Government of Western Australia
Department of Water and Environmental Regulation

Amendment Report #1

Application for Licence Amendment

Environmental Protection Act 1986, Part V

Licence Number	L8845/2014/1
Licence Holder	IB Operations Pty Ltd
ACN	165 513 557
File Number:	DER2014/002065
Premises	Iron Bridge Magnetite Project Mining Tenements M45/1226, L45/293, L45/294, L45/359, L45/360, L45/361, L45/364 and L45/367 MARBLE BAR WA 6760
Date of Report	13 February 2020
Decision	Intent to grant amended licence

1. Definitions and interpretation

Definitions

In this Amendment Report, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
ACN	Australian Company Number
Amendment Report	refers to this document
applicant	IB Operations Pty Ltd
category/ categories/ cat.	categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department Administering the *Environmental Protection Act 1986* Locked Bag 33 Cloisters Square PERTH WA 6850 info@dwer.wa.gov.au
cfu	colony-forming unit
Delegated Officer	an officer under section 20 of the EP Act
department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DMIRS	Department of Mines, Industry Regulation and Safety
DWER	Department of Water and Environmental Regulation
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
existing licence	The Licence issued under Part V, Division 3 of the EP Act and in force prior to the commencement of and during this Review
IBO	IB Operations Pty Ltd
licence holder	IB Operations Pty Ltd
occupier	has the same meaning given to that term under the EP Act.

Term	Definition
prescribed premises	has the same meaning given to that term under the EP Act.
premises	refers to the premises to which this Amendment Report applies, as specified at the front of this Amendment Report.
revised licence	the amended Licence issued under Part V, Division 3 of the EP Act, with changes that correspond to the assessment outlined in this Amendment Report.
RIWI Act	*Rights in Water and Irrigation Act 1914*
Risk Event	as described in *Guidance Statement: Risk Assessment*
TN	Total Nitrogen
TP	Total Phosphorus
WWTP	Waste Water Treatment Plant

2. Amendment

This amendment is made pursuant to section 59 of the *Environmental Protection Act 1986* (EP Act) to amend the Licence issued under the EP Act for a prescribed premises as set out below. This notice of amendment is given under section 59B(9) of the EP Act.

The following guidance statements have informed the assessment and decision outlined in this Amendment Report:

- *Guidance Statement: Setting Conditions (October 2015)*
- *Guidance Statement: Environmental Siting (November 2016)*
- *Guidance Statement: Risk Assessment (February 2017)*
- *Guidance Statement: Decision Making (June 2019)*
- *Guideline: Industry Regulation Guide to Licensing (June 2019)*

3. Amendment application

On 25 October 2019, the Licence Holder (IB Operations Pty Ltd) (IBO) (applicant) submitted an application to amend licence L8845/2014/1 to include operation of a mobile Waste Water Treatment Plant (WWTP) with discharge of treated effluent to an irrigation spray field.

The temporary WWTP will have a capacity of temporary 45 cubic metres per day (m^3/day) and will be in addition to the existing 160 m^3/day WWTP.

Table 2 outlines the proposed capacity changes to the Licence with this amendment.

Table 2: L8845/2014/1 proposed throughput capacity changes

Category	Current throughput capacity	Proposed throughput capacity	Description of proposed amendment
5: Processing or beneficiation of metallic or non-metallic ore	50,000 tonnes per annual period	No change	Not applicable
52: Electric power generation	14 MWe per annual period	No change	Not applicable
54: Sewage facility	160 cubic metres per day	205 cubic metres per day	Addition of a temporary 45 cubic metres per day WWTP

IBO also requested the premises name be changed from the North Star Project to Iron Bridge Magnetite Project.

IBO has also submitted a separate application for a works approval for a permanent 510m^3/day WWTP. The temporary WWTP will be decommissioned and removed from site when the 510 m^3/ day plant is operational.

4. WWTP

The proposed temporary treatment plant is a Waste Water Services (WWS) 130EP Mobile Treatment Plant with a design capacity of 45 m^3/ day. The treatment plant will provide for 150 persons per day, calculated on the basis of 300 Litres/day per person.

The WWS unit will be located next to the existing WWTP (as shown in Figure 1), which is

situated within an existing bunded, hard stand surface. No clearing of native vegetation is required for the plant's installation.

The standard treatment process includes influent screening, balance tank mixing, anoxic and aerobic treatment, clarification, effluent sterilization (chlorine dosing) and filtration. The WWS unit is an Extended Aeration Activated Sludge mobile sewage treatment plant, designed to treat domestic strength sewage, to achieve the Low exposure risk level defined in the Department of Health (WA) *Guideline for the Non-potable Uses of Recycled Water in Western Australia,* and the ANZECC guidelines for effluent targets.

