KALBAR
OPERATIONS PTY LTD

Fingerboards Mineral Sands Project

Environment Effects Statement

August 2020

Attachment H

Mitigation Register

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Attachment H - Mitigation register

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Identifier	Mitigation measure
Agriculture and horticulture	
AG01	Potential solutions to labour competition will be identified and pursued through continued communication and engagement with industry training bodies, such as TAFE Gippsland.
AG02	Local agriculture and horticulture industry bodies, such as Food and Fibre Gippsland, will be consulted and engaged with to identify any potential issues at an early stage and enable effective solutions to be implemented.
AG03	Representation from local horticultural and agricultural producers will be sought for the environment review committee to provide input on concerns during project construction and operations.
AG04	The work plan will be adhered to during construction and operation of the project to achieve agreed environmental and social outcomes.
AG08	A community engagement plan will be implemented that identifies approaches to actively manage issues with public perception, including providing objective and factual public communications.
AG10	A joint approach will be developed with local horticultural and agricultural producers to identify measures to attract and retain a local workforce.
AG11	A working group with growers will be established, as agreed with growers, and will meet on a periodic basis to discuss specific issues of concern and potential responses.
AG12	Local growers will be encouraged to obtain EnviroVeg or Freshcare environmental certification as evidence of 'clean green' production under an environmental management system.
AG13	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.
AG14	The amount of land clearance will be minimised wherever possible to minimise loss of agricultural land.
AG15	Progressive rehabilitation will be conducted to ensure that, where feasible, disturbed agricultural land in the project area can be restored to productive use as soon as possible.
Air quality	
AQ01	Areas will be cleared in a staged manner, and only as required, to reduce dust generation by minimising the area of exposed ground at any one time.
AQ02	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, and in particular, during drier months.
AQ03	Drop heights for topsoil and overburden will be minimised as far as practicable to reduce dust generation.
AQ04	Speed limits will be implemented and enforced on unsealed project roads to minimise dust generation.
AQ05	Topsoil stripping will be planned and conducted taking into account forecast and actual weather conditions to minimise dust generation.

Identifier	Mitigation measure
AQ06	Public roads and new intersections will be constructed to standards used by the East Gippsland Shire Council to reduce generation of excess dust (Infrastructure Design Association, 2015)[1].
AQ07	The mine void will be progressively backfilled and rehabilitated to reduce generation of dust by minimising the area of exposed soil, including for topsoil and overburden stockpiles.
AQ08	Haul vehicles will travel on designated haul roads only and haul route lengths will be minimised where practicable.
AQ10	Ore will be transferred through a pipeline across the project area as a slurry to reduce potential for dust emissions.
AQ11	Ore will be processed as a slurry to reduce potential for dust emissions.
AQ12	No crushing or grinding of ore will occur to prevent the potential for emissions of respirable crystalline silica.
AQ13	Certain activities, such as overburden excavation and transport of overburden and product, will be ceased when real-time air quality monitoring indicates that air quality trigger levels have been reached near key sensitive receptors.
AQ14	Certain activities, such as overburden excavation and transport of overburden and product, will be scheduled to avoid excessive dust emissions during forecast adverse weather conditions (principally high winds).
AQ15	Dust generation will be managed in accordance with the air quality sub-plan.
AQ16	Dust generation from haul roads will be controlled by applying water or chemical suppressants, cessation of haulage during adverse weather conditions, and as required in response to real-time air quality monitoring.
AQ17	Construction of internal haul roads will use an optimal size grading of aggregate with road stabilisation and compaction agents.
AQ18	Plant, machinery and vehicles will be maintained regularly in accordance with manufactures' specifications to minimise emission of particulates.
AQ19	A principal contact person to whom community queries and complaints will be directed will be identified for the project. The complaints response procedure will be implemented to address any complaints received. Twenty-four-hour contact details for the principal contact person will be provided through letters and signage onsite.
AQ20	Activities will be restricted, as required, on days when modelling predicts exceedances of air quality criteria at one or more sensitive receptors. Activities to be restricted will include overburden extraction and haulage, ore extraction and grading of roads. Restrictions will be applied to these activities conducted across the whole or part of the project area where required to achieve compliance with air quality criteria.
Bushfire	
BF01	A fire and emergency management sub-plan will be prepared and implemented that includes site-specific bushfire mitigation measures, awareness actions, preparedness levels and fire response procedures for the site. The plan will be prepared in consultation with East Gippsland and Wellington shire councils and emergency service providers.

[1] Infrastructure Design Association. 2015. Infrastructure Design Manual, Version 4.4.2. Local Government Infrastructure Design Association. 14 October 2015. Tongala, Victoria.

Identifier	Mitigation measure
Cultural heritage	
CH01	A cultural heritage management plan will be prepared and implemented in accordance with the *Aboriginal Heritage Act 2006* (Vic) and the Aboriginal Heritage Regulations 2018 (Vic). The plan will include site-specific management and salvage procedures (e.g., collection of surface artefacts and excavation of archaeological sites of significance).
CH02	Cultural heritage training will be provided for all personnel involved in vegetation clearance and ground disturbance works prior to commencement of these activities.
CH03	Collected cultural heritage materials will be stored by a qualified heritage advisor.
CH04	Recovered Aboriginal cultural heritage materials will be repatriated to a Registered Aboriginal Party, e.g., the GLaWAC.
CH05	A cultural heritage chance finds protocol will be developed and implemented which addresses: • Actions to be taken in the event of unexpected discovery of human remains, Aboriginal places or objects, low-density and non low-density artefact distribution. • Actions to be taken in the event of unexpected discovery of non-Indigenous cultural heritage. • Custody management of Aboriginal cultural heritage recovered. • Compliance review with the protocol. • Dispute resolution. • Authority of personnel and handling sensitive information. • Site specific management.
CH06	If cultural heritage sites are discovered, the following steps will be taken: • The person who found the cultural heritage site will immediately notify the operations manager. • The operations manager will suspend 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; the discovery is to remain in situ. • If historical archaeological deposits, artefacts or features are discovered, all works that may cause harm will cease and Heritage Victoria will be contacted. • The operations manager will notify a suitably qualified archaeologist of the find within 24 hours of the discovery.
CH07	For registered Aboriginal cultural heritage places VAHR 8422-0369 and VAHR 8322-0226, salvage procedures, such as surface salvage collection and controlled manual or mechanical salvage excavation, of flaked stone artefacts will be undertaken by a qualified archaeologist prior to commencing construction.
CH08	Properties within the project area or infrastructure options area that could not be accessed during the cultural heritage study will be investigated prior to ground disturbance activities to identify non-Indigenous cultural heritage values that may be present.
Geotechnical	
GEO02	Stability and displacement monitoring of mine slopes will be undertaken adjacent to roads using one or a combination of: • Survey targets (prisms) located on mine slopes, read by a robotic total station from various fixed survey pillars. • Radar, for safety-critical situations where a rapid response may be required.

