



Application for Works Approval

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

Works Approval Number	W6569/2021/1
Applicant	IB Operations Pty Ltd
ACN	165 513 557
File number	DER2021/000390
Premises	North Star Magnetite Project Shay Gap MARBLE BAR WA 6760 Part of L45/547 As defined by the coordinates in Schedule 1 of the works approval
Date of report	7 November 2021
Decision	Works approval granted

Steve Checker
MANAGER WASTE INDUSTRIES

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 W6569/2021/1 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 2 July 2021 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 construction works relating to North Star Magnetite Project Wastewater Treatment Plants at the premises. The premises is approximately 100 km north of Marble Bar.

The premises relates to the Category 54 sewage facility and assessed production and design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in works approval W6569/2021/1. 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 W6569/2021/1.

The applicant is constructing a pipeline from the Canning Basin to the Ore Processing Facility as part of Stage 2 of the North Star Magnetite Project. To support construction of the pipeline the applicant will construct a Construction Camp (Camp) at Shay Gap and the Camp will host up to 350 people during pipeline construction. The Camp will employ two (2) Wastewater Treatment Plants (WWTP) to manage domestic effluent generated from the Camp. The two WWTP will have a combined Production and Design Capacity (P&DC) of 101m³/day (45m³/d and 56m³/d respectively) and will discharge treated effluent to a dedicated 4.7ha Spray Irrigation Field (SIF) comprising native vegetation. The two WWTP will be standalone facilities installed and operated separately with separate influent and effluent discharges; but both WWTP effluent will report to the single SIF for disposal.

The 45m³/d WWTP will comprise a skid mounted temporary module unit which will be factory tested prior to transportation to the premises. The WWTP will be installed on flat ground and connected to influent pipes. An additional Balance Tank will be installed upstream of the WWTP which will provide a capacity of 45m³/d.

The 56m³/d WWTP will be a Submerged Aerated Filter (SAF) plant and will comprise two (2) 40-foot containers that will work in parallel. The WWTP will be installed on flat ground and connected to influent pipes. The SAF will also have additional Balance Tanks installed upstream of the WWTP which will provide a capacity of 56m³/d.

Both WWTP will connect to the adjacent SIF and all pipelines will be HDPE. Given the temporary nature of the premises all irrigation piping will be on the surface for easy removal at the termination of the project. Above ground sprinklers will be utilised at the SIF.

In addition to the two WWTP, the Applicant intends to construct and operate a Reverse Osmosis (RO) plant at the Camp for potable water. The RO P&DC is below the Category 85B threshold (0.5 GL/y) for licensing under Schedule 1 of the *Environmental Protection Regulations 1987* (the Regs) so it will not require a Registration. However, the Applicant intends to discharge the RO reject water to the SIF parallel to the WWTP discharges; that is, combine and blend the RO reject water with the WWTP effluent which is then discharged to the SIF. RO reject will enter the 45m³/d WWTP at the primary processing stage Balance Tank while RO reject will enter the SAF WWTP Mixing Tank post processing stage for discharge to the SIF. The RO reject discharge volume is up to 46 kL/d (46m³/d).

The premises will require clearing for the WWTP infrastructure and clearing has been authorised under MS993 – refer to section 2.3 below.

Section 4.3 of the Works Approval Application Form (Form) advises the premises will operate for 12-18 months so the premises will be temporary. The applicant has requested in the Form that both Commissioning and Time-limited operations occur prior to grant of a Licence.

2.3 Part IV of the EP Act

The applicant has a relevant Part IV Ministerial Statement that relates to the North Star Magnetite Project. This is Ministerial Statement MS993 and this authorisation includes clearing of native vegetation.

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 1 below. Table 1 also details the proposed control measures the applicant has proposed to assist in controlling these emissions, where necessary. Emissions associated with Commissioning and Time-limited operations have also been considered in Table 1.

