Operational Environmental Management Plan

DCS_NC_MP_HSE_025

Newcastle Gas Storage Facility
August 2025

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Document Controls

Approval and Authorisation

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Accepted on behalf of AGL by:	John Moraitis
Signed:	
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Abbreviations

Abbreviation	Long Title
EA	Environmental Assessment
EPL	Environmental Protection Licence
HRS	Hexham Receiving Station
LNG	Liquid Natural Gas
NGSF	Newcastle Gas Storage Facility
OEMP	Operational Environmental Management Plan

1. Introduction

1.1 Scope

This document is the AGL Energy Limited (AGL) Operation Environmental Management Plan (OEMP) for the Newcastle Gas Storage Facility (NGSF). The OEMP describes AGL's system for environmental management during operation of the NGSF.

AGL has developed the NGSF, located at Tomago and Hexham, New South Wales, to meet peak gas demands and provide additional security of gas supply during supply disruption events.

The NGSF includes the following components:

- The gas plant site
- An access road and utility corridor
- A gas pipeline corridor
- A high-pressure pipeline to Jemena trunk main, the Tomago – Hexham pipeline; and
- A low-pressure pipeline to an industrial user south of the site.

An overview of the NGSF is included at Figure 1.

1.2 Background

Project approval for the NGSF was granted on 10 May 2012 (File No. 11/08788) and approvals for five modifications of the project were subsequently granted on 5 February 2013, 31 January 2014, 27 February 2018, 8 June 2023, and 6 September 2023 comprising:

- Modification 1 (10_0133 MOD1) – authorising the washing out of concrete mixers during construction and for the waste water to be removed off site by pump-out trucks
- Modification 2 (10_0133 MOD2) – authorising construction and operation of a 4.5km low pressure natural gas pipeline between the gas storage facility and an industrial user to the south of the site
- Modification 3 (10_0133 MOD3) – authorising additional infrastructure to allow processing of the tail gas produced as part of the operation of the NGSF, including construction and operation of a maintenance flare and minor changes to existing infrastructure.
- Modification 4 (10_0133 MOD4) – authorising the cessation of proactive annual noise monitoring in the absence of noise complaints being received by NGSF or the NSW EPA.
- Modification 5 (10_0133 MOD5) – authorising a reduction in the frequency of air quality monitoring at Heaters H101, H501A, H501B and H501C, from annually to once every five years.

Condition C22 of the project approval included a requirement to prepare an OEMP for the project. Condition C24 of MOD3 requires the OEMP to be updated. This document has been prepared to fulfil this and other relevant approval conditions.

1.3 Objectives

The objectives of the OEMP are to:

- Describe the environmental management system for operation of the NGSF.
- Fulfil the requirements of the project approval and modifications of project approval (refer Section 1.2 above) about operational environmental management.

- Address the requirements of the Environmental Assessments (EAs) prepared for the project (Coffey 2011a, AGL 2012, EMM 2013, and EMM 2017) and the Preferred Project Report (Coffey 2011b) about operational environmental management.
- Identify relevant statutory requirements and other obligations that AGL is required to meet during operation of the NGSF, including consents, licences, approvals and consultation.
- Identify the roles and responsibilities of all employees involved in operational environmental management of the NGSF.
- Identify the overall environmental policy and environmental principles that are to be applied during operation of the NGSF.
- Identify environmental monitoring required during operation of the NGSF.
- Identify environmental standards and performance measures to be applied during operation of the NGSF.
- Identify management policies that will ensure that environmental performance goals are met during operation of the NGSF.
- Identify the methodology to be adopted for review and improvement (where necessary) of environmental performance during operation of the NGSF.
- Identify procedures for periodic review and update of the OEMP.

1.4 Environmental Policy

Operation of the NGSF is undertaken in accordance with AGL's Environmental Policy, dated October 2023. A copy of the Environment Policy is included in Appendix A2.

1.5 Structure of OEMP

The OEMP has been prepared in accordance with Guidelines for Preparation of Environmental Management Plans (DIPNR 2004). The OEMP has been structured to meet the requirements of these guidelines, as well as relevant conditions of approval for the NGSF project (refer Section 1.2 above and Appendix A1).

The OEMP is divided into the following sections:

Section 1 Introduces the OEMP and identifies the environmental policy and principles that will be applied to operation of the NGSF.

Section 2 Identifies statutory and other requirements that must be met by AGL during operation of the NGSF.

Section 3 Describes the activities involved in operation of the NGSF.

Section 4 Details the outcomes of the environmental risk assessment undertaken for operation of the NGSF and identifies the environmental documents relevant to operations.

Section 5 Provides details of how the OEMP will be implemented, including responsibilities, training, communication and reporting.

Section 6 Identifies monitoring and audit requirements and provides details relating to incident management.

Section 7 Identifies the process for management review of the OEMP.

Section 8 Provides a list of references for the OEMP.

Additional information is included in appendices.

2. Statutory and Other Requirements

2.1 Commonwealth Legislation

2.1.1 Environment Protection and Biodiversity Conservation Act 1999

The NGSF project is a "controlled action" under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Approval of the project under Sections 130 and 133 of the EPBC Act was granted by the Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) (now Department of the Environment) on 18 July 2012. A copy of the approval is included in Appendix A4.

The approval under the EPBC Act included seven conditions. The approval conditions relevant to environmental management during operation of the NGSF and reference to where each of these conditions has been addressed in the OEMP are included in Appendix A5.

2.2 New South Wales Legislation

2.2.1 Environmental Planning and Assessment Act 1979

Approval for the NGSF project under Section 75J of the *Environmental Planning and Assessment Act 1979* (EP&A Act) was provided by the NSW Department of Planning and Infrastructure (now the Department of Planning and Environment) on 10 May 2012. Three modifications to this approval under Section 75W of the EP&A Act were approved on 5 February 2013, 31 January 2014 and 27 February 2018. Copies of the original approval and modifications are included in Appendix A1.

The project approval and modifications to the approval were issued subject to several conditions. The conditions of approval relevant to environmental management during operation of the NGSF and reference to where each of these conditions has been addressed in the OEMP are included in Appendix A6.

A Statement of Commitments was prepared by under Section 75F of the EP&A Act and a revised Statement of Commitments included in the Preferred Project and Response to Submissions Report (Coffey 2011b). The revised Statement of Commitments included measures to be implemented by AGL during preconstruction, construction and operation of the NGSF and has been considered when developing this OEMP. The commitments relevant to environmental management during operation of the NGSF and reference to where each of these commitments has been addressed in the OEMP are included in Appendix A7.

2.2.2 Protection of the Environment Operations Act 1997

An Environment Protection Licence (EPL) has been issued by the NSW Environment Protection Authority (EPA) for the NGSF project under the *Protection of the Environment Operations Act 1997* (POEO Act) for the following scheduled activities:

- Chemical storage (petroleum product storage) - capacity to store between 5000 and 100,000 kL (kilolitres).
- Petroleum and fuel production (petroleum products and fuel production) – capacity to produce up to 70,000 tonnes of petroleum products or fuel per year.

The conditions included within the EPL need to be complied with during operation of the NGSF. A copy of the EPL is included in Appendix A8.

2.2.3 Protection of the Environment (General) Regulation 2009

The National Pollutant Inventory (NPI) is an Australia wide, whole of government database for emissions. The NPI, through the National Environment Protection (National Pollutant Inventory) Measure (NPI NEPM) provides the framework for the development and establishment of the NPI.

The implementation of the NPI NEPM is the responsibility of each participating jurisdiction, with each State and territory responsible for their own NPI frameworks. The NSW EPA implements and enforces the NPI NEPM under the Protection of the Environment (General) Regulation 2009. The regulation establishes reporting requirements for industrial facilities in NSW and also prescribes the offences for which penalty notices may be issued, which include failure to lodge a report when due and failure to keep and produce records.

The NGSF reports annually to the NSW EPA on the NPI.

2.2.4 Work Health and Safety Regulation 2017

The NGSF is a Major Hazard Facility (MHF) under the NSW Work Health and Safety Regulation 2017 (NSW WHS Regulation). AGL must comply with the requirements of Chapter 9 of the NSW WHS Regulation with regard to MHFs. SafeWork NSW has issued a MHF licence for the NGSF under Part 9.7 of the NSW WHS Regulation.

2.2.5 Pipelines Act 1967

The NSW Minister for Resources and Energy has provided a licence and consent for operation of the high-pressure gas pipeline under Part 3 of the *Pipelines Act 1967*.

2.2.6 Water Act 1912 and Water Management Act 2000

Bore licences, issued under the *Water Act 1912*, are held and were originally required for monitoring bore purposes prior to the adoption of a water sharing plan for the area. Refer to the Operational Water Management Plan for licence details.

New bore licences are not required for future monitoring bores within the NGSF site. Future monitoring bores within the project area would be constructed within a Water Source covered by a Water Sharing Plan, and as such would be defined as exempt monitoring bores, thereby satisfying exemption Clause 36(1)(c) of the Water Management (General) Regulation 2011, which defines exemptions from section 91B(1) of the *Water Management Act 2000*. This is also the case for the MW14, MW15, and MW16 bores that were installed in October 2013.

2.2.7 Local Government Act 1993

Under the *Local Government Act 1993*, the approval of Council is required to operate a sewage management system. Approval from Port Stephens Council to operate the sewage management system at the NGSF site is included in Appendix A9.

2.2.8 Crown Lands Act 1989

The bed of the Hunter River and portions of the southern bank of the river in the vicinity of the HRS are classified as Crown Land. Approval from Crown Lands within the NSW Department of Trade and Investment will be required for any works on Crown Land during operation of the NGSF.

2.2.9 Hunter Water Regulation 2015

The Hunter Water Regulation 2015 regulates activities within areas declared to be special areas under the *Hunter Water Act 1991*. The NGSF is located in the south-western corner of the Tomago Sandbeds Catchment Area special area.

In accordance with Section 19 of the Regulation, any plumbing and drainage works undertaken within the special area will require a permit issued by Hunter Water Corporation.

2.3 Other Requirements

The high-pressure gas pipeline is operated in accordance with the following:

- Australian Standard (AS) 2885 – The Australian Pipeline Standard.
- Australian Pipeline Industry Association Code of Environmental Practice – Onshore Pipelines (APGA Revision 5, 2022).

2.4 Summary of Approvals, Licences and Consents

A summary of the approvals, licences and consents required during operation of the NGSF is included in Table 2.1.

Table 2.1: Summary of Approvals, Licenses and Consents

Title	Agency Responsible	OEMP Reference
Project Approval and Modifications	NSW Department of Planning and Environment	Appendices A1 and A7
EPBC Approval	Commonwealth Department of the Environment	Appendices A4 and A5
Environmental Protection Licence	NSW Environment Protection Authority	Appendix A8
Approval to operate sewage management system	Port Stephens Council	Appendix A9

2.5 Consultation

Condition C22 of the project approval and Modification 2 (refer Appendices A and F) included a requirement that the OEMP be prepared in consultation with the following agencies and authorities:

- Councils (Newcastle and Port Stephens).
- Department of Industry – Lands and Water Division.
- Hunter Water Corporation.
- Environment Protection Authority.

Each of the above agencies / authorities has previously been consulted and their comments are addressed in this OEMP.

2.6 Management Policies

AGL's Health, Safety and Environmental Management System contains AGL's Environment Policy, Environmental Standards, and Environmental Methodologies. The following Environmental Standards are relevant to the operational environmental management of the NGSF:

- AGL-HSE-STD-008.1 Land Standard
- AGL-HSE-STD-008.2 Groundwater Standard
- AGL-HSE-STD-008.3 Surface Water Standard

- AGL-HSE-STD-008.4 Air Emissions Standard
- AGL-HSE-STD-008.5 Noise Emissions Standard
- AGL-HSE-STD-008.6 Biodiversity Standard
- AGL-HSE-STD-008.7 Waste Standard
- AGL-HSE-STD-008.8 Cultural Heritage Standard

Further information on these Environmental Standards and the associated Environmental Methodologies are included in the NGSF Environmental Management Sub Plans.

3. Operation of the NGSF

3.1 Overview

The NGSF stores refrigerated natural gas to enable AGL to meet peak gas demands and provide additional security of supply during supply disruption events.

The Wilton – Newcastle trunk main transfers natural gas from Sydney to Newcastle, terminating at the Jemena Gate Station at Hexham. A pipeline connects the Jemena Gate Station to the Hexham Receiving Station (HRS). Natural gas is then transferred from the HRS, along the high-pressure gas pipeline to the gas plant site.

At the gas plant site, the natural gas is refrigerated to convert it to a liquid and then transferred to the storage tank, where it is stored at -162°C and approximately atmospheric pressure. Liquefaction of natural gas occurs during periods of low gas demand. Once the storage tank at the gas plant site is full, the plant is on stand-by to supply additional gas to the market.

During periods of peak demand or supply disruption, the liquefied natural gas in the storage tank is re-gasified by heating. The gas is then then transferred back along the high-pressure gas pipeline to the HRS and Jemena Gate Station, from where it is reinjected into the Wilton – Newcastle trunk main. Regasification occurs intermittently, primarily during winter.

A small amount of gas is vapourised during storage. This gas is collected, compressed and transferred via the low-pressure gas pipeline for use.

Tail gas is a by-product of the NGSF's operations and is made from boiled-off gas from the storage tank and components removed from the liquification processing. Currently the tail gas is transported to a nearby industrial user by a low pressure gas main. Mod 3 sought approval from Department of Planning and Environment to allow the tail gas to be processed and injected to the local gas network for use by industrial and domestic users.

An overview of the NGSF is included as Figure 1. Activities involved in the operation of each of the main components of the NGSF are discussed in the sections below.

3.2 Hexham Receiving Station

The HRS monitors the quality of gas to and from the gas plant.

3.3 High Pressure Gas Pipeline

The high-pressure gas pipeline connects the HRS and the gas plant. Activities involved with operation of the pipeline include:

- Easement inspections – the easement is inspected regularly by AGL to determine whether unauthorized activities are occurring within the easement (such as excavation, fencing, deep ploughing or building works) and to identify damage due to major rainfall events.
- Rehabilitation – areas where erosion has occurred within the pipeline easement are rehabilitated by AGL.
- Rehabilitation requires access to land within the easement.
- Vegetation control – Vegetation control is undertaken along the pipeline easement periodically. Any large trees within the easement are removed to maintain pipeline integrity.
- Cathodic protection and coating integrity surveys – surveys are undertaken annually to measure the cathodic protection and assess the integrity of the external protective coating of pipeline.
- Pigging – the integrity of the pipeline is assessed by a pipeline integrity gauge (PIG).

A supervisory control and data acquisition (SCADA) system allows AGL to remotely monitor and control pipeline operating conditions such as pressure, temperature, gas flows, valve status, cathodic protection and gas quality.

AGL is responsible for issuing permits for work within the pipeline easement.

3.4 Gas Plant Site

The gas plant stores approximately 66,500 tonnes of natural gas per year. Key infrastructure at the gas plant site includes (refer Figure 2):

- Natural gas liquification plant.
- Storage tank with containment bund.
- Regassification units.
- Gas flares.
- Control room, offices, amenities, workshop and maintenance areas.
- Security and fences.
- Car parks and laydown areas.
- Lighting.
- Tail gas transfer skid.

Measures such as reflectors and road markings have been included at the main gas plant site to reduce lighting requirements and downward facing lights have been used on the site to reduce light spill.

The major processes undertaken at the gas plant site (refer to Figure 3):

- Gas pre-treatment.
- Gas liquification.
- Storage and delivery.
- Flare system.

3.4.1 Gas Pre-treatment

Prior to liquefaction, the natural gas is treated to remove mercury, carbon dioxide and water, as well as other components that could damage the facility. The odorant added to the gas is also removed.

3.4.2 Mercury Removal

If mercury is present at sufficient concentrations within the natural gas, it can accumulate within the cold portions of the gas plant and weaken the equipment. Mercury concentrations within the natural gas to the

HRS are not generally of concern. However, a mercury removal system is provided at the gas plant site and is used to remove mercury, as necessary.

3.4.3 Carbon Dioxide Removal

Carbon dioxide is removed to prevent formation of solids in the liquefaction unit. The carbon dioxide is removed via an amine unit that includes absorption towers and an amine regeneration unit.

3.4.4 Water Removal

Natural gas from the amine unit is saturated with water. This water is removed to prevent formation of ice and hydrates in the liquefaction unit by absorption onto molecular sieve beds. These beds are regenerated using hot natural gas that is then cooled and fed back into the natural gas feed stream.

3.4.5 Gas Liquification

Liquefaction of the natural gas occurs in the main exchanger of the gas liquefaction unit. This unit uses refrigerants consisting of nitrogen, methane, ethylene, propane, butane and pentane.

The liquefaction unit contains aluminium heat exchangers that chill the natural gas with the cold refrigerant. The mixed refrigerant recycle system then removes heat from the refrigerants before returning them to the refrigeration compressor.

The liquefaction system operates for approximately 9 months of the year (September to May).

3.5 Storage and Delivery

3.5.1 Gas Storage

The above ground gas storage tank has a capacity of approximately 1,500 TJ (approximately 30,000 tonnes or 63,000 m3) of LNG. The tank consists of two walls, with the LNG contained within the inner wall and insulation between the inner and outer walls.

The LNG is stored at a temperature of approximately -162^{o}C. This temperature is maintained by the insulation between the inner and outer walls of the tank and by continuous vaporisation. The vaporised gas is extracted from the top of the tank, compressed and supplied to the low-pressure gas pipeline (refer Section 3.5 below). A bund around the storage tank is capable of holding 110% of the volume of the tank.

3.5.2 Re-gasification

LNG is pumped from the storage tank to the re-gasifier to be vapourised (converted back to its gaseous form). Re-gasification occurs intermittently during periods of peak demand. The plant is capable of re-gasifying approximately 120 TJ/hr (90 tonnes/hr).

Once re-gasified, the natural gas is transferred back to the HRS via the high pressure gas pipeline.

3.5.3 Road tanker loading

NGSF has a road tanker loading facility that can accommodate tankers with approximately 18 tonnes of LPG. This facility has been decommissioned and is no longer in use.

3.6 Tail Gas

Tail gas produced as part of the operation of the NGSF is processed and currently transferred via a low pressure pipeline to a nearby industrial user. From late 2018, tail gas will be transferred to the Jemena Secondary Main via a transfer skid for use in the Jemena low-pressure distribution network.

3.7 Flare System

The gas plant has a flare system to combust hydrocarbons discharged during liquefaction or regasification during upsets, startups or shut downs. A collection system collects gases from hydrocarbon emission sources and a flare combusts the waste hydrocarbons. The location of the flare is shown on Figure 2.

A pilot flare approximately 1 metre high operates continuously within the flare stack. More significant flaring occurs approximately ten times per year for less than 24 hours per event.

From late 2018, a maintenance flare will be available for use during periods when the process flare is off-line for maintenance.

3.8 Operating Hours and Workforce

The NGSF has a workforce of approximately 22 employees based at the gas plant site. The HRS is not permanently manned. Contractors visit the NGSF for operational and maintenance activities, as required. The NGSF operates continuously.

4. Environmental Management

4.1 Environmental Risk Assessment

NGSF has a risk management system that utilises the Adapted Fully Integrated Risk Management and Assessment Matrix (AFIRM) and is aligned with the risk management standards and methodologies recommended by the Australian and New Zealand Risk Management Standard AS/NZS 31000:2009. Environmental risk assessment is undertaken in accordance with the AFIRM and HSEMS Risk Standard.

4.2 Risk Register

The NGSF risk register is contained within a standalone system, Periscope. Periscope incorporates environmental risks and has been developed, updated and reviewed by the NGSF Operations Manager. The Environment Manager participates in risk workshops as appropriate to identify material environmental risks associated with the NGSF. The NGSF Operations Manager is responsible for the identification and management of risks recorded in the NGSF risk register.

The environmental risk due to operation of the NGSF include the following aspects:

- Soils
- Surface water
- Groundwater
- Flora and fauna
- Cultural heritage
- Noise and vibration
- Air quality
- Traffic
- Waste management

- Flooding
- Bushfire.

4.3 Environmental Management Documents

The OEMP is the primary environmental management document for the operation of the NGSF. To fulfil the requirements of Condition of Approval C22, as well as other relevant approval conditions, the following have been included as appendices to the OEMP.

- Noise Management Plan (Appendix B1).
- Air Quality Management Plan (Appendix B2).
- Waste Management Plan (Appendix B3)
- Traffic Management Measures (Appendix B4)
- Flora and Fauna Management Plan (Appendix B5).
- Aboriginal Heritage Management Plan (Appendix B6).
- Land Management Plan (Appendix B7)

These documents are based on:

- The EAs prepared for the NGSF project and subsequent modifications (Coffey 2011a, AGL 2012, EMM 2013, and EMM 2017).
- The Conditions of Approval contained within both the original approval and subsequent modifications (refer Appendices A1 and A6).
- The revised Statement of Commitments for the project (refer Appendix A7).
- The outcomes of the Environmental Risk Assessment (refer Section 4.1 above).

Other environmental issues that are required by Condition of Approval C22 to be addressed as part of the OEMP have been included within standalone documents as follows:

- Groundwater management – addressed within the Operation Water Management Plan (refer Appendix A11).
- Surface water management - addressed within the Operation Water Management Plan (refer Appendix A11).
- Hazard and safety and emergency management measures – addressed within the Emergency Response Plan and Safety Management System required under Condition of Approval C4.

The Safety Management Plan (**SMP**) (DCS_NC_MP_HSE_001) is a standalone document which is scoped to primarily manage workplace health and safety. The purpose of the SMP is to detail the principles, controls and requirements for the operations and maintenance of the NGSF. The SMP describes and documents the strategies used to maintain a high level of safety on site and to meet legislative requirements and the AGL HSEMS. The Emergency Response Plan (**ERP**) (DCS_NC_MP_HSE_003) is also a standalone document that aims to provide a system and resources to deal with emergencies to protect people, property and the environment. The SMP and ERP are not included as Appendices to the EMP.

The Conditions of Approval for the project and modifications (refer Appendices A1 and A6) also require preparation of the following environmental management documents:

- Biodiversity Offset Package (Condition of Approval C2).

- Noise Monitoring Program (Condition of Approval C9).
- Flood Emergency Response Plan (Condition of Approval C15).

The Noise Monitoring Program is included within the Noise Management Plan in Appendix B1, while the Biodiversity Offset Package and Flood Emergency Response Plan (incorporated into the Emergency Response Plan) are standalone documents.

A summary of environmental management documents is provided in Table 4.1.

Table 4.1: Environmental Management Documents

Document	AGL Reference
Operation Environmental Management Plan, including: • Noise Management Plan (incorporating Noise Monitoring Program). • Air Quality Management Plan. • Waste Management Plan. • Operational Traffic Management Measures. • Flora and Fauna Management Plan. • Aboriginal Heritage Management Measures. • Land Management Plan.	 DCS_NC_MP_HSE_009 DCS_NC_MP_HSE_005 DCS_NC_MP_HSE_021 N/A DCS_NC_MP_HSE_023 N/A DCS_NC_MP_HSE_024
Emergency Response Plan (incorporating Flood Emergency Response Plan)	DCS_NC_MP_HSE_003
Safety Management Plan	DCS_NC_MP_HSE_001
Operations Water Management Plan	DCS_GN_HSE_MP_016
Biodiversity Offset Package	N/A

5. Implementation

5.1 Responsibilities

AGL has overall responsibility for environmental management during operation of the NGSF. All AGL personnel and contractors are responsible for ensuring that their work complies with the requirements of this OEMP.

Key roles and responsibilities for environmental management during operation of the NGSF are included in Table 5.1.

Table 5.1: Key Project Roles and Responsibilities

Role	Responsibilities
Operations Manager	Overall responsibility for implementation of the OEMP. Responsible for the reporting requirements contained in the OEMP. Responsible for ensuring

	that employees are aware of their obligations under the OEMP and for providing resources for environmental training.
Environment Manager	Responsible for development, implementation, monitoring and reporting in compliance with the OEMP. Responsible for informing staff of environmental issues and for implementing site-based environmental management measures as detailed in the sub plans contained within the OEMP.
Community Relations Manager	Responsible for recording and resolving complaints received in relation to the project
Operations Supervisors	Directly responsible for understanding the OEMP and the overseeing and fulfilment of commitments contained in the OEMP
All Employees and Contractors	Responsible for understanding the OEMP and ensuring that works are in compliance with the OEMP, meeting regulatory requirements and ensuring that all environmental objectives in undertaking operations are met.

5.2 Training and Competence

5.2.1 Site Induction

All AGL employees and contractors are required to attend an induction prior to commencing work on site. The induction includes an environmental component to ensure that all site personnel are aware of their responsibilities of environmental management.

The environmental component of the site induction includes:

- An overview of the OEMP, its purpose and content.
- Environmental personnel, their roles and responsibilities and contact details.
- Activities undertaken during operations that have the potential to impact on the environment.
- Environmental controls to be implemented during operations.
- Reporting environmental incidents.
- Emergency and spill response procedures.

Upon completion of the site induction, each inductee will be awarded an induction card. Records of induction attendance are kept at the project office.

5.2.2 Toolbox Meetings

Toolbox meetings are held at the start of each day and are of approximately 10-15 minutes duration. The purpose of the meeting is to inform personnel of activities to be undertaken during the day shift, as well as to discuss safe work practices, environmental protection practices, hazards and other information that may be relevant. Topics covered in toolbox meetings include health, safety and environmental issues relevant to upcoming works, works that have the potential to impact on sensitive receivers or environmentally sensitive areas or incidents that have occurred.

5.2.3 Other Identified Training

Any additional environmental training that is identified will be undertaken as required, such as during site HSE Meetings. A record of the training undertaken and attendees will be kept in the admin office.

5.3 Internal and External Communication

5.3.1 Communication Requirements

The following conditions of approval detail requirements for communication during operation of the project (refer Appendix A1):

- B49 – Provision of Electronic Information.
- B50 – Community Information Plan.
- B51, 52 and 53 – Complaints Procedure.

The AGL Community Engagement Policy (AGL 2017a) and NGSF Community Complaints and Feedback Process (AGL 2017b) have been prepared to address the requirements of these conditions of approval.

5.3.2 Internal Communication

AGL communicates internally via:

- Email
- Toolbox meetings (refer Section 5.2.2).
- HSE meetings.
- Formal reporting.

5.3.3 External Communication

In accordance with Condition of Approval B49, AGL maintains a website for the NGSF project which is located at:

www.agl.com.au/newcastle

The website includes information on:

- A copy of the project approvals.
- A copy of each environmental approval, licence or permit required and obtained.
- A copy of each plan, report or monitoring plan required for the project.
- Details of the outcomes of compliance reviews and audits of the project.

Other methods whereby AGL provides information on the project include:

- A 24-hour Community Information Line (phone: 1800 039 600).
- Project email address (AGLCommunity@agl.com.au).
- Meetings of the NGSF Community Dialogue Group (held quarterly).

5.3.4 Complaints Management

Complaints management for the NGSF project is undertaken by AGLs community relations team in accordance with the NGSF Community Complaints and Feedback Process (AGL, 2017b).

Contact Details

The community information line (phone: 1800 039 600) is the primary means for members of the community to lodge complaints relating to the project. This line is staffed 24 hours a day by AGL's call centre.

The community relations team may also be contacted via:

- Mail at Locked Bag 1837 St Leonards NSW 2065.
- Email at AGLCommunity@agl.com.au.

The community information line number, postal address and email address are to be advertised in local newspapers every six months for the first two years of operation of the NGSF and is displayed on signage at the entrance to the site.

Consultation Manager Database

All complaints received by the community relations team are to be logged in AGL's Consultation Manager database for tracking purposes. This is a web-based database that can be accessed by members of the project team as required.

For each complaint received, information to be recorded in Consultation Manager includes:

- Date and time of the complaint.
- The means by which the complaint was made (telephone, mail or email).
- Any personal details of the complainant that were provided, of if no details were provided, a note to the effect.
- The nature of the complaint.
- Any action(s) taken by AGL in relation to the complaint, including timeframes for implementing the action.
- If no action was taken by AGL in relation to the complaint, the reason(s) why no action was taken.

Response to Complaints

Response to complaints will be undertaken by AGL's community relations team. AGL's aim is to provide an initial response to all complaints within 48 hours of the complaint being made. Any detailed response or action is to be provided within two weeks, or as otherwise agreed with the complainant. All responses are to be documented in Consultation Manager, as detailed above.

Other members of the project team may be required to respond to complaints at the request of the community relations team. This response may include a visit to the complainant's location to assess if the complaint is related to AGL activities.

If the complaint is determined to be related to AGL activities, appropriate mitigation measures will be implemented by AGL to address the cause of the complaint. Details of the mitigation measures will be communicated to the complainant.

Section 5 of the Noise Management Plan (Appendix B1) details specific measures that will be implemented to respond and deal with noise related complaints.

5.4 Reporting

Environmental reporting requirements are included in Table 5.2.

Table 5.2: Environmental Reporting Requirements

Activity	Purpose	Frequency	Responsibility
Internal audit report	Audit of compliance against the conditions of approval, as well as other approvals, licenses and consents	Biannual	Environment Manager
Report to NGSF Community Dialogue Group	Report on environmental and other performance to Community Dialogue Group	Quarterly	Community Relations Manager

Activity	Purpose	Frequency	Responsibility
EPL Annual Return Report	Report to the EPA of performance against EPL conditions	Annual	Environment Manager

5.5 Document Control

Document control for the OEMP is undertaken in accordance with the AGL's NGSF Document Control Procedure - 10679145. Under this procedure, documents must be authorised and released within the AGL Enterprise Library.

6. Monitoring and Compliance

6.1 Internal Auditing

AGL undertakes audits every two years. The scope of the internal audits are as follows:

- Check compliance with the conditions of approval and statement of commitments (refer Appendices A1 and A7).
- Check compliance with the measures in the OEMP and other management plans (refer Table 4.1).
- Review the OEMP and other environmental documentation to ensure relevance to current activities and recommend changes or improvements.
- Review results of monitoring.
- Review environmental incidents to determine trends or additional controls required.
- Review non-conformance information to determine trends or additional controls required.