The WWS plant is designed to treat sewage to the effluent quality as shown in Table 3.

Table 3: Effluent quality

Parameter	Proposed system effluent
pH	6.5 – 8.5
Biological Oxygen Demand (BOD)	< 20 mg/L
Total Suspended Solids (TSS)	< 30 mg/L
Total Nitrogen (TN)	< 20 mg/L
Total Phosphorus (TP)	< 8 mg/L
E. coli	<1,000 cfu/100 ml
Free Chlorine	0.2 - 2 mg/L

The WWS plant is constructed of polymer tanks and is a self-contained, skid mounted modular system for easy deployment to remote locations. WWS plants are designed in accordance with Australian Standards, and comes to site fully assembled and factory tested. It will be interconnected to existing piping and power services which are present on site.

The general design of the WWS unit is for:

- Design maximum load of 45 cubic metres per day.
- Pre-treatment by Automatic self-cleaning Bar Screen.
- Biological treatment process by Extended Aeration Activated Sludge with separate denitrification (Modified Ludzack Ettinger process).
- Aeration by submersible Jet Ejector.
- Post-Treatment by Chlorination.
- Sludge disposal by removal from WWTP with road tanker.
- Effluent disposal by spray irrigation.

The WWS plant has an automated control system and all tanks (Balance, Anoxic, Aeration and Effluent) are fitted with high-high alarms. In the event of an excessive level in a tank, the feed source to the overfilled tank is automatically inhibited.

The plant is fitted with a Mixed Liquor Suspended Solids sensor in the Aeration/Decant Tank which illuminates a light to warn the operator that a manual sludge discharge procedure needs to be carried out within the next day or two. Removal of waste sludge is expected to be required every two to three weeks if the plant is fully loaded.

The WWS treatment plant general layout is shown in Figure 2 and process flow diagram in Figure 3.

The applicant proposes a commissioning period with validation monitoring of effluent to ensure the WWTP is capable of treating the wastewater to the proposed standard and to confirm ongoing operation of the WWTP.

