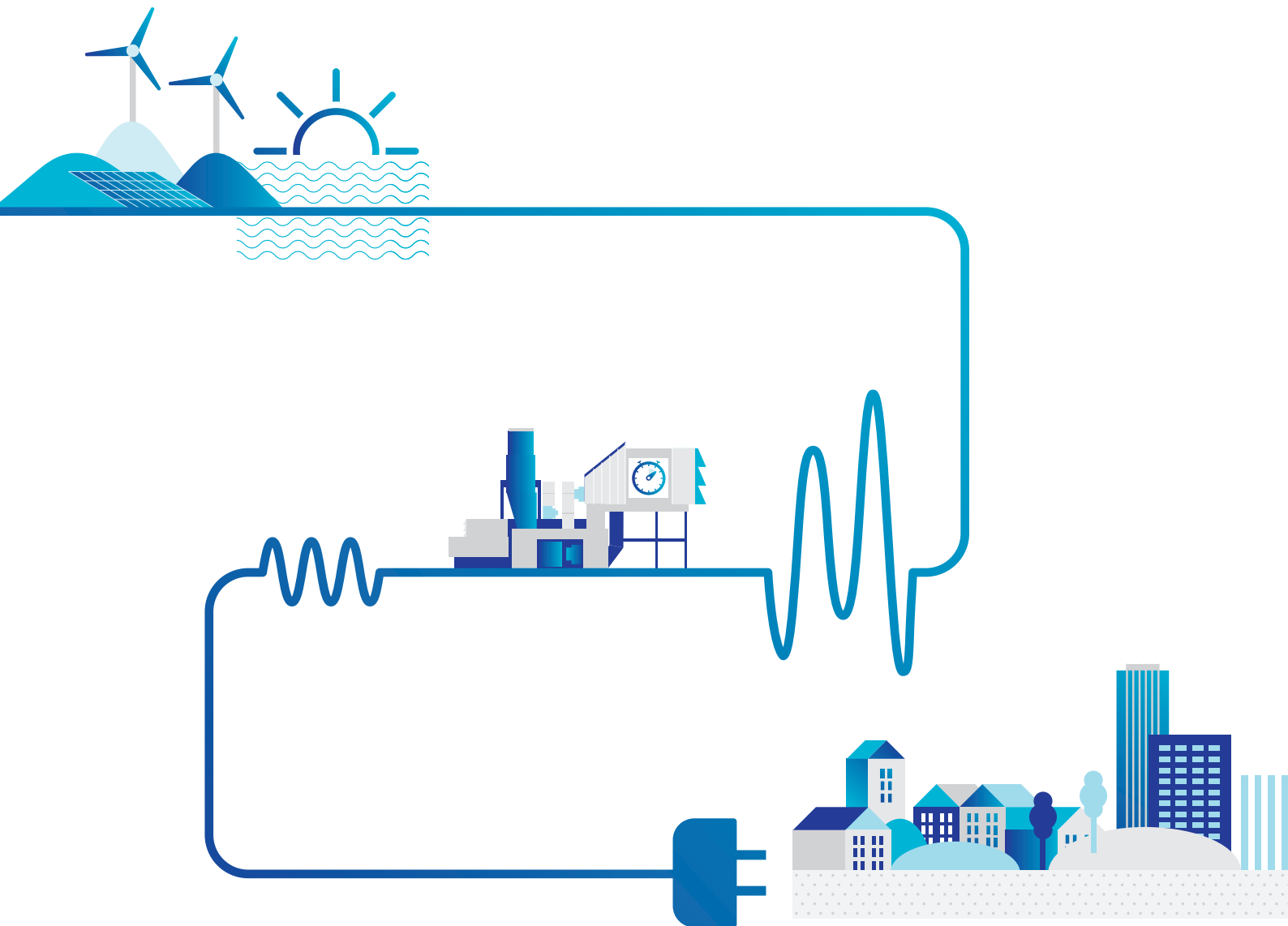




Newcastle Power Station Project

Executive Summary

November 2019



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Executive summary

ES.1 Introduction

This report provides a summary of the EIS prepared for the Newcastle Power Station (NPS) to address the Secretary's environmental assessment requirements (SEARs) and supplementary SEARs issued by Department of Planning, Industry and Environment (DPIE).

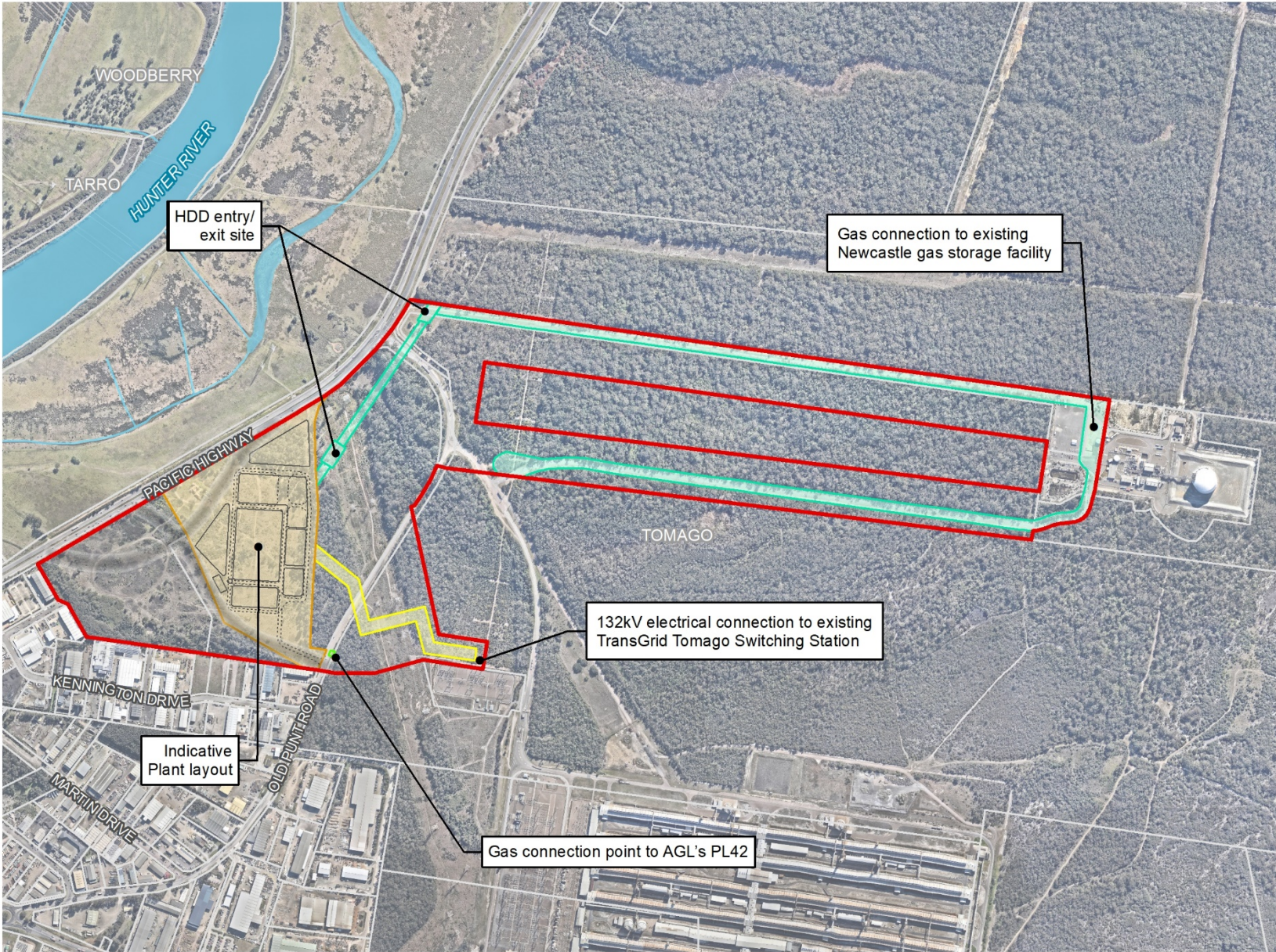
AGL Energy Limited (AGL) proposes to construct and operate a dual fuel fast-start peaking power plant with a nominal capacity of 250 megawatt (MW), the NPS. The NPS, with gas pipelines, electricity transmissions lines, site access and associated ancillary facilities (the Proposal) would be located off Old Punt Road in Tomago, New South Wales (NSW).

The NPS forms part of AGL's strategy to introduce new electricity generating development to improve energy security and reliability. The Proposal has a capital investment value of approximately \$400 million and is anticipated to be operational in 2022, following construction commencing in 2021.

The Proposal would be located across 90.59 hectares (ha). This includes Lot 3 DP1043561 (the NPS site), Lot 4 DP 1043561, Lot 202 DP 1173564 and Lots 1201, 1202 and 1203 DP 1229590 (electrical transmission lines and gas pipelines). The 'Proposal area' and key components are illustrated in the conceptual site layout in Figure ES-1 and include:

- Power station: a dual fuel power station capable of operating on natural gas and/or liquid fuel (diesel)
- Gas pipelines: to store gas and to connect the NPS to existing gas supply sources (including the Jemena Gas Network (JGN) and AGL's Newcastle Gas Storage Facility (NGSF)) via AGL's existing pipeline PL42
- Electricity transmission lines: to transfer the electricity produced by the NPS to the national electricity network

The NPS is intended to be operated as a peaking plant (base case scenario); however, it would be designed for continuous operation to maximise operational flexibility (worst case scenario). The NPS would only be operated continuously if requisite circumstances arise in the National Energy Market (NEM). The EIS considers both scenarios.



Legend

- Proposal area
- Lot
- Watercourse
- Waterbody
- Potential future transport corridor
- Development Footprint**
- NPS site
- Transmission Line Corridor
- Pipeline Corridor
- Gas connection point to AGL's PL42

Source: Aurecon, AGL, LPI, Nearmap, ESRI

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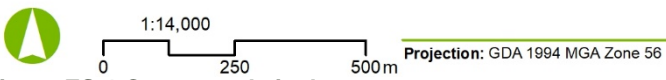


Figure ES-1 Conceptual site layout

The Proposal was declared Critical State Significant Infrastructure (CSSI) by the NSW Minister for Planning in December 2018 under State Environmental Planning Policy (State and Regional Development) 2011. The Proposal was recognised as being essential to the security of NSW's future energy supply for the following reasons:

- Energy security is a critical issue for the State and Australia, particularly post the closure of Liddell Power Station. The electricity generation from the Proposal would improve security of supply to residential, commercial and industrial energy users in the state of NSW.
- The proposed units would be able to operate at full capacity within approximately 5 minutes of start, providing a rapid response that adapts to fluctuating changes in energy supply and demand
- Fast start flexible generation that is dispatchable 'firms' intermittent renewable generation and enables higher levels of renewables to be integrated into the generation mix, reducing coal consumption and associated carbon and other pollutant emissions

The Proposal is expected to support the delivery of greater energy security for NSW as well as creating flow on economic and social benefits for the State, providing employment opportunities for the region and material investment into regional NSW.

ES.2 The Proposal

The power station

The NPS would be a dual fuel power station, meaning generation units can be supplied by natural gas and/or liquid fuel.

The NPS would supply electricity to the grid at short notice during periods of high electricity demand, and low supply, particularly during periods where intermittent renewable energy supply is low or during supply outages. This is described as 'peak-load' operation and is part of AGL's strategic move to a renewable energy mix.

