NSW GOVERNMENT | Planning

MAJOR PROJECT ASSESSMENT
Richmond Valley Power Station and Casino Gas Project
Metgasco Ltd

Director-General's
Environmental Assessment Report
Section 75I of the
Environmental Planning and Assessment Act 1979

May 2010

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EXECUTIVE SUMMARY

Metgasco Ltd (the Proponent) has lodged a major project application and supporting Environmental Assessment to construct and operate a gas extraction project and associated gas-fired power station near Casino, in the Richmond Valley local government area.

The gas extraction component of the project involves the establishment of approximately forty coal seam methane production wells and/or fifteen conventional gas wells, the installation of gas and water pipelines connecting the wells to the power station, and the construction of evaporation/storage ponds. The power station component involves the construction of a 30 megawatt gas-fired generator on land subdivided from the existing lot, and the connection of the station to the existing 66 kilovolt transmission network. The Proponent estimates the capital investment value of the project at $50 million.

The proposed power station would provide locally-generated electricity to the far north coast in an area which currently receives electricity from the Hunter Valley of New South Wales (600 kilometres away) and Queensland (250 kilometres away). The proposal would improve the reliability of electricity supply in the region, avoid line losses associated with long-distance power supply, and reduce greenhouse gas emissions associated with electricity generation in NSW.

The Department has assessed the Environmental Assessment, Submissions Report, revised Statement of Commitments, and the eight submissions received from the exhibition of the proposal. The main issues that were raised in submissions and through the Department's assessment of the project were impacts related to air quality, noise, water quality and property. The Department is satisfied that the impacts of the project can be mitigated and/or managed to ensure an acceptable level of environmental performance, subject to the recommended conditions of approval.

CONTENTS

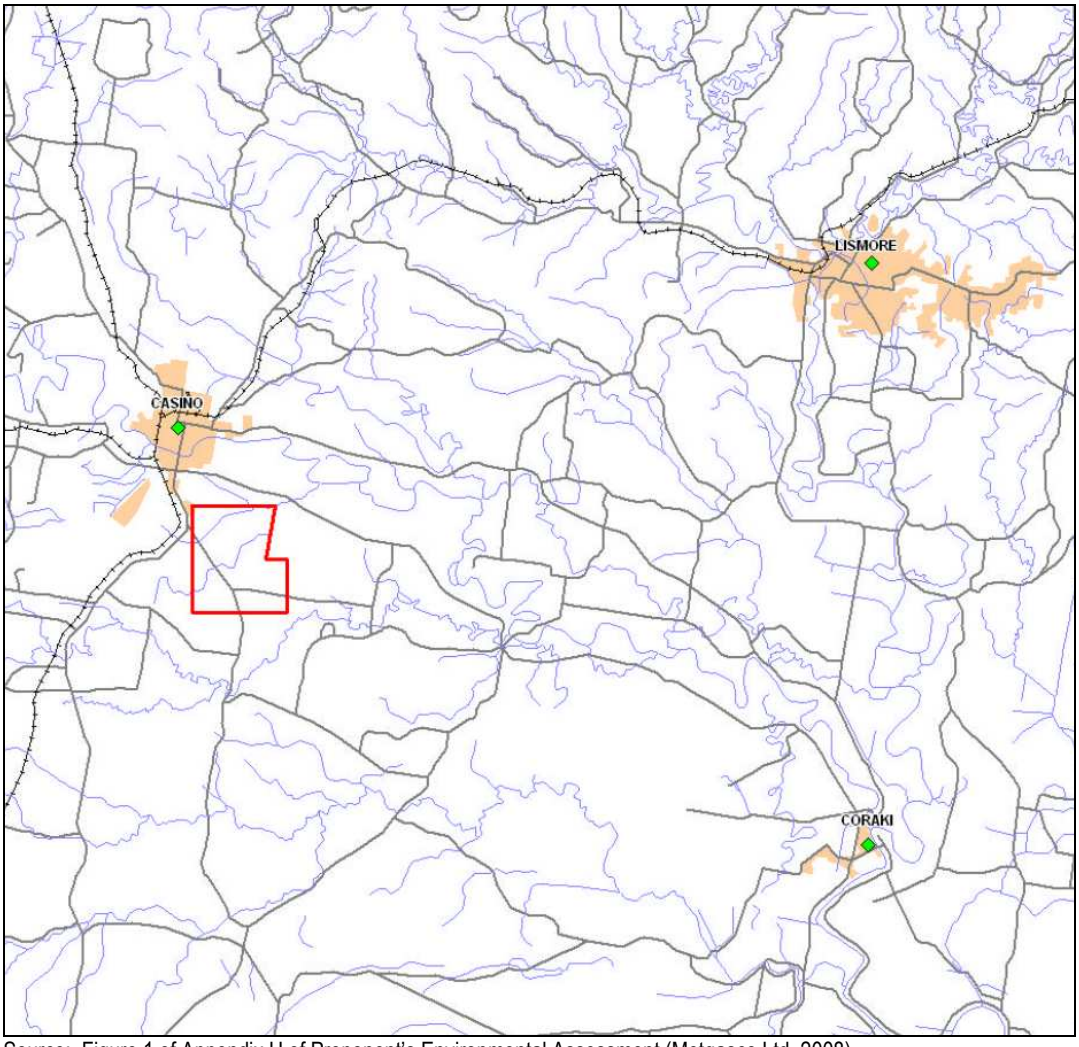
1. BACKGROUND

Metgasco Ltd (the Proponent) proposes to construct and operate a gas extraction project and associated gas-fired power station near Casino, in the Richmond Valley local government area.

1.1 Location

The project site covers an area of approximately 1,540 hectares, immediately south of Casino, with the power station to be located approximately three kilometres from the Casino township. The location of the project site is shown in Figure 1.

Figure 1: Location of Project



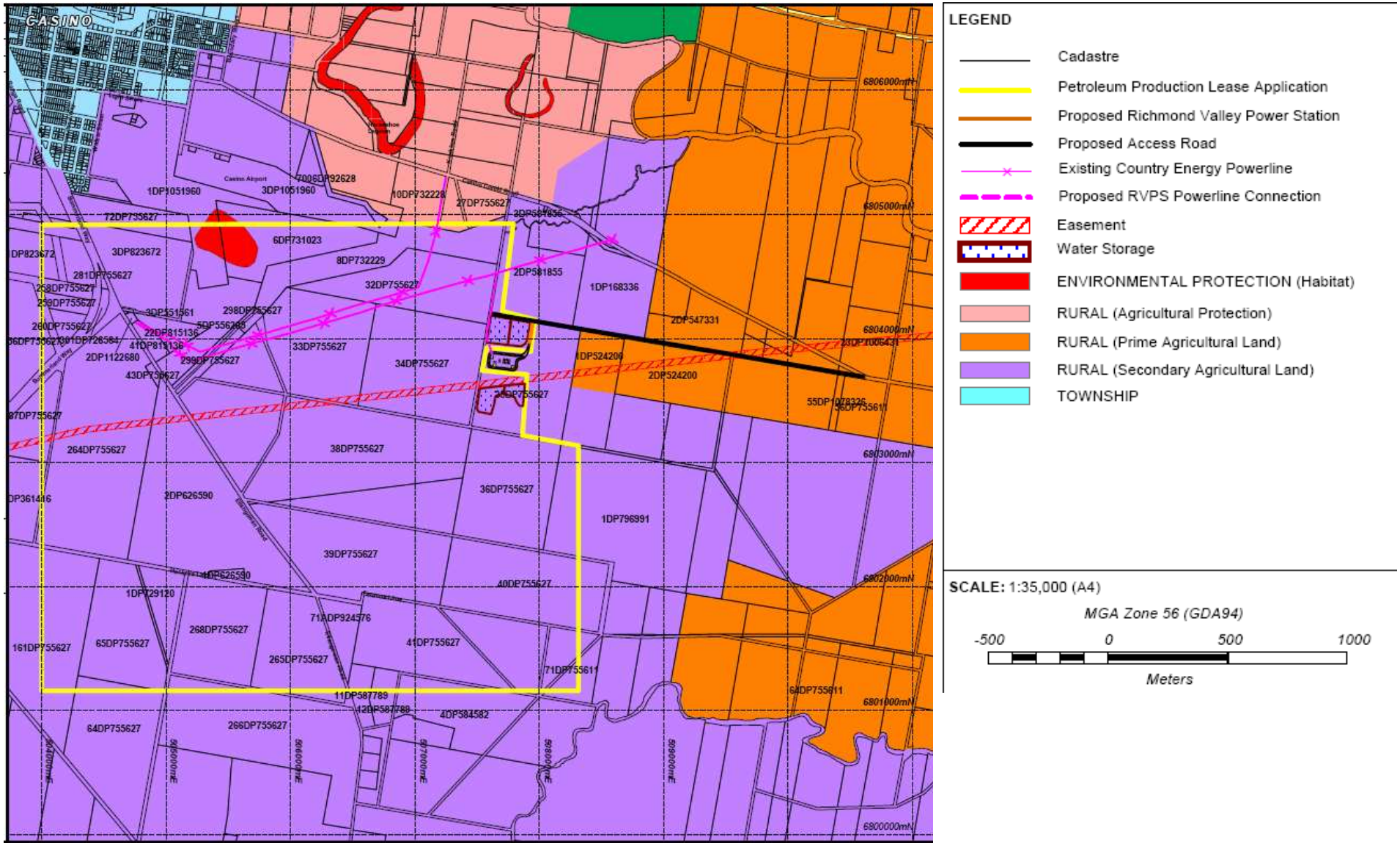
Source: Figure 1 of Appendix H of Proponent's Environmental Assessment (Metgasco Ltd, 2008)

1.2 Land Zoning and Land Use

The zoning of the land in the vicinity of the site is subject to the planning controls of both the *Casino Local Environmental Plan 1992* and the *Richmond River Local Environmental Plan 1992* as shown in Figure 2. The site is zoned 1(b) Rural (Secondary Agricultural Land) under both planning instrument and public utility undertakings are permissible with consent.

