivided and transferred an equivalent area of its own freehold land to VicRoads and the Minister for Environment and Climate Change.			



Intended land tenure (tenure over or access to project land):

The majority of the Project Area is on freehold land under the ownership of ENGIE Hazelwood.

Lease and/or licence arrangements (where applicable) will be entered into with the relevant land manager for any Project works that are located on, over or under Crown land.

As noted above, the majority of the Crown land is subject to the *Crown Land Exchange Agreement* – to be the subject of a freehold grant to ENGIE Hazelwood.

Other interests in affected land (e.g. easements, native title claims):

Easements and Encumbrances:

There are existing underground gas and fuel pipelines south of the HCP area, and overhead transmission lines extend west from the Power Station.

The Crown Allotments contain encumbrances and notices summarised as:

- **Crown Allotment F16A Vol 11740-193** Water Frontage Licences and Permanent Reservation for public purposes; and
- Crown Allotment 2055 Vol 11968-545 Permanent Reservation for public purposes.

Native Title

Native title cannot be claimed on freehold land, as it is extinguished over the area. The majority of the Crown Land is subject to the *Crown Land Exchange Agreement* – to be the subject of a freehold grant to ENGIE Hazelwood.

Note the following determinations:

- **Crown Allotment F16A Vol 11740 Folio 193** Indigenous Land Use Agreement MI109503J 06/08/2016 Native Title Determination VID6007/1998; and
- **Crown Allotment 2052 Vol 11977 Folio 643** Indigenous Land Use Agreement as to part MI300840X 06/08/2016 Native Title Determination VID6007/1998.

10. Required approvals

State and Commonwealth approvals required for project components (if known):

ENGIE Hazelwood holds a range of planning and environmental approvals and agreements that relate to the previous operations and existing rehabilitation activities at the site. These include the following:

- Mining Licence MIN5004 issued under the MRSD Act;
- Accredited Operational Licence OL0046436 issued under the Environment Protection Act 1970 (Vic);
- Morwell River Diversion No.5 Licence with the West Gippsland Catchment Management Authority;
- Groundwater Licence No. 2007412 issued under the Water Act 1989 (Vic); and
- Water Services Agreement with Gippsland Water.

Notwithstanding the existing approvals that are held, a range of additional approvals are needed before the Hazelwood Rehabilitation Project can proceed. These are set out below.

<u>Commonwealth</u>

The Project has been referred under the EPBC Act for a decision as to whether it is a 'controlled action' requiring approval under the EPBC Act.

<u>State</u>

The Project will require the following primary planning and environmental approvals:

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

The Project may also require the following secondary planning and environmental approvals:

- Licence to take and use groundwater to fill the mine lake pursuant to the *Water Act* 1989 (Vic) should it be necessary to vary the existing groundwater licence;
- Permit to take protected flora and fauna pursuant to the FFG Act;
- 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); and
- Permit or consent for management of impacts to historic heritage under the *Heritage Act* 2017 (Vic).

Have any applications for approval been lodged?

 \times No \times Yes If yes, please provide details.

On 31 January 2020, ENGIE Hazelwood sought approval from ERR for the next planned stage of rehabilitation works, through the submission of the 2019 WPV. The 2019 WPV application (and

associated RCP) is not yet approved; certain works described in the 2019 WPV are the subject of the current referrals under the EE Act and EPBC Act.

The 2019 WPV is to be updated in reference to referral agency feedback, and to address the DMRP requirements (both in form and content) introduced under Part 7C of the MRSD Act, which commenced on 30 June 2020.

The 2019 WPV was supported by a range of documentation, including:

- an overarching RCP which outlined the proposed rehabilitation works and demonstrated that they could be conducted safely; and
- a number of risk management plans which are required to accompany a work plan under the MRSD Act.

Approval agency consultation (agencies with whom the proposal has been discussed):

- Department of Agriculture, Water and Environment;
- Department of Environment, Land, Water and Planning (Vic);
- Department of Jobs, Precincts and Regions (Earth Resources Regulation Branch);
- Mine Land Rehabilitation Authority;
- Southern Rural Water;
- Gippsland Water;
- West Gippsland Catchment Management Authority; and
- EPA Victoria.

Other agencies consulted:

- Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC); and
- Latrobe City Council.

PART 2 POTENTIAL ENVIRONMENTAL EFFECTS

11. Potentially significant environmental effects

Overview of potentially significant environmental effects (identify key potential effects and comment on their significance and likelihood, as well as key uncertainties):

The potentially significant environmental effects to be considered in relation to the Project are described in the following sections.

Biodiversity

A preliminary biodiversity appraisal has been undertaken and is provided at Attachment 4. The preliminary flora and fauna assessment included a desktop review in relation to the Project Area. The desktop review included a database search of an area extending five kilometres beyond the Project Area to obtain relevant flora and fauna records and a review of past reports relevant to the Project Area. The database searches together with reviews of aerial photos and previous relevant study reports were used to inform the likelihood assessment for threatened flora, fauna and ecological communities.

Native vegetation

The Project is located within the Gippsland Plain Bioregion. One EPBC Act-listed community, Gippsland Red Gum (*Eucalyptus tereticornis subsp. mediana*) Grassy Woodland and Associated Native Grassland, and two FFG-listed communities, Central Gippsland Plains Grassland and Forest Red Gum Grassy Woodland, potentially occur within the Project Area.

Based on the findings of previous biodiversity studies and a review of modelled DELWP vegetation data, a range of EVCs may be present within the Project Area. The EVCs present may include a number that are designated as endangered in the bioregion being; Damp Forest, Herbrich Foothill Forest, Lowland Forest, Plains Grassy Forest, Plains Grassy Woodland, Swamp Scrub, Swampy Riparian Complex, Swampy Riparian Woodland and Water Body – manmade.

While some previous biodiversity studies have been undertaken in the Project Area, a comprehensive recent survey of existing native vegetation has not been conducted.

The Project Area is significantly disturbed as a result of previous mining and power generation activities and the rehabilitation works to be undertaken as part of the Project will be largely confined to areas previously disturbed, in particular along the perimeter of the Mine void, the HCP, landfill areas and overburden dump areas. Nevertheless, these rehabilitation works may impact on native vegetation.

The extent of native vegetation to be cleared won't be determined until contemporary surveys of native vegetation are undertaken and the precise boundary for the rehabilitation works has been confirmed. In particular, the potential location and extent of the threatened ecological communities is not currently known and field surveys are proposed to characterise any potential occurrence. These surveys will inform design decisions and enable a full assessment of potential impacts.

The actual amount of native vegetation to be cleared will be determined once the design is refined, applying the principles of avoiding and minimising vegetation loss to the extent practicable. It is expected that footprint of the rehabilitation works will be largely confined to disturbed areas and outside of established conservation areas and consideration would be given to modifying construction techniques in any highly sensitive locations to minimise effects on vegetation. Native vegetation losses would need to be offset in accordance with DELWP requirements. A full assessment of the impacts on native vegetation and a determination of the associated vegetation offset requirements will be undertaken once the design is further progressed.

Threatened flora

Detailed flora surveys have not yet been carried out. A database review was undertaken to identify threatened species recorded in the vicinity of the Project Area. Based on the results, the following six flora species listed as threatened under the EPBC and FFG Acts are considered possible or likely to occur within the Project Area:

- River Swamp Wallaby-grass Amphibromus fluitans (EPBC: Vulnerable);
- Grey Billy-buttons Craspedia canens (FFG: Critically Endangered);
- Matted Flax-lily Dianella amoena (EPBC: Endangered, FFG: Critically Endangered);
- Green Scentbark Eucalyptus fulgens (FFG: Endangered);
- Strzelecki Gum *Eucalyptus strzeleckii* (EPBC: Vulnerable, FFG: Critically Endangered); and
- Yarra Gum *Eucalyptus yarraensis* (FFG: Critically Endangered).

Potential impacts on listed flora species are most likely to arise from the clearing of vegetation for rehabilitation works. Informed by the findings of planned flora surveys, direct impacts on these species would be minimised through avoidance and minimisation of effects on any significant habitat areas identified.

Other threats to listed flora associated with rehabilitation works include the introduction of weeds, pests and pathogens. These indirect effects would be addressed through the development and implementation of an environmental management plan to prevent these types of impacts. The significance of residual impacts on listed flora will be subject to future assessment.

Threatened fauna

While some previous fauna surveys have been undertaken in the Project Area, a comprehensive recent survey for threatened fauna has not been conducted. The database review identified 30 fauna species listed as threatened under the EPBC Act and FFG Act that are considered possible or likely to occur within the Project Area. This list includes 21 birds, three mammals, three reptiles and three fish (see Section 12 for a full list). The majority of these species, if present, are not considered to be dependent on the Project Area but rather may opportunistically use foraging resources located within the Project Area.

Seven of these species (one bird, one mammal, two reptiles and three fish), are considered to potentially use the habitat within the Project Area and further survey is recommended to better understand the occurrence of these species:

- Lewin's Rail Lewinia pectoralis (FFG: Vulnerable);
- Platypus Ornithorhynchus anatinus (FFG: Vulnerable);
- Swamp Skink Lissolepis coventryi (FFG: Endangered);
- Glossy Grass Skink Pseudemoia rawlinsoni (FFG: Endangered);
- Australian Grayling Prototroctes maraena (EPBC: Vulnerable | FFG: Endangered);
- Dwarf Galaxias Galaxiella pusilla (EPBC: Vulnerable | FFG: Endangered); and
- Flinders Pygmy Perch Nannoperca sp. 1 (FFG: Vulnerable).

