APPENDIX D: DATABASE SEARCH RESULTS

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 07-Feb-2023

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	11
Listed Migratory Species:	9

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	13
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	5
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Species			[Resource Information]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.			
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat likely to occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area	In feature area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat known to occur within area	In feature area
Macrotis lagotis Greater Bilby [282]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rhinonicteris aurantia (Pilbara form)			
Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat known to occur within area	In feature area
REPTILE			
Liasis olivaceus barroni			
Olive Python (Pilbara subspecies) [66699]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Liopholis kintorei			
Great Desert Skink, Tjakura, Warrarna, Mulyamiji [83160]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Hirundo rustica			
Barn Swallow [662]		Species or species habitat may occur within area	In feature area
Motacilla cinerea			
Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chalcites osculans as Chrysococcyx osculans			
Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
Charadrius veredus			
Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area	In feature area
Hirundo rustica			
Barn Swallow [662]		Species or species habitat may occur within area overfly marine area	In feature area
Merops ornatus			
Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea			
Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Extra Information

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Iron ore mine expansion, West Angelas Revised Project	2021/8923	Controlled Action	Assessment Approach	In buffer area only
Koodaideri Iron Ore Mine & Infrastructure Project, WA	2012/6422	Controlled Action	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Lamb Creek Iron Ore Project, East Pilbara, WA	2012/6666	Not Controlled Action	Completed	In feature area
Railway Iron Ore Project, to develop and operate mine, plant and supporting infrastructure, Central	2009/5005	Not Controlled Action	Completed	In buffer area only

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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APPENDIX E: SIGNIFICANT FAUNA MANAGEMENT PLAN

MINERAL RESOURCES

MANAGEMENT PLAN

SIGNIFICANT FAUNA MANAGEMENT PLAN

LAMB CREEK IRON ORE PROJECT

25/09/2024 VERSION 0

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Revision History				
Version	**Issue Date**	**Prepared by**	**Approved By**	**Document Purpose**
0	25/09/2024	Carl Paton Adam Cross Neil Smith	Adam Parker – Manager Project Approvals	Regulatory Submission

Acknowledgement of Country

MinRes is committed to reconciliation and recognises and respects the significance of Aboriginal and Torres Strait Islander peoples' communities, cultures, and histories. MinRes acknowledges and respects Aboriginal and Torres Strait Islander peoples as the traditional custodians of the land.

EXECUTIVE SUMMARY

Table ES-1 summarises the purpose of the Significant Fauna Management Plan (SFMP) and Monitoring Program within the context of the Western Australia Environmental Protection Authority (EPA) objectives for the key environmental factor of Terrestrial Fauna (EPA 2016), but is also relevant for EPBC fauna considerations. The SFMP and Monitoring Program also aligns with the EPA (2021c) and Commonwealth of Australia (2014) Environmental Management Plan Instructions and Guidelines. The SFMP and Monitoring Program has been prepared for the Mineral Resources Lamb Creek Iron Ore Project. This Environmental Management Plan specifically addresses the Terrestrial Fauna environmental factor associated with the Project.

Summary Table ES-1 below presents the environmental outcomes and objectives for the environmental factor to be met through implementation of this SFMP, as well as the environmental criteria and management targets to measure achievement of the associated environmental outcomes and objectives.

Table ES-1: Significant fauna Management plan Summary

Project Title	Lamb Creek Iron Ore Mine	
Short Description	Open pit iron ore mine located approximately 130 km northwest of Newman to produce up to 10 million tonnes per annum (Mtpa) of crushed and screened iron ore over a period of three to five years. This will comprise a multi-stage crushing and screening process plant and associated mine infrastructure including, but not limited to, site offices, maintenance and equipment service area, water pipelines, fuel storage, power generation, telecommunications and an accommodation village for site personnel. The total disturbance footprint of the Project is 646.9 ha (Indicative Footprint), within a Development Envelope of 874 ha (**Figure 1**). Iron ore product will be loaded onto road trains and transported 16 km on a dedicated private haul road to its intersection with Great Northern Highway, where it will be transported 320 km to ship load-out facilities at the Utah Point berth in Port Hedland.	
Proponent Name	Process Minerals International (PMI) a wholly owned subsidiary of Mineral Resources Limited (MinRes) (ACN 118 549 910)	
Ministerial Statement No.	TBA	
Scope And Purpose Of SFMP	The purpose of the Significant Fauna Management Plan (SFMP) is to present a robust and implementable environmental management framework to protect the environmental values of the Project and to demonstrate that the EPA's objectives are met during the construction and operation of the Project (also relevant for EPBC fauna considerations).	
Key Environmental Factor and Objective	Terrestrial Fauna:	To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.
Outcome-based Management Provisions	Ensure development and operation of the Project meets the objective of protecting significant fauna and fauna habitat to maintain biological diversity and ecological integrity.	
Objective-based Management Provisions	No clearing of critical fauna habitat shall occur outside of approved, demarcated, clearing area(s) during construction or operations. Feral predator management effectively implemented to avoid increasing impacts on native fauna populations as a result of the Project. Effective operation of the Project to avoid Project related fire. Minimise fauna mortality from construction and operation of Project infrastructure and operations caused by; open water sources, open trenches/excavations, vehicle strike.	

Condition Clauses	TBA
Key Components In the SFMP	Key provisions are detailed in Section 3
Proposed Construction and Operation Dates	The forecast key milestones for construction and commissioning are: construction Q3 to Q4 2025. commence commissioning Q1 2026. commence operation from Q1 2026 to Q2 2026.
SFMP Required Pre-construction	Yes - this SFMP will be required to be implemented during installation of access tracks and roads into the site, following granting of licensed tenements

Declaration of accuracy

In making this declaration, I am aware that section 491 of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the Environment Protection and Biodiversity Conservation Regulations 2000 (Cth). The offence is punishable on conviction by imprisonment or a fine, or both. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed	
Full name (please print):	Celine Mangan
Organisation (please print):	Mineral Resources Ltd
Date	25/09/2024

TABLE OF CONTENTS

Executive summary ii
Abbreviations vi
1. Context, scope and rationale 1
1.1 Project Background 1
1.2 Key Environmental Factor – Terrestrial Fauna 4
1.3 Purpose And Objective 4
1.4 Rationale and Approach 5
1.5 Legislation, Policy and Guidance 5
2. Terrestrial Fauna 7
2.1 Survey And Study Findings 7
2.2 Fauna Habitats 7
2.3 Fauna Assemblage 15
2.3.1 Desktop Study 15
2.3.2 Introduced Fauna Species 15
2.3.3 Significant Fauna Species 16
2.4 Key Assumptions and Uncertainties 35
2.5 Potential Project Impacts 35
2.6 Application of the Mitigation Hierarchy 35
3. Management Provisions 40
3.1 Overview 40
3.2 Outcome Based Provisions 40
3.3 Objective-based provisions 40
3.4 Environmental Criteria, Targets and Justification 41
4. Monitoring and Evaluation 68
4.1 Environmental Audits 72
4.2 Capture and Release 72
4.3 Injured fauna management for Significant Fauna 72
5. Reporting Provisions 74
5.1 Annual Reporting 74
5.2 Exceedance Reporting 74
5.3 Trigger Exceedance 74
5.4 Threshold Exceedance 74
5.5 Management action has not been implemented 74
5.6 Management target has not been achieved 74
5.7 Incident Reporting 75
6. Roles and Responsibilities 76
7. Adaptive Management and Review 78
7.1 Review of this SFMP 78
8. Stakeholder Consultation 79
8.1 Engagement 79
8.2 Key Stakeholders 79
9. References 82

Figures

Figure 1: Development Envelope and Indicative Footprint 3
Figure 2: Fauna Habitat Within the Terrestrial Fauna Survey Area 14
Figure 3: Significant Fauna Recorded from Lamb Creek 33
Figure 4: Ghost bat category 2 and category 3 roost caves and associated exclusion zones 34

Tables

Table ES-1: Significant fauna Management plan Summary ii
Table 2: Summary of Terrestrial Vertebrate Fauna Surveys Conducted for the Project 8
Table 3: Vertebrate Fauna Habitat Types in the Study Area and Indicative Footprint, by Value 11
Table 4: Desktop Results for Significant Fauna Species Either Confirmed or Considered Possible or Likely to Occur Within 50 Km of the Survey Area. 15
Table 5: Desktop Results for Introduced (Feral) Fauna Recorded Within 50 Km of the Survey Area 16
Table 6: Environment Values and Outcomes 18
Table 7: Significant Fauna Outcome-based Management provisions 42
Table 8: Significant Fauna Objective-based Management provisions 50
Table 9: Monitoring Schedule 69
Table 10: Roles and Responsibilities 77
Table 11: Key Stakeholders for the Project 79

Appendices

Appendix A Cave Closure and Cave Disruption Protocol

Appendix B Vibration Monitoring

Appendix C Feral Animal Monitoring and Control Plan

Appendix D Risk Assessment

ABBREVIATIONS

Abbreviation	Definition
AER	Annual Environment Report
BC Act	Biodiversity Conservation Act 2016
CAR	Compliance Audit Report
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DEMIRS	Western Australian Department of Energy Mines, Industry, Regulation, and Safety
DWER	Western Australian Department of Water and Environmental Regulation
EMS	Environmental Management System
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EP Act	Environmental Protection Act 1986
EPA	Western Australian Environmental Protection Authority
FVMP	Flora and Vegetation Management Plan
GWOS	Groundwater Operating Strategy
Ha	Hectare
LiDAR	Light Detection and Ranging
MCP	Mine Closure Plan
PMI	Process Minerals International
PEOF	Pilbara Environmental Offsets Fund
RSD	Referral Supporting Document
SOP	Standard Operating Procedure
SFMP	Significant Fauna Management Plan
SWMP	Surface Water Management Plan
WRL	Waste Rock Landform

1. CONTEXT, SCOPE AND RATIONALE

1.1 PROJECT BACKGROUND

Process Minerals International (PMI; the Proponent), a wholly owned subsidiary of Mineral Resources Limited (MinRes) (ACN 118 549 910), proposes to develop the Lamb Creek Iron Ore Project (the Project), located approximately 130 kilometres (km) northwest of Newman, in the East Pilbara Local Government Authority (LGA) in Western Australia (WA).

Open pit iron ore mine located approximately 130 km northwest of Newman to produce up to 10 million tonnes per annum (Mtpa) of crushed and screened iron ore over a period of three to five years. This will comprise a multi-stage crushing and screening (two or three stages) process plant and associated mine infrastructure including, but not limited to, site offices, maintenance and equipment service area, water pipelines, fuel storage, power generation, telecommunications and an accommodation village for site personnel. Project Iron ore product will be loaded onto road trains and transported 16 km on a dedicated private haul road to its intersection with Great Northern Highway, where it will be transported 320 km to ship load-out facilities at the Utah Point berth in Port Hedland.

The Project is being referred under s. 38 of the Environmental Protection Act 1986 (EP Act) as it has the potential to significantly affect key environmental factors, defined by the WA Environmental Protection Authority (EPA) in its Statement of environmental principles, factors, objectives and aims of EIA (Environmental Protection Authority, 2021b). The Project is also being referred under the Environment Protection and Biodiversity and Conservation Act 1999 (EPBC Act) as it is likely to have a significant impact on Matters of National Significance (MNES). A Native Vegetation Clearing Permit (NVCP) under Part V of the EP Act will also be sought for the area of the Project that intersects the Great Northern Highway Road Reserve.

As a result of the various approvals being sought for the Project, there are subtle differences in the Development Envelopes (DE) and Indicative Footprints, however the overall clearing associated with the Project is the same. The maximum DE or Proposed Action Area for the EPBC referral is 897.5 ha, as the EPBC referral was based on an earlier, now revised, DE footprint. The EPBC referral DE is also slightly larger than that for the s. 38 Referral, due to the splitting of the DE between the approvals under Part IV and Part V of the EP Act. This Significant Fauna Management Plan (SFMP) has been prepared to support the submission of the Referral Supporting Document (RSD), Mining Proposal, NVCP and EPBC Referral to detail the management actions proposed to reduce adverse environmental impacts to the key environmental factor of Terrestrial Fauna and MNES.

Key nomenclature used throughout this document is summarised below:

The Project: This refers to the boundary within which the elements of the proposed activities are situated.

Project Area (897.5 ha): Refers to the maximum proposed Development Envelope (as for EPBC) within R47/19 (to be converted to M47/1592) and L47/1008, which overlie the Juna Downs pastoral lease (LPL N050471). A small portion of the access road and Great Northern Highway intersection area is within railway corridor L021124 (Hamersley Iron Pty Ltd- Yandicoogina Rail) that is excised from Juna Downs. This Project Area also includes the area of the intersection with the Great Northern Highway which is entirely within Main Roads WA road reserve.

Development Envelope (874 ha): delineates the area within which the Project components are located (**Figure 1**). and is a combination of the development envelopes included in the Part IV and Part V applications.

Indicative Footprint (646.9 ha): refers to the area that is proposed to be directly disturbed by the Project (e.g. clearing of native vegetation) (**Figure 1**) occurs entirely within the Development Envelope. The

layout of the Indicative Footprint may be subject to change; however, total disturbance will not exceed the maximum disturbance for the Development Envelope.

Terrestrial Fauna Survey Area (1645 ha): refers to the boundary within which all Terrestrial Fauna investigations and field surveys were undertaken.

This SFMP has been prepared in accordance with the *How to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans: Instructions* (Environmental Protection Authority 2021a).

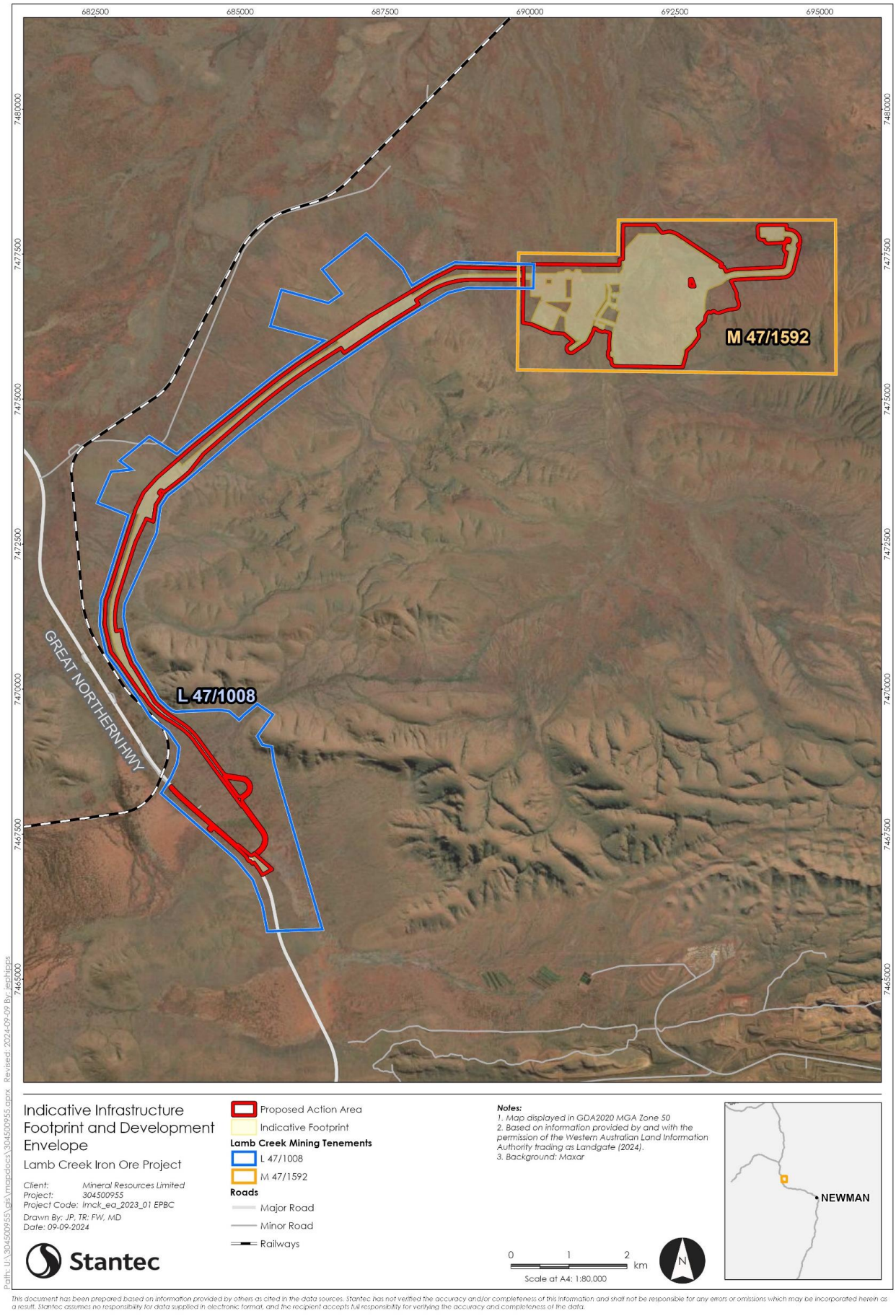

Figure 1: Development Envelope and Indicative Footprint

1.2 KEY ENVIRONMENTAL FACTOR – TERRESTRIAL FAUNA

The EPA's objective for the environmental factor of Terrestrial Fauna is "To protect terrestrial fauna so that biological diversity and ecological integrity are maintained" (Environmental Protection Authority 2016). In the context of this objective, ecological integrity is the composition, structure, function and processes of ecosystems, and the natural range of variation of these elements. Terrestrial Fauna is considered a key environmental factor for the Project due to the potential for direct and indirect impacts during construction and operation activities. Comprehensive surveying identified 21 significant species as occurring within the Study Area. Several of the fauna species are Matters of National Environmental Significance (MNES), listed at the Commonwealth and/or State level. Of the significant fauna with the potential to occur in the Study Area, the following five species were considered likely to occur in the Lamb Creek Project area and one species, the Fork-tailed Swift, was recorded:

- Northern Quoll (Dasyurus hallucatus) – Endangered.
- Ghost Bat (Macroderma gigas) – Vulnerable.
- Pilbara Leaf-nosed Bat (Rhinonicteris aurantia) – Vulnerable.
- Pilbara Olive Python (Liasis olivaceus barroni) – Vulnerable.
- Grey Falcon (Falco hypoleucos) – Vulnerable.
- Fork-tailed Swift (Apus pacificus) – Migratory, recorded.

The Proponent considers the Project can be managed to meet the EPA's objective for Terrestrial Fauna, aided by the conceptual design, planned construction and operational procedures that will be implemented to avoid, mitigate and maintain terrestrial fauna values. In addition, residual impacts from the clearing of supporting habitat for several significant fauna species is proposed to be offset through the Pilbara Environmental Offsets Fund (PEOF), managed via the Native Vegetation Clearing Permit process in accordance with Part V s 51I(2)(b) of the EP Act and in alignment with the native vegetation clearing principles in accordance with Schedule 5 cl 1 of the EP Act. These proposed offsets (to be finalised, agreed with DWER) include 42.0 ha of critical habitat (foraging and dispersal) for Northern Quoll, and 622.3 ha of supporting habitat (foraging) for Ghost Bat, and lesser portions of this 622.3 ha as supporting habitat for the Pilbara leaf-nosed Bat and Pilbara Olive Python .

1.3 PURPOSE AND OBJECTIVE

The purpose of this SFMP is to document the Proponent's approach to managing the potential impacts of construction and operation of the Project on significant fauna species to:

- Ensure that the Project is carried out in a manner that minimises the direct and indirect impacts to significant fauna species; and
- Ensure there is no direct or indirect adverse impacts to significant fauna species within the Project Area and immediate surrounds.

The Proponent is committed to avoiding and minimising potential impacts from the Project during construction and operation to ensure the biodiversity and ecological integrity of terrestrial fauna are maintained.

The objective of this SFMP is to meet the EPA's objective for the environmental factor of Terrestrial Fauna using the EPA's mitigation hierarchy of avoid, minimise, rehabilitate and offset (Government of Western Australia 2014). This will be addressed by ensuring potential impacts to significant fauna from the Project are avoided to the maximum extent practicable by:

- Identifying the risks and potential impacts from the Project on significant fauna species.

