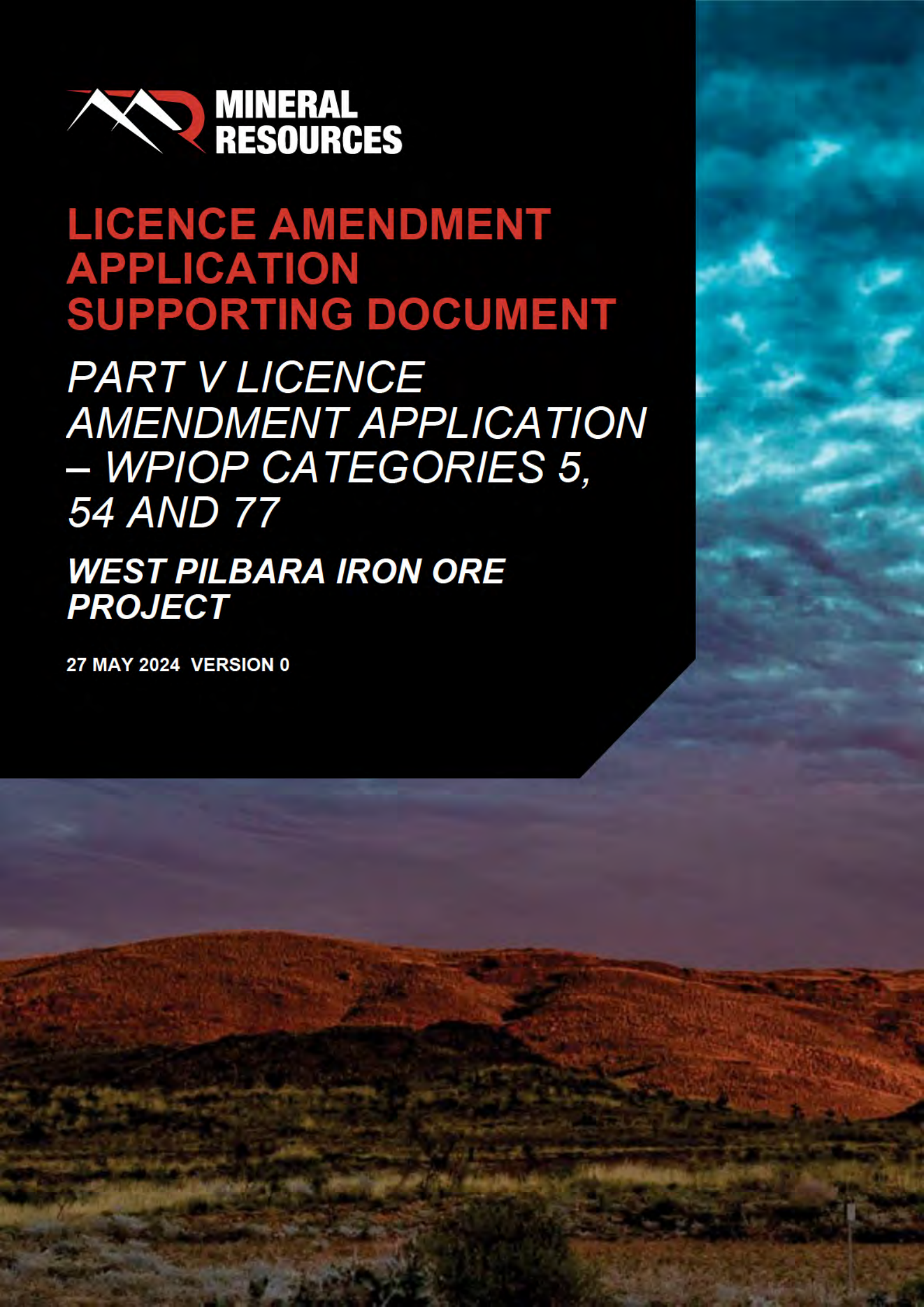
MINERAL RESOURCES

LICENCE AMENDMENT APPLICATION SUPPORTING DOCUMENT

PART V LICENCE AMENDMENT APPLICATION – WPIOP CATEGORIES 5, 54 AND 77

WEST PILBARA IRON ORE PROJECT

27 MAY 2024 VERSION 0



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Revision History

Rev	Issue Date	Prepared by	Reviewed By	Approved By	Document Purpose
0	20/05/2024	[redacted]			For submission to DWER

Acknowledgement of Country

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

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1. ABBREVIATIONS

[redacted]

2. PROJECT OVERVIEW AND PURPOSE

2.1 Overview

The Applicant, Onslow Iron Pty Ltd (ACN 649 012 395) (**Onslow Iron**) a wholly owned subsidiary of Mineral Resources Limited (ACN 118 549 910) (**MinRes**) has commenced construction activities at the Kens Bore Deposit of the West Pilbara Iron Ore Project (**WPIOP**). The Applicant was granted a Works Approval W6769/2023/1 on 25 May 2023 to construct several facilities that are prescribed under Schedule 1 of the Environmental Protection Regulations 1987 (**EP Regulations**) to support mining activities at the Kens Bore Deposit. On 22 May 2024, the applicant was granted Licence L9430/2023/1 (L9430) to operate the Wastewater Treatment Plant (**WWTP**) (Category 54) at the Accommodation Resort and discharge blended treated effluent and reverse osmosis (**RO**) to a dedicated irrigation spray field.

This Licence Amendment Application for Licence L9430 is to seek approval:

- to operate a mobile crushing and screening plant (Category 5 infrastructure) for crushing of iron ore;
- to include the Category 77 infrastructure as detailed on Registration R2550/2024/1 (R2550) into Licence L9430; and
- for contingency to use RO reject water for operational dust suppression activities.

2.1.1 Category 5

The Applicant has constructed a multi-stage mobile crushing and screening plant currently located to the north-western end of the ROM. Environmental commissioning of the plant was completed in April 2024 and subsequently an Environmental Commissioning Report was submitted to the Department of Water and Environmental Regulation (**DWER**) on 15 April 2024. The mobile crushing and screening plant is currently being operated in accordance with Time Limited Operations conditions of W6769/2023/1.

