Government of Western Australia
Department of Water and Environmental Regulation

Amendment Report

Application for Licence Amendment

Part V Division 3 of the *Environmental Protection Act 1986*

Licence Number	L8688/2012/1
Licence Holder	Hamersley HMS Pty Ltd
ACN	115 004 129
File Number	DER2014/000622-1
Premises	Hope Downs 4 Mine Part of AM70/282, L47/399 and Part of L47/702 NEWMAN WA 6753 As defined by the coordinates in Schedule 2 of the Revised Licence
Date of Report	28 October 2022
Decision	Revised licence granted

Carmen Standring

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A/MANAGER, RESOURCE INDUSTRIES
REGULATORY SERVICES
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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1. Decision summary

Licence L8688/2012/1 is held by Hamersley HMS Pty Ltd (Licence Holder) for the Hope Downs 4 Mine (the Premises), located approximately 30 km north of the town of Newman.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the operation of the Premises. As a result of this assessment, Revised Licence L8688/2012/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Amendment Report, the department has considered and given due regard to its Regulatory Framework and relevant policy documents which are available at https://dwer.wa.gov.au/regulatory-documents.

2.2 Amendment summary

On 3 June 2022, the Licence Holder submitted an application (Rio Tinto 2022) to the department to amend Licence L8688/2012/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). An amendment to increase the category 5 production/ design capacity from 16.5 million tonnes (Mt) per annum (Mtpa) to 21 Mtpa of saleable ore product (SOP) (refer to Table 1) is being sought.

No changes to the design capacity of category 6, 12, 54 and 64 under the existing licence have been requested by the Licence Holder.

Table 1: Proposed design capacity changes

Category	Current design capacity	Proposed design capacity	Description of proposed amendment
5	16,500,000 tonnes per annual period	21,000,000 tonnes per annual period (dry tonnes) 2,100,000 tonnes maximum waste fines deposition into Area 3 waste fines storage facility (WFSF)	Clearly define the production limit of category 5 as SOP excluding its weight from moisture content (i.e. dry tonnes). 21 Mtpa has been calculated as the theoretical highest possible production capacity at the Premises.

The existing licence was amended on 4 March 2022 to include the operation of the Area 3 Waste Fines Storage Facility (WFSF) consisting of Kalgan Pit 2 (Kal 2) and Kalgan Pit 3 (Kal 3) following completion of Time Limited Operations approved under works approval W6403/2020/1 with a category 5 design capacity of 16.5 Mtpa (refer to Table 1).

The Premises accepts a dry ore, which is processed through a wet process, producing approximately 90% moist SOP, and 10% waste fines. SOP is stockpiled onsite prior to loading onto trains for transport to port and the waste fines are deposited into the WFSF. SOP contains approximately 10% moisture. This amendment seeks to clearly define the production limit for category 5 as SOP excluding its weight from moisture content (i.e. dry tonnes).

The supporting documentation for works approval W6403/2020/1 included an assessment of

waste fines deposition rates starting at 2.088 Mtpa dry tonnes and slowly decreasing in volume over five years. The slurry density of the Area 3 WFSF was modelled in the water balance at 35% solids weight for weight (w/w) with a short term settled dry density of 1.0 tonnes per cubic metre (t/m^3) predicted in the active pit. This operation resulted in a predicted seepage rate from the Area 3 WFSF of between 1.5 gigalitres per year (GL/year) to 2.1 GL/year. No decant return was assumed from the facility on the basis the natural seepage rate will prevent the sustained formation of a supernatant pond for abstraction.

A revised assessment has been undertaken by Knight Piesold Consulting in April 2022 (Rio Tinto 2022) to account for the increased throughput and increase waste fines deposition from 2.088 Mtpa to 2.1 Mtpa dry tonnes into the Area 3 WFSF.

This assessment included approximately 14 months of actual operating performance data looking at the filling rate, water balance and seepage estimate of the WFSF. Actual performance data recorded lower 2021 actual tonnages (1.75 Mt) than projected (2.088 Mt); and the averaged achieved percent solids has been 39% solids w/w (compared to the design 35% solids w/w), resulting in less water in slurry reporting to the facility.

Rio Tinto 2022 states that with the increased throughput (from 2.088 Mtpa to 2.1 Mtpa), generally more water will report to the Area 3 WFSF (3.9 million cubic metres (Mm^3) per year compared with 3.1 Mm^3 per year) within the slurry. With no decant return, this increases the seepage potential from the pit.