- Outlining management provisions for terrestrial fauna, to avoid and minimise potential impacts to significant fauna populations.
- Preparing and implementing monitoring programs for populations recorded within the Development Envelope; and
- Proposing corrective and response actions if triggers and thresholds are exceeded to avoid impact to significant fauna populations.

1.4 RATIONALE AND APPROACH

The SFMP focuses on outcome-based management provisions including monitoring and evaluating success of management actions with respect to significant fauna populations within the Project Area, driven by triggers and thresholds. Assessment of the pathways over which impacts may occur provides the rationale for choice of provisions and choice of appropriate indicators to measure against the environmental outcome and/or objective.

This SFMP is subject to approval by the EPA and Department of Climate Change, Energy, the Environment and Water (DCCEEW) and will subsequently be implemented.

1.5 LEGISLATION, POLICY AND GUIDANCE

This SFMP has been written in accordance with Western Australian (WA) and Commonwealth policies and guidance, including:

- Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans; (EPA 2021b).
- Environmental Impact Assessment (Divisions 1 and 2) Procedures Manual (EPA 2021a).
- Environmental Management Plan Guidelines (Commonwealth of Australia 2014).
- Outcomes-based conditions policy (DoE 2016b).
- Outcomes-based conditions guidance (DoE 2016a).
- National Light Pollution Guidelines for Wildlife (DCCEEW 2023a).
- Biodiversity Conservation Act 2016 (WA).
- Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth).

The following management plans and strategies are also relevant to the SFMP, specific to the Project and include:

- Flora and Vegetation Management Plan (FVMP).

State and Commonwealth plans and management prescriptions that are relevant to the terrestrial fauna include:

- Environmental Factor Guideline – Terrestrial Fauna (EPA 2016);
- Commonwealth Listing Advice on Northern Quoll (Dasyurus hallucatus) (Threatened Species Scientific Committee 2005).
- National Recovery Plan for the Northern Quoll Dasyurus hallucatus (Hill and Ward 2010).
- EPBC Act referral guideline for the endangered Northern Quoll Dasyurus hallucatus (DoE 2016c).
- Conservation Advice Macroderma gigas Ghost Bat (TSSC 2016).
- A review of Ghost Bat ecology, threats and survey requirements (Bat Call WA 2021a).
- Conservation Advice Rhinonicteris aurantia (Pilbara form) Pilbara Leaf-nosed Bat (TSSC 2016).
- A review of Pilbara Leaf-nosed Bat ecology, threats and survey requirements (Bat Call WA 2021c).

- Approved Conservation Advice for Liasis olivaceus barroni (Olive Python – Pilbara subspecies) (TSSC 2008).
- Conservation Advice Falco hypoleucos Grey Falcon (Threatened Species Scientific Committee 2020).
- Referral guideline for 14 birds listed as migratory species under the EPBC Act (Department of the Environment 2015).
- Matters of National Environmental Significance. Significant impact guidelines 1.1 - Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth of Australia 2013).
- Survey Guidelines for Australia's Threatened Birds (DEWHA 2010).
- Survey Guidelines for Australia's Threatened Reptiles (DSEWPaC 2011b).
- Survey Guidelines for Australia's Threatened Mammals (DSEWPaC 2011a).
- Threat Abatement Plan for Competition and Land Degradation by Feral Goats (DEWHA 2008a).
- Threat Abatement Plan for Competition and Land Degradation by Feral Rabbits (DEE 2016).
- Threat Abatement Plan for Predation by Feral Cats (DEWHA 2008b).
- Threat Abatement Plan for Predation by the European Red Fox (DEWHA 2008c).

2. TERRESTRIAL FAUNA

2.1 SURVEY AND STUDY FINDINGS

The rationale for the proposed management approach in this SFMP is supported by desktop, detailed and targeted fauna surveys that have been completed over the Lamb Creek Project area since 2012 (Rapallo 2012;2021;2022a;b; Western Wildlife 2020). The findings of these surveys are summarised in the following sections and have been used to inform the impact assessment within the RSD and EPBC Referral, and to develop mitigation measures detailed in this SFMP (**Table 2**). Surveys and studies undertaken include:

- Level 2 Fauna Survey and Targeted Northern Quoll Survey of the Lamb Creek for Process Minerals International Pty Ltd (Rapallo 2012).
- Lamb Creek and Wedge Project: Vertebrate Fauna Desktop Assessment March (Western Wildlife 2020).
- Baseline Short-range Endemic Invertebrate Survey of the Lamb Creek Iron Ore Project (Rapallo 2022a).
- Detailed Vertebrate Fauna Survey of the Lamb Creek Project (Rapallo 2022b);
- Targeted Ghost Bat Survey for the Lamb Creek Iron Ore Project (Phoenix Environmental Sciences 2023).
- Significance Assessment regarding Ghost bat Prescence at Lamb Creek (Bat Call WA 2023b).
- Ghost Bat Cave Closure at Lamb Creek (Bat Call WA 2023a).

2.2 FAUNA HABITATS

A total of 10 broad habitat types (excluding cleared areas) have been identified by Rapallo (2022b) in the Terrestrial Fauna Survey Area, and are described in detail in Section 4.6 of the EPBC Preliminary Documentation, and includes:

- gorge, gully, and rocky breakaway;
- tussock grassland plain;
- hill crests and hill slopes;
- hummock grassland;
- stony plains;
- rocky ridge and gorge;
- drainage line (minor and medium);
- rocky hills and plateaus;
- Mulga / *Corymbia* spp. plain; and
- Mulga plain.

Fauna habitats of value for significant species within the scope of this SFMP are described in **Table 3** below and shown in **Figure 2.**

Table 2: Summary of Terrestrial Vertebrate Fauna Surveys Conducted for the Project

Survey (Reference)	Study Type / Dates	Proximity to Project Area	Survey Effort	Key Findings	
				Fauna Assemblage	Significant Fauna
Level 2 Fauna Survey and Targeted Northern Quoll Survey of the Lamb Creek for Process Minerals International Pty Ltd (Rapallo 2012);	Scope Level 2 fauna survey of the Terrestrial Fauna Survey Area and adjacent areas of similar habitat. Targeted Northern Quoll survey of the Terrestrial Fauna Survey Area. Timing 19 – 20 March 2012 (reconnaissance survey). 26 March – 12 April 2012 (field surveys).	Location Study Area. Survey Area Not stated.	Desktop assessment Database searches (max 50 km buffer). Review of relevant reports. Field survey Reconnaissance survey (2 days; 10 motion cameras for two weeks). Vertebrate fauna trapping (12 Pitfall traps for 852 nights; 20 Elliot traps for 1420 nights; ten funnel traps for 710 nights). Bird surveys (two-hectare bird surveys each day). Bat surveys (two ultrasonic recorders, and Harp Traps deployed each night) Spotlighting (30-minute surveys in each habitat type). Active searching and habitat assessments (effort not stated). Remote sensing cameras (Ten motion detecting cameras at seven sites for two weeks and at an additional seven sites for six days). Opportunistic records SRE surveys (14 sites were foraged for SRE taxa and leaf litter samples collected). Targeted Northern Quoll survey (six sites of ten cage traps for five nights).	152 taxa including: 22 mammals taxa (including seven species of bats). 58 reptiles taxa. 76 birds taxa.	Fork-tailed Swift (MI, MI).
Lamb Creek and Wedge Project: Vertebrate Fauna Desktop Assessment March	Scope Desktop assessment including database searches and a review of previous fauna surveys in the region.	Location Study Area. Survey Area 3,110 ha.	Desktop assessment Database searches (within 35 km of Proposed Action Area). Review of relevant reports.	296 taxa including: 36 native mammal taxa. Nine introduced mammal taxa. 112 reptile taxa. Nine frog taxa. 130 bird taxa.	Pilbara Olive Python (VU, VU) Grey Falcon (BC Act, VU) Night Parrot (BC Act, CR; EPBC Act, EN), Northern Quoll (EN, EN)

(Western Wildlife 2020)					Bilby (VU, VU) Pilbara Leaf-nose Bat (VU, VU) Ghost Bat (VU, VU)
Baseline Short-range Endemic Invertebrate Survey of the Lamb Creek Iron Ore Project (Rapallo 2022a)	Scope Desktop assessment including invertebrate database searches and review of relevant reports undertaken. Invertebrate field survey. Timing 16 – 25 February 2021.	Location Study Area. Survey Area 1,645 ha.	Desktop assessment Database searches. Review of relevant reports. Field survey (51 sites) Habitat assessment. Spider/scorpion burrow searching. Foraging.	Desktop assessment 13 potential SRE invertebrate taxa within survey area. Field survey 25 potential SRE invertebrate taxa within survey area.	Ten undescribed or previously unsequenced potential SRE taxa.
Detailed Vertebrate Fauna Survey of the Lamb Creek Project (Rapallo 2022b)	Scope Desktop assessment including database searches and review of relevant reports undertaken. Refine 2012 fauna habitat mapping and extend fauna habitat mapping into areas not previously mapped within the Terrestrial Fauna Survey Area. Level 2 fauna survey of Terrestrial Fauna Survey Area. Timing 16 – 28 April 2020 (vertebrate fauna survey). 17 – 23 February 2021 (supplementary field work).	Location Study Area. Survey Area 1,645 ha.	Desktop assessment Five database searches (max 50 km buffer). Review of relevant reports. Field survey Systematic trapping (10 sites - 840 Pitfall trap nights; 1400 Elliot trap nights; 840 funnel trap nights). Bird surveys (500 minutes). Acoustic recording for bats (33 detector nights). Acoustic recording for night parrot (8 detector nights). Active searching (foraging and leaf litter) (2310 minutes). Opportunistic observations. Camera trapping (279 nights at transects, 73 nights at trap sites).	Desktop assessment 301 vertebrate taxa including: 157 bird taxa. 46 mammal taxa. 91 reptile taxa. 7 amphibian taxa. Field survey 128 vertebrate taxa including: 63 bird taxa. 20 mammal taxa. 44 reptile taxa. One amphibian taxa.	Pilbara Olive Python (VU, VU) Northern Quoll (EN, EN) Ghost Bat (VU, VU) Western Pebble-mound Mouse (BC Act, P4) Fork-tailed Swift (MI, MI)

Targeted Ghost Bat Survey for the Lamb Creek Iron Ore Project (Phoenix Environmental Sciences 2023)	Scope Targeted Ghost Bat survey, comprising searches for roost sites, ultrasonic recordings and scat collection and analysis. Timing 12 - 14 September 2022. 18 October 2022.	Location Study Area. Survey Area 4,397 ha.	Desktop assessment Protected Matters Search Tool DCCEEW (2023) (40 km buffer). DBCA Threatened and Priority Fauna Database (2021) (40 km buffer). Atlas of Living Australia (Atlas of Living Australia 2023) (40 km buffer). Review of relevant reports. Field Survey Habitat assessment. Habitat/cave searches (Five caves). Bat echolocation recordings. Scat collection and analysis. Cave status assessment.	Desktop assessment 113 Ghost Bat records including: Three within the survey area; and 110 in wider search extent Field survey Seven bat species including: Ghost Bat (Macroderma gigas). Greater Northern Free-tailed Bat (Chaerephon jobensis). Common Sheathtailed Bat (Taphozous georgianus). Hill's Sheath-tailed Bat (Taphozous hilli). Gould's Wattled Bat (Chalinolobus gouldii). Little Broad-nosed Bat (Scotorepens greyii). Finlayson's Cave Bat (Vespadelus finlaysoni).	Ghost Bat (VU, VU)

Table 3: Vertebrate Fauna Habitat Types in the Study Area and Indicative Footprint, by Value

Habitat Type (Rapallo 2022b)	Description	Value to Significant Fauna	Extent within the Survey Area - ha	Area within Indicative Footprint - ha (% within survey area)
Gorge, gully, and rocky breakaway	Wide rocky gullies and gorges that bisect the hillcrest / hillslopes of the higher elevation areas containing caves, deep cracks, and crevices. Breakaways occur at the rugged edges of hillslopes. Spinifex hummock grassland with mixed shrubland patches or occasional *Ficus* spp. occurring in shaded locations or occasional *Eucalyptus leucophloia*.	High Value: • Potential foraging and dispersal habitat for Pilbara Olive Python, Northern Quoll, Ghost Bat and Peregrine Falcon. • Potential breeding habitat for Pilbara Olive Python, Northern Quoll and Peregrine Falcon. • Potential shelter habitat for Pilbara Olive Python and Northern Quoll. • Potential habitat for Pilbara Barking Gecko (*Underwoodisaurus seorsus*) and Gane's Blind Snake (*Anilios ganei*).	54.64	0.00 (0%)
Hillcrests / hillslope	Slopes and hill crests of higher elevation areas. Spinifex hummock grassland dominated with scattered *Eucalyptus leucophloia* trees and mallee, and *Acacia* spp. and *Grevillea* spp. shrubs on rocky, red skeletal soils (loams to clay/loam).	Moderate Value: • Possible foraging and dispersal habitat for Ghost Bat, Western Pebble-mound Mouse and Northern Quoll. • Possible breeding habitat for Western Pebble-mound Mouse.	318.48	50.42 (15.83%)
Mulga / *Corymbia* spp. plain	Open Mulga shrubland patches over spinifex hummock or tussock grassland on loam to sandy clay loam occurring in areas of sheet flow drainage. The Mulga patches are surrounded by run-off zones of stonier plain with open spinifex / tussock grassland under very open Mulga / *Corymbia deserticola* shrubland.	Moderate Value: • Possible foraging and dispersal habitat for Ghost Bat and Grey Falcon. • Possible habitat for Gane's Blind Snake.	290.88	180.78 (62.15%)
Minor drainage	Smaller narrow drainage channels and shallow gullies that bisect the stony plain habitat and hill slopes, forming flow zones on the valley floor. Mixed open shrubland, to shrubland often over tussock grass and herbs with occasional fringing trees (scattered *Eucalyptus leucophloia*, *Corymbia* spp. or *Eucalyptus gamophylla*).	Moderate Value: • Possible foraging and dispersal habitat for Ghost Bat, Grey Falcon, Peregrine Falcon, Pilbara Olive Python and Northern Quoll.	210.36	75.23 (35.76%)

Habitat Type (Rapallo 2022b)	Description	Value to Significant Fauna	Extent within the Survey Area - ha	Area within Indicative Footprint - ha (% within survey area)
Tussock grassland plain	Tussock grass (*Aristida inaequiglumis*, *Aristida contorta*, *Themeda triandra*) dominated, largely undefined drainage plain. Contains occasional open Mulga woodland stands or scattered Mulga individuals on brown sandy clay loam to loams. Contains patches of spinifex.	Moderate Value: • Possible foraging and dispersal habitat for Ghost Bat, Grey Falcon and Peregrine Falcon. • Potential habitat for Gane's Blind Snake.	137.33	6.08 (4.43%)
Medium drainage	Wide loamy drainage channels to undefined drainage (gravelly) containing occasional emergent *Corymbia hamersleyana* over patches of low mixed shrubs over Buffel Grass and tussock grass dominated understory on low relief. Contains very occasional Mulga stands in loamier soils.	Moderate Value: • Possible foraging and dispersal habitat for Ghost Bat, Grey Falcon, Pilbara Olive Python, Northern Quoll and Peregrine Falcon. • Possible breeding and nesting habitat for Grey Falcon. • Potential habitat for Gane's Blind Snake.	112.97	43.41 (38.43%)
Stony plain	Plains and lower slopes of spinifex hummock grasslands (or in small patches, tussock grass) on red sandy clay loam to loam soil. Typically, with a mantle of gravel (less so on the valley floor adjacent to drainage, where soils are loamier). Little to no overstory aside from scattered trees or patches of mixed shrubs often regenerating from fire. Generally, *Eucalyptus leucophloia* occurs on the slopes and *Eucalyptus gamophylla* on lower slopes, with *Corymbia hamersleyana* typically associated with drainage.	Low Value: • Possible foraging and dispersal habitat for Ghost Bat, Grey Falcon, Western Pebble-mound Mouse and Pilbara Olive Python. • Possible breeding and shelter habitat for Western Pebble-mound Mouse.	517.07	266.35 (51.51%)
Bitumen Road	N/A	N/A	0.83	0.32 (38.55%)
Unmapped*	N/A	N/A	29.94	24.28 (81.10%)
Total			1642.56	646.87 (39.38%)

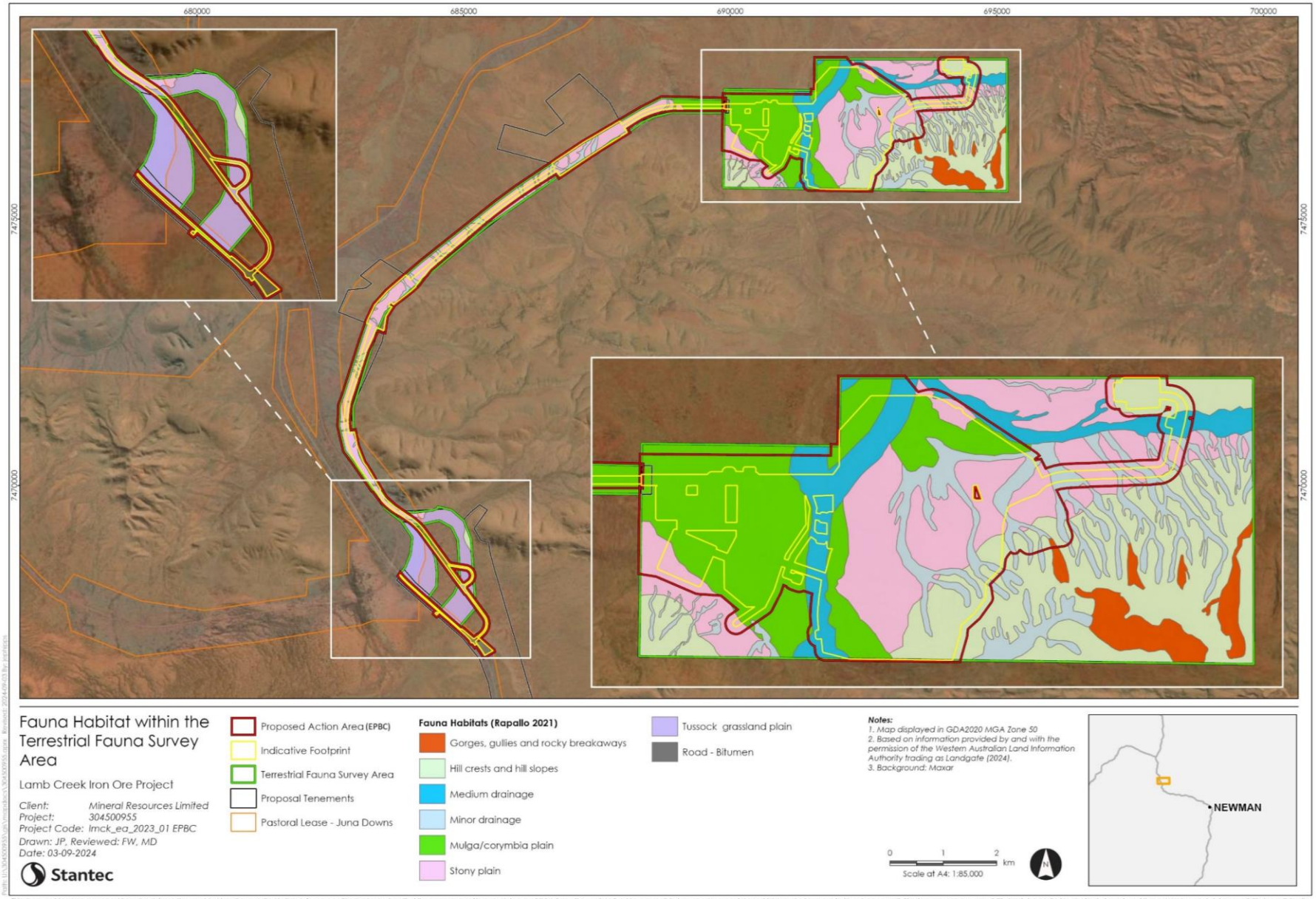

Figure 2: Fauna Habitat Within the Terrestrial Fauna Survey Area

2.3 FAUNA ASSEMBLAGE

2.3.1 Desktop Study

Desktop assessments indicate a predicted fauna assemblage of up to 301 species of terrestrial vertebrate fauna recorded within 50 kilometres of the survey area (Rapallo 2022b). These included 157 species of birds, 46 mammals, 91 reptiles and 7 amphibians. The Rapallo 2022b desktop study identified 29 taxa of conservation significant fauna, of which 12 were assessed as possible, likely or confirmed to occur within 50 km of the Survey Area (**Table 4:** Desktop Results for Significant Fauna Species Either Confirmed or Considered Possible or Likely to Occur Within 50 Km of the Survey Area.). The other 17 taxa of conservation significant fauna were considered unlikely or highly unlikely to occur in the Study Area due to the absence of suitable habitat and are therefore not addressed further in this SFMP.

