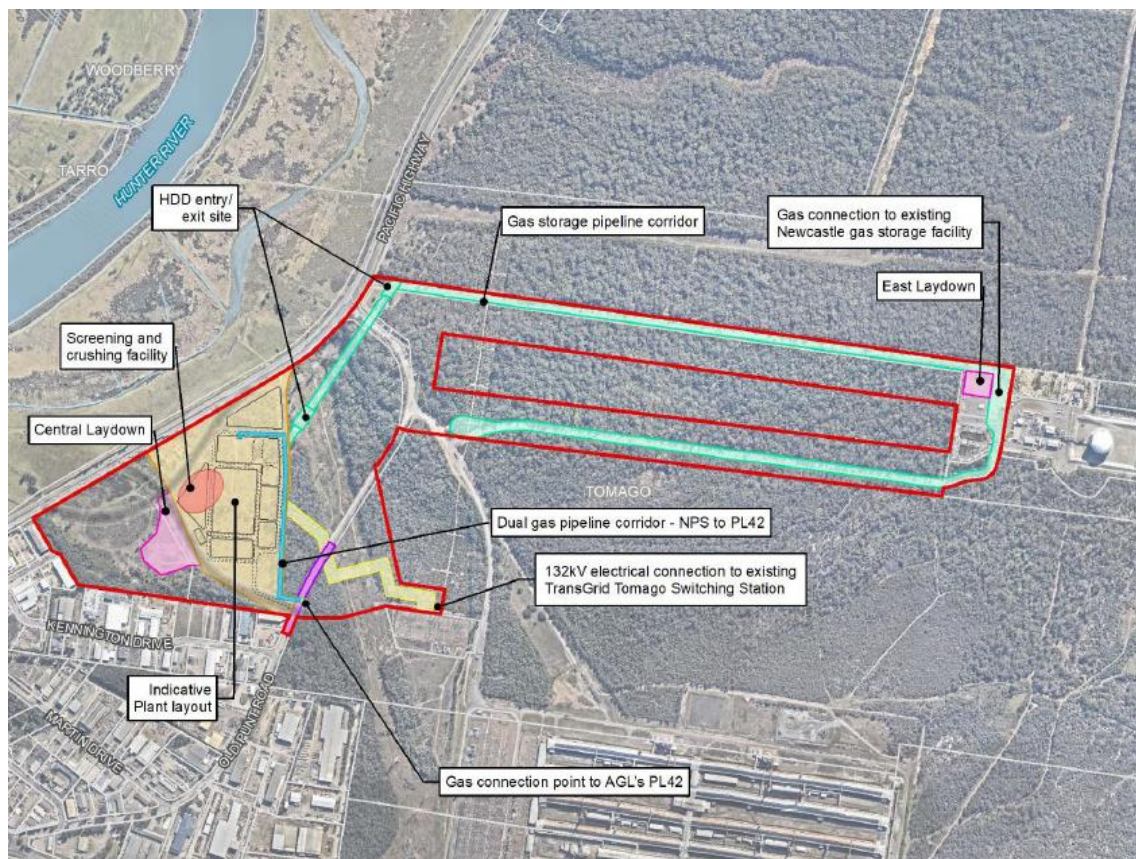


# Newcastle Power Station Project

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Critical State Significant Infrastructure Assessment (SSI 9837)

February 2021



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*Cover image: Site Layout, Source AGL – Amendment Report*

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# Executive Summary

## Background

AGL Energy Limited (AGL) proposes to construct and operate a 250-megawatt (MW) gas-fired power station and associated infrastructure and ancillary facilities, including gas supply and storage pipelines. The project is proposed to operate as a peaking power station with the ability to operate on natural gas with diesel fuel as a backup if natural gas supply is not available.

The project (known as the Newcastle Power Station) would be located in an industrial zone within the suburb of Tomago, north of Newcastle within the Port Stephens local government area and would connect to an existing high-pressure gas pipeline owned by AGL which is supplied by the Jemena Gas Network. The Department notes that in 2003 a 790 MW gas-fired power station was approved to operate on the same site, but the development consent has since lapsed.

## Project

The key components of the project include:

- a gas-fired power station, comprising of open cycle gas turbines power plant or reciprocating engines with a total nominal output capacity of up to 250 MW, capable of operating on natural gas or diesel fuel as a backup;
- two gas supply pipelines and a gas storage pipeline, receiving station and compressor units;
- an electricity transmission line connecting into an existing substation;
- associated ancillary facilities; and
- decommissioning of the power station and rehabilitation of the site after an indicative 25-year operating life.

The project has a capital investment value of \$439 million and would generate 300 jobs during construction and 23 jobs once it is operational.

The project is proposed to operate as a peaking power station which would operate on average for around 14% of the year. The project has, however, been designed for continuous operations in response to the requirements of the National Energy Market (NEM), if required.

In July 2020, AGL submitted a request to the Department to amend the project to address some conceptual design issues and concerns raised in the submissions and additional agency and stakeholder comments on the Submissions Report dated April 2020.

AGL's Amendment Report included the following key changes:

- two additional construction areas located within the project site;
- a screening and crushing facility for processing excavated materials during construction;
- realignment of the transmission line to avoid impacts on TransGrid's assets;
- extension of the construction area to include a section of Old Punt Road for road works; and
- duplication of the gas supply pipeline from the power station to AGL's existing pipeline.

The Department carefully considered the Amendment Report and all the information provided, and in August 2020, the Department accepted AGL's request to amend the project in accordance with clause 192(2) and (3) of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation).

## Statutory Context

On 12 December 2018, the then Minister for Planning declared the project to be Critical State Significant Infrastructure (CSSI) under Section 5.13 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), because it had the potential to strengthen the energy, security and reliability of the east coast electricity market. As the project has been declared CSSI, the Minister for Planning and Public Spaces is the approval authority.

The project is a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) because it has the potential to indirectly impact the Commonwealth-listed wetlands of international importance (Ramsar Wetland), located around 2.5 km south/south-east of the project site. Consequently, it requires the approval of the Commonwealth Minister for the Environment in addition to any State approvals.

The Commonwealth Government has accredited the NSW Government assessment process under Division 5.2 of the EP&A Act for the assessment of all Commonwealth matters under the EPBC Act, and the Commonwealth Minister will consider the Department's assessment, recommended conditions and any other relevant information before making a final decision on the project under the EPBC Act.

## Strategic Context

The project was declared CSSI by the then Minister for Planning in 2018 due to its potential to:

- increase the dispatchable energy capacity of NSW and help to mitigate significant short to medium term energy security risks to the east coast electricity market due to the scheduled closure of the Liddell coal-fired power station in 2022/23;
- facilitate NSW's transition to a low carbon emissions-based economy, consistent with the *NSW Renewable Energy Action Plan* and *NSW Climate Change Policy Framework*; and
- increase competition in the electricity market and attract additional investment and jobs to NSW.

Since the 2018 CSSI declaration, the increasing importance of dispatchable energy supply, including peaking gas power generation, to complement variable renewable energy as the energy market transitions to low carbon emissions is recognised in key government policies and statements including:

- the *2019 NSW Electricity Strategy* – which sets out a roadmap to secure a sustainable and affordable electricity supply;
- the *2020 NSW Electricity Infrastructure Roadmap* – which recognises the importance of new firming capacity;
- Australian Energy Market Operator's (AEMO) *Integrated System Plan (2020)* – which identifies the need for 6-19 GW of new flexible dispatchable energy supply from a range of technology options, including gas-fired power, in the National Energy Market (NEM) through to 2040 to back up variable renewable energy generation; and
- AEMO's *Electricity Statement of Opportunities (2020)* and Liddell Taskforce in the *Report of the Liddell Taskforce*, Commonwealth of Australia and NSW Government (2020) - which describe that additional investment in dispatchable electricity generation is required in NSW in the short to medium term to maintain or increase grid system resilience associated with:
  - the closure of the Liddell Power Station in 2022/ 2023,
  - bushfire risks to key infrastructure, and
  - periods of peak electricity demand during summer and winter, as occurred in 2020.

With the planned closure of coal-fired power stations commencing in the short-term and continuing in the next few decades, security of the energy supply capable of providing flexible, fast start generation

and delivering dispatchable capacity into the NEM in times when renewable energy is not available is paramount. Importantly, gas-fired power generation can supply synchronous power into the NEM that would be available to support system strength (voltage stability) as coal-fired power units are decommissioned, or units withdrawn or decommitted.

## **Engagement**

The Department exhibited the application and the Environmental Impact Statement (EIS) for the project from 20 November 2019 to 18 December 2019 and consulted with key government agencies and Port Stephens Council.

The Department received 14 public submissions on the project, comprising 9 submissions from special interest groups and 5 submissions from the general public. Five of these submissions objected to the project due to concerns about the ongoing use of fossil fuel for electricity generation rather than transitioning directly to renewable energy.

Those in support of the project noted the local employment opportunities, the additional investment in improving energy security and reliability in NSW, and the environmental benefits associated with using gas instead of coal for generating electricity.

The Department also received advice from 14 government agencies. None of the agencies or local councils objected to the project, but raised issues relating to their respective regulatory responsibilities in regard to air quality, noise, traffic and transport, aviation safety, biodiversity and water resources.

The local council (Port Stephen's Council) supported the project due to its economic benefits.

## **Assessment**

The Department has carried out a comprehensive assessment of the merits of the project in accordance with the requirements of the EP&A Act and applicable Commonwealth and NSW Government policies and guidelines. The Department also carefully considered the issues raised in submissions, agency advice and AGL's response to issues raised during the assessment process. A summary of the Department's assessment is provided below.

The Department notes that AGL assessed a worst-case scenario of operating the power station continuously using both gas and diesel and using the two generator technologies (gas turbine/reciprocating engine) to identify the maximum impacts from the project. However, as outlined above, the project is anticipated to operate at an average 14% capacity factor during any given year to provide peaking power into the grid as required.

### *Air Quality and Noise*

The Department and the EPA consider that AGL has undertaken a comprehensive assessment of the potential impacts of the project on local and regional air quality based on anticipated and worst-case modelling scenarios, in accordance with *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*.

The modelling predicted that even under the worst-case scenario, there would only be a minor incremental increase in ambient concentrations of key air pollutants at sensitive receivers around the site. However, the project is already located within an area where current PM<sub>2.5</sub> and ozone annual background concentrations exceed NSW annual ambient air quality limits in recent years due to a combination of natural, industrial and event-based sources (such as bushfires and hazard reduction).



Given that the project would generate Nitrogen Oxide (NO<sub>x</sub>) emissions which contribute to ozone formation, and the use of diesel would contribute to a small increase in particulate emissions, the EPA recommended that, given the project is in a location where the ambient air quality limits are already exceeded on occasion, either annual operating hours be restricted or an annual NO<sub>x</sub> load be set to minimise potential impacts on sensitive receivers and regional ambient air quality.

In consultation with the EPA, the Department has recommended an annual NO<sub>x</sub> load limit of 338 tonnes, subject to further revision following 12 months of performance monitoring of NO<sub>x</sub> discharges.

The annual limit would allow the power station to operate for around 25% of the year using gas and no more than 10% of the year using diesel and provide a further incentive for AGL to use gas rather than diesel, due to its lower NO<sub>x</sub> emissions.

The Department and the EPA considers the recommended limit would achieve an appropriate balance between ensuring the power station can deliver the necessary electricity into the grid during periods of high demand and minimising the risk of any exceedances of the applicable EPA air quality criteria and impacts on background levels of ozone and particulates in the regional airshed.

The Department and the EPA also consider that the project would comply with applicable noise criteria in the *NSW Noise Policy for Industry* (EPA, 2017) at all receivers during construction and operations with the incorporation of the proposed noise mitigation measures, such as limiting construction to standard hours, a requirement for a construction noise management plan together with undertaking noise validation and ongoing noise compliance monitoring.

Furthermore, the Department notes that the increase in noise from traffic from the project would comply with road traffic noise criterion under the *NSW Road Noise Policy* (EPA, 2011), noting that the key traffic route to access the site would be via the Pacific Highway.

The Department has adopted the EPA's recommended conditions for noise limits, noise monitoring and reporting, and noise validation monitoring.

It is also noted that air and noise emissions from the site would be regulated by the EPA under an Environment Protection Licence (EPL) issued under the *Protection of the Environment Operations Act 1997* (POEO Act).

### *Greenhouse Gas Emissions*

The impacts on climate change and Greenhouse Gas (GHG) emissions are key matters of concern raised by the public in objecting submissions.

The NSW Government is committed to acting on climate change by targeting net-zero emissions by 2050 and making NSW more resilient to a changing climate. These objectives are recognised within the NSW Government's *Climate Change Policy Framework* (CCPF - OEH, 2016) and *Net Zero Plan Stage 1:2020-2030*.

The *NSW Electricity Infrastructure Roadmap* (DPIE, 2020) provides an outline of how the State's electricity infrastructure will transition from retiring coal-fired power sources to cleaner, cheaper and more reliable energy sources, including the need for firming capacity such as gas-fired power stations.

Importantly, the project's emission intensity would range from 568 to 698 kg CO<sub>2-e</sub> / MWh using gas, which is approximately 40% less than the emission intensity of coal-fired power generation, and would generate 0.04 and 0.18% of the national and NSW GHG annual emissions inventories respectively.

That is, the project would result in lower emissions per MW generated when compared with coal-fired power generation, while still providing necessary firming capacity and contribute to grid resilience. This is consistent with the CCPF and Net Zero Plan, to progressively reduce emissions intensity for power generation in NSW.

#### *Traffic and Transport*

The main access to the site would be via the Pacific Highway (M1) and then via Old Punt Road which provides access to the industrial area at Tomago. Under the worst-case scenario there would be no impacts on traffic performance for access routes to the site, however a new intersection would be required for access the site from Old Punt Road.

The key issue raised by Transport for NSW (TfNSW) was the potential interaction between the project and its proposed M1 upgrade between Hexham and Raymond Terrace (M1 Upgrade Project), particularly in regard to the proposed gas pipeline and transmission line crossings the Old Punt Road and the use of Old Punt Road as an Oversize-Overmass transport route off the upgraded M1 to access the industrial area and the Tomago area.

Following extensive consultation, the Department and TfNSW are satisfied that the two projects can be constructed and operated without any significant impacts on the delivery of either project, and has recommended conditions accordingly.

#### *Aviation Safety*

Operation of the project may have potential impacts on aviation safety and/or operation due to the plume from the power station stack(s) penetrating the Obstacle Limitation Surface (OLS) of Newcastle Airport and the RAAF Base at Williamtown, located approximately 10 km north-east of the project.

The Department consulted closely with the Civil Aviation Safety Authority (CASA), the Commonwealth Department of Defence (Defence), Newcastle Airport Pty Limited (NAPL) and Jetstar Airways. The Department of Defence is the operator of the airport and is satisfied with AGL's assessment of aviation risks and its proposed mitigation measures, and that any residual issues with aviation safety can be managed by incorporating the operation of the power station into the flight rules with the airspace.

To ensure this remains the case, the Department has recommended that AGL provide an updated plume rise assessment, prepared in consultation with the key aviation stakeholders, for the final design of the power station and demonstrate that the critical plume velocity is consistent with the predictions in the EIS, and that reasonable and feasible mitigation measures are further investigated to minimise the plume velocity. AGL is also required to notify Air Services Australia for the erection of permanent and temporary structures that intrude on the OLS of the RAAF Base at Williamtown.

#### *Hazards and Risks*

The Department has considered the EIS's preliminary hazard analysis (PHA), Bushfire Threat Assessment and Fire Safety Study, which assessed potential hazards and risks associated with operation and fire ignition on site or from encroaching bushfires based on the project's conceptual design. The PHA was updated for the Submissions Report and Amendment Report.

The Department's Specialist Hazards Team is satisfied that AGL undertook an acceptable assessment of potential hazards in accordance with the requirements of *State Environmental Planning Policy No. 33 – Hazardous and Offensive Industries* and the Department's *Hazardous Industry Planning Advisory Paper No 6: Hazard Analysis* (DP&E 2011).

To ensure that the risks of the project would be appropriately managed through the life of the project, the Department has included conditions requiring AGL to carry out a range of standard additional studies based on the final design of the project, including a Fire Safety Study, a Hazard and Operability Study and Final Hazards Analysis, an Emergency Plan, and a Safety Management System covering all on-site operations and associated transport activities involving hazardous materials, and on-going requirement for a comprehensive hazard audit of the development.

### *Water Resources*

The Project has potential to impact regional water resources during construction and operations due to its proximity to the Hunter River, Ramsar-listed wetlands, located around 2.5 km south/south-east of the project site, and the Tomago Groundwater Source catchment zone, which is part of Hunter Water Corporation's (HWC) drinking water catchment area.

AGL's assessment of the potential impacts of stormwater discharge on receiving waters during construction and operations found that the proposed water management system including sediment dams, bioretention pond and oil/water separator would ensure pollutant loads in stormwater would not be higher than in existing runoff. HWC and Port Stephens Council were satisfied with the proposed management measures and subject to final detailed design, that the project would meet a Neutral or Beneficial Effect (NorBE) outcome as outlined in HWC's 2017 guideline *"Protecting our Drinking Water Catchments – Guidelines for developments in the drinking water catchments"*.

Subject to the proposed mitigation measures outlined in the EIS and recommended conditions, the Department considers that the potential construction and operational impacts of the project on local water resources can be minimised and managed to an acceptable level, including negligible impact on the downstream Hunter Estuary Ramsar Wetlands.

These conditions include the implementation of a detailed Water Management Plan, including a Site Water Balance, Surface Water Management Plan, Groundwater Management Plan and Flood Preparedness Plan prior to the commencement of construction, in consultation with HWC, the Department's Water Group/ Natural Resources Access Regulator, the EPA and Port Stephens Council.

### *Biodiversity*

The project would remove 17.6 ha of native vegetation comprising two plant community types including approximately 2 ha of the *Lower Hunter Spotted Gum – Ironbark Forest* threatened ecological community (TEC). No vegetation communities listed under the EPBC Act were identified within the project site and there would be no significant impact on wetland and migratory birds. Three threatened flora and five threatened fauna species were identified within the project site, four of which also listed as vulnerable under the EPBC Act and only one fauna species (Squirrel Glider) observed within the disturbance footprint. No Koalas were recorded during surveys and the site does not comprise core Koala habitat.

The Biodiversity Conservation and Science (BCS) Group of the Department considers that direct impacts on biodiversity have been minimised as far as reasonable and feasible and that proposed mitigation measures, including the preparation and implementation of a Biodiversity Management Plan, and that the offsets proposed are in accordance with the requirements of the *Biodiversity Conservation Act 2016* (BC Act).

The Commonwealth declared the project a controlled action due to potential indirect impacts on the Hunter Estuary Wetlands Ramsar site (Ramsar wetlands under Sections 16 and 17B of the EPBC Act).



The Department and BCS consider that the proposed mitigation measures for minimising impacts of discharges from the site, together with the Department's recommended conditions, including the preparation and implementation of a Water Management Plan, would ensure that there would be no significant impact on the Ramsar Wetland as a result of the construction or operation of the project.

#### *Other Matters*

The Department's assessment also considered other potential impacts of the project, including Aboriginal cultural heritage, human health, soils and contamination, visual, waste and social impacts. The Department considers that these impacts are likely to be minor and could be suitably managed, mitigated or offset to an acceptable level, subject to the recommended conditions.

#### **Evaluation**

The project would improve NSW energy security and reliability of the east coast electricity market by providing additional dispatchable energy during peak electricity demands, and greater competition in the NSW electricity market, given the upcoming retirement of ageing coal-fired power stations, including Liddell by 2022/23.

The project would be located within the Tomago industrial zone and has been designed to utilise existing cleared areas where practicable to minimise its environmental impacts. The main residential population centre of Tomago is located approximately 5.5 km to the east of the project site. The project is compatible with surrounding land uses, and is in close proximity to the Jemena Gas Network, the AGL natural gas storage facility, the TransGrid major transmission network and the Pacific Highway (M1).

Additionally, the project would deliver economic benefits to NSW and the region through attracting \$439 million of capital investment, creating up to 300 construction jobs within the two year construction period and up to 23 operational jobs.

Based on its detailed merit assessment in consultation with the key government agencies, the Department considers that AGL has designed the project to minimise impacts on the environment and surrounding land uses and adequately addressed the issues raised in submissions and government agency advice; particularly in regard to air quality and aviation impacts and the project's potential interactions with the M1 upgrade project.

The Department has recommended a comprehensive and precautionary suite of conditions to ensure that the project complies with contemporary criteria and standards, and that residual impacts are effectively minimised, managed, offset and/or compensated for. The conditions were developed in consultation with government agencies and Port Stephens Council.

On balance, the Department believes that the project is in the public interest and should be approved subject to the strict recommended conditions.

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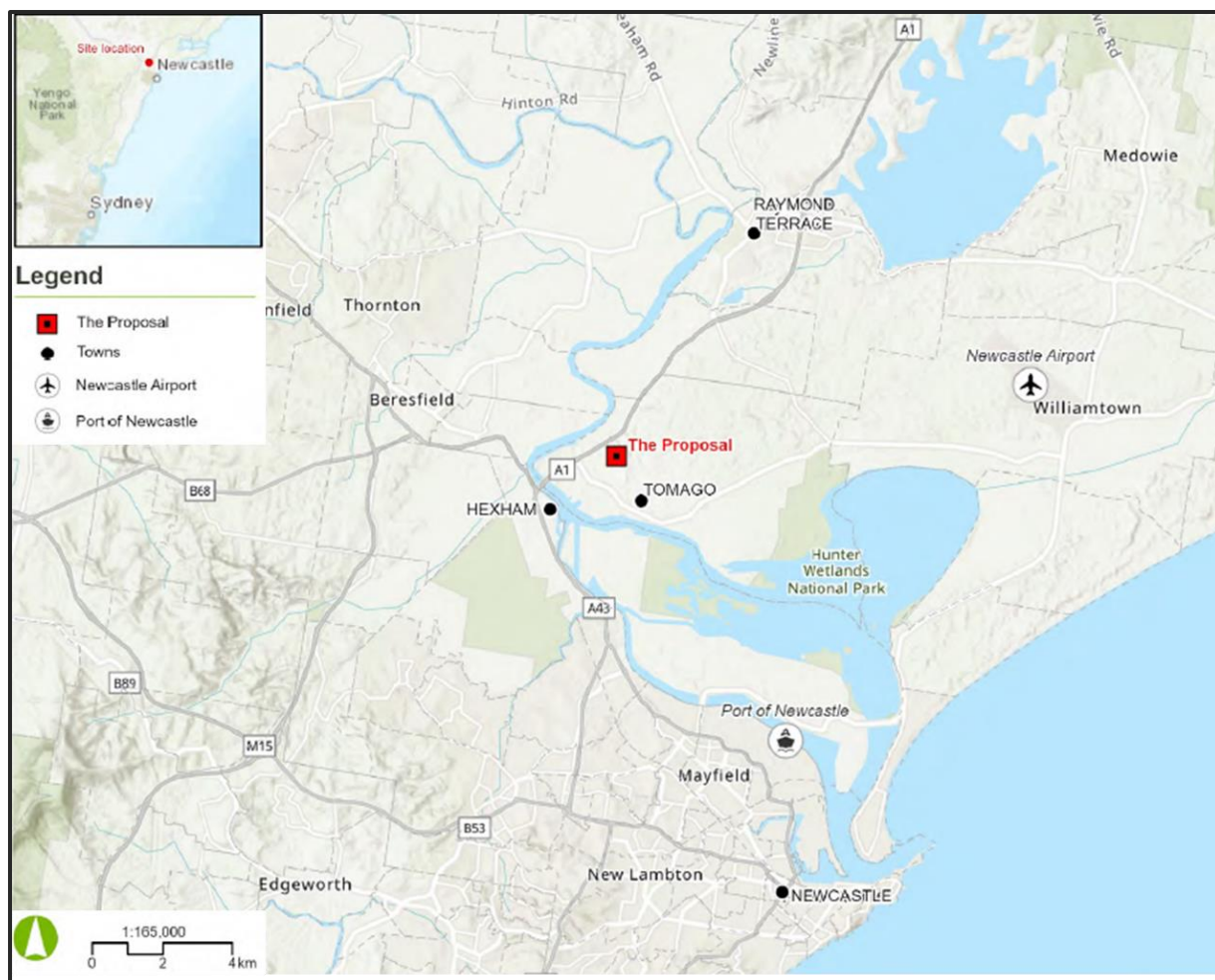
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# 1 Introduction

## 1.1 Overview

AGL Energy Limited (AGL) is proposing to develop the Newcastle Power Station Project (the project) and associated infrastructure, including gas supply pipelines, a gas storage pipeline, gas compression facilities and electricity transmission lines. The project would be located in the suburb of Tomago, approximately 2 kilometres (km) north-east of Hexham, in the Port Stephens local government area (see **Figure 1**).



