



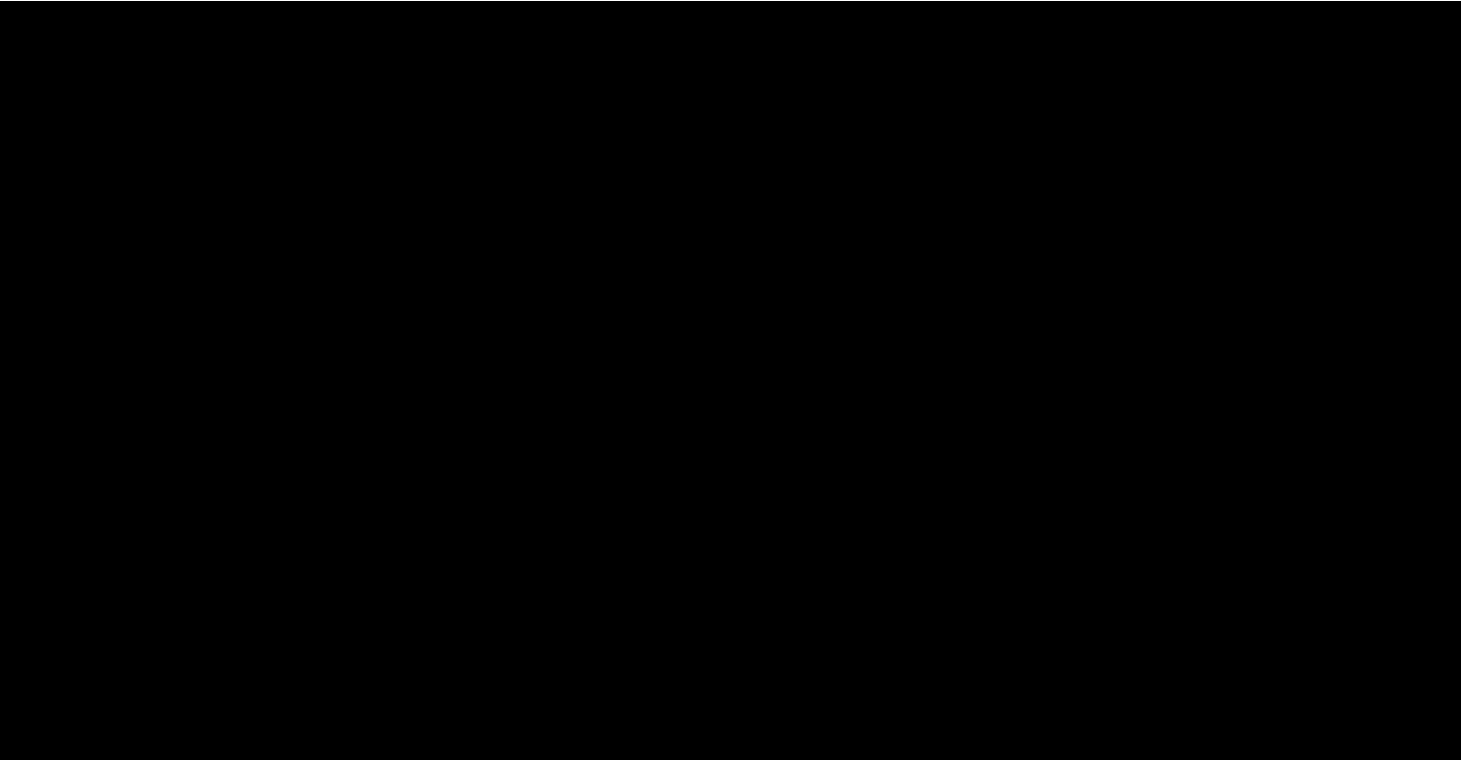
**LICENCE AMENDMENT
APPLICATION
SUPPORTING DOCUMENT**

*PART V LICENCE
AMENDMENT APPLICATION
– WPIOP CATEGORIES 5,
54, 64 AND 77*

**WEST PILBARA IRON ORE
PROJECT**

31 OCTOBER 2024 VERSION 0





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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ABBREVIATIONS

Abbreviation	Definition
ASS	Acid sulphate soils
BoM	Bureau of Meteorology
CCG	Community Consultation Group
CME	Chamber of Minerals and Energy
DBCA	Department of Biodiversity, Conservation and Attractions
DE	Development Envelope
DevWA	Development WA
DEMIRS	Department of Energy, Mines, Industry Regulation and Safety
DoT	Department of Transport
DPLH	Department of Planning, Lands and Heritage
DWER	Department of Water and Environmental Regulation
EP Regulations	Environmental Protection Regulations 1987 (WA)
EPA	Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
EPBC Act	<i>Environment Protection and Biological Diversity Act 1999</i>
GDE	Groundwater Dependant Ecosystems
Ha	Hectare
km	kilometre
mbgl	metres below ground level
MinRes	Mineral Resources Limited
MS	Ministerial Statement
Mtpa	Million tonnes Per Annum
Onslow Iron	Onslow Iron Pty Ltd
PDC	Pilbara Development Commission
PDWSA	Public Drinking water source areas
PEC	Priority Ecological Community
RDAP	Regional Development Australia Pilbara
RHIOJV	Red Hill Iron Ore Joint Venture
RiWI Act	<i>Rights in Water and Irrigation Act 1814</i>
RO	Reverse Osmosis
ROM	Run of Mine
RRK	Robe River Kuruma
TEC	Threatened Ecological Community
tpa	Tonnes per annum
WA	Western Australia
WPIOP	West Pilbara Iron Ore Project
WWTP	Wastewater treatment plant

1. PROJECT OVERVIEW AND PURPOSE

1.1 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**), located at M08/480, M08/484, L08/67, L08/69 and L08/181, Cane Western Australia (**WA**). The Applicant was granted a Works Approval W6769/2023/1 (**W6769**) 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. On 23 August 2024 L9430 was amended to include the operation of a mobile crushing and screening plant (Category 5), a concrete batching plant (Category 77) and contingency to use RO reject water for operational dust suppression activities.

This Licence Amendment Application is to seek approval:

- To operate Landfill Sites at Kens Bore and Cardo Bore East (Category 64)
- To allow flexibility of location for mobile crushing and screening plant operations (Category 5).