Figure 1: WWTP location and irrigation fields

Figure 2: WWS 130EP Treatment Plant Mobile Unit General Layout

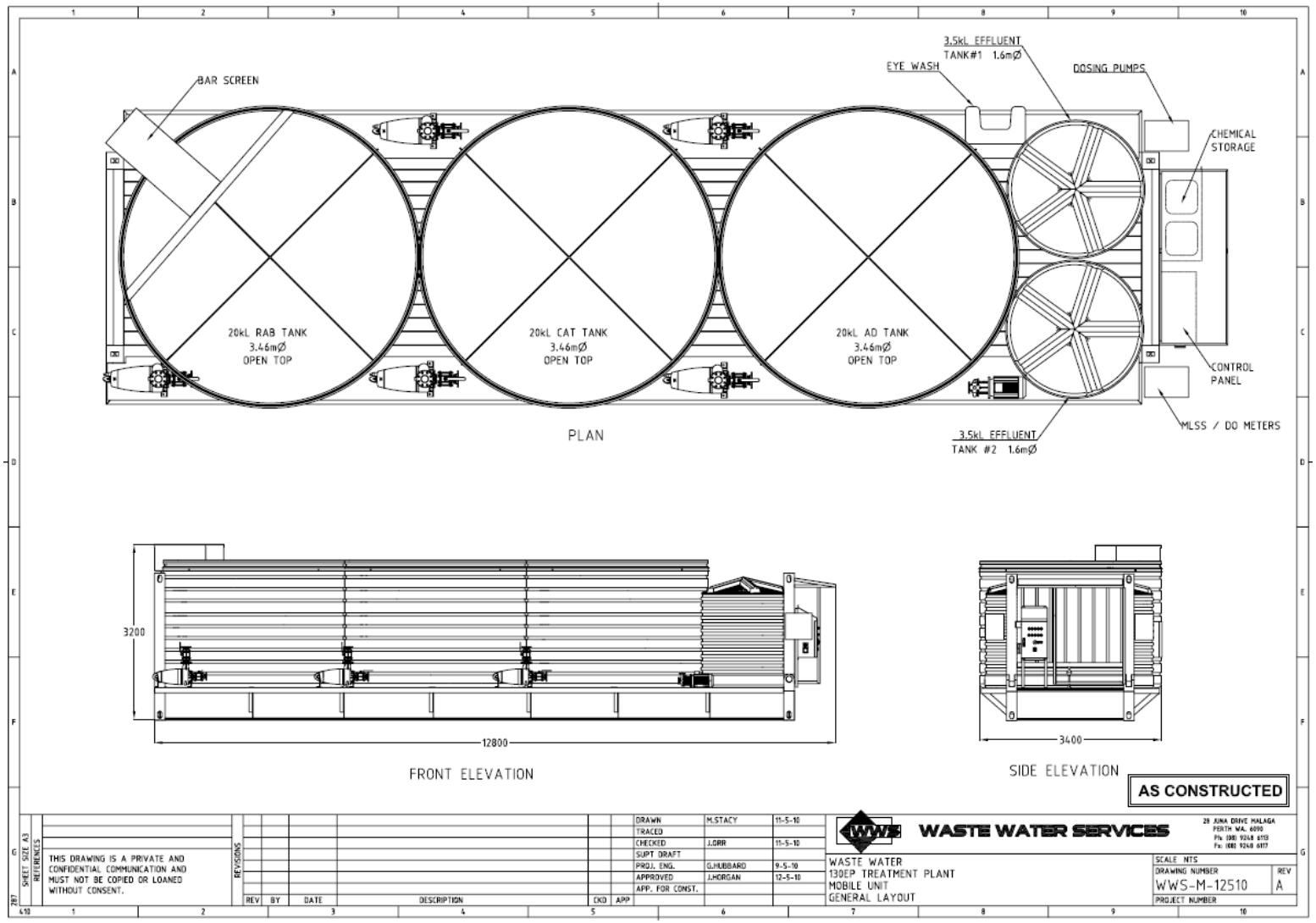
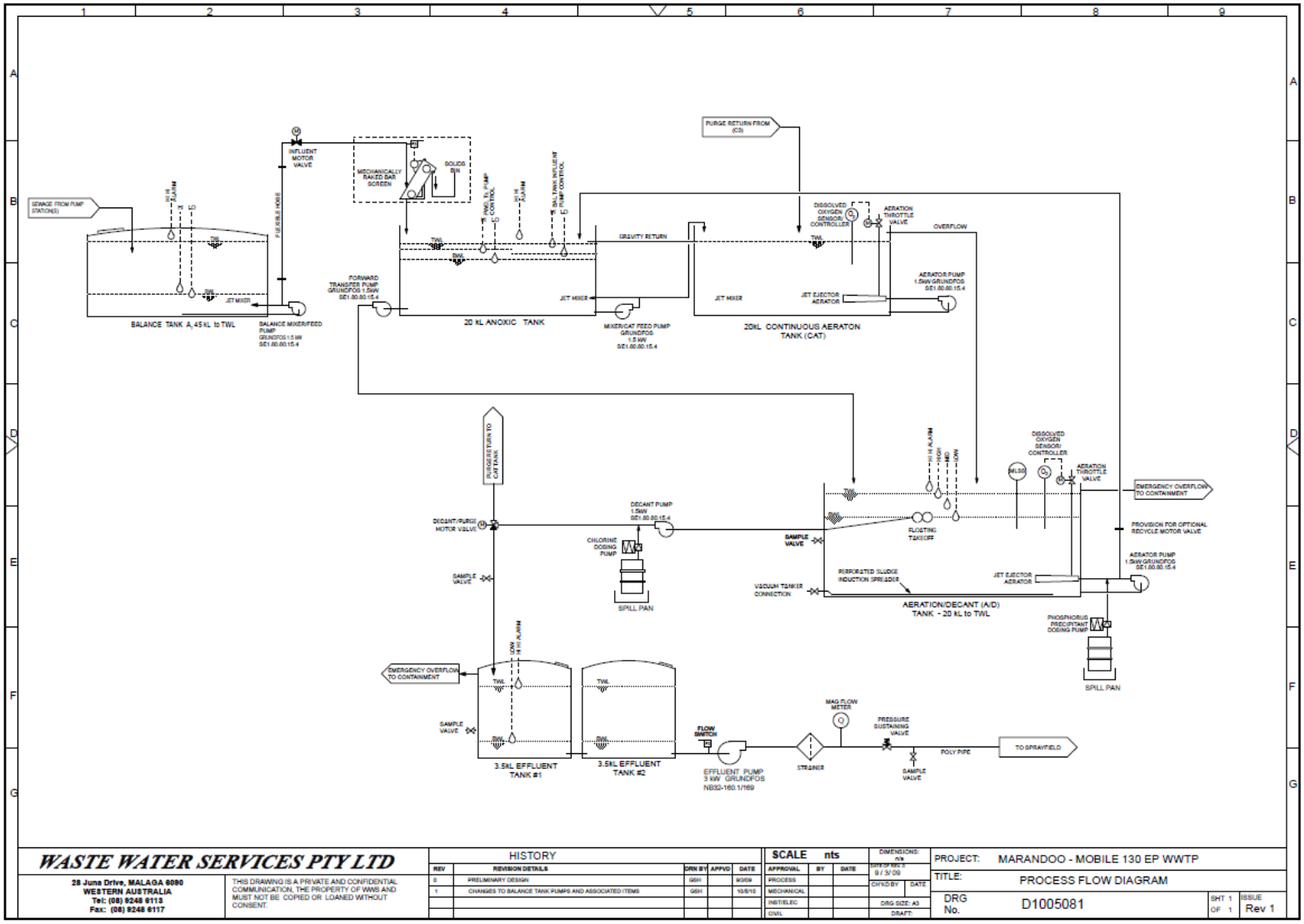