Identifier	Mitigation measure
GEO03	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).
GEO04	All mined slopes adjacent to infrastructure will be surveyed to check they are within acceptable tolerances of specified slope designs.
GEO05	Surface water run-off controls will be incorporated into mine designs, including the following, where applicable: • Preventing uncontrolled ponding of surface water from rainfall within the specified stand-off distance from slope crests. • Preventing any surface water run-off over mine slopes with crest windrows, including no ponding behind the windrows. • For the 5 m berm in mine slopes, if necessary, collecting any rainfall run-off and seepage water in drains along the toes, and re-direct it down the slope via a lined drain to the mine void floor. • Managing 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.
GEO06	Visual assessments of surface water controls will be undertaken on a regular basis, and after rainfall, to check that any ponding, seepage or run-off meets design specifications.
GEO07	Earthquake motion (acceleration) will be accounted for in mine slope designs.
GEO08	Visual assessments of excavations will be undertaken to check for any variability from expected geological conditions, with particular focus on weaker than expected materials or features.
GEO09	Excavation visual assessments for evidence of slope instability or deformation, and any interactions with slopes will be routinely completed by an experienced geologist or mining engineer with geotechnical understanding.
GEO10	Following an earthquake event, the following checks will be completed: • Visually assessing mining areas and surrounds for evidence of slope instability or deformation, and any water interactions with slopes including seepage, liquefaction and infiltration into new cracks or depressions. • Visually assessing of roads adjacent to mining areas and roads on road pillars for evidence of cracking and subsidence; could include a drive-along at a safe speed to check surfaces for serviceability. • Checking the functioning of all slope stability and deformation monitoring equipment.
GEO11	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.
GEO12	Deformation and settlement monitoring of road pillars around mining operations will be undertaken, including: • Horizontal strain and tilt on completed road pillars, measured by strain and tilt gauges, initially prior to formation of the roads to confirm that residual deformations are below tolerances, and prior to, during and post filling the voids adjacent to the road pillar. • Settlement of constructed road, either by surveying and/or settlement plates.
GEO13	Road pillars will be constructed from Haunted Hills Formation gravel or sand tailings.
GEO14	Trials will be conducted during the early stages of road pillar construction to verify construction methods and achieved densities.

Identifier	Mitigation measure
GEO15	Construction and monitoring of all road pillars will be documented, reviewed and quality controlled, including: • Assessing the construction of road pillars against planned construction methods. • Trialling various compaction methods to document and assess performance outcomes. • Formally reviewing road pillar construction methods prior to constructing high road pillar, including specifications of Haunted Hills Formation gravel, coarse sand tailings dewatering and compaction, any additives (e.g., fly ash), achieved strengths, and deformation moduli and settlement times for each stage.
GEO16	Where practicable, 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.
GEO18	Overburden and sand tailings will be placed on a stable and well drained floor after removal of weaker materials or deep ripping.
GEO19	If excess materials are placed on natural surfaces, weak materials such as topsoil, alluvium, and dune sand will be removed prior to placement.
GEO20	Slopes of landforms will be constructed from Haunted Hills Formation gravel, particularly for slopes with a gradient of 1:3 or steeper. 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 armouring layer.
GEO21	Haunted Hills Formation clay will be placed well within the landform away from the final landform slope profile to maintain slope stability.
GEO22	The next lift of material on top of sand tailings will be constructed only when the deposited sand tailings have achieved a partially-dewatered state (i.e., such that rapid loading will not induce a pore pressure increase).
GEO23	Haunted Hills Formation gravel will be nominally compacted, such as under the weight of machinery, to minimise latent settlement of the landform that may affect the final rehabilitated landform profile.
GEO24	Surface watercourses will be directed away from the landform during construction and operations, so rainfall does not pond or cause localised infiltration.
GEO25	Geotechnical assessments of the tailings cell structures will be conducted. Assessments may be undertaken during operations to also observe and test the tailings being produced.
Greenhouse gas	
GHG01	Where practical, solar photovoltaic technology will be used to supplement electricity requirements for applications such as lighting.
GHG02	Energy efficient technology will be used where practicable, including low energy lighting (e.g., LEDs).
GHG03	Electricity usage will be conducted in accordance with the power factor limits specified in Table 2 of the Victorian Electricity Distribution Code.
GHG04	Vehicle diesel consumption will be reduced where practicable through equipment selection, load and route optimisation and production scheduling, and minimising idle time.
GHG05	Equipment will be maintained and operated according to manufacturer/supplier guidelines and recommendations.
GHG06	Generator diesel consumption will be reduced by selecting a flexible configuration that allows for electricity output to be adjusted in line with demand.
GHG07	The amount of land clearance will be minimised as far as practicable to reduce greenhouse gas emissions.

Identifier	Mitigation measure
GHG08	Kalbar will regularly consider and implement new greenhouse gas mitigation opportunities and/or technologies, where practicable.
GHG09	Energy efficiency principles will be integrated in building and facility design.
GHG10	Materials and equipment will be sourced locally wherever feasible to minimise fuel use for transportation.
Groundwater	
GW01	The freshwater and contingency water storage dams will be constructed with an engineered liner to reduce infiltration to groundwater.
GW02	Groundwater will be extracted from the Latrobe Group Aquifer in line with the conditions, timings, and limits detailed in a licence issued by Southern Rural Water.
GW04	Limited quantities of chemical will be stored onsite. Any hazardous materials, such as laboratory chemicals, will be stored in designated areas in accordance with their safety data sheets.
GW05	Handling of concentrated flocculant and any hazardous materials will be done in accordance with safety data sheet recommendations.
GW06	Hazardous waste will be removed from site by a licensed contractor for treatment or disposal in an approved facility in accordance with licence and regulatory requirements.
GW08	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.
GW09	Waste will be removed from site and disposed of by licensed contractors (except for septic waste).
GW10	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.
GW11	Spills of fuels or chemicals will be managed in accordance with requirements set out in the Spill Response and Clean-up Procedure.
GW12	Hazardous materials will be transported in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (National Transport Commission, 2017)[2].
GW15	Management techniques, such as underdrains, sumps and water recovery pumps will be used to recover water in the mine void tailings containment cells.
GW16	The open voids will be progressively backfilled with sand tailings and fines tailings and covered with overburden, subsoil and, in areas other than Grassy Woodland revegetation, topsoil. Revegetation with crop, pasture or native vegetation will be undertaken where required.
Land use and planning	
LUP08	Landholder compensation will be in accordance with the *Mineral Resources (Sustainable Development) Act 1990* and based on a full inventory of on-farm assets.
Noise and vibration	
NV03	When pumping units over 500 kVA are located within 800 m of any dwelling, temporary acoustic barriers will be used, such as earth bunds, Echobarrier or FlexShield barriers

[2] National Transport Commission. 2017. Australian Code for the Transport of Dangerous Goods by Road and Rail. Edition 7.5. National Transport Commission. Melbourne, Victoria.