Additionally, the Applicant is proposing to undertake the following activities that may have potential for emissions and discharges to the environment:

- Construction and operation of a Bioremediation Facility
- Contingency for stormwater overflow to the environment following rainfall events.

1.1.1 Category 64

The Applicant is seeking approval to operate Category 64 landfill facilities for disposal of 9,000 tonnes per annum (**tpa**) of waste on the premises, at the following locations:

- Kens Bore Waste Rock Landform (KB WRL Landfill)
- Cardo Bore East at WRL #2 (CBE WRL 2 Landfill) and WRL #3 (CBE WRL 3 Landfill) (together, CBE Landfills)

The Kens Bore WRL Landfill and CBE Landfills will be used for disposal of Putrescible Waste, Inert Waste type 1, Inert Waste type 2, treated soil from the bioremediation facility that meets waste acceptance criteria and wood pallets.

An Environmental Compliance Report was submitted to the Department of Water and Environmental Regulation (**DWER**) for the KB WRL Landfill on **13 September 2024** and is currently being operated in accordance with Time Limited Operations conditions of W6769/2023/1.

The CBE Landfills are considered alternate locations for Category 64 infrastructure included in W6769 and will be constructed and managed in accordance with the controls outlined in this Licence Amendment. It is expected that the WRLs at Cardo Bore East will be available for landfilling activities once mining progresses to the Carbo Bore East deposits and sufficient waste rock is available, expected in 2028.

1.1.2 Other Activities

The Applicant is proposing to construct and operate a bioremediation facility to treat sediment and soils contaminated with hydrocarbons primarily from the site wash bay facility and from incidental fuel spills and hydrocarbon leaks. The facility will be located within the Prescribed Premises Boundary in proximity to the KB WRL (**Attachment 2**). Further detail is provided in **Section 4.3**.

Additionally, stormwater overflow during the wet season may be discharged to the environment via flow through sediment basins.

Water collected in-pit during the wet season may need to be released to the surrounding environment in cases where the water level exceeds the maximum storage capacity of turkeys nests, dis-used areas of pits and/or sediment basins. Relevant pits include those located at Kens Bore, Cardo Bore East and Upper Cane. Further details provided in **Section 4.4**.

1.1.3 Other Licence Amendments Required

Figure 2 in Schedule 1 of Licence L9430 should be removed from the Licence, as it shows the location of both operational and proposed infrastructure. The Licence should only include relevant operational infrastructure associated with the prescribed activities and not proposed infrastructure.

1.2 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 64 activities.

1.3 PRESCRIBED PREMISES CATEGORY

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

Table 1: Prescribed 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
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
Amendment Required			
64	Class II Putrescible Landfill site: premises (other than clean fill premises) on which waste of a type permitted for disposal for this category of prescribed premises, in accordance with the Landfill Waste Classification and Waste Definitions 1996' is accepted for burial.	>20 tonnes per year	9,000 tonnes per annum

1.4 EXCLUSIONS

The Category 89 landfill under Works Approval W5172, which is currently under construction, will also accept putrescible waste streams generated onsite. This landfill will be included in a Licence Amendment Application as construction is completed.

2. PROJECT APPROVALS BACKGROUND

2.1 WORKS APPROVALS, REGISTRATION, ENVIRONMENTAL PROTECTION ACT 1986

Table 2: Licence L9430 summary of amendments

Instrument	Issued	Description
L9430/2023/1	24/05/2024	Licence granted for Category 54 – Accommodation Resort WWTP and RO plant
L9430/2023/1	26/08/2024	Amendment 1 to include Category 5 for the mobile crushing and screening plant and Category 77 for the mobile concrete batching plant
L9430/2023/1	TBC	Amendment 2 to include Category 64 landfill facilities

2.2 SUMMARY OF RELEVANT LEGISLATION AND OTHER APPROVALS

Relevant key approvals relevant to this amendment application **Table 3**.

Table 3: Other Approvals

Relevant Legislation	Relevant Environmental Aspect Regulated	Relevant Requirements
<i>Mining Act 1978</i> and Mining Regulations 1981	Land, soils, water resources, rehabilitation and closure	Mining Proposal and Mine Closure Plan (Reg ID 113163) approved. Mining Proposal and Mining Closure Plan (REG ID 123801) is currently under assessment with Department of Energy, Mines, Industry Regulation and Safety (DEMIRS). It authorises mining and associated activities within the approved disturbance envelope.
<i>Aboriginal Heritage Act 1972</i> (AH Act)	Impacts to Aboriginal Heritage Sites	Ethnographic and archaeological surveys completed. 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.
<i>Land Administration Act 1997</i>	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 kms from the KB WRL Landfill and 73 kms the CBE Landfills detailed in this licence application.
<i>Contaminated Sites Act 2003</i>	Land, soils water resources, rehabilitation and closure	Management of potentially contaminating activities.

3. APPLICANT INFORMATION

3.1 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 Premises 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**.

4. ACTIVITIES

4.1 CATEGORY 64

4.1.1 Waste types and quantities

This licence amendment application seeks approval to operate landfill facilities onsite for a total throughput of up to 9,000 tpa (**Table 1**), made up of the waste types outlined below:

- Inert Waste Type 1 as defined in the Landfill Waste Classification and Waste Definitions 1996 (as amended 2019) (Landfill Definitions);
- Inert Waste Type 2 (tyres only) as defined in the Landfill Definitions;
- Clean fill as defined in the Landfill Definitions (not included in the total waste volume);
- Special Waste Type 2;
- Treated soil from the bioremediation facility that meets waste acceptance criteria for Class II;
- Wood pallets (where unable to be recycled); and
- Putrescible waste (if required).

Waste amounts and waste types will be tracked and records maintained.

4.1.2 KB WRL Landfill

This Licence Amendment Application is requesting approval to operate the KB WRL Landfill within the Prescribed Premises Boundary. The KB WRL Landfill will be used for waste generated from construction and operational activities at the site, including inert waste type 1 (including pallets), inert waste type 2 (tyres only), treated soils from the bioremediation facility that meets waste acceptance criteria. Currently, no putrescible trenches have been or are planned to be constructed at the KB WRL Landfill. However, the applicant is seeking contingency for disposal of putrescible waste within the KB WRL should the need arise.

