



Works Approval

Environmental Protection Act 1986, Part V

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

Works Approval Number: **W5894/2015/1**

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

ACN: 107 210 248

Premises address: Nammuldi Below Water Table Plant Expansion
Tenements G47/01242 and LGE-G848907 within coordinates:
536,402E, 7,524,449N;
536,127E, 7,524,280N;
535,958E, 7,524,873N;
535,192E, 7,525,027N;
534,274E, 7,524,293N;
536,047E, 7,524,421N;
536,335E, 7,524,496N;
536,286E, 7,524,695N;
536,754E, 7,524,805N;
536,922E, 7,524,427N; and
536,098E, 7,524,233N.
MT SHEILA WA 6751
as depicted in Schedule 1.

Issue date: Thursday, 29 October 2015

Commencement date: Monday, 2 November 2015

Expiry date: Thursday, 1 November 2018

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	Approved 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 annual period.	25,000,000 tonnes per annual period.



Conditions

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

Date signed: 30 October 2015

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Alana Kidd

Manager Licensing – Resource Industries
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:

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

'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

'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;

'freeboard' means the distance between the maximum water surface elevations and the top of retaining banks or structures at their lowest point;

'hardstand' means a surface with a permeability of 10^{-9} metres/second or less;

'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;

'Schedule 1' means Schedule 1 of this Works Approval unless otherwise stated;

'Works Approval' means this Works Approval numbered W5894/2015/1 and issued under the Act; 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 standard in force from time to time during the term of this Works Approval.

1.1.4 Any reference to a guideline or code of practice in the Works Approval means the current version of the guideline or code of practice in force from time to time, and shall include any amendments or replacements to that guidelines or code of practice made during the term of this Works Approval.

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 Requirements¹		
Document	Parts	Date of Document
Works Approval Application Form	All	23 July 2015
Works Approval Application – Nammuldi Below Water Table – Extension to Wet Plant – Nammuldi Operation (RTIO-HSE-0263637)	All, including Drawings and Appendices	23 July 2015
Email from Katrina Burke, Rio Tinto Iron Ore, titled “RE: NBWT Extension Cat 5 Works Approval - Further information required - 10 August 2015” received 19 August 2015.	All, including Drawings and Appendices	19 August 2015
Email from Katrina Burke, Rio Tinto Iron Ore, titled “RE: NBWT Expansion - Response to DER 23 Oct 2015” received 23 October 2015.	All, including Drawings and Appendices	23 October 2015

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 Works Approval Holder shall commission the Nammuldi Below Water Table Wet Plant Expansion for a period not exceeding 6 months.

2 Information

2.1 Reporting

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

2.1.2 The compliance document shall:

- (a) certify that the works were constructed in accordance with the conditions of the Works Approval; and
- (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.

2.1.3 The Works Approval Holder shall submit a commissioning report for the Nammuldi Below Water Table Wet Plant Expansion to the CEO 1 month prior to the completion of commissioning.

2.1.4 The Works Approval Holder shall ensure the report required by Conditions 2.1.3 includes:

- (a) a summary of the environmental performance of the Nammuldi Below Water Table Wet Plant Expansion as installed, against the design specification set out in the works approval application; and
- (b) 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.

2.2 Notification

2.2.1 The Works Approval Holder shall ensure that the parameters listed in Table 2.2.1 are notified to the CEO and are in accordance with the notification requirements of the table.