Table 4: Desktop Results for Significant Fauna Species Either Confirmed or Considered Possible or Likely to Occur Within 50 Km of the Survey Area.

Common Name	Scientific Name	Likelihood
Fork-tailed Swift	Apus pacificus	Confirmed
Peregrine Falcon	Falco peregrinus	Likely
Night Parrot	Pezoporus occidentalis	Possible
Grey Falcon	Falco hypoleucos	Possible
Letter-winged Kite	Elanus scriptus	Possible
Ghost Bat	Macroderma gigas	Confirmed
Short-tailed Mouse	Leggadina lakedownensis	Possible
Northern Quoll	Dasyurus hallucatus	Confirmed
Western Pebble-mound Mouse	Pseudomys chapmani	Confirmed
Pilbara Olive Python	Liasis olivaceus barroni	Confirmed
Pilbara Barking Gecko	Underwoodisaurus seorsus	Likely
Gane's Blind Snake	Anilios ganei	Likely

2.3.2 Introduced Fauna Species

Rapallo (2022b) identified 10 introduced (feral) fauna as potentially occurring within the Terrestrial Fauna Survey Area. Of these, four were recorded within the Terrestrial Fauna Survey Area during fauna surveys (Rapallo 2012;2022b;Table 4: Desktop Results for Significant Fauna Species Either Confirmed or Considered Possible or Likely to Occur Within 50 Km of the Survey Area.**Table 5:** Desktop Results for Introduced (Feral) Fauna Recorded Within 50 Km of the Survey Area). Introduced fauna species such as foxes and cats are declared pests which present key threats to the native mammals likely to occur within the Development Envelope, such as the Northern Quoll (Department of the Environment 2016).

Table 5: Desktop Results for Introduced (Feral) Fauna Recorded Within 50 Km of the Survey Area

Common Name	Scientific Name	Likelihood
Rock Dove	*Columba livia	Unlikely
European Cattle	*Bos taurus	Confirmed
Dromedary, Camel	*Camelus dromedarius	Confirmed
Dog	*Canis familiaris familiaris	Confirmed
Red Fox	*Vulpes vulpes	Likely
Donkey	*Equus asinus	Unlikely
Horse	*Equus caballus	Unlikely
Cat	*Felis catus	Confirmed
Rabbit	*Oryctolagus cuniculus	Likely
House Mouse	*Mus musculus	Confirmed

2.3.3 Significant Fauna Species

Of the 29 taxa of conservation significant fauna identified by the desktop study (Rapallo 2022b), 10 fauna species of significance were either confirmed from field surveys or considered likely to occur within the Development Envelope based on desktop and habitat assessments undertaken during field surveys (Rapallo 2012;2021; Western Wildlife 2020). These are discussed below. For the Night Parrot, given the lack of suitable habitat, recent fire activity and the absence of any detections within the Study Area, the species is considered unlikely to occur and is therefore not addressed within the SFMP. The Letter-winded Kite is also not addressed as no species were recorded and the Development Envelope is outside of the species known distribution.

2.3.3.1 Significant Fauna Recorded in the Development Envelope

Two fauna species of significance were confirmed within the Development Envelope based on the detailed in-field fauna surveys (Rapallo 2012;2022b). These species are:

- Western Pebble-mound Mouse (Pseudomys chapmani) (P4 under BC Act).
- Fork-tailed Swift (Apus pacificus) (MI, MI).

The Fork-tailed Swift occurs within the Project Area but is almost entirely aerial and will not be impacted by the Project. Therefore, it is not addressed within the SFMP.

2.3.3.2 Significant Fauna Likely to Occur in the Development Envelope

Eight fauna species of significance are considered likely to occur within the Development Envelope, based on desktop assessments and habitat assessments undertaken during field surveys (Rapallo 2012;2021; Western Wildlife 2020), these species are:

- Ghost Bat (Macroderma gigas) (En, En);
- Pilbara Leaf-nosed Bat (Rhinonicteris aurantia) (Vu, Vu);
- Northern Quoll (Dasyurus hallucatus) (En, En);
- Pilbara Olive Python (Liasis olivaceus barroni) (Vu, Vu);

- Gane's Blind Snake (Anilios ganei) (P1 under the BC Act);
- Pilbara Barking Gecko (Underwoodisaurus seorsus) (P2 under the BC Act);
- Grey Falcon (Falco hypoleucos) (Vu, Vu); and
- Peregrine Falcon (Falco peregrinus) (Other specially protected species under the BC Act).

The conservation significant species confirmed or considered likely to occur within the Development Envelope are described in detail in the RSD and are the focus of this SFMP. The six species classed as MNES are discussed in the EPBC Preliminary Documentation (Northern Quoll, Ghost Bat, Pilbara Leaf-nosed Bat, Pilbara Olive Python, Grey Falcon and Fork-tailed Swift). A summary of environmental values and outcomes relevant to these nine species are summarised in **Table 6**. Significant fauna records are shown in Figure 3: Significant Fauna Recorded from Lamb Creek**Figure 3.**

Table 6: Environment Values and Outcomes

Conservation Significant Species	Habitat Requirements, Cultural importance, Ecology and Distribution	Key Threats	Potential Project Related Impacts	Status within Development Envelope	Expected Outcome
Ghost Bat (*Macroderma gigas*) - VU / VU	**Description** The Ghost Bat is a large, cave-dwelling, microbat species. **Distribution** The species was once widely distributed across Australia, but is now largely restricted to northern Australia, including parts of the Pilbara and Kimberley regions of WA. **Ecology** Its preferred habitat is within arid spinifex hillsides, black soil grasslands, monsoon forest, open savannah woodland, tall open forest, deciduous vine forest, tropical rainforest, sandstone caves, boulder piles, limestone caves and abandoned mines. The Ghost Bat can forage over large areas up to 12 km from their diurnal roost with a preference for productive plain areas with thin mature woodland over patchy or clumped tussock or hummock grass (*Triodia* spp.) on sandy or stony	Threatening processes: • Habitat loss and degradation (McKenzie and Hall 2008; TSSC 2016). • altered hydrological regimes. • exposure to pollutants. • barbed wire fences. • human visitation / disturbance.	Potential Impacts to Ghost Bats as a result of this Project include: • loss of potential foraging and roost habitat ('rocky ridge' and 'gorge') due to clearing. • loss or abandonment of potential foraging and roost habitat due to blasting. • Direct mortality of individuals if present within the Development Envelope.	• No Ghost Bat caves have been located within the Development Envelope. • Ghost Bats have been recorded within the Terrestrial Fauna Survey Area as have Ghost Bat roosting caves. • No night, diurnal or maternity roosts have been found within the Development Envelope. • Two Ghost Bat roost caves (one Category 2 and one Category 3) are present outside (approximately 750 m to the south) of the Development Envelope. • A cluster of caves occurs in the southern extent of the Project Area close to the proposed haul road near its intersection with the Great Northern Highway intersection (Category 2, Category 3). • The Project will result in clearing of up to 622.3 ha of foraging habitat comprising the following broad fauna habitat types	• The loss of 622.3 ha of foraging habitat for the Ghost Bat as a result of the Project may be considered to be a **significant residual impact within** the Hamersley Bioregion (Environmental Protection Authority 2014). However, the Proponent considers that this impact can be managed via the Native Vegetation Clearing Permit process in accordance with Part V s 51I(2)(b) of the EP Act and in alignment with the native vegetation clearing principles in accordance with Schedule 5 cl 1 of the EP Act. • The proposed removal of 622.3 ha of supporting habitat is considered **likely to have a significant impact** on the Ghost Bat when assessed

Conservation Significant Species	Habitat Requirements, Cultural importance, Ecology and Distribution	Key Threats	Potential Project Related Impacts	Status within Development Envelope	Expected Outcome
	ground (Bat Call WA 2021a). **Cultural Importance** Cultural importance of this species to Traditional Owners, as well as cultural appropriateness of control/mitigation methods was raised at the June 2024 on Country engagement with Banjima and no specific concerns were raised. Banjima considers all fauna to be important.			occurring within the Indicative Footprint. These comprise the following habitats, and the percentage of the mapped extent of this habitat type mapped within the broader Terrestrial Fauna Survey Area: • hill crests and hill slopes (50.42 ha, 18.83%). • medium drainage (43.41 ha, 38.43%). • minor drainage (75.23 ha, 35.76%). • Mulga/*Corymbia* spp. plain (180.77 ha, 18.83%). • stony plain (266.35 ha, 51.51%). • tussock grassland plain (6.08 ha, 4.43%). • The Project will not result in direct disturbance to or the loss of critical Ghost Bat caves. • Given the distance from known caves to proposed operation and blasting areas, it is unlikely that blasting will cause any	against the DCCEEW criteria and is proposed to be offset as it has the potential to: • adversely affect habitat critical to the survival of a species.

Conservation Significant Species	Habitat Requirements, Cultural importance, Ecology and Distribution	Key Threats	Potential Project Related Impacts	Status within Development Envelope	Expected Outcome
				physical damage to known Ghost Bat roost caves. It is also considered unlikely that the structural integrity of caves, or roosting site viability, will be adversely impacted by blasting or other operational elements such as vibration from the Project. • Cave 1 will be temporarily closed during construction and operation to prevent impacts to Ghost Bats while the mine is operational (Bat Call WA 2023a).	
Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*) – VU / VU	**Description** The Pilbara Leaf-nosed Bat is of moderate size, having short fur, relatively small, pointed ears and a fleshy diamond-shaped noseleaf surrounding the nostrils. **Distribution** The Pilbara Leaf-nosed Bat occurs throughout the Pilbara and upper Gascoyne regions of WA, with the Pilbara population considered to be a single interbreeding	Threatening processes: • Habitat loss and degradation. • altered hydrological regimes. • exposure to pollutants. • barbed wire fences.	Potential impacts to Pilbara Leaf-nosed bats as a result of this Project include: • loss of potential foraging and roost habitat ('rocky ridge' and 'gorge') due to clearing. • loss or abandonment of potential foraging and	• This species has not been recorded in the Development Envelope. • No Critical habitat (as defined by (DBCA et al. 2023)) identified within the Development Envelope • No caves or permanent / semi-permanent surface water pools were identified within the Development Envelope; therefore, this species is likely to	No significant residual impact expected to occur to the Pilbara Leaf- nosed Bat: • No Critical habitat (as defined by (DBCA et al. 2023) identified within the Development Envelope • The proposed removal of 622.3 ha of potential foraging habitat (within Development Envelope) for Pilbara Leaf- nosed Bat species

Conservation Significant Species	Habitat Requirements, Cultural importance, Ecology and Distribution	Key Threats	Potential Project Related Impacts	Status within Development Envelope	Expected Outcome
	population comprising multiple colonies (Threatened Species Scientific Committee 2016). The Pilbara Leaf-nosed Bat population of the Pilbara and Gascoyne regions is considered an important population as it comprises multiple colonies that form one interbreeding population (Threatened Species Scientific Committee 2016). **Ecology** The species requires warm, humid daytime roost sites and forages in gorges along watercourses and over low spinifex-covered hills (Threatened Species Scientific Committee 2016). The breeding cycle for the Pilbara Leaf-nosed Bat occurs over a nine-month period with mating occurring in July, parturition occurring in late December or early January (following a prolonged gestation period), resulting in the young becoming independent between	• human visitation / disturbance.	roost habitat due to blasting. • direct mortality of individuals if present within the Development Envelope.	use the potential foraging habitat for the species within the Development Envelope as a foraging visitor intermittently, only.	is likely to be used as a foraging visitor intermittently, only.

Conservation Significant Species	Habitat Requirements, Cultural importance, Ecology and Distribution	Key Threats	Potential Project Related Impacts	Status within Development Envelope	Expected Outcome
	February and March (Armstrong 2001b). Foraging in a variety of habitats including the characteristic Triodia hummock grasslands of the Pilbara, the Pilbara Leaf-nosed Bat favours the highly productive and structurally complex riparian zones where water is permanently available and insect biomass is sufficiently high (Armstrong 2001a; McKenzie and Bullen 2013). Critical habitat, as defined by (DBCA *et al.* 2023) , includes permanent diurnal (categories 1 and 2) roosts that are essential for the daily and long-term survival of the Pilbara Leaf-nosed Bat; semi-permanent diurnal (category 3) roosts that are essential for the long-term survival of the Pilbara Leaf-nosed Bat; and any permanent pools close to permanent diurnal roosts. **Cultural Importance** A June 2024 on-Country Social Surrounds				

Conservation Significant Species	Habitat Requirements, Cultural importance, Ecology and Distribution	Key Threats	Potential Project Related Impacts	Status within Development Envelope	Expected Outcome
	engagement with the Banjima People included enquiries on the cultural importance of fauna species as well as cultural appropriateness of control/mitigation methods. No specific information or concerns were raised, other than stating that all fauna are considered important.				
Northern Quoll (*Dasyurus hallucatus*) – EN / EN	**Description** The Northern Quoll is a nocturnal marsupial and the smallest of the four Australian quoll species. **Distribution** It is currently moderately common within the Pilbara and is found scattered across the four subregions of the Pilbara. (Rapallo 2022b). **Ecology** The Northern Quoll favours rocky habitats (e.g., escarpments, mesas, gorges, breakaways, boulder fields and some waterways) for shelter and breeding, with foraging occurring in adjacent vegetation. Northern Quolls have	Threatening processes: • predation by invasive fauna (e.g., feral cats and foxes) (DCCEEW 2023b). • poisoning from cane toads. • loss of suitable habitat. • altered fire regimes.	Potential impacts to the Northern Quoll as a result of this Project include: • loss of potential foraging and dispersal habitat ('medium and minor drainage, and hillcrest/hillslope habitats) due to clearing. • direct mortality of individuals if present within the Development Envelope. Indirect impacts due to increased	• The Northern Quoll has not been recorded in the Development Envelope. • The Northern Quoll was recorded approximately 5 km south of the Development Envelope within the Terrestrial Fauna Survey Area during 2012 (Rapallo 2012) indicating that a low-density population may occur in the Development Envelope surrounds, or that the records to date can be attributed to individuals dispersing from nearby populations. No evidence of the species was found during the 2020 survey (Rapallo 2022c).	The removal of 42 ha of critical habitat and 125.6 ha of supporting habitat for Northern Quoll is considered **likely to have a significant impact,** when assessed against the DCCEEW criteria and is proposed to be offset as it has the potential to: • adversely affect habitat critical to the survival of a species.

Conservation Significant Species	Habitat Requirements, Cultural importance, Ecology and Distribution	Key Threats	Potential Project Related Impacts	Status within Development Envelope	Expected Outcome
	short life spans, with males living for approximately one year and the oldest recorded female in the wild being three years of age. The species breed once each year exhibiting synchronous reproduction within each year at each site. **Cultural Importance** A June 2024 on-Country Social Surrounds engagement with the Banjima People included enquiries on the cultural importance of fauna species as well as cultural appropriateness of control/mitigation methods. No specific information or concerns were raised, other than stating that all fauna are considered important.		predation from feral animals.	• Based on the absence of records and minimal denning habitat (0.06 ha) present within the Development Envelope, it is unlikely that an important high-density population of Northern Quoll as defined by the DoE (2016c) occurs within the Development Envelope. However the Northern Quolls recorded within the Proposed Action Area are considered a low density important population based on the records occurring in habitat which is free from cane toads and is therefore considered important for the long-term survival of the Northern Quoll (Hill and Ward 2010). • No potential denning habitat for the Northern Quoll (gorges, gullies, rocky breakaways) is proposed for clearing. Clearing of up to 43.41 ha of suitable foraging and dispersal habitat (medium drainage lines)	

Conservation Significant Species	Habitat Requirements, Cultural importance, Ecology and Distribution	Key Threats	Potential Project Related Impacts	Status within Development Envelope	Expected Outcome
				representing 38% of the mapped extent of this habitat for the species within the broader Terrestrial Fauna Survey Area has the potential to impact this species.	
Pilbara Olive Python (*Liasis olivaceus barroni*) – VU / VU	**Description** The Pilbara Olive Python is a dull olive-brown or rich brown python with a white/cream belly that can grow up to 4 m in length. **Distribution** The subspecies is restricted to ranges in the Pilbara and is known from relatively few localities. **Ecology** The species' preferred habitat is often associated with open water, such as swamps and surface water pools. Typical habitat is found along larger waterways in environments with rocky hills, escarpments, and plains dominated by dense vegetation such grassy mounds of *Triodia*. **Cultural Importance** A June 2024 on-Country Social Surrounds	Threatening processes: • predation by invasive fauna (e.g., feral cats and foxes). • competition for food sources with invasive fauna. • habitat destruction as a result of resource project development (TSSC 2008).	Threats to the Pilbara Olive Python as a result of this Project include: • loss of potential dispersal habitat ('medium drainage system') due to clearing. • direct mortality of individuals if present within the development envelope.	• This species has not been recorded in the Development Envelope but is considered likely to occur in the Development Envelope at least as a foraging visitor. • No clearing of potential denning habitat for the Pilbara Olive Python (gorges, gullies, rocky breakaways) is proposed. • The Project will result in the clearing of up to 118.6 ha of suitable foraging and dispersal habitat (medium and minor drainage lines) representing 36.69% of the mapped extent of this habitat for the species within the broader Terrestrial Fauna Survey Area.	The proposed clearing of 118.6 ha of supporting habitat for Pilbara Olive Python is **likely to have a significant impact,** when assessed against the DCCEEW criteria and is proposed to be offset as it has the potential to adversely affect habitat critical to the survival of a species.

Conservation Significant Species	Habitat Requirements, Cultural importance, Ecology and Distribution	Key Threats	Potential Project Related Impacts	Status within Development Envelope	Expected Outcome
	engagement with the Banjima People included enquiries on the cultural importance of fauna species as well as cultural appropriateness of control/mitigation methods. No specific information or concerns were raised, other than stating that all fauna are considered important.				
Western Pebble-mound Mouse (*Pseudomys chapmani*) – P4	**Description** The Western Pebble-mound Mouse is a small, burrowing and mound building rodent. **Distribution** The species is currently restricted to the non-coastal central, eastern and southern parts of the Pilbara bioregion. **Ecology** The Western Pebble-mound Mouse lives in pebbly soils in arid tussock grassland and Acacia woodland. The species is associated with eroding sands at natural features that expose pebbles. **Cultural Importance**	Threatening processes: • loss of suitable habitat; and • predation by invasive fauna (e.g., feral cats and foxes).	Potential impacts to the Western Pebble-mound Mouse as a result of this Project include: • habitat loss due to clearing; and • direct mortality of individuals.	• This species is commonly recorded within suitable habitat throughout the Hamersley and Chichester subregions of the Pilbara bioregion. • A total of 29 Western Pebble-mound Mouse mounds have been identified within the EPBC Development Envelope and 19 of these are also within the Indicative Footprint. This represents 47.5% of the total number of mounds of this species that have been found during surveys of the area (40 mounds) most of which were deemed to be active (Rapallo 2022c).	**No significant residual impacts** to Western Pebble-mound Mouse due to habitat clearing, fragmentation or direct mortality of individuals are expected.