<table>
<tr><th>Identifier</th><th>Mitigation measure</th></tr>
<tr><td></td><td>(when the barrier height exceeds the pump height by at least 0.5 m). The barrier system will incorporate an acoustically absorptive finish to minimise reflected noise.</td></tr>
<tr><td>NV06</td><td>Contingency procedures will be developed and implemented if noise emissions during construction exceed relevant guideline values, including additional mitigation measures to be considered during less favourable meteorological conditions that may enhance noise emissions from the project area.</td></tr>
<tr><td>NV09</td><td>A noise and vibration sub-plan will be prepared and implemented. The sub-plan will be informed by best practice guidelines. At a minimum, the sub-plan will include:
Location of nearby residences and other sensitive land uses, including the sensitive receptors identified in this EES.
Approved construction working hours and/or shift rotations, and inclusion of construction activities, work areas and mobile plant and equipment locations during each working shift.
Best practice work practices to minimise noise emissions.
Best practice vibration mitigation strategies to minimise vibration.
Community consultation strategy required for the construction phase and associated high noise and vibration generating works.
Complaints handling process, including contact details, follow-up inspection, monitoring and corrective action processes once a complaint is made.
Noise monitoring procedures focused on the noise-sensitive receptors, including noise monitoring from the project area and along the HMC transportation route.
Contingency procedures if noise emissions during operations are determined to exceed those modelled as part of the approval process, including alternatives to be considered during less favourable meteorological conditions that may enhance noise emissions from the project area.
Requirements for recording actions taken in response to exceedances, and evaluation of their effectiveness.
Adaptive management of noise levels for the project, where identified exceedances will inform the required control strategy.</td></tr>
<tr><td>NV10</td><td>Mobile plant items will be fitted with broadband reversing signals to avoid tonal characteristics associated with traditional reversing beepers at nearby sensitive receptors.</td></tr>
<tr><td>NV11</td><td>As the year 1 mining progresses, or moves into a new situation with respect to natural or reconstructed topography, noise modelling will be used to predict compliance at nearby sensitive receptors. Where modelling indicates potential non-compliance, additional mitigation will be implemented, or night shift overburden operations will cease to achieve compliance.</td></tr>
<tr><td>NV12</td><td>Earth bunds will be constructed to control noise such that noise levels from the target sources are controlled to achieve site compliance with EPA guidelines. The location and height of earth bunds for year 1 will be implemented as per the table below and as mining activities move around the project area, screening requirements will be reviewed.
<table>
<tr><th>Location</th><th>Height</th><th>Activities screened</th></tr>
<tr><td>Within mine void adjacent to MUP1</td><td>10 m</td><td>Bund will block line-of-sight to receptors to the east screening scrapers working with the mine void near MUP1.</td></tr>
<tr><td>Overburden haul route</td><td>3 m</td><td>The overburden haul route will be dug 3 m into existing terrain to provide screening of the mobile plant and truck movements along the route.</td></tr>
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<table>
<tr><th>Identifier</th><th>Mitigation measure</th></tr>
<tr><td>NV13</td><td>Direct treatment through plant noise-reduction kits and cladding or screening of the MUP will be undertaken. Suitable noise-reduction kits have been identified for specific items of plant in consultation with industry specialists (Hushpak and Minetek), as identified in the table below, which also shows the level of reduction required, and examples of treatments available to achieve the required reduction.
<table>
<tr><th>Plant item</th><th>Noise reduction required</th><th>Example product</th></tr>
<tr><td>Scraper – ore 1</td><td>-6 dB</td><td rowspan="3">Replacement muffler systems, cooling fans and addition of attenuated doors on the scraper engine bay.</td></tr>
<tr><td>Scraper – ore 2</td><td>-6 dB</td></tr>
<tr><td>Scraper – overburden</td><td>-6 dB</td></tr>
<tr><td>Dozer – D9 MUP2</td><td>-5 dB</td><td rowspan="4">Air intake and exhaust silencers fitted to each unit.</td></tr>
<tr><td>Dozer – D10 MUP2</td><td>-5 dB</td></tr>
<tr><td>Dozer – D10 fines tailings screening</td><td>-5 dB</td></tr>
<tr><td>Dozer – D10 MUP1</td><td>-5 dB</td></tr>
<tr><td>Haul truck CAT 785 x4</td><td>-6 dB</td><td>Replacement muffler systems.</td></tr>
</table></td></tr>
<tr><td>NV14</td><td>Noise mitigation measures such as bunding, walls or cladding will be installed at the wet concentrator plant to control noise emissions from the plant to achieve compliance. At a distance of 20 m east and south of the plant, these levels are 50, 54 and 65 L_{Aeq} dB at heights of 1.5, 10 and 20 m above ground respectively.</td></tr>
<tr><td>NV15</td><td>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).</td></tr>
<tr><td>NV16</td><td>Commissioning noise tests will be undertaken at regular intervals and prior to work starting, including checking that bunds have been constructed to specifications required for site compliance with EPA guidelines.</td></tr>
<tr><td>NV17</td><td>Noisier activities will be scheduled for less sensitive times of day where practicable and works will be limited as much as practicable during the night and at weekends.</td></tr>
<tr><td>NV18</td><td>Residents at noise-sensitive receptors will be informed of the timing and location of each construction stage and associated noise reduction measures and given advance notice and details of periods of noisy activities (such as excavation).</td></tr>
<tr><td>NV19</td><td>Managerial processes will be implemented (such as ‘push-back’ mining operations) to optimise the direction of mine void excavation so the terrain provides maximum natural attenuation noise from plant and equipment.</td></tr>
<tr><td>NV20</td><td>All personnel will be informed about the measures required to minimise noise including through regular toolbox talks.</td></tr>
<tr><td>NV22</td><td>All pneumatic tools used near residential areas will be fitted with an effective silencer on the air exhaust port.</td></tr>
<tr><td>NV23</td><td>Plant will be turned off when not in use.</td></tr>
<tr><td>NV24</td><td>Plant, machinery and vehicles will be maintained in accordance with manufacturers’ specifications to minimise emission of noise.</td></tr>
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Identifier	Mitigation measure
NV25	All trucks left standing on site will, as far as practicable, have their engines switched off after no more than five minutes.
NV27	All project vehicles will be maintained in accordance with manufacturers' specifications.
NV28	Trucks will be equipped with adequate and functioning mufflers.
NV29	Project vehicles will be driven to the speed limit and in a careful manner, avoiding strong acceleration/deceleration, and restricting the use of compression brakes to situations where justified on safety grounds, such as along long downhill slopes.
NV31	A permanent power supply will be secured as early as possible to minimise the time diesel generators are used.
NV32	Equipment and processes that do not exhibit characteristics of intermittency or impulsiveness will be selected, where feasible.
NV33	Equipment will be selected with noise emissions that do not exceed the sound values used in the project noise modelling.
NV34	Construction of the proposed Fernbank East rail siding will be restricted to daytime hours (Monday to Friday (7:00 a.m. to 6:00 p.m.) and Saturday (7:00 a.m. to 1:00 p.m.)).
NV35	Project inductions will include briefings for all employees and contractors on the key principles and requirements of the noise and vibration sub-plan as relevant to their work.
NV36	B-double movements on the private haulage road and rail loading activities at the Fernbank East rail siding will be restricted to the day and evening periods.
Radiation	
RD01	Radiation exposure to workers will be minimised by implementing standard operating procedures for handling and transport of radioactive materials, use of safety apparatus and industrial gauges.
RD02	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 and will include: • Job-specific training and additional training for supervisors. • Induction programs relating to the dangers of working near radioactive material and procedures to prevent radiation exposure. • Specific ongoing training and professional development of radiation safety personnel.
RD03	Exposure to gamma radiation will be minimised through: • Providing site security and signage to restrict unauthorised access. • Locating product stockpiles at sufficient distances 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.
RD04	Generation and inhalation of radioactive dust will be minimised through: • 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 WCP 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.

