

Environmental Protection Authority

# North Kiaka Project

SIMCOA OPERATIONS PTY. LTD.

Report 1786 June 2025 This assessment report has been prepared by the Environmental Protection Authority (EPA) under s. 44 of the *Environmental Protection Act 1986* (WA). It describes the outcomes of the EPA's assessment of the North Kiaka Project proposal by SIMCOA OPERATIONS PTY. LTD.

The North Kiaka Project was determined under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* to be a controlled action and to be assessed by the EPA under an accredited process. This document is also the result of the EPA's accredited assessment process.

This assessment report is for the Western Australian and Commonwealth Ministers for Environment and sets out:

- what the EPA considers to be the key environmental factors identified in the course of the assessment
- an assessment of the matters of national environmental significance
- the EPA's recommendations as to whether or not the proposal may be implemented and, if it recommends that implementation be allowed, the conditions and procedures, if any, to which implementation should be subject
- other information, advice and recommendations as the EPA considers appropriate.

**Darren Walsh** Chair Environmental Protection Authority

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i

# Contents

Sun	nmary	3
1	Proposal	16
2	Assessment of key environmental factors	27
2.1	Flora and Vegetation	.27
2.2	Terrestrial Fauna	.46
2.3	Greenhouse Gas Emissions	.52
2.4	Social Surroundings	.59
2.5	Air Quality	66
3	Holistic assessment	70
4	Offsets	71
5	Matters of national environmental significance	82
6	Recommendations	84
7	Other advice	85

# Figures

Figure 1: Proposal location	24
Figure 2: Mine development envelopes and disturbance footprints	25
Figure 3: Smelter development envelope and disturbance footprint	26
Figure 4: Endangered flora recorded during 2018 surveys	36
Figure 5: Sensitive receptors and registered Aboriginal heritage sites	61
Figure 6: Proposed offsets	73

## Tables

Table 1: Location and proposed extent of proposal elements	17
Table 2: Summary of predicted impacts to Endangered flora (SIMCOA 2024b 2024c)	35
Table 3: Summary of assessment for flora and vegetation	42
Table 4: Summary of assessment for terrestrial fauna	50
Table 5: Summary of assessment for greenhouse gas emissions	57
Table 6: Summary of assessment for social surroundings	64
Table 7: Summary of assessment for air quality	69

## Appendices

Appendix A: Recommended	l conditions8	\$7

Appendix B: Decision-making authorities	118
Appendix C: Regulation under other statutory processes	120
Appendix D: Environmental Protection Act principles	123
Appendix E: Other environmental factors	126
Appendix F: List of submitters	130
Appendix G: Assessment timeline	131
Appendix H: References	132
Appendix I: Contemporising of Ministerial Statement 813	137

# Summary

# Proposal

The North Kiaka Project (the proposal) is a significant amendment to an existing proposal, the 'Silicon Project, Kemerton and Mine at Moora' approved under Ministerial Statement (MS) 813. The proposal would transition quartzite mining to a new pit approximately 2 kilometres (km) north of the existing Moora Mine (Figure S1) to extend the life of mine and silicon smelter operations by around 18 years. The proposal also includes the construction of an abandonment bund within the development envelope of the existing Moora Mine.

The proponent is SIMCOA Operations Pty. Ltd. (SIMCOA), which has been operating the existing proposal, which is subject to the *Silicon (Kemerton) State Agreement Act 1987* (the State Agreement) since 1989.

The new North Kiaka pit will include mining above the water table by conventional open cut methods and blasting. Ore will be crushed and screened at existing facilities at the Moora Mine and transported approximately 300 km south for processing at the Kemerton Silicon Smelter. The Moora Mine is located approximately 15 km north of the town of Moora and the Kemerton Smelter approximately 17 km north-east of Bunbury.

# **Environmental values**

The proposal is located within the Avon Wheatbelt bioregion. The existing Moora Mine and the proposed North Kiaka Mine are located on an area which supports the Coomberdale chert hills threatened ecological community (TEC), which is listed as Critically Endangered under the *Biodiversity Conservation Act 2016* (BC Act).

The proposed disturbance footprint contains two flora species listed as Endangered under the BC Act, *Acacia aristulata* and *Daviesia dielsii*, and three flora species listed as priority flora by the Department of Biodiversity, Conservation and Attractions (DBCA), *Stylidium* sp. Moora (Priority 2), *Diurus recurva* (Priority 4) and *Regelia megacephala* (Priority 4). The conservation status of *A. aristulata* is currently under review by DBCA as it meets the criteria for listing as Critically Endangered.

Most of the remnant vegetation proposed to be cleared comprises foraging habitat for the threatened Carnaby's black cockatoo (*Zanda latirostris*) within 12 kilometres (km) of numerous confirmed breeding sites.

## Context

This section sets out the environmental performance of the approved proposal over time together with the current state of the environment for the assessment of the combined effect that the implementation of the significant amendment might have on the environment.

The proponent is the only silica mining and silicon manufacturing company in Australia. The quartzite resource for the silica occurs in the restricted Noondine chert

formation which currently is the only known high-purity chert formation in the country. The Coomberdale chert hills TEC is uniquely associated with the exposed ridges of the Noondine chert formation.

The Moora Mine and Kemerton Smelter were first assessed by the Environmental Protection Authority (EPA) and approved by the Minister for Environment under MS 027 in 1988. At that time the EPA's assessment considered impacts on flora and vegetation from mining as of 'lesser significance' (EPA Bulletin 328).

In 2001 a change to conditions through MS 575 supported expansion of mining into the Western Ridge, a smaller pit (approx. 5 hectares) immediately west of the original Moora Mine pit. The corresponding assessment (EPA Bulletin 1027) noted the vegetation occurring in association with the proponent's chert resource had in 1999 been identified as the Coomberdale chert hills TEC. Additional significant flora had also been identified including *A. aristulata* and *D. dielsii* which at the time were listed as declared rare flora under the *Wildlife Conservation Act 1950*.

During the 2001 assessment, the proponent outlined that the most prospective areas of chert resource within its leases after the Western Ridge were Cairn Hill (now the Cairn Hill Nature Reserve), the Eastern Ridge (i.e. the area directly east of the original Moora pit) and the ridges north of Kiaka Road (includes the North Kiaka pit). The proponent also outlined a Mining and Conservation Strategy whereby it was prepared to relinquish its interests in Cairn Hill in the event both the Western Ridge was authorised, and a commitment was given to guarantee long-term access to the chert resource. In addition, the proponent undertook to both further investigate the Coomberdale chert hills TEC and significant flora through regional surveys, and how future mine expansions could be balanced with their protection including the securing of additional offsets such as an area adjoining Cairn Hill (Cairn Hill North).

Through MS 575 the then Minister for the Environment agreed that a Mining and Conservation Strategy should be implemented. The conditions applied required the proponent to surrender its mining lease (M70/1055) over Cairn Hill and to prepare a Mining and Conservation Strategy prior to expansion into the Eastern Ridge.

Cairn Hill was subsequently established as a Class A Nature Reserve in 2004 following the surrender of M70/1055. The Mining and Conservation Strategy, having been linked through the MS 575 conditions to the development of the Eastern Ridge, ultimately led to the proposed North Kiaka Project instead where the vegetation is in poorer condition. Additional more degraded ridges east of North Kiaka were identified and considered but ultimately not pursued owing to failure to reach agreement with the landowners.

To support the North Kiaka Project, the proponent has proposed an evolved offset package that has its origins in the Mining and Conservation Strategy. It includes the surrender of mining tenure over Cairn Hill North, contributions towards the management of both Cairn Hill and Cairn Hill North for conservation, the enhancement of exclusion zones containing the TEC (includes the Eastern Ridge) and ecological research on the TEC and the significant flora occurring within it.

#### State of the environment

The conservation status of the Coomberdale chert hills TEC was increased to Critically Endangered during the past decade, noting the cumulative impacts from the different land uses and associated threats described below.

The long history of environmental assessment associated with the mining has resulted in the gathering of a large amount of flora and vegetation knowledge commissioned by SIMCOA. This knowledge has flowed directly into the listing status and recovery plan for the TEC and has greatly increased the understanding of its composition, occurrence and threats. The approximate mapped occurrences of the TEC correlate to the below major threats or management in the recovery plan for the TEC:

- 51% threatened by grazing, inappropriate fire regimes and/or weed invasion
- 25% threatened by past or active mining both chert and other minerals
- 24% managed for conservation (Watheroo National Park and Cairn Hill Nature Reserve).

The above, along with the practical learnings gained through progressive rehabilitation associated with the mining activities, has informed the development of the North Kiaka Project and led to reconsidering of an offset and conservation strategy in line with current threats and shaped further management requirements.

# Consultation

The EPA published the proponent's referral information for the proposal on its website for seven days public comment. The EPA also published the proponent's environmental review document on its website for public review for two weeks (from 10 April 2024 to 24 April 2024). The EPA considered five public, and four government agency submissions received during these public consultation periods in its assessment.

## Mitigation hierarchy

The mitigation hierarchy is a sequence of proposed actions to reduce adverse environmental impacts and emissions. The sequence commences with avoidance, then moves to minimisation, rehabilitation, and offsets are considered as the last step in the sequence.

The proponent considered the mitigation hierarchy in the development and assessment of its proposal, including the following measures:

#### Avoidance measures

- identification of areas with poorer quality vegetation correlating with higher quality quartz through surveys of the TEC along with mapping quality of mineral resources
- locating resource extraction pits on areas of the TEC that is in poorer condition
- proposed indirect offset to avoid and protect remnants of the TEC, threatened and priority flora within exclusion zones to be identified
- avoiding the location of *Acacia aristulata* and *Daviesia dielsii* occurrences in the planning of final infrastructure and waste landform locations where practicable

- locating supporting infrastructure on previously disturbed areas where possible
- designing the development envelope to avoid the location of potential Carnaby's black cockatoo breeding hollows
- using inert materials in the abandonment bund to avoid acid formation
- constructing the bund within the cleared area of the pit where possible
- procedures for clearing/land disturbance to include:
  - compliance with authorisation to take or disturb under the *Biodiversity Conservation Act 2016* for the clearing of any Threatened Flora or modification of an occurrence of TEC
  - o all clearing areas to be surveyed and demarcated prior to clearing
  - all clearing areas to be surveyed after clearing to confirm compliance with permits and Ministerial authorisation.
- avoid registered Aboriginal heritage sites in the design of the proposal disturbance footprint.

#### Minimisation measures

- Environmental Management Plans to minimise impacts on native flora and vegetation
- establish a vehicle hygiene and ground disturbance procedure
- dieback management plan for managing the introduction of pathogens
- implement regular weed monitoring and control programs to limit the spread of invasive species; and seeding native species in cleared areas to be rehabilitated
- include information on significant fauna which may be encountered in the site induction information
- use fauna spotters with suitable qualifications and access to care facilities during vegetation clearing activities
- undertake land clearing on one front and in one direction, thereby allowing fauna an opportunity to escape the clearing area to surrounding habitat
- record and report internally, and to appropriate regulatory agencies, all native fauna injured or killed where required
- implement traffic management rules such as reduced speed limits and no offroad driving, to reduce the likelihood of fauna injury or mortality
- store all putrescible wastes in lidded bins to prevent fauna entry and attraction of feral animals
- dust mitigation and management measures including water sprays on stockpiles and other cleared surfaces and crushers
- regular maintenance inspections and repairs on equipment (crushing and screening plant, conveyor)
- manage loss of materials and dust from haulage trucks during transport

- implement Hot Works Permit system, and Emergency Management Procedures to minimise the risk of bushfires
- clearing activities not to be undertaken when the Fire Danger Rating is severe or higher.

#### Rehabilitation measures

 progressive rehabilitation of waste rock dumps through approaches outlined in the Rehabilitation Management Plan.

#### Offset measures

- *Direct* conservation and management of the TEC, threatened flora and Carnaby's black cockatoo foraging habitat across two adjoining areas:
  - Class A Cairn Hill Nature Reserve (Lot 4319 on Deposited Plan 40938)
  - Cairn Hill North (portion of Lot 52 on Deposited Plan 29474) to be added to the conservation estate as a Class A Nature Reserve.
- Indirect research and enhancement program including:
  - enhancement of exclusion zones, including the Eastern Ridge and a leased property near North Kiaka, which contain degraded TEC remnants, threatened flora and Carnaby's black cockatoo foraging habitat
  - o ecological research on the TEC
  - research on threatened and priority flora such as on taxonomic status and population structure (genetic diversity).

## Assessment of key environmental factors

The EPA has identified the key environmental factors (listed below) in the course of the assessment. For each factor, the EPA has assessed the residual impacts of the proposal on the environmental values and considered whether the environmental outcomes are likely to be consistent with the EPA environmental factor objectives.

In undertaking its assessment of the proposal and preparing this report, the EPA had regard for the object and principles in s. 4A of the EP Act to the extent relevant to the particular matters that were considered. The EPA considered the **precautionary principle** were particularly relevant to its assessment of the proposal. The proposal has the potential to result in serious or irreversible damage to the occurrence of the Coomberdale chert hills TEC and threatened flora. The EPA has recommended conditions to ensure that risks are minimised or avoided where possible, and that relevant measures are undertaken by the proponent to manage residual impacts. Appendix D of this report provides a summary of all the principles of the EP Act and how the EPA considered these in its assessment.

As the proposal is a significant amendment to an existing proposal the EPA's assessment has been undertaken in the context of the existing proposal, having regard to the combined and cumulative effects on the environment. The EPA has also considered whether to inquire into the implementation conditions for the existing proposal.

# Flora and Vegetation

Residual impact or risk to environmental value		Assessment finding
1.	Clearing of up to 17.65 ha of Coomberdale chert hills TEC, equivalent to 2.25% of the total remaining extent (785 ha) of the TEC	The proposed clearing of 17.65 ha of Coomberdale chert hills TEC ('Critically Endangered') is a significant residual impact. The proponent's previous rehabilitation measures on the existing Moora Mine, have indicated that restoration of the TEC is not yet achievable for all species in the community. The proponent's proposed addition of Cairn Hill North to the conservation estate will increase the permanent protection of existing good quality TEC from 24% to 32% in Class A Nature Reserve and increase TEC protection across a larger area of its range. The proposed change in strategy from rehabilitation to indirect offsets, including research and enhancement of existing degraded remnant TEC occurrences is critical to achieve the outcome of improving management and supporting the recovery of the TEC. The indirect offsets are supported by the DBCA and will minimise loss and enhance a further 10% of the mapped occurrence of the TEC for the life of the mine and smelter. For the purposes of considering the combined effects of this clearing with the existing proposal, the EPA has taken account of the TEC's current listing status and the current knowledge and potential impact, as well as mitigation, research and rehabilitation. The EPA has recommended conditions to ensure that risks are minimised or avoided where possible, and that relevant measures are undertaken by the proponent to manage residual impacts. The EPA considers that the previous and additional offsets combined effects. The EPA advises that subject to limitations on clearing (condition B3), offsets (condition B9) and performance reporting on TEC status (condition B10), the significant residual impact can be counterbalanced, so that the environmental outcome is likely to be consistent with the EPA's objective for flora and vegetation.
2.	<ul> <li>Clearing of threatened flora</li> <li>17 Acacia aristulata (EN) (1.5% of known</li> </ul>	The proposal will result in the direct loss of individuals of two endangered flora that are at higher risk of conservation upgrading from cumulative loss of mature individuals through mining and agricultural activities and habitat

Re: env	sidual impact or risk to ⁄ironmental value	Assessment finding
	individuals in the local area) • 15 Daviesia dielsii (EN) (4.1% of known individuals in the local area).	degradation due to weed invasion and lack of appropriate fire regimes. Both threatened flora species are present in the existing and proposed Class A Nature Reserve in numbers higher than impacted from clearing for the proposal. The proponent's proposed exclusion zones refer to occurrences of both threatened flora, as well as individuals of <i>Goodenia</i> <i>arthrotricha</i> (EN). Indirect offsets for ecological research on both impacted species, as well as enhancement measures are supported by DBCA and provide opportunities to improve their management and conservation planning. The EPA has considered the combined effects of clearing with the existing proposal, including advice from DBCA on the listing status of the threatened flora and the current knowledge and potential impact, as well as mitigation, research and rehabilitation. The EPA has recommended conditions to ensure that relevant measures are undertaken by the proponent to manage residual impacts and considers that the previous and additional offsets combined effects. The EPA considers that the previous and additional offsets combined appropriately counterbalance the combined effects. The EPA advises that subject to the recommended conditions for clearing limits (conditions A1-1 and B1-1), and direct and indirect offset measures (condition B9), including research and enhancement trials, the significant residual impact can be managed and counterbalanced so that the environmental outcome is likely to be consistent with the EPA objective for flora and vegetation.
3.	<ul> <li>Clearing of priority flora</li> <li>5 <i>Stylidium</i> sp. Moora (Priority 2)</li> <li>65 <i>Diuris recurva</i> (10 populations) (Priority 4)</li> <li>567 <i>Regelia megacephala</i> (1 population) (Priority 4).</li> </ul>	The proposal will result in the loss of individuals of three priority flora. Both <i>Stylidium sp. Moora</i> and <i>Diuris recurva</i> occur across large ranges and in the proposed conservation offset for the Coomberdale chert hills TEC at Cairn Hill and Cairn Hill North. While <i>Regelia megacephala</i> is restricted, the proportional numbers impacted are low due to a large number recorded at a regional scale. Although significant residual impacts to <i>Stylidium sp. Moora</i> (P2) and <i>Diuris recurva</i> (P4) are unlikely, the proponent's proposed research on these species is supported as part of the TEC ecological research. This research includes population status and genetic diversity of species

Residual impact or risk to environmental value		Assessment finding
		occurring within the community to inform its management and conservation planning. The EPA advises that subject to the recommended conditions for clearing limits (conditions A1-1 and B1-1) and the acceptance of the direct and indirect offset (condition B9) put forward by the proponent, the residual impact can be managed and counterbalanced so that the environmental outcome is likely to be consistent with the EPA objective for flora and vegetation.
4.	Potential reduction in health of adjoining vegetation containing the TEC, threatened flora and priority flora from indirect impacts.	The proposal may result in a reduction in health of conservation significant flora and vegetation from dust, weeds and pathogens associated with the proposal. The proponent has committed to the implementation of a Significant Flora and Vegetation Environmental Management Plan to ensure that potential impacts are detected early, and adaptive management can be implemented. The EPA's recommended conditions for management of indirect impacts (condition B1-2) will appropriately manage residual impacts to ensure they are likely to be consistent with the EPA objective for flora and vegetation.

# Terrestrial fauna

Residual impact or risk to environmental value		Assessment finding
1.	Clearing of up to 16.51 ha of foraging habitat for Carnaby's black cockatoo.	The loss of Carnaby's black cockatoo foraging habitat within the proximity of breeding sites is a significant residual impact, also noting the high cumulative loss of such habitat in the region. The proponent's proposed addition of Cairn Hill North to the conservation estate will protect existing Carnaby's black cockatoo foraging habitat and enhancement measures applied in exclusion zones also include cockatoo foraging habitat. The proponent's proposed modification of its rehabilitation approach for waste rock dumps to focus on the establishment of Carnaby's black cockatoo foraging species comparable to those within the TEC rather than TEC and threatened and priority flora is considered achievable and would increase foraging habitat through progressive rehabilitation. The EPA advises that subject to the recommended conditions for clearing limits (conditions A1-1 and B1-1), management of
		indirect impacts (condition B1-2) and direct and

	indirect offset measures (condition B9), including research and enhancement trials, the significant residual impact can be managed and counterbalanced so that the environmental outcome is likely to be consistent with the EPA objective for terrestrial fauna.
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# Greenhouse gas emissions

Residual impact or risk to environmental value		Assessment finding
1.	Scope 1 GHG emissions of up to 125,000 tonnes CO <sub>2</sub> -e per annum. Emissions at commencement are estimated to represent 0.15% of WA annual emissions (based on 2022 data). Scope 2 GHG emissions of up	GHG emissions contribute to climate change, which impacts on WA's environment. It is recognised that the <i>Safeguard Mechanism</i> requires the proponent to take actions to reduce scope 1 GHG emissions at the Kemerton Smelter, including imposing annual baseline decline rates to ensure Australian emission reduction targets of 43% below 2005 levels by 2030 and net zero by 2050 are achieved.
	Scope 2 GHG emissions of up to 300,024 tonnes CO <sub>2</sub> -e per annum. Emissions at present are estimated to represent 0.36% of WA annual emissions (based on 2022 data). Scope 3 GHG emissions of up to 693,522 tonnes CO <sub>2</sub> -e per annum.	Scope 2 emissions relate to the sourcing of electricity from the South West Interconnected System (SWIS) for the Kemerton Smelter. The EPA supports the proponent's proposed commitments to work on renewable energy projects to reduce residual scope 2 emissions. The EPA further encourages the implementation of government initiatives to decarbonise the SWIS, including the Sectoral emissions reduction strategy for Western Australia (2023). Within the context of the above the EPA has not recommended conditions relating to scope 2 emissions for the proposal.
		The EPA has concluded that the likely environmental effects of the proposal can be mitigated through obligations under the <i>National</i> <i>Greenhouse and Energy Reporting Act 2007</i> and continued reduction of scope 2 emissions to ensure the environmental outcome is likely to be consistent with the EPA objective for greenhouse gas emissions.

# Social Surroundings

Residual impact or risk to environmental value		Assessment finding
1.	Potential for impacts to Aboriginal cultural heritage.	There are no registered Aboriginal heritage sites within the North Kiaka project disturbance footprint. Primary impacts relate to disturbance of culturally significant Moodjar trees and the Kyaka Brook including any associated buried material.

Residual impact or risk to environmental value		Assessment finding		
		The EPA considers that the proponent has taken reasonable steps to consult with the Yued people and that this is appropriate to mitigate any residual risk of unearthing a significant site. If a significant site is identified, its disturbance would be subject to assessment and regulation under the <i>Aboriginal</i> <i>Heritage Act 1972</i> .		
		The EPA advises that the impacts to Aboriginal cultural heritage can be managed through recommended conditions to avoid and minimise impacts to Aboriginal cultural heritage and reasonable steps to consult with the Yued Aboriginal Corporation about the removal of any Moodjar trees and Kyaka Brook (condition B6), and other decision-making processes to ensure the environmental outcome is consistent with the EPA objective for social surroundings.		
2.	Amenity – Noise.	The proximity of three nearby rural residence sensitive receptors to the proposal area are less than the recommended separation distance of 1000 m for extractive industries as per EPA Guidance Statement No. 3. While decision-making processes under Part V of the EP Act mitigate potential impacts from activities at the Moora Mine, the North Kiaka site will not include 'Prescribed premises' set out in the <i>Environmental Protection Regulations 1987</i> and Part V processes cannot mitigate potential impacts of emissions from this site. A marginal noise exceedance at one of the receptors has been modelled for works undertaken before 7:00 am. The potential impacts from noise exceedances can be mitigated through the restriction of operational hours (condition A1) to ensure the environmental outcome is consistent with the EPA objective for this factor.		
3.	Amenity – Visual.	The impact on visual amenity was raised as a concern during public consultation, specifically the proximity and visibility of the proposed abandonment bund around the existing Moora Mine from a nearby sensitive receptor. The proponent has previously planted vegetation to screen this receptor from visual impacts. The EPA advises that further planting and maintenance should be undertaken to ensure visual impacts from the abandonment bund are mitigated. The EPA's recommended condition (B5) will appropriately mitigate potential visual impacts to		

Residual impact or risk to environmental value	Assessment finding		
	ensure the environmental outcome is consistent with the EPA objective for social surroundings.		

# Air quality

Residual impact or risk to environmental value		Assessment finding	
1.	Potential impact on air quality from dust and impact to the associated environmental values of human health and amenity.	The proposal will create fugitive dust from drilling, blasting, extraction, crushing, screening and other operations. For three sensitive receptors in proximity to the proposal, predicted dust levels (fine dust) from the mines are not expected to exceed human health related criteria for PM <sub>10</sub> and PM <sub>2.5</sub> . Modelling suggests that coarse dust from the proposal could impact the amenity of residents for a maximum of one day in the year under conservative worst-case conditions. Decision-making processes under Part V of the EP Act can only mitigate potential impacts from activities at the Moora Mine as the North Kiaka site will not include 'Prescribed premises' set out in the <i>Environmental Protection Regulations 1987</i> . While existing monitoring in combination with modelling predictions suggest the risk of exceedance of air quality criteria is low, the EPA considers it appropriate that emission estimates and predicted modelled concentrations of dust, including the respirable silica content of dust emissions are verified and managed through recommended conditions to ensure that human health and amenity are protected. The proponent's required compliance with the <i>Work Health and</i> <i>Safety Act 2020</i> and the <i>Work Health and Safety</i> ( <i>Mines</i> ) <i>Regulations 2022</i> for workplace safety is also expected to contribute to mitigation at nearby sensitive receptors. The EPA advises that subject to the recommended	
		conditions for the implementation of dust monitoring and a management plan with management criteria, operational control procedures and contingency measures (condition B7), the environmental outcome is likely consistent with its objective for air quality.	

#### Holistic assessment

The EPA considered the connections and interactions between relevant environmental factors and values to inform a holistic view of impacts to the whole environment. The EPA formed the view that the holistic impacts would not alter the EPA's conclusions about consistency with the EPA factor objectives.

### Conclusion and recommendations

The EPA has taken the following into account in its assessment of the proposal:

- environmental values which may be significantly affected by the proposal
- assessment of key environmental factors, separately and holistically (this has included considering cumulative impacts of the proposal where relevant)
- likely environmental outcomes which can be achieved with the imposition of conditions
- consistency of environmental outcomes with the EPA's objectives for the key environmental factors
- EPA's confidence in the proponent's proposed mitigation measures
- whether other statutory decision-making processes can mitigate the potential impacts of the proposal on the environment
- principles of the Environmental Protection Act 1986.

The EPA has recommended that the proposal may be implemented subject to conditions recommended in Appendix A.

#### Other advice

The EPA commends the proponent for working with DBCA and the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS) to deliver a whole of government approach in supporting the addition of Cairn Hill North to the conservation estate as a Class A Nature Reserve.

Due to the continued pressure of cumulative impacts on the Coomberdale chert hills TEC, the EPA advises that the success of offset measures aimed at recovering or improving the conservation status of the TEC will be a critical factor in assessing the environmental impacts of future mining and development activities that involve clearing of TEC. Additionally, the EPA recommends that the proponent prioritise investigations into diversifying its sources of quartzite to support the long-term operation of its silicon smelter.



Figure S1: Mine development envelopes and disturbance footprints

# 1 Proposal

SIMCOA OPERATIONS PTY. LTD. (SIMCOA), the proponent, is seeking to develop the North Kiaka Project, a proposal to establish a new quartzite mine with associated infrastructure. The proposal is a significant amendment to an existing proposal, the 'Silicon Project, Kemerton and Mine at Moora' authorised under Ministerial Statement (MS) 813.

Mining is proposed to transition to the new North Kiaka pit located approximately 2 kilometres (km) north of the existing Moora Mine. This would enable mine and smelter operations to be extended by around 18 years. Mining at Moora would continue during the transition with reserves there likely to be exhausted within seven years. The proposal also includes construction of an abandonment bund at the Moora Mine to support closure of existing pits.

The North Kiaka Project will include mining above the water table by conventional open cut methods and blasting. Ore will be pre-processed (crushed and screened) at existing facilities at the Moora Mine and transported approximately 300 km south for processing at the Kemerton Silicon Smelter. The existing Moora Mine is located approximately 15 km north of the town of Moora and the Kemerton Smelter approximately 17 km north-east of Bunbury (Figure 1).

The proposal would require the clearing of an additional 18.12 hectares (ha) of native vegetation with the total combined native vegetation clearing at the mine sites at 43.12 ha within a disturbance footprint of 140.59 ha (Figure 2). No expansion to the Kemerton Smelter (Figure 3) is proposed, nor is any increase to maximum authorised quartzite and silicon production.

#### Original proposal implementation, proposal history and EPA assessment

The proponent's existing operations are subject to the *Silicon (Kemerton) State Agreement Act 1987* (the State Agreement) which ratified an agreement between the State of WA and the proponent to establish a smelter to manufacture silicon. The State Agreement provides for the holding of conditional ongoing *Mining Act 1978* tenure at the Moora Mine (M70/191) to support the supply of silica (quartzite) to the smelter.

The Moora Mine and Kemerton Smelter were first approved under the *Environmental Protection Act 1986* (EP Act) through MS 027 issued on 13 May 1988. Operations commenced in 1989 and included two submerged arc electric furnaces at the smelter which at the time of the EPA's assessment were estimated to produce 24,300 tpa of silicon from approximately 60,000 tpa of quartzite ore from the Moora Mine (Barrack Silicon Pty. Ltd. 1987).