**Figure 1 | Regional Context** (Source: Amendment Report)

The project would have a nominal capacity of 250 megawatts (MW) and is proposed to operate as a peaking power station operating for around 14% of the year during peak electricity demand. The project has, however, been designed and assessed to allow continuous operations for periods in response to the requirements of the National Electricity Market (NEM), if required.

The proposed engine configuration for the project would be either gas turbine power plants in open cycle mode or reciprocating engines, which would operate mainly on natural gas but be also capable of operating on liquid fuel (diesel) at times of insufficient supply of natural gas.



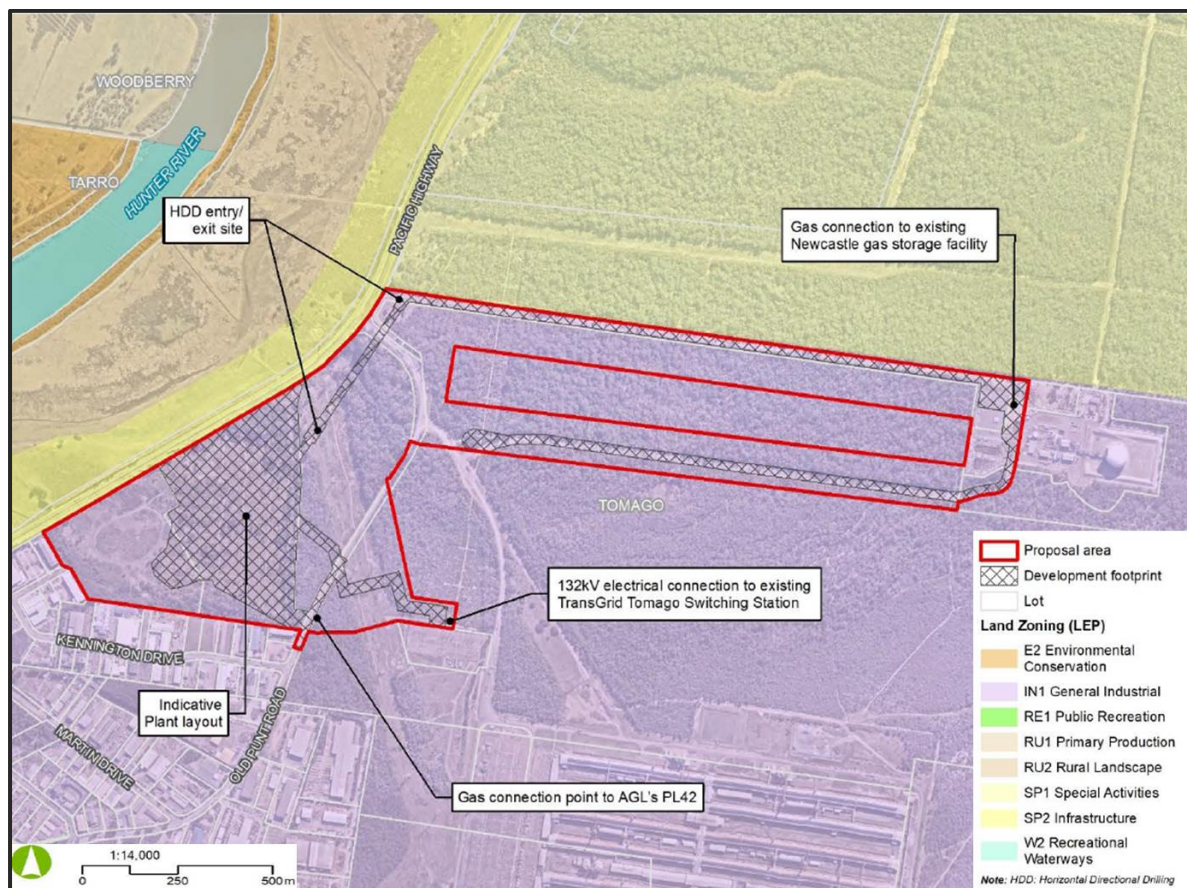
The project was declared to be Critical State Significant Infrastructure (CSSI) by order in December 2018, under Sections 5.12(4) and 5.13 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and therefore must be determined by the Minister for Planning and Public Spaces.

The project has a total capital investment value (CIV) of approximately \$439 million and would generate up to approximately 300 jobs during peak construction and up to 23 jobs on rotating shifts for operations and maintenance.

## 1.2 Site and Surrounds

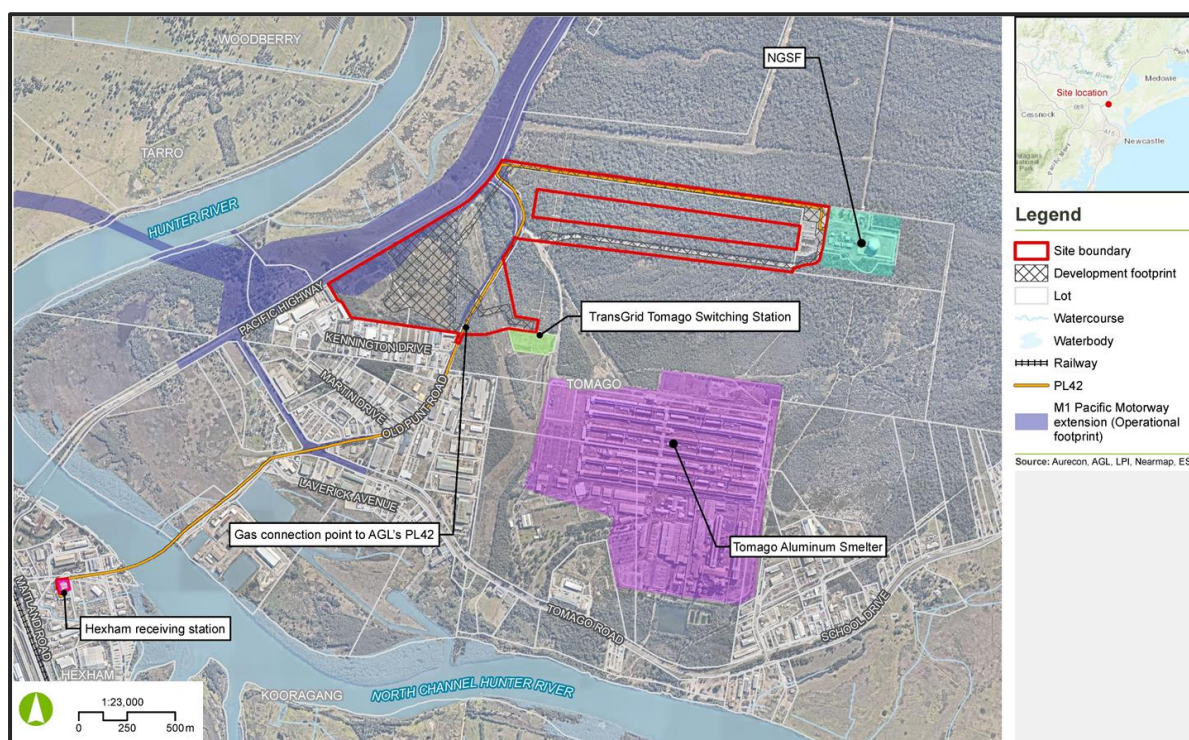
The proposed project site would be on land previously approved for construction and operation of the Tomago Gas-Fired Power Station (DA 165-05-2002-i) by Macquarie Generation (now AGL Macquarie), the approval of which lapsed in 2008. The project site would be located in Tomago between the Pacific Highway (M1) to the north and Old Punt Road to the south-east within land zoned for industrial purposes (see **Figure 2**). Major industrial infrastructure surrounding the project site includes AGL's existing Newcastle Gas Storage Facility (NGSF), TransGrid's Tomago switching station and transmission lines and the Tomago Aluminium Company smelter (see **Figure 3**). The Royal Australian Air Force (RAAF) Base at Williamtown and Newcastle Airport are located approximately 10 km north-east of the project site (see **Figure 1**).

While the area around the immediate vicinity of the site is industrial, Tomago has a residential population of around 280 people (based on the 2016 census), with the closest residential sensitive receiver around 500 m south-west of the project site. However, the main residential population centre of Tomago is located approximately 5.5 km to the east of the site.



**Figure 2 | Land Use Zoning (Source: Amendment Report)**





**Figure 3 | Major Industrial Premises** (Source: Additional information provided by AGL)

The project site topography is relatively flat and the surrounding land on the north and east is covered by native vegetation, with the west being predominantly used for agricultural purposes and historically cleared for grazing pasture. The Tomago industrial area is located to the south of the proposed project, which is highly disturbed with little remnant native vegetation.

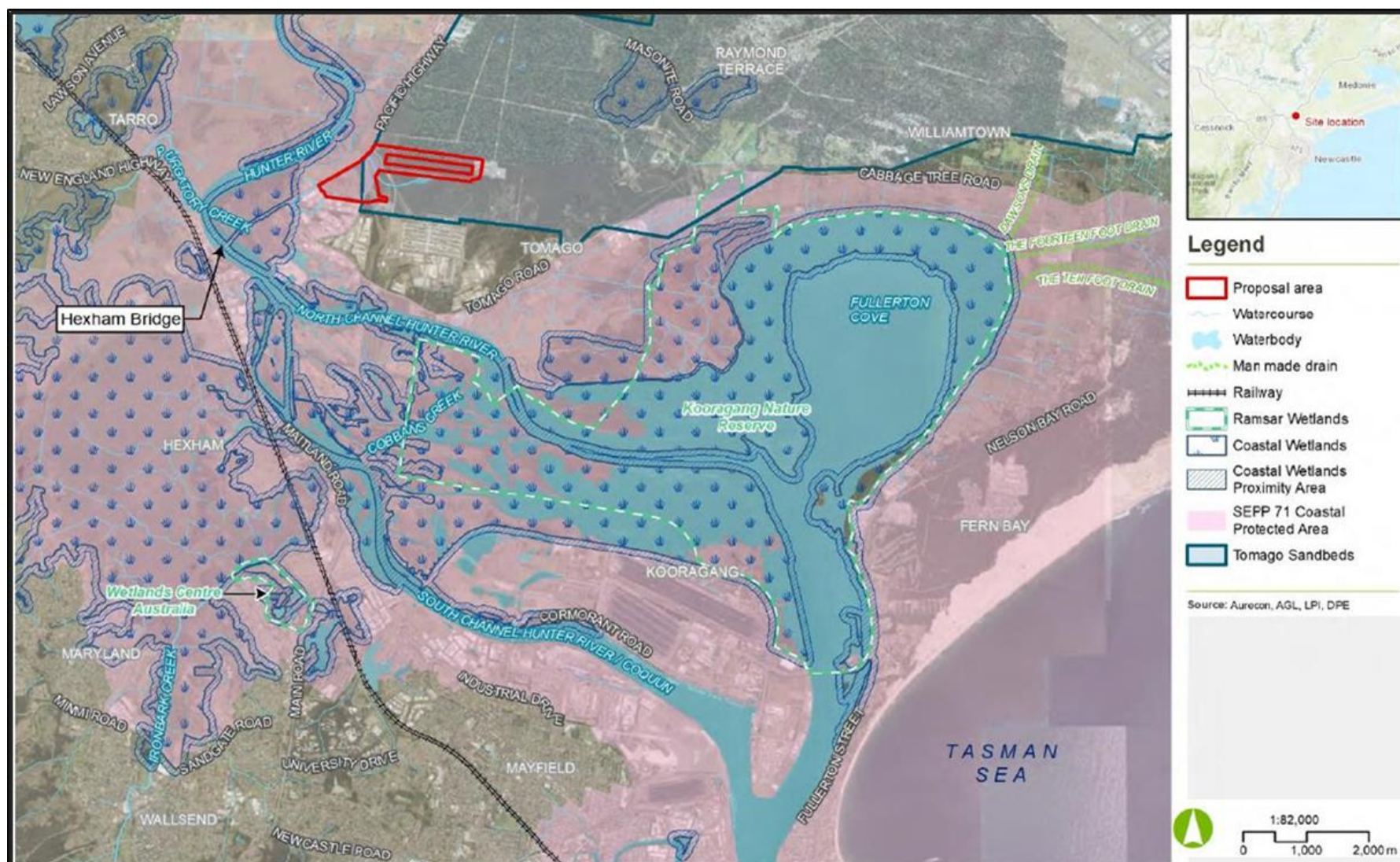
The power station component of the project would be located on land that has been previously cleared for agricultural purposes with remnant vegetation confined to the eastern boundary of the power station site. The proposed gas supply pipelines and gas storage pipeline would be constructed mainly on land already partly cleared for AGL's NGSF operations.

### 1.3 Sensitive Environmental Features

As shown in **Figure 3**, the Hunter River is located about 500 m north-west and 1.8 km to the south of the project site, and there are no defined watercourses within the proposed project site. The closest area of the Hunter Wetlands National Park is located about 2 km south of the project site. However, the closest wetland identified under *State Environmental Planning Policy (Coastal Management) 2018* is located 450 m to the north-west of the project site and borders the Hunter River.

The Ramsar-listed Kooragang Nature Reserve and Hunter Wetlands Centre are located around 2.5 km south/south-east of the project site. The gazetted area of the Hunter Water Corporation's (HWC) Tomago Sandbeds, a groundwater aquifer, intercepts the eastern part of project site, with the project's gas storage pipelines located within the Tomago Sandbeds groundwater catchment (see **Figure 4**). The Department notes that although restricted access zones of the gazetted area are located directly adjacent to the northern boundary of the project site, all of the project is located outside of restricted access zones.





**Figure 4 | Sensitive Hydrological Features (Source: EIS)**

## 1.4 M1 Motorway Extension

Transport for NSW (TfNSW)'s proposed M1 Motorway extension to Raymond Terrace (M1 Upgrade) Project (SSI 7319), also a declared CSSI project, includes an upgrade to Pacific Highway and an interchange located within the project site to the north-east, between Old Punt Road and the proposed M1 extension. The operational footprint of the M1 Upgrade proposal is shown in **Figure 3**.

The Department notes that AGL and TfNSW have been collaborating closely during the planning and design stages of the two proposals and are satisfied that there are no impediments to both projects proceeding, noting that TfNSW's proposal is still in the planning process and a formal application is expected in 2021.

# 2 Project Description

## 2.1 Project Overview

The key features of the project include construction and operation of:

- a gas-fired power station, comprising open cycle gas turbines power plant or reciprocating engines with a total nominal output capacity of up to 250 MW, capable of operating on natural gas or diesel fuel as a backup;
- two gas supply pipelines and a gas storage pipeline, receiving station and compressor units;
- an electricity transmission line connecting into an existing substation;
- associated ancillary facilities; and
- decommissioning of the gas-fired power station and rehabilitation of the site after an indicative 25-year operating life.

The major components of the project are summarised in **Table 1**, shown in **Figures 5** and **6** and described in detail in the Environment Impact Statement (EIS) and Amendment Report for the project (see **Appendix A** and **Appendix D**, respectively).

## 2.2 Amended Project

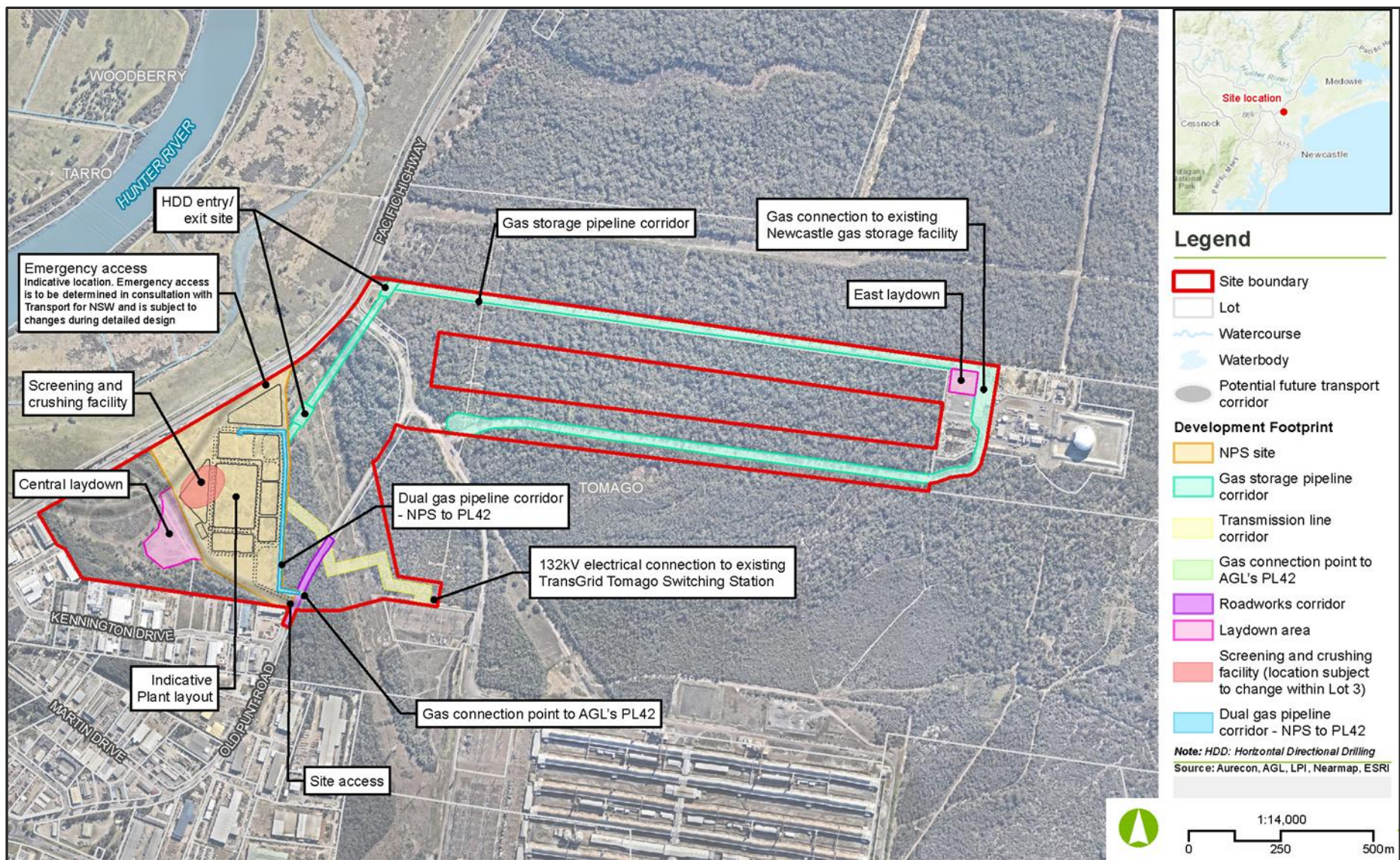
AGL submitted a request to the Department in July 2020, seeking amendments to the project to address conceptual design issues that were raised during the project's exhibition in November – December 2019 and additional agency and stakeholder comments on the Submissions Report dated April 2020.

AGL's Amendment Report included the following key changes:

- two additional construction areas located within the project site;
- a screening and crushing facility to be used during construction;
- realignment of the transmission line to avoid impacts on TransGrid's existing transmission lines;
- extension of the construction area within Old Punt Road to facilitate road works; and
- duplication of the gas supply pipeline from the power station to AGL's high pressure licensed gas pipeline PL42.

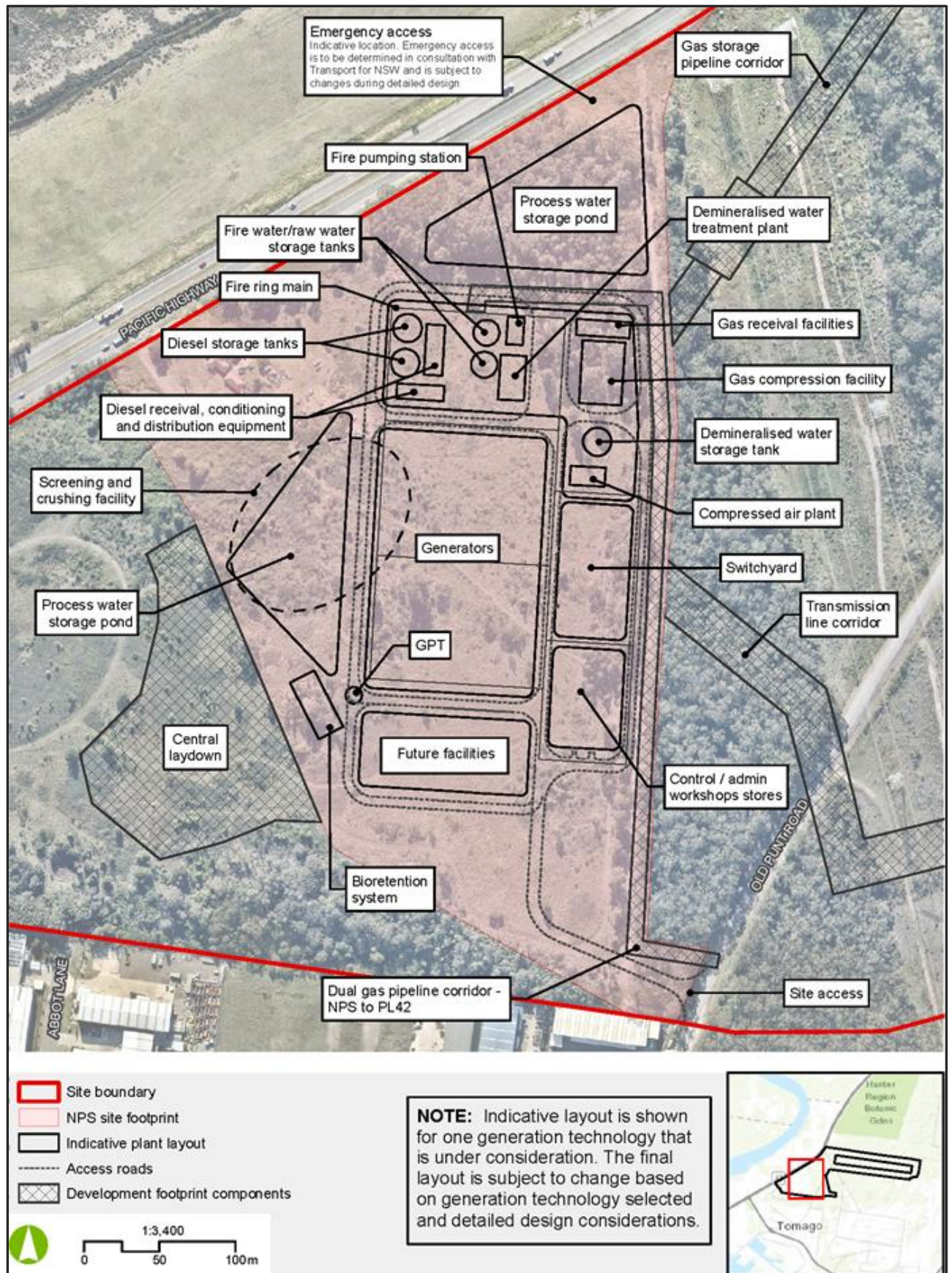
The Department carefully considered the Amendment Report and all the information provided, and in August 2020, accepted AGL's request to amend the project in accordance with clause 192(2) of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation).