The existing land use in the vicinity of the site is predominantly rural, with several road and utility easements intersecting the site. Casino airport separates the site from urban areas to the north within Casino township.

Figure 2: Land Zoning



Source: Figure 4-1 of Proponent's EA (Metgasco Ltd, 2008)

2. PROPOSED DEVELOPMENT

2.1 Project Description

The Proponent proposes to construct and operate a gas extraction project and associated gas-fired power station near Casino. The proposal would comprise the following elements as outlined in Figures 3 to 6:

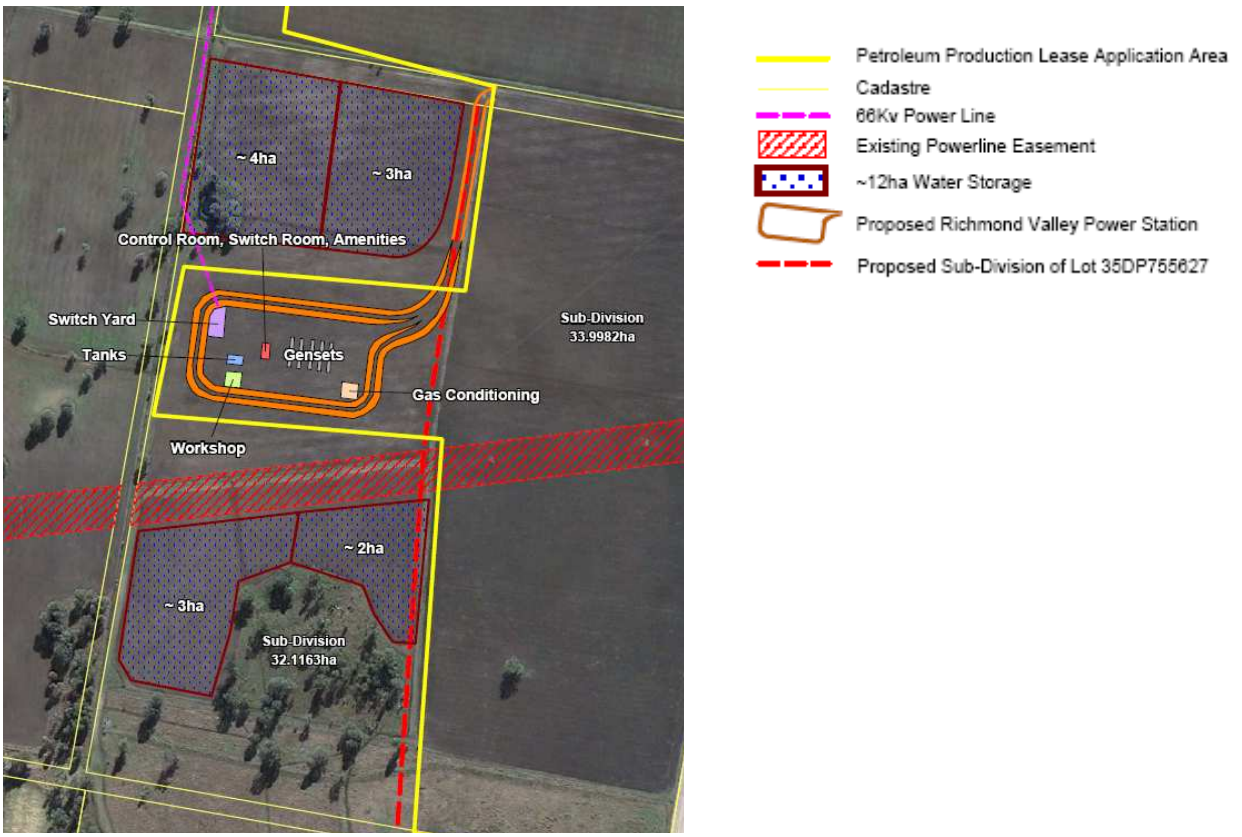
- 30-45 petroleum production wells connected via underground pipelines to the power station;
- a gas-fired power station with a nominal capacity of 30 megawatts (referred to as the Richmond Valley Power Station);
- electrical switchroom and switchyard;
- workshops, storage areas, control rooms and amenities buildings;
- evaporation and storage ponds;
- a transmission line connecting the power station to the existing 66 kilovolt transmission line;
- an access road from the power station site to the Casino-Coraki Road; and
- subdivision of Lot 35 DP755627 to separate the power station from the remainder of the existing lot.

The project is anticipated to employ 50 people during its construction and eight people during operation. The capital investment value of the project is $50 million. Key components of the project are described in the following sections.

Richmond Valley Power Station

The proponent proposes to construct and operate a power station with a nominal generating capacity of 30 megawatts for a design life of 15 years. The power station may be built in one stage or in three stages. If the power station is constructed in stages it would commence with 12 megawatts with additional units of 9 megawatts added as further gas reserves are brought on line. Power would be generated at 11 kilovolts and stepped up on-site to 66 kilovolts for connection into the County Energy grid. The Environmental Assessment states that the site will require two megawatts of power to operate all the generators in service, resulting in the delivered power from the station to the grid of approximately 28 megawatts. A notional layout of the power station is outlined in Figure 3 and an indication of its appearance is provided in Figure 4.

Figure 3: Proposed Layout for Power Station



Source: Figure 3.7 of Proponent's Environmental Assessment (Metgasco Ltd, 2008)

Figure 4: Typical Appearance of Power Station

Source: Figure 3-6 of Proponent's Environmental Assessment (Metgasco Ltd, 2008)

The Proponent proposes to subdivide Lot 35 DP755627 into two lots, as follows:

- one lot of approximately 33 hectares for the Richmond Valley Power Station; and
- one lot of approximately 34 hectares which would be retained by the current owner.

The proponent has indicated that an agreement has been reached with the existing landowner in relation to the subdivision of the site and the option to purchase the subdivided lot for the construction and ongoing operation of the power station. The Environmental Assessment, however, states that the proposed subdivided lots do not meet the minimum lot size under the *Richmond River LEP.* The proponent has prepared an objection in relation to this with a copy provided as part of the Environmental Assessment.

Flood Mitigation

The power station is proposed to be located on a site which is classified as of "high isolation hazard" as described in the Casino and Mid Richmond Floodplain Risk Management Plan based on 1 in 100 year flood data. The proponent therefore proposes to construct the power station within a bunded wall to provide protection from flooding. The nominal height of the wall would be four metres, 0.5 metres above the anticipated 1 in 500 year flood level. A ramp would be constructed for vehicle access to the power station over the bund wall.

Site Access and Parking

The proponent has identified a non-constructed but surveyed road reserve between the Casino-Coraki Road and has indicated that it proposes to construct an access road and associated intersection, to Council standards. The proponent has indicated that Council would undertake ongoing control of the road and the road reserve subject to their agreement.

Transmission Connection

The project requires that a 66 kilovolt transmission line be constructed. This would connect to the existing County Energy 66 kilovolt transmission line which is located approximately 800 metres to the north of the power station site. The section of new line would comprise four or five poles, each approximately 20 metres high.