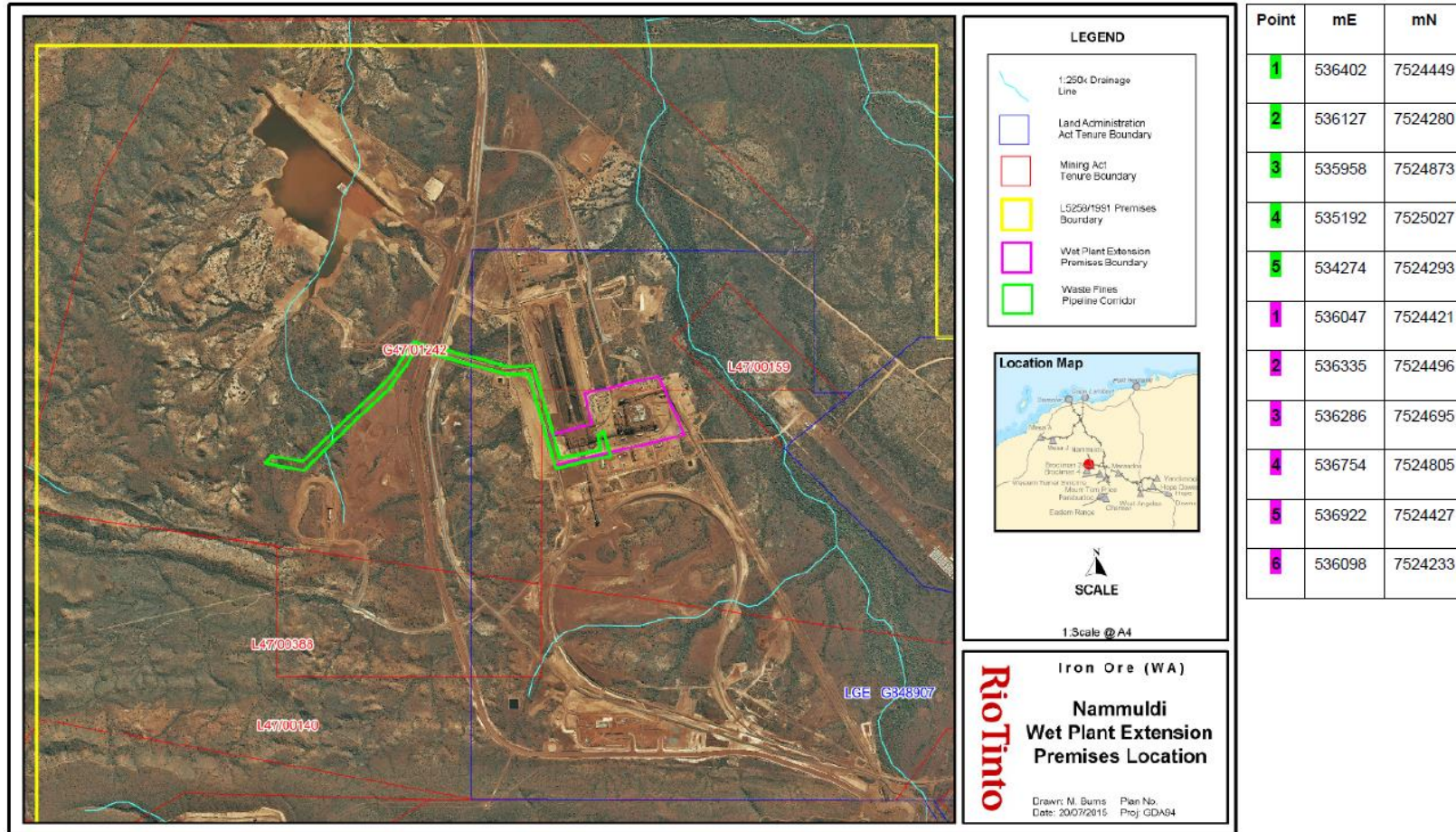
Table 2.2.1: Notification requirements			
Condition or table	Parameter	Notification requirement	Format or form
1.2.2	Commencement of commissioning	7 days prior to start	None specified
	Completion of commissioning	7 days after completion	



Schedule 1: Maps

Premises map

The Premises is shown in the map below. The pink and green lines depict the Premises boundary (coordinates on map).





Decision Document

Environmental Protection Act 1986, Part V

Proponent: Pilbara Iron Company (Services) Pty Ltd

Works Approval: W5894/2015/1

Registered office: Level 22, Central Park
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PERTH WA 6000

ACN: 107 210 248

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Tenements G47/01242 and LGE-G848907 within coordinates:
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534,274E, 7,524,293N;
536,047E, 7,524,421N;
536,335E, 7,524,496N;
536,286E, 7,524,695N;
536,754E, 7,524,805N;
536,922E, 7,524,427N; and
536,098E, 7,524,233N.
MT SHEILA WA 6751

