



LICENCE FOR PRESCRIBED PREMISES

Environmental Protection Act 1986

LICENCE NUMBER: L6869/1992/12

FILE NUMBER: DER2013/001174

LICENSEE

Pilbara Iron Company (Services) Pty Ltd
Level 22, Central Park
152-158 St Georges Terrace
PERTH WA 6000
ACN: 107 210 248

PREMISES

Marandoo Iron Ore Mine
Part of AM70/272, G47/1237, L47/334, easement N276548 and Crown Lease 3114/1277
MT SHEILA WA 6751
(as depicted in Attachment 1)

PRESCRIBED PREMISES CATEGORY

Schedule 1 of the *Environmental Protection Regulations 1987*

CATEGORY NUMBER	CATEGORY DESCRIPTION	CATEGORY PRODUCTION OR DESIGN CAPACITY	PREMISES PRODUCTION OR DESIGN CAPACITY
5	Processing or beneficiation of metallic or non-metallic ore	50,000 tonnes or more per year	20,000,000 tonnes per annual period
6	Mine dewatering	50,000 tonnes or more per year	36,500,000 tonnes per annual period
12	Screening, etc. of material	50,000 tonnes or more per year	4,380,000 tonnes per annual period
54	Sewage facility	100 cubic metres or more per day	342 cubic metres per day
60	Incineration	100 kilograms or more per hour	190 kilograms per hour
64	Class II putrescible landfill site	20 tonnes or more per year	5,000 tonnes per annual period

CONDITIONS

This Licence is subject to the conditions set out in the attached pages.

Date signed: 12 May 2016

Alana Kidd
Manager Licensing – Resource Industries
Officer delegated under section 20
of the *Environmental Protection Act 1986*

ISSUE DATE: Thursday, 5 February 2015

COMMENCEMENT DATE: Thursday, 12 February 2015

AMENDMENT DATE: Thursday, 12 May 2016

EXPIRY DATE: Sunday, 11 February 2035



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DEFINITIONS

In these conditions of Licence, unless inconsistent with the text or subject matter:

‘annual period’ means the inclusive period from 1 January until 31 December in the same year;

‘ANZECC Guidelines’ means the most recent version and relevant parts of the Australian and New Zealand Environment guidelines for fresh and marine water quality Volume 1 – 3 (Australian and New Zealand Environment and Conservation Council, Agriculture and Resource Management Council of Australia and New Zealand);

‘AS/NZS 5667.1’ means the Australian Standard AS/NZS 5667.1 Water Quality – Sampling – Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samples;

‘Biosolids’ has the meaning defined in Landfill Definitions;

‘CEO’ means Chief Executive Officer of the Department of Environment Regulation;

‘CEO’ for the purpose of correspondence means;

Chief Executive Officer
Department Administering the Environmental Protection Act 1986
Locked Bag 33
CLOISTERS SQUARE WA 6850
Email: info@der.wa.gov.au;

‘Clean Fill’ has the meaning defined in Landfill Definitions;

‘cfu/100ml’ means colony forming units per 100 millilitres;

‘freeboard’ means the vertical height between the maximum water surface elevations and the top of retaining banks or structures at their lowest point;

‘Inert Waste Type 1’ has the meaning defined in Landfill Definitions;

‘Inert Waste Type 2’ has the meaning defined in Landfill Definitions;

‘Landfill Definitions’ means the document titled “Landfill Waste Classification and Waste Definitions 1996” published by the Chief Executive Officer and as amended from time to time;

‘Licence’ means this Licence numbered L6869/1992/12 and issued under the Act;

‘Licensee’ means the person or organisation named as Licensee on page 1 of the Licence;

‘m/s’ means metres per second;

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'**µS/cm**' means microSiemens per centimetre;

'**mg/L**' means milligrams per litre;

'**NATA**' means the National Association of Testing Authorities, Australia;

'**NTU**' means nephelometric turbidity units;

'**% sat**' means percentage saturation;

'**Putrescible**' has the meaning defined in Landfill Definitions;

'**Quarterly**' means the 4 inclusive periods from 1 January to 31 March, 1 April to 30 June, 1 July to 30 September and 1 October to 31 December in the same year;

'**SFB**' means the Southern Fortescue Borefield;

'**Special Waste Type 1**' has the meaning defined in Landfill Definitions;

'**Standard Methods for Examination of Water and Wastewater**' means the most recent edition of the Standard Methods for Examination of Water and Wastewater as published by the American Public Health Association (APHA), the American Water Works Association (AWWA) and the Water Environment Federation (WEF);

'**WFSF**' means waste fines storage facility;

'**WWTPs**' means wastewater treatment plants; and

'**Western Australian guidelines for biosolids management**' means the document titled "Western Australian guidelines for biosolids management, December 2012" published by the Department of Environment and Conservation as amended from time to time.

GENERAL CONDITIONS

1 DUST MANAGEMENT

The Licensee shall take measures to prevent the generation of visible dust from materials handling operations, stockpiles, open areas and transport activities. Such measures may include, but are not limited to:

- (i) maintaining stockpiles in a damp condition;
- (ii) sealing non-working faces to prevent dust lift off;
- (iii) spraying surfaces with water;
- (iv) sealing surfaces with chemical dust suppressants; and
- (v) rehabilitation of disturbed areas.

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- 2 The Licensee shall maintain installed dust collection and dust control systems including:
- (i) coverings on conveyors, transfer points and discharge points;
 - (ii) skirtings; and
 - (iii) dust filters,
- as measures to prevent the generation of visible dust from the premises.
- WWTPs
- 3 The Licensee shall ensure that treated effluent is only discharged to the irrigation areas depicted in Attachment 4.
- 4 The Licensee shall maintain, in accordance with the manufacturer's specifications, an accurate flow metering device that measures the cumulative volume of all treated effluent discharged from the WWTPs.
- 5 The Licensee shall record the cumulative volume of all treated effluent discharged for the purpose of irrigation and this data shall be included in the Annual Environmental Report in tabular form.
- 6 The Licensee shall ensure that water quality monitoring occurs during the operation of the WWTPs, such that water quality of the effluent is monitored at the frequency stated in column 2 of Table 1 for the parameters in column 1 of Table 1.

Table 1: Marandoo Mine and Marandoo Mine Camp WWTP water quality monitoring requirements

Column 1	Column 2
Parameter	Frequency
Biochemical Oxygen Demand (mg/L)	Quarterly
Total Suspended Solids (mg/L)	
pH (pH units)	
Total Nitrogen (mg/L)	
Total Phosphorus (mg/L)	
<i>E.coli</i> (cfu/100mL)	

- DISPOSAL OF BIOSOLID AND OTHER RESIDUALS
- 7 The Licensee shall dispose of sludge and biosolids in accordance with the Western Australian guidelines for biosolids management or to a licensed or registered landfill facility.
- 8 The Licensee shall ensure that sludge is immediately removed offsite or stored onsite within a hardstand area or drying bed with a hydraulic conductivity of equal to or less than 1×10^{-9} m/s.

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- 9 The Licensee shall ensure that the storage area referred to in condition 8 is bunded to enable the containment and recovery of any liquid matter.
- 10 **SURFACE WATER – DISCHARGE OUTFALL**
The Licensee shall ensure that the concentration of Total Recoverable Hydrocarbons in waters discharged from the premises does not exceed 30 mg/L.
- 11 **WASTE MANAGEMENT FROM ANCILLARY OPERATIONS**
The Licensee shall utilise and maintain, as appropriate, protective bunding, skimmers, silt traps, neutralisation pits, fuel and oil traps, drains, and sealed collection sumps around the process plant, maintenance workshops and power generation areas to enable recovery of spillages and protection of surrounding soils and groundwater.
- 12 The Licensee shall utilise measures or agents such as quick break detergents to prevent oil-water emulsions from passing through the separator systems.
- 13 **MANAGEMENT OF PUTRESCIBLE LANDFILL**
The Licensee shall bury only the following types of waste within the Putrescible Landfill facility depicted in Attachment 3:
(i) Clean Fill;
(ii) Inert Waste Type 1; and
(iii) Putrescible Waste;
as defined in Landfill Definitions.
- 14 The Licensee shall ensure that the tipping area of the landfill is not greater than:
(i) 30 metres in length; and
(ii) 2 metres above ground level in height.
- 15 The Licensee shall ensure that waste in the tipping area of the landfill is covered:
(i) at least weekly;
(ii) with a dense (at least 200 millimetres), inert and incombustible material; and
(iii) totally, so that no waste is left exposed.
- 16 The Licensee shall ensure that there is no waste within:
(i) 100 metres of any surface water body at the site; and
(ii) 3 metres of the highest level of the water table aquifer at the landfill site.
- 17 The Licensee shall manage stormwater on site so that:
(i) it is diverted from areas of the site where there is waste; and
(ii) water that has come into contact with waste is to be diverted into a sump on the site, or otherwise retained on the site.