Figure 3: WWS 130EP Treatment Plant Mobile Unit process flow diagram



Licence: L8912/2015/1

5. Irrigation Spray field

The existing WWTP discharges to a 4 hectare (ha) irrigation area for the disposal of up to 160 m^3/day effluent. The increase in production capacity of 45 m^3/day for the WWS plant will result in a potential total effluent discharge of up to 205 m^3/day.

Based on the effluent quality, the annual loading from the WWS plant will be 2,245 kilogram/year (kg/year) TN, and 598.6 kg/year TP.

To determine the irrigation field size required, the applicant used the *Water Quality Protection Note 22: Irrigation with Nutrient rich Wastewater* (Department of Water, 2008) Risk category D, and provided calculations that an additional 0.99 ha irrigation field area would be required to account for the increase in annual loading.

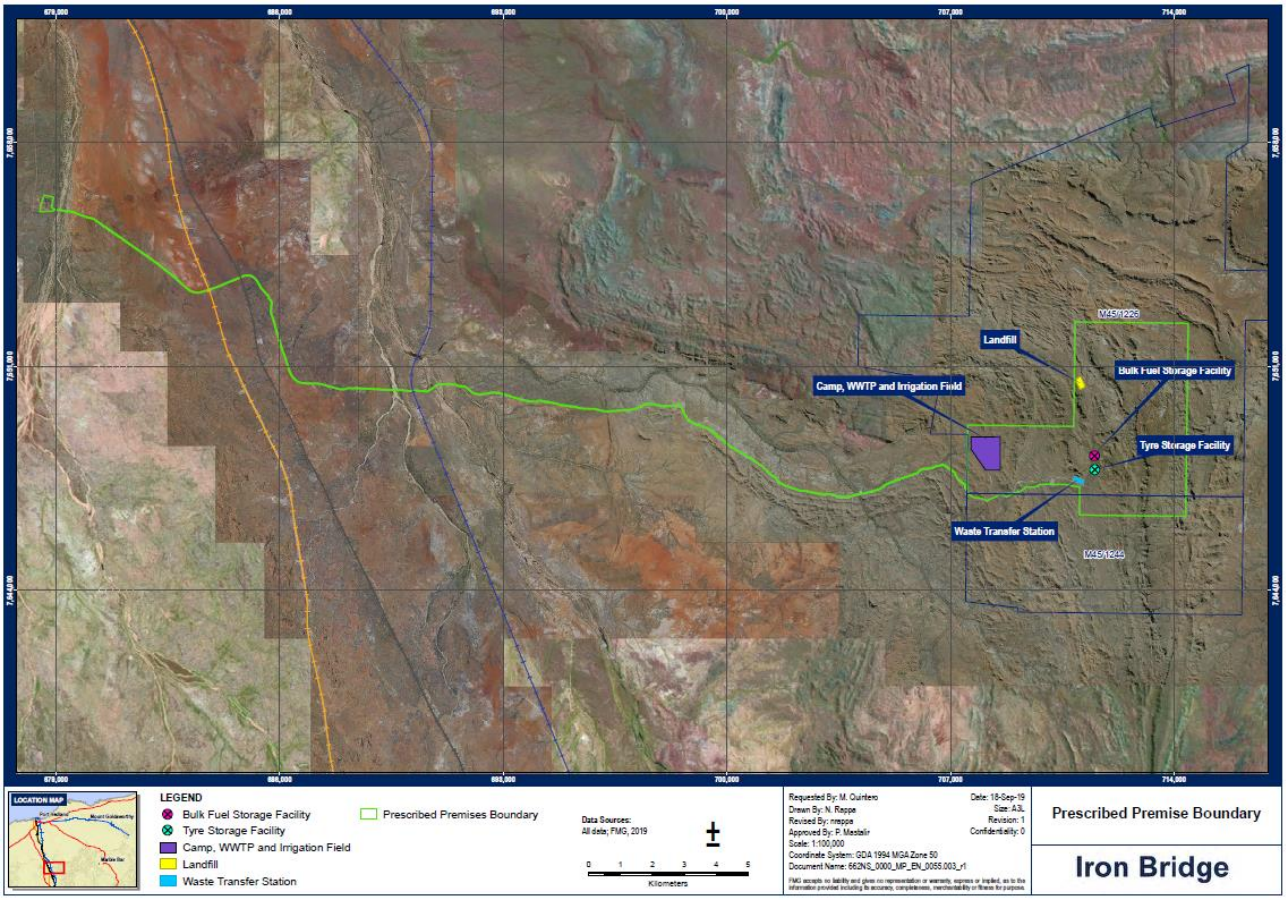
An additional irrigation area 'Stage 2 Irrigation Field', which is much larger than 0.99 ha will be utilised (refer to Figure 1).

