Environment Effects Act 1978

SCOPING REQUIREMENTS

Stockman Base Metals Project

ENVIRONMENT EFFECTS STATEMENT

March 2011

State Government Victoria

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1 Introduction

1.1 Background and Purpose of this Document

Jabiru Metals Limited ('Jabiru') proposes to develop the Stockman Base Metals Project ('Stockman Project') at a site approximately 19 kilometres (km) east-south-east of the township of Benambra in East Gippsland (Figure 1). The project includes recommissioning an existing underground mine and development of a new underground mine, to produce copper-zinc-silver-gold concentrates for export.

In light of the potentially significant effects on the environment[1] associated with this project, on 16 August 2010, the Victorian Minister for Planning (the Minister) required Jabiru to prepare an Environment Effects Statement (EES) under the *Environment Effects Act 1978* (EE Act) to document the likely environmental effects of the proposal.[2]

This document is the *Scoping Requirements for the Stockman Base Metals Project EES* (Scoping Requirements). It sets out the range of environmental matters to be investigated and documented in the EES. These Scoping Requirements have been finalised following a period of public exhibition for public comment; no submissions were received.

While the Scoping Requirements are intended to be complete in their coverage of issues and matters, the EES will need to address any pertinent issues that may emerge during the EES investigations and consultation, or that are otherwise relevant to statutory decisions to be informed by the assessment process under the EE Act.

1.2 The Project

The Stockman Project involves mining two mineral deposits known as Wilga and Currawong, which are located in State Forest east-south-east of Benambra (see Figure 1). The Wilga deposit was partially mined by a company called Denehurst Limited between 1992 and 1996 before the mine closed. Jabiru won a Government tender process for an exploration licence over this area in 2007. Jabiru propose to reopen the former Wilga mine and further develop the resource through an underground mining operation. Jabiru also propose to develop a new underground mine in the Currawong deposit about 4 km to the north of the Wilga site.

The project would involve underground mining and processing the ore to produce concentrates of copper, zinc, silver and gold. Concentrate would be trucked from site for shipping to South-East Asia. The proposed route for concentrate trucking is via Limestone Road to Benambra, then along the Great Alpine Road from Omeo. It is estimated that about 950,000 tonnes of ore per annum would be mined and processed over a period of 7 to 8 years.

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[1] For the purpose of assessment of environmental effects under the *Environment Effects Act 1978,* the meaning of 'environment' includes physical, biological, heritage, cultural, ,social , health, safety and economic aspects of human surroundings, including the wider ecological and physical systems within which humans live.

[2] A copy of the decision can be downloaded at:
http://www.dpcd.vic.gov.au/planning/environment-assessment/referrals/decisions-on-ees-referrals

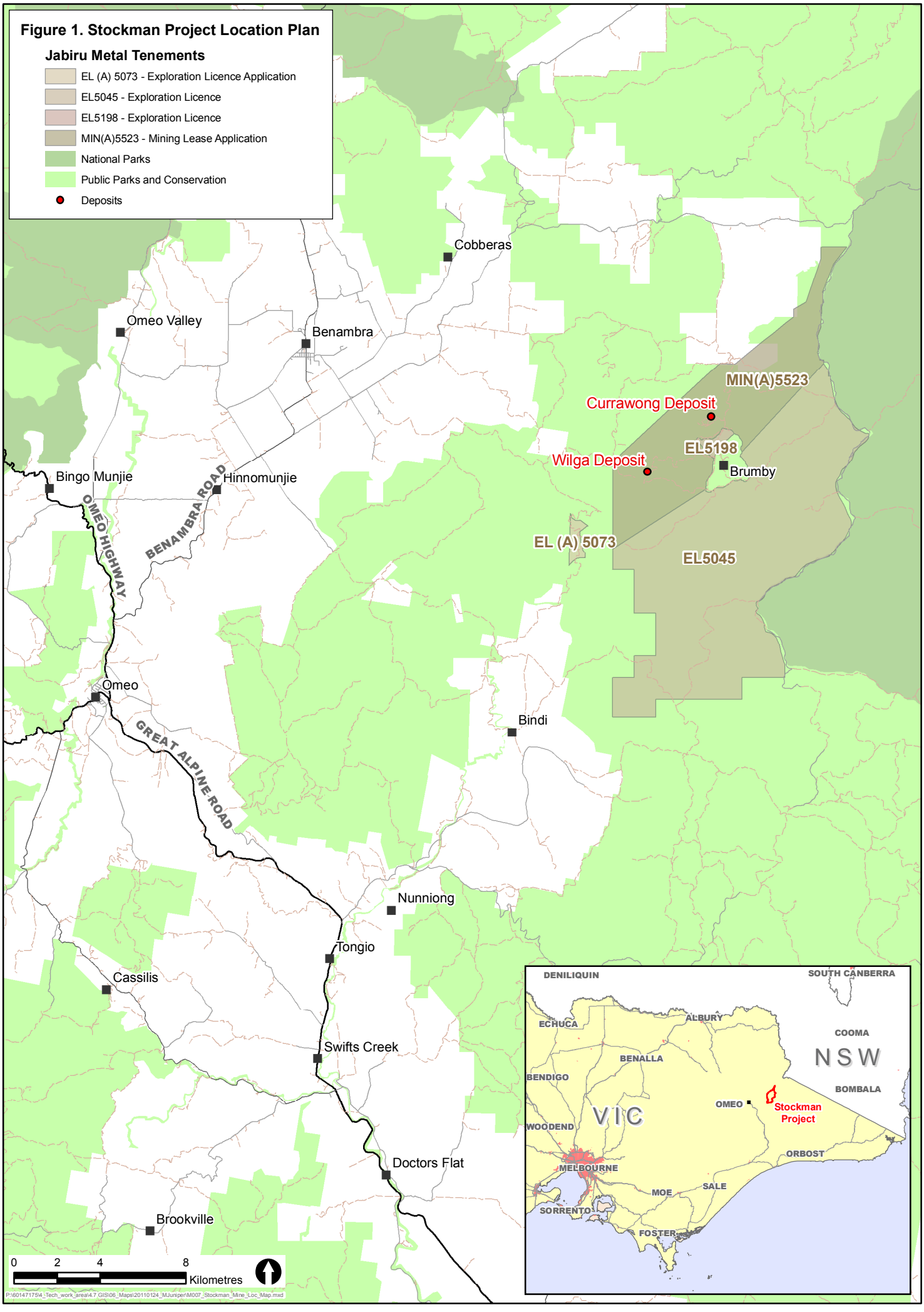
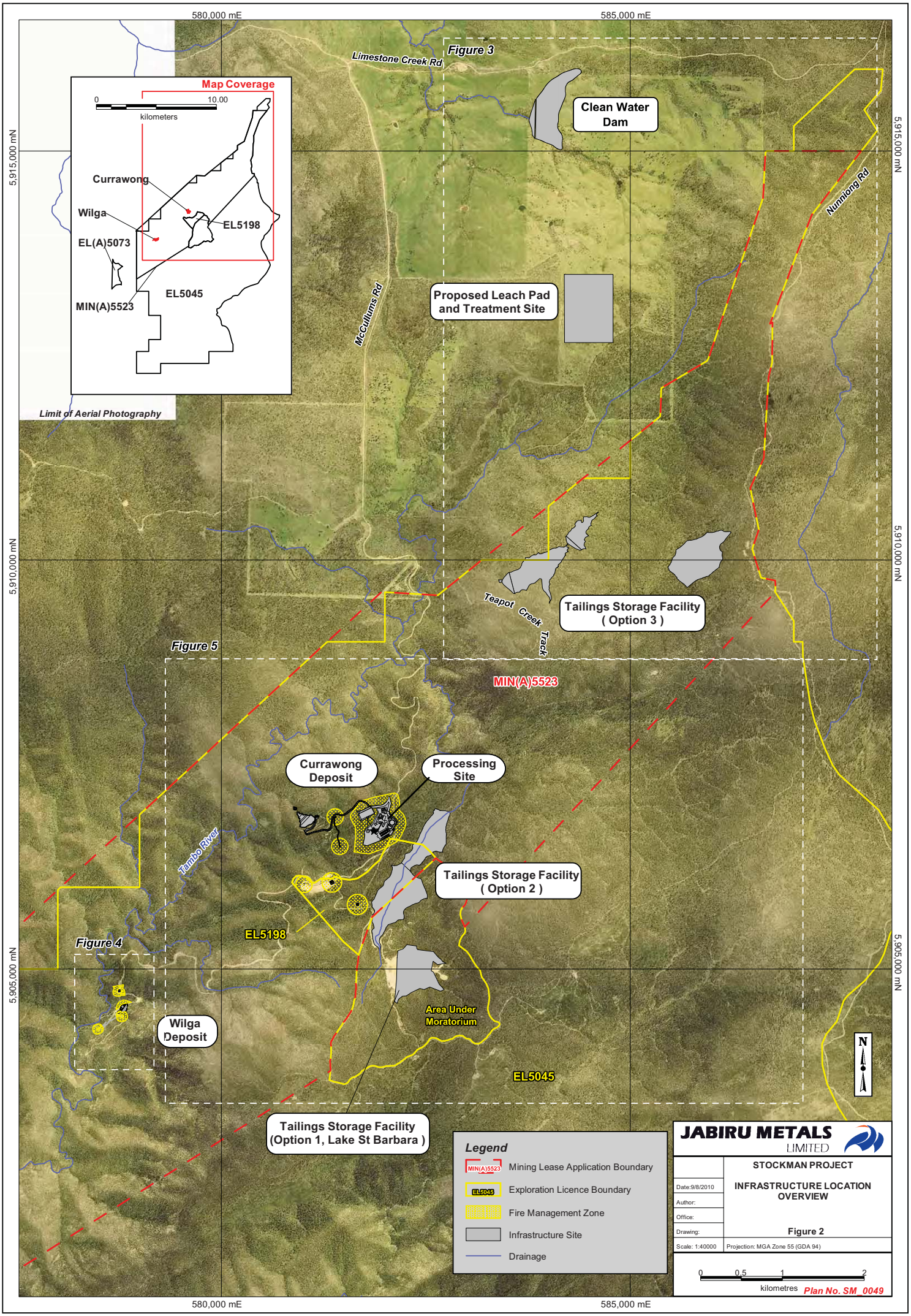