The Applicant is seeking approval to operate the multi-stage mobile crushing and screening plant at the Project. The mobile plant will be operated 24 hours per day to crush and screen iron ore mined from the WPIOP prior to transporting the ore to the Port of Ashburton for shipment to overseas market.

The current throughput capacity of this plant is approximately 2 million tonnes per annum (**tpa**), however configuration of the plant may be adjusted to meet operational requirements, for throughput up to 7 million tpa. This licence amendment application seeks approval for throughput up to 7 million tpa (**Table 1**).

2.1.2 Category 77

The Applicant has constructed a 60 m^3/hour concrete batching plant. Environmental commissioning of the plant was completed in November 2023 and subsequently an Environmental Commissioning Report was submitted to the DWER on 8 December 2023. The concrete batching plant is currently being operated in accordance with Registration R2550.

The Applicant is seeking approval to include the operation of the concrete batching plant in Licence L9430, for throughput of up to 630,720 tpa. The operational aspects of the plant and potential environmental risks and mitigations have already been assessed during the registration process (Registration R2550).

Emissions and discharges associated with operation of both plants will be appropriately managed to ensure the risk to the receiving environmental and surrounding receptors is low.

2.2 Purpose of the Document

This supporting document together with the completed DWER Amendment Application Form, has been prepared to amend Licence L9430, in accordance with Section 59B of the *Environmental Protection* Act 1986 (**EP Act**) to include Category 5 and Category 77 infrastructure.

2.3 Prescribed Premises Category

The prescribed premises category relevant to this Licence Amendment Application is detailed in **Table 1**.

Table 1: Presibed Premises Description

Category	Activity / Category	Production or Design Capacity (as per Schedule 1 of EP Regulations)	Actual Production / Storage for this Licence Application
Current Licence Extent			
54	Sewage facility: premises on which sewage is treated (excluding septic tanks); or from which treated sewage is discharged onto land or into waters	>100 cubic metres per day	250 m^3/day treated effluent + 164 m^3/day RO reject
Amendment Required			
5	Processing or beneficiation of metallic or non-metallic ore	>50 million tonnes per annum	7 million tonnes per annum
77	Concrete batching or cement products manufacturing	>100 tonnes per annum	630,720 tonnes per annum

2.4 Exclusions

Works Approval W6769/2023/1 details a central processing facility (**CPF**) crushing and screening plant at the prescribed premises (Table 1 of W6769 - item 1). At the time of preparing this Licence Amendment Application the other CFP crushing and screen plant was still under construction. Once this has been constructed and commissioned in accordance with W6769/2023/1 a Licence Amendment will be applied for to include the additional Category 5 infrastructure. Other prescribed activities detailed in W6769/2023/1 will be included in the Licence via additional amendment applications as construction is completed and environmental commissioning is completed (as required by W6769/2023/1).

3. PROJECT APPROVALS BACKGROUND

3.1 Works Approvals, Registration, Environmental Protection Act 1986

No change to Part V approvals outlined in Section 3.3 of the Supporting Document for application of Licence L9430 (Licence Application Supporting Document, Part V Licence Application – WPIOP Category 54 Version 0).

3.2 Summary of Relevant Legislation and Other Approvals

Relevant key approvals **additional** to those outlined in Section 3.4 of the Licence L9430 Supporting Document are detailed in **Table 2**.

Table 2: Other Approvals

Relevant Legislation	Relevant Environmental Aspect Regulated	Relevant Approval Requirements
Mining Act 1978 and Mining Regulations 1981	Land, soils, water resources, rehabilitation and closure	Mining Proposal and Mine Closure Plan (REG ID 123801) is currently under assessment with DEMIRS. It authorises mining and associated activities within the approved disturbance envelope (**Attachment 5**).
Aboriginal Heritage Act 1972 (AH Act)	Impacts to Aboriginal Heritage Sites	Ethnographic and archaeological surveys completed.

Relevant Legislation	Relevant Environmental Aspect Regulated	Relevant Approval Requirements
		As a result of ongoing consultation, several s18 applications received Ministerial Consent with the endorsement of the Native Title Groups (**NTG**) to disturb previously identified sites and places within and adjacent to the Project. Several areas within the Premises have been salvaged with s18 endorsement. Consultation with Native Title Groups is ongoing to identify any future requirements.
Land Administration Act 1997	Crown Land	Project occurs on Red Hill Pastoral Lease. Land is used for cattle grazing and is administered under this legislation. The Kens Bore Deposit area is not within or adjacent to any conservation reserves and Cane River Conservation Park is the nearest reserve, 20 km west of the prescribed premises boundary and approximately 70 km from the ROM detailed in this licence application.

4. APPLICANT INFORMATION

4.1 Applicant and Occupier Details

The Applicant and Occupier for the Licence Amendment is Onslow Iron Pty Ltd (ACN 649 012 395) (**Onslow Iron**), a wholly owned subsidiary of Mineral Resources Limited (ACN 118 549 910) (**MinRes**).

Authorisation for the Applicant to pursue approval and conduct activities on tenements associated with the prescribed premise boundary, and terms of the Red Hill Iron Ore Joint Venture (**RHIOJV**) is provided in **Attachment 1A**. This includes a Change Manager and Authority to Act Letter as proof of the authorised occupier status for each tenement.

A current full ASIC company extract for Onslow Iron is provided in **Attachment 1B**.

5. OPERATIONAL ACTIVITIES

5.1 Category 5

This Licence Amendment Application is requesting to operate of the following Category 5 infrastructure within the Prescribed Premises Boundary. The mobile crushing and screening plant will supplement ore production whilst the CPF crushing plant is under construction and may also be used during planned maintenance.

- Multi-stage mobile crushing and screening plant, inclusive of:
  - a primary jaw crusher as well as secondary and tertiary cone crushing;
  - horizontal and incline screen;
  - mounted mobile tracked conveyors;
  - hose and spray bars fitted in four separate locations within the jaw crusher and conveyor;
  - dust suppression sprays installed on CR1020 cone inlet and outlet;
  - dust suppression sprays installed on CR1001 cone inlet and outlet;
  - dust suppression sprays installed on CR1020 cone crusher conveyor;
  - dust suppression sprays installed on CR1001 cone crusher conveyor;
  - cone crusher CR1020 discharge conveyor and cone crusher CR1001 conveyor are fully skirted;

- transfer conveyor of incline screen is fully skirted; and
- the incline screen feed conveyor is fully covered (**Figure 1**).