Issue date: Thursday, 29 October 2015

Commencement date: Monday, 2 November 2015

Expiry date: Thursday, 1 November 2018

Decision

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

Decision Document prepared by: Ty Hibberd
Licensing Officer

Decision Document authorised by: Alana Kidd
Delegated Officer



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1 Purpose of this Document

This decision document explains how DER has assessed and determined the application and provides a record of DER's decision-making process and how relevant factors have been taken into account. Stakeholders should note that this document is limited to 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 checked="" type="checkbox"/>	
	New Licence <input type="checkbox"/>	
	Licence amendment <input type="checkbox"/>	
	Works Approval amendment <input type="checkbox"/>	
Activities that cause the premises to become prescribed premises	Category number(s)	Assessed design capacity
	5	25,000,000 tonnes per annual period
Application verified	Date: 02/09/2015	
Application fee paid	Date: 01/10/2015	
Works Approval has been complied with Compliance Certificate received	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	
	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		
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 checked="" type="checkbox"/> No <input type="checkbox"/>	Referral decision No: Managed under Part V <input type="checkbox"/> Assessed under Part IV <input checked="" type="checkbox"/>
Is the proposal subject to Ministerial Conditions?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Ministerial statement No: 925 (previously 558) EPA Report No: 1457 (previously 997)
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 (PICS) on behalf of Hamersley Iron Pty Ltd (Hamersley) proposes to extend its existing Nammuldi Below Water Table (NBWT) process plant to allow for the future processing of additional wet feed ore from the Silvergrass-East (SGE) ore deposit.

The existing NBWT process plant, hereafter referred to as the 'operational facility', forms part of the overall Brockman 2 / Nammuldi Iron Ore Mines which are located approximately 65 km north-west of Tom Price in the Pilbara region of Western Australia. The mines are operating under Licence L5258/1991/11 to which PICS is the Licensee. The operational facility consists of a crushing, screening and beneficiation plant for the processing of wet feed ore from the Nammuldi ore deposit. The proposed NBWT plant expansion, hereafter referred to as the 'plant expansion', includes all associated plant, equipment and infrastructure which constitute a system for the future processing of SGE ore.

The plant expansion forms part of the Nammuldi-Silvergrass Expansion Project which was assessed by the Office of Environmental Protection Authority (OEPA) under Part IV of the *Environmental Protection Act 1986* (the Act), at the Public Environmental Review (PER) level of assessment. Ministerial Statement 925 was issued for the Project on 11 January, 2013.

Infrastructure to be constructed and integrated into the existing operational facility as a part of the plant expansion, as shown in Figure 1, include:

- The addition of a (second) primary crushing facility, with a capacity of 5 million tonne per annum (Mtpa) saleable ore product (SOP);
- The addition of two modules (identical to the operational facility) to the Surge Bin facility, including conveyors to feed the Scrubbing and Wet Screening facility. This will increase the total number of modules installed to four;
- The addition of two modules (identical to the operational facility) to the Classification and Filtration facility, bringing the total number of modules installed to four;
- The addition of one module (identical to the operational facility) to the Thickening facility, including dedicated pumping and pipeline transportation to the NBWT Waste Fines Storage Facility (WFSF). This will bring the total number of modules installed to two;
- Installation of all required underground services; and
- Temporary administration area and temporary workshops will be installed within the immediate surrounds of the operational facility. These will be removed upon completion of commissioning.

Excavated ore from SGE will be transferred approximately 9.4 kilometres (km) south by road train to a prepared stockpile area located to the north of the operational facility. The stockpiled ore will be transferred via excavator into the primary crushing facility for feed to the conveyor system and then into the full NBWT process plant (i.e. infrastructure from the 'Ore Addition' point in Figure 1), which will include the existing operational facility and the infrastructure subject of this Works Approval application. Processed ore will be stockpiled within the existing stockyard, which was designed and constructed to accommodate the combined product from Nammuldi and full SGE development and does not require modification. Waste slurry will be transferred via a pipeline to the existing 280 hectare (ha) WFSF approximately 1.5 km away. The WFSF constructed under Works Approval W5323/2012/1 was also designed and future lifts planned to accommodate the combined product from Nammuldi and full SGE and as such was not assessed as a part of this Works Approval. However the addition of new piping infrastructure between the NBWT plant expansion and the WFSF was considered. All other infrastructure for the operational facility will remain as approved under the original Works Approval for the operational facility W5477/2013/1.



Main potential emissions from the plant expansion include dust and contamination to surrounding land or waterways from potentially contaminated stormwater, washwater or waste fines. Nearest sensitive human receptors include the Brockman 2 Accommodation Village (~1.8km east-southeast) and Jerriwah Camp (~1.8km southeast). Nearest sensitive environmental receptors include Duck Creek (~3.06 km to the north) and Mt Brockman (~8 km southwest). The expansion works are within previously disturbed land and contribute to an already operational and licensed system. Since the operation will be located far from the nearest sensitive receptor, impacts are likely to be minimal. Due to PICS management commitments, including a project specific Construction Environmental Management Plan (CEMP) and site specific Health, Safety, Environment and Quality Management System (HSEQMS) certified to ISO:14001, the environmental risk of emissions and discharges from the plant expansion are low.

