



FINGERBOARDS MINERALS SANDS PROJECT

RISK MANAGEMENT PLAN (DRAFT)

under the Mineral Resources (Sustainable Development) (Mineral Industries) Regulations 2019

QUALITY INFORMATION

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REVISION HISTORY

Revision	Revision Date	Prepared by	Checked	
0	13/3/2019	LC	ST	Draft issued for TRG review
1	29/07/2019	LC	ST	Revisions to address TRG comments to 14 June 2019
2	13/12/2019	LC	ST	Further revisions to align with new ERR guidelines (Sept 2019), EES risk assessment and additional TRG comments from 15 June 2019 to 31 October 2019.
3	17/05/2020	LC	VH	Revisions to align with EES
<u>4</u>	<u>24/02/2021</u>	<u>LC</u>	<u>LF</u>	<u>Revisions to reflect changed tailings strategy and updated water balance and correct editorial errors.</u>

ACRONYMS AND ABBREVIATIONS

Acronym / abbreviation	Meaning
% w/w	Percentage weight of solute in a total weight of solution after mixing
°C	Degrees Celsius
AEP	Annual Exceedance Probability – the probability that a given rainfall total accumulated over a given duration will be exceeded in any one year
AHD	Australian Height Datum
ANCOLD	Australian National Committee on Large Dams
APZ	Asset Protection Zone
BAL	Bushfire Attack Level
BOM	Bureau of Meteorology
CFA	Country Fire Authority
CRG	Community Reference Group
DPI	Department of Primary Industries
EC	Electrical conductivity
EE Act	<i>Environment Effects Act 1978 (Vic)</i>
EES	Environment Effects Statement
EGSC	East Gippsland Shire Council
EMS	Environmental management system
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (C'wlth)</i>
EQO	Environmental Quality Objective
ERC	Environmental Review Committee
EVC	Ecological Vegetation Community – native vegetation types used for biodiversity planning and conservation assessment at landscape, regional and broader scales in Victoria
GLpa	Gigalitres per annum
H:V	Horizontal to vertical ratio
ha	Hectare
HDPE	High density polyethylene
kg	Kilogram
kL	Kilolitre

Acronym / abbreviation	Meaning
km	Kilometre
kt	Kilotonne
kV	Kilovolt(s)
L/a	Litres per year
L/s	Litres per second
m	Metre(s)
m ³ /a	Cubic metres per annum
m ³ /h	Cubic metres per hour
mAHD	Metres above Australian Height Datum
ML	Megalitre(s)
MOU	Memorandum of Understanding
MRSD Act	<i>Mineral Resources (Sustainable Development) Act 1990 (Vic)</i>
Mtpa	Million tonnes per annum
MVA	Megavolt ampere(s)
MW	Megawatt(s)
NHMRC	National Health and Medical Research Council
NORM	Naturally occurring radioactive material
Pa	Pascal(s)
RO	Reverse osmosis – a commonly-used method of water purification
ROM	Run of mine
ROM pad	Run of mine pad – storage area for mined ore awaiting crushing
t	Tonne(s)
TN	Total nitrogen
TOC	Total organic carbon
TP	Total phosphorus
tpa	Tonnes per annum
tph	Tonnes per hour
TSF	Tailings storage facility

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Attachments

- Attachment A – Risk assessment tables
- Attachment B – Risk controls
- Attachment C – Risk treatment plans

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1 INTRODUCTION

1.1 About this Risk Management Plan

Kalbar Operations Pty Ltd (Kalbar) is currently preparing an Environment Effects Statement (EES) in accordance with a decision by the Minister for Planning on 18 December 2016 that the proposed Fingerboards Mineral Sands Project will require assessment under the *Environment Effects Act 1978*. This draft Risk Management Plan is part of a draft work plan that will be exhibited, together with the Fingerboards EES, as recommended in the EES scoping requirements issued by the Victorian government for the Fingerboards Minerals Sands Project ('the project') in March 2018. The draft work plan addresses regulatory requirements set out in Section 45 of the Mineral Resources (Sustainable Development) (Mineral Industries) Regulations 2019 and has been prepared in accordance with the Earth Resources Regulation (ERR) *Guideline for Mining Projects: Preparation of Work Plans and Work Plan Variations* (September 2019). A checklist of compliance against Section 45 requirements is provided in Appendix A of the Fingerboards work plan.

Preparation of a work plan is a requirement of the *Mineral Resources (Sustainable Development) Act 1990* (Vic) (MRSDA) for those intending to do work under a mining licence. The work plan:

- describes the mining and related activities proposed to be carried by Kalbar Resources Ltd in implementing its Fingerboards mineral sands project
- provides an overview of technical aspects of the project
- summarises the key technical, safety, environmental and social risks of implementing the project
- identifies potential social and environmental impacts of the project and how these impacts would be avoided or managed
- presents conceptual and technical information on mine rehabilitation

If approved, the work plan will serve as one of the primary instruments by which the Fingerboards project would be regulated under the MRSDA. The information presented in the work plan will also inform the calculation of the rehabilitation bond applied through the project's proposed mining licence.

This risk management plan is a mandatory component of the Fingerboards work plan. It provides a systematic description of project hazards and risks and describes the controls proposed by Kalbar to avoid or mitigate the risk of unacceptable environmental or social outcomes. ERR guidelines specify that the following elements must be included in a risk management plan provided as part of a work plan:

- a summary of the project, including assumptions and sensitive receptors
- a description of the risk assessment process
- a risk register
- risk treatment plan(s)
- details of personnel accountable for the implementation, management and review of the risk management plan.

The risk management plan has been developed from the relevant findings of the EES, in particular the mitigation measures developed as part of the ~~Environmental~~ Environmental Management Framework. A common numbering system has been used between the two submissions.

A series of risk treatment plans support the risk management plan. The scope and content of these plans is driven by the key environmental risks and impacts of the project identified through the EES, regulatory requirements and applicable policies and guidelines. The following draft risk treatment plans are provided as attachments ~~of the work plan~~:

- Airborne and deposited dust;
- Noise;
- Biodiversity; and
- Water.

1.2 Project summary

The proposed mining licence area is equivalent to the project area described in the EES and is located approximately 25 km west northwest of Bairnsdale Victoria (Figure 1-1).

Kalbar plans to mine mineral sands containing zircon, rutile, ilmenite and rare-earth bearing minerals (monazite and xenotime) from within the 'Glenaladale Deposit'.

The project is a greenfields mining project, meaning that no mining or mineral processing has previously been conducted on the land where mining activities will take place. Mining would be conducted by means of a shallow, open cut mining operation. No mine dewatering is likely to be required. Areas disturbed by mining would be rehabilitated progressively.

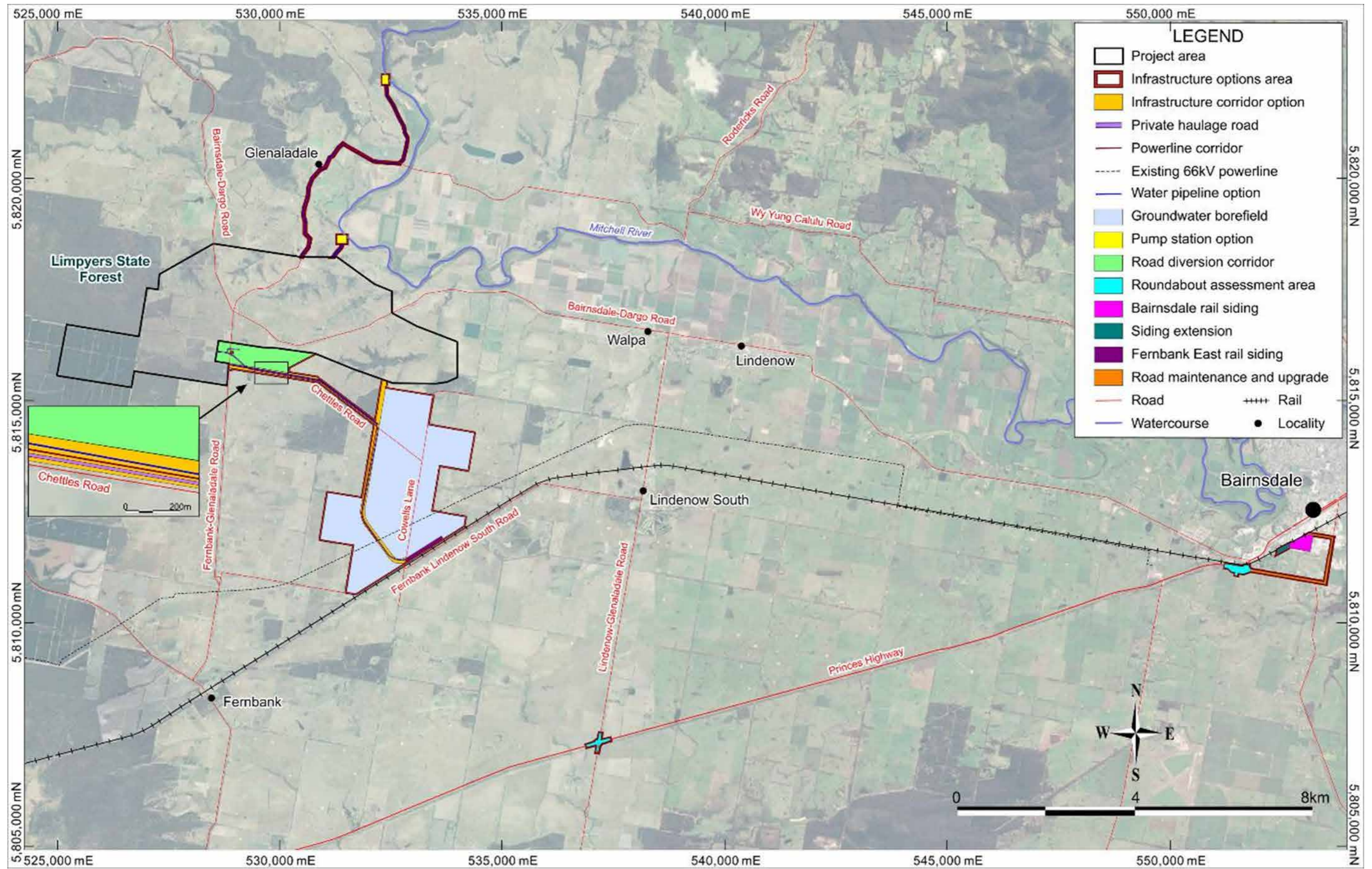
Key operational characteristics of the Fingerboards project are summarised in Table 1-1. Indicative mine layout figures are provided in Section 4 of the work plan. Products from the Fingerboards Project feed into three distinct industries:

- zircon industry
- titanium feedstock industry
- rare earth feedstock industry

The mineralized sand mine at Fingerboards would be processed on site to produce a heavy mineral concentrate, which would be exported to overseas customers for further processing. Kalbar will produce and sell two kinds of mineral concentrate – a non-magnetic ('Non-Mag') concentrate, which is zircon-rich, with minor amounts of rutile and rare-earth minerals and a magnetic concentrate, which is ilmenite-rich, with minor amounts of rare-earth minerals. About 60% of the concentrate would be non-magnetic concentrate and the rest would be magnetic concentrate. Approximately 8 million tonnes (Mt) of heavy mineral concentrate (HMC) would be produced from 170 Mt of ore over a 17 to 20 year period. Mining and mineral processing would occur on a continuous basis, 24 hours per day, 365 days per year.

Kalbar aims to export about 580,000 t per year of heavy mineral concentrate (HMC) from the Fingerboards Project. ~~Kalbar aims to export about 580,000 t per year of heavy mineral concentrate (HMC) from the Fingerboards Project. Initially, the concentrate will be transported to Port Anthony or the adjacent Barry Beach Marine Terminal (BBMT) by bulk road transport, or by containerised rail~~

~~transport from a siding in Maryvale to the Port of Melbourne. Once the rail bridge at Stratford on the Avon River has been upgraded, Kalbar will have the options of using rail transport from a siding in Bairnsdale, or from a purpose-built siding south of the proposed mining licence area. Proposed product transport routes are shown in Figure 1-2. The rail bridge across the Avon River in Stratford was replaced in December 2020 which now enables the use of freight rail east of Stratford. Accordingly, Kalbar plans to build a purpose-built rail siding close to the project area at Fernbank East and to use a private haulage road within the infrastructure corridor to access this siding from the project area. Concentrate will be transported from the rail siding to the Port of Melbourne for shipment to customers.~~



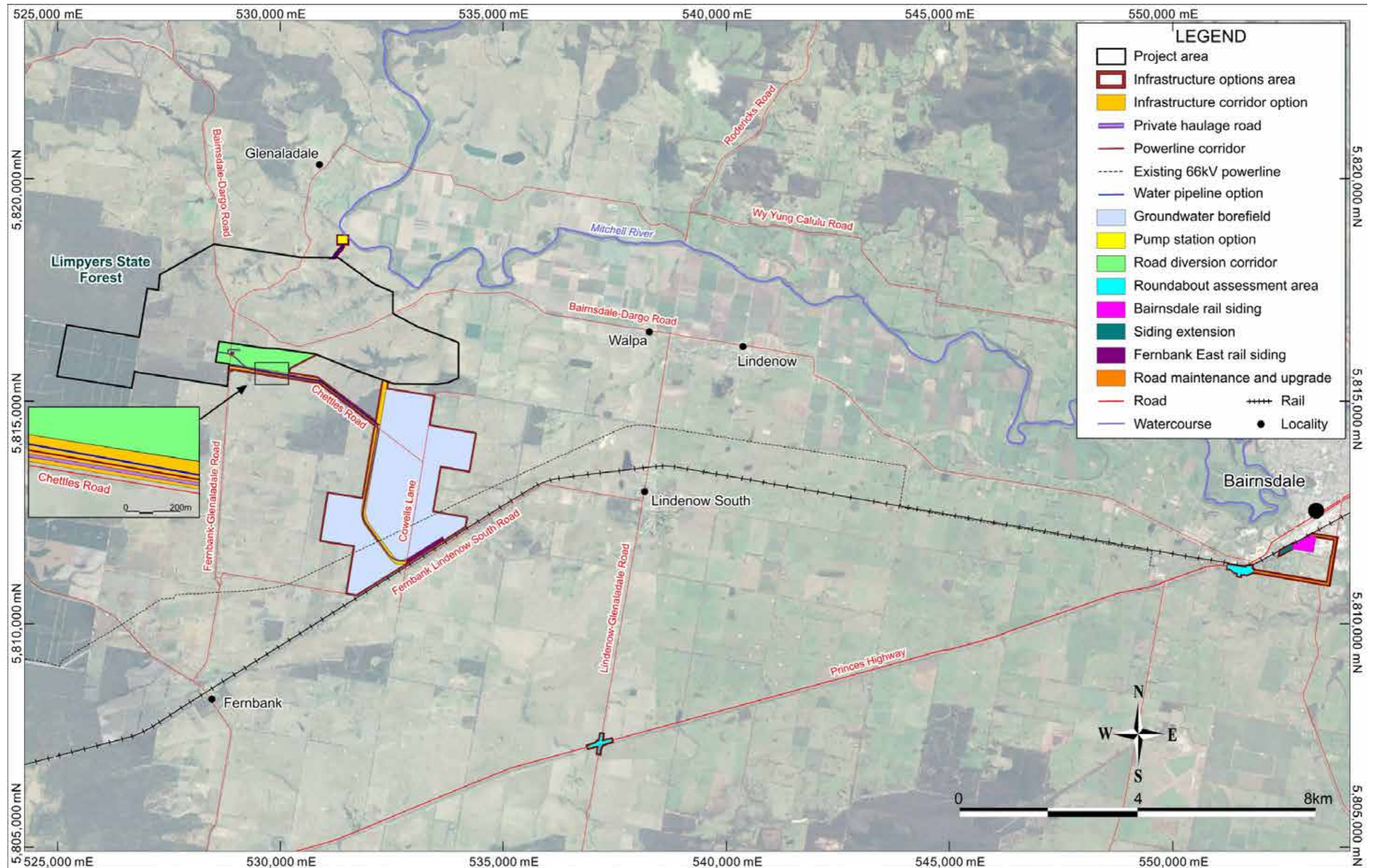


Figure 1-1: Location of Fingerboards proposed mining licence area (project area)

Table 1-1: Key characteristics of the Fingerboards Mineral Sands Project

Item	Description
Project location	East Gippsland Shire, Victoria. The associated infrastructure extends to the Wellington Shire.
Project area	The proposed mining licence required for the Fingerboards project extends over an area of approximately 1,675 ha. About 1,350 ha of this area will be mined or disturbed by mining-related activities. A summary of land parcels lying wholly or partly within the proposed mining licence area is provided in Table 1-2 below. The mining leases required for the Fingerboards project extend over an area of approximately 1,675 ha. About 1,350 ha of this area will be mined or disturbed by mining-related activities.
Mining method	Open cut dry mining operation using conventional earthmoving equipment. Conventional earthmoving equipment will include scrapers, excavators, conveyors and trucks and tractor scoops for topsoil removal. Mine dewatering will not be required. The mine void location will move over the life of the project. The void will be backfilled and rehabilitated progressively.
Mining production and feed rate	<p>An estimated 170 Mt of ore will be extracted to produce approximately 8 Mt of heavy mineral concentrate (HMC). Following construction and commissioning, production will ramp up gradually, initially commencing at 500 tph.</p> <p>At peak production, two mining units, operating in different areas of the project area, will be used to extract the ore. The second mining unit plant (MUP) is expected to start operating about 12 months after mine start up, but this could be delayed, depending upon market conditions. The expected maximum combined feed-rate of the ore to the two MUPs is 1,500 tph. Each MUP will have a capacity to treat up to 1,000 tph.</p> <p>Ore may be stockpiled and blended to provide suitable feed for the MUPs and ultimately the wet concentrator plant (WCP). This approach aims to manage levels of clay and economic minerals in the feed.</p>
Mine life	Up to 20 years (including up to a two-year construction and commissioning period).
Processing methods	<p>Ore processing will involve:</p> <ul style="list-style-type: none"> • Screening and slurring of ore at the MUPs. • Pumping of ore slurry to WCP. • Hydrocycloning of the ore to remove the fines tailings. • <u>Dewatering of fines tailings by means of centrifugation</u> • Processing of slurried ore by wet gravity to produce HMC. • Wet magnetic processing of the HMC in the WCP to produce magnetic (mainly ilmenite) and non-magnetic (mainly zircon) concentrates
Processing rate	The ore processing plant will have the capacity to treat 1,500 tph of slurried ore at the WCP at peak production, which equates to 12 Mtpa of ore.
Operating hours	24 hours a day, seven days a week, 365 days a year.
Mine life	Up to 20 years (including up to a two-year construction and commissioning period).

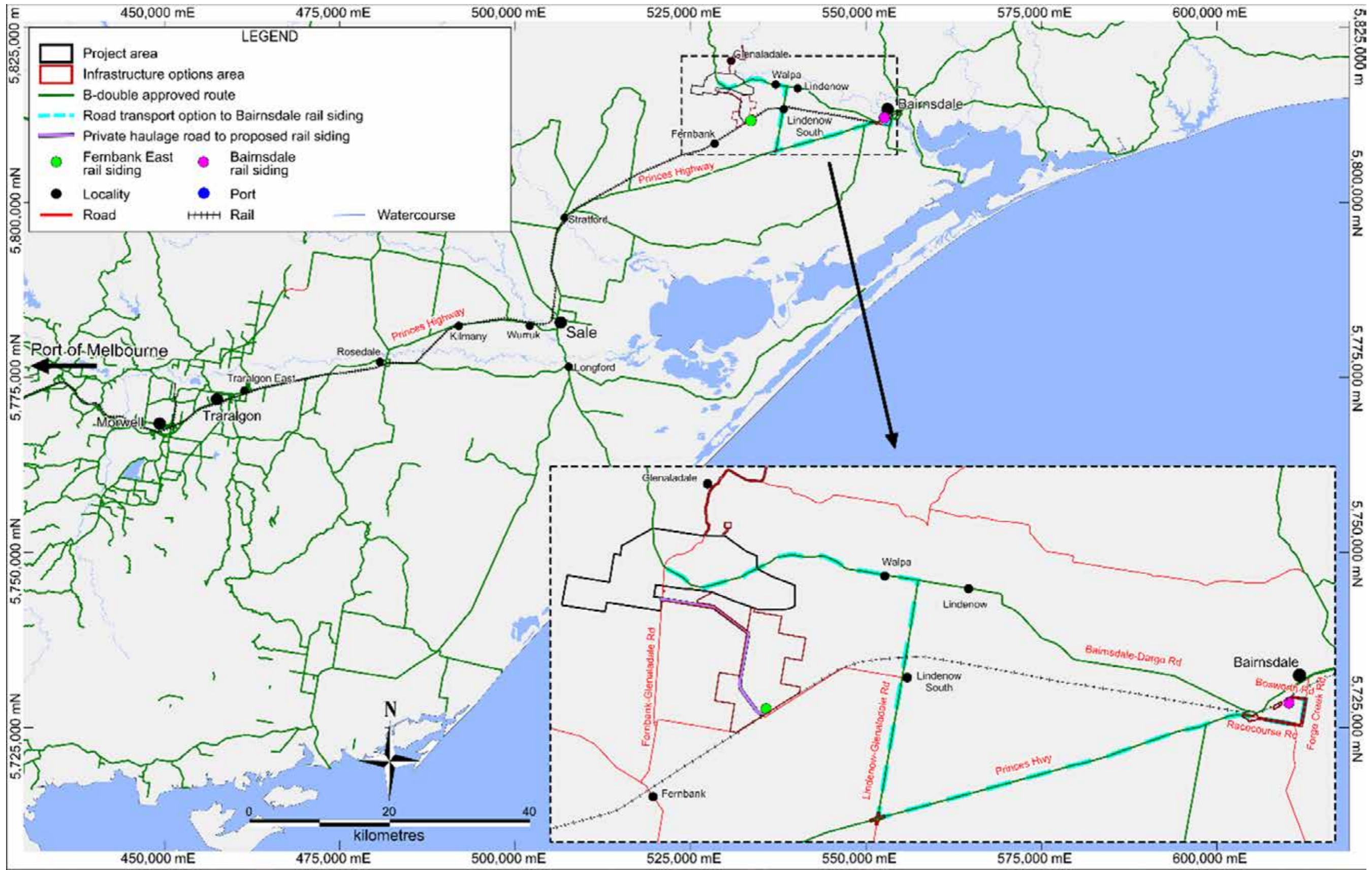


Figure 1-2: B-double transport route options to rail sidings and ports of exports

2 SENSITIVE RECEPTORS

The receptors considered during the risk assessment included:

- human receptors;
- other non-human biota;
- environmental and social values;
- beneficial uses.

Two residences exist within the project boundary (shown as 'R3' and 'R4' on Figure 2-1:), both of which are owned by Kalbar. There are ~~eleven~~ twelve residences and four vacant small holdings which are considered as house lots outside the project boundary area, but within 1 km of the proposed mining licence boundary (Figure 2-1). One of these se residential properties ('R2') is owned by Kalbar. No schools, hospitals, churches or other non-residential sensitive receptors (human) are located within a 5 km radius of the project boundary. Vegetable growing areas on the Lindenow Flats, northeast of the proposed mining licence (Figure 2-2), have been identified as a sensitive receptor.

A search of registered groundwater bores within a 10 km radius of the Fingerboards site identified 270 bores listed as either functioning, proposed, or unknown (Figure 2-3). Most bores (146) were registered for stock and domestic use. One bore (ID. 85910) lies within the proposed mining licence area, to the southeast of the intersection of Bairnsdale-Dargo Road and Fernbank-Glenaladale Road. This stock and domestic bore is 107 m deep and is likely to be sourcing groundwater from the Latrobe Valley Group aquifer. The two closest bores outside the licence area (bore IDs 85900 and 85899) are located within a few hundred metres of the northern and eastern project boundary and are likely to screen the shallow Coongulmerang Formation at depths between 8 and 11 m bgs.

One registered Aboriginal cultural heritage place is situated within the mining lease: it is a scarred tree consisting of a dead Forest Red Gum with a single scar. Baseline searches of the Fingerboards area in 2017 and 2018 failed to discover this site and it is presumed to have been destroyed during a bushfire that swept through the area in 2014. A number of reserves and conservations areas lie within a nominal 10 km radius of the Fingerboards mining lease and several gazetted roads cross the proposed mining licence. A telecommunications tower sits in close proximity to the southern boundary of the project.

Table 2-1: Sensitive receptors

Receptor	To project area (km)	To mining activity (km)	Description
<u>R01</u>	<u>0.14</u>	<u>0.76</u>	<u>Residence</u>
<u>R02</u>	<u>0.16</u>	<u>0.18</u>	<u>Residence (owned by Kalbar)</u>
<u>R03</u>	<u>0.00</u>	<u>0.00</u>	<u>Residence (owned by Kalbar)</u>
<u>R04</u>	<u>0.00</u>	<u>0.12</u>	<u>Residence (owned by Kalbar)</u>
<u>R05</u>	<u>0.26</u>	<u>0.36</u>	<u>Residence</u>
<u>R06</u>	<u>0.58</u>	<u>0.84</u>	<u>Residence</u>
<u>R07</u>	<u>0.22</u>	<u>0.32</u>	<u>Residence</u>
<u>R08</u>	<u>1.70</u>	<u>1.94</u>	<u>Residence</u>
<u>R09</u>	<u>1.92</u>	<u>2.06</u>	<u>Residence</u>
<u>R15</u>	<u>0.27</u>	<u>0.53</u>	<u>Residence</u>
<u>R16</u>	<u>0.94</u>	<u>1.13</u>	<u>Residence</u>
<u>R17</u>	<u>1.08</u>	<u>2.04</u>	<u>Residence</u>
<u>R18</u>	<u>1.38</u>	<u>2.31</u>	<u>Residence</u>
<u>R19</u>	<u>1.89</u>	<u>1.92</u>	<u>Residence</u>
<u>R20</u>	<u>1.21</u>	<u>1.52</u>	<u>Residence</u>
<u>R21</u>	<u>0.95</u>	<u>1.11</u>	<u>Residence</u>
<u>R22</u>	<u>1.65</u>	<u>1.84</u>	<u>Residence</u>
<u>R25</u>	<u>1.39</u>	<u>1.64</u>	<u>Residence</u>
<u>R26</u>	<u>1.15</u>	<u>1.53</u>	<u>Residence</u>
<u>R27</u>	<u>1.66</u>	<u>1.93</u>	<u>Residence</u>
<u>R28</u>	<u>1.07</u>	<u>1.09</u>	<u>Residence</u>

Receptor	To project area (km)	To mining activity (km)	Description
<u>R29</u>	<u>1.09</u>	<u>1.50</u>	<u>Residence</u>
<u>R30</u>	<u>0.33</u>	<u>0.35</u>	<u>Residence</u>
<u>R31</u>	<u>0.59</u>	<u>0.61</u>	<u>Residence</u>
<u>R35</u>	<u>1.36</u>	<u>1.65</u>	<u>Residence</u>
<u>R36</u>	<u>1.04</u>	<u>1.14</u>	<u>Residence</u>
<u>R38</u>	<u>1.94</u>	<u>2.12</u>	<u>Residence</u>
<u>R40</u>	<u>1.83</u>	<u>2.03</u>	<u>Residence</u>
<u>R41</u>	<u>1.34</u>	<u>1.55</u>	<u>Residence</u>
<u>R42</u>	<u>1.42</u>	<u>1.72</u>	<u>Residence</u>
<u>R43</u>	<u>1.51</u>	<u>1.66</u>	<u>Residence</u>
<u>R44</u>	<u>1.65</u>	<u>2.00</u>	<u>Residence</u>
<u>R45</u>	<u>1.65</u>	<u>2.08</u>	<u>Residence</u>
<u>R46</u>	<u>1.90</u>	<u>2.13</u>	<u>Residence</u>
<u>R47</u>	<u>0.33</u>	<u>0.35</u>	<u>Residence</u>
<u>R48</u>	<u>1.63</u>	<u>2.59</u>	<u>Residence</u>
<u>R49</u>	<u>1.85</u>	<u>1.92</u>	<u>Residence</u>
<u>R2001</u>	<u>1.85</u>	<u>1.95</u>	<u>Residence</u>
<u>R2002</u>	<u>1.91</u>	<u>2.02</u>	<u>Residence</u>
<u>R2003</u>	<u>1.83</u>	<u>2.22</u>	<u>Residence</u>
<u>R2004</u>	<u>0.05</u>	<u>0.30</u>	<u>Residence</u>

Table 2-1: Summary of sensitive receptors Other Receptors Include:

#	Details of sensitive receptor	Location, relative to Fingerboards mining lease	#	Details of sensitive receptor	Location, relative to Fingerboards mining lease
1	Residence R1	0.1 km S	34	Residence R34	2.1 km SE
2	Residence R2	0.2 km S ^{Note 1}	35	Residence R35	1.4 km N
3	Residence R3	Inside mining lease ^{Note 2}	36	Residence R36	1.0 km N
4	Residence R4	Inside mining lease ^{Note 3}	37	Residence R37	2.0 km NE
5	Residence R5	0.3 km N	38	Residence R38	1.9 km NE
6	Residence R6	0.6 km N ^{Note 1}	39	Residence R39	2.2 km NE
7	Residence R7	0.2 km NE	40	Residence R40	1.8 km NE
8	Residence R8	1.7 km NE	41	Residence R41	1.3 km NE
9	Residence R9	1.9 km NE	42	Residence R42	1.4 km NE
10	Residence R10	2.5 km NE	43	Residence R43	1.5 km NW
11	Residence R11	2.4 km NE	44	Residence R44	1.7 km S
12	Residence R12	2.5 km NE	45	Residence R45	1.6 km S
13	Residence R13	2.8 km NE	46	Residence R46	1.9 km NE
14	Residence R14	2.4 km NE	47	Residence R47	0.33 km SE
15	Residence R15	0.3 km E	48	Residence R48	1.6 km S
16	Residence R16	0.9 km E	49	Residence R49	1.8 km SW
17	Residence R17	1.1 km S	50	Mitchell River	-0.4 km NE
18	Residence R18	1.4 km S	51	Perry River	-2.1 km SW
19	Residence R19	1.9 km SW	52	Lindenow flats horticultural area	-0.8 km NE (Figure 2-2)
20	Residence R20	1.2 km N	53	Gippsland Lakes	-28 km SE
21	Residence R21	0.9 km NW	54	Scarred tree (presumed destroyed)	Inside proposed mining licence ^{Note 4}
22	Residence R22	1.6 km S	55	Bairnsdale-Dargo Rd	Figure 2-1
23	Residence R23	2.6 km SE	56	Chettles Road	Figure 2-1
24	Residence R24	2.6 km SE	57	Fernbank-Glenaladale Rd	Figure 2-1
25	Residence R25	1.4 km N	58	Limpyers Rd	Figure 2-1
26	Residence R26	1.1 km N	59	Careys Rd	Figure 2-1
27	Residence R27	1.7 km N	60	Fernbank Nature Conservation Reserve	-7 km S
28	Residence R28	1.1 km E	61	Providence Ponds Flora and Fauna Reserve	-6.3 km S
29	Residence R29	1.1 km E	62	Mitchell River National Park	-4.6 km N
30	Residence R30	0.3 km E	63	Saplings Morass Flora and Fauna Reserve	-0.2 km S
31	Residence R31	0.6 km SE	64	Telecommunications tower	

#	Details of sensitive receptor	Location, relative to Fingerboards mining lease	#	Details of sensitive receptor	Location, relative to Fingerboards mining lease
32	Residence R32	2.2 km SE	65	Existing groundwater users	Figure 2-3
33	Residence R33	2.9 km SE			

Note 1— Owned by Kalbar

Note 2— Will not be occupied during construction or operations

Note 3— Kalbar site office

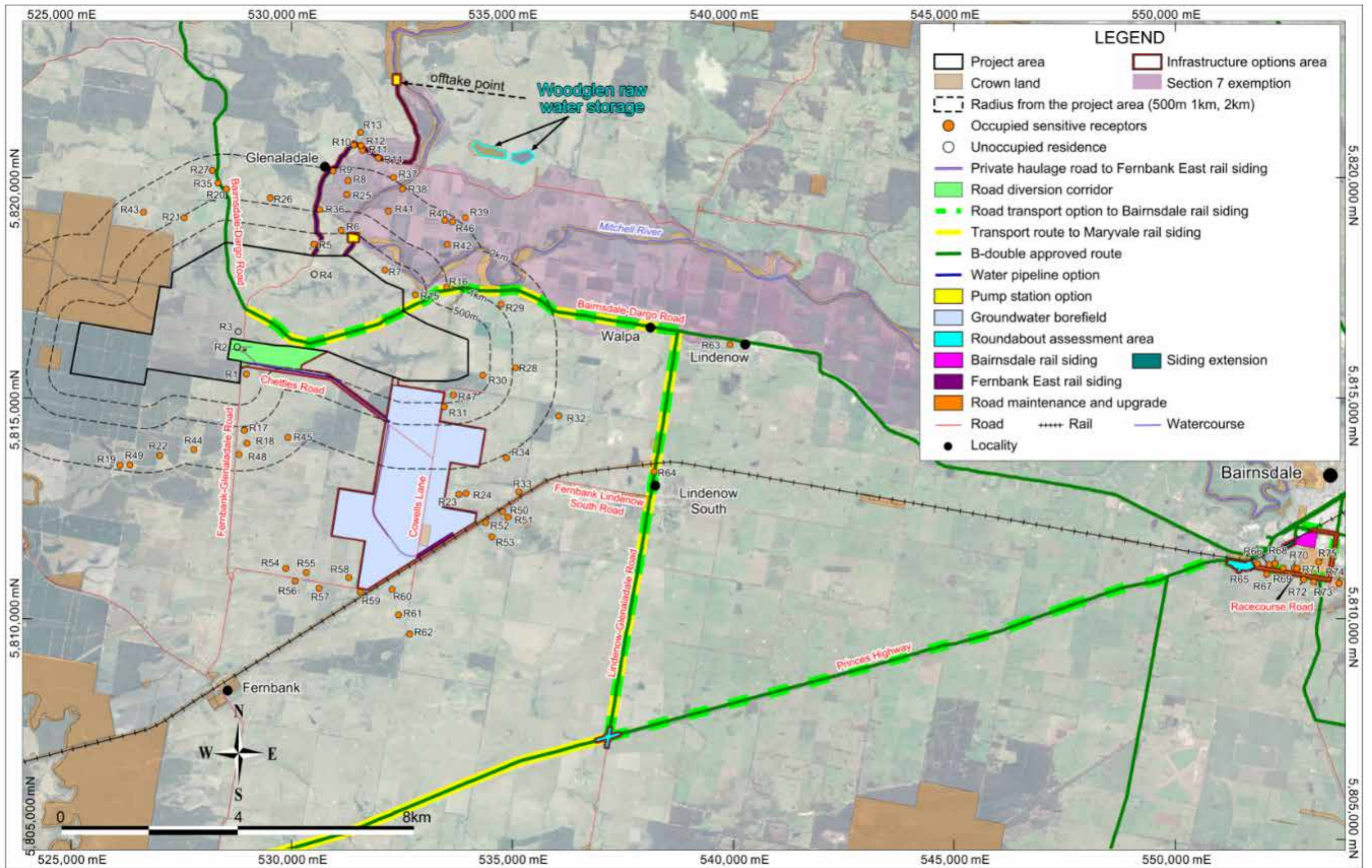
Note 4— Near the southern lease boundary, approximately 150m north of Bairnsdale-Dargo Road— presumed destroyed.

