

# Final Scoping Requirements for Wimmera Mineral Sands Project Environment Effects Statement

Environment Effects Act 1978

APRIL 2020

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# List of abbreviations

DELWP	Department of Environment, Land, Water and Planning
EE Act	<i>Environment Effects Act 1978</i>
EES	Environment effects statement
EMF	Environmental management framework
EP Act	<i>Environment Protection Act 1970</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
FFG Act	<i>Flora and Fauna Guarantee Act 1988</i>
Gl	Gigalitres
ha	Hectares
km	Kilometres
kt/a	Kilotonnes per annum
MNES	Matters of national environmental significance
Mt	Megatonnes
PASS	Potential acid sulphate soils
PEM	Protocol for environmental management
TRG	Technical reference group

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# 1. Introduction

In light of the potential for significant environmental effects, on 17 August 2019 the Minister for Planning (the Minister) determined under the *Environment Effects Act 1978* (EE Act) that Iluka Resources Limited is to prepare an environment effects statement (EES) for the proposed Wimmera Mineral Sands Project. The purpose of the EES is to provide a sufficiently detailed description of the project, assess its potential effects on the environment<sup>1</sup> and assess alternative project layouts, designs and approaches to avoid and mitigate effects. The EES will inform and seek feedback from the public and stakeholders. The Minister will issue an assessment of the project's environmental effects to conclude the EES process. The Minister's assessment of the project's effects will inform statutory decision-makers responsible for the project's approvals.

These *Final Scoping Requirements for the Wimmera Mineral Sands Project* set out the specific matters to be investigated and documented in the EES for the project. The scoping requirements presented here were finalised following consideration of submissions received during the public exhibition of the draft scoping requirements in March 2020. While the scoping requirements are intended to cover all relevant matters, the EES will also need to address other issues that emerge during the EES investigations, especially those relevant to statutory decisions that will be informed by the assessment under the EE Act.

## 1.1 The project

The proposed project is located approximately 40km southwest of Horsham, with an approximate mining footprint of 2,600ha (Figure 1). Iluka is proposing to extract approximately 10Mt of ore per annum, which will be refined onsite to produce 192kt/a of recoverable mineral product (zircon, titanium oxide and rare earth products), over the projected 25-year mine life.

The project will include the development of a mineral sands mine, mineral separation plant, zircon and rare earth refineries, ore receipt and liquification system, water pipelines, pit dewatering infrastructure, mine by-products and containment infrastructure, electricity supply infrastructure, additional onsite infrastructure (e.g. administration buildings, roads, fuel storage and laydown areas) and offsite infrastructure (e.g. access road construction/upgrades, water pipelines and temporary construction village). The proposed mining method has not been finalised. However, it is likely to be progressively mined using mobile earthmoving equipment.

It is anticipated that approximately 5.5GL of water per annum will be required primarily for mineral processing, tailings disposal, dust suppression and rehabilitation. The proponent will consider options for water supply through the EES process and is discussing alternatives with the local water authority.

## 1.2 Minister's requirements for this EES

In light of the potential for significant environmental effects, the Minister's decided that an EES was required to assess the project potential environmental effects. The Minister published procedures and requirements applicable to the preparation of the EES, in accordance with section 8B(5) of the EE Act (see Appendix A). In the procedures and requirements, the Minister identified key environmental risks that would need to be addressed in the EES, namely:

- effects on biodiversity and ecological values within and near the site, as associated with adjacent road reserves, including native vegetation, listed threatened communities and species of flora and fauna; and other habitat values;
- effects on surface water environments, including local waterways and the broader catchment, as well as groundwater resources (hydrology, quality, uses and dependent ecosystems);
- effects on cultural heritage values;
- effects on land stability, erosion and soil productivity associated with the construction and operation of the project, including progressive rehabilitation works;
- effects on the land uses and landscape values of the site and surrounding areas;
- effects of project construction and operation on air quality and noise on nearby sensitive receptors;
- 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; and

1. For assessment of environmental effects under the EE Act, the meaning of 'environment' includes physical, biological, heritage, cultural, social, health, safety and economic aspects (Ministerial Guidelines, p. 2).

- solid and liquid waste generated by the project during construction and operation.

These scoping requirements provide further detail on the matters to be investigated in the EES as required by the Ministerial guidelines for assessment of environmental effects under the EE Act 1978 (Ministerial Guidelines).

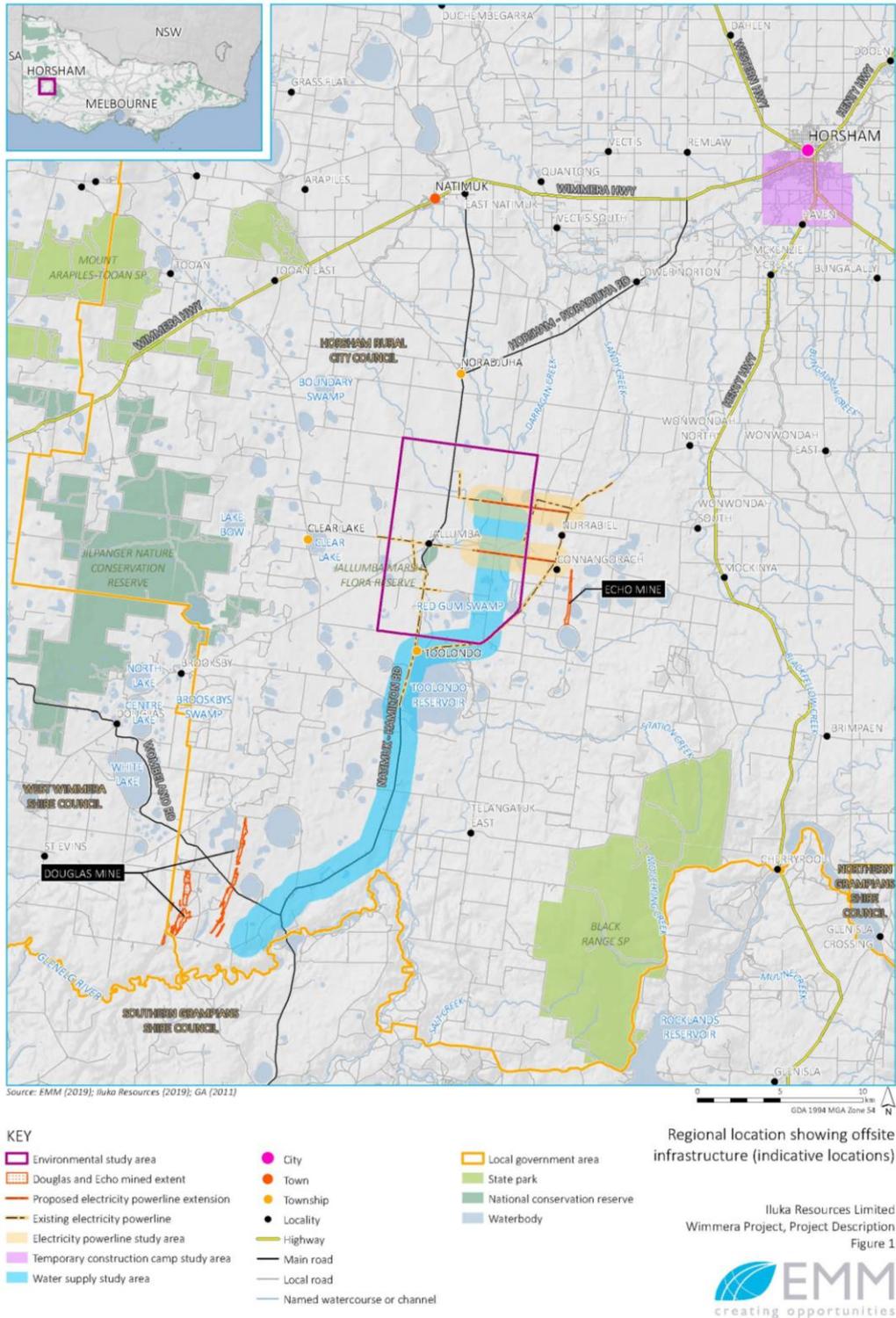


Figure 1: Location of the project showing offsite infrastructure (indicative locations) (source: EMM 2019).