PICS will need to submit a compliance document and commissioning report to the Department of Environment Regulation (DER) following the works as specified by conditions in the Works Approval. The full NWBT process plant, including the plant expansion works, will be managed under the existing licence (L5258/1991/11). The capacity for category 5 on Licence L5258/1991/11 is currently 44.6 million tonnes per annum (Mtpa) and an amendment has been received to align the category with approved State Agreement limits of 45Mtpa. The infrastructure subject of this plant expansion will have a processing capacity of 25 Mtpa. Upon completion, the total plant processing capacity for category 5 for the prescribed premises (comprising the Brockman 2 and Nammuldi mines) will be 69.6 Mtpa. However, PICS State Agreement for the mines limits processing to 45 Mtpa.

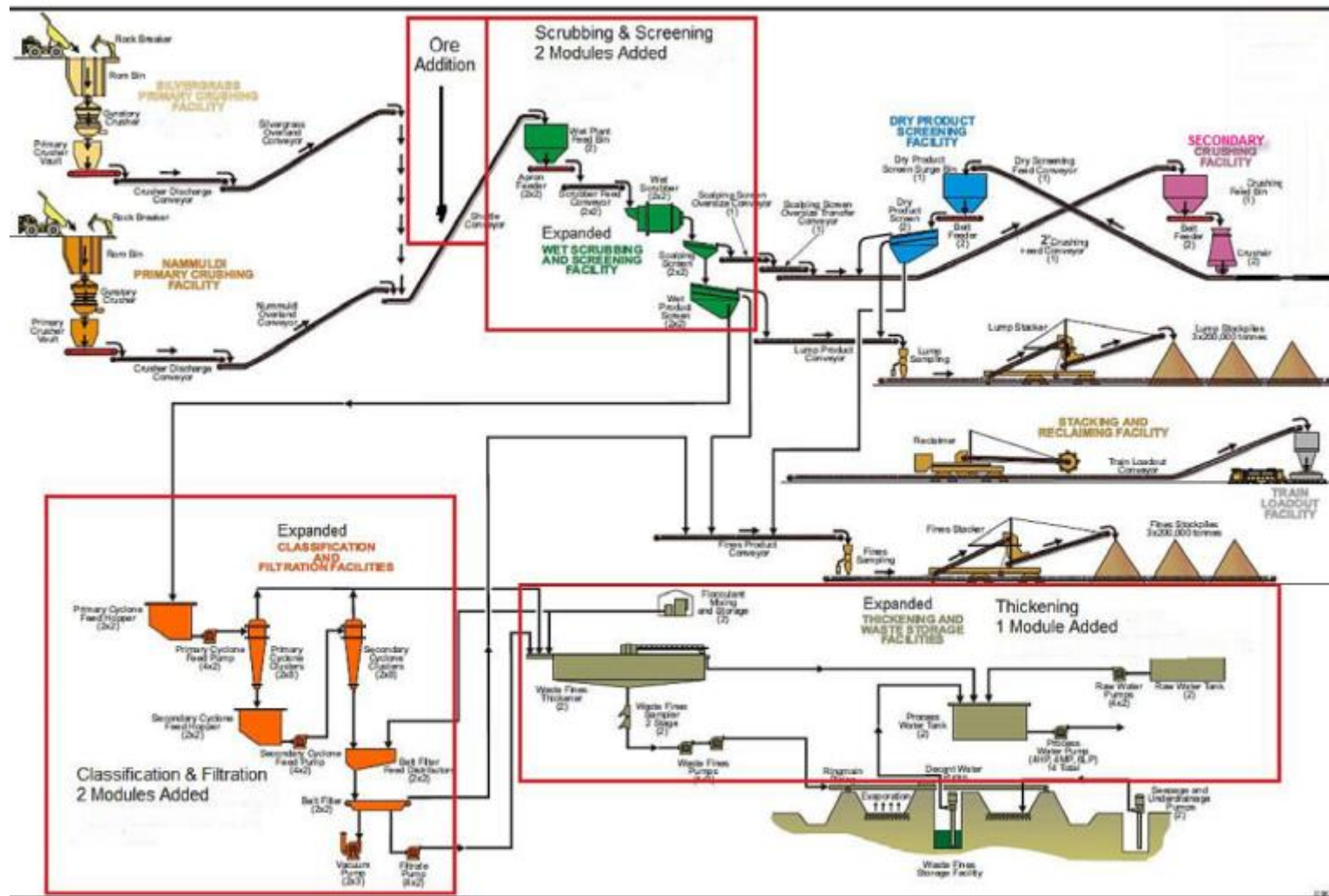


Figure 1. Process flow diagram for the NBWT process plant including the existing and proposed infrastructure, e.g. the Silvergrass Primary Crushing Facility.



