GOVERNMENT OF WESTERN AUSTRALIA

MINISTER FOR THE ENVIRONMENT; SCIENCE

Statement No.

000698

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED (PURSUANT TO THE PROVISIONS OF THE ENVIRONMENTAL PROTECTION ACT 1986)

KWINANA GAS-FIRED POWER STATION (WATER-COOLED CONDENSER)
LEATH & BARTER ROADS, KWINANA

Proposal: The construction, operation, and maintenance of a nominal 320 megawatt combined-cycle base-load power plant at Kwinana, as documented in schedule 1 of this statement.

Proponent: NEWGEN POWER KWINANA Pty Ltd

Proponent Address: PO Box 98
KENMORE QLD 4069

Assessment Number: 1583

Report of the Environmental Protection Authority: Bulletin 1190

The proposal referred to above may be implemented by the proponent subject to the following conditions and procedures:

1 Implementation

1-1 The proponent shall implement the proposal as documented in schedule 1 of this statement subject to the conditions and procedures of this statement.

2 Proponent Commitments

2-1 The proponent shall implement the environmental management commitments documented in schedule 2 of this statement.

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3 Proponent Nomination and Contact Details

3-1 The proponent for the time being nominated by the Minister for the Environment under section 38(6) or (7) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal until such time as the Minister for the Environment has exercised the Minister's power under section 38(7) of the Act to revoke the nomination of that proponent and nominate another person as the proponent for the proposal.

3-2 If the proponent wishes to relinquish the nomination, the proponent shall apply for the transfer of proponent and provide a letter with a copy of this statement endorsed by the proposed replacement proponent that the proposal will be carried out in accordance with this statement. Contact details and appropriate documentation on the capability of the proposed replacement proponent to carry out the proposal shall also be provided.

3-3 The nominated proponent shall notify the Department of Environment of any change of contact name and address within 60 days of such change.

4 Commencement and Time Limit of Approval

4-1 The proponent shall substantially commence the proposal within five years of the date of this statement or the approval granted in this statement shall lapse and be void.

Note: The Minister for the Environment will determine any dispute as to whether the proposal has been substantially commenced.

4-2 The proponent shall make application for any extension of approval for the substantial commencement of the proposal beyond five years from the date of this statement to the Minister for the Environment, prior to the expiration of the five-year period referred to in condition 4-1.

The application shall demonstrate that:

1. the environmental factors of the proposal have not changed significantly;

2. new, significant, environmental issues have not arisen; and

3. all relevant government authorities have been consulted.

Note: The Minister for the Environment may consider the grant of an extension of the time limit of approval not exceeding five years for the substantial commencement of the proposal.

5 Compliance Audit and Performance Review

5-1 The proponent shall prepare an audit program and submit compliance reports to the Department of Environment which address:

1. the status of implementation of the proposal as defined in schedule 1 of this statement;

2. evidence of compliance with the conditions and commitments; and

3. the performance of the environmental management plans and programs.

Note: Under sections 48(1) and 47(2) of the *Environmental Protection Act 1986*, the Chief Executive Officer of the Department of Environment is empowered to monitor the compliance of the proponent with the statement and should directly receive the compliance documentation, including environmental management plans, related to the conditions, procedures and commitments contained in this statement.

5-2 The proponent shall submit a performance review report every five years after the start of operations, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority, which addresses:

1. the major environmental issues associated with implementing the project; the targets for those issues; the methodologies used to achieve these; and the key indicators of environmental performance measured against those targets;

2. the level of progress in the achievement of sound environmental performance, including industry benchmarking, and the use of best available technology where practicable;

3. significant improvements gained in environmental management, including the use of external peer reviews;

4. stakeholder and community consultation about environmental performance and the outcomes of that consultation, including a report of any on-going concerns being expressed; and

5. the proposed environmental targets over the next five years, including improvements in technology and management processes.

6 Marine Environment

6-1 Prior to disturbance of the marine environment, the proponent shall submit to the Environmental Protection Authority details of a final diffuser location and design, and the results of detailed discharge plume modelling which:

1. predicts the size and minimum dilutions achieved at the edge of the near-field mixing zone about the diffuser, and specifies the location of the mixing zone boundaries;

2. demonstrates that the proposed separation between the diffuser and other existing or approved discharges at the time of issuing the works approval, will be sufficient to ensure that there is no overlap between the near-field mixing zone about the diffuser and the near-field mixing zones associated with the other existing and approved discharges;

3. includes an evaluation of the influence of the proposed discharge on seawater characteristics at seawater intakes for existing or approved activities; and

4. includes an evaluation of the interaction between the diffuser and the "worst credible" configuration for the Outer Harbour Port Development concept.

6-2 The proponent shall make the final diffuser design and the results of the discharge plume modelling required by condition 6-1 publicly available.

6-3 The design and modelling referred to in conditions 6-1 and 6-2 shall meet the requirements of the Minister for the Environment on advice of the Environmental Protection Authority prior to disturbance of the marine environment.

Note 1: In preparation of advice to the Minister for the Environment, the Environmental Protection Authority expects that advice of the following agencies will be obtained:

- the Water Corporation;
- Cockburn Sound Management Council; and
- Western Power

Note 2: The "near-field mixing zone" is defined as the zone of initial mixing between the effluent and ambient seawater where the design and hydraulics of the discharge controls the dilution. The size of the near-field mixing zone can be engineered by manipulating parameters such as discharge velocity, density of the effluent, and the position and orientation of the diffuser ports. This is opposed to the "far field", where background physical oceanographic processes (such as currents, waves and the density stratification of the ambient water) control mixing and dilution.

6-4 Prior to disturbance of the marine and coastal environment, the proponent shall prepare a Marine Works Construction Environmental Management Plan to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

The objective of this Plan is to mitigate potential impacts on the marine environment, beach and foredune of construction and installation of the discharge and intake pipelines.

This Plan shall address:

1. the disturbance and re-vegetation of dune and native vegetation along the western boundary of the site;

2. the extent of the corridor for the cooling water outflow pipeline; and

3. the disturbance and rehabilitation of the marine and coastal environment.

6-5 The proponent shall make the Marine Works Construction Environmental Management Plan required by condition 6-4 publicly available.

6-6 The proponent shall design, construct and operate the discharge pipeline and diffuser:

1. in accordance with the diffuser location and design, and the results of discharge plume modelling referred to in condition 6-1;

2. in accordance with the Marine Works Construction Environmental Management Plan;

3. such that the diffuser is located within a Low Ecological Protection Area declared in the *State Environmental Protection (Cockburn Sound) Policy*; and

4. to meet the requirements of the *State Environmental Protection (Cockburn Sound) Policy* and the relevant Environmental Quality Criteria specified in the *Environmental Quality Criteria Reference Document for Cockburn Sound (2003-2004)* and its updates.

6-7 The proponent shall measure temperature in accordance with the *Manual of Standard Operating Procedures 2005* which supports the *State Environmental (Cockburn Sound) Policy 2005,* and its updates, unless otherwise agreed in writing by the Environmental Protection Authority.

