

Shree Minerals Limited

NELSON BAY RIVER MINE

EPBC SPECIES MANAGEMENT PLAN

VERSION 3

EPBC 2011/5846

Name of Mine: Nelson Bay River Mine
Mining Title / Leases: 3M/2011
Approval: EPBC 2011/5846
EPBC Management Plan Commencement Date: August 2013
Name of Leaseholder: Shree Minerals Limited
Name of Mine Operator: Shree Minerals Limited

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1. INTRODUCTION

Shree Minerals is developing a new magnetite and hematite mine and mineral processing operation on mining lease 3M/2011, adjacent to Nelson Bay River, off Wuthering Heights Road, approximately 7 km northeast of Temma, in northwest Tasmania. **Figure 1** shows the planned layout of the mine site.

The project's approval process required the preparation of a Development Proposal and Environmental Management Plan (DPEMP) for State and local government assessment and an Environmental Impact Statement (EIS) for assessment under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

State approvals were issued on 21 August 2012 and the Commonwealth Environment Minister, the Hon. Mark Butler, approved the project under the EPBC Act on 29 July 2013, subject to conditions (EPBC 2011/5846).

This purpose of this plan is to address Condition 3 of the Minister's approval, which requires the preparation of a plan for the management and protection of EPBC species at the mine site and during travel to or from the site by mine vehicles.

Protection and management prescriptions are relevant to the construction phase, the operational phase and the closure phase of the mine.

The closure phase will be dealt with by the Mine Closure Plan, which needs to be prepared under the State's approval conditions within 12 months of those approvals coming into effect.

The scope of this current plan is therefore confined to the construction and operational phases of the mine.

EPBC species are defined by the approval to be:

EPBC species includes any flora or fauna species listed under the EPBC Act as threatened or migratory and that is known or considered likely to occur at the mine site, but must include the following species:

- *windswept spider orchid (Caladenia dienema);*
- *large golden moths, snake orchid (Diuris lanceolata);*
- *western leek orchid (Prasophyllum favonium);*
- *pretty leek orchid (Prasophyllum pulchellum);*
- *giant freshwater crayfish (Astacopsis gouldi);*
- *Australian grayling (Prototroctes maraena);*
- *wedge-tailed eagle (Aquila audax subsp. fleayi);*
- *Tasmanian azure kingfisher (Ceyx azureus subsp. diemenensis syn. Alcedo azurea subsp. diemenensis);*
- *white-bellied sea-eagle (Haliaeetus leucogaster);*
- *satin flycatcher (Myiagra cyanoleuca);*
- *Tasmanian masked owl (Tyto novaehollandiae subsp. castanops);*
- *spot-tailed quoll (Dasyurus maculatus subsp. maculatus); and*
- *Tasmanian devil (Sarcophilus harrisii).*

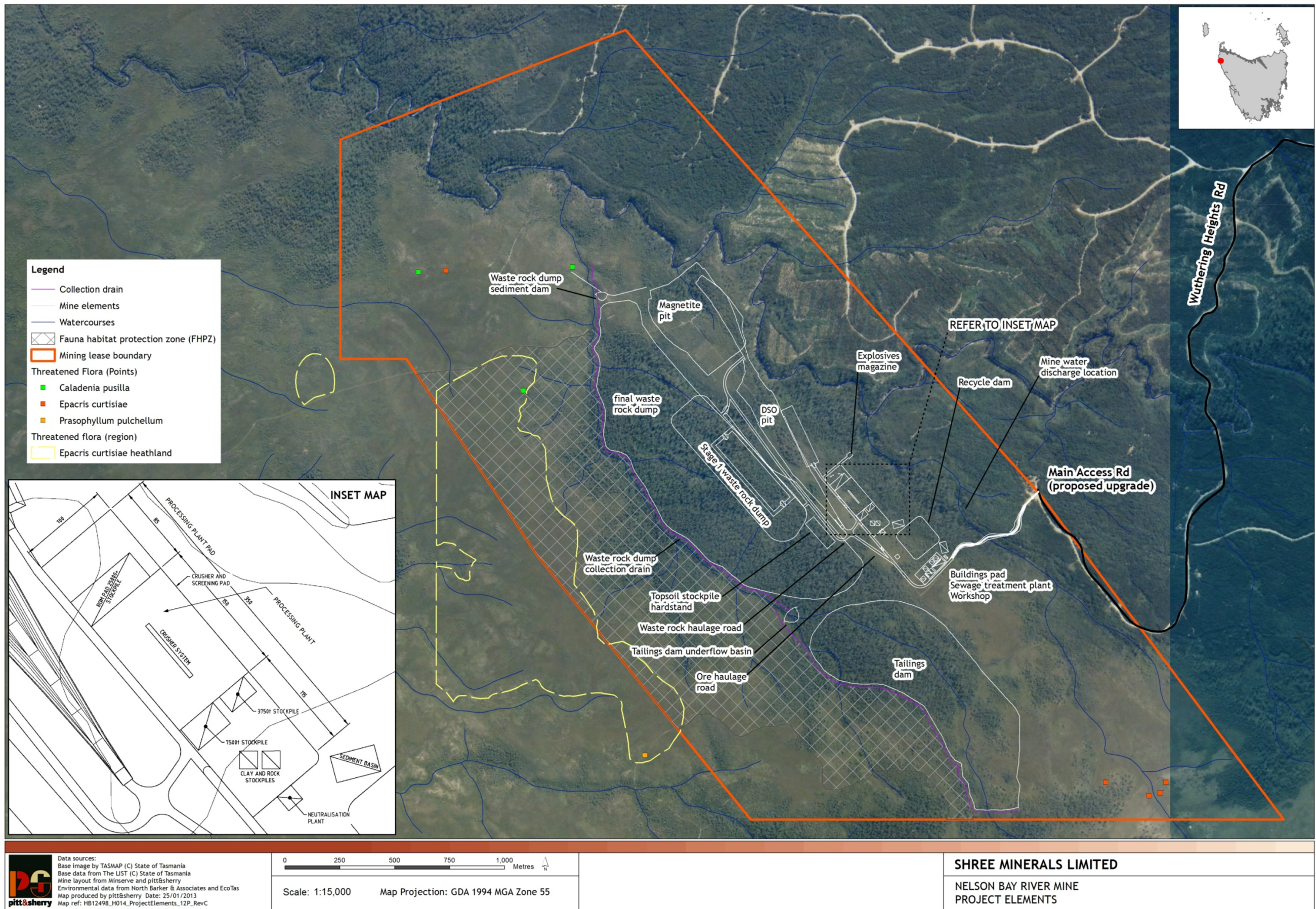


Figure 1
Current preliminary design layout of the mine

Condition 3 states:

The person making the action must engage a suitably qualified or experienced expert to prepare a plan for the management and protection of EPBC species at the mine site and during travel to or from the mine site by authorised vehicles. The plan must address:

- a. *containment of vegetation clearance and operational activities within the nominated mine footprint;*
- b. *management of food waste;*
- c. *management of hazardous substances including fuels, tailings and poisons;*
- d. *management of open pits and excavations;*
- e. *protocols for dealing with injured fauna, including:*
 - I. *animal welfare considerations;*
 - II. *initial response provisions;*
 - III. *expert care provisions;*
- f. *protocols for recording any sightings of EPBC species (including carcasses), including information on:*
 - I. *species;*
 - II. *condition;*
 - III. *date;*
 - IV. *time;*
 - V. *location coordinates; and*
 - VI. *any noteworthy circumstances including circumstances of injury or death where relevant and known.*

The plan must be approved by the minister prior to commencement of the action, and must be implemented.

