Government of **Western Australia**
Department of **Environment and Conservation**

Your ref:	W5419/2013/1
Our ref:	2013/001743
Enquiries:	Sonya Poor
Phone:	9182 2009
Fax:	9144 1118
Email:	sonya.poor@dec.wa.gov.au

Ms Leisa Turner
Specialist Environmental Advisor
Pilbara Iron Company (Services) Pty Ltd
PO Box B66
PERTH WA 6838

Dear Ms Turner

***ENVIRONMENTAL PROTECTION ACT 1986*: WORKS APPROVAL GRANTED**

Premises: Yandicoogina Junction South East Processing Plant
Works Approval Number: W5419/2013/1

A works approval under the *Environmental Protection Act 1986* (the Act) has been granted for the above premises. The Department of Environment and Conservation will advertise the issuing of this works approval in the public notices section of *The West Australian* newspaper.

The works approval includes attached conditions. Under Section 55(1) of the Act, it is an offence to contravene a condition of a works approval. This offence carries a penalty of up to $125,000 and a daily penalty of up to $25,000.

In accordance with section 102(1)(c) of the Act, you have 21 days to appeal the conditions of the works approval. Under section 102(3)(a) of the Act, any other person may also appeal the conditions of the works approval. To lodge an appeal contact the Office of the Appeals Convenor on 6467 5190 or by email at admin@appealsconvenor.wa.gov.au.

Emissions from the premises that are the subject of a works approval are not authorised until or unless a licence is issued or unless the emissions are in accordance with the works approval and while that works approval is in force.

If you have any queries regarding the above information, please contact Sonya Poor on 9182 2009.

Yours sincerely

Allisdair MacDonald
Officer delegated under Section 20
of the *Environmental Protection Act 1986*

Thursday, 6 June 2013

enc: *Environmental Protection Act 1986* Works Approval W5419/2013/1, EAR
copy to: Local Government Authority: Shire of East Pilbara

Department of
Environment and Conservation
Our environment, our future

Works Approval

Environmental Protection Act 1986, Part V

Works Approval Holder: **Pilbara Iron Company (Services) Pty Ltd**

Works Approval Number: **W5419/2013/1**

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

ACN: 107 210 248

Premises address: Yandicoogina Junction South East Processing Plant
Mining tenement M274SA
NEWMAN WA 6753

Issue date: Thursday, 6 June 2013

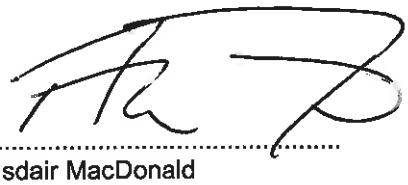
Commencement date: Monday, 10 June 2013

Expiry date: Thursday, 9 June 2016

The following category/s from the Environmental Protection Regulations 1987 cause this Premises to be a prescribed premises for the purposes of the *Environmental Protection Act 1986*:

Category number	Category description	Category production or design capacity	Premises production or design capacity
5	Processing or beneficiation of metallic or non-metallic ore: premises on which - (a) metallic or non-metallic ore is crushed, ground, milled or otherwise processed; (b) tailings from metallic or non-metallic ore are reprocessed; or (c) tailings or residue from metallic or non-metallic ore are discharged into a containment cell or dam.	50 000 tonnes or more per year.	32 500 000 tonnes per year.

Conditions of Works Approval
Subject to the conditions of the Works Approval set out in the attached pages.



Allisdair MacDonald
Officer delegated under Section 20
of the *Environmental Protection Act 1986*

Works Approval Conditions

1 General

1.1 Interpretation

1.1.1 In the Works Approval, definitions from the *Environmental Protection Act 1986* apply unless the contrary intention appears.

1.1.2 In the Works Approval, unless the contrary intention appears:

"the Act" means the *Environmental Protection Act 1986;*

"Code of practice for the storage and handling of dangerous goods" means the Storage and handling of dangerous goods, Code of Practice, Department of Mines and Petroleum, Government of Western Australia;

"Commissioning" means the process of operation and testing that verifies the works and all relevant systems, plant, machinery and equipment have been installed and are performing in accordance with the design specification set out in the works approval application;

"dangerous goods" has the meaning defined in the Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007;

"Director" means Director, Environmental Regulation Division of the Department of Environment and Conservation for and on behalf of the Chief Executive Officer as delegated under Section 20 of the *Environmental Protection Act 1986;*

"Director" for the purpose of correspondence means –

Regional Leader, Pilbara Region
Department of Environment and Conservation
PO Box 835 Telephone: +61 9182 2000
KARRATHA WA 6714 Facsimile: +61 9144 1118;

"environmentally hazardous material" means material (either solid or liquid raw materials, materials in the process of manufacture, manufactured products, products used in the manufacturing process, by-products and waste) which if discharged into the environment from or within the premises may cause pollution or environmental harm;

"JSE" means Junction South East;

"placard quantity" has the meaning defined in the Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007;

"Premises" means the area defined in the Premises Map in Schedule 1 and listed as the Premises address on page 1 of the Works Approval;

"Works Approval" means this Works Approval numbered W5419/2013/1 and issued under the *Environmental Protection Act 1986;* and

"Works Approval Holder" means the person or organisation named as the Works Approval Holder on page 1 of the Works Approval.

1.1.3 Any reference to an Australian or other standard in the Works Approval means the relevant parts of the current version of that standard.

