Decision Report

Application for Works Approval

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

Choose an item.	W6688/2022/1
Applicant	IB OPERATIONS PTY LTD
ACN	165 513 557
File number	DER2022/000117
Premises	North Star Stage 2: Junction Camp WWTP Great Northern Highway MARBLE BAR WA 6760 Legal description - Part of Miscellaneous Licence 45/625 IRON BRIDGE JUNCTION As defined by the coordinates in Schedule 1 of the works approval
Date of report	13 September 2022
Decision	Works approval granted

Marko Pasalich
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Date: 2022.09.13 15:53:14 +08'00'

Marko Pasalich
Senior Environmental Officer

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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1. Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the construction and operation of the premises. As a result of this assessment, works approval W6688/2022/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this decision report, the Department of Water and Environmental Regulation (the department; DWER) 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 Application summary and overview of premises

On 14 March 2022, IB OPERATIONS PTY LTD (the applicant) submitted an application for a works approval to the department under section 54 of the *Environmental Protection Act 1986* (EP Act).

The application is to undertake the construction and time limited operation of a sewage facility to service a temporary worker accommodation village and an associated sprayfield for the disposal of blended treated effluent and wastewater from a reverse osmosis plant at the North Star Stage 2: Junction Camp. The premises is situated approximately 100 km west of Marble Bar within the Shire of East Pilbara.

The Fortescue Metals Group owns and operates multiple iron ore mines and associated infrastructure across the Pilbara region of Western Australia which comprise the Chichester Hub. The Chichester Hub encompasses Cloudbreak and Christmas Creek, Solomon, Eliwana, the Port Hedland Anderson Point Port Facility, and the North Star Magnetite Project. The North Star Magnetite Project is a joint venture between Fortescue Metals Group subsidiary, FMG Iron Bridge, and Formosa Steel. The North Star Magnetite Project contains the North Star, Glacier Valley and Eastern Limb magnetite deposits operated under Iron Bridge Operations.

FMG Iron Bridge (Aust) Pty Ltd has approval under Part IV of the EP Act to develop the North Star Magnetite Project under Ministerial Statement (MS) 993, inclusive of the development of a pipeline from the Ore Processing Facility to the concentrate handling facility located at Port Hedland.

Supporting the construction and operation of the pipeline development and site operations, the applicant seeks approval of the North Star Stage 2: Junction Camp Wastewater Treatment Plant (WWTP) and associated infrastructure. The proposed premises is situated within the mining tenement Miscellaneous Licence L45/625, held by Pilbara Water and Power Pty Ltd. Pilbara Water and Power Pty Ltd is majority-owned by FMG Magnetite Pty Ltd, a subsidiary of FMG IB Operations Pty Ltd.

The North Star Stage 2: Junction Camp will host approximately 260 people during construction of the North Star Magnetite Project, and the WWTP will treat and manage up to 78,000 litres per day of domestic wastewater produced at the camp. A reverse osmosis plant will be constructed and operated at the North Star Stage 2: Junction Camp, producing up to 30,000 litres of reverse osmosis reject water based on a 75% recovery rate. The volume of raw water treated by the reverse osmosis water treatment plant will remain below the threshold of 0.5 GL/year and consequently will not require registration as a Category 85B prescribed premises under Schedule 1, Part 2 of the *Environmental Protection Regulations 1987* (EP Regulations).

The North Star Stage 2: Junction Camp WWTP sprayfield will handle a maximum throughput of up to 78, 000 L per day in addition to 30, 000 litres of reverse osmosis reject water (brine). The WWTP will consist of skid-mounted fixed-film activated sludge systems, with airlift piping, sedimentation clarification chambers, a tablet chlorinator, effluent tanks, duty standby air blowers, influent and effluent pumps, and purpose-built control panels. The specifics of the proposed North Star Stage 2: Junction Camp WWTP are set out in Table 1 below.