**Figure 5 | Project Site Layout – As Amended** (Source: Further information provided by AGL)





**Figure 6 | Power Station Layout – As Amended** (Source: Further information provided by AGL)



**Table 1 | Main Components of the Amended Project**

Aspect	Description
<b>Project Summary</b>	<b>Construction and operation of a gas-fired power station including associated gas supply pipelines, a gas storage pipeline, electricity transmission line and ancillary infrastructure</b>
<b>Capacity</b>	<ul style="list-style-type: none"> <li>Nominal generating capacity of 250 MW</li> </ul>
<b>Project Life</b>	<ul style="list-style-type: none"> <li>27 years, including 2 years of construction and 25 years of operation</li> </ul>
<b>Power Station</b>	<ul style="list-style-type: none"> <li>Technology – either open cycle gas turbines or reciprocating engines</li> <li>Fuel – natural gas but capable of operating on diesel</li> </ul>
<b>Gas Pipelines</b>	<ul style="list-style-type: none"> <li>Dual gas supply pipeline connections between the power station and AGL's existing gas pipeline (PL42)</li> <li>Up to 5 km gas storage pipeline between the power station and AGL's NGSF</li> </ul>
<b>Electricity Transmission Line</b>	<ul style="list-style-type: none"> <li>Connecting the power station to the NEM</li> </ul>
<b>Ancillary Infrastructure</b>	<ul style="list-style-type: none"> <li>Including, but not limited to, construction and operation water facilities, office buildings, building services, temporary and permanent security, roads, landscaping and construction laydown areas</li> </ul>
<b>Project Site</b>	<ul style="list-style-type: none"> <li>Project site (proposal area in <b>Figure 5</b>) of around 91 hectares (ha)</li> <li>Development footprint area of around 29 ha of remnant and managed native vegetation, managed grassland/shrubland and a wetland area on the corner of the Pacific Highway and Old Punt Road in Tomago</li> </ul>
<b>Land-use Zoning</b>	<ul style="list-style-type: none"> <li>IN1 - General Industrial under the <i>Port Stephens Local Environment Plan (LEP) 2013</i></li> </ul>
<b>Water and Wastewater</b>	<ul style="list-style-type: none"> <li>Water – requiring between 120 and 800 megalitres (ML) per year</li> <li>Wastewater – generating between 22 and 150 ML per year</li> </ul>
<b>Employment</b>	<ul style="list-style-type: none"> <li>Construction – up to 300 jobs during peak construction period</li> <li>Operation – up to 23 jobs on rotational shifts</li> </ul>
<b>Construction and Operational Hours</b>	<ul style="list-style-type: none"> <li>Construction – 2 years (2021-2022), standard construction hours of 7:00 am to 6:00 pm Mondays to Fridays, 8:00 am to 1:00 pm on Saturdays; and at no time on Sundays or public holidays</li> <li>Operation – 25 years, capable of continuous operation (24 hours a day, 7 days of week) on-site or remotely with a 14% capacity factor as a peaking power station</li> </ul>
<b>Capital Investment Value</b>	<ul style="list-style-type: none"> <li>\$439 million</li> </ul>

## 2.3 Power Station

The project involves the construction and operation of a power station generating power from either open cycle gas turbines or reciprocating engines. Both technology options are capable of fast-starts and can supply additional electricity to the NEM at short notice during periods of peak demand.

The decision between whether gas turbines or reciprocating engines would be constructed would be determined by AGL during detailed design, noting that both options have been considered in detail by the Department in its assessment of the project.

The internal layout of the power station (see **Figure 6**) allows for the placement of either technology options (gas turbines or reciprocating engines), ancillary infrastructure and an area proposed for potential future facilities at the power station. The Department notes that any additional facilities would require separate assessment and determination.

Construction of the power station would include:

- establishment of two construction laydown areas located within the project site; one adjacent to the power station site and one located in the carpark area of AGL's NGSF (see **Figure 5**);
- installation of a crushing and screening facility to process approximately 50,000 m<sup>3</sup> of excavated material for reuse onsite as fill; and
- demolition of a dwelling owned by AGL located in the northern area of the power station site.

Although AGL anticipates that the project would operate as a peaking power station (described as the base case scenario), the project has been designed to be capable of operating continuously (24 hours a day, 7 days a week) (described as the worst-case scenario). The project's potential environmental impacts were assessed under both base case and worst-case operating scenarios.

AGL advises that actual times of operation would be dependent on supply and demand conditions of the NEM and is likely to vary between the spring and autumn compared to hotter and cooler weather conditions in summer and winter.

### Fuel Type

The project would be capable of operating on natural gas or liquid fuel regardless of which engine technology is chosen. The project would be preferentially fuelled by natural gas supplied from either the Jemena Gas Network or the NGSF through gas supply pipelines connecting directly from the power station to AGL's existing pipeline (PL42), or the gas storage pipeline connecting the power station to the NGSF. Ancillary equipment required for natural gas operations would include distribution pipework, a heating station and compression system.

When natural gas supply is not available, the power station would operate on diesel. Diesel would be conventional automotive diesel grade, compliant with *Fuel Quality Standards (Automotive Diesel) Determination 2019* (AG, 2019) and would require on site storage of 1.5 megalitres (ML).

The storage facilities would require 30 B-Double tankers to fill (60 movements), which would be required daily if operating on diesel continuously. Tanker bays with spill management would be constructed within the power station site for diesel storage refilling. Additional equipment required would include filters, pumps, metering, pipework and heating.

## Technology Options

The decision between whether gas turbines or reciprocating engines would be constructed would be determined by AGL during detailed design, noting that both options have been considered in detail by the Department in its assessment of the Project.

### *Gas turbines*

Aero-derivative gas turbine's operate through compressed air and fuel injected into a combustion chamber with the resulting hot gas turning the turbine and generating power. The gas is then vented to the atmosphere through an exhaust stack. Each unit would be capable of generating between 30 and 70 MW and would be fitted with emission controls for both natural gas and diesel fuel operation. Up to four exhaust stacks are anticipated at an approximate height of 20 m above ground level (mAGL). However, estimates are based on indicative manufacturer information, with a conservative modelling approach adapted in air quality and plume rise assessments. As such, potential changes in design or location of the exhaust stacks are considered unlikely to materially influence predicted emissions or plume rise impacts.

### *Reciprocating engine*

Reciprocating engine technology operates through internal combustion to drive a piston within a cylinder. The pistons then move sequentially to rotate a crank shaft, turning the generator. Each unit would be capable of generating approximately 18 MW and would be fitted with selective catalytic reduction (SCR) and oxidation catalysts to reduce pollutant emissions. Reciprocating engine exhaust stacks would be merged to a single exhaust source per 'cluster', with up to three exhaust stack clusters at a height of 32 m anticipated. The reciprocating engines would be installed inside a purpose-built engine hall.

## 2.4 Gas Pipelines

Gas supply to the generators would be through either the dual gas supply pipeline and/or the gas storage pipeline.

The gas supply pipelines would connect the power station to AGL's existing pipeline PL42 located on the eastern side of Old Punt Road (see **Figure 5**). PL42 is a licensed high-pressure bidirectional pipeline that connects the Jemena Gas Network to the NGSF and would be the primary source of natural gas supply to the project. In addition to the dual gas supply pipeline, AGL would also construct a new high-pressure gas storage pipeline that would connect the power station to the NGSF (see **Figure 5**). The gas storage pipeline would be located on land owned by Tomago Aluminium, AGL and Council (road reserve).

The gas storage pipeline would be up to 5 km in length and buried approximately 900 mm to 1,200 mm below ground surface. The storage pipeline would be constructed using conventional trenching methodologies with horizontal directional drilling proposed beneath Old Punt Road.

## 2.5 Electricity Transmission

The project includes construction of a 132 kilovolt (kV) electricity transmission line between the power station and TransGrid's Tomago switching station. The electricity transmission line would be located on land owned by Tomago Aluminium, TransGrid, AGL and Council. The electricity transmission line would be constructed as an above ground line in a cleared easement up to 30 m wide.

## 2.6 Traffic

Access to the project site would be from Old Punt Road in the south-eastern corner of the power station site. A new access road to the power station site would be constructed as part of early works, including a channelised right hand turn (CHR) into the site from Old Punt Road. All heavy vehicles would access the site from the intersection of Pacific Highway and Old Punt Road.

A separate, emergency only access is also proposed to the Pacific Highway at the north-east of the power station site. No other road works would be required on the local road network.

The project includes major utility connections that traverse Old Punt Road which is a major heavy vehicle access road for the Tomago area that carries oversize/overmass (OSOM) vehicles. The intersection between Old Punt Road and Pacific Highway is also the proposed location of an interchange for the M1 upgrade project. The area includes existing utilities both above and below the roadway.

Construction of the project would include 270 to 300 light vehicle movements per day for construction workers, and up to 50 heavy vehicle movements per day for equipment and deliveries.

During operation, the project would include up to 23 staff movements per day, up to 34 wastewater tanker movements per day (if the project were operating continuously) and up to 60 movements of B-Double tankers for continuous operation of the project on diesel fuel.

## 2.7 Timing

AGL anticipates that construction is likely to commence in 2021 and take up to two years to complete followed by commissioning of the project. AGL would also be required to decommission and rehabilitate the permanent infrastructure at the end of the power station's operational life which is expected to be at least 25 years.

# 3 Strategic Context

## 3.1 Energy Security

The project was declared as CSSI by the then Minister for Planning in 2018 due to its potential to:

- increase the dispatchable energy capacity of NSW and help to mitigate significant short to medium term energy security risks to the east coast electricity market due to the scheduled closure of the Liddell coal-fired power station in 2022/23;
- facilitate NSW's transition to a low carbon emissions-based economy, consistent with the *NSW Renewable Energy Action Plan* and *NSW Climate Change Policy Framework*; and
- increase competition in the electricity market and attract additional investment and jobs to NSW.

Since the 2018 CSSI declaration, the increasing importance of dispatchable energy supply, including peaking gas power generation, to complement variable renewable energy as the energy market transitions to low carbon emissions is recognised in key government policies and statements including:

- the *2019 NSW Electricity Strategy* – which sets out a roadmap to secure a sustainable and affordable electricity supply;
- the *2020 NSW Electricity Infrastructure Roadmap* – which recognises the importance of new firming capacity;

- Australian Energy Market Operator's (AEMO) *Integrated System Plan* (2020) – which identifies gas-fired power generation as one of several dispatchable supply options to manage system security and reliability in the medium term; and
- AEMO's *Electricity Statement of Opportunities* (2020) and Liddell Taskforce in the *Report of the Liddell Taskforce*, Commonwealth of Australia and NSW Government (2020) - which describe that additional investment in dispatchable electricity generation is required in NSW in the short to medium term to maintain or increase grid system resilience associated with:
  - the closure of the Liddell Power Station in 2022/ 2023;
  - bushfire risks to key infrastructure; and
  - periods of peak electricity demand during summer and winter, as occurred in 2020.

Furthermore, the Australian Government released the *Technology Investment Roadmap Discussion Paper* in May 2020, which predicted that gas would play an increasing role in firming Australia's energy security. This is likely to occur as Australia's energy mix (previously and currently dominated by aging coal-fired power stations) shifts towards a reliance on renewable and gas technologies.

The Roadmap identifies that the combination of renewable energy, batteries, pumped hydro storage and gas-fired plants allows for a mix with lower emissions with more affordable supply, can provide flexible, fast start generation capable of delivering dispatchable capacity into the NEM.

AEMO in its 2020 *Integrated System Plan* identified the need for 6-19 GW of new flexible dispatchable energy supply from a range of technology options in the National Energy Market (NEM) through to 2040 to back up variable renewable energy generation. The Plan indicates that with the planned closure of coal-fired power stations commencing in the short-term and continuing in the next few decades, security of the energy supply capable of providing flexible, fast start generation and delivering dispatchable capacity into the NEM in times when renewable energy is not available is paramount.

Importantly, gas-fired power generation can supply synchronous power into the NEM that would be available to support system strength (voltage stability) as coal-fired power units are decommissioned, or units withdrawn or decommitted.

### 3.2 Gas Supply

This transition to a new energy mix aligns with the dropping of the east coast wholesale gas market prices (which have shown a 42% decrease in price in the first quarter of 2020 compared to the first quarter of 2019) and the Commonwealth and NSW Government's commitment to targeting an additional 70 Petajoules (PJ) of natural gas produced within NSW by 2022.

AEMO's 2020 *Gas Statement of Opportunities* found that NSW consumed around 123 PJ of natural gas in 2019. The consumer breakdown attributed the demand to 45% industrial use, 40% residential and commercial use and 15% required for gas-powered generation.

The AEMO also projected that Australia's east and south-east coast only has sufficient gas supply until 2023, with gas supply shortfalls potentially occurring from 2024 during peak days (unless more gas supply is developed, or pipeline limitations are addressed). A new gas supply of more than 70 PJ a year targeted in the Commonwealth and NSW agreement is anticipated from to meet over 60% of NSW's demand, delaying the forecast supply shortfall for the State until 2034.

There are a number of approved and proposed projects that have potential to increase gas supply and pipeline limitations in NSW including the:



- Port Kembla Gas Terminal - approved by the Minister for Planning in April 2019 (with a further modification in April 2020) with the potential to supply up to 115 PJ of gas (up to 90% of NSW gas needs) and up to 12 days of emergency gas supply;
- Narrabri Gas Project - approved by the Independent Planning Commission (IPC) in September 2020, with the potential to supply up to 70 PJ of gas for the domestic market;
- Queensland-Hunter Gas Pipeline: approved in 2009, the 825 km high-pressure gas pipeline between Wallumbilla in Queensland to Newcastle in NSW;
- Newcastle Gas Terminal Project - declared CSSI on 14 August 2019, with an EIS anticipated to be lodged in 2021; and
- Eastern Gas Pipeline - Port Kembla lateral duplication – modification approved in October 2020, to increase the capacity of the pipeline connection between the Port Kembla Gas Terminal and the Eastern Gas Pipeline.

### 3.3 Energy Efficiency and Climate Change

The Commonwealth *National Greenhouse and Energy Reporting Act 2007* (NGER Act) provides a scheme for a single national framework for Australian developers, particularly for reporting greenhouse gas emissions, energy production and energy consumption. Objectives of the NGER Act include assisting Commonwealth, state and territory government programmes and activities with avoiding duplication of similar reporting requirements in the states and territories. The *National Greenhouse and Energy Reporting Regulations 2008* (NGER Regulations) sets out specific details to achieve compliance and procedures for administering the NGER Act in relation to scopes 1 and 2 emissions and energy consumption/production of a facility.

The Clean Energy Regulator, an independent statutory authority by the *Clean Energy Regulator Act 2011*, sets out obligations for facilities with annual Scope 1 emissions exceeding the safeguard threshold of 100 kt CO<sub>2</sub>-e. Responsible facilities are required to register under the NGER Act and reduce the facility's net emissions or offset the excess emissions; e.g. by purchasing and surrendering Australian carbon credit units (ACCUs). This additional safeguard mechanism is administered through the NGER scheme, and the Clean Energy Regulator publishes the relevant information about the responsible facilities in a reporting year, including the baseline emissions number in force for that year, total reported emissions, the responsible emitter(s) for each facility, and any ACCUs surrendered.

Additionally, the NSW Government is committed to acting on climate change by targeting net-zero emissions by 2050 and making NSW more resilient to a changing climate. These objectives are recognised within the NSW Government's *Climate Change Policy Framework* (OEH, 2016) which aims to maximise the economic, social and environmental wellbeing of NSW and aligns with international policies, actions and targets.

The project would directly contribute to this target as peaking gas power stations are recognised as a key component in the Department's *Electricity Infrastructure Roadmap* (DPIE, 2020) which provides an outline of how the State's electricity infrastructure will transition from retiring power sources to cleaner, cheaper and more reliable energy sources.

Along with investing in renewable energy zones and battery storage systems, the roadmap identifies that gas peaking power stations is one of a number of technologies required to provide dispatchable energy to offset decrease in capacity when supply from variable renewable sources cannot meet demand.

## 4 Statutory Context

### 4.1 Planning Approvals

#### Critical State Significant Infrastructure

On 12 December 2018, the former Minister for Planning determined that the project was essential to NSW for environmental, economic and social reasons and declared the project to be CSSI under Section 5.13 of the EP&A Act, as it would strengthen energy security in NSW. The project is listed under Clause 12 of Schedule 5 of the *State Environmental Planning Policy (State and Regional Development) 2011* (State and Regional Development SEPP).

Consequently, the project requires the approval of the Minister for Planning and Public Spaces.

#### Application of *Biodiversity Conservation Act 2016*

The *Biodiversity Conservation Act 2016* (BC Act) applies to the project, in particular, Section 7.9 of the BC Act requires that applications for approval under Division 5.2 of the EP&A Act to carry out state significant infrastructure must be accompanied by a Biodiversity Development Assessment Report (BDAR). Section 6.12 of the BC Act also requires that the BDAR be completed in accordance with the biodiversity assessment method and specify the class of biodiversity credits required to offset the residual impacts on biodiversity values.

A BDAR was provided in the EIS and subsequently updated to address comments from the Department's Biodiversity, Conservation and Science Directorate (BCS) (see **Sections 5.4** and **6.7**).

The assessment concluded that the project is unlikely to have significant impacts on any biodiversity values of the area provided mitigation measures are applied during construction and operation of the project.

#### Exempt Approvals

Under Section 5.23 of the EP&A Act, the following approvals are not required for CSSI projects:

- permits under Sections 201 and 219 of the *Fisheries Management Act 1994*;
- excavation and Aboriginal heritage impact permits under the *National Parks and Wildlife Act 1974* and *Heritage Act 1977*;
- a bushfire safety authority under Section 100B of the *Rural Fires Act 1997*; and
- approvals for water use, management or an activity (other than an aquifer interference approval) under Sections 89 to 91 of the *Water Management Act 2000*.

Nevertheless, the Department's comprehensive assessment considered relevant matters under the EP&A Act, including consultation with relevant agencies, and included provisions in the recommended conditions of approval to ensure the heritage, bushfire and water impacts of the project would be managed and minimised.

## Environmental Planning Instruments

In accordance with Section 5.22(2) of the EP&A Act, no Environmental Planning Instruments (EPI) substantially govern the carrying out of a CSSI project other than the *State and Regional Development SEPP*. Notwithstanding this, consideration was given to the following EPIs:

- *State Environmental Planning Policy (Infrastructure) 2007*: Clause 34(1) allows for the development for the purpose of electricity generating works to be carried out by any person with consent on any land in a prescribed zone (the project would be located in the prescribed industrial zone).
- *State Environmental Planning Policy No. 33 – Hazardous and Offensive Industries (SEPP 33)*: the project is a potentially hazardous industry. AGL has prepared a Preliminary Hazard Analysis (PHA) in accordance with Clause 12 of the SEPP.
- *State Environmental Planning Policy (Koala Habitat Protection) 2020*: the project would be located in the Central Coast Koala management area. AGL's BDAR included consideration of the potential impacts of the project on koalas.
- *State Environmental Planning Policy No. 55 – Remediation of Land*: AGL has provided details of the contamination assessments undertaken for the site. The Department is satisfied that site would be suitable for the intended uses.
- *State Environmental Planning Policy (Coastal Management) 2018*: a land identified as 'coastal wetlands' under Clause 6 of the SEPP is located approximately 450 m to the north-west of the project site bordering the Hunter River. AGL's EIS and Amendment Report included consideration of the project's impact on wetlands.

## Objects of the Act

The objects of the EP&A Act, incorporating ecologically sustainable development (ESD) principles, are the underpinning principles for all decision making under the Act. The Department has assessed the project against the objects found in section 1.3 of the EP&A Act. **Appendix H** provides a summary of how these objects have been considered.

## 4.2 Other NSW Approvals

A number of additional approvals and licenses would be required if the project was to proceed. These include licenses under the following relevant legislation:

- *Pipelines Act 1967* (Pipelines Act): the project would include the construction and operation of new gas supply pipelines and a gas storage pipeline, requiring AGL to apply to the Department's Energy Operations for a variation of the existing pipeline licence;
- *Water Management Act 2000*: a Water Access Licence (WAL) would be required prior to construction commencing, as the project would access more than 3 megalitres (ML) of groundwater during construction and operation (see **Section 6.6**).
- *Roads Act 1993* (Roads Act): the project would require upgrading a public road (Old Punt Road), which requires a permit under Section 138 of the Roads Act for all construction works within the road reserve. The Department has undertaken extensive consultation with TfNSW and Council during its assessment process to ensure the project's impacts are appropriately managed and minimised (see **Section 6.3**);
- *Protection of the Environment Operations Act 1997* (POEO Act): the project would be subject to an Environment Protection Licence (EPL) issued by the NSW Environment Protection Authority (EPA); and

- *Biosecurity Act 2015* (Biosecurity Act): AGL must comply with general biosecurity duties, including mandatory measures, to prevent, eliminate or minimise a biosecurity risk. The Department's recommended conditions of approval include provisions to address these matters and require AGL to prepare and implement a biodiversity management plan, including management of noxious weeds (see **Section 6.7**).

### 4.3 Commonwealth Approval

On 15 August 2019, a delegate of the Commonwealth Minister for the Department of the Agriculture, Water and Environment (Commonwealth Minister) determined that the project was a controlled action under Section 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

This declaration was due to the project's potential indirect impact on the Hunter Estuary Wetlands Ramsar site (Ramsar wetlands under Sections 16 and 17B of the EPBC Act) due to discharges from the site.

