NSW GOVERNMENT
Department of Planning

MAJOR PROJECT ASSESSMENT
Queensland Hunter Gas Pipeline

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

February 2009

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EXECUTIVE SUMMARY

Hunter Gas Pipeline Pty Ltd (the Proponent) proposes to construct an 833 kilometre natural gas pipeline from the Wallumbilla area in Queensland to the Newcastle area in New South Wales, including a secondary pipeline that will branch off the main pipeline in the Maitland area of New South Wales. The proposal also involves the construction of associated infrastructure, including pigging stations, valve stations and connection points to other pipelines and facilities. In New South Wales the pipeline will be approximately 611 kilometres long and traverse the Moree Plains, Narrabri, Gunnedah, Liverpool Plains, Upper Hunter, Muswellbrook, Singleton, Maitland, Port Stephens and Newcastle Local Government Areas.

The proposal was gazetted as critical infrastructure in Schedule 5 of *SEPP (Major Projects) 2005* on Friday 13 June 2008. The then Minister authorised the submission of a concept plan for the project, as the Proponent was considering a number of possible routes for the gas pipeline and could not provide a detailed route assessment, rather provide a screening level assessment to identify the environment constraints, as flexibility for the consideration of various options for the pipeline corridor was required.

The Environmental Assessment was on public exhibition from Friday 19 September 2008 until Monday 20 October 2008. The Department received a total number of sixty submissions during this period. On 20 November 2008, the Proponent submitted its Preferred Project Report and Submissions Report for the proposal. Along with responses to the issues raised during the public exhibition period of the Environmental Assessment, results of further investigatory work for biodiversity and cultural heritage were also included. Due to the additional studies and the Proponent's proposition of an adaptive management construction approach, the Proponent requests that a determination under section 75P(1)(c) of the Act be made, i.e. determine that no further environmental assessment is required for the proposal, in which case the Minister may approve the proposal under Part 3A without any further application required.

The Department considers that the Proponent has provided sufficient information such that an adequate level of assessment of the project could be undertaken, and consequently recommends that the Minister form the view that no further environmental assessment of the work proposed is necessary. This is supported by the Proponent's Statement of Commitments, which are based on an adaptive management strategy. The Department recommends that the Minister exercise her power under the *Environmental Planning and Assessment Act 1979* to concurrently grant concept approval and project approval for the proposal. To reflect this approach, the Department has drafted an instrument of approval which reflects both concept and project approval. The instrument grants full project approval and details conditions that establish stringent environmental standards, mitigation measures, environmental controls and monitoring requirements for the project.

During the exhibition period of the Environmental Assessment, the Department received a total of sixty submissions. These comprised of nine submissions from State Government agencies, eight submissions from local Government agencies, thirty-six submissions from the public (of which twenty-eight were from directly impacted landholders) and seven submissions from companies and community groups. Submissions from government agencies focused on issues regarding the methods to be used for sensitive waterway crossings, potential pollution of surface and groundwater from construction, the need for consultation with potentially affected mineral and resource extraction licensees, traffic and road management measures, requirement of biodiversity offsets and the provision of offtake valves at specific locations for current and future gas supply. The Department finds that these issues can be managed as part of the Proponent's construction adaptive management strategy.

Submissions from the public mainly comprised of specific landholder concerns of the pipeline traversing property and the construction impacts to surrounding land and operational impacts from the existence of an underground natural gas pipeline. The Proponent has committed to minimise adverse social and economic impacts of access to private property and minimise the impact of pipeline easement on landowners. This would be achieved through the Proponent consulting with private landholders, as part of finalising the route, whose properties will be impacted by the pipeline and continuing negotiations with landowners regarding location of the easement, above ground infrastructure and compensation and terms and conditions of consent in relation to land access prior to construction.

The Department has recommended a number of conditions to address issues. The Department recommends that the Proponent be required to submit, as part of the Construction Environmental Management Plan, route alignment sheets for the project, identifying the final 30 metres Right of Way. The Department also recommends a condition that requires the Proponent to consult with all landowners potentially affected by the final 30-metres ROW during the preparation of these alignment sheets. The Department has also recommended a condition that requires the Proponent to ensure consultation with relevant companies and titleholders of mineral and petroleum resource licences in relation to the potential for conflict between the route of the project and current and future resource exploration and extraction activities.

Additionally, the Department recommends a condition requiring the Proponent to develop and submit for the approval of the Director-General, a Biodiversity Offset Needs Study. This Study would confirm the level and significance of the actual impacts to biodiversity and would determine the biodiversity offset requirements relevant to the quantified loss. The potential impacts to human amenity from the construction of the project would be further assessed in detail by the Proponent by way of a Construction Environmental Management Plan. This Plan would incorporate detailed information for noise, vibration, blasting, air quality and the protection of surface and groundwater quality and be submitted to the Director-General for approval. The potential impacts to human amenity and surface and groundwater are considered within acceptable limits and can be mitigated and managed to ensure no significant adverse impact occurs.

The Department considers that the key issues associated with the proposal relate to ecological impacts, cultural heritage impacts, property and land use impacts and amenity impacts. However the Department is satisfied that ongoing route iteration, together with the implementation of the recommended conditions should ensure impacts are minimised and appropriately managed.

Overall, the proposed Queensland-Hunter Gas Pipeline project could be approved subject to the effective implementation of the Proponent's Statement of Commitments and the Department's recommended Instrument of Approval.

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1. BACKGROUND

1.1 Location

Hunter Gas Pipeline Pty Ltd proposes to construct and operate an 833 kilometre long high pressure gas transmission pipeline to supply gas from Wallumbilla in the Surat Basin of south central Queensland to the Newcastle area in New South Wales, including a secondary pipeline that will branch off the main pipeline in the Maitland area of New South Wales. The entire gas transmission line is referred to as the Queensland Hunter Gas Pipeline (QHGP). The proposal also involves the construction of associated infrastructure, including pigging stations, valve stations, and connection points to other pipelines and facilities. In New South Wales, the proposal will be located within the Moree Plains, Narrabri, Gunnedah, Liverpool Plains, Upper Hunter, Muswellbrook, Singleton, Maitland, Port Stephens and Newcastle Local Government Areas. The pipeline will be approximately 611 km long in New South Wales. Figure 1 shows the locations which the pipeline would traverse and Figure 2 outlines the exiting transmission network in eastern Australia.

The Study Area is a linear corridor and is 200 metres wide. The Study Area begins at the Wallumbilla gas hub and proceeds in a southerly direction towards the NSW-Queensland border. It crosses the border near the town of Boomi before proceeding south east towards Moree in central northern NSW. The Study Area then passes Moree immediately to the east, where it also crosses the Gwydir and Mehi Rivers, as well as the Newell and Gwydir Highways. It proceeds south from Moree to Narrabri, where it traverses between the township of Narrabri to the west and Mount Kaputar to the east. It then proceeds south east towards Murrurundi, intersecting the Oxley and New England Highways, Namoi River and the Main Northern railway line. From Murrurundi, the Study Area aligns east to avoid the Towarri National Park, turning southwards to avoid Camerons Gorge Nature Reserve, passing to the immediate west of Scone and east of Muswellbrook. It then heads south east towards Singleton, passing between the Greater Blue Mountains World Heritage Area to the south west and Barrington Tops National Park to the north east. From Singleton, the Study Area proceeds eastwards, intersecting several power transmission lines, the North Coast railway line and crossing the Hunter River before terminating at Kooragang Island at Newcastle.

Figure 1: Site Location (reproduced from the Proponent's Environmental Assessment)

Figure 2: East Coast Gas Transmission Network and Future QHGP Proposal (reproduced from the Proponent's Environmental Assessment)

Note: Red line = Queensland-Hunter Gas Pipeline

1.2 Surrounding Land Use

The Proposal traverses a wide variety of environments, from south central Queensland's semi-arid lands to coastal hinterland environments near Newcastle on the NSW coast. The proposal will be located within the Darling Riverine Plains, Brigalow Belt South, Nandewar, Sydney Basin and NSW North Coast bioregions. The Study Area is generally located on agricultural lands, with other land uses including infrastructure easements present within the Study Area. In the northern regions of the Study Area, such as Moree and Boomi, cotton production is the primary land use, whereas towards the south, in the Hunter region, agricultural lands within the Study Area are more generally used for grazing. The metropolitan area of Newcastle is at the southern extent of the Study Area. The Study Area avoids all built up residential areas. The Proponent states that the Study Area has been selected to minimise impacts on the natural and built environment and local communities.

1.3 Existing Environment and Potential Modifications to the Environment

Table 1 shows the local government areas which the pipeline traverses and identifies the potential type of impact to these areas from the project.

Table 1: Land Use Impacts

Area	Predominant Land-Use	Impact Classification	Identified Impact
Moree Plains	Agricultural production	1. Significant Impact Existing major infrastructure	1. Significant Impact Study Area makes a number of crossings of the Carnarvon Highway and the Moree Weemelah Railway to the south of Garah and north of Ashley. Study Area crosses the Newell Highway and the Moree Weemelah Railway to the south of Ashley. Study Area crosses the Gwydir Highway to the east of Moree.
		1. General Impact Existing or proposed rural residential lots	1. General Impact Study Area runs to the west of a number of smaller agricultural lots located at the confluence of the Gwydir Highway & the Moree Terry Hie Road.
		2. General Impact General agricultural uses	2. General Impact Study Area runs through general agricultural use land and is close to general activities. Potential impacts include: temporary loss of productive capacity during construction and ongoing loss of productive capacity due to location of permanent aboveground infrastructure and/or maintenance activities.
Narrabri	Agricultural production (over 50% of land) and extractive Industries	1. Significant Impact Existing major infrastructure	1. Significant Impact Study Area crosses the Kamilaroi Highway to the north of Turrawan and to the north of Boggabri.
		2. Significant Impact Extractive Industries	2. Significant Impact The Narrabri coal project site proposed by Whitehaven Coal Pty Ltd is located to the west of the Kamilaroi Highway to the north of Baan Baa. A number of existing and proposed open cut & underground coal mines are located to the east of Baan Baa. They include: Maules Creek; Boggabri; Tarrawonga; and Whitehaven.
		1. General Impact General agricultural uses	1. General Impact Study Area runs through and is close to general agricultural activities. The region is known for 'prime hard' wheat, summer crops, cotton and grazing. Potential impacts include: temporary loss of productive capacity during construction; and ongoing loss of productive capacity due to location of permanent aboveground infrastructure and/or maintenance activities.
Gunnedah	Agricultural production and extractive Industries	1. *Significant Impact* Existing major infrastructure	Study Area crosses the Oxley Highway to the east of Gunnedah. Study Area crosses the Moree railway line to the south of Breeza.
		1. General Impact General agricultural uses	Study Area runs through and is close to general agricultural activities. Potential impacts include temporary loss of productive capacity during construction and ongoing loss of productive capacity due to location of permanent aboveground infrastructure and/or maintenance activities.
Liverpool Plains	Agricultural production	1. Significant Impact Existing or proposed urban settlements	Limited impact on Willow Tree. Potential impacts include dust and noise during construction and easement to limit potential for town expansion to the west of the railway line.

		2. Significant Impact Existing major infrastructure	Study Area crosses the Binnaway railway line to the south of Breeza. The Study Area crosses the Kamilaroi Highway to the north of Quirindi.
		1. General Impact General agricultural uses	Study Area runs through and contiguous to general agricultural activities. The region is known for winter and summer cropping, cotton and grazing.
Upper Hunter	Agricultural production	1. Significant Impact Existing or proposed urban settlements	Potential impacts include dust and noise during construction.
		2. Significant Impact Class one agricultural land	Study Area passes through class one agricultural lands to the north of Aberdeen. Potential impacts include temporary loss of intense productive capacity during construction and ongoing loss of intense productive capacity due to location of permanent aboveground infrastructure and/or maintenance activities.
		3. Significant Impact Existing major infrastructure	Study Area crosses the Main North Railway and New England Highway to the north west of Murrurundi. Study Area also crosses the New England Highway and the south of Scone.
		1. General Impact Existing or proposed rural residential lots	Study Area is contiguous to the Scone west rural residential investigation area outlined in the Upper Hunter draft Settlement Strategy. Potential impacts include sterilisation of land for future rural housing and amenity impacts for future housing during operation of the pipeline.
		2. General Impact General agricultural uses	Study Area runs through and contiguous to general agricultural activities. The region is known for general cropping and grazing. Potential impacts include temporary loss of productive capacity during construction and ongoing loss of productive capacity due to location of permanent aboveground infrastructure and/or maintenance activities.
Muswellbrook	Agricultural production and extractive Industries	1. Significant Impact Class one agricultural land	Potential impacts include temporary loss of intense productive capacity during construction and ongoing loss of intensive productive capacity due to location of permanent aboveground infrastructure and/or maintenance activities.
		2. Significant Impact Extractive industries	A significant number of mines are proposed or in operation in and around Muswellbrook. Six mines are within approximately 10km of the Study Area.
		3. Significant Impact Environmentally sensitive lands	Study Area passes through environmentally sensitive land (zoned 7(d) and 7 (L1-L2) to the north east of Muswellbrook.
		1. General Impact General agricultural uses	Study Area runs through and contiguous to general agricultural activities. Potential impacts include temporary loss of productive capacity during construction and ongoing loss of productive capacity due to location of permanent aboveground infrastructure and/or maintenance.
Singleton	Extractive Industries	1. Significant Impact Extractive industries	A significant number of mines are proposed or in operation. Eight mines are within approximately 10km of the Study Area.
		1. General Impact General agricultural uses	Potential impacts include temporary loss of intense productive capacity during construction and ongoing loss of intensive productive capacity due to location of permanent aboveground infrastructure and/or maintenance activities.
Maitland City	Agricultural production and extractive	1. Significant Impact Existing or proposed urban settlements	Study Area passes contiguous to the Maitland Vale, Mt Harris, Larges and Thornton North areas, which have been identified for possible urban expansion in the Maitland

	Industries		Urban Settlement Strategy.
		2. Significant Impact Existing major infrastructure	Study Area crosses the Main North Coast Railway and Paterson and Tocal Roads north of Maitland near Bolwarra.
		1. General Impact General agricultural uses	Potential impacts include temporary loss of productive capacity during construction and ongoing loss of productive capacity due to location of permanent aboveground infrastructure and/or maintenance activities.
Port Stephens	Agricultural production	1. Significant Impact Existing or proposed urban settlements	Study Area passes through the Tomago Industrial Estate.
		2. Significant Impact Existing major infrastructure	Study Area crosses the Pacific Highway to the north of the Tomago Industrial Estate.
		1. General Impact General agricultural uses	Potential impacts include temporary loss of productive capacity during construction and ongoing loss of productive capacity due to location of permanent aboveground infrastructure and/or maintenance activities.
Newcastle City	Industry	1. Significant Impact Existing urban settlements	Study Area passes through port related land on Kooragang Island.
		2. Significant Impact Existing major infrastructure	Study Area crosses port related rail infrastructure and a transport reservation for port infrastructure.
		3. Significant Impact Environmentally sensitive lands	Study Area passes through environmentally sensitive lands on Kooragang Island and to the north of the Hunter River.

2. PROPOSED DEVELOPMENT

2.1 Project Description

Hunter Gas Pipeline Pty Ltd (the Proponent), proposes to construct and operate an approximately 833 kilometre high pressure natural gas pipeline from the Wallumbilla area in Queensland to the Newcastle area in New South Wales. In NSW, the proposal would traverse the Moree Plains, Narrabri, Gunnedah, Liverpool Plains, Upper Hunter, Muswellbrook, Singleton, Maitland, Port Stephens and Newcastle Local Government Areas.

The pipeline would serve to collect natural gas and coal bed methane from numerous coal bed methane and natural gas projects located within the vicinity of the route. The gas would then be used to supply existing and future industrial, manufacturing, commercial and residential demand in the Hunter Valley, Sydney basin and elsewhere in NSW. The 833 kilometre underground pipeline would cost $700 million, generating 600 jobs in NSW during construction and 25 full-time jobs across NSW and QLD when operational.

