Tallawarra Stage B - Power Station Project

PRELIMINARY ENVIRONMENTAL ASSESSMENT

- FINAL
- 6 September 2007

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Summary

This report provides a Preliminary Environmental Assessment to support TRUenergy's Project Application for the Tallawarra Stage B Gas Power Station Project. The report identifies key environmental issues associated with the project and ultimately supports an application to the Minister for Planning under Section 75J(1) for project approval.

TRUenergy is currently constructing a 400MW Combined Cycle Gas Turbine (CCGT) Power Station at Yallah, on the shores of Lake Illawarra some 13km South of Wollongong in the Illawarra district of NSW. The Power Station is sited on part of the area previously occupied by the Tallawarra coal fired power station.

TRUenergy wishes to proceed with Stage B of the project which involves the siting of either a CCGT power station, to provide intermediate to baseload electricity, or an OCGT power station to supplement electricity supply during times of peak demand. The Stage B Power Station will be sited adjacent to the Tallawarra A CCGT Power Station.

A shortfall in electricity supply is predicted to occur in NSW within the next few years. The key objective of the proposal is to provide additional electricity supply in NSW to address the predicted shortfalls. Determination of the nature of the market need (i.e. base load electricity or peaking supply) will be subject to detailed market analysis following approval for the project.

The preliminary desktop investigations and site visit conducted in February 2007 indicate that the key environmental issues for the Tallawarra Stage B OCGT/CCGT project include:

- Air quality impacts;
- Greenhouse gas emissions;
- Noise impacts;
- Water impacts; and
- Hazards and risk impacts.

A summary of the key environmental issues listed above is provided in the report. The intent of the discussion provided in this report is to demonstrate the proponent's existing understanding of the issues and the need for further environmental assessment of these issues.

The potential impacts and management of other issues such as land use, flora and fauna, heritage, socio-economics, traffic, waste management, soils, surface water and groundwater and the reasons they have not been designated as key issues to this process, are also discussed in this report. It is proposed that these other issues will be addressed in sufficient detail to assess the level of their

impacts (if any). It is anticipated that any impacts identified will be able to be managed through appropriate mitigation measures and management plans.

The management of both key issues and these secondary issues will be handled through a Statement of Commitments and the Conditions of Approval of the project, which will determine the requirements for environmental management.

1. Introduction

TRUenergy is currently constructing a 400MW Combined Cycle Gas Turbine (CCGT) Power Station at Yallah, on the shores of Lake Illawarra some 13 kilometres south of Wollongong. The Power Station is located on the part of the site previously occupied by the Tallawarra coal fired power station.

TRUenergy is now looking to proceed with Stage B of the project which involves development of either a CCGT Power Station, to provide intermediate to baseload electricity, or an Open Cycle Gas Turbine (OCGT) Power Station to supplement electricity supply during times of peak demand. Determination of the nature of the market need (i.e. base load electricity or peaking supply) will be subject to detailed market analysis following approval for the project.

The development of any additional Power Station on the site adjacent to the Tallawarra A Power Station provides economic and practical benefits through the co location of the facilities and use of existing resources.

The project will comprise, either:

- A single unit gas fired CCGT plant with a notional capacity of 400MW; or
- Two or three OCGT peaking units with a notional capacity of 300 - 450MW. The units will require duel fuel burners with a liquid fuel as a backup.

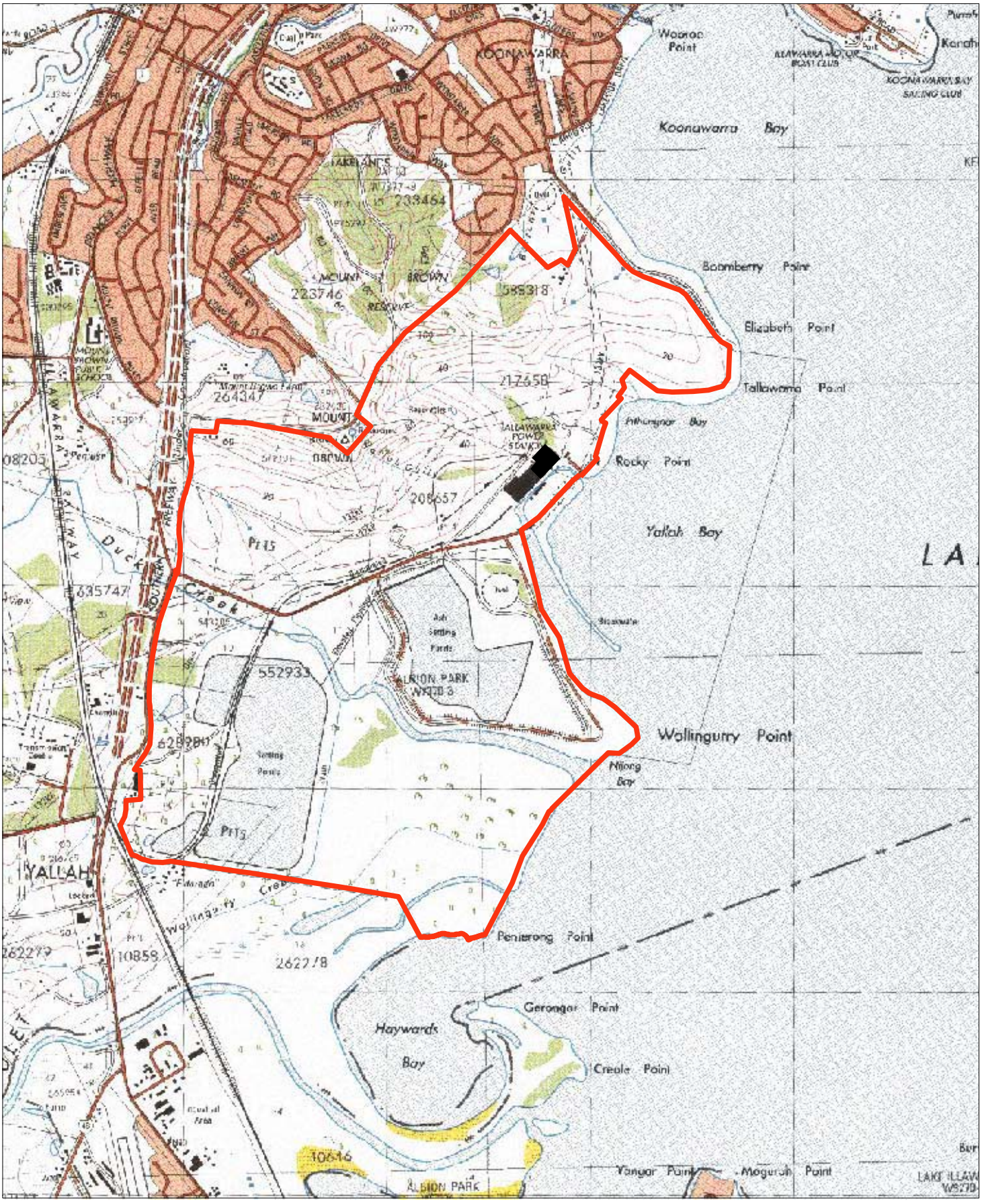
The project site and surrounding "Tallawarra Lands" owned by TRUenergy is shown on **Figure 1**. Approximately 2 hectare of the Tallawarra Lands area (565 hectares) is required for Tallawarra Stage B project (refer to **Figure 2**), although a buffer area around the Power Station of approximately 35 hectares will be maintained.

