

ENVIRONMENTAL ASSESSMENT

Newcastle Gas Storage Facility Project

Major Project Application Number 10-0133

Volume 1: Main Report

May 2011

CR 6023_8_v3



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1. INTRODUCTION

1.1 Overview

AGL Energy Limited (AGL) proposes to develop the Newcastle Gas Storage Facility Project (the Project) at Tomago, New South Wales (NSW) (Figure 1.1). The Project is required to meet AGL's peak gas market requirements over winter and to provide additional security of gas supply during supply disruption events.

The Project consists of the construction and operation of:

- The gas plant site, which includes:
 - A processing plant that will convert pipeline natural gas to liquefied natural gas (LNG) by cooling it to -162°C . It will be capable of processing up to 66,500 t of LNG per year.
 - An insulated, non-pressurised LNG storage tank (capable of containing 30,000 t or 63,000 m³ of LNG, equivalent to 1.5 petajoules (PJ)) and an associated containment bund to contain any potential spills or leaks.
 - A re-gasification unit to convert the LNG in the storage tank back into natural gas.
 - A flare.
 - A truck loading facility to allow the dispatch of up to 1,000 tankers of LNG per year.
 - A new road to connect the gas plant site to TAC Northern Access Road.
 - Infrastructure and utility connections.
 - An emergency access road.
- A natural gas pipeline connecting the gas plant site to the receiving station.
- A receiving station at Hexham to link the Project into the NSW gas network via the existing Wilton - Newcastle trunk pipeline.

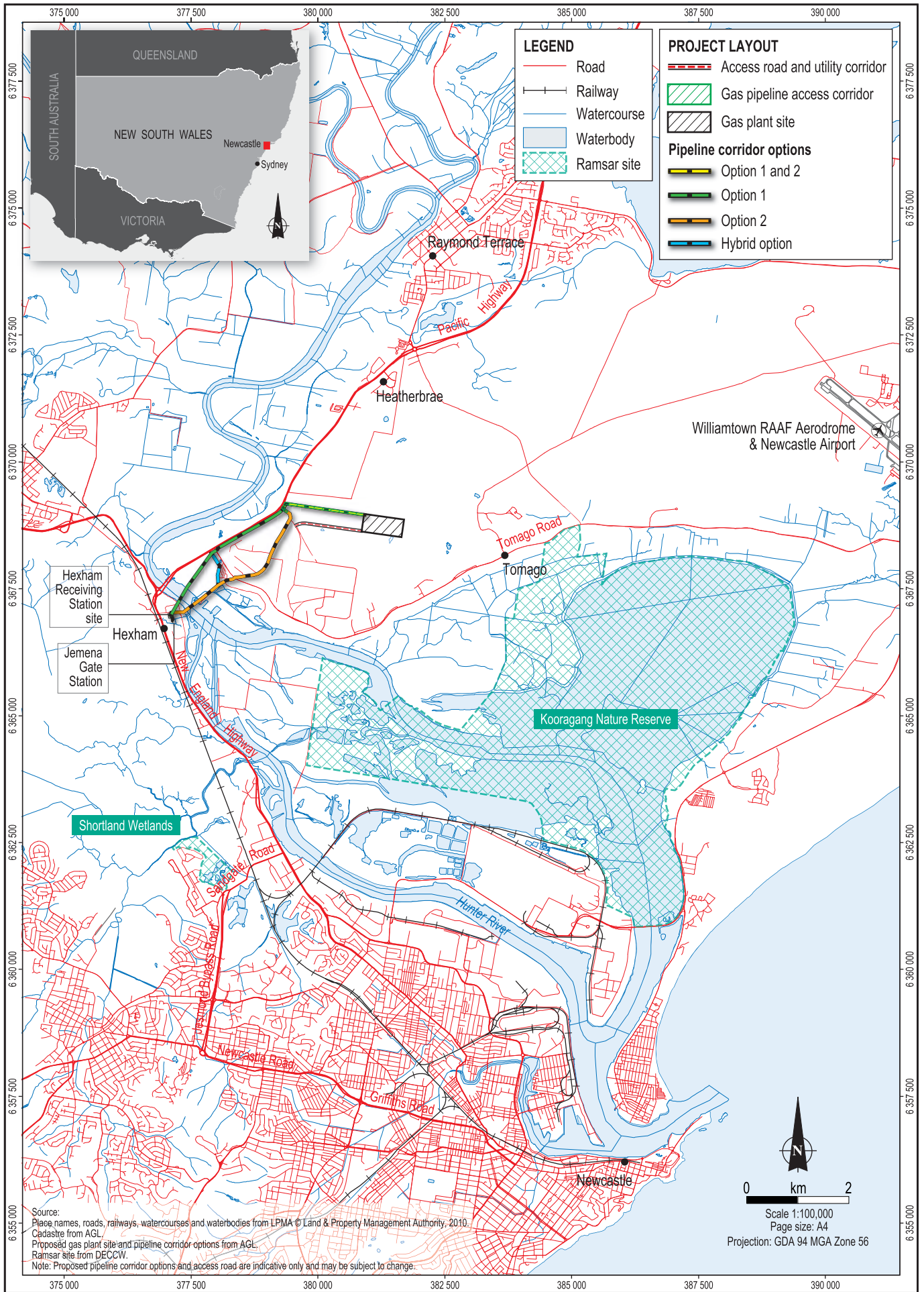
The conceptual project layout is shown in Figure 1.2.

The Project is still subject to design and the above description is indicative only at this stage.