Casino Gas Project

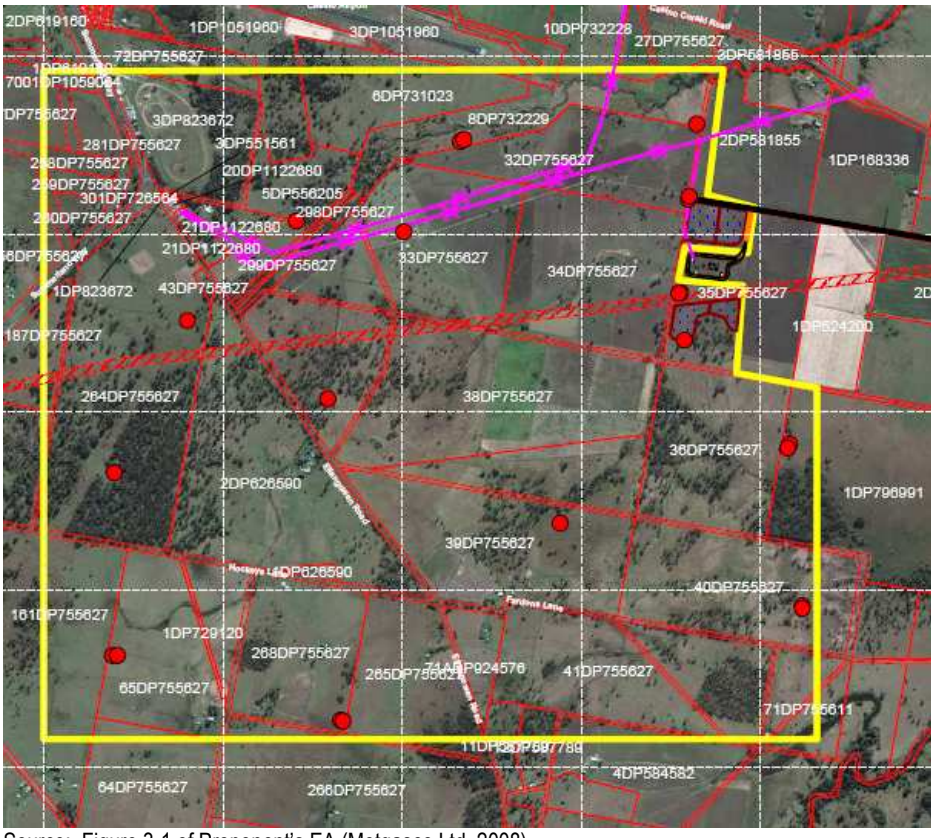
The Richmond Valley Power Station will require approximately 2.3 petajoules per annum of gas to supply the full 30 megawatt power station. Therefore, over the 15 year life of the project, approximately 34.5 petajoules of gas would be required. Exploration and appraisal activities undertaken by the proponent have confirmed probable gas reserves within Petroleum Exploration Licence 16 of 247 petajoules. The proponent will undertake further exploration and associated drilling activities to confirm quantities of proved reserves via seismic testing, coring, drilling and production testing.

Approximately 30-45 petroleum production wells will be required over approximately 15 locations, as indicated on Figure 5. These wells are proposed to be constructed over a period of between seven and 12 years.

The proponent has indicated that the siting of the well heads has primarily been based on geological analysis completed as part of exploratory activities as well as landform, disturbance to existing landholders and site accessibility. The Environmental Assessment states that the proponent will reach an agreement with each relevant landholder in relation to well locations, works required to be undertaken on each property, restoration and compensation.

Each wellhead would occupy a footprint of approximately 100 square metres and comprise a wellhead pump for water lift, a separator to separate the gas and water, and control equipment. Each wellhead would be fully fenced as shown on Figure 6.

Figure 5: Casino Gas Project Well Sites



Source: Figure 3-1 of Proponent's EA (Metgasco Ltd, 2008)

Well Access

The project area will be accessed via two existing public roads – Ellangowan Road and the Casino-Coraki Road. Within the Petroleum Production Lease, access between the well sites will be via existing tracks or new tracks developed by the proponent in accordance with individual landowner agreements. The actual access routes will be determined when the final well site locations have been confirmed.

Depending on the drill rigs used, drilling mud would either be contained within on-site pits or held within tanks on the rig itself. Where pits are utilised, these would be dewatered and backfilled on completion of drilling activities. Final restoration of the area would occur once the well ceases production.

Figure 6: Typical Wellhead Pump

Source: Figure 7-3 of Proponent's EA (Metgasco Ltd, 2008)

Gas Gathering System Installation

A gas gathering system is proposed to be installed to transport gas from the wellheads to the Richmond Valley power station. The gathering system would involve the construction of buried polyethylene pipe ranging in diameter from 90 millimetres to 450 millimetres, increasing in diameter as it approaches the power station. The Environmental Assessment states that the gathering system route would be selected in consultation with affected landholders and would utilise previously disturbed areas where possible.

Water Storage

A new, lined evaporation/storage pond measuring 12 hectares would be constructed to support the gas production process and would be located adjacent to the power station. Soil from the excavation of the pond would be used in the construction of the bund for the power station. The pond is proposed to be constructed in stages with Stage 1 measuring six hectares and comprising a series of lined cells which would be brought on line as required by the volume of water production.

2.2 Project Need

Power supplies to the far north coast of NSW are provided by electricity delivered from the national grid from generation located 600 kilometres to the south in the Hunter Valley or 250 kilometres to the north in Queensland. Given the population forecasts predicted for the North Coast of NSW, the Environmental Assessment states that demand for energy has exceeded previous forecasts and new electricity capacity will be required to meet projected electricity power load growth. The Proponent has indicated that ACIL Tasman has estimated that electricity demand within a 100 kilometre radius of the Casino Gas Project is 450 megawatts and is forecast to increase to 650 megawatts by 2010.

The Proponent has stated that the development of the project will have the following benefits:

- improve the reliability of electricity supply in the Casino area;
- improve the security and integrity of the regional electricity network;
- avoid electricity losses from the transport of electricity over long distances; and
- the generation of NSW greenhouse gas abatement credits.

As part of the submissions received, the Department of Primary Industries (now Industry and Investment NSW) indicated that it could not support the project as the Environmental Assessment did not contain sufficient information regarding verification of the gas resource to demonstrate the project's economic viability to warrant the grant of any future Petroleum Production Lease. Following the receipt of the submission, the Proponent continued discussions with the Industry and Investment NSW and provided it with additional information on the resources and reserves available within the proposed areas of the Petroleum Production Lease. As a result of exploration effort, the Department understands that the Proponent has established independently certified 3P (Proven, Probable and Possible) reserves of 1,538 petajoules, 2P (Proven and Probable) reserves of 298 petajoules and 1P (Proven) reserves of 2.7 petajoules which provides significantly larger quantities of reserves that would be required over the life of the project. The Proponent's Submissions Report states that the results of exploration wells is sufficient to give them confidence that the required quantities of gas are available within the boundaries of the Petroleum Production Lease and can be developed over the timeframe necessary to satisfy the demands of the project.

In response to the additional information, the Department has received correspondence from Industry and Investment NSW to state that the Proponent has demonstrated that there is a coal seam methane resource to the 2P level within the project area, however, the Department considers that the resource may not be sufficient to meet the proposed life of the project. The Proponent has indicated that further 2P resources may exist outside the current project area and therefore an expansion of the project may be required in future.

2.3 Department's Position

The Department considers that the Proponent has demonstrated a need for the project in the local area and considers that the project is justified taking into consideration the expected environmental impacts from its construction and operation. The Department considers that the Proponent has provided adequate information to demonstrate that sufficient gas resources exist to commence and operate the project.

The project utilises coal-seam methane and conventional gas, resources which have been found to exist in varying quantities in the local area, for the generation of electricity. The proposed use of gas engines, with a higher thermal efficiency than gas turbines, also results in less capital cost and lower sensitivity to ambient temperatures.

3. STATUTORY CONTEXT

3.1 Major Project

The project is declared to be a Major Project under *State Environmental Planning Policy (Major Projects) 2005* because it is development for the purposes of electricity generation that has a capital investment value of more than $30 million (clause 24(a)). The project will therefore be assessed and determined by the Minister for Planning under Part 3A of the *Environmental Planning and Assessment Act 1979*.

3.2 Director-General's Requirements and Adequacy of Environmental Assessment

The Director-General's requirements for the preparation of an Environmental Assessment for the project were issued on 18 September 2006. For the purpose of section 75I(2)(g) of the *Environmental Planning and Assessment Act 1979*, the Environmental Assessment for the project complied with the Director-General's requirements and the Proponent was notified of this compliance on 10 March 2008.

3.3 Environmental Planning Instruments

The *Casino Local Environmental Plan 1992* and the *Richmond River Local Environmental Plan 1992* apply to the project sites. The land proposed to be utilised for the project is zoned 1(b) Rural and the project is permissible with Council consent.

There are no environmental planning instruments that apply to the proposal that substantially govern the carrying out of the project.

3.3.1 Subdivision of Land

The project involves the subdivision of Lot 35 DP 755627 into two lots, one of approximately 32 hectares, the other 34 hectares which is proposed to be retained by the owner. The Proponent has indicated that the purpose of the subdivision is to allow the proponent to purchase the site for the construction and operation of the Richmond Valley Power Station. The Department understands from information in the Environmental Assessment that the proponent has reached an agreement with the existing landholder regarding the subdivision and has signed an option agreement for the purchase of the Richmond Valley Power Station site.

The Department understands that the subdivided lots would not meet the minimum size required under the *Richmond River Local Environmental Plan* and a Proforma SEPP 1 objection has been prepared by the Proponent. While the minimum lot size is not met by the project, the Department considers that the minimum lot size in the Richmond Valley Local Environmental Plan would not have foreseen that a power station would be proposed on the land. Given that the primary purpose of the subdivision is to purchase the required land for the project, and that the remaining land would be retained by the owner, the Department does not have any objection to the proposed subdivision and considers that it can be approved. This is reflected in the recommended conditions of approval for the project.