This plan is structured in accordance with the above requirements.

2. SPECIES OCCURRENCE

The species listed above are those known to occur on the mine site and also those that might occur on the mine site or in surrounding areas based on habitat preferences, but which might not actually be present. The detailed flora and fauna surveys conducted to inform the EIS considered all these species. A map showing the results of the surveys is provided in **Figure 2**.

The conclusions from the surveys are summarised in **Table 1**.

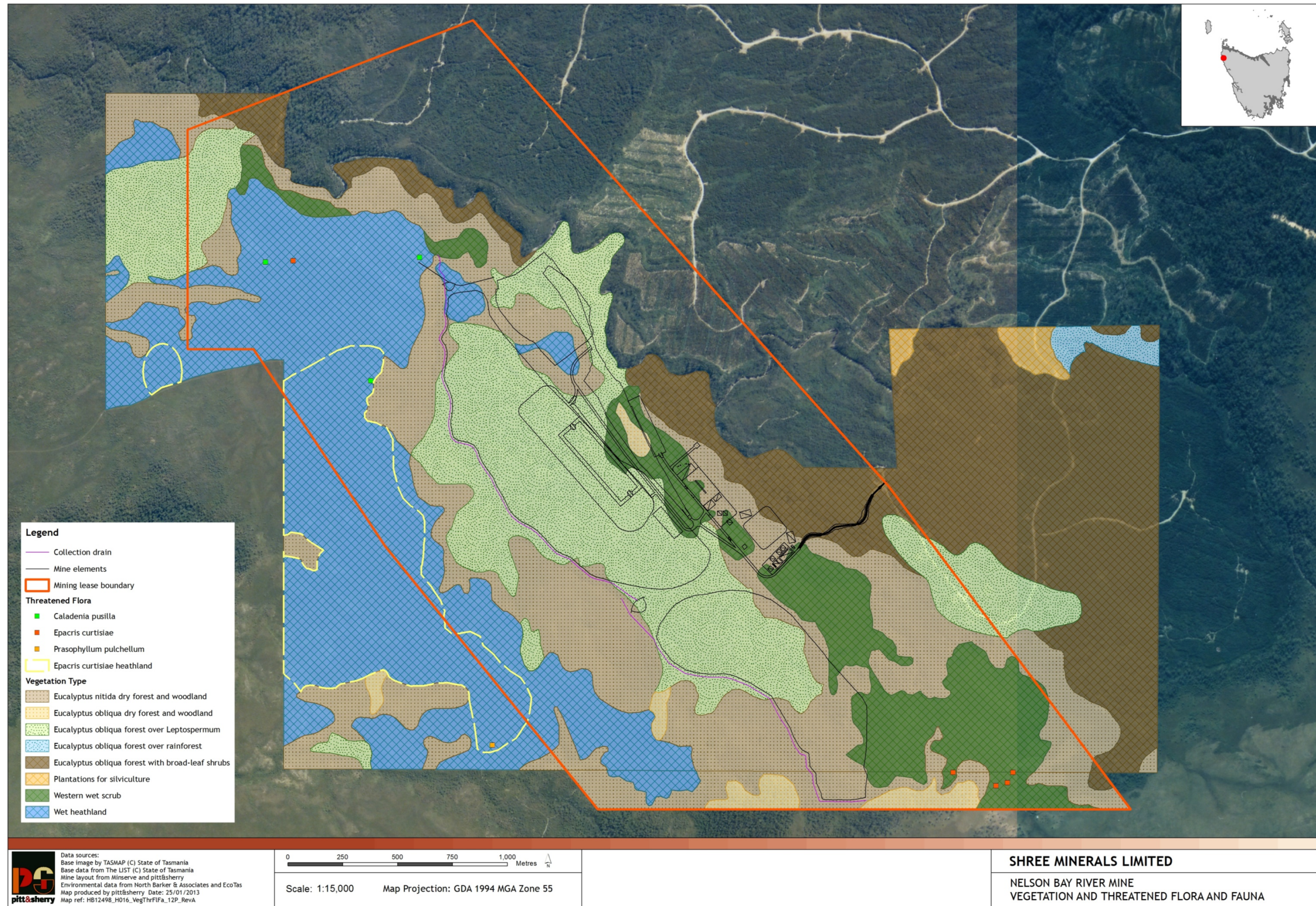


Figure 2
 Vegetation communities and threatened flora observations from the site surveys

Table 1- Summary of occurrence conclusions for EPBC species

Species	Occurrence conclusions
Windswept spider orchid (<i>Caladenia dienema</i>)	<i>Caladenia dienema</i> was not recorded in the lease area. However, the species was noted 100 m away from the northern boundary of the lease.
Large golden moths, snake orchid (<i>Diuris lanceolata</i>)	<i>Diuris lanceolata</i> was not recorded in the lease area. The nearest known recorded populations are 3.4 kilometres away from the mine lease boundary. The species is unlikely to extend as far inland as the study area and there is considered to be no potential for this species to occur.
Western leek orchid (<i>Prasophyllum favonium</i>)	<i>Prasophyllum favonium</i> was not recorded in the lease area. The wet heathland west of West Creek has the greatest potential to contain this species, although it was not recorded in the surveys, and this potential is considered to be moderate.
Pretty leek orchid (<i>Prasophyllum pulchellum</i>)	Twenty plants flowering in an area of 3 square metres were found during the surveys approximately 200 metres away from the mine lease boundary.
Giant freshwater crayfish (<i>Astacopsis gouldi</i>)	West Creek is poorly suited to <i>Astacopsis gouldi</i> , and is not considered to be potential habitat; East Creek has some potential habitat but this is limited, and dries up for periods in summer; Nelson Bay River itself has good potential habitat. No <i>A. gouldi</i> were found in the EIS site surveys. A further survey of West Creek and East Creek and Nelson Bay River conducted in November 2012 by Kanunnah Pty Ltd under the project's Biological Monitoring Plan for the State permit again found no evidence of <i>A. gouldi</i> in either of the creeks but found a juvenile <i>A. gouldi</i> in Nelson Bay River at the Wuthering Heights Road bridge, upstream of the mine site, confirming that the species is present in the river (this observation has become the most westerly known site in the lobster's range).
Australian grayling (<i>Prototroctes maraena</i>)	The mine site is 7 km upstream from a significant waterfall of more than 2 metres height, which presents a natural barrier to upstream movement of the species into Nelson Bay River. This barrier is near the mouth of Nelson Bay River, close to where it is crossed by Temma Road. Because of barrier, there is no significant likelihood of the species being any further upstream than Temma Road, which is 7 km downstream from the mine site. A fish survey of Nelson Bay River conducted in November 2012 by Freshwater Systems under the project's Biological Monitoring Plan for the State permit found no Australian grayling and confirmed that the waterfall presents an insurmountable barrier to upstream movement of the grayling into Nelson Bay River.
Wedge-tailed eagle (<i>Aquila audax subsp. fleayi</i>)	One nest record of this species has been recorded within 5 km of the lease area, approximately 2 km to the northeast. The lease area is considered to have a low probability to contain nests as most of the mature eucalypts within the area have been badly fire damaged. A helicopter survey