1.2 General conditions

1.2.1 The Works Approval Holder shall construct the works in accordance with the documentation detailed in Table 1.2.1:

Table 1.2.1: Construction Requirements[1]

Document	Parts	Date of Document
Works Approval Application Form	All	21 March 2013
Rio Tinto Yandicoogina Category 5a and 5c Iron Ore Process Plant and Waste Fines Storage Facility Works Approval Application, Application Identification Number (AIN): kwm9rc.	All	20 March 2013
Email correspondence "RE: Additional questions for the Yandicoogina JSE plant and WFC", received from Leisa Turner (Rio Tinto).	All	28 March 2013 at 9:12am
Email correspondence "RE: JSE wet plant - Yandicoogina", received from Leisa Turner (Rio Tinto).	All	6 May 2013 at 2:07pm
Email correspondence "RE: Yandicoogina JSE process plant and WFC works approval – Hold Request", received from Leisa Turner (Rio Tinto).	All	28 May 2013 at 12:04pm

Note 1: Where the details and commitments of the documents listed in condition 1.2.1 are inconsistent with any other condition of this works approval, the conditions of this works approval shall prevail.

1.2.2 The licensee, except where storage is prescribed in section 1.3, shall only store substances that are classed as dangerous goods that are below placard quantities or are environmentally hazardous materials not classified as dangerous goods, if they are stored in accordance with the Code of Practice for the Storage and handling of dangerous goods.

1.2.3 The Works Approval Holder shall commission the JSE process plant, for a period not exceeding 7 months.

1.3 Premises operation

There are no specified conditions relating to Premises operation in this section.

2 Emissions

There are no specified conditions relating to emissions in this section.

3 Monitoring

There are no specified conditions relating to monitoring in this section.

4 Improvements

There are no specified conditions relating to improvements in this section.

5 Information

5.1 Reporting

5.1.1 The Works Approval Holder shall submit a compliance document to the Director, following the construction of the works and prior to commissioning of the same.

5.1.2 The compliance document shall:
(a) certify that the works were constructed in accordance with the conditions of the Works Approval;
(b) be signed by a person authorised to represent the Works Approval Holder and contain the printed name and position of that person within the company.

5.1.3 The Works Approval Holder shall submit a commissioning report for the JSE process plant, to the Director for approval within a month of the completion of commissioning. The report shall include:
(a) a summary of the environmental performance of the process plant as installed, against the design specification set out in the works approval application;
(b) a review of performance against the works approval conditions; and
(c) where they have not been met, measures proposed to meet the design specification and/or works approval conditions, together with timescales for implementing the proposed measures.

5.2 Notification

5.2.1 The Works Approval Holder shall ensure that the parameters listed in Table 5.2.1 are notified to the Director at the Contact Address and in accordance with the notification requirements of the table.

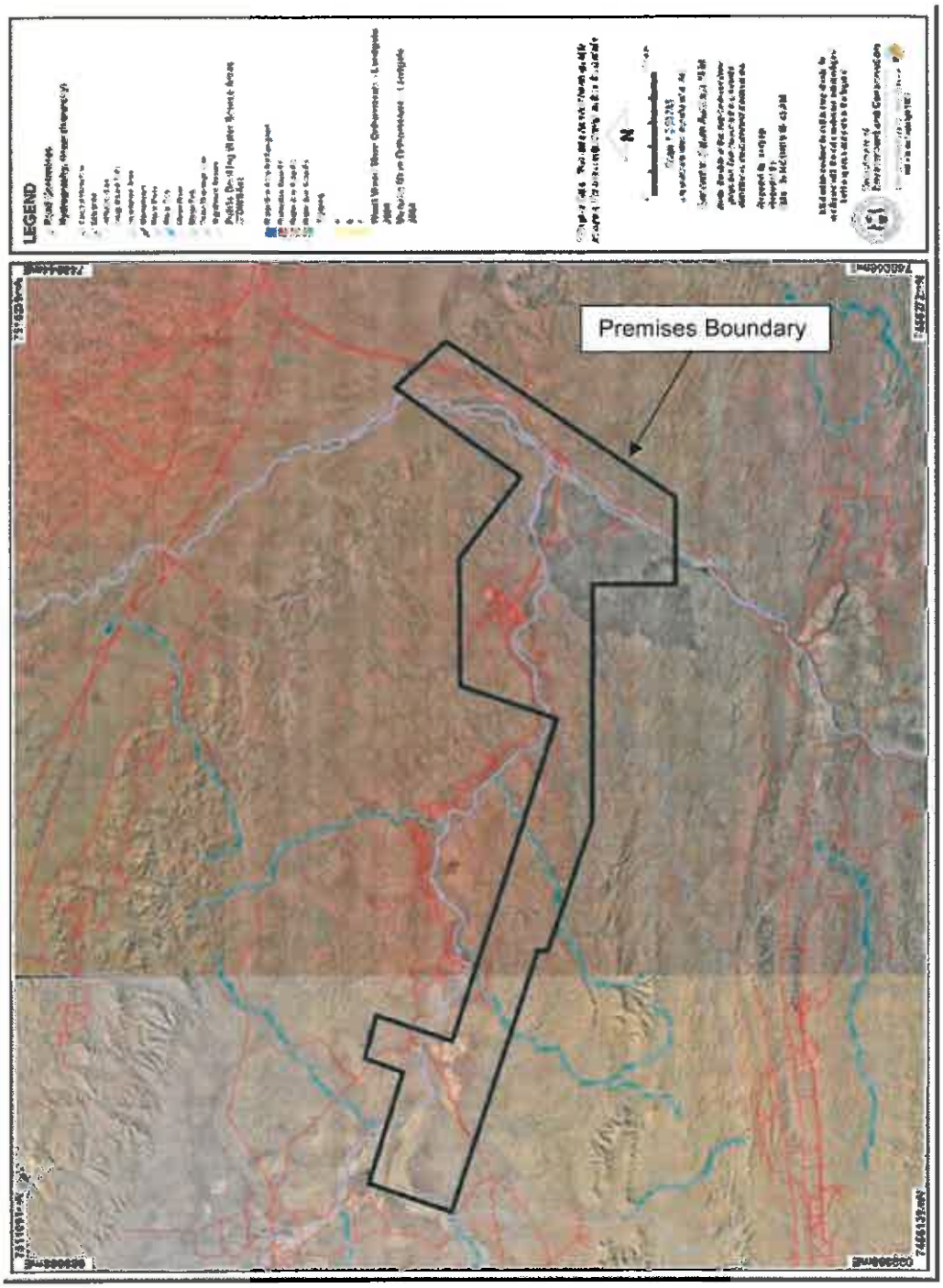
Table 5.2.1: Notification requirements

Condition or table (if relevant)	Parameter	Notification requirement	Format or form
1.2.3	Commencement of commissioning	7 days prior to start	None specified
	Completion of commissioning	7 days after completion	

Schedule 1: Maps

Premises map

The Premises is shown in the map below. The black line depicts the Premises boundary.



