SIMCOA
Silicon Metal Company of Australia

Simcoa Operations Pty Ltd

North Kiaka
Offset Management Plan

May 2025

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Executive summary

SIMCOA is proposing to establish a new quartzite mine, referred to as North Kiaka Mine (the Project), immediately north of Moora Mine (with the mine pit located approximately 1.5 to 2 km north of Kiaka Road). The proposed development of the North Kiaka mine is located within tenement M70/1292. SIMCOA also intend to build an abandonment bund around the Moora Mine pits, to comply with closure requirements for the existing operations. The Project and Moora Mine abandonment bund are being considered as a significant amendment to the Moora Mine Ministerial Statement (MS 813) Together the Project and the Approved Proposal (Moora Mine and Kemerton Smelter) comprise **the Revised Proposal**.

The establishment of the North Kiaka Mine includes:

- One mine pit
- One waste rock landform (Tonkin waste dump)
- A new run of mine area (ROM)
- Hydrocarbon storage
- A linear infrastructure access corridor connecting to Moora Mine
- Associated infrastructure such as workshops, offices, ablutions, laydown and stockpile areas and a weighbridge.

The Proposed Action (hereafter referred to as the Revised Proposal) entails clearing of approximately 18.12 ha of native vegetation, which includes 17.05 ha of Coomberdale Chert Threatened Ecological Community (TEC) and 15.58 ha of Black Cockatoo Foraging Habitats. These impacts have been determined through the assessment to be significant and therefore required to be offset.

The purpose of this Offset Management Plan (OMP) is to describe the management actions that will be undertaken to maintain the environmental values and condition for the Offset Areas, preventing degradation.

The proposed Offset Areas comprise Cairn Hill Reserve and Cairn Hill North. Cairn Hill North is a 58.34 ha site which was set aside in 2010 (after agreement was reached between DBCA, SIMCOA and the land owner) with the intent to add the area to the Cairn Hill Class-A reserve as an offset for the SIMCOA's future expansion (consistent with Condition 7 of MS 813). Cairn Hill North is located directly to the north of Cairn Hill nature reserve on Lot 52 (M70/191 and M70/424).

The OMP incorporates direct offsets to address the significant residual impact on the Coomberdale Chert TEC and Black Cockatoo foraging habitat. The Direct offsets provide for 100% of the offset requirement for the Coomberdale Chert TEC and Black Cockatoo foraging habitat. The ecological assessment of the Offset Areas identified that threatening processes such as grazing, dieback infestation and weed invasion have the potential to impact vegetation and habitat quality and affect conservation gain.

A Memorandum of Understanding (MOU) will be prepared between SIMCOA and the Department of Biodiversity, Conservation and Attractions (DBCA) once Ministerial Approval has been granted. The MOU will detail the management actions to be implemented across the Offset Areas, and the parties responsible (SIMCOA, DBCA or other) for each action.

This OMP is subject to, and must be read in conjunction with, the assumptions and qualifications contained throughout the OMP.

Defined Terms

Term	Definition
SIMCOA	SIMCOA Operations Pty Ltd
Coomberdale TEC	Remnant vegetation of the Threatened Ecological Community (TEC): "Health dominated by one or more *Regelia megacephala, Kunzea praestans* and *Allocasuarina campestris* on ridges and slopes of the chert hills of the Coomberdale Floristic Region".
Moora Mine	SIMCOA's operational quartzite mine located approximately 15 km north of Moora, in the Wheatbelt of Western Australia. Moora Mine which is located on tenements M70/191, G70/91, G70/92 and G70/93, is governed under Ministerial Statement 813.
Moora Mine Development Envelope (DE)	Moora Mine is located within an existing DE of 239.10 ha including: – Disturbance Footprint of not more than 96 ha
The Project	The development of a new quartzite mine, North Kiaka, approximately 2 km north of Moora Mine. The proposed mine at the North Kiaka DE, is located within tenement M70/1292, and is anticipated to produce up to 130,000 tpa of lump quartz (approximately 2.34 million tonnes over the life of the mine).
North Kiaka DE	The North Kiaka DE is 216.42 ha, including: – Disturbance Footprint of up to 44.59 ha – Native vegetation clearing up to 17.12 ha.
Kemerton Smelter	SIMCOA's existing Smelter located in Kemerton Strategic Industrial Area (KSIA). Kemerton Smelter commenced operation in 1989 and is currently authorised to produce up to 53,000 tonnes per annum (tpa) of silicon from four (4) submerged electric arc furnaces. Kemerton Smelter is governed by Ministerial Statement 813.
Approved Proposal	The activities at Moora Mine and Kemerton Smelter which are described and approved under Ministerial Statement 813 (MS 813)
The Proposal	The Proposal as referred under s38 of the *Environmental Protection Act 1986* to the EPA for assessment.
The Revised Proposal	The Project and Approved Proposal under MS 813 (Moora Mine and Kemerton Smelter) and the Moora Mine abandonment bund.

Acronyms

Term	Definition
AH Act	*Aboriginal Heritage Act 1972*
AS	Australian Standards
ASRIS	Australian Soil Resource Information System
ASS	Acid Sulfate Soils
BC Act	*Biodiversity Conservation Act 2016* (WA)
BoM	Bureau of Meteorology
CALM	Conservation and Land Management (former)
Coomberdale TEC	Heath dominated by one or more *Regelia megacephala, Kunzea praestans* and *Allocasuarina campestris* on ridges and slopes of the chert hills of the Coomberdale Floristic Region"
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DBCA	Department of Biodiversity, Conservation and Attractions
DBH >300mm	Diameter at breast height greater than 300 mm
DE	Development Envelope

Term	Definition
DJTSI	Department of Jobs, Tourism, Science and Innovation (WA)
DEMIRS	Department of Energy, Mines, Industry Regulation and Safety (WA)
DMP	Department of Mines and Petroleum (WA)
DAWE	Department of Agriculture, Water and the Environment (Commonwealth) (former)
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Commonwealth)
DoW	Department of Water (WA) (former)
DPaW	Department of Parks and Wildlife (WA)
DPLH	Department of Planning, Lands and Heritage (WA)
DSEWPAC	Department of Sustainability, Environment, Water, Population and Communities (Commonwealth)
DWER	Department of Water, Environment and Regulation (WA)
EMP	Environmental Management Plan
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	Environmental Protection Regulations 1987 (WA)
EPA	Environmental Protection Authority (WA)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
EPBC Regulations	Environmental Protection and Biodiversity Conservation Regulations 2019 (Commonwealth)
EPN Regulations	Environmental Protection (Noise) Regulations 1997 (WA)
EPP	Environmental Protection Policy (WA)
ESA	Environmentally Sensitive Area
GoWA	Government of Western Australia
HQS	DCCEEW Habitat Quality Scoring Tool
IBRA	Interim Biogeographic Regionalisation for Australia
KSIA	Kemerton Strategic Industrial Area
MCMPR	Ministerial Council on Mineral and Petroleum Resources
Mining Act	*Mining Act 1978* (WA)
MOU	Memorandum of Understanding
MNES	Matters of National Environmental Significance
MS	Ministerial Statement
MS 813	Ministerial Statement 813
NEPM	National Environment Protection Measure
NGER Act	*National Greenhouse and Energy Reporting Act 2007*
NOI	Notices of Intent
NR	Nature Reserve
NSW AMMAAP	New South Wales Approved Methods for the Modelling and Assessment of Air Pollutants
NTC	Native Title Claim
P1, P2, P3, P4	Priority 1, Priority 2, Priority 3, Priority 4
PCD	Proposal Content Document
PDWSA	Public Drinking Water Source Area
PMST	Protected Matters Search Tool
RiWI Act	*Rights in Water and Irrigation Act 1914* (WA)
ROM	Run of Mine

Term	Definition
SMU	Soil Mapping Unit
SPP	State Planning Policy
SRE	Short Range Endemic
SRI	Significant Residual Impact
SWALSC	South West Aboriginal Land and Sea Council
TEC	Threatened Ecological Communities
TSP	Total suspended particulates
Tonkin WRD	Tonkin Waste Rock Dump
WA	Western Australia
WQPN	Water Quality Protection Note

Units of measure

Term	Definition
%	percentage
<	Less than
°C	Degrees Celsius
bgl	Below ground level
ha	hectare
km	Kilometre
L	Litres
L/day	Litres per day
m	metres
m^3	Cubic metres
mm/year	Millimetres per year
mRL	Mean relative level
MT	Million tonnes
PM_{10}	Total suspended particulates with an aerodynamic diameter of 10 microns
$PM_{2.5}$	Total suspended particulates with an aerodynamic diameter of 2.5 microns
tpa	Tonnes per annum

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1. Introduction

1.1 Proposal

SIMCOA is proposing to establish a new quartzite mine, referred to as North Kiaka Mine (the Project), immediately north of Moora Mine (with the mine pit located approximately 1.5 to 2 km north of Kiaka Road) as shown in Figure 1. The proposed development of the North Kiaka mine is located within tenement M70/1292. SIMCOA also intend to build an abandonment bund around the Moora Mine pits, to comply with closure requirements for the existing operations. The Project and Moora Mine abandonment bund are being considered as a significant amendment to the Moora Mine Ministerial Statement (MS 813). Together the Project and the Approved Proposal (Moora Mine and Kemerton Smelter) comprise **the Revised Proposal**.

The North Kiaka Mine includes:

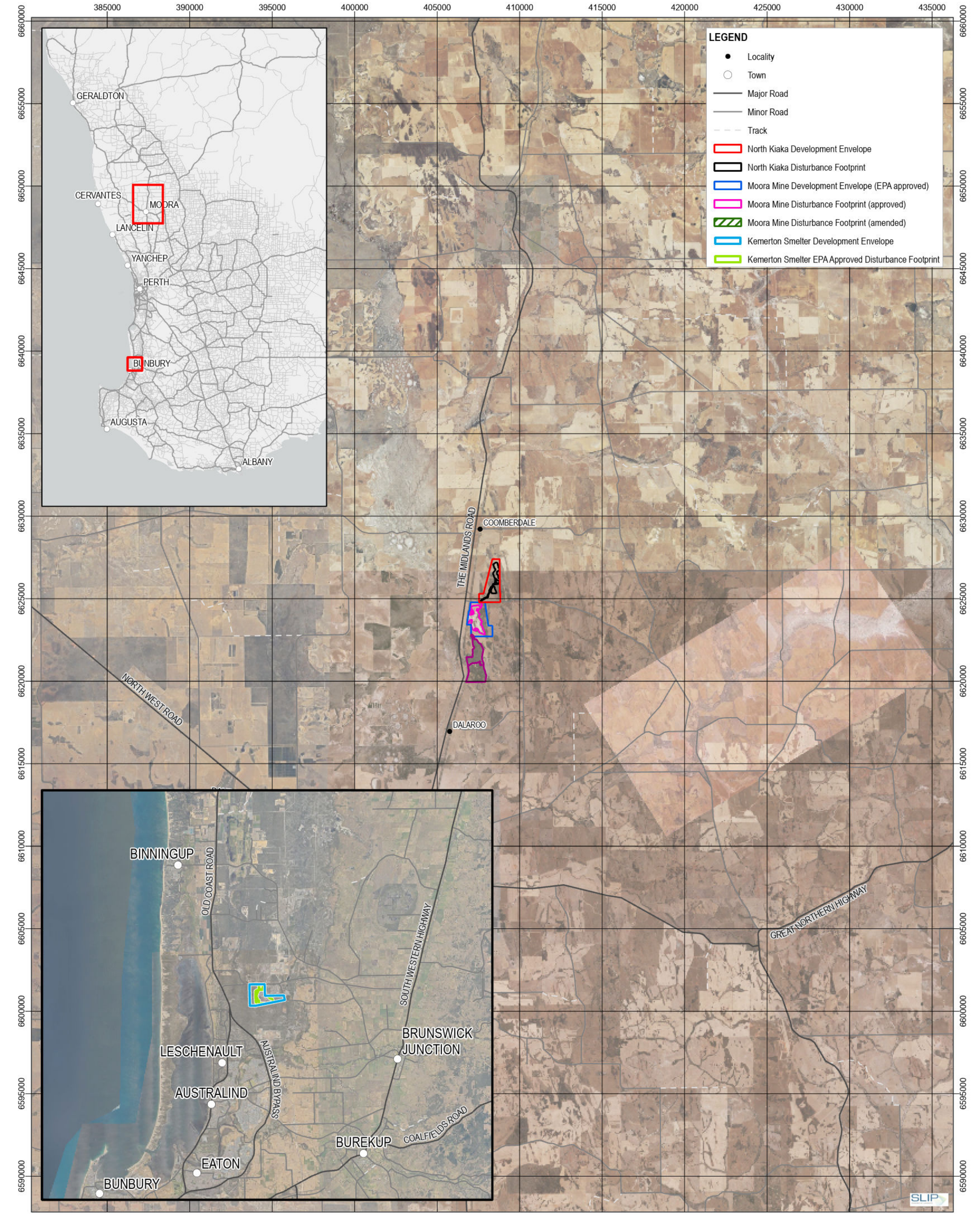
- One mine pit
- One waste rock landform (Tonkin waste dump)
- A new run of mine area (ROM)
- Hydrocarbon storage
- A linear infrastructure access corridor connecting to Moora Mine
- Associated infrastructure such as workshops, offices, ablutions, laydown and stockpile areas and a weighbridge, refer Figure 2.

The Revised Proposal will replicate approved mining methods undertaken at the Moora Mine, with the ore body mined via drill and blast methods. The open pit will be constructed to a maximum depth of 46 m below ground level (bgl) with mining at the Project remaining above the water table. The quartz material will be removed using excavators and haul trucks, transporting it to the ROM located at the Moora Mine where it will undergo processing via a crushing and wet screening process, prior to being stored in aggregate stockpiles. The processed ore will be transported via covered truck to the Kemerton Smelter located in Kemerton Strategic Industrial Area (KSIA), approximately 17 km north-east of Bunbury in the South West of WA. It is anticipated the existing Mine will be operational for another six (6) years, during which SIMCOA will develop the Project.

SIMCOA referred the Revised Proposal to:

- WA Environmental Protection Authority (EPA) under Section 40 (a)(2) of the *Environmental Protection Act 1986* (EP Act) - Reference Assessment 2346.
- Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) - Reference No. 2021/9089.

The Proposed Action as shown in Figure 2 entails clearing of approximately 18.12 ha of native vegetation, which includes 17.05 ha of Coomberdale Chert Threatened Ecological Community (TEC) and 15.58 ha of Black Cockatoo Foraging Habitat.



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Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

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North Kiaka Project Approval
Support - Sites Assets

Revised Proposal Location

Project No. **12627587**
Revision No. **A**
Date **12/05/2025**

FIGURE 1

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Data source: Simcoa: Mining Development Shape Areas is derived from client recieved 2020; Landgate: Slip Imagery - April 2017 to November 2018 (accessed - 20191023), Cadastre, Road - 20180601; GA: Natmap Geodata Topo 250k Series 3. Created by: rbrown3

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6627800 6627600 6627400 6627200 6627000 6626800 6626600 6626400 6626200 6626000 6625800 6625600 6625400 6625200 6625000 6624800 6624600 6624400

Midlands Rd

Kiaka Rd

LEGEND

- Road
- Watercourse
- Haul road
- Cadastre
- North Kiaka Development Envelope
- North Kiaka Disturbance Footprint
- Moora Mine Development Envelope (EPA approved)
- Moora Mine Disturbance Footprint (approved)
- Moora Mine Disturbance Footprint (amended)
- Easement
- Infrastructure
- Infrastructure/Laydown
- Mine pit
- Tonkin waste
- North Dump
- North Dump (Current)

Paper Size ISO A3

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

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North Kiaka DE and Disturbance Footprint

Project No. **12627587**
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FIGURE 2 Part 1

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Data source: Simcoa: Mining Development Shape Areas is derived from client recieved 2020; Landgate: Slip Imagery - April 2017 to November 2018 (accessed - 20191023), Cadastre, Road - 20180601; DMIRS: Mining Tenements - 20180601; DoW: River - 201108. Created by: rbrown3

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6625400 6625200 6625000 6624800 6624600 6624400 6624200 6624000 6623800 6623600 6623400 6623200 6623000 6622800 6622600 6622400 6622200 6622000

Kiaka Rd

Midlands Rd

LEGEND

- Road
- Watercourse
- Haul road
- Cadastre
- North Kiaka Development Envelope
- North Kiaka Disturbance Footprint
- Moora Mine Development Envelope (EPA approved)
- Moora Mine Disturbance Footprint (approved)
- Moora Mine Disturbance Footprint (amended)
- Easement
- Infrastructure/Laydown
- Tonkin waste
- Main Pit
- North Dump
- Haul Roads
- Refuelling Area
- West Pit
- ROM Pad
- Crusher
- North Dump (Current)
- Main Waste Dump
- Old North Dump
- South East Waste Dump
- West Pit Dump
- Workshop
- Settling Dams
- Offices/Buildings
- Weighbridge
- OPS Area
- Railway Stockpile Pad
- Fines Stockpiles
- Intermediate Stockpiles
- Scalps Stockpiles

Paper Size ISO A3

0 100 200 300

Metres

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Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

GHD

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North Kiaka Project Approval Support - Sites Assets

Moora Mine EPA Approved Disturbance Footprint

Project No. **12627587**
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FIGURE 2 Part 2

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1.2 Assumptions and Limitations

This report: has been prepared by GHD for SIMCOA and may only be used and relied on by SIMCOA for the purpose agreed between GHD and SIMCOA as set out in section 1.3 of this report.

GHD otherwise disclaims responsibility to any person other than SIMCOA arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

1.3 Purpose of this OMP

The purpose of this OMP is to describe the management actions that will be undertaken at the Offset Areas (Cairn Hill and Cairn Hill North) as required for the Revised Proposal. These management actions have been prepared in consultation with both DCCEEW and DBCA representatives.

The OMP will be implemented in consultation with the relevant agencies to progress monitoring and management measures for the Offset Areas which will, as far as practicable, maintain vegetation condition and reduce risk of damage from weeds and pests, which may contribute to the degradation of ecological values.

2. Offset Areas

2.1 Cairn Hill Reserve and Cairn Hill North

2.1.1 Total offset areas

The proposed Offset Areas are located within the Cairn Hill Reserve and Cairn Hill North (Figure 3).

Cairn Hill Reserve has an area of 152.01 ha and is located 600m to the south of the Moora Mine and 2 km of the North Kiaka Development Envelope. The Area was set aside in 2001 as a Class A Reserve for nature conservation, to offset the clearing of 5 ha of vegetation at Moora Mine site. Approximately 18 ha of the Cairn Hill Class-A reserve (Table 1) was required to offset the clearing area, with the remaining area set aside by SIMCOA as part of the conservation estate and would be described as an Advanced offset under both State and Federal guidance (DoEE, 2018; EPA, 2024).

Table 1 Previous Offset – Moora Mine

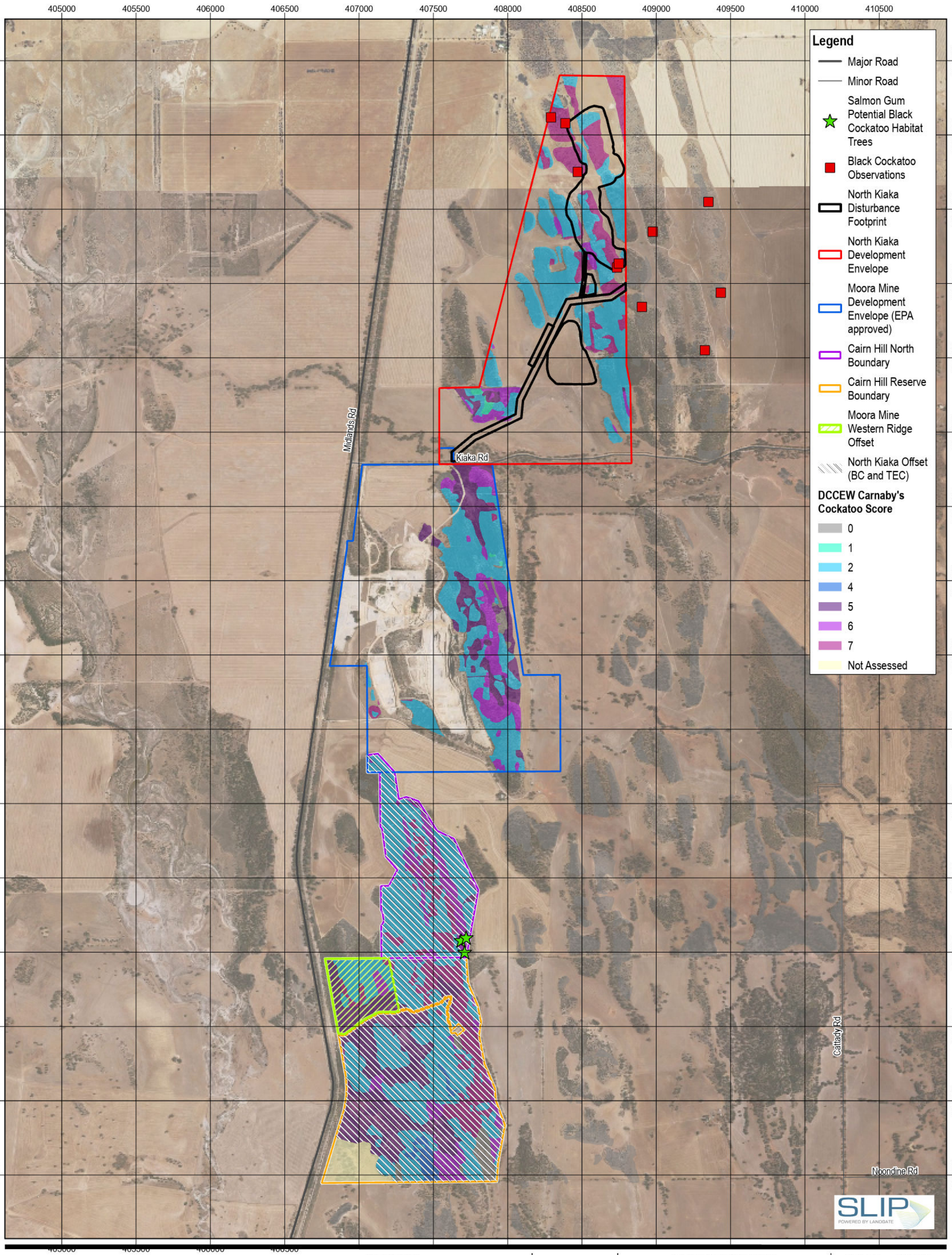
Aspects	Cairn Hill Reserve	Committed for Moora Mine	Remaining for North Kiaka Offset
Area of vegetation within Offset Areas considered suitable for offset of Black Cockatoo foraging habitat[1]	142.67 ha	18 ha	124.67 ha
Area of vegetation within Offset Areas considered suitable for offset of Coomberdale TEC and Threatened Flora habitat	152.01 ha	18 ha	134.01 ha

Cairn Hill North is a 58.34 ha site which was set aside in 2010 (after agreement was reached between DBCA, Simcoa and the landowner) with the intent to add it to the Cairn Hill Class-A Reserve as an offset for the SIMCOA's proposed expansion (consistent with Condition 7 of MS 813). Cairn Hill North is located directly north of the Cairn Hill nature reserve on Lot 52 (M70/191 and M70/424). The Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) on behalf of DBCA proposed a land exchange whereby the landowner would relinquish the land outlined as Cairn Hill North and in return be granted grazing access to Lot 4358 (57 ha) located to the east of Cairn Hill (30 January 2020). The land exchange arrangement has been agreed between SIMCOA and the landowner.

