

CITIC PACIFIC
MINING

SINO Iron Project

Northern Quoll Management Plan

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Name	Position/title
Bruce Watson	Manager Sustainability and Environment

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1 Introduction

CITIC Limited (formerly named CITIC Pacific Limited) is the ultimate owner of Sino Iron Pty Limited (**Sino Iron**) and Korean Steel Pty Limited (**Korean Steel**). Sino Iron and Korean Steel were acquired from Mineralogy Pty Limited and are both parties to the agreement scheduled to the *Iron Ore Processing (Mineralogy Pty. Ltd.) Agreement Act 2002* (as amended).

Sino Iron and Korean Steel each hold mining rights and subleases authorising the extraction of a combined two billion tonnes of magnetite ore, from an orebody known as the George Palmer deposit, located in the West Pilbara region of Western Australia, and contained entirely within Mining Leases M08/123, M08/124 and M08/125.

In 2006, CITIC Limited established CITIC Pacific Mining Management Pty Ltd (**CPM**) to manage development and ongoing operation of its iron ore mine and export facilities at Cape Preston collectively referred to as the Sino Iron Project (**Existing Project**). CPM conducts those activities on behalf of Sino Iron and Korean Steel in accordance with requirements within Ministerial Statement 635 (**MS635**) which was granted by the Minister for the Environment under Part IV of the *Environmental Protection Act 1986 (EP Act)* in 2003.

1.1 Purpose and Scope

To ensure that impacts to Northern Quoll are managed appropriately, the Sino Iron Northern Quoll Management Plan (**NQMP**) describes management actions, monitoring and reporting requirements that have been implemented by the Existing Project.

The content of the NQMP has been extracted from the CPM Operational Environmental Management Plan (OEMP).

2 Northern Quoll

The Northern Quoll (*Dasyurus hallucatus*) is an endangered species of northern Australia (EPBC Act and Schedule 1, *Wildlife Conservation Act 1950 (WC Act)*).

A recent desktop assessment and reconnaissance confirmed that Northern Quoll occurred within the man-made habitat at the port (refer to Appendix A, Figure 1) (Ecoscape 2016a). The reconnaissance survey also confirmed that the mine area was not considered to contain populations or critical habitat of the Northern Quoll.

Port Northern Quoll population

A further targeted survey was implemented at the Port within both natural and made-made habitat (Ecoscape 2016b). Whilst the targeted survey identified three male Northern Quolls along the breakwater it did not identify any females which indicated that this population was not stable (Ecoscape, 2016b).

Other records of Northern Quoll activity at the Port include:

- Motion cameras used during the reconnaissance survey observed Northern Quoll at a natural water seep, which is also a registered heritage site; and
- Opportunistic photographic observations by staff at Port workshops and other buildings (Ecoscape 2016a).

The constructed breakwater at the Port appeared to be denning habitat as it is similar to natural boulder piles which are typically an important feature to Northern Quolls (Ecoscape 2016b).

Constructed habitats may be an important management tool to offset negative impacts from resource projects and may also inform criteria for closure. Monitoring of Northern Quoll populations at the port facility may provide valuable information on the viability of constructed habitats for Northern Quolls in the Pilbara.

Within the above context CPM's management focus will be to minimise interactions with Northern Quolls and to avoid unacceptable impacts to this species, whilst collecting information that may be useful and contribute to achieving conservation objectives for this species.

2.1 Impacts to be Managed

With the presence of Northern Quolls confirmed at the Port, management actions will be put in place to minimise potential impacts to this species. Potential impacts may include:

- Reduction in habitat due to implementation of the Existing Project and any future proposals;
- Increase in injury or mortalities as a result of operational activities including vehicle collision with Northern Quolls; and
- Competition and predation on Northern Quolls by feral animals, particularly feral cats and foxes.

2.2 Compliance Obligations

Legislation and approvals related to protection of Northern Quoll includes:

- *Environment Protection and Biodiversity Conservation Act 1986* – species listed within Schedule 1
- Part IV *Environmental Protection Act 1986* – MS635
- *Wildlife Conservation Act 1950*.

MS635 which was granted by the Western Australian Minister for the Environment includes a number of commitments related specifically at the protection of flora and fauna including:

- **Commitment 2:** The OEMP is to include flora and fauna management plans; and
- **Commitment 6:** Implement a Fauna Management Plan

This Plan is intended to address potential impacts to Northern Quoll to ensure compliance with legislation and related approvals.