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- MANAGEMENT OF WASTE DUMP LANDFILL
- 18 The Licensee shall bury only the following types of waste within the Waste Dump Landfill facility depicted in Attachment 3:
- (i) Inert Waste Type 1;
 - (ii) Inert Waste Type 2;
 - (ii) Special Waste Type 1; and
 - (iii) Putrescible Waste (wooden pallets only);
- as defined in the Landfill Definitions.
- 19 The Licensee shall ensure that waste in the tipping area of the landfill is covered with a dense (at least 200 millimetres), inert and incombustible material at final landform design.
- 20 The Licensee shall ensure that there is no waste within:
- (i) 100 metres of any surface water body at the site; and
 - (ii) 3 metres of the highest level of the water table aquifer at the landfill site.
- 21 The Licensee shall manage stormwater on the landfill site so that water that has come into contact with waste is to be retained on the site.
- PIT EMERGENCY DISCHARGE POINTS
- 22 The Licensee shall, on a monthly basis, measure and record in cubic metres during discharge, the cumulative volumes of waters discharged from the discharge points shown in column 1 of Table 2 and depicted in Attachment 1. These results shall be published in the Annual Environmental Report.
- 23 The Licensee shall ensure that water is only discharged through the emergency discharge points as necessary following above average periods of rainfall.
- 24 The Licensee shall collect and have analysed representative water samples from the monitoring sites shown in column 1 of Table 2, for the parameters listed in column 2 of Table 2, at the frequencies in column 3 of Table 2.

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Table 2: Water monitoring schedule

Column 1	Column 2	Column 3
Monitoring site(s) (Attachment 2)	Parameter	Frequency
Evaporation pond discharge point	pH (pH units) ¹ Total Dissolved Solids (mg/L) Total Suspended Solids (mg/L) Total Recoverable Hydrocarbons (mg/L) Chemical Oxygen Demand (mg/L) Surfactants (mg/L) Metals (mg/L) – Pb, Cu, Fe, Mn, Mo, Zn, As, Hg, Cd and Cr	Quarterly - during discharge
<u>Emergency discharge points:</u> Tails pit TEX East TEX West	pH (pH units) ¹ Total Dissolved Solids (mg/L) Total Suspended Solids (mg/L) Total Recoverable Hydrocarbons (mg/L)	Monthly - during discharge

Note 1: In field non-NATA accredited analysis permitted.

WFSF GROUNDWATER MONITORING

- 25 The Licensee shall collect and have analysed representative water samples from the monitoring sites shown in column 1 of Table 3 and depicted in Attachment 3, for the parameters listed in column 2 of Table 3 at the frequencies in column 3 of Table 3.

Table 3: WFSF groundwater monitoring schedule

Column 1	Column 2	Column 3
Monitoring site(s) (Attachment 3)	Parameter	Frequency
MB14MN005 OW14	Depth to water pH (pH units) ¹	Quarterly
	Electrical Conductivity (µS/cm) ¹ Total Hardness (CaCO ₃) (mg/L) Major Ions (mg/L): Na, K, Ca, Cl, Mg, and SO ₄ Metals (mg/L) – Cu, Fe, Mn, As, Cd and Cr	Annual

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Note 1: In field non-NATA accredited analysis permitted.

WFSF - FREEBOARD

- 26 The Licensee shall ensure that at least 500 millimetres of freeboard is maintained at the main embankment at all times.

DEWATERING

- 27 The Licensee shall ensure the contingency discharge outlet is managed to ensure minimal erosion and scouring impacts at the discharge point.
- 28 The Licensee shall measure and record in cubic metres, the cumulative volumes of waters discharged to the agricultural project, SFB and from the contingency discharge outlet, and shall publish the results in the Annual Environmental Report.
- 29 The Licensee shall collect and have analysed representative water samples from the discharge locations listed in column 1 of Table 4, for the parameters listed in column 2 of Table 4, at the frequencies in column 3 of Table 4.

Table 4: Dewatering discharge monitoring

Column 1	Column 2	Column 3
Discharge locations (Attachment 2)	Parameter	Frequency
Water supply to Agricultural Project	Electrical Conductivity ($\mu\text{S}/\text{cm}$) ¹ pH (pH units) ¹ Total Dissolved Solids (mg/L) Dissolved Oxygen (% sat) ¹ Turbidity (NTU)	Quarterly
Contingency discharge outlet	Hardness (CaCO_3 mg/L) Ions and Metals (mg/L) – Al, Total As, B, Cd, Cl, Total Cr, Cu, Inorganic Hg, Mg, Mn, Mo, NH_3 , NO_3 , Ni, Total Phosphorus, Pb, SO_4 , Total Se, Zn	Quarterly – when discharging

Note 1: In field non-NATA accredited analysis permitted.

REINJECTION

- 30 The Licensee shall collect and have analysed representative water samples from the SFB reinjection bores listed in column 1 of Table 5, for the parameters listed in column 2 of Table 5, at the frequency in column 3 of Table 5.

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Table 5: Reinjection discharge monitoring

Column 1	Column 2	Column 3
SFB reinjection bores (Attachment 5)	Parameter	Frequency
SFP2 SFP4 SFP5 SFP6 SFP7 SFP8 SFP9 SFP10 SFP11 SFP12 WB10SF001	Electrical Conductivity ($\mu\text{S}/\text{cm}$) ¹ pH (pH units) ¹ Total Dissolved Solids (mg/L) Dissolved Oxygen (% sat) ¹ Turbidity (NTU) Hardness (CaCO_3 mg/L) Ions and Metals (mg/L) – Al, Total As, B, Cd, Cl, Total Cr, Cu, Inorganic Hg, Mg, Mn, Mo, NH_3 , $\text{NH}_4\text{-N}$, $\text{NO}_3\text{-N}$, NO_3 , Ni, Total Phosphorus, Pb, SO_4 , Total Se, Zn	Quarterly – for bores that have been operational during the monitoring period

Note 1: In field non-NATA accredited analysis permitted.

WASTEWATER INCINERATOR

- 31 The Licensee shall install and operate the wastewater incinerator in accordance with the commitments outlined in column 2 of Table 6 contained within the application document in column 1 of Table 6 below.

Table 6: Wastewater Incinerator installation and operation commitments

Column 1	Column 2
Document	Key Application Commitments
Works Approval Application – Marandoo Iron Ore Mine Waste Water Incinerator. Rio Tinto, 4 November 2015	<ul style="list-style-type: none"> No more than 190 kg of waste is incinerated per hour. The wastewater incinerator is installed and operated within the Marandoo Mine footprint as depicted in Attachment 6. Wastewater tanks are sealed. Storage tanks to be located within an earthen bund to prevent potential contact with vehicles and to contain any wastewater released. No emissions to land from the wastewater incinerator. Spill kits to be located on all mobile refuelling trucks used to refuel the wastewater incinerator. Only sewage waste is to be incinerated at the wastewater incinerator. Solid waste is to be disposed at the Putrescible Landfill facility depicted in Attachment 3.

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REPORTING CONDITIONS

- 32 The Licensee shall provide the CEO notification of when the Wastewater Incinerator referred to in condition 31 first becomes operational.
- 33 The Licensee shall ensure that all water samples are collected and preserved in accordance with AS/NZS 5667.1.
- 34 The Licensee shall ensure that all parameters requiring laboratory analysis are conducted by an organisation with NATA accreditation for the specified parameters in accordance with the current Standard Methods for Examination of Water and Wastewater-APHA-AWWA-WEF.