Table 1: North Star Stage 2: Junction Camp WWTP Design Parameters

Parameter	Estimated Design Specifications
WWTP Design	2 x 130 ep skid-mounted fixed-film plants drawing from 3 x 50,000 L balance tanks and discharging from an effluent tank to an irrigation sprayfield
Total design capacity	260 equivalent persons
Wastewater hydraulic loading	300 L/person/day
Estimated wastewater treatment design capacity	78, 000 L/day, plus 30,000 L/day reverse osmosis reject water
Estimated reverse osmosis reject water volume	Up to 30,000 L/day based on a RO Plant (75% recovery rate)
Daily discharge application rate	3.2 mm/day
Minimum irrigation sprayfield size	2.847 ha
Irrigation sprayfield required	3.2 ha

The applicant has advised that the premises is temporary and will operate for approximately 24 months. The submitted application has requested permission for commissioning and time-limited operations prior to the granting of a licence.

The premises relates to the category and assessed design capacity under Schedule 1 of the EP Regulations which are defined in works approval W6688/2022/1. The infrastructure and equipment relating to the premises category and any associated activities which the department has considered in line with *Guideline: Risk Assessments* (DWER 2020) are outlined in works approval W6688/2022/1.

2.3 Part IV of the EP Act

The broader North Star Magnetite Project development envelope is subject to Ministerial Statement number MS 993.

As per DWER Guidance Statement: *Environmental Siting*, the sensitive receptors and associated aspects concerning North Start Stage 2: Junction Camp and proposed infrastructure have been defined. These receptors have been previously assessed under Part IV Environmental Impact Assessment (EIA) and conditioned accordingly through the approved MS 993. Additional risk assessment(s) and controls were implemented in the approved Mining

Proposal (Reg I.D. 101901).

The proposed activity will be undertaken within the approved MS 993 envelope and designed, where possible, to avoid sensitive receptors.

Extensive area surveys, inclusive of the proposed prescribed premises boundary, have taken place for flora/vegetation and fauna communities/habitat to best understand the siting and location in which the prescribed activity will take place. The WWTP and associated infrastructure location have been designed to reflect the best utilisation of the mitigation hierarchy and avoidance to eliminate and minimise environmental harm to threatened flora and fauna species and habitats. Where avoidance is not feasible, IB OPERATIONS PTY LTD has and/or will use the appropriate approvals and management measures to disturb areas of concern.

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 construction and operation which have been considered in this decision report are detailed in Table 2 below. Table 2 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 2: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Vehicle movements Earthworks (including the clearing of vegetation) Installation of the wastewater treatment plant infrastructure and equipment	Air/windborne pathway	Physical separation Minimising vegetation clearing and disturbance Deployment of water carts Implementation of vehicle speed restrictions
Noise	Operation of vehicles and machinery	Air/windborne pathway	Physical separation

Emission	Sources	Potential pathways	Proposed controls
Spills/unintended releases of hydrocarbons or chemicals	Chemical handling and storage	Seepage to soil and groundwater	Siting of WWTP on cleared and compacted ground Chemical storage area to be fully contained and bunded where required
Commissioning and Time-limited Operations			
Dust	Vehicle movements	Air/windborne pathway	Deployment of water carts Implementation of vehicle speed restrictions
Noise	Pumps Operation of vehicles and machinery	Air/windborne pathway	Physical separation
Odour	Commissioning works WWTP operations and sludge removal	Air/windborne pathway	Physical separation Fully contained WWTP Each pump station fitted with a carbon scrubber vent to ensure that all air is treated before being released into the atmosphere.
Spills/Untreated releases of partially treated wastewater or solid waste	Infrastructure and equipment failure Maintenance works (accidental spills)	Seepage to soil and groundwater	Siting of WWTP on cleared and compacted ground WWTP equipped with systems to monitor the tank volume levels and alarms to alert operator of containment loss
Contaminated or potentially contaminated stormwater	Stormwater interaction with plant and irrigation sprayfield	Seepage to soil and groundwater	Siting of WWTP on cleared and compacted ground Construction of windrows to redirect sheet runoff (if required)
Spills/unintended releases of hydrocarbons or chemicals	Chemical handling and storage	Seepage to soil and groundwater	Siting of WWTP on cleared and compacted ground Chemical storage tanks with custom fabricated HDPE chemical containment bunding Chemical storage area will be fully contained and bunded

