FAUNA MANAGEMENT PLAN
HEMI GOLD PROJECT

12 MAY 2023

REVISION HISTORY

Rev	Description	Date
0	Fauna Management Plan	12 May 2023

Executive Summary

De Grey Mining Limited ("De Grey") has completed a Fauna Management Plan – Hemi Gold Project (hereafter referred to as the "Plan").

An executive summary is provided in Table ES 1-1 in accordance with the Environmental Protection Authority (EPA) Guidance (EPA, 2021).

Table ES 1-1 Executive Summary

Proposal name	Hemi Gold Project
Proponent name	De Grey Mining Limited
Ministerial Statement number	Not Applicable, Management Plan submitted with Environmental Referral Document
Purpose of the EMP	Provide monitoring actions for terrestrial fauna in accordance with the key environmental outcomes listed below to support referral under the EPBC Act
Key environmental factor/s, outcome/s and/or objectives	The environmental outcomes for **Terrestrial Fauna species**; Greater Bilby and Northern Quoll, are: • Maintain, or increase, existing local Greater Bilby and Northern Quoll populations. • Avoid and protect critical habitat during the design and construction phase: ▪ Limit clearing of critical habitat for Greater Bilby and Northern Quoll. ▪ No clearing outside of approved areas. • Improve remaining habitat through management of key threats: ▪ Fire: No accidental fires started by project activities. ▪ Weeds: No introduction of new weeds to the Project; No increase in existing weed cover attributable to the Project. • Prevent deaths of individuals through management of key threats: ▪ Clearing: No deaths of Greater Bilby or Northern Quoll from clearing activities. ▪ Feral predator control: No increase in feral predator numbers at the Project. ▪ Cane Toad incursion: No Cane Toads introduced to the Project as a result of the Project's activities. ▪ Vehicle impact: No deaths of Greater Bilby or Northern Quoll individuals due to Project vehicles.
Condition clauses (if applicable)	Not applicable.
Key components n the EMP (if applicable)	Key components are provided in **Table 2-1**.
Proposed construction date	2024
EMP required pre-construction?	Yes. EMP submitted with the Environmental Referral Document.

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1. CONTEXT, SCOPE, AND RATIONALE

De Grey Mining Limited ("De Grey") has completed Fauna Management Plan (hereafter referred to as the "Plan") for *Macrotis lagotis* (Greater Bilby) and *Dasyurus hallucatus* (Northern Quoll) at the Hemi Gold Project (Hemi, the Project).

The Plan will be submitted with the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Referral, to demonstrate that Matters of National Environmental Significance (MNES) have been appropriately considered and will be effectively managed to prevent and minimise impacts from the Project. It is anticipated a management plan for MNES will be an outcome of assessment under the EPBC Act.

In addition, the Greater Bilby and Northern Quoll are defined by the Environmental Protection Authority (EPA) WA as a Key Environmental Factor: Terrestrial Fauna. This plan has been designed to meet the requirements of the EPA to gain approval for the Project under Part IV of the *Environmental Protection Act 1986* (EP Act).

1.1 Project Description

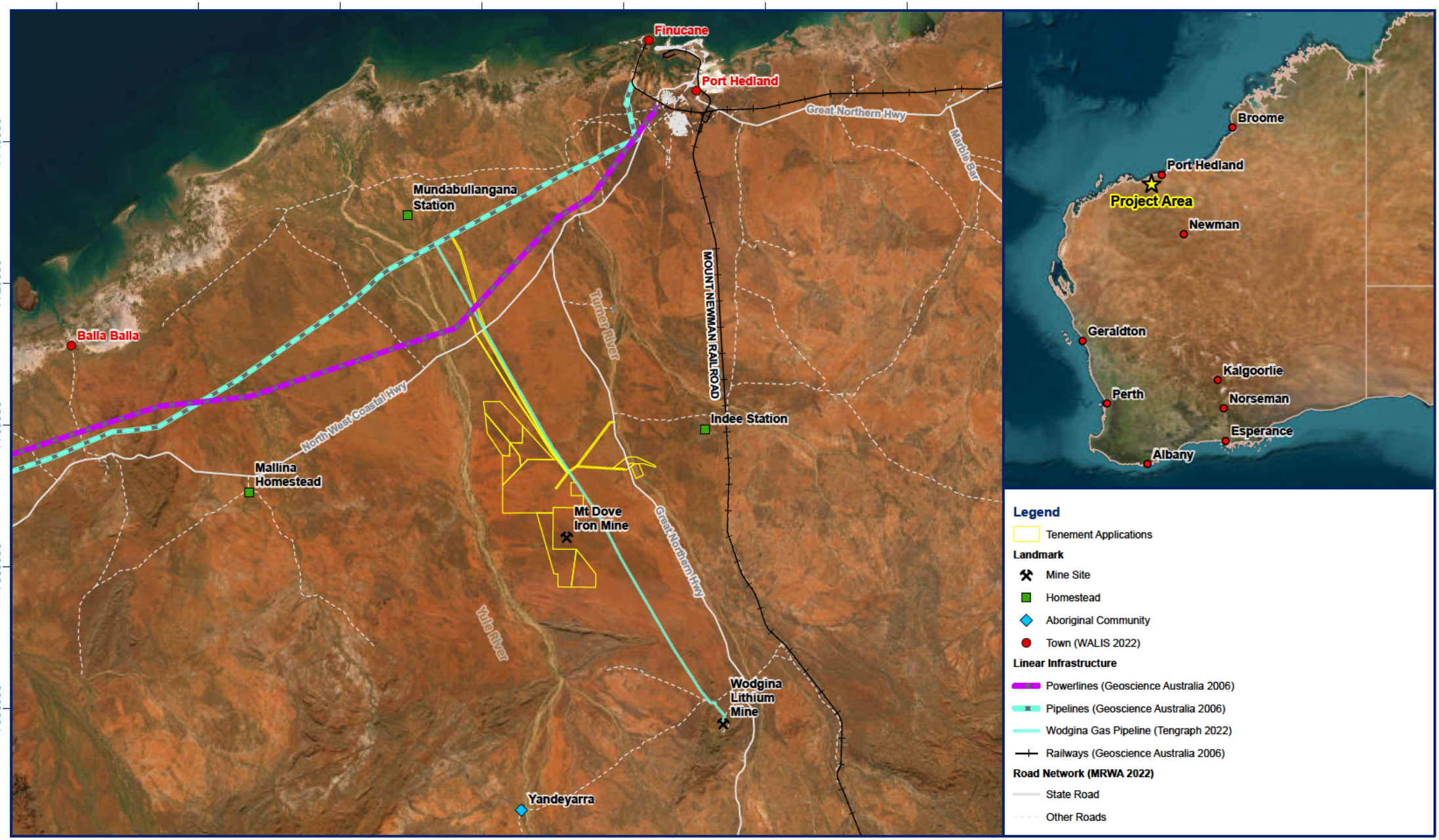
The Project is located in the Pilbara region of Western Australia, approximately 85 km south of Port Hedland, within the Town of Port Hedland Local Government Area (LGA) (Figure 1-1). Access to the Project is via the Northwest Coastal Highway.