Successive changes to the conditions of MS 027 have since been made including through MS 279 (10 August 1992), MS 575 (31 October 2001) and MS 593 (5 June 2002). Of these, MS 575 related to the Moora Mine involving changes to conditions to support expansion of mining into the Western Ridge, being a smaller pit (approx. 5 ha) immediately west of the original pit.

A range of changes to the proposal have also been approved including:

- May 2006 amended under section 45C of the EP Act to add a third furnace to increase silicon production to 48,000 tpa with a corresponding increase to 120,000 tpa of quartzite production at the Moora Mine.
- November 2009 MS 813 was issued to authorise construction of a fourth furnace to increase silicon production to 64,000 tpa from a corresponding increase to 160,000 tpa of quartzite production. All prior Ministerial Statements were superseded. The EPA's assessment is documented in Report 1317 (April 2009). The fourth furnace has not yet been constructed.
- October 2016 and August 2021 two further changes approved under section 45C of the EP Act relating to the allowance of mining below the water table at the Moora Mine.

The elements of the North Kiaka Project which have been subject to the EPA's assessment are included in Table 1. The EPA has assessed the significant amendment in the context of the existing proposal approved under MS 813 including consideration of combined effects and cumulative impacts with other proposals in the region. The EPA has also considered whether to inquire into the existing MS 813 conditions (see Appendix I), however, the EPA has not re-assessed the existing proposal.

Proposal element	Location	Existing proposal approved under MS 813	Significant amendment (North Kiaka Project)	Combined proposal
Physical element	ts – Quartzite	e mining		
Moora Mine				
Development envelope (DE)	Figure 2	239.10 ha	No change	239.10 ha
Disturbance footprint (DF)	Figure 2	93 ha	+ 3 ha	96 ha
Clearing of native vegetation	Within DF	25 ha	+ 1 ha	26 ha
Depth of pit	Within DF	Not more than 165 m reduced level	No change	Not more than 165 m reduced level
Dewater discharge pipeline	Within DE	Dewater discharge pipeline routed along an existing access road	No change	Dewater discharge pipeline routed along an existing access road
North Kiaka Mine				
Development envelope (DE)	Figure 2	-	+ 216.42 ha	216.42 ha

#### Table 1: Location and proposed extent of proposal elements

Proposal element	Location	Existing proposal approved under MS 813	Significant amendment (North Kiaka Project)	Combined proposal	
Disturbance footprint (DF)	Figure 2	-	+ 44.59 ha	44.59 ha	
Clearing of native vegetation	Within DF	-	+ 17.12 ha	17.12 ha	
Depth of pit	Within DF	-	Above water table to a maximum depth of 46 m below ground level	Above water table to a maximum depth of 46 m below ground level	
Total Mine					
Development envelope (DE)	Figure 2	239.10 ha	+ 215.42 ha (note: the Moora and North Kiaka DEs overlap by 1 ha)	454.52 ha	
Disturbance footprint (DF)	Figure 2	93 ha	+ 47.59 ha	140.59 ha	
Clearing of native vegetation	Within DF	25 ha	+ 18.12 ha	43.12 ha	
Operational elements - Quartzite mining					
Total Mine					
Quartzite production		160,000 tonnes per annum of lump quartz	No change	160,000 tonnes per annum of lump quartz	
Area of rehabilitation		All disturbed areas	No change	All disturbed areas	
Water requirements (groundwater)		250,000 kL per annum	No change	250,000 kL per annum	
Water source		Fractured rock aquifer	No change	Fractured rock aquifer	
Water discharge	Figure 2	Discharge of up to 122,000 kL per annum of dewatered groundwater via Kiaka Creek to the Conderoo River wetlands	No change	Discharge of up to 122,000 kL per annum of dewatered groundwater via Kiaka Creek to the Conderoo River wetlands	
Physical elements – Kemerton Silicon Smelter					
Development envelope (DE)	Figure 3	115.45 ha	No change	115.45 ha	
Smelter furnaces	Within DE	4 x submerged electric arc furnaces	No change	4 x submerged electric arc furnaces	

Proposal element	Location	Existing proposal approved under MS 813	Significant amendment (North Kiaka Project)		Combined proposal
Off-gas cleaning plant (baghouse)	Within DE	One large baghouse with stacks One large	No cha	ange	One large baghouse with stacks One large
		baghouse without stacks			baghouse without stacks
Operational elem	nents – Keme	erton Silicon Smelter	1		
Silicon production		64,000 tonnes per annum (approximately)	No cha	ange	64,000 tonnes per annum (approximately)
Quartzite consumption		160,000 tonnes per annum (approximately)	No change		160,000 tonnes per annum (approximately)
Wood for charcoal		110,000 tonnes per annum (approximately)	No cha	ange	110,000 tonnes per annum (approximately)
Charcoal production		27,000 tonnes per annum (approximately)	No cha	ange	27,000 tonnes per annum (approximately)
Water consumption (groundwater)		312,000 kL per annum	No cha	ange	312,000 kL per annum
Greenhouse gas emissions					
Mining –	- Scope 1			2,1	68 t CO₂-e per annum
elements	Scope 2			0 t CO <sub>2</sub> -e per annum	
	Scope 3		3,653 t CO <sub>2</sub> -e per annum		
Mining –	Scope 1			1,54	46 t CO <sub>2</sub> -e per annum
elements	Scope 2		0 t CO <sub>2</sub> -e per annum		
		Scope 3		11,84	42 t CO <sub>2</sub> -e per annum
Silicon production – construction elements	No construction activities are proposed for the Kemerton Silicon Smelter and therefore there are no associated GHG emission estimates.				
Silicon	Scope 1			123,4	54 t CO <sub>2</sub> -e per annum
production – operational	Scope 2			300,024 t CO <sub>2</sub> -e per annum	
elements	Scope 3			681,6	80 t CO <sub>2</sub> -e per annum
Commissioning					
Limited commissioning works are required as all crushing activities will continue to be undertaken at the Moora Mine. No commissioning is required for the construction of the abandonment bund. There will be no change to the volume of quartz being processed at the Kemerton Smelter, therefore no commissioning will be required at the site.					

#### Decommissioning

SIMCOA are required to develop a mine closure plan under the *Mining Act 1978* for the North Kiaka Mine. Operations at the existing Moora Mine are already subject to an approved mine closure plan. Decommissioning of the Kemerton Smelter is anticipated to occur upon closure of the North Kiaka Mine.

Other elements which affect extents of effects on the environment			
Proposal time	Maximum project life	20 years	
	Construction phase	1 year	
	Operations phase	18 years	
	Decommissioning phase	Approximately 1 year	

The proposal was referred to the EPA on 3 November 2021 and the level of assessment was set at referral information with additional information on 29 July 2022. The EPA published the Environmental Review Document (ERD) (SIMCOA 2024a) for a two-week public review period on 10 April 2024. A total of three public submissions were received and the EPA published the proponent's Response to Submissions document on 20 May 2025 (SIMCOA 2024c). This included the publication of a revised ERD (SIMCOA 2024b).

The North Kiaka Mine portion of the proposal was determined under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) to be a controlled action and was assessed by the EPA under an accredited process (EPBC Reference 2021/9089). Section 5 includes detail on the assessment of impacts to matters of national environmental significance.

#### Amendments to referred proposal during assessment

The proponent's referral supporting document (SIMCOA 2022), which is available on the EPA website, sets out the original scope of the referred proposal.

The proponent requested a change to the proposal during the assessment under section 43A of the EP Act. The amendment was for the construction of an abandonment bund around the perimeter of the mine pits at the existing Moora Mine at the completion of operations. The purpose of the bund is to minimise the potential risk to human and animal safety of inadvertent access to abandoned open mine pits and will be built to facilitate mine closure in accordance with regulatory requirements of the *Mining Act 1978*. The proposed amendment results in an increase of 3 ha to the disturbance footprint, including the clearing of an additional 1 ha of native vegetation. The EPA Chair's notice of 18 September 2023 consenting to the change is available on the EPA's website. The consolidated and updated elements of the proposal which have been subject to the EPA's assessment are included in Table 1.

#### Proposal context

The proponent is the only silica mining and silicon manufacturing company in Australia. The quartzite resource for its mining of high purity silica occurs in the

restricted Noondine chert formation which currently is the only known high-purity chert formation in the country.

The proposal is located within the Wheatbelt region of Western Australia which has largely been cleared to support broad-acre agricultural practices, primarily cropping and livestock farming.

This section sets out the environmental performance of the approved proposal over time together with the current state of the environment for the assessment of the combined effect that the implementation of the significant amendment might have on the environment.

The EPA's first assessment of both the mine and smelter in 1988 considered impacts on rare flora and vegetation from mining as of 'lesser significance' (EPA Bulletin 328). Ministerial Statements 027 and 279 included a single condition requiring monitoring of the effects of mining on the population of *Regelia megacephala*, considered a rare plant at the time.

In the subsequent decade, the vegetation occurring uniquely in association with the exposed ridges of the proponent's chert resource was recognised as the Coomberdale chert hills threatened ecological community (TEC) and additional rare flora were identified including *Acacia aristulata* and *Daviesia dielsii*.

#### Mining and Conservation Strategy

During the assessment of the Western Ridge in 2001 (EPA Bulletin 1027), the proponent outlined a Mining and Conservation Strategy noting the need to protect the newly recognised significant flora and vegetation values. The proponent stated that the most prospective areas for the chert resource within its leases after the Western Ridge were Cairn Hill (now the Cairn Hill Nature Reserve), the Eastern Ridge (i.e. the area directly east of the original Moora pit) and the ridges north of Kiaka Road (includes the proposed North Kiaka pit). The proponent's strategy stated it was prepared to relinquish its interests in Cairn Hill in the event both the Western Ridge was authorised, and a commitment was given to guarantee long-term access to the chert resource. In addition, the proponent provided commitment to undertake the following:

- provide conservation assistance through cost sharing with the former Department of Conservation and Land Management for regional flora surveys to map parts of the Coomberdale chert hills TEC and significant flora
- develop in cooperation with the Department of Conservation and Land Management a strategy to both ensure further access to chert resources and secure flora of the Coomberdale chert in reserves
- investigate possible additional conservation offsets, in particular an area north of Cairn Hill (Cairn Hill North), to enable it to be managed as a single contiguous reserve with Cairn Hill.

#### EPA Bulletin 1027 recommended that:

the Minister for Environment and Heritage advises the Minister for State Development that there is no objection to access additional resources, both in the short and longer term, under the *Silicon (Kemerton) Agreement Act 1987* (as amended) provided that

such access is consistent with the amended environmental conditions and procedures and the proponent's commitments.

The expansion of mining to the Western Ridge and associated clearing of 5 ha of Coomberdale chert hills TEC and individuals of *A. aristulata* and *D. dielsii* was authorised under MS 575 in 2001. The ministerial statement, as amended by MS 813 in 2009, included a condition that required revision and implementation of the Mining and Conservation Strategy to ensure that conservation of biodiversity values is achieved whilst maintaining long-term access to the chert resource. The strategy was required to include:

- Additional exploration to identify chert resources which may contain sufficiently high grade quartz in areas where the chert-associated vegetation is already absent or degraded (condition 20(1)).
- Provision of support (subject to negotiation) to the then Department of Environment and Conservation (DEC) for regional flora surveys to identify and map other parts of the Coomberdale chert formation which may contain the same or other significant flora associated with the chert (condition 20(2)).
- Development of the best strategy to ensure both access to high grade quartz and conservation, in secure reserves, of the flora of the Coomberdale chert formation (condition 20(3)).
- Additional conservation offsets, if required, such as Cairn Hill North and other areas to form 'stepping stones' or linkages with Cairn Hill and other ridges in the area (condition 20 (4)).
- Funding for fencing of significant areas of vegetation, whether part of reserves or other properties, and possible support for ongoing management costs (condition 20(5)).

MS 575 also included a separate condition requiring the proponent to relinquish its mining rights over Cairn Hill.

In summary, the then EPA and Minister for the Environment considered that a longer-term strategic approach was necessary to evaluate the environmental acceptability of the proponent's mining operations. It was determined that Cairn Hill should be secured in the first instance being the 'jewel in the crown' for the TEC and associated significant flora (EPA Bulletin 1027). The then EPA advised no objection to access of other chert resources conditional to submission of the Mining and Conservation Strategy including additional conservation offsets, if required, for expansion of mining into the Eastern Ridge area.

#### Current situation

The requirement for the Mining and Conservation Strategy has ultimately led to the proposed development of the North Kiaka Project in place of the Eastern Ridge. The conservation assistance for regional flora surveys and mapping of parts of the Coomberdale chert hills TEC and significant flora has also resulted in the development of a large amount of knowledge commissioned by SIMCOA on the TEC. This knowledge has flowed directly into the recovery plan for the TEC and has greatly increased the understanding of its composition, occurrence and pressures.

The Cairn Hill Class A Nature Reserve was established in 2004 following the proponent relinquishing mining rights for the area and the owner Westrail gifting it to the then Department of Conservation and Land Management (CALM). The associated condition was therefore complete and excluded from MS 813.

#### **Proposal alternatives**

The location of the proposed mine is restricted by the location of the quartzite mineral reserve which is associated with the Noondine chert (previously known as the Coomberdale chert) geological formation.

Consistent with the existing Mining and Conservation Strategy condition, SIMCOA conducted further exploration and vegetation surveys to examine how it could balance biodiversity conservation with maintenance of long-term access to the chert resource. Through this process the proponent determined that vegetation in areas north of Kiaka Road were more degraded than the Eastern Ridge and expansion plans focussed on that area. The North Kiaka pit was ultimately chosen although additional pits in degraded areas directly east on Lot M572 on Plan 3006 were also considered. It is understood that the additional pits were not pursued owing to failure to reach agreement with the landowners.

The proponent also considered a 'no development alternative'. This would require operations at the Kemerton Smelter to cease once the quartzite resource at Moora is exhausted, noting that this is currently the only known high-purity chert formation in the country. This alternative implies that quartzite would need to be sourced from elsewhere. The proponent did not adopt the 'no development alternative' and noted socio-economic reasons.



Figure 1: Proposal location



Figure 2: Mine development envelopes and disturbance footprints



Figure 3: Smelter development envelope and disturbance footprint

# 2 Assessment of key environmental factors

In undertaking its assessment of the proposal, the EPA had regard for the object and principles in s. 4A of the EP Act to the extent relevant to the particular matters that were considered. The EPA considered the **precautionary principle** were particularly relevant to its assessment of the proposal.

The proposal has the potential to result in serious or irreversible damage to the occurrence of the TEC and threatened flora. The EPA has recommended conditions to ensure that risks are minimised or avoided where possible, and that relevant measures are undertaken by the proponent to manage residual impacts.

Appendix D of this report provides a summary of all the principles of the EP Act and how the EPA considered these in its assessment.

Having regard to the above, this section sets out the EPA's assessment of the key environmental factors. The EPA also evaluated the impacts of the proposal on other environmental factors and concluded these were not key factors for the assessment. This evaluation is included in Appendix E.

The EPA has assessed the significant amendment in the context of the existing proposal as authorised under MS 813, while having regard to the combined and cumulative effect that the implementation of the existing proposal and significant amendment may have on the following key environmental factors.

# 2.1 Flora and Vegetation

#### 2.1.1 Environmental objective

The EPA environmental objective for flora and vegetation is *to protect flora and vegetation so that biological diversity and ecological integrity are maintained* (EPA 2016a).

#### 2.1.2 Investigations and surveys

The EPA used the following investigations and surveys to inform the assessment of potential impacts to flora and vegetation:

- North Kiaka Proposal Flora and Vegetation Surveys (appendix G of the revised ERD) (GHD and Trudgen 2024)
- An extension of a flora survey, floristic analysis and vegetation survey of areas of the Coomberdale Chert TEC to include a further area (appendix H of the revised ERD) (Trudgen et al. 2012)
- Comparison of the flora and vegetation of the proposed North Kiaka mine area to other parts of the Coomberdale Chert Threatened Ecological Community (Coomberdale Chert TEC Flora Assessment) (appendix I of the revised ERD) (Trudgen 2018)
- Phytophthora Dieback Management Plan (appendix J of the revised ERD) (Great Southern Bio Logic 2022)

- A Report on the Rehabilitation of Mine Waste at the Simcoa Moora Chert Mine based on monitoring in October 2022 (appendix L of the revised ERD) (Trudgen 2023)
- Response to Simcoa Operations request for suggested EIA commitments (Trudgen 2025).

Multi-year, multi-season flora and vegetation surveys were conducted for the Moora Mine DE, North Kiaka Mine DE or adjacent areas between 2000 and 2017. To address requirements of *EPA Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016f), a further contemporary targeted survey was undertaken in April 2024. In addition to the above, Malcolm Trudgen provided a technical memo (Trudgen 2025) with regards to specific flora species. The EPA considers that the information obtained throughout the assessment is sufficient for assessment of the proposal and decision-making.

#### 2.1.3 Assessment context – existing environment

The proposal is located within the Avon Wheatbelt bioregion as defined in the Interim Biogeographic Regionalisation for Australia (IBRA). It intersects the mapped vegetation associations 1041 and 142 which retain approximately 31.5% and 12.4% of their pre-European extents respectively within the bioregion (Table 5.5 of the revised ERD, SIMCOA 2024b).

The condition of native vegetation within the North Kiaka Mine disturbance footprint, which was last impacted by fire in 1981, ranges from Very Good to Degraded with approximately 40% in Good or better condition as assessed against the Trudgen (1988) vegetation condition scale. The condition of the area where the Moora Mine abandonment bund is proposed is primarily Good-Very Good (Trudgen 1988) (Tables 5.9 and 5.10 of the revised ERD, SIMCOA 2024b).

The implementation of the survey elements of the Mining and Conservation Strategy required under the existing MS 813 conditions, along with the knowledge gained over progressive rehabilitation works undertaken by SIMCOA, has contributed to the significant increase in the vegetation and flora knowledge of the area since the commencement of the mining activities. Some of the contributions include:

- Extension of the botanical study of the Coomberdale chert hills TEC by M. E. Trudgen (commissioned in 2002, completed in 2006 and updated periodically 2012, 2016)
- Development of the Interim Recovery Plan No. 338 Heath dominated by one or more of *Regelia megacephala, Kunzea praestans* and *Allocasuarina campestris* on ridges and slopes of the chert hills of the Coomberdale Floristic Region (July 2013).
- Contribution to the Coomberdale Chert TEC: Threatened Ecological Community Fact Sheet: Vegetation alliances on ridges and slopes of the chert hills of the Coomberdale floristic region (DBCA 2013).
- Comparison of the vegetation and flora of the proposed impact areas to the overall flora and vegetation values of the Coomberdale chert hills Chert TEC

by M. E. Trudgen (2018) in order to minimise and avoid impacts in the current amendment.

• Continuous learning from progressive rehabilitation work on various areas of mine dumps including at various stages the re-establishing of *Regelia megacephala*, elements of the Coomberdale chert hills TEC and Declared Rare Flora and Priority Flora (since the mid-90s to date).

The knowledge gained through the above has been used to shape the current amendment and adapt conservation strategies to improve long-term viability of the Coomberdale chert hills TEC.

### Significant vegetation

Most of the remnant vegetation proposed to be cleared is representative of the "Vegetation alliances on ridges and slopes of the chert hills of the Coomberdale floristic region" TEC, commonly referred to as the Coomberdale chert hills TEC, which is listed as Critically Endangered under the *Biodiversity Conservation Act 2016* (BC Act). The TEC is not listed under the EPBC Act.

The TEC is restricted to the exposed quartzite ridges of the Noondine chert formation and consists of seven core alliances and three buffer alliances. Surveys identified four of the core alliances within the proposed disturbance footprint namely *Allocasuarina campestris* (sheoak) shrubland, *Regelia megacephala* (priority 4) shrubland, *Kunzea praestans* shrubland and scrub and *Melaleuca leuropoma* heath and two of the buffer alliances namely *Acacia acuminata* woodlands and *Allocasuarina huegeliana* woodlands to forests (Trudgen et al. 2012; Trudgen 2018).

Threats to the continued subsistence of the TEC include extensive clearing for and through agricultural practises such as grazing in particular the lower slopes of chert outcrops, clearing for current and future mining on the chert substrate, as well as inappropriate fire regimes and high incursion of weeds due to current surrounding land use practises (DPaW 2013). At the time of writing of the recovery plan (DPaW 2013), the approximate mapped occurrences of the TEC correlated to the below major threats or management:

- 51% threatened by grazing, inappropriate fire regimes and/or weed invasion
- 25% threatened by past or active mining both chert and other minerals (noting that Moora Mine is the only silica chert mine in the region)
- 24% managed for conservation (Watheroo National Park and Cairn Hill Nature Reserve).

The conservation status of the Coomberdale chert hills TEC was increased to Critically Endangered during the past decade, noting the cumulative impacts from the different land uses and associated threats.

## Significant flora

The survey results demonstrate the proposal location exhibits high floristic diversity with 5 threatened and 12 priority flora recorded. Some of these species are indicative of or restricted to the Coomberdale chert hills TEC.

The 5 threatened species are listed under both the BC Act and EPBC Act with a ranking of Endangered (EN) and include:

- Acacia aristulata (EN)
- Daviesia dielsii (EN)
- Goodenia arthrotricha (EN)
- Synaphea quartzitica (EN)
- Eucalyptus pruiniramis (EN).

Two of these species, *A. aristulata* and *D. dielsii*, were recorded within the proposed disturbance footprint. The closest record of *G. arthrotricha* occurs within the Moora Mine DE approximately 200 metres (m) from the proposed abandonment bund, and the closest records of *S. quartzitica* and *E. pruiniramis* occur approximately 2 km south of the Moora Mine DE within the Cairn Hill Nature Reserve.

Of the 12 priority species recorded, three occur within the proposed disturbance footprint:

- *Stylidium* sp. Moora (Priority 2)
- *Diuris recurva* (Priority 4)
- *Regelia megacephala* (Priority 4) (indicative of the Coomberdale chert hills TEC).

The remaining nine priority flora species were recorded outside the North Kiaka Mine development envelope with most records located within the Cairn Hill Nature Reserve or adjoining vegetation at Cairn Hill North. A list of these species is provided in Table 5.13 of the revised ERD (SIMCOA 2024b). Cairn Hill and Cairn Hill North contains Coomberdale chert hills TEC as well as *A. aristulata*, *D. dielsii*, *G. arthrotricha*, *E. pruiniramis*, *S. quartzitica*, *S.* sp. Moora, *D. recurva* and *R. megacephala*.

#### Introduced pathogens and flora (weeds)

The *Phytophthora* dieback assessment found that most of the vegetation proposed to be cleared is either uninterpretable or uninfested. The proposal is located in an area that receives less than 600 mm of average annual rainfall where the greatest risk of dieback infestations is in water gaining sites. The Coomberdale chert hills TEC and threatened, and priority flora are vulnerable to dieback but are mostly located on the ridges which are not water gaining (Great Southern Bio Logic 2022).

The weed load in the general area is high with 34 weed species recorded for the broader survey area. No Declared Pests as listed under the *Biosecurity and Agriculture Management Act 2007* or Weeds of National Significance on the Western Australian Organism List database have been recorded.

## 2.1.4 Consultation

Matters raised during stakeholder consultation and the proponent's responses are provided in the Response to Submissions document (SIMCOA 2024c). Public concerns included that impacts to the Coomberdale chert hills TEC are unacceptable noting its Critically Endangered status. The EPA's assessment of impacts to the TEC is included in section 2.1.9.

## 2.1.5 Potential impacts from the proposal

#### Direct impacts

The proposal has the potential to significantly impact on flora and vegetation from:

- clearing of 18.12 ha (17.12 ha in the North Kiaka Mine DE and 1 ha in the Moora Mine DE) of remnant vegetation
- direct loss of 17.65 ha of the Coomberdale chert hills TEC, being equivalent to 2.25% of the total extent (785 ha) of the TEC
- clearing of individuals of threatened flora species
- clearing of individuals of priority flora species.

#### Indirect impacts

The proposal also has the potential to significantly impact flora and vegetation from:

- edge effects, that is, degradation of native vegetation due to proximity to disturbed areas including the potential for weed incursion and dust deposition
- fragmentation resulting in overall decline in vegetation and genetic flow of species
- alteration of fire regime.

#### 2.1.6 Avoidance measures

Condition 7-1(1) of MS 813 issued in 2009 required the proponent to undertake additional reconnaissance exploration to identify other parts of the Coomberdale chert formation which may contain sufficiently high-grade quartz in areas where the chert-associated vegetation is already absent or degraded. The proponent commissioned detailed mapping of the Coomberdale chert hills TEC (Trudgen 2018) and has utilised these results and other flora and vegetation surveys in the design of the proposal to avoid impacts to flora and vegetation by:

- locating resource extraction activities on areas of Coomberdale chert hills TEC that is in poorer condition owing to past land use practices
- avoiding the location of *Acacia aristulata* and *Daviesia dielsii* occurrences in the planning of final infrastructure / landform locations where practicable
- locating supporting infrastructure on previously disturbed areas where possible.

Since the occurrence of the mineral deposit correlates with the occurrence of the Coomberdale chert hills TEC, avoidance measures for the TEC in locating the mine pit are limited.

In addition to the above the proponent considered the mitigation hierarchy in the development and assessment of its proposal, including the following key measures:

- using inert materials in the abandonment bund to avoid production of acid formation
- constructing the bund within the cleared area of the pit to avoid clearing where possible
- procedures for clearing/land disturbance within the approved boundary of the North Kiaka DE to include:
  - compliance with authorisation to take or disturb under the *Biodiversity Conservation Act 2016* for the clearing of any Threatened Flora or modification of an occurrence of TEC
  - internal clearing permit to be granted prior to any clearing being undertaken
  - o all clearing areas to be surveyed and demarcated prior to clearing
  - all clearing areas to be surveyed after clearing to confirm compliance with clearing permits (internal and regulator issued).

#### 2.1.7 Minimisation measures

To minimise impacts the proponent proposes to implement the following:

- measures to prevent bushfire, the introduction or spread of weeds
- Environmental Management Plans to include procedures, management and mitigation measures to be implemented to prevent and minimise impacts on native flora and vegetation
- establish a vehicle hygiene and ground disturbance procedure
- dieback management plan for managing the introduction of pathogens
- implementing regular weed monitoring and control programs to limit the spread of invasive species including 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
- dust mitigation and management measures including water sprays on stockpiles and other cleared surfaces and crushers
- regular maintenance inspections and repairs on equipment (crushing and screening plant, conveyor)
- managing haulage trucks to minimise loss of materials and dust creation during transport
- implement Hot Works Permit system, and Emergency Management Procedures to minimise the risk of bushfires
- clearing activities not to be undertaken when the Fire Danger Rating is severe or higher.

### 2.1.8 Rehabilitation measures (including regulation by other DMAs)

Historically the proponent has undertaken progressive rehabilitation of waste rock dumps utilising native species consistent with those found in the Coomberdale chert hills TEC. This is proposed to continue with past and proposed rehabilitation strategies and methodology included in the Rehabilitation Plan provided as Appendix K of the revised ERD (Ecoscape 2012).

Mine pits and the abandonment bund at Moora would not be rehabilitated with the pits likely to form shallow pools in winter that dry out over summer (GHD 2024a). Other infrastructure areas are generally proposed to be rehabilitated to an agricultural land use or retained as cleared areas for ongoing maintenance activities. These areas were historically cleared and used for agriculture decades before development of the mine. Exact details of final land uses would be determined through the Mine Closure Plan requirements under the *Mining Act 1978*.

#### 2.1.9 Assessment of impacts to environmental values

The EPA has considered the potential impacts of the proposal on significant vegetation and flora, as well as matters relating to rehabilitation, indirect impacts and cumulative impacts. Further detail on the assessment is provided in turn below.

#### Significant vegetation

#### Coomberdale chert hills TEC

The EPA has assessed the likely residual impacts of the proposal as including the direct and permanent loss of 17.65 ha of the Coomberdale chert hills TEC. The proposed impact represents the loss of approximately 2.25% of the total mapped remaining extent of the TEC (785 ha). Previously 5 ha of vegetation was authorised to be cleared for the Western Ridge extension of the Moora Mine, representing 0.6% of the Coomberdale chert hills TEC.

The development of the original Moora Mine occurred prior to the surveying, mapping and listing of the TEC. It is therefore difficult to assess impacts to the TEC on a cumulative level and for the combined effect of clearing given the lack of survey data for this community prior to the last extension to operations; however, the section below describes the current knowledge and potential impact, as well as mitigation, research and rehabilitation that can be considered for this community. For the purposes of considering the combined effects of this clearing, the EPA has taken into account the TEC's current listing status of Critically Endangered.

While loss of 2.85% to the remaining extent of the TEC from the combined previous Western Ridge extension and the North Kiaka Project may not represent a large proportion, it is considered that the implementation of the proposal will add to further permanent loss and cumulative impacts to a Critically Endangered TEC. Only 24% of the Coomberdale chert hills TEC is in conservation estate according to the interim recovery plan with the remainder primarily located on private land (about 72%). Approximately 49% of the remaining extent is covered by mineral tenements (DPaW 2013).