There is no change to the KB Landfill Category 64, as detailed in the Environmental Compliance Report submitted to DWER for W6769 on 13 September 2024 (**Attachment 5**).

The KB WRL is planned to have three lifts and will be constructed in a staged approach with various stages of the WRL becoming available for landfill activities at different stages of mining. Waste types will be segregated and disposal of waste will occur within the area shown in **Attachment 2** as required. Signage denoting specific waste disposal areas will be installed for campaign disposal to ensure waste streams are disposed of separately as required.

Inert waste will be disposed in cells as areas of KB WRL become available, noting that the WRL is an active area, it is not practical to set up an actual cell until the campaign waste disposal activity occurs. Windrows will be constructed around three sides of the active cells when campaign waste disposal is being undertaken. The windrows will have the capacity to divert surface water flows from entering the cell. All landfill cells within the KB WRL will be set back at least 20 m from the planned rehabilitated edges of the WRL. Waste rock will be used for cover material after campaign dumping of waste to landfill areas.

Used tyres will be disposed at the base of a WRL lift into a windrowed area/cell. Type 1 inert waste will be disposed of from the tip head onto the batter face of the WRL (where practical) contained by windrow or deposited at the base level of a WRL lift into a windrowed area/cell.

In circumstances where putrescible waste is disposed at the Kens Bore WRL Landfill, in addition to the above controls, the following measures will be in place to reduce risk of windblown rubbish, litter, unauthorised access, leaching, odour, pests and scavenging fauna:

- Permanent / semi-permanent fencing or suitable barrier with signage will be installed around putrescible trenches where possible or practical and as required for fauna management.
- Trenches will be constructed at or near to the base of each lift and at least 20 m from the side of the planned rehabilitation edge but open on the tipping face.

- Trenches will be covered at least fortnightly with sufficient quantities of clean fill or other dense, inert and incombustible material.

Further landfill management details are provided in **Section 4.1.4**.

Table 4: KBE WRL lift summary table

WRL Lift	Lift/ Landfill level (m AHD)
Stage 3 (Stage 1, 2 and 3 combined)	
1	230
2	240
3	250
Final Stage	
1	230
2	240
3	250

4.1.3 Category 64 – CBE Landfills

This Licence Amendment Application is requesting approval to construct and operate landfill facilities within CBE WRL 2 and CBE WRL 3 (CBE WRL Landfills) CBE Landfills within the Prescribed Premises Boundary. The CBE Landfills will be used to store waste generated from construction and operational activities at the site, including inert waste type 1 (including pallets), inert waste type 2 (tyres only), and treated soils from the bioremediation facility that meets waste acceptance.

CBE WRL 2 will be constructed within a total footprint of 35 hectares (ha) and CBE WRL 3 will be constructed within a total footprint of 53.5 ha (**Attachment 2**).

The CBE WRLs are planned to have 3 lifts of up to 10 m, to a maximum height of 28 m above natural surface level. Waste types will be segregated and disposal of waste will occur within the area shown in **Attachment 2** as required. Signage denoting specific waste disposal areas will be installed for campaign disposal to ensure waste streams are disposed of separately as required.

Inert waste will be disposed in cells as areas of the CBE Landfills become available, noting that the WRL is an active area, it is not practical to set up an actual cell until the campaign waste disposal activity occurs. Windrows will be constructed around three sides of the active cells when campaign waste disposal is being undertaken. The windrows will have the capacity to divert surface water flows from entering the cell. All landfill cells within the CBE WRL's will be set back at least 20 m from the planned rehabilitated edges of the WRL. Waste rock will be used for cover material after campaign dumping of waste to landfill areas.

Used tyres will be disposed at the base of a WRL lift into a windrowed area/cell. Type 1 inert waste will be disposed of from the tip head onto the batter face of the WRL (where practical) contained by windrow or deposited at the base level of a WRL lift into a windrowed area/cell.

Currently, no putrescible trenches have been or are planned to be constructed at the CBE Landfills. However, the applicant is seeking contingency for disposal of putrescible waste within the CBE Landfills should the need arise.

In circumstances where putrescible waste is disposed at the CBE Landfills, the following controls will be in place as required for putrescible streams only:

- Permanent / semi-permanent fencing or suitable barrier with signage will be installed around putrescible trenches where possible or practical and as required for fauna management.
- Trenches will be constructed at or near to the base of each lift and at least 20 m from the side of the planned rehabilitation edge but open on the tipping face.

- Trenches will be covered at least fortnightly with sufficient quantities of clean fill or other dense, inert and incombustible material.

Table 5: CBE WRL lift summary table

WRL Lift	Lift/ Landfill level (m AHD)
CBE WRL #2 Landfill	
1	233
2	243
3	253
CBE WRL #3 Landfill	
1	229
2	239

4.1.4 Operational Considerations

The following operational controls will be in place at the KB WRL Landfill and CBE Landfills:

Table 6: WRL Landfills Operation Controls

#	Waste Type	Operational process	Cover
1	All	<ul style="list-style-type: none"> • Volumes and type of waste from each load to be monitored and recorded. • Disposal of waste by landfilling within defined trenches/cells. • Any wind-blown waste will be collected and returned to the tipping area at least monthly. • All landfill cells will be set back at least 20 m from the planned rehabilitated edges of WRLs. • Stormwater will be diverted away from trenches/cells or tipping face. • The separation distance between the base of the landfill and the highest groundwater level will not be less than 2 m. • The separation distance between the landfill and any surface water body will not be less than 100 m. • Waste types will be segregated. 	<ul style="list-style-type: none"> • Waste will be covered as soon as appropriate (based on waste type) after deposit and before compaction. • All landfill cells will be covered after completion and capped with 2 to 5 m of competent waste rock that will ensure all faces are stable and capable of sustaining rehabilitation material.
2	Clean fill	<ul style="list-style-type: none"> • Refer to Row # 1. 	<ul style="list-style-type: none"> • Refer to Row # 1.
3	Inert Type 1	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • During the operational phase, Inert Waste Type 1 will be covered with enough inert and incombustible material to ensure no waste is exposed.
4	Inert Type 2 (used Tyres)	<ul style="list-style-type: none"> • Used tyres will be buried in the KB WRL and CBE Landfills. 	<ul style="list-style-type: none"> • Covering of used tyres within the WRLs will be conducted in