Emission	Sources	Potential pathways	Proposed controls
Treated effluent	Irrigation sprayfield	Direct application to vegetation and seepage to soil and groundwater	Physical separation Controlled dispersal over large sprayfield area Cessation of irrigation during and immediately after major rainfall events Scheduled sprayfield maintenance and inspections Construction of windrows to redirect sheet runoff (if required) Effluent discharge from the WWTP will be measured and monitored according to the Guidelines for the Non-potable uses of Recycled Water in Western Australia (DoH, 2011). Temporary nature of camp and WWTP (Approximately 24 months)
Diluted RO wastewater	Irrigation sprayfield	Direct application to vegetation and seepage to soil and groundwater	Blending with treated effluent (dilution) Controlled dispersal over large sprayfield area Scheduled sprayfield maintenance and inspections Construction of windrows to redirect sheet runoff (if required)
Undiluted RO wastewater	Irrigation sprayfield	Direct application to vegetation	Blending with treated effluent (dilution) Controlled dispersal of diluted brine over large sprayfield area

3.1.2 Receptors

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

Table 3 and Figure 1 below provides a summary of potential human and 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 3: Sensitive human and environmental receptors and distance from prescribed activity

Receptor ID	Human receptors	Distance from prescribed activity
H1	Aboriginal and other heritage site - GOV DAA Site ID: 23590	Archaeological Place KAR057-01 mapped within the prescribed premises

H2	Yule River Water Reserve - P1	58 km northwest of prescribed premises
	Environmental receptors	**Distance from prescribed activity**
E1	Remnant native vegetation - *Corymbia hamerslyana* open woodland over *Triodia epactia* hummock grassland	Within irrigation sprayfield footprint
E2	Surveyed Priority 4 flora - *Bulbostylis burbidgeae*	Mapped within the prescribed premises boundary during North Star Slurry and Infrastructure Corridors Conservation Significant Flora and Vegetation Assessment
E3	Conservation listed significant fauna - Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia)* (Pilbara form) – considered critically endangered - Brush-tailed mulgara or Ampurta (*Dasycercus blythi)* – Priority 4 DBCA was sighted in the area	A significant fauna habitat for Pilbara Leaf-nosed Bat was mapped approximately 133 m to the west of the prescribed premises. A significant fauna habitat for Brush-tailed mulgara was mapped approximately 169 m to the east of the prescribed premises
E4	Minor drainage line	Approximately 308 m north of prescribed premises
E5	Surveyed Schedule 3 fauna habitat (Pilbara leaf nosed bat, Pilbara olive python, northern quoll)	2.8 km east of prescribed premises
E6	Turner River	Approximately 3 km northeast of prescribed premises
E7	Environmentally Sensitive Area - Schedule 1 Area	9 km northwest
E8	Priority Ecological Communities - Themeda grasslands on cracking clays (Hamersley Station, Pilbara) (VU)	~150 km southwest of prescribed premises