With the recent legislation (*Land and Public Works Legislation Amendment Act 2023* (LAPWLA Act)), the Revised Proposal will be managed under a whole of government approach. Once a letter is issued from DEMIRS confirming the transition to a Conservation Reserve, an application to approve under the *Land Administration Act 1997* can progress. Once the Revised Proposal is granted Ministerial approval, land tenure will be changed to Reserve for the purposes of Conservation of Flora and Fauna.

Cairn Hill North has been fenced in anticipation of the change of tenure and its incorporation into the Cairn Hill Reserve. Fencing has prevented livestock access from the adjacent farmland and has assisted in minimising weed spread through animal movement, two factors known to impact vegetation condition and populations. Once the DEMIRS approval is received, the total area of 210.35 ha comprised of 152.01 ha of Cairn Hill Reserve and 58.34 ha of Cairn Hill North will be managed by DBCA in perpetuity.

[1] *Not all vegetation within the Offset Areas is suitable as Black Cockatoo foraging habitat due to suitable species*



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Meters

Map Projection: Transverse Mercator
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Proposed Offset Areas

FIGURE 3

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Data source: World Topographic Map: Esri, HERE, Garmin, FAO, NOAA, USGS
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The Offset Areas includes the vegetation community, the Coomberdale Chert TEC (Coomberdale TEC) (Figure 4 and Figure 5), Threatened Flora Species (Figure 6) and Black Cockatoo Foraging Habitat (Figure 7). Several Flora and Vegetation Surveys have been undertaken including Detailed Surveys and Targeted surveys of the Coomberdale TEC, of both the Revised Proposal development envelope and the Offset Areas (Trudgen, Morgan, & Griffin, 2012; Trudgen, 2018), (GHD, 2024a). In addition to the flora and vegetation surveys, a fauna survey was undertaken which included an assessment of the quality of foraging habitat. The combined data from the surveys are described in the *North Kiaka Terrestrial Fauna and Targeted Black Cockatoo Habitat Survey* (GHD, 2024b).

Table 2 ***Summary of proposed offset areas***

Aspects	Cairn Hill Reserve (Offset 1)	Cairn Hill North (Offset 2)	Combined area
Area of vegetation within Offset Areas considered suitable for offset of Black Cockatoo foraging habitat	124.67 ha	58.05 ha	182.72 ha
Area of vegetation within Offset Areas considered suitable for offset of Coomberdale TEC and Threatened Flora habitat	134.01 ha	58.34 ha	192.35 ha
Number of *Acacia aristulata* individuals recorded	27	6	33
Number of *Daviesia dielsii* individuals recorded	72	9	81
Total Area	**134.01 ha**	**58.34 ha**	**192.35 ha**

** Threatened species recorded by GHD in 2024 during a targeted Threatened and Priority Flora search of the Offset Areas*

To confirm the proposed Offset Areas provide at least 100% of the residual impact, calculations were undertaken using the EPBC's offset calculator guided by the Offsets Assessment Guide and in accordance with the EPBC Act Environmental Offsets Policy. The calculations were confirmed with DCCEEW representatives on 18 November 2024. The Offset Strategy (GHD 2024) describes vegetation condition and site proximity of the MNES and Offset Areas in detail, which are derived from the results of biological surveys and the HQS tool, to provide inputs into the *EPBC Offset Assessment Guide Calculator*. The guidance for risk of loss calculations used in the EPBC calculator have been sourced from the *NESP Threatened Species Recovery Project 5.1: Research findings factsheet: Better offsets for Western Australia's black-cockatoos.* (Maron, 2021).

Based on the vegetation surveys (Trudgen, Morgan, & Griffin, 2012; Trudgen, 2018) for the Revised Proposal (North Kiaka DF and Moora Mine DF), the vegetation representing the Coomberdale Chert TEC includes habitat for MNES Threatened Flora species (*Acacia aristulata and Daviesia dielsii)* within the impact area. This vegetation ranges from Degraded and Good to Very Good condition (Table 3).

Table 3 ***Impact calculator –Coomberdale TEC and Threatened Flora habitat***

Attribute	Value	Justification
Area of impact	17.05 ha	Trudgen et al (2012, 2018) and Trudgen and GHD (2024) confirmed TEC
Quality	7	7.59 ha of Poor/ Good to Very Good condition
	6	9.46 ha of Degraded to Very Poor condition
Quantum of impact	5.31 ha	EPBC calculator – Poor/ Good to Very Good condition in the clearing area.
	5.68 ha	EPBC calculator – Degraded to Very Poor condition in the clearing area.

The Revised Proposal will clear up to 15.58 ha of Carnaby's Cockatoo foraging habitat with an average HQS score of five. The calculation methodology has been provided in Appendix A1. The quantum of impact for the clearing of the Black Cockatoo foraging habitat for the Revised Proposal is shown in Table 4.

Table 4 ***Impact calculator – Black Cockatoo***

Attribute	Value	Justification
Area of impact	15.58 ha	Potential high value Black Cockatoo foraging habitat (GHD, 2021a).
Quality	5	Quality based on DAWE (2022) foraging assessment tool in DCCEEW Referral guideline for 3 WA threatened black cockatoo species and DCCEEW BC habitat quality scoring tool.
Quantum of impact	10.91 ha	EPBC calculator

A summary of the Offset Areas proposed in this OMP, with offset values for each MNES, is outlined in Table 5 and Table 6.

Table 5 ***Offset calculator – Coomberdale TEC***

Attribute	Offset area 1 (Cairn Hill Reserve)	Offset area 2 (Cairn Hill North)	Justification	
Proposed offset area	63 ha	0	For residual impact of Poor/ Good to Very Good condition vegetation and Threatened Flora habitat in area to be cleared.	
	67 ha	0	For residual impact of Degraded to Very Poor condition vegetation and Threatened Flora habitat in area to be cleared	
	130 ha	0	Cairn Hill was set aside as an Advanced Offset in 2001 and the tenure was changed from Rural to Reserve and fenced. Cairn Hill North will be changed from exploratory mining to Reserve with the Mining Tenement (M70/424) handed in by SIMCOA.	
Start quality	9	9	TEC Habitat and Threatened Flora quality score for the offset area based on surveys by Trudgen (2012) and GHD (2024a) and GHD's assessment (DCCEEW, 2024).	
Future quality without offset	8	8	Potential reduced vegetation quality over time due to impacts from grazing, weeds and vehicle impacts.	
Future quality with offset	9	9	With offset management measures it is considered reasonable to see the quality of the site to remain consistent or improve over time.	
% of impact offset	100.79%	0	Poor/ Good to Very Good condition.	Offset requirement met fully by Offset 1 (Cairn Hill Reserve)
	100.33%	0	Degraded to Very Poor condition.	

Table 6 ***Offset calculator – Black Cockatoo***

Attribute	Offset area 1 (Cairn Hill Reserve)	Offset area 2 (Cairn Hill North)	Justification
Proposed offset area	124.67 ha	4.33 ha	Cairn Hill was set aside as an Advanced Offset in 2001 and the tenure was changed from Rural to Reserve and fenced. Cairn Hill North will be changed from exploratory mining to Reserve, once the SIMCOA relinquishes their Mining Tenement (M70/424).
Start quality	7	7	Quality of foraging quality is based on DAWE foraging assessment tool *Referral guideline for 3 WA threatened black cockatoo species* (DCCEEW, 2022). DCCEEW updated BC habitat quality assessment (DCCEEW, 2024) has scored the offset site as a HQS start value of 7 based upon the vegetation condition and structure, habitat features and site context.
Future quality without offset	6	6	Potential reduced foraging quality over time due to impacts from rural activities including grazing, vehicle access, climate change, spray drift and weed incursion. The foraging quality is shown to decrease as the whole area is impacted by those impacts and would

Attribute	Offset area 1 (Cairn Hill Reserve)	Offset area 2 (Cairn Hill North)	Justification
			have decreased in quality over the past 10 years if Cairn Hill Reserve had not been set aside as a Class A Reserve.
Future quality with offset	7	7	With offset and management, it is considered reasonable to expect over time the site to remain consistent, conservatively, or improve with management. The quality should be maintained in the areas of existing foraging vegetation with increases in quality in the fringes due to fencing of the area, preventing stock access and weed intrusion.
% of impact offset	97.17%	3.37%	Offset requirement met with a total of 100.43% of the impact offset by the combined Offset Areas

The proposed Offset Area meets both State and Commonwealth requirements. The Offset Area is considered suitable to counterbalance more than 100% of a total quantum of significant residual impacts (SRIs) of 10.99 ha to Coomberdale TEC and 100.44% of a total quantum of SRIs of 10.91 ha of foraging habitat for Carnaby's Black Cockatoo.

The Offset Areas will compensate at least 100% of the SRIs with the establishment of the Cairn Hill North Conservation area when SIMCOA relinquishes mining rights over the area. The estimates presented are conservative, representing the full extent of MNES values within the 17.12 ha native vegetation clearing area.

2.1.2 Offset package

A total of 130 ha is required to counterbalance impacts to TEC and Threatened Flora which will be located within the Cairn Hill Reserve. The total offset required to counterbalance impacts to Black Cockatoos is 129.03 ha.

The remaining area across the Offset Areas for future offsets is shown in Table 7. Due to the type and quality of the vegetation within the Offset Areas, 62.35 ha is suitable to offset future impacts to the TEC (combined Cairn Hill Reserve and Cairn Hill North) and within this area, 53.72 ha is suitable to offset future impacts to Carnaby's Cockatoo foraging habitat (Cairn Hill North). Foraging habitat can be found within disturbed areas of vegetation within the Cairn Hill Reserve due to:

- Resource Availability: Disturbed areas may have a mix of native and non-native plant species.
- Edge Effects: Disturbed areas often create edge habitats, which have less competition for space.

These factors make the area within Cairn Hill which is shown as disturbed (Figure 5) to have foraging habitat value for Carnaby's Cockatoo, as they are able adapt to different conditions. Other areas within Cairn Hill Reserve which contain higher quality vegetation representing the Coomberdale TEC, are not as valuable for Carnaby's Cockatoo foraging purposes.

Table 7 Offset Package – North Kiaka Project

Aspects	Cairn Hill Reserve (Offset 1)	Cairn Hill Reserve Committed for North Kiaka Project	Cairn Hill North (Offset 2)	Cairn Hill North Committed for North Kiaka Project	Remaining Offset Area for future use
Area of vegetation within Offset Areas considered suitable for offset of Coomberdale TEC and Threatened Flora habitat	134.01 ha	130 ha	58.34 ha	0	62.35 ha
Area of vegetation within Offset Areas considered suitable for offset of Black Cockatoo foraging habitat	124.67 ha	124.67 ha	58.05 ha	4.33 ha	53.72 ha

2.1.3 Threatened Ecological Communities

Vegetation alliances in the offset area were assessed to be representative of Threatened Ecological Community (TEC) 'Heath dominated by one or more *Regelia megacephala, Kunzea praestans* and *Allocasuarina campestris* on ridges and slopes of the chert hills of the Coomberdale Floristic Region' (DPAW, 2013b) (Coomberdale TEC).

The Revised Proposal will clear up to 17.12 ha of native vegetation across the North Kiaka Development Footprint (DF) 17.05 ha of which is representative of Coomberdale TEC. The vegetation proposed to be removed includes six of the ten vegetation alliances (VA) classed as core and buffer for the TEC, vegetation alliances 13, 15, 16 and 17 comprise core vegetation alliances and 9 and 11 comprise buffer vegetation alliances (Table 8 and Table 9). These vegetation alliances were initially described by Trudgen, Morgan and Grifin (2006).

Table 8 Vegetation Alliances that reflect the "core" Coomberdale Chert TEC (Trudgen et al., 2006)

Vegetation Alliance	Description
13	*Allocasuarina campestris* high shrublands to open and closed scrub
14	*Allocasuarina microstachya* open scrub
15	*Regelia megacephala* high shrubland to open and closed scrub
16	*Kunzea praestans* high shrubland to open and closed scrub
17	*Melaleuca calyptroides* open to closed heath
18	*Hibbertia subvaginata* low shrublands to low open heath
19	*Xanthorrhoea drummondii* shrubland

Table 9 Vegetation Alliances identified as "buffer units" and included in the Coomberdale Chert TEC (Trudgen et al., 2006)

Vegetation Alliance	Description
4	*Eucalyptus eudesmioides* mallee
9	*Allocasuarina huegeliana* woodlands
11	*Acacia acuminata* low woodlands

The proposed Offset Areas (Cairn Hill and North Cairn Hill) will offset the entire 17.05 ha of TEC impacted from clearing. The vegetation condition of the 17.05 ha of Coomberdale TEC (combined core and buffer vegetation alliances) impacted ranged from Very Good to Degraded condition (North Kiaka DF), comprised 7.59 ha of Poor/ Good to Very Good condition and 9.46 ha of Degraded to Very Poor condition (Figure 4).

The Coomberdale TEC within the Revised Proposal has been assessed using the DCCEEW Habitat Quality Scoring (HQS) Tool and determined to have a habitat quality starting score of 6. As such, the total quantum of impact to the TEC requiring to be offset is 10.99 ha.

2.1.4 Threatened species

The Revised Proposal will clear up to 15.58 ha of foraging habitat for the Carnaby's Black Cockatoo (*Zanda latirostris*) [species listed as Endangered under EPBC Act] (TEC vegetation occurrence as shown in Figure 4 and condition as shown in Figure 5, Threatened Flora species in Figure 6 and Black Cockatoo foraging habitat in Figure 7). The foraging habitat includes high priority food species such as *Banksia, Eucalyptus, Corymbia* and *Hakea*. The quality of foraging habitat for the Carnaby's Black Cockatoo has been assessed using DCCEEW's Habitat Quality Scoring (HQS) Tool (Appendix A1). The foraging habitat has been assessed to have an average HQS of 7. The BC foraging habitat scoring takes into consideration the vegetation condition and structure, habitat features and proximity of the site in relation to other Black Cockatoo foraging habitat.

There are also Threatened Flora species recorded within the offset site representing the flowering species:

- *Acacia aristulata* (35 individuals recorded)
- *Daviesia dielsii* (81 individuals recorded)
- *Eucalyptus pruiniramis* (nine individuals recorded)

The most recent survey recorded two *(2) Acacia aristulata* within the impact area and neither of the other threatened species, however *Acacia aristulata* and *Daviesia dielsii* seeds may still be present in the soil. Threatened Flora have been recorded in the impact area and the Offset Areas as shown in Table 10.

Table 10 Occurrences (plants) of Threatened Flora recorded in the Revised Proposal and Offset Areas (GHD, 2024a)

Taxon	Cairn Hill Reserve	Cairn Hill North	Moora Mine DF	North Kiaka DE	North Kiaka DF	Total
Acacia aristulata (EN)	27	6	0	2	2	**35**
Daviesia dielsii (EN)	72	9	0	0	0	**81**
Eucalyptus pruiniramis (EN)	9	0	0	0	0	**9**

LEGEND

- Major Road
- DRF & Priority Species (Trudgen 2012)
- Watercourse
- Moora Mine Development Envelope (EPA approved)
- Moora Mine Disturbance Footprint (approved)
- Cairn Hill North Boundary
- Cairn Hill Reserve Boundary

Vegetation Alliances and Associations (Trudgen 2012 & 2018)

- Aa1
- Aa2
- Aa3
- AaAc2
- AaDs2
- AaHs1
- AaMr1
- AaMr2
- Ac1
- Ac2
- Ac3
- Ac4
- Ac4/AaAc3
- Ac4/KpAh1/ AhXd3
- Ac5
- Ac6
- Ac7
- Ac8
- AcAa1
- AcAh2
- AcAhu1
- AcAs1
- AcB1
- AcB1/AcMr2/ AcB3
- AcB2
- AcB2/ RmKpMc3/ AcB4/Ac
- AcB3
- AcB4
- AcB5/B1
- AcCq2
- AcCq3/KpAhB1
- AcDs1
- AcDs2
- AcDs3
- AcDs4
- AcEe1
- AcEe1/EeRm1
- AcEe2
- AcEe2/AcB3
- AcEl1
- AcEl2
- AcEw2
- AcEw3
- AcEw4
- AcHs1
- AcHs2
- AcId1
- AcId2
- AcId3
- AcMr1
- AcMr2
- AcMr3
- AcRm1
- AcRm2
- AcRm3
- Ah2
- Ah4
- AhAc1
- AhAc2/AhKp2
- AhAc3
- AhAc4
- AhDf1
- AhDp1
- AhDp2
- AhDs1
- AhDsKp1
- AhDsKp2
- AhDsKp4
- AhDsKp4/ KpAhB2/(AcB4
- AhHs1
- AhKp1
- AhKp1/AhAc3/ Ac4
- AhKp2
- AhKp3
- AhRm1
- AhRm2
- AhTl1
- AhXd1
- AhXd3
- AhXd4
- B1
- Bp1
- Bp2
- ClAh2
- D
- Ds1
- DsHs1
- DsKp1

LEGEND

Vegetation Alliances and Associations (Trudgen 2012 & 2018)

- Ec1
- Ee1
- EeDs1
- EeId1
- EeKp1
- EeKp2
- EeKp3
- EhAh1
- EhEe1
- EhEe2
- El1
- El2
- El2/Ac4
- El3
- El5
- El6
- ElEo1/AcDs3
- ElXd1
- Elo1
- Elo2
- Elo3
- Eo1
- EoTd1
- Ep1
- Es1
- EsEl1
- Ew1
- Ew1/Ew2
- Ew3
- EwDi1
- EwTl2
- Hs1
- HsAh1
- KpAh1
- KpAhB1
- KpAhB2
- KpAhB3
- KpAhDs1
- KpAhDs1/ (KpAhB2)
- KpAhDs1/Mc/B
- KpAhDs2
- KpAhDs3
- KpAhMc1
- KpDs1
- KpDs1/ KpAhDs1
- KpDsMc1
- KpEe1
- KpHs1
- KpHs2
- Mc3
- Mco1
- Mr1
- Mr1/Ac4
- Rm1
- RmAh1
- RmAh1/KpHs1/ AhKp2
- RmAh2
- RmAh3
- RmAh3/AhDs1
- RmAh4
- RmB1
- RmDs1
- RmEe1
- RmEe2
- RmEe2/RmAh1
- RmEe2/RmAh3
- RmHs1
- RmHs2
- RmKp1
- RmKp2
- RmKpMc1
- RmKpMc2
- RmKpMc3
- RmKpMc3/ KpAh4
- RvAh1
- Xd1

Midlands Rd

Moonderoo River/Coonderoo River

SLIP POWERED BY LANDGATE

Paper Size ISO A3

0 100 200 300 400 500

Metres

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

GHD

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North Kiaka Project Approval
Support - Sites Assets

Vegetation Alliances

Project No. **12627587**
Revision No. **A**
Date **12/05/2025**

FIGURE 4

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Print date: 12 May 2025 - 14:23

Data source: Simcoa: Mining Development Shape Areas is derived from client received 2020; Trudgen: Vegetation mapping - 2012 and 2018; Landgate: Slip Imagery - April 2017 to November 2018 (accessed - 20191023); Road - 20180601. Created by: rbrown3

405500 406000 406500 407000 407500 408000 408500 409000 409500 410000 410500 411000

6627500 6627000 6626500 6626000 6625500 6625000 6624500 6624000 6623500 6623000 6622500 6622000 6621500 6621000 6620500 6620000

Cooneroo River

Kiaka Brook

Kiaka Rd

Midlands Rd

Cattady Rd

Noondine Rd

Coonderoo River

Legend

- Major Road
- Minor Road
- Watercourse
- North Kiaka Development Envelope
- North Kiaka Disturbance Footprint
- Moora Mine Development Envelope (EPA approved)
- Cairn Hill North Boundary
- Cairn Hill Reserve Boundary

Vegetation Condition (Trudgen 2018)

- Excellent
- Very Good to Excellent
- Very Good
- Good to Very Good
- Good
- Poor to Good
- Poor
- Poor to Very Poor
- Very Poor
- Degraded to Very Poor
- Degraded

