



Department of  
**Infrastructure, Planning and Natural Resources**

## **Primary Submission to the Commission of Inquiry**

**Development Application DA-31-2-2004-i**

**Proposal by Wambo Power Ventures Pty Ltd to  
Construct and Operate a 600 MW Gas-Fired Power  
Station, Uranquinty, in the Wagga Wagga Local  
Government Area**

**Department of Infrastructure, Planning and Natural  
Resources**

**August 2004**

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## **1. INTRODUCTION**

### **1.1 Background**

On 16 February 2004, Wambo Power Ventures Pty Ltd (the Applicant) lodged a development application (DA) with the Department of Infrastructure, Planning and Natural Resources (the Department) for the proposed construction and operation of a gas-fired power station, Uranquinty Cross Road, in the Wagga Wagga local government area.

The Minister for Infrastructure and Planning has directed that a Commission of Inquiry be held into all environmental aspects of the proposed development, in accordance with section 119 of the *Environmental Planning and Assessment Act 1979* (the Act). This report represents the Department's preliminary assessment of the proposed development and constitutes the Department's primary submission to the Commission of Inquiry.

### **1.2 Environmental Impact Assessment**

The Development Application (DA) and accompanying Environmental Impact Statement (EIS) for the power station were notified and publicly exhibited between Thursday 26 February 2004 and Monday 29 March 2004. Following significant community concern the exhibition period was extended until Monday 19 April 2004. During this time, and subsequently, the Department has received a total of 140 submissions. Submissions have been received from the following parties:

- 9 from Government agencies and public authorities including NSW Rural Fire Service, NSW Fire Brigades, Wagga Wagga City Council, Civil Aviation Safety Authority (two submissions), TransGrid, Roads and Traffic Authority, Country Energy and NSW Agriculture;
- 22 from businesses and public interest groups including Uranquinty Action Group (18 submissions), Australian Pipeline Trust, Go Green Services, Hore & Davies Real Estate and the Eastern Riverina Greens;
- 115 submissions from other members of the public including 64 form letters.

The Department has also received draft General Terms of Approval from the Department of Environment and Conservation (DEC – incorporating the Environment Protection Authority). The majority of submissions objected to the proposed development, and raised a number of concerns. These concerns are outlined in more detail in section 4 of this report, and considered as part of the Department's environmental impact assessment presented in section 5. Submissions generally suggested that the proposed development is inconsistent with the surrounding land uses and is inappropriately placed in the context of the nature of the surroundings.

### **1.3 Commission of Inquiry**

From the Department's preliminary assessment and consideration of the substantial degree of community concern highlighted in the public submissions, it was considered that the proposed development warranted further independent assessment at a Commission of Inquiry. The key issues raised by the Department and within submissions include strategic planning, amenity impacts on surrounding residents associated with the siting of the proposed development and socio-economic impacts of the development associated with these amenity impacts.

To provide an open, transparent and independent forum at which the genuine concerns of local residents could be examined in detail, the Minister for Infrastructure and Planning directed that a Commission of Inquiry should be held into all environmental aspects of the proposed development. Following the Inquiry, the Commissioner will make an independent recommendation on the proposed development to the Minister. The Department will also provide its final assessment to the Minister, which will include the findings of the Inquiry. The Minister will then proceed to determine the development application after considering the findings and recommendations of the Commissioner, together with all other submissions and advice.

#### **1.4 Scope of this Report and Assessment**

This report represents the Department's primary submission to the Commission of Inquiry. It outlines the Department's assessment of the environmental impacts associated with the proposed development. As is noted in the relevant parts of section 5 of this report, there are a significant number of issues for which the Department has requested additional information from the Applicant. In many cases the Applicant has provided the relevant information, however in some cases there remains additional information or justification which is required before the Department can finalise its assessment of the relevant environmental impacts.

While the Department's assessment to date has concluded that many of the environmental impacts associated with the proposal could be constrained within acceptable limits, where relevant criteria exist, a number of less tangible issues remain. These issues generally relate to non-criteria based matters for which clear criteria have not and/ or cannot be stipulated. These issues have been presented particularly strongly in public submissions, and include visual amenity considerations, site selection, justification for the proposed development, consistency with strategic planning objectives and compatibility with surrounding land uses. To ensure the most robust and transparent outcome to the assessment of these types of issues, the Department considers that a fresh and independent assessment be conducted through a Commission of Inquiry (in addition to all other relevant matters) to provide a mechanism by which all points of view can be heard and taken into account.

As such, the assessment presented in this report is preliminary, pending the satisfactory resolution of outstanding information issues, and may require further consideration of the residual impacts. The Department notes that the DEC has similarly sought additional information from the Applicant, and has subsequently provided its draft General Terms of Approval (which may be revised in light of the findings and recommendations of the Commission of Inquiry). The Commission of Inquiry process provides an opportunity for the Applicant to provide the necessary additional information, and affords the community the opportunity to be involved in the environmental impact assessment process in an open and transparent manner.

## **2. DEVELOPMENT PROPOSAL**

### **2.1 Background**

The proposal is for a 600 megawatt (MW) natural gas-fired power station operating in an open-cycle configuration. The Applicant would potentially source natural gas from both the Moomba to Sydney pipeline and the Victorian gas system. The Applicant is seeking consent for the 600 MW power station, which would incorporate four 150 MW turbines, however would initially construct only two of these turbines, for a total of 300 MW. The proposed plant would supply electricity to the National Electricity Market electricity grid, predominantly during peak and high shoulder electricity demand.

### **2.2 Proposed Development Site**

The proposed site is located on Uranquinty Cross Road approximately three kilometres west of Uranquinty, partially on Lot 76 DP 754573 and Lot 782 DP 878179, with total site area of approximately 30 hectares. The expected plant foot print is approximately three to four hectares, with an additional 1.2 hectares used for associated infrastructure, parking and landscaping.

Uranquinty is located approximately 15 kilometres southwest of Wagga Wagga. The location of the proposed site in the context of Uranquinty and Wagga Wagga is shown in Figure 1. As can also be seen from the figure, the site intersects with a high pressure gas pipeline, and an existing 132 kV electricity transmission line. There are 10 residences within a 2.1 kilometre radius of the site, three of which are between 600 metres and 1000 metres away. These residences are largely rural residential agricultural properties. Many of the closest properties to the proposed site would be able to see the development.

The proposed site is flat, and has been predominantly used for agricultural purposes in recent times, in particular sheep grazing and dry land pasture. As such, the site contains limited vegetation apart from along the roadside verges. The site is located on the catchment divide between the Sandy Creek drainage to the east (which ultimately flows into the Murrumbidgee River) and the Roping Pole Swamp drainage to the west.

The surrounding topography consists of extensive, gently undulating plains at around RL 200 – 240 metres, 10 – 20 metres above the alluvial plain surface. In particular, the land to the west and northwest rises away from the proposed site around a kilometre from the site. Figures 2 and 3 are photographs of the proposed site, which indicate the existing conditions at the site, and the surrounding topography.

### **2.3 Development Description**

The proposal is for a 600 MW natural gas-fired power station which would incorporate four 150 MW turbines. The Applicant proposes to construct the power station in two phases. Initially, two turbines would be constructed, for a nominal electricity generation of 300 MW, with the additional two turbines to be constructed at a later date.

The proposed plant would supply electricity to the National Electricity Market electricity grid, during peak and high shoulder electricity demand. The proposed plant would not operate outside of these peak/ high shoulder times and is proposed to operate for a total of 1,768 hours per year. It is not unprecedented for gas-fired power station technology to be used in this manner, as it can be started up and shut down quickly, in response to surges in power demand. Gas-fired power stations do not operate outside of the peak demand periods due to the high cost per unit of natural gas (compared to coal). They become economical once the price for electricity rises significantly, which happens during surges in electricity demand. Based on current supply/ demand forecasts, the Applicant estimates that this would result in approximately 200 to 350 starts per year, generating a total of 200,000 to 250,000 megawatt hours of electricity per year (MWh/y)(MWh is a measurement determined by multiplying the amount of time in hours that the power station is operating and the electricity sent out during that time).

#### **Site Infrastructure**

In addition to the power station, the Applicant proposes a number of ancillary facilities:

- transformers and switchgear – for transforming the generated electricity into the appropriate format for connection to the grid. The power station would connect directly to the 132 kV electricity transmission line which intersects the proposed site;
- diesel generator, storage and pumping – a single diesel generator unit of 500 KVA would be installed for electrical supply to the development's essential services in the event that electrical connection to the transmission network is lost. The operation of the generator is expected to be unlikely, except for routine reliability testing, as the switchyard would be able to be energised from any of four transmission line sources. 1000 kilolitres (kL) of diesel would be stored on site for use in the generator, or in the power station in the event that natural gas was unavailable;
- stormwater storage pond – for collecting and storing stormwater run-off from hardstand areas;
- demineralised water plant;
- sewerage system – an on-site sewerage treatment facility will cater for sewerable wastes for the operational staff. All sewerable wastes would be collected and transported off-site for disposal. During the construction phase additional temporary units would be provided;
- fire services and water pumping – the power station would be provided with a fire detection and suppression system conforming to National Fire Protection Association (NFPA) 850 Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Converter Stations, and would include spray deluge systems, Coz fire suppression systems and portable fire protection equipment; and
- office and workshop facilities.

### **Inputs**

The Applicant would be able to source natural gas from both the Moomba to Sydney pipeline and the Victorian gas system. Should natural gas be unavailable, the Applicant proposes to store up to 1000 kL of diesel at the site, so that the power station could be run on diesel, if necessary. Water for the power station would be piped from the Riverina Water pipeline which passes through Uranquinty. However, preliminary investigations indicate that the existing 50 mm diameter PVC pipe along Uranquinty Cross Road may not be able to cope with the additional flow rates. As such, an upgraded 80 mm diameter pipe may need to be installed between Uranquinty and the proposed site.

### **Operation and Life of Proposed Development**

The new power station would only operate during periods of peak and high shoulder electricity demand. In the EIS the Applicant identifies the current peak and high shoulder electricity demand periods, being approximately 10:00 am to 8:00 pm on summer business days and 7:00 am to 10:00 am and 5:00 pm to 8:00 pm on winter business days. Based on the current supply/ demand forecasts the Applicant envisages the power station being operated for approximately 1,768 hours per year (or about 28-34 hours per week on average), with up to 400 start ups per year. In the first instance this would apply to the initial two turbines to be installed, however would remain consistent once the third and fourth turbines were installed. During operation, the power station would provide between 6 and 8 full time equivalent jobs. The Applicant expects the life of the development to be approximately 50 years. At the end of this period an assessment would be undertaken with regards to retaining the power station.

### **Construction**

The proposed power station would take approximately 18 months to construct, including 10 months to manufacture the plant and 7 months for site works and construction, with an additional two months proposed for commissioning. The Applicant anticipates commercial production of electricity by the end of 2005. The Applicant proposes to carry out construction works during daylight hours on weekdays, and on Saturday mornings.

Total costs associated with construction are estimated to be \$200 million, however most of this expenditure would not contribute to the Australian economy due to specialist equipment being imported from overseas. The Applicant estimates that approximately \$60 million would be spent within Australia, with approximately \$30 million of this spent in the Wagga Wagga region. The Applicant estimates that the maximum number of construction workers on-site would be 110, and that the direct employment generated would be to the equivalent of approximately 62 jobs for one year.

### **3. STATUTORY PLANNING FRAMEWORK**

#### **3.1 Permissibility**

The proposed development is proposed to be located on land zoned 1 – Rural under *Wagga Wagga Rural Local Environmental Plan 1991* (LEP). Development of the purpose of electricity generation is not listed within the nominate classifications of prohibited development and development without consent in the Rural zone under the *Wagga Wagga Rural LEP*. As such, it is permissible with consent as an innominate use in the zone.

#### **3.2 Minister's Role**

As detailed below, by virtue of a declaration the proposed development is State significant development under section 76A(7) of the *Environmental Planning and Assessment Act 1979* (the Act), and the Minister for Infrastructure and Planning is the consent authority for the development application.

#### **3.3 Legislative Context**

In accordance with the provisions of the Act and the *Environmental Planning and Assessment Regulation 2000* (the Regulation), the proposed development is State significant development, designated development, and integrated development.

##### **State Significant Development**

The proposed power station constitutes State Significant development, as defined by section 76A(7)(b) of the Act, by virtue of a declaration made by the Minister for Infrastructure and Planning on 20 January 2004 that the proposal was of State or Regional environmental planning significance. The reasons for the Minister's declaration are:

- significant capital investment which exceeds the criteria established by the Government as being of State significance for industrial development (the policy does not specifically include power generating developments);
- environmental policy considerations, primarily relating to greenhouse gas emissions in the electricity sector; and
- the proposed development would form part of, and be interconnected to, an infrastructure network of State and National significance, being the National Electricity Market, including the National Electricity Grid connecting Queensland, NSW, ACT, the Snowy region, Victoria and South Australia.

As such, the proposed development is State significant development. The Minister for Infrastructure and Planning is the consent authority for State significant development.

##### **Designated Development**

Under clause 18 of Schedule 3 of the Regulation, the proposed development is designated development as it is for an electricity generating station that would supply or would be capable of supplying more than 30 megawatts of electrical power from an energy source including coal, gas, wind, bio-material or solar powered generators, hydroelectric stations on existing dams or co-generation. As the proposal is designated development an Environmental Impact Statement (EIS) was submitted to support the DA.

##### **Integrated Development**

The development proposal constitutes integrated development, as defined by section 91 of the Act. In addition to development consent the proposed development requires an Environment Protection Licence (EPL) from the DEC under the *Protection of the Environment Operations Act 1997*, and approval from Wagga Wagga City Council under the *Roads Act 1993*.

The DEC and Council were consulted during the preparation of Director-General's requirements for the Environmental Impact Statement and notified of the lodgement of the development application for the proposal. The DEC has supplied comments and draft General Terms of Approval to the Department, which have been discussed within this submission. Council has also supplied its draft General Terms of Approval with regards to the

impacts to the Uranquinty Cross Road. Both Council and the DEC will have the opportunity to revise their respective draft General Terms of Approval, as may be required in light of the findings and recommendations of the Commission.

### **Exhibition and Notification**

The Department notified, and provided a copy of the DA and accompanying EIS, to the following government agencies and infrastructure/ service providers:

- Department of Environment and Conservation (incorporating the Environment Protection Authority and the National Parks and Wildlife Service);
- Roads and Traffic Authority;
- Department of Energy, Utilities and Sustainability (incorporating the former Ministry of Energy and Utilities, and part of the former Sustainable Energy Development Authority);
- Sustainable Development Energy Authority;
- Civil Aviation Safety Authority;
- Department of Lands;
- NSW Health
- NSW Agriculture;
- NSW Fire Brigades;
- NSW Rural Fire Brigades;
- TransGrid;
- Riverina Water County Council;
- Country Energy;
- Kapooka Army Barracks;
- Wagga Wagga Air Force Base;
- Wagga Wagga Local Aboriginal Land Council; and
- Wagga Wagga City Council.

The DA and EIS were publicly exhibited between Thursday 26 February 2004 and Monday 29 March 2004, at the following locations:

- DIPNR – Lee Street, Sydney;
- DIPNR – Johnston Street, Wagga Wagga
- Wagga Wagga City Council – Corner of Baylis and Morrow Streets, Wagga Wagga;
- Uranquinty General Store, Olympic Highway; and
- Nature Conservation Council – Kent Street, Sydney.

Following significant community concern regarding the timeframe for the community to consider the issues in the EIS, the exhibition period was extended until Monday 19 April 2004, representing an exhibition period substantially longer than the statutory minimum period of 30 days.

Advertisements, in accordance with the requirements of the Act, were placed in the *Wagga Wagga Daily Advertiser* on two occasions: 25 February 2004 and 10 March 2004. The advertisements advised how an interested party could view the exhibited development application, and how submissions could be made. An additional advertisement was placed in the same newspaper on Monday 29 March 2004, notifying of the extension to the public exhibition period.

In addition to abovementioned Government authorities and service providers, the Department sent a total of 527 notices to members of the public, being land owners and/or land occupiers in the Uranquinty area who may be adversely impacted by the proposed development. The Department also notified the following public interest/environmental groups: the Uranquinty Action Group and the Nature Conservation Council. Written notifications provided details of the proposal, exhibition locations and dates, and information on how interested parties could make a submission.

### **3.4 Relevant Environmental Planning Instruments**

The assessment of the proposed development is subject to the following environmental planning instruments:

- *State Environmental Planning Policy No. 33 - Hazardous and Offensive Development*;

- *Wagga Wagga Rural Local Environmental Plan 1991.*

Consideration of the proposed development in the context of the objectives and provisions of these environmental planning instruments is provided below. The Department has also considered the relevant provisions of the *Wagga Wagga Rural Development Control Plan 2002*.

### **State Environmental Planning Policy No. 33**

*State Environmental Planning Policy No. 33 - Hazardous and Offensive Development* aims to identify proposed developments with the potential for significant off-site impacts, in terms of risk and/ or offence (odour, noise etc). A development is defined as potentially hazardous and/ or potentially offensive if, without mitigating measures in place, the development would have a significant risk and/ or offence impact on off-site receptors. The proposal constitutes "potentially hazardous development" as defined in SEPP 33, and a Preliminary Hazard Analysis was submitted as part of the EIS. The PHA concludes that the proposal would not be "hazardous development" as it could operate within acceptable risk limits.

The proposal is also considered "potentially offensive" as it requires an Environment Protection Licence (EPL) from the DEC. The DEC has issued draft General Terms of Approval for the proposed development, thereby indicating that it would be prepared to issue an EPL. As such, the proposal does not constitute "offensive" development.

### **Wagga Wagga Rural Local Environmental Plan 1991.**

Wagga Wagga Rural LEP 1991 provides a number of relevant planning and development controls on development proposals to which it applies. In particular the Department notes that the proposed site is zoned 1 – Rural and is permissible with development consent within that zone. The relevant provisions of the LEP are provided in Appendix A.