There is no change to the crushing and screening infrastructure detailed in the Environmental Compliance Report submitted to DWER for W6769 on 22 March 2024 (**Attachment 5**).

The mobile crushing and screening plant work by placing materials into the feed hopper via an excavator or frontend loader. Product material is then stockpiled adjacent to the mobile crushing plant.

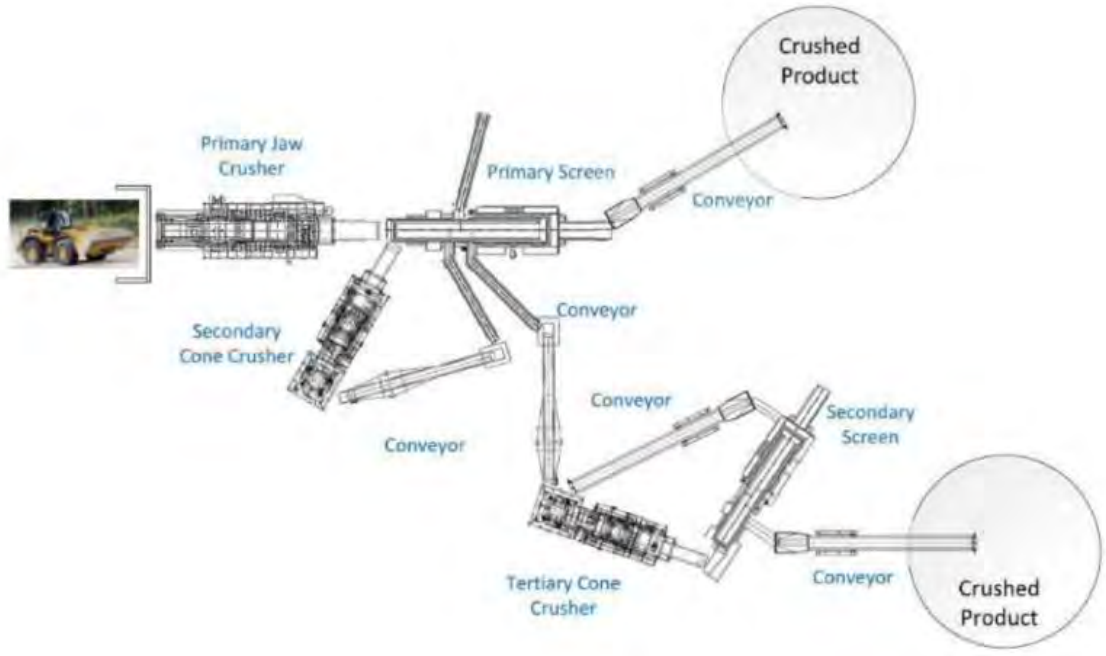

Figure 1: Indicative General Arrangement of the Multi-Stage Mobile Crushing and Screening Plant

5.1.1 Inputs

Water for the mobile crushing and screening plant will be sourced from the water supply borefield, in accordance with the 5C Abstraction Licence GWL 174888(2) (up to 2.5 GL / per annum (**pa**)). To facilitate full scale operation of the Project an amendment to GWL 174888 will be sought to increase the allocation to 5 GL/ pa before the end of 2024.

Water from the 8 ML dam onsite will be pumped to the turkeys' nest north west of the ROM and distributed by water carts and used for dust suppression. The turkey's nests will be lined with HDPE and fenced with fauna egress. Diversion drainage channels and culverts have been constructed around the site for surface water management.

The area around the mobile crushing and screening plant has been windrowed, directing any storm water run-off towards a sediment pond near the stockyard. Figures 2 and 3 show flood mapping at Kens Bore, which has been modelled off a post-construction design of the project area. The figures show that flood waters in a 1% or 10% Annual Exceedance Probability (**AEP**) event will be directed away from the mobile crushing and screening plant and into a sediment pond.

The plant is made up of a mix of diesel electric and diesel hydraulic equipment. In instances where a generator is required, a standard portable generator with inbuilt fuel tank can be used.

Fuel required to support the operation of the mobile crushing and screening plant and for mobile equipment will be sourced from self-bunded diesel tanks and distributed by a service truck as required. Fuel will be stored in accordance with Dangerous Goods Storage regulations.

5.1.2 Outputs

Crushed fines product will be stockpiled adjacent to the crushing and screening plant prior to being transported to the Port. Watercarts will be used to condition of the face of stockpiles prior to loading.