Ancillary Facilities

The aboveground facilities for the pipeline will include mainline valves (MLVs), scraper launcher and/or receiver stations, meter stations, communication towers and corrosion protection facilities. The number and location of these items will be determined during the detailed design phase of the project. A description of each of the ancillary items associated with the project is provided below:

Mainline Valves (MLVs)

Principally MLVs enable the isolation of sections of the pipeline to reduce the volume of gas released in the event of damage or programmed maintenance. MLVs generally occupy a fenced and gravelled area of 250m^2 and are strategically spaced, e.g. they would typically be 50km apart from each other. However the spacing distance is dependent on the type of landuse and population density, e.g. in rural residential areas spacing would typically be 30km, and approximately 15km apart near the built-up area of Newcastle. The MLVs would be installed near an access road, as far away from populated areas as practicable. MLVs would also be located away from watercourses and environmentally sensitive areas and may be operated manually on site from a remote control centre via the SCADA System (Supervisory Control And Data Acquisition) which is an industrial computer system. Also some MLVs would be equipped with automatic line break detection, which would allow the valve to automatically close in an unlikely event of pipeline failure.

Scraper Stations

Scraper stations allow the insertion and/or retrieval of devices which are referred to as 'pigs' to clean the internal sections of the pipe or to detect damage or metal loss within the pipe. The scraper stations would contain MLVs as well as isolation valves located on the launcher and receiver to isolate them during normal operation. Up to seven intermediate scraper stations spaced between 100 and 150km apart may be required for the length of the pipeline ROW (with five to six located in NSW). The scraper stations would be installed within the same fenced area as a MLV, therefore being located away from populated and/or environmentally sensitive areas, such as watercourses.

Meter Stations

Meter stations would be constructed at sites where gas enters or leaves the pipeline. Meter stations include equipment to measure the volume of gas transferred and, at offtake points, equipment to adjust temperature and pressure. These stations are generally located away from any significant development and occupy an area of approximately 2,500m^2. Access to power would be required to operate metering, communications and instrumentation equipment.

Corrosion Protection (CP) Facilities

Pipeline coating provides the primary protection from corrosion. However a secondary form of corrosion protection for the pipeline would also be utilised. This being, a low voltage direct current (DC) impressed current or similar CP system would be installed on the pipeline. This secondary system would consist of small power rectifiers and anode beds that would maintain the pipe at a negative potential to prevent corrosion should the coating become damaged. Test points would be located at approximately 3 to 5km intervals along the pipeline

to allow monitoring of the pipeline and CP system. The impressed current system would be generally located, as required, within the MLV fenced yard.

Off-take Points for Current and Future Use

The proposal would connect the emerging coal seam gas reserves in south central Queensland with the Newcastle, and wider Hunter Valley industrial region. Future intakes (tie-ins and connection points) are possible from other coal seam gas resources of successful petroleum exploration adjacent to the pipeline or to deliver gas to customers at points along the pipeline route. Potential connection points (offtakes) may be built into the pipeline at construction, or added to the pipeline system during operation, through a process known as 'hot-tapping'. The addition of offtakes to the pipeline would be dependent on future market opportunities.

A majority of submissions received from Councils reiterated a desire for the provision of gas take-off points in their local district. The Proponent has stated that it is liaising with local Councils to determine sites for off-take valves, however the Department finds it is necessary to impose a condition that requires such gas take-off points. The Department recommends that the Proponent must provide off-take points (valves) from the project at the following locations to service those specific areas where the off-take would be located (refer to condition 2.9 of the Conditions of Approval):

1. Narrabri and Boggabri;
2. Port Stephen LGA and Gunnedah;
3. Murrurundi, Scone and Aberdeen; and
4. Quirindi.

The Department has also recommended as part of this condition, that the Proponent must consult with the relevant local council in identifying locations for off-take points referred above and in relation to any requirements for servicing relevant areas. The outcomes of this consultation must be provided to the Department prior to the commencement of construction of the relevant part of the project (unless otherwise agreed by the Director-General).

Operation of the Project

The general operations encompass routine operation and maintenance programs including ground and aerial patrols, repair of equipment, cleaning of the pipeline (pigging), monitoring of corrosion and remediation and tenure area maintenance including access roads. The Proponent states that all gas flows would be metered with high accuracy metering. During normal operations, occasional venting of small quantities of gas may occur under controlled conditions at valve and scraper stations, in accordance with the Proponent's established operating procedures.

Gas from the pipeline would be utilised as the power source for some valve operators. Power for the scraper stations, MLV sites and CP System is likely to be solar rather than grid power supply. However If mains power is available, the Proponent may consider this type of power as an alternative. Power for the meter stations would be less than 50kW and mains sourced.

Communications for the ongoing operations phase of the proposal would be provided via fixed satellite dishes, microwave, or by data cable at the pipeline facility sites (i.e. MLVs and scraper stations) and operations personnel would have either a mobile satellite telephone or vehicles fitted with satellite telephones, or both.

2.2 Pipeline Route Development

The Proponent started with a 200km wide corridor along a direct line from southeast Queensland to Newcastle. A 200m wide Study Area was adopted to provide sufficient flexibility for alignment of the final 30m wide ROW to avoid localised constraints and impacts whilst allowing for a practical scale for the environmental assessment.

The route selection process (refer to Figure 3) has avoided regional environmental constraints such as Ramsar Wetlands, world heritage properties and national parks. Additionally, the Proponent has followed advice provided by the DECC and avoided travelling stock routes (TSRs) as part of the overall design philosophy to avoid known sensitive areas. The preference during route selection has been for the pipeline to go through 'disturbed' (private agricultural) lands and avoid sensitive publicly owned lands such as TSRs, expect in exceptional cases where there is an explicit need to do so, e.g. to avoid existing infrastructure or to cross a TSR

in order to travel parallel to avoid it. Further refinements were made to the pipeline alignment as a result of biodiversity surveys and fieldwork during the preparation of the Submissions Report, which have confirmed that identified environmental constraints have been avoided.

However because of the nature of pipeline design and construction, route development is an iterative process. Therefore the pipeline alignment within the Study Area will continue to be refined prior to construction through ongoing stakeholder consultation and fieldwork. Any refinements to either the Study Area or the route alignment will aim to continue reducing the environmental impacts of the proposal and would be consistent with the environmental assessment for this project. The Proponent has stated that if the final route is not consistent with the Minister's approval of the project, then it would apply for a modification of the approval in accordance with Section 75W of the EP&A Act.

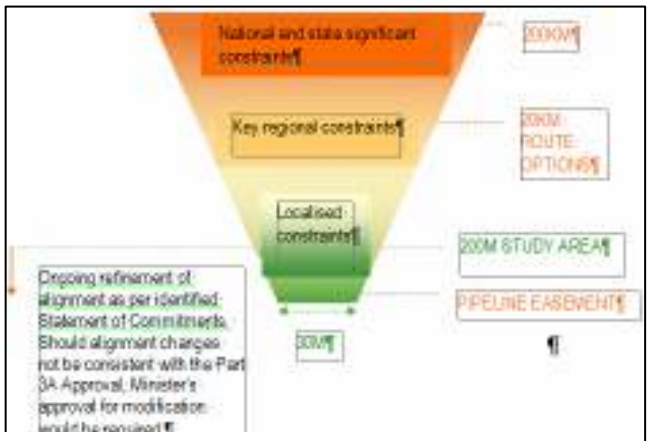

Figure 3: Illustration of route development process

Due to this proposed refinement of the pipeline alignment after the Minister has made a determination on the project, the Department recommends a condition which requires the Proponent to submit, as part of the required CEMP, route alignment sheets for the project which identify the final 30 metres ROW. This condition will allow the Department to confirm that the actual impacts from the proposal are consistent with those impacts identified during the environmental assessment process and to ensure any environmental impacts are mitigated or minimised through appropriate management practices.

As the Proponent has illustrated that all sensitive areas of environmental significance have been avoided, the Department also recommends that the route alignment sheets must demonstrate the avoidance of Endangered Ecological Communities (EEC). However the route may be aligned within an EEC if the Proponent can demonstrate to the Department that there will only be minimal impacts (in consultation with DECC) and provision has been made for appropriate biodiversity offsets.

2.3 Project Need

The project has been declared a critical infrastructure project under the *Environmental Planning and Assessment Act 1979*. The project is of state and national significance due to several key reasons. Firstly the proposal would provide clear benefits to new and expanding industries in the North-West of NSW and Hunter regions through the early provision of competitively priced and increased gas supply. The Proponent states that with access to competitively priced delivered gas and the potential for a national emissions trading scheme to be implemented, it is likely the proposal will positively influence investment in gas-fired technology by electricity generators and manufacturers. This would deliver significant greenhouse benefits both in relation to electricity generation and the use of gas in high energy industrial processes. Generating electricity using cleaner sources such as gas will make material contribution to the NSW Government's commitment to greenhouse gas emission reduction targets. The project will also deliver an alternative secure high pressure gas supply to the Sydney Metropolitan Region to avoid the disruption to businesses and residences from outages in other pipelines. It will also deliver an incentive to increased gas exploration and production in the Gunnedah Basin with the potential for royalties to the NSW Government.

Furthermore the project will complete the missing link in the East Coast Gas network to secure supply of gas in the State and provide potential future opportunities to connect to international sources, namely New Guinea. The proposal will be a third major gas pipeline to provide gas to the State's metropolitan market and therefore complete the missing link in Australia's east coast gas network by connecting the major manufacturing and export hub of the Hunter Valley in NSW directly with the Wallumbilla Gas Hub in Queensland (refer to figure 4 below). The proposal will also connect into the 25 petajoules per annum Sydney to Newcastle pipeline, potentially facilitating the flow of gas to Sydney.

Figure 4: Eastern Australia's Gas Network and the Proposed QHGP (reproduced from the Proponent's Environmental Assessment

3. STATUTORY CONTEXT

3.1 Major Project

The assessment of the proposal initially commenced in January 2006 under Part 5 of the Act. A Planning Focus meeting was held in February 2006 and Director-General Requirements were issued in April 2006. Amendments were made to the *Pipelines Act* in September 2006, which removed the provisions that overrode the EP&A Act 1979. Then amendments to the *Major Project State Environmental Planning Policy* (Major Project SEPP) were made, which listed pipelines as major projects. Therefore the proposal was then subject to Part 3A of the Act. The Proponent lodged a Project Application and the Director-General's Requirements were accredited for the purposes of Part 3A of the Act on 14 November 2006.

On 18 December 2007, the Director-General (as delegate for the Minister for Planning) formed the opinion that the project is a development of a kind described in Schedule 1 of *State Environmental Planning Policy (Major Projects) 2005* and was therefore declared to be a project to which Part 3A of the Act applies. A Draft Environmental Assessment was submitted to the Department on 8 December 2006. The Department, in consultation with DECC and DPI, found the draft Environmental Assessment to be inadequate. The Department raised concerns relating to the route alignment and selection, lack of conceptual design of the pipeline including a framework for detailed design and the need for a systematic approach to the environmental assessment.

In light of the concerns relating to the draft Environmental Assessment, the Proponent refined the project and identified additional areas requiring assessment. Subsequently the Proponent lodged a revised Project Application with the Department and the Director-General's requirements were amended and issued on 3 March 2008.

Pursuant to Section 75C of the Act, the Minister has formed the opinion that the proposal is essential to the State for economic, environmental and social reasons and has declared the proposal to be a 'critical infrastructure project'. The Minister's decision was reflected by an amendment to Schedule 5 of *State Environmental Planning Policy (Major Projects) 2005*, gazetted on Friday 13 June 2008.

3.2 Concept Plan Authorisation

On 11 February 2008, the Minister for Planning authorised the submission of a concept plan for the proposal.

3.3 Permissibility

The proposal would require a licence under the *Pipelines Act 1967*. Clause 53(1) of the *SEPP (Infrastructure) 2007* makes pipeline development that would require a licence under the *Pipelines Act 1967* permissible without consent.

3.4 Environmental Planning Instruments

The proposed project is permissible without development consent as *State Environmental Planning Policy (Infrastructure) 2007* applies to this project by virtue of clause 53(1), i.e. the project is subject to a licence under the *Pipelines Act 1967*.

There are no other State Environmental Planning Policies that apply to the proposal that substantially govern the carrying out of the development.

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

The Director-General's requirements for the preparation of an Environmental Assessment for this proposal were issued on 3 March 2008. The draft Environmental Assessment submitted to the Department on 29 May 2008 was found to be inadequate by the Department on 10 July 2008. The draft Environmental Assessment was inadequate due to the lack of:

- clear description of all components of the proposal and demonstration of potential heritage impacts;
- adequate identification of potentially occurring flora and fauna species;
- clear description of anticipated construction times and associated impacts to any sensitive receivers;
- consideration of surface water impacts to sensitive water bodies; and
- clear identification of potential mineral and agricultural impacts.

The Environmental Assessment with the inclusion of the revised sections and subject to minor editorial corrections was found to be adequate pursuant to section 75H of the Act. The Proponent was notified of its compliance on 4 September 2008.

3.6 Exhibition of the Environmental Assessment

The Environmental Assessment was placed on public exhibition from 19 September 2008 to 20 October 2008 and submissions were invited in accordance with Section 75H of the Act. The exhibition locations were:

- Department of Planning's head office in Sydney, Hunter Regional office in Newcastle and Northern Region office in Tamworth;
- Moree Plains Shire Council (main Council chambers in Moree and the Mungindi Library);
- Narrabri Shire Council (main Council chambers in Narrabri and the Wee Waa and Boggabri libraries);
- Gunnedah Shire Council;
- Liverpool Plains Shire Council (main Council chambers in Quirindi and the Werris Creek library);
- Upper Hunter Shire Council (main Council chambers in Scone and the Murrurundi Branch and Aberdeen Branch Upper Hunter Regional Libraries);
- Muswellbrook Shire Council;
- Singleton Shire Council;
- Maitland City Council;
- Port Stephens Council;
- Newcastle City Council (main Council chambers and the Beresfield and Stockton libraries); and the
- Nature Conservation Council.

The Environmental Assessment was also provided for download on the Department's internet site. Notification of the exhibition period was made through two separate advertisements in the *Newcastle Herald* (18 September 2008 and 9 October 2008), *Scone Advocate* (18 September 2008 and 9 October 2008), *Maitland Mercury* (18 September 2008 and 9 October 2008), *Port Stephens Examiner* (18 September 2008 and 9 October 2008), *Singleton Argus* (19 September 2008 and 7 October 2008), *Muswellbrook Chronicle* (19 September 2008 and 10 October 2008), *Tamworth City Times* (17 September 2008 and 8 October 2008), *Northern Daily Leader* (18 September 2008 and 9 October 2008), *Moree Champion* (18 September 2008 and 9 October 2008) and the *Sydney Morning Herald* (24 September 2008 and 8 October 2008).

3.7 Nature of Application and Approval

On application from the Proponent, the Minister had authorised the submission of a concept plan for the project. At the time of making this decision, the Proponent was considering a number of possible routes for the gas pipeline. The Proponent also could only provide a qualitative, rather than a quantitative assessment of the potential environmental impacts, as it required flexibility for the consideration of various options for the pipeline corridor.

The Environmental Assessment provided a screening level assessment which was informed by available desktop information. The aim of this approach was to develop an understanding of the key features of the existing environment and the potential impacts on any aspects of the receiving environment from the construction and operation of the proposal. The Proponent stated that the overriding objectives of the environmental assessment were to identify, as far as practicable:

- the issues and areas likely to provide substantial constraints and therefore require detailed field investigation during the ongoing refinement of the proposal and/or the preparation of issue or area specific management and mitigation strategies; and
- the issues and areas that can be managed by pipeline industry standards and widely accepted management approaches.

The Proponent has committed to the development of a Construction Environmental Management Plan (CEMP) in consultation with DECC, DPI, DWE, DoL and relevant CMAs to manage the environmental issues it has assessed and implement identified mitigation and management measures where required, prior to construction. Due to the large scale and linear nature of this project, which involves several competing environmental assessment interests, the Proponent has also committed to ensure liaison with key government stakeholders

prior to construction and during construction. This would be achieved through the establishment of a framework for a government liaison group (GLG) which will maintain liaison with DECC, DPI, DWE, DoL, relevant CMAs and the Department. This ongoing integrated consultation process will continue to influence the design details of the proposal, inform the management of adverse impacts and be a key support system throughout the construction and operation of the project.

The Department supported the Concept Plan approval approach as it is often impractical to provide full details of a project of this nature over a long distance at an early stage in the planning process. Also it will enable the selection of a preferred gas pipeline route based on key environmental performance criteria and indicators, creating a narrow route within a pipeline corridor of 200 metres, and ability to identify specific areas with significant constraints or areas requiring further investigation at the project application stage. Furthermore the Concept Plan approach was believed to enable a strategic assessment of the need for the proposal, and provide an environmental risk analysis, which will be indicative of any environmental issues that require further assessment at the project application stage.