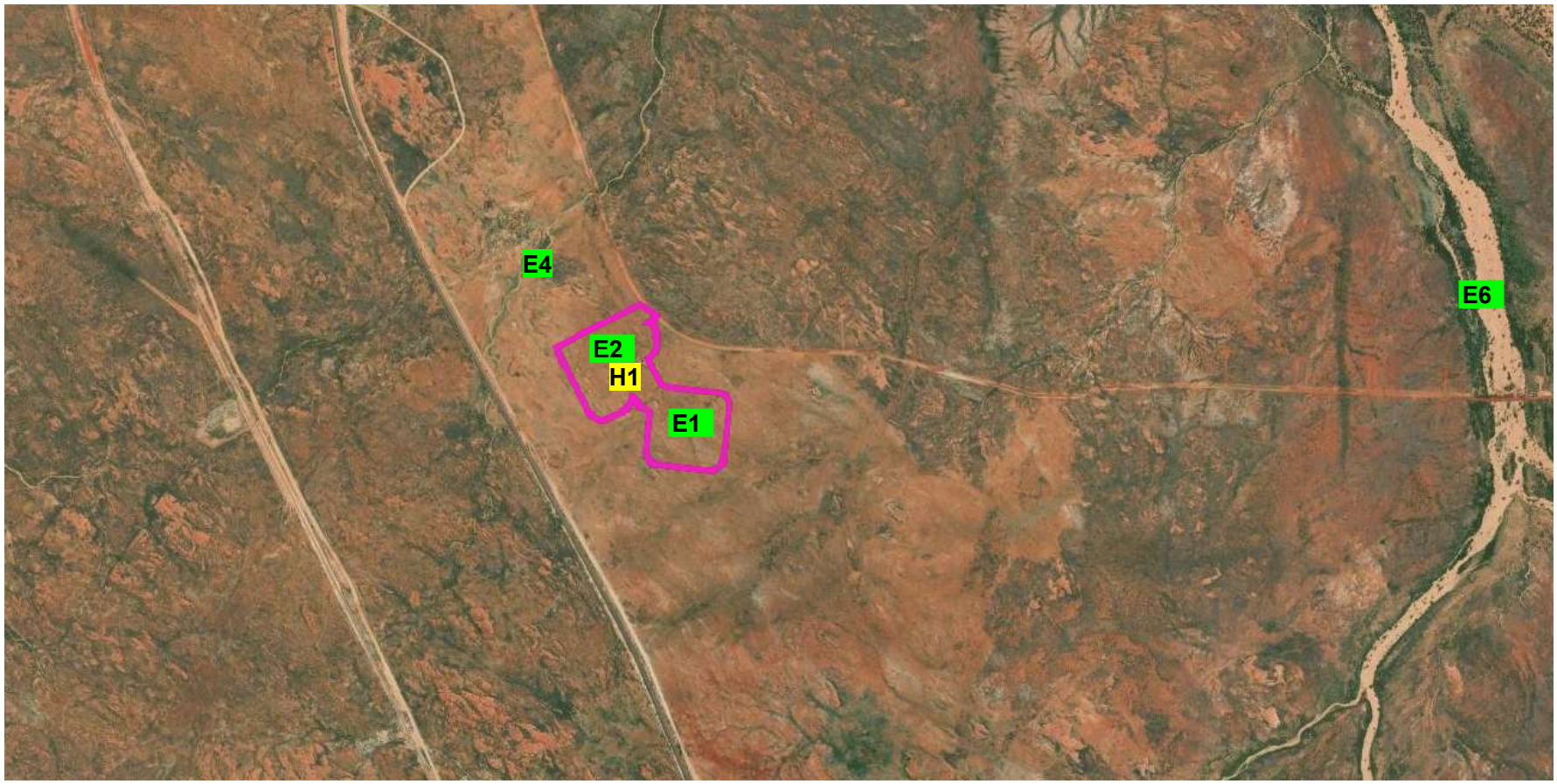

Figure 1: Proximity to sensitive human and environmental receptors

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for each identified emission source 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 applicant 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 applicant's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the works approval as regulatory controls.

Additional regulatory controls may be imposed where the applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 4.

Works approval W6688/2022/1 that accompanies this decision report authorises construction and time-limited operations. The conditions in the issued works approval, as outlined in Table 4 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

A licence is required following the time-limited operational phase authorised under the works approval to authorise emissions associated with the ongoing operation of the premises i.e., sewage treatment and effluent irrigation. A risk assessment for the operational phase has been included in this decision report, however licence conditions will not be finalised until the department assesses the licence application.

