



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

Your ref: L8155/2004/2  
Our ref: 2012/004515  
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The Manager  
EDL NGD (WA) PTY LTD  
Garden City Office Park  
Building 17, 2404 Logan Road  
EIGHT MILE PLAINS QLD 4113

Dear Sir/Madam

**ENVIRONMENTAL PROTECTION ACT 1986 – AMENDMENT TO LICENCE**

**Licence:** L8155/2004/2  
**Premises:** Broome Power Station

Further to my letter dated 26 July 2012, please find enclosed your amended *Environmental Protection Act 1986* licence.

If you have any questions or objections relating to the licence, please do not hesitate to contact the enquiries officer above on 9195 5538 for clarification or discussion of any grievances you have.

If you are concerned about, or object to any aspect of the amendment, you may lodge an appeal with the Minister for the Environment within 21 days from the date on which this licence is received. The Office of the Appeals Convenor can be contacted on 6467 5190 to find out the procedure and fee.

Members of the public may also appeal the amendments. The Appeals Registrar at the Office of the Appeals Convenor can be contacted after the closing date of appeals to check whether any appeals were received.

Yours sincerely

Carissa Aitken  
Officer delegated under Section 20  
of the *Environmental Protection Act 1986*

16 August 2012

enc: amended licence L8155/2004/2  
copy to: Local Government Authority: Shire of Broome

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[wa.gov.au](http://wa.gov.au)

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# Licence

## *Environmental Protection Act 1986, Part V*

**Licensee:** EDL NGD (WA) PTY LTD

**Licence:** L8155/2004/2

**Registered office:** Garden City Office Park  
Building 17, 2404 Logan Road  
Eight Mile Plains  
Queensland, 4113

**ACN:** 070 941 721

**Premises address:** Broome Power Station  
Lot 1049 on Plan 213567,  
McDaniel Road  
Broome WA 6725

**Licence period:** 5 years

**Expiry date:** Saturday, 17 June 2017

**Issue date:** Thursday, 14 June 2012

**Prescribed Premises Category**

Schedule 1 of the Environmental Protection Regulations 1987

Category number	Category description	Category production or design capacity	Premises production or design capacity
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)	34MWe

**Conditions of Licence**

Subject to the conditions of licence set out in the attached pages.

Carissa Aitken  
Officer delegated under Section 20  
of the *Environmental Protection Act 1986*

Amendment Date: Thursday, 16 August 2012



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## Introduction

This Introduction is not part of the Licence conditions.

### Who we are

The Department of Environment and Conservation (DEC) is a Government Department in the portfolio of the Minister for the Environment. Our purpose is to protect and conserve the State's environment on behalf of the people of Western Australia.

### Our industry licensing role

DEC has responsibilities under Part V of the *Environmental Protection Act 1986* for the licensing of prescribed premises. We also monitor and audit compliance with works approvals and licence conditions, take enforcement action as appropriate and develop and implement licensing and industry regulation policy.

### Licence requirements

This licence is issued under Part V of the *Environmental Protection Act 1986*. Conditions contained with the licence relate to the prevention, reduction or control of emissions and discharges 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 *Environmental Protection Act 1986* and any other statutory instrument. These 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 should comply with your licence. Non-compliance with your licence is an offence and strict penalties exist for those who do not comply. Additional guidance on pollution prevention can be



found in the Department of Water's Water Quality Protection Notices accessed through:  
<http://www.water.wa.gov.au/Managing+water/Water+quality/Water+quality+protection+guidelines/default.aspx>

### Ministerial conditions

If your Premises has been assessed under Part IV of the *Environmental Protection Act 1986* you may have had conditions imposed by the Minister for the Environment. You are required to comply with any conditions imposed by the Minister.

### Premises description and Licence summary

EDL NGD (WA) PTY LTD (EDL) is a wholly owned subsidiary of Energy Developments Limited. EDL finalised construction of the Broome Power Station (BPS) in 2007 to generate electricity for the township of Broome. BPS is located in an industrial area at Lot 1049 McDaniel Road, Broome about 550m west of the closest residence. The current footprint of BPS is approximately 3.6 hectares.

Electricity is generated using 17, 1.85 MW Caterpillar G3520 C radiator cooled reciprocating generators giving a design capacity of around 34MWe. Assuming demand for power grows at forecast rates the capacity will increase to 46.3 MWe by installing another eight 1.85 MW Caterpillar G3520 engine/generators, by 2025. The main emissions from the plant are oxides of nitrogen, and emissions are discharged to the environment by individual 12.5 metre stacks on each generator at a velocity of 35 metres per second.

Natural gas is sourced from the North West Shelf and trucked to Broome as Liquefied Natural Gas (LNG) to the LNG bulk fuel storage facility in Broome, located approximately 11km northnorth-east of the power station. The LNG is piped to BPS via a gas pipeline. In the event that the continuous supply of LNG to the power station is interrupted, Liquefied Propane Gas (LPG) will be used to fuel the Caterpillar G3520 C generators until such time the natural gas supply is available. LPG will be supplied from the fuel storage facility to the power station via the gas pipeline. The Caterpillar G3520 C generators will operate at reduced load when fuelled by LPG owing to the different fuel characteristics between LNG and LPG.

In the event that the LPG fuelled generators are unable to satisfy demand, seven Cummins 0.9 MW diesel fuelled generators will be available as standby generators to supplement the power generation and meet energy demands from the Broome community.

This Licence is the successor to licence L8155/2004/1 and includes conditions relating to the monitoring and management of significant emissions and discharges from the premises.

The licences and works approvals issued for the Premises since 07 February 2005 are:

Instrument log		
Instrument	Issued	Description
W4064/2004/1	07/02/2005	New works approval application
L8155/2004/1	18/06/2007	New licence application
L8155/2004/2	18/06/2012	Licence re- issue
L8155/2004/2	16/08/2012	Licence Amendment

### 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 Act apply unless the contrary intention appears.

1.1.2 In the Licence, unless the contrary intention appears:

“**the Act**” means the *Environmental Protection Act 1986*;

“**annual**” means the inclusive period from 1 July until 30 June in the following year;

“**AS 4323.1**” means the Australian Standard AS4323.1 *Stationary Source Emissions Method 1: Selection of sampling positions*;

“**CEMS**” means continuous emissions monitoring system;

“**Code of Practice for the Storage and handling of dangerous goods**” means the current version of the Storage and handling of dangerous goods, Code of Practice, Dept of Mines and Petroleum, Government of Western Australia;

“**Contact Address**” for the purpose of correspondence and advice means:

Regional Leader, Kimberley Region  
Department of Environment and Conservation  
PO Box 942  
KUNUNURRA WA 6743  
Telephone: (08) 9168 4200  
Facsimile: (08) 9168 2179;

“**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*;

“**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;

“**fugitive emissions**” means all emissions not arising from point sources identified in Sections 2.2;

“**Licence**” means this Licence numbered L8155/2004/2 and issued under the *Environmental Protection Act 1986*;

“**Licensee**” means the person or organisation named as Licensee on page i 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 excluding start-up, shut-down and upset conditions, in relation to stack sampling or monitoring;

“NOx” means oxides of nitrogen;

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

“PM10” means particles with an aerodynamic diameter of less or equal to 10 µm;

“Premises” is as defined by Condition 1.2.3 of the Licence;

“spot sample” means a discrete sample representative at the time and place at which the sample is taken;

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

“six monthly” means the 2 inclusive periods from 1 April to 30 September and 1 October to 31 March in the following year;

“Triennially” means once in every 3 years;

“Total Petroleum Hydrocarbons or TPH” means means indicator chemicals of potential concern such as Benzene, Toluene, Ethylbenzene, Xylenes (BTEX), Naphthalene and carcinogenic Polycyclic Aromatic Hydrocarbons (PAHs) as well as the collapsed fractions group of hydrocarbons defined as C6-C10 (light non-BTEX fraction); C>10-C16 (petrol or gasoline fraction); C>16-C34 (diesel fraction); and C>34C40 (Lube or fuel oil fraction);

“USEPA” means United States (of America) Environmental Protection Agency; and

“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 current version of that standard.

## 1.2 General conditions

1.2.1 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.

1.2.2 The Licensee shall provide to the Director prior written notice of any works it intends to undertake on the Premises that may:

- (a) cause any emission;
- (b) alter the volume, nature, location or source of any emission;



- (c) alter the method of detecting, monitoring or measuring any emission; or
- (d) involve the installation, alteration or replacement of any emission causing process equipment or industrial plant.

1.2.3 The Premises is the area defined in Table 1.2.1 and depicted visually in the Premises Map in Schedule 1.

**Table 1.2.1: Premises location & description**

Location	Premises definition	All or part	Record of cadastral definition
McDaniel Road, Broome	Lot number 1049	All	Plan 213567

- 1.2.4 The Licensee shall maintain all pollution control and monitoring equipment to the manufacturer's specification and any internal management system.
- 1.2.5 The Licensee shall only store more than 250 kg or 250 litres of any substance that is classed as dangerous goods below placard quantities or environmentally hazardous materials not classified as dangerous goods if:
- (a) they are stored in accordance with the Code of Practice for the Storage and handling of dangerous goods; and
  - (b) if secondary containment is required by 1.2.5(a), it is constructed and maintained to:
    - (i) contain not less than 110% of the volume of the largest storage vessel or inter-connected system; and
    - (ii) contain at least 25% of the total volume of vessels stored in the compound; and
    - (iii) have a low permeability ( $10^{-9}$  m/s or less).
- 1.2.6 The Licensee shall immediately recover, or remove and dispose of spills or leaks of environmentally hazardous materials outside its storage vessel.