Since that time, the Proponent has completed the field work for biodiversity and cultural heritage impacts and revised the Statement of Commitments in response to stakeholder and community input during the display of the Environmental Assessment. This information was included in the Submissions Report submitted to the Department after the exhibition period of the Environmental Assessment.

The Department considers that the Proponent has provided sufficient information such that an adequate level of assessment of the project could be undertaken, and consequently recommends that the Minister form the view that no further environmental assessment of the work proposed is necessary. This is supported by the Proponent's Statement of Commitments, which are based on an adaptive management strategy.

The Department recommends that the Minister exercise her power under the *Environmental Planning and Assessment Act 1979* to concurrently grant concept approval and project approval for the proposal. To reflect this approach, the Department has drafted an instrument of approval which reflects both concept and project approval. The instrument grants full project approval and details conditions that establish stringent environmental standards, mitigation measures, environmental controls and monitoring requirements for the project.

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

4. CONSULTATION AND ISSUES RAISED

4.1 Introduction

The Department received a total number of sixty submissions, which were from government agencies, private landowners and organisations.

Submissions from State Government Agencies

Department of Water and Energy (DWE)

- Requires prior identification of water sources for construction activities and hydro-testing.
- States that water to be extracted or intercepted from surface water or groundwater within areas covered by the Water Act 1912 will require licensing from DWE or application of an appropriate exemption as endorsed by DWE.
- States that where water is to be extracted from regulated and/or unregulated surface water sources which are covered by a gazetted Water Sharing Plan, the Proponent must nominate the extraction sites and extraction methods to DWE for endorsement.
- States that a contingency plan is to be prepared for events that have the potential to pollute or contaminate the surface or groundwater sources. The plan is to include mechanisms, remediation actions and communication strategies.
- States that a monitoring plan is to be prepared for activities that have the potential to pollute or contaminate the surface or groundwater sources. This plan would be linked to the contingency plan.
- States that all pipeline construction is to be in accordance with *the APIA Code of Environmental Practice - Onshore Pipelines*.
- States that site specific watercourse crossings and associated methods of construction are to be prepared in accordance with the *APIA Code of Environmental Practice - Onshore Pipelines* and submitted to DWE for endorsement prior to commencement of pipeline construction.

Border Rivers-Gwydir Catchment Management Authority (BRG CMA)

- States that vegetation and habitat issues it previously identified in the assessment process have been addressed.
- States that surface water issues for stream crossings in sensitive and fragile locations in the BRG CMA area have also been addressed. However it provided minor corrections to the naming of rivers.

The Department of Primary Industries (DPI)

- Mineral Issues:
  - States that the pipeline traverses areas of mineral, construction material and petroleum resource occurrences and the owners of these resources should be consulted regarding potential conflicts.
  - Requested that in circumstances where the pipeline may have an impact on mineral exploration activities, the Proponent should consult the relevant companies and titleholders in respect to the proposal.
- Fisheries Issues:
  - Stated that DPI Fisheries are to be consulted on high sensitivity water crossings.
- Agriculture Issues:
  - Recommends a commitment to negotiate with other water users/owners during extraction of water for construction related purposes.
  - Expresses interest in being involved in the Government Liaison Group when formulated by the Proponent, to assist with implementation of the project's adaptive management strategy.
  - States that alignment changes should be referred to DPI.
- Coal Issues:
  - Requested that the pipeline be designed for subsidence in areas of known, but undeveloped coal resources.
  - Thanked the Proponent for productive and ongoing consultation regarding minimising impacts of the pipeline route on coal resources.

- States that the Proponent should contact owners of coal tenements AUTH176 and ML1304 for consent.
- States that the pipeline route south west of Scone conflicts with coal bearing strata and should be altered to follow the New England Highway/Railway between Scone and Aberdeen.

Roads and Traffic Authority (RTA)

- States that it does not object to the proposal subject to the specific traffic and road management issues it has raised being addressed.

Namoi CMA

- Requests to participate in the Government Liaison Group and the development of the CEMP.
- Provides kilometre points of potential Aboriginal heritage impacts including scarred trees, campsites, trading routes and cultural sites.
- States that the presence of expansive soils needs to be investigated and included in the CEMP.
- Comments that it is satisfied with the assessment methodology of the EA considering that the Proponent is seeking concept approval.

Department of Lands

- States that easements and licences over Crown Land are to be obtained and Proponent's use of Crown Land must meet standards that satisfy the Department of Lands objectives as responsible land owners and managers.

Hunter-Central Rivers CMA

- Supportive of the biodiversity management strategies outlined in section 9.6 of the EA.
- Requested that it be included on a future Government Liaison Group for development and review of the CEMP.
- Seeks clarification on who the 'Kooragang Island conservation officers' are to guide final location of the pipeline.
- Commented that it was satisfied with the assessment methodology of the EA considering that the Proponent is seeking concept approval.

Department of Environment and Climate Change (DECC)

- Aboriginal cultural heritage issues:
  - Notes that the predictive model will be augmented by information from oral histories.
  - Notes that the strategic research program proposed to be conducted in the ROW involves some disturbance of subsurface material above that expected from the construction works themselves. Thus finds it is important that there is support from the Aboriginal community for this research.
  - Recommends that the oral history be used to inform protocols for avoidance and management and mitigation measures.
  - Emphasises the importance of involving Aboriginal communities in the project and providing contextual information to enable meaningful involvement.
- Biodiversity
  - States that despite avoidance and minimisation measures, some clearing of vegetation and edge effects is inevitable. As the exact route is yet to be determined, biodiversity loss cannot be quantified. Notes that while the biobanking calculator is not compulsory, it is an appropriate tool for quantification.
  - Seeks clarification on who the Kooragang Island conservation officers' are to guide the final location of the pipeline.
- Pollution Control
  - Expressed a wish to be consulted in relation to development of the CEMP to ensure construction activities do not cause significant amenity impacts to sensitive receptors.

Submissions from Local Government

Mayor of Gunnedah Shire

- States that Council supports this proposal as it promises numerous economic and social benefits, both at a regional and State level.

Narrabri Shire Council

- Supports the proposed plan and acknowledges that the infrastructure will ensure both the continued and strengthened viability of businesses within the State.
- Raised a number of matters for consideration to ensure all issues are addressed positively:
  - Opportunities exist to supply gas to the areas of Narrabri and Boggabri.
  - Council encourages the Proponent to integrate the proposal with NSW local suppliers of gas to ensure local business benefits from the proposal. Notes that the State would also benefit substantially from royalties paid by these local suppliers.
  - Notes that during a previous meeting between itself and the Proponent, the Proponent committed to place off-take valves at Narrabri and Boggabri on the pipeline. It expects that this commitment would be realised by the Proponent and the Proponent would provide further details on these off-takes. Requests Department to reinforce this through a condition of approval.

Muswellbrook Shire Council

- Requests information be provided relevant to the Shire, on the location of camp sites within Construction Camp Site Management Plans, location of any proposed sources or disposal sites for hydrotest water within the Shire area and the location of blasting sites.
- States that it must be notified of any contaminated soil uncovered during excavation within the Shire area.
- Raised concerns regarding impacts on rural roads from heavy vehicle loads.
- Requires the Proponent to obtain a 138 Permit under the *Roads Act* for works within Council roads.
- Erosion concerns along the pipeline and trench compaction.

Port Stephens Council

- Disturbance to Endangered Ecological Communities must be avoided and a buffer must be provided to ensure the protection of these communities.
- Disturbance to SEPP 14 Wetlands in the Port Stephens area must be avoided.
- Potential spread of weeds, especially the Alligator Weed and subsequent impact to wetlands must be addressed.
- States that all sealed public roads in the LGA are to be horizontal bored for laying of the pipeline.
- Re-iterates its interest in having offtake points for accessing gas for use in the Port Stephens LGA, both for industrial and domestic use.

Gunnedah Shire Council

- Stated that the future road maintenance activities should not be compromised by the presence of the pipeline.
- Concerned about the position of the pipeline relative to water supply mains, sewage treatment works, effluent pipes and leased irrigation infrastructure on the Pullaming stock route.
- Requested that provision be made during the construction of the pipeline for an off-take valve and pressure reducing station.

Newcastle City Council

- States it is satisfied that the issues raised following its preliminary assessment have been adequately addressed in the EA.

Upper Hunter Shire Council

- Raises no objections however recommends some matters that require further consideration by the Department:
  - Connection points should be provided for possible future connections to Murrurundi, Scone and Aberdeen.

- Consultation with owners affected by the proposal should ensure that consideration is given to potential impact of the pipeline, regarding placement of dwellings on the land.
- All previous landowners consulted with should be updated regarding any change to the proposed route of the gas pipeline.

Liverpool Plains Shire Council

- Welcomes the construction of the proposal as it will deliver competitively priced gas to the Hunter and communities along the pipeline route.
- Seeks the Department to impose a condition of approval that requires the Proponent to provide a take-off point to service Quirindi; provide a pressure reducing station at the takeoff point to enable reticulation of domestic pressure gas; undertake extensive consultation with landholders in respect to terms and conditions of access to lands; ensure protection of local infrastructure and the environment to limit impacts; and engage with Environmental Manager for the project to monitor impact during post construction rehabilitation works.
- States that the pipeline route should be selected so as not to limit possible options of the rail routes regarding the proposed rail upgrade of the Ardglen crossing of the Liverpool Range.

Submissions from Landowners and the General Public

The Department received 28 submissions from landholders who would be directly impacted by the proposal, by the pipeline traversing their property. All of these submissions noted an objection to the proposal based on being directly impacted and uncertainty regarding the environmental assessment. The Department received eight submissions from the public who will not be directly impacted by the proposal but have concerns regarding the environmental assessment process and impacts resulting from the proposal. A summary of the specific issues raised from all 36 public submissions is presented below:

- Recommend alternative routes that would not traverse their property and which are more suitable due to the geology, flooding regimes, and ecological land characteristics of the alternative areas.
- Concerns about the safety and hazard risks associated with the operation of the pipeline to the surrounding environment and people working on the impacted land (digging land for irrigation work).
- Concerned with a loss of land value due to the presence of a pipeline easement. One submitter questioned what guarantees does the EA make to landholders, as to the obvious downgrading of their land value, especially any land proposed now or in the future for subdivision, future development or required roads.
- Concerned that the proposal may render subdivisions for residential use on their property impossible.
- One submitter found that there is no offer within the EA to completely fence off the pipeline through intensive irrigation country (where practicable).
- The mapping contained in the EA was not representative of property location and associated infrastructure.
- State that if the people of NSW are to profit from this project than it surely is the State's responsibility to have it on its land and the idea of putting the pipeline on freehold land alongside a TSR should never have been considered.
- Access and security of their property.
- Compensation and ongoing loss of production until the land regenerates to its previous capability.
- Close proximity to open cut mining (constant blasting).
- Biodiversity corridor for flora and fauna.
- Provides suggested conditions of approval for the Department's consideration to ensure private landowners are not disadvantaged by the privately owned project.
- A submission requested assurance that the trees on the western side of Slacksmiths Lane's Lower Quipolly area are protected from the construction of the pipeline. States that it planted these trees in 1995 with permission from the then Quirindi Shire Council and they are now over 10 metres tall. States that the Proponent advised that these trees could be replaced, however it finds this would be impossible and inappropriate.
- Suggest that as the pipeline travels through the next door neighbour's property after it leaves his property, the route could be shifted to the next door property entirely. This way only one land holder would need to be liaised with.
- One submission stated that it does not support the proposal if the pipeline is to carry coal seam methane gas. This method of obtaining gas creates considerable risks to the environment. The water found with coal

seam gas is highly saline and has the potential to contain heavy metals. This waste water poses a huge concern as it has to be stored and cannot be utilised for anything. In areas where aquifers have good quality water, saline contamination may occur making the underground water unusable.

- Objects to the pipeline traversing prime agricultural land.
- Consultation process of the project is poor.
- State Government should provide access to its State owned lands if the Government endorses this project.
- Inconvenience caused during construction.
- States that there are cheaper alternatives, e.g. the coal seam gas assets in the Gloucester Basin could be utilised. Also Australian Pipeline Trust are planning to build a pipeline from Wallumbilla to Bulla Park. The cost of getting the gas to Newcastle from these projects approximates 40% of the cost of getting gas to Newcastle on the QHGP. Thus believes that other alternative methods of getting gas for the Hunter should be illustrated by the Proponent.
- The proposal will sterilise land for other uses in a relatively intensive land use and populated area.
- Questions how the open trench would be monitored for fauna.
- Questions what the post construction measures would be to manage weeds/exotic plants.
- Suggested that the route around Greenlands in the Singleton LGA be moved west to grazing country to avoid rural residential properties.
- Raised issues of compensation in relation to the impacts of the pipeline.
- Raised concerns that due to the erosive nature of the local soil, the trench backfill would wash away in heavy rain.
- Raised issues relating to rehabilitation of the pipeline easement. Submission 30 asserted that fill rehabilitation would take at least 3 years, others stated that complete rehabilitation would not be possible to be achieved i.e. irreversible damage.
- One submission stated that the information in the EA was inaccurate, as not all houses in the area has been identified as isolated receivers for noise assessment.
- Concerned with the impact the pipeline easement would have on farming activities and the time for rehabilitation.
- Stated that there was inadequate time to review the EA and provide comment during the public exhibition period after seeing the localised route at the Proponent's information sessions.
- Concerned that the ongoing route refinement would impact additional landholders who were unable to comment during the submissions process.
- Raised queries relating to the responsibility for the easement and pipeline at the end of the 50 year contractual lease period.

Submissions from Companies and Community Groups

Namoi Valley Coal Pty Ltd

- Objects to the proposal because:
  - It holds mining tenements which relate to Namoi Valley Coal's Vickery Mine.
  - No accurate plans show the position of the proposal or the land which it affects. Nor has the Proponent provided accurate details of the land holdings affected by the proposal and it is unreasonable to expect it to give consent to the project on its land until the exact impacts on its land are known.
  - No specific discussions between itself and the Proponent have been held regarding compensation for the proposed easement.
  - It will continue to object to the project until it receives assurances that the location of the pipeline will not sterilise or jeopardise its mining tenements or those held by any other Rio Tinto Group Company.

Muswellbrook Coal Company Limited

- States that the pipeline runs east of its mining area. It does cut through the top north east corner of its Exploration Lease. States that both current blasting activities in its open cut mine and future Eastern Extension project need to be considered such as indemnifying its operational activities from restrictions by the proposal.
- It would like to better understand:
  - Compensation to landholders for construction activities and pipeline placement along the proposed corridor;
  - Indicative construction timing and duration of works;

- Proposed accesses for construction works; and
- Longer term access needs for pipeline maintenance.

Moree & District Chamber of Commerce & Industry Ltd

- Supports project because the competition which will result from the project will enhance the prospects of diversifying the Moree local economy, and as such reduce its community's reliance on agriculture.
- States that one project currently being considered is the Moree Ethanol Plant, which would not be viable without the availability of natural gas.

Muswellbrook Chamber of Commerce and Industry

- Supports proposal based on the economic, environmental and social benefits of the proposal to the communities along the pipeline route.
- States that natural gas can be used in electricity generation, resulting in approximately 30% less greenhouse gas emissions. Also see a large potential to develop coal seam gas production especially in the Upper Hunter due to the large number of coal mines in the area.
- Notes that it has been assured by the Proponent that construction supplies will be sourced locally where appropriate.

Maitland Business Chamber

- Confirms its support for the proposal.
- Believes that the proposal will be a benefit to the Maitland area, the greater Hunter Valley/Newcastle area and NSW as a whole. States that in particular the security of supply and additional gas supplies to the area are most welcome.

Representatives of the Gomeroi Nation

- Raised a number of issues relating to the impact of the proposal on Aboriginal cultural heritage and the environmental assessment process to date.
- Acknowledged that the Proponent has met a majority of the requirements prescribed by the DECC's *Interim Community Consultation Requirements for Applicants*.
- Asserts that the reliance on predictive modelling fails to properly utilise the knowledge of culturally significant sites held by traditional owners and poses an additional risk when relied on without complementary information provided by Gomeroi people. It states that minimal effort has been made to provide opportunities for knowledge holders to participate.
- States that information gathered from the AHIMS register was incomplete and for this reason should not be relied on in isolation from information provided by Gomeroi traditional owners.
- States that Gomeroi would like to negotiate a Cultural Heritage Agreement and Cultural Heritage Management Plan.
- States that a complete pipeline survey walk should be undertaken as part of any cultural heritage assessment and would negate the need for oral history research.
- States that all Aboriginal sites and artefacts should not be disturbed. It also states that the Gomeroi people are opposed to the research programme to offset any loss of low to moderate heritage sites, described in Section 10.1.5 of the EA.
- Expresses a desire for a wider agreement between the Proponent and the Gomeroi on issues of compensation, employment and consent for the project.