Potential impacts on fauna species are also most likely to arise from rehabilitation works where vegetation removed provides habitat for those species. Targeted surveys are planned for threatened species that are possible or likely to occur in the Project Area and this will assist with the identification of habitats. It is likely that impacts to high value habitats could be avoided or minimised through careful planning of rehabilitation works. The significance of residual impacts on threatened fauna will be subject to future assessment.

FFG-listed threatening processes

The preliminary biodiversity appraisal has evaluated the potential for the Project to exacerbate the FFG-listed threatening processes outlined in Section 12.

From the evaluation it was concluded that the threatening processes could be effectively managed through the selection of rehabilitation techniques or through the development and implementation of measures to monitor and control these threats. A more detailed assessment of the FFG-listed threatening processes will be undertaken when the rehabilitation plan is further developed.

Further information on potentially significant environmental effects for biodiversity is provided in Attachment 4.

Aboriginal cultural heritage

To inform the EES referral, a preliminary heritage assessment appraisal has been undertaken and is provided at Attachment 5. This appraisal addresses Aboriginal and non-Aboriginal heritage.

Potential impacts to known and presently unknown tangible and intangible Aboriginal cultural heritage and heritage values may arise due to physical disturbance of the ground surface through rehabilitation works.

A total of 90 registered Aboriginal places lie within the Project Area and while many of these may have been destroyed, their current status and condition has not been recently assessed. The majority of the previously registered Aboriginal places within the Project Area are artefact scatters. Together with low density artefact distributions (LDADs), 'artefact' site types accounted for 87% of the search results. Less well-represented site types included earth features (comprising soil deposits or hearths) quarry sites and scarred trees.

The recorded sites are most concentrated in the vicinity of the original course of the Morwell River which was diverted in the 2000s to enable the western expansion of the Mine. The recorded position of many of these sites are within the mine pit and therefore likely to have been destroyed or relocated.

Impacts on Aboriginal cultural heritage will be minimised by avoiding known registered Aboriginal places to the extent possible, confining rehabilitation works to previously disturbed areas to the extent possible, further field surveys to check for previously unidentified Aboriginal places and protocols to be implemented during the works to address unexpected finds.

It is envisaged that a CHMP will be prepared in accordance with the *Aboriginal Heritage Act 2006* (Vic) to fully assess the potential impacts and to identify management measures to address any significant effects on Aboriginal cultural heritage.

Further information on the Aboriginal cultural heritage values within the Project Area is provided in Attachment 5.

Non-Aboriginal cultural heritage

To inform the EES referral, a preliminary heritage assessment appraisal has been undertaken and is provided at Attachment 5. This appraisal addresses Aboriginal and non-Aboriginal heritage.

Potential impacts to known and presently unknown non-Aboriginal cultural heritage resulting from project-related activities may arise due to physical disturbance of the ground surface through rehabilitation works.

A database review was undertaken of historic heritage places in the Project Area including the Victorian Heritage Register and Inventory, National Heritage List and Commonwealth Heritage List and Local Council Heritage Overlays and Planning Schemes.

No places on the National Heritage List, Commonwealth Heritage List or the Victorian Heritage Register were found to exist within the Project Area. The Victorian Heritage Register site, the Morwell Power Station and Briquette Factory is located adjacent to the Project Area and would not be directly affected.

The following Victorian Heritage Inventory sites are recorded within the Project Area:

- Driffield 2 Brinsmeade House;
- Driffield 14 Ryan's Hut;
- Driffield 15 Vary's Homestead;
- Driffield 18 Macmillan's Homestead;
- Homestead complex, Hazelwood;
- Quigley's House; and
- Waldon's Homestead.

These sites are typically associated with the former agricultural and pastoral uses of the Project Area and the current condition and significance of these sites is unknown. It is probable that many of these have been destroyed by the open cut mine, however some, such as Driffield 2 (Brimsmeade House) and Waldon's Homestead may still survive in some form. It is also unknown whether the sites that have been destroyed were recorded prior to destruction.

Impacts on non-Aboriginal heritage values will be minimised by avoiding any remnants of places on Victorian Heritage Inventory to the extent possible, confining rehabilitation works to previously disturbed areas to the extent possible, further field surveys to check for previously unidentified non-Aboriginal places and protocols to be implemented during the works to address unexpected finds.

Water resources

The Hazelwood Rehabilitation Project involves filling of the Mine void to achieve a Mine lake of RL +45m AHD. The filling is proposed primarily through the use of water from groundwater and surface water sources.

Whilst ENGIE Hazelwood holds approvals to access groundwater and surface water, the potential effects of lake filling on water resources require careful consideration. Potential impacts of lake filling could include reduced availability of water resources for other uses, changes to flow regimes in the Latrobe River catchment and reduced water quality in the Latrobe River catchment. Whilst the Eel Hole Creek and Morwell River represents a relatively small part of the Latrobe River catchment, there is potential for water system changes due to the Project to result in changes at the Gippsland Lakes Ramsar site which is connected to the Latrobe River catchment.

Water studies undertaken as part of the Latrobe Valley Regional Rehabilitation Strategy indicate that surface water availability in the Latrobe River system has decreased in the past 20 years and that there are uncertainties associated with climate change and projected water availability.

Notwithstanding that the creation of a Mine lake is an effective way to achieve safe, stable and sustainable rehabilitated at the site, reliable access to water must also be maintained for residents, industry, farming, emergencies and the environment – including the water needs of rivers, wetlands, traditional owners and the Gippsland Lakes system.

Accordingly, further studies are proposed in relation to the Hazelwood Rehabilitation Project to verify that the proposed Mine lake filling could be achieved while still maintaining other water uses. These studies would also enable refinement of the Mine lake filling proposal. It is envisaged that the water supply for the rehabilitation of the Mine void would be adaptive, accommodating fluctuating demands and climatic variations including future climate trends.

Further investigations are also proposed in relation to the effects of the Mine lake filling on flows within the Latrobe River system, including the Gippsland Lakes Ramsar site. Any reduced flows due to the use of water or changes in discharges from the Mine to this system would be predicted and any implications evaluated. An adaptive management approach is envisaged to maintain flows at levels required to maintain environmental values.

There is known contamination within the Project Area that has resulted from historic coal mining and power generation activities at the site. This is subject to a statutory audit initiated under the *Environment Protection Act 1970* (Vic) that requires that the contamination be characterised and that measures be established to monitor and control pollution risks associated with contamination. With completion of the statutory audit and adoption of the specified mitigation measures it is expected that potential contamination impacts on water quality would be effectively managed.

Similarly, any wastewater discharges from the site would require approval under a Development Licence pursuant to the EP Act. It is expected that the work done in support of a Development Licence application would demonstrate that any wastewater discharges would not materially affect sensitive areas in downstream receiving environments.

The rehabilitation works involve disturbance of land in some areas of the Project Area. To avoid potential impacts on water quality due to sedimentation associated with these activities best-practice construction approaches would be adopted and implemented in accordance with an environmental management plan. Additionally, the rehabilitation of the site involves progressive and timely revegetation of the site to minimise bare areas and potential for erosion.

12. Native vegetation, flora and fauna

Native vegetation

Is any native vegetation likely to be cleared or otherwise affected by the project?

x NYD \times No \times Yes If yes, answer the following questions and attach details.

Some clearance may be required as part of ongoing rehabilitation activities; however, it is anticipated that there would be a net gain of vegetation following rehabilitation and planting at the site.

What investigation of native vegetation in the project area has been done? (briefly describe)

While a number of past ecological surveys within the subject site, the contemporary extent and quality of remnant vegetation is not completely understood. Many of the relevant ecological reports for the site (in particular those relevant to the West Field Project) provide a reasonable discussion of the quality of the vegetation to provide for an impact assessment- however these patches were subsequently removed in connection with the relevant works.

The majority of historic ecological reports for the Project Area provide an analysis for the modelled datasets curated by DELWP, and it is unclear whether these datasets resemble existing on-site conditions.

A desktop review and preliminary assessment of the entire MIN5004 site area was undertaken in 2019 and identified 46 references to native vegetation (either remnant patches or scattered trees), where the ecological value was "Known" to occur within the site. A habitat and avifauna assessment undertaken in 2019 identified some native vegetation as habitat in Settling Ponds 4-9 of the Mine void. In 2021, a more assessment under the Guidelines for the removal destruction or lopping of native vegetation (the 'Guidelines') was undertaken for a small stretch of the Morwell River in the southwest of the site.

What is the maximum area of native vegetation that may need to be cleared?

×NYD Estimated area ...up to 79.9...(hectares)

A preliminary desktop assessment of the entire MIN5004 site area indicated that based on DELWP modelled datasets, 79.9 hectares of native vegetation and 578.22 ha of mapped wetlands exist within the Project Area. The DELWP modelled native vegetation and wetland datasets identify the HCP and areas within the Mine void as the primary areas where native vegetation and wetlands exist and are therefore considered to overstate the presence of these ecological values within the Project Area. The amount of native vegetation removal will be significantly less than the total modelled extent.

How much of this clearing would be authorised under a Forest Management Plan or Fire Protection Plan?

× N/A approx. percent (if applicable)

Which Ecological Vegetation Classes may be affected? (if not authorised as above) X NYD X Preliminary/detailed assessment completed. If assessed, please list.

The preliminary ecology appraisal (Attachment 4) identified the following EVCs modelled within the Project Area.

EVC	EVC name	Bioregional conservation status	Hectares
number		Gippsland Plain	
151	Plains Grassy Forest	Vulnerable	30.6
55	Plains Grassy Woodland	Endangered	25.83

53	Swamp Scrub	Endangered	7.48
83	Swampy Riparian Woodland	Endangered	15.98
998	Water Body - man-made	NA	578.22

The modelled datasets likely overstate the amount of vegetation that is present and would be removed within the Project Area. Further on-site vegetation assessments would be undertaken to understand the extent of vegetation remaining on the site and whether this would be impacted by the Project. Previous ecological investigations did map four patches of Swampy Riparian Woodland in the small stretch of the Morwell River in the south-west of the site, indicating that some remnant vegetation is present.

