Avonbank Mineral Sands Project

Minister's Assessment under Environment Effects Act 1978

November 2024

Acknowledgement

The Victorian Government acknowledges Aboriginal and Torres Strait Islander people as the Traditional Custodians of the land and acknowledges and pays respect to their Elders, past and present.

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List of abbreviations

AEP	Annual exceedance probability
AQMP	Air quality management plan
BGLC	Barengi Gadjin Land Council
BWRMDDB	Buloke Woodland of the Riverina and Murray Darling Depression Bioregion
CCTV	Closed-circuit television
CHMP	Cultural heritage management plan
dB	Decibels
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DDO	Design and Development Overlay
DEECA	Department of Energy, Environment and Climate Action
DELWP	Department of Environment, Land, Water and Planning
DIDO	Drive-in drive-out
DTP	Department of Transport and Planning
EES	Environment effects statement
EMF	Environmental management framework
EMM	Environmental management measures
EMP	Environmental management plan
ERS	Environment Reference Standard
EP Act	*Environment Protection Act 2017* (Vic)
EPA	Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
EP Regs	Environment Protection Regulations 2021
ESO	Environmental Significance Overlay
EVC	Ecological vegetation classes
FFG Act	*Flora and Fauna Guarantee Act 1988* (Vic)
FIFO	Fly-in fly-out
FZ	Farming Zone
GDE	Groundwater dependent ecosystem
GED	General Environmental Duty
HHRA	Human Health Risk Assessment
HMC	Heavy mineral sands concentrate
IAC	Inquiry and Advisory Committee
LPS	Loxton-Parilla Sands
LSIO	Land Subject to Inundation Overlay
Mt	Million tonnes
MNES	Matters of national environmental significance
MRSD Act	*Mineral Resources (Sustainable Development) Act 1990* (Vic)
NVIA	Noise and Vibration Impact Assessment
NGMVP	Natural Grasslands of the Murray Valley Plains
NVMP	Noise and Vibration Management Plan
PM	Particulate matter
PPRZ	Public Park and Recreation Zone
PUZ	Public Use Zone
RAP	Registered Aboriginal Party
RCS	Respirable crystalline silica

SIA	Social Impact Assessment
SUZ	Special Use Zone
SWMP	Surface Water Management Plan
TEC	Threatened ecology community
TMP	Traffic management plan
TRG	Technical reference group
TZ	Transport Zone
VTWBC	Victorian Temperate Woodland Bird Community
WBA	WIM Base Area
WCP	Wet concentrator plant
WHO	World Health Organisation
WIFT	Wimmera Intermodal Freight Terminal

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Executive summary

On 17 August 2019, following receipt of a referral from WIM Resource Pty Ltd (WIM Resource), the former Minister for Planning decided an environment effects statement (EES) was required for the Avonbank Mineral Sands Project. WIM Resource prepared an EES, which was exhibited for public comment from 14 April to 26 May 2023. Planning Panels Victoria received 157 submissions.

On 10 May 2023, I appointed an inquiry to consider the project's environmental effects and public submissions. I also appointed the inquiry as an advisory committee to consider the draft planning scheme amendment (PSA) included with the exhibited EES. The combined inquiry and advisory committee (IAC) held a public hearing over 14 days between 31 July and 24 August 2023 and provided its report to me on 8 November 2023.

After considering the IAC's report, on 19 December 2023 I wrote to the proponent requesting supplementary information to fully inform my assessment of the project's effects on biodiversity values. WIM Resource provided its response to my request for supplementary information on 1 August 2024, as set out in their *Response to the Minister for Planning*.

The IAC's report, EES, submissions, documents tabled at the hearing and supplementary information have informed my assessment of the environmental effects of the project, as set out within this document. My assessment will be considered by statutory decision makers as they contemplate the project's approvals.

The project is a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) due to potential significant impacts on matters of national environmental significance (MNES). As the EES is an accredited assessment process under the EPBC Act, my assessment examines impacts on MNES and will be provided to the Commonwealth Minister for the Environment and Water to inform the decision about whether and under what conditions EPBC Act approval should be granted.

It is my assessment that, on balance, the project has obvious merit and potential for significant economic benefits for the Wimmera Southern Mallee Region and the State of Victoria. However, the project comes with environmental effects that need to be mitigated. I consider that none of the environmental effects could or should result in the project not proceeding, provided the project modifications and environmental management measures (EMMs) recommended in this assessment are implemented.

In its proposed form, I consider the project is likely to have significant and unacceptable residual impacts on specific threatened biodiversity values within the mining licence area (namely Northern Plains Grassland threatened ecological community) and within the minor utilities corridor (namely Weeping Myall and Natural Grasslands of the Murray Valley Plains threatened ecological community). I recommend the project is modified to retain the Greenhills Road reserve, amongst other things, to ensure residual impacts of the project on the threatened Northern Plains Grassland and associated environmental values can be minimised and managed to an acceptable level.

Consistent with the IAC, I also consider there is residual uncertainty about the potential presence of threatened flora and fauna in the minor utilities corridor, and so there remains potential for threatened ecological values to be impacted by the project without appropriate mitigation. Hence, I also recommend changes to WIM Resource's proposed EMMs to complete further survey work for specific threatened flora and fauna in the minor utilities corridor. I also recommend the proponent prepare a design management document to demonstrate how the siting and design of infrastructure and construction works in the minor utilities corridor takes account of further surveys and meets the amended EMMs (set out in this assessment), to achieve acceptable environmental outcomes.

Beyond biodiversity impacts, the project will result in a temporary change in land use from agriculture to mining across the proposed mining licence area. This change is expected to give rise to effects, which require careful management. I am confident implementation of the amended EMMs through the project's work plan (or equivalent under reforms to the *Mineral Resources (Sustainable Development) Act 1990*) and rehabilitation plan will effectively manage soils and other effects during active mining and progressively rehabilitate the land to productive use and capability.

I acknowledge that the social effects of temporarily displacing landholders in the mining licence area during active mining also requires careful management. The EMMs, as modified in accordance with the IAC report and my assessment, offer a range of mitigations in this regard and landholders will be compensated according to legislative requirements. Therefore, on balance, I find that social effects can be managed to acceptable levels.

In relation to traffic and transport, I find the effects on the arterial road network can be acceptably managed. The environmental effects of transporting heavy mineral concentrate by road can be acceptably managed, so I do not support the IAC's recommendation to require the proponent to assess the feasibility of rail, or that the WIM Base Area provide for future rail infrastructure. However, noting that transport by rail has the potential to further reduce environmental effects, when compared to road transport, and the strong support from Horsham Rural City Council and other stakeholders, I would strongly encourage the proponent to continue to explore this option in consultation with the council and the Department of Transport and Planning.

It is my assessment that residual impacts on MNES protected under the EPBC Act are unlikely to be significant, providing sound implementation of the recommendations of my assessment, including amended EMMs, based on the recommendations of the IAC and as refined through this assessment. Residual impacts on listed species and communities and other environmental values associated with the whole of environment assessment, can be acceptably managed through implementation of these refined EMMs.

The conclusions I have reached and the recommendations I have made are informed by the work of the IAC. I have been greatly assisted in this assessment by the efforts of the IAC, its report, the various parties who made submissions to the IAC and gave evidence in its hearings, and the work of my department.

1. Introduction

In light of the potential for significant environmental effects, on 17 August 2019 the Minister for Planning determined under the *Environment Effects Act 1978* that WIM Resource (the proponent) needed to prepare an environment effects statement (EES) for the proposed Avonbank Mineral Sands Project.

The procedures and requirements for the EES specified that the EES was to document the investigation and avoidance of potential environmental effects of the project, including for any relevant alternatives (such as for the mining extent, methods for mining and processing, water supply and transport of mining outputs), as well as associated environmental avoidance, mitigation and management measures. The EES was to address the following, as well as relevant matters of national environmental significance:

- effects on the land uses of the site and surrounding areas, including the implications for agricultural productivity;
- effects on land stability, erosion and soil productivity associated with the construction and operation of the project, including progressive rehabilitation works;
- effects of project construction and operation on air quality, noise and visual amenity of nearby sensitive receptors (in particular residences);
- effects on surface water environments, including local waterways and the broader catchment, as well as groundwater (hydrology, quality, uses and dependent ecosystems);
- solid and liquid waste that might be generated by the project during construction and operation;
- both positive and adverse socio-economic effects, at local and regional scales, potentially generated by the project, including increased traffic movement and indirect effects of the project construction workforce on the capacity of local community infrastructure;
- effects on biodiversity and ecological values within and in the vicinity of the site, and associated with adjacent road reserves and crown land, including: native vegetation; listed threatened ecological communities and species of flora and fauna; and other habitats values; and
- effects on Aboriginal and non-Aboriginal cultural heritage values.

WIM Resource prepared an EES which was publicly exhibited from 14 April to 26 May 2023. A draft Planning Scheme Amendment (PSA; C84hors) and work plan framework were also published with the exhibited EES.

On 10 May 2023, I appointed a joint Inquiry and Advisory Committee (IAC) to consider the EES and the draft PSA in accordance with terms of reference I approved 6 February 2023. The IAC provided its report to me on 8 November 2023.

Having considered the IAC's report, on 19 December 2023 I wrote to the proponent requesting supplementary information needed to address key gaps in understanding on the project's effects on biodiversity values, required to inform my assessment under the Environment Effects Act. On 1 August 2024, WIM Resource submitted its response to this request for supplementary information, which is set out in the document titled *Response to the Minister for Planning*.

The report, along with the EES, its supporting technical reports, public submissions, tabled documents, relevant legislation, policy and guidelines and supplementary information I requested from the proponent have informed my assessment of the environmental effects of the project under the Environment Effects Act.

I thank the IAC for its considered report and advice. I also thank everyone who invested their time to make submissions and participate in the public hearing. I have considered all of the matters relevant to the environmental assessment of the project.

1.1. Purpose of this document

This document constitutes my assessment of the environmental effects of the project under the Environment Effects Act. This assessment represents the final step in the EES process and provides authoritative advice to decision-makers, the proponent and all other stakeholders on the likely environmental effects of the project, their acceptability and how the effects are to be addressed in relevant statutory decisions and the delivery of the project.

This assessment will inform the decisions required under Victorian law for the proposal to proceed. As the EES was undertaken as an accredited assessment process under the Bilateral Agreement with the Commonwealth under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), my assessment will also inform the decision to be made by the Commonwealth Minister for the Environment and Water about whether, and under what conditions, the project will be approved under the EPBC Act.

1.2. Structure of the assessment

The structure of my assessment is as follows:

- Chapter 2 provides a brief description of the project;
- Chapter 3 refers to key relevant legislation;
- Chapter 4 addresses key matters for this assessment, as well as the project's proposed planning controls, environmental management framework (EMF) and other post-approval matters;
- Chapter 5 assesses the environmental effects of the project by environmental discipline;
- Chapter 6 presents my conclusions, including responses to the recommendations of the IAC;
- Appendix A contains my recommendations about the environmental management measures (EMMs); and
- Appendix B contains a consolidated assessment of impacts on matters of national environmental significance (MNES).

2. Project description

WIM Resource proposes to mine the Avonbank deposit approximately 15 km northeast of Horsham in northwest Victoria to produce a heavy mineral sands concentrate (HMC) (Figure 1). The EES described the project as involving mining the ore body to produce a HMC containing mainly zircon, titanium-rich mineral concentrate and minor amounts of rare earth products. Ore would be processed at a wet concentrator plant (WCP) to produce approximately 12.75 Mt of HMC over the life of mine. The HMC would then be transported by road to the Port of Portland for export overseas. Mining is proposed to occur 24 hours a day, 365 days a year. The mine life includes approximately one year for project construction, 30 years of active mining followed by five years of final rehabilitation and decommissioning. Rehabilitation would also be undertaken progressively over the life of the mine.

The proposed mining method involves open pit mining using conventional heavy earth moving methods and equipment. A moving hole mining method is proposed involving the return of tailings and overburden directly into the mined cell as mining advances. Mining is expected to intercept groundwater and dewatering will be required.

The project includes:

- development of a mineral sands mine;
- mining unit plant;
- wet concentrator plant;
- slurry pipelines;
- power and water supply infrastructure; and
- additional site facilities (such as a site office and workshops).

The EES addresses the effects of mining and processing mineral sands to produce HMC and transporting the HMC for overseas export from the Port of Portland.

The project's development extent is 3,546 ha. This includes:

- mining within a proposed mining licence area (hereafter referred to as the mining licence area) of 3,426 ha;
- secondary processing in the WIM base area (WBA) which is located outside the mining licence area and in the Wimmera Intermodal Freight Terminal (WIFT); and
- a minor utilities corridor where power and water infrastructure will extend from terminal stations to the WBA.

At any given time, project disturbance would be less than 400 ha as areas are progressively mined and rehabilitated.

The land is currently used for broadacre agriculture. WIM Resource would enter into commercial agreements with landholders or land may be purchased from landholders prior to the commencement of works.

The project location and project area for the proposal assessed in the EES process are shown in Figure 1. The project is described in more detail in Chapter 5 of the EES. Section 4.5 of this assessment discusses project alternatives.

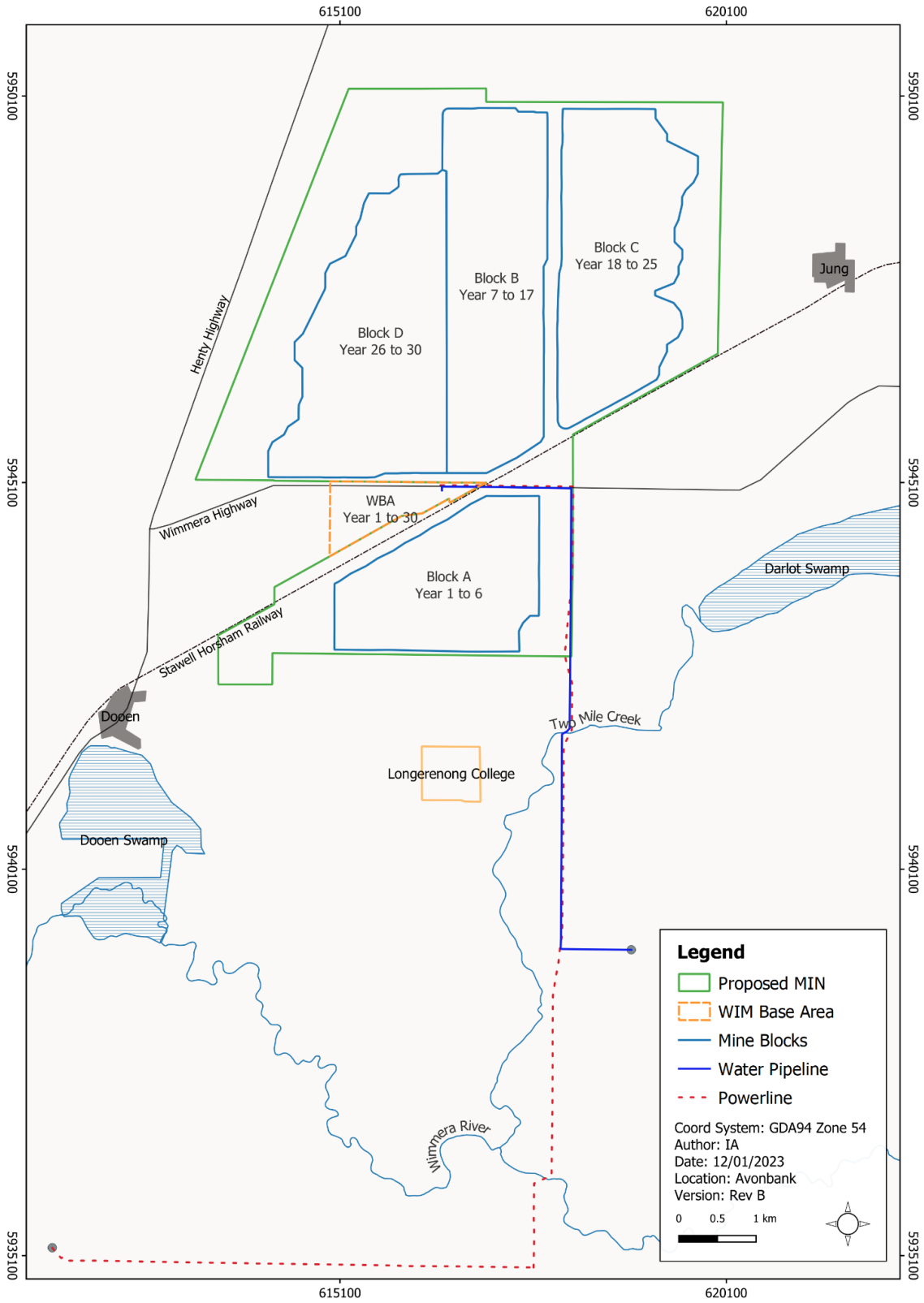


Figure 1. Project location and project area

3. Statutory processes

This section refers to key legislation relevant to my assessment and delivery of the project. WIM Resource require a variety of statutory approvals under Victorian and Commonwealth law before they can proceed with the project. My assessment under the Environment Effects Act will inform approval decisions under the *Mineral Resources (Sustainable Development) Act 1990* (MRSD Act), *Planning and Environment Act 1987* and the *Aboriginal Heritage Act 2006* as well as a range of other permits and consents. The project is also a controlled action requiring approval under the EPBC Act.

3.1. Environment Effects Act

The Environment Effects Act provides for assessment of proposed projects that are capable of having a significant effect on the environment. This project required assessment via an EES. Therefore, Section 8C of the Environment Effects Act applies and requires the relevant, notified decision-makers to consider my assessment before making approval decisions on the project.

Draft scoping requirements were exhibited for public comment between July and August 2020 and no submissions were received. In August 2020 the Minister for Planning issued final scoping requirements specifying the range of matters to be addressed in the EES. The former Department of Environment, Land, Water and Planning (DELWP) convened a technical reference group (TRG) for the project in accordance with standard EES practice to provide advice to the proponent and the former DELWP on the preparation of the EES.

The EES was prepared by WIM Resource and placed on public exhibition from 14 April to 26 May 2023. A draft PSA and work plan framework were also published as part of the exhibited EES. Planning Panels Victoria received 157 submissions on the exhibited EES and the draft PSA. Three of the submissions on the EES were from state and local government bodies.

On 10 May 2023 I appointed an inquiry under section 9(1) of the Environment Effects Act and an advisory committee under part 7, section 151(1) of the Planning and Environment Act. The inquiry and advisory committee (IAC) was appointed to review submissions and inquire into the environmental effects of the proposal, in accordance with its published terms of reference, which I approved on 6 February 2023.

The IAC held a directions hearing on 16 June 2023, followed by public hearings, held from 31 July to 24 August 2023. The IAC provided its report to me on 8 November 2023.

Having considered the IAC's report, on 19 December 2023 I wrote to the proponent requesting supplementary information needed to inform my assessment. On 1 August 2024, WIM Resource's submitted its response to this request for supplementary information (*Response to the Minister for Planning*).

The IAC report, along with the EES, its supporting technical reports, public y, tabled documents, relevant legislation, policy and guidelines and supplementary information I requested from the proponent has informed the preparation of this assessment of the environmental effects under the Environment Effects Act.

This assessment is the final step and output of the EES process. It makes findings and recommendations on the environmental effects of the proposed project, for consideration by the proponent and statutory decision-makers under Victorian law. Decision-makers must then consider this assessment before deciding whether and how the proposal should proceed. This assessment will also inform approval decisions under Commonwealth legislation outlined below.

3.2. Victorian statutory approvals

The project requires a number of Victorian statutory approvals, including:

- an approved work plan, mining licence and restricted Crown land consent under the MRSD Act[1];
- an amendment to the Horsham Rural City Council Planning Scheme to apply a Specific Controls Overlay (SCO) to secondary processing activities and ancillary infrastructure within the WBA in the WIFT and potentially, a

[1] In August 2023 the Mineral Resources (Sustainable Development) Bill 2023 passed both houses of Parliament. The legislative amendments will commence on 1 July 2027.

planning permit for the removal of native vegetation in the minor utilities corridor under the Planning and Environment Act; and
- an approved cultural heritage management plan (CHMP) under the Aboriginal Heritage Act.

Mineral Resources (Sustainable Development) Act

The project requires a mining licence under the MRSD Act. Based on the proponent's indicative project schedule provided in the EES, an approved work plan is required under the MRSD Act before commencing works associated with the project. However, the *Mineral Resources (Sustainable Development) Bill 2023* introduces reforms to how quarries and mineral resources activities will be regulated in Victoria. From 1 July 2027, the requirement to lodge work plans will be removed and replaced with a duty-based system focused on eliminating or minimising the risk of harm. Transitional arrangements also apply. Should the project be delayed, further engagement will be required with Resources Victoria to understand how the project would demonstrate compliance with the duty to eliminate or minimise risk of harm.

In the context of the current regulatory requirements under the MRSD Act, a work plan framework was published as Attachment 4 to the exhibited EES and sets out the regulatory framework that applies to work plans and the scope and approach to developing the work plan for this project. It was published as part of the exhibited EES to provide the community and other stakeholders with greater clarity on how the environmental effects of the project will be managed and how the project will be regulated.

Section 42(7) of the MRSD Act provides that a planning permit is not required for mining works and activities within the mining licence area if the proposal has been assessed through the EES process. Decisions about approving the work plan will be made under the MRSD Act following consideration of this assessment.

The work plan framework outlines that the mining licence and work plan includes mining of the mineral sands ore body, primary processing of the ore and all works incidental to mining and primary processing. Secondary processing activities and ancillary infrastructure within the WBA are proposed to sit outside the scope of the work plan and mining licence and would be regulated by the planning controls introduced through the PSA C84hors.

Planning and Environment Act

An amendment to the Horsham Rural City Council Planning Scheme is proposed by WIM Resource to allow for the development and use of land outside the mining licence area for secondary processing activities and ancillary infrastructure within the WBA in the WIFT. The proposed amendment would introduce an incorporated document into the planning scheme and apply a Specific Control Overlay (SCO) for the:

- secondary processing and ancillary activities;
- building and works required for mineral sands processing;
- waste management and associated activities;
- transport of materials and mineral sands to and from the project land;
- roads, road widening and road works; and
- removing, destroying and lopping trees and vegetation and stormwater drains/sumps, noise bunds, internal access tracks, tree screens and laydown yards within the WBA outlined in the SCO.

The draft amendment (C84hors) was included with the exhibited EES as Attachment 2. This provided an opportunity for the community and other stakeholders to comment on the draft amendment and the proposed planning controls. The proponent's draft amendment proposes to make the Minister for Planning the planning authority for this amendment, whereas the responsible authority for the WIFT, Horsham Rural City Council will be the responsible authority.

The project may also require a planning permit for the removal of any native vegetation inside the minor utilities corridor depending on whether the works to install and upgrade the infrastructure are undertaken by the proponent or a utilities provider. The IAC sought clarification from the proponent on whether a permit to remove native vegetation in the minor utilities corridor would be sought for the project. The proponent indicated that while an exemption could conceivably apply to works to install, upgrade and maintain water and power supply infrastructure if undertaken by a utilities provider, under clause 52.17-7 of the Horsham planning scheme, an exemption was not assumed in the EES and impacts of this

infrastructure on native vegetation were assessed[2]. Any planning permit would be sought as required, once the detailed design of the pipeline and powerline are available and the extent of native vegetation removal is confirmed[3].

Aboriginal Heritage Act

The Aboriginal Heritage Act stipulates that an approved CHMP must be prepared for works for which an EES is required. The project is situated on land for which Barengi Gadjin Land Council Aboriginal Corporation (BGLC) is the Registered Aboriginal Party (RAP) under the Aboriginal Heritage Act.

A draft CHMP (no. 17043) has been prepared for the project. The CHMP will be evaluated by BGLC.

3.3. Other Victorian statutory approvals

The project also requires a range of consents and permits, likely to include all the following:

- permit to discharge or deposit waste to an aquifer (A18 permit) and a permit for an on-site wastewater management system (A20 permit) under the *Environment Protection Act 2017* and associated *Environment Protection Regulations 2021*;
- licence under the *Radiation Act 2005* and approval of a number of radiation management plans;
- consent for mining on Crown land under the *Crown Land (Reserves) Act 1978* and *Land Act 1958*;
- consent to disturb known/registered historic sites if found under the *Heritage Act 2017*;
- licences to take and use surface water, construct bores and extract groundwater and a works on waterways permit under the *Water Act 1989*;
- licence(s) to construct water management dams under the Water Act;
- permit to remove listed flora and fauna from public land under the *Flora and Fauna Guarantee Act 1988* (FFG Act);
- permit to take or handle wildlife under the *Wildlife Act 1975*;
- consent to undertake works on roads and road closure, diversion and/or opening permits under the *Road Management Act 2004*; and
- permit to work across an existing railway line easement under the *Transport Integration Act 2010*.

Further information on some of these key consents and permits is provided below.

Environment Protection Act and Environment Protection Regulations

A permit under the Environment Protection Regulations 2021 is required for the deposition of waste (tailings) into the mine void and subsequent seepage into the aquifer. This is known as an A18 permit. The Environment Protection Authority (EPA) administers the Environment Protection Act.

A permit under the Environment Protection Regulations is also required to construct, install or alter an on-site wastewater management system with a design or flow rate of sewage not more than 5,000 litres a day. This is known as an A20 permit and it would be issued by Horsham Rural City Council.

Radiation Act

A licence under the Radiation Act is required for the handling and disposal of radioactive materials. The project also requires an approved radiation management plan and waste management plan. The Radiation Act is administered by the Department of Health.

[2] Tabled document 50

[3] Proponent Part A submission, Tabled Document 23

3.4. Commonwealth statutory approval

In December 2019, WIM Resource referred the project to the Commonwealth (referral 2019/8586) for a determination on whether the project was a supp action under the EPBC Act.

On 3 July 2020, the project was determined to be a controlled action requiring assessment and approval under the EPBC Act because of its potential impacts on matters of national environmental significance (MNES): listed threatened species and communities (sections 18 and 18A) and nuclear actions (s21 and s22A). The project's impacts on MNES are assessed by this accredited EES process, in accordance with the bilateral agreement made between the Australian and Victorian governments under section 45 of the EPBC Act. Therefore, decisions about whether, and under what conditions, to approve the project under the EPBC Act are to be informed by this assessment.

As the nuclear action controlling provision was triggered, the impacts of all potential project activities on the whole of the environment need to be considered by the Commonwealth Minister.

My conclusions on the assessment of the potential impacts on MNES are set out in Appendix B.

Customs Act and Customs (Prohibited Exports) Regulations

An export permit under the *Customs (Prohibited Exports) Regulations 1958* is required for the export of radioactive material. The Customs Act and associated regulations are administered by the Commonwealth Department of Home Affairs.

4. Environmental assessment and management framework

This part of my assessment sets out the context and approach for assessing the environmental effects of the project, including the information used to inform my assessment of particular matters, as well as relevant aspects of the regulatory framework and the proposed environmental control regime that has been considered. I have also set out some key conclusions and findings on the project's effects.

4.1. Consideration of environmental effects

My assessment has been informed by consideration of the exhibited EES, public submissions, evidence and information tabled at the IAC hearing, the IAC's report and supplementary information I requested from the proponent. Legislation, policy, strategies and guidelines and the objectives and principles of ecologically sustainable development contextualise my assessment.

4.2. Supplementary biodiversity information

The IAC concluded that effects on flora, fauna and native vegetation were likely to be acceptable but that some biodiversity survey work and information provided by the proponent was inadequate. The IAC recommended that these issues be addressed by survey work conducted post approval, in stages, during project delivery. I do not support this recommendation for the reasons set out below.

The information provided in the EES, together with the information tabled at the IAC hearing by the proponent, and discussed by the IAC in its report, in my view did not provide consistent or sufficient information on the project's likely residual biodiversity impacts. Indeed, there remained uncertainties, inconsistencies and gaps in the assessment work that prevented my assessment of the project's effects. The IAC's recommendation to defer surveys does not address the need for sufficient information to inform my assessment and would also be inconsistent with the *Guidelines for the removal, destruction or lopping of native vegetation 2017*. Instead, I requested the proponent provide supplementary information to address key gaps in understanding on the project's effects on biodiversity values to inform my assessment. WIM Resource's response, incorporating a review of biodiversity surveys by its biodiversity advisor Nature Advisory, is set out in its *Response to the Minister for Planning*, provided 1 August 2024, available on the department's website.

While the supplementary information provided by the proponent has assisted in informing my assessment on the potential effects on biodiversity and native vegetation, and their likely significance and acceptability, some areas of residual uncertainty remain, particularly for predicted impacts in the minor utilities corridor. As outlined in Section 5.1 of my assessment, there is residual uncertainty about the presence of certain threatened species (including species of the *Vittadinia* and *Calotis* genera) and the EPBC Act listed threatened ecological community 'Natural Grasslands of the Murray Valley Plains'. This residual uncertainty is due to some gaps in flora and fauna survey work, issues with timing of some surveys and the introduction of new information after the EES was completed (including Technical Note 8 and the proponent commissioned peer review[4]). In some cases, the new information differed or called into question previous survey work and findings presented in the EES, and was not fully reconciled in the supplementary information provided. A further challenge has been the lack of clarity provided in the supplementary information or earlier biodiversity assessments on which species of *Vittadinia* and *Calotis* were recorded and are to be impacted by the project. As they were recorded at a genus rather than species level, there is residual uncertainty about predicted impacts on threatened and/or non-threatened species, particularly in the minor utilities corridor, and the significance of any such impact would vary according to how threatened they are.

My assessment considers the acceptability of likely residual impacts on biodiversity values separately for the mining licence area and the minor utilities corridor; I take a suitably precautionary approach where justified by any residual uncertainties. For the mining licence area, I consider that residual impacts on the FFG listed threatened ecological community (TEC) 'Northern Plains Grassland', which is associated with the EPBC Act listed Natural Grasslands of the Murray Valley Plains TEC, are likely to be very significant. This is due to the large extent of the FFG listed community

[4] Tabled documents 57 and 42

along the Greenhills Road reserve, the quality of this vegetation and connectivity that this vegetation within the Road reserve provides for this landscape, between key features such as the Yarriambiack Creek in the east and Dooen Swamp in the west. Removal of this vegetation along the Greenhills Road reserve is likely to cause significant and unacceptable impacts to this FFG listed threatened community, as well as the other biodiversity values it supports, such as the noted *Vittadinia* records and other protected species noted to occur along this roadside. Given this, I recommend that the project avoid clearing this area and retain Greenhills Road reserve, in order for project impacts on this TEC to be reduced to acceptable levels.

Noting that the proponent has indicated that avoiding Greenhills Road and realigning the mining plan would result in increased agricultural impacts on one property and visual impacts on several dwellings[5], I also recommend a new EMM to require that any change to the mine layout or sequencing to avoid clearing Greenhills Road reserve and impacts to the TEC addresses the GED. Should changes to the mine layout or sequencing result in new or increased impacts to those reported in the EES, these should be discussed with EPA and other relevant statutory authorities to ensure that acceptable environmental outcomes can still be achieved.

Based on the conclusions of the supplementary information and my recommendation that the project avoid clearing Greenhills Road reserve, I consider that significant impacts on threatened *Vittadinia* species in the mining licence area are unlikely.

In the event that some of the individuals proposed to be removed in the mining licence area are identified as the threatened species of *Vittadinia*, this can be considered in detail by the relevant regulator (Department of Energy, Environment and Climate Action (DEECA) Grampians) through the application for the consent/permit needed under the FFG Act to take protected flora. Any additional survey work that is needed for the permit application should examine the residual uncertainties associated with identifying the relevant species in this area.

For the minor utilities corridor, I consider that some of the residual impacts on threatened biodiversity values are likely to be significant including for Weeping Myall, and several flora species listed under the FFG Act, such as *Calotis* and *Vittadinia*. Consistent with the IAC, I consider that the project has not fully examined the potential for some threatened flora and fauna to be present within the minor utilities corridor, and therefore the potential for some threatened ecological values to be impacted by the project. As such, I recommend a number of changes to EMMs as well as new EMMs to address these uncertainties and help ensure appropriate environmental outcomes for the delivery of components of the project in the minor utilities corridor. This includes validation surveys for some threatened flora and fauna in the minor utilities corridor and further surveys to address residual gaps, to enable final siting and alignment of infrastructure and construction works in the minor utilities corridor to effectively avoid and minimise impacts to these biodiversity values. I also recommend that the proponent prepare a design management document to demonstrate how the siting and design of the infrastructure and constructions works in the minor utilities corridor meets the EMMs (consistent with the recommendations of this assessment) and can achieve acceptable environmental outcomes for some key environmental values. The additional survey work and design management should be undertaken by the proponent ahead of the relevant approvals/ consents being issued or be required as a condition of primary approval needed for the minor utilities corridor.

4.3. Assessment evaluation objectives

To provide an integrated structure for this assessment, key aspects of legislation and statutory policy are reflected in evaluation objectives that were set out in the EES scoping requirements. My assessment has been made in reference to these evaluation objectives (Table 1).

These objectives are derived from the evaluation objectives included in the scoping requirements for the EES and used by WIM Resource in its assessment of environmental effects within the EES. The inquiry also considered the project's effects having regard to the evaluation objectives.

[5] WIM Resource Response to the Minister for Planning, 31 July 2024

Table 1: Assessment evaluation objectives

Evaluation objective	Relevant section of this report
Resource development – *achieve the best use of available mineral sands resources, in an economically and environmentally sustainable way.*	5.9, 5.10, 5.11
Social, land use and infrastructure – *minimise adverse social, land use and infrastructure effects.*	5.3, 5.4, 5.9
Amenity and environmental quality – *protect the health and wellbeing of the community, and minimise effects on air quality, noise, visual and social amenity.*	5.5, 5.6, 5.7, 5.8, 5.11
Cultural heritage – *avoid or minimise adverse effects on Aboriginal and historical cultural heritage.*	5.11
Biodiversity and habitats – *avoid, minimise or offset adverse effects of the project on biodiversity values including native vegetation, listed threatened species and communities and habitat for these species consistent with state and Commonwealth policies.*	5.1, Appendix B
Catchment values – *minimise effects on water resources and on existing and potential future beneficial and licensed uses of surface water, groundwater and related catchment values over the short long-term.*	5.2

4.4. Management of environmental effects

I acknowledge that the project will generate both positive and negative environmental effects. A sound regulatory framework and environmental control regime is needed to ensure that adverse effects of the project are effectively mitigated and managed. I have considered key elements of that regime, described below, when assessing the project's environmental effects.

This section describes the planning controls and environmental governance arrangements proposed for the project and my findings in relation to these. The EES proposes an environmental management regime to be given statutory effect through the:

- MRSD Act: mining licence and work plan, including EMMs;
- Planning and Environment Act:
    - WBA – proposed PSA, to introduce an Incorporated Document, including conditions/clauses, such as requiring an EMF and Environmental Management System (EMS);
    - minor utilities corridor - planning permit(s) for native vegetation removal, if required, and conditions and relevant EMMs; and
- various other licences, consents and management plans required under legislation such as the Aboriginal Heritage Act, Environment Protection Act, FFG Act, Radiation Act, Water Act and Road Management Act.

The primary approvals and statutory mechanisms are described in and give effect to the EMF, together with management plans and mitigation measures. These are outlined further below.

Requirements for the mining licence area

As outlined in Section 3.2, the project requires a mining licence and an approved work plan (or equivalent under the new duty-based system) under the MRSD Act. The EMMs that form part of the EMF and relate to the mining licence area will be given statutory weight through the work plan and mining licence or equivalent approval documents should the new MRSD Act duty-based system apply to this project.

Permits under the FFG Act will also be required to remove any protected or listed species in the mining licence area. My recommendations for further biodiversity survey work in the mining licence area should be used to inform these applications, except where indicated in this assessment.

Planning controls for WIM Base Area

An amendment to the Horsham Rural City Council Planning Scheme is proposed to facilitate the project outside of the mining licence area, to provide comprehensive statutory planning controls for infrastructure and works associated with mineral processing and related activities, on land within the WIFT referred to as the WBA.

A draft amendment (Amendment C84hors to the Horsham Rural City Planning Scheme) was prepared by the proponent in consultation with relevant agencies and included with the exhibited EES (Attachment 2). The amendment proposes to introduce an Incorporated Document through a schedule to a Specific Controls Overlay (SCO). The SCO will apply to works on land within the WBA to permit use and development for mineral sands processing and associated infrastructure without the need for additional planning permits.

In broad terms, the draft amendment seeks to:

- facilitate the use and development of the project in a timely, coordinated and consistent matter;
- provide for a single, consolidated planning control;
- establish a framework to manage environmental effects during construction and operation; and
- ensure the project can be planned with certainty.

The proponent's draft amendment proposes to:

- insert an Incorporated Document into the Horsham Rural City Council Planning Scheme to allow the use and development of land for the project in accordance with the specific controls or clauses in the incorporated document; and
- apply the Specific Controls Overlay and Schedule 1 (SCO1) to the land required for the project.

The IAC was appointed both as an Inquiry under the Environment Effects Act to assess the environmental effects of the project and as an Advisory Committee under the Planning and Environment Act to provide me with advice as to the content and structure of the proposed amendment.

This assessment will form part of the consideration of the amendment, at a later stage, when the proponent submits that final form of the amendment for formal consideration under the Planning and Environment Act, on whether or not that planning approval should proceed. The IAC has made recommendations on the draft amendment. I have considered those recommendations in the context of this assessment of the environmental effects of the proposed works and the manner in which those environmental effects should be mitigated.

Strategic assessment of the draft amendment (PSA)

Ministerial Direction No. 11 (MD No. 11) – *Strategic Assessment of Amendments* requires a planning authority (or proponent) to evaluate and document how an amendment addresses specific strategic considerations. Planning Practice Note 46 (PPN46) – *Strategic Assessment Guidelines* provides a consistent framework for preparing and evaluating a proposed PSA consistent with MD No. 11. The draft PSA published with the exhibited EES included an Explanatory Report for the proposed WBA to explain the purpose, effect and strategic basis for the amendment and address the matters set out in MD No. 11.

The IAC was generally satisfied that the project aligns with principles of Ecologically Sustainable Development and provides a balanced approach to managing environmental effects for net community benefit.

The Explanatory Report describes why the amendment is needed. My assessment of the acceptability of the application of the PSA process for the WBA and its consistency with State and local planning policy is provided in Section 5.3 (Land Use and Planning).

I generally support the IAC's views on both the merit and approach to the PSA for this component of the project. However, the final form and content of the PSA, when submitted for a decision under the Planning and Environment Act, will need to adequately respond to whether the final form of the PSA results in a net community benefit. This should be considered in the context of this assessment and the IAC report, and the environmental, social and economic effects of the PSA, using the EES and other relevant documentation as appropriate.

Incorporated Document (Secondary processing and ancillary infrastructure)

In this assessment, I have considered the IAC's recommendations on the draft Incorporated Document in the context of the environmental effects associated with the proposed WBA works, their acceptability and how those environmental effects might be avoided or mitigated. Subsequent consideration of a decision on whether, and on what terms, the planning approval of the WBA should proceed, is still required under the Planning and Environment Act.

The draft Incorporated Document was progressively updated by the proponent throughout the hearing in response to submissions and evidence presented. Parties were given the opportunity to provide written comments on the 'Final day' version[6] following the close of the hearing. The proponent then tabled a 'Day 4' version[7] of the Incorporated Document, which was only subject to review by the IAC. The IAC provided their recommended version of the Incorporated Document as Appendix H of the IAC report.

Submitters, including Council, raised several issues with the Incorporated Document including:

- request for several additional management plans to be conditioned;
- request for the preparation and approval of a Development Master Plan, in addition to the Development Plan, to account for staged development and approval;
- to require the use and development of the WBA be carried out in accordance with the EMF and Environmental management plan (EMP), and for the EMP to include the full list of EMMs and monitoring requirements;
- introduction of a requirement for the operator to prepare an EMS that conforms to AS/NZS ISO 14001:2006;
- introduction of various environmental audit requirements and compliance reviews;
- provision of a cessation date for mining and processing activities in place of an end date of the Incorporated Document; and
- implementation of the expiry condition based on the issue of the Statement or Certificate of Environmental Audit.

The proponent accepted various drafting changes proposed through submissions. These included amending the condition relating to the environmental audit at the conclusion of the project, and conditions of the Decommissioning Plan. Of note, the proponent proposed wording in its 'Day 4' version of the Incorporated Document for any plan required by the Incorporated Document to be consistent with the EMF, except where inconsistent with the Minister's assessment to be issued under the Environment Effects Act. The IAC supported these changes, as do I.

In its preparation of the 'Day 4' version of the Incorporated Document, the proponent did not accept some of Council's suggested changes for the following reasons:

- it considered reference to the EMS was not appropriate in an Incorporated Document and the requirement was captured through the conditions relating to the EMF (EMM SE-02). The proponent noted an EMS is an operational system established by the proponent 'rather than a regulatory tool';
- it did not consider the project lends itself to a Development Master Plan. The proponent also noted that the staging sub-condition included in the development plan condition, adequately addresses any staging (if proposed); and
- the changes to expiry of the control as this is already covered by the condition which says the controls expire after issue of an environmental audit statement at the conclusion of the project.

The IAC accepted that the EMS is embedded in the EMF and therefore does not require specific reference in the Incorporated Document. However, the IAC recommended amending Clause 5.6 of the Incorporated Document to require that the EMP reflect the EMS requirements (as detailed in the EMF). I support this recommendation. Implementation and review requirements associated with the EMF are further discussed below under Environmental Management Framework.

The IAC noted that there are a number of checks and balances in the expiring clause in the 'Day 4' version of the Incorporated Document. These include conditions related to commencement of development, use of the land and expiration of controls after an environmental audit is issued following decommissioning and closure. The IAC found that

[6] Tabled document 148

[7] Tabled document 149

these adequately respond to the issues raised and no further changes to the expiry clause were needed. I support these findings.

Management Plans Required by the Incorporated Document (Secondary Consents)

The proponent's 'Final Day' version of the Incorporated Document included the following plans to be prepared and approved by the relevant responsible authority:

- Development Plan;
- Construction Management Plan;
- EMP;
- Noise and Vibration Management Plan (NVMP);
- Native Vegetation Management Plan. The title of this plan was subsequently updated to Flora and Fauna Management Plan with a sub-condition for an Offset Management Plan;
- Traffic Management Plan (TMP); and
- Fire Management Plan.

In addition, the proponent introduced a new condition for a Compliance Assessment Plan to address Council's proposed conditions relating to Auditing and Review requirements.

Council supported the inclusion of these plans, as did the IAC. I agree that the above plans should form conditions of the Incorporated Document as these planning controls appropriately address specific environmental effects identified in the EES. As noted previously, in its final submission on the proponent's Incorporated Document, Council indicated that several additional management plans should be conditioned in the Incorporated Document. Council's request for these conditions were considered by the proponent and the IAC. My assessment in relation to these management plan conditions is outlined in Table 2 below.

Table 2: Incorporated Document – additional management plans requested by Council

Council's proposed management plan	Proponent's Day 4' Incorporated Document	IAC findings and recommendations	Assessment
Site Decontamination and Rehabilitation Plan	Decommissioning Plan, including site decontamination and rehabilitation	The IAC supported the proponent's approach of including decontamination and rehabilitation matters in the Decommissioning Plan.	I agree with the IAC.
Green Travel Plan	Not supported.	The IAC agreed with Council that a Green Travel Plan should be included as a condition in the Incorporated Document, consistent with the requirements of TM-03.	I agree with the IAC. My consideration of the IAC's findings in relation to this matter is further detailed in Section 5.4 (Traffic and Transport).
Air Quality Management Plan (AQMP)	Not supported. The proponent considered the EMM requirement for an AQMP adequately addressed this matter.	The IAC's recommended version of the Incorporated Document includes a condition to require an AQMP to be prepared to the satisfaction of the responsible authority in consultation with Earth Resources Regulation and the EPA.	I agree with the IAC.
Drainage Management Plan	Not supported. The proponent considered the EMP (Clause 5.6) addresses drainage via the EMF surface water quality EMMs (i.e. requirement	The IAC did not specifically respond to this item in its report. However, it noted that its recommended version of the Incorporated Document [Clause 5.4d) xi)] includes a requirement for the location and construction details of drainage works to be included within the Development Plan.	I agree with the IAC that the version of the Incorporated Document presented in its report, along with the proponent's proposed EMM requirement for a stormwater management plan, are adequate to address matters relating to drainage management.

Council's proposed management plan	Proponent's Day 4' Incorporated Document	IAC findings and recommendations	Assessment
	for a Stormwater Management Plan).		My consideration of the IAC's findings in relation to surface water management are detailed in Section 5.2 (Surface Water and Groundwater).
Development Plan Master Plan	Not supported. The proponent noted that the staging sub-condition included in the Development Plan condition, adequately addresses any staging (if proposed).	The IAC recommended amending Clause 5.4(b) to provide for a Development Plan Master Plan if the Development Plan is to be approved in stages. The IAC supported this approach to assist Council, other authorities, stakeholders and the community to understand the complete plan for the WBA.	I support the IAC's recommendation and propose drafting of Clause 5.4 b) Development Plan Master Plan, noting this condition should only be used if the proponent seeks approval for the WBA in stages.
Infrastructure Plan	Not supported. The proponent noted that an additional plan requiring these matters would be duplicative as they would be addressed through various plans already required by the control.	The IAC did not comment on the Council's recommended inclusion, nor the proponent's exclusion, of an Infrastructure Plan condition.	In reviewing the IAC's recommended changes to the Incorporated Document, I have found that most of the requirements listed by Council (except for the extension of the rail siding) are met through the Development Plan, TMP and Construction Management Plan. As detailed in Section 5.4 of this assessment, I do not support the IAC's recommended changes regarding allowance for provision of required ancillary rail infrastructure [5.4 d) iii)] as this assessment indicates that the environmental effects of transporting HMC by road can be acceptably managed.

The IAC also noted that as mining activities are proposed to be undertaken over 36 years, it is important to allow for any changes in regulations, knowledge, equipment or emerging matters that may change for each mining stage. I generally agree with the IAC's recommendation that each management plan required by the EMF as well as the Incorporated Document be reviewed and updated at least every five years prior to the commencement of each mining stage or as informed by each audit, whichever is the lesser timeframe, to ensure compliance with any updated approval or regulatory instruments (Condition 5.15 of the IAC's recommended version of the IC). Further to this, the corresponding EMMs should include specific requirements on when they will be reviewed and updated, to assist in providing confidence that management plans will continue to be adapted during the life of the project based on any changes to regulatory requirements and/or operational factors.

The IAC recommended that the draft PSA C84hors to the Horsham Rural City Planning Scheme be approved subject to their revisions to the Incorporated Document to manage identified environmental effects. In summary, I consider that the broad planning framework recommended by the IAC with revisions made in accordance with my assessment would be appropriate to facilitate the project, while minimising environmental effects. As I have noted above, a subsequent consideration of a decision on whether, and on what terms, the planning approval of the WBA should proceed, is still required under the Planning and Environment Act.

Requirements for the minor utilities corridor

As for the mining licence area, permits under the FFG Act will be required in the minor utilities corridor to remove any protected or listed flora species, and offsets will be required for any native vegetation removed. The recommendations from this assessment for further biodiversity survey work in the minor utilities corridor and a design management

document, should be used to inform these applications, except where indicated in this assessment. The design management document will enable demonstration of how the design of the infrastructure and works required for the project in the corridor meet the recommendations set out in this assessment and can achieve an acceptable balance of environmental outcomes, consistent with the findings on this assessment.

I note that there is uncertainty on whether the proponent or utilities providers will install and upgrade infrastructure in the minor utilities corridor as a part of this project, and therefore whether a planning permit for native vegetation removal will be required for some or all of the removal. Should the proponent undertake these works and a planning permit be required, my recommendations for further survey work and a design management document should be used to inform this permit application. Should the utilities provider undertake these works, I note that they will be required to develop a management plan for DEECA's approval which demonstrates how they will avoid and minimise impacts on native vegetation, and meet the recommendations in this assessment, prior to any exemption under Clause 52.17-7 being considered acceptable.

Environmental management framework

A proposed EMF was presented in Chapter 24 of the EES, which outlines the key environmental management documentation proposed to be developed for the project and the associated review and environmental reporting requirements. The EMF also provided a consolidated list of the proposed EMMs and identified the key project approvals and compliance requirements that would apply. The proponent tabled the EMF to the IAC as exhibited in the EES[8]. It then tabled a 'Day 1' version[9], 'Day 2' version[10], 'Final Day' version[11] and 'Day 4' version[12].

While the IAC found that the 'Day 4' version of the proponent's EMF was appropriate subject to its detailed recommendations on individual EMMs, it also recommended that the proponent undertake further refinement of the EMF and EMMs to reduce repetition and improve clarity. I agree with the IAC's recommendations, except where I have made other recommendations in Section 5 and appendices A and B of this assessment. I also support concerns raised in EPA's submission[13] that the wording of some EMMs in the EMF lack specificity, particularly when compared against their wording in the EES chapters. This limits the ability of the EMMs to ensure risk of harm is minimised in accordance with the EPA's General Environmental Duty (GED) and other obligations under the Environment Protection Act. While the wording of some of these EMMs was clarified through the proponent's updated versions of the EMF tabled at the inquiry, I consider that further refinement is needed to ensure that the EMMs are specific and measurable, in line with EPA's recommendation.

I also consider that the 'work area' that relates to each EMM requires greater definition and refinement in the EMF to improve clarity and better respond to some of the recommendations in this assessment. While none of the EMMs in the proponent's 'Day 4' version of the EMF applied specifically to the minor utilities corridor some of the new EMMs recommended in my assessment only apply to this corridor and have been noted as such in my suggested amendments to the EMF in Appendix A.

As outlined above, the IAC recommended adding introductory text to Section 24.7.1 of the EMF to require that each management plan in the EMF and Incorporated Document be reviewed and updated at least every five years prior to the commencement of each mining stage or as informed by each audit, whichever is the lesser timeframe, to ensure compliance with any updated approval or regulatory instruments. The IAC also recommended removing reference to review requirements from individual EMMs for management plans. While I agree with the intent of the IAC's recommendations and support the proposed inclusion of text in Section 24.7.1 of the EMF, I also consider that each of the individual EMMs relating to management plans should include specific requirements on when they will be reviewed and updated to assist in providing stakeholders with greater confidence that management plans will continue to be

[8] Tabled document 8

[9] Tabled documents 47 and 48

[10] Tabled documents 103 and 104

[11] Tabled documents 130 and 131

[12] Tabled documents 146 and 147

[13] Submission number 114

adapted during the life of the project based on any changes to requirements and/or operational experience. This is discussed further in Section 5 of this assessment.

