# Appendix C

## Project Environmental Management Plan (GHD, 2023)

SIMCOA
Silicon Metal Company of Australia

Simcoa Operations Pty Ltd

# North Kiaka
# Environmental Management Plan

March 2023

| Project name | | North Kiaka Project Environmental Management Plan | | | | | |
|---|---|---|---|---|---|---|---|
| Document title | | North Kiaka Project \| Environmental Management Plan | | | | | |
| Project number | | 12518217 | | | | | |
| File name | | 12518217 REP 0 North Kiaka EMP.docx | | | | | |
| Status Code | Revision | Author | Reviewer | | Approved for issue | | |
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# Executive Summary

This Environmental Management Plan (EMP) is submitted by SIMCOA Operations Pty Ltd (SIMCOA), to support environmental referrals under the *Environmental Protection Act 1986* (EP Act) and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for the North Kiaka DE (the Project), located 15 km north of Moora in the Wheatbelt of Western Australia (WA).

The Project will mine quartzite ore from the North Kiaka DE then transport it via haul roads to the existing Moora Mine (Moora Mine) located 2 km south. The ore will be processed at the crushing and screening plant located at the Moora Mine, then transported via covered truck to SIMCOA's existing silicon Smelter (Kemerton Smelter) located in Kemerton Strategic Industrial Area (KSIA), 17 km north-east of Bunbury in the South West of WA. The Project will generate approximately 130,000 tonne per annum (tpa) of lump quartz, extending SIMCOA's operations by 18 years.

Table ES 1.1 presents a summary of the preliminary key environmental factors and objectives for the EMP.

***Table ES 1.1 Environmental Management Plan Executive Summary***

| | |
|---|---|
| **Proposal Name** | North Kiaka Project |
| **Proponent name** | SIMCOA Operations Pty Ltd |
| **Ministerial Statement number** | MS 0813 |
| **Purpose of the EMP** | To support referrals under the EP Act and EPBC Act.<br>To demonstrate appropriate management measures will be in place during construction and operation to ensure that the EPA's objectives for key environmental factors will be achieved and the risks to matters of national environmental significance are effectively mitigated. |
| **Key environmental factor/s, objective/s** | **Flora and Vegetation**<br>– Minimise clearing of threatened ecological communities, Threatened and Priority flora.<br>– Prevent clearing or removal of vegetation outside of approved clearing areas.<br>– Minimise disturbance of vegetation and flora adjacent to clearing areas.<br>– Prevent introduction and/or spread of weeds into adjacent areas.<br>– Meet condition requirements for Matters of National Environmental Significance (MNES),<br>• 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" (Coomberdale TEC).<br>• Watheroo Wattle (*Acacia aristulata*) Threatened flora individuals in habitat that is of 'good to poor' condition [species listed Endangered under EPBC Act].<br>• *Daviesia dielsii* Threatened flora individuals in habitat that is of 'good to poor' condition [species listed Endangered under EPBC Act].<br>**Landforms**<br>– Minimise disturbance of the Noondine Chert Formation.<br>– Minimise clearing of remnant native vegetation present on the Noondine Chert ridgelines.<br>**Terrestrial Environmental Quality**<br>– Avoid and minimise hydrocarbon release to soils.<br>– Minimise soil erosion and transport of sediments from the Development Envelope (DE).<br>– Prevent disposal of solid/liquid wastes on-site (with the exception of on-site sewage disposal).<br>– Minimise exposure of potentially acid sulfate soils (PASS).<br>**Terrestrial Fauna**<br>– Protect habitat for conservation significant fauna.<br>– Minimise impacts on Short Range Endemics.<br>– Meet condition requirements for MNES,<br>• Carnaby's Black Cockatoo (*Zanda latirostris*) [species listed Endangered under EPBC Act]. |

| | |
|---|---|
| | **Inland waters**<br>– Minimise impacts to water quality of surface waters and groundwater.<br>– Maintain surface hydrological regime.<br>**Social Surroundings**<br>– Avoid and minimise disturbance to Aboriginal heritage sites/places.<br>– Comply with Aboriginal Cultural Heritage Act 2021 (ACH Act)<br>– Minimise amenity impacts (noise, dust, vibration emissions).<br>**Greenhouse Gas (GHG)**<br>– Contribute to achieving net zero emissions no later than 2050.<br>**Air Quality**<br>– Minimise the impacts of emissions on air quality and other environmental values.<br>– Discharges of waste into the air are minimised and managed. |
| **Condition clauses** | MS 813 current conditions pertain to the Moora Mine and Kemerton Smelter (Appendix A). The following condition clauses are considered relevant to North Kiaka. Additional condition clauses determined in the current approvals process will be added.<br>4 Compliance Reporting, specifically, 4.6 Annual Reporting<br>5 Performance Review and Reporting<br>6 Flora<br>8 Rehabilitation<br>9 Greenhouse Gas Abatement |
| **Proposed construction date** | Late 2023. |
| **EMP required pre-construction** | Yes. |

This report is subject to, and must be read in conjunction with, the limitations set out in section 1.4 and the assumptions and qualifications contained throughout the Report.

# Acronyms

| Term | Definition |
|---|---|
| ACH Act | Aboriginal Cultural Heritage Act 2021 |
| AER | Annual Environmental Reporting |
| AMD | Acid Mine Drainage |
| CER | Clean Energy Regulator |
| Coomberdale TEC | Coomberdale Floristic Region TEC |
| DBCA | Department of Biodiversity, Conservation and Attractions |
| DE | Development Envelope |
| DF | Disturbance Footprint |
| DFES | Department of Fire & Emergency Services |
| DMIRS | Department of Mines, Industry Regulation and Safety (WA) |
| DCCEEW | Department of Climate Change, Energy, the Environment and Water (Commonwealth) |
| DoW | Department of Water (WA) |
| DPLH | Department of Planning, Lands and Heritage (WA) |
| EMP | Environmental Management Plan |
| EP Act | Environmental Protection Act 1986 (WA) |
| EPBC Act | Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth) |
| EPBC Regulations | Environmental Protection and Biodiversity Conservation Regulations (Commonwealth) |
| ERD | Environmental Referral Document prepared under Section 40AA of the EP Act |
| ESA | Environmentally Sensitive Area |
| GHG | Greenhouse gas |
| GHGMP | Greenhouse Gas Management Plan |
| GWL | Groundwater licence |
| HSE | Health Safety and Environment |
| HSEQ | Health, Safety, Environment and Quality |
| KSIA | Kemerton Strategic Industrial Area |
| MNES | Matters of National Environmental Significance |
| NGER Act | National Greenhouse and Energy Reporting Act 2007 |
| PASS | Potentially acid sulfate soils |
| PDWSA | Public Drinking Water Source Area |
| ROM | Run of Mine |
| SES | Stakeholder Engagement Strategy |
| SRE | Short Range Endemic |
| TEC | Threatened Ecological Communities |
| the Moora Mine | Existing Moora Mine |
| Kemerton Smelter | SIMCOA's existing silicon Smelter in Kemerton |
| The Project | The Project located in the North Kiaka DE |
| Tonkin WRD | Tonkin Waste Rock Dump |
| WA | Western Australia |

# 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 |
| TSP | Total suspended particulates |

# Contents

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# Appendices



# Attachments

**No table of contents entries found.**

# 1. Context, scope and rationale

This EMP has been prepared by GHD Pty Ltd (GHD) on behalf of SIMCOA to support the implementation of the Project. The EMP will also support the application for approval under the WA EP Act and Commonwealth EPBC Act. This EMP has been developed in accordance with the *Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans* (EPA, 2021).

In accordance with the EPA instructions, this EMP includes the following sections:

Section 1.1 – a description of the Project that this EMP addresses.

Section 1.2 – key environmental factors

Section 1.3 – the condition requirements applicable to the Project

Section 1.4 – the rationale and approach underlying this EMP.

Section 3 outlines the EMP provisions for each key environmental factor applicable to the construction and operation of the Project. Adaptive management and stakeholder consultation are detailed in Sections 4 and 5 respectively.

## 1.1 Project description

SIMCOA currently operates the Moora Mine, located approximately 15 km north of Moora, in the Wheatbelt of WA (see Figure 1.1). SIMCOA is proposing to establish a new quartzite mine (the Project, North Kiaka DE), approximately 2 km north of the Moora Mine. The Project has a Disturbance Footprint (DF) of up to 44.45 ha, within the overall Development Envelope (DE) of 216.42 ha. A total of 17.12 ha of native vegetation will be cleared for the development of the mining pit, the waste rock landforms (Tonkin WRL) and access roads.

As per the operations of the Moora Mine, the quartzite ore will be transported via covered truck to Kemerton Smelter located in KSIA, approximately 17 km north-east of Bunbury in the South West of WA.

The Project is expected to produce approximately 130,000 tpa of lump quartz from approximately 200,000 tonnes of ore. It is anticipated the Project and the Moora Mine may have a period of several years in which they will operate concurrently. During this period SIMCOA will develop the Project at the North Kiaka DE and use the established infrastructure at the Moora Mine (i.e. water resources and processing plant). The ore will be transported from North Kiaka DE via trucks along the linear access corridor to the Moora Mine for processing prior to transportation to Kemerton Smelter. Upon closure of the Moora Mine, SIMCOA will continue to transport ore via haul roads from the North Kiaka DE to the Moora Mine for processing before transporting it to Kemerton Smelter.

The North Kiaka DE has been selected based on the presence of the quartzite mineral resource and its proximity to the Moora Mine, thereby allowing SIMCOA to extend their operations by 18 years and utilise the existing infrastructure and facilities at the Moora Mine. The aspects of the Project that are covered by this EMP are:

- One mine pit
- One Tonkin waste dump
- Hydrocarbon storage
- A linear infrastructure access corridor (easement)
- Internal access roads
- Associated infrastructure such as workshops, offices, ablutions, car park, laydown and stockpile areas and a weighbridge.
- Ongoing transport of ore

*Table 1.1 Summary of the Project*

| Summary of the Project | |
|---|---|
| Proposal title | North Kiaka Project |
| Proponent name | SIMCOA Operations Pty Ltd |
| Ministerial Statement | MS813 (existing to be updated) |
| Short description | The Project is to develop a new quartzite mine at the North Kiaka DE, located 15km north of Moora, Western Australia. The North Kiaka DE is approximately 2 km north-east of the Moora Mine.<br>The Project includes the establishment of:<br>– One mine pit<br>– One Tonkin waste dump<br>– Hydrocarbon storage<br>– A linear infrastructure access corridor (easement)<br>– Internal access roads<br>– Associated infrastructure such as workshops, offices, ablutions, car park, laydown and stockpile areas and a weighbridge.<br>The North Kiaka DE layout is shown in Figure 1.2.<br>It is anticipated that the Project will generate approximately 130,000 tpa of lump quartz.<br>Mining and processing of ore at the Project will be undertaken within daylight hours, six (6) days a week, with approximately 12 people onsite. |