The results of all internal environmental audits will be provided to AGL senior management for review and action if necessary.

Compliance Management

Environmental compliance obligations relating to the NGSF are incorporated in AGL’s Compliance Management System, known as SAP Compliance (SAP). SAP manages regulatory compliance obligations across the NGSF, and provides a summary of all the approval, licence and lease conditions for the project.

The SAP compliance management system is an important tool for managing and tracking compliance with all of the project’s environmental commitments.

The SAP system is a web-based database which is accessible to each member of the NGSF. The SAP is updated by the Compliance and Training Team each time a new approval, licence or lease is granted or modified.

All SAP users have access to an individual obligation dashboard upon signing into the system, which provides a high-level summary of the person’s required actions and their overall compliance.

At this point in time no permits or authorisations are required at NGSF. However if this changes, SAP will be utilised to monitor and verify compliance

6.2 Incident Management

Environmental incidents on site will be logged into AGL's myHSE incident reporting system. All incidents will be investigated and managed in accordance with the HSE Incident, Near Miss and Hazard Management Procedure (AGL-HSE-PRO-011.1.1).

Actions can be assigned to responsible persons and the system tracks progress against action items.

Incidents that result in material environmental harm or have the potential to cause material environmental harm will be notified in accordance with the NGSF Pollution Incident Response Management Plan and appropriate corrective actions will be implemented. All other environmental incidents will be reported to the respective government agencies in accordance with the notification requirements established by applicable legislation.

Any environment related Notices or Orders issued by regulatory authorities are to be forwarded to the Environment Manager (or their delegate). The Environment Manager (or their delegate) will then distribute to all key internal stakeholders for consultation and preparation of an agreed response. All agreed requirements must be adhered to.

7. Management Review

The OEMP is continually reviewed by AGL management to ensure its suitability and effectiveness.

The OEMP is reviewed, and if necessary amended:

- Following any major incident.
- Upon receipt of new approval conditions, approvals, consents or licences.
- When directed to do so by the Secretary of the Department of Planning and Environment.
- Bi-annually.

The review is undertaken by the Environment Manager and includes:

- The findings of audits.
- Any major non-conformances or incidents.
- Issues raised by government authorities (if any).

Reviews are documented and approved by management, along with any subsequent modifications.

8. References

AGL (2012) Section 75W Application – Washing out of Concrete Trucks. AGL Energy Limited. 13 December 2012.

AGL (2017a) Community Engagement Policy. AGL Energy Limited.

AGL (2017b) Community Complaints and Feedback Process Newcastle Gas Storage Facility. AGL Energy Limited.

APIA (2013) Code of Environmental Practice – Onshore Pipelines. Australian Pipeline Industry Association. October 2013.

Coffey (2011a) Environmental Assessment – Newcastle Gas Storage Facility Project. Coffey Natural Systems. May 2011.

Coffey (2011b) Preferred Project and Response to Submissions Report – Newcastle Gas Storage Facility Project. Coffey Natural Systems. September 2011.

EPA (2014) Waste Classification Guidelines Part 1: Classifying Waste, Environment Protection Authority. November 2014.

DIPNR (2004) Guideline for the Preparation of Environmental Management Plans. Department of Infrastructure, Planning and Natural Resources. 2004.

DPI (2011) Noxious and Environmental Weed Control Handbook - a guide to weed control in non-crop, aquatic and bushland situations. Fifth Edition. NSW Department of Primary Industries. 2011.

EMM (2013) Newcastle Gas Storage Facility – Modification 2 Environmental Assessment. EMGA Mitchell McLennan. September 2013.

EMM (2017) Newcastle Gas Storage Facility – Modification 3 Environmental Assessment – Tail Gas Project. EMGA Mitchell McLennan. October 2017.

NSW EPA (2000) *NSW Industrial Noise Policy*. Environment Protection Authority. January 2000.

Figures

Figure 1: Newcastle Gas Storage Facility Site Overview

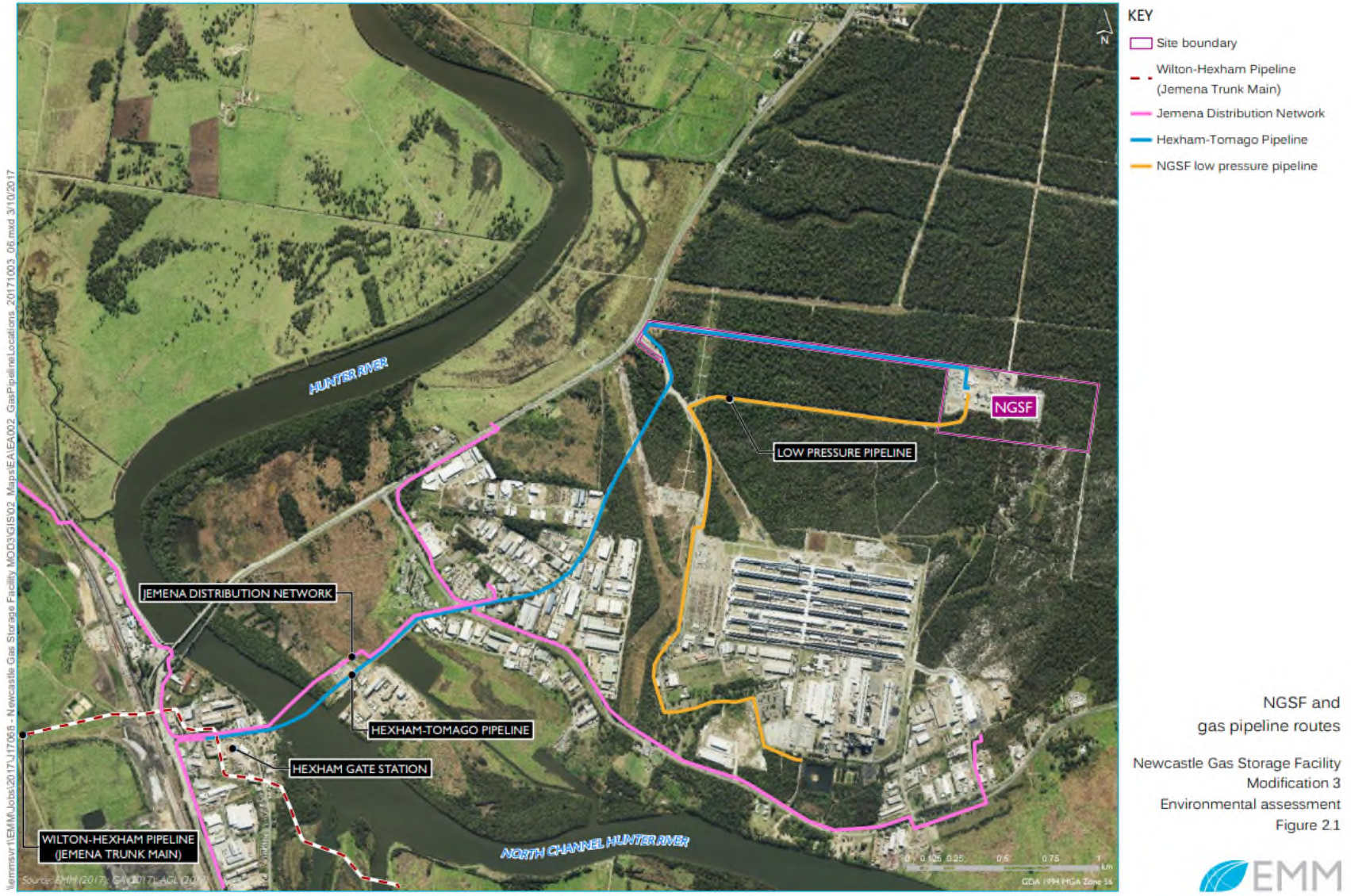


Figure 2: Newcastle Gas Storage Facility Plant Overview

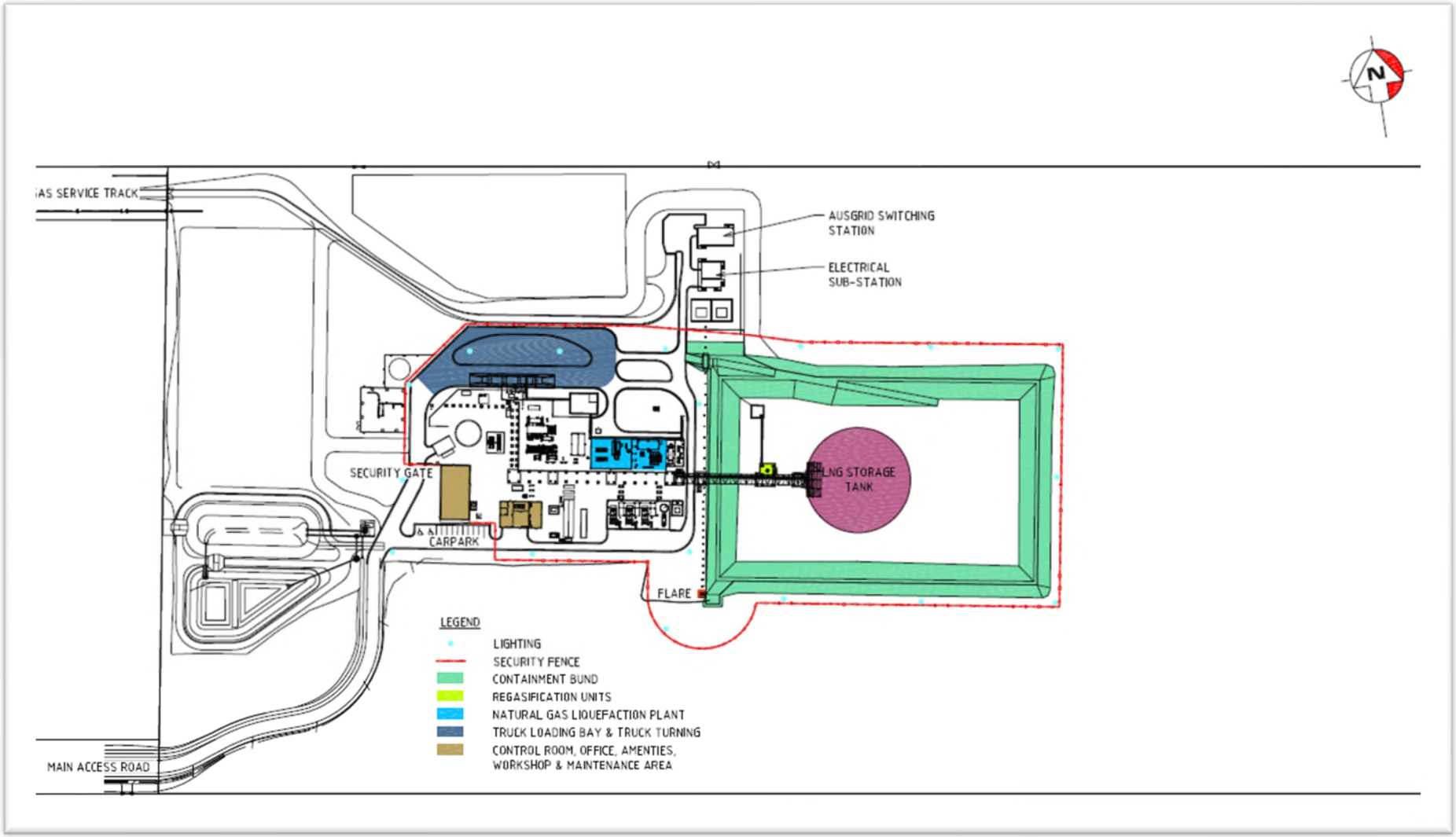
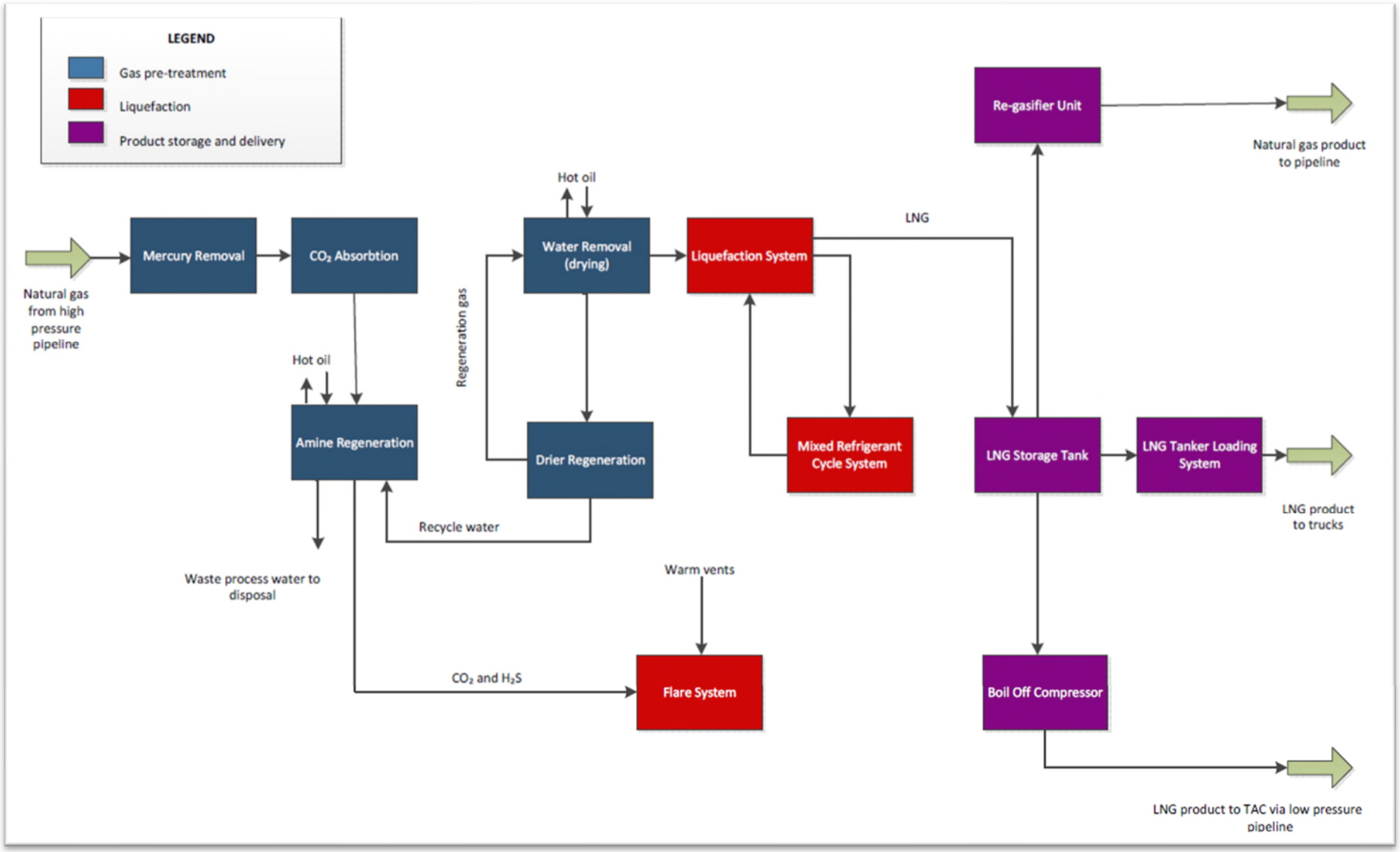


Figure 3: Newcastle Gas Storage Facility Plant Processes



Appendix A1

Project Approval under EP&A Act

Project Approval

Section 75J of the *Environmental Planning & Assessment Act 1979*

As delegate of the Minister for Planning and Infrastructure, dated 14 September 2011, the Planning Assessment Commission of NSW (the Commission) approves the project application referred to in Schedule 1, subject to the conditions in Schedule 2.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

Kevin Sproats
Member of the Commission

Brian Gilligan
Member of the Commission

Sydney 10 May 2012 File No: 11/08788

SCHEDULE 1

Application No.:	MP 10_0133
Proponent:	AGL Energy Limited
Approval Authority:	Minister for Planning and Infrastructure
Land:	Lot 105 DP 1125747 (Tomago Aluminium Company Pty Limited) – Part Lot 105 DP 1125747 (gas storage facility) Lot 1 DP 813606 (Hexham receiving station) Old Punt Road reserve (Port Stephens Council) Land beneath the bed of the Hunter River Lot 2 DP 46729, Lot 142 DP 605461, (Forgacs Engineering Pty Ltd) Old Maitland Road reserve (Newcastle City Council) Lot 2 DP 813606 (Mehan Finance Pty Ltd) Lot 101 DP 499013 (Jemena Gas Networks NSW Ltd) Lot 143 in Deposited Plan 605461 (Bendlink Pty Ltd) Lot 42 in Deposited Plan 558481 (PA Rains and PV Rains)
Proposal:	The Newcastle Gas Storage Project as described in the EA and PPR, including: • the gas plant site, including subdivision (Surveyor's Reference 10195DPA_07); • an access road and utility corridor; • a gas pipeline access corridor; • a pipeline corridor including temporary construction areas; • the Hexham receiving station; • a gas pipeline connection to the existing Jemena Gate Station at Hexham; and • associated and ancillary infrastructure.

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DEFINITIONS

BCA	Building Code of Australia
CEMP	Construction Environmental Management Plan
Construction	All pre-operation activities associated with the project other than survey; acquisitions; fencing; investigative drilling or excavation; building/road dilapidation surveys; minor clearing or translocation (except where heritage, threatened species, populations or endangered ecological communities would be affected, unless otherwise approved by the Secretary in consultation with the OEH); or other activities determined by the Environmental Representative to have minimal environmental impact (e.g. minor access roads and adjustments for services/utilities)
CL&W	Department of Industry – Lands & Water division
Councils	Port Stephens Council and Newcastle City Council
Department	Department of Planning and Environment
DoEE	Department of the Environment and Energy
DPI	Department of Primary Industries
EA	*Newcastle Gas Storage Facility Project, Environmental Assessment (Coffey Natural Systems Pty Ltd, May 2011)* as amended by*:* • the Preferred Project Report; • Modification application 10_0133 MOD 1, and accompanying letter from AGL dated 9 September 2012; • Modification application 10_0133 MOD 2, and *Newcastle Gas Storage Facility – Modification 2, Environmental Assessment (EMM, September 2013)*, including Response to Submissions dated 13 October 2013; and • Modification application 10_0133 MOD 3, and *Newcastle Gas Storage Facility – Modification 3, Environmental Assessment (EMM, October 2017),* including Response to Submissions dated 13 December 2017.
Environmental Representative	Independent person engaged by the Proponent in accordance with condition B55.
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPA	Environment Protection Authority
EPL	Environment Protection Licence issued under the POEO Act
Feasible	Feasible relates to engineering considerations and what is practical to build or carry out
HWC	Hunter Water Corporation
Incident	A set of circumstances that causes or threatens to cause material harm to the environment, and/or breaches or exceeds the limits or performance measures/criteria in this approval
Material harm to the environment	Actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial
Minister	Minister for Planning, or delegate
Negligible	Small and unimportant, such as to be not worth considering
OEH	Office of Environment and Heritage
OEMP	Operation Environmental Management Plan
Operation	Operation activities associated with the project, not including commissioning trials of equipment or temporary use of parts of the project during construction
POEO Act	*Protection of the Environment Operations Act 1997*
PPR	*Preferred Project Report and Response to Submissions Report: Newcastle Gas Storage Facility Project*, prepared by Coffey Environments Australia Pty Ltd and dated September 2011
Project	The development described in the project application, the EA and the PPR
Project Approval	Approval granted for a project in accordance with section 75J of the Act
Proponent	AGL Energy Limited and its successors and assigns
Publicly Available	Available for inspection by a member of the general public (for example available on an internet site or at a display centre)

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Reasonable	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements
Rehabilitation	The treatment or management of land disturbed by the project for the purpose of establishing a safe, stable and non-polluting environment, and includes remediation
RMS	Roads and Maritime Services – formerly Roads & Traffic Authority (RTA)
Secretary	Secretary of the Department, or nominee
Site	The land referred to in Schedule 1
Statement of Commitments	The Statement of Commitments included in the PPR

SCHEDULE 2

PART A - ADMINISTRATIVE CONDITIONS

TERMS OF APPROVAL

A1 The Proponent shall carry out the project:
- (a) generally in accordance with the EA; and
- (b) in accordance with the conditions of this approval.

A2 If there is any inconsistency between the documents in condition A1, the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this approval shall prevail to the extent of any inconsistency with the documents listed under condition A1.

A3 The Proponent shall comply with any reasonable requirement(s) of the Secretary arising from the Department's assessment of:
- (a) any reports, strategies, plans, programmes, reviews, audits or correspondence that are submitted in accordance with this approval; and
- (b) the implementation of any actions or measures contained in these documents.

LIMITS ON APPROVAL

A4 This project approval shall lapse five years after the date on which it is granted, unless any works the subject of this approval have physically commenced before that time.

A5 The gas pipeline component for the project shall follow corridor option 2 as shown in Figure 1.2 – Conceptual Project Layout in the EA. To avoid any doubt, other corridor options shown in that figure are not approved.

STAGING

A6 Construction of the project may be undertaken in discrete work packages or stages. Where that occurs, these conditions of approval need only be complied with to the extent that they are relevant to that discrete work package or stage. Prior to the commencement of relevant construction or operation activities, the Proponent shall submit a Staging Report to the Secretary which:
- (a) describes the stages; and
- (b) identifies the relevant conditions of approval for each stage and how these will be addressed across and between the stages of the project.

A7 With the approval of the Secretary, the Proponent may submit any strategy, plan or programme required by this approval on a progressive basis for discrete work packages or stages.

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STATUTORY REQUIREMENTS

A8 The Proponent shall ensure that all necessary licences, permits and approvals are obtained and maintained as required throughout the life of the project. No condition of this approval removes the obligation of the Proponent to obtain, renew or comply with such licences, permits or approvals. The Proponent shall ensure that a copy of this approval and all relevant environmental approvals are available on the site at all times during the project.

COMPLIANCE

A9 The Proponent shall ensure that employees, contractors and sub-contractors, and visitors are aware of, and comply with, the conditions of this approval relevant to their respective activities.

PUBLICLY AVAILABLE INFORMATION

A10 Subject to confidentiality, the Proponent shall make all documents required under this approval available for public inspection on request.

STRUCTURAL ADEQUACY

A11 The Proponent shall ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA. For the purpose of section 75S(2)(b) of the Act, the *relevant provisions*, as defined in section 75S(1A) of the Act apply to this approval.

SUBDIVISION

A12 In undertaking the subdivision approved under this approval, the Proponent must comply with the requirements of the *Environmental Planning and Assessment Act 1979* relating to the issue of a Subdivision Certificate (the relevant provisions referred to under section 75S(2)(b) of the Act, which continues to apply to the project).

A13 The Proponent shall consult with and address all reasonable requirements of Port Stephens Council in preparing its application for a Subdivision Certificate for the project.

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

A14 The Proponent shall implement all reasonable and feasible measures to prevent and/or minimise any material harm to the environment that may result from the construction, operation or rehabilitation of the project.

INCIDENT REPORTING

A15 The Proponent shall notify the Secretary and any other relevant agencies of any incident associated with the project as soon as practicable after the Proponent becomes aware of the incident. Within seven days of becoming aware of the incident, the Proponent shall provide the Secretary and any relevant agencies with a detailed report on the incident.

A16 The Proponent shall meet the requirements of the Secretary to address the cause or impact of any incident, as it relates to this approval, reported in accordance with condition A15 of this approval, within such period as the Secretary may require.

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PART B – PRIOR TO AND DURING CONSTRUCTION

BIODIVERSITY

B1 The Proponent shall employ a suitably-qualified ecologist to attend site clearing and vegetation removal works, and any activities with the potential to directly or indirectly impact on the biodiversity of the project site or surrounding land during construction. The ecologist shall be employed for the purpose of identifying and advising on potential ecological impacts, including appropriate mitigation and management, as required under these conditions of approval.

B1A Tree Protection Zones (TPZs) shall be established in consultation with a suitably qualified ecologist for the eight (8) Earp's Gum individuals located adjacent to the low pressure pipeline, if Option B, as identified in "Section 75W Modification 2 Environmental Assessment" prepared by EMGA Mitchell McLennan dated 13 September 2013, is undertaken.

Management of Impacts on Flora

B2 The Proponent shall take reasonable and feasible steps to minimise the area of native vegetation clearing required for the project. Areas of vegetation to be cleared as part of the project shall be clearly demarcated prior to the commencement of clearing activities. Procedures for the minimisation and management of vegetation clearing shall be detailed in the Flora and Fauna Management Plan required under condition B57.

B3 The Proponent shall construct the project in a manner that avoids direct and indirect impacts to those areas mapped as "(4) – Freshwater Wetland Complex" and "(7) – Phragmites Rushland" in Figure 7 – Vegetation Communities in *Ecological Assessment: Newcastle Gas Storage Facility Project* (ecobiological, May 2011), included as Appendix 7 to the EA. The suitably-qualified ecologist required under condition B1 shall be engaged for the purpose of advising on measures to avoid potential direct or indirect impacts.

B4 Prior to the commencement of construction, appropriately timed and targeted surveys should be undertaken to determine the absence/presence of the following taxa for which general baseline vegetation surveys are not considered appropriate:

(a) Tall Knot-weed *(Persicaria elatior)*;
(b) Small Water-ribbons (*Maundia triglochinoides)*; and
(c) Horned Pondweed *(Zannichellia palustris)*.

Any impacts on these taxa must be included the Biodiversity Offset Strategy under condition B13 and Biodiversity Offset Package under condition C2.

B5 Prior to the commencement of vegetation clearing works, the site shall be subject to further confirmatory survey work to determine the number of Earp's Gum individuals to be removed. The number, quality and extent of these individuals shall be used to inform the Biodiversity Offset Strategy under condition B13 and Biodiversity Offset Package under condition C2.

B6 Prior to the commencement of vegetation clearing works, the site shall be subject to further confirmatory survey work to determine the hollow-bearing trees to be removed. The number and quality of these tree hollows shall be used to inform the Biodiversity Offset Strategy under condition B13 and Biodiversity Offset Package under condition C2.

B7 With the exception of clearing necessary for the gas pipeline access corridor, and access road and utility corridor, on the site, the Proponent shall ensure that vegetation mapped as "Preferred Koala Habitat" in Figure 12 – Revised Koala Habitat Mapping in *Ecological Assessment: Newcastle Gas Storage Facility Project* (ecobiological, May 2011), included as Appendix 7 to the EA, is not directly or indirectly affected in the carrying out of the project.

Riparian Areas

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B8 Prior to the commencement of works with the potential to directly or indirectly affect riparian areas, the Proponent shall engage a suitably-qualified ecologist (required under condition B1) to survey and record the condition of those potentially-affected areas.

B9 Within six months of the conclusion of construction activities directly or indirectly affecting riparian areas, the Proponent shall implement a programme to rehabilitate those areas to a standard of equal or better condition than surveyed under condition B8, unless otherwise agreed by the Secretary. Riparian rehabilitation works shall be undertaken in consultation with L&W and DPI (Fisheries).

B10 Unless otherwise agreed by the Secretary, the Proponent shall monitor and maintain the condition of rehabilitated riparian areas until such time as those areas have been verified by a suitably-qualified ecologist (required under condition B1) as being well-established, in good health and self-sustaining.

Management of Impacts on Fauna

B11 Prior to the commencement of vegetation clearing works in the site, the site shall be subject to survey work to identify the presence of Koala (*Phascolarctos cinereus*) individuals. All Koala individuals identified on the site shall be allowed to self-translocate in the first instance prior to any other translocation methods being considered. If self-translocation proves impracticable, human-assisted translocation will be conducted and the Koalas located on the gas storage facility site shall be translocated to an appropriate, safe location off-site. Survey and translocation of Koala individuals shall be conducted in accordance with the Port Stephens Comprehensive Koala Plan of Management and to meet the requirements of the OEH. If human-assisted translocation is conducted, it shall be undertaken by a suitably qualified and experienced ecologist in Koala management and in accordance with *Policy for the Translocation of Threatened Fauna in NSW* (NPWS, 2001).

B12 Prior to the commencement of vegetation clearing and construction works, the Proponent shall demonstrate that it has undertaken a programme of trapping on the the gas storage facility site with the aim of collecting any New Holland Mouse (*Pseudomys novaehollandiae*) individuals. All New Holland Mouse individuals shall be translocated to an appropriate, safe location off-site. Trapping, collection and translocation of New Holland Mouse individuals shall meet the requirements of any guidelines issued by DoEE.

Biodiversity Offsets

B13 Prior to the commencement of vegetation clearing or construction works, the Proponent shall prepare a **Biodiversity Offset Strategy** in consultation with the OEH and Port Stephens Council, and for the approval of the Secretary. The purpose of the Strategy shall be to provide high-level direction to guide the development of the Biodiversity Offset Package required under condition C2. The Biodiversity Offset Strategy shall be prepared by a suitably-qualified ecologist consistent with the Biobanking Methodology under the Biobanking and Offsets Scheme outlined in *Biobanking Assessment Methodology and Credit Calculator Operational Manual* (DECC, 2009), and shall include:

(a) consideration of all native vegetation losses and the adequacy of the proposed offset;
(b) an offset area for the Earp's Gum commensurate with the area occupied by the Earp's Gum individuals to be removed from the site, and including successful planting of *Eucalyptus parramattensis* subsp. *decadens* trees at a ratio of at least 3:1 and the maintaining of these trees until established.
(c) an offset ratio for tree hollows of no less than 1:1, to be delivered through nest boxes or other measures agreed with the OEH;
(d) habitat offset measures for Koalas (*Phascolarctos cinereus*) and New Holland Mouse (*Pseudomys novaehollandiae*);
(e) demonstration of how the offset would 'improve or maintain' biodiversity values;
(f) the proposed offset ratios and connectivity improvements;
(g) proposed management actions;

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(h) demonstration of how the strategy was prepared in accordance with the OEH's Principles for the Use of Biodiversity Offsets in NSW; and
(i) measures to ensure in-perpetuity the conservation commitment.