The Project is considered to be classed as a 'Major Project' under Part 3A of the *Environmental Planning and Assessment Act* 1979 (refer to **Section 3.1**). TRUenergy have since sought Ministerial authorisation to proceed under Part 3A of the *Environmental Planning and Assessment Act* 1979.

1.1 Purpose of the Document

This Preliminary Environmental Assessment has been prepared to:

- support TRUenergy's Project Application for the Tallawarra Stage B Project;
- brief the relevant government agencies about the proposed development;
- assist the Director-General of the Department of Planning (DoP) to develop Environmental Assessment requirements;
- introduce the environmental studies conducted to date; and



Legend

- Tallawarra Lands
- Stage B Area

0 250 500

Metres

1:25,000At A4

Figure 1- Locality Plan

Source: Aerial supplied by NSW Dept of Lands, Topographic data by Streetworks.

EN02239 - Tallawarra Site Masterplan

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Legend

Stage B Area

0 50 100

Metres

1:5,000 At A4

SKM

Figure 2 - Site Layout

EN02239 - Tallawarra Site Masterplan

Source: Aerial supplied by NSW Dept of Lands, Topographic data by Streetworks.

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- identify key issues to be addressed in the Environmental Assessment Report prepared to support the Project Application.

References in this document to the 'project area' relate to the proposed Tallawarra Stage B site and land required for ancillary facilities associated with the project, including existing facilities and their immediate surrounds.

1.2 The Proponent

TRUenergy is part of the CLP Group. The CLP Group strives to be the leading investor-operator in the Asia-Pacific electric power industry. CLP invests and operates power plants and systems in Hong Kong, the Chinese mainland, Australia, India, Thailand and Taiwan. TRUenergy comprises the former TXU Australia, Yallourn Energy and Auspower businesses.

TRUenergy provides electricity and natural gas to residents and businesses in Victoria, South Australia, New South Wales, Australian Capital Territory and Queensland. It also owns power stations in Victoria, South Australia and has the Tallawarra Power Station under development in New South Wales.

1.3 Background

In 1954 a coal fired power station was constructed on the site, which operated until 1989. The former plant and much of its ancillary buildings have been demolished and the operational areas of the site remediated.

The then owner of the site, Pacific Power, prepared an Environmental Impact Statement in 1998 to support the Development Application for a new combined cycle gas turbine CCGT power station. Wollongong City Council granted development consent for the CCGT power station in 1999.

The Tallawara site was purchased by TRUenergy from Pacific Power on 30 April 2003. Initial site works for the power station commenced in 2004. Following a competitive tender process a contract was awarded to Alstom Power to engineer, procure and construct the power station based on its highly efficient, low emissions GT26 gas turbine.

The CCGT power station will utilize some of the existing infrastructure, such as the overhead power lines, water supply line and the concrete canals adjacent to the lake.

Commercial operation of the CCGT power station is expected to commence prior to summer 2008/2009. The approved CCGT power station will have a nominal 400MW capacity and will be supplied with natural gas via a lateral line from the Eastern Gas Pipeline which is situated to the west of the site. The electricity produced will be distributed using a purpose built switchyard and existing transmission lines.

The power station will assist TRUenergy meet its expanding retail base electricity demands and will help to maintain supply reliability for businesses and households in NSW.

1.3.1 Tallawarra Lands

As part of a separate approval process, TRUenergy are investigating future land use options for the remainder of the Tallawarra Lands site. TRUenergy submitted a pre-rezoning submission to Wollongong City Council in July 2005. On 12 September 2005 Council resolved to prepare a draft Local Environment Study (LES). The LES was adopted by Council in April 2007. It identifies preferred categories of development including, industrial, commercial, residential and conservation areas.

A draft Local Environment Plan (LEP) has been prepared for the site in accordance with the new standard LEP template. Council has endorsed the Tallawarra component of the draft LEP. The overall LEP is scheduled to be exhibited later this year.

The impact assessment for the Stage B Power Station development will assist in the determination of future land uses and controls boundaries for the Tallawarra Lands site. Potential future land uses will be considered as part of the impact assessment undertaken for this project.

2. Description of Proposed Development

2.1 Overview

The proposed Tallawarra Stage B Power Station will be located adjacent to the existing Tallawarra CCGT Power Station.