6. Location and siting

The Iron Bridge Magnetite Project premises is located approximately 110 km south of Port Hedland in the Pilbara region of Western Australia, and is within the arid/semi-arid region of Australia.

The location of the WWTP area within the premises boundary is shaded in purple in Figure 2.

Figure 2: Location of the WWTP area



7. Potential Receptors

Sensitive land users

Table 3 lists the closest sensitive land users and distances from the proposed activities. Note that in identifying potential receptors, the assessment will exclude employees, visitors, or contractors of the Licence Holder, as protection of these parties often involves different exposure risks and prevention strategies and is provided for under other State legislation (Guidance Statement: Risk Assessments). Hence the site accommodation village is not considered a potential receptor for purposes of this assessment.

Table 3: Sensitive land users

Sensitive Land Users	Distance from Prescribed Activity
Atlas Iron Limited Abydos Ore Project	7 km north east
Residential Premises	The applicant has stated there are no residential receptors within a 10 km radius of the WWTP area.
BHP Billiton Iron Ore Pty Ltd Turner Camp	16 km south west

Environmental receptors

Table 4 lists environmental receptors and distances from the proposed activities.

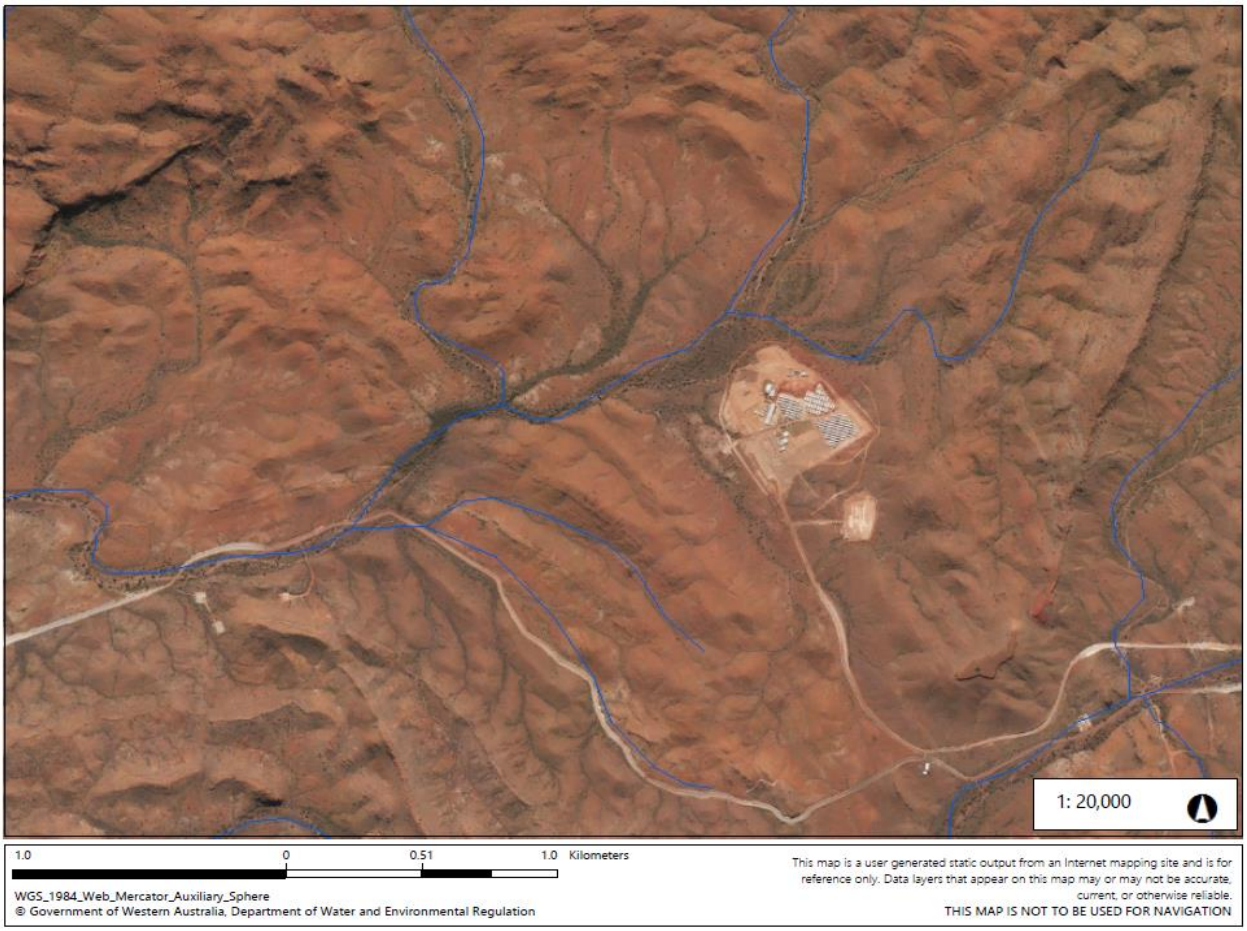
Table 3: Environmental receptors

Environmental receptors	Distance from proposed activities
Ephemeral Creeks which flow into the Turner River. Drainage lines in the region are ephemeral in nature and generally only flow for short durations following rainfall events.	Closest creek line is approximately 150 m from the WWTP and 150 m from the Stage 2 Irrigation Field. The creek lines are visible in Figures 1 and 3.
Turner River	Approximately 20 km downstream and west of the proposed activities.
Groundwater Groundwater salinity within the exploration and production bores is relatively low (fresh) to moderately brackish ranging between 300 mg/L and 1,750 mg/L and is therefore suitable as stock drinking water quality.	Depth to groundwater in the vicinity of the WWTP and irrigation areas is reported by the applicant to be 5 to 20 m below ground level (mbgl).
RIWI Act Pilbara Groundwater Area	Premises is within the Area
RIWI Act Pilbara Surface Water Area	Premises is within the Area
Threatened Ecological Communities (TEC) and Priority Ecological Communities (PEC)	Closest TEC or PEC is more than 100 km away – therefore not a sensitive receptor to the proposed activities.