SLIP POWERED BY LANDGATE

Paper Size ISO A3

0 200 400 600 800

Meters

N

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

GHD

Simcoa Operations Pty Ltd
North Kiaka Project Approval
Support - Sites Assets

Vegetation Condition

Project No. **12627587**
Revision No. **A**
Date **12/05/2025**

FIGURE 5

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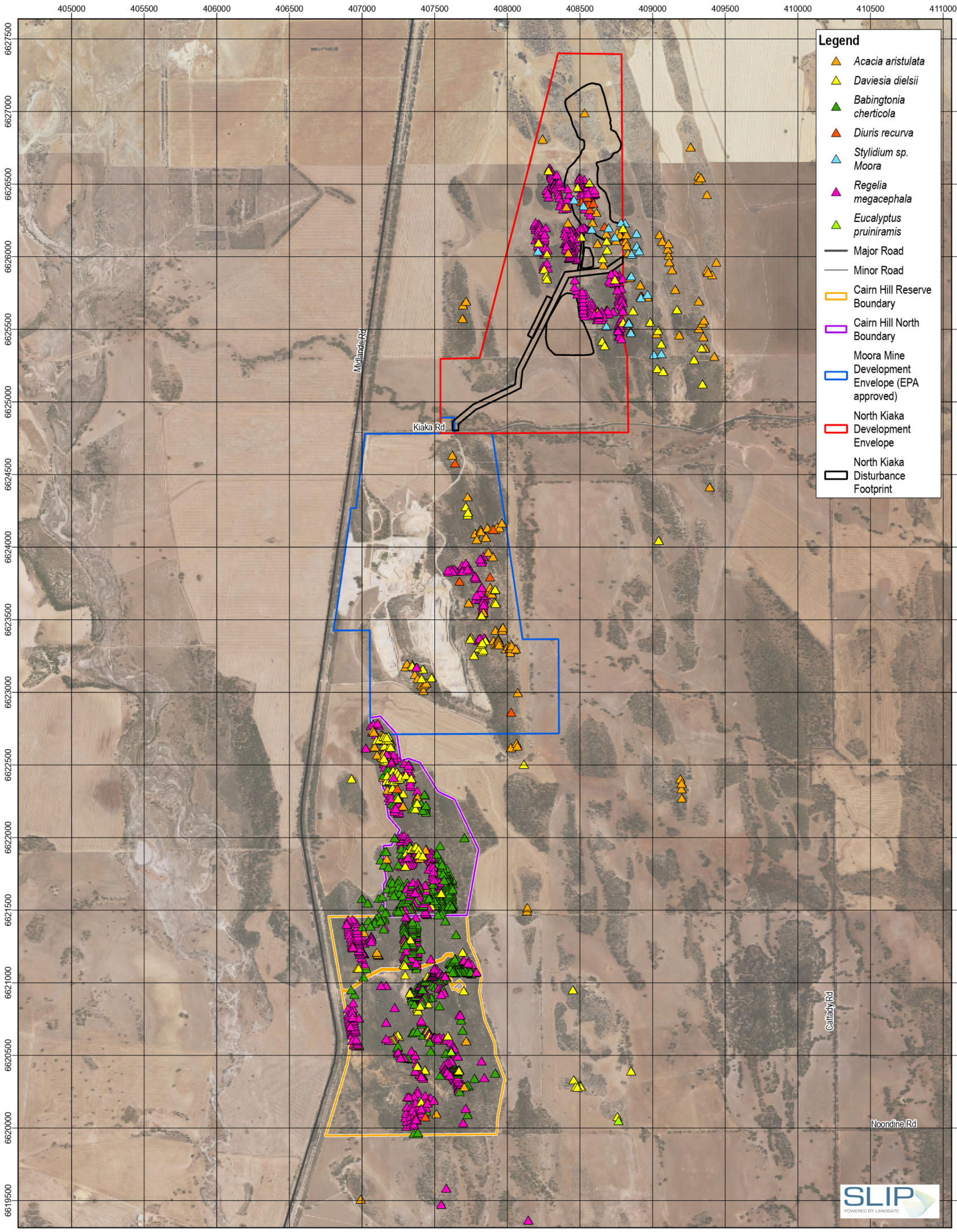
Print date: 12 May 2025 - 14:23

Data source: Simcoa: Mining Development Shape Areas is derived from client recieved 2020; Landgate: Slip Imagery - April 2017 to November 2018 (accessed - 20191023), River, Road - 20180601. Created by: rbrown3



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Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

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GHD

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Support - Sites Assets

Project No. **12627587**
Revision No. **A**
Date **12/05/2025**

Threatened Flora Species

FIGURE 6

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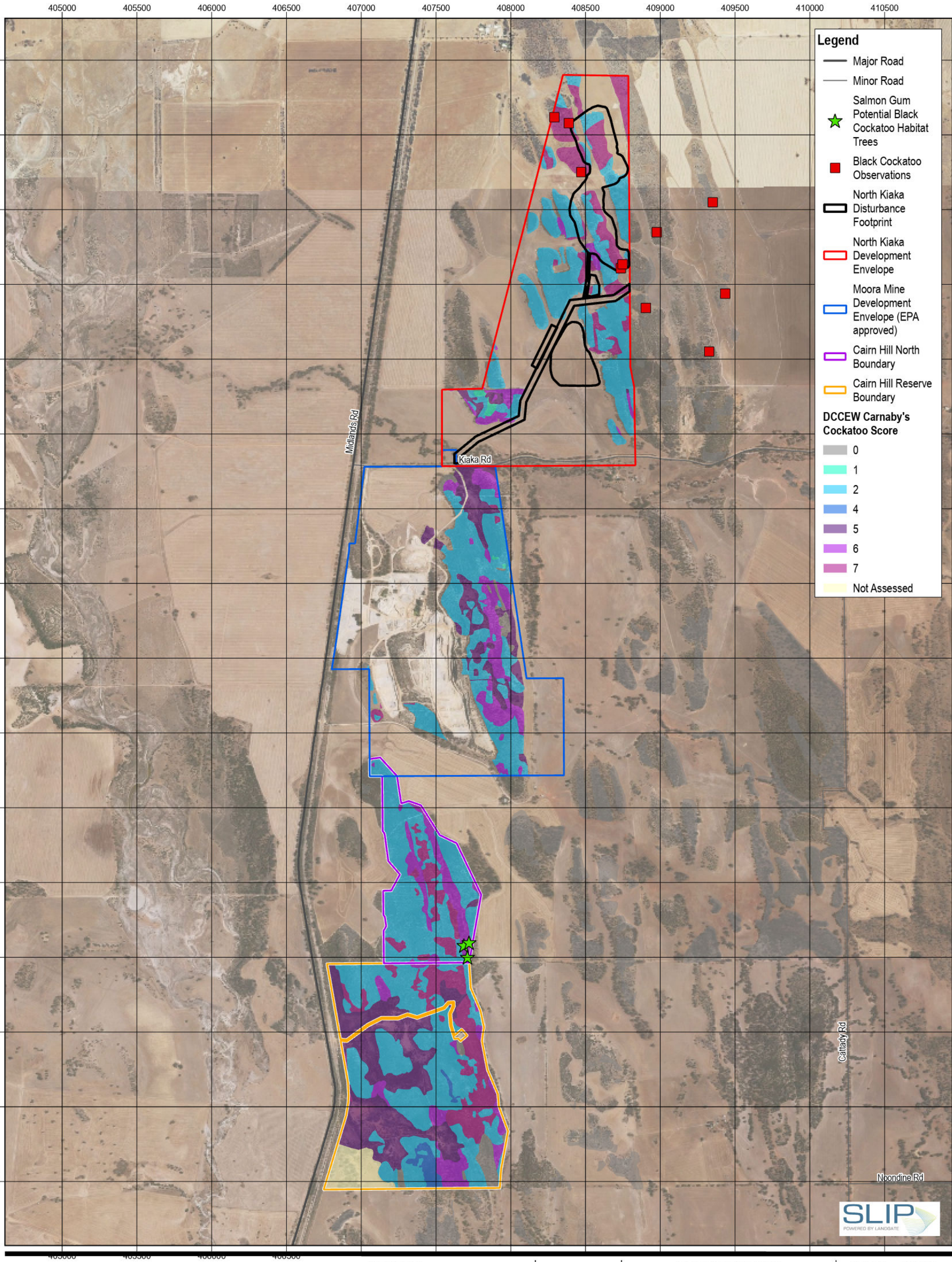
Print date: 12 May 2025 - 14:23

Data source: World Topographic Map: Esri, HERE, Garmin, FAO, NOAA, USGS
WANow: . Created by: rbrown3



Paper Size ISO A3

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Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 50

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GHD

Simcoa Operations Pty Ltd
North Kiaka Project Approval Support - Sites Assets

Project No. **12627587**
Revision No. **A**
Date **12/05/2025**

Black Cockatoo Foraging Habitat

FIGURE 7

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Data source: World Topographic Map: Esri, HERE, Garmin, FAO, NOAA, USGS
WANow: . Created by: rbrown3

2.2 Cairn Hill Reserve

2.2.1 Key attributes and values

Cairn Hill Reserve is a 152.01 ha site which was set aside in 2001 as a Class-A reserve for nature conservation. Cairn Hill Reserve is part of the conservation estate and would be described as an Advanced offset under both State and Federal guidance (DoEE, 2018; EPA, 2024). It is located 600 m to the south of the Moora Mine and 2 km south of the North Kiaka DE.

Extensive biological surveys over a 30 year period have been undertaken by ME Trudgen and Associates (Trudgen, 1985; Trudgen, Morgan, & Griffin, 2012; Trudgen, 2018; Trudgen, Morgan, & Griffin, 2006). A Targeted Threatened and Priority Flora search was also undertaken in April 2024 (GHD, 2024a) to update the database on the threatened and priority flora population in the North Kiaka DE and offsets.

Surveys undertaken by SIMCOA determined the Coomberdale TEC vegetation within Cairn Hill Reserve to be in better condition than the impact area with 96.73 ha (63.63%) in Good to Excellent condition with 1.53 ha (1.01%) in Degraded to Poor/Good and the remaining 53.75 ha (35.36%) in Completely Degraded condition.

A targeted assessment of the offset area was conducted for Carnaby's Black-Cockatoo, including assessment of breeding, foraging and roosting habitat plus any sign of presence for the species (GHD, 2024b). A targeted assessment was also conducted for Threatened and Priority Flora species within the offset area (GHD, 2024a).

Cairn Hill Reserve contains:

- Four threatened flora species known to occur in the area (*Acacia aristulata*, *Daviesii dielsii, Synaphea quartzitica and Eucalyptus pruiniramis*)
- The only known location of *Synaphea quartzitica* and *Eucalyptus pruiniramis* [not found in the Revised Proposal impact area]
- High species richness
- Very Good to Excellent vegetation condition reflective of the exclusion of grazing from the area (DPaW 2013)

The Australian Government's approach in the application of environmental offsets under the EPBC Act is defined within their Environmental Offsets Policy. Offsets under the EPBC Act are defined as *'measures that compensate for the residual adverse impacts of an action on the environment'* (DSEWPaC, 2012a).

The EPBC Act Offsets assessment guide is a calculator/ tool that has been developed to assess the suitability of offset proposals. GHD prepared habitat quality assessment of site condition, site context and species stocking rate for the Coomberdale TEC and habitat provided for Threatened Flora species to determine the start quality of the proposed offset site (score out of 10).

An updated habitat quality assessment was prepared for Black Cockatoo Species (site condition, site context and species stocking rate) using collected data (GHD, 2024b) and recent DCCEEW template (Appendix A1) with a HQS for the Offset Areas of 7. The start quality of the proposed offset site (score out of 10) was determined to be a score of 9 for Coomberdale TEC and a score of 10 Threatened Flora species habitat (Appendix A2). Based on this assessment it is considered that the survey area has high habitat values suitable to offset the SRIs to Coomberdale TEC, Threatened Flora species and Black Cockatoo foraging habitat.

The Offset Strategy (GHD, 2024) provides further detail on the vegetation, fauna habitat and offset assessments for the Cairn Hill Reserve offset area.

2.2.2 Current threats

2.2.2.1 Grazing and Weed invasion

Cairn Hill Reserve is currently managed by DBCA and has been a Reserve for over 10 years. The Reserve is protected under the WA Class-A reserve management measures. Land use along the border of Cairn Hill Reserve is either agriculture or mining. The encroachment of weeds into the Reserve due to the surrounding land uses has negatively impacted the condition of native vegetation. Current Conservation Advice (DPAW, 2013b) identifies weed invasion as a threat to native vegetation, including threatened flora species *Acacia aristulata* and *Daviesia*

dielsii, through competition of resources, disruption of native recruitment and degradation of ecosystem condition and functionality. The condition of the high conservation value area of the Coomberdale TEC is also threatened by herbicide drift and grazing (stock and native species including kangaroos) (DPAW, 2013b) on the boundaries of the offset site. Trampling and soil compaction caused by livestock and vehicles, as well as competition from introduced grasses, contributes to reduced natural recruitment of hollow bearing trees suitable for nesting by Carnaby's Black Cockatoo (DPAW, 2013). Native vegetation that forms habitat during the non-breeding season provides feeding, night roosting and watering for Carnaby's Cockatoo. Increased weed populations, because of adjacent mining and agricultural landuse decreases the value of this habitat.

2.2.2.2 Unauthorised vehicle access

Unauthorised vehicle access is limited at Carns Hill Reserve as it is fenced and managed as an offset area. Unauthorized vehicles within the Offset Areas have the potential to introduce weeds and diseases from surrounding agricultural areas, introduce rubbish, and displace threatened ecological communities and flora species through ground disturbance. In addition to fragmenting and reducing habitat quality of the Coomberdale TEC, introduced weeds, pathogens and tyre tracks may reduce foraging quality for Carnaby's Black Cockatoo.

2.2.2.3 Introduced species

Introduced species such as the goat (*Capra hircus*), red fox (*Vulpes vulpes),* feral cat (*Felis catus*) and European rabbit (*Oryctolagus cuniculus*) are present throughout Western Australia and pose significant threats to native wildlife. Through the predation of significant native species, transfer of infectious diseases, competition for grazing habitats, impacts to native seed regeneration and the support of predator populations, introduced species are considered to be a risk to threatened fauna and flora within the Cairn Hill Reserve.

2.2.2.4 Fire

Acacia aristulata is almost certainly a pyrosere species and the other threatened species recorded in the offset area *Daviesia dielsii*, may also be a pyrosere species, (M Trudgen, pers com.). This means these species cycle between a seed storage stage in the absence of fire (or other disturbance that removes competition) and a shrub phase for a period after fire (with plants dying out over time, but seed being stored in the soil). As fire is a part of the lifecycle or threatened flora species within the offset area (DAWE, 2008), the inherent threat from fire is low. However, intense and hot fires can pose a significant threat to *Acacia aristulata* and *Daviesia dielsii* by destroying seeds stored in the soil, impacting seed regeneration for threatened flora species present in the offset area. As well as impacting the condition of the Coomberdale TEC, altered fire regimes contribute to the degradation of habitat that is important for the grazing, roosting and breeding of Carnaby's Black Cockatoos (DPAW, 2013). Potential fire regimes, such as mosaic burning, that may help to preserve threatened flora species whilst considering the health of the wider system will be investigated with the relevant agencies.

2.2.2.5 Dieback

Phytophthora cinnamomi is a soil fungus which kills susceptible plants by attacking their root systems preventing the plant from absorbing water and nutrients. Dieback is the term commonly used when referring to this fungus due to its effect on vegetation. The fungus is found throughout the southern extent of WA in areas with susceptible plant species that receive rainfall in excess of 400 mm/year (Dieback Working Group, 2008). Dieback is not a major threat to the Cairn Hill Reserve offset area as there is insufficient annual rainfall for the pathogen to pathogen to exist away from water gaining sites and the only water gaining sites contain unsusceptible vegetation. However, threatened flora species *Acacia aristulata* and *Daviesia dielsii* are both susceptible to dieback, with impacts on native vegetation and the Coomberdale TEC. Dieback within the Cairn Hill Reserve would have the potential to reduce the foraging quality for Carnaby's Black Cockatoo. Therefore, hygiene management rules, access restriction and ground disturbance procedures will be applied to further reduce the risk of dieback.

2.2.2.6 Climate change

The impacts of climate change are varied across Western Australia and will continue to evolve over the coming decades. Deviations from long-term temperature and rainfall trends; changes to fire regimes; and erratic and intense weather events are causing widespread environmental harm. Ecological impacts resulting from shifting weather patterns and changes to hydrology within catchments risk altering species composition and habitat ranges

of significant flora and flora within Cairn Hill Reserve. The south-west region is particularly vulnerable to the effects of climate change, experiencing reduced rainfall and an increase in temperatures (DPAW, 2013). Climate change threatens the capacity for the regeneration of native vegetation of the Coomberdale TEC and Carnaby's Black Cockatoo habitat through changing fire regimes and rainfall. In many cases the impacts of climate change on biodiversity are exacerbated by other pressures such as land use changes and invasive species. As such, the specific management actions detailed in Section 3 across fire regimes, dieback and weed control will be fundamental in mitigating climate change impacts on the Coomberdale TEC and important breeding, roosting, watering and feeding habitats of Carnaby's Black Cockatoo.

2.3 Cairn Hill North

2.3.1 Key attributes and values

Cairn Hill North is a 58.34 ha site which was set aside in 2010 with the intent to add to the Cairn Hill Class-A reserve as an offset for the SIMCOA's future expansion (consistent with Condition 7 of MS 813). Cairn Hill North is located directly to the north of Cairn Hill nature reserve on Lot 52 (M70/191 and M70/424). When the Revised Proposal has Ministerial approval, land tenure will be changed under s16(3) of the *Mining Act 1978* to Reserve for the purposes of Conservation of Flora and Fauna. Cairn Hill North has already been fenced in anticipation of it becoming part of the Cairn Hill Reserve. Fencing has prevented livestock access from the adjacent farmland thereby reducing the spread of weeds through animal movement, two factors that negatively impact native vegetation condition over time.

Surveys undertaken by SIMCOA confirmed the occurrence of the Coomberdale TEC vegetation within Cairn Hill North and mapped the vegetation to be in equal condition as Cairn Hill Reserve with 56.63 ha (97.08%) in Good to Excellent condition, 1.37 ha (2.35%) and 0.33 ha (0.57%) in Completely Degraded condition.

Cairn Hill North contains:

- Four threatened flora species known to occur in the area (*Acacia aristulata*, *Daviesii dielsii, Synaphea quartzitica and Eucalyptus pruiniramis*)
- The only known location of *Synaphea quartzitica* and *Eucalyptus pruiniramis* [not found in the Revised Proposal area]
- High species richness
- Very Good to Excellent vegetation condition reflective of the exclusion of grazing from the area (DPaW 2013).

The Australian Government's approach in the application of environmental offsets under the EPBC Act is defined within their Environmental Offsets Policy. Offsets under the EPBC Act are defined as *'measures that compensate for the residual adverse impacts of an action on the environment'* (DSEWPaC, 2012a).

The EPBC Act Offsets assessment guide is a calculator/ tool that has been developed to assess the suitability of proposed offsets. GHD prepared habitat quality assessment of site condition, site context and species stocking rate for the Coomberdale TEC and habitat provided for Threatened Flora species to determine the start quality of the proposed offset site (score out of 10).

An updated habitat quality assessment of site condition, site context and species stocking rate was prepared for Black Cockatoo Species using collected data (GHD, 2024b) and recent DCCEEW template (Appendix A1) with a HQS for the Offset Areas of 7. The start quality of the proposed offset site (score out of 10) was determined to be a score of 9 for Coomberdale TEC and a score of 10 for Threatened Flora species habitat (Appendix A2). Based on this assessment, the survey area is considered to have high habitat values suitable to offset the SRIs to Coomberdale TEC, Threatened Flora species and Black Cockatoo foraging habitat.

The Offset Strategy (GHD, 2024) provides further detail on the vegetation, fauna habitat and offset assessments of the Cairn Hill North offset area.

2.3.2 Current threats

2.3.2.1 Grazing and Weed invasion

Livestock can have a significant impact on conservation areas through overgrazing, the introduction of weeds or disease. The current mining lease on the Cairn Hill North offset area exposes threatened flora species and the Coomberdale TEC to impacts from mining and livestock activities. The DAWE Conservation Advice identifies weed invasion as a threat to native vegetation, including threatened flora species *Acacia aristulata* and *Daviesia dielsii,* through competition of resources, disruption of native recruitment and degradation of ecosystem condition and functionality. The condition of the high conservation value area of the Coomberdale TEC is threatened by herbicide drift, weed invasion and grazing (stock and native species including kangaroos) (DPAW, 2013b). Trampling and soil compaction caused by livestock, as well as competition from introduced grasses, contributes to reduced natural recruitment of hollow bearing trees suitable for nesting by Carnaby's Black Cockatoo (DPAW, 2013). Increases in weed cover from nearby agricultural and mining activity threaten the loss or degradation of native vegetation that forms habitat during the non-breeding season, that provides for feeding, night roosting and watering for Carnaby's Cockatoo (DPAW, 2013). Cairn Hill North will be transferred to DBCA for inclusion in the Cairn Hill Reserve thereby removing the risk of future impacts from livestock grazing and clearing for agriculture or mining. This will provide continuity with the EPA Public Advice: Considering environmental offsets at a regional scale (EPA, 2024). Cairn Hill North has already been fenced in anticipation of becoming part of the Cairn Hill Reserve. The fencing has aided in preventing livestock access from the adjacent farmland and to assist in minimising weed spread through animal movement, two factors that could cause a decline in threatened flora and fauna species over time.

2.3.2.2 Native vegetation clearing

Clearing of native vegetation within the Cairn Hill North Offset area for proposed future mining activities is identified as a major threat to the Coomberdale TEC (DPAW, 2013b) and threatened flora species, *Acacia aristulata* and *Daviesia dielsii*. Carnaby's Black Cockatoos nest in hollows of live or dead eucalypts, primarily smooth-barked Salmon Gum and Wandoo (Saunders D. , 1977; 1982; 1986) though breeding has been reported in other wheatbelt tree species and some tree species on the Swan Coastal Plain and jarrah forest (Storr, 1991). Success in breeding is dependent on the quality and proximity of feeding habitat within 12 km of nesting sites (Saunders D. , 1977; Saunders, 1986; Saunders, D.A and Ingram, J.A., 1987). Along with the trees that provide nest hollows, the protection, management and increase of the feeding habitat that supports the breeding of Carnaby's Black Cockatoo is a critical requirement for the conservation of the species. Clearing in Cairn Hill North may risk the permanent loss of eucalypt woodlands within the species range that currently or potentially provide nest hollows for breeding, along with nearby areas that provide important feeding and watering habitat that supports breeding of Carnaby's cockatoo (DPAW, 2013).