The project comprises:

- power station plant of:
  - 2 to 3 open cycle gas turbine generators with a nominal capacity of 300-450MW; or
  - 1 combined cycle gas turbine generator with a nominal capacity of 400MW;
- turbine condensate cooling for the CCGT plant (either once through lake water cooling, wet cooling towers with lake water make up or air cooling);
- high voltage switchyard (extension) comprising high voltage transformers and switchgear;
- transmission line connection to the existing 132kV network;
- connecting gas pipelines, gas receiving station and gas conditioning station;
- distillate tank and unloading station;
- potable/fire water tank;
- demineralised water tank;
- electrical module; and
- emergency diesel generator.

The project will also utilise, where possible, existing infrastructure associated with the Tallawarra A CCGT power station including:

- control room, administration, amenities and workshop building;
- internal roads and car parking;
- domestic wastewater treatment and disposal system;
- security fencing; and
- landscaping and tree planting to provide visual screening of the facility.

2.2 Gas Turbine Power Station

Subject to the results of TRUenergy's market evaluation of NSW electricity demand projections the Tallawarra Stage B project will comprise, either:

- A single unit CCGT plant with a notional capacity of 400MW; or

- Two or three OCGT peaking units with a notional capacity of 300 - 450MW. The units will require duel fuel burners with a liquid fuel as a backup.

The CCGT Power Station option will comprise one combined cycle turbine with a nominal capacity of 400MW. Combined cycle plants utilise a gas turbine and a steam turbine to drive an electrical generator. The hot exhaust gases generated from the gas turbine feed into a heat recovery system which produces steam to power a steam turbine. The steam turbine is coupled to the same shaft as the gas turbine and provides approximately one third of the power output. The combined cycle process increases the overall efficiency of conversion of fuel to electricity. The CCGT will exhaust at lower temperature via stack similar to Tallawarra A and nominally 60 m in height. The CCGT will be fuelled with natural gas.

The CCGT plant will generate electricity at a voltage in the range of 11,000-22,000 volts depending on the power plant selected. The voltage will be increased to 132,000 volts by a transformer prior to being fed via a switchyard to the transmission lines crossing the site.

The OCGT Power Station option will comprise two to three open cycle turbines with a combined nominal generating power capacity of up to approximately 450MW. Each gas turbine generator unit will consist of three main items being the gas turbine, generator and high voltage transformer. It will operate to supply electricity at short notice during periods of peak demand or system emergency situations.

The hot exhaust gases generated by the combustion process are used to drive a turbine which in turn drives an electrical generator to produce electricity. The hot exhaust gases pass through a silencer unit and are discharged through an exhaust stack fitted at the end of each gas turbine unit. The height of the exhaust stacks will be in the order of 40m.

The OCGT plant will also generate electricity at a voltage in the range of 11,000-22,000 volts depending on the power plant selected with the voltage being increased to 132,000 volts by a transformer prior to being fed via a similar switchyard to the transmission lines crossing the site.

The OCGT gas turbines will run on natural gas as the primary fuel, with distillate fuel as a back-up fuel for use during a major interruption to, or periods of, limited natural gas supply.

The Tallawarra B Power Station will use the natural gas will be supplied from an extension to the existing lateral connecting the CCGT to the Eastern Gas Pipeline (EGP). It will require separate gas conditioning and metering equipment adjacent to the Tallawarra A gas conditioning and metering equipment.

In each gas turbine generator, air is drawn in through filters to remove particulate matter prior to compression. The compressed air then flows into the combustion chambers where natural gas is

injected and burnt, increasing the temperature to approximately 1100 to 1250°C depending on the particular model.

The gas turbines feature combustors with Dry Low Oxides of Nitrogen (NOx) technology to produce very low NOx emissions.

2.2.1 Cooling System

The OCGT Power Station utilises a closed cycle cooling system. This may include an evaporative cooling system using water to cool the air stream before it enters the combustion chamber of the gas turbine. This system will ensure maximum efficiency and output of the gas turbines during hot weather conditions.

The gas turbines may incorporate additional spray humidification to further augment the output on days of high humidity and high temperature.

The CCGT requires additional cooling for the steam cycle. Several options for turbine condensate cooling are currently being investigated including once through lake water cooling, wet cooling towers with lake water make up and/or air cooling.

Additional smaller self contained cooling systems will also operate throughout the power plant to cool auxiliary equipment. These systems will involve various arrangements using water, air and/or oil as the cooling medium.

2.2.2 Fuel

The gas turbines will be capable of running on natural gas and in the case of OCGT's distillate fuel. Natural gas will be the primary fuel source, and distillate fuel will only be used as a back-up should there be a major disruption or shortage to the natural gas supply.

Gas Fuel

Natural gas fuel for the turbines will be supplied from a connection to the existing CCGT lateral connecting the Tallawarra site to the EGP. A new gas metering and conditioning plant will be constructed adjacent to the existing Tallawarra A Plant. A new pipeline connecting the proposed power station to the existing pipelines will be constructed.

Distillate Fuel

The OCGT option includes installation of a distillate fuel tank(s) adjacent to the proposed power station. The tank(s) and associated pipework will be designed and bunded to comply with requirements of Australian Standard *AS 1940 The storage and handling of flammable and combustible liquids*.

The distillate tank(s) will store fuel to supply the power station with sufficient fuel to operate in the event of an interruption to the natural gas supply and there is a need to operate the power station. Distillate fuel will be transported to the site via road tankers on an “as needed” basis.

2.3 Ancillary Infrastructure

2.3.1 Emissions Control

The gas turbines will be specified with dry, low NOx combustors to produce NOx emissions of 25 parts per million or less at full load when firing on natural gas.

When firing the OCGT gas turbine facility on distillate fuel, additional demineralised water is injected into the combustion chamber of the gas turbine to lower the peak combustion temperature and limit the generation of NOx emissions to less than 45 parts per million at full load.

The proposed gas turbine plant will comply with the Protection of the Environment Operations (Clean Air) Regulation 2002 emission limits of 25 parts per million NOx emissions in natural-gas firing mode and 45 parts per million NOx emissions in distillate-fuel firing mode.