Conservation Significant Species	Habitat Requirements, Cultural importance, Ecology and Distribution	Key Threats	Potential Project Related Impacts	Status within Development Envelope	Expected Outcome
	The Western Pebble-mound Mouse has been reported to be of special cultural importance to the Banjima People. During the June 2024 on-Country Social Surrounds engagement presented information showing the mouse was relatively common in the area and the Project design footprint had avoided known mounds as much as practicable. Banjima did not have any additional information or further concerns to offer other than that all fauna ae considered important.			• There are numerous records of this species in the surrounding area (Rapallo 2022c). • Threats to the Western Pebble-mound Mouse as a result of this Project include habitat loss resulting from clearing, and direct mortality of individuals. • Stony plain habitat represents preferred habitat for the Western Pebble-mound Mouse; however, this habitat occurs extensively throughout the Hamersley subregion. • The Project will result in the loss of no more than 266.4 ha preferred habitat (stony plain) for this species comprising 51.5% of the mapped extent of this habitat type in the broader Terrestrial Fauna Survey Area.	
Gane's Blind Snake (*Anilios ganei*) – P1	**Description** The species grows to about 30 cm in length. The upper body is a deep	Threatening processes: • loss of suitable habitat.	Potential impacts to the Gane's Blind Snake as a result of this Project include:	• Gane's Blind Snake was not recorded in the Development Envelope during fauna surveys (Rapallo 2022c).	**No significant residual impacts** are expected to occur for this species and the Project is not expected to adversely affect the

Conservation Significant Species	Habitat Requirements, Cultural importance, Ecology and Distribution	Key Threats	Potential Project Related Impacts	Status within Development Envelope	Expected Outcome
	grey-brown, the belly cream. **Distribution** The species is only known from a few locations and/or specimens. **Ecology** Potential habitat for this species may include the gorge, gully, breakaway, medium drainage, tussock grassland and Mulga / Corymbia spp. plain habitats. **Cultural Importance** A June 2024 on-Country Social Surrounds engagement with the Banjima People included enquiries on the cultural importance of fauna species as well as cultural appropriateness of control/mitigation methods. No specific information or concerns were raised, other than stating that all fauna are considered important.	• predation by invasive fauna (e.g., feral cats and foxes).	• habitat loss due to clearing. • direct mortality of individuals if present within the Development Envelope.	• Potentially suitable habitat for this species occurs within the Development Envelope, comprising gorge, gully, breakaway, medium drainage, tussock grassland and Mulga / Corymbia spp. plain habitats. • Suitable habitat for this species is widespread outside of the Development Envelope within the broader Terrestrial Fauna Survey Area.	conservation status of Gane's Blind Snake.
Pilbara Barking Gecko (*Underwoodisaurus seorsus*) – P2	**Description** The Pilbara Barking Gecko is a large carphodactylid gecko, with a large head, long slender limbs and digits.	Threatening processes: • loss of suitable habitat.	Potential impacts to the Pilbara Barking Gecko as a result of this Project include: • habitat loss due to clearing.	• The Pilbara Barking Gecko has not been recorded within the Development Envelope. • Potentially suitable habitat, such as gorge /	**No significant residual impacts** are expected to occur for this species and the Project is not expected to adversely affect the

Conservation Significant Species	Habitat Requirements, Cultural importance, Ecology and Distribution	Key Threats	Potential Project Related Impacts	Status within Development Envelope	Expected Outcome
	Distribution The species is known from a few locations and/or specimens within the Hamersley Range area of the Pilbara bioregion. **Ecology** Its preferred habitat is in rocky areas and gullies. **Cultural Importance** A June 2024 on-Country Social Surrounds engagement with the Banjima People included enquiries on the cultural importance of fauna species as well as cultural appropriateness of control/mitigation methods. No specific information or concerns were raised, other than stating that all fauna are considered important.	• predation by invasive fauna (e.g., feral cats and foxes).	• direct mortality of individuals if present within the Development Envelope.	gully and breakaway habitats occur within the Development Envelope and surrounds. • Preferred habitat for this species occurs at higher elevation which would coincide with the location of the proposed pit; however, relatively limited clearing is required in this area of the Indicative Footprint, comprising 15.8% of the total hill crests and hill slopes habitats within the mapped extent in the Terrestrial Fauna Survey Area.	conservation status of the Pilbara Barking Gecko.
Grey Falcon (*Falco hypoleucos*) – VU / VU	**Description** The Grey Falcon is a compact, pale grey falcon with a heavy thick chest, long wings and dark wing tips. **Distribution** The species occurs in arid and semi-arid Australia, including the Murray-Darling Basin, Eyre Basin,	Threatening processes (TSSC 2020): • predation by invasive fauna (e.g., feral cats and foxes).	Potential impacts to the Grey Falcon as a result of this Project include: • habitat loss due to clearing. • direct mortality of individuals if present within the	• The Grey Falcon has not been recorded from the Development Envelope. • This species is considered is likely to occur in the Development Envelope occasionally while foraging (Rapallo 2022c). • Large areas of foraging habitat for this species	**No significant residual impacts** are expected to occur for this species and the Project is not expected to adversely affect the conservation status of the Grey Falcon.

Conservation Significant Species	Habitat Requirements, Cultural importance, Ecology and Distribution	Key Threats	Potential Project Related Impacts	Status within Development Envelope	Expected Outcome
	central Australia and Western Australia. **Ecology** Its preferred habitat is usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast (Menkhorst *et al.* 2019). The Grey Falcon forages over timbered plains, including *Acacia* shrublands, also ranging out onto treeless plains. It nests in tall trees on watercourses (Threatened Species Scientific Committee 2020) and occasionally on man-made structures such as transmission line towers. **Cultural Importance** Further consultation is required to determine the cultural importance of this species to Traditional Owners, as well as cultural appropriateness of control/mitigation methods, if needed.	• loss of suitable habitat. • Increased temperatures in arid and semi-arid Australia (i.e., climate change).	Development Envelope.	occurs in the Development Envelope and surrounds including hills/ranges, stony plain, and lower slopes/hillslopes habitat. Preferred nesting habitat for this species occurs at higher elevation which would coincide with the location of the proposed pit; however, relatively limited clearing (50.4 ha) is required in this area of the Indicative Footprint, 15.8% of the total hill crests and hill slopes habitats within the mapped extent in the Terrestrial Fauna Survey Area.	
Peregrine Falcon (*Falco peregrinus*)	**Description**	Threatening processes:	Potential impacts to the Peregrine Falcon	• The Peregrine Falcon has not been recorded from	**No significant residual impacts** are expected to

Conservation Significant Species	Habitat Requirements, Cultural importance, Ecology and Distribution	Key Threats	Potential Project Related Impacts	Status within Development Envelope	Expected Outcome
Other specially protected species	A large falcon with a blue-grey back, barred white underparts, and a black head. Distribution The species is known to occur across Australia, but not common in any areas of its Australian range. **Ecology** The Peregrine Falcon is found in most habitats, from rainforest to arid habitats, including coastal and alpine regions. It prefers coastal and inland cliffs, or open woodlands near water. In arid areas, it is most often encountered along cliffs above rivers, ranges and wooded watercourses where it hunts birds (Johnstone and Storr 1998). This species typically nests on rocky ledges occurring on tall, vertical cliff faces between 25 m and 50 m high (Olsen and Olsen 1988). **Cultural Importance** Further consultation is required to determine the cultural importance of	• predation by invasive fauna (e.g., feral cats and foxes); • loss of suitable habitat; and • Increased temperatures in arid and semi-arid Australia (i.e., climate change).	as a result of this Project include: • habitat loss due to clearing; and • direct mortality of individuals if present within the Development Envelope.	the Development Envelope. • The Peregrine Falcon is considered uncommon in the Hamersley Range, nesting in cliff type habitat. • Peregrine Falcon forage over a wide area and would use most habitats within the Development Envelope while foraging. • Preferred nesting habitat for this species occurs at higher elevation which would coincide with the location of the proposed pit; however, relatively limited clearing (50.4 ha) is required in this area of the Indicative Footprint, 15.8% of the total hill crests and hill slopes habitats within the mapped extent in the Terrestrial Fauna Survey Area.	occur for this species and the Project is not expected to adversely affect the conservation status of the Peregrine Falcon.

Conservation Significant Species	Habitat Requirements, Cultural importance, Ecology and Distribution	Key Threats	Potential Project Related Impacts	Status within Development Envelope	Expected Outcome
	this species to Traditional Owners, as well as cultural appropriateness of control/mitigation methods, if needed.				

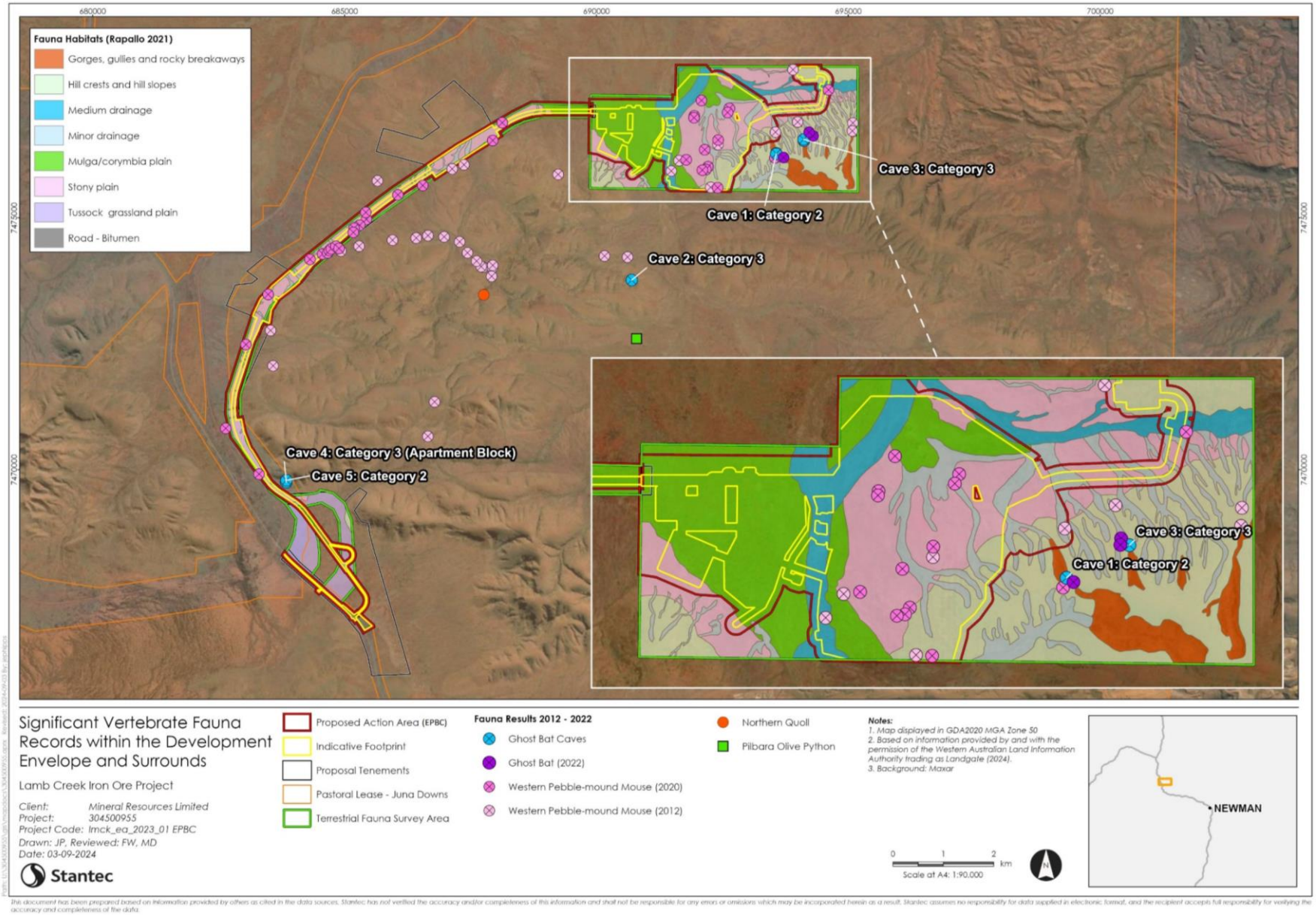

Figure 3: Significant Fauna Recorded from Lamb Creek

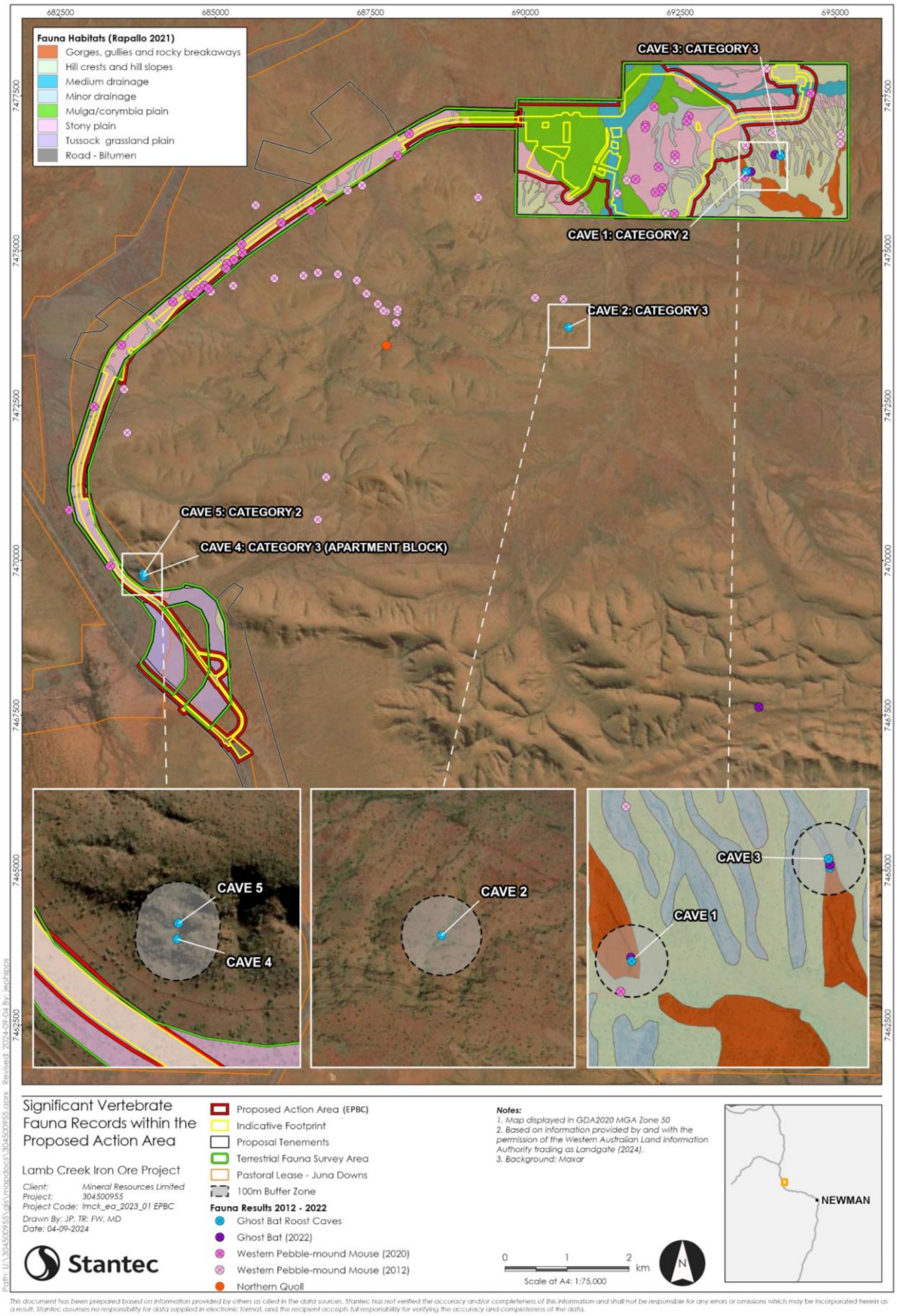

Figure 4: Ghost bat category 2 and category 3 roost caves and associated exclusion zones

2.4 KEY ASSUMPTIONS AND UNCERTAINTIES

The key assumptions and uncertainties that apply to terrestrial fauna are summarised as follows:

- It is assumed that the fauna surveys that were undertaken accurately report the distribution and status of fauna of significance, and their preferred habitats, in the Terrestrial Fauna Survey Area.
- It is assumed that the likelihood and severity of predicted impacts to terrestrial fauna are described accurately.
- The majority of significant fauna species identified are highly mobile with notably large home ranges, such that point location records for individuals represent the usage of available foraging/breeding habitat (rather than fixed permanent locations of individuals).
- It is assumed that, by applying the EPA's mitigation hierarchy (avoid, minimise, rehabilitate, offset) throughout the life of the Project, the impacts of the Project on significant species will be minimised.
- The Terrestrial Fauna Survey Areas experienced fires in recent years prior to the 2020 terrestrial fauna surveys being undertaken, and the vegetation over most of the survey area was regenerating and relatively sparse compared to unburnt conditions. This is likely to have influenced the overall diversity and abundance of species; however, where possible, trap sites were positioned in areas of unburnt habitat within the burn mosaic. Therefore, results may be conservative with regard to the presence and distribution of significant species and their habitat.
- The Project is located in the Pilbara bioregion where the presence, activity and detectability of fauna is driven by climatic conditions, particularly rainfall events. Climatic factors are outside of the Proponent's control and may impact on the health and extent of populations of significant fauna.
- Natural seasonal and spatial fluctuations of populations of significant species make it more difficult to determine whether population changes are due to natural causes or can be attributed to the Project.

2.5 POTENTIAL PROJECT IMPACTS

The Project may directly and indirectly impact on terrestrial fauna and short-range endemic (SRE) invertebrate fauna, with the potential direct impact identified as:

- clearing of native vegetation resulting in habitat loss.
- fragmentation of fauna habitat.
- fauna injury or mortality as a result of ground disturbance, machinery, blasting, vehicle strikes and entrapment.

The potential indirect impacts have been identified as:

- fauna mortality as a result of a potential increase in the prevalence of introduced species and feral predators.
- noise, vibration and/or artificial light disrupting natural foraging and breeding behaviours.
- potential decline or change in the health/composition of fauna habitat arising from dust, weeds, fire regime or hydrological regime changes.'

An assessment of the potential impacts and risks to the MNES resulting from the Project has been undertaken and is included as **Appendix D**. Results of the risk assessment have been used to develop management measures that form part of this SFMP.

2.6 APPLICATION OF THE MITIGATION HIERARCHY

Mitigation measures for potential impacts of the Project on terrestrial fauna are detailed within **Section 5.3** of the EPBC Referral Supporting Document and have been updated and consolidated within this

SFMP. Mitigation measures have focused on significant fauna, where relevant, aligning with the management provisions.