2.3.2.3 Unauthorised vehicle access

Unauthorized vehicle access is limited at Cairn Hill North as it has been fenced and set aside for offset purposes. Unauthorised vehicles have the potential to introduce weeds and diseases from surrounding agricultural areas, introduce rubbish, and displace threatened ecological communities and flora species through ground disturbance. In addition to fragmenting and reducing habitat quality of the Coomberdale TEC, introduced weeds, pathogens and tyre tracks may reduce foraging quality for Carnaby's Black Cockatoo.

2.3.2.4 Introduced species

Introduced species such as the red fox (*Vulpes vulpes),* feral cat (*Felis catus*) and European rabbit (*Oryctolagus cuniculus*) are present throughout Western Australia and pose significant threats to native wildlife. Through the predation of significant native species, transfer of infectious diseases, competition for grazing habitats, impacts to native seed regeneration and the support of pest predator populations, introduced species are considered to be a risk to threatened fauna and flora within the Cairn Hill North Offset Area.

2.3.2.5 Fire

Acacia aristulata is almost certainly a pyrosere species and the other threatened species recorded in the offset area *Daviesia dielsii*, may also be one (M Trudgen pers. Com). This means these species cycle between a seed

storage stage in the absence of fire (or other disturbance that removes competition) and a shrub phase for a period after fire (with plants dying out over time, but seed being stored in the soil). As fire is a part of the lifecycle of threatened flora species within the offset area, the inherent threat from fire is low. However, intense and hot fires can pose a significant threat to *Acacia aristulata* and *Daviesia dielsii* by destroying seeds stored in the soil, impacting seed regeneration for threatened flora species present in the offset area. As well as impacting the condition of the Coomberdale TEC, altered fire regimes contribute to the degradation of habitat that is important for the grazing, roosting and breeding of Carnaby's Black Cockatoos (DPAW, 2013). Potential fire regimes that may help to preserve threatened flora species whilst considering the health of the wider system will be investigated with the relevant agencies.

2.3.2.6 Dieback

Phytophthora cinnamomi is a soil fungus which kills susceptible plants by attacking their root systems preventing the plant from absorbing water and nutrients. Dieback is the term commonly used when referring to this fungus due to its effect on vegetation. The fungus is found throughout the southern extent of WA in areas with susceptible plant species that receive rainfall in excess of 400 mm/year (Dieback Working Group, 2008). Dieback is not a major threat to the Cairn Hill North offset area as there is insufficient annual rainfall for the pathogen to exist away from water gaining sites and the only water gaining sites contain unsusceptible vegetation. However, threatened flora species *Acacia aristulata* and *Daviesia dielsii* are both susceptible to dieback, with impacts on native vegetation and the Coomberdale TEC. The introduction of dieback within the Cairn Hill North offset area would additionally reduce the foraging quality for Carnaby's Black Cockatoo. Therefore, hygiene management measures, access restriction and ground disturbance procedures will be applied to further reduce the risk of dieback.

2.3.2.7 Climate change

The impacts of climate change are varied across Western Australia and will continue to evolve over the coming decades. Deviations from long-term temperature and rainfall trends; changes to fire regimes; and erratic and intense weather events are causing widespread environmental harm. Ecological impacts resulting from shifting weather patterns and changes to hydrology within catchments risk altering species composition and habitat ranges of significant flora and flora within Cairn Hill North. The south-west region is particularly vulnerable to the effects of climate change, experiencing reduced rainfall and an increase in temperatures (DPAW, 2013). Climate change threatens the capacity for the regeneration of native vegetation of the Coomberdale and Carnaby's Black Cockatoo habitat through changing fire regimes and rainfall. In many cases the impacts of climate change on biodiversity are exacerbated by other pressures such as land use changes and invasive species. As such, the specific management actions detailed in Section 3 across fire regimes, dieback and weed control will be fundamental in mitigating climate change impacts on the Coomberdale TEC and important breeding, roosting, watering and feeding habitats of Carnaby's Black Cockatoo.

3. Specific management actions

Upon receipt of the Ministerial statement, an MOU will be prepared between SIMCOA and DBCA. The MOU will detail the management actions to be implemented across the Offset Areas, and the parties responsible for each action, (SIMCOA, DBCA or other).

Specific management outcomes and offset objectives will be realised by implementing specific on-ground management actions for each MNES in collaboration with DBCA. These management actions include fencing to prevent introduced animal grazing, limiting entry to reduce the risk of illegal dumping of rubbish, hygiene and management to minimise weed invasion and spread of dieback. These management actions are specific to the Cairn Hill Reserve and Cairn Hill North offset areas and based on the MNES that require offsetting. It is envisaged that the vegetation condition will be protected and potentially improved once the management actions are implemented. Noting that some impacts, particularly those related to climate change, may be uncontrollable/outside of the scope of the OMP.

The management actions are considered in line with the WA and Commonwealth Conservation Advice and Recovery Plans as summarised in Table 11. The implementation of management measures described in the following sections will, where practicable, assist in maintaining and ultimately improving the habitat quality of the Coomberdale TEC, threatened flora species and Carnaby's Black Cockatoo habitat, and as a result the present habitat quality scores is unlikely to decrease as a result of the existing risks to the quality of the offset areas.

Preservation of habitat quality, where practicable, will be attributed to:

- Maintained native species recruitment representative of the Coomberdale TEC, by reducing competition from non-native species,
- Exclusion of herbivore grazing by maintaining fencing to reduce impacts from trampling and over-grazing
- Limiting entry of vehicles into the Offset Areas to reduce the risk of illegal dumping of rubbish
- Maintained species recruitment of threatened flora species.
- Maintained native species richness and diversity.
- Strategically managed fire (potential mosaic burning) to reduce the risk of fire that can pose significant impact on the MNES
- Prevention of the introduction and spread of dieback that will deteriorate the values of MNES
- Maintained foraging habitat quality for Carnaby's Black Cockatoo
- Increased organic litter cover with the growing ground biomass of tree species over time and the application of the appropriate fire regime

Maintenance of the OMP will include:

- Liaison with the DBCA to apply adaptive management principles through continual evaluation and revision of management actions.
- Provision of implementation measures in the OMP which are dynamic and are updated to reflect monitoring and corrective actions.
- A formal process to identify and consider any need to update the Implementation Plan through review and reporting schedules.

Table 11 Offset management actions in line with Recovery Plan or Conservation Advice

MNES / Significant Value	Offset Site	Relevant Conservation Advice or Recovery Plan	Main Threats	Recommended Action	OMP Proposed Actions
Coomberdale Chert TEC	Cairn Hill Reserve	Coomberdale Chert TEC Fact Sheet (DBCA, 2013) Interim Recovery Plan No. 338, 2013-2018 (DPaW, 2013).	– Land clearing and fragmentation – Invasive flora and fauna – Altered fire regimes – Plant pathogens – Climate change	– Preventing vegetation clearance and direct habitat damage – Prevent weed invasion by restricting livestock access to offset area and managing mining activity – Retain habitat features for fauna – Provide comprehensive flora and fauna surveys to identify threatened species on site and their potential foraging, shelter and nesting sites – Prevent further introduction of feral animals – Use appropriate hygiene to minimise introduction or spread of weeds and diseases at susceptible sites – Identify and implement appropriate fire management regimes – Undertake trial rehabilitation of disturbed areas	– Access control – Avoid habitat clearing and disturbance – Fire breaks – Prevent grazing – Weed control – Dieback assessment and management – Rubbish removal – Fire management regime – Maintenance of fencing
	Cairn Hill North				– Access control – Avoid habitat clearing and disturbance – Fire breaks – Prevent grazing – Weed control – Dieback assessment and management – Fire management regime – Maintenance of fencing
Threatened Flora Habitat (*Daviesia Dielsii and Acacia Aristulata*)	Cairn Hill Reserve	Conservation Advice for *Acacia aristulata* (Watheroo Wattle) (DAWE, 2008) Conservation Advice for *Daviesia dielsii* (Diels' Daviesia) (DAWE, 2009)	– Land clearing and fragmentation – Competition with invasive flora (introduction of weeds) – Climate change – Altered fire regimes – Plant pathogens	– Preventing vegetation clearance and direct habitat damage – Prevent weed invasion by restricting livestock access to offset area and managing mining activity – Undertake comprehensive flora and fauna surveys have identified threatened species on site and their potential foraging, shelter and nesting sites – Prevent further introduction of feral animals	– Access control – Avoid habitat clearing and disturbance – Fire breaks – Prevent grazing – Weed control – Dieback assessment and management – Rubbish removal – Fire management regime – Maintenance of fencing
	Cairn Hill North				– Access control – Avoid habitat clearing and disturbance – Fire breaks

MNES / Significant Value	Offset Site	Relevant Conservation Advice or Recovery Plan	Main Threats	Recommended Action	OMP Proposed Actions
				– Use appropriate hygiene to minimise introduction or spread of weeds and diseases at susceptible sites – Identify and implement appropriate fire management regimes – Undertake trial rehabilitation of Threatened Flora species in disturbed areas	– Prevent grazing – Weed control – Dieback assessment and management – Fire management regime – Maintenance of fencing
Carnaby's Black Cockatoo	Cairn Hill Reserve	Carnaby's Cockatoo (*Calyptorhynchus latirostris*) Recovery Plan (DPAW, 2013)	– Loss of breeding habitat through clearing or degradation – Nest hollow shortages – Clearing, fragmentation and degradation of foraging and night roosting habitats – Climate change – Fire events – Competition with native and invasive species – Plant pathogens	– Protect and manage breeding habitat and associated feeding habitat – Protect and manage non-breeding habitat – Undertake regular monitoring – Conduct research to inform management – Manage other impacts – Engage with broader community to investigate / deliver a local project to support maintenance and improvement of breeding habitat for BC – Undertake information and communication activities – Undertake trial rehabilitation of Carnaby's Cockatoo foraging species in disturbed portions of the Offset Areas – Investigate other locations on SIMCOA's owned farmland to rehabilitate with Carnaby's Cockatoo foraging species	– Access control – Avoid habitat clearing and disturbance – Fire breaks – Prevent grazing – Weed control – Dieback assessment and management – Targeted rehabilitation trials on disturbed areas – Fire management regime – Maintenance of fencing
	Cairn Hill North				– Access control – Avoid habitat clearing and disturbance – Fire breaks – Prevent grazing – Weed control – Dieback assessment and management – Fire management regime – Maintenance of fencing

3.1 Restricting entry into the Offset Areas

Restricted access into the offset areas will be implemented to prevent unauthorised entry that will threaten the offset area in terms of distribution of invasive weeds and spread of dieback, risk or fire and illegal dumping of rubbish. Cairn Hill North is adjacent to a DBCA managed conservation area, which provides additional assurance in the implementation of land management actions as the property will be incorporated into the Cairn Hill Reserve, once the Revised Proposal is approved. Cairn Hill North has already been fenced in anticipation of becoming part of the Cairn Hill Reserve. Fencing has prevented livestock access from the adjacent farmland and assists in minimising weed spread through animal movement, two factors that could cause a decline in vegetation condition over time.

The following actions are proposed to be implemented:

- Access to the offset area will continue to be controlled by fencing and managed by the DBCA. Fencing manages threats to the offset site from unauthorised human access, unauthorised vehicle entry and grazing (stock and feral).
- People will be made aware that the site is protected with clear signage posted at potential access points.
- Vehicle access will be regulated to such that only authorised people and personnel enter the area.
- Authorised vehicles will be restricted to use designated tracks and limited speed as advised by DBCA within the offset area.
- Illegally dumped rubbish will be removed from the Cairn Hill Reserve.

3.2 Avoidance of habitat clearing or disturbance

As the area has MNES, species of state significance and is managed by DBCA, any disturbance within the area will require referral under the EPBC Act and WA EP Act. Further, the following actions will be undertaken to maintain habitat protection measures particularly from clearing and disturbance:

- Except for vegetation clearing required for maintaining fencing, establishing or maintaining fire breaks, or approved fire management regimes, and for safety purposes, no clearing will be permitted without the relevant approvals.
- Introduced species such as goats, sheep, rabbits, foxes and feral cats are a serious threat to loss of biodiversity through degradation of native vegetation species (goats, sheep and rabbits) and native fauna (foxes and feral cats) in the offset area. Pest management will be carried out using range of best practices in accordance with the National Pest Smart Guidelines (Invasive Animals Cooperative Research Centre, 2016) issued by the Department of Primary Industries and Regional Development (DPIRD) and governed by the Biosecurity and Agriculture Management Act (BAM Act). SIMCOA will work with the DBCA to contribute toward pest predator control programmes within the Offset Areas.
- Fencing of Cairn Hill Reserve and Cairn Hill North is helping stop livestock grazing (goats and sheep) that would threaten native habitat through grazing, the distribution of invasive weeds, and spread of dieback.

3.3 Fire management

Bushfire poses a serious risk to biodiversity values, communities, critical infrastructure, and cultural and heritage values. Fire management will aim to reduce the incidence of uncontrolled fires, both planned and unplanned, and discourage broadscale burning for agricultural purposes around the offset areas.

Fire management will be carried out in line with the DBCA's Corporate Policy Statement 19- Fire Management (DPaW, 2015). Potential fire regimes including mosaic burning, that may help to preserve threatened flora species whilst considering the health of the wider system will be investigated with the relevant agencies.

3.4 Weed control

Weeds introduced into the offset areas through activities such a livestock grazing, feral and native species accessing the offset areas, and habitat clearing pose a significant threat to MNES and native species. Weed

species outcompete native plants for resources, changing vegetation composition and structure through altering natural processes and native recruitment, resulting in the degradation of ecosystem condition and functionality. Control of weed species is essential to restore diversity, composition, and structure of the vegetation communities across the offset areas. Weed control methods include fencing and chemical treatments to keep un-infested areas clear of weeds and control the spread of existing weed infestations. Some of the weed species observed across the offset areas are listed in Table 12.

Table 12 Dominant weed species in Offset Areas (Trudgen, 2018)

Dominant Weed Species in the Offset Areas	
Aira caryophyllea	*Ehrharta longiflora*
Anagallis arvensis	*Hypochaeris glabra*
Arctotheca calendula	*Ursinia anthemoides*
Avena barbata	*Vulpia myuros*
Briza maxima	

Ecological surveys of the Offset Areas will be undertaken in accordance with Flora and Vegetation and Fauna Survey Guidelines and mapped in the early phase of the Offset Management Plan implementation, to determine the distribution and abundance of weed species. A register of weed species will be established and maintained for each offset site and updated on a regular basis. The register will include details of distribution of each species, abundance, relevant biological information, history of control method applied and record of their relative success. SIMCOA will work with DBCA to determine the best targeted approach to weed management (as aligned with relevant guidelines). For some weeds a decision may be made to do no control as to do so would be difficult and potentially damage the TEC. Trudgen has indicated that some weeds would be very difficult to effectively manage. The various options are summarised in Table 13.

Table 13 Environmental weed control options

S.I.no.	Control Options	Description
1	Weed led control	– Aims to prevent introduction, establishment, survival, reproduction, and dispersal of an environmental weed before causing adverse impact on the ecosystem.
1.1	Preventing weed introduction	– Good hygiene practice – Regulation to maintain buffers between native vegetation and surrounding agricultural and mining activities – Education on garden waste disposal
1.2	Early detection and eradication	– Identification of small local priority population – Assess whether control is possible – Apply control methods
2	Site led control	– Aims to identify and prioritise areas that require weed control or those in good condition, which can be improved, based on biodiversity value.
3	Threatened species and threatened communities led control	– Aims to control weed at sites identified with priority placed on the protection of threatened species and threatened communities.
4	Human resource led control	– Aims to control weeds using various methods depending on whether the control is undertaken by volunteers or professionals. – Recommends volunteers to target small populations of visible weeds that can be removed manually or through chemical methods and professionals to be used for methods that require spraying or machinery.
5	Cause led control	– Aims to reduce, control, or eliminate the factors that cause disturbance to the ecosystems leading to proliferation of environmental weeds.

Environmental weeds can be controlled using various indirect and direct control methods employed in combination or in isolation. Weed cover will be maintained at current levels or subsequently reduced through using the appropriate weed control method and management techniques. Weed cover will be surveyed in the Offset Areas

within two years of the commencement of the action[2], and monitored alongside vegetation and flora surveys, and rehabilitation monitoring for 20 years or until the completion criteria is achieved.

Where applicable, weed control measures will be applied after agreement and approval by DBCA throughout the 20 years of the offset when weed cover is considered to negatively impact natural regeneration. The proposed control methods are described in detail in Table 14.

Table 14 Environmental weed control methods

Control Method	Description
Direct	
Chemical control	The control method uses herbicide, and it is considered to be the most cost-effective method. It is generally used in conjunction with other control methods. The use of these chemicals will be in line with approved label that provides instruction on safe use and storage, Material Safety Data Sheet (MSDS) and appropriate safety standard. Only Australian Pesticide and Veterinary Medicine Authority 9APVMA) registered herbicide will be used in accordance with the direction/instruction on the label. The use of chemicals in the offset area will be undertaken only by licensed professionals suitably qualified to identify native plants. Selection of herbicide type and most appropriate technique for herbicide application will be undertaken depending on the site conditions, target weed and constraints. Weather conditions will be taken into account during the application of the chemicals. Wind direction and speed will be assessed in the spraying zone to prevent chances of spray drift. This control method would be accompanied by the relevant DBCA permits under s40 and s45 of the BC Act.
Manual control	Involves physically removing the weed species by unearthing the root system in its entirety. It is most effective for small infestations and suitable for situations where disturbance to an individual threatened species must be avoided. Weeds can also be slashed to prevent seed production prior to flowering.
Indirect	
Land management	The incidence and impacts of weeds can be reduced by good land management. Management strategies include: – Maintenance of ground cover – Installing fences to reduce grazing – Implementation of weed hygiene – Early weed identification

Weed control measures where practicable (in areas where there are no Threatened or Priority species to be negatively impacted by the weed control) will be detailed in the weed control program that will be developed for the Offset Areas. The weed control program will include, but not limited to, specific control measures, procedures, location, and timing of management activities. Weed management will also be consistent with the *DBCA's Corporate Policy Statement 14-Weed Management* (DBCA, 2022), standard operating procedures, plans and guidelines. In addition to the weed treatment methods, weed hygiene practices will be implemented which will include:

- The requirement of all the vehicles and machinery entering the Offset Areas to undergo thorough wash down and inspection for any vegetation trapped on the undercarriage.
- No vehicles or machineries will be allowed to enter vegetated portions of the Offset Areas during wet conditions to reduce the risk of weed introduction. Vehicle access would be restricted to established tracks and the clean on entry requirements would apply to any people entering for survey purposes.

3.5 Dieback assessment and management

Phytophthora dieback is identified as a key threatening process to MNES by a causing decline in vegetation health, sometimes leading to death of the vegetation. The status of dieback presence at Cairn Hill reserve and Cairn Hill North is unknown. Review of the *DPAW Phytophthora Dieback Map* (DBCA, 2019) indicates the Offset Areas are located in an area of potential dieback. A low risk of dieback infection has been suggested, attributing to

[2] The 'commencement of the action' refers to the start of construction on the project

the Offset Areas being 'unlikely' to be infected by dieback, due to insufficient annual rainfall for the pathogen to exist away from water gaining sites and the only water gaining sites contain unsusceptible vegetation (Great Southern Biologic, 2022). However, dieback surveys will be undertaken at these sites prior to the commencement of the action and every three years thereafter for 20 years or until the completion criteria is achieved (refer section 5.4). Should infection occur, it could have significant consequences due to the following:

- The dieback has potential to infest all protectable area in the offset areas.
- The impact is predicted to be high due to the presence of several susceptible species and infection may result in loss of the species' populations.
- The disease poses a risk to the Coomberdale TEC and foraging habitat of Carnaby's Black Cockatoo.

Dieback management at each offset site will be consistent with the objective of DCCEEW's Threat Abatement Plan (DEE, 2014) for disease in natural ecosystems caused by *Phytophthora cinnamomi as* presented in Table 15 and in accordance with *and DBCA's Phytophthora Dieback Management Manual* (DBCA, 2020). Dieback management at each offset site will also consider the *Phytophthora Dieback Management Plan - Simcoa Moora Mine Site and North Kiaka Proposal* (Appendix C) for any areas where vegetation is at risk of infestation.

Table 15 Dieback management actions

Threat Abatement Plan's Objective	Recommended Actions	Proposed Management Actions
Identify and prioritise protection of threatened species and ecological communities	– Identify and prioritise species and ecological communities at risk – Identify and map areas at risk of infection – Improve and maintain monitoring program	– Strengthen information on dieback presence on each offset site and accordingly mapped. – Dieback protectable area within the offset site and its surround will be identified and mapped – Fencing of offset area to exclude area from pests, herbivores, human and vehicle entry – Dieback management will be undertaken along with weed and fire management. – Signage will be posted at the entrance and at the access points that provides information about the area and indicate that the area is prohibited from entry. – Dieback protection areas will be designated and clean on entry signage posted. – Machinery and vehicle hygiene inspection checklist will be maintained for each offset site as per the format prescribed by DBCA.
Reduce the spread and mitigate the impacts of dieback	– Assess the feasibility of phosphite registration and implement application – Implement risk mitigation, eradication and containment – Integration of dieback management with other natural resource management system – Promote the use of guidelines	
Inform and engage the community through promotion of information on the impact of dieback	– Develop and implement national communication strategy for awareness on dieback and promote measures to prevent the spread of the disease. – Education and training – Adopt signage and alert system to guide visitors and land managers.	
Encourage research on dieback and its management	– Undertake review of literature on Phytophthora biology or new research. – Screening of priority species for susceptibility towards dieback.	

In addition to the proposed management actions described above, the following dieback hygiene practices will also be carried out to prevent the risk of dieback spread or introduction:

- All vehicles and machinery entering the Offset Areas to undergo thorough wash down and inspection for any vegetation trapped on the undercarriage.
- No vehicles or machineries will be allowed to enter vegetated portions of the Offset Areas during wet conditions to reduce the risk of spreading the pathogen.
- Vehicle access would be restricted to established tracks and the clean on entry requirements would apply to any people entering for survey purposes.