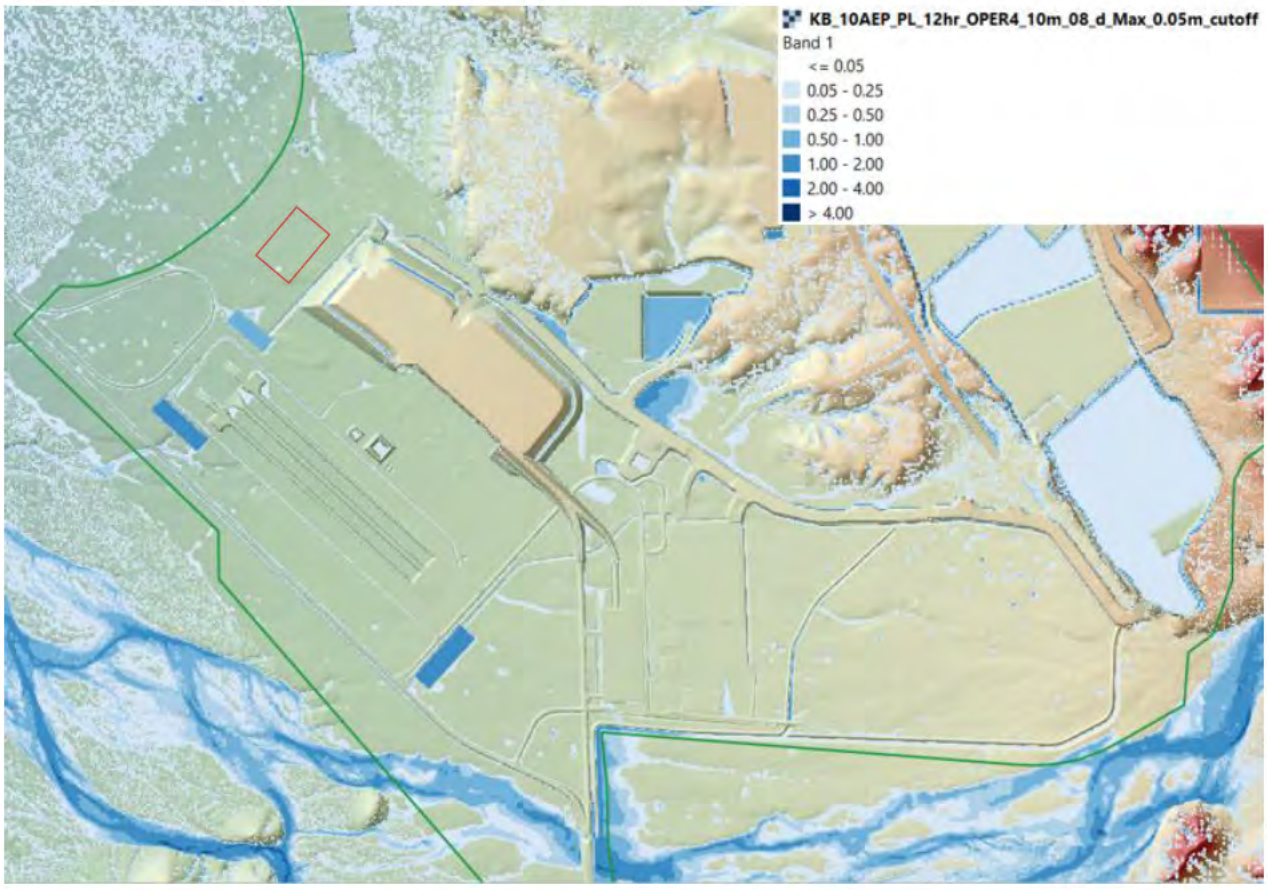

Figure 2: Kens Bore Post-Development Flood Map for 10% AEP Event

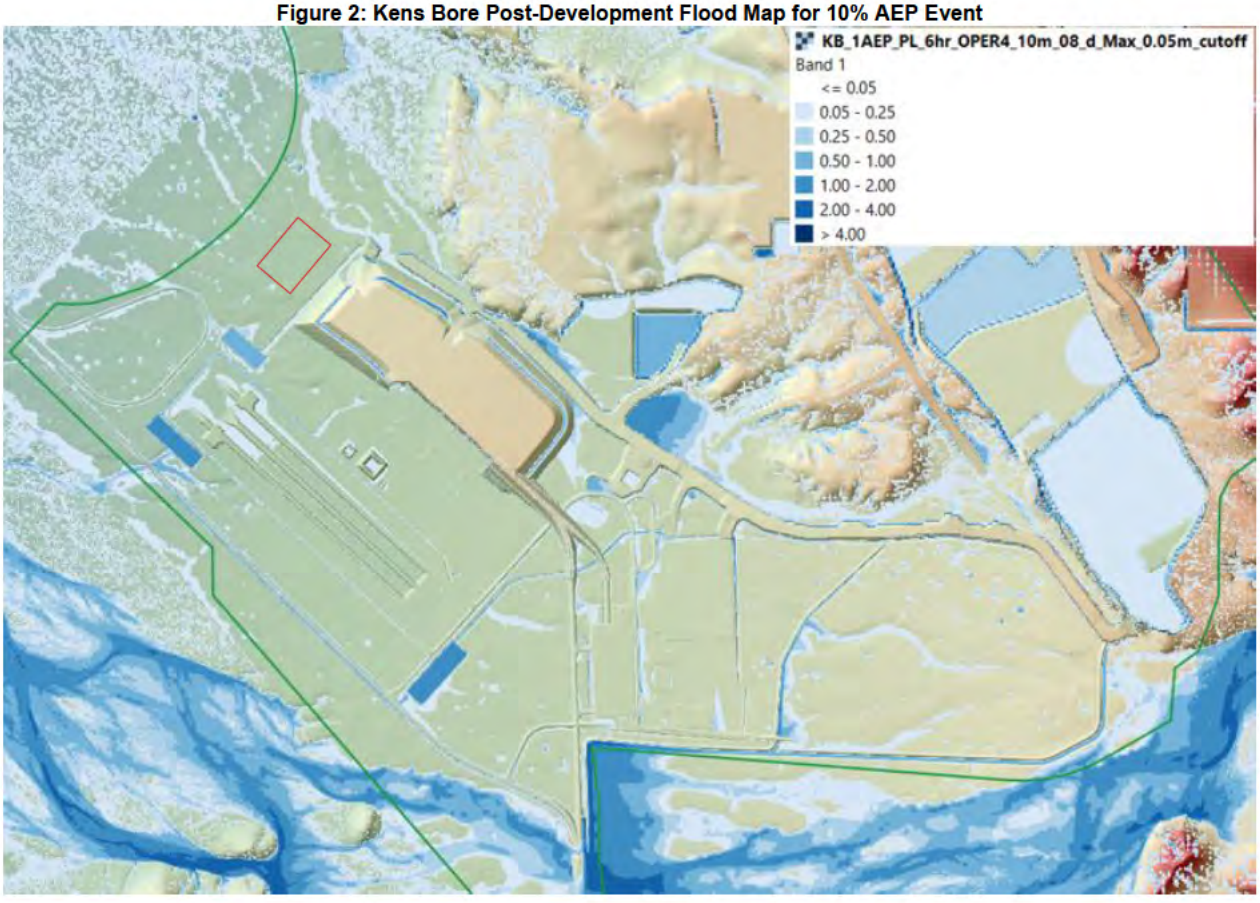

Figure 3: Kens Bore Post-Development Flood Map for 1% AEP Event

5.2 Category 77

No change to operational activities outlined in Part 4 of the application for Registration R2550.