Receptor Type and Name	Location
<u>Mitchell River</u>	<u>~0.4 km NE</u>
<u>Perry River</u>	<u>~2.1 km SW</u>
<u>Lindenow flats horticultural area</u>	<u>~0.8 km NE (Figure 2-2)</u>
<u>Gippsland Lakes</u>	<u>~28 km SE</u>
<u>Scarred tree (presumed destroyed)</u>	<u>Inside proposed mining licence ^{Note 4}</u>
<u>Bairnsdale-Dargo Rd</u>	<u>Figure 2-1</u>
<u>Chettles Road</u>	<u>Figure 2-1</u>
<u>Fernbank-Glenaladale Rd</u>	<u>Figure 2-1</u>
<u>Limpyers Rd</u>	<u>Figure 2-1</u>
<u>Careys Rd</u>	<u>Figure 2-1</u>
<u>Fernbank Nature Conservation Reserve</u>	<u>~7 km S</u>
<u>Providence Ponds Flora and Fauna Reserve</u>	<u>~6.3 km S</u>
<u>Mitchell River National Park</u>	<u>~4.6 km N</u>
<u>Saplings Morass Flora and Fauna Reserve</u>	<u>~0.2 km S</u>
<u>Telecommunications tower</u>	
<u>Existing groundwater users</u>	<u>Figure 2-3</u>

More than one receptor may be affected by a given hazard or risk event. If multiple receptors may be affected by a given risk event, then the risk assessment was generally based on a consideration of impacts on the most sensitive receptor.

People working at the Fingerboards site (employees and contractors) are clearly sensitive receptors, but are not considered in this risk management plan, as potential impacts to the Fingerboards workforce will be addressed under separate occupational health and safety plans.

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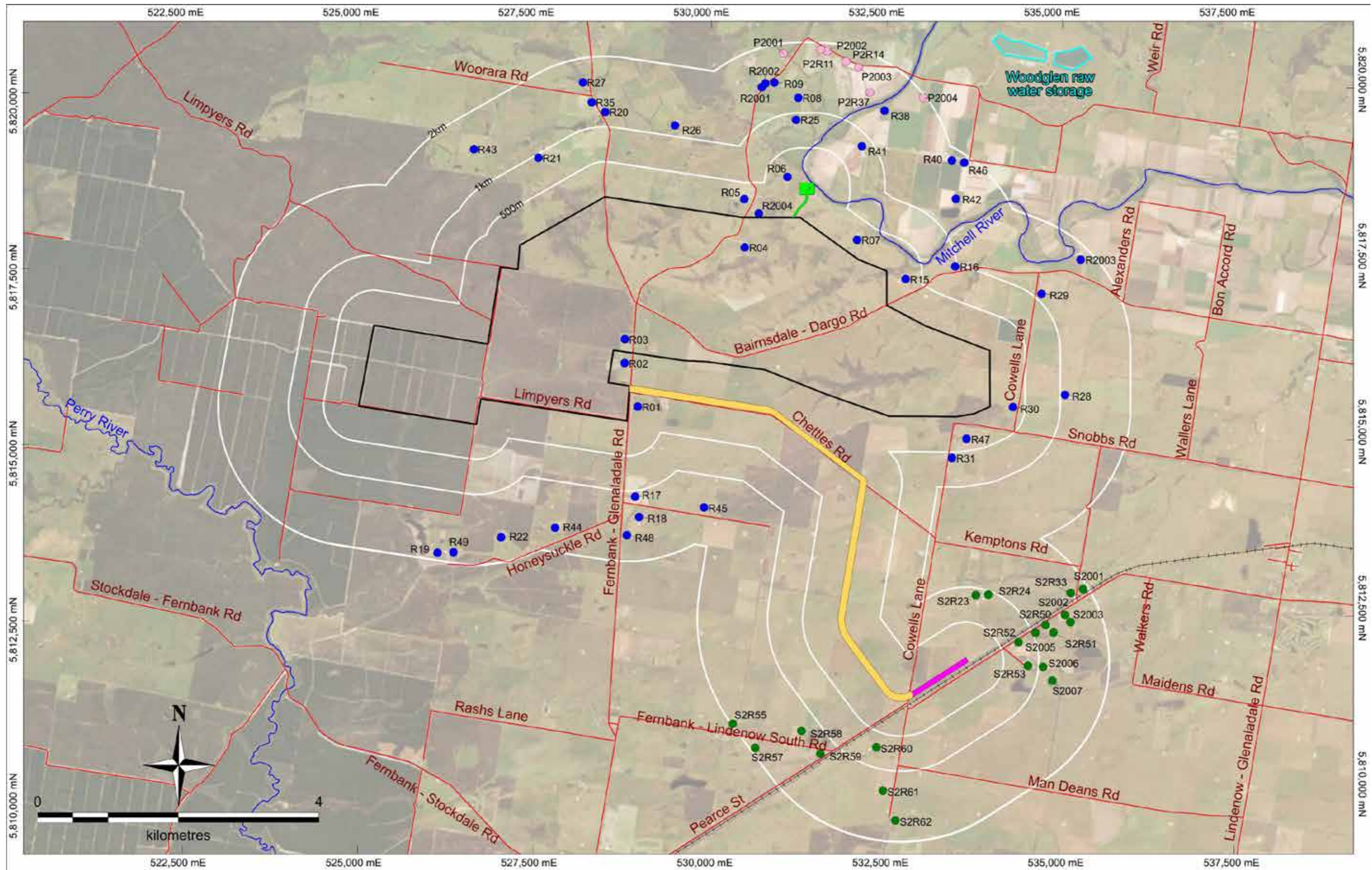


Figure 2-1: Sensitive receptors (residences, roads) near the Fingerboards project

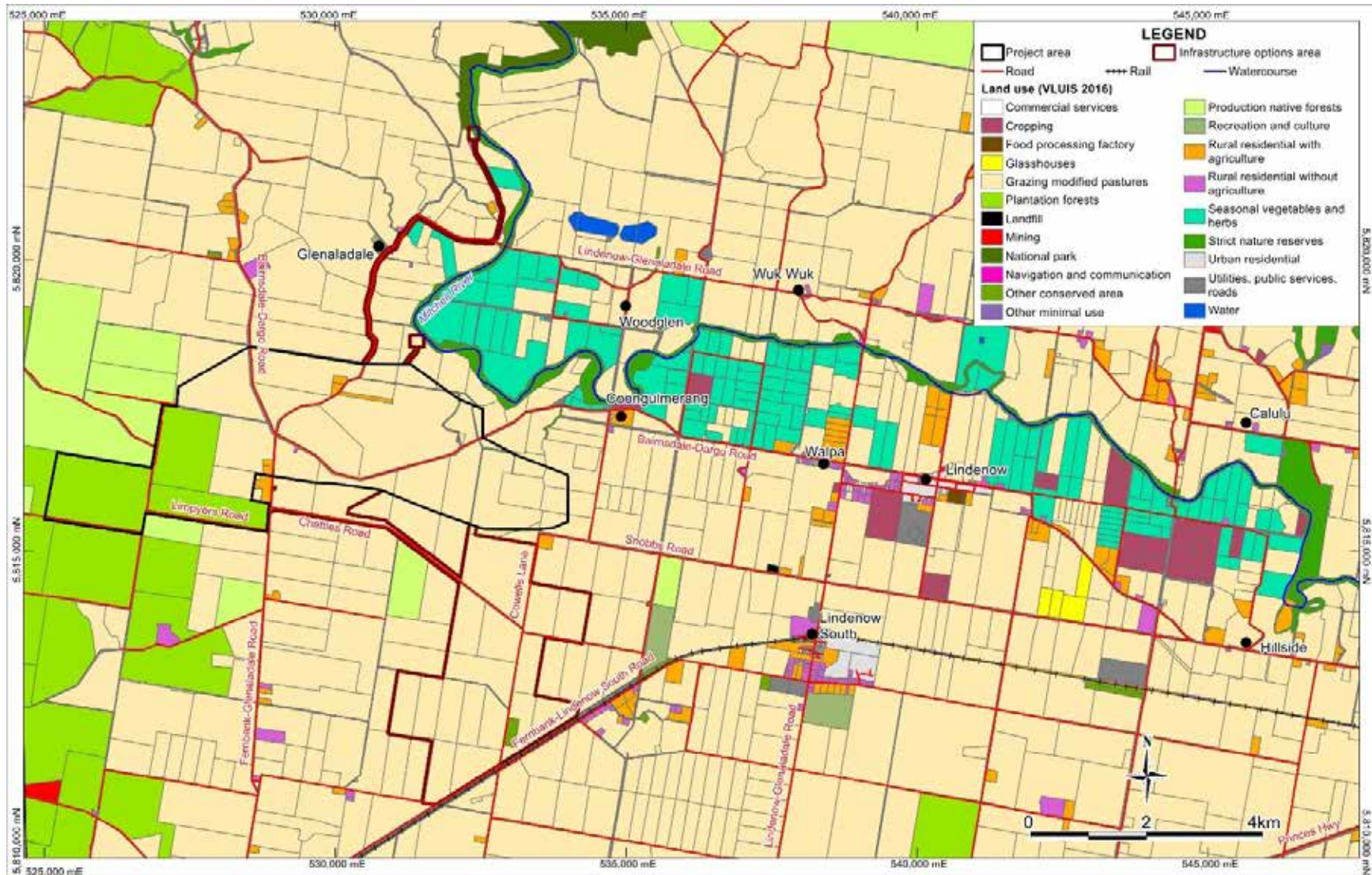


Figure 2.2: Land uses in project locality

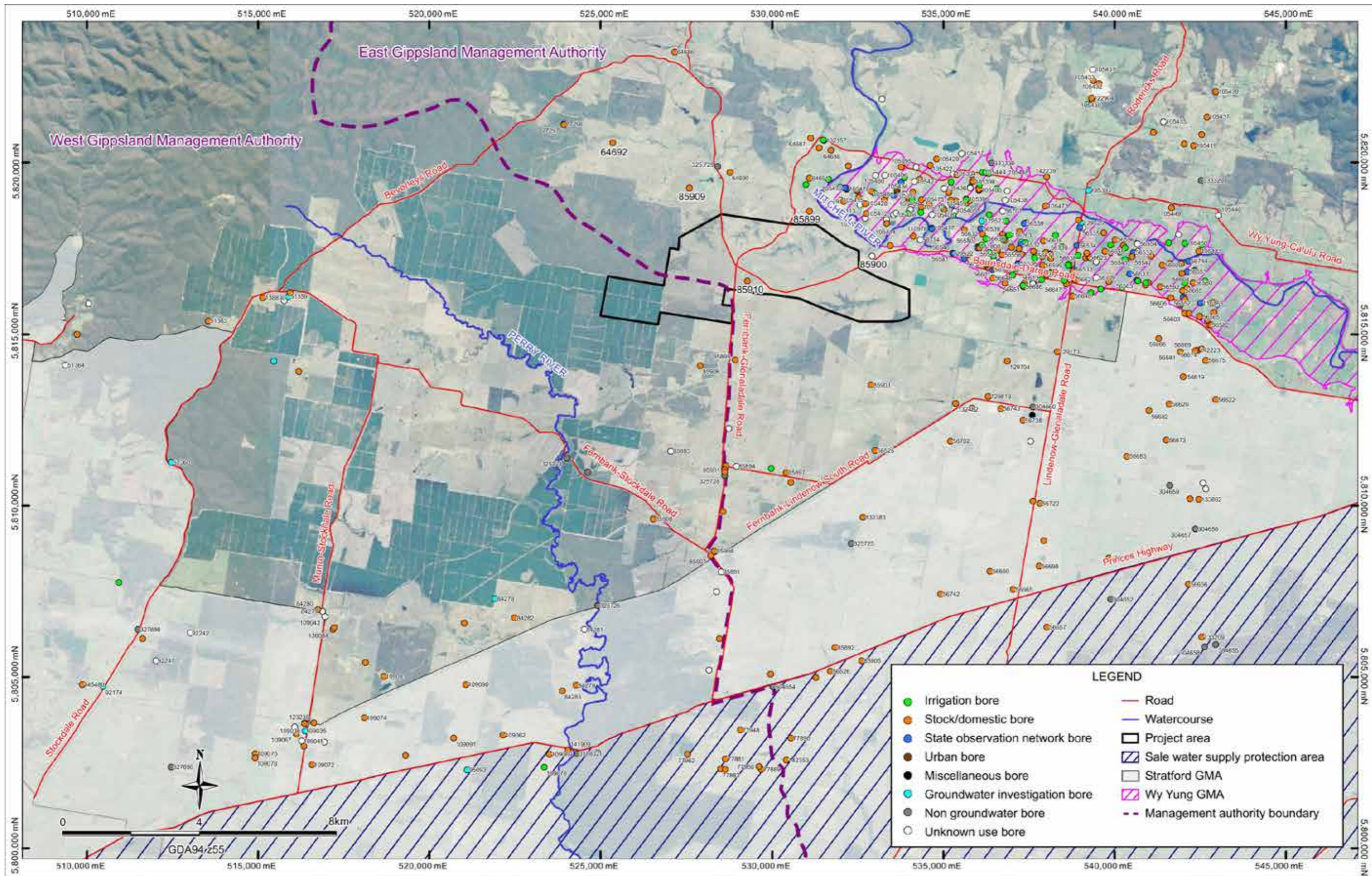


Figure 2-3: Registered groundwater bores (as at June 2018)

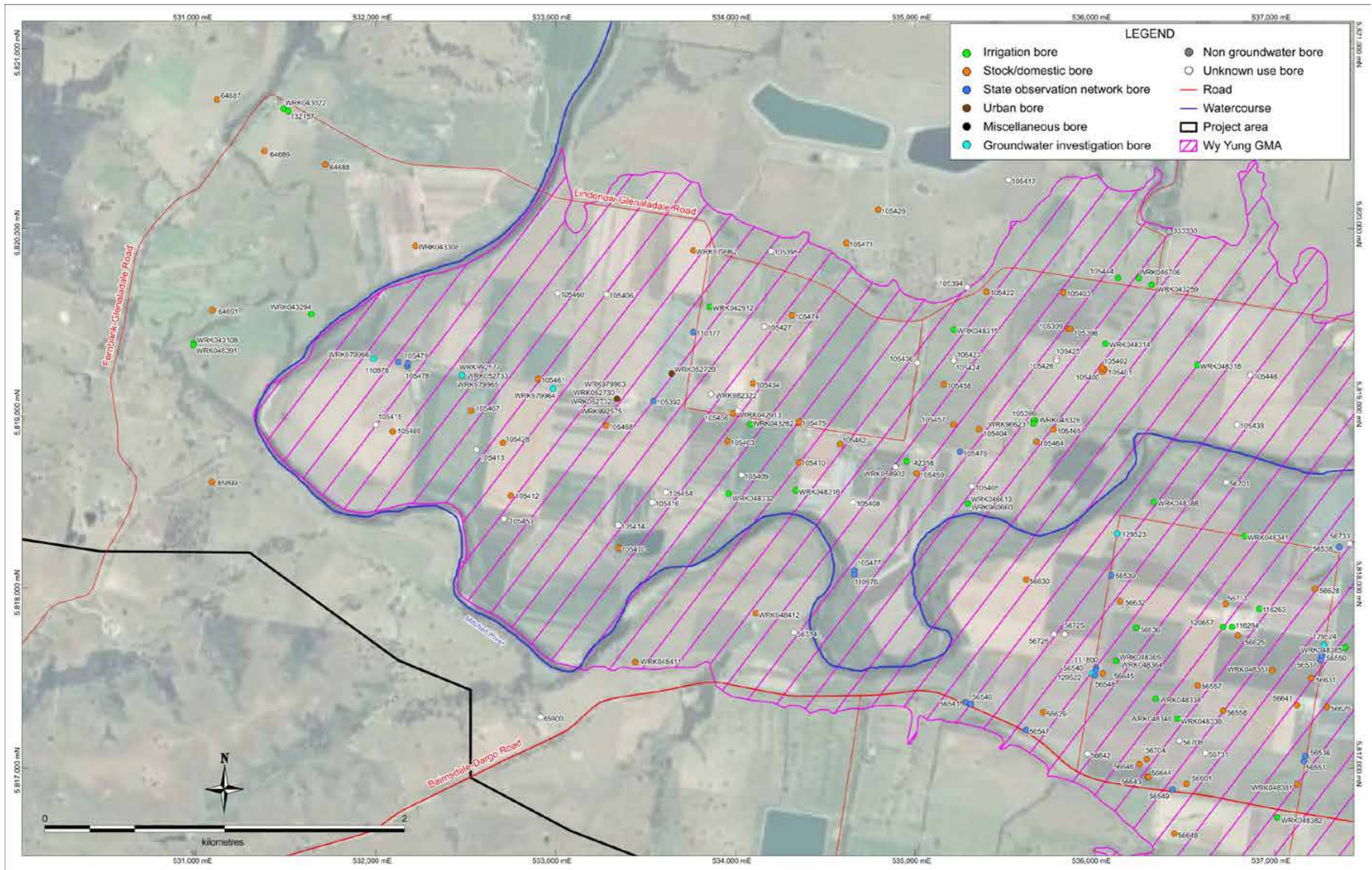


Figure 2-4: Registered water bores northeast of Fingerboards site

3 RISK ASSESSMENT PROCESS

The current Australian and international standard for risk management (AS ISO 31000:2018) defines risk as 'the effect of uncertainty on objectives'. Kalbar has interpreted 'risk' to mean those factors and sources of uncertainty that could affect the reliable attainment of outcomes to which Kalbar has committed in its work plan for the Fingerboards project. Those outcomes include – but are not limited to – complying with relevant government policies, guidelines and statutory requirements and with conditions of authorisations granted by state, federal and local government entities.

In defining the environmental management objectives that underpin the Fingerboards risk assessment, Kalbar has assumed that if it meets criteria set out in government guidelines (for example, the National Environmental Protection Measure for Ambient Air Quality, or [Environment Reference Standards promulgated under section 93 of the Environment Protection Act 2017](#)~~the State Environmental Protection Policy (Waters)~~), then beneficial uses and sensitive receptors will be protected. Kalbar has further assumed that if its activities do not discernibly alter environmental conditions beyond its approved activity area, then an appropriate level of control has been achieved. Kalbar is mindful that legislative and policy frameworks for environmental protection are evolving in Victoria and that the implementation of [regulatory changing enabled by the Environment Protection Amendment Act 2018](#) ~~in July 2020~~ may necessitate changes to this Risk Management Plan.

The risk assessment presented in the Fingerboards work plan only includes risk events initiated and / or realised within the Fingerboards proposed mining licence area. Events that could occur entirely outside the mining operations area (for example a vehicle collision involving a truck transporting heavy mineral concentrate) have been assessed but are not addressed in this plan. Transport risks and other risk events outside of the mining lease will be addressed in separate risk management documents.

Risks relating solely to the on-site safety of mine personnel (for example, on-site vehicle accidents; electrical shocks; slips, trips and falls) have not been included in the risk analysis presented in this plan, as it is Kalbar's understanding that only project aspects regulated by the Earth Resources Regulation group in the Department of Jobs Precincts and Regions, are to be discussed in the risk management plan prepared pursuant to the *Mineral Resources (Sustainable Development) Act* and Regulations. Occupational health and safety risks regulated under legislation administered by Work Safe are not discussed in this plan. The exception to this rule relates to workplace radiation exposures. The risk assessment presented in this plan includes risk scenarios relating to radiation exposure of project personnel as well as the general public to radiation for consistency with the EES.

The risk assessment framework adopted by Kalbar makes use of the source-pathway-receptor model. The framework involves identifying:

- possible source(s) of hazards or threats
- plausible pathways by which the hazard could interact with one or more receptors
- receptors or environmental / social values that could be impacted by a hazard if a pathway exists

All three elements must be present for a risk event to be realised. If any one of these elements does not exist for a given risk, then the risk element was not carried forward into the risk register.

3.1 Hazard identification

Kalbar has adopted the definition of hazard contained in ERR's *Guidance Material for the Assessment of Geotechnical Risks in Open Pit Mines and Quarries*: "A hazard is any physical activity,

situation or condition with the potential to cause harm. Harm can involve human injury or death, damage to the environment, damage to physical assets or loss of production”.

Kalbar has identified mining hazards through an aspects and impacts analysis. ‘Aspects’ include project activities, structures and materials. To date, Kalbar’s identification of hazards has drawn on technical studies, expert advice and stakeholder information compiled as part of the EES process, as well as the professional experience of Kalbar staff.

Twenty-six hazards identified as potential sources of risk arising from the implementation of the Fingerboards project are summarised in Table 3-1.

Table 3-1: Summary of hazards addressed in Fingerboards work plan

Release of sediment to surface waters	Noise emissions	Ground movements
Release of contaminated water to surface waters	Ground vibration	Land access / clearing / ground disturbance
Seepage of contaminated water into groundwater	Erosion	Vehicular traffic / movement of plant & equipment
Altered surface water hydrology	Introduction or spread of weeds or pathogens	Storage / use of hazardous materials
Increased in airborne and /or deposited dust	Light emissions	Fire / explosion
Altered groundwater hydrology (water abstraction)	Radiation	Handling / storage of mineralised materials
Increase in airborne toxicants / greenhouse gases	Rehabilitation <u>failure outcomes</u>	Modified landscapes / landforms
Public perceptions	Economic / social disruption	

In defining hazard categories, Kalbar has carefully considered opinions expressed by stakeholders. It is clear that social considerations such as, for example, concern over loss of East Gippsland’s ‘clean green image’ may not be readily addressed by merely managing physical causes of pollution. It is possible for public perception about a place to be adversely affected even if there is clear evidence that all environmental standards are being met. Accordingly, Kalbar has defined a hazard category to drive structured consideration of impacts arising from public perception, in addition to actions required to manage dust, noise and visual amenity.

Socio-economic impacts can also relate to disruption of existing social or economic systems. These could include impacts such as increased competition for labour, changes to public participation in volunteer activities because of changes to shift patterns, loss of employment and/or income due to mine closure. The hazard category ‘social / economic disruption’ is intended to capture risk events that can result in tangible impacts (either positive or negative) from changes to existing social and economic structures and practices.

This draft risk management plan has not included assessment of positive impacts (increased employment, higher wages, augmented skills) that may result from implementation of the Fingerboards project, although benefits have been identified in course of Kalbar’s baseline studies and risk assessment.

Where possible, Kalbar has sought to differentiate between related hazards which may require different risk controls. For example, while erosion may be related to the hazard 'release of sediment to surface waters', it can be a hazard in its own right, even if no sediment is discharged. Similarly, sediment discharges can result from mechanisms other than those driven by erosion hazard. Separate hazards have also been defined for 'ground movement' (which could include block sliding, consolidation, subsidence) and for 'erosion', even though these hazards are sometimes linked.

A hazard category called 'modified landscapes / landforms' has been defined to guide consideration of the safety, environmental and amenity impacts of activities such as development of an open mine pit, establishment of overburden stockpiles, construction and use of industrial buildings and infrastructure.

The hazard called 'rehabilitation failure-outcomes chiefly relates to revegetation aspects of mine rehabilitation (vegetation emergence, establishment, yield, quality, response to perturbations such as grazing or fire), but is also relevant to post-mining land capability.

The hazard category 'land access / clearing /ground disturbance' addresses risk events such as unauthorised disturbance of heritage sites or private land, clearing of native vegetation, and so on.

3.2 Definition of risk events

The risk events listed in the Fingerboards risk register are occurrences or conditions which may result in hazards giving rise to impacts. Risk events are causal or contributing factors related to hazards. For each hazard, one or more risk events was identified in the risk register. Events that may contribute to an impact could arise from internal or external sources. Risk events are not always initiated by physical hazards: they may result from organisational, political or social factors, for example. The risk events included in the Fingerboards risk register generally do not include risk triggers arising from changed legislation or policy. For example, a reduction in ecosystem protection guideline values for receiving waters could increase the risk that the objective 'comply with SEPP (Waters of Victoria)applicable Environmental Reference Standards' would not be realised. Under Kalbar's environmental management framework, statutory requirements will be reviewed on a regular basis. If the environmental standards used as the basis for the Fingerboards risk assessment change, then the risk assessment will be reviewed and updated.

A given hazard may be triggered by more than one risk event. For example the hazard 'release of sediment to surface water' could be initiated by rainfall runoff flowing across disturbed land or it could result from release of turbid water stored in a dam. The likelihoods and the consequences of different risk events may be different and the control measures required to reduce the risk of different risk events are often quite different. Early drafts of this risk management plan included detailed breakdown of risk events. At the request of ERR, some of the risk events have been aggregated in this draft of the plan to reduce regulatory burden.

A given risk event may have a range of different impacts. For example, an increase in airborne dust as a result of wind erosion from disturbed land could result in exceedance of health-based air quality values at sensitive receptors or could impact the value of horticulture crops if it results in excessive dust deposition.

3.3 Likelihood and consequence definitions

In this risk management plan Kalbar has largely adopted the likelihood and consequence definitions recommended in the *Guideline for Mining Projects - Preparation of Work Plans and Work Plan Variations* (Department of Jobs Precincts and Regions (DJPR), September 2019). Details of the

likelihood and consequence definitions used as the basis for the Fingerboards work plan risk assessment are provided in the risk register (Attachment A).

3.4 Risk assessment methods

Kalbar used a combination of multi-disciplinary workshops and expert assessment as the basis for its risk assessment. The workshops were attended by Kalbar personnel and specialists in a wide range of environmental disciplines. The risk assessment also took account of concerns and opinions expressed by stakeholders during consultation conducted as part of the EES process.

The risk assessment identified and documented both inherent and residual risk (the latter meaning the risk rating once standard controls have been put in place). The suite of ‘standard risk controls’ used in the Fingerboards project is discussed in Section 6 of this risk management plan. Standard controls are controls conventionally used in industry, whose effectiveness has been well established and for which site-specific investigations and tailored design are generally not required. The standard controls listed in this risk management plan are consistent with those presented in the Fingerboards EES.

Kalbar has generally sought to put in place sufficient controls to reduce residual risks to a level of ‘medium’ or lower, so that the risks of non-compliance or an adverse impact are as low as reasonably practicable. In some instances the consequence definitions adopted for the risk assessment make it arithmetically impossible to achieve a residual risk rating less than ‘high’. For example, under the consequence definitions recommended by ERR, any event which has the potential to cause a human fatality or permanent disability – no matter how remote the likelihood – cannot achieve a residual risk rating less than ‘high’. This effectively means that fire events necessarily attract a risk rating of ‘high’, even with mitigation measures in place.

Risk management requirements have been assessed using the matrix shown in Figure 3-1.

Likelihood	Almost certain	Medium	High	Very high	Very high	Very high
	Likely	Medium	Medium	High	Very high	Very high
	Possible	Low	Medium	Medium	High	Very high
	Unlikely	Low	Low	Medium	High	High
	Rare	Low	Low	Medium	Medium	High
		Insignificant	Minor	Moderate	Major	Critical
		Consequence				

Figure 3-1: Fingerboards risk matrix

Kalbar considers that any ‘very high’ residual risk ratings associated with the activities proposed in Fingerboards work plan are unacceptable and require additional control measures before implementing the proposed activity. A copy of Kalbar’s risk management policy is provided in Appendix E of the Fingerboards work plan.

4 OBJECTIVES AND STANDARDS

Under the current Australian standard for risk assessment, risk must be understood in the context of objectives. Kalbar has set both compliance and performance (or outcome) objectives for the Fingerboards project. In setting project environmental and social objectives, Kalbar has had regard to relevant legislation, guidelines and standards, as summarised in Table 4-1.