ANNUAL ENVIRONMENTAL REPORT

- 35 The Licensee shall provide the CEO, by **30 April** each year, a copy of an Annual Environmental Report containing data collected, as required by any condition of this Licence during the period beginning **1 January** the previous year and ending on **31 December** in that year.
- 36 The Licensee shall ensure that the Annual Environmental Report also contains:
- (a) a comparison of monitoring data against previous years' monitoring data; and
 - (b) a comparison of monitoring data against relevant guidelines including:
 - (i) Appropriate ANZECC Guidelines;
 - (ii) Marandoo Mine Phase 2 Operational Water Quality Guidelines for De-watering Discharge and the HAP; and
 - (iii) National Water Quality Management Strategy: Australian Guidelines for Sewerage Systems – Effluent Management 1997.

ANNUAL AUDIT COMPLIANCE REPORT

- 37 The Licensee shall by 30 April in each year, provide to the CEO an Annual Audit Compliance Report in the form in Attachment 5 to this Licence, signed and certified in the manner required by Section C of the form, indicating the extent to which the Licensee has complied with the conditions of this Licence, and any previous licence issued under Part V of the Act for the premises, during the period beginning 1 January the previous year and ending on 31 December in that year.

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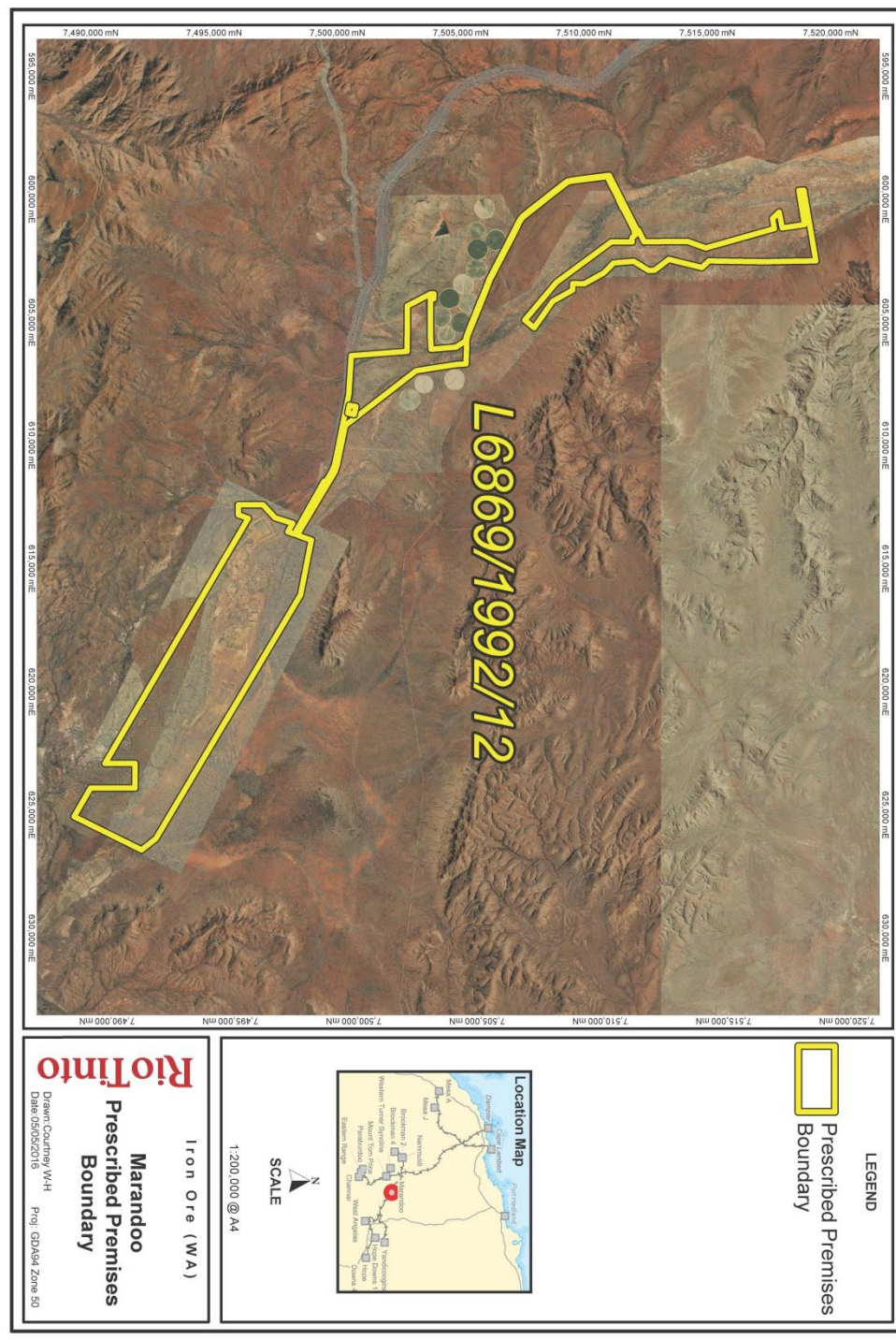
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ATTACHMENT 1 – PREMISES BOUNDARY



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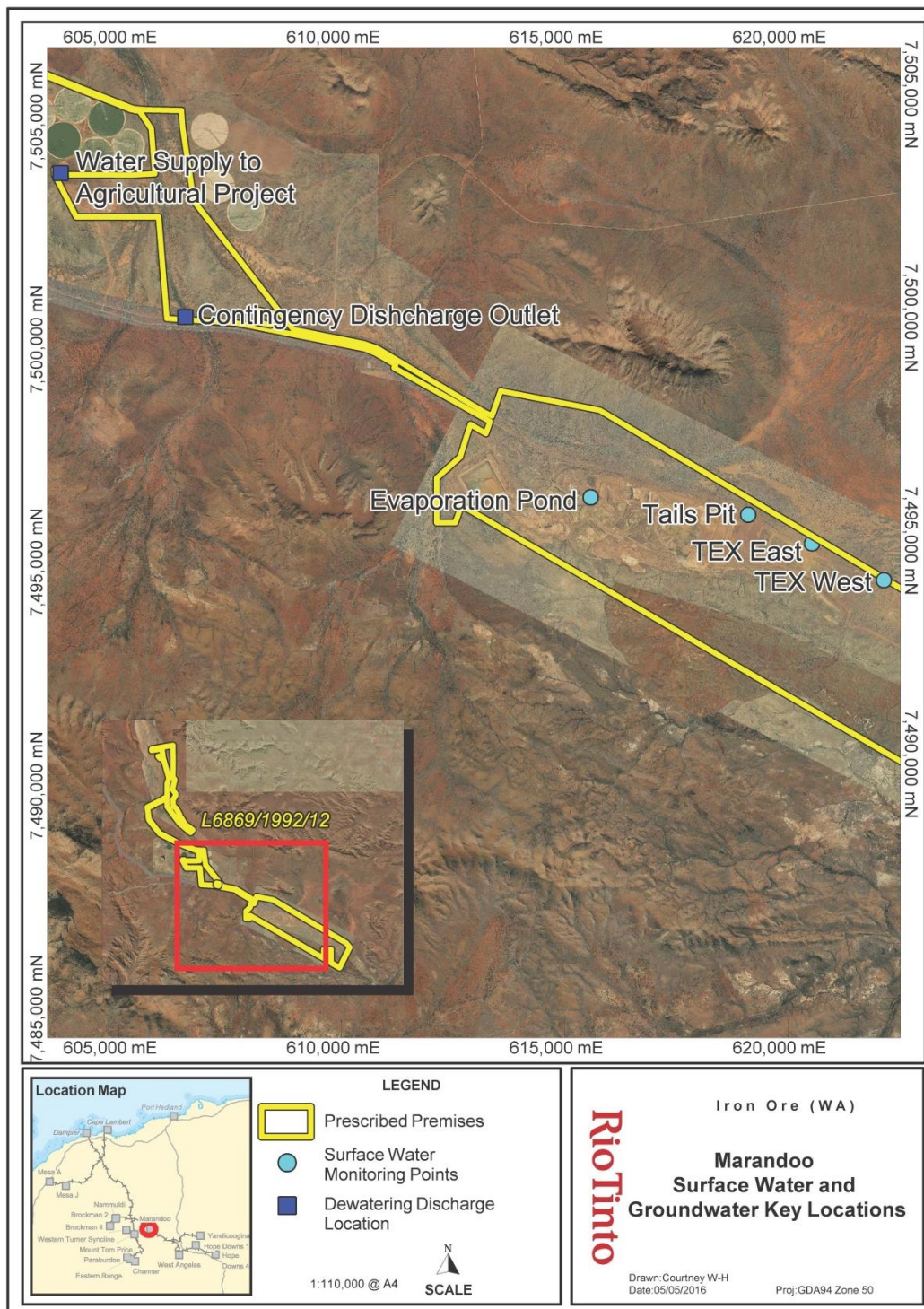