Species	Occurrence conclusions
	failed to locate any nests within the area. However, the area is considered very likely to be utilised for foraging.
<i>Tasmanian azure kingfisher (Ceyx azureus subsp. diemenensis syn. alcedo azurea subsp. diemenensis)</i>	No known nest sites or records occur within 5 km of the study area and suitable habitat is considered to be marginal. Visual and auditory searches did not locate any <i>Ceyx azureus diemenensis</i> , and the potential of occurrence is considered to be low. Potential habitat for the species occurs along the tree-lined sections of the Nelson Bay River banks. The river has relatively fast moving water with still deep sections but the banks are generally unsuitable for nesting as they are predominantly sheer rock rather than sediments.
<i>White-bellied sea-eagle (Haliaeetus leucogaster)</i>	No observations of this species have been recorded within 5 km of the mine site. The survey area is considered to have a low probability to contain nests as most of the mature eucalypts within the study area have been badly fire damaged. A subsequent helicopter survey failed to locate any nests within the area. The lease area is unlikely to be used for foraging.
<i>Satin flycatcher (Myiagra cyanoleuca)</i>	The species was seen foraging at several locations in the riparian areas along the Nelson Bay River. Within the lease area they were only recorded outside the proposed disturbance footprint.
<i>Tasmanian masked owl (Tyto novaehollandiae subsp. castanops)</i>	There is a potential for masked owls to use hollow trees for nesting.
<i>Spot-tailed quoll (Dasyurus maculatus subsp. maculatus)</i>	There are several records of this species within 5 km of the study area. It is present in the lease area, as evidenced by an observed probable scat. It is also present in the wider region around the mine site, as evidenced by road spotlight observations.
<i>Tasmanian devil (Sarcophilus harrisii)</i>	Numerous records of this species occur within 5 km of the study area. It is present in the lease area, as evidenced by observed scats. It is also present in the wider region around the mine site, as evidenced by road spotlight observations.

From these conclusions, management prescriptions are warranted for the following EPBC flora and fauna species:

- windswept spider orchid (*Caladenia dienema*);
- western leek orchid (*Prasophyllum favonium*);
- pretty leek orchid (*Prasophyllum pulchellum*);
- giant freshwater crayfish (*Astacopsis gouldi*);
- wedge-tailed eagle (*Aquila audax* subsp. *fleayi*);
- Tasmanian azure kingfisher (*Ceyx azureus* subsp. *diemenensis* syn. *Alcedo azurea* subsp. *diemenensis*);
- white-bellied sea-eagle (*Haliaeetus leucogaster*);
- satin flycatcher (*Myiagra cyanoleuca*);
- Tasmanian masked owl (*Tyto novaehollandiae* subsp. *castanops*);
- spot-tailed quoll (*Dasyurus maculatus* subsp. *maculatus*); and
- Tasmanian devil (*Sarcophilus harrisii*).

3. PROTECTION AND MANAGEMENT PRESCRIPTIONS

As required by the State approval, a Construction Environmental Management Plan (CEMP) has been prepared to manage the construction impacts of the mine (Shree Minerals will require all construction contractors to implement the CEMP as a condition of engagement. This plan should be read in conjunction with the CEMP as a companion reference document. In the event that the CEMP is revised or modified, a copy of this will be sent to the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) for information.

While there will be an initial concentrated phase of construction activities to establish the mine, construction activities will continue throughout the life of the mine, as the pits are opened up and grow in size, as additional dams, including the tailings dam is constructed, and as the waste rock dump grows in size. The CEMP will therefore remain in force for the life of the mine.

The CEMP has been developed to provide contractors with a consolidated document that covers all construction obligations, including all Commonwealth, State and Local Government approval conditions. This includes all elements of this EPBC species protection and management plan as they relate to construction activity.

It should however be noted that EPG 3 section 7 (relating to Wedge Tailed Eagle Nests), is differed within **Appendix A** of this plan, in accordance with Condition 4 (d) of the Commonwealth Approval (EPBC 5846). In this case the EPBC plan EPG 3 (**Appendix A**) takes precedence over the approved CEMP EPG 3.

This change will be actively shared with contractors and staff who are working on the NBR project and detailed within the Environmental Awareness and Induction Program identified in Condition 1 of EPBC/5846. This will be monitored for compliance by the Shree Health Safety Environment and Training (HSET) Manager and Construction Site Supervisor.

Relevant pre-clearance surveys will also provide for the identification of any Wedge Tailed Eagle nests and if found upon notification the HSET Manager and Construction Site Supervisor shall cease all works on the lease immediately and advise the relevant departments by filling out the EPBC Species Sighting Form and subsequent registers.

The CEMP has been structured in a very systematic manner to provide clear and explicit guidance to workers and to provide for auditing of the construction works against the CEMP requirements. The format of the CEMP includes tabular Environment Protection Guidelines (EPGs).

The EPGs include all EPBC species protection and management measures relevant to this current plan. For consistency, those measures are presented in this plan in an identical format by providing the relevant EPGs in **Appendix A**. This means that approval of this plan by the Commonwealth minister also approves the EPGs of the CEMP as they relate to EPBC species.

In the following sections, relevant EPGs in **Appendix A** are referenced by their EPG number. Operational EPBC species protection and management measures, which are not covered by the CEMP, are also described below, separate to the EPGs.

3.1 Vegetation Clearance

Vegetation clearance will be undertaken progressively in advance of requirements but will avoid unnecessarily early clearance.

For example, mining of the magnetite pit will not be undertaken until the mining of the DSO pit is close to completion. While vegetation will be removed from the DSO pit during the initial construction activities, vegetation clearing of the magnetite pit will therefore be delayed until that pit needs to be opened up. Similarly, clearance for the tailings dam will not occur until it is required for magnetite processing, which is not expected until 3 to 4 years into the mine's life.