The proposed Project comprises open-cut mining of six gold deposits (collectively referred to as Hemi) with processing at a rate of approximately 10 million tonnes of ore per annum. Ore will be processed through a newly constructed processing plant with tailings discharge to a purpose-built Tailings Storage Facility (TSF). Waste rock will be stored in surface waste rock landforms. Surplus water from dewatering is proposed to be reinjected into the Palaeochannel aquifer (reinjection borefields located north and south of mining infrastructure) and a controlled release into the Turner River in accordance with Part V Environmental Licence conditions.

Key Project components are:

- Open cut mining of gold bearing ore from six pits collectively known as the Hemi deposits (Aquila, Brolga, Crow, Diucon, Eagle, and Falcon).
- Construction and subsequent operation of a ~10 million tonne per annum (mtpa) processing plant.
- Storage of tailings in a 2-cell, Integrated Waste Landform (IWL) Tailings Storage Facility (TSF).
- Water supply from the local groundwater aquifer with accompanying groundwater and surface water management infrastructure to facilitate mine dewatering and aquifer reinjection.
- Discharge of surplus water that is of acceptable quality into the Turner River, via water management ponds.
- Stockpiling of waste rock with rehabilitation to form safe, stable and non-polluting Waste Rock Landforms (WRLs).
- Stockpiling of low-grade ore separately from waste rock for future processing after high-grade ore is exhausted.

- Two linear infrastructure corridors to access the Karratha to Port Hedland Gas Pipeline and the electrical grid, north of the Hemi deposits. Once a decision is made regarding power supply, redundant corridors can be removed from the Development Envelope.
- Two linear infrastructure corridors for a sealed access road; dewatering infrastructure and potential power infrastructure, east of the Hemi deposits.
- Power supply consisting of connection to the North West Interconnected System (NWIS) (preferred option), with potential for an on-site solar farm. On-site gas-fired power generation is available as a secondary option.
- Construction and operation of a sealed airstrip that can accommodate the operation of aircraft with capacity for approximately 100 passengers.
- Construction of additional supporting infrastructure including offices, workshops, laydowns, explosives magazines, accommodation village, wastewater treatment, landfills, surface water management infrastructure, pipelines, and borrow pits.
- An anticipated 15-year Life of Mine (including an initial two year dewatering phase), followed by a closure phase.
- Clearing of up to 5,830 ha is required to support the Project.



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Projection GDA2020 MGA Zone 50
Created/Reviewed By HC/AB
Aerial Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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PROJECT		CLIENT
March 2023	Fauna Management Plan	DE GREY MINING LTD
Figure 1-1		
ADV-AU-00241	Hemi Regional Location Plan	

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1.2 Key Environmental Factor

The Key Environmental Factor defined by the EPA WA requiring a management plan to be developed is Terrestrial Fauna, specifically the Greater Bilby (*Macrotis lagotis*) and Northern Quoll (*Dasyurus hallucatus*).

The objective of the Terrestrial Fauna factor is 'to protect terrestrial fauna so that biological diversity and ecological integrity are maintained' (EPA, 2016).

1.2.1 Greater Bilby (Macrotis lagotis)

1.1.1.1 Conservation Status

The Greater Bilby is listed as Vulnerable under the EPBC Act and *Biodiversity Conservation Act 2016* (BC Act) due to its patchy distribution, reduction in historical range and population of less than 10,000 (CoA, 2019).

There is a National Recovery Plan for the Greater Bilby (Pavey, 2006) and an updated Draft Recovery Plan for the Greater Bilby (CoA, 2019). It is also one of the 110 Priority Species listed in the Threatened Species Action Plan 2022-2032 (CoA, 2022).

1.1.1.2 Ecology and Distribution

Greater Bilbies are solitary, medium-sized burrowing marsupials, weighing 800 g to 2.5 kg, with blue-grey fur and long pointed ears and snout (van Dyck & Strahan, 2008). They are omnivores, digging holes between 25 cm up to 1 m for food varying from invertebrates including grubs, termites, ants, grasshoppers, spiders and beetles to seeds, bulbs and fungi (CoA, 2019).

The species is highly mobile with large foraging ranges. They are nocturnal, sheltering in burrows during the day, and can move 1.5 to 5 km between burrows on consecutive days. Many burrows may be used over several months, constructing a new burrow every few weeks creates many active and disused burrows in the home range (CoA, 2019).

Prior to European settlement, Greater Bilbies occupied 70% of the mainland, but have since declined dramatically, and now occupy only 20% of their former range. Wild populations are restricted to the Tanami Desert (NT), Boulia to Birdsville (QLD), and the Pilbara and Kimberley regions including the Gibson Desert, Little Sandy Desert and Great Sandy Desert (WA) (TSSC, 2016). The main habitats it occupies in these regions are:

- Open tussock grassland on uplands and hills.
- *Acacia aneura* (mulga) woodland/shrubland growing on ridges and rises.
- Hummock grassland in plains and alluvial areas.