*Table 1.2 Key characteristics of the Project*

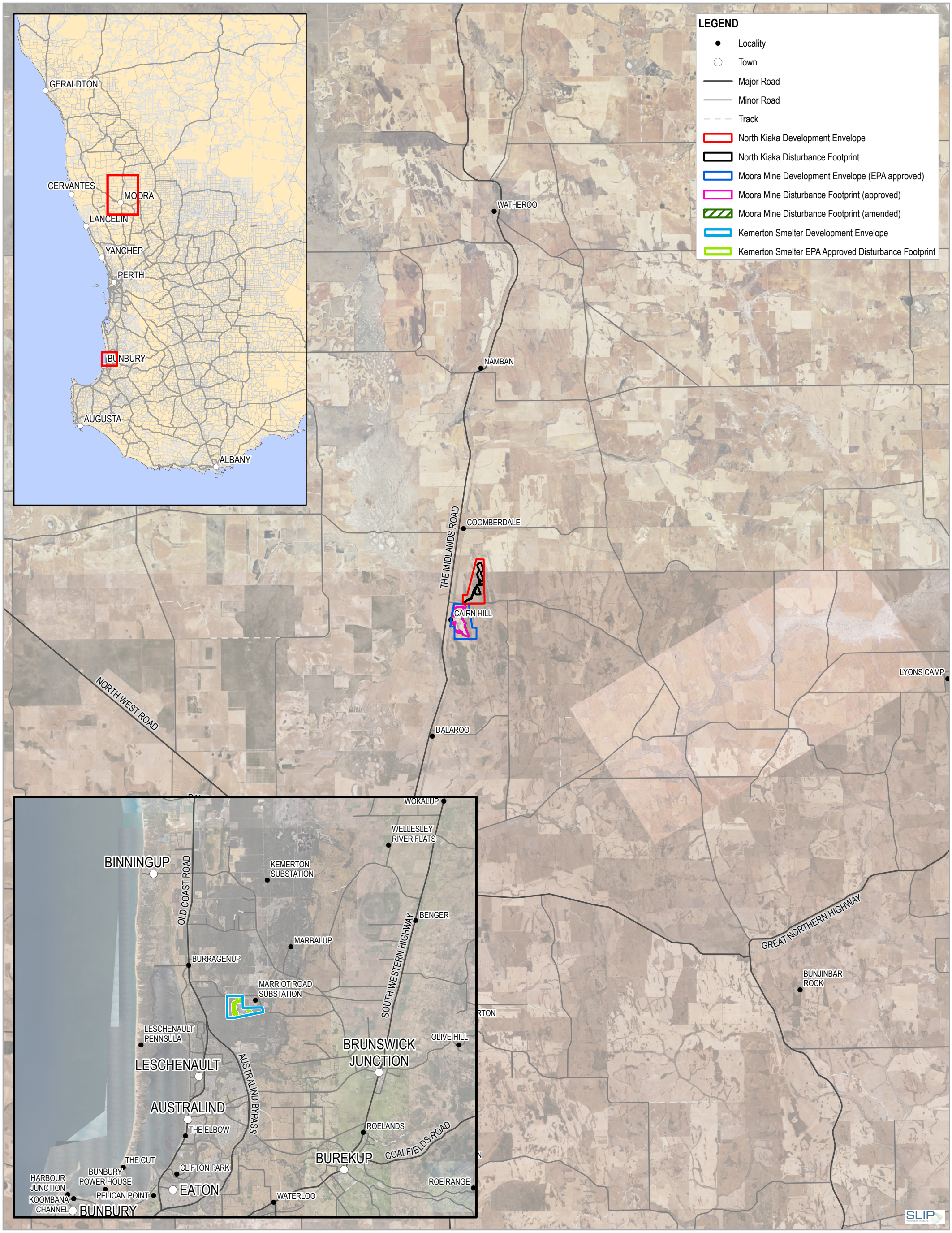
| Elements | Proposed extent |
|---|---|
| **Physical Elements** | |
| Mine | The Project will include the development of:<br>– One mine pit<br>– One Tonkin waste dump<br>– An easement linking North Kiaka DE to Moora Mine<br>– Internal access roads |
| Associated infrastructure | The development of the Project will require the following infrastructure for operational purposes:<br>– Administration buildings<br>– Car park<br>– Product stockpiles<br>– Weighbridge<br>– Process area and workshops (to include hydrocarbon storage, refuelling facility, and washdown bay). |
| **Operational Elements** | |
| Water demand | During the seven year period in which the Project and the Moora Mine will operate concurrently, water requirements for the Project will be sourced from the Moora Mine groundwater bore, which is governed by groundwater licence GWL 104693(6). During the period of concurrent operation, it is not anticipated that the water requirements for the development and operation of the Project will exceed the current licence. However, SIMCOA will seek an amendment to the current licence ((GWL 104693(6)) to authorise the use of water within mining tenements M70/1292. Upon closure of Moora Mine, if required, SIMCOA will seek the necessary approvals under the *Rights in Water and Irrigation Act 1914* (RiWI Act) to access and use groundwater for the ongoing activities of the Project. |
| Power | Power for the Project will be provided via an onsite diesel generator. |
| Overburden / Waste Rock | The Project has been designed with a waste dump (Tonkin Waste Dump). The waste dump has been designed on the basis of the waste having a swell factor of 30%, due |

| Elements | Proposed extent |
|---|---|
| | to blasting of rock. The waste dump has also been designed to accommodate waste from the pit on the assumption the pit will be partially back filled.<br>The waste dump is located in an area which has been previously cleared of native vegetation, thereby minimizing the disturbance to native vegetation. The design and location of the waste dump will also act as a weed buffer for the remnant vegetation. |
| Ore Processing Waste | At the Run of Mine (ROM) area the quartzite ore will be tipped into crushers and go through a wet screening process. The processed ore will be transported by dump truck to the Moora Mine where it will be processed and stockpiled before being transported to Kemerton Smelter. The waste rock will be disposed of into the waste dump. |
| Ore transport | As per the operations of the Moora Mine, the quartzite ore will be transported via covered truck to Kemerton Smelter located in the KSIA, approximately 17 km north-east of Bunbury in the South West of WA. |

## 1.2 Key environmental factors

The key environmental factors identified as being relevant to the Project are outlined in Table 1.3. Site-specific environmental values and activities with the potential to impact these values are also described.

A detailed assessment of environmental values and impacts is provided in the Environmental Referral Document (ERD) (GHD, 2023c).

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

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GHD

**Simcoa Operations Pty Ltd**
**Simcoa Environmental Approvals s40AA ERD**

**Proposal Location**

Project No. **12518217**
Revision No. **0**
Date **08/ 05/ 2023**

**FIGURE 1-1**

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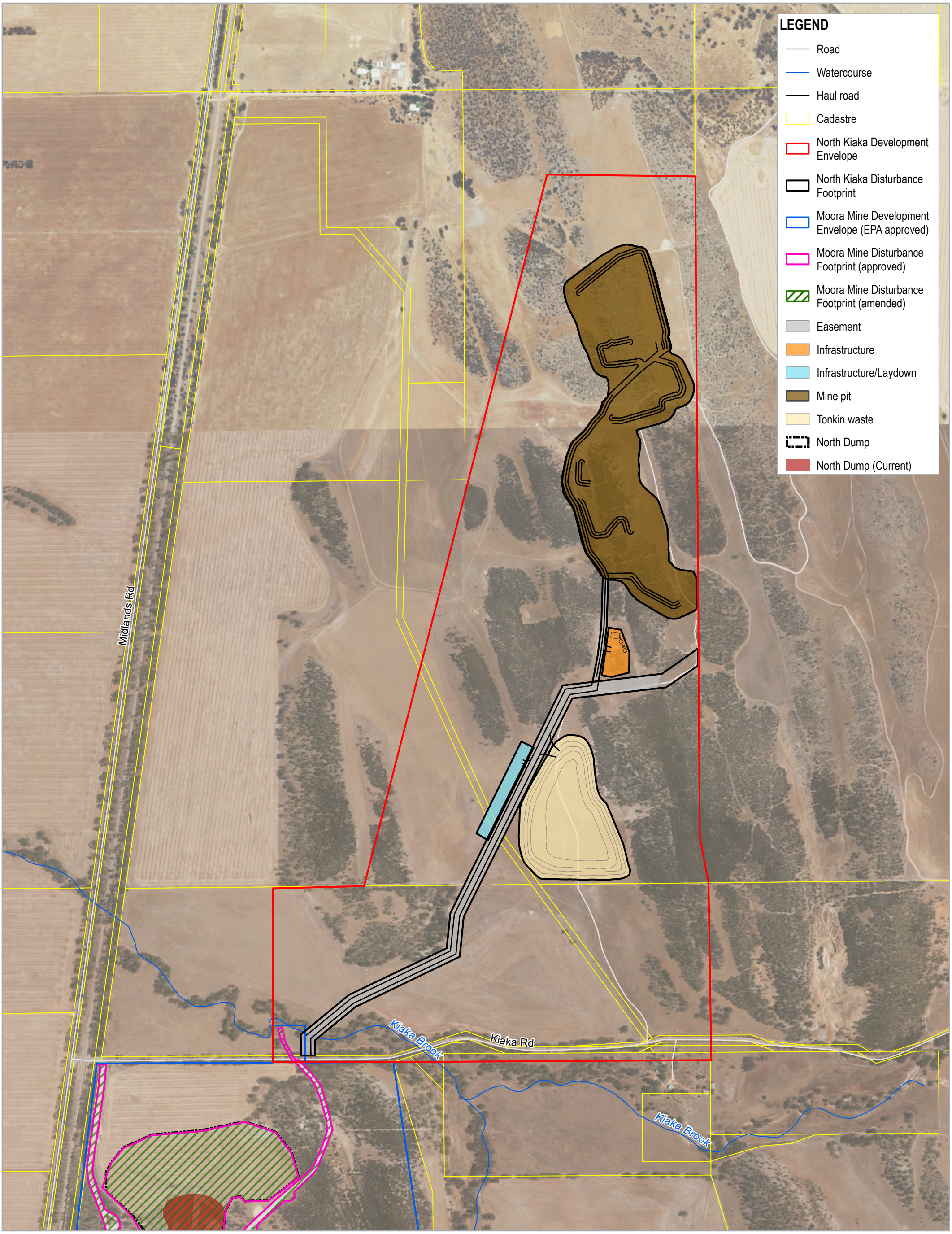


Paper Size ISO A3

0 100 200 300

Metres

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

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GHD

**Simcoa Operations Pty Ltd**
**Simcoa Environmental Approvals s40AA ERD**

**Proposal Development Envelope and Disturbance Footprint North Kiaka DE and Disturbance Footprint**

Project No. **12518217**
Revision No. **0**
Date **07/06/2023**

# FIGURE 1-2 Part 1

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

*Table 1.3 Key Environmental Factors, Activities and Values*

| Key environmental factor | Relevant environmental values | Activities that would affect the factor | *Site-specific environmental values, uses, condition or sensitive components which would be affected* |
|---|---|---|---|
| Flora and vegetation | – Listed TEC:<br>– "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" (hereafter referred to as 'Coomberdale TEC')<br>– Listed threatened species:<br>– Acacia aristulata (Endangered)<br>– Daviesia dielsii (Endangered) | – Clearing of 17.12 ha native vegetation<br>– Movement of vehicles<br>– Mine excavation and blasting<br>– Ore handling and transport | – *Coomberdale TEC*<br>– *Conservation significant flora:*<br>• *Acacia aristulata (Endangered)*<br>• *Daviesia dielsii (Endangered)*<br>• *Regelia megacephala (P4) and*<br>• *Diuris recurva (P4)* |
| Landforms | – *Noondine* Chert Formation | – Mining ridges of the Noondine Chert Formation (quartzite resource)<br>– Clearing of remnant native vegetation (present on quartzite ridges) | – *Noondine Chert Formation which has a restricted distribution between Moora and Three Springs (total extent 14,586 ha)*<br>– *Environmental values supported by the landform (and remnant native vegetation present):*<br>• *Coomberdale TEC*<br>• *Conservation significant flora*<br>• *Threatened fauna foraging (and potential breeding) habitat*<br>• *Zanda Latirostris, Carnaby's Black Cockatoo (Endangered)*<br>• *Potential subterranean fauna habitat* |
| Terrestrial environmental quality | – Not applicable | – Ground disturbance (vegetation clearing, earthworks, stormwater release, blasting)<br>– Development of the mine pit and construction of the Tonkin waste dump<br>– Storage and handling of hydrocarbons (diesel) | – *Soil system health and structure*<br>– *Groundwater and surface water quality* |
| Terrestrial fauna | – Listed threatened species:<br>– *Zanda Latirostris*, Carnaby's Black Cockatoo (Endangered) | – Clearing of native vegetation (fauna habitat)<br>– Movement of vehicles<br>– Mine excavation and blasting<br>– Ore handling and transport | – *Suitable foraging habitat for Zanda Latirostris, Carnaby's Black Cockatoo (Endangered)*<br>– *Potential breeding hollows for Zanda Latirostris, Carnaby's Black Cockatoo (Endangered)*<br>– *Potential SRE habitat*<br>(Note: the DE occurs within the modelled distribution of Carnaby's Black Cockatoo breeding range, however, no breeding/roosting trees are known within the DE). |
| Inland waters | – Not applicable<br>– No listed threatened aquatic species or communities | – Ground disturbance (vegetation clearing and earthworks)<br>– Establishment of the mine pit, the Tonkin waste dump and other raised areas<br>– Runoff from stockpiles<br>– Storage and handling of hydrocarbons (diesel) | – *Kyaka Brook (located on the southern boundary of North Kiaka DE)*<br>– *PDWSA 'Coomberdale Water Reserve' (P2) is located approximately 1 km north of North Kiaka DE*<br>– *Fractured rock aquifer (hosted by the Noondine Chert Formation) estimated to occur from 11 m (in the west) and from 42 m (in the east) of North Kiaka DE.* |
| Social surroundings | – Not applicable | – Ground disturbance (vegetation clearing and earthworks)<br>– Construction of buildings/infrastructure<br>– Blasting<br>– Mining of elevated ridges<br>– Operation of machinery/vehicles | – *One Registered Aboriginal and one Other Heritage Place occur adjacent to North Kiaka DE*<br>– *Culturally significant Moodjar Christmas trees (Nuytsia floribunda)*<br>– *Rural residential dwellings (sensitive receptors) are located 0.65 km (R03), 1.4 km (R2) and 3.6 km (R1) from the proposed mine pit, and as close as 0.65 km (R2) from the easement.*<br>– *The nearest residential receptor to the North Kiaka DE is R2 (located at 180 Kiaka Road), approximately 0.01 km south of the DE*<br>– *Coomberdale TEC (occurring within North Kiaka DE) is a classified Environmentally Sensitive Area (ESA)*<br>– *Cairn Hill Nature Reserve (R47694, Class A), located approximately 1.5 km south of North Kiaka DE*<br>– *Existing land use within and adjacent to North Kiaka DE is cropping and livestock enterprises* |
| Greenhouse gas | – Not applicable | – Movement of vehicles<br>– Mine excavation and blasting<br>– Ore handling and transport<br>– On site power generation | – *GHG emissions for the Project will be managed under the GHG Management Plan as part of the Revised Proposal* |
| Air Quality | – Reduced air quality | – Construction vehicles, heavy equipment, and temporary power combustion emissions | – *Impacts on sensitive receptors and native fauna and vegetation as a result of dust emissions* |

| Key environmental factor | Relevant environmental values | Activities that would affect the factor | *Site-specific environmental values, uses, condition or sensitive components which would be affected* |
|---|---|---|---|
| | | – Dust generated from construction activities<br>– Dust from ongoing mining and movement of vehicles | |

# 1.3 Condition requirements

The Project is currently being assessed by the WA EPA and the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW). Impacts of the Project on species protected under the EPBC Act will be assessed under the Accredited Assessment between WA and the Commonwealth. Approval has not yet been received. This EMP will be updated upon receipt of environmental approval, to ensure approval conditions are captured and addressed.