Identifier	Mitigation measure
RD05	The project will be operated in accordance with a management licence addressing radiation safety in accordance with the provisions of the Radiation Regulations, including likely conditions such as compliance with the Radiation Protection Series No. 9 and preparation of a radiation sub-plan for all operations. The plan would account for any special conditions or exemptions from specific provisions of the Radiation Regulations that might apply to the project.
RD06	Ingestion of radioactive material will be minimised through: • 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.
RD07	Runoff and erosion of soil (which could contain ore) will be minimised through: • Adequate bunding of operations and storage areas to avoid the transport of spilled or stored material into the surrounding terrestrial, freshwater or marine environment. • Constructing stockpile slope angles as low as practicable and mulch materials and contour ripping will be strategically used. • Locating stockpiles to avoid overland flow pathways. • Diverting runoff from stockpiles to the process water dams for reuse. • Vegetating overburden stockpiles where appropriate to minimise erosion.
RD08	Radiation exposure at the port through handling of HMC will be minimised through: • Adequately segregating stored concentrate from other cargo, including providing adequate signposting. • Adopting remote handling of concentrate and minimising exposure times wherever possible. • Using rotator boxes to load bulk shipments of concentrate into vessels.
RD09	Radiation exposure to personnel will be minimised through: • 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.
RD10	Generation of dust and inhalation of dust by project personnel and members of the public will be minimised through: • Limiting vehicle speed on unsealed roads. • Suppressing dust by applying water to unsealed roads in the project area as required. • Passing trucks through a wheel wash prior to leaving the site. • Minimising the drop height of truck dumping as far as practicable.
RD11	Loading of concentrate onto ships will not occur under very wet or windy conditions to limit the potential for concentrate to be washed or blown from the wharf into the ocean. Any spillage of concentrate would be immediately cleaned up
Rehabilitation	
RH01	Stripped topsoil will be transferred directly to nearby rehabilitation areas, or stockpiled separately to overburden adjacent to the active mining area within the disturbed area.

Identifier	Mitigation measure
RH02	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 for stockpiling.
RH03	Fines tailings will be placed at depth in the backfilled mine void so that any restrictions to drainage are far enough below the soil to avoid impacts on vegetation growth and grazing animals.
RH04	Construction of stockpiles will be designed to avoid flow pathways to minimise erosion.
RH06	Rocks will be included in rehabilitated channel beds to increase critical shear of the bed, resist initiation of scour and increase channel stability to storm flows and minimise erosion.
RH07	Rehabilitation will be designed to ensure plateau tops are consistent in form to pre-mining landforms. 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.
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	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.
RH10	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.
RH11	Hydromulches or tackifiers will be used where appropriate to prevent erosion and the more effective use of incident rainfall by germinating seeds.
RH12	Hydroseeding will be used in rehabilitation areas, where appropriate, to stabilise the soil surface and minimise erosion.
RH13	Site/local experience will be considered when determining seed timings and rates to achieve maximum reliability of vegetation establishment. Seed will be re-applied at a later date in areas where rehabilitation performance does not meet established targets when suitable conditions, such as rainfall, are likely to occur.
RH14	Rehabilitated areas will be irrigated where required to promote satisfactory performance and vegetation establishment.
RH15	Larger plants that are less susceptible to grazing damage will be used in rehabilitation areas where practicable.
RH16	Guards will be placed on tubestock where required to prevent damage by rabbits, cockatoos and other pest animals.
RH18	Hazardous materials will be managed (including storage, handling, transport and disposal) in accordance with relevant safety data sheets.
RH19	Mobile plant and vehicles will be maintained regularly and in accordance with manufacturers' specifications. Maintenance will include inspections for leaks and spills.
RH20	Personnel will be trained in management of hazardous materials and spill response procedures prior to commencement of work.
RH21	Where practicable, ameliorants such as organic mulches and fertilisers will be spread on in-situ topsoils prior to stripping to increase soil fertility.
RH22	Stockpiles will be vegetated where appropriate to minimise erosion.

Identifier	Mitigation measure
RH23	Stockpile slope angles will be constructed as low as practicable and mulch materials and contour ripping will be used strategically to stabilise stockpiles, prevent runoff and minimise erosion.
RH24	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.
RH25	Grazing will be excluded in rehabilitated native grass woodland areas (Zone E) channels and riparian areas (Zone D) and on steeper valley slopes (Zone C) to maintain sufficient levels of vegetation cover and prevent disturbance of soils by trampling by livestock, thereby increasing stability and minimising erosion.
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.
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.
RH28	Gypsum will be applied in sufficient quantity to a depth of at least 500 mm as part of a constructed subsoil where material likely to disperse is placed (such as Haunted Hills Formation overburden or fines tailings); to reduce exchangeable sodium and magnesium to acceptable levels (ESP <4 and Ca/Mg ratio >0.5).
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.
RH30	Revegetation will be conducted over as large an area as practicable at one time to spread potential impacts of animal grazing over larger areas.
RH31	Triple interceptor traps will be used to prevent release of hazardous materials from bunded areas into rehabilitated areas.
RH33	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.
RH34	Seeds will be spread to achieve a stem density significantly higher than the target to allow for losses due to animal damage and other causes; thinning will occur at a later date to achieve the target number of stems per hectare, particularly in areas where a higher (moderate) density of trees is proposed and where there is inclusion of understorey species.
Socioeconomic	
SE01	Community access will be provided to information on potential project impacts, and the process for the EES, land access and acquisition in a range of ways, such as through community meetings, personal meetings, newspaper advertisements and website information.
SE02	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.
SE03	Regular meetings will be held with adjacent residents to discuss any issues or concerns.
SE04	A community fund will be established to support community events and initiatives that encourage social interaction such as sporting teams and community festivals.
SE05	The community engagement plan and associated activities will be regularly reviewed and adapted based on community feedback so that the community has different ways to receive information on the performance of the project.