Table 4: Risk assessment of potential emissions and discharges from the premises during construction, commissioning, and operation

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of works approval	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
Construction								
Land clearing and earthworks Positioning of plant associated equipment including vehicle movements (reversing beepers) Installation of sprayfield	Dust	Air/windborne pathway causing impacts to native vegetation communities (smothering of foliage and flowers) and disturbance to fauna	Remnant native vegetation	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	N/A	N/A
	Noise and vibration	Air/windborne pathway and vibration through soil with impacts on (disturbance to) native fauna	Native fauna	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	N/A	N/A
	Spills/unintended releases of hydrocarbons or chemicals	Seepage to soil and groundwater with potential impacts on native vegetation	Native fauna (Including soil fauna) and remnant vegetation	Refer to Section 3.1	C = Minor L = Rare **Low Risk**	Y	Condition 5	N/A
Commissioning and time-limited operations								
Vehicle movements	Dust	Air/windborne pathway resulting in accumulation of dust on native vegetation	Remnant native vegetation	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	N/A	N/A
Pumps	Noise	Air/windborne pathway resulting disturbance to	Native fauna	Refer to Section 3.1	C = Slight L = Unlikely	Y	N/A	N/A

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of works approval	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
Operation of vehicles and machinery		native fauna			**Low Risk**			
Commissioning works	Odour	Air/windborne pathway with impacts on amenity	Accommodation village residents	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	Condition 5	N/A
WWTP operations and sludge removal								
Infrastructure and equipment failure	Spills/Untreated releases of partially treated wastewater or solid waste	Seepage to soil and groundwater resulting in elevated soil nutrients	Native fauna (Including soil fauna) and remnant vegetation	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	Condition 1 and 5	N/A
Maintenance works (accidental spills)								
Stormwater interaction with plant and irrigation sprayfield	Contaminated or potentially contaminated stormwater	Seepage to soil and groundwater resulting in elevated soil nutrients	Remnant native vegetation	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	Condition 1and 5	N/A
Chemical handling and storage	Spills/unintended releases of hydrocarbons or chemicals	Seepage to soil and groundwater resulting in damage to vegetation (root systems)	Remnant native vegetation	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	Condition 1 and 5	N/A
Irrigation sprayfield	Treated effluent	Direct application to vegetation and seepage to soil and groundwater resulting in nutrient accumulation and toxicity	Remnant native vegetation	Refer to Section 3.1	C = Minor L = Possible **Medium Risk**	Y	Condition 7, 10, and 13	N/A

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of works approval	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
	Undiluted RO effluent (brine waste)	Direct application to vegetation resulting in salt scalding and vegetation death	Remnant native vegetation	Refer to Section 3.1	C = Moderate L = Possible **High Risk**	N	Condition 5	Application of undiluted, highly saline RO brine has the potential to result in salt scaling and death of native vegetation. While application of undiluted brine has not been proposed, it has been specifically prohibited as a commissioning requirement.
	Diluted RO wastewater	Direct application to vegetation and seepage to soil and groundwater resulting in secondary salinisation and impacts on native vegetation	Remnant native vegetation	Refer to Section 3.1	C = Minor L = Possible **Medium Risk**	Y	Condition 7, 10, and 13	N/A

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

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

3.3 Assessment of wastewater and reverse osmosis reject to land

3.3.1 Effluent quality

The applicant has provided details of the expected treated effluent discharge concentrations from the WWTP, which are set out in Table 5 below.

Table 5: Expected Treated Effluent Quality Discharge Concentrations

Parameter	Expected Treated Effluent Discharge Concentrations
5-Day Biochemical Oxygen Demand (BOD_5)	<20 mg/L
pH	6.5 – 8.5
Total Suspended Solids (TSS)	<30 mg/L
Total Nitrogen (TN)	<30 mg/L
Total Phosphorus (TP)	<12 mg/L
Escherichia coli (E. coli)	<1000 cfu/100 mL
Residual Free Chlorine	0.2 – 2.0 mg/L

3.3.2 Sprayfield sizing and nutrient loading assessment

The applicant proposed to discharge treated effluent blended with reverse osmosis reject water to land via a dedicated irrigation sprayfield. The projected maximum daily discharge volume to the sprayfield is 108 m^3 per day. The applicant has advised that the location of the sprayfield was selected on the basis that the natural soil present is sufficiently permeable to accommodate both proposed irrigation volumes and expected rainfall events.