*Table 1.4 Ministerial Statement Conditions MS 0813 (to be updated)*

| Condition | Objectives | Section of EMP that addresses this condition |
|---|---|---|
| 4 Compliance Reporting | All | Section 2.7<br>Section 3 |
| 6 Flora | As per EMP provisions for Flora and Vegetation. | Section 3.1 |
| 8 Rehabilitation | As per EMP Provisions for Flora and Vegetation, Landforms, Terrestrial Environmental Quality, Inland Waters and Social Surroundings | Section 3.1<br>Section 3.2<br>Section 3.3<br>Section 3.5<br>Section 3.6 |
| 9 Greenhouse Gas Abatement | As per EMP provisions for Greenhouse Gas Emissions | Section 3.7 |

# 1.4 Rationale and approach

This EMP adopts management provisions to achieve environmental objectives for key environmental factors, based on consideration of:

- Environmental management objective/s
- Survey and study findings
- Key assumptions and uncertainties
- Risks to environmental values, including MNES
- Scientific information on the site and region
- Intensity, duration, magnitude and footprint of anticipated impacts
- Changes in environment
- External issues to the Project
- Timeframe for mitigation

## 1.4.1 Environmental management objective/s

The Environmental Management objectives identified as being relevant to the Project are outlined for each Environmental Factor in Section 3. Objectives have been based on the findings of the Environmental Review Document (GHD, 2023c). A description of the monitoring and management that will assist with demonstration of compliance with these objectives is provided for each factor.

## 1.4.2 Survey and study findings

Table 1.5 presents the surveys and studies relevant to the Project, which have been considered in developing this EMP.

*Table 1.5 Surveys and studies relevant to North Kiaka DE*

| Factor | Survey / study | Consultant | Description |
|---|---|---|---|
| Flora and vegetation | Comparison of the flora and vegetation of the proposed North Kiaka DE to other parts of the Coomberdale Chert Threatened Ecological Community. | (Trudgen, 2018) | Filed survey comprised relevés assessing vegetation type, condition, and presence of conservation significant flora.<br>Data gap: no detail on introduced species present within North Kiaka DE. |
| | An extension of a flora survey, floristic analysis and vegetation survey of areas of the Coomberdale Chert TEC to include a further area. | (Trudgen et al, 2012) | Field survey of the Coomberdale TEC to add further detail and knowledge of the vegetation and flora of the property east of the Midland Road and north of Kiaka Road. |
| | Weed invasion levels and weed species composition in the rehabilitation at the SIMCOA Moora Chert Mine and in the Coomberdale Chert Threatened Ecological Community: implications for rehabilitation areas and the TEC and limited practical avenues for management of weeds in both. | (Trudgen, 2017) | Field survey to compare the level and progression of weed invasion in the rehabilitated waste dump of the Moora Mine. Field work consisted of floristic analysis of rehabilitation quadrat of the Tonkin waste dump compared to plots in native vegetation in the Coomberdale TEC. |
| Landforms | North Kiaka Approvals and Supporting Studies – Geotechnical Desktop Study. | (GHD, 2019) | Desktop assessment of North Kiaka DE. |
| Terrestrial environmental quality | North Kiaka Soil Characterisation. | (Soilwater Consultants, 2019) | Desktop assessment and field survey for soil material sampling for laboratory testing. |
| | North Kiaka Proposed Mine Expansion – Materials Characterisation Assessment Report. | (GHD, 2020c) | Desktop assessment of North Kiaka DE. |
| Terrestrial fauna | North Kiaka Proposed Mine Expansion Fauna Assessment Report. | (GHD, 2021) | Desktop assessment and Level 2 vertebrate fauna field survey including identification of conservation significant fauna and habitat assessment. |
| | Desktop Assessment of Subterranean Fauna for the North Kiaka Quartzite Mine, Moora, Western Australia. | (Invertebrate Solutions, 2019b) | Desktop review of stygofauna and troglofauna presence in North Kiaka DE. |
| | Survey for Short Range Endemic (SRE) Fauna for the North Kiaka Mine, Moora, Western Australia. | (Invertebrate Solutions, 2019a) | Desktop review and SRE file survey to identify SRE species likely to occur in North Kiaka DE. |
| Inland waters | Moora Quartzite Mine – Phase 2 Hydrogeological Investigations. | (Saprolite Environmental, 2012)) | Drilling and test pumping program for dewatering bores within the main pit of the Moora Mine.<br>Technical desktop review of potential drawdown effects from the proposed dewatering at the Moora Mine. |
| | North Kiaka Mine Hydrogeological Assessment. | (GHD, 2023b) | Hydrogeological assessment for North Kiaka Mine to ensure the Mining Proposal and Mine Closure Plan are complete and in accordance with DMIRS guidance. |
| | Proposed Discharge Evaluation: Coonderoo River Wetlands. | (Actis Environmental Services, 2011) | Desktop and field visit to determine potential dewatering discharge sites. |
| Social surroundings | Report of an Aboriginal heritage survey for SIMCOA Operations Pty Ltd for the proposed North Kiaka Quartzite Mine located North of Moora, Western Australia. | (Brad Goode and Associates, 2019) | Desktop assessment and field survey undertaken in consultation with representatives of the Yued WC1999/071 Native Title Claim Group. |
| | North Kiaka Approvals and Supporting Studies – Noise Assessment. | (GHD, 2020b) | Desktop study and noise modelling for construction and operational noise, vibration emissions and road transport noise from North Kiaka DE. |
| | North Kiaka Approvals and Supporting Studies – Air Quality Assessment. | (GHD, 2020a) | Desktop air quality emissions for the construction and operation of the Project. |
| Greenhouse Gas Emissions | Greenhouse Gas Management Plan. | (GHD, 2023a) | Plan to demonstrate how Simcoa will contribute towards the State Government aspirations of net zero emissions by 2050. |
| Air Quality | North Kiaka Approvals and Supporting Studies – Air Quality Assessment. | (GHD, 2020a) | Desktop air quality emissions study and modelling for the construction and operation of the Project. |

### 1.4.3 Key assumptions and uncertainties

This EMP presents management provisions which address the key assumptions and uncertainties relating to the Project implementation and the values and sensitivities of the key environmental factors.

Key assumptions include:

– The air quality assessment from the Project used existing data collected from the Moora Mine with the assumption that this was an appropriate representation. The air quality assessment utilised operational parameters, and parameters used in the model were based on best estimates and other relevant data.
– The parameters and calculations used in the noise assessment model are all based on best estimates and other relevant data. Relevant source data was used as an estimate of the noise sources within and surrounding the North Kiaka DE. The noise sources will not contain an audible tonal characteristic at the nearest receiver to the ROM area, due to the distance of over 1,250 m between source area and the receptor point.
– While there is limited groundwater data available for the North Kiaka DE, a baseline hydrogeological study has been completed for the Project (GHD, 2023b). In addition, extensive groundwater levels monitoring and abstraction pumping trials have been completed for the Moora Mine, located approximately 2.km to the south. Due to the proximity and geological continuity between the North Kiaka DE and Moora Mine, groundwater data from Moora Mine has been used to infer conditions at the North Kiaka DE.

The key uncertainties include:

– Individual numbers for plants of conservation significant flora species present within the North Kiaka DE and the number of plants to be removed during construction/mining activities. Trudgen has counted the number of DRF present in the DE which will be used to determine which plants will be removed during construction.
– Presence of unrecorded Aboriginal heritage sites. Although ethnographic and archaeological surveys have been undertaken over the North Kiaka DE (Brad Goode and Associates, 2019), there remains potential for unrecorded sites or materials to be present. This EMP includes provisions for management in the event of suspected sites or materials are encountered during construction activities.

### 1.4.4 Management approach

This EMP adopts an objective based approach to identifying and prioritising management provisions. A risk assessment has been undertaken with consideration to both environmental values and sensitivities for EPA key Environmental Factors as well as MNES.

A systematic approach was utilised where the potential impacts of the Project were assessed, and mitigation measures applied. Based on this assessment, residual impacts were identified, and these will be the subject of this EMP.

This EMP adopts a management hierarchy in the selection of management provisions:

– Avoidance: measures taken to avoid impacts
– Minimisation: measures taken to reduce the duration, intensity and / or extent of impacts
– Rehabilitation: measures taken to rehabilitate, remediate or restore impacted areas.

The EMP is based on the studies and surveys summarised in Table 1.5. This includes identification of the following environmental factors within, adjacent to or in close proximity to the North Kiaka DE:

– Flora and Vegetation
– Landforms
– Terrestrial environmental quality
– Terrestrial fauna
– Inland waters
– Social Surroundings
– Greenhouse Gas

– Air Quality

### 1.4.5 Rational for choice of management actions

The provisions in Section 3 reflect the temporary duration of construction activities, and the intermittent, episodic and acute nature of impacts posed by construction activities (e.g. unauthorised clearing, dust emissions or accidental spills of hazardous materials or wastes).

The provisions have also reflected the potential for reoccurring impacts post construction (e.g. spread of introduced weeds or ongoing erosion), as well as impacts relating to operation and maintenance activities.

# 2. Environmental Management System

SIMCOA has a corporate Health, Safety, Environment and Quality (HSEQ) Management System to manage their activities in a sustainable manner, giving regards to their workforce, communities and the environment. SIMCOA acknowledges the preservation of our environment is a key issue. SIMCOA has endeavoured to do whatever they can to reduce the impact the company has on its surroundings. SIMCOA employs state of the art technologies and processes to keep their imprint on the environment to the barest minimum.

SIMCOA is committed to:

– Continually reducing its greenhouse gas emissions
– Control dust generation though dust monitoring, management and auditing
– Minimising noise on surrounding communities, through active noise mitigation strategies
– Reducing waste generation through beneficial use of waste products and recycling.
– Rehabilitating mined areas in accordance with Moora Quartzite Mine Rehabilitation Plan (Ecoscape (Australia) Pty Ltd, 2012).

A set of site-specific HSEQ policies and procedures are maintained for each of SIMCOA's facilities.

## 2.1 Roles and responsibilities

The responsibility for the application and implementation of this EMP sits with the Environmental Specialist and Mining and Strategic Projects Manager. All SIMCOA's employees and contractors are required to follow the HSEQ policies as part of their work. Role specific training is provided to ensure competence to carry out work and minimise impacts to the environment. All SIMCOA employees and contractors are made aware of the Health Safety and Environment (HSE) hazards, risk, impacts, controls and responses required for incidents in their workplace. The SIMCOA HSE Management Process Hierarchy is outlined in Plate 1.