### **Wagga Wagga Rural Development Control Plan 2002.**

The *Wagga Wagga Rural Development Control Plan 2002* (DCP) is not a statutory environmental planning instrument. However, in this case, and in addition to the LEP, the DCP provides planning and development controls with regards to development proposals. In particular, the DCP provides a land use guide for rural sub-zones. In this land use guide the DCP indicates that the proposed development, being "Generating Works" would not generally be considered suitable in the Rural 1(a) - General Rural sub-zones. The Department notes that Council considers that an amendment is necessary to create a special provision or to amend the DCP zoning for the subject land to achieve both the objectives and consistent application of the DCP. The Department highlights that the DCP provides general guidance to provide further and more detailed land use planning aspects in addition to the provisions of environmental planning instruments. This guidance, while not legally binding, needs to be considered in the context of the respective environmental planning merits of relevant development proposals. The *Environmental Planning and Assessment Act 1979*, through section 79C, binds a consent authority to consider the provisions of a DCP. Where a particular development, such as the subject development proposal, is inconsistent with the guidance provided in a DCP, the consent authority must carefully consider the relative merits of the proposal in the context of the nature and extent of the inconsistency. As such, the Department will consider the proposal in the context of the surrounding land uses, and in accordance with the statutory provisions within the LEP. The consideration of the proposal in the context of the DCP is a key consideration of the Department.

## **3.5 Statutory Requirement Compliance**

The Department is satisfied that all requirements of the Act and Regulations have been met in relation to the notification and exhibition of the development application and public involvement in the assessment process. The proposed development is generally consistent with the provisions of relevant environmental planning instruments.

#### 4. ISSUES RAISED IN SUBMISSION

In response to the notification and public exhibition of the DA, the Department has received 146 submissions.

Nine submissions were received from Government agencies and public authorities, none of which objected to the proposal, including:

- NSW Rural Fire Service,
- NSW Fire Brigades,
- Wagga Wagga City Council,
- Civil Aviation Safety Authority (two submissions),
- TransGrid,
- Country Energy,
- Roads and Traffic Authority; and
- NSW Agriculture. .

22 submissions were received from businesses and public interest groups including

- Uranquinty Action Group (18 submissions),
- Australian Pipeline Trust, Go Green Services,
- Hore & Davies Real Estate and
- the Eastern Riverina Greens.

115 submissions from other members of the public, of which

- 112 objecting to the proposal, including 64 form letters and a petition with 257 signatures; and
- three submissions which support the proposal.

The issues raised in submissions are summarised below, and discussed in more detail in the relevant part of Section 5 of this report.

|                                  |  |
|----------------------------------|--|
| Project Justification            | Peak electricity shortfall is in Vic/SA and not in NSW, therefore there is no reason for the proposal to be based in NSW.<br>The issue is not that NSW is deficient in generating capacity, but that there is inadequate transmission of electricity.<br>Claims that TransGrid's preferred solution is to upgrade the Wagga-Yass transmission line.  |
| Site Selection and Planning      | The Bomen site was not considered adequately, and was discounted for trivial reasons which also applied to the Uranquinty site.<br>The EIS also did not mention sites in broader NSW.<br>Demand management options and renewable have not been adequately considered.<br>Community Consultation: by Wambo has been inadequate.<br>Not consistent with land use guide under the WWRDCP.   |
| Air emissions and health impacts | Adequacy of the air impact assessment due to use of non site-specific meteorological data for modelling.<br>Air pollution meets criteria due to the clean air shed that exists presently allowing large amounts of pollution. This is unacceptable to local community which expect the clean air.<br>Concerns over methodology and assumptions in the health risk assessment including long term risks of diesel emissions not calculated. |
| Noise Emissions                  | Unacceptable noise intrusion for rural area.   |
| Visual Amenity                   | Visual impact due to flat, open rural, agricultural landscape.<br>Inappropriate for the Applicant to use tree plantings on other peoples properties for visual screening. In any case, tree planting would not be adequate for screening, and would take a long time to establish.   |
| Socio-Economic Impacts           | Impacts on surrounding agricultural uses, today and into the future.<br>The development is incompatible with surrounding land uses.<br>Land values would be impacted by 10-25%.<br>Most project costs would go off-shore, so very little local economic benefit.   |
| Risk and Hazard Impacts          | Risk Management and Emergency Response Plan have not been included in the EIS.<br>Hazards associated with the proposal, including failure of equipment, gas releases and leaks, ignition of gas and jet fires and explosions. Also hazards associated with storage of diesel, acid, hydroxide and oil on-site  |

|                                       |  |
|---------------------------------------|--|
|                                       | Wagga Wagga Fire Brigade, Wagga Wagga Rural Fire Service, Yarragundry Bushfire Brigade and Uranuinty Rural Bushfire Brigade not notified. Emergency response from Wagga Wagga over 30 mins.<br>Contaminated fire fighting waters would flow into surface water courses.<br>Rural fire service cannot work within 2 km of power station risking residences in this area |
| Traffic and Transport Impacts         | Traffic surveys and data analysis are flawed, in that it did take into account the students travelling to Wagga, surveys were undertaken during school sports carnival days, and did not take into account the harvest activities between November and January.<br>Not included diesel transport vehicles.   |
| Surface and Groundwater Water Impacts | Impacts to local waterways, including Murrumbidgee River.  |
| Heritage and Flora and Fauna Impacts  | Heritage: identifies 7 heritage items which have not been considered in the EIS.<br>Fauna and Flora: inadequate surveying, due to it being in the middle of a drought.<br>Also omitted the potential impact to Flora and Fauna in Roping Pole Swamp.   |

## 5. CONSIDERATION OF ENVIRONMENTAL ISSUES

The Department has reviewed the Environmental Impact Statement for the proposed development, and duly considered the submissions from Government agencies, Council and the public. As a result, the Department has identified the following environmental issues associated with the proposal. The issues have been classified as being of significance, or high significance, depending upon the magnitude and extent of environmental impacts, and the responses of the submissions with respect to the impacts. A full consideration of each of the issues listed is provided in sections 5.1 to 5.11 of this report.

Issues identified as being of **high significance** to environmental planning:

- project justification: electricity demand and transmission in NSW;
- site selection and statutory planning
- air quality impacts;
- noise impacts; and
- impacts on visual amenity.

Issues identified as being of **significance** to environmental planning:

- hazard and risks impacts;
- socio-economic impacts;
- soil and water impacts; and
- traffic and transport impacts.

Other important issues associated with the proposed development are:

- impacts on flora and fauna and heritage items; and
- waste production and management.

### 5.1 Project Justification

#### Applicant's Position

The Applicant makes use of the 2003 Statement of Opportunities (SOO) prepared by the National Electricity Market Management Company (NEMMCO), identifying that the SOO predicts inadequate summer electricity reserves from 2005/2006. The Applicant also identifies that TransGrid has estimated electricity demand to increase by between 1.9% to 3.3% per annum (pa) over the next 10 years (2.5% pa on the medium economic growth scenario).

The Applicant also considers the electricity transmission infrastructure network, noting that if all transmission elements remain in service continually, then the existing network in the NSW southwest (centred around Wagga Wagga) would be adequate. However, should there be an element out of service (such as a transmission line outage) then during periods of high load in the NSW southwest or during high transfer into Victoria, then the existing system would be critically inadequate to support predicted growth.

The Applicant identifies that there are a number of options which are being considered to relieve the pressure on the NSW southwest transmission system, including network developments and new generation capacity.

### **Issues Raised in Submissions**

#### ***Submissions from the public***

A number of submissions raised the issue of project justification, in particular the following:

- demand and supply analysis is not regionally significant, as most of the demand is in the Sydney metropolitan region, not Wagga Wagga or the NSW southwest;
- real demand for the electricity from the proposed power station would be Victoria and South Australia (SA), not NSW. Further, since the gas used would come from either Victoria or SA, it is not efficient to pump gas to NSW southwest, then transmit generated electricity back to Victoria or SA;
- TransGrid has proposed to augment supply by upgrading the existing Yass – Wagga Wagga transmission line, making the proposed power station unnecessary; and
- the transmission network will not be able to support the transmission of electricity to the major demand areas (the Sydney metropolitan region).

#### ***Submissions from Government agencies***

TransGrid has made a submission to the proposed development. As well as this, TransGrid's Planning Report provides important information regarding predicted electricity demand. TransGrid did not object to the proposal, however raises the following issues:

- for the initial 300 MW capacity, network augmentations would be required to connect the proposed power station into the existing network. This would require the construction of a 132 kV switching station, as well as augmentation of transmission capacity between Wagga Wagga and Uranquinty either by reconstructing the two existing 132 kV transmission lines to high capacity or reconstruction of one of the existing lines to a double circuit line;
- for 600 MW capacity additional augmentations would be necessary, potentially being additional 132 kV circuits back to Wagga Wagga, reconstruction of the existing 132 kV circuits to double circuit high capacity lines or reconstruction of an existing 132 kV line to a high voltage;
- TransGrid is currently considering a number of options for managing the transmission capacity issue in the NSW southwest including, increasing the voltage of the Yass – Wagga Wagga transmission line, demand management, local generation, or reducing interconnection transfer into Victoria. TransGrid's preferred solution is to increase the voltage of the Yass – Wagga Wagga line. TransGrid cannot confirm whether these proposed network augmentations would be deferred as a result of the proposed power station, as a final decision has not been made regarding such augmentations.

### **Department's Position**

There are a number of issues with regards to electricity management which are relevant for consideration with new generation. In particular, the Department notes that the State must ensure that there is an adequate supply of electricity across the State to meet expected electricity demand. Secondly, there is the ability of the State to do this via the use of an electricity transmission infrastructure network, to ensure that electricity is available at the location of the demand.

In this case, the relevant discussion relates to the ability of the State to meet the demand for electricity during peak events (such as the hottest summer days and the coolest winter days). This is because the proposed development is for a power station that would operate during peak times. With regards to the transmission network, this is also required to be designed to ensure it is capable of transmitting the electricity load during the peak events.

#### ***State and Regional Demand Forecasts***

TransGrid's *Planning Report 2004* predicts the winter peak demand (based on a standardised weather peak demand, and 50% probability of exceedance) to grow by 180-380 megawatts per annum (MWpa), with an average of 280 MWpa, and summer peak demand to grow by 330-510 MWpa (average 420 MWpa).

NEMMCO's SOO identifies that NSW is predicted to reach a low reserve condition in 2008/2009, being 157 MW below NEMMCO's requirements for reliability standards at that time. Up until that time NSW would rely on increased capacity from existing generators, the Snowy Hydro Scheme and from Queensland. However by 2008/2009 interconnector transfer limits from Queensland, and the requirements for Victoria and SA to utilise spare excess capacity from the Snowy Hydro Scheme means that NSW is predicted to be in deficit, unless new generation capacity is installed.

The NSW Department of Energy and Utilities (DEUS) has not finalised a Statement of System Opportunities (SSO) since 2002. As such, the most up to date information is obtained from the 2002 SSO. The SSO predicts that summer peak energy demand (10% probability of exceedance) is likely to increase by approximately 3000 MW between 2002 and 2011, based on the most probable scenario. The SSO forecasting factors-in increased growth of renewables and demand management initiatives, however concludes that renewables are likely to meet only a portion of the increasing level of demand, and that new non-renewable energy supply will be required to supply part of this demand.

### **Regional Transmission Capacity**

The NSW southwest is supplied primarily by the Snowy Hydro Scheme, and is serviced by a single 330 kV transmission line from the Lower Tumut node to Wagga Wagga, and a 132 kV transmission line from Yass. All transfer of power between NSW and Victoria passes through the NSW southwest region or the Snowy region, with Victorian import having a significant impact on the transmission network conditions in Wagga Wagga. In recent years Victoria has increased its capability to import from NSW/Snowy, and there are on-going projects which will continue this increase, all of which would increase power flows through Wagga Wagga. Conversely, increased load growth in the NSW southwest will reduce the electricity available for Victorian import.

TransGrid's 2004 NSW Annual Planning Report identifies the NSW southwest as suffering specific constraints. At times when Victoria is importing power and the NSW southwest load is relatively high there are a number of critical contingencies.

- Outage of Lower Tumut to Wagga 330 kV line results in high loading on Yass – Wagga Wagga 132 kV line and high loadings on the Murray – Dederang lines. This results in a severe restriction to Victorian import capability, and reactive power deficiencies in Wagga Wagga leading to unacceptably low voltages or loss of control over voltage. Under this scenario the NSW southwest area is supplied primarily via Victoria, with the Murray-Dederang line representing the maximum flow to the NSW Southwest and Victoria combined.
- Outage of one of the two Yass 330/132 transformers causes a high load on the remaining transformer.
- Outage of one of the Murray – Dederang lines results in a high loading on the Lower Tumut to Wagga Wagga line.

TransGrid identifies that the predicted increase in demand from the NSW southwest and power transfer into Victoria will exacerbate the overloading of transmission lines and transformers in the region. Further, due to the pressure on the regional system the opportunities to take lines out of service for the purposes of maintenance are becoming increasingly limited. TransGrid is currently investigating options for managing the increased pressure, with the preferred option being the upgrading of the existing 132 kV Yass – Wagga Wagga transmission line to 330 kV. West and South of Wagga, the system is also reaching its capacity and additional augmentation is expected to be required within the next 5 years.

### **Consideration**

With regards to the energy supply/demand balance in NSW, the Department makes the following conclusions.

- Based on peak demand for electricity in NSW there is a predicted significant increase in peak electricity demand; and
- Without additional generation capacity there is likely to be a deficit in the energy supply/demand balance by 2008/2009.

The proposed plant, with open-cycle gas-fired generating technology, would be a peaking and high shoulder period energy supply plant and as such would be directly beneficial in meeting this predicted increase in peak electricity demand.

With regards to the transmission network, the Department notes that there is a predicted growth in energy demand from the NSW southwest, and from Victorian importation. This growth, along with the current network constraints in the NSW southwest will place increasing pressure on the NSW southwest transmission network, with the result of constraining energy import into Victoria and creating reactive deficiencies in the Wagga Wagga region. TransGrid's preferred option is to upgrade the existing Yass – Wagga Wagga transmission line.

The Department understands that the Yass – Wagga Wagga transmission line would be used to ensure growth in demand in the NSW southwest and Victorian import capability is adequately met. The Department considers that generation in the NSW southwest would also provide advantages in relation to these matters. In particular, in the event of an outage to the Lower Tumut – Wagga Wagga transmission line NSW (the critical scenario), local generation would reduce the need for NSW southwest demand to be superimposed on Victorian import, reducing the potential for reactive deficiencies in the Wagga Wagga area. While the Department agrees that the upgrade to the Yass – Wagga Wagga line would essentially have the same net advantage from the point of view of the transmission infrastructure, it does not provide the additional benefit associated with increasing the required generation capacity of the Region.

It has further been suggested that it is not acceptable for a power station to be placed in the Wagga Wagga region when it is not Wagga Wagga that is energy deficient, and when a substantial bulk of the power will be directed towards Victoria. With regards to this, the Department notes that the State is predicted to be energy deficient by 2008/2009. Whether the NSW southwest region is energy deficient is not the only relevant consideration, in that should electricity generation be installed in Wagga Wagga, then electricity that would normally be required to be transmitted to that region from another generator (most likely the Snowy Hydro Scheme) would be able to be diverted to other regions with high demand. As such, it is unlikely that the electricity generated by the proposed development would be transmitted far a field, rather that it would reduce or prevent electricity demand in the Wagga Wagga region from generators elsewhere in the State, allowing this electricity to be directed to other high demand areas.

The Department notes that it is unclear as to whether the broader transmission network connecting the NSW southwest and Snowy to the Sydney and South Coast regions are capable of supporting the potential increased loads. The Department understands that constraints in the broader network may substantially inhibit the ability of the proposed development to help meet peak demands elsewhere in NSW. The Department requests clarification from the Applicant in this respect. The Department also notes that it is unclear at this stage whether the proposed power station would have any adverse impact to TransGrid's proposal for upgrading the Yass – Wagga Wagga line. In relation to the potential for import into Victoria, the Department notes that during the critical contingency outage of the Lower Tumut – Wagga Wagga line, demand in the NSW southwest is required to be superimposed on the Victorian import via the Murray – Dederang lines. This can be alleviated by either generation in the NSW southwest or through TransGrid's proposed upgrading. The Department notes that both options represent appropriate measures to address the existing and predicted future constraints on the network in this area. As such, while there is certainly the possibility that there will be times when electricity would flow from the proposed development into Victoria, there would also be times when it provides substantive support to the NSW southwest, preventing deficiencies in that region, while still permitting Victorian import from the Snowy.

In addition, while not an issue raised directly within any submissions, the Department notes that supply of natural gas through the adjacent pipeline can, at times, be constrained due to high demand and limited supply. The Department seeks clarification from the Applicant as to the certainty of the ability of the natural gas supply to be maintained during the peak periods.

## **Conclusions**

The Department concludes that it is likely that the proposed development would be acceptably justified with regards to both the predicted peak demand energy deficiency in NSW, as well as by providing support to the critical NSW southwest transmission network. However, there remains uncertainty in relation to the impact of the proposed power station on the regional and inter-regional transmission network, and whether the transmission system can support the proposed development. It is considered that there would be advantages in clarifying these matters through the Inquiry process. The Department also requests clarification from the Applicant as to the certainty of natural gas supply during peak periods.

## 5.2 Site Selection and Statutory Planning

### Applicant's Position

The Applicant undertook a site and technology selection for the proposed development. In both cases a number of different options were identified by the Applicant and comparisons were made between these options in order to establish a preferred combination to underpin the subject development application. Regarding technology, the Applicant notes that there are a number different ways of generating electricity, based primarily on the different fuels available being black coal, brown coal and natural gas, as well as renewables. The Applicant notes the following:

- renewable energy such as wind power and solar power are not suitable for meeting peak electricity demand, as they are limited by the intermittent nature of the resource;
- the lead time for coal fired power stations is about five years, with significant ancillary infrastructure required. Further, coal power is considered appropriate for meeting base load demand, not for meeting peak demand;
- gas turbine technology with considerably higher costs has lower lead times, less ancillary infrastructure, and is more efficient than coal fired power stations, resulting in lower impacts to land use and atmospheric emissions.

The Applicant discussed the benefits and disadvantages of the open-cycle (OCGT) and combined-cycle (CCGT) configurations for the proposed development. In particular, the Applicant notes that the OCGT was more suited to meeting peak demand due to the fast start-up times, while the CCGT was more suited to intermediate and base load generation due to the higher capital costs and extra ancillary infrastructure. The CCGT also requires a significantly larger volume of water compared to the OCGT, based on water consumption per unit of power.