## 2. Assessment process and required approvals

### 2.1 What is an EES?

An EES describes a project and its potential environmental effects. It should enable stakeholders and decision-makers to understand how the project is proposed to be implemented and the likely environmental effects of doing so. An EES has two main components as follows:

1. The EES main report – an integrated, plain English document that assesses the potential impacts of the project and examines avoidance, mitigation or other measures to reduce the environmental effects. The main report draws on technical studies, data and statutory requirements such as specific limits for surface water and groundwater quality and waste discharge to the environment and should clearly identify which components of the scope are being addressed throughout.
2. The EES technical reports – specialist studies, investigations and analyses that provide the basis for the EES main report. These reports will be exhibited in full, as appendices to the main report.

### 2.2 The EES process

The proponent is responsible for preparing an EES, including conducting technical studies and undertaking stakeholder consultation. The Department of Environment, Land, Water and Planning (DELWP) is responsible for managing the EES process<sup>2</sup>. The EES process has the following steps:

- preparation of a draft study program and draft schedule by the proponent (underway);
- preparation and exhibition of draft scoping requirements by DELWP on behalf of the Minister with public comments received during the advertised exhibition period;
- finalisation and issuing of scoping requirements by the Minister (this document);
- review of the proponent's EES studies and draft documentation by DELWP and a technical reference group;<sup>3</sup>
- completion of the EES by the proponent;
- review of the complete EES by DELWP to establish its adequacy for public exhibition;
- exhibition of the proponent's EES and invitation for public comment by DELWP on behalf of the Minister;
- appointment of an inquiry panel by the Minister to review the EES and public submissions received, conduct public hearings and provide a report to the Minister; and finally
- following receipt of the inquiry report, preparation of an assessment on whether the project's environmental effects are acceptable by the Minister for the consideration of statutory decision-makers.

#### Technical reference group

DELWP has convened a technical reference group (TRG) of state government agencies and Horsham Rural City Council. The TRG will advise DELWP and the proponent on:

- applicable policies, strategies and statutory provisions;
- the scoping requirements for the EES;
- the design and adequacy of technical studies for the EES;
- the proponent's public information and stakeholder consultation program for the EES;
- responses to issues arising from the EES investigations;
- the technical adequacy and completeness of draft EES documentation; and
- coordination of statutory processes.

#### Consultation plan

The proponent is responsible for informing and engaging the public and stakeholders to identify and respond to their issues and keep them informed of the EES studies. Stakeholders include potentially affected parties (including Traditional Owner groups and Registered Aboriginal Parties as relevant), interested community

2. Further information on the EES process can be found at [planning.vic.gov.au/environment-assessment/what-is-the-ees-process-in-victoria](http://planning.vic.gov.au/environment-assessment/what-is-the-ees-process-in-victoria).

3. For critical components of the EES studies, peer review by an external, independent expert may be appropriate.

organisations and government bodies. Under its consultation plan the proponent informs the public and stakeholders about the EES investigations and provides opportunities for input and engagement during the EES investigations. The consultation plan is reviewed and amended in consultation with DELWP and the TRG before it is published on the planning website.<sup>4</sup> The final consultation plan will:

- identify stakeholders;
- characterise public and stakeholders' interests, concerns and consultation needs, local knowledge and inputs;
- describe consultation methods and schedule; and
- outline how public and stakeholder inputs will be recorded, considered and/or addressed in the preparation of the EES.

### **Statutory approvals and the EES process**

The project will require a range of approvals under Victorian legislation if it is to proceed. DELWP coordinates the EES process as closely as practicable with the approvals procedures, consultation and public notice requirements.

To facilitate the integrated consideration of issues assessed within the EES and the timely completion of required approval processes, the EES is expected to include a draft work plan that is consistent with the requirements of the *Mineral Resources (Sustainable Development) Act 1990* (MRSD Act) and regulations.

The key approvals required under Victorian legislation are: an approved work plan and a mining licence under the MRSD Act; and an approved Cultural Heritage Management Plan under the *Aboriginal Heritage Act 2006*. No planning permit under the *Planning and Environment Act 1987* will be required for mining related works within the mining licence, provided the requirements of section 42(7) of the MRSD Act are fulfilled.

Other approvals are likely to be required for the project to proceed (e.g. for vegetation removal and water abstraction). They will be determined throughout the course of the EES process.

### **2.3 Accreditation of the EES process under the EPBC Act**

The project was also referred to the Commonwealth under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). A delegate for the Commonwealth Minister for the Environment determined on 16 September 2019 that the project is a controlled action (EPBC 2019/8493), as it is likely to have a significant effect on the following matters of national environmental significance (MNES), which are protected under Part 3 of the EPBC Act:

- listed threatened species and communities (sections 18 and 18a);
- listed migratory species (sections 20 and 20a); and
- protection of the environment from nuclear actions (sections 21 and 22A).

The EES process is accredited to assess impacts on MNES under the EPBC Act through the Bilateral Assessment Agreement between the Commonwealth and the State of Victoria. Note that what are generally termed 'effects' in the EES process correspond to 'impacts' defined in section 82 of the EPBC Act.

The Commonwealth Minister or delegate will decide whether the project is approved, approved with conditions or refused under the EPBC Act, after having considered the Minister for Planning's assessment under the EE Act.

4. <https://www.planning.vic.gov.au/environment-assessment/browse-projects/projects/wimmera-mineral-sands>.

## 3. Matters to be addressed in the EES

### 3.1 General approach

Preparation of the EES should be consistent with the principles of a systems approach and a risk-based approach. The EES should put forward a sound rationale for the level of assessment and analysis undertaken for any environmental effect or combination of environmental effects<sup>5</sup> arising from all components and stages of the project. The EES should provide an analysis of the significance of the potential effects of the project, with consideration of:

- the potential effects on individual environmental assets – magnitude, extent and duration of change in the values of each asset – having regard to intended avoidance and mitigation measures;
- the likelihood of adverse effects, including those caused indirectly as a result of proposed activities, and associated uncertainty of available predictions or estimates;
- further management measures that are proposed where avoidance and mitigation measures do not adequately address effects on environmental assets, including specific details of how the measures address relevant policies;
- likely residual effects, including significant residual impacts on MNES, that are likely to occur assuming the proposed measures to avoid and mitigate environmental effects are implemented; and
- proposed approach to managing and monitoring environmental performance and contingency planning.

### 3.2 Content and style

Together with the Minister's reasons for decision, the published procedures and requirements and the Ministerial Guidelines, the content of the EES and related investigations is to be guided by these scoping requirements. To facilitate decisions on required approvals, the EES should address statutory requirements associated with approvals that will be informed by the Minister's assessment, including decision-making under the MRSD Act, EPBC Act, *Planning and Environment Act 1987* and other applicable legislation. The EES should also address any other significant issues that emerge during the investigations.

Ultimately, it is the proponent's responsibility to ensure that adequate studies are undertaken and reported to support the assessment of environmental effects and that the EES has effective internal quality assurance in place. Close consultation with DELWP and the TRG during the investigations and preparation of the EES will be necessary to minimise the need for revisions prior to authorisation of the EES for public exhibition.

The EES should provide a clear, objective and well-integrated analysis of the potential effects of the proposed project, including proposed avoidance, mitigation and management measures, as well as feasible alternatives. Overall, the main report should include:

- an executive summary of the potential environmental effects of the project, including potential effects on identified MNES;
- a description of the entire project, including its objectives, rationale, key elements, associated requirements for new infrastructure, resource use and use of existing infrastructure;
- a description of the approvals required for the project to proceed, and their relationship to relevant laws, policies, strategies, guidelines and standards;
- a description of feasible alternatives capable of substantially meeting the project's objectives that may also offer environmental or other benefits (as well as the basis for the choice where a preferred alternative is nominated);
- descriptions of the existing environment, where this is relevant to the assessment of potential effects;
- appropriately detailed assessments<sup>6</sup> of potential effects of the project (and feasible alternatives) on environmental assets and values, relative to the "no project" scenario, together with an estimation of likelihood and degree of uncertainty associated with predictions;
- clear, active measures for avoiding, minimising, managing and monitoring effects, including a statement of commitment to implement these measures;
- predictions of residual effects of the project assuming implementation of proposed environmental management measures;

5. Effects include direct, indirect, combined, facilitated, consequential, short and long-term, beneficial and adverse effects.