3.4 Exhibition and Notification

The project application and Environmental Assessment were placed on public exhibition from Friday 22 August to Monday 22 September 2008 and submissions invited in accordance with section 75H of the Act. Exhibition locations were as follows:

- Department of Planning's head office in Sydney;
- Nature Conservation Council of NSW;
- Richmond Valley Council; and
- Lismore City Council.

The Environmental Assessment was also available for download on the Department's internet site. Notification of the exhibition period was made through advertisements in the *Richmond River Express* and the *Lismore Northern Star* on 20 August and 22 August 2008 respectively.

3.5 Minister's Approval Power

The Department has met all its legal obligations so that the Minister can make a determination regarding the project.

4. CONSULTATION AND ISSUES RAISED

The application for the project and accompanying Environmental Assessment were publicly exhibited from Friday 22 August 2008 to Monday 22 September 2008. During the exhibition period eight submissions were received. Submissions were received from State and local government agencies and five members of the local community. Of the total submissions received, one provided support for the project, three objected to the project, and the remaining four submissions did not state a clear position although raised concerns regarding the proposal.

4.1 Submissions from State and Local Government

Submissions were received from two State government agencies and from Richmond Valley Council. A submission from the NSW Roads and Traffic Authority was received after the exhibition period and while received late, was considered as part of the assessment of the project. Submissions received from government agencies and Council have been briefly summarised, as follows:

- NSW Department of Environment, Climate Change and Water (DECCW) – **supported the project** provided amendments were made to the proponent's Statement of Commitments. DECCW's amendments included specific air emission limits, amendments to construction and operational noise and additional commitments in relation to wastewater, Aboriginal heritage and waste management.
- NSW Industry and Investment (I&I) – **raised objection to the project** as it considered that the Environmental Assessment did not contain sufficient information to demonstrate an economic coal seam methane resource as part of the Casino Gas Project to sustain supply of gas to the proposed Richmond Valley power station. Other issues raised by I&I included management of evaporation storage dams, flooding, rehabilitation, agricultural impacts and that any pipeline crossings of existing watercourses should be designed consistent with national fish friendly guidelines.
- NSW Roads and Traffic Authority – **raised no objection to the project**, however, indicated that the Casino-Coraki Road is a regional road under the care and control of Richmond Valley Council. Any permanent access proposed to be constructed onto this road is to be designed in accordance with AUSTROADS guidelines and consideration of sight distance and traffic generation potential.
- Richmond Valley Council – **did not state a position regarding the project,** however, provided a number of comments in relation to the project which Council indicated should be considered in the assessment. These issues included that noise impacts, property impacts (including those surrounding properties that are currently vacant but have dwelling entitlement), the need to obtain concurrence from the RTA in relation to the proposed access to Casino-Coraki Road, pre and post road inspections on Council's road network for the assessment of impact from heavy loads, the need to prepare traffic control plans, flooding impacts and that a Section 138 Roads Act approval will be required for pipelines within/crossing a road reserve. Council also indicated that it will not accept the maintenance responsibility for the proposed access road and that the proponent is to maintain the pavement on the Crown road reserve. Council stated that it would only consider responsibility for the road reserve if a full maintenance agreement is provided including ongoing maintenance costs to be borne by the proponent.

4.2 Submissions from Individuals

Five submissions were received from the local community, predominantly from surrounding property owners. Of the five submissions received, two submissions objected to the project, while the remaining three submissions did not state a position regarding the project, however, raised a number of issues of concern.

Issues raised by the community can be summarised as follows:

- lack of detail provided in the Environmental Assessment;
- inadequate noise impact assessment;
- adequate turning lanes should be provided as part of the access to the Casino-Coraki Road;
- inadequate fauna assessment;
- potential contamination of surrounding land, surface and groundwater and impact to town water supply;
- potential risk of acid sulphate soils;
- inadequate community consultation;
- no economic benefit to the local community;

- impact to current agricultural practices undertaken on surrounding land;
- impact on property values - many of the surrounding properties are vacant however have dwelling entitlement;
- impact on wildlife drinking water from storage ponds including the Jabiru;
- potential noise and vibration impacts to surrounding properties;
- the access road to the site must be upgraded to minimise generation of dust;
- objection to the two drill sites on Lot 1 DP 796991 as this is intended to be used for future cropping;
- changes in underground pressure and fractures in the coal seam may result in escape of methane gas in Casino township which may result in danger to human life;
- insufficient barrier for protection of storage ponds from flooding; and
- operational noise impact from generators and cooling fans.

4.3 Submissions Report

On review of the submissions received, the Department directed the Proponent to prepare a Submissions Report. The Proponent's response to submissions did not lead to any changes to the project and therefore a Preferred Project Report was not prepared. However minor changes to the Proponent's Statement of Commitments were undertaken to address concerns raised in submissions. The Submissions Report (including revised Statement of Commitments) was made publicly available on the Department's website and a copy provided for comment to the Department of Environment, Climate Change and Water (DECCW). The Department has considered other agencies' recommendations in formulating recommended conditions of approval for the project. A copy of the Submissions Report is provided as Appendix C to this Report.

4.4 Department's Consideration

The Department's consideration of issues raised in public and agency submissions is summarised in Table 1.

Table 1: Consideration of Issues

Issue Raised	Where Addressed
Resource verification	Section 2.4
Project need	Section 2.4
Air quality	Section 5.1
Noise Emissions	Section 5.2
Soil and Water Quality	Section 5.3
Property Impacts	Section 5.4
Adequacy of Environmental Assessment	The Department reviewed the draft Environmental Assessment and deemed it adequate for public exhibition purposes.
Flooding	A number of submissions raised flooding as an issue of concern. The Department has reviewed the flooding assessment undertaken by the Proponent and considers that the Proponent has demonstrated, through hydraulic modelling, that the project is unlikely to have any significant impact on flood levels on the Richmond Valley Floodplain. No further assessment regarding flooding issues is considered warranted by the Department at this stage of the project. The Department has, however, recommended as a condition of project approval, that the evaporation/storage pond also be constructed above the 1 in 100 year flood level to minimise potential impacts from flooding on water quality and existing agricultural land practices.
Traffic and access	As part of its submission, the RTA indicated that it did not object to a permanent access being constructed onto the Casino-Coraki Road, a regional road under the care and control of Richmond Valley Council, provided that it be designed in accordance with AUSTROADS guidelines and in consideration of sight distance and traffic generation potential.

	The Department has recommended a condition of project approval that requires the Proponent to design and construct the new site access point on the Casino-Coraki Road in accordance with the abovementioned guidelines and the requirements of Council, at no cost to the Council. In addition, the Department has recommended that a road delapidation report be undertaken to assess the current condition of all roads proposed to be used for the construction of the project, including the haulage of equipment, and to detail mechanisms to restore any damage that may result form the construction and ongoing operation of the project. The cost of any restorative work shall be borne by the Proponent. No further assessment regarding traffic issues is considered warranted by the Department at this stage of the project.
Consultation issues	The application and Environmental Assessment were placed on public exhibition from Friday 22 August to Monday 22 September 2008, in accordance with Section 75H of the EP&A Act. Late submissions were accepted up until Friday 3 October 2008. The Proponent held an open day on 2 May 2007 for the community during preparation of the Environmental Assessment and consulted with a number of agencies, including Council. The Department also undertook consultation with a number of agencies throughout the assessment process. The Department considers that all consultation requirements for the project application have been met.
Flora and Fauna	The Department is satisfied that flora and fauna has been addressed as part of the Environmental Assessment and while flora and fauna was raised as an issue of concern from one submission from the local community, the Department does not regard it as a key issue for this project. The Department notes that an area of land within the Environmental Assessment was identified as being "highly constrained" in relation to flora and fauna and therefore it has recommended as a condition of project approval that in identifying the location of drilling wells for the project the Proponent shall avoid this area as marked in Figure 6.9 of the Environmental Assessment. The Department does not consider that there are any other flora and faun issues regarding the project that require specific consideration.
Cumulative impacts Construction impacts Visual impacts Indigenous heritage Hazards/risk issues	The Department is satisfied that these matters have been adequately addressed in the Proponent's Submissions Report and/or revised Statement of Commitments. The Department has, however, recommended a number of conditions of approval in relation to visual amenity, indigenous heritage and hazards to minimise the environmental impacts of the project. The Department does not consider that further assessment of these issues is warranted at this stage of the project.

5. ASSESSMENT OF ENVIRONMENTAL IMPACTS

Key issues raised in the submissions in response to the public exhibition of the project and/or identified during the Department's assessment included:

- air quality impacts;
- noise impacts;
- water quantity and water quality impacts; and
- property impacts.

All other issues raised in submissions are considered to be minor or have been addressed as part of the Proponent's Preferred Project Report.