This estimated capital cost of the Project is \$300 million.

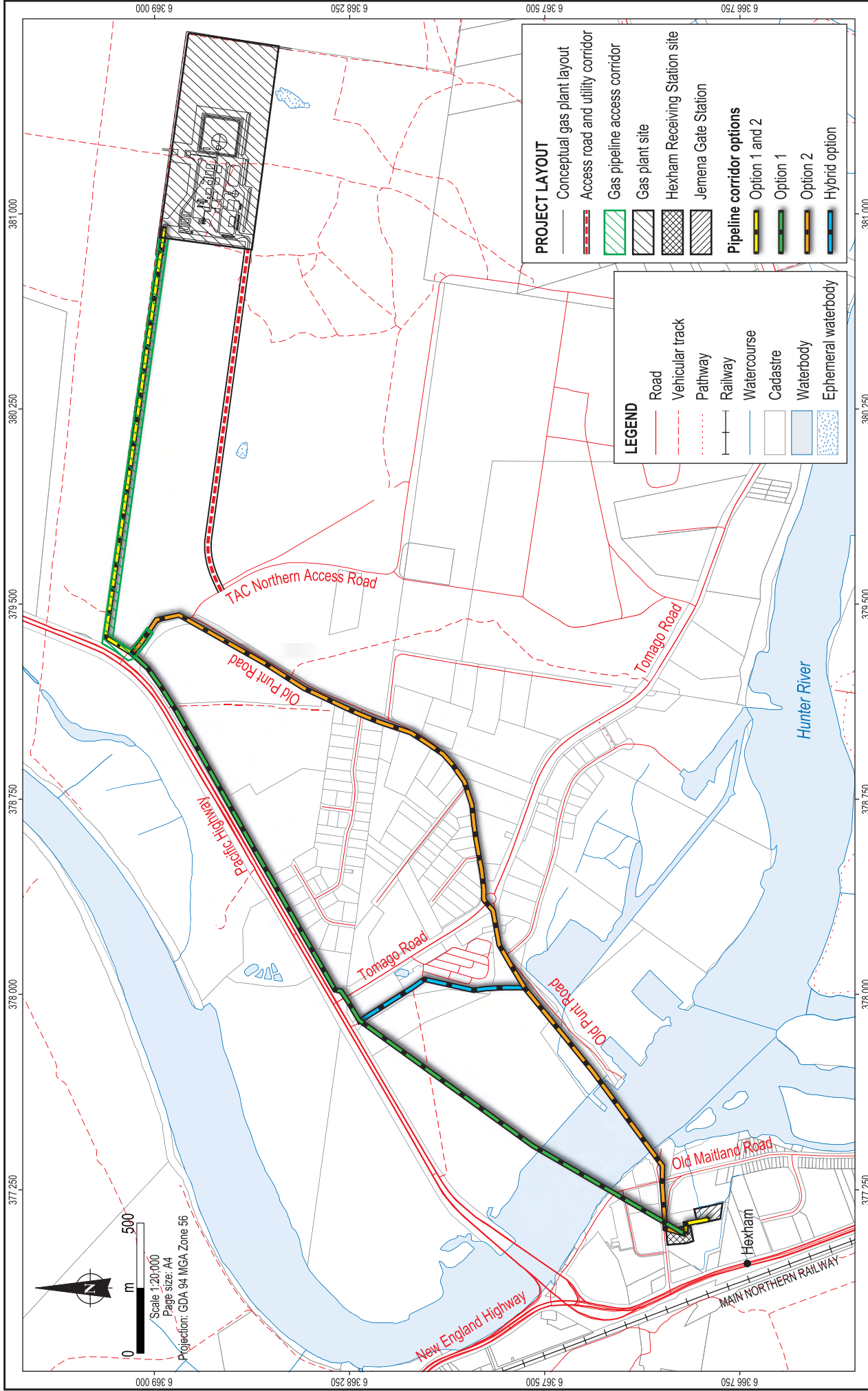
AGL is currently the proponent for the Project but the proponent may ultimately be a successor or assignee to AGL.

It is envisaged that the Project will be in operation by first quarter 2014 with construction commencing in third quarter 2011.



Source:
 Place names, roads, railways, watercourses and waterbodies from LPMA © Land & Property Management Authority, 2010.
 Cadastre from AGL.
 Proposed gas plant site and pipeline corridor options from AGL.
 Ramsar site from DECCW.
 Note: Proposed pipeline corridor options and access road are indicative only and may be subject to change.





Source: Place names, roads, railways, watercourses and waterbodies from LPIA © Land & Property Management Authority, 2010.
 Cadastral from AGL.
 Proposed gas plant site and pipeline corridor options from AGL.
 Proposed gas plant layout from Worley Parson (December 2010).
 Note: Proposed pipeline corridor options and access road are indicative only and may be subject to change.

AGL Energy Limited
 Newcastle Gas Storage Facility Project

AGL
 Coffey natural systems

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Figure No: 1.2

1.2 Proponent

AGL Energy Ltd (AGL) is one of Australia's largest integrated energy companies and is focused on power generation, gas production and energy retailing. AGL has been operating in Australia for more than 170 years.

AGL has developed into Australia's leading renewable energy company and is the largest private owner, operator and developer of renewable energy generation assets. AGL has major investments in hydro and wind power generation, as well as ongoing developments in key renewable energy areas including solar, geothermal, biomass, bagasse¹ and landfill gas.