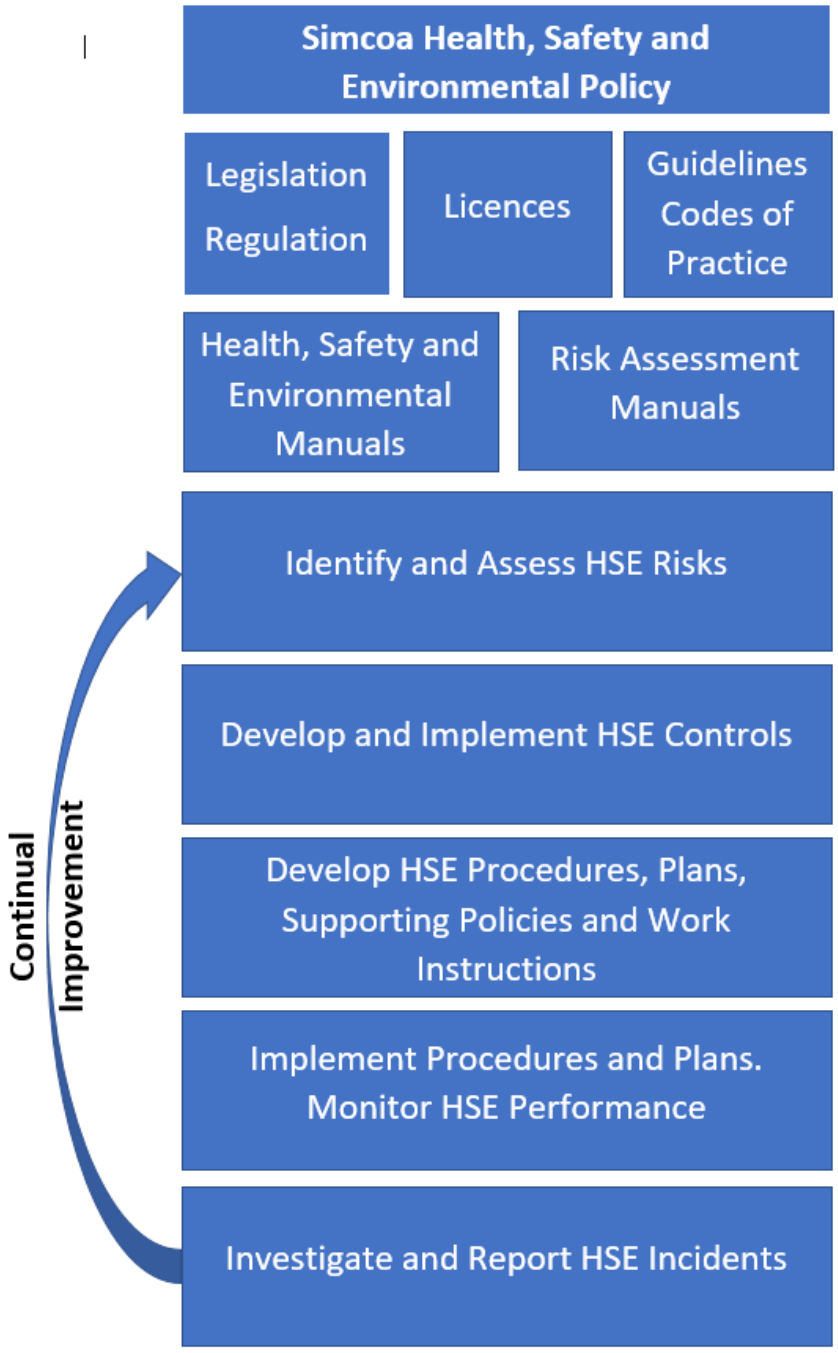


*Plate 1* *SIMCOA HSE Management Process Hierarchy*

## 2.2 Communication

Environmental information will be communicated to SIMCOA staff and contractors via the following means:

- Site inductions
- Toolbox meetings
- Training
- Standard Operating Procedures
- Pre-start meetings
- On-site notice boards
- Electronic media

– Environmental alerts
– Incident investigations and reporting.

SIMCOA has communicated with government departments, local government and neighbouring residents during the design and planning stages of the Project and will continue to consult as the Project develops. Details of stakeholder consultation is presented in the ERD (GHD, 2023c).

## 2.3 Environmental awareness training and inductions

SIMCOA will ensure all personnel, including contractors, complete a site induction. The induction will include an environmental component which will address the following:

– Requirements of relevant environmental management documentation
– Significant environmental values to be protected
– Control strategies for the management of environmental risk in day-to-day activities
– Roles and responsibilities for implementing management, monitoring and reporting for environmental factors
– Applicable legislative responsibilities and requirements associated with non-compliance
– Where applicable, spill response and fire and emergency response training.

SIMCOA will retain records of personnel and subcontractor training and inductions within a training register.

## 2.4 Complaints procedure

SIMCOA will maintain a register of all environmental incidents / complaints and 'near misses'. Incidents will be recorded by the person who caused or identified the incident. Complaints will be recorded by the person who received the complaint and records of complaints will include the following information:

– Contact details of person making the complaint (name and phone number, as a minimum)
– Date, time and issue/s that the complaint relates to
– All complaints will be responded to within 24 hours or 48 hours if occurring over weekend
– Appropriate action regarding the complaint will be determined in consultation with the complainant and/or regulator.

## 2.5 Environmental incidents / non-compliances

SIMCOA's procedure for incident / near miss / occurrence of non-compliance is as follows:

– Raise an incident report (no later than the end of the working day or shift)
– Preserve site evidence, to ensure integrity for investigations
– As appropriate, implement immediate action to minimise the impacts of an incident
– Preliminary classification of the incident by Supervisor, in consultation with responsible Manager, to determine the 'actual impact' and the 'potential risk rating', and establish who must be notified and how the investigation is to be progressed
– Where applicable, environmental incidents will be reported to the relevant government agency
– Investigate the incident and report findings (including final classification of the incident)
– Implementation of corrective actions, including:
– Identify and analyse root cause
– Identify required actions to prevent recurrence
– Identify any additional opportunities for improvement
– Summarise 'lessons learnt' and distribute internally for education and awareness training.

## 2.6 Emergency response

SIMCOA will prepare a Project specific Emergency Response Plan, which will detail how emergencies are responded to within the North Kiaka DE and, where relevant, take into account individual components of the Project (e.g. fuel storage).

## 2.7 Compliance reporting

SIMCOA will undertake reporting in accordance with regulatory and legislative requirements. It is expected the Project will operate in accordance with the EP Act (Part IV and Part V) and EPBC approvals, which will specify annual environmental and compliance reporting requirements.

Ministerial Statement 0813 (Appendix A), condition clause 4 outlines Compliance Reporting requirements for the Moora Mine, these are expected to apply to the Project.

# 3. EMP provisions

The EMP will be used for the management of environmental commitments for the Project during construction and operation. Mine closure will be managed as per the Mine Closure Plan.

Communication during the construction and operations phase will occur on a daily, weekly or as-needed basis with relevant staff, project managers or external stakeholders.

All construction and operation personnel and sub-contractors will undergo an induction, which includes information on the importance of the environmental approvals conditions and the requirements to enable environmental outcomes to be achieved. They will be advised of their responsibilities under the EP Act, EPBC Act, and other relevant legislation, in addition to ministerial and contractual requirements. A record of inductions will be kept by the Construction Manager or equivalent.

Regular toolbox meetings will be used to reinforce messages on environmental protection, to relay new information and to encourage and celebrate positive outcomes.

Reporting as per the ministerial conditions will be undertaken for the Project at designated intervals.

# 3.1 Flora and Vegetation

Table 3.1 and Table 3.2 outline management provisions for the identified potential impacts and risks to flora and vegetation. Specifically, it addresses vegetation clearing, hygiene and fire management.

Potential indirect impacts to flora and vegetation that relate to soil erosion and contamination are addressed through provisions for Terrestrial Environmental Quality (refer to Section 3.3); and those that relate to dust are addressed through the provisions of Social Surroundings (refer to Section 3.6).

*Table 3.1 Flora and Vegetation Key Environmental Values*

**EPA Factor**: Flora and Vegetation

**EPA Objective** To protect flora and vegetation so that biological diversity and ecological integrity are maintained

**Objective**:

– Minimise clearing of TECs and Conservation Significant Flora (including Threatened and Priority Flora)
– Prevent clearing or removal of vegetation outside of approved clearing areas
– Minimise disturbance of vegetation and flora adjacent to clearing areas
– Prevent introduction and/or spread of weeds into adjacent areas
– Meet condition requirements for MNES,
  - 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 TEC".
  - Watheroo Wattle (*Acacia aristulata)* Threatened flora individuals in habitat that is of 'good to poor' condition [species listed Endangered under EPBC Act]
  - *Daviesia dielsii* Threatened flora individuals in habitat that is of 'good to poor' condition [species listed Endangered under EPBC Act]

**Key Environmental Values**: flora and vegetation including threatened flora and ecological communities

– Coomberdale TEC
– Conservation Significant Flora (Figure 3.1):
  - *Acacia aristulata* (Endangered)
  - *Daviesia dielsii* (Endangered)
  - *Regelia megacephala* (P4)
  - *Diuris recurva* (P4)

**Key Impacts and risks**:

– Direct loss of 17.12 ha of native vegetation and flora through clearing (including a TEC, Threatened and Priority Flora)
– Introduction and/or spread of invasive species (weeds/pathogens), causing increased competition with native vegetation in undisturbed and rehabilitated areas
– Indirect impact
  - Smothering of vegetation by dust generated from activities (i.e. clearing, excavation, blasting, processing, ore handling/transport) (refer to Section 0)
  - Bushfire caused by spot fires generated from the operation of vehicles/equipment, resulting in damage/loss of surrounding vegetation and flora

*Table 3.2 Flora and Vegetation Management and Reporting*

| **Objective - based**<br>**Management actions** ***(to be updated to address any additional condition requirements)*** | **Management targets** | **Monitoring**<br>**(method, location and timing)** | **Reporting** |
|---|---|---|---|
| **Construction and Operations – Vegetation Clearing** | | | |
| – Disturbance Footprint to use existing cleared areas where practicable.<br>– Avoid or minimise impact to Threatened flora and TEC in Good or better condition, where practicable<br>– Internal clearing permit to be granted prior to any clearing being undertaken<br>– All clearing boundaries to be clearly marked and checked prior to commencement, during and post clearing activities.<br>– Clearing undertaken in stages and limited to the extent required for construction of infrastructure and the undertaking of mine activities.<br>– All vehicles are to be restricted to approved clearing areas and designated access tracks.<br>– Vehicles shall avoid driving over, or parking on native vegetation as far as practicable | Compliance with pre-defined clearing limits and boundaries described within approval documents.<br>Compliance with "Permit to Take" under the Biodiversity Conservation Regulations 2018 for the clearing of any Threatened Flora<br>Minimise clearing of native vegetation and flora. | Inspections to visually check/review clearing boundaries and assess vegetation clearing, in particular, compliance with clearing permit boundaries / statutory approvals.<br>All clearing areas will be surveyed after clearing to confirm compliance with clearing permits (internal and regulator issued). | Maintain clearing register to ensure that the measured extent of clearing is regularly updated.<br>Implement and maintain Incident Report Register<br>Post-construction clearing inspection report. |
| **Construction and Operations – Weeds and Dieback Spread** | | | |
| – All vehicles entering construction or operational areas to be Clean on Entry<br>– All vehicles leaving construction or operational areas to be Clean on Exit.<br>– Vehicles to be maintained and cleaned to reduce the spread of weeds or dieback. | Identify and map high risk areas within North Kiaka DE (i.e. Declared Pests and/or Weeds of National Significance)<br>Minimise the introduction/spread of weeds.<br>Minimise the introduction/spread of Dieback. | Pre-clearing weed survey of North Kiaka DE, to inform targeted management actions. | Implement and maintain Weed Register.<br>Implement and maintain Weed Control/Treatment Register<br>Implement and maintain Incident Report Register Implement and maintain hygiene records a in accordance with Standard Operating Procedure (SoP) – Moora Mine Hygiene Measures |

| Objective - based<br>**Management actions** *(to be updated to address any additional condition requirements)* | Management targets | Monitoring<br>(method, location and timing) | Reporting |
|---|---|---|---|
| – Vehicles to be restricted to approved clearing / disturbance areas and designated access roads.<br>– Vehicles shall avoid driving over, or parking on native vegetation as far as practicable<br>– Dieback hygiene procedures prepared for use on site including training in use of clean down stations.<br>– Topsoil which is known to be heavily infested with weeds or dieback will be disposed of through burial and an alternative growth medium will be utilised for rehabilitation.<br>– Develop and implement a Weed Control Program for disturbed and rehabilitated areas. Weed management techniques may include, spraying with herbicides (to be undertaken in late winter or early spring), hand pulling and cutting; and seeding native species in cleared areas to be rehabilitated, at the earliest opportunity | | | |
| **Construction and Operations – Fire Control** | | | |
| – Clearing activities will not be undertaken when the Fire Danger Rating is severe or higher.<br>– Adhere to the Shire of Moora, and the Department of Fire & Emergency Services (DFES) restrictions.<br>– Inform DFES when moderate to high-risk activities are planned.<br>– Implementation of Hot Works Permit system | No incidents of fire attributable to construction or operation activities<br>Emergency response and evacuation plan maintained and updated yearly. | Daily checks of fire risk ratings, and Shire warnings and restrictions<br>Annual inspection of firebreaks<br>Monitoring of Hot Works Permits<br>Water cart condition and location to be assessed during safety inspections (monthly during operations) | Implement and maintain Incident Report Register<br>Implement and maintain Hot Work Permit Register<br>Notification to DFES of moderate to high-risk activities. |

| Objective - based<br>Management actions *(to be updated to address any additional condition requirements)* | Management targets | Monitoring<br>(method, location and timing) | Reporting |
|---|---|---|---|
| – Develop Emergency Management Procedures for bushfire.<br>– A filled water cart and suitable towing vehicle is to be available on-site during hours of construction/operation.<br>– All vehicles to be maintained to manufacturers recommendation.<br>– All staff to be trained in operation of firefighting equipment including location.<br>– SIMCOA employees/contractors to extinguish and report fires occurring within North Kiaka DE to the Mine Manager (or qualified delegate)<br>– Firebreaks and other fire prevention works will be maintained / undertaken during operations, in accordance with the *Bush Fires Act 1954.* | | | |
| **Biodiversity offset** | | | |
| – Protection of two offset sites (the 152.01 ha Cairn Hill Reserve offset and 58.34 ha Cairn Hill North offset). | Effective protection of Cairn Hill and Cairn Hill North offset areas. | Monitoring and rehabilitation as per the commitments listed in the Resource Access and Conservation Package (EPA Bulletin 1027). | Reporting as determined the Resource Access and Conservation Package (EPA Bulletin 1027). |
| **Rehabilitation** | | | |
| – Progressive rehabilitation will be undertaken in accordance with the Mine Closure Plan. | Rehabilitation undertaken in accordance with the Mine Closure Plan. | Monitoring of rehabilitated areas as per the Mine Closure Plan. | Mine Closure Plan.<br>Annual rehabilitation report.<br>Post-rehabilitation inspection report. |

**LEGEND**

- *Acacia aristulata*
- *Daviesia dielsii*
- *Diuris recurva* population
- *Regelia megacephala* population
- Road
- Watercourse
- North Kiaka Development Envelope
- North Kiaka Disturbance Footprint
- Moora Mine Development Envelope (EPA approved)
- Moora Mine Disturbance Footprint (approved)
- Moora Mine Disturbance Footprint (amended)
- Vegetation Survey Area

**Vegetation Alliances**

- Core Vegetation Alliances
- Buffer Vegetation Alliances
- Other Vegetation Alliances

Kiaka Brook
Midlands Rd
Kiaka Rd
Kiaka Brook
Landgate / SLIP
Cattady Rd

Paper Size ISO A3

0 100 200 300 400 500

Metres

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

N

GHD

**Simcoa Operations Pty Ltd**
**Simcoa Environmental Approvals s40AA ERD**

**Conservation Significant Flora Records within the Moora Mine and North Kiaka DE (Trudgen 2018)**

Project No. **12518217**
Revision No. **0**
Date **07/06/2023**

**FIGURE 5-7**

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Print date: 07 Jun 2023 - 11:33

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

## 3.2 Landforms

This section outlines management provisions for potential impacts on landforms resulting from the location of mine elements and development of the mine pit. The management actions, targets, monitoring and reporting requirements are provided in Table 3.3 and Table 3.4.