#### **Stormwater control**

- 1.2.7 The Licensee shall ensure that uncontaminated stormwater is kept separate from contaminated or potentially contaminated stormwater. Where stormwater has come into contact with a possible source of contamination, it should be treated as contaminated.

#### **1.3 Premises operation**

- 1.3.1 No raw materials, materials or fuels other than those listed in Table 1.3.1 and which comply with any specification stated shall be subjected to the relevant process in that table.

**Table 1.3.1: Processing of materials**

Material	Purpose	Specification
Natural gas	Fuel in Gas Turbines	None specified



## 2. Emissions

### 2.1 General

2.1.1 The Licensee shall record and investigate the exceedance of any limit and/or target in this section.

### 2.2 Point source emissions to air

2.2.1 The Licensee is permitted, subject to conditions in the Licence, to emit waste to the atmosphere from the emissions points listed in Table 2.2.1 and identified in the Map of emission points in Schedule 1.

Emission point reference and location on Map of emission points	Emission point reference on Map of emission points	Emission point height (m)	Source, including any abatement
A1	EGM 01 Stack	12.5	EGM 01 (1.85 MWe)
A2	EGM 02 Stack	12.5	EGM 02 (1.85 MWe)
A3	EGM 03 Stack	12.5	EGM 03 (1.85 MWe)
A4	EGM 04 Stack	12.5	EGM 04 (1.85 MWe)
A5	EGM 05 Stack	12.5	EGM 05 (1.85 MWe)
A6	EGM 06 Stack	12.5	EGM 06 (1.85 MWe)
A7	EGM 07 Stack	12.5	EGM 07 (1.85 MWe)
A8	EGM 08 Stack	12.5	EGM 08 (1.85 MWe)
A9	EGM 09 Stack	12.5	EGM 09 (1.85 MWe)
A10	EGM 10 Stack	12.5	EGM 10 (1.85 MWe)
A11	EGM 11 Stack	12.5	EGM 11 (1.85 MWe)
A12	EGM 12 Stack	12.5	EGM 12 (1.85 MWe)
A13	EGM 13 Stack	12.5	EGM 13 (1.85 MWe)
A14	EGM 14 Stack	12.5	EGM 14 (1.85 MWe)
A15	EGM 15 Stack	12.5	EGM 15 (1.85 MWe)
A16	EGM 16 Stack	12.5	EGM 16 (1.85 MWe)
A17	EGM 17 Stack	12.5	EGM 17 (1.85 MWe)

2.2.2 The Licensee shall target point source emissions to air at or below the levels specified in Table 2.2.

Emission point reference	Parameter	Target (including units) <sup>1,2</sup>	Averaging period
A1 – A17 inclusive	Oxides of Nitrogen	650 mg/m <sup>3</sup>	1 hour

Note 1: All units are referenced to STP dry

Note 2: All units are referenced to 6% O<sub>2</sub>

### 2.3 Point source emissions to surface waters

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



## 2.4 Point source emissions to land

2.4.1 The Licensee is permitted, subject to conditions in the Licence, to discharge waste to land from the emissions points listed in Table 2.2.1 and identified in the Map of emission points in Schedule 1.

**Table 2.4.1: Point source emission points to land**

Emission point reference and location on Map of emission points	Emission point reference on Map of emission points	Source, including any abatement
L1	Oily Water Separator Seepage Trench	Oily Water Separator Clean Water Discharge

2.4.2 The Licensee shall limit point source emissions to land at or below the levels specified in Table 2.4.2.

**Table 2.4.2: Point source emission limits to land**

Emission point reference	Parameter	Limit (including units)	Averaging period
L1	Total Petroleum Hydrocarbons	15 mg/l	Spot sample

## 2.5 Point source emissions to groundwater

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

## 2.6 Fugitive emissions

2.6.1 The Licensee shall use all reasonable and practical measures to prevent and where that is not practicable to minimise dust emissions from the Premises.

## 2.7 Odour

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



### 3 Monitoring

#### 3.1 General monitoring

- 3.1.1 The Licensee shall record production or throughput data and any other process parameters relevant to any non-continuous or CEMS monitoring undertaken.
- 3.1.2 The Licensee shall have all monitoring equipment referred to in any condition of the Licence calibrated in accordance with the manufacturer's specifications.
- 3.1.3 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 Director 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.

Emission point reference	Parameter	Units <sup>1,4</sup>	Frequency <sup>2,3</sup>	Method
A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16 and A17	Sulfur dioxide	mg/m <sup>3</sup> g/s	Triennially (such that each engine unit is sampled once every 3 years)	USEPA Method 6
A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16 and A17	Nitrogen oxides	mg/m <sup>3</sup> g/s	Triennially (such that each engine unit is sampled once every 3 years)	USEPA Method 7E or 7D
A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16 and A17	Carbon monoxide	mg/m <sup>3</sup> g/s	Triennially (such that each engine unit is sampled once every 3 years)	USEPA Method 10
A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16 and A17	PM10	mg/m <sup>3</sup> g/s	Triennially (such that each engine unit is sampled once every 3 years)	USEPA Method 5 or USEPA Method 17

Note 1: All units are referenced to STP dry

Note 2: Triennial monitoring shall be undertaken at least 27 months apart.

Note 3: Monitoring shall be undertaken to reflect normal operating conditions and any limits or conditions on inputs or production.

Note 4: All units are referenced to 6% O<sub>2</sub>



3.2.2 The Licensee shall ensure that sampling required under Condition 3.2.1 of the Licence is undertaken at sampling locations in compliance with the AS4323.1.

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

### 3.3 Monitoring of point source emissions to surface water

There are no specified conditions relating to monitoring of point source emissions to surface water in this section.

### 3.4 Monitoring of point source emissions to land

3.4.1 The Licensee shall undertake the monitoring in Table 3.4.1 according to the specifications in that table.

Emission point reference	Parameter	Units	Frequency <sup>1</sup>
L1	Total Petroleum Hydrocarbons	mg/l	Six monthly

Note 1: Six monthly monitoring shall be undertaken at least 5 months apart.

### 3.5 Monitoring of point source emissions to groundwater

There are no specified conditions relating to monitoring of point source emissions to groundwater in this section.

### 3.6 Monitoring of inputs

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

### 3.7 Process monitoring

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

### 3.8 Environmental quality monitoring

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

### 3.9 Meteorological monitoring

There are no specified conditions relating to meteorological monitoring.



## **4 Improvements**

### **4.1 Improvement programme**

There are no specified improvement conditions in this section.



## 5 Information

### 5.1 Records

5.1.1 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 5.1.1(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 groundwater.

5.1.2 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.

5.1.3 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 year.

5.1.4 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.

### 5.2 Reporting

5.2.1 The Licensee shall submit to the Director at the Contact Address an annual environmental report within 28 calendar days after of 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 <sup>1</sup>
5.1.3	Compliance	AACR
Table 2.2.2	Target exceedances	None specified
Table 3.2.1	Sulfur dioxide, nitrogen oxides, carbon monoxide, PM10	AR1
Table 2.4.2	Limit exceedances	None specified
Table 3.4.1	Total Petroleum Hydrocarbons	LR1

Note 1: Forms are in Schedule 2

5.2.2 The annual environmental report shall also contain:

- (a) any relevant process, production or operational data recorded under Condition 3.1.1;
- (b) an assessment of the information contained within the report against previous monitoring results and Licence limits and/or targets; and
- (c) any original monitoring reports submitted to the Licensee from third parties.



### 5.3 Notification

5.3.1 Parameters listed in Table 5.3.1 shall be notified to the Director at the Contact Address and in accordance with the notification requirements of the table.

Condition or table (if relevant)	Parameter	Notification requirement <sup>1</sup>	Format or form <sup>2</sup>
2.2.2	Breach of any target specified in the Licence	Part A: As soon as practicable but no later than 5PM of the next usual working day.	N1
2.4.2	Breach of any limit specified in the Licence		
	Any failure or malfunction of any pollution control equipment or any incident which has caused, is causing or may cause pollution	Part B: As soon as practicable	

Note 1: No notification requirement in the Licence shall negate the requirement to comply with s72 of the Act.