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 W = Works Approval L = Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
General conditions	W1.2.1, W1.2.2 and W2.2.1	<p>Construction and Commissioning Condition W1.2.1 will require PICS to construct the plant expansion in accordance with the supporting documents and general provisions of the <i>Environmental Protection Act 1986</i>.</p> <p>The proponent is planning to commence construction in early November 2015, with commissioning to commence in approximately May 2016. Construction is estimated to take 6 months, with commissioning expected to take approximately 5 to 6 months. Condition W1.2.2 has been included to allow PICS to commission the plant expansion for a period not exceeding 6 months. Condition W2.2.1 requires PICS to notify the CEO upon the commencement and completion of commissioning.</p>	<p>Works Approval application supporting documentation.</p> <p>General provisions of the <i>Environmental Protection Act 1986</i>.</p>
Premises operation	Licence conditions.	<p>Construction, Commissioning and Operation DER's assessment and decision making are detailed in Appendix A.</p>	<p>Works Approval application supporting documentation.</p> <p>General provisions of the <i>Environmental Protection Act 1986</i>.</p> <p><i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i>.</p>
Emissions general	N/A	<p>Construction, Commissioning and Operation There are no conditions relating to general emissions during construction, commissioning or operation.</p>	N/A.



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
Point source emissions to air including monitoring	N/A.	Construction, Commissioning and Operation There are no proposed point source emissions to air during construction, commissioning or operation of the plant expansion. Power is provided to the operational facility from an existing 220 kilovolt (kV) substation built in the Brockman region. No conditions relating to point source emissions to air or to monitoring of these emissions are required to be added to the Works Approval or Licence.	Works Approval application supporting documentation. General provisions of the <i>Environmental Protection Act 1986</i> .
Point source emissions to surface water including monitoring	N/A.	Construction, Commissioning and Operation There are no proposed point source emissions to surface water during construction, commissioning or operation of the plant expansion. The plant expansion will be located approximately 3.06 km south from the nearest permanent surface water body (being Duck Creek) and 12.2 km from the nearest public drinking water reserve being Millstream Water Reserve Drinking Water Source Protection Area. A tributary of Duck Creek is located 765 m to the east of the proposed plant expansion. No conditions relating to point source emissions to surface water including monitoring are required on the Works Approval or Licence.	Works Approval application supporting documentation. General provisions of the <i>Environmental Protection Act 1986</i> .
Point source emissions to groundwater including monitoring	N/A.	Construction and Operation There are no proposed point source emissions to groundwater during construction, commissioning or operation of the plant expansion. Depths to groundwater at Nammuldi vary between 16 and 98 metres below ground level (mbgl). The regional water table elevation (also below the proposed plant expansion) falls from between 574 and 590 mRL. Existing operations at the Brockman 2 / Nammuldi site have licence GWL107421(21) from the Department of Water (DoW) to abstract up to 55 gigalitres (GL) of groundwater per annum. This licence has sufficient capacity to provide for the water requirements (per annum) of the proposed plant expansion. No conditions relating to point source emissions to groundwater or the monitoring of such emissions are required to be added to the Works Approval or Licence.	Works Approval application supporting documentation. General provisions of the <i>Environmental Protection Act 1986</i> .



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
Emissions to land including monitoring	Licence conditions.	Construction, Commissioning and Operation DER's assessment and decision making are detailed in Appendix B.	Works Approval application supporting documentation. General provisions of the <i>Environmental Protection Act 1986</i> . <i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i> . <i>Environmental Protection (Controlled Waste) Regulations 2004</i> . CEMP.
Fugitive emissions	N/A.	Construction, Commissioning and Operation DER's assessment and decision making are detailed in Appendix C.	Works Approval application supporting documentation. General provisions of the <i>Environmental Protection Act 1986</i> . CEMP.
Odour	N/A.	Construction, Commissioning and Operation Odour emissions should not be generated during construction or operation of the plant expansion. No conditions relating to odour emissions are required to be added to the Works Approval or Licence.	N/A.