The land system associated with the prescribed premises has been interpreted as the Macroy land System, related to stony plains and interfluves. The Macroy Land System is aligned with vulnerability category D as set out in the *Guidelines for the Non-potable Uses of Recycled Water in Western Australia,* being described as course-grained soil and turbid or dark coloured waters (DoH, 2021). The maximum nutrient application rates for nitrogen and phosphorus for vulnerability category 4 are 480 kg/ha and 120 kg/ha respectively.

Based on the projected nitrogen and phosphorus concentrations of the treated effluent (less than 30 mg/l and 12 mg/l respectively), and the anticipated dilution of the effluent with reverse osmosis reject water, the minimum sprayfield area required to irrigate the treated wastewater is calculated to be 2.84 hectares. This is based on 365 days of irrigation per year, the location being situated within vulnerability category D, and the calculated annual phosphorus discharge in accordance with the *Guidelines for the Non-potable Uses of Recycled Water in Western Australia* and *Water Quality Protection Note 22 (WQPN22): Irrigation with nutrient rich wastewate*r; based on projected throughputs and the dilution of effluent strength with brine by a factor of 0.72. However, the applicant has proposed a sprayfield area of 3.2 hectares, 0.353 hectares greater than necessary.

During and following heavy rain, there is the potential for this irrigated effluent to pool on the ground surface. Pooling of effluent may lead to dispersion off-site via overland flow or infiltration and migration in groundwater. The Delegated Officer considers this pooling would cause low level off-site impacts and minimal impacts at the wider scale due to the dilution effect from rainfall, the presence of a deep groundwater table and the conditions relating to irrigation operations added to the works approval as per the applicant's proposed controls.

3.3.3 Soil salinisation

The volume of raw water treated by the reverse osmosis water treatment plant will remain below the threshold of 0.5 GL/year and consequently will not require registration as a Category 85B prescribed premises under Schedule 1, Part 2 of the EP Regulations. However, discharge of reverse osmosis reject water or brine has the potential to lead to soil sodicity, with adverse impacts on the health of terrestrial vegetation; either through direct salt scalding, the gradual accumulation of salts within the soil profile, or secondary salinisation as a result of localised groundwater mounding.

Given the dilution of reverse osmosis wastewater with treated effluent to reduce both nutrient and salt loading across the sprayfield, and the temporary nature of the proposed premises (24 months), the Delegated Officer has determined the overall rating for the risk of blended effluent discharge and soil sodicity is Medium. However, to ensure that the discharge of undiluted RO reject to the irrigation field does not cause vegetation degradation and soil sodicity, the Delegated Officer will require that no undiluted RO brine be discharged during time-limited operations.

4. Consultation

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

Table 6: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 30/06/2022	None received	N/A
Local Government Authority advised of proposal on 14/07/2022	None received	N/A
Department of Mines, Industry Regulation and Safety (DMIRS) advised of proposal 14/07/2022	*"DMIRS has reviewed the letter requesting comments on the proposed WWTP on L45/625 for the North Star Stage 2 operation.* *The proposed activity is compatible with the License purposes.* *DMIRS received and approved a Mining Proposal Reg ID 97061 that included the junction camp associated with the WWTP on 12/11/21 and is a fairly good match with the outline of the WWTP/prescribed premises shown in the Works approval documentation"*	Notes

DPLH advised of proposal on 14/07/2022	None received	N/A
DoH advised of proposal on 14/07/2022	Refer to Appendix 1	Noted Applicant advised of approval requirements under the *Health (Treatment of Sewage and Disposal of Effluent and Liquid Wastes) Regulations 1974,* and has confirmed that an application has been made
Applicant was provided with draft documents on 02/09/2022	The Applicant responded on 12 September 2022. Refer to Appendix 2	Refer to Appendix 2

5. Conclusion

Based on the assessment in this decision report, the delegated officer has determined that a works approval will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