Table 1: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
<i>Dust</i>	<i>Positioning of plant including vehicle movements</i>	<i>Air / windborne pathway</i>	<i>Minimise vegetation disturbance. The WWTP are packaged plant, so they just need to be sited and plumbed at the respective location. Water cart.</i>

Emission	Sources	Potential pathways	Proposed controls
			<i>Speed restrictions.</i>
<i>Noise</i>	<i>Positioning of plant including vehicle movements</i>	<i>Air / windborne pathway</i>	<i>Speed restrictions. Sitting.</i>
Commissioning			
<i>Dust</i>	<i>Movement of vehicles</i>	<i>Air / windborne pathway</i>	<i>Water cart. Speed restrictions.</i>
<i>Noise</i>	<i>Commissioning of WWTP</i>	<i>Air / windborne pathway</i>	<i>Sitting. Package plant so noise is limited.</i>
<i>Spills</i>	<i>Commissioning of WWTP</i>	<i>Seepage to soil and groundwater</i>	<i>Storage of small volumes of WWTP associated chemicals will comply with Australian Standards. Bunded storage area. HDPE piping to SIF. Sludges will be removed from the WWTP and disposed off the premises Inspections and maintenance.</i>
<i>Odour</i>	<i>Commissioning of WWTP</i>	<i>Air / windborne pathway</i>	<i>WWTP employ tanks and containers which are contained (closed) and reduce odour. Properly treated wastewater should not produce significant odour at the SIF. Inspections and maintenance.</i>
<i>Treated sewage</i>	<i>Discharge to SIF</i>	<i>Seepage to soil, vegetation and groundwater</i>	<i>Discharge to SIF – 4.7ha in total. Sitting of SIF. Nutrient application criteria. Monitoring of effluent quality. Above ground sprinkler system. No pooling of treated wastewater on the ground. Low level ground maximum slope of 0.5% with limited permeability (permeability rate of 8m/d). Sparsely vegetated. Groundwater separation depth. Windrow on southwest boundary to contain runoff. Fenced, locked and will display signage. Inspections and maintenance.</i>

Emission	Sources	Potential pathways	Proposed controls
Time-limited operations			
<i>Dust</i>	<i>Movement of vehicles</i>	<i>Air / windborne pathway</i>	<i>Water cart. Speed restrictions.</i>
<i>Noise</i>	<i>Operation of WWTP</i>	<i>Air / windborne pathway</i>	<i>Sitting. Package plant so noise is limited.</i>
<i>Spills</i>	<i>Operation of WWTP</i>	<i>Seepage to soil, vegetation and groundwater</i>	<i>Storage of small volumes of WWTP associated chemicals will comply with Australian Standards. Bunded storage area. HDPE piping to SIF. Sludges will be removed from the WWTP and disposed off the premises. Inspections and maintenance.</i>
<i>Odour</i>	<i>Operation of WWTP</i>	<i>Air / windborne pathway</i>	<i>WWTP employ tanks and containers which are contained (closed) and reduce odour. Properly treated wastewater should not produce significant odour at the SIF. Inspections and maintenance.</i>
<i>Treated sewage</i>	<i>Discharge to SIF</i>	<i>Seepage to soil, vegetation and groundwater</i>	<i>Discharge to SIF – 4.7ha in total. Sitting of SIF. Nutrient application criteria. Monitoring of effluent quality. Above ground sprinkler system. No pooling of treated wastewater on the ground. Low level ground maximum slope of 0.5% with limited permeability (permeability rate of 8m/d). Sparsely vegetated. Groundwater separation depth. Windrow on southwest boundary to contain runoff. Fenced, locked and will display signage. Inspections and maintenance. Sludge will be removed from the tanks and disposed off-site.</i>
Operation			