An updated estimate of pit seepage based on the 2.1 Mtpa at 35% solids w/w from mid 2022 is shown in Table 2 (Rio Tinto 2022).

Table 2: Summary of water balance

Year	Water in Slurry (Mm^3)	Seepage Kal 2 (Mm^3)	Seepage Kal 3 (Mm^3)	Predicted Total Seepage (Mm^3)	Predicted Design Seepage (Mm^3)
To date	3.1	1.31	0.57	1.88	3.74
2022	3.6	1.63	0.39	2.02	1.71
2023	3.9	1.76	0.87	2.63	1.85
2024	3.9	1.75	0.61	2.36	1.65
2025	3.9	0.2*	1.54	1.74	1.51
2026	3.9	0.2*	1.49	1.69	1.08
2027	3.9	0.2*	0.35	2.05**	2.08
				12.32	13.62

*Estimated ongoing seepage post deposition
**Estimated to include nominal Kal 4 seepage of 1.5 Mm^3 for 8 months

Rio Tinto 2022 states that *"The results indicate whilst the forecast seepage is higher than the original design, because of the seepage to date being low (lower throughput and higher percent solids), the total seepage is only slightly higher*."

2.3 Part IV of the EP Act

The proposed storage of waste fines within an above ground tailings storage facility (TSF) was subject to assessment by the EPA. The EPA determined (EPA Report 1374) that groundwater and surface water quality could potentially be impacted from contamination from the paddock TSF. The EPA concluded that the proposal could be managed to meet the EPA's environmental objectives for groundwater and surface water provided conditions are imposed requiring the Proponent to ensure that any discharge of water (runoff/seepage) from TSFs is monitored and managed (if necessary) to ensure that surface and groundwater quality are maintained.

Ministerial Statement (MS) 854, which was published on 1 February 2011, includes conditions relevant to the management of the proposed facilities. Condition 7 of MS 854 (Water Quality) requires the Proponent to:

- Condition 7-1: ensure that run off and/or seepage from the tailings storage facility does not lead to the quality of surface water or groundwater within or adjacent to the proposal area exceeding the trigger values for a slightly to moderately disturbed ecosystem provided in the Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000), Australian Water Quality Guidelines for Fresh and Marine Waters and its updates, taking into consideration natural background water quality of the receiving environment.
- Condition 7-2: monitor the quality of surface water and groundwater upstream and downstream of the tailings storage facility to ensure that the requirements of condition 7-1 are met.

Reference to the TSF in the original MS 854 relates to an above ground paddock style facility. The Licence Holder applied on 17 September 2020 for a Section 45C to have MS 854 amended to include the construction, commissioning and operation of a new in-pit TSF (Kalgan 2, Kalgan 3 and Kalgan 4) in Area 3 and increase the dewatering rate by 3 GL/annum for the abstraction of recirculation water as a result of seepage from the in-pit storage of tailings. MS 854 was amended on 2 October 2020 via a section 45C (assessed as insignificant) to include the new in-pit TSF and the increase in dewatering amount. The requirements of MS 854 Condition 7-1 and 7-2 stated above now also apply to the new in-pit TSF.

The Licence Holder is currently working with the EPA to address water quality impacts from the TSFs at the Premises and to include the new in-pit TSF in the monitoring program.

Existing licence L8688/2012/1 currently regulates the ambient groundwater quality monitoring for the new in-pit TSF (Kalgan Pit 2 and Kalgan Pit 3), until such time as the Environmental Management Plan (EMP) (or equivalent) is approved by the EPA.

The Licence Holder must ensure that any proposed changes to the Premises are consistent with MS 854.

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk assessments* (DWER 2020).

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises operation which have been considered in this Amendment Report are detailed in Table 3 below. Table 3 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 3: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls (Rio Tinto 2022)
Overtopping of the Area 3 WFSF	Increased deposition of waste fines into Area 3 WFSF	Waste fines or water released to surrounding soils and surface water	• Continue with the cycling of deposition between pits subject to the development of the supernatant pond. • If the supernatant pond develops in one of the pits to more than a nominal 0.5 m over the whole facility, implement the decant recovery system (trailer pump with floating intake) back to the process plant.
Seepage		Seepage to groundwater or surface water	• Continue the water balance and survey checks to back calculate dry density and seepage whilst monitoring rate of rise. • Continue with the cycling of deposition between pits subject to the development of the supernatant pond. • If the supernatant pond develops in one of the pits to more than a nominal 0.5 m over the whole facility, implement the decant recovery system (trailer pump with floating intake) back to the process plant. • Continue to monitor the ambient groundwater quality.