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. Department of Water (DOW), July 2008. *Water Quality Protection Note 22 (WQPN22): Irrigation with nutrient rich wastewate*r. Perth, Western Australia. Accessed at: www.dwer.wa.gov.au
5. Department of Health (DOH), 2011. *Guidelines for the Non-potable Uses of Recycled Water in Western Australia*. Perth, Western Australia. Accessed at: www.health.wa.gov.au

Appendix 1: Department of Health Advice

Department of Health Advice notes
The onsite wastewater treatment system and disposal area requires a formal application to be submitted to the local government for assessment prior forwarding onto the DOH
The water quality criteria from the secondary wastewater treatment system should meet the DoH's requirements as per *Health (Treatment of Sewage and Disposal of Effluent and Liquid Wastes) Regulations 1974*, and adopted Codes of Practice
The wastewater treatment plant should be engineer certified detailing the requirements as specified on the DoH website
The location of the disposal area should ensure 100 metre setbacks are met from environmentally sensitive winter or wet seasonal creeks. The submitted plans were not detailed enough to show this
A specific site and soil evaluation report is required for the above proposal, to be undertaken by a qualified consultant that is conducted during the wettest seasonal time of the year only (January/February) as per AS/NZS 1547:2012 requirements
The disposal area needs to be sized in accordance with the above Standard requirements and permeability findings
To ensure diligent management and maintenance of plumbing fittings, equipment and disposal sprinklers occur
Ensure heavy metals and TDS are monitored and managed within Department of Water and Environmental Regulation criteria to mitigate risk to drinking water, or potential drinking water sources
Consideration of nuisances such as odours, noise and vibration in relation to the location of the wastewater treatment plant and irrigation spray field including spray drift to accommodation or sensitive land users.

Appendix 2: Summary of applicant's comments on risk assessment and draft conditions

Condition	Summary of applicant's comment	Department's response
Condition 1 Table 1	Typographical changes requested: correct discharge limit provided for Total Nitrogen (<30 mg/L) and Total Phosphorus (<12 mg/L) change the maximum slope gradient across the entire sprayfield area to 1.8 % WWTP Infrastructure specifications updated	Table 1 updated to reflect the changes requested
Condition 15 Table 7	Typographical changes requested - correct discharge limit provided for Total Nitrogen (<30 mg/L) and Total Phosphorus (<12 mg/L)	Typographical changes adopted

Appendix 3: Application validation summary

SECTION 1: APPLICATION SUMMARY					
Application type					
Works approval	☒				
~~Licence~~	☒	~~Relevant works approval number:~~		~~None~~	☐
		~~Has the works approval been complied with?~~	~~Yes ☐ No ☐~~		
		~~Has time limited operations under the works approval demonstrated acceptable operations?~~	~~Yes ☐ No ☐ N/A ☐~~		
		~~Environmental Compliance Report / Critical Containment Infrastructure Report submitted?~~	~~Yes ☐ No ☐~~		
		~~Date Report received:~~			
~~Renewal~~	☐	~~Current licence number:~~			
~~Amendment to works approval~~	☐	~~Current works approval number:~~			
~~Amendment to licence~~	☐	~~Current licence number:~~			
		~~Relevant works approval number:~~		~~N/A~~	☐
~~Registration~~	☐	~~Current works approval number:~~		~~None~~	☒
Date application received		12/03/2022			
Applicant and Premises details					
Applicant name/s (full legal name/s)		IB Operations Pty Ltd			
Premises name		North Star Stage 2 Iron Bridge Junction Camp WWTP			
Premises location		North Star Magnetite Project L45/625 granted under the Mining Act 1978.			
Local Government Authority		Shire of East Pilbara or Shire of Port Hedland			
Application documents					
HPCM file reference number:		DER2018/001042-7~19			
Key application documents (additional to application form):		*Iron Bridge Operation (IBO) - North Star Stage 2: Junction Camp Supporting Document*			
Scope of application/assessment					
Summary of proposed activities or changes to existing operations.		Works approval Construction of Category 54 sewage facility (and sprayfield for disposal of blended treated effluent and RO plant wastewater)			