Government of Western Australia
Department of Environment and Conservation

ENVIRONMENTAL ASSESSMENT REPORT

WORKS APPROVAL NUMBER: W5419/2013/1
WORKS APPROVAL FILE NUMBER: 2013/001743
APPLICATION DATE: 21 MARCH 2013
EXPIRY DATE: 9 JUNE 2016

PREMISES DETAILS

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

PREMISES
Yandicoogina Junction South East Processing Plant
Mining tenement M274SA
NEWMAN WA 6753

PRESCRIBED PREMISES CATEGORY

Table 1: Prescribed premises category

Category number*	Category Description*	Category Production or Design Capacity*	Premises Production or Design Capacity#	Premises Fee Component**
5	Processing or beneficiation of metallic or non-metallic ore	50 000 tonnes or more per year	32 500 000 tonnes per year	More than 5 000 000 tonnes per year

* From Schedule 1 of the Environmental Protection Regulations 1987
\# From application
** From Schedule 4 of the Environmental Protection Regulations 1987

This Environmental Assessment Report (EAR) has been drafted for the purposes of detailing information on the management and mitigation of emissions and discharges from the prescribed premises. The objective of the EAR is to provide a risk assessment of emissions and discharges, and information on the management of other activities occurring onsite which are not related to the control of emissions and discharges from the prescribed premises activity. This does not restrict the Department of Environment and Conservation (DEC) to assessing only those emissions and discharges generated from the activities that cause the premises to become prescribed premises.

Basis of Assessment
The Yandicoogina Junction South East (JSE) Processing Plant has been assessed as "prescribed premises" category number 5, under Schedule 1 of the Environmental Protection Regulations 1987.

Category 05 – Processing or beneficiation of metallic or non-metallic ore: premises on which -
(a) *metallic or non-metallic ore is crushed, ground, milled or otherwise processed;*
(b) *tailings from metallic or non-metallic ore are reprocessed; or*
(c) *tailings or residue from metallic or non-metallic ore are discharged into a containment cell or dam.*

Pilbara Iron Company (Services) Pty Ltd (Pilbara Iron) is proposing to construct a wet processing plant and upgrade the existing primary and secondary crusher at JSE as part of the Yandi Sustaining Project.

The new wet processing plant will have a design capacity of 32.5 million tonnes per annum (mtpa) and will process 31mtpa of which 28mtpa will be of ore and 3mtpa of waste fines. By upgrading the existing primary and secondary crusher this facility will be able to operate at 31.5mtpa with a design capacity of 32mtpa.

The construction of a waste fines cell will be assessed under a separate works approval application.

1.0 BACKGROUND

1.1 GENERAL COMPANY DESCRIPTION

Pilbara Iron is a major ore producer in the Pilbara region of Western Australia and has been mining in the region since the 1960s, previously as Hamersley Iron Pty Limited and Robe River Iron Associates. Pilbara Iron currently exports iron ore to markets predominately in Asia. Iron ore is mined inland at Pilbara Iron's ore operations and then railed to ports at Dampier and Cape Lambert.

The process plant will be constructed in accordance with the Yandi Sustaining Project Construction Environmental Management Plan (CEMP) YSP-0000-PLN-T-001 (Calibre, December 2011).

1.2 LOCATION OF PREMISES

Yandicoogina is located in the central Pilbara region of Western Australia (Figure 1), about 90 kilometres (km) north-west of Newman within tenement M274SA. The proposed process plant will be located adjacent to the existing JSE primary and secondary crusher (Figure 2) at these coordinates (zone 50, MGA 94) E 730 980.09, N 7 476 251.3.

The key surrounding environmental features to Yandicoogina include:

- Karijini National Park - approximately 70km west;
- Millstream-Chichester National Park – approximately 190km north-west; and
- Weeli Wolli Creek – approximately 3km east of the process plant and 1.5km from WFC3.

There are no other sensitive environmental receptors within close proximity to the project area.

Climate

The climate for the Yandicoogina area is arid with an average annual rainfall of 310 millimetres (mm) and evaporation from free water surfaces in the area is estimated at 3600mm per year, well in excess of annual rainfall.

Geology and soils

The Yandicoogina area consists of Proterozoic basement rocks of the Weeli Wolli Formation, overlain by relatively thin Tertiary and Quaternary sediments. The basement rocks comprise Banded Iron Formation (BIF), chert, shale and volcanic rocks. The thin alluvium and colluviums cover consists of valley fill and drainage deposits, which are restricted to areas close to present drainages. These deposits include the Channel Iron Deposit (CID), which has formed in the palaeochannel of the ancestral equivalents of the Marillana and Yandicoogina creek systems.

Vegetation
Yandicoogina lies within the Fortescue Botanical District, which is a subdivision of the Eremaean Botanical Province. The three major landforms can be distinguished as:

- Low stony hills - generally consisting of hills, ridges and breakaways supporting a scattered overstorey of small trees (Eucalyptus and Acacia species) over moderately dense Spinifex (Triodia species) hummock grassland;
- Valleys - consisting of low stony plains in valleys supporting scattered overstorey of small trees (Eucalyptus and Acacia species) over sparse mixed shrubs and Spinifex (Triodia species). Alluvial flats are dominated by Acacia shrub lands with a moderately rich understorey of shrubs, herbs and tussock grasses; and
- Drainage lines - vary from small gullies in upper hills to more major creeklines. Minor drainage lines differ very little from the vegetation type surrounding them and are usually species poor. Major creeklines support Eucalyptus dominated woodlands and open forest over a mixed understorey of shrubs and grasses.