#	Waste Type	Operational process	Cover
		<ul style="list-style-type: none"> • Tyre disposal will be conducted in accordance with Part 6 of the <i>Environmental Protection Regulations 1987</i>. • Used tyres will be buried in separate cells from putrescible and other waste. • No more than 1,000 tyres stored within a cell. 	<p>accordance with Part 6 of the <i>Environmental Protection Regulations 1987</i>.</p> <ul style="list-style-type: none"> • Inert Waste Type 2 will be covered with at least 100 mm of inert and incombustible material during the operational phase.
5	Putrescible Waste	<ul style="list-style-type: none"> • Trenches will be constructed at or near to the base of each lift and at least 20 m from the side of the planned rehabilitation edge but open on the tipping face. • Buried in dedicated putrescible trenches within the KB WRL and CBE landfills • Tipping area will be less than 30 metres in length • Stormwater will be diverted away from the trench or tipping face • Permanent / semi-permanent fencing or suitable barrier with signage will be installed around putrescible trenches as required. • Each putrescible trench to have an egress ramp 	<ul style="list-style-type: none"> • Trenches will be covered as the waste rock landform progress. • Putrescible waste to be covered at least fortnightly with sufficient quantities of clean fill or other dense, inert and incombustible material.

4.1.5 Landform Stability

The geotechnical aspects of the WRLs proposed for landfills have been assessed in the mining proposal associated with this scope (Reg ID 123801).

Regular inspections will be performed during operations to verify the stability and performance of the WRLs. These inspections will involve reviewing monitoring data, conducting drone surveys, and performing site visits to assess the disposal of waste material and overall site conditions.

4.1.6 Emissions and Discharges

A summary of the potential emissions and discharges from operation of the Category 64 landfills is provided in **Table 7**.

A risk assessment of the emissions and discharges is provided in **Section 7, Table 12**. With adequate controls in place the risk to the receiving environment from operating the landfills is low.

Table 7: Summary of Emissions and Discharges and Proposed Controls and Monitoring

Emissions or Discharge	Proposed Controls and Monitoring
Emissions to Air - Dust	<p>Proposed Controls</p> <ul style="list-style-type: none"> • Dust suppression water will be applied as required to reduce dust emissions. <p>Proposed Monitoring</p> <ul style="list-style-type: none"> • Visual monitoring for generation of dust.

Emissions or Discharge	Proposed Controls and Monitoring
	<ul style="list-style-type: none"> • 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.
Emissions to Air – Noise	<p>Proposed Controls</p> <ul style="list-style-type: none"> • Will be in accordance with the <i>Environmental Protection (Noise) Regulations 1997 (WA)</i>. • Noise attenuation methods will be considered for plant and relevant equipment. • Maximum sound power levels are specified for equipment. <p>Proposed Monitoring</p> <ul style="list-style-type: none"> • An incident reporting system will be maintained to assist in managing environmental incidents such as noise complaints.
Emissions to Air – Light	<p>Proposed Controls</p> <ul style="list-style-type: none"> • Night lighting will be limited to the minimum required for site safety and security. • If required, the lights will face inwards towards the Project activities to reduce impact to fauna.
Discharge to Land and Surface Water	<p>Proposed Controls</p> <ul style="list-style-type: none"> • Stormwater will be diverted away from the trench or tipping face. • Training to staff and contractors for permitted waste disposal and recycling. • Waste rock will be used for cover material after campaign dumping of waste to landfill areas. • Have appropriate signage for the landfill, including signage within the facility, to designate specific areas (e.g. tipping area). • The separation distance between the landfill and any surface water body will not be less than 100 m. • The separation distance between the base of the landfill and the highest groundwater level will not be less than 2 m. • All landfill cells will be set back at least 20 m from the planned rehabilitated edges of the WRLs. <p>Monitoring</p> <ul style="list-style-type: none"> • Report on feral animal captures and eradication programmes associated with landfill facilities as per State and Federal legislated Fauna Management Plans. • Regular landfill inspections in accordance with internal work instructions/procedures.

4.2 CATEGORY 5 – MOBILE CRUSHING AND SCREENING PLANT

This application also seeks to amend Figure 1 shown in Schedule 1 of L9430, removing the location shown for the Category 5 mobile crushing and screening plant. As detailed in the Licence Amendment application for Category 5, the plant will be operated within the Prescribed Premises Boundary. This will allow flexibility in operating the mobile plant in other mining related areas within the Prescribed Premise as required.

There are no changes to the operational controls detailed in L9430 for the mobile crushing and screening plant.

A revised map is provided as **Attachment 2**.

4.3 OTHER – BIOREMEDIATION FACILITY

A bioremediation facility was originally proposed to be located within the KB WRL; however, this facility is now proposed for construction adjacent to the Kens Bore low grade ore stockpile to better facilitate operational needs (as shown in **Attachment 2**). The bioremediation facility will be used to treat sediment and soils contaminated with hydrocarbons primarily from the site wash bay facility and from incidental fuel spills and hydrocarbon leaks.

4.3.1 Construction Considerations

The following considerations and controls will be implemented for the design and installation of the bioremediation facility:

- The proposed location is more than 100m from major drainage lines.
- Groundwater at the proposed location is estimated to be more than 5 m below surface level.
- The pad of the bioremediation facility will be constructed with an HDPE liner or alternative material, aligned with WQPN 27 Liners for containing pollutants, using engineered soils or WQPN 26 - Liners for containing pollutants, using synthetic membranes (DWER 2013).
- Adequate freeboard or stormwater drainage will be established for the facility to contain a 5% AEP 72hr rainfall event to minimize risk of overflow.
- Flood ingress controls for the facility will be designed to protect against a consideration to a 1% AEP rainfall event.

4.3.2 Operational Considerations

The Bioremediation facility will be managed in accordance with the *Contaminated Sites Act 2003* (WA).