6-8 Prior to disturbance of the marine environment, the proponent shall prepare a Marine Environment Temperature Elevation Management Plan to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

Note 3: In preparation of advice to the Minister for the Environment, the Environmental Protection Authority expects that advice of the following agencies will be obtained:

- the Water Corporation;
- Cockburn Sound Management Council; and
- Western Power

6-9 The proponent shall not allow thermal discharges from the diffuser other than in accordance with the Marine Environment Temperature Elevation Management Plan required by condition 6-8.

The objectives of this Plan are:

- to specify and ensure that upper limits of instantaneous and daily average cooling water effluent temperature are not exceeded;

- to ensure that the near-field mixing performance of the cooling water outflow diffuser is as predicted (pursuant to condition 6-1); and

- that the thermal discharge from the diffuser meets the objectives of the *State Environmental (Cockburn Sound) Policy 2005* and its updates.

This Plan shall address:

1. specific measures to monitor:

    a. cooling water effluent temperature;
    b. mixing performance of the diffuser to the edge of the near-field mixing zone; and
    c. the temperature elevation field in Cockburn Sound.

    Note 4: The monitoring plan shall be in accordance with the *Manual of Standard Operating Procedures 2005* which supports the *State Environmental (Cockburn Sound) Policy 2005,* and its updates.

2. contingency plans to address exceedances of the Environmental Quality Guidelines specified in the *Environmental Quality Criteria Reference Document for Cockburn Sound (2003-2004)* and its updates.

    Note 5: The contingency plans shall outline specific management actions to be taken in the event of an exceedance of the Environmental Quality Guidelines, including an investigation against the temperature Environmental Quality Standards included in the *Environmental Quality Criteria Reference Document for Cockburn Sound (2003-2004)* and its updates.

    Note 6: The contingency plans shall outline management actions to be taken in the event of an exceedance of the Environmental Quality Standard.

6-10 The proponent shall implement the Marine Environment Temperature Elevation Management Plan required by condition 6-9.

6-11 The proponent shall make the Marine Environment Temperature Elevation Management Plan required by condition 6-9 publicly available.

6-12 The proponent shall conduct measurements of the free chlorine residual concentrations at the discharge and at the edge of the near-field mixing zone under a representative range of known plant operating conditions and biocide dosing regimes.

6-13 The proponent shall, on the basis of the understanding derived from the measurements referred to in condition 6-12, collaborate with Western Power to minimize the addition of chemical biocides to the cooling water to the extent possible, within operational constraints.

6-14 The proponent shall, on the basis of the measurements referred to in condition 6-12, prepare and submit to the Environmental Protection Authority and the Cockburn Sound Management Council within one year post-commissioning, a detailed environmental risk assessment and management plan in relation to the use and discharge of sodium hypochlorite or alternative cooling water treatment chemicals and their by-products to the environment.

Environmental risk and management response are to be assessed for consistency with the *State Environmental (Cockburn Sound) Policy 2005*.

7 Greenhouse Gas Abatement

7-1 Prior to commencement of construction, the proponent shall develop a Greenhouse Gas Abatement Programme to:

- ensure that the plant is designed and operated in a manner which achieves reductions in "greenhouse gas" emissions as far as practicable;
- provide for ongoing "greenhouse gas" emissions reductions over time;
- ensure that through the use of best practice, the total net "greenhouse gas" emissions and/or "greenhouse gas" emissions per unit of product from the project are minimised; and
- manage "greenhouse gas" emissions in accordance with the *Framework Convention on Climate Change 1992*, and consistent with the National Greenhouse Strategy;

to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

This Programme shall include:

1 calculation of the "greenhouse gas" emissions associated with the proposal, as advised by the Environmental Protection Authority;

Note: The current requirements of the Environmental Protection Authority are set out in: *Minimising Greenhouse Gas Emissions, Guidance for the Assessment of Environmental Factors, No. 12* published by the Environmental Protection Authority (October 2002). This document may be updated or replaced from time to time.

2 specific measures to minimise the total net "greenhouse gas" emissions and/or the "greenhouse gas" emissions per unit of product associated with the proposal using a combination of "no regrets" and "beyond no regrets" measures;

Note: The following definitions apply:

1. "no regrets" measures are those which can be implemented by a proponent and which are effectively cost-neutral.
2. "beyond no regrets" measures are those which can be implemented by a proponent and which involve additional costs that are not expected to be recovered.

3 consideration of the implementation of "greenhouse gas" offset strategies;

4 estimation of the "greenhouse gas" efficiency of the project (per unit of product and/or other agreed performance indicators) and comparison with the efficiencies of other comparable projects producing a similar product, both within Australia and overseas;

5 implementation of thermal efficiency design and operating goals consistent with the Australian Greenhouse Office Technical Efficiency guidelines in design and operational management;

6 actions for the monitoring, regular auditing and annual reporting of "greenhouse gas" emissions and emission reduction strategies;

7 a target set by the proponent for the progressive reduction of total net "greenhouse gas" emissions and/or "greenhouse gas" emissions per unit of product and as a percentage of total emissions over time, and annual reporting of progress made in achieving this target. Consideration should be given to the use of renewable energy sources such as solar, wind or hydro power;

8 a program to achieve reduction in "greenhouse gas" emissions, consistent with the target referred to in (7) above;

9 entry, whether on a project-specific basis, company-wide arrangement or within an industrial grouping, as appropriate, into the Commonwealth Government's "Greenhouse Challenge" voluntary cooperative agreement program.

Components of the agreement program include:

1. an inventory of emissions;
2. opportunities for abating "greenhouse gas" emissions in the organisation;
3. a "greenhouse gas" mitigation action plan;
4. regular monitoring and reporting of performance; and
5. independent performance verification.

10 Review of practices and available technology; and

11 "Continuous improvement approach" so that advances in technology and potential operational improvements of plant performance are adopted.

7-2 The proponent shall implement the Greenhouse Gas Abatement Programme required by condition 7-1.

7-3 Prior to the commencement of construction, the proponent shall make the Greenhouse Gas Abatement Programme required by condition 7-1 publicly available.

8 Stack Emissions

8-1 Prior to commencement of construction, the proponent shall prepare a Stack Emissions Management Plan, to ensure that best available practicable and efficient technologies are used to minimise total air emissions from the power station, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

This Plan shall address:

1. specific measures to minimise total air emissions from the power station to meet emission limits consistent with best practicable technology and current industry standards;

2. monitoring of air emissions, including nitrogen oxides (NO_X) and volatile organic compounds (VOCs); and

3. public reporting of air emissions and any complaints about air emissions.

8-2 The proponent shall implement the Stack Emissions Management Plan required by condition 8-1.

8-3 The proponent shall make the Stack Emissions Management Plan required by condition 8-1 publicly available.

Procedures

1. Where a condition states "to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority", the Environmental Protection Authority will provide that advice to the Department of Environment for the preparation of written notice to the proponent.

2. The Environmental Protection Authority may seek advice from other agencies or organisations, as required, in order to provide its advice to the Department of Environment.

3. Where a condition lists advisory bodies, it is expected that the proponent will obtain the advice of those listed as part of its compliance reporting to the Department of Environment.