The IAC also recommended changes to EMM SE-02 to require that the EMS establish a program of review for management plans specified in the EMF for all project areas, including the WBA and be reviewed in response to any relevant changes to AS/NZS ISO 14001:2016 Standard 'Environmental management systems – Requirements with guidance for use'. I support these amendments and discuss additional changes to EMM SE-02 recommended by the IAC and in Section 5.8.

As outlined above, the EMMs will be given statutory weight through the various conditions of approval that apply to the project. These include but are not limited to the mining licence and work plan (or equivalent under the MRSD Act duty-based framework for the mining licence area), PSA (WBA), planning permits for native vegetation removal (minor utilities corridor) and permits under the FFG Act to take protected flora (mining licence area and minor utilities corridor).

Further investigations

While I am largely satisfied that the environmental effects of the project have been adequately identified and assessed through the EES, IAC report, documents tabled at the hearing and the supplementary information, there are residual uncertainties. I note the IAC made recommendations for further biodiversity survey work which I have refined through my assessment and in some instances, recommended additional biodiversity surveys. I am satisfied that these further investigations are not needed to inform this assessment under the Environment Effects Act on the acceptability of the project's environmental effects as outlined in Section 5.1 of this assessment. However, they should inform any relevant approvals and secondary consents required for the project.

Environment Protection Act 2017

In addition to the above approvals and associated regulatory instruments, the project must comply with the relevant permissions under the Environment Protection Act and comply with the duties set out in this, notably the GED.

The GED requires that 'a person who is engaging in an activity that may give rise to risks of harm to human health or the environment from pollution or waste must minimise those risks, so far as reasonably practicable.'[14].

As outlined above, in its submission[15] EPA suggested that the EMMs in the EMF be redrafted to be more specific and measurable to assist in ensuring the risk of harm is minimised in accordance with the GED and other obligations under the Environment Protection Act. While the IAC did not comment on this specific issue, as outlined above, it recommended changes to the EMF to ensure that approvals can adapt to changes in regulations and a dynamic approach to managing risks. I agree with the EPA that further refinement of these EMMs is required. Section 5 discusses a range of specific changes to EMMs recommended by the IAC and in my assessment.

4.5. Consideration of project alternatives

As set out in the scoping requirements and the EES procedures and requirements issued by the former Minister for Planning under the Environment Effects Act, this EES was required to describe and assess effects of project alternatives. This needed to include a comparative assessment of the environmental effects of relevant feasible alternatives, as well as an explanation of why the preferred alternative was selected.

Chapter 3 of the EES discussed project alternatives considered for the mining method, layout, HMC transport, power and water supply, rehabilitation and closure and vegetation removal. It also included a discussion of the 'no development' option. The key project alternatives discussed by the IAC relate to the use of rail rather than road to transport HMC between the WBA and the Port of Portland and alternatives to avoid native vegetation removal on road reserves.

[14] Environment Protection Act, s25(1)

[15] Submission no. 114

The IAC heard submissions from Council, Rail Freight Alliance and other submitters that expressed strong support for the use of rail over road for the transport of HMC once funding for the Maroona to Portland rail line is committed and the necessary upgrades undertaken to the line. The IAC indicated that it was satisfied with the alternatives assessment of rail in EES Chapter 3 and found that subject to its recommendations, it is currently not appropriate to require the project to transport HMC by rail due to the lack of suitable infrastructure, but the option should continue to be investigated and its feasibility assessed should funding be committed. As outlined in Section 5.4 of this assessment I agree with the IAC that it is not appropriate to require that the project transport HMC by rail at this time due to the lack of suitable infrastructure. However, as this assessment indicates that the environmental effects of transporting HMC by road can be acceptably managed, I cannot support the IAC's recommendations to require that the feasibility of rail be assessed, and that the WBA provide for future rail infrastructure. Noting that transport by rail has the potential for reduced environmental effects compared to road transport and strong support from Council and other stakeholders, I would encourage the proponent to continue to explore this option in consultation with Council and the Department of Transport and Planning.

Alternatives to avoid native vegetation removal on road reserves, including DEECA Grampians concerns that the EES did not adequately address the avoid and minimise requirements for impacts to native vegetation, particularly for the mining licence area, and the IAC's findings, are discussed further in Section 5.1 of this assessment.

Section 5 of my assessment focuses on the preferred project as presented in the EES.

5. Assessment of environmental effects

It is my assessment that except for biodiversity effects, on balance, the environmental effects of the project are well understood and carefully considered in the EES and inquiry processes. In relation to biodiversity effects, supplementary information was needed to inform my assessment of the project's effects on biodiversity values and their acceptability.

Having now reviewed this supplementary information from the proponent, the IAC report, EES submissions and documents tabled at the hearing it is my assessment that the project can meet the EES evaluation objectives, and have acceptable environmental effects, subject to project modifications recommended in this assessment and implementation of EMMs endorsed by the IAC and refined through this assessment. As outlined in sections 4.2 and 5.1 of this assessment, this is based on the project retaining the Greenhills Road reserve in the mining licence area and changes to EMMs to require the completion of further survey work for some specific threatened flora and fauna species in the minor utilities corridor to help ensure residual impacts are avoided and minimised.

I also recommend that the proponent develop a design management document to demonstrate how the siting and design of infrastructure and construction works in the minor utilities corridor meets the amended EMMs, as outlined in this assessment, and therefore ensure acceptable environmental outcomes are indeed achieved.

While the temporary change in land use from agriculture to mining across the mining licence area has the potential to give rise to several environmental effects, I consider that on balance, implementation of the EMMs, as set out in Appendix A of my assessment, provide a sound framework for managing these effects.

The IAC made several findings and recommendations in relation to the project and its effects. My response to its findings and recommendations, along with my assessment of the environmental effects of the project are detailed in the sections below.

Section 6 provides my main conclusions and recommendations about the environmental effects of the project and responds to the IAC's key recommendations. Appendix A summarises my recommendations for the EMMs. My findings in relation to MNES are provided in Appendix B.

5.1. Biodiversity

Evaluation objective

Avoid, minimise or offset adverse effects of the project on biodiversity values including native vegetation, listed threatened species and communities and habitat for these species consistent with state and Commonwealth policies.

Assessment context

Biodiversity effects are addressed in Chapter 21 Flora and Fauna and Technical Appendix P Flora and Fauna, with supporting information provided in Chapter 16 Surface water, Chapter 17 Groundwater, Appendix K Surface water assessment and Appendix L Groundwater assessment of the EES. Biodiversity effects are discussed in Chapter 12 of the IAC report. WIM Resource has proposed 11 EMMs to deal with biodiversity effects (eight avoidance and mitigation measures and three monitoring measures) and nine of these have been the subject of recommendations by the IAC (seven avoidance and mitigation measures and two monitoring measures). The IAC further recommended the addition of one EMM (FD-0D).

The proponent commissioned a peer review of biodiversity assessment work conducted for the EES and tabled the findings at the hearing[16]. The peer review was also informed by additional site inspections and validation surveys in June 2023 after completion of the EES. The proponent also commissioned an additional field survey after completion of the EES and tabled the findings at the hearing[17]. As noted in section 4 of this assessment, following receipt of the IAC

[16] Expert Witness Statement of Brett Lane, Tabled Document 42, Proponent

[17] Technical Note 8, Tabled Document 57, Proponent

report I sought supplementary information from the proponent on biodiversity matters, necessary to inform my assessment of these effects. The proponent provided that supplementary information in August 2024 and this is relied upon, alongside other EES material, as set out below in my assessment of biodiversity related effects.

Several potential impacts on biodiversity values were examined through the EES and IAC hearing, including:

- ground disturbance likely to result in the loss and degradation of native vegetation and/or habitat for threatened flora and fauna species and communities listed under the EPBC Act and/or FFG Act;
- project activities such as trenching and vehicle movements and related effects which could result in direct and indirect impacts on threatened flora and fauna species and communities;
- mining and pit dewatering which could result in altered groundwater conditions affecting groundwater dependent ecosystems (GDEs);
- threatening processes under the FFG Act, including land clearance, habitat fragmentation, and loss of coarse woody debris;
- introduction of hazards to fauna that have the potential to lead to displacement, entanglement, entrapment, injury or death and/or changes to noise, lighting and vibration in areas of retained habitat; and
- indirect effects to vegetation and habitat adjacent to operational areas related to placement of stockpiles, soil compaction, dust, introduction or spread of weeds, surface water run-off and changed hydrology.

Discussion

Native vegetation

The project would occur in a highly modified agricultural region that has been largely cleared of native vegetation. The EES recorded 28.50 ha of native vegetation and 170 trees (36 small scattered trees, 85 large scattered trees and 49 large trees in patches) within the development extent. Ecological vegetation classes (EVCs) recorded within the development extent included; Black Box Lignum Woodland (EVC 663), DELWP Mapped Wetland (ID 19053, 19051), Floodplain Riparian Woodland (EVC 56), Plains Grassland (EVC 132), Plains Savannah (EVC 826_62), Plains Woodland (EVC 803), Red Gum Swamp (EVC 292) and Riverine Chenopod Woodland (EVC 103_62).

The EES identified that the total extent of Plains Grassland (EVC 132) within the minor utilities corridor was 0.65 ha, although that is inconsistent with the assessed residual impact in the EES of 1.15 ha within this same area. For the purposes of this assessment, it is assumed that 1.15 ha of Plains Grassland is present within the minor utilities corridor.

The EES identified that the project would result in the removal of a total of 11.80 ha of native vegetation, including 0.17 ha of DELWP Mapped Wetland (ID 19053) and 59 trees (43 large scattered trees, 14 small scattered trees and 2 large trees in patches). Some 11.63 ha of the native vegetation to be removed was assessed as EVCs with a bioregional conservation status of endangered within the Wimmera region, as summarised in Table 3 below.

Table 3: EES summary of residual impacts to EVCs within the development extent

EVC	Bioregional Conservation Status	Residual impacts MIN and WBA	Residual impacts minor utilities corridor	Residual impact total (ha)
Black Box Lignum Woodland (663)	Endangered	0.35	-	0.35
DELWP Mapped Wetland (19053)	N/A	-	0.17	0.17
Plains Grassland (132)	Endangered	9.56	1.15	10.71
Plains Savannah (826)	Endangered	-	0.23	0.23
Riverine Chenopod Woodland (103_62)	Endangered	-	0.34	0.34
Total				**11.80**

Field surveys and assessments commissioned after completion of the EES have since increased and modified the assessed extent of native vegetation to be removed by the project. Technical Note 8 identified that previously mapped Riverine Chenopod Woodland (EVC 103) patches along Tralee Lane and Two Mile Creek Road were re-assessed as Plains Grassland (EVC 132) and two additional areas of native vegetation were identified. Technical Note 8 concluded that through the revised native vegetation mapping, a total of 12.20 ha of Plains Grassland (EVC 132) would be impacted by the project.

The flora and fauna peer review identified an additional 3.213 ha of Plains Grassland (EVC 132) that would be impacted by the project and revised the total extent of native vegetation removal for the project to 17.990 ha.

The supplementary information reconciled the findings of these assessments and concluded that the project would result in a total removal of 17.818 ha of native vegetation (patches and trees). A summary of the residual impacts to ecological vegetation classes, as clarified in the supplementary information is provided in Table 4. The supplementary information concluded that the project would result in a residual impact to 45 trees (32 large scattered trees, 11 small scattered trees, and 2 large trees in a patch).

Table 4: Supplementary information summary of residual impacts to ecological vegetation classes within the development extent

EVC	Bioregional Conservation Status	Residual impacts MIN and WBA (ha)	Residual impacts minor utilities corridor (ha)	Residual impact total (ha)
Black Box Lignum Woodland (663)	Endangered	0.35	-	0.35
DELWP Mapped Wetland (19053)	N/A	-	0.17	0.17
Plains Grassland (132)	Endangered	11.97	2.75	14.72
Plains Savannah (826)	Endangered		0.23	0.23
Total				**15.47**

Adequacy of surveys

The EES was informed by a combination of desktop flora and fauna assessments and field surveys. The EES noted that additional surveys would be needed to address some gaps in information. For example, it noted that native grassland values would need to be validated during the appropriate season (spring-summer), as some field data collected to inform the EES was up to five years old (by the time the proponent finalised the EES for exhibition). Some validation to inform the EES data had also been completed out of season in June 2022. The EES also identified that a limitation of the survey work was a lack of access to some areas of private land in the mining licence area.

Technical Note 8 documented the results of native vegetation validation surveys undertaken in December 2022 after the EES was completed. It recorded additional patches of native vegetation and an increased impact on Plains Grassland (EVC 132) compared to the exhibited EES.

The peer review commissioned by the proponent documented numerous additional areas of degraded native vegetation, and in some cases increased extent of habitat zones in the development extent compared to the EES. The peer review concluded that the difference in native vegetation extent and occurrence compared to the EES was due to natural variability in vegetation condition between surveys. It also concluded that the EES had accurately and comprehensively described the native vegetation potentially affected by the project.

In its submission to the IAC, DEECA Grampians Region (DEECA Grampians)[18] recommended that due to the discrepancy between the EES and peer review on the total vegetation mapped and proposed to be removed by the project, an updated site assessment should be undertaken prior to project approval to ensure reliable native vegetation mapping was used to confirm required offsets. DEECA Grampians also recommended that the project area be ground-truthed prior to project approval and noted that its recommendations were consistent with planning permit requirements set out in the *Assessor's Handbook*[19].

The IAC concluded that surveys conducted for the EES and peer review provided an acceptable assessment of the likely presence of native vegetation, but noted that initial survey work to inform the EES was deficient. The IAC noted that the optimum time to survey grasslands is spring to summer and noted that several surveys were undertaken outside of these seasons (noting the surveys undertaken in March 2017, March to April 2020, June 2022 and June 2023). The IAC considered that additional areas of native vegetation identified in the peer review were due to the difference in the timing

[18] Tabled Document 121, DEECA Grampians region, response to committee questions.

[19] Assessor's Handbook: Applications to remove, destroy or lop native vegetation, Department of Environment, Land, Water and Planning, 2018.

of surveys and seasonal conditions, but that natural variability may have also contributed, and it was possible that further survey work would identify additional native vegetation to be impacted by the project.

The IAC was largely satisfied that the periodic surveys required through EMM FF-03 adequately respond to uncertainties relating to survey timing and coverage. The IAC also noted the EMM-required survey work would inform consideration of further avoidance and mitigation (EMM FF-06), as well as adjustments to native vegetation offsets that may be required (EMM FF-08). The IAC recommended amendment to EMM FF-03 to require the periodic surveys be undertaken in accordance with the *Assessor's Handbook*, prior to commencing mining in each block as well as along the minor utilities corridor to confirm the total numbers of protected/threatened flora to be removed by the project. The IAC also recommended editorial changes to EMM FF-03, EMM FF-06 and EMM FF-08 to clarify, strengthen and link these commitments. The IAC additionally recommended that the Flora and Fauna Management Plan (FFMP; EMM FF-06) be reviewed no less than every five years and that each update be approved by DEECA.

The supplementary information clarified that the increase in impacts to native vegetation since EES exhibition and the peer review was due to several small patches of native vegetation being remapped, some additional areas of previously unmapped native vegetation being identified and the retention of a further 15 scattered trees in response to submissions. The supplementary information noted that while some native vegetation surveys that informed the EES were up to five years old, the results had been validated more recently by surveys conducted following completion of the EES and were therefore sufficient. The supplementary information concluded that variation in grasslands can occur year-to-year due to seasonal differences in rainfall and survey timing and this can affect how the native vegetation is considered and assessed under the Native Vegetation Guidelines. The supplementary information also concluded that when considered together, the combination of survey efforts for the exhibited EES and those following EES exhibition, were comprehensive and sufficient, and all parts of the development extent impact area had been assessed for biodiversity values. I remain unconvinced by the conclusion offered by the supplementary information, noting the concerns with the extent of the survey work.

While there has been survey work undertaken by the proponent to verify some of the findings in their exhibited EES, it is not clear that additional surveys were sufficiently comprehensive to remedy all identified limitations (such as differences in survey timing, methodology, area and scope). These additional field assessments (Technical Note 8) were undertaken in an appropriate season, but the method adopted was a rapid survey, with limited assessment in areas of public land, and little to no surveys in private land. The proponent's peer reviewer was also constrained – they inspected "…accessible locations that supported the most extensive remnant ecosystems across a substantial proportion of the development extent" over a period of three days in June. Therefore, some residual uncertainty remains.

I support the IAC's view that further survey work is required to reduce uncertainties. However, I do not support the IAC's recommendation that this be deferred and conducted over the life of the project, in stages, to progressively clarify impacts and offset requirements. Offsets need to be identified and secured prior to native vegetation removal to ensure that there is appropriate certainty regarding the availability and implementation of the offset/compensation for any removal of native vegetation (and any species-specific offsets) that is approved. I agree with DEECA Grampians that the adequacy of native vegetation mapping and required offsets need to be determined ahead of any relevant approvals being issued. To this end, I recommend that EMM FF-03 and EMM FF-08 be updated to require that native vegetation assessments are undertaken in line with the Native Vegetation Guidelines to inform residual impacts for the purposes of offsets, prior to any relevant approvals being sought. I otherwise agree with the IAC's recommended amendments to EMM FF-06, that updated survey work should inform the FFMP and be reviewed no less than every five years and subject to approval by DEECA.

On balance, based on the supplementary information and previous work for the EES, the assessments (field and desktop) undertaken provide an adequate understanding of the areas of native vegetation across the development extent. I acknowledge the challenge of access limitations for field assessment in freehold land. To this end, I support the progressive survey effort proposed in EMM FF-03, to account for the unavoidable gaps in survey efforts for inaccessible areas, and to inform the progressive updates to FFMP (EMM FF-06). I note however that this recommendation for progressive surveys is not applicable to inform primary approvals and offset requirements, as detailed in my recommendations above.

Threatened ecological communities

Threatened ecological communities listed under the EPBC Act

Native vegetation clearing for the project would result in the loss of TECs listed under the EPBC Act. The EES identified the potential for four EPBC Act listed TECs to occur within the study area; Natural Grassland of the Murray Valley Plains, Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions, Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains and Mallee Bird Community of the Murray Darling Depression Bioregions. Of these, the EES recorded 5.22 ha of Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions within the study area and stated that 0.23 ha would be impacted in the minor utilities corridor.

The supplementary information reconciled assessments undertaken since completion of the EES and revised the extent of TECs within the development extent from 5.01 ha to 4.99 ha of Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions and from 0 ha to 0.08 ha of Natural Grassland of the Murray Valley Plains. The assessment of residual impacts to EPBC Act listed TECs provided in the supplementary information was consistent with the EES. These are examined further below.

Natural Grasslands of the Murray Valley Plains

Natural Grasslands of the Murray Valley Plains (NGMVP) is a critically endangered ecological community, listed under the EPBC Act. In Victoria, this ecological community is associated with areas of Plains Grasslands (EVC 132) and the FFG Act listed Northern Plains Grasslands Community. Whilst the EES considered the potential for this EPBC listed TEC to occur, it was not recorded during field surveys/studies the proponent commissioned to inform their exhibited EES, so there was no residual impact for this TEC identified by the proponent in the exhibited EES. However, during the IAC hearing, the proponent identified a 0.31 ha patch of NGMVP in the minor utilities corridor (Technical Note 8). Technical Note 8 indicated that 0.08 ha of the recorded extent would be impacted by the project. The IAC did not comment on this finding, only noting that this ecological community was not recorded in the EES.

The supplementary information confirmed that this patch of NGMVP would be avoided by the project by re-aligning/locating infrastructure and undertaking pole top works[20] on private land within the minor utilities corridor, adjacent to the existing powerline, rather than in the public land within the minor utilities corridor (as was presented in the EES). The supplementary information also noted that the total extent of NGMVP recorded was 0.75 ha across the total study area, none of which was recorded in the mining licence area.

The information before me regarding the presence and potential impacts on NGMVP, includes the results of different and inconsistent native vegetation surveys. The surveys undertaken within the mining licence area were at different and non-optimal times (i.e. March – April and June) and in season in November 2018. For the minor utilities corridor, the surveys were conducted in January, December and June. The survey that detected the NGMVP in the minor utilities corridor was completed in December, but was after a high, unseasonally heavy rainfall event. Other surveys conducted in this corridor area were also completed out of the optimal seasons. This results in some residual uncertainty for predicted impacts, as discussed below.

In light of the supplementary information, I note that impacts on the NGMVP are not predicted to occur in the mining licence area and on that basis, conclude impact on this ecological community is unlikely for this component of the project in the mining licence area.

In relation to the minor utilities corridor however, I note that private land within this corridor has not been surveyed sufficiently to fully confirm the extent of NGMVP patches, which creates greater residual uncertainty regarding the potential presence of this TEC in some areas potentially impacted by the proposed utilities infrastructure. Based on the information from the proponent, the project has conservatively assumed a 20 m (power infrastructure) and a 25 m (water pipeline infrastructure) construction corridor; these corridors or right of ways are likely to be larger than that required for the works. Using a conservative corridor width provides opportunity for flexibility in the final alignment and micro-siting of

[20] The EES refers to 'pole top works' as works associated with the powerlines that are of a minor routine maintenance nature, or restringing of powerlines.

infrastructure components to enable further avoidance of both direct impacts to ecological values and risks to adjacent ecological values.

While I support the commitment to avoid the recorded patch of NGMVP as set out in the supplementary information, and recommend this be embedded within a new EMM FF-12, I acknowledge the residual uncertainty about the extent of the patches in adjacent private land, which needs to be accounted for in the environment controls to be adopted for the project. I therefore recommend that proposed EMMs are strengthened to better ensure that direct and indirect impacts to any recorded patches of NGMVP are avoided when this project is implemented. To this end, I recommend a new EMM FF-11 to require that a further survey is undertaken to confirm the extent of NGMVP in the minor utilities corridor, to the satisfaction of DEECA and DCCEEW, in accordance with the relevant guidelines prior to any relevant approvals being granted. I further recommend that as part of EMM FF-12 WIM Resource develop a design management plan for the minor utilities corridor that will be informed by the further survey work undertaken and will assist in demonstrating how the design of the minor utilities corridor will achieve avoidance of patches of NGMVP, as well as other significant environmental values, prior to any relevant approvals being granted.

I note that the *Conservation Advice for the Natural Grasslands for the Murray Valley Plains*[21] recommends a buffer zone of at least 30 m be maintained from the outer edge of a remnant patch to protect the ecological community. The supplementary information on the other hand committed to a 3 m buffer around patches of NGMVP, concluding this would be sufficient to avoid direct and indirect impacts. The rationale for the 30 m buffer not being required in this circumstance is twofold, firstly that it only applies when there is significant direct or indirect impact on NGMVP patches (i.e. direct, permanent or continual indirect disturbance) and secondly, the environmental controls proposed to be applied ensure material impacts are avoided.

Any excavation, ground disturbance works and/or direct use of land likely to be required to construct or maintain the infrastructure for the project could reasonably be considered as a potential source of direct (or indirect) impact that needs to be avoided. To avoid impacts to this critically endangered ecological community with sufficient certainty, a 3 m buffer is unlikely to be sufficient for all sources of potential impact. While it might be argued that some departure from the recommended 30 m buffer could be entertained by relevant regulators, a 3 m buffer is unlikely to be considered acceptable. I consider the 3 m buffer insufficient to protect the TEC.

Therefore, I recommend that proposed EMMs are strengthened to better ensure that direct and indirect disturbance to patches of NGMVP are avoided when this project is implemented. This includes amending EMM FF-12 to encompass a buffer between the edge of any patch of NGMVP that is recorded and ground disturbing works in the minor utilities corridor, which is consistent with the 30 m buffer recommended in the *Conservation Advice* wherever necessary, or a reduced buffer that is to the satisfaction of DEECA and DCCEEW. I also recommend that EMM FF-12 include a requirement to implement measures (developed in consultation with DEECA and DCCEEW) to avoid disturbance and manage potential impacts on this ecological community when conducting all non-ground disturbing works (including pole-top works) within the minor utilities corridor that occur within 30 m of a recorded patch of NGMVP.

Buloke Woodland of the Riverina and Murray Darling Depression Bioregion

Buloke Woodland of the Riverina and Murray Darling Depression Bioregion (BWRMDDB) is a TEC listed as endangered under the EPBC Act. In Victoria, the TEC is associated with areas of Plains Savannah (EVC 826), and the FFG listed Semi-arid Northwest Plains Buloke Woodland Community.

It is noted that semi-arid woodlands in Victoria are slow growing, and the removal of mature trees has long-lasting consequences on the condition of the woodlands[22]. The conservation advice for the Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions[23] states that a key threat to BWRMDDB is land clearance and fragmentation, noting that BWRMDDB has been subject to extensive clearing. The conservation advice for BWRMDDB further notes

[21] Department of Sustainability, Environment, Water, Population and Communities (2012) Natural Grasslands of the Murray Valley Plains Conservation Advice.

[22] Department of Environment Land Water and Planning (2021) Victorian semi-arid woodlands. ISBN 978-1-76105-618-5.

[23] Department of Climate Change, Energy, the Environment and Water (2023) Approved Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions Conservation Advice.

challenges associated with rehabilitation of the TEC, particularly with the availability of seeds and the potential requirement for high-rainfall event or events to assist with mass regeneration.

The EES found that 5.01 ha of BWRMDDB was present within the development extent and concluded that 0.23 ha of this TEC would be impacted in the minor utilities corridor with the remaining 4.78 ha retained through exclusion zones and refinement of the minor utilities corridor (Table 5). I note that the retained areas are to be protected from direct and indirect impacts through the requirements of FF-01, with an amendment to require that the protection measures for areas of BWRMDDB be to the satisfaction of DCCEEW.

The EES stated the total extent of BWRMDDB within the minor utilities corridor was 0.01 ha, which is inconsistent with the residual impact of 0.23 ha predicted in the EES for this same area. For the purposes of this assessment, I assume there is at least 0.23 ha of Buloke Woodland of the Riverina and Murray Darling Depression Bioregion within the minor utilities corridor and I consider the 0.23 ha impact to BWRMDDB as the maximum potential residual impact for the project, as this figure is repeated throughout the EES, proponent's peer review, and supplementary information. Given the small amount of vegetation to be removed and its low quality, the EES concluded that this removal would not result in a significant impact to BWRMDDB under the EPBC Act. However, it is noted that this conclusion needs to be confirmed with DCCEEW.

Table 5: Summary of residual impacts to Buloke Woodland of the Riverina and Murray Darling Depression Bioregion (source: Table 54 Appendix P Flora and Fauna)

TEC	Total extent within development extent (ha)	Residual impact within MIN and WBA (ha)	Residual impact within minor utilities corridor (ha)	Total residual impact within development extent (ha)
Buloke Woodland of the Riverina and Murray Darling Depression Bioregion	5.01	-	0.23	0.23

Based on the information before me, I consider that this extent of removal is not significant. However, the information provided through the EES does not sufficiently examine how avoidance has been considered in the minor utilities corridor. There may be further opportunities to further avoid impacts to this area of BWRMDDB when developing the detailed design and refining the alignment/siting of the infrastructure proposed to occur within the minor utilities corridor, as detailed in EMM FF-06.

As there remain further opportunities to avoid or minimise the impact to BWRMDDB from the project, I recommend that EMM FF-12 is updated to require the proponent to demonstrate avoidance and minimisation in this area, prior to the commencement of any works, to the satisfaction of DCCEEW. Further, if all impact to BWRMDDB cannot be avoided, I recommend EMM FF-12 is updated to require the proponent to demonstrate how the impacts to the patch will be managed to prevent further direct or indirect impacts to patch(s) being retained.

FFG listed threatened ecological communities

Native vegetation removal associated with the project would result in the loss of ecological communities listed under the FFG Act. The EES recorded four communities listed under the FFG Act within the development extent: Northern Plains Grassland Community (21.18 ha), Red Gum Swamp Community No.1 (0.02 ha), Semi-arid Northwest Plains Buloke Woodland Community (5.01 ha) and Victorian Temperate Woodland Bird Community (1.56 ha). The Red Gum Swamp Community No.1 was recorded within the broader project study area, but not within the development extent, so is not expected to be impacted by the project.

Table 6 summarises the extent of residual impacts to these communities, as recorded in the EES. I note the EES contained discrepancies in the calculations between the total extent and assessed residual impacts within the minor utilities corridor, for both the Northern Plains Grassland Community and the Semi-arid Northwest Plains Buloke Woodland Community. Field surveys the proponent conducted after completion of the EES, as set out in Technical Note 8 and the

peer review, subsequently revised the extent of residual impacts to these FFG listed communities. The supplementary information has since reconciled these assessments and provided an updated assessment of residual impacts to ecological communities listed under the FFG Act, as summarised in Table 6 below.

Table 6: Summary of residual impacts within the development extent to ecological communities listed under the FFG Act (source: Appendix P Flora and Fauna and supplementary information)

Threatened ecological communities	Residual impacts MIN and WBA (ha)		Residual impacts Minor utilities corridor (ha)		Residual impact total (ha)	
	EES	Supplementary information	EES	Supplementary information	EES	Supplementary information
Northern Plains Grassland Community	9.58	9.56	1.15	2.02	10.71	11.59
Red Gum Swamp Community No.1	-	-	-	-	-	-
Semi-arid Northwest Plains Buloke Woodland Community	-	-	0.23	0.23	0.23	0.23
Victorian Temperate Woodland Bird Community	0.35	0.25	0.34	-	0.69	0.35

Northern Plains Grassland Community

The Northern Plains Grassland Community was recorded in the development extent in the EES and additional areas were identified in surveys undertaken after the EES was completed (Technical Note 8 and peer review). The supplementary information confirmed that of the 24.52 ha of the Northern Plains Grassland Community within the development extent, 11.59 ha would be impacted by the project. The IAC did not provide specific commentary on the proposed impacts to this community, but broadly accepted the proponent's rationale for why there needed to be impacts to Greenhills and Molyneaux Road reserves.

The supplementary information concluded that the project would remove a total of 11.59 ha of this FFG listed TEC within the development extent, 2.02 ha within the minor utilities corridor and 9.56 in the area encompassing the mining licence area and WBA. The supplementary information noted that only two patches of grassland in Molyneaux Road reserve (0.107 ha and 0.101 ha) appear to meet the requirements to be classified as the Northern Plains Grassland Community. The other patches of Plains Grassland in this roadside reserve were not considered to be this listed TEC. The supplementary information noted that three further patches of grassland proposed to be cleared within the Greenhills Road reserve also meet the requirements for the Northern Plains Grassland Community, totalling approximately 9.335 ha of removal.

DEECA Grampians' submission noted that they had been raising concerns with the acceptability of the proposed extent of clearance of Plains Grassland (and the corresponding Northern Plains Grassland community) via the TRG, during the proponent's development of the EES. Further, at the point the EES was exhibited, DEECA Grampians still considered this extent of removal within the Greenhills Road reserve to not be in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation DELWP 2017 (*the Native Vegetation Guidelines*)*. DEECA Grampians highlighted that greater than 99% of the grasslands in this region have likely been lost, and that most of the remaining grasslands exist on roadsides, including Greenhills Road reserve. DEECA Grampians noted that while the quality of

some of the native vegetation within Greenhills and Molyneaux Road reserves is degraded, the sites remain important. Further, DEECA Grampians considered that in addition to direct removal, the project would contribute to further fragmentation of remnant vegetation across this landscape.

Greenhills Road reserve contains a large and relatively contiguous patch of this FFG listed TEC, and these areas are also noted to support a range of species which are protected under the FFG Act. As noted by DEECA Grampians, fragmentation of remaining areas of grassland is a concern, and I note that this area acts as a key linkage/corridor for native species within this landscape, between key features such as the Yarriambiack Creek in the east and Dooen Swamp in the west. Removal of this corridor of native vegetation has the potential to cause significant impacts to the FFG listed threatened TEC, as well as the ecological values it supports.

I note the IAC did not specifically address the impacts to the Northern Plains Grassland TEC. However, they acknowledged the evidence of the peer reviewer, who considered that the project would not result in significant impacts to FFG Act or EPBC Act listed species or communities and concluded that subject to the recommended changes to the EMF, the effects on threatened flora and vegetation communities are acceptable. I do not support this general conclusion, particularly in light of DEECA Grampians' submission and information consolidated through the supplementary information.

On balance, I consider the total loss of up to 11.59 ha of this FFG listed threatened Northern Plains Grassland Community to be a significant and unacceptable loss, noting that a key threat to this listed TEC is habitat fragmentation, and most known remnants are small in size and highly fragmented in the landscape[24]. Therefore I recommend further avoidance of this TEC by the project - the best opportunity to reduce this clearance and impact to an acceptable level is by avoiding the TEC in the Greenhills Road reserve (where there is most of what is proposed to be cleared), as well as in the minor utilities corridor as there is significant scope for infrastructure and works to be realigned/sited to avoid environmental values. As noted by DEECA Grampians in their submission, the proponent has not sufficiently explored and demonstrated how impacts on these significant areas of native vegetation have been avoided and minimised, in accordance with state policy.

I note that the entirety of Greenhills Road reserve does not meet the thresholds for this listed FFG TEC, however by not clearing this road reserve, there is an opportunity for the native vegetation rehabilitation plan (EMM FF-07) to improve the quality of the other areas of native grasslands in the road reserve through weed management and additional planting. This together with avoiding the significant impact of clearing 9.335 ha of this TEC in this road reserve will help ensure this overall corridor remains as a key area of biodiversity value and an ecological link within this landscape.

However, I consider that the removal of up to 0.208 ha of the Northern Plains Grassland Community within Molyneaux Road reserve to be acceptable, as these two patches are more fragmented, and would allow for mining to occur across Block A during the significant, earlier phases of this development.

I recommend a new EMM FF-09 be required, to ensure the retention of Greenhills Road reserve and its native grasslands including the significant areas of the Northern Plains Grassland Community. Should the retention of Greenhills Road reserve lead to changes to the mine layout or sequencing, these changes should consider the GED. Any new or increased impacts to those reported in the EES should be discussed with EPA and other relevant statutory authorities to ensure that acceptable environmental outcomes can be achieved (EMM SL-14).

I also recommend a new EMM FF-12 to help ensure the avoidance of the areas of Northern Plains Grassland Community within the minor utilities corridor.

Semi-arid Northwest Plains Buloke Woodland Community

The EES recorded 5.01 ha of Semi-arid Northwest Plains Buloke Woodland Community in the development extent, 0.23 ha of which would be impacted by the project within the minor utilities corridor. The supplementary information updated the assessed extent of 4.99 ha of Semi-arid Northwest Plains Buloke Woodland Community in the development extent and confirmed that 0.23 ha would be impacted by the project in the minor utilities corridor. I note the extent of this

[24] Department of Sustainability and Environment (2006) Northern Plains Grassland fact sheet.

community fully aligns with the Buloke Woodland of the Riverina and Murray-Darling Depression Bioregions TEC, and so my findings for that TEC above are the same for this FFG listed community.

Victorian Temperate Woodland Bird Community (VTWBC)

The Victorian Temperate Woodland Bird Community (VTWBC) is defined as a group of 24 bird species considered in decline and primarily associated with drier woodlands on the slopes and plains north of the Great Dividing Range[25] The EES stated that due to a lack of published guidelines to specify a threshold for presence of the VTWBC, the community is assumed to be present where woodland EVCs occur and one or more nominated species consistent with the community are recorded. Three of the 24 key bird species listed as part of the VTWBC group were considered in the EES to have a moderate or high likelihood of occurrence within the study area. Furthermore, all eucalypt-dominated woodland areas within the study area were considered to support the VTWBC including: Floodplain Riparian Woodland (EVC 56), Riverine Chenopod Woodland (103_62), Plains Woodland (803) and Black Box Lignum Woodland (EVC 663).

The EES noted that 1.56 ha of the VTWBC occurs within the development extent, of which 0.69 ha would be impacted by the project (0.35 ha within the area encompassing the mining licence area and WBA and 0.34 ha within the minor utilities corridor).

The supplementary information updated the presence of VTWBC to 0.35 ha within the development extent and noted that the full extent (0.35 ha) would be impacted by the project. The supplementary information did not provide a specific discussion on how impacts to the community had been minimised, but it is noted that the extent and residual impact to Riverine Chenopod Woodland (EVC 103_62) corresponds to a reduction in the proposed residual impact to this EVC within the minor utilities corridor (from 0.34 ha in the EES to 0 ha in the supplementary information). It is also noted that the impacts to this community appear to correspond with the 0.35 ha of Black Box Lignum Woodland proposed to be impacted by the project within the area encompassing the mining licence area and WBA.

While I do not consider that the residual impact to 0.35 ha of the community is a significant impact, I note that the EES and supplementary information recorded that the patch of native vegetation associated with the impacted VTWBC has one of the highest habitat scores of any patch of vegetation to be removed. I also note the proponent has committed to avoiding an area adjacent to this impacted patch[26]. As the area of the community to be impacted is small and adjacent to this area proposed to be retained, I recommend EMM FF-06 is updated to require the proponent to explore and demonstrate how this patch can be avoided or clearance minimised, in accordance with the state policy, to the satisfaction of DEECA.

Threatened flora

Native vegetation removal associated with the project would result in the loss of threatened flora. The EES identified that three flora species listed as critically endangered under the FFG Act were recorded within the development extent including: 153 Buloke (*Allocasuarina luehmannii*), 10 Buloke Mistletoe (*Amyema linophylla subsp. Orientalis*) and six Weeping Myall (*Acacia pendula*). Additionally, 11 other FFG Act listed flora species were found to have a moderate or greater likelihood of occurrence, and two of these are listed under both the EPBC Act and FFG Act (Turnip Copperburr (*Sclerolaena napiformis)* and Large-headed Fireweed (*Senecio macrocarpus)*).

The EES assessed that the project would impact 46 individuals of Buloke and a total of five individuals of Weeping Myall. The EES stated there would be no project impacts to threatened flora species listed under the EPBC Act. The EES did however identify that a spring survey was required prior to project commencement to confirm the total number of threatened flora individuals that would be removed. The IAC noted that there was a lack of confidence in the targeted survey work undertaken to inform the EES and highlighted that the targeted flora survey methodology was not documented in the EES and could not be verified. Assessments conducted by the proponent since the completion of the EES have also raised uncertainty regarding the potential presence of and residual impacts to a number of listed threatened flora, as discussed below.

[25] Department of Energy Environment and Climate Action (nd) Flora and Fauna Guarantee Act 1988 – Threatened List Characteristics of Threatened Communities

[26] Technical Note 9, Tabled Document 58, Proponent.

Weeping Myall (Acacia pendula)

Weeping Myall is listed as critically endangered under the FFG Act. The species was recorded within the development extent during surveys undertaken for the EES, with further individuals recorded in the minor utilities corridor during surveys following completion of the EES.

The supplementary information has confirmed the presence of 33 individuals in the development extent and confirmed that the project would have a residual impact on 19 individuals within the minor utilities corridor. The supplementary information also noted that Weeping Myall is considered rare in Victoria with isolated populations near Warracknabeal and Echuca. The supplementary information concluded that significant impacts to listed threatened flora species under the FFG Act were unlikely.

The IAC considered that the removal of five Weeping Myall reported in the peer review would not affect the status of the species in the wider region or state and found that the affects were acceptable. I note the increase in likely extent of and impact to this species, reported in the supplementary information. I consider the loss of 19 Weeping Myall to be significant and unacceptable, noting that project impacts would result in a large proportion of the estimated population (approximately 25 in Victoria[27]) to be removed. I therefore recommend that EMM FF-12 is updated to require the detailed design of the minor utilities corridor to avoid all Weeping Myall, and that EMM FF-06 is updated to require specific measures be included to demonstrate that the retained Weeping Myall within the mining licence area are suitably protected from any project activities to the satisfaction of DEECA.

Buloke (Allocasuarina luehmannii)

Buloke is listed as critically endangered under the FFG Act. The EES notes 153 Buloke (148 within the mining licence area and WBA and five individuals within the minor utilities corridor) were recorded within the development extent during surveys with 46 individuals to be impacted. Proponent commissioned surveys undertaken following the completion of the EES[28] identified 40 Buloke within the minor utilities corridor.

The proponent commissioned peer review noted that consideration should be given to retaining additional scattered trees, particularly FFG Act listed Buloke, where opportunities arise but concluded that the impact to 46 individuals (as assessed in the EES) would not affect the status of the species in the wider region or state.

The supplementary information concluded that that 159 Buloke trees were identified in the development extent (156 within the area encompassing the mining licence area and WBA and three within the minor utilities corridor), with 40 individuals proposed to be impacted by the project.

DEECA Grampians submitted that four Buloke in the mining licence area could be reasonably avoided with a minor boundary change to the development extent or the application of a tree protection zone, as they occur on the edge of the development extent.

I support the IAC and DEECA's recommendation to further consider avoidance of these four Buloke on the edge of the development extent. However, I recommend that EMM FF-06 is updated to specifically require this prior to any relevant approvals being sought.

Overall, I consider the proposed impact on up to 40 Buloke would not result in a significant impact to the species, subject to efforts to further minimise impacts to the species where possible. I note the uncertainty in relation to the number of Buloke likely to be impacted by the project in light of the difference in assessed individuals within the development extent between the EES and surveys conducted by the proponent following completion of the EES, however consider that the native vegetation surveys required in my recommended changes to EMM FF-06 will ensure that this uncertainty is addressed.

[27] Department of Environment Land Water and Planning 2021 - Threatened Species Assessment Weeping Myall Taxon ID 500073

[28] Technical Note 8, Tabled Document 57, Proponent

Vittadinia species

The EES concluded that five species of Vittadinia (also known as New Holland Daisy) listed under the FFG Act had a low likelihood of occurrence in the study area; Club-hair New Holland Daisy *Vittadinia condyloides,* Fuzzy New Holland Daisy *Vittadinia cuneata var. hirsuta,* Fuzzy New Holland Daisy *Vittadinia cuneata var. morrisii,* Giant New Holland Daisy *Vittadinia megacephala* and Winged New Holland Daisy *Vittadinia pterochaeta*. The EES also noted that New Holland Daisy was recorded in the study area but did not specify the species or assess any residual impacts to Vittadinia species.

The EES includes VBA records of four species of Vittadinia being recorded within 25 km of the project area, all listed as endangered under the FFG Act: Club-hair New Holland Daisy *Vittadinia condyloides* (VBA 2005, 3 records), Fuzzy New Holland Daisy *Vittadinia cuneata var. morrisii* (VBA 2011, 11 records), Giant New Holland Daisy *Vittadinia megacephala* (VBA 1996, 1 record), and Winged New Holland Daisy *Vittadinia pterochaeta* (VBA 1998, 3 records).

Threatened species assessments for these five species note these species tend to be relatively rare within Victoria and generally occurring in isolated populations.[29] The Winged New Holland records are known from three areas in north-western Victoria, and Fuzzy New Holland Daisy (Var. morrisii) populations are considered to be severely fragmented to the point where the separation of the isolated populations likely to exceed the dispersal range for the species, as it does not have specialised mechanisms to allow for long-distance dispersal.

The EES identified that Vittadinia was recorded in the Greehills Road reserve, however Appendix P did not include where in the patch it was recorded, or information on the number of recorded individuals in the area, nor did it identify the record to the species level. I note that the VBA records for the endangered Vittadinia occur within close proximity to both the mining licence area and minor utilities corridor, with Winged New Holland Daisy recorded in Molyneaux Road just east of the project boundary, and Fuzzy New Holland Daisy near the minor utilities corridor. I further note that the supplementary information does not identify which other species of Vittadinia are considered to be potentially occurring within the broader project area.

Technical Note 8 noted that populations of Vittadinia species were recorded (11 individuals) by field surveys the proponent commissioned post EES completion in the minor utilities corridor, in the roadsides of Tuckers Road and Tralee Lane (South of Wimmera Highway), and Tralee Lane. Individuals were recorded at a genus rather than a species level and the occurrence was extrapolated to a density of 55/ha. The IAC did not offer specific comment on this information but stated that the targeted flora survey work that informed the EES could not be relied upon as the method for the targeted flora surveys in the mining licence area and minor utilities corridor had not been documented and therefore could not be verified.

The supplementary information has confirmed the presence of Vittadinia species at a genus level in the minor utilities corridor (Tuckers Road and Tralee Lane) and the mining licence area (within Molyneaux Road reserve), at the extrapolated density of 55/ha[30]. The supplementary information concluded that approximately 183 individuals of Vittadinia species would be impacted by the project, 54 individuals in the area encompassing the mining licence area and WBA, and 136 in the minor utilities corridor. The supplementary information concluded that there was a very low likelihood of these impacted individuals being the listed threatened species of Vittadinia, and therefore concluded that impacts to the Vittadinia species were unlikely to be significant for the project. This conclusion in the supplementary information is also based on the project commitment to salvage, propagate and rehabilitate the plains grassland community in impacted roadsides.

While I support the project's commitment to rehabilitate impacted areas (via proposed EMM FF-07) and in doing so attempt to successfully salvage and propagate these impacted species, this is not a reliable means of mitigating impacts as it does not change the significance of direct impacts. The significance of the direct loss and residual risk for the impacted species needs to account for the level of uncertainty associated with predictions for the different project areas. As noted above, the IAC raised questions about the reliability of the targeted flora survey work for the that informed the

[29] Department of Environment Land water and Planning (2021). Threatened Species Assessment *Vittadinia condyloides* Club-hair New Holland Daisy Taxon ID 503536; *Vittadinia cuneata var. hirsuta* Fuzzy New Holland Daisy Taxon ID 505068; *Vittadinia cuneata var. morrisii* Fuzzy New Holland Daisy Taxon ID 505060; *Vittadinia megacephala* Giant New Holland Daisy Taxon ID 503540; *Vittadinia pterochaeta* Winged New Holland Daisy Taxon ID 503542.

[30] Table 1: Protected flora counts for all affected areas extrapolated from AECOM density estimates – the supplementary information

EES conclusion on threatened flora species; I concur. Overall, there remains some residual uncertainty regarding whether recorded individuals and predicted total extent of the Vittadinia species in the mining licence area are all the non-threatened species of Vittadinia.

The supplementary information states that the potential for the threatened species of Vittadinia to be present in the mining licence area is relatively low. This is less clear for the minor utilities corridor. A precautionary approach is needed in reaching conclusions on the significance of impacts for this species, in particular within the minor utilities corridor.

I note that when required permits under the FFG Act are progressed, the DEECA Grampians will need to confirm the application requirements and will be best placed to consider how impacts on the Vittadinia species need to be characterised and what mitigation is needed to acceptably address impacts. Any additional survey work that is needed for permit applications should examine the residual uncertainties associated with identifying the relevant species in the mining licence area.

However, for the minor utilities corridor, I recommend that EMM FF-11 is amended to specify that further survey work is required to address the degree of uncertainty around presence of the threatened species of Vittadinia, ahead of any relevant approvals/consents being issued. I further recommend that should threatened species of Vittadinia be recorded during additional survey work within the minor utilities corridor, consultation with DEECA Grampians is necessary to examine potential approaches to minimising impacts to the species, before progressing an application for a consent/ permit under the FFG Act to take protected flora. This should also be included in EMM FF-11.

Calotis species

The EES considered that Cut-leaf Burr-Daisy *Calotis anthemoides,* listed as critically endangered under the FFG Act, had a moderate potential of occurrence in both the retention licence area and the minor utilities corridor, noting the past records[31] of the species from the project area and greater project area. The EES noted VBA records for two individuals of Cut-leaf Burr-daisy, within 25 km of the project area but identified no individuals in targeted surveys in the mining licence area.

Technical Note 8 noted that 100 individuals of a Calotis species were recorded in the roadsides of Tuckers Road and Tralee Lane (South of Wimmera Highway) through a field survey the proponent commissioned after completion of the EES. Individuals were recorded at a genus rather than species level and the occurrence was extrapolated to a density of 500/ha. The IAC did not comment on this information.

The supplementary information identified that approximately 813 individual plants are likely to be impacted by the project within the minor utilities corridor. The supplementary information also concluded that it was reasonable to assume the Calotis species referenced in Technical Note 8 should be considered to be Rough Burr-daisy *Calotis scabiosafolia* (which it not listed under the FFG Act) and not Cut-leaf Burr-Daisy (which is listed under the FFG Act). No further information was provided to support this conclusion, which seems to differ from information gleaned from the EES and Technical Note 8.

The threatened species assessment for Cut-leaf Burr-Daisy[32] notes that the population has undergone a significant reduction, with a conservative estimate of a loss of at least 90% of the area of occupancy for the taxon, with significant further population loss of around 80 to 90% over the next 100 years. The key conservation objectives for the species listed in the action statement[33] include minimising future population decline through mitigating threats to populations, and increasing the range and/or extent of the species by providing opportunities for natural movement/dispersal.

I note there is a VBA record for Cut-leaf Burr Daisy on Molyneaux Road, just east of mining licence and minor utilities corridor areas, and that there are records of the Rough Burr-Daisy adjacent to the minor utilities corridor south of Tuckers Road. Similar to the targeted survey work undertaken for the Vittadinia species in the minor utilities corridor, there is residual uncertainty regarding whether the project is impacting on the non-threatened or threatened species of Calotis.

[31] Table 4, Appendix P of the EES.

[32] Department of Environment Land water and Planning 2021 – Threatened Species Assessment Cut-leaf Burr-Daisy Taxon ID 500593.

[33] Department of Environment Land water and Planning 2024 – Action Statement Cut-leaf Burr-daisy (Calotis anthemoides).

Thus, a precautionary approach is needed to arrive at a conclusion on the significance of the impact on this species. On the balance of information presented, I consider there is potential for the Critically Endangered Calotis species to be present in the minor utilities corridor and for one or more of these species to be significantly impacted by the project.

Therefore, I recommend that EMM FF-11 is amended for the minor utilities corridor, to specify that further survey work is required to address the degree of uncertainty around presence of the threatened species, ahead of any relevant approvals/consents being issued. I further recommend that should threatened species of Calotis be recorded during additional survey work within the minor utilities corridor, consultation with DEECA Grampians is necessary, to examine potential approaches to avoiding or minimising impacts to the species, before progressing an application for a consent/permit under the FFG Act.

When the project progresses a permit/consent application under the FFG Act to take any listed flora, DEECA Grampians will need to confirm the application requirements for these species and be best placed to consider how impacts on the *Calotis* can be acceptably addressed through that process.