6. Assessments of assets, values and potential effects must be adequately timed to ensure they are accurately representative of seasonal weather patterns of the area.

- any proposed offset measures where avoidance and other mitigation measures will not adequately address effects on environmental values, including the identified MNES;
- assessment of cumulative impacts with other existing and proposed developments in the region (including other approved and proposed mineral sand mines);
- documentation of the process and results of the consultation undertaken by the proponent during the preparation of the EES, including the issues raised by stakeholders or the public and the proponent's responses to these issues, in the context of the EES studies and the associated consideration of mitigation measures;
- evaluation of the implications for the project and feasible alternatives from the implementation of legislation and policy;
- evaluation against the principles and objectives of ecologically sustainable development; and
- conclusions on the significance of impacts on local, regional, state and federal matters;

The EES should also include an outline of a program for community consultation, stakeholder engagement and communications proposed for implementation during the construction and operation of the project, including opportunities for local stakeholders to engage with the proponent to seek responses to issues that might arise during project implementation.

The proponent may choose to prepare a website with interactive functionality to provide an alternative form of access to EES information, which may compliment the conventional EES chapters and technical documents. Such an approach should be discussed with DELWP Impact Assessment Unit and should be integrated with the preparation of the EES package, including review by the TRG.

The proponent must also prepare a concise, graphical-based non-technical summary document (hard copy A4, no more than 25 pages) for free distribution to interested parties. The EES summary document should include details of the EES exhibition, public submission process and availability of the EES documentation.

### **3.3 Project description**

The EES is to describe the project in sufficient detail both to allow an understanding of all components, processes and development stages, and to enable assessment of their likely potential environmental effects. The project description should cover the following.

- An overview of the proponent and their environmental performance credentials, including experience in developing and operating projects and their health, safety and environmental policies.
- Contextual information on the project, including its objectives and rationale, its relationship to statutory policies, plans and strategies, including the basis for selecting the proposed project location and implications of the project not proceeding.
- Geological context and estimated mineral resources and ore reserves.
- Land use activities (including beneficial and sensitive uses) in the project area and vicinity, supported by plans and maps drawn at an appropriate scale that show:
  - the location of relevant sensitive receptors;
  - the extent of Crown and private lands, existing land uses and waterways;
  - the general layout of the proposed mine and associated facilities and infrastructure; and
  - cross-sections of the proposed extraction areas.
- Information on the project's operational life and decommissioning and rehabilitation arrangements.
- Other necessary works directly associated with the project, such as road upgrades and/or connections, and infrastructure and services relocation.
- Details of all the project components, including:
  - location, footprint, layout and access arrangements during site establishment, construction, operation and rehabilitation (including for all offsite infrastructure);
  - design, methods, staging and scheduling of the proposed mining, including direction and timing of mining across the site and its operational life, volumes to be mined, total production and production rate and expected timing of rehabilitation, decommissioning and closure;
  - function, operation and design principles and capacity of main components of works, including overburden handling, ore extraction (including reagents to be used), mineral separation,

- refining, tailings and mining/refinery by-products management, refinery waste management, handling of products from processing and water management;
- water requirements and proposed sources for construction and operational use, including details on storage provisions, supply infrastructure, and proposed daily and annual use for each project phase (including a water balance for operations and post-closure phases);
  - necessary works directly associated with the project, such as an infrastructure and services provision, upgrade and/or relocation, including potential construction/upgrade of roads and other linear services required for transporting ore and heavy mineral/rare earths concentrate on and off-site;
  - proposed construction techniques and extent of areas to be disturbed during project establishment and construction, including total area expected to be cleared, particular requirements for traffic and floodwater management, dust and noise management, as well as for sensitive environmental locations;
  - solid waste, wastewater and hazardous material generation and management during construction, operation and rehabilitation, including transportation and storage of hazardous material on-site and off-site;
  - any proposed or potential use of mine voids for disposal of material from other projects/sites;
  - transport type and route of product from the mine;
  - electricity and gas requirements and proposed supply infrastructure;
  - lighting, telecommunications, safety and security requirements;
  - workforce accommodation facilities including location, size and required services;
  - hours of operation, workforce requirements (total work force) and recruitment policies during construction, operation and rehabilitation; and
  - approach to be taken regarding project rehabilitation, including progressive rehabilitation and mine-closure.

### 3.4 Rehabilitation and closure

The EES is to document the proponent's approach to progressive rehabilitation<sup>7</sup> and closure to ensure stable rehabilitated landforms capable of supporting future use of the project area. The description of rehabilitation and closure should canvass changes in topography, groundwater conditions, drainage and vegetation cover during mining operations and at the end of the mine life. Rehabilitation and closure planning in the EES should be informed by the outcomes and adopted recommendations of the specialist studies within the EES (e.g. water, soils, landscape and visual, social, biodiversity, cultural heritage, etc.) and relevant objectives. The EES should include a draft rehabilitation and closure plan that incorporates:

- proposed depth of topsoil to be extracted, storage and management of stockpiled topsoil and subsoils and treatment measures;
- proposed methods for restoring soil profiles, drainage and productivity, as well as landscape rehabilitation in the context of the mine path and decommissioning of structures/facilities;
- tailings characterisation and testwork to inform predictions about drying and consolidation and identify implications for rehabilitation;
- proposed management of surface water and groundwater flows, including erosion and flood risks, and consideration of project area drainage and water quality;
- proposed design criteria relating to landform and geology to achieve a safe, stable and sustainable landform that is capable of supporting the proposed land uses after rehabilitation;
- proposed design criteria for landscape and visual values;
- proposed rehabilitation objectives for each of the distinct areas (domains) of the project that require differing rehabilitation approaches and methodologies, including for offsite infrastructure where appropriate;
- proposed rehabilitation and closure criteria for all environmental, geophysical and structural elements of the rehabilitation framework, in respect of each of the distinct areas (domains) of the project;
- approach to identifying potential end land uses of the project area (including potential for return of agricultural land-uses post mining) including consultation with landholders and local communities;

<sup>7</sup> The term 'rehabilitation' is considered to include all decommissioning activities for the project.

- approach for establishing sustainable vegetation cover (consistent with end land uses);
- approach to community and stakeholder engagement;
- proposed fire and emergency management measures;
- proposed contingency measures for rehabilitation in the event of unplanned/forced closure;
- proposed program for monitoring and maintenance of rehabilitation and closure activities including contingency measures for where proposed rehabilitation and closure criteria are not achieved;
- planning for progressive rehabilitation and mine closure, including rehabilitation milestones;
- assessment of the relevant risks that the rehabilitated areas may pose after completion of rehabilitation (e.g. geotechnical risks); and
- proposed program for monitoring and managing any relevant risks that the rehabilitated areas may pose and maintenance of those areas after completion of rehabilitation.

### **3.5 Project alternatives**

The EES should document the proponent's design development process leading to the project design presented in the EES. The EES should canvass the proponent's consideration of feasible alternatives and include an explanation of how specific alternatives were shortlisted for evaluation within the EES, including alternatives related to all offsite infrastructure being considered. The EES should document the likely environmental effects of shortlisted feasible alternatives, particularly where these offer a potential to minimise and/or avoid environmental effects whilst meeting the objectives of the project. The discussion of feasible alternatives and their effects should include:

- the basis for selecting the area proposed to be mined within the broader exploration licence(s), in the context of the concept mine plan and alternative mine layout and staging;
- the site selection process for all ancillary infrastructure, including the processing facilities;
- the technical feasibility and environmental implications of alternative construction, mining, ore processing, tailings management, refinery waste management and project rehabilitation methods; and
- alternative locations and designs for electricity, water, gas and fuel supply, site access, worker accommodation, site access, transport of products and workers and solid and liquid waste disposal.