Further, dieback management will also be in accordance with *Management of Phytophthora cinnamomi for Biodiversity Conservation in Australia-National Best Practice Guideline* (O'Gara et al., 2005) and DPaW's *Corporate Policy Statement No.3 - Management of Phytophthora disease* (DPaW, 2022).

3.6 Climate change mitigation

The direct impacts of climate change to the Offset Areas are unknown. However, shifting weather patterns and changes to catchment hydrology risk altering species composition and habitat ranges of significant flora and flora within the Offset Areas over time. In many cases the impacts of climate change on biodiversity are exacerbated by other pressures such as land use changes, extreme weather conditions and invasive species. Specific management actions listed for fire regimes, dieback and weed control provide mitigating actions in response to impacts from climate change to the Coomberdale TEC and threatened fauna. As these impacts are realised, an adaptive management approach will be essential in effectively mitigating existing threats to the Offset Areas that may be intensified by climate change.

The following action will be undertaken to mitigate potential direct and indirect impacts of climate change:

– Contribute to research on the impacts of climate change on the Coomberdale TEC and Carnaby's Black Cockatoo habitat.

4. Risk and risk management

A risk analysis was undertaken to assess the risk to achieving the actions of the management plan posed by the currently identified threats such as grazing, uncontrolled fire, weed invasion and dieback. Measures will be implemented to minimise the associated risks as described in Section 2.4.

DBCA's phytophthora dieback risk assessment and management plan form at Appendix 1 of the *Phytophthora Dieback Management Manual* (DBCA, 2020) provides a risk rating for dieback under different moisture conditions. The same matrix provided in Table 16 has been used to prepare a risk assessment for other threatening processes for the North Kiaka project, which is provided in Table 17.

Table 16 Risk Matrix for assessment of risk of threatening processes

LIKELIHOOD	CONSEQUENCE				
	Insignificant	Minor	Intermediate	Significant	Severe
Very likely	Low	Moderate	High	High	High
Likely	Low	Moderate	Moderate	High	High
Possible	Low	Low	Moderate	High	High
Unlikely	Low	Low	Low	Moderate	Moderate
Very Unlikely	Low	Low	Low	Low	Low

Table 17 Risk assessment of threatening processes on offset areas

Threatening Process	Potential Impact on the Offset Area	Inherent Risk Rating			Management Measures	Residual Risk Rating		
		Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
Grazing	– Loss of understory vegetation – Loss of native vegetation through feeding and trampling – Inhibit species recruitment – Reduce species richness and diversity – Alter species composition	Likely	Significant	High	Section 2.4.1	Likely	Minor	Moderate
Clearing	– Loss of native vegetation – Loss of habitat for threatened Black Cockatoo species	Unlikely	Significant	Moderate	Section 2.4.2	Very Unlikely	Significant	Low
Fire	– Loss of native vegetation – Loss of habitat for threatened Black Cockatoo species – Loss of fauna	Likely	Severe	High	Section 2.4.3	Unlikely	Severe	Moderate
Weed	– Alter species composition – Competition with native species for resources – Reduce species richness, diversity and percentage cover	Likely	Significant	High	Section 2.4.4	Likely	Minor	Moderate
Dieback	– Decline of vegetation health that will lead to loss of breeding and foraging habitat for Black Cockatoos – Alter vegetation structure – Alter foliage cover – Loss of food resources	Unlikely	Insignificant	Low	Section 2.4.5	Very Unlikely	Insignificant	Low
Climate Change	– Alter species composition – Loss of species richness and diversity – Loss of native vegetation – Loss of habitat for threatened Black Cockatoo species	Very Likely	Significant	High	Section 2.4.6	Very Likely	Intermediate	High

5. Monitoring

5.1 Habitat quality monitoring

Flora and Vegetation survey and Targeted Carnaby's Black Cockatoo habitat assessment will be required upon implementation of this OMP at Offset Areas to establish baseline and monitoring quadrats.

Habitat quality assessments will be undertaken regularly using the same quadrats as the baseline survey to enable statistical analysis of change over time at each quadrat. There is an 85% confidence that ecological values will be maintained at both Offset Areas over 20 years.

A foraging habitat assessment will be undertaken at each offset site in the spring within two years of the commencement of the action, and on a regular basis thereafter for 20 years or until the completion criteria is achieved.

Habitat quality assessment will be carried out for the vegetation of the Coomberdale TEC, habitat for Threatened Flora species and foraging habitat for Carnaby's Black Cockatoo species using the foraging habitat quality scoring tools (Appendix A). The HQS tools allocate habitat quality scores based on the following three indicators:

- Site condition: assessment of vegetation condition and structure in comparison to the baseline.
- Site context: assessment of the offset area in relation to surrounding environment.
- Species habitat index: the ability of the offset site to support the species.

This OMP will be reviewed after each monitoring event to determine what amendments to management actions are required, if any, to maintain progress towards the nominated completion criteria.

5.1.1 Photo-point monitoring

Photo monitoring of Carnaby's Black Cockatoo foraging habitat will be undertaken at designated locations on a regular basis to assess any changes in habitat quality over time. These will be aligned with photo-points used for the baseline flora and vegetation assessment where possible. Photo monitoring will be used to provide a visual record of changing site conditions over time. Each photograph will have location, date and time at which it was recorded. The photo-point monitoring will be undertaken during the habitat quality assessments.

5.2 Vegetation quality monitoring

A vegetation monitoring program will be established upon implementation of this OMP to establish baseline condition and enable monitoring of the success of the specific management actions detailed in Section 3. Vegetation will be monitored every three years against the baseline conditions for each area. If vegetation condition and populations are reported in a declining trend, SIMCOA will liaise with DBCA to review the frequency of flora and vegetation surveys, to assess the outcomes of the management actions undertaken to improve the health and condition of the vegetation.

Quadrats will be established in representative vegetation alliances (Table 18) within both Cairn Hill Reserve and North Cairn Hill Offset Areas. Within each representative vegetation alliance, locations where Threatened Flora species have been recorded will be the first preference for quadrat establishment. This will enable the recording of species recruitment where practicable.

The methodology will align with previous vegetation monitoring undertaken within the greater Moora Mine area (M.E. Trudgen & Associates, 2022). Within each representative vegetation alliance, a 10 m by 10 m quadrat will be established and the following data collected:

- The location of at least the North-East and South-West corners (all four corners are permanently pegged) using a hand-held GPS.
- A list of all species present in the quadrat noting the height, percentage foliage cover estimation and where practicable number of individuals

- A vegetation description based on Aplin's (1979) modification of Specht's classification
- The total cover of annual weeds, total native annuals were recorded
- The number of plants alive and dead recorded for conservation significant flora species
- Landform and substrate characteristics
- Representative photograph from each corner peg.

Table 18 Representative vegetation alliances

Vegetation Alliance	Description
13	*Allocasuarina campestris* high shrublands to open and closed scrub
14	*Allocasuarina microstachya* open scrub
15	*Regelia megacephala* high shrubland to open and closed scrub
16	*Kunzea praestans* high shrubland to open and closed scrub
17	*Melaleuca calyptroides* open to closed heath
18	*Hibbertia subvaginata* low shrublands to low open heath
19	*Xanthorrhoea drummondii* shrubland
4	*Eucalyptus eudesmioides* mallee
9	*Allocasuarina huegeliana* woodlands
11	*Acacia acuminata* low woodlands

The initial data collection at establishment will form the baseline, from which future assessments shall be compared. The baseline establishment and ongoing vegetation monitoring shall be undertaken during August to October timeframe to maintain consistent and comparable recording of annual native and weed species occurs.

This OMP will be reviewed after each monitoring event to determine what amendments to management actions are required, if any, to continue to make progress towards the nominated completion criteria.

5.3 Introduced species monitoring

An introduced species monitoring program will be developed in collaboration with DBCA, upon implementation of this OMP. The monitoring program will establish a baseline of pest composition and enable monitoring of the success of the management actions detailed in section 3. The monitoring program proposes to use remote camera traps to detect presence of introduced species within the Offset Areas. The initial data collection survey will provide the baseline data, from which future assessments will be compared. The baseline establishment and monitoring will be undertaken at a period to be agreed with DBCA, to provide consistent and comparable recording introduced species.

This OMP will be reviewed after each monitoring event to determine what amendments to management actions are required, if any, to maintain progress towards the nominated completion criteria.

5.4 Dieback monitoring

A dieback assessment program will be established upon implementation of this OMP to establish baseline condition and enable monitoring of the success of the specific management actions detailed in section 3. The assessment program shall entail a baseline dieback assessment of the Offset Areas, to be conducted by a registered dieback interpreter. This initial assessment will provide baseline condition. Re-assessment of the Offset Areas will be undertaken every three years to monitor for potential new or increased dieback infestations. Supplementary assessments will also be considered should regular habitat quality or vegetation quality monitoring detect a reduction in quality that cannot be attributed to a specific threat or cause. The requirement to undertake this will be risk based.

This OMP will be reviewed after each monitoring event to determine if amendments to management actions are required to maintain progress towards the nominated completion criteria.

5.5 Performance indicators and completion criteria

The following performance indicators will be assessed during each habitat quality assessment to assess the performance of the OMP against the completion criteria outlined in Table 19.

Table 19 Completion criteria for offset management outcomes

Performance Indicator	Completion Criteria	Timeframe (with DBCA)
Introduced species	– No significant increase in introduced species compared to baseline	TBC
Weed Cover	– Weed cover does not negatively impact natural regeneration or revegetation – No significant increase in in weed cover compared to baseline	TBC
Species Richness	– No ongoing decline in species richness compared to baseline (accounting for seasonal variations due to annual rainfall and climate change)	TBC
Presence of Dieback	– No introduction of dieback via site entry	TBC
Threatened Flora Species	– Evidence of ongoing recruitment of threatened flora species compared to baseline (where possible) – No decline in threatened flora species cover compared to baseline	TBC
Carnaby's Black Cockatoo Habitat	– Increase of Black Cockatoo foraging habitat within Offset Areas compared to baseline.	TBC
Vegetation Condition	– No decline in areas of VG or better vegetation condition compared to baseline. – Improvement in vegetation condition Good Condition or poorer compared to baseline.	TBC

6. Adaptive management and review

6.1 Review of the Plan

The OMP will be reviewed annually, and any completion criteria or success targets met in the preceding year will be noted. An adaptive management approach will be adopted such that direct and indirect impacts are reduced by embedding a cycle of monitoring, reporting and implementing change (where required). SIMCOA will liaise with DBCA to apply the adaptive management principles. The implementation measures included in the OMP are intended to be dynamic and will be updated to reflect monitoring and corrective actions. This will also allow for flexibility to respond to changing environmental conditions and adopt new technologies / management measures.

6.2 Reporting

Progress of the OMP will be included in the compliance reporting required for the ministerial approval. Progress against the objectives of this OMP will be reported in accordance with the proposed schedule in Table 18.

Table 20 Reporting Schedule

Reports	Reporting Period	Responsibility
Annual compliance requirements detailed in the Ministerial Statement detailing the compliance with the MS conditions, all potential non-compliances and corrective actions and any changes required to avoid future non-compliances	Annually	SIMCOA
Annual compliance report in accordance with the EPBC Act Annual Compliance Report Guideline	Annually	

Evaluation report assessing the effectiveness of management actions comprising the monitoring reports, management actions and investigations and corrective actions, if taken	Every 3 years	
Habitat quality assessment report for both Coomberdale Chert TEC, including threatened flora species, and Carnaby's Black Cockatoo	As per Sections 5.1, 5.2	

6.3 Implementation of the contingency measures

Where monitoring results indicate that management actions are not working, contingency measures will be determined in collaboration with DBCA. The MOU will note which party is responsible for each contingency measure. Contingency measures will include corrective actions guided by expert opinion and will result in necessary revisions of the management measures and monitoring program. The revisions will be documented in accordance with SIMCOA's document control procedure. The corrective actions may include:

- Increase in monitoring frequency
- Further survey works to better understand the factors that are influencing the unanticipated changes in the environment
- Change in approach to weed, feral animal, dieback or fire management

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Appendices

Appendix A

Habitat Quality Scoring

A1. Habitat Scoring System for WA black cockatoo foraging habitat

This habitat scoring system describes elements indicative of suitable foraging habitat[3] for the three WA black cockatoo species (Carnaby's Black Cockatoo, Baudin's Black Cockatoo and the Forest Red-tailed Black Cockatoo) in WA. Its use must be supported by survey information and reporting, undertaken by suitably qualified and experienced ecologists. Appropriate scores will best fit a description. Where all components of the 'detail' column description are not met, this must be specified, and justification provided for that score to be accepted by the Department.

For an offset site to be considered by the Department, the offset site must have a start score of 1 for each indicator (e.g., there must be a species stocking rate score of at least 1).

Table A.1 DCCEEW Site condition scoring for WA Black Cockatoo Species

Indicator	Score	Detail		Impact site	Offset start quality	Without offset	With offset
Site Condition		**Foraging value**	**Details**				
Vegetation condition and structure. Habitat features	7	Very High	Carnaby's Black Cockatoo				
			Native kwongan heath and shrubland (>30% projected foliage cover), banksia and eucalypt woodlands with >50% projected foliage cover. Low percentage (< 5%) of tree deaths4.	x	x	x	x
			Baudin's Black Cockatoo				
			Marri-Jarrah Forest and woodlands with >50% projected foliage cover. Low percentage (< 5%) of tree deaths.	x	x	x	x
			Forest Red-tailed Black Cockatoo				
			Marri-Jarrah-Karri Forest, other eucalypt woodlands, or allocasuarina woodlands, with >50% projected foliage cover. Low percentage (< 5%) of tree deaths.	x	x	x	x
	6	High	Carnaby's Black Cockatoo				
			Native kwongan heath and shrubland (>25% projected foliage cover), banksia and eucalypt woodlands with >40% projected foliage cover. Low percentage (< 10%) of tree deaths.	x	x	x	x

[3] *In some cases, an impact or offset site may contain or require both foraging and breeding habitat for one or more black cockatoos. Breeding habitat is species of trees known to support breeding within the range of the species which either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow. For most species of trees, suitable DBH is 500 mm. For salmon gum and wandoo, suitable DBH is 300 mm.*

[4] *No tree deaths indicate robustness of habitat, unlikely for the habitat to decline in the medium-term. Tree deaths may be owing to disease, water stress, fire, etc.*

Indicator	Score	Detail		Impact site	Offset start quality	Without offset	With offset
Vegetation condition and structure. Habitat features	5	Moderate to high	Baudin's Black Cockatoo				
			Marri-Jarrah Forest and woodlands with >40% projected foliage cover. Low percentage (< 10%) of tree deaths.	x	x	x	x
			Forest Red-tailed Black Cockatoo				
			Marri-Jarrah-Karri Forest, other eucalypt woodlands, or allocasuarina woodlands, with >40% projected foliage cover. Low percentage (< 10%) of tree deaths.	x	x	x	x
			Carnaby's Black Cockatoo				
			Native kwongan heath and shrubland (>20% projected foliage cover), banksia and eucalypt woodlands with 30-40% projected foliage cover; OR > 60% projected foliage cover but veg. condition reduced due to tree deaths (up to 20%).	x	**5**	x	**5**
			Baudin's Black Cockatoo				
			Marri-Jarrah Forest or woodlands with 30-40% projected foliage cover; OR > 60% projected foliage cover but veg. condition reduced due to tree deaths (up to 20%).	x	x	x	x
			Forest Red-tailed Black Cockatoo				
			Marri-Jarrah-Karri Forest, other eucalypt woodlands, or allocasuarina woodlands, with 30-40% projected foliage cover; OR > 60% projected foliage cover but veg. condition reduced due to tree deaths (up to 20%).	x	x	x	x
	4	Moderate	Carnaby's Black Cockatoo				
			Native kwongan heath and shrubland, banksia or eucalypt woodlands with 20-30% projected foliage cover. Moderate percentage of tree deaths (30-40%).	x	x	**4**	x
			Baudin's Black Cockatoo				
			Marri-Jarrah Forest or woodlands with 20-30% projected foliage cover; OR Marri-Jarrah Forest with 40-60% projected foliage cover but vegetation condition reduced due to tree deaths (up to 30-40%).	x	x	x	x
			Forest Red-tailed Black Cockatoo				
			Marri-Jarrah-Karri Forest, other eucalypt woodlands, or allocasuarina woodlands with: 20-30% projected foliage cover; OR 40-60% projected foliage cover but veg. condition reduced due to tree deaths (up to 30-40%).	x	x	x	x
	3		Carnaby's Black Cockatoo				

Indicator	Score	Detail		Impact site	Offset start quality	Without offset	With offset
		Low to moderate	Native kwongan heath and shrubland, banksia or eucalypt woodlands with 10-20% projected foliage cover.	**3**	x	x	x
			Baudin's Black Cockatoo				
			Marri-Jarrah Forest or woodlands with 5-20% projected foliage cover.	x	x	x	x
			Forest Red-tailed Black Cockatoo				
			Marri-Jarrah-Karri Forest, other eucalypt woodlands, or allocasuarina woodlands with 5-20% projected foliage cover.	x	x	x	x
	2	Low	Carnaby's Black Cockatoo				
			Native kwongan heath and shrubland, banksia and eucalypt woodlands with <10% projected foliage cover; OR Paddocks and/or urban areas with scattered foraging trees such as banksias, marri.	x	x	x	x
			Baudin's Black Cockatoo				
			Marri-Jarrah Forest or woodlands with 1-5% projected foliage cover; OR Paddocks and/or urban areas with scattered foraging trees such as banksia, hakea, dryandra.	x	x	x	x
			Forest Red-tailed Black Cockatoo				
			Marri-Jarrah-Karri Forest, other eucalypt woodlands, or allocasuarina woodlands with 1-5% projected foliage cover; OR Paddocks and/or urban areas with scattered food plants such as Cape Lilac, Eucalyptus caesia and E. erythrocorys.	x	x	x	x
	1	Negligible to low	All species				
			Scattered specimens of known food plants but projected foliage cover of these is <2%. May include: paddocks or urban areas with scattered foraging trees.	x	x	x	x
	0	None	All species				
			No Proteaceae, eucalypts or other potential sources of food. May include bare ground or developed sites devoid of vegetation (e.g. infrastructure, roads, gravel pits).	x	x	x	x
Total (out of 7)				**3**	**5**	**4**	**5**

Table A.2 DCCEEW Site Context scoring for WA Black Cockatoo Species

Site Context					Impact site	Offset Start Quality	Without offset	With offset
Proximity of the site in relation to other habitat.	3	Site is within 6km of known breeding site.	or	Site is within 12km of other foraging resources with site condition of at least 3.	x	x	x	x
	2	Site is within 12km of known breeding site	or	Site is within 15km of other foraging resources with site condition of at least 4.	2	2	2	2
	1	Site is within 15km of known breeding site.	or	Site is between 15km and 20km of other foraging resources with site condition of at least 5.	x	x	x	x
	0	Site is further than 15km from known breeding site.	or	Site is further than 20km from other foraging resources.	x	x	x	x
Total (out of 3)					**2**	**2**	**2**	**2**

Table A.3 DCCEEW Total scores for WA Black Cockatoo Species

Combined scores	Impact site	Offset Start Quality	Without offset	With offset
Final Totals	**5**	**7**	**6**	**7**

Table A.4 DCCEEW WA Black Cockatoo Species presence or absence

Indicator		Species Stocking Rate[5]	Impact Site			Offset Site		
			CBC	BBC	FRT	CBC	BBC	FRT
Confirm presence/ absence of species.	Yes	Species is seen or reported regularly and/or there is abundant foraging evidence, e.g. chewed nuts can be identified as this species. Regularly is when the species is seen at intervals of every few days or weeks for at least several months of the year.	YES			YES		
	No	Species is recorded or reported very infrequently and there is little or no foraging evidence.		NO	NO		NO	NO

The metrics used to determine Site Condition, Site Context, and Species Stocking Rate were developed by the Department of Climate Change, Energy, the Environment, and Water in consultation with species experts in WA.

[5] Species stocking rate is indicated by yes or no to confirm if any of the species is frequently present or not. If yes, the presence must be for the species being impacted by the proposal, not for a species that will not be impacted.

A standard habitat quality scoring system for a species allocates scores out of 3 for both site condition and site context, and out of 4 for species stocking rate. However, as black cockatoos are very mobile, this HQS uses a score out of 7 for site condition and a score out of 3 for site context. Site condition is considered the key factor in determining the quality of habitat for these black cockatoo species. Species stocking rate is considered only in terms of presence or absence of the species and does not add to the total score. Note that the species, or strong indicators of the species, must be present, consistent with the presence/usage description above, for an offset to be considered suitable.

A2. Quality score assessment

The Commonwealth Government's approach in the application of environmental offsets under the EPBC Act is defined within their Environmental Offsets Policy (DSEWPaC, 2012a). Offsets under the EPBC Act are defined as *'measures that compensate for the residual adverse impacts of an action on the environment'* (DSEWPaC, 2012a). The EPBC Act Environmental Offsets Policy has five aims:

- Ensure the efficient, effective, timely, transparent, proportionate, scientifically robust and reasonable use of offsets under the EPBC Act
- Provide proponents, the community and other stakeholders with greater certainty and guidance on how offsets are determined and when they may be considered under the EPBC Act
- Deliver improved environmental outcomes by consistently applying the policy
- Outline the appropriate nature and scale of offsets and how they are determined
- Provide guidance on acceptable delivery mechanisms for offsets.

The EPBC Act Offsets assessment guide is a tool that has been developed to assess the suitability of offset proposals. The guide assists proponents with planning and estimating future offset requirements. The "*How to use the offsets assessment guide*" (DSEWPaC, 2012b) outlines the three components considered to contribute to the calculation of starting/ baseline habitat quality of a proposed offset site including:

- Site condition: This is the condition of a site in relation to the ecological requirements of a threatened species or ecological community. This includes considerations such as vegetation condition and structure, the diversity of habitat species present, and the number of relevant habitat features.
- Site context: This is the relative importance of a site in terms of its position in the landscape, taking into account the connectivity needs of a threatened species or ecological community. This includes considerations such as movement patterns of the species, the proximity of the site in relation to other areas of suitable habitat, and the role of the site in relation to the overall population or extent of a species or community.
- Species stocking rate: This is the usage and/or density of a species at a particular site. The principle acknowledges that a particular site may have a high value for a particular threatened species, despite appearing to have poor condition and/or context. It includes considerations such as survey data for a site in regards to a particular species population or, in the case of a threatened ecological community this may be a number of different populations. It also includes consideration of the role of the site population in regards to the overall species population viability or community extent.
- The combination of these three components contribute to the sum of the habitat quality score. However components may have different weighting depending on the ecological requirements of a particular threatened species or ecological community (DSEWPaC, 2012b), and are determined based on the findings of the desktop and field assessment. The habitat quality score is entered into the DCCEEW offset assessment guide spreadsheet as the 'Start Quality' on a scale of 0-10.