2.3 Management Objectives

CPM's management objectives for Northern Quoll are to:

1. Minimise potential for injury or mortality to Northern Quolls;
2. Minimise disturbance to Northern Quoll habitat; and
3. Increase knowledge of Northern Quoll Populations in proximity to the Project.

2.4 Environmental Management of Northern Quolls

The management actions listed in Table 1 have been developed to address the impacts and to ensure CPM's management objectives for this species are achieved.

Table 1: Northern Quoll management action

No.	Action / control measure	Responsibility	Timing
1	In accordance with CPM's Risk Assessment framework identify high risk areas, including where Northern Quoll species and habitat have been identified and potential impacts are likely. This is to include major project activities within known artificial habitats such as the breakwater.	Environment department Area managers	Ongoing
2	Record Northern Quoll survey results by fauna specialists in GIS systems and ground disturbance approval processes.	Environment department GIS department	Ongoing
3	Update environmentally sensitive areas data within GIS and ground disturbance planning systems to include Northern Quolls confirmed by Fauna specialists. (Access to confirmed Northern Quoll habitat will be restricted.)	Environment department GIS department All personnel	Ongoing
4	Ad-hoc Northern Quoll sightings by personnel will be recorded and reviewed annually.	Environment department All personnel	Ongoing
5	GDP process to ensure: <ul style="list-style-type: none"> - Disturbance is within approved project footprint; - Northern Quoll spatial data and recorded sightings are considered as a part of any constraints assessment completed for GDP applications; - planned clearing is adjusted where possible to avoid disturbance of habitat areas; - Inspections and assessment of areas for active denning are completed within potential Northern Quoll habitat; and - Disturbance to active Northern Quoll habitat is avoided. 	Area managers GDP Manager Environment department Area supervisors GDP Manager Environment advisers	Ongoing
6	To mitigate potential injury or death of Northern Quoll within the Project.	All personnel Environment department area managers GDP Manager Environment department	Ongoing
7	Implement feral animal control program (feral cats, foxes, wild dogs) to reduce competition and /or predation threat. Any control program will consider potential impacts to Northern Quoll.	Environment department	Ongoing
8	Workforce Environmental Awareness Program to include	Environment	Ongoing

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Northern Quoll Management Plan**



No.	Action / control measure	Responsibility	Timing
	material on Northern Quoll management and protection (examples include induction, toolbox meetings, awareness signs/posters, minimising waste). Awareness is to include hours of activity, likely locations and what the workforce would do if it encounters a Northern Quoll (e.g. allow fauna to move on, don't touch).	department	

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3 Environmental Monitoring of Northern Quolls

Monitoring will be conducted as described in Table 2 below to identify new Northern Quoll activity in proximity to the Project. This monitoring will also provide feedback into the effectiveness of management measures and increase knowledge of this species.

Table 2: Northern Quoll monitoring activity

Monitoring activity	Responsibility	Timing
Review Northern Quoll sightings to confirm if there are any new locations where this species has been observed.	Environment Department	Annually
Within potential Northern Quoll habitat that occurs within any GDP applications undertake inspections for active denning activity.	Environment Department	Ongoing

3.1 Evaluation and Review

CPM will continually evaluate and review its management of Northern Quoll to identify opportunities to improve management systems and conservation outcomes for this species in proximity to the Project. Table 3 describes review triggers and related actions to ensure that CPM's management of this species is continually improved.

Table 3: Northern Quoll evaluation and revision triggers to action

Trigger	Action	Responsibility	Timing
New active Northern Quoll areas detected on project	Confirmation by Fauna specialist. Update GIS active habitats in GIS system. Update Environmental Sensitive Area map Review other actions	Environment Department	Ongoing
Active Northern Quoll dens located in areas to be disturbed by project activities	If dens cannot be avoided, individuals to be relocated by Fauna specialist in consultation with DPaW.	Environment Department	Ongoing
Injury or Mortality to Northern Quoll	Take appropriate measures to manage injured wildlife. To mitigate potential future incidents, reporting and investigate injury or death of Northern Quoll within the Project incident	Environment Department	At time of incident

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Trigger	Action	Responsibility	Timing
	management system.		
Unauthorised clearing of Northern Quoll habitat	Investigate incident, identify impacts to Northern Quoll and implement corrective actions as required.	Area managers GDP Manager Environment manager CEO	At time of incident

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4 Reporting

Table 4 outlines proposed internal and external reporting actions.