Where appropriate, the assessment of environmental effects of design and layout alternatives is to address the matters set out in the subsequent sections of this document. The depth of investigation of alternatives should be proportionate to their potential to minimise potentially significant adverse effects as well as meet project objectives.

### **3.6 Applicable legislation, policies and strategies**

In addition to the EE Act and the EPBC Act, the EES will need to identify relevant legislation, policies, guidelines and standards, and assess their specific requirements or implications for the project, particularly in relation to required approvals. Particular attention is drawn to the recent changes in the EP Act which are expected come into effect on 1 July 2020, and any subsequent updates to subordinate legislation.

The proponent will also need to identify and address other relevant policies, strategies, subordinate legislation and related management or planning processes that may be relevant to the assessment of the project. These include but are not limited to EPBC Act policy statements, conservation advices, threat abatement plans and recovery plans for nationally listed threatened species and communities and nationally listed migratory species.

### **3.7 Draft evaluation objectives**

Draft evaluation objectives are provided in Section 4 for each of the topics to be addressed in the EES. The draft evaluation objectives identify desired outcomes in the context of key legislative and statutory policies, as well as the principles and objectives of ecologically sustainable development and environment protection, including net community benefit. In accordance with the Ministerial Guidelines, they provide a framework to guide an integrated assessment of environmental effects and for evaluating the overall implications of the project.

### 3.8 Environmental management framework

Inadequate environmental management of the project during project construction, operation, rehabilitation and closure will not realise the necessary environmental outcomes, statutory requirements or stakeholder confidence. Hence, the proponent will need to provide an environmental management framework (EMF) for the project within the EES. The EMF will articulate clear accountabilities for managing and monitoring environmental effects and risks associated with construction, operation, rehabilitation and closure phases of the project, including for offsite infrastructure.

The EMF should describe the baseline environmental conditions to be used to monitor and evaluate the residual environmental effects of the project, as well as the efficacy of applied environmental management and contingency measures. The EMF should cover all aspects of the project including all offsite infrastructure and associated impacts. The framework should include the following:

- The context of required approvals and consents and the statutory application of these post-EES.
- Any existing or proposed environmental management system to be adopted.
- Organisational responsibilities and accountabilities for environmental management.
- A register of environmental risks associated with each phase of the project which is to be maintained during project implementation (including matters identified in preceding sections in these directions as well as other pertinent risks). This can be provided as an attachment to the EES.
- The environmental management measures proposed in the EES to address specific issues, including commitments to mitigate adverse effects and enhance environmental outcomes and timing of implementation. This consolidated list can be provided as an attachment to the EES.
- Arrangements for management of and access to baseline and monitoring data, to ensure the transparency and accountability of environmental management and to contribute to the improvement of environmental knowledge.
- The framework for management of any environmental incidents and emergencies.
- The proposed objectives, indicators and monitoring requirements (including parameters, locations and frequency) for managing (at least):
  - biodiversity (including MNES) values on and near the project area;
  - biodiversity (including MNES) offsets to be established and managed offsite;
  - noise, vibration, and emissions to air, including dust and greenhouse gases;
  - public health and safety;
  - potential impacts on upstream and downstream surface water and groundwater beneficial uses and sensitive receivers, including fauna and native vegetation;
  - monitoring of water quality and water table levels, including for all potentially affected wetlands;
  - groundwater and surface water functions, including behaviour and quality, stormwater runoff, erosion and sediment control, and flood risk;
  - solid and liquid waste, including recycling and handling of potentially hazardous or contaminated waste, potential acid sulphate soils (PASS), radioactive material and other excavated spoil;
  - Aboriginal cultural heritage values;
  - historic heritage values;
  - traffic during construction, including managing temporary disruption and changed accessibility;
  - disruption of and hazard to the existing infrastructure;
  - socioeconomic and land use values;
  - landscape and visual values;
  - landform and slope stability;
  - traffic and road management measures;
  - project rehabilitation, including handling of topsoil, overburden, tailings, refinery waste and mining by-products; and
  - emergency management.

The EMF should outline internal and external auditing and reporting requirements to review and continuously improve the effectiveness of environmental management and to ensure compliance with statutory conditions. The EMF will set the scope for later development and review of environmental management plans for

construction, operation, closure and rehabilitation phases of the project. Similarly, the EMF will outline a program for community consultation, stakeholder engagement and communications for the project, including opportunities for local stakeholders to engage with the proponent and a process for complaints recording and resolution.

## 4. Assessment of specific environmental effects

Preparation of the EES and the necessary investigation of effects should be proportional to the environmental risk, as outlined in the Ministerial Guidelines (p. 14). A risk-based approach should be adopted during the EES studies, so that a greater level of effort is directed at investigating and managing those matters that pose relatively higher risk of adverse effects.

The following structure sets out how the EES could document its assessment of effects for each draft evaluation objective.

1. **Identify key issues or risks** that the project poses to the achievement of the draft evaluation objective. In addition to addressing the key issues identified, the proponent should undertake an environmental risk assessment covering all potentially significant risks.
2. **Characterise the existing environment** to underpin impact assessments having regard to the level of risk. The environmental risk assessment by the proponent could guide the necessary data acquisition.
3. **Assess the likely effects** of the project on the existing environment and evaluate their significance.
4. **Present design and mitigation measures** that could substantially reduce and/or mitigate the likelihood, extent and/or duration of potential effects. All design and mitigation measures must apply the mitigation hierarchy<sup>8</sup> with justification of why higher order measures cannot be applied.
  - a. Avoidance: measures taken to avoid creating adverse effects on native vegetation and biodiversity values from the outset, such as careful spatial or temporal placement of infrastructure or disturbance.
  - b. Minimisation: measures taken to reduce the duration, intensity and extent of impacts that cannot be completely avoided.
  - c. Rehabilitation/restoration: measures taken to improve degraded or removed ecosystems following exposure to impacts that cannot be completely avoided or minimised.
  - d. Offsets: measures taken to compensate for any residual, adverse impacts after full implementation of the previous three steps of the mitigation hierarchy.Note that an assessment of residual effects (post mitigation) and their significance will be required to illustrate the likely effectiveness of the proposed mitigation measures.
5. **Propose performance criteria and management** to evaluate whether the project's effects are maintained within permissible levels and propose contingency approaches if they are not.

The description and assessment of effects must not be confined to the immediate area of the project but must also consider the potential of the project to impact on nearby environmental values, including areas potentially impacted by offsite components of the project. In addition, the cumulative effect of the project in combination with other activities in the broader area/region should be assessed for all significant adverse effects.

### 4.1 Resource development

#### Draft evaluation objective

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

#### Key issues

- Development of a known mineral sands resource.
- Efficient and environmentally sustainable mining of available resources.
- Best use of land's resources considering environmental, social, cultural and land use values.
- Potential impacts on the existing local and regional industries, businesses and landholders.
- Impact of commodity price fluctuation on project sustainability.

<sup>8</sup> Example of guidance on best practice application of mitigation hierarchy is provided in: <https://www.icmm.com/website/publications/pdfs/biodiversity/cross-sector-guide-mitigation-hierarchy>

### Existing environment

- Identify the extent, nature and development potential of the ore body, and composition of heavy mineral concentrate, including radiological content and activity levels.
- Identify the composition of tailings and waste material (including refinery waste), and products from processing including radiological content and activity levels.
- Identify the socioeconomic context of the project in relation to the presence of local workers and suppliers of goods and services that could support the project.
- Describe local industries and other commercial activities in the vicinity of the project which could be affected by the project.

### Likely effects

- Assess the project's feasibility including the predicted economic costs and benefits from construction and operation, capital investment, operating expenditure, employment and business opportunities, taxes and royalties to the regional, state and national economies, and the temporary and permanent impacts on other industries/commercial activities.
- Identify relevant mining hazards and assess the relevant risks that may be posed by the project, and feasible alternatives, to relevant sensitive receptors (environment, to members of the public, or to land, property or infrastructure) in the vicinity of the work.