Additional provisions for potential impacts on environmental values supported by the landform are included in:

– Section 3.1 (Flora and Vegetation) for potential direct impacts resulting from the clearing of native vegetation.
– Section 3.3 (Terrestrial Environmental Quality) for potential secondary impacts resulting from contamination of groundwater and/or surface water.
– Section 3.5 (Inland Waters) for potential secondary impacts resulting from the alteration of surface hydrology.

***Table 3.3 Landforms***

**EPA Factor**: Landforms
**EPA Objective** To maintain the variety and integrity of significant physical landforms so that environmental values are protected
**Objective**:
– Minimise disturbance of the Noondine Chert Formation
– Minimise clearing of remnant native vegetation present on the Noondine Chert ridgelines
**Key Environmental Values**: Landforms
– Noondine Chert Formation which has a restricted distribution between Moora and Three Springs (total extent 14,586 ha)
– Environmental values supported by the landform (and remnant native vegetation present):
  - Coomberdale TEC
  - Conservation significant flora
  - Threatened fauna foraging (and potential breeding) habitat
  - Potential habitat for SRE
  - Potential subterranean fauna habitat
**Key Impacts and risks**:
– Development of the mining pit altering the landform structure
– Clearing of native vegetation (present on the landform) for the development of the mining pit and access roads, impacting the following environmental values:
  - Coomberdale TEC vegetation alliances
  - Threatened Flora: *Acacia aristulata* and *Daviesia dielsii*
  - Priority Flora: *Diuris recurva* (P4) and *Regelia megacephala* (P4)
  - Carnaby's Black Cockatoo (*Zanda latirostris*) foraging habitat
  - Potential subterranean fauna habitat
  - Potential habitat for SRE

*Table 3.4 Landforms management and reporting*

| **Objective - based**<br>**Management actions** ***(to be updated to address any additional condition requirements)*** | **Management targets** | **Monitoring**<br>**(method, location and timing)** | **Reporting** |
|---|---|---|---|
| **Design** | | | |
| – Disturbance footprint minimises impact to upper slopes of the Noondine Chert ridgelines, in particular those areas supporting remnant native vegetation, by locating the Tonkin waste dump and other mine elements (i.e. workshop and administration area) in the adjacent valleys and lower slopes.<br>– As far as practicable, locate the disturbance footprint in areas of the Coomberdale TEC which are in Poor or lower condition.<br>– Avoid or minimise impact to Threatened flora and TEC in Good or better condition, where practicable. | Minimise impact to the Noondine Chert Formation. | Inspections (during construction) to visually check/review clearing boundaries.<br>Monthly environmental compliance inspection (during operations) to check/review pit development boundaries. | Maintain clearing register to ensure that the measured extent of clearing is regularly updated.<br>Implement and maintain Incident Report Register.<br>Monthly Inspection Report<br>Post-construction Clearing Inspection Report. |
| **Rehabilitation** | | | |
| – Progressive rehabilitation of disturbed areas, where possible, undertaken for the duration of the Life-of-Mine<br>– Areas active for the duration of the Life-of-Mine will be rehabilitated at closure.<br>– The final height of constructed Tonkin waste dump will not exceed the height of existing landforms (pre-development) and will be designed to reflect the topography of the surrounding landscape. | Rehabilitation undertaken in accordance with the Mine Closure Plan. | Monitoring of rehabilitated areas as per the Mine Closure Plan. | Annual Rehabilitation Report.<br>Post-rehabilitation Inspection Report. |

## 3.3 Terrestrial Environmental Quality

This section outlines management provisions for potential impacts on terrestrial environmental quality. The management actions, targets and monitoring and reporting requirements are provided in Table 3.5 and Table 3.6.

*Table 3.5 Terrestrial environmental quality*

**EPA Factor**: Terrestrial Environmental Quality

**EPA Objective** To maintain the quality of land and soils so that environmental values are protected

**Objective:**

– Avoid and minimise hydrocarbon release to soils
– Minimise soil erosion and transport of sediments from North Kiaka DE
– Prevent disposal of solid/liquid wastes on-site (with the exception of on-site sewage disposal)
– Minimise exposure of PASS

**Key Environmental Values**:

– Soil system health and structure
– Groundwater and surface water quality

**Key Impacts and risks**:

– Soil erosion from vegetation clearing, earthworks, constructed landforms and stormwater release, impacting soil quality
– Indirect:
  - Disturbance of ASS during mining, resulting in acidification of soils and potential leaching of metals to groundwater
  - AMD from the Tonkin WRD (North Kiaka DE), resulting in contamination of groundwater
  - Exposure of dissolvable minerals during mining (if below groundwater level), resulting in saline drainage and AMD to groundwater
  - Release of environmentally hazardous materials from storage or handling areas, resulting in contamination of soils (and potentially surface water or groundwater in proximity to the release)
  - Solid/ liquid waste discharge, resulting in contamination of soils (and potentially surface water or groundwater in proximity to the release)

*Table 3.6 Terrestrial environmental quality management and reporting*

| **Objective - based**<br>**Management actions** ***(to be updated to address any additional condition requirements)*** | **Management targets** | **Monitoring**<br>**(method, location and timing)** | **Reporting** |
|---|---|---|---|
| **Construction and Operations – Erosion and Sediment Control** | | | |
| Establishment of exclusion zones and access controls to prevent unauthorised disturbance. | Erosion and sediment controls installed and | Visual inspections of erosion and sediment controls – monthly (during | Monthly Inspection Report. |

| Objective - based<br>Management actions *(to be updated to address any additional condition requirements)* | Management targets | Monitoring<br>(method, location and timing) | Reporting |
|---|---|---|---|
| – Clearing undertaken in stages and limited to the extent required for construction of infrastructure and undertaking of the mine activities.<br>– Collection and stockpiling of topsoil immediately following vegetation clearing to prevent loss of topsoil from wind/water erosion.<br>– Soil stockpiles maintained at a height not exceeding 2 m and used as soon as possible (i.e. in progressive rehabilitation).<br>– Cleared and exposed areas will be rehabilitated or otherwise stabilised as early as practicable to minimise the potential for erosion.<br>– Erosion and sediment control measures will be applied to prevent erosion of exposed areas and sediment discharge to adjacent areas.<br>– Control measures including:<br>• Rock armouring.<br>• Cut off drains.<br>• Stabilisation of stockpiles and disturbed areas.<br>• Sediment traps.<br>– In the event of extreme weather conditions (e.g. storm events) construction work will cease and additional erosion and sediment control will be assessed and implemented where required. | maintained as per management actions. | construction) and annually prior to winter (during operations).<br>Visual inspection of stockpiles monthly. | |
| **Construction and Operations - Acidification (ASS)** | | | |
| – During construction, minimise disturbance to soil caused by earthworks and vehicle activity within and surrounding North Kiaka DE.<br>– Though disturbance of ASS is considered highly unlikely, if ASS are detected these will be managed in accordance with the Department of Environment Regulation (DER, 2015b) Guidance: 'Treatment and management of soils and water in acid sulfate soil landscapes'. | No evidence of the effects of ASS in areas disturbed by earthworks. | Weekly inspections (during construction).<br>Monthly inspections (during operations).<br>Visual inspection for signs of ASS including, iron leaching, sulphurous material and a sheen or the soil. | Monthly Inspection Report. |
| **Construction and Operations - Environmentally Hazardous Materials** | | | |
| Release of environmentally hazardous materials:<br>– Risk assessment developed for bulk hydrocarbon storage areas.<br>– Bulk hydrocarbon storage areas will provide:<br>• Placarding on storage tanks including "combustible liquid C1", "no ignition sources" and "maximum fill level"<br>• Impact protective ARMCO railing or bollards. | No incidents of significant environmentally hazardous materials release.<br>No detectable contamination of Kyaka. Brook (or other downstream waterways). | Weekly inspections (during construction).<br>Monthly inspections (during operations).<br>Spill kits contents to be maintained and checked during environmental inspections (monthly). | Implement and maintain Incident Report Register.<br>Groundwater monitoring report<br>Monthly Inspection report. |

| Objective - based<br>Management actions *(to be updated to address any additional condition requirements)* | Management targets | Monitoring<br>(method, location and timing) | Reporting |
|---|---|---|---|
| • Dry powder fire extinguishers<br>– Stormwater drainage system to be designed in accordance with DWER water quality protection note (WQPN) 52 Stormwater management at industrial sites (DoW, 2010) including capture of runoff from areas at risk of potential contamination (i.e. vehicle refuelling and wash-down areas), and the removal of hydrocarbons via a hydrocarbon/sediment trap prior to discharge.<br>– Hydrocarbon trap lined in accordance with WQPN 26 Liners for containing pollutants using synthetic membranes (DoW, 2013a) and WQPN 27 Liners for containing pollutants using engineered soils (DoW, 2013b).<br>– Minor quantities of oils and greases stored in a workshop with a sealed floor.<br>– Liquid wastes (i.e. lubricants and hydraulic fluids) stored in holding tanks for recycling and disposal off-site.<br>– Spill contamination management:<br>• Emergency management procedures and equipment for the recovery of contaminated soils in the event of accidental release.<br>• Daily inspection of machinery and equipment for integrity.<br>• Refuelling and repairs/servicing undertaken in a designated, bunded area.<br>• Spill kits readily available, and staff trained in the use of spill kits and appropriate disposal of contaminated material.<br>• Contaminated soil disposed of at an appropriately licensed waste disposal facility. | No detectable contamination of groundwater within or down-gradient of North Kiaka DE. | SIMCOA will undertake water use and environmental monitoring in line with the Ground water and Works Approval for the Moora Mine; licence (GWL 104693 (6), W6381)). | |
| **Construction and Operations - Solid / Liquid Wastes** | | | |
| – During construction, temporary ablution facilities to be self-contained. Sewage to be collected by a licenced contractor and disposed at an appropriately licensed waste facility.<br>– Liquid wastes (i.e. lubricants and hydraulic fluids) stored in holding tanks for recycling and disposal off-site.<br>– Septic system designed and located in accordance with the 'Health Treatment of Sewage and Disposal of Effluent and Liquid Waste Regulations 1974' and the 'Australian/New Zealand Standard 1547:2012', and as approved under the 'Health Treatment of Sewage and Disposal of Effluent and Liquid Waste Regulations 1974'. | All wastes (except sewage) disposed off-site at licensed facilities.<br>Septic system located at least 100 m from the Kyaka Brook. | Monitor/inspect septic system as per the Health Treatment of Sewage and Disposal of Effluent and Liquid Waste Regulations 1974. | Implement and maintain Incident Report Register.<br>Monthly Inspection report. |

| Objective - based<br>Management actions *(to be updated to address any additional condition requirements)* | Management targets | Monitoring<br>(method, location and timing) | Reporting |
|---|---|---|---|
| – Septic system located in accordance with WQPN 70 (DoW, 2016)this includes locating the system at least 100 m from the Kyaka Brook (outside of the flood zone). | | | |
| **Rehabilitation** | | | |
| – Progressive rehabilitation of the Tonkin waste dump and other cleared areas where practicable.<br>– Land not rehabilitated to its former condition will be stabilized, and where necessary, isolated from the surrounding landscape.<br>– Tonkin waste dump designed to be stable and un-polluting (i.e. batter slope of 18°, placement of structurally stable soils at the Tonkin waste dump surface).<br>– Tonkin waste dump contoured, ripped and logs/rocks placed to prevent sheet flow from landforms.<br>– Progressively rehabilitate the Tonkin waste dump to slow surface water flows across the embankment surface, thereby minimising soil erosion.<br>– Revegetation of the Tonkin waste dump slope/top/berm with species most likely to thrive (i.e. soil depth and water holding capacity are appropriate to plant water demand), aiding in preventing runoff and erosion.<br>– Soils returned to a condition suitable for the agreed post-mining land use. | Rehabilitation and revegetation undertaken in accordance with the Mine Closure Plan.<br>Constructed landforms are stable and non-polluting. | Rehabilitation and revegetation monitoring in accordance with the Mine Closure Plan. | Mine Closure Plan.<br>Annual rehabilitation report.<br>Post-rehabilitation inspection report. |

# 3.4 Terrestrial Fauna

This section outlines management provisions for potential impacts on terrestrial fauna. The management actions, targets, monitoring and reporting requirements are provided in Table 3.7 and Table 3.8.