AGL retails natural gas, electricity and energy-related products and services to approximately 3.2 million customer accounts across NSW, Victoria, South Australia and Queensland.

AGL is listed on the Australian Securities Exchange (ASX: AGK). AGL is an S&P/ASX 50 company and was one of the first companies to be listed on the exchange.

1.3 Project Location

The Project comprises of the following components (see figures 1.2 and 1.3):

- Gas plant site.
- Access road and utility corridor.
- Gas pipeline access corridor.
- Pipeline corridors (option 1, option 2 or a hybrid option).
- Hexham receiving station.
- Gas pipeline connection to the Jemena Gate Station.

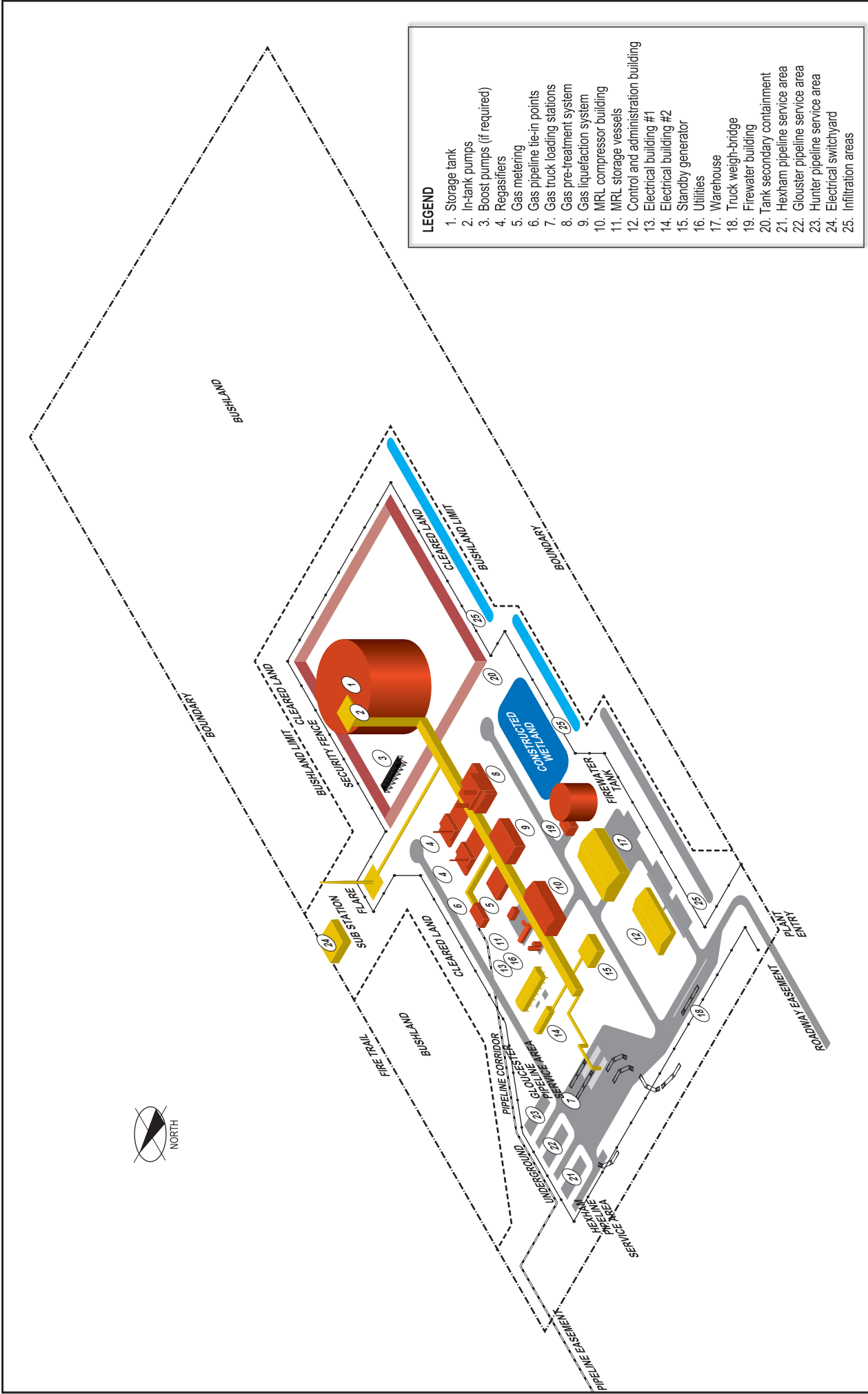
There have been amendments to the project components since the draft EA. These are:

- Pipeline corridor option 1 – the horizontal directional drilling section of the southern end of the pipeline has been removed from the project. Accordingly, references to this section of the pipeline have been removed from this EA. Figures within this EA and within the specialist reports have *not* been amended.
- Gas plant site – the electrical switchyard within the gas plant site has been relocated further to the east, north of the flare stack. Text and figures within this EA has been amended accordingly.

1.3.1 Gas Processing Facility, Access Road and Utility Corridor

The gas plant will be located in the northeastern corner of Lot 105 DP 1125747 in the Port Stephens Local Government Area (LGA). This site is north of the Tomago Aluminium Smelter on land currently owned by the Tomago Aluminium Company (TAC). This lot is known as 5 Old Punt Road, Tomago. The site is approximately 13 km northwest of the Newcastle central business district, 8 km south of Raymond Terrace and 4 km east of the Hexham industrial area (see Figure 1.1).