### Mitigation measures

- Describe alternative mine configurations considered to access mineral sands reserves (including location of the project's infrastructure) and strategies for management and disposal of tailings and waste material to avoid and minimise impacts and potential sterilisation of future reserves, including justification for the preferred approach.
- Describe alternative ore processing options/methods considered and outline how environmental aspects were considered in the selection of the preferred processing options/methods.
- Describe alternatives for off-site components of the project and outline how environmental aspects were considered in the selection of the preferred options for workforce accommodation, water pipelines, gas pipelines, powerlines, new or upgraded access roads and approaches to transportation and storage of heavy mineral concentrate and other mineral products produced.
- Describe methods and strategies to firstly assess radiological effects and risks on an ongoing basis over the project life and then demonstrate that the radioactivity of tailings, waste materials and products arising from processing of mined minerals stays within environmentally acceptable exposure levels. This should utilise, as a minimum, the methodology described in the Guide for Radiation Protection of the Environment (2015) published by the Australian Radiation Protection and Nuclear Safety Agency.
- Propose how the identified relevant risks posed to relevant sensitive receptors by the project, and feasible alternatives, are to be eliminated or minimised as far as reasonably practicable.
- Describe alternative methods of site preparation which could optimise rehabilitation, including potential for future productive land uses.
- Outline measures to enhance potential economic benefits to local and regional businesses and minimise potential adverse effects to local land-uses and businesses.

### Performance objectives and management

- Describe performance standards and systems to monitor and manage the performance of mitigation measures proposed to address the relevant impacts and risks to relevant sensitive receptors.
- Describe the program for monitoring the efficiency of resource recovery.

## 4.2 Biodiversity and habitat

### Draft evaluation objective

*Avoid, minimise, restore or offset potential 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 for all project components, including onsite and offsite infrastructure).*

### Key issues

- Loss or degradation of native vegetation and listed communities, including those listed under the EPBC Act, the FFG Act and/or DELWP advisory lists.
- Loss or degradation of habitat for flora and fauna listed under the EPBC Act, the FFG Act and/or DELWP advisory lists.
- Loss or degradation of habitat for fauna listed as migratory under the EPBC Act.
- Disturbance or degradation of adjacent or nearby habitat that may support listed species or communities, native vegetation or native species.
- Habitat loss or degradation resulting from other effects, such as edge effects, surface water quality or hydrological changes, groundwater drawdown, groundwater mounding, dust deposition, traffic, noise, vibration, light or the introduction of weeds/ pathogens.
- Disruption to the movement of fauna between areas of habitat across the broader landscape.
- Cumulative impacts on biodiversity and habitat with other existing and proposed developments (including other approved and proposed mineral sand mines).
- The availability of suitable offsets for the loss of native vegetation and habitat for listed threatened species, communities and migratory species under the FFG Act and/or EPBC Act.

### Existing environment

- Characterise the type, distribution and condition of native vegetation, terrestrial and aquatic habitat and habitat corridors or linkages that could be impacted by the project, including offsite infrastructure.
- Identify the existing or potential presence of any species listed under the EPBC Act, FFG Act and DELWP advisory lists that could be impacted by the project, as well as declared weeds, pathogens and pest animals.
- Identify the existing or likely presence of communities listed under the EPBC Act and/or FFG Act, including:
  - Victorian Temperate Woodland Bird Community;
  - Semi-arid Northwest Plains Buloke Grassy Woodland Community;
  - Red Gum Swamp Community No. 1;
  - Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions;
  - Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South Eastern Australia; and
  - Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains.
- Identify and characterise any areas of native vegetation and groundwater dependant ecosystems that may be affected by groundwater mounding, groundwater drawdown (from mine dewatering or water supply borefields), or changes to groundwater chemistry.
- Describe the biodiversity values that could be affected by the project (including all offsite infrastructure), including:
  - native vegetation and communities listed under the EPBC Act and/or FFG Act;
  - presence of, or suitable habitats for, native flora and fauna species, in particular species listed under the EPBC Act, FFG Act, and DELWP advisory lists (including those species listed in Appendices B and C);
  - large old trees as defined by the Guidelines for the Removal, Destruction or Lopping of Native Vegetation (DELWP, 2017); and
  - potential use of the project area and its environs for movement by the EPBC Act, FFG Act, and DELWP advisory listed fauna species including those listed in Appendix B.
- Describe the existing threats to biodiversity values, including:
  - removal of listed species or destruction of habitat;

- historic or ongoing disturbance or alteration of habitat conditions (e.g. habitat fragmentation, severance of wildlife corridors or habitat linkages, changes to water quantity or quality, fire hazards, etc.);
  - the presence of any declared weeds, pathogens and pest animals within and near the project area; and
  - any other threatening processes which may affect biodiversity values.
- Characterisation of the existing environment is to be informed by a literature review and appropriate seasonal or targeted surveys of the potential and actual presence of threatened species and communities, in line with commonwealth and state survey guidelines, conservation advices and threatened species recovery plans. Where surveys do not identify a listed species but past records and/or habitat analysis suggest that it may occur locally, justification will need to be provided if further investigations or further mitigation measures are not proposed.

### Likely effects

- Assess the effects (direct and indirect) of the project and feasible alternatives, on native fauna and flora, EPBC Act and FFG Act listed communities, and other protected species listed in Appendices B and C.
- Assess the effects (direct, indirect and cumulative) of the project, including transport route road construction/upgrades and use, on biodiversity values, including:
  - direct removal of individuals or destruction of habitat;
  - disturbance or alteration of habitat conditions (e.g. habitat fragmentation, severance of wildlife corridors or habitat linkages, changes to water quantity or quality, fire hazards, etc.);
  - threats to mortality of listed threatened fauna; and
  - the presence of any declared weeds, pathogens and pest animals within and in the vicinity of the project area.
- Assess the potential for the project to result in effects from radiation on wildlife. This should utilise, as a minimum, the method described in the Guide for Radiation Protection of the Environment (2015) published by the Australian Radiation Protection and Nuclear Safety Agency.

### Mitigation measures

- Identify potential alternatives and proposed design options and measures which could avoid or minimise significant biodiversity effects at all stages of the project. This includes potential effects on native vegetation, EPBC Act listed communities and threatened flora or fauna species or any other listed protected flora and fauna species and their habitat.
- Develop hygiene controls for vehicle and machinery movement to minimise the spread of pathogens and weeds.
- Justify and describe the assumptions and level of uncertainty associated with the proposed measures achieving their desired outcomes.

### Performance objectives and management

- Describe proposed commitments to manage residual effects of the project on biodiversity values, including an offset strategy and offset management plan that sets out the ability to secure the appropriate offsets to satisfy both commonwealth<sup>9</sup> and state<sup>10</sup> offset policy requirements.
- Describe how the offset/s will be secured, managed and monitored, including management actions, responsibility, timing, performance measures and the specific environmental outcomes to be achieved.
- Describe the approach to develop contingency measures to be implemented in the event of adverse residual effects on flora and fauna values requiring further management.
- Identify any further commitments proposed to monitor and manage risks and effects on biodiversity values and native vegetation, including as part of the EMF (see Section 3.8).

<sup>9</sup> Proposed offsets must meet the requirements of the EPBC Act Environmental Offsets Policy (October 2012) or updates.

<sup>10</sup> Refer to the DELWP Guidelines for the Removal, Destruction or Lopping of Native Vegetation (2017) or updates.

## 4.3 Water, catchment values and hydrology

### Draft evaluation objective

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

### Key issues

- The potential for adverse effects on the functions, values and beneficial uses of groundwater due to the project's activities, including water extraction, interception or diversion of flows, discharges or seepage from mining and processing areas and other operational areas or saline water intrusion.
- The potential for adverse effects on the functions, values, beneficial and licensed uses of surface water due to the project's activities, including water extraction, interception or diversion of flows, discharges or seepage from operational areas or saline water intrusion.
- The potential for adverse effects on nearby and downstream water environments (including downstream swamps and wetlands) due to changed water quality, flow regimes, groundwater mounding/depression or waterway conditions during construction, operations, rehabilitation and post-closure.
- Ore, product, overburden, tailings, refinery waste and mining by-products management, in the context of potential water quality impacts including those arising from sedimentation, release of radionuclides, other contaminants and pollutants, acid sulphate soils, acid/metalliferous drainage formation, or salinity.
- Potential erosion, sedimentation and landform stability effects during construction, operation, rehabilitation and post-closure.