The vegetation clearance EPG (EPG 3 in **Appendix A**) is therefore relevant to both the initial construction and the ongoing operational phases of the mine.

For both the construction phase and the operational phase of the mine, vegetation clearance will be undertaken in accordance with EPG 3.

Other than disturbance associated with the creation of denning opportunities, no vegetation clearance will occur within the Fauna Habitat Protection Zone (FHPZ).

3.2 Food Waste

The management of food waste at the Nelson Bay River Mine during the construction phase will be in accordance with EPG 5, provided in **Appendix A**.

Additional measures regarding waste (food waste and general rubbish) will be implemented throughout the construction and operational phase until the closure of the mine as identified within this section.

The management of food and general waste will be in accordance with the items specified below.

- Bins will be located within crib rooms (meal rooms) in the mine infrastructure area. Bins will be of standard dimension (approx. 240L, lidded, lined and emptied on a regular basis as shown in **Figure 3** below);

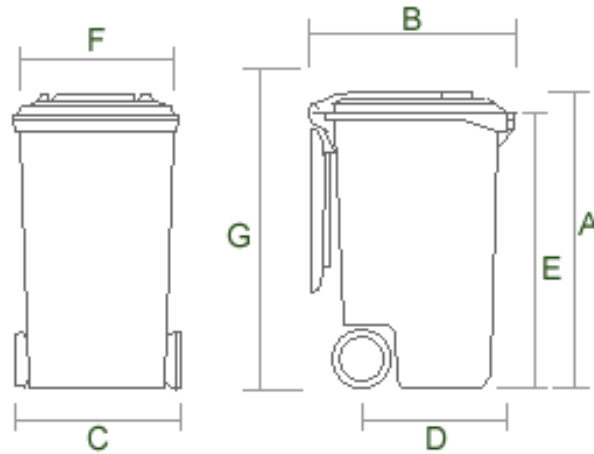


Figure 3 – Wheelie Bin Dimensions ($A = 1070\text{mm}$, $B = 740\text{mm}$, $C = 570\text{mm}$, $D = 535\text{mm}$, $E = 995\text{mm}$, $F = 550\text{mm}$, $G = 1140\text{mm}$, Weight 15.5kg).

- All visitors, staff and contractors to the site will receive an induction which details requirements on the disposal of food waste and general rubbish at the Nelson Bay River Mine;
- There will be a zero tolerance procedure for littering and disciplinary procedures for anyone found to be not in compliance with the NBR site rules;
- The 240L bins will be emptied into a larger covered skip style bin within a fenced secure compound area. This area will remain closed at all times to eliminate possible wildlife from entering. Fencing dimensions will be 1.8m high chain wire security specification with man gate and vehicle access gate;
- The large skip style bins will be emptied regularly by a licenced waste removal contractor as per their nominated collection schedule;
- Shree will report waste volumes generated in the Annual Environmental Report, a condition of the EPA permit (note: Shree Minerals will also set waste and resource targets over time as part of the continuous improvement of the Environmental Management System);
- As the mining method will be predominately truck and shovel (vehicular) there is little use placing bins around the site, all operators will receive adequate meal and toilet breaks in accordance with the nominated award and have access to crib room facilities and bins; and
- Regular inspections of the workings will be undertaken by a suitably qualified Mining Engineer and HSET Manager, any observed rubbished will be removed from site and operators will be cautioned during daily Pre-Shift meetings and/or toolbox talks as required.

3.3 Hazardous Substances

The storage and handling of hazardous substances, including fuels, chemicals and explosives will comply with the requirements of the National Code for the Storage and Handling of Workplace Dangerous Goods (NOHSC), to avoid impacts to the environment and consequential impacts to fauna species.

Hazardous waste during construction will be managed in accordance with EPG 5, provided in **Appendix A**.

Equivalent measures will be implemented during the operational phase of the mine.

Tailings from the magnetite processing plant will be sent to the tailings dam for permanent storage. These tailings will be the result of crushing, grinding and magnetic separation only and no potentially hazardous reagents will be used. The tailings will be dosed with lime or similar prior to deposition to neutralise any acidity and to provide a residual alkalinity so that the tailings do not generate acid subsequent to deposition.

The tailings will therefore not be hazardous to fauna.

The State permit requires a Tailings Management Plan to be prepared for approval by the Director of the EPA prior to the commencement of magnetite processing and the management of tailings will be in accordance with that approved plan.

3.4 Open Pits and Excavation

Open pits and all excavations at the site will be managed to ensure that fauna, including EPBC species, is not adversely affected. Excavations will only be carried out in designated areas that have been clearly marked on the ground in accordance with the CEMP.

There will be two mine pits on the site, the DSO pit and the magnetite pit. These will be surrounded by cleared buffer areas and as required diversion drains and diversion berms will be constructed to divert surface water away from the pits. The surrounds of the pits, and the mining activity and haulage within them will therefore not be attractive to fauna.

The pit edges will also have safety berms around them where appropriate and these will create an additional barrier to fauna inadvertently entering the pits.

In the unlikely event that fauna do enter the pits, they will be able to escape via the haulage roads. As a last resort, the mine's designated animal handling officer will organise the safe removal of the animal from the pit.

These measures will operate throughout the life of the mine and will protect EPBC fauna species from adverse impacts from the open pits.

Excavations will be undertaken at various locations across the mine site and throughout the life of the mine. Excavations will include (but not be limited to) borrow pits for material sourcing (e.g. during road construction), trenches during pipeline installation, and excavations for dam and basin construction.

EPG 16, provided in **Appendix A** describes the measures that will be undertaken throughout the life of the mine whenever excavations are made.

The vegetation clearance EPG 16 is therefore relevant to both the initial construction and the ongoing operational phases of the mine.

As described in EPG 16, trapped animals will only be handled by a person trained in animal handling procedures and designated as the animal handling officer.

3.4.1 Mine Footprint Delineation

The Nelson Bay River mine lease footprint will be delineated using appropriate warning signage and safety bunds as appropriate identified by risk assessment.

Examples of areas requiring earth bunds include:

- adjacent high and low walls and benches;
- near public access tracks;
- areas where boundary is not defined by survey due to topographical constraints;
- redundant exploration tracks; and
- dams, tailings ponds etc.

Fencing is not a favoured option due to its potential to create a physical barrier to wildlife passage and movement as well as having an unnecessary visual impact. Security measures will include daily inspections of the mine by a qualified Mining Supervisor.

The site access locations will be controlled via a locked gate and sign posted to restrict and prevent public access. Due to the sites remote location unauthorised access is expected to be limited. Infra-red cameras will be deployed at strategic locations surrounding the lease for wildlife monitoring. These cameras will also provide incidental benefit in relation to identifying security breaches.

Procedures for clearing and survey control will be implemented to prevent ML boundary breaches. As part of the clearing processes, the area will be identified using survey tape and machine operators will be tool boxed on the relevant restrictions, clearing areas and trained in the NBR site clearing procedures as part of the site induction.