Identifier	Mitigation measure
SE06	A range of avenues will be provided for those with concerns to contact Kalbar to express their concerns or ask questions.
SE08	Regular updates will be provided to local communities on the progress of the EES.
SE09	Regular community updates will be provided on how bushfire mitigation measures are being adopted on site.
SE11	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.
SE12	Prior to construction and operations, all residents adjacent to affected roads will be engaged with to discuss any concerns they have and how road safety can be maintained.
SE13	The need for a cycleway/foot path on Lindenow-Glenaladale Road to provide greater protection for cyclists and pedestrians on this road within the township will be investigated as a part of the traffic management plan.
SE14	If Bairnsdale Siding is utilised, Bairnsdale Racing Club and East Gippsland Shire will be engaged regarding when public events are held at Bairnsdale Racecourse and the measures that can be adopted to improve pedestrian safety.
SE15	All adjacent landholders will be engaged prior to construction and operations to discuss any concerns that these residents have and dust emissions will be minimised.
SE16	The use of low beam lights on vehicles will be promoted except in emergencies or for safety reasons.
SE17	Site-specific visual impact management will be discussed with affected residents located close to the project area.
SE18	Current levels of access to national parks and other natural assets will be maintained.
SE19	An environmental review committee will be established to involve the community in reviewing the environmental performance of the project throughout its life.
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.
SE21	Close dialogue with East Gippsland and Wellington Shire councils will be maintained to identify opportunities to encourage social interaction.
SE22	Timely responses will be provided to any community complaints raised.
SE23	The review and update the Lindenow and District Community Plan will be discussed with the East Gippsland Shire Council.
SE24	Incentives will be provided for personnel to participate in local community activities and organisations.
SE25	An employment code of conduct, pre-employment screening and fit for work procedures will be developed and implemented.
SE26	A community complaints procedure will be developed and implemented.
SE28	Police checks will be conducted on potential project personnel.
SE29	A local employment and procurement guideline will be developed and implemented that gives preference to local residents and businesses.
SE30	Incentives for new residents to buy locally will be established, working work with the Chamber of Commerce and local industry representative groups.

Identifier	Mitigation measure
SE31	Capacity and capability of the local community will be built through implementing training courses.
SE32	Local landholders will be engaged on how land is rehabilitated to ensure compatibility with future stocking requirements.
SE33	Access will be maintained to the Fingerboards information board and a similar meeting point re-established.
SE35	Tourism authorities, such as Business & Tourism East Gippsland and East Gippsland Marketing Inc., will be engaged regularly to identify economic and business opportunities for the region.
SE36	Local businesses providing short-term accommodation will be engaged to discuss the timing of project works and potential peak periods.
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.
SE38	Education and training providers will be consulted to identify suitable work placement applicants and provide opportunities to work on the project.
SE39	Local applicants will be targeted for employment opportunities on the project, working with GROW Gippsland and other organisations, including to encourage applicants from disadvantaged or vulnerable groups.
SE40	Opportunities will be provided for apprentices to work on the project and work with support networks such as the Australian Apprenticeship Support Network to increase the likelihood that these apprentices will complete their program.
SE41	Information sessions will be provided for potential employees, presentations given at career events and local schools, and careers counsellors will be engaged on job opportunities available on the project.
SE42	Partnerships will be formed with local labour hire providers to fill short-term and contract jobs.
SE43	A database of businesses based in Gippsland with services and supplies that could support construction, operations and closure of the project, such as Industry Capability Network (ICN) and Gippsland Business Connect, will be established and maintained.
SE44	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 available and general competencies and skills that are required. This information will be distributed to education and training providers and advertised in local newspapers to assist people in getting job ready.
SE45	Industry Capability Network (ICN) and GROW industry briefings and tender writing workshops will be provided.
SE46	Skill shortages and training requirements will be identified to allow local people to gain qualifications within these areas. Ongoing training will be encouraged and supported through local partnerships with a view to keep abreast of the changing landscape of the mining industry.
SE47	A labour force strategy will be prepared in consultation with local employment networks prior to construction commencing; including targeted strategies to manage potential impacts of project employment on other sectors.
SE49	Pre-employment medicals and drug testing will be conducted through contracts with local hospitals or medical practices.

Identifier	Mitigation measure
SE50	Local health service providers, education providers and relevant support networks will be engaged with prior to construction, and on a six-monthly basis during construction and operations, to monitor and identify strategies to manage any potential peaks in demand.
SE52	Targeted strategies will be implemented to reduce potential impacts on housing availability and affordability during construction; including for example 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 construction.
SE53	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.
SE54	Workers living in long-term accommodation will be encouraged to share with other project workers.
SE55	Regular consultation will be conducted with local housing support agencies and house prices will be monitored.
SE56	Transport contractors will be engaged about opportunities to adopt vehicle management systems which enable drivers to detect school buses.
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.
SE58	Road works will be avoided on roads used to access areas such as Den of Nargun including Wy Yung Calulu Road and Friday Creek Road.
SE59	Kalbar will work with GROW Gippsland to support local economic development, including: • Developing an individualised GROW Gippsland Action Plan with an annual statement of outcomes for publication on the GROW Gippsland website. • Sharing appropriate data to communicate regional procurement opportunities and track GROW Gippsland progress via a shared measurement framework. • Providing opportunities to grow local small to medium sized businesses – either as suppliers to our business, as partners, or as sub-contractors – to improve social outcomes. • Seeking opportunities to work with social enterprises and Aboriginal businesses in the region that deliver social outcomes as part of doing business, either directly or as part of our supply chain. • Collaborating with other GROW members to identify opportunities to work together to increase opportunities for people with barriers to work and support economic participation in our region.
SE60	Organisations such as the GLaWAC and GEGAC will be engaged on opportunities to encourage local Indigenous youth to conduct training and/or apprenticeships; employment and commercial opportunities on the project will also be discussed.
SE61	A database will be maintained of people interested in working on the project through which upcoming opportunities can be proactively promoted to subscribers.
SE62	A review of the existing capability of emergency services and potential future requirements for these services will be completed in consultation with East Gippsland and Wellington shires and emergency service providers.
SE63	All tenders will be advertised in local newspapers and relevant procurement portals.
SE64	Best practice, evidence-based health and wellbeing programs will be investigated in collaboration with East Gippsland and Wellington shires councils.