Flora
No Priority flora were recorded within the project area. Five Priority species have been recorded from the surrounding Yandi Expansion area, with the exception of one species, the remaining species are recorded relatively frequently in the Newman area.

Populations of Hamersley Lepidium (*Lepidium catapycnon*) have been recorded around the mine site. The closest population is approximately 2.2km south-east of the proposed process plant and will not be impacted by the proposal.

Fauna
No significant fauna has been identified within the project area, however, the mine is a potential habitat for the Northern Quoll (*Dasyurus hallucatus*) and the Pilbara Olive Python (*Liasis olivaceus barroni*).

Surface water and Groundwater
Marillana Creek is the dominant drainage feature in the project area. It enters from the west near the Oxbow deposit and drains in a predominately easterly direction into the Weeli Wolli Creek system downstream of the current Yandicoogina mine operations. Two major tributaries, Phil's Creek and Yandicoogina Creek drain into Marillana Creek with M274SA. The process plant will be located near the downstream end of the catchment approximately 2km from Marillana Creek.

The groundwater depth in the vicinity of process plant varies from 17 – 20 metres (m) below ground level (mBGL) and the closest public drinking water sources area (PDWSA) to Yandicoogina is the Newman Water Reserve, located approximately 60km south-east of the mine.

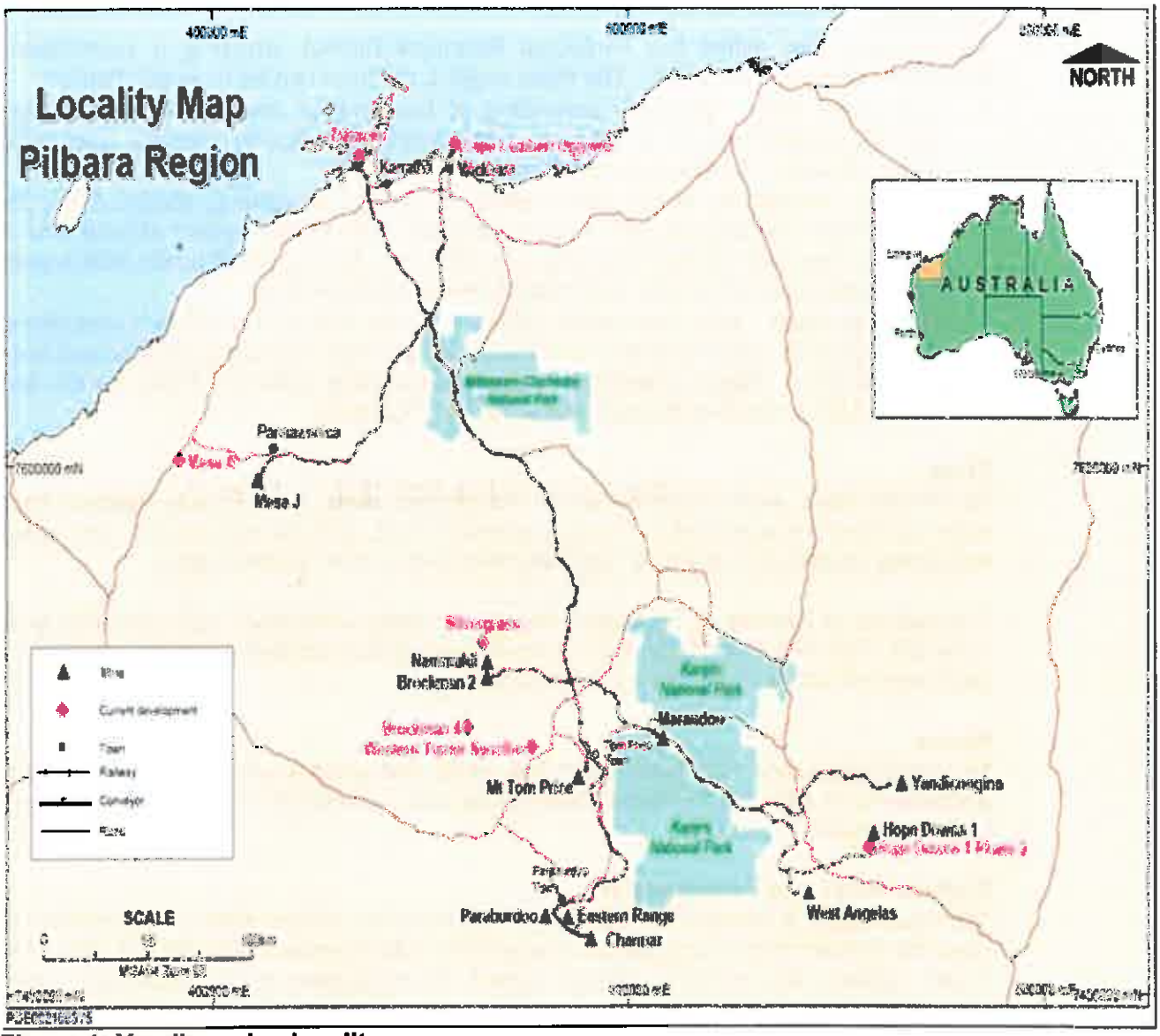


Figure 1: Yandicoogina locality

Figure 2: Location of JSE process plant, existing primary and secondary crusher

1.3 PROPOSAL DESCRIPTION

Pilbara Iron currently produces 52mtpa of Saleable Ore Product (SOP) from the JC and JSE deposits within the Yandicoogina area. The JC deposit will be depleted during 2014 and in order to maintain current production capacity a third deposit Junction South West (JSW) is due to commence mining in 2013 in conjunction with further development of the JSE deposit.