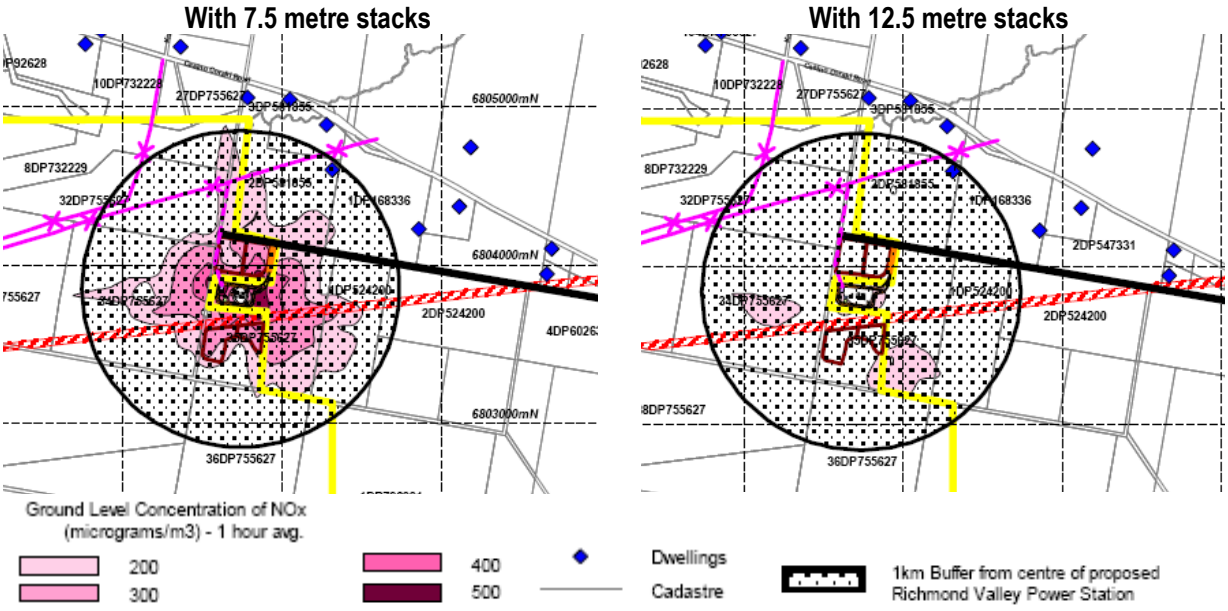
5.1 Air Quality

Issue

The Environmental Assessment states that the primary source of air emissions from the Casino gas project include dust from establishment and construction works, fugitive emissions from the operation of equipment such as water pumps and fugitive emissions from drilling operations and gas production. The Environmental Assessment indicates that there would be no venting or flaring of gas under normal operating conditions. For the Richmond Valley Power Station, air emissions include dust from construction works and nitrous oxide (NO_x), and to a lesser degree sulphur dioxide (SO_2), emissions from the operation of the power station. The Proponent has indicated that the sulphur content of the gas proposed to be used in the power station is less than 0.2 ppm, emissions of SO_2would not be significant and were not modelled as part of the assessment.

Dispersion modelling undertaken for the project indicated that the emission concentration of NO_x was predicted as 190 mg/m^3 from each of the ten stacks, well below the required 450 mg/m^3 limit for stationary reciprocating internal combustion engines required under the *Protection of the Environment Operations (Clean Air) Amendment (Industrial and Commercial Activities and Plant) Regulation 2005*. Following the generation of ground level emission contours, the results of modelling indicated that for a stack height of 7.5 metres, the ground level concentration of NO_x reach distances well outside the boundary of the power station and therefore potentially impact on dwellings located in the surrounding area. Increasing the stack height to 12.5 metres indicated that ground level concentrations for NO_x would be minimised such that the limits at all residential locations in the locality would be well below the guideline limit of 246 µg/m^3, as illustrated in Figure 7. The Environmental Assessment has stated that the Proponent will ensure that ground level concentration of NO_x from the project will conform to the regulatory limits. .

Figure 7: Ground Level NOx Concentrations



Source: Figures 6.2 and 6.3 of Proponent's Environmental Assessment (Metgasco, 2008)

The Environmental Assessment states that the only other air emission that may result from the project would be potential dust generation during drilling activities, the construction of the power station and the construction of the gas and water gathering system. The Proponent has outlined that it will implement dust suppression management measures during construction (i.e. through the use of water trucks) to minimise potential impacts and that it will establish a vegetative cover on all exposed ground areas post construction.

Submissions

Few submissions raised air quality as an issue of concern. The DECCW noted that the Proponent committed to meeting a NO_x stack emission limit of 450 mg/m^3 and ground level concentrations of 246 µg/m^3, however, the Proponent's Statement of Commitments only included the latter limit and therefore DECCW requested these be revised to include both limits. The Proponent has accepted that the additional limit should be included and therefore has updated its Statement of Commitments accordingly.

Two submissions received from the community raised the generation of dust from traffic utilising the access road as an issue of concern. The Proponent, in its Submissions Report, indicated that the access road will be constructed to Richmond Valley Council specifications to a standard suitable to accept the required construction traffic. In addition, the Proponent indicated that it would ensure that any dust generated does not adversely impact on landholders or surrounding residents.

One submission also raised the issue that the project could result in changes in underground pressures and fractures in the coal seam and lead to escapes of methane gas and potentially endanger human life or migrate through uncontrolled pathways to the surface soil to result in the death of vegetation. The author of the submission has quoted a paper by C.M Atkinson in 2005 which analysed the environmental impacts of three gas extraction areas in NSW and gives the example where drill wells in Stratford were shut down as a result of boreholes up to 300 metres away which began to blow off methane gas.

Consideration

The Department has reviewed the Environmental Assessment, submissions received from the exhibition and the Proponent's response to the submissions and considers that air quality is a key issue for the construction and operation of a gas-fired power station.

The Department has therefore recommended a number of conditions of project approval related to minimising air quality impacts from the project. During the project's construction, the recommended conditions require that the project be constructed in a manner that minimises the generation of dust and should dust emissions occur, the Proponent will be required to identify and implement practicable dust mitigation measures such that visual dust emissions cease.

In relation to the operation of the project, the Department has recommended specific conditions of project approval regarding the monitoring of exhaust emissions from each stack to ensure that they comply with the specific discharge air quality limit of 450 mg/m^3 for nitrogen dioxide (NO_2) or nitric oxide (NO) or both, irrespective of whether the fuel type utilised within the gas-fired power station is coal seam methane or natural gas.

In relation to the concern raised regarding potential fractures within the coal seam and the escape of methane, the Proponent has provided a response to this issue within its Submissions Report which indicates that in locations remote from the well site, the natural hydrostatic pressure will remain unchanged and therefore methane gas would remain trapped within the coal seam. The Department has accepted that the project is unlikely to result in any fractures of the coal seam in areas remote from the wells and therefore the potential for the escape of methane gas to the township of Casino or other locations in the locality resulting in the endangering of human life is not anticipated.

5.2 Noise

Issue

The Environmental Assessment contained a noise and vibration assessment based on the identification of the nearest residences and the sound power level that would be generated by various noise sources such as construction vehicles and drilling rigs. The assessment determined that the nearest residential receiver is located approximately one kilometre from the proposed Richmond Valley Power Station.

The Environmental Assessment determined that the primary source of emissions from the Casino Gas Project would be a result of transport movements associated with the establishment of well sites, drilling noise from the drilling of wells and the operation of dewatering pumps that are used in gas extraction. Of these noise sources, the operation of the wells and the dewatering pumps were identified as being potential generators of noise for local residential receivers. The transport movement of material to sites and the establishment of well sites was not considered in the Environmental Assessment to result in potential adverse noise impacts to residential receivers given the intermittent nature of the works.

Potential noise sources associated with the Richmond Valley Power Station were identified as transport movements from delivery of materials and equipment to the site during construction, earth moving equipment used for the construction of the evaporation/storage ponds and the containment bund proposed to surround the power station and from the operation of generator sets associated with the completed power station.

During construction, the Proponent indicated that the delivery of plant and equipment is expected to result in 23 heavy vehicle movements. The Environmental Assessment assumed a worst case scenario that 5,000 m^3 of material would need to be imported to the site for the construction of the containment bund and ramp for the Richmond Valley Power Station, resulting in approximately 300 vehicles movements over a 30 day period (i.e. 10 trucks per day). The bulk of the material for the construction of the containment bund would be sourced from the excavation of the evaporation/storage pond with the Proponent estimating that this would approximate 38,000 m^3 and equate to approximately 2,530 (15m^3) truck movements. The Environmental Assessment indicated that the work is expected to be completed over a 30 day period resulting in approximately 90 on-site trips per day generating a sound power level of approximately 100dB.

For the operation of the power station, the Environmental Assessment took into consideration the generation of noise from the generator sets and the mitigation of noise from the four metre high containment bund in which they would be located. Noise monitoring undertaken at a similar facility in Queensland indicated that the controlling noise source would be the cooling fans.