¹ Bagasse is the fibrous residue remaining after sugarcane or sorghum stalks are crushed to extract their juice and is currently used as a renewable resource in the manufacture of pulp and paper products and building materials.



- LEGEND**
1. Storage tank
 2. In-tank pumps
 3. Boost pumps (if required)
 4. Regasifiers
 5. Gas metering
 6. Gas pipeline tie-in points
 7. Gas truck loading stations
 8. Gas pre-treatment system
 9. Gas liquefaction system
 10. MRL compressor building
 11. MRL storage vessels
 12. Control and administration building
 13. Electrical building #1
 14. Electrical building #2
 15. Standby generator
 16. Utilities
 17. Warehouse
 18. Truck weigh-bridge
 19. Firewater building
 20. Tank secondary containment
 21. Hexham pipeline service area
 22. Glouster pipeline service area
 23. Hunter pipeline service area
 24. Electrical switchyard
 25. Infiltration areas

The gas plant site will be subdivided from Lot 105 to form a new allotment. Access will be via an access corridor (with associated utility corridor), which will join the TAC Northern Access Road at a point approximately 140 m south of where the TAC Northern Access Road and Old Punt Road intersect. The gas plant site, access road and utility corridor are zoned 4a (Industrial-General) within Port Stephens LGA. These areas are generally covered with native vegetation, including re-growth.

1.3.2 Gas Pipeline Corridors

The alignment of the gas pipeline between the Hexham receiving station and the gas plant is yet to be determined.

The gas pipeline access corridor will connect the gas plant to one of the gas pipeline options at the north end of Old Punt Road. The gas pipeline access corridor will be subdivided from Lot 105.

AGL is considering two potential gas pipeline corridor options from the end of the gas pipeline access corridor, at the northern end of Old Punt Road near the Pacific Highway (see Figure 1.2):

- Option 1 – the route traverses approximately 1.6 km southwest adjacent to the Pacific Highway until it reaches Tomago Road. The pipeline route crosses Tomago Road. It will then connect with the hybrid option, before joining option 2. It will then follow along option 2 and terminate at the Hexham receiving station.
- Option 2 – the route traverses approximately 1.0 km southeast along the Old Punt Road easement through to the start of the Tomago industrial area. The pipeline will be in a trench beneath or adjacent to Old Punt Road. From here it is proposed to use horizontal directional drilling to construct the pipeline from the start of the Tomago industrial area to the southern side of Laverick Avenue. The horizontal drill will follow the Old Punt Road easement. From the southern side of Laverick Avenue, the route heads southwest for approximately 600 m before crossing the Hunter River. Horizontal directional drilling will be used to construct the pipeline under the Hunter River and the adjacent coastal wetlands. The route then traverses west along Old Maitland Road for approximately 300 m before terminating at the Hexham receiving station site.
- Hybrid option – the route will follow along option 1 until Tomago Road. The pipeline will then run along the unsealed road (parallel to Tomago Road) and then run south. It will then run along the western side of the Tomago Caravan Park boundary until it meets the Laverick Avenue HDD exit point. The pipeline will follow the same route as described in option 2 from the Laverick HDD exit point into the Hexham receiving station and Jemena trunk line compound (see Figure 1.2).

1.3.3 Hexham Receiving Station

The Hexham receiving station will link the Project into the NSW gas network. It is proposed to build the receiving station on an AGL-owned site, 235 Old Maitland Road, adjacent to the existing Jemena Gate Station facility. A short underground pipeline will be constructed to connect the receiving station to the Jemena Gate Station.

1.4 Project Approvals Process

1.4.1 State Approvals

The Project will be subject to a range of planning and related legislation across local, state and Commonwealth levels. The environmental planning instruments, other than State environmental

planning policies will not apply to the Project if it is approved under Part 3A of the *Environmental Planning and Assessment (EP&A) Act 1979*.

The Department of Planning (DoP), confirmed on 9 August 2010 that the project is subject to determination by the Minister for Planning under Part 3A of the EP&A Act and as such an Environmental Assessment (EA) is to be prepared. The Major Project Application Number for the Project is 10-0133.

The Preliminary Environmental Assessment (PEA) was submitted to the DoP and in accordance with the Part 3A process, the DoP subsequently issued the Director-General Requirements (DGRs) for the EA on 13 October, 2010. On 28 October 2010, the Minister for Planning declared that the Project will be assessed as 'critical infrastructure'.

As part of the EA process, the draft EA will be reviewed by DoP prior to being placed on public exhibition. The draft EA will be submitted to DoP in February 2011 with a view to submit the finalised EA for public exhibition by April 2011. The EA will be advertised and publicly exhibited for at least 30 days during which time submissions by stakeholders can be made. Following receipt of submissions, AGL will consider all submissions and respond to any issues raised.

Clause 6(1) of the State Environmental Planning Policy (Major Development) 2005 (Major Development SEPP) states the types of development to which Part 3A of the EP&A Act applies. Under Schedule 1 of the Major Development SEPP the following development types are relevant to the project:

- A gas storage facility with a 'capital investment value in excess of \$20 million' (Schedule 1, Group 3, item 10(2)(b)).
- Storing dangerous goods in such quantities that constitute a major hazard facility under the Control of Major Hazard Facilities National Standard (Schedule 1, Group 3, item 10(3)).
- A pipeline for which a licence is required under the *Pipelines Act 1967* (NSW) (Schedule 1, Group 8, item 26A(a)).