3.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020), the Delegated Officer has excluded employees, visitors and contractors of the Licence Holder's from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation.

Table 4 and Figure 1 below provides a summary of potential environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises *(Guideline: Environmental siting* (DWER 2020)).

Table 4: Sensitive human and environmental receptors and distance from prescribed activity

Environmental receptors	Distance from prescribed activity
Surface water	The Kal 2 and Kal 3 pits are located approximately 700 m east of Coondiner Creek
Groundwater	The pre-mining groundwater level was measured at approximately 20 mbgl. Current readings from monitoring bores close to Kal 2 and Kal 3 show groundwater level has declined to 65 mbgl due to dewatering at the Premises.
Threatened/ Priority Flora	There are no Threatened Flora located within or near the Premises, however several Priority Flora species have been recorded within the Premises.
Rights in Water and Irrigation Act 1914	The Premises lies within the Proclaimed Pilbara Groundwater and Surface Water Areas

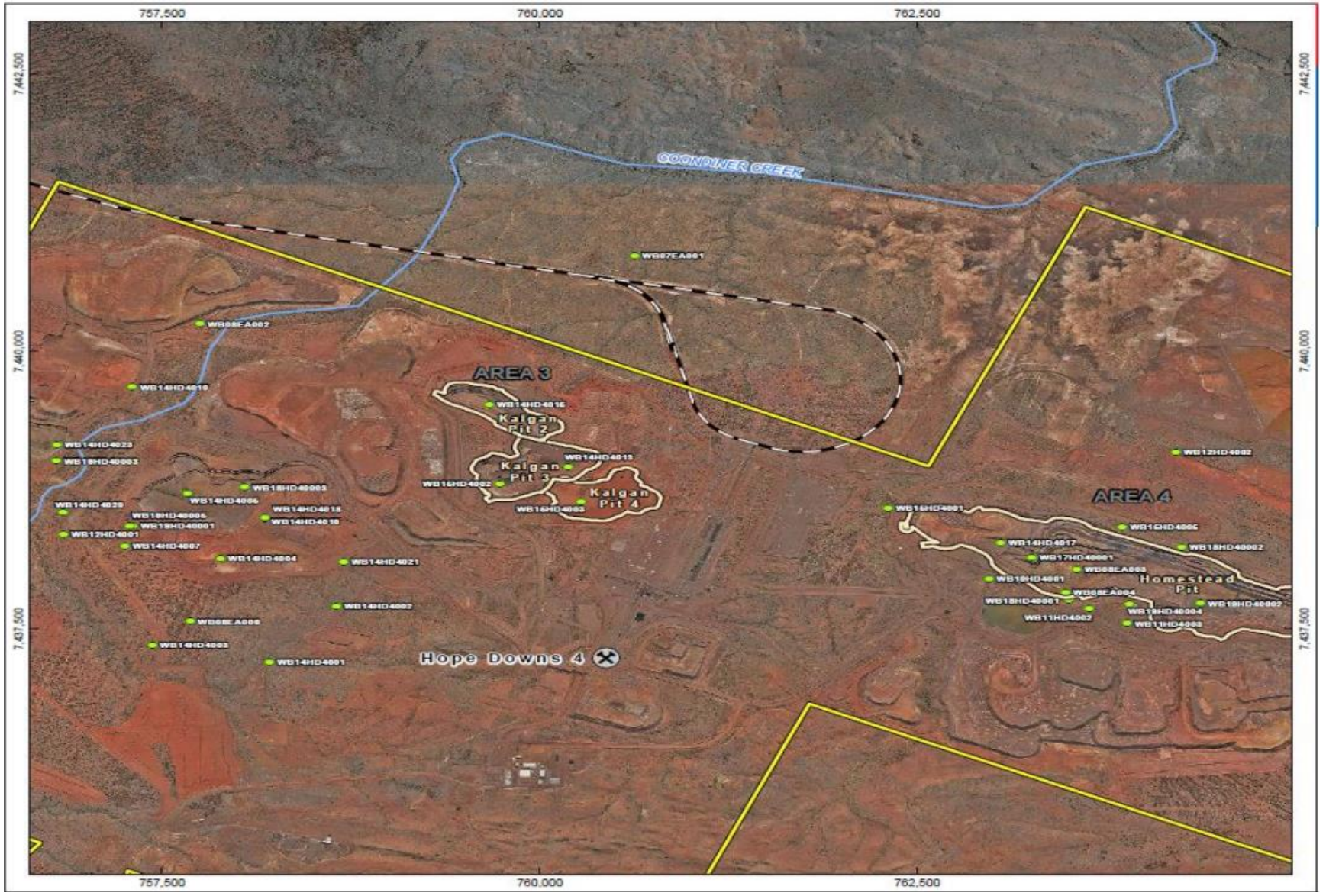

Figure 1: Distance to sensitive receptors

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for those emission sources which are proposed to change and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the Licence Holder has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the Licence Holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the licence as regulatory controls.

Additional regulatory controls may be imposed where the Licence Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 5.

The Revised Licence L8688/2012/1 that accompanies this Amendment Report authorises emissions associated with the operation of the Premises.

The conditions in the Revised Licence have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Table 5. Risk assessment of potential emissions and discharges from the Premises during operation

Risk Event					Risk rating[1] C = consequence L = likelihood	Licence Holder's controls sufficient?	Conditions[2] of licence	Justification for additional regulatory controls
Source/Activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Licence Holder's controls**				
Operation								
Increased deposition of waste fines into Area 3 WFSF	Overtopping of the Area 3 WFSF	Risk of structural failure leading to physical damage or smothering of vegetation by tailings Soil contamination with the possible addition of ions and metals Water quality contamination and impacts	Local terrestrial ecosystems Groundwater and surface water quality	Refer to Section 3.1	C = Moderate L = Rare **Medium Risk**	Y	Conditions on existing licence relating to the Area 3 WFSF including: Condition 2 –Operational requirements Condition 4 – Inspection of infrastructure	N/A