The Proponent undertook background noise monitoring at the nearest residential receivers over a period of two days which indicated that the area was very quiet with background noise levels less than 30 dBA. From this it determined that noise emanating from any stationary industrial operational sources should not exceed 35 dBA to meet the intrusiveness criteria and 40 dBA to meet the amenity criteria. The intrusiveness criteria was nominated as the controlling criteria and therefore during operations of the Casino Gas Project and/or the Richmond Valley Power Station, the Environmental Assessment indicated that noise emanating from the project should not exceed 35 dBA between 10 pm and 7 am when measured at the nearest residential receiver.

For short term construction activities, the Environmental Assessment based the construction noise assessment on the methodology outlined in Chapter 171 of the Environmental Noise Control Manual which is related to the length of the construction period. The Environmental Assessment identified that short term construction works (less than four weeks) should not exceed noise levels of 50 dBA and 40 dBA for construction periods of between four and 26 weeks.

The Environmental Assessment indicated that the actual rigs to be used for drilling the production wells were yet to be determined, although noise data from a similar drilling program in the Sydney region indicated that the noise from the drilling of gas wells can be directional so there is scope for minimising noise impacts to surrounding residents through adjustment to the orientation of the rig. Noise modelling results on two pump types indicated that the drilling rig would need to be located at least 300 metres from the nearest residential receiver to comply with an operational noise limit of 35 dBA without implementing further mitigation measures. The Environmental Assessment committed to locating the drilling rigs outside the buffer distances and/or implementing additional noise mitigation at the source.

Noise modelling undertaken for the operation of the Richmond Valley Power Station showed that, without temperature inversions and in the absence of light winds, noise from the power station would be acceptable at the nearest residential receiver. When temperature inversions were considered, however, the noise modelling indicated that there may be the potential for the operational noise criteria of 35 dBA to be exceeded at the nearest residences.

The modelling indicated the following:

- the air discharge from the power station should be directed away from the nearest residences;

- the use of eight quiet mode cooling fans instead of four standard cooling fans could be used to reduce the overall noise impact by approximately 11 dBA;
- locating the cooling fans at ground level decreased noise impacts by a further 2-4 dBA, one kilometre from the site; and
- the use of a further two metre noise barrier on top of the containment bund has the potential to reduce noise by 2-3 dBA, one kilometre from the site.

The Proponent has committed to take the above results into account during the detail design stage of the project. The Proponent has committed to ensuring that the operation of the Casino Gas Project and the Richmond Valley Power Station would not adversely impact on local residences by meeting the operational noise level of 35 dBA at the nearest residential receiver at all times.

Submissions

Noise was raised as an issue of concern by the majority of submissions received. A small number of submissions also raised the possibility of vibration as being an issue. The community submissions that raised noise as an issue of concern did not raise any specific concerns or provided any detail regarding the particular noise concerns that they had related to the project. DECCW and Richmond Valley Council outlined their noise concerns in detail in their submissions as summarised below.

The DECCW raised noise as an issue of concern, and requested that the Statement of Commitments be revised or if this is not the case that DECCW's recommendations would be translated to conditions of approval for the project. With regard to noise, DECCW requested that a Statement of Commitment should state that "noise impacts from all operational activities at the premises will not exceed an $L_{Aeq\ (15\ min)}$ noise level of 35 dBA measured at the nearest residence". An additional commitment was also recommended by DECCW, specifically for construction activities, being that "noise impacts from all construction activities at the premises, including the drilling of gas wells, will not exceed an $L_{Aeq\ (15\ min)}$ noise level of 35 dBA and a L_{max} noise level of 45 dBA measured at the nearest residence. Further DECCW recommended that 24 hour drilling should only occur between Monday and Fridays (excluding public holidays) and only subject to the compliance with the noise level commitment outlined above.

DECCW's concerns stem from the fact that the Environmental Assessment states that a total of 55 drill wells are to be drilled, however, the document does not indicate how many drill rigs would be employed on site at any one time. In addition, DECCW noted that the Environmental Assessment proposed that drilling would occur 24 hours per day, the location of the wells relative to the location of residences were as yet undetermined and that the nature of the drilling activity may generate impulsive noise impacts and therefore considered that residents may experience significant construction noise impacts over a considerable period of time, including possible sleep deprivation. DECCW considered the commitment in the Environmental Assessment to meet a construction noise limit of 50 dBA as inappropriate and recommended that the Proponent should commit to construction noise not exceeding background noise levels by more than 5 dBA. DECCW also indicated that a cumulative noise assessment had not been completed.

Richmond Valley Council indicated that the background noise of 30 dBA used to assess the impact of the project is unlikely to be truly representative of the actual night-time background noise in the locality and that actual background noise levels should have been considered, as the intent of the use of 30 dBA in the Industrial Noise Policy is for industrial areas. The Council also indicated that the Proponent should have taken into account plant operating simultaneously and being representative of the operation of the project. Council outlined that consideration should also have been given to surrounding properties which have dwelling entitlements but are currently vacant with regard to the future potential conflict or amenity issues such as noise which may arise with a future development application for a dwelling.

Consideration

The Department has reviewed the Environmental Assessment, issues raised in submissions regarding noise and the responses to the issues raised by the Proponent in its Submissions Report. The Proponent has stated, in its Submissions Report, a construction noise criteria of 50 dBA should apply for drilling of wells that are each expected to take less than four weeks duration. The Proponent, however, has acknowledged that this did not take into account the proposed 24 hour aspect of drilling activities. The Proponent considers that appropriate noise criteria should be addressed separately for each phase of proposed activities associated with the project and that in general, there will be a construction phase, followed by an operational phase. The Submissions Report has stated that the majority of

construction activities will be completed prior to the operation of the Richmond Valley Power Station but some short term duration construction activities associated with drilling and completion of wells to maintain the required gas production will be carried out over the life of the project.

The Proponent has indicated that construction of the power station and the Casino Gas Project should be undertaken in accordance with the *Interim Construction Noise Guidelines* recently released by the DECCW (July, 2009), which translate to a construction noise goal of background plus 10 dBA for construction works undertaken during standard hours (Mon to Fri 7 am to 6 pm, Sat 8am to 1 pm and no construction work on Sundays or public holidays). Where work is proposed outside of the standard hours, the construction noise goal that applies is the background level plus 5 dBA. Therefore the construction noise goals for the power station and the site would be 40 dBA during standard hours and 35 dBA otherwise.

For the drilling of the wells and the construction of wellhead facilities, the Proponent has argued, in its Submissions Report, that the typical density for the wells would be one per square kilometre resulting in only one group of people being affected by the noise generated at each well site. The Proponent considers that what is important with respect to noise is the duration a person (or residence) is exposed to noise from construction works not the total construction works associated with the project. The Proponent has estimated that the number of wells drilled as part of the initial development will be less than 20 with the remainder drilled over the life of the project at a rate of approximately two per year. The approximately 20 wells that are proposed to be drilled initially are spread over the lease area and the Proponent has indicated that each should be considered as its own construction site as there would be only one group of people affected by potential noise from construction works each time.

With respect to the comments raised by Richmond Valley Council regarding the background noise level, the Department considers that the Proponent correctly adopted a background noise level of 30 dBA in accordance with the *NSW Industrial Noise Policy* to assess the noise impacts of the project. The Department also confirms that the assessment of the project correctly references the requirements and noise limits of the *NSW Industrial Noise Policy* as this is the relevant policy to be used in NSW to assess the impact of industrial noise on the environment.

The Department has attempted to find a pragmatic way forward to deal with the issue of overlapping construction and operational noise from the project as raised in DECCW's submission. The Department considers that operational noise from the project should be assessed in accordance with the *Industrial Noise Policy* and management of construction noise issues should be through an environmental management plan or out-of-hours works request process. The Department considers that this approach would provide a reasonable means of regulating noise issues, noting the challenges of predicting the overlap between construction and operational noise impacts, and the difference between on-going operational noise and the transience of construction noise for this project. The recommended conditions of project approval state that the maximum allowable noise contributions from the project during all times should be $L_{Aeq(15\ minute)}$ of 35 dBA with a maximum $L_{A1(1\ minute)}$ during the night of 45 dBA. For construction noise, the Department has recommended that construction activities, with the exception of drilling) must only be undertaken within standard hours.

With respect to drilling, the Department has recommended that this activity can be undertaken at any time, subject to compliance with an approved Construction Noise and Vibration Plan. The Construction Noise and Vibration Plan is required to detail how construction noise and vibration, particularly for works proposed to be undertaken outside standard hours (such as drilling) will be managed to minimise adverse impacts to surrounding residents and be submitted for the approval of the Director-General. The Plan is required to outline what specific measures the Proponent will implement to manage out-of-hours construction activities considering noise goals for out-of-hours works and cumulative noise impacts with other construction activities and the operation of project components.

5.3 Water Quality and Water Quantity

Issue

Four aquifers were identified in the study area, as being relevant to the project, as follows:

- Quaternary alluvium (0-20 m);
- Grafton Formation (20-100 m);
- Kangaroo Creek Sandstone (100-450 m); and
- Walloon Coal Measures (450-680 m).