### Existing environment

- Identify and characterise the relevant groundwater and surface water environments, including the adjacent Jallumba Marsh Flora Reserve and Red Gum Swamp as well as the nearby Toolondo Reservoir and Natimuk Lake, in terms of their protected beneficial uses and values, existing drainage functions and behaviours and catchments. This should include developing an understanding of relevant aquifers with consideration of potential project interactions with the Murray Group Limestone Aquifer as well as groundwater flow directions to the south of the site towards the Glenelg River.
- Identify existing groundwater and surface water users and allocations in the broader area, including downstream of the mine site and in areas where there is potential for surface or groundwater impacts from proposed offsite infrastructure.
- Characterise the interaction between surface water and groundwater within the project area and the broader area.
- Model the area's hydrogeology with the current allocations, extractions and uses of groundwater and surface water (e.g. irrigation use, stock and domestic use and environmental flows) in the broader area of the mine site, including downstream of the site.
- Characterise the physical and chemical properties of the project area soils/mine geological materials including the potential environmental risks (e.g. potential for erosion, salinity, nutrients and acidification).

### Likely effects

- Develop a water balance model to quantify the project's demand (both quantity and quality) on groundwater and/or surface water resources, including volume to be extracted, stored and released during the construction, operations, rehabilitation and post-closure phases of the project.
- Use appropriate methods, including modelling, to identify and evaluate effects of the project and feasible alternatives on groundwater and surface water environments, including:
  - the likely extent, magnitude and duration of groundwater level drawdown in the vicinity of the mine and water supply bores during construction and operation, and the expected timing and scale of recovery of groundwater levels as mining progresses and post-closure (spatial and temporal groundwater modelling);
  - the potential for mounding and migration of groundwater from the backfilled tailings material along the mine path during operations, rehabilitation and post-closure (including predicted volume, timing and water characteristics);

- changes to groundwater and surface water quality at all project phases, including effects from drawdown and rebound of groundwater levels in the vicinity of the mine-path and water supply bores, refinery waste, processing reagents and other contaminants (including radionuclides), as well as downstream and upstream effects on ecological values (e.g. groundwater dependent ecosystems);
- changes to availability of surface water and groundwater for beneficial uses (e.g. licenced users and/or ecosystems), accounting for climate risks and the potential effects of climate change;
- potential for impacts on the Murray Group Limestone Aquifer;
- potential for impacts on the hydrology and/or water quality of the adjacent Jallumba Marsh Flora Reserve and Red Gum Swamp, as well as the nearby Toolondo Reservoir and Natimuk Lake;
- risks associated with potential acid forming materials (soil and rock) that may be disturbed or exposed by mining activities; and
- potential erosion, sedimentation and landform stability effects of the project.

### Mitigation measures

- Describe proposed design options and measures that could avoid or minimise significant effects on beneficial uses of surface water, groundwater and downstream water environments, accounting for climate risks and the potential effects of climate change, during the project construction, operations, rehabilitation and post-closure phases.
- Identify relevant guidelines and standards to be met for management of stormwater runoff, erosion and sediment control, and flood risk.

### Performance objectives and management

- Describe monitoring programs and specific monitoring activities to be implemented to ensure prompt detection of surface water and groundwater effects associated with the project.
- Identify possible contingency actions to respond to foreseeable changes that may be identified through the monitoring program.

## 4.4 Amenity and environmental quality

### Draft evaluation objective

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

### Key issues

- The potential for risks to public health and safety and diminished social wellbeing due to factors such as: exposure to dust, noise, vibration, lighting, radiation, hazardous materials and transport hazards.
- Potential cumulative impacts of other existing and proposed mining projects on amenity and environmental quality values of the region.

### Existing environment

- Describe the physical and chemical characteristics of overburden, ore, product, tailings, refinery waste and mining by-products including specific aspects relevant to air quality and radiation.
- Identify dwellings and any other potentially sensitive receptors (e.g. community centres, schools, recreation facilities and agricultural businesses) that could be affected by the project's potential effects on air quality, noise, vibration, lighting and radiation levels.
- Monitor and characterise background levels of air quality in accordance with PEM<sup>11</sup> requirements, including air pollution indicators (dust, PM10, PM2.5, crystalline silica, airborne metals, etc.), noise, vibration and lighting in the vicinity of the project, including adjacent sensitive receptors and along potential transport routes.
- Characterise background radiation levels within the mine site and the broader project area.
- Evaluate the existing road/rail conditions and traffic (type, volume and timing) conditions on key proposed transport routes for the project.

<sup>11</sup> <https://www.epa.vic.gov.au/about-epa/publications/1191> (or updates)

- Evaluate the suitability of existing port facilities for storage and shipping of product, if shipping of product is proposed.

### Likely effects

- Predict likely atmospheric concentrations of particulate matter and other relevant Class 1, 2 or 3 indicators in surrounding areas during mine construction, operation, rehabilitation and closure, using an air quality impact assessment undertaken in accordance with the PEM. The air quality impact assessment is to also include an assessment using the State environment protection policy (Ambient Air Quality) environmental objectives.<sup>12</sup> The assessment should include identification and assessment of air emissions from the proposed mineral processing and refining activities.
- Assess any effects of dust emissions on surrounding agricultural industry and local water supplies, including privately owned rainwater tanks.
- Assess likely noise increases, vibration and lighting impacts at sensitive receptors in the vicinity of the project and along the proposed transport route.
- Assess potential human health and ecological risks from the transport, handling, storage and disposal of processing reagents and hazardous chemicals used for the project.
- Assess the potential for radiation effects associated with the project during construction, operations, rehabilitation and post-closure.
- Assess likely traffic volume increase in the vicinity of the project and along proposed transport routes during construction, operations and rehabilitation (for employees, product and other project-related transportation).
- Assess likely effects to human health and well-being of the communities in the vicinity of the project.
- Assess potential safety hazards to the public arising from the project.
- Predict likely radiation doses to sensitive receptors during mine construction, operation, rehabilitation and post-closure.
- Assess the potential for cumulative impacts of the project on amenity and environmental quality values in conjunction with other existing and proposed projects in the region.

### Mitigation measures

- Identify potential and proposed design responses and/or other mitigation measures in accordance with best management practice, to avoid, reduce and/or manage significant effects for sensitive receptors, during the project construction, operation, rehabilitation and post-closure, arising from:
  - air pollution indicators;
  - noise, vibration and lighting;
  - adverse changes to the background radiation levels in the vicinity of the project (including the radionuclide content of vegetation, surface water and groundwater); and
  - public safety hazards.

### Performance objectives and management

- Describe monitoring programs for potential effects on amenity, environmental quality, health and social wellbeing including a framework for identifying and responding to any emerging issues.

## 4.5 Social, land use and infrastructure

### Draft evaluation objective

*Minimise potential adverse social, land use and infrastructure effects.*

### Key issues

- The potential for loss and/or reduced access to farm land, businesses, social networks and community infrastructure including residences.
- Relocation or other impacts to existing infrastructure.

<sup>12</sup> This should take into consideration the changes in the EP Act which are expected come into effect on 1 July 2020, and any subsequent updates to subordinate legislation.

- Potential for benefits and adverse effects on the existing and future land and beneficial uses, including agriculture and other local businesses.
- Potential biosecurity effects associated with disturbance of land and movement of vehicles associated with the mine on agricultural operations within and in the vicinity of the mine.
- Potential effects on socio-economics and tourism at local and regional scales.
- Potential damage to local and regional road surfaces along transport routes and increased risk to road safety on transport routes.
- The potential to increase risk of environmental and landscape hazards such as bushfires.