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ATTACHMENT 2 – MARANDOO SURFACE WATER AND GROUNDWATER KEY LOCATIONS



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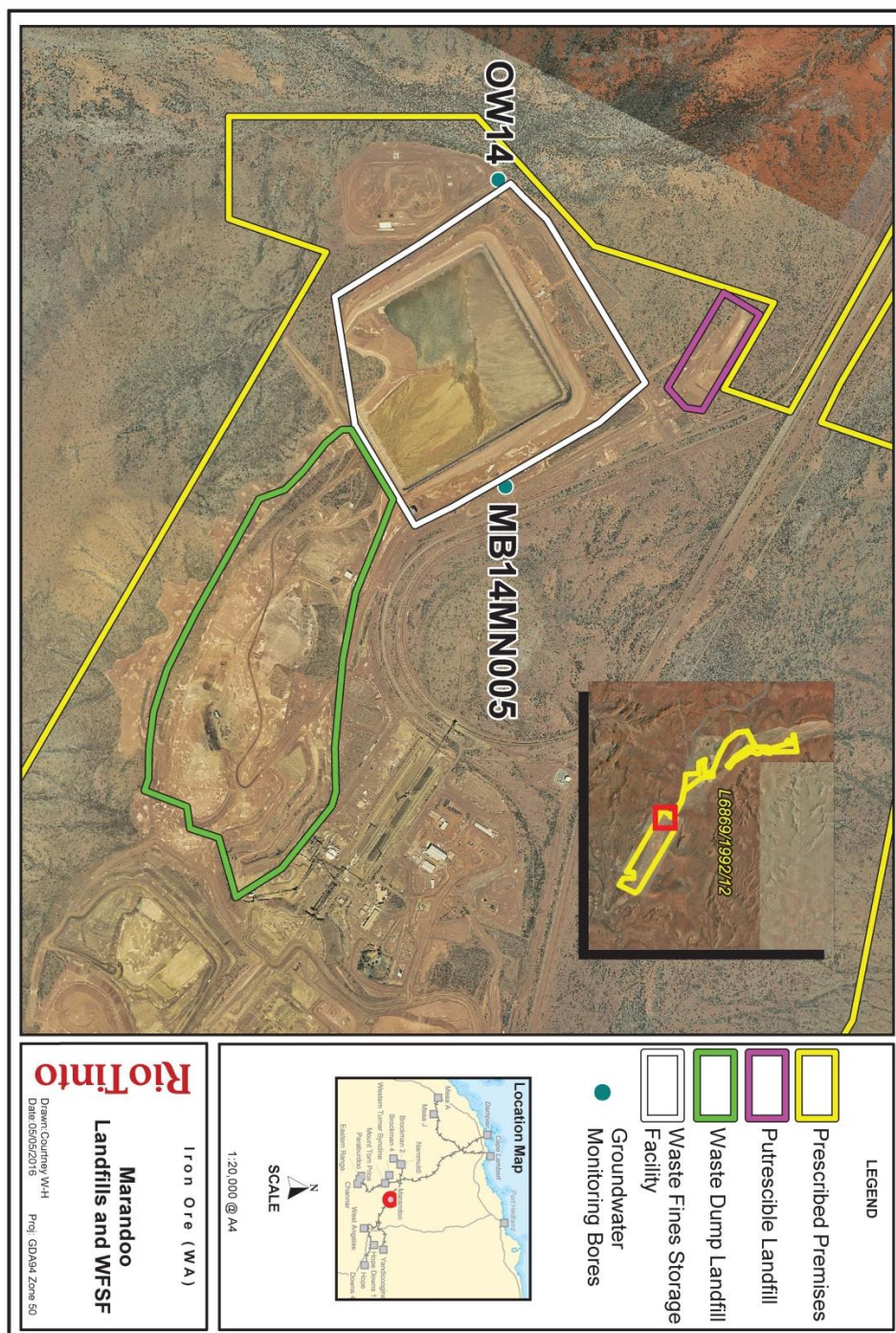


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ATTACHMENT 3 – LANDFILL AREAS DEFINED IN CONDITIONS 13 AND 18. WFSF GROUNDWATER MONITORING LOCATIONS DEFINED IN CONDITION 25



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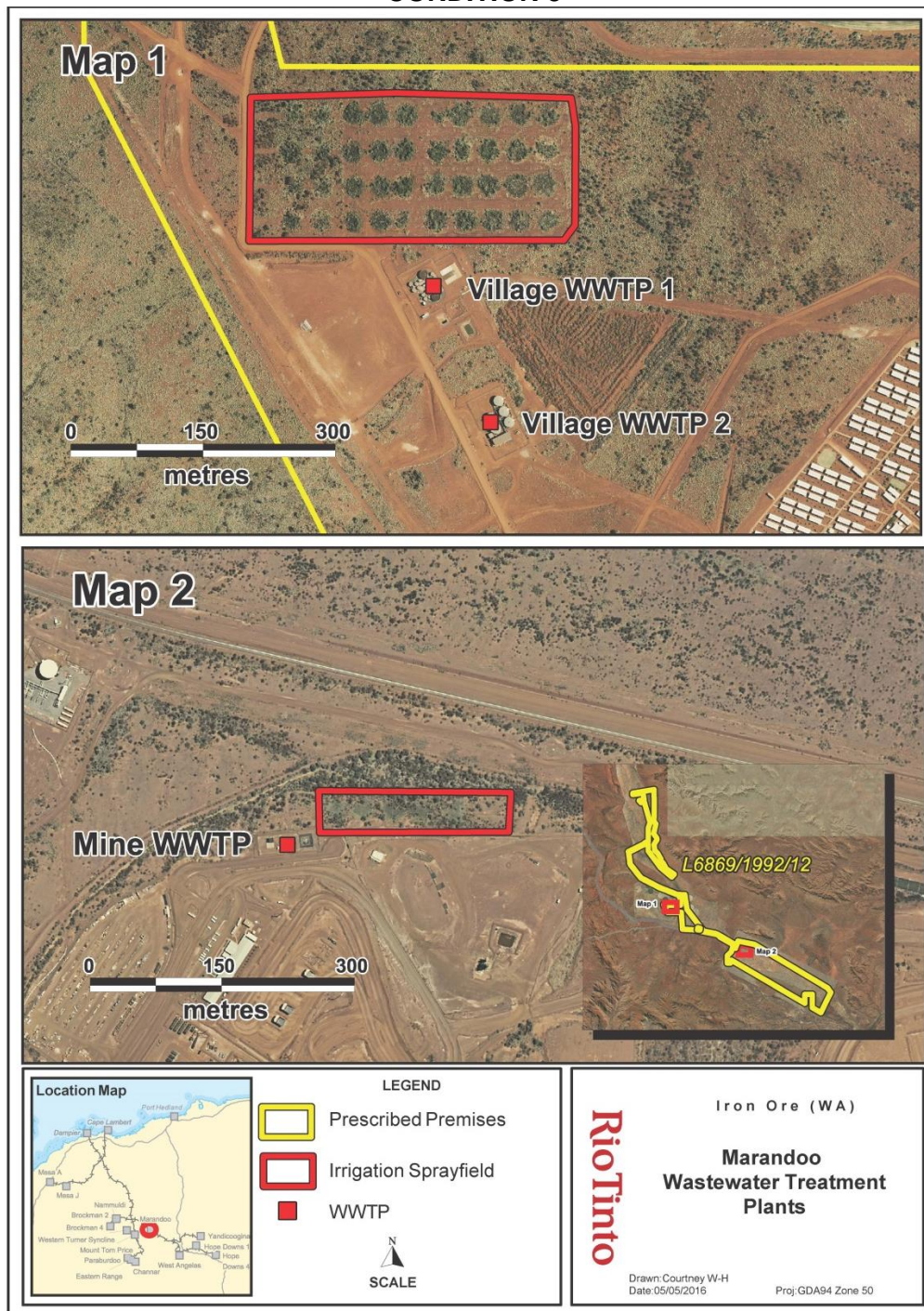