Requirements to avoid, minimise and offset

The EES stated that substantial effort had been made to avoid impacts to areas of ecological value and this resulted in a reduction in direct impacts on native vegetation by 16.70 ha and a reduction of tree loss by 111 trees. The EES identified that further avoidance and minimisation could occur in the minor utilities corridor, and also discussed the option for undergrounding some components. The proponent tabled Technical Note 9 during the hearing, which included an updated map of the patches of native vegetation avoided by the project.

The IAC noted DEECA Grampians' submission that the EES did not adequately address the avoid and minimise requirements for impacts to native vegetation, in accordance with the state policy. DEECA Grampians noted key areas where avoidance and minimisation had not been adequately demonstrated, in particular Greenhills Road reserve, Molyneaux Road reserve, four Buloke located (in different areas) at the edge of the development extent and within the minor utilities corridor.

The IAC heard evidence from the proponent[34] that avoidance of native vegetation on both Greenhills and Molyneaux Roads reserves were not considered feasible given it would result in an inability to access an approximate total of 35 million tonnes of ore. The proponent stated that adjusting the mine boundary to mine areas devoid of native vegetation did not account for the maximisation of resource recovery that has been built into the mine layout and design. The IAC also heard evidence from the proponent that areas not being mined that do not contain significant environmental values generally reflect areas without a viable mineral resource.

The IAC broadly accepted that the proponent was limited in its ability to expand further into areas devoid of native vegetation, particularly along Greenhills and Molyneaux Road reserves, and that there was little opportunity to completely avoid impacting native vegetation within the development extent. The IAC did however consider that opportunities remained to avoid and minimise impacts through refinement of the mine boundary as well as within the minor utilities corridor. The IAC recommended that options to avoid removal of the four trees identified by DEECA Grampians on the edge of the development extent should be further investigated through the FFMP (EMM FF-06) but that the EMM FF-06 was satisfactory to ensure assessment of the potential protection of additional native vegetation. The IAC also recommended amendments to EMM FF-01, EMM FF-02 and EMM FF-06 to strengthen the requirements to investigate further options to avoid and minimise impacts to native vegetation, including the option to bore or move services underground and in response to updated surveys within the minor utilities corridor.

The supplementary information concluded that no further areas of avoidance were considered feasible within the mining licence area, including along Greenhills and Molyneaux Roads reserves, without impacting the project's commercial objectives. While the supplementary information noted that the extent of native grassland impacts along Greenhills and Molyneaux Road reserves had increased since the EES was exhibited, it concluded that it was highly degraded and of low quality. The supplementary information noted that avoidance had resulted in the retention of 86.94 ha of native

[34] Tabled Document 129, Proponent, closing submission

vegetation within the surveyed area (includes additional areas surrounding the development extent). It also concluded that vegetation proposed to be removed in the development extent had an average habitat hectare score of 0.24 compared to retained vegetation in the same area that had an average habitat score of 0.23. The supplementary information concluded that further avoidance within the minor utilities corridor would occur during detailed/engineering design in collaboration with the service providers.

I agree with the IAC that opportunities remain for the project to demonstrate adequate avoidance and minimisation, in accordance with state policy. I support the monitoring measures including the IAC's amendments to EMM FF-01 and EMM FF-02 to strengthen the proposed exclusion and protection zones around retained trees and patches of vegetation.

I also note that areas of higher quality vegetation are proposed to be removed by the project compared to those that are proposed to be retained. I further note the supplementary information did not provide sufficient and rigorous justification for why the project is unable to avoid higher quality of patches of vegetation.

As discussed in the Northern Plains Grassland Community section above, I consider that impacts to significant native vegetation along Greenhills Road reserve to be significant and unacceptable, due to the extent of this FFG listed community proposed to be cleared, as well as the quality of this vegetation and the connectivity that this native vegetation provides in the landscape between key features such as the Yarriambiack Creek in the east and Dooen Swamp in the west. Removal of this extent of native vegetation along this corridor has the potential to cause significant impacts to the FFG listed ecological community, as well as the values it supports such as the noted Vittadinia records and other protected species noted to occur in these roadsides.

I acknowledge the EES and supplementary information stated the assessment of impacts within the minor utilities corridor had conservatively assumed a 20 m (power infrastructure) and 25 m (water pipeline infrastructure) corridor, which is likely to be larger than what is required for works. This allows for flexibility in the placement of components and further avoidance of impacts. I agree that further avoidance of native vegetation can and is likely to occur within the minor utilities corridor. I also note that this further avoidance work needs to be completed in collaboration with the relevant utility providers. However, noting the gaps in field work in the minor utilities corridor, I recommend a new EMM (FF-12) to ensure that further work is undertaken to demonstrate the avoid and minimise principles of state policy is met within the minor utilities corridor. This work should occur prior to any relevant approvals being sought, to the satisfaction of DEECA.

I note some submitters raised concerns with the removal of native vegetation that had been planted by the community, I recommend clarification is sought to determine if these trees were planted using public funding for the purposes of biodiversity enhancement and therefore should be considered to be native vegetation for the purposes of offsetting in line with the Native Vegetation Guidelines. If it is determined that the planted trees were planted through the use of public funds for the purpose of biodiversity, this removal should be included in any offset requirements unless the proponent can demonstrate compliance to the exemption requirements, to the satisfaction of DEECA.

Rehabilitation of grasslands

The EES noted that progressive rehabilitation of areas of native vegetation would contribute to minimising the long-term effects of the project. The EMF included the commitment to establish a Native Vegetation Rehabilitation Plan (EMM FF-07) as part of the Rehabilitation Plan EMM RH -01, to address matters relating to the progressive rehabilitation and closure of the mine. EMM FF-07 committed the project to a schedule of progressive rehabilitation with a strategy of ensuring that rehabilitated land be capable of supporting the end land use as soon as reasonably practicable (typically within 4 years).

EMM FF-07 stated that establishment of native vegetation on rehabilitated land would only occur with the consent of landholders, and is expected to primarily target native vegetation that existed prior to mining, highlighting Greenhills Road reserve as an area where there was potential to reinstate Plains Grassland in the future after mining these areas.

The peer review supported progressive rehabilitation in line with the project's moving hole method of mining and recommended that the project identify opportunities to establish new corridors or contribute to existing habitat corridors.

DEECA Grampians' submission considered that the native vegetation rehabilitation requirements could be strengthened to provide a binding requirement to rehabilitate grasslands on road reserves removed by the project.

During the hearing, in response to questions from the IAC, DEECA Grampians highlighted that long-term management and adequate funding was required for rehabilitation of grasslands to be successful and noted a number of limitations and considerations for successful restoration[35]. DEECA Grampians further recommended the creation of habitat corridors that link to as much existing remnant vegetation as possible, noting key linkage points such as Darlot and Dooen Swamps, Yarriambiack Creek, and the Wimmera River, along with existing patches of roadside native vegetation and larger patches of vegetation in the project area.

Council[36] also recommended that management plans minimise the loss of topsoil in the stripping process, as retention of seed banks in topsoil in key areas can assist in re-establishing native species.

The IAC concluded that should the rehabilitation be done well, the project could meet its objectives and potentially improve biodiversity outcomes. The IAC recommended amendments to EMM FF-06 and EMM FF-07 to require a specific native vegetation rehabilitation plan, developed with the guidance of a suitably qualified ecologist, and in partnership with relevant landholders and stakeholders. The IAC also recommended an amendment to EMM RH-01 to link to the requirements of EMM FF-07.

The supplementary information concluded that the loss of FFG listed threatened vegetation communities would be "temporary", stating that for the Northern Plains Grassland community the rehabilitation plans "will ultimately reinstate the key elements of these communities, likely to a higher quality than currently exists, including on public roadsides, where about 70% of the area of the affected communities occurs."

I note the information provided in the EES, the IAC conclusions and the supplementary information regarding the potential native vegetation rehabilitation and approaches to supporting the objective of rehabilitating impacted areas where possible. However, rehabilitation cannot be used to justify impacts to EVCs and threatened flora, nor should the direct removal of native vegetation or vegetation communities be considered temporary. This approach does not consider the impacts to flora and fauna which use this vegetation as habitat or as a stepping stone through the landscape, nor has sufficient evidence been provided which demonstrates that the rehabilitation is feasible or can achieve a 1:1 impact to restoration outcome. To this end, and with due regard to state and federal policy, I consider that impacts to native vegetation and threatened flora and fauna must be considered independently of any assumed gains or offsets in the future from rehabilitation.

I support the IAC's recommendation for the development of a specific native vegetation rehabilitation plan (EMM FF-07) and recommend additional amendments to EMM FF-07 to require a detailed plan be developed prior to the commencement of works. This would include details on the feasibility, cost and proposed extent of works, and key actions associated with the proposed rehabilitation, and be developed in consultation with stakeholders and landholders. The plan should be informed by progressive rehabilitation and field surveys undertaken in line with project stages (EMM FF-03) and outline key agreements and commitments, along with the required monitoring and adaptive management measures that will be implemented if the plan does not achieve its objectives within the agreed timeframes.

Buloke Mistletoe

The EES identified approximately 10 Buloke Mistletoe *Amyema linophylla subsp. orientalis,* listed under the FFG Act, as occurring within the development extent and immediate surrounds. The EES assessed that the project would avoid all direct impacts to the species. As noted by the IAC, the peer review considered that the recorded Buloke Mistletoe may have been misidentified and assessed the individuals as likely to be Harlequin Mistletoe, which is not a threatened species under the FFG Act.

The supplementary information confirmed that 10 Buloke Mistletoe were identified within the development extent but that none would be impacted by the project, consistent with the EES. No further discussion was provided regarding a potential misidentification of the species. In light of this residual uncertainty, I recommend that tree protection zones are

[35] Tabled Document 121, DEECA Grampians region, response to committee questions.

[36] Tabled Document 100, Council, submission.

established around trees identified as supporting Buloke Mistletoe in line with EMM FF-02 to avoid any encroachment or indirect effects associated with the project.

I note the IAC's recommendation that EMM FF-06 is amended to require information on the threatened flora species survey method, including any rationale and assumptions. Based on the information before me and the uncertainty relating to the survey work, I instead recommend that EMM FF-06 is amended to require further detailed surveys are undertaken in the development extent by a qualified ecologist to determine the species present for the purpose of informing the FFG Act requirements, and ensuring there are no impacts to listed FFG Act species such as Buloke Mistletoe.

Threatened fauna

The EES identified 30 fauna species listed under the EPBC Act and/or FFG Act with a moderate or higher likelihood of occurring within the study area, as detailed below in Table 7[37]. The supplementary information stated that the assessment of likelihood of occurrence for listed fauna species largely aligned with the EES with some minor differences.

Table 7: EPBC Act and/or FFG Act listed fauna with a moderate or higher likelihood of occurrence[38] within the study area[39]

Name	EPBC Act status	FFG Act status
Fork-tailed Swift *Apus pacificus*	Mi, Ma	
Musk Duck *Biziura lobata*	Ma	vu
Sharp-tailed Sandpiper *Calidris acuminata*	Mi, Ma	
Curlew Sandpiper *Calidris ferruginea*	CR, Mi, Ma	cr
Pectoral Sandpiper *Calidris melanotos*	Mi, Ma	
Red-necked Stint *Calidris ruficollis*	Mi, Ma	
Latham's Snipe *Gallinago hardwickii*	Mi, Ma	
White-bellied Sea-Eagle *Haliaeetus leucogaster*	Ma, Mi*	en
White-throated Needletail *Hirundapus caudacutus*	VU, Mi, Ma	vu
Caspian Tern *Hydroprogne caspia*	Mi, Ma	vu
Glossy Ibis *Plegadis falcinellus*	Mi, Ma	
Growling Grass Frog *Litoria raniformis*	VU	vu
Silver Perch *Bidyanus bidyanus*	CR	en

[37] Note that the assessment of likelihood of occurrence presented in Table 7 is primarily based on the assessment of likelihood as presented in the exhibited EES. It is acknowledged that there were minor differences and discrepancies between the supplementary information and the EES. Where the supplementary information has identified additional species with a likelihood of occurrence higher than what was assessed in the EES or updated listing status, this has been reflected in Table 7, however a conservative approach has been applied and where the supplementary information has assessed a species with a lower likelihood of occurrence than the EES these species have not been removed from Table 7.

[38] Note that the likelihood of occurrence assessment rankings presented in the EES of moderate, high and known corresponds with the supplementary information assessment rankings of potential, likely and does occur respectively.

[39] Note that the study area referred to corresponds to the 'on-retention licence study area' in the EES and the 'study area' in the supplementary information. The EES 'on-retention licence area' refers to the combined retention licence area and minor utilities corridor area. The supplementary information 'study area' refers to area within 10 km of the on-retention licence area.

Name	EPBC Act status	FFG Act status
Golden Sun Moth *Synemon plana*	CR	vu
Striped Legless Lizard *Delma impar*	VU	en
Brolga *Antigone rubicunda*		en
Eastern Great Egret *Ardea alba modesta*	Ma	vu
Hardhead *Aythya Australia*		vu
Bush Stone-curlew *Burhinus grallarius*		cr
Black Falcon *Falco subniger*		cr
Diamond Dove *Geopelia cuneata*		vu
Little Eagle *Hieraaetus morphnoides*		vu
Hooded Robin *Melanodryas cucullate*	EN**	vu
Bearded Dragon *Pogona barbata*		vu
Australasian Shoveler *Spatula rhynchotis*		vu
Diamond Firetail *Stagonopleura guttata*	VU**	vu
Freckled Duck *Stictonetta naevosa*		en
Reddish-orange Sun Moth *Synemon jcaria*		en
Pale Sun Moth *Synemon selene*		en
Freshwater Catfish *Tandanus tandanus*		en
Brown Treecreeper* *Climacteris picumnus subsp. victoriae*	VU**	
Blue-winged Parrot* *Neophema chrysostoma*	VU**	
Common Greenshank* *Tringa nebularia*	Mi	en
Platypus* *Ornithorhynchus anatinus*		vu
Square-tailed Kite* *Lophoictinia isura*		vu
Southern Whiteface* *Aphelocephala leucopsis*	VU**	

***KEY**: CR/cr = critically endangered, EN/en = endangered VU/vu = vulnerable Mi = migratory species Ma = marine species*

**Supplementary Report additions.*

***listed under the EPBC Act 31 March 2023, following exhibition of the EES.*

The EES was informed by targeted threatened fauna surveys for Striped Legless Lizard, Golden Sun Moth and Pale Sun Moth and Reddish-orange Sun Moth. Targeted surveys for these species did not record any individuals. While targeted surveys were also recommended for Growling Grass Frog and threatened and/or migratory waterbirds, due to the dry conditions during optimal survey times they were not completed. The EES concluded that there was limited suitable habitat for threatened fauna species within the development extent and the project was unlikely to result in significant impacts for any threatened fauna species listed in Table 7 above.

The proponent's peer review supported the assessment of residual impacts in the EES and also concurred that there was limited habitat for threatened fauna in the development extent. The peer review noted some limitations in the survey efforts that informed the EES, including the lack of survey for Growling Grass Frog and waterbirds and the shorter than recommended survey period for Striped Legless Lizard but overall deferred to site inspections undertaken to inform the peer review that also found limited aquatic habitat and degraded and limited suitable habitat for Striped Legless Lizard and other threatened faun species. The peer review concluded that no further targeted surveys were required.

The IAC identified a number of shortcomings in the fauna surveys undertaken to inform the EES including the limited scope of assessment due to access restrictions, dry conditions at the time of survey and a lack of formal survey within the minor utilities corridor. The IAC recommended a new monitoring measure EMM FF-0D to require baseline targeted fauna surveys and a schedule of future fauna surveys in line with project stages across the development extent, in consultation with DEECA. The IAC considered that otherwise the EMMs proposed in the proponent's day 4 version of the EMF were adequate to sufficiently avoid, mitigate or manage fauna effects.

The supplementary information noted some limitations in survey work undertaken to inform the EES as well as some amendments and minor differences to the likelihood assessment for fauna but overall concluded that due to the degraded or lack of suitable habitat, no further fauna surveys were required and significant impacts to listed threatened fauna species under the FFG Act or EPBC Act were unlikely.

Project impacts on EPBC listed species as listed in Table 7 are summarised below and discussed in detail in Appendix B of my assessment.

Growling Grass Frog *Litoria raniformis* (EPBC Act – vulnerable, FFG Act – vulnerable)

The EES recommended targeted surveys for Growling Grass Frog be undertaken but noted they were not completed due to dry conditions at the time of survey and when additional site inspections were conducted. The EES considered that suitable habitat within the study area may be present but ephemeral and likely only used by the species on an opportunistic and occasional basis during high rainfall events.

The supplementary information concluded that while Growling Grass Frog has the potential to occur near the study area, it is unlikely to occur within the development extent due to a lack of suitable habitat.

I acknowledge the consensus in the assessment of limited potential Growling Grass Frog habitat within the development extent as provided across the EES, peer review and supplementary information. I agree that on balance the development extent is unlikely to include important permanent habitat for Growling Grass Frog and the project is unlikely to result in a significant impact to the species. However, I recommend surveys and additional mitigation measures be adopted as outlined below.

Striped Legless Lizard *Delma impar* (EPBC Act – vulnerable, FFG Act – endangered)

The EES was informed by a targeted survey for Striped Legless Lizard, but no individuals were recorded. The EES found that the project would not result in a residual impact to Striped Legless Lizard.

The peer review considered that the targeted surveys for Striped Legless Lizard had been shorter than the recommended duration, however concluded that habitat within the project area was severely degraded and unlikely to be suitable for the species. The supplementary information also concluded that there was a lack of suitable habitat within the development extent for the species.

While I consider that the project is unlikely to result in a significant impact on this species, given the limitations in survey work, including the shorter than recommended targeted survey period, I recommend that surveys and additional mitigation measures be adopted as outlined below.

Golden Sun Moth *Synemon plana* (EPBC Act – vulnerable, FFG Act – vulnerable)

There are no historic records of Golden Sun Moth within the project area, however as the species is cryptic and native to grassland and grassy woodland, a targeted survey for Golden Sun Moth was undertaken over four days for the EES. No individuals were recorded during the survey and the EES found that the project would not result in a residual impact to Golden Sun Moth.

The peer review considered the targeted assessment of Golden Sun Moth had been undertaken in favourable conditions and concurred that there was potential for the species to occur within the study area in areas of suitable habitat. The supplementary information concluded that Golden Sun Moth has the potential to occur but are unlikely be present in large numbers within the development extent.

I acknowledge the findings of the EES, peer review and supplementary information and I consider that the project is unlikely to result in a significant impact on this species. However given the limitations in survey work completed to date as highlighted by the IAC, I recommend that surveys and additional mitigation measures be adopted as outlined below.

White-throated Needletail *Hirundapus caudacutus* (EPBC Act – vulnerable, migratory and marine, FFG Act – vulnerable)

The EES noted that White-throated Needletail may utilise the project area as part of a wide-ranging foraging area while in Australia between summer and early autumn. The EES found that the project was unlikely to significantly impact the species, however the removal of woodland habitat, grassland habitat and scattered trees would result in a residual impact through the loss of aerial foraging areas and a potential reduction in the number of hollow-bearing trees in the landscape that could be used for roosting. The EES noted that impacted areas of potential habitat were small, isolated remnants and not part of a core or continuous stand of native vegetation like the riparian corridor of the Wimmera River.

The peer review supported the findings of the EES and stated that the species was likely to occur and occasionally forage over the study area, particularly over wooded areas. The supplementary information concluded that the project would not have a significant residual impact on the species as important habitat for the species does not occur within the development extent.

While I consider that the project may have a residual impact on this species primarily through the removal of native vegetation and scattered trees, the impact is unlikely to be significant. However, I note some areas of residual uncertainty remain including the increase in the assessed removal of grasslands since the EES was completed and that an arboriculture assessment was not undertaken to inform the EES and therefore the total number of impacted trees that contain hollows was not assessed in the EES. I therefore recommend surveys and additional mitigation measures be adopted, as outlined below in the “Threatened fauna surveys and mitigation measures” section.

Brown Treecreeper *Climacteris picumnus* subsp. *victoriae* (EPBC Act - vulnerable)

Brown Treecreeper was listed as vulnerable under the EPBC Act on 31 March 2023, however as the listing occurred after DCCEEW’s controlled action decision for this project the species is not required to be considered under the EPBC Act by the Commonwealth Minister for the Environment and Water. The species was recorded at Darlot Swamp and Dooen Swamp (outside of the development extent) during field assessment to inform the peer review. The peer review also noted some small, fragmented areas of suitable habitat that may be occasionally utilised by the species in the project area. The peer review concluded that due to the largely degraded and limited extent of high-quality habitat in the region it was unlikely that habitat within the study was critical to the survival of the species and significant impacts were unlikely to occur as a result of the project.

The supplementary information concluded that the species was likely to occur within the development extent in small numbers and the species may be impacted by the removal of 0.6 ha of woodland habitat within the development extent. It concluded that the project was unlikely to result in significant residual impact to the species.

I consider that the project is unlikely to result in a significant impact on this species. I recommend that consideration be given to the species in line with my recommendations for surveys and mitigation measures below.

Blue-winged Parrot *Neophema chrysostoma* (EPBC Act – vulnerable)

Blue-winged Parrot was listed as vulnerable under the EPBC Act on 31 March 2023. However, as the listing occurred after DCCEEW's 'controlled action' decision for this project the species is not required to be considered under the EPBC Act by the Minister for the Environment and Water. The peer review noted that suitable habitat for the species includes grasslands, grassy woodlands and forest, but that the project area contained only suboptimal habitat and was unlikely to occur in significant numbers.

The supplementary information concluded that the species had the potential to move through the study area on migration but due to the lack of suitable habitat the project was not expected to significantly impact on the species.

I consider that the project is unlikely to significantly impact on Blue-winged Parrot. I recommend that consideration be given to the species in line with my recommendations for surveys and mitigation measures below.

Silver Perch *Bidyanus bidyanus* (EPBC Act – critically endangered, FFG Act – endangered) and **Freshwater Catfish** *Tandanus tandanus* (FFG Act – endangered)

Silver Perch and Freshwater Catfish have the potential to occur in the Wimmera River. The EES noted that while the minor utilities corridor crosses the Wimmera River, no ground disturbing works are proposed in proximity to the Wimmera River, and therefore impacts to these species would not occur.

I note that while no ground disturbance works are proposed in proximity to the Wimmera River there remains the risk of potential impacts from proposed pole top works and the proposed EMMs do not indicate how such works will be undertaken with appropriate construction environmental management measures in place. I consider that rigorous construction environmental management measures should apply to these works to ensure the residual risk of impacts during construction works is appropriately managed in line with my recommendations below.

Pale Sun Moth *Synemon selene* (FFG Act – endangered) **and Reddish-orange Sun Moth** *Synemon jcaria* (FFG Act – endangered)

Targeted surveys were conducted for Pale Sun Moth and Reddish-orange Sun Moth as a part of the EES. The EES noted that a sun moth expert was engaged to help undertake the targeted surveys. Neither species was recorded during surveys and the EES noted that Pale Sun Moth had been recorded at a regional site in 2020.

While it was not recorded during surveys for the EES and there is very poor suitable habitat within the project area, the EES found that Pale Sun Moth may be present in more intact areas of habitat outside of the development extent in woodlands and grasslands associated with Dooen and Darlot Swamps.

The EES considered that the Reddish-orange Sun Moth was not likely to occur within the project area nor within Dooen and Darlot Swamps as the principal food plant for the species' larvae is Scented Mat-rush *Lomandra effusa* and no patches of this plant species were found within the project area or nearby swamps. The EES found that the project would not result in a residual impact to either species.

The peer review concluded that both species had the potential to occur in the study area and the supplementary information further assessed that whilst there was the potential for occurrence within the study area, both species were unlikely to occur in large numbers or extensively within the development extent.

I acknowledge the findings of the EES, peer review and supplementary information and consider it unlikely that the project would result in a significant impact to Pale Sun Moth or the Reddish-orange Sun Moth. However, in light of the limitations in fauna surveys, as highlighted by the IAC I recommend surveys and mitigation measures in line with my recommendations below.

Migratory species listed under the EPBC Act and/or FFG Act and waterbirds listed under the FFG Act

The EES assessed a number of EPBC Act migratory species as likely to occur within the study area including; Glossy Ibis, Fork-tailed Swift, Sharp-tailed Sandpiper, Curlew Sandpiper, Pectoral Sandpiper, Red-necked Stint, Latham's Snipe, White-bellied Sea-Eagle and Caspian Tern. The EES also assessed several threatened waterbirds listed under the FFG Act as likely to occur within the study area including Brolga, Musk Duck, Eastern Great Egret, Freckled Duck, Hardhead and the Australasian Shoveler. The EES identified that targeted surveys were required for a number of waterbird species. However, waterbird surveys were not undertaken due to the dry conditions within the study area during optimal periods for survey.

The EES considered that where and when water is present within the development extent it has the potential to be utilised by these species. The EES noted that listed waterbirds, migratory and marine species may utilise patches of woodland, farm dams, watercourses, wetlands, open/wet paddock and scattered trees on occasion across the development extent and the project would result in some residual impacts from the removal of habitat but concluded that impacts were likely to be limited to a small number of individuals and were unlikely to be significant. The EES noted that areas of suitable habitat such as the Wimmera River and Dooen and Darlot Swamps provided the highest quality fauna habitat in the area and would not be impacted by the project.

The peer review supported the EES's assessment that the project area contained only limited areas of suitable habitat and was unlikely to result in significant impacts to listed migratory and/or marine species. The IAC noted the large number of waterbirds recorded during field survey at the dam located in proximity to but outside of the development extent as well as the numerous marine and migratory species listed under the EPBC Act that were recorded within the study area.

The supplementary information considered that further surveys for waterbirds were not required and found that the project was unlikely to result in significant impacts to any listed migratory and/or marine species or listed waterbird species.

I acknowledge the number of migratory and marine species either recorded or assessed as likely to occur within the study area and I agree with the IAC that the survey work informing the EES had a number of limitations, most relevant to this, the dry conditions that prevented further field survey. Despite the limitations in survey effort, I note the general assessments of limited aquatic habitat available within the development extent provided across the EES, peer review and the supplementary information and agree that significant effects are unlikely to occur as a result of the project

Other effects/threatened species

The EES found that Bush Stone-curlew, Diamond Dove, Hooded Robin, Diamond Firetail and Bearded Dragons would be impacted by the project through the removal of 0.92 ha of woodland habitat and 59 scattered trees. I note that Bush Stone-curlew, Diamond Firetail, Hooded Robin are three key bird species of the VTWBC and are listed under the FFG Act. Please also refer to my assessment of threatened communities above for a discussion of impacts to Victorian Temperate Woodland Bird Community. The removal of vegetation, and scattered trees in particular, would also result in residual impacts to Black Falcon and Little Eagle. Additionally, the supplementary information assessed that the project would result in a residual impact to the Square-tailed Kite, but considered the development extent did not contain important habitat for the species and the residual impact would therefore not be significant.

The EES found that the removal of agricultural land and farm dams would have a residual impact on Eastern Great Egret, but that this represents sub-optimal habitat that the species would use only on occasion.

The EES identified that the development extent and immediate surrounds have been largely cleared of vegetation and characterised by patches of remnant native vegetation and scattered trees. It stated that the proposed removal of native vegetation and trees would contribute to fragmentation of habitat by increasing the distance between areas of native vegetation and limiting the availability of 'stepping stones' of habitat across the landscape. The removal of native vegetation and trees would also result in the removal of habitat features such as nesting hollows, perching trees, roosting and foraging resources.

Threatened fauna surveys and mitigation measures

While I consider that the development extent is unlikely to support significant habitat for any listed threatened fauna species or result in a significant impact to such species, I agree with the IAC that there were a number of shortcomings with the fauna surveys conducted for the project to date. I consider that pre-clearance surveys conducted progressively prior to construction in each mining block, in consultation with DEECA, are appropriate in line with the IAC's new monitoring measures FF-0D. However, I recommend this requirement is best addressed via an amendment of EMM FF-03. I consider this will manage residual uncertainty regarding previously inaccessible areas within the mining licence area.

I support the measures in the FFMP (EMM FF-06) and refer to my recommendations relating to land clearance and habitat fragmentation as discussed above. As outlined above, I recommend that a number of commitments are strengthened to increase the success of mitigating impacts to threatened fauna. I support the commitment to progressively rehabilitate dams, subject to consultation with landowners. I also recommend amending EMM FF-06 to require assessment of habitat for threatened species in dams to be removed in the mining licence area, prior to their removal, by a suitably qualified ecologist. Where habitat features for threatened species are recorded in dams, I also recommend that EMM FF-07 require consideration of reinstating habitat features removed during rehabilitation of dams, subject to consultation with landowners.

In relation to the minor utilities corridor, while I note there was some overlap in the area of field survey for the mining licence area with this corridor, as highlighted by the IAC, no formal fauna surveys (targeted or otherwise) have been undertaken within the minor utilities corridor. In light of this gap, I recommend a new EMM (FF-10) to require further surveys for threatened fauna in the minor utilities corridor prior to any relevant approvals being sought for this area. I recommend that these surveys be developed in consultation with and to the satisfaction of DEECA. I also recommend that the results of any fauna surveys are considered and accounted for in a new EMM FF-12 which requires a design management document and detailed management plan for the minor utilities corridor to ensure any significant impacts to threatened species are avoided through design refinement and management measures.

The project also proposed to identify opportunities to rehabilitate native vegetation progressively to establish new habitat corridors and contribute to existing habitat corridors (EMM FF-07). While I support this commitment, I propose some additional amendments to EMM FF-06 to improve the likelihood that rehabilitation efforts will benefit threatened fauna species. To this end, I recommend that prior to their removal, trees are assessed for hollows and the size of hollows are recorded. This can then inform my recommended amendment to FF-07 to require consideration of suitable hollow replacements during native vegetation rehabilitation efforts. My recommendations for amendments to EMMs relating to avoidance of native vegetation removal and retention of additional scattered trees are likely to further reduce residual impacts on threatened species that rely upon this vegetation.

The EMF included an EMM (EMM FF-04) to manage potential hazards to fauna during construction. I support this measure but have suggested that the protective measures outlined in EMM FF-04 should account for the results of additional fauna surveys required under EMM FF-03 and EMM FF-10.

Finally, I note the findings of the radiation risk assessment conducted for the EES that the radiological risk to wildlife from the project would be negligible. Assessment of radiation impact and mitigation measures is further discussed in Section 5.8 of my assessment.

Groundwater dependent ecosystems

The EES identified four potential GDEs that could be impacted by the project; Darlot Swamp (terrestrial GDE), Dooen Swamp (terrestrial GDE), Yarriambiack Creek (terrestrial GDE) and the Wimmera River (terrestrial and aquatic GDE). Longerenong College and Two Mile Creek were identified as low potential GDEs and were not considered further in the EES. The EES explained that aquatic GDEs depend on groundwater baseflows and terrestrial GDEs may intermittently rely on groundwater to maintain health and examined whether the identified potential GDE's would be impacted by changes to groundwater as a result of the project, including groundwater mounding, groundwater drawdown and changes to groundwater quality.

The EES found that all potential GDEs were outside the modelled area of groundwater drawdown associated with the project and predicted no residual impacts on GDEs from drawdown. While Darlot Swamp and Yarriambiack Creek were modelled to experience some minor mounding and groundwater salinity changes, the EES also predicted that residual effects were unlikely.

The IAC examined whether GDEs had been adequately assessed and considered in the EES. The IAC noted the findings of the proponent's commissioned peer review which concluded that the EES had adequately assessed risks and impacts on GDEs and the predicted changes to groundwater were within the natural tolerance of the vegetation within the GDEs. The IAC also noted the findings of Mr Gresswell[40], a groundwater expert witness for the proponent, found that following the application of the proposed EMMs, residual impacts were expected to be minor to negligible and unlikely to occur at the magnitude, spatial extent and duration that would pose risks to groundwater environmental values at the location of receptors. The IAC concluded that impacts on GDE's had been adequately assessed. I agree with this finding.

Considering the stringent environmental objectives relating to GDEs and the ecological and cultural significance of the values associated with GDEs, the IAC recommended amendments to EMM GW-05, EMM GW-0B and EMM FF-05 which I support. These EMMs require targeted studies and ongoing monitoring to assess GDE health/function overtime. This information will provide the foundational knowledge for the project to respond and manage potential impacts appropriately. I also recommend that EMM GW-08 be amended so that this monitoring is captured through the Groundwater Management Plan and EMM FF-05 is amended to reference EMMs GW-05 and GW-0B. I discuss recommendations regarding EMM GW-08 further in Section 5.2.

Cumulative impacts

The EES examined a number of other mineral sands projects proposed in the region for their potential to generate cumulative impacts along with the Avonbank project. All projects examined were located more than 15 km away. While noting the difficulty in quantifying cumulative impacts due to a lack of publicly available data, the EES indicated that cumulative biodiversity impacts could be associated with the removal of native vegetation, reduction in the extent of TECs, impacts on threatened flora and fauna, habitat fragmentation and the loss of hollow-bearing trees. In particular, the EES identified that the removal of native vegetation across these projects could result in a significant loss of habitat features and lead to an increase in fragmentation and edge effects on existing vegetation and reduce habitat connectivity.

While the IAC did not comment on the potential for cumulative biodiversity impacts, I consider that such impacts can be effectively managed through the EMMs, as refined through my assessment. This includes my recommendation that the project avoid impacts to Greenhills Road reserve which contains a large and relatively contiguous patch of the FFG listed Northern Plains Grassland Community and provides a key habitat/ ecological linkage in the landscape. DEECA Grampians also noted in its submission that removal of the native vegetation from road reservices, including Greenhills Road, would contribute to further fragmentation across this landscape.

Assessment

Mining licence area

It is my assessment that some of the residual impacts on threatened biodiversity values in the mining licence area are likely to be significant. This is particularly the case for the FFG listed threatened Northern Plains Grassland ecological community, which is likely to experience significant and unacceptable impacts without further avoidance and minimisation, in particular avoidance of clearing large patches of this TEC along the Greenhills Road reserve. However, based on the information before me and with the adoption of the recommended modification to the project in the mining licence area (i.e. avoiding Greenhills Road reserve), and the revisions to the EMMs recommended by the IAC and in this assessment, I consider the likely impacts on native vegetation and threatened ecological communities to be acceptable.

[40] Tabled Document 035, Proponent, Expert witness statement of Rikito Gresswell

I support the findings of the IAC that the survey work which informed the EES had some deficiencies. However, I do not support the IAC recommendations that the additional survey work required is deferred and conducted over the life of the project in stages to inform offsets. I agree with DEECA that the adequacy of native vegetation mapping and required offsets needs to be determined ahead of any relevant approvals being sought, and recommend changes to EMMs FF-03, FF-06, and FF-08.

It is my assessment that the loss of up to 0.208 ha of Northern Plains Grassland TEC within Molyneaux Road reserve is acceptable, in order to facilitate the pivotal mining of areas south of Greenhills Road reserve. This recommendation is reflected in the creation of a new EMM (EMM FF-09) and amendments to EMM FF-12.

I consider that DEECA Grampians will be best placed to consider whether impacts on the Vittadinia and Calotis species can be acceptably managed once further survey work is undertaken to clarify these matters and be the basis of necessary approvals.

Minor utilities corridor

It is my assessment that some of the residual impacts on threatened biodiversity values in the minor utilities corridor are likely to be significant including for Weeping Myall, and several flora species listed under the FFG Act, such as Calotis and Vittadinia.

I consider the loss of 19 Weeping Myall to be significant and unacceptable and recommend that the project design and implementation avoids impacts to this species, as supported by my changes to EMMs FF-06 and FF-07.

Consistent with the findings of the IAC, I consider that the project has not adequately considered the potential for some threatened flora and fauna to be present within the minor utilities corridor, and subsequently the potential for some threatened ecological values to be impacted by the project. I have made recommended changes to a range of EMMs including the addition of new EMMs FF-10, FF-11 and FF-12 to address these residual uncertainties. This includes the addition of EMM FF-10 and FF-12 to survey for and avoid impacts to threatened fauna in the minor utilities corridor, as well as the development of a design management document which demonstrates how the project design and construction meets the requirements outlined in this assessment. I recommend that this additional survey work and design management be undertaken prior to any relevant approvals being sought for the minor utilities corridor to ensure that works can be designed and implemented to manage biodiversity impacts to acceptable levels.

My detailed assessment in relation to all relevant MNES is provided in Appendix B, which includes consideration of potential effects on species and communities listed under the EPBC Act.

5.2. Surface water and Groundwater

Evaluation objective

Minimise effects on water resources and on existing and potential future beneficial and licensed uses of surface water, groundwater and related catchment values over the short and long-term.

Assessment context

Surface water and groundwater effects are addressed in Chapter 16 Surface Water, Chapter 17 Groundwater, Technical Appendix K Surface Water Impact Assessment and Appendix L Groundwater Impact Assessment of the EES. Water effects are addressed in Chapter 11 of the IAC Report.

WIM Resource has proposed 9 EMMs to deal with surface water effects and 16 EMMs to deal with groundwater effects (7 surface water avoidance and mitigation measures and 2 monitoring measures; 11 groundwater avoidance and mitigation measures and 5 monitoring measures). Of these, 4 surface water EMMs (3 avoidance and mitigation measures and 1 monitoring measure) and 10 groundwater EMMs (5 avoidance and mitigation measures and 5 monitoring measures) have been the subject of recommendations by the IAC (refer Appendix G, IAC report).

Surface water and water supply

The project area is located in the Wimmera River catchment in the southwest area of the Murray Darling Basin. There are no designated watercourses in the project area, however, there are three watercourses within the vicinity of the project including Yarriambiack Creek, Two Mile Creek and the Wimmera River. There are also two wetlands nearby including Dooen Swamp, which connects to the Wimmera River during high flow events, and Darlot swamp, which is fed by Yarriambiack Creek.

The project will have a net water requirement of up to 4.6 gigalitres of water per year and is proposed to be a zero-discharge site with sufficient water holding capacity within the mine void and process water dams, such that there will be no discharge outside operational areas.

The EES investigated the potential for the project to cause riverine flooding, change local drainage patterns resulting in downstream impacts and reduced water availability at sensitive receptors; and offsite water discharges resulting in poor water quality in downstream environments.

The EES found that the project would have a negligible residual impact on surface water values.

Groundwater

Groundwater beneath the project is expected to flow slowly from south-east to north-west. The water table beneath the project site occurs in the Loxton-Parilla Sands (LPS) aquifer, at 12 to 34 m below ground, comprises sands with some gravels and clays; and has a low to moderate hydraulic conductivity. The underlying Geera Clay aquitard is 30-40 metres thick, which assists in limiting the vertical hydraulic connection between the LPS aquifer and regional Renmark Group and Basement aquifers below.

Groundwater is brackish and highly saline and not suitable for potable use. Key sensitive receptors include registered stock bores located to the south-east of the project and GDEs of Darlot and Dooen swamps and the Wimmera River.

The EES investigated the mining and mineral processing activities that may affect groundwater resources over the life of the project. The assessment focused on activities within the mining footprint, associated with the predicted drawdown (lowering of groundwater level) and mounding (increasing of groundwater level) zones and potential process water migration pathways. The key issues relevant to groundwater relate to changes in groundwater levels due to dewatering and tailings replacement, and potential localised changes in groundwater quality.

The EES found that the project would have a minor to negligible impact on groundwater values.

Discussion

Surface water

I agree with the IAC that the key issues relevant to surface water are whether the:

- modelling informing the Surface Water Impact Assessment is adequate and appropriate;
- risk of flooding impacts associated with the project are acceptable;
- impacts on water quality are acceptable; and
- project's water requirements are achievable.

Flood modelling and impacts

Submissions to the IAC questioned the adequacy of the surface water modelling and whether it represented the 1 per cent annual exceedance probability (AEP) inclusive of the potential impacts of climate change on future flood levels.

The proponent's expert witness Mr Hughes gave evidence that the hydraulic modelling gives a good estimate of the direct catchment runoff inundation potential across and surrounding the project area. He explained that the project area does not have a significant external catchment area draining to it and is generally located at the top of a very flat catchment. In addition, the overland flow paths that intersect with the project area are relatively minor and shallow. Mr Hughes also advised the IAC that he considered the assessment of climate change to be realistic in terms of its limited potential to impact on surface water flows.

The IAC found that flood modelling informing the EES was appropriate, and the effects of flooding were adequately considered. They concluded that the project would not be impacted by riverine flooding or by significant local flooding, even under extreme events or those that may be elevated in the future due to climate change. The IAC noted that local drainage works are required to prevent water pooling on rural roads and within productive agriculture areas.

I agree with the IAC that the modelling used to inform the Surface Water Impact Assessment was appropriate and that flooding impacts are acceptable. EPA's submission to the IAC did not raise any concerns with the modelling conducted and evidence provided by the proponent's expert witness indicates that the assessment followed standard guidelines and adopted a conservative approach. I also consider that the measures proposed through EMM SW-04 to prepare an integrated mine drainage and erosion plan prior to opening new mining cells or constructing new infrastructure along with the Surface Water Management Plan (SWMP; SW-06) will assist in managing local drainage effects.

Water quality impacts

A number of submitters raised concerns regarding how the project could impact on water quality in the region.

The proponent's expert witness Mr Hughes outlined that water quality would not be affected by the operation of the mine as the water balance modelling showed that there would be no site runoff from the mine of surface water to the Wimmera River. Mr Hughes indicated that the SWMP (EMM SW-06) would be a key mitigation measure for the project. EMM SW-02 also requires that the process water storage, transfer areas and sumps are designed with a capacity to contain a significant rainfall even of at least 1% AEP, such that there is no discharge of surface water from operational areas.

In its submission, the EPA recommended changes to the SWMP to specifically reference the Environment Reference Standard (2021) and the Australian and New Zealand guidelines for fresh and marine water quality (2018). The IAC supported EPA's recommended changes to this EMM; and made further changes to include routine updates and review of surface water modelling over the life of the project prior to entering each new mining Block. I support these recommendations as they will clarify the state regulatory and guidance framework that underpins the SWMP and monitoring; and promote verification and improvement to the project's surface water model overtime. I have recommended a further minor change to this EMM to include the relevant dates of key legislation and standards.

In its submission, Council asked that they be consulted during the preparation of the SWMP. The IAC accepted Council's request and further amended EMM SW-06 to this effect. I also support this addition and note that Council is an important stakeholder being the responsible authority for the WIFT.

The IAC found that water quality had been adequately considered in the EES and was satisfied that there was unlikely to be any change to water quality as a result of the project because all site run off would be contained with zero discharge to downstream environments, even in the most extreme rain events. I agree with this finding and consider that the range of measures proposed to manage offsite water discharge (EMM SW-02), site drainage (EMM SW-04) and other potential effects on water quality (EMM SW-06) provide a robust framework to manage the project's surface water effects.

Water availability

Submitters raised concerns about how the project water requirements could impact on water availability in the Wimmera River catchment.

Grampians Wimmera Mallee Water and the proponent have agreed to commercial terms for supply of 4.6 gigalitres of water per year for the project with a daily peak demand volume of 17.2 megalitres. Consistent with the IAC, I am generally satisfied that the project water requirements can be met by the agreed "unallocated rural pipeline water" that is

at the discretion of Grampians Wimmera Mallee Water to allocate on commercial terms. This will be supported through EMM SW-05 which requires that a water efficiency program must be incorporated into the SWMP to provide a framework to investigate water use efficiency and recovery opportunities, with consideration to any new or emerging technologies over the life of the mine. Based on this, I support the IAC finding that water requirements have been adequately considered.

Conclusion

The EES concluded that the project will not impact riverine flood levels and will only have a negligible impact on the hydrologic regime of the Wimmera catchment. Local drainage can be effectively managed; and all potentially impacted site run off can be contained, with zero discharge to downstream environments. The IAC found that, subject to its recommendations, the measures proposed in the EMF are adequate to sufficiently avoid, mitigate or manage surface water effects, and that surface water effects are acceptable. I support this finding and acknowledge that the surface water mitigation measures effectively promote water minimisation, address water availability and storage, and manage the project's surface water effects over the lifespan of the project.

Groundwater

I agree with the IAC that the key issues relevant to groundwater are whether the:

- modelling and assessment informing the Groundwater Impact Assessment are adequate and appropriate;
- groundwater quality impacts are acceptable; and
- monitoring measures are adequate.

Adequacy of modelling and assessment

Some submissions to the IAC raised concerns about uncertainties associated with the Groundwater Impact Assessment including the limitations and assumptions and what they considered to be a poorly understood groundwater recharge process.

The proponent's expert witness, Mr Gresswell told the IAC that uncertainty is inherent in hydrogeological assessments, and therefore, conservative assumptions were applied. He explained that the assessment benefited from data collected during the demonstration trial, which significantly reduced uncertainty associated with the water balance, tailings material properties, seepage rates and groundwater response. A detailed quantitative uncertainty analysis was also undertaken as part of numerical groundwater modelling, using a conservative range of parameter values to thoroughly assess model uncertainty.

The IAC found that the modelling and assessment was adequate and suitable and noted that it is appropriate that conservative assumptions were applied. I support the IAC's finding. The Groundwater Impact Assessment Report and numerical groundwater modelling were independently peer reviewed by Mr Hugh Middlemis and Mr Gary Meyer, both experienced hydrogeologists; and the assessment was deemed to be consistent with best practice guidelines.

Acceptability of groundwater effects and monitoring

Dewatering and tailings replacement

Mining of the ore would intersect the water table at some locations across the mining licence area. The IAC heard evidence from the proponent's expert witness that *"This would necessitate temporary dewatering of the LPS aquifer, resulting in temporary drawdown (lowering) of the water table until the ore is extracted, and the mined area is progressively backfilled. Following processing of the extracted ore, wet tailings would be returned to the mined pits"*[41].

[41] *Section 4.1 of TD 029 Expert Witness Statement of Rikito Gresswell (Groundwater)*

Most of the water is expected to be recovered, however approximately 10% has the potential to seep into the LPS aquifer and cause mounding (raising) of the water table.

Some submitters raised concerns about the depletion of groundwater due to temporary dewatering. The IAC heard evidence from Mr Gresswell that the project is unlikely to deplete groundwater, with less than a 10% reduction in available drawdown expected at registered bores due to temporary dewatering. Mr Gresswell concluded that as the volume of fresher water seeping from the wet tailings is expected to be larger than the volume of groundwater removed from the aquifer, there will be a net increase in groundwater overtime.

Several EMMs were proposed to manage and monitor the potential effects of groundwater drawdown and mounding. These include requirements for process water and groundwater monitoring (EMM GW-0C and GW-0A) and development and implementation of a Groundwater Management Plan (GW-08).

The IAC accepted the evidence of Mr Gresswell that impacts on groundwater are acceptable and noted that depletion of groundwater is unlikely due to temporary dewatering. I consider that the EMMs provide an appropriate framework to avoid and minimise impacts from the project to groundwater. Specifically, the groundwater management plan will include trigger levels and contingency measures to manage project related groundwater drawdown and mounding effects; and the monitoring program will establish a groundwater gauging dataset that will allow the project to monitor changes in groundwater levels overtime to aid in the assessment of potential impacts to sensitive receptors (including bore users and GDEs).

Localised changes in groundwater quality

Several submissions raised concerns around the potential for the project to impact groundwater quality.

The EES assessed the significance of residual impacts on groundwater quality in the context of the identified environmental values of groundwater, relevant water quality criteria that apply to these environmental values and the linkage between the receptors of these environmental values and project induced groundwater quality effects. The EES found that the LPS aquifer is highly saline and is unsuitable for potable use and some livestock (for drinking). In their submission Council confirmed that stock and domestic use of groundwater in the vicinity of the project area is unlikely due to poor quality. The groundwater bore data indicated that the mean ambient background concentrations for some metals in groundwater exceeded the water quality criteria adopted for the protection of aquatic ecosystems.

The EES found that process water from placement of mine tailings would be fresher (less saline) than the surrounding groundwater and that this 'freshening' would be limited to within 300m of the pit boundary (over 62 years) and unlikely to impact on groundwater receptors.

Some submissions raised concerns about the presence of hexavalent chromium identified in baseline and test pit trials and the use of polyacrylamide flocculants for the project, specifically around their fate and transport.

The EES reported that hexavalent chromium was detected in a number of bores during baseline groundwater monitoring and in test pit trials, with some measured concentrations exceeding the adopted objective for groundwater dependent ecosystems and species. The IAC was provided evidence in Technical Note 13[42] which explained that "*…while hexavalent chromium may temporarily form, prevailing conditions are likely to result in reduction of any toxic hexavalent chromium to the non-toxic trivalent chromium, which would attenuate by precipitation, limiting mobility to close proximity to the area disturbed by the mining and not resulting in long term presence of hexavalent chromium.*"

As ore recovery involves processing soils wet or in a slurry, use of flocculants is required to remove suspended solids to allow water to be recovered for reuse in ore processing and disposal of tailings to the mine void. Technical Note 13 explained that polyacrylamide-based flocculants would biodegrade in the subsurface in a matter of days to weeks. As a result, any risk to human health and the environment from the use of polyacrylamide-based flocculants would be low.

[42] Tabled Document 86

EMM GW-02 sets out the parameters for adding a polymer flocculant to the mine tails to promote water recovery. I recommend EMM GW-02 be amended to include more specific information regarding the dosage of the proposed flocculants to be used in the mining process to respond to stakeholder concerns. I also support the requirement to monitor chemicals of potential concern (EMM GW-0E), including analytes acrylamide and hexavalent chromium through the GWMP, in line with EPA's recommendation.

In its submission the EPA noted that the groundwater EMMs as detailed in the EMF do not clearly outline benchmarks by which predicted environmental outcomes will be measured. I agree and consider that the groundwater EMMs would benefit from further refinement to be more specific and measurable and better reflect the requirements of the EP Act 2017. I also suggest that EMMs GW-08, GW-0A and GW-0E be amended to specify that the groundwater management plan and any groundwater monitoring needs to consider and build on the findings of the groundwater impact assessment prepared for the EES. I support the adaptive management approach described in the GWMP (EMM GW-08) but recommend a feedback mechanism needs to be incorporated to link review of project operations with any significant impact identified during groundwater monitoring. The IAC recommended removing the requirement to review and update the GWMP from EMM GW-08 and Potential Acid Sulfate Soil Management Plan (EMM GW-09) **and** instead including an overarching statement on this in the preliminary text of the EMF (Section 24.7.1). I consider that it should be retained in EMMs GW-08 and GW-09 but align with the IAC's suggested wording in Section 24.7.1 of the EMF which includes a minimum timeframe for management plans to be reviewed and updated. I consider that this will assist in providing stakeholders with greater confidence that traffic management measures will continue to be adapted during the life of the project based on any changes to requirements and/or operational experience.