A continuous emission monitoring system will be installed to monitor all stack emissions against Environmental Protection Licence limits and other relevant regulations.

2.3.2 Transformers and High Voltage Switchyard

Electric generators coupled to the gas turbines will operate at a voltage of approximately 22 kilovolts. This will be stepped up to 132 kilovolts using step-up transformers to evacuate the power from the site. Connection to the high voltage switchyard will be via an above-ground connection from the step-up transformers to a new dedicated bay adjacent to the existing high voltage switchyard.

2.3.3 Chemicals and Oil storage

Due to the nature of facility, chemicals and / or dangerous goods will be stored at the facility. A list of the type and quantities of chemicals to be used and stored at the proposed power station will be outlined in the Environmental Assessment report.

Chemicals will be stored on-site in designated chemicals storage facilities that will be constructed in compliance with relevant Australian Standards.

Spill controls will be provided around the gas turbine generators and distillate storage areas to contain and separate any leakage. A number of other gas turbine generator controls and alarms will indicate a lubricating oil leak including the low oil pressure alarm, low oil pressure trip and low oil level alarm.

2.3.4 Emergency Diesel Generators

Emergency diesel generators will be installed to provide emergency power during a station trip or a complete system shutdown.

2.3.5 Water

Water will be stored in tanks on site for fire services, evaporative cooling, water sprays and demineralised water for NOx control when operating on diesel fuel. Potable water will be supplied to the Tallawarra Stage B OCGT Plant site from the existing Tallawarra site supply from the Sydney Water main. Waste generated from the demineralised water process will be discharged from site, via an existing constructed wetland in accordance with approved CCGT water management controls.

For the CCGT option, water will be required for the condenser cooling system. It is proposed to draw water for condenser cooling from the lake via the existing inlet canal or a similar purpose built arrangement. Two types of water cooling are currently being investigated; including 'once through' lake water cooling and wet cooling towers with lake water make up. Discharge options are also currently under investigation and will be detailed in the Environmental Assessment.

2.3.6 Sewage Treatment

A small amount of wastewater will be generated by staff using the site. Sewage from amenities provided from staff will be directed to an existing on-site package sewage treatment plant to ensure that there is zero discharge from the site.

2.3.7 Site Office and Workshop

One of the aims of the project is to maximise the use of TRUenergy's currently approved CCGT Power Station equipment and infrastructure. The Tallawarra Stage B Plant will utilise the existing Tallawarra Power Station control room, administration building, amenities and workshop to the extent possible.

2.3.8 Site Access and Parking

Access to the Tallawarra Stage B Plant will be provided from the Princes Highway via Yallah Bay Road. The Tallawarra B Power Station will also utilise the existing carpark facilities.

2.4 Workforce and Hours of Operation

It is expected that during construction of the Stage B Plant the peak employment level will be in the order of 200-250 personnel for an OCGT or 300-400 personnel for a CCGT. Construction activities will be undertaken during standard daytime construction hours (7.00am to 6.00pm Monday to Friday and 7.00am to 1.00pm on Saturdays). With normal progress construction works are not proposed to be undertaken on Sundays or public holidays.

Once operational the Stage B Plant will require an increase in the number of personnel to manage day-to-day routine operations and maintenance. For an OCGT approximately 1-3 additional personnel will be required. A CCGT will require an additional 15-20 personnel.

Shutdown maintenance activities will be undertaken by a casual workforce, in the same manner as for the Tallawarrra A CCGT Plant. This will result in a short-term increase in personnel at the site during these events.

2.5 Alternatives and Justification

2.5.1 Alternatives Considered to Date

During the development of the conceptual Stage B Power Station a number of alternative locations, layouts and technologies on the site were considered. The Tallawarra site was identified as the preferred location for a power station as the site is already owned and operated by TRUenergy. A CCGT Power Station has already been approved for this site and is currently under construction. The Stage B Plant will be designed to utilise some of the existing equipment and infrastructure associated with the Tallawarra A CCGT Power Station. In addition, the proposed Stage B Plant will be located within a highly disturbed area associated with the former coal fired power station.

Minimising environmental and social impacts and maximising efficiency have been major considerations in the evaluation of alternative options. Alternative options have included:

- plant locations on the site;
- unit configurations;
- number of units; and
- secondary fuel options.

Further discussion of the alternatives considered will be included in the Environmental Assessment report for the project.

The consequences of not proceeding with the proposal will result in the loss of the benefits of the project including:

- increased reliability of electricity supply;
- improved security of electricity supply during system emergencies or blackouts;
- improved environmental outcomes through the generation of lower greenhouse gas emissions per unit of output than conventional power generation technologies; and
- social and economic benefits through the provision of direct and indirect employment opportunities.

2.5.2 Justification for Project

To meet future electricity growth in NSW a number of additional power plants will be required to serve both peaking capacity as well as intermediate and base load requirements. TRUenergy is seeking to construct and operate the Tallawarra Stage B CCGT/OCGT Power Station to mitigate against power shortages and increased user demand.

Tallawarra is the ideal site for a new Plant, being located adjacent to the Tallawarra A CCGT Power Station and utilising existing infrastructure including electricity transmission and gas pipelines. The new plant will occupy a small area of the overall site.

The key objective of the proposal is to provide additional electricity supply in NSW to address the predicted shortfalls. Determination of the nature of the market need (i.e. base load electricity or peaking supply) will be subject to detailed market analysis following approval for the project.

3. Planning Considerations and Consultation

3.1 Planning Considerations

The project requires approval under Part 3A of the Environmental Planning and Assessment Act 1979 (EP&A Act) as it is of a class of development listed in Schedule 1 of the State Environmental Planning Policy (SEPP) (Major Projects) 2005. The listing in Schedule 1 of the SEPP that applies to this project is:

"Development for the purpose of an electricity generation facility that:
(a) has a capital investment value of more than $30 million for gas or coal-fired generation, or co-generation, or bioenergy, bio-fuels, waste gas, bio-digestion or waste to energy generation, or hydro or wave power generation, or solar power generation, or wind generation, or
….."