Figure 1. Stockman Project Location Plan
Jabiru Metal Tenements
EL (A) 5073 - Exploration Licence Application
EL5045 - Exploration Licence
EL5198 - Exploration Licence
MIN(A)5523 - Mining Lease Application
National Parks
Public Parks and Conservation
Deposits
Cobberas
Omeo Valley
Benambra
MIN(A)5523
Currawong Deposit
EL5198
Wilga Deposit
Brumby
Bingo Munjie
Hinnomunjie
OMEO HIGHWAY
BENAMBRA ROAD
EL (A) 5073
EL5045
Omeo
Bindi
GREAT ALPINE ROAD
Nunniong
Tongio
Cassilis
Swifts Creek
Doctors Flat
Brookville
0 2 4 8
Kilometres
DENILIQUIN
SOUTH CANBERRA
ECHUCA
ALBURY
COOMA
NSW
BENALLA
BENDIGO
BOMBALA
OMEO
Stockman Project
VIC
WOODEND
ORBOST
MELBOURNE
MOE
SALE
SORRENTO
FOSTER


580,000 mE
585,000 mE
5,915,000 mN
5,910,000 mN
5,905,000 mN
Figure 3
Limestone Creek Rd
Clean Water Dam
Nunniong Rd
McCulloms Rd
Proposed Leach Pad and Treatment Site
Map Coverage
0
10.00
kilometers
Currawong
Wilga
EL5198
EL(A)5073
EL5045
MIN(A)5523
Limit of Aerial Photography
Teapot Creek Track
Tailings Storage Facility (Option 3)
Figure 5
MIN(A)5523
Currawong Deposit
Processing Site
Tambo River
Tailings Storage Facility (Option 2)
EL5198
Figure 4
Area Under Moratorium
Wilga Deposit
EL5045
Tailings Storage Facility (Option 1, Lake St Barbara)
N
Legend
MIN(A)5523 Mining Lease Application Boundary
EL5045 Exploration Licence Boundary
Fire Management Zone
Infrastructure Site
Drainage
JABIRU METALS LIMITED
STOCKMAN PROJECT
INFRASTRUCTURE LOCATION OVERVIEW
Date:9/8/2010
Author:
Office:
Drawing:
Figure 2
Scale: 1:40000
Projection: MGA Zone 55 (GDA 94)
0
0.5
1
2
kilometres
Plan No. SM_0049

The project would require a range of infrastructure for processing the ore and storing waste rock and tailings in the project area. Jabiru is considering a range of alternative sites for processing plants and tailings storage facilities, including increasing the capacity of the tailings dam developed by the former mining operation[3] (see Figure 2).

The company is also considering a range of power and water supply options. Electricity may be generated on site by diesel or gas-fired generators or it may be supplied via an extension to the electricity grid.[4] Water is likely to be obtained from several sources, including direct runoff to a clean water storage dam, supplemented by water from bore fields in the vicinity of Benambra.[5]

Accommodation for employees who are not currently local residents would be required, and it is proposed that this will be provided by between 10 and 15 new permanent houses in Omeo and motel-style accommodation for remaining personnel located adjacent to either the Benambra or Omeo townships.

1.3 Project Setting

The Stockman Project site is located in State Forest in the upper reaches of the Tambo River catchment. The region is characterised by high relief landscapes with altitudes ranging from 500 metres (m) to 1500 m above sea level. The main activities would take place at elevations between 650 m and 1200 m on steep north to north-westerly ridges and spurs of 15 to 20 degree slope that border the headwaters of the Tambo River. Waterways in the north of the project area include Limestone Creek, a high value wetland asset, which forms part of the headwaters of the River Murray and Morass Creek, a significant tributary of the Mitta Mitta River.