Buildings and structures would range in height between one and three storeys, with design to be finalised during detailed design of the Proposal.

The height of the exhaust stacks is dependent on the technology but would be approximately 35m AHD for gas turbines and 45m AHD for reciprocating engines.

Paved walkways would be provided around all buildings and to connect the buildings and major plant areas.

Gas pipeline and storage

Two gas pipelines are to be constructed:

- New gas pipeline connection from the NPS gas receiving yard (within the NPS site on Figure ES-1) to AGL's existing pipeline PL42, located on the eastern side of Old Punt Road. PL42 connects the NSGF to the Jemena Gas Network (JGN). The new gas pipeline connection would enable gas to be sourced from the NSGF or the JGN.
- New gas storage pipeline, passing under Old Punt Road to the north east of the NPS site and then traversing the cleared land to the NSGF. The gas storage pipeline would require up to 5km of pipeline to provide the required gas storage capacity.

These are shown in Figure ES-1.

Electricity transmission line

A new high voltage 132kV electricity transmission line would be required to connect the proposed power station to the TransGrid Tomago 132kV switching station, approximately 500m south east (Figure ES-1). The switching station would transfer the electricity produced at the power station to the regional electricity transmission system.

Where the transmission line passes over land not owned by AGL or TransGrid, a new cleared easement would be established. Where parallel to the TransGrid easements the power station connection line easement would be contiguous with the adjacent TransGrid easement.

The transmission line from the TransGrid Tomago 132kV switching station would require crossing existing 132kV transmission lines and Old Punt Road.

Should these crossings not be able to be achieved, part or all of the transmission line may need to be placed underground.

ES.3 Proposal need and justification

The Proposal is required to:

- Support the continual supply of electricity to NSW residents, businesses and the community without interruption
- Contribute to lower emissions by delivering firming capacity in support of intermittent renewable generation
- Improve security of electricity to NSW as aging generation plants retire

AGL has a broad ranging strategy to increase electricity generation capacity into the NEM to improve energy security and reliability. The Proposal is part of this strategy that includes a mix of high-efficiency gas power stations, renewable power, battery storage and demand response initiatives. The Proposal would supply electricity to the NEM at short notice during periods of high electricity demand, and/or low supply, particularly during periods where intermittent renewable energy supply is low or during supply outages.

The Proposal would assist in reducing volatility and cost fluctuation in the electricity market by operating during peak demand periods and would diminish the likelihood of power supply shortages for domestic and business customers.

Peaking power generation plant such as the proposed NPS would assist AGL to manage the cost of electricity sold to consumers and minimise market exposure along with providing rapid start up generation capacity at times of reduced supply or reduced generation capability from other plants or sources.

As Australia's electricity market adapts to a carbon-constrained future and turns towards intermittent renewable energy sources, the NPS would create a secure energy system as the market transitions. Fast start dispatchable power generation will complement renewables by providing back-up to wind and solar energy and can help respond to peak demand.

Whilst the development of peaking power generation plants has a high investment cost, it is an important investment in AGL's risk management strategy and corporate social responsibility objectives; supporting the transition to renewable energy sources and providing the broader NSW community with electricity that is more environmentally sustainable, affordable and reliable.

ES.4 Approval pathway

The Proposal was declared CSSI in December 2018 in accordance with the State and Regional Development SEPP. As CSSI, the Proposal requires approval from the Minister under Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

In March 2019, AGL referred the action to the Department of Environment and Energy (DoEE) due to potential impacts to matters of national environmental significance.

On 15 August 2019, DoEE determined that the Proposal is a controlled action as it could potentially have significant impacts on a Ramsar wetland, due to its proximity to the Kooragang component of the Hunter Estuary Wetland. As such, the Proposal requires assessment and approval under the EPBC Act. Following the determination of a controlled action, supplementary SEARs were issued on 11 September 2019 so that the Commonwealth's requirements are addressed in the EIS (Appendix C of the EIS).

As there is a bilateral agreement between the Commonwealth and NSW governments, that provides for an accredited Division 5.2 assessment process under the EP&A Act, the Proposal will be assessed through the NSW planning approval process.

ES.5 Consultation

Through the preparation of this EIS, AGL has engaged with stakeholders (including government groups, asset owners, local community groups, businesses, residents, and local media), landowners and Registered Aboriginal Parties. This included a range of meetings to obtain feedback on the Proposal with stakeholders.

Some feedback that was received included:

- Interface with adjoining utilities and infrastructure
- Impacts to koala habitat
- Proximity to the RAMSAR wetland
- Air emissions, plume rise and other aviation hazards
- Water quality

Separately from this, DPIE has engaged with a range of government departments, agencies and organisations to input into the SEARs. A copy of the original SEARs and the comments received on the original SEARs are provided in Appendix A of the EIS.

ES.6 Key issues

Biodiversity

Biodiversity is discussed in Section 6.2 of the EIS. The assessment found that with the implementation of management measures, there would not be any significant impacts on vegetation community, fauna habitat, regional fauna connectivity or to the Hunter Estuary Wetland Ramsar site.

The Proposal would result in the removal of 15.5ha of native vegetation which is habitat for native and threatened species (such as the Squirrel Glider, which was recorded on site). This includes:

- About 15.1ha of Plant Community Type (PCT) 1590: Spotted Gum - Broad-leaved Mahogany - Red Ironbark shrubby open forest (including about 1.9ha of the Lower Hunter Spotted Gum – Ironbark Forest Endangered Ecological Community (EEC))
- About 0.4 ha of PCT 1646: Smooth-barked Apple - Blackbutt - Old Man Banksia woodland on coastal sands of the Central and Lower North Coast.

About two thirds (11.1ha) of the vegetation removal would occur in low quality or managed vegetation which is highly disturbed, mostly cleared of canopy trees and weed infested. The Proposal would result in the removal of three individuals of the threatened species *Eucalyptus parramattensis subsp.decadens* (Earps Gum) and would remove specific habitat features including between four and nine hollow bearing trees and fallen timber and rocks.

The removal of vegetation, particularly within the transmission line corridor (about 30m wide) in the eastern part of the Proposal area (refer to Figure ES-1), would remove part of the intact wildlife corridor that provides a linkage to the Tilligerry State Conservation Area (located approximately 3.5km to the north east of the Proposal). This would contribute to 'barrier effects' which occur where particular species are either unable or are unwilling to move between suitable areas of habitat due to the imposition of a barrier.

During construction and operation, there is the potential for there to be injuries or fatality to fauna in the area, particularly through vehicle strikes or through entrapment in trenching activities.

The Proposal is located approximately 2.5km north of the Kooragang component of the Hunter Estuary Wetland Ramsar site. While without mitigation measures, the Proposal was assessed as unlikely to have an impact on the Wetlands, a range of avoidance, mitigation and management measures have been identified in Section 6.2.4 of the EIS to further reduce any risk. Although mitigation is proposed, there would be some residual vegetation clearing impacts and offsets have been identified for the Proposal due to impacts on native vegetation as well as for threatened species being the Squirrel Glider, Koala and *Eucalyptus parramattensis subsp.decadens*.

Non-Aboriginal heritage

Non-Aboriginal heritage is discussed in Section 6.12 of the EIS. The assessment found that it was very unlikely that the Proposal would have any impact on non-Aboriginal heritage.

There are no listed Commonwealth, National, State or local non-Aboriginal heritage sites in or near the Proposal area. Additional field investigation and assessment undertaken in support of the EIS did not identify any non-Aboriginal heritage sites.

As such, it is considered unlikely that the Proposal area contains historic heritage of local or state significance. The historical archaeological potential of the Proposal area is considered very low.

An unexpected heritage find procedure would be implemented in case of any heritage finds during construction activities (refer to Section 6.12.4 of the EIS).

Aboriginal heritage

Aboriginal heritage is discussed in Section 6.7 of the EIS. The assessment concluded that based on the results of archaeological survey, test excavations and consultation with the Aboriginal community, the overall impact to Aboriginal heritage would be low.

The Proposal is in a region with rich Aboriginal cultural heritage where numerous archaeological sites have been previously recorded. The Proposal is located within the Tomago area where the Worimi people are the traditional owners. The Awabakal people occupied the land immediately south and the Birpai people to the north of the Proposal area.

An extensive search of the Office of Environment and Heritage (OEH) Aboriginal Heritage Information Management System (AHIMS) database was conducted that identified a total of five sites within the search area, none of which were within the Proposal area.

Field surveys were undertaken across the Proposal area that found three previously unidentified Aboriginal heritage sites. These were identified within 1.5km of the Hunter River to the north-west. Two of the three sites (NPS01 and NPS02) were identified as isolated finds (single stone artefacts) and the third – a large artefact scatter likely associated with a previously identified site Hexham M12RT on the opposite side of the highway. A potential archaeological deposit (PAD) encompassing finds at NPS01 and NPS02 was also identified. Test excavations at this PAD found several subsurface artefacts but showed that the PAD was limited in size and had a low density of artefacts.

No Aboriginal heritage sites were identified within the proposed gas pipeline corridors. One isolated flake (NPS03) was found in the proposed electrical transmission corridor but was suspected of being brought to site with fill material.

Based on the field investigations, the scientific significance of the Proposal area was assessed as low. No comments were received from the registered Aboriginal parties (RAPs) on the cultural value of the Proposal area, and it has been concluded in the Aboriginal Cultural Heritage Assessment Report (ACHAR) that the overall significance of the Proposal area to local Aboriginal people is low.

A range of avoidance, mitigation and management measures have been identified in Section 6.7.4 of the EIS.

Surface water and hydrology

Surface water and hydrology is discussed in Section 6.3 of the EIS. The assessment found, that with proposed mitigation measures in place, there would be negligible impact on the hydraulic and flooding behaviour of the Hunter River and to surrounding surface water quality.

Without mitigation, during construction of the Proposal, site levelling and changes in site drainage could result in altered surface water flow rate and volume. This could lead to potential scouring of waterways, changes in groundwater recharge and sediment laden stormwater runoff to nearby waterways. Construction activities have the potential to affect surface water quality including mobilisation of contaminants, which could be increased in the event of a significant flood (between the 1% annual exceedance probability (AEP) and the Probable Maximum Flood (PMF) events).

The proposed gas pipeline route crosses high hazard flood areas and construction could be partially affected by the 1% AEP and the PMF flood events.

Without mitigation, construction activities have the potential (albeit assessed as unlikely) to cause surface water contamination, and runoff may impact downstream aquatic ecosystems including the Hunter River and Hunter Estuary Wetlands Ramsar site. To manage the construction surface water and hydrology risk, a range of management measures are proposed including soil and erosion controls including construction sedimentation basin/s, appropriate on-site storage of any liquids or chemicals and a spill response procedure.

Construction of the Proposal would result in an increase of around 30% impervious surfaces, reducing infiltration and increasing stormwater runoff from the NPS site. Unmitigated, this could result in flow rate increases and intensity with the potential to erode natural waterway channels. However, the Proposal would be designed to make sure that the post-development flow rate and volume is equal to pre-development for all storm events, despite the increase in impervious area, which would avoid this impact. During operation, management measures would be installed to avoid impacts to surface water quality including contamination or sediment run off. Discharging to a bioretention system and an oil/grease separator would meet the Neutral or Beneficial Effect (NorBE) guidelines. Further development of these measures would be undertaken during the detailed design phase of the Proposal.