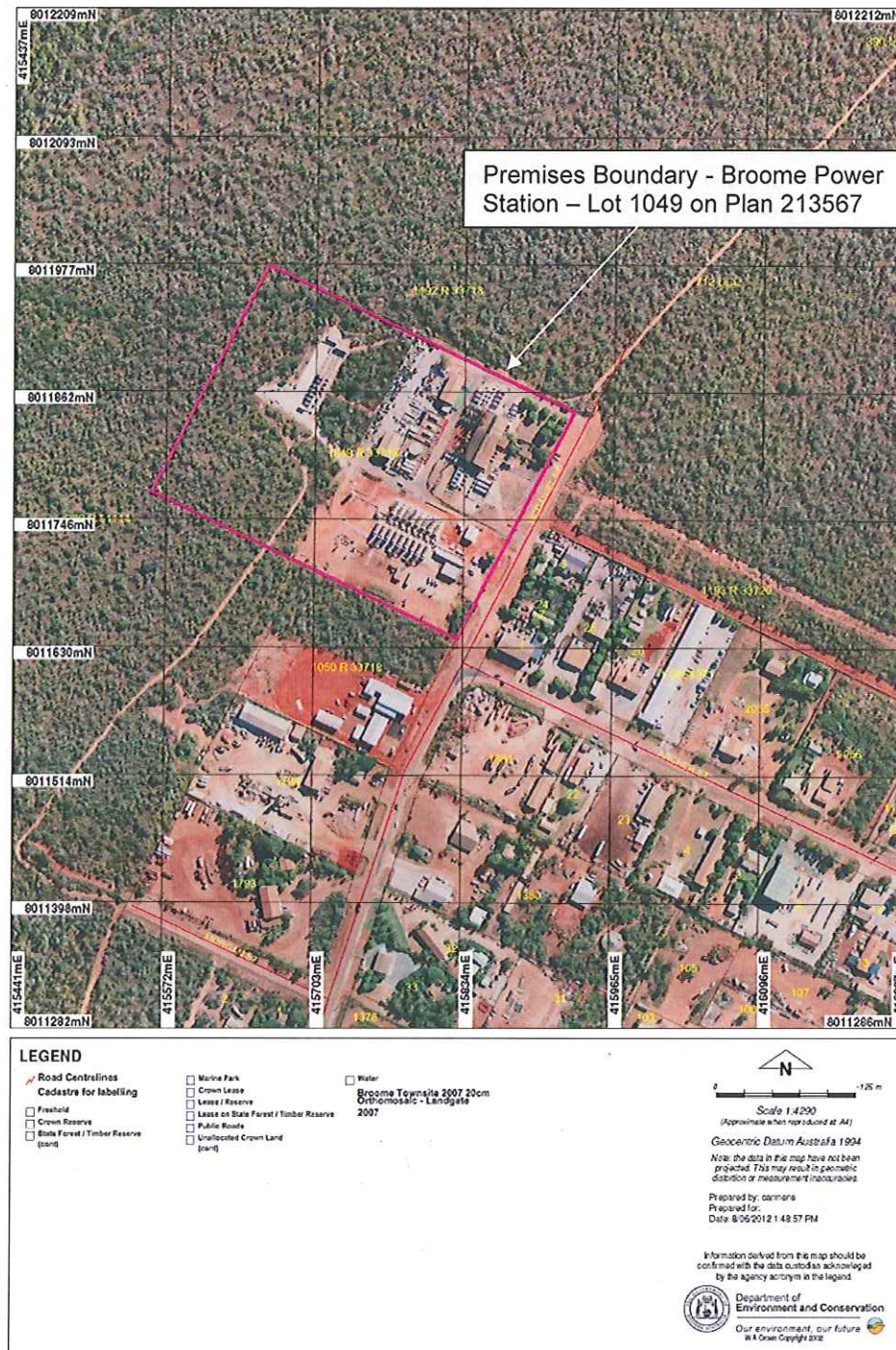
Note 2: Forms are in Schedule 2



# Schedule 1: Maps

## Premises map

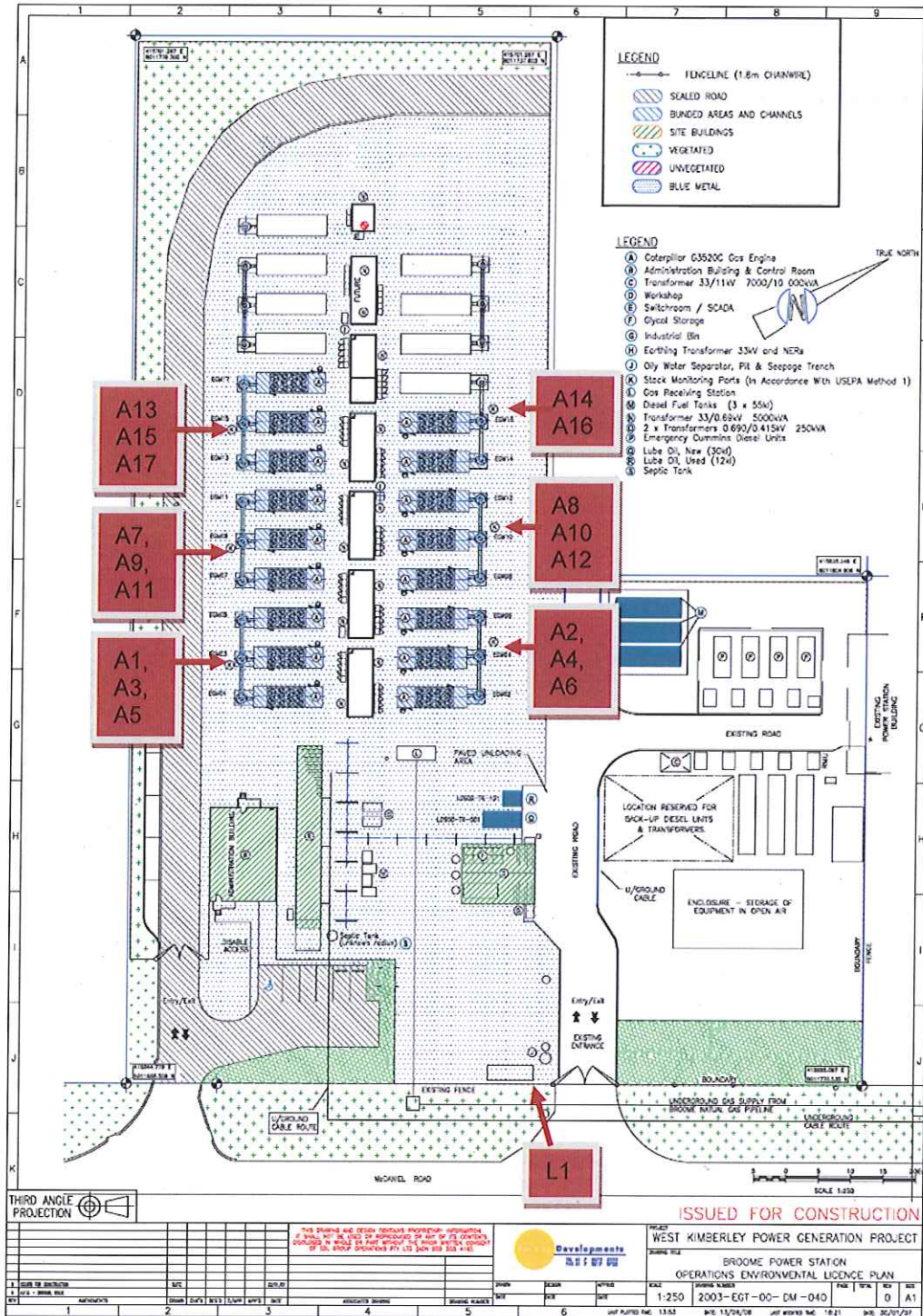
The Premises is shown in the map below. The pink line depicts the Premises boundary but it is defined in Table 1.2.1 which should prevail if any discrepancy exists.





### Map of emission points

The locations of the emission points defined in Tables 2.2.1, 2.2.2, 2.4.1, 2.4.2, 3.2.1 and 3.4.1 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.

Copies of the original monitoring reports must also be submitted.

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Licence: L8155/2004/2 Licensee: EDL NGD (WA) PTY LTD  
Form: AACR Period :  
Name: Annual audit compliance report

### Annual audit compliance report

#### Section A: Statement of compliance with Licence conditions

Were all conditions of licence complied with within the reporting period?		
Yes	<input type="checkbox"/>	Initial Sections A & B, then proceed to Section C
No	<input type="checkbox"/>	Initial Section A, then 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

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

Please use a separate page for each Licence condition that was not complied with. Each page must be initialled by the person(s) who signs Section C of this AACR

Initial:



### Section C: Signature and certification

This AACR may only be signed by a person(s) with legal authority to sign it as defined 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 AACR 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 (CEO) of DEC to sign on the Licensee's behalf.
a corporation	<input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>	by affixing the common seal of the Licensee in accordance with the Corporations Act 2001; or  by two directors of the Licensee; or  by a director and a company secretary of the Licensee, or  if the Licensee is a proprietary company that has a sole director who is also the sole company secretary – by that director, or  by the principal executive officer of the Licensee; or  by a person with authority to sign on the Licensee's behalf who is approved in writing by the CEO of DEC.
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 CEO of DEC.
a local government	<input type="checkbox"/>  <input type="checkbox"/>	by the CEO 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 AACR 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:

mg/m <sup>3</sup>	g/s	USEPA Method 7E or 7D
mg/m <sup>3</sup>	g/s	USEPA Method 10
mg/m <sup>3</sup>	g/s	USEPA Method 10
mg/m <sup>3</sup>	g/s	USEPA Method 10
mg/m <sup>3</sup>	g/s	USEPA Method 5 or USEPA Method 17
mg/m <sup>3</sup>	g/s	USEPA Method 5 or USEPA Method 17
mg/m <sup>3</sup>	g/s	USEPA Method 5 or USEPA Method 17

STP dry  
6% O<sub>2</sub>

A) PTY LTD: .....