Hunter Bird Observers Club

- Requests that the Department reject the proposal by the Proponent for the route of the final 10km of the pipeline from KP 815 to KP 825 across Kooragang Island (also known as Ash Island).
- Raised concerns relating to the cumulative impact of the proposal with potential future developments on the Kooragang Island.
- Asserted that the need for additional gas supply to consumers in the Newcastle area was not justified in the proposal, as AGL operates a high-pressure gas main on Walsh Point.
- Raised the issue of habitat loss for bird species as a result of easement clearing.
- Raised the issue of weed management during construction and maintenance of the pipeline route.

4.2 Submissions Report

On review of the issues identified in the submissions, the Department required the Proponent to prepare a Submissions Report to address each of the issues raised in those submissions. The Proponent prepared and submitted to the Department a Submissions Report on 21 November 2008. The Submissions Report described further refinements made to the alignment of the pipeline as a result of the submissions received and ongoing consultation. As a result of these refinements, the total length of the pipeline is 833km with 611km in New South Wales and 222km in Queensland (as opposed to the total length of 820km and 600km located in NSW which was stated in the Proponent's environmental assessment document).

At the time of preparing the Submissions Report, the Proponent conducted on ground biodiversity survey work which confirmed that the identified significant environmental constraints in the Environmental Assessment have been avoided. The Proponent also conducted Aboriginal heritage fieldwork on four sites of high cultural significant sites which were described as occurring within the study area. The Proponent has further refined the pipeline route to avoid ecological and cultural significant sites. The Department further discussed with DECC issues relating to ecological impacts, specifically the need for biodiversity offsets and also sought comments regarding the Aboriginal cultural heritage assessment and environmental impacts relating to construction (air, noise and vibration impacts).

The pipeline route within the 200 metre Study Area is yet to be finalised and the Study Area may also be altered as a result of the ongoing land holder consultation process and detailed on site survey work. The Proponent has stated that if the final route of the project is not consistent with the Minister's approval of the project, then it will apply for a modification of the approval in accordance with Section 75W of the EP&A Act.

4.3 DECC Review of the Submissions Report

The DECC reviewed the Submissions Report in relation to matters of its areas of interest. It notes that it is not possible to construct a pipeline of such a length without some impacts on biodiversity. It stated that it supports the approach by the Proponent to avoid and mitigate impacts on biodiversity to the 'fullest extent possible' however it disagrees with the Proponent's claim that no offsets will be required because there will be no significant impacts. The DECC seeks that offsets are determined for the loss of biodiversity and that condition and significance are accounted for in the process. The DECC acknowledges that biodiversity loss cannot yet be quantified and proposes a methodology to inform quantification of offset requirements. This includes using the Biobanking calculator as a guiding tool to inform the quantification process and amalgamating offset conservation areas into nodes, enabling offsetting of "like for like" areas and to reduce potential fragmentation of the areas set aside for conservation.

The DECC also commented on Aboriginal cultural heritage impacts. It noted that the Proponent proposes a package of measures including modelling, varying protocols for final placement of the pipeline and construction based on identified constraints and oral histories study. The DECC also noted that since the public exhibition of the Environmental Assessment, representations have been made to DECC regarding Aboriginal heritage, and comments from the Aboriginal community have been provided in the Submissions Report. Concerns have been raised with DECC that community and spiritual values have not been adequately considered in the decision making process relating to the pipeline route and in finalisation of the constraints. The DECC has therefore stated that it believes a clear commitment to obtain and then account for community and spiritual values in final placement of the pipeline, and throughout construction, would address certain issues raised by the Aboriginal community. It also supports on ground involvement of members of the relevant community to monitor the open trench during construction. The Department notes that the Proponent has committed to consult with relevant registered local Aboriginal stakeholders, to develop a program to undertake within the 30-metre ROW in each of the five bioregions one strategic research project to determine cultural heritage significance and provide the outcomes of the research to the local Aboriginal stakeholders consulted in a form to be agreed (SoC AH7).

The DECC noted that certain protocols to be implemented throughout construction relate to Aboriginal heritage, such as induction of contractors and stop work and investigation. It stated that its experience with previous developments has been that effective application of similar protocols is not straightforward. The DECC recommends therefore that these protocols are incorporated into the Construction Environmental Management Plan (CEMP). The Department has recommended a condition that requires the Proponent to include, as part of

the CEMP, details of the protocols to be implemented to mitigate and/or manage impacts to Aboriginal cultural heritage sites. The Department's standard recommended condition which requires the Proponent to carry out the project generally in accordance with the major project application, Environmental Assessment, Submissions Report and the recommended conditions of approval, ensures the Proponent's obligation to Aboriginal cultural heritage.

The DPI also reviewed the Submissions Report and stated that further investigation and consultation with stakeholders with regards to potential impacts to current and future exploration and extraction activities should be undertaken. It also welcomed the Proponent's commitment to establish a framework for the Government Liaison Group (GLG), which will include key government stakeholders. DPI stated that its involvement in the GLG will greatly assist in effective assessment of the primary industry resource issues involved, and will coincide with the implementation of the project's adaptive construction management strategy.

The Department has noted that the Proponent would make refinements to the pipeline corridor to continue reducing the environmental impacts of the project prior to submitting the required CEMP. For this reason, the Department recommends a condition which states that any deviations in route alignment outside the defined corridor can only occur for the purpose of:

a) reducing impacts to biodiversity, cultural heritage or human amenity;
b) avoiding geological or topographical constraints, providing deviations do not increase impacts to those areas referred to under a); and
c) after consultation with potentially affected landholders and relevant agencies.

The Department also recommends that the Proponent be required to submit, as part of the CEMP required under recommended condition 6.2, route alignment sheets for the project identifying the final 30-metre Construction Right of Way (ROW). The Department also recommends a number of design requirements be imposed on the Proponent prior to finalising the route. This includes avoiding all Endangered Ecological Communities, unless demonstrated that where impacts cannot be avoided, there will only be minimal impacts (to the satisfaction of the Director-General). Additionally the Proponent must consult with all landowners potentially affected by the final ROW during the preparation of the route alignment sheets. The Proponent must also ensure consultation with relevant companies and titleholders of mineral and petroleum resource licences in relation to the potential for conflict between the route of the project and current and future resource exploration and extraction activities. The Department requires that this consultation must aim to resolve any identified potential conflict where practicable.

The Department concurs with the DECC in that there will be some unavoidable loss of vegetation and potential fauna habitat as a result of clearing required for the pipeline trench and ancillary infrastructure. However the Department believes it is unnecessary, at this time, to require the Proponent to develop and implement biodiversity offsets, as the actual loss is unknown and therefore cannot be assessed. The Department therefore recommends that the Proponent be required to develop and submit for the approval of the Director-General, a Biodiversity Offset Needs Study. The Study must be developed in consultation with DECC and include a methodology for determining biodiversity offset requirements. This involves:

a) quantification of vegetation, considering condition of vegetation, loss of potential habitat, and resulting short and long term consequences of this loss;
b) detailing the significance of impacts to biodiversity as a result of the quantified loss;
c) considering the biodiversity management measures or activities identified in the environment assessment;
d) describing the decision-making framework used in determining the level of impact to biodiversity and detailing the final methodology used to determine the biodiversity offset requirements; and
e) inclusion of a timeline to achieve the implementation of the final suite of measures to mitigate and or manage impacts to biodiversity.

5. ASSESSMENT OF ENVIRONMENTAL IMPACTS

After consideration of the Environmental Assessment, submissions received and the Submissions Report, the Department has identified the following key environmental issues associated with the proposal:

5.1 Ecological Impacts

The Proponent conducted a desktop assessment to determine the potential biodiversity constraints for the proposal. The desktop review focused on the 200 metre study area and searches of databases (DECC Atlas Wildlife, EPBC Protected Matters Search Tool, and CMA sub-region data) were performed to determine the potential existence of species, at a minimum area 10 kilometres either side of the study area. To validate the desktop data obtained, aerial reconnaissance was then carried out.

The screening of species revealed a number of endangered populations, Endangered Ecological Communities (EECs) and threatened flora and fauna species which have the potential to be impacted by the proposal. The Environmental Assessment identified 23 EECs with the potential to occur along the length of the proposal. As a result of the screening process, twelve of these EECs were expected to occur and have the potential to be impacted by the pipeline corridor. Twenty-six threatened species and three endangered populations were identified as a result of the screening process with the potential to occur within the pipeline corridor and be impacted by the proposal. The field survey work conducted at the close of the exhibition period targeted these constraint areas to validate the findings of the screening process. The aim of the field work was to describe and measure key biodiversity attributes, assess the presence and condition of significant values and determine the nature and extent of potential impacts. The results of this field survey work were provided in the Submissions Report.

Issue

Flora Results

The pipeline traverses through several different types of vegetation, including agricultural land, scattered paddock trees, remnant patches of native vegetation, riparian vegetation, woodland, forest, grassland, mangroves, floodplain forests and saltmarsh. Table 2 below shows a summary of the constraint areas identified and the Proponent's proposed mitigation measures for these environmental constraints.

Table 2: Summary of flora constraint areas, including Proponent's proposed mitigation measures

Revised Route K KP	Constraint	Mitigation
222.5-222.8	Coolibah Black Box woodland EEC (TSC)	The Right of Way (ROW) would be minimised to 20m wide and constructed to ensure no net loss of mature trees. No hollow bearing trees would be removed. All coarse woody debris and other habitat features (terrestrial and aquatic) would be reinstated. The ROW would be aligned adjacent to complimentary infrastructure to ensure minimal impacts on native vegetation and habitat relative to approved projects, such as roads at that location.
225.2-226 236.2-236.4 238.2-238.4	*Dichanthium* spp. Dominant grasslands of the Brigalow belt Bioregions (EPBC)	ROW realigned (See Rev L)
227.7-228.2 238.4-240	Adjacent to *Dichanthium* spp. grasslands	The construction period would be minimised and grass would be covered to 100mm depth, stored and kept moist (Sods would not be stacked). Sods would be reinstated in rehabilitation phase. Clearing of any mature trees would be avoided.
233-235	*Dichanthium* spp. Dominant grasslands of the Brigalow belt Bioregions (EPBC) Coolibah Black Box woodland EEC (TSC Act)	ROW realigned to avoid (See Rev L)
250.9-251.2	Coolibah Black Box EEC (TSC Act)	The ROW would be minimised to a maximum width of 20m and clearing of mature trees would be avoided.
254-256	Coolibah Black Box woodland EEC (TSC Act)	The ROW would be minimised to a maximum width of 20m and clearing of mature trees would be avoided.
276-276.5	Myall woodland EEC	The ROW has been realigned to avoid good quality vegetation. The ROW has been shifted to the TSR, however it will remain in the cleared existing road easement within the TSR (see Rev L).
306.8-308	Myall Woodland EEC within TSR	No clearing of native vegetation would be required for the existing ROW.
317-318	Coolibah Black Box EEC	The ROW would be minimised to a maximum of 20m width and would avoid clearing mature native trees in dry creek-bed.
356-357	Coolibah Black Box EEC	The ROW would be minimised to a maximum width of 20m and would be positioned to avoid clearing mature trees, particularly hollow bearing River Red gums.
411.8 - 412.3	Myall Woodland EEC	The ROW would be minimised to a maximum width of 20m and would avoid all mature vegetation.
583-586	White Box Yellow Box Blakeley's Red Gum Grassy Woodland and derived Grassland with exotic groundcover (TSC Act)	The ROW would be minimised to a maximum width of 20m and would be positioned to avoid clearing mature trees.
604 – 605.3	White Box Yellow Box	The ROW would be minimised to a maximum width of 20m and would be positioned to avoid clearing mature trees.

	Blakeley's Red Gum Grassy Woodland and derived Grassland with exotic groundcover. TSC Act	
625.5 – 626.5	Box Gum Woodland EEC (TSC and EPBC)	The ROW only just touches on edge of this vegetation type. The ROW would be minimised to a maximum width of 20m and would be positioned to avoid clearing mature trees. All disturbed areas would be revegetated with local provenance native grass and understorey species indicative of this community type.
639 – 642.8	White Box Yellow Box Blakeley's Red Gum Grassy Woodland and derived Grassland with exotic groundcover (TSC Act)	The ROW would be minimised to a maximum width of 20m and would be positioned to avoid clearing mature trees.
642.8 – 644	Box Gum Woodland EEC (TSC and EPBC)	The ROW has been realigned to avoid this community (See Rev L)
790 - 791	Lower Hunter Spotted Gum Ironbark Forest EEC	There is an existing track which the ROW would follow and no mature trees would be removed.
819.5 - 820	Patches of Swamp Oak Floodplain Forest EEC	The ROW would remain as much as possible in the powerline easement to minimise vegetation clearing. The corner of vegetation at KP 820 would be completely avoided and the ROW would remain in the powerline easement.
820 – 821.3	Patches of River Flat Eucalypt Forest on Coastal flood plain EEC Patches of Swamp Oak Floodplain Forest EEC Patches of Swamp Sclerophyll Forest EEC Patches of Mangrove-Estuarine Complex EEC	The ROW would be in the cleared areas as close as possible to the electrical easement to KP821. From KP821 to 822 the Hunter River the crossing would be by Horizontal Directional Drilling (HDD). There is a patch of Swamp Sclerophyll Forest ECC at KP821 south of Tomago Road. The pad required for HDD would not be located within this EEC and should clearing be required the ROW would be minimised and all mature trees would be retained. The patch of River-Flat Eucalypt Forest on Coastal Floodplains of the NSW north coast EEC from KP821 to 821.3 would be avoided by the use of the HDD for the crossing of the Hunter River. The stand of *Grevillea parviflora* subsp. *parviflora* is located on the western side and outside of the ROW just north of KP 820 and care would be taken to ensure that the population is not accidentally harmed by parking of vehicles or storage of materials. The entire population would be protected by a temporary fence during clearing, excavation and filling.
821.5 - 827	Mangrove-Estuarine Complex & Coastal Saltmarsh EEC	The ROW would remain in the existing cleared access tracks and dyke. The method of waterway crossings would be undertaken in consultation with CMA, DECC (Parks and Wildlife) and DPI.

Note: The shaded green areas signify that although the Proponent would be avoiding any unnecessary clearing of vegetation, some loss would still occur. Therefore the Department finds that this loss needs to be quantified and a biodiversity offset strategy be formed, where appropriate, to offset this loss.

As an addition to Table 2, the list below contains threatened flora species which have been identified with a potential of occurring in the pipeline corridor, whilst not being located despite targeted searches. The Proponent explains that due to the short period of survey work and access to some areas being not possible, there is potential for the occurrence of any of these species and further targeted searches are proposed prior to construction:

- *Sida rohlenae* - undertake further targeted searches between KPs 333.8 and 348.8.
- Digitaria porrecta – survey occurred outside of the flowering period therefore searches in suitable habitat should be undertaken between KP 447 - 451, KP 466-468 and KP602 to 603.
- *Zannichellia palustris* undertake targeted searches between KP 823 - 827.
- *Bothriochloa biloba* undertake targeted searches in areas of box-gum woodland.
- *Rhizanthella slateri* this species is difficult to locate and little is known of its distribution or habitat requirements. Therefore targeted searches should be undertaken during excavation to gain more knowledge on this species.
- *Lepidium monoplocoides* – undertake targeted searches in suitable habitat between Moree and Narrabri.
- *Dichanthium setosum* undertake targeted searches in areas suitable habitat with heavy black soils from KP 222 - 535
- *Diuris tricolor* undertake targeted searches in suitable habitat between Muswellbrook and Cessnock (Approximately KP721 - 765)
- *Swainsona murrayana* undertake targeted searches in suitable habitat between KPs 333.8 and 348.8.
- *Eucalyptus parramattensis subsp. Decadens* – undertake targeted searches between KPs 806 - 833.
- *Homopholis belsonii* –undertake targeted searches in suitable habitat in areas of belah woodland (from the Queensland Border to Moree).
- *Cyperus conicus* – undertake targeted searches within areas of Pilliga scrub north east of Narrabri.