The NPS site is to be built above the flood planning level and would not be affected by a 1% AEP event. The transmission route would also not be affected by the 1% AEP event. However, during a PMF event, the edges of the NPS site may experience inundation. The gas pipeline route would be partially affected by the 1% AEP event or greater. While the pipeline is underground, inundation would result in temporary loss of access for maintenance activities. The Proposal would not have any effect on existing flood behaviour. The Proposal would not increase afflux that would impede access to existing road networks and impact existing community flood emergency management arrangements.

A range of avoidance, mitigation and management measures have been identified in Section 6.3.4 of the EIS.

Groundwater

Groundwater is discussed in Section 6.4 of the EIS. The assessment identified that the construction of the Proposal would not encounter significant groundwater inflow nor impact the regional groundwater level. As such, there is not expected to be any impact to groundwater dependent ecosystems (GDE) in the development footprint.

The groundwater system underlying the Proposal area is reliant on rainfall as its primary recharge method. Altering surface water runoff from vegetation removal during site clearing activities may potentially affect the local groundwater levels. However, as most of the development footprint has been previously cleared, this is expected to be of low consequence.

Excavation activities for the NPS are not expected to encounter groundwater and there is a low likelihood of encountering localised perched water. Similarly, the transmission line is not expected to encounter groundwater. Trenching for the gas pipelines would encounter groundwater and dewatering is likely to be required during construction. The gas pipelines would be excavated down to a depth of 2-3m in an area where the groundwater table is between 10cm and 3m below ground level. Excavations could temporarily affect groundwater flows and impact on GDE. The gas pipelines and electricity transmission line would be developed across areas identified as high and moderate potential GDE. A vegetation community (Freshwater Wetland Complex) located in the north west of the NPS site, near the Pacific Highway is identified as a GDE. To mitigate adverse impacts this GDE, horizontal directional drilling (HDD) would be undertaken to avoid ground disturbance.

The key to preventing impacts to groundwater quality is to prevent surface water contamination. Any groundwater abstracted from the Tomago Sandbed aquifer would be reinjected back into the aquifer once water quality checks have been done and water quality treatment undertaken if required. Lining the trenches with coarse grained materials such as sand would allow groundwater to bypass the buried pipes limiting any impact to groundwater flows or to GDEs.

During operation there is not anticipated to be any change in groundwater levels or flows, quality or impacts to groundwater users or impacts on GDEs. However, due to the presence of contaminants and fuel on the site and the generation of wastewater, accidental spills could affect the groundwater quality. A range of management measures would be to appropriately manage the storage, handling and disposal of fuel, contaminants and waste water. Should there be an accidental spill that could affect the groundwater, there is a groundwater divide located south south-east of the Proposal area that would prevent potentially impacted groundwater from reaching the Ramsar listed Hunter River Estuary wetlands.

A range of avoidance, mitigation and management measures have been identified in Section 6.4.4 of the EIS.

Air quality

Air quality is discussed in Section 6.5 of the EIS. The air quality assessment found that there would be minor impacts due to air emissions from construction activities (dust, odours and exhaust). During operation, there would be minor exceedances of particulate matter less than 2.5µm (PM_{2.5}) and acrolein.

Air quality impacts during construction would be from the disturbance of dust and particulates from excavation, ground disturbance and demolition, odours from materials use and vehicle/plant exhaust emissions. These impacts would be minor, localised and short-term to the work site and are unlikely to affect receivers.

Operational air quality would be affected by the main generator plant as it would be the main source of emissions. Both the gas turbine and reciprocating engine options for the Proposal were assessed. Maximum cumulative predictions for anticipated substances (NO₂, SO₂, CO₂, benzene, ammonia and polycyclic aromatic hydrocarbons, particulate matter, acrolein and formaldehyde) are within relevant criteria, except for two under specific scenarios being:

- PM_{2.5} for all operational scenarios
- Acrolein for the reciprocating engine option under natural gas operation

The existing background levels of PM_{2.5} (8.1µg/m³) in the local area exceed the EPA annual average level criterion. The Proposal would result in an increase in PM_{2.5} by 0.1µg/m³ for the gas turbine option and 0.2µg/m³ for the reciprocating engine option. This contribution is less than 1% and not considered material or expected to have an impact on human health. Neither option would exceed the peak 24-hour criterion.

The emission of acrolein for the reciprocating engine option using natural gas is predicted to reach 1.5µg/m³ at receivers. This is above the NSW EPA criterion, but below international screening criteria. This emission level is also based on a worst case scenario of continual operations, with the base case operation likely to be well below these criteria.

Greenhouse gas (GHG) emissions were calculated for the operation of the Proposal for the key activities that would emit greenhouse gases. Direct and indirect GHG emissions were assessed for the Proposal operation, associated with natural gas and diesel fuel combustion. During the peaking load (base case), the Proposal is estimated to generate approximately 183 – 234kt CO_{2-e} per annum (depending on fuel type and generator technology). The GHG emissions from the Proposal would be approximately 0.46% and 0.12% of the 2017 NSW and national inventories for electricity generation (respectively), and to approximately 0.18% and 0.04% of the 2017 NSW and national inventory totals (respectively).

The Proposal would be consistent with the objectives of the Paris Agreement, supporting the transition to renewables by providing ‘firming’ capacity for grid security when renewables are not generating while releasing lower emissions than coal fired generation.

A range of avoidance, mitigation and management measures have been identified in Section 6.5.4 of the EIS.

Soils and contamination

Soils and contamination are discussed in Section 6.6 of the EIS. The soils and contamination assessment found that as a result of the implementation of mitigation measures; erosion, land contamination risks and sedimentation impacts are likely to be low. The risk of an impact on the Ramsar wetland (Kooragang Nature Reserve) due to the disturbance of acid sulphate soils (ASS) or other construction impacts would be low (the lowest risk assessment category) given the distance (greater than 2.5km) and management measures proposed.

Ground disturbance and excavation for the construction of the Proposal would temporarily expose the ground surface and sub-surface through the removal of vegetation and topsoils. Removal of topsoil and vegetation would expose soils to risk of erosion by water and wind across the Proposal area which could impact surrounding water or air quality. Soil erosion may occur in the form of runoff during rainfall, flooding events or windblown.

There is a moderate to high risk of encountering acid sulphate soils (ASS) during excavations, ground disturbance and shallow dewatering activities, including horizontal directional drilling (HDD) activities (for gas storage pipeline construction). Care would be taken not to dewater shallow groundwater where possible, to prevent oxidation of previously un-oxidised ASS in situ for trenches, drainage lines and shallow excavations. This would result in a low likelihood of an impact on the Ramsar wetland (Kooragang Nature Reserve) given its distance (greater than 2.5km) from the Proposal area.

Construction has the potential to disturb and interact with existing contamination of land within the Proposal area. There are seven areas of environmental concern in the Proposal area, which pose a risk to human health due to the identification of polycyclic aromatic hydrocarbons (PAHs). This would need to be further investigated and managed during construction. Construction and operation of the Proposal would also involve the storage, treatment or handling of fuels, chemicals, demolished building materials, wastes and other potential contaminants.

Existing contamination risks for the Proposal are not considered to be significant and along with the use of contaminants during construction and operation can all be managed appropriately. A range of avoidance, mitigation and management measures have been identified in Section 6.6.4 of the EIS.

Traffic and transport

Traffic and transport is discussed in Section 6.8 of the EIS. The traffic and transport assessment found that construction of the Proposal would result in negligible impacts on the local traffic network, which carries high traffic volumes. Additionally, operational traffic volumes would be minor and have a minor impact on the local road network.

Construction related traffic on the Pacific Highway and Tomago Road would be for the duration of construction (2021 to the end of 2022). Construction traffic demand is likely to coincide with the morning peak but would vary depending on the stage of construction works underway. The highest anticipated demand has been estimated as 270 construction staff per day during the initial stages of construction, rising to 300 further into the program, with 80 heavy truck deliveries (including diesel delivery) per day. It was assumed that two thirds of all deliveries and all inbound staff movements would take place during the morning peak.

The surrounding road network including surrounding intersections have sufficient capacity to accommodate the increase in traffic from construction. A new access road into the site would be constructed to provide the main access point to the NPS site. To accommodate this new access road and heavy vehicles approaching the NPS site from the north, a channelised right turn (CHR) would be constructed on Old Punt Road. The provision of a CHR turn treatment at the site access would allow any vehicles turning right to do so with negligible impact upon through traffic flows along Old Punt Road. An alternate access/egress will be considered during design in the event the site access or Old Punt Road is cut off or closed.

During operation, the Proposal would generate regular daily staff traffic and heavy vehicle movements on an as required basis for the removal of waste process water and the delivery of diesel. Most light traffic movements would be from the 23 regular operational and maintenance staff. Heavy vehicle movements would vary from no heavy vehicle movements (when the NPS is operational on gas fuel) to 60 (when the NPS is fully operational on diesel fuel) during peaking operations (base case) per day. During continuous operation (worst case), using diesel fuel, heavy vehicle movements would be 94 per day. The Pacific Highway/Old Punt Road intersection is expected to continue to operate well within its capacity, however over time, increased traffic demand may result in some approaches experiencing increases in delays (with some queuing). With these increases, the intersection is still expected to operate at an acceptable standard.

Additional traffic movements are expected to be accommodated within the existing local road network. Overall, operational traffic volumes would be minor and would have a minor impact on the local road network.

A range of avoidance, mitigation and management measures have been identified in Section 6.8.4 of the EIS.

Noise and vibration

Noise and vibration is discussed in Section 6.9 of the EIS. The noise and vibration assessment identified that construction impacts of the Proposal is expected to be less than or equivalent to existing ambient industrial noise levels. During operation, noise mitigation measures to be installed as part of the Proposal, would achieve noise compliance. Additionally, road noise levels are not expected to exceed construction or operation noise criteria. No vibration impacts are anticipated. The Proposal is located within an industrial area, with the closest receivers being industrial receivers. The closest sensitive receivers are located just over 400m away in Tomago. Works would be undertaken during standard and out-of-hours construction hours.

Construction noise levels at the closest sensitive receivers are expected to be below the relevant construction noise management levels for standard, out-of-hours and highly noise affected. As works may need to be undertaken at night, a sleep disturbance assessment was undertaken. This showed that construction noise levels are below the sleep disturbance $L_{Aeq, 15minutes}$ and L_{max} criteria and the Proposal is unlikely to disturb the sleep of residential receivers. While there would be vibration inducing equipment used during construction, the source of vibration would be at a significant distance from the nearest sensitive receivers and would not exceed the criteria for human response or cosmetic building damage.

The operational noise assessment considered the noise impacts from both reciprocating engines and gas turbines. The predicted noise levels of the worst case scenario show that without any sound attenuation the Proposal would exceed noise trigger levels at residential receivers. However, with noise attenuation, the predicted noise levels would comply with the criteria at all surrounding residential and non-residential receivers. Noise attenuation may include silencers, lined ducts, acoustic enclosures, noise screens/barriers, selection of quieter plant/equipment, or a combination of these.

Based on the proposed construction and operational traffic volumes, road noise levels are not expected to exceed the 2dB noise increase criteria. Under the worse case scenario, with all construction traffic during the night, the Proposal would result in less than a 0.5dB increase at the nearest sensitive receiver.

A cumulative operational noise impact assessment was undertaken to assess the combined noise impacts of the Proposal and other facilities in the industrial estate. The assessment showed that there would be limited change to the existing noise levels. While most of the sensitive noise receivers were below the ambient noise level criteria, one noise catchment area would result in a 1dBA increase in industrial noise. This is not considered to be audible.