Date: .....



Licence: L8155/2004/2  
Form: LR1  
Name: Monitoring of emissions to land

Licensee: EDL NGD (WA) PTY LTD.  
Period :

Form LR1: Monitoring of emissions to land							
Emission point	Parameter	Limit	Result <sup>1</sup>	Result <sup>1</sup> (g/s)	Averaging period	Method	Sample date & times
L1	Volumetric flow rate		m <sup>3</sup> /s				
L1	Total petroleum Hydrocarbons		mg/L				

Note 1: All units are referenced to STP dry

Signed on behalf EDL NGD (WA) PTY LTD: ..... Date: .....



Licence: L8155/2004/2  
Form: N1

Licensee: EDL NGD (WA) PTY LTD  
Date of breach:

**Notification of detection of the breach of a limit or any failure or malfunction of any pollution control equipment or any incident which has caused, is causing or may cause pollution.**

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	<b>L8155/2004/2</b>
Name of operator	<b>EDL NGD (WA) PTY LTD</b>
Location of Premises	
Time and date of the detection	

<b>Notification requirements for the breach of a limit</b>	
<b>To be notified as soon as practicable and no later than 5PM of the next working day</b>	
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	

<b>Notification requirements for any failure or malfunction of any pollution control equipment or any incident which has caused, is causing or may cause pollution</b>	
<b>To be notified as soon as practicable and no later than 5PM of the next working day</b>	
Date and time of event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident	



### Part B - to be submitted as soon as practicable

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 unauthorised emissions from the installation in the preceding 24 months.	

Name*	
Post	
Signature on behalf of EDL NGD (WA) PTY LTD	
Date	



LICENCE: L8155/2004/2  
LICENCE FILE NUMBER: 2012/004515  
APPLICATION DATE: 2/3/2012  
EXPIRY DATE: 17/6/2017

## PREMISES DETAILS

### LICENSEE

EDL NGD (WA) PTY LTD  
Garden City Office Park  
Building 17, 2404 Logan Road  
Eight Mile Plains  
QUEENSLAND 4113  
ACN: 070 941 721

### PREMISES

Broome Power Station  
Lot 1049 on Plan 213567  
McDaniel Road  
BROOME WA 6725

## PRESCRIBED PREMISES CATEGORY

Table 1: Prescribed Premises Category

Category number*	Category Description*	Category Production or Design Capacity*	Premises Production or Design Capacity <sup>#</sup>	Premises Fee Component**
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 MW or more in aggregate (using natural gas) 10 MW in aggregate (using a fuel other than natural gas)	34 MW	More than 20 but not more than 100 MW

\* From Schedule 1 of the Environmental Protection Regulations 1987

<sup>#</sup> 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 Broome Power Station (BPS), which has been assessed as "prescribed premises" category number 52, under Schedule 1 of the Environmental Protection Regulations 1987, as detailed in Table 1 above.



BPS uses natural gas to fire 17 Caterpillar G3520C Gas Engines to generate electric power. BPS operates 365 days per year supplying power to the Broome community. The operation currently has a designed capacity of 34 Megawatts (MW) with the anticipation of this increasing to 46.3 MW by 2025 (with the addition of 8 extra Caterpillar G3520C Gas Engines).

The current licence (L8155/2004/2) for the premises expires on the 17 June 2012. This EAR has been drafted to accompany the re-issuing of the licence and associated operating conditions

DEC notes that this EAR is based on emissions and discharges from a full scale operation (i.e. 46.3 MW), presenting a more conservative assessment of current operations (34 MW). Before the installation of additional Caterpillar G3520C Gas Engines can occur, the proponent will need to apply for a works approval.

## **1.0 BACKGROUND**

### **1.1 GENERAL COMPANY DESCRIPTION**

EDL NGD (WA) PTY LTD (EDL) is a wholly owned subsidiary of Energy Developments Limited (Energy Developments). Energy Developments is ISO 9001 (Quality Management Systems) accredited and has an international portfolio of projects that focus on the provision of renewable and innovative energy and environmental solutions. They have a number of power stations fuelled by natural gas, coal mine methane, distillate, or landfill gas operating across Australia, France, the United Kingdom and the United States of America.

BPS is part of the West Kimberley Power Project in which Energy Developments and the Western Power Corporation signed a 20-year power purchase agreement for Energy Developments to supply electricity to the West Kimberley towns of Broome, Derby, Fitzroy Crossing and Halls Creek (using natural gas) and Looma (using diesel) in Western Australia.

Energy Developments have built a liquefied natural gas plant, supplied by North West Shelf gas, near Karratha in the Pilbara region. The gas is delivered to the plant via the Dampier-Bunbury natural gas pipeline and is then transported to the West Kimberley region by road.

Energy Developments has established a \$1,000,000 community trust fund that is jointly administered by Energy Developments and Western Australia Public Utilities Office within the Department of Finance. This trust is used to fund community development projects in the West Kimberley Region.

### **1.2 LOCATION OF PREMISES**

BPS is located adjacent to the old Western Power diesel-fuelled power station in the industrial area to the south of the Broome town site (see Attachment 1). BPS is approximately 1.2 kilometres (km) to the west of Roebuck Bay, a Ramsar wetland of international significance. The premises are situated in a relatively low lying area with the flood level around the site being below 10.5 metres (m) Australian Height Datum (AHD). BPS is approximately 16m AHD. The nearest creek to the site is Dampier Creek located approximately 6km to the north east. The site is also adjacent to an aquifer recharge area and just over 2km to the south of the BPS site is an environmentally sensitive area that contains a declared rare flora species.

The closest residence to BPS is a set of resort-style accommodation units located approximately 550m east. Residential areas are located 800m to the north and west of BPS.



The Broome area in which BPS is located has a tropical climate characterised by distinct wet (December – March) and dry (April to November) seasons. The average annual rainfall is 606 millimetres (mm) with around 85% of this falling during the wet season. The annual mean maximum temperature range is 28.8 – 34.3 degrees Celcius (°C).

The main soil type is the red pindan soils and the surrounding flora is classified as grassland wooded by scattered trees with a variably dense middle layer of *Acacia* species. This vegetation community is otherwise known as Pindan vegetation.

Two mammal species of conservation significance have been recorded within a 50km radius. The Bilby *Macrotis lagotis* and the Little Northern Freetail Bat *Mormopterus loriae* – both declared as vulnerable. Both species have not been identified within the project area therefore they are unlikely to be affected by BPS.

No sites of Aboriginal significance exist on the premises, the nearest being approximately 700m from the site.

### 1.3 PROCESS DESCRIPTION

Natural gas is supplied to the BPS via a gas pipeline from the Liquefied Natural Gas (LNG) bulk fuel storage facility in Broome, located approximately 11km north north-east of the power station as depicted in Attachment 1.

BPS currently has the capacity to generate around 34 MW, by using 17, 1.85 MW Caterpillar G3520 C radiator cooled reciprocating engine/generators. Assuming demand for power grows at Western Power forecast rates the capacity will increase to 46.3 MW by installing another eight 1.85 MW Caterpillar G3520 engine/generators, by 2025. See Attachment 2 for the BPS premises layout showing existing and future generator units.

In the event that the continuous supply of LNG to the power station is interrupted, Liquefied Propane Gas (LPG) will be used to fuel the Caterpillar G3520 C generators until such time the natural gas supply is available. LPG will be supplied from the fuel storage facility to the power station via the gas pipeline. The Caterpillar G3520 C generators will operate at reduced load when fuelled by LPG owing to the different fuel characteristics between LNG and LPG. It must be noted that any change to fuel burnt on the premises will trigger s53(d) of the *Environmental Protection Act 1986*, and as such, a works approval and/or licence amendment will be required.

In the event that the LPG fuelled generators are unable to satisfy demand, seven Cummins 0.9 MW diesel fuelled generators will be available to supplement the power generation and meet energy demands from the Broome community. These units currently form part of the existing Western Power station, which acts as a back-up supply to the gas generator units during emergency situations.

### 1.4 REGULATORY CONTEXT

#### 1.4.1 Part IV *Environmental Protection Act 1986*, Environmental Impact Assessment

BPS was referred to the Environmental Protection Authority (EPA) in September 2004. In October 2004 the EPA advised the Department of Environment and Conservation's (DEC) (previously Department of Environment) Karratha Office that the proposal raised a number of environmental issues, however, the overall environmental impact of the proposal is not so severe as to require formal assessment by the EPA. The EPA advised that the assessment will be sufficiently managed under Part V of the *Environmental Protection Act 1986*.



#### **1.4.2 Part V Environmental Protection Act 1986, Environmental Management**

A works approval (W4064/2005/1) was issued on 7 February 2005 for the construction of BPS. A compliance certificate was received in January 2007 to indicate compliance with the works approval conditions. DEC subsequently issued a nil-condition Environmental Protection licence for the premises.

The current licence for the premises expires on the 17 June 2012. This EAR has been drafted to accompany the re-issuing of the licence and associated operating conditions.