Identifier	Mitigation measure
Surface water	
SW01	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.
SW02	The design and placement of infrastructure in the project area will consider potential for flow accumulation and increased flood risk, and associated prevention measures.
SW03	Mine contact water from outside of the mine void, temporary TSF or process water dams that is retained in water management dams will be offset by releasing the same volume of water from the freshwater 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 storage dam.
SW04	A surface water and groundwater sub-plan will be developed and implemented to minimise discharge of stormwater from construction areas. The sub-plan will include measures such as: • Directing surface runoff around or away from areas of land disturbance, stockpiles, embankments or nearby sensitive areas, where practicable. • Capturing runoff (via surface water infrastructure) that comes into contact with construction areas and directing it to sedimentation dams. If required, flocculant treatment (i.e., alum, gypsum or hydrated lime) will be used to reduce suspended sediment levels in the stormwater. • Controlling erosion within gullies using primary and secondary sediment traps constructed at appropriate sites. • Retaining water on site from the contributing catchment to approximately the 10% annual-exceedance-probability. • Designing and profiling all site drains to reduce water flow velocity and erosion.
SW05	Freeboards on the water storage dam, process water dam and sediment ponds will be maintained to allow for storm events and high rainfall periods, in accordance with relevant licence, permit and approval requirements.
SW06	Areas will be inspected for nearby stream bed instability prior to construction where infrastructure such as water storages and haul roads are to be installed on or close to a watercourse.
SW07	If required, bed instability will be addressed through appropriately designed grade controls, such as the use of rock chutes.
SW08	All stream bed instability areas within and immediately downstream of the project area will be inspected prior to, and annually, during construction to determine movement rates of unstable areas and potential risks posed to mine infrastructure.
SW09	Surface water management infrastructure designed to capture runoff (and eroded soils) will be maintained until vegetation is fully established and stabilising the landscape.
SW10	Stockpile slope angles will be constructed as low as practicable; and seeding or mulch materials and contour ripping will be used to stabilise stockpiles, prevent runoff and minimise erosion of soils.
SW11	A daily water balance approach will be applied to dam design to achieve a probability of spillway activation of once per 100 years on average (1% average-exceedance probability) for Perry River catchments, and three times per 100 years on average (3.3% average-exceedance probability) for Mitchell River catchments.
SW12	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.

Identifier	Mitigation measure
SW21	Rainfall runoff water from vehicle workshop floors, vehicle service areas and fuelling areas will be captured and directed to an interceptor trap to extract hydrocarbons, prior to treated water 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.
SW22	The temporary TSF will be constructed using engineered cells with lined walls. Water will be managed using a decant system, sumps and drains to capture and reuse seepage.
SW23	Water will be recovered and reused where practicable (such as runoff from ore stockpiles and supernatant water from the temporary TSF and tailings areas within the mine voids).
SW24	Water running off undisturbed ground will be diverted around disturbance areas where practicable.
SW28	Surface water will be managed through an adaptive management strategy that includes trigger levels for surface water quantity and quality that determine when remedial action is required (in consultation with affected stakeholders).
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.
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.
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 storage dam. Mine contact water will be treated to meet licence requirements prior to discharge offsite.
SW34	Ephemeral drainage gullies will be revegetated in areas downstream of future mining activities prior to operations commencing to increase landscape stability and specifically mitigate: • Effects of a moderate increased flow velocity downstream of the mine operations and the final landform. • Potential effects of tunnel erosion downstream of the mine void boundary where soil treatment is not planned. • Effects of sediment starvation by reducing sediment transport and encouraging deposition.
SW35	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.
SW36	Aquatic and riparian vegetation will be established in minor waterways between the water management dams and major receiving waterways to reduce potential water quality impacts from release of mine contact water.
SW37	Natural surface water drainage courses will be re-routed to avoid post-mining landforms, where practicable.
SW38	Surface water ponding on post-mining landforms will be avoided, where practicable, through appropriate slope profile design and topsoil treatments.
SW39	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.

Identifier	Mitigation measure
SW40	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.
SW41	Riparian vegetation will be retained where possible to maintain aquatic ecosystem habitat and prevent sedimentation of watercourses.
SW42	Access tracks and roads will be regularly maintained and clearly marked to prevent establishment of secondary tracks and reduce soil erosion; existing roads will be used where practicable.
Terrestrial and aquatic biodiversity	
TE01	Appropriate approvals and permits will be obtained prior to any vegetation removal.
TE02	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-dependant fauna known or potentially present (yellow-bellied sheathtail bat, powerful owl, masked owl and eastern pygmy possum).
TE03	Appropriate offsets will be secured in accordance with state and Commonwealth legislation and policy.
TE04	The extent of clearance and buffers around no-go areas will be clearly defined to avoid disturbance within areas to be retained.
TE05	Access tracks and roads will be clearly marked to prevent establishment of secondary tracks and disturbance to adjacent vegetation; existing roads will be used where practicable.
TE06	Access tracks expected to experience heavy traffic will not be located adjacent to areas of high ecological sensitivity (comprising areas of the Gippsland Red Gum Grassy Woodland and Associated Native Grassland ecological community and 11 EVCs (refer to Table 9.3); hollow-bearing trees; known occurrences and identified potential habitat for swamp everlasting, dwarf kerrawang, gaping leek-orchid, slender wire-lily, blue mat-rush, slender tick-trefoil and sandfly zieria; identified habitat for the giant burrowing frog and Australian grayling; and downstream waterways and wetlands).
TE07	Parking areas, stockpiles, machinery depots and site buildings will be located in areas of low ecological value (such as blue gum plantations).
TE08	Large trees will be retained adjacent to the project footprint and clearly marked; Tree Retention Zones will be identified and marked.
TE09	Areas will be revegetated and managed in accordance with the rehabilitation sub-plan to increase overall native vegetation cover in the project area, native vegetation patch size and habitat connectivity, and to exclude stock from such areas.
TE10	Disturbed areas will be revegetated to recreate pre-existing vegetation communities, where agreed and practicable, to increase habitat value and visual amenity while reducing the likelihood for weeds to establish and proliferate, and for soil erosion to occur.
TE11	Revegetation of mined areas will include: • Planting locally occurring native shrubs, trees and groundcover plants, selected in consultation with DELWP, to recreate the target vegetation community. • Including rocks, logs, dead trees, and stumps in the restoration and rehabilitation works to provide fauna habitat. • Maintaining plantings in accordance with the rehabilitation sub-plan. • Managing weeds and pest animals.
TE12	Staff/contractor inductions will incorporate an environmental component signed off by a suitably qualified representative (e.g., site environmental advisor/specialist).