A range of avoidance, mitigation and management measures have been identified in Section 6.9.4 of the EIS.

Social and economic

Social and economic potential impacts are discussed in Section 6.10 of the EIS. The social and economic assessment identified that there would be a minor impact to the regional community. The social and economic impacts from the Proposal would include:

- Direct employment of 300 people at the peak of construction with up to 900 indirect jobs. Where possible, workers would be sourced from the local area to relieve impacts to accommodation and housing and social infrastructure.
- Direct employment of about 23 operational and maintenance staff during operation
- AGL would positively contribute to the community, by tying into AGL's existing Local Community Investment Program, and continue to look for opportunities to engage local businesses and service providers

- Supporting the regional economy through directing expenditure to regional contractors and suppliers for raw materials and utility purchases, and local service suppliers
- Assisting in the transition towards cleaner electricity generation with a lower environmental footprint than other electricity generation technologies
- A low operational impact on amenity as it is located near existing industrial and utilities infrastructure

A range of avoidance, mitigation and management measures have been identified in Section 6.10.4 of the EIS.

Visual amenity

Visual amenity is discussed in Section 6.11 of the EIS. The visual amenity assessment found that the visual impact would be moderate to low from most viewpoints.

The visual impact of the Proposal was assessed from vantage points around the Proposal area. This included publicly accessible view points and residences and a view from the future Pacific Motorway M1 to Raymond Terrace project. Of the 10 viewpoints assessed, three viewpoints were assessed as having a high to moderate visual impact from the Proposal. However, these four locations are from the Pacific Highway approaches to the site. While the visual effect is high, receivers in these areas are in transit and would only have a short exposure to these views. Reduction of the visual impact of the Proposal would be achieved by the planting of screening vegetation.

In addition, it is anticipated that the proposed Pacific Motorway M1 to Raymond Terrace would have an interchange in proximity to the Proposal area and the Proposal would likely be highly visible from motorists on the interchange. However, as with the other high to moderate visual impact viewpoints, the views would only be visible for a short duration.

A range of avoidance, mitigation and management measures have been identified in Section 6.11.4 of the EIS.

Electromagnetic fields

Electromagnetic fields (EMF) are discussed in Section 6.13 of the EIS. The EMF assessment identified that it is unlikely that EMF generated by the Proposal either individually or in combination with the existing transmission lines would have an impact on human health.

Electric and magnetic fields were assessed for the 132kV transmission line from the NPS and the existing TransGrid 132kV Switching station. Due to its location, near existing transmission lines, the area is already subject to electric and magnetic fields. The assessment considered impacts to human health as well as identifying the prudent avoidance criteria.

When the proposed power station is operational, the predicted magnetic field contributions associated with the proposed 132kV line are at the upper end of those typically encountered around transmission lines. The magnetic field contributions vary between 92 and 221 milligauss (mG) beneath the lines to 28 to 60mG at the edge of the easements. These magnetic field contributions are around 10% or lower than the human health criteria (being 2,000mG for the general public). In addition, the proposed 132kV route is not in an area frequented by passers-by and the periodic operation would further reduce the likelihood of any sustained human interaction.

The existing electric field directly below the power transmission lines has been estimated at between 3000 and 4500 volts/m (v/m) under the 330kV lines and between 1200 and 1800v/m under the existing 132kV lines. The electric field under the proposed 132kV lines has been estimated at between 1100 and 1500v/m, decreasing to 500v/m at the edge of the easement. As the transmissions line for the Proposal would only be operated periodically, this would further reduce the likelihood of any sustained human interaction.

The transmission lines would not result in large magnetic or electric fields which would exceed human health criteria. In addition, as the proposed transmission line would be constructed in an area where there would be no prolonged human exposure, no management measures are required.

Waste

Waste is discussed in Section 6.14 of the EIS. The waste assessment identified that construction and operational waste impacts can be managed through the application of appropriate mitigation and management measures.

The construction and operation of the Proposal would result in generation of waste (including green and virgin excavated natural material (VENM) waste, liquid waste, hazardous materials, construction and demolition waste, general office waste). Waste generated from the Proposal would need to be removed from site and either treated or disposed of at an appropriate facility. Without mitigation, potential impacts from waste generation from the inefficient use of resources or from the improper management of wastes generated during the construction may include:

- Reduction in space in local landfills resulting in increased need for travel or filling other landfills
- Release of waste (controlled or uncontrolled) causing contamination of air, land, surface or groundwater

Potential impacts to the environment which may occur from improper management of wastes generated during operation

All waste would be managed in accordance with the reduce, reuse, recycle waste hierarchy. Waste would be separated and managed at the construction site with materials reused or recycled where possible. Licenced contractors would be engaged to collect, transport and dispose of specific types of waste, including sewage and waste water.

A range of avoidance, mitigation and management measures have been identified in Section 6.14.4 of the EIS.

Hazard and risk

Hazard and risk is discussed in Chapter 7 of the EIS. A hazard and risk assessment was undertaken to assess the various hazards and risks to, and from, the Proposal. This assessment considered plume rise and aviation hazard, bushfire, hazardous materials and fire safety. The assessments found that, with the implementation of a range of safety and protection measures, that these hazards could be adequately managed to minimise adverse impacts.

Aviation hazards

The Proposal would be located approximately 10km west of Newcastle Airport and the co-located RAAF Base Williamtown. Impacts identified for the Proposal include:

- Plume rise: for a critical plume volume (CPV) of 6.1m/s, the critical plume height was within the Civil Aviation Safety Authority (CASA) Obstacle Limitation Surface (OLS) for 98% of the modelled period for the reciprocating engine scenario, and 99.8% in the gas turbine scenario
- Structural obstruction: both generator types would require a permanent exhaust stack that would extend into the CASA OLS height restriction of 30m (CASA, 2103b). Additionally, the cranes used during construction are likely to extend into the OLS.

A range of avoidance, mitigation and management measures have been identified in Section 7.1.4 of the EIS.

Bushfire

During construction, sources of bushfire potential risks and impacts would be from:

- Hot works such as welding during igniting surrounding vegetation and causing a bushfire
- Inadequate bushfire emergency response system in place
- Insufficient training of construction workers dealing with bushfire risk.

During operation, ignition sources would be located within the Proposal that have the potential to cause or spread bushfire which would have direct impacts on the site, site assets and adjoining landowners. Five key areas of potential impacts of an uncontrolled bushfire include people, generators and storage areas, buildings, gas pipeline/s and electrical transmission lines and continuity of operations. In addition, in bushfire events, access to the site or to water for the purposes of firefighting may be restricted.

Protection of site assets and site personnel from bushfire would include the establishment and maintenance of an asset protection zone around the asset or site and buildings to bushfire attack level (BAL) 40.

A range of avoidance, mitigation and management measures have been identified in Section 7.2.4 of the EIS.

Hazard assessment

A preliminary hazard assessment considered the potential risks and hazards from the Proposal. The assessment found that the Proposal is considered to be potentially hazardous as the separation distance from the Proposal boundary to the gas storage pipeline is less than 20m, The Proposal is also considered to be potentially offensive as it would be capable of supplying over 30MW of electricity.

The Proposal would include a range of safety and protection measures (including design of structures and implementation of safety controls) to minimise the risk of hazard events and impacts to adjoining areas. With the measures implemented, property damage and accident propagation from a potential failure of the gas pipeline (both maximum overpressure and maximum heat radiation) and associated infrastructure would be low. The individual fatality risk from a leak scenario along the gas pipelines to adjoining land uses would be within an acceptable range. The societal risk from a hazard event is low due to the relatively low population density associated with the large essentially rural land surrounding the Proposal area.

A range of avoidance, mitigation and management measures have been identified in Section 7.3.4 of the EIS.

Fire safety

A Fire Safety Study (FSF) was completed that identified potential consequences of fires and explosions associated with the operation of the NPS. The FSF proposed key preventative strategies and measures that would mitigate the potential risks as a result of hazards associated with fire on the Proposal.

The FSF identified potential fire hazards from the Proposal would include:

- Transport fire hazards from loss of containment in the pipeline/s
- Storage pipeline fire hazards
- Transformer fire hazards

A range of avoidance, mitigation and management measures have been identified in Section 7.4.4 of the EIS.

ES.7 Management measures

AGL would carry out the Proposal in accordance with the Project Application documents and the Minister's Conditions of Approval.

The EIS sets out the recommended range of management measures to avoid, mitigate and manage construction and operational impacts of the Proposal. The implementation of these measures and programs through the design, construction, and operation phase of the Proposal would be detailed in the Construction Environmental Management Plan (CEMP) and Operational Environmental Management Plan (OEMP) as applicable. The measures and programs are provided in the following table.

ID	Measures and programs	Timing
General		
G-1	AGL would carry out the Proposal in accordance with the Project Application documents and the Minister's Conditions of Approval.	Pre-construction Construction Operation
G-2	Monitoring would be carried out in accordance with the requirements of an Environmental Protection Licence.	Operation
Cumulative impacts		
CU-1	AGL would continue to engage with Roads and Maritime as to the collaborative design and construction processes to reduce the cumulative visual impact of the projects (the Proposal and M12RT project).	Pre-construction Construction
Management planning		
M-1	The construction and operation would be carried out under the provisions of an Environmental Management System prepared in accordance with ISO 14001 or equivalent.	Construction Operation
M-2	The construction would be carried out under the provisions of a Construction Environmental Management Plan.	Construction
M-3	The operation would be carried out under the provisions of an Operational Environmental Management Plan.	Operation
Consultation		

ID	Measures and programs	Timing
CO-1	Consultation would continue with stakeholders during all stages of the Proposal.	Pre-construction Construction Operation
CO-2	Stakeholders, including adjoining landholders and the local community would be notified when construction and operation are planned to commence.	Construction Operation
Biodiversity		
B-1	<p>A Biodiversity Management Plan would be prepared as part of the CEMP and implemented throughout construction. The Plan would include, but not be limited to:</p> <ul style="list-style-type: none"> ■ Plans showing areas to be cleared and areas to be protected, including exclusion zones, appropriate signage, protected habitat features and revegetation areas, vehicle and equipment parking areas, and stockpile areas ■ Site inductions ■ Location of threatened biodiversity ■ Pre-clearing survey requirements ■ Vegetation clearing procedures ■ Procedures for unexpected threatened species finds and fauna handling ■ Protocols to manage weeds and pathogens including a Plan of Management for the control of weeds, according to requirements under the NSW <i>Biosecurity Act 2015</i> ■ Protocols for soil and seed material to minimise transfer between sites ■ Restriction of public access and associated impacts from domestic pets, waste dumping and damage to adjoining vegetation should be enforced pre, during and post construction ■ Reduction in lighting levels at access road to avoid any adverse effects upon the essential behavioural patterns of light-sensitive fauna, in accordance with AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting ■ Noise management practices ■ Dust control measures 	Pre-construction Construction
B-2	Detailed design would consider areas identified in the Biodiversity Development Assessment Report (BDAR) that host threatened species and communities and limits the intrusion of the Proposal into those areas.	Pre-construction Construction