EPA submitted that the deposition of waste into the mine void and potential seepage requires an A18 permit under the Environment Protection Regulations. EPA recommended that the project's groundwater management plan (EMM GW-08) be consistent with any A18 permit granted. I note that the EMF requires that the groundwater management plan be developed in consultation with EPA and consider that this should provide the opportunity for the project to demonstrate how EPA's permit requirements have been addressed.

The IAC accepted the evidence of Mr Gresswell that impacts on groundwater are acceptable and noted that contamination and other groundwater quality impacts are unlikely in the context of the environmental values and relevant water quality criteria. The IAC found that subject to its recommendations, the measures in the EMF are adequate to sufficiently avoid, mitigate or manage groundwater effects, and impacts on groundwater are acceptable. I support this finding subject to the IAC's recommended changes to the project's groundwater EMMs as well as mine. I consider that the EMMs, including the requirement to prepare and implement a groundwater management plan (EMM GW-08) and the tailing strategy (EMM GW-02) provide a suitable framework for managing project related groundwater effects. The range of groundwater monitoring requirements proposed including monitoring of chemicals of potential concern (EMM GW-0E) and process water monitoring (GW-0C) will also allow for early detection and management of any potential risks.

Assessment

It is my assessment that:

- Flooding, water quality and availability impacts have been adequately considered and are acceptable.
- The surface water EMMs are adequate to sufficiently avoid, mitigate and manage the project's surface water effects subject to the IAC's and my recommended changes to EMM SW-06.
- The groundwater modelling and assessment is adequate and groundwater effects are acceptable.
- The groundwater EMMs are adequate to sufficiently avoid, mitigate and manage the project's groundwater effects subject to my recommended changes to EMM GW-01 – GW-09 and GW-0A – GW-0E.

5.3. Land use and planning

Evaluation objective

To minimise adverse social, land use and infrastructure effects.

Assessment context

Land use and planning effects are addressed in Chapter 8 Land Use and Planning and Appendix B Land Use and Planning Impact Assessment of the EES and discussed in Section 15.4 of the IAC Report. WIM Resource has proposed three EMMs that deal with land use and planning effects and two have been the subject of recommendations by the IAC.

The current land use within the mining licence area (3,426 hectares) is predominately broadacre agriculture, across 25 separate private landholdings. There are four residential dwellings and small sections of Crown land and public land. Part of the mining licence area is located within the Farming Zone (FZ) and is subject to an Environmental Significance Overlay (ESO) directly to the north and south boundaries of the WIFT and a Land Subject to Inundation Overlay (LSIO) located to the south of the WIFT area (within the mining licence area).

The WBA (90 hectares) is located outside the mining licence area in the WIFT Precinct, a logistics and industrial area. It is located in the Special Use Zone, Schedule 9 (SUZ9) and is subject to a Design and Development Overlay Schedule 11 (DDO11). The SUZ9 is divided into six precincts for industrial uses. The general purpose of SUZ9 includes mineral sands processing and storage handling. Precinct 2 of the SUZ9 is intended for the purpose 'To provide for industry and warehousing involved in the storage and transfer of mineral sands and other earth resources on land generally in sub precinct 2'. Additionally, the purpose of sub-precincts 2, 3 and 4 include reference to storage and transfer of mineral sands, and mineral sands processing and storage.

Outside both the mining licence area and WBA is a 14 kilometre (30 hectare) minor utilities corridor which is intended to provide power and water connections to the WBA to service the project. The powerline infrastructure would run through 29 private land parcels and various public land which fall into the following zones: FZ, Transport Zone schedules 1 & 2 (TZ1, TZ2), the Public Park and Recreation Zone (PPRZ), the Public Conservation and Resource Zone (PCRZ) and the Public Use Zone schedule 1 (PUZ1). The water pipeline would extend through 12 private land parcels as well as several public land parcels and within the FZ, TRZ1, PUZ2, and TRZ2.

The project has the potential to generate land use and planning impacts through:

- introducing inconsistencies between project objectives and the Planning Policy Framework and Municipal Planning Strategy; and State, regional and local policies;
- temporary changes to land use from agriculture to mining within or adjacent to the development extent; and
- other commercial or industrial developments may be attracted to the area as an indirect effect of the project, resulting in agglomeration impacts.

Discussion

Consideration of planning policy

To provide context for my assessment I have considered national, State and regional plans, State planning provisions, the Horsham Rural City Council Planning Scheme, and the Planning Policy Framework of the Victorian Planning Provisions. The relevant objectives of planning in Victoria are specified in Section 4 of the Planning and Environment Act, which seek to:

- provide for the fair, orderly, economic and sustainable use and development of the land;
- provide for the protection of natural and man-made resources and the maintenance of ecological process and genetic diversity;
- facilitate development in accordance with these objectives; and
- balance the present and future interests of all Victorians.

Several submitters considered that the project aligned with relevant strategies and policies while others raised concerns that the project was not supported by policy. Those concerned by lack of policy support for the project sited higher strategic priorities (such as those relating to agriculture, contaminated land, environment, amenity), non-compliance with planning objectives and misalignment with the Commonwealth Critical Minerals Strategy as it does not strengthen domestic supply chains.

The EES stated that the project was consistent with State and local planning policies, except for the protection of agricultural land. Within the mining licence area and minor utilities corridor, the project is located on land zoned as Farming Zone. Agricultural land across Victoria is identified in State and local planning policies as an important asset which requires protection from permanent land use change. Resource extraction and mining is also identified as an important resource, when in balance with surrounding land uses, environmental values and social and economic factors. There is strong planning policy support for both the protection and retention of agricultural land and for mining. Planning policy requires a balance between a change of use from agricultural land to mining, and the impacts on surrounding land uses.

Appendix F of the IAC report outlines the regulatory context for the project including relevant strategies and policies that support the project and none of these policies conflict with each other's intent. I am satisfied that the temporary use of land for mining is contemplated by Clause 14.01-1S of State planning policy and the Farming Zone and is also supported by policies related to mineral resources.

Draft planning scheme amendment (C84hors)

Under Section 42(7) of the MRSD Act, a planning permit is not required for mining works and activities within the mining licence area if the proposal has been assessed through the EES process. As noted in section 4 of this assessment, a draft PSA (C84hors) was prepared by the proponent and included with the exhibited EES. The draft PSA proposes to introduce an Incorporated Document into the Horsham Rural City Council Planning Scheme and apply the Specific Control Overlay (SCO) to the WBA (located outside of the mining licence area). The Incorporated Document relates to the use and development of land in the WBA for mineral processing and other infrastructure. The Incorporated Document would also exempt the works from requiring additional planning permit approval, provided that the works are carried out in the SCO area and in accordance with the conditions set out in the document. There is nothing in the MRSD Act which prohibits the processing of ore outside the mining licence area. The proponent's draft PSA proposes the Minister for Planning be the planning authority for the amendment. As the responsible authority for the WIFT, Horsham Rural City Council would be the responsible authority under the planning scheme.

Several submissions, including one from Council, questioned the appropriateness of the secondary processing facility being located outside the mining licence area and regulated through planning controls introduced through the planning scheme amendment C84hors. Council's concerns included: ambiguity around why the secondary processing facility is located outside the mining licence area, preference for one authority or Act to oversee the project, duplication of regulatory documents under both governing Acts and lack of council resources for the ongoing regulation of compliance and enforcement of mining activities which are not a core council responsibility. Council's submission also acknowledged the benefit in ensuring activities in the WIFT were subject to Council oversight and in avoiding having multiple authorities responsible for different parts of the WIFT. As a result, the Council submission focussed on ensuring the Incorporated Document is 'fit for purpose', appropriately addresses matters identified in the EES and provides a clear framework for approval and ongoing compliance. Council's submission and the IAC concluded that the impacts identified in the EES could be managed through the proposed framework set up through an SCO and Incorporated Document.

The planning controls proposed introduced through the draft PSA, including the SCO and Incorporated Document are generally acceptable as an avenue to manage works outside the mining licence area; and as noted by the proponent many other major projects throughout Victoria have previously utilised similar planning mechanisms to regulate project works. I agree with the IAC's conclusion that although there may be confusion around the differing regulatory tools for the project, the project's WBA aligns with the current land use and development already existing in the WIFT, specifically the intention of the SUZ9. It is my view that the environmental impacts can be acceptably managed through the implementation of the proposed EMF and regulatory planning framework, as refined through this assessment.

The IAC recommended a number of modifications to the Incorporated Document as detailed in Appendix H of their report and discussed in Section 4 of this assessment. I support the majority of the IAC's recommended changes to the Incorporated Document as outlined in Section 4 of this assessment. I also recommend a minor change to EMM LP-01 to reference the correct figure in the EES showing the proposed location of the WBA.

Net community benefit

As discussed in Section 5.19 of this assessment, the EES predicted that the project will generate benefits for the region and community through economic growth, increased employment opportunities and community support programs.

Many submissions acknowledged and supported the significant economic and social benefits of the project. Some submitters, including Council, considered that the broader regional economic benefits of the project may be overstated, and short term. Council considered that although the EES didn't fully consider some factors, the overstatement of benefits was 'not to a significant extent'.

The IAC was generally satisfied that the project provides a balanced approach to managing the environmental effects for "net community benefit and sustainable development for the benefit of present and future generations". It noted that while the project is expected to have economic and social benefits for the broader community, it will also have significant impacts on the directly affected landholders. This issue will be considered further when I am asked to make a decision under the Planning and Environment Act for the project.

Land use changes

As discussed above, the project will temporarily remove agricultural land within the mining licence area from production, but aims to return the land to agricultural use, following rehabilitation. The timing, extent and duration of displacement varies considerably across the project area (between 6 to 30 years). The EES indicated that mined land would be available for agricultural production within four years after cessation of mining in that area, when rehabilitation is complete.

A number of landholders raised concerns in their submissions about the economic effects of reduced agricultural production within the mining licence area and the ability to rehabilitate land to its previous agricultural land use and subsequent future use. Concerns were also raised in submissions by landholders that changes in amenity associated with the project, including increased air and noise emissions along with changed traffic conditions could disrupt land uses in proximity to the project.

The IAC accepted that the temporary loss of agricultural land would be offset by the benefits of resource recovery. Landholders within the mining licence area would be directly impacted by this change and these impacts are discussed further in sections 5.8 and 5.9 of my assessment. EMM LP-02 also sets out the requirement to negotiate land access agreements with relevant landholders. A range of EMMs have been proposed to return the land in the mining licence area to a productivity commensurate with pre-mining and enable its return to agricultural production (see Section 5.11). EMMs have also been proposed to manage associated effects from the change in land use including displacement, changes in amenity and traffic conditions.

I support the IAC finding that with implementation of these measures proposed in the EMF, and refined through this assessment, the land use impacts can be acceptably managed. I also support the IAC's recommended change to EMM LP-02 to reference equivalent updated legislation when referring to the MRSD Act, noting the reforms that are underway.

Agglomeration impacts

The EES identified that the project has the potential to attract other commercial or industrial developments to the area, resulting in agglomeration impacts. It found that potential effects can be effectively managed through the existing planning framework as any rezoning of surrounding land would need a strategic justification and assessment by State government agencies.

The planning zones surrounding the project are the Farming Zone and Township Zone and additional commercial and industrial development would require a planning permit under the Horsham Rural City Council Planning Scheme or a PSA. A PSA would be required to change the current zoning surrounding the project and would be subject to a strategic justification assessment against existing State, regional and local planning policies. The IAC report did not address this specific issue however I consider that any agglomeration impacts can be effectively managed through existing State planning policies, frameworks and any necessary approval decisions that may be required.

Assessment

It is my assessment that:

- The project does not conflict with State planning policy and there is broad policy support for mining in the Horsham Rural City Council Planning Scheme.
- The land rehabilitation strategy and measures in the EMF, including recommended amendments proposed by the IAC and in this assessment, are appropriate for managing land use impacts and land use impacts are acceptable and temporary.
- There are no tangible concerns regarding the possible future agglomeration impacts on land surrounding the project.

5.4. Traffic and transport

Evaluation objective

Minimise adverse social, land use and infrastructure effects.

Protect the health and wellbeing of the community, and minimise effects on air quality, noise, visual and social amenity.

Assessment context

Traffic and transport effects are addressed in Chapter 9 Traffic and Transport and Technical Appendix C Road Traffic Impact Assessment of the EES and in Chapters 7.4 and 9 of the IAC Report. WIM Resource has proposed nine EMMs to manage traffic and transport effects (seven avoidance and mitigation measures and two monitoring measures) and four avoidance and mitigation measures have been the subject of recommendations by the IAC.

WIM Resource proposes to transport HMC from the WBA to the Port of Portland by B-double trucks, primarily via the Henty Highway, a gazetted A-double highway and Wimmera Highway, a gazetted B-double highway. The bulk of the traffic movements associated with the project will occur during operations. The EES indicated that during operations, the project would generate up to 27 HMC haulage vehicle trips between the WBA and the Port of Portland each day, equivalent to 54 heavy vehicle movements every 24 hours, or 2.25 movements every hour. Operational personnel movement was predicted to predominantly originate from Horsham and travel to and from the mine on the Wimmera and Henty highways and generate approximately 215 light vehicle movements per day.

The use of rail rather than road to transport HMC from the WBA to the Port of Portland was considered as a part of the alternatives assessment for the EES but not assessed in detail through the Traffic Impact Assessment. The EES indicated that use of rail to transport HMC was not feasible due to operational constraints associated with the existing rail infrastructure and that there would be significant costs associated with undertaking the necessary upgrades to the rail line to enable its use by the project.

Vehicle access to the WBA is proposed to be from the Wimmera Highway and the project would require road infrastructure works at the Wimmera Highway/WBA intersection to accommodate a channelised right turn lane and basic left turn lane.

Road closures would also be required in the mining licence area to facilitate mining operations. The EES reported that the local road network is currently used by no more than 50 vehicles per day and that vehicle types vary from light vehicles to farm machinery.

Traffic and transport requirements for the project have the potential to generate a number of effects on existing transport infrastructure and users:

- deterioration of road condition, particularly from HMC truck movements on the haulage route;
- increased congestion (resulting in increased travel time) associated with the additional light and heavy vehicle movements;
- compromised road function and safety issues associated with additional light and heavy vehicle movements;
- disruption and access constraints due to road closures; and
- cumulative impacts associated with multiple projects in the region relying on the same road network.

Road traffic noise and vibration, particularly at night, can also disturb sleep and effect amenity. These effects are discussed further in sections 5.5 and 5.9 of my assessment respectively.

Discussion

The key traffic and transport issues identified by the IAC and discussed in my assessment relate to:

- acceptability of impacts on the arterial road network from HMC truck movements;
- whether the project should be required to transport HMC by rail rather than the arterial road network;
- acceptability of impacts from local road closures with mitigation measures in place; and
- whether measures to rehabilitate local roads are acceptable.

Acceptability of impacts on arterial road network

Submitters to the IAC raised several concerns about project related heavy vehicle movements and to a lesser extent, personnel movements, on the arterial road network. Council expressed concern about the impact of haulage trucks on the condition of the arterial road network. I acknowledge these concerns and the potential for road deterioration to lead to road safety impacts.

The EES found that of all the route options considered for HMC haulage, the chosen route along Henty Highway was of the highest standard of arterial roads. The residual impact on the function and safety of the arterial road network from project related vehicle movements was assessed as negligible.

The IAC heard evidence from the proponent's traffic expert witness, Mr Walley, that all arterial roads to be used by the project are gazetted heavy vehicle routes suitable for heavy vehicles associated with the project. Mr Walley advised the IAC that DTP has a statutory duty to ensure that public roads are inspected, maintained and repaired to an appropriate standard.

The IAC did not agree with Council that the Incorporated Document be amended to require that the proponent be made responsible for road impacts across the region noting that these roads are also used by many vehicles not associated with the project. I agree with the IAC while also supporting their finding that increased heavy vehicle movements associated with the project along the proposed haulage route has the potential to increase road deterioration. I support the intent of the IAC's amendments to EMM TM-01 relating to the HMC haulage route. In particular, the requirement to consult with DTP as a part of periodic reviews of the preferred road transport route and consider maintenance effects as a part of these reviews. I also support the intent of the IAC's suggested change to EMM TM-01 to require that the proponent consult with DTP when significant issues arise regarding road safety, however I recommended that this be reworded to require that consultation with DTP begins when the proponent becomes aware of any road condition or maintenance issues that could pose a risk to road safety. I consider that this change will enable a more proactive approach to managing any potential safety risks associated with road deterioration.

Council expressed concern about impacts to service levels from any road closure associated with the construction of the proposed access to the WBA from the Wimmera Highway. Council also raised concerns about the proposed design of this intersection, including the lack of an acceleration lane and insufficient sight lines.

Mr Walley, the proponent's expert witness, indicated that construction of the proposed Wimmera Highway/WBA intersection would involve works to Wimmera Highway that could be expected to cause temporarily disruptions to road traffic for a period of up to three months. He also noted that the proposed design of the intersection complies with relevant Austroads and DTP requirements.

I consider that the TMP (EMM TM-02) can adequately manage the impact of any temporary disruption to service levels from works associated with construction of the new Wimmera Highway/WBA intersection. However, I recommend a change to EMM TM-05 Road Infrastructure Improvements (noted as EMM TM-04 in the IAC report) to require that the proponent consult with Council on the design of this intersection. The IAC indicated that this EMM adequately addressed design requirements for this intersection, but this change will ensure that Council views, as the responsible authority for the land covered by the WIFT, are considered in its design.

Submitters to the IAC raised concerns about safety from interaction between haulage vehicles and school buses and increased travel times for other road users on the arterial road network from project generated traffic. Council also suggested that a Green Travel Plan was needed as a condition of the Incorporated Document, in line with EMM TM-03 to minimise private vehicle use by project workers to and from the site.

Mr Walley drew on findings from the EES which indicated that project generated traffic would have a minimal impact on the road network service level or road safety. Mr Walley also provided evidence that public buses already interact with heavy vehicles in major towns along the haulage routes and school buses already interact with heavy vehicles on Henty Highway and other arterial roads. Mr Walley provided evidence that under a worst-case scenario, cumulative increases in vehicle traffic would be noticeable on some sections of Henty Highway, particularly between Horsham and Hamilton. However, in the context of existing traffic volumes and the traffic capacity of Henty Highway, Mr Walley indicated that it was unlikely to create a material change in service levels.

The IAC was satisfied that the project HMC haulage trucks would not generate a significant additional risk to safety compared to existing conditions. I consider that the TMP will be an important tool for managing this risk and recommend that EMM TM-02 be amended to specifically require that measures be developed as part of the TMP to mitigate any potential public safety risks associated with HMC haulage trucks interacting with school and public buses.

I acknowledge concerns raised in submissions that project related heavy vehicle movements could impact on travel times from increased congestion and note that the project would rely on gazetted arterial roads designed to accommodate such vehicles. To this end, I consider that the TMP and haulage route EMMs (EMM TM-01 and TM-02) are sufficient for managing any potential impacts on travel times and ensuring periodic review of the preferred road transport route with regard to potential effects on travel times. The IAC recommended removing the requirement to review and update the TMP from EMM TM-02 and instead including overarching statement on this in the preliminary text of the EMF (Section 24.7.1). I consider that it should be retained in EMM TM-02 but align with the IAC's suggested wording in Section 24.7.1 of the EMF which includes a minimum timeframe for management plans to be reviewed and updated. I consider that this will assist in providing stakeholders with greater confidence that traffic management measures will continue to be adapted during the life of the project based on any changes to requirements and/or operational experience.

I agree with the IAC (and Council) that the Green Travel Plan should be included as a condition in the Incorporated Document, consistent with the requirements of EMM TM-03 which is intended to apply to the whole project. I also agree with the IAC that opportunities to reduce traffic impacts from personnel movement will be an important consideration when developing the EMP for the WBA. Measures such as this may assist in encouraging the uptake of more sustainable transport options, such as carpooling, by workers travelling between Horsham and the WBA and in turn assist in minimising impacts on congestion and travel times for other road users.

With the IAC's and my recommended changes to EMMs, I agree with the IAC finding that traffic and transport effects on the arterial road network can be acceptably managed. The traffic and transport EMMs, particularly those relating to the TMP and haulage route (EMM TM-01 and TM-02) will assist in managing potential impacts on the arterial road network.

Use of road rather than rail

The EES did not include a detailed assessment of the environmental effects of transporting HMC by rail as the proponent determined that transport by rail was not a feasible option for the project in the absence of suitable rail infrastructure. Given this, there is uncertainty relating to the significance of the potential environmental effects of this option and how they might differ from those associated with road transport and operation of the existing Maroona to Portland rail line. The EES indicated that a greater disturbance area would be required for additional rail infrastructure at the WBA to support transport by rail including new infrastructure at the WBA and Port of Portland. It also stated that both road and rail transport options would generate additional noise emissions that have the potential to impact on residents living in proximity.

In their submissions to the IAC, Council and the Rail Freight Alliance agreed that road transport is currently the only option available to the project to transport HMC from the WBA to the Port of Portland. The IAC heard evidence[43] that the Maroona to Portland rail line has deteriorated and is currently not suitable to carry HMC due to axle load and speed limit constraints. Works would also be needed at the WIFT and Port of Portland to enable transport of the HMC by rail.

Council, Rail Freight Alliance and other submitters expressed strong support for the use of rail over road for the transport of HMC once funding for the rail line is committed and the necessary upgrades undertaken. Council further submitted that rail transport should be used exclusively by the project to transport HMC when available, to assist in reducing amenity, safety and greenhouse gas impacts associated with road transport.

The IAC found that subject to its recommendations, it is currently not appropriate to require the project to transport HMC by rail, but the option should continue to be investigated and its feasibility assessed should funding be committed to necessary rail infrastructure upgrades. It also found that the WBA should provide for future rail infrastructure. It recommended that EMM TM-01 be amended to require that the feasibility of rail be periodically evaluated, including at the time funding is committed to upgrade the line and consider triple bottom line (i.e., social, environmental and economic) effects and benefits.

I agree with the IAC that it is not appropriate to require that the project transport HMC by rail at this time due to the lack of suitable infrastructure. This assessment notes that the environmental effects of transporting HMC by road can be acceptably managed, so I do not support the IAC's recommendations to require that the proponent assess the feasibility of rail, or that the WBA provide for future rail infrastructure. However, noting that transport by rail has the potential to further reduce environmental effects, when compared to road transport, and the strong support from Council and other stakeholders, I would strongly encourage the proponent to continue to explore this option in consultation with Council and the Department of Transport and Planning.

Local road closures

The EES identified nine unsealed roads within the mining licence area that would be closed for extended periods of time during active mining. Traffic would be directed to existing road detours or newly created road detours during this time.

The IAC heard evidence from Council and several landholders that local road closures required for the project would cause significant disruption. Council considered that it should be involved in determining the options for maintaining local access and developing traffic and access management plans, along with landholders and other stakeholders. Council also suggested that it should be required to approve traffic and access management plans, rather than just be consulted on them. Landholders expressed a range of concerns about local road closures. These related to road safety concerns, additional travel distances to access different parts of their property, inability to access properties at cropping times, additional costs associated with moving farm machinery over larger distances, impacts on sharing farm equipment between landholders due to access constraints and specific concerns relating to the partial closure of Greenhills and Molyneaux roads. For instance, Council highlighted that Greenhills Road provides a critical east-west link to enable farmers to transport large machinery safely and avoid use of Wimmera Highway. Council also expressed concern over the suitability of Molyneaux Road for project vehicles without the level crossing being upgraded.

[43] Tabled Document 52

Technical Note 18[44] prepared by the proponent in response to queries raised by the IAC relating to local road access, indicates that public access to land affected by mining will be managed by the proponent on a landholder-by-landholder basis in consultation with Council. It outlines that road closures would be required throughout the life of the project and traffic directed to existing or newly created detours. It also states that where possible, directly affected landholders would be escorted across parts of the mine path to access their paddocks, vacated houses, and associated farming infrastructure, where no other access is available from detours. Technical Note 18 clarifies that part of Greenhills Road would be closed at various times and in various places during active mining depending on which mining block is progressing at the time, along with a section of Molyneaux Road.

I agree with the IAC that local roads are essential to local communities and that consultation with Council and the local community, particularly directly affected landholders, will be critical to managing impacts associated with local road closures. I also acknowledge the concerns raised in submissions to the IAC about the significant disruption that local road closures would have for local landholders over extended periods of time (in some cases over ten years). My recommendation to avoid the removal of the FFG listed Northern Plains Grasslands Community along the Greenhills Road reserve will also assist in reducing the impact that closure of this local road would have had on the local community.

I agree with the IAC's recommended changes to EMM TM-02 which require that the proponent consult with local landholders prior to identifying detour routes and provide stakeholders with adequate advanced notice of proposed local road closures and detours. The IAC also recommended changes to EMM TM-02 to require that the proponent consult with Council and / or the relevant road authority prior to any local road closure, and secure Council's agreement on these closures and preferred road detours. I support this change as it will ensure that Council knowledge and experience in managing the local road network is considered by the proponent prior to closing any local roads and identifying detour routes. I also support the IAC's minor updates to EMM TM-04.

I agree with the IAC finding that the measures proposed in the EMF, subject to the IAC's and my recommended changes, are adequate to sufficiently avoid, mitigate or manage impacts on the local road network and that impacts are acceptable.

Rehabilitation of local roads

The EES included a commitment to progressively rehabilitate and reinstate local roads across the mine life (EMM TM-07). This was confirmed in evidence provided by Mr Walley who also indicated that local roads used as detour routes due project road closures would be subject to road maintenance or road management agreements with specific requirements to address any road maintenance and reinstatement issues. Submitters, including Council and landholders, expressed concern about the existing condition of some local roads in the project area noting that some are unsealed and only suitable for use during dry weather. Submitters also emphasised the importance of local roads which provide access to properties and facilitate the movement of farm machinery.

The IAC suggested that road rehabilitation had not been adequately considered in the EMMs and recommended that EMM TM-07, which was removed by the proponent in the 'Day 4' EMF, be reintroduced. The IAC also identified an opportunity for the project to improve local roads for local landholders and the wider community by reinstating them to an all-weather standard. To this end, the IAC recommended amendments to TM-07 to require that roads removed for mining operations be reinstated to an all-weather standard, or to the relevant road standard described in Council's Road Management Plan, in consultation with stakeholders. I agree with the intent of the IAC's suggested changes. However, I recommend additional changes to clarify that Council agreement be required to confirm the relevant standard of reinstatement for the local road, prior to these works occurring, and that road reinstatement be required to occur progressively during and post-mining operations.

The IAC found that the EMF, with the recommended changes, was adequate to sufficiently avoid, mitigate or manage environmental effects on local roads and that the environmental effects were acceptable. I agree with these findings. I consider that the greater focus in the EMF on progressive rehabilitation of local roads, as well as the requirement to reinstate roads removed for mining operations to an all-weather standard or equivalent, provide a stronger framework for managing impacts and making a positive contribution to the local road network for the community.

[44] Tabled Document 134

Assessment

It is my assessment that:

- Traffic and transport effects on the arterial road network can be acceptably managed through the EMMs as modified by the IAC and in accordance with my assessment.
- It is not appropriate to require that the project transport HMC by rail at this time due to a lack of suitable infrastructure. However, I would encourage the proponent to continue to explore this option in consultation with Council and the Department of Transport and Planning.
- Traffic and transport effects on the local road network can be acceptably managed through the EMMs as modified by the IAC and in accordance with my assessment.
- I support the intent of many of the IAC's recommended changes to EMM TM-01, TM-02, TM-04 and TM-07 with the further modifications recommended in my assessment as appropriate.
- I recommend a change to EMM TM-05 to require that the proponent consult with Council on the design of the new Wimmera Highway/WBA intersection.

5.5. Noise and vibration

Evaluation objective

To protect the health and wellbeing of the community and minimise effects on air quality, noise, visual and social amenity

Assessment context

Noise and vibration effects are addressed in Chapter12 and Technical Appendix G of the EES and in Section 10 of the IAC Report. WIM Resource has proposed 10 EMMs (seven avoidance and mitigation measures and three monitoring measures) to deal with construction and operation noise and vibration effects. Four EMMs (three avoidance and mitigation measures and one monitoring measure) have been the subject of recommendations by the IAC.

The project will generate noise emissions during construction, operations and decommissioning. The EES outlined that noise emissions will be generated through site preparation activities, construction and fit-out of the WCP, operation of mining equipment (e.g., bulldozers, excavators) and vehicle movements, particularly on the haulage route. The EES stated that along the haulage route there would be 54 project generated truck movements a day (approximately 2 per hour); consisting of 27 HMC loaded trucks travelling between the WBA and Port of Portland and then returning. The EES identified the following potential noise and vibration impacts:

- short-term/temporary increase in noise emissions for local residents and/or environmental receptors as a result of construction and site preparation;
- increased noise emissions for local residents and/or environmental receptors as a result of operational mining activity;
- increased noise emissions for local residents as a result of project road traffic; and
- vibration effects for local residents and/or environmental receptors during construction and operation.

The EES stated that vibration effects are not commonly experienced beyond a distance of 100 m and given there are no sensitive receptors within 100 m of construction or operational activities, vibration effects are unlikely and therefore no mitigation measures were proposed.

The study area for the Noise and Vibration Impact Assessment (NVIA) focused on activities within the mining licence area and WBA, and extended to areas that may be impacted by noise and vibration for representative worst-case scenarios. This extended to around 4 km from the mining licence area. Representative areas along the haulage route to the Port of Portland were also considered. Noise monitoring was undertaken at six locations and the EES identified 46 potential sensitive receptors within the study area surrounding the mining licence area and WBA. Representative sensitive receptors for each road traffic segment were assessed in the towns of Dooen and Cavendish. Receptor types included

residential dwellings, educational facilities and community venues, and natural areas. Day, evening and night-time L_{Aeq}[45] and L_{A90}[46] noise levels were determined at the six monitoring locations in February/March and May/June in 2020.

The EES assessed the residual impacts on sensitive receptors from construction and operational noise and vibration emissions as negligible. Residual impacts on sensitive receptors as a result of road traffic noise was assessed as minor.

Discussion

The key noise and vibration issues identified in the IAC report and discussed in my assessment are whether:

- existing noise levels were adequately characterised and assessed in areas inside and outside the project area; and
- noise and vibration impacts from project construction and operation, including road traffic (especially at night) are acceptable.

Characterisation of existing noise levels

The EES found that the background noise environment is generally quiet as is typical in rural environments with background noise levels of approximately 25-30 dB L_{A90} during the day and evening, and approximately 20 dB L_{A90} at night. This was supported by evidence given by Mr Evans, the noise and vibration expert witness for the proponent, who stated that ambient noise levels varied depending on the proximity of the monitoring location to the roads in the area with ambient noise levels in the order of 30 dB L_{Aeq} observed at some locations at night and in the order of 40-50 dB L_{Aeq} at other locations.

In its submission the EPA raised concern that the EES did not assess the impacts of low frequency noise[47] and the risk of impact to natural areas having regard to the noise frequency spectrum (i.e., tonal differential) of both pre-existing noise and noise from the project. In EPA's guidelines, low frequency noise is defined as noise with significant acoustic energy in one-third octave bands ranging between 10 Hertz to 160 Hertz. The EPA requested that background noise measurements be undertaken again closer to the start of project construction and that these measurements include the frequency spectrum (i.e., low to high frequency) of background noise. The EPA recommended that the development of the NVMP, detailed in EMM NV-06, should also include consideration of low frequency noise. The EPA also suggested changes to monitoring measure NV-0A and the addition of new monitoring measure NV-0B to ensure verification actions taken to reduce noise impacts are effective in meeting the acoustic performance they have been designed to achieve.

In its 'Day 4' version of the EMF the proponent included changes to EMM NV-06 and monitoring measure NV-0A, and new monitoring measure NV-0B, in response to the EPA's submission.

The IAC agreed with the EPA that further background noise measurements should be undertaken closer to the start of project construction and include a noise frequency analysis. The IAC generally agreed with the scope of the updated EMM NV-06 proposed by the proponent. The IAC also recommended changes to NV-0A to specify that noise measurements be conducted no more than 6 months prior to the commencement of construction activities and to update reference to EPA Victoria's publication 1996. I support these updates and recommended changes to NV-0A, however I note the updated wording of NV-0A in Appendix G of the IAC report states that noise measurements be undertaken "no more than 6 months prior to the commencement of operation of the project". This reference to project operation is incorrect and should be amended to construction activities as is recommended in Chapter 10 of the IAC report.

I support the IAC findings that existing background noise levels were adequately assessed in areas inside and outside the project area and with recommended changes to mitigation measures to update and summarise baseline data, consider that potential impacts can be appropriately managed.

[45] Represents the equivalent or average noise energy during a measurement period.

[46] The sound level exceeded for 90% of the time. Used to express background noise level.

[47] Described as a rumbling or droning noise, can be generated by machinery such as pumps, diesel engines, generators and natural sources such as wind and thunder.

Construction noise and vibration

The EES found that as existing background noise levels were higher than the expected construction noise levels under all meteorological conditions during the day, construction noise may not be obvious at sensitive receptors. At night, however, construction noise levels could be 3 dBA higher than background noise levels. Mr Evans, the noise and vibration expert witness for the proponent, stated that while the EES used a conservative approach to meteorological conditions it did not use the most conservative inputs in the model. Mr Evans indicated that the modelling approach undertaken in the NVIA was acceptable and expressed support for noise monitoring procedures to verify the predictions made.

Several submitters were concerned the project would result in unacceptable noise levels from construction activities, including EPA and Council. In its submission EPA raised concerns about the management of noise and vibration from the project and proposed several changes and inclusions to the EMF, including mitigation measure NV-03, for construction management measures. The focus of Council's submission was on achieving consistency between the NVMP requirements outlined in EMM NV-06 and requirements in the Incorporated Document. Council submitted that the NVMP required as a part of the Incorporated Document should address all noise sources at all hours, not just out-of-hours noise sources as outlined in EMM NV-06.

The proponent accepted the substance of changes to NV-03 proposed by the EPA and made amendments accordingly. The proponent did not make any changes to the Incorporated Document in response to Council's submission. The IAC agreed with the proponent's drafting of the NVMP clause in the 'Day 4' version of the Incorporated Document. I also support the updated wording on the NVMP in the Incorporated Document noting that EMM NV-06 provides the detailed outline of what this plan will include. I am generally satisfied with the IAC's review of the 'Day 4' version of the noise EMMs in the EMF tabled by the proponent noting that the updates adequately respond to the issues raised in submissions and the recommendations of the EPA and Council.

The IAC suggested that the detail of the NVMP requirements were already covered by EMM NV-06 and recommended that they be removed from EMM NV-03 and that EMM NV-06 capture all content relevant to the NVMP. I support the intent of these changes, that all NVMP related measures be included in EMM NV-06, however I do not agree that the detail provided in EMM NV-03 (i.e., referring to unavoidable works) was covered in EMM NV-06. Therefore, I recommend that EMM NV-06 be updated so that 'a framework for the approval of construction works outside normal working hours' be replaced with the EPA preferred wording of a 'process for the justification and approval of unavoidable works…' and the cross-reference to EMM NV-03 be removed from EMM NV-06. I also suggest a change to NV-03 to remove all references to the NVMP in line with the IAC's recommendation.

As discussed in Section 5.4 as it related to the TMP, the IAC also recommended removing the requirement in NV-06 to review and update the NVMP at an appropriate frequency with consideration to the level of risk, statutory requirements, monitoring results and community complaints and instead addressing in Section 24.7.1 of the EMF. I consider that inclusion of this information in NV-06 will assist in providing stakeholders with greater confidence that noise management measures will continue to be adapted during the life of the project based on any changes to requirements and/or operational experience in line with the GED. To this end I recommend that this wording be retained in EMM NV-06 but align with the IAC's suggested wording in Section 24.7.1 of the EMF which includes a minimum timeframe for management plans to be reviewed and updated.

Upon review of the recommended changes to the EMF and mitigation measures, with the exception of the IAC's changes to the review and update of the NVMP, I support the findings of the IAC that the construction noise and vibration modelling is adequate and appropriate. The NVIA was peer reviewed by Mr Evans, an experienced acoustic engineer, who concluded that with the application of the recommended mitigation measures, noise and vibration impacts from the project can be satisfactorily managed. The additional background noise monitoring recommended prior to construction will further assist in verifying the predictions made in the EES and ensure that the construction noise and vibration effects can be managed acceptably.

Operational noise and vibration

The EES found that during all meteorological conditions (standard and noise-enhanced) operational noise levels at various locations around the mine site and WBA would meet all of the noise limits for all operational years at all receptors. Where the predicted noise levels are below the noise limits the EES stated that no noise impacts would be anticipated. However, during his evidence Mr Evans, noise and vibration expert for the proponent, noted that while noise levels are predicted to be below the noise limits, noise from mining operations would likely be audible by receptors at times. The closest noise sensitive receptor is Longerenong College. The IAC expressed concern that there may be a risk of exceeding night-time noise limits at Longerenong College when mining is closest to the college. The IAC recommended changes to EMM NV-06 to add a requirement for noise monitoring at locations where modelling showed that operational noise levels are approaching noise criteria limits. The IAC also recommended changes to the title and detail of monitoring measure NV-0A, to provide better clarity on what it involves. I support these changes.

A number of submitters raised operational noise as a concern, including the EPA and Council. The EPA expressed concerns about the management of operational noise and the assessment of the tonal component to operational noise. The EPA recommended that *EPA Publication 1996, Noise guidelines: assessing low frequency noise* be considered in the development of the NVMP. The EPA recommended changes across most of the noise and vibration mitigation measures on the 'Day 2' version of the EMF, primarily to address out-of-hours work in the NVMP and refine management of stockpiles in operational noise management.

The proponent accepted the majority of the recommendations proposed by the EPA and included the changes in the 'Day 4' version of the EMF. The IAC supported these changes as do I, subject to my recommended changes to EMM NV-03 and EMM NV-06 above.

I support the findings of the IAC that operation noise and vibration modelling is adequate and appropriate and subject to the recommendations made by the IAC and in my assessment, that proposed mitigation measures will adequately manage operational noise and vibration, and operational noise and vibration is acceptable. The recommended additional background noise monitoring prior to construction will also assist in verifying the predictions made in the EES and ensure that the operational noise and vibration effects can be managed acceptably.

Road traffic noise and vibration

The EES identified road traffic noise as a potential impact to local residents during all stages of the project, most notably at night-time during operations. The EES indicated that the townships of Dooen and Cavendish would be the most sensitive to road traffic noise generated by the project on the HMC haulage route. At Cavendish the EES found that noise levels at night would increase by up to 5 dBA however these increases would be limited to around two truck movements per hour. At Dooen the criteria were found to be exceeded at several receptors prior to and during project implementation however it was noted that the change in noise levels due to the project at these receptors would unlikely be perceptible. The EES assessed the overall risk to human health from increased night-time noise levels at Cavendish and Dooen to be minor. Vibration impacts from passing vehicles were not identified in the EES or the evidence as an impact that requires avoidance or mitigation measures as vibration impacts are ameliorated within a short distance to the source.

Several submitters raised concerns that noise from HMC haulage trucks had been understated in the EES and that increases in noise from HMC heavy vehicles may result in sleep disturbance and annoyance. There was also concern about the lack of consideration in the EES of the increase in heavy vehicles through Horsham and the use of Henty Highway, especially during the night-time. In its submission, and supported by others, Council suggested a total ban on project generated truck movements at night-time.

In his evidence Mr Evans, noise and vibration expert, concluded that the percentage increase in heavy vehicles at night-time through small towns like Cavendish and Dooen is large because few trucks currently use these arterial roads (i.e., increase from one per hour to three per hour). Conversely the percentage increase in Horsham is low because of the existing use of these arterial roads by heavy vehicles. Dr Denison, human health expert for the proponent, provided evidence that predicted noise levels from existing traffic in Cavendish and Dooen would exceed World Health

Organisation (WHO) road noise guidelines and recommended that opportunities to minimise road traffic noise in these areas be considered, above what was proposed in the EES.

The proponent's 'Day 4' version of the EMF included updates to EMM NV-06 including requirements for a truck driver code of conduct and haulage trucks to meet High Productivity Freight Vehicle Performance Based Standards. I support these changes, subject to the recommended changes by the IAC to refer to truck movement through towns rather than passing by residences.

The IAC expressed concern with the EES's comparison of data against two different sets of guidelines in the NVIA and Human Health Risk Assessment (HHRA) (i.e., NSW Road Policy 2011 related to sleep disturbance and WHO recommendations in the protection of adverse health effects). The IAC requested hourly traffic volume data from the proponent which was presented in the IAC report (Table 27). This shows that current traffic movements through Cavendish between midnight and 6 am range from 1 to 6 vehicles per hour. It is noted that the traffic volume data did not distinguish the type of vehicle (i.e., car or heavy vehicle). This data supported the evidence provided by Mr Evans that the number of vehicle movements through Cavendish would increase from 1 to 3 per hour. The IAC agreed with the proponent's evidence that it was not reasonable to limit or curtail HMC haulage vehicles from using the proposed haulage route as the gazetted arterial road network is specifically designed, constructed and maintained to accommodate all compliant heavy vehicles. I support this finding and the IAC recommended changes to EMM NV-02 and TM-01 to require night-time truck movements be regulated to 2 per hour during the hours of 10 pm and 6 am, a total of 16 truck movements for the period. This rate is largely in line with the proponent's proposed hourly average truck movements of 2.25 trucks per hour and is consistent with the NSW Road Noise Policy 2011 which was used in the NVIA to determine the road traffic noise criteria as a management tool for the project.

The IAC also recommended changes to monitoring measure NV-0A to require measurements of existing background noise at towns along the HMC haulage route. I support this recommendation as it will assist in verifying the predictions made in the EES and in evaluating the effectiveness of the mitigation measures.

Upon review of the recommended changes to the mitigation measures, I support the findings of the IAC that subject to these recommendations (restricted night-time truck movements) road traffic noise can be managed to acceptable levels.

Assessment

It is my assessment that:

- With the implementation of recommended monitoring measures (NV-0A) and updated EMMs the characterisation of existing noise levels is adequate to inform relevant environmental management tools for the project.
- Noise and vibration effects from construction and operation can be managed to acceptable levels through the EMMs, subject to the modifications by the IAC (EMM NV-06 and EMM NV-06) and in accordance with my recommended changes (EMM NV-03 and NV-06).
- Noise and vibration effects from road traffic can be managed to acceptable levels through regulation of truck movements during night-time hours subject to the IAC's recommended changes to EMM NV-02 and TM-01.

5.6. Air quality

Evaluation objective

Protect the health and wellbeing of the community, and minimise effects on air quality, noise, visual and social amenity.

Assessment context

Air quality effects are addressed in Chapters 13 Air Quality and 18 Human Health, Appendix H Air Quality Impact Assessment, and Appendix M HHRA of the EES, and in Chapter 8 of the IAC's report. WIM Resource has proposed 16 EMMs to deal with air quality (10 avoidance and mitigation measures and 6monitoring measures) and 7 EMMs (5 avoidance and mitigation measures and 2 monitoring measures) have been the subject of recommendations by the IAC.

The project will generate dust emissions during construction, mining operations, final rehabilitation and decommissioning. The EES outlined that dust emissions will be generated through ground disturbance by mining equipment (e.g. bulldozers, excavators, etc.), vehicle movements, including on unsealed roads and wind erosion of stockpiles and bare or disturbed ground.

Dust emissions generated by the project will comprise of particulate matter (PM), heavy metals, and respirable crystalline silica (RCS) associated with PM. Coarser PM tends to settle relatively quickly while finer particles can remain in the atmosphere for days and travel hundreds of kilometres. Fine PM is typically considered in two fractions: PM_{10} (PM with a diameter less than 10µm) and $PM_{2.5}$ (PM with a diameter less than 2.5µm).

Residents living in proximity to the mining licence area, WBA and the haulage route have the potential to experience changes in air quality due to dust generation, particularly during the 30-year operational phase. Dust has the potential to impact health and wellbeing, local amenity, visibility, and ecosystems. The effects of dust deposition to water supplies and plants are discussed in Section 5.9 of my assessment. Radiation exposure through dust deposition is discussed in Section 5.7. Inhalation of dust containing PM is associated with health impacts associated with the heart and lungs. RCS can penetrate deep into the lungs upon inhalation and can cause irreversible lung damage. Heavy metals are also associated with health impacts from inhalation of dust originating from mineral sands mining operations.

The EES assessed the residual impacts on sensitive receptors from emissions of PM, metal, and crystalline silica during all phases of the project as negligible to minor following implementation of mitigation measures, including road management (EMM AQ-03 and AQ-04), HMC stockpile management (EMM AQ-05), and an Air Quality Management Plan (EMM AQ-08).

Discussion

I agree with the IAC that the key issues relevant to air quality are:

- Air Quality Impact Assessment (Appendix H) methodology is appropriate; and
- air quality will be acceptable with mitigation measures applied.

Air Quality Impact Assessment methodology

A submission to the IAC raised concern on how the air quality modelling was performed, more specifically highlighting that meteorological data collected for modelling did not capture wind extent at the maximum height of stockpiles. The proponent's air quality expert witness, Mr Cowan, did not directly respond to the concern, but did highlight that an overestimation of dust deposition occurred on account of the modelling which assumed a much lower moisture content than would occur typically in stockpiling and material loading. Further, the proponent's human health expert witness, Dr Denison, concluded that the main risk to human health from dust deposition arises from the deposition of metals onto plants and soil, rather than dust inhalation. The IAC agreed that wind speed at elevated heights at the top of stockpiles could differ to the speeds closer to ground level, which were those that formed the basis of the modelling.

To manage this, the IAC recommended a new EMM (EMM AQ-0E) to require that wind speed and direction monitoring be undertaken at an elevation above the height of the stockpiles and that the equipment used and location be endorsed by the EPA. The IAC also recommended that the air quality model be re-run with one year of operational data to confirm the accuracy of the modelling results and the required mitigation measures (EMM AQ-0F). I support these recommendations, as further modelling will allow for weather variations across multiple years at heights where wind erosion is most likely and allow further refinement of measures in the Air Quality Management Plan (AQMP), should it be required (EMM AQ-08).

In their submission to the IAC the EPA stated that they did not endorse the methodology used to perform the quantitative risk assessment of PM undertaken as a part of Appendix M – Human Health Risk Assessment. EPA cited that their Guidelines for assessing and minimising air pollution in Victoria (EPA publication 1961) are intended for calculations of health impacts across much larger populations than those surrounding the project. The EPA also noted that further consideration of dust exposure and mitigation measures may be warranted, given the hazard quotients recorded at

multiple receptors for cobalt, chromium and cadmium. However, the EPA did not offer any additional or alternative means by which to calculate quantitative health impacts of PM or heavy metals generated by the project. I consider that any variances between the modelling for the EES and modelling run with a year of operational data (EMM AQ-0F) will assist in informing whether any further changes to the AQMP are required (EMM AQ-08) to reduce air quality impacts as far as reasonably practicable.

With the proposed EMMs in place, including the additional EMMs recommended by the IAC above, I support the IAC finding that the Air Quality Impact Assessment conducted for the EES was appropriate. The approach adopted in the assessment was reviewed by an independent technical reviewer and the requirement to re-run the model with one year of operational data and adjust EMMs accordingly, will provide a sound basis to manage air quality effects for the operational life of the project.

Acceptability of Air Quality Impacts

Air quality monitoring undertaken over a 12-month period for the EES identified five occasions under existing conditions when PM_{10} measurements exceeded the 24-hour average Environment Reference Standard (ERS), due to wind erosion from agricultural and arid land to the north. Air quality modelling for the EES indicated that while there were limited periods of 24-hour average PM_{10} exceedances at a selection of sensitive receptors, this was due to elevated background concentrations and the project contribution was very low. Concentrations of $PM_{2.5}$, RCS and metals at sensitive receptors were found to remain below their respective criteria for annual average, maximum 24-hour average and maximum 1-hour average periods during all project phases.

The EES stated that truck movements will be a source of dust throughout the life of the project. EPA's submission to the IAC recommended implementing tiered speed limits in close proximity to sensitive receptors to reduce dust generation from vehicular movements. The IAC noted the Council did not agree with EPA's recommendation. The proponent's expert witness, Mr Cowan, argued there was insufficient evidence supporting the EPA's position that faster vehicles will generate more dust than slower vehicles. The IAC did not suggest a new EMM relating to speed limits. I consider that the proposed EMMs including the requirement to construct roads of appropriate materials (EMM AQ-03) and undertake road watering (EMM AQ-04) will effectively manage potential dust emissions from truck movements.

The EPA recommended the use of closed-circuit television (CCTV) to support a proactive approach to monitoring dust and adapting the AQMP to minimise air quality impacts as far as practicable. The IAC heard evidence from the proponent's expert witness, Mr Cowan, that while it is not reasonably practicable to actively monitor dust generation on CCTV at every hour of the day, CCTV footage would be a valuable tool to identify the causes and direction that dust is being generated during significant events that are picked up through continuous air quality monitoring. I agree with the IAC that real time continuous monitoring and CCTV surveillance will be essential to understanding and managing dust emissions from the project. The IAC recommended that continuous air quality monitoring requirements be separated from the AQMP (EMM AQ-08) and included in the EMF as a stand-alone monitoring measure (EMM AQ-0D). I support this recommendation. I also support the IAC's recommended change to EMM AQ-0A which states that alarms be used to notify when particle concentrations have approached thresholds of concern. I also consider that a further change to EMM AQ-0D is required to clarify that real time continuous air quality monitoring will be performed throughout all project phases.

Concerns were raised by multiple submitters, including Council, about the difficulty in retaining moisture levels in HMC stockpiles and the potential for them to generate dust. The proponent's expert witness, Mr Cowan explained that HMC particles are likely to crust together during the drying process, and that air quality impacts from wind erosion would be minimal. I consider that appropriate measurement, verification and contingencies will be available to manage potential impacts associated with wind blow dust from stockpiles (such as EMM AQ-05), and I support the IAC's recommendation for real time continuous air quality monitoring (EMM AQ-0A) and field inspections (EMM RD-0D) to provide additional alert mechanisms.