DEC administered legislation which may be relevant to the operation of BPS include:

- Environmental Protection Regulations 1987;
- Environmental Protection (Unauthorised Discharges) Regulations 2004;
- Environmental Protection (Noise) Regulations 1997;
- Environmental Protection (Clearing of Native Vegetation) Regulations 2004;
- *Contaminated Sites Act 2003*; and
- Contaminated Sites Regulations 2006.

#### **1.4.3 Other Decision Making Authorities' Legislation which applies**

- *Dangerous Goods Safety Act 2004*;
- Dangerous Goods Safety (General) Regulations 2007
- Dangerous Goods Safety (Storage And Handling Of Non-Explosives) Regulations 2007;
- Dangerous Goods Safety (Explosives) Regulations 2007;
- *Occupational Safety and Health Act 1984*;
- Occupational Safety and Health Regulations 1996;

#### **1.4.4 Rights in Water and Irrigation Act 1914**

The property owners do not hold a Groundwater Licence (GWL) under the *Rights in Water and Irrigation Act 1914*.

#### **1.4.5 Local Government Authority**

##### Shire of Broome

- BPS is zoned as "Industrial" under the Shire of Broome's Town Planning Scheme No. 4.
- Shire of Broome has approved site drainage plans for the premises.

## **2.0 STAKEHOLDER AND COMMUNITY CONSULTATION**

### **SUBMISSIONS RECEIVED DURING 21 DAY PUBLIC COMMENT PERIOD**

The Application for Licence details for this facility were advertised in the West Australian newspaper on 2 April 2012 as a means of advising stakeholders and to seek public comments. No comments 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 BPS. In order to determine the site's appropriate environmental regulation, an emissions and discharges risk assessment was conducted of the BPS using the environmental risk matrix outlined in Appendix B. The results of this are summarised in Table 2.

<p>as ed d a</p> <p>and</p> <p>ull ity at</p> <p>acity nich</p> <p>The 2.</p> <p>full ity at nding</p> <p>acity</p>	<p>areas located 800m to the north and west.</p>	<p>mechanisms/licence conditions (monitoring/reporting)/other regulatory tools</p> <p><b>NO<sub>2</sub>:</b> C = licence condition (setting targets + EMPs - longer timeframes)</p> <p><b>PM<sub>10</sub>:</b> E = No regulation, other management mechanisms</p> <p><b>SO<sub>2</sub>:</b> E = No regulation, other management mechanisms</p>	<p>monitoring conditions requiring reporting should targets be exceeded.</p> <p>CO,PM<sub>10</sub> and SO<sub>2</sub> will not need targets applied to the licence but will need to be monitored on a regular basis to ensure emissions remain within modelled emissions and comply with NEPM Guidelines. EDL will be required to provide monitoring results to DEC in an Annual Report.</p>	<p>Occupational Safety and Health Regulations 1996</p> <p>General provisions of the <i>Environmental Protection Act 1986</i></p>
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<p>city ne . 1. full ality d). % e ting</p>					
<p>on of hicle BPS. e low and imise  remote  ines</p>	<p><b>Low.</b> Distance to nearest sensitive receptor is 550m to the east. Residential areas located 800 m to the north and west.</p>	<p>D = EIPs, other management mechanisms/licence conditions (monitoring/reporting)/other regulatory tools</p>	<p>LIC – due to the proximity of the nearest sensitive receptor a condition will be added to the licence to ensure dust emitted from the premises does not interfere with the health, welfare, convenience, comfort or</p>	<p><b>Appendix A</b> <b>Section 1.2</b></p>	<p>West Kimberley Power Project (WKPP) Remote Power Stations Environmental Management Plan</p> <p>Environmental Protection (Unauthorised Discharges) Regulations 2004</p> <p>Occupational Safety and Health Regulations 1996</p> <p>General provisions of the <i>Environmental Protection Act 1986</i></p>



# ENVIRONMENTAL ASSESSMENT REPORT

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)
	<ul style="list-style-type: none"> <li>Heavily trafficked areas will be surfaced with loose aggregate or sealed;</li> <li>There will approximately be one truck movement per month for the supply of oil / engine coolant or other supplies;</li> <li>Site access roads will be maintained to ensure the finished surface is in good repair with daily visual inspections of these roads; and</li> <li>Vehicle speeds on access roads is restricted to a maximum of 15km per hour.</li> </ul>			amenity of any person who is not on the premises.		
Odour emissions	<p><b>Operation:</b> <b>Significance N/A</b></p> <p>There are no odour emissions associated with the operation of BPS.</p>	N/A	N/A	N/A	N/A	N/A
Noise emissions	<p><b>Operation:</b> <b>Significance of 1</b></p> <p>Noise emissions are generated from the operation of the generator units at BPS. As outlined in the WKPP EMP, each generator unit is:</p> <ul style="list-style-type: none"> <li>Housed in an individual enclosure designed to attenuate noise emissions;</li> <li>Located on concrete slabs; and</li> <li>Well maintained and regularly serviced.</li> </ul> <p>Routine maintenance activities will be restricted, where practicable, to between 7am to 7pm Monday to Saturday.</p> <p>Noise monitoring was performed in 2008 which determined that noise impacts from</p>	<p><b>Low.</b></p> <p>Distance to nearest sensitive receptor is 550m to the east. Residential areas located 800 m to the north and west.</p>	E = No regulation, other management mechanisms	<p>LIC – no conditions</p> <p>However, if noise complaints are received EDL will be required to record and report any noise complaints in an annual report.</p>	N/A	<p>West Kimberley Power Project (WKPP) Remote Power Stations Environmental Management Plan</p> <p>Environmental Protection (Noise) Regulations 1997</p> <p>Occupational Safety and Health Regulations 1996</p> <p>General provisions of the <i>Environmental Protection Act 1986</i></p>

	N/A	N/A	N/A	N/A	N/A
<p>water</p> <p>direct pollutant emissions. Residential areas located 800 m to the north and west.</p> <p>been that in the structure. was</p> <p>ted to in oil- naturally water (less trench</p> <p>an be ergent rainfall.</p>	<p><b>Low.</b> Distance to nearest sensitive receptor is 550m to the east. Residential areas located 800 m to the north and west.</p>	<p>D = EIPs, other management mechanisms/licence conditions (monitoring/reporting)/other regulatory tools</p>	<p>LIC – a condition will be added to the licence to ensure all contaminated stormwater is appropriately treated prior to discharging offsite. A Total Petroleum Hydrocarbon limit of 15mg/L will be applied to the licence.</p>	<p><b>Appendix A Section 1.3</b></p>	<p>West Kimberley Power Project (WKPP) Remote Power Stations Environmental Management Plan</p> <p>Environmental Protection (Unauthorised Discharges) Regulations 2004</p> <p>General provisions of the <i>Environmental Protection Act 1986</i></p> <p>Water Quality Protection Note # 52 – Stormwater Management at Industrial Sites (Department of Water)</p>

<p>to the east. Residential areas located 800 m to the north and west.</p> <p>the oil and of the</p> <p>these used used these -2004 mable</p> <p>ent to e spill</p> <p>it that inated TPH. s than rbons on the</p>	<p>to the east. Residential areas located 800 m to the north and west.</p>	<p>contaminated waste be retained onsite, appropriately treated or disposed of to an authorised off-site facility.</p>	<p>Environmental Protection (Unauthorised Discharges) Regulations 2004</p> <p>Environmental Protection (Controlled Waste) Regulations 2004</p> <p>General provisions of the <i>Environmental Protection Act 1986</i></p> <p><i>Litter Act 1979</i></p>		<p>Environmental Protection (Unauthorised Discharges) Regulations 2004</p> <p>Environmental Protection (Controlled Waste) Regulations 2004</p> <p>General provisions of the <i>Environmental Protection Act 1986</i></p> <p><i>Litter Act 1979</i></p>
<p>nsists</p>	<p><b>Low.</b> Distance to nearest sensitive receptor is 550m to the east.</p>	<p>D = EIPs, other management mechanisms/licence conditions. (monitoring/reporting)/other regulatory tools</p>	<p>LIC – conditions will be added to the operating licence to:</p> <ul style="list-style-type: none"> <li>• ensure</li> </ul>	<p><b>Appendix A Section 1.5</b></p>	<p>West Kimberley Power Project (WKPP) Remote Power Stations Environmental Management Plan</p> <p>Explosives and Dangerous Goods</p>

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- storage facilities; and
- require immediate clean up any hydrocarbon spills and contaminated material; and;
  - require recording and reporting of any spills or loss of chemicals / hydrocarbons to DEC in an annual report.

Protection Act 1986

e has inated r the  storical diesel	nearest sensitive receptor is 550m to the east. Residential areas located 800 m to the north and west.		anticipating any expansion or construction works on Lot 1049 McDaniel Road, therefore, no conditions are required.	Contaminated Sites Regulations 2000
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## **4.0 GENERAL SUMMARY AND COMMENTS**

This Environmental Assessment Report is for the operation of BPS located at Lot 1049 McDaniel Road in Broome, Western Australia.

The main discharges associated with the operation of BPS have been identified as air emissions, dust emissions, discharges to land, solid / liquid wastes and hydrocarbon / chemical storage. These discharges have been assessed as having a significant risk of impacting the environment if not managed and / or monitored appropriately.