Have potential vegetation offsets been identified as yet?

 \mathbf{x} NYD \mathbf{x} Yes If yes, please briefly describe.

Other information/comments? (eg. accuracy of information)

As a detailed on-site field assessment has not yet been undertaken and modelled data has been relied upon to estimate the potential extent of to be removed within the Project Area, potential vegetation offsets are yet to be identified.

A detailed field assessment is planned to determine the type, quality and extent of native vegetation removal required within the Project Area and this will be uses to identify the required vegetation offsets.

NYD = not yet determined

Flora and fauna

What investigations of flora and fauna in the project area have been done? (provide overview here and attach details of method and results of any surveys for the project &

describe their accuracy)

Some work has been undertaken over the years to characterise the ecological values at the site; however, the contemporary extent is not well understood. To summarise the current flora and fauna investigations, a desktop appraisal study was conducted (AECOM, 2021a). This study reviewed recent flora and fauna reports and conducted database searches of the Protected Matters Search Tool (PMST) and the Victorian Biodiversity Atlas (VBA) within a five-kilometre radius.

Have any threatened or migratory species or listed communities been recorded from the local area?

- \times NYD \times No \times Yes If yes, please:
- List species/communities recorded in recent surveys and/or past observations.
- Indicate which of these have been recorded from the project site or nearby.

The Project Area is heavily disturbed; however, the desktop appraisal assessment has identified a number of potential threatened or migratory species or listed communities in the local area. Further targeted surveys may be required to confirm presence/absence and distribution of these species within the Project Area.

Threatened flora

The likelihood assessment identified six species of threatened flora that have the potential of occurring within the Project Area, including:

- River Swamp Wallaby-grass Amphibromus fluitans (EPBC: Vulnerable);
- Grey Billy-buttons Craspedia canens (FFG: Critically Endangered);
- Matted Flax-lily Dianella amoena (EPBC: Endangered | FFG: Critically Endangered);
- Green Scentbark Eucalyptus fulgens (FFG: Endangered);
- Strzelecki Gum Eucalyptus strzeleckii (EPBC: Vulnerable | FFG: Critically Endangered); and

• Yarra Gum *Eucalyptus yarraensis* (FFG: Critically Endangered).

The Hazelwood Mine also manages ecological conservation areas within the Project Area to meet its legal obligations for biodiversity offsets and general enhancement of conservation values beyond those requirements, including planting and protecting threatened species such as Strzelecki Gum.

Threatened and migratory fauna

A number of threatened aquatic bird species such as ducks, waders, rails and egrets were identified in the likelihood assessment:

- Common Sandpiper Actitis hypoleucos (EPBC: Marine, Migratory | FFG: Vulnerable);
- Eastern Great Egret Ardea alba modesta (EPBC: Marine | FFG: Vulnerable);
- Hardhead Aythya australis (FFG: Vulnerable);
- Musk Duck *Biziura lobata* (EPBC: Marine | FFG: Vulnerable);
- Australasian Bittern *Botaurus poiciloptilus* (EPBC: Endangered | FFG: Critically Endangered);
- Cattle Egret Bubulcus ibis (EPBC: Marine);
- Sharp-tailed Sandpiper Calidris acuminata (EPBC: Marine, Migratory);
- Little Egret Egretta garzetta nigripes (FFG: Endangered);
- Latham's Snipe Gallinago hardwickii (EPBC: Marine, Migratory);
- Caspian Tern Hydroprogne caspia (EPBC: Marine, Migratory | FFG: Vulnerable);
- Australian Little Bittern Ixobrychus dubius (FFG: Endangered);
- Lewin's Rail Lewinia pectoralis (FFG: Vulnerable);
- Blue-billed Duck Oxyura australis (FFG: Vulnerable);
- Glossy Ibis Plegadis falcinellus (EPBC: Marine, Migratory);
- Australasian Shoveler Spatula rhynchotis (FFG: Vulnerable); and
- Freckled Duck Stictonetta naevosa (FFG: Endangered).

Other non-aquatic bird species that were identified in the likelihood assessment include:

- Grey Goshawk Accipiter novaehollandiae (FFG: Endangered);
- Black Falcon Falco subniger (FFG: Critically Endangered);
- Little Eagle Hieraaetus morphnoides (FFG: Vulnerable);
- White-bellied Sea Eagle Haliaeetus leucogaster (EPBC: Marine | FFG : Endangered); and
- Powerful Owl Ninox strenua (FFG: Vulnerable).

Three mammals were identified as potentially occurring within the Project Area, including:

- Grey-headed Flying Fox Pteropus poliocephalus (EPBC: Vulnerable | FFG: Vulnerable);
- Yellow-bellied Sheath-tailed Bat Saccolaimus flaviventris (FFG: Vulnerable); and
- Platypus Ornithorhynchus anatinus (FFG: Vulnerable).

Three reptiles were identified as potentially occurring within the Project Area including:

- Lace Monitor Varanus varius (FFG: Endangered);
- Glossy Grass Skink *Pseudemoia rawlinsoni* (FFG: Endangered); and
- Swamp Skink Lissolepis coventryi (FFG: Endangered).

Three fish species were identified as potentially occurring within the Project Area, including:

- Australian Grayling Prototroctes maraena (EPBC: Vulnerable | FFG: Endangered);
- Dwarf Galaxias Galaxiella pusilla (EPBC: Vulnerable | FFG: Endangered); and
- Flinders Pygmy Perch Nannoperca sp. 1 (FFG: Vulnerable).

Threatened ecological communities

Three threatened ecological communities have been identified as having the potential to occur within the Project Area, including:

- Gippsland Red Gum (*Eucalyptus tereticornis subsp. mediana*) Grassy Woodland (GRGGW) and Associated Native Grassland. Listed as critically endangered under the EPBC Act;
- Forest Red Gum Grassy Woodland Community. Listed as a threatened ecological community under the FFG Act; and
- Central Gippsland Plains Grassland Community. Listed as a threatened ecological community under the FFG Act.

If known, what threatening processes affecting these species or communities may be exacerbated by the project? (eg. loss or fragmentation of habitats) Please describe briefly.

The Project intends to finalise the rehabilitation of the Mine site, increasing net vegetation, and may provide for improved regional connectivity of aquatic and riparian habitat.

Threatening processes listed under the FFG Act that may be exacerbated by the Project include:

- Habitat fragmentation as a threatening process for fauna in Victoria there may be some loss or fragmentation of habitat for aquatic species in the vicinity of the site, if present within the waterways to be modified.
- Degradation of native riparian vegetation along Victorian rivers and streams due to modification of waterways, native riparian vegetation may be disturbed or impacted by changes in flow or water quality due to the Project.
- Increase in sediment input into Victorian rivers and streams due to human activities best
 practice sedimentation protocols would be followed during works on waterways. Flow
 regimes would be further investigated to determine the appropriate environmental flow
 required to maintain contributions of the Morwell River to the Latrobe system, and the
 species it supports.
- Alteration to the natural flow of rivers and streams changes to flow in the Morwell River Diversion and Eel Hole Creek affecting downstream water environments requires further investigation into potential effects on threatened species or communities.
- Wetland loss and degradation as a result of change in water regime, dredging, draining, filling and grazing potential hydrological changes may affect wetlands in the near vicinity of the site (such as the Morwell River wetlands), and wetlands fed by the Latrobe River, including the Gippsland Lakes wetlands. Further assessment of hydrological changes predicted and surveys for threatened species would be conducted to understand potential impacts.
- Invasion of native vegetation by environmental weeds vehicles and earthworks have the
 potential to exacerbate environment weed spread, if not controlled.
- Infection of amphibians with Chytrid Fungus, resulting in chytridiomycosis due to works around waterways. Appropriate hygiene measures for construction will be included as mitigation measures during development of environmental management plans for the works.

Are any threatened or migratory species, other species of conservation significance or listed communities potentially affected by the project?

- **X** NYD X No X Yes If yes, please:
- List these species/communities:
- Indicate which species or communities could be subject to a major or extensive impact (including the loss of a genetically important population of a species listed or nominated for listing) Comment on likelihood of effects and associated uncertainties, if practicable.

While the Project Area is highly disturbed and habitat is limited, some threatened flora and fauna species may be present as noted above and have the potential to be impacted by the Project. Further targeted surveys within the proposed disturbance areas are required to confirm whether species are present to assess potential impact to these species.

Aquatic fauna species within and downstream of the site may be affected by changes to the hydrological regime and modification to waterways. This connectivity and potential impacts to significant species or communities will be further investigated.

Is mitigation of potential effects on indigenous flora and fauna proposed? X NYD No Yes If yes, please briefly describe.

Due to the stage of planning for rehabilitation works, mitigation of potential effects has not been finalised; however, potential mitigations include:

- Ensure that works are excluded from existing established conservation areas. Undertake a detailed site assessment of other areas potentially subject to disturbance to map and assess remaining remnant vegetation so as to adhere to the avoid and minimise principles during the design of the rehabilitation of the Project Area.
- Undertake a targeted flora survey in all suitable habitats to record the location of all flora species of conservation significance. Where practical, these species should be protected, and their habitats enhanced during the rehabilitation of the Project Area.
- Targeted surveys are needed for those significant fauna species considered to have the potential to occur in the Project Area, and for those species previously recorded to ensure that their habitat is protected and enhanced during the rehabilitation of the Project Area.
- Develop a waterway ecological restoration plan for all watercourses and wetlands within the Project Area to be implemented during the rehabilitation. The rehabilitation process provides a significant opportunity to restore these habitats to increase their ecological functionality. As a start, revegetation works should be undertaken along the watercourses using species representative of the likely pre-European Ecological Vegetation Classes.
- The restoration of waterways within the Project Area should prioritise the importance of providing fish passage through the Project Area, as well as being responsive to the requirements of the threatened species that may inhabit the Project Area.
- The west Gippsland Waterway Strategy 2014-2022 sets out a range of objectives for the management of the natural values of the West Gippsland region. Any rehabilitation and restoration works necessary should ensure alignment with the objectives of this plan.
- For any impacts to native vegetation that is unavoidable, commensurate offsets are to be achieved.