1.1.1.3 Critical Habitat

The approved recovery plan for the Greater Bilby (Pavey, 2006) states that identification of critical habitat is difficult and the draft recovery plan (CoA, 2019) applies the broad definitions below:

- **Important Population** - All populations are important populations.
- **Critical Habitat** – Any habitat where Bilbies are found to occur.

1.1.1.4 Key Threats

The key threats to the Greater Bilby listed in the Recovery Plan (CoA, 2019) are summarised below, with reference to the potential of the threat from the Project:

- Predation by foxes, cats and wild dogs – food and water sources may encourage predators to the area.
- Habitat loss and fragmentation – up to 5,830 ha of clearing is proposed in a largely uncleared environment.
- Mortality and injury on roads – roads will be constructed for the project, which will create light and heavy vehicle traffic.
- Domestic and other introduced species – unlikely to be increased by the Project.
- Unmanaged fire – Project activities may increase the risk of accidental fire ignition.
- Loss of Traditional Owner knowledge and land management – improvements relating to Traditional Owner knowledge and land management could be enhanced by the Project.
- Reduction in population resilience and genetic fitness in the wild and intensively managed populations – as the Greater Bilby does not continuously inhabit the Project area and suitable habitat is abundant locally and regionally, connections within and between populations are unlikely to be impacted.

1.2.2 Northern Quoll

1.1.1.5 Status

The Northern Quoll (*Dasyurus hallucatus*) is listed as Endangered under the EPBC Act and BC Act, due to its substantial reduction in numbers and likelihood of future declines (TSSC, 2005).

There is a National Recovery Plan in place for the Northern Quoll (Hill & Ward, 2010), and it is one of the 110 Priority Species listed in the Threatened Species Action Plan 2022-2032 (CoA, 2022).

1.1.1.6 Ecology and Distribution

Northern Quolls are solitary, medium-sized marsupials considered terrestrial and arboreal, weighing between 220 g and 1.1 kg. They have brown fur with distinctive white spots, and males die off after mating (van Dyck & Strahan, 2008).

They are generally nocturnal, utilising a variety of den sites during the day including rock crevices, tree hollows, logs, termite mounds and goanna burrows, tending to change dens every night (van Dyck & Strahan, 2008).

Their diet is considered opportunistic omnivorous, eating invertebrates including beetles and spiders, nectar and fruits including native grapes, small mammals, reptiles, frogs and eggs (van Dyck & Strahan, 2008).

Prior to European settlement the Northern Quoll was common across northern Australia from the Pilbara to Brisbane. A 75% reduction in range has contracted the current distribution to six discontinuous centres across mainland QLD, NT and WA, where it remains in the Kimberley and Pilbara, and a number of offshore islands (TSSC, 2005).

1.1.1.7 Critical Habitat

Northern Quolls occur in a variety of habitats, with rocky areas and offshore islands identified in the National Recovery Plan as habitat critical to survival (Hill & Ward, 2010).

1.1.1.8 Key Threats

The key threats to the Northern Quoll listed in the Recovery Plan (Hill & Ward, 2010) are summarised below, with reference to the potential of the threat from the Project:

- Cane Toads – may be introduced as stow-aways on vehicles and in freight.
- Feral predators - food and water sources may encourage predators to the area.
- Inappropriate fire regimes - Project activities may increase the risk of accidental fire ignition.
- Habitat degradation – could occur through unmanaged project activities.
- Weeds – may be introduced or spread on dirty vehicles or equipment.
- Disease – unlikely to be influenced by the Project.
- Hunting and persecution – untrained or uninformed personnel could persecute individuals.
- Population isolation – up to 5,830 ha of clearing is proposed in a largely uncleared environment.

1.3 Condition Requirements and Approvals

The Project is in the development stage, and as such no conditions have been placed on the Project. De Grey will implement this management plan to ensure that significant impacts are unlikely.

Given that secondary signs of Greater Bilby and recordings of Northern Quolls were recorded during baseline surveys, the Project will be referred the Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the EPBC Act.

Given the scale and nature of the Project, and potential impacts to a number of environmental factors, including Terrestrial Fauna for Greater Bilby and Northern Quoll, the Project will be referred to the EPA (WA) under Part IV of the EP Act.