Ore from the JSE pit is currently being processed through a dry processing plant, which consists of a primary and secondary crusher. This plant currently operates at 22mtpa but the motor will be upgraded to take the tonnes to 31.5mtpa with a design capacity of 32mtpa. The quality of ore taken during further development of the JSE pit will result in the requirement to construct a wet process plant in order to prepare the ore for further processing into SOP.

The proposed process plant will have a design capacity of 32.5mtpa and will process 31mtpa, of which, 28mtpa will be of ore and 3mtpa of waste fines.

At the existing JSE primary and secondary crusher, secondary sized ore is conveyed out from below the secondary sizer on conveyor YCV301. As part of the proposed process plant works, conveyor YCV301 will be modified to be an indexing shuttle conveyor and arranged so that it can discharge onto existing conveyor YCV302 in instances when the JSE ore does not require wet processing. When the ore does require wet processing, YCV301 will discharge onto a new conveyor (YCV303), which will be a shuttle conveyor feeding a set of bins, which will in turn feed the lines of the process plant.

The bins feeding the process plant are single bins with four discharge openings. Each opening feeds an apron feeder, which feeds a belt conveyor. Each belt conveyor carries material to a scrubber. The scrubbers have been selected for a retention time of about 90 seconds and each scrubber will be equipped with a trammel to make a nominally 32mm separation.

A double deck multi-slope vibrating screen will be located below each trammel, accepting the trammel undersize. Each screen will be dressed with mesh to make a nominal cut at 6mm on the top deck and 2mm on the bottom deck. Spray bars will be positioned over each deck to provide a final rinse.

Rejects form the trammel, nominally -120mm +32mm will be conveyed away on conveyor YCV308. YCV308 discharges via a surge bin and apron feeder onto conveyor YCV309. Rejects from both decks of the screens, nominally -32mm +2mm are conveyed away from the process plant on conveyor YCV309. Conveyor YCV309 returns the material onto the existing overland conveyor YCV302 for further processing inside the Loop.

Screen undersize, -2mm and the process wash water will fall into a series of underflow sumps. Underflow material from each sump will be pumped via a dedicated pumping system into upcurrent classifier (UCC) units, which perform a slimes removal function and also a "mids" split. Classifier overflow will be gravity fed to the plants high rate thickener and underflow will be fed out by gravity to four belt filters. Mids can be optionally fed to the filters or to the thickener, making provisions to upgrade the product from the wet plant further, when required, at the expense of yield.

The classifiers are capable of making two separations. The primary chamber will make a separation of about 500 micron, and the secondary chamber will make a separation at about 120 micron. The overflow from the secondary chamber will be fed by gravity to the high rate thickener, while the underflow from the classifier chamber will normally be recombined and fed by gravity to vacuum belt filters.

Overflow from the UCC will be fed into the thickener feed box via two waste fines overflow launders. Filtrate from the vacuum belt filters will also be fed into the high rate thickener. Flocculent from the flocculent storage tank will be added to the material in the thickener. Overflow from the thickener will flow into a series of process water tanks via the overflow launder. This will then used as the main process water source for the process plant and thickened waste material will be transferred to an intermediate underflow tank via underflow pumps.

Filtered dewatered product will fall onto conveyor YCV309, which will return the entire wet processed product to conveyor YCV302 for further processing inside the Loop.

Turkey's nest

Raw water for JSE is drawn from a turkey's nest at the Run of Mine (ROM) area, which is replenished from the JSE Southern borefield and temporary in-pit dewatering bores.

The process plant will require up to 700 kilolitres (kL) of make-up water per hour to replenish losses to product material, waste fines, pump seals and evaporation. The existing transfer line from the Southern borefield to the proposed turkey's nest is not sufficient for the flow rates required for the process plant and is in poor condition. Therefore, it is proposed to provide a single overland pipe with adequate capacity for the process plant and dewatering flows to the proposed turkey's nest. This transfer line will be laid on a graded easement and will follow the established corridor occupied by the existing line. The proposed transfer line will be buried at unsealed light vehicle access roads and run underground through service sleeves at heavy vehicle and sealed roads.

An 8 million litre turkey's nest (YTY652) is proposed adjacent to the existing JSE raw water turkey's nest to achieve a minimum storage capacity of 12 hours in the event of interruptions to the raw water supply. The proposed turkey's nest design will incorporate two cells connected by a spillway. Incoming water will be fed into a concrete walled cell of the turkey's

nest where any sediment present will settle out for later removal with mobile equipment. The second cell in the turkey's nest will be fitted with a minimum 1mm thick high density polyethylene (HDPE) fully welded liner.

Commissioning

The basic scope of commissioning can be designated by the following stages:

- stage 1: Construction verification;
- stage 2: Pre-commissioning;
- stage 3: No-load commissioning;
- stage 4: Load commissioning; and
- stage 5: Performance verification.

Pilbara Iron will undertake all stages of commissioning under the works approval, with stages 1 to 3 including first fill of all lubricants and running of all process plant equipment (including conveyors, sizers, feeders, crushers, scrubbers, cyclones and balanced machines) undertaken prior to submitting the compliance documentation. Upon confirmation from DEC, Pilbara Iron will undertake stages 4 and 5, load commissioning (i.e. wet commissioning) and performance verification, prior to submitting the commissioning report.

1.4 REGULATORY CONTEXT

1.4.1 Part IV Environmental Protection Act 1986, Environmental Impact Assessment

The Yandicoogina Iron Ore Project – Expansion to include JSW and Oxbow Deposits has been assessed and approved by the Environmental Protection Authority (EPA) under Part IV of the *Environmental Protection Act 1986*. Ministerial Statement 914 was published on the 18 October 2012.