The region has a cool climate with an average annual rainfall of 900-1000 millimetres (mm) and receives snow in the winter. Average minimum and maximum temperatures for summer and winter at the lower elevation areas are 8 ºC and 26 ºC, and -1 ºC and 10 ºC respectively.

The closest townships to the project area are Benambra, Omeo and Swifts Creek, located 19 km west-northwest, 30 km west-southwest and 34 km southwest respectively. Several farmhouses are located on the roads that lead to the main site access road. These farmhouses are separated from the project site by mountainous terrain and are all situated more than 10 km away.

The site is in a relatively natural condition apart from areas disturbed by the former mining operation and past forestry activity. The native vegetation includes 16 different ecological vegetation classes; 24 significant fauna species have been identified as occurring within 5 km of the project site.

1.4 Overview of the EES Process

While Jabiru is responsible for preparing the EES, the Department of Planning and Community Development (DPCD) manages the EES process.

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[3] Whilst this option was not considered in the referral, the proponent (in consultation with DPI) has since decided to include this in the scope of the project being assessed. Therefore the EES scope will include analysis of this option.

4 Note: Jabiru is no longer considering an option to source electricity from the Dartmouth-Mount Beauty grid.

[5] Note: Jabiru is no longer considering an option to source water from the Dartmouth or Kiewa Dam.

The EES process for the Stockman Project has the following key steps, consistent with the procedures and requirements issued under the EE Act by the Minister to the proponent:

- Referral of the proposal to the Minister for Planning by the proponent (completed);
- Decision by the Minister for Planning that an EES is required (completed);
- Preparation of Draft Scoping Requirements by DPCD (completed);
- Public comment on advertised Draft Scoping Requirements (completed);
- Issuing of final Scoping Requirements by the Minister for Planning (this document);
- Preparation of the EES by the proponent;
- Review of the draft EES by DPCD (in consultation with relevant agencies) in terms of its adequacy for public exhibition;
- Authorisation to invite public comments on the EES and then exhibition of the EES for public comment;
- Appointment of an Inquiry by the Minister for Planning to review the EES and any public submissions, conduct public hearings and provide a report; and
- Following receipt of the Inquiry report, provision of an Assessment of the project and its environmental effects by the Minister for Planning to decision-makers.

EES Consultation

In addition to the above formal steps, informal consultation also plays an important role in the preparation of the EES. The proponent is responsible for both undertaking the studies and engaging with stakeholders in order to identify and respond to their concerns. Relevant stakeholders include government agencies, potentially affected parties and the community. A public information and stakeholder consultation program is to be prepared and implemented by the proponent to ensure that the public is familiar with the investigations and that stakeholders are consulted on pertinent issues.

Technical Reference Group

A Technical Reference Group (TRG), convened by DPCD, will advise DPCD and the proponent on the preparation of the EES for the project. The TRG will comprise representatives of relevant government agencies and East Gippsland Shire Council.

The role of the TRG is to provide advice to DPCD and the proponent, as appropriate, on:

- the Scoping Requirements for the EES;
- the design and adequacy of technical studies for the EES;
- the technical adequacy of the draft EES documentation; and
- coordination of statutory processes.

Further information on the EES process can be found at DPCD's website: www.dpcd.vic.gov.au/planning/ees.

1.5 Accreditation of the EES process

The project was also referred to the Australian Government under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The delegate for the

responsible Minister determined the project to be a controlled action on 29 November 2010, requiring assessment and approval under the EPBC Act. The relevant controlling provisions for the project under the EPBC Act are threatened species and ecological communities (sections 18 and 18A).

The EES process is to be applied as an accredited process under the EPBC Act in accordance with the bilateral agreement between the Commonwealth and Victoria.

2 Required Approvals and Assessment Process

2.1 Required Approvals

The project will require a range of approvals under Victorian legislation as illustrated in Figure 3, which is likely to encompass:

- Work plan and work authority under the *Mineral Resources (Sustainable Development) Act 1990;*
- Planning permits (excluding for mining) under the East Gippsland and Alpine Planning Schemes under the *Planning and Environment Act 1987*;
- Permit/consents under the *Water Act 1989;*
- Permit under the *Flora and Fauna Guarantee Act 1988*;
- Approved Cultural Heritage Management Plan (CHMP) under the *Aboriginal Heritage Act 2006*; and
- Works approval under the *Environment Protection Act 1970*.

The Assessment under the EE Act does not constitute a statutory approval in its own right, but will inform decisions made with respect to the project under the *Mineral Resources (Sustainable Development) Act 1990; Planning and Environment Act 1987, Water Act 1989; Flora and Fauna Guarantee Act 1988* and *Environment Protection Act 1970.*

The project also requires an approval under the EPBC Act. Although the relevant Australian Government Minister would make a decision whether to approve the project under the EPBC Act, this decision will be informed by the Minister for Planning's Assessment.

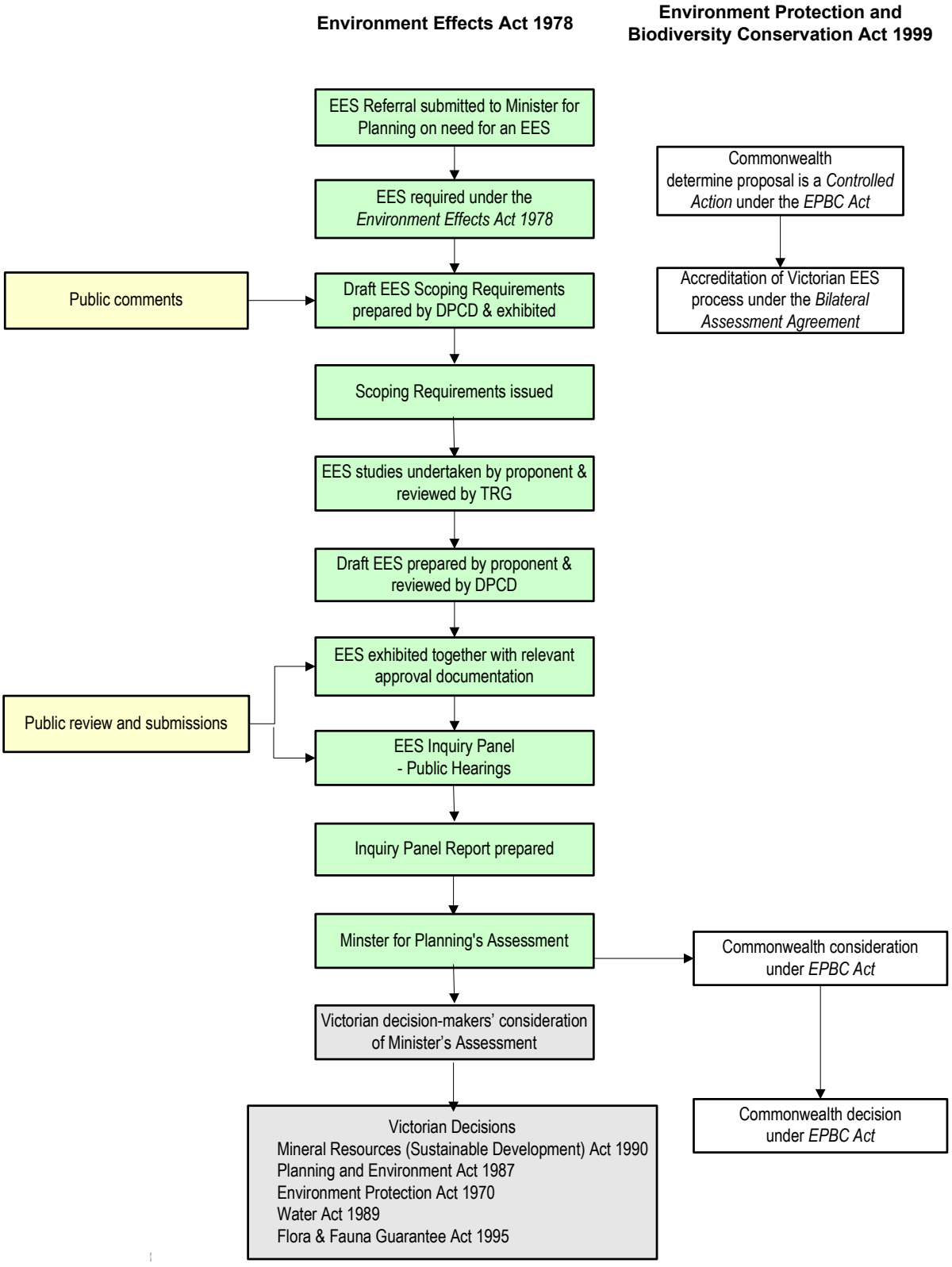
2.2 Coordination of Assessment and Approvals