Concerns were raised in submissions about the high silt content of the HMC, and the potential for the mobilisation of silt due to wind erosion and handling of materials. Council also raised concern in their submission that the drying of mine tailings in pits may generate dust via wind erosion. The EES states that due to the coarse grain size, density and

dampness of the HMC, resuspension of dust would be unlikely to occur. The proponent's expert witness, Mr Cowan, concluded that due to the large typical particle size of tailings and of the HMC, the transport of HMC particles from stockpiles would likely be restricted to short distances. I support the IAC's assessment that the proposed EMMs to avoid particle transport by maintaining moisture content of the HMC and capture particles through sediment fencing (EMM AQ-05), will be appropriate for managing impacts to air quality from HMC handling and stockpiling. I am satisfied that managing the timing works (EMM AQ-06) and reducing the number of heavy vehicles carting material (EMM AQ-07) will further minimise air quality impacts from material handling to an acceptable level.

The EES found potential for metals, PM and RCS to be emitted through material handling operations involving topsoil, subsoil, and overburden. In its submission the EPA noted that the air quality mitigation measures as detailed in the EMF do not clearly outline benchmarks by which predicted environmental outcomes will be measured. The IAC recommended that the AQMP (EMM AQ-08) has a clearer statement around maintenance and implementation of administrative controls being to the satisfaction of the responsible authorities across all project phases. I support this change and also suggest naming the responsible authorities overseeing the AQMP (EMM AQ-08) to ensure that the relevant authorities are involved in setting the boundary thresholds for corrective actions and contingency measures.

As discussed in sections 5.4 and 5.5 as it relates to the TMP and noise management plan, the IAC recommended deleting the requirement to review and update the AQMP at an appropriate frequency with consideration to the level of risk, statutory requirements, monitoring results and community complaints and instead, including an overarching statement on this in preliminary text in the EMF (Section 24.7.1). I consider that inclusion of this information in EMM AQ-08 will assist in providing stakeholders with greater confidence that air quality management measures will continue to be adapted and risk-based during the life of the project, based on any changes to requirements and/or operational experience in line with the GED. To this end I recommend that this wording be retained in EMM AQ-08 but align with the IAC's suggested wording in Section 24.7.1 of the EMF which includes a minimum timeframe for management plans to be reviewed and updated. This would also provide a linkage with operational air quality modelling and monitoring requirements set out in EMM AQ-0F and EMM AQ-0A respectively.

In terms of cumulative impacts on air quality from other projects proposed in the region, the EES found that due to the distance between projects or timing of these projects, cumulative impacts to air quality are not expected to occur. While the IAC did not take a position on cumulative effects on air quality, the EPA supported the proposed proactive monitoring measures, such as visual inspections (AQ-0B), to address any potential cumulative impacts.

The IAC found that subject to its recommendations, the EMMs are adequate to sufficiently avoid, mitigate or manage project effects on air quality generated by the project, and that effects on sensitive receptors from air emissions are acceptable. I support this finding, noting that adaptive management is incorporated into EMMs such as EMM AQ-08 to ensure continuous improvement in how air quality effects are managed, in line with the GED.

Assessment

It is my assessment that:

- Air quality effects have been appropriately assessed and will continue to be assessed and managed through operational monitoring and modelling required by implementation of additional EMMs AQ AQ-0D, AQ-0E, and AQ0-F.
- Adverse effects on sensitive receptors related to airborne dust emissions can be managed to acceptable levels with the implementation of the proposed EMMs, and revised EMMs AQ-02, AQ-08 and AQ-0A, and additional EMMs AQ-0C, AQ-0D, AQ-0E and AQ-0F as recommended by the IAC and supported by me. I further recommended that EMM AQ-08 be updated to include the authorities responsible for reviewing the AQMP and any subsequent updates to it.

5.7. Radiation

Evaluation objective

Protect the health and wellbeing of the community, and minimise effects on air quality, noise, visual and social amenity.

Assessment context

Radiation effects are addressed in EES Chapter 14 Radiation and Technical Appendix I Radiation Risk Assessment, and in Chapter 6 of the IAC Report. WIM Resource has proposed nine EMMs to deal with radiation effects and two have been the subject of recommendations by the IAC.

The proposed air quality and human health EMMs will assist in managing radiation effects. Air quality and human health effects are addressed in chapters 13 Air Quality and 18 Human Health, Appendix H - Air Quality Impact Assessment, and Appendix M – HHRA of the EES, and in chapters 8 and 14 of the IAC report. The potential effects to human health associated with dust emissions and consumption of tank water, soil, crops or livestock contaminated with dust containing metals are dealt with in sections 5.2 and 5.9 of my assessment.

The project has triggered the nuclear action controlling provisions (Sections 21 and 22A), as a relevant MNES requiring assessment under the EPBC Act. My conclusions on impacts on MNES are set out in Appendix B of this assessment.

Radiation in Victoria is managed under a comprehensive regulatory framework set out in the Radiation Act and the *Radiation Regulations 2017*, which are administered by the Department of Health. The project would require a management licence prior to commencing operations as well as approval of a radiation management plan, and waste management plan by the Department of Health.

Mineral sands deposits typically contain titanium-bearing minerals, including ilmenite, rutile, leucoxene, zircon, uranium, thorium, and the rare earth bearing minerals monazite and xenotime. The presence of thorium and uranium in monazite results in the potential for elevated radiation exposure when mining and processing mineral sands for rare earths production. Mineral sands mining, processing and transport activities associated with the project therefore have the potential to generate radiation effects.

The EES assessed potential exposure pathways for a 'Critical Group' being a member of the public living near the project area. Due to their proximity to the project, residents of Longerenong College were assessed as the 'Critical Group'. The EES assessed a number of potential exposure pathways for this Critical Group to radiation. For instance, dust inhalation during mining operations, consumption of locally grown crops, livestock, tank water and/or soils contaminated with resuspended dust, inhalation of radon or thoron gas, inhalation and ingestion of dust during laundering of contaminated clothing and exposure to radiation during HMC transport. The EES also assessed potential exposure pathways for other members of the public (the 'Non-Critical Group') associated with the storage and movement of HMC at the Port of Portland, disposal of tailings and the post-rehabilitated landform and to the environment from resuspended radioactive particulates settling on soils.

Discussion

I agree with the IAC that the key issues associated with radiation relate to:

- adequacy of the assessment of the radioactive pathways for the project;
- acceptability of radiation exposure to the environment and residents; and
- storage and management of HMC in stockpiles and transport.

Adequacy of the assessment

Submitters to the IAC raised concerns about the adequacy of the radiation risk assessment conducted for the EES. Concerns were raised about the adequacy of the existing conditions assessment, assessment of impacts on crops, other users of the WIFT, drinking water in rainwater tanks and of worker health impacts from radiation exposure.

I agree with the IAC that the radioactive pathways were adequately assessed in the EES. The Radiation Risk Assessment was peer reviewed by Mr Jim Hondros, a radiation protection expert, who found that the assessment was

comprehensive, used recognised methods and provided an accurate assessment of potential radiation impacts. No concerns with the radioactive pathways were documented in the radiation expert conclave meeting held during the inquiry and the proponent and Council's radiation experts agreed that the radiation dose estimate used in the assessment was based on very conservative assumptions and applied internationally recommended dose factors and breathing rates.

The IAC noted that while the EES presented a thorough understanding of the existing conditions and the potential for radiation exposure, potential impacts to landholders/residents returning to their properties after mining and rehabilitation were not considered. The IAC noted that the *Code of Practice on Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing (2005)* recommends assessing the effective dose to a Critical Group of individuals most likely to be affected by a project. Based on this, the IAC recommended that an assessment be conducted as part of the Radiation Management Plan (EMM RD-08) of the effective dose for landholders/residents who may return to their residences while mining operations are still active in other parts of the project area and requirements be developed to manage any identified risks. I support this recommendation and consider that it will also assist in managing any potential concerns from these landholders/residents on radiation exposure risk when they return to their properties.

While I appreciate that concerns were raised by a submitter regarding the adequacy of the assessment of worker health impacts from radiation exposure, I note that the focus of an EES is on assessing public health and safety impacts, rather than worker health and safety impacts. The latter will be managed through the Radiation Management Plan required for the project. To this end I agree with the IAC that it is appropriate to rely on the radiation management licence approvals to manage potential impacts associated with the transport of HMC and exposure of workers, including those at the Port of Portland.

Exposure to the environment and residents from radiation

Multiple community submitters raised concerns about effects of radiated dust entering rainwater tanks, being taken up by plants, and impacting human health and the grain industry in the broader region. The EES assessed the potential for radiation effects from consumption of water in rainwater tanks containing soluble and insoluble fractions of dust. It concluded that calculated doses were less than the annual limit even when considered with other exposure pathways. It further noted that assessing the radiological content of local tank water would be a key element of the project's radiation monitoring programme.

The EES also found that calculated annual doses from consumption of crops (cereals/grain, leafy vegetations) with elevated radionuclides were only marginally greater than calculated baseline doses. A joint statement to the IAC from the three experts representing the proponent and Council at conclave confirmed that the project poses negligible to very low radiological impacts to members of the public. In terms of impacts on non-human biota, the EES concluded that even using extremely conservative criteria and applying the most sensitive reference organisms, the project would pose a negligible radiological risk to native flora and fauna.

Concerns about exposure to radon and thoron gas were also raised in a submission to the IAC. The EES concluded that the potential exposure pathway to a member of the public as a result of such gases would be negligible.

A submission to the EES expressed concern that it would be difficult to assess the effectiveness of radiation prevention measures in the Radiation Management Plan. While the IAC did not directly respond to this concern, it recommended that EMM RD-08 which sets out the requirement to develop a Radiation Management Plan, be amended to explicitly refer to the Department of Health as the regulatory body responsible for approving the plan. I support this recommendation and note that radiation experts in the Department of Health are best placed to assess the effectiveness of the radiation protection measures.

The EES identified that all projects with the potential to contribute to cumulative radiological risks are located more than 15 km from the Avonbank project. The IAC acknowledged Technical Note 17[48] prepared by the proponent to respond to

[48] Tabled Document 106

IAC queries on the cumulative effects of the project which concluded the potential for cumulative impacts associated with radiation would be negligible to non-existent.

The IAC found that subject to its recommendations, the measures proposed in the EMF were adequate to sufficiently avoid, mitigate or manage radiation effects, and that radiation effects were acceptable. I support this finding based on the views of the radiation experts at the conclave who concluded that there were no reasons to delay the project because of the radiological impact assessment outcome.

Management and transport of HMC

The EES states that due to the coarse grain size, density and dampness of the HMC, resuspension of dust would be unlikely from HMC stockpiles. Council raised concern in their submission to the IAC that there was a risk of dust generation from HMC stockpiles not retaining sufficient moisture which did not appear to have been taken into account in dust and radiation exposure calculations. The proponent's expert witness on air quality, Mr Cowan, explained that in the event that HMC stockpiles dried up the particles would likely crust together, and the crusted material would only be likely to be transported into air if appropriate moisture levels were not returned to stockpiles before they were moved. I am generally satisfied that radiation EMM RD-05 which relates to HMC stockpile management provides an appropriate framework for managing the moisture content of stockpiles. The IAC recommended an additional radiation EMM (RD-0D) for field inspections of HMC stockpiles to ensure the target moisture threshold is maintained and no dust lift off is observed. I support the inclusion of this additional EMM and consider that this monitoring will further assist in effectively managing any dust emissions associated with HMC stockpiles (EMM RD-05).

Council also recommended the use of either a shed, tarpaulins or mulch to address their concern of dust emissions being transported from drying HMC stockpiles. The proponent's expert witness, Mr Cowan, explained that the this would not be necessary or practical in preventing dust emissions from HMC stockpiles. The IAC noted Council's acceptance of Mr Cowan's evidence that covering HMC stockpiles with a shed, tarpaulin or mulch was not necessary or practical, and concluded that the air quality EMMs were appropriate to manage dust emissions from HMC stockpiles. I agree with the IAC that covering HMC stockpiles is not required to further manage dust impacts and potential exposure to radiation. I also agree with the IAC that while such an approach may have been contemplated on the Fingerboards Mineral Sands Project, the project and associated risk profile are very different to those associated with the Avonbank project.

The IAC heard submissions raising concern over the potential for dust to escape from vehicles transporting HMC between the WBA and the Port of Portland. While the proponent has committed to using sealed vehicles to transport HMC on public roads, I support the IAC's recommended changes to EMM RD-02 which clarify that sealed trailers would be used, where the sealing of the trailer is achieved by using the most practical and best reasonable method available at the time.

A submission to the IAC expressed concern about workers' exposure to radiation from dust within the HMC storage building at the Port of Portland. The Port of Portland's submission to the IAC confirmed that a fully enclosed storage shed and ship loading conveyor system would operate in accordance with its Management Licence obligations under the Radiation Act. I agree with the IAC that the risk to workers is beyond the scope of the EES and I am satisfied that the Radiation Management Plan (EMM RD-08) subject to the approval of the Department of Health is the appropriate tool for managing any such exposure risks.

Assessment

It is my assessment that:

- The assessment of the radioactive pathways for the project was appropriate.
- The radiation EMMs are adequate to sufficiently avoid, mitigate and manage the project's radiation effects subject to the IAC's recommended changes to EMMs RD-02, RD-08, and additional EMM RD-0D, and my recommended change to EMM AQ-0C.

5.8. Human health

Evaluation objective

Protect the health and wellbeing of the community, and minimise effects on air quality, noise, visual and social amenity.

Assessment context

Human health effects are addressed in Chapter 18 Human Health and Technical Appendix M Human Health Risk Assessment of the EES and in Chapter 14 of the IAC Report. WIM Resource has proposed one EMM that directly deals with human health effects (SE-07) and this has been the subject of recommendations by the IAC. A number of the proposed amenity and social will also assist in managing human health effects.

Project mining, processing and transport activities have the potential to generate human health effects. This Section discusses my assessment relating to the health effects from:

- consumption of soil, crops or livestock contaminated with dust containing metals;
- consumption of water in rainwater tanks contaminated with dust containing metals; and
- exposure to project lighting by residents living in proximity to the project.

Sections 5.6 and 5.7 provided my assessment of the health effects associated with exposure to noise and air emissions generated by the project. Section 5.8 provided my assessment of health effects associated with exposure to radiation.

In addition to physical health effects, the project has the potential to generate stress and uncertainty, particularly for landholders affected by displacement. The EES outlines that the project would displace existing agricultural land use and associated farming businesses and infrastructure on 25 agricultural properties wholly or partly located in the mining licence area. The duration and extent of displacement will vary across the mining licence area from between six and thirty years. Residents of six dwellings within and adjacent to the mining licence area will also be displaced for different periods of time during active mining. Some properties would be acquired by WIM Resource and others would be subject to a compensation process. Affected landholders have the potential to experience effects on wellbeing from their involvement in this process. Changes in amenity, particularly for residents living in close proximity to the mine and the haulage route also have the potential to create stress and effects on wellbeing. Social effects associated with changes in amenity are discussed further in Section 5.9.

Discussion

Physical health

Multiple submitters raised concerns about health effects from consuming water in rainwater tanks that could have been contaminated by dust deposition from the project. The IAC heard evidence from the proponent's expert witness, Dr Denison that:

- predicted concentrations of metals in rainwater tanks from dust deposition would pose a negligible risk to human health;
- metals uptake into sheep and chicken meat and eggs from dust deposition would pose a negligible risk to human health; and
- predicted levels of metals in crops from dust deposition would be well below maximum residue levels for safe food.

Noting this, I support the requirement to conduct ongoing rainwater tank and crop monitoring from construction through to closure (EMM7), particularly given the reliance of tank water for drinking in the area. I also support the intent of the IAC's minor changes to this EMM to require that crop monitoring data be published along with rainwater tank data. I suggest a further change to provide clarity that the data needs to be published on the project website following each monitoring period.

The IAC found that subject to its recommendations, the EMMs are adequate to sufficiently avoid, mitigate or manage general health effects of the project and that these human health effects are acceptable. I support this finding noting that the EMMs proposed to avoid and minimise air quality impacts will also assist in mitigating any associated human health effects.

Submissions to the IAC expressed concern about the potential to be impacted by night lighting from the project. The EES found that project lighting will be noticeable at some residences in proximity to the project but due to the small number of receptors in proximity to the project and the presence of existing lighting, visual amenity impacts would be minor to negligible. Dr Denison provided evidence to the IAC that artificial light at night can disrupt sleep cycles which in turn, can affect a number of disorders such as diabetes and obesity. Dr Denison indicated that mitigation measures outlined in the EES for reducing landscape and visual effects will be critical to minimising any health effects associated with exposure to night lighting.

I support the IAC's recommended changes to EMM LV-05 to reference the correct standard for 'Control of obtrusive effects of outdoor lighting' and EMM LV-0A to require that visual amenity inspections include periodic inspections of private viewpoints. I recommend further changes to EMM LV-0A to require that additional landscape screening be offered to affected landholders in line with EMM LV-04, should the inspections indicate that they could be experiencing sleep effects from night lighting. This may include the use of more mature vegetation to provide maximum screening as soon as possible, in line with suggestions from the proponent's expert witness. I also suggest that the proponent report back to the Environmental Reference Group on the findings of these inspections. The IAC found that subject to implementation of the EMMs and its recommended changes, impacts of light pollution will be acceptable. I agree with this finding subject to my recommended change to EMM LV-0A.

Mental health

The displacement of residents, agriculture, farm businesses and associated infrastructure has the potential to create stress and uncertainty for directly affected landholders. The EES found that some landholders are resistant to displacement for practical and intangible reasons. It noted that it may not be possible to fully ameliorate the impacts of displacement for some landholders through financial compensation due to the extended period of time that they would be displaced and strong emotional connection they have to their land. The IAC also heard evidence from the proponent's expert witness that while the overall risks to mental health and wellbeing from the project were low, those most at risk are multi-generational farming families being displaced for extended periods by the project.

I acknowledge the inter-generational connection that a number of landholders within the mining licence area and surrounds have to their dwellings, land and farm businesses. In submissions to the IAC some directly affected landholders expressed concern that displacing them from their properties for extended periods of time would affect their connection to the land. Concerns were also raised in submissions by affected landholders about the stress and uncertainty that the project has created for them and how their lives have been put on hold while they wait for a decision on the project.

I agree with the IAC that for some landholders affected by displacement, the effects of the project will be significant and experienced over an extended period of time. While these landholders will be financially compensated, in some cases it may not be possible to mitigate effects through compensation. I also agree with the IAC that affected landholders have the potential to experience stress and distress at different times over the life of the project associated with processes such as negotiating compensation and relocating. I support the intent of the IAC's recommended changes to EMM SE-07 which proposes that a Wellbeing Plan be developed and implemented to better support landholders and families affected by displacement. While it is appropriate that the focus of the plan be on supporting landholders and families displaced by the project, I recommend that support through this plan be extended to landholders living in proximity to the project who could experience wellbeing and livability impacts associated with changes in amenity during mining operations. To this end, I recommend that access to counselling services be extended to landholders living in proximity to the project for a minimum period of two years after operations commence, and as determined appropriate in the Wellbeing Plan. Social effects associated with amenity changes are discussed further in Section 5.9 of my assessment.

While I acknowledge the IAC finding that mental health support measures proposed in the EMF are adequate and mental health effects are acceptable, it is my assessment that people respond to stress and uncertainty differently and may require different support. Mental health risks require careful management. I consider that the support proposed through the Wellbeing Plan, including access to counselling services, will be important to manage these risks. Maintaining effective communication and engagement with affected landholders will also be critical. I support the requirement for all staff involved in direct engagement with landholders to receive appropriate training (EMM SE-08) and agree with the IAC's recommended changes to require that the scope and frequency of training be in line with recommendations of the Wellbeing Plan.

I support the establishment of an Environmental Reference Group (EMM SE-02) prior to project works commencing but consider that additional changes are needed to this EMM to maximise the opportunity for directly affected landholders to be involved. To this end, I recommend that the Environmental Reference Group be required to include at least one representative from a landholder displaced by the project (should they self-nominate) so that any ongoing concerns associated with project operations can be discussed in a proactive manner.

Assessment

It is my assessment that:

- Physical human health effects can be acceptably managed through the EMMs as modified in accordance with my assessment.
- Effects of light pollution can be acceptably managed through the EMMs as modified in accordance with my assessment.
- People respond to stress and uncertainty differently and mental health risks require careful management, particularly for landholders affected by displacement.
- I support the IAC's recommended changes to SE-08 and LV-05.
- I support the intent of the IAC's recommended changes to EMM LV-0A, SE-02 and SE-07 with the further modifications recommended in my assessment.

5.9. Socioeconomic

Evaluation objective

Minimise adverse social, land use and infrastructure effects.

Assessment context

Socioeconomic effects are addressed in Chapter 20 Socioeconomics and Technical Appendices N Economic Impact Assessment and O Social Impact Assessment of the EES and in Chapter 13 of the IAC Report. WIM Resource has proposed nine EMMs to deal with socioeconomic effects (eight avoidance and mitigation measures and one monitoring measure) and five avoidance and mitigation measures have been the subject of recommendations by the IAC.

The project has the potential to generate socioeconomic effects as well as opportunities for local residents and the wider Wimmera Southern Mallee Region, associated with:

- the temporary change in land use from agriculture to mining;
- changes in amenity from project-induced noise, traffic, dust and visual changes;
- changes in demand for housing and community services;
- changes in social dynamics;
- changes in land use; and
- employment and business opportunities

As outlined in Section 5.8, the temporary change in land use from agriculture to mining would displace existing agricultural land uses, associated farming businesses and infrastructure and a number of dwellings. This Section discusses the potential social effects associated with this displacement.

The project will generate noise and dust emissions during construction, mining operations, final rehabilitation and decommissioning. Residents living in close proximity to the mine and the haulage route are likely to experience changes in amenity throughout this period, particularly during the 30-year operations. Active mining and project infrastructure also have the potential to result in visual amenity changes for some residents living in proximity, including Longerenong Agricultural College, and members of the public travelling on roads in proximity to the mine.

Workforce requirements associated with the project have the potential to alter the demand for housing and some community services and result in changes to the local labour market which could affect social dynamics (community behaviour and interactions). WIM estimates that:

- 50 to 150 of the 200 construction workers will be sourced from outside the region and accommodated in temporary accommodation; and
- 58 of the 232 operational workers will be sourced from outside the region and be accommodated in permanent housing in Horsham and the surrounding region.

This is expected to lead to an increased demand for temporary accommodation during construction and permanent housing at the start of mining operations as individuals and their families move to the area looking to rent or buy. Demand for some community services is also expected to increase during these periods with the small influx of workers.

The project would also generate employment and business opportunities for local residents and the broader Wimmera Southern Mallee Region during construction, operations, decommissioning and closure. The temporary change in land use in the mining licence area from agriculture to mining would also result in a temporary loss of agricultural production as the mining front progresses across this area. The project aims to progressively rehabilitate each mining area within four years of the initial disturbance.

Discussion

Displacement

As outlined in Section 5.8, concerns were raised by a number of landholder submitters that there are generational impacts associated with displacing them from their family farms and homes, including effects on their connection to the land. The EES found that the social effect of displacement would be moderate and noted that some affected landholders have an intergenerational connection to their land and/or extensive infrastructure on their land which would be hard to replace. The IAC also heard evidence from landholders about tangible and intangible values held by their properties and valued objects that they would like to see protected or relocated.

During the hearing the proponent advised that they had given a conditional undertaking to a landholder to retain the one dwelling (R38) in the mining licence area that was identified in the EES as requiring removal. The EES identified that the dwelling was likely to have social and familial value to the landholder.

The social effects of displacement including effects on connection to land and enjoyment of this land, require careful management. While landholders affected by displacement will be financially compensated, in some cases it may not be possible to mitigate effects through compensation.

As outlined in Section 5.8, maintaining effective communication and engagement with affected landholders will be critical and I support the requirement for all staff involved in direct engagement with landholders to receive appropriate training (EMM SE-08). The changes I recommended to the Community Engagement Plan (EMM SE-02) to require that at least one representative from a landholder displaced by the project is involved in the Environmental Reference Group (should they self-nominate) will also assist in proactive engagement with these landholders. While I agree with the IAC that the protection or relocation of valued objects or places to be impacted by the project could be explored through engagement

conducted as a part of the Community Engagement Plan, I also consider that the compensation process will enable individual landholders to negotiate with the proponent on this. I also support the IAC's change to EMM SE-02 to require that the Community Engagement Plan be generally consistent with the exhibited EES Chapter 5 and, if required, updated to be consistent with my assessment.

Changes in amenity

Changes in amenity associated with the project, including increased dust and noise emissions and changes in visual amenity, have the potential to generate social effects for landholders and other community members such as effects on liveability and wellbeing. The EES found that changes in amenity for occupants living in close proximity to the project, have the potential to decrease the satisfaction they feel with living on their property. It found that occupants situated in a relatively quiet area may be particularly sensitive to changes in amenity. The EES indicated that a number of residents place a high value on the rural landscape that they live in and / or have a strong intangible connection to the land and surrounding area. Some landholders also raised concerns in submissions to the IAC about how their liveability could be affected by noise and dust emissions, traffic, views of stockpiles and lighting from the project.

The range of EMMs discussed in my assessment to avoid and minimise changes in amenity and reduce human health risks will assist in mitigating liveability and wellbeing effects (sections 5.5-5.6 and 5.8). The complaints handling system developed as a part of the Community Engagement Plan (EMM SE-02) will also assist in responding to community concerns and taking any necessary corrective action. However, given the potential for some landholders living in proximity to the mine or haulage route to experience changes in amenity over an extended period, given the projected life of the mine is over 36 years, I consider that additional measures are needed to more proactively involve these landholders. I support the establishment of an Environmental Reference Group (EMM SE-02) prior to project works commencing but consider that additional changes are needed to this EMM to maximise the opportunity for directly affected landholders to be involved. To this end, I recommend that the proponent be required to promote the establishment of an Environmental Reference Group within the local community and, as noted above the Group be required to include at least one representative from a landholder living in proximity to the mine and at least one representative from a landholder living in proximity to the haulage route (should they self-nominate) so that any concerns regarding liveability and wellbeing effects from changes in amenity can be discussed in a proactive manner. As outlined in Section 5.8, I have also recommended changes to EMM SE-07 to enable residents living in proximity to the project or haulage route who may be affected by sustained changes to amenity, to access counselling services.

While the social effects of changes in amenity are not discussed in detail in the IAC report, based on its findings relating to amenity, and subject to its recommendations and those I have made above, I consider that the social effects on amenity can be managed to acceptable levels.

Changed demand for housing and community services and changed social dynamics

The small influx of project workers during construction and at the start of operations has the potential to create several social effects.

Construction workers sourced from outside the region are likely to create additional demand for temporary and short-term accommodation in Horsham and the broader region during the one-year construction period. This has the potential to impact on the availability of such accommodation for other users. The IAC heard evidence from the proponent's expert witness that there is substantial unused capacity in the region's temporary accommodation market to accommodate this workforce and other users. However, in its submission to the IAC, Council raised concerns that tourist and business visitation could be significantly affected by this increased demand. Council also raised concerns over the currency of some of the temporary accommodation market data used to inform the Social Impact Assessment (SIA) prepared for the EES.

I agree with the IAC that proactive planning on workforce accommodation is critical to minimising any potential effects on the temporary accommodation market. I consider that the workforce accommodation strategy (EMM SE-03), which will include an assessment of the need for mitigation strategies, including drive-in drive-out (DIDO) and fly-in fly-out (FIFO) worker positions, will assist in minimising project effects on the temporary accommodation market. I support the intent of

the IAC's recommended changes to EMM SE-03, one of which requires that the strategy include contingency measures for accommodating the construction workforce should temporary accommodation arrangements not be available for the construction workforce. I suggest a further change to this EMM to clarify that temporary accommodation contingencies may include working with local caravan park operators to install additional cabins at their premises, in line with the proponent's Technical Note[49] on this issue.

The IAC also raised concerns about the currency of the demographic and housing data used in the SIA and EES. All technical studies and associated EES documentation should be informed by the most up to date data available. Where limited up to date data is available to inform a study, this should be clearly articulated as a study limitation. I support the IAC's recommendation that EMM SE-03 be changed to require that the workforce accommodation strategy be based on current data and reviewed periodically, including prior to operations commencing.

Workers and their families who move to the area from outside the region at the start of mining operations will create additional demand for permanent housing to rent or buy in Horsham and the surrounding area. This has the potential to effect housing supply and affordability, particularly in the short-term. The IAC heard evidence from the proponent's expert witness that the local rental market is tight but impacts on housing are manageable with the implementation of a workforce accommodation strategy. I acknowledge the concerns raised by Council and a number of community submitters to the IAC regarding the existing housing shortage in the region and the potential for the project to exacerbate availability issues.

I consider that the workforce accommodation strategy (EMM SE-03), including the IAC's recommended changes, will assist in managing potential impacts on the permanent housing market. This includes a requirement to prepare a schedule of housing under the control of the project, inclusive of strategic housing purchases, rental agreements with holiday homeowners and partnerships with housing developers, which I support.

I agree with the IAC finding that workforce accommodation needs and impacts will be adequately addressed through development and implementation of the workforce accommodation strategy. The influx of workers associated with the project for construction and operations is expected to be relatively small and I consider that the range of measures and contingencies to be developed as a part of the workforce accommodation strategy, including the potential use of DIDO and FIFO worker positions, will assist in managing potential effects. The IAC concluded that subject to its recommendations, effects on housing are acceptable. I am also satisfied that following implementation of the IAC's and my recommendations, effects on housing supply and affordability will be acceptably managed.

The small influx of workers during project construction and operations has the potential to create additional demand for community services in Horsham and the surrounding region and affect existing residents access to these services. The IAC heard evidence from the proponent's expert witness that childcare services and general practitioners are currently operating at or near capacity in Horsham but that the small uplift in demand associated with the project would have a minimal effect. I acknowledge Horsham Rural City Council's submission to the IAC which indicated that long day care services in Horsham and the surrounding region are currently over stretched. Council noted however that they are in the process of bringing on an additional long day care provider in Horsham North with 92 places. Concerns were also expressed by Council at the hearing about the currency of some of the data used to inform the SIA and its ability to accurately quantify the additional demand on community services created by the project. Due to these concerns, Council requested that the SIA be updated with current data.

I agree with the IAC's finding that the project is unlikely to place unreasonable demands on community services and facilities. While I note that some services are currently experiencing capacity issues, the scale of change associated with the project is expected to be small and I consider that the EMMs proposed will assist in minimising any project effects on service availability. In particular, the IAC's recommended change to EMM SE-04 requires the proponent to communicate anticipated workforce size and composition to Council and the Department of Education following project approval, to inform service planning.

[49] Technical Note 01, tabled document 38

It is important that EES technical studies are informed by the most up to date data available, however I do not consider that any issues with data currency in the SIA would have significantly altered the study findings or mitigation measures as they relate to managing demand on community services. Given this, I support the IAC's finding that the SIA adequately captures existing conditions and impacts, for the purposes of identifying appropriate measures to manage potential effects.

The small influx of workers to the region during construction and at the start of mining operations has the potential to impact on community cohesion in Horsham and nearby settlements. The EES found that as the number of new residents is expected to be small, particularly relative to the population of Horsham, these residents are likely to integrate into and contribute to the existing community, resulting in a positive impact.

In contrast, I acknowledge that a small number of submitters to the IAC raised concerns that the influx of workers could result in increased crime and a decline in community cohesion. While the IAC did not make any specific findings on the potential for the project to impact on community cohesion, it did note that it was not given any information to support the concerns that the influx of workers could lead to increased crime. I consider that the relatively small number of project workers who move to the area during construction and operations have the potential to contribute to the vitality of the area and that measures such as the community development fund (SE-04) will assist in integrating the project and its workforce into the existing community.

Employment and business opportunities and changes in land use

The EES estimated that the project will generate a gross revenue of $512.8 million per annum for Victoria during operations (inclusive of direct, flow-on supply chain and consumption effects). This includes $93 million in wages and salaries annually. It was estimated that a gross revenue of $335 million per annum will be generated for the Wimmera Southern Mallee Region during this same period. The additional demand created by the project for local workers during mining operations also has the potential to impact on the supply of labour available to other existing local industries such as agriculture, construction and manufacturing. The EES estimated that impacts would be short-term and that the project would attract additional workers and increase the labour market pool. The EES also assessed the effect of the temporary change in land use from agriculture to mining and estimated that the total loss in agricultural production would equate to $465,450 per annum.

I acknowledge the multiple submissions to the IAC, including from local businesses and residents that expressed support for the employment and local business opportunities that would be generated by the project. In their submission to the IAC, Council expressed support for the economic benefits that the project would bring for the region, including employment and procurement opportunities and other flow on benefits. I also acknowledge that Council and other submitters to the IAC expressed concern that the project would create challenges for the local labour market given low levels of unemployment, difficulties in finding skilled staff and potential to offer higher salaries on the project.

The EES also identified the potential for cumulative effects on the local labour market to be experienced from concurrent projects proposed within the region, including other mineral sands projects (e.g., Donald Mineral Sands, Wimmera Mineral Sands and WIM150 Mineral Sands projects). While these projects would increase the size and skill set of the local workforce the potential to contribute to long-standing skills gaps in the region was also acknowledged. To assist in managing this potential impact I suggest that the community support and workforce development strategy (EMM SE-04) be reviewed periodically including once the timing of these other projects becomes clearer and updated as required.

I support the intent of the IAC's recommended changes to EMM SE-04 which require that a community support and workforce development strategy be prepared and implemented. I also consider that the focus of this strategy on skills development, apprenticeships and programs to support local business to tender on goods and services contracts (among other things) will assist in maximising regional economic benefits, minimising impacts on the local labour market and maximising social benefits. The progressive rehabilitation strategy proposed for the project as set out in EMM RH-01 should enable land within the mining licence area to be progressively returned to its previous productive land use and capability. This will assist in minimising the amount of land taken out of agricultural production at any one time and the length of time it is out of production.

I support the IAC's finding that the project is likely to bring significant economic benefits and that delivery of the project will contribute to achieving the best use of available mineral sands resources in an economically and environmentally sustainable way. I also support the IAC's findings relating to workforce impacts and opportunities and agree with the IAC that subject to its recommendations and those of my own, the workforce effects of the project are acceptable.

Assessment

It is my assessment that:

- The social and economic effects have been properly identified and assessed.
- The project will cause social effects but on balance these effects can be managed to acceptable levels through the EMMs, as modified in accordance with the IAC report and my assessment.
- The project is likely to bring substantial economic benefits for the Wimmera Southern Mallee Region and the State of Victoria.
- I support the intent of the IAC's changes to EMM SE-02, SE-03, SE-04 and SE-07 with the further modifications recommended in my assessment.

5.10. Soils, landform and rehabilitation

Evaluation objective

Achieve the best use of available mineral sands resources, in an economically and environmentally sustainable way.

Minimise adverse social, land use and infrastructure effects.

Assessment context

Soils and landform effects and rehabilitation issues were addressed in EES Chapters 15 Soils and Landform and 22 Land Rehabilitation, EES Technical Appendix J Soils and Landform Impact Assessment, and EES Attachments 3 Rehabilitation Plan, 4 Work Plan Framework and 5 Aspects and Risk Register. Soils, landform and rehabilitation issues were considered in Section 7 of the IAC report. WIM Resource has proposed 14 EMMs (13 avoidance and mitigation measures and 1 monitoring measure) to deal with soils, landform and rehabilitation effects and four avoidance and mitigation measures have been the subject of recommendations by the IAC. The IAC also recommended the addition of two EMMs to the EMF to manage effects on soils and landform and rehabilitation issues.

The project is situated within the North Western Dunefield landscape unit within the Wimmera region, which is characterised by a very low variation in elevation. The EES stated that the two dominant soil types associated with the project area are vertosols and sodosols. Vertosols occupy up to 70% of the project area and are soils that generally have high agricultural potential because of their high chemical fertility and water-holding capacity but may suffer from poor drainage. Vertosols generally have moderately to highly sodic and saline subsoils. Sodosols occupy up to 30% of the project area and are duplex soils with a strongly sodic and saline subsoil. The EES stated that despite their typically low agricultural potential and high sodium concentration in the deeper soil layers, sodosols are still considered to be productive agricultural soils. The primary chemical limitations to plant growth present across the project area for both soil types were determined to be sodicity, alkalinity, salinity and boron.

The EES identified several potential soils and landform impacts associated with the project including:

- mining and movement of soil materials results in adverse effects on soil profile capability and agricultural productivity post-mining;
- backfilling of mine voids with tails and/or overburden results in geotechnical instability of the final landform;
- mining and movement of soil material results in increased rates of erosion from operational areas and from rehabilitation;
- stripping and excavation of the soil profile results in disturbance to existing contaminated land and impacts to surrounding soil resources;

- disturbance of potential acid sulfate soils results in oxidation of reactive materials and acidification of soil resources; and
- mine operations results in the release of contaminants and impacts to soil resources and other sensitive receptors.

The EES stated that, based on targeted field sampling, the materials from the Shepparton Formation and Loxton Parilla Sands Formation geological units within the project area are unlikely to present a potential acid sulfate soils hazard. While the Geera Clay geological unit was considered to represent a high potential acid sulfate soils hazard, it sits below the ore body and would not be disturbed during mining. The EES also noted that there are no priority EPA contaminated sites recorded within the project area.

The EES proposed several EMMs to manage potential impacts on soils and landform and concluded that, with the implementation of the proposed EMMs, residual impacts would be minor or negligible.

Discussion

The IAC considered that the key issues associated with soils and rehabilitation relate to:

- soils being adequately assessed prior to mining;
- soil stockpiling being appropriately managed;
- potential for the condition of soils to be impacted by stockpiling;
- ability to return the land to a productivity commensurate with pre-mining; and
- adequacy of measures for unplanned closure of the project.

Soils

The EES described how the approach to mining and development of measures to preserve and protect soils to optimise agricultural land productivity was informed by the soils in the development extent. The EES found that the project is expected to generate minor changes in the chemical and physical properties of the soil and that soil capability and productivity will not be affected by the project.

Submitters, including landholders in the mining licence area, raised concerns about the soil testing undertaken to date and the ability to maintain structurally sound and productive soils. At the hearing, Mr Sparke, an agronomy expert witness for the Scanlan Carroll submitters, said soil testing to date had been inadequate and considered that further soil nutrients needed to be tested to provide an accurate baseline of pre-mining soil health. Mr Sparke made recommendations regarding soil testing methodology and information management. Mr Sparke also recommended further planning in relation to wind erosion and stressed the importance of having stockpile cover to reduce erosion (EMM SL-03).

Mr Savage, a soils and landform expert witness for the proponent, recommended several soil management practices which had already been captured in the EMMs, including segregating topsoils, subsoils and overburden, applying ameliorants to soils, managing stockpiles and investigating soil contamination. Both Mr Savage and Mr Bannan, a rehabilitation expert witness for the proponent, agreed with many of Mr Sparke's recommendations including around soil testing (EMM SL-04), wind erosion planning (EMM SL-03), and weed management (EMM SL-09).

The IAC noted that the proponent agreed to a number of the recommendations in principle, stating that if the matters are not addressed in the rehabilitation plan, they could expect to be further researched or resolved during consultation for the work plan and compensation process. The proponent made changes to EMMs in response to the evidence including to require a suitably qualified person undertake the agricultural baseline assessment proposed under EMM SL-12. It also said that soil stockpile management requirements in the EMF will require a pre-mine survey to identify key stripping depths for each soil unit and the information to be used to prepare rehabilitation plans for each landholding, which is reflected in the Day 4 version of EMM SL-02.

The IAC considered that "managing the soil stockpiles and bringing them back to commensurate productivity is one of the most important, if not the most important, determinant of the post-mining success"[50] of the project and that protecting the topsoil from wind erosion will be crucial. Upon consideration of Mr Sparke's suggestions, the IAC recommended the addition of EMM SL-13, which requires the preparation of wind erosion management guidelines to specify measures to minimise wind erosion from stockpiles and the conditions for when stockpiles can be backfilled. The new EMM SL-13 further specifies that the guidelines must be prepared by a person with expertise in agricultural soil management. I endorse the addition of EMM SL-13 to the EMF as it will further manage the adverse effects of wind erosion on stockpiles. I recommend a further change to EMM SL-13 to require that the guidelines be reviewed and revised if required, after each block has been mined to reflect any changed understanding based on operational experience. I also recommend that EMM SL-03 be updated to require that stockpiles are managed with consideration of EMM SL-13.

I agree with the IAC that the Day 4 version of EMM SL-02 and monitoring requirement SL-0A provide a sound basis for monitoring and managing potential effects on soil and agree with the IAC's recommended changes to EMM SL-03 (soil stockpile management) to require a detailed inventory of soil stockpiles be prepared and securely stored.

The IAC was also satisfied with the Day 4 version of other EMMs related to soil management (SL-01, SL-05 and SL-06) and recommended changes to three EMMs in response to the evidence provided:

- SL-04 (soil amelioration), to require testing of gypsum and other ameliorants, as recommended by a suitably qualified person;
- SL-09 (weeds and pathogens), to require a weed and pathogen management plan that applies to the whole project, not just the flora and fauna management plan; and
- SL-12 (agricultural baseline assessment), to require the assessment be prepared for each landholding or paddock.

The IAC found that soils need to be assessed in detail and inventoried prior to mining and that stockpiles can be managed through careful segregation into discrete units. The IAC concluded that, with the implementation of the proposed EMMs, revised EMMs SL-03, SL-04, SL-09 and SL-12, and additional EMM SL-13, the adverse effects of stockpiling can be adequately avoided, mitigated or managed, and that the adverse effects on soils are acceptable.

I support the IAC's findings and recommended amendments to EMMs SL-03, SL-04, SL-09 and SL-12, and recommended additional EMM SL-13. As noted above, I have made further recommendations regarding EMMs SL-03 and SL-13. I agree with the IAC that bringing soils to commensurate productivity will be a critical determinant of post-mining success. With the implementation of the refined EMMs, I consider that adverse effects of stockpiling and adverse effects on soils can be managed to acceptable levels.

Land rehabilitation

The IAC examined whether land disturbed by mining can be returned to a productivity commensurate with pre-mining. The EES explained that a demonstration trial was undertaken in 2019-2022 to test the feasibility of mining, processing and rehabilitation within the project area. It involved:

- stripping and stockpiling topsoil, subsoils and overburden;
- excavating approximately 5,000 bank cubic metres of ore from between 13-20 m below ground;
- confirming mine design parameters and suitability of equipment;
- processing excavated ore by separating the HMC from coarse and fine sand tailing;
- dewatering and co-disposal of tailings back into the pit for consolidation;
- reapplying overburden and soils; and
- seeding with barley in 2021 and harvesting.

The outcomes of the demonstration trial informed the preparation of a preliminary rehabilitation plan included with the EES (Attachment 3), which was required in the EES scoping requirements. The plan sets out the progressive

[50] Avonbank Mineral Sands Project IAC Report 8 November 2023

rehabilitation strategy for the project and has been designed to ensure no ongoing management measures are required once the land is fully rehabilitated. The EES stated that the preliminary rehabilitation plan would be refined prior to project commencement with consideration of the detailed operating plans, stakeholder and community feedback and my assessment. The EES concluded that while there are expected to be minor changes to the chemical and physical properties of the rehabilitated soil profiles compared to unmined areas, the soil capability and productivity are expected to be commensurate with the surrounding non-mined areas. The IAC agreed that, subject to its recommendations, it is expected that the agricultural land will be returned to the same or better state of productivity.

Submitters, including landholders in the mining licence area, raised concerns related to rehabilitation. Some submitters were critical of the demonstration trial due to the site not being representative of the soils to be mined, the shallower depth of its excavation compared to the proposed project depth and the use of a small excavator which would not cause the same level of compaction as that proposed to be used for the project. They also submitted that seeding and germination periods need to be considered in the rehabilitation plan schedule. A number of other individual submitters also expressed confidence that the mine could be rehabilitated into productive farming land.

The IAC heard evidence from Mr Bannan that differences between the demonstration trial and the preliminary rehabilitation plan were due to lessons learnt having been applied from the demonstration trial to the project. He expressed confidence that the land could be returned to its pre-mining productivity. Mr Sparke stressed the importance of landholder engagement for achieving a workable rehabilitation plan. Both Mr Savage and Mr Bannan agreed with Mr Sparke that soils need to be returned with commensurate health as pre-mining and noted that bringing the soil back to its original health will require ongoing treatment and long-term monitoring post-rehabilitation.

I agree with the IAC that the new EMM proposed by the proponent, RH-02: Rehabilitation Research Plan, will assist in investigating and assessing the feasibility of alternative rehabilitation methods to optimise the end land use and ensure risks are minimised as far as practicable.

The IAC further highlighted that the rehabilitation plan provided with the exhibited EES is preliminary only and requires further development and approval prior to project commencement. The IAC noted that the rehabilitation plan will form part of the approvals under the MRSD Act, informed by the requirements in the EMF (including EMM RH-01), and that the incorporated document imposes some rehabilitation requirements for the WBA. The IAC considered that the rehabilitation plan should be reviewed periodically to assess its performance and be adjusted as necessary. I note that Earth Resource's *Preparation of Rehabilitation Plans: Guideline for Mining & Prospecting Projects*[51] set out expectations for when a rehabilitation plan (and the broader work plan) may need to be updated. Given this, I do not consider that further updates are needed to RH-01 to specify the need for periodic review. However, I consider that SL-10 should retain the requirement to review and update the Rehabilitation Operations Management Plan at an appropriate frequency in line with the IAC's suggested wording in Section 24.7.1 of the EMF to assist in providing stakeholder with greater confidence that rehabilitation management will continue to be adapted during the life of the project based on any changes to requirements and/or operational experience.

The IAC concluded that, with the implementation of the proposed EMMs and the revised and additional EMMs as recommended by the IAC and supported by me, adverse effects related to land rehabilitation can be sufficiently avoided, mitigated or managed to acceptable levels. I support the IAC's findings. I consider that the proposed EMMs including the rehabilitation plan provide a sound framework for managing potential project effects on soils and landform so that soil capability and productivity can be returned to a condition commensurate with surrounding non-mined areas.

Unplanned closure

The IAC examined whether there are adequate measures in place to manage unplanned closure of the project. The preliminary rehabilitation plan attached to the EES included a brief section on unplanned closure. It described that possible reasons for a temporary closure relate to safety, economic or other issues, in which case the project would be put into a "state of care and maintenance for a period until there is clarity on a path forward for the operations". It stated

[51] February 2020

that, if feasible, progressive rehabilitation would continue in accordance with the rehabilitation plan. EES Attachment 3 also stated that there would be sufficient material stockpiled to undertake rehabilitation works in the event that the rehabilitation bond was to be drawn on to pay a third party to undertake such works.

Submitters raised concerns related to unplanned closure. One submitter was concerned about the project shutting down or slowing down possibly for years due to fluctuations in the price of minerals. Some submitters gave examples of mines that have been abandoned, leaving a toxic legacy due to insufficient funds for rehabilitation. Other submitters were concerned about the cost of rehabilitation and the adequacy of the bond to fund rehabilitation, noting that the issue was documented in the 2020 Victorian Auditor-General's report on rehabilitating mines.

The IAC noted that the section on unplanned closure in the preliminary rehabilitation plan does not explicitly raise the possibility of permanent closure, but it is alluded to by raising the possibility of paying a third party to undertake rehabilitation. The IAC also noted that the plan made no mention of unplanned closure of the WBA, obligations to landholders for compensation and payment of money owed to employees, contractors and others.

To ensure clarity around expectations and responsibilities, and for the benefit of all stakeholders, the IAC considered it important to require contingency measures for rehabilitation in the event of temporary or permanent unplanned closure. The IAC considered that EMM RH-01: Rehabilitation Plan was not fit for this purpose and recommended the addition of EMM RH-03 to the EMF, which requires the preparation of a contingency plan for unplanned closure in consultation with an independent mining management expert, stakeholders and landholders prior to construction. The IAC concluded that, with implementation of the proposed EMMs and the additional EMM RH-03, adverse effects related to unplanned closure can be avoided, mitigated or managed to acceptable levels.

While I support the intent of the IAC's recommendation of an additional EMM and plan, I note that the rehabilitation plan to be developed for the project will need to set out how the proponent intends to deal with unplanned, interim or unexpected closure scenarios in line with Earth Resource's *Preparation of Rehabilitation Plans: Guideline for Mining & Prospecting Projects*. Given this, I recommend that EMM RH-01 be updated to reflect that the rehabilitation plan will need to set out the approach for dealing with unplanned, interim or unexpected closure rather than capturing this through a separate EMM and plan (EMM RH-03). With the implementation of the refined EMM RH-01, I consider that adverse effects related to unplanned closure can be acceptably managed.

Assessment

It is my assessment that:

- The adverse effects on soils can be acceptably managed with the implementation of the proposed EMMs, revised EMMs SL-03, SL-04, SL-09 and SL-12, and additional EMM SL-13, as recommended by the IAC and supported by me. I recommend a further change to EMM SL-13 to require that the wind erosion management guidelines be reviewed and revised if required, after each block has been mined to reflect any changed understanding based on operational experience. I also recommend that EMM SL-03 be updated to require that stockpiles are managed with consideration of EMM SL-13.
- The adverse effects related to land rehabilitation can be managed to acceptable levels with the implementation of the proposed EMMs.
- The adverse effects related to unplanned closure can be acceptably managed with the implementation of the proposed EMMs, provided that EMM RH-01 be updated to reflect that the rehabilitation plan will need to set out the approach for dealing with unplanned, interim or unexpected closure.

5.11. Other effects (Aboriginal cultural heritage, historic heritage, landscape and visual, wastes and emissions)

As noted in my published reasons for requiring an EES, the EES was to focus on potentially significant effects of the project including those related to land use and amenity (i.e., air quality, noise and visual), surface water and groundwater, remnant vegetation and associated biodiversity values, and Aboriginal cultural heritage values. The EES, submissions, IAC and supplementary information carefully examined additional potential effects associated with these aspects. Except for Aboriginal cultural heritage and landscape and visual effects, these are considered in sections 5.1 to 5.10 of this assessment. Aboriginal cultural heritage and landscape and visual effects are discussed below along with other effects examined in the EES and IAC hearing process (historic heritage and wastes and emissions).

Table 8 outlines the IAC's findings relating to these effects and discusses their overall significance, the proposed EMF and management controls. Generally, I support the findings of the EES and the IAC in relation to these effects and consider that they can be effectively managed through well-established practices including the recommended EMMs. I have recommended amendments to management measures and/or conditions of approval where warranted.