Table 4-1: Environmental objectives and standards

Environmental Aspect	Objectives	Legislation, guidelines and standards
Social, health and wellbeing outcomes and community engagement.	To protect the health and wellbeing of residents and local communities.	The <i>Environment Effects Act 1978 (Vic)</i> <i>Environment Protection Act 2017(Vic)</i> <i>Planning and Environment Act 1987 (Vic)</i>
	To provide the community with access to information on the environmental performance and socioeconomic impacts of the project during all phases.	The <i>Mineral Resources (Sustainable Development) Act 1990 (Vic)</i> The <i>Land Acquisition and Compensation Act 1986 (Vic)</i> The <i>Environment Protection and Biodiversity Conservation Act 1999</i> The <i>Ministerial Guidelines for Assessment of Environmental Effects under the Environment Effects Act 1978 (DSE, 2006).</i>
	To address community complaints effectively and in a timely manner.	<i>Community Engagement Guidelines for Mining and Mineral Exploration in Victoria (DPI, 2008).</i>
	To maximise the economic benefits from the project for the region.	<i>Engage Early—Guidance for proponents on best practice Indigenous engagement for environmental assessments under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (Commonwealth of Australia, 2016).</i> <i>Leading Practice Sustainable Development Program for the Mining Industry – Community Engagement and Development (Commonwealth of Australia, 2016)</i> <i>Leading Practice Sustainable Development Program for the Mining Industry – Community Health and Safety Handbook (Commonwealth of Australia, 2016)</i> <i>Enduring Value – the Australian Minerals Industry framework for sustainable development (MCA, 2015)</i>

Environmental Aspect	Objectives	Legislation, guidelines and standards ^{13b}
Biodiversity values, including offsets and establishing a sustainable vegetation cover.	To avoid, minimise or offset adverse effects on native vegetation and listed threatened flora and fauna species.	<p><i>Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)</i></p> <p><i>Flora and Fauna Guarantee Act 1988</i></p> <p><i>Planning and Environment Act 1987</i></p> <p><i>Catchment and Land Protection Act 1994</i></p> <p><i>Wildlife Act 1975 and Wildlife Regulations 2013</i></p> <p><i>Conservation Forests and Lands Act 1987</i></p> <p><i>Guidelines for the Removal, Destruction or Lopping of Native Vegetation (DELWP, 2017)</i></p> <p><i>Commonwealth Conservation Advice on Gippsland Red Gum (Eucalyptus tereticornis subsp. mediana) Grassy Woodland and Associated Native Grassland.</i></p> <p><i>Native Vegetation management guide for the earth resources industries. Melbourne, Victoria (DPI, 2009).</i></p> <p><i>Vegetation quality assessment manual: Guidelines for applying the habitat hectares scoring method. Version 1.3. Department of Sustainability and Environment.</i></p> <p><i>East Gippsland Roadside Vegetation Strategy (EGSC, 2012)</i></p> <p><i>Victorian Australian River Assessment System (AUSRIVAS) (eWater, 2016).</i></p> <p><i>Australian Weeds Strategy – A national strategy for weed management in Australia (Natural Resource Management Ministerial Council 2006)</i></p> <p><i>Leading Practice Sustainable Development Program for the Mining Industry – Biodiversity Management (Commonwealth of Australia, 2016)</i></p> <p><i>Native Vegetation Gain Scoring Manual Version 2 (DELWP, 2017b).a</i></p> <p><i>EPBC Act Environmental Offsets Policy (DSEWPC, 2012a)</i></p> <p><i>Assessment Guide for use in determining offsets under the EPBC Act (DSEWPC, 2012b)</i></p>
Ecological character of the Gippsland Lakes Ramsar site.	To maintain the ecological character of the Gippsland Lakes Ramsar site.	<p><i>Matters of National Environmental Significance, Significant Impact Guidelines 1.1</i></p> <p>Australian National Guidelines for Ramsar Wetlands - Implementing the Ramsar Convention in Australia http://www.environment.gov.au/water/wetlands/ramsar/australian-national-guidelines</p>

Environmental Aspect	Objectives	Legislation, guidelines and standards ^{4b}
Groundwater and/or surface water usage and stormwater runoff.	To minimise effects on water resources and protect beneficial uses and licensed uses of surface water and groundwater.	<p><i>Water Act 1989</i></p> <p><i>Catchment and Land Protection Act 1994</i></p> <p><i>Heritage Rivers Act 1992</i></p> <p><i>Environment Protection Act 1970 <u>and Environment Reference Standard</u></i></p> <p><i>State Environment Protection Policy (Waters)</i></p> <p><i>Ministerial Guidelines for Groundwater <u>Licensing-Licensing</u> and the Protection of High Value Groundwater Dependent Ecosystems</i> in (Government of Victoria, July 2015)</p> <p><i>Guidelines for Assessing the Impact of Climate Change on Water Supplies in Victoria</i> (DELWP, 2016);</p> <p><i>Australian Water Quality Guidelines for Fresh and Marine Waters</i> (ANZECC, 2018)</p> <p><i>ANZECC 2000—Australian Water Quality Guidelines for Irrigation Water Quality</i> (ANZECC, 2000)</p> <p><i>ANZECC 2000—Australian Water Quality Guidelines for Fresh and Marine Waters – Guidelines for Livestock Watering-</i> (ANZECC, 2000)</p> <p><i>Australian Drinking Water Guidelines 6, (2011), updated 2018, NHMRC, (National Health and Medical Research Council)-</i></p> <p><i>NHMRC 2008 – Guidelines for Managing Risks in Recreational Water</i></p>
Geotechnical and geochemical landform stability, including potential erosion and sedimentation.	To maintain landform stability and prevent excessive erosion during all project phases.	<p><i>Mineral Resources (Sustainable Development) Act 1990 (MRSDA).</i></p> <p><i>Australian National Committee on Large Dams (ANCOLD), 2012a. Guidelines on Tailings Dams—Planning, Design, Construction, Operation and Closure, May 2012.</i></p> <p><i>ANCOLD, 2012b. Guidelines on the Consequence Categories for Dams, October 2012.</i></p> <p><i>ANCOLD, 2014. Regulation and Practice for the Environmental Management of Dams in Australia, June 2014.</i></p> <p><i>Australian Standard AS 1726:2017 – Geotechnical Site Investigations.</i></p> <p><i>Guidance Material for the Assessment of Geotechnical Risks in Open Pit Mines and Quarries (ERR, 2015)</i></p> <p><i>Leading Practice Sustainable Development Program for the Mining Industry – Tailings Management</i> (Commonwealth of Australia, 2016)</p>

Environmental Aspect	Objectives	Legislation, guidelines and standards ^{13b}
Resource use; solid and liquid waste management	<p>To use resources, including water and energy efficiently.</p> <p>To prevent pollution.</p> <p>To minimise generation of waste, maximise reuse and recycling, and to dispose of wastes responsibly.</p>	<p><i>Environment Protection Act 1970/2017</i></p> <p><i>EPA Publication No. IWRG621 Industrial Waste Resource Guidelines – Soil hazard categorisation and management.</i></p> <p><i>EPA Publication No. IWRG631 Industrial Waste Resource Guidelines – Solid industrial waste hazard categorisation and management.</i></p> <p><i>EPA Publication No. IWRG600.2 Industrial Waste Resource Guidelines – Waste Categorisation.</i></p> <p><i>Leading Practice Sustainable Development Program for the Mining Industry – Hazardous Materials Management (Commonwealth of Australia, 2016)</i></p>
Noise, vibration and emissions to air, including dust and greenhouse gases.	To minimise effects on air quality and protect the health and amenity of residents and local communities.	<p><i>Environment Protection Act 1970</i></p> <p><i>EPA Protocol for Environmental Management – Mining and Extractive Industries</i></p> <p><i>State Environment Protection Policy Air Quality Management (SEPP AQM).</i></p> <p><i>EPA Guideline: Recommended separation distances for industrial residual air emissions.</i></p> <p><i>State Environment Protection Policy (Control of Noise From Industry, Commerce and Trade) No. N-1</i></p> <p><i>EPA Publication 1254 – Noise Control Guidelines, October 2008.</i></p> <p><i>EPA Publication 1411 Noise from Industry in Regional Victoria (NIRV)</i></p> <p><i>Leading Practice Sustainable Development Program for the Mining Industry – Airborne Contaminants, Noise and Vibration (Commonwealth of Australia, 2009)</i></p>

Environmental Aspect	Objectives	Legislation, guidelines and standards ^{33b}
Aboriginal and cultural heritage values.	To avoid or minimise adverse effects on Aboriginal and non-Aboriginal cultural heritage values.	<p><i>Native Title Act 1993</i></p> <p><i>Environment Protection and Biodiversity Conservation Act 1999</i></p> <p><i>Aboriginal and Torres Strait Islander Heritage Protection Act 1984</i></p> <p><i>Aboriginal Heritage Act 2006 and Aboriginal Heritage Regulations 2018</i></p> <p><i>Traditional Owner Settlement Act 2010</i></p> <p><i>The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance</i> (ICOMOS Incorporated, 2013).</p> <p><i>Exploration and Mining Licences: Guidance Notes for the Aboriginal Heritage Act/Heritage Act</i> (ERR, 2014)</p> <p><i>Guidelines for Conducting Archaeological Surveys</i> (Heritage Victoria, 2013)</p> <p><i>Guidelines for Investigating Historical Archaeological Artefacts and Sites</i> (Heritage, Victoria 2014)</p>
Traffic during construction and operation.	Maintain road safety and level of service during construction and operation of the project.	<p><i>Road Management Act 2004</i></p> <p><i>Local Government Act 1989</i></p> <p><i>Transport Integration Act 2010</i></p> <p><i>Heavy Vehicle National Law Application Act 2013</i></p> <p>Victorian Freight and Logistics Plan 2013</p> <p>Gippsland Freight Strategy 2013 and Gippsland Freight Infrastructure Master Plan 2013</p> <p>Austrroads guides (Road Design, Road Safety, Traffic Management)</p> <p>VicRoads guidelines and technical publications (https://www.vicroads.vic.gov.au/business-and-industry/technical-publications/technical-publications)</p>
Disruption of or hazard to existing infrastructure.	Avoid disruption or degradation to existing infrastructure due to project activities.	<p><i>Mineral Resources (Sustainable Development) Act 1990 (MRSDA).</i></p> <p><i>Guidance Material for the Assessment of Geotechnical Risks in Open Pit Mines and Quarries</i> (ERR, 2015)</p>

Environmental Aspect	Objectives	Legislation, guidelines and standards ^{9.5b}
Requirements for protection of the environment from radiation.	To protect project personnel, the public and the environment from the harmful effects of radiation.	<p><i>Radiation Act 2005</i> and the <i>Radiation Regulations 2017</i></p> <p><i>Code for Radiation Protection in Planned Exposure Situations</i> (ARPANSA, 2016), Radiation Protection Series RPS C-1.</p> <p>Code of Practice – Safe Transport of Radioactive Material (ARPANSA, 2014), Radiation Protection Series No. C-2.</p> <p><i>Guide for Radiation Protection of the Environments</i> (ARPANSA, 2015) Radiation Protection Series No. G-1.</p> <p><i>Code of Practice and Safety Guide – Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing</i> (ARPANSA, 2005), Radiation Protection Series RPS 9.</p> <p><i>Safety Guide –Monitoring, Assessing and Recording Occupational Radiation Doses in Mining and Mineral Processing</i>, (ARPANSA, 2011), Radiation Protection Series No. 9.1.</p> <p><i>Radiation Protection and NORM Residue Management in the Zircon and Zirconia Industries</i>, Safety Report Series No. 51 (IAEA, 2007).</p> <p><i>Handbook of Parameter values for the prediction of radionuclide transfer in terrestrial and freshwater environments</i>, Technical Report Series No. 472, (IAEA, 2010).</p>
Site rehabilitation, including handling of topsoil, tailings and mining by-products.	Establish rehabilitation conditions that are safe for humans, non-polluting, geotechnically stable, not prone to erosion and able to sustain post-mining land uses agreed with stakeholders.	<p><i>Mineral Resources (Sustainable Development) Act 1990 (MRSDA)</i>.</p> <p><i>Environment Protection Act 1970</i></p> <p><i>Catchment and Land Protection Act 1994</i></p> <p><i>Water Act 1989</i></p> <p><i>Rehabilitation and Closure Plan Guideline for the Mining Industry</i>, (ERR, 2017)</p> <p><i>Minerals Guidelines and Codes of Practice: Rehabilitation - Guidelines for Environmental Management in Exploration and Mining</i>, (ERR, 2014)</p> <p><i>Guidance Material for the Assessment of Geotechnical Risks in Open Pit Mines and Quarries</i>, (ERR, 2015)</p> <p><i>Rehabilitation Plans & Other Environmental Aspects of Work Plans - Guidelines for Environmental Management in Exploration and Mining</i> (ERR, 2004).</p> <p><i>Mine Rehabilitation - Leading Practice Sustainable Development Program for the Mining Industry</i>.(DFAT, 2016a).</p> <p><i>Mine Closure - Leading Practice Sustainable Development Program for the Mining Industry</i>, (DFAT, 2016b).</p>

Environmental Aspect	Objectives	Legislation, guidelines and standards
Fire management and emergency response.	No unintentional fires or increase in fire risk to surrounding properties.	<i>Planning and Environment Act 1987</i> <i>Emergency Management Act 2013</i> <i>Country Fire Authority Act 1958</i> <i>Forests Act 1958</i> <i>Electricity Safety Act 1998</i> <i>State Bushfire Plan (Emergency Management Victoria, 2014)</i> <i>East Gippsland Fire Management Plan 2017 – 2020</i> <i>East Gippland Planning scheme 13.02-1S 31/07/2018 VC148 (Bushfire planning) and Bushfire Management Overlay</i> <i>Code of Practice for Bushfire Management on Public Land (DSE, 2012)</i> <i>HB 330—Living in bushfire-prone areas (Standards Australia, 2009)</i> <i>AS 3959:2018 - Construction of buildings in bushfire-prone areas (Standards Australia, 2018)</i>

Note: Guidelines were current as at the date of preparation of this plan. Kalbar will review this list of relevant legislation, guidelines and standards at least annually.

5 RISK ASSESSMENT OUTCOMES

The risk assessment completed for the Fingerboards project identified ~~122-118~~ potential risk events, not including risk events arising solely from activities outside the proposed mining licence area. Of these,

- 57 were categorised as low inherent risks (assuming standard mitigations measures are in place)
- ~~53-504~~ were categorised as medium inherent risks (assuming standard mitigations measures are in place)
- ~~12-1011~~ were categorised as high inherent risks
- none were categorised as very high inherent risks

A copy of the risk assessment spreadsheet is provided in Attachment A.

The ~~twelve-eleven~~ risk events categorised as having 'high' inherent risk were:

- ~~Slope instability (event 1) or Ground settlements movement/landform instability (2 events 22)~~ cause damage to roads or other public infrastructure outside the mining licence area, causing a serious human injury or fatality (for example a traffic accident caused by an uneven road pavement)
- ~~Slope instability~~ Inadequate surface water management results in slope instability on engineered slopes / constructed landforms
- Unauthorised disturbance of either registered or previously unknown Aboriginal sites occurs during land clearing activities (2 separate risk events)
- Fire initiated by project activities or a bushfire initiated outside the proposed mining licence area result in loss of human life or serious injuries to people (2 separate risk events)
- Mine rehabilitation is unsuccessful because rehabilitation activities are not adequately resourced
- ~~Tailings dam embankment failure (by any of a number of failure mechanisms) results in loss of human life or serious injuries to people~~
- Community members experience psychological distress due to perceived health impacts of mining (separate risk to air quality impacts on health)
- Residents of properties near to the proposed mining licence area experience loss of connection to the land due to changes in land appearance within the proposed mining licence area (assessed separately to amenity impacts on near neighbours)
- Ground disturbance/clearing results in weed incursion and/or introduction of pathogens

The two risk events categorised as 'high inherent risks' involving the possible inadvertent disturbance of either registered Aboriginal sites or unregistered and previously unknown Aboriginal sites were considered as 'unlikely' (in the case of previously unknown sites) or 'rare' (in the case of registered sites), given the implementation of standard risk controls. However both events were assigned 'critical' consequence ratings in order to align with the consequence definitions recommended in ERR's recent *Guideline for Mining Project - Preparation of Work Plans and Work Plan Variations* (September 2019), which assigns only one consequence category ('Critical') to 'Harm to features and/or places of Indigenous cultural value', irrespective of the value of the heritage site or whether or not the disturbance of the site was done with or without authorisation.

Risk events associated with bushfires – whether originating within the mining licence area or outside the mining licence area -were assigned to the 'high inherent risk' category because of their potential to result in fatalities or serious injury, notwithstanding the low probability of the events, given the implementation of proposed standard controls.

Several risk events were assigned to the 'high inherent risk' category because they present the potential for causing fatalities or significant injuries, notwithstanding the very low likelihood of the initiating events, given the implementation of standard controls. This group of risk events comprised various events involving the failure or significant instability of engineered structures (~~tailings embankment~~, pit walls, constructed landforms).

Kalbar is mindful that uncertainty can result in adverse health and social impacts, quite separately to illnesses attributable specifically to physical causes. At this stage in the project development – and notwithstanding efforts to date to establish good communications and rapport with stakeholders – the risk assessment concluded that such 'public perception' effects were 'likely' for at least some members of the community. Accordingly two risk events in this grouping were rated as having high inherent risk.

Controls to reduce the likelihood and/or to reduce the adverse impacts of risk events are listed in Attachment B. Because the possibility of serious injury or death cannot be entirely eliminated, some of these events remain as high residual risks. The risk treatment plans / management plans and other management documentation required in connection with high inherent risks include (but are not limited to):

- Cultural Heritage Management Plan (including 'chance find' procedure)
- Mine Rehabilitation and Closure Plan (and associated weed/pathogen hygiene procedure and erosion monitoring procedure)
- Tailings design report and construction certificate for in-pit storages
- Tailings operation and maintenance manual and associated audit reports
- Ground Control Management Plan (to guide aspects of the project related to slope stability and ground consolidation/deformation)
- Water storage dam design, construction and commissioning reports

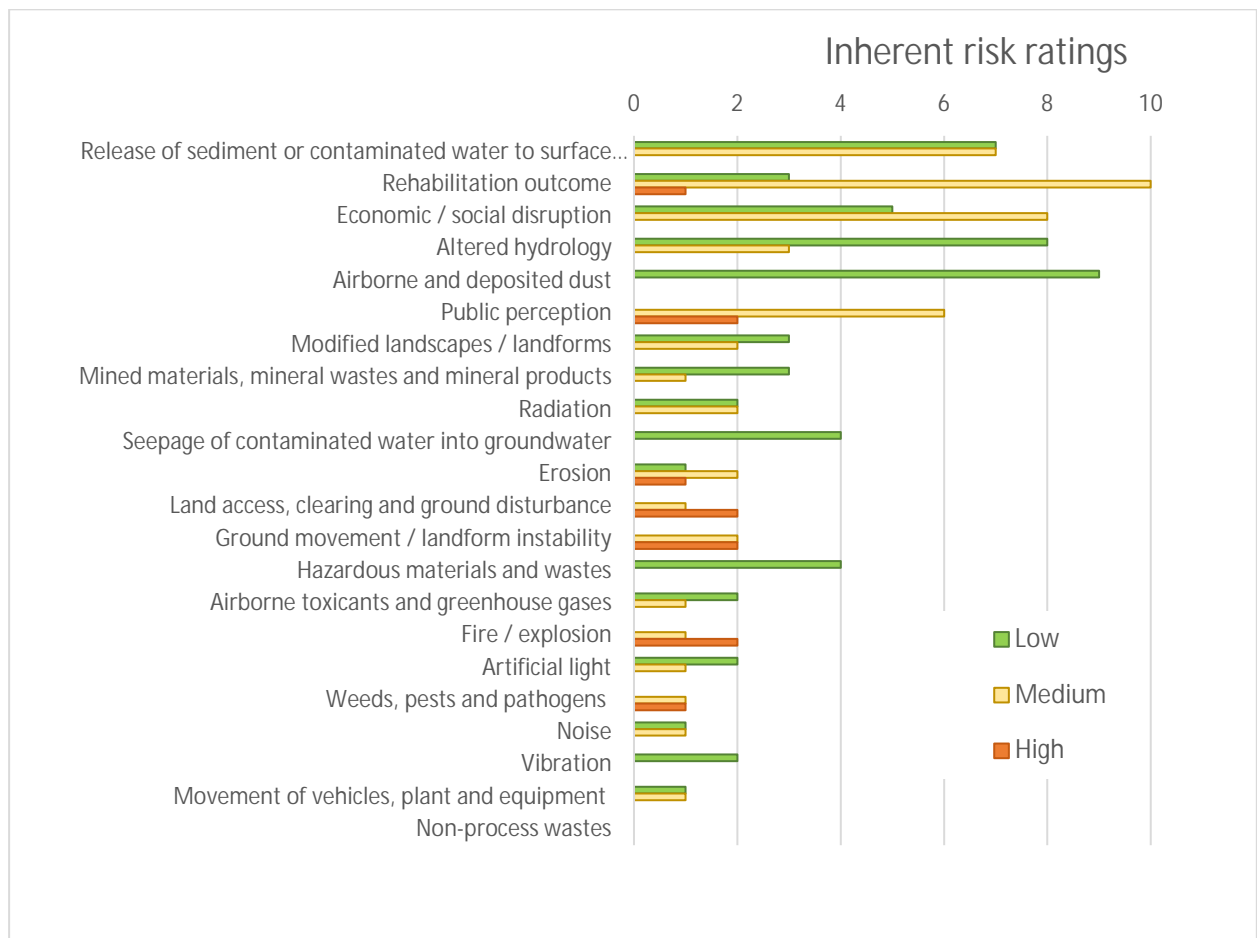
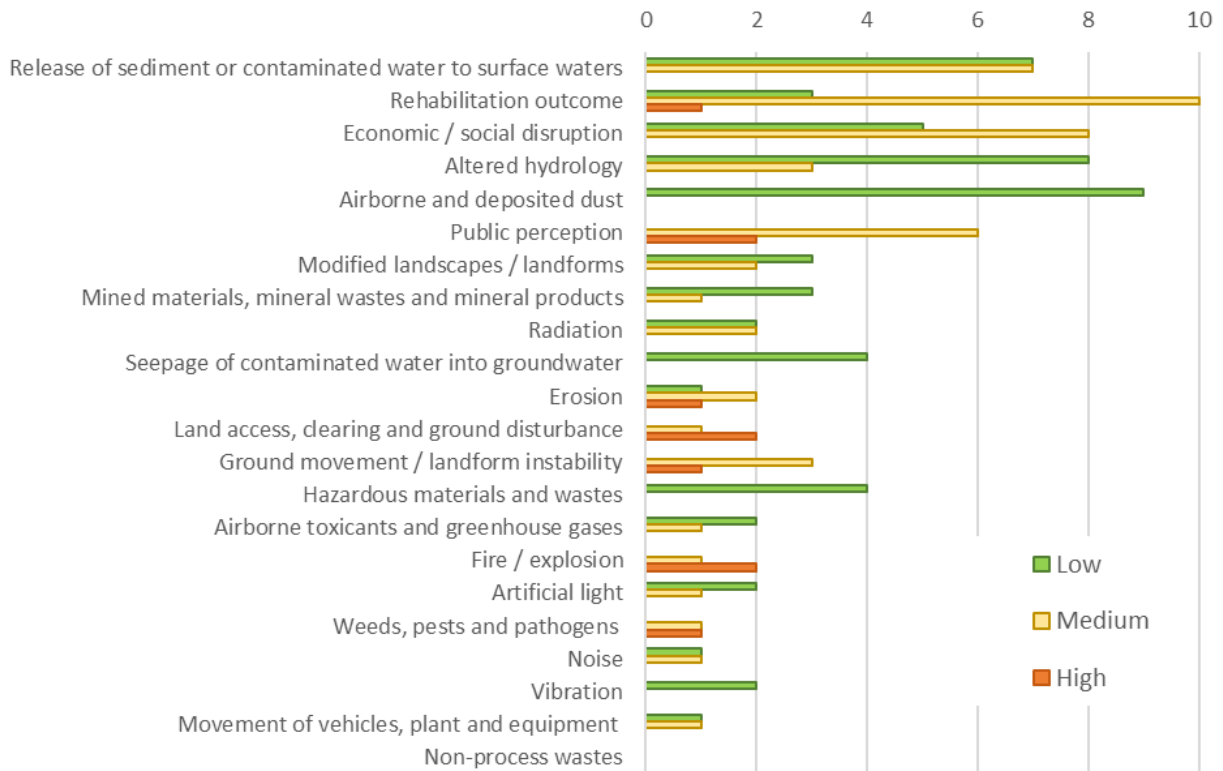


Figure 5-1: Inherent risk ratings

Four categories of hazard dominate the 'medium inherent risk' events. They are:

- Rehabilitation ~~failure-outcomes~~ (9-10 events)
- Release of sediment or contaminated water to surface waters (9-7 events)
- Economic / social disruption (8 events)
- Public perception (6 events)

The importance of implementing a successful Community Engagement Strategy and establishing effective systems for including stakeholder participation in compliance / performance monitoring was evident in the results of the risk assessment. The risk assessment also highlighted the need to implement and to monitor the effectiveness of the Fingerboards rehabilitation plan, a copy of which is provided as Appendix C of the work plan.

Approximately 47.48% of the risk events considered during the risk assessment were considered to have low inherent risk. Low inherent risk events included risks of public exposure to excessive radiation, ~~particulate matter~~ or airborne toxicants; environmental contamination arising from spillage of fuels or hazardous chemicals; reduction in the amount of surface water available to existing licence holders who currently extract water from the Mitchell River; reduction in the amount of groundwater available to existing holders of licences for extraction of water from shallow alluvial aquifers, including those in the Wy Yung Water Supply Protection Area. The risk ratings were assigned based on expert technical advice provided to Kalbar as part of the EES process. Many of the technical reports were reviewed by independent experts.

Notwithstanding the strong technical basis for its risk assessment, Kalbar recognises that some of the risk events classified as having inherently low risk are of great concern to stakeholders. The risk assessment has sought to capture stakeholder concerns through separate delineation of 'public perception' as a hazard that will require active management throughout the life of the project.

6 RISK CONTROLS

A tabular summary of proposed risk controls (mitigation measures) is provided in Attachment B. To make it easier to navigate to particular types of impacts, subheadings have been provided (noise, dust, etc). In some cases, controls relate to more than one hazard. For example actions that reduce dust emissions may also help to reduce radiation exposure. As much as possible, Kalbar has sought to minimise duplication of controls listed in the summary table.

By applying the risk controls listed in Attachment B, the number of medium and higher risk events was reduced by approximately **413%**. A comparison of the project's inherent and residual profiles is presented in Figure 6.1 and Figure 6.2.

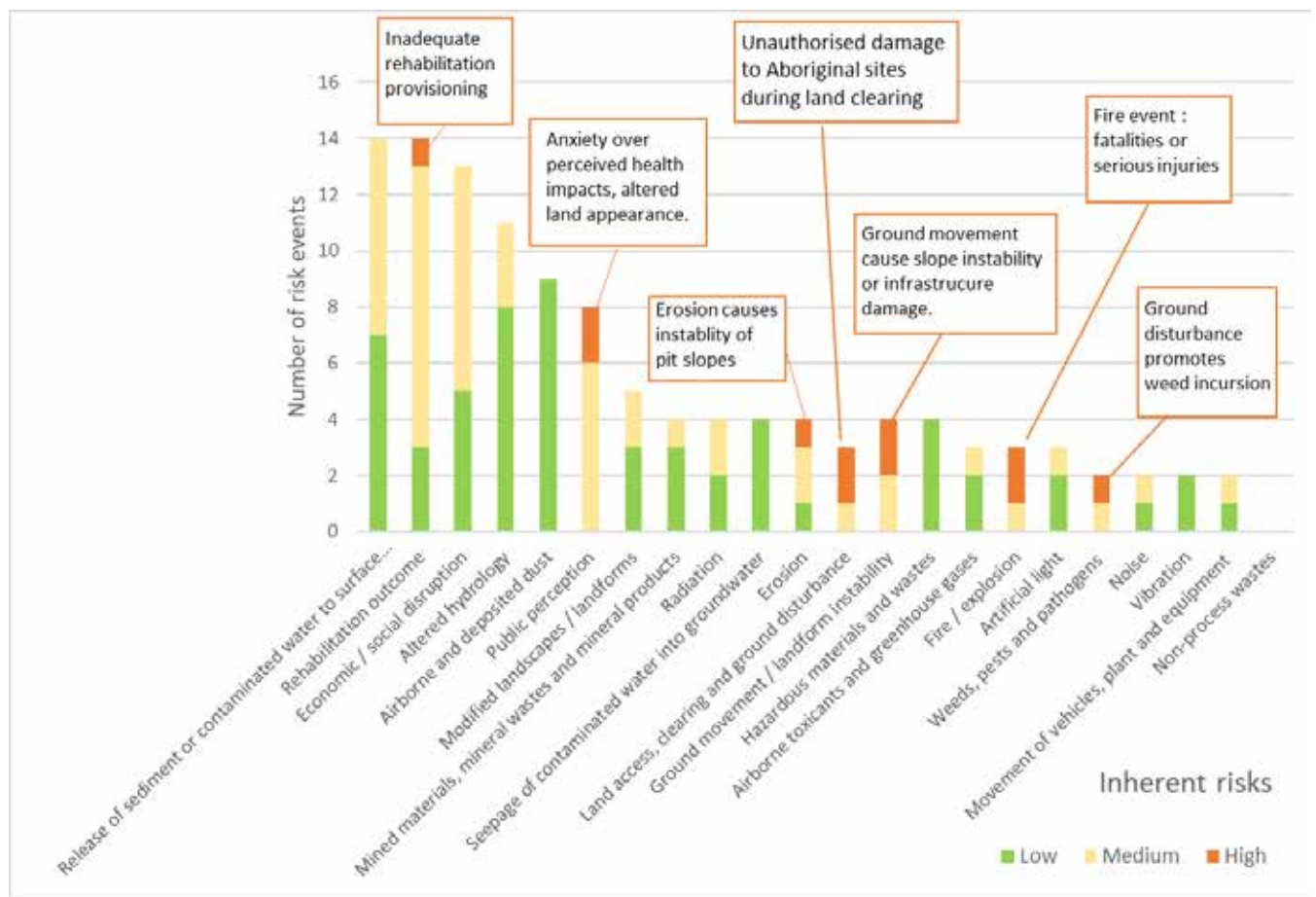


Figure 6-1: Inherent risk summary

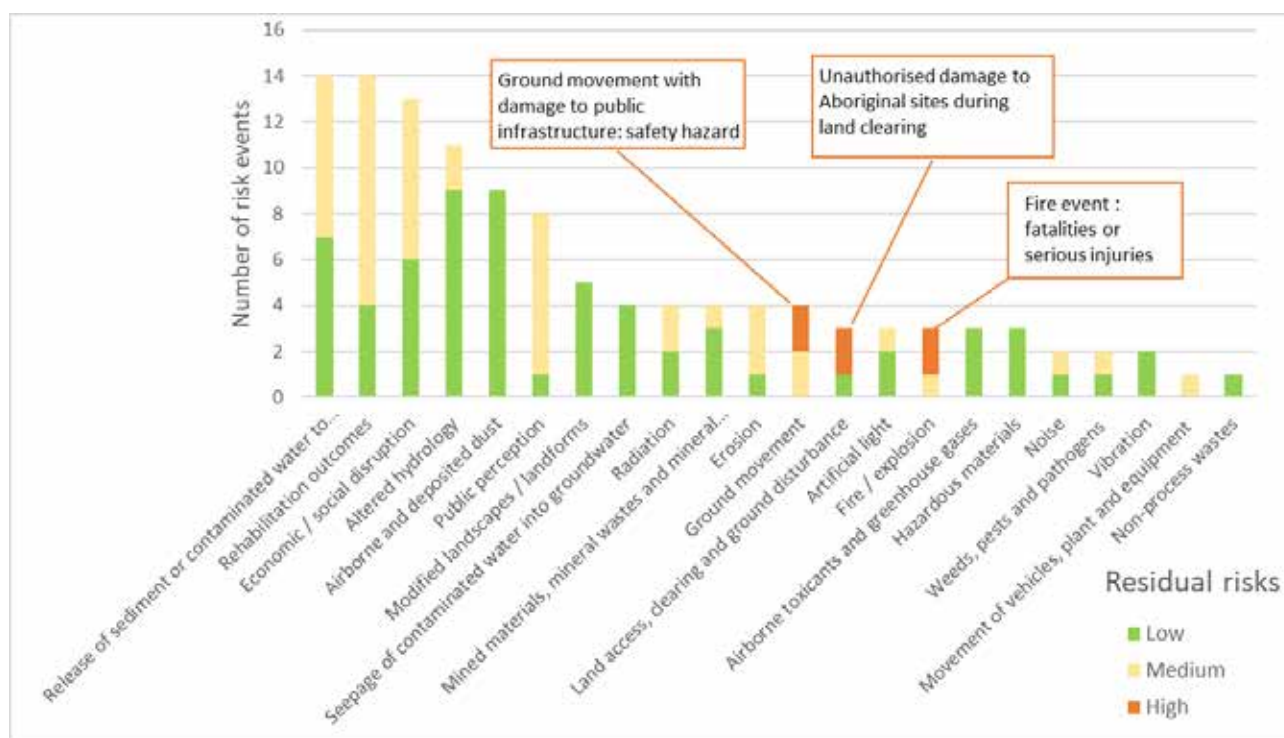


Figure 6-2: Residual risk summary

As recommended by ERR guidelines ([September, 2019](#)[December, 2020](#)), the risk controls proposed for key hazards have been captured in a series of risk treatment plans. The following risk treatment plans are presented in Attachment C of this risk treatment plan:

- Noise risk treatment plan;
- Airborne & deposited dust risk treatment plan;
- Water quality and hydrology risk treatment plan; and
- Biodiversity risk treatment plan.

Risk events associated with public perception and social and/or economic impacts (where the latter go beyond pollution control matters) are addressed in the Community Engagement Plan.

Risks associated with ground movements (slope failure, ground deformation) will be managed through the implementation of a Ground Control Management Plan and associated trigger-action-control plan that will be implemented following detailed mine design and prior to commencement of mining.

The tailings operation maintenance surveillance manual [for management of in-pit tailings storage](#) and the ground control management plan will be prepared as part of detailed engineering design for the Fingerboards project and will be submitted to ERR along with the final work plan for the project.

A Radiation Management Plan and a Radioactive Waste Management Plan will be prepared and submitted to Department of Health ~~and Human Services~~.

7 IMPLEMENTATION OF RISK MANAGEMENT PLAN

The key personnel accountable for implementing this risk management plan are listed in Table 7-1.

Table 7-1: Accountabilities for implementation of risk management plan

Position	Accountabilities
Operations Manager	Responsible for implementing corporate policies and management systems
	Accountable for coordinating company actions and communications in the event of an emergency or significant incident
	Responsible overall for resourcing and ensuring compliance with safety and environmental management systems
	Reviews, approves and commits to implementation of periodic updates of this plan
HSE Specialist	Assesses resourcing and training needs for EMS implementation
	Schedules and coordinates implementation of environmental management plans, including the work plan and risk management plan
	Coordinates planning, design and monitoring for mine rehabilitation and closure
	Reviews and signs off on incident reports
	Assists line managers to incorporate EMS requirements into procedures and tasks
	Responsible for regular performance and compliance reviews of environmental risk control systems
	Liases with stakeholders and environmental staff and contractors
	Schedules and coordinates periodic reviews and updates of this plan
Environmental Officer / Rehabilitation Officer	Coordinates and delivers environmental training and inductions
	Conducts or coordinates environmental monitoring
	Reviews monitoring data and prepares periodic compliance and performance reports
	Manages and maintains environmental records and databases
	Assists in incident investigation and resolution
	Assists in planning and monitoring of mine rehabilitation and closure works
Community Liaison Officer	Distributes project information
	Environmental Review Committee (ERC) participant
	Maintains communications register
	Monitors effectiveness of social impact mitigation measures
	Liases with stakeholders
	Assists in incident investigation and resolution
	Routine reporting on engagement outcomes

8 PERFORMANCE AND COMPLIANCE MONITORING

Details of performance and compliance monitoring to check that risk controls are being implemented and that they are effective are described in Section 9 of each risk treatment plan (Attachment C).

9 REPORTING

A provisional reporting schedule has been prepared, based upon Kalbar’s preliminary assessment of the monitoring that will be required during construction, operations and decommissioning of the Fingerboards project (Table 9-1). Additional reporting requirements are likely to be required through licence / permit conditions issued for the Fingerboards project. More detailed information on reporting for particular risk controls is presented in Section 10 of each risk treatment plan (Attachment C).

Table 9-1: Summary of reporting on risk management performance / compliance (provisional)

#	Aspect addressed in report	Reported to	Reporting method /frequency	Purpose of report
1	Air quality – monitoring results and complaints	Kalbar senior management	Monthly report; exceptions reporting	Check effectiveness of controls; track compliance status; identify activities / conditions requiring improved control.
		Environmental review committee; Community forum group	Quarterly report	Disclosure of performance and compliance status.
		ERR / Clean Energy Regulator (NGERS)	Annual report	Statutory reporting
		General public	Annual report	Disclosure of performance and compliance status.
2	Noise – routine monitoring results and complaints	Kalbar senior management	Monthly report; exceptions reporting	Check effectiveness of controls; track compliance status; identify activities / conditions requiring improved control.
		Environmental review committee; Community forum group	Quarterly report	Disclosure of performance and compliance status.
		ERR	Annual report	Statutory reporting
		General public	Annual report	Disclosure of performance and compliance status.
3	Surface water and groundwater quality monitoring	Kalbar senior management	Monthly report; exceptions reporting	Check effectiveness of controls; track compliance status; identify activities / conditions requiring improved control.
		Environmental review committee; Community forum group	Quarterly report	Disclosure of performance and compliance status.