GHD has developed specific weightings (scores) for each of the three quality components for the Revised Proposal. These scores and the corresponding justification for the score has been included in Table A5. The values present at the Offset site have been considered against these scores to provide an indicative assessment of the overall offset quality (scale of 0-10) for Coomberdale Chert TEC and habitat for Threatened Flora species. The Black Cockatoo foraging habitat is using the recently updated scoring system provided by DCCEEW (Appendix A1).

Table A.5 Indicative offset habitat quality score weighting

Aspect	Coomberdale Chert TEC	Threatened Flora Habitat (*Daviesia Dielsii* and *Acacia Aristulata*)
Site condition	**Score out of 4:**	**Score out of 4:**
	The site condition score has been based on a combination of vegetation condition rating scale for the South West and Interzone Botanical Provinces (EPA, 2016) and the key criteria to meet the TEC (DBCA, 2013; DPaW, 2013).	The site condition score has been based on a combination of vegetation condition rating scale for the South West and Interzone Botanical Provinces (EPA, 2016) and the key criteria to meet the TEC where the Threatened Flora Species occur (DBCA, 2013; DPaW, 2013).
	High 4 – 'Pristine' to 'Excellent' vegetation condition, large patch size and/ or good connectivity to well reserved/ protected TEC, diversity of key indicator species, diverse vegetation age classes (recruitment through to mature trees), no known disease/ dieback	High 4 – 'Pristine' to 'Very Good' vegetation condition, large patch size, habitat present for *Daviesia Dielsii* and *Acacia Aristulata*, presence of other key species that typically are found in association, no recent disturbances
	Moderate 3 – 'Very Good' to 'Good' vegetation condition, lower diversity of key indicator species, disease may be present	Moderate 2-3 – 'Good' condition, weeds present, some scattered habitat for *Daviesia Dielsii* and *Acacia Aristulata*, recent disturbances such as grazing or fire
	Low 2 – Does not meet the condition/ patch size for TEC but may be in the buffer of a known TEC, known disease/ dieback presence	
	Very Low 1 – Cleared/ Completely Degraded to Degraded condition with no connectivity to adjacent TEC patches. However, may have potential to rehabilitate the Coomberdale Chert TEC within the site (suitable habitat features such as soil type and land systems present)	Low 1 – Degraded vegetation, TEC community but no current suitable habitat for Daviesia Dielsii and *Acacia Aristulata*
	0 – Site no potential for rehabilitation of Coomberdale Chert TEC (unsuitable habitat features such as soil type and land systems)	0 –no potential Daviesia Dielsii and *Acacia Aristulata* presence
Site context	**Score out of 4:**	**Score out of 3:**
	Use DBCA TEC/ PEC mapping to assist with determining site context during the desktop assessment.	Use DBCA TPFL / WA Herb mapping to assist with determining site context during the desktop assessment.
	Quality score out of 4:	**Quality score out of 3:**
	3 - 4 – High connectivity with known Coomberdale Chert TEC/PEC, previously recorded within or adjacent to the site, low threats surrounding the site i.e. reserved vegetation surrounding the site, important ecological linkage	3 – Known *Daviesia Dielsii* and *Acacia Aristulata* records within 200 m of the area, and good connectivity to well reserved/ protected areas with potential habitat, in known distribution of the species
	2 – Medium level of connectivity with known Coomberdale Chert TEC/ PEC	2 – Medium level of connectivity with known *Daviesia Dielsii* and *Acacia Aristulata* habitat in known distribution of the species
	1 – Limited level of connectivity with known Coomberdale Chert TEC/ PEC	1 – No current suitable habitat due to disturbance, but potential to re-establish habitat

Aspect	Coomberdale Chert TEC	Threatened Flora Habitat (*Daviesia Dielsii* and *Acacia Aristulata)*
	0 – Unsuitable habitat surrounding the site	0 – Unsuitable habitat surrounding the site
Species stocking rate	**Score out of 2:**	**Score out of 3:**
	Presence (2)/ absence (0) – determined from onsite TEC assessment against the key components for identifying the Coomberdale Chert TEC (DBCA, 2013; DPaW, 2013).	*Daviesia Dielsii* and *Acacia Aristulata* – 3 - Recorded in recent survey (within past 4 years) – 2 – Absent in recent survey but historically recorded from database searches within Proposal area or recently recorded within 100 m of Proposal area – 1 – Not known to occur within the survey area but records from within 200 m 0 – No records within survey area of 200 m

Table A.6 Coomberdale Chert TEC habitat scoring

Aspect	Coomberdale Chert TEC	Impact Site (North Kiaka DF and Moora DF) Poor / Good to Very Good condition	Impact Site (North Kiaka DF and Moora DF) Degraded to Very Poor condition	Offset Site (Cairn Hill and Cairn Hill North)
Site condition	**Score out of 4:**	7.59 ha of Poor/ Good to Very Good condition **3 out of 4**	9.46 ha of Degraded to Very Poor condition **2 out of 4**	136.143 Poor/Good to Excellent 56.19 Degraded to VP condition **3 out of 4**
	The site condition score has been based on a combination of vegetation condition rating scale for the South West and Interzone Botanical Provinces (EPA, 2016) and the key criteria to meet the TEC (DBCA, 2013; DPaW, 2013).			
	High 4 – 'Pristine' to 'Excellent' vegetation condition, large patch size and/ or good connectivity to well reserved/ protected TEC, diversity of key indicator species, diverse vegetation age classes (recruitment through to mature trees), no known disease/ dieback			
	Moderate 3 – 'Very Good' to 'Good' vegetation condition, lower diversity of key indicator species, disease may be present	7.59 ha of Poor/ Good to Very Good condition		136.143 Good to Excellent (71%) 56.19 Degraded to Poor condition (29%)
	Low 2 – Does not meet the condition/ patch size for TEC but may be in the buffer of a known TEC, known disease/ dieback presence		9.46 ha of Degraded to Very Poor condition	
	Very Low 1 – Cleared/ Completely Degraded to Degraded condition with no connectivity to adjacent TEC patches. However, may have potential to rehabilitate the Coomberdale Chert TEC within the site (suitable habitat features such as soil type and land systems present)			
	0 – Site no potential for rehabilitation of Coomberdale Chert TEC (unsuitable habitat features such as soil type and land systems)			
Site context	**Score out of 4:**	**2 out of 4**	**2 out of 4**	**4 out of 4**
	Use DBCA TEC/ PEC mapping to assist with determining site context during the desktop assessment.			
	3 - 4 – High connectivity with known Coomberdale Chert TEC/PEC, previously recorded within or adjacent to the site, low threats surrounding the site i.e. reserved			TEC previously recorded within and adjacent to the Offset Areas, low threats surrounding the site i.e. reserved vegetation surrounding

Aspect	Coomberdale Chert TEC	Impact Site (North Kiaka DF and Moora DF) Poor / Good to Very Good condition	Impact Site (North Kiaka DF and Moora DF) Degraded to Very Poor condition	Offset Site (Cairn Hill and Cairn Hill North)
	vegetation surrounding the site, important ecological linkage			the site, important ecological linkage
	2 – Medium level of connectivity with known Coomberdale Chert TEC/ PEC	Medium connectivity with known TEC, recorded within and adjoining the impact site	Medium connectivity with known TEC, recorded within and adjoining the impact site	
	1 – Limited level of connectivity with known Coomberdale Chert TEC/ PEC			
	0 – Unsuitable habitat surrounding the site			
Species stocking rate	**Score out of 2:**	**2 out of 2**	**2 out of 2**	**2 out of 2**
	Presence (2)/ absence (0) – determined from onsite TEC assessment against the key components for identifying the Coomberdale Chert TEC (DBCA, 2013; DPaW, 2013).	TEC present at the impact site	TEC present at the impact site	TEC present at the Offset
Total Habitat Quality Score		**7 out of 10**	**6 out of 10**	**9 out of 10**

Table A.7 Threatened Flora Habitat scoring

Aspect	Habitat for *Daviesia Dielsii* and *Acacia Aristulata*	Impact Site (North Kiaka and Moora)	Offset Site (Cairn Hill and Cairn Hill North)
Site condition	**Score out of 4:**	**2 out of 4**	**4 out of 4**
	The site condition score has been based on a combination of vegetation condition rating scale for the South West and Interzone Botanical Provinces (EPA, 2016) and the key criteria to meet the TEC (DBCA, 2013; DPaW, 2013).		
	– High 4 – 'Pristine' to 'Very Good' vegetation condition, large patch size, habitat present for *Daviesia Dielsii* and *Acacia Aristulata*, presence of other key species that typically are found in association, no recent disturbances		Very Good' vegetation condition, large patch size, habitat present for both species, presence of other key species that typically are found in association, no recent disturbances
	– Moderate 2-3– 'Good' condition, weeds present, some scattered habitat for *Daviesia Dielsii* and *Acacia Aristulata*, recent disturbances such as fire	Moderate condition, weeds present, scattered habitat for both species	
	– Low 1 – Degraded vegetation, TEC community but no current suitable habitat for Daviesia Dielsii and *Acacia Aristulata*		
	– 0 –no potential Daviesia Dielsii and *Acacia Aristulata* presence		
Site context	**Score out of 3:**	**2 out of 3**	**3 out of 3**
	Use DBCA TPFL / WA Herb mapping to assist with determining site context during the desktop assessment.		
	– 3 – Known *Daviesia Dielsii* and *Acacia Aristulata* records within 200 m of the area, and good connectivity to well reserved/ protected areas with potential habitat, in known distribution of the species		Known *Daviesia Dielsii* and *Acacia Aristulata* records within 200 m of the area, and good connectivity to well reserved/ protected areas with potential habitat, in known distribution of the species
	– 2 – Medium level of connectivity with known *Daviesia Dielsii* and *Acacia Aristulata* habitat in known distribution of the species	Known records for both species within 200 m of the area (Trudgen 2012), and good connectivity to well reserved/ protected areas with potential habitat, in known distribution of the species	
	– 1 – No current suitable habitat due to disturbance, but potential to re-establish habitat		
	– 0 – Unsuitable habitat surrounding the site		
	Score out of 3:	**3 out of 3**	**3 out of 3**

Aspect	Habitat for *Daviesia Dielsii* and *Acacia Aristulata*	Impact Site (North Kiaka and Moora)	Offset Site (Cairn Hill and Cairn Hill North)
Species stocking rate	*Daviesia Dielsii* and *Acacia Aristulata* – 3 - Recorded in recent survey (within past 4 years) – 2 – Absent in recent survey but historically recorded from database searches within Proposal area or recently recorded within 100 m of Proposal area – 1 – Not known to occur within the survey area but records from within 200 m – 0 – No records within survey area of 200 m	– *Acacia Aristulata* recorded in recent survey (within past 4 years) – *Daviesia Dielsii* absent in recent survey but historically recorded from previous surveys of the area or recently recorded within 100 m of Proposal area	Both species recorded significant numbers in recent survey
		7 out of 10	**10 out of 10**

Appendix B

Offset Tenure Arrangements

Department of Energy, Mines, Industry Regulation and Safety
GOVERNMENT OF WESTERN AUSTRALIA

Our ref A2826/201901; FNA 14966
Enquiries Milan Nathoo
P: [redacted]
E: [redacted]

Mining Manager
Simcoa Operations Pty Ltd
Sent by Email

Attention: Greg Phyffer

Dear Greg

ADDITION OF LOT 52 ON DEPOSITED PLAN 29474 TO CAIRN HILL CLASS A 'CONSERVATION OF FLORA AND FAUNA' RESERVE 47694

I refer to your correspondence dated 12 December 2024 requesting comments on a proposal for a portion of freehold Lot 52 on Deposited Plan 29474 to be added to Cairn Hill Class A 'Conservation of Flora and Fauna' Reserve 47694.

It is understood Simcoa Operations Pty Ltd (Simcoa) are currently seeking Environmental Protection Authority approval for the North Kiaka quartzite mine, located 15km north of Moora. As part of the North Kiaka mine, Simcoa are proposing a conservation offset that involves the extension of Cairn Hill Class A Nature Reserve into Lot 52 which contains remnant native vegetation.

This proposal is represented in Tengraph as FNA 14966. It does not intersect any geothermal energy title, however intersects Petroleum Special Prospecting Authority applications STP-SPA-0106 held by Buru Energy Limited and STP-SPA-0109 held by H2EX Ltd, exploration licence E 70/4776 and Mining Leases M70/191 and M70/424 held by Simcoa Operations Pty Ltd.

A review of historic exploration drilling undertaken by Simcoa on M70/424 (overlapping Lot 52) found the area contained low grade and sub grade quartz with high contaminants, which requires substantial beneficiation to be suitable for silicon production and is therefore currently uneconomic to mine. Thus, Simcoa are willing to relinquish M70/424 for the abovementioned environmental offset in exchange for guaranteed access to remaining resources on M70/191 and the development of the North Kiaka mine on M70/1292.

Locked Bag 100 East Perth WA 6892
www.demirs.wa.gov.au
ABN 69 410 335 356

Considering the viability of extracting the resource on Lot 52, Department of Energy, Mines, Industry Regulation and Safety provides no objections to the portion of Lot 52 shown as FNA 14966 to be added to Cairn Hill Class A Reserve 47694 to allow Simcoa to expand its operations.

Yours sincerely

Patrick Dawson

_____

Patrick Dawson | Acting General Manager Land Use Planning
Resource Security Directorate
19 February 2025

CC: Dan Endacott – Director Major Project Assessments, EPA Services, Department of Water and Environmental Regulation

[redacted]

CC: Robert Baker – Assistant Manager, Land Management Central, Department of Planning, Lands and Heritage

[redacted]

Locked Bag 100 East Perth WA 6892
www.demirs.wa.gov.au
ABN 69 410 335 356

Appendix C

Dieback Management Plan

GREAT SOUTHERN
BIO LOGIC
environmental solutions

Phytophthora Dieback Management Plan

Simcoa Moora Mine Site and North Kiaka Proposal

Tel: 0400 113 093 • PO Box 5573, Albany, WA, 6332 • Email: info@gsbiologic.com.au • www.gsbiologic.com.au

Phytophthora Dieback Management Plan

Simcoa Mine Site and North Kiaka Proposal

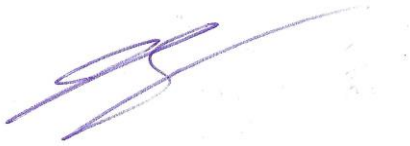
26 /07 /2022

Prepared for:

GHD
10 Victoria Street
Bunbury
WA, 6230

Project reference: GSBL502-PDMP-Simcoa quartzite mines-2022-V1

Written and submitted by



Jeremy Spencer

Senior Environmental Scientist

Record of Distribution

No. of copies	Report File Name	Report Status	Date	Prepared for:	Initials
1	GSBL502-PDMP-Simcoa quartzite mines-2022-V1	V1	26 July 2022	GHD	JS
1	GSBL502-PDMP-Simcoa quartzite mines-2022-V1	V1	26 July 2022	GSBL	JS

EXECUTIVE SUMMARY

Simcoa produce silicon for national and international markets from the company facility in Kemerton near Bunbury. Quartzite used for the production of silicon is currently sourced from the Simcoa Moora Mine and a new mine area is currently proposed for North Kiaka (North Kiaka Proposal). These two sites occupy adjoining land, separated by Kiaka Road, to the north of the Moora townsite.

Current Phytophthora Dieback management practises applied across the existing Simcoa Moora Mine are defined in the Standard Operating Procedure (SoP) – Moora Mine Hygiene Measures. However the Department of Mines, Industry Regulation and Safety (DMIRS) have advised that a Phytophthora Dieback survey of the proposal area will be required, together with Phytophthora Dieback management strategies. It is also assumed that similar requirements may be applied to the existing Simcoa Moora Mine.

In response to the DMIRS requirement, a survey was undertaken using a survey methodology referred to as Broad Area survey. Results of the Broad Area survey were used to determine the requirement for a detailed disease occurrence survey and associated Phytophthora Dieback Management Plan (PDMP).

In Western Australia, assessment and management of Phytophthora Dieback is overseen by the DBCA. The DBCA's primary tools for the management of Phytophthora Dieback include the *Phytophthora Dieback Interpreters Manual for lands managed by the Department* (DBCA 2015) and the *Phytophthora Dieback Management Manual* (DBCA 2020). These are applicable to an area termed the Vulnerable zone which is defined as all areas receiving greater than 600 mm of annual rain fall and areas of lower rainfall where natural or manmade features such as creek lines, drains and soaks collect water, i.e., where water gaining sites occur.

The average annual rainfall across Simcoa's existing and proposed mine areas is approximately 460 mm (BoM 2022) which places the site in the Vulnerable Zone but suggests that infestations are most likely to be limited to creek lines and gullies or other water gaining features. During the current assessment it was noted that most of the remnant native vegetation occurs along the elevated quartzite ridge that lies along the eastern side of Study Area. Separating high points along the ridge are gently sloping alluvial valleys that do not represent defined creek lines or any other features that may be considered water gaining sites.

The only vegetation within the Study Area that was considered to be within the Vulnerable Zone occurs in the western area, surrounding the Moora Mine Site administrative facility. All other areas of remnant vegetation are therefore not subject the requirement for Phytophthora Dieback management as they are not at threat from the plant pathogen.

The vegetation within the Vulnerable Zone was classified as Uninterpretable due to an absence of susceptible species. It has been further classified as unprotectable as it receives direct runoff from the Midlands Road which is an uncontrollable disease vector. Therefore, there are no areas of protectable vegetation occurring across the Simcoa site and there is no requirement for a Phytophthora Dieback Management Plan. Ongoing operations should continue under the direction of the existing SoP which addresses the requirement of basic Phytophthora Management and is considered suitable for the sites.

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1 INTRODUCTION

1.1 Background

Simcoa produce silicon for national and international markets from the company facility in Kemerton near Bunbury. Quartzite used for the production of silicon is currently sourced from the Simcoa Moora Mine and a new mine area is currently proposed for North Kiaka (North Kiaka Proposal). These two sites occupy adjoining land, separated by Kiaka Road, to the north of the Moora townsite.

The North Kiaka Proposal has been referred to the EPA for assessment and a Mine Closure Plan (MCP) has been provided to the Department of Mines, Industry Regulation and Safety (DMIRS). DMIRS have advised that a Phytophthora Dieback survey of the proposal area will be required, together with Phytophthora Dieback management strategies. It is also assumed that similar requirements may be applied to the existing Simcoa Moora Mine.

Phytophthora Dieback is an introduced soil borne plant pathogen that affects up to 40% of native plant species within Western Australia. Most commonly the disease is caused by *Phytophthora cinnamomi,* however, other introduced species such as *P. multivora* can also have significant impact under specific environmental conditions.

Phytophthora Dieback is commonly introduced to an area through infested soils carried as basic raw materials or on vehicles, plant and machinery, or by humans on foot. In favourable conditions for the pathogen, infestation can result in the collapse of entire vegetation communities. Once introduced to an area, Phytophthora Dieback will spread through further human vectoring and also via water movement and root to root contact, resulting in extensive infestations which may cause significant impact to native vegetation communities. There is currently no practical method of eradication of the pathogen.

1.2 Objectives

The objectives of this 2022 Phytophthora Dieback Management Plan (PDMP) are to:

- assess remnant vegetation across the existing and proposed mine areas to determine the current Phytophthora Dieback occurrence.
- determine the protectability of remnant vegetation across the existing and proposed mine areas to identify vegetation that requires protection from Phytophthora Dieback introduction and/or spread.
- develop site specific management controls to reduce the spread of Phytophthora Dieback within the site.

The aim of this Phytophthora Dieback Management Plan is to mitigate the potential impacts of Phytophthora Dieback on native vegetation within the Simcoa Moora Mine and North Kiaka Proposal (the Study Area) with consideration for operational requirements.

1.3 Scope of Works

The scope of works performed to achieve the PDMP objectives included:

- Desktop assessment of the Simcoa Moora Mine and North Kiaka Proposal footprints including review of all available historic disease occurrence data and assessment of the sites' vulnerability to disease.

- Broad Area survey across vegetated areas within the existing and proposed mine areas to identify assessable vegetation, susceptible vegetation and evidence of Phytophthora Dieback within the vegetation.
- collection of field data using a hand-held GPS unit. Field data included survey effort track files, disease evidence points, soil and tissue sample locations and mapped disease boundaries.
- development of this PDMP inclusive of current (2022) Broad Area disease occurrence data and recommendations for ongoing hygiene; and
- development and supply of associated spatial data with reference to the EPA Index of Biodiversity Surveys for Assessments (IBSA) requirements (note there is no IBSA template for Dieback assessment data and the IBSA template for *1_Survey details* has been adapted).

The Broad Area survey method is defined in *Phytophthora Dieback Interpreters Manual for Land managed by the department* (DBCA, 2015). Broad Area survey data provides planning and management information only. Comprehensive Survey is required for operational purposes.

1.4 Site Characteristics

Simcoa's operations subject to the Phytophthora Dieback assessment and this PDMP include the existing Simcoa Moora Mine and the North Kiaka Proposal which occupy adjoining properties situated north and south of Kiaka Road. The two sites are located approximately 15 km north of the Moora townsite.

The North Kiaka Proposal is approximately 1.5-2 km NNE of the existing Simcoa Moora Mine. The North Kiaka Proposal is expected to generate up to 130,000 tpa of lump quartz for downstream processing at the Kemerton Silicon Smelter located in the Kemerton Strategic Industrial Area 17 km north-east of Bunbury, Western Australia. The North Kiaka Proposal will be open-cut and above the water table and has a predicted Life of Mine of 18 years based on current resource estimates.