Regarding site selection, the Applicant highlighted the key selection criteria as being a reliable and adequate gas supply; access to the electricity grid and proximity to electricity load centres. Other selection criteria included transport access, labour access, and access to water and other utilities and infrastructure. The Applicant considered the 11 regions identified in TansGrid's 2003 Planning Report and concluded the Wagga Wagga locality to be optimum. Within Wagga Wagga, the Applicant considered three principal alternatives being Gregadoo, Bomen and Uranquinty. The advantages and disadvantages of each are provided in Table 5.1.

**Table 5.1: Advantages and Disadvantages of the Selected Sites**

| Location   | Advantages   | Disadvantages  |
|------------|--|--|
| Gregadoo   | Substation and existing transmission infrastructure                | Construction impediments due to transmission lines, no gas pipeline, and in the flight line of Wagga Wagga Airport   |
| Bomen      | Within industrial estate and close to pipeline                     | Undulating landform, lack of transmission infrastructure with adequate capability and requirement for new substation |
| Uranquinty | Level site in close proximity to pipeline and transmission network | Rural location and the requirement to construct a substation.  |

Within the Uranquinty region, the Applicant identified six potential sites, with the first five south of the proposed site, adjacent to the 330 kV transmission line. The only feasible option out of the possible six was the proposed site, due to the inability of the Applicant to secure land from the owners of the other sites.

The Applicant has considered the proposed development against the relevant provisions of the *Wagga Wagga Rural Local Environmental Plan 1991* (LEP). In particular, the Applicant notes that the proposed development is permissible with consent. Regarding the *Wagga Wagga Rural Development Control Plan 2002* (DCP), the Applicant highlights that, while the proposed development is not consistent with all the provisions of the DCP, the DCP itself does not prohibit the proposal.

### **Issues Raised in Submissions**

The submission made by Wagga Wagga City Council highlights the inconsistency with the DCP (while also acknowledging that the proposed development would be permissible under the LEP). Council suggests that an amendment be made to create a special provision or amend the DCP zoning for the subject land to achieve both the objectives and consistent application of DCP.

Many public submissions raise concerns generally related to the site selection process and technology selection. In particular, there is significant concern that the site in the Bomen Industrial Estate was overlooked for inappropriate reasons and that the proposed site at Uranquinty is inappropriate due to the provisions of the DCP, the rural character of the locality and conflicts with surrounding land uses. Objections were also made that the proposed development has not included the necessary upgrades to infrastructure, in particular the water pipeline and electricity transmission lines upgrades.

### **Department's Position**

The Department considers the Applicant's process for establishing the preferred technology and the preferred site as being appropriate. In particular, the Department notes that the Applicant was quite specific in its selection criteria (for both technology and site) due to the high specificity for the intended outcome. In particular, the Department notes that the Applicant intended to meet the peak and high shoulder electricity demand. The Applicant's preferred option of utilising the OCGT configuration is considered appropriate for this purpose. The Department notes that while gas technology is a non-renewable resource, it is substantially more efficient than existing coal technologies, and is likely to play an important role in the electricity generation network in the near future.

The site selection process clearly shows the Applicant's two primary criteria as being close the natural gas source, and being close to transmission infrastructure. The Department is satisfied that the Applicant has adequately selected a site. It is the role of the planning and assessment process (the current process, including the Commission of Inquiry) to determine whether the environmental impacts of the proposed development at the proposed site are acceptable or unacceptable, whether such impacts can be appropriately managed, and whether the potential impacts from the proposed development are outweighed by the potential benefits.

Notwithstanding this, the Department notes significant concern regarding the appropriateness of the proposed site with regards to the rural character and surrounding land uses. On this matter, the Department highlights that issues relating to specific impacts (such as air emissions, visual amenity, noise) are discussed under the relevant section headings below. Regarding the impacts of the proposed development on the local community the Department has considered this in the socio-economic section. Aside from the specific potential impacts, and in light of the inconsistency with the relevant DCP, the Department considers this matter of the siting of the proposed development a key issue to be addressed through the Inquiry process.

The Department provides a consideration of the proposed development in the strategic and regional planning context. The Department notes that the proposed site is on Class 1 and Class 2 land, which is considered as prime agricultural land. NSW Agriculture confirms that this land is prime agriculture land. There is some concern that the use of such land is inappropriate for industrial purposes, and further that industry such as the proposed development may encourage future industrial development proposals into the Uranquinty area. The Department notes that the land surrounding the proposed development is considered rural residential. While the Department considers that there remains outstanding issues with the proposed development (see relevant section), the Department understands

that there is a current abundance of prime agricultural land and rural residential land in the vicinity of Wagga Wagga, and that as such the proposed development would have a minimal effect on the supply of this type of land.

While the Department notes that there may be attractions to new industry into the Uranquinty area, the Department considers that the proposed development would not increase any such attraction of future industrial development, since there are no real advantages to locating industry directly adjacent to the development. Specifically, it is not necessary to locate industry adjacent to an electricity source, nor are there any outputs of the proposed development (steam etc) which may be of use to industrial developments. The Department further notes that the location of any new industrial development would be subject of its own site selection processes and subsequent planning and assessment. Future use of the surrounding land would also need to be considered in the context of any future development applications, rezonings or strategic planning approaches.

The Department understands that residential expansion of Wagga Wagga is currently taking place in the south westerly direction, in the direction towards Uranquinty (as development to the north is constrained by the Bomen Industrial Area and the Murrumbidgee floodplain). On this matter, the Departmental officers have visited the subject area, and note that preliminary infrastructure development is underway. Notwithstanding this, the Department considers that this residential advance remains several kilometres away from the Uranquinty, and there is unlikely to be any conflict between it and the proposed development as currently proposed.

As discussed above the DCP is not a statutory environmental planning instrument. The DCP provides general guidance to provide further and more detailed land use planning aspects in addition to the provisions of environmental planning instruments. The LEP is a statutory planning instrument and provides for the permissibility of the various types of development. This guidance, while not legally binding, needs to be considered in the context of the respective environmental planning merits of relevant development proposals. Where a particular development, such as the subject development proposal, is inconsistent with the guidance provided in a DCP, the consent authority must carefully consider the relative merits of the proposal in the context of the nature and extent of the inconsistency. The Department considers that the comprehensive, independent and transparent assessment offered by the Commission of Inquiry process would help facilitate an appropriate level of assessment for the proposal.

Regarding the potential need for subsequent upgrades to ancillary infrastructure, including the water pipeline and the transmission lines, the Department notes that prior to granting consent, should the Minister determine to do so, there would need to be certainty that the necessary infrastructure would be available to support the proposed development. At present this certainty has not been provided. The Applicant and/or the infrastructure provider would be required to demonstrate, including a preliminary assessment regarding any planning or environmental constraints and a clear consideration of the appropriate planning and assessment process, that the provision of such infrastructure as would be necessary is a feasible and realistic. The Department understands that the Applicant has consulted with TransGrid and Riverina Water County Council in relation to this matter and that there are currently a number of options regarding the necessary upgrades of the subject transmission infrastructure. The Department seeks clarification from the Applicant as to the status of the necessary upgrades, and from the approval bodies as to the proposed planning and assessment process.

### **5.3 Air Quality Impacts**

#### **Applicant's Position**

The Applicant has undertaken an air impact assessment in accordance with the EPA's *Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in NSW* (EPA Guidelines). The Applicant has obtained background air quality data from monitoring undertaken in 1998 approximately 2 kilometres north of Wagga Wagga. The Applicant asserts that the data provided would be conservatively representative since there have not been any significant new sources of air pollution, and that the proposed site would be less impacted by air pollution from Wagga Wagga.

The Applicant has carried out modelling under four different scenarios, being:

- Scenario 1: Four units (150 MW each) operating at full load using natural gas;
- Scenario 2: Four units operating at 50% capacity, using natural gas, which is representative of worst case operating conditions, during start up and shut down;
- Scenario 3: Four units operating at full load using diesel; and
- Scenario 4: Emergency diesel generator operating at full load.

In the event of a total or partial shutdown of the electricity transmission system, the proposed development would not perform a start up using electricity generated on site (a black start). The Applicant notes that the power station would only be operating for approximately 10% of the year, meaning annual predictions would be significantly over estimated.

The Applicant has modelled the maximum ground level concentrations assuming the proposed power station is operating for the entire year for each scenario. The Applicant notes that this will result in a significant over estimate of the annual average impact from the emissions. **Table 4.1** shows the impacts associated with the proposed power station, with comparison to the EPA's ambient air criteria.

**Table 4.1: Maximum concentrations**

| Pollutant                     | Averaging period | EPA Guideline ( $\mu\text{g}/\text{m}^3$ ) | Scenario | Maximum         |                    |
|-------------------------------|------------------|--|----------|-----------------|--------------------|
|                               |                  |  |          | with background | without background |
| SO <sub>2</sub>               | 10 minutes       | 712  | 1        | 53.2            | 3.0                |
|                               |                  |  | 2        | 52.2            | 2.0                |
|                               |                  |  | 3        | 485.2           | 435.0              |
|                               |                  |  | 4        | 54.2            | 4.0                |
|                               | 1 hour           | 570  | 1        | 36.6            | 1.5                |
|                               |                  |  | 2        | 36.1            | 1.0                |
|                               |                  |  | 3        | 255.1           | 220.0              |
|                               |                  |  | 4        | 37.1            | 2.0                |
|                               | 24 hour          | 228  | 1        | 14.5            | 0.2                |
|                               |                  |  | 2        | 14.4            | 0.1                |
|                               |                  |  | 3        | 43.6            | 29.3               |
|                               |                  |  | 4        | 15.1            | 0.8                |
|                               | 1 year           | 60   | 1        | 5.71            | 0.01               |
|                               |                  |  | 2        | 5.71            | 0.01               |
|                               |                  |  | 3        | 7.2             | 1.5                |
|                               |                  |  | 4        | 5.9             | 0.2                |
| NO <sub>2</sub> <sup>a</sup>  | 1 hour           | 246  | 1        | 73              | 44                 |
|                               |                  |  | 2        | 106             | 93                 |
|                               |                  |  | 3        | 101             | 85                 |
|                               |                  |  | 4        | 72              | 8                  |
|                               | 1 year           | 62   | 1        | -               | 0.4                |
|                               |                  |  | 2        | -               | 2.7                |
|                               |                  |  | 3        | -               | 8.8                |
|                               |                  |  | 4        | -               | 0.8                |
| PM <sub>10</sub> <sup>b</sup> | 24 hour          | 50   | 1        | -               | 1.0                |
|                               |                  |  | 2        | -               | 0.7                |
|                               |                  |  | 3        | -               | 1.3                |
|                               |                  |  | 4        | -               | less than 0.00002  |
|                               | 1 year           | 30   | 1        | -               | 0.08               |
|                               |                  |  | 2        | -               | 0.08               |
|                               |                  |  | 3        | -               | 0.1                |
|                               |                  |  | 4        | -               | less than 0.00001  |
| CO                            | 15 minutes       | 100,000                                    | 1        | 24.6            | 18.9               |
|                               |                  |  | 2        | 17.9            | 12.2               |
|                               |                  |  | 3        | 24.6            | 18.9               |
|                               |                  |  | 4        | 5.78            | 0.08               |
|                               | 1 hour           | 30,000                                     | 1        | 15.5            | 11.2               |
|                               |                  |  | 2        | 11.5            | 7.2                |
|                               |                  |  | 3        | 15.5            | 11.2               |
|                               |                  |  | 4        | 4.35            | 0.05               |

|  |        |        |   |      |      |
|--|--------|--------|---|------|------|
|  | 8 hour | 10,000 | 1 | 4.6  | 2.9  |
|  |        |        | 2 | 3.9  | 2.2  |
|  |        |        | 3 | 4.6  | 2.9  |
|  |        |        | 4 | 1.74 | 0.04 |

- a. For nitrogen dioxide the Applicant has used the measured background hourly concentrations, as opposed to the worst case NO<sub>2</sub> concentration.
- b. For particulate matter (PM<sub>10</sub>) the Applicant has not included background values due to the broad range measured.

The Applicant has also modelled the maximum concentrations for pollutants at the nearest receptors. For scenarios 1, 2, and 4 the ambient concentrations at the individual receptors ranged up to a maximum of approximately three quarters of the maximum values stated in **Table 4.1**. For scenario 3 the Applicant has predicted concentrations at the individual receptors for SO<sub>2</sub> well below the trend (less than 1% of maximum emissions stated in **Table 4.1**).

### Health Impacts

The EIS includes a health risk assessment following the methodology of the California Air Resources Board (CARB). The Applicant undertook the health risk assessment for the short term and long term effects of the proposed power station using natural gas, and the shorter term effects of the power station using diesel. The Applicant also conservatively assumed that the proposed power station is in continuous operation. Other key assumptions used in the health risk assessment were:

- different exposure pathways include inhalation, soil ingestion and dermal absorption;
- each contaminant is considered in an additive manner regarding the total risk or hazard index;
- a deposition velocity of 0.02 m/s (this is a conservative overestimation) and that all contaminants are deposited (inhalation impacts are considered in the EPA's ambient air guideline concentrations).
- assessment of cancer risk as a result of ingestion of contaminated drinking water assumes that all drinking water is taken from the tank;
- no pollutants emitted from the use of natural gas contaminate eggs or meat;
- home-grown garden produce comprises 100% of daily intake;

The results of the health risk assessment are provided in **Table 4.2**. In all cases the total hazard index is below an acceptable incremental carcinogenic risk of  $1 \times 10^{-6}$  over a lifetime (70 years) and below the indicative threshold hazard index of 1.0. The Applicant has not undertaken a chronic exposure hazard index analysis for diesel operation, since such operation is likely to be infrequent and only under emergency conditions. No total non-inhalation chronic exposure assessment was undertaken since, as the Applicant argues, there are no relevant pollutants assessable from natural gas combustion for that purpose.

**Table 4.2: Total Hazard Index's for the Proposed Power Station**

|                            | Total Acute Non-cancer Inhalation | Total Chronic Non-cancer Inhalation | Total Chronic Non-cancer Non-inhalation | Individual Cancer Risk                  |
|----------------------------|-----------------------------------|-------------------------------------|---|---|
| <b>EPA Risk Criteria</b>   | <b>1</b>                          | <b>1</b>                            | <b>1</b>                                | <b><math>1.00 \times 10^{-6}</math></b> |
| Full load with natural gas | < 0.0009                          | < 0.0028                            | -                                       | $2.80 \times 10^{-7}$                   |
| Full load with diesel      | < 0.0047                          | -                                   | -                                       | -                                       |

### Odour

The Applicant has undertaken an odour impact assessment based on the emission of NO, NO<sub>2</sub> and SO<sub>2</sub>. The Applicant used a conservative peak to mean (conversion) ratio with worst case emissions scenario for modelling odour impacts. In all cases showing that the EPA's odour guidelines were met.

### Greenhouse

The Applicant predicts total greenhouse gas emissions of 237,528 tonnes carbon dioxide equivalents per annum (tCO<sub>2-eqv</sub>/a). The greenhouse gas emissions intensity of the proposal is estimated at 0.628 tonnes of carbon dioxide equivalents per megawatt hour (tCO<sub>2-eqv</sub>/MWh).

### Issues Raised in Submissions

The DEC requested additional information with regards to the applicability of the TAPM data set used in the assessment as representative of the proposed site, considering it was based on meteorological input from the Pacific Power monitoring to the north of Wagga Wagga and Bureau of Meteorology station in Wagga Wagga (BoM). The DEC required the TAPM data set to be validated for the actual proposed site. The DEC also requested additional information in relation to the emissions calculation for sulfur dioxide and compliance with the *Clean Air (Plant and Equipment) Regulation 1997*. The Applicant has submitted responses to these requests, and the DEC has subsequently provided draft General Terms of Approval indicating that the responses are satisfactory.

Air quality impacts are a key community concern. The following is a general summary of these issues:

- meteorological data (TAPM based on Pacific Power and BoM data) used for the modelling was not demonstrated to be representative of the proposed site, further the 1998 data was not a representative year for the area in terms of wind and rainfall;
- the effect of heavy winter fogs has not been considered, in particular the observation that mixing heights are at their lowest during the likely hours of operation of the proposed power station and the fact that there are residences on nearby hills;
- concern regarding the health risk methodology, in particular not undertaking an assessment of diesel emissions, and use of standards from the USA;
- the assessment has not been undertaken for 2 turbines operating;
- concerns regarding the averaging periods for specific pollutants, primarily NO<sub>x</sub> and NO<sub>2</sub>;
- concern that the EPA guideline is a maximum allowable level, and that any increase in air pollution represents a risk and is unacceptable to nearby residents;
- questions why no emissions concentrations were provided for individual receptors west and southwest of the site;
- requests for odour assessment to be undertaken for scenarios 1 and 3 and for receptors east and west of the proposed site;
- the technology for the proposed power station is not the latest technology and is therefore not as greenhouse efficient as it could be;
- concern over regularity of maintenance and monitoring;
- concerns over health risk assessment including, chronic risks from diesel should not be discounted just because diesel use is predicted to be infrequent (as chronic risks is the build up over time), emissions of beryllium, cadmium, chromium, manganese and selenium were not included for diesel emissions as they have no short-term impact; and the assessment erroneously assumes that all particulate matter will be deposited, discounting inhalation risk;
- the EIS does not include an assessment of the emissions from the proposed power station on the surrounding local climate including rain cloud formation and temperature.

### Department's Position

The Department considers that the Applicant's air impact assessment is generally adequate. Regarding the appropriateness of the TAPM data set used for the purposes of modelling the impacts from the emissions, the Department notes that the Applicant has provided an analysis of this issue in response to an additional information request from the DEC. The Applicant argues that the discrepancies can be accounted for by the different local land forms surrounding the proposed site. In particular, the TAPM data set indicated increased winds from the south-westerly and north-easterly direction as opposed to the westerly, easterly and south-easterly direction from the Wagga Wagga BoM site. The Applicant argues that these differences can be explained by the elevated landforms to the north, west, north-east, east and south-east of the proposed site, with wind channelling around these hills. Regarding concern as to whether the assessment has adequately incorporated the affect of local climatic conditions, such as fogs, the Department notes that such conditions would be taken into account in the meteorological data set used for modelling purposes.