	Seepage	Seepage entering groundwater and flowing down gradient with potentially the following impacts: • Water quality adversely affecting aquatic fauna in Kalgan Creek discharge point; • Groundwater mounding; and • Groundwater contamination	Dewatering abstraction bores which are then discharged to the creek Freshwater ecosystems Groundwater dependent ecosystems	Refer to Section 3.1	C = Moderate L = Rare **Medium Risk**	Y	Conditions on existing licence relating to the Area 3 WFSF including: Condition 4 – Inspection of infrastructure Condition 5 – Annual water balance Condition 6 – Authorised discharge point Condition 10 – Ambient groundwater monitoring	N/A

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk assessments* (DWER 2020).

Note 2: Proposed Licence Holder's controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

4. Consultation

Table 6 provides a summary of the consultation undertaken by the department.

Table 6: Consultation

Consultation method	Comments received	Department response
Department of Jobs, Tourism, Science and Innovation (JTSI) advised of proposal (30/08/2022)	No comments received.	N/A.
Licence Holder was provided with draft amendment on 21 October 2022	Comments are summarised in Appendix 1.	Department's responses are provided in Appendix 1.

5. Conclusion

Based on the assessment in this Amendment Report, the Delegated Officer has determined that a Revised Licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

5.1 Summary of amendments

Table 7 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Licence as part of the amendment process.

Table 7: Summary of licence amendments

Condition no.	Proposed amendments
Prescribed premises category description table	Category 5 assessed production / design capacity has been increased from 16,500,000 tonnes per annual period to 21,000,000 tonnes per annual period.
1	Category 5 premises production or design capacity limit has been increased from 16,500,000 tonnes per annual period to 21,000,000 tonnes per annual period.
9, Table 7	Updated the frequency from 24 hrs to monthly.
10, Table 8	WB10HD4001 has been replaced by WB21HD40006.

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
4. Existing Licence L8688/2012/1 and Amendment Report granted 4 March 2022 available

at Search - Department of Water and Environmental Regulation (der.wa.gov.au).

5. Rio Tinto 2022, *Hope Downs 4 Iron Ore Mine – Licence (L8688/2012/1) Amendment Application* (RTIO-HSE-0360003), dated 3 June 2022 (DWERDT612831).