Additional provisions are provided in:

– Section 3.1 (Flora and Vegetation) for potential indirect impacts to fauna resulting from bushfire and habitat degradation (i.e. weed spread).
– Section 3.6 (Social Surrounds) for potential indirect impacts to fauna resulting from noise, vibration, light and dust emissions.

***Table 3.7 Terrestrial fauna***

**EPA Factor**: Terrestrial fauna

**EPA Objective** To protect terrestrial fauna so that biological diversity and ecological integrity are maintained

**Objective**:

– Protect habitat for conservation significant fauna
– Minimise impacts on Short Range Endemics
– Meet condition requirements for MNES,
  - Carnaby's Black Cockatoo (*Zanda latirostris*) [species listed Endangered under EPBC Act]

**Key Environmental Values**:

– Suitable foraging habitat for Carnaby's Black Cockatoo
– Potential breeding hollows for Carnaby's Black Cockatoo

(Note: North Kiaka DE occurs within the modelled distribution of Carnaby's Black Cockatoo breeding range, however, no breeding/roosting trees were identified within the DE)

**Key Impacts and risks**:

– Direct loss of 15.80 ha of fauna habitat (Carnaby's Black Cockatoo foraging habitat)
– Direct loss of up to 15.58 ha of potential SRE habitat
– Death, injury or displacement of native fauna species due to vehicle interactions or entrapment associated with mining operations
– Indirect Impacts
  - Disruption or disturbance to fauna as a result of noise, vibration, light and dust emissions from Project activities (i.e. clearing, blasting, mining, processing, ore handling/transport) (refer to Section 3.6)
  - Bushfire caused accidentally by the operation of vehicles/plant/equipment, resulting in damage/loss of surrounding fauna habitats (refer to Section 3.1)
  - Attraction of feral fauna due to food/water availability on-site, increasing competition with, or predation on, native fauna species

*Table 3.8 Terrestrial fauna management and reporting*

| **Objective - based**<br>**Management actions** ***(to be updated to address any additional condition requirements)*** | **Management targets** | **Monitoring**<br>**(method, location and timing)** | **Reporting** |
|---|---|---|---|
| **Design** | | | |
| – Proposal footprint optimises use of previously disturbed/cleared areas to minimise fauna habitat lost through native vegetation clearing. | Minimise habitat loss and fragmentation. | Not applicable. | Not applicable. |
| **Construction and Operations – Clearing and Ground Disturbance** | | | |
| – A detailed survey of the proposed clearing area has been undertaken by a suitably qualified consultant prior to clearing to identify any Black Cockatoo suitable potential breeding hollows (GHD, 2021).<br>– Clearing will be timed, as far as practical, to avoid Black Cockatoo breeding season (July to December).<br>– The site induction will include information on conservation significant fauna which may be encountered within the North Kiaka DE. Information will include descriptions of the fauna, specific management measures to protect them, responsibilities for reporting sightings and incidents involving conservation significant fauna.<br>– Land clearing will be undertaken on one front and in one direction, where practicable, to allow fauna to exit the area.<br>– A suitably qualified environmental professional (fauna spotter) will be present during all land clearing activities. The person will hold a permit to handle and move significant fauna under Regulation 15 of the *Wildlife Conservation Act 2016* and have access to a care facility which can be used to rehabilitate injured or sick fauna.<br>– All native fauna injuries and deaths will be recorded. | No incidents of conservation significant fauna injury or death. | Pre-clearing survey to identify potential Black Cockatoo breeding hollows.<br>Clearing monitored by a suitably qualified professional.<br>Native fauna encounters (including all fauna injuries and deaths) recorded. | Implement and maintain a Fauna Register (including encounters, injuries and deaths).<br>Report all conservation significant fauna occurrences resulting in injury or death to the Department of Biodiversity, Conservation and Attractions (DBCA). |
| **Construction and Operations – Excavations and/or Trenches (i.e. pipelines or services)** | | | |
| – Open excavations/trenches will be inspected twice daily, i.e.at dawn and prior to sunset. Entrapped fauna will be removed and relocated to surrounding vegetation.<br>– If excavations/trenches are left open overnight, ramps will be established to permit native fauna to escape.<br>– All excavations/trenches to be backfilled as soon as practicable.<br>– If injured/sick animals are encountered, a suitably qualified environmental professional will be called to care for the animal (this person must hold a permit and have access to a care facility – see above). | No incidents of fauna injury or death from entrapment. | Daily monitoring of steep sided excavations and trenches. | Implement and maintain a Fauna Register (including encounters, injuries and deaths). |

| **Objective - based**<br>**Management actions** ***(to be updated to address any additional condition requirements)*** | **Management targets** | **Monitoring**<br>**(method, location and timing)** | **Reporting** |
|---|---|---|---|
| **Construction and Operations – Food Waste** | | | |
| – No food to be stored outside of designated crib locations which are lockable secured buildings.<br>– Food wastes and water to be appropriately contained so as not to attract feral or native fauna (i.e. lidded bins).<br>– Food wastes to be collected from site and disposed off-site at a licensed waste facility.<br>– All staff and contractors to attend induction which will include prohibition on littering and feeding any fauna. | No repeated scavenging by feral or native fauna (> 1 week). | Weekly inspection of food/water storage areas.<br>Fauna food or water scavenging (observation, scats, container tampering) recorded. | Implement and maintain a Fauna Register (including food scavenging evidence). |
| **Construction and Operations – Vehicle Collisions** | | | |
| – All vehicles to adhere to traffic management rules including:<br>• Reduced speed limits on internal roads.<br>• No off-road driving (unless authorised for exploration and land clearing).<br>– Native fauna encounters (including all fauna injuries and deaths) will be recorded. | No incidents of conservation significant fauna injury or death. | Native fauna encounters (including all fauna injuries and deaths) recorded. | Implement and maintain a Fauna Register (including encounters, injuries and deaths). |
| **Offset** | | | |
| – Protection of two offset sites (the 152.01 ha Cairn Hill Reserve offset and 58.34 ha Cairn Hill North offset). | Effective protection of Cairn Hill and Cairn Hill North offset areas. | Monitoring and rehabilitation as per the commitments listed in the Resource Access and Conservation Package (EPA Bulletin 1027). | Reporting as determined by the commitments listed in the Resource Access and Conservation Package (EPA Bulletin 1027). |
| **Rehabilitation** | | | |
| – Fauna habitat structures (e.g. logs, wood debris) will be stockpiled during clearing and later incorporated into rehabilitated areas, or relocated outside the cleared area for fauna use<br>– Progressive rehabilitation will be undertaken in accordance with the Mine Closure Plan. | Rehabilitation undertaken in accordance with the Mine Closure Plan. | Monitoring of rehabilitated areas as per the Mine Closure Plan. | Mine Closure Plan.<br>Annual Rehabilitation Report.<br>Post-rehabilitation Inspection Report. |

# 3.5 Inland Waters

This section outlines management provisions for potential impacts on inland waters. The management actions, targets, monitoring and reporting requirements are provided in Table 3.9 and Table 3.10.

Additional provisions for potential impacts on environmental values supported by inland waters are included in:

– Section 3.3 (Terrestrial Environmental Quality) for potential secondary impacts resulting from contamination of groundwater and/or surface water.

***Table 3.9 Inland waters***

**EPA Factor**: Inland waters

**EPA Objective** To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected

**Objective**:

– Minimise impacts to water quality of surface waters and groundwater
– Maintain surface hydrological regime

**Key Environmental Values**:

– Kyaka Brook (located on the southern boundary of North Kiaka DE)
– Public Drinking Water Source Area (PDWSA) 'Coomberdale Water Reserve' (P2) is located approximately 1 km north of North Kiaka DE
– Fractured rock aquifer (hosted by the Noondine Chert Formation) estimated to occur from 11 m (in the west) and from 42 m (in the east) of North Kiaka DE

**Key Impacts and risks**:

– Sedimentation of surface waters, resulting from erosion following ground disturbance (i.e. vegetation clearing and earthworks), or from constructed landforms/surfaces (i.e. the mine pit, Tonkin WRD and other raised areas)
– Indirect:
  - Contamination of groundwater and/or surface water due to accidental release/spillage of environmentally hazardous materials (diesel) from storage and handling areas(refer Section 3.3)
  - Disturbance of ASS during mining, resulting in acidification of soils and potential leaching of metals to groundwater (refer Section 3.3)
  - Acid Mine Drainage (AMD) from the Tonkin WRD, resulting in contamination of groundwater
  - Exposure of dissolvable minerals during mining, resulting in saline drainage to groundwater

*Table 3.10 Inland water management and reporting*

| **Objective - based**<br>**Management actions** ***(to be updated to address any additional condition requirements)*** | **Management targets** | **Monitoring**<br>**(method, location and timing)** | **Reporting** |
|---|---|---|---|
| **Construction and operation** | | | |
| – Rock pitching will be installed in Kyaka Brook to dissipate energy from pipeline discharge from culverts or diversion drains.<br>– Construction of the easement across Kyaka Brook will be prioritised for the dry season to minimise impacts, noting that the waterway is ephemeral.<br>– Construction works for within surface waterways (e.g. diversions channels, culverts or river crossings), where practicable, will be undertaken during the dry season and no flow periods.<br>– If construction takes place during wet weather conditions the need for additional erosion and sediment control will be assessed, and where required, implemented.<br>– Construction during heavy rainfall events will be avoided.<br>– In the event of extreme weather conditions construction works will cease and the need to additional erosion and sediment control will be assessed and, where required, implemented. | Minimise sediment in surface water flows.<br>Minimise any impediment to natural flow of the creek. | Groundwater condition is monitored as required by GWL104693 (6) including:<br>Production Bores (BH1, BH2, in-pit sumps):<br>– Monthly monitoring of cumulative flow meter readings<br>– Monthly monitoring of field parameters (pH and EC)<br>Biannual monitoring (in June and December) for pH, EC, TDS, Ca, Na, Mg, K, SO4, Cl, NO3, HCO3, CO3, Al, As, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Zn, SiO2, TN, total recoverable hydrocarbons [C6-C9, C10-C14, C15-C28, C29-C36)<br>Monitoring Bores (MB01 - MB06 and NKMB1 – NKMB6):<br>– Monthly monitoring of water levels<br>Quarterly monitoring (in March, June, September, December) for EC measures for exploration holes (M1099, M1735, M1838, M1961)<br>– Monthly monitoring of water levels<br>Visual inspection of erosion protection measures following storm events.<br>Annual inspections of stormwater infrastructure prior to wet season, with remedial / maintenance works to be completed to ensure infrastructure is maintained to design specifications. | Implement and maintain Incident Report Register.<br>Groundwater Monitoring Report.<br>Monthly Inspection report. |
| **Rehabilitation** | | | |
| – Where practicable, progressive rehabilitation will be undertaken, thus reducing the area of exposed soil prone to erosion.<br>– Tonkin WRD designed to be stable and non-polluting (i.e. batter slope of 18°, placement of structurally stable soils at the Tonkin WRD surface).<br>– Tonkin WRD contoured, ripped and logs/rocks placed to prevent sheet flow and sediment transport from landforms.<br>– Progressively rehabilitate Tonkin WRD to slow surface water flows across the embankment surface, thereby minimising soil erosion.<br>– Revegetation of Tonkin WRD slope/top/berm with species most likely to thrive (i.e. soil depth and water holding capacity are | Rehabilitation undertaken in accordance with the Mine Closure Plan. | Monitoring of rehabilitated areas as per the Mine Closure Plan. | Mine Closure Plan.<br>Annual rehabilitation report.<br>Post-rehabilitation inspection report. |

| Objective - based<br>**Management actions** *(to be updated to address any additional condition requirements)* | Management targets | Monitoring<br>(method, location and timing) | Reporting |
|---|---|---|---|
| appropriate to plant water demand), aiding in preventing runoff and erosion.<br>– Disturbed areas rehabilitated and soils ameliorated as required to return soils to a condition suitable for the agreed post-mining land use. | | | |

**Legend**

- GW Monitoring Bore
- GW Production Bore
- Dewater Discharge Point
- Road
- Watercourse
- Haul road
- Mine Dewater Pipeline
- West Pit
- Main Pit
- North Dump
- Easement
- Infrastructure
- Mine pit
- Tonkin waste
- North Kiaka Development Envelope
- North Kiaka Disturbance Footprint
- Moora Mine Development Envelope (EPA approved)
- Moora Mine Disturbance Footprint (approved)
- Moora Mine Disturbance Footprint (amended)

NKMB01
NKMB02
NKMB03
NKMB04
NKMB05
NKMB06
Dewater Discharge Location
Kiaka Brook
Midlands Rd
Kiaka Rd
MB01
MB02
MB03
MB04
MB05
MB06
BH1
BH2

Paper Size ISO A3
at Scale: 1:14,000

0 100 200 300 400
Meters

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

N

GHD

**Simcoa Operations Pty Ltd**
**Simcoa Environmental Approvals s40AA ERD**

**Groundwater Sampling Locations**

Project No. **12518217**
Revision No. **0**
Date **17/05/2023**

**FIGURE 5-21**

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# 3.6 Social Surroundings

This section provides management measures for potential impacts to social surroundings. The management actions, targets, monitoring and reporting requirements are provided in Table 3.11 and Table 3.12.