The EES process is coordinated with other primary approvals and relevant assessment requirements, such that any relevant applications and statutory documents are prepared in conjunction with the EES and placed on public exhibition together.

Within the framework of the EES process and the role of the TRG, DPCD will coordinate the preparation and exhibition of the EES with relevant information and public notice requirements under applicable legislation.

Figure 3 shows the coordinated statutory assessment and approval pathway for this project.

Figure 3
Assessment and Approval Process



3 General Requirements for the EES

3.1 General Content and Style of the EES

The EES should enable interested stakeholders and decision-makers to understand the likely environmental effects of the proposed development and to form an informed view on relevant aspects of the proposal.

The EES should consist of a main report supported by technical appendices containing relevant data, technical reports and other sources of the EES analysis.

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

- An executive summary of the potential environmental effects of the project;
- A description of the project's objectives and rationale, as well as its relationship to relevant policies and plans;
- A description of the entire project, including associated infrastructure and accommodation requirements;
- An analysis of relevant alternatives capable of substantially meeting the project's objectives that may also offer environmental benefits (as well as the basis for the choice where a preferred alternative is nominated);
- Discussion of applicable legislation, policies and strategies, including an outline of the primary approvals required for the project to proceed, together with associated information requirements to support applications for approval;
- Responses to issues raised during stakeholder consultation;
- Descriptions of the existing environment, particularly where this is relevant to the assessment of potential effects;
- Appropriately detailed predictions of potential effects of the project (and relevant alternatives) on environmental assets and values, relative to the "no project" scenario. Where relevant, assessments should encompass direct and indirect, combined, short and long term, beneficial and adverse effects and consequences, together with an estimation of the likelihood and degree of uncertainty associated with each prediction;
- Analysis of potential for cumulative effects, both on a local and regional scale, from the proposal in combination with the existing facilities, or other projects proposed in the area or region, that may give rise to an overall significant effect on the same environmental asset or value.
- Proposed 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 management measures;
- Any proposed offset measures where avoidance and mitigation measures may not adequately address impacts on environmental values;

- Evaluation of the implications of the project and relevant alternatives for the implementation of applicable legislation and policy, as well as integrated evaluation objectives which may be refined during the EES process; and
- An outline of the environmental performance history of Jabiru as well as the proposed approach to environmental management.

A concise summary document (hard copy A4) addressing the project description, key environmental effects and proposed responses, needs to be prepared by the proponent for free distribution to interested parties. The EES summary document should include details of the EES exhibition and availability of the EES documentation.

Close consultation with DPCD 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.

More specific detail on the required scope and content of the EES is covered in the following sections.

3.2 Project Description

In general the EES should describe the proposal in sufficient detail to allow an understanding of all components and its development stages (if relevant), to assist in determining environmental effects associated with the project.

The EES should describe the following aspects of the proposal:

- The proposal's objectives and rationale;
- The location, design, methods and scheduling of the proposed mining activities, supported by suitably detailed maps, plans and drawings;
- The key physical components (facilities and infrastructure) of the proposal;
- Details of the mine operations including: transportation of ore to processing facilities; method for processing ore; methods of treatment, disposal and reuse of tailings; methods for storage, disposal and/or reuse of waste rock;
- Details of mine management including the management of: water from mining and processing activities; contaminated stormwater from disturbed areas such as the ore stockpile, processing plant and roads; and rehabilitation;
- Project implementation program including workforce, hours of operation and likely development timeline for the life of the project;
- Necessary works directly associated with the proposal, i.e. facilities, new infrastructure, accommodation, transport, rehabilitation and closure; and
- Environmental mitigation and management measures built into the project design.

3.3 Relevant Alternatives

The EES should provide descriptions and assessments of relevant alternatives.

In the first instance, it should provide an explanation of how potential alternatives for the following project components/methods were identified and evaluated:

- Tailings treatment and storage;

- Location(s) for main project elements, including processing facility, tailings storage facility (TSF) and helipad;
- Project water and electricity supply sources and infrastructure locations; and
- Accommodation location and related infrastructure.

The EES should identify the environmental effects of each alternative and explain why the preferred alternative was selected. This should also encompass any relevant design alternatives that could minimise environmental effects, including consideration of using cleared freehold land for ore processing and tailings storage.

In addition to the "no project" scenario, the EES should also consider project alternatives that achieve the project objectives in terms of developing the Wilga and Currawong deposits, whilst avoiding and minimising effects on environmental assets and values.

The depth of analysis of alternatives should be proportionate to their potential to both meet the aims of the project and provide a credible opportunity to minimise the potential adverse effects in the context of relevant evaluation objectives (see section 3.7). The analysis should further take into account applicable legislation and policy, as well as the draft evaluation objectives, set out in these Scoping Requirements for the EES.

3.4 Existing Environment

The EES should incorporate a general description of the features of the environment in the vicinity of the project and relevant alternatives.

The description of the existing environment should be sufficiently detailed to provide a firm and reliable basis for prediction of environmental effects, especially with respect to key environmental assets and values that may be affected.

The description of the existing environment should:

- Provide an overview of the regional environmental setting;
- Provide a detailed description of local environments potentially affected by the proposal, including:
  - All areas and aspects of the environment that may be affected;
  - Details of any values and uses of the environment, and any notable features;
  - An assessment of each aspect of the environment's sensitivity to change or disturbance; and
  - Good quality maps, plans, photographs, diagrams and other descriptive detail on the above;
- Land use activities within the vicinity of the project area, supported by plans and maps where applicable;
- Combine published information with sufficient new field data to provide a suitably reliable basis for impact prediction, especially with respect to key environmental issues; and
- Clearly identify the sources and accuracy of the information.