In addition to approval under Part 3A of the EP&A Act, the project may also require approvals under a number of additional Acts or assessment under State Environmental Planning Policies. The additional Acts and policies relevant to this project are listed in **Table 1** below with an indication of any approvals likely to be required.

Table 1 Other Potentially Relevant Acts and State Planning Policies

Planning Provisions	Comments	Relevant Licences/ Approvals/ Assessments
Commonwealth Legislation		
Environmental Protection and Biodiversity Conservation Act 1999	Under the *Environmental Protection and Biodiversity Conservation Act* (EPBC Act), approval of the Commonwealth Minister for the Environment and Heritage is required for any action that may have a significant impact on matters of national environmental significance.	A search of the EPBC Act database (refer to **Appendix 2**) indicates that the Project will not impact on any matters of National environmental significance prescribed by the EPBC Act, therefore approval from the Commonwealth Minister for Environment will not be required for this project.
NSW Legislation		
Protection of the Environment Operations Act 1997	The *Protection of the Environment Operations Act (POEO Act)* relates to pollution and waste disposal in NSW and provides for the licensing of certain types of development.	It is anticipated that the proposed project will require licensing under the provisions of the POEO Act.
Pipelines Act 1967	The *Pipelines Act 1967* was enacted to meet the need for efficient and economical transportation of petroleum and natural gas products over long distances. The Act is flexible enough to provide for the construction and operation of pipelines to carry any substance,	Under Part 3A of the EP&A Act a Pipeline Licence will be required to be obtained through NSW Department of Energy and Water after the Minister for Planning has approved the project. Under Section 75V of the EP&A Act, if the Project is granted project

Planning Provisions	Comments	Relevant Licences/ Approvals/ Assessments
	whether gaseous, liquid or solid, suitable for transportation by pipe, but does not automatically extend to all types of pipelines. This involves the general oversight of location, development and acquisition of land and easements to facilitate the actual construction and maintenance of the pipeline.	approval under Part 3A of the EP&A Act, the Pipeline Licence cannot be refused by DWE and must be substantially consistent with the terms of the Project approval.
Roads Act 1993	A licence under Section 138 of the Roads Act is required in order to undertake works within a road reserve.	Access to the project site currently exists off the Princes Highway. If this access changes as a result of the proposal, an application will be made to the Road Authority. Heavy equipment and plant components (including turbines) will be transported to the site via road from Port Kembla. The RTA will be consulted regarding traffic management for this activity.
Dangerous Goods Act 1974	This Act is administered by WorkCover and requires that licences be held for the storage, transport and use of dangerous goods, as prescribed by the Dangerous Goods Regulation 1999.	A licence will be required for any prescribed goods where relevant thresholds are exceeded.
State Environmental Planning Policies		
State Environmental Planning Policy (SEPP) 33 – Hazardous and Offensive Development	SEPP No. 33 requires the consent authority to consider whether an industrial proposal is a potentially hazardous industry or a potentially offensive industry. A hazard assessment is completed for potentially hazardous development to assist the consent authority to determine acceptability.	A hazard assessment will be required to be completed as part of the environmental assessment for the project in order to determine if the project is categorised as a potentially hazardous or potentially offensive industry.
Regional Environmental Plans		
Illawarra Regional Environmental Plan No.1	This Plan aims to maximise opportunities for the region by identifying regional planning issues. The Plan details specific provisions relating to the supply and demand for different land uses.	The 3A assessment will consider the aims and objectives of this Plan.
Local Environmental Plans		
Wollongong Local Environmental Plan (LEP) 1990	This Plan provides statutory planning controls for the Wollongong local government area. The project site is zoned 5(a) Special Uses and the proposed OCGT peaking units are permissible with development consent in this zone. As discussed above, a new LEP is	The Part 3A assessment will consider the objectives of the 5(a) Special Uses zoning and future land uses on the Tallawarra Lands site.

Planning Provisions	Comments	Relevant Licences/ Approvals/ Assessments
	currently under consideration for the surrounding Tallawarra Lands site.	
Draft Wollongong Local Environmental Plan (Interim Review)	The purpose of this draft LEP is to update the current LEP by removing anomalies, clarify provisions, reflect best practices and improve the readability of the LEP.	Proposed amendments to the draft LEP do not have any specific implications for the project site.

3.2 Authority Consultation

The authority consultation process for the project has commenced with an initial briefing meeting held with the Department of Planning (DoP) on Thursday 30 August 2007. TRUenergy have since sought Ministerial authorisation to proceed under Part 3A of the *Environmental Planning and Assessment Act* 1979.

The next stage of the consultation process is the lodgement of the Project Application and this Preliminary Environmental Assessment with DoP. All relevant government agencies, including Wollongong City Council, will be invited to provide advice to the DoP regarding the Environmental Assessment Requirements for the project.

In addition to the DoP, the key agencies for this project will be:

- Department of Environment and Climate Change (DECC);
- Department of Water and Energy (DWE); and
- Wollongong City Council (WCC);

Consultation with the above authorities and any others specified by DoP will be ongoing throughout the environmental assessment phase of the project.

Consultation will also be undertaken, as necessary, with Air Services Australia, Civil Aviation Safety Authority and the Department of Transport and Regional Services with regard to potential impacts on Illawarra Regional Airport.

3.3 Community Consultation and Social Impact Assessment

Initial consultation with the community regarding this project has been undertaken by briefing the Tallawarra Power Station Community Liaison Group. The Tallawarra Power Station Community Liaison Group was convened in 2003 to facilitate information transfer and inform the community regarding the CCGT Power Station. The group comprises 25 representatives from the local community organisations, government agencies and leaseholder representatives.

Consultation with the Tallawarra Power Station Community Liaison Group and broader community will be ongoing throughout the environmental assessment phase of the project. Where requested or considered necessary, individual meetings with community members will also be undertaken.