Notes

1. The Minister for the Environment will determine any dispute between the proponent and the Environmental Protection Authority or the Department of Environment over the fulfilment of the requirements of the conditions.

2. The proponent is required to apply for a Works Approval and Licence for this project under the provisions of Part V of the *Environmental Protection Act 1986*.

3. Within this statement, to "have in place" means to "prepare, document, implement and maintain for the duration of the proposal".

Dr Judy Edwards MLA
MINISTER FOR THE ENVIRONMENT; SCIENCE

07 NOV 2005

Schedule 1

The Proposal (Assessment No. 1583)

The proposal is to construct and operate a natural gas-fired combined-cycle gas turbine power plant with a nominal generation capacity of 320 megawatts on a site located off Leath and Barter Roads on the western edge of the Kwinana Industrial Area, being portion of Crown Reserve No. 30611 and part of Kwinana Lots 161, 218 and 1772 (vesting order number 90 for *Use and Requirements of State Energy Commission*) and part of Lot 22. (The location is shown in figures 1 and 2 attached).

The main components of the power plant are (See figure 3 attached):

- one natural gas-fired turbine of 160 megawatts nominal generating capacity;
- one 160 megawatts steam turbine;
- one heat recovery steam generator (HRSG);
- water-cooled condenser;
- sub-sea diffuser (80 metres) and associated pipeline (300 metres);
- demineralised water production plant (156 kilolitres per day capacity);
- one 60-metre HRSG stack; and
- administration, laboratory and control buildings.

The power station will be operated in two modes:

- as a base load power station providing 240 megawatts of power (65-85% of operating time); and
- with auxiliary duct firing to provide an additional 80 megawatts of power during times of peak demand (10-15% of operating time).

Cooling will be provided by a water-cooled condenser. Seawater from Cockburn Sound will be drawn into Western Power Corporation's existing inlet at a rate of 5 cubic metres per second. The project will involve construction of an 80-metre sub-sea diffuser and associated 300-metre pipeline.

The main characteristics of the proposal are summarised in table 1 below.

Figure 3 (attached) shows the site layout.

Table 1 - Key Proposal Characteristics (Assessment No. 1583)

Element	Description
Project Purpose	To construct, operate and maintain a nominal 320 megawatt base-load power station for the South West Interconnected System Grid
Life of the Project	30 years
Power Generating Capacity	320MW (nominal)
Facility footprint	Approximately 4 hectares
Fuel Type Gas Transportation Liquid Fuel	 Natural Gas Dampier to Bunbury Natural Gas Pipeline Approximately 200 litres diesel for emergency shutdown. Diesel will not be used as a generating fuel
Plant Facilities Gas turbine specifications Steam turbine specifications Heat recovery steam generator (HRSG) Number of stacks Height of HRSG stack	 1 x gas turbine of 160MW nominal generating capacity fitted with dry low NO_x burners 1 x single shaft, axial exhaust steam turbine of 160MW nominal steam generating capacity. 100% steam turbine bypass 1 x dual pressure HRSG with horizontal gas path and supplementary firing One 60m
Cooling System Cooling water intake Sub-sea diffuser and associated pipeline Cooling water intake rate Average temperature increase Benthic area disturbed during construction of pipeline and diffuser	Water cooled condenser Existing Western Power Cockburn 1 intake 300m pipeline with 80m diffuser $5m^3$/sec (~158GL/year) ~7 degrees Celsius 4m wide x 300m = 0.1 hectares disturbed
Thermal Efficiency Thermal Efficiency based on net higher heating value	 48% during base load (without duct firing) 46% during peak load (with duct firing)
Plant operation	Base load (65-85% of operation time) plus peaking capacity (10-15% of operation time)
Operation Hours Operation without duct firing Operation with duct firing	Available 24 hours, 365 days/year Approximately 5600-7500 hours/year (65-85% ACF) Approximately 1000-1300 hours/year (10-15% ACF)
Chemical Storage	All chemical/storage areas will be bunded and all chemical use areas will be paved

Element	Description
Inputs	
Natural Gas	~55 TJ per day (14.5 PJ/year)
Process water	150ML/year, supplied by Water Corporation
Outputs	
Waste water	Approximately 5.5ML/year
Waste water fate	Contained in Evaporation Pond or removed from site
Waste water composition	Salty water (max TDS 15000mg/L). Some inorganic salts and residual acids/alkalis may be present in the waste water
Air Emissions	
Oxides of Nitrogen (NO_X)	25- >31ppmv; 640 tonnes/year
Sulphur dioxide (SO_2)	4 tonnes/year
Carbon Dioxide (CO_2)	0.42 tonnes CO_{2e}/MWh; 0.75Mt/year
Carbon Monoxide (CO)	750 tonnes/year
VOCs	2 tonnes/year
PAHs	3 kilograms/year
Dioxins and furans	Will meet best practice of 0.1ng/Nm^3 (I-TEQ)
Predicted Noise Emissions	36.3dB(A) at nearest residential premise 46.3dB(A) at nearest industrial premise
Other	
Additional infrastructure	Control building, laboratory, electrical switchrooms, stores and workshops

Abbreviations

ACF	annual capacity factor
CO_{2e}	carbon dioxide equivalent
dB(A)	decibels (A weighted)
GL	gigalitres (10^9 litres)
HRSG	heat recovery steam generator
I-TEQ	international toxic equivalent
L	litres
m	metres
mg	milligrams (10^{-3} grams)
ML	megalitres
Mt	megatonnes (10^6 tonnes)
MW	megawatts (10^6 watts)
MWh	megawatt hours
ng/Nm^3	nanograms (10^{-9} grams) per normal cubic metre at 1 atmosphere, 0 deg C
PAHs	polycyclic aromatic hydrocarbons
PJ	petajoules (10^{15} joules)
ppm	parts per million
ppmv	parts per million by volume
TDS	total dissolved solids
TJ	terajoules (10^{12} joules)
VOCs	volatile organic compounds

Figures (attached)

Figure 1 - Regional location
Figure 2 - Location in Kwinana Industrial Area
Figure 3 - Kwinana Gas-Fired Power Station site layout