Fauna Results

One hundred and eighty bird species were recorded along the pipeline route over the survey period, seven of which are threatened species listed as vulnerable under the TSC Act. Forty species of mammals were recorded, of which thirty-one were native (of which eight were threatened) and nine were introduced species. Thirty-nine species of reptile were also recorded, and included a diverse range of species groups, such as snakes, skinks, geckos, monitors and a turtle. The threatened Five-clawed Worm Skink was recorded and habitat with high potential for the Pale-headed snake (TSC Act – Vulnerable) was identified. Fourteen amphibian species were recorded, including the threatened Green and Golden Bell Frog, which is listed as Vulnerable under the EPBC Act and Endangered under the TSC Act. A diverse range of fauna habitats were recorded along the pipeline route. Within these habitats, microhabitats such as hollow bearing trees and fallen timber provide important breeding, roosting and foraging habitat. Table 3 shows a summary of the impacts to fauna identified. Table 4 illustrates the Proponent's proposed mitigation measures.

Table 3: Summary of fauna impacts, including Proponent's proposed mitigation measures

Threatened Species	Status	Recorded
Grey-crowned Babbler	V – TSC Act	Seven locations along the pipeline route, particularly in the sections between KP 303 to 455 and KP 640 to 664. Group sizes observed ranged from 3 to 8 individuals.
Brown Treecreeper	V- TSC Act	Three individuals were observed at KP 640.4. Important habitat components of this species are hollow bearing trees for nesting and ground layer microhabitat complexity for foraging on insects.
Speckled Warbler	V- TSC Act	Observed at KP 455 within remnant bushland of the TSR. Another observation was made at KP 769.2, in an area dominated by regrowth, acacia and eucalypts. This species is mostly found in relatively large undisturbed remnant vegetation. It feeds predominately on the ground on insects and seeds.
Turquoise Parrot	V- TSC Act	Observations were made at KP 235 near the Boomi River where hollow bearing River Red Gums may provide nesting habitat. Also recorded at KP 289.8, where the Gil Gil Creek riparian vegetation may also provide nesting habitat. This species was also recorded at KP 365 in a largely cleared landscape with some Casuarina woodland on roadside of approximately 5 metres wide on either side of the road. The species forages on the ground, feeding on the seeds of grasses and herbaceous plants in grassy woodlands.
Diamond Firetail	V- TSC Act	Was recorded at KP 454.9 within remnant bushland of the TSR and KP 640.4. This species is found in grassy Eucalypt woodland and is often associated with box-gum and snow-gum woodlands.
Masked Owl	V- TSC Act	One Masked Owl was recorded at KP 455 in the TSR in response to call playback. Another two potential Masked Owl responses were heard at KP 333 and 339.7. Masked Owls utilise a very large home range, it is therefore possible all three individuals utilise habitat along the pipeline route. The species utilises hollows for nesting so a precautionary approach has been taken to protecting nesting habits for this species along the pipeline route.
Koala	V- TSC Act	Koalas were recorded at four locations: KP 455 (in the TSR), 505, 528.5 and 557. The koala inhabits eucalypt woodlands and forests. Suitable habitat was recorded in the form of favoured food trees such as River Red Gums.
Microchiropteran Bats	7 species recorded, all are V under TSC Act. In addition, one is also listed as V under EPBC Act.	Three species were detected at KP 235, two species at KP365, and two species 455. Microchiropteran Bats forage mostly on insects and rely on hollow bearing trees for roosting habitat. In addition to riparian vegetation and remnant woodland, isolated paddock trees can be important as bat habitat. Actual recordings were as follows: - Eastern Bentwig Bat: KP 720, 664 - Little Bentwig Bat: KP 724 - Large-eared Pied Bat: KP 664, 455 - Large-footed Myotis: KP 664 - Yellow-bellied Sheathtail Bat: KP 455, 365, 235.5 - Little Pied Bat: KP 365, 235.5 - Beccari's Free Tail Bat: KP 235.5
Green and Golden Bell Frog	V – EPBC Act E – TSC Act	Fourteen amphibian species were recorded including the Green and Golden Bell Frog. Potential habitat exists between KP 822 and KP 827. Summer breeding habitat was more dominant south of the proposal between KP 824.2 and KP 827, habitat suitable for winter refuge was located directly north of this easement, separated by an existing track built up above the surrounding wetlands. Potential summer breeding areas were also located adjacent to the proposal between KP 823 and KP 824. During the surveys, this species was identified between KP 824 and KP

		826 with numerous individuals heard calling. There are existing records of this species near KP 825.5 from previous survey work in the area.
Five-clawed Worm Skink	E – TSC Act V – EPBC Act	Recorded at a single location along the route within Myall Woodland EEC KP 391.8 east of the township of Bellata on the Myall Hollow Creek. Suitable habitat with high potential for supporting this species was identified at KP226 and 231 in the form of native grasslands on black cracking soils.
Pale-headed Snake	V - TSC Act	This species was not recorded during the field surveys but suitable habitat was identified at KP222 to 224 and KP333. The species prefers streamside areas and shelters in loose bark and tree-trunks, or in hollow trunks and limbs of dead trees.

Table 4: Species Specific Mitigation

Threatened Species	Species Specific Mitigation
Grey-crowned Babbler	To minimise impacts to nesting sites, works would be undertaken outside of the breeding season wherever possible (July to December) and an ecologist would check the sites for nests prior to any clearing. The nest surveys would be undertaken with enough lead time to accommodate minor ROW adjustments (including narrowing the ROW) required to avoid nests should active nests be found.
Brown Treecreeper, Speckled Warbler, Diamond Firetail and Turquoise Parrot	Prior to clearing the onsite ecologist would undertake surveys to check for the presence of these species. Removal of hollow bearing trees would be avoided to the greatest extent practicable. Coarse woody debris would be reinstated and the disturbed area would be revegetated with local provenance native grasses and ground covers.
Masked Owl	Removal of Hollow Bearing Trees would be avoided.
Koala	Prior to clearing the onsite ecologist would undertake surveys to check for the presence of this species. The ROW would be reduced to a minimum width in areas of known koala habitat. The Proponent states that as koala habitat exists essentially at waterway crossings throughout the study area, crossing points would be selected to minimise the extent of riparian vegetation clearing.
Microchiropteran Bats	The extent of riparian vegetation clearing would be minimised and limited to the narrowest area practicable. The removal of mature vegetation would be avoided where practical.
Green and Golden Bell Frog	Construction will occur entirely within the existing disturbed area associated with the access track that traverses through the known Green and Golden Bell Frog habitat. Indirect impacts, including Chytrid contamination and breeding movement disruption will be controlled through construction timing and the preparation of a '*Litoria aurea* management plan'. Construction between KP822 and KP826 would only occur outside the known breeding season of this species. A herpetologist will also be onsite during the entire construction period between KP822 and KP826. A soil and water management plan for this area would also be prepared and the method of construction through this species habitat will be prepared with input from DPI, DECC (Parks and Wildlife), Hunter Rivers CMA, a specialist soil conservationist and a qualified ecologist. This Plan would also include requirements for water quality monitoring.
Five-clawed Worm-Skink	A herpetologist will be present during the clear and grade process to inspect the surface litter and top soil that is removed during this process as well as during trench excavation. Within areas identified as potential habitat for this species, any open trenches must be checked by walking inside the trench. Soil structure rehabilitation would occur in identified habitat, which includes the re-construction and the rehabilitation of ground micro-habitats such as fallen timber and native grasses. Weed control would also be performed to ensure the integrity of the easement post-construction.
Pale-headed snake	A herpetologist would be onsite to check all habitat features for presence of this species prior to clearing in areas of likely habitat. Removal of Hollow Bearing Trees would be avoided to the greatest extent practicable.
Fauna Habitat	
All habitats	A weed management plan or protocol will be developed and included in the CEMP. An ecologist would be onsite throughout the construction period to provide advice and

	particularly during clearing vegetation, waterway and wetland habitats and for clearing the trench of trapped fauna. The onsite ecologist would supervise and assist with the two staged clearing process which would involve clearing all understorey and smaller vegetation, leaving more mature vegetation for a minimum of 24 hours before clearing larger trees. When removing larger vegetation, a spotter would be present at each tree to be removed to look for signs of animal movement in the tree to be cleared. Prior to clearing larger trees, an excavator or loader would be used to hit the trunk as high up the tree as possible several times. Wait at least 30 seconds and then repeat the process several times. Once the tree is on the ground the ecologist should check for any signs of fauna. Direct contact with any wildlife should be avoided wherever possible. Uninjured wildlife must be encouraged to leave the site and injured wildlife should be handled by persons trained in native fauna rescue.
Riparian Vegetation	The ROW would be reduced to the minimum width feasible. Waterway crossing points will be selected to minimise the extent of riparian vegetation clearing and limited to the narrowest area practicable. Clearing of mature vegetation would be avoided where practical. Coarse woody debris, snags and other instream and bank features would be reinstated. Terrestrial habitat features such as logs and rocks would also be reinstated.
Woodlands	In selected sensitive areas the ROW would be reduced to the minimum width feasible. The removal of mature trees would be avoided where practical. In selected areas disturbed areas would be revegetated with local provenance native grasses and shrubs. Terrestrial habitat features such as logs and rocks would be placed in adjacent areas throughout construction and reinstated on completion of the works.
Grasslands	The Proponent states that grassland habitats along the pipeline route are highly disturbed and subject to cropping, pasture movement, ploughing or grazing. There is virtually no undisturbed grassland habitat. Terrestrial habitat features such as logs and rocks would be placed in adjacent areas throughout construction and reinstated on completion of works.
Wetlands, Mangroves and Salt Marsh	The method of construction and the Soil and Water Management Plan for these areas will be planned with input from DPI, DECC (Parks and Wildlife), the relevant CMA, a specialist soil conservationist and a qualified ecologist. The ROW is being co-located with other infrastructure features wherever possible, particularly at Kooragang Island. Works will be undertaken at a time to avoid the breeding season for the Green and Golden Bell Frog and spring-summer migratory and breeding periods for wetland birds.

Issues Raised in Submissions

- The DECC stated that despite avoidance and minimisation measures, some clearing of vegetation and edge effects is inevitable. As the exact route is yet to be determined, biodiversity loss cannot be quantified.
- The Hunter – Central Rivers CMA was supportive of the biodiversity management strategies outlined in the Environmental Assessment.
- Three submissions from the public questioned how livestock and native fauna would be protected from the open trench.
- Five submissions (three public; Port Stephens Council; and Hunter Bird Observers Club) raised the issue of weed management during construction and maintenance of the pipeline route.
- Five submissions (four public submissions and the Hunter Bird Observers Club) raised the issue of habitat loss as a result of easement clearing.
- Three public submissions objected to the proposal on the basis that justification for avoiding Travelling Stock Routes (TSRs) was to conserve remaining native vegetation, and there is no difference in the ecological values of privately owned versus publicly owned native vegetation.
- One public submission requested assurances to protect planted trees on its property. It should be noted that should the final pipeline alignment require the clearing of these trees, the Proponent would replace or move these specific trees.
- Port Stephens Council and the Hunter Bird Observers Club raised concerns about the presence of EECs within the Port Stephens and Newcastle region. Port Stephens Council also requested that the Port Stephens Koala Plan of Management be addressed in the Environmental Assessment.
- Hunter Bird Observers Club stated that no suitable areas of compensatory habitat existed for replacement of any destroyed wetland habitat.

Consideration

The Proponent has stated that the ongoing refinement of the Study Area and ROW has avoided significant impacts, prior to the biodiversity survey work taking place. It also has stated that the nature, scale and duration of the residual impacts can be demonstrated to be both minimal and reversible. Although the Department finds the evaluation method of ecological impacts to be adequate, the field surveys for biodiversity and the Proponent's subsequent assessment was conducted over a short period and access was limited to some sections of the pipeline route, through access not being granted by land owners. Also in other areas, difficult terrain and access conditions limited the number of times a site could be surveyed. The Department finds that these limiting factors do not allow for the confirmation of low ecological impact resulting from the project.

The Proponent has also stated to the Department that no biodiversity offsets will be required because there will be no significant impacts. The Department is satisfied that the maximum potential impacts are likely to be within acceptable bounds, and these impacts can be managed through further route alignment and the implementation of biodiversity offsets.

The Department finds that the biodiversity loss needs to be quantified and a biodiversity offset strategy be developed and implemented, where appropriate, to offset this loss. The DECC concurs with the Department's view, as it has stated that it is not possible to construct a pipeline of this length without some impacts to biodiversity. The DECC seeks that offsets are determined for the loss of biodiversity and that condition and significance are accounted for in the process. As quantification of biodiversity loss is yet to occur, it is important that a methodology be formed for determining biodiversity offset requirements. The Department has therefore recommended a condition that requires the Proponent to develop and submit for the approval of the Director-General, a Biodiversity Offset Needs Study. The Study must be developed in consultation with the DECC and shall include a methodology for determining biodiversity offset requirements. The Department recommends that the Proponent be required to submit this Study prior to the commencement of any construction works (unless otherwise agreed by the Director-General).

The Department recommends that the Study shall include several components to assist in the determination of any appropriate offsets. One key component of this Study is the requirement of the Proponent to quantify the clearing of vegetation, considering condition of vegetation, loss of potential habitat and resulting short and long term consequences of this loss. These evaluating factors are crucial to substantiate and validate the quantification of biodiversity loss and to assist in confirming whether an offset is required. It is also recommended as part of the condition, that the Proponent detail the significance of impacts to biodiversity as a result of the loss quantified. Another key component of this Study is that the Proponent is required to consider the biodiversity management measures described in the Environmental Assessment to minimise the impacts to the local ecology of the area during construction. These measures include revegetation protocols, construction measures to reduce terrestrial and aquatic impacts, fauna mitigation measures such as placement of nest boxes and any ongoing biodiversity or threatened species monitoring requirements. The Study will also describe the decision-making framework used to determine the biodiversity offset requirements and will include a program (timeline) to achieve the implementation of the measures to mitigate and or manage impacts to biodiversity.

The Department also recommends a condition requiring the Proponent to submit a Construction Environmental Management Plan (CEMP) for the approval of the Director-General. The CEMP must be submitted no later than one month prior to the commencement of any relevant construction works associated with the project (or within such a period otherwise agreed by the Director-General). The Department recommends that the CEMP detail the measures described in the Environmental Assessment to minimise the impacts to the local ecology of the area during the construction of the proposal.

The Proponent states that the trench route for the natural gas pipeline would be selected to utilise natural gaps between trees. The construction of the natural gas pipeline would not disturb an area in width greater than 30 metres (30-metres ROW). In sensitive areas, the ROW would be narrowed to avoid any significant ecological impact (20-metres ROW). The Department recommends that the Proponent be required to limit the clearing of native vegetation to the minimal extent practicable required for the construction of the project. This will be achieved by locating the pipeline in previously cleared areas where possible, and where clearing cannot be

avoided, a narrower corridor (20-metres) be cleared. This will ensure that low impact construction techniques are implemented, thereby minimising ecological impacts.

The Proponent is also required, through a recommended condition, not to disrupt to the extent practicable, the previous vegetation rehabilitation works conducted by the Kooragang Wetland Rehabilitation Project and Hunter Bird Observers Club, on the western part of Kooragang Island. The Department has also recommended that the Proponent submit as part of the CEMP, a study of the potential impacts from the construction of the project on potential koala habitat. This is to ensure that any potential impacts to koalas or their habitat are not significant and can be mitigated or managed. This requirement is important and relevant as although no core koala habitat was located by the Proponent during its assessment and field surveys, koalas were spotted at four different locations along the pipeline study area (refer to Table 3).

The Department also recommends that the Proponent monitor open trench areas for any fauna and any sightings of fauna must be actively managed to minimise actual or potential impacts on those species. Any fauna found in the open trench will be recorded and managed in consultation with the DECC. The Department further recommends that the Proponent, for a period of two years after construction (or as otherwise agreed to by the Director-General) monitor the areas along the project alignment, after construction is complete, for weed infestation. Any infestations must be actively managed by the Proponent to remove or minimise the spread of weed infestations.

The Proponent has committed to a range of measures to mitigate, minimise and manage potential impacts to biodiversity. The Proponent has committed to consult with an ecologist during construction of the project to ensure that clearing of mature trees is avoided to the greatest extent practicable. The retention of mature, hollow bearing trees is important as these are limited and a declining resource in agricultural landscapes. As such, where the removal of hollow bearing trees cannot be avoided, the Proponent has committed to provide nest boxes for impacted fauna. Furthermore, and any felled trees (logs) will be placed in the remaining woodland or in the revegetated areas. This process will ensure the provision of alternative shelter for fauna impacted by any tree removal.