Where mining and subsequent vegetation clearance activities occurs within close proximity to site Mine Lease (ML) boundaries, survey markers and plans will assist to ensure that all operators understand the approved limit of extraction (ALOE). A mining supervisor will also be present on-site at all times whenever works are occurring, the role will act primarily as an observer, ensuring the safety of personnel and that operations do not occur outside of the mine footprint boundaries.

Detailed mine survey plans will regularly be prepared by the site Mine Manager and will be kept on-site for a period of 7 years. A requirement of the plans is that the site footprint must be shown, where works occur in proximity to the ML footprint. This will act as a secondary control as any breach will be identified by survey and appropriate action may be taken.

3.5 Protocols for Dealing with Injured Native Fauna

Shree Minerals will appoint at least one Designated Animal Handling Officer (DAHO). The officer(s) will be trained in animal handling procedures and relevant permits for handling wildlife will also be obtained from the Policy, Conservation and Assessment Branch of the Tasmanian Department of Primary Industries, Water and Environment under the *Nature Conservation Act 2002*.

Shree Minerals will implement the following protocols for dealing with injured native fauna. Construction contractors will be required, as a condition of engagement, to follow these protocols. The protocols will also apply throughout the operational phase of the mine.

1. If an injured native fauna species is identified within the mine site, work within a 50 m radius will stop immediately.
2. The site supervisor (during construction) and DAHO will be advised.

3. If the animal is a Tasmanian devil, the DAHO will immediately report the incident to the Save the Tasmanian Devil Program for instructions on any particular handling requirements.
4. Subject to 3, if the DAHO considers it to be in the animal's best interests and the animal's injuries make it appropriate to do so, the person will collect the animal and initially wrap it in a blanket or place it in a dark box to ensure that it is kept calm and safe.
5. The animal will be transported to the closest veterinary clinic¹, for appropriate treatment.
6. If required, the animal will then be rehabilitated (or released) by an approved wildlife carer.
7. A record of the animal species, its injuries and the action taken will be recorded, using the *pro forma* in **Appendix B**. If the species is an EPBC species, it will be noted as such.

All completed forms will be given to the DAHO.

All information will be added to the EPBC species register (established under condition 11 of the EPBC approval).

3.6 Protocols for Recording any Sightings of EPBC Species

During their site inductions, all staff and contractors working on the mine site will be made aware of the protocol for recording sightings of EPBC species. This includes both EPBC flora and fauna species. The inductions will include information allowing them to identify EPBC species.

The protocol is as follows:

- If an EPBC species (including both live animals and roadkill) is observed within the mine site, the person making the observation will make a record of the sighting on the *pro forma* provided in **Appendix B**;
- If an EPBC species (including both live animals and roadkill) is observed by mine workers travelling to and from the mine site along Wuthering Heights Road, the person making the observation will make a record of the sighting on the *pro forma* provided in **Appendix B**;
- If an EPBC species roadkill is observed by mine workers travelling to and from the mine site between the junction of Wuthering Heights Road and Smithton, the person making the observation will make a record of the sighting on the *pro forma* provided in **Appendix B**;
- Any Tasmanian devil roadkill observed will be photographed if possible and will be reported to the DAHO as soon as practicable, who will in turn report the incident to the Save the Tasmanian Devil Program for instructions on any particular handling requirements;
- The DAHO will inspect Wuthering Heights Road on a daily basis and remove any roadkill (whether EPBC species or not) to at least 40 metres from the edge of the road (again taking advice from the STDP if it is a devil).

¹ Smithton Veterinary Clinic, 33 Nelson Road, Smithton, Ph 03 6452 1054, smithonvet.com

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EPBC Species Sighting Forms will be retained in all company vehicles, site meal rooms including the pool bus.

In the event that a GPS coordinate cannot be recorded the DAHO upon notification will inspect the area when practical and record a GPS easting/northing. Staff will be encouraged to take photographs where possible. If an actual or suspected EPBC species is identified as roadkill, a photograph must be taken using a mobile phone or camera and immediately provided to the DAHO who will investigate.

All completed forms will be given to the DAHO. All information will be added to the EPBC species register (established under condition 12 of the EPBC approval).

If an eagle or quoll roadkill is recorded, a copy of the record will be provided to the Tasmanian Threatened Species Unit, Biodiversity Conservation Branch (DPIPWE). If a Tasmanian devil is recorded, a copy of the record will be provided to the Save the Tasmanian Devil Program.

4. PLAN IMPLEMENTATION

This Plan will be implemented following approval by the Minister. Construction works will not commence until the Plan is approved.

Appendix A

Environment Protection Guidelines

EPG 3: Clearing

EPG 5: Waste management

EPG 8: Drainage Erosion & Sediment Control

EPG 16: Excavations

EPG 17: Monitoring & Performance Management

Issue		Management measures	Check	Compliance notes
Vegetation clearing				
1	Vegetation to be cleared	Only vegetation within designated construction zones may be cleared.		
2	Construction and exclusion zones	Construction zone boundaries must be shown on construction drawings and delineated on the ground.		
		Any exclusion zones required by relevant EPGs or CETs (e.g. around discovered den or nest sites) must be shown on construction drawings and delineated on the ground.		
		Exclusion zones must be sized so as to avoid any accidental disturbance of the zone, such as from felled trees, accidentally falling into them. As a minimum, the exclusion zone around a discovered Tasmanian devil or spotted tailed quoll or masked owl nest must be a minimum of 50 m radius.		
		There must be no disturbance of the sensitive wet heathlands west of West Creek, unless prescribed burns are requested by the EPA. The area within the lease 30m east of West Creek is a Fauna Habitat Protection Zone and also contains orchid habitat.		
3	Zone delineation	Construction and exclusion zones must be clearly defined and explained to workers using tape, signs, site plans, site inductions, tool box talks, and work inspections in order to ensure no additional clearing takes place.		
		Exclusion zone boundaries must have an additional 20 m warning zone marked around them.		
		Where there are significant flora or fauna values outside the construction zone boundary but within 20 m of it, additional warning signs must be placed inside the boundary to warn workers of the external values so that inadvertent edge effects, such as the felling of trees onto the value, does not occur.		
		Disturbance within these warning zones must be avoided unless absolutely necessary and if disturbance is unavoidable it must be undertaken with particular care.		
4	Previously undetected discoveries	If potential threatened vegetation, fauna habitat or heritage area is detected during clearing work that is not noted in a CET or on construction drawings, but that may be significant, the site must be temporarily marked off as an exclusion zone until management advice has been taken from a relevant specialist.		
5	Clearance minimisation	Vegetation clearance must be minimised as far as practicable, particularly at watercourses.		
6	Habitat fragmentation	Wildlife habitat fragmentation effects must be minimised by maintaining tree canopy connectivity where practicable, particularly at watercourses and roadside remnants.		
7	Eagle nests	To avoid desertion of any active wedge-tailed eagle or white bellied sea-eagle nests, no activities		