1.4 Rationale and Approach

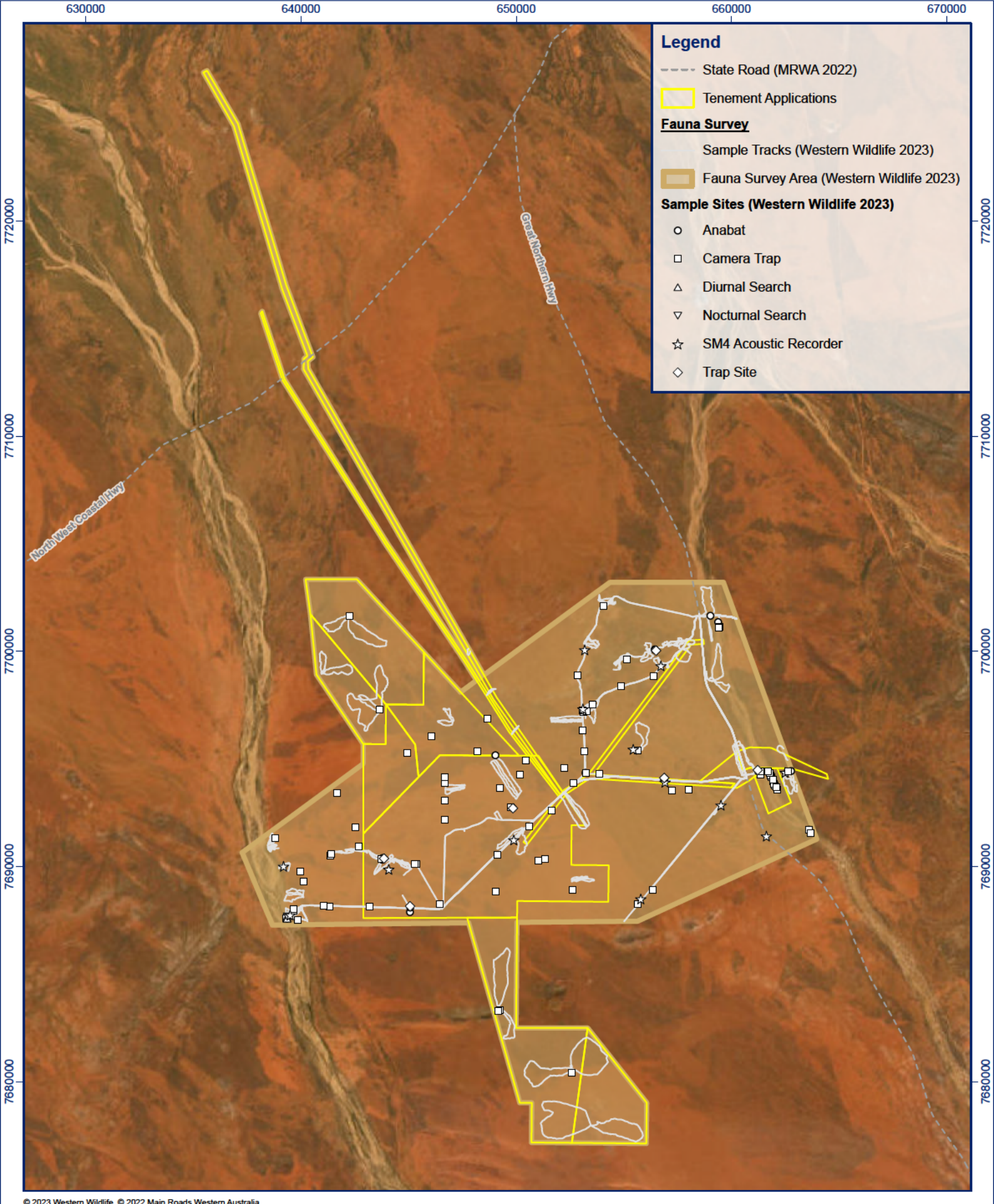
1.4.1 Detailed Fauna Survey Methods

Western Wildlife completed a two-phase detailed fauna survey of Hemi for all fauna species, as well as a basic survey of the proposed infrastructure corridors as shown on Figure 1-2 (Western Wildlife, 2023). The fauna survey was completed in accordance with the Technical Guidance: terrestrial vertebrate fauna surveys for environmental impact assessment (EPA, 2020) and relevant State and Federal Guidelines on surveying conservation significant fauna. The fauna survey comprised a two-phase baseline vertebrate survey completed from 19 – 30 September 2021 and 14 – 25 March 2022. Following this, some additional targeted surveys were completed from 9 – 12 August 2022. Methods included:

- Trapping at six sites for seven nights; each site used ten pitfall traps, ten funnel traps, ten Elliott traps and two cage traps.
- Bird surveys at each trapping site (six sites) and opportunistically.

- Bat surveys with ultrasonic detectors at each trap site (six sites) and 16 other sites (totalling 22 sites).
- Night Parrot survey with passive acoustic detectors at 13 sites.
- Camera trap survey at 72 sites, targeting Northern Quoll in rocky and riverine habitats (12 sites), and Greater Bilby in Sand Dune, Spinifex Sandplain and Sandplain Drainage (58 sites).
- Nocturnal transects and searches with spotlights and headtorches on four nights.
- Diurnal transects and searches for:
  - Burrows, diggings, tracks or scats of the Greater Bilby in sandplain habitats.
  - Scats of the Northern Quoll in rocky habitats and tracks in sandy habitats such as riverbeds.

Type and locations of survey sites are shown on Figure 1-2.



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Projection GDA2020 MGA Zone 50
Created/Reviewed By HC/AB
Aerial Esri, DigitalGlobe, GeoEye, i-cubed, USDA FSA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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PROJECT

Fauna Management Plan

Fauna Survey Trapping Locations

Figure 1-2 | ADV-AU-00241 | March 2023

CLIENT

DE GREY MINING LTD

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1.4.2 Results

1.1.1.9 Habitat Types

The survey identified six fauna habitats of varying extents, from extensive Spinifex Sandplain to extremely limited rocky outcrops. Major River habitats are represented by the Yule and Turner Rivers to the East and West.

All habitats are listed in Table 1-1, with their extents and status as critical habitat for the Greater Bilby and Northern Quoll. Three were associated with the Bilby and two the Northern Quoll.

Table 1-1 Fauna Habitats, Extents and Status as Critical Habitat

Fauna Habitat	Extent (ha)	Critical Habitat Status
Spinifex Sandplain	22,729.8	Bilby
Sandplain Drainage	9,347.4	Bilby
Major River	1,232.2	Northern Quoll
Stony hills	1,190.5	-
Sand Dune	190.1	Bilby
Rocky Outcrops	1.5	Northern Quoll

1.1.1.10 Greater Bilby

There are several records of this species in the vicinity of the study area on DBCA's Threatened and Priority Fauna Database. This species is likely to be widespread in the region. As the Bilby can move its home range in response to the changing availability of food, they may not always be present despite suitable habitat being available (Western Wildlife, 2023).

The Greater Bilby was not recorded during the survey directly, although secondary signs were recorded in the study area in September 2021 and March 2022. The secondary signs were described as inactive burrows that had been active in the past year. The burrows were located in the Sand Dune (area excluded from the Development Envelope) and Spinifex Sandplain habitats, particularly in the vicinity of the Yule River (Figure 1-3). It is considered likely to be an uncommon resident to the Spinifex Sandplain, Sandplain Drainage and Sand Dune habitat (Western Wildlife, 2023).

The approved recovery plan for the Bilby (Pavey, 2006) states that critical habitat is difficult to identify in Western Australia. The Draft Recovery Plan (CoA, 2019) applies broad definitions of any habitat where the Bilby are known to occur or may occur being considered critical habitat. Western Wildlife assessed the likely critical habitat for the Bilby as the Sand Dune, Spinifex Sandplain and Sandplain Drainage habitats. Unlike critical habitat for other species, Bilby habitat is often widespread, and in this case constitutes most of the study area (Western Wildlife, 2023).