1.4.2 Part V Environmental Protection Act 1986, Environmental Management

Yandicoogina has been assessed as a "prescribed premises" under the Environmental Protection Regulations 1987 under licence L7340/1997/8 and is licensed to carry out category 5, 6, 54 , 64 and 77 prescribed activities as per Schedule 1 of the *Environmental Protection Act 1986*. A works approval is required for the construction of the process plant. Pilbara Iron will be required to submit compliance documentation prior to operation of the process plant.

DEC will also administer the following legislation:

- *Contaminated Sites Act 2003*;
- Environmental Protection Regulations 1987;
- Environmental Protection (Noise) Regulations 1997;
- Environmental Protection (Unauthorised Discharges) Regulations 2004;
- Environmental Protection (Controlled Waste) Regulations 2004; and
- Environmental Protection (Clearing of Native Vegetation) Regulations 2004.

1.4.3 Other Decision-making Authorities' Legislation which applies

Department of Mines and Petroleum (DMP)

Yandicoogina will be regulated by DMP under the following legislation:

- *Iron Ore (Yandicoogina) Agreement Act 1996*;
- *Mining Act 1978*;
- Mining Regulations 1981;
- *Mines Safety and Inspection Act 1994*; and
- Mines Safety and Inspection Regulations 1995.

The onsite storage of hydrocarbons and dangerous goods will be regulated by the following legislation:

- *Dangerous Goods Safety Act 2004*;
- Dangerous Goods Safety (Storage and handling of Non-explosives) Regulations 2007;
- *Occupational Safety and Health Act 1984*;
- Occupational Safety and Health Regulations 1996; and
- Australian Standards 1940-2004 The storage and handling of flammable and combustible liquids.

1.4.4 Rights in Water Irrigation Act 1914

Pilbara Iron hold a Groundwater Licence (GWL) under the *Rights in Water Irrigation Act 1914*. Licence number GWL166205(4) allocates 35 000 000kL of groundwater from the Pilbara Hamersley-Fractured Rock aquifer to the property per year.

1.4.5 Local Government Authority

The premises is located within the Shire of East Pilbara.

2.0 STAKEHOLDER AND COMMUNITY CONSULTATION

SUBMISSIONS RECEIVED DURING 21 DAY PUBLIC COMMENT PERIOD

The application for works approval details for this facility were advertised in The West Australian newspaper on 22 April 2013 as a means of advising stakeholders and to seek public comments. No submissions were received.

3.0 EMISSIONS AND DISCHARGES RISK ASSESSMENT

DEC considers that conditions should focus on regulating emissions and discharges of significance. Where appropriate, emissions and discharges which are not significant should be managed and regulated by other legislative tools or management mechanisms.

The following section assesses the environmental risk of potential emissions from the process plant. In order to determine the site's appropriate environmental regulation, an emissions and discharges risk assessment was conducted of the process plant using the environmental risk matrix outlined in Appendix A. The results of this are summarised in Table 2.

Table 2: Risk assessment and regulatory response summary table

Risk factor	Significance of emissions	Socio-Political Context of Each Regulated Emission	Risk Assessment	DEC Regulation (EP Act - Part V)	EAR Reference	Other management (legislation, tools, agencies)
Air emissions (point source)	**Construction and Operation - 1** There will be no point source air emissions generated during the **construction and operation of the process plant.**	**No** level of community interest or concern.	**E** – No regulation, other management **mechanisms.**	WA – No conditions. **LIC – No conditions.**	N/A.	General provisions of the *Environmental Protection Act 1986.*
Dust emissions	**Construction – 1** Dust emissions will be generated during the construction of the process plant. These emissions will be associated with: • clearing; • earthworks; and • vehicle movement on unsealed roads. Construction dust will be managed in accordance with the Yandi Sustaining Project CEMP and will include the following controls: • water suppression will be applied during clearing and construction activities including areas with high vehicle movement or unsealed roads; • where practicable, clearing will be avoided on high wind days; and • visual inspections will be conducted to determine the need for dust suppression. **Operation – 2** Dust emissions generated during operation will be limited to that produced by general operational activities including: • ore handling (ROM dumping, ore loading and unloading, conveyor transfers, dust lift-off from the stockpiles); • ore transport (waste, ore, product); • ore processing; and • from light and heavy vehicle traffic on unsealed roadways. Water will be used to control dust emissions during processing operations and the following measures will be implemented: • water suppression will be applied on unsealed work areas and access roads; • conveyors handling material, which is relatively dry will be fitted with spray booths for dust suppression. This includes the primary crushed ore conveyor, scrubber feed conveyors, dry screen feed conveyor, lump stacking conveyor and fines stacking conveyor. The stackers and the reclaimers are also fitted with dust suppression sprays; • on-line moisture analysers will be installed to monitor	**Low** level of community interest or concern.	**D** – EIPs, other management mechanisms/licence conditions.	WA – Standard condition in relation to construction in accordance with application documentation. Permission to commission will be granted for 7 months. The proponent will be required to operate as per commitments made during the works approval assessment. LIC – Conditions on existing licence relating to dust management.	N/A.	General provisions of the *Environmental Protection Act 1986.* Environmental Protection (Unauthorised Discharges) Regulations 2004. Yandi Sustaining Project CEMP.