There have been major amendments to Part 3A planning approvals process since the Draft EA. The NSW Government has announced that Part 3A of the *Environmental Planning and Assessment Act 1979* will be repealed. On 13 May 2011, the Government announced several transitional arrangements. For applications involving '*chemical and significant infrastructure*' already in the Part 3A system, these will continue to be assessed and determined under Part 3A pending its legislative repeal.

1.4.2 Federal Approvals

On 23 November 2010, a referral was submitted to the Department of the Sustainability, Environment, Water, Population and Communities (DSEWPC) to allow determination of whether the proposed Project is a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). On 23 December 2010, the Project was declared a controlled action under the EPBC Act by DSEWPC, and as such requires assessment and approval by the Minister for Sustainability, Environment, Water, Population and Communities before it can proceed.

On 17 January 2011, the DoP in consultation with DSEWPC issued supplementary DGRs for the Project to ensure that sufficient information is included in the EA to provide an appropriate level of assessment of the relevant controlling actions.

1.5 Purpose and Structure of the Environmental Assessment Report

This environmental assessment (EA) report describes the Project, provides an assessment of potential impacts that may occur if the Project is developed, and recommends measures to avoid, mitigate or manage those impacts.

The EA is the principal document by which the environmental aspects of the Project will be assessed by the NSW DoP and by DSEWPC. The EA has been prepared to address relevant issues and requirements raised by key stakeholders (government agencies, statutory authorities and the community) and as determined by the AGL Risk Management and Assessment Framework (AGL, 2010). It concludes by presenting AGL's commitments to operate the Project in an environmentally and socially acceptable manner.

The EA is presented in three parts, as shown in Table 1.1. Table 1.2 provides a summary of each section within the EA main report.

The Project is currently a proposal only and is still subject to a number of factors including detailed design, project approvals and final investment decision by the AGL Board. For reasons of style, the Project and related proposed activities have been described in the active 'will' rather than 'would'.

Table 1.1 Structure of the EA report

EA Part	Description
Executive Summary	Provides an overview of the Project and the EA report.
Main Report (this report)	Describes the Project and its potential impacts and recommends avoidance, mitigation and management measures (see Table 1.2).
Appendices (Volumes 2, 3, 4 and 5)	Includes the specialist study reports that provide a detailed technical analysis of the key issues identified and associated with the Project. These reports are used to support the content of the main report.

Table 1.2 Summary of the EA main report

Section No.	Section Title	Description
1	Introduction	Provides an overview of the Project, the purpose and structure of the EA, details about the proponent and the relationship of the Project to other proposed projects.
2	Legal and Policy Requirements	Outlines applicable environmental legislation and policy.
3	Project Justification	Outlines why the Project is being proposed, why and how the specific site and technology will be selected and how sustainability will be taken into account in project planning.
4	Project Description	Describes the construction and operation of the Project.
5	Stakeholder Consultation	Describes the stakeholder and community consultation that has been undertaken in the lead-up to, and during, the environmental assessment process for the Project.
6	Environmental and Social Context	Describes the physical environmental setting in the area and the social environment.

Table 1.2 Summary of the EA main report (cont'd)

Section No.	Section Title	Description
7	Environmental Impact Assessment	Provides a description of the existing environment and an assessment of the potential impacts of the Project on the physical and social environment. It provides management measures to avoid or minimise these impacts.
8	Preliminary Hazard Analysis	Describes safety considerations and an outline of proposed Project hazard assessment.
9	Environmental Safeguards and Impact Mitigation Measures	Summarises the best practice procedures and control measures to be adopted by the Project in order to reduce the risks of impacts.
10	Conclusion	Summarises the findings of the EA.
11	References	Lists references of all material used in the preparation of the EA.
12	Glossary	Lists all abbreviations and defined terms used within the EA main report.

The specialist studies involved in the preparation of the EA are outlined in Table 1.3 below.

Table 1.3 Roles of specialist consultants in preparation of the Environmental Assessment report

Project Role	Consultant
Project management and environmental assessment report writing and assessment of impacts	Coffey Natural Systems Pty Ltd
Preliminary Contamination Assessment – Tomago and Hexham	Coffey Environments Pty Ltd
Surface Water Assessment	WorleyParsons
Water and Wastewater Servicing Summary	WorleyParsons
Flood Impact Assessment	WorleyParsons
Groundwater Assessment	Coffey Geotechnics Pty Ltd
Ecological Assessment	Ecobiological
Bush Fire Threat Assessment	Ecobiological
Cultural Heritage Assessment	RPS
Socio-economic Characterisation	Coffey Environments Pty Ltd
Visual Impact Assessment	Terras
Traffic Study	AECOM Australia Pty Ltd
Construction and Operations Noise and Vibration Assessment	Atkins Acoustics and Associates Pty Ltd
Air Quality and Greenhouse Gas Assessment	PAEHolmes
Preliminary Hazard Assessment	Planager

Table 1.4 lists the key issues identified in the Director-General's Requirements (DGRs) for the Project, including the supplementary DGRs, and references the relevant part of Section 7 where these have each been addressed.