The EPA also notes that the TEC is unlikely to be restored on highly modified areas. This is on the basis that since 1991 the proponent has progressively rehabilitated 47 separate areas of waste rock dumps and while native species occurring in the TEC have been established, a review found that the areas contain less than desirable structure, diversity and weed cover and appear less resilient to dry conditions. A floristic analysis found the rehabilitation forms a separate floristic grouping to native vegetation recorded in the TEC, and the review concluded that the two key factors preventing restoration were the modified substrate and the high weed load from an agricultural setting (Trudgen 2023).

The interim recovery plan notes the key threats to the TEC are mining, grazing, inappropriate fire regimes and high incursion of weeds. Taking into account these threats, it counselled for attaining conservation management of core vegetation alliances and the increase of conservation initiatives that focus on protecting areas from disturbance and adding areas to the conservation reserve system. One of its three criteria of success is: *"the increase in the number of occurrences identified as "core areas" that are managed for conservation and/or with conservation included in the purpose"* (DPaW 2013).

#### Conclusion – Coomberdale chert hills TEC

To counterbalance the additional clearing of Coomberdale chert hills TEC, the proponent has proposed an offset that includes contributing to the conservation and management of the TEC within Cairn Hill and Cairn Hill North, implementing exclusion zones for the TEC on other landholdings including works to improve their condition, and implementing a research program to improve understanding of the TEC including its protection and management. Further detail on the offset is included in Section 4.

The EPA supports the offset as an important preservation measure to alleviate the threats to separate portions of the TEC and notes it is consistent with the objectives of the interim recovery plan to protect and manage remaining occurrences. The offset will ultimately result in an increase of areas being conserved from 24% to 32%.

Acknowledging the proponent's efforts to avoid impacts to areas of the TEC in better condition, that the proportional impact is low, and the benefits of the offset to counterbalance the impacts, the EPA considers that the environmental outcome for the Coomberdale chert hills TEC would likely be consistent with the EPA objective for flora and vegetation.

The EPA advises that the proposal should be subject to implementation conditions to limit clearing of the Coomberdale chert hills TEC (recommended condition B1-1), to require pre-clearance surveys to confirm Coomberdale chert hills TEC baseline extent and condition including North Kiaka proposal site and offset areas to compare with future monitoring for research and enhancement trials and following implementation of management actions as well as to ensure impacts are as predicted (recommended conditions B1-2 & B1-3), and to implement offsets to counterbalance the significant residual impact (recommended condition B9).
Measures to address indirect impacts to the TEC from the spread of weeds, inappropriate fire regimes and dust generation are discussed in the corresponding section below.

# Significant flora

The proposal will directly impact two Endangered and three priority flora found in the disturbance footprint. A further three Endangered flora species have all been recorded nearby.

#### Endangered flora

A summary of the records of the five Endangered flora species is provided in Table 2 with locations shown in Figure 4. Several of the Endangered flora species are disturbance opportunists including pyrosere species which are those where seeds often remain dormant in soil layers until germination is triggered by a bushfire event. No fire has been through the area since 1981 (SIMCOA 2024b) and the 2024 survey was undertaken in autumn after an exceptionally hot summer which may have further reduced the number of individuals remaining. Accordingly, the 2024 individual counts may be under representative of the local populations, therefore Table 2 and Figure 4 utilise the individuals from the highest recording period which was the 2018 surveys.

# Table 2: Summary of predicted impacts to Endangered flora (SIMCOA 2024b 2024c)

Species	Disturbance or pyrosere strategy	Number of individuals recorded (local extent – 10km radius)	Number of individuals in North Kiaka Mine DE	Number of individuals directly impacted in disturbance footprint	Percentage loss of known individuals from local extent*
Endangered					
Acacia aristulata	Yes	1,100	32	17	1.5%
Daviesia dielsii	Likely	365	92	15	4.1%
Eucalyptus pruiniramis	Likely	1	0	0	0%
Goodenia arthrotricha	Yes	4	0	0	0%
Synaphea quartzitica	Yes	12	0	0	0%

\*Impacts to the regional population would be lower.

North Kiaka Project



Figure 4: Endangered flora recorded during 2018 surveys

#### Acacia aristulata and Daviesia dielsii

*A. aristulata* and *D. dielsii* will both be directly impacted with individuals occurring in the proposed disturbance footprint. Both species are geographically restricted, with *D. dielsii* having a slightly larger range of at least 100 km<sup>2</sup>. DBCA has indicated that both species are at high risk due to continuing decline from the direct take of individual plants and degradation of habitat from mining activities, weed invasion and grazing.

A. aristulata is restricted to two areas within the Moora district. Currently two of the 15 subpopulations are within the conservation reserve system. DBCA has indicated that the species conservation status is currently under review due to the restricted extent of occurrence and the decline in habitat quality and the number of mature individuals. The implementation of the proposal will require clearing of 17 individual *A. aristulata* plants which is 1.5% of the known records within the local area (SIMCOA 2024b). Historically 70 plants were cleared in the Western Ridge pit (SIMCOA 2024e).

The main threats to *D. dielsii* are the lack of information about its biology or ecology and the known populations are threatened by loss of habitat and weed invasion (DCCEEW 2009). The implementation of the proposal will require clearing of 15 *D. dielsii* plants which is 4.1 % of the known records within the local area (SIMCOA 2024b). Historically 1 plant was cleared in the Western Ridge pit (SIMCOA 2024e).

It is possible that individuals of both *A. aristulata* and *D. dielsii* were also cleared for the development of the original Moora Mine pit. This was prior to these species being listed and specifically searched for meaning the exact extent of impact is unknown. To account for the potential combined effects of this clearing consistent with s40AA of the EP Act, the EPA has taken into account the current conservation status of the two species.

#### Goodenia arthrotricha, Eucalyptus pruiniramis and Synaphea quartzitica

These three species all have geographically restricted distributions and are known from less than 10 populations.

*G. arthrotricha* is known from five populations although the majority of plants (83%) are found in one location. DBCA has indicated that due to the presence of suitable habitat that may contain seed bank, this species may be potentially present in the proposed disturbance footprint.

*E. pruiniramis*' range is considered to be fragmented as the nine known populations are scattered with considerable distances between them (DCCEEW 2008) and *S. quartzitica* is known from four populations all of which are in conservation areas; three are in Watheroo National Park and the other is located in Cairn Hill Nature Reserve. Both of these species are considered unlikely to occur within the proposed disturbance footprint noting they are readily observable in surveys and furthermore there are habitat differences at North Kiaka that are unlikely to suit *S. quartzitica* (GHD & Trudgen 2024).

#### Conclusion – Endangered flora

The EPA notes that the proponent has avoided most of the recorded locations of Endangered flora in the local area with the proportional impacts to *A. aristulata* and *D. dielsii* both less than 10% when the combined impacts from the Moora and Western Ridge pits are considered. Consistent with the *WA Environmental Offset Guidelines* the EPA considers that the cumulative impacts to these species are significant residual impacts and require both a direct and indirect offset. The offsets proposed by the proponent will see a large proportion of the local records included in Class A Nature Reserves or exclusion zones with work also to be undertaken to examine their ecology and fire response to inform future conservation management. The EPA considers that this provides sufficient confidence that the impacts of the proposal will be counterbalanced and that the proposal will not result in an unacceptable decline in the species. Section 4 provides further details on the proposed offsets and EPA's assessment.

The EPA requires conditions B9-2, B9-6 and C4-2 to undertake baseline and targeted surveys for *A. aristulata* and *D. dielsii*, as well as any other legislated endangered species within the proposed disturbance footprint and offset sites in order to record reference information to measure outcomes of offset requirements and measure restoration progression.

The EPA has determined that the likelihood of significant impact to threatened flora species can be mitigated through limitations on removal (including zero take of individuals in the case of *G. arthrotricha*) (condition B1-1). Even though the project will not require the removal of *G. arthrotricha*, *E. pruiniramis*, and *S. quartzitica*, they have been recorded within the offset sites.

The EPA advises that the significant residual impact to *A. aristulata* and *D. dielsii* is likely to be able to be regulated through reasonable conditions (recommended conditions A1 and B1) and counterbalanced by offsets (recommended condition B9) so that the species are appropriately protected and the environmental outcome is likely to be consistent with the EPA objective for flora and vegetation.

#### Priority flora

The implementation of the proposal will require clearing of individuals of *Stylidium* sp. Moora (P2), *Diuris recurva* (P4) and *Regelia megacephala* (P4) recorded within the proposal disturbance footprint (GHD 2024). None of these species are restricted to the development envelopes.

In relation to the other nine priority flora recorded nearby, the EPA does not consider they are at risk of significant impacts. These species generally have large ranges or population sizes, or the proportional impact to the local population would be minimal if they did occur in the disturbance footprint and were overlooked due to any potential survey limitation.

### Stylidium sp. Moora (P2) and Diuris recurva (P4)

*Stylidium* sp. Moora occurs across a range of 57 km north to south and the proposal location represents the northern extent of the known records of this species. The proponent's ERD indicates there may be a high proportional impact to this species, but due to its clonal nature (i.e. spreading by runners), the assessment of actual numbers of genetically different individuals is complex and regional records generally do not provide abundance figures (SIMCOA 2025). Furthermore *Stylidium* sp. Moora was segregated from the widespread *Stylidium septentrionale* and was recorded under the latter name in earlier surveys meaning the true abundance of the species in the general area may be much higher.

Additional information provided by Trudgen (2025) indicates the species is not uncommon within the TEC. It has been recorded from six other TEC remnants in the general area including Cairn Hill, Cairn Hill North and the Eastern Ridge. In the vicinity of the North Kiaka pit there are 20 point locations, five within the proposed disturbance footprint, a further three within the North Kiaka Mine DE, and 12 in remnant vegetation directly east of the North Kiaka Mine DE. Therefore, the proportional impact to the local population from the proposal is expected to be low and significant impacts are unlikely.

The distribution of the population of *D. recurva* is well known regionally and ranges 470 km north to south however exact numbers of individuals across the range is unknown. Again, this species is likely clonal in nature and regional records represent numbers of occurrences not abundance (SIMCOA 2025). It is noted that the current P4 listing for this species is likely highly precautionary as the species is widespread and occurs as far north as Kalbarri National Park and as far south as Dowerin and Goomalling (SIMCOA 2025). The implementation of the proposal may impact 65 individuals but is not likely to reduce the overall extent of the species occurrence.

Both of the above priority species occur in the proposed conservation offset for the Coomberdale chert hills TEC at Cairn Hill and Cairn Hill North. The proponent also proposes to undertake a research and enhancement offset for the TEC part of which includes investigating the population structures (genetic diversity) of these species noting they are a component of the TEC. As outlined under section 4, the EPA considers the offset for the TEC is appropriate and will inform the management and enhancement of the TEC. Although significant residual impacts to *Stylidium* sp. Moora and *D. recurva* are unlikely, the research on these species is supported as part of the TEC work.

### Regelia megacephala (P4)

The EPA has noted that *R. megacephala* has a restricted range limited to the extent of the Coomberdale chert hills TEC. The impact from the implementation of the proposal is deemed to be low due to a large number of *R. megacephala* individuals recorded at a regional scale (over 9,000 individuals) compared to the impact site (567 individuals). The EPA has recommended removal of individuals for *R. megacephala* should be limited to 567 to ensure impacts are not greater than anticipated. This should be supported by a requirement for a pre-clearing survey to confirm number of individuals.

#### Conclusion – Priority flora

The EPA considered that records of all priority flora are found within the wider region which indicates the proposal is unlikely to change the conservation status of the impacted priority flora species. The EPA recommends that the residual impact to priority flora be subject to implementation conditions to limit the clearing of vegetation to 18.12 ha, five individuals of *Stylidium* sp. Moora, 65 individuals of *D. recurva* and 567 individuals of *R. megacephala* (conditions A1-1 and B1-1), to undertake a pre-clearing survey to confirm baseline information to measure outcomes of offset requirements and measure restoration progression (conditions B9-2, B9-6 and C4-2), and to provide a research and restoration offset for the Coomberdale chert hills TEC which will provide a dual benefit for the impacted priority flora (condition B9). Based on these conditions, the EPA considers the environmental outcome related to priority flora is likely to be consistent with the EPA objective for flora and vegetation.

#### Rehabilitation

The proponent is currently required to undertake rehabilitation in accordance with condition 8-3 of MS 813 which requires progressive rehabilitation that is to achieve vegetation comparable in species composition to pre-mining vegetation (i.e. Coomberdale chert hills TEC) and contain less than 10% weed cover.

To date the proponent has not been able to re-establish vegetation consistent with the Coomberdale chert hills TEC on waste rock dumps due to the substantially modified substrate which appears to reduce rainfall infiltration and storage. In addition, high weed incursion has occurred due to the surrounding agricultural setting and the competitive advantage of annual species in dry conditions. Approximately 70% weed cover has been recorded in some rehabilitation areas (Trudgen 2023).

The vegetation establishment method used has primarily been the transfer of topsoil and brush from cleared areas although most of this material is now exhausted. Clearing at the North Kiaka Mine would provide additional material but this is understood to contain a higher weed load and is unlikely to be sufficient for both remaining areas at Moora and the new Tonkin waste rock dump at North Kiaka.

The proponent proposes to continue rehabilitating waste rock dumps but proposed the composition be simply local native plant species, including Carnaby's black cockatoo foraging species, rather than comparable to the Coomberdale chert hills TEC. It also requests the weed cover criterion be removed with weeds to be managed in accordance with the Mine Closure Plan required under the *Mining Act 1978*.

Recognising the modified substrate and rehabilitation results to date, the EPA agrees with the proponent that achieving species composition comparable to the Coomberdale chert hills TEC is not reasonably practicable. Some species have established successfully and therefore work should focus on establishing a species composition that is likely to have the best results. Care should be taken to ensure

that the native species used are complementary to neighbouring areas of the TEC and do not risk their modification due to the introduction or proliferation of overly competitive species.

Regarding the weed cover criterion, the EPA considers weed intrusion is likely to be ongoing owing to the surrounding agricultural setting, modified landforms and limited supply of clean topsoil. A specific percent cover criterion is unlikely on its own to provide an adequate measure of success. To improve rehabilitation results it is considered that construction of waste rock dumps should be improved, consistent with the findings of the Trudgen (2023) review, to better support infiltration and subsoil storage of rainfall such as through increasing the volume of fine material present. Subsequent improvements in native vegetation recruitment and survival will in turn reduce weed cover.

It follows that the EPA recommends a modified rehabilitation condition B3 for the mine sites requiring progressive rehabilitation of disturbed areas that achieves the outcomes of self-sustaining vegetation, is undertaken in a manner that ameliorates the risk of degradation of adjacent areas of TEC, and improves water infiltration and storage in waste rock dumps. These outcomes are to be included in the Mine Closure Plan required under the *Mining Act 1978*.

Regarding the Kemerton Smelter, its decommissioning is not subject to the *Mining Act 1978*. The EPA considers that the proponent should prepare and submit a Decommissioning Environmental Management Plan at least five years prior to the forecasted decommissioning phase that details the proposed rehabilitation of disturbed areas to make the area suitable for the new land use proposed at that time. Condition B8 is recommended to this effect.

#### Indirect impacts

The primary risk of indirect impacts to significant vegetation and flora from the proposal relates to the potential for increased weed prevalence in adjoining vegetation. This has the potential to degrade adjoining occurrences of the Coomberdale chert hills TEC, and to result in the loss of additional nearby individuals of threatened and priority flora.

DBCA has indicated that their assessment of the area is that it is likely to be dieback free and exists within the vulnerable zone, it would therefore be considered protectable. An annual survey is to be undertaken, and the proposed Dieback Hygiene Management Plan (Preston Consulting 2023b) regularly updated. The EPA considers that an annual revision of the dieback surveys and regular revisions of the Dieback Hygiene Management Plan to maintain the currency of occurrence information throughout the life of the proposal is adequate.

The EPA advises that the proposal should be subject to conditions to avoid and minimise the indirect impacts of environmental weeds, dieback and dust including through implementation of an Environmental Management Plan and associated monitoring (conditions B1-2 and B1-3). Based on these conditions, the EPA considers the environmental outcome related to flora and vegetation is likely to be consistent with the EPA objective for flora and vegetation.

### Cumulative impacts

The proponent has considered the cumulative effects of the proposal by considering the proposed impacts to flora and vegetation and conservation significant species from this proposal and other existing and reasonably foreseeable projects within the same IBRA region including the current mining activities, CBH Moora Grain, Mummaloo Iron Ore Project, Mount Gibson Iron Ore Mine and Infrastructure - Iron Hill Deposit, Karara Iron Ore Mine Project, Hinge Iron Ore Project and from agricultural development and roads.

On a bioregional scale, the impacts of the proposal, are not predicted to be significant for vegetation associations.

The project is the only current and historical proposal on the Coomberdale chert hills TEC, but cumulative impacts on the TEC included extensive clearing for agriculture. Whilst it is still possible to counterbalance the current proposals impacts on the critically endangered Coomberdale chert hills TEC by offsets, the feasibility of additional offset opportunities would be based on rehabilitation success and additional research and enhancement.

# 2.1.10 Summary of key factor assessment and recommended regulation

The EPA has considered the likely residual impacts of the proposal on flora and vegetation environmental values. In doing so, the EPA has considered whether reasonable conditions could be imposed, or other decision-making processes can mitigate potential inconsistency with the EPA factor objective. The EPA assessment findings are presented in Table 3.

The EPA has also considered the principles of the *Environmental Protection Act 1986* (see Appendix D) in assessing whether the residual impacts will be consistent with its environmental factor objective and whether reasonable conditions can be imposed (see Appendix A).

The EPA has also had regard to its conclusions in other recent assessments, including Medcalf Vanadium Project and Atlas Project.

Residual impact or risk to environmental value		Assessment finding or Environmental outcome	Recommended conditions and DMA regulation
1.	Clearing of up to 17.65 ha of Coomberdale chert hills TEC, equivalent to 2.25% of the total extent (785 ha) of the TEC.	The proposed clearing of 17.65 ha of Coomberdale chert hills TEC ('Critically Endangered') is a significant residual impact. The proponent's previous rehabilitation measures on the existing Moora Mine, have indicated that restoration of the TEC is not yet achievable for all species in the community.	<ul> <li>Condition A1 (Limitations and extent of proposal)</li> <li>limit extent of loss of native vegetation.</li> <li>Condition B1 (Flora and Vegetation)</li> </ul>

#### Table 3: Summary of assessment for flora and vegetation

Residual impact or risk to environmental value	Assessment finding or Environmental outcome	Recommended conditions and DMA regulation
	Cairn Hill North to the conservation estate will increase the permanent protection of existing good quality TEC from 24% to 32% in Class A Nature Reserve and increase TEC protection across a larger area of its range. The proposed change in strategy from rehabilitation to indirect offsets, including research and enhancement of existing degraded remnant TEC occurrences is critical to address key information gaps to achieve the outcome of improving management and supporting the recovery of the TEC. The indirect offsets are supported by the DBCA and will minimise loss and enhance a further 10% of the mapped occurrence of the TEC for the life of the mine and smelter. For the purposes of considering the combined effects of this clearing with the existing proposal, the EPA has taken account of the TEC's current listing status and the current knowledge and potential impact, as well as mitigation, research and rehabilitation. The EPA has recommended conditions to ensure that risks are minimised or avoided where possible, and that relevant measures are undertaken by the proponent to manage residual impacts.	<ul> <li>Infinits to the clearing of Coomberdale chert hills TEC</li> <li>pre-clearance survey/s.</li> <li>Condition B3 (Rehabilitation)</li> <li>Rehabilitation is self- sustaining and weed management demonstrates avoidance of degradation to adjacent areas of TEC.</li> <li>Condition B9 (Offsets)</li> <li>Counterbalance the significant residual impacts including:</li> <li>land acquisition to add Cairn Hill North to the conservation estate as a Class A Nature Reserve</li> <li>protect and enhance TEC remnants in identified exclusion zones to improve vegetation condition, resilience and management</li> <li>research offset to inform management and conservation</li> </ul>
	The EPA recommends that reasonable conditions should be applied to counterbalance the significant residual impact, specifically, direct offset and indirect offsets for research and enhancement trials on existing degraded remnant TEC occurrences to improve its resilience. The EPA advises that subject to the above recommended conditions, the environmental outcome is likely to be consistent with the EPA objective for flora and vegetation.	planning of the TEC. Condition B10 (Environmental performance reporting) Report performance the state of the TEC and proposed adaptive management for recovery and management of the TEC.

Residual impact or risk to environmental value	Assessment finding or Environmental outcome	Recommended conditions and DMA regulation
<ul> <li>Clearing of threatened flora <ul> <li>17 Acacia aristulata (EN) (1.5% of known individuals in the local area)</li> <li>15 Daviesia dielsii (EN) (4.1% of known individuals in the local area).</li> </ul> </li> </ul>	The proposal will result in the direct loss of individuals of two endangered flora that are at higher risk of conservation upgrading from continued loss of mature individuals through mining and agricultural activities and habitat degradation due to weed invasion and lack of appropriate fire regimes. Both threatened flora species are present in the existing and proposed Class A Nature Reserve in numbers higher than impacted from clearing for the proposal. The proponent's proposed exclusion zones refer to occurrences of both threatened flora, as well as individuals of <i>Goodenia</i> <i>arthrotricha</i> (EN). Indirect offsets for ecological research on both impacted species, as well as enhancement measures are supported by DBCA and provide opportunities to improve their management and conservation planning. The EPA has considered the combined effects with the existing proposal including advice from DBCA on the listing status of the threatened flora and the current knowledge and potential impact, as well as mitigation, research and rehabilitation. The EPA has recommended conditions to ensure that relevant measures are undertaken by the proponent to manage residual impacts and considers that the previous and additional offsets combined appropriately counterbalance the combined effects. The EPA advises that subject to the recommended conditions for clearing limits, management of indirect impacts and direct and indirect offset measures, including research and enhancement trials, the significant residual impact can be managed and counterbalanced so that the environmental outcome is likely to be consistent with the EPA objective for flora and vegetation.	<ul> <li>Condition B1 (Flora and Vegetation)</li> <li>limits to the clearing of endangered flora individuals</li> <li>no loss of Goodenia arthrotricha</li> <li>pre-clearance survey/s.</li> <li>Condition B9 Offsets</li> <li>Counterbalance the significant residual impacts including:</li> <li>land acquisition to add Cairn Hill North to the conservation estate as a Class A Nature Reserve</li> <li>protect and enhance threatened flora in identified exclusion zones to support recovery</li> <li>research offset including disturbance response, population status and genetic diversity to inform management and conservation planning.</li> </ul>

Re risł val	sidual impact or ( to environmental ue	Assessment finding or Environmental outcome	Recommended conditions and DMA regulation
3.	Clearing of priority flora • <i>Stylidium</i> sp. Moora (Priority 2) • <i>Diuris recurva</i> (Priority 4) • <i>Regelia</i> <i>megacephala</i> (Priority 4).	The proposal will result in the loss of individuals of three priority flora. Both <i>Stylidium sp. Moora</i> and <i>Diuris</i> <i>recurva</i> occur across large ranges and in the proposed conservation offset for the Coomberdale chert hills TEC at Cairn Hill and Cairn Hill North. While <i>Regelia megacephala</i> is restricted, the proportional numbers impacted are low due to a large number recorded at a regional scale. Although significant residual impacts to <i>Stylidium sp. Moora</i> (P2) and <i>Diuris</i> <i>recurva</i> (P4) are unlikely, the proponent's proposed research on these species is supported as part of the TEC ecological research. This research includes population status and genetic diversity of species occurring within the community to inform its management and conservation planning. The EPA advises that subject to the recommended conditions for clearing limits, management of indirect impacts and the acceptance of the direct and indirect offset from the proponent, the impact can be managed so that the environmental outcome is likely to be consistent with the EPA objective for flora and vegetation.	<ul> <li>Condition B1 (Flora and Vegetation)</li> <li>limits to the clearing of priority flora individuals</li> <li>pre-clearance survey/s.</li> <li>Condition B9 Offsets</li> <li>Requirements to counterbalance the potential significant residual impacts including:</li> <li>research and enhancement offset.</li> </ul>
4.	Potential reduction in health of adjoining vegetation containing the TEC, threatened flora and priority flora from indirect impacts.	The proposal may result in a reduction in health of conservation significant flora and vegetation from dust, weeds and pathogens associated with the proposal. The proponent has committed to the implementation of a Significant Flora and Vegetation Environmental Management Plan to ensure that potential impacts are detected early, and adaptive management can be implemented. The EPA advises that subject to the recommended conditions to require management actions if targets are not met, the residual impact can be managed so that the environmental outcome is likely to be consistent with the EPA objective for flora and vegetation.	<ul> <li>Condition B1 (Flora and Vegetation)</li> <li>Minimise indirect impacts from dust, weeds and introduced pathogens</li> <li>Implementation of a Significant Flora Environmental Management Plan to manage impacts from dust and spread of weeds and introduced pathogens.</li> </ul>

#### **Terrestrial Fauna**

# 2.2.1 Environmental objective

The EPA environmental objective for terrestrial fauna is to protect terrestrial fauna so that biological diversity and ecological integrity are maintained (EPA 2016e).

# 2.2.2 Investigations and surveys

The EPA advises the following investigations and surveys were used to inform the assessment of the potential impacts to terrestrial fauna:

- Terrestrial Fauna and Targeted Black Cockatoo Habitat Survey (appendix M of the revised ERD) (GHD 2024b)
- Survey for Short Range Endemic Fauna (appendix S of the revised ERD) (Invertebrate Solutions 2019).

The surveys were generally consistent with the *Technical Guidance – Terrestrial Vertebrate Fauna Surveys for environmental impact assessment* (EPA 2020b) and *Technical Guidance – Sampling of Short-range Endemic Invertebrate Fauna* (EPA 2016g). Surveys did not include the proposed Moora Mine abandonment bund, but fauna values were extrapolated from existing information including from flora and vegetation surveys. The EPA considered it had sufficient information to complete its assessment.

### 2.2.3 Assessment context – existing environment

The proposal is located near the western boundary of the Avon Wheatbelt bioregion where large amounts of land have been cleared historically for agriculture. Isolated areas of native vegetation have remained as 'islands' and likely provide linkages for fauna, primarily avian species, to move across the landscape.

The fauna survey identified and mapped five broad fauna habitat types within the North Kiaka Mine DE including mallee woodland, mixed shrublands on low hills, quartzite outcropping formations, riparian areas and disturbed areas. For the proposed location of the Moora abandonment bund the habitat was extrapolated as the mixed shrublands on low hills habitat type. A total of 97 vertebrate fauna species were recorded including 16 mammal (five of which are introduced species), 63 bird and 18 reptile species (GHD 2024b).

One threatened fauna species was recorded namely Carnaby's black cockatoo (*Zanda latirostris*), listed as Endangered under both the BC Act and EPBC Act. Further information on this species is included below. The survey also found that peregrine falcon (*Falco peregrinus*) (Other specially protected fauna under the BC Act) is highly likely to utilise the area but significant impacts to the species were unlikely given its wide distribution and the fact no suitable nesting areas were identified. This species is not discussed further.

# Carnaby' s black cockatoo (Zanda latirostris, Endangered)

The fauna survey recorded sightings of Carnaby's black cockatoos and both old and fresh evidence of feeding on *Banksia sessilis* (parrot bush). Six large eucalypts with potential breeding hollows were recorded in close proximity, but outside the North Kiaka Mine and Moora Mine DEs. The trees include three wandoo (*Eucalyptus wandoo*) and three salmon gum (*Eucalyptus salmonophloia*) within about 100 m to 1.2 km of the existing and proposed mine DEs. No roosting trees or roosting locations were recorded or are known from the local area (GHD 2024b).

Most of the remnant vegetation proposed to be cleared comprises the mixed shrublands on low hills habitat type which is the type that contains the most valuable Carnaby's black cockatoo foraging species. The value of the foraging habitat is also increased by the presence of the 6 potential breeding trees nearby as well as the existence of numerous historical records of confirmed breeding within 12 km according to DBCA datasets. The proximity of sufficient foraging habitat has been shown to be a key factor in breeding success.

#### Short Range Endemic fauna

Two confirmed SRE taxa were recorded within the North Kiaka Mine DE being an unconfirmed trapdoor spider which closely resembles *Kwonkan wonganensis* and a millipede (*Antichiropus sp. 'Moora'*). A further two likely and four potential SRE taxa were recorded but most of these are likely to be more widespread than currently known due to a paucity of systematic survey work for SREs in the Wheatbelt region (Invertebrate Solutions 2019). Not all taxa were able to be determined to species level, but none are likely to match any listed threatened or priority fauna.