The full details of the community consultation program will be documented in the Environmental Assessment report prepared for this project.

4. Preliminary Environmental Assessment

4.1 Environmental and Community Context

The project site is located to the south east of Dapto, on the western foreshore of Lake Illawarra. The site is some 80 kilometres south of Sydney and 13 kilometres southwest of Wollongong. The location of the project site and immediate surrounds are shown in **Figure 1**.

The project site has been significantly modified as a result of previous land use associated with the operation of the former coal powered power station and its ancillary operations. The former power station had a considerably larger overall footprint than the approved Tallawarra A CCGT Power Station and proposed Stage B power station. The broader Tallawarra Lands site has been utilised for grazing purposes.

The project site is zoned 5(a) Special Uses. The site is located on the footslopes of Mount Brown located to the north-west of the site and the foreshore of Lake Illawarra located immediately to the east of the site.

The climate of the Illawarra region can be described as temperate and is moderated by the proximity of Lake Illawarra and the Pacific Ocean. The region experiences warm to hot summers, with average maximum temperatures of 27.0°C in February and cool to mild winters, with average minimum temperatures of 6.8°C in July. The annual average maximum and minimum temperatures are 22.7°C and 12.0°C respectively. The mean rainfall is 1227mm per year with February, April and June being the wettest months. Rainfall occurs on average on 72 days per year.

4.1.1 Land Ownership

TRUenergy owns all of the land within the project area and surrounding Tallawarra Lands, a total area of 565 hectares (refer to **Figure 1**). As part of the previously approved Tallawarra A CCGT Power Station project and the proposed Stage B project design, TRUenergy has retained a buffer zone on its own land around the development site.

4.2 Assessment of Key Issues

4.2.1 Air Quality & Greenhouse Gas Emissions

The existing air quality around the project area is influenced by surrounding rural-residential and residential land uses, vehicular traffic movements and emissions, rail traffic movements and emissions, surface disturbance and exposure of soil associated with construction works and industrial land uses.

In addition, the Illawarra region is subject to existing concerns regarding air pollution, specifically photochemical smog which is associated with emissions of NOx. The regional topography and climate conditions including prevailing wind direction contribute to emissions being transported from over Sydney to the Illawarra basin.

Operation of the Tallawarra Stage B Power Station will result in the emission of combustion products through exhaust stacks. The emissions will largely comprise carbon monoxide, carbon dioxide and nitrogen oxides (NOx).

Construction of the Tallawarra Stage B Power Station and associated infrastructure will require the excavation, levelling and clearing of approximately 2 hectares. Other sources of dust during construction include vehicle movements and demolition activities.

Appropriate dust management measures will be implemented throughout the duration of construction activities including watering of exposed soils when necessary, water sprays for dust-generating excavation and demolition activities and progressive restoration of disturbed areas. These standard measures will ensure that the impacts from dust generation are minimised and are minor.

The combustion of fuels by construction equipment and vehicular movements will also contribute to emissions within the local environment. However, provided equipment and vehicles are properly maintained emissions will cause a significant impact.

Conclusion and Need for Further Assessment

Dust and combustion emissions will be generated from construction activities associated with the Tallawarra Stage B power station project. However, provided standard mitigation measures as detailed in the section above are implemented, the impact of these sources of pollution on air quality will be minor and temporary.

A comprehensive air quality and greenhouse gas emission assessment will be completed for operation of the Tallawarra Stage B Power Station project as part of the Environmental Assessment, including CASA plume modelling, calculation of predicted emissions and identification of appropriate mitigation measures. The emissions from the exhaust stacks will be the most significant factor in this regard, with extensive plume modelling being conducted incorporating a number of variations in the meteorological characteristics of the region and topography.

4.2.2 Noise

Background noise levels at the project site are currently low with the main contributors being rural use and the rail and road corridors. However it is understood the area will be impacted by the approved Tallawarra A CCGT Power Station currently under development. Existing residential development is located approximately one kilometre to the north and north-west of the project site and 2.5 kilometres to the south-west. However, TRUenergy lodged a pre-rezoning submission to Wollongong Council for the rezoning of the surrounding Tallawarra Lands in July 2005. Following submission of the pre-rezoning submission, Council then resolved to prepare a draft LES. The LES was adopted by Council in April 2007. A draft LEP has since been prepared for the site and endorsed by Council. As such, future noise receivers must be assessed as part of this project.

It is expected that noise emissions associated with the operation of the project will mainly be limited to the gas turbines and generators. Operational noise will be short-term and intermittent in nature.

During construction, noise will be generated though building and assembly works, major earthworks and excavations, crane operations and material deliveries.

Construction and operational noise impacts will generally be mitigated through appropriate management and design measures. Standard noise controls will be implemented during the construction phase such as limiting construction to DEC normal working hours and maintaining ongoing consultation with nearby residential receivers.

Conclusion and Need for Further Assessment

A noise assessment will need to be undertaken to assess the operational impacts of the project. This will include monitoring of existing noise levels, evaluation of future noise sources (particularly the approved Tallawarra A CCGT Power Station which is currently under construction) and the modelling of the potential impacts in accordance with industry recognised standards and protocols. The criteria used to assess the noise impacts will be reviewed in consultation with DEC. Potential future land uses, associated with the rezoning of Tallawarra Lands, will also be considered as part of this noise assessment.

4.2.3 Water

The proposed Stage B Power Station is located within the Lake Illawarra Catchment. Yallah Creek, an intermittent creek flowing from Mount Brown to the northern section of the existing inlet canal borders the northern extent of the project area.

Potable water for drinking, general power station use and steam plant make-up will be supplied to the Tallawarra Stage B OCGT Plant site from the existing Tallawarra site supply from the Sydney Water main. Water for domestic and construction supply will be piped directly to usage points.

The remaining water, for use in the steam circuit, plant washdown, station services and fire services, will be supplied via the two existing 1ML storage tanks. Demineralised water for NOx control (when operating on diesel fuel) will also be stored on-site.