5.3 Other - RO Reject for Dust Suppression

- The Applicant seeks approval to use RO reject water for dust suppression at the premises as contingency. There is existing RO Plants at the Premises (Accommodation Resort and Construction Camp, as detailed in L9430) and another two RO Plants are proposed (as detailed in W6769, at the CPF and Upper Cane). RO reject water will be pumped to water storage infrastructure that may include turkey nest dams and/or be contained in storage tanks, and will be applied only to pre-disturbed locations throughout the prescribed premises.
- Records will be maintained of the RO reject used for dust suppression, including quality (TDS, EC, pH), and monthly volumes (m^3). All reasonable measures will be taken to avoid detrimental effects to surrounding vegetation and topsoil stockpiles from using RO reject as part of dust suppression water, in accordance with relevant tenement conditions. Dust suppression will be undertaken with minimal amount of water only, to prevent water logging and run off water. Dust suppression water will be contained in the pre-disturbed areas only.
- Simulations undertaken for the RO Plant at the Accommodation Resort indicate the RO reject TDS concentrations is anticipated to range between approximately 2,360 mg/L and 3,415 mg/L. A comparison of the expected RO reject water against Australia and New Zealand Environment Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) Guidelines for Livestock drinking water is shown in **Error! Reference source not found.**. The expected quality of the TDS from the RO reject is below the acceptable concentrations of TDS, whereby there are no adverse effects to beef cattle (ANZECC 2000). Other parameters reported are within the ANZECC and ARMCANZ Livestock Drinking water quality guidelines (**Error! Reference source not found.**). The RO reject that will be used for dust suppression is unlikely to infiltrate to the groundwater or runoff from the exposed disturbed surfaces as evaporation rates are high in the region and dust suppression water will be contained to pre-disturbed areas only. The risk to the environment from using the brackish RO reject water for dust suppression water is considered low.
- The existing RO Plants at the Accommodation Resort and Construction Camp fall under the production design capacity for the Category 85B threshold of 0.5 GL/year (Accommodation Resort 200 m^3/day permeate and Construction Camp – 120 m^3/day permeate)

Table 3: RO Simulation Data Water Quality

Analyte (mg/L)	Lower range	Upper Range	ANZECC & ARMCANZ Guideline (Livestock drinking water) mg/L
Hardness as CaCO3	986.6	1,474.3	-
Ca	149.5	223.4	1,000
Mg	149.5	223.4	2,000
Na	276.6	375.4	-
K	7.2	9.2	-
Ba	0.0	0.0	-
Sr	0.1	0.1	-
CO3	9.6	22.2	-
HCO3	1,020.2	1,489.3	-
SO4	152.5	229.2	1,000
Cl	541.3	767.3	-

Analyte (mg/L)	Lower range	Upper Range	ANZECC & ARMCANZ Guideline (Livestock drinking water) mg/L
F	1.0	1.3	2
OH	0.0	0.0	-
SiO2	49.8	70.0	-
B	0.6	0.6	5
NH3	0.0	0.0	-
TDS	2,358.09	3,411.66	4,000
pH	7.89	8.13	-

6. EMISSIONS AND DISCHARGES

A summary of the expected emissions and discharges from operation of the Category 5 mobile crushing and screening plant is provided in **Table 4**. Changes to the dust controls from those described in W6769/2023/1 are included in **Table 4**.

A risk assessment of the emissions and discharges is provided in **Section 9, Table 8**. With adequate controls in place the risk to the receiving environment from operating the mobile crushing and screening plant is low.

No change to the expected emissions and discharges from the operation of Category 77 infrastructure, as detailed and assessed in Part 9 of the application for Registration R2550.

Table 4: Summary of Emissions and Discharges and Proposed Controls and Monitoring

Emissions or Discharge	Proposed Controls and Monitoring
Emissions to Air - Dust	• **Proposed Controls** • Pre-conditioning of ore with water cart as it is being dug and loaded out of the pit where required. • Use of water cart to further condition ore at mobile crusher ROM dig face where required. • Water cart for dust suppression on ROM floor and around the mobile crushing and screening plant, with particular attention to the traffic areas of front-end loaders where required. • Operating water carts will dampen work areas and surface mining equipment running tracks. • Operate dust suppression systems (dust suppression sprays/spray bars) on strategic points to manage dust as required. **Proposed Monitoring** • Visual monitoring for generation of dust. • If visible dust emissions are noted outside of the area where the prescribed activity is located then an assessment of the source will be made and additional water will be applied to key source areas, or alternative treatments applied. • An incident reporting system will be maintained to assist in managing environmental incidents such as noise complaints.
Emissions to Air – Noise	**Proposed Controls** • Will be in accordance with the Environmental Protection (Noise) Regulations 1997 (WA). • Equipment will be regularly serviced and maintained. **Proposed Monitoring** • An incident reporting system will be maintained to assist in managing environmental incidents such as noise complaints.

Emissions or Discharge	Proposed Controls and Monitoring
Emissions to Air – Light	**Proposed Controls** • If required, the lights will face inwards towards the Project activities to reduce impact to fauna.
Discharge to Land and Surface Water	**Proposed Controls** • Diesel will be stored onsite during operation of the mobile plant and distributed by a service truck. • Fuel will be stored in designated areas with suitable bunding. • Fuel storage and handling will be in accordance with Australian Standards (AS 1940) and the *Dangerous Goods Safety Act 2004.* • The area around the mobile crushing and screening plant will be windrowed and any stormwater runoff is directed to a sediment pond. • Spill kits will be made available and employees trained in their use. • Implement spill response procedures. • Spillages of hydrocarbons occurring as a result of incident or equipment failures will be addressed and reported through the MinRes incident reporting procedure.