Emission	Sources	Potential pathways	Proposed controls
<i>Dust</i>	<i>Movement of vehicles</i>	<i>Air / windborne pathway</i>	<i>Water cart. Speed restrictions.</i>
<i>Noise</i>	<i>Operation of WWTP</i>	<i>Air / windborne pathway</i>	<i>Sitting. Package plant so noise is limited.</i>
<i>Spills</i>	<i>Operation of WWTP</i>	<i>Seepage to soil, vegetation and groundwater</i>	<i>Storage of small volumes of WWTP associated chemicals will comply with Australian Standards. Bunded storage area. HDPE piping to SIF. Sludges will be removed from the WWTP and disposed off the premises. Inspections and maintenance.</i>
<i>Odour</i>	<i>Operation of WWTP</i>	<i>Air / windborne pathway</i>	<i>WWTP employ tanks and containers which are contained (closed) and reduce odour. Properly treated wastewater should not produce significant odour at the SIF. Inspections and maintenance.</i>
<i>Treated sewage</i>	<i>Discharge to SIF</i>	<i>Seepage to soil, vegetation and groundwater</i>	<i>Discharge to SIF – 4.7ha in total. Sitting of SIF. Nutrient application criteria. Monitoring of effluent quality. Above ground sprinkler system. No pooling of treated wastewater on the ground. Low level ground maximum slope of 0.5% with limited permeability (permeability rate of 8m/d). Sparsely vegetated. Groundwater separation depth. Windrow on southwest boundary to contain runoff. Fenced, locked and will display signage. Inspections and maintenance. Sludge will be removed from the tanks and disposed off-site.</i>

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 2 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 2: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Pardoo homestead	30km from northern edge of the Premises boundary
Environmental receptors	Distance from prescribed activity
Threatened and/or priority flora	4km northeast
Groundwater	48mbgl

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 3.

Works approval W6569/2021/1 that accompanies this decision report authorises construction, commissioning and time-limited operations. The conditions in the issued works approval 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. treated sewage activities. 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 3: Risk assessment of potential emissions and discharges from the premises during construction, commissioning, time-limited operations 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								
Placement of WWTP and SIF including vehicle movements (reversing beepers).	Dust	Air / windborne pathway causing impacts to health and amenity	Residences 30km north	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	N/A The Delegated Officer has considered the separation distance between the source and receptors as a guide to inform the risk of dust emissions as not foreseeable. Dust can be adequately regulated by section 49 of the EP Act.	N/A
	Noise			Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	N/A The Delegated Officer has considered the separation distance between the source and receptors as a guide to inform the risk of noise emissions as not foreseeable. Noise can be adequately regulated by the EP Noise Regs.	N/A
Commissioning								

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				
Commissioning of WWTP	Dust	Air / windborne pathway causing impacts to health and amenity	Residences 30km north	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	N/A The Delegated Officer has considered the separation distance between the source and receptors as a guide to inform the risk of dust emissions as not foreseeable. Dust can be adequately regulated by section 49 of the EP Act.	N/A
	Noise			Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	N/A The Delegated Officer has considered the separation distance between the source and receptors as a guide to inform the risk of noise emissions as not foreseeable. Noise can be adequately regulated by the EP Noise Regs.	N/A
	Spills	Seepage to soil, vegetation and groundwater	Fauna, flora and groundwater	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	Condition 1	N/A
	Odour	Air / windborne pathway causing impacts to health and amenity	Residences 30km north	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	N/A The WWTP are closed systems. The Delegated Officer has considered the separation distance between the source and receptors as a guide to inform the risk of odour emissions as not	N/A

Works approval: W6569/2021/1

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				
							foreseeable. Odour can be adequately regulated by section 49 of the EP Act.	
	Treated sewage	Seepage to soil, vegetation and groundwater	Fauna, flora and groundwater	Refer to Section 3.1	C = Moderate L = Possible Medium Risk		Condition 1, 5, 7, 8, 11, 12, 13, 14, 15 and 16.	Refer to section 3.3
Operation including Time-limited operations								
Operation of WWTP	Dust	Air / windborne pathway causing impacts to health and amenity	Residences 30km north	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	N/A The Delegated Officer has considered the separation distance between the source and receptors as a guide to inform the risk of dust emissions as not foreseeable. Dust can be adequately regulated by section 49 of the EP Act.	N/A
	Noise		Residences 30km north	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	N/A The Delegated Officer has considered the separation distance between the source and receptors as a guide to inform the risk of noise emissions as not foreseeable. Noise can be adequately regulated by the EP Noise Regs.	N/A
	Spills	Seepage to soil, vegetation and groundwater	Fauna, flora and groundwater	Refer to Section 3.1	C = Slight L = Unlikely	Y	Condition 1	N/A