ID	Measures and programs	Timing
B-3	<p>Limit removal of trees to that required within the development footprint and reinstate logs and rocks, which are removed for pipeline construction, along the right of ways or relocate them to appropriate nearby habitats.</p> <ul style="list-style-type: none"> ■ A pre-clearing protocol would be implemented during clearing works, as follows: <ul style="list-style-type: none"> – Pre-clearance surveys would be undertaken to determine if any inhabiting fauna are present – A suitably qualified and trained fauna handler would be present during hollow-bearing tree clearing to rescue and relocate displaced fauna ■ Appropriate exclusion fencing around trees and woodland that are to be retained within the development footprint would be erected, considering allowance for Tree Protection zones in accordance with the Australian Standards 	Pre-construction Construction
B-4	Koala traffic signs would be installed along the access route from Old Punt Road.	Construction Operation
B-5	Any fencing required around proposed easements (not including fencing erected for safety of operation purposes) would have a Koala-friendly design, with a 20cm gap at the bottom to allow the movement of Koalas and other terrestrial fauna.	Construction Operation
B-6	A Biodiversity Offset Strategy would be prepared for the project.	Construction
B-7	Weed infestations within the construction footprint would be identified and mapped prior to construction.	Pre-construction
B-8	Appropriate wheel wash and hygiene procedures would be implemented to limit construction plant and vehicles spreading weed seeds, vegetation debris and loose soil to and from the Proposal area.	Construction
B-9	Weed controls would be monitored regularly to promote the rehabilitation of revegetated areas within the Proposal area. Supplementary active revegetation would be undertaken as required.	Operation
B-10	Open sections of trenches would be monitored as required for trapped animals such as small ground dwelling mammals.	Construction
Surface water and hydrology		
SW-1	<p>A Surface Water Management Plan (SWMP) will be prepared as part of the CEMP and implemented throughout construction. It would include, but not be limited to:</p> <ul style="list-style-type: none"> ■ Erosion and Sediment Control Plan ■ Stormwater Management Strategy ■ Dewatering Procedure ■ Acid Sulphate Soil Management Plan (ASSMP) 	Pre-construction Construction

ID	Measures and programs	Timing
SW-2	<p data-bbox="507 210 1257 300">A site-specific Erosion and Sediment Control Plan (ESCP) would be developed in accordance with the Blue Book. At minimum this would include:</p> <ul style="list-style-type: none"> <li data-bbox="512 322 1257 383">■ Scheduling construction works to avoid periods of heavy rainfall, where possible <li data-bbox="512 405 1257 465">■ Incorporating a designated stable vehicle access road and construction phase car park <li data-bbox="512 488 1257 548">■ Minimisation of the area of exposed and unstable ground surfaces during construction <li data-bbox="512 571 1257 631">■ Using sediment control systems including geofabric on stockpiles, silt fences, sediment traps, contour berms, energy dissipators <li data-bbox="512 654 1257 683">■ Resealing or revegetating exposed surfaces as soon as practical <li data-bbox="512 705 1257 766">■ Dust suppression methodologies including the use of a mist/spray and limiting certain tasks once a wind threshold is reached <li data-bbox="512 788 1257 848">■ Clean/dirty water separation and management via a Stormwater Management Strategy <li data-bbox="512 871 1257 931">■ Contact with soil, sediment, groundwater and surface water where possible <li data-bbox="512 954 1257 1014">■ A description of monitoring required (dust as well as certain contaminants) <li data-bbox="512 1037 1257 1097">■ A description of the inspection and maintenance of erosion and sediment controls required 	<p data-bbox="1286 210 1465 239">Pre-construction</p> <p data-bbox="1286 262 1465 291">Construction</p>
SW-3	<p data-bbox="507 1097 1257 1126">A Stormwater Management Strategy would be developed including:</p> <ul style="list-style-type: none"> <li data-bbox="512 1149 1257 1254">■ Clean water diversion drains or berms to divert clean water runoff from the surrounding catchment around the construction site and into existing drainage lines to prevent the formation of new surface flow paths <li data-bbox="512 1276 1257 1337">■ Separation of clean and dirty/contaminated stormwater within the construction site <li data-bbox="512 1359 1257 1442">■ All surface runoff from disturbed areas will be directed via dirty water drains to sediment control structures which will ultimately run into the sediment basin/s <li data-bbox="512 1464 1257 1525">■ Sediment basin sizing, location and maintenance regime in accordance with Blue Book and IECA guidelines <li data-bbox="512 1547 1257 1576">■ Turbidity testing and treatment (via a Dewatering Procedure) <li data-bbox="512 1599 1257 1659">■ A description of disposal/reuse options (e.g. reuse for dust suppression or irrigation or disposal to stormwater or sewer). <li data-bbox="512 1682 1257 1711">■ Water quality monitoring <li data-bbox="512 1733 1257 1762">■ Siting of waste and chemical storage areas <li data-bbox="512 1785 1257 1814">■ Disposal of contaminated water at a licensed facility 	Construction

ID	Measures and programs	Timing
SW-4	<p>A Dewatering Procedure would be developed to instruct:</p> <ul style="list-style-type: none"> ■ Process for testing whether water meets discharge criteria ■ Water treatment methods including flocculation and pH adjustment ■ Discharge process and location/s including avoiding erosion or scour ■ Water quality monitoring requirements ■ Permits and records required ■ Any water which cannot be treated to meet discharge criteria would be removed by sucker truck and transported for offsite disposal at a licenced facility 	Construction
SW-5	<p>An ASSMP would be developed and implemented and would include:</p> <ul style="list-style-type: none"> ■ Further site investigations to determine the areas of ASS that may generate sulphuric acidity from sulphide oxidation ■ Preparation in accordance with the Port Stephens LEP 2013, the Port Stephens Council ASS Policy 2004, and the Acid Sulphate Soils Manual (ASSMAC 1998) ■ Protocol to minimise the disturbance and exposure of ASS ■ A description of the management/stockpiling requirements for each of the scenarios that may generate ASS (i.e. excavation or HDD) ■ Methods for storing excavated ASS in conditions which simulate its natural state; or treatment and storage away from water bodies and drainage lines ■ Bunding of exposed ASS storage and treatment areas to minimise and prevent spread of leachate ■ Appropriate signage, barricading and sediment controls ■ Recommended liming rates for generated ASS ■ Method for lime treatment with machinery sufficient to perform adequate mixing ■ A description of the maximum onsite residency time for untreated ASS ■ A description of an emergency response protocol (i.e. where acidic runoff is generated) ■ Steps to minimise groundwater dewatering (potentially oxidising unoxidised ASS) ■ A field screening test using hydrogen peroxide (H₂O₂) would be performed on excavated soils in areas where ASS or PASS is anticipated, or on suspect soils. Soils which record a pH of below 4 following oxidation should be managed as ASS ■ Record keeping requirements including: <ul style="list-style-type: none"> – ASS monitoring and laboratory testing results – Excavation records – Stockpile tracking – Register of lime used for ASS treatment – Register of any offsite disposal of treated ASS 	Pre-construction Construction

ID	Measures and programs	Timing
SW-6	The permanent piped connection to the Hunter Water Corporation (HWC) network would be installed as early works to provide water for construction purposes and minimise water deliveries to the Proposal area.	Pre-construction
SW-7	A procedure would be developed and implemented to minimise the risk of drilling waste (in the form of drilling fluids and hydraulic stimulation fluids) contaminating watercourses during drilling, completion, hydraulic stimulation and workover activities. Drilling fluid spills would be immediately contained, cleaned up and reported.	Construction
SW-8	The HDD entry and exit sites would be securely banded to prevent the release of leachate from excavated material, drilling fluids, or spills entering the surrounding environment.	Construction
SW-9	A designated concrete washout area for concrete mixers and pump trucks, concrete chutes, tools and equipment would be established away from drainage lines and water bodies, which would be lined with impervious material. The washout capacity would be regularly checked before being used. The wash water would be left to evaporate, with dried concrete removed for recycling as required. Inspection of the capacity of the washout area and integrity of the liner would be undertaken prior to each use, and prior to rainfall events or site shut down, with improvements made as required. Wash water would be pumped out as required to maintain capacity or prior to rain events and disposed of as contaminated water.	Construction
SW-10	The use of pesticides in the project footprint would be limited where possible to avoid contamination of nearby watercourses/wetland areas.	Construction Operation
SW-11	Use of chemical treatment of hydrostatic test water would be avoided where possible. If necessary, chemical concentration to be calculated such that they are consumed in the hydrotesting process and only trace volumes would be present in any discharge.	Construction
SW-12	Water used in pressure testing would be collected following testing and disposed of off-site at a licensed facility.	Construction
SW-13	Any mulch stockpiles from cleared vegetation must be located at high points away from watercourses, with upgradient water diverted to avoid entering the stockpile.	Construction
SW-14	Mulch should not be used as part of erosion controls in the floodplain or along concentrated flow paths.	Construction

ID	Measures and programs	Timing
SW-15	Bunding and hazardous materials storage requirements include: <ul style="list-style-type: none"> ■ Appropriately bunded in accordance with relevant Australian Standards ■ Bund-wall expansion joints and fire suppression to be incorporated into design. ■ Sufficient capacity ■ Isolation valves for all bunds ■ A high-level alarm would be fitted to the sewage tank ■ Low- and high-level alarms would be fitted to the diesel tanks ■ Inspection and maintenance after rainfall ■ Bund areas and tanker loading/unloading areas having sufficient capacity 	Construction Operation
SW-16	A register of all hazardous chemicals kept in the Proposal area is to be maintained and updated regularly.	Construction Operation
SW-17	Dedicated re-fuelling areas and spill controls, and appropriate chemical, fuel and liquid storage and handling would be undertaken during construction, in accordance with Australian standards.	Construction Operation
SW-18	Spill kits to be maintained in appropriate locations in accordance with Australian Standards, including where required inside machinery and vehicles.	Construction Operation
SW-19	A Spill Response and Containment Procedure would be developed including: <ul style="list-style-type: none"> ■ Training and PPE ■ Precautionary measures for handling and storage of chemicals and fuels ■ Spill response protocols (control, contain, clean up) ■ Contaminated soils to be disposed of appropriately ■ All spills to be reported and recorded in the Spills Register ■ Spill kits to be restocked following use 	Construction Operation
SW-20	All vehicles, plant and equipment to be checked regularly for fuel tank and line leaks or failures.	Construction Operation
SW-21	Bunds and sumps should be regularly inspected, and capacity maintained by regular draining and disposal.	Construction Operation
SW-22	Licenced contractors would be engaged to collect, transport and dispose of liquid hazardous materials, waste solvents, paints and hydrocarbon products to an appropriate off-site facility in accordance with relevant NSW Environment Protection Authority (EPA) guidelines.	Construction Operation
SW-23	Management and maintenance of the sewage system must be carried out by suitably trained personnel.	Construction Operation
SW-24	The civil design of the power station will incorporate the principles in the Port Stephens Council DCP 2007 to ensure that the post-development flow rate and volume is equal to pre-development for all storm events.	Pre-construction