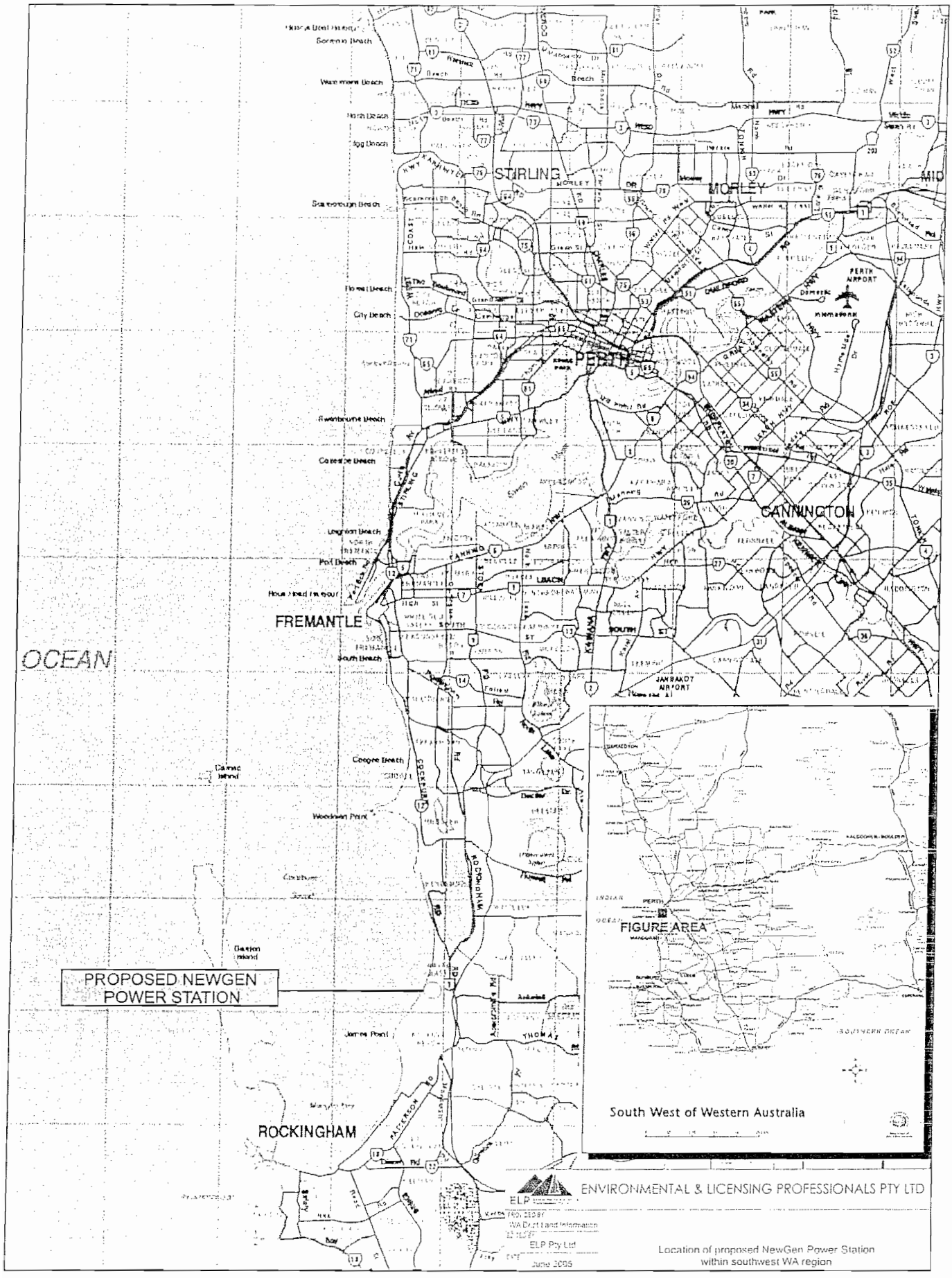

Figure 1: Regional location

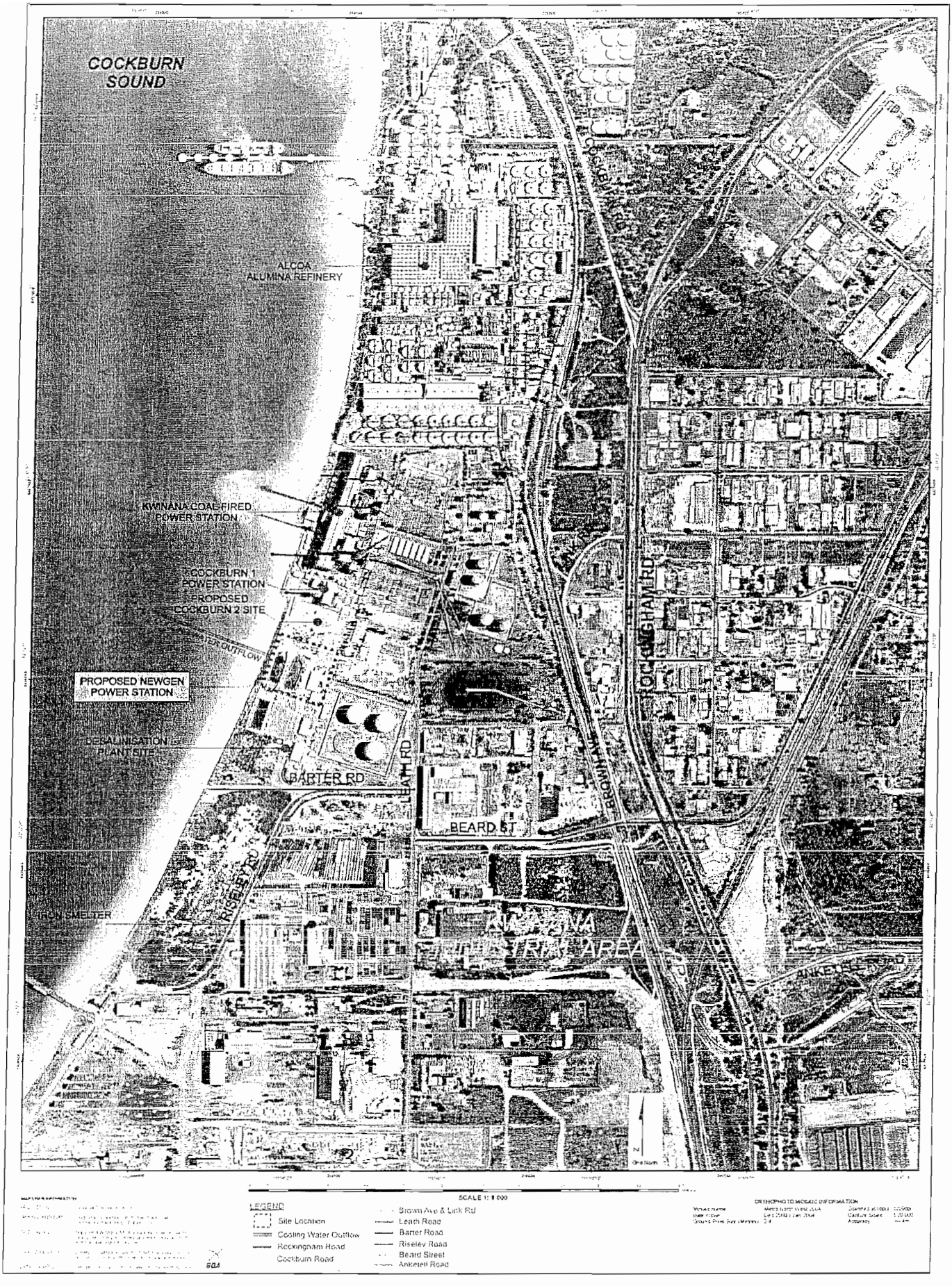

Figure 2: Location in Kwinana Industrial Area

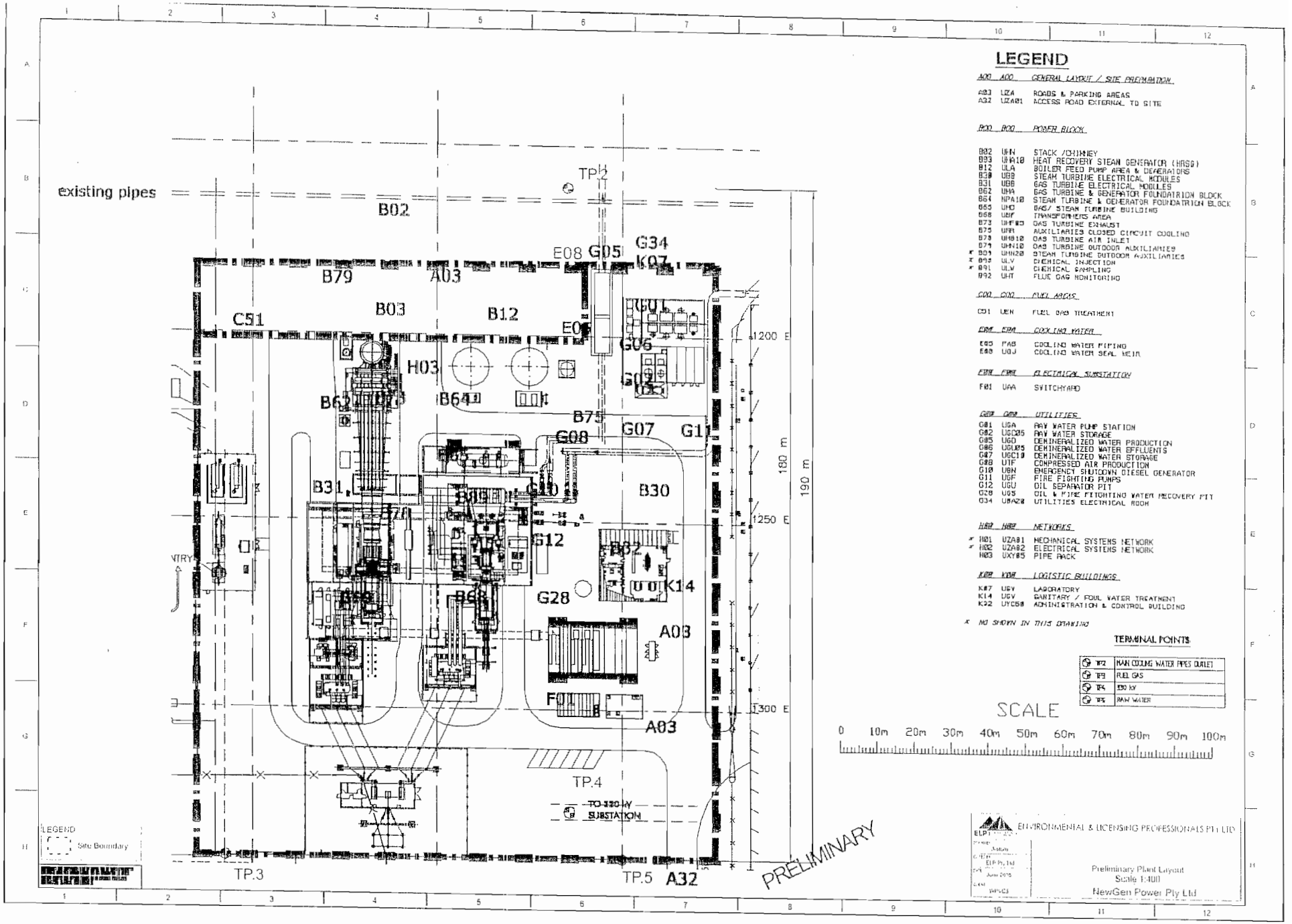

Figure 3: Kwinana Gas-Fired Power Station site layout

Schedule 2

PROPONENT'S ENVIRONMENTAL MANAGEMENT COMMITMENTS

May 2005

KWINANA GAS-FIRED POWER STATION WATER-COOLED CONDENSER LEATH & BARTER ROADS, KWINANA

(Assessment No. 1583)

NewGen Power Kwinana Pty Ltd

PROPONENT'S ENVIRONMENTAL MANAGEMENT COMMITMENT
KWINANA GAS-FIRED POWER STATION - WATER-COOLED CONDENSER (Assessment No. 1583)

Note: The term "commitment" as used in this schedule includes the entire row of the table and its six separate parts as follows:

- a commitment number;
- a commitment topic;
- the objective of the commitment;
- the 'action' to be undertaken by the proponent;
- the timing requirements of the commitment; and
- the body/agency to provide technical advice to the Department of Environment.

No.	Topic	Objective	Action	Timing	Advice
1	Greenhouse Gases	To ensure that emissions are within the greenhouse gas guidelines.	Become a signatory to the Greenhouse Challenge programme.	Project Design	Australian Greenhouse Office

Attachment to Statement 698

Change to Description of Proposal

Proposal: Kwinana Gas Fired Power Station (Water Cooled Condenser) Leath & Barter Roads, Kwinana

Proponent: NewGen Power Pty Ltd

Amendment of Schedule 1 – Key Proposal Characteristics Table 1

Features of previously approved Proposal:

Element	**Quantities/Description**
Wastewater	Approximately 5.5 ML/year
Wastewater fate	Contained in Evaporation Pond or removed from site.

Features of changed Proposal:

Element	**Quantities/Description**
Wastewater	Approximately 7.5 ML/year
Wastewater fate	Added to cooling water pipeline and discharged to Cockburn Sound

Approved under delegation: _____

Barry Carbon
Chairman

Date: _____

Attachment 2 to Ministerial Statement 698

Change to proposal approved under section 45C of the
Environmental Protection Act 1986