1.1.1.11 Northern Quoll

The Northern Quoll was recorded in the study area in September 2021 and March 2022 in the Major River habitat (Yule and Turner Rivers), and in the rocky outcrops. All Northern Quoll records were from camera traps and through secondary signs of scats and tracks. All records are shown on Figure 1-4.

The Northern Quolls in the study area are considered to be part of a population studied by the Department of Biodiversity, Conservation and Attractions (DBCA) and have been identified as an 'important population.'

Northern Quolls are considered likely to be resident in Rocky Outcrops and Major River habitats, dispersing and foraging within 1 km in adjacent habitats (Western Wildlife, 2023)(Figure 1-4).

Rocky Outcrop and Major River habitats are critical habitat for the Northern Quoll for shelter, foraging and dispersal (Western Wildlife, 2023).

1.1.1.12 Feral Predator Presence

Of the six introduced mammal species recorded within the study area, three were feral predators: Cat (*Felis catus*); Fox (*Vulpes vulpes*); and Wild Dog (*Canis familiaris*).

These three species are listed as threats to Bilby and Northern Quoll in their respective recovery plans, and 'Predation by Feral Cats' and 'Predation by the European Red Fox' are listed as key threatening processes under the EPBC Act.

1.4.3 Key Assumptions and Uncertainties

The key assumptions used to inform this management plan were:

- The past presence of Greater Bilby and current presence of Northern Quoll in parts of the proposed development envelope was confirmed during baseline surveys (Western Wildlife, 2023).
- Habitat for Greater Bilby and Northern Quoll occurs at the Project (Western Wildlife, 2023).
- Northern Quoll are known to reside in parts of the Project along and near the Yule and Turner Rivers (Western Wildlife, 2023).
- Greater Bilbies use the area transiently and are not currently breeding in the area (Western Wildlife, 2023).
- Certain habitats that are considered 'critical habitats' are important for the persistence of these species:
    - Rocky Outcrop and Major River habitats as well as any foraging and dispersal habitat within 1 km of these are critical habitat for the Northern Quoll.
    - Spinifex Sandplain, Sandplain Drainage, Sand Dune are critical habitat for the Greater Bilby.
    - Rocky Outcrop, Major River and Sand Dune are limited in extent at the Project and wider region (Table 1-1) (Western Wildlife, 2023).
    - Spinifex Sandplain and Sandplain Drainage are widespread at the Project and wider region (Table 1-1) (Western Wildlife, 2023).
- Avoiding and protecting critical habitats will maintain local populations of Greater Bilby and Northern Quoll.

The key uncertainties around this management plan are:

- Population estimates for the Greater Bilby and Northern Quoll.
- Ongoing use of the area by Greater Bilby in the future.

1.4.4 Objective-based Environmental Management Plan – Risk Based Approach

This Environmental Management Plan (EMP) has been developed to minimise risks to the Greater Bilby and Northern Quoll by developing objective based management actions.

An objective-based provision is considered appropriate to manage impacts (direct and indirect) to Greater Bilby and Northern Quoll.

The objective based provision is that the Greater Bilby and Northern Quoll will continue to persist within the Development Envelope and be monitored through opportunistic sightings and/or camera trap records.

Supporting provisions are outlined in this management plan.

1.4.5 Rationale for Choice of Management Actions

This management plan has been prepared in accordance with the following:

- "Instructions on how to prepare *Environmental Protection Act 1986* Part IV Environmental Management Plans" (EPA, 2021).
- Environmental Management Plan Guidelines (CoA, 2014).

The structure of the management plan follows the EPA (2021) guidelines.

Given the Greater Bilby is not considered a resident breeding population, and that Northern Quoll populations are known to fluctuate naturally, monitoring of ongoing presence through opportunistic sightings and camera trap records is considered appropriate.

Proposed management measures in Table 2-1 (to prevent and control introduced species, prevent and control fire and limit vehicular impacts) are considered likely to support the Greater Bilby and Northern Quoll's persistence in the area.

2. OBJECTIVE BASED EMP

This EMP has applied the mitigation hierarchy (avoid, minimise, rehabilitate) by:

- Avoiding critical habitat for the Greater Bilby and Northern Quoll by adapting the mine design wherever possible. The mine design was altered in the planning phase to avoid Sand Dunes; the Yule River; and Northern Quoll foraging and dispersal habitat within 1 km of the Yule River. The habitats are considered limited in extent at the Project and in the wider region.
- Minimisation of disturbance to the Turner River from the dewatering pipeline and outfall.
- Minimisation of disturbance to Northern Quoll foraging and dispersal habitat within 1 km of the Turner River from the dewatering pipeline and access road.
- Minimising clearing for the project footprint to 5,830 ha.
- Minimise impacts from key threats described in Section 1.1.1.4 and Section 1.1.1.8 by implementing the management measures outlined in Table 2-1.
- Progressive rehabilitation will be completed wherever possible.

2.1 Objectives

2.1.1 State and National Objectives for Fauna- Greater Bilby and Northern Quoll

State and national objectives developed for the Greater Bilby and Northern Quoll are summarised as:

- The EPA Objective for Terrestrial Fauna is:
  - 'to protect terrestrial fauna so that biological diversity and ecological integrity are maintained' (EPA, 2016).
- The Draft Greater Bilby Recovery Plan (CoA, 2019) objectives are:
  - The size of the Greater Bilby population has grown.
  - The area occupied by the Greater Bilby has been maintained or increased.
  - The genetic diversity of the Greater Bilby has been maintained and retains the potential for evolutionary change through adaption and selection.
  - Aboriginal organisations, communities, and individuals have a greater role in Bilby conservation (CoA 2019).
- The Northern Quoll Recovery Plan (Hill & Ward, 2010) objectives are to:
  - Protect Northern Quoll populations on offshore islands from invasion and establishment of cane toads, cats and other potential invasive species.
  - Foster the recovery of Northern Quoll sub-populations in areas where the species has survived alongside cane toad.
  - Halt Northern Quoll declines in areas not yet colonised by cane toads.
  - Halt declines in areas recently colonised by cane toads.
  - Maintain secure populations and source animals for future reintroductions/introductions if they become appropriate.
  - Reduce the risk of Northern Quoll populations being impacted by disease.
  - Reduce the impact of feral predators on Northern Quoll.
  - Raise public awareness of the plight of Northern Quoll and the need for biosecurity of islands and WA.