#	Aspect addressed in report	Reported to	Reporting method /frequency	Purpose of report
		ERR / Southern Rural Water/EGCMA	Annual report	Statutory reporting
		General public	Annual report	Disclosure of performance and compliance status.
4	Surface water extraction / discharge; groundwater extraction	Kalbar senior management	Monthly / exceptions	Check effectiveness of controls; track compliance status; identify activities / conditions requiring improved control.
		Environmental review committee; Community forum group	Quarterly report	Disclosure of performance and compliance status.
		Southern Rural Water / EPA / EGCMA	Annual report	Statutory reporting (including incident reporting, as required)
		General public	Annual report	Disclosure of performance and compliance status.
5	Radiation	Kalbar senior management	Monthly / exceptions	Check effectiveness of controls; track compliance status; identify activities / conditions requiring improved control.
		Environmental review committee; Community forum group	Quarterly report (environmental monitoring)	Disclosure of performance and compliance status.
		DHHS DoH / ERR	Frequency to be agreed in consultation with DHHS (environmental monitoring and OHS monitoring)	Demonstrate compliance with licence issued under Radiation Regulations 2017
		General public	Summary of environmental radiation monitoring via Kalbar website	Disclosure of performance and compliance status.
6	Ground disturbance / rehabilitation / weed & pest	Kalbar senior management	Monthly / exceptions	Check effectiveness of controls; track compliance status; identify activities / conditions requiring improved control.

#	Aspect addressed in report	Reported to	Reporting method /frequency	Purpose of report
	management / implementation of offsets	Environmental review committee; Community forum group	Quarterly report	Disclosure of performance and compliance status.
		ERR / DELWP / EGCMA	Annual report	Statutory reporting / incident reporting as required
		General public	Annual report	Disclosure of performance and compliance status.
7	Dams, mining infrastructure, emergency preparedness	Kalbar senior management	Monthly / exceptions	Confirm compliance with operating & maintenance strategies; ensure implementation of emergency planning exercises and independent audits.
		Environmental review committee; Community forum group	Quarterly report	Disclosure of performance and compliance status.
		ERR (EGCS, CFA, EGMA, DELWP, Wellington Shire, Emergency Management Victoria for information)	Annual report	Statutory reporting (including incident reporting, as required)
		General public	Annual report	Disclosure of summary information (performance / compliance)
8	Community engagement, complaints	Kalbar senior management	Monthly / exceptions	Tracking implementation of Community Engagement Plan; follow up on resolution of complaints and incident reports
		Environmental review committee; Community forum group	Quarterly report	Records of engagement; planning for future engagement activities; review of complaints trends; disclosure of incident reports.
		ERR, EGSC, Wellington Shire	Annual	Statutory reporting
		General public	Annual, via website	Summary compliance and performance statistics

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Risk ID	Hazard	Causes / contributing factors (risk events)	Receptors / Impacts	Phase	Standard mitigation	Mitigation numbers (EES)	Inherent Risk			Additional mitigation	Additional mitigation numbers (EES)	Residual Risk		
							Likelihood over life of activity	Consequence	Risk			Likelihood over life of activity	Consequence	Residual risk
1	Release of sediment or contaminated water to surface waters	Runoff from stockpiles or disturbed / rehabilitated areas	Sedimentation increases water turbidity and harms aquatic species	C,O,CL	<ul style="list-style-type: none"> Where practical, undisturbed water will be diverted around disturbance areas. (SW24) Construction of stockpiles will be designed to avoid flow pathways to minimise erosion (RH04) Surface runoff will be directed around or away from areas of land disturbance, stockpiles, embankments or nearby sensitive areas, where practicable. (SW04) Erosion within gullies will be controlled using primary and secondary sediment traps constructed at appropriate sites. (SW04) Catchment water onsite will be retained to approximately 10% annual-exceedance-probability. (SW04) Runoff that comes into contact with construction areas will be captured by surface water management infrastructure and directed to sedimentation dams. (SW04) Sediment traps and dams will be cleaned at regular intervals, and following storm events and high rainfall events, to maintain the efficiency of the infrastructure. (SW40) Seeding times and rates will consider site/local experience to ensure maximum reliability of vegetation establishment. (RH13) Rehabilitated areas will be irrigated where required to achieve satisfactory performance and vegetation establishment (RH14). Rehabilitation will be designed to ensure plateau tops are close to level and evenly distribute runoff to drainage paths (swales) discharging off the plateau to adjoining major flow channels. Swales will be designed to be broad, U-shaped, no steeper than current stable drainage paths, and consistent in shape with the most stable drainage paths currently present (RH07). Riparian vegetation will be established in rehabilitated flow channels to increase effective hydraulic roughness of the channels, reduce flow velocities, increase channel stability to storm flows and minimise erosion (RH08). High rates of vegetation establishment will be prioritised in rehabilitated flow channels (especially in the first three years of rehabilitation) to maximise surface cover and minimise erosion (RH09). Hydroseeding will be used in rehabilitation areas where appropriate to stabilise the soil surface and minimise erosion (RH12). Rocks will be included in rehabilitated channel beds to increase critical shear of the bed, resist initiation of scour, and channel stability to storm flows and minimise erosion (RH06). Appropriate erosion and sediment control strategies will be implemented to prevent gully erosion in areas adjoining the project footprint (TE23). No-go zones will be established around waterbodies adjoining the project footprint to prevent any disturbance to the biodiversity values present within these areas (TE24). Strategies to control sediment runoff (and reduce the potential for increased turbidity in downstream aquatic habitats) and reduce the potential for spills will be implemented during construction and operations (TE25). 	RH04, RH13, RH14, RH07, RH08, RH09, RH12, RH06, TE23, TE24, TE25, SW24, SW40	Unlikely	Moderate	Medium	<ul style="list-style-type: none"> All site drains will be designed and profiled to reduce water flow velocity, to reduce erosion. (SW04) Stockpiles will be vegetated where appropriate to minimise erosion (RH22). Stockpile slope angles will be constructed as low as practicable and mulch materials and contour ripping will be strategically used to stabilise stockpiles, prevent runoff and minimise erosion (RH23). Topsoil stockpiles scheduled to be in place for four months or longer (or for an unknown duration) will be restricted to a height of 2 m and treated with soil stabiliser, or revegetated immediately following their construction (RH26). Seed will be re-applied in areas where rehabilitation performance does not meet established targets at a later date when suitable conditions, e.g. rainfall, are considered likely to occur (RH13). Gypsum will be applied in sufficient quantity over a depth of at least 500 mm to reduce exchangeable sodium and magnesium to acceptable levels (ESP <4 and Ca/Mg ratio >0.5) where material likely to disperse (such as Haunted Hills Formation overburden or fine tails) is placed as part of a constructed subsoil (RH28). If required, flocculant treatment (i.e., alum, gypsum or hydrated lime) will be used to drop suspended sediment levels in the stormwater. (SW04) 	SW04, RH13, RH22, RH23, RH26, RH28	Unlikely	Moderate	Medium
2	Release of sediment or contaminated water to surface waters	Runoff from stockpiles or disturbed / rehabilitated areas	Increase in metals or radionuclides or change in receiving water pH harms aquatic species or human health	C,O	<ul style="list-style-type: none"> Where practical, undisturbed water will be diverted around disturbance areas. (SW24) Construction of stockpiles will be designed to avoid flow pathways to minimise erosion (RH04). Catchment water onsite will be retained to approximately 10% annual-exceedance-probability. (SW04) 	SW24, RH04, SW04	Unlikely	Insignificant	Low		Possible	Insignificant	Low	
3	Release of sediment or contaminated water to surface waters	Runoff from stockpiles or disturbed / rehabilitated areas	Increase in nutrients or oxygen demand harms aquatic species	C,O	<ul style="list-style-type: none"> Where practical, undisturbed water will be diverted around disturbance areas. (SW24) Construction of stockpiles will be designed to avoid flow pathways to minimise erosion (RH04) Sediment traps and dams will be cleaned at regular intervals, and following storm events and high rainfall events, to maintain the efficiency of the infrastructure. (SW40) Catchment water onsite will be retained to approximately 10% annual-exceedance-probability. (SW04) 	SW24, SW40, RJ04, SW04	Unlikely	Minor	Low		Possible	Minor	Medium	
4	Release of sediment or contaminated water to surface waters	Discharge from contact water dams (via spillway)	Sedimentation increases water turbidity and harms aquatic species	O, CL	<ul style="list-style-type: none"> Catchment water onsite will be retained to approximately 10% annual-exceedance-probability. (SW04) The fresh water storage, process water, contingency water and water management dams will have design storage allowance for a 1 in 100-year average-exceedance probability, 72-hour storm event. (SW11) Freeboards on the fresh water storage dam, process water dam and sediment ponds will be maintained to allow for storm events and high rainfall periods, in accordance with Australian and Victorian regulatory requirements. (SW05) Mine contact water management dams within the Perry River catchment will be emptied as a priority over those located in the Mitchell River catchment to reduce potential water quality impacts from a spillway discharge to the Perry River catchment. (SW32) Aquatic and riparian vegetation will be established in minor waterways between water management dams and major receiving waterways to reduce potential water quality impacts from the release of mine contact water. (SW36) 	SW4, SW05, SW11, SW32, SW36	Rare	Moderate	Medium	<ul style="list-style-type: none"> If required, flocculant treatment (i.e., alum, gypsum or hydrated lime) will be used to drop suspended sediment levels in the stormwater. (SW04) If during successive storm events water management dams are required to be drawn down at a rate greater than can be achieved by the process water demand, mine contact water will be treated at a rate of 24 ML/day prior to discharge to the freshwater dam. Mine contact water will be treated to a level that is acceptable for discharge to the Mitchell River. (SW33) 	SW04, SW33	Rare	Minor	Low
5	Release of sediment or contaminated water to surface waters	Discharge from contact water dam (via spillway)	Increase in metals or radionuclides or change in receiving water pH harms aquatic species or human health	O, CL	<ul style="list-style-type: none"> Freeboards on the fresh water storage dam, process water dam and sediment ponds will be maintained to allow for storm events and high rainfall periods, in accordance with Australian and Victorian regulatory requirements. (SW05) Mine contact water management dams within the Perry River catchment will be emptied as a priority over those located in the Mitchell River catchment to reduce potential water quality impacts from a spillway discharge to the Perry River catchment. (SW32) 	SW05, SW32	Rare	Insignificant	Low	<ul style="list-style-type: none"> If during successive storm events water management dams are required to be drawn down at a rate greater than can be achieved by the process water demand, mine contact water will be treated at a rate of 24 ML/day prior to discharge to the freshwater dam. Mine contact water will be treated to a level that is acceptable for discharge to the Mitchell River. (SW33) 	SW33	Unlikely	Insignificant	Low
6	Release of sediment or contaminated water to surface waters	Release of stored water as a result of failure of contact water dam(s)	Sedimentation increases water turbidity and harms aquatic species	O, CL	<ul style="list-style-type: none"> Dams to be designed, constructed and operated in accordance with ANCOLD requirements. (SW12) Appropriate outlet scour protection will be placed on all stormwater outlets, chutes, spillways and slope drains to dissipate flow energy and minimise risk of soil erosion.(SW30) 	SW12, SW30	Rare	Moderate	Medium	<ul style="list-style-type: none"> Visual assessments of water controls will be undertaken on a regular basis, and after rainfall (GEO06) 	GEO06	Rare	Moderate	Medium
7	Release of sediment or contaminated water to surface waters	Release of stored water as a result of failure of contact water dam(s)	Increase in metals, radionuclides, nutrients or oxygen demand or change in receiving water pH harms aquatic species or human health	O, CL	<ul style="list-style-type: none"> Where infrastructure, such as dams and haul roads, are to be installed on or in close proximity to a watercourse, these areas will be inspected for nearby stream bed instability prior to construction. (SW06) All stream bed instability areas will be inspected prior to, and annually during construction to ascertain a rate of movement and potential risks posed to mine infrastructure. (SW08) 	SW06, SW08	Rare	Minor	Low			Rare	Minor	Low
8	Release of sediment or contaminated water to surface waters	Discharge from sediment ponds or contact water dams (via spillway)	Increase in nutrients or oxygen demand harms aquatic species	O	<ul style="list-style-type: none"> Catchment water onsite will be retained to approximately 10% annual-exceedance-probability. (SW04) The fresh water storage, process water, contingency water and water management dams will have design storage allowance for a 1 in 100-year average-exceedance probability, 72-hour storm event. (SW11) Freeboards on the fresh water storage dam, process water dam and sediment ponds will be maintained to allow for storm events and high rainfall periods, in accordance with Australian and Victorian regulatory requirements. (SW05) Mine contact water management dams within the Perry River catchment will be emptied as a priority over those located in the Mitchell River catchment to reduce potential water quality impacts from a spillway discharge to the Perry River catchment. (SW32) 	SW054, SW05, SW11, SW32	Rare	Minor	Low			Unlikely	Minor	Low

Risk ID	Hazard	Causes / contributing factors (risk events)	Receptors / Impacts	Phase	Standard mitigation	Mitigation numbers (EES)	Likelihood over life of activity	Consequence	Risk	Additional mitigation	Additional mitigation numbers (EES)	Likelihood over life of activity	Consequence	Residual risk
9	Release of sediment or contaminated water to surface waters	Discharge from process water dam (via spillway)	Increases in water turbidity harms aquatic species	O	• Dams to be designed, constructed and operated in accordance with ANCOLD requirements. (SW12)	SW12	Rare	Moderate	Medium	Geotechnical assessments of the tailings cell structures will be conducted. (GEO25)	GEO25	Rare	Moderate	Medium
11	Release of sediment or contaminated water to surface waters	Release of turbid water as a result of process water dam overtopping event	Sedimentation increases water turbidity and harms aquatic species	O	• Dams to be designed, constructed and operated in accordance with ANCOLD requirements. (SW12)	SW12	Rare	Moderate	Medium	• Geotechnical assessments of the tailings cell structures will be conducted. (GEO25)		Rare	Moderate	Medium
12	Release of sediment or contaminated water to surface waters	Discharge from process water dam (via spillway)	Increase in metals or radionuclides or change in receiving water pH harms aquatic species	O	• The design, construction and operation of the freshwater storage dam will follow the Australian National Committee on Large Dams (ANCOLD) Guidelines on the Consequence Categories for Dams (October 2012). (SW12)	SW12	Unlikely	Minor	Low			Unlikely	Minor	Low
14	Release of sediment or contaminated water to surface waters	Release of turbid water as a result of process water dam overtopping event	Increase in metals or radionuclides or change in receiving water pH harms aquatic species	O	• The design, construction and operation of the freshwater storage dam will follow the Australian National Committee on Large Dams (ANCOLD) Guidelines on the Consequence Categories for Dams (October 2012). (SW12)	SW12	Rare	Moderate	Medium			Rare	Moderate	Medium
15	Release of sediment or contaminated water to surface waters	Altered site hydrology results in increased rate of erosion in natural drainage lines downstream of project.	Sedimentation increases water turbidity and harms aquatic species	O, CL	<ul style="list-style-type: none"> • Erosion within gullies will be controlled using primary and secondary sediment traps constructed at appropriate sites. (SW04c) • All site drains will be designed and profiled to reduce water flow velocity, to reduce erosion. (SW04a) • If required, bed instability will be addressed through appropriately designed grade controls, such as the use of rock chutes. (SW07) • All stream bed instability areas will be inspected prior to, and annually during construction to ascertain a rate of movement and potential risks posed to mine infrastructure. (SW08) • Surface water management infrastructure designed to capture run-off (and eroded sediments) will be maintained until such a time that vegetation is fully established and stabilising the landscape. (SW09) • The fresh water storage, process water, contingency water and water management dams will have design storage allowance for a 1 in 100-year average-exceedance probability, 72-hour storm event. (SW11) • Appropriate outlet scour protection will be placed on all stormwater outlets, chutes, spillways and slope drains to dissipate flow energy and minimise risk of soil erosion. (SW30) • Sediment traps and dams will be cleaned at regular intervals and following storm events and high rainfall events to maintain the efficiency of the infrastructure (SW4c). • Swales will be designed to be broad, U-shaped, no steeper than current stable drainage paths, and consistent in shape with the most stable drainage paths currently present. (RH07) • Riparian vegetation will be established in rehabilitated flow channels to increase effective hydraulic roughness of the channels, thereby reducing flow velocities, increasing channel stability to storm flows and minimising erosion. (RH08) 	SW04a,c, SW07, SW08, SW09, SW11, SW30, RH07, RH08	Unlikely	Moderate	Medium	<ul style="list-style-type: none"> • Permanent and long-term drains and bund walls will be topsoiled and vegetated with suitable vegetation as soon as possible. (SW29) • Ephemeral drainage gullies will be revegetated in areas downstream of future mining activities prior to operations commencing (SW34) • Riparian vegetation will be established in rehabilitated flow channels to increase effective hydraulic roughness of the channels, reduce flow velocities, increase channel stability to storm flows and minimise erosion. (RH08) • The density of deep-rooted trees and shrubs will be increased in areas at risk from tunnel erosion by minimising the volume of seepage flows reaching valley slopes and channels. (RH24) • Rocks will be included in rehabilitated channel beds to increase critical shear of the bed, resist initiation of scour, and channel stability to storm flows and minimise erosion. (RH06) 	SW29, SW34, RH06, RH08, RH24	Rare	Moderate	Medium
16	Release of sediment or contaminated water to surface waters	Runoff from septic effluent disposal fields	Increase in nutrients or oxygen demand harms aquatic species	C,O	<ul style="list-style-type: none"> • Wastewater from ablutions and the office will be treated with a wastewater treatment system. There will be sufficient capacity to cater for the operations workforce and visitors. (SW25) - Treated septic effluent will meet EPA requirements for the effluent disposed to land. 	SW25	Unlikely	Minor	Low			Unlikely	Minor	Low
17	Seepage of contaminated water into groundwater	Seepage from in-pit tailings	Contamination of groundwater by acidity, metals or radionuclides	O, CL	<ul style="list-style-type: none"> • Management techniques, such as underdrains, sumps and water recovery pumps will be used to maximise the recovery of water in the mine void tailings containment cells. (GW15) • The project will recover and reuse water where practicable (such as run-off from ore stockpiles and water recovered from tailings within the mine void) (SW23) • Visual assessments of water controls will be undertaken on a regular basis, and after rainfall, to ensure that any ponding, seepage or run-off meets design specifications. (GEO006) • Ops controls: avoid overdosing of flocculant. 	GW15, SW23, GEO006	Unlikely	Minor	Low			Unlikely	Minor	Low
18	Seepage of contaminated water into groundwater	Seepage from in-pit tailings storage area. Seepage from process water dam	Contamination of groundwater by metals or radionuclides	O	<ul style="list-style-type: none"> • All dams for regular water storage will be constructed with engineered liners to reduce infiltration to groundwater. (GW01) • The project will recover and reuse water where practicable (such as run-off from ore stockpiles and water recovered from in-pit tailings storage) (SW23) • Geotechnical assessments of the in-pit tailings cell structures will be conducted. (GEO25) 	GW01, SW23, GEO25	Unlikely	Minor	Low			Unlikely	Minor	Low
19	Seepage of contaminated water into groundwater	Infiltration of septic effluent	Contamination of groundwater by nutrients, pathogens or BOD	C,O	<ul style="list-style-type: none"> • Wastewater from ablutions and the office will be treated with a wastewater treatment system. There will be sufficient capacity to cater for the operations workforce and visitors. (SW25) 	SW25	Unlikely	Minor	Low			Unlikely	Minor	Low
20	Seepage of contaminated water into groundwater	Seepage from fines centrifuge cake or HMC product stockpiles	Contamination of groundwater by acidity, metals or radionuclides	O	<ul style="list-style-type: none"> • Surface runoff will be directed around or away from areas of land disturbance, stockpiles, embankments or nearby sensitive areas, where practicable. (SW04) • The project will recover and reuse water where practicable (such as run-off from ore stockpiles and water recovered from tailings stored within the mine void) and optimise operations to maximise water use efficiency. (SW23) • Runoff from concentrate stockpiles centrifuge cake storage areas will be diverted to the process water dams for reuse. (RD07) 	SW04, SW23, RD07	Unlikely	Minor	Low			Unlikely	Minor	Low
21	Altered hydrology	Capture of water in mine contact water dams	Reduced frequency / magnitude of flow down drainage lines results in modifications to riparian systems along drainage lines - Mitchell system Reduced frequency / magnitude of flow down drainage lines results in modifications to riparian systems along drainage lines - Perry system	O, CL	<ul style="list-style-type: none"> • Surface water will be extracted from the Mitchell River in line with the conditions, timings, and limits detailed in any licence issued by Southern Rural Water. (SW01) 	SW01	Possible	Minor	Medium	<ul style="list-style-type: none"> • Mine contact water from outside of the mine void or tailings dam that is retained in water management dams will be offset by releasing the same volume of fresh water from the fresh water storage dam. Water will be released downstream of the project area (to the Perry River Catchment) or directly to the Mitchell River via the pipeline from the freshwater dam. (SW03) • An adaptive management strategy will be implemented, based on water quality and quantity monitoring results, to determine whether offset water that would typically be returned to the Mitchell River may be directed to ephemeral drainage gullies in a controlled manner. (SW35) 	SW03, SW35	Unlikely	Minor	Low

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22	Altered hydrology	Capture of water in mine contact water dams	Reduced flow in Mitchell harms aquatic ecology Reduced flow in Mitchell reduces water available to irrigators and other water users	O, CL	• Mine contact water from outside of the mine void that is retained in water management dams will be offset by releasing the same volume of fresh water from the fresh water storage dam. Water will be released downstream of the project area (to the Perry River Catchment) or directly to the Mitchell River via the pipeline from the freshwater dam. (SW03)	SW03	Rare	Insignificant	Low			Rare	Insignificant	Low
23	Altered hydrology	Winter fill water extraction from Mitchell River	Reduced flow in Mitchell harms aquatic ecology Reduced flow in Mitchell reduces water available to irrigators and other water users	C,O	• Surface water will be extracted from the Mitchell River in line with the conditions, timings, and limits detailed in any licence issued by Southern Rural Water. (SW01)	SW01	Unlikely	Minor	Low			Unlikely	Minor	Low
25	Altered hydrology	Seepage from process water dam or freshwater storage dam	Groundwater mounding affects vegetation health	O	• All dams for regular water storage will be constructed with engineered liners to reduce infiltration to groundwater. (GW01)	GW01	Rare	Minor	Low			Rare	Minor	Low
26	Altered hydrology	Seepage from tailings in mine void	Groundwater mounding affects vegetation health	O, CL	• Management techniques, such as underdrains, sumps, and water recovery pumps will be used to maximise the recovery of water in the mine void tailings containment cells. (GW15) • A ground control management plan (GCMP) and an associated trigger-action-response plan (TARP) will be developed and implemented prior to commencement of mining.	GW15	Unlikely	Minor	Low			Unlikely	Minor	Low
27	Altered hydrology	Seepage from tailings in mine void	Groundwater seepage compromises geotechnical stability of surrounding areas Groundwater seepage increases risk of tunnel erosion in surrounding areas	O, CL O, CL	• Surface water run-off controls will be incorporated into mine designs, including: i) Prevent uncontrolled ponding of surface water from rainfall within the specified stand-off distance from slope crests. ii) Prevent any surface water run-off over mine slopes with crest windrows, including no ponding behind the windrows. iii) If necessary, collect any rainfall run-off and any seepage water in drains along the toes, and re-direct it down the slope via a lined drain to the mine void floor. iv) Manage water storage and ponding areas on the mine void floor well away from slope toes, and away from areas that will form foundations for road pillars. (GEO05) • Management techniques, such as underdrains, sumps, and water recovery pumps will be used to maximise the recovery of water in the mine void tailings containment cells. (GW15) • A ground control management plan (GCMP) and an associated trigger-action-response plan (TARP) will be developed and implemented prior to commencement of mining.	GEO05, GW15	Unlikely	Moderate	Medium	• Visual assessments of water controls will be undertaken on a regular basis, and after rainfall, to ensure that any ponding, seepage or run-off meets design specifications. (GEO06)	GEO06	Unlikely	Moderate	Medium
28	Altered hydrology	Seepage from process water dam or freshwater storage dam Seepage from mine contact water dams	Groundwater seepage reduces geotechnical stability of surrounding areas Groundwater seepage increases risk of tunnel erosion in surrounding areas Groundwater seepage increases risk of tunnel erosion in surrounding areas Groundwater seepage reduces geotechnical stability of surrounding areas	O O, CL	• All dams for regular water storage will be constructed with engineered liners to reduce infiltration to groundwater. (GW01) • The design, construction and operation of the freshwater storage dam will follow the Australian National Committee on Large Dams (ANCOLD) Guidelines on the Consequence Categories for Dams (October 2012). (SW12)	GW01, SW12	Rare	Moderate	Medium	• Visual assessments of water controls will be undertaken on a regular basis, and after rainfall, to ensure that any ponding, seepage or run-off meets design specifications. (GEO06)	GEO06	Rare	Moderate	Medium
29	Altered hydrology	Altered site hydrology: redirection of flow, modified storage.	Increased flood risk in Mitchell / Perry catchments	C,O,CL	• The design and placement of infrastructure in the project area will consider potential for flow accumulation and increased flood risk. (SW02)	SW02	Unlikely	Minor	Low			Unlikely	Minor	Low
30	Altered hydrology	Extraction of groundwater from the Latrobe Group aquifer	Groundwater drawdown to Latrobe Group aquifer and reduced availability for licensed users or ecosystem support.	O	• Groundwater will be extracted from the Latrobe Group aquifer in line with the conditions, timings, and limits detailed in a license issued by Southern Rural Water. (GW02)	GW02	Unlikely	Minor	Low			Unlikely	Minor	Low
31	Altered hydrology	Extraction of groundwater from the Latrobe Group aquifer	Groundwater drawdown transmitting to overlying Seaspray Group Aquifer, Boisdale Aquifer and surficial alluvial aquifers and reduced availability for licenced groundwater users or ecosystem support.	O	• Groundwater will be extracted from the Latrobe Group aquifer in line with the conditions, timings, and limits detailed in a license issued by Southern Rural Water. (GW02)	GW02	Unlikely	Minor	Low			Unlikely	Minor	Low
32	Altered hydrology	Extraction of groundwater from the Latrobe Group aquifer	Reduced groundwater flux in the Latrobe Group aquifer increasing saline groundwater intrusion near the coast.	O	• Groundwater will be extracted from the Latrobe Group aquifer in line with the conditions, timings, and limits detailed in a license issued by Southern Rural Water. (GW02)	GW02	Rare	Minor	Low			Rare	Minor	Low
33	Erosion	Tunnel erosion compromises stability of water storage structures	Sediment discharge to surface water	O, CL	• The density of deep-rooted trees and shrubs will be increased in areas at risk from tunnel erosion by minimising the volume of seepage flows reaching valley slopes and channels. (RH24) • All dams for regular water storage will be constructed with engineered liners to reduce infiltration to groundwater. (GW01) • Surface water ponding on post-mining landforms will be avoided, where practicable, through appropriate slope profile design and topsoil treatments. (SW38)	RH24, GW01, SW38	Rare	Major	Medium	• The density of deep-rooted trees and shrubs will be increased in areas at risk from tunnel erosion by minimising the volume of seepage flows reaching valley slopes and channels. (RH24) • Visual assessments of water controls will be undertaken on a regular basis, and after rainfall, to ensure that any ponding, seepage or run-off meets design specifications. (GEO06)	RH24, GEO06	Rare	Major	Medium
34	Erosion	Water erosion in drainage channels	Vegetation / ecosystem damage	C,O,CL	• Erosion within gullies will be controlled using primary and secondary sediment traps constructed at appropriate sites. • Catchment water onsite will be retained to approximately 10% annual-exceedance-probability. All site drains will be designed and profiled to reduce water flow velocity, to reduce erosion. (SW04) • Surface water management infrastructure designed to capture run-off (and eroded sediments) will be maintained until such a time that vegetation is fully established and stabilising the landscape. (SW09) • Aquatic and riparian vegetation will be established in minor waterways between water management dams and major receiving waterways to reduce potential water quality impacts from the release of mine contact water. (SW36) • Natural surface water drainage courses will be re-routed to avoid post-mining landforms, where practicable. (SW37) • The downhill side of containment structures, such as surface water drains and road batters, will undergo soil conditioning and be spread with topsoil and revegetated as soon as practicable to minimise erosion and sediment laden runoff. (SW39)	SW04, SW09, SW36, SW37, SW39	Unlikely	Minor	Low			Unlikely	Minor	Low

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35	Erosion	Water erosion near active pit void	Initiation of slope instability	O	<ul style="list-style-type: none"> Where infrastructure, such as dams and haul roads, are to be installed on or in close proximity to a watercourse, these areas will be inspected for nearby stream bed instability prior to construction. (SW06) All stream bed instability areas will be inspected prior to, and annually during construction to ascertain a rate of movement and potential risks posed to mine infrastructure. (SW08) Surface water run-off controls will be incorporated into mine designs, including: i) Prevent uncontrolled ponding of surface water from rainfall within the specified stand-off distance from slope crests. ii) Prevent any surface water run-off over mine slopes with crest windrows, including no ponding behind the windrows. iii) If necessary, collect any rainfall run-off and any seepage water in drains along the toes, and re-direct it down the slope via a lined drain to the mine void floor. iv) Manage water storage and ponding areas on the mine void floor well away from slope toes, and away from areas that will form foundations for road pillars. (GEO05) Surface watercourses will be directed away from the landform during construction and operation, so rainfall does not pond or cause localised infiltration. (GEO24) 	SW06, SW08, GEO05, GEO24	Unlikely	Major	High	<ul style="list-style-type: none"> Visual assessments of water controls will be undertaken on a regular basis, and after rainfall, to ensure that any ponding, seepage or run-off meets design specifications. (GEO06) 	GEO06	Rare	Major	Medium
36	Erosion	Use of inappropriate materials in constructed landforms	Slope instability: loss of containment from constructed landforms	O, CL, PC	<ul style="list-style-type: none"> Rigorous geotechnical design methodology will be undertaken using all available information and account for variability and uncertainty. Slopes of landforms will be constructed from Haunted Hills Formation gravel, particularly for slopes with a gradient of 1:3. For slopes of 1:4 or flatter, dewatered, stacked and compacted coarse sand tailings can be placed within the outer zone of the slope, with Haunted Hills Formation gravel forming an outer layer. (GEO20) Haunted Hills Formation clay will be placed well within the landform. (GEO21) Haunted Hills Formation gravel will be compacted to minimise latent settlement of the landform that may affect the final landform profile. (GEO23) Road pillars will be constructed from HHF Gravel. (GEO13) 	GEO20, GEO21, GEO23, GEO13	Unlikely	Moderate	Medium	Outer slopes of engineered final landform will be constructed of HHF gravels to a minimum thickness of 5m.	--	Unlikely	Moderate	Medium
37	Airborne and deposited dust	Ground clearing, mining, materials handling, vehicular traffic	Exposure to airborne particulates (total particulates, PM10, PM2.5, crystalline silica) sensitive receptors exceeds human health guideline values	C,O,CL	<ul style="list-style-type: none"> Areas will be cleared in a staged manner only as required to reduce dust generation by minimising the area of exposed ground surfaces at any one time. (AQ01) Water or appropriate suppressants will be applied to working surfaces, stockpiles, haul roads and other areas where rehabilitation is not yet practical, to minimise dust generation. In particular, during drier months when less rainfall is expected. (AQ02) Drop heights for topsoil and overburden during creation of stockpiles will be minimised as far as practicable to reduce dust generation. (AQ03) Topsoil stripping will be planned and conducted in consideration of forecast and actual weather conditions to minimise dust generation. (AQ05) The mine void will be progressively backfilled and rehabilitated to minimise the area required for topsoil and overburden stockpiles. (AQ07) Haul vehicles will travel on designated haul roads only and haul routes will be minimised where possible. 	AQ01, AQ02, AQ03, AQ05, AQ07, AQ08, AQ16, AQ17	Unlikely	Minor	Low	<ul style="list-style-type: none"> Certain activities will be scheduled to avoid excessive dust emissions during forecast adverse weather conditions. (AQ14) Certain activities will cease when real-time monitoring indicates that trigger level near key sensitive receptors have been reached. (AQ13) 	AQ13, AQ14	Unlikely	Minor	Low
38	Airborne and deposited dust	Wind erosion from disturbed surfaces and /or stockpiles	Exposure to airborne particulates (total particulates, PM10, PM2.5, crystalline silica) sensitive receptors exceeds human health guideline values	C,O,CL	<ul style="list-style-type: none"> Areas will be cleared in a staged manner only as required to reduce dust generation by minimising the area of exposed ground surfaces at any one time. (AQ01) Water or appropriate suppressants will be applied to working surfaces, stockpiles, haul roads and other areas where rehabilitation is not yet practical, to minimise dust generation. In particular, during drier months when less rainfall is expected. (AQ02) 	AQ01, AQ02, AQ03, AQ07, AQ08, RH26	Unlikely	Minor	Low	<ul style="list-style-type: none"> Certain activities will be scheduled to avoid excessive dust emissions during forecast adverse weather conditions. (AQ14) Certain activities will cease when real-time monitoring indicates that trigger level near key sensitive receptors have been reached. (AQ13) 	AQ13, AQ14	Unlikely	Minor	Low
40	Airborne and deposited dust	Ore processing	Exposure to airborne particulates (total particulates, PM10, PM2.5, crystalline silica) sensitive receptors exceeds human health guideline values	O	<ul style="list-style-type: none"> Ore will be processed as a slurry to reduce dust emissions. (AQ11) There will be no crushing or grinding of ore, preventing the potential generation of respirable crystalline silica emissions. (AQ12) 	AQ11, AQ12	Rare	Minor	Low	Additional mitigation measures will be implemented and monitored through the proposed environmental management framework. In particular, the development of an air quality risk treatment plan (AQ15)	AQ15	Rare	Minor	Low
41	Airborne and deposited dust	Wheel-generated dust and lift off from disturbed areas and stockpiles	Contamination of horticultural crops (inert dust)	C,O,CL	<ul style="list-style-type: none"> Areas will be cleared in a staged manner only as required to reduce dust generation by minimising the area of exposed ground surfaces at any one time. (AQ01) Water or appropriate suppressants will be applied to working surfaces, stockpiles, haul roads and other areas where rehabilitation is not yet practical, to minimise dust generation. In particular, during drier months when less rainfall is expected. (AQ02) Drop heights for topsoil and overburden during creation of stockpiles will be minimised as far as practicable to reduce dust generation. (AQ03) Speed limits will be implemented and enforced on unsealed project roads to minimise dust generation. (AQ04, TE33) Topsoil stripping will be planned and conducted in consideration of forecast and actual weather conditions to minimise dust generation. (AQ05) The mine void will be progressively backfilled and rehabilitated to minimise the area required for topsoil and overburden stockpiles. (AQ07) Haul vehicles will travel on designated haul roads only and haul routes will be minimised where possible. (AQ08) Construction and management of haul roads will use best practice dust control measures. For example, the application of water or chemical suppressants, cessation of haulage during adverse weather conditions or in response to real-time monitoring. (AQ16) Construction of the wear course of internal haul roads will use an optimal size grading of aggregate with road stabilisation and compaction agents. (AQ17) Topsoil stockpiles scheduled to be in place for four months or longer (or for an unknown duration) will be 	AQ01, AQ02, AQ03, AQ05, AQ07, AQ08, AQ16, AQ17, RH26	Unlikely	Minor	Low	Additional mitigation measures will be implemented and monitored through the proposed environmental management framework. In particular, the development of an air quality risk treatment plan (AQ15)	AQ15	Unlikely	Minor	Low
42	Airborne and deposited dust	Wheel-generated dust and lift off from disturbed areas and stockpiles	Contamination of horticultural crops (metals or radionuclides)	C,O,CL	<ul style="list-style-type: none"> Areas will be cleared in a staged manner only as required to reduce dust generation by minimising the area of exposed ground surfaces at any one time. (AQ01) Water or appropriate suppressants will be applied to working surfaces, stockpiles, haul roads and other areas where rehabilitation is not yet practical, to minimise dust generation. In particular, during drier months when less rainfall is expected. (AQ02) 	AQ01, AQ02, AQ03, AQ04, AQ05, AQ07, AQ08, AQ16, AQ17, TE33, SE26, SE22	Unlikely	Insignificant	Low			Unlikely	Insignificant	Low
43	Airborne and deposited dust	Wheel-generated dust and lift off from disturbed areas and stockpiles	Adverse impacts on vegetation health / productivity / marketability	C,O,CL	<ul style="list-style-type: none"> Areas will be cleared in a staged manner only as required to reduce dust generation by minimising the area of exposed ground surfaces at any one time. (AQ01) Water or appropriate suppressants will be applied to working surfaces, stockpiles, haul roads and other areas where rehabilitation is not yet practical, to minimise dust generation. In particular, during drier months when less rainfall is expected. (AQ02) Drop heights for topsoil and overburden during creation of stockpiles will be minimised as far as practicable to reduce dust generation. (AQ03) Speed limits will be implemented and enforced on unsealed project roads to minimise dust generation. (AQ04, TE33) Topsoil stripping will be planned and conducted in consideration of forecast and actual weather conditions to minimise dust generation. (AQ05) The mine void will be progressively backfilled and rehabilitated to minimise the area required for topsoil and overburden stockpiles. (AQ07) Haul vehicles will travel on designated haul roads only and haul routes will be minimised where possible. (AQ08) Construction and management of haul roads will use best practice dust control measures. For example, the application of water or chemical suppressants, cessation of haulage during adverse weather conditions or in response to real-time monitoring. (AQ16) Construction of the wear course of internal haul roads will use an optimal size grading of aggregate with road stabilisation and compaction agents. (AQ17) 	AQ01, AQ02, AQ03, AQ04, AQ05, AQ07, AQ08, AQ16, AQ17, TE33	Unlikely	Minor	Low	Additional mitigation measures will be implemented and monitored through the proposed environmental management framework. In particular, the development of an air quality risk treatment plan. (AQ15)	AQ15	Unlikely	Minor	Low
			Soiling of surfaces at sensitive receptors		<ul style="list-style-type: none"> Areas will be cleared in a staged manner only as required to reduce dust generation by minimising the area of exposed ground surfaces at any one time. (AQ01) Water or appropriate suppressants will be applied to working surfaces, stockpiles, haul roads and other areas where rehabilitation is not yet practical, to minimise dust generation. In particular, during drier months when less 									