Table 8: Assessment of other environmental effects

IAC findings and recommendations	Assessment
Aboriginal cultural heritage While the project is located within a culturally significant landscape (BGLC), no Aboriginal archaeological sites or cultural heritage effects were identified within the proposed development extent. The IAC concluded that Aboriginal cultural heritage effects were adequately assessed in the EES and Cultural heritage mitigation measures would adequately manage project effects. The IAC acknowledged the issues raised by BGLC, the Registered Aboriginal Party, in their submission[52] regarding the intangible and tangible values in the surrounding cultural landscape. The BGLC noted that if the IAC is satisfied that the project poses no risk to this cultural landscape, and associated cultural values then it would support the project. The IAC indicated that it had regard to impacts on surface water and groundwater systems, and flora and fauna values in arriving at its findings on Aboriginal cultural heritage effects.	I support the IAC's findings and note that a CHMP, approved by BGLC, is required for the project. The approved CHMP would then need to be implemented accordingly, to protect Aboriginal cultural heritage, as agreed with BGLC. To this end, I also support the IAC's recommended change to AH-01.
Historic heritage The EES did not identify any statutory or non-statutory historic heritage sites within the development extent. Nine potential historic heritage sites were identified within the Project Area, of which two were subsequently determined not to be archaeological sites. Post exhibition, Dwelling R38 (Site 3) which had been identified as a site of potential historic value, was removed from the development extent of the Project and will now be retained. In its report, the IAC noted that the measures proposed in the EMF are adequate to sufficiently avoid, mitigate or manage the effects on historic heritage, subject to the following changes:	I support the majority of the IAC's proposed amendments to HH-01, HH-03 and HH-04. It is my recommendation that further modification is made to EMM HH-04 to specify that education on the Chance Finds Procedure (EMM HH-03) is included in the heritage induction and training program for site personnel. I also recommend that the timeframe and process for reviewing and updating the Historic Heritage Management Plan be included in EMM HH-04 in line with the IAC's suggested wording in Section 24.7.1 of the EMF.

[52] Tabled document 127

IAC findings and recommendations	Assessment
EMM HH-01 (Exclusion zones) should be amended to specify further field investigation of the retained dwelling (Site 3) prior to confirmation of the development extent boundary. The IAC also recommended that following field investigation, including archaeological survey and consultation with the landholder, an exclusion zone should be established and maintained around the retained dwelling that would also account for potential impacts from ground movement. Additional minor amendments to EMM HH-03 and EMM HH-04.	I also recommend the proponent have regard to the advice by Council concerning the condition of Dooen Weir and undertake further field investigation prior to any project works in vicinity of this site. If the Dooen Weir is assessed to still be present and within vicinity of any project works, an exclusion zone should be established around this site in line with EMM HH-01 and EMM HH-0A and procedures followed in accordance with the Historic Heritage Management Plan (EMM HH-04) and requirements under the *Heritage Act 2017*. Subject to these recommended changes I agree with the IAC that the EMMs are adequate to sufficiently avoid, mitigate or manage the effects on historic heritage. Sites identified of being of familial value are discussed further in Section 5.9 - Socioeconomic.
Landscape and visual The EES assessed landscape and visual impacts as being minor to negligible. Some concerns were raised in submissions regarding the visual impact of one of the stockpiles (Overburden Stockpile B) and the need to account for line-of-sight distances for road users in the design of landscape screening vegetation. To address these matters, the IAC recommended the EMMs relating to Landscape Screening (LV-04) be updated to require the proponent to consult with Council to ensure appropriate road intersection line-of-sight distances are maintained, and with the adjacent landholder to Overburden Stockpile B.	I support the IAC's recommendations to update LV-04 to strengthen consultation requirements with Council and the adjacent landholder to Overburden Stockpile B regarding the landscape screening vegetation. In regard to LV-04, I consider it appropriate the outcomes of discussions with Council regarding the landscape screening vegetation and agreed set-back distances to achieve line-of–sight requirements are reflected in the traffic management plan (where applicable). I note that some of the EMMs proposed to manage air quality and soils associated with stockpile management may also assist in managing visual impacts. Section 5.8 provides my assessment of the health effects associated with exposure to project lighting by residents living in proximity to the project (visual impacts).
Waste and emissions *Greenhouse Gas Emissions* To meet the General Environmental Duty (GED), as discussed at Section 4.5, WIM Resource is required to minimise the risks of harm to human health or the environment from pollution or waste, including greenhouse gas emissions, 'so far as reasonably practicable'.	I support the IAC's findings that the GHG emissions effects generated by the project are acceptable. Along with the IAC, I acknowledge the concerns of submitters regarding the adequacy of the measures developed by WIM Resource to meet Commonwealth and State climate change legislation.

IAC findings and recommendations	Assessment
The IAC found the GHG emissions effects would be acceptable, subject to measures proposed in the EMF being updated and strengthened to adequately avoid, mitigate or manage effects. Specifically, the IAC recommended the following change to EMM WE-05: GHG and Energy Efficiency Program: • Require investigation of the feasibility of transitioning to renewable energy and/or introducing offsets as far as practicable, for energy efficiency targets to be set and a requirement for targets to be regularly reviewed and adjusted if necessary to ensure they, at a minimum, align with any changes to Victoria's interim and net zero targets.	As such I support the IAC's recommendations to amend and strengthen the GHG and Energy Efficiency Program (EMM WE-05) as proposed. I consider it appropriate that EMM WE-05 is further amended to reflect that before the consideration of offsets, minimising risk of harm from GHG emissions 'so far as reasonably practicable' is required in line with the GED. It's recognised the IAC made various other recommendations that seek to further reduce project related GHG emissions such as the use of the HMC haulage route to the Port of Portland, and the Green Travel Plan. My consideration of the IAC's findings in relation to these matters is presented in Section 5.4 (Traffic and Transport).
Waste The IAC determined that WIM Resource's approach to avoid, mitigate and manage potential waste effects from the construction and operation of the project is appropriate, subject to amendment of EMM WE-06 to require the Waste Management Plan be in accordance with the *Dangerous Goods (Storage and Handling) Regulations 2023*. The IAC also recommended amendment to condition 5.4 of the Incorporated Document requiring the Development Plan to show the location and layout of dangerous goods storage buildings.	I support the IAC's findings that the potential waste effects associated with the project can be effectively managed, subject to the IAC's recommended revisions to EMM WE-06 and the waste management controls specified in the Incorporated Document. Section 5.2 provides my assessment of the effects to groundwater of deposition of waste into the mine void. Section 5.7 provides my assessment of radioactive waste, and effects associated with emissions of radiation. Section 5.10 (Soils, landform and rehabilitation) provides my assessment of the effects of potentially contaminated soil and materials.

6. Conclusions

I consider that the environmental effects of the proposed project examined through the EES process are generally acceptable, provided project modifications recommended in this assessment are implemented, together with EMMs endorsed by the IAC and refined through this assessment.

As outlined in Section 5.1 of my assessment, I do not support the IAC's finding that there are no significant environmental effects that preclude the project being approved, as I consider that the project as proposed is likely to have significant and unacceptable residual impacts on specific threatened biodiversity values, without further mitigation. These include the FFG listed threatened Northern Plains Grassland ecological community in the mining licence area, and Weeping Myall and the EPBC listed threatened Natural Grasslands of the Murray Valley Plains ecological community in the minor utilities corridor. To this end, my assessment recommends modifying the project to retain the Greenhills Road reserve, to ensure residual impacts of the project on the threatened Northern Plains Grassland and associated environmental values can be reduced and managed to acceptable levels.

Consistent with the IAC, I consider that there is residual uncertainty about the examination of the potential effects on threatened flora and fauna in the minor utilities corridor, and therefore have recommended changes to WIM Resource's proposed EMMs to complete further survey for some specific threatened flora and fauna in the minor utilities corridor. This will help address residual uncertainties and ensure residual impacts are appropriately avoided and minimised though project design and implementation. I also recommend that the proponent prepare a design management document to demonstrate how the siting and design of infrastructure and construction works in the minor utilities corridor addresses the amended EMMs, as outlined in this assessment, and therefore can achieve acceptable environmental outcomes consistent with the findings of this assessment.

While the temporary change in land use from agriculture to mining across the mining licence area has the potential to give rise to several environmental effects, I consider that implementation of the EMMs, as recommended by the IAC and set out in Appendix A of my assessment, provide a sound framework for managing these effects. This includes development and implementation of a mine work plan (or equivalent under the future MRSD Act duty-based framework) and rehabilitation plan for the project. Landholders in the mining licence area also have the potential to experience social effects from temporary displacement from family homes and farms during active mining. The EMMs, as modified in accordance with the IAC report and my assessment, offer a range of mitigations in this regard and landholders will be compensated according to legislative requirements. Therefore, on balance, I find that social effects can be managed to acceptable levels.

The Victorian EES process served as the accredited assessment process for the purposes of examining the significant impacts of this 'controlled action' on MNES under the EPBC Act. My assessment is issued to the Commonwealth Minister for Environment and Water to inform the decision about whether and under what conditions to approve the project under the EPBC Act. On balance, I consider that residual impacts on MNES are unlikely to be significant, providing sound implementation of the amended EMMs, based on the recommendations of the IAC and this assessment. Residual impacts on listed species and communities and other environmental values associated with the whole of environment assessment, can be acceptably managed through implementation of these EMMs.

Decision-makers need to consider this assessment before deciding whether and how the project should proceed. As a matter of good practice, I also expect decision-makers to write to me to advise how my assessment was considered and applied.

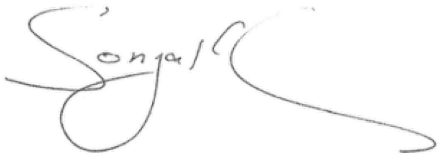
Table 9 summarises my response to the IAC's key recommendations as provided in the Executive Summary of the IAC report. My additional primary recommendations are summarised in Table 10. My detailed recommendations relating to each environmental aspect are outlined in Appendix A.

Table 9: Response to IAC's key recommendations.

IAC key recommendations		Minister's response	Section of this assessment
1	Amend the Environmental Management Framework as shown at Appendix G of this Report.	Generally supported subject to recommended additional changes to the EMF as outlined in Section 5 and Appendix A of this assessment.	Section 5 and Appendix A
2	Approve the draft Horsham Planning Scheme Amendment C84hors, subject to amending the Avonbank Mineral Sands Project Incorporated Document in line with the Committee's recommended version shown at Appendix H of this Report.	Supported in principle, noting additional changes needed to the draft PSA outlined in Section 4 and Appendix A of this assessment, and that the final form and content of the PSA will need to be submitted for a formal decision under the Planning and Environment Act, in due course.	Section 4 and Appendix A

Table 10: Minister for Planning's additional primary recommendations.

Primary recommendations	Section of this assessment
The project needs to avoid clearing the Greenhills Road reserve and associated native vegetation, in order to reduce project impacts on the FFG listed threatened ecological community 'Northern Plains Grassland' and associated environmental values to acceptable levels.	5.1
Additional flora survey work needs to be undertaken to inform offset requirements ahead of any relevant approvals being sought.	5.1
Further survey work needs to be undertaken for some specific threatened flora and fauna in the minor utilities corridor, prior to relevant approvals being granted, to help ensure residual impacts are appropriately avoided and minimised.	5.1
The proponent needs to prepare a design management document to demonstrate how the siting and design of infrastructure and construction works in the minor utilities corridor meets the amended EMMs (outlined in this assessment) and achieves acceptable environmental outcomes.	5.1



HON SONYA KILKENNY MP

Minister for Planning

Date: 8 November 2024

Appendix A Environmental Management Measures

The IAC recommended specific changes to the EMF and several EMMs in response to submissions and through their analysis of the issues. Section 4 of this assessment outlines the IAC's key findings and recommendations relating to the EMF and my response. Further to this, Section 5 of this assessment sets out where I support and/or recommend further changes to the EMMs considered by the IAC.

Table A1 contains the proponent's 'Day 4' version of the EMF that was tabled at the inquiry hearing (Tabled documents 146 and 147) and incorporates recommended changes from the IAC denoted as either 'additions' and/or '~~deletions~~'. I generally endorse all changes recommended by the IAC except where qualified in Table A1. Further details regarding my findings and recommendations in this table are contained in Section 5 of this report.

Table A1: Recommended changes to environmental management measures

#	IAC recommendation	Work area	Minister's response
Land Use and Planning			
LP-01	**WIM Base Area (WBA) location** The WBA secondary processing infrastructure must be situated within the Wimmera Intermodal Freight Terminal (WIFT) as generally as depicted in Figure 8-6 of the EES.	WBA	Supported with a change to reference Figure 8-14 of the EES instead of Figure 8-6.
LP-02	**Land Access Agreements or Land Purchase** Prior to the commencement of work on a mining licence, consent from the owners/occupiers of the land directly affected must be granted, land may be purchased prior to the commencement of works, or compensation must be determined under the *Mineral Resources (Sustainable Development) Act 1990* (or equivalent updated legislation if enacted). For access to land outside the mining licence (WBA or minor utilities corridor), tenure to enter upon land to undertake and use works must be agreed with the relevant landholders.	Development extent	Supported
LP-03	**Rehabilitation Plan** *Refer to **RH-01**.*	Development extent Port	Supported with the recommended changes outlined for RH-01
Traffic and Transport			
TM-01	**HMC Haulage route** The proposed Heavy Mineral Concentrate (**HMC**) haulage route must rely on sealed roads gazetted for the types of vehicles generated by the Project. The number of HMC haulage trucks using the haulage route must be limited to 2 per hour between 10pm and 6am. The preferred road transport route must be periodically reviewed over the life of the Project, in consultation with the Department of Transport and Planning (DTP), to assess alternative routes with consideration to matters, including but not limited to, road condition, safety, traffic impact, travel time, maintenance and amenity effects. The Project must consult with DTP as soon as practicable when significant issues arise regarding	HMC haulage route	I recommend changes to this EMM to: • require that DTP be consulted should the proponent become aware of any road condition or maintenance issues that could pose a risk to road safety. • remove the requirement to evaluate the feasibility of transporting HMC to the Port of Portland by rail.

#	IAC recommendation	Work area	Minister's response
	road safety, condition and maintenance of the roads used for HMC haulage. The feasibility of transporting HMC to the Port of Portland by rail must be periodically evaluated, including at the time funding is committed for upgrade of the rail line. The feasibility must take account of the triple bottom line impacts and benefits, including greenhouse gas emissions.		
TM-02	**TM-02: Traffic Management Plan** A Traffic Management Plan (**TMP**) must be prepared prior to Project commencement. The TMP must be implemented, and must provide a management framework and specific requirements relating to traffic movement to and from the proposed mining licence/WBA to mitigate residual impacts. ~~The TMP must be reviewed and updated at an appropriate frequency as established in the overarching EMS with consideration to the level of risk, statutory requirements, monitoring results, community complaints and in response to audit findings~~ Initially, the TMP must address matters relating to worksite construction traffic, and as the Project progresses, it must be reviewed and updated to address subsequent Project phases. The TMP must: • Explain the relevant statutory requirements and context (including any relevant approvals). • Describe the avoidance and mitigation measures to be implemented to minimise impacts so far as reasonably practicable. • Identify specific environmental objectives and performance standards to be achieved with avoidance and mitigation measures in place. • Detail the monitoring to be undertaken to verify the effectiveness of the avoidance and mitigation measures. • Describe mechanisms to determine when/if corrective actions and contingency measures are required. • Detail a program to investigate and implement ways to improve the environmental performance of the Project over time.	Project	Supported, including amendments to specify: • that measures be developed as part of the TMP to mitigate any potential public safety risks associated with HMC haulage trucks interacting with school and public buses. • the timeframe and process for reviewing and updating the management plan in line with the IAC's suggested wording in Section 24.7.1 of the EMF.

#	IAC recommendation	Work area	Minister's response

	• Detail appropriate review periods and/or triggers to ensure the plan remains fit for purpose.
	• Establish procedures to manage:
	• incidents and any non-compliance.
	• stakeholder and community complaints.
	• failure to comply with statutory requirements and/or performance criteria.
	• roles and responsibilities for implementing the plan.
	• a protocol for periodic review of the plan.
	• Include or cross-reference to a community engagement strategy which must include a complaints handling system (SE-02).
	• Include a program to consult with the community and landholders prior to local road closures and changes to the local road network, including specific requirements that the Proponent must:
	  ○ consult with the relevant landholders when identifying detour routes for local landholders impacted by road closures.
	  ○ consult the HRCC and/or relevant road authority prior to any local road closure. HRCC will need to agree to the proposed local road closures and preferred road detours.
	  ○ must give stakeholders adequate advanced notification of proposed local road closures and preferred road detours.
	• Include periodic reporting requirements to the Horsham Rural City Council (**HRRCC**) and ~~Department of Transport and Planning (~~**DTP**~~)~~ to facilitate review and amendments where necessary.
	In addition to the above framework and the avoidance and mitigation measures in **TT-01** and **TT-03** – **TT-05,** the TMP must include specific requirements to:
	• ~~Identify detour routes for local landholders impacted by road closures.~~
	• Consider impacts to travel times and accessibility for road users, including but not limited to emergency services and public transport during any public road works.
	• ~~Consult the HRCC and/or relevant road authority prior to any local road closure.~~		

#	IAC recommendation	Work area	Minister's response
	• Detail Project traffic activity, including hours, expected volumes, traffic types, haulage activity, and access routes. • Identify Project traffic operation expectations and requirements (vehicle operating speeds, driver behaviour and conduct, compliance and enforcement). • Include mitigation measures to minimise dust and noise impacts on sensitive receptors with particular regard to driver behaviour. • Outline strategies to be implemented that seek to ensure the safety and health of the public and others who may be impacted by Project traffic during site operations. • ~~Ensure that stakeholders are aware of any proposed changes to Project traffic conditions and that risks associated with such changes are identified and mitigated~~. • Undertake a Road Safety Audit prior to the TMP being approved by the relevant road authority.		
TM-03	**Green Travel Plan** A Green Travel Plan (**GTP**) must be developed prior to Project commencement and implemented to promote sustainable transport initiatives and to minimise private vehicle use by Project personnel (where appropriate). The GTP must be relevant to all phases of the Project, from construction through to decommissioning and focus on Project related personnel activity to encourage carpooling and/or Project provided transit services where appropriate. The GTP must be prepared in consultation with the HRCC and must include: • Sustainable transport initiatives and associated incentives. • Travel mode targets and timeframes. Mechanisms to monitor, review and amend the GTP, as required.	Project	Supported
TM-04	**Road maintenance and management** Road maintenance and management agreements must be established between the HRCC and WIM Resource for local roads that are directly relied upon by the Project or used as detours for public traffic. This agreement will ~~likely~~ include: • Identification of maintenance responsibilities, triggers and standards	Development extent	Supported

#	IAC recommendation	Work area	Minister's response
	for local roads that are relied on by Project traffic. • Process and standard of progressive road reinstatement (refer TM-07). • ~~The process and standard of road reinstatement post-mining operations to the pre-existing condition and/or to the relevant road standard described in the HRCC 'Road Management Plan' (HRCC, 2017).~~ • A dispute resolution process. The agreements must be in place prior to Project construction. The HRCC must be consulted on all relevant matters relating to road closures and detours. Requirements for rehabilitation of local roads removed for the purposes of mining are detailed in SE-07.		
TM-05	**Road infrastructure improvements** Road infrastructure improvements that are necessary for the Project must be undertaken at the Wimmera Highway/WBA intersection so that it complies with Austroads and DTP design requirements. The design of the intersection must be subject to a Road Safety Audit during the functional and detailed design stage.	WBA	Supported with an amendment to require that the proponent consult with Council on the design of this intersection, as the responsible authority for the land covered by the WIFT.
TM-06	**Community engagement** *Refer to **SE-02**.*	Project	Supported with recommended changes outlined for SE-02
TM-07	**Progressive rehabilitation of local roads** Local roads that have been removed for the purposes of mining operations must be reinstated to a condition agreed prior to removal, in consultation with stakeholders, HRCC and impacted landowners. The minimum condition of the reinstated road must be agreed to prior to the removal of the road for mining operations. The process and standard of road reinstatement post-mining operations must be to an all-weather standard, or to the relevant road standard described in the HRCC 'Road Management Plan' (HRCC, 2017), in consultation with landholders and the community. Refer to **RH-01** and **TM-04.**	WBA Mining licence	Supported with changes to specify that: • Council agreement be required on the relevant standard of the local road prior to its reinstatement. • road reinstatement needs to occur progressively during and post-mining operations.

#	IAC recommendation	Work area	Minister's response
TM-0A	**Local road assessments** Assessments must be undertaken to confirm if reinstated roads meet the necessary regulatory standards and the agreed pre-condition benchmark. Assessments must be undertaken by a suitably qualified person as detailed in the HRCC agreement (refer **TM-04**).	Development extent	Supported
TM-0B	**Local road inspections** Local roads relied upon by the Project must be periodically inspected by a suitably experienced person for signs of deterioration resulting from the Project.	Development extent	Supported
Historic Heritage			
HH-01	**Heritage exclusion zones** Exclusion zones must be established and maintained within the development extent to avoid direct impacts to Sites 2, 3, 6, 7, 8 and 9, as shown in Figure 10-7. Confirm the development extent boundary and establish and maintain an exclusion zone around Site 3 following field investigation undertaken to identify any archaeological features and artefact bearing deposits, and consideration of potential impact from ground movement from mining activities that may impact the structural integrity of a building or structure. The exclusion zones must be recorded and communicated to contractors and site personnel through site inductions/training and by physical demarcation where required.	Development extent	Supported
HH-02	**Relocation of historic structures** A detailed assessment of the structure and an archaeological survey of Site 1 will be undertaken to establish whether it is practicable to relocate Site 1. Any relocation must be conducted in line with the relevant consents under the *Heritage Act 2017* and in line with the Heritage Management Plan (**HH-04**). Over the course of the Project, if additional heritage structures or items are discovered, opportunities for relocation must be investigated.	WBA	Supported

#	IAC recommendation	Work area	Minister's response
HH-03	**Chance Finds Procedure** A Chance Finds Procedure (**CFP**) for potential heritage or archaeological sites must be prepared prior to Project commencement that sets out the steps that must be taken in the event of discovering a site of potential heritage or archaeological value that requires oversight by a project archaeologist. The CFP must be implemented and must include contingency measures for temporarily stopping works and establishing a protection buffer around the discovery area. The CFP must be prepared to include all requirements listed in the draft procedure provided in the Historic Heritage Impact Assessment (refer Appendix D of the EES).	Development extent	Supported
HH-04	**Historic Heritage Management Plan** A Historic Heritage Management Plan (**HMP**) must be prepared prior to Project commencement. The HMP must be implemented, and must provide a management framework to avoid and minimise impacts to historic heritage so far as reasonably practicable. ~~The plan must be reviewed and updated at an appropriate frequency as established in the overarching EMS, with consideration to the level of risk, statutory requirements, monitoring results, community complaints and in response to audit findings.~~ The HMP must: • Summarise the baseline data and existing environment. • Explain the relevant statutory requirements and context (including any relevant approvals). • Describe the avoidance and mitigation measures to be implemented to minimise residual risks/impacts so far as reasonably practicable. • Identify specific environmental objectives and performance standards to be achieved with avoidance and mitigation measures in place. • Detail the monitoring and inspections to be undertaken to verify work procedures are implemented effectively. • Describe mechanisms to determine when/if corrective actions or contingency measures are required.	Development extent	Supported with changes to specify: • That education on the Chance Finds Procedure (EMM HH-03) is included in the heritage induction and training program for site personnel • That further field investigation be undertaken of Dooen Weir prior to any project works in the vicinity of this site and an exclusion zone established around the site in line with EMM HH-01 and HH-0A if assessed as still being present along with the other procedures outlined in this HMP to manage potential impacts. • The timeframe and process for reviewing and updating the management plan in line with the IAC's suggested wording in Section 24.7.1 of the EMF.

#	IAC recommendation	Work area	Minister's response
	• Detail a program to investigate and implement ways to improve the environmental performance of the Project over time. • Detail appropriate review periods and/or triggers to ensure the plan remains fit for purpose. • Establish procedures to manage: - incidents and any non-compliance. - stakeholder and community complaints. - failure to comply with statutory requirements and/or performance standards. - roles and responsibilities for implementing the plan. - a protocol for periodic review of the plan. • Include or cross-reference to a community engagement strategy which must include a complaints handling system (SE-02). In addition to the above framework and the avoidance and mitigation measures in **HH-01** – **HH-03**, the HMP must include specific requirements to: • Undertake field investigations where relevant in line with the 'Guidelines for Conducting Archaeological Surveys' (Heritage Victoria, 2020) once access is granted for each landholding and prior to the commencement of ground disturbing works. • Complete and lodge a site card for identified historic sites within 30 days of any new discovery. • Maintain and implement a CFP as described in Section 10.6.2.2 (HH-03). • Undertake archival recordings (photographs) in line with the 'Specification for the Submission of Archival Photographic Records' (Heritage Victoria, 2017) prior to disturbing or altering any historic sites. • Obtain relevant consents in line with the Heritage Act 2017, including where relevant: Consent to Uncover, Consent to Disturb, or Consent to Excavate. • Develop an internal topsoil disturbance approval process that requires authorisation by a suitably trained person prior to any disturbance. • Develop a heritage induction and training program for site personnel so that the requirements of the HMP are understood by the relevant personnel.		

#	IAC recommendation	Work area	Minister's response
HH-05	**Rehabilitation Plan** Refer to **RH-01**.	Development extent Port	Supported with the recommended changes outlined for RH-01.
HH-0A	**Heritage exclusion zone inspections** An internal topsoil disturbance approval process must be established that requires authorisation by a suitably trained person prior to any disturbance within the development extent. Exclusion zones must be periodically inspected to ensure the protocol is complied with and no damage to heritage sites has occurred as a result of Project activities.	Development extent	Supported
Landscape and Visual Amenity			
LV-01	**WBA plant location** Refer to **LP-01**.	WBA	Supported
LV-02	**Block B stockpile (OB-B) location** The Overburden B Stockpile must be located in an area that is set back from the Henty and Wimmera Highways. The form of the overburden stockpile will be managed by shaping and profiling its slopes to minimise the footprint, minimise visual impacts and disturbance to the surrounding agricultural land so far as reasonably practical.	Mining licence	Supported
LV-03	**Progressive rehabilitation** Visual impacts associated with the Project must be minimised through the staging and sequencing of works. At any given time, the extent of Project disturbance will be less than 400 ha at any one time as areas are progressively mined and rehabilitated, typically within four years.	Development extent	Supported
LV-04	**Landscape screening** The visual impact of Project elements that are expected to remain in place for the Project life must be minimised through landscape screening established prior to the commencement of Project works that require landscaping. Landscape screening will consist of planting native trees at identified locations and must be designed in consultation with HRCC to ensure, where required, appropriate road intersection site distances are maintained. Once established, screening vegetation must minimise visual impacts by reducing the visibility of the WBA/Wet Concentrator	WBA Mining licence	Supported with a change to specify that the outcomes of discussions with Council on landscape screening and set-back distances to achieve line-of-site requirements are reflected in the traffic management plan (where applicable).

#	IAC recommendation	Work area	Minister's response
	Plant (**WCP**) and Overburden B stockpile from nearby receptors. Figure 11-12 shows the location of the proposed landscape screening areas: • Landscape Screen 1 (LS1) to the north and east of the WBA. • Landscape Screen 2 (LS2) along the Wimmera and Henty Highways adjacent to OB-B Stockpile. • Landscape Screen 3 (LS3) along the Wimmera Highway north of the WBA. Additional landscape screening may be provided during Project implementation in response to community feedback where reasonably practicable to do so. ~~It is anticipated that tree screening will be~~ E~~e~~stablish~~ed~~ landscape screening ~~-~~between the Overburden B stockpile and the adjacent residential dwelling (R6) and associated business in consultation with the landholder. Landscape screening must be maintained throughout the life of the Project.		
LV-05	**Lighting impacts** All lighting secondary to key operational and safety requirements must be designed in accordance with AS/NZS 4282 'Control of obtrusive effects of outdoor lighting'. This must include limiting the amount of lighting required for the Project, reducing direct visibility of light sources, reducing glare and minimising light spill.	Development extent	Supported
LV-06	**Rehabilitation Plan** Refer to **RH-01.**	Development extent Port	Supported with the recommended changes outlined for RH-01.
LV-0A	**Visual amenity inspections** Visual amenity inspections must be periodically conducted from selected viewpoints, which must include private viewpoints, over the life of mine to qualitatively assess the effects of lighting and other matters relating to visual amenity.	Development extent	Supported, with additions to require that: • additional landscape screening be offered to affected landholders in line with EMM LV-04, should the inspections indicate that they could be experiencing sleep effects from night lighting (e.g., use of more mature vegetation); and • the proponent report back to the Environmental Reference Group on the findings of these inspections.

#	IAC recommendation	Work area	Minister's response
LV-0B	**Tree screen monitoring** Tree screen establishment must be periodically inspected and monitored to assess the condition of vegetation.	WBA Mining licence	Supported
Noise and Vibration			
NV-01	**Fleet type** The mine haulage vehicle fleet must be optimised to minimise the number of circuits and to minimise noise emissions so far as reasonably practicable.	Mining licence	Supported
NV-02	**HMC Haulage route** Predicted noise levels of night-time vehicle movements in Dooen, Horsham, Cavendish, Hamilton, Heywood and Portland be reported on. The report must include the potential for sleep disturbance using the indicators in the New South Wales Road Noise Policy. Between the hours of 10pm and 6am, the number of HMC haulage vehicles using the haulage route is limited to 2 haulage vehicles per hour. Refer **TM-01**.	HMC Haulage route	Supported
NV-03	**Construction noise** The Project must minimise the risk of harm associated with construction noise (including vibration) so far as reasonably practicable at all times, consistent with the ~~General Environmental Duty (~~GED~~)~~ and with the Civil Construction, Building and Demolition Guide (Environment Protection Authority (EPA) publication 1834). High noise generating construction activities associated with the Project must be scheduled to occur only during the normal working hours specified in EPA publication 1834, unless they are justified and approved to be unavoidable works or low-noise impact works as defined in EPA publication 1834. A Noise and Vibration Management Plan (NVMP) must be prepared and approval sought (refer to **NV-06**). The NVMP must include a process for the justification and approval of unavoidable works, managed-impact works, and low noise impacts that may be planned to occur outside the normal working hours, consistent with EPA publication 1834. ~~The NVMP must be prepared by a suitably qualified person and must:~~	Development extent	Supported with the removal of the reference to the NVMP and cross reference to NV-06.

#	IAC recommendation	Work area	Minister's response
	~~include a clear rationale for the justification of both unavoidable works and managed-impact works (consistent with EPA publication 1834) and response strategies to reduce and minimise noise and vibration and their impacts, so far as reasonably practicable.~~ ~~ensure that all assessments for justification of out-of hours works and their approval are conducted by a suitably qualified independent person, such as an Independent Environmental Auditor, who has no prior involvement in planning or delivery of the Project and is able to make decisions free from influence or pressure relating to the delivery of the Project;~~ ~~ensure that in respect of unavoidable works:~~ ~~the necessity for such works to be carried out outside of normal working hours is assessed and documented by a person with skills and expertise in risk/safety assessments;~~ ~~the mitigation measures to reduce noise and vibration are designed, specified, and assessed by a person with skills and expertise in noise and vibration control; and~~ ~~the risk associated with residual noise and vibration is assessed and contingency measures are taken to address, so far as reasonably practicable the residual noise and vibration impacts;~~ ~~ensure in respect of managed-impact works:~~ ~~measures are taken to manage impacts on noise sensitive receptors consistent with the definition of managed-impact works in EPA publication 1834~~ ~~these measures are designed, specified and assessed by a person with skills and expertise in noise and vibration control; and~~ ~~a program is in place to verify that the measures to managed noise impacts meet the performance they have been designed to achieve.~~ ~~ensure in respect of low-noise impact works:~~ ~~a list detailing planned works that are low-noise impact works (because they are inherently quiet or unobtrusive, consistent with the definition in EPA publication 1834) is established.~~ Noise criteria that may be considered to manage the emergence of construction noise over background noise must be established based		

#	IAC recommendation	Work area	Minister's response
	on a background level, that represents the background at the time of impact. ~~A community engagement strategy and complaints handling system must be established to ensure noise emissions are avoided and minimised so far as reasonably practicable during the construction phase (**SE-02**).~~		
NV-04	**Earthen bunds and stockpiles** Earthen bunds and stockpiles must be strategically located to abate noise emissions and mitigate impacts to sensitive receptors. Indicative locations for stockpiles and bunds for the construction phase are shown in Appendix G of the EES. Noise bunds must be designed to minimise the risk of noise emissions at sensitive receptors so far as reasonably practicable. Planning procedures must be established to proactively situate and construct noise bunds, to mitigate impacts on sensitive receptors. During operations, the location and configuration of bunds should be adapted and augmented to respond to the results of monitoring and stakeholder feedback.	WBA Mining licence	Supported
NV-05	**Noise abatement on equipment** Noise abatement kits must be fitted on all relevant equipment and vehicles to minimise the risk of harm to human health or the environment from noise so far as reasonably practicable, taking into account sound levels, frequency spectrum and noise character.	Project	Supported
NV-06	**Noise and Vibration Management Plan** A Noise and Vibration Management Plan (**NVMP**) must be prepared prior to Project commencement. The NVMP must be implemented, and must provide a management framework to avoid and minimise risks/impacts from Project noise and vibration, so far as reasonably practicable, in line with the Project EMS and relevant legislative requirements. The NVMP must address the management of any works outside recommended normal working hours (during construction) in accordance with EPA publication 1834 (**NV-03**) and must also address the operational phase of the Project, including road traffic haulage to the Port of Portland.	Project	Supported in principle, with additional changes to: • Remove cross-references to NV-03. • Replace wording 'Detail a framework for the approval of construction works outside normal working hours' with EPA's preferred wording of detail the 'process for the justification and approval of unavoidable works…'. • specify the timeframe and process for reviewing and updating the management plan in line with the IAC's suggested wording in Section 24.7.1 of the EMF.

#	IAC recommendation	Work area	Minister's response
	The NVMP must be developed in consultation with stakeholders and must be subject to approval by the relevant authority. Initially, the NVMP must address matters relating to worksite construction and as the Project progresses it must be reviewed and updated to address subsequent operational Project phases. ~~The NVMP must be reviewed and updated at an appropriate frequency as established in the overarching EMS with consideration to the level of risk, statutory requirements, monitoring results, community complaints and in response to audit findings.~~ The NVMP must, as a minimum: • Summarise the baseline data and existing environment, based on existing noise measurements undertaken at representative locations no more than six months before the Project commences. • Explain the relevant statutory requirements and context (including any relevant approvals). • Detail a framework for the approval of construction works outside normal working hours as detailed in EPA publication 1834 (refer to **NV-03**). • Describe the avoidance and mitigation measures to be implemented to minimise noise emissions so far as reasonably practicable. • Identify specific environmental objectives and performance standards to be achieved with avoidance and mitigation measures in place. • Detail the monitoring to be undertaken to verify the modelling and the effectiveness of the avoidance and mitigation measures (monitoring must meet the requirements of EPA publication 1996: Noise guidelines – assessing low frequency noise). • Describe mechanisms to determine when/if corrective actions and contingency measures are required. • Detail a program to investigate and implement ways to improve the environmental performance of the Project over time. • Detail appropriate review periods and/or triggers to ensure the plan remains fit for purpose. • Establish procedures to manage: - incidents and any non-compliance; - stakeholder and community complaints;		

#	IAC recommendation	Work area	Minister's response
	- failure to comply with statutory requirements and/or performance standards; - roles and responsibilities for implementing the plan; and - a protocol for periodic review of the plan. • Include or cross-reference to a community engagement strategy which must include a complaints handling system (SE-02). In addition to the above framework and the avoidance and mitigation measures detailed in **NV-03** – **NV-05**, the NVMP must include specific requirements to: • Plan vehicle movements to avoid manoeuvres and idling near sensitive receptors. • Restrict areas where mobile plant can operate, so that it is away from sensitive receptors. • Investigate quieter equipment or methods and maintain equipment. • Maintain a mine planning procedure that defines a process by which mitigation and management measures are identified and implemented over the life of the Project to reduce the risk of harm from noise so far as reasonably practicable. • Augment or add new noise bunds as required in response to monitoring and community feedback, as well as proactively, to ensure noise emissions are minimised so far as reasonably practicable. • Manage noise from the Project during construction and operation with consideration to the risk of low frequency noise and implement appropriate management measures to reduce the risk so far as reasonably practicable. • Conduct noise modelling over the life of the Project to assess operational scenarios that may impact sensitive receptors. • Noise monitoring to be undertaken during mining operations at receiver locations where the noise modelling has shown that the potential operation noise levels are approaching the noise criteria limits. • Define procedures for the selection of equipment for each phase/stage of works in order to minimise noise emissions. • Connect to the electricity grid as early as possible to avoid the use of diesel generators.		

#	IAC recommendation	Work area	Minister's response
	• Enable preparatory work to occur off-site or within shielded areas where there is low potential for impacting receptors. • Restrict areas where mobile plant can operate so that it is away from receptors that may be affected by noise. • Consider maximum/impulsive noise level events, especially at night, as they have the potential to generate sleep disturbance or awakening impacts. • Consider the risk of impact to natural areas having regard to the frequency spectrum of both the pre-existing noise and the noise from the Project, their potential character, and variability. • Develop and implement a code of practice for haul truck driver behavior to limit impacts from truck ~~pass-bys near residences~~ passing through towns and ensure compliance with the code of practice with consideration to matters including but not limited to noisy accelerations/decelerations, engine brake noise, tailgate rattling. The code of practice is to be monitored and audited to establish its effectiveness. Non-conformances with the code of practice must be investigated and corrective actions applied as required. • Product haulage trucks must meet High Productivity Freight Vehicle (HPFV) Performance Based Standards to minimise noise emissions, including, but not limited to, road-friendly suspension, antilock braking systems on all axles and low impact tyres (pavement loading and contact area). • Ensure that processes are in place to assess or otherwise ensure the protocols from service providers, or other external bodies contracted, are adequate to manage noise emissions (including vibration) and their impacts. • Use electrical equipment rather than equipment driven by a diesel generator. • Use effective alternatives to 'beeper' alarms (e.g. broadband alarms, proximity sensors).		
NV-07	**Traffic Management Plan** Refer to **TM-02**.	Project	Supported with the amendments proposed for TM-02.

#	IAC recommendation	Work area	Minister's response
NV-0A	~~**Operator attenuated n**~~**Noise measurements** ~~Operator attenuated n~~Noise measurements must be undertaken over the life of the Project, including measuring existing noise levels prior to and close to the time of construction, at sensitive receptors according to a schedule approved in the Noise and Vibration Management Plan. Noise measurements must be undertaken at representative locations at no more than six months prior to the commencement of the operation of the Project. Measurements of existing background noise must be undertaken in Dooen, Horsham, Cavendish, Hamilton, Heywood and Portland to determine the noise impacts of night-time vehicle movements. During the noise measurements, traffic volumes and vehicle type must be determined and reported. The monitoring program must be developed by a suitably qualified person such that it is aligned with the requirements of EPA Publications 1996, 1834 and 1826.4 and must fully characterise the relevant risks and impacts associated with the Project. The monitoring program must cover Project activities associated with the WBA, mining licence and HMC haulage route. The monitoring outcomes must be used to verify that the mitigation measures or corrective actions taken to reduce noise are effective and meet the acoustic performance they have been designed to achieve.	Project	Supported with an amendment to require that noise measurements be undertaken 6 months prior to construction commencing, not operations.
NV-0B	**Audit and inspection** A program for audit and inspection must be established to verify that measures to minimise noise emissions and their impacts are adequately implemented and the relevant work practices are adhered to.	Project	Supported.
NV-0C	**Response to complaints** Community complaints must be investigated and corrective actions developed and implemented as required under the NVMP to inform continual improvement. The number of complaints will be monitored and reported via the management review process and to the ERG.	Project	Supported.

#	IAC recommendation	Work area	Minister's response
Air Quality			
AQ-01	**HMC Transport** Refer **TM-01**. HMC will be temporarily stored in a closed shed at the Port of Portland and will be loaded to the ship in a contained conveyor with water sprays to avoid dust lift-off during ship loading.	Port of Portland	Supported
AQ-02	**Minimise disturbed area** The active disturbed area will be maintained to less than ~~around~~ 400 ha, comprising the active mining area, tails cells, overburden/soil removal and areas being land formed and rehabilitated. The area subject to topsoil stripping must be minimised so far as reasonably practicable, and once rehabilitated (**RH-01**), will be cropped in line with surrounding farming areas.	Development extent	Supported
AQ-03	**Road surface material** Roads for light and heavy vehicles within the mining licence area and WBA must be constructed with appropriate materials comprising low silt content to minimise dust emissions. It is expected gravels mined from the Karoonda sandstone geological unit will be preferentially used as they are less susceptible to surface erosion due to the relatively large particle or aggregate size. Permanent and semi-permanent roads will be topped with gravel excavated during mining to optimise road conditions and minimise surface erosion and dust so far as reasonably practicable.	WBA Mining licence	Supported
AQ-04	**Road and open area watering** Road watering within the mining licence area and WBA must be undertaken on light vehicle roads and heavy vehicle routes to keep the surface moist and to minimise wheel generated dust. It must also be undertaken as required in areas that have been disturbed and not yet stabilised. Road watering must be scheduled such that the rate is commensurate with the ambient weather conditions and can be adapted to provide a preventative response to forecast weather events. Open areas and unsealed roads must be routinely watered, including when they	Development extent	Supported

#	IAC recommendation	Work area	Minister's response
	are observed to be dusty, and schedules must be adapted as required in response to forecast weather conditions, monitoring and community feedback. It is expected that during the summer months, there will be at least two water trucks to service all at risk areas. Water trucks may be dosed with polymer stabilising agents to improve efficiency of the program during high-risk periods.		
AQ-05	**HMC stockpile management** Heavy Mineral Concentrate must be stockpiled wet when pumped from the concentrator plant. The HMC stockpile will retain moisture and will be loaded to the haulage trucks moist with around 5-8% water content. Under standard operating conditions there would typically be two HMC stockpiles; one that is actively being stacked and the second being loaded to the haulage truck by a front-end loader. A third stockpile will facilitate the transition of the active stacker to a new stockpile. Sprinklers must be established at each stockpile to maintain the appropriate moisture content to minimise dust lift off so far as reasonably practicable. During the start-up phase of the Project the target moisture threshold of stockpiled HMC must be above 5% (weight/weight). This moisture threshold must be verified under a range of conditions upon commencement to confirm it will effectively prevent dust lift-off. If a higher moisture content is required based on field verification, then the moisture threshold can be increased up to around 8%. During operations, the area supervisor must periodically take moisture measurements in accordance with the Air Quality Management Plan (AQMP) (**AQ-08**) from representative areas on the stockpile and must activate sprinklers, as required, to prevent dust lift off. Field inspections during loading activities must also be undertaken to verify the HMC meets the target moisture threshold. The sprinkler systems must be equipped with fail-safe mechanisms, such as secondary pumps/water sprays and water carts, to ensure there's an alternate method for maintaining the moisture content in the event of a mechanical failure in the primary sprinkler system. A routine maintenance schedule must be put in place to regularly check and test these systems.	WBA	Supported

#	IAC recommendation	Work area	Minister's response
	Sediment creep fences must be installed around the HMC stockpiles to reduce windspeed and act as a physical barrier to prevent spillage or movement by gradual creep outside the area. The sediment fences will be around 150 - 200cm and constructed of a chain wire fence covered with a woven geotextile fabric to slow wind speeds.		
AQ-06	**Operational scheduling** Topsoil stripping and placement must be avoided during extreme wind events to avoid excessive dust emissions. Subsoil, overburden and ore extraction will continue during all weather conditions as the materials have a higher moisture content and are less susceptible to erosion. Water carts may be used as described in Section 13.6.2.3 (**AQ-04**) to increase soil moisture during overburden and subsoil removal, however, this is not expected to be required due to the inherent moisture content of the material.	Development extent	Supported
AQ-07	**Vehicle types and operation** Appropriately sized vehicles will be used to maximise the efficiency of material carting (topsoil, subsoil, overburden) and minimise the number of circuits. Drop heights from the excavator to truck must be minimised so far as reasonably practicable without impacting safety.	WBA Mining licence	Supported
AQ-08	**AQ-08: Air Quality Management Plan** An Air Quality Management Plan (**AQMP**) must be prepared prior to Project commencement. The AQMP must be maintained and implemented for the duration of the construction, operation, decommissioning and closure of the facilities to the satisfaction of the responsible authority.~~, and~~ It must provide a management framework to mitigate residual air quality impacts from the Project so far as reasonably practicable, in line with the Project EMS and relevant legislative requirements. The AQMP must be developed in consultation with stakeholders and must be subject to approval by the relevant authority. ~~It must be reviewed and updated at an appropriate frequency as established in the~~	Project	Supported with suggested amendments to include: • the names of the responsible authorities involved in overseeing the AQMP (i.e., EPA and Resources Victoria); • the timeframe and process for reviewing and updating the management plan in line with the IAC's suggested wording in Section 24.7.1 of the EMF.

#	IAC recommendation	Work area	Minister's response
	~~overarching EMS, with consideration to the level of risk, statutory requirements, monitoring results, community complaints and in response to audit findings.~~ The AQMP must: • Summarise the baseline data and existing environment. • Explain the relevant statutory requirements and context (including any relevant approvals). • Describe the avoidance and mitigation measures to be implemented to minimise air emissions so far as reasonably practicable. • Identify specific environmental objectives and performance standards to be achieved with avoidance and mitigation measures in place. • Detail monitoring to be undertaken to verify the modelling and the effectiveness of the avoidance and mitigation measures. • Describe mechanisms to determine when/if corrective actions and contingency measures are required. • Detail a program to investigate and implement ways to improve the environmental performance of the Project over time. • Detail appropriate review periods and/or triggers to ensure the plan remains fit for purpose. • Establish procedures to manage: - incidents and any non-compliance. - stakeholder and community complaints. - failure to comply with statutory requirements and/or performance standards. - roles and responsibilities for implementing the plan. - a protocol for periodic review of the plan. • Include or cross-reference to a community engagement strategy which must include a complaints handling system (SE-02). In addition to the above framework and the avoidance and mitigation measures detailed in **AQ-01** – **AQ-07** the AQMP must include specific requirements to:		

#	IAC recommendation	Work area	Minister's response
	• Train employees to record and report excessive dust emissions if they occur so that mitigation measures can be adjusted or applied. • Require employees and contractors to drive to conditions to minimise emissions. • Encourage work teams to consider weather conditions at the commencement of each shift to ensure that all appropriate mitigation and contingency measures have been considered. • Plan daily work programs with consideration to the forecast weather conditions to minimise dust emissions. ~~- Closed Circuit TV cameras will be established, monitored and maintained within the WBA and mining licence to facilitate dust surveillance. Recordings will be retained for a minimum period of six months from the time taken and used as required to investigate incidents.~~ • Periodic sweeping of the sealed surfaces within the WBA will be undertaken to minimise sediment accumulation so far as reasonably practicable.		
AQ-09	**Community engagement** Refer to **SE-02.**	Project	Supported with the recommended changes outlined for SE-02
AQ-10	**Progressive rehabilitation** Refer to **RH-01**	Development extent	Supported with the recommended changes outlined for RH-01
AQ-0A	**Real time continuous air quality monitoring** Real-time continuous air quality monitoring of particulate matter (preferably with alarm to notify of preset particle concentrations alert levels) must be undertaken at sensitive receptors according to a schedule approved in the **AQMP** (AQ-08) ~~Air Quality Management Plan~~. The monitoring must be developed by a suitably qualified person such that it is aligned with the requirements of EPA Publication 1961. The siting, maintenance and calibration of the instruments and analysis of data is to be completed by a suitably qualified person with NATA accreditation (were relevant). The intent of the monitoring is to fully characterise the relevant risks and impacts associated with the Project. The continuous air monitoring locations will be determined by a suitably qualified person,	Development extent	Supported, with an additional change to clarify that real time monitoring will be undertaken throughout all project phases to inform the AQMP.