Watercourses that are required to be crossed for construction, that contain 1st or 2nd class streams, close to wetlands or contain good quality riparian vegetation have been classified as high sensitivity watercourses. These watercourses provide important habitat for Endangered Ecological Communities and endangered aquatic species including: Lowland Darling River aquatic ecological community; *Notopala sublineata* (River snail); *Bidyanus bidyanus* (Silver perch); *Ambassis agassizii* (Olive perchlet) western population; *Mogurnda adspersa* (Purple spotted gudgeon) western population; and *Maccullochella peelii peelii* (Murray cod). The Proponent has committed to conduct further fieldwork assessment of these watercourses to finalise crossing locations, methods and site specific management measures during construction.

To ensure fish passages are not blocked during the installation of the pipeline across waterways, the design of waterway crossings and structures would be undertaken with reference to NSW Fisheries' *Guidelines for Design of Fish and Fauna Friendly Waterway Crossings* (2003), and where necessary in consultation with DPI. During operation of the project, the Proponent would ensure that revegetation of riparian zones is effectively implemented with species of local provenance to stabilise soils and prevent erosion of stream banks.

The Department believes that provided the Proponent implements all the nominated environmental commitments and the Department's recommended management measures defined in the conditions of approval, significant ecological impacts can be avoided and residual impacts can be mitigated or minimised.

5.2 Cultural Heritage Impacts

Issue

Construction

The Aboriginal Cultural Heritage Assessment was based on information derived from archaeological and environmental literature, register searches including the Aboriginal Heritage Information Management System (AHIMS database), ethno-historical research and Aboriginal community consultation. A synthesis of this information was used to derive and use predictive modelling and locations of known sites to identify areas with differing levels of impact to Aboriginal heritage.

The DECC AHIMS was used to search the 200 metre Study Area and 1.5 km either side of the Study Area, providing data for an area of 3.2km wide. This enabled the identification of known items both within the Study Area and in the immediate vicinity of the Study Area. Within the 3.2 km wide AHIMS search area, there are 195 registered sites, of which 1 is an Aboriginal dreaming and ceremony site, located in the Darling Riverine Plains bioregion. There are 153 artefact sites (106 in Sydney Basin, 34 in NSW North Coast and 13 in Brigalow Belt South), 1 burial site (in Darling Riverine Plains), 1 conflict site (at NSW North Coast), 3 grinding groove sites (1 each at Sydney Basin, NSW North Coast and Brigalow Belt South), and 1 hearth, non human bone and organic material, shell, potential archaeological deposit in the Sydney Basin. There are also thirty modified tree sites (carved or scarred trees), where four are located in the Sydney Basin, twelve in Brigalow Belt South and fourteen in Darling Riverine Plains. Also four potential archaeological deposit sites are situated in the Sydney Basin and one stone quarry and artefact site is located in the Sydney Basin.

Sixteen known sites would be subject to potential impact, of which four are high significant sites and twelve are moderate to low significant sites. Of the four high significant sites, three are associated with the former Euraba Mission site (AHIMS # 01-6-0007, #01-6-0009 and RNE# 1/02/191/0006) and lie within the Darling Riverine Bioregion. These sites are a mission/Aboriginal ceremony and dreaming site, a burial site and a modified tree site respectively. The fourth significant site is the Wallalong Brush Conflict Site (AHIMS #38-4-0337) and lies within the Sydney Basin Bioregion.

The Proponent completed additional Aboriginal heritage fieldwork after the public exhibition period of the Environmental Assessment. The results of this fieldwork were presented in the Submissions Report, which confirm that the revised Study Area presented in the Submissions Report avoids these four previously identified sites of high cultural significance.

For the twelve sites categorised as 'low to moderate impact', the proposal is likely to cause only limited scientific or cultural loss by disturbing or destroying archaeological deposits and surface sites in each area that the proposed pipeline passes through. However the overall cumulative impact of the pipeline development may be substantial, as the Proponent may discover several more of these types of sites during the route final alignment process and during construction. These sites will be collectively managed in a strategic way where if avoidance of these sites is not possible, the impact would be offset through a research excavation programme. A large research-focused open area excavation would be conducted, designed to investigate research questions that may provide meaningful information about how Aboriginal people lived and used the land in the past. This program would be performed as mitigation of generalised impact on the many low to moderate impact artefact scatter/deposit sites. This management approach will mitigate the cumulative impact of the project by providing for a better understanding of past landscape use and the relationship between activities at the site, allow for local resources to be more thoroughly examined and facilitate comparisons with other excavated sites.

The Proponent states that the majority of adverse impacts to Aboriginal heritage would be avoided through careful alignment of the ROW and the implementation of location specific management measures through areas of identified sensitivity. A number of known sites and key site types such as scarred trees, rock shelters, axe grinding grooves, rock engravings, modified trees, quarry and/or stone tool source, waterhole/well, burial sites, ceremonial sites, mythological sites, mission/cemetery/historic sites and conflict sites will be avoided by use of the management option 'Avoid within ROW'. The Proponent further states that in practice, the known sites and areas of defined sensitivity for these site types will be surveyed prior to construction to identify, record and flag the sites to ensure the actual pipeline trenching and associated works avoid these sites. The 200 metre Study Area allows substantial room to move the 30m wide ROW impact footprint to avoid such sites.

Monitoring of development excavation works by representatives of the local Aboriginal community with a suitably qualified archaeologist/physical anthropologist on call, will be conducted for areas that have the potential to contain Aboriginal burials. This approach is considered to be the only effective method for identifying burials as the precise location and preservation of burials within soil types cannot be predicted accurately, nor can burial sites be detected by archaeological survey because these sites are situated below current ground surfaces. Archaeological test excavation may identify some burials, but may not detect burials if they fall within un-excavated areas between test trenches. In order for this management approach to be successful, contingency plans would be prepared in the event that skeletal remains are revealed during the excavation. As part of this contingency plan, legal requirements to notify the NSW Police and/or State Coroner would be included. The development of the contingency plans would require the Proponent to further consult with Aboriginal stakeholders to identify what each community considers to be appropriate management.

The final alignment of the ROW would ensure the identified high significance sites would not be directly or indirectly impacted, including high significant sites identified from the oral history study. The Proponent has committed to completing an oral history study prior to construction in order to identify and avoid such sites known only to knowledge holders and not previously documented in written records. The results of the oral history research will be provided to the DECC and the Department in order to assist in the further understanding of Aboriginal cultural heritage in the state.

The Proponent's preliminary desktop assessment of historical heritage identified sites as being of hard, moderate or low constraints, depending on their heritage significance and proximity to the proposed project. The assessment concluded that there were 13 heritage items that are considered to be a hard constraint and nine known items that are considered a moderate constraint. In addition to the known constraints, the preliminary historical heritage assessment concluded that there were 49 hard and 20 moderate potential heritage constraints. The potential hard constraints are located within the Study Area and are deemed to be of high potential heritage significance. The potential moderate constraints are located within the Study Area or very nearby and deemed to be of medium potential heritage significance. There are 114 known and 142 potential heritage items that are considered to be a low constraint. Many known items in this category are located in towns and urban areas and are substantial built structures. The Proponent states that it is unlikely that they would be impacted directly by construction or operation of the project.

Prior to and during construction, the Proponent has committed to identify and avoid within the final ROW potential hard and moderate historical heritage constraints. The Proponent has also committed to maintain consultation with the Department's Heritage branch, local councils and other relevant agencies and stakeholders, both before and during construction. Furthermore the Proponent has committed to include the final heritage constraints in the CEMP.

Operation

Operation of the pipeline is not considered to impact on items of Aboriginal cultural heritage, as activities on the ground will primarily be confined to surveillance work. All sites will be clearly defined within the pipeline database and staff inductions would highlight the areas that are to be avoided.

Issues Raised in Submissions

- DECC stated that some relevant past Archaeological studies (e.g. those relating to mining developments in the Boggabri/Gunnedah basin) do not appear to have been considered in the predictive modelling. DECC considered that the modelling could be improved significantly by a more comprehensive consideration of past work.

  DECC also stated that the Proponent's assessment raises the issue of cumulative impact of loss of many artefact scatters. DECC stated that given there would still be some disturbance of subsurface material above the expected from the development works themselves due to the proposed excavation program , it is important that there is support from the Aboriginal community.

DECC found that as the assessment so far has focused on Archaeological significance, it recommends that final details on protocols adopted in relation to avoidance, constraints and mitigation measures is informed by the oral histories. DECC further recommended that the Proponent, wherever possible, should involve members of the relevant community in any ground assessment, mitigation and monitoring, including moving objects out of the 30m ROW construction corridor. Any sites identified during on ground assessment must be notified to DECC as a requirement under section 91 of the NP&W Act.

- The Traditional Owners of the Gomeroi (Gamilaroi) Nation of North West NSW
  The submission from the Gomeroi people acknowledged that the Proponent has met a majority of the requirements prescribed by the DECC's *Interim Community Consultation Requirement for Applicants*. The submissions also asserted that the reliance on predictive modelling fails to properly utilise the knowledge of culturally significant sites held by traditional owners and poses an additional risk when relied on without complementary information provided by the Gomeroi people. It states that minimal effort has been made to provide opportunities for knowledge holders to participate.

  The Gomeroi people also stated that information gathered from the AHIMS register was incomplete and for this reason should not be relied on in isolation from the information provided by the Gomeroi traditional owners. Also they stated that a complete pipeline survey walk should be undertaken as part of any cultural heritage assessment and would negate the need for oral history research. The Gomeroi people would also be willing to negotiate a Cultural Heritage Agreement and Cultural Heritage Management Plan.

  Additionally, the submission stated that disturbance to all Aboriginal sites and artefacts should be avoided and stated that the Gomeroi people are opposed to the Archaeological Research Program due to potential additional impacts. Also the submission stated that the pipeline route should be developed in consultation with the Gomeroi People as part of an agreed Cultural Heritage Management Plan and Cultural Heritage Agreement. Lastly the Gomeroi people expressed a desire for a wider agreement between the Proponent and the Gomeroi on issues of compensation and employment relevant to the project.

- A submission from the public stated that the proposed pipeline route is 350 metres from National Trust listed buildings and a Heritage Preservation area. It should be noted the Proponent has since refined the pipeline route following landholder consultation. The route was moved further away from heritage listed buildings and the Proponent has committed to avoid within the final ROW all potential hard and moderate heritage constraints.

Consideration

The Department finds that provided the Proponent implements all the nominated environmental commitments during the design and construction phases of the project, including the completion of the oral histories research, the resultant construction impacts to known cultural heritage sites would be negligible. However as noted by the DECC, the Proponent's proposed mitigation and management measures, specifically the final alignment of the 30m ROW, is dependant on Aboriginal community understanding, participation and support. Therefore the Department has recommended a condition that requires that Proponent to prepare an oral history study for determining significant Aboriginal heritage sites along the potential route. The Study must be informed by the views of the Traditional Owners and appropriate Aboriginal community. The Department also requires that the CEMP protocols adopted in relation to avoidance, constraints and mitigation measures must be informed by the oral histories. The Department further recommends that the results of this Study must be used to assist in the determination of the final project ROW.

As it is highly likely that the Proponent would encounter other unknown significant Aboriginal heritage sites during further survey work, the Department recommends that the Proponent be required to consult with the DECC with regard to any appropriate course of action for the management of these sites, during any ground fieldwork assessment during finalisation of the route alignment.

Further, if the Proponent becomes aware of any previously unidentified significant Aboriginal objects during the course of construction, the Department has recommended a condition that requires the Proponent to

immediately cease all work that is likely to affect the object(s) and inform the DECC in accordance with the *National Parks and Wildlife Act 1974*. Relevant works will not recommence until written authorisation from the DECC advising otherwise is received by the Proponent. The Department believes this recommendation is critical to ensure no significant cultural heritage sites are adversely affected from the construction of the project.

The Department finds that the Proponent is undertaking adequate consultation with Aboriginal Stakeholders in accordance with the requirements of the DECC guidelines. The Proponent has liaised with the Gomeroi people regarding its assessment methodology during the assessment process, as the Gomeroi people proposed an alternative methodology for managing Aboriginal heritage impacts, which was not accepted by the Proponent. The Proponent explained that the strategic management of impacts through detailed assessment prior to construction was an appropriate best-practice approach given the issues of cumulative impact and significance evaluation for a larger linear infrastructure project. It was also explained to this submitter that the proposed methodology was more likely to minimise impacts by identifying highly sensitive sites early in the planning process (prior to exhibition of Environmental Assessment) and would provide a high quality package of management and mitigation measures. The Proponent conveyed to the Department that the Submitter agreed that it would respond with a proposal, timeline and costings for its proposed survey methodology to better explain its own reasoning, however the Proponent has not received this response to date. The Department however is satisfied that its recommended condition requiring the active involvement of Traditional Owners and the appropriate Aboriginal community (which includes the Gomeroi people) addresses this particular communication based concern.

The Proponent has also stated to the Department that it has agreed with the Gomeroi people's representative (author of the submission) that researchers from the representative and nominated Gomeroi elders may provide additional information to the cultural heritage assessment presented in the Environmental Assessment. The Department has recommended that as part of the required CEMP for the project, the Proponent detail the measures to monitor and manage indigenous heritage values on site including involvement of the relevant Local Land Councils, Committees and Traditional Owner Groups. The Department is satisfied that this recommended condition would ensure the adequate implementation of the agreement between the Proponent and the representatives of Gomeroi people. The DECC has outlined to the Department that the Proponent's proposed protocols should be incorporated into the CEMP. The Proponent's proposed protocols include, but are not limited to induction of contractors, stop work and investigation, recording new sites and reporting to DECC, and Care and Control Permits. The Department is satisfied that this concern of DECC is addressed in the Department's recommended condition that requires the Proponent to provide details of the protocols to be implemented to mitigate and/or manage impacts to Aboriginal cultural heritage sites in the CEMP.

The Department agrees with the Proponent that a survey walk of the pipeline route, as suggested by the Gomeroi people's representatives, does not negate the need for oral history research. This is because a survey walk would not provide for the identification of non-physical items of cultural heritage. The package of measures proposed by the Proponent, which includes completion of the oral histories research to inform the final route alignment and the avoidance of all significant items of cultural heritage significance within the 30m ROW during construction, is a better impact-specific and holistic based approach for the management of Aboriginal heritage.

The Department notes that the Gomeroi people, as conveyed in their submission, are opposed to the Archaeological Research Programme proposed by the Proponent, as unnecessary impacts to potential heritage sites may occur from additional human movement. However the Proponent explains that this Program will be within the footprint of the 30m ROW, so as not to disturb a wider region than would already be impacted by the pipeline. The Department also notes that the Gomeroi people have stated that the proposed pipeline route should avoid disturbance to all cultural heritage sites. However the Department finds that the potential impacts to the sites classified as moderate and low impact types is acceptable due to the Proponent's proposed Research Programme designed to offset such impact. Impacts to sites of high significance would be avoided within the final alignment. Upon reviewing the Proponent's assessment, including the Submissions Report, the DECC has informed the Department that it is in support of the package of measures proposed by the Proponent including modelling, varying protocols for final placement of the pipeline and undertaking construction based on identified constraints and results of the oral histories.

With regards to potential impacts to historical heritage, the Department is satisfied that the Proponent's commitment to avoid all significant and moderate sites within the ROW and identifying the final constraints in the CEMP would ensure impacts to historical heritage is minimised and managed.

The Department believes that impacts to significant cultural heritage sites can be avoided and the residual impacts can be managed provided the Proponent's mitigation measures and the Department's recommended management measures in the conditions of approval are implemented.

5.3 Noise and Blasting

Issue

Construction Noise

The Proponent conducted a qualitative noise impact assessment, which adopted a tiered impact assessment to determine noise off-set distances and identify potential noise receptors within the offset region. This screening level assessment has identified a 'major impact' zone as a result of activities during pipeline construction. The major impact is identified as receptors where predicted noise exceeds greater than 20dBA$_{LA(15minute)}$ above background noise. Background noise is assumed to be 30dBA for isolated rural receptors and 35dBA for receptors situated in urban built environments. At the screening level, 272 isolated receptors and a number of other locations have been identified as being within the major impact zone, meaning the noise criterion for construction noise would be exceeded. Following route finalisation, the Proponent has committed to conduct further detailed noise impact assessment for receptors where major impacts are predicted and where required, will develop specific localised mitigation measures in consultation with local residents and stakeholders prior to and during construction.