Risk factor	Significance of emissions	Socio-Political Context of Each Regulated Emission	Risk Assessment	DEC Regulation (EP Act - Part V)	EAR Reference	Other management (legislation, tools, agencies)
	moisture content of the ore. This allows adjustments to the moisture content to minimise dust while not adding too much water to the ore and creating runoff from the stockpiles; • regular housekeeping will be undertaken to collect and remove material that may present a potential dust risk from around conveyors and loading/unloading areas; • where possible, drop heights at all transfer points will have been minimised throughout the process plant design; and • minimising site disturbance, clearing only when required and in accordance with the CEMP.					
Odour emissions	**Construction and Operation – 1** Odour emissions are not expected during the construction and operation of the process plant.	**No** level of community interest or concern.	**E** – No regulation, other management mechanisms.	WA – No conditions. LIC – No conditions.	N/A.	General provisions of the *Environmental Protection Act 1986.*
Noise emissions	**Construction and Operation - 1** Noise and vibration are not expected to be significant during the construction and operation of the process plant. Construction noise levels will be managed under the Yandi Sustaining Project CEMP. Pilbara Iron has committed to complying with the Environmental Protection (Noise) Regulations 1997 and Australian Standards 2107. Noise levels during operation are not expected to increase from the JSE area as a result of the process plant. This is a result of the insignificant noise emissions proportional to the existing mining operations in the area.	**No** level of community interest or concern.	**E** – No regulation, other management mechanisms.	WA – No conditions. LIC – No conditions.	N/A.	General provisions of the *Environmental Protection Act 1986.* Environmental Protection (Noise) Regulations 1997. Australian Standards 2107 Acoustics - Recommended design sound levels and reverberation times for building interiors. Yandi Sustaining Project CEMP.
Light emissions	**Construction and Operation - 1** Night shift work is expected to occur during the construction phase of the process plant. As existing facilities at Yandicoogina will be operating in the vicinity during this time, the additional lighting is not expected to increase the overall light emissions in the immediate or surrounding areas. Permanent plant lighting will be installed during construction and will be utilised once the process plant is operational. Lighting from the process plant is not expected to impact the Yandicoogina village, which is located approximately 7km away.	**No** level of community interest or concern.	**E** – No regulation, other management mechanisms.	WA – No conditions. LIC – No conditions.	N/A.	General provisions of the *Environmental Protection Act 1986.*

Risk factor	Significance of emissions	Socio-Political Context of Each Regulated Emission	Risk Assessment	DEC Regulation (EP Act - Part V)	EAR Reference	Other management (legislation, tools, agencies)
	The light spill is not expected to have any impact on the surrounding habitat areas as the land around the process plant will be cleared.					
Discharges to water	**Construction and Operation – 1** There should be no discharges to water associated with the construction and operation of the process plant. The closest water source to the process plant is Marillana creek approximately 2km from the plant. Groundwater depth in the vicinity of the process plant varies in depth from 17 – 20mBGL and the closest PDWSA is the Newman Water Reserve, located approximately 60km south-east of the mine.	**No** level of community interest or concern.	**E** – No regulation, other management mechanisms.	WA – No conditions. LIC – Conditions on existing licence relating to stormwater management, water monitoring from the levee bank discharge point including targets, reporting in the Annual Environmental Report and a Total Petroleum Hydrocarbon discharge limit of 30mg/L.	N/A.	General provisions of the *Environmental Protection Act 1986.* Environmental Protection (Unauthorised Discharges) Regulations 2004.
Discharges to land	**Construction – 1** There should be no discharges to land associated with the construction of the process plant. **Operation – 1** The processing area will be constructed with a floor grade that directs stormwater away from the process plant. This will ensure clean stormwater run-off and potentially sediment loaded run-off from the plant are separated. Stormwater within the plant area will be collected in open drains, which are fed into sedimentation ponds. The area surrounding the crushing plant and conveyor transfer points will be of compacted structural fill. The area under the plant and conveyor transfer points will be concrete slab and graded such that washdown water passes through a sump prior to being collected in concrete sediment/silt traps. The sediment will settle in the drive in pits of these sumps while the liquid containing particles will be directed into silt traps. Fine solids will settle in these silt traps prior to release of the clear water. These traps will be removed by pumping out, or allowed to evaporate depending on water levels and climatic conditions.	**Low** level of community interest or concern.	**D** – EIPs, other management mechanisms/licence conditions.	WA – No conditions. LIC – Conditions on existing licence relating to stormwater management, water monitoring from the levee bank discharge point including targets, reporting in the Annual Environmental Report and a Total Petroleum Hydrocarbon discharge limit of 30mg/L.	N/A.	General provisions of the *Environmental Protection Act 1986.* Environmental Protection (Unauthorised Discharges) Regulations 2004.

Risk factor	Significance of emissions	Socio-Political Context of Each Regulated Emission	Risk Assessment	DEC Regulation (EP Act - Part V)	EAR Reference	Other management (legislation, tools, agencies)
	The concrete sumps are designed to allow vehicle access for the removal of sediment. Both the drive in sumps and silt traps will be debogged using bobcats and front end loaders.					
Solid / liquid wastes	**Construction and Operation – 1** Waste generated from construction will be appropriately segregated to prevent contamination and recycled where practicable. Solid industrial and domestic waste will be generated during the construction and operation of the process plant. Waste material that is suitable for re-use or recycling will be separated and sent off-site for treatment or recycling. General waste will be disposed of at the onsite licensed landfill. Hazardous waste will be transferred or recycled off-site by a licensed contractor if a controlled substance. All waste handling procedures will be in accordance with the CEMP during construction and the Health Safety Environment and Quality (HSEQ) Management System during operations.	**No** level of community interest or concern.	**E** – No regulation, other management mechanisms.	WA – No conditions. LIC – Conditions on existing licence relating to putrescible landfill management.	N/A.	General provisions of the *Environmental Protection Act 1986.* Environmental Protection (Controlled Waste) Regulations 2004. Yandi Sustaining Project CEMP. HSEQ Management System.
Hydrocarbon/ chemical storage	**Construction and Operation – 1** Hazardous material will be used on site during the construction of the process plant. Material Safety Data Sheets (MSDS) shall be approved prior to bringing any chemicals onsite and a copy retained with the chemical. Bulk fuel storage onsite will be contained within self-bunded tanks or where single skinned tanks are used, they will be stored in accordance with Australian Standards 1940-2004. This will be impervious so that spills are retained and able to be recovered through pumping out of spilled material or excess water from the low point. Diesel required for machinery and fixed plant will be transported around site in self bunded fuel trailers. This will provide diesel on an as needs basis. Minor stores of oils and chemicals will be segregated according to class and will be stored in the applicable dangerous goods cabinet or within a bund. Diesel generators and smaller plant with onboard diesel tanks will all be self-bunded. The projects CEMP outlines the management of hydrocarbons	**Low** level of community interest or concern.	**E** – No regulation, other management mechanisms.	WA – No conditions. LIC – Conditions on existing licence relating to liquid chemical storage.	N/A.	General provision of the *Environmental Protection Act 1986.* Environmental Protection (Unauthorised Discharges) Regulations 2004. Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007. Australian Standards 1940-2004 The storage and handling of flammable and combustible liquids. Yandi Sustaining Project CEMP.