Other information/comments? (eg. accuracy of information)

Refer to Attachment 4 – Preliminary ecology appraisal report.

13. Water environments

Will the project require significant volumes of fresh water (eg. > 1 Gl/yr)? × NYD × No × Yes If yes, indicate approximate volume and likely source.

Approximately 637GL of water is required to fill the Mine void. As described in Section 3, the lake is proposed to be filled from the following primary water sources:

- Groundwater obtained under licence from Southern Rural Water; and
- Surface water entitlements under existing *Water Services Agreement* and obtained through commercial agreements with Gippsland Water.

Water available from these sources will continue to be investigated and assessed. Nevertheless, the indicative annual volumes expected to be available are presented below.

Water source	Indicative annual volumes available	ENGIE Target Rate (GL/year)	Comment
Groundwater	22GL (existing Southern Rural Water groundwater extraction licence)	17-19	Fill rate is below the extraction volumes currently permitted under the existing licence issued by Southern Rural Water from M1 (approximately 1GL) and M2 (approximately 17GL) aquifers, noting this excludes major pumping outages. Historically, groundwater pumping quantities have varied significantly. There are minimum extraction requirements to maintain geotechnical stability (unless and until weight is returned to the Mine void through the establishment of a lake).
Surface water	Commercial agreements	8-24.5	The precise range may vary year to year. ENGIE Hazelwood has a commercial agreement in place that provides for variable supply, based both on historical usage and modelled capability over a 10-year period. Other commercial agreements under negotiation are not included here.

Based on the indicative annual volumes likely to be available from water sources presented above, the target fill range is between 10 and 20 years; however, this could vary.

Other potential sources towards fill comprise:

- Flood flows diverted from the Morwell River, however where the volumes are dependent upon relevant rainfall (flood) incidents, the volumes will be occasional and highly variable;
- Water drained from the HCP (once decommissioned, or required to be operationally lowered to maintain stability); and
- Rainwater runoff from the Morwell Main Drain (in the event diverted into the Mine void in future to be the subject of discussion with relevant stakeholders).

Will the project discharge waste water or runoff to water environments? NYD X No X Yes If yes, specify types of discharges and which environments.

The Morwell River currently receives discharges from the Hazelwood site via Eel Hole Creek under EPA Operational Licence OL0046436. Historically discharges to Eel Hole Creek from the HCP

ranged between averages of 45ML/month during the December to May (dry) and 445ML/month during June to October (wet) periods. Following the completion of fill, the Mine lake is proposed to be connected to adjacent watercourses, with the possibility of re-establishing the currently diverted Morwell River to its original pathway through the site.

Nevertheless, it is anticipated that there will be an ongoing need to discharge waste water from the site via Eel Hole Creek and this would be subject to a Development Licence under the EP Act. The likely volume and composition of the discharge, together with the specific proposed discharge location following the decommissioning of the HCP and WEP would be determined as part of further investigations.

Are any waterways, wetlands, estuaries or marine environments likely to be affected? NYD NO X Yes If yes, specify which water environments, answer the following questions and attach any relevant details.

The Project would result in the modification of waterways and flow regimes, which have the potential to impact waterways at the site (notably, the Morwell River and Eel Hole Creek) and have implications for the health of river systems and aquatic environments downstream of the site. The Morwell River feeds the Latrobe River approximately eight kilometres to the north of the Hazelwood Mine, which in turn, contributes to outflows to the Gippsland Lakes wetlands, approximately 70 kilometres east of the site. The contribution of the Morwell River to the total flow volume in this section of the Latrobe River is estimated to be in the order of 30%.

Following filling, the Morwell River is proposed to be interconnected through the Mine lake. By following the previous Morwell River alignment through the site, the MRD infrastructure to the west of the Hazelwood Mine, constructed in the period 2006 – 2010, would be bypassed or maintained as a tributary of Morwell River; subject to further ecological assessments.

Eel Hole Creek (previously diverted) would also be modified as a result of the Project. This waterway received water from the HCP during its operation. Once the HCP drained, Eel Hole Creek would be reinstated through the land on which the HCP is currently positioned, and would receive flows from the WEP as well as the ephemeral portion of Eel Hole Creek.

While historically groundwater and surface water used at the site have been discharged via the HCP into the Latrobe system, during lake filling, this water is now being retained within the Mine void, and flows leaving the site have reduced.

Reduced flows have the potential to exacerbate the already reduced frequency and duration of flows that flush salinity from the Gippsland Lakes estuary and wetlands due to agricultural, industrial and urban consumption of water from the Thomson, Macalister and Latrobe rivers, potentially threatening the ecological character of the wetlands.

Specific linkages between the use of the surface water resources and downstream impacts would be further investigated to understand potential effects such as:

- The effect of continued water resource use under future climate scenarios on the Latrobe River ecosystem; and
- Implications for Traditional Owners and socio-economic activities that rely on healthy wetlands and rivers, that may be affected by use of the water.

Are any of these water environments likely to support threatened or migratory species? \times NYD \times No \times Yes If yes, specify which water environments.

Threatened aquatic fauna species may be present in suitable water habitats around the site, including the Australian Grayling *Prototroctes maraena* (EPBC: Vulnerable | FFG: Endangered), Dwarf Galaxias *Galaxiella pusilla* (EPBC: Vulnerable | FFG: Endangered) and Flinders Pygmy Perch *Nannoperca sp. 1* (FFG: Vulnerable).

Further downstream of the Project Area, as noted in Section 8 – Existing environment, the Latrobe system and the Gippsland Lakes support plant and animal species of high conservation significance, including migratory species.

Refer to Attachment 4 – Preliminary ecology appraisal report.

Are any potentially affected wetlands listed under the Ramsar Convention or in 'A Directory of Important Wetlands in Australia'?

 \times NYD \times No \times Yes If yes, please specify.

Lake Wellington and the Lower Latrobe Wetlands, approximately 70 kilometres downstream of the Project Area, are part of the Gippsland Lakes Ramsar site listed under the Ramsar Convention.

These wetlands rely on numerous major rivers that feed the Ramsar site, including the Latrobe, Macalister, Thomson, Avon (flowing into Lake Wellington), Mitchell, Nicholson and Tambo (flowing into Lake King). Flows from the Morwell River would contribute to these wetlands and the species they support.

Further investigations are required to evaluate the potential impacts of the Project on the Ramsar site.

Refer to Attachment 4 – Preliminary ecology appraisal report for further details on the ecological character of the Ramsar site.

Could the project affect stream flows?

 \times NYD \times No \times Yes If yes, briefly describe implications for streamflows.

The Project is expected to directly affect stream flows in the Morwell River and Eel Hole Creek, a tributary of the Morwell River. Eel Hole Creek currently receives water from the HCP. With the draining of the HCP, flows in Eel Hole Creek would be reduced to intermittent flows from the upstream ephemeral sections of the creek consistent with pre-mining operation.

As noted above, flows leaving the Project Area would be reduced during the Mine lake filling, as while historically groundwater and surface water used at the site was discharged into the Morwell River via the HCP, this water would instead be retained within the Mine void.

Although flow diversions in the Morwell River have the potential to impact flow dependent values and beneficial uses in the lower Latrobe River and Lower Latrobe Wetlands, the likelihood (frequency) of flow modifications in these reaches appears to be mitigated by flow contributions from tributaries, especially below the confluence of the Thomson River.

Prior to mining operations on the Hazelwood site, the Morwell River floodplain was quite expansive and during heavy rainfall the river would swell and expand across large farmland areas. The installation of the various Morwell River diversions around both the Hazelwood and Yallourn mines and the expansion of those mines has reduced the area of the flood plain and forced the water down channel structures, increasing the rate of flow past those mines and towards the Latrobe River. Eel Hole and Wilderness creeks have also had minor diversions as a result of the mining operations.

The Project proposes to reinstate the Morwell River through the future Mine lake following the completion of filling, and also Eel Hole Creek through the HCP site. Implementation of the Mine lake with a river flow into and out of the Mine would reintroduce a large area for flood retention. As the Mine void has a large surface area (approximately 1100 hectares), a one metre flood over this expanse could retain 11GL of water which could then more slowly traverse down the remainder of the river course to the Latrobe River. This flooded area could further protect downstream areas and particularly the Yallourn Mine while it is operational and beyond.

Could regional groundwater resources be affected by the project? $MYD \times No \times Yes$ If yes, describe in what way.

Groundwater at the site has been extracted during site operation since the 1960s and continues today as per the site's groundwater extraction licence 2007412 under the *Water Act 1989* to maintain aquifer depressurisation. Based on current modelling, groundwater extraction would be required to continue in perpetuity to ensure stability of an empty or partially-filled void. Under the Groundwater Licence issued by Southern Rural Water (valid until 1 September 2025), Hazelwood

Power Corporation is authorised to extract a total annual volume of 20,480ML of groundwater from the M1 and M2 aquifers beneath the mine for stability purposes. Groundwater is proposed to be extracted at a target rate of 18GL/year from the M1 and M2 aquifers to fill the Mine void.