The Environmental Assessment stated that groundwater within the study area for agricultural activities mainly concentrated on extraction from the shallow aquifer and the Grafton Formation (i.e. between 1 and 100 m). The quality

of groundwater within the study area is variable and is generally used for stock watering. The Assessment stated that the existing groundwater quality data did not provide a basis to which to differentiate groundwater quality between the first three aquifers, however, the Walloon Coal Measures, from which water is proposed to be extracted as part of the project, was considered to be of slightly poorer quality than overlying formations tending to have higher salinity levels (i.e. electrical conductivity levels of between 3,000 and 6,000 µS/cm). The Proponent stated that the likely water extracted as part of the Casino Gas Project would, at best be stockwater quality, and that all water extracted would be piped to a series of evaporation/storage ponds. The Environmental Assessment states that the ponds would be a cell design and commissioned in stages depending on the actual volume of water generated during production. The Proponent has stated that the volume of water entering the ponds would be monitored on a regular basis (daily for the first month, then weekly for the following three months and then monthly monitoring) to evaluate the quantity of water generated and the rate at which the pond cells should be brought on line. The Environmental Assessment indicates that initially three wells would be constructed followed by a further six wells which would provide sufficient time and data to evaluate the capacity of the evaporation/storage pond(s). The Environmental Assessment has indicated that the pond would be designed for a 1 in 25 year storm with a 300 mm freeboard.

The Environmental Assessment stated that due to the expected groundwater quality and water volumes, it is unlikely that the extracted water will be able to be utilised for beneficial purposes. The Proponent also committed to undertake ongoing monitoring of the extracted water and volumes to monitor any potential changes to groundwater dependant ecosystems.

The power station would be located in a floodplain so the plant and equipment is proposed to be contained within a flood proof bund. The bund wall for the project has been designed to protect the power station from the 1 in 500 year flood event. The Proponent conducted modelling of the proposed bund and evaporation/storage pond and its effect on the level of flooding in the study area and assumed that the bunded area and the evaporation/storage pond would comprise an area of 12 hectares. The results of the modelling indicated that the project could increase the 1 in 100 year flood level by 1-3 centimetres and the 1 in 500 year flood level by 15 centimetres as outlined in Table 2.

Table 2: Changes to Flood Levels due to Bund Construction

Average Recurrence Interval (ARI)	Current Defined Flood Level (m AHD)	Estimated Flood Level post Bund Construction (m AHD)	Change in Flood Level (m)
less than 50	-	-	<0.01 to 0.03
50	19.90	19.93	0.03
100	20.40	20.44	0.04
500	22.10	22.20	0.10
>500	-	-	0.10 to 0.15

Submissions

Water quantity and quality was raised as an issue of concern from a number of submissions, including those received from NSW Industry and Investment, Richmond Valley Council and from the local community. The Department of Environment, Climate Change and Water outlined recommended conditions of approval related to the management of wastewater from the project. These recommendations included that all wastewater from the project, including well water be collected and stored in the evaporation/storage ponds, that the project will have zero discharge of wastewater from the evaporation/storage ponds and that the quality of water extracted from the ponds be regularly monitored to evaluate and optimise reuse opportunities.

NSW Industry and Investment requested that the evaporation/storage ponds be excised from any proposed Petroleum Production Lease Application to ensure that the planning approval could effectively manage water interactions between the proposed power station and the evaporation ponds including the management of dehumidification water and runoff. This Department considered that the construction of the evaporation/storage ponds in stages to be a highly speculative approach to water management and that further water balance and modelling be undertaken to ensure that the dams provided are of sufficient capacity to manage expected production water volumes. Flooding implications regarding the evaporation/storage ponds was also required to be addressed.

Richmond Valley Council requested clarification relating to the proposed impact of flooding in terms of the extent of flooding from the proposed operation of the bund wall around the power station. No other comments regarding water quantity or quality were raised.

Five submissions received by the local community raised the following concerns regarding either water quantity or water quality impacts from the project:

- The evaporation/storage ponds are directly in line with a natural watercourse and may cause water to back up onto the submitter's crops.
- Contamination of the surrounding area and groundwater from toxic holding ponds.
- How will wildlife be prevented from drinking potentially toxic water from the holding ponds?
- Potential adverse impact to water quality will have significant impact to the ability to crop the land.
- How will the storage ponds be sealed to prevent leakage into sub terrain groundwater systems?
- What measures will prevent the overflow of water from the storage ponds in times of heavy rainfall?
- Can the Proponent be certain that water extracted from shallow and deep wells will not lower groundwater levels in the area as large scale water withdrawals have been found to cause wells used for livestock to become unproductive in Queensland.

Consideration

The Department has reviewed the responses provided by the Proponent in its Submissions Report as well as the information provided in the Environmental Assessment regarding water quantity and water quality and the potential impacts from the project.

The Proponent considers that the water stored in the evaporation/storage ponds will be as a result of the drilling wells on the Petroleum Production Lease and therefore that the evaporation/storage ponds should be included as part of the Lease. Other issues raised by NSW Industry and Investment were addressed in the Proponent's Submissions Report.

The Proponent has reiterated in its Submissions Report that the pond design proposed in the Environmental Assessment meets the zero water discharge design philosophy. The Proponent has also stated that upon any request from a landholder, the water from the evaporation /storage ponds would be comprehensively tested against the relevant ANZECC Water Quality Guidelines for the proposed use prior to any decision being made on alternative uses. In relation to the evaporation/storage pond overflowing, the Department considers that the Proponent has based its design on conservative assumptions in its modelling. The Proponent has indicated that the peak depth of water (438 mm below the top of the pond wall) in the pond would occur during May if the area had received 75% of the peak rainfall for the year, experienced the heaviest rainfall for the month based on the last 20 years of rainfall data and based on the peak production rate. The Proponent has noted that the total depth of the pond will start to decline after the initial two year period as the inflow of water from the operations will decrease over time. The Submissions Report states that the evaporation/storage pond has been designed to take into consideration the highest recorded rainfall for any given month since 1858 without the pond overflowing.

The Department accepts that a conservative approach has been undertaken for the pond design, however, has recommended that the Proponent design, construct, operate and maintain the project to ensure that there will be zero discharge of water from the ponds unless it can demonstrate to the satisfaction of the Director-General that such discharges would be beneficial to pasture/crops and will not leave any adverse soil residues or the discharge is subject to an Irrigation Management Plan that has been prepared in accordance with *Environmental Guidelines: Use of Effluent by Irrigation (DEC, 2004) and* approved by the Director-General. In addition, the Department has recommended a condition of project approval relating to the construction and operation of the evaporation/storage pond such that the pond wall is above the 1 in 100 year flood level and that the pond be lined with an impervious membrane to prevent any wastewater leaching back into the groundwater system. The Department considers that these conditions will ensure that all wastewater produced by the project is stored within the evaporation/storage pond, that the storage pond is not at risk of being flooded (with the exception of the occurrence of an extreme flood event) and that the underlying groundwater is protected from infiltration through the bed of the pond. The Department considers that these recommended conditions of project approval would address the majority of the issues raised by the community.

In relation to the extraction of water during production lowering water levels and impacting on water used for the watering of livestock, the Department considers that this issue has previously been addressed within the Environmental Assessment and the Proponent has provided further information regarding this issue in the Submissions Report. The Department considers that the measures proposed to be implemented by the Proponent to prevent cross contamination of water between the aquifers as part of drilling activities, would ensure that groundwater utilised from bores for farming activities would not be adversely affected by the project. The Proponent will undertake the drilling of well sites in

accordance with the requirements of NSW Industry and Investment which would include casing-off the well for its entire length thereby isolating the shallow aquifers from the geological section where the gas and water will be extracted.

The Department has recommended as a condition of project approval that the Proponent prepare and implement a Groundwater Monitoring Program to monitor the impact of the project on groundwater levels throughout the local catchment. The Groundwater Monitoring Program is required to be prepared in consultation with the NSW Office of Water and NSW Industry and Investment and outline how the Proponent intends on monitoring groundwater levels, flows and qualities, how the results will provide input into the construction and operation of the project and contingency measures in the event that monitoring indicates the project is having or is likely to have an adverse or unexpected impact on local groundwater conditions. In addition to this condition, the Department has recommended a condition of approval which requires the Proponent to prepare and implement a Water Quality Monitoring Program to monitor the quality of the water extracted and stored as part of the project. The Department has recommended that the Groundwater Monitoring Program be submitted to the Director-General for approval prior to the commencement of construction and that the Water Quality Monitoring Program be submitted for approval prior to the commencement of project operations.

The Department notes that the Proponent is committed to ensuring that the project does not adversely impact on the ability of landholders to continue agricultural activities. The Proponent has also committed to designing the project to maintain current overflow drainage patterns or include additional drainage where this is not possible to avoid any additional inundation of neighbouring land as a result of construction and operation of the project.