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44	Airborne and deposited dust	Wheel-generated dust and lift off from disturbed areas and stockpiles	Deposition on rooftops, followed by contamination of rainwater tanks Aesthetic impacts: reduction in clarity of air	C,O,CL	<ul style="list-style-type: none"> rainfall is expected. (AQ02) Drop heights for topsoil and overburden during creation of stockpiles will be minimised as far as practicable to reduce dust generation. (AQ03) Speed limits will be implemented and enforced on unsealed project roads to minimise dust generation. (AQ04, TE33) Topsoil stripping will be planned and conducted in consideration of forecast and actual weather conditions to minimise dust generation. (AQ05) The mine void will be progressively backfilled and rehabilitated to minimise the area required for topsoil and overburden stockpiles. (AQ07) Haul vehicles will travel on designated haul roads only and haul routes will be minimised where possible. (AQ08) Construction and management of haul roads will use best practice dust control measures. For example, the application of water or chemical suppressants, cessation of haulage during adverse weather conditions or in response to real-time monitoring. (AQ16) Construction of the wear course of internal haul roads will use an optimal size grading of aggregate with road 	AQ01, AQ02, AQ03, AQ04, AQ05, AQ07, AQ08, AQ16, AQ17, TE33, SE26, SE22	Unlikely	Insignificant	Low			Unlikely	Insignificant	Low
45	Airborne toxicants and greenhouse gases	Wind erosion from disturbed surfaces	Exposure to airborne toxicants at sensitive receptors exceeds human health guideline values	C,O,CL	<ul style="list-style-type: none"> Areas will be cleared in a staged manner only as required to reduce dust generation by minimising the area of exposed ground surfaces at any one time. (AQ01) Water or appropriate suppressants will be applied to working surfaces, stockpiles, haul roads and other areas where rehabilitation is not yet practical, to minimise dust generation. In particular, during drier months when less rainfall is expected. (AQ02) Drop heights for topsoil and overburden during creation of stockpiles will be minimised as far as practicable to reduce dust generation. (AQ03) Topsoil stripping will be planned and conducted in consideration of forecast and actual weather conditions to minimise dust generation. (AQ04) Speed limits will be implemented and enforced on unsealed project roads (TE33) The mine void will be progressively backfilled and rehabilitated to minimise the area required for topsoil and overburden stockpiles. (AQ07) A principal contact person will be identified for community queries and follow a complaint response procedure (see Chapter 12: Environmental management framework for the detailed complaints procedure). Twenty-four hour contact details for relevant project personnel will be provided through letters and signage onsite. (AQ19) 	AQ01, AQ02, AQ03, AQ04, AQ07, AQ19, TE33	Unlikely	Insignificant	Low	Certain activities will cease when real-time monitoring indicates that trigger level near key sensitive receptors have been reached. (AQ13) Certain activities will be scheduled to avoid excessive dust emissions during forecast adverse weather conditions. (AQ14)	AQ13, AQ14	Unlikely	Insignificant	Low
		Wind erosion from stockpiles		O			Unlikely	Insignificant						
46	Airborne toxicants and greenhouse gases	Ore processing	Exposure to airborne toxicants at sensitive receptors exceeds human health guideline values	O	<ul style="list-style-type: none"> Ore will be transferred across the project area as a slurry to reduce potential for dust emissions. (AQ10) Ore will be processed as a slurry to reduce dust emissions. (AQ11) There will be no crushing or grinding of ore. (AQ12) Plant, machinery and vehicles will be regularly maintained in accordance with manufactures standards to minimise exhaust emissions. (AQ18) Vehicle diesel consumption will be reduced through equipment selection, load and route optimisation and production scheduling, and minimising idle time. (GHG04) Equipment will be maintained and operated according to manufacturer/supplier guidelines and recommendations. (GHG05) 	AQ10, AQ11, AQ12, AQ18, GHG04, GHG05	Rare	Insignificant	Low			Rare	Insignificant	Low
		Vehicle emissions		C,O,CL										
47	Airborne toxicants and greenhouse gases	Scope 1 and Scope 2 GHG emissions	Emissions intensity incompatible with best practice management	C,O,CL	<ul style="list-style-type: none"> Solar photovoltaic technology will be used to supplement electricity requirements for applications such as lighting. (GHG01) Energy efficient technology will be used where practicable, including low energy lighting (e.g., LEDs). (GHG02) Electricity usage will be conducted in accordance with the power factor limits specified in Table 2 of the Victorian Electricity Distribution Code. (GHG03) Vehicle diesel consumption will be reduced through equipment selection, load and route optimisation and production scheduling, and minimising idle time. (GHG04) Equipment will be maintained and operated according to manufacturer/supplier guidelines and recommendations. (GHG05) Generator diesel consumption will be reduced by selecting a flexible configuration that allows for electricity output to be adjusted in line with demand. (GHG06) 	GHG01, GHG02, GHG03, GHG04, GHG05, GHG06	Possible	Minor	Medium	<ul style="list-style-type: none"> Solar photovoltaic technology will be used to supplement electricity requirements for applications such as lighting. (GHG01) Energy efficient technology will be used where practicable, including low energy lighting (e.g., LEDs). (GHG02) The amount of land clearance will be minimised as far as practicable to reduce greenhouse gas emissions. (GHG07) Kalbar will regularly consider and implement new greenhouse gas mitigation opportunities and/or technologies, where practicable. (GHG08) 	GHG01, GHG02	Unlikely	Minor	Low
48	Airborne and deposited dust	Wind erosion from disturbed surfaces and/or stockpiles	Exposure to radionuclides at sensitive receptors exceeds human health guideline values	C,O,CL	<ul style="list-style-type: none"> Generation and inhalation of radioactive dust will be minimised through: <ul style="list-style-type: none"> Ensuring HMC stockpile material is damp. Progressively backfilling and revegetating the worked-out mine void to minimise the area of mine materials exposed to the environment. Pumping ore as a slurry to the wet concentrate plant and returning tailings as a slurry. Retaining sufficient moisture content in concentrates during processing. Transporting concentrate in fully-sealed containers or covered for bulk shipments. (RD04) Generation and inhalation of dust will be minimised through: <ul style="list-style-type: none"> Limiting vehicle speed on unsealed roads. Suppressing dust by applying water to unsealed roads in the project area as required. Providing suitable respiratory protection for tasks with associated inhalation hazards. Ensuring passing trucks pass through a wheel wash prior to leaving the site. Minimising the drop height of truck dumping. (RD10) 	RD04, RD10	Unlikely	Insignificant	Low	HMC stockpile areas will be protected from windblown erosion by the use of water sprays and perimeter shade cloth fences (or a more substantial structure).		Unlikely	Insignificant	Low
49	Airborne and deposited dust	Ore processing	Exposure to radionuclides at sensitive receptors exceeds human health guideline values	O	<ul style="list-style-type: none"> Ore will be transferred across the project area as a slurry to reduce potential for dust emissions. (AQ10) Ore will be processed as a slurry to reduce dust emissions. (AQ11) There will be no crushing or grinding of ore. (AQ12) Radiation exposure to workers will be minimised through: <ul style="list-style-type: none"> Engineering controls, such as ventilation, dust control, and appropriate machinery shielding. Limiting occupancy in identified higher risk areas and/or restricting time spent on identified higher risk activities. Providing warning signs and labels in higher risk areas. Providing adequate facilities for personal hygiene. Providing personal protective equipment for certain procedures where higher potential radiation doses might necessitate its use. (RD09) 	AQ10, AQ11, AQ12, RD09	Rare	Insignificant	Low			Rare	Insignificant	Low
			Noise levels at sensitive receptors exceed daytime or evening guideline values (EPA Publication 1254 Noise Control Guidelines; Noise from Industry in Regional Victoria (NIRV))	C	<ul style="list-style-type: none"> When slurry pumping units are located within 800 m of any dwelling, temporary acoustic barriers will be used. (NV03) A noise and vibration risk management plan will be prepared and implemented. (NV09) Mobile plant items will be fitted with broadband reversing signals to avoid tonal characteristic associated with traditional reversing beepers at nearby sensitive receptors. (NV10) Activities such as overburden movement will be restricted to day and evening periods during year 1 to mitigate noise propagation during the night. (NV11) Earth bunds will be used as a screening measures at strategic locations to screen operational noise impacts on sensitive receptors. (NV12) Direct treatment through plant noise-reduction kits and cladding or screening of the WCP will be undertaken. Suitable noise-reduction kits have been identified for specific items of plant in consultation with industry specialists. (NV13) Cladding will be installed on the sides of the WCP closest to sensitive receptors. The cladding will comprise 0.6 mm thick sheet steel with a lining of 75 mm thick, 32 kg/m2 glasswool insulation, which is expected to provide a sound insulation rating of Rw 31. (NV14) 		Unlikely							
			Noise levels at sensitive receptors exceed night time guideline values (EPA Publication 1254 Noise Control Guidelines; Noise from Industry in Regional Victoria (NIRV))	C			Possible							

Risk ID	Hazard	Causes / contributing factors (risk events)	Receptors / Impacts	Phase	Standard mitigation	Mitigation numbers (EES)	Likelihood over life of activity	Consequence	Risk	Additional mitigation	Additional mitigation numbers (EES)	Likelihood over life of activity	Consequence	Residual risk
50	Noise	Operation of machinery and materials handling	Noise levels at sensitive receptors exceed daytime or evening guideline values (EPA Publication 1254 Noise Control Guidelines; Noise from Industry in Regional Victoria (NIRV))	O, CL	<ul style="list-style-type: none"> • Consultation with affected residents located in the vicinity of the site will be conducted during the course of the project to investigate the need for alternative or additional noise control measures depending on each individual situation (e.g., acoustic treatment for dwellings, or temporary relocation). (NV15) • Commissioning noise tests will be undertaken prior to work starting, including checking that bunds have been constructed to specifications required for compliance with EPA guidelines. (NV16) • Noisier activities will be scheduled for less sensitive times where feasible and works will be limited as much as practicable during the night and weekends. (NV17) • Residents at noise-sensitive receptors will be informed of the timing and location of each construction stage and associated noise reduction measures, and given notice and details of periods of noisy activities (such as excavation). (NV18) • Managerial processes will be implemented (such as 'push-back' mining operations) to optimise the direction of pit excavation so the terrain provides maximum natural attenuation of plant and equipment. (NV19) • All personnel will be informed about the measures required to minimise noise including through regular toolbox talks. (NV20) • All pneumatic tools used near residential areas will be fitted with an effective silencer on the air exhaust port. (NV22) • Plant will be turned off when not in use. (NV23) • All plant and equipment will be maintained in accordance with manufacturers' specifications. (NV24) • No truck associated with the work will be left standing with its engine operating for more than five minutes, where possible. (NV25) • All project vehicles will be maintained in accordance with manufacturers' specifications. (NV27) • Good practice noise reduction practices for heavy vehicles will be implemented. (NV28) • Activities which generate the highest potential noise and vibration will not be scheduled at night, where 	NV03, NV09, NV10, NV11, NV12, NV13, NV14, NV14, NV16, NV17, NV18, NV19, NV20, NV22, NV23, NV24, NV25, NV27, NV28, NV30, NV31, NV32, NV33, NV35, SE22, SE26	Unlikely	Moderate	Medium	<ul style="list-style-type: none"> • Contingency procedures will be developed and implemented if noise emissions during construction are observed to exceed those modelled for this EES, including additional mitigation measures to be considered during less favourable meteorological conditions that may enhance noise emissions from the project area. (NV06) • Consultation with affected residents located in the vicinity of the site will be conducted during the course of the project to investigate any need for alternative noise control measures depending on each individual situation (e.g., acoustic treatment for dwellings, or temporary relocation). (NV15) 	NV06, NV15	Unlikely	Moderate	Medium
			Noise levels at sensitive receptors exceed night time guideline values (EPA Publication 1254 Noise Control Guidelines; Noise from Industry in Regional Victoria (NIRV))	O, CL										
			Noise levels at sensitive premises cause sleep disruption and / or loss of amenity	C,O,CL										
51	Noise	Operation of machinery and materials handling	Noise disrupts / displaces terrestrial fauna	C,O,CL	<ul style="list-style-type: none"> • Excessive noise or vibration emitting equipment or machinery will be located away from sensitive ecological values. Where relocation is not feasible, control measures such as mufflers or baffles will be employed. (TE35) 	TE35	Possible	Insignificant	Low		Possible	Insignificant	Low	
52	Vibration	Operation of machinery and materials handling	Vibration causes structural damage to private or public property	C,O,CL	<ul style="list-style-type: none"> • A noise and vibration risk management plan will be prepared and implemented. (NV09) 	NV09	Rare	Insignificant	Low		Rare	Insignificant	Low	
53	Vibration	Operation of machinery and materials handling	Vibration adversely affects human comfort / amenity	C,O,CL	<ul style="list-style-type: none"> • All pneumatic tools used near residential areas will be fitted with an effective silencer on the air exhaust port. (NV22) • Plant will be turned off when not in use. (NV23) • All plant and equipment will be maintained in accordance with manufacturers' specifications. (NV24) • No truck associated with the work will be left standing with its engine operating for more than five minutes, where possible. (NV25) • All project vehicles will be maintained in accordance with manufacturers' specifications. (NV27) • Activities which generate the highest potential noise and vibration will not be scheduled at night, where feasible, (NV30) 	NV22, NV23, NV24, NV25, NV27, NV30	Unlikely	Minor	Low		Unlikely	Minor	Low	
54	Weeds, pests and pathogens	Vehicle movements	Weeds or pathogens are introduced or spread through contact with vehicles moving about the site	C,O,CL	Biosecurity procedures will be implemented to avoid project activities introducing and spreading weeds, pests and diseases into rehabilitation areas. (TE45)	TE45	Possible	Minor	Medium	<ul style="list-style-type: none"> • Revegetation of mined areas will include management of weeds and pest animals. (TE47) • Declared noxious weeds or established pest animals present on the licence area will be managed through a regular weed / vermin survey and treatment program. • Rehabilitation practices will be developed with a view to reducing weed occurrence in revegetated areas (compared to pre-mining conditions), for example through scalping and burial of weed-infested topsoil. 	TE47	Unlikely	Minor	Low
		Imported materials	Weeds or pathogens are introduced or spread in materials brought to site				Unlikely	Minor	Low					
55	Weeds, pests and pathogens	Ground disturbance	Ground disturbance encourages weed establishment	C,O,CL	Disturbed areas will be revegetated to increase habitat value and visual amenity while reducing the likelihood for establishment and proliferation of weeds. (TE46)	TE46	Likely	Moderate	High	Revegetation of mined areas will include management of weeds and pest animals. (TE47)	TE47	Possible	Minor	Medium
56	Movement of vehicles, plant and equipment	On-site vehicle collision with fauna	Fauna injury or fatality	C,O,CL	<ul style="list-style-type: none"> • Appropriate speed-limits will be applied in areas containing remnant native vegetation to reduce the risk of fauna mortality from vehicle strike. (TE17) • Traffic movements will be minimised during the night, dusk and dawn periods in remnant native vegetation areas, where possible. (TE18) 	TE17, TE18	Likely	Insignificant	Medium	<ul style="list-style-type: none"> • Where practicable, access / haul roads that will experience heavy usage will not be established adjacent to areas of high ecological sensitivity. (TE06) • Construction machinery, vehicles and pedestrians will be confined to formed tracks and designated areas, where possible. (TE34) • Use of underpasses/culverts and overpasses will be investigated to maintain permeability for ground dwelling species and arboreal marsupials where access roads and linear infrastructure bisect or cross native vegetation. (TE29) • Haul routes will be designed to maximise visibility. 	TE06, TE29, TE34	Likely	Insignificant	Medium
57	Artificial light	Emissions from fixed plant	Amenity impacts at sensitive premises	C,O	<ul style="list-style-type: none"> • Fixed lighting on plant and buildings will be designed to reduce the potential for light spill through measures such as focussed/targeted lighting and installation of shields or baffles. (VL02) • Works will be scheduled, wherever possible, during daylight hours to avoid night-time activities in areas directly visible from nearby residences. (VL04) 	VL02, VL04	Likely	Minor	Medium			Likely	Minor	Medium
58	Artificial light	Emissions from mobile plant	Amenity impacts at sensitive premises	C,O,CL	The use of low beam lights on vehicles will be promoted except in case of emergency or where safety is compromised. (SE16)	SE16	Unlikely	Minor	Low			Unlikely	Minor	Low
59	Artificial light	Emissions from fixed plant	Modified fauna behaviour / displacement or disruption of fauna	C,O	Lighting systems will be designed and used in a way that minimises potential impacts on fauna, particularly nocturnal species (mammals such as possums, gliders and bats, and birds); including, where applicable, use of light shields and directional lighting to avoid interference with foraging or roosting activities. (TE36)	TE36	Possible	Insignificant	Low			Possible	Insignificant	Low
		Emissions from mobile plant		C,O,CL			Unlikely	Insignificant				Unlikely	Insignificant	
60	Radiation	Radionuclides in backfilled materials	Radiation levels in rehabilitated land exceeds pre-mining levels.	O, CL	<ul style="list-style-type: none"> • A Radioactive Waste Management Plan will be developed and implemented for the site, in consultation with the Victorian Department of Health and Human Services. 	RH03	Rare	Minor	Low	Additional pre-commencement surveys will be implemented, as recommended by the Victorian Department of Health and Human Services.		Rare	Minor	Low
		Radon / thoron emanation from backfilled materials	Exposure to radon / thoron exceeds public health guidelines	O, CL	<ul style="list-style-type: none"> • Fines tailings (centrifuge cake) will be covered by approximately 20m of overburden, manufactured subsoil and topsoil. 							Rare	Minor	
61	Mined materials, mineral wastes and mineral products	Wastes or contaminated materials abandoned on site at closure	Potential radiation exposure to people or animals	O, CL	A third party contamination audit will be conducted as part of mine decommissioning and closure, or in the event of the project entering into care and maintenance: any remaining mineralised materials will be encapsulated in the pit void or disposed of to a secure offsite facility, as appropriate.	--	Unlikely	Minor	Low			Rare	Minor	Low

Risk ID	Hazard	Causes / contributing factors (risk events)	Receptors / Impacts	Phase	Standard mitigation	Mitigation numbers (EES)	Likelihood over life of activity	Consequence	Risk	Additional mitigation	Additional mitigation numbers (EES)	Likelihood over life of activity	Consequence	Residual risk
62	Radiation	Inappropriate handling, storage or disposal of radiation sources (density gauges, neutron probes, etc)	Accidental exposure to radiation	O, CL	<ul style="list-style-type: none"> Radiation exposure to workers will be minimised by implementing standard operating procedures for handling and transport of radioactive materials, use of radiation sources/apparatus and industrial gauges. (RD01) Workers will be provided with training specific to their role on potential radiation risks and measures to be implemented to reduce or minimise radiation exposures. All training will be documented. (RD02) The project will be operated in accordance with a management licence covering radiation safety-related aspects of the project in accordance with the provisions of the Radiation Regulations. (RD25) 	RD01, RD02, RD05	Rare	Major	Medium	<ul style="list-style-type: none"> A Radioactive Waste Management Plan will be developed and implemented for the site, in consultation with the Victorian Department of Health and Human Services. Plants will be operated to ensure that radioactivity concentrations in HMC product will not exceed 10 Bq/g. Radiation sources for density gauges or geophysical equipment will be handled by appropriately qualified contactors or personnel. 		Rare	Major	Medium
63	Radiation	Working in proximity to radioactive materials	Radiation exposure exceeds applicable workplace guidelines	O	<ul style="list-style-type: none"> Radiation exposure to workers will be minimised by implementing standard operating procedures for handling and transport of radioactive materials, use of radiation sources/apparatus and industrial gauges. (RD01) Workers will be provided with training specific to their role on potential radiation risks and measures to be implemented to reduce or minimise radiation exposures. All training will be documented. (RD02) Exposure to gamma radiation will be minimised through: <ul style="list-style-type: none"> Providing site security and signage to restrict unauthorised access. Locating product stockpiles at sufficient distance from other operations. Only loading trucks immediately prior to departure from the site. Transporting HMC in accordance with the Code of Practice for Safe Transport of Radioactive Material. (RD03) The project will be operated in accordance with a management licence covering radiation safety-related aspects of the project in accordance with the provisions of the Radiation Regulations. (RD05) Ingestion of radioactive material will be minimised through: <ul style="list-style-type: none"> Providing hand washing facilities and encouraging good hygiene practices. Restricting smoking and eating onsite to designated areas only. Providing sufficient hose-down points and sumps to allow clean-up of product. (RD06) Exposure from handling operations at the port will be minimised through: <ul style="list-style-type: none"> Adequately segregating stored materials from other cargo, including providing adequate signposting. Adopting remote handling and minimising exposure times wherever possible. Using rotator boxes to load bulk shipments of concentrate into vessels. (RD08) Radiation exposure to workers will be minimised through: <ul style="list-style-type: none"> Engineering controls, such as ventilation, dust control, and appropriate machinery shielding. Limiting occupancy in identified higher risk areas and/or restricting time spent on identified higher risk activities. Providing warning signs and labels in higher risk areas. Providing adequate facilities for personal hygiene. 	RD01, RD02, RD03, RD05, RD06, RD08, RD09	Unlikely	Moderate	Medium	<ul style="list-style-type: none"> A Radioactive Waste Management Plan will be developed and implemented for the site, in consultation with the Victorian Department of Health and Human Services. Plants will be operated to ensure that radioactivity concentrations in HMC product will not exceed 10 Bq/g. Radiation sources for density gauges or geophysical equipment will be handled by appropriately qualified contactors or personnel. 		Unlikely	Moderate	Medium
64	Radiation	Inappropriate response and clean up procedures in the event of a transport accident	Human exposure to radioactive materials	O	<ul style="list-style-type: none"> Workers will be provided with training specific to their role on potential radiation risks and measures to be implemented to reduce or minimise radiation exposures. All training will be documented. (RD02) HMC will be transported in accordance with the the Code of Practice for Safe Transport of Radioactive Material. (RD03) 	RD02, RD03, RD04, RD08	Unlikely	Minor	Low			Rare	Minor	Low
65	Ground movement / landform instability	Slope failure associated with ground movements	Damage to public infrastructure (roads, powerlines) or properties outside mining licence area.	O, CL	<ul style="list-style-type: none"> Rigorous geotechnical design methodology will be undertaken using all available information and account for variability and uncertainty. Daily visual assessments around mining areas near infrastructure will be undertaken, including checks for signs of deformation (e.g., cracks, compressional ridges), over steepening of slopes and poor management of surface water (e.g., pooling). (GEO03) Surface water run-off controls will be incorporated into mine designs (GEO05) Visual assessments of water controls will be undertaken on a regular basis, and after rainfall, to ensure that any ponding, seepage or run-off meets design specifications. (GEO06) Earthquake motion (acceleration) will be accounted for in mine slope designs. (GEO07) Visual assessments of excavations for any variability of expected geological conditions will be undertaken, with particular focus on weaker than expected materials or features. (GEO08) Excavation visual assessments will be routinely completed by an experienced geologist or mining engineer with geotechnical understanding. (GEO09) Deformation and settlement monitoring of road pillars around mining operations will be undertaken. (GEO12) Where possible, exclusion zones will be put in place for the geotechnical risk zones around each mining area and public access will be limited in affected areas. (GEO16) Where possible, affected properties will be acquired to prevent access to these affected areas. (GEO17) Tailings will be placed on a sound, free-draining mine floor. (GEO18) If excess materials are placed on natural surfaces, weak materials such as topsoil, alluvium, and dune sand will be removed prior to placement. (GEO19) Fine tailings will be dewatered by centrifugation before placement in the mine void. (GEO22) Haunted Hills Formation gravel will be compacted to minimise latent settlement of the landform that may affect the final landform profile. (GEO23) Geotechnical assessments of the tailings cell structures will be conducted. (GEO25) Additional geotechnical testing will be conducted as part of detailed design, including shear strength testing of the Coongulmerang Formation, and the HHF Clay A ground control management plan (GCMP) and an associated trigger-action-response plan (TARP) will be developed and implemented prior to commencement of mining. 	GEO03, GEO05, GEO06, GEO07, GEO08, GEO09, GEO12, GEO16, GEO17, GEO18, GEO19, GEO22, GEO23, GEO25	Rare	Major	Medium	<ul style="list-style-type: none"> Slope stability and displacement monitoring of mine slopes will be undertaken (GEO02) All mined slopes adjacent to infrastructure will be surveyed and verified that they have been mined within acceptable tolerances of specified slope designs. (GEO04) Following an earthquake event, geotechnical inspections will be completed to check mining areas and surrounds for evidence of slope instability, ground subsidence or deformation. Slope stability and deformation monitoring equipment will be checked to ensure it is still functioning. (GEO10) Deformation and settlement monitoring of mine slopes around mining operations will be undertaken and horizontal strain and tilt at margins of existing roads will be assessed, measured by strain gauges and tilt meters. (GEO11) 	GEO02, GEO04, GEO10, GEO11	Rare	Major	Medium
			Serious injury or fatality resulting from accident caused by damage to public infrastructure outside the mining licence area	O, CL			Rare	Critical	High			Rare	Critical	High
66	Ground movement / landform instability	Consolidation of backfilled materials	Damage to public infrastructure (roads, powerlines) or properties outside mining licence area.	O, CL		GEO05, GEO06, GEO09, GEO12, GEO13, GEO14, GEO15, GEO16, GEO17, GEO22, GEO25	Unlikely	Moderate	Medium	<ul style="list-style-type: none"> Daily visual assessments around mining areas near infrastructure will be undertaken, including checks for signs of deformation (e.g., cracks, compressional ridges), over steepening of slopes and poor management of surface water (e.g., pooling). (GEO03) Deformation and settlement monitoring of mine slopes around mining operations will be undertaken and horizontal strain and tilt at margins of existing roads will be assessed, measured by strain gauges and tilt meters. (GEO11) 	GEO03, GEO11	Rare	Moderate	Medium
Land within mining licence area unsuitable for agree post mining uses			PC	Unlikely										
67			Serious injury or fatality resulting from accident caused by damage to public infrastructure outside the mining licence area	O, CL								Rare	Critical	High