7. STAKEHOLDER ENGAGEMENT

7.1 Key Stakeholders

The Applicant has identified the key stakeholders for the Project are listed in **Table 5.**

Table 5: Key Stakeholders

Stakeholder Sector	Organisation
Australian Government Agencies	Department of Climate Change, Energy, the Environment and Water (**DCCEEW**)
	Regional Development Australia Pilbara (**RDAP**)
State Government Agencies and Members of Parliament	Conservation Council of WA
	Department of Biodiversity, Conservation and Attractions (**DBCA**)
	Department of Planning, Lands and Heritage (**DPLH**)
	Department of the Premier and Cabinet (Ministers for Water and Environment)
	Department of Primary Industries and Regional Development
	Department of Transport (**DoT**)
	DWER – EPAS
	DWER – Environmental Regulation
	DWER – Water Branch
	Development WA (**DevWA**)
	Pilbara Development Commission (**PDC**)
Local Government	Shire of Ashburton
Traditional Owners	Robe River Kuruma Aboriginal Corporation (**RRKAC**)
Private Industry	API Management Pty Ltd (**APIM**)
	Chamber of Minerals and Energy (**CME**)
	Onslow Chamber of Commerce and Industry (**OCCI**)
	Telstra

Stakeholder Sector	Organisation
Pastoralists	Mt Stuart Station
	Red Hill Station
Community	Community Consultation Group (**CCG**)
	Onslow Community
	Pilbara Mesquite Management Committee

8. SITING AND LOCATION

8.1 Category 5

8.1.1 Sensitive Receptors and Environmentally Sensitive Areas

There are no changes to sensitive land uses and environmentally sensitive receptors identified in the Licence L9430 Supporting Document in relation to Category 5 infrastructure. A summary is provided in **Table 6** and shown in **Attachment 7.**

Table 6: Sensitive Receptors and Environmentally Sensitive Areas

Type / Classification	Description	Distance from Premises	Context
Residential and Sensitive Land Uses			
Aboriginal and other heritage sites	Native Title group with interests over the Premises area is the Robe River Kuruma (RRK) [WCD2016/006].	Registered heritage sites are within the Project area. Ethnographic and archaeological surveys completed. As a result of ongoing consultation, several s18 applications received Ministerial Consent with the endorsement of RRK to disturb previously identified sites and places within and adjacent to the Project. Consultation with RRK is ongoing to identify any future requirements.	**Section 8.1.4**
Pastoral Lease and Stations	Red Hill Pastoral Lease underlies most of the Premises boundary.	Red Hill station homestead is approximately 15 km to the northwest of the Project area. Mt Stuart station homestead is located approximately 44 km to the east of the southern portion of the Project area. Note Cardo Outstation is not a residential premises, homestead is abandoned.	**Attachment 7A**
Rural / Residential Developments	N/A	No rural residential developments within the Project area.	**N/A**
Specified Ecosystems			
Environmentally Sensitive Areas	N/A	None within the Project area.	N/A
Ecological Communities (Threatened Ecological Communities (**TEC**) and Priority Ecological Communities (**PEC**))	One PEC, *Triodia pisoliticola* assemblages of mesas of the West Pilbara (P3) (Triodia PEC) has been identified within the proposed prescribed premises boundary and the surrounds.	Within Project area.	**Attachment 7B** Condition 7.5 of MS 1203 states 'During construction, the proponent shall ensure the area of any ground disturbing activities is delineated spatially and marked in-situ to avoid exceeding the extent of the authorised clearing of *Triodia pisoliticola* PEC in condition 7-1.' Condition 7-7 of MS 1203 states 'the proponent shall monitor impacts due to dust

Type / Classification	Description	Distance from Premises	Context
			deposition saline water application for dust control, changed surface hydrology, weeds, fire and feral species on the *Triodia pisoliticola* PEC in the development envelope.'
Groundwater Dependant Ecosystems (GDEs)	GDEs have been identified in two areas proximal to the Kens Bore Deposit, to the southeast and southwest of the open pit within the Red Hill Creek. Studies conducted by Astron Environmental (2010b; 2011 and 2012) determined that vegetation in these areas have a moderate to high dependence on groundwater, comprising of mainly *Melaleuca* and *Eucalyptus* species.	Within Project area.	**Attachment 7B** No dewatering activities are proposed for the Project.
Important wetlands – Western Australia	N/A	None within the Project area.	NA
Ramsar Sites in Western Australia	N/A	None within the Project area.	NA
Department of Conservation and Biodiversity (DBCA) Legislated Lands and Waters	Cane River Conservation Park (H417369).	Located approximately 34 km to the west	Distance from the Premises boundary to Cane River Conservation Park is approximately 34 km, proposed activities are not expected to impact the Conservation Park.
Biological Component			
Threatened / Priority Flora	No threatened flora within the proposed prescribed premises boundary. One priority flora species, *Triodia pisoliticola* (P3) has been identified within the Project area.	Within Project area.	**Attachment 7B** Project will be implemented in accordance with MS 1027, MS 1203 and EPBC 2009/4706. MS 1203 has a condition ensuring that "implementation of the Proposal does not directly or indirectly disturb more than 149.2 ha of the *Triodia pisoliticola* PEC" under Condition 7-1. Management measures will be implemented to ensure the conditions of MS 1203 and EPBC 2009/4706 are met.

Type / Classification	Description	Distance from Premises	Context
Groundwater Dependant Ecosystems (**GDEs**)	GDEs have been identified in two areas proximal to the Kens Bore Deposit, to the southeast and southwest of the open pit within the Red Hill Creek. Studies conducted by Astron Environmental (2010b; 2011 and 2012) determined that vegetation in these areas have a moderate to high dependence on groundwater, comprising of mainly *Melaleuca* and *Eucalyptus* species.	Within Project area.	No dewatering activities are proposed for the Project.
Threatened / Priority Fauna	Northern Quoll (*Dasyurus hallucatus*) (EN) Pilbara Olive Python (*Liasis olivaceaus barroni)* (VU) Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia*) (VU) Ghost Bat (*Macroderma gigas*) (VU) Western Pebble-mound Mouse (*Pseudomys chapmani*) (P4)	Within Project area.	**Attachment 7B** EPBC 2009/4706 approval conditions that ensures "*ongoing protection and long-term conservation of EPBC Act listed threatened fauna species within the vicinity of disturbance areas"* through the implementation of Fauna Management Plans. Further to this, the Project will be implemented in accordance with MS 1027 and MS1203 which puts strict measures in place to avoid entrapment.
Physical Component			
Public drinking water source areas (**PDWSA**)	P1 Protection Area Bungaroo Creek Water Reserve	Located approximately 20 km to the east northeast of the Project.	NA
Surface Water Management Area	Proclaimed Pilbara Surface Water Area	Within Project area.	**Section 8.1.3** The water resources are managed in accordance with the DWER Pilbara Regional Water Plan (DoW 2010).
Major watercourses / water bodies	Cane River Red Hill Creek	Within Project area.	**Section 8.1.3** The Project Area is intersected by the ephemeral Red Hill Creek and Cane River, tributaries to the Red Hill Sub-Catchment (of the larger Robe River Catchment) and Cane River Catchments respectively that flow from the Hamersley Ranges (PSM 2022a).
Groundwater	Proclaimed Pilbara Groundwater Area	Depth to groundwater at the ROM is approximately 21 mbgl.	**Section 8.1.3**