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

Table 1: Prescribed premises categories

Prescribed premises category and description	**Proposed production or design capacity**	~~**Proposed changes to the production or design capacity (amendments only)**~~
Category 54; Sewage facility: premises — *(a) on which sewage is treated (excluding septic tanks); or* *(b) from which treated sewage is discharged onto land or into waters.*	78,000 L/day plus 30,000 L/day RO reject 108,000 L/day total daily irrigation volume (108 m^3/day)	

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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: MS [0993] EPA Report No: 1514
Has the proposal been referred and/or assessed under the EPBC Act?	Yes ☒ No ☐	Reference No: EPBC 2012/6689
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes ☐ No ☒	Certificate of title ☐ General lease ☐ Expiry: Mining lease / tenement ☒ L45/625 Start – 30/06/2021 End – 04/08/2042 Other evidence ☐ Expiry:
Has the applicant obtained all relevant planning approvals?	Yes ☐ No ☒ N/A ☐	Approval: Expiry date: If N/A explain why?
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes ☐ No ☒	Clearing approved under MS993
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes ☐ No ☒	Clearing approved under MS993
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: N/A Type: ~~Proclaimed Groundwater Area/Surface Water Area~~ Has Regulatory Services (Water) been consulted? Yes ☐ No ☐ N/A ☒ Regional office: Northwest
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes ☐ No ☒	Name: N/A Priority: P1 / P2 / P3 / 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 ☒	
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes ☐ No ☒	
Is the Premises subject to any EPP requirements?	Yes ☐ No ☒	
Is the Premises a known or suspected contaminated site under the *Contaminated Sites Act 2003*?	Yes ☐ No ☒	Classification: N/A Date of classification: N/A

Direct interest stakeholders			
Shire of East Pilbara	Letter to be sent	Yes ☒	No ☐
DoH	Letter to be sent	Yes ☒	No ☐
DMIRS	Letter to be sent	Yes ☐	No ☒
DPLH	Letter to be sent	Yes ☒	No ☐
EPA Services	Letter to be sent	Yes ☒	No ☐

SECTION 2: RECEPTORS

The Town of Port Hedland is the closest major centre to the Prescribed Premises Boundary, located approximately 145 km north

The town of Marble Bar is approximately 98 km east of the Premises Boundary.

The Woodstock Aboriginal community is situated 30 km south of the premises.
Panorama Homestead is situated 40 km northeast of the mine area.

Human receptors	Distance from activity / prescribed premises
Aboriginal and other heritage site - GOV DAA Site ID: 23590	Archaeological Place KAR057-01 mapped within the Prescribed premises
Yule River Water Reserve - P1	58 km northwest
Environmental receptors	Distance from activity / prescribed premises
Remnant native vegetation - *Corymbia hamerslyana* open woodland over *Triodia epactia* hummock grassland	Within irrigation sprayfield footprint
Conservation listed significant fauna - Pilbara Leaf-nosed Bat (*Rhinonicteris aurantia)* (Pilbara form) – Considered critically endangered. - Brush-tailed mulgara or Ampurta (*Dasycercus blythi*) – Priority 4 DBCA was sighted in the area	- A significant fauna habitat for Pilbara Leaf-nosed Bat was mapped approximately 133 m to the west of the prescribed premises. - significant fauna habitat for Brush-tailed mulgara was mapped approximately 169 m to the east of the prescribed premises
Environmentally Sensitive Area - Schedule 1 Area	9 km northwest
Priority Ecological Communities - Themeda grasslands on cracking clays (Hamersley Station, Pilbara) (VU)	~150 km southwest
Surveyed Schedule 3 fauna habitat (Pilbara leaf nosed bat, Pilbara olive python, northern quoll)	2.8 km east
Surveyed Priority 4 flora (*Bulbostylis burbidgeae*)	Mapped within the Prescribed premises Boundary during North Star Slurry and Infrastructure Corridors Conservation Significant Flora and Vegetation Assessment
Turner River	3 km northeast