In accordance with internal design guidance, the following operational controls will be in place at the Bioremediation Facility:

- Stormwater will be redirected away from the treatment facility.
- Leachate and contaminated stormwater runoff will be directed to an impermeable leachate collection system or contained within the facility with adequate capacity/freeboard to contain a 5% AEP 72hr event.
- Leachate will be removed periodically as required and transferred to the facility treatment cells or disposed of at an offsite licensed facility.
- Sampling to be undertaken on a regular basis to determine hydrocarbon levels, in accordance with internal sampling work instructions.
- Bioremediation area inspections to be undertaken on a regular basis in accordance with internal procedures.

4.3.3 Emissions and Discharges

A summary of the expected emissions and discharges from operation of the Bioremediation Facility is provided in **Table 8**.

A risk assessment of the potential emissions and discharges is provided in **Table 12**. With adequate controls in place the risk to the receiving environment from operating the bioremediation facility is low.

Table 8: Summary of Emissions and Discharges and Proposed Controls and Monitoring

Emissions or Discharge	Proposed Controls and Monitoring
Emissions to Air – Dust	<p>Proposed Controls</p> <ul style="list-style-type: none"> Water will be applied as required to reduce dust emissions. <p>Proposed Monitoring</p> <ul style="list-style-type: none"> Visual monitoring for generation of dust from the bioremediation facility and during ripping/tilling activities. Bioremediation area inspections to be undertaken on a regular basis in accordance with internal procedures.
Emissions to Air - Odour	<p>Proposed Controls</p> <ul style="list-style-type: none"> Regular ripping/tilling and applying water in accordance with internal procedures to support micro-organisms required for the bioremediation process. <p>Monitoring</p> <ul style="list-style-type: none"> Bioremediation area inspections to be undertaken on a regular basis in accordance with internal procedures.
Discharge to Land and Surface Water	<p>Proposed Controls</p> <ul style="list-style-type: none"> Bioremediation activities to occur on pad with appropriate pad liner. Sampling in accordance with internal sampling guidance. Stormwater will be redirected away from the treatment facility. Leachate and contaminated stormwater runoff will be directed to an impermeable leachate collection system with adequate capacity. <p>Monitoring</p> <ul style="list-style-type: none"> Regular inspections of the bioremediation facility in accordance with internal procedures, including inspections of surface water controls and drainage around the facility.

4.4 OTHER – INCIDENTAL PIT WATER MANAGEMENT

Stormwater management around the central processing facility (CPF) is detailed in Works Approval W6769. In addition to the CPF stormwater management, there will be a requirement to pump out in-pit stormwater to minimise mining operation disruptions.

Conservative flood modelling for a 5% AEP 72hr rainfall event (MinRes, 2024) indicates there is potential for pit inundation from direct rainfall and local catchment runoff during the wet season. Kens Bore, Upper Cane and Cardo Bore East (when active) deposits will likely require stormwater to be pumped from pits during the wet season to maintain mining operations.

The Applicant will prioritise reuse of pit stormwater by first pumping to dis-used areas of the pit (where available) or turkeys nests. If either option is unavailable, water will then be sent to sediment basins before continuing to discharge downstream. As a contingency, where all previously described options have been exhausted or are unavailable, it is proposed to discharge the in-pit stormwater directly to local drainage lines via pipelines with diffusers attached.

It is expected that for the volume of stormwater runoff/direct rainwater that will be collected in-pit during a 5% AEP 72hr rainfall event, in-pit pumping would be required for approximately three to six days during the wet season, with discharge flow rates ranging from 100 L/s to 200 L/s for the various stages of Kens Bore Pit.

At Cardo Bore East and Upper Cane, in-pit pumping would be required for approximately one to four days during the wet season, with discharge flow rates of 100 L/s.

4.4.1 Proposed Pit Stormwater Discharge Locations and Management

As described above, where possible, pit stormwater will be stored for future use as dust suppression. When direct discharge is required, in-pit stormwater will be discharged to nearby creeks, with the proposed indicative locations shown in **Attachment 2**.

In the event that discharge of in-pit stormwater to the environment is required, this will be a temporary activity until the stormwater storage capacity of the turkeys nests and sediment basins are reestablished, when pit water can be redirected to those structures. The following controls will be in place to ensure environmental outcomes are achieved during any periods where in-pit stormwater is directly discharged to the environment:

- Discharge locations will be in areas where erosion risk is low, and where there are natural flows during stormwater, and will be outside of avoidance areas including significant cultural heritage areas to minimise risk of erosion.
- In-pit stormwater will be sampled for total suspended solids (TSS) prior to direct discharge to the environment.
- Surface water quality, quantity and flows are monitored at locations upstream and downstream of project disturbance areas. The WPIOP Surface Water Monitoring Plan (MinRes 2024c) outlines designated water monitoring locations. At this time, limited data has been acquired due to the lack of rainfall events, and limited access to some monitoring locations.
- Discharge flow rates to the environment from in-pit pump out of stormwater will be managed to prevent scouring of the receiving creek beds and a diffuser will be attached to the end of the discharge pipeline to further reduce the impact of scouring.

Flow through sediment basins will also be used for discharge of stormwater in the event that unused pits and turkeys nests have reached storage capacity during storm events. Flow through sediment basins will be constructed to trap and settle suspended sediments within the Kens Bore infrastructure area, as detailed in Works Approval W6769. A compliance report will be lodged in accordance with Condition 1 of W6769 once construction of the sediment basins is complete, which is expected to be in December 2024.

Sediment basins are also proposed to be constructed around the Upper Cane non process infrastructure (NPI) area, Upper Cane ROM and Cardo Bore East ROM. The Cardo Bore East sediment basin along with the surrounding bund are proposed to settle the sediments prior to any release to the downstream environment.

Design criterion for sediment basins include:

- Sediment basins sized to completely retain a 1 hour duration, 1 Exceedance per Year (EY) event
- Spillway and basin sized to permit a 1 in 20 to 1 in 50 AEP event and achieve a 5-minute detention time
- Any drains will be sized for the same magnitude event as the sediment basins spillways (that is 1 in 20 to 1 in 50 AEP) (PSM 2023).

5. STAKEHOLDER ENGAGEMENT

5.1 KEY STAKEHOLDERS

The Applicant has identified the key stakeholders for the Project are listed in **Table 9**.