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
Noise	N/A.	Construction, Commissioning and Operation There is not expected to be any significant noise emissions during construction, commissioning or operation of the plant expansion further to those already occurring from the existing operation facility. There are no sensitive noise receptors such as townships within at least 10 km of the proposed operational facility and plant expansion works. The nearest sensitive receptors are the Brockman 2 Accommodation Village (~1.8 km east-southeast) and Jerriwah Camp (~1.8 km southeast). Hamersley has committed to complying with the <i>Environmental Protection (Noise) Regulations 1997</i> . No conditions relating to noise emissions are required to be added to the Works Approval or Licence.	Works Approval application supporting documentation. <i>Environmental Protection (Noise) Regulations 1997</i> . CEMP.
Monitoring general	N/A.	Construction, Commissioning and Operation The existing licence has conditions relating to monitoring of the Mine, Camp and Jerriwah wastewater treatment plants (WWTPs), groundwaters on the perimeter of the WFSF, dewatering water to Pit 5 and Duck Creek, and a summary of vegetation monitoring. There will be no changes to these monitoring requirements as a result of the plant expansion. No additional conditions relating to general monitoring are required to be added to the Works Approval or Licence.	Works Approval application supporting documentation. General provisions of the <i>Environmental Protection Act 1986</i> .
Monitoring of inputs and outputs	Licence conditions.	Operation The proposal relates to the construction and operation of additional infrastructure for the processing of SGE ore. Ore will be processed and deposited in the stockyard. Condition(s) may be added to the Licence requiring PICS to monitor the throughput of ore against the capacity licenced for under category 5 of Schedule 1 of the <i>Environmental Protection Regulations 1987</i> .	Works Approval application supporting documentation. General provisions of the <i>Environmental Protection Act 1986</i> .
Process monitoring	N/A.	Construction, Commissioning and Operation No conditions relating to process monitoring are required on the Works Approval or Licence.	N/A.



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
Ambient quality monitoring	N/A.	Construction, Commissioning and Operation The existing licence has conditions relating to management of the WFSF including monitoring of six groundwater bores established on the perimeter of the dam. No additional conditions are required to be added to the Works Approval or Licence.	Works Approval application supporting documentation. General provisions of the <i>Environmental Protection Act 1986</i> .
Meteorological monitoring	N/A.	Construction, Commissioning and Operation There are no conditions relating to meteorological monitoring required during construction, commissioning or operation of the plant expansion.	N/A.
Improvements	N/A.	Construction, Commissioning and Operation There are no conditions relating to improvements.	N/A.
Information	W2.1.1 Licence conditions.	Construction, Commissioning and Operation Condition W2.1.1 will require PICS to submit a compliance document to DER once construction of the plant expansion has been completed and prior to the commissioning of the same. W2.1.2 sets out the requirements of this compliance document. Condition W2.1.3 will require PICS to submit a commissioning report 1 month prior to the completion of commissioning. W2.1.4 sets out the requirements of this compliance document. PICS are required to notify DER upon the commencement and completion of commissioning.	Works Approval application supporting documentation.
Works Approval Duration	N/A	This works approval will be issued to PICS for a period of 3 years.	N/A.



5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
12/10/2015	Application advertised in West Australian (or other relevant newspaper)	No comments received.	N/A.
23/10/2015	Proponent sent a copy of draft instrument	Minor comments received 27/10/2015.	<p>The following changes were made to W5894/2015/1 to incorporate comments received:</p> <ul style="list-style-type: none"> • The Works Approval Holder was changed from Hamersley Iron Pty Ltd (Hamersley) to Pilbara Iron Company (Services) Pty Ltd (PICS). Whilst Hamersley prepared the works approval, the ownership lies with PICS. The ACN was updated to reflect this change; • The approved premises production or design capacity was increased from 21 Mtpa to 25 Mtpa to more accurately reflect the capacity of the infrastructure subject of this Works Approval. This increase will not cause any additional emissions or discharges from the Premises since the actual capacity on the Licence as a result of these works will only increase by 0.4 Mtpa. Licence L5258/1991/11 currently limits processing to 44.6 Mtpa; this will increase to 45 Mtpa as a result of these works, and to align with State Agreement limits for the mines; • PICS requested that the time-frame for submission of a commissioning report in condition L2.1.3 be change from 2 months prior to completion to 1 month to allow for greater accuracy of information provided as requested in Condition 2.1.4. The DER accepts this request; • In Appendix B, Regulatory Controls, PICS requested removal of the following text “<i>Condition(s) may be added to the Licence for the management of the waste fines pipelines (i.e. inspections, maintenance and reporting of any failures leading to environmental emissions)</i>”. The DER has determined to maintain this statement as conditions for monitoring and maintenance of the pipelines may be required on the Licence; and • Minor formatting



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

Premises operation

Emission Description

Emission: Washwater or stormwater potentially contaminated with hydrocarbons or high sediment load.