### 2.2.4 Consultation

Public comments received during the assessment raised concerns regarding the loss of Carnaby's black cockatoo foraging habitat and the inadequacy of land acquisition offsets to counterbalance impacts noting a net loss of habitat would occur. These comments have been considered and addressed through the assessment with further information included in sections 2.2.5 to 2.2.10 and section 4 (Offsets).

# 2.2.5 Potential impacts from the proposal

The proposal has the potential to impact terrestrial fauna from:

- direct loss of 16.51 ha (15.58 ha at the North Kiaka Mine DE and 0.93 ha at the Moora Mine DE) of Carnaby's black cockatoo foraging habitat
- direct loss of potential habitat for SRE invertebrate fauna
- indirect impacts from habitat fragmentation and edge effects.

### 2.2.6 Avoidance measures

The proponent has designed the proposal to avoid impacts to terrestrial fauna by:

• utilising previously disturbed/cleared areas (e.g. for infrastructure and the Tonkin waste rock dump)

- excluding the potential Carnaby's black cockatoo breeding hollows from the development envelopes.
- clearing will be undertaken outside of the Black Cockatoo breeding season.

#### 2.2.7 Minimisation measures

To minimise impacts to terrestrial fauna the proponent proposes to:

- include procedures, management and mitigation measures in SIMCOA's EMP to prevent and minimise impacts on native terrestrial fauna
- include information on significant fauna which may be encountered in the site induction information that describes the fauna, any specific management measures to protect them, responsibilities for reporting sightings and incidents involving significant fauna
- use fauna spotters with suitable qualifications and access to care facilities during vegetation clearing activities
- undertake land clearing on one front and in one direction, thereby allowing fauna an opportunity to escape the clearing area to surrounding habitat
- record and report internally, and to appropriate regulatory agencies, all native fauna injured or killed where required
- implement traffic management rules such as reduced speed limits and no offroad driving, to reduce the likelihood of fauna injury or mortality
- store all putrescible wastes in lidded bins to prevent fauna entry and attraction of feral animals
- implementation of Hot Works Permit system, and Emergency Management Procedures to minimise the risk of bushfires
- not undertaking clearing activities when the Fire Danger Rating is severe or higher.

### 2.2.8 Rehabilitation measures (including regulation by other DMAs)

The proponent proposes to undertake progressive rehabilitation of waste rock dumps utilising native species. Upon closure other disturbed areas would primarily remain as is or be returned to agricultural use with final details to be determined through the Mine Closure Plan required under the *Mining Act 1978*.

Rehabilitation of waste rock dumps at Moora to date have utilised species consistent with the Coomberdale chert hills TEC. This has included *Banksia sessilis*, a Carnaby's black cockatoo foraging species, although the success of establishing this species has been limited owing to a trend of dominance by *Allocasuarina huegelii* long-term. The proponent proposes to modify its rehabilitation approach to focus on the establishment of Carnaby's cockatoo foraging species rather than the TEC, including greater coverage with *Banksia sessilis*.

# 2.2.9 Assessment of impacts to environmental values

#### Carnaby' s black cockatoo

The proposal is located within the current known breeding range of Carnaby's black cockatoo which has disappeared from more than one-third of its historical breeding range due to extensive habitat loss through broad-scale agricultural clearing (EPA 2019). Critical habitat includes any habitat that provides for feeding, watering, regular night roosting and potential for breeding (DPaW 2013a). The foraging habitat proposed to be cleared is considered likely to support breeding individuals and due to the highly cleared nature of the local area it is considered significant as a limiting resource for black cockatoo breeding in the region.

The loss of 16.51 ha of foraging habitat would be mitigated in part by the progressive rehabilitation of waste rock dumps using foraging species. Although the amount of foraging habitat to be re-established is likely to be similar to that cleared, there will still be a time lag between the clearing of vegetation, the formation of the waste rock dumps, and the establishment and maturing of foraging species. Within the context of the high cumulative loss of such habitat in the region and the proximity of several breeding sites within 12 kilometres of the proposal, the EPA considers that the loss of 16.51 ha of foraging habitat represents a significant residual impact which should be counterbalanced through an offset.

The proponent has proposed an offset comprising the conservation and management of remnant vegetation including Carnaby's black cockatoo foraging habitat across two areas referred to as Cairn Hill and Cairn Hill North. It also proposes to enhance degraded areas of the Coomberdale chert hills TEC on other landholdings, referred to as exclusion zones, including the Eastern Ridge. These exclusion zones will include Carnaby's black cockatoo foraging habitat, and the enhancement measures are proposed to include the establishment of *Banksia sessilis* where appropriate. Further detail on the EPA's assessment of the proposed offset is included in section 4 of this report.

The EPA is satisfied that the proposed offset is relevant and proportionate and will counterbalance the significant residual impacts. It will see an increase to the extent of remnant vegetation secured for conservation in the region and combined with enhancement of foraging habitat in exclusion zones, and rehabilitation of waste rock dumps, there will be an increase in the extent of Carnaby's black cockatoo foraging habitat in the medium to long-term. The EPA considers this will support ongoing persistence of the species in the area. It follows that subject to conditions to limit the extent of foraging habitat cleared (condition B2), to progressively rehabilitate waste rock dumps using Carnaby's black cockatoo foraging species (condition B3), and to implement offsets (condition B9), the environmental outcome is likely to be consistent with the EPA objective for terrestrial fauna.

#### Short Range Endemic fauna

The SRE fauna habitat is considered to be throughout the rocky vegetated portions of the North Kiaka Mine DE which is represented in surrounding areas and the offset site. Whilst habitat within the Wheatbelt is highly fragmented in nature due to the limited remnant vegetation, the impact is unlikely to result in an adverse impact on SRE fauna at a local or regional scale. The EPA has considered the proponent's minimisation measures by locating the development envelopes and disturbance footprints within previously disturbed areas and has also considered the proponent's proposed progressive rehabilitation measures which will reinstate fauna habitat values in the area. The proposal is not expected to have a significant impact on these species as the North Kiaka Mine DE does not contain highly restricted habitats, and the species likely have a wider distribution within the local area, including the proposed offset areas for flora and vegetation values.

# 2.2.10 Summary of key factor assessment and recommended regulation

The EPA has considered the likely residual impacts of the proposal on terrestrial fauna environmental values. In doing so, the EPA has considered the principles of the EP Act (see Appendix D), whether reasonable conditions could be imposed (see Appendix A), and whether other decision-making processes can mitigate potential impacts consistent with the EPA factor objective (see Appendix C). The EPA assessment findings are presented in Table 4.

Residual impact or risk to environmental value		Assessment finding or Environmental outcome	Recommended conditions and DMA regulation
1.	Clearing of up to 16.51 ha of foraging habitat for Carnaby's black cockatoo.	The loss of foraging habitat, which is in proximity of breeding sites, is a significant residual impact noting the high cumulative loss of such habitat in the region. The proponent's proposed addition of Cairn Hill North to the conservation estate will protect existing Carnaby's black cockatoo foraging habitat and enhancement measures applied in exclusion zones also include cockatoo foraging habitat. The proponent's proposed modification of its rehabilitation approach for waste rock dumps to focus on the establishment of Carnaby's black cockatoo foraging species comparable to those within the TEC rather than TEC Priority and Declared Rare Flora is considered achievable and would increase foraging habitat through progressive rehabilitation. The EPA advises that this residual impact should be subject to reasonable conditions	<ul> <li>Condition B2 (Terrestrial fauna)</li> <li>limits to the clearing of Carnaby's black cockatoo foraging habitat.</li> <li>Condition B3 (Rehabilitation)</li> <li>requirement to progressively rehabilitate waste rock dumps with Carnaby's black cockatoo foraging habitat.</li> <li>Condition B9 (Environmental Offsets)</li> <li>land acquisition to add to the conservation estate as Class A Nature Reserve</li> <li>research and enhancement offset.</li> </ul>

#### Table 4: Summary of assessment for terrestrial fauna

Residual impact or risk to environmental value	Assessment finding or Environmental outcome	Recommended conditions and DMA regulation
	to set clearing limits and require a direct and indirect offset to counterbalance the significant residual impact. In addition, a requirement for rehabilitation of waste rock dumps with Carnaby's foraging species is recommended.	
	The EPA has concluded that subject to these measures the environmental outcome is likely to be consistent with the EPA objective for terrestrial fauna.	

# 2.2 Greenhouse Gas Emissions

# 2.3.1 Environmental objective

The EPA environmental objective for greenhouse gas (GHG) emissions is *to minimise the risk of environmental harm associated with climate change by reducing greenhouse gas emissions as far as practicable* (EPA 2024b).

# 2.3.2 Supporting information

The proponent provided a revised Greenhouse Gas Emissions Environmental Management Plan (GHGMP) including a peer review as part of its revised ERD (Appendix U; SIMCOA 2024b). The peer review includes an analysis of the GHGMP best practice mitigation measures, emissions intensity and benchmarking.

The EPA recognises that the proponent has prepared its information relating to this factor in accordance with the 2023 version of the *Environmental Factor Guideline-Greenhous Gas Emissions* (EPA 2023a). However, the EPA considers it has adequate information to have due regard to its recently updated *Environmental Factor Guideline – Greenhouse Gas Emissions* (EPA 2024b) hereafter referred to as the GHG Guideline.

# 2.3.3 Consultation

No public comments relating to GHG emissions were received during the two-week public review period.

### 2.3.4 GHG emission sources and estimates

The proposal will produce GHG emissions from:

- stationary and mobile energy consumption for operational activities
- vegetation clearing
- capital goods and employee commuting during construction activities
- purchased electricity
- purchased goods and services, upstream transport and distribution, waste generated in operations, business travel, processing of sold products, and end of life treatment of sold products during operational activities.

The GHG Guideline provides that, generally, GHG emissions from a proposal will be assessed where they exceed 100,000 tonnes of scope 1 or scope 2 emissions each year measured in tonnes of carbon dioxide equivalent (t CO<sub>2</sub>-e).

The existing approved operations already exceed this threshold and the addition of the North Kiaka Mine will see a minor increase to emissions. Most emissions are generated at the Kemerton Smelter, and the proponent has provided the following breakdown: Scope 1 GHG emissions:

- construction up to 2,168 t CO<sub>2</sub>-e per annum for the North Kiaka Mine
- operations up to 125,000 t CO<sub>2</sub>-e per annum, of which:
  - $\circ~$  1,546 t CO\_2-e per annum is associated with the combined North Kiaka and Moora mining operations, and
  - o 123,454 t CO<sub>2</sub>-e per annum is associated with the Kemerton Smelter.

Scope 2 GHG emissions:

• up to 300,024 t CO<sub>2</sub>-e per annum during operations from the Kemerton Smelter only, with no electricity grid connection at Moora or North Kiaka.

Scope 3 GHG emissions:

- operations up to 693,522 t CO<sub>2</sub>-e per annum, of which:
  - 11,842 t CO<sub>2</sub>-e per annum is associated with the combined North Kiaka and Moora mining operations, and
  - o 681,680 t CO<sub>2</sub>-e per annum is associated with the Kemerton Smelter.

The peer review by Pangolin Associates (2024) concluded that the estimated emissions were reasonable.

### 2.3.5 Minimisation measures

#### Scope 1 GHG emissions

The proponent has identified the following measures to reduce scope 1 GHG emissions:

- installation of an additional charcoal retort by 2030 to reduce the consumption of coal as a fuel source
- possible retrofitting for energy efficient operations of the Kemerton Smelter furnace, including installing a heat recovery system.

### Scope 2 GHG emissions

The proponent relies on decarbonisation of the South-West Interconnected System (SWIS) which supplies electricity to the Kemerton Smelter in the first instance. The EPA notes that the use of electricity is a decision within the proponent's control, however, the proponent has advised there is currently not an economically feasible alternative. In the event the SWIS does not meet its decarbonisation trajectory, the proponent indicated they could potentially reduce scope 2 emissions through the following, if commercially viable:

- procuring renewable energy via a GreenPower accredited provider
- entering into a purchase agreement for green energy
- installing 'behind the meter' renewable generation infrastructure.

The possible retrofitting of the Kemerton Smelter furnace for energy efficient operations also has the potential to reduce electricity demand and therefore scope 2 emissions.

#### Scope 3 GHG emissions

The GHGMP indicates that scope 3 emissions associated with the proposal will be reduced by approximately 30% with the installation of a new charcoal retort at the Kemerton Smelter. The transition from coal to charcoal as a reductant would avoid the upstream transportation and distribution emissions associated with the delivery of coal from Colombia which are greater than those same upstream emissions for charcoal which would likely be sourced from Indonesia (Pangolin Associates 2024).

# 2.3.6 Safeguard Mechanism (regulation by other DMAs)

The Australian Government regulates GHG emissions under the *Safeguard Mechanism* enacted through the *National Greenhouse and Energy Reporting Act* 2007 (NGER Act) and subsidiary legislation. Scope 1 GHG emissions from designated large facilities, which includes those that emit over 100,000 t CO<sub>2</sub>-e per annum, are required to be reduced along a straight-line trajectory to net zero by 2050 in accordance with baselines and ongoing decline rates set by the Clean Energy Regulator.

The *Safeguard Mechanism* currently applies to the proponent's scope 1 GHG emissions from the Kemerton Smelter, as a designated large facility, but not the Moora Mine or North Kiaka Mine. While scope 1 GHG emissions at the smelter remain over 100,000 t CO<sub>2</sub>-e per annum, the proponent will be required to reduce the smelter's net GHG emissions consistent with the Australian Government's legislated targets of 43% below 2005 levels by 2030 and net zero emissions by 2050.

The proponent's mitigation measure to install an additional charcoal retort by 2030 would see charcoal replace coal as the primary fuel source at the Kemerton Smelter. This would result in annual scope 1 emissions falling below the *Safeguard Mechanism* threshold, however, the proponent may continue to generate and trade credits for a further 10 years (section 58B of the *Safeguard Mechanism*). This acts as an incentive and supports reductions below the threshold being appropriately recognised and would see regulation under the *Safeguard Mechanism* continue for most of the proposal's life.

The Safeguard Mechanism does not apply to the proponent's scope 2 emissions.

### 2.3.7 Emissions baseline, intensity and benchmarking

The proponent is currently the only silicon producer in Australia, therefore there is no direct comparison available to benchmark the proponent's emissions intensities. The proponent commissioned a benchmarking assessment evaluating emissions intensity for the global silicon industry. The proponent provided a scope 1 emissions intensity of 2.09 t CO<sub>2</sub>-e/t silicon. Compared to the global market, a benchmarking assessment indicated that this is relatively low but when scope 2 emissions are added the overall emissions intensity of the proponent is higher than most other

countries. This is due to the electrical consumption at the Kemerton Smelter from the currently carbon-intensive SWIS. The EPA notes that the scope 1 emission intensity of 2.09 t CO<sub>2</sub>-e/t silicon is slightly higher than the *Safeguard Mechanism* default emission intensity value of 1.92 t CO<sub>2</sub>-e/t silicon (DCCEEW 2024c) but slightly lower than the baseline intensity of 2.245 t CO<sub>2</sub>-e/t silicon published as applicable from 1 July 2023 (DCCEEW 2025).

A GHG review conducted by Pangolin Associates (2024) recommended that the decarbonisation of emissions associated with the SWIS will align the proponent's emissions intensity with global best practice. The review noted that emissions reductions from the design and retrofitting of the Kemerton furnaces was not considered currently feasible. The review recommended that further exploration into the proposed technologies be undertaken before an accurate measure of emissions reductions could be made. The review also anticipated that, alongside the decarbonisation of the SWIS, the installation of an additional charcoal retort will likely reduce emissions intensities further below the global average.

Based on the Safeguard Mechanism Reforms Position Paper, baseline emissions intensities decline rates will apply for all Safeguard facilities. The general decline rate is to be 4.9% each year from 2023 to 2030. To maintain progress to net zero by 2050, indicative annual decline rates would be set for 2030-31 to 2049-2050, noting that the actual rate will need to be set through periodic baseline setting process. The baseline intensity of the Kemerton Smelter is expected to align with the *Safeguard Mechanism's* facility emissions intensity, after the implementation of the previously discussed mitigation measures.

#### 2.3.8 Environmental values and assessment context

GHG emissions from a cumulative range of sources have an impact on WA's environment, even if the specific impact of a particular proposal's emissions may not be known with certainty. This is because there is an established link between GHG emissions and the risk of climate change. The EPA recognises that climate change will have an impact on WA's environment and environmental values. For example, climate change has already caused a significant drying of the State's south-west, which in turn places significant additional pressures on water resources, flora and fauna, marine environmental quality, and social surroundings. The EPA therefore considers GHG emissions to be a key environmental factor in the assessment of the proposal. There is also an established correlation between global temperature rise and GHG emissions. The EPA advises that for every 1,000 giga tonnes (Gt) of CO<sub>2</sub>-e emitted by human activity, global surface temperature rises by 0.45°C (best estimate) with a likely range from 0.27°C to 0.63°C (IPCC 2023).

The proposal's estimated annual scope 1 emissions of 125,000 tonnes of CO<sub>2</sub>-e per annum constitutes approximately 0.15% of Western Australia's total reported GHG emissions for 2022 of 82.5 million tonnes (Mt) of CO<sub>2</sub>-e (DCCEEW 2024a), and approximately 0.03% of Australia's total reported GHG emissions for 2023 which were 432.9 Mt of CO<sub>2</sub>-e (DCCEEW 2024b). These figures increase by a factor of three (approx.) when scope 2 emissions are included which represent the greater proportion of emissions in this case.

In summary, the proponent's GHG emissions currently represent a small fraction of the State and National totals, but the North Kiaka Project would see emissions continue for a further 20 years.

# 2.3.9 Emissions trajectory and offsets

The proponent's GHGMP committed to reducing scope 1 and 2 operational GHG emissions by an approximate 18% every five years (relative to the previous target period) through to 2050, with a trajectory that will enable net zero emissions to be achieved by the end of operation. The trajectory is aligned with the national commitment to reduce GHG emissions to net zero by 2050, as outlined in the *Safeguard Mechanism*.

The proponent intends to purchase offsets such as Australian Carbon Credit Units (ACCUs) during the period until the additional charcoal retort has been installed. The GHGMP indicates that the additional charcoal retort will reduce scope 1 emissions by approximately 90%. After the installation, and where net scope 1 emissions cannot be avoided or reduced (including the combustion of natural gas and diesel fuels), emissions exceeding statutory obligations will be offset through either the retirement/surrender of self-generated ACCUs or through the purchase of ACCUs from the market.

ACCUs are administered by the Clean Energy Regulator and assured by the Emissions Reduction Assurance Committee, an independent statutory committee which assess ACCUs compliance against the offsets integrity standards set out in section 113 of the *Carbon Credits (Carbon Farming Initiative) Act 2011*. The EPA has not been able to assess the specific amount or type of offsets at this stage. However, given the quantity of offsets likely involved, and the regulatory regimes governing offsets, the EPA is satisfied that the offsets are likely to be reasonably available and have sufficient integrity at the time they are required.

# 2.3.10 Consideration of conditions

The EPA recognises that the significantly strengthened *Safeguard Mechanism* requires the proponent to take actions to reduce GHG emissions, including imposing annual baseline decline rates to ensure Australian emission reduction targets of 43% below 2005 levels by 2030 and net zero by 2050 are achieved. The EPA is of the view that emissions reductions required under the *Safeguard Mechanism* represent an as far as practicable reduction of the proposal's scope 1 GHG emissions, and therefore the likely environmental effects of the proposal can be mitigated to achieve consistency with the environmental factor objective for GHG emissions. The EPA has recommended a condition that requires the proponent to notify the State of a substantial change to its obligations under the *Safeguard Mechanism* (recommended condition B4).

The EPA notes that when the proponent's mitigation measures result in annual scope 1 emissions falling below the *Safeguard Mechanism* threshold, the trading of credits may still apply for 10 years which would provide regulation for most if not all the remaining life of the proposal. Should the situation change, or the Minister for the Environment be of a mind to further evaluate the regulation of emissions below the threshold, the Minister under s. 46 of the EP Act may request the EPA inquire into

and report on the matter of changing the implementation conditions associated with the proposal.

In relation to scope 2 emissions, the EPA's GHG Guideline outlines that these emissions are likely to be relevant to the consideration of a proposal where the proponent has control over its choice of independent energy quantity and source. The energy source in this case is the SWIS for which the proponent has advised there is currently no commercially feasible alternative. The proponent is working on developing alternatives such as the construction of new renewable energy sources near Moora with the intention to connect to the SWIS. The EPA supports the proponent's commitment to reduce electricity use and residual scope 2 emissions.

The EPA also encourages government work on decarbonisation of the SWIS, including the *Sectoral emissions reduction strategy for Western Australia* (2023) as the foundation for delivering the State Government's commitment to net zero GHG emissions by 2050. This strategy focuses on electricity as a key sector and has prioritised large investment to support the decarbonisation of the SWIS.

Within the above context, the EPA considers that any conditions specifically relating to scope 2 emissions are not warranted. Should circumstances change over time, the Minister for Environment may at any point request the EPA inquire into and report on the matter of changing the implementation conditions associated with the proposal under s. 46 of the EP Act.

In consideration of the above, the EPA is of the view that the likely environmental effects of the proposal can be mitigated to achieve consistency with the environmental factor objective for GHG emissions through obligations under the *Safeguard Mechanism*. Consistent with the *Greenhouse Gas Emissions Policy for Major Projects 2024*, the EPA has recommended a condition that requires the proponent to notify the State of a substantial change to its obligations under the *Safeguard Mechanism* (recommended condition B4).

### 2.3.11 Summary of key factor assessment and recommended regulation

The EPA has considered whether the residual emissions from the proposal are consistent with the principles of the EP Act (see Appendix D) and with the EPA factor objective for GHG emissions. In doing so, the EPA has also considered whether reasonable conditions could be imposed (Appendix A) to reduce potential inconsistency with the EP Act principles and EPA's factor objective. The EPA summary findings are in Table 5.

Residual emissions	Assessment finding	Recommended conditions and DMA regulation
Scope 1 emissions of up to $125,000$ tonnes CO <sub>2</sub> -e per annum to continue.	GHG emissions contribute to climate change, which impacts on WA's environment.	Condition B4: (Greenhouse Gas Emissions)
Emissions at commencement are	The EPA recognises that the Safeguard Mechanism requires the	<ul> <li>reporting if obligations change</li> </ul>

#### Table 5: Summary of assessment for greenhouse gas emissions

Residual emissions	Assessment finding	Recommended conditions and DMA regulation
estimated to represent 0.15% of WA annual emissions (based on 2022 data). Scope 2 GHG emissions of up to 300,024 tonnes CO <sub>2</sub> -e per annum. Emissions at present are estimated to represent 0.36% of WA annual emissions (based on 2022 data). Scope 3 GHG emissions of up to 693,522 tonnes CO <sub>2</sub> -e per annum.	proponent to take actions to reduce scope 1 GHG emissions, including imposing annual baseline decline rates to ensure Australian emission reduction targets of 43% below 2005 levels by 2030 and net zero by 2050 are achieved. Scope 2 emissions relate to the sourcing of electricity from the South West Interconnected System (SWIS) for the Kemerton Smelter. The EPA supports the proponent's proposed commitments to work on renewable energy projects to reduce residual scope 2 emissions. The EPA further encourages the implementation of government initiatives to decarbonise the SWIS, including the Sectoral emissions reduction strategy for Western Australia (2023). Within the context of the above the EPA has not recommended conditions relating to scope 2 emissions for the proposal. The EPA has concluded that the likely environmental effects of the proposal can be mitigated through obligations under the National Greenhouse and Energy Reporting Act 2007 and continued reduction of scope 2 emissions to ensure the environmental outcome is likely to be consistent with the EPA objective for greenhouse gas emissions.	under the NGER Act and Safeguard Mechanism.

# 2.3 Social Surroundings

# 2.4.1 Environmental objective

The EPA environmental objective for social surroundings is *to protect social surroundings from significant harm* (EPA 2023b).

# 2.4.2 Investigations and surveys

The EPA advises that the following investigations and surveys were used to inform the assessment of potential impacts to social surroundings:

- Report on archaeological investigations into the locations of the Kiaka Brook 1 and Koolera Well artefact scatters, north of Moora, Western Australia (Appendix P of the revised ERD) (Brad Goode & Associates Pty Ltd 2022)
- Report of an Aboriginal heritage survey for SIMCOA Operations Pty Ltd for the proposed North Kiaka quartzite mine located north of Moora, Western Australia (Appendix P of the revised ERD) (Brad Goode & Associates Pty Ltd 2019)
- Report of an archaeological Aboriginal heritage survey for the proposed SIMCOA North Kiaka quartzite mine, Moora, Western Australia (Appendix P of the revised ERD) (Johnston 2019)
- North Kiaka Approvals and Supporting Studies Noise Assessment (Appendix Q1 of the revised ERD) (GHD 2020a).

The EPA considers that it has sufficient information to assess impacts on social surroundings.

The impacts from dust emissions are considered in section 2.5 Air Quality. Potential impacts to social surroundings associated with operation of the Kemerton Smelter remain the same character as those previously assessed and are not discussed further in this report. The proponent has not proposed any changes to the smelter other than to extend operations by approximately 20 years.

# 2.4.3 Assessment context: existing environment

#### Surrounding land use and sensitive receptors

The proposed North Kiaka Mine and the existing Moora Mine are surrounded by broad-acre agricultural land uses, primarily cropping and grazing (sheep). Based on the proposed disturbance footprints, the three closest sensitive receptors are residential premises located approximately 270 m southeast of the Moora Mine (receptor 1), approximately 500 m south of the proposed North Kiaka Mine (or 1 km northeast of the Moora Mine) (receptor 2), and approximately 600 m northwest of the proposed North Kiaka Mine (receptor 3). Receptor 2 is owned by the proponent on a separate lot from both mine sites. The other receptors are owned by members of the public. A map of the sensitive receptor locations is included as Figure 5.

Visual receptors in the landscape also include users of Midlands Road (west of the proposal) and Kiaka Road (between the two mine sites).

#### Aboriginal cultural heritage

Surveys undertaken did not record any Aboriginal heritage sites registered under the *Aboriginal Heritage Act 1972* (AH Act) within the North Kiaka Mine DE. The closest registered site is located just south of Kiaka Road on private property (Figure 5) (Kiaka Site Complex 1-3 – Site ID 5141) and is understood to include water wells, a hand axe and stone material suitable for tool making. Spatial datasets show this site as intersecting the North Kiaka Mine DE, but this is due to the application of a buffer.

The Moora Mine DE contains two registered sites (Figure 5). One of these (Kiaka Brook 2 – Site ID 4659 – artefacts/scatter) occurs within the existing disturbance footprint with approval obtained for disturbance in 1992 under section 18 of the AH Act. The second site (Kiaka Brook 1 – Site ID 4658 – artefacts/scatter) is located adjacent to the existing Moora Mine pit near where the abandonment bund is proposed.

The mine sites are located within the boundaries of the Yued Agreement Area (WI2015/009) but are located on freehold land and are not subject to the South West Native Title Settlement.

# 2.4.4 Consultation

Matters raised during the public review period and the proponent's responses are provided in section 4.7 of the Response to Submissions document (SIMCOA 2024c). Concerns were raised about visual amenity, noise, vibration and operating hours.

During discussion between the proponent and representatives of the Yued Native Title Claim group, it was requested by the representatives that the proponent should, where possible, avoid impacting *Nuytsia floribunda* (Western Australian Christmas Tree) or 'Moodjar' trees, and where not possible, engage Heritage Monitors to monitor ground disturbance for possible burials. Moodjar trees are culturally significant to the Yued people due to the belief that spirits of deceased Yued people would travel to the Moodjar trees, that Moodjar trees were sometimes used as possible burial sites, and that these trees were important cultural markers of Nyungar country. The representatives also requested every effort be made to avoid impacting the bed of Kyaka Brook noting waterways are culturally significant and there is a proposed crossing on private land between the North Kiaka Mine and Kiaka Road (Brad Goode & Associates Pty Ltd 2019).

# 2.4.5 Potential impacts from the proposal

The proposal has the potential to impact on social surroundings through:

- a decline in amenity from emissions of noise, vibration and dust (see section 2.5) from construction and operational activities affecting nearby sensitive receptors
- a decline in visual amenity through clearing and mining of elevated topographic features, and the construction of the waste rock dump and abandonment bund
- loss or degradation of registered Aboriginal heritage sites and other culturally sensitive values through ground disturbance.



Figure 5: Sensitive receptors and registered Aboriginal heritage sites

# 2.4.6 Avoidance and minimisation measures (including regulation by other DMAs)

#### Emissions: Noise and vibration

The proponent proposes to minimise noise and vibration impacts by preferentially undertaking construction works within normal construction hours (7:00 am to 7:00 pm, Monday to Saturday), and operations within daylight hours (7:00 am to 5:00 pm, Monday to Friday). Elements of the site are proposed to become operational from 6:30 am such as vehicle movements and starting of generators and the crusher.