ID	Measures and programs	Timing
SW-25	The power station would be developed above the PMF level.	Pre-construction
SW-26	<p>A Flood Preparedness Plan would be developed based on the PMF event, and would include:</p> <ul style="list-style-type: none"> ■ Roles, responsibilities and communication procedures including emergency contacts ■ Monitoring procedures for rainfall and flood warnings (including BoM and local flood warning services) ■ Requirement for an environmental risk assessment prior to commencing excavation or trenching work in the event of a flood warning ■ Site shut-down and flood preparedness procedures to minimise harm to persons, plant and the environment ■ Actions in the lead up to the flood (such as monitoring water levels, filling excavations, completing erosion and sediment controls, removing hazardous materials and waste from the Proposal area, barricading, sealing tanks and containers to prevent overflows, tying down loose items) ■ Actions at the time of the flood (may include further evacuation, rescue, pollution prevention, spill response, and contingency measures) ■ Actions post-flood (including clean up and rectification) ■ Evacuation routes and procedures ■ Rescue procedures ■ Procedure for resuming operations ■ Reporting requirements and corrective actions ■ During its development, the Flood Preparedness Plan would be discussed with the SES and Council to ensure alignment with community evacuation arrangements. 	Construction Operation
SW-27	<p>Pre-construction surface water quality monitoring would be undertaken at the following monitoring locations:</p> <ul style="list-style-type: none"> ■ Drainage Path 1 (at culvert crossing Pacific Highway) ■ Drainage Path 2 (at culvert crossing Pacific Highway) <p>Water quality testing would be undertaken monthly (if water is present) and following elevated periods of rainfall for a period of at least 3 months prior to construction.</p> <p>Test results from pre-construction monitoring would be correlated with available monitoring data from the adjacent NGSF site to create a baseline dataset which could be used for comparison during construction and operation of the Proposal.</p>	Pre-construction

ID	Measures and programs	Timing
SW-28	<p>A surface water quality monitoring program would be implemented at the following monitoring locations:</p> <ul style="list-style-type: none"> ■ Construction phase sediment basin/s (construction only) ■ Wet sump oil and grease separator (GPT) ■ Bio-retention system outflow ■ Drainage Path 1 ■ Drainage Path 2 ■ LEP Wetlands discharge location (downstream of the secondary drainage that meets Drainage Path 1) ■ Water quality testing would be undertaken monthly and following elevated periods of rainfall. 	<p>Construction Operation</p>
SW-29	<p>Regular inspection, monitoring and maintenance of erosion and sediment control structures would be undertaken in accordance with the ESCP and Blue Book.</p> <p>In addition, inspections would be undertaken immediately prior to and following heavy rainfall and rectifications made as required.</p>	<p>Construction</p>
SW-30	<p>Regular inspection and maintenance would be undertaken of:</p> <ul style="list-style-type: none"> ■ Hazardous material containment facilities ■ Bunds and sumps ■ Vehicles, plant and equipment including tanks and line failures ■ Sewage tanks ■ Water storage tanks or ponds ■ GPT ■ Spill kits <p>In addition, inspections would be undertaken immediately prior to and following heavy rainfall and rectifications made as required.</p>	<p>Construction Operation</p>
SW-31	<p>An Operation Environmental Management Plan (OEMP) will include a Stormwater Management Strategy including:</p> <ul style="list-style-type: none"> ■ Drainage and temporary water storage systems, including separation of clean and dirty/contaminated water ■ Use of GPT (sediment and oil/water separator) and bioretention area ■ Reuse options (e.g. irrigation) ■ Water quality monitoring ■ Clean water discharge location and method ■ Disposal of contaminated water and sewage at a licensed facility 	<p>Operation</p>
SW-32	<p>A chemical drains system would be provided for collection and treatment of chemical spills and stormwater falling into bunded chemical storage areas (if outdoors).</p> <p>Chemical drains would be collected in a drains sump for testing and treatment before being piped to the process wastewater system.</p>	<p>Operation</p>
Groundwater		

ID	Measures and programs	Timing
GW-1	<p>A Groundwater Management Plan would be prepared, implemented and updated as required as part of the CEMP and OEMP. The plan would describe best practice control measures to reduce the risk of contamination of groundwater, or the substantial alteration of groundwater flows due to drawdown effects. The plan would detail:</p> <ul style="list-style-type: none"> ■ Background groundwater quality and levels ■ Management of groundwater interference and dewatering ■ Groundwater testing and assessment ■ Groundwater discharge or reinjection criteria ■ Best practice controls ■ Spill response and containment plan ■ Contamination response plan ■ Drawdown contingency plan ■ Groundwater monitoring program <p>The Groundwater Management Plan would include a groundwater monitoring program which would detail:</p> <ul style="list-style-type: none"> ■ Groundwater monitoring required <ul style="list-style-type: none"> – Analytes/parameters (water quality) – Background concentrations – Criteria/thresholds ■ Groundwater levels ■ Frequency ■ Bore locations <ul style="list-style-type: none"> – The 10 existing monitoring bores on the power station site – Available boreholes at the NGSF site near the proposed pipeline corridor – Additional locations along the pipeline corridor – At the directional drilling entry and exit pits (during construction) – Upstream and downstream of the operational stormwater discharge point/s ■ Potential impacts <ul style="list-style-type: none"> – Change in groundwater quality or levels – Drawdown impacts – Effects on GDE – Effects on beneficial aquifers (including groundwater users) ■ Reporting requirements ■ Protocol for the investigation, notification and mitigation of any identified exceedances of the groundwater quality criteria <p>Monitoring requirements would be reviewed once the details of the construction are finalised and during construction.</p>	Construction Operation
GW-2	Limit the extent of impervious surfaces to allow aquifer recharge.	Pre-construction

ID	Measures and programs	Timing
GW-3	Minimise long-term disturbance of groundwater flows through design, such as incorporating permeable zones that allow groundwater to bypass the buried gas pipeline.	Pre-construction Construction
GW-4	<p>When constructing the gas pipeline in areas of shallow groundwater, the following techniques should be considered to minimise groundwater impact:</p> <ul style="list-style-type: none"> ■ Trenches below the water table would be excavated over short lengths to reduce the volume of groundwater impacted during construction ■ As required, use appropriate materials, such as trench shields or sheet piles, to maintain the stability of excavation walls ■ If practical, dewater to locally lower the water table beneath the floor of the excavation to provide a safe and dry working surface ■ Abstracted groundwater would be stored pending water quality testing, for either re-injection or infiltration (if water quality criteria are met) or disposal offsite at a licensed disposal facility ■ Replace material excavated from trenches to minimise changes to groundwater flows ■ Where possible, pipelines will be bedded on sand in the base of the trench 	Construction
GW-5	<ul style="list-style-type: none"> ■ When working along the pipeline route, additional precautions should be made when using or transporting fuels and chemicals, and any spills should be immediately contained and cleaned up. Any contaminated material to be removed from the site is to send to a licensed facility. 	Construction
GW-6	<p>Any water encountered and abstracted from the Tomago Sandbeds aquifer should be locally reinjected back into the aquifer on the hydraulically down gradient side, approximately 50m from the edge of the construction works</p> <p>Prior to re-injection the abstracted groundwater must be inspected for any signs of contamination (high turbidity, oily sheen or odour of hydrocarbons) and tested for water quality parameters (temperature, dissolved oxygen, redox, EC, and pH), which would be compared to measurements from nearby monitoring wells.</p> <p>If greater than 10% difference with the groundwater measurements treatment would be required prior to re-injection.</p> <p>If collected groundwater does not meet criteria for re-injection, then the collected groundwater must be disposed to a facility licenced to accept and treat contaminated water.</p>	Construction
GW-7	Undertake infiltration rate tests at locations of proposed groundwater discharge areas or infiltration basins to determine local infiltration rates and the presence of indurated sand layers capable of inhibiting groundwater recharge.	Construction Operation
GW-8	Process water would be managed to prevent discharge to surface water systems or groundwater.	Operation
GW-9	Sealed pavement areas should be used for refuelling and chemical storage areas to minimise the risk of spills infiltrating to groundwater.	Construction Operation
GW-10	Prepare a remediation action plan for major spills or other incidents which may cause impact to groundwater quality. This may include hydraulic containment using downgradient berms and pumps.	Construction Operation

ID	Measures and programs	Timing
GW-11	Rehabilitate compacted areas which are not needed for operational activities by loosening the soil, adding organic matter and revegetating the area.	Post-construction
Air quality		
AQ-1	The power station would be fitted with a Continuous Emission Monitoring Systems (CEMS) to demonstrate ongoing regulatory compliance, ensure proper and efficient operation of pollution control equipment, and evaluate operating and emission variability.	Pre-construction Operation
AQ-2	<p>The CEMP will include requirements to monitor and manage potential air quality impacts associated with the construction of the Proposal. The CEMP will identify project construction activities with the potential to have air quality impacts and the controls required to avoid, minimise and mitigate these impacts. The plan will include measures to:</p> <ul style="list-style-type: none"> ■ Minimise dust generation from stockpiles, haulage routes, work activities and exposed ground surfaces ■ Minimise generator and vehicle emissions ■ Cover or minimise truck loads ■ Reduce speeds on unsealed roads ■ Modify or cease dust generating works during unfavourable weather conditions ■ Inspect and address corrective actions 	Construction
AQ-3	Any long-term stockpiles would be stabilised and are to be managed to suppress dust emissions.	Construction
AQ-4	Demolition activities, including removal of hazardous building materials, will be planned and carried out in a manner that minimises the potential for dust generation. Removal of hazardous building materials will be completed prior to the commencement of general demolition works.	Construction
AQ-5	Vegetation or other materials are not to be burnt on site.	Construction Operation
AQ-6	All air quality requirements and monitoring would be adhered to in accordance with an EPA license.	Operation
Soils and contamination		
SC-1	Heavy vehicles and machinery would use allocated tracks where possible to minimise soil erosion.	Construction
SC-2	Where highly contaminated soil and/or groundwater is impacted, a site-specific remediation action plan would be required to manage the material. This would include management requirements that are above those outlined within the CEMP. It may be specific to the selected remediation technique and detail the requirements of a specialist remediation contractor.	Pre-construction Construction
SC-3	A pre-demolition hazardous materials survey is required for the demolition of the residential dwelling on Lot 3. Based on the findings, required controls would be implemented for removing the identified materials.	Construction

ID	Measures and programs	Timing
SC-4	<p>A spills protocol would be developed as part of the OEMP, including:</p> <ul style="list-style-type: none"> ■ Fuel/chemical spill protocols – spill kits to be available and relevant workers to be trained on response protocols ■ A formal reporting procedure - any spills to be reported on the Spill Register ■ A register of all hazardous chemicals kept on site is to be maintained and updated regularly ■ Appropriate recorded spill capture points (i.e. bunding, collection sump, etc) ■ Maintenance requirements of effluent-related infrastructure or disposal to stormwater or sewer) 	Operation
SC-5	<p>Monitoring of contamination would be included in the CEMP which would include:</p> <ul style="list-style-type: none"> ■ Further assessment of identified contamination AECs prior to construction to determine remedial actions ■ Hazardous materials (HAZMAT) asbestos and lead paint surveys of any buildings or structures within the Proposal area prior to demolition ■ Monitoring to be detailed in Proposal construction environmental management plans 	Construction
SC-6	<p>Construction of sediment basin/s would be in accordance with the specifications outlined in Appendix I.</p>	<p>Construction Operation</p>
Aboriginal heritage		
AH-1	<p>Cultural awareness induction for any personnel involved in ground breaking activities. This could include a Cultural Awareness Training Program.</p>	Construction
AH-2	<p>A Cultural Heritage Management Plan including potential monitoring and salvage works procedures would be prepared and implemented for the Proposal construction.</p>	Construction
AH-3	<p>Chance Finds Procedure to be followed for any Aboriginal heritage objects found during the works. In the event an Aboriginal heritage object is found all activity in the immediate area must cease and an appropriately qualified heritage professional should be consulted. OEH and local Aboriginal stakeholder groups must be immediately contacted and informed of the Aboriginal heritage object found. The qualified heritage professional should record the location and the attributes of the site and determine its Aboriginal cultural significance. If Aboriginal remains (human skeletal material or suspected human skeletal material) are discovered during construction all activities in the immediate area must cease. The State Police and OEH must be contacted and any sand or soil removed from the near vicinity identified and set aside for investigation purposes.</p>	Construction
AH-4	<p>Repatriation of archaeological material is to be conducted for artefacts and charcoal recovered during test excavations. The location of the reburial must be determined by the RAPs and should be as close as possible to the location at which the sites were recovered.</p>	Construction
AH-5	<p>A copy of the final ACHAR should be distributed to all Aboriginal organisations who expressed interest in the proposed works.</p>	Pre-construction