Historic groundwater extraction has created a cone of depression around the mine. The extraction of groundwater for the Project, in addition to the dewatering undertaken regionally (for coal mining and offshore oil and gas) has an inconsequential and limited effect on availability for other uses of the M1 and M2 aquifers. Groundwater for urban, domestic and agricultural purposes is largely sourced from the Haunted Hills Formation (unconfined aquifer). Once the mine lake is filled to the RL +45m AHD scenario, groundwater extraction from the M1 and M2 may only be required to counteract evaporation and to maintain water balance requirements. It has been determined that groundwater levels in the vicinity of the site will eventually recover. With the formation of a Mine lake, the groundwater system will tend towards a new dynamic equilibrium that will be similar to that of the pre-mining condition.

Cessation of pumping from aquifers is expected to result in recovery in groundwater levels. Initial recovery is expected to be rapid, and over time the lateral flow will affect a larger radius and the duration of recovery will be sensitive to regional averages in hydraulic conductivities, both horizontal and vertical, and recharge. The final levels would depend on the influence of surrounding extraction activities, closure of other mines and the final Mine lake in the Hazelwood Mine.

In the unconfined aquifers the current water table is generally higher than the proposed Mine lake level of up to RL +45m AHD. This would maintain shallow groundwater flow direction towards the site, leading to groundwater discharging into the lake.

There is minimal contamination on the Hazelwood site and within the Mine void specifically. The potential for contaminants to pollute groundwater is not significant through filling of the Mine lake. This is currently being managed through the statutory audit process being conducted for the site to characterise contamination and to ensure that it is managed appropriately in conjunction with rehabilitation of the site.

Could environmental values (beneficial uses) of water environments be affected? NYD No X Yes If yes, identify waterways/water bodies and beneficial uses (as recognised by State Environment Protection Policies)

There are a number of factors that may affect the water quality of the Mine lake, which in turn may affect downstream water environmental values if the lake is connected to the Morwell River following filling. Potential factors that may impact the Mine lake water quality may include:

- Groundwater inflows carry dissolved constituents at background concentrations into the water body. Natural, upgradient groundwater will have a certain water quality and will contribute to the Mine lake water body. Inflowing groundwater can also pick up constituents from weathered coal immediately surrounding the Mine lake water body or from recharging meteoric water passing through the dewatered zone. However, the coal itself is considered an aquitard and therefore pore water within the coal is not expected to be very mobile.
- Surface water runoff from Mine void walls may transport constituents and sediments that will affect the chemistry of the water body.
- Out-of-Mine void overburden dump seepage may carry dissolved constituents into the water body.
- Direct precipitation generally is a diluting factor on Mine lake water quality.
- Since evaporation removes water and leaves behind any dissolved constituents evaporation tends to have a concentrating effect on Mine lake water quality.
- Groundwater and surface water outflows from Mine lake water bodies typically have the effect of removing constituents from the water body. However, if the water body is stratified, these outflows may remove water of different quality, which may result in either improved or reduced water quality in the Mine lake water body.

• Depending on the water quality of the external water sources used to fill and top-up the water body, these may result in either improved or reduced water quality in the Mine void water body.

Assessment of the HARA in the context of the Mine void fill shows minor water quality effects for some metals/metalloids in the short-term; however, modelling results indicated that metals/metalloids would be below the ADWG and the Australian guidelines for livestock drinking water. Once fully flooded, the potential for sulphide oxidation (leading to acid mine drainage) would be greatly reduced and transmission and erosion would be limited to the surface and lake edge water interaction areas. Where possible, low angle beach areas would be created to limit wave erosion using natural materials and growth media to manage erosion potential. The current statutory audit being conducted will further investigate the HARA and its potential impacts to both groundwater and final Mine lake water quality.

Potential impacts on environmental values of water environments would be further assessed through the statutory environmental audit process being conducted for the Hazelwood Mine, including assessment of whether the water would meet the applicable criteria for Traditional Owner cultural values, ecosystems, industrial and recreational uses. These findings would be further explored in consultation with relevant stakeholders to determine appropriate use of water from the Mine lake that corresponds with the vision for the site.

Works within waterways in the vicinity of the site (Eel Hole Creek and Morwell River) has the potential to increase sedimentation in downstream waterways, which could affect salinity and turbidity of the water. Water quality would be monitored at discharge points in line with any discharge licences for the Project and downstream of works. This would ensure water quality meets the standards to maintain environmental values of the receiving water environment.

Further assessment would be undertaken to determine the likelihood and effect of surface water and groundwater interactions between the Mine lake and the Morwell River. This assessment would investigate potential water quality changes of the river in the context of current and probable future river water quality and current and probable future river values.

Could aquatic, estuarine or marine ecosystems be affected by the project? \times NYD \times No \times Yes If yes, describe in what way.

As noted above, the Project proposes to use the following sources of water:

- Groundwater (which as noted above, needs to be extracted in any event for stability purposes); and
- Surface water allocations (from the Latrobe system).

Flows in Eel Hole Creek would also be affected following the draining of the HCP, leading to changed conditions for aquatic life in this waterway. The MRD would also be bypassed (or would remain as a tributary) following any re-routing of the Morwell River into and out of the Mine lake, which would lead to changes in this section of the MRD.

The impacts of the use of this water resource on GDEs and aquatic ecosystems in the vicinity of the Project site, and the potential effects on the Latrobe River ecosystem (and the downstream Gippsland Lakes) is a key uncertainty that is proposed to be investigated further.

It is anticipated that an interconnection of the Mine lake and the Morwell River following filling would provide improved Mine lake water quality, improved river water quality, and improved regional connectivity of aquatic and riparian habitat.

Is there a potential for extensive or major effects on the health or biodiversity of aquatic, estuarine or marine ecosystems over the long-term?

No X Yes If yes, please describe. Comment on likelihood of effects and associated uncertainties, if practicable.

Given the proposed timeframe of the Project, the effect of continued water resource use in the long-term for rehabilitation of the Hazelwood Mine on the Latrobe River ecosystem is a key matter that requires further investigation.

Particularly, the use of water under future climate scenarios requires further assessment and validation (including in reference to forthcoming guidance from DELWP as part of the LVRRS process).

There are also potential positive effects of a Mine lake that will be investigated further. These could include water quality improvements in Morwell River downstream of the Mine lake and improvements in the health of Eel Hole Creek.

Is mitigation of potential effects on water environments proposed? \times NYD \times No \times Yes If yes, please briefly describe.

Groundwater levels and surface water flows would be monitored in order to inform an adaptive filling process with consideration of climate conditions and the needs of other users. ENGIE Hazelwood's arrangements for water access can be curtailed in the response to such developments.

It is expected that rigorous mitigation measures will be required as per the statutory environmental audit under the EP Act to prevent the migration of contamination from the site to surrounding water environments, and this will be expected to include:

- Investigation and clean up of contamination at the Mine and Power Station ancillary activity areas – potential clean up techniques include excavation and treatment or disposal at a licenced facility; and
- Ongoing management of residual contamination to avoid impacts to water environments, including the establishment and maintenance of capping across former ash ponds and landfills.

Other information/comments? (eg. accuracy of information)

Numerous studies have been undertaken to understand hydrogeological and hydrological issues and risks and to inform the mitigation strategies and overall management and implementation of rehabilitation and closure on the site.

Statutory environmental audits in relation to filling the Mine void with water, including any impacts to groundwater from filling operations and impacts to the future Mine lake water quality are being undertaken under the CUNs. Audit findings will be taken into account to the extent they are available over the course of the referral and any subsequent further approvals process.

14. Landscape and soils

Landscape

Has a preliminary landscape assessment been prepared? X No X Yes If yes, please attach.

The Concept Master Plan provides a vision of what the Project Area might look like after rehabilitation is complete. It is envisaged that a landscape and visual assessment will be undertaken as part of any future approvals process.

Is the project to be located either within or near an area that is:

• Subject to a Landscape Significance Overlay or Environmental Significance Overlay? NYD No X Yes If yes, provide plan showing footprint relative to overlay.

A small portion of the Project Area is intersected by the Environmental Significance Overlay to the north of the site.

Identified as of regional or State significance in a reputable study of landscape values?
 NYD × No × Yes If yes, please specify.

• Within or adjoining land reserved under the National Parks Act 1975?

 \times NYD \times No \times Yes If yes, please specify.

Within or adjoining other public land used for conservation or recreational purposes ?
 NYD × No × Yes If yes, please specify.

There are a number of conservation areas in the vicinity of the Project Area, including the following offset areas located between 60 and 1,200 metres from the Mine crest:

- Eel Hole Creek /Cemetery Net Gain Offset Area 470m from the Mine crest;
- Deans Road Offset Area 60m from the Mine crest;
- Eucalyptus Strzelecki Offset Area 940m from the Mine crest; and
- Old Eucalyptus Strzelecki Highway Net Gain Offset Area 1,200m from the Mine crest.

ENGIE Hazelwood manages an offset area at Eel Hole Creek to protect listed EVCs described as Riparian Forest / Warm Temperate Forest and Plains Grassy Forest within the MIN5004 area, and a section of the southern component is located outside of the MIN5004 area. The Eel Hole Creek Offset Area / Reserve extended an existing conservation area known as the Eel Hole Creek / Cemetery Conservation Reserve originally established in 2002.

Following rehabilitation of the Project Area, subject to Government support and community input, public recreational uses are proposed to be encouraged, with tourism and recreation a central component of the Concept Master Plan. Low-lying land abutting the Morwell River presents an opportunity to provide large-scale recreational uses overlooking the future lake (following relevant land rezonings and transfers).

Is any clearing vegetation or alteration of landforms likely to affect landscape values? \times NYD \times No \times Yes If yes, please briefly describe.

No significant vegetation removal is proposed; however, certain landforms of the site would be modified, and some planted vegetation may be removed in the process (subject to relevant offsets).