3.5 Key Environmental Issues

In accordance with section 8B(5) of the EE Act, the Minister specified that the EES for the Stockman Project is to give particular attention to the investigation of potential environmental effects of the proposed works and relevant alternatives, including associated environmental mitigation and management measures, with respect to:

- *"Hydrology, including impacts on groundwater (in relation to both mine dewatering and potential off-site extraction for operational purposes) and surface water (incorporating aspects of water quality and flow), and downstream environments;*
- *Biodiversity, including impacts on ecological values of the Alpine National Park associated with potential water supply infrastructure; aquatic environments potentially affected by hydrological change; and noise and other disturbance associated with proposed mining activities on threatened fauna listed under the* Flora and Fauna Guarantee Act 1988*;*
- *Tailings and other waste storage and management;*
- *Aboriginal cultural heritage in the vicinity of the proposed mine and ancillary infrastructure;*
- *Indirect effects on the amenity and social functioning of the local community, including in relation to community infrastructure capacity."*

3.6 Applicable Legislation, Policies and Strategies

The EES will need to identify relevant legislation, policies and strategies, and assess their specific requirements or implications for the project and the assessment of potential environmental effects through the EES studies.

This should include, but not be limited to:

- *Environment Effects Act 1978* (EE Act);
- *Mineral Resources (Sustainable Development) Act 1990* (MRSD Act)*;*
- *Environment Protection Act 1970* (EP Act) (including the principles of environment protection) and relevant State Environment Protection Policies (SEPPs);
- *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) (EPBC Act)*;*
- *National Parks Act 1975* and Regulations, as well as Alpine National Park Management Plan;
- *Planning and Environment Act 1987* (P&E Act) and Victoria Planning Provisions as well as aspects of the East Gippsland Planning Scheme including *Victoria's Native Vegetation Management – A Framework for Action (NVMF)*;
- *Catchment and Land Protection Act 1994* (C&LP Act) including the *North East Regional Catchment Strategy 2004* and the *East Gippsland Regional Catchment Strategy;*
- *Flora and Fauna Guarantee Act 1988*, including *Victoria's Biodiversity Strategy*;
- *Water Act 1989*;
- *Heritage Act 1995;*

- *Aboriginal Heritage Act 2006;*
- *Crown Land (Reserves) Act 1978;*
- *Land Act 1958;*
- *Wildlife Act 1975;*
- *Forest Act 1958;*
- *Traditional Owner Settlement Act 2010;* and
- *Native Title Act 1993*.

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.

The proponent should also take account of any relevant published guidance relating to obligations under the EPBC Act, such as policy statements and/or recovery plans for nationally listed threatened species and ecological communities.

3.7 Draft Evaluation Objectives

The EES is to provide an integrated environmental assessment of the project, in terms of its likely effects and associated risks with respect to:

- key requirements or objectives under statutory provisions and relevant policy;
- best practice techniques and technologies;
- objectives and principles of ESD and environmental protection.

This integrated assessment may be assisted by the formulation of assessment or performance criteria to address specific effects and/or risks. These criteria might usefully be linked to the following higher-order objectives for the integrated evaluation of project effects or outcomes. The following draft evaluation objectives provide a potentially suitable framework, which could be refined as the EES proceeds. They reflect the key issues identified by the Minister as well as relevant legislation and policy (see above), as well as other environmental issues identified to date.

The proposed *draft evaluation objectives* to guide the assessment of potential effects of the project are set out in the table below.

Table 1: Draft Evaluation Objectives

Draft Evaluation Objectives	Key Legislation
1. To enable an economically viable mining project that makes the best use of mineral resources.	- *MRSD Act*
2. To avoid, minimise and mitigate effects on flora and fauna species and ecological communities, in particular those listed under the *Flora and Fauna Guarantee Act 1988* and/or the *Environment Protection and Biodiversity Conservation Act 1999*, as well as to comply with the requirements for native vegetation under *Victoria's Native Vegetation Management – A Framework for Action*.	- *P&E Act* - *FFG Act* - *EPBC Act* - *Wildlife Act*
3. To protect catchment values, surface water quality, stream flow, aquatic health and groundwater values, as well as avoid impacts on any protected beneficial uses.	- *EP Act* - *Water Act* - *P&E Act* - *C&LP Act*
4. To minimise the generation of waste and greenhouse gases to the extent practicable, including the provision of appropriate long-term management and storage of tailings and any potentially harmful mining by-products.	- *EP Act* - *MRSD Act*
5. To minimise adverse effects on forestry and other land uses during construction and mining to the extent practicable, including risks associated with disturbance of potentially contaminated land, and to provide for effective long term rehabilitation of affected land.	- *MRSD Act* - *P&E Act* - *C&LP Act* - *EP Act*
6. To protect Aboriginal and non- Aboriginal cultural heritage values.	- *Aboriginal Heritage Act 2006* - *Heritage Act 1995* - *P&E Act*
7. To minimise adverse amenity effects regarding noise, air quality and vibration as well as risks to public health and safety during mine development and operation, to the extent practicable.	- *EP Act* - *P&E Act* - *MRSD Act*
8. To minimise potential adverse social and economic effects and maximise potential socio-economic benefits, including in relation to affected townships, residents, community services and infrastructure both during project operations and following closure.	- *P&E Act* - *MRSD Act*
9. To provide a transparent framework with clear accountabilities for managing environmental effects and hazards associated with the project in order to achieve acceptable environmental outcomes.	- *MRSD Act* - *P&E Act* - *EP Act* - *Aboriginal Heritage Act 2006* - *EPBC Act*
10. Overall, to enable a mining development that contributes to the economic, social and environmental objectives of the State, consistent with the principles of ecologically sustainable development and environment protection.	- *MRSD Act* - *P&E Act* - *EP Act* - *EPBC Act*

4 Assessment of Specific Environmental Effects

4.1 General Approach

The EES documentation should be prepared in the context of the principles of a systems approach and proportionality to risk, as set out in the Ministerial Guidelines.[6]

The EES must assess potential environmental effects as a result of the construction and operation of the Stockman Project. The assessment of environmental effects in the EES, at least in the case of significant risks, should include:

- Description of the existing environment;
- Potential effects on individual environmental assets, in terms of magnitude, extent and duration of change in the values of each asset;
- Relationships between different effects;
- The likelihood of effective avoidance and mitigation of potential adverse effects;
- The likelihood of residual adverse effects and associated uncertainty of predictions; and
- Implications of likely effects for implementation of statutory provisions, including policy, as well as consistency with principles and objectives of ecologically sustainable development and environmental protection.

The scope of field investigations and modelling to be conducted should be discussed with DPCD and the relevant agencies. Ultimately it is the proponent's responsibility to ensure that adequate studies are undertaken and reported, particularly where there are specific information requirements to support statutory applications.

The EES should outline the methods used and relevant assumptions in making professional or scientific judgements about environmental effects.