*Table 3.11 Social surroundings*

**EPA Factor**: Social surrounds

**EPA Objective** To protect social surroundings from significant harm

**Objective**:

– Avoid and minimise disturbance to Aboriginal heritage sites/places
– Comply with Aboriginal Cultural Heritage Act 2021
– Minimise amenity impacts (noise, dust, vibration emissions)

**Key Environmental Values**:

– One Registered Aboriginal Heritage sites occur within North Kiaka DE
– Culturally significant Moodjar Christmas trees (*Nuytsia floribunda*)
– Rural residential dwellings (sensitive receptors) are located 0.65 km (R3), 1.4 km (R2) and 3.6 km (R1) from the proposed mine pit, and as close as 0.65 km (R2) from the easement
– Coomberdale TEC (occurring within North Kiaka DE) is a classified Environmentally Sensitive Area
– Cairn Hill Nature Reserve (R47694, Class A) and Cairn Hill North, located approximately 1.5 km south of North Kiaka DE
– Existing land use within and adjacent to North Kiaka DE include cropping and livestock farming

**Key Impacts and risks**:

– Loss/disturbance of Aboriginal heritage sites/places
– Impacts to sensitive receptors (nearby rural residential dwellings) including noise/vibration/dust emissions
– Release of pollutants/particulates affecting air quality
– Visual amenity affected by mining of the Noondine Chert ridgelines and/or construction of Tonkin waste dump, buildings, and infrastructure
– Amenity impacts resulting from traffic movements (noise/dust emissions)
– Socio-economic benefits (positive impact)
– Impact to the Coomberdale TEC (assessed in Section 3.1)

*Table 3.12 Social surroundings management and reporting*

| **Objective - based**<br>**Management actions** *(to be updated to address any additional condition requirements)* | **Management targets** | **Monitoring**<br>**(method, location and timing)** | **Reporting** |
|---|---|---|---|
| **Design** | | | |
| – The disturbance footprint will avoid direct impact to known Registered Aboriginal Heritage Sites and Other Heritage Places identified within the North Kiaka DE.<br>– The disturbance footprint will avoid, where practicable, direct impact to Moodjar trees. | Avoid impact to Aboriginal Heritage Registered Sites. | | |
| **Construction and Operations – Aboriginal Heritage** | | | |
| – Aboriginal heritage sites/places clearly demarcated on drawings, flagged on-site and avoided.<br>– Inductions to include information on Aboriginal heritage sites/places and aboriginal culture and the requirement not to disturb these sites/places.<br>– SIMCOA Engineering controls will be applied to avoid, where practicable, or otherwise minimise direct impact to the bed of Kyaka Brook during construction of the access road crossing.<br>– Engage Heritage Monitors to monitor construction of the Kyaka Brook access road crossing.<br>– Where direct impact to Moodjar trees cannot be avoided (i.e. within the mine pit), engage Heritage Monitors to assess the Moodjar tree and surroundings for possible burials and approve for future clearing, or at request of the Heritage Monitors, ensure a monitor is present when disturbing ground around Moodjar trees.<br>– Aboriginal heritage monitoring will be undertaken in accordance with Aboriginal Due Diligence Guidelines (DPLH, 2013)and the Guidelines for the Engagement of Aboriginal Heritage Monitors (DPLH, 2015), in conjunction with archaeological report recommendations.<br>– Should any significant or substantial quantity of Aboriginal artefacts be discovered during construction, all work will cease within the immediate area (20m buffer), and an Aboriginal heritage consultant engaged by SIMCOA to record and report the material to the DPLH.<br>– If skeletal material is uncovered during ground disturbing activities, work will cease in the immediate area and the discovery reported to the WA Police Force under the Coroners | Minimise impact to Aboriginal Heritage Places.<br>Minimise impacts to Moodjar trees where possible. | Heritage Monitors engaged to monitor construction of the Kyaka Brook access road crossing, and disturbance of Moodjar trees. | Implement and maintain a Stakeholder Consultation Register.<br>Implement and maintain Incident Report Register (including information on any uncovered heritage material, consultation, management and outcomes).<br>Incidents reported to the WA Police Force and DPLH (as required). |

| Objective - based<br>Management actions *(to be updated to address any additional condition requirements)* | Management targets | Monitoring<br>(method, location and timing) | Reporting |
|---|---|---|---|
| Act 1996. If the police determine that the remains are likely of Aboriginal origin, then the discovery will be reported to the Registrar at the DPLH. | | | |
| **Construction and Operations – Noise and Vibration** | | | |
| – Construction will be preferentially undertaken during normal construction hours (7.00 am to 7.00 pm, Monday to Saturday).<br>– If construction occurs outside of normal construction hours the following measures apply:<br>• Construction work carried out in accordance with Section 6 of AS 2436-2010<br>• Equipment used is the quietest reasonably available<br>• All sensitive receptors notified of works at least 24 hours ahead<br>• Preparation and approval of a noise management plan (internal) at least 7 days prior<br>– Best available technology will be used to minimise noise and vibration emissions from existing plant and equipment<br>– Where plant and equipment are housed in buildings (or under roofed structures), the design will incorporate sound insulation properties.<br>– Operations will preferentially occur during daylight hours (7.00 am to 5 pm, Monday to Friday). | No repetitive / sustained complaints arising due to noise or vibration impacts. | Undertaking noise and vibration monitoring in accordance with operating licence conditions. | Implement and maintain Complaints Register. |
| **Construction and Operations – Dust** | | | |
| – Access roads and other trafficked areas will be paved, sealed, or otherwise treated with water or dust suppressants.<br>– Wetting down of areas will be undertake ahead of drilling, blasting, and excavation.<br>– Application of water or dust suppressants where materials are handled or stockpiled as appropriate.<br>– Cessation of handling of materials during adverse wind conditions, or if complaints are received from sensitive receptors.<br>– Haulage trucks to minimise loss of materials along transport routes. Cessation of handling materials during adverse wind conditions, or if complaints are received from sensitive receptors. | Dust controls implemented and maintained.<br>No repetitive / sustained complaints by sensitive receptors regarding dust emissions. | Daily monitoring of weather conditions and dust by Mine Manager (or qualified delegate).<br>Weekly site inspection of dust controls (during construction).<br>Monthly environmental compliance inspection (during operations).<br>Dust monitoring (in accordance with operating licence conditions). | Mine Closure Plan.<br>Implement and maintain Complaints Register.<br>Implement and maintain Incident Report Register.<br>Prepare Operational Dust Management Plan |

| Objective - based<br>Management actions *(to be updated to address any additional condition requirements)* | Management targets | Monitoring<br>(method, location and timing) | Reporting |
|---|---|---|---|
| – Cleared and exposed areas will be rehabilitated or otherwise stabilised as early as practicable to minimise the potential for wind erosion.<br>– Soil stockpiles maintained at a height not exceeding 2 m. | | | |
| **Construction and Operations – Amenity** | | | |
| – Mine elements located east of rocky outcrops (to be retained) where practicable.<br>– The Tonkin WRD positioned and designed to minimise visual impacts to the landscape.<br>– Soil stockpiles maintained at a height not exceeding 2 m. | Proposal footprint minimises impact to the Noondine Chert ridgelines and native vegetation as far as practicable.<br>No complaints received regarding visual impact of North Kiaka. | Monthly environmental compliance inspection.<br>Rehabilitation and revegetation monitoring in accordance with the Mine Closure Plan. | Mine Closure Plan.<br>Implement and maintain Complaints Register.<br>Monthly Inspection Report. |
| **Construction and Operations – Socio-economic Impact** | | | |
| – Commence stakeholder consultation including discussion of closure risk and the post-mining land use. | Stakeholder list and consultation included in environmental approvals. | If required, workshop(s) undertaken with key stakeholders. | Mine Closure Plan.<br>Implement and maintain a Stakeholder Consultation Register. |
| **Rehabilitation** | | | |
| – Progressive revegetation of the Tonkin waste dump and weed control (if required).<br>– Tonkin waste dump final landform design incorporates features to integrate the landform with the surrounding landscape. | Rehabilitation in accordance with the Mine Closure Plan.<br>Tonkin waste dump constructed and revegetated in accordance with the Mine Closure Plan. | Rehabilitated areas monitored in accordance with the Mine Closure Plan. | Mine Closure Plan<br>Annual rehabilitation report.<br>Post-rehabilitation inspection report. |

**LEGEND**

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

**Aboriginal Heritage**

- Registered Site
- Other Heritage Place

Kiaka Brook
Midlands Rd
Kiaka Rd
4605
4751
5141
Kiaka Brook
4659
4658
Cattady Rd

Paper Size ISO A3

0 130 260 390 520

Metres

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

N

GHD

**Simcoa Operations Pty Ltd**
**Simcoa Environmental Approvals s40AA ERD**

**Aboriginal Heritage**

Project No. **12518217**
Revision No. **0**
Date **07//06//2023**

**FIGURE 5-23**

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Data source: Simcoa: Mining Development Shape Areas is derived from client recieved 2020; Langate: Slip Imagery - April 2017 to November 2018 (accessed - 20191023), Road - 20180601; DoW: River - 201108; DIA: Aboriginal Heritage Site - 201806. Created by: klabez

**LEGEND**

- Sensitive Receptor
- Road
- Haul road
- Watercourse
- 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
- Mine pit
- Tonkin waste

R03

Kiaka Brook

Midlands Rd

Kiaka Rd

R02

R01

Paper Size ISO A3

0 150 300 450 600

Metres

N

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

GHD

**Simcoa Operations Pty Ltd**
**Simcoa Environmental Approvals s40AA ERD**

**Sensitive Receptors**
**(North Kiaka DE and Moora Mine)**

Project No. **12518217**
Revision No. **0**
Date **07/06/2023**

**FIGURE 5-26**

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Print date: 07 Jun 2023 - 14:55

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

# 3.7 Greenhouse Gas Emissions

This section provides management measures for potential impacts to Greenhouse Gas Emissions. The management actions, targets, monitoring and reporting requirements are provided in Table 3.13 and Table 3.14.

*Table 3.13 Greenhouse Gas Emissions Key Environmental Factor*

**EPA Factor**: Greenhouse gas emissions

**EPA Objective**. To minimise the risk of environmental harm associated with climate change by reducing greenhouse gas emissions as far as practicable.

**Objective**: Contribute to achieving net zero emissions no later than 2050

**Key Environmental Values**:

– Global environmental values

**Key Impacts and risks**: This management plan considers both direct emissions and indirect emissions

– Direct emissions Scope 1 (consumption of fuel in on-site vehicles and power generation) estimated at 1,546 tonnes CO2-e annually

– Indirect emissions Scope 3 (emissions occur as a consequence of the activities of a facility, but from sources not owned or controlled by that facility's business)

- Transportation and distribution of product (sold product)
- Purchased goods and services (operational)
- Purchased capital goods
- Fuel and energy related activities (other than those included in Scope 1 estimates)
- Employee commute and business travel
- Waste Generation

*Table 3.14 Greenhouse Gas Emissions Management and Reporting*

| **Objective - based Management actions** *(to be updated to address any additional condition requirements)* | **Management targets** | **Monitoring (Method, location and timing)** | **Reporting** |
|---|---|---|---|
| **Construction and Operations – Greenhouse Gas Management Plan** | | | |
| – Establish baseline emissions and maintain emissions within the baseline, to comply with Commonwealth Safeguard Mechanism. | Maintain emissions below the established baseline. | Establish a baseline for the Project and submit this to the Commonwealth Clean Energy Regulator (CER) alongside the existing information collected for | Greenhouse Gas Management Plan.<br>Compliance with established baseline included in Part IV compliance report and published |

| Objective - based<br>Management actions<br>*(to be updated to address any additional condition requirements)* | Management targets | Monitoring<br>(Method, location and timing) | Reporting |
|---|---|---|---|
| | | Moora Mine and Kemerton Smelter. | as part of annual Safeguard Mechanism data tables by the CER.<br>Annual internal reporting.<br>Annual reporting in accordance with the National Greenhouse and Energy Reporting Act 2007 (NGER Act). |
| – Implement GHG monitoring and reporting in accordance with the NGERs.<br>– Review and adopt reasonable and practicable measures to avoid and reduce North Kiaka Scope 1, 2 and 3 GHG emissions.<br>– Adaptive management through five yearly review of reasonable and practicable measures to reduce GHG emissions in response to developments in Commonwealth and State policies, markets, technology and regional infrastructure. | Monitor and report on all Scope 1 & Scope 2 emissions.<br>Review of GHG emissions abatement opportunities register with consideration to outcomes of five yearly review and milestone developments.<br>Review undertaken at major State and Commonwealth policy changes in GHG abatement.<br>Greenhouse Gas Management Plan (GHGMP) updated based on five-year review findings and policy changes. | Monitor and report on all Scope 1 & Scope 2 emissions. | Greenhouse Gas Management Plan.<br>Annual reporting in accordance with the NGER Act.<br>Annual internal reporting.<br>Preparation of an abatement opportunities assessment report presented internally. |
| **Construction and Operations – abatement actions** | | | |
| Preventative maintenance to ensure that the emissions target for North Kiaka is achieved. | Develop procedures to address plant non- conformances. | Establish a comprehensive monitoring program to facilitate assessment of plant efficiency and operating conditions. | Preparation of a quarterly plant performance report, presented internally. |
| **Offset** | | | |
| Where net Scope 1 and Scope 2 greenhouse emissions cannot be avoided or reduced through feasible measures, emissions exceeding committed targets will be offset through acquisition of carbon offsets (quantity of carbon offsets to be determined in the GHGMP). | | | Greenhouse Gas Management Plan. |

# 3.8 Air Quality

This section provides management measures for potential impacts to air quality. The management actions, targets, monitoring and reporting requirements are provided in Table 3.15 and Table 3.16.