Risk factor	Significance of emissions	Socio-Political Context of Each Regulated Emission	Risk Assessment	DEC Regulation (EP Act - Part V)	EAR Reference	Other management (legislation, tools, agencies)
	and oily waste during construction such as fuels, grease, degreasers, emulsified oil and oily wastewater. Waste oil, oily rags, oil filters and any other hydrocarbon related wastes shall be collected and disposed of off-site through an appropriately **licensed waste service provider.** Spill kit equipment will be located near all higher risk contamination points such that they are available for immediate use. All site vehicles and machinery will also carry spill kits and spill kit response will be in accordance with the CEMP. Once operation of the process plant commences, chemical storage in the vicinity of the plant will be confined to the flocculants used within the process. Fuel for light and heavy vehicles will be provided via dedicated site fuel trucks and/or dedicated fuel outlets located at the mine. The flocculent plant facility will comprise one distinct area, within a concrete bunded area. The facility will contain a dry powder flocculent silo. It is anticipated that storage of the flocculent powder will be up to 80 tonnes at any one time.					
Native vegetation clearing	**Construction and Operation - 1** No native vegetation clearing permit is required for this project and all clearing will be managed under Ministerial Statement 914.	**No** level of community interest or concern.	**E** – No regulation, other management mechanisms.	WA – No conditions. LIC – No conditions.	N/A.	General provisions of the *Environmental Protection Act 1986.* Environmental Protection (Clearing of Native Vegetation) Regulations 2004. Ministerial Statement 914.
Contaminated site identification	**Construction and Operation – 1** The premises is not currently registered as a contaminated site under the *Contaminated Sites Act 2003.*	**No** level of socio-political concern.	**E** – No regulation, other management mechanisms.	WA – No conditions. LIC – No conditions.	N/A.	General provision of the *Environmental Protection Act 1986.* *Contaminated Sites Act 2003.*

4.0 GENERAL SUMMARY AND COMMENTS

Pilbara Iron currently produces 52mtpa of SOP from the JC and JSE deposits within the Yandicoogina area. The JC deposit will be depleted during 2014 and in order to maintain current production capacity a third deposit JSW is due to commence mining in 2013 in conjunction with further development of the JSE deposit.

Pilbara Iron is proposing to construct a wet processing plant as part of the Yandi Sustaining Project. The process plant will have a design capacity of 32.5mtpa and will process 31mtpa of which 28mtpa will be of ore and 3mtpa of waste fines. The existing primary and secondary crusher at JSE will also be upgraded to operate at 31.5mtpa with a design capacity of 32mtpa. The construction of a waste fines cell will be assessed under a separate works approval application.

As shown in Table 2, emissions and discharges associated with this works approval are a low risk to the environment, and should not result in significant impacts to the environment if managed as per Pilbara Iron's commitments.

The facility is also subject to the general provisions of the *Environmental Protection Act 1986* relating to the causing and reporting of pollution and will be subject to inspections by DEC officers.

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APPENDIX A: EMISSIONS AND DISCHARGES RISK ASSESSMENT MATRIX

Table 3: Measures of Significance of Emissions

Emissions as a percentage of the relevant emission or ambient standard		Worst Case Operating Conditions (95th Percentile)			
		>100%	50 – 100%	20 – 50%	<20%*
Normal Operating Conditions (50th Percentile)	>100%	5	N/A	N/A	N/A
	50 – 100%	4	3	N/A	N/A
	20 – 50%	4	3	2	N/A
	<20%*	3	3	2	1

*For reliable technology, this figure could increase to 30%

Table 4: Socio-Political Context of Each Regulated Emission

		Relative proximity of the interested party with regards to the emission				
		Immediately Adjacent	Adjacent	Nearby	Distant	Isolated
Level of Community Interest or Concern*	5	High	High	Medium High	Medium	Low
	4	High	High	Medium High	Medium	Low
	3	Medium High	Medium High	Medium	Low	No
	2	Low	Low	Low	Low	No
	1	No	No	No	No	No

Note: These examples are not exclusive and professional judgement is needed to evaluate each specific case

*This is determined by DEC using the DEC "Officer's Guide to Emissions and Discharges Risk Assessment" May 2006.

Table 5: Emissions Risk Reduction Matrix

		Significance of Emissions				
		5	4	3	2	1
Socio-Political Context	High	A	A	B	C	D
	Medium High	A	A	B	C	D
	Medium	A	B	B	D	E
	Low	A	B	C	D	E
	No	B	C	D	E	E

PRIORITY MATRIX ACTION DESCRIPTORS

A = Do not allow (fix)

B = licence condition (setting limits + EMPs - short timeframes)(setting targets optional)

C = licence condition (setting targets + EMPs - longer timeframes)

D= EIPs, other management mechanisms/licence conditions (monitoring/reporting)/other regulatory tools

E = No regulation, other management mechanisms