Consequently, the project requires the approval of the Commonwealth Minister for the Environment in addition to any State approvals before the project may proceed. The Commonwealth has accredited the NSW assessment process under EP&A Act for the assessment of all Commonwealth matters under the EPBC Act.

Under this accreditation, the Department is required to:

- assess the likely impacts of the project on Commonwealth matters in accordance with any relevant agreement, policies or guidelines; and
- prepare an assessment for the Commonwealth Minister, including any recommended conditions.

The Department has worked closely with its Biodiversity Conservation and Science Directorate (BCS) in assessing the project's impacts on biodiversity and Commonwealth matters under the EPBC Act, and considers that the project would be unlikely to have significant impact on the Ramsar wetlands, (which are located approximately 2.5 km south/south-east of the project site), subject to the proposed management measures and recommended conditions of approval (see **Section 6.7**).

The Commonwealth Minister will consider the Department's assessment report, conditions imposed by the NSW Government (should the project be approved) and any other relevant information before making a final decision on the project under the EPBC Act.

## 5 Engagement

### 5.1 Department's Engagement

The Department has consulted with the community, special interest groups, and government agencies during its comprehensive assessment of the project, including:

- making all the information on the project publicly available on the Department's website;
- exhibiting the project application and EIS from 20 November to 18 December 2019 (28 days);
- advertising the exhibition in the Sydney Morning Herald, Daily Telegraph, The Australian, Port Stephens Examiner and the Newcastle Star, and notified landowners adjacent to the project site;
- notified the relevant government agencies and Port Stephens Council (the local Council) as well as Maitland City Council, and City of Newcastle Council;
- publishing all the submissions on the Department's website;
- requiring AGL to submit a formal response to the issues raised in the submissions; and
- on-going consultation with the government agencies on the assessment of the key issues.

## 5.2 AGL's Engagement

AGL's EIS and Amendment Report described that AGL maintains a stakeholder contact database and details the on-going consultations with the key stakeholders, including:

- government agencies, including TfNSW, EPA, SafeWork NSW, Department of Defence, Civil Aviation Safety Authority, AirServices Australia, Newcastle Airport, RAAF Base Williamtown and Councils;
- asset and landowners (Hunter Water Corporation, TransGrid, and Tomago Aluminium);
- Registered Aboriginal Parties (RAPs); and
- local community by establishing a webpage for the project on the AGL website, providing an overview of the project and project updates, answers to frequently asked questions, and enquiry or complaint lines via telephone, email, or post.

## 5.3 Submissions

The Department received a total of 14 public submissions during exhibition of the EIS, 9 from special interest groups and 5 from individuals. Five of the public submissions objected to the project.

The Department also received advice from 12 government agencies and submissions from Port Stephens Council and City of Newcastle Council.

A break-down of the submitters positions is provided in **Table 2**, and copies of all submissions were made available on the Department's website (see **Appendix B**). A summary of the submissions is in the following sections and the Department's consideration of all the matters raised is described in **Section 6** of this report.

**Table 2 | Summary of Submissions**

Group	Submissions	Support	Object	Comment
Public	5	0	2	3
Special Interest Groups	9	1	3	5
Government Agencies	14	1	0	13
Total	28	3	5	20

## 5.4 Key Issues – Community and Special Interest Groups

The key issues raised in public submissions related to the potential climate change impacts of the project, consideration of alternative technologies to generate electricity (such as renewables) and impacts on biodiversity, water resources, aviation and air quality. the project

A summary of issues raised is provided in **Table 3** and a summary of how these issues have been addressed is in **Appendix G**.

**Table 3 | Summary of Community and Special Interest Group Submissions**

Group	Position	Key Issues
Ampcontrol	Support (1)	



Nature Conservation Council of NSW Port Stephens Greens Hunter Environment Lobby Inc	Object (3)	<ul style="list-style-type: none"> <li>• Alternative design solutions including renewable options (deprioritising the use of fossil fuels in energy generation) or differing locations;</li> <li>• Impacts on flora and fauna, water and air quality;</li> <li>• Safety issues surrounding gas production and utilisation;</li> <li>• Likely impacts on the nearby airport operation; and</li> <li>• Impacts on surrounding and regional utilities.</li> </ul>
Jemena Limited Hunter Water Corporation (HWC) Jetstar Airways Newcastle Airport Pty Ltd TransGrid	Comment (5)	
General Public	Object (2)	
	Comment (3)	

## 5.5 Key Issues - Government Agencies

None of the government agencies objected to the project. However, they provided comments on the key aspects of the project and recommended conditions of approval. Port Stephens Council supported the project due to its potential to support long term economic growth in the region. A summary of the key matters raised in the government agency submissions and recommendations is provided in **Table 4**.

In addition, the Department sought advice from its Hazards team which required further information and clarifications on the assumptions and input into the risk modelling, the project including further details and updates to the Preliminary Hazards Assessment (PHA) in the EIS.

The Department's considerations of the matters raised is provided in **Section 6** of this report.

**Table 4 | Summary of Government Agency Submissions**

Government Agency	Key Issues	Consideration and Conditions
<b>Environment Protection Authority (EPA)</b>	<ul style="list-style-type: none"> <li>• Air quality: emission controls, variation in emissions and pollution control efficiency across plant's operating load, and exceedances of principal toxic air pollutants (e.g. acrolein).</li> <li>• Noise: feasible and reasonable sound attenuation measures, low-frequency and/or tonal impacts at surrounding receivers during operations, and a review of background noise, amenity noise and evening intrusive levels, and meteorological conditions used in the assessment.</li> </ul>	<ul style="list-style-type: none"> <li>• The Department worked closely with the EPA throughout the assessment process and has recommended conditions to address issues related the air quality and noise and water quality monitoring and mitigation (see <b>Appendix I</b>).</li> <li>• The EPA supports the recommended conditions.</li> </ul>
<b>Transport for NSW (TfNSW)</b>	<ul style="list-style-type: none"> <li>• Potential interactions and impacts with the M1 Upgrade Project.</li> <li>• Impacts of gas pipeline and electricity utility connections across Old Punt Road affecting oversize/overmass vehicles.</li> <li>• Intersection design from Old Punt Road into the site.</li> <li>• Emergency access from the site.</li> </ul>	<ul style="list-style-type: none"> <li>• The Department and TfNSW considered interactions between the project and the proposed M1 Upgrade Project as one of the key assessment issues.</li> <li>• The Department's recommended conditions has provision for matters related to road upgrades and infrastructure design to accommodate the M1 Upgrade Project to the satisfaction of TfNSW. Furthermore, the recommended conditions include other management requirements, including the preparation of a Traffic Management Plan in consultation with TfNSW and Port Stephens Council prior to construction.</li> <li>• TfNSW supports the recommended conditions.</li> </ul>
<b>Civil Aviation Safety Authority (CASA) - Aviation Group/ Commonwealth Department of Defence (Defence)</b>	<ul style="list-style-type: none"> <li>• Impacts of gas turbine plant option on aircraft operating at the Royal Australian Air Force (RAAF) Base Williamtown/ Newcastle Airport.</li> <li>• CASA deferred any advice to Defence as the Aerodrome Operator.</li> </ul>	<ul style="list-style-type: none"> <li>• The Department has consulted with the Defence and CASA to ensure aviation safety and recommended a pre-construction condition, requiring AGL to obtain approval from Air Services Australia for the erection of permanent and temporary structures that intrude on the Obstacle Limitation Surface (OLS) of the RAAF Base at Williamtown, and provide an updated plume rise assessment report based on the final generator design prior to commencement of construction.</li> </ul>
<b>Department of Planning, Industry and Environment</b>		

Government Agency	Key Issues	Consideration and Conditions
Energy, Climate Change & Sustainability - Energy Operations (DPIE Energy)	<ul style="list-style-type: none"> <li>Requested that the project's pipelines be regulated and licenced under the provisions of the <i>Pipelines Act 1967</i>.</li> </ul>	<ul style="list-style-type: none"> <li>The Department's recommended conditions require the supply and storages pipelines to be licensed under the <i>Pipelines Act 1967</i>.</li> </ul>
Biodiversity Conservation and Science Directorate (BCS)	<ul style="list-style-type: none"> <li>Biodiversity: <ul style="list-style-type: none"> <li>classification of vegetation zones in relation to the Threatened Ecological Community (TEC) vegetation in the north and east of the project site.</li> </ul> </li> <li>Aboriginal cultural heritage: <ul style="list-style-type: none"> <li>revision of the assessment and clarification of the impacts on Aboriginal cultural heritage values as well as avoidance or conservation strategy to be integrated in an Aboriginal cultural heritage management plan.</li> </ul> </li> <li>Downstream impacts on Ramsar Wetland due to flooding and run-off of contaminated water.</li> </ul>	<ul style="list-style-type: none"> <li>AGL addressed BCS concerns and recommendations in a revised BDAR in the Submissions Report and further revision to the BDAR as part of the Amendment Report.</li> <li>The Department has recommended conditions on: <ul style="list-style-type: none"> <li>biodiversity, including ecosystem and species credit requirements that AGL must retire, and an Aboriginal cultural heritage management plan as part of the project's environmental management strategy;</li> <li>Aboriginal heritage, including requiring no direct or indirect impacts on heritage items located outside the approved development footprint, or to heritage item NPS01, mitigation strategy, avoidance and conservation measures, and recommended a condition for preparation of an Aboriginal cultural heritage management plan, including a long-term management of object, prior to construction in consultation with the Registered Aboriginal Parties (RAPs) and BCS; and</li> <li>downstream surface water quality and flooding impacts, including.</li> </ul> </li> </ul>
Water Group/ Natural Resources Access Regulator	<ul style="list-style-type: none"> <li>Impacts to groundwater dependent ecosystems (GDE's), water users and any licensable take of water, including requirement for a WAL prior to the commencement of the project in relation to the groundwater and/or surface water take.</li> </ul>	<ul style="list-style-type: none"> <li>The Department has recommended AGL to prepare a Water Management Plan prior to construction in consultation with DPIE Water, EPA and Council, including a groundwater management plan, which must identify GDEs, groundwater flow patterns in the region to the Hunter Estuary Wetlands, and detail relevant performance criteria and trigger levels.</li> </ul>
Fire & Rescue NSW (FRNSW)	<ul style="list-style-type: none"> <li>Fire safety and hazards, including a requirement for the Fire Safety Study to be prepared in consultation with the FRNSW.</li> </ul>	<ul style="list-style-type: none"> <li>The Department consulted with its Hazards Specialist Team and has recommended a range of conditions to ensure safety of the environment and community and the project's hazards and risks would be managed and minimised.</li> </ul>

Government Agency	Key Issues	Consideration and Conditions
		<ul style="list-style-type: none"> <li>These include requirements for a Fire Safety Study, a Hazard and Operability Study and a Final Hazard Analysis pre-construction, an Emergency Plan and a Safety Management System pre-commissioning, pre- and post-start up Compliance Reports, and routine Hazards Audits to the satisfaction of the Secretary.</li> </ul>
<b>NSW Health</b>	<ul style="list-style-type: none"> <li>Air quality and noise, including requirements to comply with the EPA's criteria, and the cooling towers to be compliant with the relevant NSW Health policies and guidelines to avoid the growth of <i>Legionella</i>.</li> </ul>	<ul style="list-style-type: none"> <li>The Department has recommended conditions relating to air quality and noise impacts of the project and EPA supports these conditions.</li> <li>AGL's Submissions Report has confirmed that the project would not use cooling towers or any other infrastructure that would promote growth of <i>Legionella</i>.</li> </ul>
<b>Heritage Council of NSW</b>	<ul style="list-style-type: none"> <li>Noted that the project site is not listed on the State Heritage Register (SHR), and there are no SHR items nearby.</li> </ul>	<ul style="list-style-type: none"> <li>The Department's recommended conditions do not permit any direct or indirect impacts on heritage items located outside the approved development footprint.</li> </ul>
<b>WaterNSW</b>	<ul style="list-style-type: none"> <li>Noted that the project site is not near any WaterNSW land, assets or infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>Noted.</li> </ul>
<b>Port Stephens Council</b> (Council)	<ul style="list-style-type: none"> <li>Noted the project is aligned with vision of the Hunter Regional Plan by creating new business opportunities.</li> <li>Surface water, discharges, stormwater, and flooding impacts.</li> <li>Biodiversity, including impacts on the Ramsar-listed wetland, offset credits and mitigation measures relating to potential koala habitat loss.</li> <li>Traffic, including potential impacts on TfNSW's M1 Upgrade Project.</li> </ul>	<ul style="list-style-type: none"> <li>The Department's recommended conditions have provisions relating to the matters raised by the Council, including preparation of relevant management plans in consultation with the key agencies, including Council.</li> </ul>
<b>Crown Lands</b> <b>Department of Primary Industries /</b> <b>City of Newcastle Council</b>	<ul style="list-style-type: none"> <li>No issues raised and/or provided no comments.</li> </ul>	<ul style="list-style-type: none"> <li>Noted.</li> </ul>

## 5.6 Response to Submissions and Amendment Report

### Submissions Report

Following the exhibition of the EIS, the Department requested AGL provide a response to the issues raised in submissions. In May 2020, AGL provided a Submissions Report to the Department (see **Appendix C**). The Department made the Submissions Report publicly available on its website and referred it to the government agencies who had made submissions on the project's EIS.

Defence, CASA, FRNSW and Council advised that they were satisfied with the Submission Report and recommended conditions to minimise potential impacts to aviation safety, fire risks, stormwater, flooding and water quality impacts, if the project was approved.

The EPA, NSW Health, BCS, and TfNSW requested additional information to address residual concerns, including air and noise impacts and mitigation measures, changes to the biodiversity assessment and further detail of traffic and transportation issues.

The Department requested that AGL provide further responses to residual issues, including further classifications of the hazard's assessment.

### Amendment Report

On 26 August 2020, AGL provided responses to the additional issues raised on the Submissions Report, including proposed changes to the project in an Amendment Report (see **Appendix D**). The Amendment Report described and assessed the following amendments to the project, as was originally described in the EIS:

- addition of two construction laydown areas within the project site, known as the 'Central' and 'East' laydown areas;
- on-site processing and reuse of excavated rock during construction using a screening and crushing facility within the project site;
- realignment of the transmission line to minimise impacts to existing infrastructure;
- increasing the development footprint to include road works required at Old Punt Road; and
- duplication of the gas supply pipeline from the power station to the existing AGL's PL42 pipeline.

The Amendment report provided a revised assessment of the proposed amended project, including potential impacts on biodiversity, Aboriginal heritage, air quality, noise and vibration, hazards and traffic. The Department referred the Amendment Report to the key government agencies for advice and made it publicly available on its website from 27 August 2020.

## 5.7 Residual Issues – Government Agencies

None of the government agencies raised major concerns or objected to the amendments. BCS, TfNSW and the EPA were generally satisfied that sufficient information had been provided to adequately assess the key issues, including biodiversity, air, noise and water impacts of the amended Project.

Following consultation with the EPA and additional information provided by AGL (see **Appendix E** and **Appendix F**), the EPA provided recommendations for noise, air quality, water quality and waste management conditions. TfNSW provided recommendations in relation to the residual traffic related issues to be included in the conditions relating to the existing and proposed road network in the locality.



## 6 Assessment

The Department has assessed the merits of the project in accordance with the requirements of the EP&A Act and applicable NSW and Commonwealth Government policies and guidelines. The Department has also considered the issues raised in submissions, AGL's Submissions Report and Amendment Report, further advice from key agencies, and AGL's response to these residual issues.

The Department considers the key assessment issues relate to the project's impacts on air quality and greenhouse gas emissions, noise and vibration, traffic and transport, aviation safety, hazards and risks, water resources, and biodiversity. The Department's consideration of these matters is provided in the following sections. A summary of the Department's assessment of other relevant issues is provided in **Section 6.9**.

### 6.1 Air Quality and Greenhouse Gas Emissions

AGL engaged ERM Australia Pacific Pty Limited (ERM) to complete an Air Quality Impact Assessment (AQIA) of the air quality impacts of the project. The AQIA was completed in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (EPA, 2016) (Approved Methods).

The AQIA was revised twice throughout the assessment process to address issues raised by the EPA and NSW Health, including further consideration of emissions, cumulative impacts, ozone and regional air quality and emission controls including oxides of nitrogen (NO<sub>x</sub>) control technologies. Appendix C of the Amendment Report provides the updated AQIA.

The EPA advised that it was satisfied with the AQIA submitted with the Amendment Report and recommended conditions to address its concerns (see **Appendix E**). In particular, this included a recommendation to restrict total annual operational hours and hours using diesel fuel to minimise particulate and NO<sub>x</sub> emissions.

This was to keep the NO<sub>x</sub> emissions as low as reasonable and feasibly achievable, as NO<sub>x</sub> is a precursor for formation of both ozone and PM<sub>2.5</sub> and the background ozone and PM<sub>2.5</sub> concentrations are already exceeding the national air quality criteria in the Newcastle regional airshed. This is discussed in more detail below.

The EIS also included a Greenhouse Gas Assessment (GHGA) prepared by ERM in accordance with the requirements of the Commonwealth *National Greenhouse and Energy Reporting Act 2007* (NGER Act) and *National Greenhouse and Energy Reporting Regulations 2008* (NGER Regulations).

#### Construction

During construction, temporary dust generation would occur from ground disturbance, vegetation clearing, earthworks, vehicle movements and landscaping. The final AQIA included an assessment of the screening and crushing facility proposed as part of the project in the Amendment Report, including dust dispersion modelling.

With the incorporation of standard dust controls, construction activities are predicted to comply with the EPA's air quality impact assessment criteria at sensitive receivers. Proposed mitigation measures include use of water carts, enforcement of speed limits, minimising drop heights, water sprays on

stockpiles, crushing and screening equipment and additional management controls during adverse weather conditions (e.g. high wind conditions).

The EPA and the Department have recommended conditions requiring AGL to minimise dust emissions from the site. To ensure that AGL's commitments are appropriately documented and managed, the Department also recommended incorporating a construction air quality management sub-plan into the Environmental Management Strategy (EMS) required for the project. On this basis, the Department considers that construction air quality impacts could be readily managed and mitigated.

## Operations

Operational impacts of key air emissions of the project were assessed against the EPA's impact assessment criteria for oxides of nitrogen (NO<sub>x</sub>), carbon monoxide (CO), sulphur dioxide (SO<sub>2</sub>), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) and hazardous air pollutants (HAPs), such as volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs).

The AQIA modelled both engine technologies (gas turbine and reciprocating engines) under the worst-case scenario (continuous operations) and the likely anticipated operation (approximately 14% capacity) operating on both natural gas and diesel fuel. The modelling predicted a marginal exceedance of the EPA's assessment criteria for the operation of a gas turbine power station (PM<sub>2.5</sub> on both natural gas and diesel) and two exceedances for the operation of a reciprocating engine power station (PM<sub>2.5</sub> operating on both fuel types and acrolein (a VOC) operating on gas), assuming worst-case continuous operations (ie. operating 24 hours per day, 7 days a week) (see **Table 5**).

**Table 5 | Air Quality Criteria Exceedances at representative receiver location – Continuous Operations**

Substance	Averaging period	Technology	Background (µg/m <sup>3</sup> )	EPA Criterion (µg/m <sup>3</sup> )	Maximum Prediction (µg/m <sup>3</sup> ) - Gas	Maximum Prediction (µg/m <sup>3</sup> ) - Diesel
PM <sub>2.5</sub>	Cumulative annual mean	Gas turbine	8.1	8.0	8.14	8.2
PM <sub>2.5</sub>	Cumulative annual mean	Reciprocating engine	8.1	8.0	8.2	8.3
Acrolein	Incremental 1 hour 99.9 <sup>th</sup> percentile	Reciprocating engine	-	0.42	1.25	No exceedance

NSW Health and the EPA raised concerns about these predicted exceedances noting in particular that the background ambient air quality for PM<sub>2.5</sub> was already above the EPA criteria of 8 µg/m<sup>3</sup> and that this annual criterion was likely to be further reduced to 7 µg/m<sup>3</sup> by 2025.

## Particulates

The Department notes that the background annual ambient PM<sub>2.5</sub> concentration of 8.1 µg/m<sup>3</sup> used in the assessment is based on 2018 monitoring data taken from the Beresfield air quality monitoring station operated by the Department's Environment, Energy and Science (EES) Division, the closest

monitoring station to the project. This 2018 figure compares to the average annual concentration for the period 2014 to 2018 of 7.7 µg/m<sup>3</sup>.

The modelling shows that there is only a very small incremental increase in annual average ambient PM<sub>2.5</sub> and PM<sub>10</sub> levels as a result of the project at the nearest sensitive receivers, with a peak annual incremental annual average increase of around 0.2 µg/m<sup>3</sup> across the air modelling domain outside the site when using diesel continuously. In peaking mode at 14% capacity and conservatively assuming at least 50% diesel is used for power generation, the PM<sub>2.5</sub> annual emissions contribution would only be around 10% of that assumed for the worst-case modelling.

When considering other conservative assumptions applied in the modelling, AGL argues that the predicted peak ambient concentration would not materially influence background concentrations or the ability to achieve the EPA's proposed 2025 PM<sub>2.5</sub> goal.

Overall, the Department and the EPA accept that the PM<sub>2.5</sub> assessment is highly conservative, particularly in that continuous operation using diesel would not occur in practice. To ensure that this is the case, the EPA and the Department have recommended conditions that effectively limit the annual operating hours based on meeting an annual total NO<sub>x</sub> (as NO<sub>2</sub> equivalent) emission load limit (see further discussion below).

#### *Acrolein*

AGL completed additional assessment for acrolein and provided further information about the meteorological conditions when the 1 hour 99<sup>th</sup> percentile criterion was predicted to be exceeded (see Appendix D of the Amendment Report AQIA). This analysis showed that these hourly exceedances occurred mainly during the daytime period (between 8 am and 3 pm), with wind speeds greater than 6.5 m/s, and during periods of moderate temperatures (10 – 30 °C).

AGL contends that these milder meteorological conditions would be unlikely to align with times when the power station is operating, as this would usually occur during times of more extreme weather where there is peak demand in the electricity grid. Consequently, the Department and the EPA consider the risk of any systematic exceedances of acrolein are unlikely to occur in practice.

#### *Ozone formation*

The EPA recommended that as NO<sub>x</sub> is a contributor to ozone formation and the project is located in an area where ozone levels are already exceeding ambient air quality standards, that NO<sub>x</sub> emissions should be as low as reasonably and feasibly achievable.

At the request of the EPA, AGL provided further assessment of potential for ozone formation. Firstly, it demonstrated that the ambient ozone concentration threshold in the airshed was exceeded based on 5 years of monitoring data (2014-2018). Further, the estimated NO<sub>x</sub> emissions under both 14% (peaking) and 100% (continuous) operations predicted up to 374 tonnes and 2,672 tonnes NO<sub>x</sub> per year respectively, which triggered a requirement for an assessment of the project's incremental ozone contributions.

On this basis, AGL undertook further Level 1 screening level assessment of peaking (based on 6 hours operation per day) and continuous operations for both engine types and using both gas and diesel. The scenario of under 6-hours per day operation using gas complied with the screening level ozone concentration (0.5 ppb), however all other scenarios exceeded the trigger level.