Table 9: 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
	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)
Pastoralists	Mt Stuart Station
	Red Hill Station
Community	Community Consultation Group (CCG)
	Onslow Community

6. SITING AND LOCATION

6.1 CATEGORY 64

6.1.1 Sensitive Receptors and Environmentally Sensitive Areas

There are no changes to sensitive land uses and environmentally sensitive receptors identified in the L9430 Supporting Document. A summary is provided in **Table 10**.

Table 10: 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 6.1.3
Pastoral Lease and Stations	Red Hill Pastoral Lease underlies most of the Premise 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.	N/A
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, <i>Triodia pisolitica</i> 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.	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 <i>Triodia pisolitica</i> PEC in condition 7-1.'

Type / Classification	Description	Distance from Premises	Context
			Condition 7-7 of MS 1203 states 'the proponent shall monitor impacts due to dust deposition saline water application for dust control, changed surface hydrology, weeds, fire and feral species on the <i>Triodia pisolitica</i> 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 <i>Melaleuca</i> and <i>Eucalyptus</i> species.	Within Project area.	No dewatering activities are proposed for the Project.
Important wetlands – Western Australia	N/A	None within the Project area.	N/A
Ramsar Sites in Western Australia	N/A	None within the Project area.	N/A
Department of Conservation and Biodiversity (DBCAs) Legislated Lands and Waters	Cane River Conservation Park (H417369).	Located approximately 34 km to the west	Distance from the Premise 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, <i>Triodia pisolitica</i> (P3) has been identified within the Project area.	Within Project area.	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 <i>Triodia pisolitica</i> 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)pl determined that vegetation in these areas have a moderate to high dependence on groundwater, comprising of mainly <i>Melaleuca</i> and <i>Eucalyptus</i> species.	Within Project area.	No dewatering activities are proposed for the Project.
Threatened / Priority Fauna	Northern Quoll (<i>Dasyurus hallucatus</i>) (EN) Pilbara Olive Python (<i>Liasis olivaceus barroni</i>) (VU) Pilbara Leaf-nosed Bat (<i>Rhinonictoris aurantia</i>) (VU) Ghost Bat (<i>Macroderma gigas</i>) (VU) Western Pebble-mound Mouse (<i>Pseudomys chapmani</i>) (P4)	Within Project area.	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.	N/A
Surface Water Management Area	Proclaimed Pilbara Surface Water Area	Within Project area.	Section 6.1.2 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 6.1.2 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).

Type / Classification	Description	Distance from Premises	Context
Groundwater	Proclaimed Pilbara Groundwater Area	Depth to groundwater at the closest bore to KBE WRL is approximately 35 mbgl. Depth to groundwater at the closest bore to CBE WRL's is approximately 32 mbgl.	N/A
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 (Okane 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

6.1.2 Hydrology

The Project is located within the proclaimed Pilbara Surface Water Management Area under the *Rights in Water and Irrigation Act 1814* (RiWI Act). The water resources are managed in accordance with the DWER Pilbara Regional Water Plan (DWER 2022).

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 majority of Project infrastructure is located within the Red Hill Creek Sub-Catchment, with the southern end of the Kens Bore Pit located on the fringe of the Red Hill Creek Floodplain. Cardo Bore East Deposits are located within northern Cane River Catchment (PSM 2022a, PSM 2022b). Flow within the area is consistent from the Hamersley Ranges, northwest towards the Indian Ocean – there is minimal localised variation from this trend.

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).

Five surface water gauges have been intermittently recording water depth and quality since 2009 within surface water pools and creek lines across the WPIOP (PSM 2022b). While this data set is comprehensive, the level of confidence in this data varies as the stations were frequently inoperable or personnel were unable to access the gauges due to large rainfall events. Therefore, no field surface water flow or quality characteristics have been able to be validated.

The Applicant is establishing a monitoring network to collect surface quality data, that can effectively be validated, to determine surface water quality characteristics within the Project Area. A surface water monitoring plan (MinRes 2024c) has been developed and outlines designated surface water monitoring locations. However, data collection has not yet commenced due to the lack of rainfall events.

6.1.3 Heritage

6.1.3.1 Native Title

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

6.1.3.2 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. 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.

7. RISK ASSESSMENT

A risk assessment has been prepared to identify the environmental impacts of the landfill facilities and bioremediation facility, 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 11**.

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 12**. 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 12** so that no unacceptable risks are posed to the receiving environment.

Table 11: 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	<ul style="list-style-type: none"> 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 		<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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[^] 		<ul style="list-style-type: none"> 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 		

Likelihood		
	<ul style="list-style-type: none"> Specific consequence criteria (for environment) are exceeded 	
Moderate	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Specific consequence criteria (for public health) are likely to be met Local scale impacts: low level impact to amenity
Slight	<ul style="list-style-type: none"> On-site impact: minimal Specific consequence criteria (for environment) met 	<ul style="list-style-type: none"> Local scale: minimal to amenity Specific consequence criteria (for public health) met