The Project will **avoid** impacts to significant fauna via the following:

- Proposed clearing has been minimised as far as practicable to reduce the extent of disturbance required; the Proponent has revised the Development Envelope from 1,399 ha to 874 ha (898 ha for EPBC).
- Placement of infrastructure in the high significance habitat of gorges, gullies and rocky breakaways has been fully avoided for example through the re-design and relocation/reduction of the northern WRL and northern topsoil stockpile. In addition disturbance of the high significance habitat of hills, ranges and plateaus has been minimised through the re-design of the access road and camp location.
- A Land Access and Land Clearing Procedure will be implemented to ensure all clearing works are compliant with regulatory requirements and are within approved boundary. This includes requirements for weed hygiene to prevent introduction or spread of weeds.
- The area to be cleared shall be clearly demarcated and machinery operators made aware of the operational boundary, following confirmation with the relevant manager. Some heavy equipment used may have in-cab GPS mapping and alarm functions however in the absence of this functionality, pegging of clearing boundaries supplemented with other control measures such as the use of spotters and/or restricting clearing to the daylight hours will be used to prevent unauthorised clearing.
- Habitat and fauna surveys have been undertaken to identify key areas and species to avoid.
- Cave 1 to be temporarily closed during construction and operation which will eliminate risk of habitation and nursing by Ghost Bats which may be impacted from mining activity (e.g., vibration from blasting, excavation, haulage and overburden stacking). The cave structural integrity should be protected and when reopened after operations Ghost Bats are expected to return to the cave.
- No Barbed wire in new fencing will be used by the Proponent, subject to consultation with the pastoralist. If however, the pastoralist requires use of barbed wire for effective stock management, bat deflectors/reflectors between the top two strands will be used within the Project Area.
- Prohibit feeding of all fauna.
- Prohibit entry to caves, unless authorised.
- Ensure artificial lighting is not directed toward habitat of high significance.
- Demarcate areas that may not be entered by personnel and/or machinery.
- Intersection of the haul road with GNH, and an additional 100 m past the intersection, will be sealed to reduce the generation of dust.
- Road haulage iron ore loads will be covered.
- Ground clearing (including topsoil stripping) shall not be undertaken during periods of high winds (unless soil moisture levels are also elevated enough to inhibit dust formation).
- Off-road driving shall be prohibited unless authorised by management.
- Avoid hot work in fire sensitive areas and during high fire risk days.
- Haul road and Development Envelope design shall consider surface water flow to minimise obstruction to seasonal overland water flow to the loamy drainage flats proximal to the GNH.
- The Project will **minimise** impacts to terrestrial fauna via the following:
- Spatially restricted Indicative Footprint and short life of mine.
- Implement SFMP.
- Where placement of infrastructure such as the pit shell cannot avoid habitat of higher significance (e.g. drainage lines), minimise clearing as far as practicable.

- Minimise noise from vehicles / machinery and blasting etc. to avoid disturbance to roosting bats through appropriate selection of machinery reducing the number and duration of operating machines required to achieve the work.
- Replace the top strands of barbed wire in fences in the Project Area with single-strand wire, subject to consultation with pastoralist. If however the pastoralist requires use of barbed wire for effective stock management, bat deflectors/reflectors between the top two strands will be used within the Project Area
- Implement a 100 m radius exclusion zone around recorded Category 2 and Category 3 Ghost Bat roosts.
- Vehicles and equipment shall be restricted to designated roads, tracks, and cleared areas.
- Laydown areas will be situated in previously disturbed locations.
- Temporary Closure of Cave 1. Closure of Cave 1 is likely to be closed by using a lightweight steel frame fitted to the entrance and bird aviary steel netting or any heavier style with apertures not exceeding 100 mm. This would exclude Ghost bats but smaller species up to 10g such as Pilbara leaf-nosed bats (Rhinonicteris aurantia) or Finlayson's cave bat (Vespadelus finlaysoni) would be able to pass through unharmed. Other small fauna of a similar size including reptiles, frogs and snakes would also be able to access the cave. With regard to larger fauna such as Quolls, Dingoes and/or Macropod species that will be excluded by the closures, Lamb Creek Cave 1 is situated in an area with numerous alternative deep overhangs and shallow caves that are suitable for their foraging and/or resting activities. Each of these species is known to travel significant distances on a daily basis (Bat Call WA 2023a).
- Avoid providing accessible artificial water sources.
- Driving between dusk and dawn shall be minimised and light vehicle use will be limited with crews to be bused to and from camp to minimise traffic during start and end of shift.
- Machinery and vehicle movements that must be undertaken between dusk and dawn will be limited to low speeds on access tracks.
- Excavations and trenches will be kept open only as long as needed to undertake the work and egress points will be provided dependant on depth / morphology of the excavation.
- Any steep-sided holes (e.g., sumps) will be fitted with egress matting or another method of escape to avoid fauna entrapment.
- Regular inspection of all excavations and sumps shall be undertaken to minimise fauna mortality in accordance with **Table 8**.
- Native fauna shall not be fed or intentionally harmed.
- Environmental responsibility awareness training shall be delivered to all personnel as part of the induction process.
- Ensure food waste is disposed of appropriately so it cannot be accessed by fauna.
- Targeted control program to be implemented (e.g., shooting or trapping) where increased presence of feral animals are observed on site.
- Noise, vibration and artificial light awareness shall be delivered to all personnel as part of the induction process.
- Regular inspection and maintenance of vehicles and equipment shall be undertaken to ensure no excessive operating noise is experienced from faulty machinery and noise suppression equipment is operating adequately.
- Ensure blasting is undertaken during daylight hours and is strictly controlled to minimise air blast and ground vibration.
- Minimise the use of artificial lighting needed for safe operation, use directional and / or screened lighting, and when required for safety, avoid light spill onto important habitats (e.g., rocky outcrops).

- Implement the FVMP.
- Dust suppression shall be implemented to manage dust emission on cleared areas and iron ore handling areas.
- Stockyard ore product will be conditioned through addition of water to ensure dust extinguishing moisture limits are maintained (as per export license stipulations)
- Speed limits shall apply on sealed and unsealed roads.
- Blasting plans will consider meteorological conditions to minimise dust lift off.
- Dust awareness and dust management shall be delivered to all personnel as part of the induction process.
- A Weed Management Plan shall be prepared and implemented as part of the FVMP, prior to construction and operation, to control access and movement of vehicles and construction personnel to prevent the introduction and spread of weeds into the Development Envelope, weed free areas, and between work areas.
- Vehicles and equipment to be cleaned, inspected and issued with a Weed Hygiene Certificate prior to entry to site or moving between known weed infested areas on-site, (as per controls in Flora and Vegetation Management Plan).
- Weed awareness and weed hygiene shall be delivered to all personnel as part of the induction process.
- Fire management awareness shall be delivered to all personnel as part of the induction process.
- Firebreaks will be incorporated into mine layout planning in accordance with the local government firebreak notice under s. 33 of the Bush Fires Act 1954.
- Smoking will only be permitted in designated areas, which shall be appropriately signed and contain self-arresting cigarette butt disposal containers.
- An Emergency Response Plan shall be prepared and implemented.
- An Emergency Response Team shall be formed in accordance with requirements regulated by DEMIRS.
- The Emergency Response Team will ensure that sufficient fire suppression equipment is located as per the Emergency Response Plan.
- Hot Work shall be completed under a Hot Work Permit and in accordance with MRL-SAF-PRO-0081 Hot Work Procedure.
- Traffic Management Plan shall be prepared and implemented.
- All vehicles and machinery will be fitted with fire extinguishers and/or in-plant fixed water suppression.
- Implement surface and groundwater management strategies in accordance with the Surface Water Management Plan (SWMP) and Groundwater Operating Strategy (GWOS).
- The Project will **rehabilitate** impacts to terrestrial fauna via the following:
- Progressive rehabilitation of foraging habitat within close proximity of roost habitat (<2 km from Category 2 and Category 3 Ghost Bat caves).
- Drainage management structures identified as remaining post-closure shall meet recognised Australian drainage design specifications.
- The open pit will be backfilled to a minimum of 5 m above the baseline groundwater level.
- Progressive rehabilitation of disturbed areas will be undertaken throughout the life of mine, as far as practicable.
- Implement an appropriate rehabilitation plan (surface treatments; seed selection, collection, storage and management) in accordance with the approved Mine Closure Plan (MCP).
- Seasonal weed control programs shall be implemented, as required.

- Weeds which are physically removed will be disposed of within the backfilled pit or waste rock landform and buried.
- Salvage and stockpile particular vegetation types, soil, or habitat features (e.g., vegetation, stumps, logs, and boulders) for use in rehabilitation programs.
- Rehabilitation shall include spatially heterogenous habitat with appropriate refuge areas to increase ability for animals to disperse between patches.
- Ensure all drill holes are capped as soon as reasonably practicable.
- The Project will **offset** impacts to terrestrial fauna via the following:
- Impacts to terrestrial fauna associated with the Proposed Action will be managed and mitigated to ensure that potential impacts to terrestrial fauna are managed to an acceptable level. Residual impacts to habitat areas from clearing and construction are proposed to be offset for 42.0 ha of critical habitat for the Northern Quoll, and 622.3 ha of supporting habitat for the Ghost Bat.

3. MANAGEMENT PROVISIONS

3.1 OVERVIEW

The SFMP outlines the requirements to avoid, minimise, manage, monitor, and rehabilitate direct and indirect impacts to significant fauna from the Project, aligning with the EPA's mitigation hierarchy. The subsequent sections identify the management provisions that will be implemented by the Proponent for the Project to ensure that the environmental objectives, criteria, targets, and outcomes are met for terrestrial fauna. Where unacceptable environmental outcomes remain post the implementation to controls measure such as permanent loss of significant species habitat, offset strategies will be proposed. The SFMP will be reviewed and updated as required, following an adaptive management approach (Section 7).

3.2 OUTCOME BASED PROVISIONS

This SFMP focuses on outcome-based provisions, which are performance-based and can be applied. The objectives developed are measurable, and the success of management actions can be monitored and reported. Outcome-based provisions specify triggers and thresholds (environmental criteria) for direct impacts that are quantifiable and specifically relate to terrestrial fauna (**Table 7**). Where required, suitable response and corrective actions are also recommended for the environmental criteria. The following outcomes-based provisions have been established:

- No unauthorised clearing within exclusion zones around recorded Category 2 and Category 3 Ghost Bat roosts.
- No statistically significant project-related increase in feral animal abundance as a result of project-related activities
- No adverse impacts to critical Ghost Bat cave (Cave 1) resulting from vibration levels from blasting activities; and
- Maintain the structural integrity of Cave 1.

3.3 OBJECTIVE-BASED PROVISIONS

Objective-based provisions relate to environmental management actions that are not specifically measurable. They specify management actions according to management targets, particularly for indirect impacts that are not quantifiable. The objective-based management provisions have been outlined in (**Table 8**) and are intended to prevent project-related adverse impacts to terrestrial fauna (including significant fauna species) within proximity to the Project with appropriate management actions and monitoring actions. The following objectives-based provisions have been established:

- No clearing of vegetation shall occur outside of the approved, demarcated clearing area(s) during construction or operation.
- Minimise Project-related direct interactions per year (e.g., vehicle strike, interaction with fencing) for significant fauna resulting in injury or mortality.
- Minimise adverse impacts to significant fauna as a result of increase in feral animal abundance.
- Minimise Project related disturbance of significant fauna from noise, vibration and artificial light.
- Minimise Project related decline to fauna habitat quality (e.g. vegetation health) due to dust, weeds, and hydrocarbon or chemical leaks and altered hydrological regimes.
- Effective operation of the Project to minimise the risk of Project related fire.

3.4 ENVIRONMENTAL CRITERIA, TARGETS AND JUSTIFICATION

The development of environmental objectives and criteria for outcome-based provisions within the SFMP are based on available data and information and align with the purpose of the SFMP. Outcome-based provisions utilise monitoring and reporting to assess against the measurable environmental criteria. In addition to these outcome-based provisions, objective-based provisions have been applied with management targets.

During monitoring, where threshold criteria (outcome-based) or management targets (objective-based) are exceeded, and are project-related, response and corrective actions are provided, and will be implemented, as appropriate. Monitoring will inform adaptive management, with the revision of environmental criteria, and response or corrective actions, as required (**Section 7**).

Justification for the management provisions outlined in the SFMP are based on the following:

- Clearing of critical habitat for significant fauna species has the potential to result in direct impacts to individuals and indirect impacts through habitat loss. The management approach focuses on minimising clearing undertaken where possible through design and the implementation of progressive rehabilitation. In addition to this, exclusion zones will be placed around recorded Category 2 and Category 3 Ghost Bat roosts within proximity to the Development Envelope.
- Feral animals are an existing key threat to significant species in the vicinity of the Project. An indicative Feral Animal Monitoring and Control Plan has been proposed within **Appendix C**. This feral animal monitoring and control program aims to reduce predation pressure on significant fauna for populations that are potentially impacted by the Project for the life of the Project. It is anticipated that monitoring will demonstrate a decrease in feral animal numbers below that of baseline levels over the duration of the control program.
- The Project has the potential to negatively impact upon the occurrence of significant species through indirect impacts, in particular vibration from blasting to bat habitat in proximity to the Development Envelope. The indicative cave closure procedure and vibration monitoring (**Appendix A**, **Appendix B**) aims to reduce potential impacts to roosting Ghost Bats in proximity to the Development Envelope and allow for Ghost Bats to return to roost at viable caves post-operations and removal of any temporary cave closure structures (where structural integrity has been retained) post mining.
- Habitat degradation through altered fire regimes, contamination or the introduction of weeds could negatively impact upon critical habitat for significant species and in some instances may increase the risk of fire. Weed introduction and spread will be managed and monitored as part of the FVMP. Mitigation to minimise the risk of project related fire within the SFMP focuses on avoidance through maintaining equipment, training, and the implementation of fire prevention practices.

Table 7: Significant Fauna Outcome-based Management provisions

EPA Factor and Objective		Terrestrial Fauna: to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.						
SFMP Purpose		*To avoid adverse project-related impacts to terrestrial vertebrate fauna including significant fauna and associated habitat.*						
Outcomes-Based Management Objectives		Trigger and Threshold Criteria		Trigger and Threshold Response Actions		Monitoring	Timing / Frequency of Monitoring	Reporting
		Trigger Criteria	Threshold Criteria	Trigger Level Actions	Threshold Level Actions and Contingency Actions.			

TF1	No unauthorised clearing within exclusion zones around recorded Category 2 and Category 3 Ghost Bat roosts.	Clearing occurs within 50 m of the 100 m radius exclusion zone around recorded Category 2 and Category 3 Ghost Bat roosts.	Clearing occurs within 100 m buffer implemented around exclusion zone around recorded Category 2 and Category 3 Ghost Bat roosts.	• If unplanned clearing within 50 m of the 100 m radius exclusion zone, report internally as an incident in accordance with internal procedures.
				• Investigate details of clearing within 50 m of 100 m exclusion zone to confirm activity approved and met conditions (e.g. Land Activity Permit (LAP)).
				• If clearing not approved or conditions not adhered to, review management strategies and implement changes to prevent future occurrences
					• Undertake investigation to determine source of disturbance. If source is project-related, undertake a review to determine if impact can be minimised, develop actions to prevent recurrence and communicate findings to relevant personnel.
					• Suitably qualified person to undertake an assessment of degree of potential impact(s) resulting from the unauthorised clearing incident to significant fauna population and habitat which may include:
					  ◦ Area and extent of habitat cleared.
					  ◦ Monitor significant fauna population, as appropriate.
					• Undertake rehabilitation of unauthorised clearing as required, in accordance with rehabilitation procedures, with the aim
						• Monitoring of clearing register for compliance to approvals.
						• Internal audit and inspection of areas of clearing.
						• Clearing activities will be audited regularly to ensure compliance with LAP conditions, including prior to LAP close out. This includes confirmation that all clearing has been completed within the LAP boundary).
							• Post clearing
							• Post clearing
							• Post clearing
							• Annual
							•
								Regular reporting:
								• Monitoring reports- clearing register and Internal clearing permits (LAP).
								• Submit an annual compliance assessment report as part of the Annual Environment Report to the DWER.
								• Internal incident reporting and investigation process. Report any non-compliances with the LAP and Land Clearing Procedure.
								Exceedance Reporting:
								• Trigger threshold exceedance (report in accordance with Section 5.3
								• Threshold exceedance (report in accordance with Section 5.4

EPA Factor and Objective	Terrestrial Fauna: to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.						
SFMP Purpose	*To avoid adverse project-related impacts to terrestrial vertebrate fauna including significant fauna and associated habitat.*						
Outcomes-Based Management Objectives	Trigger and Threshold Criteria		Trigger and Threshold Response Actions		Monitoring	Timing / Frequency of Monitoring	Reporting
	Trigger Criteria	Threshold Criteria	Trigger Level Actions	Threshold Level Actions and Contingency Actions.			
			which may include the following: Audit and review of training and staff inductions (increase staff training and awareness to include information on buffers, legislative requirements, and appropriate clearing procedures). Review of the potential impact(s) of unauthorised clearing and report any non-compliance to appropriate regulator within 10 days of identification. Installation of signage where appropriate.	to reinstate habitat for significant fauna. • Report as a non-compliance to appropriate regulator within 10 days of confirmed identification. • Investigation report to be submitted to appropriate regulator with remediation actions proposed within 28 days of original notification. <u>Contingency action:</u> • Temporarily cease clearing activities. • Should unauthorised clearing take place in critical habitat, consult with DBCA about any additional management actions required.	• Land disturbance will be reconciled annually, as a minimum, for compliance and reporting purposes. •		
	Actual and planned clearing within Development Envelope exceeds 90% of the approved	Actual clearing within the Development Envelope exceeds the approved clearing limit (646.9 ha).	• Report internally as an incident in accordance with internal procedures. • Notify Registered Manager • Confirm extent of existing approved	• Cease all clearing activities: • Undertake investigation to: • Identify likely cause of incident. • Report incident to DWER			

EPA Factor and Objective		Terrestrial Fauna: to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.						
SFMP Purpose		*To avoid adverse project-related impacts to terrestrial vertebrate fauna including significant fauna and associated habitat.*						
Outcomes-Based Management Objectives		Trigger and Threshold Criteria		Trigger and Threshold Response Actions		Monitoring	Timing / Frequency of Monitoring	Reporting
		Trigger Criteria	Threshold Criteria	Trigger Level Actions	Threshold Level Actions and Contingency Actions.			
		clearing limit (646.9 ha).		ground disturbance via audit of clearing records. • Do not authorise any further LAPs if threshold criterion may be exceeded.	• Undertake consultation with relevant government authorities (DWER and DCCEEW) and stakeholders. • Undertake corrective rehabilitation, as required. • Review of relevant approvals, in consultation with DWER and DCCEEW • Undertake further education and awareness training			
TF2	No statistically significant increase in feral animal abundance, in comparison to baseline levels. as a result of project-related activities.	Monitoring data indicate a marked increase in the abundance or activity of feral animals.	Monitoring indicates a significant increase in the abundance or activity of feral animals over two consecutive monitoring events, in comparison to baseline levels.	• Report internally as an incident in accordance with internal procedures • Review management strategies and implement changes to prevent future occurrences. • Identify key causes for increased feral animal population and investigate	• Report any confirmed non-compliance to appropriate regulator within 10 days of identification. • Identify key causes for increased feral animal population and investigate possible causes, for example poor waste management, artificial ponding of water that may attract fauna. Examples of Project related activities which may contribute to an	• Monitor feral animals in accordance with the Feral Animal Monitoring and Control Plan (**Appendix C**). • Record observations of feral animals in accordance with Feral Animal Monitoring	• Undertake 2 years baseline feral animal monitoring prior to and during construction and early operations. In accordance with **Appendix C**. • As triggered.	Regular reporting: • Submit an annual compliance assessment report as part of the Annual Environment Report to the DWER . • Feral animal control contractor reports. Exceedance Reporting: • Trigger threshold exceedance (report in accordance with Section 5.3). • Threshold exceedance (report in accordance with Section 5.4).

EPA Factor and Objective	Terrestrial Fauna: to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.						
SFMP Purpose	*To avoid adverse project-related impacts to terrestrial vertebrate fauna including significant fauna and associated habitat.*						
Outcomes-Based Management Objectives	Trigger and Threshold Criteria		Trigger and Threshold Response Actions		Monitoring	Timing / Frequency of Monitoring	Reporting
	Trigger Criteria	Threshold Criteria	Trigger Level Actions	Threshold Level Actions and Contingency Actions.			
			possible causes, for example poor waste management, artificial ponding of water that may attract fauna. • If increase in presence of feral animals is attributed to project-related activities, undertake a review of procedures to determine if impact can be minimised, develop corrective actions with consideration of the following: • Incident Reporting Procedure to record sightings of feral animals. • Educate staff and local traffic on the	increase in feral animal numbers include: • Animals accessing artificial water sources. • An increase in numbers following construction of linear infrastructure: Feral animals readily use roads, tracks and other cleared access ways over denser vegetation or complex topography. • Accessing food waste not properly disposed of; and • Incidences where feral animals are being fed. • If increase in presence of feral animals is attributed to project-related activities, undertake a review of procedures to determine if impact can be minimised, develop corrective actions with consideration of the following:	and Control Plan (**Appendix C**). • Internal incident reporting and investigation process.		