The EPA understands the proposed North Kiaka Mine does not include any prescribed activities as defined in Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) and would therefore not be considered a prescribed premises whereby noise or vibration emissions could be regulated under Part V of the EP Act. For the Moora Mine, which is a category 5 (processing or beneficiation of metallic and non-metallic ore) prescribed premises, the existing Part V licence L6149/1988/9 includes a condition for ground vibration limits and monitoring.

Noise emissions at both sites including from blasting is subject to compliance with the limits set out in the *Environmental Protection (Noise) Regulations 1997* (the Noise Regulations). The proposed abandonment bund at Moora is likely to act as a noise barrier and may lead to a reduction in noise at receptor 1.

#### Visual amenity

Visual impacts are proposed to be minimised by locating the waste rock dump in lower lying cleared areas and by locating other facilities behind vegetated rocky outcrops making them less visible from Midlands Road. The Moora Mine abandonment bund has also been designed to be close to the current area of impact to limit clearing and the overall mine footprint and by extension visual impacts.

#### Aboriginal cultural heritage

The proponent has designed both the proposed Moora abandonment bund and the North Kiaka Mine disturbance footprint to avoid registered Aboriginal heritage sites and minimise impacts to cultural values. Should a need arise for disturbance to registered sites, that disturbance must be assessed and approved under the AH Act. The culturally important Moodjar trees and Kyaka Brook within the proposal disturbance footprint do not meet criteria for registered sites.

#### 2.4.7 Assessment of impacts to environmental values

#### Emissions: Noise and vibration

The proponent's noise assessment modelling predicts that at worst-case level, operational noise levels from both the North Kiaka Mine and Moore Mine would comply with the Noise Regulations except for a marginal exceedance at receptor 3 for works undertaken before 7:00 am. This is based on modelling of all fixed and mobile plant at the North Kiaka Mine being used prior to 7:00am (GHD 2020a).

To mitigate the risk of exceedances, the EPA considers that operational hours, defined as when earth moving machinery, drilling or blasting is occurring, should be restricted to after 7:00 am. Condition A1-1 is recommended to this effect.

Regarding vibration, the EPA notes that the closest receptor to proposed blasting at the North Kiaka pit is receptor 3. On average this receptor is approximately 200 m further from proposed pit operations than receptor 1 is from the Moora pits. Recent vibration monitoring at receptor 1 indicates minimal risk of exceeding the conditioned limits under the existing Part V licence L6149/1988/9. The greater separation distance for receptor 3 is expected to increase the attenuation of potential vibration impacts and therefore the EPA considers that vibration limits and monitoring for blasting at North Kiaka are not warranted.

#### Visual amenity

The proximity and visibility of the proposed abandonment bund at the existing Moora Mine to the sensitive receptor 270 m southeast was raised as a concern during the public review period. It is understood the proponent previously planted a row of eucalypts along the southern boundary of the waste rock dump near the receptor to obscure views (SIMCOA 2023). While this has ameliorated some of the impacts, gaps in the screen exist and the construction of the abandonment bund in the same vicinity is expected to exacerbate the issue. To appropriately mitigate impacts it is considered the proponent should undertake additional plantings, including ongoing infill planting as required, to maintain a vegetative screen between the receptor's driveway, which borders the proponent's mine site, and the proposed abandonment bund (recommended condition B5).

Other key risks to visual amenity relate to views of waste rock dumps from Kiaka Road, being the north dump currently in use at Moora, and the proposed Tonkin dump for North Kiaka. The proponent proposes to progressively rehabilitate these dumps using native species and the EPA considers this is sufficient to mitigate against long-term visual impacts. Further information on the EPA's assessment of rehabilitation is included in section 2.1.9 and progressive rehabilitation is a recommended requirement of condition B3.

### Aboriginal cultural heritage

The EPA considers that the proponent has taken reasonable steps to consult with the Yued people. Primary impacts relate to disturbance of the culturally significant Moodjar trees and the Kyaka Brook including any associated buried material. In this regard, the EPA notes:

- the flora and vegetation surveys identified Moodjar trees as a minor component within quadrats
- the archaeological survey found that most of the area is extremely hard rock and is not expected to reveal burials beneath the ground surface during mineral extraction (Johnston 2019), and
- the area of the brook crossing is small and located on previously disturbed farmland.

Accordingly, the EPA considers that the risk of significant impacts to cultural heritage values is low. On request of the Yued people, as outlined in its Environmental Management Plan (EMP) (Appendix C of the revised ERD), the proponent has committed to engage Heritage Monitors to monitor for possible burials during disturbance of Moodjar trees and the Kyaka Brook. The EPA considers this is appropriate to mitigate any residual risk of unearthing a significant site. A condition to this effect is recommended (condition B6). If a significant site is identified, its disturbance would be subject to assessment and regulation under the AH Act.

#### Summary

The EPA considers that impacts to social surroundings can be appropriately mitigated through conditions for operating hours, visual screening, progressive rehabilitation and Aboriginal cultural heritage monitors. Subject to implementation of these conditions, the environmental outcome for the proposal is likely to be consistent with the EPA objective for social surroundings.

# 2.4.8 Summary of key factor assessment and recommended regulation

Re	sidual impact	Assessment finding	Recommended conditions and DMA regulation
1.	Amenity – Noise and vibration.	It is noted that the proximity of three nearby rural residence sensitive receptors to the proposal area are less than the recommended separation distance of 1000 m for extractive industries as per EPA Guidance Statement No. 3. While decision-making processes under Part V of the EP Act mitigate potential impacts from activities at the Moora Mine, the North Kiaka site will not include 'Prescribed premises' set out in the <i>Environmental</i> <i>Protection Regulations 1987</i> and Part V processes cannot mitigate potential impacts of emissions from this site. A marginal noise exceedance at one of the receptors has been modelled for works undertaken before 7:00 am. The potential impacts from noise exceedances can be mitigated through the restriction of operational hours to ensure the environmental outcome is consistent with the EPA objective for this factor.	<ul> <li>Condition A1</li> <li>limit the hours of operation.</li> <li>DMA processes –</li> <li>compliance with the Noise Regulations as well as conditions for emissions under the existing Part V EP Act licence for the Moora Mine.</li> </ul>

#### Table 6: Summary of assessment for social surroundings

Residual impact		Assessment finding	Recommended conditions and DMA regulation
2.	Amenity – Visual.	The impact on visual amenity was raised as a concern during public consultation, specifically the proximity and visibility of the proposed abandonment bund around the existing Moora Mine from a nearby sensitive receptor. The proponent has previously planted vegetation to screen this receptor from visual impacts. The EPA advises that further planting and maintenance should be undertaken to ensure visual impacts from the abandonment bund are mitigated. The EPA's recommended condition (B5) will appropriately mitigate potential visual impacts to ensure the environmental outcome is consistent with the EPA objective for social surroundings.	<ul> <li>Condition B5</li> <li>establish and maintain a vegetative screen between the Moora Mine abandonment bund and the driveway of Lot 52 on Deposited Plan 29474.</li> <li>Condition B3</li> <li>undertake progressive rehabilitation of waste rock dumps with local native species, including Coomberdale chert hills TEC species.</li> </ul>
3.	Potential for impacts to Aboriginal cultural heritage.	There are no registered Aboriginal heritage sites within the North Kiaka project disturbance footprint, with one registered Aboriginal heritage site located near the proposed Moora Mine abandonment bund outside the disturbance footprint. Any disturbance will be regulated under the <i>Aboriginal Heritage Act</i> <i>1972.</i> The North Kiaka Mine will require disturbance of Moodjar trees at the pit and of the Kyaka Brook for construction of a haul road crossing. While not registered sites, these values are culturally significant. The EPA considers that the proponent has taken reasonable steps to consult with the Yued people and that this is appropriate to mitigate any residual risk of unearthing a significant site. The EPA advises that the impacts to Aboriginal cultural heritage can be	<ul> <li>Condition B6</li> <li>avoid and minimise impacts to Aboriginal cultural heritage</li> <li>take reasonable steps to consult with the Yued Aboriginal Corporation about the removal of any Moodjar trees and Kyaka Brook.</li> <li>DMA processes</li> <li>consent is required to alter Aboriginal heritage sites under section 18 of the AH Act.</li> </ul>
		conditions and other decision- making processes to ensure the environmental outcome is consistent with the EPA objective for this factor.	

# 2.4 Air Quality

# 2.5.1 Environmental objective

The EPA environmental objective for the air quality factor is *to maintain air quality and minimise emissions so that environmental values are protected* (EPA 2020a). A related objective is the EPA objective for human health, this being, *to protect human health from significant harm* (EPA 2016b).

# 2.5.2 Investigations and surveys

The EPA advises the Air Quality Assessment (Appendix R of the revised ERD) (GHD 2020b) was used to inform the assessment of potential impacts to air quality.

The proponent's modelling does not meet the requirements of DWER's *Air Quality Modelling Guidance Notes* (DoE 2006) as it does not include a cumulative assessment of emissions from the existing Moora Mine, and background levels. In addition, the silica content in dust emitted from operations was not provided. However, the EPA considered that information available was sufficient to conduct an assessment on the basis of dust levels recorded from the proponent's dust monitoring over multiple years for the existing Moora mine.

The proponent has not proposed any changes to operations at the Kemerton Smelter other than to extend operations there by approximately 20 years. Potential impacts to air quality associated with the smelter's operation remain the same and are not discussed further in this report. Annual environmental compliance reporting for the Smelter's licence (L6341/1988/10) under Part V of the EP Act did not contain any exceedances of ambient air quality limits since issuing of the most recent licence in 2020.

# 2.5.3 Assessment context – existing environment

The three closest sensitive receptors to the proposal are residential premises located approximately 270 m southeast of the Moora Mine (receptor 1), approximately 500 m south of the proposed North Kiaka Mine (or 1 km northeast of the Moora Mine) (receptor 2), and approximately 600 m northwest of the proposed North Kiaka Mine (receptor 3). Receptor 2 is owned by the proponent on a separate lot from both mine sites. The other receptors are owned by members of the public. A map of the sensitive receptors is included as Figure 5.

Available data from the proponent's monitoring of total suspended particulates (TSP) levels in accordance with its Part V EP Act licence since 2014 indicate the highest short-term contribution of dust from the Moora operations recorded at the premises boundary was 169 micrograms per cubic meter ( $\mu$ g/m<sup>3</sup>) TSP, well below the licence limit of 1,000  $\mu$ g/m<sup>3</sup>.

# 2.5.4 Consultation

Matters raised during the public review period and the proponent's responses are provided in section 4.6 of the Response to Submissions document (SIMCOA 2024c).

Concerns raised related to human health impacts to nearby residents and farm workers from emissions of dust.

# 2.5.5 Potential impacts from the proposal

The proposed North Kiaka Mine and the existing Moora Mine have the potential to impact air quality from:

- the release of particulate matter (TSP, PM<sub>10</sub> and PM<sub>2.5</sub>) to air from construction and operations including drilling, blasting, excavating, dozing and the crushing and screening of material
- wind generated dust from exposed areas such as pits, waste rock dumps and stockpiles.

# 2.5.6 Avoidance and minimisation measures (including regulation by other DMAs)

To avoid and minimise air quality impacts, the proponent has proposed the following:

- reviewing daily weather forecasts to pre-emptively cease handling of materials during adverse wind conditions, or if complaints are received from sensitive receptors
- sealing or treating of access roads and other trafficked areas to reduce dust emissions
- application of water sprays to stockpiles, open mine pit areas at crushers, and ahead of drilling and blasting
- progressive rehabilitation of waste rock dumps
- dust control during construction of the Moora Mine abandonment bund, and if necessary managed by the selection of materials for construction.

The Moora Mine is subject to an existing Part V EP Act licence (L6149/1988/9) but the EPA understands a similar licence will not be required for operations at North Kiaka as it will not meet the definition of a prescribed premises. Existing dust management conditions applicable to Moora include requirements to minimise the generation of visible dust and includes compliance limits for TSP for short-term dust events.

The EPA notes that the Safe Work Australia *Working with Crystalline Silica Substances: Guidance for PCBUs (2024)* provide the workplace exposure standard for respirable crystalline silica (including PM<sub>10</sub> and PM<sub>2.5</sub>) in Australia. The regulation of workplace safety is undertaken by DEMIRS in WA under the *Work Health and Safety Act 2020* including the *Work Health and Safety (Mines) Regulations 2022*. The proponent's required compliance with this legislation is also expected to contribute to mitigation at nearby sensitive receptors.

# 2.5.7 Assessment of impacts to environmental values

The proposal will create fugitive dust from different activities on the site. In relation to coarse dust (TSP), the proponent's air quality modelling indicates that the proposal could contribute to an exceedance of the criteria in DWER's draft guideline at

sensitive receptors under conservative worst case dispersion conditions. The exceedance is predicted for not more than one day in the year and the modelling did not account for the application of water as a mitigation measure. Impacts from coarse dust relate to decreased amenity and noting the conservative nature of the modelling, the short period of potential exceedances and that monitoring conducted at the premises boundary under licence conditions did not record exceedances of the boundary concentration limit, the EPA considers that the risk of significant impacts from TSP is low.

The proponent's modelling of fine dust ( $PM_{10}$  and  $PM_{2.5}$ ) emissions predicts concentrations of around 30% of daily and 7% of annual air quality criteria and no exceedances at any of the three sensitive receptors in proximity to the mines.

In summary, the proponent's modelling suggests a low risk of any significant impacts to air quality. However, in the absence of accurate information on background concentrations as well as the silica content of dust, the EPA considers a precautionary approach should be applied whereby emission estimates and ambient concentrations of dust are verified and managed to not exceed relevant health criteria during the implementation of the proposal.

The Draft Guideline for Air Emissions (DWER 2019) includes ambient air quality guideline values, which are based on the approved health guidelines from the Department of Health. For PM<sub>10</sub> it specifies a maximum (ambient) concentration of 46  $\mu$ g/m<sup>3</sup>. The EPA has recommended this level, which is lower than the National Environment Protection (Ambient Air Quality) Measure (NEPM), as an appropriate threshold that should not be exceeded at any residential premises from implementing the proposal. The EPA considers that monitoring and management of PM<sub>10</sub> will also by extension mitigate any residual amenity risk from TSP. The recommended conditions also include a requirement for the proponent to monitor and verify that ambient dust contains an average respirable crystalline silica concentration of no more than 9.2  $\mu$ g/m<sup>3</sup>, consistent with the DWER draft guideline.

The EPA considers that dust generating activities such as drilling, blasting and crushing provide scheduling and scale down options to mitigate potential impacts to the three sensitive receptors in proximity of the proposal. The EPA advises that the residual impact of dust is manageable subject to the implementation of an Air Quality Environmental Management Plan and recommended conditions. The recommended conditions specify outcomes for dust levels attributable to the proposal at occupied residential properties and includes limits for fine dust and the respirable concentration of silica in dust.

The EPA recommends that subject to the implementation of this condition, the environmental outcome for the proposal is likely consistent with its objective for air quality.

### 2.5.8 Summary of key factor assessment and recommended regulation

The EPA considers it appropriate that emissions estimates and predicted modelled concentrations of dust are verified and managed through recommended conditions during the implementation of the North Kiaka Project, including a condition requiring

the proponent monitor and verify that the air quality criteria for PM<sub>10</sub> and respirable crystalline silica should not be exceeded at any occupied residential premises due to dust emissions from the proposal. Recommended condition B7, supplemented by condition C4, requires implementation of an Air Quality Environmental Management Plan as the means to achieving this. Subject to the recommended conditions, the environmental outcome is likely consistent with the EPA objective for air quality.

Residual impact		Assessment finding	Recommended conditions and DMA regulation
1.	Potential impact on air quality from dust and to impact the associated environmental values of human health and amenity.	The proposal will create fugitive dust from drilling, blasting, extraction, crushing, screening and other operations. For the three sensitive receptors in proximity to the proposal, predicted dust levels from the mines are not expected to exceed human health related criteria for fine dust (PM <sub>10</sub> and PM <sub>2.5</sub> ) particles. Modelling suggests that coarse dust from the proposal could impact the amenity of residents for a maximum of one day in the year under conservative worst- case conditions. Decision-making processes under Part V of the EP Act can only mitigate potential impacts from activities at the Moora Mine as the North Kiaka site will not include 'Prescribed premises' set out in the <i>Environmental</i> <i>Protection Regulations 1987</i> . While existing monitoring and the modelling suggests the risk of exceedance of air quality criteria is low, the EPA considers it appropriate that emission estimates and predicted modelled concentrations of dust, including the respirable silica content of fine dust emissions are verified and managed through recommended conditions to ensure that human health and amenity are protected. The EPA advises that subject to the recommended conditions, the environmental outcome is likely consistent with its objective for air quality.	<ul> <li>Condition B7</li> <li>meet environmental outcomes for air quality including requirements for the proponent to implement dust monitoring and a management plan with management plan with management criteria, operational control procedures and contingency measures including scaling down operational activities.</li> <li>DMA Regulation</li> <li>DEMIRS regulation of air quality for workplace safety under the Work Health and Safety Act 2020 and the Work Health and Safety (Mines) Regulations 2022 will contribute to mitigation of impacts on air quality outside the development envelope.</li> </ul>

Table 7: Summary	of assessment f	or air	quality
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# 3 Holistic assessment

While the EPA assessed the impacts of the proposal against the key environmental factors and environmental values individually in the key factor assessments above, given the link between flora and vegetation and terrestrial fauna, and social surroundings and air quality, the EPA also considered connections and interactions between them to inform a holistic view of impacts to the whole environment.

### Flora and Vegetation – Terrestrial Fauna

There is a high level of interconnectivity between the environmental factors of flora and vegetation and terrestrial fauna. Minimising the direct and indirect impacts to flora and vegetation will also minimise impacts to significant fauna habitat. In turn significant fauna aid ecosystem functioning and structure for flora and vegetation.

The EPA considers that the proposed mitigation and management measures, as accounted for in the recommended conditions or regulation by other DMAs, and the provision of offsets to counterbalance the significant residual impacts will mean the inter-related impacts are likely to be consistent with the EPA environmental factor objectives.

#### Social Surroundings – Air Quality

Minimising the direct impacts of dust emissions to air quality will also minimise potential interference with social surrounding amenity, human health and indirect impacts to flora and vegetation. The EPA has recommended condition B7 which requires an air quality management plan to demonstrate compliance with ambient air quality levels. This complements condition B1 requiring indirect impacts to flora and vegetation such as from dust be minimised.

#### Greenhouse Gas Emissions

There is an established link between GHG emissions and the risk of climate change. The EPA recognises that climate change will impact on Western Australia's environment and environmental values. The EPA considers that the proposed mitigation of GHG emissions, as regulated under the *Safeguard Mechanism*, will also mean that the impacts to other factors and values of the environment including the values associated with flora and vegetation and terrestrial fauna are likely to be consistent with the EPA environmental factor objectives.

#### Summary of holistic assessment

When the separate environmental factors and values affected by the proposal were considered together in a holistic assessment, the EPA formed the view that the impacts from the proposal would not alter the EPA's views about consistency with the EPA's factor objectives as assessed in section 2.
# 4 Offsets

Environmental offsets are actions that provide environmental benefits which counterbalance the significant residual impacts to biodiversity from a proposal. Consistent with the *WA Environmental Offsets Guidelines* (Government of Western Australia 2014), the EPA may consider the application of environmental offsets after avoidance, minimisation and rehabilitation have been pursued.

In this case the proponent applied the mitigation hierarchy by siting pits and infrastructure on already cleared areas or more degraded areas, by identifying actions to minimise indirect impacts, and by proposing to rehabilitate waste rock dumps. After considering these measures, the EPA determined the significant residual impacts of the proposal to be the loss of:

- 17.65 ha of the Coomberdale chert hills TEC (CR)
- 17 individuals of Acacia aristulata (EN)
- 15 individuals of Daviesia dielsii (EN)
- 16.51 ha of foraging habitat for Carnaby's black cockatoo (EN).

Further detail on avoidance, minimisation and rehabilitation and the EPA's determination of significant residual impacts is included in sections 2.1 and 2.2 of this report.

In response to public submissions and feedback from DWER, DCCEEW and DBCA, the proponent submitted a revised Offsets Strategy (Appendix T of the revised ERD; SIMCOA 2024b), an Offset Management Plan (OMP) (SIMCOA 2024d), and additional proposed offset commitments (SIMCOA 2025). These form the basis of the offset assessment.

#### Proposed offset

SIMCOA has proposed offsets which build on those considered during the prior assessment of the Western Ridge. The offsets include contribution to the management of the now Class A Cairn Hill Nature Reserve as well as an evolution and expansion of the requirements of the Mining and Conservation Strategy required by condition 7 of MS 813.

The proposed offsets comprise two parts as follows:

- 1. Conservation and management of the TEC and associated values across two adjoining areas:
  - a. Cairn Hill Class A Nature Reserve (Lot 4319 on Deposited Plan 40938)
  - b. Cairn Hill North (portion of Lot 52 on Deposited Plan 29474), which is currently freehold land owned by a third party which is to be added to the conservation estate as a Class A Nature Reserve.

- 2. Research and enhancement program including:
  - a. research and enhancement of exclusion zones containing degraded TEC remnants including threatened flora and Carnaby's black cockatoo foraging habitat
  - b. research on threatened and priority flora such as on taxonomic status and population structure (genetic diversity).

A map of Cairn Hill, Cairn Hill North and the proposed exclusion zones is included as Figure 6.



Figure 6: Proposed offsets

#### Conservation and management – Cairn Hill and Cairn Hill North

Both Cairn Hill and Cairn Hill North were explicitly identified as potential areas to be secured for conservation at the time of the prior assessment of the Western Ridge expansion. It was determined that conservation of Cairn Hill was required, and this was reflected through condition 21 of MS 575 requiring the proponent to surrender Mining Lease M70/1055 over the area. Whether this was sufficient for both the Western Ridge and future expansions was to be determined through the Mining and Conservation Strategy which would provide further context on the extent and condition of the TEC to be impacted versus conserved. The strategy would also consider any further contributions to conservation management by the proponent.

The two sites together measure 210.35 ha and the proponent has proposed that the conservation and management of 148 ha, along with the research and enhancement program, would be sufficient to counterbalance the combined impacts of the Western Ridge and North Kiaka Project. The remaining 62.35 ha is proposed to be carried over as an advanced offset for potential additional expansions in future.

To ensure long-term security of Cairn Hill North, three transactions are proposed. The proponent would relinquish its tenement M70/424 over the area, the landholder would relinquish ownership in exchange for grazing access to the State-owned Lot 4358 on Deposited Plan 40938 east of Cairn Hill, and the area would be added to the Cairn Hill A Class Nature Reserve vested with DBCA. Support for these transactions has already been received from the landowner, Department of Planning, Lands and Heritage (DPLH), DEMIRS and DBCA.

The contribution to management activities on Cairn Hill and Cairn Hill North would include things such as access control, signage, fire, pest and weed management, dieback assessment and management, climate change mitigation and ecological surveys to support monitoring. The further details of the proponent's management contribution are proposed to be developed through a revision to the OMP undertaken in consultation with DBCA as well as an accompanying memorandum of understanding (MoU) detailing implementation responsibilities.

#### Research and enhancement program – exclusion zones

The proponent also proposes to prepare a research and enhancement program on advice of DBCA with the dual objectives of increasing the understanding of ecological values associated with the Coomberdale chert hills TEC, and enhancing the TEC and its associated values (i.e. threatened and priority flora and Carnaby's black cockatoo foraging habitat). Research and enhancement would focus on exclusion zones that contain areas of the TEC such as the Eastern Ridge and other land owned or leased by the proponent.

Potential research and enhancement actions identified include:

• Flora and vegetation surveys of the Eastern Ridge and other degraded TEC areas to update baseline information including TEC vegetation condition as well as the distribution and population size of threatened and priority flora.

- Revegetation trials of 25 m buffer belts around existing degraded TEC occurrences including the use of Carnaby's black cockatoo foraging species such as *Banksia sessilis* as appropriate. The purpose of this work is to enhance adjoining areas of the TEC by mitigating edge effects rather than to expand the TEC noting the geology of the buffers will likely be different.
- Enhancement trials of degraded areas of the TEC using TEC species including Carnaby's black cockatoo foraging species *Banksia sessilis*, *Acacia aristulata* (EN), *Daviesia dielsii* (EN), *Goodenia arthrotricha* (EN) and other threatened and priority flora species known from the TEC.
- Research to improve the understanding of the ecology of the TEC.
- Research into Acacia aristulata (EN) and Daviesia dielsii (EN) as well as DNA studies for *Stylidium* sp. Moora (P2) and *Diuris recurva* (P4) to investigate their taxonomic status or population structure (genetic diversity) and ensure genetic variation is included in rehabilitation trials.

The proponent suggested that an area at least four times the size of the TEC impacted by the North Kiaka Project (i.e. 71 ha) may be appropriate (SIMCOA 2025). It subsequently confirmed that 69.8 ha of the Eastern Ridge and a 24.1 ha portion of Lot 573 on Plan 3006 located adjacent to the North Kiaka Mine DE could form the exclusion zones (total of 93.9 ha). The former location is owned by the proponent (Lot 51 on Plan 29474) and the latter is leased from a third party.

#### Assessment

#### Environmental values of Cairn Hill and Cairn Hill North

Most of the vegetation across Cairn Hill and Cairn Hill North is Coomberdale chert hills TEC which includes Carnaby's black cockatoo foraging habitat. Individuals of *Acacia aristulata* and *Daviesia dielsii* also occur regularly throughout.

Cairn Hill and Cairn Hill North contain a range of other threatened and priority flora including *Goodenia arthrotricha* (EN), *Eucalyptus pruiniramis* (EN), *Synaphea quartzitica* (EN), *Stylidium* sp. Moora (P2), *Diuris recurva* (P4) and *Regelia megacephala* (P4). There are also three salmon gum trees with potential breeding hollows for Carnaby's black cockatoo in the southeast corner of Cairn Hill North.

#### Environmental values of exclusion zones

The vast majority of the proposed exclusion zone over the Eastern Ridge comprises the Coomberdale chert hills TEC. It also contains Carnaby's black cockatoo foraging habitat as well as a range of threatened and priority flora including *A. aristulata*, *D. dielsii*, *G. arthrotricha*, *D. recurva* and *R. megacephala*.

The proposed exclusion zone over Lot 573 contains about 15 ha of the Coomberdale chert hills TEC, Carnaby's black cockatoo foraging habitat and individuals of *A. aristulata* and *D. dielsii.* 

#### Offset adequacy – conservation and management (direct offset)

The development of the original Moora Mine occurred prior to the surveying, mapping and listing of the TEC. The adequacy of offsets for the significant amendment in the context of the approved proposal and the combined effect was considered within the context of uncertainty about the past impacts on the TEC, the existing conditions in relation to offsets for the approved proposal under MS 813 and the TEC's current listing status of Critically Endangered.

The EPA's previous assessment of the Western Ridge (EPA Bulletin 1027) states that Cairn Hill included several historically disturbed areas such as gravel pits. On the basis of the limited success that the proponent has reported to re-establish vegetation consistent with the Coomberdale chert hills TEC on areas where soil substrate has been impacted (section 2.1.8), the EPA considers that the most degraded areas of Cairn Hill and Cairn Hill North measuring a combined 55 ha cannot be accepted as an offset for the TEC. The better condition vegetation makes up the balance of about 155 ha and is suitable to support the direct offset component for the Coomberdale chert hills TEC.

The other environmental values subject to significant residual impacts co-occur with the TEC in many patches, implying that an offset for the TEC will by extension provide benefits to those values. However, the proponent submitted that areas within Cairn Hill which contain higher quality vegetation representing the Coomberdale chert hills TEC, are less valuable for Carnaby's black cockatoo foraging purposes and that some degraded areas within Cairn Hill contain more valuable foraging habitat. Also, the proponent's information refers to occurrence in degraded areas of *A. aristulata* and *D. dielsii.* Information on the viability of these occurrences including on potential impacts of weeds and competition from other native species over time is not available but contributions towards management may support their persistence.

It follows that the EPA considers the conservation and management of the entire 210 ha of Cairn Hill and Cairn Hill North is important when considering all environmental values subject to significant residual impacts. The EPA has applied the precautionary principle to evaluate the risk and assess the offsets submitted. In the light of this, the EPA considers that both Cairn Hill and Cairn Hill North should be allocated in full as an offset for the Western Ridge and North Kiaka Project combined.

The EPA notes that the relinquishment of mining rights and the conversion of Cairn Hill North to a Class A Nature Reserve will increase the representation of the TEC in conservation estate from 24% to 32%.

#### Offset adequacy – research and enhancement (indirect offset)

It is considered that the proposed exclusion zones provide the greatest opportunities to trial the maintenance or improvement of the condition of existing remnant TEC and enhance the viability of the community. The proposed research and enhancement measures also provide for the potential increase in the extent of *A. aristulata*, *D. dielsii* and Carnaby's black cockatoo foraging habitat. The EPA

notes that DBCA has provided in-principle support for the research and enhancement offset.