Specific effects to be investigated and aspects of investigation in the EES are set out below. However, the proponent will need to address any other issues that may emerge and warrant assessment during the investigations and preparation of the EES.

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[6] A *systems* approach involves the consideration of potentially affected environmental systems and interacting environmental elements and processes. This would enable potential interdependencies to be identified, helping to focus relevant investigations and identify opportunities to avoid, mitigate or manage adverse effects. An inter-disciplinary approach should be adopted where appropriate.

A *risk-based* approach should be adopted in the assessment of environmental effects so that suitable, intensive, best practice methods can be applied to accurately assess those matters that involve relatively high levels of risk of significant adverse effects and guide the design of strategies to manage these risks. Simpler or less comprehensive methods of investigation may be applied to matters that can be shown to involve lower levels of risk.

Implementation of a risk-based approach means that a staged study design may be appropriate. The initial phase of investigation should characterise environmental assets that may be affected, potential threats arising from a project, and the potential environmental consequences. This phase should enable the design of any necessary further studies proportionate to the risk to analyse the consequences and likelihood of adverse effects.

4.2 Best Use of Mineral Resources

Objective: To enable an economically viable mining project that makes the best use of mineral resources.

The EES should describe:

- The relationship between the resource, reserve and mine plan that will provide for economic mining of ore;
- Strategic placement of tailings, waste rock and other project infrastructure to prevent the sterilisation of future potentially viable mineral resources; and
- Processes to be used to recover values from mined ore and provide expected mineralogical and elemental product recovery.

The EES should also:

- Outline potential for future mining within the Mining Licence Area should further exploration be successful.
- Provide an indication of how current project planning accounts for possible future expansion of mining operations.

4.3 Biodiversity and Habitat

Objective: To avoid, minimise and mitigate effects on flora and fauna species and ecological communities, in particular those listed under the Flora and Fauna Guarantee Act 1988 *and/or the* Environment Protection and Biodiversity Conservation Act 1999*, as well as to comply with the requirements for native vegetation under* Victoria's Native Vegetation Management – A Framework for Action.

The EES should provide an assessment of any potential effects of the project (during construction and operation) on terrestrial and aquatic ecosystems, biodiversity, protected species and communities, and any other ecological values. This should take into account proposed clearance of native vegetation for the project footprint, including clearing required for power and water infrastructure, construction easements, site access by construction vehicles and for other temporary works areas.

Specifically, the EES should:

- Identify any potential direct or indirect effects the project may have on ecological communities or species of conservation significance (including any species or communities listed under the FFG Act and EPBC Act) and biodiversity values of affected areas. Assessment should be informed by historical site data, relevant databases, literature and appropriate seasonal and targeted surveys and/or modelling. Evidence is to be provided to demonstrate that adequate information has been compiled on the potential presence and risks for threatened species and communities, based on likelihood and consequence of potential impacts. Relevant indirect effects may include effects from project air emissions, increased dust, noise and blasting, as well as from potential weed invasion and vermin occurrence. In the absence of positive identification of listed protected species and communities that are likely to be associated with habitat to be impacted, a precautionary approach should be taken;
- Identify any potential effects of the project on other ecological and conservation values, including areas of scientific or other conservation significance;

- Identify measures to avoid, mitigate and manage biodiversity impacts in particular, with respect to native vegetation, habitat, listed threatened species and communities as well as ecological values of the State Forest;
- Assess the relevance to the project of Potentially Threatening Processes, as listed under the FFG Act or EPBC Act, and outline mitigation approaches;
- Address any obligations arising from *Victorian Biodiversity Strategy* and the NVMF. In particular, the EES should address how vegetation removal has been avoided and minimised in accordance with the NVMF, as well as identifying suitable offsets options for unavoidable clearing of native vegetation;
- Assess the effect of linear infrastructure development and easements on terrestrial and aquatic habitats and wildlife corridors, including the risk of increasing the presence of weeds and pests;
- Assess residual effects of the project on ecological and conservation values; and
- Evaluate implications of residual effects for policies and principles.

The EES should also include a separate assessment chapter addressing effects on and avoidance, mitigation and management measures for matters of national environmental significance under the EPBC Act. This chapter should include, but not be limited to, information on the following:

- The critically endangered Alpine Sphagnum Bogs and Associated Fens ecological community, including its occurrence both within and surrounding the project area, as well as potential impacts and offsets;
- The habitat quality of relevant waterways in the Tambo, Mitta Mitta and Upper Murray River catchments for EPBC-listed frog and fish species, including the Australian Grayling (*Prototroctes maraena*) and Giant Burrowing Frog (*Helieoporus australiacus*);
- A description of an offset strategy in the context of *Draft Policy Statement 4.1: Use of environmental offsets* under the *Environment Protection and Biodiversity Conservation Act 1999*. Outline within the offset strategy, a plan for ongoing management arrangements for any offsets proposed as part of any compensatory measures. Such a plan should include relevant details on the tenure and ownership of offsets.

4.4 Water and Catchment

Objective: To protect catchment values, surface water quality, stream flow, aquatic health and groundwater values, as well as avoid impacts on protected beneficial uses.

Surface Water

The EES should assess potential effects related to surface drainage, water quality, hydrology, natural springs, river health and wetland environments.

Specifically, the EES should:

- Characterise surface water environments in the project area in terms of water quality, hydrology (including seasonal, storm event variation and climate variation), ecology and protected beneficial uses in the context of *State Environment Protection Policy (SEPP) (Waters of Victoria)*;

- Identify any potential effects that the project construction and operation activities may have on surface water environments, including effects on hydrology, water quality, aquatic and riparian ecology and beneficial uses, as well as any potential effects from the project's use of surface water for water supply. This should include assessment of any potential for short- and long-term effects of the project on relevant waterways in the Tambo, Mitta Mitta and Upper Murray River catchments;
- Assess risks of contaminated discharges from the mine affecting surface water quality and beneficial uses;
- Identify measures to avoid, mitigate and manage any potential effects including any relevant design features of the project components, water treatment and discharge measures and any proposed measures to rehabilitate affected waterways; and
- Identify residual short and long term effects of the project on surface waterways downstream and in the project area.

The EES will need to address all relevant requirements for managing discharges and protecting water quality and beneficial uses in the context of the *SEPP (Waters of Victoria)* and other water-related policies and strategies. It should have regard to the requirements of the *Water Act 1989* and the relevant catchment management strategies and plans.

Groundwater

The EES should:

- Characterise the groundwater in the project area in terms of aquifer resources, quality and beneficial uses;
- Identify potential effects of mining construction and operation activities (including seepage from water storages and mine dewatering) on groundwater and its beneficial uses in and around the project area;
- Identify measures to avoid, mitigate and manage any potential effects; and
- Identify residual effects of project construction and operation activities on groundwater and current and potential beneficial uses in and around the project area in the short and long term.

