



Licence

Environmental Protection Act 1986, Part V

Licensee: TEC Pipe Pty Ltd

Licence: L8858/2014/1

Registered office: Level 14, Parmelia House
191 St Georges Terrace
PERTH WA 6000

ACN: 090 067 011

Premises address: Solomon Power Station
Part of mining tenement M47/1431 within E 598,617, N 7,550,938; E 599,018, N 7,550,779; E 598,821, N 7,550,271; E 598,418, N 7,550,427
As depicted in Schedule 1

Issue date: Thursday, 26 March 2015

Commencement date: Monday, 30 March 2015

Expiry date: Sunday, 29 March 2020

Prescribed premises category

Schedule 1 of the *Environmental Protection Regulations 1987*

Category number	Category description	Category production or design capacity	Approved premises production or design capacity
52	Electric power generation: premises (other than premises within category 53 or an emergency or standby power generating plant) on which electrical power is generated using a fuel.	≥ 20 MWe in aggregate (using natural gas) or ≥ 10 MWe in aggregate (using a fuel other than natural gas)	122 MWe (using natural gas) 94.2 MWe (using diesel fuel)

Conditions

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

Date signed: 8 October 2015

.....
Jonathan Bailes
Manager Licensing (Process Industries)
Officer delegated under section 20
of the *Environmental Protection Act 1986*



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Introduction

This Introduction is not part of the Licence conditions.

DER's industry licensing role

The Department of Environment Regulation (DER) is a government department for the state of Western Australia in the portfolio of the Minister for Environment. DER's purpose is to advise on and implement strategies for a healthy environment for the benefit of all current and future Western Australians.

DER has responsibilities under Part V of the *Environmental Protection Act 1986* (the Act) for the licensing of prescribed premises. Through this process DER regulates to prevent, control and abate pollution and environmental harm to conserve and protect the environment. DER also monitors and audits compliance with works approvals and licence conditions, takes enforcement action as appropriate and develops and implements licensing and industry regulation policy.

Licence requirements

This Licence is issued under Part V of the Act. Conditions contained within the Licence relate to the prevention, reduction or control of emissions and discharges to the environment and to the monitoring and reporting of them.

Where other statutory instruments impose obligations on the Premises/Licensee the intention is not to replicate them in the Licence conditions. You should therefore ensure that you are aware of all your statutory obligations under the Act and any other statutory instrument. Legislation can be accessed through the State Law Publisher website using the following link: <http://www.slp.wa.gov.au/legislation/statutes.nsf/default.html>

For your Premises relevant statutory instruments include but are not limited to obligations under the:

- *Environmental Protection (Unauthorised Discharges) Regulations 2004* – these Regulations make it an offence to discharge certain materials such as contaminated stormwater into the environment other than in the circumstances set out in the Regulations.
- *Environmental Protection (Controlled Waste) Regulations 2004* - these Regulations place obligations on you if you produce, accept, transport or dispose of controlled waste.
- *Environmental Protection (Noise) Regulations 1997* – these Regulations require noise emissions from the Premises to comply with the assigned noise levels set out in the Regulations.

You must comply with your Licence. Non-compliance with your Licence is an offence and strict penalties exist for those who do not comply.



Licence holders are also reminded of the requirements of section 53 of the Act which places restrictions on making certain changes to prescribed premises unless the changes are in accordance with a works approval, licence, closure notice or environmental protection notice.

Licence fees

If you have a licence that is issued for more than one year, you are required to pay an annual licence fee prior to the anniversary date of issue of your licence. Non payment of annual licence fees will result in your licence ceasing to have effect meaning that it will no longer be valid and you will need to apply for a new licence for your Premises.

Ministerial conditions

If your Premises has been assessed under Part IV of the Act you may have had conditions imposed by the Minister for Environment. You are required to comply with any conditions imposed by the Minister.

Premises description and Licence summary

The Solomon Power Station is a maximum 134.4MWe power station located within the Fortescue Metal Groups (FMG) Solomon Iron Ore Project. The power station is a dual fuel facility with the primary fuel source being natural gas, whilst diesel is used as a back-up fuel source. The plant consists of four 13MWe Solar Titan units and two 42.2 MWe GE LM6000 turbines.

Each Solar turbine has a single exhaust stack measuring 7.7 metres high and 2.8 metres in diameter. The GE turbines each have a stack that is 18.5 metres high.

The main emissions are the emissions to air of oxides of nitrogen from units firing on gas but also oxides of nitrogen, sulphur dioxide and particulates from units firing on diesel. The nearest sensitive receptors are: Karijini National Park, Hamersley Gorge day use area (12 Kilometres South East), Kangi Accommodation Village (FMG Solomon mine accommodation, 17 kilometres South West) and the Hamersley Station Homestead (30 Kilometres South West).