The Proponent has proposed a 28 days on and then nine days off construction work timetable. The nine days off enables demobilisation and remobilisation of construction camps, as well as specialist crews to return to their homes. The Proponent has stated that the majority of construction work will be undertaken in rural areas, away from sensitive receivers. Where construction noise is predicted to be audible at sensitive receivers, impacted residents will be notified 48 hours in advance of work and during the local construction period as necessary. Blasting will be scheduled to occur between 9am and 5pm Monday to Saturday and no blasting will be undertaken on Sundays or public holidays. Construction works would be undertaken between 7am and 6pm, seven days a week for 28 days and then nine days off, expect for special activities which may result in extended construction hours. These activities are where:

- the horizontal directional drill (HDD) rig is in operation. Once the drill rig is in operation, it has to keep operating until the HDD bore is complete;
- boring is in operation and until the completion of the infrastructure boring. This situation is similar to HDD, as boring must continue until completion as the integrity of the bore would be compromised should drilling cease midway (potential subsidence);
- water filling of the pipeline and pumping pressure would be required to be obtained for hydro-testing. Hydro-testing operations cannot cease midway as it is imperative that the pipeline is maintained at pressure during the testing procedures;
- works do not pose an audible disturbance to any residences;
- the transportation of plant, equipment and pipe by oversized trucks outside of hours is required by authorities (e.g. to minimise potential impacts on traffic movements);
- it is required in an emergency to avoid injury or loss of life, property and/or to prevent environmental harm; and
- an agreement is reached with local residents in order to reduce the duration of construction activities and/or manage other traffic, amenity or disturbance issues.

Blasting

The Proponent has undertaken preliminary investigations for the potential impacts from blasting. It has adopted the *Australian and New Zealand Environment and Conservation Council (ANZECC) Guidelines for Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibratio*n. The area around the Liverpool Ranges to Upper Hunter is likely to require blasting of hard rock (possible length of 45km). The Proponent has predicted through its screening level assessment that a distance of 250 metres would be required to meet a blasting limit of 115dBL blast overpressure and 5mm/s ground vibration. This is based on blast design assumptions including 11kg maximum instantaneous charge (MIC). The Department has recommended a condition that requires the Proponent to meet these limits.

Operation Noise

Gas venting at main line valves (MLVs) is the key noise impact from operation of the project. The Proponent has stated that the MLVs will be located such that they will meet noise criteria specified in DECC's *Industrial Noise Policy*. The DECC has noted that the final location of above ground infrastructure should be subject to detailed impact assessment and approval from the Department of Planning for noise to demonstrate noise criteria is met for operational activities.

Issues Raised in Submissions

- The DECC noted that among other key issues, the management of construction noise and vibration must be considered in further detailed assessment provided as part of the project application and/or presented upon completing the detailed design and final route selection stages of the project. The information may then form part of the Construction Environmental Management Plans for managing construction amenity impacts, such as noise, vibration and blasting.
- Five public submissions raised issues of impacts on human amenity impacts, indicating concern regarding both construction and operational noise generated from the project.
- One public submission stated that information included in the Environmental Assessment was inaccurate, as not all houses in the area of Greenlands had been identified as isolated receivers for noise assessment.

Consideration

The Proponent is yet to demonstrate that there will be no adverse noise impacts to sensitive receivers or be able to confirm the appropriate management measures which have been formed from consultation with the affected receptor. However the Department acknowledges that the Proponent has utilised an adaptive construction management approach for noise, where the detailed assessment of noise impacts and the relevant mitigation and management measures will be determined after the route alignment has been finalised (which will occur prior to construction and the details of which will be presented in the CEMP).

Due to this uncertainty of the potential extent and significance of the actual noise impacts, the Department finds it imperative to recommend certain noise management conditions. Firstly the Department principally supports the Proponent's 28-day construction and nine-day respite construction schedule. However the Department considers that it is critical that an alternative schedule be developed for areas that contain sensitive receptors through the CEMP. Therefore the Department has recommended that the Proponent be permitted to undertake activities associated with the project, other than blasting, that would generate an audible noise at any residential or sensitive receiver during the hours of 7:00am to 6:00pm (Mondays to Fridays), 8:00am to 1:00pm on Saturdays and at no time on Sundays or public holidays. The Department has also recommended as part of this condition, that subject to the Director-General's approval of the required CEMP, construction activities may occur outside these hours (for example a 28-day construction, 9-day respite construction schedule approach). Thus the Department's standard hours permitted may be extended, provided the Proponent can demonstrate in the CEMP that no adverse impacts would occur to sensitive receptor areas. The Department has recommended that this condition should not apply in the event of a direction from police or other relevant authority, or to avoid immediate environmental harm.

The Department recommends that a Construction Noise Management Plan (CNMP) be prepared as part of the CEMP, which would need to include a review of the construction noise criteria and related noise impact assumptions identified in the Environmental Assessment in relation to the determined calculated noise levels for

the final route of the pipeline. It also needs to contain details of the scheduling and management of construction works outside the standard hours.

The CNMP must also contain details of the measures to avoid and/or mitigate noise impacts and where impacts cannot be mitigated to meet the construction noise criterion, details of effective consultation and/or negotiation with affected receptors. The CEMP requires the approval of the Director-General prior to the commencement of construction works.

Potential noise impacts during the operational period may be generated by vehicles and machinery travelling along the pipeline ROW and access tracks, maintenance at above-ground sites, venting of gas at MVLs for planned maintenance or emergency situations and by equipment noise at above-ground sites, from pigging and meter stations. The Proponent has stated that these activities would be intermittent and of short duration, and would not create any long term noise impact to receptors. Impacts related to these noise emissions include the potential disturbance to local residents, other and users and stock and wildlife. There are no adverse noise impacts anticipated with the operation of the pipeline, with the exception of an emergency gas release (this would take place at the MLVs). The Proponent states that the occurrence of emergency venting would be extremely infrequent, if at all, and MLV locations would be planned to minimise the potential for noise impacts. Furthermore the Proponent states that operational activities associated with the pipeline would have limited, if any, potential to generate vibration.

For the management of potential operational noise impacts from the proposal, the Department recommends that the Proponent be required to include in the Operational Management Plan (OEMP), measures to mitigate and manage noise and to demonstrate noise criteria specified in the NSW *Industrial Noise Policy* will be met for operational activities. The OEMP is recommended to be submitted for the approval of the Director-General no later than one month prior to the commencement of operation of the project (or within such a period otherwise agreed by the Director-General). Operation of the project can not commence until written approval has been received from the Director-General.

The Department also recommends a condition that ensures airblast overpressure does not exceed 115 dB(Lin Peak). However of the total number of blasts over a 12 month period, a 5% exceedance is allowed. The Department has also recommended ground vibration from blasting does not exceed specific criteria (peak particle velocity criteria of 5mm per second). These blasting limitations are consistent with the *ANZECC Guidelines for Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibratio*n.

The Department believes that provided the Proponent implements all the nominated environmental commitments, its recommended noise impact minimisation measures, and the Department's recommended management measures in the conditions of approval, the impacts to sensitive receptors from construction and operational noise can be mitigated or managed.

5.4 Property and Land Use Impacts

Issue

Although the Proponent selected the Study Area to minimise impacts on the natural and built environment and local communities, impacts to agricultural production associated with the construction of the pipeline and ongoing operation of the aboveground and underground infrastructure will still occur for several reasons. Firstly the proposal creates a general impact to existing or proposed rural residential lots, these include noise, dust and vibration. Secondly the proposal will impact upon agricultural uses, as the Study Area runs through and is close to agricultural activities. These potential impacts include temporary loss of productive capacity during construction and ongoing loss of productive capacity due to location of permanent aboveground infrastructure and/or maintenance activities. The Study Area also is located in close proximity to underground and open cut mines, which are within approximately 10km of the Study Area. Although the proposal is close to industry, the Proponent states that the Study Area has been selected to avoid existing mining and quarrying activities.

Issues Raised in Submissions

A majority of the submissions received from the public illustrated concerns regarding land use impacts of the proposal. Of the 28 submissions received from landholders whose land would be traversed by the proposed pipeline, 18 submissions were concerned for the potential loss of land value due to the presence of a pipeline easement. Six submissions were concerned the proposal may render subdivisions for residential use on their property impossible and one submission held a general concern about the future liability of the pipeline and associated impacts. Six submissions stated concerns about the creation of the pipeline easement, access and security arrangements.

One submission questioned whether its company could relocate the pipeline if necessary due to exploratory or extractive coal mining. Another submission raised concern that Class 1 and Class 2 agricultural land around the Upper Hunter region was to be used for non-agricultural purposes. And lastly, one submission stressed the requirement for ongoing extensive consultation, and others stated that the current process of consultation has been unsatisfactory.

Consideration

The Proponent has stated that compensation will be provided to landholders for the presence of the pipeline easement. It further states that the proposed pipeline route has avoided areas zoned for future residential development and it will continue detailed alignment of the ROW to ensure no direct impacts on areas zoned for future residential expansions occurs. The Proponent has committed to avoid land use conflicts, particularly in relation to existing and proposed urban settlements, extraction industries and environmentally sensitive land uses.

The Proponent also explains that the pipeline route has been refined in the Maitland local government area to avoid impacts on future land use. It also states that it is responsible for the ongoing maintenance of the easement and pipeline infrastructure. During the operational phase of the project, the permanent easement would be patrolled regularly by the Proponent, as a part of the regular operation of the pipeline and as part of planned maintenance trips or as dedicated route inspection trips. In addition, specific inspections would be carried out after heavy rainfall or flash flooding. The Department acknowledges that the pipeline route is yet to be finalised and therefore the actual direct impacts to specific properties is not known. The Department has therefore recommended a design requirement, where the Proponent must submit route alignment sheets, identifying the final 30-metres Construction Right of Way. The Department requires the route alignment sheets to be submitted as part of the CEMP, which requires the approval of the Director-General.

The Department has also recommended a condition which requires the Proponent to consult with all landowners potentially affected by the final 30-metres Construction Right of Way during the preparation of the route alignment sheets. The Department also recognises that due to the nature of the environment in which the pipeline is to traverse, there is potential for current and future exploration and extraction activities to be directly impacted from the existence of the proposed underground natural gas pipeline. As such, the Department has recommended a condition which requires the Proponent, during the process of finalising the route alignment, to ensure consultation with relevant companies and titleholders of mineral and petroleum resource licences in

relation to the potential for conflict between the route of the project and current and future resource exploration and extraction activities. This consultation process must aim to resolve any identified potential conflict where practicable.

The Proponent has stated to the Department, that it is committed to actively negotiating with landholders along the ROW to agree to compensation and terms and conditions of consent agreements. The process for access and security arrangements for landholders will be documented in the CEMP and negotiated through consultation. With regards to one submitter's question of relocating the pipeline if necessary due to exploratory or extractive coal mining, the Proponent has stated that should it be proven necessary after the route alignment has been finalised, it would be willing to negotiate relocation of the pipeline at the submitter's expense. Terms of potential relocation would be negotiated with the submitter during the development of easement agreements.

The Study Area passes through Class 1 agricultural land. However the Proponent has developed mitigation measures to correspond to any identified impacts. These include taking into account the outcomes of consultation with landholders in the ROW refinement, negotiating conditions of land access and compensation with landholders, scheduling construction cognisant of seasonal constraints and negotiating compensation for lost productive capacity and ensuring the buried depth of the pipeline will allow for general cropping and grazing activities on parts of the easement. The Proponent explains that in most cases, current land use can continue following easement rehabilitation. The Proponent will continue to consult with landholders over potential impacts and the Proponent has recognised the need for an effective and reflective consultation process with stakeholders and landholders. The Proponent's commitments C1 and C2 reflect this. Commitment C3 provides to establish a framework for ongoing liaison with government agencies, including discussion of mineral titles and landholder impacts.

The Department is satisfied that the implementation of the Proponent's commitments and the Department's recommended conditions would ensure minimum and manageable impacts to land-use and land value and adequate consultation with all affected landholders, companies and holders of resource licences. The Department's assessment of the required route alignment sheets would help ensure that any actual impacts are minimised or managed to the Department's satisfaction.

5.5 Other issues

5.5.1 Analysis of Potential Hazards and Safety Risks

As required by the Director-General's Requirements (DGRs), the Environmental Assessment included an assessment of the hazards and risks of the proposed project and presented this in the form of a Preliminary Hazards Analysis (PHA). The PHA identified 54 types of potential incidents representing the following risk:

- zero 'extreme or high' risk level incidents;
- ten 'intermediate' risk level incidents;
- 33 'low' level incidents; and
- 11 'negligible' level risk incidents.

The proposal is potentially hazardous. The main hazard arises from the potential loss of containment of the natural gas and the subsequent ignition resulting in:

- Jet fires;
- Flash fire; or
- Vapour Cloud Explosion (VCE).

As part of the Department's assessment process for this project, the Major Hazards Unit of the Department reviewed the risk and hazard assessment, prepared by the Proponent. The MHU found that the PHA includes a qualitative risk assessment in accordance with AS2885-2007 and a Quantitative Risk Assessment in accordance with the Department's *HIPAP No.6, 'Guidelines for Hazard Analysis*' and *HIPAP No.4 'Risk Criteria for Land Use Safety Planning*'. The PHA also addresses impacts of pipeline construction on bush fires as required by the DGRs.

The PHA has presented the results of the Quantitative Risk Assessment in the form of risk transects showing the cumulative individual risk levels, and compared them to the Department's risk criteria given in '*HIPAP No.4*'. The MHU noted that there are recommendations in the PHA and proposed safeguards in section 5.2.4 to mitigate the bush fire risks.

The Department's MHU considers that, with the appropriate safeguards, as described in Table 9.1 of the Proponent's Environmental Assessment, the project will meet the Department's risk criteria. The Department recommends the Proponent be required to prepare and submit for the approval of the Director-General, a Final Hazards Analysis (FHA) study, confirming that the risk levels are no higher than that stated in Table 9.1 of the PHA and that all relevant recommendations in the PHA have been implemented. The FHA must be submitted to the Department at least one month prior to the commencement of construction of the proposed project.

The Department also recommends that the Proponent must provide details to the Department of the 'Safety and Operating Plan', required under the *Pipelines Regulation 2005*. Further, the Department recommends that one month prior to the commencement of operation of the project, the Proponent must submit for the approval of the Director-General, a report detailing compliance with the above two recommendations (FHA and SOP), including:

a) dates of study/plan/system submission, approval, commencement of construction and commissioning;
b) actions taken or proposed, to implement recommendations made in the studies/plans/systems; and
c) responses to each requirement imposed by the Director-General.

The Department also recommends that a condition be included which states the Proponent must comply with all reasonable requirements of the Director-General in respect of the implementation of any measures arising from the reports submitted in respect of the recommended conditions, within such time as the Director-General may agree. The Department's MHU concluded that the project can operate under acceptable safety levels, provided the Proponent implement all the nominated environmental commitments, safety measures and the abovementioned studies. The Department has recommended a requirement for the FHA in the instrument of approval.

5.5.2 Air Quality Impacts

Issue

Construction

Due to the transient nature of construction activities, the Proponent has not conducted air quality modelling, as modelling must take into consideration factors such as wind speed and the variability of wind direction. The Proponent states that these factors are indeterminate for this assessment due to the linear scope of the proposal and shifting time frames for construction. The Proponent has therefore provided a screening level assessment for air quality impacts, including a review of typical construction activities to determine the generation estimates of emissions, including nuisance dust, total suspended particulates (TSP), particulate matter less than ten microns (PM10), and particulate matter less than 2.5 microns (PM2.5). The Proponent has used DECC's air quality standards as guidelines, which should not be compared to estimated emissions for construction activities. This is because the estimated dust generation from certain activities is not accurate and the aim is to determine the likely relative contribution of various sources to the overall dust generation expected at the construction site.

The DECC's impact assessment goals for nuisance dust (nuisance impacts from dust deposition or dust fallout), which sets out the dust deposition limits in its *Approved Methods for the Modelling and Assessment of Air Pollutants* (2005) allows for a 2g/m^2/month maximum increase in deposited dust level and a 4g/m^2/month increase in total deposited dust level in an annual averaging period.

The annual goal for total suspended solids (TSP) is given as 90μg/m3, as recommended by the National Health and Medical Research Council (NMRC). DECC's goals for PM10 are 24-hour maximum of 50 μg/m3 and annual average of 30 μg/m3. The National Environment Protection Measure's (NEPM) goals for PM2.5 are 24-hour maximum of 25 μg/m3 and an annual average of 8 μg/m3.