Threatened or priority flora	No Threatened or Priority Flora has been reported within the premises boundary or within 3 km of the proposed activity (information from DWER mapping database) – not considered sensitive receptors to the proposed activities.
Conservation significant fauna	Pilbara Leaf-nosed Bat, Northern Quoll and Pilbara Olive Python are found in the area but are not considered sensitive receptors for the proposed activity due location and scale.

Figure 3 below shows the ephemeral creek lines in the vicinity of the WWTP area

Figure 3: Ephemeral Creek lines



8. Other approvals

The applicant has provided the following information relating to other approvals relevant to the amendment as outlined in Table 5.

Table 4: Relevant approvals

Legislation	Approval	Summary
Mining Act 1978	Reg ID 82940 approved 3 December 2019	Mining Proposal North Star Magnetite Project Early Works M45/1226, M45/1244, L45/294, L45/397.

EP Act Part IV	Ministerial Statement 993 (MS 993)	The proposed activities are within the Development Envelope. Conditions predominately relate to surveys and management plans to protect priority fauna within the Mine Development Envelope, and there are no conditions which specifically relate to the WWTP.
EP Act Part V	Clearing	Clearing permit exemption applies (clearing approved under MS 993)
RIWI Act	GWL179289 CAW203155(1)	Applicant is not applying for further licences or permits – a valid licence/permit applies.

9. Amendment history

Table 6 provides the history of amendments for L8845/2014/1.

Table 5: Licence amendments

Instrument	Issued	Amendment
L8845/2014/1	08/06/2015	New Licence
L8845/2014/1	07/01/2016	Amendment to add category 5
L8845/2014/1	02/06/2016	Amendment to increase category 5, add category 54 and decrease category 5 throughput.
L8845/2014/1	24/05/2017	Amendment Notice 1 for Category 54 activities during care and maintenance, general stormwater management and administrative changes.
L8845/2014/1	03/10/2018	Amendment Notice 2 to amend the TSF inspection requirements.
L8845/2014/1	13/02/2020	This amendment – to include a temporary 45 m^3/ day WWTP.

10. Assessment

In undertaking its risk assessment, DWER will identify all potential emissions, pathways and potential receptors to establish whether there is a Risk Event, consistent with the *Guidance Statement: Risk Assessments*. DWER will determine controls having regard to the controls proposed by the Licence Holder.

Risk assessment of construction and operation of the proposed temporary WWTP is outlined in Tables 7 and 8 below.