Identifier	Mitigation measure
TE13	Sensitive areas, such as those with fauna habitat, will be cleared of fauna (as far as practicable) by a suitably trained ecologist or other qualified environmental specialist prior to construction and operations activities commencing.
TE14	Pre-clearing activities will remove the understorey and smaller non-hollow-bearing trees to disturb fauna and encourage them away from the clearing area.
TE15	Animals disturbed during clearing works will be relocated, with appropriate authorisation under the *Wildlife Act 1975*.
TE16	All trenches will have escape ramps to avoid fauna entrapment and allow animals to escape.
TE17	Appropriate speed-limits will be applied in areas containing remnant native vegetation to reduce the risk of fauna mortality from vehicle strike.
TE18	Traffic movements will be minimised during the night, dusk and dawn periods in remnant native vegetation areas.
TE19	Hollow-bearing trees will be retained around project infrastructure, where construction permits.
TE20	Pre-clearance surveys will be carried out by a competent environmental professional in all areas of vegetation to be cleared that have large trees (as defined in the Guidelines for the removal, destruction or lopping of native vegetation, 2017) or that are likely to support flora or fauna species listed under the EPBC Act and/or FFG Act.
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.
TE22	Isolation and fragmentation of habitat will be minimised when planning activities with potential to remove vegetation.
TE23	Appropriate erosion and sediment control strategies will be implemented to prevent gully erosion in areas adjoining the project footprint.
TE24	No-go zones with buffers will be established around waterbodies adjoining the project footprint to prevent any disturbance to the biodiversity values present within these areas. The width of buffer areas will be determined on a case-by-case basis.
TE25	Strategies will be implemented during construction and operations to control sediment runoff (and reduce the potential for increased turbidity in downstream aquatic habitats) and reduce the potential for spills.
TE26	Bunding for the fuel storage area (fuel farm) will be in accordance with Australian Standard 1940:2004 (Standards Australia, 2004)[3]. The capacity (i.e., bund height), storage, stormwater control and maintenance, and operation of bunded areas will comply with EPA bunding guidelines (Environment Protection Authority Victoria, 2015)[4].
TE27	The design, construction, monitoring and rehabilitation of the temporary TSF will comply with the Department of Economic Development, Jobs, Transport and Resources:

[3] Standards Australia. 2004. AS 1940:2004. The Storage and Handling of Flammable and Combustible Liquids. Standards Australia. Sydney, New South Wales.

[4] Environment Protection Authority Victoria. 2015. Bunding Guidelines. Publication 347.1. Environment Protection Authority Victoria, Southbank, Victoria.

Identifier	Mitigation measure
	Technical Guideline Design and Management of Tailings Storage Facilities (Department of Economic Development, Jobs, Transport and Resources, 2017)[5].
TE28	The biodiversity sub-plan will incorporate fauna salvage and relocation/translocation procedures.
TE29	Use of underpasses/culverts and overpasses will be investigated to allow ground dwelling species and arboreal marsupials to move between areas of native vegetation that are bisected or crossed by access roads and linear infrastructure.
TE30	All remaining areas of ecological value near the project area and infrastructure options area will be managed under the supervision of a suitably qualified ecologist to enhance habitat features and compensate for those lost; including installing nesting boxes and logs, and other large woody debris relocated from cleared areas.
TE31	Fauna escape features and refuges (including ramps and damp sandbags) will be provided where remnant patches of vegetation are adjacent to construction and operational areas.
TE32	Any water and other suppressants (applied to reduce dust) will not directly enter nearby waterbodies or remnant native vegetation.
TE34	Construction machinery, vehicles and pedestrians will be confined to formed tracks and designated areas, where practicable.
TE36	Lighting systems will be designed and used in a way that minimises potential impacts on fauna species, 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.
TE37	Project infrastructure and activities will be micro-sited to avoid threatened flora species and native vegetation; including for example, if vegetation of high quality is identified during pre-clearance searches, where practicable, the location will be adjusted to avoid it.
TE39	All trenches and other excavations will be checked daily and any trapped animals removed by a competent environmental professional before works commence.
TE41	Areas used for handling and/or storage of concentrated flocculent and hazardous materials will be bunded appropriately to avoid spilled or stored material reaching the surrounding environment and will contain spill response equipment.
TE42	Mobile plant and vehicles will be maintained regularly and in accordance with manufacturers' specifications; including inspections for leaks and spills.
TE44	If a leak or spill occurs, contaminated soil will be excavated and disposed of by a qualified specialist at a licenced facility.
TE45	Biosecurity procedures will be implemented to avoid introducing and spreading weeds, pests and diseases into the project area and surrounds.
TE46	Disturbed areas will be revegetated to increase habitat value and visual amenity while reducing the likelihood of weeds to establish and proliferate.
TE47	Revegetation of mined areas will include management of weeds and pest animals.

[5] Department of Economic Development, Jobs, Transport and Resources. 2017. Technical Guideline, Design and Management of Tailings Storage Facilities. Department of Economic Development, Jobs, Transport and Resources. Earth Resources Regulation. April 2017.