ID	Measures and programs	Timing
AH-6	A copy of the final ACHAR including comments and recommendations by RAPs should be provided to the relevant OEH regional branch.	Pre-construction
Traffic and transport		
T-1	Parking for construction staff is to be provided within the NPS site.	Construction
T-2	A Construction Traffic Management Plan (CTMP) would be prepared by the contractor to safely manage traffic movements to and from the Proposal.	Pre-construction
T-3	Over Size Over Mass vehicle requirements would be addressed in Traffic Control Plans within the CTMP.	Pre-construction
T-4	A Drivers Code of Conduct would be prepared that directs all heavy vehicles to access the site via the Pacific Highway and Old Punt Road intersection.	Pre-construction
T-5	A CHR turn treatment on Old Punt Road is required to allow for the safe movement of construction traffic turning right into the site. This must be designed in accordance with the Austroads Guidelines.	Pre-construction
Noise and vibration		
NV-1	A Construction Noise and Vibration Management Plan (CNVMP) would be prepared prior to the commencement of works to manage high noise works, affected receivers, complaints handling and consultation protocols, and out of hours work.	Construction
NV-2	Respite periods of one hour would be employed for every three hours of work where works are anticipated to generate noise levels > 75dBA at a receiver.	Construction
NV-3	Appropriate plant and equipment would be selected for the task at hand and efficient work practices would be adopted to minimise the construction period and the number of noise sources on site.	Construction
NV-4	Power down plant and equipment when not in use and avoid high engine speeds when lower speeds are sufficient.	Construction
NV-5	All construction plant and equipment would be maintained in suitable condition prior to mobilisation to the site and during construction.	Construction
NV-6	Particular emphasis would be placed on construction maintenance of exhaust silencers, covers on engines and transmissions, and poorly maintained components.	Construction
NV-7	Excessively noisy machines would be taken out of service for repair or removed from the site.	Construction
NV-8	Tonal motion alarms (beepers) would be avoided in favour of broadband motion alarms (quackers).	Construction
NV-9	Where night works are required, works with the potential to generate impulsive noise would be avoided.	Construction
NV-10	Noise complaints would be managed by the construction contractor in accordance with the CEMP.	Construction
NV-11	Appropriate plant and equipment would be selected for the task at hand so that lower vibration/lower impact plant would be chosen over that with a higher impact.	Construction

ID	Measures and programs	Timing
NV-12	Plant and equipment selected for the Proposal would have sound power levels not exceeding those presented in Section 6.9 of the EIS – Attenuated Sound Power Levels at Source.	Operation
NV-13	Where the attenuated noise levels from the Proposal exceed the predicted noise levels, further attenuation and/or analysis would be carried out to assess and recommend additional measures.	Operation
NV-14	Where noise complaints are validated, operator attended noise measurements would be undertaken to measure and compare the site noise level contributions with the NMLs presented in the EIS.	Construction
NV-15	Where noise monitoring is carried out, all site noise levels would be measured.	Construction
NV-16	Where noise monitoring identifies an exceedance, management measures would be designed and implemented to ensure ongoing compliance.	Construction
NV-17	Where vibration complaints are validated, vibration monitoring would be undertaken to identify the nature and extent of any exceedances.	Construction
NV-18	Where vibration monitoring identifies an exceedance, management measures would be designed and implemented to ensure ongoing compliance.	Construction
<i>Social and economic</i>		
SE-1	AGL would use social procurement policies to employ local labour, local and regional businesses, contractors and supply companies for provision of labour, goods and services.	Construction Operation
SE-2	Detailed advanced notice of goods and services required by the Proposal would be issued to assist local businesses and services meet the needs of the Proposal. AGL would require all tenderers on the Proposal to prepare a Local Industry Participation Plan and an Indigenous Engagement Plan as a mandatory component of each tender.	Construction Operation
SE-3	Community consultation would be ongoing throughout the Proposal life. Public notifications, letterbox drops, and emails would be used to update the local community on the Proposal's progress and scheduling of works, particularly works which would have an impact on public amenity such as noisy night works.	Construction Operation

ID	Measures and programs	Timing
SE-4	<p>Throughout the Proposal planning, construction and operation, AGL would continue consultation with the following key stakeholders:</p> <ul style="list-style-type: none"> ■ DPIE ■ Paterson electoral division ■ Newcastle electoral division ■ Port Stephens Council ■ Roads and Maritime ■ Hunter Water Corporation ■ Department of Defence ■ Civil Aviation Authority ■ Newcastle Airport <p>Department of Energy and Environment</p>	<p>Pre-construction Construction Operation</p>
SE-5	<p>AGL would continue dialogue groups with representatives from Port Stephens Koalas, Hunter Wildlife Rescue, Wahroonga Aboriginal Corporation, HWC and Hunter Region Botanic Gardens.</p>	<p>Construction Operation</p>
SE-6	<p>A Local Community Investment Program would be established for the Proposal once construction commences and would continue into operation. The Proposal would further facilitate, or support initiatives aimed at community development, capacity building and strengthening community institutions.</p>	<p>Construction Operation</p>
SE-7	<p>AGL would continue to develop their working relationships with local area emergency service providers including Raymond Terrace police, ambulance and fire services, and regional hospitals, to prepare for emergencies and advise on risks to or from the Proposal. Proposal design will provide sufficient access for emergency vehicles and equipment including firefighting and rescue.</p>	<p>Construction Operation</p>
SE-8	<p>AGL's existing 'Fitness for Work Policy' will be enforced, and all staff, contractors and visitors will undergo site inductions to be familiar with the construction safety management plan and emergency management plan, as well as occupational health and safety requirements.</p>	<p>Construction Operation</p>
SE-9	<p>First aid facilities will be provided on site.</p>	<p>Construction Operation</p>
SE-10	<p>Community liaison would be undertaken throughout the construction and operation phases. A 24-hour information line would be established for any concerned residents to enquire about the Proposal, and a complaints register would be maintained for the life of the Proposal.</p>	<p>Construction Operation</p>

ID	Measures and programs	Timing
SE-11	<p data-bbox="507 210 1241 360">AGL would monitor socio-economic parameters so that the effects of the Proposal on the socio-economic conditions of the local area can be quantified during the Proposal and additional management measures can be applied where required. These parameters may include:</p> <ul data-bbox="512 383 1214 680" style="list-style-type: none"> <li data-bbox="512 383 1203 412">■ Number of direct jobs created for local and regional residents <li data-bbox="512 427 1209 488">■ Number of contracts with local businesses and their monetary value <li data-bbox="512 506 1166 535">■ Funding provided to community organisations and groups <li data-bbox="512 553 1190 582">■ Housing and accommodation requirements of the workforce <li data-bbox="512 600 1227 629">■ Number of staff who remain in the community after construction <li data-bbox="512 647 956 676">■ Stakeholder and community feedback 	<p data-bbox="1286 210 1422 239">Construction</p> <p data-bbox="1286 257 1394 286">Operation</p>
Visual amenity		
VA-1	<p data-bbox="507 770 1222 891">The power station design including all plant facilities such as diesel storage and operational and amenity buildings would be located insofar as is practical to reduce the requirement to clear vegetation and to reduce the angle from passing viewpoints.</p>	Pre-construction
VA-2	<p data-bbox="507 925 1254 1077">A landscape design workshop would be considered to establish the means to minimise the visual impact and visibility of the Proposal. The workshop would assess the retention of trees, the planting of new and endemic vegetation, and viewpoint specific plantings to eliminate visual impacts from specific locations.</p>	Pre-construction
VA-3	<p data-bbox="507 1111 1246 1232">A site landscape plan would be prepared that emphasises integration of new plantings with existing vegetation and that includes opportunities to provide screen plantings. The landscape plan would include (but not limited to):</p> <ul data-bbox="512 1249 1246 1503" style="list-style-type: none"> <li data-bbox="512 1249 1246 1346">■ Visual and ecological planting patterns of locally endemic species to emulate existing mixes of tree and grass cover in the surrounding landscape <li data-bbox="512 1361 1161 1422">■ Installation of temporary screens to minimise exposure of construction areas from local viewpoints <li data-bbox="512 1440 1241 1503">■ Specific plantings would be considered for screening the nearest residential receivers 	<p data-bbox="1286 1111 1465 1140">Pre-construction</p> <p data-bbox="1286 1140 1422 1169">Construction</p>
VA-4	<p data-bbox="507 1536 1254 1655">The power station design would seek to include the selection of visually sympathetic cladding and security fencing materials to reduce contrast and improve integration of the balance of plant and of the site as a whole.</p>	Pre-construction
VA-5	<p data-bbox="507 1688 1174 1742">The lighting design would be in accordance with AS4282-1997 Control of the obtrusive effects of outdoor lighting.</p>	Pre-construction

ID	Measures and programs	Timing
VA-6	<p>The site-specific CEMP would include the following:</p> <ul style="list-style-type: none"> ■ Where possible, lights would be used at the lowest effective level and would be directed downwards to the work area and away from incoming viewpoints ■ Construction lighting would be kept to a minimum necessary for safety and security needs and would not be directed in a manner so as to shine toward oncoming traffic on the Pacific Highway ■ Night works would be limited where possible to avoid areas that are exposed to direct views along Pacific Highway and workers will be trained in the management of night time lighting ■ Inspection and maintenance schedules of the following construction elements and mitigations for visual impacts: ■ Construction lighting direction ■ Temporary construction fencing and screening ■ Delineated no-go areas ■ Vegetation plantings and rehabilitation 	Construction
VA-7	<p>A site-specific OEMP will be prepared for the Proposal. The OEMP would include the following inspection requirements:</p> <ul style="list-style-type: none"> ■ Inspection and maintenance of security lighting direction to ensure it is directed to the worksite and away from neighbouring land uses ■ Inspection and maintenance of security fencing to remove litter and graffiti ■ Inspection and maintenance of vegetation plantings and rehabilitation 	Operation
<i>Non-Aboriginal heritage</i>		
NAH-1	<p>If any heritage objects and/or relics are uncovered during the construction of the Proposal the following steps would be followed:</p> <ul style="list-style-type: none"> ■ All activity in the immediate area would cease immediately ■ The project manager would be notified ■ Flagging or fencing would be erected to demarcate and protect the area ■ Site personnel and visitors would be advised to avoid the area until further notice ■ An appropriately qualified heritage professional would be consulted to confirm if the object/s is a heritage item or relic ■ The Office of Environment and Heritage (OEH) would be contacted ■ An appropriately qualified heritage professional would record the location and attributes of the site and determine the significance of the find <p>Heritage objects and/or relics may include glass, ceramic, metal, building footings, and building materials etc., as protected under NSW legislation.</p>	Construction