Issue		Management measures	Check	Compliance notes
		(including boundary marking, pipe laying, harvesting, roading, burning, reforestation, planting, and weed control, etc.) may be carried out within 500 metres or 1 km line of sight of a nest during the breeding season (August - January inclusive). The nest may not be approached (including on foot or by helicopter) unless directed by a Forest Practices Authority zoologist or DPIPWE specialist.		
		No burning may be conducted within 500m or 1 km line of sight of any active wedge-tailed eagle or sea-eagle nest during the breeding season (August - January inclusive).		
		Employees and contractors must regularly look out for eagle nests within 500 m of the construction area during construction work.		
		If a wedge-tailed eagle nest is identified all works must cease at the mine site, other than for monitoring purposes, until the identified nest is vacated.		
8	Pre-clearance Surveys	Pre-clearance surveys for Tasmanian devil and spotted tail quoll dens and for masked owl and wedge-tailed or white bellied sea eagle nests must be carried out within the week prior to clearance and must be documented, including details of results, methodology and personnel (and the qualifications). Clearance activities must stop and may not continue until the nest or den has been confirmed to be vacated.		
		Operations must cease within 50 m of any tree suspected of containing a previously unknown masked owl nest (trees with large nesting hollows in combination with evidence of pellets (regurgitated skin/bones, and/or white droppings at the base of the tree) or devil/or quoll den and a Forest Practices Authority Zoologist and/or DPIPWE specialist must be advised as soon as practical to determine a management prescription for the nest.		
		New denning opportunities must be created by building Wildlife Habitat Clumps (WHC) using windrows of cleared vegetation. These opportunities must be located within the eastern perimeter of the Fauna Habitat Protection Zone. Construction of the WHCs should be undertaken as part of the waste rock dump collection drain construction activities.		
9	Retained vegetation	Vegetation to be retained within the construction area must be marked with flagging or marker tape to indicate that it must be avoided. Marker paint must not be used. Disturbance of roots or compacting of soil in the drip zone of retained vegetation should be avoided if possible.		
10	Vegetation stockpiling	Cleared vegetation should be stockpiled separately in a cleared area in a manner that: <ul style="list-style-type: none"> • facilitates respreading or salvaging • avoids damage to adjacent live vegetation 		
		Enough large trees trucks and branches should be stockpiled separately to provide material for the future construction of the WHC denning opportunities. Guidance of the specialist who will design the WHCs must be sought on material requirements.		
11	Rock stockpiling	Surface rock removed during vegetation clearing must be stockpiled, either for construction reuse at		



Environment Protection Guideline

Clearing

EPG 3

HB12498H001 P5rep CEMP 31P Rev 02

Issue		Management measures	Check	Compliance notes
		another location or for later disposal in the Non Acid Forming (NAF) waste dump.		
12	Large clearings	Large areas designated for clearing must be cleared progressively in order to reduce erosion potential.		
13	Use of cleared timber	No timber may be removed from the lease area, whether for domestic, commercial or other purposes, without prior approval from the construction Superintendent.		

Issue		Management measures	Check	Compliance notes
Solid inert wastes				
1	Waste types	Solid inert wastes associated with construction, which may include building rubble, concrete, bricks, timber, plastic, glass, metals, and tyres, must be stockpiled and removed from site to a suitable disposal facility.		
2	Salvage stockpiles	Reusable and recyclable wastes, such as timber skids, pallets, drums, scrap metals, tyres, must be stockpiled and transported to a suitable site for salvage.		
3	Collection bins	Designated waste collection bins must be provided at appropriate locations around the site and all staff must be required to avoid littering.		
4	Approved disposal	General refuse must be stored on site in a covered bin and periodically transported to a municipal waste transfer station for disposal.		
Liquid inert wastes				
5	Waste type	Liquid inert wastes include surface water drainage and groundwater.		
6	Management	Areas of disturbance must be controlled and surface water drainage diverted around the site footprints during construction. Where possible, temporary sedimentation basins and silt fencing must be used and final runoff must be directed to the existing naturally vegetated gently sloping drainage lines.		
		Sediment basin water and runoff from settlement basins must be monitored in accordance with EPG 17.		
7	Reuse	Collected site water, including in settlement basins and in the recycle dam once it is constructed, may be used around construction areas for dust suppression.		
Hazardous wastes				
8	Waste types	Hazardous wastes are those which pose an immediate potential risk to human health and/or the environment. Such wastes relevant to mine site construction may include: chemicals, waste oils or sewage.		
9	Waste management	Hazardous wastes must be managed in accordance with all relevant regulatory requirements.		
10	Sewage and sludge	Contractors must provide portable toilet systems and sewage waste must be transported off site and disposed of at a suitable municipal sewage treatment plant.		
11	Waste chemicals	All waste chemicals and other toxic materials must be stored and collected for safe transport off-site for reuse, recycling, treatment or disposal at locations approved by relevant regulatory authorities.		
12	Hydrocarbon wastes	Hydrocarbon wastes, including lube oils and oily sludges, must be collected for safe transport off-site for reuse, recycling, treatment or disposal at approved locations.		
13	Spill trays and	Hazardous waste storage areas must be suitably designed to adequately contain 110% of total volume of		

Issue		Management measures	Check	Compliance notes
	bunding	the contained material within an impervious spill tray or bund.		
14	Contaminated soils	In the event of a spill, any hydrocarbon contaminated soil must be removed immediately and taken to an appropriate authorised disposal or treatment facility. The EPA must be notified within 24 hours of any spill greater than 1 litre.		
		Contaminated soils (e.g. loading bay drain/pig trap contents, oil/fuel spills) must be managed according to their location, their concentration of contaminants, their tendency to leach and the extent of area affected. Appropriate disposal options must be determined in consultation with the relevant environment protection authorities.		
Putrescible wastes				
15	Waste types	Putrescible wastes are those wastes able to be decomposed by bacterial action and may include discarded food, domestic garbage, commercial wastes and garden clippings.		
16	Approved disposal	Putrescible wastes must be disposed of by collection and transportation to a landfill approved by the relevant regulatory authority (this may include local government approval).		
Food wastes				
17	Food waste	Designated food waste collection bins, with lids, will be provided at appropriate locations around the site and all staff will be required to avoid littering.		
		Food waste, will be stored on site in a covered bin away from buildings and periodically transported to a waste transfer station for disposal or to a landfill approved by the relevant regulatory authority (this may include local government approval).		
Housekeeping				
18	General hygiene	The construction area and work and storage sites must be maintained to an orderly and hygienic standard.		
19	Litter avoidance	Litter bins must be provided and regular site maintenance duties must be carried out in order to ensure that litter accumulation is avoided.		