This Attachment replaces Schedule 1 and the Attachment of Ministerial Statement 698

Proposal: Kwinana Gas-Fired Power Station (Water Cooled Condenser)

Proponent: NewGen Power Kwinana Pty Ltd

Changes:

- Include an additional mode of operation
- Increase the authorised limit of oxides of nitrogen (NOx)
- Update location maps (Figures 1 and 2)

Table 1: Summary of the Proposal

Proposal Title	Kwinana Gas-Fired Power Station (Water Cooled Condenser)
Short Description	The proposal is to construct and operate a natural gas-fired combined-cycle gas turbine power plant with a nominal generation capacity of 320 megawatts on a site located off Leath and Barter Roads on the western edge of the Kwinana Industrial Area, being portion of Crown Reserve No. 30611 and part of Kwinana Lots 161, 218 and 1772 (vesting order number 90 for *Use and Requirements of State Energy Commission*) and part of Lot The main components of the power plant are: • one natural gas-fired turbine of 160 megawatts nominal generating capacity; • one 160 megawatts steam turbine; • one heat recovery steam generator (HRSG); • water-cooled condenser; • sub-sea diffuser (80 metres) and associated pipeline (300 metres); • demineralised water production plant (156 kilolitres per day capacity); • one 60-metre HRSG; and • administration, laboratory and control buildings. The power station will be operated in **three** modes; • as a base load power station providing 240 megawatts of power (65-85% of operating time); • with auxiliary duct firing to provide an additional 80 megawatts of power during times of peak demand (10-15% of operating time); **and**

	• **at low load operation, operating below an average switch over point of 160 megawatts (up to 56% of operating time).** Cooling will be provided by a water-cooled condenser. Seawater from Cockburn Sound will be drawn into Western Power Corporation's existing inlet at a rate of 5 cubic metres per second. The project will involve construction of an 80-metre sub-sea diffuser and associated 300-metre pipeline.