ID	Measures and programs	Timing
NAH-2	<p>In the event of the discovery of human skeletal material (or suspected human skeletal material) during project activities in the Proposal area the following steps would most likely be followed:</p> <ul style="list-style-type: none"> ■ All activities and/or works in the immediate area would cease ■ The NSW Police would be immediately contacted along with the project manager and OEH ■ Flagging or fencing would be erected to demarcate and protect the area ■ Site personnel and visitors would be advised to avoid the area until further notice ■ Any sand or soils removed from the near vicinity of the find would be identified and set aside for assessment by the investigating authorities 	Construction

Waste and recycling

WR-1	<p>Appropriate construction and demolition waste storage and disposal methods would be completed in accordance with the CEMP and Protection of the Environment Operations Act 1997 during possible demolition of the onsite property. This aims to reduce any transportation of harmful contaminant via surface water run-off into the surrounding waterway systems.</p>	Construction
WR-2	<p>A Construction Waste Management Plan (CWMP) and Operational Waste Management Plan (OWMP) would be developed and implemented prior to each stage. The plans would be developed with the following criteria:</p> <ul style="list-style-type: none"> ■ A hierarchical waste management approach would be used, from the most preferable (reduce, reuse or recycle wastes) to the least preferable (disposal) to prioritise waste management strategies to avoid waste generation ■ The CWMP and OWMP would be developed in accordance with the mitigation strategies described in the WSM which provides avoidance, mitigation, reuse, recycle or disposal methods for each waste stream identified in the NPS ■ The plans would promote the use of materials with minimal packaging requirements, removal of packaging offsite by suppliers and fabrication of parts offsite ■ Where waste cannot be avoided, waste materials would be segregated by type for collection and removal (for processing or disposal) by licensed contractors ■ All waste types would be separated at source for recycling and apply a system of colour-coded waste storage containers to ensure the segregation of waste is affected as far as possible ■ A licensed service provider would be appointed to collect general solid waste and hazardous waste during construction and operation ■ Each waste type would be classified for transport to ensure correct handling ■ Any waste that cannot be recovered or recycled would need to go to a licensed treatment or disposal facility where it would will be treated and disposed of according to its classification 	Construction Operation

ID	Measures and programs	Timing
WR-3	An audit regime would be implemented, in accordance with the AGL Health and Safety Environmental Management System (HSEMS) during construction and operation which includes (but not limited to) quantities of waste, storage areas and contractor services.	Construction Operation
WR-4	Spoil that can be beneficially reused would be done so in accordance with the project spoil re-use hierarchy.	Construction
WR-5	Ongoing consultation would be required between AGL and HWC regarding the arrangement for the disposal of wastewater.	Construction Operation
Plume rise and aviation hazard		
PR-1	AGL would provide the plume rise assessment report to Airservices Australia, Department of Defence, and CASA for review prior to the commencement of construction.	Pre-construction
PR-2	AGL would consult with Airservices Australia, Department of Defence, and CASA and provide information necessary to allow for a flight chart amendment.	Pre-construction Construction Operation
PR-3	AGL would apply for approval from the Directorate of External Land Planning (DELP) for the erection of permanent and temporary structures in accordance with AC 139-08(0) – CASA Advisory Circular – Reporting of Tall Structures.	Pre-construction
Bushfire		
BF-1	An Emergency Management and Evacuation Plan (EMEP) would be developed and implemented prior to construction and operation. The EMEP would be developed in accordance with: <ul style="list-style-type: none"> ■ NSW RFS - A guide to developing a Bush Fire Emergency Management and Evacuation Plan ■ Australian Standard AS 3745:2010 - Planning for emergencies in facilities <p>The EMEP would include:</p> <ul style="list-style-type: none"> ■ Identify designated buildings or safe places that can provide refuge from bushfires (in accordance with AS3959:2018). ■ Consultation with the local NSW RFS, NSW Fire and Rescue and Port Stephens Bush Fire Management Committee ■ Assessment of response times and access for fire services ■ Ensuring persons are not exposed to bushfire impacts 	Construction Operation
BF-2	Road access to the proposed NPS site would be available to the Fire Emergency Services through the incorporation of the following measures in design: <ul style="list-style-type: none"> ■ The NPS road system would consist of a perimeter road and a network of services roads to allow for multiple access routes ■ The perimeter road would be sealed and a minimum 8m wide forming part of the Asset Protection Zone (APZ) ■ Service roads would be sealed and a minimum of 4m wide, sign posted, and with direct access toward the main entry ■ An alternate access/egress will be considered during design in the event access to Old Punt Road or Old Punt Road itself is cut off or closed 	Construction Operation

ID	Measures and programs	Timing
BF-3	<p>A radiant heat impact of 23kW/m² or less would be achieved within design for the generator plant, equipment and fuel storage. This would be achieved through either:</p> <ul style="list-style-type: none"> ■ Implementation of an APZ between the asset and the site boundary (as large as reasonably possible), ■ Installation of radiant heat barriers such as metal clad fencing or construction within a shed (in order to be able to decrease the APZ distance less than 32m), or ■ Suitable siting of infrastructure within the construction compound 	Pre-construction Construction
BF-4	<p>The bulk fuel (diesel) storage would be designed to be compliant with the Australian Standards AS1692:2006 and AS 1940:2017. The location of these storage areas would be located as far as possible from the primary bushfire hazard area. If compliance with AS1692:2006 and AS 1940:2017 is not possible, fire protection on the primary bushfire hazard side (east) of the plant and equipment area would as a minimum be compliant with AS 2419.1:2005 for the installation of fire hydrants.</p>	Pre-construction
BF-5	<p>Design of the proposed pipelines would take advantage of the existing bushfire protection measures. Where the final design layout demonstrates that any existing measures are insufficient, compliance with the requirements of the applicable pipeline standard; European LNG Code, EN 1473:2007 would be necessary.</p>	Pre-construction
BF-6	<p>Electrical transmission lines would have vegetation easements in accordance with the bushfire protection requirements of the Guide for the Management of Vegetation in the Vicinity of Electricity Assets (ISSC 3 – 2016).</p>	Pre-construction Construction
BF-7	<p>As described in ISSC 3, 2016, a 10m APZ would be established surrounding the boundary fence, where only maintained lawn or grasses are permitted.</p>	Construction
BF-8	<p>Administration, workshops and stores buildings located on the eastern side of the site (within 23m of the primary bushfire hazard) would be designed to a construction standard minimum of BAL 40.</p>	Pre-construction Construction
BF-9	<p>An emergency egress onto the Pacific Highway, using the existing Lot 2 residential access, will be further considered and included in the EMEP and operational management plans.</p>	Construction Operation
BF-10	<p>Water for firefighting would be provided through the installation of a ring main water supply and hydrants throughout the site. The water supply for the site would be capable of complying with the Australian Standard AS2419.1:2017.</p>	Construction
BF-11	<p>AZP's would be monitored through vegetation clearing maintenance activities.</p>	Operation
Hazard and risk		
HR-1	<p>The detailed design of the generator building/housing and associated equipment would clearly outline the basis of safety used to ensure that the explosive situations do not arise.</p>	Pre-construction
HR-2	<p>Rotating machines would be designed such that the risk associated with failure leading to uncontained projectiles is minimised.</p>	Pre-construction

ID	Measures and programs	Timing
HR-3	The safety assessment process would continue to identify controls that prevent or limit the effects of major hazardous incidents on site, such as fire and explosion that could result in significant off-site effects.	Pre-construction
Fire safety		
FS-1	The storage and associated piping systems for gases in the gaseous or liquefied states would comply with NFPA 54, NFPA 55, NFPA 56, NFPA 58, and ASME B31.1/B31.3/B31.8 as applicable.	Pre-construction
FS-2	The detailed design would provide for the subdivision of separate fire areas for the purpose of limiting the spread of fire, protecting personnel, and limiting the resultant consequential damage to the plant. Fire areas would be separated from each other by fire barriers, spatial separation, or other approved means.	Pre-construction
FS-3	Hydrocarbon detection systems would be provided in areas of the facility where congestion and hydrocarbon loss may occur.	Pre-construction
FS-4	Hot works would be controlled by appropriate Control of Work permitting processes, if required.	Construction Operation
FS-5	Diesel tanks would be designed, installed, and operated in accordance with relevant Australian Standards.	Construction Operation
FS-6	A hydrant system comprising at least one hydrant riser per tank would be installed along with a mobile monitor.	Construction
FS-7	Foam concentrate and powder-type extinguishers would be provided along with a minimum of three powder-type extinguishers for the storage area.	Pre-construction
FS-8	A smoke detection system would be installed throughout rooms containing electrical equipment, including walk-in-type consoles, above suspended ceilings where combustibles are installed, and below raised floors. Where the only combustibles above the false ceiling are cables in conduit and the space is not used as a return air plenum, smoke detectors are permitted to be omitted from this area.	Pre-construction
FS-9	An aspirating smoke detection system would be considered for fire detection with Argonite gaseous suppression systems in cabinets and FM200 gaseous suppression in the switch rooms.	Pre-construction
FS-10	A fire detection system would be provided for each generator housing.	Pre-construction
FS-11	Fireproofing of supports and structures potentially exposed to a jet fire would be considered during design based on the requirements of API 2118.	Pre-construction
FS-12	Bund capacity in the diesel storage area would be sufficient for spill containment and firefighting purposes.	Pre-construction
FS-13	Fire water storage capacity would be provided to comply with NFPA 850 requirements.	Pre-construction

ES.8 Public exhibition

The EIS will be publicly exhibited by DPIE. Interested persons and organisations can review the EIS and make a written submission on any aspect of the Proposal during this time.

Advertisements will be placed in newspapers to advise of the public exhibition and where the EIS can be viewed.

Copies of the EIS will be available for viewing, with locations to be determined and notified by DPIE. The EIS will be available to view on the internet at:

- AGL website <https://www.agl.com.au/about-agl/how-we-source-energy/newcastle-power-project>
- DPIE website <https://www.planningportal.nsw.gov.au/major-projects/project/9951>

Submissions to the project during the exhibition period should be made direct to DPIE via email, post, or via the DPIE website mentioned previously.

ES.9 Conclusion

The Proposal is an essential investment in the NSW energy sector and is expected to deliver greater energy security as well as creating flow on economic and social benefits for the State, providing employment opportunities for the region, and investment into regional NSW.

The Proposal would contribute to lower emissions by delivering firming capacity in support of intermittent renewable generation. The Proposal would supply electricity to the NEM at short notice during periods of high electricity demand, and/or low supply, particularly during periods where intermittent renewable energy supply is low or during supply outages.

The Proposal would provide a substantial investment in the Hunter region with an estimated cost of \$400 million and would generate significant direct and indirect employment during construction and operation. Further, AGL's approach to benefit-sharing with local communities aims to create a net positive social, economic and environmental contribution to the communities in which it operates.

The Proposal would be a critical addition to the electricity infrastructure of NSW. Generation would be relatively close to areas of consumer demand, supporting reliability, particularly during peak consumption times. The Proposal would support the energy requirements of future employment growth in the area, as well as the existing Tomago aluminium smelter, Port of Newcastle and major air defence and civilian/military air traffic management installations in the Tomago area.

The Proposal has avoided, minimised and managed environmental impacts as far as practicable, through adoption of best practice technologies and management strategies.

In addition, a number of mitigation and management measures have been recommended based on the maximum parameters assessed in the EIS. These safeguards would be adopted during detailed design; and construction and operation via the preparation and implementation of a construction environmental management plan (CEMP) and operational environmental management plan (OEMP) as appropriate.