9.1 Risk Assessment - Construction

Table 6: Risk assessment for construction of proposed infrastructure

Risk Event								
Source /Activities	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**	**Consequence rating[1]**	**Likelihood rating[1]**	**Risk [1]**	**Reasoning**	**Regulatory controls (conditions refer to conditions of the works approval)**
Installation of temporary WWTP and Stage 2 Irrigation Field	Dust and Noise	A mining operation is located 7 km away and no residential areas located within 10 km.	Information not provided in the application	N/A	N/A	N/A	Distance to closest sensitive land user is sufficient to inform the risk of dust and noise emissions during construction as not foreseeable.	No conditions. The *Environmental Protection (Noise) Regulations 1997* (WA) are applicable. The general provisions of the EP Act are applicable.
	Stormwater (sediment and hydrocarbons from leaks from machinery)	Contamination of soils and ephemeral creeks by direct discharge and stormwater flow.	Information not provided in the application	Slight	Unlikely	Low	Construction is short term and disturbance will be minimal. Construction activities will be located at least 150 m from creek lines.	No conditions The *Environmental Protection (Unauthorised Discharges) Regulations 2004* (WA) will apply.

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the Department's Guidance Statement: Risk Assessments (February 2017)

Table 7: Risk assessment for proposed amendments during commissioning and operation

Risk Event								
Source/ Activities	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**	**Consequence rating[1]**	**Likelihood rating[1]**	**Risk[1]**	**Reasoning**	**Regulatory controls (conditions refer to conditions of the works approval)**
Operation of the temporary WWTP	Odour	A mining operation is located 7 km away and no residential areas located within 10 km.	Information not provided in the application.	N/A	N/A	N/A	Distance to closest sensitive land user is sufficient to inform the risk of odour as not foreseeable.	No conditions. The general provisions of the EP Act are applicable
	Sewage (raw and treated) Stormwater contaminated with sewage and sewage chemicals.	Rupture of tanks and spills with direct flow path to ephemeral creeks. Stormwater intercepting spills and leaks from the WWTP flowing to and contaminating ephemeral creeks which are tributaries of Turner River. Potential for eutrophication and degradation of	WWTP unit is self-contained, will be above ground and on its own platform within the existing bunded WWTP area, designed so that sludge is stored for removal, and includes alarms and cutoffs.	Moderate	Unlikely	Medium	Scale of operation and applicant's controls. The WWTP is expected to operate only for around 12 months. The closest creek is approximately 150 m away, and is ephemeral. Rainfall is episodic.	Conditions 5.1.1, 5.1.2 and 5.1.3 to ensure the WWTP is located and constructed as proposed. The *Environmental Protection (Unauthorised Discharges) Regulations 2004* (WA) will also apply.

Risk Event				Consequence rating[1]	Likelihood rating[1]	Risk[1]	Reasoning	Regulatory controls (conditions refer to conditions of the works approval)
Source/ Activities	**Potential emissions**	**Potential receptors, pathway and impact**	**Applicant controls**					
		riparian vegetation.						
	Treatment chemicals potentially including sodium hypochlorite,	Spills and leaks intercepting with stormwater – contamination of soils and creeks with impacts to vegetation.	Information not provided by the Applicant.	Slight	Unlikely	Low	Relatively small quantities of chemicals expected to be stored. The WWTP is expected to operate for around 12 months. The closest creek is approximately 150 m away, and is ephemeral. Rainfall is episodic.	No conditions The *Environmental Protection (Unauthorised Discharges) Regulations 2004* (WA) will apply. Environmentally hazardous materials above placard quantity are regulated by DMIRS.
Discharge of treated effluent to Stage 2 Irrigation Field	Effluent	Direct discharge of effluent by irrigation and spray drift causing increased nutrients in soils and impact on surrounding vegetation/riparian vegetation. Infiltration of nutrient rich effluent to groundwater of beneficial use.	Design specifications of the WWS 130EP Mobile Treatment Plant and treated effluent quality. Irrigation area is increased with the addition of Stage 2 Irrigation Field. Irrigation by above ground, evenly spaced sprinklers as shown in Figure 1.	Minor	Unlikely	Medium	Expected water quality of effluent. The area available for effluent discharge by irrigation will be doubled with the addition of the Stage 2 Irrigation Field. Stage 2 Irrigation Field is 150 m from an ephemeral creek. Rainfall is episodic and climate is generally hot and dry. Separation distance to groundwater.	Conditions 5.1.1, 5.1.2 and 5.1.3 to ensure the WWTP and irrigation field is located and constructed as proposed. Commissioning conditions 5.2.1 to 5.2.4 for validation monitoring. The existing WWTP operating conditions remain suitable and applicable to the ongoing operation of the proposed temporary WWTP. Existing conditions updated to enable ongoing operation of the temporary WWTP following submission of construction compliance.