Identifier	Mitigation measure
TE48	Currently known extant populations of gaping-leek orchid will be avoided, and project activities will be designed to minimise potential for indirect impacts to these populations.
TE49	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.
TE50	Progressive rehabilitation will aim to increase the extent of native vegetation cover and habitat connectivity within and adjoining the project area prior to clearing and fragmenting habitat in other areas.
TE51	Faunal habitat features, such as logs and hollows, will be included as part of habitat restoration works.
TE52	Populations of listed or rare native plant species from EVCs within the project area will be increased through targeted recovery programs.
TE53	A detailed flora and fauna survey will be undertaken in accordance with relevant state and Commonwealth legislative requirements in the unsurveyed portion of the project area, located in the northwestern corner, prior to commencement of ground disturbance.
TE54	Pre-clearance searches for fauna will be conducted by a competent environmental professional prior to vegetation removal.
TE55	Construction activities will be delayed if significant weather events are forecast.
TE56	Felling of large hollow-bearing trees will be supervised by a competent environmental professional.
Traffic and transport	
TT01	The intersection of Princes Highway and Lindenow-Glenaladale Road will be upgraded to roundabout control to increase road safety and avoid excessive slowing of traffic due to B-doubles turning right from Lindenow-Glenaladale Road onto Princes Highway (if required under the Bairnsdale rail and road and rail scenarios).
TT02	A traffic management plan will be prepared in accordance with industry standards to address general driver awareness and safety for the project workforce and the inherent risks associated with driving; the plan will be updated as required based on annual driver surveys of the project workforce and in response to recommendations from relevant incident investigations.
TT03	Standard road lighting will be provided at the following intersections to increase the visibility on approach to the intersection and improve safety: • Fernbank-Glenaladale Road and Bairnsdale-Dargo Road (if required under the road and rail scenario). • Lindenow-Glenaladale Road and Princes Highway. • Fernbank-Glenaladale Road and the private haulage road. • Racecourse Road and Princes Highway (if required under the Bairnsdale rail scenario).
TT04	Flag lighting (a small number of lights to indicate the presence and location of an intersection without providing lighting to any particular level) will be provided at the following intersections to increase visibility on approach and improve safety: • Fernbank-Glenaladale Road and Princes Highway. • Fernbank-Glenaladale Road and private haulage road.
TT05	Prior to the movement of oversize and overmass vehicles: • An audit will be completed to assess route options, safety, and clearance between the vehicle and potential obstructions such as wires, trees, structures and rail crossing infrastructure, and then plan the route accordingly.

Identifier	Mitigation measure
	• A permit will be obtained from the relevant road authority to gain access to any roads not approved for oversize and overmass vehicles.
TT06	Oversize and overmass vehicle movements will avoid peak hours and school bus operation hours.
TT07	A channelised right-turn treatment will be provided at the new intersection of Bairnsdale-Dargo Road and the diverted section of Fernbank-Glenaladale Road north of Bairnsdale-Dargo Road.
TT10	Diverted and realigned roads will be constructed to the same or better standard as existing roads.
TT11	New intersections, including new intersections that have been created by diverted roads, will be constructed to Austroads standards.
TT12	The no overtaking line marking west of the intersection of Lindenow-Glenaladale Road and Bairnsdale-Dargo Road will be extended to just west of Lindenow-Glenaladale Road to reduce the risk of vehicles trying to overtake B-doubles on the approach to the crest of the hill near the intersection.
TT13	Boom gates will be installed at the level crossing on Lindenow-Glenaladale Road in accordance with AS 1742.7 Manual of uniform traffic control standards, Part 7 Railway crossings.
TT14	Rumble or shaker strips will be provided on approach to the new Fingerboards roundabout and on the Fernbank East rail siding access road to prevent mud tracking onto the public road network.
TT15	The proposed new Fingerboards roundabout will be designed so that the angle between each leg is approximately equal, such that the legs are distributed generally evenly around the roundabout.
TT17	Where roadworks require closure of roads, alternative routes will be identified in consultation with East Gippsland Shire Council and Department of Transport to provide the public with adequate access at all times.
TT18	New intersections will be constructed such that through-traffic movements are maintained to the satisfaction of the responsible road authority. Temporary traffic signals will be used as required to safely control traffic flow through the work site.
TT19	Roadworks and temporary traffic management on the public road network will be implemented in accordance with a traffic management plan submitted to and approved by the responsible road authority prior to commencement of works.
TT20	Emergency services will be advised where significant delays are expected and contact details for the operations manager will be provided to allow emergency services to arrange access across an area of delay.
TT21	Roadworks affecting the Princes Highway, if required under the Bairnsdale rail scenario or road and rail scenario, will be avoided during peak periods, including peak hours and peak times such as school and public holidays, wherever practicable.
TT22	The construction environmental management plan and environmental management plan will include measures to encourage personnel to travel to and from the mine site by bus, or to carpool.
TT23	Based on the outcomes of pedestrian surveys at Lindenow South, B-double operating times will be limited (i.e., avoiding peak times), speed limits will be revised and driver training and familiarisation will be undertaken as required to minimise risks to pedestrian safety within the town.

Identifier	Mitigation measure
TT24	Measures developed in consultation with the Department of Transport will be implemented to minimise the risk of B-doubles queuing onto the level crossing at Maryvale rail siding, such as shorter cycle times, leading and lagging right turn phasing and coordinating signals with a detector on the rail line upstream of the crossing (if required under the road and rail scenario).
TT25	Heavy mineral concentrate haulage via Lindenow South will be scheduled to avoid school bus routes during times of school bus movements (i.e., 7:30 a.m. to 9:00 a.m. and 3:20 p.m. to 5:00 p.m. on school days).
TT26	Where any pavement damage occurs and requires immediate treatment, remedial pavement works will be undertaken as agreed with the responsible road authority.
TT28	For B-double movements to Fernbank East rail siding, an operational overlay to the traffic management plan will be introduced that requires B-doubles to stop before crossing Chettles Road and Cowells Lane.
TT29	For B-double movements to Bairnsdale rail siding, shoulders will be widened, and line marking will be reinstated on the Racecourse Road bend to reduce the potential for rear end collisions (if required under the Bairnsdale rail scenario).
TT30	For B-double movements to Bairnsdale rail siding, shoulders will be widened, and line marking will be reinstated on the Forge Creek Road bend to reduce the potential for crashes (if required under the Bairnsdale rail scenario).
TT31	For B-double movements to Bairnsdale rail siding, the intersection of Princes Highway and Racecourse Road will be upgraded to roundabout control to increase road safety and avoid excessive slowing of traffic due to B-doubles turning right from Princes Highway onto Racecourse Road (if required under the Bairnsdale rail scenario).
Visual and landscape	
VL01	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.
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.
VL03	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.
VL04	Works will be scheduled wherever practicable during daylight hours to avoid night-time activities in areas directly visible from nearby residences.
VL05	The mine void will be progressively backfilled, and rehabilitation will be progressive to re-instate pre-mining landforms and re-establish vegetation.
VL06	Fixed buildings will be located to take advantage of existing vegetation screening. Additional vegetation screening will be planned to minimise future visual impacts.
VL07	The landscape will be restored to reduce visual impacts from elevated viewpoints.
VL08	Regular slopes and/or sharp transition angles will be rounded to provide a natural appearance to the final landform.
VL09	Disturbed areas (e.g., road reserves) will be revegetated with local indigenous vegetation.
VL10	Displaced plantation timber and vegetation will be replaced around properties in consultation with relevant landholders.
VL11	Topsoil will be managed and maintained throughout rehabilitation activities to promote successful re-grassing and tree planting.

Identifier	Mitigation measure
VL12	Containers will be stacked at the rail siding to the maximum height of adjacent screening vegetation and/or topography.
VL13	Temporary visual bunds will be placed to screen operations within the mine void.