It is recommended that BPS operate under licence conditions to manage these risks accordingly. Monitoring of significant air emissions will be required under licence conditions. General conditions regarding on-site dust and stormwater management, as well as management and storage of hydrocarbons, chemicals and waste generated from operations will be included on the licence. EDL will be also required to report the results of any monitoring programs to DEC as part of an annual environmental report. Further discussion of discharges associated with the operation of BPS can be found in Appendix A.

An operating licence for BPS will be issued to EDL for a period of five years. The premises will be subject to inspections by DEC officers to assess compliance with licence conditions.

## **OFFICER PREPARING REPORT**

\_\_\_\_\_  
Carmen Standing  
Position: Environmental Officer  
Kimberley Region  
Department of Environment and Conservation  
9168 4200

June 2012

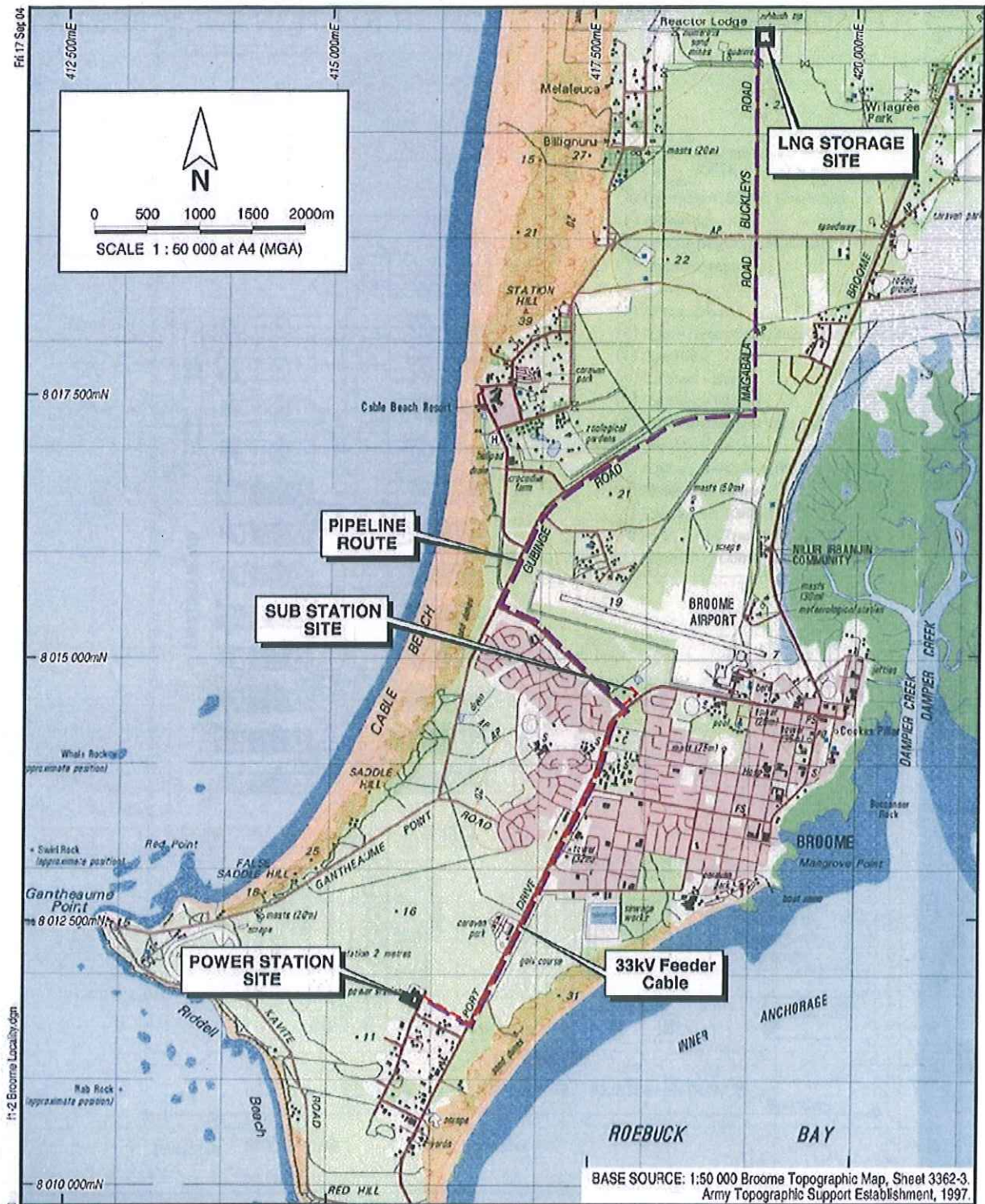
## **ENDORSEMENT**

\_\_\_\_\_  
Damian Thomas  
Position: Team Leader  
Kimberley Region  
Department of Environment and Conservation  
9168 4200

June 2012



**ATTACHMENT 1 – BROOME POWER STATION LOCATION**



BASE SOURCE: 1:50 000 Broome Topographic Map, Sheet 3362-3, Army Topographic Support Establishment, 1997.



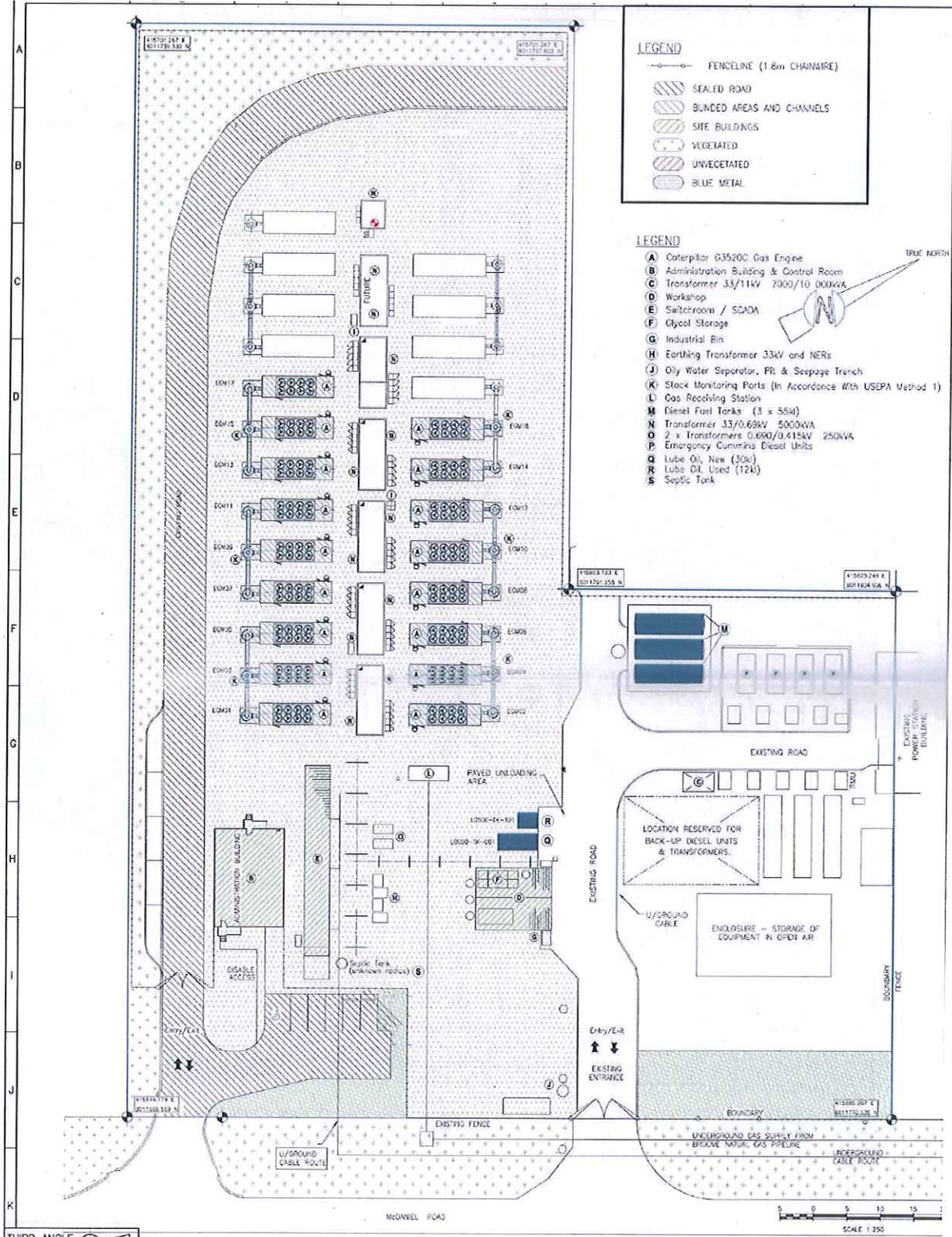
**Douglas Partners**  
Geotechnics • Environment • Groundwater



Title: <b>BROOME FACILITIES LOCALITY PLAN</b>			
Client: <b>ENERGY DEVELOPMENTS LIMITED - WEST KIMBERLEY POWER PROJECT</b>		Office: <b>PERTH</b>	
Drawn By: <b>R. SHAPLAND</b>	Scale: <b>1 : 50 000 at A4</b>	Project No: <b>22254</b>	<b>FIGURE 1-2</b>
Approved By:	Date: <b>16-09-04</b>	Revision: <b>0</b>	



## ATTACHMENT 2 – BROOME POWER STATION PREMISES LAYOUT



THIRD ANGLE PROJECTION

<p>This drawing and any other documents prepared in connection with this project are the property of the Department of Environment and Conservation. It shall not be used, copied, reproduced or otherwise disseminated without the prior written consent of the Department of Environment and Conservation.</p>			<p>PROJECT: WEST KIMBERLEY POWER GENERATION PROJECT</p> <p>DRAWING TITLE: BROOME POWER STATION OPERATIONS ENVIRONMENTAL LICENCE PLAN</p>	
<p>SCALE: 1:250</p> <p>DATE: 2003-EGT-00-DM-040</p> <p>DATE: 30/01/02</p>			<p>DATE: 30/01/02</p>	

ISSUED FOR CONSTRUCTION



## APPENDIX A: EMISSIONS AND DISCHARGES OF SIGNIFICANCE

### 1.1 AIR EMISSIONS

Air emissions are continuous during operation, exiting the 12.5 metre stacks at a velocity of 35 metres per second. The principal emissions of concern from the combustion of natural gas are carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), particulate matter (PM<sub>10</sub>) and sulphur oxides (SO<sub>x</sub>).