The Solomon Power Station is operated by TEC Pipe and contracted to supply the Solomon Mines power needs. It is anticipated that average demand will be 26MWe with peak demand at 50MWe. In order to guarantee future power supply demands the installed capacity of the plant is a maximum of 134.4MWe.

This licence amendment is to include the operation of all generation units on both natural gas and diesel. The licence has also been updated to the current template.

The licences and works approvals issued for the Premises are:

Instrument log		
Instrument	Issued	Description
W5104/2011/1	23/02/2012	Works approval issued
W5104/2011/1	07/09/2012	Works approval amendment
W5104/2011/1	01/11/2012	Works approval transfer
W5104/2011/1	19/12/2013	Works approval amendment
W5104/2011/1	26/06/2014	Works approval amendment
L8858/2014/1	26/03/2015	New licence
L8858/2014/1	08/10/2015	Licence Amendment to include all power sources on natural gas and diesel.

Severance

It is the intent of these Licence conditions that they shall operate so that, if a condition or a part of a condition is beyond the power of this Licence to impose, or is otherwise *ultra vires* or invalid, that condition or part of a condition shall be severed and the remainder of these conditions shall nevertheless be valid to the extent that they are within the power of this Licence to impose and are not otherwise *ultra vires* or invalid.

END OF INTRODUCTION



Licence conditions

1 General

1.1 Interpretation

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

1.1.2 For the purposes of this Licence, unless the contrary intention appears:

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

'annual period' means the inclusive period from 1 April until 31 March in the following year;

'averaging period' means the time over which a limit is measured or a monitoring result is obtained;

'CEMS' means continuous emissions monitoring system;

'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

'Licence' means this Licence numbered L8858/2014/1 and issued under the Act;

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

'MWe' means power output (electricity generated) in megawatts;

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

'NATA accredited' means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis;

'normal operating conditions' means any operation of a particular process (including abatement equipment) excluding start-up, shut-down and upset conditions, in relation to stack sampling or monitoring;

'NOx' means oxides of nitrogen, calculated as the sum of nitric oxide and nitrogen dioxide and expressed as nitrogen dioxide;

'Premises' means the area defined in the Premises Map in Schedule 1 and listed as the Premises address on page 1 of the Licence;

'Schedule 1' means Schedule 1 of this Licence unless otherwise stated;

'Schedule 2' means Schedule 2 of this Licence unless otherwise stated;

'shut-down' means the period when plant or equipment is brought from normal operating conditions to inactivity;



'stack test' means a discrete set of samples taken over a representative period at normal operating conditions;

'start-up' means the period when plant or equipment is brought from inactivity to normal operating conditions;

'STP dry' means standard temperature and pressure (0°Celsius and 101.325 kilopascals respectively), dry;

'USEPA' means United States (of America) Environmental Protection Agency;

'USEPA Method 7E' means the USEPA Method 7E Determination of nitrogen oxides emissions from stationary sources (instrumental analyser procedure);

'USEPA Method 10' means the USEPA Method 10 Determination of carbon monoxide emissions from stationary sources; and

'USEPA Method 25A' means USEPA Method 25A Determination of total gaseous organic concentrations using a flame ionization analyser.

'usual working day' means 0800 – 1700 hours, Monday to Friday excluding public holidays in Western Australia;

1.1.3 Any reference to an Australian or other standard in the Licence means the relevant parts of the standard in force from time to time during the term of this Licence.

1.1.4 Any reference to a guideline or code of practice in the Licence 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 guideline or code of practice made during the term of this Licence.

1.1.5 Nothing in the Licence shall be taken to authorise any emission that is not mentioned in the Licence, where the emission amounts to:

- (a) pollution;
- (b) unreasonable emission;
- (c) discharge of waste in circumstances likely to cause pollution; or
- (d) being contrary to any written law.

1.2 General conditions

1.2.1 The Licensee shall operate and maintain all pollution control and monitoring equipment to the manufacturer's specification or any relevant and effective internal management system.

1.2.2 The Licensee shall immediately recover, or remove and dispose of spills of environmentally hazardous materials outside an engineered containment system.

1.2.3 The Licensee shall:

- (a) implement all practical measures to prevent stormwater run-off becoming contaminated by the activities on the Premises; and
- (b) treat contaminated or potentially contaminated stormwater as necessary prior to being discharged from the Premises.¹

Note1: The *Environmental Protection (Unauthorised Discharges) Regulations 2004* make it an offence to discharge certain materials into the environment.