EPA Factor and Objective	Terrestrial Fauna: to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.						
SFMP Purpose	*To avoid adverse project-related impacts to terrestrial vertebrate fauna including significant fauna and associated habitat.*						
Outcomes-Based Management Objectives	Trigger and Threshold Criteria		Trigger and Threshold Response Actions		Monitoring	Timing / Frequency of Monitoring	Reporting
	Trigger Criteria	Threshold Criteria	Trigger Level Actions	Threshold Level Actions and Contingency Actions.			
			importance of not feeding feral animals and correct waste disposal as well as reporting all sightings. • Conduct a review of waste management practices and improve practices accordingly. • Revise Feral Animal Monitoring and Control Plan (**Appendix C**) accordingly: Increase frequency and intensity of feral control actions, as appropriate. Audit and review of training and staff inductions (increase staff training and awareness around feral animal control).	• Audit and review of training and staff inductions (increase staff training and awareness around feral animal control, ensure awareness material is included in inductions). • Increase frequency and intensity of feral animal control actions if required as per Feral Animal Monitoring and Control Plan (**Appendix C**). Investigate and implement additional/alternative control measures to control feral animal populations according to industry best practice for example review the waste management plan. Contingency Action: • Should multiple threshold exceedances occur, undertake a review of the effectiveness of threshold value with respect to			

EPA Factor and Objective		Terrestrial Fauna: to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.						
SFMP Purpose		*To avoid adverse project-related impacts to terrestrial vertebrate fauna including significant fauna and associated habitat.*						
Outcomes-Based Management Objectives		Trigger and Threshold Criteria		Trigger and Threshold Response Actions		Monitoring	Timing / Frequency of Monitoring	Reporting
		Trigger Criteria	Threshold Criteria	Trigger Level Actions	Threshold Level Actions and Contingency Actions.			
					baseline data and implement adaptive management process in consultation with DBCA/ DWER/ DCCEEW accordingly.			
TF3	No adverse impacts to Cave 1 resulting from vibration levels from blasting activities.	In situ vibration levels from blasting approaches modelled vibration predictions recorded (between 20 and 24.99 mm/sec PPV modelled to occur at Cave 1).	In situ vibration levels from blasting exceeds modelled vibration predictions of 25 mm/sec PPV at Cave 1 and damage to the structural integrity of Cave 1 occurs.	• Temporarily cease blasting activities until inspection of Cave 1 is undertaken, prior to the next planned blast. • Report internally as an incident in accordance with internal procedures • Cave inspection to be undertaken by an appropriately qualified person at the discretion of the Registered Mine Manager in consultation with the Environmental Manager, after blast to ensure that no structural damage to cave 1 has occurred	• Temporarily cease blasting activities. • Report any confirmed non-compliance to appropriate regulator within 10 days of identification. • Undertake Cave assessment after blast to determine extent of structural damage to cave 1 (following appropriate safety procedures ensuring that cave structural integrity can be assessed safely by personnel). • Review management strategies and implement changes to prevent future occurrences. • Blast engineer to review and re-calibrate blast conditions accordingly.	• Vibration monitoring (**Appendix B**). • Internal incident reporting and investigation process.	• During blasting (data logger). • As triggered.	Regular reporting: • Submit an annual compliance assessment report as part of the Annual Environment Report to the DWER. • Vibration monitoring reporting. • Internal incident reporting (in accordance with Section 5.7). Exceedance Reporting: • Trigger threshold exceedance (report in accordance with Section 5.3). • Threshold exceedance (report in accordance with Section 5.4).

EPA Factor and Objective		Terrestrial Fauna: to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.						
SFMP Purpose		*To avoid adverse project-related impacts to terrestrial vertebrate fauna including significant fauna and associated habitat.*						
Outcomes-Based Management Objectives		Trigger and Threshold Criteria		Trigger and Threshold Response Actions		Monitoring	Timing / Frequency of Monitoring	Reporting
		Trigger Criteria	Threshold Criteria	Trigger Level Actions	Threshold Level Actions and Contingency Actions.			
				(following appropriate safety procedures ensuring that cave structural integrity can be assessed safely by personnel). • Should no structural damage to Cave 1 be reported, the blast engineer to review and re- calibrate blast conditions accordingly to within modelled predictions, prior to undertaking subsequent blast.				
	Maintain the structural integrity of Cave 1	Minor (e.g. small rockfall not obscuring entrance to cave with minimal disturbance to roosting bats) Structural damage occurs at Cave 1	Moderate to Major (e.g. large rock fall obscuring cave entrance, cavity/ piercing of the lateral extent of the cave impacting the cave microclimate)	• Report internally as an incident in accordance with internal procedures • Ensure cave remains closed in accordance with procedure in Appendix A • Investigate the cause and the extent of the structural damage	• Investigate the cause and the extent of the structural damage to the cave (following appropriate safety procedures ensuring that cave structural integrity can be assessed safely by personnel). • Ensure cave remains closed in accordance with procedure in Appendix A.	• Vibration monitoring (**Appendix B**) • Internal incident reporting and investigation process.	• In accordance with **Appendix B** • As triggered.	Regular reporting: • Submit an annual compliance assessment report as part of the Annual Environment Report to the DWER. • Vibration monitoring reporting. • Geotechnical/photographic cave assessment monitoring reports.

EPA Factor and Objective	Terrestrial Fauna: to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.						
SFMP Purpose	*To avoid adverse project-related impacts to terrestrial vertebrate fauna including significant fauna and associated habitat.*						
Outcomes-Based Management Objectives	Trigger and Threshold Criteria		Trigger and Threshold Response Actions		Monitoring	Timing / Frequency of Monitoring	Reporting
	Trigger Criteria	Threshold Criteria	Trigger Level Actions	Threshold Level Actions and Contingency Actions.			
		related structural damage occurs to Cave 1	to the cave (following appropriate safety procedures ensuring that cave structural integrity can be assessed safely by personnel). • Review management strategies and implement changes to prevent future occurrences. • Audit and review of training and staff inductions (increase staff training and awareness). • Revise monitoring schedule, accordingly, for example increase frequency of inspections, photographic monitoring and/ or LiDAR capture/ geotechnical assessment of the cave	• Undertake additional LiDAR and/or photographic recording of the cave. • The appropriate regulator will be notified within 10 days of a confirmed breach of a Management Target(s) being known, with a report provided via email including any corrective actions identified once an investigation has been completed. • A follow up report detailing the adequacy of the response actions will also be submitted to the appropriate regulator within 12 months of the initial notification or within the ACAR. • Review management strategies and implement changes to prevent future occurrences. • Undertake appropriate corrective rehabilitation of the cave in consultation with DBCA/ DWER as soon as practicable			• Internal incident reporting (in accordance with Section 5.7). Exceedance Reporting: • Trigger threshold exceedance (report in accordance with Section 5.3). • Threshold exceedance (report in accordance with Section 5.4).

Table 8: Significant Fauna Objective-based Management provisions

EPA Factor and Objective	Terrestrial Fauna: To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.
Significant Fauna Values	Nine conservation significant fauna species and associated habitat recorded or considered likely to occur in the Development Envelope: • Ghost Bat (Macroderma gigas) (En, En); • Pilbara Leaf-nosed Bat (Rhinonicteris aurantia) (Vu, Vu); • Northern Quoll (Dasyurus hallucatus) (En, En); • Pilbara Olive Python (Liasis olivaceus barroni) (Vu, Vu); • Gane's Blind Snake (Anilios ganei) (P1 under the BC Act); • Pilbara Barking Gecko (Underwoodisaurus seorsus) (P2 under the BC Act); • Grey Falcon (Falco hypoleucos) (Vu, Vu); and • Peregrine Falcon (Falco peregrinus) (Other specially protected species under the BC Act).
SFMP Purpose	To avoid adverse project-related direct and indirect impacts to terrestrial vertebrate fauna including significant fauna and associated habitat.
Key Impacts and Risks	Potential risk to long term viability of local and regional populations of conservation significant fauna, due to direct impacts from clearing of native vegetation or direct and indirect impacts from mining activities (**Appendix D**)

Management Targets	Management Priority	Management Actions	Monitoring	Timing	Responsible	Reporting

No clearing of vegetation shall occur outside of the approved, demarcated clearing area(s) during construction or operation.	High	• Implement the LAP process and Procedure.
		• Clearing awareness training is to be undertaken by all personnel involved in clearing activities, including specific information on significant fauna within the Development Envelope, the requirements for clearing, and the LAP and Land Clearing Procedure processes.
			• Visual inspections for evidence of:
			  • adherence to boundary demarcation compliance.
			  • unauthorised access or clearing (e.g., observations of vehicles or machinery, vehicle tracks, damage to fencing or vegetation).
				• During construction (pre-clearing clearing and post-clearing activities).
				• Imagery analysis annually, or as required, to monitor clearing extent.
				• As triggered.
					• Project Manager
					• Construction
					• Operations
					• Environment Manager
					• Environment Team.
						Regular reporting:
						• Monitoring reports-clearing register and Internal clearing permits.
						• Submit an annual compliance assessment report as part of the Annual Environment Report to the DWER.
						• Internal incident reporting and investigation process. Report any non-compliances with the

Management Targets	Management Priority	Management Actions	Monitoring	Timing	Responsible	Reporting

		• Proposed clearing has been minimised as far as practicable to reduce the extent of disturbance required; the Proponent has revised the Development Envelope from 1,399 ha to 874 ha (898 ha for EPBC).
		• A LAP and the Land Clearing Procedure will be implemented to ensure all clearing works are compliant with regulatory requirements and are within approved boundary.
		• The area to be cleared shall be clearly demarcated and machinery operators made aware of the operational boundary, following confirmation with the relevant manager. Some heavy equipment will have in-cab GPS mapping and alarm functions, however in the absence of this functionality, other control measures such as the use of spotters and/or restricting clearing to the daylight hours could be used to prevent unauthorised clearing.
			• Monitoring of clearing register for compliance to approvals:
			  • Clearing activities will be audited regularly to ensure compliance with LAP conditions, including prior to LAP close out. This includes confirmation that all clearing has been completed within the LAP boundary.
			  • Land disturbance will be reconciled annually, as a minimum, for compliance and reporting purposes.
			• Internal incident reporting and investigation process.
						LAP and Land Clearing Procedure.
						Exceedance Reporting:
						• Management action has not been implemented (report in accordance with Section 5.5).
						• Management target has not been achieved (report in accordance with Section 5.6).

Management Targets	Management Priority	Management Actions	Monitoring	Timing	Responsible	Reporting
		• Delineate clearing boundary areas by qualified surveyors in the field and confirmed cleared areas via survey after clearing. • Coordinates for clearing extents will be provided to the Construction Contractor. • Vehicles and equipment shall be restricted to designated roads, track and cleared areas unless authorised under a LAP.				
No statistically significant increase in feral animal abundance. as a result of project-related activities.	High	• Avoid providing accessible artificial water sources. • Prohibit feeding of all fauna. • Spatially restricted Indicative Footprint and short life of mine. • Environmental responsibility awareness training shall be delivered to all personnel as part of the induction process. • Ensure food waste is disposed of appropriately so it cannot be accessed by fauna. • Feral animal monitoring and subsequent	• Record and monitor the presence and abundance of feral fauna compared to baseline presence and abundance to determine the effectiveness of control programs. • Implement feral animal control at seasonally appropriate time. • Maintain a register of all introduced fauna sightings.	• Baseline monitoring of feral animal presence to be undertaken over 2 year period prior to and during construction and early operational activities. In accordance with (**Appendix C**) • Control programs - Opportunistically.	• Construction personnel. • Operations personnel. • Environment Manager • Environment Team.	Regular reporting: • Submit an annual compliance assessment report as part of the Annual Environment Report to the DWER. • Feral animal control contractor reports. Exceedance reporting: • Management action has not been implemented (report in accordance with Section 5.5). • Management target has not been achieved (report in accordance with Section 5.6).

Management Targets	Management Priority	Management Actions	Monitoring	Timing	Responsible	Reporting
		targeted control program to be implemented (**Appendix C**).				
No significant adverse impacts to significant fauna as a result of project related altered hydrological regimes.	High	Hydrological Regimes: • Haul road and Development Envelope design shall consider surface water flow to minimise obstruction to seasonal overland water flow to the loamy drainage flats proximal to the Great Northern Highway. • Implement surface and groundwater management strategies in accordance with the SWMP and GWOS. • Drainage management structures identified as remaining post closure shall meet recognised Australian drainage design specifications. • The open pit will be backfilled to a minimum of 5 m above the baseline groundwater level. • Progressive rehabilitation of disturbed areas will be undertaken throughout the life of mine, as far as practicable.	• Implement surface and groundwater monitoring as required in accordance with the Surface Water Management Plan (SWMP) and Ground Water Operating Strategy (GWOS).	• In accordance with schedule in the SWMP and GWOS. •	• Project Manager • Construction personnel. • Operations personnel • Environment Manager • Environment Team.	Regular reporting: • Submit an annual compliance assessment report as part of the Annual Environment Report to the DWER. • SWMP monitoring reports. Exceedance reporting: • Management action has not been implemented (report in accordance with Section 5.5) • Management target has not been achieved (report in accordance with Section 5.6).

Management Targets	Management Priority	Management Actions	Monitoring	Timing	Responsible	Reporting
Effective operation of the Project to minimise the risk of Project related fire.	High	• Off-road driving shall be prohibited unless authorised under a LAP. • Avoid hot work in fire sensitive areas and during fire risk days. • Fire awareness shall be delivered to all personnel as part of the induction process. • Firebreaks will be incorporated into mine layout planning in accordance with the local government firebreak notice under s. 33 of the *Bush Fires Act 1954*. • Smoking will only be permitted in designated areas, which shall be appropriately signed and contain self-arresting cigarette butt disposal containers. • An Emergency Response Plan shall be prepared and implemented. • An Emergency Response Team shall be formed, in accordance with requirements regulated by DEMIRS. • The Emergency Response Team will ensure that sufficient operational fire suppression equipment is	• Inspection and maintenance of fire breaks in accordance with the local government firebreak notice under s. 33 of the *Bush Fires Act 1954*. • Regular inspection of vehicles and fire response equipment shall be undertaken.	• As required in accordance with the local government firebreak notice under s. 33 of the *Bush Fires Act 1954*. • Quarterly	• Project Manager • Construction personnel. • Operations personnel • Environment Manager • Environment Team.	Regular reporting: • Internal incident reporting, emergency response and investigation process in the event of a fire, in accordance with internal incident reporting procedure. • Submit an annual compliance assessment report as part of the Annual Environment Report to the DWER. Exceedance reporting: • Management action has not been implemented (report in accordance with Section 5.5). • Management target has not been achieved (report in accordance with Section 5.6).

Management Targets	Management Priority	Management Actions	Monitoring	Timing	Responsible	Reporting
		located as per the Emergency Response Plan. • A Traffic Management Plan shall be prepared and implemented. • Implement a Hot Work Permit system for high ignition risk work activities. • Regular inspection and maintenance of vehicles and equipment shall be undertaken. • All vehicles and machinery will be fitted with fire extinguishers and/or in-plant fixed water suppression, and water carts will be fitted with firefighting equipment. • All fuel stored on site is to be contained within a secure bund or other facility. • Implement an appropriate rehabilitation plan (surface treatments; seed selection, collection, storage and management) in accordance with the approved MCP, following fire.				

Management Targets	Management Priority	Management Actions	Monitoring	Timing	Responsible	Reporting
No significant increase in project-related direct significant fauna interactions per year (e.g., vehicle strike, interaction with fencing) resulting in injury or mortality.	Low	• Develop and implement a Traffic MP. • Maintain a fauna mortality register. • Close Cave 1 prior to the critical female breeding period of October to December. • Temporary closure of Cave 1 during construction and operation to ensure no inadvertent loss of mothers and/or pups will occur in the event of mining activity (e.g., blasting, excavation, haulage, overburden stacking) in proximity to caves. • The area to be cleared shall be clearly demarcated and machinery operators made aware of the operational boundary, following confirmation with the relevant manager. • New fencing shall not use barbed wire, subject to consultation with pastoralist. The Proponent is committed to replacing barbed wire fences with three or four strand wire fencing in the Project area (in consultation with the	• Undertake periodic compliance checks with site speed limits. • In the event that fauna is injured during clearing, construction or operations, the animal shall be taken to an authorised veterinarian or trained wildlife carer, or if not possible, humanely euthanised in accordance with *Standard Operating Procedure: Humane Killing Of Animals Under Field Conditions* (Department of Biodiversity Conservation and Attractions 2018). • Check trenches for trapped fauna and ensuring egress points are functional.	• In accordance with section 4.2. • As triggered. • Twice daily trench inspections	• MinRes • Construction. • Operations • Environment Team.	Regular Reporting: • Record known injuries to, or deaths of, significant fauna species in the internal Conservation Significant Fauna Interaction Register as soon as possible, as the injury or death is identified. • Internal incident reporting, and investigation process in accordance with internal incident reporting procedure. • Submit an annual compliance assessment report as part of the Annual Environment Report to the DWER. Exceedance Reporting: • Report significant fauna mortalities within 48 hours to DBCA in accordance with legislative requirements. • Management action has not been implemented (report in accordance with Section 5.5) • Management target has not been achieved (report in

Management Targets	Management Priority	Management Actions	Monitoring	Timing	Responsible	Reporting
		Juna Downs pastoralist). If however the pastoralist requires use of barbed wire for effective stock management, bat deflectors/reflectors between the top two strands will be used within the Project Area. • Spatially restricted Indicative Footprint and short life of mine. • Implement a 100 m radius exclusion zone around recorded Category 2 and Category 3 Ghost Bat roosts. • Driving between dusk and dawn shall be minimised, for example buses to transport staff between camp and work site at shift changes. Machinery and vehicle movements that must be undertaken between dusk and dawn will be limited to low speeds (site-specific but typically 40km/h) on access tracks. • Excavations and trenches will be kept open only as long as needed to undertake the work and egress points will be provided dependant on depth /				accordance with Section 5.6) •

Management Targets	Management Priority	Management Actions	Monitoring	Timing	Responsible	Reporting
		morphology of the excavation. • Any steep-sided holes (e.g., sumps) will be fitted with egress matting or another method of escape to avoid fauna entrapment. • Regular inspection of all excavations (including open trenches) shall be undertaken to minimise fauna mortality. • Environmental responsibility awareness training shall be delivered to all personnel as part of the induction process. • Vehicles and equipment shall be restricted to designated roads, tracks and cleared area, unless authorised under a LAP. • Signage will be installed along access roads to warn road users of areas where they will be entering critical fauna habitat area and will advise of applicable speed reduction. • Ensure all drill holes are capped as soon as reasonably practicable.				

Management Targets	Management Priority	Management Actions	Monitoring	Timing	Responsible	Reporting
Minimise project related disturbance of significant fauna from noise, vibration and artificial light.	Low	• Implement staff training to enable staff to implement procedures related to minimisation of noise, dust, vibration, and artificial light. • Avoid placement of infrastructure in any habitat of high significance. • Prohibit entry to caves, unless authorised by Management. • Undertale monitoring/inspection of Cave 1 prior to and after the first blast as per Appendix B. • Avoid placing artificial lighting in key significant fauna habitat. • As practicable while providing lighting required for safe operation, implement best practice light management (DCCEEW 2023a) within proximity to significant bat species' habitat through maintaining natural darkness in and near all significant bat species' habitats is the most effective impact mitigation method. Where lighting exists or is introduced, effective management and	• Cave closure (**Appendix A**) and vibration monitoring (**Appendix BAppendix B**). • Undertake Blast vibration monitoring for Cave 1 to ensure no disturbance to significant fauna, or degradation or loss of significant fauna habitat (Cave 1) occurs. • Photo monitoring Cave 1 **(Appendix B**) • Regular inspection and maintenance of vehicles and equipment shall be undertaken.	• In accordance with **Appendix A.** • In accordance with **Appendix B**. • Quarterly during first year, six-monthly thereafter if no change • Daily	• Construction. • Operations. • Environment Team.	Regular Reporting: • Internal incident reporting, and investigation process in accordance with internal incident reporting procedure. • Noise and vibration monitoring reporting. • Submit an annual compliance assessment report as part of the Annual Environment Report to the DWER. Exceedance Reporting: • Management action has not been implemented (report in accordance with Section 5.5). • Management target has not been achieved (report in accordance with Section 5.6).