The DEC has issued draft General Terms of Approval indicating that it is satisfied that the TAPM data set is adequately representative of the proposed site, and that the modelled impacts are acceptable. In light of this the Department considers the use of the TAPM data

set to be adequate for the purposes of modelling the impacts from the proposed power station.

The Department notes that in all cases the maximum ground level concentrations are well below the EPA criteria. With regards to the *Clean Air (Plant and Equipment) Regulation 1997*, the Department notes that while scenario 2 is expected to exceed the emission limit at the point of discharge, that emission limit is not intended to apply to start up and shut down (which is scenario 2). Regarding the modelled pollutant concentrations at discrete receptors, the Department notes that for scenario 3, the data presented is substantially lower than the trend shown (for other pollutants) for pollutant concentrations at individual receptors compared to the maximum values. The Department requests clarification of these figures.

In relation to concern over the lack of individual receptors to the west and southwest of the proposed site, the Department notes that the maximum impacts are predicted to the west and southwest of the plant. The additional individual receptors included locations to the northwest, east and south. In all cases the maximum values were below the EPA criteria, and are therefore considered acceptable. The Department notes concerns from the community as to the lack of individual receptors west and southwest of the proposed site. However, it is considered that such receptors are adequately reflected by the maximum concentrations, which are below the EPA criteria.

The Department understands the general key community concern, being that any increase in air emissions is unacceptable as the environment is one of the reasons why people might live in a location such as Uranquinty. The Department notes this concern, however also notes that the predicted increase in ambient air pollutant concentrations are generally well within the acceptable criteria which applies to the State as a whole. Further, due to the conservative assumptions used in the assessment, such as continuous emission of pollutants, these predicted ground level concentrations would only be experienced for approximately 10% of the time.

The Department highlights that the DEC's draft General Terms of Approval include the requirement to continuously monitor emissions of nitrogen oxides and meteorological conditions at the site.

### **Health Risk Assessment**

The Department is satisfied that the Applicant has applied a reasonable and robust methodology to the assessment of health risks associated with the combustion of natural gas in the proposed development. In the case of this fuel, the Applicant has demonstrated that the proposal would not generate an unacceptable carcinogenic or non-carcinogenic human health risk. The Department does not consider this surprising, because the combustion of natural gas will generate air emissions for which ambient air quality criteria are established, and against which the Applicant has predicted performance well below those criteria.

In the case of diesel fuel combustion, the Department notes that acute inhalation risks lie well below non-carcinogenic health risk criteria. As noted above, this outcome can be reasonably predicted noting the outcomes of the air dispersion modelling presented in the Environmental Impact Statement and demonstrated performance below acceptable ambient air quality criteria. The Department appreciates significant community concern raised in relation to the robustness of the consideration of carcinogenic and chronic non-carcinogenic health implications associated with the use of diesel fuel. While the Department considers from a preliminary consideration of the issue, that the proposal could be operated with diesel fuel within acceptable health limits, it highlights that this position cannot be conclusively established based on the information provided by the Applicant to date. In particular, a number of compounds, exposure scenarios and applied assumptions require a more rigorous and justified consideration in order to resolve concerns raised through public submissions and conclusively demonstrate that diesel-related health impacts are not significant. The Department considers that the Applicant needs to review the presentation of its consideration of health impacts from this fuel source, to more adequately justify and defend the assessment approach applied, focussing on:

- further justification of the Applicant's position that carcinogenic and chronic non-carcinogenic health impacts do not need to be considered under diesel fuel scenarios;

- the appropriateness of compounds considered as contributing to health effects from diesel combustion (both acute and chronic, carcinogenic and non-carcinogenic), particularly in relation to heavy metals. For example, the California Air Resources Board and California Office of Environmental Health Hazard Assessment has published risk assessment values for arsenic (acute inhalation, chronic inhalation, chronic ingestion and carcinogenic risk), although the Applicant has only considered this contaminant in the context of acute inhalation effects; and
- in light of the above considerations, update of the health risk assessment, as may be necessary.

#### 5.4 Noise Impacts

The Applicant undertook a noise impact assessment in the EIS in consultation with the EPA's *Industrial Noise Policy* (INP). As a result of this assessment both the Department and the DEC requested additional information. The Applicant's position, described below reflects the Applicant's final position, incorporating the responses and amendments made in light of the additional information requests.

##### Applicant's Position

The Applicant chose two monitoring sites to reflect the noise environment in the locality, including the site itself. These two sites are 650 m to the south of the site (Pine Grove), and two kilometres to the northwest of the site (Wyrilla), and represent the closest residence to the proposed site, and the most elevated residence. The rating background level (RBL) was determined based upon the monitoring undertaken at these locations. At both locations the RBL was determined to be 30 dB(A) at all times, except for location 1 where the RBL was 31 dB(A) during the day.

##### Operational Noise

The Applicant has used the noise emitted from a Mars 100 Turbine for predicting the noise from the proposed power station. The Applicant argues that the Mars 100 Turbine is sufficiently similar to the Siemens model proposed to be used at the proposed development. The noise modelling used a noise emission level of 67 dB(A) at 100 metres from each turbine, based on the worst case scenario of four turbines operating. Worst case meteorological conditions were also used, based on Class D and Class F Stability conditions and easterly or westerly winds at 3 m/s. **Table 4.3** shows the predicted noise emissions at the nearby receptors, with the shaded cells indicating exceedances of the noise criteria. The noise criteria identified by the Applicant are based on the Intrusiveness criteria, which are determined as RBL + 5 dB(A). The Applicant claims that the 35 dB(A) criterion could be applied at all sensitive receivers in the area.

**Table 4.3: The operation noise impact at the nearest receivers**

| General Location of receptor | Noise Emissions $L_{eq}$ – dB(A) |                        |                        |
|------------------------------|----------------------------------|------------------------|------------------------|
|                              | Class D, Westerly Wind           | Class F, Easterly Wind | Class F, Westerly Wind |
| South 650 m                  | 41                               | 38                     | 41                     |
| Southeast 850 m              | 39                               | 36                     | 39                     |
| East 980 m                   | 39                               | 35                     | 39                     |
| Northwest 1300 m             | 32                               | 38                     | 33                     |
| West 1400 m                  | 31                               | 37                     | 32                     |
| Northeast 1500 m             | 33                               | 30                     | 33                     |
| South 1700 m                 | 27                               | 33                     | 30                     |
| Northwest 2000 m             | 26                               | 32                     | 27                     |
| East 2100 m                  | 29                               | 24                     | 29                     |
| East 2000 m                  | 31                               | 25                     | 31                     |
| Southeast 2400m              | 27                               | 21                     | 27                     |

The Applicant notes that for three locations the proposed development would routinely experience noise emissions of up to 6 dB(A) in excess of the criteria, and that up to 3 dB(A) exceedances would be experienced at a further two receivers under adverse weather conditions. The Applicant asserts that to ensure the overall noise emissions from the power

station are reduced to acceptable levels at the receivers, the following noise levels would need to be met:

- One turbine – 61 dB(A) at 100 m
- Two turbines – 66 dB(A) at 100 m
- Four turbines – 67 dB(A) at 100 m.

The Applicant later obtained information from the supplier. The plant would be provided as a package from Siemens, including the V94.2 gas turbines, related transformers and other auxiliary equipment. The Applicant asserts that Siemens can guarantee the package can meet a noise emission level of 55 dB(A) at 100 metres, and that as such all operational noise criteria would be met. The Applicant also identifies further capabilities for noise mitigation.

Upon request the Applicant undertook a sleep disturbance assessment. The Applicant notes the *Industrial Noise Policy* criterion for rural environments at night time as being 40 dB(A)  $L_{Aeq}$ . The Applicant argues that the noise associated with the development would not be characterised by large modulations, and would be considered continuous noise. The Applicant considers that since the rural night time criteria is greater than the intrusiveness criterion of 35 dB(A), the rural night time amenity criteria would be met at all times.

### Construction Noise

The Applicant notes that there will be two distinct construction phases, initially for the first two turbines, and subsequently for the second two turbines. The Applicant proposes that the construction period be broken into four stages, being site preparation works, foundation laying, equipment installation and building construction, and pipeline construction. Construction noise was determined using the four construction stages and the various pieces of equipment on site during those construction stages. Construction is proposed between 7:00 am to 6:00 pm Monday to Friday, 7:00 am to 1:00 pm Saturdays, with no weekend or public holiday work. The Applicant calculates the noise criteria, as prescribed by the EPA's *Environmental Noise Control Manual*, as being 35 dB(A) (The Applicant originally misinterpreted the guideline by calculating the Stage 1 criterion at 50 dB(A) and the Stage 2 criterion at 40 dB(A)).

The worst case noise emissions were identified by the Applicant as occurring when two dozers are operating at the site. The Applicant has modelled the noise impacts associated with the predicted emissions at nearby receptors. For this modelling, the Applicant notes that worst case meteorological conditions under Stability Class E and F very rarely occur during the proposed construction times, and as such, the worst case meteorological conditions are assumed to be Stability Class D with 3 m/s westerly winds. **Table 4.4** provides the predicted noise impacts from the Applicant's modelling, with shaded cells indicating exceedances of the construction period criterion.

**Table 4.4: The construction noise impact at the nearest receivers**

| Location of receptor | Construction Noise Criteria (dB(A)) | $L_{eq}$ (dB(A))             |                                      |
|----------------------|-------------------------------------|------------------------------|--------------------------------------|
|                      |                                     | Neutral Daytime with No Wind | Stability Class D with Westerly Wind |
| South 650 m          | 35                                  | 42                           | 46                                   |
| Southeast 850 m      |                                     | 40                           | 45                                   |
| East 980 m           |                                     | 39                           | 45                                   |
| Northwest 1300 m     |                                     | 38                           | 31                                   |
| West 1400 m          |                                     | 37                           | 30                                   |
| Northeast 1500 m     |                                     | 35                           | 40                                   |
| South 1700 m         |                                     | 33                           | 29                                   |
| Northwest 2000m      |                                     | 32                           | 38                                   |
| East 2100 m          |                                     | 31                           | 37                                   |
| East 2000 m          |                                     | 32                           | 25                                   |
| Southeast 2400m      |                                     | 28                           | 34                                   |

The Applicant notes that the construction noise criterion is exceeded by up to 11 dB(A) at a number of receivers. The Applicant calculates that in order to meet the construction period noise criterion, the maximum on site noise emissions would have to be less than 111 dB(A). The Applicant considers that Stage 3 and Stage 4 of the construction period will comply with this requirement, noting predicted exceedances during Stage 1 and Stage 2. The

Applicant proposes a number of measures to minimise noise from construction activities at the site, including:

- Inform contractors and sub-contractors to keep noise to a minimum and limit operation of noisy machinery to between 9:00 am and 4:00 pm;
- where possible fitting mufflers and silencers to machines, using rubber tyred machinery rather than metal tracked machinery, limiting the drop height of concrete aggregate, not hammering containers when emptying vessels, and locating the mixing plant appropriately;
- Keep neighbours informed when noisy equipment is introduced to the site and the likely duration of its use and ensuring a site contact number is circulated to all for quick response to complaints; and
- Implement a management strategy to monitor noise, assess and record complaints and track performance on limiting and managing noise.

### **Traffic Noise**

The Applicant notes that there are no construction related traffic noise criteria. Regarding operational traffic from the development, the Applicant notes that the Uranquinty Cross Road could be deemed a collector road or a local road. The EPA's *Environmental Criteria for Road Traffic Noise* stipulates the following road traffic noise criteria for these roads, with a new development not to exceed an additional 2 dB(A) on top of any existing road traffic noise:

- Collector Road: 60 dB(A) day  $L_{Aeq,1 \text{ hour}}$  and 55 dB(A) night  $L_{Aeq,1 \text{ hour}}$ ; and
- Local Road: 55 dB(A) day  $L_{Aeq,1 \text{ hour}}$  and 50 dB(A) night  $L_{Aeq,1 \text{ hour}}$ .

The Applicant notes that there are currently approximately 100 vehicles per day using the Uranquinty Cross Road, of which some 2% are heavy vehicles, and 10% are assumed to occur during each hour of both the morning and afternoon peak hours. The Applicant asserts that the noise survey locations discussed above (500 m and 300 m from the road respectively) routinely measured  $L_{eq}$  noise above 50 dB(A) and that therefore the noise in these areas is predominantly based on other factors. The Pearce residence is identified as being the most likely to be affected by road traffic noise, being 20 metres from the road. The ambient  $L_{eq,15 \text{ minute}}$  noise measurement at this residence is 40 dB(A) with no cars. The predicted  $L_{eq,1 \text{ hour}}$  with 10 cars passing by the site is 49 dB(A). The Applicant assumes the worst case scenario that all seven of the daily vehicles associated with the proposed power station all arrive at the same time during the morning peak, and leave during the afternoon peak. The Applicant calculates that the resultant noise impact at the Pearce residence would be 50 dB(A). At other residences, the Applicant claims that the noise contribution would be less than 30 dB(A). The Applicant concludes that the worst case impact is a 1 dB(A) increase as a result of the proposed development, and that the road traffic noise level will stay within the acceptable criteria.

Regarding night time road traffic noise, the Applicant notes that the morning peak hour may occur during the stated night time hours (before 7:00 am), however the EPA guideline criterion of 50 dB(A) is complied with at the worst effected residence. Further, the dramatic increase in noise in the Uranquinty area after 6:00 am suggests that the period between 6:00 am and 7:00 am should be considered as a shoulder period as opposed to night time.

Construction road traffic noise will result from the estimated 110 people required at the site. The Applicant assumes that 80% of these workers will travel in any 1 hour period. If all of these vehicles pass by the Pearce residence  $L_{eq,1 \text{ hour}}$  would increase to 56 dB(A).

### **Issues Raised in Submissions**

The DEC requested additional information from the Applicant in relation to a number of aspects of the Applicant's original noise impact assessment. In particular, the DEC note the following concerns:

- exceedances of the criteria during operation of the development;
- appropriateness of the use of the Mars 100 Turbine for noise assessment;
- further consideration necessary regarding tonal or impulsive corrections, and noise from auxiliary equipment; and
- construction noise impacts; including consideration of heavy vehicle construction traffic and use of appropriate construction noise criteria.

In light of the additional information, the DEC has subsequently provided draft general terms of approval to the Department, indicating that it is generally satisfied with the Applicant's noise impact assessment. The DEC's draft General Terms of Approval include a requirement to undertake a noise compliance monitoring study three months after the commencement of operations at the proposed development.

### **Department's Position**

The Department considers that the Applicant's revised noise impact assessment is generally acceptable. In particular, the Department was originally concerned about the predicted noise exceedances associated with the operation of the development. The Applicant's subsequent provision of a preferred supplier and a guarantee from that supplier indicates that the Applicant will be able to comply with the relevant noise criteria at all times. The Department also notes that there is the potential for the proposed power station to operate early in the morning during what is defined as the night time period. The Applicant claims that the noise characteristics from the power station are not tonal, and would therefore be considered continuous noise. While the Department does not dispute this, it is considered appropriate that the tonal characteristics of the proposed power station be provided, and a comparison be provided with a continuous noise source.

The Department also notes that the DEC's provision of draft General Terms of Approval indicate that the DEC is satisfied that the appropriate noise criteria have been formulated and that the Applicant can meet these criteria. The Department does, however, consider it appropriate that the supplier provide this guarantee to the Department.

Regarding construction noise impacts the Department notes that the construction period noise criterion is predicted to be exceeded during Stage 1 (earthworks) and Stage 2 (foundations). Further, the Department considers that these exceedances of the criteria are substantial, and not acceptable. The Department has reviewed the noise mitigation measures proposed by the Applicant, and is generally supportive of such mitigation measures being implemented. The Department does not however consider that the proposed mitigation measures have been demonstrated to reduce construction noise levels to within acceptable limits. As such, the Department requires the Applicant to provide a detailed assessment of whether the proposed construction noise mitigation measures are likely to result in significant reduction of construction noise, and whether this noise reduction would result in acceptable criteria being met. The Department considers it necessary that all feasible and reasonable construction noise mitigation measures be implemented during the construction period to ensure noise is minimised.

In relation to road traffic noise, the Department notes that at the worst affected residence, the increase in road traffic noise is less than 2 dB(A), and that the resultant road traffic noise remains below the criterion of 50 dB(A). As such, the Department is satisfied that the road traffic noise from the proposed power station will not have an unacceptable impact. During the construction period the Department notes that the Applicant has not included consideration of heavy vehicles in its calculation of construction road traffic noise. Further the construction road traffic noise is already predicted to substantially increase road traffic noise in the local area. In light of this the Department considers it necessary that the Applicant investigate additional measures for reducing the road traffic noise during the construction period. The Department notes that there are no specific guidelines or criteria in relation to this issue, however due to the low level of background noise the locality would be susceptible to large increases in such noise. It is considered appropriate that all reasonable and feasible measures be considered to minimise road traffic noise during the construction period, including appropriate scheduling of traffic movements, especially for heavy vehicles.

### **Conclusion**

The Department is generally satisfied that the development could be operated within acceptable noise criteria under the majority of conditions and scenarios. During the construction period however, the Department considers the predicted noise impacts to be unacceptable. In light of its assessment, the Department requires the Applicant to provide the following information:

- provision of the tonal characteristics of the proposed plant and equipment;
- provision of the guarantee from Siemens;

- further consideration of the feasible and reasonable construction noise mitigation measures (including road traffic noise) that could be implemented during the construction period to ensure noise is minimised, and whether these measures would reduce noise impacts to acceptable levels; and
- consideration of the heavy vehicles in the construction road traffic noise assessment.

To ensure road traffic noise is minimised during the construction period, the Department would recommend that the Applicant prepare a Construction Traffic Management Plan detailing noise minimisation measures, should the Minister determine to approve the proposal.

## **5.5 Impacts on Visual Amenity**

### **Applicant's Position**

The Applicant undertook a visual impact assessment of the proposed development, by considering the impact to views in the immediate distance (500 m), intermediate distance (500 m to 2.5 km) and the broader distance (greater than 2.5 km). The Applicant identified the sensitive receivers in the area, as well as potential screens such as vegetation and landscape forms.