Table 1.4 Director-General's requirements under section 75F of the *Environmental Planning and Assessment Act 1979*

Key Assessment Requirements	Reference in EA
General Requirements	
<p>The EA must include:</p> <ul style="list-style-type: none"> • An executive summary. • A description of the project including construction, operation, staging and decommissioning including how the design meets the Australian Standard AS2885. • Consideration of any relevant statutory provisions including the consistency of the project with the objects (Section 5) of the Environmental Planning and Assessment Act 1979. • Consideration of State Environmental Planning Policy No.14 – Coastal Wetlands and State Environmental Planning Policy No. 71 – Coastal Protection Areas. • Consideration of Port Stephens Local Environmental Plan 2000 and Development Control Plan 2007 – B5 Industrial Development (Port Stephens Council, 2007). • An assessment of the environmental impacts of the project during construction and operation, with particular focus on the key assessment requirements specified below. Where relevant, the assessment must consider cumulative impacts associated with surrounding landuse and other landuse on site. • A draft Statement of Commitments detailing measures for environmental mitigation, management, offset and/ or monitoring for the project. • A conclusion justifying the project taking into consideration the environmental, social and economic impacts of the project; the suitability of the site; and the public interest; and • Certification by the author of the EA that the information contained in the assessment is neither false nor misleading. 	<p style="text-align: center;">Section 4</p> <p style="text-align: center;">Section 2</p> <p style="text-align: center;">Sections 2 and 7.5</p> <p style="text-align: center;">Sections 2 and 7</p> <p style="text-align: center;">Section 7</p> <p style="text-align: center;">Section 9</p> <p style="text-align: center;">Section 10</p> <p style="text-align: center;">Report certification</p>
Strategic Justification	
<p>The EA must include assessment of the following key issues:</p> <ul style="list-style-type: none"> • Provide a strategic assessment of the need for and scale, scope and location of the project in relation to predicted gas demand, predicted pipeline capacity constraints, unplanned or intermittent supply interruptions, and the strategic direction of the region and the State in relation to gas supply and demand and gas extraction technologies. • Analyse the suitability of the site with consideration to strategic land use planning for the region (including the Department's <i>Lower Hunter Regional Strategy</i>, DoP, 2006) and potential conflicts with surrounding land use (existing and planned-future). • Clearly demonstrate how project elements (including gas storage facility, road access and gas pipeline) have been located within the site to avoid and /or minimise key environmental impacts, including vegetation impacts, as far as reasonable and feasible. • Describe the objectives of the project, alternatives considered (including of project siting) and justification for the preferred project; and • Demonstrate the benefits of the project at a strategic and local context. 	<p style="text-align: center;">Section 3</p> <p style="text-align: center;">Section 3</p> <p style="text-align: center;">Section 3</p> <p style="text-align: center;">Sections 3, 4 and 7</p> <p style="text-align: center;">Section 3</p>

Table 1.4 Director-General’s requirements under section 75F of the *Environmental Planning and Assessment Act 1979* (cont’d)

Key Assessment Requirements	Reference in EA
<i>Flora and Fauna</i>	
<p>The EA must include a flora and fauna impact assessment in accordance with the Guidelines for <i>Threatened Species Assessment</i> (DEC, 2005c). The EA must specifically consider impacts on:</p> <ul style="list-style-type: none"> • Any threatened species and communities listed under both State and Commonwealth legislation recorded on the site or in the surrounding area including consideration of <i>Port Stephens Council Comprehension Koala Plan of Management</i> (Port Stevens Council, 2002). • Riparian, in-stream ecology and groundwater dependent communities affected by the project including consideration of the <i>NSW Groundwater Dependent Ecosystems Policy</i> (DLWC, 2002). • Native vegetation and habitat values on site including SEPP 14 wetlands and areas covered by SEPP 71 Coastal Protection Area. • Wildlife corridors and the Hunter Estuary Wetland Ramsar site. • Existing environmental enhancement works, conservation agreements or offsets on site. • Measures to avoid, mitigate or offset impacts consistent with ‘improve or maintain’ principles. Sufficient details must be provided to demonstrate the availability of viable and achievable options to offset the impacts of the project. The EA must demonstrate how the project (including gas storage facility, road access and gas pipeline) has been designed and sited to avoid impacts to biodiversity values as far as possible and, where unavoidable, how impacts would be minimised, mitigated and offset consistent with maintain or improve principles. 	<p>Section 7.5</p> <p>Section 7.5</p> <p>Sections 7.3, 7.4 and 7.5</p> <p>Section 7.5</p> <p>Sections 7.3 and 7.5</p> <p>Section 7.5</p> <p>Sections 3 and 7.5</p>
<i>Surface Water and Groundwater Impacts</i>	
<p>The EA must include:</p> <ul style="list-style-type: none"> • A site water balance clearly identifying and quantifying operational water use for the project including: annual water demand and sources of input; water reuse and recycling measures; waste water generation and disposal requirements (including sewage); and stormwater management. The EA is to demonstrate how a sustainable and efficient water supply is to be sourced and secured for the Project. • A flow diagram or similar showing interactions between various water and wastewater streams and maps showing indicative locations and design of water storage/capture structures on site. • A detailed assessment, in consultation with NOW, of the direct and indirect impacts on groundwater and surface water, with consideration of the <i>Water Sharing Plan for the Tomago Tomaree Stockton Groundwater sources 2003</i>, including an assessment of the adequacy of the existing piezometers, impacts on the existing sand aquifer, groundwater and surface water resources, existing user entitlements, and on groundwater-dependent and riparian ecology must be include with consideration of impacts to surrounding water extraction operations. Mitigation, contingency and monitoring requirements must be specified to manage impacts, the details of any models or predictive tools used are to be documented in the EA. • An assessment of the water quality impacts of the project including stormwater management and water quality impacts on the Tomago Sandbeds aquifer potable water supply and consideration of the Special Areas regulated by the <i>Hunter Water Act 1991</i> and <i>Hunter Water Regulation 2010</i>. Mitigation, contingency and monitoring requirements must be specified to manage impacts. 	<p>Sections 7.3 and 7.4</p> <p>Section 7.3.4</p> <p>Sections 7.3, 7.4 and 7.5</p> <p>Sections 7.3 and 7.4</p>