Planted screens are no longer present due to the fire risk they posed to the open cut mine.

The final landform of the Mine void as a lake and the surrounding landscaping would likely improve the visual amenity of the site.

Is there a potential for effects on landscape values of regional or State importance? X NYD X No X Yes Please briefly explain response.

Is mitigation of potential landscape effects proposed? X NYD X No X Yes If yes, please briefly describe.

The Concept Master Plan sets out an indicative concept for future use which breaks down the site into precincts for different uses. Further, conceptual site flyovers have been prepared for community engagement purposes, depicting key proposed site features. Detailed landscape plans have not been prepared and it is envisaged that these would be developed in consultation with Government and the community in parallel with the filling process.

Other information/comments? (eg. accuracy of information)

Note: A preliminary landscape assessment is a specific requirement for a referral of a wind energy facility. This should provide a description of:

- The landscape character of the site and surrounding areas including landform, vegetation types and coverage, water features, any other notable features and current land use;
- The location of nearby dwellings, townships, recreation areas, major roads, above-ground utilities, tourist routes and walking tracks;

 Views to the site and to the proposed location of wind turbines from key vantage points (including views showing existing nearby dwellings and views from major roads, walking tracks and tourist routes) sufficient to give a sense of the overall site in its setting.

Soils

Is there a potential for effects on land stability, acid sulphate soils or highly erodible soils? \times NYD \times No \times Yes If yes, please briefly describe.

The depressurisation of the regional aquifers has resulted in consolidation of sediments and surface subsidence throughout the region. Ground movement surveys indicated that there is no significant differential settlement in the Latrobe Valley and that observed movements are in the form of a relatively uniform settling of land surrounding the mines. The maximum settlement recorded in monitoring networks around the coal mines of the Latrobe Valley is in the order of 2.5m.

Ground movements during the filling period are expected to comprise ongoing subsidence as dewatering continues; however, this is expected to be small relative to historic regional subsidence.

When groundwater is no longer required to be extracted for stability and/or filling purposes, gradual land surface rebound in the region surrounding the Mine is expected to occur over many decades, however this would be less than the subsidence that has occurred historically. Preliminary modelling has suggested that a land surface rebound of 25 - 40% of measured subsidence is possible at the site. These changes are anticipated to occur over the next 50-100 years, with the rebound rate slowed by the continuation of aquifer pumping at Loy Yang and other water extractors in the area.

The capped and rehabilitated landfills in the Project Area would also expect to undergo some settlement, which would be considered in post-relinquishment planning of future land uses.

In terms of the potential effects of acid or leachate from the coal exposed on batters or the Mine floor affecting Mine lake water quality, preliminary static and kinetic geochemical test results and wall wash results for coal wall and floor material demonstrated that:

- There is low to negligible acid neutralisation capacity in the coal;
- The electrical conductivity (EC) decreases rapidly over the testing period before stabilising;
- Leached sulfate concentrations are generally low and decrease over the test period; and
- Leached salts are mainly present in the form of sodium and chloride and follow the same trend as EC over time.

Are there geotechnical hazards that may either affect the project or be affected by it? \times NYD \times No \times Yes If yes, please briefly describe.

The rehabilitation of the Mine batters and floor through the formation of a Mine lake is expected to achieve a safe, stable and sustainable landform by providing a counterweight to floor heave (upward pressures from the M1 and M2 aquifers below the Mine) and increasing the lateral pressure to stabilise batters.

During filling of the Mine lake, batter stability would need to be actively managed through continued aquifer depressurisation and surface water management to minimise seepage inflow. Ground movement would likely occur in the immediate vicinity of the Mine in response to Mine filling, and ongoing monitoring would be undertaken to monitor slope stability during the filling of the lake. Key ground movement risks include:

- Block sliding;
- Sinkhole formation;
- Floor heave; and
- Subsidence.

For the rehabilitated Mine with exposed coal covered and rehabilitated, and with continued use of horizontal drains in Mine batters, geotechnical modelling indicates the risk of coal block

movement can be minimised. During Mine lake filling, ground movement is most likely to occur due to groundwater-induced subsidence/heave. The ground movement damage risk assessment found that the change from current damage risk (i.e. to buildings, roads and utilities) is minor outside the MIN5004 area including within the nearby Morwell township.

There is a pre-existing background level of seismicity in the Latrobe Valley region. The Mine lake filling has some potential to invoke directly related seismic events or increases in localised seismic activity, as the depths encountered are theoretically sufficient to produce seismic impacts; however, there is no model that can quantitatively predict the frequency or magnitude of such impacts.

Other information/comments? (eg. accuracy of information)

Numerous geotechnical assessments and designs have been completed to provide a high level of confidence in the ability of the Project to achieve its objective of a safe, stable and sustainable landform.

The cover designs of the ash storage ponds and landfills have been well progressed; however, ongoing assessment and evaluation is being undertaken for rehabilitation works to ensure compliance with design and management requirements in accordance with the site's CUNs and statutory audit process.

15. Social environments

Is the project likely to generate significant volumes of road traffic, during construction or operation?

X NYD X No X Yes If yes, provide estimate of traffic volume(s) if practicable.

Traffic generated by earthworks and demolition works at the site are managed through the Mine Traffic Management Plan.

In the event that certain materials for the rehabilitation works cannot be sourced on the site, there may be an increase in trucks on the road network to and from the site to deliver the appropriate materials.

These deliveries would occur over the capping period (estimated to be completed by 2025). However, it is not yet determined what traffic volumes would occur and if this would be significant compared with historic operations and current road usage.

Is there a potential for significant effects on the amenity of residents, due to emissions of dust or odours or changes in visual, noise or traffic conditions?

 \times NYD \times No \times Yes If yes, briefly describe the nature of the changes in amenity conditions and the possible areas affected.

Emissions of dust, odours and noise have been managed during the operation and decommissioning phase of the Hazelwood Mine and Power Station through the mine's Environmental Management System (**EMS**). Emissions would be expected to be within historical limits at the site and would be unlikely to significantly affect the amenity of residents, given the existing management plans in place.

Dust suppression procedures would continue to be implemented during earthworks. All crushed rock roads are regularly graded and repaired to maintain the standard of access and watered to minimise dust from vehicle movements.

Changes in the level and type of noise are anticipated during the Project construction phase. These changes will initially include truck and shovel and dozer movements (day shift only) during overburden and batter re-profiling, and demolition works (day shift only). Once these works are completed and the lake filling begins, the main source of noise will be from maintenance (truck and shovel and dozer) works and diesel water pumps.

Traffic at the site is managed through the Mine Traffic Management Plan. It is unlikely that changed traffic conditions would significantly affect the amenity of residents, as haulage trucks to and from the site are likely to utilise existing routes.

Is there a potential for exposure of a human community to health or safety hazards, due to emissions to air or water or noise or chemical hazards or associated transport? NYD X No X Yes If yes, briefly describe the hazards and possible implications.

The Hazelwood mine fire in 2014, a 45-day incident arising from adjacent, deliberately lit bushfires, had impacts on the Latrobe Valley community, particularly in terms of air quality. Since then, the extensive recommendations and affirmations from the 2014 Hazelwood Mine Fire Inquiry have been implemented on site to manage fire risk.

The Project would provide for a final safe, stable and sustainable landform, where exposed coal would be inundated with water or covered by inert material, removing fire risk. 'Burn holes' (specific historic geological formations disturbed through mining activities that have spontaneously combusted) in existing and proposed reprofiled batters above RL +45m AHD have been excavated and capped as a standard management practice at Hazelwood. These locations have been mapped and covered with inert overburden material and compacted to mitigate the risk of spontaneous combustion. Ongoing management of fire risk would be undertaken during the filling process in accordance with the site's Fire Risk Management Plan approved by ERR, including the maintenance of the Mine's reticulated fire service system, and grazing and slashing vegetated areas to limit fuel loads.

Statutory environmental audit processes are being undertaken to manage potential hazardous materials which could impact human health through air emissions (dust or vapour), or contaminant transport via groundwater or surface water. Further work will be undertaken to ensure water quality within the Mine lake will not represent a health hazard for potential future recreational uses.

The site will be secured throughout the works to maintain public safety and there would be no public access to the Mine lake or the HCP during filling and rehabilitation earthworks. This would mean the community would not be exposed to direct health and safety hazards. No blasting is proposed for the Project, and hence there would not be potential risks from fly rock.

Is there a potential for displacement of residences or severance of residential access to community resources due to the proposed development?

 \times NYD \times No \times Yes If yes, briefly describe potential effects.

Are non-residential land use activities likely to be displaced as a result of the project? \times NYD \times No \times Yes If yes, briefly describe the likely effects.

Do any expected changes in non-residential land use activities have a potential to cause adverse effects on local residents/communities, social groups or industries?

Is mitigation of potential social effects proposed? NYD × No × Yes If yes, please briefly describe.

The Concept Master Plan for the Hazelwood site provides a vision for the site following its rehabilitation and relinquishment, which identified future precincts and land uses at the site subject to consultation rezonings, land transfers and other approvals.

Hazelwood is proposed to be re-established as the hub of the Latrobe Valley providing a range of opportunities for clean energy production, eco and agri-tourism, and sport and recreation. The thousand-hectare lake is proposed to be the powerhouse for new communities, comprising a sustainable mix of land uses that support a safe and responsive economic, social and environmental future for Hazelwood. The new uses will create a lasting legacy for Hazelwood, providing an opportunity for new and existing communities alike to engage with the natural environment, and celebrate the site's historic value.

Other information/comments? (eg. accuracy of information)

Cultural heritage

Have relevant Indigenous organisations been consulted on the occurrence of Aboriginal cultural heritage within the project area?

No If no, list any organisations that it is proposed to consult.