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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				
					Low Risk			
	Odour	Air / windborne pathway causing impacts to health and amenity	Residences 30km north	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y	N/A The WWTP are closed systems. The Delegated Officer has considered the separation distance between the source and receptors as a guide to inform the risk of odour emissions as not foreseeable. Odour can be adequately regulated by section 49 of the EP Act.	N/A
	Treated sewage	Seepage to soil, vegetation and groundwater	Fauna, flora and groundwater	Refer to Section 3.1	C = Moderate L = Possible Medium Risk		Condition 1, 5, 7, 8, 11, 12, 13, 14, 15 and 16.	Refer to section 3.3

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 Detailed risk assessment for nutrients and RO reject effluent discharge

3.3.1 Description of emissions risk event

The Applicant intends to discharge treated wastewater combined with RO reject to the dedicated SIF. The volume of treated wastewater discharged to the SIF will be up to 101m³/d while the volume of RO reject will be up to 46m³/d. Irrigation of nutrient rich water combined with RO reject has the potential to cause contamination of soil (salts) and health impacts (degradation) to native vegetation in the SIF.

3.3.2 Identification and general characterisation of emission

The Applicant proposes to discharge up to 147m³/d of blended effluent to the 4.7ha SIF. This results in a hydraulic loading rate of 25.79 kL/ha/day. The expected parameter concentrations within the treated effluent (including RO reject) are contained in Table 4 below.

Table 4: Blended effluent quality proposed for discharge to the SIF.

Parameter	Expected concentration
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)	<8 mg/L**
E. coli	<1000 cfu/100 mL
Residual Free Chlorine	0.2 – 2.0 mg/L*
Total dissolved solids (TDS)	<2400 mg/L***
Calcium ions (Ca ²⁺)	49 mg/L
Sodium ions (Na ⁺)	98 mg/L
Magnesium ions (Mg ²⁺)	25 mg/L
Electrical conductivity (EC)	580 µs/cm

*Residual free chlorine concentrations may be measured in treated wastewater prior to mixing with RO reject

** Analysed over an annual period to assess nutrient loading potential

*** Total of combined 24-hour average as RO reject will be sent to both WWTP and combined with WWTP TDS inputs.

3.3.3 Description of potential adverse impact from the emission

Excess nutrient (TP) may impact native vegetation health (growth) within the SIF.

RO reject can contain high concentrations of salt (TDS) causing soil contamination and health impacts (degradation) on vegetation. Irrigation using blended effluent has the potential to modify major cation ratios in the receiving soil, causing loss of soil structure and dispersion. This can

occur where the irrigation water being discharged has a high proportion of sodium ions in relation to calcium and magnesium ions (commonly referred to as the Sodium Adsorption Ratio (SAR)), as well as a low electrical conductivity (EC).

If irrigation water with a high SAR relative to EC is applied to a soil, overtime the sodium in the water can displace bound calcium and magnesium ions and increase the exchangeable sodium proportion within the receiving soil. This will affect soil behavior by decreasing permeability and increasing dispersibility, with the potential to impact flora and surface water receptors at and near the irrigation area.

Decreased permeability of the receiving soil reduces root penetration and air availability for plants as soils become waterlogged at the root zone. Waterlogged soils may become saline as salts are unable to leach through the profile and accumulate in the topsoil and root zone. A reduction in root penetration, air availability and increased soil salinity can lead to reduced plant growth or death.

High dispersibility increases the erodibility of soil, as clay platelets become detached from larger clay aggregates. This may cause a reduction in water quality at surrounding watercourses due to the increased nutrient and sediment transported through surface runoff. There are no localised surface water bodies located within 2km of the SIF or significant watercourses / surface water within 25km of the SIF.