Issue		Management measures	Check	Compliance notes
Erosion control				
1	Erosion berms	Where used, erosion control berms should be extended beyond hardstand construction areas to discharge run-off water to stable, preferably vegetated land. Where vegetation is absent, energy dissipation measures, such as rock rip-rap, should be installed as necessary.		
		Erosion control berm gradients must closely follow land contours to ensure low velocity discharge away from the exposed soils.		
		Run-off water from erosion control berms must be directed to the downslope side of the hardstand to prevent discharge water from returning to the construction area.		
		Where erosion control berms need to be trafficable, they should be constructed so as to permit traffic to move over them safely without diminishing their effectiveness.		
2	Cleared vegetation berms	Cleared vegetation may be spread over the construction area or in filter strips, as an alternative or addition to erosion control berms.		
3	Perimeter cut off drains	Perimeter cut off drains must be constructed at strategic locations to prevent surface run-off from the construction area.		
		The drains must be designed to prevent any sediment carried within them from leaving the disturbed area, utilising sediment fences, settling ponds, vegetated swales and/or other similar measures.		
		Drains must be designed to have sufficient capacity to contain runoff expected to arise from 1 in 20 year rainfall event.		
4	Track drainage	Access track drains must discharge run-off water in a manner which does not lead to sedimentation or erosion, i.e. low gradient run-off, broad dish shaped outlets to appropriately stable areas (e.g. vegetated or riprap stabilised).		
5	Regular inspections	Erosion control structures must be inspected weekly and following large rain events, and maintained to ensure that they remain effective (i.e. removal of silt build up, reinforcing or re-establishing failed structures).		
6	Diversion structures	Where the construction area is likely to affect or be affected by gully erosion, stabilisation works including diversion structures may be required. These may involve geotextiles, rock stabilisation, concrete lining, localised drainage modification or other site-specific measures as appropriate.		
Sediment control				
7	Silt fences	Sediment or silt barriers must be used where necessary and generally constructed from geotextile silt fence or filter fabric secured in place with star pickets or sand bags, concrete saddle weights or culverts.		
8	Sediment basins	Sediment basins or ponds should be constructed downslope as necessary and designed to catch and retain		

Issue		Management measures	Check	Compliance notes
		run-off water, allowing sediment to settle out.		
9	Regular inspections	Sediment control structures must be regularly inspected and maintained to ensure that they remain effective (i.e. removal of silt build up, replacement/re-installation of failed components such as fencing or coir logs), particularly after high intensity rainfall or run-off events.		
Discharge water control				
10	Discharge monitoring	Discharge water quality must be monitored in accordance with EPG 17.		
11	Inlet filters	Inlet filters or screens must be used on water uptake hoses.		
12	Hose supports	Inlet hoses must be supported above the sediment layer in the water.		
13	Avoid direct discharges	Direct discharge of construction site water to waterways must be avoided where discharge water sediment loads significantly exceed that of the receiving waters and are likely to result in detrimental impacts.		
14	Avoid flooding	Water must be discharged in a manner that does not result in flooding of land both on and off the construction area or run-off beyond the intended receiving area or to waterways.		
15	Diverted watercourses	Diverted watercourse water must be discharged directly back into the watercourse over riprap protection downstream of the crossing		
16	Sediment filters	Trench water must be discharged through sediment filters (e.g. hose outlet filters, geotextiles or straw bales) to remove solids.		
17	Flow diffusers	Trench water must be discharged to stable land through flow diffusers (e.g. spray bars) and energy dissipaters (e.g. rock riprap or geotextile filters/fabrics).		
18	Sediment basins	Water should be discharged as necessary to holding or settling ponds to avoid erosion and permit sediment to settle out of the water column.		

Issue		Management measures	Check	Compliance notes
1	Excavation	Excavation includes the removal of overburden, borrow pits, trenches and designed civil works (dams, pits, roads etc).		
2	Delineation	Excavation may only be carried out in designated areas that have been clearly marked on the ground with reference to relevant EPGs and CETs.		
3	Water management	Cut off drains and bunds should be constructed where required to divert water away from excavation sites. This diverted water will not be subject to contamination and should be directed into natural drainage lines through energy dissipation structures.		
4	Excavation dewatering	If water accumulates in a temporary excavation from a storm event, the water may be pumped from the trench in accordance with EPG 8.		
5	Blasting	It is unlikely that blasting will be required for any construction operations. However, if blasting is required it must be undertaken by a suitably licensed person.		
6	Usage of (NAF) Waste rock/overburden	Waste rock will consist of quartz sandstone, ultramafic dykes, metamorphosed sediments and potentially some low grade oxidised ore which is not suitable for direct shipping.		
		During construction waste rock should be beneficially reused wherever practicable, for example in bunds, drain diversions, sedimentation dams, mine roads and hardstands, recirculation and make up dams, hardstands for process sites and work areas. Any such rock must first be confirmed to be non acid forming, using the procedures below.		
		When no beneficial use can be found for non acid forming waste rock it should be transferred to the waste rock dump.		
		Care must be taken to ensure that waste rock dumps remain within their defined boundaries and that there is no movement of material, particularly down drainage lines in the area.		
		Although potentially acid forming (PAF) waste rock will not knowingly be taken to the waste rock dump, the dump design of collection drains directing seepage to a sedimentation dam provides a mechanism to collect and treat for any acid drainage that unexpectedly occurs.		
		The sedimentation dam must be regularly monitored in accordance with EPG 17 and if the pH falls below 5.5, the dam water must be treated with lime or equivalent before it discharges. The source of the acid must be determined and the acid source must be removed to a bunded site close to the DSO pit and temporarily capped with clay. When the DSO pit's drop cut becomes available, this material must then be relocated to there.		

Issue		Management measures	Check	Compliance notes
7	Potentially Acid Forming waste	During excavations for construction it is very unlikely that overburden will be potentially acid forming. However, regular investigations for contained pyrite or other sulphides by the site geologist must be carried out.		
		All quartz vein rock and skarn rock must be treated as PAF rock, regardless of pyrite content.		
		If pyrite or other sulphides are observed, excavation must cease until testing can be carried out. Testing may include but not be limited to: <ul style="list-style-type: none"> • Visual estimation of contained sulphides • pH, EH and possibly hand held XRF analysis • If the sample is thought to contain potentially acid forming sulphides a sample will be sent to an accredited testing laboratory (e.g. SGS) 		
		If waste rock is found to be potentially acid forming it must be removed to a bunded site close to the DSO pit and temporarily capped with clay. When the DSO pit's drop cut becomes available, this material must then be relocated to there.		
8	Acid Sulphate Soils(ASS)/ Potentially Acid Sulphate Soils (PASS)	Excavations are unlikely to encounter acid sulphate soils as the conditions in the mine lease are not conducive to their formation.		
		However, routine inspection of overburden must be carried out including observations for: <ul style="list-style-type: none"> • Rotten eggs odours • Yellow caking of exposed clays • materials colour change from black to reddish oxides • extremely clear greenish water • reddish coagulation in water from iron hydroxides. 		
		Any suspected acid sulphate soils must be tested with a field pH peroxide test in order to quantify the level of acidity.		
		If removed or permanently exposed soils are found to be ASS or PASS they must be removed to a bunded site close to the DSO pit and temporarily capped with clay. When the DSO pit's drop cut becomes available, this material must then be relocated to there.		
9	Trenching and pipe installation	Open trenches must be checked each morning for native fauna.		
		Trenches left open overnight must be left with an earthen ramp(s) to enable fauna to escape of their own accord.		
		If an animal is trapped in a trench, work should stop immediately within 50 m vicinity, the site supervisor advised and the animal relocated to a suitable habitat by a person trained in fauna handling procedures. Records must be kept of the procedure including species, time, date and location.		