Table 12: Risk Assessment, Proposed Controls and Monitoring

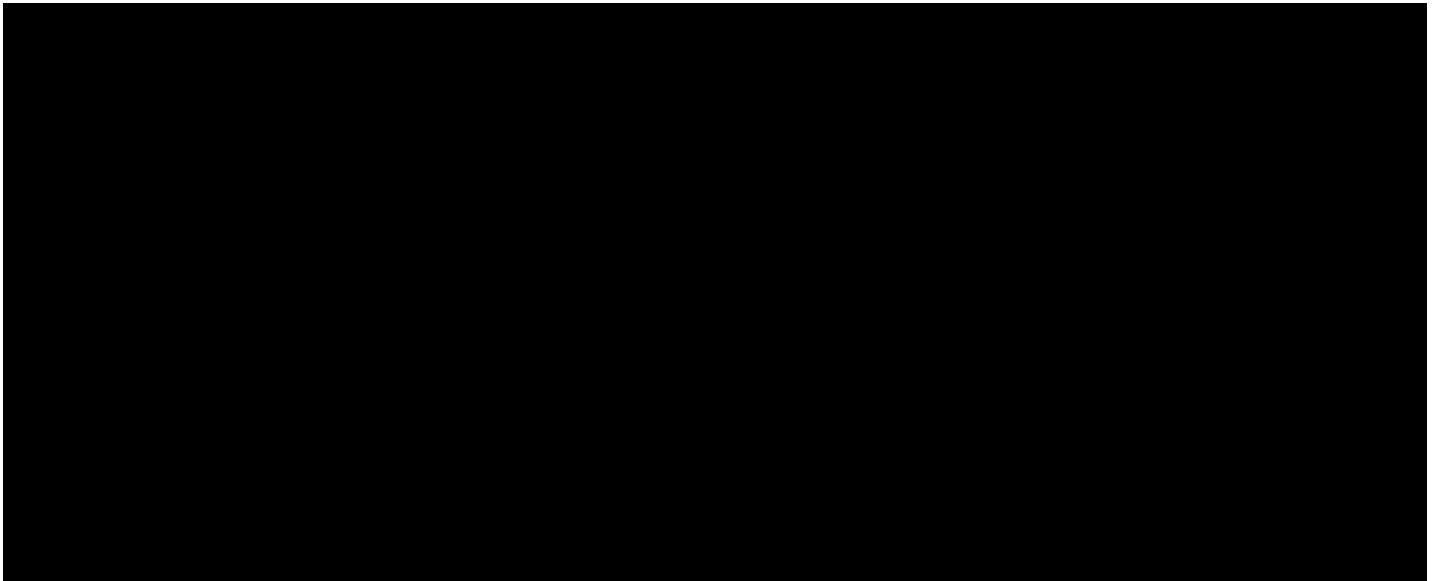
Source / Activities	Potential Emissions	Receptors	Pathway	Potential Adverse Impact	Proposed Controls and Monitoring	Residual Risk			Reasoning for Residual Risk Ranking	
						Likelihood	Consequence	Ranking		
Category 64 – Landfill facilities	Delivery of waste to the landfill from the movement of vehicles on unsealed roads Dust when capping and covering landfill material with waste material and Maintenance of the landfill.	Emissions to Air – Fugitive Dust (PM2.5, PM10, TSP)	Nearest sensitive premises: Red Hill Homestead ~18 km. PEC within Project area	Air/wind dispersion	No health and amenity impacts expected. Dust deposition on surrounding vegetation.	Proposed Controls <ul style="list-style-type: none"> Dust suppression water will be applied as required to reduce dust emissions. Proposed Monitoring <ul style="list-style-type: none"> 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. Monitor impacts due to dust deposition, on the <i>Triodia pisolitica</i> assemblages of the mesas of the West Pilbara PEC in proximity to mining operations in accordance with Condition 7-7 of MS 1203. 	Unlikely	Slight	Low	<ul style="list-style-type: none"> Dust emissions from the landfills are not expected to migrate to sensitive receptors due to the large separation distance between the Project and the nearest receptor (Red Hill Homestead approximately ~18 km). Landfill cells will be within the WRL, dust emissions associated with landfill activities is not expected to contribute more than what will be generated during normal WRL activities.
	Vehicles and earthmoving machinery for landfill maintenance	Emissions to Air - Noise	Nearest sensitive premises: Red Hill Homestead ~18 km. Native fauna (inc. Northern Quoll, Pilbara Olive Python, Pilbara Leaf-nosed Bat, Ghost Bat, Western Pebble-mound Mouse).	Air/windborne	No health or amenity impacts expected. Changes to native fauna behaviour.	Proposed Controls <ul style="list-style-type: none"> Noise attenuation methods will be considered for plant and relevant equipment. Mobile equipment used for the construction will be operated and serviced in line with the manufacturer's specifications. Proposed Monitoring <ul style="list-style-type: none"> An incident reporting system will be maintained to assist in managing environmental incidents such as noise complaints. Monitoring in accordance with State and Federal legislated Management Plans. 	Possible	Slight	Low	<ul style="list-style-type: none"> Landfill cells will be within the WRL, noise emissions associated with landfill activities are not expected to contribute more than what will be generated during normal WRL activities. Noise emissions associated with this will be localised to the work area, large separation distance to the nearest sensitive premises (Red Hill Homestead, ~18km). Due to the typically mobile nature of fauna, the conservation status unlikely to be altered by the proposed activities.
	Organic Waste material breaks down/ decompose	Emissions to Air - Odour	Nearest sensitive premises: Red Hill Homestead ~18 km.	Air/windborne	No amenity impacts expected.	Proposed Controls <ul style="list-style-type: none"> Waste will be disposed within defined trench/cell or within an area enclosed by earthen bund and covered on a regular basis. Training to staff and contractors for permitted waste disposal and recycling. MinRes Landfill Management Procedure. Proposed Monitoring <ul style="list-style-type: none"> Regular inspection of landfill cells, recording landfill volumes and tyre disposal. 	Unlikely	Minor	Low	<ul style="list-style-type: none"> Large separation distance to the nearest sensitive premises (Red Hill Homestead, ~18km).
	Landfill fires causing smoke	Emissions to Air – Smoke (gaseous, dust (PM2.5, PM10)). Carbon oxides, nitrogen oxides, VOCs.	Nearest sensitive premises: Red Hill Homestead ~18 km.	Air / wind dispersion	No health and amenity impacts expected.	Proposed Controls <p>Tyres will be disposed in the landfill facility in dedicated trenches as follows:</p> <ul style="list-style-type: none"> In batches separated from each other by at least 100 mm of soil and each consisting of not more than 1,000 used car tyre equivalent. Tyres to be covered at regular intervals Once final waste levels in the tyre disposal area are achieved 500 mm of cover will be applied. Putrescible trenches covered regularly with sufficient quantities of Inert waste Type 1 clean fill or other appropriate cover material. Training to staff and contractors for permitted waste disposal and recycling. MinRes Landfill Management Procedure. Proposed Monitoring <ul style="list-style-type: none"> Regular inspection of landfill cells, recording landfill volumes and tyre disposal. 	Unlikely	Major	Medium	<ul style="list-style-type: none"> Larges separation distance to nearest sensitive premises (Red Hill Homestead ~18 km away from WRL Landfill). Smoke from a potential tyre fire is unlikely to lead to unacceptable impacts.