The salinity of the blended effluent (1,539mg/L TDS) is generally within levels that can be tolerated by vegetation endemic to the area.

3.3.4 Criteria for assessment

Department of Water and Environmental Protection Water Quality Protection Note 22 (WQPN22): Irrigation with nutrient rich wastewater. The Applicant advises in the Application that the soil is Sandy so this would indicate Category B is the relevant loading rate provided in Water Quality Protection Note 22 (WQPN22): Irrigation with nutrient rich wastewater (DOW 2008). Therefore, levels of TN are expected to remain within the Category B loading rates at the premises, however levels for TP are expected to be above loading rates within Category B. Using the expected concentration data for TN, TP and BOD from Table 4, and applying an irrigation area of 547ha, and an effluent volume (P&DC) of 101m³/d then the irrigation loading rates will be 235.31kg/ha/year for TN and 62.75kg/ha/year for TP. Category B nutrient loading rates for WQPN22 for TN and TP are 180kg/ha/year and 20kg/ha/year respectively.

Soil salinity refers to the amount of dissolved salts in the soil. Excessive sodium levels relative to calcium and magnesium can adversely affect plant growth, soil structure and permeability. 'Use of effluent by irrigation – Department of Environment and Conservation (NSW) – October 2004'

SAR is an indicator of the suitability of water for use in irrigation. Generally, the higher the SAR the less suitable the water is for irrigation, depending on the water's electrical conductivity. The Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 3, Primary Industries (ANZECC 2000) describes a relationship between SAR and EC that can be used to determine the suitability of an effluent for irrigation, whereby a high SAR may be tolerable if effluent also has a high electrical conductivity. The relationship between SAR, EC and soil structural impacts is shown in Figure 1 below.

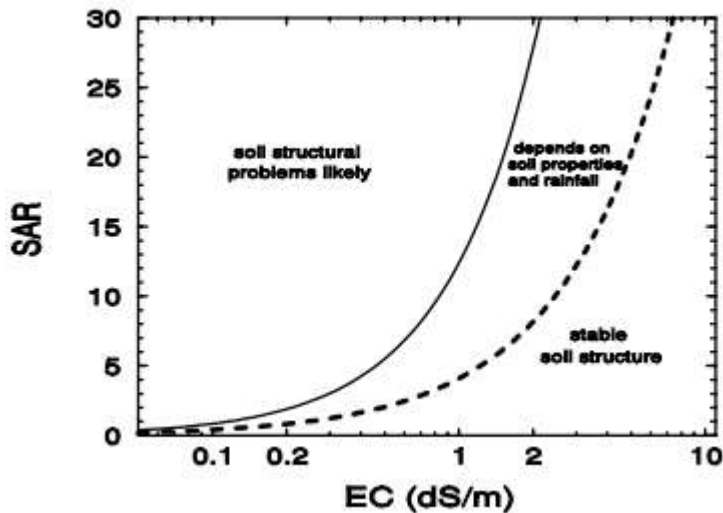


Figure 1: Relationship between SAR and EC of irrigation water for prediction of soil structural stability. Note that 1 dS/m = 1,000 μ S/cm

A calculation for determining the SAR of an effluent is provided in the guideline document Use of Effluent by Irrigation (DEC NSW 2004) and has been listed below and incorporates data from Table 4.

$$\text{SAR} = \frac{\text{Na}^+}{\left[\frac{(\text{Ca}^{2+} + \text{Mg}^{2+})}{2} \right]^{0.5}}$$

Where:

Na = sodium ion concentration (conc.) (meq/L) = (mg/L in effluent) / 22.99

Ca = calcium ion conc. (meq/L) = (mg/L in effluent) / (40.08 x 0.5)

Mg = magnesium ion conc. (meq/L) = (mg/L in effluent) / (24.32 x 0.5)

$$\begin{aligned} \text{SAR} &= [\text{Na}^+] / (([\text{Ca}^{2+}] + [\text{Mg}^{2+}])/2)^{1/2} \\ &= [4.3] / (([2.4] + [2.1])/2)^{1/2} \\ &= 2.3 \end{aligned}$$

3.3.5 Consequence

If irrigation of excessive nutrients (TP) and DO reject effluent results in increased vegetation degradation and soil sodicity, then the Delegated Officer has determined that mid-level on-site impacts and low off-site impacts with Specific Consequence Criteria are at risk of not being met. Therefore, the Delegated Officer considers the consequence excessive nutrients (TP) and RO reject effluent discharge and soil sodicity to be **Moderate**.