#	IAC recommendation	Work area	Minister's response
	and will include areas within the WBA, the mining licence as well as adjacent sensitive receptors.		
AQ-0B	**Visual inspection** Visual observations and inspections for nuisance dust must be undertaken routinely by area supervisors and recorded, investigated and contingency measures implemented for nuisance dust. Observed nuisance dust by any member of staff must be investigated and appropriate controls enacted. The focus must be on measures to prevent and control nuisance dust.	Development extent Port	Supported
AQ-0C	**Crop and rainwater tank monitoring** Prior to commencement of the Project, baseline crop monitoring to analyse dissolved and total metals must be conducted. Ongoing monitoring of crops and rainwater tanks must be conducted during construction, operation and closure according to a schedule that is proportionate to the risk of harm to human health, as negotiated with each landholder. Assessment of monitoring results must inform any management actions required. Crop and r~~R~~ainwater tank monitoring data must be published with consent provided by the residents/landowners.	WBA Mining licence	Supported, including additions to require that crop and rainwater monitoring data be published on the project website following each monitoring period.
AQ-0D	**Real time continuous monitoring** Closed Circuit TV cameras will be established, monitored and maintained within the WBA and mining licence area to facilitate dust surveillance. Recordings will be retained for a minimum period of six months from the time taken and used as required to investigate incidents.	WBA Mining licence	Supported
AQ-0E	**Wind speed and direction monitoring** Monitor wind speed and direction with monitoring at elevation above the height of the stockpiles. The equipment to be used and its location be endorsed by EPA.	Mining licence	Supported
AQ-0F	**Modelling accuracy re-run** Re-run the air quality model using one year of monitored air quality data to assess the accuracy of the modelling results. The modelling results must be used to determine any adjustments that may be required to Project's operation.	WBA Mining licence	Supported
Radiation			

#	IAC recommendation	Work area	Minister's response
RD-01	**Site security** Site security and signage must be provided to restrict unauthorised access by members of the public to the operational areas.	WBA Mining licence	Supported
RD-02	**Use of sealed vehicles for the transport of HMC on public roads** Transport of HMC from the WBA to the Port of Portland must be undertaken on sealed roads in sealed trailers ~~covered articulated vehicles~~, where the sealing of the trailer is achieved by using the most practical and best reasonable method available at the time.	HMC haulage road	Supported
RD-03	**Road surface material** Refer to **AQ-02**	WBA Mining licence	Supported
RD-04	**Road and open area watering** Refer to **AQ-04**	Development extent	Supported
RD-05	**HMC stockpile management** Refer to **AQ-05**	WBA	Supported
RD-06	**Washdown** Vehicle washdown facilities must be provided within the WBA to ensure vehicles and equipment can be washed down as required. Periodic audits must be conducted to ensure compliance with this requirement. Procedural controls and/or Personal Protective Equipment may be used to minimise concentrate leaving site on worker's clothing where appropriate.	WBA	Supported
RD-07	**Emergency and clean-up procedures** Emergency response procedures and processes must be maintained to prepare for and respond to potential emergency situations. This must include suitable emergency and clean-up procedures in the unlikely event of a spill, consistent with Section 24.7.2.	Project	Supported
RD-08	**Radiation Management Plan** A Radiation Management Plan (RMP) must be prepared prior to Project commencement. The RMP must be implemented. The RMP must provide a management framework to avoid and minimise risks so far as reasonably practicable in line with the 'Code of Practice on Radiation	Project	Supported

#	IAC recommendation	Work area	Minister's response
	Protection and Radioactive Waste Management in Mining and Mineral Processing' (ARPANSA, 2005) (the Code of Practice). The RMP must address aspects relating to radiation exposures to workers and members of the public, a statutory requirement under the *Radiation Act 2005* (**Radiation Act**). The RMP must also address matters associated with risks to the environment and the management of any ancillary wastes. It must thereby cover all requirements of a radioactive waste management plan as required under the Code of Practice (ARPANSA, 2005). ~~The RMP must be reviewed and updated at an appropriate frequency as established in the overarching EMS, with consideration to the level of risk, statutory requirements, monitoring results, community complaints and in response to audit findings. It~~ The RMP must be developed in consultation with stakeholders and must be subject to approval by the ~~relevant Authority~~ Department of Health. The RMP must: • Summarise the baseline data and existing environment and be updated as additional baseline data is obtained. • Explain the relevant statutory requirements and context (including any relevant approvals). • Describe the avoidance and mitigation measures to be implemented to minimise residual risks so far as reasonably practicable. • Identify specific environmental objectives and performance standards to be achieved with avoidance and mitigation measures in place. • Detail the monitoring and inspections to be undertaken to verify the effectiveness of the avoidance and mitigation measures. • Establish performance standards relating to radiation exposure associated with specific receptors. • Describe mechanisms to determine when/if corrective actions and contingency measures are required. • Detail a program to investigate and implement ways to improve the environmental performance of the Project over time consistent with currently available technology.		

#	IAC recommendation	Work area	Minister's response
	• Detail appropriate review periods and/or triggers to ensure the plan remains fit for purpose. • Establish procedures to manage: - Incidents and any non-compliance. - Stakeholder and community complaints. - Failure to comply with statutory requirements and/or environmental performance standards. - Roles and responsibilities for implementing the RMP. - A protocol for periodic review of the RMP. • Include or cross-reference to a community engagement strategy which must include a complaints handling system (SE-02). In addition to the above framework and the avoidance and mitigation measures outlined in **RD01** – **RD07**, the RMP must include specific requirements to: • Identify all significant exposure sources and pathways, including plans of the mine and processing plant, descriptions of the equipment to be used in mining and processing, the processes involved and estimates of the radionuclide content of various process streams, and identification of those groups of workers or members of the public most at risk. • Prevent and minimise low-level radiation exposure to workers and detail the worker dose assessment methodologies for internal and external exposure pathways in accordance with the 'Monitoring, Assessing and Recording Occupational Radiation Doses in Mining and Mineral Processing' (ARPANSA, 2011). • Report to the Victorian Department of Health, and company management, detailing results of personal dosimetry, area and dust monitoring, incident reports and other operational issues, and worker dose records. • Describe the waste generated and the facilities and procedures involved in the handling, treatment, storage and disposal of radioactive waste (i.e., any process gauges or discrete radiation source that may be used in the process plant, which must require legal off-site disposal in accordance with requirements under the Radiation Act).		

#	IAC recommendation	Work area	Minister's response
	• Describe the hazards risks and monitoring requirements for relevant sensitive receptors identifying the reference organisms selected for the assessment and the rationale for selection. • Identify the exposure risks and requirements to appropriately manage and minimise any identified risks for returning residents after rehabilitation of properties while the mining operations are still underway.		
RD-09	**Progressive rehabilitation** Refer to **RH-01.**	Development extent	Supported with the recommended changes outlined for RH-01
RD-0A	**Personal radiation dose monitoring (workers)** Personal radiation dose monitoring (workers) and work area monitoring must be undertaken over the life of mine at sensitive receptors according to a schedule approved in the Radiation Management Plan. The monitoring program must be developed by a suitably qualified person such that it is aligned with the regulatory requirements and must fully characterise relevant risks and impacts associated with the Project.	WBA Mining licence	Supported
RD-0B	**Sampling of airborne particulate matter** Periodic sampling of airborne particulate matter must be analysed for radionuclides.	WBA Mining licence	Supported
RD-0C	**Water sampling** Surface water and groundwater samples must be analysed for radionuclides according to a schedule approved in the Radiation Management Plan. The monitoring program must be developed by a suitably qualified person such that it is aligned with the regulatory requirements and must fully characterise the relevant risks and impacts associated with the Project.	WBA Mining licence	Supported
RD-0D	**Field inspections** The HMC stockpiles must be monitored to ensure the target moisture threshold is maintained and to ensure there is no observable dust lift off.	WBA	Supported
Soils and Landform			
SL-01	**Geera clay formation**	Mining licence	Supported

#	IAC recommendation	Work area	Minister's response
	Refer to **GW-01**		
SL-02	**Soil resource management** A pre-mine soil survey must be undertaken by a suitably qualified person for each landholding once land access is secured and prior to stripping topsoil. The surveys must be conducted at an appropriate intensity to characterise the materials that will be stripped and stockpiled for later placement in the reconstructed soil profile. Field characteristics must be logged, and representative samples submitted for laboratory analysis, including but not limited to sodicity, salinity and pH. Under the Rehabilitation Plan that must be implemented through **RH-01,** the upper soil horizons must be stripped and stockpiled separately from the lower soil horizons. The effective rooting zone (being the upper soil horizons) will typically be stripped as three separate soil units, being topsoil, Subsoil A and Subsoil B. The exact number of stripped soil units and the stripping depths must be informed by the depth and characteristics of the soil units as informed by the pre-mine soil surveys, and set out in specific rehabilitation plans for each landholding (groups of land parcels). Lower soil horizons will be stripped or excavated as overburden and either stockpiled or placed directly back to the mined void. It is anticipated that the depth of each soil unit will be adjusted as required across the landholding to ensure appropriate differentiation of upper and lower subsoil units. Wherever reasonably practicable topsoil and subsoil resources will be returned to the same landholding from which it was stripped. Stripping operations must be controlled via a combination of survey control for each soil unit and field observations. The depth of each soil unit will be either marked by survey pegs or by GPS control in the relevant rehabilitation machinery. Operations must be supervised to verify the stripping depths as per survey controls and to verify various field indicators (such as soil colour or texture). Adjustments must be made, if required, to the planned stripping depth by a suitably trained field supervisor to ensure soil units are appropriately stripped and stockpiled. For the purposes of this SL-02, a 'soil unit' are soils that have common physical and chemical characteristics observed vertically and horizontally.	WBA Mining licence	Supported

#	IAC recommendation	Work area	Minister's response
SL-03	**Soil stockpile management** Stockpile areas must be pre-stripped to preserve the soil resource and to ensure stockpiles are placed on the same underlying soil unit. A~~n~~ detailed inventory of soil stockpiles using GIS and Normalised Differential Vegetation Index (NVDI) images or similar technology must be kept which identifies~~y~~ the stockpile footprint, surveyed volume, key characteristics, amelioration requirements and intended placement location. The inventory must be securely stored for future reference. Topsoil and subsoil stockpiles will be seeded and stabilised with vegetation to minimise wind erosion where practicable to do so. Chemical stabilisers such as polymers or hydromulch may be used as a contingency if required. Overburden will be directly returned to the mine void except for the stockpiles associated with starter pits for Block A and Block B. Surface water run-off and surface erosion must be actively managed given the dispersive nature of the materials. Drainage of each stockpile location must be designed and incorporated into the overarching progressive mine and rehabilitation planning system to ensure no mine contact water is discharged from the operational areas. Suitable erosion and sediment controls, such as sediment retention ponds, must be established at the toe of each overburden stockpile to capture run-off water. Water from sumps must be returned to the process water circuit or used for operational purposes.	WBA Mining licence	Supported, with a further update to require that stockpiles are managed with consideration of SL-13 (wind erosion management guidelines).
SL-04	**Soil amelioration** The subsoil and topsoil units must be ameliorated to mitigate the issues relating to sodicity. Gypsum and other ameliorant requirement tests will be undertaken prior to topsoil/subsoil placement to determine the amelioration requirements for each soil unit or stockpile. Gypsum and other ameliorants will be spread as recommended by a suitably qualified person following topsoil and subsoil placement and then ripped or disc ploughed to the depth of each soil unit. Fertilisers will be spread onto topsoil areas after placement at rates commensurate with surrounding unmined areas. This is expected to offset the anticipated loss of topsoil fertility due to stockpiling.	WBA Mining licence	Supported

#	IAC recommendation	Work area	Minister's response
SL-05	**Soil profile ripping and compaction management** The stripping, stockpiling and placement of topsoil and subsoil materials will be undertaken during dry soil conditions, wherever practicable to do so, to minimise compaction. Topsoil heights must be limited to 2 m and subsoil heights will be limited to 6 m, to minimise compaction within the stockpile. It is anticipated that machinery with low bearing pressure will be used to minimise topsoil and subsoil compaction. Each soil unit will be ripped as required to alleviate compaction within the rooting zone. It is expected ripping will be undertaken to the depth extent of each soil unit to avoid mixing hostile materials into the upper soil profile.	WBA Mining licence	Supported
SL-06	**Contaminated land** Once land access is secured and prior to soil disturbance, potentially contaminated sites must be assessed and managed in accordance with the EP Act 2017, together with relevant parts of the National Environment Protection (Assessment of Site Contamination) Measure (1999) (as amended 2013) (**NEPM**). The NEPM outlines a staged approach to the investigation and assessment of existing contamination that proceed in stages, in proportion to the risks of environmental harm. The initial desktop review provided in this EES must be expanded upon and must involve: • Site inspections and landholder interviews to identify areas of potential contamination. • Preliminary sampling of soil, groundwater and surface water in areas of suspected contamination. • Preparation of a conceptual site model relevant to each suspected contaminated site. This will facilitate the completion of a preliminary site investigation for the relevant landholdings. As detailed in Section 2 of the NEPM, further work may be required pending the outcomes of the site investigation, which may involve a detailed site investigation. If areas of contamination are confirmed, a remediation or management plan must be developed to address all relevant requirements of the NEPM. Any management plan in the first instance must determine whether it is possible to avoid disturbing pre-existing contaminated land. Where	Development extent Port	Supported

#	IAC recommendation	Work area	Minister's response
	disturbance cannot be avoided, it must describe options to mitigate or remediate environmental harm from existing contamination.		
SL-07	**Site drainage and erosion** Refer to **SW-04**.	Development extent	Supported
SL-08	**Chemical management** Refer to **WE-06**.	Project	Supported
SL-09	**Weeds and pathogens** A biosecurity management protocol must be prepared ~~as part of the Flora and Fauna Management Plan under FF-06~~, and must be implemented across the whole Project. The Protocol must be prepared by a suitably qualified person to minimise the risk of weeds or pathogens proliferating or spreading as a result of the Project's activities. The ~~FFMP~~ Protocol must include requirements pertinent to weed and pest management to: • restrict and minimise access to rehabilitation areas ~~will be restricted or minimised~~ where possible; • restrict vehicles and machinery ~~will be restricted~~ to formed roads and tracks to the maximum practicable extent; • implement risk-based vehicle/machinery hygiene protocols when crossing between landholdings and when entering or leaving the operational areas; • avoid or minimise movement of topsoil between landholdings ~~must be avoided or minimised~~ so far as reasonably practicable; • manage topsoil stockpiles ~~must be managed~~ to minimise the occurrence and proliferation of weeds; • implement risk-based hygiene controls ~~must be implemented~~ for any imported rehabilitation materials to minimise biosecurity risks; • undertake herbicide application ~~must be undertaken~~ with consideration to any potentially herbicide resistant species (i.e. herbicides must be fit for purpose); and • monitor weeds and pests ~~must be monitored~~ across the site.	Development extent	Supported
SL-10	**Rehabilitation Operations Management Plan** A Rehabilitation Operations Management Plan (**ROMP**) must be prepared prior to Project commencement. The ROMP must be implemented, and must provide a management framework to avoid and minimise impacts so far as reasonably practicable.	Development extent	Supported with a suggested amendment to include the timeframe and process for reviewing and updating the management plan in line with the IAC's suggested wording in Section 24.7.1 of the EMF.

#	IAC recommendation	Work area	Minister's response
	The ROMP must address matters relating to operational control of rehabilitation activities to facilitate the successful implementation of the approved Rehabilitation Plan (**RH-01**). The ROMP must detail processes relating to planning, works implementation, monitoring and reporting. It must provide a roadmap to the detailed rehabilitation related work procedures that must be maintained and implemented. ~~The ROMP must be reviewed and updated at an appropriate frequency as established in the overarching EMS, with consideration to the level of risk, statutory requirements, monitoring results, community complaints and in response to audit findings.~~ The ROMP must: • Summarise the baseline data and existing environment. • Explain the relevant statutory requirements and context (including any relevant approvals). • Detail planning and operational requirements associated with the successful implementation of the Rehabilitation Plan developed under **RH-01**. • Describe the avoidance and mitigation measures to be implemented to minimise residual risks/impacts so far as reasonably practicable. • Identify specific environmental objectives and performance standards to be achieved with avoidance and mitigation measures in place. • Detail the monitoring and inspections to be undertaken to verify work procedures are implemented effectively. • Describe mechanisms to determine when/if corrective actions and contingency measures are required. • Detail a program to investigate and implement ways to improve the environmental performance of the Project over time. • Detail appropriate review periods and/or triggers to ensure the plan remains fit for purpose. • Establish procedures to manage: - incidents and any non-compliance. - stakeholder and community complaints. - failure to comply with statutory requirements and/or performance standards. - roles and responsibilities for implementing the plan. - a protocol for periodic review of the plan.		

#	IAC recommendation	Work area	Minister's response
	• Include or cross-reference to a community engagement strategy which must include a complaints handling system (SE-02). In addition to the above framework, the ROMP must include specific requirements to: • Detail a protocol for pre-mine soil surveys and contaminated site investigations for each landholding. • Detail the design specifications relevant to backfill operations for overburden and sand tailings. • Describe the procedural requirements for the development of an integrated planning process that must inform the Rehabilitation Plan and the landholder specific plans (which may form a part of the Land Access and Compensation Agreements). • Describe procedural requirements relating to the scheduling of activities with consideration to ground and weather conditions such that environmental risks are minimised. • Include work instructions relevant to the successful implementation of the Rehabilitation Plan. • Maintain fire management measures, including but not limited to the establishment of fire breaks and access to a water source.		
SL-11	**Rehabilitation Plan** Refer to **RH-01**.	Development extent Port	Supported with the recommended changes outlined for RH-01
SL-12	**Agricultural baseline assessment** A detailed agricultural baseline assessment (ABA) must be completed prior to mining within each landholding or paddock by a suitably qualified person. The outcomes of the assessment must inform the setting of appropriate performance standards and rehabilitation criteria (including but not limited to yield). The assessments may be used to form the basis of the Land Access and Compensation Agreements performance target, where appropriate. The ABA must describe matters including but not limited to, if available: • Soil chemical and physical characterisation; • Site-specific fertiliser, weed management and herbicide history; • Site survey levels; • Climatic conditions; and	WBA Mining licence	Supported

#	IAC recommendation	Work area	Minister's response
	• Past crop yields for a range of cropping varieties over several years.		
SL-13	**Wind Erosion Management Guidelines** Prior to commencement of the Project, Guidelines must be prepared by a person with expertise in agricultural soil management to specify measures to minimise wind erosion of stockpiles and the conditions when stockpiles, especially topsoil stockpiles, can be backfilled. The Guidelines must consider, but not be limited to, methods and conditions to maximise stockpile vegetation cover, stockpile moisture levels and meteorological conditions for backfilling.	WBA Mining licence	Supported, with a further change to require that the guidelines be reviewed and revised if required after each block has been mined to reflect any changed understanding based on operational experience.
SL-14		Mining licence	New requirement **Greenhills Road** Should the retention of Greenhills Road reserve lead to changes to the mine layout and/or sequencing and the potential for new or increased impacts such as increased noise and/or air emissions, these changes need to address the GED. Any new or increased impacts to those reported in the EES should be discussed with EPA and other relevant statutory authorities to ensure that acceptable environmental outcomes can be achieved (EMM SL-14).
SL-0A	**Field surveys** Field surveys and inspections must be undertaken during supervised soil stripping and stockpiling activities to ensure the soil units are stripped and stockpiled as planned.	Development extent	Supported
SL-0B	**Pre mine soil surveys** Pre-mine soil sampling must be undertaken over the life of mine according to the protocol in the Rehabilitation Operations Management Plan. The monitoring program must be developed to adequately characterise the resources to be recovered for rehabilitation (refer Attachment 3 (Rehabilitation Plan), Section 13.1).	WBA Mining licence	Supported

#	IAC recommendation	Work area	Minister's response
SL-0C	**Inspections** Stormwater drains and sumps must be inspected and monitored over the life of the Project.	Development extent Port	Supported
Surface Water			
SW-01	**Solar drying cells** Fine and course tailings will be co-disposed to the in-pit tailings cells so that solar drying cells are avoided.	WBA Mining licence	Supported
SW-02	**Offsite water discharge** The process water storage, transfer areas and sumps must be designed with a capacity to contain a significant rainfall event of at least 1% annual exceedance probability (AEP), such that there is no discharge of surface water from operational areas. The process water capacity will be maintained at between 350% to 500% of a 1% AEP event.	WBA Mining licence	Supported
SW-03	**Disturbance area** Refer **LV-03**.	Development extent	Supported
SW-04	**Mine planning and site drainage** Prior to opening new mining cells or constructing new infrastructure, an integrated mine drainage and erosion plan must be prepared by a suitably qualified person with consideration to the existing topography, detailed mine design, surrounding infrastructure and the location of sensitive receptors. All infrastructure, including but not limited to buildings, stockpiles, sumps, pipelines and booster pumps will be located in areas to minimise the risk of ponding, erosion and adverse effects to surface water flow paths. Rehabilitation areas must be contoured to reflect the pre-mining landform and surface drainage must be re-established commensurate with undisturbed areas. Appropriately sized sediment retention basins will be established as part of the drainage plan to capture mine contact water and prevent discharge and erosion outside operational areas. Stormwater drains must be designed and constructed to minimise the risks posed to infrastructure and sensitive receptors. The Surface Water Management Plan (Section	Development extent	Supported

#	IAC recommendation	Work area	Minister's response
	16.6.2.4 (**SW-06**)) must be developed and implemented to monitor water quality within operational areas and in established rehabilitation areas.		
SW-05	**Water use efficiency** To optimise water use from the Grampians Wimmera Mallee Pipeline, a water efficiency program must be incorporated into the Surface Water Management Plan (**SW-06**). This program must provide a framework to investigate water use efficiency and recovery opportunities, with consideration to any new or emerging technologies over the life of mine.	WBA Mining licence	Supported
SW-06	**Surface Water Management Plan** A Surface Water Management Plan (**SWMP**) must be prepared prior to Project commencement. The SWMP must be implemented, and must provide a management framework to avoid and minimise impacts of the Project water on surface water quality, so far as reasonably practicable, in line with the Project EMS and relevant legislative requirements, regulations and guidelines including but not limited to the EP Act, ERS and Australian and New Zealand guidelines for water quality. The SWMP must address aspects relating to Project related mine stormwater drainage, process water management and associated potential impacts and risks to sensitive receptors, including but not limited to adjacent landholders and Dooen swamp. The SWMP must be developed in consultation with stakeholders, including HRCC, and must be subject to approval by the relevant Authority. ~~It must be reviewed and updated at an appropriate frequency as established in the overarching EMS, with consideration to the level of risk, statutory requirements, monitoring results, community complaints and in response to audit findings.~~ The SWMP must: • Summarise the baseline data and existing environment. • Explain the relevant statutory requirements and context (including any relevant approvals). • Describe the avoidance and mitigation measures to be implemented to minimise residual risks/impacts so far as reasonably practicable. • Identify specific environmental objectives and standards to be achieved with avoidance and mitigation measures in place.	Development extent Port	Supported with editorial changes to include the relevant dates of the Environment Protection Act 2017, the Environment Reference Standard (ERS; and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018).

#	IAC recommendation	Work area	Minister's response
	• Detail the monitoring to be undertaken to verify the effectiveness of the avoidance and mitigation measures, including but not limited to surface water chemistry and water storage levels. • Describe mechanisms to determine when/if corrective actions and contingency measures are required. • Detail a program to investigate and implement ways to improve the environmental performance of the Project over time. • Detail appropriate review periods and/or triggers to ensure the plan remains fit for purpose. • Establish procedures to manage: - incidents and any non-compliance. - stakeholder and community complaints. - failure to comply with statutory requirements and/or performance standards. - roles and responsibilities for implementing the plan. - a protocol for periodic review of the plan. • Include or cross-reference to a community engagement strategy which must include a complaints handling system (SE-02). In addition to the above framework and the avoidance and mitigation measures in **SW01** – **SW02**, **SW04** and **SW05**, the SWMP must include specific requirements to: • Implement mine planning procedures to ensure surface water drains and sumps are established and maintained to contain significant storm events within disturbed areas. • Routinely inspect and monitor freeboard in process water dams and sumps. • Reestablish pre-mining drainage patterns were appropriate to do so. • Have procedures in place to prepare for extreme rainfall events. • Detail the erosion control and management measures for stockpiles, internal roads and other disturbed areas. • Surface water modelling to be routinely updated and reviewed over the life of the Project and prior to entering each new mining Block.		
SW-07	**Rehabilitation Plan** Refer to **RH-01**.	Development extent Port	Supported with the recommended changes outlined for RH-01

#	IAC recommendation	Work area	Minister's response
SW-0A	**Surface water monitoring** Surface water samples and water levels must be undertaken according to a schedule approved in the SWMP ~~Surface Water Management Plan~~. The surface water sampling analytical suite must be developed by a suitably qualified person such that it is aligned with the requirements of the EPA Environment Reference Standard (ERS) and must fully characterise the relevant risks and impacts associated with the Project.	Development extent Port	Supported
SW-0B	**Freeboard monitoring** Process water dam levels must be routinely monitored to confirm freeboard levels are maintained.	Development extent	Supported
Groundwater			
GW-01	**Geera clay formation** Mine design and operations must avoid disturbing the Bookpurnong Formation/Geera Clay during all mining, excavation, and dewatering activities with a buffer of at least 1.5 m to avoid exposing and oxidising the Geera Clay. Mining and sump excavation must be undertaken with survey control to ensure the buffer is maintained. Refer to the Potential Acid Sulfate Soil Management Plan (PASSMP)~~PASS Management Plan~~ requirements in **GW-09**.	Mining licence	Supported with amendments to include specific benchmarks against which predicted environmental outcomes will be measured.
GW-02	**Tailings strategy** The fine tailings produced at the desliming cyclone will be dosed with a polymer flocculant to promote water recovery. A large diameter thickener and a flocculant dosing system will be used in the primary stage of dewatering to allow the fines to be thickened. Fines will report to the thickener underflow and will be combined with sand tailings and pumped back to the mine void. Clean water overflow from the thickener will be transferred to a process water dam or recirculated to the WCP. The use of flocculants must be optimised to ensure maximum clean water recovery whilst minimising the amount used, so far as reasonably practicable. The flocculants will be used in the process at very low concentrations in line with standard practice within the mineral sands industry.	WBA Mining licence	Supported with amendments to include: • more specific information on the dosage of the proposed flocculants to be used in the mining process. • specific benchmarks against which predicted environmental outcomes will be measured.

#	IAC recommendation	Work area	Minister's response
	Secondary dewatering must occur at the mine void tails discharge outlet. This must involve adding further polymer flocculant to the slurry exiting the pipe head. The clean water must separate from the tailings beach and must report to a decant sump. The recovered water must be recycled to the process water circuit. This process results in water recovery of around 62% and must effectively maximise water recovery, so far as reasonably practicable.		
GW-03	**Tails placement** Sand tails will be placed in the mine void to a depth greater than 3 m from the final rehabilitated ground surface and surrounding natural ground. All sand tailings cells must be capped with at least 3 m of overburden, subsoil and topsoil material.	Mining licence	Supported with amendments to include specific benchmarks against which predicted environmental outcomes will be measured.
GW-04	**Groundwater bore network** Process water and groundwater monitoring must be undertaken in line with the Groundwater Management Plan (GWMP) (Section 17.6.2.7 (**GW-08**)). The bore network (locations and sampling schedule) established in accordance with the ~~Groundwater Management Plan~~ GWMP must be adapted over the life of mine in response to observed Project related drawdown/mounding effects and any changes to water chemistry, with consideration to identified sensitive receptors. An annual groundwater monitoring review must be undertaken by a suitably qualified person to assess the outcomes against the groundwater modelling and background water quality. Recommendations must be made as required to adapt the monitoring schedule and/or bore network so that the effects on sensitive receptors can be adequately characterised as the mine progresses.	WBA Mining licence	Supported with amendments to include specific benchmarks against which predicted environmental outcomes will be measured.
GW-05	**Groundwater dependent ecosystem studies** If Project related drawdown/mounding or adverse changes to groundwater quality are recorded that could propagate to areas of potential GDEs, targeted studies must be undertaken to monitor Groundwater Dependent Ecosystem (**GDE**) health/function over time in accordance with monitoring measure GW-0B. As described in the	WBA Mining licence	Supported with amendments to include specific benchmarks against which predicted environmental outcomes will be measured.

#	IAC recommendation	Work area	Minister's response
	GWMP framework (refer Section 17.6.2.7 (**GW-08**)), environmental performance standards must be established, against which groundwater monitoring results must be regularly reviewed. Performance standards must be established for bores situated in-between the source and the identified GDE receptors. Commencement of targeted GDE health monitoring must be triggered if the performance standards are exceeded.		
GW-06	**Contaminated sites investigations** Refer to **SL-06**	Development extent	Supported with amendments to include specific benchmarks against which predicted environmental outcomes will be measured.
GW-07	**Chemical storage and management** Refer to **WE-06**	Development extent Port	Supported with amendments to include specific benchmarks against which predicted environmental outcomes will be measured.
GW-08	**Groundwater Management Plan** A Groundwater Management Plan (**GWMP**) must be prepared prior to Project commencement. The GWMP must be implemented, and must provide a management framework to avoid and minimise risks/impacts from the Project to groundwater, so far as reasonably practicable, in line with the Project EMS and relevant legislative requirements. The GWMP must address aspects relating to Project related groundwater drawdown/mounding, changes to the groundwater chemistry and associated potential impacts to sensitive receptors, including but not limited to bore users and GDEs. ~~The GWMP must be reviewed and updated at an appropriate frequency as established in the overarching EMS, with consideration to the level of risk, statutory requirements, monitoring results, community complaints and in response to audit findings . It~~ The GWMP must be developed in consultation with stakeholders and must be subject to approval by the relevant Authority. The GWMP must: • Summarise the baseline data and existing environment. • Explain the relevant statutory requirements and context (including any relevant approvals). • Describe the avoidance and mitigation measures to be implemented to minimise residual risks/impacts so far as reasonably practicable.	Mining licence	Supported including amendments to specify: • That the GWMP and any additional groundwater monitoring will consider and build on the findings of the groundwater impact assessment prepared for the EES. • a feedback mechanism be incorporated to link review of project operations with any significant impact identified during groundwater monitoring. • benchmarks against which predicted environmental outcomes will be measured. • the timeframe and process for reviewing and updating the management plan in line with the IAC's suggested wording in Section 24.7.1 of the EMF.

#	IAC recommendation	Work area	Minister's response
	• Identify specific environmental objectives and performance standards to be achieved with avoidance and mitigation measures in place. • Detail monitoring to be undertaken to verify the effectiveness of the avoidance and mitigation measures including but not limited to groundwater levels and chemistry. • Establish performance standards relating to groundwater flux and changes to hydrochemistry for bores associated with specific receptors. • Establish a GDE monitoring protocol to be implemented if certain groundwater flux performance standards are exceeded. • Describe mechanisms to determine when/if corrective actions and contingency measures are required. • Detail a program to investigate and implement ways to improve the environmental performance of the Project over time. • Detail appropriate review periods and/or triggers to ensure the plan remains fit for purpose. Establish procedures to manage: - incidents and any non-compliance. - stakeholder and community complaints. - failure to comply with statutory requirements and/or environmental performance standards. - roles and responsibilities for implementing the plan. - a protocol for periodic review of the plan. • Include or cross-reference to a community engagement strategy which must include a complaints handling system (SE-02). In addition to the above framework and the avoidance and mitigation measures in **GW01** – **GW04**, the GWMP must include specific requirements to: • Utilise data collected as part of the GWMP to inform the groundwater model and verify spatial and temporal predictions over the life of the project. Where unexpected changes are indicated, implement mitigation measures, and re-visit the model to reassess risks and update where needed. • Review the groundwater bore network annually to ensure the spatial extent and monitoring frequency is adequate to characterise the risks at identified sensitive receptors.		

#	IAC recommendation	Work area	Minister's response
	• Implement a water quality monitoring program that is commensurate with the risks associated with mining and water use/discharge (during operations and post closure). • Submit an annual groundwater report to the relevant regulatory authority that summarises groundwater monitoring data against relevant environmental objectives. • Maintain a Project water balance to forecast water use and to verify actual use over the life of mine. • Undertake a periodic survey of groundwater bore users over the life of mine, to maintain a current record of users that may be affected by Project activities. • Maintain groundwater quality monitoring equipment to ensure it is appropriately calibrated and associated records maintained.		
GW-09	**Potential Acid Sulfate Soil ~~PASS~~ Management Plan** A Potential Acid Sulf~~ph~~ate Soil Management Plan (**PASSMP**) must be prepared prior to Project commencement. The PASSMP must be implemented, and must provide a management framework to avoid and minimise risks/impacts from Project-Generated PASS, so far as reasonably practicable, in line with the Project EMS and relevant legislative requirements. The PASSMP must address aspects relating to Project related PASS risks with the objective of avoiding the high-risk lithological unit (Geera Clay). ~~The PASSMP must be reviewed and updated at an appropriate frequency as established in the overarching EMS, with consideration to the level of risk, statutory requirements, monitoring results, community complaints and in response to audit findings.~~ It must be developed in consultation with stakeholders and must be subject to approval by the relevant Authority. The PASSMP must: • Summarise the baseline data and existing environment primarily through the Avonbank geological model.	Mining licence	Supported with amendments to include: • Specific benchmarks against which predicted environmental outcomes will be measured. • The timeframe and process for reviewing and updating the management plan in line with the IAC's suggested wording in Section 24.7.1 of the EMF.

#	IAC recommendation	Work area	Minister's response
	• Include a protocol for sampling PASS as part of the progressive resource drilling program to verify and further characterise the geological model. • Explain the relevant statutory requirements and context (including any relevant approvals). • Describe the measures to avoid PASS material during mining and to minimise residual risks so far as reasonably practicable. • Identify specific environmental objectives and performance standards to be achieved with avoidance and mitigation measures in place. • Detail the monitoring and inspection to be undertaken to verify the effectiveness of the avoidance and mitigation measures. • Establish performance standards relating to changes in process water chemistry and bores associated with specific receptors. • Describe mechanisms to determine when/if corrective actions and contingency measures are required. • Detail a program to investigate and implement ways to improve the environmental performance of the Project over time. • Detail appropriate review periods and/or triggers to ensure the plan remains fit for purpose. • Establish procedures to manage: - incidents and any non-compliance. - stakeholder and community complaints. - failure to comply with statutory requirements and/or environmental performance standards. - roles and responsibilities for implementing the plan. - a protocol for periodic review of the plan. • Include or cross-reference to a community engagement strategy, which must include a complaints handling system (SE-02). In addition to the above framework, the PASSMP must include specific requirements to: • Ensure GPS survey control is used to limit the excavation at the bottom of the ore body such that there is a buffer of at least 1.5 m to the Geera Clay lithological unit.		

#	IAC recommendation	Work area	Minister's response
	• Ensure routine in-pit inspections of the lower ore body above the Geera Clay are carried out to verify PASS materials are not excavated or dewatered. • Routinely ~~M~~monitor the pH of decant sumps and conduct PASS field testing in-pit during mining. • Maintain a geological model and incorporate new drilling or sampling results as required.		
GW-10	**Waste Management Plan** Refer to **WE-06**.	Project	Supported
GW-11	**Rehabilitation Plan** Refer to **RH-01**.	Development extent Port	Supported with the recommended changes outlined for RH-01
GW-0A	**Groundwater monitoring** Groundwater samples and water levels must be undertaken according to a schedule approved in the ~~Groundwater Management Plan~~ GWMP. The groundwater sampling analytical suite must be developed by a suitably qualified person such that it is aligned with the requirements of the ERS and must fully characterise the relevant risks and impacts associated with the Project. Prior to mining, the relevant ERS environmental objectives and indicators must be established as a benchmark against which the maintenance of the stated environmental values can be assessed. EMS environmental performance standards must be set that are commensurate with the ERS objectives.	WBA Mining licence	Supported with an amendment to specify that the GWMP and any additional groundwater monitoring will consider and build on the findings of the groundwater impact assessment prepared for the EES.
GW-0B	**Targeted monitoring of groundwater dependent ecosystems** Targeted monitoring of GDEs must be undertaken over the course of the Project if adverse groundwater effects (flux or hydrochemistry) are recorded that could propagate to areas of potential GDEs. Monitoring must be conducted at a minimum monthly during year one of ~~The~~ mining of Block A, and as determined appropriate in the EMS, ~~must provide an opportunity~~ to verify the actual groundwater effects against the groundwater model and to inform any changes or additional mitigation measures in consultation with a suitably qualified ecologist and ~~must~~	WBA Mining licence	Supported with amendments to include specific benchmarks against which predicted environmental outcomes will be measured.

#	IAC recommendation	Work area	Minister's response
	enable a tailored and specific GDE monitoring program to be established if required.		
GW-0C	**Process water monitoring** Process water monitoring must be undertaken at the WCP prior to groundwater discharge according to a schedule to be approved in the ~~Groundwater Management Plan~~ GWMP. Monitoring must be conducted for various key parameters, including, but not limited to, pH and salinity. This must confirm process water quality is within set operating parameters prior to discharge.	WBA	Supported with amendments to include specific benchmarks against which predicted environmental outcomes will be measured.
GW-0D	**Geological model verification** Soil sampling must be undertaken to validate the geological conceptual model in line with the requirements to be approved in the PASSMP ~~Management Plan~~. The monitoring must be designed by a suitably qualified person to validate the geological conceptual model in line with the requirements to be approved in the PASSMP.	Mining licence	Supported with amendments to include specific benchmarks against which predicted environmental outcomes will be measured.
GW-0E	**Chemicals of potential concern monitoring** Chemicals of Potential Concern (including but not limited to acrylamide and Cr(VI)) must be monitored as part of the listed analytes included in the ~~Groundwater Management Plan~~ GWMP. A process must be maintained to understand the risks to sensitive receptors and the uncertainties related to the monitoring data. Monitoring must be undertaken in accordance with Groundwater Sampling Guidelines, EPA Publication 669.1.	WBA Mining licence	Supported including amendments to specify that: • analytes acrylamide and hexavalent chromium be monitored through the GWMP. • the GWMP and any additional groundwater monitoring will consider and build on the findings of the groundwater impact assessment prepared for the EES.
Wastes and Emissions			
WE-01	**Off-site water discharge** Refer to **SW-02**.	WBA Mining licence	Supported
WE-02	**Tailings strategy** Refer to **GW-02**.	WBA Mining licence	Supported with the changes outlined under GW-02
WE-03	**Mine planning and site drainage** Refer to **SW-04**.	Development extent	Supported

#	IAC recommendation	Work area	Minister's response
WE-04	**Contaminated land** Refer to **SL-06**.	Development extent Port	Supported
WE-05	**GHG and Energy Efficiency Program** A Greenhouse Gas and Energy Efficiency Program must be prepared and implemented to minimise greenhouse gas (GHG) emissions. The program must: • bBe developed using the 'Protocol for Environmental Management (PEM): Greenhouse Gas Emissions and Energy Efficiency in Industry' (PEM, 2001) and the EPA's 'Guideline for minimising GHG emissions' (EPA, 2022). • Must investigate the feasibility of transitioning to renewable energy and/or introducing an offsetting program to the extent practicable. • ~~The Program must identify~~ Set energy efficiency targets and measures to achieve these targets. • ~~The Program must s~~Set out the monitoring measures ~~requirements~~ required to evaluate the effectiveness of the program. • ~~management measures and must o~~Establish a mechanism to identify improvements. • Regularly review targets and adjust them if necessary to ensure they, at a minimum, align with any changes to Victoria's interim and net zero targets. ~~In setting targets, consideration must be given to Victoria's Climate Change Framework, as this sets out Victoria's long-term plan to achieve net zero emissions by 2050.~~	Project	Supported, with an addition to require that reasonably practicable measures to avoid emissions are investigated before consideration of offsets in line with the GED.
WE-06	**Waste Management Plan** A Waste Management Plan (**WMP**) must be prepared prior to Project commencement. The WMP must be implemented, and must provide a management framework to avoid and minimise risks so far as reasonably practicable. The WMP must address aspects relating to Project related waste, emissions and associated potential impacts on sensitive receptors. ~~The WMP must be reviewed and updated at an appropriate frequency as established in the overarching EMS, with consideration to the level of risk, statutory requirements, monitoring results, community complaints and in response to audit findings~~. It must be developed in consultation with	Development extent Port	Supported

#	IAC recommendation	Work area	Minister's response
	stakeholders, including the EPA, and must be subject to approval by the relevant Authority. The WMP must: • Summarise the baseline data and existing environment. • Explain the relevant statutory requirements and context (including any relevant approvals). • Describe the mitigation measures to be implemented to minimise residual risks/impacts so far as reasonably practicable. • Identify specific environmental objectives and performance standards to be achieved with avoidance and mitigation measures in place. • Detail monitoring is to be undertaken to verify the effectiveness of the avoidance and mitigation measures. • Describe mechanisms to determine when/if corrective actions and contingency measures are required. • Detail a program to investigate and implement ways to improve the environmental performance of the Project over time. • Detail appropriate review periods and/or triggers to ensure the plan remains fit for purpose. • Establish procedures to manage: - incidents and any non-compliance. - stakeholder and community complaints. - failure to comply with statutory requirements and/or environmental performance standards. - roles and responsibilities for implementing the plan. - a protocol for periodic review of the plan. • Include or cross-reference to a community engagement strategy which must include a complaints handling system (SE-02). In addition to the above framework and the mitigation measures in **WE-05**, the WMP must include specific requirements to: • Ensure all dangerous goods on-site (including waste hydrocarbons and chemicals) are stored in accordance with AS 1940-2004 'The storage and Handling of Flammable and Combustible Liquids', AS 1692 'Tank Storage of Fuels', ~~and~~ EPA Publication 1698 (EPA, 2018) and Dangerous Goods (Storage and Handling) Regulations 2023.		

#	IAC recommendation	Work area	Minister's response
	• Develop a recycling program that will include investigating options for waste material re-use on-site. • Track waste transport through the EPA Waste Tracker and maintain records and receipts. • Ensure onsite sewage systems are designed and installed in compliance with EPA Publication 891 (EPA, 2016a) for systems <5,000 L/day. • Review waste volumes disposed of, recycled and reused to assess the effectiveness of waste minimisation and management measures. • Evaluate and consider alternative, carbon friendly fuels, electricity sources, energy efficient equipment and other measures to minimise GHG and carbon emissions. • Participate in GHG reporting and audits, as required by current regulations and legislation. • Ensure waste classification is done in accordance with Schedule 5 of the Regulations with reference to Waste classification assessment protocol, EPA publication 1827.2. • Include an unexpected finds protocol for the discovery of unexpected, historical waste during excavation on-site. • Provide a framework and procedure outlining the requirements for demolition and removal of Project infrastructure at the end of Project life, which must include the identification and categorisation of waste types and disposal options adopting the waste hierarchy.		
WE-07	**Rehabilitation Plan** Refer to **RH-01**.	Development extent Port	Supported with the recommended changes outlined for RH-01
WE-0A	**Waste record keeping and inspection** The volume and characteristics of all waste streams generated, reused onsite or disposed offsite must be recorded in accordance with relevant waste duties. Relevant records must be kept and routine inspections and audits must be undertaken to ensure such duties are complied with.	Project	Supported

#	IAC recommendation	Work area	Minister's response
WE-0B	**Energy use and greenhouse gas emissions monitoring** Energy use and greenhouse gas emissions must be monitored in line with the GHG and Energy Efficiency Program.	Project	Supported
Socioeconomics			
SE-01	**Heritage exclusion zones** Refer to **HH-01.**	Development extent	Supported
SE-02	**Environmental Management System and Community Engagement Plan** An AS/NZS ISO 14001:2016 EMS must be developed and implemented across the Project, the scope of which must cover the mine site, processing plant, road transport and activities at the Port of Portland. The EMS will provide a consistent management approach across the Project and will be integrated with other relevant business elements. An EMS is an auditable system of interrelated business elements established to avoid and minimise effects on the environment, fulfil compliance obligations, enhance environmental performance and maintain a process of continual improvement. The EMS must establish a program of review for management plans required by this EMF and the Incorporated Document for all Project activity areas. The underlying concept is based on a Plan-Do-Check-Act (PDCA) principle comprising the following elements: • Plan: establish environmental objectives and processes necessary to deliver results in accordance with the organisation's environmental policy. • Do: implement the processes as planned. • Check: monitor and measure performance against the organisation's environmental policy and environmental objectives. • Act: take action to meet environmental objectives and to continually improve performance. The EMS must be developed prior to the commencement of mining, following the EES assessment, and must be reviewed if there are relevant changes to the AS/NZS ISO 14001:2016. A Community Engagement Plan (**CEP**) must be incorporated into the EMS. The CEP provides a means by which stakeholders can provide	Project	Supported, including additions to require that the proponent promote the establishment of an Environmental Reference Group within the local community and require that the Group include at least one representative from a landholder living in proximity to the mine and a landholder living in proximity to the haulage route, should they self-nominate.

#	IAC recommendation	Work area	Minister's response
	feedback and receive responses and includes a mechanism for recording and resolving complaints. The purpose of the CEP is to develop an understanding between the Project and stakeholders, to provide an opportunity for two-way communication that allows stakeholder concerns to be addressed so far as reasonably practicable, and to facilitate beneficial Project integration with the local area and region. An overview of the community engagement strategy is provided in EES Chapter 5. The CEP must be generally consistent with the exhibited EES Chapter 5 – Community Engagement and, if required, updated to be consistent with the Minister's assessment of the EES. The CEP must be relevant to all Project activities and areas. Prior to commencement of Project works, an Environmental Reference Group (ERG) will be formed and maintained to facilitate effective two-way communication between WIM, community stakeholders and government regulators. Targeted consultation groups/committees will be formed over the life of the Project to address specific matters or issues as they arise and to communicate environmental performance to interested parties or affected parties, including but not limited to landholders, regulators, HRCC and community members.		
SE-03	**Workforce Accommodation Strategy** A Workforce Accommodation Strategy (**WAS**) must be developed prior to the commencement of Project works in consultation with key stakeholders, including the HRCC and relevant local housing organisations. The WAS must be based on the most current data and consultation must be undertaken with these groups prior to commencement to minimise adverse effects and to optimise opportunities for the community. Once prepared, the ~~Workforce Accommodation Strategy~~ WAS must be implemented and reviewed periodically throughout delivery of the Project, including prior to operations commencing. The ~~Strategy~~ WAS must include: • An estimate of the housing needs of the Project workforce by location. • A schedule of housing under the control of the Project, inclusive of strategic housing purchases, rental agreements with holiday home	Development extent	Supported, with additions to clarify that that temporary accommodation contingencies may include working with local caravan park operators to install additional cabins at their premises.

#	IAC recommendation	Work area	Minister's response
	owners and partnerships with housing developers. • An estimate of permanent and temporary housing available on the open market by location and agreed maximum percentage be occupied by imported workers. • An assessment of the need for mitigation strategies, including Ddrive-Iin, Ddrive-Oout or Fffly-Iin, Fffly-Oout worker positions. • Contingency measures for the construction workforce if temporary accommodation arrangements cannot be made available. This may involve temporary accommodation contingencies and/or Drive-In Drive-Out contingency models with accommodation outside the Wimmera Southern Mallee. In addition to the above, the housing requirements of the construction and operational workforce must be communicated to the market immediately following Project approval to enable the market to take advantage of the opportunities created by the Project. ~~The strategy must include contingency measures for the construction workforce if temporary accommodation arrangements cannot be made available. This may involve temporary accommodation contingencies and/or Drive-In Drive-Out (DIDO) contingency models with accommodation outside the Wimmera Southern Mallee.~~		
SE-04	**Targeted community and workforce support programs** A community development fund will be established to support community groups through an annual grant selection program. From this fund, targeted community support programs will be planned and funded over the course of the Project to reflect the needs and aspirations of the community. A community support and workforce development strategy will be prepared in consultation with HRCC and other relevant stakeholders before construction commences and implemented across the life of the Project that recognises the following initial key areas of focus: • Skills development and apprenticeship programs. • Indigenous employment programs. • Mining and rehabilitation research programs. • Student research programs established with Longerenong Agricultural College on agricultural mine rehabilitation.	Project	Supported, with additions to require that the community support and workforce development strategy be reviewed periodically including once the timing of other major projects proposed in the region becomes clearer and updated as required.

#	IAC recommendation	Work area	Minister's response
	Programs will be established to encourage local small businesses to tender on goods and services contracts over the life of the Project. Communicate anticipated Project workforce size and composition to HRCC and the Department of Education following Project approval.		
SE-05	**Land access and compensation agreements** Refer to **LP-02**.	Development extent	Supported
SE-06	**Rehabilitation Plan** Refer to **RH-01.**	Development extent Port	Supported with the recommended changes outlined for RH-01
SE-07	**Wellbeing Plan and access to counselling services** Prepare and implement a Wellbeing Plan focussed on supporting landholders and families who will be displaced by the Project. The Wellbeing Plan must at a minimum: • be prepared before construction commences by an independent trained psychologist, preferably with one who specialises in mental health of farmers • identify suitable training for staff engaging with landholders throughout the Project • identify suitable counselling services (financial and psychological) • include a communications plan for effective and ongoing communication with the landholders about services and resources available • be reviewed periodically as advised by the professional who is engaged to prepare the plan. Facilitate access to independent counselling services (financial and psychological) for those landholders who will be displaced by the Project, at a minimum during the period that land agreements and compensation are being negotiated, and as determined appropriate in the Wellbeing Plan.	WBA Mining licence	Supported with additions to require that the Plan also provide support to landholders living in proximity to the project who could experience impacts associated with changes in amenity. This includes providing these landholders with access to counselling services for a minimum of two years after operations commence, and as determined appropriate in the Wellbeing Plan.
SE-08	**Training and awareness** All staff involved in direct engagement with landholders, particularly those negotiating land agreements and compensation, will receive appropriate training to be aware of potential mental health and wellbeing impacts of	Project	Supported

#	IAC recommendation	Work area	Minister's response
	the Project and have skills to approach landholders with sensitivity. The scope and frequency of training must be in line with recommendations of the Wellbeing Plan required by SE-07.		
SE-0A	**Community surveys** Periodic community surveys must be conducted over the life of the Project to objectively gauge views on the Project.	Project	Supported
Flora and Fauna			
FF-01	**Vegetation exclusions zones** Vegetation exclusion zones must be established and maintained within the development extent (as shown in ~~(refer~~ EES Figure 21-6 and as amended~~)~~ to reflect the revised development extent (Committee Hearing Document 79) and in response to periodic surveys (FF-03) and review and update of the FFMP (FF-06). No native vegetation removal or topsoil disturbance will be permitted within the exclusion zones over the life of the Project.	Development extent	Generally supported, with the following recommendation: • amend the reference to surveys from being "periodic" to "progressive" to reflect that while most assessments will be upfront, some works will be undertaken as access becomes available. • include reference to surveys in the minor utilities corridor (FF-11) review and update of the FFMP (FF-06), avoidance of Greenhills Road reserve (FF-09) and the minor utilities corridor FFMP (FF-12). • inclusion of the reference to ensuring the controls for areas of Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions are protected from direct and indirect impacts to the satisfaction of DCCEEW.
FF-02	**Tree protection zones** Tree protection zones must be established and maintained to protect patches or scattered trees wherever reasonably practicable to do so within the development extent (as shown in EES Figure 21-6 and as amended to reflect the revised development extent (Committee Hearing Document 79) and in response to periodic surveys (FF-03) and review and update of the FFMP (FF-06). Tree protection zones ~~have been~~ will be established around selected scattered trees that can be avoided and are not otherwise protected within an exclusion zone. Tree protection zones must be implemented in line with Australian Standard AS 4970-2009 'Protection of Trees on Development Sites' (the Standard). A 15 m	Development extent	Generally supported, with the following recommendations: • amend "periodic surveys" to "progressive surveys". • include reference to surveys in the minor utilities corridor (FF-11) and update of the management plan for the utilities corridor (FF-12).