2 Emissions

2.1 General

2.1.1 The Licensee shall record and investigate the exceedance of any descriptive or numerical limit specified in any part of section 2 of this Licence.

2.2 Point source emissions to air

2.2.1 The Licensee shall ensure that where waste is emitted to air from the emission points in Table 2.2.1 and identified on the map of emission points in Schedule 1 it is done so in accordance with the conditions of this Licence.

Table 2.2.1: Emission points to air

Emission point reference and location on Map of emission points	Emission Point	Emission point height (m)	Source, including any abatement
A1	Exhaust Stack on Titan Turbine MPU21_TP1	7.7 m	Solar Titan Unit 21
A2	Exhaust Stack on Titan Turbine MPU22_TP1	7.7m	Solar Titan Unit 22
A3	Exhaust Stack on Titan Turbine MPU23_TP1	7.7m	Solar Titan Unit 23
A4	Exhaust Stack on Titan Turbine MPU24_TP1	7.7m	Solar Titan Unit 24
A5	Exhaust Stack on GE LM6000 Turbine GTG1_TP1	18.5m	GE LM6000 Unit 1
A6	Exhaust Stack on GE LM6000 Turbine GTG2_TP1	18.5m	GE LM6000 Unit 2

2.2.2 The Licensee shall not cause or allow point source emissions to air greater than the limits specified in Table 2.2.2.

Table 2.2.2: Point source emission limits to air

Emission point Reference	Parameter	Limit (including units) ^{1,2}	Averaging period
A1-A6	Oxides of nitrogen (NOx)	620 mg/m ³	Stack Test (minimum 30 minute average)

Note 1: All units are referenced to STP dry

Note 2: Concentration units are referenced to 15% O₂.



3 Monitoring

3.1 General monitoring

- 3.1.1 The licensee shall ensure that all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured.
- 3.1.2 The Licensee shall ensure that annual monitoring is undertaken at least 9 months apart.
- 3.1.3 The Licensee shall record production or throughput data and any other process parameters relevant to any monitoring undertaken.
- 3.1.4 The Licensee shall ensure that all monitoring equipment used on the Premises to comply with the conditions of this Licence is calibrated in accordance with the manufacturer's specifications and the requirements of this licence.
- 3.1.5 The Licensee shall, where the requirements for calibration cannot be practicably met, or a discrepancy exists in the interpretation of the requirements, bring these issues to the attention of the CEO accompanied with a report comprising details of any modifications to the methods.

3.2 Monitoring of point source emissions to air

- 3.2.1 The Licensee shall undertake the monitoring in Table 3.2.1 according to the specifications in that table.

Table 3.2.1: Monitoring of point source emissions to air

Emission point reference	Parameter	Units ¹	Averaging period	Frequency ²	Method
A1-A6	Carbon monoxide (CO)	mg/m ³	Stack test (Minimum 30 minute average)	Annually	USEPA Method 10
	Oxides of nitrogen (NOx)				USEPA Method 7E
	Volatile organic compounds (VOCs)				USEPA Method 25A

Note 1: All units are referenced to STP dry

Note 2: Monitoring shall be undertaken to reflect normal operating conditions and any limits or conditions on inputs or production.

- 3.2.2 The Licensee shall ensure that all non-continuous sampling and analysis undertaken pursuant to condition 3.2.1 is undertaken by a holder of NATA accreditation for the relevant methods of sampling and analysis.

3.3 Process monitoring

- 3.3.1 The Licensee shall monitor and record parameters specified in Table 3.3.1 according to the specifications in that table.

Table 3.3.1 Process monitoring

Monitoring point reference	Parameter	Units	Frequency
Solar Titan Unit 21	Run time	Hours	Monthly
Solar Titan Unit 22			
Solar Titan Unit 23	Total electrical energy generated	MWe	
Solar Titan Unit 24			
GE LM6000 Unit 1			
GE LM6000 Unit 2	Operating capacity	%	



4 Information

4.1 Records

4.1.1 All information and records required by the Licence shall:

- (a) be legible;
- (b) if amended, be amended in such a way that the original and subsequent amendments remain legible or are capable of retrieval;
- (c) except for records listed in 4.1.1(d) be retained for at least 6 years from the date the records were made or until the expiry of the Licence or any subsequent licence; and
- (d) for those following records, be retained until the expiry of the Licence and any subsequent licence:
 - (i) off-site environmental effects; or
 - (ii) matters which affect the condition of the land or waters.