### *Limits on Power Station Operations*

The EPA and the Department remain concerned that AGL is seeking maximum flexibility for power station operations ranging from full use of diesel or natural gas, 2 engine types and continuous operations, without any clear commitment to adopt emission control technology to achieve the Lowest Achievable Emission Rate (LAER).

The modelling does not support the proposed flexibility with continuous operations and the use of diesel constrained due to current PM<sub>2.5</sub> and ozone background concentrations already exceeding ambient air quality criteria.

As such, the EPA recommended air quality conditions to the Department that would limit maximum operational hours of the project in order to ensure emissions are reduced consistent with peaking operations. The EPA recommended that operational hours for all fuel types should not exceed 2,200 cumulative hours per calendar year (approximately 25% of total hours of the year) and that diesel should not be used for more than 900 hours per year (approximately 10% total hours of the year).

Alternatively, the EPA advised that it would accept a NO<sub>x</sub> annual tonnage limit that would practically constrain operational hours but would provide additional incentive for AGL to minimise NO<sub>x</sub> emissions through preferential use of gas over diesel, and consider final engine selection and emission control technology during detailed design.

Following further consultation with the EPA and AGL, the Department has recommended an operational total NO<sub>x</sub> (as NO<sub>2</sub> equivalent) emissions limit of 338 tonnes annually, subject to a revised annual total NO<sub>x</sub> (as NO<sub>2</sub> equivalent) emission load limit following 12 months performance monitoring of actual NO<sub>x</sub> emissions. In addition, the recommended conditions also allow for the load limit to be exceeded if the Australian Energy Market Operator (AEMO) notifies AGL to take relevant actions to maintain or restore the security or reliability of the electricity network (under the emergency provisions of the National Electricity Rules).

To minimise air emissions from the project, and following consultation with the EPA, the Department has also recommended conditions for AGL to:

- require diesel fuel to comply with relevant fuel quality standards;
- ensure that all plant and equipment is maintained in a proper and efficient manner and operated in a proper and efficient manner;
- undertake a revised AQIA based on the final plant design;
- undertake an air quality verification program within 6 months of commissioning the power station and submit a post commissioning verification report to the Department and the EPA; and
- comply with strict point source discharge limits, including routine monitoring to demonstrate compliance.

### **Greenhouse Gas Emissions**

The GHG assessment considered all direct and indirect operational GHG emissions from the project, based on both technology types and each fuel source, including 'Scope 1' emissions (GHG emissions released into the atmosphere as a direct result of Project activities) and 'Scope 3' emissions (GHG emissions occurring as a result of activities of a facility, from sources not owned or controlled by the facilities business). The GHG assessment also considered 'Scope 2' emissions (purchased

electricity/use of electricity from the grid to power ancillary equipment and auxiliary loads during operation), but this was assessed as minor compared to the other emissions from the project.

A summary of the calculated GHG emissions associated with the project's operation is presented in **Table 6**.

**Table 6 | Calculated GHG Emissions During Operation of the Project at 14% Capacity**

Scope	Project's lifetime GHG emissions (Mt CO <sub>2</sub> -e)				Typical year Project GHG emissions (Mt CO <sub>2</sub> -e)			
	Reciprocating engine		Gas turbine		Reciprocating engine		Gas turbine	
	Gas	Diesel	Gas	Diesel	Gas	Diesel	Gas	Diesel
<b>1</b>	3.6	4.9	4.3	5.6	0.145	0.196	0.174	0.222
<b>3</b>	1.0	0.3	1.1	0.3	0.038	0.01	0.046	0.011
<b>Total</b>	<b>4.6</b>	<b>5.2</b>	<b>5.5</b>	<b>5.8</b>	<b>0.183</b>	<b>0.206</b>	<b>0.22</b>	<b>0.234</b>

The GHG assessment estimated the project's operational annual Scope 1 emissions about 0.14 – 0.22 Mt CO<sub>2</sub>-e at 14% capacity factor, and about 1 – 1.6 Mt CO<sub>2</sub>-e assuming continuous operations (worst-case scenario). In either case, operation of the project would exceed the facility threshold of annual 25 kt CO<sub>2</sub>-e emissions and trigger the reporting requirements under the National Greenhouse and Energy Reporting scheme for the total annual emissions.

**Table 7** summarises the percentage of the project's contribution to total NSW and Commonwealth GHG emissions for electricity generation and total sources, based on the *State and Territory Greenhouse Gas Inventories 2017, Australia's National Greenhouse Accounts* (DoEE, 2019). This is based on the project's highest annual GHG emissions under 14% peaking capacity, compared with the 2017 emissions estimates in NSW of 51.1 Mt CO<sub>2</sub>-e for the electricity generation sector, and 131.5 Mt CO<sub>2</sub>-e for all sectors, and the 2017 national inventory estimates of 190 Mt CO<sub>2</sub>-e for the electricity generation sector and 535 Mt CO<sub>2</sub>-e for all sectors

**Table 7 | Project Annual GHG Emissions Against 2017 NSW and Australian GHG Inventories (%)**

	Electricity Generation Inventories		Total National Inventories	
	Base case (14% capacity)	Worst-case (continuous operation)	Base case (14% capacity)	Worst-case (continuous operation)
<b>NSW</b>	0.46%	3.3%	0.18%	1.3%
<b>Australia</b>	0.12%	0.9%	0.04%	0.3%

AGL would be required to comply with all the requirements under the *National Greenhouse and Energy Reporting Act 2007* and Regulations, including methods and criteria for calculating GHG emissions, requirements for preparing, conducting and reporting on greenhouse and energy audits, and compliance rules and procedures for administering the safeguard mechanism under the *National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015* (COA, 2019).



The impacts on climate change and GHG emissions are key matters of concern raised by the public in objecting submissions.

As outlined in **Section 3**, gas fired power generation would be required to contribute to the 6-19 GW of new flexible dispatchable energy supply from a range of technology options in the National Energy Market (NEM) through to 2040, to back up variable renewable energy generation. Further, the NSW Government is committed to acting on climate change by targeting net-zero emissions by 2050 and making NSW more resilient to a changing climate. These objectives are recognised within the NSW Government's *Climate Change Policy Framework* (CCPF - OEH, 2016) and *Net Zero Plan Stage 1:2020-2030*.

Importantly, the project's emission intensity would range from 568 to 698 kg CO<sub>2-e</sub> / MWh using gas, which is approximately 40% less than the emission intensity of coal-fired power generation, and would generate between 0.04 and 0.18% of the national and NSW GHG annual emissions inventories respectively.

That is, the project would result in lower emissions per MW generated when compared with coal-fired power generation, while still providing necessary firming capacity and contribute to grid resilience. This is consistent with the CCPF and Net Zero Plan, to progressively reduce emissions intensity for power generation in NSW.

## Summary

The Department and the EPA consider that AGL has undertaken a comprehensive assessment of potential impacts of the project on local and regional air quality based on anticipated and worst-case modelling scenarios. With regard to particulate matter, NO<sub>x</sub>, ozone and acrolein, the Department is satisfied that the EPA's recommendation to limit annual NO<sub>x</sub> (as NO<sub>2</sub> equivalent) emissions would effectively constrain operating hours consistent with peaking operations and therefore minimise risk of exceedance of the air quality criteria, including ensuring minimal to negligible increase in particulates and ozone given the higher background levels.

The Department considers that the project is consistent with NSW and Commonwealth policy and commitments on GHG emissions and climate change in contributing to reducing emissions intensity in the electricity generation sector while providing necessary dispatchable energy to complement variable renewable energy in the NEM.

The Department considers that with the implementation of the project's mitigation measures and the recommended conditions (see **Appendix I**), the project can be appropriately managed to minimise air quality impacts on the local and regional receiving environment.

## 6.2 Noise and Vibration

The project would result in noise and vibration impacts from construction and operation of the power station, gas turbines and electricity transmission lines. To assess potential impacts, the EIS included a Noise and Vibration Impact Assessment (NVIA) prepared by ERM. The NVIA was carried out in accordance with the *Interim Construction Noise Guideline* (ICNG) (DECCW, 2009), *NSW Noise Policy for Industry* (NPfI) (EPA, 2017) and *NSW Road Noise Policy* (EPA, 2011).

The existing ambient noise environment was measured at 13 nearby sensitive receivers grouped into 5 noise catchment areas (NCA) (see **Figure 7**). The identified receptors are the nearest receiver type

within each noise catchment area and are therefore representative of the potential worst-case impacts in those areas.

## **Construction Noise**

Noise modelling predicted that under six construction scenarios (including earthworks, building construction or pipeline/transmission line construction), noise levels would be well below the construction noise management level (NMLs) at all receiver locations during standard construction hours.

For example, the closest residential receivers R3 and R4 (Van Village) to construction activity are predicted to receive up to 38 dB(A), compared to a standard day NML for construction noise of 62 dB(A).

However, some construction activities may need to be undertaken outside standard construction hours (eg site preparation and piling work), and the assessment indicates there may be a 2 to 3 dB(A) exceedance of the NMLs at receiver R4 and R3 respectively during the night-time period. Further, the modelling shows that there would be exceedances of the sleep disturbance criteria at these 2 receiver locations as a result of rock breaking, crushing and piling activities.

To minimise noise impacts, AGL proposes to limit rock breaking, crushing and pile driving activities to standard day time hours. AGL also committed to implementing noise and vibration measures and programs which include monitoring, management of high noise works, complaints handling and consultation protocols and out of hours works which would be implemented through a Construction Noise and Vibration Management Plan (CNVMP).

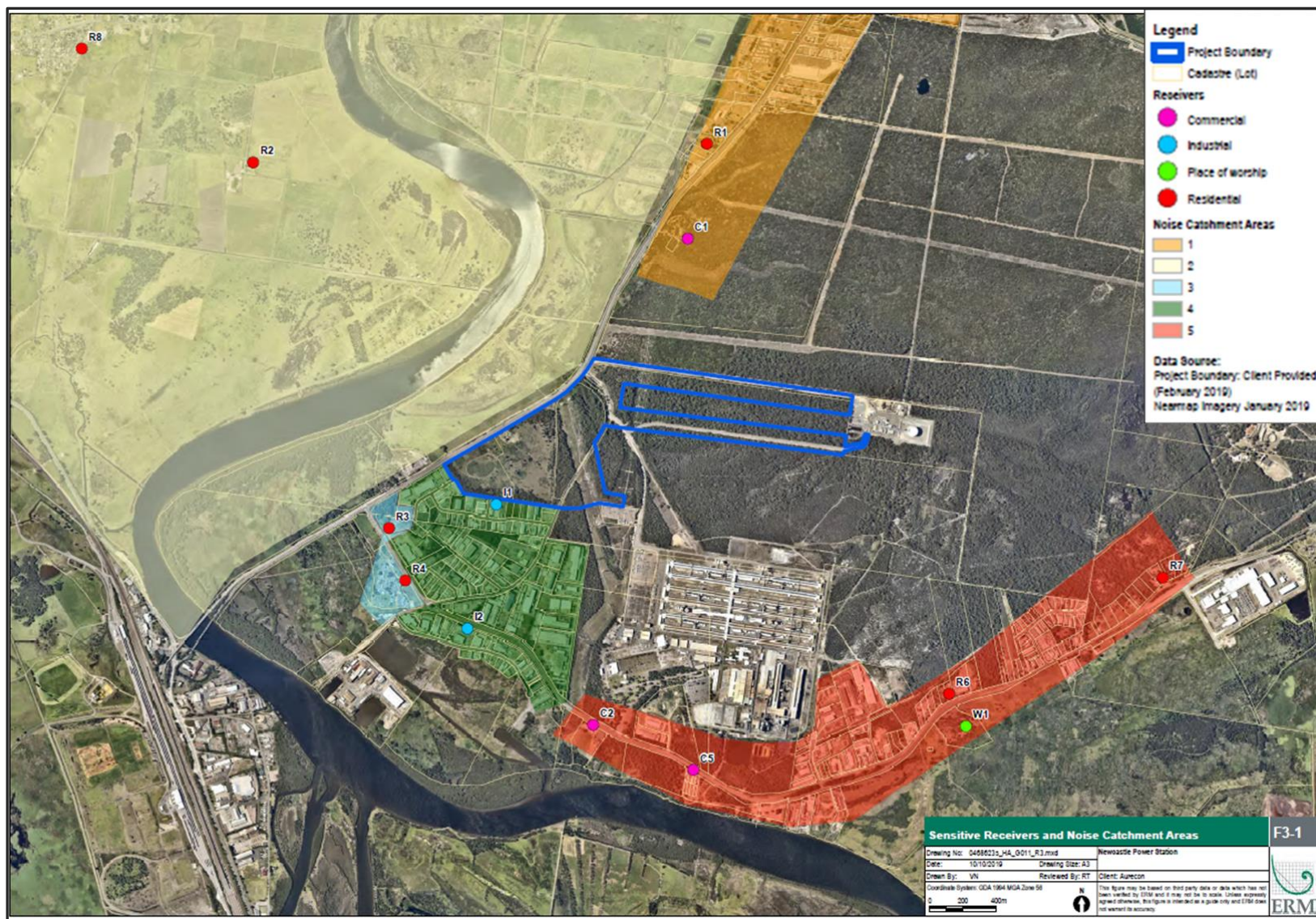
The EPA was satisfied that the final revision of the NVIA (Revision 9, August 2020) adequately assessed construction noise and vibration impacts. The EPA recommended conditions to limit construction to standard hours with allowance for out of hours work subject to:

- demonstrating that construction noise levels would be below the required out of hours noise management levels required under the ICNG; or
- approval by the Planning Secretary following consultation with affected receivers, application of reasonable and feasible noise mitigation measures, as supported by an updated noise impact assessment.

The assessment also reviewed potential construction noise impacts on the Hunter Estuary Wetlands. Noise levels are expected to be less than or equivalent to existing ambient industrial noise levels with worse case construction during night periods predicted to be less than 0.5 dB increase, which is a negligible increase.

Vibration impacts during construction are not anticipated to be a significant issue, with no buildings located within the safe working distances for structural damage for each of the construction scenarios.

The Department considers that with the implementation of AGL's proposed mitigation measures and the Department's recommended conditions that construction noise and vibration impacts can be adequately minimised for surrounding receivers and the Ramsar-listed Hunter Estuary Wetlands.



**Figure 7 | Sensitive Noise Receivers and Noise Catchments (Source: Amendment Report)**



## Operational Noise

Operational noise impacts were modelled using worst-case scenarios (continuous operations) with concurrent equipment usage and activities occurring at the project site.

The noise modelling predicted that without sound attenuation, the project would exceed the EPA's project noise trigger levels (PNTLs) at most residential receivers surrounding the site. With installation of at source noise attenuation, the project is predicted to comply with the PNTL at all residential and non-residential receivers.

The EPA sought clarification about whether proposed noise attenuation was feasible, given that significant at source noise reduction (up to 30- 40 dB) would be required to comply with the PNTLs. To address EPA's concerns, AGL undertook a review of attenuation feasibility and provided additional information on attenuated sound power levels from contemporary projects incorporating sound attenuation for gas turbines and reciprocating engines.

At the closest residential receivers, with the incorporation of reasonable and feasible noise attenuation, the modelling predicts that noise levels at receiver R3 under noise enhancing conditions (night-time temperature inversion) would comply with the PNTL of 43 dB(A) with predicted noise levels of 39 dB(A).

Subsequently, the EPA advised it is satisfied that AGL provided sufficient information to adequately assess the project and recommended conditions for noise limits, noise monitoring and reporting, including noise validation monitoring. The Department accepts the EPA's recommendations, noting that noise emissions from the site would be regulated by the EPA under an EPL issued under the POEO Act.

The NIA also assessed incremental noise impacts at the Hunter Estuary Wetlands concluding that the noise from the project would be less than existing ambient industrial noise level and therefore the incremental noise from the project would not be discernible.

## Traffic Noise

The NVIA included an assessment of traffic noise impacts during construction and operations. The assessment concluded that the increase in noise from traffic from the project would comply with road traffic noise criterion under the *NSW Road Noise Policy* (EPA, 2011), noting that the key traffic route to access the site would be via the Pacific Highway.

## Summary

The Department and the EPA are satisfied that AGL has undertaken a comprehensive noise and vibration assessment of the potential impacts of the project. The Department notes that the project is in an industrial area limiting the number of sensitive receivers around the site. Following consultation with the EPA (see **Appendix E**), the Department has recommended conditions to manage and mitigate the noise impacts of the project including:

- limiting construction to standard hours as required by the ICNG, with provision for out of hours construction activities where necessary;
- requirement for a construction noise management plan;
- complying with operational noise limits set in accordance with the EPA's NPfI; and
- undertaking noise validation and ongoing noise compliance monitoring.

### 6.3 Traffic and Transport

To assess the potential traffic impacts associated with the project, AGL engaged SECAsolution Pty Ltd (SECA) to complete a Traffic Impact Assessment (TIA) and TIA Addendum, provided in the EIS and Amendment Report respectively. An additional assessment was also included in the Submissions Report to respond to comments raised by TfNSW.

SECA considered multiple guides and publications in preparing the traffic assessments including the *Port Stephens Development Control Plan 2014* and *Port Stephens Local Environment Plan 2013* and *Guide to Traffic Generating Developments* (TfNSW, 2002).

The project site is accessible from Old Punt Road, located in the south-east corner of the power station site. The project would interact with Old Punt Road at three key locations:

- the gas supply pipelines would be constructed below Old Punt Road, near the project site access point;
- the gas storage pipeline would be constructed below Old Punt Road just south of the Pacific Highway intersection; and
- the transmission lines and easement would cross above Old Punt Road to the north-east of the proposed main access.

Old Punt Road is a local road which provides a north-south link between the Pacific Highway to the north and Tomago Road to the south-west. Both the Pacific Highway and Tomago Roads are State roads, with the Pacific Highway servicing major connections between Sydney, northern NSW and Queensland. Port Stephens Council is the roads authority for all other public roads in the area.

Although not yet constructed, a major issue raised by TfNSW throughout the assessment process was the interaction between the project and TfNSW's proposed M1 Upgrade Project.

#### Local Traffic Network Impacts

Construction of the project would require up to 300 light vehicle and 50 heavy vehicle movements per day.

The operation of the project would require up to 23 light vehicle movements per day. Heavy vehicle truck movements would be required if the project were to operate on diesel fuel or operate continuously. Under these scenarios; diesel operation would require up to 60 tanker movements a day (30 B-Doubles at 50 m<sup>3</sup> capacity), and continuous operation would require an additional 34 wastewater tanker movements (20 m<sup>3</sup> capacity) daily.

The traffic assessment found that construction traffic would have negligible impact on the local traffic network. The assessment considered the Tomago Road and Old Punt road intersection, with modelling predicting sufficient spare capacity; with only slight increases in average delay and queue lengths.

However, a right hand turn treatment on Old Punt Road would be required for safe access into the site.

While Council did not raise any concerns about local traffic impacts, TfNSW requested further assessment of traffic impacts at the intersection of Pacific Highway and Old Punt Road and on oversize vehicles.

AGL subsequently submitted a supplementary traffic assessment in the Submissions Report which modelled that the intersection of the Pacific Highway and Old Punt Road would continue to operate at



an acceptable level of service during construction and that oversize vehicles can safely turn from Old Punt Road onto the Pacific Highway with no road improvement works required to enter the highway.

The Amendment Report also included additional traffic assessment provided for additional proposed construction laydown areas. A summary of the residual issues and AGL's responses are provided in **Table 8** below.

**Table 8 | Residual Traffic and Transport Issues**

TfNSW residual issue	AGL response
Demonstrate that longer B-Doubles can safely complete a left-hand turn onto the Pacific Highway	AGL confirmed that B-Doubles (25 m, 9-axle) can currently complete left hand turns from Old Punt Road onto the Pacific Highway Safely with no upgrade to the road required.
Mitigation measures include a channelised right hand turn; however, no other assessment has been completed or committed for any road improvement works required for larger construction vehicles during construction.	The TIA Addendum assessed heavy vehicle construction traffic to the laydown areas and concluded that no further road improvements were needed.
Upgrades to Old Punt Road including the channelised right hand turn are the responsibility of AGL and should be completed prior to construction commencing.	AGL agreed to additional requests regarding pavement reconstruction, trenching of utilities, timing of upgrades prior to substantial works commencing and integration of Old Punt Road and the M1 Upgrade Project. Updated mitigation measures were submitted as part of the Amendment Report.
The emergency access point at the north-east of the site is not suitable given this location exits onto the Pacific Highway or proposed motorway.	<p>AGL acknowledged that this site would be unsuitable due to safety concerns and proposed that emergency egress be developed in consultation with affected stakeholders.</p> <p>TfNSW later confirmed that the proposed location would be acceptable in emergency situations; however, that at all other times it should be gated off and not used as an access point. The Department has recommended a condition to address TfNSW concerns.</p>

TfNSW are satisfied that the Amendment Report addressed previous comments (other than those relating to the M1 Upgrade Project which are discussed below).

The Department has assessed the TIA and TIA Addendum and carefully considered the comments received by TfNSW (see **Appendices D and E**). Subject to AGL's proposed mitigation measures and the Department's recommended conditions, the Department is satisfied that the project would not result in any significant local traffic network impacts during construction or operation.

The Department's has recommended conditions which include:

- the upgrade of Old Punt Road including CHR treatment prior to the commencement of construction;
- permitted use for the emergency egress; and

- a Traffic Management Plan which includes details of transport routes to be used for all construction and operational traffic, measures to minimise traffic safety issues and oversized vehicles.

## **M1 Upgrade Project**

The main concern raised by TfNSW was the interaction between the project and the M1 Upgrade Project. These are both CSSI projects considered essential to the State.

TfNSW advised that the interchange at the intersection of Old Punt Road and the Pacific Highway would be a key component for servicing the Tomago industrial area, with Old Punt road serving as the key oversize vehicle entry point into the industrial area off the proposed M1RT Project. Therefore, the Newcastle Power Station infrastructure crossing Old Punt Road would need to be designed and constructed to cater for the M1 Upgrade Project.

Key locations where the M1 Upgrade Project would interact with the project include:

- the gas storage pipeline – to ensure that the pipeline (via directional drilling under the proposed M1 Upgrade construction footprint) would be at sufficient depth and length to ensure there would be no significant design constraints on the M1 Upgrade Project; and
- the electricity transmission line over Old Punt Road, to ensure there is sufficient height to account for oversize vehicles; and
- the project site access at Old Punt Road and gas supply pipeline corridor

The Department considers that AGL has addressed the majority of TfNSW's concerns within the Submissions Report, Amendment Report and proposed mitigation measures and that there are clear commitments to ensure that the detailed design would address these issues.

Nonetheless, following consultation with TfNSW and AGL, the Department has recommended conditions requiring:

- a minimum vertical clearance height for the electricity transmission line over Old Punt Road, subject to a reduced height to the satisfaction of TfNSW;
- providing detailed design drawings of the gas supply pipelines and gas storage pipeline to TfNSW to ensure the designs are to the satisfaction of TfNSW; and
- preparing and implementing a Traffic Management Plan in consultation with TfNSW and Council, to the satisfaction of the Secretary.