Dust and particulate matter will be the main emissions from construction activities. Specific activities that are potential sources of dust generation include vegetation clearing and earth-moving for site preparation, excavation, trenching and backfilling; stockpiling of excavated material; movement of vehicles and machinery; and blasting at hard rock areas. The Proponent has estimated the daily emissions of dust and particulate matter from typical construction scenarios using the National Pollution Inventory and US EPA AP42 guidelines documented emissions estimation techniques. Table 5 below presents a summary of the estimated emissions from construction activities.

Table 5: Estimated Emissions from Construction Activities

Activity	TSP Emissions (kg/day)	PM10 Emissions (kg/day)	PM2.5 Emissions (kg/day)
Dozer	51	7	1
Excavator/Ditcher	1.2	0.6	0.1
Wheel Generated Dust	143	44	4.4
Grader	27	9	0.9
Padding Machine	281	181	27.1
Wind Erosion	29	14	2.2
Blasting	189	98	10.2

From Table 5 it can be seen that the dozer, wheel generated dust, use of the padding machine and blasting are activities that have a greater potential to generate dust. Blasting will only occur in limited sections of the pipeline route where igneous rocks intersect with the pipeline route.

The Proponent has proposed management safeguards and mitigation measures in areas where nuisance dust, particulate or gaseous pollutants may adversely impact on populated areas or sensitive vegetation communities. These mitigation and management measures are summarised in Table 6.

Table 6: Mitigation and Management Measures for Air Quality Impacts

Potential Impact	Mitigation and Management Measures
Reduction in air quality from dust and particulate matter	To minimise nuisance dust: • Reduce speed limits during high dust conditions. • Clearing of vegetation and topsoil would be limited to the designated footprint required for pipeline construction. • Progressive reinstatement would be undertaken as the pipeline construction proceeds. • Water trucks would be employed to reduce dust in dry windy conditions. • Silt and other materials would be removed from around erosion control structures following any significant rain event to ensure deposits do not become a dust source. • Working practices would be modified during periods of high winds by limiting the use of some machinery, particularly when in close proximity to dwellings, and reducing travel speeds. • Blasting would be conducted at appropriate times, with consideration of site conditions and sensitive receivers. • Burning of material on site would be prohibited, expect under the instruction of fire services.
Emissions from plant and equipment	Vehicles would be maintained to ensure emissions are kept to the minimum practicable.

Each crew ('spread') would work at a rate of approximately 3-4km per day depending on the terrain. Typically it would take up to 12 weeks for all the crews to pass through an area and complete their tasks. This means that each crew would be set to a specific activity such as survey and fencing to ensure construction is planned, scheduled and integrated to function as a continuous production process. The construction activities would include survey and fencing, set up of temporary facilities, clear and grade of the ROW, trenching, pipe stringing

and bending, pipe welding and inspection, joint coating, pipe placement in the trench (lowering in and laying), backfilling and compaction, hydro-testing and reinstatement.

Given the short term duration of the construction spreads, ambient air monitoring has been deemed as not necessary. However the Proponent has proposed daily checks to ensure its safeguards are being adhered to by construction staff and contractors.

Operation

As the pipeline would be buried and maintenance activities are generally passive during operation, it is unlikely that air quality would be negatively affected. The Right of Way would be rehabilitated after construction, minimising the potential for dust generation. Air emissions that may have an adverse impact on air quality during the operation of the pipeline include:

- fugitive emissions of gas due to maintenance activities, such as pipeline purging; and
- emergency venting of gas that may impact the air quality for a limited period in a specific location, generally at a main line valve location.

The Proponent has proposed mitigation measures to be implemented depending on site conditions at a particular location and the proximity of sensitive receivers. Table 7 presents the principal mitigation measures that would be implemented to minimise air quality impacts during operation:

Table 7: Air quality mitigation measures during operation

Potential Impact from Operation	Mitigation and Management Measures
Release of air pollutants from fugitive gas emissions	Regular maintenance checks, in accordance with AS2885.3 would be undertaken to ensure containment of the gas within the pipe network system.
	All valves of a leak detection system, to monitor gas leaks that may affect the integrity of the gas pipeline.
Release of air pollutants from gas venting	The Proponent states that the planned venting of gas would be limited at all times. This is because generally gas that does not conform to the specifications of the requisite gas supply for the proposal would not be accepted into the pipeline. It is also not in the interests of the pipeline operator to vent gas, as this is costly.
	Should gas venting be undertaken, it would be undertaken, where practicable, under favourable weather conditions (i.e. to facilitate rapid atmospheric dispersion of the gas).

Issues Raised in Submissions

Construction

Five submissions from potentially affected landholders raised issues of impacts on human amenity during the construction phase of the pipeline. DECC's submission noted that air quality impacts, as well as other impacts, would need to be considered in further detail in the Construction Environmental Management Plan.

Operation

The DECC's submission noted its previous comments made to the Department regarding its review of the draft Environmental Assessment Report. As part of its review, the DECC stated that limited information is provided on the potential impacts associated with venting of gases that do not meet specifications during the operational period. The estimated volume of gas released should be provided based on indicative spacing of the Main Line Valves. An assessment of the potential to reduce air impacts and gas release with reduced spacing of Main Line Valves should be undertaken. The DECC also noted that the Environmental Assessment states that under normal operations gas venting may occur at valves and scraper stations in accordance with established operating procedures. Further advice should be provided on what these established operating procedures entail.

Consideration

The Department notes that the actual air quality impacts as a result of construction are unknown due to the transient nature of construction works and weather conditions at the time of construction. However the Department believes the mitigation and management measures proposed by the Proponent will effectively reduce dust generation and emissions from construction machinery and vehicles. The Department however notes that specific mitigation measures would be implemented by the Proponent depending on the construction location and the distance between the site and sensitive receptors. Therefore the Department has recommended a condition that requires the Proponent to detail, as part of the required CEMP, how the environmental performance of the construction works will be monitored, and what actions will be taken to address identified potential adverse environmental impacts. As part of this recommended condition, the Proponent is required to address several key environmental performance issues, including detailing the measures to manage dust emissions and the measures to control air emissions during construction to ensure minimal and acceptable air emissions.

The Department also recommends a condition requiring the Proponent to undertake all construction works with the objective of preventing visible dust emissions and constructing the project in a manner that minimises dust impacts. Additionally, the Department recommends a condition that prohibits the Proponent from emitting any offensive odour, as defined under section 129 of the *Protection of the Environment Operations Act 1997*, beyond the boundary of the project site(s).

The Department acknowledges that as the proposed pipeline route is yet to be finalised and would be presented to the Department for approval during the detailed design phase of the project, the DECC's concerns of conducting further detailed assessment can be met at that time. The Department therefore recommends a condition that requires the Proponent to submit for the approval of the Director-General, an Operation Environmental Management Plan (OEMP). The Proponent must detail, as part of this plan, the measures to be utilised to ensure ambient air criteria will be met for operational activities, including gas venting, to the satisfaction of the DECC's requirements.

It is the opinion of the Department that provided the Proponent's mitigation measures are implemented and the recommended conditions of approval are complied with, the project would meet all relevant air quality criteria and impacts to air can be managed to the Department's satisfaction.

5.5.3 Sensitive Waterways and Crossings

The proposed pipeline would cross many major and minor watercourses, and would be located in the vicinity of groundwater bores. The sensitivity of waterways has been determined based on data from aerial photography, Department of Natural Resources' stream categories database, *NSW Fisheries' Classification and Characteristics of Waterway Type* (2003), SEPP 14 and RAMSAR listings records and water bore licences. The proposed pipeline would cross a maximum total of 178 watercourses, the identified crossings are based on desktop analysis and are categorised as follows:

- 33 crossings reflecting high sensitivity, this includes crossings within the Gwydir, Boomi, Quirindi, Hunter. Macintyre/Barwon, Namoi and Pages systems;
- 20 crossings reflecting moderate sensitivity; and
- 126 water crossings reflecting low sensitivity.

Sensitive wetlands (such as RAMSAR or SEPP 14) have been avoided, for the most part, throughout the Study Area. The Gwydir and Hunter Estuary RAMSAR wetlands are fed by watercourses crossed by the proposed pipeline. The majority of watercourse crossings are through drainage lines that experience surface water flows only during rain events and are therefore dry for the most part. The Proponent states that surface water impacts are negligible when these watercourses are dry. The potential impacts to water features as a result of the proposal are:

- Changes in waterway channel or bank form. This may result from loss of riparian vegetation and lead to increased erosion potential or geomorphic impacts.
- Pollution of surface and groundwater. Water pollution could potentially result from erosion and sedimentation, disposal of water used for hydrostatic testing and spills of fuels and chemicals during construction.
- Potential during horizontal directional drilling for the drill to intersect a fracture within the riverbed of a watercourse crossing. This event is referred to as a 'frac-out' and could cause increased turbidity until the material is fully dispersed.
- Changes to existing surface and groundwater flow regimes.

No direct impacts are anticipated to drinking water supplies as a result of the construction or operation of the proposal. However there is potential for residual impacts to occur as a result of construction activities on watercourses, wetlands and groundwater and soils.

The Proponent has proposed construction and mitigation measures to reduce impacts to surface and groundwater. These include, but are not limited to:

- implementing soil and water management measures such as diverting surface runoff around and away from working areas to prevent erosion;
- containing water pumped from trenches and disposal through sediment socks or settlement control devices to allow sediment to settle out prior to discharge to the environment;
- developing a procedure to be included in the CEMP for the disposal of hydrostatic test water; and
- developing monitoring and reporting procedures and a spill response procedure which will be illustrated in the CEMP.

However fieldwork is required for thirty sites to determine whether these measures may need to be supplemented by a more detailed understanding of watercourse sensitivity, the probable crossing technique employed and the potential impacts. This proposed fieldwork would be conducted as part of the Proponent's adaptive management framework for construction, which it has committed to. This means that the Proponent would, to minimise potential impacts on surface and groundwater, undertake further assessment on watercourses to finalise crossing locations and methods, and form site specific management measures during construction. The Proponent has also committed to engage with DECC, DPI, DWE and relevant CMAs with regard to crossing methodology and site specific management measures during construction. This commitment would ensure appropriate water crossing techniques are used. The Proponent has also committed to implement all practicable measures to limit impacts on watercourses and channels. Measures to be implemented will be guided by industry and government guidelines and policies.

Issues Raised in Submissions

The DWE stated in its submission that site specific watercourse crossings and associated methods of construction are to be prepared in accordance with *APIA Code of Environmental Practice – Onshore Pipelines* and submitted to DWE for endorsement prior to commencement of pipeline construction. DPI Fisheries noted that it is to be consulted with regards to high sensitivity water crossings. The Border Rivers-Gwydir CMA noted that its previous concerns regarding the Proponent's approach to the development of methods for watercourse crossings has been addressed in the Proponent's Submissions Report.

Consideration

The Department recognises and agrees with the Proponent that several methods can be employed at watercourse crossings depending upon the size and nature of watercourse flow regimes and the quality of the riparian vegetation. Open cut with or without flow diversion and horizontal directional drilling are the common pipeline construction methods available for the crossing of watercourses. Therefore the Department is satisfied with the Proponent's commitment to engage with, prior to construction, DECC, DPI and DWE to select appropriate waterway crossing techniques, taking into account the sensitivity of the waterway crossing. The Department also notes that the majority of watercourse crossings would be through non-perennial watercourse features (intermittent flow) and thus have been identified as generally being of low sensitivity. It is also noted that the Proponent would where practicable, undertake crossings at all watercourses during no or low flow conditions.

The Department is also satisfied with the range of commitments developed by the Proponent to minimise the pollution of surface or groundwater prior to, and during construction to minimise changes to existing surface and groundwater regimes, minimise impacts on water quality and geomorphology, minimise the risk of pollution of surface and groundwater and to minimise adverse impact on surface and groundwater bodies. The Department supports the Proponent's commitment to form a Government Liaison Group (GLG) as ongoing liaison with representatives of government agencies and other authorities should be maintained to ensure good construction environmental practice is achieved. The methodology for watercourse crossings would be one of the several important aspects that would be discussed and resolved by the GLG.

Although the Department finds that the Proponent's proposed management measures and commitments are suitable for the issue of waterway crossings, it recommends specific conditions to ensure impacts are avoided or minimised. Firstly, the Department recommends a condition that requires the Proponent to prepare, in accordance with *APIA Code of Environmental Practice – Onshore Pipelines*, site-specific watercourse crossing plans and details of associated methods of construction. These documents must be submitted for the endorsement of DWE prior to the commencement of the relevant construction works. To enable the Department to review these documents, it has also recommended as part of this condition, that the CEMP include a copy of DWE's endorsement(s) for the documents, provides details of the duration and timing of works associated with watercourse crossings and the mitigation measures to protect riparian and aquatic habitats in and around water-crossings. The Plan would be flexible to take account of changed weather and water flow conditions.

Secondly, the Department recommends a condition that requires the Proponent to avoid any disturbance to, or crossing of, wetlands mapped under *State Environmental Planning Policy 14* (SEPP 14). Where the project route lies within 100 metres of a mapped SEPP 14 wetland, the Department requires an appropriate buffer around these wetlands be defined and illustrated in the CEMP. This requirement would ensure no adverse effects to SEPP 14 wetlands result from the project. Furthermore, the Department recommends the Proponent be required to consult with DPI in relation to any temporary infrastructure or works in and around watercourses that may result in the blockage of fish passage.

To ensure the protection of the good water quality, the Department has recommended that the CEMP outline measures that will be employed to manage water on the site, to minimise soil erosion and the discharge of sediments and other pollutants to land and or watercourses throughout the life of the project, by way of a Water Management Sub Plan. The Proponent is also required to detail in the CEMP, the measures to monitor and minimise soil erosion and the discharge of sediment and other pollutants into local waterways or land during construction. The Department also recommends that the Proponent employs soil and water management controls to minimise soil erosion and the discharge of sediment and other pollutants to lands and/or waters, in accordance with Landcom's *Managing Urban Stormwater: Soils and Conservation* document.

The Department believes that provided the Proponent implements all nominated environmental commitments during the design and construction phases of the project and adheres to the Department's recommended conditions of approval, the potential impacts to watercourses from construction would be mitigated and/or minimised.

6. CONCLUSIONS AND RECOMMENDATIONS

The Department has assessed the Environmental Assessment, Statement of Commitments, submissions received and the Submissions Report, and is satisfied that the impacts of the project can be mitigated and/ or managed to ensure an acceptable level of environmental performance.

The Proponent proposes that the Aboriginal heritage oral research would be completed after the Minister has made a determination on the proposal and prior to construction, as is envisaged by the Proponent's commitment AH6. The Department notes that outcomes of this research and consultation with relevant Aboriginal groups would inform the final alignment of the proposed pipeline.

The Department finds that there will be some unavoidable loss of vegetation and potential fauna habitat as a result of clearing required for the pipeline trench and ancillary infrastructure. However, the Department believes it is unnecessary, at this time, to require the Proponent to develop and implement biodiversity offsets, as the actual loss is unknown and therefore cannot be assessed. The Department therefore recommends that the Proponent be required to develop and submit for the approval of the Director-General, a Biodiversity Offset Needs Study. The Study must be developed in consultation with DECC and include a methodology for determining biodiversity offset requirements. This Study would confirm the level and significance of the actual impacts to biodiversity and would determine the biodiversity offset requirements relevant to the quantified loss.

The route alignment sheets for the project that will be submitted by the Proponent, as part of the CEMP, will allow the Department to confirm that the actual impacts from the proposal are consistent with those impacts identified during the environmental assessment process. It will also ensure that any adverse environmental impacts are mitigated or minimised through appropriate management practices.

The potential impacts to human amenity from the construction of the project would be further assessed in detail by the Proponent by way of a Construction Environmental Management Plan. This Plan would incorporate noise, vibration, blasting, air quality and the protection of surface and groundwater quality and be submitted to the Director-General for approval.

The Department notes that the proposed pipeline will bring a range of benefits to the State including direct investment, opportunities for economic development, additional gas supply security and opportunities for price competition. It will also provide opportunities for environmental benefits through replacing coal fired electricity with gas. There are a range of potential impacts, however the Department is satisfied that ongoing route iteration, together with the implementation of the Proponent's commitments and the Department's recommended conditions should ensure impacts are minimised and appropriately managed.

The Department recommends that the Minister for Planning consider the findings and recommendations of this report and approve the project, subject to the conditions of approval.

APPENDIX A – RECOMMENDED CONDITIONS OF APPROVAL

APPENDIX B – STATEMENT OF COMMITMENTS

APPENDIX C – SUBMISSIONS REPORT

APPENDIX D – ENVIRONMENTAL ASSESSMENT