The EPA considers the EP Act principle to conserve biological diversity and ecological integrity as fundamental to the consideration of the adequacy of the proposed indirect offset. Furthermore, having regard for the precautionary principle of the EP Act, the increased conservation status of the TEC in the last decade and the potential increase in the conservation status of *A. aristulata* and *D. dielsii* the EPA regards research and enhancement critical to address key knowledge gaps in scientific information on the ecology and management of the TEC and threatened flora. The increased conservation status of the community and species highlights the need to better understand and address cumulative impacts of the threatening processes associated with different land uses on the TEC and its associated flora species.

Research on the TEC, *A. aristulata* and *D. dielsii* is broadly consistent with research priorities in approved conservation advice for actions to support the recovery of the species. Advice from the DBCA to the proponent in the development of the research program is crucial to refine and target the indirect offset, which may include research on long-term fire management regimes and the population status, genetic diversity and seed viability of species within the community.

This proposed research is consistent with the Offset Policy guidelines, stating that research should be designed to address priority knowledge gaps, improve environmental management and inform the environmental assessments of future projects (Government of WA 2014). Consistent with offset principle 6 (long-term and strategic) the scientific knowledge gained from this research may benefit the long-term conservation and management of the TEC and threatened flora and inform adaptive management actions relating to the proposal's on-ground enhancement measures (Indirect offset) and management offsets (Direct offset). The outcomes of the proposed research may support updates of the recovery strategies for the TEC and threatened flora and, consistent with the EPA's *Public Advice – Considering environmental offsets at a regional scale* (March 2024) represents opportunities for preservation of TEC and species diversity and ecological integrity at a regional scale.

Accordingly, these proposed actions are supported by the EPA, and it is considered that they should be further developed and refined in consultation with DBCA through a revision to the OMP. The EPA supports the proponent's proposed exclusion zones totalling 93.9 ha noting they contain the same environmental values as those being impacted.

#### Analysis of offsets against EPA public advice (EPA 2024c)

The EPA has reviewed and considered proposal offsets against the guiding values in its *Public Advice for Considering Environmental Offsets at a Regional Scale* (EPA 2024c) in relation to significant residual impacts for this proposal:

1. **Restoration**: The proponent has proposed exclusion zones which include occurrences of the TEC. The exclusion zones will prevent native vegetation clearing and mining activities for the life of the mine and smelter. The

proponent has committed to enhance the degraded areas of the TEC within the exclusion zones through the establishment of buffer belts and to protect significant flora, vegetation and fauna values, including *A. aristulata*, *D. dielsii* and Carnaby's black cockatoo foraging habitat. This includes maintenance and improving the quality of habitat within the exclusion zones. The EPA has recommended conditions that require the proponent to identify suitable buffer zones within its landholdings and implement techniques for enhancement of the TEC in historically degraded areas, including measurable improvement.

2. **Regional scale management**: The proposed addition of Cairn Hill North to the existing Class A Cairn Hill Nature Reserve increases the conservation management of core vegetation alliances of the TEC and ensures the permanent protection of the community across a larger area of its range. This measure is consistent with two of the three key objectives in the Interim Recovery Plan for the TEC (DPaW, 2013b).

In relation to the proposed indirect offsets, the proponent's previous rehabilitation trials established that vegetation reaching a self-sustaining state on a modified substrate is less diverse than TEC vegetation. The EPA considers the change in strategy to rather enhance degraded TEC occurrences on unmodified substrate within exclusion zones is critical to achieve the outcome of managing, improving and supporting the recovery of the TEC. The enhancement measures to provide protection of the genetic diversity of the TEC and enhance adjoining remnants across the landscape will respond to the third objective in the Interim Recovery Plan for the TEC through minimising loss and enhancing occurrences of degraded TEC.

Over the medium-term, the protection and enhancement of the TEC in exclusion zones through fencing and buffer vegetation is expected to manage existing threatening processes such as weed invasion and grazing.

The EPA has recommended conditions that require the proponent conduct ecological research on the TEC, including but not limited to disturbance response and understanding the species and genetic diversity of the community and the impact of key threatening processes. The research should also increase the understanding of the disturbance response and seed viability of pyrosere flora species within the TEC, including for *A. aristulata* and potentially *D. dielsii*. The outcomes of research and enhancement trails will inform in the long-term, the regional management and conservation planning for the TEC and threatened flora, including for the Cairn Hill and Cairn Hill North Nature Reserves.

3. **Resilient systems**: The proposed addition of Cairn Hill North to the existing Class A Cairn Hill Nature Reserve preserves the regional connectivity linkage of the TEC towards the north within the Class A conservation estate. The EPA has recommended conditions requiring the proponent to relinquish mining rights over Cairn Hill North following gazettal of that area as a Class A Nature Reserve and to contribute to maintaining the environmental values of Cairn Hill Nature Reserve and Cairn Hill North for the life of the mine and smelter.

The proponent's commitment to enhance occurrences of degraded TEC within exclusion zones on its landholdings will contribute to joining adjacent

TEC remnants, including an increase in the populations of TEC flora species within remnants. The development and implementation of enhancement measures for the TEC within exclusion zones provides an opportunity to increase the resilience of the TEC through management of threatening processes including weed incursion and gradual degradation from edge effects. The EPA has recommended conditions for enhancement of the TEC, including completion criteria for buffer vegetation around the TEC occurrences within the exclusion zones to measure and report on tangible improvements.

- 4. Expanding scientific knowledge: The proponent has negotiated access to an additional landholding adjacent and to the east of the North Kiaka project which is not under its ownership. This landholding includes TEC, significant flora values associated with the TEC and an area degraded through historic quarrying. The proponent has committed to ecological research within this landholding to address priority knowledge gaps that have been identified to improve management and protection for the TEC, *A. aristulata* and *D. dielsii*. The EPA has recommended conditions that require the proponent to conduct ecological research on the TEC, *A. aristulata* and *D. dielsii*, including disturbance response and understanding the population status and genetic diversity. The outcome of this research will inform the management of exclusion zones on proponent landholdings and provide input to the management and conservation planning of the TEC within a regional context.
- 5. Like for like, and similar values: The proposed addition of Cairn Hill North as Class A Nature Reserve to the existing Cairn Hill provides permanent protection for Coomberdale chert hills TEC and a range of threatened and priority flora including *A. aristulata*, *D. dielsii*, *G. arthrotricha*, *E. pruiniramis*, *S. quartzitica*, *S.* sp. Moora, *D. recurva* and *R. megacephala*. The enhancement of the TEC and its associated values in exclusion zones will protect and expand associated flora species of the TEC.
- 6. **Connectedness**: The proponent's proposed relinquishment of mining interests in Cairn Hill North preserves the Coomberdale chert outcrops landform and the associated TEC to provide connectivity with the A Class Cairn Hill Nature Reserve. The outcome of the research and enhancement trials is also expected to support ongoing management of processes that threaten the TEC and inform management to increase the resilience and connectedness of TEC remnants across the broader landscape.

It follows that the EPA considers the offset proposal is appropriate to counterbalance the significant residual impacts of the proposal subject to the following:

- secure Cairn Hill North for conservation as an A Class Nature Reserve and relinquish mining rights
- allocate all of Cairn Hill and Cairn Hill North as an offset for the combined proposal
- update the OMP and prepare and implement a MoU with DBCA detailing the proponent's management contribution to Cairn Hill and Cairn Hill North for a period not exceeding the life of the proposal (i.e. to 2045) with the objective of maintaining the condition of the environmental values over that period
- update the OMP with a detailed research and enhancement plan prepared and implemented in consultation with DBCA, setting aside areas containing

the Coomberdale chert hills TEC as exclusion zones with the objective of informing the understanding, management and enhancement of the TEC and its associated environmental values

- enhance degraded TEC remnants in the exclusion zones utilising species from the Coomberdale chert hills TEC including Carnaby's black cockatoo foraging species in buffer vegetation planting
- regular reporting on the outcomes of this program to inform and apply outcomes to the recovery of the Coomberdale chert hills TEC and associated environmental values.

The EPA considers that the above actions will collectively improve the security, resilience and extent of the TEC, Carnaby's foraging habitat, *A. aristulata* and *D. dielsii* so as to ensure the proposal is not inconsistent with the EPA's objectives for flora and vegetation and terrestrial fauna.

#### Conclusion

The EPA considered whether the proposed offset is likely to counterbalance the significant residual impacts associated with the North Kiaka proposal within the context of the existing proposal and its implementation to date. The offset was considered within the context of uncertainty about the past impacts on the TEC, the proponent's implementation of condition requirements in relation to offsets under existing ministerial statements and the TEC's current listing status of Critically Endangered.

In addition, the EPA had regard for the precautionary principle of the EP Act and the increased conservation status of the TEC in the last decade. Noting that the proposal has the potential to result in serious or irreversible damage to the occurrence of the TEC and threatened flora, the EPA has recommended conditions to ensure that risks are minimised or avoided where possible (section 2.1), and that relevant measures are undertaken by the proponent to manage residual impacts. The EPA advises that the recommended offsets are proportional to the combined impacts on the TEC and are consistent with the priorities in the DBCA's interim recovery plan.

The offset is relevant and proportionate to the environmental values that will be impacted and includes the Coomberdale chert hills TEC, *A. aristulata*, *D. dielsii* and Carnaby's black cockatoo foraging habitat. The benefits of the offset are multifaceted including a mix of conservation, management, research and on ground enhancement and are consistent with the priorities in the interim recovery plan for the Coomberdale chert hills TEC, the WA Offsets policy and guidance and several guiding principles in the EPA's Public Advice - Consideration of offsets at a regional scale.

The EPA recognises that the proponent revised its Offset Strategy in 2025 in response to submissions on the ERD and advice from the EPA, DBCA and other government stakeholders.

The EPA's view is that the increase of the TEC in the conservation estate as Class A Nature Reserve from 24% to 32% will enhance regional protection and improve

connectivity of the TEC and its associated environmental values. In addition, the indirect offsets will protect, minimise loss and enhance a further 10% of the mapped occurrence of TEC remnants for the life of the mine and smelter. This combined increase in protection is significantly more than the TEC to be removed through mining. In addition, the EPA considers that the required research and enhancement offset has the potential to buffer TEC remnants and improve its resilience and the protection of a broad suite of environmental values which are connected.

Subject to condition B9 requiring the conservation, management and allocation of Cairn Hill and Cairn Hill North, the preparation and implementation of an OMP and associated MoU and a Research Plan and environmental performance reporting on the state of the TEC and threatened flora (condition B10), the EPA is satisfied that the offset is likely to counterbalance the significant residual impacts.

# 5 Matters of national environmental significance

The Commonwealth Minister for the Environment has determined that the proposal is a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as it is likely to have a significant impact on one or more MNES. It was determined that the proposed action is likely to have a significant impact on the following matters protected by the EPBC Act:

• Listed threatened species and communities (sections 18 & 18A)

The EPA has assessed the controlled action on behalf of the Commonwealth as an accredited assessment under the EPBC Act. It is noted that the Moora Mine including the abandonment bund is not included in the area considered as part of the controlled action.

This assessment report would be provided to the Minister for Environment (Cmwth) who will decide whether or not to approve the proposal under the EPBC Act along with other information required. This is separate from any Western Australian approval that may be required.

## Commonwealth policy and guidance

The EPA had regard to the following relevant Commonwealth guidelines, policies and plans during its assessment:

- Commonwealth EPBC Act Environmental Offsets Policy (Commonwealth of Australia 2012)
- Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black cockatoo (DAWE 2022)
- Carnaby's Cockatoo (*Calyptorhynchus latirostris*) Recovery Plan (DPaW 2013a)
- Interim Recovery Plan 2013-2018 for Heath dominated by one or more of Regelia megacephala, Kunzea praestans and Allocasuarina campestris on ridges and slopes of the chert hills of the Coomberdale Floristic Region. (DPaW 2013b)
- Interim Recovery Plan for Synaphea quartzitica (DEC 2003).
- Approved Conservation Advice for *Eucalyptus pruiniramis* (Midlands Gum) (DCCEEW 2008a)
- Approved Conservation Advice for Acacia aristulata (Watheroo Wattle) (DCCEEW 2008b)
- Approved Conservation Advice for *Daviesia dielsii* (Diels' Daviesia) (DCCEEW 2009).

# EPA assessment

#### Listed threatened species and communities (sections 18 and 18A)

Listed threatened species and communities that occur or may occur in the proposal area include:

- Carnaby's black cockatoo (Zanda latirostris)
- Acacia aristulata
- Daviesia dielsii.

The occurrence of the above-listed threatened species is discussed in the proponent's revised ERD (SIMCOA 2024b) and in the proponent's response to submissions (SIMCOA 2024c) and Additional information to support the Assessment (SIMCOA 2025). Discussion of these species is provided in sections 2.1 and 2.2 of this report.

Potential impacts to listed species are primarily a result of clearing of vegetation and habitat loss. The proposal will result in the loss of up to 17.12 ha of native vegetation that includes 15.58 ha of black cockatoo foraging habitat in the North Kiaka DF.

The assessment of the potential impacts to other listed species is discussed in sections 2.1 Flora and Vegetation and section 2.2 Terrestrial Fauna of this report.

# Summary

The EPA recommends the following environmental conditions to minimise impacts on MNES:

- condition A1 limits the location and authorised extent of the clearing of vegetation to 17.12 ha (for the North Kiaka Mine)
- condition B1 limits on the authorised extent of disturbance of threatened flora species and the avoidance, where practicable, and minimisation of indirect impacts
- condition B2 limits on the authorised extent of disturbance of foraging habitat for Carnaby's black cockatoo (*Zanda latirostris*) to 16.51 ha (which includes 0.93 ha for the abandonment bund)
- condition B3 for rehabilitation activities to include Carnaby's black cockatoo foraging habitat.

The EPA considers that there will be a significant residual impact from the clearing of up to 17 individuals of *Acacia aristulata*, 15 individuals of *Daviesia dielsii* and foraging habitat for Carnaby's black cockatoo (*Zanda latirostris*). The EPA has recommended an offset in condition B9 (see section 4) which takes into account the significant residual impact due to implementation of the proposal.

The EPA's view is that the impacts from the proposal on the above-listed MNES are therefore not expected to result in an unacceptable or unsustainable impact on any matters of MNES.

# 6 Recommendations

The EPA has taken the following into account in its assessment of the proposal:

- environmental values which may be significantly affected by the proposal
- assessment of key environmental factors, separately and holistically (this has included considering cumulative impacts of the proposal where relevant)
- likely environmental outcomes which can be achieved with the imposition of conditions
- consistency of environmental outcomes with the EPA's objectives for the key environmental factors
- EPA's confidence in the proponent's proposed mitigation measures
- whether other statutory decision-making processes can mitigate the potential impacts of the proposal on the environment
- principles of the EP Act.

The EPA recommends that the proposal may be implemented subject to the conditions recommended in Appendix A.

# 7 Other advice

The EPA may include other information, advice or recommendations relevant to the environment in its assessment reports, even if that information has not been taken into account by the EPA in its assessment of a proposal.

# Addressing gaps in knowledge

The EPA commends the proponent for working with DBCA and DEMIRS to deliver a whole of government approach in supporting the addition of Cairn Hill North as a Class A Nature Reserve to the conservation estate. Cairn Hill North contains significant environmental values, including the critically endangered Coomberdale chert hills TEC, two threatened flora (ranked endangered), several priority flora species and foraging habitat for Carnaby's black cockatoo located near known breeding habitat.

The EPA recognises that targeted research and enhancement are critical to address key knowledge gaps in the scientific understanding and management of the Coomberdale chert hills TEC. The EPA considers that the recommended offsets are proportional to the combined impacts on the TEC, will contribute to research and on ground enhancement and expects that outcomes will inform priorities in the DBCA's interim recovery plan.

Due to the continued pressure of cumulative impacts on the Coomberdale chert hills TEC, the EPA advises that the success of offset measures aimed at recovering or improving the conservation status of the TEC will be a critical factor in assessing the environmental impacts of future mining and development activities that involve clearing of TEC. Additionally, the EPA recommends that the proponent prioritise investigations into diversifying its sources of quartzite to support the long-term operation of its silicon smelter.

# Scope 2 greenhouse gas emissions

The EPA notes that the proponent's scope 2 GHG emissions estimates, and associated reduction in emissions over the life of the proposal, are reliant on the forecasted rate of incorporation of renewable energy into the SWIS as set out in the SERS (Government of Western Australia 2023a). Consistent with the State government's commitment to net zero GHG emissions by 2050, the SERS forecasts that up to 96% of the SWIS will be generated from renewable energy sources. Consistent with the EFG GHG, the EPA expects that proponents undertake reasonably practicable measures and explore alternatives to avoid or reduce scope 2 emissions at commencement and consider options to mitigate scope 2 emissions throughout the life of the proposal. The EPA acknowledges that in most instances there are limited opportunities available to proponents to materially avoid or reduce scope 2 emissions where grid connection is the only reasonable option.

The EPA therefore strongly encourages the continued WA Government support of decarbonisation of the State's interconnected electricity grids, including through

strategic policy initiatives supported by public reporting of progress against adopted targets.

# **Appendix A: Recommended conditions**

Section 44(2)(b) of *Environmental Protection Act 1986* specifies that the EPA's report must set out (if it recommends that implementation be allowed) the conditions and procedures, if any, to which implementation should be subject. This appendix contains the EPA's recommended conditions and procedures.

# **Recommended Environmental Conditions**

#### STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED (Environmental Protection Act 1986)

NORTH KIAKA PROJECT

- **Proposal:** Establishment of a new quartzite mine approximately 17 kilometres (km) north of Moora. The North Kiaka Project would transition mining from the existing Moora Mine to a new pit approximately 2 km north as well as the construction of an abandonment bund at Moora. Mined quartzite will be crushed and screened using existing facilities at the Moora Mine before being transported to the Kemerton Silicon Smelter, approximately 17 km north-east of Bunbury, for processing.
- Proponent: SIMCOA OPERATIONS PTY. LTD. Australian Company Number 009064653
- Proponent address: 973 Marriott Road Wellesley WA 6233

Assessment number: 2346

Report of the Environmental Protection Authority: 1786 Previous Assessment Number: 1783 Previous Report of the Environmental Protection Authority: 1317 Previous Statement Number: 813

**Introduction**: The proposal is a significant amendment to the existing proposal 'Silicon Project, Kemerton and Mine at Moora (Revised Proposal)' which was agreed to be implemented under Ministerial Statement 813. The EPA's Report for the existing proposal is Bulletin 1317, EPA Assessment Number 1783.

Pursuant to section 45 of the Environmental Protection Act 1986, it is now agreed that:

1. the significant amendment to the existing proposal described and documented in the proponent's Proposal Content Document (18 September 2023), may be implemented;

2. Ministerial Statement 813 for the existing proposal 'Silicon Project, Kemerton and Mine at Moora (Revised Proposal)' is superseded under section 40AA(6)(b) of the *Environmental Protection Act 1986*; and

3. the implementation of the significantly amended proposal (being the existing proposal as amended by the significant amendment proposal) is subject to the following implementation conditions and procedures.

#### Conditions and procedures:

- Part A: Proposal extent
- Part B: Environmental outcomes, prescriptions and objectives
- Part C: Environmental management plans and monitoring
- Part D: Compliance and other conditions

#### PART A: PROPOSAL EXTENT

#### A1 Limitations and Extent of Proposal

A1-1 The proponent must ensure that the proposal is implemented in such a manner that the following maximum extents / capacities are not exceeded:

Proposal element	Location	Maximum extent/capacity					
Physical elements – quartzite mining							
Moora Mine							
Development envelope	Figure 1	No more than 239.10 ha					
Disturbance footprint	Figure 1	96 ha including no more than 26 ha of native vegetation					
North Kiaka Mine							
Development envelope	Figure 1	No more than 216.42 ha					
Disturbance footprint	Figure 1	44.59 ha including no more than 17.12 ha of native vegetation					
Operational elements – quartzite mining							
Quartzite production	Moora Mine and North Kiaka Mine	160,000 tonnes per annum of lump quartz (combined total)					
Pit depth	Moora Mine	Not more than 165 m reduced level					
	North Kiaka Mine	Above groundwater level					
Operational hours	Moora Mine and North Kiaka Mine	7:00 am to 7:00 pm Monday to Saturday 9:00 am to 7:00 pm Sunday and public holidays					

Physical elements – silicon production at Kemerton Smelter						
Development envelope	Figure 2	115.45 ha				
Smelter furnaces	Within the disturbance footprint	4 x submerged electric arc furnaces				
Off-gas cleaning plant (baghouse)	Within the disturbance footprint	One large baghouse with stacks One large baghouse without				
		stacks				
Operational elements – silicon production at Kemerton Smelter						
Silicon production	-	64,000 tonnes per annum (approximately)				
Quartzite consumption	-	160,000 tonnes per annum (approximately)				
Timing elements						
Life of mine and smelter	-	Up to 2045				

#### PART B – ENVIRONMENTAL OUTCOMES, PRESCRIPTIONS AND OBJECTIVES B1 Flora and Vegetation

- B1-1 The proponent must ensure the implementation of the proposal achieves the following environmental **outcome**:
  - (1) **disturb** no more than the extent of the following environmental values:
    - (a) 17.65 ha of the Coomberdale chert hills threatened ecological community within the disturbance footprint as described in Table 1; and
    - (b) known populations of significant flora species as described in Table 1.

 Table 1: Disturbance of Threatened and Priority flora species

Species	Disturbance of known population	
Acacia aristulata (ranked endangered)	Up to 17 individuals	
Daviesia dielsii (ranked endangered)	Up to 15 individuals	
Goodenia arthrotricha (ranked	0 individuals	
endangered)		
Stylidium sp. Moora (J.A. Wege 713)	Up to 5 individuals	
(Priority 2)		
Diuris recurva (Priority 4)	Up to 65 individuals	
Regelia megacephala (Priority 4)	Up to 567 individuals	

- B1-2 The proponent must implement the proposal to meet the following environmental **objective**:
  - (1) avoid, where practicable, or otherwise minimise indirect impacts to the Coomberdale chert hills threatened ecological community, threatened flora and priority flora occurring within fifty (50) metres of the North Kiaka Mine and Moora Mine disturbance footprints. These indirect impacts may include, but not limited to dust, environmental weeds, altered hydrology and dieback.
- B1-3 The proponent must prepare a Significant Flora and Vegetation Environmental Management Plan that demonstrates how achievement of the flora and vegetation environmental outcomes in condition B1-1 will be monitored and substantiated, how the flora and vegetation objectives in condition B1-2 will be monitored and achieved, and that satisfies the requirements of conditions C4 and C5, and submit it to the **CEO**.

#### B2 Terrestrial fauna

- B2-1 The proponent must ensure the implementation of the proposal achieves the following environmental **outcomes**:
  - (1) **disturb** no more than 16.51 ha of **foraging habitat** for Carnaby's black cockatoo (*Zanda latirostris*).

#### B3 Rehabilitation

- B3-1 The proponent must ensure the implementation of the proposal achieves the following environmental **outcomes** within the Moora Mine and North Kiaka Mine Disturbance Footprints:
  - (1) rehabilitated vegetation for areas disturbed is **self-sustaining**;
  - (2) rehabilitated vegetation achieves a cover and diversity of Carnaby's black cockatoo (*Zanda latirostris*) foraging species comparable to preclearing vegetation;
  - (3) rehabilitation areas are managed to demonstrate avoidance of degradation to adjacent areas of the Coomberdale chert hills threatened ecological community including through the management of invasive species;
  - (4) waste dumps constructed after the publication of this statement support infiltration of rainfall and subsoil water storage to support persistence of perennial species including through increasing the volume of fine material present in the dumps; and
  - (5) closure planning and rehabilitation are undertaken in a progressive manner during operations, where practicable, and as soon as practicable upon closure.
- B3-2 The proponent must include the environmental outcomes of condition B3-1 in the Mining Development and Closure Proposal and Mine Closure Plan required under the *Mining Act 1978*, and submitted for approval to **DEMIRS**.

#### B4 Greenhouse Gas Emissions

- B4-1 The proponent must notify the **CEO** in writing within one month of it becoming aware that implementation of the proposal will not be or is not expected to be regulated under the **Safeguard Legislation** as a designated large facility (the notifiable event) and such notice must briefly describe the reasons for and expected duration of the notifiable event.
- B4-2 The proponent must, if requested in writing by the **CEO**, provide the **CEO** with a report on the implications for the proposal of any amendment or proposed

amendment to the **Safeguard Legislation**, or a decision or proposed decision made under the **Safeguard Legislation** that is specified in the **CEO**'s request.

- B4-3 The report required by condition B4-2 must:
  - (1) be submitted to the **CEO** within three (3) months of the date of the **CEO**'s request or such longer period as the **CEO** agrees to in writing; and
  - (2) explain the implications that the specified amendment or decision has had or is expected to have on:
    - the obligation to reduce net Scope 1 GHG emissions from implementation of the proposal under the Safeguard Legislation; and
    - (b) the quantity of actual and net Scope 1 **GHG emissions** likely to result from the future implementation of the proposal.

#### B5 Social Surroundings (Visual Amenity)

- B5-1 The proponent must ensure the implementation of the proposal achieves the following environmental **outcome**:
  - (1) Within 12 months of **construction activities** commencing for the Moora Mine abandonment bund, establish a vegetative screen between the bund and the driveway of Lot 52 on Deposited Plan 29474, and then maintain that screen for the remaining life of the proposal, to minimise visual impacts to Lot 52.

#### B6 Social Surroundings (Aboriginal Cultural Heritage)

- B6-1 The proponent must implement the proposal to meet the following environmental **objective**:
  - (1) avoid, where practicable, and otherwise minimise adverse impacts to Aboriginal cultural heritage.
- B6-2 The proponent must take reasonable steps to consult with the **Yued Aboriginal Corporation** about the removal of any Moodjar (*Nuytsia floribunda*) trees and construction of the crossing over Kyaka Brook prior to initial **ground disturbing activities** to offer cultural monitors the opportunity to be present for those activities.

#### B7 Dust (Amenity and Air Quality)

B7-1 The proponent must ensure the implementation of the proposal achieves the following environmental **outcome**:

- (1) ensure dust emissions from activities undertaken in implementing the proposal do not exceed the following levels at any occupied residential premises within seven hundred and fifty (750) metres from the Moora Mine development envelope or North Kiaka Mine development envelope:
  - (a) forty-six (46) micrograms per cubic metre of particulate matter with an equivalent aerodynamic diameter of ten (10) micro metres or less over a twenty-four (24) hour average; and
  - (b) respirable crystalline silica content of no more than nine point two
     (9.2) micrograms per cubic metre determined through **specified monitoring and sampling**.
- B7-2 The proponent must prepare an Air Quality Environmental Management Plan that demonstrates how achievement of the environmental outcome in condition
   B7-1 will be monitored and substantiated, and satisfies the requirements of condition C4, and submit it to the CEO.

#### B8 Decommissioning

- B8-1 The proponent must ensure that decommissioning of the Kemerton Smelter achieves the following environmental **outcomes**:
  - the waste hierarchy is applied to decommissioning and closure of the site to demonstrate waste avoidance and recovery over disposal of equipment and material;
  - (2) the site will be decommissioned to ensure it is physically safe to members of the public and non-human biota in the long term;
  - (3) the site is geotechnically and geomorphically stable in the long term; and
  - (4) the site is chemically non-polluting in the long term.
- B8-2 The proponent must prepare a Decommissioning Environmental Management Plan that demonstrates how achievement of the environmental outcomes in condition B8-1 will be monitored and substantiated, and satisfies the requirements of condition C4, and submit it to the **CEO**.

#### **B9** Environmental Offsets

- B9-1 The proponent must implement offsets to counterbalance the significant residual impacts of the proposal on the following environmental values:
  - (1) Coomberdale chert hills threatened ecological community;
  - (2) Acacia aristulata;
  - (3) Daviesia dielsii; and

- (4) foraging habitat for Carnaby's black cockatoo (*Zanda latirostris*).
- B9-2 To meet the requirements of condition B9-1, the proponent must ensure the implementation of the offsets achieves the following environmental **outcomes** and **objectives**:
  - (1) counterbalance the significant residual impacts to the environmental values identified in condition B9-1;
  - (2) relinquish mining rights over **Cairn Hill North** immediately following gazettal of that area as a Class A Nature Reserve vested with the Conservation and Parks Commission and managed by **DBCA**;
  - (3) contribute to maintaining the environmental values of Cairn Hill Nature Reserve and Cairn Hill North, including the values identified in condition B9-1, for the remaining life of the proposal;
  - (4) undertake works to enhance the Coomberdale chert hills threatened ecological community occurrences in exclusion zones to achieve a tangible improvement including an improvement in vegetation condition and to contribute to the recovery of the environmental values identified in condition B9-1;
  - (5) contribute to improved knowledge of the **Coomberdale chert hills threatened ecological community** through ecological research, including but not limited to understanding the species and genetic diversity of the community and the impact of key threatening processes, to inform its recovery, management and conservation planning; and
  - (6) contribute to improved knowledge of *Acacia aristulata* and *Daviesia dielsii* through ecological research, including but not limited to disturbance response, seed viability, and understanding population status and genetic diversity, to inform their recovery, management and conservation planning.
- B9-3 The proponent must ensure:
  - (1) no **adverse impacts** from the proposal to the environmental values identified in condition B9-1 within the exclusion zones required by condition B9-2(4); and
  - (2) only **authorised activities** are undertaken within the exclusion zones required by condition B9-2(4).