Type / Classification	Description	Distance from Premises	Context
Acid sulphate soils (**ASS**)	N/A	No known risk. The majority of material within the Project area can be classified as non-acid forming, as low Sulphur has been detected from geochemical test work - indicating there will be no long-term risk of acidity (Okanes 2022).	N/A
Contaminated Sites – Reported Sites	N/A	No known contaminated sites identified within the Project area., or within proximity to the Project	N/A

8.1.2 Soils and Land Systems

The Project area is located within the Western Region of soil-landscape mapping in Western Australia (Tille, 2006). The northern section of the mine access road is located within the Hamersley Plateaux Zone (285) of the Fortescue Province (Tille 2006). The Hamersley Plateaux Zone (44,450 km2) is described as a dissected plateau with stony plains and hardpan wash plains interspersed with hills on sedimentary and volcanic rocks as part of the Hamersley basin. Soils are comprised of shallow red loams, red/brown clays and red loamy earths covered by spinifex grasslands scattered with snappy gum (*Eucalyptus leucophloia*), kanji (*Acacia inaequilatera*) and mulga scrublands, located in the Pilbara between Pannawonica, Newman and Paraburdoo (Tille, 2006).

The ROM is within the Urandy land system. The Urandy land System is comprised of Level stony plains, sandy alluvial plains and fans through widely spaced going or sub parallel creeklines and channels. System drainage is subject to sheet flow and overbank flooding. Relief is up to 10 m.

8.1.3 Hydrology

Surface water flow in the Pilbara is predominantly ephemeral, with most surface water flow events occurring between December and March, in response to cyclonic and low-pressure events (PSM 2022a). The Project area, on average, recorded a mean annual rainfall of 350 and 370 mm annually, which is far exceeded by the evaporation rate of 2,800 mm/year.

The Project is located on the western fringes of the Hamersley Ranges, situated within the Robe River Catchment, which form part of the Onslow Coast Basin and Indian Ocean Drainage Division that drain towards the northwest and discharge to the Indian Ocean (PSM 2022a).

The Project is intersected by the ephemeral Red Hill Creek and Cane River, tributaries to the Red Hill Sub-Catchment (of the larger Robe River Catchment) and Cane River Catchments respectively that flow from the Hamersley Ranges (PSM 2022a).

The ROM is located within the Robe River Catchment (PSM 2022a). Flow within the area is consistent from the Hamersley Ranges, northwest towards the Indian Ocean. The nearest portion of the ROM is 11.2 km from the Cane River and 1.3 kms from Red hill Creek (**Attachment 7**).

Within the proposed Project area there are no known beneficial users of surface water. No Ramsar listed wetlands or other nationally important wetlands occur within, or in close proximity to the Project (DSEWPaC 2012).

8.1.4 Heritage

8.1.4.1 Native Title

The Project area intersects land which is subject to Robe River Kuruma (**RRK**) (Kuruma Marthudunera Part B WCD2018/003) native title determination.

8.1.4.2 Registered Heritage sites

Activities within the region have been conducted in cooperation with consideration for the NTG's interests in the Land, including, but not limited to, comprehensive archaeological and ethnographic surveys by both APIM and the Applicant during the Project's lifetime. Through this work, numerous heritage sites and places have been identified and recorded within and in close proximity to the Kens Bore Deposit and supporting infrastructure areas. Owing to the confidential nature, as well as cultural sensitivity of these places, no further details on these sites are provided in this licence application, other than those that are publicly available via DPLH (**Attachment 7A**). These sites have been considered in design phases and avoided wherever possible.

The heritage sites/places identified to date have been the subject of numerous high-level recording (site Identification) and on-country consultation surveys/meetings with the RRK NTG to enable the collaborative development of appropriate management strategies. With the endorsement of the RRK, many of the Heritage sites and places have been submitted to DPLH for inclusion on the Register of Aboriginal Sites.

As a result of ongoing consultation, several s18 applications received Ministerial Consent with the endorsement of the RRK to disturb previously identified sites and places within and adjacent to the prescribed premise boundary.

As well as in relation to the registered sites, additional consultation has occurred and is continuing with the RRK NTG.

8.2 Category 77

There are no changes to siting and location information identified in the application for Registration R2550 in relation to Category 77 infrastructure.

9. RISK ASSESSMENT

A risk assessment has been prepared to identify the environmental impacts of the operation of the mobile crushing and screening plant, in accordance with the DWER Guidance Statement: *Risk Assessments* (Department of Environmental Regulation (DER) 2017). The residual risk assessment ratings are consistent with the risk assessment matrix used by DWER as shown in **Table 7**.

A summary of the environmental risks relevant to this licence amendment application, and the associated environmental controls to be implemented to reduce these risks to an acceptable level, are presented in **Table 8**. The risk of adverse impacts to the environment from potential emissions and discharges from the prescribed activities are able to be managed with the implementation of management controls detailed in **Table 8** so that no unacceptable risks are posed to the receiving environment.

Table 7: Risk Matrix and Criteria

	Consequence				
Likelihood	**Slight**	**Minor**	**Moderate**	**Major**	**Severe**
Almost Certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	Extreme
Unlikely	Low	Medium	Medium	Medium	High
Rare	Low	Low	Medium	Medium	High

Likelihood	
The following criteria has been used to determine the likelihood of the risk / opportunity occurring	
Rare	The risk event may only occur in exceptional circumstances
Unlikely	The risk event will probably not occur in most circumstances
Possible	The risk event could occur at some time
Likely	The risk event will probably occur in most circumstances
Almost Certain	The risk event is expected to occur in most circumstances

Consequence		
The following criteria has been used to determine the consequences of a risk occurring		
	Environment	**Public Health and Amenity**