## **Summary**

The Department considers that AGL have undertaken a robust assessment of potential traffic impacts and committed to continued consultation and collaboration with TfNSW to ensure that the project would not inhibit the construction or operations of the proposed M1 Upgrade Project. Further, the Department considers that the local traffic impacts during construction and operations would not be significant, with most of the traffic accessing the site from the M1. The proposed intersection upgrade into the site would ensure that traffic safety and traffic performance impacts would be able to be appropriately managed.

Subject to the recommended conditions, the Department is satisfied that the local traffic network impacts and integration of the project and the proposed M1 Upgrade Project and the local road network can be appropriately managed.

## 6.4 Aviation Safety

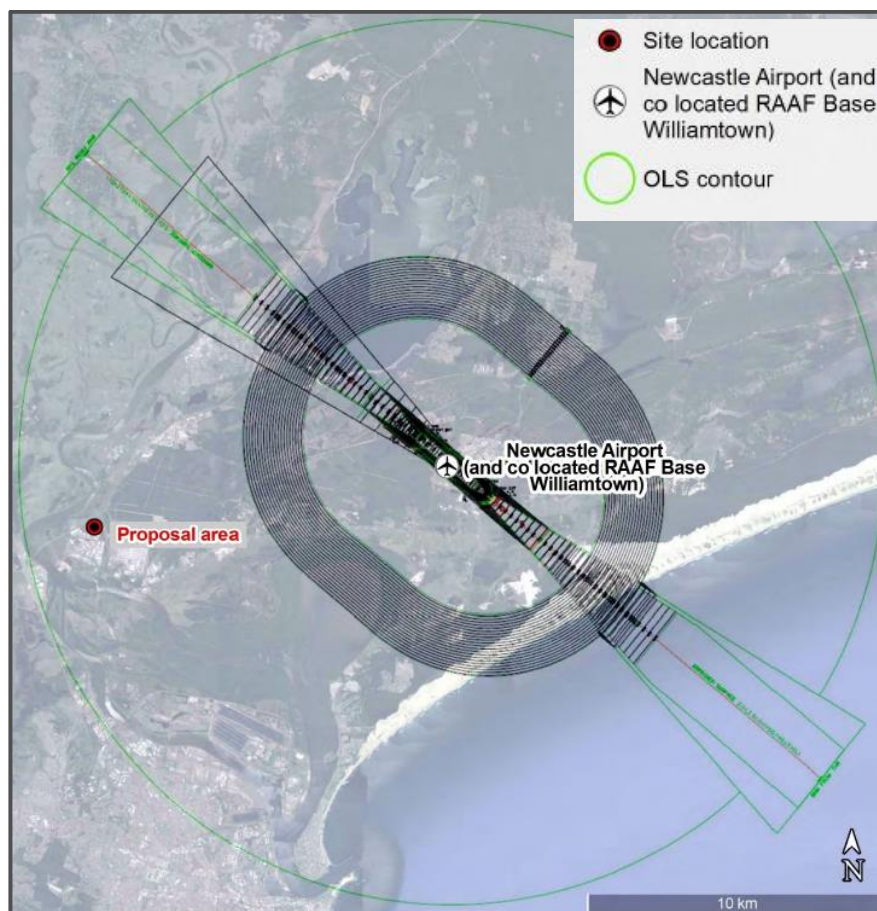
AGL proposes to operate a power station utilising either gas turbines in open cycle mode or reciprocating engines; both of which have the potential to impact aviation safety and/or operations through the resulting exhaust plume.

The nearest airport which would potentially be impacted by the project is the Newcastle Airport (co-located with the RAAF Base at Williamtown), located approximately 10 km north-east of the project site. The airport services a total catchment area of 1.1 million people and operates approximately 418 passenger and 285 military flight movements per week between 6 am and 10 pm, with some military flights operating to 11 pm during Australian Eastern Daylight Time (AEDT). Defence is the Aerodrome Operator of the airport with the Newcastle Airport Pty Limited (NAPL) operating under a 60-year lease.

### Aviation Assessment Approach

The project's plume rise would be within the south-western extent of the 156.5 m Australian Height Datum (mAHD) Outer Horizontal Surface (OHS) of the Obstacle Limitation Surface (OLS) (see the outer green ring in **Figure 8**).

To assess potential aviation safety impacts, AGL engaged ERM to complete a Plume Rise Assessment (PRA) to determine the extent of the plume rise and potential impacts to airport operations. The PRA was prepared in accordance with the *Advisory Circular AC 139-05 v3.0, Guidelines for Conducting Plume Rise Assessments* (Advisory Circular) (CASA, 2019).



**Figure 8 | RAAF Base Williamtown OLS Relative to the Project (Source: EIS)**

An analysis of potential impacts was performed on a worst-case scenario (being continuous operation of all proposed generating units at full capacity for a five-year modelling period). Modelling results were produced for critical plume velocity's (CPVs) of 4.3 m/s, 6.1 m/s and 10.6 m/s.

However, CASA advised Department of Defence that a CPV of 6.1 m/s using the 99.9<sup>th</sup> percentile critical plume extent was appropriate for visual flight rules (VFR) and instrument flight rules (IFR).

### **Intrusion of Obstacle Limit Surface**

The PRA identified several potential impacts, including:

- temporary construction cranes breaching CASA's 30 m OLS restriction height by at least 30 m;
- permanent exhaust stacks breaching CASA's 30 m OLS restriction height (by 5 m for the gas turbine option and 15 m for the reciprocating engine option);
- continuous operations of both technology types would result in an incursion of the OLS at a CPV of 6.1 m/s including
  - for the gas turbine option the 99.9<sup>th</sup> percentile plume extends to 285 mAHd (128.5 m above the OLS); and
  - the reciprocating engine option the 99.9<sup>th</sup> percentile plume extends to 135 mAHd (does not intrude into the OLS).

Key airport stakeholders including CASA, Defence, Newcastle Airport and Jetstar Airways all provided comments on the Project. The impact of plume rise on aviation safety was the main issue of concern raised, with Jetstar requesting additional details including timeframe and potential mitigations.

CASA deferred its advice to Defence as the Aerodrome Operator. Both Defence and Newcastle Airport raised concerns that although both options would penetrate the OLS, that the gas turbine option would have a significant impact on aircraft operations, with Defence initially not supporting this option.

AGL provided a response to the identified plume concerns in the Submissions Report describing that the assessment was completed on a worst-case, continuous operations scenario and that as the power station would be operating at an average capacity factor of 14%, the maximum plume rise extent was a highly conservative prediction.

Under this assessment, the reciprocating engine plume would not penetrate the airport's OLS, and the gas turbine plume would penetrate by 128.5 m. As such, the reciprocating engine option is Defence's preferred option. However, it requested that should AGL proceed with the gas turbine option, the following mitigation measures be undertaken:

- the Radar Terrain Clearance Chart for the RAAF Base Williamtown be amended by the Aeronautical Information Service – Air Force in accordance with the regulations under the Instrument Flight Rules Operations; and
- descent profile of the Distance Measuring Equipment or Global Navigation Satellite Systems Arrival procedure by Global Airspace Solutions.

### **Summary**

The Department is satisfied that AGL has adequately assessed the plume rise, OLS intrusion and mitigation measures, and notes AGL's commitments to continuing consultation with relevant stakeholders, including Airservices Australia, Defence and CASA.



The Department has accepted Defence recommendations and AGL's commitments and included the following pre-construction requirements in its recommended conditions (see **Appendix I**):

- AGL must liaise with and provide information on the final design and emission parameters of the open cycle gas turbine power station (if chosen) to the Defence, RAAF Base Williamtown, Aeronautical Information Service – Air Force, Air Service Australia, Newcastle Airport Pty Ltd; and Global Airspace Solutions to ensure adequate mitigation measures and air space safety;
- undertake an updated plume rise assessment to demonstrate that the critical plume extent from the selected generator technology, following detailed design, is consistent with the predictions in the EIS, and demonstrate that reasonable and at source feasible mitigation measures have been considered to further reduce the extent of the plume – undertaken in consultation with the key aviation stakeholders and to the satisfaction of the Secretary; and
- in accordance with Volume 4, Part 175.E of the *Civil Aviation Safety Regulations 1998* AGL must notify Air Services Australia for the erection of permanent and temporary structures that intrude on the OLS.

## 6.5 Hazards and Risks

Operation of the proposed power station may result in hazards and risks associated with the storage and ignition of gas, diesel or dangerous goods. AGL have undertaken a detailed hazard assessment including a Preliminary Hazard Analysis (PHA), Bushfire Threat Assessment (BTA) and Fire Safety Study (FSS) to assess potential hazards and risks associated with operation and fire ignition on site or from encroaching bushfires; as discussed in further detail below.

### Hazard Assessment

In line with the requirements of SEPP 33, the EIS included a PHA, completed by Aurecon Australasia Pty Limited (Aurecon), and carried out in accordance with the Department's *Hazardous Industry Planning Advisory Paper No. 6 Hazard Analysis* (HIPAP 6).

The PHA determined an overall risk to people and property and assessed potentially hazardous risks against the criteria as described in the Department's *Hazardous Industry Planning Advisory Paper No. 4 Risk Criteria for Land Use Safety Planning* (HIPAP 4) (see **Table 9**).

As the PHA was based on concept design, the Department's Hazards Unit requested supplementary information from AGL to clarify assumptions used in the PHA to ensure a robust assessment. A final PHA was provided with the Amendment Report (Revision 6.2), with an additional PHA Addendum (August 2020) provided to assess the proposed construction laydown areas. The Department's Hazards Unit are satisfied that the final revision provided an appropriate level of conservatism and that it was an acceptable assessment of potential hazards.

The final PHA identified that the main hazards associated with the project are from:

- potential loss on containment of natural gas from the above ground gas processing area;
- the high pressure of the gas within the above ground piping sections; and,
- a number of leak sources.

The Department's Hazard Unit also noted that in accordance with standard procedures a Final Hazard Analysis (FHA) would be required to be submitted to the Department prior to construction to verify that the final design of the project does not exceed the risks described in the PHA.

**Table 9 | Individual Fatality Risk Criteria**

Land use	Acceptable level of risk per year
<b><i>Fatality (contours in Figure 8)</i></b>	
Hospitals, schools, child-care facilities, old age housing	0.5 in a million (5E-7)
Residential, hotels, motels, tourist resorts	1 in a million (1E-6)
Commercial developments including retail centres, offices and entertainment centres	5 in a million (5E-6)
Sporting complexes and active open space	10 in a million (1E-5)
Industrial	50 in a million (5E-5)
<b><i>Injury</i></b>	
Residential and sensitive use areas	50 in a million
<b><i>Propagation</i></b>	
At neighbouring/land zoned potentially hazardous installations	50 in a million

#### *Risk of Fatality*

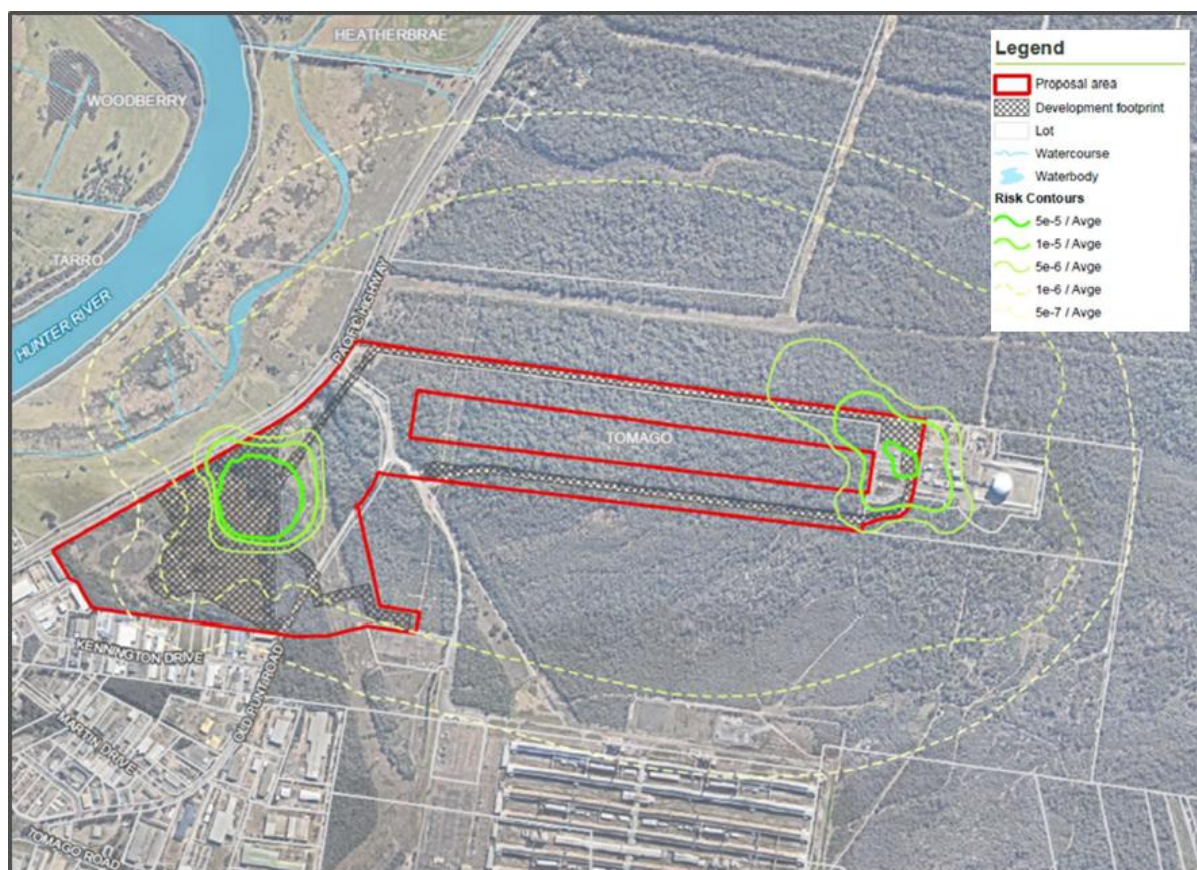
Contours showing the level of individual risk of fatality were prepared, with **Figure 9** below describing that the risk of a fatality to a person based on the HIPAP 4 criteria is acceptable for all surrounding land uses. The contours designate that the most likely risks are in areas where above ground piping is proposed.

#### *Injury and Propagation Risk*

The PHA also considered individual injury risk under heat radiation and explosion over-pressure scenarios at sensitive and residential areas. The maximum over pressure and heat radiation injury criteria were not reached at the nearest residentially zoned land approximately 2 km away from the project. The nearest residential receiver (located approximately 500 m away) is located on land zoned E2 – Environmental Conservation and was not identified as a sensitive receptor as defined in land-use planning.

The power station and the adjacent NGSF would be located within the 50 in a million (5E-5) risk (see green contour on **Figure 9**). All equipment and structures within this contour would be subject to failure during an event.

To mitigate potential risks from major accidents resulting in injury, propagation or fatality, the PHA recommended that the power stations heavily occupied buildings such as the administration and control buildings, offices, mess facilities and workshops be located outside these impact areas where possible. Where not possible, the PHA recommended fire safety design and mitigations be incorporated in design and construction as identified in the preliminary Fire Safety Study (Appendix T of the EIS).



**Figure 9 | Individual Fatality Risk – Site and Pipelines (Source: Amendment Report)**

#### *Societal Risk*

Societal risk was also considered low due to the low population density associated with the project and surrounding rural environment. Residential land use is located more than 2 km from the project site and public access would not be available to the site. The Department considers that the project complies with the societal risk criteria.

#### **Fire Safety**

The PHA identified potential fire and explosion risks which were further assessed in the EIS with a preliminary Fire Safety Study (FSS). The preliminary FSS was completed in accordance with the *Hazardous Industry Planning Advisory Paper No 2 – Fire Safety Study* (HIPAP 2) and identified potential hazards from the transportation and storage of natural gas.

Fire and Rescue NSW (FRNSW) provided a recommendation that following the progression of the PHA to a FHA, that the FSS should be updated giving consideration to the FHA and final design development. The Department's Hazard Unit also provided recommended conditions relating to the finalisation of the FHA and FSS including that the FSS be submitted to FRNSW for approval.

The Department considers that the project complies with the HIPAP 2 criteria and that provided the recommended conditions are adhered to, that fire and explosion risks at the project site can be adequately managed.

## Bushfire Risk

The power station, transmission lines, gas supply pipelines and gas storage pipeline would be located in bushfire prone land (BFPL), Category 1 – the highest risk for bushfire with a vegetation buffer of 100 m. To assess potential risks of bushfire to the project or the project's risk of starting a bushfire, AGL provided a Bushfire Threat Assessment (BTA) with the EIS, completed by Kleinfelder.

The BTA was prepared in accordance with HIPAP 2, HIPAP 4 and HIPAP 6. Both construction and operation have the potential to cause or spread bushfire from ignition sources and inadequate or insufficient training or emergency procedures.

The primary bushfire risk to people is in the eastern and southern areas of the power station site in areas of vegetation and where staff would most likely be situated during operations. Buildings, generators and fuels storage would need to be separated from bushfire hazards or constructed to resist bushfire attack level (BAL) of BAL 40.

AGL committed to mitigations to minimise potential impacts of the threat of bushfire including implementation of an Emergency Management and Evacuation Plan (EMEP), achieving a radiant heat impact of 23 kW/m<sup>2</sup> for the generator plant, equipment and storage and constructing administration workshop and stores buildings to a minimum of BAL 40.

The Department considers that the BTA demonstrates that risk of bushfire to people and property can be managed provided strict mitigations measures are applied to the design, construction and operation of the project.

## Summary

AGL have undertaken a comprehensive hazard assessment in accordance with the requirements of SEPP 33. Nonetheless, to ensure the project would operate safely, the Department's Hazard Unit made recommendations to ensure that the risks of the project would be appropriately managed through the life of the project. As such, the Department has recommended a number of conditions to ensure that the final design incorporates recommendations identified in the PHA, including:

- finalisation of the FSS, and FHA prior to construction;
- development of an Emergency Plan and Safety Management System;
- limits of direct gas or materials flows between the project and the NGSF; and,
- specific compliance and audit reporting relating to pre-startup, post-startup and ongoing for the life of the project.

Overall, the Department considers that with the implementation of the recommended conditions, the project would not significantly increase the risk of hazards to people or the environment.

## 6.6 Water Resources

A key issue for the project is potential impacts to regional water resources due to the project's proximity to the Hunter River and Ramsar-listed wetlands, located 2 km south, and the Tomago Groundwater Source catchment zone (the Tomago Sandbeds catchment), which is identified as a Special Area in the *Hunter Water Act 1991* and associated 2015 Regulation (see **Figure 4** above).

As outlined above, the Commonwealth determined that the project was a controlled action due to potential impacts on the Ramsar wetlands. Council, the EPA and HWC also raised concerns about the management of wastewater and stormwater runoff during construction and operation of the project.



## Water Supply

AGL propose to source water for construction and operations from HWC's potable water supply through a new connection tie in on Old Punt Road. The key water use would be for evaporative cooling and water injection for NO<sub>x</sub> suppression for the gas turbine option.

HWC raised concerns that the operation of the project would require 0.8 gigalitres (GL) per year for the worst-case scenario (continuous operations using gas turbine technology), representing some 1.2% of the HWC area annual water use. The Department notes that AGL would, however, operate at an indicative 14% capacity in peaking power mode and therefore water consumption would be significantly less – in the order of 0.1 GL for the gas turbine option. The EPA's recommendation for limiting annual NO<sub>x</sub> load would ensure that the continuous operations scenario would be significantly constrained.

HWC confirmed that while there would be sufficient water supply available even for continuous operations to meet anticipated operational water demand of the power station. However, HWC requested that AGL incorporate water saving features as much as reasonable and feasible into the final design and operation of the project. The Department has recommended a condition that reasonable and feasible measures be incorporated to minimise potable water demand through final design and during operations.

## Surface Water

AGL engaged Aurecon to complete a Surface Water and Hydrology Assessment (SWHA) and Flooding Assessment for the EIS.

The SWHA identified two key ephemeral drainage paths within the site (see **Figure 10**). The first (Drainage Path 1) commences at the southern extent of the power station site flowing west to the Hunter River. The second drainage path is within the catchment area for the Tomago Sandbeds and would flow to the north-east towards the Hunter River. There are also additional drainage paths associated with the construction of the gas storage pipeline and power line that would require sediment and erosion controls to be implemented during construction.

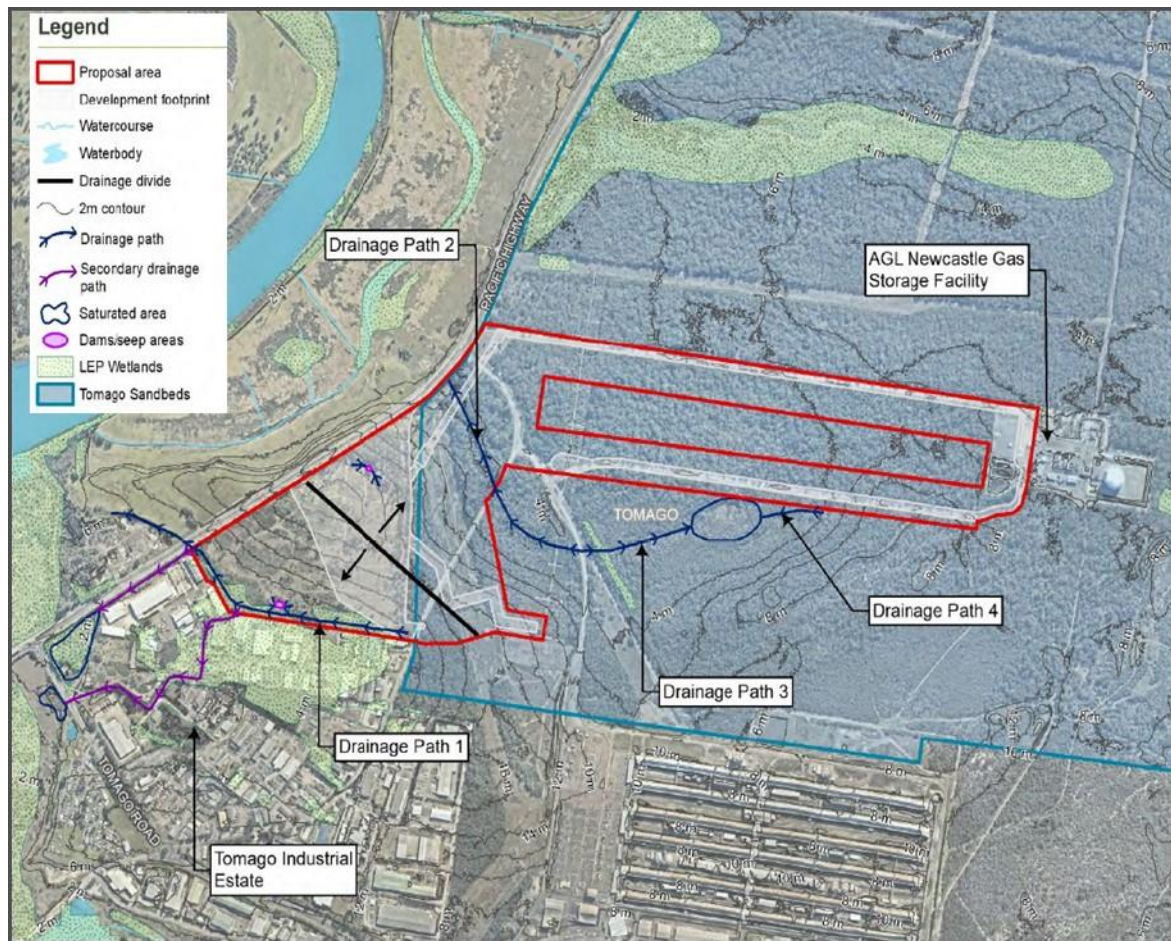
### Construction activities

Construction works have the potential to increase sediment and turbidity to downstream waters and impact on aquatic ecology through disturbance of Acid Sulphate Soils (ASS).