Where relevant, investigations should take account of the requirements of *SEPP (Groundwaters of Victoria).*

Water Use

The EES should:

- Identify the water supply requirements of mining and processing operations and available sources of water supply, and assess the potential impacts of usage on beneficial uses;
- Provide a water balance assessment for all water managed by the project including volumes and quality to meet project needs, water inputs and outputs, direct rainfall/runoff, potential harvesting from tailings storage facility (if any), processing requirements and additional water supply requirements;
- Identify site design and management measures to maximise water reuse, manage site discharges (including treatment if required), transport water to and from project components, control site run-off (including seasonal variations, storm events and under different operating conditions); and

- Identify and assess measures to manage risks of uncontrolled water discharge from project facilities.

4.5 Mine Waste, Emissions and Rehabilitation

Soils, Geochemistry and Mine Materials

Objective: To minimise the generation of waste and greenhouse gases to the extent practicable, including the provision of appropriate long-term management and storage of tailings and any potentially harmful mining by-products.

In relation to soils, the EES should:

- Characterise soil systems within the project area, including their association with vegetation types;
- Identify potential effects of construction and operation activities on soil systems including: stockpiling topsoil and subsoil; surface soil stability; erosion; the exposure, management and disposal of any potentially problematic soils (both natural and anthropogenic); and potential implications for site rehabilitation;
- Identify measures to avoid, mitigate and manage any potential effects on soil systems and maximise potential for successful rehabilitation; and
- Identify residual effects on soil systems and their potential implications for site rehabilitation.

In relation to geology and mine materials, the EES should also:

- Characterise the geology and geochemistry of the project area and the geochemistry of waste rock material including estimated volumes and any acid generating potential;
- Characterise the geochemistry of tailings, waste rock, ore and concentrates to be generated by the project including volume, acid generating potential and chemical composition;
- Outline proposed measures for the treatment and long term management of mine materials in the project area;
- Identify potential short and long term risks associated with the treatment, transport and disposal of mine materials including potential for segregation of tailings and potential for generating problematic leachates or seepage;
- Identify measures to avoid, mitigate and manage any potential adverse effects; and
- Identify residual short or long term risks associated with the treatment, transport and disposal of waste rock and tailings in the project area, including potential release of metals or other environmental contaminants from the waste rock and tailings, and identify any ongoing management requirements or limitations to future land use activity.

Where relevant, investigations and management measures should take account of the requirements of *SEPP (Prevention and Management of Contaminated Land)* and the *Environmental Guidelines for Major Construction Sites* (EPA Publication 480).

Greenhouse Gases and Energy Consumption

The EES should:

- Estimate the energy use and greenhouse gas (GHG) emissions resulting from the construction and operation of the mine, including from direct sources (e.g. transport, acid neutralisation by local carbonate rocks and land clearance) and indirect sources produced elsewhere during generation of consumables (e.g. electricity and lime);
- Identify the potential effects of the mine on GHG emissions and energy consumption;
- Provide recommendations on potential energy minimisation and GHG minimisation, for both direct (at site) and indirect (transportation) sources, including renewable power provision options and an estimate of resulting emission reductions; and
- Identify residual effects of the mine's GHG emissions and energy consumption.

Any relevant requirements of *SEPP (Air Quality Management)* and the *Protocol for Environmental Management - Greenhouse Gas Emissions and Energy Efficiency in Industry* (EPA Publication 824) will also need to be discussed.

Rehabilitation and Closure

The EES should:

- Identify the proposed end use objectives and post closure landforms for the project area;
- Describe how these end use objectives will be achieved including disposal of equipment and mine materials and soil and water management;
- Describe the rehabilitation methods to be investigated (or considered on the basis of previous research), a discussion of the suitability of these methods, and a program for implementing the methods;
- Describe prpoposed rehabilitation performance standards and monitoring provisions including required species and diversity;
- Identify post closure monitoring and management arrangements for the project area, including for water and vegetation;
- Identify the proposed means of resourcing and financing post-closure activities; and
- Plan and cross-section views of the project area post closure.

4.6 Land Use

Objective: To minimise adverse effects on forestry and other land uses during construction and mining, including risks associated with disturbance of potentially contaminated land, to the extent practicable, and to provide for effective long term rehabilitation of affected land.

The EES should:

- Characterise the project area in terms of current land use (including public land use), as well as planning scheme provisions and public infrastructure that supports current land uses in the project area;
- Identify potential short- and long-term effects of the project on existing and potential future land uses and public infrastructure. This should include an identification of key affected stakeholders and potential implications for future land uses and development;
- Identify proposed measures to avoid, mitigate and manage any potential adverse effects;
- Identify residual effects of project on existing and potential future land uses; and

- Evaluate implications of likely effects on land use in the context of relevant planning scheme provisions.

To ensure efficiency of this process, the EES should address all requirements for any relevant planning scheme amendments or permits.

4.7 Cultural Heritage

Objective: To protect Aboriginal and non- Aboriginal cultural heritage values.

Aboriginal Cultural Heritage

The EES should:

- Provide a background on pre-contact and contemporary activities by Aboriginal people in the project area;
- Clearly document consultation undertaken to gain the knowledge, values and views of local Aboriginal communities (including traditional owners and relevant Registered Aboriginal Parties);
- Identify any cultural heritage sites located in the project area either prior to or during the EES process and describe both the scientific and cultural significance of each site. The investigation should be undertaken in consultation with Aboriginal Affairs Victoria and relevant Aboriginal groups and in accordance with relevant legislation, particularly the *Aboriginal Heritage Act 2006*;
- Discuss the potential for unknown sites in the area, highlighting any areas of cultural heritage sensitivity;
- Assess potential effects of the proposed development on known significant sites and potential unknown sites;
- Identify proposed measures to avoid, mitigate or manage potential effects on known and unknown sites of scientific or cultural significance; and
- Identify residual effects of the project on Aboriginal cultural heritage and values in the project area.

Non-Aboriginal Cultural Heritage

The EES should:

- Describe the historic background of non-Aboriginal activities in the project area;
- Provide an inventory of any non-Aboriginal heritage places of significance (to be assessed in terms of place types, periods and heritage values) in the project area. Survey work may be required to ensure that the inventory provides a thorough listing of all non-Aboriginal heritage places in the project area;
- Assess potential effects of the proposed development on known significant sites and potential unknown sites;
- Identify proposed measures to avoid, mitigate or manage potential effects on known and unknown sites of significance. Include details of any proposed measures such as site protection measures, site recording and documentation, and excavation procedures; and

- Identify residual effects of the project on non-Aboriginal heritage and values in the project area.

The EES will need to address relevant requirements of the East Gippsland Shire planning scheme and the *Heritage Act 1995.*

4.8 Amenity

Objective: To minimise adverse amenity effects regarding noise, air quality and vibration as well as risks to public health and safety to the extent practicable during mine development and operation.

Air Quality

The EES should:

- Characterise the existing air quality environment and beneficial uses in the project area including potentially affected residences and recreational park/forest users;
- Identify potential effects of project construction and operational activities on beneficial uses, with respect to related dust and air emissions;
- Identify proposed measures to avoid, mitigate and manage any potential adverse effects including any relevant techniques or design measures to be employed during construction or operation; and
- Identify residual effects associated with the project on air quality and beneficial uses.