X Yes If yes, list the organisations so far consulted.

ENGIE Hazelwood has engaged with GLaWAC in relation to the intent to develop a CHMP for the Project Area in accordance with the *Aboriginal Heritage Act 2006* (Vic).

At the time of the 2004 EES, extensive surveys and clearance activities were undertaken with assistance of the relevant Aboriginal Party at that time (Central Gippsland Aboriginal Health and Housing Co-operative represented by the Gippsland Regional Cultural Heritage Program).

It is intended that a comprehensive consultation process, cultural values workshop and fieldwork for the Hazelwood Rehabilitation Project be undertaken with GLaWAC representatives.

What investigations of cultural heritage in the project area have been done? (attach details of method and results of any surveys for the project & describe their accuracy) A preliminary desktop appraisal assessment of Aboriginal cultural heritage and historic cultural heritage has been undertaken and is provided in Attachment 5 – Preliminary heritage appraisal report.

The desktop appraisal assessment has reviewed previous assessments completed in the Project Area and has undertaken updated searches for:

- Non-Aboriginal historic heritage databases, including the Australian Heritage Database (World, National and Commonwealth heritage), VHD (State), Victorian Heritage Inventory (VHI) and Heritage Overlays (HO) in the Latrobe Planning Scheme (local heritage); and
- Aboriginal cultural heritage, including the VAHR.

As noted above, extensive Aboriginal cultural heritage surveys and clearance activities were undertaken by predecessor parent company International Power (Australia) Holdings Pty Ltd (**IPAH**) between 2003 and 2006 in connection with the West Field Project. This included extensive field-based surveys undertaken with the assistance of the relevant Aboriginal Party.

A further Aboriginal cultural heritage survey was conducted in 2019, which identified 5 distinct areas of Aboriginal artefacts along the pondage shoreline of the HCP, which had been exposed by the lowering of the HCP water level. Three sites were located on the eastern shore and 2 on the southern shore.

Is any Aboriginal cultural heritage known from the project area?

- \times NYD \times No \times Yes If yes, briefly describe:
- Any sites listed on the AAV Site Register
- Sites or areas of sensitivity recorded in recent surveys from the project site or nearby
- Sites or areas of sensitivity identified by representatives of Indigenous organisations

The search of the VAHR revealed 90 previously recorded Aboriginal cultural heritage places were located within the Project Area. Of the recorded site types, artefact scatters dominated the search results, accounting for around 83% of the total results. The Mine site is heavily disturbed; however, areas of cultural heritage sensitivity are associated with the Project Area and some of these areas remain relatively undisturbed, particularly around existing natural watercourses.

The previous 2004 EES surveys identified a number of objects, predominately scattered stone artefacts across the western portion of the current MIN5004 area, which were entered onto the Victorian Aboriginal Register. The subsequent development of the West Field of the Hazelwood Mine and associated infrastructure relocation works involved significant ground disturbance. The relevant artefacts were collected and removed with the assistance of the relevant Aboriginal Party, pursuant to the 'Consent to Disturb' permits, prior to the high-impact (significant ground disturbance) works being conducted.

The Aboriginal heritage artefacts uncovered in the vicinity of the HCP along the alignment of a former natural waterway (Eel Hole Creek) in May 2019 identified above were entered onto the VAHR and remain in situ and undisturbed.

Are there any cultural heritage places listed on the Heritage Register or the Archaeological Inventory under the *Heritage Act 1995* within the project area?

 \times NYD \times No \times Yes If yes, please list.

A desktop review of non-Aboriginal historic heritage places has shown the following places are listed within and adjacent to the Project Area:

- Morwell Power Station and Briquette Factory (VHD H2377, Latrobe Planning Scheme HO153) (adjacent) – a highly intact example of a mid-twentieth century power station and briquetting factory, 421 Commercial Road;
- Hazelwood Cemetery and Gates (Latrobe Planning Scheme HO28) (adjacent) publicly accessible cemetery established in 1879, external to MIN5004, corner Brodribb Road and Yinnar Road;
- Driffield 2 (VHI H8121-0002) within MIN5004, Brodribb Road;

- Ryan's Hut (Driffield 14) (VHI H8121-0014) within MIN5004, Brodribb Road, flood plain;
- Vary's Homestead (Driffield 15) (VHI H8121-0015) late 19th Century, early 20th century structure, artefact scatter, exotic plantings, Brodribb Road, river terrace;
- Quigley's House (VHI H8121-0035) late 19th Century, early 20th century structure, brick and concrete structural remains, Monash Way;
- Macmillan Homestead (VHI H8121-0018) within MIN5004, Brodribb Road, river terrace;
- Homestead Complex (VHI H8121-0033) large domestic refuse dump and material exposed, extensive brick scatter, exotic mature planting's, brick floors possibly associated with dairy, shed foundations, numerous post and rail fences, built-up driveway, possible fireplace remnants, within MIN5004, Monash Way;
- Waldon's Homestead (VHI H8121-0037) highly disturbed structural remains (brick, concrete, mortar) beneath two peppercorn trees, within MIN5004, Monash Way; and
- Hazelwood Soldiers' Settlement Memorial (VHI) (adjacent) external to MIN5004, off Brodribb Road.

Four delisted heritage items were also reported on the VHI, however these items are likely to no longer exist in the landscape. The condition and significance of number of archaeological sites associated with the area's former agricultural/pastoral uses are unknown, and it is probable that many of them within the MIN5004 site have been destroyed.

Is mitigation of potential cultural heritage effects proposed?

 \times NYD \times No \times Yes If yes, please briefly describe.

Much of the Hazelwood site has been the subject of previous significant ground disturbance in connection with 50+ years of open cut mining and power generation activities.

Notwithstanding this, ENGIE Hazelwood has:

- Detailed Aboriginal heritage compliance documentation in place, namely its *Cultural Heritage Protocol and Cultural Heritage Instruction*, to manage any unexpected Aboriginal heritage discoveries in accordance with the *Aboriginal Heritage Act 2006* (Vic), and mitigate the risk of harm; and
- (As noted above) previously undertaken extensive Aboriginal heritage surveys and clearance activities with the assistance of relevant aboriginal parties, including in connection with the West Field development of the Mine.

So as to ensure that the remaining works are conducted without a risk of harm, ENGIE Hazelwood intends to develop a site-wide CHMP with the Registered Aboriginal Party GLaWAC. Further assessment of known and potential Aboriginal cultural heritage and the identification of mitigation measures will occur as part of preparation of the CHMP. These measures will be prepared in accordance with the *Aboriginal Heritage Act 2006* (Vic) and in consultation with GLaWAC.

In terms of non-Aboriginal heritage sites, the design of the Project would avoid direct and indirect (e.g. vibration, visual) impacts to remaining heritage places and any significant archaeological items. The presence and condition of archaeological sites will be confirmed through inspections and assessed prior to the commencement of any disturbance works. The listings for sites that have been destroyed should be updated on the VHI and any surviving sites should be recorded.

Public access to the adjacent Hazelwood Cemetery and the Hazelwood Soldiers' Settlement Memorial would be maintained during the rehabilitation process. Further mitigation measures would be proposed in the event of potential impacts to heritage places being identified.

Other information/comments? (eg. accuracy of information)

Refer to Attachment 5 – Preliminary heritage appraisal report.

16. Energy, wastes & greenhouse gas emissions

What are the main sources of energy that the project facility would consume/generate?

× Electricity network. If possible, estimate power requirement/output ... 20 million kWh/yr

- × Natural gas network. If possible, estimate gas requirement/output
- K Generated on-site. If possible, estimate power capacity/output
- \times Other. Please describe.

Please add any relevant additional information.

Based on 2019-2020 energy usage, electricity usage was approximately 16 million kilowatt hours. During the Project operation, the main electricity usage would be for pumping water to fill the lake. It is expected that energy usage would not substantially change from current consumption.

What are the main forms of waste that would be generated by the project facility?

- **X** Wastewater. Describe briefly.
- **X** Solid chemical wastes. Describe briefly.
- **x** Excavated material. Describe briefly.
- \times Other. Describe briefly.

Please provide relevant further information, including proposed management of wastes.

During rehabilitation works, waste generated would include waste hydrocarbons, oil filters, office and paper, general food waste etc. as well as the additional waste generated through demolition.

Demolition wastes would include concrete, steel, electrical cables, pipes, plaster wall sheets and disused office furniture. Waste materials generated during demolition may contain asbestos and other hazardous substances which would be managed in accordance with relevant health and safety regulations. Where assets are identified as inert and left in situ, details would be recorded in the Buried Infrastructure Register.

Plant and equipment that is planned to be salvaged from the site may be temporarily stored in designated hardstand areas prior to removal off-site. Prior to storage, all equipment and machinery would be typically inspected for hydrocarbon leaks and managed accordingly.

Any equipment not proposed for salvage would be disposed of on-site in accordance with a Waste Management Plan, transported to a suitable industrial scrap material recycling facility or transported to the appropriate waste recycling / landfill facility in accordance with all regulatory requirements.

Some green waste may also be generated where reshaping of vegetated landforms is required; however, such material will be re-used and/or disposed of onsite to the extent possible.

<u>Asbestos</u>

The HAP 1 landfill has been established as an asbestos receiving cell under the EPA Licence to receive asbestos from both the mine and the demolition of the Power Station. Asbestos Dumps 1, 2, 3 are now rehabilitated and would not receive any further demolition waste.

Hydrocarbon and hazardous waste

All hazardous products including hydrocarbons and other chemicals would be managed in accordance with the Mine Waste Management Plan.

If the fuel depot (the refuelling area located above the southern batters of the mine) is identified as not re-usable, the demolition of underground fuel storage tanks would occur in accordance with Australian Standard AS 4976-2008, The removal and disposal of underground petroleum storage tanks and remedial works undertaken if necessary.