Table 2: Location and authorised extent of physical and operational elements

Element	Location	Previously Authorised Extent	Authorised Extent
Project Purpose		To construct, operate and maintain a nominal 320 megawatt base-load power station for the South West Interconnected System Grid.	To construct, operate and maintain a nominal 320 megawatt base-load power station for the South West Interconnected System Grid.
Life of the Project		30 years	30 years
Power Generating Capacity		320MW (nominal)	320MW (nominal)
Facility footprint	Figure 1	Approximately 4 hectares	Approximately 4 hectares
Fuel			
Type		Natural Gas	Natural Gas
Gas Transportation		Dampier to Bunbury	Dampier to Bunbury
Liquid Fuel		Natural Gas Pipeline	Natural Gas Pipeline
Plant Facilities			
Gas turbine specifications		1 x gas turbine of 160MW nominal generating capacity fitted with dry low NOx burners	1 x gas turbine of 160MW nominal generating capacity fitted with dry low NOx burners
Steam turbine specifications		1 x single shaft, axial exhaust steam turbine of 160MW nominal steam generating capacity, 100% steam turbine bypass	1 x single shaft, axial exhaust steam turbine of 160MW nominal steam generating capacity, 100% steam turbine bypass
Heat recovery steam generator (HSRG)		1 x dual pressure HRSG with horizontal gas path and supplementary firing	1 x dual pressure HRSG with horizontal gas path and supplementary firing
Number of stacks		One	One
Height of HRSG stack		60m	60m
Cooling System		Water cooled condenser	Water cooled condenser
Cooling water intake		Existing Western Power Cockburn 1 intake	Existing Western Power Cockburn 1 intake

Element	Location	Previously Authorised Extent	Authorised Extent
Sub-sea diffuser and associated pipeline		300m pipeline with 80m diffuser	300m pipeline with 80m diffuser
Cooling water intake rate		5m^3/sec (~158GL/year)	5m^3/sec (~158GL/year)
Average temperature increase		~7 degrees Celsius	~7 degrees Celsius
Benthic area disturbed during construction of pipeline and diffuser		4m wide x 300m = 0.1 hectares disturbed	4m wide x 300m = 0.1 hectares disturbed
Thermal Efficiency Thermal Efficiency based on net higher heating value		48% during base load (without duct firing) 46% during peak load (with duct firing)	48% during base load (without duct firing) 46% during peak load (with duct firing)
Plant operation		Base load (65-85% of operation time) plus peaking capacity (10-15% of operation time)	Base load (65-85% of operation time) plus peaking capacity (10-15% of operation time)
Operation Hours		Available 24 hours, 365 days/year	Available 24 hours, 365 days/year
Operation without duct firing		Approximately 5600-7500 hours/year (65-85% ACF)	Approximately 5600-7500 hours/year (65-85% ACF)
Operation with duct firing		Approximately 1000-1300 hours/year (10-15% ACF)	Approximately 1000-1300 hours/year (10-15% ACF)
Chemical Storage		All chemical/storage areas will be bunded and all chemical use areas will be paved	All chemical/storage areas will be bunded and all chemical use areas will be paved
Inputs Natural Gas		~55 TJ per day (14.5 PJ/year)	~55 TJ per day (14.5 PJ/year)
Process water		150ML/year, supplied by Water Corporation	150ML/year, supplied by Water Corporation
Outputs Waste water		Approximately 7.5 ML/year	Approximately 7.5 ML/year
Waste water fate		Added to cooling water pipeline and discharged to Cockburn Sound	Added to cooling water pipeline and discharged to Cockburn Sound
Waste water composition		Salty water (max TDS 15000mg/L). Some inorganic salts and residual acids/alkalis may be present in the waste water.	Salty water (max TDS 15000mg/L). Some inorganic salts and residual acids/alkalis may

Element	Location	Previously Authorised Extent	Authorised Extent
			be present in the waste water.
Air Emissions Oxides of Nitrogen (NOx)		25 -> 31ppmv; 640 tonnes/year	**31ppmv (gas turbine above switchover)** **60ppmv (gas turbine below switchover);** **880 tonnes/year**
Sulphur Dioxide (SO2)		4 tonnes/year	4 tonnes/year
Carbon Dioxide (CO2)		0.42 tonnes CO2e/MWh; 0.75Mt/year	0.42 tonnes CO2e/MWh; 0.75Mt/year
Carbon Monoxide (CO)		750 tonnes/year	750 tonnes/year
VOCs		2 tonnes/year	2 tonnes/year
PAHs		3 kilograms/year	3 kilograms/year
Dioxins and furans		Will meet best practice of 0.1 ng/Nm^3 (I-TEQ)	Will meet best practice of 0.1 ng/Nm^3 (I-TEQ)
Predicted Noise Emissions		36.3dB(A) at nearest residential premise 46.3dB(A) at nearest industrial premise	36.3dB(A) at nearest residential premise 46.3dB(A) at nearest industrial premise
Other Additional infrastructure		Control building, laboratory, electrical switchrooms, stores and workshops	Control building, laboratory, electrical switchrooms, stores and workshops

Note: Text in **bold** in Table 2 indicates a change to the proposal.

Table 3: Abbreviations and Definitions

Abbreviation	Term and Definition
Above switchover	The gas turbine premix burner is in operation.
Below switchover	The gas turbine pilot burner is in operation.
CEO	Chief Executive Officer
GL	gigalitre
ha	hectare
km	kilometre
ppmv	parts per million volume

Figures (attached)

Figure 1 Regional location
Figure 2 Location in Kwinana Industrial Area – **Deleted**

Coordinates defining the development envelope are held by the Department of Water and Environmental Regulation, Document Reference Number DWERDT286876.