In the immediate distance the landscape is flat with no buildings, with the power lines running across the site a prominent feature of the area. In the middle distance there are a number of residences, the Uranquinty Cross Road and the outskirts of Uranquinty. The landscape on this scale is generally flat, however falling away slightly to the south, and rising hills to the northwest. The Applicant considers there to be scattered vegetation and some contrast in landform which would aid in absorbing the bulk of the development. In particular, the Applicant considers vegetation stands at the nearby receivers and the slight undulating nature of the landform would provide significant screening of such receivers from the proposed development. The Applicant argues that existing dense vegetation to the east of the site provides substantial screening, and that additional plantings along the Uranquinty Cross Road (south of the development) and to the west of the development would provide further screening. However, the Applicant identifies that there are two particularly sensitive receivers, being Wyrilla (elevated to the northwest of the site) and Jacks Road (with open views onto the site). Users of the Uranquinty Cross Road would also get a clear view of the development until screening landscaping matures.

In the broader context, the Applicant identifies that the top section of the proposed development would be visible in places along the Olympic Highway. The Applicant considers that the proposed development would not have any adverse visual impacts, other than those stated above.

To reduce the visual impact of the development, the Applicant proposes to use low reflective materials and neutral colours. The Applicant also proposes to provide screening vegetation between the development and the Uranquinty Cross Road, to the west of Jacks Road and to the west of the development site, as well as generally across the proposed development site. The Applicant also proposes to undertake off-site screening vegetation planting in consultation with surrounding landholders.

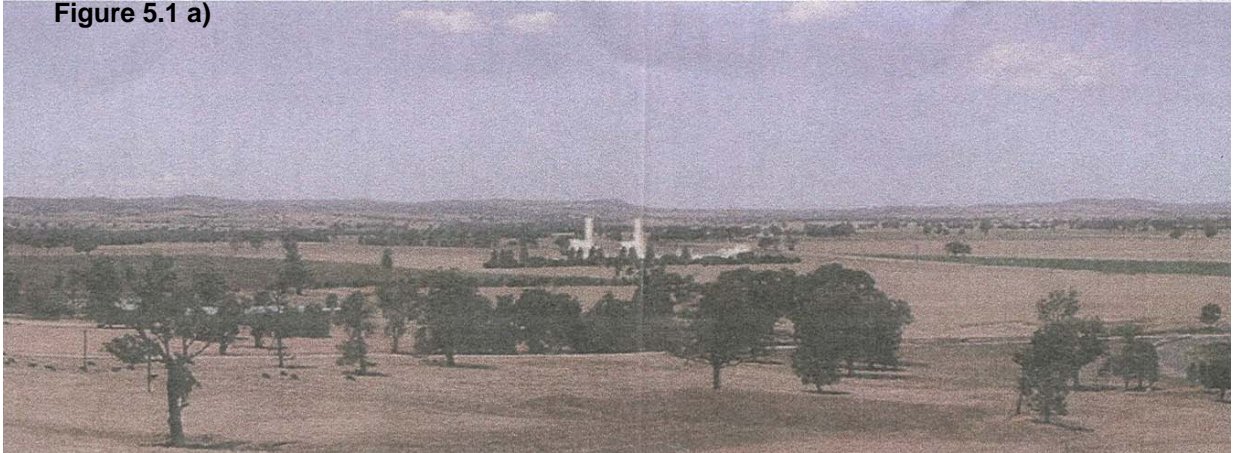
### **Issues Raised in Submissions**

Wagga Wagga City Council raised the visual impact of the proposed development as impacting significantly on the existing visual amenity of the area, and notes uncertainty regarding the veracity of the scaling of the photomontage presented in the EIS. Council also highlights the use of trees for screening purposes, however notes that the Applicant has not undertaken any further discussions with local landowners regarding such tree screening plantings off the proposed site.

The visual impact from the proposed development is a key concern for many of the local residents. This concern is often raised in conjunction with the general amenity of the area, and the appropriateness of the proposed development within a rural environment. Concern is

**Figure 5.1: Four photomontages of the proposed development from the Wyrilla property to the northwest of the site. a) shows the development with cream façade and 15 years tree screening; b) shows the development with cream façade and 5 years tree screening; c) shows the development with sandy façade and 5 years tree screening; and d) shows the development with dark façade and 5 years tree screening.**

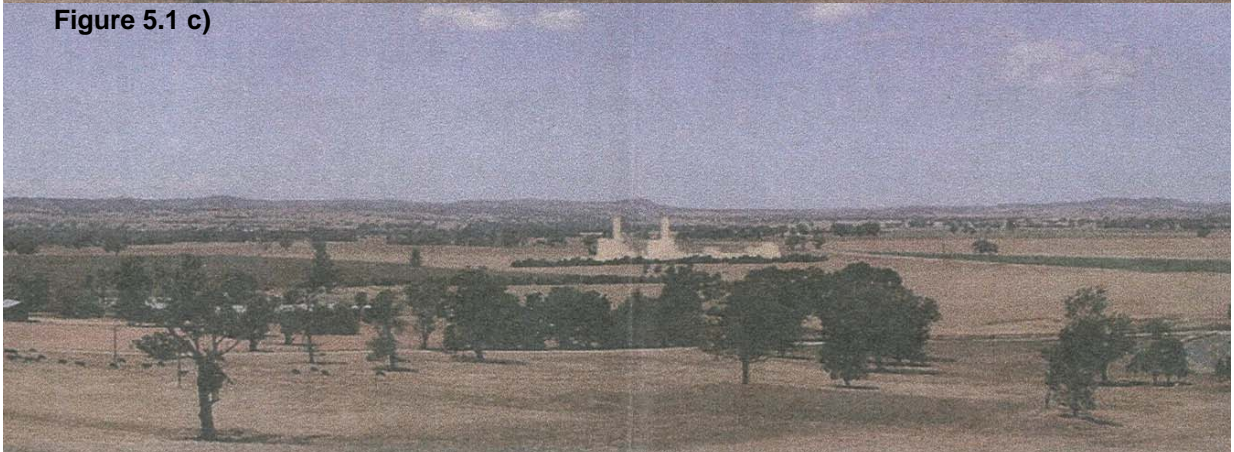
**Figure 5.1 a)**



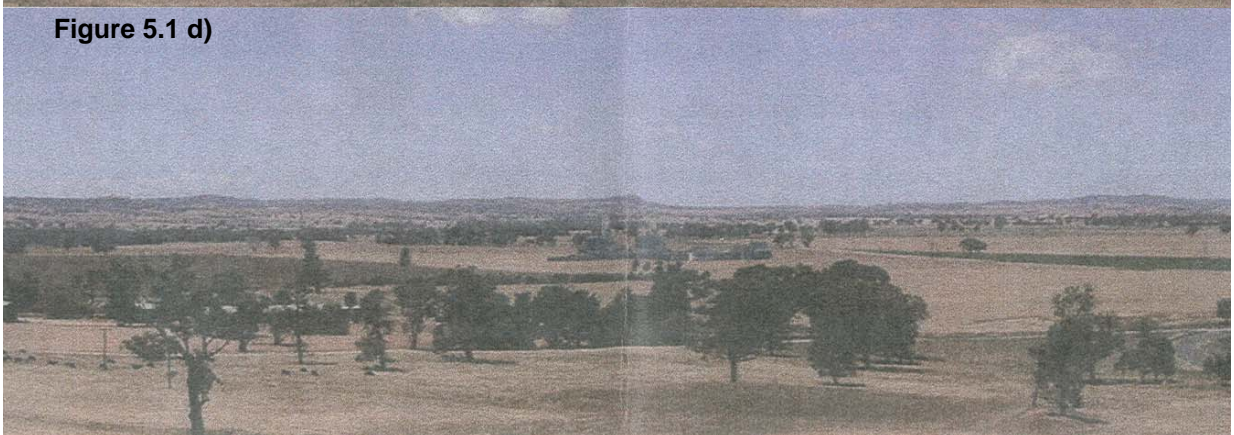
**Figure 5.1 b)**



**Figure 5.1 c)**



**Figure 5.1 d)**



also raised regarding the potential for the plume to be highly visible from the proposed power station.

### **Department's Position**

The Department maintains concerns regarding the visual impact of the proposed development. In particular, there are a number of nearby residences which will potentially be visually impacted by the proposed development, with one residence in particular (Wyrilla) having elevated views directly across the proposed site.

The Department requested additional information from the Applicant by way of a detailed photomontage and details of any further consultations with nearby residents. The Applicant has provided a photomontage, which was developed by taking a photo of the similar Oakey power station at varying distances, then superimposing the picture on the photo of the view. Extracts from the photomontages are provided in **Figure 5.1**, showing the proposed power station from the Wyrilla property. The Applicant's photomontages show the proposed development in four different states, being:

- cream colour, with 15 years worth of screening vegetation;
- cream colour, with 5 years worth of screening vegetation;
- sandbank colour, with 5 years worth of screening vegetation; and
- dark colour, with 5 years worth of screening vegetation.

The photomontages indicate that the proposed power station would generally blend into the background and not intrude into the skyline, from this view. Another photomontage provided by the Applicant shows that the stacks from the proposed power station would be observable from the nearby residents to the south. The Department notes that, from the Wyrilla viewpoint, the ability to screen the proposal using vegetation immediately surrounding the development is limited. However, there appears to be more opportunity for screening of the development for closer residents in non-elevated positions. In light of this, the visual impact from the proposed development would not intrude significantly on the view of the surrounding land holders. Notwithstanding this, the Department remains unconvinced that the Applicant has accurately represented the scale of the proposed development for the photomontage. A small variation in the scaling would result in a significant difference to the visual intrusion of the proposed development. The Department concludes that there is likely to be an impact to surrounding land owners in terms of visual amenity, and that the absorption capability of the proposed site is not high. However, it is not possible at this stage for the Department to accurately, and with a high degree of confidence, specify these impacts. The Department considers it necessary for the Applicant to further consider the visual impacts of the proposed development and to provide further justification of the approach used so as to address this matter in more detail as part of the Inquiry process.

The Department understands that the proposed development uses very little process water, and that the use of water is for the purposes of humidifying and cooling the input air prior to introduction into the gas turbine. As such, the proposed power station does not operate with a steam cycle and would not generate a visible water vapour plume. As such, the Department would not consider a visible plume to be a likely scenario.

## **5.6 Hazards and Risk Impacts**

### **Applicant's Position**

In accordance with *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development*, the Applicant characterised the proposed development as a potentially hazardous industry because, in the absence of mitigation measures, the proposal could exert a significant off-site risk impact. In this context, a Preliminary Hazard Analysis was prepared and incorporated into the Environmental Impact Statement to demonstrate that sufficient and appropriate risk mitigation measures were proposed to reduce possible risk impacts to an acceptable level.

The Applicant identifies that the following dangerous goods and hazardous materials are to be stored and/ or used on the site, with the potential for associated hazards and consequent risk impacts:

- natural gas to be piped to the site at high pressure, for compression on the site and combustion in the development's turbines. Natural gas would not be stored on site, other than process inventories;
- distillate would be stored in a bunded tank on site in volumes up to 1000 kilolitres for use as an alternative fuel in the event of disruption to natural gas supply;
- sulfuric acid would be stored on-site at volumes up to one kilolitre for use in the demineralisation plant;
- sodium hydroxide would be stored on-site at volumes up to one kilolitre for use in the demineralisation plant;
- transformer oil would be stored in bunded areas, up to a total volume of 1 kilolitre;
- minor quantities of lubricants would be stored on site in a separate oil store for use as required on plant and equipment.

The Applicant presents a series of possible incidents that may occur on the proposed development site and in relation to the carrying out of the development. From the hazard identification process, the Applicant has identified that incidents involving natural gas and distillate pose potentially significant consequences, and have carried forward these incidents for further consequence and frequency considerations.

Incidents involving natural gas may occur as a result of a gas pipeline leak or rupture, or in the event of a flame out scenario (i.e. failure of a gas turbine with stack discharge of natural gas). The Applicant suggests that in the event of a natural gas release, the gas would tend to burn (flash fires, torch fires etc) rather than explode (vapour cloud explosion). Dispersion modelling for gas pipeline releases concludes that under worst case scenarios, clouds of vapour gas may exceed lower flammability limits at ground level and generate a flash fire zone up to 900 to 1000 metres from the point of release. However, taking into consideration the frequency of such releases and the probability of extended undetected release scenarios and subsequent ignition, the Applicant has calculated risk of fatality on the site lies below the accepted risk criterion of  $10 \times 10^{-6}$  per year for an industrial land use. Further, within a radius of two kilometres from the point of discharge, modelling indicates that individual fatality risk would not exceed  $1 \times 10^{-6}$  per annum, the stipulated risk limit for residential land uses. The Applicant highlights that it conservatively considered off-site fatality risks for residential receptors based on a conservative heat flux of  $4.7 \text{ kWm}^{-2}$ . As a consequence, by demonstrating that this heat flux does not generate a fatality risk greater than  $1 \times 10^{-6}$  per annum, the Applicant has implicitly demonstrated that the injury/ irritation criterion of no greater than a heat flux of  $4.7 \text{ kWm}^{-2}$  at frequencies of not greater than  $50 \times 10^{-6}$  per annum can be met by a significant margin.

Consideration is given in the Preliminary Hazard Analysis to possible flame out scenarios. Dispersion modelling of natural gas from the proposed development stack demonstrates that the likely maximum ground level concentration of gas lies below its lower flammability limit, thereby not posing potential for ignition and associated risk impacts. The Applicant notes that natural gas may pose a toxic (injury/ irritation) risk at elevated concentrations, primarily through asphyxiation. The concentrations at which this effect is expected lie above the upper flammability limit which can be deduced would not occur, given that the lower flammability limit is not predicted to be reached (it is only one tenth of the limit) from flame out dispersion modelling.

The key incidents associated with the storage and handling of distillate on the site involve tank fires and pool fires in the event of a distillate release. The worst case release and ignition scenario in this context would generate a heat flux of  $38 \text{ kWm}^{-2}$  at a distance of 1.3 tank diameters from the centre of the fire, dropping to  $2.1 \text{ kWm}^{-2}$  at a distance of 5.5 tank diameters. This would translate to approximately 22 to 33 metres based on the expected tank diameter range of 10 to 15 metres. Noting a conservative bund fire probability of  $10 \times 10^{-6}$  per annum, the Applicant concludes that fatality risks criterion would not be exceeded for on-site or off-site receptors, and significant injury and irritation risks would not extend to local residential receptors. There is, however, potential for elevated heat flux, capable of structural damage, to extend to such a distance that on-site infrastructure is affected. The Applicant suggests that this matter would need to be taken into consideration during the detailed design of the proposed development, to ensure that infrastructure, particularly other stores of

flammable materials and critical items are sufficiently distanced from the proposed distillate tank and surrounding bund.

In addition to heat flux considerations, the Applicant notes that fire events involving distillate would generate smoke, which may have a toxic effect off-site. Based on a worst case scenario (full release and combustion of stored distillate), the Applicant has modelled dispersion of combustion gases and demonstrated that off-site receptors would not be exposed to smoke concentrations capable of causing injury or irritation at greater than the acceptable risk criterion of  $10 \times 10^{-6}$  per annum.

Information in the Environmental Impact Statement suggests that societal risks exist in relation to injury and irritation risks posed to the most sensitive receptors in Uranquinty in the event of a distillate fire. These risks are considered overestimates given the conservative assumptions applied to incident modelling, but as highlighted by the Applicant, reinforces the need for effective emergency response, fire safety and safety management on the site.

The Applicant suggests that transport risks associated with haulage of dangerous goods and hazardous materials is low, given the quantities of materials to be transported in any load, design and operation of transport vehicles and the implementation of spill management measures in the event of a release.

### **Issues Raised in Submissions**

The Department received correspondence from the NSW Fire Brigades and NSW Rural Fire Service. Neither raised significant concern regarding the proposed development. The NSW Fire Brigades did recommend that the Applicant provide an Emergency response Plan, adequate fire fighting water storage and a Fire Safety Study.

The Civil Aviation Safety Authority (CASA) raised concern that the emissions plume extends beyond the acceptable 1000 m above ground level, causing an impact to air craft approaching and leaving the Wagga Wagga airport. CASA indicated that as a result of the proposed development, three of the instrument landing procedures would need to be amended by increasing the altitudes at which aircraft are able to start their descent into the Aerodrome. Two of the current procedures could be modified to accommodate the change, whilst the third would need to be changed completely.

A number of submissions raised hazards from the proposed development. In particular, objectors raised concern associated with failure of equipment, gas releases and leaks, ignition of gas including jet fires and explosions. Also hazards associated with storage of diesel on-site were raised. Another key issue of concern was the ability of the NSW Rural Fire Service to attend properties threatened by a bushfire but within 2 kilometres of the proposed power station.

### **Department's Position**

The Department is satisfied that the Applicant has undertaken an adequate level of assessment of hazards and risks associated with the proposed development, in accordance with relevant guidance documents. In the case of identified potentially significant incidents, the Applicant has demonstrated that resultant off-site risk, in terms of fatality, injury and irritation all lie within acceptable land use safety planning criteria. The Department considers that appropriate hazards management is fundamental to achieving the risk outcomes predicted by the Applicant, and further, all reasonable mitigation and management measures should be implemented to reduce associated risks to as low as reasonably possible. To this end, and in line with common risk management practice through development consents that are issued for potentially hazardous industry, the Department would recommend that the following conditions be imposed on the proposed development, should it be approved by the Minister:

- a Construction Safety Study, to consider and detail risk mitigation measures during construction;
- a Hazard and Operability Study, to consider the process design of the development and ensure that all appropriate incident management process components (infrastructure and management) have been included in the design of the proposal;

- a Fire Safety Study to consider, design and detail appropriate fire safety measures and management practices. This would include detailed design of retention infrastructure for a worst case firefighting water generation scenario;
- a Final Hazard Analysis, to demonstrate that the risk profile of the proposed development following detailed design is consistent with (and perhaps better) than that considered through the Preliminary Hazard Analysis;
- a comprehensive Emergency Response Plan for the site, in the event that an incident does occur; and
- a Safety Management System for the proposed development, to provide an overarching safety management framework for the proposal.