2.1.2 Hemi Gold Project Objectives for Greater Bilby and Northern Quoll

Using the state and national objectives for each species, De Grey has developed the following objectives for the Hemi Gold Project. The project objectives for these species are to:

- Maintain the presence of Greater Bilby and Northern Quoll populations in areas they have been identified in baseline surveys.
- Avoid, as far as practicable, and protect critical habitat during the design and construction phase.
- Improve remaining habitat by managing key threats, fire and weeds.
- Prevent deaths of individuals by managing the key threats:
  - Clearing.
  - Feral predator control.
  - Cane toad incursion prevention.
  - Vehicle impact.

Table 2-1 Management Objectives and Actions

EPA factor/s and objective/s: Terrestrial Fauna: 'To protect terrestrial fauna so that biological diversity and ecological integrity are maintained' **Objective/s: Maintenance of, or increase in, existing local Greater Bilby and Northern Quoll populations.** **Key environmental values: Greater Bilby and Northern Quoll**				
Objective-based				
Management Targets	**Management Actions**	**Monitoring**	**Timing / Frequency of Actions**	**Reporting**
Key impact and risk: Clearing of critical habitat				
Maintain Greater Bilby and Northern Quoll presence				
Maintenance of existing local Greater Bilby and Northern Quoll populations.	• Implement the management actions outlined in this management plan.	• Ongoing presence recorded through opportunistic records and camera trap records. • Targeted searches for signs of MNES in areas of Greater Bilby and Northern Quoll records.	• Assessed annually.	• Annual Environmental Report.
No deaths of Bilby or Northern Quoll from land clearing activities.	• Clear land only in approved areas. • Pre-clearance searches to identify presence of Bilby, their active burrows and Northern Quoll. • Where individuals are intercepted, capture and relocate (capture effort limited to seven consecutive nights). • Any burrows located inside proposed clearing areas (unlikely, as outside of preferred burrowing sand dune habitat) will be confirmed inactive before clearing proceeds.	• Clearing supervised by environmental personnel. • Clearing reported in a clearing register. • Annual desktop review of areas cleared against areas approved. • Compliance with internal ground disturbance permit process.	• Prior to all clearing during construction and operational phases of the Project.	• Any mortalities reported as soon as practicable, but no later than end of shift using internal incident report. • Mortalities reported to DBCA within 24 hours of environment department becoming aware. • Where practicable DNA sample collected and preserved for DBCA/WA museum analysis. • Annual Environmental Report.

EPA factor/s and objective/s: Terrestrial Fauna: 'To protect terrestrial fauna so that biological diversity and ecological integrity are maintained' Objective/s: Maintenance of, or increase in, existing local Greater Bilby and Northern Quoll populations. Key environmental values: Greater Bilby and Northern Quoll				
Objective-based				
Management Targets	**Management Actions**	**Monitoring**	**Timing / Frequency of Actions**	**Reporting**
Avoid and protect critical habitat during the design and construction phase				
Limit clearing of critical habitat for Greater Bilby and Northern Quoll.	• Identify critical habitat from baseline fauna surveys. • Excise critical habitat that is limited in extent (rocky outcrops, major river, sand dune) from the project footprint wherever possible. • Minimise clearing of critical habitat that is widespread (spinifex sandplain, sandplain drainage). • Implementation of the site clearing procedure to prevent clearing critical habitat. Clearing procedure to include demarcation of critical habitat to be avoided "exclusion zones."	• Annual desktop review of areas cleared against critical habitat.	• Planning and approval phase. • Construction phase – or whenever clearing occurs.	• Clearing non-compliances reported to DBCA. • Annual Environmental Report.
No clearing outside of approved areas.	• Develop and implement a clearing procedure to prevent clearing outside of approved areas, to include: • Approved clearing boundaries determined with GPS in the field. • Clearing boundary clearly demarcated. • Machinery operators familiarised with boundaries prior to clearing. • Clearing supervised by environmental personnel or trained and authorised delegate.	• Clearing supervised by environmental personnel or trained and authorised delegate • Clearing reported in a clearing register. • Annual desktop review of areas cleared against areas approved.	• Construction phase. • Prior to all clearing.	• Non-compliances reported to DBCA and DCCEEW. • Annual Environmental Report.

EPA factor/s and objective/s: Terrestrial Fauna: 'To protect terrestrial fauna so that biological diversity and ecological integrity are maintained' Objective/s: Maintenance of, or increase in, existing local Greater Bilby and Northern Quoll populations. Key environmental values: Greater Bilby and Northern Quoll				
Objective-based				
Management Targets	**Management Actions**	**Monitoring**	**Timing / Frequency of Actions**	**Reporting**
Improvement to remaining habitat by managing key threats				
Key impact and risk: fire				
No accidental fires started by project activities.	• Conduct site inductions that include fire prevention and control measures. • Effective maintenance of vehicles including tyres and wiring to prevent fire ignition. • Vehicles kept clean to prevent vegetative material collecting underneath and igniting. • No unauthorised off-road driving to prevent vehicles and machinery igniting grassfires. • All vehicles will carry portable fire extinguishers, with training provided on fire-fighting equipment. • Emergency response capacity will be maintained. • A hot works permit system will be implemented. • Install fire breaks around critical infrastructure. • Conducting any controlled burns in consultation with DBCA.	• Induction and training records • Internal reporting and investigating of accidental fires.	• Ongoing from commencement of construction.	• Annual Environmental Report.
Key impact and risk: weeds				
• No introduction of new weeds to the Project. • No increase in existing weed cover attributable to the project.	• Implementation of vehicle hygiene measures. • No materials brought to site unless certified clean. • Implement weed control as required. • Ensure site induction include weed hygiene measures. • Ensure site inductions include Vehicle hygiene and weed identification. • Presence of weeds included in environmental hazard and housekeeping inspections.	• Environmental Inspection records. • Induction presentations and materials. • Induction records. • Vehicle equipment hygiene certificate records.	• Biannual environmental inspections. • Control as required.	• Internal environmental inspection records. • New weeds reported in the Annual Environmental Report.