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ATTACHMENT 4 – WASTEWATER TREATMENT PLANT IRRIGATION FIELDS DEFINED IN CONDITION 3



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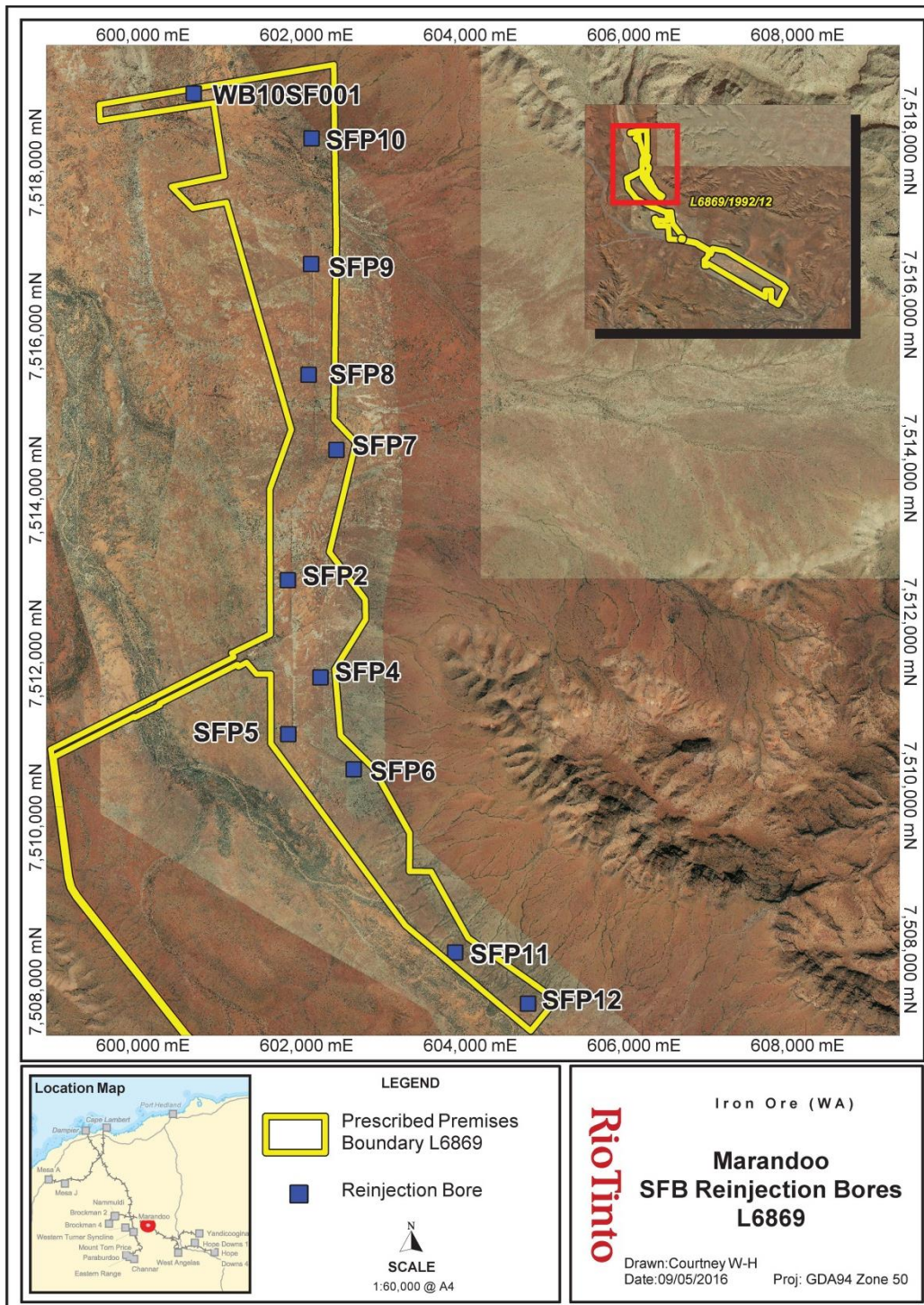


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ATTACHMENT 5 MARANDOO SFB REINJECTION BORES DEFINED IN CONDITION 30



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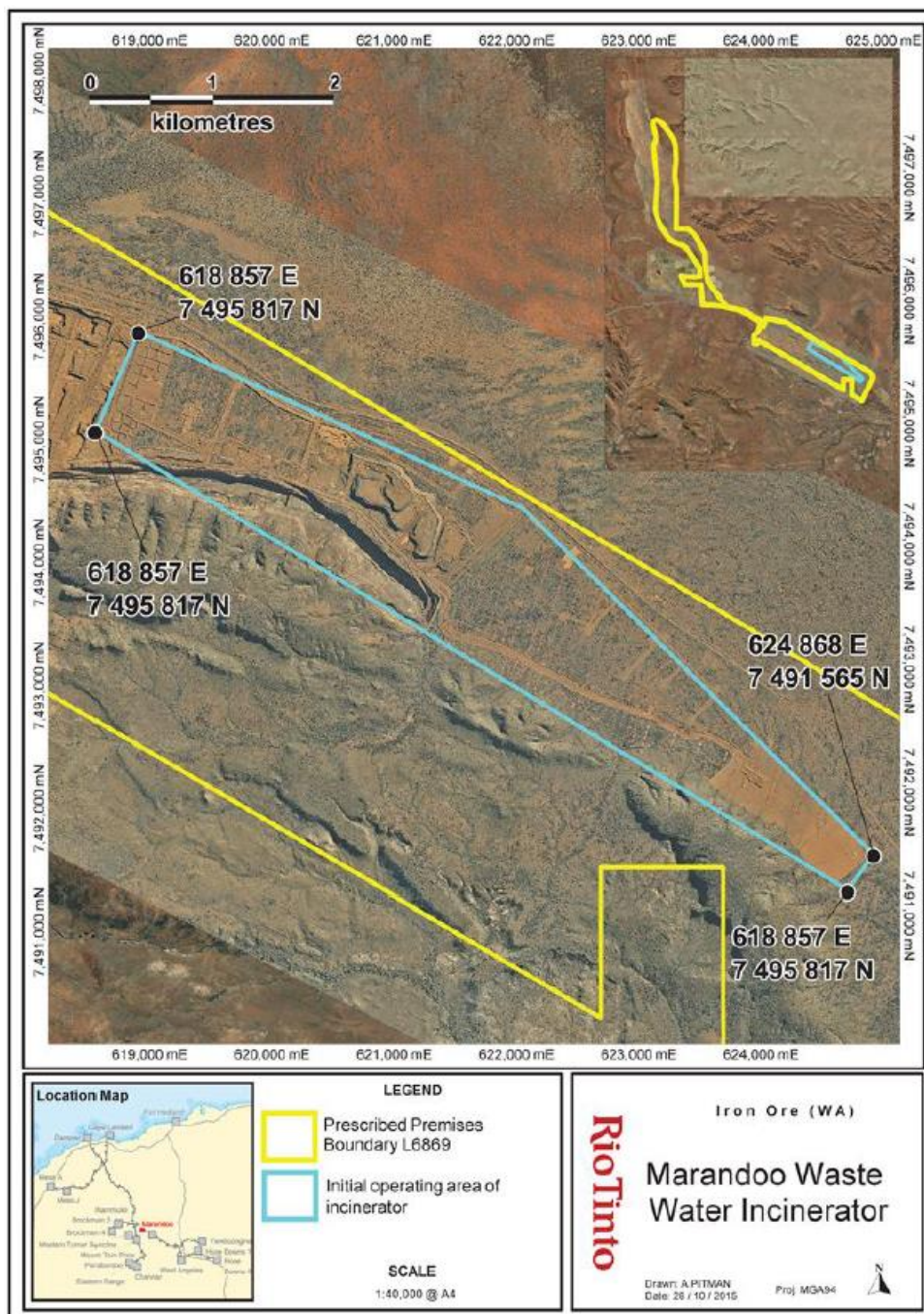