Note: The Biodiversity Offset Strategy is intended to provide an initial, high-level direction for the identification of potential offsets, including details of quantified offset requirements. The Biodiversity Offset Package is intended to detail the delivery of the required offsets, in practical terms.

HAZARDS AND RISK

B14 The Proponent shall establish and maintain Asset Protection Zones around the project, being no less than 25 metres around the gas plant site and no less than 31 metres around the processing plant and storage tank. The Earp's Gum individuals are to be retained within the asset protection zones where appropriate canopy distances exist. The understory in the vicinity of retained Earp's Gum individuals is to be appropriately managed to minimise fire risk. Details shall be incorporated into the Fire Safety Study required under B16(a).

B15 During construction, the Proponent shall store and handle all dangerous goods, as defined by the Australian Dangerous Goods Code, strictly in accordance with:
(a) all relevant Australian Standards; and
(b) DECC's *Environment Protection Manual Technical Bulletin – Bunding and Spill Management*.

In the event of an inconsistency between the requirements listed from (a) to (b) above, the most stringent requirement shall prevail to the extent of the inconsistency.

B16 At least one month prior to the commencement of construction of the project, except for construction of those preliminary works that are outside the scope of the hazard studies (including such works as vegetation clearing and site preparation which would not influence or pre-empt the outcomes of the hazards studies), or within such further period as the Secretary may agree, the Proponent shall prepare and submit for the approval of the Secretary the following studies:
(a) A **Fire Safety Study** prepared in accordance with and covering the relevant aspects in *Hazardous Industry Planning Advisory Paper No. 2 - Fire Safety Study Guidelines* (DoP, 2011) and Best Practice Guidelines for Contaminated Water Retention and Treatment Systems (NSW Government, 1994). The study shall also be submitted for approval to Fire and Rescue NSW and to the Rural Fire Service;
(b) A **Hazard and Operability Study** for the project, chaired by a qualified person, independent of the project, approved by the Secretary prior to the commencement of the study. The study shall be consistent with the Department of Planning and Infrastructure's *Hazardous Industry Planning Advisory Paper No. 8 – HAZOP Guidelines* (DoP, 2011). The study report shall be accompanied by a programme for the implementation of all recommendations made in the report. If the Proponent intends to defer the implementation of a recommendation, reasons must be documented and justified; and
(c) A **Final Hazard Analysis** of the project, consistent with *Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis* (DoP, 2011). The FHA shall report on the implementations of the recommendations of the Preliminary Hazard Analysis.

Construction, other than of preliminary works (including such works as vegetation clearing and site preparation which would not influence or pre-empt the outcomes of the hazards studies), shall not commence until approval under this condition has been given by the Secretary and, with respect to the Fire Safety Study, approval has also been given by Fire and Rescue NSW and the Rural Fire Service.

B16A Prior to commencing construction of the project as described in the *Newcastle Gas Storage Facility – Modification 3, Environmental Assessment* (EMM, October 2017), the Proponent must update the HAZOP study identified in condition B16(b) for the project to the satisfaction of the Secretary.

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B17 Prior to the commencement of the detailed design of the project, the Proponent shall consult with WorkCover with regard to complying with the regulations applicable to Major Hazard Facilities and shall obtain requirements for the preparation of the **Site Risk Assessment** and the **Safety Case**. The Proponent shall comply with all requirements issued by WorkCover.

B18 The **Safety Case** shall be prepared by the Proponent under the Major Hazard Facilities legislation and shall be submitted to WorkCover no later than six months prior to the commissioning of the project, or as otherwise agreed by WorkCover.

DESIGN PRINCIPLES

B19 Buildings and car parking associated with the proposed development should be designed with consideration to the general principles and objectives of *Crime Prevention through Environmental Design* (Australian Institute of Criminology, 1989).

SOILS, WATER AND HYDROLOGY

B20 Except as may be expressly provided by an Environment Protection Licence for the project, the Proponent shall comply with section 120 of the *Protection of the Environment Operations Act 1997* during construction of the project.

B21 Erosion and Sediment controls consistent with *Managing Urban Stormwater: Soils and Construction Manual* (Landcom, 2004, or its latest version) shall be installed prior to the commencement of soil disturbing works and shall be maintained until such time as the disturbed areas have been rehabilitated.

B22 The Proponent shall carry out rehabilitation of disturbed areas progressively, and as soon as reasonably practicable following disturbance.

Construction Method

B23 The Proponent shall apply the gas pipeline corridor construction methods generally in accordance with Table 2.2 of the PPR, at the locations specified.

Flooding

B24 The Proponent shall ensure that all structures to be constructed below known flood planning levels are constructed of materials and with finishes that are resistant to floodwaters/ tides. Construction of the project shall be undertaken in accordance with the *NSW Flood Plain Development Manual* (DIPNR, 2005).

Groundwater Monitoring Programme

B25 Prior to the commencement of construction, the Proponent shall develop a **Groundwater Monitoring Programme** in consultation with L&W and HWC and to the satisfaction of the Secretary. The programme shall detail the monitoring strategy that would be implemented to monitor the water quality impacts of the project on beneficial aquifers (including associated groundwater users, surface waters and groundwater dependent ecosystems). The programme shall:

(a) identify surface and groundwater monitoring locations demonstrating their appropriateness for obtaining representative water quality and water level data on construction and operational impacts in relation to beneficial aquifers, groundwater users and surface waters;
(b) provide details of the monitoring points (including location, depth of monitoring, duration and frequency of monitoring and parameters to be monitored);
(c) identify performance criteria, including monitoring criteria to detect early indicators of drawdown impacts or water quality impacts to beneficial aquifers;
(d) identify the frequency of reporting on monitoring results;
(e) identify procedures for contingency or remedial action where adverse impacts are identified, such that the adverse impacts are remediated prior to any impact to other groundwater

users, and/ or rehabilitation measures applied where the project is identified as adversely affecting any groundwater dependent ecosystems/ communities; and

(f) identify mechanisms for the regular review and update of the programme in consultation with L&W and HWC as required.

In submitting the programme for the Secretary's approval, the Proponent shall provide written evidence of consultation with L&W and HWC on the robustness and acceptability of the monitoring programme, including issues raised by these agencies and how these have been addressed. The programme shall be reviewed and updated at the conclusion of construction activities.

Stormwater Management

B26 Prior to the commencement of construction, the Proponent shall engage an independent and suitably qualified expert to the satisfaction of HWC, to undertake peer reviews of the design, construction and ongoing maintenance of the stormwater management system. The reviews shall:

(a) provide HWC with a peer review of the detailed design of the stormwater management system;
(b) investigate the constructability, effectiveness and durability of the stormwater management system;
(c) be undertaken to ensure that the system is constructed as designed to the schedule agreed between the Proponent and HWC; and
(d) provide HWC with inspection reports on the adequacy of the stormwater management system in accordance with the inspections identified in the schedule referred to in (c).

The review reports shall be incorporated into the compliance tracking programme required under condition B54 and shall include, but not necessarily be limited to: annual reports of Stormwater systems Performance supplied to HWC.

Any faults identified as a result of the inspection reports identified in (d) shall be rectified and reinspected at the Proponent's expense.

NOISE

Construction Hours

B27 Subject to conditions B28 and B29, construction works (other than horizontal directional drilling (HDD)) that would generate audible noise at any sensitive receiver shall only be undertaken during the following hours:

(a) 7:00 am to 6:00 pm, Mondays to Fridays, inclusive;
(b) 8:00 am to 1:00 pm on Saturdays; and
(c) at no time on Sundays or public holidays.

This condition does not apply in the event of a direction from police or other relevant authority for safety reasons or emergency work to avoid the loss of lives, property and/or to prevent environmental harm.

B28 Any work generating high noise that has impulsive, intermittent, low frequency or tonal characteristics, including jack hammering, pile driving, rock hammering, rock breaking, saw cutting, sheet piling or vibratory rolling, shall only be undertaken:

(a) between the hours of 8.00 am and 6.00 pm Monday to Friday;
(b) between the hours of 8.00 am and 1.00 pm Saturday; and
(c) in continuous blocks of no more than three hours, with at least one hour respite between each block of work generating high noise impact, where the location of the work is likely to impact the same receivers;

except as otherwise approved by the Secretary. For the purposes of this condition "continuous" includes any period during which there is less than a one hour respite between ceasing and recommencing any of the work the subject of this condition.

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B29 Construction outside of the hours specified under condition B27 or B28 may be varied for works as approved through the out-of-hours work protocol required as part of the Construction Noise Management Plan under condition B57 of this approval. Any request to alter the hours of construction shall:

(a) be considered on a case-by-case basis;

(b) be accompanied by details of the nature and need for activities to be conducted during the varied construction hours and any other information necessary to reasonably determine that activities undertaken during the varied construction hours will not adversely impact on the acoustic amenity of receptors in the vicinity of the site; and

(c) require that affected residential receivers are informed of the timing and duration of any construction activities approved under this condition at least 48 hours before that work commences.

Construction Noise Criteria

B30 The Proponent shall implement all reasonable and feasible noise mitigation measures to minimise noise generated by construction of the project, consistent with the requirements of the *Interim Construction Noise Guidelines (DECC, July 2009)*.

B31 Prior to the commencement of construction, the Proponent shall undertake a noise assessment to identify all sensitive receivers where the construction noise management goals, exceed the ICNG construction noise goals for that receiver. The results shall be included in the Construction Noise Management Plan required under condition B57 of this approval.

TRAFFIC AND TRANSPORT

B32 Prior to the commencement of construction of the project, the Proponent shall commission a suitably qualified road infrastructure specialist to assess the condition of all public roads proposed to be traversed by construction traffic associated with the project (including over-mass or over-dimensional vehicles) in consultation with Council and the RMS, and to identify any upgrade requirements to accommodate project traffic for the duration of construction (including culvert, bridge and drainage design; intersection treatments; vehicle turning requirements; and site access), having regard to peak traffic volumes. The **Pre-Construction Road Inspection Report** shall be submitted to the Secretary prior to the commencement of construction works, clearly identifying recommendations made by the Council and the RMS and how these have been addressed. The Proponent shall ensure that all upgrade measures identified in the report are implemented to meet the reasonable requirements of Council and the RMS, prior to the commencement of construction.

B33 A commercial-type vehicular crossing shall be constructed across the public footway at the proposed driveway entrance/ exit to the Hexham receiving station site at the expense of the Proponent. The crossing shall be designed and constructed in accordance with Newcastle City Council's *A017 Series (Concrete Vehicular Crossings)* design specifications.

B34 Redundant existing vehicular crossings at the Hexham receiving station site shall be removed at the expense of the Proponent and the public footway and kerb shall be restored to be consistent with existing infrastructure.

AIR QUALITY

Odour

B35 During construction, the Proponent shall ensure no offensive odour as defined under the *Protection of the Environment Operations Act 1997* is emitted from the project site.

Dust

B36 The Proponent shall employ reasonable and feasible measures to ensure that construction activities associated the project are undertaken in a manner that minimises or prevents the emission of dust.

METEOROLOGY

B37 Prior to the commencement of construction works, the Proponent shall establish a meteorological monitoring station on the site, or at a representative location off-site, for the purpose of continuously monitoring meteorological conditions on the site for the life of the project. The meteorological monitoring station shall be located, operated and maintained to meet the requirements of the OEH. The Proponent may satisfy this condition by demonstrating to the satisfaction of the OEH that it has access to data from an existing meteorological monitoring station, representative of conditions on this site, and operated by a third party.

HERITAGE

B38 The Proponent shall employ a suitably-qualified archaeologist to attend site clearing and vegetation removal works within the gas storage facility site and within riparian areas of the Hunter River, and any activities with the potential to directly or indirectly impact on subsurface heritage items. The archaeologist shall be employed for the purpose of identifying and advising on potential Aboriginal heritage impacts, including appropriate mitigation and management, as required under these conditions of approval. Items of heritage significance that may be uncovered during construction of the project shall be managed in accordance with the approved Cultural Heritage Management Plan under condition B57.

B39 Registered Aboriginal stakeholders shall be invited to attend site clearing and soil disturbance work to assist in the identification of heritage items, including potential mitigation and management measures.

B40 Where reasonable and feasible, the Proponent shall remove vegetation from the site with the aim of avoiding or minimising the need to disturb the underlying soil.

WASTE MANAGEMENT

B41 The Proponent shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site during construction, except as expressly permitted by a licence under the *Protection of the Environment Operations Act 1997*, if such a licence is required in relation to that waste.

B42 The Proponent shall maximise the reuse and/or recycling of construction waste materials generated on site, to minimise the need for treatment or disposal of those materials outside the site.

B43 The Proponent shall ensure that all liquid and/or non-liquid construction waste generated by the project is assessed and classified in accordance with the *Waste Classification Guidelines* (DECC 2008, or any future guideline that may supersede that document) and where removed from the site is only directed to a waste location lawfully permitted to accept those materials.

VISUAL AMENITY

B44 The Proponent shall:

(a) take all reasonable and feasible measures to mitigate off-site lighting impacts from the construction of the project; and

(b) ensure that all external lighting associated with construction of the project complies with *Australian Standard AS4282 – 1997 – Control of the Obtrusive Effects of Outdoor Lighting.*

This condition does not apply to lighting required for aviation safety.

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AIR SAFETY

B45 At least one month prior to the commencement of construction, the Proponent shall notify the RAAF Aeronautical Information Service of the location and heights of tall structures that are 30 metres or more above ground level within 30 kilometres of an aerodrome, or 45 metres of more above ground level elsewhere.

INFRASTRUCTURE, SERVICES AND ANCILLARY FACILITIES

B46 The Proponent shall undertake all necessary alterations to existing public utility installations to meet the reasonable requirements of, and at no expense to, the relevant public utility authority.

B47 The Proponent shall ensure that road surfaces – and any other road-related infrastructure including drainage, street lighting, street furniture or underground facilities – disturbed or damaged during construction, are restored to meet the reasonable requirements of, and at no expense to, the relevant road authority.

B48 The Proponent shall design and provide on-site carparking, driveways, parking bays, vehicular turning areas, letterboxes, landscaping and drainage in consultation with and to meet the reasonable requirements of the relevant local council.

COMMUNITY INFORMATION, CONSULTATION AND INVOLVEMENT

Provision of Electronic Information

B49 Prior to the commencement of construction, the Proponent shall establish a dedicated website or maintain dedicated pages within its existing website for the provision of electronic information associated with the project. The Proponent shall publish and maintain up-to-date information on this website or dedicated pages including, but not necessarily limited to:

(a) the status of the project;
(b) a copy of this approval and any future modification to this approval;
(c) a copy of each relevant environmental approval, licence or permit required and obtained in relation to the project;
(d) a copy of each plan, report, or monitoring programme required by this approval; and
(e) details of the outcomes of compliance reviews and audits of the project.

Community Information Plan

B50 Prior to the commencement of construction, the Proponent shall prepare and implement a **Community Information Plan** which sets out the community communication and consultation processes to be implemented during construction and operation of the project. The Plan shall include, but not be limited to:

(a) procedures to inform the local community of planned investigations and construction activities, including blasting works (if any);
(b) procedures to inform the relevant community of construction traffic routes and any potential disruptions to traffic flows and amenity impacts;
(c) procedures to inform the community where work outside the construction hours specified in condition B27, in particular noisy activities, has been approved; and
(d) procedures to inform and consult with affected landowners to rehabilitate impacted land.

Complaints Procedure

B51 Prior to the commencement of construction, the Proponent shall ensure that the following are available for community complaints for the life of the project (including construction and operation) or as otherwise agreed by the Secretary:

(a) a 24-hour telephone number on which complaints about construction and operational activities at the site may be registered;
(b) a postal address to which written complaints may be sent; and
(c) an email address to which electronic complaints may be transmitted.

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The telephone number, postal address and email address shall be advertised in a newspaper circulating in the area of the project, on at least one occasion prior to the commencement of construction; and at six-monthly intervals during construction and for a period of two years following commencement of operation of the project. These details shall also be provided on the Proponent's internet site required by condition B49. The telephone number, the postal address and the email address shall be displayed on a sign near the entrance to the construction site(s), in a position that is clearly visible to the public.

B52 The Proponent shall record details of all complaints received through the means listed in condition B51 of this approval in an up-to-date Complaints Register. The Register shall record, but not necessarily be limited to:

(a) the date and time of the complaint;
(b) the means by which the complaint was made (telephone, mail or email);
(c) any personal details of the complainant that were provided, or if no details were provided, a note to that effect;
(d) the nature of the complaint;
(e) any action(s) taken by the Proponent in relation to the complaint, including timeframes for implementing the action; and
(f) if no action was taken by the Proponent in relation to the complaint, the reason(s) why no action was taken.

The Complaints Register shall be made available for inspection by the Secretary upon request.

B53 The Proponent shall provide an initial response to any complaints made in relation to the project during construction or operation within 48 hours of the complaint being made. The response and any subsequent action taken shall be recorded in accordance with condition B52. Any subsequent detailed response or action is to be provided within two weeks, or as otherwise agreed by the complainant/ Secretary.

COMPLIANCE TRACKING PROGRAMME

B54 Prior to the commencement construction, the Proponent shall develop and implement a **Compliance Tracking Programme**, to track compliance with the requirements of this approval during the construction and operation of the project and shall include, but not necessarily be limited to:

(a) provisions for periodic reporting of compliance status to the Secretary including at least prior to the commencement of construction of the project, prior to the commencement of operation of the project and within two years of operation commencement;
(b) a programme for independent environmental auditing in accordance with *AS/NZ ISO 19011:2003 - Guidelines for Quality and/or Environmental Management Systems Auditing*;
(c) procedures for rectifying any non-compliance identified during environmental auditing or review of compliance;
(d) mechanisms for recording environmental incidents and actions taken in response to those incidents;
(e) provisions for reporting environmental incidents to the Secretary during construction and operation; and
(f) provisions for ensuring all employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities.

CONSTRUCTION ENVIRONMENTAL MANAGEMENT

Environmental Representative

B55 Prior to the commencement of pre-construction or construction activities, the Proponent shall nominate for the approval of the Secretary a suitably qualified and experienced Environmental Representative(s) who is independent of the design, construction and operation personnel. The Proponent shall engage the Environmental Representative(s) prior to construction until at least

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six months after commencement of operation, or as otherwise agreed by the Secretary. The Environmental Representative(s) shall:

(a) monitor the implementation of all environmental management plans and monitoring programmes required under this approval;
(b) monitor the outcome of all environmental management plans and advise the Proponent upon the achievement of all project environmental outcomes;
(c) have responsibility for considering and advising the Proponent on matters specified in the conditions of this approval, and all other licences and approvals related to the environmental performance and impacts of the project;
(d) ensure that environmental auditing is undertaken in accordance with the requirements of condition B54 and the project Environmental Management System(s);
(e) be consulted in responding to the community concerning the environmental performance of the project; and
(f) have the authority and independence to recommend to the Proponent reasonable steps to be taken to avoid or minimise unintended or adverse environmental impacts, and, failing the effectiveness of such steps, to recommend to the Proponent that relevant activities are to be ceased as soon as reasonably practicable if there is a significant risk that an adverse impact on the environment will be likely to occur, until reasonable steps are implemented to avoid such impact.

Construction Environmental Management Plan

B56 The Proponent shall prepare and implement a Construction Environmental Management Plan (CEMP) to outline environmental management practices and procedures to be followed during construction of the project. The Plan shall be shall be consistent with the *Guideline for the Preparation of Environmental Management Plans* (DIPNR, 2004 or its latest revision). The Plan shall be prepared in consultation with Councils, L&W and HWC and include, but not necessarily be limited to:

(a) a description of all relevant activities to be undertaken on the site during construction including an indication of stages of construction, where relevant;
(b) identification of the potential for cumulative impacts with other construction activities occurring in the vicinity and how such impacts would be managed;
(c) details of any construction sites and mitigation, monitoring, management and rehabilitation measures specific to the site compound(s) that would be implemented;
(d) statutory and other obligations that the Proponent is required to fulfil during construction including all relevant approvals, consultations and agreements required from authorities and other stakeholders, and key legislation and policies;
(e) evidence of consultation with relevant public authorities required under this condition and how issues raised by the agencies have been addressed in the plan;
(f) a description of the roles and responsibilities for all relevant employees involved in the construction of the project including relevant training and induction provisions for ensuring that all employees, contractors and sub-contractors are aware of their environmental and compliance obligations under these conditions of approval;
(g) details of how the environmental performance of construction would be monitored, and what actions would be taken to address identified potential adverse environmental impacts;
(h) specific consideration of relevant measures to address any requirements identified in the documents referred to under condition A1 of this approval;
(i) a complaints handling procedure during construction as identified in conditions B51 to B53; and
(j) a matrix of construction work method statements (or similar) to be prepared and the anticipated level of risk associated with each to be determined.

The Construction Environmental Management Plan shall be submitted for the approval of the Secretary no later than one month prior to the commencement of relevant construction works associated with the project, or within such lesser period otherwise agreed by the Secretary. Construction works shall not commence until written approval of the CEMP has been received from the Secretary.

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B57 As part of the Construction Environmental Management Plan required under condition B56 of this approval, the Proponent shall prepare and implement the following:

(a) a **Flora and Fauna Management Plan**, prepared in consultation with the relevant Council and with reference to the OEH requirements, to outline measures to protect and minimise loss of native vegetation and native fauna habitat as a result of construction of the project. The Plan shall include, but not necessarily be limited to:

(i) plans showing terrestrial vegetation communities; important flora and fauna habitat areas; locations where EECs, native grasses are to be cleared. The plans shall also identify vegetation adjoining the site where this contains important habitat areas and/or threatened species, populations or ecological communities;

(ii) methods to manage impacts on flora and fauna species and their habitat which may be directly or indirectly affected by the project, such as location of fencing, procedures for vegetation clearing or soil removal/stockpiling and procedures for re-locating hollows or installing nesting boxes and managing weeds;

(iii) procedures to accurately determine the total area, type and condition of vegetation community to be cleared; and

(iv) a procedure to review management methods where they are found to be ineffective.

(b) a **Cultural Heritage Management Plan**, developed in consultation with registered local Aboriginal stakeholders, to outline mitigation and management strategies for items of heritage significance that may be uncovered during construction of the project;

(c) a **Groundwater Management Plan** prepared in consultation with L&W and HWC to detail how impacts to groundwater will be avoided and mitigated during the construction and operation of the project. The Plan shall integrate data from groundwater monitoring undertaken as required by condition B25 to set baseline and to establish targets and thresholds for the duration of the project. A contingency plan shall be developed as part of the Groundwater Management Plan in the event that groundwater is compromised during construction, such as through drawdown from horizontal directional drilling;

(d) a **Surface Water Management Plan** prepared in consultation with L&W, HWC and the Port Stephens Council (particularly in regard to stormwater being conveyed from the gas storage facility site to Old Punt Road), to detail how surface water and stormwater will be managed on the site during construction and operation of the project. The plan shall include detailed design of all watercourse crossings, culverts and in-stream works, a programme to monitor and manage, and notification and mitigation of identified impacts of watercourse crossings, culverts and instream crossings. In particular, the design for the horizontal directional drilling under the Hunter River shall be provided, including an assessment of the depth of scour for the Hunter River, and demonstration that the HDD will be undertaken below this depth. The plan shall also include use of appropriately sized stormwater controls, in accordance with *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004). The plan shall include specific measures to avoid sediment-laden stormwater from entering the Hunter River, a monitoring programme for stormwater leaving the site (including the requirements for inspection reports required under condition B26) details of how hydrostatic test water would be disposed, and measures to mitigate contamination of soils and water;

(e) a **Flood Emergency Response Plan** prepared in consultation with and to meet the reasonable requirements of Newcastle City Council and Port Stephens Shire Council;

(f) a **Noise Management Plan** to manage noise impacts during construction and to identify all feasible and reasonable noise mitigation measures. The Plan shall include, but not necessarily be limited to:

(i) details of construction activities and an indicative schedule for construction works;

(ii) identification of construction activities that have the potential to generate noise impacts on surrounding land uses, particularly residential areas;

(iii) details of the requirements for Noise Impact Statement(s) for discrete work areas, including construction site compounds;

(iv) identify all sensitive receivers where construction noise goals are predicted to be exceeded;

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(v) detail what reasonable and feasible actions and measures would be implemented to minimise noise impacts;
(vi) consultation with the owner/occupiers of sensitive receivers (including receivers R4 (Tomago Village Caravan Park) and R5 (217 Maitland Road), where construction noise goals are expected to be exceeded, with the aim of identifying and implementing reasonable and feasible noise mitigation and management measures, including where necessary, the consideration of respite periods and alternative accommodation arrangements;
(vii) procedures for notifying sensitive receivers of construction activities that are likely to affect their noise amenity, as well as procedures for dealing with and responding to noise complaints;
(viii) an out-of-hours work (OOHW) protocol for the assessment, management and approval of works outside of standard construction hours as defined under this approval, including a risk assessment process under which the Environmental Representative may approve out-of-hour construction activities deemed to be of low environmental risk and refer high risk works for the Secretary's approval. The OOHW protocol shall detail standard assessment, mitigation and notification requirements for high and low risk out-of-hour works, and detail a standard protocol for referring applications to the Secretary; and
(ix) a description of how the effectiveness of these actions and measures would be monitored during the proposed works, clearly indicating how often this monitoring would be conducted, the locations where monitoring would take place, how the results of this monitoring would be recorded and reported; and, if any exceedence is detected, how any non-compliance would be rectified;

(g) a detailed **Acid Sulphate Soil Management Plan** prepared in consultation with DPI (Aquatic Habitat Protection Unit), and L&W prior to any construction activity in areas mapped as Potential Acid Sulphate Soils or Actual Acid Sulphate Soils. The plan shall include reference to the water quality monitoring programme contained in the Groundwater and Surface Water Management Plans. The plan shall be prepared in accordance with the Acid Sulphate Soils Manual (ASSMC, 1998). As part of the plan, a Contingency Plan to deal with the unexpected discovery of actual or potential acid sulphate soils shall be prepared in consultation with L&W; and

(h) a **Traffic Management Plan** to manage traffic conflicts that may be generated during construction. The Plan shall address the requirements of the relevant road authority and shall include, but not necessarily be limited to:
(i) details of how construction of the project will be managed in proximity to local and regional roads;
(ii) details of traffic routes for heavy vehicles, including any necessary route or timing restriction for oversized loads;
(iii) measures to minimise and manage traffic noise;
(iv) an assessment of sufficient access for emergency vehicles to ensure the proposed traffic arrangements meet the requirements detailed in *Guidelines for Emergency Vehicle Access Policy No 4* (NSW Fire Brigades, 2010);
(v) demonstration that all statutory responsibilities with regard to road traffic impacts have been complied with;
(vi) details of measures to minimise interactions between the project and other users of the roads such as the use of fencing, lights, barriers, traffic diversions etc;
(vii) procedures for informing the public where any road access will be restricted as a result of the project;
(viii) procedures to manage construction traffic to ensure the safety of livestock and to minimise disruption to livestock;
(ix) speed limits to be observed along routes to and from the site and within the site; and
(x) details of the expected behavioural requirements for vehicle drivers travelling to and from the site and within the site.

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PART C – PRIOR TO AND DURING OPERATION

BIODIVERSITY

C1 The Proponent shall design, install and maintain all fencing – other than operational site security fencing – in a manner that does not impede the passage of koalas or other native fauna.

Biodiversity Offset Package

C2 The Proponent shall develop and implement a **Biodiversity Offset Package** in consultation with the OEH and Port Stephens Council, consistent with the Biodiversity Offset Strategy approved under condition B13 of this approval. The package shall be consistent with the Biobanking Methodology under the Biobanking and Offsets Scheme outlined in *Biobanking Assessment Methodology and Credit Calculator Operational Manual* (DECC, 2009). The Package shall result in the establishment of one or more offset sites to give effect to the requirements of the Biodiversity Offset Strategy, which shall be underpinned by a Plan of Management and an appropriate mechanism to ensure long-term conservation and financial security of the offset site(s). The Package shall be submitted for the approval of the Secretary at least one month prior to the commencement of operation of the project.

HAZARDS AND RISK

C3 During operation, the Proponent shall store and handle all dangerous goods, as defined by the Australian Dangerous Goods Code, strictly in accordance with:

(a) all relevant Australian Standards; and

(b) DECC's *Environment Protection Manual Technical Bulletin – Bunding and Spill Management*.

In the event of an inconsistency between the requirements listed from (a) to (b) above, the most stringent requirement shall prevail to the extent of the inconsistency.

Operational Hazards Studies

C4 At least two months prior to commissioning the project, or as otherwise agreed by the Secretary, the Proponent shall prepare and submit the following plans for the approval of the Secretary:

(a) A comprehensive **Emergency Plan** and detailed emergency procedures for the proposed project. This plan shall include consideration of the safety of all people outside of the project who may be at risk from the project. The plan shall be consistent with the *Hazardous Industry Planning Advisory Paper No. 1 – Industry Emergency Planning Guideline* (DoP, 2011); and

(b) A document setting out a comprehensive **Safety Management System**, covering all on-site operations and associated transport activities involving hazardous materials. The document shall clearly specify all safety related procedures, responsibilities and policies, along with details of mechanisms for ensuring adherence to the procedures. Records shall be kept on-site and shall be available for inspection by the Secretary upon request. The Safety Management System shall be consistent with the *Hazardous Industry Planning Advisory Paper No. 9 – Safety Management* (DoP, 2011).

Commissioning shall not commence until approval has been given by the Secretary.

Pre-Startup Compliance Report

C5 At least one month prior to the commencement of operation of the project, or as otherwise agreed by the Secretary, the Proponent shall submit to the Secretary, a report detailing compliance with conditions B16 and C4 of this approval, including:

(a) dates of study/plan/system submission, approval, commencement of construction and commissioning;

(b) actions taken or proposed, to implement recommendations made in the studies/plans/systems; and

(c) responses to each requirement that may be imposed by the Secretary under condition A3.