The CCGT option will also draw water from Lake Illawarra for condenser cooling. Condenser cooling options currently being considered include once through lake water cooling, wet cooling towers with lake water make up and/or air cooling.

Conclusion and Need for further Assessment

The operation of the Stage B Power Station will result in increased water use and potential for impact on aquatic biota and water quality. An assessment of impact of the proposal on water quality will be conducted and mitigation measures proposed to prevent any detrimental impact on surrounding water bodies.

Additionally a comprehensive assessment of the environmental impacts presented by the proposed Stage B CCGT cooling water once through and wet cooling tower options will be undertaken and presented in the Environmental Assessment.

4.2.4 Hazard Analysis

State Environmental Planning Policy No. 33 (SEPP 33) – Hazardous and Offensive Development applies to all industries that are considered to be potentially hazardous industry or potentially offensive industry. The policy is designed to ensure new developments only proceed if they are suitably located and able to demonstrate that they can be built and operated with an adequate level of safety. The assessment process detailed in the guidelines accompanying SEPP33 will be applied to the project to ensure that risks to surrounding land uses are clearly identified and mitigation measures developed, if required.

In order to determine whether an industry is classified as 'potentially hazardous industry' DoP has developed a risk screening procedure based on the quantity of dangerous goods involved in the proposal and the distance of these materials from the project site boundary. Hazardous materials are classified by the Australian Code for the Transport of Dangerous Goods by Road and Rail (Australian Dangerous Goods Code). If a project proposes to store quantities of these goods below the relevant thresholds it can be assumed there is unlikely to be a significant off-site risk and the proposal is therefore not classified as 'potentially hazardous industry'.

The Tallawarra Stage B plant will be located adjacent the existing Tallawarra Stage A CCGT power station. The existing power station stores and uses a variety of chemicals for operation and maintenance activities. The cumulative risk of the existing chemical storage and use combined with the chemicals proposed for the Stage B Power Station will be assessed.

Conclusion and Need for Further Assessment

The operation of the Stage B Power Station will result in increased chemical use and deliveries at the Tallawarra power station site. An assessment of the cumulative hazard posed by the chemical and fuel storage and deliveries for the existing power station and the proposed Stage B Power Station will be undertaken using the SEPP 33 guidelines as a framework. The findings of the hazard assessment will be detailed in the Part 3A Environmental Assessment for the project.

4.3 Other Environmental Issues

There is a range of potential environmental issues associated with the Stage B power station project that are not considered to be key issues. These issues are considered secondary issues given the characteristics of the project and the availability of appropriate safeguards for mitigation. **Table 2** outlines these issues.

It is proposed that these issues will be addressed in sufficient detail to asses the level of their impacts (if any). It is anticipated that any impacts identified will be able to be managed through appropriate mitigation measures and management plans.

The management of both key issues and these secondary issues will be handled through a Statement of Commitments and the Conditions of Approval of the project, which will determine the requirements for environmental management.

Table 2 Other Environmental Issues

Existing Environment	Potential Impacts	Management and Mitigation Measures
Land Use		
The proposed Stage B Power Station is situated on the former coal fired power station site. TRUenergy has a current approval for a CCGT Power Plant adjacent the proposed Power Station. The CCGT is currently under construction. The surrounding Tallawarra Lands site is currently owned by TRUenergy and is leased for grazing purposes. The Tallawarra Lands site has potential for a variety of land uses to improve the site's usability, including residential, commercial and industrial. A pre zoning submission was made to Wollongong City Council in July 2005 to seek Council's in principle support to proceed with the preparation of a formal rezoning submission and draft Local Environment Plan for Tallawarra lands. On 12 September 2005 Council resolved to prepare a draft LES. The LES was adopted by Council in April 2007. A draft LEP has been prepared for the site and Council has endorsed the Tallawarra component of the draft LEP. The overall LEP is scheduled to be exhibited later this year. Dapto and Koonawarra residential areas are located approximately 1 kilometre north-east and north of the project site, respectively. A new residential subdivision, Haywards Bay, is located approximately 2 kilometres south of the project site.	The construction and operation of the Stage B Power Station is consistent with the former and current land use of the site. The proposed site is located on the former coal fired power station site and adjacent to the approved CCGT Power Station. It is considered unlikely that the construction and operation activities associated with the project will cause any significant risk to land use within the project area. A buffer area has been designated around the approved CCGT Power Station. The proposed Stage B Power Station will be sited inside the designated buffer area.	The Stage B power plant has been sited on part of the area previously occupied by the Tallawarra coal fired power station. In addition the proposed disturbance footprint of the project has been minimised. Overall, the adverse impacts on land use are expected to be minimal. The management of existing and proposed land use of the project area is not considered to be a key environmental issue.
Flora and Fauna		
The land on which the proposed Stage B Power	The majority of infrastructure associated with the	The existing ecological assessment is

Existing Environment	Potential Impacts	Management and Mitigation Measures
Station will be located has been previously disturbed by former Power Station infrastructure. Much of the surrounding Tallawarra Lands have been previously cleared of vegetation as a result of past land use. Remnant vegetation is found in localised parts of the site as shown on Figure 2. Remnant vegetation associated with Yallah Creek to the north of the project site is listed as a threatened ecological community under the *Threatened Species Conservation Act* 1995. Tallawarra Lands also provide habitat for several threatened species, including the green and golden bell frog, large bent-wing bat, large-footed myotis bat and four other bat species.	proposed Stage B Power Station will be located on disturbed land within the former power station site and will not cause any significant vegetation disturbance or clearing.	considered to have covered the required detail and no further assessment is necessary. Sediment and erosion control measures will be implemented and maintained around all areas, exposed as part of construction activities to minimise the potential for indirect impacts building on existing infrastructure used for the Stage B Plant. As such, it is considered unlikely that the Stage B Power Station project will cause any significant impact on flora and fauna.
Surface Water Management		
The proposed Stage B Power Station is located within the Lake Illawarra Catchment. Yallah Creek, an intermittent creek flowing from Mount Brown to the northern section of the existing inlet canal borders the northern extent of the project area.	During the construction and operation phases of the development, surface water runoff from the site will have the potential to impact on surrounding water bodies, including Yallah Creek and Lake Illawarra. It is anticipated that the OCGT option will have relatively small process water requirements for power generation. The CCGT will draw water from Lake Illawarra for cooling purposes.	Sediment and erosion control measures will be implemented and maintained around all areas exposed as part of construction activities to minimise the potential for indirect impacts on receiving waterways. Drawing of lake water for cooling purposes for the CCGT option will be assessed further as a key issue in the Environmental Assessment.
Socio-Economic		