[Signed 3 November 2020]

Dr Tom Hatton
CHAIRMAN
Environmental Protection Authority
under delegated authority

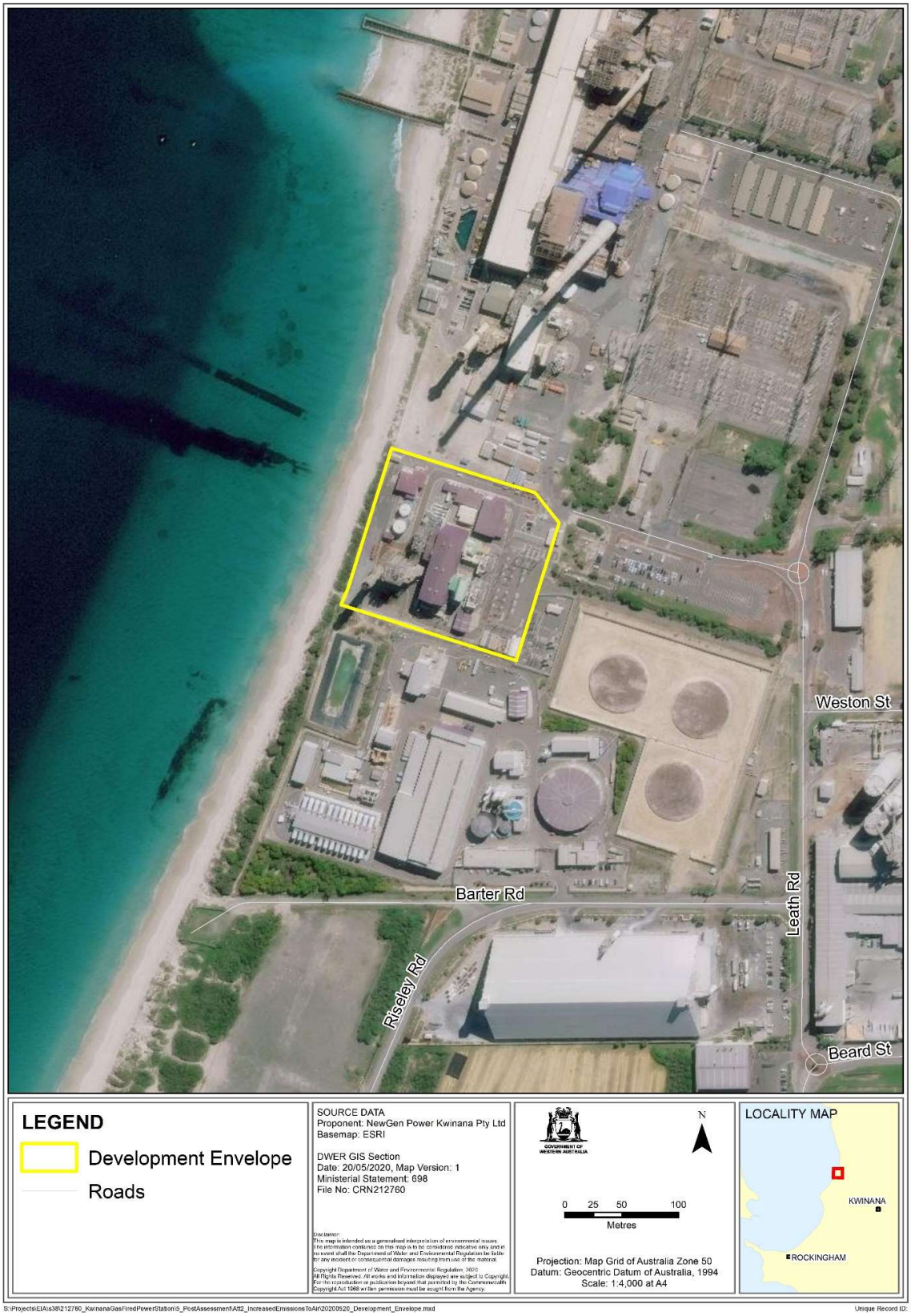

Figure 1: Regional location

Attachment 3 to Ministerial Statement 698

Change to proposal approved under section 45C of the *Environmental Protection Act 1986*

This Attachment replaces Schedule 1 and Attachment 2 of Ministerial Statement 698

Proposal: Kwinana Gas-Fired Power Station (Water Cooled Condenser)

Proponent: NewGen Power Kwinana Pty Ltd

Changes:

- Increase in power generation capacity and thermal efficiency

Table 1: Summary of the Proposal

Proposal Title	Kwinana Gas-Fired Power Station (Water Cooled Condenser)
Short Description	The proposal is to construct and operate a natural gas-fired combined-cycle gas turbine power plant with a nominal generation capacity of **335** megawatts on a site located off Leath and Barter Roads on the western edge of the Kwinana Industrial Area, being portion of Crown Reserve No. 30611 and part of Kwinana Lots 161, 218 and 1772 (vesting order number 90 for *Use and Requirements of State Energy Commission*). The main components of the power plant are: • one natural gas-fired turbine of **approximately 175** megawatts nominal generating capacity; • one 160 megawatts steam turbine; • one heat recovery steam generator (HRSG); • water-cooled condenser; • sub-sea diffuser (80 metres) and associated pipeline (300 metres); • demineralised water production plant (156 kilolitres per day capacity); • one 60-metre HRSG; and • administration, laboratory and control buildings. The power station will be operated in three modes; • as a base load power station providing 240 megawatts of power (65-85% of operating time); • with auxiliary duct firing to provide an additional 80 megawatts of power during times of peak demand (10-15% of operating time); and • at low load operation, operating below an average switch over point of 160 megawatts (up to 56% of operating time). Cooling will be provided by a water-cooled condenser. Seawater from Cockburn Sound will be drawn into Western Power

	Corporation's existing inlet at a rate of 5 cubic metres per second. The project will involve construction of an 80-metre sub-sea diffuser and associated 300-metre pipeline.

Table 2: Location and authorised extent of physical and operational elements

Element	Location	Previously Authorised Extent	Authorised Extent
Project Purpose		To construct, operate and maintain a nominal 320 megawatt base-load power station for the South West Interconnected System Grid.	To construct, operate and maintain a nominal **335** megawatt base-load power station for the South West Interconnected System Grid.
Life of the Project		30 years	30 years
Power Generating Capacity		320MW (nominal)	**335** MW (nominal)
Facility footprint	Figure 1	Approximately 4 hectares	Approximately 4 hectares
Fuel Type Gas Transportation Liquid Fuel		 Natural Gas Dampier to Bunbury Natural Gas Pipeline	 Natural Gas Dampier to Bunbury Natural Gas Pipeline
Plant Facilities Gas turbine specifications Steam turbine specifications Heat recovery steam generator (HRSG) Number of stacks Height of HRSG stack		 1 x gas turbine of 160MW nominal generating capacity fitted with dry low NOx burners 1 x single shaft, axial exhaust steam turbine of 160MW nominal steam generating capacity, 100% steam turbine bypass 1 x dual pressure HRSG with horizontal gas path and supplementary firing One 60m	 1 x gas turbine of **approximately 175MW at 41ºC** generating capacity fitted with dry low NOx burners 1 x single shaft, axial exhaust steam turbine of 160MW nominal steam generating capacity, 100% steam turbine bypass 1 x dual pressure HRSG with horizontal gas path and supplementary firing One 60m
Cooling System Cooling water intake Sub-sea diffuser and associated pipeline Cooling water intake rate		Water cooled condenser Existing Western Power Cockburn 1 intake 300m pipeline with 80m diffuser $5m^3$/sec (~158GL/year)	Water cooled condenser Existing Western Power Cockburn 1 intake 300m pipeline with 80m diffuser $5m^3$/sec (~158GL/year)