Post-Startup Compliance Report

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C6 Within three months of the commencement of operation of the project, or as otherwise agreed by the Secretary, the Proponent shall submit to the Secretary, a report verifying that:

(a) the Emergency Plan required under condition C4 is effectively in place and that at least one emergency exercise has been conducted; and

(b) the Safety Management System required under condition C4 has been fully implemented and that records required by the system are being kept.

Hazard Audit

C7 Within 12 months of the commencement of operation of the project and every three years thereafter, or at such intervals as the Secretary may agree, the Proponent shall carry out a comprehensive Hazard Audit of the project and within one month of each audit submit a report to the Secretary. The audits shall be carried out at the Proponent's expense by a qualified person or team, independent of the project, approved by the Secretary prior to commencement of each audit. Hazard Audits shall be consistent with *Hazardous Industry Planning Advisory Paper No. 5 Hazard Audit Guidelines* (DoP, 2011). Each audit report must be accompanied by a programme for the implementation of all recommendations made in the audit report. If the Proponent intends to defer the implementation of a recommendation, reasons must be documented.

NOISE

Operational Noise Criteria

C8 The Proponent shall design, construct, operate and maintain the project to ensure that the noise contribution from the project at each receiver location does not exceed the noise limits specified in Table C1.

Table C1: Maximum Allowable Noise Limits (dB(A)

Location	Day 7:00am to 6:00pm Mondays to Saturdays 8:00am to 6:00pm Sundays and public holidays	Evening 6:00pm to 10:00pm on any day	Night 10:00pm to 7:00am Mondays to Saturdays 10:00pm to 8:00am Sundays and public holidays	
	$L_{Aeq(15\text{-minute})}$	$L_{Aeq(15\text{-minute})}$	$L_{Aeq(15\text{-minute})}$	$L_{A1(1\text{-minute})}$
217 Old Maitland Road	49	42	42	55
Hunter Botanical Gardens	50	50	50	N/A
5 Graham Drive	35	35	35	45
185 Old Maitland Road	35	35	35	45
45 School Drive	35	35	35	45
Tomago Caravan Park	35	35	35	45

The receiver locations set out in Table C1 are those identified in Table 7.39 and Figure 7.29 of the EA.

If noise from the project is substantially tonal, intermittent or impulsive in nature or contains major components within the low frequency range (as described in Chapter 4 of the *NSW Industrial Noise Policy* (EPA, 2000)), 5 dB(A) shall be added to the measured noise level when comparing the measured noise with the limits specified in Table C1, in accordance with the requirements of the *NSW Industrial Noise Policy*.

The noise limits set out in Table C1 do not apply under: wind speeds greater than 3 m/s at 10 metres above ground level; or under stability category F temperature inversion conditions when wind speeds are greater than 2 m/s at 10 metres above ground level; or under stability category G temperature inversion conditions. Stability category temperature inversion conditions shall be determined by the sigma-theta method referred to in Part 4E of Appendix E of the *NSW Industrial Noise Policy*. The meteorological data to be used for determining meteorological conditions shall be those recorded by monitoring station referred to under condition B37.

C9 The Proponent shall develop and implement a **Noise Monitoring Programme** in consultation with and to meet the requirements of the OEH. The Programme shall aim to demonstrate compliance with the noise limits under condition C8 of this approval during operation of the project.

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AIR QUALITY

Odour

C10 During operation, the Proponent shall ensure no offensive odour as defined under the *Protection of the Environment Operations Act 1997* is emitted from the project site, which impacts on any sensitive receiver.

Dust

C11 The Proponent shall employ reasonable and feasible measures to ensure that the project is operated in a manner that minimises or prevents the emission of dust.

Operational Air Quality Criteria

C12 The Proponent shall design, construct, operate and maintain the project to ensure that the discharge concentration limits specified in Table C2 are not exceeded at the nominated discharge point at the listed reference conditions. For the purpose of this condition, discharge locations are as identified in Figure 2.1 of *Air Quality and Greenhouse Gas Assessment – Newcastle Gas Storage Facility* (Coffey Natural Systems Pty Ltd, February 2011), provided as Appendix 14 to the EA and Figure 3.1 of the *Newcastle Gas Storage Facility – Modification 3, Environmental Assessment* (EMM, October 2017).

Table C2: Maximum Allowable Air Discharge Limits

Discharge Point	Pollutant	Limit	Reference Conditions
Stack associated with the Gas Liquefaction System (Point 9 in the EA)	Nitrogen oxides (as NO_2)	250 mg/m^3	273K, 101.3kPa
	Volatile organic compounds (VOCs, as n-propane) or carbon monoxide (CO)	5 mg/m^3 (VOCs) 100 mg/m^3 (CO)	Dry, 273K, 101.3kPa, 3% O_2
	Solid particles	5 mg/m^3	273K, 101.3kPa
	Sulphur oxides (includes SO_2 and SO_3 or sulphuric acid mist)	60 mg/m^3	273K, 101.3kPa
Stack associated with the Regassifier or LNG Vaporiser (Point 4 in the EA)	Nitrogen oxides (as NO_2)	190 mg/m^3	273K, 101.3kPa
	Volatile organic compounds (VOCs, as n-propane) or carbon monoxide (CO)	20 mg/m^3 (VOCs) 125 mg/m^3 (CO)	Dry, 273K, 101.3kPa, 3% O_2
	Solid particles	40 mg/m^3	273K, 101.3kPa
	Sulphur oxides (includes SO_2 and SO_3 or sulphuric acid mist)	5 mg/m^3	273K, 101.3kPa

C13 For the purpose of demonstrating compliance with discharge limits specified under condition C12 of this approval, the Proponent shall monitor the pollutants listed in Table C3 at each of the discharge points listed under condition C12, and applying the sampling methods and units of measure specified. Monitoring shall be undertaken quarterly for the first year following

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commissioning, and thereafter as may be agreed by the OEH. Two consecutive non-detectable results may be the basis for discontinuation of monitoring of that particular pollutant at any time.

Table C3: Discharge Monitoring Requirements

Pollutant	Units of Measure	Sampling Method
Nitrogen oxides	mg/m^3	TM-11
Volatile organic compounds (VOCs)	mg/m^3	OM-2
Solid particles	mg/m^3	TM-15
Sulphuric acid mist and sulphur dioxide	mg/m^3	TM-3
Sulphur dioxide	mg/m^3	TM-4
Dry gas density	kg/m^3	TM-23
Moisture	%	TM-22
Molecular weight of stack gas	g/gmol	TM-23
Oxygen	%	TM-25
Carbon dioxide	%	TM-25
Temperature	K	TM-2
Velocity	m/s	TM-2
Volumetric flow rate	m^3/s	TM-2
Selection of sampling points	N/A	TM-1

SOILS, WATER AND HYDROLOGY

C14 Except as may be expressly provided by an Environment Protection Licence for the project, the Proponent shall comply with section 120 of the *Protection of the Environment Operations Act 1997* during operation of the project.

C15 Prior to the commencement of operation of the project, the Proponent shall arrange for and implement a **Flood Emergency Response Plan**. The Plan shall be prepared by an independent, qualified flood engineer experienced in flood management. The Plan shall be updated and maintained where appropriate and include an education and awareness component for the workforce and detailed evacuation procedures to interface with the Bureau of Meteorology's flood warning system and the local State Emergency Services Plan (where appropriate) and to include provisions for any third parties likely to be involved. The Plan shall include the following components:

(a) likely flood behaviour;
(b) flood warning systems;
(c) education awareness programmes;
(d) evacuation and evasion procedures;
(e) evacuation routes and flood refuges;
(f) flood preparedness and awareness procedures for staff and visitors; and
(g) means to minimise risk and damage to gas plant infrastructure.

Consideration shall include the full range of flood risks (including climate change associated risks), the proposed use of the site, site access constraints and local area evacuation routes to high ground.

TRAFFIC AND TRANSPORT

C16 Prior to the commencement of operation of the project, the Proponent shall commission a suitably qualified road infrastructure specialist to assess the condition of all public roads traversed by construction traffic associated with the project (including over-mass or over-dimensional vehicles) in consultation with Council and the RMS and taking into account the Pre-Construction Road

Inspection Report prepared under the requirements of B32. Should the Pre-Operational Road Inspection Report identify any damage to roads attributable to construction traffic associated with the project, the Proponent shall repair the roads consistent with the recommendations of the report, within such time as agreed to with the relevant Council and the RMS and to meet the reasonable requirements of the relevant Council and the RMS. The **Pre-Operation Road Inspection Report** shall be submitted to the Secretary prior to the commencement of operation, clearly identifying recommendations made by relevant Councils and the RMS and how these have been addressed, to the satisfaction of the Secretary.

WASTE MANAGEMENT

C17 The Proponent shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site during operation, except as expressly permitted by a licence under the *Protection of the Environment Operations Act 1997*, if such a licence is required in relation to that waste.

C18 The Proponent shall maximise the reuse and/or recycling of operation waste materials generated on site, to minimise the need for treatment or disposal of those materials outside the site.

C19 The Proponent shall ensure that all liquid and/or non-liquid operation waste generated by the project is assessed and classified in accordance with the *Waste Classification Guidelines* (DECC 2008, or any future guideline that may supersede that document) and where removed from the site is only directed to a waste management facility lawfully permitted to accept those materials (unless otherwise permitted by an applicable Environment Protection Licence under the *Protection of the Environment Operations Act 1997*).

C20 The Proponent must seek prior approval under the *Local Government Act 1993* for the installation and operation of a human waste storage facility.

VISUAL AMENITY

C21 The Proponent shall:

(a) take all reasonable and feasible measures to mitigate off-site lighting impacts from the operation of the project; and

(b) ensure that all external lighting associated with operation of the project complies with *Australian Standard AS4282 – 1997 – Control of the Obtrusive Effects of Outdoor Lighting.*

This condition does not apply to lighting required for aviation safety.

ENVIRONMENTAL MANAGEMENT

Operation Environmental Management Plan

C22 The Proponent shall prepare and implement an Operation Environmental Management Plan (OEMP) for the project, in accordance with *Guideline for the Preparation of Environmental Management Plans* (DIPNR, 2004) or its latest version. The Plan shall be prepared in consultation with Councils, L&W, HWC and EPA and include, but not necessarily be limited to:

(a) identification of all statutory and other obligations that the Proponent is required to fulfil in relation to the operation of the development, including all consents, licences, approvals and consultations;

(b) specific consideration of relevant measures to address any requirements identified in the documents referred to under condition A1;

Modification 1 – approved 5 February 2013
Modification 2 – approved 31 January 2014
Modification 3 – approved 27 February 2018

(c) a management organisational chart identifying the roles and responsibilities for all relevant employees involved in the operation of the project;
(d) overall environmental policies and principles to be applied to the operation of the project;
(e) management policies to ensure that environmental performance goals are met and to comply with the conditions of this approval;
(f) standards and performance measures to be applied to the project, and means by which environmental performance can be periodically reviewed and improved (where appropriate), including what actions will be taken to address identified potential adverse environmental impacts. In particular, the following environmental performance issues shall be addressed in the Plan:
    (i) noise emissions, including measures for regular performance monitoring of noise generated by the project and measures to proactively respond to and deal with noise complaints;
    (ii) air quality impacts;
    (iii) operational traffic impacts, particularly during maintenance, and procedures to restore any damage attributable to the project during the operation phase;
    (iv) hazard and safety and emergency management measures, including measures to prevent and control bushfires;
    (v) groundwater management; and
    (vi) surface water management.
(g) procedures for the periodic review and update of the Operation Environmental Management Plan as necessary; and
(h) the environmental monitoring requirements outlined under this approval.

The OEMP shall be submitted for the approval of the Secretary no later than one month prior to the commencement of operation of the project or within such lesser period as otherwise agreed by the Secretary. Operation activities shall not commence until written approval of the OEMP has been received from the Secretary.

C23 To avoid any doubt, the Groundwater Management Plan and the Surface Water Management Plan required under condition B57 shall continue to be applied during operation.

C24 Within 3 months, unless otherwise agreed with the Secretary of any modification to the conditions of the approval (unless the conditions require otherwise), the Proponent must review and if necessary, revise the strategies, plans and programs required under this approval to the satisfaction of the Secretary.

Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted to the Secretary for approval, unless otherwise agreed with the Secretary.

Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the project.

Modification 1 – approved 5 February 2013
Modification 2 – approved 31 January 2014
Modification 3 – approved 27 February 2018

Appendix A2

AGL HSE Policy

Health Safety
& Environment
Look. Think. Act.

AGL Health, Safety and Environment Policy

Vision

We are respected for the care and commitment we demonstrate in prioritising our Health, Safety and Environment (HSE) obligations, managing risk and protecting our people and the environment in which we operate.

Scope

This policy applies to all AGL employees and contractors, and to the products and services that we provide to our customers. Where we do not have direct operational control, we will work productively with our stakeholders to achieve and maintain the standards described in this Policy.

Our Commitment

To conduct our business in a way that causes no harm to people and minimises impact on the environment.
To achieve this AGL will:

1. Understand and meet or exceed our legal and regulatory compliance obligations.
2. Maintain, continuously improve, and adhere to an HSE Management System that sets out how we will implement this Policy.
3. Create a working environment where everyone feels safe to speak up or intervene when they see something that does not seem right or is not consistent with our HSE Management Systems.
4. Provide a wide range of resources that improve the health and wellbeing of our employees.
5. Support employees who are injured at work to return to safe and sustainable work as soon as possible, and make reasonable adjustments, where appropriate, for non-work related injuries and illnesses.
6. Proactively identify and provide the resources to reduce, control, monitor and ensure awareness of the risks that have the potential to cause physical and/or psychosocial harm to people or impact the environment associated with our workplaces.
7. Consult and work collaboratively and transparently with our employees, customers, contractors, partners and the communities in which we operate on HSE matters.
8. Integrate HSE requirements when designing, purchasing, constructing and modifying facilities, equipment and systems for our customers and our own operations.
9. Continuously improve our processes, products and management systems by being curious, keeping current with industry leading practices and capturing lessons from rigorous incident investigations and adapting to meet the changing risks of the business as we transition.

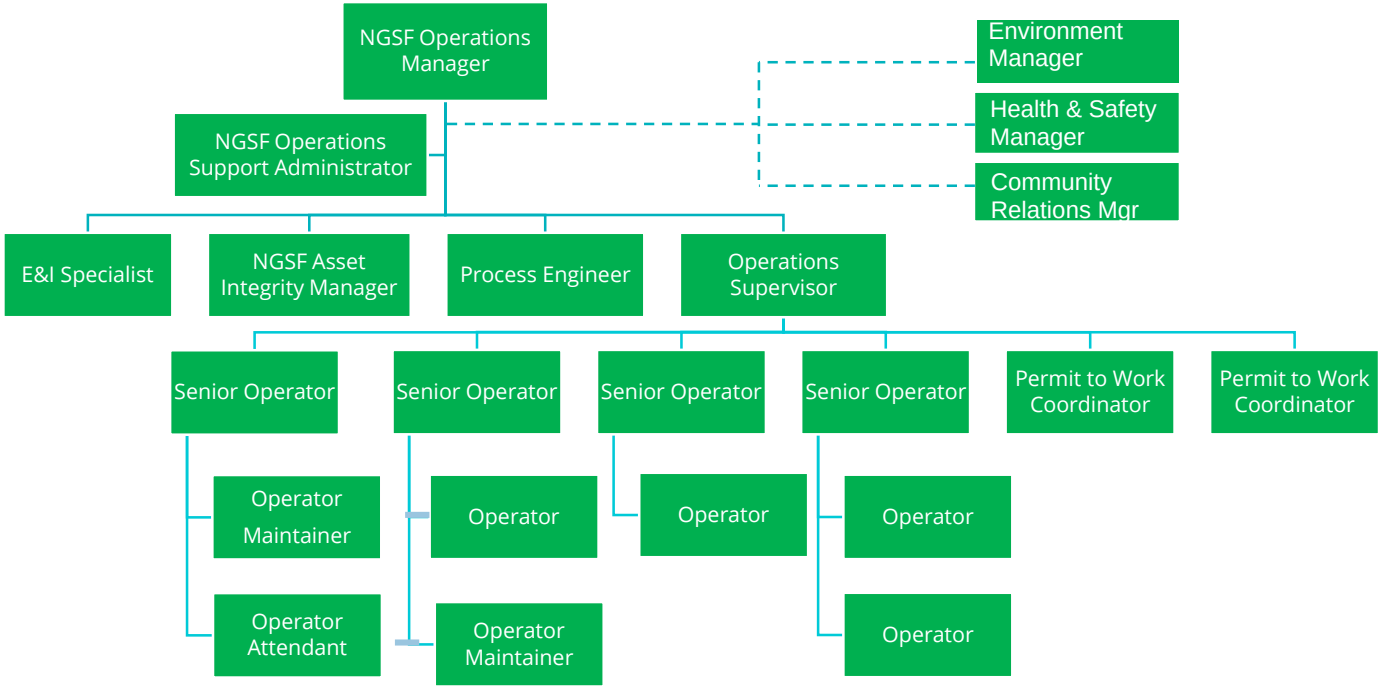
This policy has been approved by the Board of AGL and will be reviewed regularly to ensure it is kept effective.

Damien Nicks
Chief Executive Officer and Managing Director
October 2023

Appendix A3

Organisational Chart

Newcastle Gas Storage Facility



Appendix A4

Approval under EPBC Act

Approval

Newcastle Gas Storage Facility Project **EPBC 2010/5752**

This decision is made under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999*.

Proposed action

person to whom the approval is granted	**AGL Energy Limited**
proponent's ACN	**74 115 061 375**
proposed action	To develop the Newcastle Gas Storage Facility Project as described in the referral received under the EPBC Act, dated 25 November 2010. The Project includes the construction and operation of: • A gas plant site which includes a gas storage tank and processing plant; • A new access road to connect the gas plant site to Old Punt Road, Tomago; • A new gas receiving station at Hexham; • A natural gas pipeline connecting the gas plant site to the receiving station at Hexham [See EPBC Act referral 2010/5752].

Approval decision

Controlling Provision	Decision
Wetlands of international importance (sections 16 & 17B)	Approve
Listed threatened species and communities (sections 18 & 18A)	Approve
Listed migratory species (sections 20 & 20A)	Approve

conditions of approval This approval is subject to the conditions specified below.

expiry date of approval

This approval has effect until 30 June 2052.

Decision-maker

name and position

David Calvert
A/g Assistant Secretary
Environment Assessment Branch 2

signature

date of decision 18 / July / 2012

Conditions attached to the approval

1. To minimise the risk of construction and operational activities leading to the offsite movement of sediments or contaminants that could adversely affect the Kooragang Nature Reserve (now Hunter Wetlands National Park) wetland of international importance, the person taking the action must implement Conditions B 20 to B26 inclusive (dealing with Soils, Water and Hydrology), and B56 (dealing with a Construction Environmental Management Plan), imposed under the New South Wales Planning Assessment Commission conditions of approval dated 10 May 2012 for Application Number MP10_0133 under the NSW *Environmental Planning & Assessment Act 1979*. Available at https://majorprojects.affinitylive.com/public/537ae28c8102a8a38dc0bfe1183bc7df/Instrument%20of%20Approval.pdf .

2. To minimise adverse impacts during construction on listed threatened species and ecological communities, and in particular the New Holland Mouse (*Pseudomys novaehollandiae)*, and Earp's Gum *(Eucalyptus parramattensis subsp. decadens),* the person taking the action must implement Conditions B 56 (dealing with a Construction Environmental Management Plan), imposed under the New South Wales Planning Assessment Commission conditions of approval dated 10 May 2012 for Application Number MP10_0133.

3. To offset the loss of approximately four (4) individuals of Earp's Gum *(Eucalyptus parramattensis subsp. decadens)* and approximately 15ha of potential habitat for the New Holland Mouse (*Pseudomys novaehollandiae),* the person taking the action must implement Condition C2 (dealing with a Biodiversity Offset Package), imposed under the New South Wales Planning Assessment Commission conditions of approval dated 10 May 2012 for Application Number MP10_0133.

4. The Biodiversity Offset Package required under conditions B13 and C2 imposed under the New South Wales Planning Assessment Commission conditions of approval dated 10 May

2012 for Application Number MP10_0133, must provide for the permanent offsite protection of at least 25ha of optimal habitat for the New Holland Mouse (*Pseudomys novaehollandiae)* and permanent offsite protection of at least 60 individual Earp's Gum *(Eucalyptus parramattensis subsp. decadens)* trees.

5. Within 10 days after the **commencement** of the action, the person taking the action must advise the **Department** in writing of the actual date of commencement.

6. The person taking the action must maintain accurate records substantiating all activities associated with or relevant to these conditions of approval, including measures taken to implement management plans required as part of the approval, and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.

7. Within 3 months of every 12 month anniversary of the commencement of the action, the person taking the action must publish a report on their website addressing compliance with the conditions of this approval over the previous 12 months, including implementation of any management plans as specified in the conditions. Non-compliance with any of the conditions of this approval must be reported to the Department at the same time as the compliance report is published.

Definitions

Department

The Australian Government Department administering the *Environment Protection and Biodiversity Conservation Act 1999*.

Minister

The Minister administering the *Environment Protection and Biodiversity Conservation Act 1999* and includes a delegate of the Minister.

Commencement

The construction of any infrastructure, excluding fences and signage, associated with the proposed action.

Appendix A5

Conditions of Approval under EPBC Act

EPBC Act Approval Conditions

No.	Condition	Reference
6	The person taking the action must maintain accurate records substantiating all activities associated with or relevant to these conditions of approval, including measures taken to implement management plans required as part of the approval, and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.	Section 5
7	Within 3 months of every 12 month anniversary of the commencement of the action, the person taking the action must publish a report on their website addressing compliance with the conditions of this approval over the previous 12 months, including implementation of any management plans as specified in the conditions. Non-compliance with any of the conditions of this approval must be reported to the Department at the same time as the compliance report is published.	Section 5

Appendix A5

EPBC Act Conditions of Approval

EPBC Act Approval Conditions

No.	Condition	Reference
6	The person taking the action must maintain accurate records substantiating all activities associated with or relevant to these conditions of approval, including measures taken to implement management plans required as part of the approval, and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.	Section 5
7	Within 3 months of every 12 month anniversary of the commencement of the action, the person taking the action must publish a report on their website addressing compliance with the conditions of this approval over the previous 12 months, including implementation of any management plans as specified in the conditions. Non-compliance with any of the conditions of this approval must be reported to the Department at the same time as the compliance report is published.	Section 5

Appendix A6

EP&A Act Conditions of Approval

EP&A Act Conditions of Approval

<table>
<tr><th>No.</th><th>Condition</th><th>OEMP Reference</th></tr>
<tr><td>C8</td><td>The Proponent shall design, construct, operate and maintain the project to ensure that the noise contribution from the project at each receiver location does not exceed the noise limits specified in Table C1.
Table C1: Maximum Allowable Noise Limits (dB(A))
<table>
<tr><th rowspan="2">Location</th><th>Day
7:00am to 6:00pm
Mondays to Saturdays
8:00am to 6:00pm
Sundays and public holidays</th><th>Evening
6:00pm to 10:00pm on any day</th><th colspan="2">Night
10:00pm to 7:00am
Mondays to Saturdays
10:00pm to 8:00am
Sundays and public holidays</th></tr>
<tr><th>$L_{Aeq(15\text{-}minute)}$</th><th>$L_{Aeq(15\text{-}minute)}$</th><th>$L_{Aeq(15\text{-}minute)}$</th><th>$L_{A1(1\text{-}minute)}$</th></tr>
<tr><td>217 Old Maitland Road</td><td>49</td><td>42</td><td>42</td><td>55</td></tr>
<tr><td>Hunter Botanical Gardens</td><td>50</td><td>50</td><td>50</td><td>N/A</td></tr>
<tr><td>5 Graham Drive</td><td>35</td><td>35</td><td>35</td><td>45</td></tr>
<tr><td>185 Old Maitland Road</td><td>35</td><td>35</td><td>35</td><td>45</td></tr>
<tr><td>45 School Drive</td><td>35</td><td>35</td><td>35</td><td>45</td></tr>
<tr><td>Tomago Caravan Park</td><td>35</td><td>35</td><td>35</td><td>45</td></tr>
</table>
The receiver locations set out in Table C1 are those identified in Table 7.39 and Figure 7.29 of the EA.
If noise from the project is substantially tonal, intermittent or impulsive in nature or contains major components within the low frequency range (as described in Chapter 4 of the NSW Industrial Noise Policy (EPA, 2000)), 5 dB(A) shall be added to the measured noise level when comparing the measured noise with the limits specified in Table C1, in accordance with the requirements of the NSW Industrial Noise Policy.
The noise limits set out in Table C1 do not apply under: wind speeds greater than 3 m/s at 10 metres above ground level; or under stability category F temperature inversion conditions when wind speeds are greater than 2 m/s at 10 metres above ground level; or under stability category G temperature inversion conditions. Stability category temperature inversion conditions shall be determined by the sigma-theta method referred to in Part 4E of Appendix E of the NSW Industrial Noise Policy. The meteorological data to be used for determining meteorological conditions shall be those recorded by monitoring station referred to under condition B37.</td><td>Appendix B1 – Noise Management Plan</td></tr>
<tr><td>C9</td><td>The Proponent shall develop and implement a Noise Monitoring Programme in consultation with and to meet the requirements of the OEH. The Programme shall aim to demonstrate compliance with the noise limits under condition C8 of this approval during operation of the project.</td><td>Appendix B1 – Noise Management Plan</td></tr>
<tr><td>C10</td><td>During operation, the Proponent shall ensure no offensive odour as defined under the Protection of the Environment Operations Act 1997 is emitted from the project site, which impacts on any sensitive receiver.</td><td>Appendix B2 – Air Quality Management Plan</td></tr>
<tr><td>C11</td><td>The Proponent shall employ reasonable and feasible measures to ensure that the project is operated in a manner that minimised or prevents the emission of dust.</td><td>Appendix B2 – Air Quality Management Plan</td></tr>
<tr><td>C12</td><td>The Proponent shall design, construct, operate and maintain the project to ensure that the discharge concentration limits specified in Table C2 are not exceeded at the nominated discharge point at the listed reference conditions. For the purpose of this condition, discharge locations are as identified in Figure 2.1 of Air Quality and Greenhouse Gas Assessment – Newcastle Gas Storage Facility (Coffey Natural Systems Pty Ltd, February 2011), provided as Appendix 14 to the EA.</td><td>Appendix B2 – Air Quality Management Plan</td></tr>
</table>

	Table C2: Maximum Allowable Air Discharge Limits **Discharge Point** / **Pollutant** / **Limit** / **Reference Conditions** Stack associated with the Gas Liquefaction System (Point 9 in the EA) — Nitrogen oxides (as NO_2) — 250 mg/m^3 — 273K, 101.3kPa Volatile organic compounds (VOCs, as n-propane) or carbon monoxide (CO) — 5 mg/m^3 (VOCs) 100 mg/m^3 (CO) — Dry, 273K, 101.3kPa, 3% O_2 Solid particles — 5 mg/m^3 — 273K, 101.3kPa Sulphur oxides (includes SO_2 and SO_3 or sulphuric acid mist) — 60 mg/m^3 — 273K, 101.3kPa Stack associated with the Regassifier or LNG Vaporiser (Point 4 in the EA) — Nitrogen oxides (as NO_2) — 190 mg/m^3 — 273K, 101.3kPa Volatile organic compounds (VOCs, as n-propane) or carbon monoxide (CO) — 20 mg/m^3 (VOCs) 125 mg/m^3 (CO) — Dry, 273K, 101.3kPa, 3% O_2 Solid particles — 40 mg/m^3 — 273K, 101.3kPa Sulphur oxides (includes SO_2 and SO_3 or sulphuric acid mist) — 5 mg/m^3 — 273K, 101.3kPa	
C13	For the purpose of demonstrating compliance with discharge limits specified under condition C12 of this approval, the Proponent shall monitor the pollutants listed in Table C3 at each of the discharge points listed under condition C12, and applying the sampling methods and units of measure specified. Monitoring shall be undertaken quarterly for the first year following commissioning, and thereafter as may be agreed by the OEH. Two consecutive non-detectable results may be the basis for discontinuation of monitoring of that particular pollutant at any time. ***Table C3: Discharge Monitoring Requirements*** **Pollutant** / **Units of Measure** / **Sampling Method** Nitrogen oxides — mg/m^3 — TM-11 Volatile organic compounds (VOCs) — mg/m^3 — OM-2 Solid particles — mg/m^3 — TM-15 Sulphuric acid mist and sulphur dioxide — mg/m^3 — TM-3 Sulphur dioxide — mg/m^3 — TM-4 Dry gas density — kg/m^3 — TM-23 Moisture — % — TM-22 Molecular weight of stack gas — g/gmol — TM-23 Oxygen — % — TM-25 Carbon dioxide — % — TM-25 Temperature — K — TM-2 Velocity — m/s — TM-2 Volumetric flow rate — m^3/s — TM-2 Selection of sampling points — N/A — TM-1	Appendix B2 – Air Quality Management Plan
C15	Prior to the commencement of operation of the project, the Proponent shall arrange for and implement a Flood Emergency Response Plan. The Plan shall be prepared by an independent, qualified flood engineer experienced in flood management. The Plan shall be updated and maintained where appropriate and include an education and awareness component for the workforce and detailed evacuation procedures to interface with the Bureau of Meteorology's flood warning system and the local State Emergency Services Plan (where appropriate) and to include provisions for any third parties likely to be involved. The Plan shall include the following components: (a) likely flood behaviour; (b) flood warning systems; (c) education awareness programmes; (d) evacuation and evasion procedures; (e) evacuation routes and flood refuges; (f) flood preparedness and awareness procedures for staff and visitors; and (g) means to minimise risk and damage to gas plant infrastructure. Consideration shall include the full range of flood risks (including climate change associated risks), the proposed use of the site, site access constraints and local area evacuation routes to high ground.	Emergency Plan and Emergency Response Procedures