Existing Environment	Potential Impacts	Management and Mitigation Measures
The regional economics are partly dependent on the continued investment of local industries such as Tallawarra power station.	The construction works will provide a short-term financial benefit to the community, with some of the plant components, labour and resources sourced directly from the region. Operation and maintenance of the project will support the continued employment generated from the Tallawarra A CCGT power station and specialist maintenance providers.	No further assessment or economic justification for the project is considered necessary.
Traffic		
The development site is situated within close proximity to local and regional road networks. The Princes Highway and Southern Freeway are situated to the west of the Tallawarra Lands site, both of which provide direct access to major centres including Wollongong and Sydney. Access to the site is provided via a private road which intersects with the Princes Highway, providing both northbound and southbound access.	During construction, new traffic movements will be generated by construction workers and material deliveries to and from the project construction sites. There is a potential for conflict with local traffic to exist during this stage. Access to the site will be via Yallah Bay Road (the existing Tallawarra CCGT Power Station access road) off the Princes Highway, south of Dapto. The existing road network is considered sufficient to accommodate the increased traffic movements from the proposed development.	Consultation will be undertaken before construction with the appropriate roads authority regarding the works that may affect roads or traffic. A Traffic Management Plan (TMP) will be developed as part of the CEMP. The impacts on road traffic are considered to be minimal, short –term and localised and therefore traffic is not considered to be a key issue. Yallah Bay Road will be upgraded as part of the Tallawarra Lands project.
Visual Amenity		
The proposed Stage B Plant will be located on the edge of Lake Illawarra adjacent to the approved CCGT Power Station. Views of the area from existing residential areas on the western shoreline of Lake Illawarra are generally limited due to intervening topography and screening vegetation. Views from residential areas on the eastern shoreline of Lake Illawarra will be limited, intermittently screened by intervening vegetation and against the backdrop of Mount Brown. Views of the Stage B Plant will not dominate the horizon.	The proposed Stage B Power Station may be visible through screening vegetation from Lake Illawarra, existing residential development on the eastern shore of Lake Illawarra and areas of the surrounding Tallawarra Lands. The proposed Stage B Power Station will be in keeping with the nature of the site, as it is to be situated adjacent to the approved Tallawarra A CCGT Power Station.	Temporary and permanent screening of some structures will be considered in the project design. During construction the work areas will be maintained in an organised and tidy condition, disturbed areas will be rehabilitated, as soon as practicable, following completion of excavation works and temporary screening will be erected where appropriate. The proposed Stage B Power Station will be in keeping with the former and existing nature of

Existing Environment	Potential Impacts	Management and Mitigation Measures
The Stage B Power Station may also be visible from areas within the surrounding Tallawarra Lands area.		the site. The management of visual amenity associated with the construction and operation of the project is not considered to be a key environmental issue.
European Heritage		
A desktop search of the Wollongong City Council LEP and NSW Heritage Office – State Heritage Inventory has not identified any European heritage items occurring within the project area. However, some remnants and buildings associated with the former power station have been identified as having some possible industrial heritage value.	Former buildings and remnants associated with the former power station, located within the project site are subject to a separate demolition application process and are not subject to this approval. It is considered highly unlikely that construction and operation activities associated with the project will cause any significant risk to European heritage values within the project area. European heritage is therefore not considered a key issue.	If a potential European heritage site is uncovered during the works the works in that area will cease until the find could be assessed by an appropriately qualified archaeologist.
Aboriginal Heritage		
A search of the DEC Aboriginal Heritage Information System (AHIMS) database identified seven previously recorded Aboriginal sites located within 200m of the project area. Two types of sites were recorded; middens and artefact scatters.	All infrastructure associated with the proposed Stage B Power Station will be located within the former power station site and will not result in any further ground disturbance.	No further Aboriginal heritage assessment is required. Sediment and erosion control measures will be implemented and maintained around all areas exposed as part of construction activities to minimise the potential for indirect impacts. As such, it is considered unlikely that the Stage B Power Station project will cause any significant impact on Aboriginal heritage.
Waste		
Waste management systems and facilities (including an on-site package sewage treatment plant) have been established at the project site as part of the Stage A CCGT Power Station project.	During construction, general building waste such as timber, masonry, scrap metal, packaging materials and plastics will be generated. In addition, a small quantity of waste (sewage and domestic rubbish) will be generated from the construction compound.	A Waste Management Sub-Plan (WMP) which will incorporate the principles of avoid, re-use and recycle will be developed for the construction phase of the proposal. The WMP will detail any procedures for the management of construction wastes from the site. This will be

Existing Environment	Potential Impacts	Management and Mitigation Measures
	The Stage B project will not generate significant quantities of waste during operation.	part of the CEMP. Any hazardous material will be stored, handled and transported in accordance with relevant legislation and guidelines.
Contaminated Land		
The proposal is located within an area that may have been subject to contamination from previous land uses i.e. the former coal fired power station.	During construction, contaminated soil or building materials may be encountered and disturbed.	An assessment of potential contamination risks will be undertaken prior to construction. Any contamination detected will be managed according to the requirements of the *Contaminated Land Management Act*, SEPP 55 and appropriate guidelines. Procedures for the management of contaminated material will be outlined in the CEMP.