4.1.2 The Licensee shall ensure that:

- (a) any person left in charge of the Premises is aware of the conditions of the Licence and has access at all times to the Licence or copies thereof; and
- (b) any person who performs tasks on the Premises is informed of all of the conditions of the Licence that relate to the tasks which that person is performing.

4.1.3 The Licensee shall complete an Annual Audit Compliance Report indicating the extent to which the Licensee has complied with the conditions of the Licence, and any previous licence issued under Part V of the Act for the Premises for the previous annual period.

4.1.4 The Licensee shall implement a complaints management system that as a minimum records the number and details of complaints received concerning the environmental impact of the activities undertaken at the Premises and any action taken in response to the complaint.

4.2 Reporting

4.2.1 The Licensee shall submit to the CEO an Annual Environmental Report within 28 calendar days after the end of the annual period. The report shall contain the information listed in Table 5.2.1 in the format or form specified in that table.

Table 5.2.1: Annual Environmental Report

Condition or table (if relevant)	Parameter	Format or form ¹
-	Summary of any failure or malfunction of any pollution control equipment and any environmental incidents that have occurred during the annual period and any action taken	None specified
Table 3.2.1	Air emission monitoring	None specified
Table 3.3.1	Load monitoring	None specified
4.1.3	Compliance	Annual Audit Compliance Report (AACR)
4.1.4	Complaints summary	None specified

Note 1: Forms are in Schedule 2

4.2.2 The Licensee shall ensure that the Annual Environmental Report also contains:

- (a) any relevant process, production or operational data recorded under Condition 3.1.3; and
- (b) an assessment of the information contained within the report against previous monitoring results and Licence limits.



- 4.2.3 The Licensee shall submit the information in Table 5.2.2 to the CEO according to the specifications in that table.

Table 5.2.2: Non-annual reporting requirements

Condition or table (if relevant)	Parameter	Reporting period	Reporting date (after end of the reporting period)	Format or form
-	Copies of original monitoring reports submitted to the Licensee by third parties	Not Applicable	Within 14 days of the CEOs request	As received by the Licensee from third parties

4.3 Notification

- 4.3.1 The Licensee shall ensure that the parameters listed in Table 5.3.1 are notified to the CEO in accordance with the notification requirements of the table.

Table 5.3.1: Notification requirements

Condition or table (if relevant)	Parameter	Notification requirement ¹	Format or form ²
2.2.2	Breach of any limit specified in the Licence	Part A: As soon as practicable but no later than 5pm of the next usual working day. Part B: As soon as practicable	N1

Note 1: Notification requirements in the Licence shall not negate the requirement to comply with s72 of the Act