C17	The Proponent shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site during operation, except as expressly permitted by a licence under the *Protection of the Environment Operations Act 1997*, if such a licence is required in relation to that waste.	Appendix B3 – Waste Management Plan
C18	The Proponent shall maximise the reuse and/or recycling of operation waste materials generated on site, to minimise the need for treatment or disposal of those materials outside the site.	Appendix B3 – Waste Management Plan
C19	The Proponent shall ensure that all liquid and/or non-liquid operation waste generated by the project is assessed and classified in accordance with the *Waste Classification Guidelines* (DECC 2008, or any future guideline that may supersede that document) and where removed from the site is only directed to a waste management facility lawfully permitted to accept those materials (unless otherwise permitted by an applicable Environment Protection Licence under the *Protection of the Environment Operations Act 1997*).	Appendix B3 – Waste Management Plan

C20	The Proponent must seek prior approval under the *Local Government Act 1993* for the installation and operation of a human waste storage facility.	Appendix B3 – Waste Management Plan
C22	The Proponent shall prepare and implement an Operation Environmental Management Plan (OEMP) for the project, in accordance with Guideline for the Preparation of Environmental Management Plans (DlPNR, 2004) or its latest version. The Plan shall be prepared in consultation with Councils, NOW, HWC and EPA and include, but not necessarily be limited to: (a) identification of all statutory and other obligations that the Proponent is required to fulfil in relation to the operation of the development, including all consents, licences, approvals and consultations; (b) specific consideration of relevant measures to address any requirements identified in the documents referred to under condition A1; (c) a management organisational chart identifying the roles and responsibilities for all relevant employees involved in the operation of the project; (d) overall environmental policies and principles to be applied to the operation of the project; (e) management policies to ensure that environmental performance goals are met and to comply with the conditions of this approval; (f) standards and performance measures to be applied to the project, and means by which environmental performance can be periodically reviewed and improved (where appropriate), including what actions will be taken to address identified potential adverse environmental impacts. ln particular, the following environmental performance issues shall be addressed in the Plan: (i) noise emissions, including measures for regular performance monitoring of noise generated by the project and measures to proactively respond to and deal with noise complaints; (ii) air quality impacts; (iii) operational traffic impacts, particularly during maintenance, and procedures to restore any damage attributable to the project during the operation phase; (iv) hazard and safety and emergency management measures, including measures to prevent and control bushfires. This shall include measures for leak testing of the pipeline and reporting results to the EPA; (v) groundwater management; and (vi) surface water management. (g) procedures for the periodic review and update of the Operation Environmental Management Plan as necessary; and (h) the environmental monitoring requirements outlined under this approval. The OEMP shall be submitted for the approval of the Director-General no later than one month prior to the commencement of operation of the project or within such lesser period as otherwise agreed by the Director-General. Operation activities shall not commence until written approval of the OEMP has been received from the Director-General.	This OEMP

Appendix A7

Statement of Commitments

Statements of Commitment

No.	Commitment	OEMP Reference
7.1.1	Use licensed contractors to collect, transport and dispose of hazardous materials such as waste solvents, paints, mercury absorption medium and hydrocarbons to a licensed off-site facility in accordance with EPA guidelines.	Appendix B3 – Waste Management Plan
7.1.2	Remove wastewater and sewage from site by an EPA licensed operator for treatment at an EPA-approved wastewater treatment facility.	Appendix B3 – Waste Management Plan
7.1.3	Regularly inspect hazardous material containment facilities to ensure their integrity.	Appendix B7 – Land Management Plan
7.1.4	Ensure potential contaminants at the Hexham receiving station are stored within flood-protected facilities.	Appendix B7 – Land Management Plan
7.2.1	Transport trade wastewater, amenities wastewater and waste process water offsite by a licensed operator to a licensed disposal facility.	Appendix B3 – Waste Management Plan
7.10.1	Operation traffic management controls will be implemented to ensure staff, contractor and public safety relating to vehicle transport. Safe driver conduct policies and standards will be applicable to all AGL staff and contractors. Other controls include: – Implement driver and pedestrian safety awareness programs. – Review speed limits across the Project sites for all vehicles. – Conduct a random alcohol and drug testing program.	Appendix B4 – Traffic Management Measures
7.11.1	A noise and vibration management plan will be prepared as part of the CEMP and OEMP to ensure noise levels are adequately controlled and any impacts managed.	Appendix B1 – Noise Management Measures
7.11.2	Construction and operation activities will be undertaken with a focus on noise control at source, noise attenuation and in consultation with potentially affected receptors to minimise the risk of noise exceeding noise criteria and disturbing sensitive receptors.	Appendix B1 – Noise Management Measures
	The following measures will be implemented (where practical) to manage impacts of noise and ensure Project goals are met:	Appendix B1 – Noise Management Measures
7.11.3	Ensure vehicles and equipment are in good working order and have effective noise reduction features.	Appendix B1 – Noise Management Measures
7.11.4	Consult potential noise receptors about the nature of operations noise emissions and avoidance and mitigation practices to be adopted. Feedback and complaints will be recorded and addressed where practical.	Appendix B1 – Noise Management Measures
7.11.5	Monitor noise levels during operations to ensure localised noise creep (increase in local ambient noise) is not occurring due to the Project.	Appendix B1 – Noise Management Measures
7.11.6	Noise and vibration monitoring programs will be developed as part of the noise	Appendix B1 –

	and vibration management plan. The programs will focus on monitoring:	Noise Management Measures

7.11.7	Noise emissions during construction and operations to ensure equipment is meeting noise certification and criteria requirements and detect any faulty or damaged equipment.	Appendix B1 – Noise Management Measures
7.11.8	Responding to community complaints in line with EPA licence conditions.	Appendix B1 – Noise Management Measures
	Control measures will be implemented during construction and operation to minimise dust and other emissions:	
7.12.1	A monitoring program will be established to ensure regular (or continuous) monitoring of air emissions.	Appendix B3 – Air Quality Management Plan
7.12.2	The access road will be sealed during operations to prevent the generation of dust by vehicles using the road and to dirt being carried onto the TAC Northern Access Road or Old Punt Road where it could form dust.	Appendix B3 – Air Quality Management Plan
7.12.3	Monitoring of the Project emissions will be in accordance with current AGL practice. Emissions of pollutants are reported annually in the National Pollution Inventory (NPI).	Appendix B3 – Air Quality Management Plan
7.12.4	Chemicals and analytes, including glycol, used across the Project for dehydration, rehydration and refrigeration will be monitored and modelled.	Section 6.1 of OEMP
7.12.5	There will not be any gas venting during shutdown other than in an emergency.	Appendix B3 – Air Quality Management Plan
7.14.1	If any evidence of illegal dumping of wastes on the Project area is observed the dumped material will be removed immediately. If any liquid sludge or chemical waste is observed then appropriate sampling and monitoring will be implemented to determine whether any impact to groundwater has occurred.	Appendix B3 – Waste Management Plan

Appendix A8

Environment Protection Licence

Environment Protection Licence

Licence - 20130

Licence Details	
Number:	20130
Anniversary Date:	20-July

Licensee

AGL UPSTREAM INVESTMENTS PTY LIMITED

5 OLD PUNT ROAD

TOMAGO NSW 2322

Premises

NEWCASTLE GAS STORAGE FACILITY

5 OLD PUNT ROAD

TOMAGO NSW 2322

Scheduled Activity

Chemical storage

Petroleum products and fuel production

Fee Based Activity	Scale
Petroleum products and fuel production	> 10000-200000 T annual production capacity
Petroleum products storage	> 5000-100000 kL storage capacity

Contact Us

NSW EPA

6 Parramatta Square

10 Darcy Street

PARRAMATTA NSW 2150

Phone: 131 555

Email: info@epa.nsw.gov.au

Locked Bag 5022

PARRAMATTA NSW 2124

Environment Protection Licence

Licence - 20130

Environment Protection Licence

Licence - 20130

Environment Protection Licence

Licence - 20130

Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

Environment Protection Licence

The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

AGL UPSTREAM INVESTMENTS PTY LIMITED
5 OLD PUNT ROAD
TOMAGO NSW 2322

subject to the conditions which follow.

Environment Protection Licence

Licence - 20130

1 Administrative Conditions

A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Petroleum products and fuel production	Petroleum products and fuel production	> 10000 - 200000 T annual production capacity
Chemical storage	Petroleum products storage	> 5000 - 100000 kL storage capacity

A1.2 The licence Scheduled Activity Fee Based Activity Scale is limited for Petroleum Products and Fuel Production to the amount of 70,000 tonnes per annum produced notwithstanding the scale bandwidth of 10,000 - 200,000 tonnes per annum produced.
Note: This limitation is consistent with the Development Consent.

Note: In relation to this licence, the licensee must comply with :

- The fee based activity scale limits imposed by this licence;
- The fee based activity scale limits which apply for the reporting period specified in this licence; and
- The activity scale limits imposed by other legal instruments, such as approvals currently in force under the Environmental Planning and Assessment Act 1979.

A1.3 Except as expressly provided by these conditions, works and activties must be carried out in accordance with the proposal contained in the;

a) Environmental Assessment, dated May 2011 prepared by Coffey Natural Systems Pty Ltd.

b) Preferred Project and Response to Submissions Report, Newcastle Gas Storage Facility Project, dated September 2011

c) Environmental Assessment, dated October 2017 prepared by EMM, including response to submissions dated 13 December 2017 and Project approval MP10_0133, Modification 3

- approved on 27 February 2018.

unless otherwise specified in the following conditions.

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
NEWCASTLE GAS STORAGE FACILITY
5 OLD PUNT ROAD
TOMAGO
NSW 2322
PREMISES SHOWN ON PLAN TITLED "NEWCASTLE GAS STORAGE FACILITY GAS PLANT SITE" DATED 08-07-2016 (PLAN FILED AS EPA DOCUMENT DOC16/341875).

A3 Other activities

A3.1 The licence applies to all activities carried on at the premises.

A4 Information supplied to the EPA

A4.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:
a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and
b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

2 Discharges to Air and Water and Applications to Land

P1 Location of monitoring/discharge points and areas

P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

Air

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EPA identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
7	Air emissions monitoring and discharge point	Air emissions monitoring and discharge point	Stack associated with the WPG Gas Fired Heater servicing the Amine Regeneration Unit identified as Point 7 on the plan titled "Newcastle Gas Storage Facility Gas Plant Site" which has been filed as EPA document DOC16/341875.
8	Air emissions monitoring and discharge point	Air emissions monitoring and discharge point	Stack Associated with the regasifier or LNG Vaporiser, identified as Point 8 on the plan titled "Newcastle Gas Storage Facility Gas Plant Site" which has been filed as EPA document DOC16/341875.
10	Air emissions monitoring and discharge point.	Air emissions monitoring and discharge point.	Stack Associated with the regasifier or LNG Vaporiser, identified as Point 10 on the plan titled "Newcastle Gas Storage Facility Gas Plant Site" which has been filed as EPA document DOC16/341875.
11	Air emissions monitoring and discharge point	Air emissions monitoring and discharge point	Stack Associated with the regasifier or LNG Vaporiser, identified as Point 11 on the plan titled "Newcastle Gas Storage Facility Gas Plant Site" which has been filed as EPA document DOC16/341875.

P1.2 The following points referred to in the table below are identified in this licence for the purposes of weather and/or noise monitoring and/or setting limits for the emission of noise from the premises.

Noise/Weather

EPA identification no.	Type of monitoring point	Location description
2	Noise monitoring	Hunter Botanical Gardens
3	Noise monitoring	5 Grahame Drive Tomago 2322
5	Noise monitoring	45 School Drive Tomago 2322
6	Noise monitoring	Tomago Village Van Park
9	Meteorological Station	Tomago Aluminium Company Meteorological Station.

3 Limit Conditions

L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

L2 Load limits

Environment Protection Licence

L2.1 The actual load of an assessable pollutant discharged from the premises during the reporting period must not exceed the load limit specified for the assessable pollutant in the table below.

Note: An assessable pollutant is a pollutant which affects the licence fee payable for the licence.

L2.2 The actual load of an assessable pollutant must be calculated in accordance with the relevant load calculation protocol.

Assessable Pollutant	Load limit (kg)
Arsenic (Air)	
Benzene (Air)	
Benzo(a)pyrene (equivalent) (Air)	
Fine Particulates (Air)	
Hydrogen Sulfide (Air)	
Lead (Air)	
Mercury (Air)	
Nitrogen Oxides (Air)	
Sulfur Oxides (Air)	
Volatile organic compounds (Air)	

L3 Concentration limits

L3.1 For each monitoring/discharge point or utilisation area specified in the table/s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.

L3.2 Air Concentration Limits

POINT 7

Pollutant	Units of measure	100 percentile concentration limit	Reference conditions	Oxygen correction	Averaging period
Nitrogen Oxides	milligrams per cubic metre	250	Dry, 273K, 101.3 kPa	3 percent	1 hour
volatile organic compounds as n-propane equivalent	milligrams per cubic metre	5	Dry, 273K, 101.3 kPa	3 percent	1 hour
Carbon monoxide	milligrams per cubic metre	100	Dry, 273K, 101.3 kPa	3 percent	1 hour

Solid Particles	milligrams per cubic metre	5	Dry, 273K, 101.3 kPa	3 percent	1 hr or per the test method, whichever is greater
Sulfur Oxides	milligrams per cubic metre	60	Dry, 273K, 101.3 kPa	3 percent	1 hour

POINT 8,10,11

Pollutant	Units of measure	100 percentile concentration limit	Reference conditions	Oxygen correction	Averaging period
Nitrogen Oxides	milligrams per cubic metre	190	Dry, 273K, 101.3 kPa	3 percent	1 hour
volatile organic compounds as n-propane equivalent	milligrams per cubic metre	20	Dry, 273K, 101.3 kPa	3 percent	1 hour
Solid Particles	milligrams per cubic metre	40	Dry, 273K, 101.3 kPa	3 percent	1 hr or per the test method, whichever is greater
Sulfur Oxides	milligrams per cubic metre	5	Dry, 273K, 101.3 kPa	3 percent	1 hour
Carbon monoxide	milligrams per cubic metre	125	Dry, 273K, 101.3 kPa	3 percent	1 hour

L4 Waste

L4.1 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L4.2 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if those activities require an environment protection licence.

L5 Noise limits

L5.1 Noise generated at the premises that is measured at each noise monitoring point established under this licence must not exceed the noise levels specified in Column 4 of the table below for that point during the corresponding time periods specified in Column 1 when measured using the corresponding measurement parameters listed in Column 2.

POINT 2

Time period	Measurement parameter	Measurement frequency	Noise level dB(A)
Day	Day-LAeq (15 minute)	-	50
Evening	Evening-LAeq (15 minute)	-	50

Night	Night-LAeq (15 minute)	-	50

POINT 3

Time period	Measurement parameter	Measurement frequency	Noise level dB(A)
Day	Day-LAeq (15 minute)	-	35
Evening	Evening-LAeq (15 minute)	-	35
Night	Night-LAeq (15 minute)	-	35
Night	Night-LA1 (1 minute)	-	45

POINT 5

Time period	Measurement parameter	Measurement frequency	Noise level dB(A)
Day	Day-LAeq (15 minute)	-	35
Evening	Evening-LAeq (15 minute)	-	35
Night	Night-LAeq (15 minute)	-	35
Night	Night-LA1 (1 minute)	-	45

POINT 6

Time period	Measurement parameter	Measurement frequency	Noise level dB(A)
Day	Day-LAeq (15 minute)	-	35
Evening	Evening-LAeq (15 minute)	-	35
Night	Night-LAeq (15 minute)	-	35
Night	Night-LA1 (1 minute)	-	45

Note: For the purpose of the condition above;
a) Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sunday and Public Holidays.
b) Evening is defined as the period 6pm to 10pm.
c) Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sunday and Public Holidays.

L5.2 The noise limits set out in the Noise Limits table\s for Noise Monitoring Points 1 to 6 inclusive apply under all meteorological conditions except for the following:

a) Wind speeds greater than 3 metres/second at 10 metres above ground level; or
b) Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or
c) Stability category G temperature inversion conditions.

For the purposes of this condition:
a) Data recorded by the meteorological station identified as EPA Identification Point Nine (9) must be used to determine meteorological conditions; and
b) Temperature inversion conditions (stability category) are to be determined by the sigma-theta method referred to in Part E4 of Appendix E to the NSW Industrial Noise Policy.

L5.3 **Determining Compliance**

To determine compliance:
a) with the Leq(15 minute) noise limits in the Noise Limits table, the noise measurement equipment must be located:
i) approximately on the property boundary, where any dwelling is situated 30 metres or less from the property boundary closest to the premises; or
ii) within 30 metres of a dwelling façade, but not closer than 3m, where any dwelling on the property is situated more than 30 metres from the property boundary closest to the premises; or, where applicable
iii) within approximately 50 metres of the boundary of a National Park or a Nature Reserve.
b) with the LA1(1 minute) noise limits in the Noise Limits table, the noise measurement equipment must be located within 1 metre of a dwelling façade.
c) with the noise limits in the Noise Limits table, the noise measurement equipment must be located:
i) at the most affected point at a location where there is no dwelling at the location; or
ii) at the most affected point within an area at a location prescribed by part (a) or part (b) of this condition.

L5.4 For the purposes of determining the noise generated at the premises the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

L5.5 A non-compliance with respect to the noise limits table\s will still occur where noise generated from premises in excess of the appropriate limit is measured:

a) at a location other than an area prescribed by the above conditions and/or

b) at a point other than the most affected point at a location.

L6 Potentially offensive odour

L6.1 The licensee must not cause or permit the emission of offensive odour beyond the boundary of the premises.

Note: Section 129 of the Protection of the Environment Operations Act 1997, provides that the licensee must not cause or permit the emission of any offensive odour from the premises but provides a defence if the emission is identified in the relevant environment protection licence as a potentially offensive odour and the odour was emitted in accordance with the conditions of a licence directed at minimising odour.

L6.2 No condition of this licence identifies a potentially offensive odour for the purposes of section 129 of the Protection of the Environment Operations Act 1997.

4 Operating Conditions

O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.
This includes:
a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
a) must be maintained in a proper and efficient condition; and
b) must be operated in a proper and efficient manner.

O3 Dust

O3.1 The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.

O4 Processes and management

O4.1 All above ground tanks containing material that is likely to cause environmental harm must be bunded or have an alternative spill containment system in place.

5 Monitoring and Recording Conditions

M1 Monitoring records

M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.

M1.2 All records required to be kept by this licence must be:
a) in a legible form, or in a form that can readily be reduced to a legible form;
b) kept for at least 4 years after the monitoring or event to which they relate took place; and
c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:

a) the date(s) on which the sample was taken;
b) the time(s) at which the sample was collected;
c) the point at which the sample was taken; and
d) the name of the person who collected the sample.

M2 Requirement to monitor concentration of pollutants discharged

M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

M2.2 Air Monitoring Requirements

POINT 7,8,10,11

Pollutant	Units of measure	Frequency	Sampling Method
Carbon dioxide	percent	Special Frequency 1	TM-24
Carbon monoxide	milligrams per cubic metre	Special Frequency 1	TM-32
Dry gas density	kilograms per cubic metre	Special Frequency 1	TM-23
Moisture	percent	Special Frequency 1	TM-22
Molecular weight of stack gases	grams per gram mole	Special Frequency 1	TM-23
Nitrogen Oxides	milligrams per cubic metre	Special Frequency 1	TM-11
Oxygen (O2)	percent	Special Frequency 1	TM-25
Solid Particles	milligrams per cubic metre	Special Frequency 1	TM-15
Sulfur dioxide	milligrams per cubic metre	Special Frequency 1	TM-4
Sulfuric acid mist and sulfur trioxide (as SO3)	milligrams per cubic metre	Special Frequency 1	TM-3
Temperature	Kelvin	Special Frequency 1	TM-2
Velocity	metres per second	Special Frequency 1	TM-2
Volatile organic compounds	milligrams per cubic metre	Special Frequency 1	OM-2
Volumetric flowrate	cubic metres per second	Special Frequency 1	TM-2

Note: For the purposes of Monitoring Pollutants discharged to air at discharge Points 7, 8, 10 and 11 "Special Frequency 1" is defined as monitoring once every 5 years during any period when the heaters are in operation. Based on site operations, this is only likely to occur during the cooler winter months when there is increased gas export demand. As a consequence, it is understood that monitoring may only occur during 3 months of the year.

Environment Protection Licence

M3 Testing methods - concentration limits

M3.1 Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with:
a) any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or
b) if no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or
c) if no such requirement is imposed by or under the Act or by a condition of this licence, any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place.

Note: The *Protection of the Environment Operations (Clean Air) Regulation 2022* requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".

M4 Testing methods - load limits

Note: Division 4 of the *Protection of the Environment Operations (General) Regulation 2022* requires that monitoring of actual loads of assessable pollutants listed in L2.2 must be carried out in accordance with the relevant load calculation protocol set out for the fee-based activity classification listed in the Administrative Conditions of this licence.

M5 Weather monitoring

M5.1 At the point(s) identified below, the licensee must monitor (by sampling and obtaining results by analysis) the parameters specified in Column 1 of the table below, using the corresponding sampling method, units of measure, averaging period and sampling frequency, specified opposite in the Columns 2, 3, 4 and 5 respectively.

POINT 9

Parameter	Sampling method	Units of measure	Averaging period	Frequency
Temperature at 2 metres	AM-4	degrees Celsius	1 hour	Continuous
Wind Direction at 10 metres	AM-2 & AM-4	Degrees	15 minutes	Continuous
Wind Speed	AM-2 & AM-4	metres per second	15 minutes	Continuous
Sigma theta	AM-2 & AM-4	Degrees	15 minutes	Continuous
Rainfall	AM-4	millimetres	15 minutes	Continuous
Relative humidity	AM-4	percent	1 hour	Continuous

M5.2 The meteorological weather station must be maintained so as to be capable of continuously monitoring the

parameters specified in this section.

M6 Recording of pollution complaints

M6.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M6.2 The record must include details of the following:
a) the date and time of the complaint;
b) the method by which the complaint was made;
c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
d) the nature of the complaint;
e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
f) if no action was taken by the licensee, the reasons why no action was taken.

M6.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M6.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M7 Telephone complaints line

M7.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M7.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M7.3 The preceding two conditions do not apply until : the date of the issue of this licence.

M8 Noise monitoring

M8.1 Where noise complaints are received by the EPA, the EPA may require in writing that the Licensee undertake noise compliance monitoring and provide a report to the EPA.

6 Reporting Conditions

R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:

1. a Statement of Compliance,

2. a Monitoring and Complaints Summary,
3. a Statement of Compliance - Licence Conditions,
4. a Statement of Compliance - Load based Fee,
5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and
7. a Statement of Compliance - Environmental Management Systems and Practices.

At the end of each reporting period, the EPA will provide to the licensee notification that the Annual Return is due.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

R1.3 Where this licence is transferred from the licensee to a new licensee:
a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:
a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA via eConnect *EPA* or by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.6 Where the licensee is unable to complete a part of the Annual Return by the due date because the licensee was unable to calculate the actual load of a pollutant due to circumstances beyond the licensee's control, the licensee must notify the EPA in writing as soon as practicable, and in any event not later than the due date. The notification must specify:
a) the assessable pollutants for which the actual load could not be calculated; and
b) the relevant circumstances that were beyond the control of the licensee.

R1.7 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

R1.8 Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
a) the licence holder; or
b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

R2 Notification of environmental harm

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which they became aware of the incident.

R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:
a) where this licence applies to premises, an event has occurred at the premises; or
b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,
and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:
a) the cause, time and duration of the event;
b) the type, volume and concentration of every pollutant discharged as a result of the event;
c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
g) any other relevant matters.

R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

7 General Conditions

G1 Copy of licence kept at the premises or plant

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G1.1 A copy of this licence must be kept at the premises to which the licence applies.

G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.

G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

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Dictionary

General Dictionary

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

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flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environmen t Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder describe d at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 mo nths. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*.

Environment Protection Licence

Licence - 20130

TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non-putrescible), special waste or hazardous waste
Wellhead	Has the same meaning as in Schedule 1 to the Protection of the Environment Operations (General) Regulation 2021.

Mr Peter Jamieson

Environment Protection Authority

(By Delegation)

Date of this edition: 20-July-2012

End Notes

2	Licence varied by notice 1512518 issued on 21-Mar-2013
3	Licence varied by notice 1517956 issued on 25-Nov-2013
4	Licence transferred through application 1529031 approved on 01-May-2015 , which came into effect on 04-May-2015
5	Licence varied by notice 1531115 issued on 08-Jul-2015
6	Licence varied by notice 1539133 issued on 12-Jul-2016
7	Licence varied by notice 1564088 issued on 30-May-2018
8	Licence varied by notice 1628317 issued on 08-Jun-2023
9	Licence varied by notice 1630692 issued on 06-Sep-2023

Appendix A9

Approval to Operate a System of Sewage Management

Renewal of approval to operate an on-site sewage management System

Environmental Health & Compliance
116 Adelaide Street, (PO Box 42) Raymond Terrace 2324
DX 21406 | ABN 16 744 377 876

AGL ENERGY LTD
5 OLD PUNT ROAD
TOMAGO NSW 2322
ATTN: AMANDA ALLAN

RENEWAL OF APPROVAL 2015/2016

ACCOUNT NO: 045-2014-00006370-001

OWNER DETAILS: AGL ENERGY LTD

PROPERTY NO: PARCEL NO: 45562

PROPERTY ADDRESS: LOT: 201 DP: 1173564,
3 Old Punt Road TOMAGO 2322

Description of Wastewater Management System:

Effluent Pump Out

DURATION OF APPROVAL:

Commencement: 01/09/2015 Expiry date of approval period: 31/08/2016

The Approval to Operate an On-site Sewage Management System in the Port Stephens Local Government area is issued on 1st September 2015 and is valid through to 31st August 2016. After the granting of this approval, subsequent approvals are to be renewed unless otherwise stated by Council and will be subject to an annual renewal fee.

The granting of and continuation of approval will be subject to any or all of the conditions set out in the approval, and any other conditions deemed necessary for the maintenance of public and environmental health standards.

The Approval may be revoked or modified by Council under circumstances listed in Section 109 of the Local Government Act 1993, or after inspection of the on-site sewage management system by Council Officers.

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CONDITIONS RELATING TO THE OPERATION OF AN ON-SITE SEWAGE MANAGEMENT SYSTEM IN THE PORT STEPHENS LOCAL GOVERNMENT AREA

Effluent Pump Out

1. DESCRIPTION OF APPROVAL

This approval is to operate an On-site Sewage Management System within the Port Stephens Council area as required under the *Local Government Act 1993*, Section 68 Part C(6).

2. DESCRIPTION OF ON-SITE SEWAGE MANAGEMENT SYSTEMS

On-site sewage management systems include all types of human waste storage tanks, pumpout systems, sewage ejection systems, common effluent systems (CEP), low pressure sewer systems, septic tanks, effluent soak-away trenches and mounds, aerated wastewater treatment systems, composting toilets, greywater treatment systems and greywater application systems.

In brief any premises or land where sewage is not directly discharged to a public authority sewer and where the sewage management activity is not already subject to an operating license issued by the NSW Environment Protection Authority (EPA) must be covered by an Approval to Operate issued by the Local Authority (Council).

3. DURATION OF APPROVAL

Period for which this approval operates: 01/09/2015 to 31/08/2016.

After the granting of the initial approval, subsequent approvals are to be renewed annually and will be subject to an annual renewal fee in accordance with Councils schedule of fees and charges.

The granting of and continuation of approval will be subject to any or all of the conditions set out below.

The Approval may be revoked or modified by Council under circumstances listed in Section 109 of the *Local Government Act 1993*.

4. CONDITIONS - GENERAL

The conditions set out in this approval apply to all owner, operators or occupiers of on-site sewage management systems in the Port Stephens Local Government Area. These may be varied after inspection by Council Officers to include site-specific conditions for the improved operation and maintenance of individual systems.

a) On-site sewage management systems shall be operated and maintained in a manner that meets the following environmental and health performance objectives over the long term.