Table 1.4 Director-General's requirements under section 75F of the *Environmental Planning and Assessment Act 1979* (cont'd)

Key Assessment Requirements	Reference in EA
Surface Water and Groundwater Impacts (cont'd)	
<ul style="list-style-type: none"> Contaminant fate analysis from a grid of points across the site for a 100 year period of representative climate and representative water extraction by Hunter Water Corporation from the Station 20 boreline. The grid of points shall include a regular grid to give a broad indication of contaminant transport potential from across the site and shall also include points that represent the locations of stormwater discharge (both treated and untreated) and any other point discharges from the site including a map showing the results of this assessment including contaminant fate lines and travel times, with results to be shown irrespective of whether or not any real risk of contamination may be envisaged by the proponent. The assessment shall also include presentation of maps of groundwater level contours under wet, dry and average climate conditions. 	Section 7.3 and 7.4
<ul style="list-style-type: none"> An assessment of the disturbance or crossing of waterways proposed, the assessment of the impacts of the disturbance on stream hydrology and morphology must be included. The EA must clearly identify the condition of existing waterways and any rehabilitation and monitoring requirements following disturbance. 	Section 7.3
<ul style="list-style-type: none"> A flood impact assessment in accordance with <i>NSW Government's Floodplain Development Manual</i> (DIPNR, 2005) including details of changes to local drainage and the potential to affect flooding behaviour. 	Section 7.3
Indigenous Heritage	
The EA must assess the indigenous heritage values of the site (archaeological and cultural) in accordance with <i>Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation</i> (DEC, 2005b) and identify measures to avoid, minimise, manage and/or offset impacts.	Section 7.7
Non-Indigenous Heritage	
The EA must include an assessment of non-indigenous heritage values, including where required the preparation of Statement of Heritage Impact, for areas that may be impacted by the project with details on any archaeological investigation undertaken.	Section 7.8
Noise Impacts	
The EA must include a noise impact assessment in accordance with <i>NSW Industrial Noise Policy</i> (EPA, 2000). The EA must consider noise impacts from each mode of operation, taking into account worst-case meteorological conditions and potential low-frequency noise impacts. Noise impacts associated with an increase in traffic due to the project needs to be determined in accordance with the <i>Environmental Criteria for Road Traffic Noise</i> (EPA, 1999). The EA must also include an assessment of the construction noise impacts of the project in accordance with the <i>Interim Construction Noise Guidelines</i> (DECC, 2009). The EA must clearly outline the noise mitigation, monitoring and management measures the proponent intends to apply to the project. The assessment must also take into account, as relevant, <i>Assessing Vibration: A Technical Guideline</i> (DEC, 2006a).	Section 7.12
Air Quality	
The EA must include an operational air quality impact assessment demonstrating no adverse impact on human health or the environment. The assessment must be prepared in accordance with the <i>Approved methods for Modelling and Assessment of Air Pollutants in NSW</i> (DEC, 2005a) identifying cumulative emissions (such as sulfur dioxide) at a local and regional level. The EA is to demonstrate how sulphur dioxide emissions can be eliminated prior to discharge and the measures proposed to control sulphur dioxide emissions. The EA must consider air quality impacts from each mode of operation taking into account worst-case meteorological conditions. The EA must clearly outline mitigation measures to be applied and the extent to which these measures are likely to effective in achieving the relevant environmental outcomes. A cost-benefit analysis on different mitigation measures/technologies that have been investigated should also be included.	Section 7.13

Table 1.4 Director-General's requirements under section 75F of the *Environmental Planning and Assessment Act 1979* (cont'd)

Key Assessment Requirements	Reference in EA
Greenhouse Gases	
The EA must include a comprehensive greenhouse gas assessment, incorporation a quantitative model showing the tonnages of each greenhouse gas produced (directly and indirectly from the project) per year. These figures must be expressed as a percentage of the total national greenhouse gases produced per year over the life of the project. If a greenhouse gas offset is proposed, full details of this offset(s) must be included in the EA.	Section 7.14
Hazards and Risk Impacts	
The EA shall include an assessment of the hazards and risk associated with the project (and the potential for off site impacts) including details of hazardous materials used or kept on the premises during the construction and operation phases. The EA shall also include a screening of potential hazards on site to determine the potential for off site impacts and ay requirement for a Preliminary Hazard Analysis (PHA). Should potential off-site impacts be identified, a PHA must be prepared in accordance with the <i>Department's Hazardous Industry Planning Advisory Paper No. 6</i> and Multi-level Risk Assessment. The Environmental Assessment must include:	Sections 7 and 8
<ul style="list-style-type: none"> • The identification of potential operational impacts on Williamtown Airport. 	Section 8
<ul style="list-style-type: none"> • The identification of any contaminated land affected by the proposal and the potential to contaminate land, and identify mitigation measures. 	Sections 7.2 and 8
<ul style="list-style-type: none"> • A dangerous goods transport safety assessment. 	Section 8
<ul style="list-style-type: none"> • Specific consideration of on-going maintenance and safety management of the project, including potential for impacts on and from bush fires and floods. 	Sections 7.3, 7.6 and 8
Visual Amenity Impacts	
The EA must include an assessment of the visual impact of the project from key viewing points (such as Hexham Bridge) within the local area and from nearby residential areas. The EA must clearly describe the visual amenity mitigation and management measures that the proponent intends to apply to the project. Photomontages demonstrating the potential visual impacts of the proposal and the effect of mitigation measures must be included as part of this assessment.	Section 7.10
Traffic Impacts	
The EA must include:	Section 7.11
<ul style="list-style-type: none"> • A construction and operational traffic assessment considering impacts on the local and regional road network and identifying any site access or road upgrade requirements (including to cater for over-sized transport of plant components). 	
<ul style="list-style-type: none"> • Consideration of conflicts with Old Punt Road, Old Maitland Road and the future Pacific Highway Upgrade, including evidence of consultation with TRA, Port Stephen Council and Newcastle City Council. 	Sections 5 and 7.11
General Environmental Risk Analysis	
Notwithstanding the above key assessment requirements, the EA must include an environmental risk analysis to identify potential environmental impacts associated with the project (construction and operation), proposed mitigation measures and potentially significant residual environmental impacts after the application of proposed mitigation measures. Where additional key environmental impacts are identified through this environmental risk analysis, an appropriately detailed impact assessment of these additional key environmental impacts must be include in the EA.	Section 7.1 and 7.15