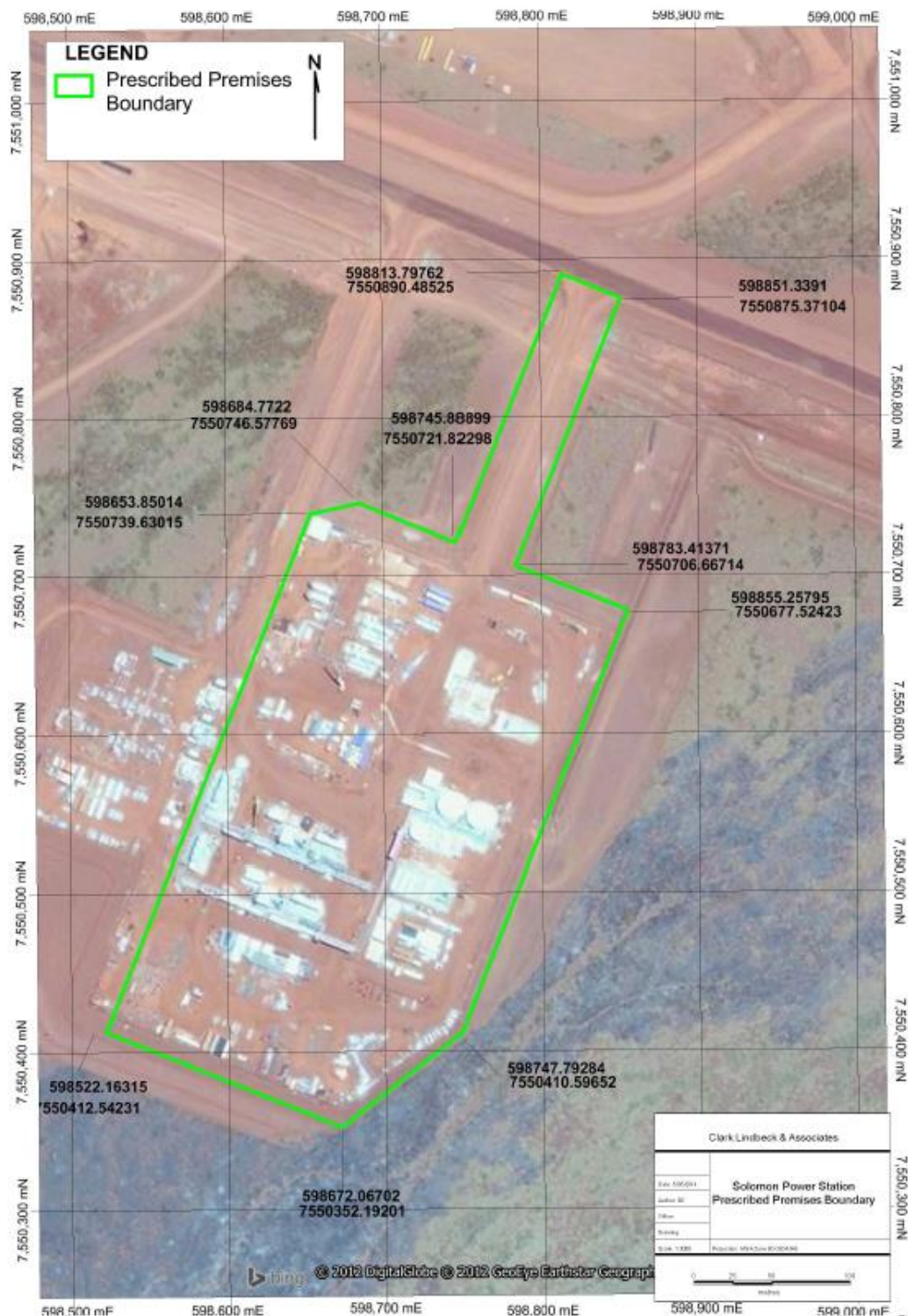
Note 2: Forms are in Schedule 2



Schedule 1: Maps

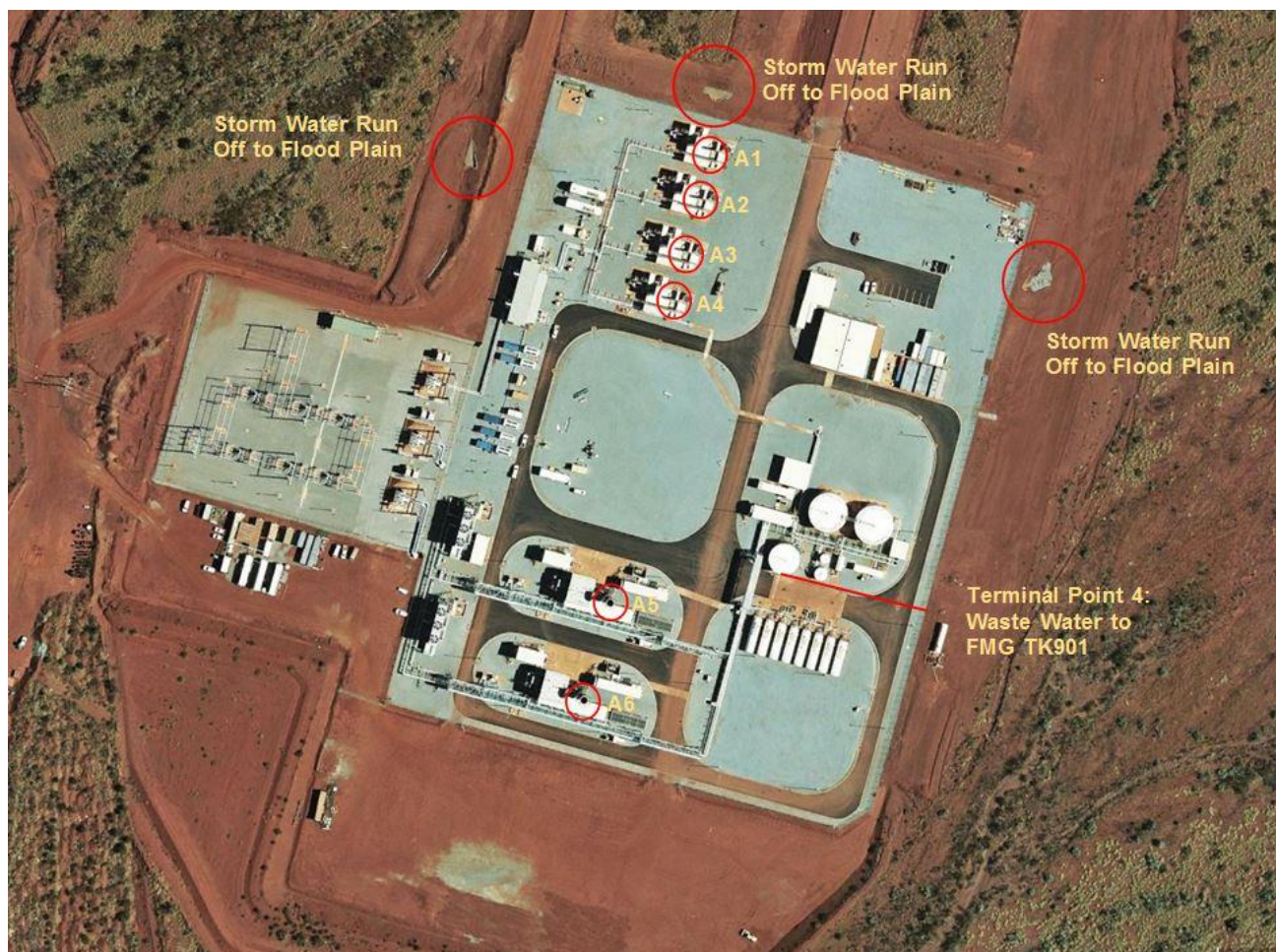
Premises map

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



Map of emission points

The locations of the emission points defined in Tables 2.2.1 are shown below.





Schedule 2: Reporting & notification forms

These forms are provided for the proponent to report monitoring and other data required by the Licence. They can be requested in an electronic format.

ANNUAL AUDIT COMPLIANCE REPORT PROFORMA

SECTION A LICENCE DETAILS

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

STATEMENT OF COMPLIANCE WITH LICENCE CONDITIONS

1. Were all conditions of the 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 initialled by the person(s) who signs Section C of this Annual Audit Compliance Report (AACR).

Initial:



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 the 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 initialled by the person(s) who signs Section C of this AACR

Initial:



SECTION C

SIGNATURE AND CERTIFICATION

This Annual Audit Compliance Report (AACR) may only be signed by a person(s) with legal authority to sign it. The ways in which the AACR 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 AACR 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 <i>Corporations Act 2001</i> ; 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: _____

NAME:
(printed) _____

POSITION: _____

DATE: ____/____/____

SEAL (if signing under seal)

SIGNATURE: _____

NAME:
(printed) _____

POSITION: _____

DATE: ____/____/____



Licence: L8858/2014/1
Form: N1

Licensee: TEC Pipe Pty Ltd
Date of breach:

Notification of detection of the breach of a limit.

These pages outline the information that the operator must provide. Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

Part A

Licence Number	
Name of operator	
Location of Premises	
Time and date of the detection	

Notification requirements for the breach of a limit

Emission point reference/ source	
Parameter(s)	
Limit	
Measured value	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Part B

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident.	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission.	