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ATTACHMENT 6 – OPERATING AREA OF THE WASTEWATER INCINERATION PLANT DEFINED IN CONDITION 31



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ATTACHMENT 5 – ANNUAL AUDIT COMPLIANCE REPORT

SECTION A

LICENCE DETAILS

Licence Number:	Licence File Number:
Company Name:	ABN:
Trading as:	
Reporting period: _____ to _____	

STATEMENT OF COMPLIANCE WITH LICENCE CONDITIONS

1. Were all conditions of licence complied with within the reporting period? (please tick the appropriate box)

Yes ☐ Please proceed to Section C

No ☐ Please proceed to Section B

Each page must be initialed by the person(s) who signs Section C of this Annual Audit Compliance Report

INITIAL: _____

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SECTION B - DETAILS OF NON-COMPLIANCE WITH LICENCE CONDITION.

Please use a separate page for each licence condition that was not complied with.

a) Licence condition not complied with?	
b) Date(s) when the non compliance occurred, if applicable?	
c) Was this non compliance reported to DER?	
<input type="checkbox"/> Yes <input type="checkbox"/> Reported to DER verbally Date _____ <input type="checkbox"/> Reported to DER in writing Date _____	<input type="checkbox"/> No
d) Has DER taken, or finalised any action in relation to the non compliance?	
e) Summary of particulars of compliance non compliance, and what was the environmental impact?	
f) If relevant, the precise location where the non compliance occurred (attach map or diagram)	
g) Cause of non compliance	
h) Action taken or that will be taken to mitigate any adverse effects of the non compliance	
i) Action taken or that will be taken to prevent recurrence of the non compliance	

Each page must be initialed by the person(s) who signs Section C of this Annual Audit Compliance Report

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SECTION C - SIGNATURE AND CERTIFICATION

This Annual Audit Compliance Report must only be signed by a person(s) with legal authority to sign it. The ways in which the Annual Audit Compliance Report must be signed and certified, and the people who may sign the statement, are set out below. Please tick the box next to the category that describes how this Annual Audit Compliance Report is being signed. If you are uncertain about who is entitled to sign or which category to tick, please contact the licensing officer for your premises.

If the licence holder is		The Annual Audit Compliance Report must be signed and certified:
an individual	<input type="checkbox"/> <input type="checkbox"/>	by the individual licence holder, or by a person approved in writing by the Chief Executive Officer of the Department of Environment Regulation to sign on the licensee's behalf.
A firm or other unincorporated company	<input type="checkbox"/> <input type="checkbox"/>	by the principal executive officer of the licensee; or by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
A corporation	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	by affixing the common seal of the Licensee in accordance with the Corporations Act 2001; or by two directors of the licensee; or by a director and a company secretary of the licensee, or if the Licensee is a proprietary company that has a sole director who is also the sole company secretary – by that director, or by the principal executive officer of the licensee; or by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
A public authority (other than a local government)	<input type="checkbox"/> <input type="checkbox"/>	by the principal executive officer of the licensee; or by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
a local government	<input type="checkbox"/> <input type="checkbox"/>	by the chief executive officer of the licensee; or by affixing the seal of the local government.

It is an offence under section 112 of the *Environmental Protection Act 1986* for a person to give information on this form that to their knowledge is false or misleading in a material particular. There is a maximum penalty of \$50,000 for an individual or body corporate.

I/We declare that the information in this annual audit compliance report is correct and not false or misleading in a material particular.

SIGNATURE: _____

SIGNATURE: _____

NAME:(printed)_____

NAME:(printed)_____

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POSITION: _____

POSITION: _____

DATE: ____/____/____

DATE: ____/____/____

SEAL (if signing under seal)

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Partial Decision Document

Environmental Protection Act 1986, Part V

Proponent: Pilbara Iron Company (Services) Pty Ltd

Licence: L6869/1992/12

Registered office: Level 22, Central Park
152-158 St Georges Terrace
PERTH WA 6000

ACN: 107 210 248

Premises address: Marandoo Iron Ore Mine
Part of AM70/272, G47/1237, L47/334, easement N276548 and Crown
Lease 3114/1277
MT SHEILA WA 6751

Issue date: Thursday, 5 February 2015

Commencement date: Thursday, 12 February 2015

Expiry date: Sunday, 11 February 2035

Decision

Based on the assessment detailed in this document the Department of Environment Regulation (DER) has decided to issue an amended licence. The DER considers that in reaching this decision, it has taken into account all relevant considerations and legal requirements and that the Licence and its conditions will ensure that an appropriate level of environmental protection is provided.

Decision Document prepared by: Clarrie Green
Licensing Officer

Decision Document authorised by: Alana Kidd
Manager Licensing



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1 Purpose of this Document

This decision document explains how the DER has assessed and determined the application and provides a record of the DER's decision-making process and how relevant factors have been taken into account. Stakeholders should note that this document is limited to the DER's assessment and decision making under Part V of the *Environmental Protection Act 1986*. Other approvals may be required for the proposal, and it is the proponent's responsibility to ensure they have all relevant approvals for their Premises.

2 Administrative summary

Administrative details		
Application type	Works Approval <input type="checkbox"/> New Licence <input type="checkbox"/> Licence amendment <input checked="" type="checkbox"/> Works Approval amendment <input type="checkbox"/>	
Activities that cause the premises to become prescribed premises	Category number(s)	Assessed design capacity
	5	20,000,000 tonnes per annual period
	6	36,500,000 tonnes per annual period
	12	4,380,000 tonnes per annual period
	54	342 cubic metres per day
	60	190 kilograms per hour
64	5,000 tonnes per annual period	
Application verified	Date: N/A.	
Application fee paid	Date: N/A.	
Works Approval has been complied with	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	
Compliance Certificate received	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	
Commercial-in-confidence claim	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Commercial-in-confidence claim outcome	N/A	
Is the proposal a Major Resource Project?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Was the proposal referred to the Environmental Protection Authority (EPA) under Part IV of the <i>Environmental Protection Act 1986</i> ?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Referral decision No: Managed under Part V <input type="checkbox"/> Assessed under Part IV <input type="checkbox"/>



Is the proposal subject to Ministerial Conditions?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Ministerial statement No: 883 and 1020 EPA Report No: 1416 and 1558
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the <i>Environmental Protection Act 1986</i>)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Department of Water consulted Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Is the Premises within an Environmental Protection Policy (EPP) Area Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If Yes include details of which EPP(s) here.		
Is the Premises subject to any EPP requirements? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If Yes, include details here, eg Site is subject to SO ₂ requirements of Kwinana EPP.		

3 Executive summary of proposal and assessment

Pilbara Iron Company (Services) Pty Ltd (Pilbara Iron) operates the Marandoo Iron Ore Mine (Marandoo) under L6869/1992/12. Marandoo is located approximately 37km east of Tom Price and 77km north-east of Paraburdoo on a temporary reserve held under a State Agreement Act, within the Karijini National Park. The temporary reserve and infrastructure corridor were excised from the park by Parliament in January 1991 to facilitate the mining of the Marandoo deposit.

The Licence was previously amended on Thursday 15 January 2015 to include a newly developed waste dump landfill (W5716/2014/1). In the works approval application the waste dump landfill was approved for disposal of Type 2 inert wastes (e.g. tyres, conveyor belts and screen mats). However, when the Licence was amended to include operational conditions for the waste dump landfill, Inert Type 2 wastes were not specified. This amendment allows for the disposal of Type 2 inert wastes.