The above studies would not be required prior to determination as they generally require completion of detailed design to complete the finer detail of hazards management on the site. The studies themselves are inter-related and built on the initial assessment of risks, and demonstration of compliance with relevant land use safety planning criteria, presented in the Preliminary Hazard Analysis. A key aspect of the detailed design of the proposal has been identified by the Applicant as the location of the storage of distillate on site, relative to other infrastructure, given the assessed potential for structural damage in the event of a worst case incident. The Department concurs with the Applicant's position that this is a significant issue, and while not demonstrated by the Applicant, the Department assessment of the potential layout of the site suggests that there is sufficient room on the site to accommodate acceptable separation distances. This matter will need to be clearly demonstrated in any Final Hazard Analysis, and the worst case initiating incident specifically addressed in both the Fire Safety Study and Emergency Response Plan.

It is noted that although the Preliminary Hazard Analysis identifies that sulfuric acid and sodium hydroxide would be stored on the site, it makes little comment as to why incidents involving these materials have not been considered in more detail. Notwithstanding, the Department notes that both of these materials are class 8 dangerous goods, and pose a direct exposure hazard and an injury/ irritation hazard in the event of exposure to irritating vapours. While this may be the case, the Department considers that the volumes proposed to be stored on the site do not pose a significant risk to surrounding land uses, and, provide the two materials are stored separately, do not represent a potential reaction (heat liberation) hazard. It is highlighted that these class 8 dangerous goods would not pose a hazard in relation to flammability or explosion potential, and are only likely to be relevant if released to the environment. In this regard, the Department is satisfied that environmental risks could be adequately mitigated through bunding of stored inventories, and through the application of appropriate spill management procedures. This matter could be the subject of conditions of consent, should the Minister determine to approve the proposed development. The Department considers that transportation risks are manageable through application of relevant regulatory restrictions.

It is noted that the Applicant has considered societal risks as part of the Preliminary Hazard Analysis for the proposal. The Applicant has based this consideration on injury and irritation risks despite guidelines requiring the less conservative situation of fatality risks. Notwithstanding, the Department considers that societal risks lie within acceptable limits, but require minimisation to as low as reasonably possible, consistent with adopted land use safety planning policy. This minimisation could be achieved through robust consideration of hazards and risk management measures in the risk studies listed above.

Regarding aviation impacts, the Department notes CASA's concerns that the proposed development will result in one of the instrument landing procedures being completely changed. The Department agrees that the Applicant should be required to meet the additional costs associated with the necessary amendments to the relevant procedures, in the event that the Minister grants approval. The Department notes that CASA's concern is not in relation to the safety of aeroplanes but rather the administrative work associated with amending procedures.

In relation to the concerns about bushfire risk and the inability of the NSW Rural Fire Service to attend properties within 2 kilometres of the proposed power station, the Department notes that the submission from the NSW Rural Fire Service did not raise such an issue.

Notwithstanding this, the Department considers it appropriate to seek clarification from the Applicant, and if necessary from the NSW Rural Fire Service on this issue.

## **5.7 Socio-Economic Impacts**

### **Applicant's Position**

The Applicant has provided an assessment of the proposal regarding the social and economic benefits and impacts to the region, as well as to the local Uranquinty area. Construction period economic inputs to the regional economy were predicted to be approximately 62 jobs on an annual basis and 50% of the local (national as opposed to overseas) expenditure, directly being approximately \$30 million. Based on economic multipliers for similar regional economies, the Applicant claims that the following regional benefits would accrue out of such expenditure:

- an additional \$24 million of value added;
- an additional \$15 million of household income; and
- the equivalent of an additional 112 jobs for one year.

During operation of the proposed development, there would be six to eight full time equivalent jobs. These positions require specialised experience and training, though the Applicant asserts that it may be possible to fill these positions with locals in three to four years after suitable training. The proposed development would require on-going expenditure in the Wagga Wagga region of approximately \$1 million per year. The Applicant also notes that the proposed development would provide security of electricity supply to the region.

The Applicant has also addressed the concern of impacts to land values surrounding the proposed site. The Applicant asserts that:

- the proposed development would not impact on the ability of the surrounding land to sustain agriculture production;
- in the short term there may be reductions in the residential market values of certain properties near the proposed site, as a result of amenity impacts, particularly noise and visual;
- it is unlikely that the proposed development would attract additional co-generative industries to the locality; and
- that investigations into the similar Millmerran and Oakey power stations in Queensland had shown no observable downward effect on land values. The Applicant does note that interpretation of these studies should be considered cautiously as they did not include properties adjoining or within sight of the developments, and the circumstances of the surrounding land uses were substantially different.

### **Issues Raised in Submissions**

Public submissions received in response to the exhibition of the subject development application and accompanying Environmental Impact Statement have raised a broad suite of considerable concerns over possible socio-economic impacts. Particularly, submissions highlight that the proposed development could adversely impact on local and regional land values, quality of life, the viability of other sectors (including agriculture and local commerce) and the overall image of the Uranquinty and broader Wagga Wagga areas. A number of submissions suggest that construction and operation of the proposal would generate a flow-on effect through falling land prices, which would in turn affect the social and economic structures in the region. It is asserted that the proposed development would be bad for the image of the area, particularly given the industrial image of the development compared with the largely rural/ agricultural land uses surrounding the development site.

Three public submissions supported the proposed development highlighting the jobs and investment for the community, as well as the likelihood that development of this nature would result in an increased provision of services to the local area.

The Civil Aviation Safety Authority states that the effect of the necessary modifications to the procedures, as a result of the proposed development, would add further flight miles to the distances flown by the two airlines currently using the Aerodrome.

### **Department's Position**

The Department notes the capital investment of the proposed development, and accepts that approximately \$30 million is likely to be spent during construction, with the equivalent of 62 full time employment positions for one year. The Department also accepts that the proposed development would require on-going expenditure of approximately \$1 million per year, with employment of up to eight people during operation of the development. The Department considers that the use of multipliers in the EIS is acceptable, and that while the accuracy of such multipliers might be questioned, the project will generate flow on jobs and expenditure. The Department acknowledges that this analysis does not indicate that the proposed power station would represent a significant impact to the overall regional economy, however notes that there would be regional employment and economic benefits to Wagga Wagga.

The Department notes that Uranquinty would not be able to support the entire temporary increase in construction workers. However, as a regional centre Wagga Wagga would be able to support this increase.

The Applicant has submitted evidence that the land values from land surrounding similar developments in Queensland were not affected by such developments. Notwithstanding, the Applicant's consideration was qualified heavily by the limitations of those investigations, and the site-specific characteristics. As such, the Department is not convinced that the Applicant's investigations are capable of providing substantial relevant guidance on this matter. Further, the Applicant concedes that as a result of the amenity impact on some local residences there may be a short term decrease in land values. The Department's view on the potential impact to surrounding land prices is that any such analysis must first establish that a direct impact on property values can be demonstrated due to the proposed development. A clear nexus would need to be established and the Department's experience with major development and infrastructure projects across the State indicates that, due to low residual impacts of projects on amenity and the beneficial aspects of developments, property values are not generally affected.

Notwithstanding this, the Department agrees with the Applicant that in relation to certain properties in the immediate vicinity of the proposed development, there may be impacts that can not be completely mitigated. On this matter, the Department notes that it has not been able to finalise its assessment regarding a number of impacts from the proposal. For some of these issues it is likely that there are technical solutions, or that issues would be short lived during the construction period and would not result in on-going impacts to surrounding residences. On the other hand, the Department has still not been able to finalise its assessment of the visual impact of the proposed development, which has the potential to result in significant impact to a number of nearby residences. The Department notes also that development of this nature can facilitate improvements in local roads, increased local employment opportunities, and modifications to the existing land use such as increased revegetation. The Department concludes that until its assessment can be finalised, including a final determination of the visual amenity impact, it would not be possible to finalise its assessment as to whether any direct impact on land values can be established. Further, due to the unresolved issues mentioned throughout this assessment, and the concerns raised regarding the appropriate siting of the proposed development in the context of existing surrounding land uses, the Department highlights that a final consideration of the potential adverse socio-economic impacts cannot be reached at this stage of the assessment.

The Department notes that the proposed development would have important socio-economic benefits to the State through increased generation of reliable peak and high shoulder electricity supply. The Department notes that gas is considered an important component of the electricity generation infrastructure, as it is more efficient than coal technology and can be used to meet the increasingly sharp peaks in electricity demand. The proposed development would also afford a reliable electricity supply to the region of Wagga Wagga, as it would allow the transmission network to cope with critical outages in the electricity transmission infrastructure, an event which would currently impose a critical burden on the remaining transmission infrastructure. As mentioned in section 5.1 above, the Department notes the potential for adverse impacts from the proposed development on the regional transmission network. The Department has sought clarification from TransGrid in relation to this matter.

## 5.8 Soil and Water Impacts

The Applicant undertook an assessment of surface water, groundwater and sub surface soil issues in the EIS. As a result of this assessment both the Department and the DEC requested additional information. The Applicant's position, described below reflects the Applicant's final position, incorporating the responses and amendments made in light of the additional information requests.

### Applicant's Position

#### **Surface and Process Water**

The proposed site is located on the catchment divide between Sandy Creek to the east and Roping Pole Swamp to the west. The Applicant claims that all activities at the site are proposed to be located on the eastern side of the site, and as such surface water drainage would flow towards Sandy Creek, and subsequently into the Murrumbidgee River. As there are no surface water bodies on the site, surface water quality was assessed by collecting water samples from farm dams on the adjacent Jack property and from Sandy Creek. The samples generally had neutral to alkaline pH, low salinity and low heavy metals with some nutrients. The Applicant notes the presence of copper, zinc and nitrogen at the Jack property's dams as reflecting the current agricultural use. The Sandy creek site had higher salinity and concentration of nitrates, predicted to be as a result of the anthropogenic influences from Uranquinty.

The Applicant identifies the following key uses of water at the site: fire services, evaporative cooling of the gas turbines, site wash down and turbine washing, potable water and landscaping, with an average daily requirement of 23 m<sup>3</sup>/day. The Applicant notes that there are on-going discussions with Riverina Water County Council regarding the potential necessity to upgrade the existing water pipeline to the site.

The proposed power station would have a demineralisation plant with a capacity to treat up to 130 m<sup>3</sup>/day of water. Regeneration of the plant would produce approximately 750 m<sup>3</sup> per annum with salt content of 15,000 mg/L, for a total salt load of 11,160 kg per annum. This process waste water would be directed to one of two evaporation ponds with dried salt removed mechanically and either sold on market or disposed of to an EPA licensed facility. The evaporation ponds would be designed to evaporate the 1 in 10 wet year rainfall plus the demineralisation blow down water, but would include a freeboard of 1 metre to accommodate the highest recorded annual rainfall at Wagga Wagga. The evaporation ponds would be constructed with a composite liner system to prevent seepage into the surrounding soil and underlying groundwater.

Stormwater and blow down water would be directed to a stormwater retention basin. Water collected from roofed areas would be collected to supplement town water, with any excess also draining to the stormwater basin. Grease and oil traps would be placed between bunded areas and the stormwater basin to prevent such contaminants from entering the basin. The stormwater retention basin would be sized for the 1 in 10 annual rainfall of 771 mm, and would be approximately 20,000 m<sup>3</sup> capacity. This basin would also be able to collect the 1 in 100 year 72 hour storm event. While the Applicant intends to have no off-site discharge of water, the basin is proposed to have a grassed spillway draining to the natural depression on the eastern side of the proposed site. The Applicant is also considering the necessity for a liner being placed at the base of the basin. During the construction period the stormwater basin is proposed to be used as a sediment trap. All other areas of the proposed site, including the contractors lay down area (post construction), will have the surface stormwater flows diverted around the proposed development. The Applicant notes that the water stored in the stormwater basin will be sufficiently low in dissolved solids for the purposes of stock watering and irrigation.

The Applicant proposes to prepare a detailed Sediment and Erosion Control Plan (construction), and On-site Plant Watering Management Plan (operation) to ensure to ensure the issues associated with surface waters are adequately managed at the proposed development.

#### **Soil and Groundwater**

The Applicant undertook borehole drilling and soil sampling at the proposed site to determine the characteristics of the site. The site is covered by a layer of topsoil up to 0.2 metres deep overlying silty clays to a depth of approximately 50 metres. The Applicant identified two predominant soil types at the proposed site. The majority of the site was chromosomal soil with indications of poor drainage, with sodosol in the centre of the proposed site. Across the site there were moderate to high levels of sodicity and acidity, however no trend observed. The site was classed as being low salinity with no shallow aquifers that might raise the water table in the short term.

The site has been used for dry land farming and grazing over the last 100 years. Currently the site is covered by sub clover and some annual grasses, however presently has little feed due to the recent drought. There is also a gas main located on the site. The Applicant undertook soil contamination testing of six surface soils at the site for organochlorines and organophosphates. No such contaminants were detected.

Groundwater at the site was investigated by drilling three shallow boreholes (20-24 m deep) and one deep borehole (70 m deep). The shallow boreholes were dry immediately following drilling. In the deep borehole, groundwater was intercepted at 50 m depth, with the soil a red clayey sand with low permeability. The Applicant suggests that the water table is found below the silty clays that underlie the surface soil at the site, generally to a depth of 50 metres. The groundwater was more saline with a slightly higher pH than the surface water, however contained low concentration of contaminants.

### **Issues Raised in Submissions**

The DEC requested significant additional information, based on the identification of an error in the Applicant's calculation of salt loads from the demineralisation plant. This resulted in the inclusion of the evaporation basins into the proposal, and the segregation of the clean stormwater from the highly saline demineralisation plant regeneration water. The DEC's draft General Terms of Approval require the following:

- stormwater and sediment control plans for both the construction and operation phases of the development;
- proper and effective management of stormwater utilisation area, with the potential for soil and water monitoring to be directed by the DEC; and
- monitoring of any discharge of waters.

The NSW Fire Brigades indicated that the water containment area for contaminated fire fighting water should be capable of containing flow rates based on a worst case fire scenario of at least 90 minutes.

Concerns raised in public submissions include:

- storage of stormwater in the basin;
- impacts on surrounding water courses including Sandy Creek, Roping Pole Swamp and the Murrumbidgee River from polluted run-off, including from spills from contaminated fire fighting water;
- loss of water pressure to local users as a result of the proposed power station demand.

### **Department's Position**

The Department has reviewed the Applicant's revised water management strategy for the proposal. While the inclusion of the evaporation ponds into the proposal represents a significant addition to the proposal, the Department is satisfied that the Inquiry process will allow full public comment on that aspect of the proposal. With regards to the proposed evaporation ponds, the Department notes that the Applicant proposes that they be constructed with an impermeable synthetic liner to ensure no saline water seeps into the surrounding soils or groundwater. In addition to this, the Department notes the high impermeability of the clayey soils, and the significant depth to groundwater. As such, the Department is generally satisfied that the evaporation ponds would not result in any adverse impact to the surrounding soils and groundwater. Notwithstanding this, the Department would consider it prudent to continue groundwater monitoring to ensure there is no occurrence of significant long term change attributable to the proposed power station.

While the water stored in the stormwater basin would be substantially less saline than the evaporation ponds, there is still potential for the stormwater basin to contain contaminated water. As such, the Department concurs with the DEC that any discharge should be monitored. With regards to impacts on surrounding soils and groundwater, the Department considers it appropriate that the stormwater basin be designed and constructed to minimise any outflow into the surrounding soils. As such, the Department would recommend that the Applicant provide a lining (not necessarily synthetic) for the stormwater basin as well.

Regarding the potential for the re-use of surface water collected in the stormwater basin, the Department notes that such waters collected from the hard stand areas at the proposed development are not subject to the NSW Farm Dams Policy. Water collected in this manner should not be used for stock watering, nor should it be transferred off site. However, subject to approval from the DEC, and subsequent monitoring requirements, it may be used for the purposes of tree watering and on-site irrigation. In the event of a fire, any contaminated fire fighting water would be able to be stored in the stormwater basin or an evaporation pond (subject to final approval of a Fire Safety Study to demonstrate that such storage is sufficient). This contaminated fire fighting water would need to be tested, treated as necessary and potentially transferred off-site for disposal.

The Department considers the Applicant's proposed water management strategy to be generally appropriate. The Applicant proposes to operate the development in such a manner that prevents off-site water discharge, via the collection and re-use of stormwater and evaporation of saline process water. Notwithstanding this, the Department concurs with the DEC that the Applicant should be required to prepare a detailed Soil and Water Management Plan for both the construction and operation periods. These Plans would need to clearly identify the measures taken to ensure no contaminated waters (including sedimentation) are discharged from the site. The Department would also recommend that the Applicant prepare a detailed landscaping and water re-use plan, detailing on-going monitoring of the quality and quantity of water re-used at the site, and monitoring to ensure there is no adverse impact to the soil structure.

In relation to the impacts on water supply from the proposed development, the Department notes that there are currently on-going discussions between the Applicant and Riverina Water County Council as to the necessity of an upgrade to the existing water supply pipeline. The Department also understands that the Applicant is considering options regarding selective timing for water supply withdrawal (such as withdrawing water overnight) so as to not impinge on the existing water users.

## 5.9 Traffic and Transport Impacts

### Applicant's Position

The Applicant notes that the proposed power station will have a maximum of six full-time personnel at the site. There would also be infrequent visits from the outsourced service providers. The Applicant has assumed a total average operational traffic flow of 6 to 8 vehicles per day. The Applicant identifies that the major traffic generating phase of the development would be construction.

Existing traffic data for Uranquinty was obtained by placing automatic traffic counters, to the north and the south of Uranquinty for 12 days, and a manual survey undertaken for one day. The counter to the north of Uranquinty did not function, and no data was reported by the Applicant. The Applicant also undertook a count on the Hanging Rock Road (south of the proposed site and west of Uranquinty) and on the Uranquinty Cross Road west of the proposed site. The average daily flow of traffic obtained from these counts is shown in Table 4.5.

**Table 4.5: Traffic Volumes on Uranquinty's Roads**

| Location                | Average Daily Count |       |              |                                      |
|-------------------------|---------------------|-------|--------------|--------------------------------------|
|                         | Total               | Cars  | Small trucks | Articulated trucks and semi trailers |
| Olympic Highway (south) | 2,847               | 2,082 | 437          | 238                                  |
| Hanging Rock Road       | 96                  | 29    | 65           | 2                                    |
| Uranquinty Cross Road   | 115                 | 35    | 69           | 2                                    |

Peak weekday traffic obtained from the automatic count of the Olympic Highway occurred between 7:45 am – 9:00 am and 4:00 pm – 6:00 pm, with approximately 250 vehicles per hour each in each direction.