Risk ID	Hazard	Causes / contributing factors (risk events)	Receptors / Impacts	Phase	Standard mitigation	Mitigation numbers (EES)	Likelihood over life of activity	Consequence	Risk	Additional mitigation	Additional mitigation numbers (EES)	Likelihood over life of activity	Consequence	Residual risk
68	Ground movement / landform instability	Excessive slope gradients on constructed landforms	Slope instability: erosion or slope failure on constructed slopes	O, CL, PC	<ul style="list-style-type: none"> All mined slopes adjacent to infrastructure will be surveyed and verified that they have been mined within acceptable tolerances of specified slope designs (GEO04) Slopes of landforms will be constructed from Haunted Hills Formation gravel, particularly for slopes with a gradient of 1:3. For slopes of 1:4 or flatter, dewatered, stacked and compacted coarse sand tailings can be placed within the outer zone of the slope, with Haunted Hills Formation gravel forming an outer layer. (GEO20) Haunted Hills Formation clay will be placed well within the landform. (GEO21) Surface watercourses will be directed away from the landform during construction and operation, so rainfall does not pond or cause localised infiltration. (GEO24) Additional geotechnical testing will be conducted as part of detailed design, including shear strength testing of the Coongulmerang Formation, and the HHF Clay A ground control management plan (GCMP) and an associated trigger-action-response plan (TARP) will be developed and implemented prior to commencement of mining. 	GEO04, GEO20, GEO21, GEO24	Possible	Moderate	Medium	<ul style="list-style-type: none"> Rocks will be included in rehabilitated channel beds to increase critical shear of the bed, resist initiation of scour, and channel stability to storm flows and minimise erosion. (RH06) Swales will be designed to be broad, U-shaped, no steeper than current stable drainage paths, and consistent in shape with the most stable drainage paths currently present. (RH07) Riparian vegetation will be established in rehabilitated flow channels to increase effective hydraulic roughness of the channels, reduce flow velocities, increase channel stability to storm flows and minimise erosion. (RH08) Riparian vegetation will be established in rehabilitated flow channels to increase effective hydraulic roughness of the channels, reduce flow velocities, increase channel stability to storm flows and minimise erosion. (RH09) The density of deep-rooted trees and shrubs will be increased in areas at risk from tunnel erosion by minimising the volume of seepage flows reaching valley slopes and channels. (RH24) Tree densities in areas planned for grazing land use, particularly in swale areas, will be increased to reduce deep drainage and seepage flows, and to maximise erosion stability. (RH27) 	RH06, RH07, RH08, RH09, RH24, RH27	Possible	Minor	Medium
69	Modified landscapes / landforms	Physical barriers to movement of terrestrial fauna Physical barriers to movement of aquatic fauna	Interference with movement / interaction of fauna populations	C,O	<ul style="list-style-type: none"> Isolation and fragmentation of habitat will be minimised when planning activities with potential to remove vegetation. (TE22) No-go zones will be established around waterbodies adjoining the project footprint to prevent any disturbance to the biodiversity values present within these areas. (TE24) Extent of clearance and buffers around no-go areas will be clearly defined to ensure disturbance within areas to be retained are avoided. (TE4) 	TE22, TE24, TE4	Possible	Minor	Medium	Use of underpasses/culverts and overpasses will be investigated to maintain permeability for ground dwelling species and arboreal marsupials where access roads and linear infrastructure bisect or cross native vegetation.(TE29)	TE29	Unlikely	Minor	Low
70	Modified landscapes / landforms	Establishment of open pit Establishment of stockpiles	Impact on visual amenity	O C,O	<ul style="list-style-type: none"> Visual bunds and screen plantings will be established at locations around the perimeter of the project area to visually screen project activities from sensitive viewpoints. (VL01) The mine void will be progressively backfilled and rehabilitation will be progressive to re-instate pre-mining landforms and re-establish vegetation. (VL05) Topsoil will be managed and maintained throughout rehabilitation activities to promote successful re-grassing and tree planting. (VL11) Temporary visual bunds will be placed to screen operations within the mine void. (VL13) Disturbed areas will be revegetated to recreate pre-existing vegetation communities will be undertaken, where possible, increasing habitat value and visual amenity (TE10) 	VL01, VL05, VL11, VL13, TE10	Possible	Minor	Medium	The landscape will be restored to reduce the visual impacts from elevated viewpoints. (VL07) Regular slopes and/or sharp transition angles will be rounded to provide a natural appearance to the final landform. (VL08)	VL07, VL08	Unlikely	Minor	Low
71	Modified landscapes / landforms	Trenching Establishment of water storages	Fauna entrapment	C,O	<ul style="list-style-type: none"> Fauna escape features and refuges (including ramps and damp sandbags) will be provided. (TE31) All trenches will have graded sides to avoid fauna entrapment and allow animals to escape. (TE16) Lined water holding facilities will be fitted with fauna egress matting to allow a means of escape for small animals entering the water 	TE31, TE16	Unlikely	Minor	Low	Trenches and other excavations will be checked daily and any trapped animals removed. (TE39)	TE39	Unlikely	Minor	Low
72	Modified landscapes / landforms	Industrial buildings and infrastructure visible from vantage points outside mining licence area	Residents / visitors within viewshed experience diminished visual amenity	C,O	<ul style="list-style-type: none"> Visual bunds and screen plantings will be established at locations around the perimeter of the project area to visually screen project activities from sensitive viewpoints. (VL01) Buildings and roofs will be clad with non-reflective materials of a colour that mimics those found in the landscape to reduce visual contrast with the landscape setting. (VL03) Fixed buildings will be located to take advantage of existing vegetation screening. Additional vegetation screening will be planned to minimise future visual impacts. (VL06) Temporary visual bunds will be placed to screen operations within the mine void. (VL13). 	VL01, VL03, VL06, VL13	Unlikely	Minor	Low			Unlikely	Minor	Low
73	Modified landscapes / landforms	Changed appearance of land	Reduced amenity for people travelling on diverted sections of the Bairnsdale-Dargo Road and Fernbank-Glenaladale Road due to views of the mine site, associated infrastructure	C,O,CL	<ul style="list-style-type: none"> Visual bunds and screen plantings will be established at locations around the perimeter of the project area to visually screen project activities from sensitive viewpoints. (VL01) Buildings and roofs will be clad with non-reflective materials of a colour that mimics those found in the landscape to reduce visual contrast with the landscape setting. (VL03) Fixed buildings will be located to take advantage of existing vegetation screening. Additional vegetation screening will be planned to minimise future visual impacts. (VL06) Disturbed areas (e.g., road reserves) will be revegetated with local indigenous vegetation. (VL09) Temporary visual bunds will be placed to screen operations within the mine void. (VL13). 	VL01, VL03, VL06, VL09, VL13	Unlikely	Minor	Low			Unlikely	Minor	Low
74	Land access, clearing and ground disturbance	Unauthorised clearing / disturbance	Loss / damage to terrestrial flora, vegetation, ecosystems, habitats Loss / damage to aquatic flora, vegetation, ecosystems, habitats	C,O C,O	<ul style="list-style-type: none"> Vegetation removal will not proceed until applicable approvals and permits obtained. (TE01) Extent of clearance and buffers around no-go areas will be clearly defined to ensure disturbance within areas to be retained are avoided. (TE04) Access tracks and roads will be clearly marked to prevent establishment of secondary tracks and disturbance to adjacent vegetation. Existing roads to be used where practicable. (TE05) Parking areas, stockpiles, machinery depots and site buildings will be located in areas of low ecological value (such as blue gum plantations). (TE07) Large trees will be retained adjacent to the project footprint are to be clearly marked and Tree Retention Zones to be identified. (TE08) Staff/contractor inductions will incorporate an environmental component that has been signed off by a suitably qualified representative (e.g., site environmental advisor/specialist). (TE12) Construction machinery will not be permitted to access Cowells Lane to avoid potential indirect impacts to swamp everlasting, native vegetation and low-lying areas within the infrastructure options area.(TE49) Prior to any proposed disturbance in unsurveyed areas, a detailed flora survey will be undertaken. (TE53) 	TE01, TE02, TE04, TE05, TE07, TE08, TE12, TE49, TE53	Unlikely	Moderate	Medium	<ul style="list-style-type: none"> Prior to clearing, nest boxes will be installed in areas of potential habitat adjacent to the project footprint to compensate for the removal of hollow-bearing trees and impacts on hollow-dependent fauna known or potentially present (yellow-bellied sheath-tail bat, powerful owl, masked owl and eastern pygmy possum).(TE02) Logs, dead trees, stumps and other habitat elements will be included in the restoration and rehabilitation works for fauna habitat. (TE11) Sensitive areas, such as those with fauna habitat, will be cleared of fauna by a suitably trained ecologist or other qualified environmental specialist prior to construction and operational activities commencing. (TE13) Pre-clearing activities will remove the understorey and smaller non-hollow-bearing trees to disturb fauna and encourage them away from the clearing area. (TE14) Animals disturbed during clearing works will be relocated in accordance with a Management Authorisation under the Wildlife Act. (TE15) Where construction permits, hollow-bearing trees will be retained around project infrastructure.(TE19) Pre-clearance survey and supervision of large hollow-bearing tree felling activities will be carried out by a suitably qualified zoologist. (TE20) Salvaged or artificial hollows will be installed (under the supervision of an ecologist) in retained vegetation adjacent to the project footprint where hollow-bearing trees are lost. (TE21) Fauna salvage and relocation / translocation procedure will be developed and implemented to supported the biodiversity risk treatment plan.(TE28) All remaining areas of ecological value near the project area and infrastructure options area will be managed to enhance habitat features and compensate for those lost; including installing nesting boxes and logs, and other large woody debris relocated from cleared areas. (TE30) Project infrastructure and activities will be microsituated to avoid native vegetation. For example, if vegetation of high quality is identified during pre-clearance surveys, where reasonably possible, the location will be adjusted to avoid it. (TE37) The extent of native vegetation cover and habitat connectivity within and adjoining the project area will be increased through restoration as part of progressive rehabilitation. (TE50) Faunal habitat features, such as logs and hollows, will be created as part of habitat restoration works.(TE51) Populations of listed or rare native plant species from ecological vegetation categories within the project area will be increased through targeted recovery programs. (TE52) Prior to any proposed disturbance in unsurveyed areas, a detailed flora survey will be undertaken. (TE53) Appropriate biodiversity offsets will be secured in accordance with State and Commonwealth legislation/ policy. (TE03) 	TE03, TE11, TE13, TE14, TE15, TE19, TE20, TE21, TE28, TE30, TE37, TE50, TE51, TE52, TE53	Unlikely	Minor	Low

Risk ID	Hazard	Causes / contributing factors (risk events)	Receptors / Impacts	Phase	Standard mitigation	Mitigation numbers (EES)	Likelihood over life of activity	Consequence	Risk	Additional mitigation	Additional mitigation numbers (EES)	Likelihood over life of activity	Consequence	Residual risk
75	Land access, clearing and ground disturbance	Unauthorised disturbance of registered Aboriginal heritage values or places.	Non-compliance with statutory requirements and/or approval conditions	C,O	<ul style="list-style-type: none"> An approved Cultural Heritage Management Plan will be prepared and implemented in accordance with Aboriginal Heritage Act 2006 (Vic) and the Aboriginal Heritage Regulations 2018 (Vic), that will include site specific management and salvage procedures (e.g., collection of surface artefacts and excavation of archaeological sites of significance). (CH01) A chance finds protocol will be developed and implemented. (CH05) Cultural heritage training will be provided for all personnel involved in ground disturbance works. (CH02) If cultural heritage sites are discovered, immediate action will be taken to protect the sites and to notify relevant stakeholders (CH06) 	CH01, CH05, CH02, CH06	Rare	Critical	High	Collected cultural heritage materials will be stored by a qualified heritage advisor. (CH03) Recovered cultural heritage materials will be repatriated to a Registered Aboriginal Party, e.g., the GLaWAC.		Rare	Critical	High
76	Land access, clearing and ground disturbance	Unauthorised disturbance of previously unidentified Aboriginal heritage values or places.	Non-compliance with statutory requirements and/or approval conditions	C,O	<ul style="list-style-type: none"> An approved Cultural Heritage Management Plan will be prepared and implemented in accordance with Aboriginal Heritage Act 2006 (Vic) and the Aboriginal Heritage Regulations 2018 (Vic), that will include site specific management and salvage procedures (e.g., collection of surface artefacts and excavation of archaeological sites of significance). (CH01) A chance finds protocol will be developed and implemented. (CH05) Cultural heritage training will be provided for all personnel involved in ground disturbance works. (CH02) If cultural heritage sites are discovered, immediate action will be taken to protect the sites and to notify relevant stakeholders (CH06) 	CH01, CH05, CH02, CH06	Unlikely	Major	High			Unlikely	Major	High
			Loss / damage of tangible cultural artefacts or other tangible cultural assets	C,O										
			Loss / damage of intangible cultural artefacts or other intangible cultural assets.	C,O										
77	Hazardous materials and wastes	Spillage or loss of containment during storage / dispensing / use	Soil contamination	C,O,CL	<ul style="list-style-type: none"> Bunding for the fuel storage area (fuel farm) will be in accordance with Australian Standard 1940:2017 (Standards Australia, 2017). The capacity (i.e., bund height), storage, stormwater control and maintenance, and operation of banded areas will comply with EPA bunding guidelines (EPA, 1992). (SW19) Inductions and training will be provided to all relevant project personnel on the safe storage, handling and transport of dangerous goods and in emergency management. (SW18, GW03) Limited quantities of chemical will be stored on site. Any hazardous materials, such as laboratory chemicals, will be stored in designated areas in accordance with their safety data sheets. (SW13) Hazardous materials will be managed (including storage, handling, transport and disposal) in accordance with relevant safety data sheets. (RH18) Areas used for handling and/or storage of hazardous materials will be appropriately banded and contain spill response equipment. (SW20) Spills of fuels or chemical will be managed in accordance with requirements set out in the Spill Response and Clean-up Procedure. (SW14) Personnel will be trained in management of hazardous materials and spill response procedures prior to commencement of work. (RH20) Mobile plant and vehicles will be maintained regularly and in accordance with manufacturers specifications. Maintenance will include inspections for leaks and spills. (RH19) If a leak or spill occurs it will be cleaned up and contaminated soil will be excavated and disposed of at an approved facility. (RH21) 	SW19, SW18, GW03, SW13, SW14, SW20, RH18, RH19, RH20, RH32	Unlikely	Minor	Low	Waste hydrocarbons will be stored in suitable containers for removal from the mine site for disposal at either an EPA-approved hydrocarbon waste site or a recycling depot. (SW27) Fuel management procedures will be developed and implemented for the project. An inventory of hazardous materials on site will be maintained.	SW27	Unlikely	Minor	Low
78	Hazardous materials and wastes	Spillage or loss of containment during transport / storage / dispensing / use	Surface water contamination	C,O,CL	<ul style="list-style-type: none"> Bunding for the fuel storage area (fuel farm) will be in accordance with Australian Standard 1940:2017 (Standards Australia, 2017). The capacity (i.e., bund height), storage, stormwater control and maintenance, and operation of banded areas will comply with EPA bunding guidelines (EPA, 1992). (SW19) Inductions and training will be provided to all relevant project personnel on the safe storage, handling and transport of dangerous goods and in emergency management. (SW18) Limited quantities of chemical will be stored on site. Any hazardous materials, such as laboratory chemicals, will be stored in designated areas in accordance with their safety data sheets. (SW13) Hazardous materials will be managed (including storage, handling, transport and disposal) in accordance with relevant safety data sheets. Spills of fuels or chemical will be managed in accordance with requirements set out in the Spill Response and Clean-up Procedure. (SW14) Personnel will be trained in management of hazardous materials and spill response procedures prior to commencement of work. (RH20) Handling of concentrated flocculant and any hazardous materials will be done in accordance with safety data sheet recommendations. (SW15) Hazardous waste will be removed from site by a licensed contractor for treatment or disposal in an approved facility in accordance with the requirements. (SW17) Areas used for handling and/or storage of hazardous materials will be appropriately banded and contain spill response equipment. (SW20) Rainfall runoff water from vehicle workshops, vehicle service areas and fuelling areas will be captured and directed to an interceptor trap to extract hydrocarbons, prior to it being discharged to the drain and sump network. The trap will be emptied of hydrocarbons routinely by a licensed contractor for disposal offsite at a licensed facility (SW21) Waste hydrocarbons will be stored in suitable containers for removal from the mine site for disposal at either an EPA-approved hydrocarbon waste site or a recycling depot. (SW27) Hazardous materials will be transported in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (National Transport Commission, 2016). (SW16) Mobile plant and vehicles will be maintained regularly and in accordance with manufacturers specifications. 	SW18, SW14, SW15, SW17, SW20, SW21, SW16, RH18, RH19, RH20	Unlikely	Minor	Low	Fuel management procedures will be developed and implemented for the project. An inventory of hazardous materials on site will be maintained.	--	Unlikely	Minor	Low
79	Hazardous materials and wastes	Spillage or loss of containment during transport / storage / dispensing / use	Groundwater contamination	C,O,CL	<ul style="list-style-type: none"> Bunding for the fuel storage area (fuel farm) will be in accordance with Australian Standard 1940:2017 (Standards Australia, 2017). The capacity (i.e., bund height), storage, stormwater control and maintenance, and operation of banded areas will comply with EPA bunding guidelines (EPA, 2015). (GW03) Limited quantities of chemical will be stored on site. Any hazardous materials, such as laboratory chemicals, will be stored in designated areas in accordance with their safety data sheets. (GW04) Hazardous materials will be managed (including storage, handling, transport and disposal) in accordance with relevant safety data sheets. Handling of concentrated flocculant and any hazardous materials will be done in accordance with safety data sheet recommendations. (GW05) Hazardous waste will be removed from site by a licensed contractor for treatment or disposal in an approved facility in accordance with the requirements. (GW06) Areas used for handling and/or storage of concentrated flocculant and other hazardous materials will be appropriately banded and contain spill response equipment. (GW07) Inductions and training will be provided to all relevant project personnel on the safe storage, handling and transport of dangerous goods and in emergency management. (GW08) Waste hydrocarbons will be stored in suitable containers for removal from the project area for disposal at either an EPA-approved hydrocarbon waste site or a recycling depot. (GW10) Spills of fuels or chemical will be managed in accordance with requirements set out in the Spill Response and Clean-up Procedure. (GW11) Personnel will be trained in management of hazardous materials and spill response procedures prior to commencement of work. Hazardous materials will be transported in accordance with the Australian Code for the Transport of Dangerous 	GW03, GW04, GW05, GW06, GW07, GW08, GW10, GW11, GW12, RH18, RH19, RH20	Unlikely	Minor	Low	Waste hydrocarbons will be stored in suitable containers for removal from the mine site for disposal at either an EPA-approved hydrocarbon waste site or a recycling depot. (SW27) Fuel management procedures will be developed and implemented for the project. An inventory of hazardous materials on site will be maintained.	SW27	Unlikely	Minor	Low
80	Fire / explosion	Fire / explosion initiated by project activity	Injury / loss of human life	C,O,CL	<ul style="list-style-type: none"> An emergency access management plan developed in consultation with emergency services, including police, fire, ambulance and state emergency services will be implemented. (TT02) 	TT02	Rare	Critical	High	East Gippsland and Wellington Shires and emergency service providers will be engaged to review the existing capability of emergency services and that required in the future should the project be approved. (BF02)	BF02	Rare	Critical	High
			Damage to vegetation/ fauna	C,O,CL	<ul style="list-style-type: none"> transport of dangerous goods and in emergency management. (GW08) Regular community updates will be provided on how bushfire mitigation measures are being adopted on site. (SE09) Incentives will be provided to encourage employees to become emergency services volunteers. For example, Kalbar will pay its employees for their time to attend training and respond to incidents on behalf of these organisations. (SE11) 					East Gippsland and Wellington Shires and emergency service providers will be engaged to review the existing capability of emergency services and that required in the future should the project be approved. (BF02) Sufficient access and egress will be made available for mobile equipment to allow spill/fire response and clean-up where there is the possibility of large spillages, fire or explosion.				

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81	Fire / explosion	Fire / explosion initiated by project activity	Damage to private property	C,O,CL	<ul style="list-style-type: none"> Hot work will be administered under an internal hot work procedure. Mobile equipment will be maintained in good working order with appropriate exhaust and fire suppression and extinguishing systems. Clearing operations will not be undertaken during periods of severe, extreme or catastrophic fire danger. All work areas will be equipped with suitable fire extinguishers and their locations indicated by appropriate signage. Hydrocarbons and other flammable or combustible materials will only be stored within appropriately constructed hydrocarbon storage areas with suitable fire extinguishers, and appropriate signage located in the vicinity. 	GW08, SE09, SE11	Rare	Major	Medium	<ul style="list-style-type: none"> Buildings within the plant site will be designed and constructed in accordance with relevant requirements of AS3959 2018. An asset protection zone will be established around the plant, fuel storage areas, administration areas and other habitable spaces. Electricity transmission lines will be kept well clear of vegetation and an inspection and maintenance of the assets will occur at least annually. All mobile equipment will be equipped with appropriate communication equipment, including two-way radios and/or mobile telephones. 	BF02	Rare	Major	Medium
			Damage to public infrastructure	C,O,CL										
82	Fire / explosion	Fire / explosion initiated by external source	Loss of life/ecosystem harm/property damage	C,O,CL	<ul style="list-style-type: none"> A bushfire management plan will be prepared and implemented that identifies measures for landscape, siting, design, defensible space, construction, water supply and access and includes site specific bushfire mitigation measures, awareness actions, preparedness levels and fire response procedures for the site. (BF01) Fuel reduction and fire management activities will be implemented to minimise the risk of bushfire and ensure effective response to fire events. 	BF01	Possible	Major	High	<ul style="list-style-type: none"> Buildings within the plant site will be designed and constructed in accordance with relevant requirements of AS3959 2018. An asset protection zone will be established around the plant, fuel storage areas, administration areas and other habitable spaces. 		Possible	Major	High
84	Mined materials, mineral wastes and mineral products	Runoff or seepage from HMC stockpiles or centrifuges cake storage areas	Soil / surface water / groundwater contamination	O	<ul style="list-style-type: none"> Surface runoff will be directed around or away from areas of land disturbance, stockpiles, embankments or nearby sensitive areas, where practicable. (SW04) The project will recover and reuse water where practicable (such as run-off from ore-stockpiles and water recovered from in-pit tailings storage) (SW23) 	SW04, SW23	Unlikely	Minor	Low			Unlikely	Minor	Low
85	Rehabilitation outcomes	Grazing, herbivory	Poor establishment and/or performance of areas rehabilitated to pasture / native vegetation	O, CL	<ul style="list-style-type: none"> Larger plants that are less susceptible to grazing damage will be used in rehabilitation areas where possible. (RH15) Guards will be placed on tubestock where required to prevent damage by rabbits, cockatoos and other pest animals. (RH16) Grazing will be excluded in rehabilitated flow channels to maintain sufficient levels of vegetation cover on the surface of the channel bed and prevent disturbance of soils by trampling by livestock, thereby increasing channel stability to storm flows and minimising erosion. (RH25) Revegetation will be conducted over as large an area as possible at one time to spread potential impacts of animal grazing over larger areas. (RH30) Rehabilitation activities will be timed in consultation with landholders and based on analysis of long-term rainfall patterns to maximise the rate of successful vegetation establishment and rehabilitation performance. (RH10) 	RH15, RH16, RH25, RH30	Possible	Moderate	Medium	Revegetated areas will be fenced (electric fencing with multiple closely spaced tapes) to prevent damage by stock or kangaroos, where cost-effective to do so. (RH29)	RH29	Unlikely	Moderate	Medium
86	Rehabilitation outcomes	Erosion	Poor establishment and/or performance of areas rehabilitated to pasture / native vegetation	O, CL, PC	<ul style="list-style-type: none"> Hydromulches or tackifiers will be used where appropriate to prevent erosion and ensure more effective use of incident rainfall by germinating seeds. (RH11) Planting of tubestock will be scheduled to maximise initial growth, including in spring to take advantage of warmer growing conditions or in autumn to take advantage of the wet winter. (RH33) 	RH10, RH11, RH33	Unlikely	Moderate	Medium			Unlikely	Moderate	Medium
87	Rehabilitation outcomes	Weed competition / infestation by pests	Poor establishment and/or performance of areas rehabilitated to pasture / native vegetation	O, CL, PC	<ul style="list-style-type: none"> Revegetation of mined areas will include management of weeds and pests (TE11, TE47) Biosecurity procedures will be implemented to avoid introducing and spreading weeds, pests and diseases into the project area and surrounding areas. (TE45) 	TE11, TE47, TE45	Possible	Moderate	Medium	<ul style="list-style-type: none"> Declared noxious weeds or established pest animals present on the Licence area will be managed through a regular weed / vermin survey and treatment program. Rehabilitation practices will be developed with a view to reducing weed occurrence in revegetated areas (compared to pre-mining conditions), for example through scalping and burial of weed-infested topsoil. 		Possible	Minor	Medium
88	Rehabilitation outcomes	Lack of seed stock / tubestock	Poor establishment and/or performance of areas rehabilitated to pasture / native vegetation	O, CL	Kalbar will establish local seed / propagule production facilities to ensure adequate supply of seed tube stock.		Possible	Moderate	Medium	<ul style="list-style-type: none"> Kalbar will collaborate with GROW to provide opportunities (potentially including seed/ plant production) to grow local small to medium sized businesses – either as suppliers to our business, as partners, or as sub-contractors . 	SE59	Unlikely	Moderate	Medium
89	Rehabilitation outcomes	Fire damage	Poor establishment and/or performance of areas rehabilitated to pasture / native vegetation	O, CL	A bushfire management plan will be prepared and implemented that identifies measures for landscape, siting, design, defensible space, construction, water supply and access and includes site specific bushfire mitigation measures, awareness actions, preparedness levels and fire response procedures for the site. (BF01)	BF01	Rare	Major	Medium			Rare	Major	Medium
90	Rehabilitation outcomes	Tailings are hardsetting	Loss of land capability; increased erosion hazard; restriction in water infiltration	O, CL	Fines tailings will be placed at depth in the backfilled mine void so that any restrictions to drainage are far enough below the soil surface such that the growth of vegetation is unaffected. (RH03)	RH03	Unlikely	Moderate	Medium			Unlikely	Moderate	Medium
91	Rehabilitation outcomes	Surface water runoff erodes bare surface	Gully/ing / tunnel erosion results in loss of land productivity Erosion and sediment mobilisation: loss of soil fertility and decline in land productivity	O, CL, PC	<ul style="list-style-type: none"> High rates of vegetation establishment will be prioritised in rehabilitated flow channels (especially in the first three years of rehabilitation) to maximise surface cover and minimise erosion. (RH09) Hydromulches or tackifiers will be used where appropriate to prevent erosion and ensure more effective use of incident rainfall by germinating seeds. (RH11) Hydroseeding will be used in rehabilitation areas where appropriate to stabilise the soil surface and minimise erosion. (RH12) Where possible, ameliorants such as organic mulches and fertilisers will be spread on in-situ topsoils prior to stripping to increase soil fertility. (RH21) 	RH09, RH11, RH12	Possible	Moderate	Medium	Kalbar will optimise rehabilitation practices through field trials and landform evolution modelling within the first 2 years of operations		Unlikely	Moderate	Medium
92	Rehabilitation outcomes	Vegetation not characteristic of local vegetation	Low habitat value for native fauna	PC	<ul style="list-style-type: none"> Revegetation of mined areas will include planting of a range of locally occurring native shrubs, trees and groundcover plants in consultation with DELWP to recreate the target vegetation community. (TE11) Areas will be revegetated following the mine rehabilitation plan, to: Increase overall native vegetation cover in the project area. Increase native vegetation patch size (TE9) 	TE11, TE09	Unlikely	Moderate	Medium	<ul style="list-style-type: none"> Kalbar will establish local seed / propagule production facilities to ensure adequate supply of seed tube stock. Field trials to optimise native vegetation establishment will be initiated by Year 1 of operations. Trial results will be reported annually. 		Unlikely	Minor	Low
93	Rehabilitation outcomes	Drought	Poor establishment and/or performance of areas rehabilitated to pasture / native vegetation	O, CL	<ul style="list-style-type: none"> Rehabilitation activities will be timed in consultation with landholders and based on analysis of long-term rainfall patterns to maximise the rate of successful vegetation establishment and rehabilitation performance. (RH10) Hydromulches or tackifiers will be used where appropriate to prevent erosion and ensure more effective use of incident rainfall by germinating seeds. (RH11) Site/local experience will be considered when determining seed timings and rates to ensure maximum reliability of vegetation establishment. Seed will be re-applied in areas where rehabilitation performance does not meet established targets at a later date when suitable conditions, such as rainfall, are considered likely to occur. (RH13) 	RH10, RH11, RH13	Possible	Minor	Medium	<ul style="list-style-type: none"> Rehabilitated areas will be irrigated where required to promote satisfactory performance and vegetation establishment. (RH14) 	RH14	Unlikely	Minor	Medium
94	Rehabilitation outcomes	Inhospitable growth medium	Poor establishment and/or performance of areas rehabilitated to pasture / native vegetation	O, CL	<ul style="list-style-type: none"> Topsoil stockpiles scheduled to be in place for four months or longer (or for an unknown duration) will be restricted to a height of 2 m and treated with a soil stabiliser, or revegetated immediately following their construction. Gypsum will be applied in sufficient quantity over a depth of at least 500 mm to reduce exchangeable sodium and magnesium to acceptable levels (ESP <4 and Ca/Mg ratio >0.5) where material likely to disperse (such as Haunted Hills Formation overburden or fines tailings) is placed as part of a constructed subsoil. (RH28) 	RH26, RH28	Unlikely	Minor	Low			Unlikely	Minor	Low

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95	Rehabilitation outcomes	Timing of rehabilitation works	Poor establishment and/or performance of areas rehabilitated to pasture / native vegetation	O, CL	<ul style="list-style-type: none"> Rehabilitation activities will be timed in consultation with landholders and based on analysis of long-term rainfall patterns to maximise the rate of successful vegetation establishment and rehabilitation performance. (RH10) Planting of tubestock will be scheduled to maximise initial growth, including in spring to take advantage of warmer growing conditions, or in autumn to take advantage of the wet winter. (RH33) 	RH10, RH33	Unlikely	Minor	Low			Unlikely	Minor	
96	Rehabilitation outcomes	Decline in soil fertility due to dilution of topsoil with overburden	Productivity of post-mining land is less than pre-mining land capability.	O, CL	<ul style="list-style-type: none"> Site inductions for mining and rehabilitation personnel will include information on the different soil types present across the project area and their corresponding management, including in relation to stockpiling. (RH02) Soil stockpiles will be segregated according to physical composition. (RH01) Where possible, ameliorants such as organic mulches and fertilisers will be spread on in-situ topsoils prior to stripping to increase soil fertility. (RH21) Local landholders will be engaged on how land is rehabilitated to ensure compatibility with future stocking requirements. (SE32) 	RH01, RH02, RH21, SE32	Unlikely	Minor	Low			Unlikely	Minor	Low
97	Rehabilitation outcomes	Rehab and closure activities inadequately planned and funded	Incomplete or unsatisfactory implementation of closure, loss of employment	O, CL	Progressive rehabilitation will be undertaken to return land to its pre-mining land use or an agreed alternative (RH05)	will be RH05	Unlikely	Major	High	<ul style="list-style-type: none"> Rehabilitation provisioning will be reviewed annually. A third-party audit of rehabilitation provisioning will be conducted at least every 3 years. 		Rare	Major	Medium
98	Rehabilitation outcomes	Backfill materials unsuitable for rehabilitation to agreed end land use (density target not met; drainage characteristics not suitable)	Timing of rehabilitation program is longer than expected; ongoing aesthetic impacts on mine site	O, CL	<ul style="list-style-type: none"> Variability testwork will be completed during process design to define fines material characteristics and settling behaviour across the deposit. Rigorous geotechnical design will be undertaken using all available information and account for variability and uncertainty. (GEO001) Use of centrifuges to dewater in controlled conditions and disposal of dewatered fines cake in accordance with tailings management plan. Geotechnical monitoring of the in-pit tailings storage structures will be conducted during operations. (GEO25) 	GEO001, GEO25	Rare	Moderate	Medium	<ul style="list-style-type: none"> Modification of process and mining conditions and flocculation rate to account for any potential fines variability in the mine plan, if required. 		Rare	Minor	Low
99	Economic / social disruption	Kalbar workforce increases local population	Over-stretched community services (with decreased access for local people) due to increased demand from the project workforce.	C,O	<ul style="list-style-type: none"> Local health service providers, education providers and relevant support networks will be engaged prior to construction commencing and on a six-monthly basis during construction and operation to monitor and identify strategies to manage any potential peaks in demand. (SE50) A local employment and procurement policy will be developed and implemented to ensure local residents and business are preferred. (SE29) East Gippsland and Wellington shires and emergency service providers will be engaged to review the existing capability of emergency services and potential future requirements. (SE62) 	SE29, SE50, SE62	Possible	Insignificant	Low			Possible	Insignificant	Low
100	Economic / social disruption	Kalbar workforce increases local population	Increased demand for housing from project workforce affects housing availability / affordability for residents within 20 km of the project area.	C,O	<ul style="list-style-type: none"> Targeted strategies will be implemented to reduce potential impacts on housing availability and affordability during construction. This may include working with East Gippsland and Wellington shires to source holiday homes that could be rented to workers during the construction period and/or assisting community housing agencies in securing short-term accommodation for use as crisis accommodation during the construction period. (SE52) A housing strategy will be developed in consultation with local housing support agencies prior to construction commencing to identify targeted strategies associated with accommodating the non-local workforce. (SE53) Workers living in long term accommodation will be encouraged to share with other project workers. (SE54) Local businesses providing short-term accommodation will be engaged to discuss the timing of project works and potential peak periods. (SE36) 	SE52, SE53, SE54, SE36	Unlikely	Moderate	Medium	<ul style="list-style-type: none"> Regular consultation will be conducted with local housing support agencies and house prices will be monitored. (SE55) 	SE55	Unlikely	Minor	Low
101	Economic / social disruption	Noise, other amenity impacts affect tourism demand	Diminished value of businesses 10-20km of the project area that are reliant on tourists due to sustained impacts on amenity from the project.	C,O	<ul style="list-style-type: none"> Tourism authorities, such as Business & Tourism East Gippsland and East Gippsland Marketing Inc., will be regularly engaged to identify opportunities for the region. (SE35) A local employment and procurement policy will be developed and implemented to ensure local residents and business are preferred. (SE29) A noise and vibration risk management plan will be prepared and implemented. (NV09) 	SE35, SE29, NV09	Possible	Moderate	Medium	<ul style="list-style-type: none"> Consultation with affected residents located in the vicinity of the site will be conducted during the course of the project to investigate any need for alternative noise control measures. (NV15) 	NV15	Unlikely	Moderate	Medium
102	Economic / social disruption	Antisocial behaviour by project personnel	Decline in community cohesion due to the influx of workers from outside the project area engaging in unwanted behaviour in the local community	C,O	<ul style="list-style-type: none"> An employment code of conduct, pre-employment screening and fit for work procedures will be developed and implemented. (SE25) A community complaints procedure will be developed and implemented. (SE26) Timely responses will be provided to any community complaints raised. (SE22) Police checks will be conducted on potential employees. (SE28) 	SE25, SE26, SE28, SE22	Unlikely	Minor	Low			Unlikely	Minor	Low
103	Economic / social disruption	Increased competition for labour	Disruption to agricultural practices due to increased competition for labour leads to reduced income for existing businesses.	C,O	<ul style="list-style-type: none"> Potential solutions to labour competition will be pursued through continued communication and engagement with industry representatives, such as Federation Training. (AG01) A joint approach with adjacent horticultural and agricultural producers will be developed to identify measures to attract and retain a local workforce. (AG10) A labour force strategy will be prepared in consultation with local employment networks prior to construction commencing. Targeted strategies will be included to manage potential impacts of project employment on other sectors. (SE47) 	AG01, AG10, SE47	Possible	Minor	Medium	<ul style="list-style-type: none"> Education and training providers will be consulted to identify suitable work placement applicants and provide opportunities to work on the project. (SE38) GROW Gippsland and other organisations will be worked with to target local applicants, including applicants from disadvantaged or vulnerable groups. (SE39) Opportunities will be provided for apprentices to work on the project and consult with support networks such as the Australian Apprenticeship Support Network to increase the likelihood that these apprentices will complete their program. (SE40) Information sessions will be provided for potential employees, present at career events and local schools and careers counsellors will be engaged on job opportunities available on the project. (SE41) Partnerships will be formed with and use local labour hire providers for short-term and contract jobs. (SE42) A range of people working on the mine (including construction, operations and closure) and/or featured roles on the mine will be profiled to give people information on the types of roles there are and general competencies and skills they require. This information will be distributed to education and training providers and advertised in local newspapers to assist people in getting job ready. (SE44) Skill shortages and areas of training required will be identified to allow local people to gain qualifications within this area. Encourage and support Ongoing training will be encouraged and supported through local partnerships with a view to keep abreast of the changing landscape of the mining industry. (SE46) 	SE38, SE39, SE40, SE41, SE42, SE44, SE46	Possible	Minor	Medium
104	Economic / social disruption	Establishment of restricted areas limits access by Traditional Owners and other members of the public	Mining activities restrict or prevent customary uses of land by Traditional Owners	C,O	<ul style="list-style-type: none"> A community reference group will be established to provide a point of liaison and communication with the local community during project construction and operations (SE20). An Aboriginal Cultural Heritage Management Plan (CHMP) will be prepared and implemented. (CH01) Current levels of access to national parks and other natural assets will be maintained. (SE18) 	SE20, CH01, SE18	Unlikely	Minor	Low			Unlikely	Minor	Low
105	Economic / social disruption	Project traffic results in increase travel times	Increased travel times for landholders within 10-20km of the project area due to increased vehicle movements associated with the project and / or changed road conditions leads to reduced income and/or increased stress	C,O,CL	<ul style="list-style-type: none"> All agricultural landholders within 2 km of the project area will be consulted to understand where, when and how the local road network is used for the transport of machinery and stock so that strategies can be introduced to reduce potential impacts. (SE37) A project travel plan will be prepared and implemented that encourages personnel to travel to and from the mine site by bus, or to car pool. (TT22) Oversize and overmass vehicle movements will avoid peak hours and school bus operation hours. (TT06) Diverted and realigned roads will be constructed to the same or better standard as existing roads. (TT10) Where roadworks require closure of roads, alternative routes will be identified in consultation with East Gippsland Shire Council and VicRoads to provide the public with adequate access at all times. (TT17) 	SE37, TT22, TT06, TT10, TT17	Unlikely	Minor	Low			Unlikely	Minor	Low