- **Prevention of public health risk**
  Sewage contains bacteria, viruses, parasites and other disease carrying organisms. Contact with effluent should be minimised or eliminated, particularly for children. Residuals, such as composted material, should be handled carefully. Treated sewage should not be used on edible crops that are consumed raw.
- **Protection of lands**
  On-site sewage management systems should not cause deterioration of land and vegetation quality through soil structure degradation, salination, waterlogging, chemical contamination or soil erosion.
- **Protection of surface waters**
  On-site sewage management systems should be operated and maintained so that surface waters are not contaminated by any flow from treatment systems and land application areas (including effluent, rainfall run-off and contaminated groundwater flow).
- **Protection of groundwaters**
  On-site sewage management systems should be operated and maintained so that groundwaters are not contaminated by any flow from treatment systems or land application areas. Land application disposal areas disposing of primary treated effluent or un-disinfected secondary treated effluent must not be located or constructed in areas prone to flooding, surface water inundation or high groundwater levels.
- **Protection of community amenity**
  On-site sewage management systems should be operated and maintained so that they do not unreasonably interfere with the quality of life and where possible, so that they add to the local amenity. Special consideration should be given to aesthetics, odours, dust, vectors and excessive noise.

b) In accordance with Section 68 Part C(5) of the *Local Government Act, 1993* the prior approval of Council is required to install, construct or alter a waste treatment device or a human waste storage facility or a drain (being a land application area) connected to any such device or facility. Owners must submit an application to Council, and receive approval, should changes to the type of treatment system, septic tank or land application area be sought. This includes minor or major excavation works on the land application disposal areas that changes the location or alters the design or operational characteristics from that which was originally approved.

c) On-site sewage management systems shall be inspected and maintained frequently to ensure excessive sludge levels do not decrease the efficiency of downstream treatment and subsequent land application disposal areas.

d) Effluent and septage (sludge) removal shall only be carried out by effluent removal companies holding a current approval to transport issued by Port Stephens Council and a current discharge license issued by Hunter Water Corporation.

e) If an owner or occupier of land is the holder of an approval to operate a system of sewage management on the land (being an approval that is in force), any other owner or occupier of that land may operate the system of sewage management (without obtaining a further approval) in accordance with the conditions of the approval.

f) Council shall be notified of any failure of on-site sewage management systems that may result in pollution, risk to public health or environmental contamination.

g) The owner/occupier/operator shall take all practicable measures to minimise the placement or entry of waste materials by occupiers, guests or employees that may impact on the on-site sewage management system treatment process.

h) The owner/occupier/operator shall maintain any land application disposal area with regard to: adequate and appropriate vegetation cover, elimination of weeds and unsuitable vegetation, maintenance of grass, plants and shrubs to ensure adequate exposure to sun and wind to maximize evapo-transpiration levels.

i) The owners/occupiers/operators of the on-site sewage management system shall install and maintain all equipment considered necessary by Council Officers for the safe and efficient, storage, treatment, disposal, removal and transfer of wastewater and effluent.

j) The owner/occupier/operator shall take all practicable measures to minimise the impact of stormwater and seepage on the treatment system or land application disposal areas.

k) Land application disposal areas shall comply with prescribed buffer distances from property boundaries, permanent and intermittent waterways, drainage easements, dwellings/habitable buildings, pathways, pools, dams, driveways and groundwater bores.

l) The deliberate or intentional discharge of sludge, septage or effluent (whether treated or not) into stormwater easements, other drainage channels, watercourses or neighboring properties is strictly prohibited.

m) Buildings, dwelling and other substantial structures shall not be located within 1.5 metres of an on-site sewage management systems. This distance may require a greater separation distance dependent on specific circumstances.

n) The person operating the system of on-site sewage management shall provide details of the way in which it is operated and evidence of compliance with the relevant requirements of the regulation and of the conditions of the approval whenever Council reasonably requires a person to do so.

o) Council may carry out inspections, without prior notification, at a frequency accorded to the assessed risk of the system, to determine compliance with the approval. Fees may be charged for these inspections. These fees are specified in the schedule of fees included with the Council Management Plan for the period in which the inspection is carried out, and must be paid by the specified due date.

p) It is a condition of this approval that owners and/or occupants of premises on which a system of on-site sewage management is installed, permit appropriately authorised Council Officers to enter such premises for the purpose of carrying out inspections in accordance with Council's On-site Sewage Management Strategy. At the time of inspection, the premises must be rendered safe from any obstructions or dangers, which would hinder the inspection of the on-site sewage management system. This includes appropriate securement of dogs or any other animals. As part of the inspection Council Officers may undertake testing of water or soil and/or obtain samples for analysis of surface waters, effluent waters, influent waters, soils or any other material deemed necessary. Photographic evidence may be taken if deemed necessary.

q) This approval remains valid only if the prescribed renewal fee has been paid to Council. When the renewal fee is paid through the rates notice, the approval will be issued upon payment of the first rates installment. Council may deem the approval to be invalid where subsequent rate installments (containing a portion of the renewal fee) are not paid. Council will not reimburse --> on a pro-rata basis <-- ### Invalid Field Definition ### any portion of the Approval to Operate fee should the on-site sewage management system be decommissioned during the Approval to Operate period.

5. CONDITIONS - SYSTEM SPECIFIC **(Effluent Pump-Out)**

The following conditions apply specifically to owners and operators of the nominated system and are additional to those conditions set out above.

a) The effluent (liquid) holding tank shall be emptied of effluent on a frequency that permits safe and healthy operating conditions.

b) The contents of the septic tank and effluent holding well are not permitted to overflow or be disposed of via any other method than removal to a Hunter Water Corporation sewage disposal point by a Council approved effluent removal contractor.

c) The suction/draw-off line and standpipe shall be fit-for-purpose having regard to:

   i) Correct type, size and class of PVC pipe;
   ii) Correct connections and fittings;
   iii) Adequately secured in place;
   iv) Fitted with a gate or stop valve if down gradient of the tank;
   v) Terminate not past the property boundary.

d) High water level alarms shall be maintained in an operational state at all times (if fitted). The alarm systems shall incorporate both an audible and visual alarm that activates with 2 days holding capacity remaining in the effluent holding tank. The alarm shall be energised by a permanent power supply. The use of batteries as the primary power source is not permitted. The location of the alarm shall remain in a prominent position readily visible/audible to the occupiers of the premises.

e) Greywater (including effluent from washing machines, handbasins or showers) shall not be discharged to any other location other than the approved On-site Sewage Management System unless otherwise approved by Council.

6. RIGHT OF REVIEW AND APPEAL

The applicant may request the Council to review the determination. Such request must be made within twenty-eight (28) days of the above date of determination. The Council will review the determination and give notice to you as soon as practicable thereafter (see *Local Government Act 1993*,s 100).

If you are dissatisfied with the Council's determination of this application, either initially or upon review, you may appeal to the Land and Environment Court, but if you do the appeal must be made within twelve (12) months (refer *Local Government Act 1993*,s 176).

Your attention is also directed to the provisions of s107 of the *Local Government Act*, which provides that the Council may determine to extend or renew this approval if satisfied there is good cause for doing so. See the detailed provisions of that Section.

Marc Goodall
CO-ORDINATOR
ENVIRONMENTAL HEALTH & COMPLIANCE

1.

Appendix A10

Record of Contact Form

Record of Contact Form

Project: Newcastle Gas Storage Facility		
Date of call		**Time of call**
Taken by		
Type of call	**Complaint/Enquiry/Comment/Other** *(circle appropriate)*	
Details of call		
Caller's name		
Contact details	**Address**	**Phone**
Follow up action required		
Action taken		
By whom	**Organisation**	
When	**Date**	**Time**
Action completed	**Date**	**Signature**

Appendix A11

Operation Water Management Plan

Operations Water Management Plan

Newcastle Gas Storage Facility

7 August 2025

Table of Contents

Operations Water Management Plan

AGL DCS: DCS-GN-HSE-MP-016

Version: 5.3

Date: 05 June 2023

Document revision history

Date Issued	Version	Author	Approved by	Comments
09/03/2015	1	N. Fry		Draft for internal review
12/03/2015	2	N. Fry	B. Hayward	Consultation draft for HWC, NOW, PSC, comment
15/04/2015	3	N. Fry	B. Hayward	For submission - revisions incorporating consultation comments
08/06/2016	4	N. Fry	A. Clifton	First review
14/05/2018	5	EMM	A. Clifton	Second review
04/07/2018	5.1	AGL	A.Clifton	Minor corrections from review of Version 5
24/06/2021	5.2	AGL	L Taylor	Minor updates
05/06/2023	5.3	AGL	J Moraitis	Minor updates
07/08/2025	5.4	AGL	J Moraitis	Minor updates

Document distribution history

Date	Version	Sent by	To	**Comment**
12/03/2015	2	B. Hayward	HWC, NOW, PSC	For consultation
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14/05/2018	5	A Clifton	HWC, DoI Water, PSC	For information
04/07/2018	5.1	A Clifton	HWC, DPE, PSC	For information
06/06/2024	5.3	J. Moraitis	HWC, DPE, PSC	For information
07/08/2024	5.4	J Moraitis	HWC, DPE, PSC	For information

Glossary	
Alluvial aquifer	Permeable zones that store and produce groundwater from unconsolidated alluvial sediments (clays, sands, gravels and other materials). Shallow alluvial aquifers are generally unconfined aquifers.
Aquifer	Rock or sediment in a formation, group of formations, or part of a formation that is saturated and sufficiently permeable to transmit economic quantities of water.
Aquifer properties	The characteristics of an aquifer that determine its hydraulic behaviour and its response to abstraction.
Aquifer, confined	An aquifer that is overlain by low permeability strata. The hydraulic conductivity of the confining bed is significantly lower than that of the aquifer.
Aquifer, semi-confined	An aquifer overlain by a low-permeability layer that permits water to slowly flow through it. During pumping, recharge to the aquifer can occur across the confining layer – also known as a leaky artesian or leaky confined aquifer.
Aquifer, unconfined	Also known as a water table aquifer. An aquifer in which there are no confining beds between the zone of saturation and the surface. The water table is the upper boundary of an unconfined aquifer.
Australian Height Datum (AHD)	The reference point (very close to mean sea level) for all elevation measurements, and used for correlating depths of aquifers and water levels in bores.
Bore	A structure drilled below the surface to obtain water from an aquifer or series of aquifers.
Contamination	The presence in, on or under the land of a substance at a concentration above the concentration at which the substance is normally present in, on or under (respectively) land in the same locality, being a presence that presents risk of harm to human health or any other aspect of the environment.
Discharge	The volume of water flowing in a stream or through an aquifer past a specific point in a given period of time.
Drawdown	A lowering of the water table in an unconfined aquifer or the pressure surface of a confined aquifer caused by pumping of groundwater from bores and wells.
Electrical Conductivity (EC)	A measure of a fluid's ability to conduct an electrical current and is an estimation of the total ions dissolved. It is often used as a measure of water salinity.
Groundwater	The water contained in interconnected pores or fractures located below the water table in an unconfined aquifer or located at depth in a confined aquifer

Glossary	
Groundwater system	A system that is hydrogeologically more similar than different in regard to geological province, hydraulic characteristics and water quality, and may consist of one or more geological formations.
Hydraulic conductivity	The rate at which water of a specified density and kinematic viscosity can move through a permeable medium (notionally equivalent to the permeability of an aquifer to fresh water).
ISBL	Inside battery limits
microSiemens per centimetre (µS/cm)	A measure of water salinity commonly referred to as EC (see also Electrical Conductivity). Most commonly measured in the field with calibrated field meters.
Monitoring bore	A non-pumping bore, is generally of small diameter that is used to measure the elevation of the water table and/or water quality. Bores generally have a short well screen against a single aquifer through which water can enter.
OSBL	Outside battery limits
pH	Potential of Hydrogen; the logarithm of the reciprocal of hydrogen-ion concentration in gram atoms per litre; provides a measure on a scale from 0 to 14 of the acidity or alkalinity of a solution (where 7 is neutral, greater than 7 is alkaline and less than 7 is acidic).
PIRMP	Pollution Incident Response Management Plan
Recharge	The process which replenishes groundwater, usually by rainfall infiltrating from the ground surface to the water table and by river water reaching the water table or exposed aquifers. The addition of water to an aquifer.
Sand aquifer	Shallow unconfined aquifer that is found in aeolian and beach deposited unconsolidated sands.
Screen	A type of bore lining or casing of special construction, with apertures designed to permit the flow of water into a bore while preventing the entry of aquifer or filter pack material.
Standing water level (SWL)	The height to which groundwater rises in a bore after it is drilled and completed, and after a period of pumping when levels return to natural atmospheric or confined pressure levels.
Water bearing zone	Geological strata that are saturated with groundwater but not of sufficient permeability to be called an aquifer.
Water quality	Term used to describe the chemical, physical, and biological characteristics of water, usually in respect to its suitability for a particular purpose.
Water table	The top of an unconfined aquifer. It is at atmospheric pressure and indicates the level below which soil and rock are saturated with water.

1. Introduction

1.1. Scope

This document is the AGL Energy Limited (AGL) Operations Management Plan (OWMP) for the Newcastle Gas Storage Facility (NGSF). The OWMP describes AGL's system for groundwater and surface water management during operation of the NGSF and is a sub-plan of the Operation Environmental Management Plan (OEMP).

This OWMP has been developed to meet Approval Condition B25, B57(c)&(d) and C23 (refer to Section 2.1) describing how impacts to groundwater and surface water will be avoided and mitigated during operation of the NGSF.

The OWMP is applicable to the main NGSF facility located at Tomago and does not include the ancillary gas pipelines, the electricity substation or the Hexham Receiving Station.

The OWMP was developed based on the Guideline for the Preparation of Environmental Management Plans (NSW Department of Planning and Environment, 2004).

1.2. NGSF Background

AGL has developed the NGSF, located at Tomago and Hexham, New South Wales, to meet peak gas demands during winter and provide additional security of gas supply during supply disruption events.

The NGSF includes the following components:

- The gas plant site at Tomago;
- An access road and utility corridor;
- A gas pipeline access corridor;
- A high pressure gas pipeline corridor;
- The Hexham Receiving Station (HRS);
- A gas pipeline connection to the existing Jemena Gate Station at Hexham;
- A low pressure liquid natural gas (LNG) pipeline; and
- Associated and ancillary infrastructure.

An overview of the NGSF is included as Figure 1.

Project approval under Part 3A of the EP&A Act for the NGSF was granted on 10 May 2012 (File No. 11/08788) and approvals for modification of the project were subsequently granted on 5 February 2013, 31 January 2014, and 27 February 2018 (refer to OEMP (AGL, 2018)).

The NGSF site is underlain by the Tomago sand beds, which is an important beneficial aquifer containing a potable water supply groundwater resource.

1.3. Objectives

The purpose of the OWMP is to satisfy the Part 3A Project Approval conditions, in particular, condition B 57 (c) and (d) and provide a framework for how water will be managed on site. Key objectives of the OWMP are to:

- Determine groundwater quality thresholds based on baseline data to measure operational performance against;
- Monitor groundwater level and quality to monitor, avoid, and mitigate any impacts on groundwater; and
- Detail how stormwater will be managed on site.

1.4. Responsibilities

Table 1: Roles and responsibilities

Role	Responsibilities
Operations Manager	The Operations Manager is accountable for the following: • Implementation of this plan and ensuring that the plans obligations are met; • Providing resources for implementing the plan; • Ensuring that all employees, contractors and visitors conduct their activities on site in accordance with the plan; • Ensuring appropriate bunded areas are provided where required; and • For keeping chemicals on site to the minimum required.
Environment Manager	The Environment Manager is accountable for the following: • Development of this plan; • Review and audit of the OWMP every two years; • Carrying out the scheduled six monthly monitoring program; • Carrying out additional monitoring and reporting as per the trigger action response plan; • Reporting on monitoring results to the Department of Planning and Environment (formerly the Natural Resources Access Regulator), Hunter Water Corporation (HWC) and Port Stephens Council (PSC) within six weeks of each monitoring event; • Determining adopted quality thresholds based on climatic influences and statistical review of monitoring data. • Promoting environmental awareness on site; • Carrying out audits on site for compliance against this plan and the overall OEMP; • Developing induction modules on environmental issues for all employees, contractors and visitors; and • Reporting on environmental incidents.
All employees, contractors, and visitors	All employees, contractors, and visitors are accountable for the following: • Following any direction given by the Operations Manager or Environment Manager in regards to water management on site; • Conducting activities in a manner that reduces the risk of impact to groundwater and surface water on site; and • Reporting all spills that occur on site.

1.5. Training

AGL employees and contractors are required to attend an induction prior to commencing work on the site. The induction includes control measures that are required to be used to prevent or minimise impact to groundwater and surface water on site.

2. Approvals and licences

2.1. Approval conditions

Project Approval conditions relating to groundwater and surface water, and where these conditions are addressed in this OWMP, are provided in Table 2.

Table 2: Part 3A approvals and where addressed in this OWMP

Part 3A approval, Condition B25	Section where addressed in this OWMP
Prior to the commencement of construction, the Proponent shall develop a Groundwater Monitoring Program in consultation with NOW and HWC and to the satisfaction of the Director-General. The programme shall detail the monitoring strategy that would be implemented to monitor the water quality impacts of the project on beneficial aquifers (including associated groundwater users, surface waters and groundwater dependent ecosystems). The programme shall:	This OWMP has been developed in consultation with NOW (now DPI Water) and HWC.
a) identify surface and groundwater monitoring locations demonstrating their appropriateness for obtaining representative water quality and water level data on construction and operational impacts in relation to beneficial aquifers, groundwater users and surface waters;	Groundwater and surface water monitoring locations for the operational phase are identified in Section 5 and Section 6 respectively.
b) provide details of the monitoring points (including location, depth of monitoring, duration, and frequency of monitoring and parameters to be monitored);	Details of monitoring points are provided in Section 5 and Section 6.
c) identify performance criteria, including monitoring criteria to detect early indicators of drawdown impacts or water quality impacts to beneficial aquifers;	Performance criteria are included in Appendix A (groundwater) and Appendix B and C (surface water).
d) identify the frequency of reporting on monitoring results;	Section 8, Table 11
e) identify procedures for contingency or remedial action where adverse impacts are identified, such that the adverse impacts are remediated to the extent practicable prior to any impact to other groundwater users, and/ or rehabilitation measures applied where the project is identified as adversely affecting any groundwater dependent ecosystems/ communities; and	Section 5.3, 6.3 and 7
f) identify mechanisms for the regular review and update of the programme in consultation with NOW and HWC as required.	Section 10.2
In submitting the programme for the Director General's approval, the Proponent shall provide written evidence of consultation with NOW and HWC on the robustness and acceptability of the monitoring programme, including issues raised by these agencies and how these have been addressed. The programme shall be reviewed and updated at the conclusion of construction activities	

Part 3A approval, Condition B25	Section where addressed in this OWMP
Part 3A approval, Condition B57(c)&(d)	
As part of the Construction Environmental Management Plan required under condition B56 of this approval, the Proponent shall prepare and implement the following: *c) a **Groundwater Management Plan** prepared in consultation with NOW and HWC to detail how impacts to groundwater will be avoided and mitigated during the construction and operation of the project. The plan shall integrate data from groundwater monitoring undertaken as required by condition B25 to set baseline and to establish targets and thresholds for the duration of the project. A contingency plan shall be developed as part of the Groundwater Management Plan in the event that groundwater is compromised during construction, such as through drawdown from horizontal directional drilling*	Section 5 and Appendix A
*d) a **Surface Water Management Plan** prepared in consultation with NOW, HWC and the Port Stephens Council (particularly in regard to stormwater being conveyed from the gas storage facility site to Old Punt Road), to detail how surface water and stormwater will be managed on site during construction and operation of the project. The plan shall include detailed design of all watercourse crossings, culverts and in-stream works, a programme to monitor and managed, and notification and mitigation of identified impacts of watercourse crossings, culverts and instream crossings. In particular, the design for the horizontal directional drilling under the Hunter River shall be provided, including an assessment and depth of scour for the Hunter River and demonstration that the HDD will be undertaken below this depth. The plan shall include use of appropriately sized stormwater controls, in accordance with Managing Urban Stormwater: Soils and Construction (Landcom 2004). The plan shall include specific measures to avoid sediment laden stormwater from entering the Hunter River, a monitoring programme for stormwater leaving the site (including the requirements for inspection reports required under condition B26) details of how hydrostatic test water would be disposed, and measures to mitigate contamination of soils and water*	Section 6 and Appendix B and C.
Part 3A approval, Condition C23	
To avoid any doubt, the Groundwater Management Plan and Surface Water Management Plan required under condition B57 shall continue to be applied during operation	This OWMP encompasses the Groundwater Management Plan and Surface Water Management Plan and is to be applied during operation.

2.2. Groundwater policies

There are numerous groundwater policies and licensing systems, managed by DPI Water that apply to different areas and different projects. Only those policies and plans that are relevant to the Newcastle Gas Storage Facility (NGSF) are discussed in this OWMP.

The access, taking, and use of groundwater in NSW is currently managed and implemented by DPI Water under two primary legal instruments — the *Water Management Act 2000* (WMA) and the *Water Act 1912*

(WA). The WMA applies where a water sharing plan has been gazetted; areas that fall outside of a water sharing plan remain covered by the older WA.

In this area, the Tomago-Tomaree Groundwater Water Sharing Plan (WSP) has been gazetted and applies to the sand dune unconfined aquifer (primarily to manage abstractions from the Tomago Sandbeds and to protect sensitive environmental receptors). The estuarine sediments at Tomago also fall within the area of the Tomago-Tomaree Groundwater Water Sharing Plan. Deeper aquifers are not included in the Tomago-Tomaree WSP and activities impacting the deeper aquifers are covered under the WA.

There are several overarching policies that apply to the development and management of groundwater systems across NSW. The NSW State Government Groundwater Policy framework includes the following documents:

- NSW Groundwater Quality Protection Policy (DLWC, 1998);
- NSW Groundwater Quantity Management Policy (draft) (DLWC, 2001); and
- NSW Groundwater Dependent Ecosystem Policy (DLWC, 2002).

The NSW State Groundwater Policy Framework aims to slow, halt, or reverse degradation in groundwater resources, ensure long-term sustainability of the biophysical characteristics of the groundwater system, maintain the full range of beneficial uses of these resources and maximise the economic benefit to the region and state.

Other policies of interest include the Aquifer Interference Policy (NOW, 2012)

The **Aquifer Interference Policy** defines aquifer interference activities and describes how these will be managed under the licensing and approvals regime in the *Water Management Act 2000*. The policy focuses on high risk activities such as mining, coal seam gas, sand and gravel extraction, construction dewatering, aquifer injection activities, and other activities that have the potential to contaminate groundwater or result in unacceptable loss of storage or other structural damage to an aquifer.

2.3. Bore licences

Bore licences, issued under the *Water Act 1912*, are held and were originally required for monitoring bore purposes prior to change in legislation. These licences are tabulated in Table 3. The conditions of bore licences 20BL172529 and 20BL172769 are similar and mainly relate to bore construction. Conditions for bore licence 20BL172769 are included as Appendix D.

Table 3: Bore licences for the NGSF

Licence No	Issued	Local Bore No	Lot and DP	Site and Purpose
20BL172529 (2010 program)	3 August 2010	MW1, MW2, MW3	Part of Lot 107 DP 1125747	NGSF boundary monitoring bores for EA
20BL172769 (2011)	14 April 2011	MW3A, MW4, MW5, MW6, MW7, (BH4, BH8, BH11, BH15 – now decommissioned)	Part of Lot 107 DP 1125747	Additional NGSF boundary and internal monitoring bores for baseline program

The legislation was updated in 2013 to provide that new bore licences are not required for future monitoring bores within the NGSF site. Future monitoring bores within the project area would be constructed within a Water Source covered by a Water Sharing Plan, and as such would be defined as exempt monitoring bores, thereby satisfying exemption Clause 36(1)(c) of the *Water Management (General) Regulation 2011*, which defines exemptions from section 91B(1) of the *Water Management Act 2000.* This is also the case for the MW14, MW15, and MW16 bores that were installed in October 2013.

3. Project Description

3.1. Site setting

The NGSF is located in the northeast corner of Lot 105 DP 1125747 in the Port Stephens Local Government Area (LGA). This lot is also known as 5 Old Punt Road, Tomago. The site is approximately 13 km northwest of the Newcastle central business district, 8 km south of Raymond Terrace and 4 km north-east of the Hexham industrial area.

3.2. Overview

The NGSF stores liquified natural gas to enable AGL to meet peak gas demands during winter and provide additional security of supply during supply disruption events.

The Wilton – Newcastle trunk main transfers natural gas from Sydney to Newcastle, terminating at the Jemena Gate Station at Hexham. A pipeline connects the Jemena Gate Station to the Hexham Receiving Station (HRS). Natural gas is then transferred from the HRS, along the high pressure gas pipeline to the gas plant site.

At the NGSF, the natural gas is refrigerated to convert it to a liquid and then transferred to the storage tank, where it is stored at -162 °C and at approximately atmospheric pressure. Liquefaction of natural gas occurs during periods of low gas demand. Once the storage tank at the gas plant site is full, the plant is on stand-by to supply additional gas to the market.

During periods of peak demand or supply disruption, the liquefied natural gas in the storage tank is re-gasified by heating. The gas is then transferred back along the high pressure gas pipeline to the HRS and Jemena Gate Station, from where it is reinjected into the Wilton – Newcastle trunk main. Regasification occurs intermittently, primarily during winter.

A small amount of gas is vapourised during storage. This gas is collected, compressed and transferred via the low pressure gas pipeline to a nearby industrial user.

An overview of the NGSF is included as Figure 1. Activities involved in the operation of each of the main components of the NGSF are discussed in the sections below.

3.3. NGSF Site

The NGSF stores approximately 66,500 tonnes of natural gas per year. Key infrastructure at the gas plant site includes (refer Figure 2):

- Natural gas liquefaction plant;
- Storage tank within containment bund;
- Regasification units;
- Flare;
- Tanker loading bay and truck turning circle;
- Control room, offices, amenities, workshop and maintenance areas;
- Security and fences;
- Car parks and laydown areas; and
- Lighting.

These processes are described in the OEMP (AGL, 2023).

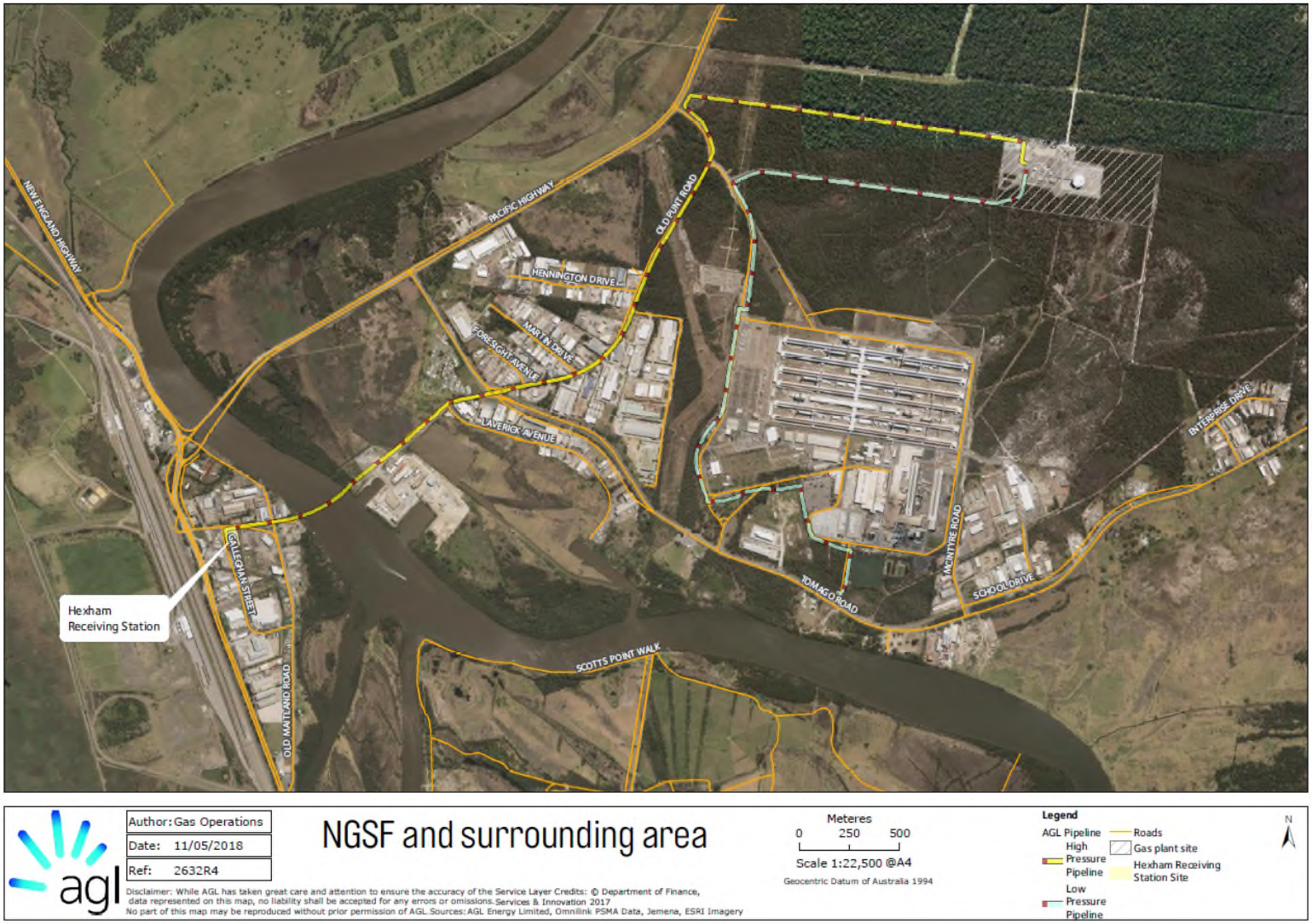

Figure 1: NGSF project overview

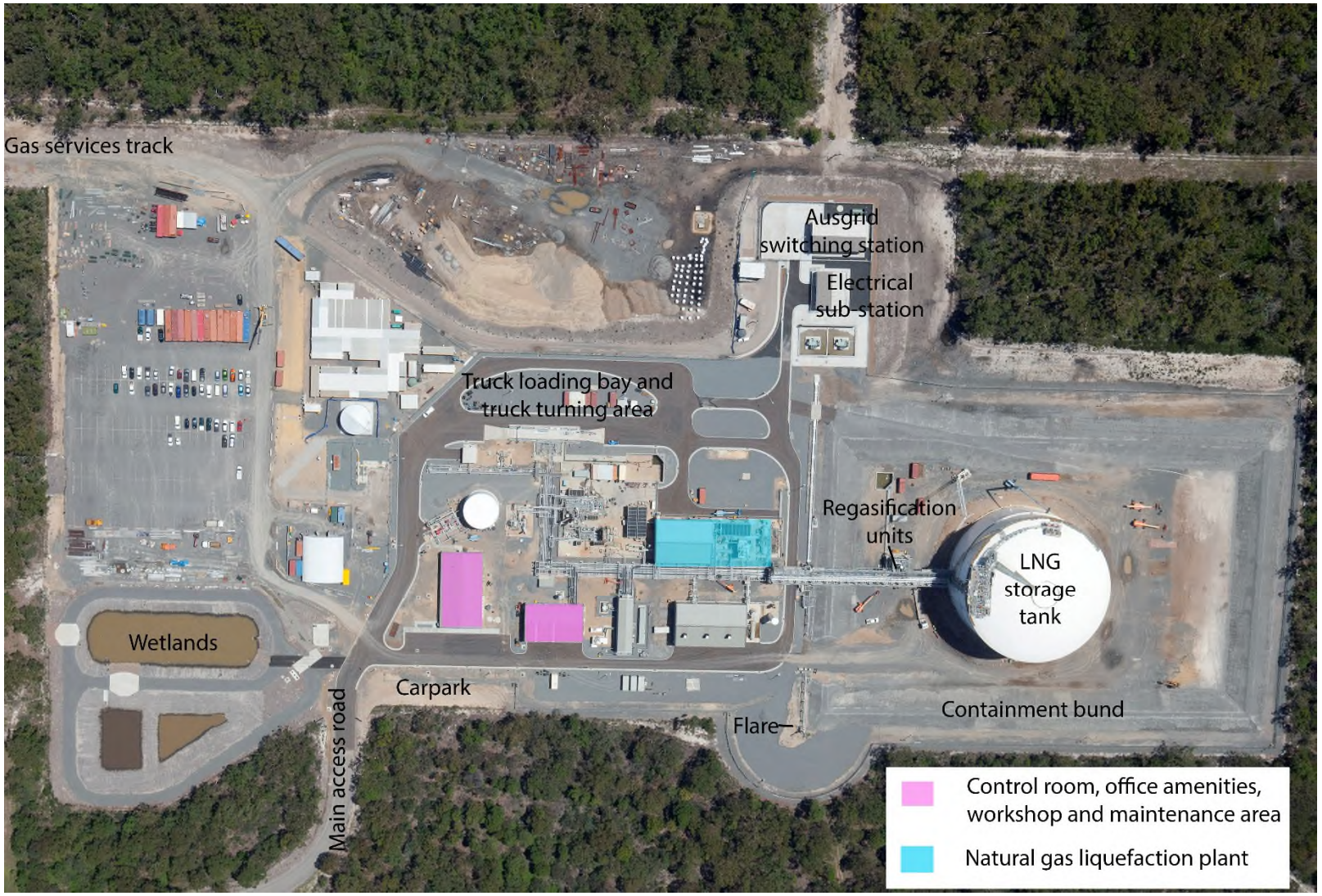

Figure 2: NGSF site showing key infrastructure. Aerial image taken 30 December 2014 (during construction phase). Labelled items are applicable for operational phase.