Appendix 1: Summary of Licence Holder's comments on risk assessment and draft conditions

Condition	Summary of Licence Holder's comment	Department's response
Condition 9 - Table 7: Monitoring of treated wastewater Volume monitoring frequency	The Licensee recognises that it did not request a change to this condition in the License amendment application, however verifying the volume on the flowmeter every 24 hours is not pragmatic for a low risk facility and unfortunately there is no telemetry on this infrastructure. The Licensee requests frequency of monitoring the volume is changed to monthly.	Updated.
Schedule 1: Maps Figure 4	Bore WB10HD4001 has been replaced by WB21HD40006. Replace Figure 4 with Attachment 2.	Updated

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY			
Application type			
Amendment to licence	☒	Current licence number:	L8688/2012/1
Date application received		3/06/2022	
Applicant and Premises details			
Applicant name/s (full legal name/s)		Hamersley HMS Pty Ltd (ACN 115 004 129)	
Premises name		Hope Downs 4 Mine	
Premises location		Part of AM70/282, L47/399 and Part of L47/702 NEWMAN WA 6753	
Local Government Authority		Shire of East Pilbara	
Application documents			
HPCM file reference number:		DER2014/000622-1	
Key application documents (additional to application form):		Cover letter Licence amendment application form Attachment 1C: Authorisation letter Attachment 2: Premises map Attachment 8: Hope Downs 4 Kalgan WFSF Throughput Change Assessment (Knight Piesold Consulting 2022)	
Scope of application/assessment			
Summary of proposed activities or changes to existing operations.		Licence amendment to increase the category 5 production capacity from 16.5 Mtpa to 21 Mtpa. The Premises has operated at a production rate of between 16.5-19.1 Mtpa of saleable ore product (SOP) since 2015. This licence amendment seeks to clearly define the production limit for category 5 as SOP excluding its weight from moisture content. A production limit of 21 Mtpa has been calculated as the theoretical highest possible production capacity at the Premises.	

Category number/s (activities that cause the premises to become prescribed premises)

Table 1: Prescribed premises categories

Prescribed premises category and description	Assessed production or design capacity	Proposed changes to the production or design capacity (amendments only)
Category 5: Processing or beneficiation of metallic or non-metallic ore	16,500,000 tonnes per annual period 2,088,000 tonnes waste fines deposition expected volumes for each year of life of Kal 2 and Kal 3	21,000,000 tonnes per annual period (dry tonnes) 2,100,000 tonnes maximum waste fines deposition into Area 3 WFSF
Category 6: Mine dewatering	23 GL/a regulated under MS 854	No change
Category 12: Screening, etc. of material	10,000,000 tonnes per annual period	No change
Category 54: Sewage facility	372 m^3/day	No change
Category 64: Class II putrescible landfill site	1,000 tonnes per annual period	No change

Legislative context and other approvals

Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes ☐ No ☒	Referral decision No: Managed under Part V ☐ Assessed under Part IV ☐
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes ☒ No ☐	Ministerial statement No: 854 and 932 EPA Report No: 1465
Has the proposal been referred and/or assessed under the EPBC Act?	Yes ☐ No ☒	Reference No: N/A
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes ☒ No ☐	Other evidence ☒ State Agreement Act Reissued: 11/07/2017
Has the applicant obtained all relevant planning approvals?	Yes ☐ No ☐ N/A ☒	If N/A explain why? *Iron Ore (Hope Downs) Agreement Act 1992*
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes ☐ No ☒	No clearing is proposed.

Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes ☐ No ☒	No clearing is proposed.
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes ☐ No ☒	Licence / permit not required.
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes ☒ No ☐	Name: Pilbara Type: Proclaimed Groundwater Area and Surface Water Areas Has Regulatory Services (Water) been consulted? Yes ☐ No ☐ N/A ☒ Regional office: North West
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes ☐ No ☒	Name: N/A Priority: N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to WQPN 25)? Yes ☐ No ☐ N/A ☒
Is the Premises subject to any other Acts or subsidiary regulations (e.g. *Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx*)	Yes ☒ No ☐	*Iron Ore (Hope Downs) Agreement Act 1992*
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes ☐ No ☒	N/A
Is the Premises subject to any EPP requirements?	Yes ☐ No ☒	N/A
Is the Premises a known or suspected contaminated site under the *Contaminated Sites Act 2003*?	Yes ☐ No ☒	N/A