Table 1.4 Director-General's requirements under section 75F of the *Environmental Planning and Assessment Act 1979* (cont'd)

Consultation Requirements	Reference in EA
General Environmental Risk Analysis (cont'd)	
<p>You must undertake an appropriate and justified level of consultation with the following parties during the preparation of the EA:</p> <ul style="list-style-type: none"> • NSW Department of Environment, Climate Change and Water. • NSW Office of Water. • Port Stephens Council. • Newcastle City Council. • Hunter Water. • Industry and Investment NSW. • NSW Fire Brigades. • WorkCover NSW. • Roads and Traffic Authority. • Civil Aviation Safety Authority. • Department of Defence. • Air Services Australia. • The local community and land owners. 	Section 5
The EA must clearly indicate issues raised by stakeholders during consultation, and how those matters have been addressed in EA.	Sections 5 and 9
EPBC Act Listed Flora and Fauna	
<ul style="list-style-type: none"> • The EA must include a flora and fauna impact assessment and have regard to species conservation advice and recovery plans. The EA must consider the direct, indirect, cumulative and facilitative impacts of the project on all listed EPBC Act species that may be impacted by project activities, including: <ul style="list-style-type: none"> – Eucalyptus parramattensis subsp. decadens (Earp's Gum) Vulnerable. – Rulingia prostrate (Dwarf Kerrawang) Endangered. – Pseudomys novaehollandiae (New Holland Mouse) Vulnerable. – Litoria aurea (Green and Golden Bell Frog) Vulnerable. <p>The EA must also provide details of all avoidance and mitigation measures.</p>	
EPBC Act Listed Migratory Species	
<ul style="list-style-type: none"> • The EA must include a migratory species impact assessment having regard to relevant conservation advice, policy statements and recovery plans. The EA must consider the direct, indirect, cumulative and facilitative impacts of the project on all EPBC Act listed migratory species which may be impacted by project activities. <p>The EA must also provide details of all avoidance and mitigation measures.</p>	
Ramsar Wetlands of International Significance	
<ul style="list-style-type: none"> • The EA must include an impact assessment that considers the direct, indirect, cumulative and facilitative impacts of the project on the ecological character of the Hunter Estuary Wetlands Ramsar Site. This assessment must have specific reference to impacts: <ul style="list-style-type: none"> – On migratory shorebirds and habitat. – On the green and golden bell frog, particularly in the south west corner of Kooragang Island and Juncus Swamp. – On Sarcocornia saltmarsh (the second most important habitat for migratory birds, found adjacent to the Tomago Wetlands and on the northern edge of Kooragang Island). 	

Table 1.4 Director-General's requirements under section 75F of the *Environmental Planning and Assessment Act 1979* (cont'd)

Consultation Requirements	Reference in EA
<i>Ramsar Wetlands of International Significance (cont'd)</i>	
<ul style="list-style-type: none"> - On intertidal mudflats (the most important habitat for migratory birds, found in Fullerton cove, the north east end of Kooragang Island and the east bank of the North Arm of the Hunter River upstream of Stockton Bridge; some mapped as open water). - From changes to hydrology, including freshwater inflows and the tidal regime. - From the activation of acid sulphate soils. <p>The EA must also provide details of all avoidance and mitigation measures.</p>	
<i>Targeted Surveys</i>	
<ul style="list-style-type: none"> • The EA must also include the methodology, details and results of targeted surveys undertaken for EPBC Act species that may be impacted by project activities, including: <ul style="list-style-type: none"> - <i>Eucalyptus parramattensis</i> subsp. <i>decadens</i> (Earp's Gum) Vulnerable. - <i>Rulingia prostrate</i> (Dwarf Kerrawang) Endangered. - <i>Pseudomys novaehollandiae</i> (New Holland Mouse) Vulnerable. - <i>Litoria aurea</i> (Green and Golden Bell Frog) Vulnerable. - Mitigatory Shorebird Species listed under the EPBC Act that may be impacted by project activities. <p>Targeted surveys must be undertaken at the appropriate season, time and by an appropriately qualified person.</p>	
<i>Offsets</i>	
<p>The EA must include details of any proposed offsets to compensate for the unavoidable impacts to Matters of National Environmental Significance.</p>	

Environmental Assessment
Newcastle Gas Storage Facility Project