Impact: Contamination of surrounding land and waterways.

Controls: PICS will implement the following to control or minimise the risk of potentially contaminated washwater or stormwater entering the surrounding environment:

- Water overflow and washdown from the new facilities (with the exception of the primary crushing facility on a gravel paved hardstand) will be contained within the concrete hardstand areas;
- Water landing on these hardstand areas will be directed to concrete sediment sumps (also contained within the concrete hardstand area). The water from these sumps will be recycled back into the ore-processing stream;
- Water, generally surface water flow from rainfall, outside the concrete hardstand areas will continue to be directed around site to an existing earthen sedimentation/evaporation pond. This water will not be re-used as the pond and associated drains are designed for evaporation purposes;
- Diesel fuel required for machinery and/or fixed plant will be transported around site in self banded, purpose built fuel trailers, to provide diesel fuel on an as needs basis;
- All small quantities of hydrocarbons and/or chemicals will be stored in purpose built dangerous goods cabinets and/or on banded pallets as applicable;
- Waste oil, oily rags, oil filters, and any other hydrocarbon related wastes will be collected and disposed off-site through an appropriately licensed waste service provider. Tracking records shall be maintained by all contractors and be available for inspection on site;
- Spill response (management) procedures during construction and operation will ensure that any hydrocarbons spilled on the pavement will be appropriately cleaned up, therefore keeping the anticipated quantity of hydrocarbons in washdown water, low; and
- Management of hydrocarbons and oily waste during construction such as fuels, grease, degreasers, emulsified oil and oily waste water is outlined in the CEMP.

Risk Assessment

Consequence: Minor

Likelihood: Rare

Risk Rating: Low

Regulatory Controls

W1.2.1 requires that PICS construct the works in accordance with the supporting documentation and general provision of the *Environmental Protection Act 1986*. The existing Licence has conditions relating to stormwater and hydrocarbon management at the Brockman 2 / Nammuldi mines. No further conditions are required for the Works Approval or Licence at this stage.

Residual Risk

Consequence: Minor

Likelihood: Rare

Risk Rating: Low



Appendix B

Emissions to land including monitoring

Additional waste fines will be generated from the processing of SGE ore. These waste fines will be transported to the existing WFSF via a second delivery pipeline with supernatant collected and returned to the process stream. This second pipeline follows the existing pipeline route and comprises waste fine and decant/return pipelines. The WFSF was constructed under W5323/2012/1 and is currently operated under L5258/1991/11. The WFSF was designed and constructed to accommodate the combined product from Nammuldi and full SGE and as such was not assessed as a part of this Works Approval. However the addition of new piping infrastructure between the NWBT plant expansion and the WFSF was considered. Commissioning of the new pipeline will occur under this Works Approval and will involve testing of the pipelines and pump operations for leakage and operability.

Solid industrial and domestic waste will be generated during the construction and operation of the plant expansion area.

Emission Description

Emission: Discharge of waste fines (e.g. pipeline failure). Construction and domestic waste.

Impact: Contamination of surrounding land and waterways.

Controls: Hamersley has committed to undertake the following measures to minimise risk of waste fines emissions:

- The second waste fines pipeline is within a bunded easement;
- The waste fines pipelines include an automatic pressure drop cut-out ability that will drain into two existing emergency containment dams in the event of a spill or emergency;
- A flow meter will be placed in the waste fines pipelines adjacent to the WFSF and differences in flow between the two meters will indicate a burst pipe condition;
- The WFSF will maintain a freeboard of at least 300 mm; and
- The WFSF has been designed to completely contain all storm events for the design requirement of 100 year ARI 72 hour storm. Due to the large containment volume, it has been demonstrated that up to a 10,000 year ARI can also be contained within the facility despite inundating the waste fines fully. Therefore, under normal operating conditions, the available capacity will be well in excess of the requirements. In addition a spillway has also been designed to prevent overtopping.

Waste (industrial and domestic) material that is suitable for re-use or recycling will be separated from landfill waste and sent off-site for treatment or recycling as practicable. Non-recyclables will be transported and disposed of at an approved off-site facility. All waste handling procedures will be in accordance with the CEMP during construction and the HSEQMS during operations.

Risk Assessment

Consequence: Minor

Likelihood: Rare

Risk Rating: Low

Regulatory Controls

The existing licence has conditions relating to management of the WFSF include groundwater monitoring and minimum freeboard for the main embankment. The Licence also has conditions for management of the site putrescible landfill and waste dump landfill. Condition(s) may be added to the Licence for the management of the waste fines pipelines (i.e. inspections, maintenance and reporting of any failures leading to environmental emissions).