The dates of any previous N1 notifications for the Premises in the preceding 24 months.	

Name	
Post	
Signature on behalf of TEC Pipe Pty Ltd	
Date	



Decision Document

Environmental Protection Act 1986, Part V

Proponent: TEC Pipe Pty Ltd

Licence: L8858/2014/1

Registered office: Level 14, Parmelia House
191 St Georges Terrace
PERTH WA 6000

ACN: 090 067 011

Premises address: Solomon Power Station
Part of mining tenement M47/1431 within E 598,617, N 7,550,938; E 599,018, N 7,550,779; E 598,821, N 7,550,271; E 598,418, N 7,550,427

Issue date: Thursday, 26 March 2015

Commencement date: Monday, 30 March 2015

Expiry date: Sunday, 29 March 2020

Decision

Based on the assessment detailed in this document the Department of Environment Regulation (DER) has decided to issue a licence. DER considers that in reaching this decision, it has taken into account all relevant considerations.

Decision Document prepared by:

Ty Matson
Licensing Officer

Decision Document authorised by:

Jonathan Bailes
Manager Licensing



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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 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
	52	122 MWe (using natural gas) 94.2MWe (using diesel fuel)
Application verified	Date: N/A	
Application fee paid	Date: N/A	
Works Approval has been complied with	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
Compliance Certificate received	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input 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 type="checkbox"/> No <input checked="" 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 type="checkbox"/> No <input checked="" type="checkbox"/>	Ministerial statement No: EPA Report No:
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"/>	
Is the Premises subject to any EPP requirements?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	



3 Executive summary of proposal and assessment

This licence regulates the operation of a 134.4 MWe power station under Part V of the *Environmental Protection Act 1984*. The power station is located within the Solomon Iron Ore Mine in the Pilbara Region. The Solomon Mine is owned and operated by FMG Solomon Pty Ltd (FMG) a subsidiary of Fortescue Metals Group.