Issue		Management measures	Check	Compliance notes
Dust				
1	Weather conditions	If dust plumes are generated that are visible from Rebecca Road or Temma Road, the time and date of the plume, its size and nature and the prevailing weather conditions will be recorded. Prevailing weather conditions will include wind speed, direction and temperature.		
2	Mitigation action	If construction activities generate dust plumes that could be visible from Rebecca Road or Temma Road, action will be taken to reduce the plume in accordance with the dust management EPG.		
3	Mitigation effectiveness	The effectiveness of the dust mitigation actions will be recorded.		
4	Dust avoidance	On any day where wind speed and direction and temperature are predicted to reach levels where past experience suggests that dust plumes are likely to be generated, workers will be alerted to the elevated potential for dust plume generation and requested to take avoidance action. The effectiveness of these actions will be monitored and recorded.		
Noise				
5	Noise emissions	There are no sensitive receptors in the vicinity of the work site and there is no credible risk of noise impacts on members of the public. Noise impacts will be confined to impacts on workers and normal occupational, health and safety controls will apply.		
6	Noise monitoring	Noise monitoring will not be necessary under normal circumstances and will only be required if and when unusual activities are undertaken that have the potential to expose workers to unacceptable levels of occupational noise.		
Surface water				
7	Weekly field monitoring parameters	Field monitoring of the following parameters will be undertaken upstream and downstream of any runoff from construction areas that is entering natural watercourses: <ul style="list-style-type: none"> • pH • conductivity • turbidity • dissolved oxygen • temperature. 		
8	Mitigation action	If the downstream monitoring shows values above the following investigation limits and also significantly above the upstream values (or below in the case of pH), the reason for the elevation will be determined and mitigation actions will implemented to reduce the source of the impacts: pH < 6; conductivity 550 µS/cm; turbidity 55 NTU. For these purposes, significant differences will constitute differences of pH: 2 units; conductivity 200 µ/cm; turbidity 20 NTU.		
9	Follow-up monitoring	Daily testing of streams until downstream values are below the investigation limits and downstream-upstream differences are no longer significant.		

Issue		Management measures	Check	Compliance notes
Groundwater				
10	Monthly monitoring parameters	<p>Monthly monitoring of all bores within the active construction footprint as well as down gradient of it will be monitored/sampled for:</p> <ul style="list-style-type: none"> • standing water level • pH • conductivity • turbidity • dissolved oxygen • temperature. 		
11	Mitigation action	Groundwater quality should not be affected by the construction activities. Monitoring results will therefore be compared with the monitoring bore background database. If the values show evidence of elevated concentrations relative to background levels, possible reasons for the differences will be determined and any warranted mitigation actions will implemented to reduce the source of the impacts.		
12	Follow-up monitoring	Weekly testing of bores until levels return to background or it becomes clear that the observed values are consistent with natural variability.		
Vegetation				
13	Clearance footprint	The extent of construction disturbance will inspected daily to detect any excursions outside the designated construction footprint.		
14	Mitigation actions	If exceedances are detected, mitigation actions will be taken to stop the excursion and move activities back inside the designated footprint and rehabilitate the excursion area.		
15	Follow-up inspections	Excursion rehabilitation will be inspected weekly until it is confirmed that all necessary actions have been taken for the rehabilitation to be effective.		
Fauna				
16	Preclearance surveys	Prior to vegetation clearance, preclearance surveys will be undertaken in accordance with the Fauna Management Plan and the EPBC Species Management and Protection Plan.		
17	Protection actions	If dens or nests of significant species are identified in the preclearance surveys, the nests will be marked off as no-go areas in accordance with those plans.		
18	Follow-up inspections	Any marked off dens or nests areas will be inspected daily to confirm that construction activities are not encroaching inside these areas.		
19	Devil monitoring	In addition to the above monitoring, the Tasmanian Devil Monitoring Strategy will be implemented.		
Performance inspections				
20	Daily works	The construction contractor's site manager (or approved representative) will undertake daily inspections		

Issue		Management measures	Check	Compliance notes
	inspection	<p>of the construction works against the environmental management prescriptions described in the EPGs and CETs, as relevant to the works being performed at that time. The results of these inspections will be recorded in an inspection diary.</p> <p>Any actual or potential non-conformances with the management prescriptions will be identified and recorded, together with rectification or preventative actions implemented.</p>		
21	Weekly works audits	<p>A weekly compliance audit against the full suite of EPGs and active CETs across the project will be undertaken by the construction contractor's site manager (or approved representative). Any non-compliances, and rectification actions implemented.</p> <p>The compliance audits will be retained and made available on request to State and Commonwealth regulatory officers.</p>		
22	Incidents	<p>An environmental incident register will be maintained for the duration of the construction period. All incident reports will be entered into the register and passed to the construction manager. An incident will be any event that has the potential to cause significant environmental harm.</p> <p>For each incident, the construction manager (or approved representative) will determine and implement action as appropriate. The response action will be recorded in the register. Targeted monitoring of the response will be undertaken until any necessary rectification is complete. The register will be retained and made available on request to State and Commonwealth regulatory officers.</p>		

Record of sightings of EPBC species (Including carcasses)

EPBC Species (tick)		Tasmanian devil		Satin flycatcher
		Spotted-tailed quoll		Azure kingfisher
		Wedge-tailed eagle		Masked owl
		White bellied sea eagle		Giant freshwater crayfish
		Windswept spider orchid		Large golden moths snake orchid
		Western leek orchid		Pretty leek orchid
		Australian grayling		
Other native fauna & flora species (not EPBC listed)				
Condition of animal (or carcass)				
Date				
Time				
Location description				
Location co-ordinates				
Other native fauna species (not EPBC listed)		Was the roadkill caused by your vehicle? (tick)	Yes	
			No	
Notes: (including circumstances of death if known)				
Name and company of person making this report				

The completed form is to be given to the Shree Minerals –Health, Safety, Environment and Training Manager (HSET) or, for construction workers, to the site superintendent.