The EES will need to address any relevant requirements of *SEPP (Air Quality Management)* and the EPA's *Protocol for Environmental Management, Mining and Extractive Industries.*

Noise and Vibration

The EES should:

- Characterise the existing noise environment and beneficial uses in the project area including potentially affected residences and recreational forest users;
- Identify potential effects of project construction and operation activities including blasting on beneficial uses through an increase in noise and/or vibrations;
- Identify measures to avoid, mitigate and manage any potential noise or vibration effects on beneficial uses and to ensure the project will comply with applicable noise policy; and
- Identify residual effects of the project from noise and blasting for beneficial uses.

Visual

The EES should:

- Characterise the existing viewshed and sensitive receptors in the project area;
- Identify the potential effects of the Stockman Project on the visual amenity of identified sensitive receptors. This assessment should take into account relevant findings of the assessment of existing and future land use, as well as proposed night lighting and post-closure landforms in the context of the existing viewshed;
- Identify measures to minimise and mitigate visual amenity effects; and

- Identify residual effects on the visual amenity of beneficial uses.

4.9 Socio-Economic Effects

Objective: To minimise potential adverse social and economic effects and maximise potential socio-economic benefits, including in relation to affected townships, residents, community services and infrastructure.

Social

The EES should:

- Characterise the existing community (including landholders, recreational users, nearby residents, nearby towns and associated communities and interest groups) within the project area, including the distribution of residents, their demographic and social characteristics, , key employment industries, community infrastructure and services, attitudes to the project, patterns of community interaction and social foci, and places with particular cultural, recreational or aesthetic values;
- Estimate likely additions to the populations of Benambra and Omeo due to the project and the likely demographic characteristics of the additional population;
- Describe the proposed recruitment policy and accommodation arrangements;
- Identify potential positive and negative effects on residents and communities near the project area including those related to amenity, employment opportunities, community cohesion housing availability and affordability. This assessment should draw on interviews with potentially affected groups, be undertaken by a social impact specialist and should include all stages of project life and of existing and future land uses;
- Identify proposed avoidance, mitigation and management measures to reduce potential adverse effects, address community concerns and optimise social benefits; and
- Identify residual effects on local communities.

Economic

The EES should:

- Characterise the existing local and regional economy in terms of key income and employment generating activities and outputs;
- Identify the magnitude and distribution of likely effects of the project on relevant sectors of the state and regional economies, including tourism and industry and the employment implications of those effects;
- Estimate direct and indirect jobs created by construction and operation of the Stockman Project and the extent to which supplies and services would be sourced locally;
- Outline proposed funding arrangements and economic impacts of any upgrades of public infrastructure or services necessary for the project to proceed;
- Identify potential short- and long-term effects on the local and regional economies including effects associated with potential changes in income, demographics, changes to supply and demand for products and services, including land and housing, and potential for localised price increases. This assessment should draw on appropriate databases,

surveys and predictive techniques and take account of economic impacts at all stages of project life;

- Identify proposed measures to maximise the realisation of economic benefits and reduce adverse economic effects of the project; and
- Identify residual significant economic costs and benefits of the project.

Financial implications, in terms of influences on specific business enterprises or compensation issues, will not need to be addressed as part of the EES.

Roads, Traffic and Transport

The EES should:

- Describe proposed transport routes and infrastructure;
- Characterise the current traffic conditions (including site access) and infrastructure (including forest roads) and road users in terms of capacity, travel times, safety and accessibility;
- Identify project vehicle types, numbers and routes;
- Identify potential effects of construction and operations on traffic movements, in particular the impact of heavy vehicle movements and the ability of existing roads to accommodate these potential effects;
- Identify potential effects of installing mine infrastructure along or across roads;
- Identify any other transport infrastructure upgrades needed for mine operations (e.g., rail or port);
- Identify traffic management and safety principles for the construction and operation phase, covering (where appropriate) road safety, temporary or permanent road diversions, different traffic routes, hours of use, traffic speeds, types of vehicles and emergency services provisions. The EES should identify which agencies or stakeholders will need to be consulted to resolve traffic management responsibilities; and
- Identify residual effects of project construction and operations on existing traffic conditions and infrastructure and road users.

The EES should include an assessment of the consistency of the final project design with the objectives of relevant Victorian transport polices.

4.10 Environmental Management Framework

Objective: To provide a transparent framework with clear accountabilities for managing environmental effects and hazards associated with the project in order to achieve acceptable environmental outcomes.

The EES should describe the environmental management framework that is proposed to apply to the project, including the proponent's Environmental Management System (EMS), any requirements for relevant Environmental Management Plans (EMP) as well as environmental monitoring and performance requirements for the proposed works. The framework should cover:

- The statutory approvals and consents that will influence EMPs and associated measures.

- Any Environmental Management System to be adopted (e.g. based on ISO 14001), such that organisational responsibilities and accountabilities are clearly identified.
- Proposed environmental objectives and indicators to guide environmental monitoring and management actions.
- An outline of one or more EMPs for the construction, operational and decommissioning phases (including rehabilitation).
- The proposed program for evaluating environmental outcomes, reviewing and revising EMPs, as well as the auditing and reporting of performance.

Environmental and Management Plan

The EES should include an outline of an overarching EMP that addresses the following:

- Environmental performance standards and management measures (in summary form) proposed in the EES for each predicted environmental issue or impact, including identification of performance indicators and objectives to guide environmental monitoring and management actions.
- A table of environmental management commitments proposed in the EES to address specific issues.
- In-principle feasibility of compliance with statutory requirements and environmental commitments.
- Notification procedures for any exceedances and/or incidents.
- An approach for evaluating environmental outcomes relative to EES predictions.

Environmental Monitoring Program

- A proposed monitoring program including parameters to be measured, rationale, approximate measurement locations (e.g. upstream) and approximate measurement frequencies.

Risk Management

The EES should identify any risk to public safety and ecological values, and propose measures to minimise risks and respond to accidents or emergencies. Hazards might include: fire, hazardous or acid-generating materials, contaminant emissions to air or spills to land or water, mine collapse, dam failure, pipeline failure, traffic accident, use of explosives and storm events.

4.11 Ecologically Sustainable Mining

Objective: Overall, to enable a mining development that contributes to the economic, social and environmental objectives of the State, consistent with the principles of ecologically sustainable development and environment protection.

To provide an integrated assessment of the project, drawing on the findings of specific assessments set out above, the EES should address the economic, social and environmental implications of the Stockman Project either proceeding or not in the context of key legislation

and policy as well as the principles of ecologically sustainable development and environment protection.

4.12 EES Consultation and Communications

In addition to the consultation plan which the proponent is to prepare and implement during the EES process, the EES should:

- Describe consultation activities undertaken during the preparation of the EES;
- Outline the outcomes of consultation undertaken during the EES process, the issues and suggestions raised by stakeholders or members of the public (by theme and source, rather than individually) and the response made by the proponent in the context of either the EES studies or the refined proposal; and
- Outline a program for community consultation and communications during the construction, operation and closure of the mine, including opportunities for stakeholders to engage with the proponent and address or respond to issues.