Management Targets	Management Priority	Management Actions	Monitoring	Timing	Responsible	Reporting
		mitigation approaches to reduce potential impacts to may include: • maintaining dark roost sites. • creating dark corridors from roosts to foraging/watering sites. • keeping light intensities low and redirecting light away from habitats. • longer wavelength (red) artificial light appears to have the least impact on several bat species. • Demarcate areas that may not be entered by personnel and/or machinery. • Noise, vibration and artificial light awareness training shall be delivered to all personnel as part of the induction process. • Regular inspection and maintenance of vehicles and equipment shall be undertaken. • Ensure blasting is undertaken during daylight hours and is strictly controlled to				

Management Targets	Management Priority	Management Actions	Monitoring	Timing	Responsible	Reporting
		minimise air blast and ground vibration. • Minimise the use of artificial lighting needed for safe operation, use directional and / or screened lighting, and when required for safety, avoid light spill onto important habitats (e.g., rocky outcrops). • As practicable while providing lighting required for safe operation, adhere to DCCEEW (2023a) Light pollution guidelines best practice lighting design to minimise potential impacts from artificial light sources to significant fauna by incorporating the following design principles: • start with natural darkness and only add light for specific purposes. • use adaptive light controls to manage light timing, intensity and colour. • light only the object or area intended – keep lights close to the ground, directed, and shielded to avoid light spill.				

Management Targets	Management Priority	Management Actions	Monitoring	Timing	Responsible	Reporting
		• use the lowest intensity lighting appropriate for the task. • use non-reflective, dark-coloured surfaces. • use lights with reduced or filtered blue, violet and ultraviolet wavelengths.				

Minimise project related decline to fauna habitat due to dust, weeds, and hydrocarbon or chemical leaks and altered hydrological regimes.	Low	Dust Management:
		• Intersection of the haul road with Great Northern Highway, and an additional 100 m past the intersection, will be sealed to reduce the generation of dust.
		• Road haulage iron ore loads will be covered.
		• Ground clearing (including topsoil stripping) shall not be undertaken during periods of high wind (unless soil moisture levels are also elevated enough to inhibit dust formation).
		• A LAP and the Land Clearing Procedure will be implemented to ensure all clearing works are compliant with regulatory requirements and are within approved boundary.
			• Monitoring of daily wind conditions will be taken into consideration when planning clearing or blasting activities.
			• Visual assessment of dust suppression performance
			• Bi-annual monitoring of the presence and abundance of weeds compared to baseline presence and abundance to determine the effectiveness of control programs.
				• Daily
				• Daily
				• Bi-annual
					• Construction.
					• Construction
					• Operations.
						Regular Reporting:
						• Internal incident reporting, and investigation process in accordance with internal incident reporting procedure for example:
						  • Excessive dust
						  • New weed species and/or new occurrences of existing weed species are recorded.
						  • Vehicles reported outside authorised areas/ tracks.
						• Dust monitoring reporting.
						• Biannual weed monitoring reporting.
						• Submit an annual compliance assessment report as part of the Annual

Management Targets	Management Priority	Management Actions	Monitoring	Timing	Responsible	Reporting
		• Spatially restricted Indicative Footprint and short life of mine. • Vehicles and equipment shall be restricted to designated roads, tracks and cleared areas unless authorised under a LAP. • Dust suppression shall be implemented to manage dust emission on cleared areas and iron ore handling areas. This will be visually assessed on an ongoing basis. • Reduced speed limits to be applied on unsealed roads (site-specific but typically 40 kph). • Blasting plans will consider meteorological conditions to minimise dust lift off. • Dust awareness training shall be delivered to all personnel as part of the induction process. • Implement an appropriate rehabilitation plan (surface treatments; seed selection, collection, storage and management) in accordance with the approved MCP.				Environment Report to the DWER. Exceedance Reporting: • Management action has not been implemented (refer to Section 5.5). • Management target has not been achieved (refer to Section 5.6)

Management Targets	Management Priority	Management Actions	Monitoring	Timing	Responsible	Reporting
		• Progressive rehabilitation of disturbed areas will be undertaken throughout the life of mine, as far as practicable. Weed Management: • A LAP and the Land Clearing Procedure will be implemented to ensure all clearing works are compliant with regulatory requirements and are within approved boundary. • A Weed Management Plan shall be prepared and implemented as part of the FVMP, prior to construction and operation, to control access and movement of vehicles and construction personnel to prevent the introduction and spread of weeds into the Development Envelope, weed free areas, and between work areas. • Vehicles with ground engaging equipment to be cleaned, inspected and issued with a Weed Hygiene Certificate prior to entry to site or moving between areas with known weed infestations on-site.				

Management Targets	Management Priority	Management Actions	Monitoring	Timing	Responsible	Reporting
		• Vehicles and equipment shall be restricted to designated roads, tracks and cleared areas, unless authorised under a LAP. • Weed awareness and weed hygiene training shall be delivered to all personnel as part of the induction process. • Regular inspection and maintenance of vehicles and equipment shall be undertaken. • Seasonal weed control programs shall be implemented, including herbicide spraying or physical removal, in accordance with the FVMP. • Progressive rehabilitation of disturbed areas will be undertaken throughout the life of mine, as far as practicable. • Hydrocarbon or chemical spill management: Hydrocarbon and/or chemical leaks and spills (expected to be rare) will be managed using bunding techniques, leak detection mechanisms and spill kits to restrict impacts.				

Management Targets	Management Priority	Management Actions	Monitoring	Timing	Responsible	Reporting
		• Spill response equipment available (including on all Haul Trucks). • Spill response training for all personnel and contractors. • Dedicated workshop for maintenance. • Maintain high standard of housekeeping around processing plant. • Prevent chemical / hydrocarbon spill from spreading to native vegetation. • Management of sites as per the Contaminated Site Act 2003. • Develop and implement a Hazardous Substances Management Plan (HSMP) and Procedure. • Develop and implement an Emergency Response Plan. • Develop and implement a Spill Response Plan. • Develop and implement a Controlled Waste Management Procedure. • Develop and implement a Contaminated Sites Register. • Develop and implement a Waste Management Procedure.				

Management Targets	Management Priority	Management Actions	Monitoring	Timing	Responsible	Reporting
		• Routinely check sumps for fauna. •				

4. MONITORING AND EVALUATION

A monitoring schedule has been developed with performance targets (**Table 9**) to assess the effectiveness of the management measures outlined in this SFMP (**Section 4**). The performance targets have been aligned with the outcomes-based objectives and associated environmental criteria, with associated measurement parameters, monitoring frequencies and responsibilities.

In addition to the monitoring schedule, Monitoring Programs have been developed to align with the SFMP and are presented in **Appendix B** and **Appendix C.** Monitoring has been developed to achieve the following objectives:

- Monitor the success of mitigation and management measures in the SFMP and detect potential impacts to significant fauna and habitat.
- Evaluate effectiveness and monitor for exceedance against trigger, threshold, and management target criteria (management provisions).
- Assess the effectiveness of the environmental criteria to inform adaptive management and revision where required.

Table 9: Monitoring Schedule

Management Targets	Monitoring Event	Monitoring Action	Timing	Responsibility
No clearing of vegetation shall occur outside of the approved, demarcated clearing area(s) during construction or operation.	Clearing inspections	Visual inspections for evidence of: • adherence to boundary demarcation compliance. • unauthorised access or clearing (e.g., observations of vehicles or machinery, vehicle tracks, damage to fencing or vegetation).	During clearing, construction, pre-clearing and post-clearing activities.	Manager Environment. Staff and contractors.
		Monitoring of clearing register for compliance to approvals: • clearing activities will be audited regularly to ensure compliance with LAP conditions, including prior to LAP close out. This includes confirmation that all clearing has been completed within the LAP boundary. • Land disturbance will be reconciled annually, as a minimum, for compliance and reporting. •	Imagery analysis annually, or as required, to monitor clearing extent.	
		Internal incident reporting and investigation process	As triggered.	
No significant increase in Project-related direct significant fauna interactions per year (e.g., vehicle strike, interaction with fencing) resulting in injury or mortality.	Signage	Undertake periodic compliance checks with site speed limits.	Quarterly signage inspections.	Manager Environment. All staff and contractors. Suitably qualified persons, as required.
	Fauna mortality or injury register	In the event that fauna is injured during clearing, construction or operations, the animal shall be taken to an authorised veterinarian or trained wildlife carer, or if not possible, humanely euthanised in accordance with Standard Operating Procedure: Humane Killing Of Animals Under	In accordance with Section 4.2	

		Field Conditions (Department of Biodiversity Conservation and Attractions 2018)		
	Trench inspections	Check trenches for trapped fauna and ensuring egress points are functional.	Twice daily trench inspection	
No statistically significant increase in feral animal abundance as a result of Project related activities.	Feral fauna monitoring	Record and monitor the presence and abundance of feral fauna compared to baseline presence and abundance to determine the effectiveness of control programs.	Baseline monitoring undertaken over 2 consecutive years prior to and during early construction activities.	Manager Environment. Environment Team. Suitably qualified person, as required.
	Feral fauna control	Implement feral fauna control at seasonally appropriate time	In accordance with **Appendix C**.	
	Introduced fauna register	Maintain a register of all introduced fauna sightings.	Opportunistically (i.e. when observed).	
Minimise Project related disturbance of significant fauna from noise, vibration and artificial light.	Vibration monitoring	Cave closure (**Appendix A**) and vibration monitoring (**Appendix B**).	In accordance **Appendix A.**	Manager Environment. Environment Team. Project Manager.
		Undertake Blast vibration monitoring for Cave 1 to ensure no disturbance to significant fauna, or degradation or loss of significant fauna habitat (Cave 1) occurs.	In accordance with **Appendix B**.	
	Photo monitoring	Photo monitoring Cave 1	As per **Appendix B.**	
Minimise Project related decline to fauna habitat due to dust, weeds, and hydrocarbon or chemical leaks and altered hydrological regimes.	Dust monitoring	Monitoring of daily wind conditions will be taken into consideration when planning clearing or blasting activities.	Daily.	Manager Environment. Environment Team.
	Weed monitoring	Bi-annual monitoring of the presence and abundance of weeds compared to baseline presence and abundance to determine the effectiveness of control programs.	Biannual. As per Flora and Vegetation Management Plan	

	Surface and groundwater monitoring	Implement surface and groundwater monitoring as required in accordance with the Surface Water Management Plan (SWMP) and Ground Water Operating Strategy (GWOS).	In accordance with schedule in the SWMP and GWOS.	
Effective operation of the Project to minimise the risk of Project related fire.	Routine fire inspection	Inspection and maintenance of fire breaks in accordance with the local government firebreak notice under s. 33 of the *Bush Fires Act 1954*.	As required in accordance with the local government firebreak notice under s. 33 of the *Bush Fires Act 1954*.	Manager Environment. Environment Team.
		Regular inspection of vehicles and fire response equipment shall be undertaken.	Quarterly.	
Maintain Structural integrity of Cave 1	Cave monitoring	Photographic, geotechnical assessment monitoring of Cave 1	As per Appendix B.	Manager Environment Environment Team

4.1 ENVIRONMENTAL AUDITS

In accordance with the Proponent's Environmental Management System (EMS), an audit of implementation of this SFMP will be completed annually. The key requirements of this SFMP audit include:

- Assessment of compliance of all SFMP components.
- Evaluation of performance against SFMP provisions.
- Assessment of adequacy of management actions, response actions and monitoring.
- Review of management actions, response actions and monitoring as required in order to meet the purpose and objectives of this SFMP.
- Additional audit(s) in response to significant incidents of non-conformance.

SFMP audits shall be conducted by personnel trained and competent in the use of the audit tool and have expertise in the area being audited. Results of all audits will be communicated and discussed at project management review meetings.

4.2 CAPTURE AND RELEASE

Should capture and release be required, it is important that any capture and release is undertaken by qualified licensed personal in accordance with relevant DBCA standard operating procedures (SOPs) such as:

- Transport and temporary holding of wildlife SOP No: SC22-11 (DBCA 2023b)
- Cage traps for live capture of terrestrial vertebrates SOP No: SC22-07(DBCA 2023a)
- Animal handling and restraint using soft containment SOP No: SC22-12
- Hand capture of wildlife SOP No: SC22-12 (DBCA 2022c)(DBCA 2022)
- Hand restraint of wildlife (DBCA 2017b)
- Care of evicted pouch young SOP No.SC22-16 (DBCA 2023c)

An appropriate DBCA fauna license will be required to undertake capture and release.

4.3 INJURED FAUNA MANAGEMENT FOR SIGNIFICANT FAUNA

In unlikely event that an injured significant fauna individual is found, an assessment needs to be undertaken to determine if the fauna is safe to approach. If capture is necessary, the following management actions will be undertaken by a qualified fauna handler:

- If handling is the preferred method, safely confine (wrap the animal in towel and place in cardboard box) ensuring the animal can breathe.
- Keep box closed but not sealed to allow for ventilation and place box in a dry, warm, dark and quiet place.
- The DBCA (2023b) – Standard Operating Procedure (SOP) Transport and Temporary Holding of Wildlife procedure will be adhered to if the injured animal is to be transported:
  - Where transportation of the injured animal is to occur on foot or vehicle.
  - Individuals shall be kept within a box with ventilation for secure transport.
  - Temperature of vehicle will not exceed 25 degrees Celsius during transportation.
- First response wound management will be undertaken in accordance with DBCA (2017a) - SOP First aid for animals:

- Due to the remote location of the Project any medical attention required to the animal is to be assessed on a case-by-case basis in consultation with the fauna handler, a veterinarian and the Environment Manager.
- In the event the animal is injured (or is dependent young) and is not able to be re-released (based on veterinarian advice), the DBCA shall be consulted for rehabilitation options.
- No relocation of nests or rehabilitated fauna individuals is to occur (unless in extenuating circumstances where prior consultation has occurred with EPA, DCCEEW and DBCA and approval and a permit to handle and move significant fauna has been granted).
- Euthanasia of an animal will only be undertaken under the instruction of a veterinarian, however, DBCA (2018) - SOP Human Killing of Animals under Field Conditions will be considered, where appropriate.

5. REPORTING PROVISIONS

5.1 ANNUAL REPORTING

Annual compliance reporting will be undertaken for the Project in line with regulatory requirements and relevant guidance documentation, including the preparation of an AER and CAR. The annual reports will document compliance with Project approval conditions, as well as requirements stipulated in this SFMP.

5.2 EXCEEDANCE REPORTING

The following exceedance reporting will be undertaken if a trigger (**Section 5.3**) or Threshold (**Section 5.4**) exceedance occurs or a management action has not been implemented (**Section 5.5**) or management target has not been achieved (**Section 5.6**) in accordance with the SFMP.

5.3 TRIGGER EXCEEDANCE

- Trigger exceedance will be reported promptly in accordance with internal procedures (prior to the end of shift the following day) and reported to appropriate management staff.
- Investigate to determine the cause of the trigger exceedance.
- Internal reporting and communication of corrective actions to be implemented that eliminate or reduce the likelihood of recurrence.

5.4 THRESHOLD EXCEEDANCE

- Notify the CEO of the DWER in writing within 10 days of identifying and confirming the threshold exceedance, with a report provided via email including any corrective actions identified once an investigation has been completed.
- Investigate to determine the cause of the threshold exceedance.
- Investigate to determine the potential environmental harm or alteration of the environment that occurred as a result of the threshold exceedance.
- A follow up report detailing the adequacy of the response actions will also be submitted to the DWER within 12 months of the initial notification or within the ACAR.

5.5 MANAGEMENT ACTION HAS NOT BEEN IMPLEMENTED

- Notify the CEO of the DWER in writing within 10 days of identifying and confirming the failure to implement a management action, with a report provided via email including any corrective actions identified once an investigation has been completed.
- Investigate to determine the cause of the management action not being implemented.
- Investigate to determine the potential environmental harm or alteration of the environment that occurred due to the failure to implement the management action(s).
- Provide a report to the CEO including any corrective actions identified, within 21 days of the initial notification of failure to implement a management action being identified.

5.6 MANAGEMENT TARGET HAS NOT BEEN ACHIEVED

- Notify the CEO of DWER in writing within 21 days of identifying and confirming the non-achievement of the target.
- Investigate to determine the cause of the management target not being achieved.

- Provide a report to the CEO within 90 days of the non-achievement of the target being reported.
- The report shall include:
  - the cause(s) of the management targets not being achieved.
  - details of revised and/or additional management actions to be implemented to prevent reoccurrence of management target(s) not being met.
  - appropriate changes to Project activities/ corrective actions required.

5.7 INCIDENT REPORTING

Environmental incidents will be promptly reported in accordance with internal procedures and reported to appropriate management staff. Corrective actions, when appropriate, will also be developed and implemented that eliminate or reduce the likelihood of recurrence.

The minimum standards required in respect to non-conformance and corrective actions are to:

- Define and document what classifications of incidents and non-conformances are reportable to:
  - internal management.
  - contractors, suppliers and vendors.
  - regulatory authorities.
  - other external stakeholders.
- Report environmental incidents and non-conformances in line with established procedures and applicable legal and other obligations.
- Investigate incidents and non-conformance such that the root cause can be determined.
- Implement corrective actions that address the root cause(s) of the incidents and non-conformances that aim to eliminate or improve response capabilities to prevent reoccurrence.
- Retain documentation as evidence.

6. ROLES AND RESPONSIBILITIES

MinRes will ensure that all personnel and contractors are responsible for ensuring they comply with the company's environmental management requirements and that any action or inaction on their part does not result in harm to the environment. Delegation of responsibilities may occur to ensure that environmental management activities are coordinated at an appropriate level; however, accountability remains with the person designated those responsibilities. MinRes also expects this general principle of line management accountability to apply to all its contractors. Roles and responsibilities have been designated to ensure that environmental management requirements within this SFMP are met. The key personnel involved in implementation of the SFMP, and their roles and responsibilities are listed in Table 10.

Table 10: Roles and Responsibilities

Role	Responsibility

MinRes	• Overall responsibility for implementing this SFMP.
	• Ensure the development and implementation of procedures and plans in the SFMP:
	  • Hazardous Substances Management Plan (HSMP) and Procedure.
	  • Emergency Response Plan.
	  • Spill Response Plan.
	  • Controlled Waste Management Procedure.
	  • Contaminated Sites Register.
	  • Waste Management Procedure.
	  • Traffic Management Plan
	  • Emergency Response Plan
	  • Weed Management Plan
	  • FVMP.
	  • Audit and compliance checks.
	  • Engagement with Traditional Owners.

Project Manager (may delegate all or part responsibility to an appropriately qualified person)	• Ensure construction and operational activities are implemented by employees (inclusive of contractors) in accordance with the SFMP
Manager Environment (may delegate all or part responsibility to an appropriately qualified person)	• Obtain relevant approvals from regulatory agencies for disturbance as required. • Undertake Monitoring in accordance with the SFMP. • Incident Reporting and Monitoring in accordance with the SFMP. • Maintain clearing register to ensure compliance with approvals. • Undertake internal audits and inspections of clearing areas and compliance with SFMP. • Implement and maintain the SFMP, review its effectiveness and review the implementation as required. • Undertake training and inductions of personnel in accordance with the SFMP. • Liaise with stakeholders and technical experts for advice and resolution of management aspects/objectives as required. • Engagement with Traditional Owners. • Report as required to regulating authorities.
Employees (inclusive of contractors)	• Complete induction prior to commencement of work on site. • Toolbox. • Training. • Comply with requirements in SFMP. • Stop works if impact to the environment is suspected or known. • Report any environmental concerns, opportunities for improvement, near misses or incidents to their supervisor ASAP.