2 PHYTOPHTHORA DIEBACK REGULATION AND MANAGEMENT

2.1 Legislative Framework

The biodiversity conservation provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act) includes policy prepared under the Act in relation to species, habitat and protected areas. The EPBC Act lists Phytophthora Dieback as a key threatening process that poses a significant threat to biodiversity values within Australia. Policy prepared under the EPBC Act includes the national *Threat Abatement Plan for disease in natural ecosystems caused by Phytophthora cinnamomi* (TAP) (Commonwealth of Australia (CoA) 2018), and recovery plans for threatened flora species and communities that include Dieback management considerations.

The TAP (CoA 2018) establishes a national framework to guide and coordinate Australia's response to Phytophthora Dieback. This identifies research, management and other actions to mitigate impact of the pathogen to natural values.

In Western Australia, Phytophthora Dieback management is regulated by the Department of Biodiversity Conservation and Attractions (DBCA) through implementation of the *Biodiversity Conservation Act* (2016) and the *Conservation and Land Management Act* (1984). The DBCA also has certain statutory obligations under the *Biosecurity and Agriculture Management Act* (2007) concerning biosecurity matters generally, including *Phytophthora* spp. assessment and management.

2.2 Current Western Australian Management

In Western Australia, assessment and management of Phytophthora Dieback is overseen by the DBCA who regulate standards, implementation of hygiene and maintain a registration system for appropriately qualified Phytophthora Dieback Interpreters. The DBCA's primary tools for the management of Phytophthora Dieback in Western Australia include the *Phytophthora Dieback Interpreters Manual for lands managed by the Department* (DBCA 2015) and the *Phytophthora Dieback Management Manual* (DBCA 2020).

The Dieback Working Group, composed of State agencies, local government authorities and community groups, also contribute to Phytophthora Dieback management in Western Australia through the development and distribution of management guidelines for community and industry groups. *Standard Dieback Signage - protocols for use* (Project Dieback, 2008) guides standardised signage across tenures to raise awareness and mitigate disease spread.

2.2.1 Phytophthora Dieback Assessment

The *Phytophthora Dieback Interpreters Manual for Lands managed by the Department* (DBCA 2015) presents defined Phytophthora Dieback assessment methodologies. It identifies several assessment methods that provide for either linear or non-linear assessment. Assessment methods may vary depending on the project type, disturbance activity and objectives of the assessment.

While this document refers to lands managed by the DBCA, it is recognised in Western Australia as Industry best practice and is routinely applied across State, local government, and private estate.

DBCA (2015) guidelines identify six potential disease hygiene categories based on presence/absence of the disease, or the unknown disease status of an area. An area can have an unknown disease status if

the vegetation at the site is not susceptible to the disease or it cannot be assessed because of disturbance, e.g., fire. As a result, even if the pathogen is present, there may be no interpretable signs.

Only areas with suitable remnant native vegetation can be assessed. Areas that have been cleared or significantly altered are excluded from survey. In some cases, small, excluded areas may be afforded a hygiene category if they are small enough to be influenced by adjacent surveyed vegetation or situated such that topographical influences can be used to determine disease presence or absence.

The six possible disease categories are listed and described below:

1. **Infested –** Areas a registered interpreter determines to have plant disease symptoms consistent with the presence of *Phytophthora cinnamomi*.
2. **Uninfested –** Areas determined by a registered interpreter to be free of plant disease symptoms that indicate the presence of *P. cinnamomi*.
3. **Uninterpretable –** Natural, undisturbed areas where susceptible plants are absent, or are too few to make a determination of the presence or absence of *P. cinnamomi*.
4. **Temporarily uninterpretable –** Areas where disease presence or absence cannot be determined due to a level and type of site disturbance that will recover within the short to medium term, e.g., fire, rehabilitation.
5. **Not yet resolved –** *Phytophthora* occurrence diagnosis cannot be made because of inconsistent or incomplete evidence (including sample results). The category is only to be used in low interpretability zones (400 mm to 600 mm rainfall range).
6. **Disease risk roads (DRR) –** Interpreters will use the DRR category to show the disease status is unknown because of suspected or apparent recent use under unknown hygiene conditions.

Following the determination of disease categories, protectable areas are identified to determine areas that are likely to remain free from the disease with the application of appropriate disease hygiene as required.

Protectable areas are defined in the *Phytophthora Dieback Management Manual* (2020) as being areas that are likely to be classified Uninfested but may also include areas that are Uninterpretable. Protectable areas may also include areas of high conservation and/or socioeconomic value (e.g., a small uninfested area which contains a known population of a susceptible species of threatened flora) and which fall within the Vulnerable Zone. The protectable area criteria include areas that:

- are situated in zones receiving greater than 600 mm per annum average rainfall, or in lower rainfall zones in areas that are water gaining (e.g., granite outcrops, impeded drainage or engineering works which aggregate rainfall)
- are determined to be free of Dieback by a registered Phytophthora Dieback Interpreter (Uninterpretable areas may be classified as protectable) and
- are positioned in the landscape and of sufficient size (greater than four ha with a minimum axis greater than 100 m) such that an Interpreter judges that Phytophthora Dieback will not autonomously infest it, in the short term (a period of up to several decades).

2.3 Phytophthora Dieback Management across the Simcoa Moora Mine

Current Phytophthora Dieback management practises applied across the existing Simcoa Moora Mine are defined in the *Standard Operating Procedure (SoP) – Moora Mine Hygiene Measures.*

The SoP defines the hygiene measures applicable to all vehicles that have the potential to introduce weed species and disease at the mine. The aim is to ensure that adequate measures are taken to minimise the introduction of weeds and *Phytophthora* spp. and their impact on vegetation of high conservation value, particularly the Coomberdale Chert Threatened Ecological Community (TEC), which occurs across the site.

Hygiene management focuses on the principle of “Clean on Entry” to occurrences of the TEC or rehabilitation areas. Therefore, all vehicles, plant and machinery must be clean of soil and vegetative matter prior to entering any areas near rehabilitation zones or haul roads near areas of native vegetation on the Simcoa Moora Mine site.

3 ASSESSMENT METHOD

In accordance with the agreed project scope of works, the field survey was undertaken using a survey methodology referred to as Broad Area survey. The Broad Area survey method is consistent with the DBCA guideline, *Phytophthora Dieback Interpreters Manual for Lands managed by the Department* (2015). The information produced using this method of survey provides planning level disease hygiene information for application across all assessable vegetation within the existing Simcoa Moora Mine and North Kiaka Proposal mining areas (the Study Area).

Due to the mobility of the disease though autonomous spread and human vectoring, all disease occurrence data has a limited life of 12 months. A summary of key survey activities performed across the Simcoa existing and proposed mine areas is provided below.

3.1 Desktop Interpretation

Both existing and proposed mine areas were subject to an initial desktop assessment involving a review of available reports including flora and vegetation reports, geotechnical reports, known disease occurrence data including the Vegetation Health Service (VHS) *Phytophthora* sample database and an examination of available aerial imagery to assess:

- the extent of assessable remnant native vegetation occurring within the existing and proposed mine areas;
- the known occurrence of Phytophthora Dieback within or influential to the existing and proposed mine areas;
- the occurrence of site specific or influential high risk disease vectors including but not limited to roads, creek lines and gravel pits; and
- evidence of existing disease signatures such as areas of obvious vegetation decline.

3.2 Field Survey

The Broad Area survey method involved assessment of linear disease occurrence along accessible tracks and other linear infrastructure, with an extrapolation of disease occurrence using topography, high-risk disease vectors and other influences. It should be noted that extrapolated areas were not subject to intensive ground coverage, but all large, vegetated areas were traversed on foot and small areas were visually assessed from elevated vantage points.

The current assessment was undertaken in July 2022 by a DBCA registered disease interpreter and included visual diagnosis of the disease within areas of assessable remnant vegetation within the Study Area. Visual diagnosis involves identification of susceptible species' deaths occurring in patterns consistent with disease spread, such as radiating from an identified vector. Plant deaths associated with *Phytophthora* are rapid and complete rather than partial. Further, the disease presents a chronologic pattern of deaths, with the oldest deaths closest to the disease vector and most recent deaths further from the vector, forming a disease front.

Following the visual diagnosis of the disease, infested areas, if identified, are mapped along roads, tracks and other high risk disease vectors, while small infestations may be mapped in their entirety. Areas of vegetation considered to be uninfested or uninterpretable are not classified, as small undetected infestations may occur within them but remain undetectable due to the reduced survey effort associated

with this method of survey. For management purposes these areas should be considered protectable from future introduction or spread of the disease.

This method may only be used for non-operational mapping to identify obvious infested sites. It is usually carried out in very large areas where a comprehensive assessment would be prohibitively expensive and there are no soil disturbance activities anticipated within 12 months. The resulting data is generally used for broadscale planning and targeting of areas for comprehensive assessment, if required.

Field data including disease presence and vegetation information was collected using a hand-held GPS unit and converted to ArcGIS™ shapefiles. Collected field data included all sample locations, a point file of all identified individual plant deaths attributed to *Phytophthora*, disease hygiene boundaries and track files of the area covered during survey.

3.2.1 Sampling Program

Sampling for Phytophthora Dieback includes the collection of soil and tissue samples from fresh deaths of plants considered to be reliable indicator species of *Phytophthora* expression. The samples are labelled and placed into heavy duty plastic bags before being forwarded to the DBCA Vegetation Health Service (VHS) laboratory for analysis.

4 PHYTOPTHORA DIEBACK OCCURRENCE SURVEY RESULTS

The Regional location of the Simcoa Moora Mine and North Kiaka Proposal areas is shown in Figure 1. Figures 2-1 and 2-2 show the assessable vegetation and survey results from the Study Area

4.1 Desktop

4.1.1 Vegetation

Vegetation across the Study Area has been subject to several flora and vegetation surveys and nine separate vegetation alliances have been identified (Trudgen 2012). The native vegetation within the Study Area includes several occurrences of the conservation significant Threatened Ecological Community (TEC) "*Heath dominated by one or more Regelia megacephala, Kunzea praestans and Allocasuarina campestris on ridges and slopes of the chert hills of the Coomberdale Floristic Region*" (DPaW 2013).

From the report by Trudgen (2012), nine vegetation alliances have been identified across the Study Area. These include:

- *Allocasuarina campestris* high shrublands to open and closed scrub
- *Allocasuarina microstachya* open scrub
- *Regelia megacephala* high shrubland to open and closed scrub
- *Kunzea praestans* high shrubland to open and closed scrub
- *Melaleuca calyptroides* open to closed heath
- *Hibbertia subvaginata* low shrublands to low open heath
- *Xanthorrhoea drummondii* shrubland
- *Eucalyptus eudesmioides* mallee
- *Allocasuarina huegeliana* woodlands
- *Acacia acuminata* low woodlands

Trugden (2012), defines vegetation condition as being variable, ranging from excellent to poor with the majority being in Good or better condition. Trugden (2018) assessed vegetation condition across the North Kiaka Proposal area and defines vegetation condition ranging from Completely Degraded to Very Good.

Individual species listed in the available flora and vegetation reports identify the following species that are considered to be likely disease indicator species due to known susceptibility of these plant genera to *Phytophthora* species.

- *Banksia fraseri var. fraseri.*
- *Banksia sessilis.*
- *Xanthorrhoea drummondii.*

4.1.2 Assessable remnant native vegetation

As defined in the assessment criteria presented in Section 3, only areas with suitable remnant native vegetation can be assessed. Areas that have been cleared or significantly altered are excluded from

assessment (i.e., those classed as degraded or completely degraded under the Keighery (1994) condition scale).

A review of available aerial imagery identified potentially assessable vegetation occurring along the eastern side of the Simcoa Moora Mine with a small area surrounding the site office and associated infrastructure on the western side of the mine. Potentially assessable vegetation within the North Kiaka Proposal area occurs in defined pockets across the area, predominantly in the central and eastern portions of the site. A small area of potentially assessable vegetation occurs in the southwest of the proposed mine area. Aerial imagery also shows significant areas of vegetation in the northern section, however, these present as degraded and potentially un-assessable due to vegetation condition.

4.1.3 Geology

As described in the North Kiaka Approvals and Supporting Studies Geotechnical Desktop Study (GHD, 2021) the Study Area is underlain by Noondine Chert, which outcrops in NNW-SSE trending parallel ridges. Between the ridges are gentle sloping valleys infilled with Colluvium at the margins and Alluvium elsewhere. Historical investigations are limited to the ridges and no information is available regarding the depth of valley soils. Where valleys are narrow and aligned parallel/perpendicular with ridges, they may represent preferentially weathered Dolerite Dykes.

4.1.4 Previous interpretation data

There were no previous Phytophthora Dieback assessment reports associated with the Simcoa existing and proposed mine areas available for review. A review of the VHS positive sample database shows that nearest known occurrence of *Phytophthora* occurs approximately 50 km to the west. These known locations do not influence the Study Area.

4.1.5 Land Use

Both sites are in the Moora Shire that is situated in the Western Australian Wheatbelt region. The region has been extensively cleared for agriculture which is the main land use that has influenced both sites. The existing Simcoa Moora Mine has also been subject to extensive excavation associated with the quarrying activities at the site.

There is limited public access to both sites and all remnant vegetation across the Simcoa Moora Mine is separated from mining activities by exclusion fencing.

4.1.6 Climate

The Bureau of Meteorology (BoM) broadly classifies the climate across the southwest region of Western Australia as warm summers with cold winters. The BoM maintains a network of weather stations across Australia to record weather data. The nearest stations to the project area with detailed annual average data include Berkshire Valley, Walebing, Barberton and Lupin Valley. The long-term average annual rainfall data from across these sites shows that annual average rainfall ranges between 429.0 mm at Berkshire Valley through to 500.5 mm at Lupin Valley (BoM 2022). The Study Area is situated roughly central to these sites and so average annual rainfall across the Study Area is likely to be around 460 mm.

The closest BoM weather station recording temperature data is located at Walebing. Records from this station show that the highest average maximum temperature is 33.9 °C in January while the lowest average minimum temperature is 16.1 °C in July (BoM 2022).

These are important figures as the accepted distribution of *Phytophthora* is generally restricted by the 400 mm isohyet with distribution in the 400 - 600 mm/yr zone further restricted to sites with high summer rainfall averages or associated with water gaining sites. Based on the BoM climate classification and rainfall data the Study Area experiences suitable climatic conditions for *Phytophthora* to have an impact, however, due to high summer temperatures and some years experiencing marginal rainfall it is unlikely that significant impact associated with Phytophthora Dieback will occur. This impact is also likely to be limited to creek lines, soaks and other water gaining sites.

4.2 Broad Area Survey Results

A summary of key statistics from the Broad Area survey is presented in Table 1 below:

Table 1: Summary of key statistics from the Simcoa Study Area

Simcoa Study Area – Summary of Key Statistics	
Area of Assessable Vegetation	164 ha
Infested Vegetation	0 ha
Uninterpretable Vegetation	149 ha
Uninfested Vegetation	15 ha

No visual evidence of Phytophthora Dieback was observed and no soil and tissue samples were collected.

No Protectable Areas were identified within the Study Area.

4.3 Broad Area Survey Discussion

4.3.1 Environmental Conditions required for Phytophthora Dieback to impact vegetation

The spread of Phytophthora Dieback is dependent upon environmental conditions (moisture and temperature) and host availability. The variability of these factors produces an extremely wide range of disease syndromes in Western Australian vegetation communities. It is known that the impact of the disease may be greater in the higher rainfall areas and the impact and distribution of infested areas is reduced in the lower rainfall zones.

As identified in Section 1.4.4 the DBCA (2015, 2020) define the Vulnerable Zone for susceptibility to Phytophthora Dieback as all areas in the south west with average annual rainfall above 400 mm. Disease occurrence in the Vulnerable Zone is further refined in the 400 mm to 600 mm rainfall zone, as suitable environmental conditions in this lower rainfall zone will occur where natural or manmade features such as creek lines, drains and soaks that collect water exist, i.e., where water gaining sites occur.

The average annual rainfall across Simcoa's existing and proposed mine areas is approximately 460 mm (BoM 2022) which places the site in the Vulnerable Zone but suggests that infestations are most likely to be limited to creek lines and gullies or other water gaining features. During the current assessment it was noted that most of the remnant native vegetation occurs along the elevated quartzite ridge that lies along the eastern side of Study Area. Separating high points along the ridge are gently sloping alluvial valleys that do not represent defined creek lines or any other features that may be considered water gaining sites.

Based on these observations and the rainfall zone, it is considered that Phytophthora Dieback will not impact vegetation systems occurring along the elevated quartzite ridgeline in the east of the Study Area.

Vegetation occurring along Midlands Road and within the creek system to the north of Kiaka Road is a Eucalyptus woodland that is not described in the reviewed flora and vegetation report. It includes remnant vegetation in the west of the existing Simcoa Moora Mine, surrounding the mine administration centre and also vegetation in the very southern extent of the North Kiaka Proposal area. This vegetation includes low lying areas and at the time of assessment appeared to be very wet. The vegetation unit is considered to be a water gaining site that would provide a suitable environmental for *Phytophthora* species, however, no susceptible species were present in this vegetation. The vegetation in the creek line north of Kiaka Road was excluded from survey as the vegetation condition was rated Degraded due to ongoing and historic grazing which has removed all understorey species.

4.3.2 Environmental Conditions required for Assessment

Interpretation of vegetation for Phytophthora Dieback occurrence requires there to be suitable soil moisture that will stimulate disease activity, resulting in visible disease expression. The current survey was undertaken in July 2022. This survey timing was preceded by the 2021 winter season where above average rainfall was received and average rainfall was recorded for the preceding months of May and June, 2022 (BoM 2022). Subsurface soil conditions at the time of survey were visibly moist. These conditions are considered to provide a suitable environment for disease expression to be visible at the time of assessment if Phytophthora Dieback is present across the Study Area.

4.3.3 Disease Hygiene Categories

Following the Broad Area survey of all assessable areas of remnant vegetation across the Study Area it was determined that the majority of the assessable vegetation is classified as Uninterpretable for Phytophthora Dieback. This is due to either the complete absence of susceptible species or limited numbers of susceptible species being present. In some small areas, susceptible species including *B. sessilis* and *X. drummondii* occurred in limited numbers. Some old dead individuals were noted, however, no old or fresh deaths that presented as consistent with Phytophthora Dieback impact were noted, suggesting that Phytophthora Dieback is absent from the vegetation.

There are three small areas of Uninfested vegetation that were identified in the northern portion of the North Kiaka Proposal area. These are showing significant impact from grazing but were in Good condition at the time of survey. Suitable numbers of healthy *B. sessilis* and *X. drummondii* occurred in these areas and there was no visual disease expression. These areas are considered to be outside the Vulnerable Zone as defined in the PDMM (DBCA 2020) as they receive less than 600 mm of annual rainfall and do not represent water gaining sites.

It is important to note that these disease hygiene categories have been determined from a Broad Area survey which does not produce disease occurrence data suitable for operational application. The small Uninfested areas were subject to a more intensive ground coverage and are believed to represent accurate disease occurrence data, however, limited ground coverage was applied to the Uninterpretable areas. It was possible to gain several suitable vantage points where observation of large areas of vegetation could be made, consistent with the vantage point survey method (DBCA 2015). From these vantage points it could be seen that all Uninterpretable vegetation along the eastern ridgeline was uniform in appearance, supporting the Uninterpretable classification.

4.3.4 Protectable area assessment

As presented in Section 3, the criteria for Protectable Areas as defined in the PDMM (DBCA 2020) requires Protectable Areas to occur in the Vulnerable Zone and meet other criteria.

All vegetation occurring along the eastern quartzite ridgeline is considered outside the Vulnerable Zone on the basis of having average annual rainfall that is below 600 mm and an absence of water gaining sites that may generate suitable conditions for Phytophthora Dieback to survive.

All vegetation in low lying areas surrounding the Simcoa Moora Mine administration facility in the west of the Study Area are Uninterpretable. . . While Uninterpretable areas may be classified Protectable, this area may receive potentially infested drainage from roadside drains along Midlands Road. As disease absence cannot be determined by a registered Phytophthora Dieback Interpreter due to the absence of susceptible species it must be classified as unprotectable. Therefore, no Phytophthora Dieback Protectable Areas have been assigned across the Study Area.

4.4 Limitation of survey results

Phytophthora Dieback is a soil borne plant pathogen that spreads autonomously via root to root transmission, independently through the soil and also with the movement of water. The disease is also widely spread by human activities involving the movement of infested soil and plant material. As a result, the edge of a disease infestation is considered to be an actively spreading disease front, and all uninfested areas of vegetation that are associated with human vectors such as tracks and access ways are considered to be at risk of future infestation unless appropriate management is applied.

The disease occurrence data presented in this report is representative of the distribution of Phytophthora Dieback within assessable vegetation across the Simcoa Moora Mine and North Kiaka Proposal area at the time of assessment. It does not represent high confidence operational scale data. In accordance with DBCA guidelines (2015, 2020), operational scale data is required prior to any planned soil disturbance activities. Operational scale data is developed from disease occurrence surveys undertaken using either the Comprehensive Transect or Linear surveys methods which are defined in the *Phytophthora Dieback Interpreters Manual for Lands managed by the Department* (DBCA, 2015)**.**

Operational scale Phytophthora Dieback occurrence data is valid for a period of 12 months from the date of assessment. After 12 months a disease re-check assessment is required and after three years a full re-assessment of the survey area will be required. As there are no Protectable Areas within the Study Area and the majority of the Study Area falls outside the Vulnerable Zone for Phytophthora, future re-check or re-assessment is not considered necessary.

5 PHYTOPHTHORA DIEBACK RISK ASSESSMENT

Application of the PDMM (DBCA, 2020) is intended for lands that occur within the Vulnerable Zone. The only vegetation within the Simcoa Moora Mine and North Kiaka Proposal area that occurs in the Vulnerable Zone is the woodland vegetation surrounding the Simcoa Moora Mine administration facility, situated along Midlands Road in the west of the Study Area.