During construction the daily average traffic movements are expected to be 48 vehicles during the 9 months of active construction (months 9-18), and up to 75 per day during the 2 month peak construction period. This represents an increase of about 75% on the Uranquinty Cross Road. With regards to heavy vehicles, the Applicant estimates that there is expected to be approximately 9 concrete trucks per day (predominantly during the 9 to 12 month period of construction), approximately 104 semi trailers, up to 8 B-Doubles and 8 licensed delivery loads. The Applicant notes that the Uranquinty Cross road is not B-Double designated and that up to 8 loads would require permits from the RTA as oversized loads. The Applicant argues that the number of vehicles (including heavy vehicles) would be less than that experienced during the typical harvest season, and that as such no special measures are considered necessary.

The key intersection is that between the Olympic Highway and Yarragundry Street (which turns into the Uranquinty Cross Road). This intersection is the subject of a level rail crossing. The Applicant proposes that a representative from the Rail Infrastructure Corporation would be alerted when heavy loads were crossing the rail line and that heavy loads would be arrive/depart at times to minimise conflicts with sensitive road users. The Applicant also proposes to initiate discussion with Wagga Wagga City Council and the RTA regarding the possible implementation of a lights and bells pedestrian maze for crossing the rail line at the intersection.

The crossing of the rail line at the Kapooka Bridge represents another key location in the regional road network. The Kapooka Bridge is a level separated crossing of the rail line, on the Olympic Highway, approximately 7.5 kilometres north of Uranquinty, and requires a series of 90° turns to be negotiated as the Bridge crosses perpendicular over the rail line. The Applicant notes that the RTA is considering an alignment of the Bridge, however this would be outside the necessary timing for the proposed development. The Applicant notes that the bridge is B-Double approved, and that oversized loads would be assessed individually, and alternative routes arranged if necessary.

### **Issues Raised in Submissions**

Wagga Wagga City Council notes the substantial increase in traffic, and especially the number of heavy vehicles, as a result of the construction period of the proposed development. In light of this Council recommends that, should the Minister determine to approve the development application, the Applicant prepare a Traffic Management Plan in consultation with Council, which addresses the condition and maintenance of roads during the construction period, and in consultation with the nearby school to address conflicts during school zone time periods. Council also notes that the EIS indicates that heavy loads would be delivered outside of peak periods. Council also raises concern over the impact of the heavy vehicle loading on Yarragundry Street and the Uranquinty Cross Road between Uranquinty and the site. Council requests that a contribution of \$40,000 be levied, which represents approximately two thirds of the cost of resealing the road. Council indicates that approval would be given under section 138 of the Roads Act 1993 for vehicular access onto the site from the Uranquinty Cross Road, pending the detailed design being approved by Council. The Roads and Traffic Authority recommends that a Basic Right Turn Treatment be constructed at the site access point on the Uranquinty Cross road to ensure safe movement of through traffic. Council also requests additional detail regarding the provision of on-site access road and parking provisions. Neither the RTA nor Council raised any concerns regarding impacts to the Yarragundry Street – Olympic Highway intersection or Kapooka Bridge.

Increased traffic impacts were raised in a number of community submissions. In particular the quality of local roads and the safety of local road users (including school children) were raised as key issues. Additionally the adequacy of the Applicant's assessment was questioned, including the adequacy of traffic monitoring – being on a school sports carnival

day (reducing the quantity of traffic) – and not including any consideration of the harvest season between November and January.

### **Department's Position**

The Department accepts that during the operation phase of the development, the proposed development would not add a significant volume of traffic to the local road network. However, the Department notes that the number of heavy vehicles estimated for the transport of diesel has not been included in the traffic assessment. The Department requests further details in relation to this.

During the construction period there could be an elevated impact on the road traffic network. In particular, the Department notes the existing issues associated with the level rail crossing on Yarragundry Road, and that there are currently a number of matters under consideration for the improvement of the safety of this intersection, especially for pedestrians and school children. The Department considers that the incorporation of a lights and bells pedestrian maze for crossing the level crossing would provide a significant safety improvement for sensitive users at the intersection, however is not convinced that the full burden of these works should not rest entirely with the Applicant. The Department notes that the Applicant proposes to minimise conflicts with sensitive road users by scheduling heavy vehicles at times least likely to cause a conflict. The Department considers that at a minimum, the Applicant should avoid heavy vehicle movements during school arrival and departure times, with clear details to be provided in a Construction Traffic Management Plan. The Plan would be prepared in consultation with the relevant stakeholders (including the local school). The Department requires additional consideration from the Applicant as to the construction of a lights and bells pedestrian crossing of the rail line, and details of the consultation with relevant stakeholders in this matter.

The Department considers Council's requests to be reasonable. In particular, the Department would recommend that the Applicant:

- be levied for resealing the surface of the Uranquinty Cross Road between Uranquinty and the proposed site; and
- prepare the site access intersection to Council's satisfaction.

The Department also agrees that the Applicant has not provided adequate consideration of the on-site access and parking arrangements. The Department considers it appropriate for the Applicant to prepare a detailed site layout indicating the proposed landscaping, the proposed on-site access road and car-parking arrangements. The Department would expect that the recommendations made by the Resolve Planning's report (Appendix 10 of the EIS) be considered.

The Department also agrees that the Applicant has not undertaken an assessment of the likely traffic impacts during the harvest season. In particular, should the peak construction period (months 12-15) coincide with the harvest season, then there may be an unacceptable impact to the local road network during this time. The Department therefore considers it necessary for the Applicant to undertake additional assessment to prove the acceptability of the construction period and the harvest season, or to consider measures that might be implemented to mitigate such a potential impact.

Regarding the issue of Kapooka Bridge, the Department considers that the necessary regulatory approvals from the RTA would allow each over sized load to be assessed on its merits and the necessary measures taken to minimise impacts on the Bridge.

## **5.10 Impacts on Heritage Items and Flora and Fauna**

### **Applicant's Position**

#### *Heritage Impacts*

The Applicant undertook both desk-top and field survey investigations into the site and surrounding areas in order to identify known indigenous and non-indigenous heritage items, and to identify local circumstances likely to be associated with undiscovered items.

In relation to indigenous heritage, the Applicant highlights that a known relic is located approximately 300 metres west of the proposed development site. This relic, an open campsite (NPWS site #56-1-0025) would not be disturbed by the construction or operation of the proposal. The field survey of the site did not identify any previously undiscovered relics, or contexts in which such relics were considered likely to occur. In particular, the survey identified that the land to be developed is characterised as an elevated plain more than one kilometre from the nearest permanent or ephemeral water source. Previous studies of Aboriginal occupation patterns in the region suggest that the most archaeologically sensitive landforms are banks, alluvial terraces and low ridge crests along floodplain landscapes. In this context, the Applicant suggests that the proposed development is not associated with potentially sensitive areas, and is distanced from potentially significant areas for indigenous heritage. The Applicant highlights that the survey of the site for items of indigenous heritage significance was undertaken with a representative of the Local Aboriginal Land Council (LALC). The LALC confirmed that there is no visual, above-ground evidence of indigenous heritage significance, but recommends that two on-site monitors be present on the site during construction to assist in the identification and management of any relic that may be uncovered.

The Environmental Impact Statement indicates that searches of relevant databases have not identified any non-indigenous heritage items on, or in the vicinity of the proposed development site. Further, survey of the site did not identify any currently undiscovered heritage items.

#### *Impacts on Flora and Fauna*

The Environmental Impact Statement presents both database and survey results for flora and fauna on and in the vicinity of the proposed development site. In general, the Applicant highlights that the ecological context of the site is one of significant historical disturbance through agricultural activities, with much of the land surrounding the site being cleared for grazing and characterised by only remnant and sparse stands of vegetation.

The proposed development site includes six trees/ groupings of saplings, in various states of degradation and die-back. The flora species on the site, while not representing threatened species in themselves, do characterise the White Box Yellow Box Blakely's Red Gum Woodland Endangered Ecological Community in a broader context. The Applicant has applied the test of significance under section 5A of the *Environmental Planning and Assessment Act 1979* to this remnant vegetation and concludes that the proposal would not significantly affect the Ecological Community, or its included species. Although the existing vegetation on the site is in a degraded state, the Applicant has committed to retention and enhancement of the flora.

The Applicant highlights that given the floral and hydrological characteristics of the site and surrounding land, it is unlikely to form significant habitat for arboreal and terrestrial mammal species, nor for piscine and amphibian fauna. This assertion is supported by survey results that identified two introduced species, the European Hare (*Lepus capensis*) and European Rabbit (*Oryctolagus cuniculus*) on land surrounding the site, and only one amphibian species, the Spotted Grass Frog (*Limnodynastes tasmaniensis*). In contrast, 33 avian species were identified surrounding the site, with eight of these species noted in the proposed development site itself. None of the species identified during the survey are listed as threatened or vulnerable, and section 5A tests concluded that the proposal would not significantly affect these species. The Applicant notes, however, that threatened species databases indicated that examples of the Brolga (*Grus rubicunda*), Superb Parrot (*Polytelis swainsonii*) and Turquoise Parrot (*Neophema pulchella*) have been recorded on land in the region. The Applicant suggests that neither the Brolga nor the Turquoise Parrot is likely to frequent the site given its lack of suitable habitat. The Superb Parrot is expected to preferentially utilise local vegetated creek lines and ephemeral water bodies over the degraded vegetation on the subject development site. The conclusions from section 5A tests of significance support the Applicant's assertions in this regard.

## **Issues Raised in Submissions**

### *Heritage Impacts*

Public submissions did not raise concern in relation to the potential impacts of the development on indigenous heritage. Concern was raised, however, in relation to the effects of the proposed development on local items of non-indigenous heritage significance. One submission in particular went into detail, identifying a number of items that the submitter considered were not adequately or appropriately assessed in the Environmental Impact Statement.

The DEC raises a number of omissions and inaccuracies with the indigenous heritage considerations presented in the main body of the Environmental Impact Statement. It does, however, confirm that it is satisfied with the underlying findings of the Heritage Study (Appendix 13 of the Environmental Impact Statement), even though these findings were not fully and correctly summarised elsewhere in the Environmental Impact Statement.

### *Impacts on Flora and Fauna*

A number of public submissions highlight the significance of Roping Pole Swamp in the context of ecological diversity and habitat provision for fauna, particularly avian species. Submissions raise concern that a number of threatened species that have been identified in the region, including the Brolga and Superb Parrot, may be adversely impacted by the construction and operation of the proposed development.

The DEC considers that impacts on flora and fauna on the site has been adequately considered by the Applicant. However, the DEC also suggests that the off-site impacts of the proposed development have not been adequately assessed in the Environmental Impact Statement. The issue raised by the DEC in this regard relates to gaseous emissions from the proposed development and the consequent effects on the chemical and thermodynamic characteristics of the local microclimate. It is not clear from the DEC's submission whether this issue has now been resolved to its satisfaction, although the submission does list a number of mitigation and management measures for imposition should the proposal be approved.

## **Department's Position**

### *Heritage Impacts*

The Department is satisfied that the Applicant has applied an adequate level of rigour to the assessment of potential heritage impacts associated with the proposed development. It is important to note the context of the proposed development site is not particularly conducive to the presence of relics. Not only are there no known items on or immediately surrounding the site, but no evidence of relics has been detected during site surveys and in the case of indigenous heritage, the site has been assessed as possessing minimal potential for the presence of such items. Further, the Department highlights that the site itself has previously been the subject of significant disturbance, initially through clearing and preparation for use as agricultural land, and more recently from excavations associated with the installation of gas transmission infrastructure below the surface of the land. With the history of disturbance associated with the site, and the current absence of any indication of heritage significance from database or survey sources, the Department considers it unlikely that heritage issues will be an issue of concern during the construction and operation of the proposed development. In the unlikely event that a relic is uncovered while undertaking the development, the Department highlights that separate statutory provisions would require the Applicant to notify the NSW Heritage Office or the DEC, as may be relevant, and manage the discovered item in accordance with the requirements of the relevant agency. The Department would also require that the Applicant provide for the presence of the LALC officers during construction, should the Minister approve the development.

The Department recognises and agrees with statements made in public submissions that a number of non-indigenous heritage items were not considered in detail in the Environmental Impact Statement. While the EIS would have benefit from more explicit comment on the effects of the proposal on these items, the Department considers that the net outcome of the assessment is without significant consequence. This can be seen through consideration of the nature and mode of significance of the heritage items in question:

- Pomingalarna Run Stockman's Hut – a pit and shaped stones;
- Frederick Wise Grave – fenced grave and gravestone;
- Underground water tank found on Metcalf's property – an underground water tank;
- Site of the old Sandy Creek School – underground water tank; and
- No. 5 RAAF Service Flying Training School – liquid explosives store.

While the Department does not disagree that the above items are of heritage significance, it is important to consider each in the context of the basis for this significance and how that basis may be affected by the proposed development. In some of the cases, particularly the Pomingalarna Run Stockman's Hut and Frederick Wise's grave, the heritage significance of the items relates to historical context and not necessarily the current status of each of the items. The Stockman's Hut, for example, is no longer in existence, but the historical significance of this structure is remembered through marking and maintenance of its former location. In the case of Wise's grave, it is not the physical entity itself that is of significance, rather the fact that it recalls one of the early Uranquinty settlers. In this context, the proposed development would not affect these heritage items, as the historical context is not interrupted. The Department considers that the proposal would equally not affect any physical significance of these items, given the distance from the Stockman's Hut site (it would therefore not encroach on the former curtilage of the Hut, and cannot be considered to encroach into lines of site given the absence of the Hut) and the anachronistic juxtaposition of physical elements at the Wise grave site (gravestone and contemporary chain-wire fence).

For a similar reason, the Department considers that the proposal would not affect the heritage significance of underground water tanks. These items derive their significance through historical context, functionality and physical marking of former developments with now-significant heritage contexts. The proposed development would not physically affect these items, nor would it materially alter their functionality as former water collection and storage elements. In both cases, it is the remnant underground water tanks which represent the key heritage item, and not aboveground structures or elements which may otherwise be impacted by visual impacts and curtilage encroachment considerations.

The No. 5 RAAF Service Flying Training School is the subject of a specific, dedicated memorial site within the Uranquinty township, with the heritage-significant liquid explosives store located to the south of the proposed development site (approximately 1.5 kilometres). The bulk of the heritage significance of the former school has now been transferred to the memorial site with accurate documentation recording its history and heritage significance. The remnant liquid explosives store is itself functionally significant as an on-going marker, and as a representative of the physical context of the former School site. Given its distance from the proposed development site, and the complementary memorial site, the Department considers that there would be minimal potential conflict between the heritage values of this item and the construction and operation of the proposed development.

In light of the above consideration, the Department does not consider that additional measures would need to be imposed on the proposed development to protect heritage values, if the proposed development is granted consent.

#### *Impacts on Flora and Fauna*

The Department concurs with the outcomes of the Applicant's assessment of potential impacts on flora and fauna, and is generally satisfied that the proposed development would not adversely affect local and regional ecological values. Department representatives have attended the proposed development site on a number of occasions, and at different periods throughout the year. From these inspections, the Department confirms that the development site is highly degraded, as is much of the land immediately surrounding the site. In this context, the site represents negligible habitat, foraging and breeding opportunities for threatened species. It is recognised that there are a number of superior habitat opportunities in the region, including local watercourses and the Roping Pole Swamp.

There is some question in submissions, including the DEC's submission, whether the proposed development would have a significant impact on off-site habitat and species through mechanisms such as air quality impacts, noise impacts, thermal effects etc. In considering these types of impacts on significant surrounding habitat areas, the Department suggests that

it is appropriate to consider modelled effects at the closest (human) receptor to Roping Pole Swamp, namely the Pearce residence.

In the case of potential noise impacts, background noise measurements at the Pearce receptor have been used (among other receptors) to characterise with locality with an assessment background level of 30 dB(A). In comparison noise modelling presented in the Environmental Impact Statement suggests that noise impacts at the Pearce residence would generally be in the order of 31-32 dB(A), with the most adverse weather conditions generating no greater than 37 dB(A) at that point. In this light, the Department considers that noise impacts from the operation of the proposed development would generally not be significantly different from existing background levels at the Pearce residence, and given the further separation of Roping Pole Swamp from the proposed development site, even less so when considered from the Swamp itself. There is, however, potential for slightly higher noise impacts under the most extreme weather conditions, with a conservative estimate in the Swamp being of the order of 37 dB(A). To place this impact in context, it is important to note that the proposed development will not be operating constantly, nor would the most adverse weather conditions occur continuously. In order for this noise impact to be realised in practice, a peak load demand for the development would need to coincide with stable atmospheric conditions (i.e. stability class F) and easterly winds. In reality, peak demand would only occur in the morning and afternoon/ evening periods, whereas, stable atmospheric conditions only occur at night. The Department appreciates that there is potential overlap in these periods, generally in the 5:00 pm to 8:00 pm period, but the extent of the overlap is likely to be minimal in both duration and frequency. Further, land along the Uranquinty Cross-Road is characterised by maximum noise levels considerably above average background levels, as evidenced in the Environmental Impact Statement (the proposed development site (76dB(A)), Pine Grove (63 dB(A)) and Wyrilla (67 dB(A))). The spread between background noise levels (over 15-minute periods) and maximum recorded noise levels suggests that the locality is characterised by generally low noise levels on average, with short duration elevated noise impacts as high as in the order of 70 dB(A), most likely as a result of passing traffic. This observation is important because it highlights that the impact of the proposed development on background noise is well below existing maximum noise levels, and is significant noting that ecological impacts and disturbance can usually be associated with sporadic elevated noise episodes, rather than a generally constant lower-level background noise. Taking each of these factors and general observations into account, the Department considers that overall, the proposed development is unlikely to have an appreciable effect on noise impacts at Roping Pole Swamp, and particularly, below the impacts associated with occasional traffic along the Uranquinty Cross-Road.