Severe	• On-site impacts: catastrophic • Off-site impacts local scale: high level or above • Off-site impacts wider scale: mid-level or above • Mid to long term or permanent impact to an area of high conservation value or special significance^ • Specific Consequence Criteria (for environment) are significantly exceeded	• Loss of life • Adverse health effects: high level or ongoing medical treatment • Specific Consequence Criteria (for public health) are significantly exceeded • Local scale impacts: permanent loss of amenity
	Environment	**Public Health and Amenity**
Major	• On-site impacts: high level • Off-site impacts local scale: mid-level • Off-site impacts wider scale: low level • Short term impact to an area of high conservation value or special significance^ • Specific consequence criteria (for environment) are exceeded	• Adverse health effects: mid-level or frequent medical treatment • Specific consequence criteria (for public health) are exceeded • Local scale impacts: high level impact to amenity
Moderate	• On-site impacts: mid-level • Off-site impacts local scale: low level • Off-site impacts wider scale: minimal • Specific consequence criteria (for environment) are at risk of not being met	• Adverse health effects: low level or occasional medical treatment • Specific consequence criteria (for public health) are at risk of not being met • Local scale impacts: mid-level impact to amenity
Minor	• On-site impacts: low level • Off-site impacts local scale: minimal • Off-site impacts wider scale: not detectable • Specific consequence criteria (for environment) likely to be met	• Specific consequence criteria (for public health) are likely to be met • Local scale impacts: low level impact to amenity
Slight	• On-site impact: minimal • Specific consequence criteria (for environment) met	• Local scale: minimal to amenity • Specific consequence criteria (for public health) met

Table 8: Risk Assessment, Proposed Controls and Monitoring

Source / Activities	Potential Emissions	Receptors	Pathway	Potential Adverse Impact	Proposed Controls and Monitoring	Residual Risk			Reasoning for Residual Risk Ranking
						Likelihood	Consequence	Ranking	
Category 5 – Mobile crushing and screening Mobile plant operation, loading of and stockpiling product.	Emissions to Air – Noise	Nearest sensitive premises: Red Hill Homestead ~18. km from ROM. Mt Stuart Homestead – ~44 km from ROM. Native fauna habitat	Air / windborne	Change to amenity or health of human receptors. Changes to native fauna behaviour.	**Proposed Controls** • Will be in accordance with the *Environmental Protection (Noise) Regulations 1997*. • Equipment will be regularly serviced and maintained. • In accordance with the Northern Quoll Management Plan and Pilbara Olive Python Management Plan. **Proposed Monitoring** • An incident reporting system will be maintained to assist in managing environmental incidents such as noise complaints. • Monitoring in accordance with EPBC Management Plans.	Possible	Slight	Low	Due to the location of the project in a pastoral area, with no residences in the immediate vicinity (the nearest sensitive premises is the Red Hill Homestead, ~18 km from the ROM) there is almost no likelihood of unacceptable impacts. Due to the typical mobile nature of fauna, the conservation status is unlikely to be altered by noise emissions from the proposed activities.
	Emissions to Air – Dust	Nearest sensitive premises: Red Hill Homestead ~18 km from ROM. Mt Stuart Homestead – ~44 km from ROM. PEC within Project area (remnant PEC ~2.6 km from ROM).	Air / wind dispersion	Change to amenity or health of human receptors. Deposition of dust on native vegetation affecting them (PEC).	**Proposed Controls** • Pre-conditioning of ore with water cart as it is being dug and loaded out of the pit where required. • Use of water cart to further condition ore at mobile crusher ROM dig face where required. • Water cart for dust suppression on ROM floor and around the mobile crushing and screening plant, with particular attention to the traffic areas of front-end loaders where required. • Operating water carts will dampen work areas and surface mining equipment running tracks. • Operate dust suppression systems (dust suppression sprays/spray bars) on strategic points to manage dust as required. **Proposed Monitoring** • Visual monitoring for generation of dust. • If visible dust emissions are noted outside of the area where the prescribed activity is located then an assessment of the source will be made and additional water will be applied to key source areas, or alternative treatments applied. • An incident reporting system will be maintained to assist in managing environmental incidents such as noise complaints.	Possible	Slight	Low	Due to the location of the Project in a remote pastoral area, with no residences in the immediate vicinity, and the large separation distance to the nearest residence (~18km from the ROM to Red Hill Homestead) there is almost no likelihood of unacceptable impacts.
	Emissions to Air – Light	• Native terrestrial faun	Air	Change to amenity or health of human receptors. Changes to native fauna behaviour.	**Proposed Controls** • If required, the lights will face inwards towards the Project activities to reduce impact to fauna. • In accordance with the Northern Quoll Management Plan and Pilbara Olive Python Management Plan.	Unlikely	Slight	Low	Due to the typical mobile nature of fauna, the conservation status unlikely to be altered by light emissions from the proposed activities.
Category 5 – Mobile crushing and screening From mobile plant and associated machinery in the event of high rainfall Accidental spillage of hydrocarbon during refuelling Gensets	Sediment-laden stormwater (fine sediments) Hydrocarbons	Local soils and native vegetation in the local area. Potentially surface waters Local groundwater	Discharge to land / soil. Mobilisation through surface water movement Infiltration to groundwater.	Sediment in local drainage lines and creeks Hydrocarbon contamination in soils Hydrocarbon contamination of surface water bodies	**Proposed Controls** • Diesel will be stored onsite during operation of the mobile plant and distributed by a service truck. • Fuel storage and handling will be in accordance with Australian Standards (AS 1940) and the *Dangerous Goods Safety Act 2004*. • The area around the mobile crushing and screening plant will be windrowed and any stormwater runoff is directed to a sediment pond. • Spill kits will be made available and employees trained in their use. • Implement spill response procedures. • Spillages of hydrocarbons occurring as a result of incident or equipment failures will be addressed and reported through the MinRes incident reporting procedure.	Unlikely	Slight	Low	If there is a breach of procedures and discharge of contaminants to land or surface water occurs, it is expected to be localised and restricted to the Project area. No permanent (only ephemeral) major drainage lines located within the Project area, and with the proposed controls, the likelihood of this event is reduced. The risk that hydrocarbons will impact the underlying groundwater quality from accidental spills at the ROM is unlikely as the separation distance to the water table is approx. 21 mbgl.

10. ATTACHMENT 10 – PROPOSED FEE CALCULATION

Licence Amendment fee has been calculated using the DWER amendment application fees calculator and is calculated at [redacted]


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