#### Offset Environmental Management Plan

B9-4 The proponent must review and revise the North Kiaka Offset Management Plan (Version 1, December 2024) that demonstrates how the environmental outcomes and objectives in condition B9-2 will be achieved, and how this achievement will be substantiated, and submit it to the **CEO**.

B9-5 The North Kiaka Offset Management Plan must include the implementation of the offset measures to the extent and at the locations as set out and described in Table 2, and Figure 3.

Table 2: Environmental values, locations and extent and type of offset measure	S
required to meet condition B9-1	

Er	vironmental value	Offset locations	Extent of area to receive offset measures (hectares)	Type of offset measures
•	Coomberdale chert hills threatened ecological community Acacia aristulata Daviesia dielsii Foraging habitat for Carnaby's black cockatoo (Zanda latirostris)	Cairn Hill North and Cairn Hill Nature Reserve	210.35 hectares	Land acquisition – direct offset
•	Coomberdale chert hills threatened ecological community Acacia aristulata Daviesia dielsii Foraging habitat for Carnaby's black cockatoo (Zanda latirostris)	Exclusion zones	93.9 hectares	On-ground management and research – indirect offset

B9-6 The North Kiaka Offset Management Plan must:

- (1) demonstrate that the environmental outcomes and objectives in condition B9-2 will be met;
- (2) describe how the offset measures will be implemented consistent with condition B9-5;
- (3) demonstrate application of the principles of the WA Environmental Offsets Policy, as described in the WA Environmental Offsets Guidelines, and the Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy, or any subsequent revisions of these documents;
- (4) be prepared in consultation with **DBCA**;

- (5) identify how the ongoing performance of the offset measures, and whether they are achieving the outcomes and objectives in condition B9-2, will periodically be made publicly available;
- (6) for the land acquisition offset identified in condition B9-5:
  - (a) outline the activities to be undertaken to support the ceding of Cairn Hill North to the Crown and establishment as a Class A Nature Reserve;
  - (b) include **baseline and targeted flora and vegetation surveys** of **Cairn Hill Nature Reserve** and **Cairn Hill North**;
  - (c) specify the quantum of works associated with maintaining Cairn Hill Nature Reserve and Cairn Hill North for the remaining life of the proposal including completion criteria and a monitoring program; and
  - (d) provide confirmation in writing that **DBCA** accepts responsibility for its management role.
- (7) for the research offset identified in conditions B9-2(5) and B9-2(6), within six (6) months of the date of this statement, or an alternative date agreed to by the CEO, prepare a research program in consultation with DBCA that:
  - (a) identifies the objectives and intended outcomes, and specifies the deliverables and completion criteria;
  - (b) identifies how the research will result in a positive conservation outcome or **tangible improvement**, and will improve management and protection, and address priority knowledge gaps that have been identified as a research priority needed to improve management and protection, for the **Coomberdale chert hills threatened ecological community**, *Acacia aristulata* and *Daviesia dielsii*;
  - (c) demonstrate the consistency of the objectives in condition B9-6(7)(a) with any relevant guidance, including but not limited to, recovery plans, conservation advice, threat abatement plans, area management plans, the principles of the WA Environmental Offsets Policy, the WA Environmental Offsets Guidelines, or any subsequent revisions of these documents;
  - (d) provides an implementation and reporting schedule, including an outline of key activities, all deliverables, stages of implementation,

reporting of research results (including interim results), reporting on implementation status, and milestones towards completion criteria;

- (e) identifies the governance arrangements including responsibilities for implementing, and oversight of, the research program, agreements with government agencies, agreements with any third parties, and contingency measures;
- (f) identify how a research program summary, and the results (including interim results) of the research program will be communicated and/or published in an open access format; and
- (g) identifies the third party to carry out the work required to meet the outcomes of condition B9-6(7)(a), who has a demonstrated track record, experience, qualifications and competencies of the proposed third party to carry out the work and achieve the outcomes.
- (8) for the on-ground management offset identified in condition B9-5:
  - identify how the exclusion zones will be protected and managed by the proponent for conservation during the remaining life of the proposal;
  - (b) state the targets for each environmental value to be achieved by the on-ground management, including completion criteria, which will result in a **tangible improvement** to the environmental values being offset. This must include, but not be limited to:
    - completion criteria for revegetation buffers bordering areas of the Coomberdale chert hills threatened ecological community;
    - (ii) completion criteria for the **exclusion zones**; and
    - (iii) adaptive management to ensure meeting completion criteria.
  - (c) demonstrate how the environmental values within the exclusion zones will be maintained and improved or managed to counterbalance the significant residual impacts to the environmental values in condition B9-1 and achieve the environmental outcomes and objectives in condition B9-2;
  - (d) demonstrate the consistency of the targets with the environmental outcomes and objectives in condition B9-2(4) and the objectives

of any relevant guidance, including but not limited to, recovery plans, conservation advice, threat abatement plans or area management plans;

- (e) detail the on-ground management actions, with associated timeframes for implementation and completion, to achieve the targets identified in condition B9-6(8)(b); and
- (f) detail the monitoring, reporting and evaluation mechanisms for the targets and actions identified under condition B9-6(8)(b) and condition B9-6(8)(e).

#### B10 Environmental Performance Reporting

- B10-1 The proponent shall submit an Environmental Performance Report to the **CEO** every five (5) years.
- B10-2 The first Environmental Performance Report shall be submitted within three (3) months of the expiry of the five (5) year period commencing from the date of this Statement, or such other time as approved by the **CEO**.
- B10-3 Each Environmental Performance Report shall report on the following:
  - (1) state of the **Coomberdale chert hills threatened ecological community** impacted by the proposal;
  - (2) state of the threatened flora impacted by the proposal;
  - (3) the success of progressive rehabilitation against the environmental outcomes required under condition B3-1.

B10-4 The Environmental Performance Report must include:

- a comparison of the environmental values identified in condition B10-3 at the end of the five (5) year period; against the state of each environmental value at the beginning of the five (5) year period;
- (2) a comparison of the environmental values identified in condition B10-3 at the end of the five (5) year period; against the state of the environmental values identified in the first Environmental Performance Report submitted in accordance with condition B10-2; and
- (3) proposed adaptive management and continuous improvement strategies for recovery and management.
- B10-5 Each Environmental Performance Report must be published on the proponent's website and provided to the **CEO** in electronic form suitable for on-line

publication by the Department of Water and Environmental Regulation within twenty (20) business days of being approved.

## PART C – ENVIRONMENTAL MANAGEMENT PLANS AND MONITORING

## C1 Environmental Management Plans: Conditions Related to Commencement of Implementation of the Proposal

- C1-1 The proponent must not undertake, unless otherwise authorised by the CEO:
  - (1) ground disturbing activities within the North Kiaka Mine development envelope until the CEO has confirmed in writing that the Significant Flora and Vegetation Environmental Management Plan required by condition B1-3 meets the requirements of that condition and conditions C4 and C5;
  - (2) **ground disturbing activities** within the North Kiaka Mine development envelope until the **CEO** has confirmed in writing that the Air Quality Environmental Management Plan required by condition B7-2 meets the requirements of that condition and condition C4;
  - (3) **ground disturbing activities** within the North Kiaka Mine development envelope until the **CEO** has confirmed in writing that the North Kiaka Offset Management Plan required by condition B9-4 meets the requirements of that condition and conditions C4 and C5.
- C1-2 The proponent must submit the Decommissioning Environmental Management Plan required by condition B8-2 at least five (5) years prior to the forecasted decommissioning phase of the Kemerton Smelter.
- C1-3 If, within two (2) years of the submission of the Decommissioning Environmental Management Plan, the **CEO** has not confirmed that the plan meets the requirements of condition B8-2 and condition C4, all operations at the Kemerton Smelter must cease and may only restart after the **CEO** notifies the proponent that the Decommissioning Environmental Management Plan meets the requirements of condition B8-2 and condition C4, or as otherwise agreed by the **CEO**.

# C2 Environmental Management Plans: Conditions Relating to Approval, Implementation, Review and Publication

- C2-1 After receiving notice in writing from the **CEO** under condition C1-1 or C1-3 that the environmental management plan(s) required in Part B satisfies the relevant requirements, the proponent must:
  - (1) implement the most recent version of the **confirmed** environmental management plan; and
  - (2) continue to implement the **confirmed** environmental management plan referred to in condition C2-1(1), other than for any period which the **CEO** confirms by notice in writing that it has been demonstrated that the relevant requirements for the environmental management plan have been met, or are able to be met under another statutory decision-making

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process, in which case the implementation of the environmental management plan is no longer required for that period.

- C2-2 The proponent:
  - (1) may review and revise a **confirmed** environmental management plan provided it meets the relevant requirements of that environmental management plan, including any consultation that may be required when preparing the environmental management plan;
  - (2) must review and revise a **confirmed** environmental management plan and ensure it meets the relevant requirements of that environmental management plan, including any consultation that may be required when preparing the environmental management plan, as and when directed by the **CEO**; and
  - (3) must revise and submit to the **CEO** the **confirmed** environmental management plan if there is a material risk that the outcomes or objectives it is required to achieve will not be complied with, including but not limited to as a result of a change to the proposal.
- C2-3 Despite condition C2-1, but subject to conditions C2-4 and C2-5, the proponent may implement minor revisions to an environmental management plan if the revisions will not result in new or increased **adverse impacts** to the environment or result in a risk to the achievement of the limits, outcomes or objectives which the environmental management plan is required to achieve.
- C2-4 If the proponent is to implement minor revisions to an environmental management plan under condition C2-3, the proponent must provide the **CEO** with the following at least twenty (20) business days before it implements the revisions:
  - (1) the revised environmental management plan clearly showing the minor revisions;
  - (2) an explanation of and justification for the minor revisions; and
  - (3) an explanation of why the minor revisions will not result in new or increased **adverse impacts** to the environment or result in a risk to the achievement of the limits, outcomes or objectives which the environmental management plan is required to achieve.
- C2-5 The proponent must cease to implement any revisions which the **CEO** notifies the proponent (at any time) in writing may not be implemented.
- C2-6 **Confirmed** environmental management plans, and any revised environmental management plans under condition C2-4(1), must be published on the proponent's website and provided to the **CEO** in electronic form suitable for on-

line publication by the Department of Water and Environmental Regulation within twenty (20) business days of being implemented, or being required to be implemented (whichever is earlier).

#### C3 Conditions Related to Monitoring

- C3-1 The proponent must undertake monitoring capable of:
  - (1) substantiating whether the proposal limitations and extents in Part A are exceeded; and
  - (2) **detecting** and substantiating whether the environmental outcomes identified in Part B are achieved (excluding any environmental outcomes in Part B where an environmental management plan is expressly required to monitor achievement of that outcome).
- C3-2 The proponent must submit as part of the Compliance Assessment Report required by condition D2, a compliance monitoring report that:
  - (1) outlines the monitoring that was undertaken during the implementation of the proposal;
  - (2) identifies why the monitoring was capable of substantiating whether the proposal limitation and extents in Part A are exceeded;
  - (3) for any environmental outcomes to which condition C3-1(2) applies, identifies why the monitoring was scientifically robust and capable of detecting whether the environmental outcomes in Part B are met;
  - (4) outlines the results of the monitoring;
  - (5) reports whether the proposal limitations and extents in Part A were exceeded and (for any environmental outcomes to which condition C3-1
    (2) applies) whether the environmental outcomes in Part B were achieved, based on analysis of the results of the monitoring; and
  - (6) reports any actions taken by the proponent to remediate any potential non-compliance.

#### C4 Environmental Management Plans: Conditions Relating to Monitoring and Adaptive Management for Outcomes Based Conditions

- C4-1 The environmental management plans required under conditions B1-3, B7-2, B8-2 and B9-4 must contain provisions which enable the substantiation of whether the relevant outcomes of those conditions are met, and must include:
  - (1) **threshold criteria** that provide a limit beyond which the environmental outcomes are not achieved;

- (2) **trigger criteria** that will provide an early warning that the environmental outcomes are not likely to be met;
- (3) monitoring parameters, sites, control/reference sites, methodology, timing and frequencies which will be used to measure threshold criteria and trigger criteria. Include methodology for determining alternate monitoring sites as a contingency if proposed sites are not suitable in the future;
- (4) baseline data;
- (5) data collection and analysis methodologies;
- (6) adaptive management methodology;
- (7) **contingency measures** which will be implemented if **threshold criteria** or **trigger criteria** are not met; and
- (8) reporting requirements.
- C4-2 The environmental management plan required under condition B1-3 is also required to include:
  - (1) **baseline and targeted flora and vegetation surveys** of the North Kiaka and Moora Mine Disturbance footprints.
- C4-3 The environmental management plan required under condition B7-2 is also required to include:
  - (1) real time monitoring of particulate matter with an equivalent aerodynamic diameter of ten (10) micro metres or less and ambient meteorological conditions for a representative period of at least one (1) year during the operational phase of the proposal to confirm achievement of the environmental outcome in condition B7-1(1)(a);
  - (2) monthly specified monitoring and sampling of respirable crystalline silica for a representative period of at least one (1) year during the operational phase of the proposal to confirm achievement of the environmental outcome in condition B7-1(1)(b);
  - (3) proposed monitoring methods and frequency for particulate matter with an equivalent aerodynamic diameter of ten (10) micro metres or less, respirable crystalline silica and **ambient meteorological conditions** beyond the **representative period** of at least one (1) year referenced in conditions C4-3(1) and C4-3(2) as informed by the results of that representative monitoring; and
  - (4) **contingency measures** including, but not limited to a reduction or cessation of activities when the **trigger criteria** included in condition C4-

1(2) are exceeded.

- C4-4 The environmental management plan required under condition B8-2 is also required to include:
  - (1) removal or, if appropriate, retention of plant and infrastructure in consultation with relevant stakeholders;
  - (2) rehabilitation of all disturbed areas to a standard suitable for the proposed new land use(s); and
  - (3) identification of contaminated areas, including provision of evidence of notification and proposed management measures to relevant statutory authorities.
- C4-5 Without limiting condition C3-1, failure to achieve an environmental outcome, or the exceedance of a **threshold criteria**, regardless of whether threshold **contingency measures** have been or are being implemented, represents a non-compliance with these conditions.

#### C5 Environmental Management Plans: Conditions Related to Management Actions and Targets for Objective Based Conditions

- C5-1 The environmental management plans required under conditions B1-3 and B9-4 must contain provisions which enable the achievement of the relevant objectives of those conditions and substantiation of whether the objectives are reasonably likely to be met, and must include:
  - (1) management actions;
  - (2) management targets;
  - (3) contingency measures if management targets are not met; and
  - (4) reporting requirements.
- C5-2 Without limiting condition C2-1, the failure to achieve an environmental objective, or implement a **management action**, regardless of whether **contingency measures** have been or are being implemented, represents a non-compliance with these conditions.

#### PART D – COMPLIANCE, TIME LIMITS, AUDITS AND OTHER CONDITIONS D1 Non-compliance Reporting

- **D1-1** If the proponent becomes aware of a potential non-compliance, the proponent must:
  - (1) report this to the **CEO** within seven (7) days;
  - (2) implement contingency measures;
  - (3) investigate the cause;
  - (4) investigate environmental impacts;
  - (5) advise rectification measures to be implemented;
  - (6) advise any other measures to be implemented to ensure no further impact;
  - (7) advise timeframe in which contingency, rectification and other measures have and/or will be implemented; and
  - (8) provide a report to the **CEO** within twenty-one (21) days of being aware of the potential non-compliance, detailing the measures required in conditions D1-1(1) to D1-1(7) above.
- D1-2 Failure to comply with the requirements of a condition, or with the content of an environmental management plan required under a condition, constitutes a non-compliance with these conditions, regardless of whether the **contingency measures**, rectification or other measures in condition D1-1 above have been or are being implemented.

#### D2 Compliance Reporting

- D2-1 The proponent must provide an annual Compliance Assessment Report to the **CEO** for the purpose of determining whether the implementation conditions are being complied with.
- D2-2 Unless a different date or frequency is approved by the **CEO**, the first annual Compliance Assessment Report must be submitted within fifteen (15) months of the date of this Statement, and subsequent reports must be submitted annually from that date.
- D2-3 Each annual Compliance Assessment Report must be endorsed by the proponent's Chief Executive Officer, or a person approved by proponent's Chief Executive Officer to be delegated to sign on the Chief Executive Officer's behalf.

- D2-4 Each annual Compliance Assessment Report must:
  - (1) state whether each condition of this Statement has been complied with, including:
    - (a) exceedance of any proposal limits and extents;
    - (b) achievement of environmental outcomes;
    - (c) achievement of environmental objectives;
    - (d) requirements to implement the content of environmental management plans;
    - (e) monitoring requirements;
    - (f) implement **contingency measures**;
    - (g) requirements to implement adaptive management; and
    - (h) reporting requirements.
  - include the results of any monitoring (inclusive of any raw data) that has been required under Part C in order to demonstrate that the limits in Part A, and any outcomes or any objectives are being met;
  - (3) provide evidence to substantiate statements of compliance, or details of where there has been a non-compliance;
  - (4) include the corrective, remedial and preventative actions taken in response to any potential non-compliance;
  - (5) be provided in a form suitable for publication on the proponent's website and online by the Department of Water and Environmental Regulation; and
  - (6) be prepared and published consistent with the latest version of the Compliance Assessment Plan required by condition D2-5 which the CEO has confirmed by notice in writing satisfies the relevant requirements of Part C and Part D.
- D2-5 The proponent must prepare a Compliance Assessment Plan which is submitted to the **CEO** at least six (6) months prior to the first Compliance Assessment Report required by condition D2-2, or prior to implementation of the proposal, whichever is sooner.
- D2-6 The Compliance Assessment Plan must include:
  - (1) what, when and how information will be collected and recorded to assess compliance;
- (2) the methods which will be used to assess compliance;
- (3) the methods which will be used to validate the adequacy of the compliance assessment to determine whether the implementation conditions are being complied with;
- (4) the retention of compliance assessments;
- (5) the table of contents of Compliance Assessment Reports, including audit tables; and
- (6) how and when Compliance Assessment Reports will be made publicly available, including usually being published on the proponent's website within sixty (60) days of being provided to the CEO.

#### D3 Contact Details

D3-1 The proponent must notify the **CEO** of any change of its name, physical address or postal address for the serving of notices or other correspondence within twenty-eight (28) days of such change. Where the proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State.

#### D4 Time Limit for Proposal Implementation

- D4-1 The North Kiaka Mine must be substantially commenced within five (5) years from the date of this Statement.
- D4-2 The proponent must provide to the **CEO** documentary evidence demonstrating that they have complied with condition D4-1 no later than fourteen (14) days after the expiration of the period specified in condition D4-1.
- D4-3 If the North Kiaka Mine has not been substantially commenced within the period specified in condition D4-1, implementation of the North Kiaka Mine must not be commenced after the expiration of that period.

#### D5 Public Availability of Data

D5-1 Subject to condition D5-2, within a reasonable time period approved by the **CEO** upon the issue of this Statement and for the remainder of the life of the proposal, the proponent must make publicly available, in a manner approved by the **CEO**, all validated environmental data collected before and after the date of this Statement relevant to the proposal (including sampling design, sampling methodologies, monitoring and other empirical data and derived information products (e.g. maps)), environmental management plans and reports relevant to the assessment of this proposal and implementation of this Statement.

#### D5-2 If:

- (1) any data referred to in condition D5-1 contains trade secrets; or
- (2) any data referred to in condition D5-1 contains particulars of confidential information (other than trade secrets) that has commercial value to a person that would be, or could reasonably be expected to be, destroyed or diminished if the confidential information were published,

the proponent may submit a request for approval from the **CEO** to not make this data publicly available and the **CEO** may agree to such a request if the **CEO** is satisfied that the data meets the above criteria.

D5-3 In making such a request the proponent must provide the **CEO** with an explanation and reasons why the data should not be made publicly available.

#### D6 Independent Audit

- D6-1 The proponent must arrange for an independent audit of compliance with the conditions of this statement, including achievement of the environmental outcomes and/or the environmental objectives and/ or environmental performance with the conditions of this statement, as and when directed by the **CEO**.
- D6-2 The independent audit must be carried out by a person with appropriate qualifications who is nominated or approved by the **CEO** to undertake the audit under condition D6-1.
- D6-3 The proponent must submit the independent audit report with the Compliance Assessment Report required by condition D2, or at any time as and when directed in writing by the **CEO**. The audit report is to be supported by credible evidence to substantiate its findings.
- D6-4 The independent audit report required by condition D6-1 is to be made publicly available in the same timeframe, manner and form as a Compliance Assessment Report, or as otherwise directed by the **CEO**.

Acronym or abbreviation	Definition or term
Aboriginal cultural heritage	Means the tangible and intangible elements that are important to the Aboriginal people of the state, and are recognised through social, spiritual, historical, scientific or aesthetic values, as part of Aboriginal tradition to the extent they directly affect or are affected by physical or biological surroundings.
Adverse impact(s) / adversely impacted	Negative change that is neither trivial nor negligible that could result in a reduction in health, diversity or abundance of the receptor/s being impacted, or a reduction in <b>environmental</b> <b>value</b> . Adverse impacts can arise from direct or indirect impacts, or other impacts from the proposal. In relation to flora and vegetation, includes but is not limited to, a definable change in spatial coverage or a change in the health, species diversity, structure and plant density of vegetation, vegetation and flora mortality, spread or introduction of environmental weeds, introduction or spread of disease and edge effects. In relation to terrestrial fauna, includes but is not limited to, a definable change in spatial coverage of vegetation, vegetation and flora mortality, spread or introduction of environmental weeds, introduction of environmental weeds, introduction of environmental weeds, introduction or spread of disease and edge effects.
Ambient meteorological conditions	Includes wind speed, wind direction, ambient temperature, relative humidity, atmospheric pressure and rainfall.
Authorised activities	Activities permitted within the exclusion zones required by condition B9-2(4) including, Traditional Owner access and cultural activities, surveys and research, rehabilitation of cleared or degraded areas, land management practices (weed and feral animal control, restricting unauthorised access, controlled burning etc), monitoring (e.g. for dust) and access along existing tracks (and maintenance of these existing tracks as required).
Baseline and targeted flora and vegetation surveys	Reconnaissance, detailed and targeted surveys undertaken in accordance with the EPA's <i>Technical guidance – Flora and vegetation surveys for environmental impact assessment</i> (EPA 2016) including any revision to this technical guidance.
Detecting	The smallest statistically discernible effect size that can be achieved with a monitoring strategy designed to achieve a statistical power value of at least 0.8 or an alternative value as determined by the <b>CEO</b> .
Cairn Hill Nature Reserve	The area labelled as such in Figure 3 being Lot 4319 on Deposited Plan 40938.

Table 3: Abbreviations	and	definitions
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Cairn Hill North	The area labelled as such in Figure 3 being a portion of Lot 52 on Deposited Plan 29474.
CEO	The Chief Executive Officer (CEO) of the Department of the Public Service of the State responsible for the administration of section 48 of the <i>Environmental Protection Act 1986</i> , or the CEO's delegate.
Confirmed	In relation to a plan required to be made and submitted to the <b>CEO</b> , means, at the relevant time, the plan that the <b>CEO</b> confirmed, by notice in writing, meets the requirements of the relevant condition.
	In relation to a plan required to be implemented without the need to be first submitted to the <b>CEO</b> , means that plan until it is revised, and then means, at the relevant time, the plan that the <b>CEO</b> confirmed, by notice in writing, meets the requirements of the relevant condition.
Contamination	Having a substance present at above background concentrations that presents, or has the potential to present, a risk or harm to human health, the environment or any <b>environmental value</b> .
Contingency measures	Planned actions for implementation if it is identified that an environmental outcome, environmental objective, threshold criteria, or management target are likely to be, or are being, exceeded. Contingency measures include changes to operations or reductions in disturbance or <b>adverse impacts</b> to reduce impacts and must be decisive actions that will quickly bring the impact to below any relevant threshold, management target and to ensure that the environmental outcome and/or objective can be met.
Construction activities	Activities that are associated with the substantial implementation of a proposal including but not limited to, earthmoving, vegetation clearing, grading or construction of right of way. Construction activities do not include Geotechnical investigations (including potholing for services and the installation of piezometers) and other preconstruction activities where no clearing of vegetation is required.
Coomberdale chert hills threatened ecological community	The Vegetation alliances on ridges and slopes of the chert hills of the Coomberdale floristic region" threatened ecological community which is listed under the <i>Biodiversity Conservation Act 2016</i> .
DBCA	The Department of the Public Service of the State responsible for the administration of the <i>Biodiversity Conservation Act 2016</i> and the <i>Conservation and Land Management Act 1984</i> which at the time of writing is the Department of Biodiversity, Conservation and Attractions (DBCA).
DEMIRS	The Department of the Public Service of the State responsible for the administration of the <i>Mining Act</i> 1978 which at the time of

	writing is the Department of Energy, Mines, Industry Regulation and Safety (DEMIRS).	
Dieback	A plant disease of native ecosystems. The main species responsible, <i>Phytophthora cinnamomi</i> , is a microscopic and soil-borne organism that was introduced into Western Australia.	
Disturb/ed	Means directly has or materially contributes to the disturbance effect on health, diversity or abundance of the receptor/s being impacted or on an <b>environmental value</b> .	
	In relation to flora, vegetation or fauna habitat, includes to result in the death, destruction, removal, severing or doing substantial damage to.	
	In relation to fauna, includes to have the effect of altering the natural behaviour of fauna to its detriment.	
Environmental value	A beneficial use, or ecosystem health condition.	
Environmental weeds	Any plant declared under section 22(2) of the <i>Biosecurity and</i> <i>Agriculture Management Act 2007</i> , any plant listed on the Weeds of National Significance List and any weeds listed on the Department of Biodiversity Conservation and Attractions Midwest Impact and Invasiveness Ratings list, as amended or replaced from time to time.	
Exclusion zone(s)	The two areas shown in Figure 3, where there will be no direct disturbance from proposal activities except for <b>authorised activities</b> permitted within the exclusion zone.	
Foraging habitat	Vegetation consistent with the 'Mixed shrublands on low hills' fauna habitat type described in SIMCOA's Environmental Review Document as "Mixed Shrublands of <i>Acacia</i> , <i>Banksia</i> , <i>Regelia</i> , <i>Kunzea</i> , <i>Allocasuarina</i> , <i>Hibbertia</i> , <i>Xanthorrhoea</i> and <i>Melaleuca</i> on rocky low hills".	
GHG emissions	Greenhouse gas emissions expressed in tonnes of carbon dioxide equivalent (CO <sub>2</sub> -e) as calculated in accordance with the definition of 'carbon dioxide equivalence' in Section 7 of the <i>National</i> <i>Greenhouse and Energy Reporting Act 2007</i> (Cth), or, if that definition is amended or repealed, the meaning set out in an Act, regulation or instrument concerning greenhouse gases as specified by the Minister.	
Ground disturbing activities	Any activity or activities undertaken in the implementation of the proposal, including any clearing, civil works or construction.	
Invasive species	Includes <b>environmental weeds</b> and native species that are known to invade and dominate an area in a manner that would substantially alter the area's inherent vegetation diversity, composition and structure.	
Land acquisition	The protection of environmental values of an area for the purpose of conservation through improved security of tenure. Includes	

	costs of establishing the offset site and the ongoing management of costs of maintaining the offset for the long term.	
Management action	The identified actions implemented with the intent of achieving the environmental objective.	
Management target	A type of indicator to evaluate whether an environmental objective is being achieved.	
Objective(s)	An objective is the proposal-specific desired state for an environmental factor/s to be achieved from the implementation of management actions.	
Occupied residential premises	Includes any premises occupied by a member of the public during the period of implementation of the proposal. For clarity this does not include premises occupied by the proponent or the proponent's employees or contractors unless that occupation is for residential use.	
On-ground management	This includes revegetation (re-establishment of native vegetation in degraded areas) and enhancement (repair of ecosystem processes and management of weeds, disease or feral animals) with the objective to achieve a <b>tangible improvement</b> to the environmental values in the offset area.	
Operational	Operation of the mine and plant infrastructure for the proposal.	
Operational hours	Refers to when earth moving, drilling or blasting occurs for the proposal.	
Outcome(s)	A proposal-specific result to be achieved when implementing the proposal.	
Proposal	The proposal described in Table A1-1.	
Real time monitoring	Continuous monitoring applying a 5-minute averaging period measuring particulates in micrograms per cubic metre. Particulate matter with an equivalent aerodynamic diameter of 10 micro metres or less to be measured in accordance with AS/NZS 3580.9.8.	
Representative period	A period of time that encompasses typical operations at both the North Kiaka and Moora mines, in terms of both nature and magnitude, that occurs immediately following construction of the North Kiaka Mine.	
Revegetation buffer	Revegetation of 25 m buffer belts around existing degraded TEC occurrences including the use of Carnaby's black cockatoo foraging species comparable to those within the TEC for the purpose to enhance adjoining areas of the TEC by mitigating edge effects rather than to expand the TEC noting the geology of the buffers will likely be different.	
Safeguard Legislation	The <i>National Greenhouse and Energy Reporting Act 2007</i> and subsidiary National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015.	