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the Department's Guidance Statement: Risk Assessments (February 2017)

11. Consultation

Table 9: Summary of consultation

Method	Comments received	DWER response
Application documents referred to DMIRS 22/11/2019	No comments received	N/A
Application documents referred to Shire of East Pilbara 22/11/2019	No comments received	N/A
Applicant referred draft documents 14 January 2020	No comments (DWER notified by the Applicant)	N/A

12. Conclusion

Based on the assessment in this Amendment Report, the Delegated Officer has determined that a licence amendment for the changes requested by the applicant will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

13. Consolidation of Licence

As part of this amendment package DWER has consolidated the licence by incorporating changes made under the following Amendment Notices:

- Amendment Notice 1, granted 24 May 2017; and
- Amendment Notice 2, granted 3 October 2018.

The obligations of the licence holder have not changed in consolidating the licence. DWER has not undertaken any additional risk assessment of the premises related to previous Amendment Notices.

In consolidating the licence, the CEO has:

- updated the appearance of the licence;
- deleted the redundant AACR form set out in schedule 1 of the previous licence and advise the licence holder to obtain the form from the department's website;
- revised licence condition's numbers, and removed any redundant conditions and realigned condition numbers for numerical consistency; and
- corrected clerical mistakes and unintentional errors.

Previously issued Amendment Notices will remain on the department's website for future reference and will act as a record of the department's decision making.

Summary of amendments

Table 10 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 10: Licence amendments

Condition No.	Proposed amendments
Front cover page – Premises Name	Updated to 'Iron Bridge Magnetite Project'
Front cover page - licence expiry date	Updated in accordance with the Notice of amendment licence expiry dates, issued on 29 April 2016
Front cover page premises category table	Assessed premises production or design capacity updated to include addition of the 45 m^3/day WWTP.
1.1.2	CEO's correspondence address updated.
1.3.2	Waste acceptance table amended to increase limit of sewage accepted to 205 m^3/day after submission of construction compliance documents for the 45 m^3/day WWTP.
1.3.3	Waste processing table amended to increase the sewage process to 205 m^3/day after submission of construction compliance documents for the 45 m^3/day WWTP.
2.2.1	Emissions to land table amended to include discharge of treated wastewater to Stage 2 Irrigation Spray Field after submission of construction compliance documents for the 45 m^3/day WWTP.
3.2.1	Monitoring of emissions to land amended to include monitoring of emissions to Stage 2 irrigation Field after submission of commissioning report for the 45 m^3/day WWTP.
5.1.1 to 5.1.3	Additional conditions for construction of the 45 m^3/day WWTP, and submission of compliance documents.
5.2.1 to 5.2.4	Additional conditions for commissioning, with monitoring of effluent quantity and quality and submission of a commissioning report.
Schedule 1	Map of emissions to land updated to include Stage 2 Irrigation Field.
Schedule 2	AACR form removed from the licence (licence holder to upload the most recent format from the department's website).

Alana Kidd
MANAGER, RESOURCE INDUSTRIES
An officer delegated by the CEO under section 20 of the EP Act.

Appendix 1: Key documents

	Document title	In text ref	Availability
1	Application form signed 25 October 2019 with Supporting Documentation.	Application	DWER records (DWERDT216993)
2	Application - Email from Mathew Dowling, Fortescue Metals Group Ltd, 12/12/2019 9:30 AM. Subject: *L8845/2014/1 - License amendment*.		DWER records (A1851505)
3	Application - Email from Mathew Dowling, Fortescue Metals Group Ltd, 12/12/2019 11:13AM. *RE: L8845/2014/1 - License amendment*		DWER records (A1851505
4	Application - Email from Jayden O'Brien, Fortescue Metals Group Ltd, 17/12/2019 8:02AM. *RE: L8845/2014/1 - License amendment*		DWER records (A1853299)
5	ANZECC & ARMCANZ 2000 *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.* Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, Canberra	ANZECC guidelines	Accessed at www.waterquality.gov.au/anz-guidelines
	Department of Health (WA) *Guideline for the Non-potable Uses of Recycled Water in Western Australia*	DoH guidelines	Accessed at https://ww2.health.wa.gov.au
6	DER, October 2015. *Guidance Statement: Setting conditions.* Department of Environment Regulation, Perth.	-	accessed at www.dwer.wa.gov.au
7	DER, February 2017. *Guidance Statement: Risk Assessments*. Department of Environment Regulation, Perth.	-	
8	DER, November 2016. *Guidance Statement: Environmental Siting*. Department of Environment Regulation, Perth.	-	
9	DWER, June 2019. *Guideline: Industry Regulation Guide to Licensing*	-	
10	DWER, June 2019. *Guideline: Decision Making*	-	
11	Licence L8845/2014/1	L8845/2014/1 or existing licence	accessed at www.dwer.wa.gov.au