Table 4: Northern Quoll reporting actions

Trigger	Action	Responsibility	Timing
Fauna specialist confirms new, active, Northern Quoll den within approved project disturbance footprint and relocation of individuals is required.	Report to regulator DPaW as part of Licence to Take Fauna requirements.	Fauna specialist	At time of monitoring
Northern Quoll monitoring conducted	Summarise in annual report to regulators.	Environment Department	Annual
Evaluation and revision triggered	Review and report to regulator according to CPM incident reporting flowchart, as required by legislation or legislative condition	Environment Department	At time of trigger

5 References

- Cramer et al 2016, Research Priorities for the Northern Quoll (*Dasyurus hallucatus*) in the Pilbara Region of Western Australia, 5 February 2016
- Ecoscape 2016a, Cape Preston Northern Quoll Reconnaissance Survey, Ecoscape (Australia) Pty Ltd, Report prepared for CITIC Pacific Mining Management Pty Ltd, 16 December 2016
- Ecoscape 2016b, Cape Preston Northern Quoll Targeted Survey, Ecoscape (Australia) Pty Ltd, Report prepared for CITIC Pacific Mining Management Pty Ltd, 16 December 2016

Appendix A – Figures

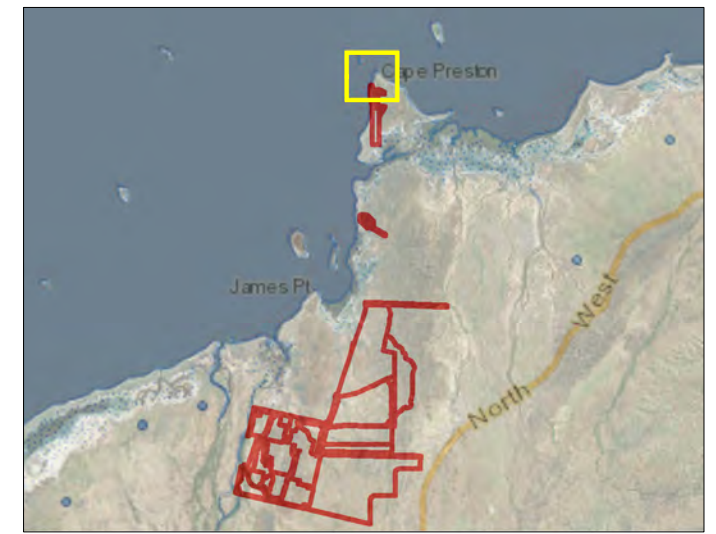
Figure 1 – Northern Quoll Locations from Reconnaissance Survey (Ecoscape 2016b)



LEGEND

- Northern Quoll
- Disturbance Expansion

DATASOURCES:
 SOURCE DATA: ECOSCAPE, CITIC PACIFIC MINING, STRATEGEN,
 BASEMAP: GEOSCIENCE AUSTRALIA. (2015). NATIONALMAP COLOUR TOPOGRAPHIC BASE WORLD WM
 AERIAL: LANDGATE
 SERVICE LAYERS: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS
 DS: USDA, USGS, AEX, GETMAPPING, AEROGRIID, IGN, IGP, SWISSTOPO, AND THE GIS USER
 COMMUNITY



ecoscape

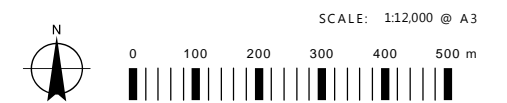
**NORTHERN QUOLL LOCATIONS
 FROM RECONNAISSANCE SURVEY**

**CAPE PRESTON NORTHERN QUOLL
 TARGETED SURVEY**

STRATEGEN



COORDINATE SYSTEM: GDA 1994 MGA ZONE 50
 PROJECTION: TRANSVERSE MERCATOR
 DATUM: GDA 1994
 UNITS: METER



PROJECT NO: 3688-16

REV	AUTHOR	APPROVED	DATE
0	CP	SB	24/05/2016

**MAP
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