Air quality modelling presented in the Environmental Impact Statement demonstrates that the proposed development would not generate ground level concentrations of air pollutants above accepted criteria at any time. In fact, under even the most conservative scenarios, the impacts of the proposed development, combined with existing ambient concentrations is generally less than 50% of the accepted ambient criteria for particulates, NO<sub>x</sub>, SO<sub>x</sub> and CO. Given the sporadic operation of the proposed development and the dispersion characteristics associated with the discharge of combustion gas at elevated temperature, the net average outcome, as well as the peak ground level concentrations are not considered a significant issue in relation to impacts on flora and fauna. It is important to note that ambient air quality criteria have been developed taking into consideration a number of factors, of which the most stringent is often human health implications. While protection of human health is not always necessarily a more stringent criterion than would be protective of the most sensitive ecological receptors, it is another important level of assurance that must be considered in concert with the predicted high levels of dilution and dispersion post stack discharge. As a matter of case examples of this issue, the Department highlights a number of highly significant and sensitive ecological areas in the Newcastle (Fullerton Cove and Kooragang Nature Reserve) and Sydney (Towra Point Reserve) subject to much broader and more concentrated air quality impacts from anthropogenic sources, without significant detrimental effect.

## 5.11 Impacts on Waste Production and Management

### Applicant's Position

Through an analysis of potential wastes generated by the proposed development during construction and operation, the Applicant has identified that the following waste materials are likely to be associated with the proposal:

- packaging waste, such as wooden pallets, cardboard and plastic, during both construction and operation;
- waste chemicals, oils and containers, during both construction and operation;
- metallic scrap from construction and plant assembly activities;
- surplus sub-soils and cleared vegetation;
- general domestic and office-type waste generated during both construction and operation; and
- sewage waste during both construction and operation.

The Applicant proposes to segregate solid wastes produced during construction and operation into dedicated storage areas prior to collection for off-site treatment and disposal, as may be required. Liquid wastes, including waste oils and sewage would be collected and temporarily stored on the site prior to collection for off-site treatment and disposal. The Applicant indicates that the management, handling and transport wastes would be undertaken in accordance with relevant Australian Standards and to address the requirements of the Department of Environment and Conservation. Management of wastes would also be subject to a formal waste management plan, the basic details of which are provided in the Environmental Impact Statement, in the event that the Minister determine to approve the development.

### Issues Raised in Submissions

While submissions did not specifically raise waste generation and management as an issue of concern, a number did highlight that hazards and risks associated with the proposed development represent a key concern. In some cases, general management of hazardous materials (which may include waste streams) was raised as a matter for consideration as part of the environmental impact assessment of the proposal.

The DEC, in issuing its draft General Terms of Approval for the proposal has not included any specific measures directly targeting waste generation and management (although there are specific provisions relating to waste water management, which are addressed under the consideration of water quality impacts in this report).

### Department's Position

The Department is generally satisfied that the Applicant has appropriately and adequately identified wastes likely to be generated through the construction and operation of the proposed development. The Applicant's consideration does not, however, provide any detailed assessment of the likely quantities of wastes to be generated, nor does it outline waste management procedures, other than for general regulatory provisions and waste management guidelines.

Notwithstanding, the Department recognises that the wastes generated on the site are not novel and generally not considered to raise significant waste management issues (such as, for example, hazardous wastes and scheduled chemical wastes). While the waste management framework outlined by the Applicant in the Environmental Impact Statement is considered very preliminary in scope and detail, the Department is satisfied that this matter could be adequately conditioned through development consent if the proposal is approved. The Applicant has identified key regulatory instruments and good practice waste management provisions, which could be expanded through a formal management plan to be developed prior to construction and operation, respectively.

## 6. CONCLUSIONS

As detailed in section 5 of this report, the Department has identified a number of outstanding matters that must be resolved before the environmental impact assessment of the proposed development can be finalised. The Department considers that some of these issues have achievable technical solutions, and seeks further information or clarification from the Applicant

to facilitate the resolution of outstanding issues, while others may not have achievable technical solutions. Key issues for resolution relate to:

- **project justification:** the Department considers it necessary to clarify the inter-relationships between the proposed development and the electricity transmission infrastructure network, and the potential benefits of the proposed development to the State's generating capacity in this respect;
- **site selection and statutory planning:** the Department notes significant concern regarding the appropriateness of the proposed site with regards to the rural character and surrounding land uses, especially in light of the inconsistency with the Wagga Wagga Rural DCP land use guideline. The Department considers this matter of the siting of the proposed development a key issue to be addressed through the Inquiry process. The Department also requires clarification of the status of the ancillary infrastructure necessary to support the proposed development;
- **health risk assessment methodology:** the Department requires the Applicant to provide a more rigorous and justified consideration of the number of compounds, exposure scenarios and assumptions applied in order to resolve concerns raised through public submissions and conclusively demonstrate that diesel-related health impacts are not significant;
- **socio-economic impacts:** in light of the outstanding issues discussed, and the inability of the Department to finalise its assessment, it is not possible to adequately determine the potential socio-economic impacts of the proposed development;
- **construction noise:** particularly all reasonable and feasible measures to be implemented by the Applicant to mitigate and minimise noise during the construction period, including road traffic noise;
- **visual amenity:** the visual impact of the proposed development on the surrounding residents has not accurately determined, as the Department has no certainty regarding the appropriateness of the scaling of the proposed development on the relevant photomontages; and
- **traffic impacts:** further consideration of how the potential impacts associated with cumulative effect from the proposed development and the harvest season traffic would be addressed.

The Department recognises that the proposed development represents a significant development in the context of the state's electricity generation and transmission infrastructure. Provision of reliable electricity generation capacity and transmission network infrastructure is of vital importance to ensure economic and social goals can be achieved.

Public submissions generally expressed objection for the proposed development, with objections based on the local impacts of the power station, primarily being the impacts of air emissions, noise and visual amenity on the rural character of the area. Further, the necessity for additional generation in the State generally, and the Wagga Wagga region specifically, was questioned. It is therefore important that the environmental impacts of the proposal are comprehensively considered, and contrasted with the benefits of the proposal, with full public participation and consultation. The Commission of Inquiry provides a forum for the Applicant to present all relevant information to the community, and for interested and affected members of the community to be involved in the assessment process in an open and transparent manner.

## APPENDIX A

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| <b>1</b> | <b>Name of plan</b>  |
| <b>2</b> | <b>Aims, objectives etc</b>  |
|          | The general aims of the plan are as follows:   |
|          | (a) to encourage the proper management, development and conservation of natural and man-made resources within the area to which this plan applies by protecting, enhancing or conserving:<br>(i) prime crop and pasture land,<br>(ii) timber, minerals, soil, water and other natural resources,<br>(iii) localities of significance for nature conservation,<br>(iv) localities of high scenic or recreational value, and<br>(v) places and buildings of archaeological or heritage significance, including Aboriginal relics and places,   |
|          | (b) to replace the existing planning controls with a single local environmental plan to help facilitate growth and development of the land to which this plan applies in a manner which is consistent with the aims specified in paragraph (a) and which:<br>(i) minimises the costs to the community of fragmented and isolated development of rural land,<br>(ii) facilitates the efficient and effective provision of amenities and services,<br>(iii) facilitates a range of residential and employment opportunities in accordance with demand,<br>(iv) facilitates farm adjustments, and<br>(v) ensures that the efficiency of arterial roads is not adversely affected by development on adjacent land, |
|          | (c) to simplify the general restrictions on development by reducing the number of zones into which land is divided,  |
|          | (d) to give the Council greater responsibility for environmental planning by creating a broad framework of controls and to create opportunity for the more detailed provisions relating to matters of significance only for local environmental planning to be contained in development control plans made by the Council,   |
|          | (e) to speed up the planning process,  |
|          | (f) to maintain the opportunity for public involvement and participation in the environmental planning and assessment process,   |
|          | (g) to ensure that the plan is complementary to <u>Wagga Wagga Local Environmental Plan 1985</u> ,   |
|          | (h) to reduce the incidence of damage to localities subject to flooding by restricting development in the flood plain and in the floodways,  |
|          | (i) to promote ecologically sustainable development.   |
| <b>3</b> | <b>Land to which plan applies</b>  |
| <b>4</b> | <b>Relationship to other environmental planning instruments</b>  |
| <b>5</b> | <b>Interpretation</b>  |
| <b>6</b> | <b>Adoption of model provisions</b>  |
|          | The <u>Environmental Planning and Assessment Model Provisions 1980</u> , except for:   |
|          | (a) the definitions of <b>arterial road</b> and <b>map</b> in clause 4 (1), and  |
|          | (b) clauses 15, 16, 19, 20, 21, 22 and 23,<br>are adopted for the purpose of this plan.  |
| <b>7</b> | <b>Consent authority</b>   |

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| <b>Part 2 General restrictions on development of land</b> |  |
| <b>8</b>  | <b>Zones indicated on the map</b>  |
| <b>9</b>  | <b>Zone objectives and development control table</b>   |
| (1)   | The objectives of a zone are set out in the Table to this clause under the heading "Objectives of zone" appearing in the matter relating to the zone.  |
| (2)   | Except as otherwise provided by this plan, in relation to land within a zone specified in the Table to this clause, the purposes (if any) for which:   |
| (a)   | development may be carried out without development consent,  |
| (b)   | development may be carried out only with development consent, and  |
| (c)   | development is prohibited,   |
|   | are specified under the headings "Without development consent", "Only with development consent" and "Prohibited", respectively, appearing in the matter relating to the zone.  |
| (3)   | Except as otherwise provided by this plan, the Council shall not grant consent to the carrying out of development on land to which this plan applies unless the Council is of the opinion that the carrying out of the development is consistent with the objectives of the zone within which the development is proposed to be carried out. |
| <b>Table</b>  |  |
| <b>Zone No 1 (Rural)</b>                                  |  |
| <b>1</b>  | <b>Objectives of zone</b>  |
|   | The objectives of this zone are to promote the proper management and utilisation of resources by:  |
| (a)   | protecting, enhancing and conserving:  |
| (i)   | agricultural land in a manner which sustains its efficient and effective agricultural production potential,  |
| (ii)  | soil stability by controlling and locating development in accordance with soil capability,   |
| (iii)   | forests of existing and potential commercial value for timber production,  |
| (iv)  | valuable deposits of minerals and extractive materials by controlling the location of development for other purposes in order to ensure the efficient extraction of those deposits,  |
| (v)   | trees and other vegetation in environmentally sensitive localities where the conservation of the vegetation is significant to scenic amenity or natural wildlife habitat or is likely to control land degradation,   |
| (vi)  | water resources for use in the public interest,  |
| (vii)   | localities of significance for nature conservation, including localities with rare plants, wetlands and significant wildlife habitat, and  |
| (viii)  | places and buildings of archaeological or heritage significance, including Aboriginal relics and places,   |
| (b)   | preventing the unjustified development of prime crop and pasture land for purposes other than agriculture,   |
| (c)   | ensuring that any allotment created for intensive agricultural pursuits is potentially and physically capable, on its own, of sustaining a range of such pursuits or other agricultural purposes as a commercial agricultural operation suitable to the locality,  |
| (d)   | facilitating farm adjustments,   |
| (e)   | minimising the cost to the community of:   |
| (i)   | fragmented and isolated development of rural land, and   |
| (ii)  | providing, extending and maintaining public amenities and services, and  |
| (f)   | providing land for future urban development, for future rural residential development and for future development for other non-agricultural purposes, in accordance with the need for that development,  |
| (g)   | providing for a range of rural living styles in appropriate locations within the area to which the plan applies, and   |
| (h)   | encouraging the establishment of rural industries within the area to which the plan  |

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| applies.   |
| <b>2 Without development consent</b>   |
| Agriculture (other than ancillary dwellings and intensive livestock keeping establishments); forestry (other than ancillary dwellings and pine plantations).   |
| <b>3 Only with development consent</b>   |
| Any purpose other than a purpose included in item 2 or 4.  |
| <b>4 Prohibited</b>  |
| Residential flat buildings; shops (other than general stores not exceeding 100 square metres in gross floor area).   |
| <b>Part 3 Special provisions</b>   |
| <b>10 General considerations for development within rural zone</b>   |
| (1) The Council shall not consent to an application to carry out development on land within Zone No 1 unless it has taken into consideration, if relevant, the effect of the carrying out of that development on:              |
| (a) the present use of the land, the potential use of the land for the purposes of agriculture and the potential of any land which is prime crop and pasture land for sustained agricultural production,                       |
| (b) vegetation, timber production, land capability (including soil resources and soil stability), water resources (including the quality and stability of water courses and ground water storage and riparian rights),         |
| (c) the future extraction of known valuable deposits of minerals, coal, petroleum, sand, gravel or other extractive materials and localities considered to be prospective for those materials,                                 |
| (d) the protection of localities of significance for nature conservation or of high scenic or recreational value, and places and buildings of archaeological or heritage significance, including Aboriginal relics and places, |
| (e) the cost of providing, extending and maintaining public amenities and services to the development, and   |
| (f) future expansion of settlements in the locality.   |
| (2) As well as the matters referred to in subclause (1), the Council shall take into consideration the relationship of the development to development on adjoining land or on other land in the locality.                      |
| (3) Subclause (1) does not apply to development, consisting of:  |
| (a) an addition to a building or work,   |
| (b) development ancillary to a purpose for which development may be carried out with the consent of the Council under this plan.   |
| <b>11 Subdivision of land generally</b>  |
| <b>12 Subdivision for the purposes of agriculture in Zone No 1</b>   |
| <b>13 Subdivision for the purposes of dwellings in Zone No 1</b>   |
| <b>14 Subdivision for other purposes in Zone No 1</b>  |
| <b>15 Subdivision for the purposes of the creation of rural small holdings</b>   |
| <b>16 Subdivision of land in Zone No 2</b>   |
| <b>17 Dwellings in Zone No 1—vacant land</b>   |
| <b>18 Creation of additional dwellings in Zone No 1</b>  |
| <b>19 Applications that must be advertised</b>   |

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| <b>20</b>   | <b>Development along arterial roads</b>                                     |
| The Council shall not grant consent to an application to carry out development on land which has frontage to an arterial road, unless:  |   |
| (a) access to that land is provided by a road other than the arterial road, wherever practicable, and   |   |
| (b) in the opinion of the Council, the safety and efficiency of the arterial road will not be adversely affected by:  |   |
| (i) the design of the access to the proposed development,   |   |
| (ii) the emission of smoke or dust from the proposed development, and   |   |
| (iii) the nature, volume or frequency of vehicles using the arterial road to gain access to the proposed development.   |   |
| <b>21</b>   | <b>Environmentally sensitive land</b>                                       |
| <b>22</b>   | <b>Flooding</b>   |
| (1) A person shall not erect a building or carry out a work on the flood plain except with the consent of the Council.  |   |
| (2) The Council shall not consent to the erection of a building or the carrying out of a work on land within a floodway if...   |   |
| <b>23</b>   | <b>Land subject to bushfire hazards</b>                                     |
| The Council shall not grant consent to the subdivision of land or to the erection of a building on land which is subject to bushfire hazards by reason of the vegetation on the land or on any adjacent land unless, in the opinion of the Council:   |   |
| (a) adequate provision is made for access for fire fighting vehicles,   |   |
| (b) adequate safeguards are adopted in the form of fire breaks, reserves and fire radiation zones, and  |   |
| (c) adequate water supplies are available for fire fighting purposes.   |   |
| <b>24</b>   | <b>Items of the environmental heritage</b>                                  |
| (1) A person shall not, in respect of a building, work, relic or place that is an item of the environmental heritage:   |   |
| (a) demolish, renovate or extend that building or work,   |   |
| (b) damage or despoil that relic or place or any part of that relic or place,   |   |
| (c) excavate any land for the purpose of exposing or removing that relic, or  |   |
| (d) erect a building on the land on which that building, work or relic is situated or the land which comprises that place,  |   |
| except with the consent of the Council.   |   |
| (2) The Council shall not grant consent to a development application made in pursuance of subclause (1) unless it has made an assessment of:  |   |
| (a) the significance of the item as an item of the environmental heritage of the City of Wagga Wagga,   |   |
| (b) the extent to which the carrying out of the development in accordance with the consent would affect the historic, scientific, cultural, social, archaeological, architectural, natural or aesthetic significance of the item and its site,  |   |
| (c) whether the setting of the item, and in particular, whether any stylistic, horticultural or archaeological features of the setting should be retained, and  |   |
| (d) whether the item constitutes a danger to the users or occupiers of that item or to the public.  |   |
| <b>25</b>   | <b>Development in the vicinity of an item of the environmental heritage</b> |
| The Council shall not grant consent to a development application to carry out development in the vicinity of the land on which an item of the environmental heritage is situated unless the Council has made an assessment of the effect which the carrying out of that development will have on the historic, scientific, cultural, social, archaeological, architectural, natural or aesthetic significance of the item of the environmental heritage and its settings. |   |
| <b>26</b>   | <b>Heritage Council to be given prior notice of demolition consent</b>      |

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| <b>27</b> | <b>Conservation incentives relating to items of the environmental heritage</b>   |
| <b>28</b> | <b>Access</b>  |
|           | A person, other than the Council, shall not construct a road which has access to a public road except with the consent of the Council.   |
| <b>29</b> | <b>Suspension of certain covenants etc</b>   |
| (1)       | For the purpose of enabling development to be carried out in accordance with this plan (as in force at the time the development is carried out) or in accordance with any consent granted under the Act, the operation of any covenant, agreement or instrument imposing restrictions on development, to the extent necessary to serve that purpose, is not to apply to the development. |
| (2)       | Pursuant to section 28 of the Act, before the making of this clause the Governor approved of subclause (1).  |
| <b>30</b> | <b>Development in the vicinity of licensed aerodromes</b>  |
| (1)       | The Council shall not grant consent to a development application to carry out development in the vicinity of the land on which any licensed aerodrome is situated unless the Council has made an assessment of the effect which the carrying out of that development will have on the continued operation of the aerodrome.  |
| (2)       | In this clause, licensed aerodrome has the same meaning as in Regulation 89 of the Civil Aviation Regulations of the Commonwealth.   |
| <b>31</b> | <b>Development in the vicinity of the Gregadoo Waste Disposal Facility</b>   |
| <b>32</b> | <b>What is exempt and complying development?</b>   |