This Licence amendment is also for the construction of an in-pit mobile wastewater incineration facility (WWIF) capable of disposing up to 190 L of wastewater per hour. Conventionally in-pit ablation facilities have been a septic tank and leach drain system or sealed holding tanks which require frequent pumping and transfer to a waste water treatment plant. However, due to the location of the in-pit facilities being within the Priority 1 (P1) Southern Fortescue and Marandoo Drinking Water Reserve, discharge of treated effluent or leach drains within this area are not permitted.

The WWIF will be housed within a 40 foot long sea container that is attached to the ablation block and contains two 4,500 L storage tanks, a fuel tank and a burner and incinerator chamber. As the WWIF receives ablation wastewater a high level sensor will be used to activate the burner and incinerator chamber for pre-heating. Once heated to a set temperature, the wastewater will be pumped to the combustion chamber for incineration/evaporation. Solids will also be incinerated with the residual, non-hazardous ash being directed to a collection tray that will be periodically emptied for disposal at the Marandoo Putrescible Landfill. The Marandoo Putrescible Landfill is located outside of the P1 Drinking Water Reserve. Although capable of treating up to 190 L of wastewater per hour, the anticipated throughput will be more like 62.5 L per hour based on workforce projections.

As the pit is expanded further to the east, the in-pit WWIF will be relocated closer to workers. This is expected to occur every 18 – 24 months until the mine pit reaches the eastern most extent. Commissioning of the WWIF is anticipated to take less than three months at the time of construction. Once the incinerator is operational, it will not require commissioning after each relocation as the system is designed as a mobile facility.



DER has considered whether the risk profile of emissions and discharges from the premises has significantly changed since the previous licence was granted. No significant changes have occurred and therefore DER has not amended conditions relating to other emissions and discharges. However, target conditions and conditions relating to liquid chemical storage and stormwater management have been removed. DER's assessment and decision making is provided in the Decision Table below.



4 Decision table

All applications are assessed in line with the *Environmental Protection Act 1986*, the *Environmental Protection Regulations 1987* and DER's Operational Procedure on Assessing Emissions and Discharges from Prescribed Premises. Where other references have been used in making the decision they are detailed in the decision document.

DECISION TABLE			
Works Approval / Licence section	Condition number L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
General conditions	Former conditions 3, 13, 14, 16 to 18 and 21	<p>Updates to Licence conditions have been made in accordance with the Guidance Statement: Conditions relating to stormwater management and liquid chemical storage have been removed.</p> <p>The depth to groundwater is approximately 100 m below ground level (mbgl) around active mining areas and there are no surface water bodies or drainage lines located within 1 km of the proposed area. Therefore the risk of water contamination from stormwater or chemical storage is low and the activity of storage does not require a replacement condition. Spill kits are placed on all mobile refuelling trucks and internal procedures are in place requiring any spill or leak of chemicals, including hydrocarbons, to be recovered or removed and disposed as soon as practicable after detection. The Licensee has a responsibility to comply with relevant legislative requirements for the storage and handling of environmentally hazardous materials. Unauthorised discharges of environmentally hazardous materials may be subject to the provisions of the <i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i>.</p>	<p>Application supporting documentation</p> <p><i>Environmental Protection (Unauthorised Discharges) Regulations 2004.</i></p>
Premises operation	L13 – L21	<p><u>Emission Description</u></p> <p><i>Emission:</i> Type 2 inert wastes (e.g. tyres, conveyor belts and screen mats) disposed to the Waste Dump Landfill. Waste ash from the WWIF will be disposed at the Putrescible Landfill facility.</p> <p><i>Impact:</i> Potential for contamination of the surrounding environment through leachate or windblown waste.</p> <p><i>Controls:</i> There will be no hazardous waste placed in the waste dump landfill. Due to the nature of the waste, it is not expected that leachate or windblown rubbish will be</p>	<p>Landfill Waste Classification and Waste Definitions 1996 (As amended December 2009)</p>



DECISION TABLE			
Works Approval / Licence section	Condition number L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p>generated. The depth to groundwater at the Waste Dump Landfill is greater than 70 metres (m).</p> <p><u>Risk Assessment</u> <i>Consequence:</i> Insignificant <i>Likelihood:</i> Rare <i>Risk Rating:</i> Low</p> <p><u>Regulatory Controls</u> The Licence currently has conditions 18 to 21 for the management of the Waste Dump Landfill. Condition 18, which specifies the types of wastes permitted at the Waste Dump Landfill, was amended to include 'Inert Waste Type 2'. The acceptance of waste ash from the WWIF falls within the definition of 'Inert Waste Type 1' under the Landfill Waste Classification and Waste Definitions 1996 (As amended December 2009). Therefore existing conditions on the Licence adequately regulate the operation of the landfills. No additional conditions are required.</p> <p><u>Residual Risk</u> <i>Consequence:</i> Insignificant <i>Likelihood:</i> Rare <i>Residual Risk Rating:</i> Low</p>	
Point source emissions to air including monitoring	L31	<p>Operation of the Waste Water Incineration Facility (WWIF)</p> <p><u>Emission Description</u> <i>Emission:</i> Emissions to air from the WWIF stack include that of sulphur dioxide, carbon monoxide and volatile organic compounds primarily a result of using hydrocarbon fuel. <i>Impact:</i> Typical air emissions from the incinerator unit at maximum throughput (190 kg per hour) are anticipated to dissipate to below Department of Health (DoH) assessment criteria at the point of the premises boundary. <i>Controls:</i> Only wastewater from service area bathrooms will be incinerated, hence emissions are controlled. The majority of the waste stream is water, therefore water</p>	Ambient Air Assessment Criteria, National Environmental Protection Measure (Ambient Air Quality) – DoH assessment criteria



DECISION TABLE			
Works Approval / Licence section	Condition number L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p>vapour and emissions from the generator are the main emissions.</p> <p><u>Risk Assessment</u> <i>Consequence:</i> Minor <i>Likelihood:</i> Rare <i>Risk Rating:</i> Low</p> <p><u>Regulatory Controls</u> No impacts are anticipated for the nearest human receptors greater than 2 km away in Karijini National Park.</p> <p>Condition 31 authorises the use of the WWIF within a specific operating area of the Marandoo Pit. Pilbara Iron is authorised to relocate the facility within this operating area. The residual risk remains unchanged.</p>	Application supporting documentation
Emissions to land including monitoring	N/A	<p>Soil Bioremediation Facilities (Landfarm)</p> <p><u>Emission Description</u> <i>Emission:</i> Discharges of hydrocarbon contaminated soils beyond the landfarm area into the environment. <i>Impact:</i> Hydrocarbons in high concentrations can have toxic effects on aquatic organisms if allowed to enter surface waters near to the facility. <i>Controls:</i> Soil bioremediation facilities are bunded to prevent the ingress and egress of stormwater during heavy rain events. In the rare event that a significant rainfall causes the release of hydrocarbon contaminated stormwater runoff beyond the landfarm area it is likely that concentrations would be very low.</p> <p><u>Risk Assessment</u> <i>Consequence:</i> Minor <i>Likelihood:</i> Rare <i>Risk Rating:</i> Low</p>	<p><i>Environmental Protection (Unauthorised Discharges) Regulations 2004.</i></p> <p><i>Environmental Protection (Controlled Waste) Regulations 2004.</i></p> <p>National Water Quality Management Strategy: Australian Guidelines for Sewerage Systems – Effluent</p>