3.3.6 Likelihood of Risk Event

SAR has been calculated of the irrigation water using the blended effluent ionic concentrations provided in Table 4 (section 3.3.2) and the formula listed in section 3.3.4. This results in a calculated SAR value of 2.3. When compared with the EC (0.58dS/m) of the discharge and plotted on the graph shown in Figure 1, the blended effluent is considered not likely to cause soil structural problems.

TP and TN irrigation loading rates are greater than Category B WQPN22 loading rates per section 3.3.4.

Taking in to account the proposed premises lifespan of 18 months for irrigation of nutrients and

the low risk to soil structural stability posed by the blended effluent, the Delegated Officer has determined that the risk event may only occur in exceptional circumstances. Therefore, the Delegated Officer considers the likelihood of the risk event to be **Possible**.

3.3.7 Overall risk rating of RO reject effluent discharge

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix contained in Guidance Statement: Risk Assessment (DER 2017) and determined that the overall rating for the risk of excessive nutrients (TP) and RO reject effluent discharge and soil sodicity is **Medium**.

4. Consultation

Table 5 provides a summary of the consultation undertaken by the department.

Table 5: Consultation

Consultation method	Comments received	Department response
<i>Application advertised on the department's website and comments due 16/9/2021</i>	<i>None received</i>	<i>N/A</i>
<i>Local Government Authority Shire of East Pilbara advised of proposal on 23/8/2021</i>	<i>None received</i>	<i>N/A</i>
<i>Department of Health advised of proposal on 23/8/2021</i>	<i>None received</i>	<i>N/A</i>
<i>Department of Mines, Industry Regulation and Safety (DMIRS) advised of proposal 23/08/2021</i>	<i>Advice received 4/10/2021 that sewage facility is adequately covered under the approved Mining Proposal.</i>	<i>Noted.</i>
<i>Applicant was provided with draft documents on 19 October 2021</i>	<i>Comments received 1 November 2021. Refer to Appendix 1</i>	<i>Refer to Appendix 1</i>

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 Health (DOH) 2011. *Guidelines for the Non-potable Uses of Recycled Water in Western Australia*. Perth, Western Australia.
5. Department of Water (DOW) 2008. *Water Quality Protection Note 22 (WQPN22): Irrigation with nutrient rich wastewater*. Perth, Western Australia.
6. Environmental Guidelines, Use of Effluent by Irrigation, Department of Environment and Conservation (NSW) 2004.

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

Decision Report / Condition	Summary of applicant's comment	Department's response
Decision Report	Spray Irrigation Field (SIF) is 4.7ha	<p>Changed SIF to 4.7ha. Application stated 'overall' 5.7ha. The change of the SIF size will alter the TN and TP loading rates in section 3.3.4. The change in TN concentration will also alter the respective irrigation loading rates in section 3.3.4. Loading rates for TN and TP have changed accordingly. TN has changed from 129.35kg/ha/year to 235.31kg/ha/year and TP has changed from 51.74kg/ha/year to 62.75kg/ha/year.</p> <p>Given the changes in irrigation loading rates for TN and TP DWER has changed the Likelihood of Risk Event from Unlikely to Possible in section 3.3.6.</p> <p>The overall Risk Rating has not changed from Medium.</p>
	Table 4 TN expected concentration of 30mg/L based on new SAF WWTP operational data.	Changed TN from 20mg/L to 30mg/L. As above this has changed some irrigation loading rates.
	Table 4 TDS change to 2400mg/L	Changed to 2400mg/L
Works Approval Conditions		
Condition 1 Table 1	Change TN from 20mg/L to 30mg/L Residual free chlorine SIF not less than 4.7ha	Changed
Condition 5 Table 2	Not more than 147m ³ applied	Changed
Condition 7 Table 4	Thermotolerant coliforms	Changed
Condition 15 Table 7	TN and TDS changed to 30mg/L and 2400mg/L respectively	Changed