Residual Risk

Consequence: Minor

Likelihood: Rare

Risk Rating: Low



Appendix C

Fugitive emissions

(1) Dust

Dust emissions are likely to occur during construction and will be associated with minor detailed earthworks. The plant subject to this Works Approval will process below-water-table (BWT) ore which has greater moisture content than Above-Water-Table (AWT) ore. It is expected the processing of BWT ore will greatly minimise dust emissions from the full NWBT processing facility. Potential dust emissions during the operation will be limited to that produced by general operational activities, including ore handling (ROM dumping, ore loading & unloading, conveyor transfers, dust lift off from the ore stockpiles), ore transport (waste, ore, product), ore processing, and from light and heavy vehicle traffic on unsealed roadways.

Emission Description

Emission: Dust emissions may result from construction and operation of the plant expansion infrastructure.

Impact: Dust emissions can be harmful to human health and the environment. Elevated total suspended particulates (TSP) can impact ambient environmental quality resulting in amenity impacts and can smother vegetation. Particulate matter (PM) that is less than 10 (PM_{10}) or 2.5 ($PM_{2.5}$) micrometres (μm) in diameter can be drawn deep into the lungs causing human health impacts. The chemical and physical properties of the particles, the size of the particles and the duration of exposure are all factors which may affect human health impacts.

Controls: Given PICS's management commitments and the significant buffer distance between the plant expansion area and the nearest human sensitive receptor, being the Brockman 2 Accommodation Village (~1.8km to the east southeast) and Jerriwah Camp (~1.8km to the southeast), the works are unlikely to cause nuisance dust.

Construction dust will be managed in accordance with the NBWT CEMP and will include the following controls:

- Water suppression;
- Clearing will be avoided on high wind days where practicable; and
- Visual inspections will be conducted to determine the need for dust suppression.

Water will be used to control dust during processing operations. The measures to be implemented to manage dust will include:

- Unsealed work areas and access roads will be regularly sprayed with water to control dust through the use of water suppression from a water truck;
- On-line moisture analysers will be installed to monitor moisture content of the ore so that it can be adjusted to minimise dust while not adding too much water to the ore and creating runoff from the stockpiles;
- On the ROM pad and stockpiles dust management will consist of managing the height of the stockpiled ore pushed up after delivery by road train. Supplementary water will be added to moisture condition the ore at the stockpile location. The stockyard contains water cannons and sprays if required;
- The ROM bins will be equipped with a dust suppression spray system. The dust suppression system will only be used in the event where ROM ore below dust extinction levels is fed into the plant;
- Regular housekeeping will be undertaken to collect and remove material that may represent a potential dust source from around conveyors and loading/unloading areas; and
- Progressive rehabilitation and establishment of green areas to minimise windblown dust from open areas.



Inside the facility, within the plant expansion scope, a dust suppression system will be installed that is sufficient to maintain air quality in and around the facility, positive pressurisation for Motor Control Centres and control rooms, fogging sprays inside dry ore transfer chutes and an enclosure with restricted access over shuttle conveyor at surge bins.

Risk Assessment

Consequence: Insignificant

Likelihood: Possible

Risk Rating: Low

Regulatory Controls:

PICS's management commitments and general provision of the *Environmental Protection Act 1986* are considered sufficient to manage the risk of fugitive dust. No specific conditions are required for the Works Approval or Licence at this stage.

Residual Risk:

Consequence: Insignificant

Likelihood: Unlikely

Risk Rating: Low

(2) Light

Emission Description

Emission: Light emissions resulting from night-time operations (24-hour operation).

Impact: Nuisance lighting impacting on potentially sensitive fauna communities. Limited impacts to human receptors are expected given the (immediate) proximity to the existing operational facility and the separation distance to the nearest light-sensitive premises, being the Brockman and Jerriwah Camps approximately 1.8 km from the plant expansion area.

Controls: Given PICS's management commitments and the buffer distance between the plant expansion area and the nearest sensitive receptor, the works are unlikely to cause nuisance light.

Risk Assessment

Consequence: Insignificant

Likelihood: Unlikely

Risk Rating: Low

Regulatory Controls:

PICS's management commitments and general provision of the *Environmental Protection Act 1986* are considered sufficient to manage the risk of fugitive light. No specific conditions are required for the Works Approval or Licence at this stage.

Residual Risk:

Consequence: Insignificant

Likelihood: Unlikely

Risk Rating: Low