During construction of the mine, FMG gained approval to construct a 134.4 MWe Power Station to supply the mine's power needs (W5104/2011/1). FMG have since sold the power station to TEC Pipe Pty Ltd (TEC). The power station footprint has been excised from the boundary of the Solomon Mine prescribed premises (L8464/2010/1).

The power plant consists of four 13 MW Solar Turbine TITAN 130-20501 AXIAL turbines (Solar), and two 42.2 MW General Electric LM6000 turbines (GE). TEC predicts that average demand will be 26 MWe whilst peak demand will be 50 MWe. In order to provide N+1 redundancy and guarantee future power supply demands the installed capacity of the plant is a maximum 134.4 MWe.

The power station is a dual fuel facility with the primary fuel source being natural gas, whilst diesel is used as a back-up fuel source. A natural gas pipeline has been installed bringing gas from the Dampier- Bunbury pipeline. All turbines have been commissioned and are operational.

The main emissions from the plant are the emissions to air of oxides of nitrogen from units firing on gas but also oxides of nitrogen, sulphur dioxide and particulates from units firing on diesel. Air emissions are assessed in Appendix 1.

The nearest sensitive receptors are: Karijini National Park, Hamersley Gorge day use area (12 Kilometres South East), Kangi Accommodation Village (FMG Solomon mine accommodation, 17 kilometres South West) and the Hamersley Station Homestead (30 Kilometres South West).

This licence amendment is to include the operation of all generation units on both natural gas and diesel. Only point source emissions to air and monitoring have been reassessed as part of this amendment. The licence has also been updated to the current template.



4 Decision table

All applications are assessed in line with the *Environmental Protection Act 1986*, the *Environmental Protection Regulations 1987*, DEC's Policy Statement - Limits and targets for prescribed premises (2006), 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
Point source emissions to air including monitoring	L2.2.1, L2.2.2, L3.2.1 and L3.3.1	Point source emissions to air are assessed in Appendix A.	Application supporting documentation Commissioning and Emissions Verification Report, 12 August 2015 Ektimo report R000912-1, dated 27 May 2015
Improvements	N/A	Improvement requirements IR1 to IR4 have been included through condition 4.1.1 as a result of the assessment of point source emissions to air in Appendix A.	Application supporting documentation
Licence Duration	N/A	The licence duration has not been reassessed as part of this amendment.	N/A



5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
23/09/2015	Proponent sent a copy of draft instrument		

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

Point source emissions to air including monitoring

Operation

Emission Description

Emission: Particulates (PM) and sulfur dioxide (SO₂) from exhaust stacks A1-A6 when fired on diesel.

Impact: reduction in local air quality above NEPM standard; impacts to human health. Emissions verification testing of the Solar units (A1-A4) fired on diesel demonstrated that the emissions of SO₂ were below detection limits. Air quality impact assessment and modelling carried out at the works approval stage confirmed that ground level concentrations of SO₂ and PM are expected to be well below NEPM guidelines at all sensitive receptors

Controls: Diesel fuel is only used as a back-up fuel supply (estimated usage for 2016 is 256 hours or 2.9% of the estimated total run hours), and the Licensee has committed to using only low sulfur fuel. All units will be maintained to ensure that they run efficiently.

Risk Assessment

Consequence: Insignificant; Likelihood: Unlikely; Risk Rating: Low

Regulatory Controls

No specific regulatory controls are required as the assessed risk is low.

Residual Risk

Consequence: Insignificant; Likelihood: Unlikely; Risk Rating: Low

Operation

Emission Description

Emission: Carbon monoxide (CO), oxides of nitrogen (NO_x) and volatile organic compounds (VOC) from exhaust stacks A1-A6 when fired on diesel and gas (emissions will be higher when the units are fired on diesel).

Impact: Reduction in local air quality, above NEPM standard.

Emissions verification testing of the all units fired on diesel and gas has shown that emissions are in line with the expected emissions stated in the manufacturer's performance specification and as assessed at the works approval stage (reference Commissioning and Emissions Verification Report, 12 August 2015 and Tables 1 and 2 below). Higher than target NO_x emissions were recorded on GTG2 at low loads (20% and 50%) when fired on diesel, but still remained at low levels (maximum 230mg/m³ against target of 174mg/m³).

Initial uncertainty over the emissions results gained during diesel commissioning of the Solar units has been resolved with the Licensee confirming that the stack flow is homogenous and the use of an unheated sample line does not interfere with the integrity of the sampling methods (Ektimo report R000912-1, dated 27 May 2015).