*Table 3.15 Air Quality Key Environmental Factor*

**EPA Factor**: Air Quality

**EPA Objective** To maintain air quality and minimise emissions so that environmental values are protected

**Objective**:

– Minimise the impacts of emissions on air quality and other environmental values

– Discharges of waste into the air are avoided and managed

**Key Environmental Values**:

Air Quality.

**Key Impacts and risks**:

– Reduced air quality due to:
  - Vegetation clearing
  - Construction vehicles, heavy equipment, and temporary power combustion emissions
  - Dust generated from construction activities
  - Dust generated from operational activities and road use
  - Bushfires

– Increase in greenhouse gas emissions

– Potential nuisance and aesthetic impact of visible dust

– Impacts on sensitive receptors and native fauna and vegetation as a result of dust emissions

*Table 3.16 Air Quality Management and Reporting*

| **Objective - based**<br>**Management actions**<br>***(to be updated to address any additional condition requirements)*** | **Management targets** | **Monitoring**<br>**(method, location and timing)** | **Reporting** |
|---|---|---|---|
| **Design** | | | |
| Materials handling and storage facilities will be designed to minimise the loss of materials. | | | |

| Objective - based<br>Management actions<br>*(to be updated to address any additional condition requirements)* | Management targets | Monitoring<br>(method, location and timing) | Reporting |
|---|---|---|---|
| **Construct and Operate** | | | |
| – Employee (and contractor) inductions to include dust management and safety (in accordance with licence conditions and other approvals), including reporting requirements.<br>– Dust suppression on haul roads is carried out during mining season by a dedicated water truck.<br>– Application of water sprays at a minimum rate of 2 L/m2/hr to excavation areas, haul roads, and ahead of drilling and blasting.<br>– Application of water sprays as required to stockpiles and other cleared surfaces (i.e. the open mine pit area).<br>– Implementation of Hot Works Permit system, and Emergency Management Procedures to minimise the risk of bushfires. | Dust controls implemented and maintained.<br>No repetitive / sustained complaints by sensitive receptors regarding dust emissions. | Daily monitoring of weather conditions and dust by Mine Manager (or qualified delegate).<br>Weekly site inspection of dust controls (during construction).<br>Monthly environmental compliance inspection (during operations).<br>Dust monitoring (in accordance with operating licence conditions).<br>Monitoring of Hot Works Permits. | Implement and maintain Hot Work Permit Register.<br>Monthly Inspection reports<br>Annual compliance Report (Part IV EP Act).<br>Prepare an Operational Dust Management Plan |
| **Rehabilitation** | | | |
| Undertake progressive rehabilitation of cleared areas. | Rehabilitation in accordance with the Mine Closure Plan. | Rehabilitated areas monitored in accordance with the Mine Closure Plan. | Mine Closure Plan<br>Annual rehabilitation report.<br>Post-rehabilitation inspection report. |

# 4. Adaptive management

The adaptive management approach aims to reduce impacts by embedding a cycle of monitoring, reporting and implementing change (where required). This EMP applies the principles of adaptive management through monitoring, corrective actions and implementing changes.

## 4.1 Monitoring and corrective actions

Internal monitoring of the Environmental Factors outlined in this EMP will occur during construction and operation of the Project. Any non-conformances or incidents within this EMP will be investigated, rectified or mitigated as soon as possible to ensure minimal ongoing environmental harm. Where relevant, procedures will be amended or updated and inductions and other workforce communication will be undertaken in a timely manner to minimise the risk of reoccurrences.

## 4.2 Management plan review

This EMP is intended to be dynamic and may be updated to reflect changes in management practices and the natural environment with time. This will also allow flexibility to adopt new technologies/management measures.

Amendments to management actions will be completed when required. This will include revision/amendment of management actions that are not achieving the desired outcomes, monitoring identifying additional impacts and management actions, changes to relevant legislation or improvements to practices to achieve a greater environmental outcome.

# 5. Stakeholder consultation

## 5.1 Stakeholder Engagement Strategy

SIMCOA will prepare a Stakeholder Engagement Strategy (SES) to guide effective consultation for the Project. This SES will be designed to create a methodology for engagement throughout planning stages, through to operation of the Project. A strategic and holistic approach ensures effective and transparent engagement with stakeholders and will directly contribute to the success of the Project.

The stakeholder engagement process will involve:

– Building stakeholder understanding of the Project to contribute to stakeholder acceptance.
– Building trusted relationships with stakeholders to foster tolerance and compromise for the Project.
– Strengthening the reputation of SIMCOA as a positive contributor in their host communities.
– To achieve these goals, the objectives of engagement throughout all stages of the Project are to:
    - Provide clear, objective, and timely information to stakeholders.
    - Seek input and feedback from the key stakeholders to inform planning and development.

The SES includes processes to manage stakeholders who are critical to approval and development of the Project, those potentially directly or indirectly impacted, and those not impacted by the Project but potentially interested in being kept informed of SIMCOA's activities.

A summary of the consultation undertaken to date in relation to the Project is provided in Table 5.1. This table provides an overview of the comments and issues raised and SIMCOA's response to these issues.

## 5.2 Ongoing consultation

SIMCOA will continue to engage with relevant stakeholders throughout the environmental approval process to ensure that all concerns are addressed. This includes decision making authorities, other relevant government authorities, the local community, and environmental non-government organisations. SIMCOA is committed to building effective relationships and working transparently with all stakeholders.

*Table 5.1 Stakeholder consultation to date*

| Stakeholder | Date | Type of consultation | Person/s involved | Summary of communication | Comments received |
|---|---|---|---|---|---|
| Neighbouring rural landholder | 9 June 2021 | Public meeting at Moora | R Tonkin<br>SIMCOA<br>B Tonkin<br>SIMCOA<br>J Gardiner<br>SIMCOA | Presentation of current Moora Mine and proposed expansion of current operations with the development of the Project. Overview of potential impacts and proposed mitigation measures for the key environmental factors (i.e. flora, fauna, inland waters, noise, Aboriginal heritage and transport of ore to Kemerton). | No concerns regarding information presented at the public meeting information session.<br>Requested ongoing updates (meetings/email correspondence) on progress of the project and land access. |
| Moore Catchment Council/Friends of the Moora Woodlands | | | R Walmsley, D Pete<br>SIMCOA | | Pleased to see progress on reserve expansion. Keen for more involvement by SIMCOA in education regarding the TEC, especially in regard to increasing awareness of Cairn Hill.<br>Moore Catchment Council/Friends of the Moora Woodlands has been seeking assistance and funding for several small projects, such as additional signage and help with maintenance of Cairn Hill access trails. SIMCOA are supportive of this and noted these are commitments already given to DBCA as part of an overall conservation package.<br>Post meeting R. Walmsley alerted SIMCOA to a group of local Yued workers who collect seed and perform rehabilitation. SIMCOA appreciative of this and may be looking to utilize this service for future rehabilitation works.<br>At the invitation of Moore Catchment Council/Friends of the Moora Woodlands, SIMCOA has committed to contribute, as a sponsor, to the September 2021 symposium on wheatbelt native vegetation. |
| Department of Mines, Industry Regulation and Safety (WA) (DMIRS) | 2 July 2020 | Teleconference | DMIRS (R Irwin & L Copeland)<br>SIMCOA<br>GHD | General update on SIMCOA existing Moora Mine and the Project operations.<br>SIMCOA outlined the approvals obtained for Moora Mine, detailing the previous approvals included mining below the groundwater level; and the Project at North Kiaka DE (a greenfield operation) is located about 2 km north of Moora Mine. | DMIRS highlighted the North Kiaka Minimg Plan (MP) Proposal and Mine Closure Plan (MCP) are to be aligned to the DMIRS MP and MCP Guidelines (DMIRS, 2023a).<br>DMIRS recommended the Moora Mine MP and MCP should be updated to include the North Kiaka mine site, as this will allow the entire Project (Moora and North Kiaka) to operate under a single Mining Proposal and Mine Closure Plan.<br>DMIRS could assess the MP concurrently with s38 approval; however, DMIRS is constrained from approving the MP until the s38 assessment process has been completed. |

| Stakeholder | Date | Type of consultation | Person/s involved | Summary of communication | Comments received |
|---|---|---|---|---|---|
| | | | | SIMCOA outlined that ore from North Kiaka DE will be trucked to Moora Mine for processing. This will require trucks to cross one Shire of Moora Road. SIMCOA queried whether the MP needed to include approval from the Shire. | DMIRS confirmed the MP does not need to include evidence of approval from the Shire. However, the stakeholder register needs to reflect the engagement with the Shire. |
| Department of Planning, Lands and Heritage (WA) (DPLH) | 1 July 2020; 14 August 2020; 10 September 2020; and 11 September 2020 | Emails | DPLH (B de Grasis)<br>SIMCOA | SIMCOA consulted with DPLH regarding Aboriginal heritage site ID 4605 'Kiaka Road Scarred Tree' the buffer of which included the proposed haul road crossing of Kyaka Brook and Kiaka Road. | The Aboriginal Cultural Materials Committee reassessed ID 4605 (Kiaka Road Scarred Tree) and determined the Place no longer meets section 5 of the Aboriginal Heritage Act 1974 (AHA). Review of the Aboriginal Heritage Inquiry System indicates the status of the site has been changed to "Stored data/Not a Site". |
| Yued Native Title Group | 13 December 2018 | Face-to-face | Eight nominated representatives of the Yued Native Title C Group | As detailed in the *Aboriginal heritage survey for SIMCOA Operations Pty Ltd for the proposed North Kiaka Quartzite* (Brad Goode and Associates 2019) SIMCOA consulted with the Yued Native Title Group briefing them on the Exiting Mine and the intention of SIMCOA to expand their operations with the development of the Project. | Moodjar trees are culturally significant to Aboriginal people due to their association with spirts of the deceased. The trees generally do not meet the DPLH criteria to be registered as an Aboriginal site as they have no myth regarding their significance is applicable to the species as a whole which cannot be defined as a place to which the AH Act applies.<br>The Moodjar trees also provide a key marker in the Noongar calendar.<br>SIMCOA has noted the cultural significance of the trees and will, where possible, avoid disturbance to the trees and will engage Heritage Monitors to be onsite should impacts to any Moodjar trees be unavoidable. |
| Department of Water, Environment and Regulation (WA) (DWER) EPA SU | 28 June 2018 | Meeting at EPA SU offices | DWER EPA SU<br>SIMCOA<br>GHD | Presentation of proposal and initial assessment of potentially relevant factor requiring assessment (flora and vegetation, terrestrial fauna). Additional work required to determine whether Inland waters, Subterranean fauna and Social Surrounds (Aboriginal heritage) require assessment.<br>Based on limited number of relevant environmental factors | EPA SU stated it is the EPA Board and not the EPA SU that are responsible for considering which factors would be relevant and the appropriate level of assessment.<br>Providing details on status of offsets would be important to the level of assessment.<br>Recommended that DBCA are contacted to confirm their continued support for proposed offsets associated with the Project (and correspondence to this effect is sought). This correspondence along with previous correspondence from EPA and DBCA (or its predecessors) should be provided to EPA SU to confirm whether areas previously offset are |

| Stakeholder | Date | Type of consultation | Person/s involved | Summary of communication | Comments received |
|---|---|---|---|---|---|
| | | | | the Proposal could potentially be assessed at an “Assessment on Referral Information” (ARI). | also applicable as an offset for the Proposal (in addition to further offset areas).<br>Proposal should be referred under the EPBC Act (Commonwealth) prior to being referred under the EP Act. |

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# Appendices

# Appendix A

## Ministerial Statement 0813