EPA factor/s and objective/s: Terrestrial Fauna: 'To protect terrestrial fauna so that biological diversity and ecological integrity are maintained' Objective/s: Maintenance of, or increase in, existing local Greater Bilby and Northern Quoll populations. Key environmental values: Greater Bilby and Northern Quoll				
Objective-based				
Management Targets	**Management Actions**	**Monitoring**	**Timing / Frequency of Actions**	**Reporting**
Prevent deaths of Bilby and Northern Quoll individuals by managing key threats				
Key impact and risk: feral predators				
No increase in feral predator numbers at the Project.	• Prevent attracting feral predators to the area by reducing access to food and water sources and fencing of water sources and landfill. • All putrescible bins stored outside shall have closing lids. • Educate the workforce on not supporting feral species through the induction. • Report sightings of feral fauna by personnel as environmental incidents in project incident register. • If required, control existing populations through baiting, shooting and trapping.	• Camera monitoring. • Environmental incident records. • Control records. • Induction presentation, materials and records.	• Ongoing. • Control as required.	• Annual Environmental Report to summarise feral predator status.
Key impact and risk: cane toads				
No cane toads introduced to the Project as a result of the Project's activities.	• Prevent introducing cane toads by implementing more rigorous vehicle hygiene measures for vehicles arriving from known cane toad range (Kimberley, Northern Territory). • Include in contractor pre-mobilisation information that vehicles travelling to the Project from known cane toad ranges may be required to undertake quarantine requirements. • Site inductions to include cane toad identification and reporting of sightings. • Humane disposal of any cane toads found.	• Environmental induction records. • Environmental incident records. • Vehicle inspection records.	• Ongoing	• Annual Environmental Report. • Confirmed sightings reported on feralscan.org.au/toadscan and to DBCA.

EPA factor/s and objective/s: Terrestrial Fauna: 'To protect terrestrial fauna so that biological diversity and ecological integrity are maintained' Objective/s: Maintenance of, or increase in, existing local Greater Bilby and Northern Quoll populations. Key environmental values: Greater Bilby and Northern Quoll				
Objective-based				
Management Targets	**Management Actions**	**Monitoring**	**Timing / Frequency of Actions**	**Reporting**
Key impact and risk: vehicle impact				
No deaths of Greater Bilby or Northern Quoll individuals due to project vehicles.	• Implement signed speed limits on project roads. • Install fauna signage on project roads. • Induction to include site speed limits, identification and significance of Bilby and Northern Quoll, and reporting requirements for vehicle impacts.	• Speed signage in place. • Fauna signs in place. • Environmental induction records. • Environmental incident records.	• Implemented from construction.	• Any mortalities reported as soon as practicable, but no later than end of shift using internal incident report. • Mortalities reported to DBCA within 24 hours of environment department becoming aware. • Annual Environmental Report.

2.2 Management Targets

The management targets outlined in Table 2-1 are listed below:

- Maintenance of existing local Greater Bilby and Northern Quoll populations.
- No deaths of Greater Bilby or Northern Quoll from land clearing activities.
- Limit clearing of critical habitat for Greater Bilby and Northern Quoll.
- No clearing outside of approved areas.
- No accidental fires started by project activities.
- No introduction of new weeds to the Project.
- No increase in existing weed cover attributable to the Project.
- No increase in feral predator numbers at the Project.
- No Cane Toads introduced to the Project as a result of the Project's activities.
- No deaths of Greater Bilby or Northern Quoll individuals due to Project vehicles.

2.3 Management Actions

The management actions outlined in Table 2-1 are listed below:

- Identify critical habitat of limited extent and excision of these areas from the footprint.
- Identify critical habitat which is widespread and limiting clearing in these areas.
- Implementation of site Clearing Procedure.
- Develop and implement a Pre-clearance Survey Procedure for Greater Bilby and Northern Quoll, which includes, where required, capture and relocation and establishment of exclusion zones.
- Vehicles to carry fire extinguishers with training provided in fire-fighting equipment.
- Maintain emergency response capability for fires.
- Maintenance of vehicles.
- Implement of a Hot Works permitting system.
- No unauthorised off-road driving.
- Implement vehicle hygiene measures.
- Material brought to site certified clean.
- Implement weed control where new weeds or weed spread are identified.
- Fence landfill and water sources.
- All putrescible bins stored outside to have closing lids.
- Control of feral predator populations as required.
- Implement vehicle inspection measures for vehicles arriving from known cane toad range.
- Humane disposal of any cane toads found.
- Implement and adhere to signed speed limits on project roads.
- Install Greater Bilby and Northern Quoll signage on project roads.

- Induction includes – fire prevention and control, weed hygiene measures, feral species discouragement, cane toad identification, site speed limits, identification and significance of Greater Bilby and Northern Quoll, and reporting requirements for vehicle impacts.

2.4 Monitoring

The monitoring outlined in Table 2-1 is summarised below:

- Monitor the Greater Bilby, Northern Quoll and feral predator species presence using automated motion sensor cameras.
- Supervise clearing by environmental personnel and recorded in a Clearing Register.
- Undertake an annual review of clearing completed against clearing approved in the Clearing Register and against critical habitat.
- Compliance with internal ground disturbance permit process.
- Maintain records for inductions and training of all staff and contractors.
- Maintain records for environmental hazard and housekeeping inspections.
- Maintain records for environmental incidents.

2.5 Reporting

The reporting requirements outlined in Table 2-1 are listed below:

- Report Greater Bilby and Northern Quoll monitoring overview and status in the Annual Environmental Report (AER).
- Report Feral Predator and Cane Toad monitoring overview, status and control in the AER.
- Report new weeds and weed control undertaken in the AER, where relevant.
- Feral Predator Control Summary Report, if required.
- Report cane toad sightings on 'Feralscan' and to DBCA.
- Report Greater Bilby and Northern Quoll mortalities through internal incident report as soon as practicable (no later than end of shift), record on internal register and report to DBCA within 24 hours of the environment department becoming aware. Where practicable DNA sample collected and preserved for DBCA/WA Museum analysis.
- Report clearing completed and non-compliances with approvals in the AER.
- Report non-compliances with this plan to DBCA and DCCEEW.