Air quality impact assessment and modelling carried out at the works approval stage confirmed that ground level concentrations of CO, NO_x and VOC are expected to be well below NEPM guidelines at all sensitive receptors.

Controls: The higher emissions occur when the units are run on diesel fuel. Diesel fuel is only used as a back-up fuel supply (estimated usage for 2016 is 256 hours or 2.9% of the estimated total run hours). All units will be maintained to ensure that they run efficiently.

Risk Assessment

Consequence: Minor; Likelihood: Unlikely; Risk Rating: Moderate



Regulatory Controls

A NO_x emission limit based on the performance of the Solar fired on diesel remains in condition 2.2.2 and applies to all units. Higher emissions occur when the units are fired on diesel; the limit is retained to ensure emissions remain at the level assessed, particularly if diesel were to become the dominant fuel source.

Annual monitoring is required by condition 3.2.1 for NO_x, CO and VOC. This has been reduced from six monthly as the uncertainty over the initial monitoring carried out during commissioning has been resolved and the performance of the engines is not expected to vary significantly over time. It is expected that most monitoring events will take place whilst the units are gas-fired.

However condition 3.2.1 requires monitoring to be carried out to reflect normal operating conditions. Therefore, if diesel firing becomes the dominant fuel source during any period, testing will be expected to be carried out whilst the units are fired on diesel. Condition 3.3.1 requires the Licensee to monitor process conditions so the operational status of the plant at any time can be ascertained and compared to emission levels.

Residual Risk

Consequence: Minor; Likelihood: Unlikely; Risk Rating: Moderate

Table 1: Air Emission Targets

Emission Point	Emission	Emission Target
GTG 1 and GTG 2 (Emission Points A5-A6)	Nitrogen Oxides	174mg/m ³
	Carbon Monoxide	31 mg/m ³
	Volatile Organic Compounds	11 mg/m ³
MPU 21, 22, 23 and 24 (Emission Points A1-A4)	Nitrogen Oxides	696 mg/m ³
	Carbon Monoxide	3 mg/m ³
	Volatile Organic Compounds	0.04 mg/m ³ (as unburnt hydrocarbons)

Table 2: Emission testing data

Engine ID	Engine Fuel Type	Base Load (%)	*Nitrogen oxides (NO _x) (mg/m ³)	*Carbon monoxide (CO) (mg/m ³)	Carbon dioxide (CO ₂) (%)	Oxygen (O ₂) (%)	*TOC (as methane) (mg/m ³)
MPU 21	Natural gas	20	130	41	1.7	17.6	< 2.2
MPU 21	Natural gas	50	180	< 3.2	2.8	16.3	< 1.6
MPU 21	Natural gas	100	360	2.6	3.9	15.3	< 1.3
MPU 22	Natural gas	20	170	43	2.3	19.1	< 3.9
MPU 22	Natural gas	50	190	< 4.1	2.8	17.4	< 2
MPU 22	Natural gas	100	400	2.9	3.6	15.8	< 1.4
MPU 23	Natural gas	20	80	31	2.4	18.5	< 3
MPU 23	Natural gas	50	160	< 3.6	3.2	16.8	< 1.8
MPU 23	Natural gas	100	350	< 2.6	3.3	15.3	< 1.3
MPU 24	Natural gas	20	330	49	1.7	19.1	< 4
MPU 24	Natural gas	50	280	< 3.9	2.7	17.2	< 1.9
MPU 24	Natural gas	100	430	< 2.6	4	15.4	< 1.3
GTG 1	Natural gas	20	70	37	2.5	15.8	< 1.4
GTG 1	Natural gas	50	70	47	2.9	15.1	< 1.2
GTG 1	Natural gas	100	17	11	3.5	14.7	< 1.2
GTG 2	Natural gas	20	55	52	2.8	15.6	< 1.2
GTG 2	Natural gas	50	60	33	3.4	15.3	< 1.3
GTG 2	Natural gas	100	17	27	3.5	15.1	< 1.2
GTG 1	Liquid	20	31	91	2.9	16.8	8.8
GTG 1	Liquid	50	30	120	3	16.5	4.9
GTG 1	Liquid	100	72	3.9	4.1	15.2	< 1.2
GTG 2	Liquid	20	230	76	3	16.8	12
GTG 2	Liquid	50	180	37	3.6	16	4.2
GTG 2	Liquid	100	160	12	3.9	15.6	< 1.3

*Results corrected to 15% Oxygen at STP

% results - expressed as % volume/volume dry basis

mg/m³ means mg/m³ at STP and 15% dry O₂ corrected

STP means 0°C and 101.325 kPa.