Risk ID	Hazard	Causes / contributing factors (risk events)	Receptors / Impacts	Phase	Standard mitigation	Mitigation numbers (EES)	Likelihood over life of activity	Consequence	Risk	Additional mitigation	Additional mitigation numbers (EES)	Likelihood over life of activity	Consequence	Residual risk
106	Economic / social disruption	Project scheduling inadequate or poorly communicated to stakeholders.	Project activities disrupt planned commercial use of land within the project development envelope or on neighbouring properties (for example harvesting of timber plantations).	C,O	Mine scheduling will consider other land uses' existing scheduled activities, such as planning for mining in pine and blue gum plantations after currently scheduled tree harvesting.		Possible	Moderate	Medium	Landholder compensation will be in accordance with the MRSD Act and based on a full inventory of on-farm assets. (LUP08)	LUP08	Possible	Minor	Medium
107	Economic / social disruption	Noise, other amenity impacts affect land values	Presence of the mine diminishes the value of property adjacent to the project area.	C,O,CL	Regular consultation will be conducted with local housing support agencies and house prices will be monitored (SE55).	SE55	Possible	Moderate	Medium			Possible	Moderate	Medium
108	Economic / social disruption	Income disparity; inadequate compensation of landowners	Community division over income disparity between those employed on the project and those employed in other sectors of the local area.	C,O	A local employment and procurement policy will be developed and implemented to ensure local residents and business are preferred (SE29).	SE29	Unlikely	Minor	Low			Unlikely	Minor	Low
109	Economic / social disruption	Sudden unplanned mine closure	Loss of income	PC	Kalbar will establish and implement a Disaster Recovery / Business Continuity Plan to provide a framework for managing impacts of significant, unforeseen events (including unplanned closure).		Rare	Major	Medium			Rare	Major	Medium
110	Economic / social disruption	Shift patterns make it difficult for employees or contractors to participate in community activities	Decline in participation in volunteering, social or sporting clubs	C,O	<ul style="list-style-type: none"> Incentives will be provided to encourage employees to become emergency services volunteers. For example, Kalbar will pay its employees for their time to attend training and respond to incidents on behalf of these organisations. (SE11) Incentives will be provided for workers on the project to participate in the local community. (SE24) 	SE11, SE24	Possible	Moderate	Medium	<ul style="list-style-type: none"> A community fund will be established to support community events and initiatives that encourage social interaction. (SE04) Adapt rosters where practical to enable employees to continue to be involved in the local community. 	SE04	Unlikely	Moderate	Medium
111	Economic / social disruption	Constraints on post closure land use to prevent erosion, overgrazing	Loss of income	PC	<ul style="list-style-type: none"> Progressive rehabilitation will be undertaken to return land to its pre-mining land use or an agreed alternative. (LUP02) 	LUP02	Possible	Moderate	Medium	<ul style="list-style-type: none"> Landholder compensation will be paid in accordance with the MRSD Act and based on a full inventory of on-farm assets. (LUP08) 	LUP08	Possible	Minor	Medium
112	Public perception	Introduction of resource industry to area	Residents within 10-20km of the project area experience a change in identity linked to rural lifestyle	C,O	<ul style="list-style-type: none"> A community reference group will be established to provide a point of liaison and communication with the local community during project construction and operations. (SE20) A stakeholder engagement plan will be implemented that identifies approaches to actively manage issues with public perception, including providing objective and factual public communications. (AG08) 	SE20, AG08	Possible	Minor	Medium			Possible	Minor	Medium
113	Public perception	Anxiety over perceived health threats	Community concern that the project will result in a decline in water quality used for drinking from dust deposition leading to increased stress	C,O	<ul style="list-style-type: none"> Community access will be provided to transparent information on potential project impacts, the EES process and land access and acquisition process in a range of ways (SE01). An environmental review committee will be established to involve the community in reviewing the environmental performance of the project throughout its life (SE19). A community reference group will be established to provide a point of liaison and communication with the local community during project construction and operations (SE20). Regular meetings will be held with adjacent residents to discuss any issues or concerns (SE03). A range of avenues will be provided for those with concerns to contact Kalbar to express their concerns or ask questions (SE06). Dust, noise and water monitoring results will be made available at regular intervals on the project website along with information on how any peaks or exceedances have been responded to (SE02). A stakeholder engagement plan will be implemented that identifies approaches to actively manage issues with public perception, including providing objective and factual public communications. (AG08) The stakeholder engagement plan and associated activities will be regularly reviewed and adapted based on community feedback to ensure that the community has a range of avenues to receive information on the performance of the project. (SE05) 	SE01, SE19, SE02, SE03, SE05, SE06, SE20, AG08	Likely	Moderate	High	<ul style="list-style-type: none"> The stakeholder engagement plan and associated activities will be regularly reviewed and adapted based on community feedback to ensure that the community has a range of avenues to receive information on the performance of the project (SE05). 	SE05	Possible	Moderate	Medium
114	Public perception	Changed appearance of land	Residents within the project area and/or adjacent to it experience a change in connection to their land due to the physical disturbance of the land and change in landscape.	C,O	<ul style="list-style-type: none"> A community reference group will be established to provide a point of liaison and communication with the local community during project construction and operations (SE20). A stakeholder engagement plan will be implemented that identifies approaches to actively manage issues with public perception, including providing objective and factual public communications. (AG08) The stakeholder engagement plan and associated activities will be regularly reviewed and adapted based on community feedback to ensure that the community has a range of avenues to receive information on the performance of the project. (SE05) 	AG08, SE05, SE20	Likely	Moderate	High	<ul style="list-style-type: none"> Progressive rehabilitation will be undertaken to return land to its pre-mining land use or an agreed alternative. (LUP02) Local landholders will be engaged on how land is rehabilitated to ensure compatibility with future stocking requirements (SE32). 	LUP02, SE32	Possible	Moderate	Medium
115	Public perception	Restricted land access	Peoples' connection to land changed from diminished access to natural resources and/or important community places, associated with the change in land use from agriculture to mining, road closures and/or changed road conditions	C,O	<ul style="list-style-type: none"> A traffic management plan will be prepared and implemented (TT02). 	TT02	Possible	Minor	Medium	<ul style="list-style-type: none"> All agricultural landholders within 2 km of the project area will be consulted to understand where, when and how the local road network is used for the transport of machinery and stock so that strategies can be introduced to reduce potential impacts (SE37). Road works will be avoided on roads used to access areas such as Den of Nargon and Dargon including Wy Yung Calulu Road and Friday Creek Road. (SE58) 	SE37, SE58	Unlikely	Minor	Low
116	Public perception	General uncertainty about project impacts	Community concern that the project has created uncertainty in their lives leads to increased stress and/or a decline in community wellbeing.	C,O	<ul style="list-style-type: none"> Community access will be provided to transparent information on potential project impacts, the EES process and land access and acquisition process in a range of ways (SE01). A community reference group will be established to provide a point of liaison and communication with the local community during project construction and operations (SE20). An environmental review committee will be established to involve the community in reviewing the environmental performance of the project throughout its life (SE19). A stakeholder engagement plan will be implemented that identifies approaches to actively manage issues with public perception, including providing objective and factual public communications. (AG08) 	SE01, SE19, SE20, AG08	Possible	Minor	Medium			Possible	Minor	Medium
		Uncertainty about long term impacts of project	Community concern that future generations of local residents will not be able to enjoy the area as much as past generations due to the presence of the project leads to increased stress	C,O										
117	Public perception	Dissatisfaction with engagement / approvals processes	Community concern that the stakeholder engagement process and/or approvals processes do not provide adequate opportunity for input leads to disengagement and/or increased stress	C,O,CL	<ul style="list-style-type: none"> Regular meetings will be held with adjacent residents to discuss any issues or concerns. (SE03) A range of avenues will be provided for those with concerns to contact Kalbar to express their concerns or ask questions. (SE06) An environmental review committee will be established to involve the community in reviewing the environmental performance of the project throughout its life. (SE19) A community reference group will be established to provide a point of liaison and communication with the local community during project construction and operations. (SE20) A stakeholder engagement plan will be implemented that identifies approaches to actively manage issues with public perception, including providing objective and factual public communications. (AG08) The stakeholder engagement plan and associated activities will be regularly reviewed and adapted based on community feedback to ensure that the community has a range of avenues to receive information on the performance of the project. (SE05) 	SE03, SE05, SE19, SE20, AG08	Possible	Moderate	Medium	<ul style="list-style-type: none"> The stakeholder engagement plan and associated activities will be regularly reviewed and adapted based on community feedback to ensure that the community has a range of avenues to receive information on the performance of the project. (SE05) One-on-one meetings will be held with adjacent landholders on a regular basis to provide project updates and discuss any issues of concern (SE57). 	SE05, SE57	Possible	Minor	Medium

Risk ID	Hazard	Causes / contributing factors (risk events)	Receptors / Impacts	Phase	Standard mitigation	Mitigation numbers (EES)	Likelihood over life of activity	Consequence	Risk	Additional mitigation	Additional mitigation numbers (EES)	Likelihood over life of activity	Consequence	Residual risk
118	Public perception	Differences of opinion over whether project should be implemented	Divisions in the local community over those who support the project and those who are against it affect community cohesion and subsequently, community wellbeing.	C,O	<ul style="list-style-type: none"> An environmental review committee will be established to involve the community in reviewing the environmental performance of the project throughout its life. (SE19) A community reference group will be established to provide a point of liaison and communication with the local community during project construction and operations. (SE20) Close dialogue with East Gippsland and Wellington Shire councils will be maintained for opportunities to encourage social interaction. (SE21) 	SE19, SE20, SE21	Possible	Minor	Medium	East Gippsland Shire Council will be worked with to review and update the Lindenow Community Plan. (SE23)	SE23	Possible	Minor	Medium
119	Public perception	Concern about wholesomeness of produce	Loss of market for produce due to damage to region's reputation	C,O	<ul style="list-style-type: none"> A stakeholder engagement plan will be implemented that identifies approaches to actively manage issues with public perception, including providing objective and factual public communications. (AG08) The stakeholder engagement plan and associated activities will be regularly reviewed and adapted based on community feedback to ensure that the community has a range of avenues to receive information on the performance of the project. (SE05) An environmental review committee will be established to involve the community in reviewing the environmental performance of the project throughout its life (SE19). A community reference group will be established to provide a point of liaison and communication with the local community during project construction and operations (SE20). Local industry, such as East Gippsland Marketing Inc. and Business and Tourism East Gippsland, will be consulted and engaged with to identify any potential issues at an early stage and enable effective solutions to be implemented. (AG02) Representation from local horticultural and agricultural producers will be sought on the environment review 	AG03, AG08, SE05, SE19, SE20, AG02, AG03	Possible	Moderate	Medium	<ul style="list-style-type: none"> A working group with growers will be established, if agreed with growers, that would meet on a periodic basis and discuss any issues of concern. (AG11) Local growers will be encouraged to obtain EnviroVeg or Freshcare Environmental certification as evidence of 'clean green' production under an environmental management system. (AG12) An annual local community event will be supported that attracts visitors to the region, such as a Harvest Festival, and/or support the East Gippsland Veg Innovation Day.(AG13) 	AG11, AG12, AG13	Unlikely	Moderate	Medium
120	Non-process wastes	Inappropriate storage of putrescible wastes	Increase in vermin, feral animals	C,O	<ul style="list-style-type: none"> Waste (excluding septic waste, which will be treated on site) will be removed from site and disposed of by licensed contractors. (GW09) Non-toxic waste (including perishable and inert waste) will be securely stored in appropriate receptacles. Construction and office waste will be reused and / or recycled where possible Waste removal contracts will be established to limit the amount of waste that will be stored on site and the time the waste is stored. Appropriate receptacles will be provided to facilitate the safe storage, segregation and recycling of waste. Treated septic effluent will meet EPA requirements for the effluent disposed to land. 	GW09	Unlikely	Minor	Low			Unlikely	Minor	Low
			Visual impact											
			Injury to fauna or livestock											
			Compromises ability to recycle materials											
			Contamination of surface water, groundwater or soil	C,O,CL										

Table B1: Risk controls and performance measures*¹

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
1.	Land access/ clearing / ground disturbance			
1.1	CH01, CH05	A Cultural Heritage Management Plan (CHMP) will be prepared and implemented in accordance with <i>Aboriginal Heritage Act 2006</i> (Vic) and the <i>Aboriginal Heritage Regulations 2018</i> (Vic). The CHMP will include site specific management and salvage procedures (e.g., collection of surface artefacts and excavation of archaeological sites of significance) and a chance finds protocol.	74, 75	CHMP approved and implemented
1.2	CH02	Cultural heritage training will be provided for all personnel involved in ground disturbance works.	74, 75	Training records
1.3	CH03	Storage of collected cultural heritage materials will be done under the guidance of a qualified Heritage Advisor.	74, 75	Records of salvage and register with details of lodgement with custodian.
1.4	CH04	Recovered cultural heritage materials will be repatriated to a Registered Aboriginal Party, e.g., the GLaWAC.	74, 75	Register of cultural heritage materials; record of disposition.
1.5	CH06	If cultural heritage sites are discovered, the following steps will be taken: <ul style="list-style-type: none"> The person who found the cultural heritage site will immediately notify the person in charge. The person in charge must suspend any relevant works to a distance of 50 m from the site and isolate the find via the installation of safety webbing, or other suitable barrier and the material to remain in situ. The person in charge of works should notify a suitably qualified archaeologist of the find within 24 hours of the discovery. 	74, 75	Incident reports; records of notification.
1.6	TE12	Staff/contractor inductions will incorporate an environmental component that has been signed off by a suitably qualified representative (e.g., site environmental advisor/specialist).	73	Induction records

¹ A dash '—' indicates that the specified risk controls are additional to controls included in the Fingerboards EES.

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
1.7	TE01	Vegetation clearing and ground-disturbing works will be implemented in accordance with an internal permitting land access / clearing permit.	73	Clearing records (including spatial coordinates, before and after photographs)
1.8	TE04	The extent of vegetation clearance will be clearly demarcated on the ground to ensure that areas to be retained are protected. Appropriate buffers will be established around all remnant native vegetation to be retained: these areas will be clearly identified as 'no-go' areas.	73	On-ground demarcation (pegs, tape); clearing records.
1.9	TE05	Access tracks and roads will be clearly marked to prevent the establishment of secondary tracks and disturbance to adjacent vegetation.	73	On-ground demarcation (pegs, tape);
1.10	TE08	All large trees to be retained will be clearly marked and Tree Retention Zones (i.e. twelve times the trees' diameter at breast height) will be delineated under the internal clearing permit system.	73	Spatial coordinates of retained trees (in register and on map); on-ground demarcation.
1.11	TE03	Appropriate biodiversity offsets will be secured in accordance with State and Commonwealth legislation/ policy.	73	Records of land acquisition; correspondence with agencies
1.12	TE13	Areas of important fauna habitat will be checked for fauna prior to construction and operational activities. Inspections for fauna will be done by an appropriately qualified environmental specialist.	73	Records of pre-disturbance checks (as part of internal clearing permit system)
1.13	TE19	Where construction permits, hollow-bearing trees will be retained around project infrastructure.	73	Maps submitted with internal clearing permit form, showing trees to be removed / retained.
1.14	TE20	Where large hollow-bearing trees are to be removed a qualified zoologist will conduct pre-clearance searches and will be present at tree felling activities in order to salvage fauna.	73	Records of pre-disturbance fauna search / salvage (as part of internal clearing permit system)

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
1.15	TE21	Salvaged or artificial hollows will be installed (under the supervision of an ecologist) in retained vegetation adjacent to the project footprint where hollow-bearing trees are lost.	73	Records of salvaged / artificial hollow locations.
1.16	TE28	Fauna salvage and relocation / translocation procedure will be developed and implemented to support the biodiversity risk treatment plan.	73	Records of salvaged / relocated / translocated fauna; documented procedures; permits to relocate fauna
1.17	TE15	Any animals disturbed during clearing works will be relocated in accordance with a Management Authorisation under the <i>Wildlife Act</i> .	74	Management Authorisation consents; records of fauna relocation.
1.18	TE24	No-go zones will be established around waterbodies adjoining the project footprint to prevent any disturbance to the biodiversity values present within these areas.	1, 68	Physical demarcation of 'no-go' areas; spatial database of no-go area established and used in assessing ground disturbance
1.19	TE11	Logs, dead trees, stumps and other habitat elements will be included in the restoration and rehabilitation works for fauna habitat.	73	Photographic records of rehabilitation areas.
1.20	TE09	Areas will be revegetated following the mine rehabilitation plan	92	Annual rehabilitation report
1.21	TE37	Project infrastructure and activities will be micrositied to avoid native vegetation. For example, if vegetation of high quality is identified during pre-clearance surveys, where reasonably possible, the location will be adjusted to avoid it.	37	Detailed mine plans; microsite survey records
2. Modified landscapes / landforms				
2.1	TE16, TE31, TE39	Graded escape ramps will be provided at regular intervals on trench walls to allow for animal escape. Open trenches will be inspected at least once per shift. Trapped animals will be removed and relocated to a suitable environment before commencement of works.	70	Photographic records / fauna relocation records (part of internal clearing permit system)

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
2.2	--	Lined water holding facilities will be fitted with fauna egress matting to allow a means of escape for small animals entering the water.	70	Construction / commissioning reports
2.3	AQ07, GW16, RD04, RH05, VL05	The mine void will be progressively backfilled and progressive rehabilitation will be implemented to reinstate landforms to a profile similar to pre-mining landforms and re-establish vegetation.	69	Annual rehabilitation report to ERR.
2.4	VL01, VL13	Temporary visual bunds will be provided to screen internal mine void operations.	69	Photographic records
2.5	VL06	Fixed buildings will be located to take advantage of existing screening vegetation; additional screening plantings will be established to minimise future visual impacts.	71, 72	Photographic records
2.6	VL03	Building cladding and roofs will be constructed using non-reflective materials of a colour that mimics those found in the landscape to reduce visual contrast with the landscape setting.	71, 72	Photographic records
2.7	VL07, VL08	Final landforms will be designed to blend with the surrounding natural landscape; slopes will be smoothed to eliminate sharp transition angles to provide a natural appearance to the final landform.	69	Photographic records, final as-built surveys.
2.8	VL09	Road reserves will be revegetated with indigenous vegetation from dominantly local varieties to ensure consistency of colour and texture.	72	Rehabilitation records (species lists) and annual rehabilitation
2.9	TE10	Disturbed areas will be revegetated to recreate pre-existing vegetation communities will be undertaken, where possible, increasing habitat value and visual amenity	69	Rehabilitation records (species lists) and annual rehabilitation report
2.10	TE22	Isolation and fragmentation of habitat will be minimised when planning activities with potential to remove vegetation.	68	Mine plans, fauna habitat mapping layer
3.	Ground movements / geotechnical stability (see also Erosion)			
3.1	GEO01	Rigorous geotechnical design will be undertaken using all available information and account for variability and uncertainty.	65, 66 <u>98</u>	Geotechnical design reports; independent design reviews
3.2	GEO02	Slope stability and displacement monitoring of mine slopes will be undertaken adjacent to roads.	65	Monitoring results; annual geotechnical reviews

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
3.3	GEO03	Daily visual assessments around mining areas near infrastructure will be undertaken, including checks for signs of deformation, over steepening of slopes and poor management of surface water.	65	Records of daily observation; annual geotechnical reviews
3.4	GEO04	All mined slopes adjacent to infrastructure will be surveyed and verified that they have been mined within acceptable tolerances of specified slope designs.	67 <u>68</u>	As-built reports
3.5	GEO05	Surface water run-off controls will be incorporated into mine designs to prevent ponding of surface water within the specified stand-off distance from slope crests and control surface water run-off over mine slopes. Surface water will be managed to keep ponding areas on the mine void floor well away from slope toes, and away from areas that will form foundations for road pillars.	65, 66, <u>67</u>	Mine drainage design plan; event-based observations and photographs
3.6	GEO06	Visual assessments of water controls will be undertaken on a regular basis and after rainfall, to ensure that any ponding, seepage or run-off meets design specifications.	65, 66, <u>67</u>	Site inspection records; annual geotechnical review
3.7	GEO07	Earthquake motion (acceleration) will be accounted for in mine slope designs.	65	Design report; independent review of design report
3.8	GEO08	Excavations will be visually inspected to check for variability of geological conditions, with particular focus on weaker than expected materials or features.	65	Construction reports
3.9	GEO09	Visual assessments will be routinely completed by an experienced geologist or mining engineer with geotechnical understanding.	65, 66, <u>67</u>	Construction reports
3.10	GEO10	Following an earthquake event, geotechnical inspections will be completed to check mining areas and surrounds for evidence of slope instability, ground subsidence or deformation. Slope stability and deformation monitoring equipment will be checked to ensure it is still functioning.	10, 65	Geotechnical inspection reports; monitoring and calibration records

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
3.11	GEO11	Deformation and settlement monitoring of mine slopes will be undertaken. Horizontal strain and tilt at margins of existing roads will be assessed, measured by strain gauges and tilt meters.	65,66, <u>67</u>	Monitoring results; annual geotechnical review
3.12	GEO12	Monitoring of road pillar deformation when filling adjacent to a road pillar will be conducted early in the life of the mine in Panels 2 and 3, to assess modelling predictions	65,66, <u>67</u>	Monitoring data; review of geotech stability assessment and GRZ estimates completed
3.13	GEO13	HHF Gravels will be used to construct road pillars, with an option being considered to use sand tailings, dependent upon the results of geotechnical testing and evaluation.	66, <u>67</u> ,36	As-built records; schedule of quantities.
3.14	GEO14	Initial trials will be conducted during the early stages of building road pillars to verify construction methods and achieved densities.	66, <u>67</u>	Trial test results; review of geotech stability assessment and GRZ estimates completed
3.15	GEO15	The construction and monitoring of all road pillars will be documented, reviewed and quality controlled. Compaction trials and settlement monitoring of road pillars will be implemented in the early stages of the operation.	66, <u>67</u>	Monitoring data; Trial test results; review of geotech stability assessment and GRZ estimates completed
3.16	GEO16	Where possible, exclusion zones will be put in place for the geotechnical risk zones around each mining area. Public access will be limited in affected areas.	65,66, <u>67</u>	Documented extent of GRZ; design reports; signage
3.17	GEO17	Land and assets within the GRZ will be acquired / relocated to prevent uncontrolled access / use.	65,66, <u>67</u>	Land acquisition records; landholder compensation agreements
3.18	GEO18	Tailings will be placed on a sound, free-draining mine floor.	65	Work instructions; tailings operating strategy; commissioning report

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
3.19	GEO19	Weak materials will be removed prior to placement of overburden or mineral wastes in backfilled excavations.	65	Work instructions; geotechnical inspection reports.
3.20	GEO20	Slopes of landforms will be constructed from Haunted Hills Formation gravel, particularly for slopes with a gradient of 1:3. For slopes of 1:4 or flatter, dewatered, stacked and compacted coarse sand tailings can be placed within the outer zone of the slope, with Haunted Hills Formation gravel forming an outer layer.	67,68,36	Design reports; as-built surveys.
3.21	GEO21	Haunted Hills Formation clay will be placed well within the landform.	67,68,36	Design reports; as-built reports.
3.22	GEO22	Fine tailings will be dewatered by centrifugation before placement in the mine void. Tailings will be returned to the mine void in a partly dried state (damp but not wet).	65,66,67,26,27	Tailings test records (as-placed moisture content)
3.23	GEO23	Haunted Hills Formation gravel will be compacted to minimise latent settlement of the landform that may affect the final landform profile.	65,36	Compaction records; as-built reports
3.24	GEO24	Surface watercourses will be directed away from the landform during construction and operation, so rainfall does not pond or cause localised infiltration.	35	Mine drainage design plan; event-based observations and photographs
3.25	GEO25	Geotechnical assessments of the in-pit tailings cell-storage structures will be conducted during active operations.	65,66,67,11	Construction reports
3.26	--	For final landform slopes with gradient greater than 1:4, the toe of the sand tailings interface (the closest approach of sand tailings to the outer slope) will be no closer than vertically below the crest of the slope.	67,68	Mine plan; as-built records
3.27	--	The angle of the interface between sand tailings and HHF gravel will not exceed 45°.	67,68	Mine plan; as-built records
3.28	--	Additional geotechnical testing will be conducted as part of detailed design, including shear strength testing of the Coongulmerang Formation, and the HHF Clay	65,67,68	Lab reports; detailed geotech design reports completed.
4.	Handling / storage of mineralised materials			

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#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
4.1	SW12	The off-path TSF will be designed, constructed and operated in accordance with Australian National Committee on Large Dams (ANCOLD) Guidelines on the Consequence Categories for Dams (October 2012).	82, 83, 6, 9, 10, 11, 12, 13, 14, 24, 28	As-built report; engineer's certificate; annual tailings audit reports.
4.2	TE27, CW13	The design, construction, operation, monitoring and rehabilitation of the off-path TSF will comply with the Department of Economic Development, Jobs, Transport and Resources: <i>Technical Guideline Design and Management of Tailings Storage Facilities (DEDJTR, 2017)</i> .	9, 10, 11, 24, 25	As-built report; engineer's certificate; annual tailings audit reports.
4.3	RD07	Runoff from areas where mineralised materials (including sand tailings, fine tailings centrifuge cake and mineral concentrate) are stored will be collected and returned to the process water circuit.	20	Site drainage plans and as-built records
4.4	RD04	During haulage HMC will be protected from wind-blown loss by the use of closed bags in containers or a wind proof cover over bulk trucks.	64	Shipping manifest; haulage contract.
4.5	--	HMC stockpile areas will be protected from windblown erosion by the use of water sprays and perimeter shade cloth fences (or a more substantial structure).	48	Deposited and airborne dust monitoring records; plant inspections records by environmental officer.
5.	Hazardous materials and wastes			
5.1	--	Fuel management procedures will be developed and implemented for the project.		Documented procedures; training and induction records.
5.2	GW08, SW18	Inductions and training will be provided to all relevant project personnel on the safe storage, handling and transport of dangerous goods and in emergency management.	76, 77, 78, 80	Documented procedures; training and induction records.
5.3	GW04, SW13	Limited quantities of chemical will be stored on site. Any hazardous materials, such as laboratory chemicals, will be stored in designated areas in accordance with their safety data sheets.	77, 78	Chemical inventory; MSDS register
5.4	GW05, SW15	Handling of concentrated flocculant and any hazardous materials will be done in accordance with safety data sheet recommendations.	77, 78	MSDS; training records.

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
5.5	GW03, SW19, TE26	Bundling for the fuel storage area (fuel farm) will be in accordance with Australian Standard 1940:2017 (or its successors). The capacity (i.e., bund height), storage, stormwater control and maintenance, and operation of banded areas will comply with EPA bunding guidelines (EPA, 1992).	76, 77, 78	Design drawings; as-built records
5.6	GW12, SW16	Hazardous materials will be transported in accordance with the <i>Australian Code for the Transport of Dangerous Goods by Road and Rail</i> (National Transport Commission, 2016).	77, 78	Shipping manifest
5.7	GW06, SW17	Hazardous waste will be removed from site by a licensed contractor for treatment or disposal in an approved facility in accordance with the requirements.	77, 78	Waste contracts; haulage and disposal records.
5.8	--	An inventory of hazardous materials on site will be maintained.	76, 77, 78	Materials inventory.
5.9	RH20	Personnel will be trained in management of hazardous materials and spill response procedures prior to commencement of work.	76, 77, 78	Documented spill procedures; training records.
5.10	GW07, SW20	Areas used for handling and/or storage of concentrated flocculent and other hazardous materials will be appropriately banded and contain spill response equipment.	76, 77, 78	Documented spill procedures; training records; spill kits in place
5.11	GW11, SW14	Spills of fuels or chemical will be managed in accordance with requirements set out in the Spill Response and Clean-up Procedure	76, 77, 78	Documented spill procedures; training records; spill kits in place
5.12	RH19	Mobile plant and vehicles will be maintained regularly and in accordance with manufacturers specifications. Maintenance will include inspections for leaks and spills.	76, 77, 78	Maintenance records; incident reports
5.13	SW21	Rainfall runoff from vehicle workshops, vehicle service areas and fuelling areas will be captured and directed to an interceptor trap. The trap will be emptied of hydrocarbons routinely by a licensed contractor for disposal offsite at a licensed facility.	77	Drainage design drawings and as-built records; interceptor trap inspection and maintenance records.
5.14	RH18	Hazardous materials will be managed (including storage, handling, transport and disposal) in accordance with relevant Safety Data Sheets.	76, 77, 78	Hazardous materials inventory; MSDS register; work instructions

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
5.15	GW10, SW27	Waste hydrocarbons will be stored in suitable containers for removal from the mine site for disposal at either an EPA-approved hydrocarbon waste site or a recycling depot.	76, 77, 78	Workplace inspections; waste contracts and disposal records.
6. Non-process wastes				
6.1	--	Non-toxic waste (including perishable and inert waste) will be securely stored in appropriate receptacles		Housekeeping inspection records (at least monthly)
6.2	--	Construction and office waste will be reused and / or recycled where possible		Recycling statistics; waste / recycler contractor invoices.
6.3	--	Waste removal contracts will be established to limit the amount of waste that will be stored on site and the time the waste is stored.		Waste contracts and invoices; haulage and disposal records.
6.4	--	Appropriate receptacles will be provided to facilitate the safe storage, segregation and recycling of waste.		Housekeeping inspection records (at least monthly)
7. Erosion (see also ground movement / landform instability)				
7.1	SW04a	All site drains will be designed and profiled to reduce water flow velocity, to reduce erosion.	1, 15, 34	Drainage design report and drawings; inspection records.
7.2	RH08	Riparian vegetation will be established in rehabilitated flow channels to increase effective hydraulic roughness of the channels, thereby reducing flow velocities, increasing channel stability to storm flows and minimising erosion.	1, 15, 67	Rehabilitation procedures; annual rehabilitation report; erosion monitoring records
7.3	RH07	Rehabilitation will be designed to evenly distribute runoff to drainage paths (swales) discharging off the plateau. Swales will be designed to be broad and no steeper than current stable drainage paths	1, 15	Drainage design report and drawings; erosion monitoring records
7.4	SW06	Where infrastructure, such as dams and haul roads, is to be installed on or in close proximity to a watercourse, the works area will be inspected for nearby stream bed instability prior to construction.	7, 35	As-built records; inspection and maintenance records.

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
7.5	SW07	Bed instability will be addressed through appropriately designed grade controls, such as the use of rock chutes.	15	As-built records; inspection and maintenance records.
7.6	SW08	Stream bed instability areas will be inspected prior to construction, then annually to assess rates of movement and potential risks posed to mine infrastructure.	7, 15, 35	Annual (and event-based) inspection and maintenance records.
7.6	SW10, RH23	Stockpile slope angles will be constructed as low as practicable and mulch materials and contour ripping will be strategically used to stabilise stockpiles, prevent runoff and minimise erosion.	1	Materials inventory; inspection records
7.7	RH22	Stockpiles will be vegetated where appropriate to minimise erosion.	1	Inspection records; annual rehabilitation report.
7.8	TE23	Appropriate erosion and sediment control strategies will be implemented to prevent gully erosion in areas adjoining the project footprint.	1	Annual (and event-based) inspection and maintenance
7.8	SW30	Appropriate outlet scour protection will be placed on all stormwater outlets, chutes, spillways and slope drains to dissipate flow energy and minimise risk of soil erosion.	6, 15	Drainage design specification, as-built records; inspection and maintenance records.
7.9	RH06	Rocks will be included in rehabilitated channel beds to increase critical shear of the bed, resist initiation of scour, and channel stability to storm flows and minimise erosion.	6, 15	As-built records; inspection and maintenance records.
7.9	RH08	Riparian vegetation will be established in rehabilitated flow channels to increase effective hydraulic roughness of the channels, reduce flow velocities, increase channel stability to storm flows and minimise erosion.	1	Annual rehabilitation report.
7.10	RH24	The density of deep-rooted trees and shrubs will be increased in areas at risk from tunnel erosion, thereby minimising the volume of seepage flows reaching valley slopes and channels	33	Rehabilitation procedures; annual rehabilitation report; erosion monitoring records

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
7.11	RH27	Tree densities in areas planned for grazing land use, particularly in swale areas, will be increased to reduce deep drainage and seepage flows, and to maximise erosion stability	67 68	Rehabilitation procedures; annual rehabilitation report; erosion monitoring records
7.12	RH28	Gypsum will be applied in sufficient quantity over a depth of at least 500 mm to reduce exchangeable sodium and magnesium to acceptable levels (ESP <4 and Ca/Mg ratio >0.5) where material likely to disperse placed as part of a constructed subsoil.	94	Rehabilitation procedures; erosion monitoring records
7.13	RH12	Hydroseeding will be used in rehabilitation areas where appropriate to stabilise the soil surface and minimise erosion.	1	Rehabilitation procedures; erosion monitoring records
7.14	--	Outer slopes of engineered final landform will be constructed of HHF gravels to a minimum thickness of 5m.	36	As-built records; materials inventory
7.15	--	For final engineered slopes of gradient greater than 1:4, HHF gravel will be used in constructing the outer zone (the region from the crest of the slope vertically down to the floor, and out to the outer face). For shallower final engineered slopes, at least 5m of HHF gravel will be used towards the top (below topsoil) with tailings sand optionally included below.	36	Mine plan; materials inventory, as-built records
8.	Sediment / contaminant discharge to surface waters			
8.1	SW24	Where possible, clean water upstream of the open-mine void will be diverted around disturbed areas to avoid generating additional mine contact stormwater requiring management.	1	Drainage design report and drawings
8.2	SW04	During construction, surface runoff will be directed around or away from areas of land disturbance, stockpiles, embankments or nearby sensitive areas, where practicable.	1, 2, 3	Drainage design report and drawings; inspection records.