### **Existing environment**

- Characterise the existing and planned land uses and the existing beneficial uses within and in the vicinity of the proposed project, including tourism values in the region.
- Describe the existing infrastructure for residential use, water supply, irrigation, wastewater collection and power supply in the project area and in its vicinity.
- Characterise the current traffic conditions (including site access) and road infrastructure (including arterial and municipal roads) and road users in terms of capacity, condition and structural integrity, travel times, safety and accessibility.
- Describe proposed transport routes during construction and operations (for employees, product and other project-related transportation). This should include description of proposed transport infrastructure and its ability to accommodate traffic generated by the project, as well as other predicted future demands.
- Describe existing emergency response infrastructure and resources.
- Describe the characteristics of the existing community in the vicinity of the project area, having regard to demographic, socio-economic and societal connection factors and with reference to relevant municipal or sub-regional benchmarks.
- Describe community attitudes to the existing environment and the potential changes brought by mining and associated operations.
- Describe the bushfire hazard for the immediate project area and broader landscape conditions and undertake appropriate risk assessment that considers the risk of bushfire to people, property and community infrastructure.

### **Likely effects**

- Assess potential social and land use impacts arising from the project including impacts on access to accommodation and social services as a result of increased employment and establishment of workforce accommodation facilities.
- Assess the potential economic effects (beneficial and adverse) which could result from the project, including any potential impacts on tourism and opportunities for new and existing businesses.
- Assess the potential effects on workforce development opportunities in the local and wider region as a result of the project.
- Assess potential effects on accessibility for farm land and community infrastructure, as well as local residences.
- Assess potential effects of the project on the structural condition of potentially affected public roads for both the construction and operation phases, having regard to relevant design standards in the context of historical and proposed future usage.
- Assess potential effects on social cohesion, mental health and well-being of the communities in the vicinity of the project.
- Evaluate the consistency of the project with the policies and provisions of the Horsham Planning Scheme and other land use planning strategies.
- Assess the implications of the project for fire risk management within the project footprint or in its vicinity.

### **Mitigation measures**

- Outline and assess design and mitigation measures that address the potential for adverse land use effects during construction, operations (including progressive rehabilitation), rehabilitation and post-

closure, including the proposed principles for sustainable land use set for rehabilitation of soils and landforms post-mining.

- Identify the proposed transport routes' impacts on road safety and operational performance of the existing road infrastructure, considering all project vehicle types, traffic volumes and movements and need for installation of any proposed mine infrastructure along or across the public road network during the project construction, operation and rehabilitation.
- Outline the required transport infrastructure upgrades and any additional road maintenance required to address adverse impacts of the project construction, operation and rehabilitation (e.g. road, rail and port).
- Outline, where appropriate, any transport infrastructure upgrades that will require decommissioning and removal.
- Describe and evaluate the proposed traffic management and safety principles to address changed traffic conditions during construction, operation and rehabilitation of the project, covering (where appropriate) road safety, temporary or permanent road diversions, different traffic routes, hours of use, vehicle operating speeds, types of vehicles and emergency services provisions.
- Outline measures to minimise potential adverse effects on local communities and infrastructure and maximise potential opportunities (e.g. through appropriate design of workforce accommodation and provision of support for local community development).
- Outline measures to minimise potential adverse effects to local businesses, including agriculture and tourism, and to enhance potential benefits to local and regional businesses.
- Outline measures to minimise dislocation due to severance causing reduced access to farm land and/or disruption to social networks and community facilities.
- Outline appropriate bushfire protection measures to address the identified bushfire risk.

#### **Performance objectives and management**

- Describe monitoring programs to measure social, land use, economic and infrastructure outcomes for communities living within or near the project footprint including a framework for identifying and responding to any emerging issues.

### **4.6 Cultural heritage**

#### **Draft evaluation objective**

*Avoid or minimise adverse effects on Aboriginal and historic cultural heritage.*

#### **Key issues**

- Destruction or disturbance of sites or places of Aboriginal or historical cultural heritage significance.

#### **Existing environment**

- Review land use history, previous studies and relevant registers to identify areas with Aboriginal cultural heritage value or potential Aboriginal cultural heritage value.
- Identify and characterise any Aboriginal cultural heritage sites or areas of sensitivity potentially impacted by the project area through consultation and investigations to the satisfaction of the Barengi Gadjin Land Council Aboriginal Corporation.
- Identify and document any known and previously unidentified places and sites of historical cultural heritage significance within the project area and its vicinity, including any necessary investigations to supplement past studies. Assessments are to be undertaken in accordance with the *Heritage Act 2017* and Heritage Victoria's Guidelines for Conducting Archaeological Surveys (2014) or updates.
- Identify any known or previously unidentified intangible heritage values associated with the project area.

#### **Likely effects**

- Assess the potential direct and indirect effects of the project on identified sites or places of Aboriginal cultural heritage significance, and whether they can be avoided.
- Assess the potential direct and indirect effects of the project on sites and places of historical cultural heritage significance, having regard to the Guidelines for Investigating Historical Archaeological Artefacts and Sites (Heritage Victoria, 2015) or updates.

- Assess the potential for effects on any intangible heritage values associated with the project area.

#### **Mitigation measures**

- Describe and evaluate proposed design, management and site protection measures that could avoid or minimise impacts on Aboriginal and historical cultural heritage values.
- Develop a cultural heritage management plan to the satisfaction of the Barengi Gadjin Land Council Aboriginal Corporation.
- Develop an archaeological management plan and chance finds procedure to manage historic heritage investigation/excavation etc.

#### **Performance objectives and management**

- Outline how implementation of proposed commitments to mitigate and manage residual effects on sites and places of historical heritage significance will be monitored, including site investigation and recording procedures.
- Outline how compliance with conditions of any required statutory approvals (i.e. consents/permits) will be managed and monitored.

### **4.7 Landscape and visual**

#### **Draft evaluation objective**

*Minimise adverse effects on landscape and visual amenity.*

#### **Key issues**

- The potential for effects on the landscape values including views from Grampians National Park, Mount Arapiles-Tooan State Park and Black Range State Park, visual amenity for residents and character of region.
- Potential cumulative impacts of other existing and proposed projects (including mining) on landscape values of the region.

#### **Existing environment**

- Characterise the visual character and associated landscape values of the project area and surrounds.
- Identify viewsheds in which the project area features, including from nearby residences (where permitted), public lookouts, roads and key vantage points in the vicinity.

#### **Likely effects**

- Assess the effects of the project and feasible alternatives on landscape and visual amenity values of the project area and surrounding area, including with respect to views from public vantage points and representative local residences during construction, operation, rehabilitation and post-closure.
- Assess the potential for cumulative impacts of the project on landscape and visual amenity values in conjunction with other existing and proposed projects in the region.

#### **Mitigation measures**

- Outline and evaluate the proposed environmental management commitments to mitigate or manage effects on landscape and visual amenity values including in relation to the configuration and staging of works and progressive rehabilitation, including appropriate provision for post-closure planning.
- Describe and evaluate the potential and proposed measures to restore and rehabilitate the landscape and visual amenity values of the project area after mining.

#### **Performance objectives and management**

- Outline measures to monitor the success of progressive rehabilitation and other environmental commitments to mitigate or manage effects on landscape and visual amenity values during all phases of the project.
- Describe the approach to monitor effects and develop contingency measures to be implemented in the event of adverse residual effects on landscape and visual values requiring further management.