The PDMM (DBCA 2020) requires proposed soil movement activities within the Vulnerable Zone to be subject to a risk assessment. The outcome of the risk assessment determines the need for a PDMP and assists to define the nature of Phytophthora Dieback mitigation strategies that are required. Any activity that has a Moderate or High Risk must be undertaken in accordance with a activity specific PDMP while activities determined to have a low risk may proceed using Basic Phytophthora Dieback Management procedures (defined in Section 5.2).

5.1 Disease Risk

The primary source of Phytophthora Dieback introduction and spread is through controllable or uncontrollable disease vectors. Controllable disease vectors include human movement of contaminated soil, water and vegetation carried on vehicles, machinery equipment and clothing, including footwear. Uncontrollable disease vectors include movement of infested soil on animals including feral pigs and by autonomous spread.

The risk of introducing and/or spreading Phytophthora Dieback is closely related to the soil moisture content at the time of the proposed activity, the nature of the activity and the consequence of introducing the disease on vegetation occurring in the area the activity is planned. These are further described below.

5.1.1 Soil Moisture

As Phytophthora Dieback spreads most readily in infested soil transported on vehicles, machinery, equipment and footwear, higher levels of soil moisture will increase the risk of disease spread as it increases the soil's capacity to adhere to these carriers. Soil moisture classifications are:

- **Dry** – where dust forms when exposed soil is disturbed.
- **Moist** – where soil is damp but does not stick to carriers.
- **Wet** – where soil and moisture combine so that soil sticks to carriers.

The amount of rainfall required to influence the classification of soil moisture varies with soil type and therefore must be regularly monitored throughout an activity. Soils across the Simcoa Moora Mine and North Kiaka Proposal area vary, but typically have a low clay content which will decrease the likelihood of soils adhering to carriers with moisture.

5.1.2 Activity Type

The likelihood of introducing or spreading Phytophthora Dieback is dependent on the availability of a source of inoculum and the nature of the activity. Variables that should be considered include the type of equipment used, area covered, access, need for imported materials, duration of activity and drainage from the activity area.

As the assessment of likelihood assumes implementation of basic Phytophthora Dieback management practices, we assume the source of Phytophthora Dieback that could be introduced or spread will originate from:

- a hygiene breach associated with poor hygiene clean down practice prior to clean entry into protected areas or
- an unknown infestation occurring within an area assessed as being protectable from the pathogen.

The assessment of likelihood must consider the potential for each activity to experience a hygiene breach and the possibility for an undetected infestation to occur within the activity area. The level of likelihood is therefore directly associated with:

- the number of vehicles, machines and equipment involved the activity
- the size of the area involved and
- the duration of the activity.

5.1.3 Consequence of introducing Phytophthora Dieback

The consequence of introducing Phytophthora Dieback is based on the predicted impact of the pathogen in a specific vegetation type. This will vary with position in the landscape, annual rainfall and soil types.

Table 2 below is from the PDMM (DBCA 2020) and presents the predicted impact ratings and associated consequence ratings as defined in the PDMM. While not represented in the DBCA table below, DBCA also have a consequence rating of Insignificant which is incorporated into risk assessment matrix tables presented below.

Table 2: Predicted impact rating, assessment scale and associated consequence rating

Assessment for the consequence of introducing Phytophthora Dieback		
Predicted Impact	Scale of Impact	Consequence Rating
Very High	> 50% overstorey will die	**Severe**
High	10% to 50% of overstorey will die	**Significant**
Moderate	< 10% of overstorey and high numbers of understorey will die	**Moderate**
Low	No overstorey and minimal understorey will die	**Minor**

As discussed in Section 5, occurrence of Phytophthora Dieback is limited by environmental conditions, especially rainfall. Due to the low average annual rainfall and the absence of water gaining sites across much of the area, the occurrence of Phytophthora Dieback across the Simcoa Moora Mine and North Kiaka Proposal areas is anticipated to be limited to the vegetation surrounding the Simcoa Moora Mine administration facility that has been classified as Uninterpretable and Unprotectable. Therefore, there are no protectable, susceptible communities within the Simcoa Moora Mine and North Kiaka Proposal areas and the consequence rating is Insignificant.

5.1.4 Calculation of Activity Risk

Tables 3 – 5 are from the PDMM (DBCA 2020) and provide a risk assessment matrix based on activity likelihood of introducing the pathogen and the consequence of introducing the pathogen for each soil moisture classification. If an activity is anticipated to occur over a range of soil moisture conditions then

the worst case scenario must be applied. Example:, a construction program spanning 6 months is likely to include periods of activity occurring in wet soil conditions and so the wet soil risk assessment table must be used to calculate activity risk.

Any activity that is considered to have a Moderate or High Risk rating is required to be subject to an activity specific PDMP using Phytophthora Dieback occurrence data developed through operational scale disease survey methods (DBCA 2015). The activity specific PDMP may require the implementation of a targeted comprehensive Phytophthora Dieback assessment of the activity site prior to activity to map the occurrence of the pathogen in the immediate vicinity and to identify site specific Clean on Entry (CoE) points. Completion of the activity specific PDMP and identification of CoE points will identify specific operational hygiene strategies designed to mitigate the risk of introducing Phytophthora Dieback to protectable areas. Clean on Entry is further defined in Section 5.2.

Low risk activities can proceed with the application of basic Phytophthora Dieback management principles which are defined in Section 5.2.

Table 3: risk matrix for activities performed in Dry Soil Conditions

Likelihood	Phytophthora Dieback Risk Assessment for Activities in Dry Soil				
	Consequence				
	Insignificant	Minor	Moderate	Significant	Severe
Very Likely	**Low**	**Moderate**	**High**	**High**	**High**
Likely	**Low**	**Moderate**	**Moderate**	**High**	**High**
Possible	**Low**	**Low**	**Moderate**	**Moderate**	**High**
Unlikely	**Low**	**Low**	**Low**	**Moderate**	**Moderate**
Very Unlikely	**Low**	**Low**	**Low**	**Low**	**Low**

Table 4: risk matrix for activities performed in Moist Soil Conditions

Likelihood	Phytophthora Dieback Risk Assessment for Activities in Moist Soil				
	Consequence				
	Insignificant	Minor	Moderate	Significant	Severe
Very Likely	**Low**	**High**	**High**	**High**	**High**
Likely	**Low**	**Moderate**	**High**	**High**	**High**
Possible	**Low**	**Moderate**	**Moderate**	**High**	**High**
Unlikely	**Low**	**Low**	**Low**	**Moderate**	**High**
Very Unlikely	**Low**	**Low**	**Low**	**Moderate**	**Moderate**

Table 5: risk matrix for activities performed in Wet Soil Conditions

Likelihood	Phytophthora Dieback Risk Assessment for Activities in Wet Soil				
	Consequence				
	Insignificant	Minor	Moderate	Significant	Severe
Very Likely	**Low**	**High**	**High**	**High**	**High**
Likely	**Low**	**High**	**High**	**High**	**High**
Possible	**Low**	**Moderate**	**High**	**High**	**High**
Unlikely	**Low**	**Moderate**	**Moderate**	**High**	**High**
Very Unlikely	**Low**	**Low**	**Low**	**Moderate**	**Moderate**

NB: from Section 5.1.3, consequence rating for the Simcoa Moora Mine and North Kiaka Proposal areas is Insignificant. This results in a classification of Low risk for all soil moisture conditions.

In accordance with the PDMM, activities determined to have a Low risk do not require an activity specific PDMP and may proceed using Basic Phytophthora Dieback Management procedures.

5.2 Basic Phytophthora Dieback Management

Basic Phytophthora Dieback Management requires the standard of clean on entry (CoE) be applied across the Simcoa Moora Mine and North Kiaka Proposal areas. CoE is defined as the requirement for all vehicles, equipment, machinery and clothing including footwear to be clean and free from soil and or plant material prior to entering areas of remnant native vegetation. Basic Phytophthora Dieback Management practices include:

- no access to infested or unprotectable areas during moist or wet soil conditions.
- all personnel and site contractors to have completed Biosecurity awareness training. Basic Green Card training is a suitable standard of awareness training and is the requirement for operating on DBCA lands. A list of suitable Green Card training providers is available through the Dieback Working Group website.
- all external access points to remnant native vegetation on the Simcoa Moora Mine and North Kiaka Proposal areas are considered CoE points. All vehicles, equipment, machinery and clothing including footwear are to arrive at the Simcoa Moora Mine and North Kiaka Proposal areas in a hygienically clean state that is free from all soil and plant material.
- where practical, all activities undertaken in remnant vegetation should be performed during dry soil conditions.
- avoid driving through areas where Phytophthora Dieback may persist such as low-lying unprotectable areas, boggy creeks and puddles.
- carry mobile clean down kits (Commonwealth of Australia 2015) for minor, unplanned hygiene compliance.
- report any observed breaches of hygiene to the Supervising Manager.

6 REFERENCES

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Simcoa *Standard Operating Procedure (SoP) – Moora Mine Hygiene Measures.*

7 REPORT DISCLAIMER

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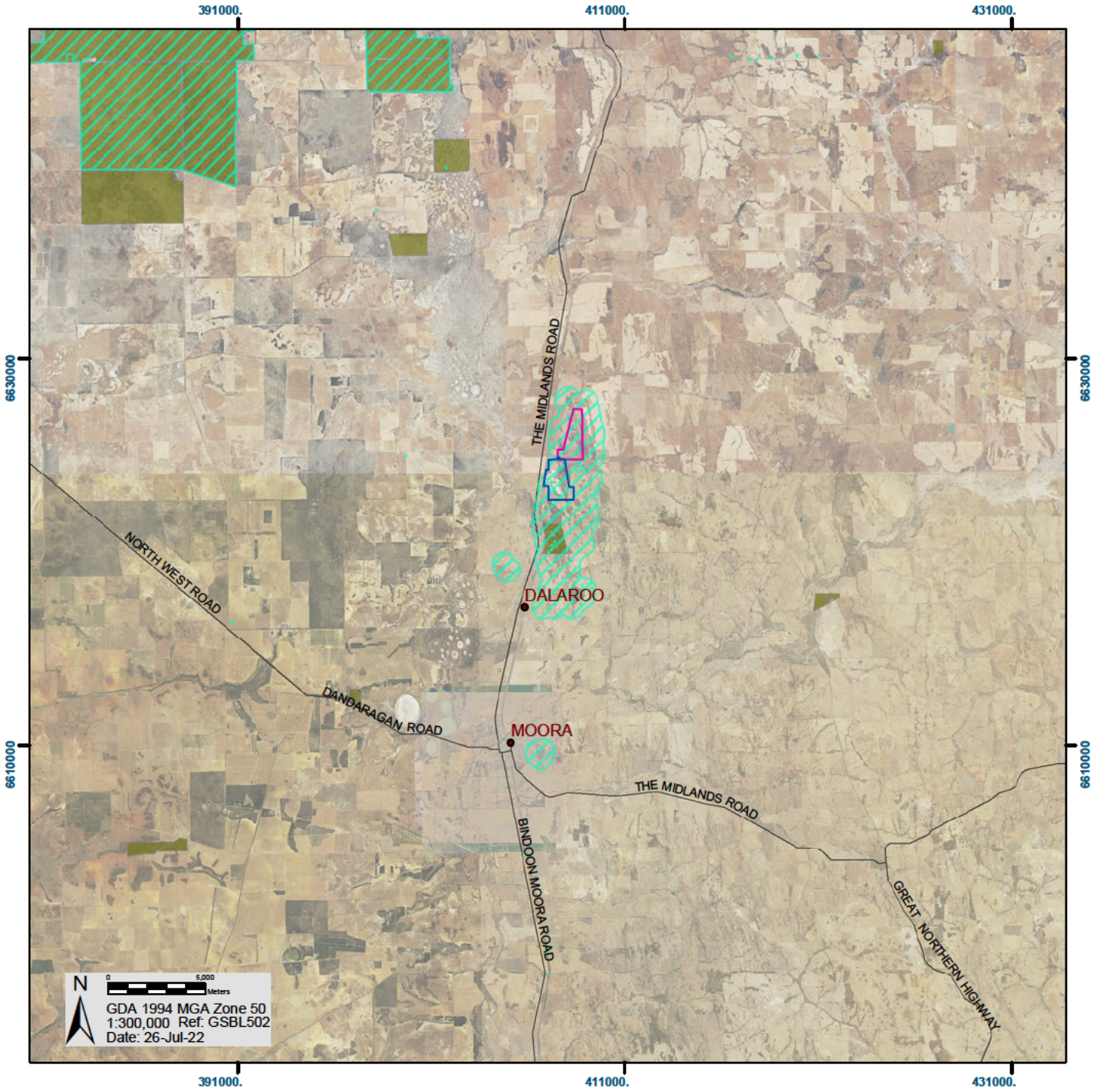
Figures

Phytophthora Dieback Occurrence Survey

Simcoa Moora Mine Site and North Kiaka Proposal

Figure 1 - Regional Location



- Simcoa Moora Mine Site
- North Kiaka Proposal
- DWER Environmentally Sensitive Areas
- DBCA Legislated Lands

Phytophthora Dieback Management Plan
Simcoa Moora Mine Site and North Kiaka Proposal
prepared for GHD, July 2022

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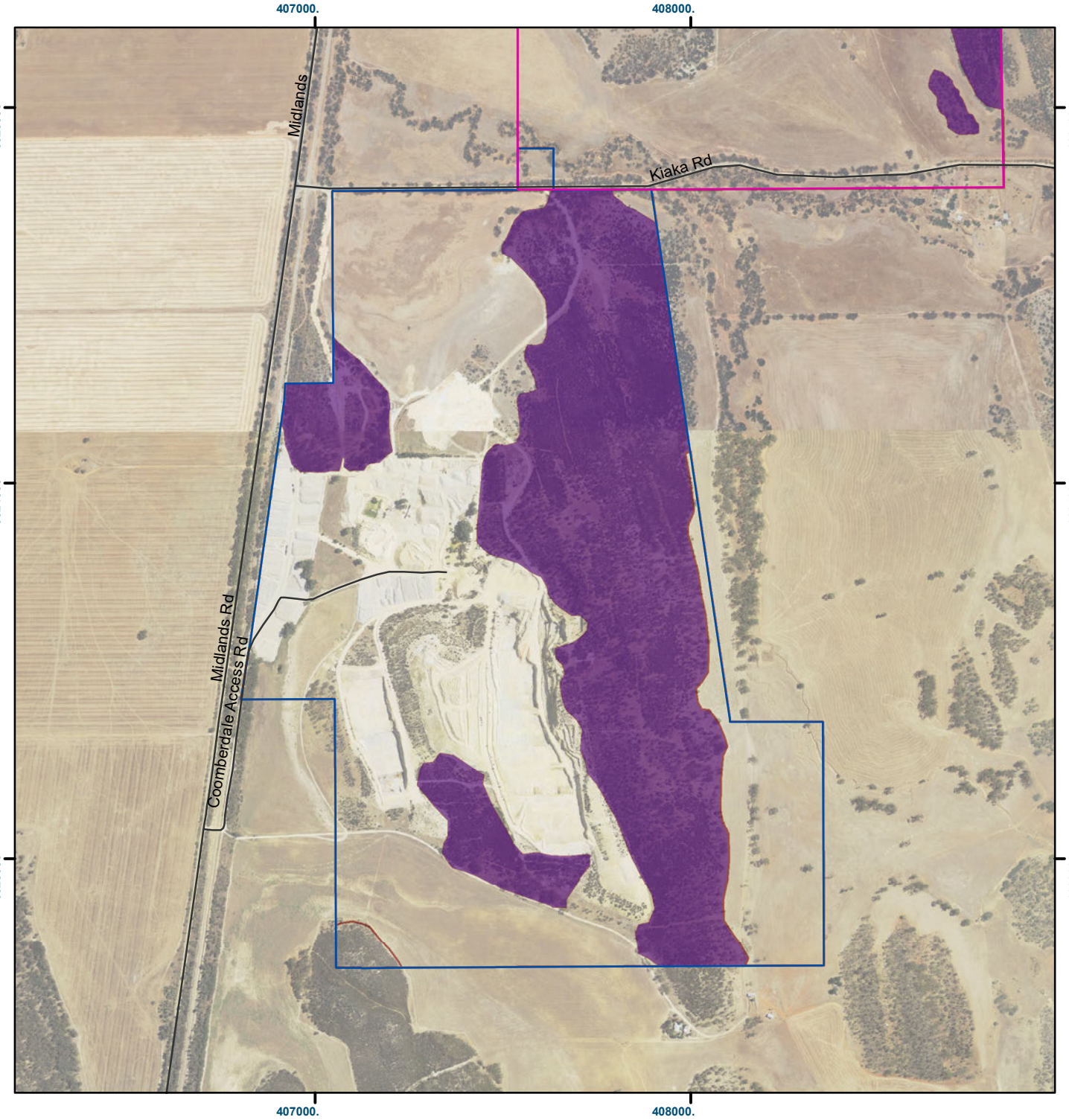
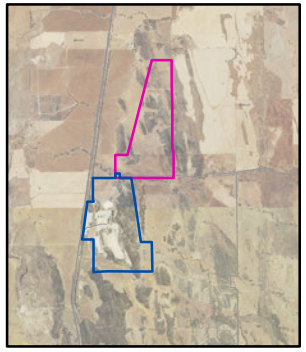


Figure 2-1 - Phytophthora Dieback Occurrence Survey - Simcoa Moora Mine Site

Phytophthora Dieback Status

- Uninfested
- Uninterpretable
- Excluded
- Simcoa Moora Mine Site
- North Kiaka Proposal



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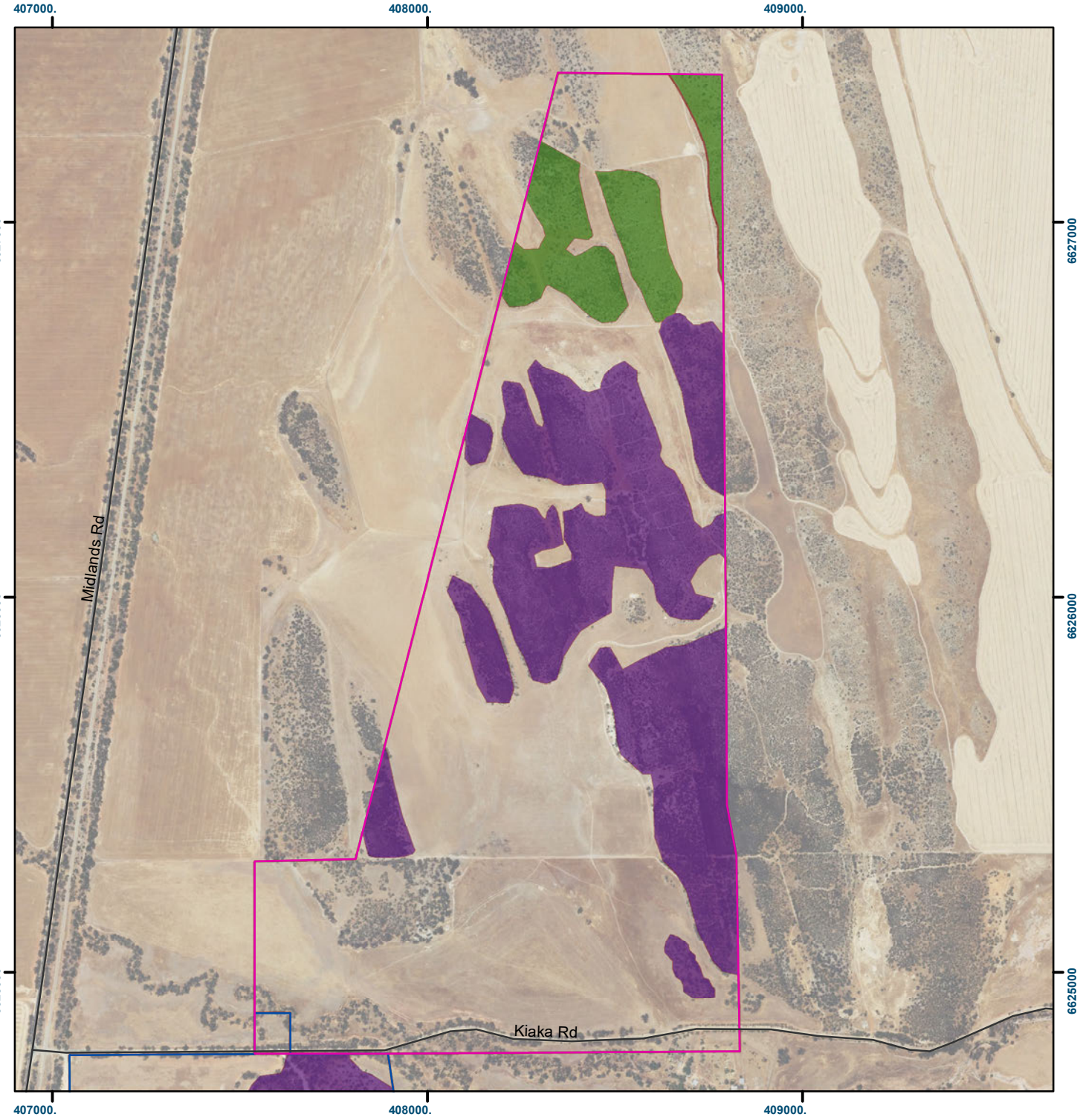
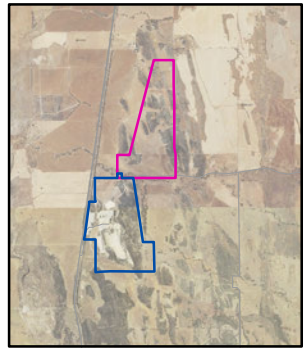


Figure 2-2 - Phytophthora Dieback Occurrence Survey - North Kiaka Proposal

Phytophthora Dieback Status

- Uninfested
- Uninterpretable
- Excluded
- Simcoa Moora Mine Site
- North Kiaka Proposal



Phytophthora Dieback Management Plan
Simcoa Moora Mine Site and North Kiaka Proposal
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Appendix D

Flora and Vegetation Assessment (GHD 2024)

Appendix E

Terrestrial Fauna and Targeted Black Cockatoo Habitat Survey

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The Power of Commitment