7. ADAPTIVE MANAGEMENT AND REVIEW

Adaptive management practices will be implemented where change to management practices and monitoring may lead to more effective environmental outcomes. The adaptive management approach may include the following components:

- Evaluation of the management actions and targets:
  - if monitoring results or audits indicate that management objectives are not being achieved.
  - if new information is discovered during construction, operations or closure.
  - where any significant changes to Project design or operation have occurred.
- Evaluation of assumptions and uncertainties following further significant fauna monitoring and management.
- Review of data and information gathered over the review period that has increased understanding of the environment in the context of the regional ecosystem.
- Review of Management Actions as the Project progresses, and new management measures and technologies become available that may be more effective for significant fauna management.
- Assessment of changes which are outside the control of the Proponent (i.e., a new project within the area or region, regional change affecting significant fauna management) and the revised management measures identified.
- Amendment to the monitoring program.

7.1 REVIEW OF THIS SFMP

This SFMP will be reviewed periodically during the phases (construction, operations and into closure), nominally once every 2 years. Other occasions when this SFMP will be reviewed include:

- Upon significant changes to the Project activities or upon significant changes to key environmental values identified in this SFMP.
- Following non-compliances or environmental incidents related to significant fauna management.
- If one or more management targets or performance indicators are not being met and adaptive management is required.
- Upon regulatory approval of the Project by the DWER and the Department of Mines, Industry Regulation and Safety (DMIRS).

The review process will ensure that this SFMP remains current and adheres to regulatory requirements and the provisions of this SFMP. Any significant changes to this SFMP will be referred to the DWER for approval prior to implementation of such changes.

8. STAKEHOLDER CONSULTATION

The Proponent is committed to ongoing stakeholder engagement and communication through all stages of the Project.

8.1 ENGAGEMENT

Stakeholder engagement for the Project commenced in 2012 and specific stakeholder engagement activities undertaken have included:

- Briefings and presentations with key regulatory authorities and potentially affected parties to provide information on the Project, planned studies and request feedback.
- Face to face meetings, telephone calls and written correspondence with potentially affected stakeholders to provide updates on the Project and obtain additional feedback.
- Specifically, consultation between MinRes and the Banjima People, through the body corporate Banjima Native Title Aboriginal Corporation (BNTAC) and their consultants, regarding the preparation of various environmental regulatory approvals (State and Commonwealth) has been conducted, including reviews of this SFMP. Feedback from these engagements has been incorporated into the approval submission documents and this SFMP.

Through the variety of engagement forums, the Proponent has been able to identify the required studies and investigations and, importantly, key environmental and socials impacts, and associated mitigation strategies required to support the Project, to ensure the Project aligns with expectations. A detailed summary of stakeholder communications is provided in Chapter 3 of the EPBC Preliminary Document.

8.2 KEY STAKEHOLDERS

The Proponent has identified key Project stakeholders, and these are listed in **Table 11.**

Table 11: Key Stakeholders for the Project

Stakeholder Sector	Organisation
Australian Government Agencies	Department of Climate Change, Energy, the Environment and Water
State Government Agencies & Members of Parliament	Department of Biodiversity, Conservation and Attractions
	Department of Jobs, Tourism, Science and Innovation
	Department of Energy, Mines, Industry Regulation and Safety
	Department of Planning, Lands and Heritage
	Department of the Premier and Cabinet (Ministers for Water and Environment)
	Department of Primary Industries and Regional Development
	Department of Transport
	Department of Water and Environmental Regulation - Environmental Protection Authority services
	Department of Water and Environmental Regulation
	Development WA
	Environmental Protection Authority

Stakeholder Sector	Organisation
	Main Roads WA
	Pilbara Port Authority
	Alinta Energy
Local Government	Shire of East Pilbara
Traditional Owners	Banjima Native Title Aboriginal Corporation
	Martidja Banyjima (MIB) – Karijini Development Pty Ltd
Corporate and Community	Rio Tinto/Juna Downs Pastoral Lease
	Bird Life Western Australia
	BHP
	Wildflower Society of Western Australia
	Conservation Council of Western Australia
	Wilderness Society

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MINERAL RESOURCES

APPENDIX A
CAVE CLOSURE AND CAVE DISRUPTION PROTOCOL

Appendix A Cave Closure and Cave Disruption Protocol

A.1 Background

A conservative protocol (Cave Closure and Cave Disruption Protocol) is recommended by Bat Call WA (2023a) to protect reproducing Ghost Bat females and their young during the most important part of their reproductive cycle. This covers the periods when:

- Gravid females are subject to premature birth due to either capture and handling or repeated flushing of the bats from their diurnal roost caves.
- Females carrying newborns are subject to dropping them due to capture or disturbance.
- Non-volant young in nurseries are subject to abandonment due to repeated disturbance of the mothers.
- Newly volant young during the early adolescent period are subject to premature abandonment due to repeated disturbance of the mothers and/or young.

For Ghost Bat category 1, category 2, and category 3 roost caves (**Figure 4**) that are part of an important cave grouping, the following cave disturbance protocols will be followed as recommended by Bat Call WA (2023a) :

1. Surveys with higher disturbance to Ghost Bats (i.e., when Ghost Bats are captured, or are present and are disturbed) will be limited to once per cave during August, September, and January.
2. Multiple lower disturbance survey entries per cave are allowed in August, September, and January. The surveys should be done by one ecologist working quietly to minimise stressing the bats present and hopefully not flushing them from the cave. If a Ghost Bat(s) is disturbed and flushed from the cave, the caves and their entrance areas should be vacated to allow the bat(s) to return and settle. Restrictions per item 1 above then apply.
3. No cave entries should be carried out in October, November and December, including entry to inspect caves within the potential impact zone of a drilling/blasting program. Any damage assessments required during blasting operations in this time period should be carried out from the cave entrance.
4. Where category 2 and 3 caves are within the impact zone of a drilling/blasting program (Cave 1 as shown in **Figure 4**), and after it is proven that there are no Ghost Bats inside, the caves may be temporarily sealed prior to 1 October and remain inaccessible to Ghost Bat throughout the female's reproductive period.

A.2 Procedure for Temporary Closure of Cave 1

The methodology for closure of Cave 1 will be developed in consultation with DBCA. However, it is anticipated that the closure of Cave 1 is likely to be temporarily closed by using a lightweight steel frame fitted to the entrance and bird aviary steel netting or any heavier style with apertures not exceeding 100 mm. This would exclude Ghost bats from entering the cave but smaller species up to 10g such as Pilbara leaf-nosed bats (*Rhinonicteris aurantia*) or Finlayson's cave bat (*Vespadelus finlaysoni*) would be able to pass through unharmed. Other small fauna of a similar size including reptiles, frogs and snakes would also be able to access the cave. With regard to larger fauna such as Quolls, Dingoes and/or Macropod species that will be excluded by the closures, Cave 1 is situated in an area with numerous alternative deep overhangs and shallow caves that are suitable for their foraging and/or resting activities. Each of these species is known to travel significant distances on a daily basis (Bat Call WA 2023a).

Cave closure is viable as there is Ghost Bat habitat in close proximity (within 25 km to the east, south and west of the Development Envelope) that will allow the bats to relocate during mining operations and return to the retained caves once mining is complete (Bat Call WA 2023a). Experience at other Iron Ore mines has shown that Ghost Bats return to roost at viable caves that have been (structurally) retained after several years (Bat Call WA 2021b; Bullen and Creese 2014). The cave will remain closed for the life of mine (approximately 3 years) then reopened after completion of mining.

MINERAL RESOURCES

APPENDIX B
VIBRATION MONITORING

Appendix B Vibration Monitoring

Ground vibrations as a result of the release of explosive energy from the blasting process can spread through adjacent rock and soil to surrounding structures, slopes, and benches. Vibration monitoring is to be undertaken at Cave 1 to ensure the structural integrity of the cave is maintained during the blasting process.

Methods for vibration monitoring will be determined in consultation with DBCA to ensure that there is no impact to the cave's structural integrity.

Additional noise monitoring will not be required as the cave will be closed in accordance with the procedure outlined in **Appendix A** of this SFMP and no Ghost Bats will be present within the cave during blasting operations.

The following indicative methodology is proposed:

- A permanent location for vibration monitoring will be established at Cave 1 as close as possible to the nearest part of the cave to the pit, as confirmed through survey pickup.
- Vibration will be measured at the monitoring location at Cave 1 prior to and during each blast (monitoring equipment with data logger). Vibration data loggers will be connected via telemetry with appropriate safety procedures and protocols developed and implemented prior to vibration monitoring being undertaken.
- All monitoring equipment used will be in accordance with the Australian Standard for Blast Monitoring (AS2187.2-2006) which provides guidelines for the type of equipment required to monitor ground vibration (peak particle velocity, or PPV).
- The Proponent has conducted a geotechnical assessment, including peak particle velocity (PPV) analysis of Cave 1 indicating that the conservative limit of 25 mm/sec PPV (Bat Call WA 2023a) will ensure that the structural integrity of the cave will not be affected by the modelled vibration from blasting. Modelled predictions will require calibration for actual on-site conditions throughout the blasting process. This will be achieved by the blasting engineer comparing the results of initial blasts with the predictions of the model.
- Cave inspections to be undertaken before and after the first blast in the pit to assess for any signs of instability. This would include a geotechnical photographing structural assessment. Subsequent to these initial visitations drone surveys would be undertaken quarterly to monitor the structural integrity of the cave during the first year and six-monthly thereafter if conditions are unchanged. Additional cave inspections to be conducted if Trigger or Threshold PPV limits exceeded, as per **Table 6** in the SFMP.
- Develop appropriate safety procedures ensuring that cave structural integrity can be assessed safely by personnel.

MINERAL RESOURCES

APPENDIX C
FERAL ANIMAL MONITORING AND CONTROL PLAN

Appendix C Feral Animal Monitoring and Control Plan

C.1 Background

Feral and pest fauna, specifically feral cats and foxes have been implicated in the significant decline of multiple species of vertebrate fauna (DEWHA 2008b;c). Feral animal monitoring will be undertaken to monitor for a potential increase in the numbers of feral animals.

A detailed feral animal monitoring plan design will be completed in consultation with DBCA.

C.2 Feral Animal Monitoring

It is anticipated that annual population monitoring of introduced fauna will consist of the following:

- Deployment of cameras to establish baseline numbers. The Proponent proposes to establish baseline feral animal numbers over a two-year period prior to and during construction and early operations.
- Quantitative and systematic recording of introduced animals undertaken through the deployment of cameras at permanent locations within the Project Area will be identified with star pickets as follows:
    - Monitoring for feral animal presence will be undertaken on a quarterly basis.
    - Feral animal monitoring will be undertaken at control sites (those with the potential to be impacted by the Project) and reference locations (not impacted by the Project). Areas with the potential to attract feral animals such as the camp, waste storage facilities and key infrastructure areas will be a focus for monitoring.
    - Opportunistic visual observations whereby site personnel and contractors will be required to record sightings of feral animals at the site, including date, time, location and species. Those observations will be considered in relation to the annual monitoring results, to inform management of site activities.

C.3 Reporting

The results of feral animal monitoring and control activities will be summarised in the Proponent's Annual Environmental Report**.**

The feral animal monitoring report will include a summary of results of systematic monitoring and recording of opportunistic sightings of introduced fauna (e.g. feral cats and foxes), through annual monitoring, feral animal control reports and incident reports.

C.4 Review

Results of the monitoring program will be reviewed annually. Where required, modifications to the program will be implemented to achieve the stated targets. Details of material changes to the feral animal management approach will be described in the Annual Environment Report.

C.5 Feral Animal Control Program

The feral animal control program will be undertaken annually within areas potentially impacted by the Project with a focus on:

- Areas where significant fauna have been recorded in proximity to the Project Area.
- Areas likely to attract feral animals, for example the camp, waste facilities, areas with accessible water and key infrastructure areas.

Feral animal control will include appropriate measures to control feral animals, as required, and may include:

- Baiting.
- Shooting.
- Grooming traps.
- Trapping.

C.6 Licences:

Depending on the method of feral animal control, different licences and permits are likely to be required. This may include, but not be limited to:

- Department of Health 1080 landholder application and permit.
- DPIRD License to Use Animals for Scientific Purposes.
- DPIRD Wildlife Animal Ethics Committee animal ethics permit.
- DBCA Fauna Licence approval.
- DBCA 1080 risk assessment and no toxic trial (Grooming traps).

C.7 Measurable outcomes

The success of the feral and pest animal reduction program will be measured by changes (decline) in feral animal presence recorded over time. It is anticipated that the feral animal monitoring and control program will reduce predation pressure of foxes and feral cats within proximity to the Project and should see an increase in the abundance of native vertebrate fauna species.

C.8 Reporting

The specialist contractors undertaking the feral and pest animal reduction program will provide a written report at the conclusion of each control program. The report will include the following sections: methods, results, discussion and recommendations.

This report will quantify the outcomes of feral animal control undertaken. The results of the control activities will be summarised in the annual environmental reports.

Contractor reports will be available upon request.

MINERAL RESOURCES

APPENDIX D
RISK ASSESSMENT

Appendix D Risk Assessment

A qualitative risk assessment was conducted in accordance with the Environmental Management Plan Guidelines (Commonwealth of Australia 2014) to assess the risks of the Project and is shown in **Table D 2**. Each environmental risk identified has been provided a likelihood and consequence rating using the criteria in **Table D 1** below to generate a risk rating of low, medium, high or severe.

Table D 1: RISK ASSESSMENT CRITERIA

	Consequence				
Likelihood	**Minor**	**Moderate**	**High**	**Major**	**Critical**
Highly likely	Medium	High	High	Severe	Severe
Likely	Low	Medium	High	High	Severe
Possible	Low	Medium	Medium	High	Severe
Unlikely	Low	Low	Medium	High	High
Rare	Low	Low	Low	Medium	High

Likelihood	
The following criteria has been used to determine the likelihood of the risk occurring	
Highly likely	The risk event is expected to occur in most circumstances
Likely	The risk event will probably occur during the life of the project
Possible	The risk event might occur during the life of the project
Unlikely	The risk event could occur but considered unlikely or doubtful
Rare	The risk event may only occur in exceptional circumstances
Consequence	
The following criteria has been used to determine the consequences of a risk occurring	
Minor	Minor incident of environmental damage that can be reversed
Moderate	Isolated but substantial instances of environmental damage that could be reversed with intensive efforts
High	Substantial instances of environmental damage that could be reversed with intensive efforts
Major	Major loss of environmental amenity and real danger of continuing
Critical	Severe widespread loss of environmental amenity and irrecoverable environmental damage

Table B 2: Fauna and Habitat ENVIRONMENTAL RISK ASSESSMENT

Value	Potential Impacts	Inherent Risk			Management Measures	Residual Risk		
		Likelihood	Consequence	Risk		Likelihood	Consequence	Ranking
Fauna and habitat	Unauthorised Clearing in critical habitat.	Possible	High	Medium	Management measures are outlined in **Table 7.** Any potential impacts from fauna habitat fragmentation is expected to be managed through suitable design and mitigation measures, this risk event is considered **MEDIUM**. Loss of habitat is proposed to be offset for: ○ Ghost bats ○ Northern Quoll ○ Pilbabra Olive Python	Unikely	High	Medium
Fauna and habitat	Fragmentation of fauna habitat.	Possible	Moderate	Medium	Management measures are outlined in **Table 7.** Any potential impacts from fauna habitat fragmentation is expected to be managed through suitable design and mitigation measures, with negligible impacts. Due to the limited nature of impacts and short life of mine, this risk event is considered **LOW**.	Possible	Minor	Low
Fauna	Fauna injury or mortality as a result of ground disturbance, machinery and blasting.	Possible	Moderate	Medium	Management measures are outlined in **Table 7.** Any potential impacts to fauna as a result of ground disturbance, vehicle interactions, machinery and blasting is expected to be managed through suitable design and mitigation measures, with negligible impacts. Due to the limited nature of impacts and short life of mine, this risk event is considered **LOW**.	Unlikely	Moderate	Low

Value	Potential Impacts	Inherent Risk			Management Measures	Residual Risk		
		Likelihood	Consequence	Risk		Likelihood	Consequence	Ranking
Fauna	Fauna mortality as a result of a potential increase in the prevalence of introduced species and feral predators.	Likely	High	High	Management measures are outlined in **Table 7.** The potential impacts to terrestrial fauna can be managed such that there are no significant residual impacts, and the biological diversity and ecological integrity of terrestrial fauna will be maintained. Therefore, it is considered **unlikely** that the Project will result in significant impacts from an increase to feral fauna predator activity, this risk event is considered **MEDIUM.**	Possible	High	Medium
Dust	Dust generated as part of construction and operational activities has the potential to impact on local flora and fauna. Reduced health and viability of fauna habitat	Likely	Moderate	Medium	Management measures are outlined in **Table 7.** Any potential decline or change in the health/composition of fauna and fauna habitat arising from dust are expected to be managed through suitable design and mitigation measures, with negligible impacts. Due to the limited nature of impacts and short life of mine, this risk event is considered **LOW**.	Possible	Minor	Low
Noise and vibration	Noise and vibration disrupting natural foraging and breeding behaviours	Possible	High	Medium	Management measures are outlined in **Table 7.** Any potential disruption to species behaviour from noise and vibration are expected to be managed through suitable design and mitigation measures, with negligible impacts. Due to the limited nature of impacts and short life of mine, this risk event is considered **LOW**.	Unlikely	Moderate	Low

Value	Potential Impacts	Inherent Risk			Management Measures	Residual Risk		
		Likelihood	Consequence	Risk		Likelihood	Consequence	Ranking
Light emissions	Artificial light can potentially disturb species behaviour, cause barriers to movement, cause abandoning of roosts and nests, and expose nocturnal animals to nocturnal predators.	Likely	Moderate	Medium	Management measures are outlined in **Table 7.** Any potential disruption to species behaviour from artificial light are expected to be managed through suitable design and mitigation measures, with negligible impacts. Due to the limited nature of impacts and short life of mine, this risk event is considered **LOW**.	Likely	Minor	Low
Weeds	Introduction and/or spread of weed species leading to reduced flora species and system diversity.	Likely	Moderate	Medium	Management measures are outlined in **Table 7.** Any potential decline or change in the health/composition of fauna habitat arising from the introduction and/or spread of weeds are expected to be managed through suitable design and mitigation measures, with negligible impacts. Due to the limited nature of impacts and short life of mine, this risk event is considered **LOW**.	Possible	Minor	Low
Hydrocarbons	Inadequate transport, handling and storage of hydrocarbons and chemicals leading to contamination of the environment	Likely	Minor	Low	Management measures are outlined in **Table 7** Any potential contamination of fauna habitat arising from the inadequate transport, handling and storage of hydrocarbons and chemicals is expected to be managed through suitable design and mitigation measures, with negligible impacts. Due to the limited nature of impacts and short life of mine, this risk event is considered **LOW**	Possible	Minor	**Low**

Value	Potential Impacts	Inherent Risk			Management Measures	Residual Risk		
		Likelihood	Consequence	Risk		Likelihood	Consequence	Ranking
Fire	Construction activities have the potential to cause accidental bushfires which may lead to damage or death to surrounding flora and fauna communities	Likely	High	High	Management measures are outlined in **Table 7.** Any potential decline or change in the health/composition of fauna habitat arising from fire are expected to be managed through suitable design and mitigation measures, with negligible impacts. Due to the limited nature of impacts and short life of mine, this risk event is considered **MEDIUM**.	Unlikely	High	Medium
Hydrological change	Potential decline or change in the health/composition of fauna habitat arising from hydrological regime changes.	Likely	Moderate	Medium	Management measures are outlined in **Table 7.** Any potential decline or change in the health/composition of fauna habitat arising from hydrological changes are expected to be managed through suitable design and mitigation measures, with negligible impacts. Due to the limited nature of impacts and short life of mine, this risk event is considered **LOW**.	Possible	Minor	Low

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