Table 3 below shows the summary of modelling (including background concentrations) of ambient air quality for 25 engine units with a nominal capacity of 46.3MW, operating 24 hours and 365 days a year at 100% design capacity.

**Table 3<sup>a</sup>:** Summary of Modelling Results (including background concentrations) for operations at full capacity

Substance	Averaging Period	NEPM Goal (µg/m <sup>3</sup> )	Range at Receptors D1 to D10 (µg/m <sup>3</sup> )	Grid maximum	
				(µg/m <sup>3</sup> )	% NEPM Goal
Carbon monoxide	8 hours	11 247	2545 – 3277	3 277	29
Nitrogen Dioxide	1 hour (method 1)	246	79 – 164	207	84
	1 hour (method 2)	246	128 – 192	192	78
	Annual	62	20 – 24	30	48
Particulates as PM <sub>10</sub>	24 hours	50	0.1 – 2	2	4
Sulphur Dioxide	1 hour	570	85 – 86	86	15
	24 hours	228	7.5 – 8	8	4
	Annual	57	0.001 – 0.08	0.08	0.1

<sup>a</sup> Table sourced from p 28 of "Referral Document – Broome Power Station West Kimberley Power Project Broome, Western Australia", prepared by Douglas Partners for Energy Developments Limited on 20 September 2004; project 22254.

Typically, under normal operating conditions, BPS will be operating at around 60% capacity. This 60% is an average over each year. For example sometimes within a year the power station may run at 100% capacity and at other times below the 60% capacity. Table 4 below shows modelled ambient air emissions for 25 engine units operating at 60% design capacity.

**Table 4<sup>a</sup>** Summary of Modelling Results (including background concentrations) for 25 engine units operating at 60% capacity.

Substance	Averaging Period	NEPM Goal (µg/m <sup>3</sup> )	60% capacity	
			(µg/m <sup>3</sup> )	% NEPM Goal
Carbon monoxide	8 hours	11 247	1966	18
Nitrogen Dioxide	1 hour (method 1)	246	124	51
	1 hour (method 2)	246	115	47
	Annual	62	18	29
Particulates as PM <sub>10</sub>	24 hours	50	1	2
Sulphur Dioxide	1 hour	570	52	9
	24 hours	228	5	2
	Annual	57	0.05	0.08

<sup>a</sup> Table estimated from Table 3 (above) – originally from p 28 of "Referral Document – Broome Power Station West Kimberley Power Project Broome, Western Australia", prepared by Douglas Partners for Energy Developments Limited on 20 September 2004; project 22254.



Please note that Table 4 above is based on the data from the worst case scenario modelling and not actual operating data therefore it is likely to be an over-estimate of emissions from the power station when operating at 60% capacity.

It should also be noted that there has been no verification of these modelled ambient emissions to date.

**POINT SOURCE EMISSIONS TESTING RESULTS**

EDL have conducted point source emissions testing from the stacks on several of the gas and diesel generator units over the past couple of years. The results for emissions from a selection of the gas generators can be seen in Table 5 below:

**Table 5:** Emissions testing results for a selection of BPS Gas Generator Units.

Year sampled	2011			2009			2008			NSW Clean Air Regs 2010 *	Cat G3520C Gas Generator Set Specifications #	
	Generator Unit											
	EGM02	EGM04	EGM12	EGM03	EGM05	EGM07	EGM10	EGM12	EGM14			
Gases sampled	SOx (mg/m <sup>3</sup> )	<0.34	<0.3	<0.46	u/d	u/d	u/d	<5.7	<5.7	<5.7	-	-
	NOx (mg/m <sup>3</sup> )	470	490	460	403	462	443	520	590	620	450	500
	CO (mg/m <sup>3</sup> )	760	730	720	877	854	832	970	1000	980	-	1076
	VOCs (mg/m <sup>3</sup> )	<0.36	<0.43	<0.087	n/d	n/d	n/d	n/s	n/s	n/s	40	-

Abbreviations and notes:

u/d = unable to be determined

n/d = not detected

n/s = not sampled

- = no criteria available

\*Standard of concentration for a Schedule 4, Group 6 stationary reciprocating internal combustion engines.

# Emissions data from Caterpillar G3520C Natural Gas Continuous (Island Mode Operation) Gas Generator Set

Table 5 also compares the point source emissions from BPS with guideline concentrations specified in the New South Wales governments' Protection of the Environment Operations (Clean Air) Regulation 2010 (NSW Clean Air Regs) and specifications for the Caterpillar G3520C Generator Set. As can be seen in Table 5, the emissions data from BPS is slightly elevated compared to the standard concentrations provided for stationary reciprocating internal combustion engines as provided in the New South Wales governments' Protection of the Environment Operations (Clean Air) Regulation 2010. However, emissions since 2009 are below Caterpillar specifications for the G3520C gas engine as provided and assessed under the works approval (W4064/2005/1).

DEC notes there are several gaps in the sampling information available for BPS. For example, no sample data has been submitted for 2010, and there are some parameters unable to be determined due to discrepancies with sampling and analysis methods used. DEC has concerns that the sample regime may not be robust or frequent enough to detect unacceptable emissions from the generator units within a reasonable timeframe.

EDL currently perform emissions testing for each generator unit on a rolling schedule that results in each unit being sampled approximately once in every five years. Under normal operating conditions, based on modelling data, emissions from the operations are likely to fall within NEPM guideline values for ambient air quality. However, without regular and standardised monitoring to ensure stack emissions are within acceptable limits, this assumption cannot be confirmed. Regular and more frequent emissions testing should be performed by EDL, in accordance with



specified emissions testing methods, to ensure any unacceptable trends are accurately detected and addressed early to minimise potential impacts to the public and the surrounding environment.

#### **AIR EMISSIONS RISK ASSESSMENT**

The environmental risk of air emissions from operation of BPS is seen to be significant due to the potential for emitting pollutants to the atmosphere at unacceptable concentrations and volumes. Although modelling has indicated that the emissions from BPS will be within NEPM guideline values, it is prudent to ensure the monitoring program is robust and effective in detecting issues.

The socio-political context was classed as "Low" as there were no public submissions received in response to advertising EDLs application for licence, however, the nearest sensitive receptor is reasonably close being 550m to the east. Residential areas are located 800m to the north and west.

From the risk assessment performed in Table 2 above it can be seen that the most significant air emissions from operations of BPS are CO and NO<sub>2</sub> which were rated as "2" and "2 to 3" respectively. PM<sub>10</sub> and SO<sub>2</sub> were both rated as the less significant emission rating of "1".

The risk assessment therefore gives a Priority Matrix Action Descriptor as follows:

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

**NO<sub>2</sub>:** C = licence condition (setting targets + EMPs - longer timeframes).

**PM<sub>10</sub> and SO<sub>2</sub>:** although these emissions are likely to be low risk as demonstrated by modelling data, due to the potential for these pollutants to impact on human and environmental health it is recommended these parameters are included as part of regular monitoring and reporting regimes.

Refer to Appendix B for details of Emissions and Discharges Risk Assessment Matrix.

#### **RECOMMENDED STRATEGY FOR MANAGING AIR EMISSIONS**

Air emissions from operations of BPS are seen as posing a low - medium risk to the environment. This is due to the management measures and design commitments made by EDL and the fact that under normal operating conditions background ambient air emissions should be well below the NEPM standard. As can be seen from the emissions modelling outlined in Tables 3 and Table 5 above, NO<sub>2</sub> emissions are the most significant and pose the highest risk of approaching or exceeding the NEPM guideline values. For this reason a target of 650mg/m<sup>3</sup> has been set for point source emissions of NO<sub>2</sub> from BPS generator units. This target is based on technical data included in the manufacturer's specifications for the Caterpillar G3520C gas engine, taking into account the fact that BPS typically operates with all gas engines operating in a range between 60 – 80% operating capacity. The operation of the gas engine units fluctuate in accordance with town demand for power, and hence, they cannot be expected to operate as efficiently as they would at full load (when maximum NO<sub>2</sub> emissions would be around 500mg/m<sup>3</sup>). Recent emissions testing at BPS indicate NO<sub>2</sub> emissions at or below an hourly average of 650mg/m<sup>3</sup>, a level that is reflective of normal operating conditions for BPS. EDL has committed to regularly tuning the gas engines every 1,000 hours and servicing in accordance with manufacturers specifications to ensure NO<sub>2</sub> emissions are kept as low as practicably possible. The NO<sub>2</sub> target will be applied to the licence with the requirement to report to DEC if this target is exceeded.