4. Geological and hydrogeological setting

4.1. Geology

The geology of the NGSF site consists of Quaternary (Pleistocene and Recent) age sands, silts and clays known as the Tomago Sandbeds. The gas plant site is located in the south western portion of the Tomago Sandbeds area.

The Tomago Sandbeds consists of extensive inner barrier sand ridges extending from Tomago to Port Stephens in the northeast and about 5 km to 15 km inland from the present coastline. The Tomago Sandbeds comprise fine to medium grained, well sorted, quartzose beach sand with discontinuous indurated sand layers.

4.2. Hydrogeology

The groundwater in the Tomago Sandbeds aquifer is of good quality and is used by Hunter Water to supplement water supplies to Newcastle and the Tomaree Peninsula, and for consumptive uses such as mining, industrial, recreation (watering of golf courses, playing fields and recreation reserves), irrigation, domestic, and stock supply. The whole of this sand dune, alluvial aquifer is known as the Tomago, Tomaree and Stockton Groundwater Source. It is an important potable water supply source and is vulnerable to contaminating site activities.

The NGSF site and the northern section of the gas pipeline corridor are located above the Tomago Sandbeds and within the Hunter Water Special Area for potable water supply (see Figure 3).

The aquifer is recharged by local rainfall and, prior to construction of the NGSF, there was no runoff from the site. Rain that falls across the area is either transpired by the vegetation or recharges the shallow water table in the unconfined sand aquifer, with the exception of rainfall that occurs over the non-permeable areas within the NGSF (e.g. concrete, asphalt), which is diverted to the holding pond within the constructed wetlands and then discharged via the stormwater pipeline to the discharge point at Old Punt Road.

The closest Hunter Water Corporation (HWC) water supply pumping station is Pump Station 20, which is approximately 500 m north of the gas plant site (see Figure 4). Groundwater beneath the NGSF site flows northwest in the direction towards Pump Station 20.

Wetlands in the vicinity of the site include a low lying area shown as “Mosquito Swamp” on some maps, approximately 700 m to the east. Further to the north east are two wetlands identified as SEPP14 wetlands and known as “Siddons Swamp” and “Blind Harrys Swamp” (see Figure 3). These low lying areas are prone to water inundation in response to prolonged rainfall.

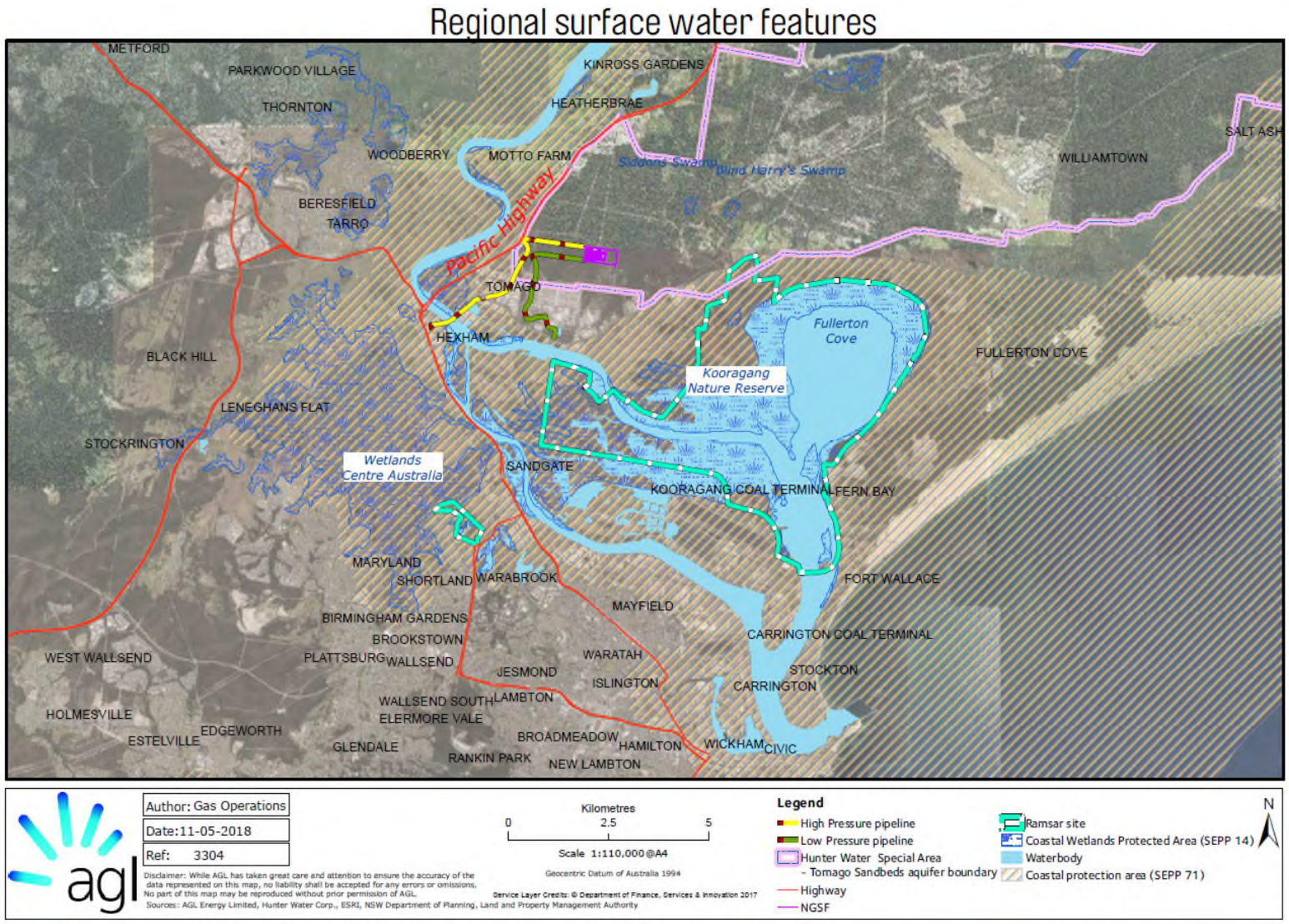

Figure 3: NGSF and Hunter Water Special Area

5. Groundwater management

5.1. Environmental management activities and controls

Environmental management activities, mitigation and control measures used to prevent and/or minimise environmental impacts on groundwater are outlined in Table 4.

Table 4: Environmental management activities and controls

Area	Control Measure	Responsibility
Chemical management	Chemicals to be contained within a dedicated area and bunded.	Operations Manager
Chemical management	Chemical inventory on site will be kept to minimum practical levels.	Operations Manager
Oil management	Electricity substation transformers to be bunded to 110% capacity of the transformer oil tank.	Operations Manager
Stormwater management	Roadways to be sealed and water runoff diverted to the stormwater management system.	Construction Manager
Stormwater management	Stormwater is directed to the water holding pond. Water quality monitoring is carried out in accordance with Section 66.1.1 of this OWMP.	Operations Manager
Environmental awareness	All site visitors and staff will be inducted and made aware of all relevant environmental issues.	Operations Manager
Spill response	Information on how to respond to spills and the sensitivities of the surrounding environment will be included in induction materials.	Environment Manager
Spill response	Spill kits to be provided at key locations (e.g., near high risk spill locations such as the warehouse).	Operations Manager

5.1.1. Monitoring network

The groundwater monitoring network has been developed to assess aquifer trends (both water levels and water quality), and aquifer responses due to the operation of the NGSF.

It is acknowledged that, compared to the construction phase of the NGSF, operational activities on site pose low risk to the shallow groundwater resources due to the significant reduction of personnel, vehicles, and land disturbance activities being carried out on site.

The purposes of the groundwater monitoring program include assessment of potential impacts from NGSF operations on the local sand dune aquifer and, consequently, protection of the drinking water resource and nearby Groundwater Dependent Ecosystems (GDEs). The groundwater monitoring includes assessment of trends in:

- Groundwater levels;
- Groundwater flow direction;

- Aquifer properties;
- Surface water-groundwater interaction;
- Residence time; and
- Water quality.

There are 12 groundwater monitoring locations at the NGSF site (refer to Figure 4).

There are no primary GDEs identified on-site. There are low-lying areas within the dunes where the water table is intersected on the far eastern boundary of the site.

The groundwater monitoring program is summarised in Table 5.

Table 5: Groundwater monitoring program summary

Project Stage	Number of monitoring sites	Water Level Frequency	Water Quality Frequency	Reporting Frequency
Operation (on or adjacent NGSF site)	12 existing bores (MW1, MW2, MW3A, MW4, MW5, MW6, MW7, MW14, MW15, MW16, MW18, and MW19)	Sevenbores with continuous data loggers (MW1, MW2, MW3A, MW4, MW6, MW16 and MW19) and five measured manually at six-monthly intervals (MW5, MW7, MW14, MW15, , MW18)	Six-monthly	Interpreted report to be provided to HWC, DPE, and PSC within two weeks of the monitoring report being finalised.

5.1.2. Determining groundwater quality thresholds

Groundwater quality thresholds were adopted based on statistical analysis of groundwater quality data collected from June 2011 through to March 2014 and includes baseline (nine months) plus monitoring results from the construction of the NGSF (19 months).

Details of the methodology used to define thresholds can be found in the construction Groundwater Monitoring Program (AGL, 2015a) and Coffey (2015).

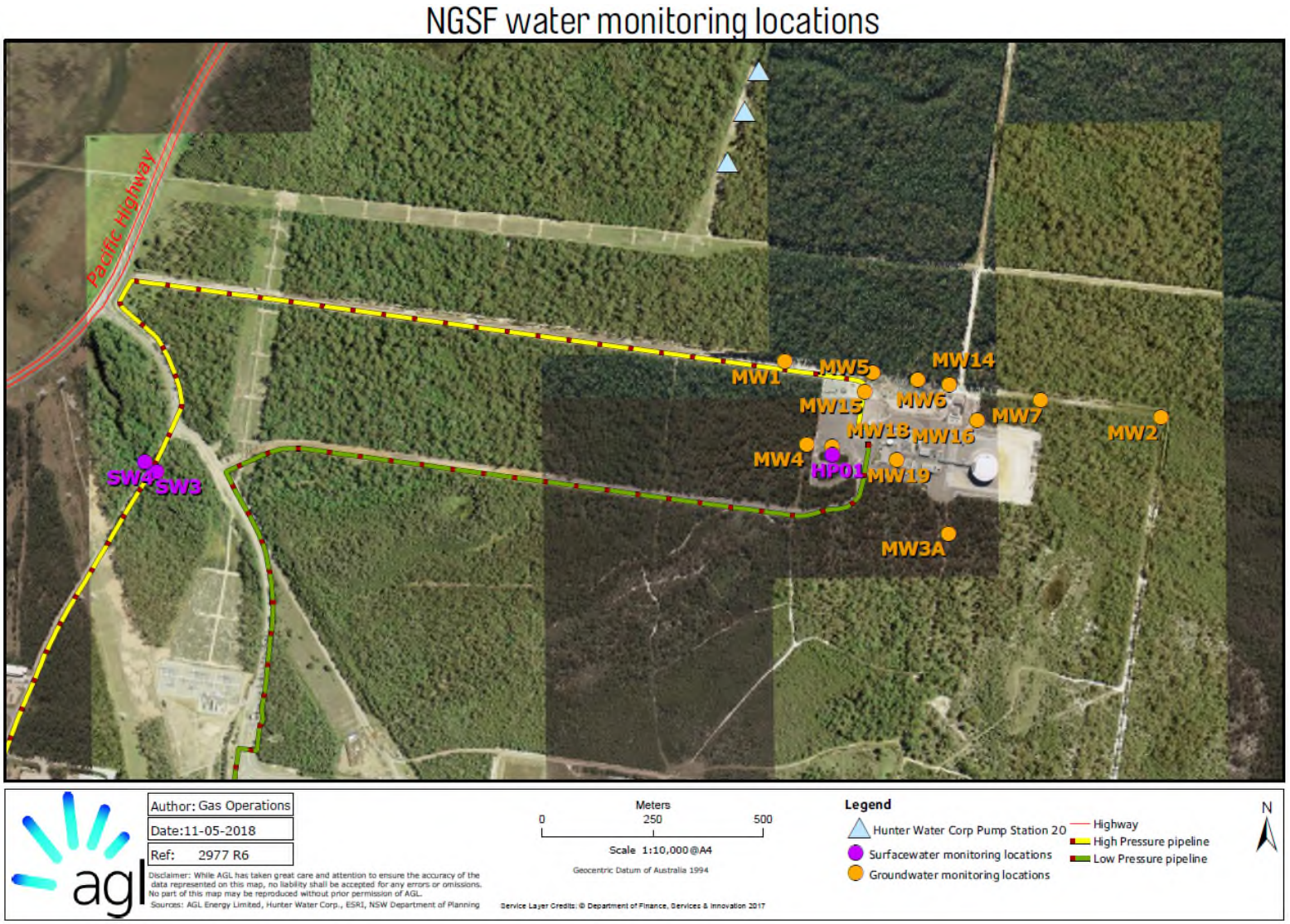

Figure 4: Groundwater and surface water monitoring locations

5.1.3. Groundwater monitoring frequency and analytes

Groundwater monitoring frequencies have been determined by considering a number of project risk related factors to local water resources and historical trends from the construction monitoring program.

The operational phase of the NGSF poses significantly lower risks to local water resources than during construction due to the significant reduction in personnel, vehicles and land disturbance activities on site. No significant impacts to local water resources were observed during the construction period.

In considering the risk posed to local water resources through the operation of the NGSF and historical trends, groundwater monitoring will continue to occur at six monthly intervals. The frequency will be further reviewed in another two years.

The groundwater monitoring network is comprised of 12 monitoring bores as shown in Table 6.

Table 6: NGSF operational phase groundwater monitoring network

Bore ID	Easting (m MGA)	Northing (m MGA)	Total Depth (mbgl)	Screened Interval (mbgl)
MW1	380829	6368998	4.2	1.7 to 4.2
MW2	381681	6368871	3.5	0.5 to 3.5
MW3A	381200	6368608	6.2	2.5 to 5.5
MW4	380879	6368810	6.4	2.3 to 5.3
MW5	381028	6368973	6.0	2.1 to 5.1
MW6	381202	6368946	5.7	2.0 to 5.0
MW7	381408	6368910	5.7	1.5 to 4.5
MW14	381130.4	6368957	3.5	0.5 to 3.5
MW15	381011.6	6368930	5.5	2.5 to 5.5
MW16	381265.3	6368865	3.5	0.5 to 3.5
MW18	380936.6	6368804.4	6.3	3.3 to 6.3
MW19	381068	6368776	5.9	2.9 to 5.9

mbgl – metres below ground level.

For each groundwater monitoring event, field water quality measurements will be recorded including field pH, electrical conductivity (EC), redox potential, temperature and dissolved oxygen. Groundwater samples will be sent to a NATA accredited laboratory under appropriate chain of custody, for analysis of:

- General parameters – total suspended solids (TSS), total dissolved solids (TDS) and EC;
- Major cations – calcium, magnesium, potassium and sodium;
- Major anions – alkalinity, chloride, sulphate and fluoride;
- Dissolved metals – arsenic, cadmium, chromium, copper, lead, nickel, zinc and iron;
- Total recoverable hydrocarbons (TRH), benzene, toluene, ethyl benzene and xylenes (BTEX);
- Nutrients – total nitrogen, total Kjeldahl nitrogen (TKN), nitrate, nitrite and total phosphorus;
- Pathogens (total coliforms, faecal coliforms and Escherichia coli) (at locations MW19 and MW15 only); and
- Amines and glycols[1].

Table 7 summarises the detail of the groundwater monitoring programs for the NGSF.

[1] These analytes were included following the May 2016 review of the OWMP. As a result, no baseline values were collected for these analytes.

Table 7: Groundwater monitoring requirements

Management Practice	Monitoring	Responsibility	Timing
Groundwater monitoring at the 12 locations at NGSF groundwater monitoring locations listed in Table 6	Continuous loggers (where installed) and six-monthly water quality samples. Suite of analytes as described above. Reports to be provided to HWC, DPE and PSC within two weeks of the monitoring report being finalised.	AGL (Environment Manager) to monitor groundwater monitoring locations on or adjacent to the NGSF site (refer Table 6).	During operation.

5.2. Adopted groundwater thresholds

Groundwater quality results from the monitoring program described in this OWMP will be compared against the adopted thresholds (as shown in Appendix A).

The adopted thresholds were identified based on review of data collected during the period from June 2011 through to March 2014, which was during the end of a La Nina period (to March 2012) and was followed by El Niño-Southern Oscillation (ENSO) neutral period). The adopted thresholds will be reviewed following significant climatic changes (for example, alterations of the ENSO index), and as more results are obtained over a longer timeframe. The analytes amines and glycols were included in the analytical suite from May 2016, but there were no thresholds defined based on baseline data. Where available, thresholds for these analytes have been adopted based on a human and environmental health risk assessment.

The adopted thresholds will be reviewed every two years, and will take into account the ENSO status. Revisions of the adopted threshold values would be undertaken with consultation with DPE and HWC.

The results of the groundwater monitoring program will be analysed using the exponentially weighted moving average (EWMA), which is an effective method for identifying trends. EWMA is a weighted average presentation which takes account recent values using a weighting that diminishes over time. EWMA plots will be included in the six-monthly monitoring reports.

Given there are no plans to extract groundwater as part of the NGSF operations, drawdown impacts are not considered a potential issue and thresholds are not defined.

5.3. Exceedance of groundwater quality threshold

Should groundwater water quality results exceed the adopted threshold value for a particular analyte at a particular monitoring point, the response action process shown in Figure 5 would be followed. AGL's NGSF Environment Manager is responsible for following the response action process.

Phase 1 of the response action process involves a desktop review and would be expected to be completed within a month following exceedance verification. Phase 2 could be completed within a varied timeframe depending on the particular exceedance, but would be expected to be finalised within six months. Phase 2 references AGL's Fully Integrated Risk Management (FIRM) matrix, which is AGL's internal risk analysis and assessment tool. Phase 3 would involve the implementation of further mitigation measures, which would be specific depending on the type of exceedance and identified risk and would be developed in consultation with DPE and HWC.

Increasing development activities in neighbouring lands to the NGSF may result in exceedances of water quality thresholds at the NGSF monitoring sites that are related to activities occurring on nearby properties out of AGL's control. AGL intends to reassess the NGSF groundwater monitoring network prior to neighbouring development and may install additional boundary monitoring bores to assess impacts on water quality from non-AGL activities.

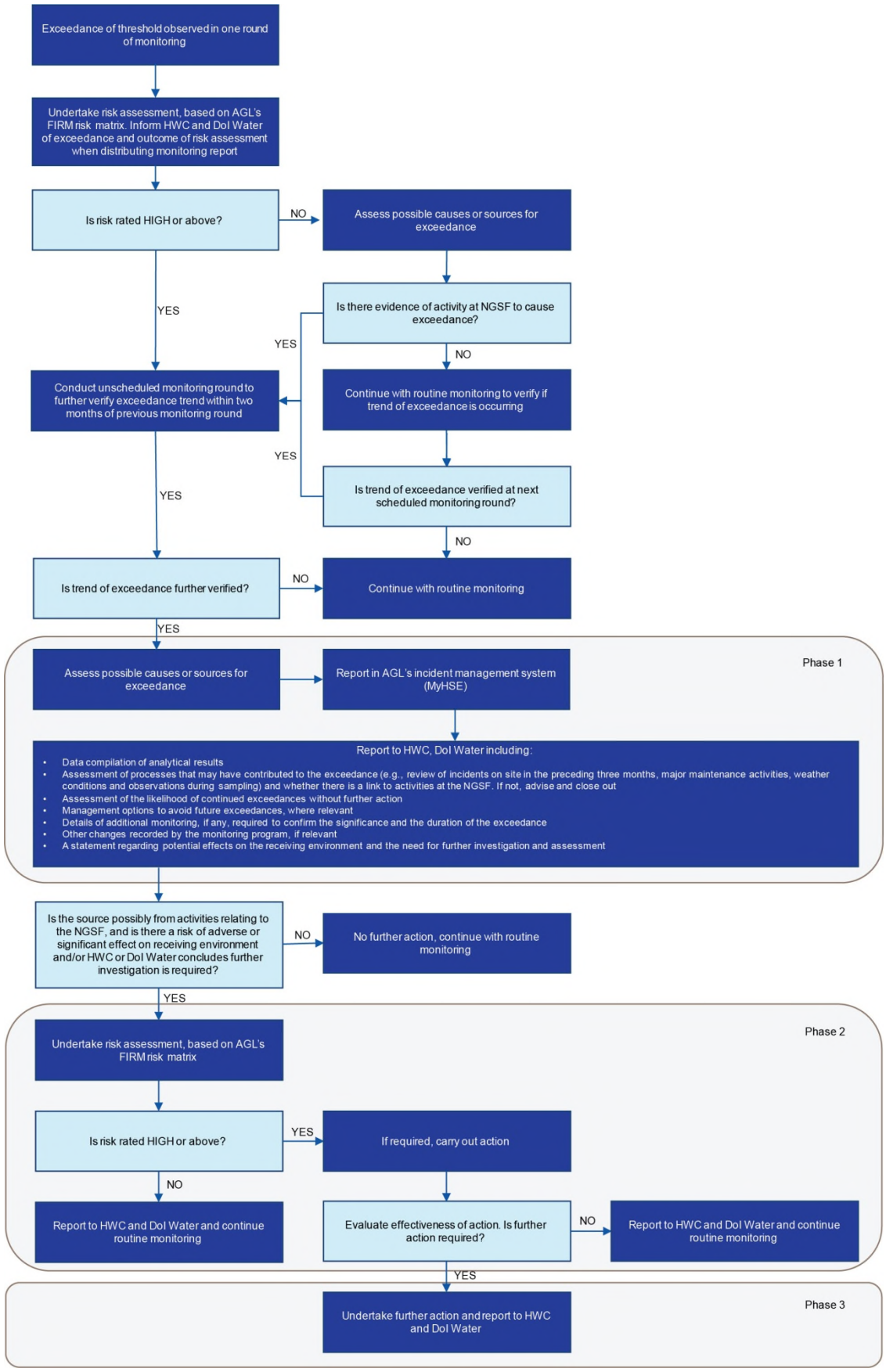

Figure 5: Response action process for exceedance of water quality threshold

6. Surface water management

6.1. Environmental management activities and controls

Environmental management activities, mitigation and control measures used to prevent and/or minimise environmental impacts on surface water are outlined in Table 8.

Table 8: Environmental management activities and controls

Area	Control Measure	Responsibility
Chemical management	Chemicals to be contained within a dedicated area and bunded	Operations Manager
Chemical management	Chemical inventory on site will be kept to minimum practical levels	Operations Manager
Oil management	Electricity substation transformers to be bunded to 110% capacity of the transformer oil tank	Operations Manager
Stormwater management	Roadways to be sealed and water runoff diverted to the stormwater management system	Operations Manager
Stormwater management	Stormwater is directed to the water holding pond. Water quality monitoring is carried out in accordance with this section of this OWMP	Operations Manager
Environmental awareness	All site visitors and staff will be inducted and made aware of all relevant environmental issues	Operations Manager
Spill response	Information on how to respond to spills and the sensitivities of the surrounding environment will be included in induction materials	Environment Manager
Spill response	Spill kits to be provided at key locations (e.g., near high risk spill locations such as the warehouse)	Operations Manager

6.1.1. Surface water management

Stormwater at NGSF is collected from within bunded areas and sealed roads and is directed via pipeline to the holding pond / wetland system. Several sumps collect the stormwater and are pumped manually to the wetland. The main process sump is required to be tested using a hand-held water meter for field parameters prior to pumping to the wetland. If the parameters are within the defined thresholds and there are no known spills to have occurred, the water is allowed to be pumped to the wetland. This process is governed by an SOP (DCS_NC_SOP_PT_204).

The holding pond /wetland area has been designed to contain the volume of a 1 year ARI storm event, approximately 4.5 ML, and to retain a volume of approximately 1.5 ML, to prevent overflows up to the 100 year ARI storm event. The wetland has been planted with selected species for phytoremediation to assist with purification of the water in cases of very minor spills on site. Discharge from the wetland, via enclosed stormwater pipeline, occurs at the discharge point located along a natural drainage line at Old Punt Road. The wetland can be discharged by manually operating the purge pump. It is the intention to retain water in

the wetland for as long as possible to ensure maximum phytoremediation. It is likely discharge would occur during times of heavy rainfall.

Where a significant spill occurs, the spill response plan would be followed as outlined in Section 7.1, to prevent contamination of the wetland and discharge area. If a sump were found to contain contaminated water, the contents of the sump would be required to be pumped out and disposed of at a licensed treatment facility and not be pumped into the wetland. Because of this, it is the intention to maintain a minimum volume of water in the main process area sump, to minimise potential disposal volumes if contamination were to occur.

The wetlands also contain a single floating absorbent boom to intercept any hydrocarbons that may enter the wetlands due to a spill or other event. A preventative maintenance system is in place to trigger periodic inspections of the wetlands, to check for full functionality of the wetlands and proper operation of the boom. If excess vegetation is observed, work orders are raised to manually clear the vegetation without damaging the pond liner. This process ensures that hydrocarbons cannot flow through the wetlands and be released from the site; this is considered unlikely given the control measures located upstream of the wetlands including collection sumps and the oily water separator.

6.1.2. Monitoring network

Three surface water sites are monitored: the main holding pond in the constructed wetland (HP01), and upstream and downstream of the stormwater discharge location (labelled SW3 and SW4 as shown in Figure 4). Location details are provided in Table 9. In drier periods some or all of these locations may not be available to sample.

Table 9: NGSF surface water monitoring sites

Surface Water Monitoring Site ID	Easting (m mga)	Northing (m mga)
SW3	379407	6368748
SW4	379381	6368770
HP01	380937	6368786

6.1.3. Determining surface water quality thresholds

Surface water quality thresholds were adopted based on statistical analysis of surface water quality data collected from September 2012 to March 2014 and includes results from pre-construction monitoring (8 months) plus monitoring results from the construction period (19 months).

Details of the methodology used to define thresholds is included in the construction Groundwater Monitoring Program (AGL, 2015a) and Coffey (2015).

6.1.4. Surface water monitoring frequency and analytes

Surface water monitoring frequencies have been determined by taking into consideration a number of factors related to the risk of the project to local water resources and historical trends from the construction monitoring program.

The operational phase of the NGSF poses significantly lower risks to local water resources due to a significant reduction in personnel, vehicles, and land disturbance activities on site. No significant impacts to local water resources were observed during the construction period.

In considering the risk posed to local water resources through the operation of the NGSF and historical trends, surface water monitoring will continue to occur at six monthly intervals. The frequency will be further reviewed in another two years.

For each sampling event, field water quality measurements will be recorded including field pH, electrical conductivity (EC), redox potential, turbidity, temperature and dissolved oxygen. Samples will be sent to a NATA accredited laboratory under appropriate chain of custody, for analysis of:

- General parameters – total suspended solids (TSS), turbidity, total dissolved solids (TDS) and EC;
- Major cations – calcium, magnesium, potassium and sodium;
- Major anions – alkalinity, chloride, sulphate and fluoride;
- Dissolved and total metals – arsenic, cadmium, chromium, copper, lead, nickel, zinc and iron;
- Total recoverable hydrocarbons (TRH), benzene, toluene, ethyl benzene and xylenes (BTEX);
- Nutrients – total nitrogen, total kjeldahl nitrogen (TKN), nitrate, nitrite and total phosphorus; and
- Amines and glycols[1].

Table 10 summarises the surface water monitoring program.

Table 10: Surface water monitoring requirements

Management Practice	Monitoring	Responsibility	Timing
Conduct surface water monitoring at the NGSF surface water monitoring sites listed in Table 9.	Six-monthly water quality samples and water level checks. Suite of analytes as described above. Reports to be provided to HWC, DPE and PSC within two weeks of the monitoring report being finalised.	AGL (Environment Manager) to monitor at surface water monitoring locations on or adjacent to the NGSF site (refer Table 9).	During operation of NGSF

6.2. Adopted surface water thresholds

Surface water quality results from the monitoring program described in this OWMP will be compared against the adopted thresholds (as shown in Appendix B and C).

The adopted thresholds were identified based on review of data collected during the period from September 2012 to March 2014 (which was during an El Niño-Southern Oscillation (ENSO) neutral period). The adopted thresholds will be reviewed following significant climatic changes (for example, alterations of the ENSO index), and as more results are obtained over a longer timeframe. The adopted thresholds will be reviewed every two years, and will take into account the ENSO status. Revisions of the adopted threshold values would be undertaken with consultation with DPE and HWC.