Self-sustaining	Refers to vegetation that can survive (continue indefinitely) without ongoing management actions such as watering, weed control or infill planting.
Specified monitoring and sampling	Monitoring of respirable crystalline silica once every six days for 24 hours with a PM <sub>10</sub> high-volume sampler and analysed using the X-Ray Diffraction (XRD) alpha-quartz (NIOSH7500) method.
Tangible improvement	A perceptible, measurable and definable improvement that provides additional ecological benefit and/or value.
Threshold criteria	The indicators that have been selected to represent limits of impact beyond which the environmental outcome is not being met.
Trigger criteria	Indicators that have been selected for monitoring to provide a warning that, if exceeded, the environmental outcome may not be achieved. They are intended to forewarn of the approach of the threshold criteria and trigger response actions.
Vegetation condition	The condition of native vegetation rated in accordance with the <i>Technical guidance – Flora and vegetation surveys for environmental impact assessment (EPA 2016)</i> including any revision to this technical guidance.
Yued Aboriginal Corporation	The Regional Corporation established under the Yued Indigenous Land Use Agreement registered on 17 October 2018 in regard to the Yued Agreement Area (WI2015/009).

#### Figures (attached)

- Figure 1 North Kiaka Mine and Moora Mine development envelopes and disturbance footprints (This figure is a representation of the co-ordinates referenced in Schedule 1)
- Figure 2 Kemerton Smelter development envelope (This figure is a representation of the co-ordinates referenced in Schedule 1)
- Figure 3 Offset locations



Figure 1 North Kiaka Mine and Moora Mine development envelopes and disturbance footprints



Figure 2 Kemerton Smelter development envelope



Figure 3 Offset locations

#### Schedule 1

All co-ordinates are in metres, listed in Map Grid of Australia Zone 50 (MGA Zone 50), datum of Geocentric Datum of Australia 2020 (GDA20).

Spatial data depicting the figures are held by the Department of Water and Environmental Regulation. Record no. APP-0000354.

## **Appendix B: Decision-making authorities**

De	cision-Making Authority	Legislation (and approval)
1.	Minister for Aboriginal Affairs	<ul> <li>Aboriginal Heritage Act 1972</li> <li>section 18 consent to impact a registered Aboriginal heritage site</li> </ul>
2.	Minister for the Environment	<ul> <li>Biodiversity Conservation Act 2016</li> <li>section 40 authority to take or disturb threatened species</li> <li>section 45 authority to modify occurrence of a threatened ecological community</li> </ul>
3.	Minister for State Development	<ul> <li>Silicon (Kemerton) Agreement Act 1987</li> <li>clause 8 approval of proposals to significantly modify, expand or otherwise vary activities</li> </ul>
4.	Minister for Mines and Petroleum	Mining Act 1978 - granting of a new mining lease
5.	Minister for Water	Rights in Water and Irrigation Act 1914 - section 5C licence to take water
6.	Chief Dangerous Goods Officer Department of Energy, Mines, Industry Regulation and Safety	<ul> <li>Dangerous Goods Safety Act 2004</li> <li>storage and handling of dangerous goods</li> </ul>
7.	Chief Executive Officer, Department of Biodiversity, Conservation and Attractions	<ul> <li>Biodiversity Conservation Act 2016</li> <li>authority to take flora and fauna (other than threatened species)</li> </ul>
8.	Chief Executive Officer, Department of Water and Environmental Regulation	<i>Environmental Protection Act 1986</i> <ul> <li>part V works approval and licence</li> <li>part IV compliance (Ministerial statements)</li> </ul>
9.	Chief Executive Officer, Shire of Moora	<ul> <li>Local Government Act 1995</li> <li>development approval and scheme amendment</li> <li>Health Act 1911</li> <li>Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974</li> <li>permit for treatment of sewage</li> </ul>
10.	Chief Health Officer, Department of Health	<ul> <li>Health Act 1911</li> <li>Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974</li> <li>treatment of sewage intended to serve a building that is not a single dwelling or any other building that produces more than 540 litres of sewage per day</li> </ul>

### Table B1: Identified relevant decision-making authorities for the proposal

Decision-Making Authority	Legislation (and approval)
<ol> <li>Executive Director Resource and Environmental Compliance, Department of Energy, Mines, Industry Regulation and Safety</li> </ol>	Mining Act 1978 - mining proposal - mine closure plan
12. WorkSafe Commissioner	Work Health and Safety Act 2020 Work Health and Safety (Mines) Regulations 2022 - mining safety

# Appendix C: Regulation under other statutory processes

Table C1: Identified relevant decision-making authorities for the regulation of outcomes for the proposal

Statutory decision-making process	Environmental outcome
Aboriginal Heritage Act 1972	Consent under section 18 of the Act regulates any direct disturbance or potential harm to Aboriginal sites. As such approval was obtained for disturbance of a registered site within the existing disturbance footprint of the Moora Mine (see Section 2.4 above).
	No additional disturbance of registered Aboriginal heritage sites is proposed but if required the impacts can be considered and regulated under the AH Act to support the EPA objective for social surroundings.
Biodiversity Conservation Act 2016	This Act regulates the taking or disturbance of any threatened flora, fauna and ecological communities in such a manner that it does not compromise the overall conservation and protection of that species or community. Previous permission to take have been granted for the Moora Mine (2001 and 2004) and additional permissions will have to be obtained for the North Kiaka Mine (see Section 2.1 and 2.2 for assessment). The permits support the EPA objectives for flora and vegetation and fauna in so far as direct take
	or disturbance of threatened flora, fauna and ecological communities without permission is unlawful.
<i>Environmental Protection Act 1986</i> Part V Division 3 (Prescribed premises, works approvals and licences)	The Moora mine site is regulated under Part V and is considered a prescribed premises, meeting the criteria for the processing or beneficiation of metallic or non-metallic ore and dewatering. The works approval and licence are to regulate emissions and discharges during construction, commissioning and operations to achieve the following outcomes:
	<ul> <li>minimise and mange noise and dust emissions to protect environmental values and amenity at sensitive receptors</li> </ul>
	<ul> <li>maintain air quality and minimise emissions so that environmental values are protected</li> </ul>
	<ul> <li>no adverse impacts to soil, surface water and groundwater quality.</li> </ul>

	The Moora Mine is currently governed under Part V in such a manner as to support the EPA objectives for Social Surroundings and Air Quality. The North Kiaka mine site however is not considered a prescribed premises and will not be regulated under the Moora Mine works approval. Therefore, the EPA has recommended additional conditions relating to matters of noise and air quality regulation (see Sections 2.4 and 2.5 above).
Environmental Protection (Noise) Regulations 1997	The Regulations regulate the emissions of noise to an allowable level that can be received by a property and set out clear methods for noise assessment and control. Compliance with the Noise Regulations is required at all receptors and is considered to support the EPA objective for social surroundings.
Mining Act 1978	<ul> <li>The mining proposals and mine closure plans for the Moora and North Kiaka mines will regulate the construction, operation, decommissioning and rehabilitation of the proposal to be consistent with the Department of Energy, Mines, Industry Regulation and Safety's (DEMIRS) environmental factor objectives for water resources, land and soils and rehabilitation and mine closure to: <ul> <li>maintain the hydrological regimes, quality and quantity of groundwater and surface water to the extent that existing and potential uses, including ecosystem maintenance are protected</li> <li>maintain the quality of land and soils so that environmental values are protected</li> <li>ensure mining activities are rehabilitated and closed in a manner to make them physically safe to humans and animals, geo-technically stable, geo-chemically non-polluting/non-contaminating, and capable of sustaining an agreed postmining land use, and without unacceptable liability to the State.</li> </ul> </li> <li>The Moora Mine has already undertaken rehabilitation measures in accordance with the mining plan and existing mining plans will be reviewed and updated to include the North Kiaka Mine (see section 2.1 above). The DEMIRS objectives are consistent with the EPA objectives for inland waters and terrestrial environmental quality.</li> </ul>

<i>Rights in Water and Irrigation Act</i> 1914	The water licenses regulate the use, management, allocation, and protection of water resources with the key objectives:
	Protect the state's water resources
	<ul> <li>Promote the sustainable and efficient use of water</li> </ul>
	• Meet the needs of current and future users
	• Protect ecosystems and the environment.
	The Moora Mine is operating under a current Water License for groundwater extraction, and it is not proposed that any additional activities that would require a water license will be undertaken at North Kiaka.
	Characteristics relating to water source, requirements and discharge can be adequately regulated under this Act and it is considered to support the EPA objective for inland waters.
	Should additional water be required, it can be assessed under the <i>Rights in Water and Irrigation Act 1914</i> .
National Greenhouse and Energy Reporting Act 2007 (Cth) Safeguard Mechanism	The existing approved operations currently report under the <i>Commonwealth Safeguard Mechanism</i> . The obligations under the <i>Safeguard Mechanism</i> are considered to support the EPA objective for Greenhouse Gas Emissions for the project.

### **Appendix D: Environmental Protection Act principles**

Table D1: Consideration of principles of the Environmental Protection Act 1986
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EP Act principle	Consideration
<ul> <li><b>1. The precautionary principle</b></li> <li>Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In application of this precautionary principle, decisions should be guided by – <ul> <li>(a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and</li> <li>(b) an assessment of the risk-weighted consequences of various options.</li> </ul> </li> </ul>	<ul> <li>The EPA considered the precautionary principle were particularly relevant to its assessment of the impacts of the proposal on flora and vegetation within the context of the increased conservation status of the TEC in the last decade. The proposal has the potential to result in serious or irreversible damage to the occurrence of the Coomberdale chert hills TEC and associated threatened flora. The EPA notes that the proponent has considered different options in designing the proposal and proposed avoidance measures to avoid impacts on the TEC by: <ul> <li>locating resource extraction activities on areas of Coomberdale chert hills TEC that is in poorer condition</li> <li>avoiding the location of threatened flora in the planning of final infrastructure and landform locations where practicable</li> <li>locating supporting infrastructure on previously disturbed areas where possible</li> </ul> </li> <li>The proponent has also proposed limits on impacts and mitigation measures to reduce impacts on the TEC and associated threatened flora. The EPA has applied conditions where is uncertainty, including indirect offset measures which are aimed at research to address key scientific knowledge gaps to support the recovery of the TEC and threatened flora. The outcome of this research will provide input to the management and conservation planning of the TEC within a regional context.</li> <li>The EPA has recommended conditions to ensure that risks are minimised or avoided where possible, and that relevant measures are undertaken by the proponent to manage residual impacts. The EPA has concluded that subject to the implementation of the recommended conditions, the proposal is unlikely to pose a threat of serious or irreversible harm.</li> </ul>
<b>2. The principle of intergenerational equity</b> The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.	The EPA has considered the principle of intergenerational equity in its assessment and has had particular regard to this principle in its assessment of flora and vegetation and terrestrial fauna.

EP Act principle	Consideration
	The EPA has considered the principle of intergenerational equity when examining the potential long-term impacts to the Coomberdale chert hills TEC. In light of the known and future pressures to the TEC, the EPA has concern regarding the future resilience of the Coomberdale chert hills TEC. To address these concerns, the EPA has recommended a suite of conditions to ensure that the proponent can counterbalance the significant residual impacts.
	The EPA is of the view that the recommended indirect research offset measures have the potential to manage threatening processes to the TEC, increase the quality of TEC remnants and increase the numbers of threatened and priority flora, as well as Carnaby's foraging habitat through both direct and indirect offsets. The EPA has also recommended rehabilitation of waste rock dumps with Carnaby's foraging species to increase habitat connectivity and support species resilience and contribute to recovery.
	From its assessment of this proposal, the EPA has concluded that the health, resilience and productivity of the environment will likely be maintained for the benefit of future generations, conditional on implementation of recommendations, particularly offsets.
<ul> <li>3. The principles of the conservation of biological diversity and ecological integrity</li> <li>Conservation of biological diversity and ecological integrity should be a</li> </ul>	The EPA has had particular regard to this principle in its assessment of flora and vegetation. The clearing of Coomberdale chert hills TEC is a significant residual impact due to its conservation status and within the context of biological diversity and integrity as it provides habitat for conservation significant flora and fauna
fundamental consideration.	species.
	As discussed for Principle 1, the EPA has recommended limits of disturbance to the TEC, threatened and Priority flora and Carnaby's black cockatoo habitat and the implementation of mitigation measures, which will contribute to the conservation of biodiversity diversity and ecological integrity of these values. The EPA has required the proponent to avoid and minimise impacts to a low level and propose direct and indirect offsets.
	The EPA has recommended offset measures to increase the conservation estate for the TEC and its associated values from 24% to 32%. In addition, the indirect offsets will protect and enhance a further 10% of the mapped occurrence of TEC remnants for the life of the mine and smelter.

EP Act principle	Consideration
	The EPA has concluded that given the nature of the proposed offsets they are likely to contribute to the conservation of biological diversity and ecological integrity in the area.
<ol> <li>Principles relating to improved valuation, pricing and incentive mechanisms         <ol> <li>Environmental factors should be included in the valuation of assets and services.</li> <li>The polluter pays principle — those who generate pollution and waste should bear the cost of containment, avoidance or abatement.</li> <li>The users of goods and services should pay prices based on the full life cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any wastes.</li> <li>Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, which enable those best placed to maximise benefits and/or minimise costs to develop their own solutions and responses to environmental problems.</li> </ol> </li> </ol>	<ul> <li>In considering this principle, the EPA notes that the proponent will bear the costs relating to implementing the proposal to achieve environmental outcomes, and management and monitoring of environmental impacts during construction, operation and decommissioning of the proposal. The EPA has had particular regard to this principle in considering:</li> <li>the relinquishment of mining tenure and the implementation of the proposed offsets for the significant residual impacts to flora and vegetation, and terrestrial fauna</li> <li>dust controls and monitoring to avoid amenity impact to social surroundings and air quality.</li> <li>Greenhouse gas emissions</li> <li>The proponent will be responsible for bearing the costs of adopting advances in process management and other measures in the future to further reduce and offset GHG emissions to achieve net zero by 2050.</li> <li>The EPA notes the commitments proposed by the proponent particularly in relation to bearing the costs to achieve environmental outcomes and concludes this principle is unbeld</li> </ul>
5. The principle of waste minimisation	In considering the principle of waste minimisation in its assessment, the EPA
<b>5.</b> The principle of waste minimisation All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.	notes that the mining operations, by their nature, optimise the extraction of quartzite ore and due to economic pressures, minimise the creation of waste rock.
	The EPA notes that waste will be minimised through the control of dust emissions through an approved environmental management plan.
	Consistent with the principle of waste minimisation, the EPA has recommended conditions requiring the application of the waste hierarchy for the decommissioning and closure of the Kemerton Smelter.

## Appendix E: Other environmental factors

#### Table E1: Evaluation of other environmental factors

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
Land			
Subterranean fauna	Direct or indirect disturbance or of subterranean fauna habitat. Potential impacts due to changes to ground and surface hydrological processes and water quality, flora and vegetation.	<ul> <li>Public comments</li> <li>Public availability of a subterranean fauna survey report.</li> </ul>	<ul> <li>Subterranean fauna was not identified as a preliminary environmental factor when the EPA decided to assess the proposal.</li> <li>The impacts of mining below the water table at the existing Moora Mine have previously been approved by the EPA under MS 813.</li> <li>Considering that: <ul> <li>No dewatering or groundwater abstraction is proposed for the North Kiaka Project</li> <li>Dewatering and mining below the water table are approved under MS 813 for the existing Moora Mine, with the impacts to subterranean fauna previously assessed</li> <li>The combined effects of the proposed North Kiaka Project and the existing Silicon Project will impact less than 1% of the Noondine chert formation (which has the potential to provide suitable habitat for subterranean fauna)</li> </ul> </li> <li>the EPA considers it is unlikely that the proposed North Kiaka Project would have a significant impact on subterranean fauna. Accordingly, the EPA did not consider subterranean fauna to be a key environmental factor at the conclusion of its assessment.</li> </ul>
Landforms	Direct impact on the Noondine chert formation from mining.	<ul> <li>Public comments</li> <li>Permanent alteration of Noondine chert formation.</li> </ul>	Landforms was not identified as a preliminary environmental factor when the EPA decided to assess the proposal. The EPA's environmental objective for landforms is <i>to maintain</i> <i>the variety and integrity of significant physical landforms so that</i> <i>environmental values are protected</i> . There are six criteria that the EPA commonly uses to determine whether a landform is

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
			<ul> <li>significant including variety, integrity, ecological importance, scientific importance, rarity and social importance (EPA 2018b). The EPA considered that the Noondine chert formation does not meet most of these criteria with its greatest value attributable to the presence of the Coomberdale chert hills TEC considered under Flora and Vegetation in section 2.1.</li> <li>In determining there was unlikely to be any significant impacts to landforms, the EPA noted the following: <ul> <li>The formation has a total extent of 14,586 ha that generally occurs as ridges approximately 75 m above adjacent valleys across a 150 km stretch between Moora and Three Springs. The North Kiaka Mine and Moora Mine DEs intersect only 1.7% (254 ha) of the landform and do not include any areas of significant elevation. The mine pits are not more than about 260 m AHD compared to the adjacent valley to the west at 210 m AHD.</li> <li>The Morth Kiaka Mine DE has been subject to agricultural land use over many years which has resulted in degradation of the vegetation.</li> <li>The most significant occurrences of the landform are likely to be Jingemia Cave within Watheroo National Park and Cairn Hill and Cairn Hill North which are already or are proposed to be included in a Class A Nature Reserve. These areas contain vegetation in much better condition and both Jingemia Cave and Cairn Hill reach a greater elevation of 280 m AHD.</li> <li>The area to be impacted is not considered to contain high geoheritage or high cultural heritage values.</li> </ul> </li> <li>While the Noondine chert outcrops are a restricted landform in the national context and have an exclusive role in maintaining the Coomberdale chert hills TEC and associated conservation significant additional or different impacts to Flora and the represent significant additional or different impacts to Flora and the represent significant additional or different impacts to Flora and the represent significant additional or different impacts to Flora and the matematicant additiona</li></ul>

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
			consistent with its objective for Flora and Vegetation, which also means that it did not consider landforms to be a key environmental factor at the conclusion of its assessment.
Terrestrial environmental quality	Potential for acid sulfate soils in the mining area, which could affect water quality and	<ul><li>Public comments</li><li>None.</li></ul>	Terrestrial environmental quality was not identified as a preliminary environmental factor when the EPA determined to assess the proposal.
	vegetation.		The risk of exposure of acid sulfate soils at the North Kiaka pit is low noting mining will occur above the water table.
			Accordingly, the EPA did not consider terrestrial environmental quality to be a key environmental factor at the conclusion of its assessment.
Water			
Inland waters	Potential impact to surface water and groundwater quality	Public comments     Impact to continuity and	Inland waters was not identified as a preliminary environmental factor when the EPA determined to assess the proposal.
from discharge of hydrocarbons, chemicals or sediment (in stormwater) to the	quality of water supply.	There are no Ramsar listed or nationally important wetlands within or in close proximity to the proposed North Kiaka Mine DE, the existing Moora Mine DE or the Kemerton Smelter DE.	
	environment.	<ul> <li>Materials characterisation, hydrogeological exploration to determine groundwater levels, and waste rock column leach tests recommended by DEMIRS.</li> </ul>	The proponent has not proposed dewatering or groundwater abstraction from the proposed North Kiaka Mine DE and no change to the existing water discharge volumes, authorised under MS 813. The water demand would be fulfilled from the existing Moora Mine groundwater licence GWL 104693(6). This licence has an allocation limit of 250,000 kL per annum and the proponent's historical use has generally been around 30-40% of the entitlement.
			Considering the above, the EPA notes that the likely impacts to inland waters can be regulated by other decision-making authorities including:
			<ul> <li>the Mining Act will mitigate impacts to water quality from the TSF</li> </ul>

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments	Evaluation of why the factor is not a key environmental factor
			<ul> <li>the RiWI Act will mitigate impacts to groundwater, should additional water be required from the existing Moora Mine</li> <li>the provisions in the <i>Environmental Protection</i> (Unauthorised Discharges) Regulations 2004 and the Contaminated Sites Act 2003 will apply to the proposal.</li> </ul>
			Based on the proponent not proposing groundwater abstraction and dewatering, proposed mitigation measures and mitigation under other decision-making processes, the EPA did not consider inland waters to be a key environmental factor at the conclusion of its assessment.

# **Appendix F: List of submitters**

### 7-day comment on referral

#### Organisations and public

• 2 submissions were received from the public during the 7-day public comment period.

### Public review of additional proponent information

#### Organisations and public

• 3 submissions were received from the public during the public review period

#### Government agencies

- Department of Climate Change, Energy, the Environment and Water
- Department of Biodiversity, Conservation and Attractions
- Department of Energy, Mines, Industry Regulation and Safety
- Department of Water and Environmental Regulation

### Appendix G: Assessment timeline

Date	Progress stages	Time (weeks)
29 July 2022	EPA decided to assess – level of assessment set	
15 August 2022	EPA requested additional information	2
6 July 2023	EPA received additional information	46
3 April 2024	EPA accepted additional information	39
10 April 2024	EPA released additional information for public review	1
24 April 2024	Public review period for additional information closed	2
12 May 2025	EPA received final information for assessment	54
15 May 2025	EPA completed its assessment	1
30 June 2025	EPA provided report to the Minister for Environment	6
30 June 2025	EPA report published	1 day
21 July 2025	Appeals period closed	3

Timelines for an assessment may vary according to the complexity of the proposal and are usually agreed with the proponent soon after the EPA decides to assess the proposal and records the level of assessment.

In this case, the EPA met its timeline objective to complete its assessment and provide a report to the Minister.

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# Appendix I: Contemporising of Ministerial Statement 813

#### **Table I1: Consideration of Ministerial Statement 813**

Ministerial condition or proponent's environmental management commitment	Environmental factor	Proposed change	Comments including assessment and evaluation of proposed changes where relevant to ensure the combined proposal can be implemented consistently with EPA objectives
Condition 1 Proposal Implementation	N/A	Delete condition and replace with consolidated contemporary style condition A1.	The EPA recommends condition 1 is replaced with new condition A1 setting the maximum limits on proposal characteristics which will ensure the implementation of the proposal is consistent with EPA objectives. This condition reflects a contemporary condition setting approach recommended by the EPA. Characteristics relating to water source, requirements and discharge have been removed noting these can be adequately regulated under other decision-making processes such as the <i>Rights in Water and Irrigation Act 1914</i> and Part V Division 3 of the <i>Environmental Protection Act 1986</i> . Characteristics relating to wood supply and charcoal production have also been removed noting these ultimately relate to silicon production which is the environmentally significant characteristic.
Condition 2 Proponent Nomination and Contact Details	N/A	Delete condition and replace with contemporary condition D3.	Condition 2 requires the proponent to notify the CEO of DWER of any change of name and address. This condition has been replaced with condition D3 which includes the same requirement.
Condition 3 Time Limit of Authorisation	N/A	Delete condition and replace with new condition D4.	<ul> <li>Condition 3 set out that approval would lapse if the proposal was not substantially commenced within 5 years (i.e. by November 2014). In November 2014 the then Minister for Environment wrote to the proponent advising that the condition had been met as mining at Moora had been an ongoing operation.</li> <li>As the North Kiaka mine is a new operation, a new condition D4 has been included requiring that those operations be commenced within 5 years or their approval will lapse.</li> </ul>

Ministerial condition or proponent's environmental management commitment	Environmental factor	Proposed change	Comments including assessment and evaluation of proposed changes where relevant to ensure the combined proposal can be implemented consistently with EPA objectives
Condition 4 Compliance Reporting	N/A	Delete condition and replace with contemporary condition D2.	Condition 4 requires the proponent to prepare and maintain a compliance assessment plan detailing how it will monitor and report on compliance with the conditions. It also requires compliance assessment reports to be submitted annually to the CEO of DWER and to be made publicly available. This condition has been replaced with condition D2 which includes the same requirements but with a contemporary structure that aligns with the current format of Ministerial Statements.
Condition 5 Performance Review and Reporting	N/A	Delete condition	<ul> <li>This condition relates to construction of the fourth furnace and requires environmental performance review reports of the furnace's operations to be submitted at the conclusion of the second and fourth years of operation and at additional intervals thereafter as specified by the CEO of DWER.</li> <li>As the fourth furnace has not yet been constructed, the condition has not yet been triggered.</li> <li>A review of the condition has identified that it should be deleted given commissioning and operation will be subject to regulation under Part V of the EP Act.</li> </ul>
Condition 6 Flora	Flora and Vegetation	Replace with new condition B1.	Condition 6 requires there be no discernible detrimental changes to the Coomberdale Chert threatened ecological community, <i>Regelia megacephala</i> and other priority and threatened flora species from mining activities except to the extent that statutory approvals have been granted for their taking or disturbance. This condition has been replaced with new condition B1 which sets limits on impacts to the significant flora and vegetation identified for the significant amendment proposal as outlined in section 2.1.

Ministerial condition or proponent's environmental management commitment	Environmental factor	Proposed change	Comments including assessment and evaluation of proposed changes where relevant to ensure the combined proposal can be implemented consistently with EPA objectives
Condition 7 Mining and Conservation Strategy	Flora and Vegetation	Delete condition	This condition is now redundant and can be deleted. It required the preparation and implementation of a Mining and Conservation Strategy for future expansion into the Eastern Ridge to balance biodiversity conservation with maintenance of long-term access to the chert resource. The proponent has advised that expansion into the Eastern Ridge is now highly unlikely. Furthermore, condition B9 now sets out the latest offset requirements replacing the requirement for the conservation strategy.
Condition 8 Rehabilitation	Flora and Vegetation Terrestrial Fauna	Replace with new condition B3	This condition requires the proponent to undertake progressive rehabilitation of the Moora Mine to a standard comparable in species composition with that of pre-mining vegetation. To support achievement of this outcome the condition requires baseline surveys of soil profiles, landforms/landscapes, groundwater levels, surface water flows and vegetation complexes. Rehabilitation trials are also required to determine criteria for successful regrowth.
			As outlined in the assessment in section 2.1, it has been determined that rehabilitation of waste rock dumps to be consistent with the Coomberdale chert hills TEC is not practicably achievable owing to the modified substrate. The condition has been updated to condition B3 requiring progressive rehabilitation of waste rock dumps in accordance with the Mine Closure Plan required under the <i>Mining Act 1978</i> subject to additional environmental outcomes that are based on learnings from the rehabilitation to date.
Condition 9 Greenhouse Gas Abatement	Greenhouse Gas Emissions	Replace with new condition B4.	Condition 9 requires a Greenhouse Gas Abatement Report that demonstrates energy efficiency has been maximised and future energy recovery has been considered in the design of the third and fourth submerged electric arc furnaces, that ensures greenhouse gas intensity is equivalent to or better than benchmarked world's best practice, and that continuous improvement in greenhouse gas intensity is achieved through triennial review and adoption of advances in technology and process management where practicable.

Ministerial condition or proponent's environmental management commitment	Environmental factor	Proposed change	Comments including assessment and evaluation of proposed changes where relevant to ensure the combined proposal can be implemented consistently with EPA objectives
			This condition is now redundant noting the assessment found that greenhouse gas emissions are subject to regulation under the Australian Government's Safeguard Mechanism. Accordingly, the condition has been replaced with condition B4 which includes a requirement for the proponent to notify the CEO upon significant changes to its obligations under the Safeguard Mechanism.
Procedures	N/A	Delete as redundant.	The procedures listed in MS 813 relate to the way advice is sought and provided by Departments and statutory bodies in execution of the various conditions. They also set out that the Minister for Environment will resolve any disputes between the EPA and DEC over fulfilment of conditions, and that approvals under Part V of the EP Act are required.
			These procedures are redundant noting the contemporised conditions set out when advice is required from others and that the CEO of DWER will determine fulfilment of conditions.