Additionally, DEC requires EDL to undertake more regular air emissions monitoring of all generator units at BPS. Conditions will be added to the operating licence to require all generator units to be sampled at least every 3 years for SO<sub>x</sub>, NO<sub>x</sub>, PM<sub>10</sub> and CO emissions. Conditions will



also specify appropriate emissions testing methods to be used. EDL will be required to provide an annual report to the DEC outlining the monitoring data collected from the site. Should EDL be able to demonstrate that the emissions monitoring performed over the next few years under licence conditions clearly shows actual emissions consistent with the modelled data and the set target level for NO<sub>2</sub> emissions, then DEC may consider an amendment to allow less frequent monitoring of individual units.

## **1.2 DUST EMISSIONS**

Dust emissions will be generated from vehicle movements on-site. Dust emissions will be fugitive and more prevalent in dry and windy conditions.

Dust emissions can impact the environment by smothering vegetation and causing sedimentation of nearby water bodies. Dust emissions also have the potential to interfere with the health, welfare, convenience, comfort or amenity of people living adjacent to the premises.

The WKPP EMP outlines the following commitments:

- Heavily trafficked areas will be surfaced with loose aggregate or sealed;
- There will be around one truck movement per month for the supply of oil / engine coolant or other supplies;
- Site access roads will be maintained to ensure the finished surface is in good repair with daily visual inspections of these roads; and
- Vehicle speeds on access roads is restricted to a maximum of 15km per hour.

### **DUST EMISSIONS RISK ASSESSMENT**

Due to the management measures and commitments made in the WKPP EMP, the risk of dust emissions from the premises is low.

The socio-political context was classed as "Low" as there were no public submissions received in response to advertising EDLs application for licence, however, the nearest sensitive receptor is reasonably close being 550m to the east. Residential areas are located 800m to the north and west.

The significance of dust emissions was therefore rated as "2".

The risk assessment therefore gives a Priority Matrix Action Descriptor of D = EIPs, other management mechanisms/licence conditions (monitoring/reporting)/other regulatory tools.

Refer to Appendix B for details of Emissions and Discharges Risk Assessment Matrix.

### **RECOMMENDED STRATEGY FOR MANAGING DUST EMISSIONS**

The issue of dust emissions is suitable for licence conditions. A condition will be added to the licence to ensure dust emitted from the premises does not interfere with the health, welfare, convenience, comfort or amenity of any person who is not on the premises.

## **1.3 DISCHARGES TO LAND**

Unacceptable discharges to land from operation of the BPS may occur from stormwater that has become contaminated with sediment, hydrocarbons or engine coolants stored or used at the premises.

Site drainage from BPS has been designed and constructed so that stormwater is diverted away from the power plant and associated infrastructure to reduce the potential for stormwater becoming contaminated. Approval for the site drainage was obtained from the Shire of Broome.

Any waste from transformers is directed to a sump that connects directly to an oil-water separator or can be manually pumped out if required.



All engine units have skids that can be washed out by biodegradable detergent into a sump that is not affected by rainfall. The sump is then manually pumped out into either containers or to the oil-water separator unit on-site that treats all potentially contaminated stormwater on site for sediments and Total Petroleum Hydrocarbons (TPH). Clean water is treated to contain less than 5mg/L free TPH and discharges to an adjacent soakage pit on the premises. Separated oils are disposed of by a suitably licensed waste contractor.

#### **DISCHARGES TO LAND RISK ASSESSMENT**

Due to the management measures and commitments made in the WKPP EMP, the risk of discharges to land from the premises is low. The significance of discharges to land was therefore rated as "2".

The socio-political context was classed as "Low" as there were no public submissions received in response to advertising EDLs application for licence, however, the nearest sensitive receptor is reasonably close being 550m to the east. Residential areas are located 800m to the north and west.

The risk assessment therefore gives a Priority Matrix Action Descriptor of D = EIPs, other management mechanisms/licence conditions (monitoring/reporting)/other regulatory tools.

#### **RECOMMENDED STRATEGY FOR MANAGING DISCHARGES TO LAND**

The issue of discharges to land is suitable for licence conditions. A condition will be added to the licence to ensure all contaminated stormwater is appropriately treated prior to discharging offsite. A Total Petroleum Hydrocarbon limit of 15mg/L for discharges to land will be applied to the licence.

### **1.4 SOLID/LIQUID WASTE**

In accordance with the WKPP EMP, solid / liquid wastes generated from BPS will be recycled where possible or disposed of to an appropriately licensed facility.

Liquid wastes associated with the operation of the BPS include waste oil and coolant from the maintenance of the generator units. Waste storage facilities onsite for these liquid wastes consist of a self-bunded used oil storage facility and a self-bunded used coolant storage facility. Both of these facilities are compliant with AS 1940-2004 "The storage and handling of flammable and combustible liquids". There is also a spill station located adjacent to these facilities containing appropriate spill response equipment.

The BPS also has an oil-water separator unit on-site that treats all potentially contaminated stormwater on site for sediments and Total Petroleum Hydrocarbons (TPH). Clean water is treated to contain less than 5mg/L free TPH and discharges to an adjacent soakage pit on the premises. Separated oils are disposed of by a suitably licensed waste contractor.

#### **SOLID/LIQUID WASTE RISK ASSESSMENT**

Due to the management measures and commitments made in the WKPP EMP, the risk of solid / liquid waste from the premises is low. The significance of solid / liquid waste emissions was therefore rated as "2".

The socio-political context was classed as "Low" as there were no public submissions received in response to advertising EDLs application for licence, however, the nearest sensitive receptor is reasonably close being 550m to the east. Residential areas located 800m to the north and west.

The risk assessment therefore gives a Priority Matrix Action Descriptor as follows of D = EIPs, other management mechanisms/licence conditions (monitoring/reporting)/other regulatory tools.



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### **RECOMMENDED STRATEGY FOR MANAGING SOLID/LIQUID WASTES**

The issue of solid / liquid wastes is suitable for a licence condition. A condition will be added to the licence to require all contaminated waste be retained onsite, appropriately treated or disposed of to an authorised off-site facility.

#### **1.5 HYDROCARBON/CHEMICAL STORAGE**

The fuel storage facility at BPS consists of:

- Three 55kL above ground bunded diesel tanks;
- One 30kL above ground bunded clean lube oil tank;
- One 12kL above ground bunded used lube oil tank;
- 200L Glycol drums stored in a bunded area within a workshop with a maximum of 10 drums; and
- a concrete bunded area for storage of Intermediate Bulk Containers (ICBs) and 205L drums of oils, other chemicals and batteries.

Storage facilities designed and built in accordance with the relevant standards including AS 1940-2004 "The storage and handling of flammable and combustible liquids" and AS 3961-1991 "Liquefied natural gas – storage and handling" and they have been fitted with an audible/visible alarm.

Designated hazardous/dangerous material storage areas are located above the 1 in 100 year flood level.

EDL have committed to undertaking weekly inspections of:

- Dangerous goods usage and storage;
- Bunds (and after rainfall periods or if fill levels indicate that a leak may have occurred (as monitored by the power station control system)); and
- Site drains and natural water courses for foreign objects.

#### **HYDROCARBON/CHEMICAL STORAGE RISK ASSESSMENT**

Due to the management measures and commitments made in the WKPP EMP, the risk of hydrocarbon / chemical storage from the premises is low. The significance of hydrocarbon / chemical storage was therefore rated as "2".

The socio-political context was classed as "Low" as there were no public submissions received in response to advertising EDLs application for licence, however, the nearest sensitive receptor is reasonably close being 550m to the east. Residential areas located 800 m to the north and west.

The risk assessment therefore gives a Priority Matrix Action Descriptor of D = EIPs, other management mechanisms/licence conditions (monitoring/reporting)/other regulatory tools.

#### **RECOMMENDED STRATEGY FOR MANAGING HYDROCARBON/CHEMICAL STORAGE**

The issue of fuel/chemical storage is suitable for licence conditions as follows: The licensee will be required to:

- ensure hydrocarbon / chemical storage facilities on the premises comply with AS/NZS 1940:2004;
- perform regular monitoring / inspection of storage facilities;
- ensure immediate clean up any hydrocarbon spills and contaminated material; and;
- record and report any spills or loss of chemicals / hydrocarbons to DEC in an annual report.



## APPENDIX B: 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 (95 <sup>th</sup> Percentile)			
		>100%	50 – 100%	20 – 50%	<20%*
Normal Operating Conditions (50 <sup>th</sup> 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

Note: The above matrix is taken from the DEC Officer's Guide to Emissions and Discharges Risk Assessment May 2006.