As noted above, CUNs under Section 62A(1) of the *Environment Protection Act 1970* have been issued by EPA Victoria for the Hazelwood Mine and Power Station site, including the HCP. ENGIE Hazelwood has prepared a Clean Up Plan that responds to the CUNs and will guide the

remediation of polluted land and groundwater resulting from historical activities at the site. In this regard, any contamination requiring disposal would be guided by the CUNs and overseen by the requirements of the EPA.

Once rehabilitation works are complete, the site would no longer generate runoff requiring treatment from the Power Station block or licenced landfill facilities prior to discharge.

Leachate generated would continue to be collected and transported via the SWOP until no longer required.

What level of greenhouse gas emissions is expected to result directly from operation of the project facility?

× Less than 50,000 tonnes of CO₂ equivalent per annum

 \times Between 50,000 and 100,000 tonnes of CO₂ equivalent per annum

 \times Between 100,000 and 200,000 tonnes of CO₂ equivalent per annum

imes More than 200,000 tonnes of CO $_2$ equivalent per annum

Please add any relevant additional information, including any identified mitigation options.

Based on 2019-2020 National Greenhouse and Energy Reporting, the Hazelwood Rehabilitation Project Scope 1 and Scope 2 emissions were 27,170 tonnes of CO_2 equivalent. It is anticipated that emissions from the Project would be similar to the levels generated over the 2019-2020 reporting period.

17. Other environmental issues

Are there any other environmental issues arising from the proposed project? \times No \times Yes If yes, briefly describe.

18. Environmental management



 A set of environmental objectives (listed in the table below) and associated performance indicators;

- A series of environmental procedures and work instructions, with specific environmental management measures to achieve objectives; and
- A series of environmental monitoring program procedures to confirm that objectives are being met.

Theme	Objective(s)
Flora management	 To minimise the impact on native vegetation and flora species and associated habitats. Minimise removal of <i>Eucalyptus strzeleckii</i> individuals. Minimise impact on identified locally threatened species (eg <i>Dianella amoena</i>).
Fauna management	• To minimise the impact on native fauna species and associated habitats.
Weed management	• To prevent the introduction and spread of weeds.
Bushfire management	• To prevent / mitigate the outbreak of bushfire caused by the operation.
Air quality	 To minimise dust emissions generated by the operation. Minimise fugitive dust visibility and nuisance at sensitive receptors
Noise management	• To minimise the effect of noise on the social and natural environment.
Hazardous materials	 To collect, treat, transport and dispose of wastes in an environmentally acceptable manner in accordance with relevant legislation.
Waste management	 To minimise the generation of waste by the operation. To dispose of waste in a manner compliant with legislative requirements.
Groundwater management	To minimise environmental impact from the extraction of groundwater and minimise potential groundwater contamination
Surface water management	Minimise impacts on local water quality and hydrology
Cultural heritage	To avoid unauthorised disturbance to Aboriginal heritage sites.
Ground disturbance	 To conserve and reuse topsoil for rehabilitation. To conserve and reuse material from the subsoil zone as a source of bulk material for the rehabilitation process. To minimise adverse effects of clearing. To prevent unauthorised clearing of land.
Rehabilitation and closure	 Progressively restore all land disturbed by mining activities to a safe, stale landform, for long term sustainable use, as soon as practicable, in compliance with the MRSD Act and reflecting community expectations.

It is anticipated that the EMS would be augmented to incorporate requirements and conditions arising from statutory approvals granted for the Project subsequent to this referral (and any subsequent assessment) process.

For example, the environmental management requirements and conditions contained in an approved DMRP would be adopted. These measures would provide the means to monitor and control potential environmental effects related to the Project during implementation.

Further, the statutory environmental audit processes being undertaken for the site under EPA Operational Licence OL0046436 and CUNs overseen by EPA Victoria, would ensure that contamination risks from the site are appropriately considered and managed in the rehabilitation design and land use suitability post-relinquishment. Mitigation measures identified through this process would also be incorporated into environmental management processes for the site.

The use of water resources and design of waterway interconnections would be subject to further investigation to ensure ecological effects in waterways and aquatic ecosystems are avoided or minimised in the case where waterways are modified in the vicinity of the site. An adaptive water filling approach would be adopted following further consultation with regulators, other mine operators, water modelling and ongoing monitoring.

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In addition, consultation with Traditional Owners (either through, or in parallel with the CHMP process) would be undertaken to further investigate the future management of water resources in the Latrobe River catchment, including cultural flows, consistent with key LVRRS principles.

19. Other activities

Are there any other activities in the vicinity of the proposed project that have a potential for cumulative effects?

 \times NYD \times No \times Yes If yes, briefly describe.

It is understood from public reports that the separate coal mines at Yallourn and Loy Yang are proposed to close in approximately 2028 and around 2048 respectively. These sites will require rehabilitation following closure. Whilst the specific rehabilitation proposals for these sites have not been finalised, they may include filling of those mine voids with water to create at least partial lakes.

In recognition of the significant challenge associated with the closure and rehabilitation of the three Latrobe Valley coal mines and the potential for cumulative effects and competing demands for water, the Victorian Government initiated development of the LVRRS, in response to the 2015-2016 Hazelwood Mine Fire Inquiry Volume IV Report on Terms of Reference 8 - 10.

The purpose of the LVRRS is to guide the Latrobe Valley mine licensees, Government and the community on a climate resilient transformation of the Latrobe Valley coal mines and adjacent lands to safe, stable and sustainable landforms that will support the next land use.

ENGIE Hazelwood has actively participated in the development of the LVRRS and related technical studies workstreams and would contribute to any joint solutions developed by the Victorian Government for rehabilitation of the coal mines in the Latrobe Valley that arise from the LVRRS.

20. Investigation program

Study program

Have any environmental studies not referred to above been conducted for the project? \times No \times Yes If yes, please list here and attach if relevant.

Other environmental studies not referred to above include those prepared in support of the:

- 2019 Work Plan Variation Application (ENGIE Hazelwood, 2020)
- ENGIE Hazelwood Mine Rehabilitation and Closure Plan (ENGIE Hazelwood, 2020).

Has a program for future environmental studies been developed? \times No \times Yes If yes, briefly describe.

A high-level program for future environmental studies was developed as part of the 2019 WPV and RCP outlined above, however it requires updating following the move away from the proposed *staged* approach to filling outlined in the 2019 WPV and associated RCP.

It is envisaged that a range of further environmental studies would be undertaken to support approvals applications, including those identified in the table below.

Study	Purpose
Hydrological Assessment	An assessment of potential changes in hydrological conditions within the Latrobe River catchment and the Gippsland Lakes Ramsar site arising from the Project.

Hydrogeological Assessment	An assessment of potential changes in hydrogeological conditions within the Latrobe Valley region arising from the Project and the potential for associated impacts on groundwater uses.	
Water Quality Assessment	An assessment of the potential for changes in water quality in waterways in the Latrobe River catchment and the Gippsland Lakes Ramsar site arising from the Project.	
Aquatic Ecology Assessment	An assessment of potential impacts on aquatic ecology values of Eel Hole Creek, Morwell River, the Latrobe River and Gippsland Lakes Ramsar site arising from the Project.	
Terrestrial Ecology Assessment	An assessment to characterise the terrestrial biodiversity values within areas likely to be disturbed as part of rehabilitation works and potential impacts arising from the Project.	
Aboriginal Cultural Heritage Assessment	An assessment of potential impacts on Aboriginal cultural heritage values arising from the Project including to inform the preparation of a CHMP.	
Historic Heritage Assessment	An assessment of potential impacts on historic heritage values arising from the Project.	
Socio-economic Assessment	An assessment of potential socio-economic impacts arising from the Project.	

Consultation program

Has a consultation program conducted to date for the project?

 \times No \times Yes If yes, outline the consultation activities and the stakeholder groups or organisations consulted.

ENGIE Hazelwood's existing community engagement activities in respect to the final rehabilitation of the Hazelwood Mine have included the following:

- Rehabilitation and Closure Plan (RCP) Working Group: The RCP Working Group comprised regulator and Government representatives and traditional owner representatives. Established in July 2018, the Group met bi-monthly to discuss the RCP, technical studies and inform ENGIE Hazelwood's plans for the site. This forum no longer meets; however, ongoing regular discussions with Government and regulators continues.
- Environmental Review Committee (ERC): The ERC is an advisory body for Hazelwood established under a condition of MIN5004, comprising representatives from the community, key regulators, government agencies and groups who have an interest in ENGIE Hazelwood's environmental performance. The ERC typically meets quarterly to review progress and set priorities for minimising environmental impacts and improving performance. To support these objectives, the ERC tours the site operations annually and reviews the Performance Report and the actions in the Environment Improvement Plan.
- **Community activities**: ENGIE Hazelwood has held many community activities, including forums, workshops, pop-ups and focus groups each year from 2016-2019 (pre-COVID 19 interruptions). Feedback, comments and views are captured through a variety of methods.
- Publishing community updates on ENGIE Hazelwood website.

Has a program for future consultation been developed?

 \times NYD \times No \times Yes If yes, briefly describe.

A program for future consultation on the Project is under development. The proposed approach will be set out in a Stakeholder Consultation Plan and will include:

- Stakeholder engagement objectives;
- Stakeholder identification and analysis;
- Proposed engagement approach and consultation methods; and
- Proposed processes for recording, monitoring, responding to and reporting stakeholder input.

Authorised person for proponent:

I, Jamie Lowe, Head of Regulation, Compliance and Sustainability, confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature

Date: 2 December 2021

Person who prepared this referral:

I, David Hyett, Industry Director – Environment, confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature

Date: 2 December 2021