DECISION TABLE			
Works Approval / Licence section	Condition number L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p><u>Regulatory Controls</u> The former condition requiring Pilbara Iron to prevent stormwater from entering the bioremediation area has been removed. The <i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i> adequately regulate the discharge of hydrocarbon contaminated materials. As contaminated soils are effectively separated from the environment through bunding and hardstanding, the regulation of how soils are remediated is not required. Pilbara Iron will still be required to effectively treat contaminated soils prior to disposal or have contaminated soils removed by a licensed contractor.</p> <p>WWTPs DER's assessment and decision making are detailed in Appendix A.</p> <p>As previous targets have been removed from the licence, the nutrient loading rates have been reassessed to determine if further conditions are necessary.</p>	Management 1997 (NWQMS Guidelines)
Fugitive emissions	L1 and 2	<p>Operation <u>Emission Description</u> <i>Emission:</i> The increased capacity for category 5 has the potential to cause further dust emissions from the Premises through greater excavation, crushing and screening volumes. <i>Impact:</i> Dust can impact on the health and amenity of nearby human populations. The nearest residential community is Tom Price, approximately 37 km west of Marandoo, and unlikely to be impacted. The amenity for visitors to Karijini National Park, approximately 2 km away, may be impacted by dust from mining activities at Marandoo. However, given the short term exposure to visitors and the inert nature of iron ore dust, long term health impacts are not anticipated. <i>Controls:</i> Existing proponent dust controls which will continue to be implemented include:</p>	



DECISION TABLE			
Works Approval / Licence section	Condition number L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<ul style="list-style-type: none"> Spraying working surfaces with water using water carts; Stockpile water sprays; Water sprays on crushing plants; Dust collection systems such as baghouses, coverings on conveyors / transfer points and dust filters; Sealing of working surfaces where practicable; and Rehabilitation of disturbed areas where possible. <p><u>Risk Assessment</u> <i>Consequence:</i> Minor <i>Likelihood:</i> Unlikely <i>Risk Rating:</i> Moderate</p> <p><u>Regulatory Controls</u> The significant volume of throughput at Marandoo and proximity to Karijini National Park justifies the retention of existing conditions that legally require Pilbara Iron to implement commitments. No changes to residual risk are anticipated.</p>	
Odour	N/A	The WWIF will be located at the base of the mine void and buffered from wind. Odours from incineration of wastewater are not expected to impact sensitive receptors beyond the premises boundary.	N/A
Monitoring general	L33	<p>The previous Licence required all water samples to be taken in accordance with Australian Standard 5667. This condition has been retained and further defined in the amended Licence.</p> <p>In-field analysis of pH, electrical conductivity and dissolved oxygen is now permitted under the amended Licence due to the Licensee's inability to deliver water samples within the required holding times.</p>	Australian Standard AS/NZS 5667.1 Water Quality – Sampling – Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samples



DECISION TABLE			
Works Approval / Licence section	Condition number L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
Ambient quality monitoring	L25 and L30	<p>Targets are no longer applied to DER licences, in line with recent administrative changes implemented at DER, described on DERs website under 'Administrative changes implemented within DER' at www.der.wa.gov.au. DER's assessment and decision making is provided in Appendix A.</p> <p>Target conditions based on ANZECC guidelines for dewatering quality have been removed from the Licence. Discharge quality data will continue to be reported to DER via the Annual Environmental Report for assessment to ensure that there are no significant environmental impacts resulting from dewatering. No increase in environmental risk will occur through the removal of dewatering quality targets.</p>	<p>ANZECC and ARMCANZ (2000) Australian Water Quality Guidelines for fresh and Marine Water Quality</p> <p>DER website www.der.wa.gov.au</p>
Information	L35-37	Despite the removal of target conditions Pilbara Iron will be required to compare dewatering monitoring results against ANZECC guidelines and the 'Marandoo Mine Phase 2 Operational Water Quality Guidelines for De-watering Discharge and the HAP' within the Annual Environmental Report submission. WWTP monitoring results will need to be compared to NWQMS Guidelines for secondary treatment facilities to justify that each WWTP is being operated effectively.	<p>ANZECC and ARMCANZ (2000)</p> <p>Marandoo Mine Phase 2 Operational Water Quality Guidelines for De-watering Discharge and the HAP</p> <p>NWQMS Guidelines</p>
Licence Duration	N/A	The Licence expiry date has been extended to 11 February 2035 in regard to the Guidance Statement on Licence Duration.	Guidance Statement on Licence Duration revised May 2016



5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
10/03/16	Proponent sent a copy of draft instrument	<p>Comments received 14/04/16. The Licensee requested the following changes to the Licence:</p> <ol style="list-style-type: none">1. Removal of condition 1 for dust management.2. Request to undertake in-field analysis of electrical conductivity and dissolved oxygen.3. Change to the reference to the sulphate ion (SO₄ instead of SO₄-S) in the monitoring tables.4. Request to compare monitoring data to the relevant guidelines and previous years' data only and to not undertake an assessment.5. A further request to change the premises boundary was received 28/04/16 due to part of Crown Lease 3114/1277 being relinquished to the Department of Lands in 2015 and an easement being granted which covers the Southern Fortescue Borefield. Tenements L47/234 and L47/48 are not part of the premises address. A finalised updated premises boundary map was provided on 4/05/16. A finalised updated map of the SFB borefield provided on 9/05/16.	<ol style="list-style-type: none">1. Condition 1 for dust management is to remain within the licence as the Premises boundary abuts Karijini National Park and the category 5 capacity has significantly increased. The risk has been assessed as moderate.2. Changes have been made to the monitoring tables allowing for in-field analysis of electrical conductivity and dissolved oxygen.3. Change to the reference to the sulphate ion (SO₄) in the monitoring tables has been made.4. The requirement to undertake an assessment of the data has been removed. Condition 36 now states that a comparison of monitoring data against previous years' data and Licence limits is to be included in the Annual Environmental Report.5. The maps within Schedule 1 have been updated to depict the updated premises boundary.

6 Risk Assessment

Note: This matrix is taken from the DER Corporate Policy Statement No. 07 - Operational Risk Management

Table 1: Emissions Risk Matrix

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Severe
Almost Certain	Moderate	High	High	Extreme	Extreme
Likely	Moderate	Moderate	High	High	Extreme
Possible	Low	Moderate	Moderate	High	Extreme
Unlikely	Low	Moderate	Moderate	Moderate	High
Rare	Low	Low	Moderate	Moderate	High

Appendix A

Discharge to land from WWTP

Emission Description

Emission: Discharge of nutrient-rich wastewater to land for disposal using an irrigation system.

Impact: Elevated nutrients in soil have the potential to promote the growth of plant species with faster nutrient uptake, typically non-native species and weeds. Vegetation communities within Karijini National Park are of elevated conservation significance as they are representative of the vegetation communities of the Hamersley Range and are in relatively pristine condition compared to the highly modified ecology of surrounding pastoral stations. These impacts are likely to be localised to the nearby vicinity of the irrigation fields.

Nutrients that percolate past the root zone of vegetation may also cause eutrophication impacts to downstream water bodies. However, regional groundwater is approximately 33 mbgl and therefore unlikely to register significant increases in nutrients as a result of irrigated treated wastewater.

Marandoo sits on the edge of a flat lying internally draining catchment known as the Mount Bruce Flats, which is subject to inundation following heavy rainfall events. The natural hydrological regime of Marandoo Ridge has already been modified by the existing railway, which intercepts and re-directs surface runoff generated across the northern side of Marandoo Ridge. The majority of surface water runoff generated on Marandoo Ridge during low intensity rainfall events infiltrates the soil and does not reach the Mount Bruce Flats.

There remains a risk that nutrients not absorbed by vegetation may be transported to nearby surface water bodies during periods of heavy rainfall. However, the nearest surface water body to both the camp and mine WWTPs is located over 650 m away. Therefore any nutrients that come into contact with stormwater is expected to be significantly diluted to very low concentrations before the stormwater comes into contact with surface water bodies.

Control: Pilbara Iron treats wastewater to a quality that meets National Water Quality Management Strategy guidelines for secondary wastewater treatment units. Results are regularly reviewed, compared to previous results and corrective actions taken as needed.

Risk Assessment

Consequence: Minor

Likelihood: Rare

Risk Rating: Low

Regulatory Controls

As the Marandoo Mine Camp WWTP is operating efficiently and in accordance with Australian Standards, target conditions relating to effluent quality have not been converted into limits. Reporting condition L36 has been applied to the Licence to require a comparison of effluent discharge monitoring to NWQMS Guidelines for secondary treatment plants.

The residual risk to the environment remains unchanged.