During construction, AGL propose to install two sediment basins on the power station site sized and operated in accordance with the Landcom *Managing Urban Stormwater: Soils and Construction Guideline* to minimise the release of sediment-laden stormwater off-site. These sediment basins would be then integrated into the stormwater management system for the operational stage of the project (see below).

Similarly, construction of the linear infrastructure (pipeline and transmission lines) would incorporate best practice management sediment and erosion controls, and mitigation measures to manage any ASS encountered during construction of the storage pipeline. Most of the project site is classified as low risk of encountering acid sulphate soils (ASS). However, the north-west boundary is adjacent to areas of high-risk ASS (likely located 0-1 m below the surface).

The Department has recommended conditions to ensure that ASS is appropriately managed and requiring a Water Management Plan be prepared prior to commencement of construction to minimise impacts from disturbed areas.



**Figure 10 | Drainage Pathways and Catchment (Source: EIS)**

### Operations

During operations, accidental spills of fuels, chemicals, oils and greases or run-off from roads, car parks and hardstand areas have the potential to impact the water quality of the surrounding local wetlands, the Hunter River and downstream environments.

AGL propose to treat stormwater runoff from the operational area of the power station through a Gross Pollutant Trap (GPT) and a bioretention system with discharge into grassed areas to the west of the power station, and then into natural drainage channels.

To assess the potential impacts of the stormwater discharge, the SWHA included an assessment of Neutral or Beneficial Effect (NorBE) impact on receiving waters to demonstrate that the bioretention and oil/water separator would be designed to ensure pollutant loads in stormwater runoff from the project would not be higher than that in existing runoff.

The Department notes that there is no statutory requirement to apply the NorBE test to the project as it is not physically located in water supply catchments where the *State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011* (Drinking Water SEPP) applies. However, in its consideration of developments in its Special catchment areas, HWC requests that any development consider the NorBE test as outlined in its 2017 guideline “*Protecting our Drinking Water Catchments – Guidelines for developments in the drinking water catchments*”

Council also requested that given that the project is partially located in the drinking water catchment that in addition to applying NorBE principles, that a Treatment Train Effectiveness (TTE) be applied to the detailed stormwater design. TTE would apply a pollutant load reduction approach for the stormwater system components to demonstrate that pollutant loads would be below pre-development loads. The Department has recommended that in designing the final operational stormwater system that the NorBE and TTE principles be applied.

In order to minimise potential impacts to surface water AGL have proposed to:

- implement plans including a Surface Water Management Plan, Acid Sulphate Soils Management Plan and an Erosion and Sediment Control Plan;
- develop procedures for spill response and containment, drilling, chemical treatment and stockpiles; and
- undertake surface water quality monitoring.

AGL provided a revised SWHA and responses to issues raised within the Submissions Report. Council's residual comments reiterated the importance of ensuring impacts to water quality can be minimised as reasonably and feasibly possible.

Following the provision of this additional supporting information, the EPA, Council and HWC were satisfied that stormwater runoff from the site could be appropriately managed. In particular, HWC acknowledged that the power station was not within the Tomago Sandbeds catchment area, that the risks from construction of the pipeline within the water supply catchment were low, and that a neutral impact on water quality would be expected with the implementation of proposed management measures.

The EPA did not raise any concerns about water discharges from the site and the Department notes that AGL would be required to operate the site to comply with the POEO Act, to ensure there would be no pollution of waters or discharges .from the site would be required to meet discharge limits set under any EPL issued by the EPA for the premises.

The Department recognises that unmitigated, the project has the potential to impact on downstream sensitive water resources, including the Ramsar wetland. AGL have proposed mitigation measures to minimise any adverse water quality impacts of the project as far as reasonably practicable. Nonetheless, the Department has recommended conditions to further reduce the risk of adverse impacts occurring, requiring AGL to:

- ensure that the project complies with the POEO Act, prohibiting the pollution of waters except in accordance with discharge limits set in an EPL;
- demonstrate that the project be constructed and operated to meet TTE and NorBE principles;
- install and maintain a stormwater management system including erosion and sediment controls during construction; and
- prepare and implement a Surface Water Management Plan.

The Department considers that with the implementation of AGL's mitigation measures and the Department's recommended conditions, that impacts to downstream receiving waters – including the Tomago Sandbed aquifer and Ramsar wetlands – would be negligible.

## **Flooding**

The project site is mainly located above the flood planning level, defined as the level of the 1% AEP (annual exceedance probability) flood event plus 0.5 metre freeboard and flooding is not predicted at

the power station site or along the electricity transmission line corridor. Further, most of the power station site, including all generator infrastructure, would be located above the Probable Maximum Flood (PMF) level.

The gas storage pipeline between the power station and the NGSF is in an area mapped as both high hazard floodway and flood storage areas, however, as the pipeline infrastructure is buried with minimal above surface infrastructure, there would be negligible impact on flood behaviour.

Council and BCS were satisfied with the flood assessment but recommended that a flood preparedness/evacuation plan be prepared as a post approval requirement. The Department has recommended that this form a part of the Water Management Plan.

## **Groundwater**

The EIS included a Groundwater Assessment (GWA) prepared by Aurecon. Groundwater levels at the project site range from 0.75 m below ground level (BGL) to 11 m BGL. The main risk to groundwater would be from the construction of the gas storage pipeline, with AGL noting that dewatering of trenches would be required. However, permanent adverse impacts on groundwater resources were considered unlikely to occur due to the short-term nature of the construction works in this area.

AGL proposed management controls provided in the GWA to prevent contamination of groundwater including:

- implementation of a Groundwater Management Plan;
- monitoring programs;
- incorporating permeable zones in design; and
- specific pipeline construction mitigation.

The Department received comments from DPIE Water and NRAR advising that a Water Access Licence (WAL) must be obtained prior to the commencement of works for groundwater and/or surface water take and that impacts to GDE's, water users and licencing would need to be considered in detail.

AGL described in the Submissions Report that further consultation occurring between DPIE Water and NRAR and AGL, resulted in the agency recommending that AGL should estimate the take of water required for construction of the project, and that should interception of more than 3 ML of water be anticipated, AGL would need to obtain the WAL.

AGL confirmed that construction of the gas storage pipeline would likely exceed the 3 ML per year threshold and would require a WAL. AGL also confirmed that there would be no measurable groundwater impacts on GDE's and that DPIE Water and NRAR confirmed that impacts to GDE's and other water uses would be low risk.

The Department considers the assessment of groundwater impacts in the GWA has been conducted in accordance with applicable policies and guidelines, and that issues raised by the DPIE Water Group and NRAR have been adequately addressed.

The Department considers that the project can be constructed in such a manner that would not result in any significant groundwater-related impacts to water users or the environment, provided proposed mitigation measures are applied. The Department also has recommended conditions to minimise water impacts of the project, given the high value of the water source at the Tomago Sandbeds including the implementation of a Groundwater Management Plan.



## Wastewater Management

During operations, the project would generate wastewater including process water and sewage. HWC advised that a direct connection to the existing sewerage system would not be possible, however based on waste stream volumes and type, there would be suitable treatment facilities with sufficient capacity to account for the project. This would be managed through a Trade Waste Agreement between AGL and HWC.

The EPA recommended that all process operational wastewater be captured and stored at the project site and disposed of by tanker transport to a licensed facility.

The Department accepts the advice of HWC that the operational wastewater streams could be suitably managed via a standard Trade Waste Agreement.

## Summary

Overall, the Department is satisfied that the potential construction and operation impacts of the Project would not result in any significant impacts on local and regional water resources, including the Hunter Estuary Wetlands.

To ensure this is the case, the Department has recommended that AGL be required to:

- ensure sufficient supply of water is available for the development;
- implement sediment and erosion control on site prior to the commencement of construction;
- undertake activities in identified acid sulphate soil risk areas in accordance with relevant guidelines; and
- implement a Water Management Plan prior to the commencement of construction, prepared by a suitably qualified person/s in consultation with DPIE Water, the EPA and Council and approved by the Secretary.

## 6.7 Biodiversity

### Biodiversity Assessment Approach

The EIS included a BDAR prepared by Kleinfelder. The biodiversity assessment was carried out in accordance with the *Biodiversity Assessment Method* (BAM) (OEH 2017).

BCS and Council raised concerns with the BDAR, including the classification of mapped vegetation and calculation of ecosystem credit species, potential impacts on koala habitat, and requested further clarification on avoidance and minimisation measures, and indirect impacts on the Ramsar listed Hunter Estuary wetlands.

AGL submitted a revised BDAR with the Amendment Report to address the concerns raised by BCS. The Department and BCS are satisfied that the information provided in the Amendment Report and revised BDAR (Revision 9.0, August 2020) addresses residual concerns about the biodiversity assessment.

## Impacts on Threatened Species and Ecological Communities

### Plant Communities

The majority of the site is cleared. However, the Project would still require removal of up to 17.6 ha of two plant community types (PCTs) within the development footprint, as summarised in **Table 10** below and shown in **Figure 11**. It is noted that majority of the remnant vegetation requiring removal is in poor condition due to current and historical land uses on the site.

**Table 10** List of Plant Communities Impacted by the Project

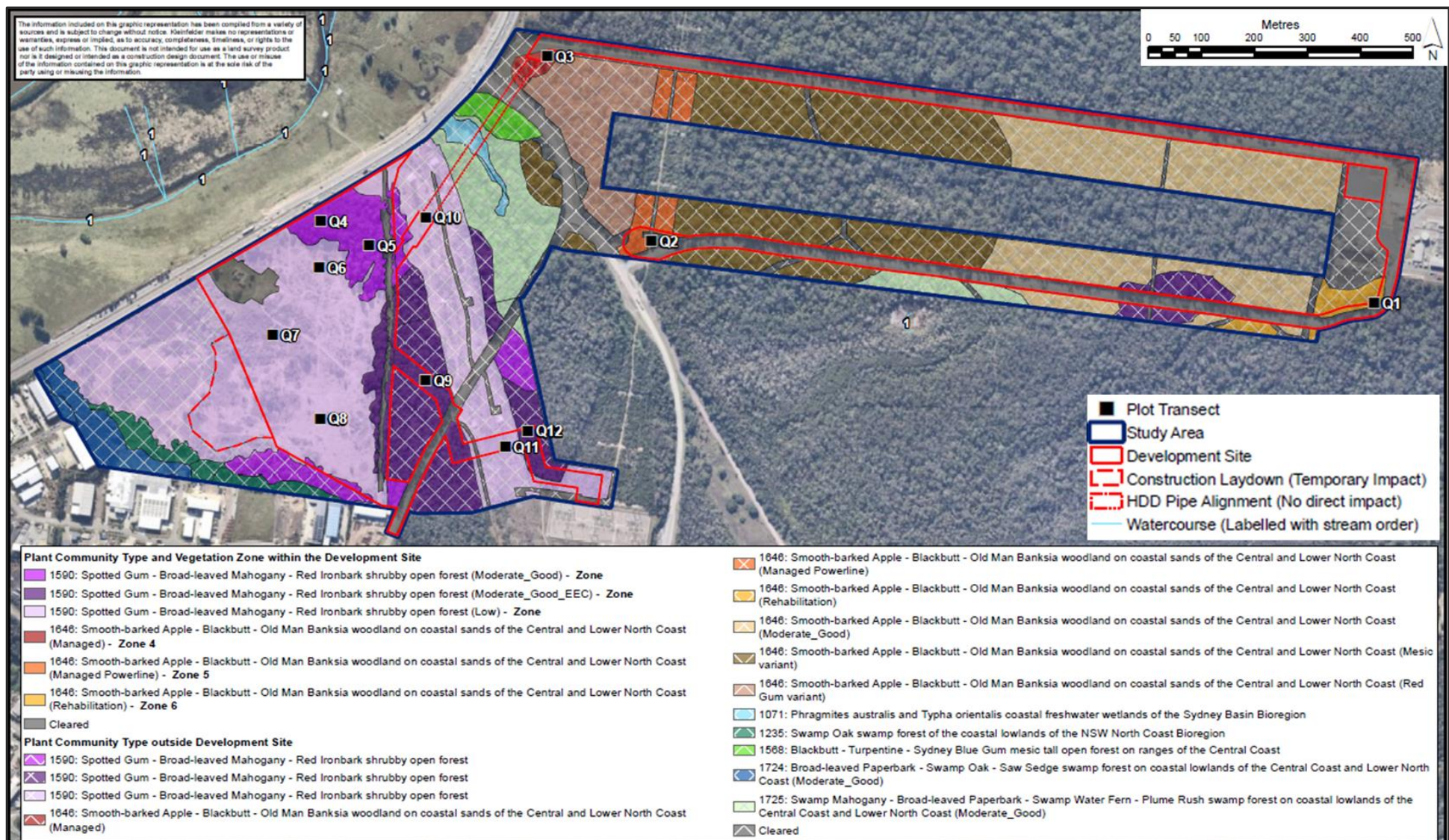
Species and PCT	Condition	Zone	Area	BC Act	Ecosystem Credit Liability
Spotted Gum – Broad-leaved Mahogany – Red Ironbark shrubby open forest ( <b>1590</b> )	Moderate/Good		1	2.39	Not listed 53
	Moderate/Good/TEC		2	2.04	TEC 69
	Low		3	12.76	Not listed 112
Smooth-barked Apple – Blackbutt – Old Man Banksia woodland on coastal sands of the Central and Lower North Coast ( <b>1646</b> )	Managed		4	0.05	Not listed 1
	Managed powerlines		5	0.23	Not listed 3
	Rehabilitation		6	0.13	Not listed 4
<b>Total</b>				<b>17.6</b>	<b>242</b>

Approximately 2 ha of the *Lower Hunter Spotted Gum – Ironbark Forest* threatened ecological community (TEC) listed under the BC Act would be cleared. However, no vegetation communities listed under the EPBC Act were identified within the project site. The credit liability required to offset the direct impacts to native vegetation has been calculated in accordance with the BC Act and is also detailed in **Table 10**.

### Fauna and Flora

Detailed surveys of the project site recorded three BC Act threatened flora and five threatened fauna species within the project site, with only the Squirrel Glider observed within the disturbance footprint. Of these, four species are also listed as Vulnerable under the EPBC Act (see **Table 11**).

AGL's assessment of impacts on Koala habitat was undertaken in accordance with Port Stephens Comprehensive Koala Plan of Management (CKPoM). Although no Koala's were recorded during site visits, thirteen tree species listed as Koala feed trees were identified within the project site, with historical recordings of Koala sightings occurring on and within 1 km of the study area.



**Figure 11 | Vegetation Zones and Distribution of Plant Community Types within the Development Footprint (Source: Amendment Report)**



**Table 11 | List of Threatened Flora and Fauna**

Species	BC Act Status	EPBC Act Status	Disturbance Area (ha)	Species Credit Liability (credits)
<b>Birds</b>				
Masked Owl	Vulnerable	Not listed	-	Offsetting not required
<b>Mammals</b>				
Little Bent-wing Bat	Vulnerable	Not listed	-	Offsetting not required
Eastern Freetail Bat	Vulnerable	Not listed	-	Offsetting not required
Squirrel Glider	Vulnerable	Not Listed	4.58	<b>146</b>
Grey-headed Flying-fox	Vulnerable	Vulnerable	-	Offsetting not required
Koala*	Vulnerable	Vulnerable	0.15	<b>6</b>
<b>Plants</b>				
Small-flower Grevillea	Vulnerable	Vulnerable	-	Offsetting not required
Maundia triglochinos	Vulnerable	Not Listed	-	Offsetting not required
Earp's Gum	Vulnerable	Vulnerable	0.1	<b>6</b>
<b>Total</b>				<b>158</b>

\* species habitat only, assumed to be present due to recordings of Koala in the area.

### Avoidance and Minimisation

AGL proposes to minimise vegetation clearing as much as practicable through utilising previously cleared corridors/easements and land and have also committed to range of mitigation measures to minimise the impacts to biodiversity including:

- implementation of a Biodiversity Management Plan;
- implementing pre-clearing protocols and exclusion fencing;
- managing Koala impact risks; and,
- managing biosecurity risks, including spread of noxious weeds.

### EPBC Controlling Provision – Ramsar Wetland

As outlined in Section 4.3, the Commonwealth declared the project a controlled action due to the potential indirect impact on the Hunter Estuary Wetlands Ramsar site (Ramsar wetlands under Sections 16 and 17B of the EPBC Act).

The BDAR included a significance assessment on matters of national environmental significance (MNES) in accordance with the EPBC Act *Policy Statement 1.1: Significant Impact Guidelines Matters of National Environmental Significance* (Significant Impact Guidelines) (DoE, 2013). The assessment found that there would be no significant impact on wetland and migratory birds as:

- the Ramsar site is located 2.5 km away from the project site and no direct impacts on the wetlands or habitat for migratory birds are predicted to occur as a result of construction or operations;



- changes to surface water and potential interception of groundwater would be unlikely to result in impacts to the hydrological regime of the wetland;
- the habitat or lifecycle of wetland species is unlikely to be impacted due to surface water controls during construction and operation;
- the water quality of the wetland is unlikely to be impacted due to the distance from the project and stormwater, groundwater, ASS and contamination mitigations;
- the proposed management of invasive species would minimise biosecurity risks; and
- although the plume rise may impact species flying to the Ramsar Wetland, the horizontal diameter (250 m) is not substantial given the distance from the wetlands and the size of the wetlands (12 km wide).

The Department and BCS consider that AGL's assessment of MNES and proposed mitigation measures to manage the impact on water resources (see Section 6.6), together with the Department's recommended conditions (see Section 6.6 and **Appendix I**), would ensure that there would be no significant impact on the Ramsar Wetland as a result of the construction or operation of the project.

BCS's assessment of the project's BDAR (Amendment Report BDAR) and advice on EPBC matters is provided in **Appendix E**. The Department has also consulted with the Commonwealth Department of Agriculture, Water and the Environment on the assessment of MNES.

### Biodiversity Offsets

Offsetting of the project would be completed in accordance with the BAM. The credit liability required to offset the impacts to native vegetation and threatened species was calculated in accordance with the BC Act and is detailed in **Tables 10 and 11**. The Department and BCS consider that as there is no significant impact predicted on the Ramsar wetlands or associated species, that no offsets would be required for the controlled action under the EPBC Act.

### Summary

The Department and BCS consider that direct impacts to biodiversity have been minimised as much as reasonably and feasibly possible due to the project utilising existing cleared areas where practicable. Where direct and indirect impacts were unavoidable, the assessment under the BAM is considered comprehensive and AGL propose to offset the impacts of the development in accordance with the requirements of the BC Act.

The Department considers that AGL provided a comprehensive assessment of impacts of the project on EPBC matters and that potential impacts on the listed Hunter Estuary Wetland can be minimised through proposed mitigation measures, as incorporated into the Department's recommended conditions.

The Department has recommended pre-construction conditions to ensure protection of biodiversity values (see **Appendix I**), requiring AGL to:

- implement a Biodiversity Management Plan, prepared by a suitably qualified expert in consultation with the BCS and Port Stephens Council and approved by the Planning Secretary; and
- retire the identified biodiversity credits (see **Tables 10 and 11**) in consultation with the BCS and Port Stephens Council and to the satisfaction of the Biodiversity and Conservation Trust, and in accordance with the *NSW Biodiversity Offsets Scheme*.

The Department has assessed the project in close consultation with the BCS and found that the project is not likely to have a significant impact on any of the above protected provisions, subject to the recommended conditions of approval (see **Appendix I**).

## 6.8 Other Issues

The Department's consideration of other issues is provided in **Table 12**.