Part V Licence Amendment Application – WPIOP Categories

Source / Activities	Potential Emissions	Receptors	Pathway	Potential Adverse Impact	Proposed Controls and Monitoring	Residual Risk			Reasoning for Residual Risk Ranking	
						Likelihood	Consequence	Ranking		
	Lighting to ensure safe operation of machinery and safe access to the premises	Emissions to Air – Light	Nearest sensitive premises is Red Hill Homestead ~18 km from proposed WRL landfill. Native fauna (inc. Northern Quoll, Pilbara Olive Python, Pilbara Leaf-nosed Bat, Ghost Bat, Western Pebble-mound Mouse).	Air	No amenity impacts expected. Changes to native fauna behaviour.	Proposed Controls <ul style="list-style-type: none"> Night lighting will be limited to the minimum required for site safety and security. If required, the lights will face inwards towards the Project activities to reduce impact to fauna. In accordance with relevant management plans, including Northern Quoll Management Plan, Ghost Bat management Plan and Pilbara Olive Python Management Plan. 	Unlikely	Slight	Low	<ul style="list-style-type: none"> Due to the location of the premises in a remote pastoral area, with no residences in the immediate vicinity (separation distance ~18 km from landfill) a there is almost no likelihood of unacceptable impacts from light emissions. Landfill cells will be within the WRL, light emissions associated with landfill activities are not expected to contribute more than what will be generated during normal WRL activities.
	Windblown wastes may affect the local amenity	General waste	Nearest sensitive premises: Red Hill Homestead ~18 km. Native fauna (inc. Northern Quoll, Pilbara Olive Python, Pilbara Leaf-nosed Bat, Ghost Bat, Western Pebble-mound Mouse).	Air/ wind dispersion	No amenity impacts expected. Attract feral animals impacting native fauna population and behaviour.	Proposed Controls <ul style="list-style-type: none"> Putrescible landfill facility will have appropriate barrier to prevent windblow waste The tipping area will be no longer than 30 metres. Waste will be disposed within defined trench/cell or within an area enclosed by earthen bund. Have appropriate signage for the landfill, including signage within the facility, to designate specific areas (i.e. tipping area). Proposed Monitoring <ul style="list-style-type: none"> Regular inspection of landfill cells, recording landfill volumes and tyre disposal. Regular inspections to include windblown waste Report on feral animal captures and eradication programmes associated with landfill facilities as per State and Federal legislated Fauna Management Plans 	Unlikely	Slight	Low	<ul style="list-style-type: none"> Large separation distance to nearest sensitive receptor (~18km) Controls reduce likelihood of adverse impacts to native fauna
	Contaminated leachate from wastes	Emissions to groundwater - Leachate	Groundwater	Infiltration to localised groundwater.	Contamination of groundwater	Proposed Controls <ul style="list-style-type: none"> Disposal within the WRLs - the separation distance between the base of the landfill and the highest groundwater level will be more than 6 m. Waste will be disposed within defined trench/cells. The tipping area will be no longer than 30 metres. Proposed Monitoring <ul style="list-style-type: none"> Regular inspection of landfill cells, recording landfill volumes and tyre disposal. 	Rare	Minor	Low	<ul style="list-style-type: none"> The risk that any potential leachate from the landfill will impact the underlying groundwater quality considered unlikely as the water table is approx. 15 to 45 mbgl, and the separation distance to natural ground surface from the base of the first WRL lift is no less than 6 metres.
Other – Bioremediation Facility	Ripping and tilling activities for treatment of soils	Emissions to Air – Dust	Nearest sensitive premises: Red Hill Homestead ~18 km. PEC within Project area	Air/wind dispersion	No health and amenity impacts expected. Dust deposition on surrounding vegetation.	Proposed Controls <ul style="list-style-type: none"> Dust suppression water will be applied as required to reduce dust emissions. Proposed Monitoring <ul style="list-style-type: none"> 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. 	Unlikely	Slight	Low	<ul style="list-style-type: none"> Dust emissions from the landfill are not expected to migrate to sensitive receptors due to the large separation distance between the Project and the nearest receptor (Red Hill Homestead approximately ~18 km).

Source / Activities		Potential Emissions	Receptors	Pathway	Potential Adverse Impact	Proposed Controls and Monitoring	Residual Risk			Reasoning for Residual Risk Ranking
							Likelihood	Consequence	Ranking	
	Aerobic/anaerobic treatment, ripping and tilling of soils for treatment	Emissions to Air - Odour and volatile organic compounds (VOCs)	Nearest sensitive premises: Red Hill Homestead ~18 km. PEC within Project area	Air/wind dispersion	No health and amenity impacts expected.	Proposed Controls <ul style="list-style-type: none"> Periodic mixing/turning of material to promote bioremediation. Adequate moisture content to promote bioremediation. Regular ripping/tilling and applying water in accordance with internal procedures to support micro-organisms required for the bioremediation process. Facility located >100m from occupied buildings 				<ul style="list-style-type: none"> It is not expected that odours or VOCs from the bioremediation facility will impact on the closest sensitive receptor and amenity (approximately 18 km to Red Hill Station Homestead).
	Insufficient storage and treatment of contaminated soils	Unauthorised Discharge to Land and Surface Water	Soils and surface water	Infiltration to localised groundwater or surface water	Contamination of groundwater and surface water	Proposed Controls <ul style="list-style-type: none"> Bioremediation activities to occur on pad with appropriate pad liner. Sampling in accordance with internal sampling guidance. Stormwater will be redirected away from the treatment facility. Leachate and contaminated stormwater runoff will be directed to an impermeable leachate collection system with adequate capacity. Monitoring <ul style="list-style-type: none"> Design of pad and liner includes monitoring of leachate, groundwater, landfill gas, odour, noise and litter. Sample and analysis to confirm contamination status in accordance with internal sampling guidance. 	Unlikely		Low	<ul style="list-style-type: none"> The risk of unauthorised discharge to groundwater or surface water is unlikely as the pad will be constructed with appropriate liner and stormwater will be redirected away from the remediation facility.

8. ATTACHMENT 10 – PROPOSED FEE CALCULATION



9. REFERENCES

- Astron Environmental (2010b) West Pilbara Iron Ore Project – Kens Bore Deposit Borefields Groundwater Dependent Ecosystems Desktop Study. Prepared for API Management Pty Ltd.
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