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
8.3	SW04b	Runoff that comes into contact with disturbed areas will be captured by surface water management infrastructure and directed to sedimentation dams. If required, flocculant treatment (i.e alum, gypsum or hydrated lime) will be used to drop suspended sediment levels in the stormwater.	1, 4	Drainage design report and drawings; water level monitoring records; water quality monitoring records; (if applicable) flocculant dosing records.
8.4	SW04c	Sediment movement within gullies will be controlled using primary and secondary sediment traps constructed at appropriate sites. <u>Sediment traps and dams will be cleaned at regular intervals and following storm events and high rainfall events to maintain the efficiency of the infrastructure.</u>	1, 15, 34	As-built reports; annual or event-based inspection records.
8.5	SW04d	Mine contact water dams will be designed to retain site runoff up to approximately the 10% annual-exceedance-probability (or 1% AEP for the Perry Catchment).	1, 2, 3, 4, 8, 15, 34	Drainage design report and drawings; water level monitoring records
8.6	SW11	The mine contact water management dams, freshwater storage dam and process water dam will have design storage allowance for a 1 in 100-year average-exceedance probability, 72-hour storm event.	4, 8	Drainage design report and drawings; as-built reports.
8.7	SW05	Freeboards on the fresh water storage dam, process water dam and sediment ponds will be maintained to allow for storm events and high rainfall periods, in accordance with Australian and Victorian regulatory requirements.	4, 5, 8	Water level records; site meteorological records
8.8	SW09	Dam <u>Surface water management</u> infrastructure designed to capture run-off (and eroded sediments) will not be decommissioned until such a time that vegetation is fully established and stabilising the landscape.	15, 34	Erosion monitoring and surface water quality records; dam decommissioning reports.
8.9	SW29	Permanent and long-term drains and bund walls will be topsoiled and vegetated with suitable vegetation as soon as possible	15	Design specifications; annual rehabilitation reports

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#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
8.10	SW32	Mine contact water management dams within the Perry River catchment will be emptied as a priority over those located in the Mitchell River catchment to reduce potential water quality impacts from a spillway discharge to the Perry River catchment.	4, 5, 8	Work instructions; water balance; dam operating rules
8.10	SW33	If during successive storm events water management dams are required to be drawn down at a rate greater than can be achieved by the process water demand, mine contact water will be treated at a rate of 24 ML/day prior to discharge to the freshwater dam. Mine contact water will be treated to a level that is acceptable for discharge to the Mitchell River.	4, 5	Work instructions; water balance; dam operating rules
9.	Contaminant seepage to groundwater [See also controls under Hazardous Materials]			
9.1	SW22	The TSF will be constructed using engineered cells with lined walls. Water draining from in-pit tailings will be managed using a decant system, sumps and underdrains to capture and reuse seepage.	9, 10, 11, 24, 25	Design report and drawings; as built reports; water recovery records; groundwater monitoring data.
9.2	GW01	All dams for regular water storage will be constructed with engineered liners to reduce infiltration to groundwater.	18, 25, 28, 33	Liner testing report; groundwater monitoring data
9.3	GW09	All non-process waste will be removed from site and disposed of by licensed contractors.	120	Contracts; invoices.
9.4	SW25	Wastewater from ablutions and the office will be treated with a wastewater treatment system. There will be sufficient capacity to cater for the operations workforce and visitors.	21, 25	Design, installation and commissioning reports; works approval; maintenance records.
9.5	--	Treated septic effluent will meet EPA requirements for the effluent disposed to land.		Design and commissioning reports; works approval; monitoring records.
9.6	GW15	Sand tailing stacking areas will have under drainage and sumps to return seepage water.	17	Pumping records; sump water level observations

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
10.	Altered surface water hydrology			
10.1	SW02	The design and placement of infrastructure in the project area will consider potential for flow accumulation and increased flood risk.	29	Detailed design drawings
10.2	SW23	The project will recover and reuse water where practicable (such as run-off from ore stockpiles <u>water recovered from in-pit tailings storage</u> and <u>supernatant water from the TSF and tailings area within the mine void</u>) and optimise operations to maximise water use efficiency.	17, 18, 20, 84	Water recovery records; site water balance; water extraction records
10.3	SW01	Surface water extraction from the Mitchell River will comply with the conditions, timings, and limits detailed in any licence issued by Southern Rural Water.	21, 23	Water extraction records; annual compliance report.
10.4	SW03	Mine contact water <u>from outside of the mine void or tailings dam</u> that is retained in water management dams will be offset by releasing the same volume of clean water from the fresh water storage dam. Water will be released downstream of the project area (to the Perry Catchment) or directly to the Mitchell River via the pipeline from the freshwater dam	22	Dam water level records; discharge records; site meteorological records.
10.5	SW12	The design, construction and operation of the freshwater storage dam and other large dams will follow the Australian National Committee on Large Dams (ANCOLD) Guidelines on the Consequence Categories for Dams (October 2012).	6, 9, 10, 11, 12, 13, 14, 24, 28, 82, 83	Annual dam audit reports.
10.6	RH08	Riparian vegetation will be established in rehabilitated flow channels to increase effective hydraulic roughness of the channels, reduce flow velocities, increase channel stability to storm flows and minimise erosion.	1, 21, 67 68	Annual rehabilitation report; erosion monitoring results
11.	Altered groundwater hydrology			
11.1	GW01	All dams for regular water storage will be constructed with engineered liners to reduce infiltration to groundwater.	18, 25, 28, 33	Liner completion reports; groundwater level monitoring records; annual dam audit reports.

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
11.2	SW22	The TSF will be constructed using engineered cells with lined walls.	9, 10, 11, 24, 25	Dam completion report; engineer's certificate.
11.3	SW22	Water in the TSF draining from in-pit tailings will be managed using a decant system , sumps and under drains to capture and reuse seepage.	9, 10, 11, 24, 25	Records of water recovery / transfer; groundwater monitoring records
11.4	GW15	Management techniques, such as underdrains, sumps, and water recovery pumps will be used to maximise the recovery of water in the mine void tailings containment cells.	17	Pumping records; sump water level observations; groundwater monitoring records
11.5	GW02	Groundwater extraction from the Latrobe Group aquifer will be done in accordance with the conditions, timings, and limits detailed in a licence issued by Southern Rural Water.	30,31, 32	Water extraction records; groundwater level monitoring records; annual compliance report.
11.6	RH03	Fines tailings (centrifuge cake) will be placed at depth in the backfilled mine void blended with coarse sand tailings and placed so as to ensure any restrictions to drainage are far enough below the soil surface such that the growth of vegetation is unaffected.	90	Mineral waste management procedures; tailings placement records and level surveys; groundwater level monitoring records; vegetation health surveillance records
12.	Noise & vibration			
12.1	NV11	Activities such as overburden movement will be restricted to day and evening periods during year 1 to mitigate noise propagation during the night.	50	Operations schedule and records; complaints register.
12.2	NV12	Earth bunds will be used as a screening measures at strategic locations to screen operational noise impacts on sensitive receptors.	50	As-built records; photographs
12.3	NV13	Direct treatment through plant noise-reduction kits and cladding or screening of the WCP will be undertaken.	50	Equipment supply contracts and specifications

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
12.4	NV23	Plant and equipment will be switched off when not in use	50, 53	Work instructions; workplace inspections records.
12.5	NV10	Mobile plant items will be fitted with broadband reversing signals to avoid tonal characteristic associated with traditional reversing beepers at nearby sensitive receptors	50	Equipment supply contracts and specifications; complaints register; instructions to contractors
12.6	NV09	Implement a Construction Noise Management Plan addressing approved construction working hours and/or shift rotations, and specifying construction activities, work areas and mobile plant and equipment locations during each working shift.	50	Noise monitoring results (compliance with NIRV); complaints register
12.7	NV19	Best practice noise mitigation measures will be implemented, including managerial processes such as 'push-back' mining operations (i.e. optimising the direction of pit excavation so the terrain provides maximum natural attenuation of equipment).	50	Noise monitoring records; maintenance records; records of toolbox talks; work instructions
12.8	NV16	The quietest available plant and equipment will be selected for the project, where feasible.	50	Equipment supply contracts and specifications
12.9	NV20	All personnel will be informed about the measures required to minimise noise including through regular toolbox talks.	50	Toolbox talk records; complaints register
12.10	NV24	All plant and equipment will be maintained in accordance with manufacturers' specifications.	50, 53	Maintenance records
12.11	NV06	If noise emissions during construction are observed to exceed those modelled for the EES, contingency measures will be implemented, including restriction of noisy activities during unfavourable meteorological conditions.	50	Operations schedule and records; noise monitoring records; complaints register; meteorological records

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
12.9	NV28	Good practice noise reduction practices for heavy vehicles will be implemented: <ul style="list-style-type: none"> • Good maintenance of vehicles. • Trucks equipped with adequate and functioning mufflers. • Good driver behaviour (driving to the speed limit, driving in a careful manner, avoiding strong acceleration / deceleration, and limiting the use of compression brakes in residential areas.) 	50	Maintenance records; induction records; noise monitoring records; complaints register
12.10	NV14	Noise cladding will be installed on the sides of the WCP closest to sensitive receptors.	50	As built records
12.11	NV15	Affected residents located in the vicinity of the site will be consulted during the course of the project to investigate their receptiveness to the use of alternative noise control measures (e.g., acoustic treatment for dwellings, temporary relocation)	50	Records of consultation
12.12	TE35	Excessive noise or vibration emitting equipment or machinery will be located away from sensitive ecological values. Where relocation is not feasible, control measures such as mufflers or baffles will be employed.	51	Maps of locations requiring special noise control; work instructions; noise monitoring results
13.	Fire			
13.1	--	Sufficient access and egress will be made available for mobile equipment to allow spill/fire response and clean-up where there is the possibility of large spillages, fire or explosion.	80, 81	Design drawings and as-built reports
13.2	BF01	A Bushfire Preparedness and Response Plan will be prepared and implemented as a component of the Fingerboards Emergency Plan.	80, 81, 89	Documented plan; annual pre-fire season audit; emergency training / practice drill records.
13.3	--	Buildings within the plant site will be designed and constructed in accordance with relevant requirements of AS3959 2018.	79, 81	Design specification; as-built reports.
13.4	--	An asset protection zone will be established around the plant, fuel storage areas, administration areas and other habitable spaces.	79, 81	Design plans; maps of APZ (to be referenced in change management procedure).

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
13.5	--	Electricity transmission lines will be kept well clear of vegetation and an inspection and maintenance of the assets will occur at least annually.	79, 80, 81	Annual pre-fire season audit.
13.6	LUP06	Appropriate fire breaks will be maintained within and around the perimeter of the Project Site Fuel hazard reduction works (pruning, slashing, etc) will be carried in advance of the bushfire season each year, as required.	79, 80, 81	Annual pre-fire season audit.
13.7	--	Hot work will be administered under an internal hot work procedure.	79, 80	Documented hot work procedure; training / induction records
13.8	--	Mobile equipment will be maintained in good working order with appropriate exhaust and fire suppression and extinguishing systems.	79, 80	Maintenance records; workplace housekeeping inspections.
13.9	--	Clearing operations will not be undertaken during periods of severe, extreme or catastrophic fire danger.	79, 80	Documented clearing permit system; notifications of hot work ban / fire ban days.
13.10	--	All work areas will be equipped with suitable fire extinguishers and their locations indicated by appropriate signage.	79, 80	Workplace housekeeping inspections.
13.11	--	Hydrocarbons and other flammable or combustible materials will only be stored within appropriately constructed hydrocarbon storage areas with suitable fire extinguishers, and appropriate signage located in the vicinity.	79, 80	Workplace housekeeping inspections.
13.12	--	All mobile equipment will be equipped with appropriate communication equipment, including two-way radios and/or mobile telephones.	79, 80, 81	Equipment supply contracts and specifications; documented emergency procedures
13.13	BF02	Engage with East Gippsland and Wellington Shire councils and emergency service providers to review the existing capability of emergency services and that required in the future.	79, 80	Records of engagement
14.	Light emissions			

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
14.1	VL04	Wherever possible works will be scheduled during daylight hours to avoid night-time activities in areas directly visible from nearby residences.	57	Operations schedules and records; complaints register
14.2	TE36, VL02	Fixed lighting on plant and buildings will be designed to reduce the potential for light spill through measures such as focussed/targeted lighting and installation of shields or baffles.	57, 59	Equipment supply contracts and specifications; complaints register
14.3	SE16	Prohibit the use of high beams on vehicles except in case of emergency.	58, 59	Work procedures, complaints register
15. Airborne and deposited dust				
15.1	AQ01	Areas will be cleared in a staged manner only as required to reduce dust generation by minimising the area of exposed ground surfaces at any one time.	37, 38, 41, 42, 43, 44, 45	Clearing records; airborne and deposited dust monitoring records.
15.2	AQ05	Topsoil stripping will be planned and conducted in consideration of forecast and actual weather conditions to minimise dust generation.	37, 40, 41, 42, 43, 44	Topsoil stripping records; materials inventory; site meteorological records; operations schedule.
15.3	AQ04, TE33	Speed limits will be implemented and enforced on unsealed project roads.	42, 45	Induction records; signage; periodic audits
15.4	AQ02, LUP04	Water or appropriate suppressants will be applied to working surfaces, stockpiles, haul roads and other areas as required to minimise dust generation.	37, 38, 41, 42, 43, 44	Airborne and deposited dust monitoring records; water cart usage records
15.5	AQ03	Drop heights for topsoil and overburden during creation of stockpiles will be minimised as far as practicable to reduce dust generation.	37, 38, 41, 42, 43, 44, 45	Work instruction; periodic compliance observations
15.6	AQ07, RH05	The mine void will be progressively backfilled and rehabilitated to minimise the area required for topsoil and overburden stockpiles.	37, 38, 41, 42, 43, 44, 45	Clearing and rehabilitation records; materials inventory.
15.7	AQ16	Best practice dust control measures will be adopted on internal haul roads to achieve a level of control consistent with that assumed in the air quality assessment	37, 41, 42, 43, 44	Water truck records, dust monitoring results

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
15.8	AQ10	Ore will be transferred across the project area as a slurry to reduce potential for dust emissions.	46, 49	Pipeline as-built report.
15.9	AQ11	Ore will be processed as a slurry.	40, 46, 49	Commissioning report.
15.10	AQ12	There will be no crushing or grinding of ore, preventing the potential generation of respirable crystalline silica emissions.	40, 46, 49	Plant design specifications and as-built report.
15.11	AQ14	Ground-disturbing activities and materials handling will be scheduled to avoid excessive dust emissions during forecast adverse weather conditions.	37, 38, 45	Site meteorological records; airborne and deposited dust monitoring
15.12	AQ13	When real-time monitoring indicates that trigger level near key sensitive receptors have been reached, dust generating activities will be suspended or moved to other parts of the mine.	37, 38, 45	Dust monitoring records; site meteorological records; operations records; complaints register.
15.13	RH26	Topsoil stockpiles scheduled to be in place for four months or longer (or for an unknown duration) will be restricted to a height of 2 m and treated with a soil stabiliser, or revegetated immediately following their construction.	38, 41	Stockpile tracking via materials inventory; work instructions; results of routine inspections of stockpiles.
16.	Airborne toxicants² and greenhouse gases			
16.1	GHG01	Solar photovoltaic technology will be used to supplement electricity requirements for applications such as lighting.	47	Equipment supply contracts and specifications; installation records
16.2	GHG02	Energy efficient technology will be used where practicable, including low energy lighting (e.g., LEDs).	47	Equipment supply contracts and specifications; installation records
16.3	GHG03	The power factor of mains electricity will be improved by reducing the phase difference between the voltage and the current. The on-site power factor correction will be optimised for grid electricity usage.	47	Power usage records; NGRS reporting

² In this document 'airborne toxicants' refers to heavy metals and a range of organic pollutants arising from fossil fuels (for example, diesel).

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
16.4	GHG04	Vehicle diesel consumption will be reduced through equipment selection, load and route optimisation and production scheduling, and minimising idle time.	46, 47	Fuel usage records; NGERS reporting
16.5	GHG06	Generator diesel consumption will be reduced through selecting a flexible configuration that allows for electricity output to be adjusted in line with demand.	47	Fuel usage records; NGERS reporting
16.6	GHG05	Fuel-burning equipment will be maintained and operated according to manufacturer/supplier guidelines and recommendations.	46, 47	Fuel usage records; equipment maintenance records
17. Radiation [see also controls for airborne and deposited dust]				
17.1	--	Additional pre-commencement surveys will be implemented, as recommended by the Victorian Department of Health and Human Services.	60	Radiation monitoring results and report
17.2	RD05	During operations radiation controls will be enforced on site to ensure that radiation doses are maintained as low as reasonably achievable, and will be implemented in accordance with the site Radiation Management Plan (RMP)	62, 63	Radiation compliance monitoring and annual report.
17.3	RD01	Radiation exposure to workers will be minimised by implementing standard operating procedures for handling and transport of radioactive materials, use of radiation sources/apparatus and industrial gauges	62, 63	Standard operating procedures; results of workplace personal exposure monitoring
17.4	RD03	Appropriate site security and signage will be provided to restrict access to areas where radiation exposure requires special controls.		Induction and training records; signage in place; annual
17.5	RD03a	Product stockpiles will be located at sufficient distance from other operations to limit potential radiation exposure.	63, 64	Radiation monitoring records; site layout and as-built records.
17.6	RD03b	Trucks will be loaded only immediately prior to departure from the site.	63, 64	Work instructions; loading and haulage records

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
17.7	RD03c	Mineral concentrates will be transported in accordance with applicable requirements of the <i>Code of Practice for Safe Transport of Radioactive Material</i> .	63, 64	Transport manifests; haulage contracts; work instructions
17.8	RD02a	Induction programs will include information about the dangers of working near radioactive material and procedures to prevent radiation exposure.	62, 63, 64	Induction records
17.9	RD02b	Designated workers will be required to complete training in the radiological aspects of operations, including: measures to reduce or minimise radiation exposures; job-specific training and additional training for supervisors; on-going training and professional development of radiation safety personnel.	62, 63, 64	Training records
17.10	RD09a	Engineering controls, such as ventilation, dust control, and appropriate machinery shielding will be provided where required.	63	Design specifications and commissioning reports; maintenance records;
17.11	RD09b	Work practices will be put in place to limit occupancy in identified higher risk areas and/or restricting time spent on identified higher risk activities	63	HAZOP records; job safety assessments; work instructions; work activity records; personnel monitoring results (radiation exposure)
17.12	RD09c	Adequate facilities for personal hygiene will be provided.	63	Design specifications; as-built records; site housekeeping records
17.13	RD09d	Warning signs and labels will be established and maintained in higher risk areas.	63	Signage / labels in place; workplace inspection records.
17.14	RD09e	Personal protective equipment such as face masks and gloves will be compulsory for certain operational procedures where higher potential radiation doses are expected.	63	Job safety analyses; induction records; personal radiation monitoring results; PPE inventory

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
17.15	--	A Radioactive Waste Management Plan will be developed and implemented for the site, in consultation with the Victorian Department of Health and Human Services.	60	Approved RMP documented and implemented; annual compliance report.
17.16	--	Plants will be operated to ensure that radioactivity concentrations in HMC product will not exceed 10 Bq/g.	62, 63	Routine monitoring of HMC; product certificates and SDS.
17.17	--	Radiation sources for density gauges or geophysical equipment will be handled by appropriately qualified contactors or personnel.	62, 63	Training records; documentation required under Management Licence (<i>Radiation Act 2005</i>)
17.18	--	A third party contamination audit will be conducted as part of mine decommissioning and closure, or in the event of the project entering into care and maintenance: any remaining mineralised materials will be encapsulated in the pit void or disposed of to a secure offsite facility, as appropriate.	71	Audit report; remediation records
18.	Weeds, pests and pathogens			
18.1	LU03, TE45	Biosecurity procedures will be implemented to avoid project activities introducing and spreading weeds, pests and diseases into rehabilitation areas.	54, 55, 87	Procedures in place; induction records / work instructions; periodic audits (especially during construction phase)
18.2	TE47, TE11	Revegetation of mined areas will include management of weeds and pest animals.	54, 55, 87	Weed / pest survey and eradication records; annual rehabilitation reports
18.3	TE46	Disturbed areas will be revegetated to increase habitat value and visual amenity while reducing the likelihood for establishment and proliferation of weeds.	55	Weed / pest survey and eradication records; annual rehabilitation reports

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
18.4	--	Declared noxious weeds or established pest animals present on the Licence area will be managed through a regular weed / vermin survey and treatment program.	54, 55, 87	Results of surveys / control programs; annual rehabilitation report.
18.5	--	Rehabilitation practices will be developed with a view to reducing weed occurrence in revegetated areas (compared to pre-mining conditions), for example through scalping and burial of weed-infested topsoil.	54, 55, 87	Results of weed surveys / control programs; annual rehabilitation report.
19. Rehabilitation failure outcomes				
19.1	RH13a	Kalbar will consider site/local experience when determining seeding times and rates to ensure maximum reliability of vegetation establishment.	1, 93	Annual rehabilitation schedule; site meteorological records
19.2	RH13b	Seed will be re-applied in areas where rehabilitation performance does not meet established targets at a later date when suitable conditions, e.g., rainfall, are considered likely to occur.	1, 93	Seed production / purchase records; annual rehabilitation report; site meteorological records.
19.3	RH10	Rehabilitation activities will be scheduled in consultation with landholders and based on analysis of long-term rainfall patterns to maximise the chance of successful vegetation establishment and rehabilitation performance.	86, 93	Annual rehabilitation schedule; species lists; annual rehabilitation report.
19.4	RH11	Hydromulches will be used where appropriate to promote more effective use of incident rainfall by germinating seeds.	86, 91, 93,	Rehabilitation monitoring records; site meteorological records annual rehabilitation report.
19.5	RH14	If necessary, rehabilitated areas will be irrigated to achieve successful vegetation establishment.	93	Rehabilitation monitoring records; site meteorological records; irrigation records.
19.6	RH09	High rates of vegetation establishment will be prioritised in rehabilitated flow channels (especially in the first three years of rehabilitation) to maximise surface cover and minimise erosion.	1, 6768 , 91	Rehabilitation monitoring records; annual rehabilitation report.

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
19.7	RH16	Fencing / tree guards will be provided in selected rehabilitation areas as required to control grazing pressure / herbivory.	85	Annual rehabilitation report.
19.8	RH25	Grazing will be excluded in rehabilitated flow channels to maintain sufficient levels of vegetation cover on the surface of the channel bed and prevent disturbance of soils by trampling by livestock, thereby increasing channel stability to storm flows and minimising erosion.	85	Rehabilitation design and procedures; landholder agreements; annual rehabilitation report; erosion monitoring records
19.9	RH26	Topsoil stockpiles scheduled to be in place for four months or longer (or for an unknown duration) will be restricted to a height of 2 m and treated with a soil stabiliser, or revegetated immediately following their construction.	94	Stockpile tracking via materials inventory; work instructions; results of routine inspections of stockpiles.
19.10	RH29	Revegetated areas will be fenced (electric fencing with multiple closely spaced tapes) to prevent damage by stock or kangaroos, where cost-effective to do so.	85	Purchase / installation receipts; annual rehabilitation report.
19.11	--	Kalbar will establish local seed / propagule production facilities to ensure adequate supply of seed tube stock.	88, 92	Seed production / purchase records; rehabilitation records
19.12	SE32	Engage with local landholders on how land is rehabilitated to ensure compatibility with future stocking requirements.	96, 114	Consultation records; benchmarking against agreed reference sites
19.13	RH30	Revegetation will be conducted over as large an area as possible at one time to spread potential impacts of animal grazing over larger areas.	85	Rehabilitation procedures and schedule; annual rehabilitation report; erosion monitoring records
19.14	--	Kalbar will optimise rehabilitation practices through field trials and landform evolution modelling within the first 2 years of operations	91	Erosion trial results; landform evolution modelling results

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
	--	Rehabilitation provisioning will be reviewed annually. A third-party audit of rehabilitation provisioning will be conducted at least every 3 years.	97	Rehabilitation cost data; records of rehabilitation progress; provisioning review reports
20. On-site traffic				
20.1	TE06	Where practicable, access / haul roads that will experience heavy usage will not be established adjacent to areas of high ecological sensitivity.	56	Mine plan; clearing permit system (including spatial data of areas of high ecological sensitivity)
20.2	AQ08	Haul vehicles will travel on designated haul roads only.	37, 38, 41, 42, 43, 44	Induction records; signage; work instructions
20.3	TE34	Construction machinery, vehicles and pedestrians will be confined to formed tracks and designated areas, where possible.	56	Work instructions, mine plan
20.4	AQ04, RD010, TE17, TE33	Speed limits will be established and enforced.	42, 43, 44, 45, 48, 24, 56	Induction records; signage; work instructions; periodic audits.
20.6	TE18	Traffic movements will be minimised during the night, dusk and dawn periods in remnant native vegetation areas, where possible.	56	Work instructions; mining schedule
20.6	--	Haul routes will be designed to maximise visibility.	56	Mine plan
21. Social / economic disruption				
21.1	LUP01	Scheduling of clearing and other mining activities will have regard to other land users' existing scheduled activities (for example, planned harvesting of pine and blue gum plantations, movement of livestock).	106	Records of consultation with stakeholders
21.2	LUP02	Progressive rehabilitation to return land to pre-mining or agreed land use capability and productivity.	97, 111	Annual rehabilitation reports; ERC meeting records; benchmarking against agreed reference sites.

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
21.3	LUP08	Develop a full inventory of on-farm assets and use the inventory in determination of landholder compensation in accordance with the MRSD Act.	111	Documented inventory and valuation report; landholder agreements
21.4	SE04	A community fund will be established to support community events and initiatives that encourage social interaction.	110	Records of contributions / participation in events
21.5	SE11	Provide incentives to encourage project employees to volunteer for the local CFA or other emergency services.	80, 110	HR procedures
21.6	SE18	Maintain access to national parks and other natural assets at all times.	104	Mine plan / offsite road and traffic planning
21.7	SE21	Maintain close dialogue with East Gippsland and Wellington Shire councils on opportunities to encourage social interaction.	118	Records of engagement
21.8	SE24	Provide incentives for workers on the project to participate on local sporting teams, conservation initiatives and other community activities.	110	HR procedures
21.9	SE25	An employment code of conduct, pre-employment screening and fit for work procedures will be developed and implemented.	102	Code of conduct in place and enforced; induction records; employee contracts reference code of conduct.
21.10	SE26	A community complaints procedure will be developed and implemented.	102	Documented procedure in place; quarterly reports to community reference group; annual statutory reporting
21.11	SE28	Police checks will be conducted on potential employees.	102	HR procedures
21.12	SE29	A local employment and procurement policy will be developed and implemented to ensure local residents and business are preferred.	99, 101	Policy in place; procurement records

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
21.13	SE35	Kalbar will engage with Tourism authorities, such as Business & Tourism East Gippsland and East Gippsland Marketing Inc to identify opportunities for the region.	101	Records of engagement
21.14	SE36	Local businesses providing short-term accommodation will be engaged to discuss the timing of project works and potential peak periods.	100	Records of engagement
21.15	SE38	Education and training providers will be consulted to identify suitable work placement applicants and provide opportunities to work on the project.	103	Employment records; work experience placements; contracts with local providers
21.16	SE39	Kalbar will work with GROW Gippsland and other organisations to target local applicants, including applicants from disadvantaged or vulnerable groups.	103	Employment records
21.17	SE40	Opportunities will be provided for apprentices to work on the project and consult with support networks such as the Australian Apprenticeship Support Network to increase the likelihood that these apprentices will complete their program.	103	Numbers of apprentices employed / retained to completion of program
21.18	SE41	Information sessions will be provided for potential employees, present at career events and local schools and careers counsellors will be engaged on job opportunities available on the project.	103	Records of presentations and meetings; employment records
21.19	SE42	Partnerships will be formed with and use local labour hire providers for short-term and contract jobs.	103	Contracts in place and active
21.20	SE50	Local health service providers, education providers and relevant support networks will be engaged prior to construction commencing and on a six-monthly basis during construction and operation to monitor and identify strategies to manage any potential peaks in demand. (SE50)	99	Records of six-monthly reviews
21.21	SE52, SE53	Targeted strategies will be implemented to reduce potential impacts on housing availability and affordability during construction; A housing strategy will be developed in consultation with local housing support agencies prior to construction commencing to identify targeted strategies associated with accommodating the non-local workforce.	100	Housing strategy established and implemented; 2-yearly review of housing strategy

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
21.22	SE54	Workers living in long term accommodation will be encouraged to share with other project workers.	100	HR procedures; 2-yearly housing survey of Kalbar workforce
21.23	SE55	Regular consultation will be conducted with local housing support agencies and house prices will be monitored (SE55).	100	Consultation records
21.24	SE62	Kalbar will engage with East Gippsland and Wellington Shires and emergency service providers to review the existing capability of emergency services and potential future requirements.	99	Meeting records
21.25	--	Adapt rosters where practical to enable employees to continue to be involved in the local community.	110	HR procedures
21.26		Kalbar will establish and implement a Disaster Recovery / Business Continuity Plan to provide a framework for managing impacts of significant, unforeseen events (including unplanned closure).	109	Plan documented and reviewed at least 2-yearly
22.	Public perception			
22.1	SE01	Community access will be provided to transparent information on potential project impacts, the EES process and land access and acquisition process in a range of ways. For example, community meetings, personal meetings, newspaper advertisements and website information.	113, 116	Meeting records; publications
22.2	AG08,	A stakeholder engagement plan will be implemented that identifies approaches to actively manage issues with public perception, including providing objective and factual public communications.	112, 113, 114, 116, 117, 119	Stakeholder engagement plan developed and publicly available; Records of engagement
22.3	SE05	The stakeholder engagement plan and associated activities will be regularly reviewed and adapted based on community feedback to ensure that the community has a range of avenues to receive information on the performance of the project.	112, 113, 114, 116, 117, 119	Revisions history of engagement plan; records of engagement; complaints register

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
22.4	AG03	Representation from local horticultural and agricultural producers will be sought on the environment review committee to provide input on concerns during project construction and operation.	119	ERC membership / participation
22.5	AG02	Local industry, such as East Gippsland Marketing Inc. and Business and Tourism East Gippsland, will be consulted and engaged with to identify any potential issues at an early stage and enable effective solutions to be implemented.	119	
22.6	SE03	Hold regular one-on-one meetings with adjacent residents to discuss any issues or concerns.	113, 117	Meeting records; complaints register
22.7	SE57	One-on-one meetings will be held with adjacent landholders on a regular basis to provide project updates and discuss any issues of concern.	117	Meeting records; complaints register
22.8	SE09	Provide regular community updates on how bushfire mitigation measures are being adopted on site.	80	Records of communications; records of participation in bushfire drills or other activities jointly with local emergency
22.9	SE19	An environmental review committee will be established to involve the community in reviewing the environmental performance of the project throughout its life.	113, 116, 117, 118, 119	Environmental Review Committee established and active; meeting records
22.10	SE20	A community reference group will be established to provide a point of liaison and communication with the local community during project construction and operations.	104, 112, 113, 114, 116, 117, 118, 119	Community Forum Group established and active; meeting records
22.11	SE21	Close dialogue with East Gippsland and Wellington Shire councils will be maintained for opportunities to encourage social interaction.	118	Meeting minutes
22.12	SE22	Timely responses will be provided to any community complaints raised.	42, 44, 50, 102	Incident reports; complaints register

#	EES Ref No	Details of control	Risk events being managed (refer Attachment A)	Performance measures
22.13	SE26	A community complaints procedure will be developed and implemented.	42, 44, 50, 102	Procedure implemented and publicly available; quarterly reports to ERC.
22.14	SE32	Local landholders will be engaged on how land is rehabilitated to ensure compatibility with future stocking requirements.	96	Engagement records; landholder
22.15	SE37	All agricultural landholders within 2 km of the project area will be consulted to understand where, when and how the local road network is used for the transport of machinery and stock so that strategies can be introduced to reduce potential impacts.	105, 115	Engagement records; correspondence
22.16	SE58	Road works will be avoided on roads used to access areas such as Den of Nargon and Dargon including Wy Yung Calulu Road and Friday Creek Road.	115	Construction plans
22.17	TT02	A traffic management plan will be prepared and implemented in accordance with the guidelines given in Division 8 – Traffic Management Plans of the <i>Road Management Act 2004</i> , Worksite Safety – Traffic Management Code of Practice.	79, 115	Traffic management plan implemented and communicated to stakeholders