Element	Location	Previously Authorised Extent	Authorised Extent
Average temperature increase Benthic area disturbed during construction of pipeline and diffuser		~7 degrees Celsius 4m wide x 300m = 0.1 hectares disturbed	~7 degrees Celsius 4m wide x 300m = 0.1 hectares disturbed
Thermal Efficiency Thermal Efficiency based on net higher heating value		48% during base load (without duct firing) 46% during peak load (with duct firing)	**49%** during base load (without duct firing) **47%** during peak load (with duct firing)
Plant operation		Base load (65-85% of operation time) plus peaking capacity (10-15% of operation time)	Base load (65-85% of operation time) plus peaking capacity (10-15% of operation time)
Operation Hours Operation without duct firing Operation with duct firing		Available 24 hours, 365 days/year Approximately 5600-7500 hours/year (65-85% ACF) Approximately 1000-1300 hours/year (10-15% ACF)	Available 24 hours, 365 days/year Approximately 5600-7500 hours/year (65-85% ACF) Approximately 1000-1300 hours/year (10-15% ACF)
Chemical Storage		All chemical/storage areas will be bunded and all chemical use areas will be paved	All chemical/storage areas will be bunded and all chemical use areas will be paved
Inputs Natural Gas Process water		~55 TJ per day (14.5 PJ/year) 150ML/year, supplied by Water Corporation	~55 TJ per day (14.5 PJ/year) 150ML/year, supplied by Water Corporation
Outputs Waste water Waste water fate Waste water composition		Approximately 7.5 ML/year Added to cooling water pipeline and discharged to Cockburn Sound Salty water (max TDS 15000mg/L). Some inorganic salts and residual acids/alkalis may be present in the waste water.	Approximately 7.5 ML/year Added to cooling water pipeline and discharged to Cockburn Sound Salty water (max TDS 15000mg/L). Some inorganic salts and residual acids/alkalis may be present in the waste water.
Air Emissions Oxides of Nitrogen (NOx)		31ppmv (gas turbine above switchover) 60ppmv (gas	31ppmv (gas turbine above switchover) 60ppmv (gas turbine below

Element	Location	Previously Authorised Extent	Authorised Extent
		turbine below switchover); 880 tonnes/year	switchover); 880 tonnes/year
Sulphur Dioxide (SO_2)		4 tonnes/year	4 tonnes/year
Carbon Dioxide (CO_2)		0.42 tonnes CO_{2e}/MWh; 0.75Mt/year	0.42 tonnes CO_{2e}/MWh; 0.75Mt/year
Carbon Monoxide (CO)		750 tonnes/year	750 tonnes/year
VOCs		2 tonnes/year	2 tonnes/year
PAHs		3 kilograms/year	3 kilograms/year
Dioxins and furans		Will meet best practice of 0.1 ng/Nm^3 (I-TEQ)	Will meet best practice of 0.1 ng/Nm^3 (I-TEQ)
Predicted Noise Emissions		36.3dB(A) at nearest residential premise 46.3dB(A) at nearest industrial premise	36.3dB(A) at nearest residential premise 46.3dB(A) at nearest industrial premise
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ppmv	parts per million volume

Figures (attached)
Figure 1 Regional location

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[Signed 22 April 2024]

Prof. Matthew Tonts
CHAIR
Environmental Protection Authority
under delegated authority

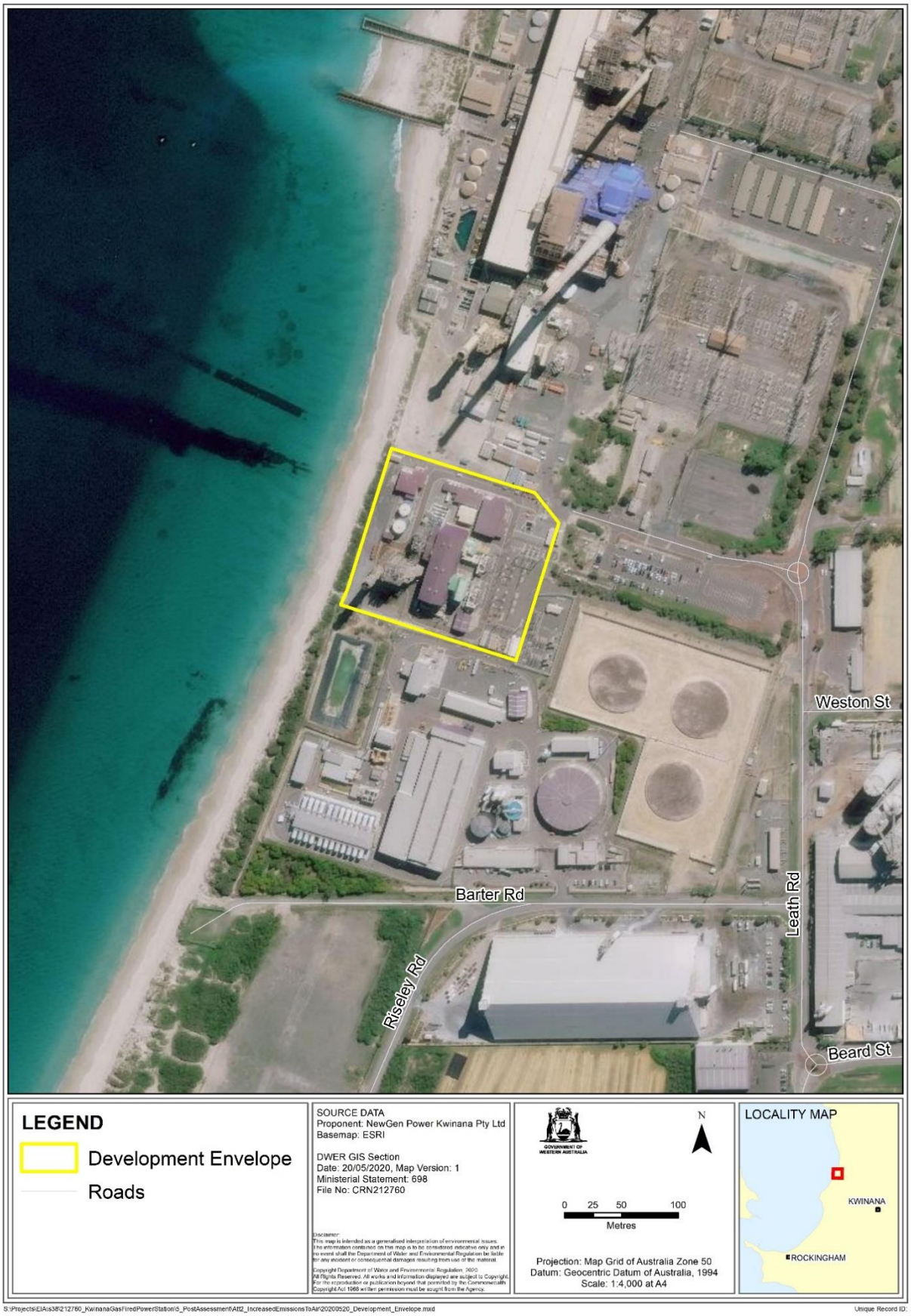

Figure 1: Regional location