**Table 12 | Other Issues**

Issue	Findings	Recommended conditions
<b>Heritage</b>	<p>The Aboriginal cultural heritage impact assessment identified four archaeological sites within the project site including:</p> <ul style="list-style-type: none"> <li>• a large low-density artefact scatter west of the power station site;</li> <li>• two isolated artefacts; and</li> <li>• a potential archaeological deposit (PAD) spreading from the large artefact scatter to a second isolated find.</li> </ul> <p>The large low-density artefact scatter would be located 20 m north-west of the construction lay down area for the project, outside of the development footprint and would not be directly impacted. The remaining sites would require removal prior to construction and were assessed as having low scientific significance.</p> <p>Identification of additional objects during works is considered unlikely and no operational impacts are anticipated.</p> <p>There are no non-Aboriginal heritage features identified within or adjacent to the in the project site.</p>	<ul style="list-style-type: none"> <li>• Avoid impacts on heritage items outside of the project development footprint.</li> <li>• In the event of the discovery of an unexpected Aboriginal artefact during construction, cease works and engage an archaeologist to assess the find.</li> <li>• Prepare and implement an Aboriginal cultural heritage -plan as a component of the Environmental Management Strategy (EMS) recommended for the project, prepared in consultation with the Registered Aboriginal Parties (RAPs) and BCS.</li> </ul>
<b>Health</b>	<p>Potential impacts on human health were assessed including impacts from particulate matter, NO<sub>x</sub>, ozone and acrolein (see <b>Section 6.1</b>), electric and magnetic fields (EMF), increased noise (see <b>Section 6.2</b>) and disease from pathogens, and safe work legislation. The assessment identified:</p> <ul style="list-style-type: none"> <li>• EMF generated by the project either individually or in combination with the existing transmissions lines are well within human health reference levels set by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA);</li> <li>• The project would have no infrastructure items that would promote the growth of <i>Legionella</i>;</li> <li>• the proposed gas storage pipeline is not considered a Major Hazard Facility (MHF) under the <i>Work Health and</i></li> </ul>	<ul style="list-style-type: none"> <li>• Minimise noise from construction, operation and decommissioning.</li> <li>• Implement all reasonable and feasible measures to minimise dust and other air emissions.</li> <li>• Satisfy the requirements of the <i>Pipelines Act 1967</i>.</li> </ul>

Issue	Findings	Recommended conditions
	<p><i>Safety (WHS) Regulation 2017</i> and is instead would be regulated under the <i>Pipelines Act 1967</i> which includes stringent statutory requirements for the design, construction, operation and decommissioning of pipeline infrastructure and in accordance with Australian Standards; and</p> <ul style="list-style-type: none"> <li>environmental noise and air quality impacts would be minimised and mitigated by AGL's proposed management measures and the Department's recommended conditions.</li> </ul>	
<b>Soils and contamination</b>	<p>The soils and contamination assessment identified seven areas of contamination within the project site consisting of dumped waste or stockpiled material and moderate to high risk of intercepting acid sulphate soils (when constructing the gas storage pipeline or construction of the project near the ephemeral drainage pathways).</p> <p>AGL have committed to remove, manage or remediate the localised contaminated areas prior to the commencement of construction and implement an acid sulphate soils management plan to minimise impacts to surrounding vegetation or water quality.</p> <p>The EPA or Council did not raise any concerns with the proposed measures to manage contaminated wastes from the site.</p>	<ul style="list-style-type: none"> <li>Remove, manage and/or dispose of any contaminated material in accordance with EPA's <i>Waste Classification Guidelines</i>.</li> <li>Prepare and implement a Waste Management Plan, including management of contaminated materials.</li> <li>Undertake construction activities in accordance with the <i>Acid Sulphate Soil Manual</i>.</li> </ul>
<b>Visual</b>	<p>The project introduces a new industrial development to the area which would be visible from the Pacific Highway, the proposed M1 Upgrade interchange and the Hunter Region Botanic Gardens, located approximately 800 m north of the site.</p> <p>The project would occupy less than 1% of the viewshed from the botanic gardens.</p> <p>The project would also require vegetation removal making it visible during construction and operation to motorists using the Pacific Highway.</p> <p>To minimise visual impacts, AGL propose to introduce vegetation screening, develop a site landscape plan and minimise impacts of outdoor lighting.</p> <p>The Department considers that while the project would be visible, the area is predominately industrial, including the NGSF, and Tomago Aluminium Smelter and that overall impact would be moderate to low.</p>	<ul style="list-style-type: none"> <li>Minimise off-site visual impacts of the development including complying with applicable Australian Standards for outdoor lighting and glare reflection.</li> <li>Blend visual appearance of infrastructure with surrounding landscape as reasonably and feasibly as possible.</li> </ul>
<b>Waste</b>	<p>Construction would generate waste from vegetation clearing, demolition works, trenching and earthworks. AGL propose to</p>	<ul style="list-style-type: none"> <li>Tanker all wastewater to a licenced facility.</li> </ul>

Issue	Findings	Recommended conditions
	<p>manage construction waste with a Construction Waste Management Plan (CWMP).</p> <p>Waste from operation of the power station would include solid waste captured from air pollution environmental controls or chemical wastes. Liquid waste would be generated and managed as wastewater and disposed of in consultation with HWC as discussed in <b>Section 6.6</b>.</p> <p>The Department considers the proposed waste management strategies are acceptable as they would appropriately reduce waste being transferred to landfill, promote recycling and manage construction and operation impacts.</p>	<ul style="list-style-type: none"> <li>• Comply with the requirements of the HWC and the EPA in regard to waste management, classification and disposal.</li> <li>• Prepare and implement a Waste Management Plan.</li> </ul>
<b>Social and Economic</b>	<p>Potential social impacts identified for the project include:</p> <ul style="list-style-type: none"> <li>• short term use of local amenities during construction (accommodation and recreational facilities);</li> <li>• impacts to human health including air and noise emissions, road traffic, safety and visual amenity; and</li> <li>• increased employment opportunities.</li> </ul> <p>AGL has proposed open and clear consultation with local business, services and the community to minimise impacts to goods and services in the region and construction noise and traffic impacts. The site is located in close proximity to Newcastle and other large regional centres where there is substantial capacity to accommodate the approximate 300 construction workforce, noting that the operational workforce of 23 is minor and would not impact on regional services.</p> <p>The social impacts associated with these aspects have been integrated into the Department's overall assessment including recommended conditions to avoid and mitigate impacts.</p> <p>The Project would also result in both direct and indirect jobs and economic benefits to the region including a CIV of \$439 million and ongoing tax contributions from employees of the project.</p> <p>The project would provide benefits to NSW in contributing to a stable and reliable electricity supply by providing dispatchable energy to complement variable renewable energy sources as coal-fired power is decommissioned or decommitted.</p>	<ul style="list-style-type: none"> <li>• See recommended conditions above for managing amenity (noise, air and visual impacts), and off-site hazards and risks.</li> </ul>



## 7 Evaluation

The Department has undertaken a comprehensive assessment of the merits of the project in accordance with the relevant Commonwealth and NSW legislation, policy and guidelines, and considered all information provided by AGL, government agencies, public and special interest groups.

AGL seeks approval for construction and operation of a gas-fired power station and associated infrastructure, including gas supply pipelines, a gas storage pipeline, gas compression facilities and electricity transmission lines, site access and ancillary facilities in Tomago, NSW.

The project is essential for the NSW economy as it would provide a reliable dispatchable supply of electricity to the NEM as it transitions away from coal-fired power station power generation to renewable energy, whilst supporting continued industrial development and employment in the State. The project has been classified as CSSI under the EP&A Act and the Minister for Planning and Public Spaces is the consent authority.

Additionally, the Project would deliver economic benefits to the Hunter Region and NSW as a whole by generating \$439 million of capital investment, creating up to 300 construction jobs within the two year construction period and up to 23 operational jobs (operating on shifts) for the life of the Project.

The Department has worked closely with the government agencies and considered the key assessment issues raised and recommended conditions by the EPA, TfNSW and Defence throughout the assessment process to ensure any impacts from construction and operation of the Project are minimised and managed. Following AGL's amendments and additional information, the key government agencies supported the Department's recommended conditions and did not raise any residual concerns.

Based on this assessment, the Department concludes that:

- the Project would not result in any significant impacts on the environment or surrounding land uses;
- any residual impacts can be managed and mitigated to an acceptable level through the Department's recommended conditions of approval, including setting annual limits on NO<sub>x</sub> to mitigate impacts on the local and regional airshed; and
- the Project is justified as it is consistent with key NSW and Commonwealth government strategic objectives, including the *NSW Climate Change Policy Framework*, *2019 NSW Electricity Strategy* and *2020 NSW Electricity Infrastructure Roadmap*, as it would:
  - increase NSW energy security by providing additional dispatchable energy during peak electricity demands; and
  - provide greater competition in the NSW electricity market, given the upcoming retirement of coal-fired power stations, including Liddell by 2022/23.

On balance, the Department believes that the Project's benefits outweigh its residual impacts and it is in the public interest and approvable, subject to the strict set of recommended conditions of approval (see **Appendix I**).

## 8 Recommendation

It is recommended that the Minister for Planning and Public Spaces:

- **considers** the findings and recommendations of this report;
- **accepts and adopts** all of the findings and recommendations in this report as the reasons for making the decision to grant approval to the application;
- **agrees** with the key reasons for approval listed in the notice of decision;
- **grants approval** for the application in respect of SSI 9837, subject to the conditions in the attached development project approval; and
- **signs** the attached project approval and recommended conditions of approval (see **Appendix I**).

**Recommended by:**



25/2/2021

**Stephen O'Donoghue**

Director

Resource Assessments

**Recommended by:**



25/2/2021

**Mike Young**

Executive Director

Energy, Industry and Compliance

## 9 Determination

The recommendation is Adopted / ~~Not adopted~~ by:

A handwritten signature in blue ink, appearing to read 'Rob Stokes', is written over the text 'Adopted'.

**The Hon. Rob Stokes MP**

Minister for Planning and Public Spaces

# Appendices

## Appendix A – Environmental Impact Statement

See the Department's website at <https://www.planningportal.nsw.gov.au/major-projects/project/9951>

## Appendix B – Submissions

See the Department's website at <https://www.planningportal.nsw.gov.au/major-projects/project/9951>

## Appendix C – Submissions Report

See the Department's website at <https://www.planningportal.nsw.gov.au/major-projects/project/9951>

## Appendix D – Amendment Report

See the Department's website at <https://www.planningportal.nsw.gov.au/major-projects/project/9951>

## Appendix E – Agency Advice

See the Department's website at <https://www.planningportal.nsw.gov.au/major-projects/project/9951>

**Table E | Agency and Local Government Advice**

E1 – Agency advice		
Biodiversity, Conservation and Science Directorate of the Department	EIS advice	E1_A-1
	Submissions Report advice	E1_A-2
	Amendment Report advice	E1_A-3
	EPBC advice	E1_A-4
	Biodiversity Offset Calculations	E1_A-5
Civil Aviation Safety Authority	EIS advice	E1_B-1
	Submissions Report advice	E1_B-2
Crown Lands	EIS advice	E1_C-1
Department of Defence	EIS advice	E1_D-1
	Submissions Report advice	E1_D-2
Department of Primary Industries	EIS advice	E1_E-1
DPIE Water Group and NRAR	EIS advice	E1_F-1
Environment Protection Authority	EIS advice	E1_G-1
	Submissions Report advice	E1_G-2
	Amendment Report advice	E1_G-3
	Conditions advice	E1_G-4
Fire and Rescue NSW	EIS advice	E1_H-1



## E1 – Agency advice

	Submissions Report advice	E1_H-2
Heritage NSW	EIS advice	E1_I-1
NSW Health	EIS advice	E1_J-1
	Submissions Report advice	E1_J-2
Transport for NSW	EIS advice	E1_K-1
	Submissions Report advice	E1_K-2
	Amendment Report advice	E1_K-3
	Conditions advice	E1_K-4
WaterNSW	EIS advice	E1_L-1
DPIE Energy	EIS advice	E1_M-1
DPIE Hazards	EIS advice	E1_N-1
	Amendment Report advice	E1_N-2

## E2 – Local Government Advice

Port Stephens Council	EIS advice	E2_A-1
	Submissions Report advice	E2_A-2
Newcastle Council	EIS advice	E2_B-1

## Appendix F – Additional Information

See the Department's website at <https://www.planningportal.nsw.gov.au/major-projects/project/9951>

**Table F | Supplementary Information**

### F1 – AGL Supplementary Information

F1_A-1	Response to Request for Information - EPA Conditions
F1_A-2	Response to Request for Information - EPA and Port Stephens Council Conditions

## Appendix G – Community Views

The table below includes a summary of how the key issues raised by the community were taken into consideration.

**Table G | Community Views**

Issue	Consideration
<p><i>Power Station Technology</i></p> <ul style="list-style-type: none"> <li>• preference for renewable energy technology including pumped hydro, solar or wind technologies combined with battery storage;</li> <li>• CO<sub>2</sub> emissions and fossil fuel use; and</li> <li>• air pollution from firing of gas or diesel fuels.</li> </ul>	<ul style="list-style-type: none"> <li>• The NSW and national energy markets are in a period of transition from a market previously dominated by coal-fired power stations towards a renewable energy mix.</li> <li>• Gas-fired power stations are an important part of this transition as they provide firming capability to the National Electricity Market (NEM) together with the growing renewable energy power generators.</li> <li>• The project would result in lower emissions than coal-fired generation with worst-case greenhouse emission predictions accounting for about 0.3% of Australia's total yearly national inventory.</li> </ul> <p><i>Conditions</i></p> <ul style="list-style-type: none"> <li>• Annual emissions from the project as a result of fuel burning must not exceed 338 tonnes of NO<sub>x</sub> (as NO<sub>2</sub> equivalent).</li> <li>• Verification of air quality impacts within six months of commissioning of the power station.</li> <li>• Monitoring of key air emissions from turbine stacks.</li> </ul>
<p><i>Biodiversity</i></p> <ul style="list-style-type: none"> <li>• indirect impacts to flora and fauna; and</li> <li>• preference for use of other contaminated areas without impacting on the environment.</li> </ul>	<ul style="list-style-type: none"> <li>• The project would require the removal of 17.6 hectares (ha) of vegetation, with 13.17 ha being of low quality or managed vegetation. Although some clearing would be required, the project has been designed to utilise existing previously cleared corridors as much as practicable.</li> <li>• AGL have committed implementing mitigation measures to reduce direct and indirect impacts to biodiversity including reducing vegetation clearing, implementation of plans, and management of key risks to threatened species.</li> </ul> <p><i>Conditions</i></p> <ul style="list-style-type: none"> <li>• Offset the biodiversity impacts of native vegetation clearing in accordance with the Biodiversity Assessment Method under the <i>Biodiversity Conservation Act 2016</i>.</li> <li>• Prepare and implement mitigation measures and offset requirements in accordance with a Biodiversity Management Plan prior to construction and to the satisfaction of the Secretary.</li> </ul>
<p><i>Safety and hazards</i></p> <ul style="list-style-type: none"> <li>• proximity to bushfire prone land;</li> <li>• safety of operation of hazardous materials; and</li> </ul>	<ul style="list-style-type: none"> <li>• The project would be located in a predominately industrial area, in proximity to other gas related infrastructure on land that has been previously used for agricultural purposes or as easements for existing infrastructure.</li> </ul>

Issue	Consideration
<ul style="list-style-type: none"> <li>preferred location of power station to be on nearby contaminated land.</li> </ul>	<ul style="list-style-type: none"> <li>The project would be designed and constructed so that risk from bushfire attack to people or property can be appropriately managed.</li> <li>AGL have completed an extensive hazard assessment in accordance with legislative requirements and would implement mitigations to manage risks to people and the environment.</li> </ul> <p><i>Conditions</i></p> <ul style="list-style-type: none"> <li>Prepare and submit to the satisfaction of the Secretary a Fire Safety Study, a Hazard and Operability Study and a Final Hazard Analysis prior to constructions.</li> <li>Prepare and implement an Emergency Plan and Safety Management System prior to commissioning.</li> <li>Regular compliance and audit reporting.</li> <li>Handle all chemicals, fuels and oils in accordance with Australian Standards and NSW EPA guidelines.</li> </ul>
<p><i>Water</i></p> <ul style="list-style-type: none"> <li>water supply and amount of water required; and</li> <li>water quality and stormwater management.</li> </ul>	<ul style="list-style-type: none"> <li>Operation of the project requires the use of raw water, demineralised water (through a demineralised water treatment plant), service water, firefighting water and potable water resulting in up to 800 ML of water for operation yearly.</li> <li>HWC advised AGL that there would be adequate capacity within regional water sources to supply the power station when operating on a continuous (worst-case) basis.</li> <li>AGL would also need to manage intercepted groundwater during construction of the gas storage pipeline.</li> </ul> <p><i>Conditions</i></p> <ul style="list-style-type: none"> <li>Requirement a Water Access Licence prior to construction commencing.</li> <li>Prior to commencing construction, prepare and implement erosion and sediment controls and minimise impacts to water quality by preparing and submitting a Water Management Plan to the satisfaction of the Secretary.</li> </ul>
<p><i>Aviation</i></p> <ul style="list-style-type: none"> <li>plume rise impacts; and</li> <li>consultation between AGL and aviation industry participants required</li> </ul>	<ul style="list-style-type: none"> <li>AGL consulted with Defence and CASA throughout the assessment process to minimise potential impacts to the Newcastle Airport, co-located with RAAF Base at Williamtown and aircraft operations.</li> <li>Following confirmation of the aviation impact assessment method, both technology types were deemed acceptable for construction and operation, with Defence recommending that key aviation stakeholders be notified of the final generator design.</li> </ul> <p><i>Conditions</i></p> <p>Prior to construction:</p>

Issue	Consideration
	<ul style="list-style-type: none"> <li>Undertake a plume rise assessment, in consultation with key aviation stakeholders, of the selected generator design to demonstrate that the critical plume extent is consistent with that modelled in the EIS, and demonstrate that reasonable and feasible mitigation measures have been considered to further minimise the extent of the plume.</li> <li>Submit evidence of consultation to the Secretary that it has provided the final design drawings of the open cycle gas turbine power station (if chosen) to the relevant aviation industry and authorities to ensure adequate mitigation measures and air space safety would be in place; and</li> <li>Notify Air Services Australia for the erection of permanent and temporary structures that intrude on the Obstacle Limitation Surface (OLS) of the RAAF Base Williamtown.</li> </ul>

## Appendix H – Consideration of the Objects of the Act

**Table H| Consideration of the Project Against the relevant Objects of the EP&A Act**

Issue	Consideration
<ul style="list-style-type: none"> <li>(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources;</li> </ul>	<ul style="list-style-type: none"> <li>The project would provide ongoing socio-economic benefits to the people of NSW through ongoing employment opportunities during construction and operations.</li> <li>Consideration has also been given to the sensitive environmental features located within proximity to the project including the Ramsar listed wetlands, the Hunter Water drinking catchment and local endangered species and communities with appropriate conditioning of the project to avoid, minimise and offset impacts.</li> </ul>
<ul style="list-style-type: none"> <li>(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment;</li> </ul>	<ul style="list-style-type: none"> <li>The Department considers that the project can be carried out in a manner that is consistent with the principles of ecologically sustainable development (ESD). The Department's assessment has sought to integrate all significant environmental, social and economic considerations. Consideration of the key principles and programs of ESD is detailed below.</li> </ul> <p><b>Precautionary Principle</b></p> <ul style="list-style-type: none"> <li>The Department has assessed the project's threat of serious or irreversible environmental damage and considers that there is sufficient scientific certainty regarding environmental impacts and residual risks to enable determination of the application.</li> <li>The EIS contains a number of specialist environmental impact assessments and a number of design, construction and operation measures to mitigate, remediate or offset potential impacts.</li> </ul>

Issue	Consideration
	<ul style="list-style-type: none"> <li>• The Department has also recommended conditions of approval that further mitigate potential residual impacts of the project such as limiting the annual NO<sub>x</sub> emissions to minimise air quality impacts, finalisation of hazard assessments and conditioned operational gas flows to minimise risks and hazards and requiring AGL to retire biodiversity offsets.</li> <li>• The Department considers that the recommended conditions can provide an appropriate level of protection to environmental values in the region.</li> </ul> <p><b><i>Inter-generational equity</i></b></p> <ul style="list-style-type: none"> <li>• The Department recognises that the NSW energy market is in a state of transition from one dominated by coal-fired power stations to a renewable energy mix. Whilst this transition is being fuelled by investment in renewable energy zones and increased battery storage systems, gas-fired power stations are still required to play a crucial role in firming the State's electricity supply, especially in times when renewable energy sources aren't available such as during increased cloud cover days or evenings and nights.</li> <li>• The Department recognises that climate change and reducing GHG emissions are key considerations for inter-generational equity and consider that the project contributes to reducing potential climate impacts compared with coal-fired power stations, whilst also securing a reliable energy supply to the State.</li> </ul> <p><b><i>Conservation of biological diversity and ecological integrity</i></b></p> <ul style="list-style-type: none"> <li>• The projects potential impacts on biodiversity were an important consideration of the Department's assessment of the project. As described in <b>Section 6.7</b>, the Department considers that direct and indirect impacts on biodiversity and on EPBC matters including the Ramsar-listed Hunter Estuary Wetland impacts can be minimised through proposed mitigation measures and offsets.</li> </ul> <p><b><i>Improved valuation, pricing and incentive</i></b></p> <ul style="list-style-type: none"> <li>• This ESD principle emphasises the internalisation of environmental costs in the pricing of assets and services.</li> <li>• The Department's assessment has sought to apply the 'polluter pays principle', insofar as AGL would be required to offset or remediate potential environmental impacts. As such, the Department has conditioned that biodiversity impacts be offset, operational wastewater is required to be removed offsite to a licensed facility and that the project would operate under an Environment Protection Licence issued by the EPA.</li> </ul>
<ul style="list-style-type: none"> <li>• (c) to promote the orderly and economic use and development of land;</li> </ul>	<ul style="list-style-type: none"> <li>• The project is located in an industrially zoned area in the Port Stephens LEP and is consistent with the objectives the IN1 zone including encouraging employment opportunities and providing</li> </ul>



Issue	Consideration
	<p>compatible infrastructure and land use, as exemplified by the proximity to AGL's NGSF, existing gas pipelines, which would be utilised for the supply of gas to the power station, along with existing electricity transmission infrastructure and proximity to M1 and major road access to the site. .</p>
<ul style="list-style-type: none"> <li>• (e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats;</li> </ul>	<ul style="list-style-type: none"> <li>• The Department considers that the project has been designed to minimise environmental and biodiversity impacts as much as practicable through locating the power station and gas pipelines in areas previously cleared or impacted by existing industrial land use in the area.</li> <li>• Although some clearing of threatened ecological communities would be required, the Department considers that the proposed offset would maintain or enhance biodiversity values in the long-term and that potential impacts to threatened species and habitats can be managed and/or mitigated through appropriate conditions of approval that require strict management measures and biodiversity offsets.</li> <li>• The Department also considers that no significant impacts to the Ramsar-listed wetland would occur as a result of construction or operation of the project due to AGL's proposed mitigation measures to manage the impact to water resources and the application of proposed conditions such as the Water Management Plan and Biodiversity Management Plan.</li> </ul>
<ul style="list-style-type: none"> <li>• (f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage);</li> </ul>	<ul style="list-style-type: none"> <li>• The Department has assessed the project's impacts on built and cultural heritage (see <b>Section 6.8</b>) and considers that potential impacts to Aboriginal heritage items can be appropriately minimised and mitigated through the design of the project limiting impact to known existing Aboriginal items, proposed management measures and the Department's recommended conditions for discovery of unexpected items. The project would not impact non-Aboriginal heritage items.</li> </ul>
<ul style="list-style-type: none"> <li>• (g) to promote good design and amenity of the built environment;</li> </ul>	<ul style="list-style-type: none"> <li>• The Department considers that the project would be located in an industrial area which would suit the existing built environment such as the existing NGSF and Tomago Aluminium Smelter. Nonetheless, the proposed mitigation measures and conditions would minimise off-site visual impacts of the development and aim to blend the visual appearance of infrastructure with surrounding landscape as reasonably and feasibly as possible.</li> </ul>
<ul style="list-style-type: none"> <li>• (h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants;</li> </ul>	<ul style="list-style-type: none"> <li>• The project application included a comprehensive hazard assessment completed in accordance with the requirements of SEPP 33 and reviewed in consultation with the Department's Hazards team (see <b>Section 6.5</b>).</li> <li>• Proposed mitigation measures to minimise risks from construction and operation of a gas-fired power station, fire safety and bushfire risks would provide acceptable levels of protection for the health and safety of occupants of the power station, project site and surrounding residents.</li> </ul>

Issue	Consideration
	<ul style="list-style-type: none"> <li>The Department has also conditioned further requirements including finalisation of hazard assessments, emergency planning and construction and demolition conditions to ensure structural adequacy of the buildings and safe demolition at the end of project life.</li> </ul>
<ul style="list-style-type: none"> <li>(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State; and</li> </ul>	<ul style="list-style-type: none"> <li>The Department notified and consulted with the Port Stephens Council and NSW government authorities (including further discussion of key issues with the EPA, TfNSW and BCS) throughout the assessment of the project and carefully considered all responses in its assessment (see <b>Section 5</b>).</li> <li>The Department has also consulted with the Commonwealth Department of Agriculture, Water and Environment throughout the assessment due to the assessment process under the EPBC Act.</li> </ul>
<ul style="list-style-type: none"> <li>(j) to provide increased opportunity for community participation in environmental planning and assessment.</li> </ul>	<ul style="list-style-type: none"> <li>The Department publicly exhibited the project application and EIS and made all relevant documents publicly available on its website (see <b>Section 5</b>). All public submissions have been considered by AGL and the Department during the assessment process.</li> </ul>

## Appendix I – Recommended Instrument of Approval

See the Department's website at <https://www.planningportal.nsw.gov.au/major-projects/project/9951>