2.6 Stakeholder Consultation

Significant stakeholder consultation has been completed for the Project, which is summarised in Table 2-2.

Table 2-2 Stakeholder Consultation on Bilby and Northern Quoll

Stakeholder	Topics	Date
Department of Climate Change, Energy, the Environment and Water (DCCEEW)	EPBC Act Referral	August 2022
EPA	EPA Administration of the EP Act.	February and November 2022
Department of Biodiversity Conservation and Attractions (DBCA)	Project overview	2023

Stakeholder	Topics	Date
Department of Water and Environmental Regulation (DWER) EPA Services	Supports the EPA in conducting environmental impact assessments under Part IV of the EP Act.	11 Feb 2022
Department of Industry Regulation and Safety (DMIRS)	Project strategy and approval timelines	2021 - 6 May, 8 June, 15 July; 2022 - 3 Feb.
The Department of Planning, Lands and Heritage (DPLAH)	Minister for Aboriginal Affairs Workshop	29 Nov 2021 29 April 2022
Local Government - Town of Port Hedland	Twenty-two meetings with Councillors, officers, the CEO and Mayor.	14 Jan 2021 and 20 Apr 2022
Traditional Owners - Kariyarra People (Kariyarra Aboriginal Corporation)	Native Title Mining Agreement.	Meet regularly, involved in heritage surveys.

2.7 Roles and Responsibilities

Roles and responsibilities to implement the plan are provided in Table 2-3.

Table 2-3 Roles and Responsibilities

Role	Responsibilities
General Manager or Equivalent	• Compliance with this Plan. • Suitable resourcing is available to comply with this Plan.
Environmental Manager	• Compliance with this Plan. • Review and revision of this Plan. • Provide advice to maintain compliance with this Plan. • Reporting for compliance.
Site Environmental personnel	• Compliance with this Plan. • Presentation of the site induction and other training as required. • Supervision of clearing activities as required. • Provide training to delegated personnel on clearing inspection requirements. • Delegation of clearing supervision and inspection activities as required. • Record keeping as required by this Plan.
All Personnel Including Contractors	• Compliance with this Plan. • Complete the site induction prior to commencement of work, and any other environmental training as required. • Report all sightings of Greater Bilby, Northern Quoll and feral species, including mortalities, to Environmental Officers.

2.8 Environmental Training

To support the management actions, training activities identified in this section will be required.

2.8.1 Induction

The site induction will be required to include information on:

- The Project's environmental setting and general environmental management measures and controls.
- Information on environmental approval requirements and commitments.

- Information on the environmental performance expectations for all employees.
- The consequences of non-compliances.
- Measures to protect all native fauna as well as Threatened species.
- Bilby and Northern Quoll identification, significance and reporting.
- Internal Clearing Permitting and Processes.
- Environmental Incident Reporting Requirements and Processes.
- Waste Management Measures.
- Spill Response Measures.
- Fire prevention and control.
- Weed hygiene measures.
- Discouraging feral species.
- Cane toad identification and risks.
- Site speed limits.

2.8.2 Fire

Specific training will be developed and implemented in:

- Fire prevention.
- Fire equipment usage, including portable fire extinguishers, deluge systems, and any other equipment used on site.
- Firefighting and emergency response.
- Reporting of fires.

2.9 Emergency Response Contacts and Procedures

An Emergency Response Procedure will be developed for the Project, which will include a response to local wildfires, including all relevant emergency contacts, including but not limited to:

- Department of Fire and Emergency Services, Port Hedland – (08) 9158 1300.
- DBCA Pilbara Region, Karratha – (08) 9182 2000.

2.10 Adaptive Management and Review of the EMP

2.10.1 Auditing

Internal audit of site compliance against this EMP will be completed annually by De Grey environmental personnel, with results presented as a report and kept on file for external auditing purposes.

2.10.2 Review and Revision

Internal review of this EMP will be completed at biennial intervals, when the project phase changes or as required. Any changes will be recorded in Table 2-4 and submitted to DBCA and DCCEEW for approval.

Table 2-4 Table to Record Future Changes to the BNQMP

Complexity of changes:	Minor Revisions	Moderate Revisions	Major Revisions
Number of Key Environmental Factors:	1 ☐	2-3 ☐	> 3 ☐
Date revision submitted to EPA:	DD/MM/YYYY		
Proponent's operational requirement timeframe for approval of revision:			
< 1 Month ☐	< 6 Months ☐	> 6 Months ☐	None ☐
Reason for Timeframe:			

Item No	EMP Page No	EMP Section	Summary of Change	Reason for Change
1				
2				

3. REFERENCES

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Hill, B., & Ward, S. (2010). *National Recovery Plan for the Northern Quoll Dasyurus hallucatus*. Department of Natural Resources, Environment, The Arts and Sport.

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Western Wildlife. (2023). *Hemi Gold Project: Detailed Vertebrate Fauna Survey 2021 - 2022*.

4. GLOSSARY

A glossary of terms used in this Plan is provided in Table 4-1.

Table 4-1 Glossary

Abbreviation	Definition
BC Act	*Biodiversity Conservation Act 2016*
CoA	Commonwealth of Australia
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
De Grey	De Grey Mining Limited
DMIRS	Department of Industry Regulation and Safety
DNREA	Department of Natural Resources Environment and the Arts
DPLH	Department of Planning, Lands and Heritage
DWER	Department of Water and Environmental Regulation
EMP	Environmental Management Plan
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection and Biodiversity Protection Act 1999*
ERD	Environmental Review Document
G	Gram
Ha	hectare
IWF	Integrated Waste Landform
Kg	Kilogram
Km	kilometre
kV	Kilovolt
LGA	Local Government Area
MRWA	Main Roads Western Australia
Mtpa	Million tonnes per annum
Project	Hemi Gold Project
RPM	RPM Advisory Services Pty Ltd
NT	Northern Territory
QLD	Queensland
TSF	Tailings Storage Facility
TSSC	Threatened Species Scientific Committee
WA	Western Australia