#	IAC recommendation	Work area	Minister's response
	buffer from trees (patches and scattered) and exposed edges must be implemented to protect trees from indirect impacts. Activities excluded from within a tree protection zone, as detailed in the Standard, include: • physical damage to the tree; • machine excavation including trenching; • parking of vehicles and plant; • dumping of waste; • wash down and cleaning of equipment; and/or • placement of fill. It is noted that on private properties the landholder may require activities such as cultivation, firebreaks or weed spraying to be undertaken within a tree protection zone in the course of continued management of their properties.		
FF-03	**Periodic flora surveys** Given that the Project extends over 36 years, vegetation characteristics will change over this period. Periodic Spring flora surveys (October to December) must be undertaken as required under the FFMP and in accordance with timeframes required by the *Assessor's handbook: Applications to remove, destroy or lop native vegetation*, DELWP, 2018 (or equivalent guidelines if updated): • over the life of the Project across the proposed disturbance area to further update surveys prepared through the EES process and characterise previously unsurveyed areas (due to land access restrictions), prior to the commencement of each mining block • along the minor utilities corridor and public roads to confirm the total numbers of protected/threatened flora individuals that will be removed by Project activities, prior to commencement and construction of the water pipeline. ~~Given that the Project extends over 36 years, it is acknowledged that the vegetation characteristics will change over this period.~~ The periodic surveys will capture these changes and facilitate the consideration of further avoidance and mitigation measures. ~~It is anticipated that periodic surveys will be undertaken as required under the Flora and Fauna~~	Development extent	Generally supported, with the following recommendations: • amend the heading from "periodic" to "progressive" to reflect that while most assessments will be upfront, some works will be undertaken as access becomes available. • require works in all accessible areas to be subject to native vegetation surveys prior to the commencement of any works, to ensure the total area of native vegetation is assessed in accordance with the relevant guidelines for the purposes of informing offset requirements for areas to be removed, and for identifying required mitigation measures for protecting areas which are to be retained, to the satisfaction of DEECA. • note that further offsets may be required if native vegetation is identified for removal in previously inaccessible areas. • note that surveys must be undertaken: • in accordance with relevant guidelines and in consultation with DEECA

#	IAC recommendation	Work area	Minister's response
	~~Management Plan prior to the commencement of each mining block and prior to construction of the water pipeline. It is acknowledged that~~ Native vegetation offsets may need to be adjusted over the life of the Project in response to new surveys (see FF-08).		• as a priority when access becomes available • prior to commencement of works associated with project/mining stages • remove dot point which references works required in the minor utilities corridor. • include requirement to assess and record number and size of hollows to be removed. • include requirements to assess and record any potential threatened species habitat in dams to be removed.
FF-04	**Construction methods** Within the development extent, there will be open mine voids, sumps, trenches and dam infrastructure which could pose a risk to native fauna due to entrapment. Fauna egress will be incorporated into the design of these features where practicable and safe to do so. Trenching for minor utilities must be backfilled and/or covered as soon as practicable. Earthen sumps and mine voids will be typically constructed such that they pose a very low risk to fauna, given the natural materials used and the gradient of the walls/batters (i.e., not vertical). Certain activities and mining features must be fenced to exclude access by livestock and/or larger mammals. The type of fencing must be suitable for the type and nature of the hazard and associated receptors (animals/general public) that may be affected. It is anticipated that activity specific fencing requirements will be assessed progressively over the life of mine, with consideration to the hazards presented and the risks posed to livestock and/or larger mammals. Existing landholder use and requirements must be considered in any such assessment of risk.	Development extent	Generally supported, with the following recommendations: • update to include need to consider the results of additional fauna surveys (FF-03 and FF-10).
FF-05	**Groundwater Dependent Ecosystem health** ~~**Groundwater and surface water management plans**~~ A Surface Water Management Plan **(SW-06)** and ~~Groundwater Management Plan~~ GWMP (**GW-08**) must be prepared prior to Project commencement to avoid and minimise Project related risks/impacts to surface and groundwater, so far as reasonably practicable, and must be implemented. Each plan must include a monitoring program that must	Development extent	Generally supported, with the following recommendations: • include references to GW-05 and GW0B in the third sentence. • Amend third sentence to note that that further studies be undertaken to monitor the health/function of potentially affected GDEs on 'and' in the vicinity of mining activities.

#	IAC recommendation	Work area	Minister's response
	assess surface and groundwater quality, process water quality and groundwater levels in established bores. If Project related drawdown/mounding or adverse changes to groundwater quality are recorded that could propagate to areas of potential GDEs located on or in the vicinity of mining activities, targeted studies must be undertaken to monitor the health/function of potentially affected GDEs. A root cause investigation must be undertaken, and corrective actions/contingencies must be identified and implemented, in consultation with a suitably qualified ecologist.		
FF-06	**Flora and Fauna Management Plan** A Flora and Fauna Management Plan (**FFMP**) must be prepared prior to Project commencement. The FFMP must be implemented, and must provide a management framework to avoid and minimise impacts so far as reasonably practicable. The FFMP must be reviewed and updated at an appropriate frequency as established in the overarching EMS, and prior to the commencement of each mining block (with consideration of matters in Section 24.7.1 of this EMF) ~~with consideration to the level of risk, statutory requirements, monitoring results, community complaints and in response to audit findings~~. It must be developed, reviewed and updated in consultation with stakeholders and must be subject to approval by the Department of Energy, Environment and Climate Action (DEECA) ~~Department of Environment, Land, Water and Planning~~. The FFMP must: • Summarise the baseline data and existing environment. • Explain the relevant statutory requirements and context (including any relevant approvals). • Describe how the detailed design and delivery of the Project avoids and minimises impacts to native vegetation consistent with the '*Guidelines for the removal, destruction or lopping of native vegetation*' (DELWP, 2017). • Identify specific environmental objectives and performance standards to be achieved with avoidance and mitigation measures in place. • Detail the monitoring to be undertaken to verify the effectiveness of the avoidance and mitigation measures, including but not limited to flora	Development extent	Generally supported, with the following recommendations: • amend the reference to surveys from "periodic" to "progressive" to reflect that while most assessments will be upfront, some works will be undertaken as access becomes available. • inclusion of the requirement for pre-clearance surveys of dams, with a focus on threatened fauna. • inclusion of the requirement for rehabilitation of dams to include consideration of reinstatement of threatened species habitat, where recorded FF-03. • remove the reference to the native vegetation rehabilitation plan. • consider further avoidance of the area of native vegetation which meets the requirements to be considered part of the Victorian Temperate Woodland Bird Community. • require specific management measures to demonstrate that all Weeping Myall are suitably protected from direct and indirect impacts from the project. • update plans to show the location of the additional 4 Bulokes which were nominated for retention during the hearing and ensure these are considered in the tree protection measures.

#	IAC recommendation	Work area	Minister's response
	and fauna condition and compliance with tree protection zones and exclusions zones. • Describe mechanisms to determine when/if corrective actions and contingency measures are required. • Detail a program to investigate and implement ways to improve the environmental performance of the Project over time. • Detail appropriate review periods and/or triggers to ensure the plan remains fit for purpose. • Establish procedures to manage: - incidents and any non-compliance - stakeholder and community complaints. - failure to comply with statutory requirements and/or environmental performance standards. - roles and responsibilities for implementing the plan. - a protocol for periodic review of the plan. • Include or cross-reference to a community engagement strategy which must include a complaints handling system (SE-02). In addition to the above framework and the avoidance and mitigation measures in **FF01** – **FF05 and SL-09**, the FFMP must include specific requirements to: • Provide details of the targeted survey methodology for threatened flora species, including any rationale and assumptions. • Undertake a native vegetation condition assessment prior to the removal of vegetation. ~~• Undertake spring surveys (October to December) along the minor utilities corridor and public roads to confirm the total numbers of protected/threatened flora individuals that will be removed by Project activities prior to commencement.~~ - Following completion of periodic surveys as required by FF-03, consider further avoidance and mitigation measures including the option to bore or move underground services and the need for further exclusion zones (FF-01 and FF-02). • Periodic targeted fauna surveys must be undertaken if the native vegetation condition assessment demonstrates the vegetation represents habitat that is likely to be used by listed fauna.		• require further detailed surveys within the development extent to be undertaken by a suitably qualified ecologist to determine the species present for the purpose of informing the FFG Act requirements, and ensuring there are no impacts to listed FFG Act species such as Buloke Mistletoe. • identify the location of Buloke trees within the mining licence area, and update plans to clearly indicate which individuals are to be impacted by the project.

#	IAC recommendation	Work area	Minister's response
	- Under the guidance of a suitably qualified ecologist, develop a native vegetation rehabilitation plan to identify and deliver opportunities to progressively establish new habitat corridors or contribute to existing habitat corridors in the broader landscape to improve biodiversity outcomes once the Project is complete, where it is reasonably practicable to do so and with the agreement of the landowner. Ensure the requirements for the native vegetation rehabilitation plan are included in the overall Project Rehabilitation Plan (RH-01). • Establish fencing or demarcate exclusions zones and tree protection zones where necessary as determined through a risk-based assessment conducted in consultation with the landholder/s. • Develop tree removal protocols describing the timing and program for removal to avoid the breeding season of nesting birds and mammals. • Establish and maintain tree screens (**LV-04**) using species that could be used as habitat by local fauna. • Progressively rehabilitate farm dams in consultation with the landholder. • Undertake risk-based pre-mining flora surveys as required prior to the development of each mining block-and revise the vegetation offsets as required. • Establishment and implement procedures to translocate listed flora, where suitable and practicable to do so, prior to disturbance • Identify and outline the requirements for salvaging and relocating wildlife in consultation with ~~DELWP~~ DEECA and ~~Council~~HRCC. • Obtain relevant permits and authorisations prior to the removal of vegetation and taking of protected flora in accordance with the Horsham Planning Scheme and the *Flora and Fauna Guarantee Act 1988*. • Develop and implement a flora and fauna induction and training program for site personnel so that the requirements of the FFMP are understood by the relevant personnel. - Develop a fire safety plan in consultation with (and approved by) the Country Fire Authority and landholders to specify requirements for operational fire safety measures, plan communication and		

#	IAC recommendation	Work area	Minister's response
	implementation, follow-up assessment and plan review/update. The fire safety plan must include: - Requirements to maintain firebreaks with consideration to the operational hazards and surrounding landholder activities/hazards. - Occupational health and safety procedures relating to how Hot Works (i.e. welding etc.) are to be undertaken and hazards controlled. • Maintenance of firefighting equipment in and around work areas to meet the general duties under the Occupational Health and Safety Act and to minimise residual risks to the environment so far as reasonably practicable.		
FF-07	**Native vegetation rehabilitation** ~~A Rehabilitation Plan (**RH-01**) must be established and implemented for the Project that addresses matters relating to progressive rehabilitation and closure.~~ ~~The Rehabilitation Plan must include a schedule of progressive rehabilitation and must describe the strategy to establish a safe, stable, sustainable landform capable of supporting the proposed end land use.~~ ~~It is expected that land will be stabilised as soon as reasonably practicable after mining, typically within 4 years.~~ ~~The Rehabilitation Plan must define the end land use with consideration to the views of the landholders and the broader community where appropriate. The focus of the plan, in line with community feedback to date, is on returning private land to a productive agricultural end land use.~~ ~~Where it is proposed to establish native vegetation on rehabilitated land, the Rehabilitation Plan in respect to those areas must be developed~~ Implement a native vegetation rehabilitation plan consistent with the FFMP (FF-06) and Rehabilitation Plan (RH-01) in consultation with the relevant landholders and stakeholders. Establishing native vegetation on rehabilitated land will only occur with the consent of landholders, and is expected to primarily target native vegetation that existed prior to mining. One such opportunity may exist along Greenhills Road, where road verges may be rehabilitated following road reinstatement with a Plains Grassland vegetation type. Where areas of native vegetation are to be rehabilitated, a landholder specific rehabilitation plan would be developed to meet these objectives.	Development extent	Generally supported, with the following recommendations: • require the rehabilitation plan to be developed prior to the commencement of any works. • require the plan to: ○ include details on the feasibility, cost and proposed extent of works, and key actions associated with the proposed rehabilitation. ○ be developed in consultation with stakeholders and landholders. ○ outline key agreements and commitments, along with the required monitoring and adaptive management measures that will be implemented if the plan does not achieve its objectives within the agreed timeframes. • amend first sentence to note Under the guidance of a suitably qualified ecologist, develop and implement a native vegetation rehabilitation plan consistent with the FFMP (FF-06) and Rehabilitation Plan (RH-01) in consultation with the relevant landholders and stakeholders.

#	IAC recommendation	Work area	Minister's response
	It is expected that topsoil would be stored separately and returned following mining. Alternatively, topsoil stripped from these areas could be directly returned to an area of rehabilitation in a commensurate location to facilitate the regeneration of the retained seed bank. Seed collection of local provenance native species will be undertaken to facilitate targeted seeding and planting programs within areas of native rehabilitation. It is expected that there will be opportunities to enhance the habitat values of protected stands of vegetation where this is deemed appropriate by a suitably qualified ecologist and in consultation with the Landholder. This may include implementing weed control measures, additional planting of native understorey species and additional canopy species to enhance the habitat value of the sites. Felled trees may be utilised as habitat logs in exclusion zones where practicable to do so and in agreement with the landholder. Similarly, some targeted translocation of significant species (flora or fauna) may be possible in some instances in consultation with ~~DELWP~~ DEECA.		• the plan will identify and deliver opportunities to progressively establish new habitat corridors or contribute to existing habitat corridors in the broader landscape to improve biodiversity outcomes once the project is complete, where it is reasonably practicable to do so and with the agreement of the landowner. • remove specific reference to Greenhills Road. • include the requirement for the native vegetation rehabilitation plan to be included in the overall Project Rehabilitation Plan (RH-01).
FF-08	**Native vegetation offsets** The Project will result in unavoidable residual impacts on native vegetation with avoidance and mitigation measures in place, in response to periodic flora surveys (FF-03) and as established by the native vegetation conditions assessments under FF-06. Offsets will be required to compensate for residual impacts on native vegetation, threatened species and habitat for threatened species. Offsets will be sought within the Wimmera Catchment Management Authority (WCMA) or the Horsham Rural City area.	Development extent	Generally supported, with the following recommendations: • removal of the reference of periodic surveys. • require the initial offset requirements to be developed in accordance with the results of the pre-commencement surveys outlined in FF-03, FF-10, and FF-11. • require that offsets are sought for any further vegetation nominated for removal as surveys progress into areas which have not yet been surveyed.
FF-09		MIN and WBA	New requirement **Avoidance of Greenhills Road reserve** Native vegetation along and within the Greenhills Road reserve is to be fully retained and protected from direct and indirect project works consistent with FF-01, FF-02 and FF-06. Prior to the commencement of any works, a plan must be developed which demonstrates how the vegetation along Greenhills Road reserve will be avoided by mining works, to the satisfaction of DEECA. This plan should include sufficient

#	IAC recommendation	Work area	Minister's response
			management measures to ensure direct and/or indirect impacts can be suitably managed. The plan must also demonstrate how any change in mine layout and/or sequencing to avoid native vegetation impacts in this road reserve has considered the GED. Any new or increased impacts to those reported in the EES should be discussed with EPA and other relevant statutory authorities to ensure that acceptable environmental outcomes can be achieved.
FF-10		Minor utilities corridor	New requirement **Threatened fauna surveys** Surveys must be undertaken for threatened fauna prior to the commencement of any works. The targeted species, design and methods for surveys should be developed in consultation with DEECA. The report should identify the likely and known presence of listed species and the potential impacts as a result of the project to the satisfaction of DEECA and an independent peer reviewer. The results of these surveys should be used to update the likelihood assessment for threatened species. The results of surveys should inform the refinement or need for any additional avoidance or mitigation measures in the FFMP FF-12.
FF-11		Minor utilities corridor	New requirement **Native vegetation, threatened flora and threatened communities surveys** Surveys must be undertaken for native vegetation, threatened flora and threatened communities prior to the commencement of any works. Specific survey must be undertaken to determine the extent of Natural Grasslands of the Murray Valley Plains, in line with the guidelines, to the satisfaction of DCCEEW and DEECA. The design and methods for surveys should be developed in consultation with DEECA and an independent peer reviewer. The report should identify the likely and known presence of listed species and threatened communities and the potential impacts as

#	IAC recommendation	Work area	Minister's response
			a result of the project to the satisfaction of DEECA and the independent peer reviewer. The results of these surveys should be used to update the likelihood assessment for threatened species and communities. The results of surveys should inform the refinement or need for any additional mitigation measures in the FFMP FF-06 and FF12. Targeted species surveys for Calotis and Vittadinia species should be developed in conjunction with, and the satisfaction to DEECA and an independent peer reviewer, prior to any secondary consents being issued.
FF-12		Minor utilities corridor	New requirement **Minor utilities corridor - flora and fauna management plan and design management document** In addition to the requirements of FF-06, a minor utilities corridor flora and fauna management plan which includes a design management document must be completed prior to commencement of any works, to the satisfaction of DEECA. This plan and design management document must use the results of the additional survey work outlined in FF-10 and FF-11 for the minor utilities corridor to demonstrate that the minor utilities corridor does not result in significant impacts to any listed flora and fauna species, threatened ecological communities, and does not result in the removal of any Weeping Myall. The plan and design management document must clearly identify the full extent of Natural Grassland of the Murray Valley Plains community within the project area and must clearly demonstrate how the project will avoid any direct or indirect impacts to any area of this community, to the satisfaction of DEECA and DCCEEW. The mitigation measures must be tailored to the activity type (e.g. pole top works, ground disturbance), and include a suitable buffer.

#	IAC recommendation	Work area	Minister's response
			The plan must outline the steps that have been undertaken to avoid and minimise impacts to patches of Buloke Woodland of the Riverina and Murray Darling Depression Bioregion, and include detailed mitigation measures for area to be retained, to the satisfaction of DEECA and DCCEEW. A detailed management plan specific to the minor utilities corridor must be prepared to the satisfaction of DEECA and an independent peer reviewer. This plan must: • Outline the approach to the avoidance and mitigation of ecological values; • describe the relevant mitigation measures which will be implemented to avoid direct and indirect impacts to native vegetation nominated for retention; • describe the required mitigation measured to avoid any impacts to threatened ecological communities or listed flora and fauna species; • describe any required mitigation measures to protect aquatic values and listed aquatic species for works near wetlands or waterbodies, such as the Wimmera River; • describe any required mitigation measures required to prevent direct and indirect impacts to environmental values during the proposed pole top works; and • include mapping which clearly demonstrates the areas of retention and removal, locations of any listed species and the locations of any required mitigation measures. The minor utilities corridor flora and fauna management plan does not replace application of the other measures within the FFMP but should be considered in addition to the FFMP.
FF-0A	**Clearing reconciliation** Periodic reconciliation of survey data collected for vegetation clearing and topsoil disturbance against planned and approved areas.	Development extent	Supported

#	IAC recommendation	Work area	Minister's response
FF-0B	**Periodic inspections of avoidance areas** Periodic inspections of avoidance areas (refer to FF-01 and FF-02) to ensure there are no impacts from Project activities.	Development extent	Supported
FF-0C	**Weed inspections and monitoring** Weed inspections and monitoring must be undertaken according to the schedule in the ~~Flora and Fauna Management Plan~~ FFMP.	Development extent	Supported
FF-0D	**Fauna surveys** Undertake baseline targeted fauna surveys in consultation with DEECA prior to construction. Develop and implement a schedule of fauna surveys that aligns with the Project's stages.	Development extent	Supported, however recommend this is captured in existing FF-03 and subject to a number of additional amendments.
Rehabilitation			
RH-01	**Rehabilitation Plan** Prior to Project commencement, a Rehabilitation Plan must be established and implemented to ensure the progressive rehabilitation of the mine and the timely rehabilitation of other Project components. It will cover all work areas within the proposed mining licence, the broader development extent and the Port of Portland. The Rehabilitation Plan must incorporate the requirements of native vegetation rehabilitation as required by FF-07. The Rehabilitation Plan must be consistent with the preliminary Rehabilitation Plan exhibited as Attachment 3 of the EES, but refined to take account of detailed operating plans, stakeholder and community feedback, and the Minister for Planning's EES assessment. The Rehabilitation Plan must be approved by the relevant authorities and must be implemented. The Rehabilitation Plan must describe the work to be undertaken to ensure the rehabilitated landform will be safe, stable, sustainable, and be capable of supporting the proposed end land use. The Rehabilitation Plan must define the end land use with consideration to the views of the landholders and the broader community where appropriate. The Rehabilitation Plan must establish objectives and performance standards/criteria to measure and quantify when the objectives have been met and the rehabilitation is considered to be complete. A schedule for progressive rehabilitation must be included along with the rehabilitation milestones for the life of mine.	Development extent Project	Supported, with further change to reflect that the rehabilitation plan will need to set out the approach for dealing with unplanned, interim or unexpected closure; and the requirements reflected in the recommended changes to FF-07.

#	IAC recommendation	Work area	Minister's response
	Relevant post-closure risks associated with the completed rehabilitation must be identified and assessed to determine: the type, likelihood and consequence of the risks; the activities required to manage those risks; the associated projected costs; and any other matter that may be relevant to risks arising from the rehabilitated land. A rehabilitation bond will be assessed and lodged prior to the commencement of mining, in line with the MRSD Act and the ~~ERR~~ 'Guidelines for Rehabilitation Bonds – Mineral, Exploration, Mine and Quarries' (Earth Resources Regulation ~~ERR~~, 2022). It is anticipated that the bond will be periodically assessed prior to the commencement of each mine development stage and must consider the progressive rehabilitation undertaken at that point in time.		
RH-02	**Rehabilitation Research Plan** A Rehabilitation Research Plan (RRP) must be developed prior to the commencement of mining and maintained for the life of the Project. The overarching objective of the RRP will be to investigate and assess the feasibility of applying alternative rehabilitation methods to optimise the end land use, and to ensure the relevant rehabilitation risks are minimised so far as reasonably practicable. The RRP will identify areas of study and research to be undertaken over a 5-year forward plan. The development of studies within the RRP will involve consultation with landholders affected by the Project, as well as suitably qualified persons with experience in agronomy, soil science, soil hydrology, hydrogeology, mine rehabilitation, and mine planning (as relevant to each study). The Longerenong College will be consulted during the development of the RRP and over the course of its implementation. Student research programs and partnerships will be developed where relevant. Each study proposed in the RRP will typically include a desktop scoping component, followed by a field trial or glasshouse trial. Some studies may be completed via desktop research or benchmarking with other parties, including other leading practice mineral sands operations and/or local	Development extent	Supported

#	IAC recommendation	Work area	Minister's response
	farmers. Each investigation will be designed so that results are valid and reliable.		
RH-03	**Contingency plan for unplanned closure** Prepare an unplanned closed contingency plan, in consultation with independent mining management expert, stakeholders and landholders, before construction commences and reviewed before each mine stage. It must give pathways for both temporary and permanent closure.	WBA Mining licence	Not supported; suggest that this be captured in RH-01.
RH-0A	**Rehabilitation monitoring** Rehabilitation monitoring must be conducted against the agreed completion criteria as outlined in the Rehabilitation Plan. Aspects to be monitored include but not limited to soil stability/erosion, vegetation establishment and soil physical and chemical parameters. The Rehabilitation objectives, criteria and associated monitoring is outlined in Attachment 3 (Rehabilitation Plan).	Development extent Port	Supported
Aboriginal Cultural Heritage			
AH-01	**AH-01: Cultural Heritage Management Plan** A Cultural Heritage Management Plan, as agreed with the Registered Aboriginal Party (RAP), must be implemented to protect Aboriginal cultural heritage. A Cultural Heritage Management Plan is not subject to the review and update requirements detailed in Section 24.7.1 of this EMF.	Development extent	Supported
AH-0A	**Cultural Heritage Management Plan** Monitoring and inspections must be undertaken as agreed in the Cultural Heritage Management Plan.	Development extent	Supported

Appendix B Matters of national environmental significance

Context

The EES and this assessment examine the likely impacts on matters of national environmental significance (MNES), relevant to the controlling provisions identified in the Commonwealth EPBC Act controlled action decision for the project (i.e. listed threatened species and communities (sections 18 & 18A) and nuclear actions (sections 21 & 22A)).

This appendix consolidates information on likely effects of the project on MNES protected under the EPBC Act, drawing on the assessment of specific matters discussed in other sections of my assessment. This includes assessment findings on biodiversity (Section 5.1) groundwater and surface water (Section 5.2) and radiation (Section 5.7).

Potential impacts on relevant MNES were discussed in Appendix P and Appendix I to the EES and summarised in Chapter 21 (Flora and Fauna), Chapter 25 (MNES) and Chapter 14 (Radiation). The key finding of the proponent's EES was that the project was unlikely to generate significant impacts on any MNES. The proponent commissioned additional field surveys, focused on the minor utilities corridor in December 2022, after completion of the EES. The results of this were tabled by the proponent at the inquiry as Technical Note 8.

Impacts on MNES were also considered by the proponent's commissioned peer review prepared by Nature Advisory[53] and in the supplementary information I requested from the proponent after I received the IAC report to address key gaps in understanding on the project's effects on biodiversity values and inform my assessment.

Section 16.3 of the IAC report summarised the likely impacts on MNES, with discussion of evidence and submissions related to MNES also provided in Sections 6 and 12 of the report. The overall finding of the IAC was that the project would not significantly impact MNES, and therefore the IAC concluded that offsets were not required under Commonwealth legislation and impacts could be acceptably managed.

Species considered in relation to MNES that have a likelihood of occurrence of 'potential' or higher within either the project area or broader study area used to inform the biodiversity assessments are summarised in Table B1.

Table B1: MNES species considered within the EES and supplementary information, with likely presence (i.e. with a likelihood of occurrence of 'potential' or higher near the study area[54]). Source: Supplementary information

Species	EPBC Status	Presence
Golden Sun Moth *Synemon plana*	Vulnerable	Potential to occur
Growling Grass Frog *Litoria raniformis*	Vulnerable	Potential to occur
Silver Perch *Bidyanus bidyanus*	Critically Endangered	Likely to occur
Striped Legless Lizard *Delma impar*	Vulnerable	Potential to occur
White-throated Needletail *Hirundapus caudacutus*	Vulnerable, and Migratory	Likely to occur
Floodplain Rustyhood *Pterostylis cheraphila*	Vulnerable	Potential to occur
Large-headed Fireweed *Senecio macrocarpus*	Vulnerable	Potential to occur

[53] Tabled Document 42, Proponent, Expert witness statement of Brett Lane.

[54] Note that the Supplementary Information defined the 'study area' as the area within 10 km of the on-retention licence area.

Species	EPBC Status	Presence
Slender Darling-pea *Swainsona murrayana*	Vulnerable	Potential to occur
Turnip Copperburr *Sclerolaena napiformis*	Endangered	Potential to occur
Wimmera Rice-flower *Pimelea spinescens subsp. pubiflora*	Critically Endangered	Potential to occur

Table B1: The information presented in Table B1 was sourced from the supplementary information as the most up to date reconciliation of information on biodiversity survey work and findings for the project. It is acknowledged that there were minor differences and discrepancies between the supplementary information and the EES.

The EES also identified the potential for three EPBC Act listed threatened ecological communities (TECs) to occur within the study area: *Natural Grassland of the Murray Valley Plains*, *Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions* and *Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains*. Of these, the EES recorded 5.01 ha of Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions within the development extent and stated that 0.23 ha would be impacted in the minor utilities corridor.

The EES concluded that there was little to no evidence of the *Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains* within the project area, noting that while gilgai were present within the landscape, the decades of intensive agriculture have reduced the potential for it to persist in the landscape. This conclusion was supported in the peer review. I consider that the project is unlikely to result in a significant impact to this TEC, in light of potentially suitable areas not being recorded during the surveys.

The EES also considered the potential for Plains Rice Flower *Pimelea spinescens subsp. spinescens*, Greencomb Spider Orchid *Caladenia tensa,* Wimmera Rice-flower *Pimelea spinescens subsp. pubiflora*, Slender Darling-pea *Swainsona murrayana*, and the Floodplain Rustyhood *Pterostylis cheraphila* to occur within the area be low, and subsequently there were not included in the targeted surveys undertaken for the project. In light of this conclusion, I consider that the project is unlikely to result in significant impacts to these species.

B.1 Listed threatened species and communities

Natural Grasslands of the Murray Valley Plains

Natural Grasslands of the Murray Valley Plains (NGMVP) is a critically endangered ecological community, listed under the EPBC Act. In Victoria, this ecological community is associated with areas of Plains Grasslands (EVC 132) and the FFG Act listed Northern Plains Grasslands Community. Whilst the EES considered the potential for this EPBC listed TEC to occur, it was not recorded during field surveys/studies the proponent commissioned to inform their exhibited EES, so there was no residual impact for this TEC identified by the proponent in the exhibited EES.

However, during the IAC hearing, the proponent identified a 0.31 ha patch of NGMVP in the minor utilities corridor (Technical Note 8). Technical Note 8 indicated that 0.08 ha of the recorded extent would be impacted by the project. The IAC did not comment on this finding, only noting that this ecological community was not recorded in the EES.

The supplementary information confirmed that this patch of NGMVP would be avoided by the project by aligning/locating infrastructure and undertaking pole top works on private land within the minor utilities corridor, adjacent to the existing powerline, rather than in the public land within the minor utilities corridor identified in the EES. The supplementary information also noted that the total extent of NGMVP recorded was 0.75 ha across the total study area, none of which was recorded in the mining licence area.

The information before me regarding the presence and potential impacts on NGMVP, includes the results of different and inconsistent native vegetation surveys. The surveys undertaken within the mining licence area were at different and non-optimal times (i.e. March – April and June) and in season in November 2018. For the minor utilities corridor, the surveys were conducted in January, December and June. The survey that detected the NGMVP in the minor utilities corridor was completed in December, but was after a high, unseasonally heavy rainfall event. Other surveys conducted in this corridor area were also completed out of the optimal seasons. This results in some residual uncertainty for predicted impacts, as discussed below.

In light of the supplementary information, I note that impacts on the NGMVP are not predicted to occur in the mining licence area and therefore conclude that impacts on this ecological community are unlikely for this component of the project.

In relation to the minor utilities corridor, I note that private land within this corridor has not been surveyed sufficiently to fully confirm the extent of NGMVP patches, which creates residual uncertainty regarding the potential presence of this TEC in some areas that could be impacted by the proposed utilities infrastructure. The supplementary information confirmed that the project has conservatively assumed a 20 m (power infrastructure) and a 25 m (water pipeline infrastructure) construction corridor; and that these corridors or right of ways are expected to be larger than what is required for the works. This provides opportunity for flexibility in the final alignment and micro-siting of infrastructure components to enable further avoidance of both direct impacts to ecological values and indirect impacts to adjacent ecological values. However, without appropriate surveys and controls in place, there remains potential for impact on NGMVP from the minor utilities works.

While I support the commitment to avoid the recorded patch of NGMVP as set out in the supplementary information, and recommend this be embedded within a new EMM FF-12, I acknowledge the residual uncertainty about the extent of the patches in adjacent private land, which needs to be accounted for in the environment controls to be adopted for the project. I therefore recommend that proposed EMMs are strengthened to better ensure that direct and indirect impacts to any recorded patches of NGMVP are avoided when this project is implemented. To this end, I recommend a new EMM FF-11 to require that a further survey is undertaken to confirm the extent of NGMVP in the minor utilities corridor, to the satisfaction of DEECA and DCCEEW, in accordance with the relevant guidelines prior to any relevant approvals being granted. I further recommend that as part of EMM FF-12 WIM Resource develop a design management plan for the minor utilities corridor that will be informed by the further survey work undertaken and will assist in demonstrating how the design of the minor utilities corridor will achieve avoidance of patches of NGMVP, as well as other significant environmental values, prior to any relevant approvals being granted.

I note that the *Conservation Advice for the Natural Grasslands for the Murray Valley Plains*[55] recommends a buffer zone of at least 30 m be maintained from the outer edge of a remnant patch to protect the ecological community. The supplementary information committed to a 3 m buffer around patches of NGMVP, concluding this would be sufficient to avoid direct and indirect impacts. The rationale for the 30 m buffer not being required in this circumstance is twofold, firstly that it only applies when there is significant direct or indirect impact on NGMVP patches (i.e. direct, permanent or continual indirect disturbance) and secondly, the environmental controls proposed to be applied ensure material impacts are avoided.

Any excavation, ground disturbing works and/or direct use of land likely to be required to construct or maintain the minor utilities in this corridor could reasonably be considered as a potential source of direct (or indirect) impact that needs to be avoided. To avoid impacts to this critically endangered ecological community with sufficient certainty, a 3 m buffer is unlikely to be sufficient for all sources of potential impact. While it might be argued that some departure from the recommended 30 m buffer could be entertained by relevant regulators, a 3 m buffer is unlikely to be considered acceptable. I consider the 3 m buffer insufficient to protect the TEC.

Therefore, I recommend that proposed EMMs are strengthened to better ensure that direct and indirect disturbance to patches of NGMVP are avoided when this project is implemented. This includes amending EMM FF-12 to encompass a

[55] Department of Sustainability, Environment, Water, Population and Communities (2012) Natural Grasslands of the Murray Valley Plains Conservation Advice.

buffer between the edge of any patch of NGMVP that is recorded and ground disturbing works in the minor utilities corridor, which is consistent with the 30 m buffer recommended in the Conservation Advice wherever necessary, or a reduced buffer that is to the satisfaction of DEECA and DCCEEW. I also recommend that EMM FF-12 include a requirement to implement measures (developed in consultation with DEECA and DCCEEW) to avoid disturbance and manage potential impacts on this ecological community when conducting all non-ground disturbing works (including pole-top works) within the minor utilities corridor that occur within 30 m of a recorded patch of NGMVP.

Buloke Woodland of the Riverina and Murray Darling Depression Bioregion

Buloke Woodland of the Riverina and Murray Darling Depression Bioregion (BWRMDDB) is a TEC listed as endangered under the EPBC Act. In Victoria, the TEC is associated with areas of Plains Savannah (ECV 826), and the FFG listed Semi-arid Northwest Plains Buloke Woodland Community.

It is noted that semi-arid woodlands in Victoria are slow growing, and the removal of mature trees have long-lasting consequences on the condition of the woodlands[56]. The *Conservation Advice for the Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions*[57] states that a key threat to the community is land clearance and fragmentation, noting that the ecological community has already been subject to extensive clearing. The Conservation Advice further notes challenges associated with rehabilitation of the ecological community, particularly with the availability of seeds and the potential requirement for high-rainfall event or events to assist with mass regeneration.

The EES found that 5.01 ha of the BWRMDDB was present within the development extent and concluded that 0.23 ha of this TEC would be impacted in the minor utilities corridor with the remaining 4.78 ha retained through exclusion zones and refinement of the minor utilities corridor (Table B2). The EES noted that the design changes to the project has resulted in the largest stands of the community to be protected, with the works boundary now offset from these patches. I note that the retained areas will be sufficiently protected from direct and indirect impacts through the requirements of FF-01, with an amendment to require that the protection measures for areas of BWRMDDB be to the satisfaction of DCCEEW.

It is noted that the EES identified that the total extent of the BWRMDDB within the minor utilities corridor was 0.01 ha, which is inconsistent with the assessed residual impact of 0.23 ha within this same area. For the purposes of this assessment, it is assumed there is at least 0.23 ha of BWRMDDB within the minor utilities corridor.

Table B2: Summary of residual impacts to Buloke Woodland of the Riverina and Murray Darling Depression Bioregion Source: Table 54 Appendix P Flora and Fauna

TEC	Total extent within development extent (ha)	Residual impact within MIN and WBA (ha)	Residual impact within minor utilities corridor (ha)	Total residual impact within development extent (ha)
Buloke Woodland of the Riverina and Murray Darling Depression Bioregion	5.01	-	0.23	0.23

The EES stated that given the project is only clearing small patches (ranging from 0.001 ha to 0.23 ha) and that the quality of the patches are low, the BWRMDDB within the project area that are proposed to be removed are not likely to be "making a significant contribution to the long-term viability and survival of the Buloke Woodlands community." . The EES noted that the project would be unlikely meet a number of the significant impact criteria, including resulting in increased fragmentation for the TEC or adversely affect habitat critical to the survival of an ecological community. The EES subsequently concluded that the impacts from the project to BWRMDDB would not constitute a significant impact under the EPBC Act. However, the EES also noted that the proposed loss will still reduce the extent of the ecological community, albeit of lower value stands. I note that this conclusion still needs to be verified by DCCEEW.

[56] Department of Environment Land Water and Planning (2021) Victorian semi-arid woodlands. ISBN 978-1-76105-618-5.

[57] Department of Climate Change, Energy, the Environment and Water (2023) Approved Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions Conservation Advice.

As the figures provided in the supplementary information remain unclear, for the purposes of this assessment, I will consider the 0.231 ha impact to BWRMDDB as the maximum potential residual impact for the project, as this figure is repeated throughout the EES document, peer review, and supplementary information. While I consider that the extent of removal is not significant, the information provided does not sufficiently explain how avoidance will be considered in the minor utilities corridor, and what opportunities there may be to further avoid impacts to this area of BWRMDDB, through detailed design work and alignment refinement proposed to occur within the minor utilities corridor, as detailed in EMM FF-06.

I consider that the proponent has not sufficiently demonstrated the application of the avoidance and minimisation principles of the native vegetation *Guidelines*[58] and there remain opportunities to avoid or minimise the impact to BWRMDDB from the project. I recommend that EMM FF-12 is updated to require the proponent to demonstrate avoidance and minimisation in this area, prior to commencing any works, to the satisfaction of DCCEEW. Further, if all impact to BWRMDDB cannot be avoided, I recommend EMM FF-12 is updated to require the proponent to demonstrate how the impacts to the patch will be managed to prevent further direct or indirect impacts to patch(s) being retained.

Growling Grass Frog

Growling Grass Frog *Litoria raniformis* is listed as vulnerable under the EPBC Act and the FFG Act. The EES recommended targeted surveys for Growling Grass Frog be undertaken but noted they were not completed due to dry conditions at the time of survey and when additional site inspections were conducted. The EES considered that suitable habitat within the study area may be present but ephemeral and likely only used by the species on an opportunistic and occasional basis during high rainfall events. The peer review supported this finding.

The supplementary information concluded that while Growling Grass Frog has the potential to occur near the study area, it is unlikely to occur within the development extent due to a lack of suitable habitat.

I acknowledge the consensus in the assessment of limited potential Growling Grass Frog habitat within the development extent as provided across the EES, peer review and supplementary information. I agree that on balance the development extent is unlikely to include important permanent habitat for Growling Grass Frog and the project is unlikely to result in a significant impact to the species. However, in light of the limited survey work, as noted by the IAC, I recommend that pre-construction surveys and additional measures be adopted as outlined in section B.4 below to mitigate potential impacts on this species.

Golden Sun Moth

Golden Sun Moth *Synemon plana* is listed as vulnerable under the EPBC Act and the FFG Act. There are no historic records of Golden Sun Moth within the project area, however as the species is cryptic and native to grassland and grassy woodland, a targeted survey for Golden Sun Moth was undertaken over four days between 12 November 2018 and 17 December 2018. No individuals were recorded during field surveys but the EES noted that the species was recorded at other sites within the region within four days of all surveys in the project area, indicating the time of survey was appropriate for detection of the species within the study area. The EES found that the project would not result in a residual impact on Golden Sun Moth.

The peer review considered the targeted assessment of Golden Sun Moth had been undertaken in favourable conditions and concurred that there was potential for the species to occur within the study area in areas of suitable habitat. The supplementary information concluded that Golden Sun Moth has the potential to occur but are unlikely be present in large numbers within the development extent.

I acknowledge the findings of the EES, peer review and supplementary information and I consider that the project is unlikely to result in a significant impact on this species. However, in light of in the limited survey work, as noted by the

[58] Department of Environment, Land, Water and Planning (2017) Guidelines for the removal, destruction or lopping of native vegetation.

IAC, I recommend that pre-construction surveys and additional measures be adopted as outlined in section B.4 below to mitigate potential impacts on this species.

Striped Legless Lizard

Striped Legless Lizard *Delma impar* is listed as vulnerable under the EPBC Act and endangered under the FFG Act. A targeted survey for Striped Legless Lizard was undertaken in 2018 for the EES and no individuals were recorded. The EES found that the project would not result in a residual impact on Striped Legless Lizard.

The peer review considered that the targeted surveys for Striped Legless Lizard had been shorter than the recommended duration, however concluded that habitat within the project area was severely degraded and unlikely to be suitable for the species. The supplementary information also concluded that there was a lack of suitable habitat within the development extent for the species.

While I consider that the project is unlikely to result in a significant impact on this species, given the limited survey work, as noted by the IAC, I recommend that pre-construction surveys and additional measures be adopted as outlined in section B.4 below to mitigate potential impacts on this species.

White-throated Needletail

White-throated Needletail *Hirundapus caudacutus* is listed as vulnerable and migratory under the EPBC Act and vulnerable under the FFG Act. The EES identified that White-throated Needletail is primarily an aerial foraging species and may utilise the project area as part of a wide-ranging foraging area while in Australia between summer and early autumn. The EES noted that habitat for the species includes wooded areas such as forest and rainforests as well as cleared pastures, plantations or remnant vegetation on the edge of paddocks.

An assessment of project impacts on White-throated Needletail under the Significant Impact Guidelines 1.1[59] was undertaken for the EES and it was determined that significant impacts on the species were unlikely. However, the EES found that removal of 0.92 ha of woodland habitat, grassland habitat and scattered trees would result in a residual impact on this species through the loss of aerial foraging areas and a potential reduction in the number of hollow-bearing trees in the landscape that could be used for roosting. The EES noted that impacted areas of potential habitat were small, isolated remnants and not part of a core or continuous stand of native vegetation like the riparian corridor of the Wimmera River.

The peer review supported the findings of the EES and stated that the species was likely to occur and occasionally forage over the study area, particularly over wooded areas. The supplementary information concluded that the project would not have a significant residual impact on the species as important habitat for the species does not occur within the development extent.

While I consider that the project has the potential to have a residual impact on this species, primarily through the removal of native vegetation and scattered trees, the impact is unlikely to be significant because the project would only remove a small amount of suitable habitat for the species that is unlikely to be critical to the survival of the species. However, some areas of residual uncertainty remain due to the increase in proposed impacts on grasslands since the EES was completed, limited survey work and the lack of an arboriculture assessment to inform the EES which would have informed understanding of the total number of impacted trees that contain hollows. I therefore recommend that fauna pre-construction surveys and additional measures be adopted, as outlined in section B.4 below, to mitigate potential impacts on this species.

[59] Department of the Environment (2013) *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance.*

Silver Perch

Silver Perch *Bidyanus bidyanus* is listed as critically endangered under the EPBC Act and endangered under the FFG Act and considered to have a moderate likelihood of occurrence, associated with the Wimmera River. The EES found that while the minor utilities corridor crosses the Wimmera River, no ground disturbing works are proposed in proximity to the Wimmera River, and therefore impacts to the species would not occur.

Given that pole top works are proposed to occur in proximity to the Wimmera River stringent construction environmental management measures should apply to these works to help ensure that residual impacts during construction works are appropriately managed. I recommend EMM FF-12 include the requirement to develop these measures, in consultation with the service provider, prior to works commencing to manage any potential impacts on this species. In light of the limited survey work, as noted by the IAC, I recommend that pre-construction fauna surveys and additional measures be adopted as outlined in section B.4 below to mitigate potential impacts on this species.

Turnip Copperburr

Turnip Copperburr *Sclerolaena napiformis* is listed as Endangered under the EPBC Act and Critically Endangered under the FFG Act. The EES considered that the Turnip Copperburr had a moderate potential of occurrence, and it was therefore included in the targeted surveys. The peer review also considered that the species had the potential to occur. The supplementary information considered that in light of the species not being detected in the targeted surveys, the species was unlikely to occur within the proposed impact area.

I acknowledge the findings of the EES, peer review and supplementary information and I consider that the project is unlikely to result in a significant impact on this species. However, in light of in the limited survey work, as noted by the IAC, I recommend that pre-construction surveys and additional measures be adopted as outlined in section B.4 below to mitigate potential impacts on this species.

Large-headed Fireweed

Large-headed Fireweed *Senecio macrocarpus* is listed as Vulnerable under the EPBC Act and critically endangered under the FFG Act. The EES considered that Large-headed Fireweed had a moderate likelihood of occurrence within the on-retention licence study area however it was not detected during targeted surveys that informed the EES. The peer review also considered that the species had the potential to occur. The supplementary information considered as the species was not detected during targeted surveys, the species was unlikely to occur within the proposed impact area.

I acknowledge the findings of the EES, peer review and the supplementary information and I consider that the project is unlikely to result in a significant impact on this species. However, in light of the limited survey work, as highlighted by the IAC, I recommend that pre-construction surveys and additional management measures be adopted as outlined in Section B.4 below to mitigate potential impacts to this species.

B.2 Nuclear action

The project is classified as a nuclear action as it involves the storage of radioactive materials (uranium and thorium) which are present in the Heavy Mineral Concentrate stockpiles which exceed levels set out in the Environment Protection and Biodiversity Conservation Regulations 2000. The triggering of the nuclear action controlling provision under the EPBC Act requires a whole of environment assessment for the relevant component of the action. This has been addressed through the broader scope of the assessment occurring via the EES, as set out in detail with section 5 of this assessment.

Radiation impacts

Radiation impacts are discussed in detail in Section 5.7 of my assessment. It is my assessment that the radiation EMMs are adequate to sufficiently avoid, mitigate and manage the project's radiation effects subject to the IAC's recommended changes to EMMs and those recommended in my assessment. Calculated doses of radiation exposure for members of the public reported in the EES are predicted to be considerably less than the regulatory annual dose limit even when

combined with multiple exposure pathways from the project. Furthermore, the proponent and Council's radiation experts agreed at the inquiry that the radiation dose estimate used in the Radiation Risk Assessment for the EES was based on very conservative assumptions and applied internationally recommended dose factors and breathing rates.

I also acknowledge the comprehensive regulatory framework that applies to managing radiation in Victoria which will necessitate that the project obtain a management licence prior to commencing operations as well as approval of a radiation management plan, and waste management plan by the Department of Health.

Whole of environment assessment

It is my overall conclusion that the project will result in acceptable environmental effects subject to implementation of relevant EMMs proposed in the EMF and refined by the IAC and through this assessment. This includes:

- Acceptable environmental effects on biodiversity (Section 5.1) subject to management through a number of EMMs, as well as new EMMs which include the requirement for modification of the project to retain the Greenhills Road reserve, further surveys for threatened flora, fauna and ecological values and avoidance and minimisation within the minor utilities corridor.
- Acceptable environmental effects on surface water including water quality, flooding and groundwater related to drawdown and mounding which can be effectively managed through the groundwater management plan (Section 5.2).
- Acceptable environmental effects on land use associated with the temporary change in land use from agriculture to mining across the mining licence area with a range of EMMs, including a requirement to develop and implement a Rehabilitation Plan to return the land to a productivity commensurate with pre-mining and enable its return to agricultural production (Section 5.3).
- Acceptable environmental effects on traffic and transport (Section 5.4). While the project will generate increased heavy vehicle movements it will rely on gazetted arterial roads designed to accommodate such vehicles. EMMs, including development and implementation of a Traffic Management Plan will assist in managing impacts.
- Acceptable environmental effects on amenity (sections 5.5 and 5.6). While operational mining and associated heavy vehicle traffic will generate noise and air emissions, particularly dust, effects on sensitive receptors can be effectively managed through EMMs.
- Negligible risks to human health predicted from the project including from consumption of water in rainwater tanks that could have been contaminated by dust deposition. While mental health risks from displacement requires careful management a range of EMMs have been proposed to manage these risks (Section 5.8).
- Acceptable socioeconomic effects (Section 5.9). Social effects of temporarily displacing landholders in the mining licence area from family homes and farms during active mining require careful management through compensation and a range of EMMs, as modified in accordance with the IAC report and my assessment. On balance my assessment finds that social effects can be managed to acceptable levels, including for the broader community.
- Acceptable environmental effects on soils and landform (Section 5.10) resulting from land disturbance. While soil stockpiles and adverse effects associated with land rehabilitation require careful management, the demonstration trial has indicated that impacts can be effectively managed and the Rehabilitation Plan to be developed as a part of the work plan or equivalent, will provide a sound framework for managing any effects.
- Acceptable environmental effects on other environmental values (Aboriginal cultural heritage, historic heritage, landscape and visual and waste and emissions; Section 5.11) from land disturbance, changes to the landscape and visual setting and greenhouse gas emissions and wastes generated by the project.

B.3 Assessment

It is my assessment, taking account of the findings and recommendations of this assessment, that:

- With implementation of the proposed EMMs including amendments recommended by the IAC and this assessment, the project is not expected to have a significant impact on any MNES.
- I support the findings of the IAC that the survey work which informed the EES had deficiencies and there remains some residual uncertainty regarding the potential presence of Turnip Copperburr and Large-headed Fireweed.

To this end, I recommend amendments to EMMs FF-03, FF-06 and FF-08 to require progressive pre-clearance surveys within the mining licence area as well as strengthened mitigation measures that will respond to the findings of the surveys. Additionally, for the minor utilities corridor I recommend new EMMs FF-11 and FF-12 to require further surveys and the development of a flora and fauna management plan for this area.

- I consider that the project has not adequately considered the potential for NGMVP to be present and potentially impacted within the minor utilities corridor and to this end I recommend a new EMM FF-12 to embed the commitment to avoid the recorded patch of NGMVP within the minor utilities corridor as well as include strengthened commitments to ensure direct and indirect disturbance to patches of NGMVP are avoided during project works. I also recommend that a new EMM-11 required further survey for NGMVP within the minor utilities corridor, prior to any relevant approvals being sought.
- I consider there remains opportunities for the project to demonstrate avoidance and minimisation of BWRMDDB within the minor utilities corridor and I recommend this is addressed via an update to EMM FF-12 to require the proponent demonstrate avoidance and minimisation in this area as well as develop a methodology to demonstrate how any impacts to the retained patch of BWRMDDB would be managed to prevent further direct and indirect impacts, prior to any works in this area.
- There are some residual uncertainties associated with the potential presence of several listed fauna species within the minor utilities corridor, however this can be addressed with my recommended amendments to a range of EMMs including the addition of new EMMs FF-10 and FF-12 to require surveys and the develop of a minor utilities corridor flora and fauna management plan which is to include a design management document. I recommend that this additional survey work and design management be undertaken prior to relevant approvals being sought for the minor utilities corridor. The potential radiation impacts from the project are likely to be able to be managed to an acceptable level subject to the IAC's recommended changes to EMMs and those recommended in my assessment.
- It is my assessment from the whole of environment assessment undertaken for the EES that the project will not result in unacceptable environmental effects on environmental values including biodiversity, surface water, groundwater, agriculture, traffic, amenity, human health, land use, social and economic values, soils and landform and Aboriginal and historic heritage.