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)				
Application type				
Works approval	<input checked="" type="checkbox"/>			
Licence	<input type="checkbox"/>	Relevant works approval number:		None <input type="checkbox"/>
		Has the works approval been complied with?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
		Has time limited operations under the works approval demonstrated acceptable operations?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
		Environmental Compliance Report / Critical Containment Infrastructure Report submitted?	Yes <input type="checkbox"/> No <input type="checkbox"/>	
		Date report received:		
Renewal	<input type="checkbox"/>	Current licence number:		
Amendment to works approval	<input type="checkbox"/>	Current works approval number:		
Amendment to licence	<input type="checkbox"/>	Current licence number:		
		Relevant works approval number:		N/A <input type="checkbox"/>
Registration	<input type="checkbox"/>	Current works approval number:		None <input type="checkbox"/>
Date application received	2/7/2021			
Applicant and premises details				
Applicant name/s (full legal name/s)	IB Operations Pty Ltd			
Premises name	North Star Magnetite Project			
Premises location	L45/547 Shay Gap			
Local Government Authority	Shire of East Pilbara			
Application documents				
HPCM file reference number:	DER2021/000390			
Key application documents (additional to application form):	Application Form and Attachments			
Scope of application/assessment				
Summary of proposed activities or changes to existing operations.	<p>Works Approval</p> <p>Construction of two WWTP and Spray Irrigation Field (SIF) with inclusion of RO wastewater to SIF</p> <p>Total P&DC is 101m³/day</p> <p>RO discharge of 46m³/day</p>			

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)

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 54: sewage facility	101m ³ /day	N/A

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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Referral decision No: MS993 Managed under Part V <input checked="" type="checkbox"/> Assessed under Part IV <input type="checkbox"/>
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Ministerial statement No: MS993 EPA Report No:
Has the proposal been referred and/or assessed under the EPBC Act?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Reference No: EPBC 2012/6689
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Certificate of title <input type="checkbox"/> General lease <input type="checkbox"/> Expiry: Mining lease / tenement <input checked="" type="checkbox"/> Expiry: Other evidence <input type="checkbox"/> Expiry:
Has the applicant obtained all relevant planning approvals?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	CPS No: Clearing approved under MS993.
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Application reference No: Licence/permit 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Application reference No: Licence/permit No: GWL175700

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)

<p>Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	<p>Name: N/A Type: Proclaimed Groundwater Area/Surface Water Area Has Regulatory Services (Water) been consulted? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> Regional office: Swan Avon / Mid-West Gascoyne / Kwinana Peel / North West / South West / Goldfields / South Coast</p>
<p>Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	<p>Name: N/A Priority: P1 / P2 / P3 / N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to <u>WQPN 25</u>)? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> Note: If the proposed activity is not listed as a compatible land use with the PDWSA please consult with the relevant regional office (Regulatory Services - Water) and Water Source Protection (Science and Planning).</p>
<p>Is the Premises subject to any other Acts or subsidiary regulations (e.g. <i>Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx</i>)</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	<p>Approvals are currently being sort for treatment of sewage and disposal of effluent and liquid waste under Department of Health Act 1911.</p>
<p>Is the Premises within an Environmental Protection Policy (EPP) Area?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Is the Premises subject to any EPP requirements?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i>?</p>	<p>Yes <input type="checkbox"/> No <input type="checkbox"/></p>	<p>If Yes include details here. Classification: N/A / possibly contaminated – investigation required (PC–IR) / not contaminated – unrestricted use (NC–UU) / contaminated – restricted use (C–RU) / remediated for restricted use (RRU) / contaminated – remediation required (C–RR) / decontaminated (Decon) Date of classification: N/A</p>