## Appendix A

### Procedures and requirements under section 8B(5) of the *Environment Effects Act 1978*

The procedures and requirements applying to the EES process, in accordance with both section 8B(5) and the *Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978* (Ministerial Guidelines), are as follows:

- (i) The EES is to document the investigation and avoidance of potential environmental effects of the proposed 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 mitigation and management measures. In particular the EES should address:
  - a. effects on biodiversity and ecological values within and near the site, as associated with adjacent road reserves, including native vegetation, listed threatened communities and species of flora and fauna; and other habitat values;
  - b. effects on surface water environments, including local waterways and the broader catchment, as well as groundwater resources (hydrology, quality, uses and dependent ecosystems);
  - c. effects on Aboriginal and non-Aboriginal cultural heritage values;
  - d. effects on land stability, erosion and soil productivity associated with the construction and operation of the project, including progressive rehabilitation works;
  - e. effects on the land uses and landscape values of the site and surrounding areas;
  - f. effects of project construction and operation on air quality and noise on nearby sensitive receptors;
  - g. 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; and
  - h. solid and liquid waste generated by the project during construction and operation
- (ii) The matters to be investigated and documented in the EES will be set out in detail in scoping requirements prepared by the Department of Environment, Land, Water and Planning (the department). Draft scoping requirements will be exhibited for 15 business days for public comment, before being finalised and then issued by the Minister for Planning.
- (iii) The level of detail of investigation for the EES studies should be consistent with the scoping requirements issued for this project and be adequate to inform an assessment of the potential environmental effects (and their acceptability) of the project and any relevant alternatives, in the context of the Ministerial Guidelines.
- (iv) The proponent is to prepare and submit to the department a draft EES study program to inform the preparation of scoping requirements.
- (v) The department is to convene an inter-agency Technical Reference Group (TRG) to advise the proponent and the department, as appropriate, on scoping and adequacy of the EES studies during the preparation of the EES, as well as coordination with statutory approval processes.
- (vi) The proponent is to prepare and submit to the department its proposed EES consultation plan for consulting the public and engaging with stakeholders during the preparation of the EES. Once completed to the satisfaction of the department, the EES consultation plan is to be implemented by the proponent, having regard to advice from the department and the TRG.
- (vii) The proponent is also to prepare and submit to the department its proposed schedule for the studies, preparation and exhibition of the EES, following confirmation of draft scoping requirements. This is to enable effective management of the EES process on the basis of an agreed alignment of the proponent's and department's schedules, including for TRG review of technical investigations and the EES documentation.
- (viii) The proponent is to apply appropriate peer review and quality management procedures to enable the completion of EES studies and documentation to an acceptable standard.

- (ix) The EES is to be exhibited for a period of 30 business days for public comment, unless the exhibition period spans the Christmas–New Year period, in which case 40 business days will apply.
- (x) An inquiry will be appointed under the *Environment Effects Act 1978* to consider and report on the environmental effects of the proposal.

## Appendix B

**Fauna species for which potential effects of the project are to be assessed in the EES (among others as relevant).**

- Australasian Bittern (*Botaurus poiciloptilus*)
- Australian Bustard (*Ardeotis australis*)
- Australian Painted-snipe (*Rostratula australis*)
- Baillon's Crake (*Porzana pusilla palustris*)
- Barking Owl (*Ninox connivens connivens*)
- Bearded Dragon (*Pogona barbat*)
- Black Falcon (*Falco subniger*)
- Blue-billed Duck (*Oxyura australis*)
- Brolga (*Grus rubicunda*)
- Brown Toadlet (*Pseudophryne bibronii*)
- Brown Treecreeper (*Climacteris picumnus victoriae*)
- Brush-tailed Phascogale (*Phascogale tapoatafa*)
- Brush-tailed Rock-wallaby (*Petrogale penicillata*)
- Bush Stone-curlew (*Burhinus grallarius*)
- Caspian Tern (*Hydroprogne caspia*)
- Chestnut-rumped Heathwren (*Calamanthus pyrrhopygius*)
- Common Greenshank (*Tringa nebularia*)
- Common Sandpiper (*Actitis hypoleucos*)
- Crested Bellbird (*Oreoica gutturalis gutturalis*)
- Curlew Sandpiper (*Calidris ferruginea*)
- Diamond Firetail (*Stagnopleura guttata*)
- Eastern Curlew (*Numenius madagascariensis*)
- Eastern Dwarf Galaxias (*Galaxiella pusilla*)
- Eastern Great Egret (*Ardea modesta*)
- Flathead Galaxias (*Galaxias rostratus*)
- Freckled Duck (*Stictonetta naevosa*)
- Freshwater Catfish (*Tandanus tandanus*)
- Glenelg Spiny Freshwater Crayfish (*Euastacus bispinosus*)
- Golden Sun Moth (*Synemon plana*)
- Grey-crowned Babbler (*Pomatostomus temporalis temporalis*)
- Grey-headed Flying-fox (*Pteropus poliocephalus*)
- Growling Grass Frog (*Litoria raniformis*)
- Heath Mouse (*Pseudomys shortridgei*)
- Hooded Robin (*Melanodryas cucullata cucullata*)
- Intermediate Egret (*Ardea intermedia*)
- Latham's Snipe (*Gallinago hardwickii*)
- Lewin's Rail (*Lewinia pectoralis*)
- Little Bittern (*Ixobrychus minutus dubius*)
- Little Egret (*Egretta garzetta nigripes*)
- Magpie Goose (*Anseranus semipalmata*)
- Major Mitchell's Cockatoo (*Lophochroa leadbeateri*)
- Malleefowl (*Leipoa ocellata*)
- Painted Honeyeater (*Grantiella picta*)
- Pectoral Sandpiper (*Calidris melanotos*)
- Plains-wanderer (*Pedionomus torquatus*)
- Red-lored Whistler (*Pachycephala rufogularis*)
- Regent Honeyeater (*Anthochaera Phrygia*)
- Regent Parrot (*Polytelis anthopeplus monarchoides*)
- Sharp-tailed Sandpiper (*Calidris acuminata*)
- Slender-billed Thornbill (*Acanthiza iredalei hedleyi*)
- Smoky Mouse (*Pseudomys fumeus*)
- South-eastern Red-tailed Black-Cockatoo (*Calyptorhynchus banksii graptogyne*)

- Southern Bent-wing Bat (*Miniopterus orianae bassanii*)
- Southern Brown Bandicoot (south-eastern) (*Isodon obesulus obesulus*)
- Speckled Warbler (*Pyrrholaemus sagittatus*)
- Spotted Harrier (*Circus assimilis*)
- Square-tailed kite (*Lophoictinia isura*)
- Swift Parrot (*Lathamus discolor*)
- Variegated Pygmy Perch (*Nannoperca variegata*)
- Whiskered Tern (*Chlidonias hybrida*)
- White-bellied Sea-eagle (*Haliaeetus Leucogaster*)
- White-throated Needletail (*Hirundapus caudacutus*)
- Yarra Pygmy Perch (*Nannoperca obscura*)

## Appendix C

Flora species for which potential effects of the project are to be assessed in the EES (among others as relevant).

- Buloke (*Allocasuarina luehmannii*)
- Buloke Mistletoe (*Amyema linophylla* subsp. *orientalis*)
- Candy Spider-orchid (*Caladenia versicolor*)
- Clover Glycine (*Glycine latrobeana*)
- Downy Star-bush (*Asterolasia phebalioides*)
- Floodplain Rustyhood (*Pterostylis cheraphila*)
- Green-striped Greenhood (*Pterostylis chlorogramma*)
- Hairy Tails (*Ptilotus erubescens*)
- Hairy-pod Wattle (*Acacia glandulicarpa*)
- Kamarooka Mallee (*Eucalyptus froggattii*)
- Large-fruit Groundsel (*Senecio macrocarpus*)
- Leek flax-lily (*Dianella porracea*)
- Metallic Sun-orchid (*Thelymitra epipactoides*)
- Ornate Pink Fingers (*Caladenia ornata*)
- Rigid Spider-orchid (*Caladenia tensa*)
- River Swamp Wallaby-grass (*Amphibromus fluitans*)
- Rock Wattle (*Acacia rupicola*)
- Salt Paperbark (*Melaleuca halmaturorum*)
- Small Milkwort (*Comesperma polygaloides*).
- Spiny Rice-flower (*Pimelea spinescens* subsp. *spinescens*)
- Spiral Sun-orchid (*Thelymitra matthewsii*)
- Swamp Everlasting (*Xerochrysum palustre*)
- Trailing Hop-bush (*Dodonaea procumbens*)
- Turnip Copperburr (*Sclerolaena napiformis*)
- Wimmera Bottlebrush (*Callistemon wimmerensis*)
- Wimmera Rice-flower (*Pimelea spinescens* subsp. *pubiflora*)
- Wimmera Woodruff (*Asperula wimmerana*)
- Winged Water Starwort (*Callitriche umbonate*)