5.4 Property Impacts

Issue

Land tenure for the project is predominantly freehold land with the exception of three lots owned by the Crown. A native title claim also exists over the project area known as the Bandjalang People #2 (Native Title Claim 98/19). The Environmental Assessment has indicated that the Proponent will seek to obtain access to the land required for the petroleum production wells and associated infrastructure through agreements with individual landowners in accordance with the requirements of the *Petroleum (Onshore) Act 1991*. The Environmental Assessment stated that the agreements would cover a number of issues including selection of well locations, works required to be undertaken on each property, restoration plans and compensation arrangements.

The Proponent has indicated that the land would be managed to ensure that no long term land contamination occurs so that the land can be rehabilitated to its existing agricultural state at the end of the life of the project. The Proponent has also indicated that the land will be returned to its pre-development state after the wells are no longer in production and no fragmentation of rural holdings would occur. The Proponent has outlined management measures in the Environmental Assessment to protect the land including the containment of the Richmond Valley Power Station within a bunded enclosure, bunding of potentially contaminating items within the power station site and monitoring of water quality within the evaporation/storage ponds. The Environmental Assessment also states that the location of petroleum infrastructure will avoid existing infrastructure and associated easements.

Submissions

The majority of submissions received raised property impacts as an issue of concern. NSW Industry and Investment (formerly the Department of Primary Industries) considered that the Environmental Assessment adequately addressed agricultural issues and considered that the project appeared to be compatible with local agricultural production. NSW Industry and Investment, however, suggested that locating the wells near fence lines and tree lines will assist to reduce the impact of the wells on future routine farming. The Department also made a number of other comments, including:

- consolidating the location of the power station and evaporation basins would assist in reducing the footprint of the project;
- consultation with landholders in undertaking property access, capping and rehabilitation should address individual property owner concerns and issues;
- pipelines should be buried at a recommended minimum depth of 750 mm and clearly marked in a manner that is satisfactory to landholders to not pose a risk to persons or farm management operations;
- grasses used in rehabilitation should comprise locally occurring species and species preferred by landholders. The pipeline route and associated work sites should also be checked for Giant Parramatta Grass and if found managed in accordance with references on www.dpi.nsw.gov.au;
- drilling mud should be contained rather than disposed to pasture unless found to be beneficial. Any water that is obtained from the dewatering process that is deemed suitable for stock for agricultural use should be

comprehensibly tested for suitability and only used for these purposes if compliant with the relevant water quality criteria.

A number of submissions raised dwelling entitlements as an issue of concern. Richmond Valley Council noted in its submission, that a number of landholders have expressed concern to Council regarding potential implications of any future applications that they may submit for a dwelling due to the proximity of the proposed power station and gas project. Other landholders raised the concern of potential impacts to property values and whether the project would result in the impact to the current practice of aerial crop spraying on surrounding agricultural lands.

Consideration

The Department has reviewed the Environmental Assessment, issues raised in submissions and the Proponent's response and considers that the project can be constructed and operated with minimal impact to surrounding landholders. The Department notes that the Proponent has committed to further consultation with landholders regarding aspects associated with the project including the use of their land, rehabilitation and compensation arrangements.

The Proponent responded to the issues raised by NSW Industry and Investment and noted the majority of the recommendations made. In response to the recommendation that pipelines be buried at a minimum depth of 750 mm, the Proponent indicated that it would select the appropriate depth for the pipelines based on surface activities and the level of interference expected. The Proponent stated in its Submissions Report that all lines will be installed in accordance with the applicable Australian Standards including AS 3723 *Installation and Maintenance of Plastic Pipe Systems for Gas* which states that where there is no or little interference, the expected safe burial of pipelines is considered to be 300 mm. The Proponent has also stated that marker tape would be installed over the gas lines and markers and posts may also be used. The Department has accepted that the Proponent will undertake necessary measures to ensure that any pipelines constructed for the project are buried to the required depth to ensure minimal disruption with surface activities and will include appropriate markers to alert landholders to their presence.

The Department notes that the main undeveloped (non-associated) properties surrounding the project site comprise agricultural properties where activities such as cropping, cattle grazing and dairying are undertaken. The Department is satisfied that the visual impacts of the project would not pose a significant impediment to continued agricultural use on these properties and the presence of drilling wells would not occupy a large area of land and therefore could be successfully integrated with rural land use activities. The Department does not consider that the impacts of the project would constrain the carrying out of agricultural land use at neighbouring properties such as to affect its agricultural land value and warrant compensation on these grounds.

In relation to existing dwelling entitlements at surrounding undeveloped properties, the Department is satisfied that the presence of the power station and associated gas project would not necessarily preclude future development, however, may necessitate additional design consideration in locating future dwellings to minimise impacts of the project (i.e. visual amenity and noise). Noting that many of the properties which surround the project comprise large scale agricultural blocks, the Department considers that the size of the properties (in comparison to small lifestyle allotments) would provide flexibility for locating a future dwelling in areas of the property where the resultant impact from the project can be minimised or designing the dwelling to take into account the presence of the power station (i.e. facing the living areas of the dwelling away from the power station, landscaping to screen views and utilising materials in the construction of the dwelling to ameliorate potential noise impacts). Further, the Department notes that whilst dwelling entitlements exist on currently undeveloped land there is no certainty that these entitlements would be acted on in the near future given existing restrictions at many properties including limited connection to utility services (sewerage, water and electricity), road access and the fact that some properties are affected by flooding. In consideration of the above matters, the Department is satisfied that the project would not pose an unacceptable impediment to the future development of dwellings in surrounding properties such as to warrant compensation.

In relation to the use of aircraft for crop spraying activities, the Department notes that the Proponent has reviewed landholder concerns and does not consider that the operation of the power station would limit the ability of landholders to undertake aerial crop spraying. The Proponent has indicated that upon notification of proposed crop spraying from a neighbouring property, that it would provide information to the landholder of the aviation assessment undertaken and the likely size of the plume so that this information can be considered by the pilot prior to the planning of the flight. The Proponent has indicated that the vertical velocity of the plume is unlikely to exceed 4.3 m/s under all meteorological conditions at a distance of six metres from the stacks and therefore the Department considers that the power station

would not limit aerial spraying operations. The Department has recommended that the stacks be no less than 12.5 metres above ground level and therefore readily visible to aircraft, taking into account the fact that the power station would be situated on a floodplain and not masked by surrounding buildings. In light of this, the Department does not consider that the power station or associated infrastructure would pose a safety hazard for aerial spraying operations.

6. CONCLUSIONS AND RECOMMENDATIONS

The Department has assessed the Environmental Assessment, Submissions Report, revised Statement of Commitments and submissions received during the exhibition period and is satisfied that the impacts of the project can be mitigated and/or managed to ensure an acceptable level of environmental performance. The Department recommends that the Minister approve the project, subject to conditions.

The construction and operation of the Casino Gas Project and the Richmond Valley Power Station would improve the reliability of electricity supply in the Casino area and minimise electricity transmission losses associated with transporting power over long distances to the Northern Rivers Region. The Proponent has demonstrated that the majority of environmental impacts associated with the project can be mitigated and managed. Where necessary, the Department has included additional measures as part of its recommended conditions of approval to further mitigate potential impacts to the surrounding environment and to protect local community amenity.

The Department has recommended specific conditions of approval be imposed on the Proponent to address the key issues raised in the assessment process, as follows:

- Air Quality – the Proponent must design, construct, operate and maintain the project to ensure that for each generator exhaust stack discharge point, the concentration of nitrogen dioxide (NO_2) or nitric oxide (NO) or both (as NO_2) does not exceed 450 mg/m^3.
- Noise – the Proponent is to design, operate and maintain the project to ensure that the noise contributions from the project to the background acoustic environment do not exceed $L_{Aeq(15\ minute)}$ 35 dBA during day, evening and night time periods and an $L_{A1(1\ minute)}$ night-time noise level of 45 dBA.
- Water Quantity and Quality – the Proponent shall design, construct and operate the evaporation/storage pond to ensure the pond wall is above the 1 in 100 year flood event and that the pond is lined with an impervious membrane to prevent wastewater from leaking into the underlying groundwater. The Proponent must also ensure that there will be zero discharge of water stored in the evaporation/storage pond unless it can demonstrate to the satisfaction of the Director-General that the discharge will be beneficial to pasture/crops and will not leave any adverse soil residues or the discharge is undertaken in accordance with an approved Irrigation Management Plan. The Department has also recommended that the Proponent prepare a Groundwater Monitoring Program to monitor the impact of the project on groundwater levels throughout the local catchment and a Water Quality Monitoring Program to monitor the quality of the water extracted and stored by the project.
- Flora and Fauna – in identifying the location for constructing wells associated with the project, the Proponent shall avoid all areas marked "highly constrained areas" in Figure 6-9 of the Environmental Assessment and avoid areas marked "areas requiring specific controls" to the extent possible.

On balance, the Department considers that the project can be undertaken in an ecologically sustainable manner and would provide benefits to the regional community through the improvement and reliability of the electricity supply for the local region.

APPENDIX A – RECOMMENDED CONDITIONS OF APPROVAL

APPENDIX B – REVISED STATEMENT OF COMMITMENTS

APPENDIX C – SUBMISSIONS REPORT

APPENDIX D – ENVIRONMENTAL ASSESSMENT