The results of the surface water monitoring program will be analysed using the exponentially weighted moving average (EWMA), which is an effective method for identifying trends. EWMA is a weighted average presentation which takes account recent values using a weighting that diminishes over time. EWMA plots will be included in the six-monthly monitoring reports.

6.3. Exceedance of surface water quality threshold

Should surface water quality results exceed the adopted threshold value for a particular analyte at a particular monitoring point, the response action process shown in Figure 5 would be followed. AGL's NGSF Environment Manager is responsible for following the response action process.

[1] These analytes were included following the May 2016 review of the OWMP. As a result, no baseline values were collected for these analytes

Phase 1 of the response action process involves a desktop review and would be expected to be completed within a month following exceedance verification. Phase 2 could be completed within a varied timeframe depending on the particular exceedance, but would be expected to be finalised within six months. Phase 2 references AGL's Fully Integrated Risk Management (FIRM) matrix, which is AGL's internal risk analysis and assessment tool. Phase 3 would involve the implementation of further mitigation measures, which would be specific depending on the type of exceedance and identified risk and would be developed in consultation with DPE and HWC.

Increasing development activities in neighbouring lands to the NGSF may result in exceedances of water quality thresholds at the NGSF monitoring sites that are related to activities occurring on nearby properties out of AGL's control. AGL intends to reassess the NGSF groundwater monitoring network prior to neighbouring development and may install additional boundary monitoring bores to assess impacts on water quality from non-AGL activities.

7. Incident response

Response to incidents on site will be in accordance with AGL's NGSF Pollution Incident Response Management Plan (PIRMP) and the Emergency Response Plan. Additional details relating to incidents with the potential to impact groundwater are included in Sections 7.1 and 7.2.

7.1. Spill response

In the event of a significant spill (a spill deemed to cause or have the potential to cause material environmental harm as defined by Section 147 of the *Protection of the Environment Operations Act 1997*) on-site, AGL will implement the PIRMP and Emergency Response Plan.

For the purposes of preventing or minimising impacts to surface water and groundwater from a significant spill, a spill response strategy has been developed and is illustrated as a contingency plan flow chart in Figure 6. The spill response strategy may comprise the following steps:

- Confirm the source and location of the contamination;
- Clean up the contamination in the immediately affected area;
- Assess the surface water/groundwater quality with respect to relevant background concentrations, adopted thresholds and guidelines;
- Assess if PIRMP has been triggered
- Advise NSW Environment Protection Authority (EPA), DPE, and HWC of the spill or leakage;
- Investigate the most appropriate remedial response (most likely to be hydraulic containment for significant spills and leaks);
- Undertake hydraulic containment by installing down gradient (new) pumping bores;
- Install additional monitoring bores down gradient of the spill and increase monitoring frequency; and
- Pump the reclaimed water to a treatment facility for treatment/disposal and re-inject to groundwater if the water meets relevant site criteria.

A conceptual layout of a hydraulic containment system is illustrated in Figure 7. The interception pumping bore/s would be located down gradient of the spill area and monitoring bores would be established both up gradient and down gradient of the pumping bore/s to ensure that the hydraulic containment system is performing adequately.

A treatment facility would be established on the site to remove the contaminants from the groundwater pumped from the hydraulic containment system to meet appropriate standards and be returned to the groundwater system provided testing confirms that water quality is acceptable for discharge to this groundwater source. Treated groundwater would be returned up gradient and/or across gradient from the spill area and away from direct flow to the HWC pumping bores (if possible). Once the groundwater cleanup goals are achieved, stakeholders would be advised and hydraulic containment operation would cease.

If the treated groundwater is unsuitable for direct discharge, then the groundwater may require off-site disposal to an appropriate facility.

If the spill discharges into one of the sumps located within the site, a sample of the liquid contents of the sump is to undergo chemical analysis and assessment against the defined surface water thresholds (Appendix B). If the sample is within the defined thresholds, the sump may be discharged into the holding pond. If the sample exceeds the defined thresholds the sump must be emptied by vacuum truck and disposed of at an appropriately licensed liquid waste treatment facility.

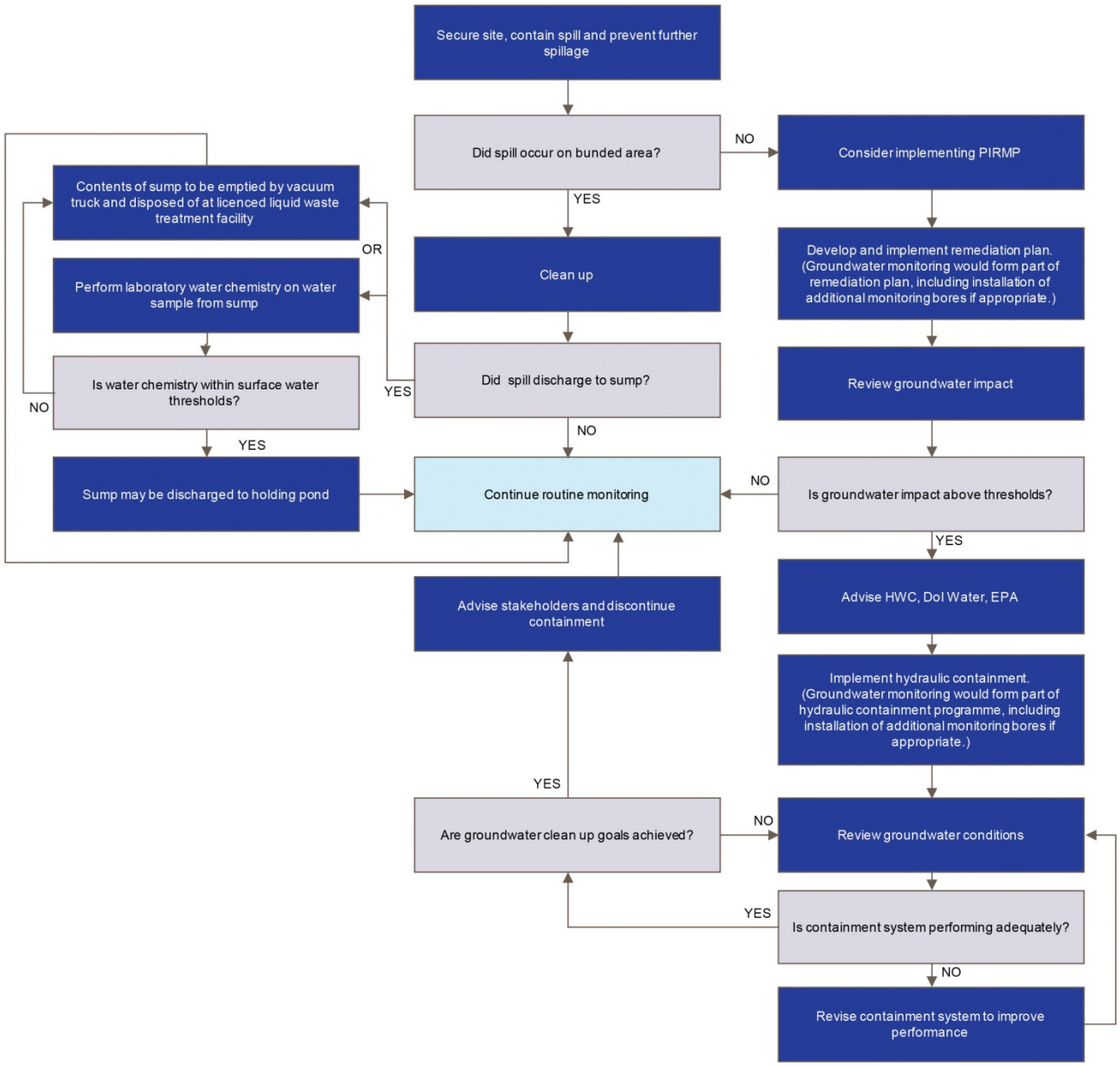

Figure 6: Significant Spill Contingency Plan Flow Chart

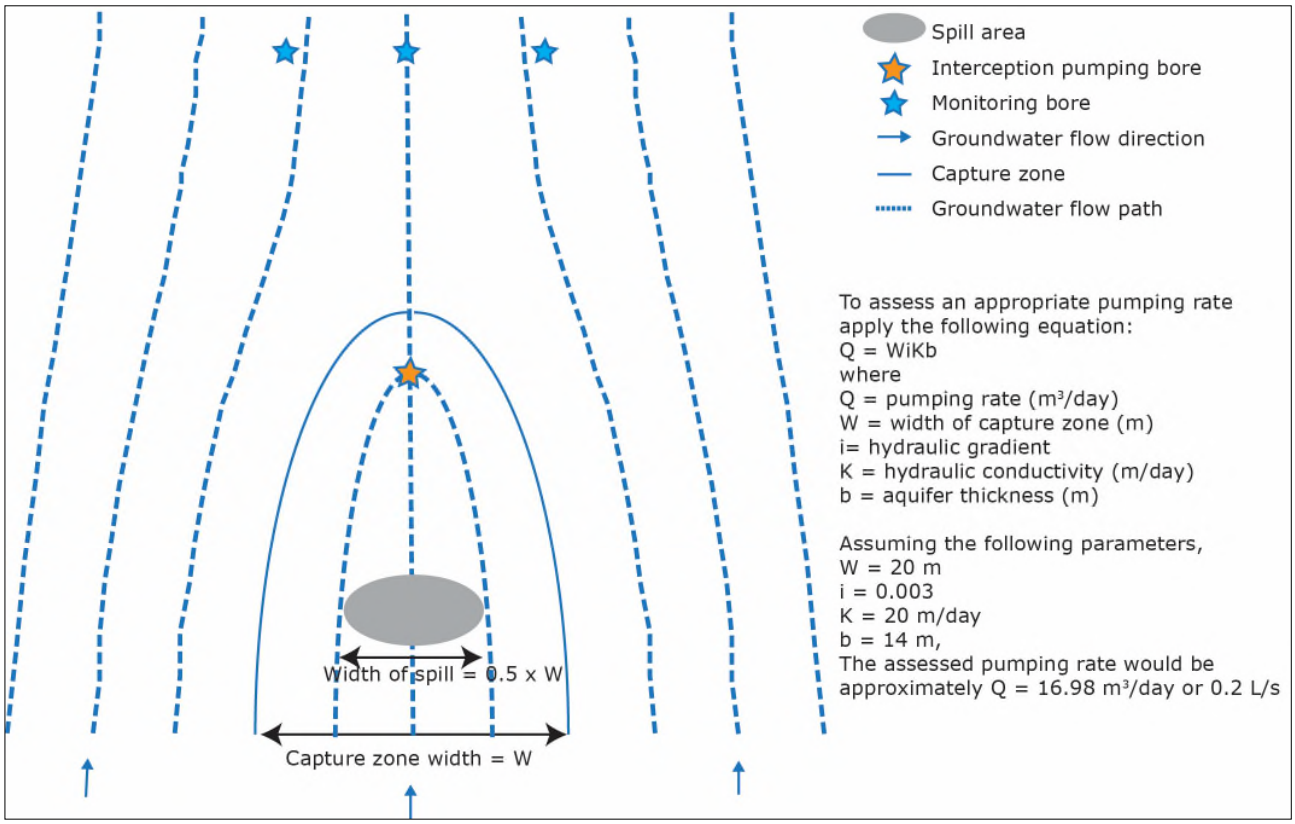

Figure 7: Hydraulic Containment System Schematic

7.2. Illegal dumping

Security of the site will be maintained to prevent third parties gaining unlawful access to the site.

If evidence of illegal dumping of wastes on the project area is observed the dumped material will be removed immediately and this will be treated as an environmental incident. If visual evidence of liquid or chemical waste is observed then sampling and monitoring will be implemented to assess potential and/or actual impact to groundwater or surface water.

AGL's NGSF Environment Manager is responsible for responding to illegal dumping and development and implementation of corrective actions.

7.3. Drawdown impacts

As there are no plans by AGL to extract groundwater, drawdown impacts are not considered a potential issue and a corresponding contingency plan is not warranted.

8. Reporting and document control

8.1. Reporting

Environmental reporting and review requirements are included in Table 11.

Table 11: Groundwater reporting and review requirements

Activity	Purpose	Frequency	Responsibility
Internal audit report	Audit of compliance against the conditions of approval, as well as other approvals, licences and consents.	Every two years	Environment Manager
Monitoring reports	Report to the HWC, DPE, PSC of monitoring results, including discussion of trends	Within two weeks of the monitoring report being finalised.	Environment Manager
Review of OWMP	To update the OWMP where necessary	Every two years	Environment Manager
Review of groundwater monitoring frequency	To decide if 6-monthly frequency monitoring remains appropriate	Every two years	Environment Manager
Review of adopted thresholds, including statistical review	To decide if adopted thresholds are still appropriate with reference to ENSO situation	Every two years	Environment Manager
Review of groundwater monitoring network	To decide if monitoring network is still appropriate	Every two years OR prior to major development at neighbouring properties	Environment Manager

8.2. Document control

Document control for the OWMP is undertaken in accordance with AGL's Document and Data Control Procedure. Under this procedure, documents must be authorised and include the current issue number.

Monitoring data collected under this OWMP are stored in AGL's directory: G:\Operations\Environment\NGSF\8.7 Aspects and impacts\8.7.3 Water monitoring program\3. Reports and Assessments or G:\Operations\Environment\NGSF\8.7 Aspects and impacts\8.7.2 Surface water\2. Monitoring Data for sump testing results.

9. Consultation

Version 2 of the OWMP was distributed to DPE (formerly NRAR), PSC, and HWC for consultation prior to submission.

Feedback received during the consultation process was considered by AGL and incorporated into the revised version (Version 3) of the OWMP for Department of Planning and Environment approval.

Subsequent versions of the OWMP are distributed to DPE, PSC, and HWC for information.

10. Compliance and review

10.1. Internal audit

AGL undertook an internal audit within 12 months of operations commencing, with subsequent audits undertaken every two years thereafter.

The scope of the internal audits will be as follows:

- Assess compliance with the conditions of approval and statement of commitments (refer to OEMP for approval documents);
- Assess compliance with the requirements in the OWMP (refer to Table 5, Table 8, Table 10, and Table 11);
- Review the OWMP to ensure relevance to current activities and recommend changes or improvements; and
- Review results of monitoring, including exceedances to determine trends or additional controls required.

The results of internal environmental audits will be provided to the NGSF Operations Manager for review and action if necessary.

10.2. Review and update of the program

The OWMP is scheduled to be reviewed every two years during operation of NGSF.

Revised OWMPs will be forwarded to HWC, SPE, and PSC for information and comment (if required) after each review.

The review is to be undertaken by the Environment Manager.

11. References

AGL, 2015a. Groundwater Monitoring Program, Newcastle Gas Storage Facility (Construction phase), NGSF-AGL-NAS-EN-PLN-007, dated 14 January 2015.

AGL, 2018. Operations Environment Management Plan, Newcastle Gas Storage Facility, DCS_NC_MP_HSE_025, dated May 2018.

Coffey Geotechnics Pty Ltd, 2015. Review of Water Quality Thresholds Gas Storage Site Construction Groundwater and Surface Water Monitoring Program Newcastle Gas Storage Facility Project. Report reference GEOTLCOV24054AC-AQ, 28 January 2015.

12. Appendices

Appendix A: Adopted groundwater quality thresholds for NGSF operational phase

(As defined in Coffey, 2015)

Analyte	Units	EQL	Ecosystem Guidelines[1]	Drinking Water Guidelines[2]	Adopted Groundwater Thresholds
General Parameters					
Field pH	pH unit	0.1	6.5 to 8.0 [3]	6.5 to 8.5 [6]	3.6 to 7.0
Electrical Conductivity @ 25°C	µS/cm	1	N/A	N/A	500
Total Dissolved Solids @180°C	mg/L	10	N/A	600 [6]	2000
Suspended Solids (SS)	mg/L	5	N/A	N/A	-
Cations					
Calcium	mg/L	1	N/A	N/A	-
Magnesium	mg/L	1	N/A	N/A	-
Sodium	mg/L	1	N/A	N/A	-
Potassium	mg/L	1	N/A	N/A	-
Anions					
Total Alkalinity as CaCO3	mg/L	1	N/A	N/A	-
Chloride	mg/L	1	N/A	N/A	-
Fluoride	mg/L	0.1	N/A	1.5	0.5
Sulfate	mg/L	1	N/A	500	50
Dissolved Metals					
Arsenic	mg/L	0.001	0.013	0.01	0.005
Cadmium	mg/L	0.0001	0.0002	0.002	0.002
Chromium	mg/L	0.001	0.001 [4]	0.05 [4]	0.005
Copper	mg/L	0.001	0.0014	2	0.01
Lead	mg/L	0.001	0.0034	0.01	0.01
Nickel	mg/L	0.001	0.011	0.02	0.01
Zinc	mg/L	0.005	0.008	3 [6]	0.2

Analyte	Units	EQL	Ecosystem Guidelines[1]	Drinking Water Guidelines[2]	Adopted Groundwater Thresholds
Iron	mg/L	0.05	0.3 [5]	0.3 [6]	10
Nutrients					
Nitrate as N	mg/L	0.01	0.7	50	10
Nitrite as N	mg/L	0.01	N/A	3	0.02
Nitrite + Nitrate as N	mg/L	0.01	N/A	N/A	10
Total Kjeldahl Nitrogen as N	mg/L	0.1	N/A	N/A	10
Total Nitrogen as N	mg/L	0.1	0.5 [3]	N/A	20
Total Phosphorus as P	mg/L	0.01	0.05 [3]	N/A	2
Total Petroleum Hydrocarbons					
C6-C9	µg/L	20	N/A	N/A	20
C10-C14 TRH	µg/L	50	N/A	N/A	50*
C15-C28 TRH	µg/L	100	N/A	N/A	500
C29-C36 TRH	µg/L	50	N/A	N/A	200
C10-C36 TRH	µg/L	50	N/A	N/A	1000
C10-C14 TPH Post Silica Gel Clean Up	µg/L	50	N/A	N/A	50*
C15-C28 TPH Post Silica Gel Clean Up	µg/L	100	N/A	N/A	100*
C29-C36 TPH Post Silica Gel Clean Up	µg/L	50	N/A	N/A	50*
C10-C36 TPH Post Silica Gel Clean Up (sum)	µg/L	50	N/A	N/A	50*
BTEX					
Benzene	µg/L	1	950	1	1*
Toluene	µg/L	2	180 [5]	800	5
Ethylbenzene	µg/L	2	80 [5]	300	2*
meta- & para-Xylene	µg/L	2	N/A	N/A	2*
ortho-Xylene	µg/L	2	350	N/A	2*
Total Xylenes	µg/L	2	N/A	600	2*
Coliforms					

Analyte	Units	EQL	Ecosystem Guidelines[1]	Drinking Water Guidelines[2]	Adopted Groundwater Thresholds
Total coliforms	cfu/100 ml	-	N/A	N/A	-
Faecal coliforms	cfu/100 ml	-	N/A	N/A	-
E. Coli	cfu/100 ml	-	N/A	<LOR	<LOR
Other Organic Compounds					
Diethanolamine[7]	µg/L	1	5000	60	60
Ethanolamine[7]	µg/L	1	1000	600	600
Methyldiethanolaimine	µg/L	1	N/A	N/A	-
Glycols					
2-butoxyethanol	µg/L	2000	N/A	N/A	-
2-Ethoxyethanol acetate	µg/L	2000	N/A	N/A	-
Diethylene glycol	µg/L	2000	N/A	N/A	-
Diethylene glycol, monobutyl ether	µg/L	2000	N/A	N/A	-
Ethylene glycol	µg/L	2000	N/A	N/A	-
Propylene glycol	µg/L	2000	N/A	N/A	-
Triethylene glycol	µg/L	2000	N/A	N/A	-

Notes:

* - all results non-detect; detection limit adopted for threshold

TRH denotes total recoverable hydrocarbons (analysis conducted before silica gel cleanup)

TPH denotes total petroleum hydrocarbons (analysis conducted after silica gel cleanup)

1 - ANZECC (2000) Fresh Water Ecosystem Trigger Values for 95% Species Protection.

2 - NHMRC (2011) Drinking Water Guidelines (Health).

3 - Range of values for NSW lowland rivers.

4 - Chromium guidelines are for Chromium VI.

5 - ANZECC Indicative Interim Working Level (IIWL) – Low Reliability Trigger Values.

6 - NHMRC (2011) Drinking Water Guidelines (Aesthetic).

7 – Alberta Environment and Parks (2016) – Groundwater (potable and or aquatic life)

EQL denotes estimated quantitation limit.

N/A denotes no guideline available.

Analyte	Units	EQL	Ecosystem Guidelines[1]	Drinking Water Guidelines[2]	Adopted Groundwater Thresholds

NT denotes analyte not tested.

"-" denotes no threshold defined.

Appendix B: Adopted surface water quality thresholds for NGSF operational phase – Drainage Lines

(As defined in Coffey, 2015)

Analyte	Units	EQL	Ecosystem Guidelines1	Drinking Water Guidelines2	Adopted Surface Water Thresholds
General Parameters					
Field pH	pH unit	0.1	6.5 to 8.0 [3]	6.5 to 8.5 [6]	4.8 to 9.3
Electrical Conductivity @ 25°C	µS/cm	1	N/A	N/A	5000
Total Dissolved Solids @180°C	mg/L	10	N/A	600 [6]	2000
Suspended Solids (SS)	mg/L	5	N/A	N/A	2000
Cations					
Calcium	mg/L	1	N/A	N/A	-
Magnesium	mg/L	1	N/A	N/A	-
Sodium	mg/L	1	N/A	N/A	-
Potassium	mg/L	1	N/A	N/A	-
Anions					
Total Alkalinity as CaCO3	mg/L	1	N/A	N/A	-
Chloride	mg/L	1	N/A	N/A	-
Fluoride	mg/L	0.1	N/A	1.5	5
Sulfate	mg/L	1	N/A	500	100
Total Metals					
Arsenic	mg/L	0.001	0.013	0.01	0.02
Cadmium	mg/L	0.0001	0.0002	0.002	0.002
Chromium	mg/L	0.001	0.001 [4]	0.05 [4]	0.01
Copper	mg/L	0.001	0.0014	2	0.05
Lead	mg/L	0.001	0.0034	0.01	0.02
Nickel	mg/L	0.001	0.011	0.02	0.02
Zinc	mg/L	0.005	0.008	3 6	0.2
Iron	mg/L	0.05	0.3 [5]	0.3 [6]	20
Nutrients					

Analyte	Units	EQL	Ecosystem Guidelines1	Drinking Water Guidelines2	Adopted Surface Water Thresholds
Nitrate as N	mg/L	0.01	0.7	50	200
Nitrite as N	mg/L	0.01	N/A	3	0.01
Nitrite + Nitrate as N	mg/L	0.01	N/A	N/A	200
Total Kjeldahl Nitrogen as N	mg/L	0.1	N/A	N/A	5
Total Nitrogen as N	mg/L	0.1	0.5 [3]	N/A	100
Total Phosphorus as P	mg/L	0.01	0.05 [3]	N/A	0.2
Total Petroleum Hydrocarbons					
C6-C9	µg/L	20	N/A	N/A	20*
C10-C14 TRH	µg/L	50	N/A	N/A	500
C15-C28 TRH	µg/L	100	N/A	N/A	1000
C29-C36 TRH	µg/L	50	N/A	N/A	500
C10-C36 TRH	µg/L	50	N/A	N/A	2000
C10-C14 TPH Post Silica Gel Clean Up	µg/L	50	N/A	N/A	50*
C15-C28 TPH Post Silica Gel Clean Up	µg/L	100	N/A	N/A	100*
C29-C36 TPH Post Silica Gel Clean Up	µg/L	50	N/A	N/A	50*
C10-C36 TPH Post Silica Gel Clean Up (sum)	µg/L	50	N/A	N/A	50*
BTEX					
Benzene	µg/L	1	950	1	1*
Toluene	µg/L	2	180 [5]	800	2*
Ethylbenzene	µg/L	2	80 [5]	300	2*
meta- & para-Xylene	µg/L	2	N/A	N/A	2*
ortho-Xylene	µg/L	2	350	N/A	2*
Total Xylenes	µg/L	2	N/A	600	2*
Coliforms					
Total coliforms	cfu/100 ml	-	N/A	N/A	NT

Analyte	Units	EQL	Ecosystem Guidelines1	Drinking Water Guidelines2	Adopted Surface Water Thresholds
Faecal coliforms	cfu/100 ml	-	N/A	N/A	NT
E. Coli	cfu/100 ml	-	N/A	<LOR	NT
Other Organic Compounds					
Diethanolamine[7]	µg/L	1	5000	60	5000
Ethanolamine[7]	µg/L	1	1000	600	1000
Methyldiethanolaimine	µg/L	1	N/A	N/A	-
Glycols					
2-butoxyethanol	µg/L	2000	N/A	N/A	-
2-Ethoxyethanol acetate	µg/L	2000	N/A	N/A	-
Diethylene glycol	µg/L	2000	N/A	N/A	-
Diethylene glycol, monobutyl ether	µg/L	2000	N/A	N/A	-
Ethylene glycol	µg/L	2000	N/A	N/A	-
Propylene glycol	µg/L	2000	N/A	N/A	-
Triethylene glycol	µg/L	2000	N/A	N/A	-

Notes:

* - all results non-detect; detection limit adopted for threshold

TRH denotes total recoverable hydrocarbons (analysis conducted before silica gel cleanup)

TPH denotes total petroleum hydrocarbons (analysis conducted after silica gel cleanup)

1 - ANZECC (2000) Fresh Water Ecosystem Trigger Values for 95% Species Protection.

2 - NHMRC (2011) Drinking Water Guidelines (Health).

3 - Range of values for NSW lowland rivers.

4 - Chromium guidelines are for Chromium VI.

5 - ANZECC Indicative Interim Working Level (IIWL) – Low Reliability Trigger Values.

6 - NHMRC (2011) Drinking Water Guidelines (Aesthetic).

7 – Alberta Environment and Parks (2016) – Groundwater (potable and or aquatic life)

EQL denotes estimated quantitation limit.

N/A denotes no guideline available.

NT denotes analyte not tested.

Appendix C: Adopted surface water quality thresholds for NGSF operational phase – Wetland area

(As defined in Coffey, 2015)

Analyte	Units	EQL	Ecosystem Guidelines1	Drinking Water Guidelines2	Adopted Surface Water Thresholds
General Parameters					
Field pH	pH unit	0.1	6.5 to 8.0 [3]	6.5 to 8.5 [6]	3.6 to 6.7
Electrical Conductivity @ 25°C	µS/cm	1	N/A	N/A	1000
Total Dissolved Solids @180°C	mg/L	10	N/A	600 [6]	2000
Suspended Solids (SS)	mg/L	5	N/A	N/A	2000
Cations					
Calcium	mg/L	1	N/A	N/A	-
Magnesium	mg/L	1	N/A	N/A	-
Sodium	mg/L	1	N/A	N/A	-
Potassium	mg/L	1	N/A	N/A	-
Anions					
Total Alkalinity as CaCO3	mg/L	1	N/A	N/A	-
Chloride	mg/L	1	N/A	N/A	-
Fluoride	mg/L	0.1	N/A	1.5	5
Sulfate	mg/L	1	N/A	500	100
Total Metals					
Arsenic	mg/L	0.001	0.013	0.01	0.005
Cadmium	mg/L	0.0001	0.0002	0.002	0.002
Chromium	mg/L	0.001	0.001 [4]	0.05 [4]	0.01
Copper	mg/L	0.001	0.0014	2	0.02
Lead	mg/L	0.001	0.0034	0.01	0.02
Nickel	mg/L	0.001	0.011	0.02	0.02
Zinc	mg/L	0.005	0.008	3 6	1
Iron	mg/L	0.05	0.3 [5]	0.3 [6]	20

Analyte	Units	EQL	Ecosystem Guidelines1	Drinking Water Guidelines2	Adopted Surface Water Thresholds
Nutrients					
Nitrate as N	mg/L	0.01	0.7	50	50
Nitrite as N	mg/L	0.01	N/A	3	0.01*
Nitrite + Nitrate as N	mg/L	0.01	N/A	N/A	50
Total Kjeldahl Nitrogen as N	mg/L	0.1	N/A	N/A	50
Total Nitrogen as N	mg/L	0.1	0.5 [3]	N/A	10
Total Phosphorus as P	mg/L	0.01	0.05 [3]	N/A	0.5
Total Petroleum Hydrocarbons					
C6-C9	µg/L	20	N/A	N/A	20*
C10-C14 TRH	µg/L	50	N/A	N/A	200
C15-C28 TRH	µg/L	100	N/A	N/A	1000
C29-C36 TRH	µg/L	50	N/A	N/A	500
C10-C36 TRH	µg/L	50	N/A	N/A	2000
C10-C14 TPH Post Silica Gel Clean Up	µg/L	50	N/A	N/A	50*
C15-C28 TPH Post Silica Gel Clean Up	µg/L	100	N/A	N/A	100*
C29-C36 TPH Post Silica Gel Clean Up	µg/L	50	N/A	N/A	50*
C10-C36 TPH Post Silica Gel Clean Up (sum)	µg/L	50	N/A	N/A	50*
BTEX					
Benzene	µg/L	1	950	1	1
Toluene	µg/L	2	180 [5]	800	50
Ethylbenzene	µg/L	2	80 [5]	300	2*
meta- & para-Xylene	µg/L	2	N/A	N/A	2*
ortho-Xylene	µg/L	2	350	N/A	2*
Total Xylenes	µg/L	2	N/A	600	2*
Coliforms					

Analyte	Units	EQL	Ecosystem Guidelines1	Drinking Water Guidelines2	Adopted Surface Water Thresholds
Total coliforms	cfu/100 ml	-	N/A	N/A	NT
Faecal coliforms	cfu/100 ml	-	N/A	N/A	NT
E. Coli	cfu/100 ml	-	N/A	<LOR	NT
Other Organic Compounds					
Diethanolamine[7]	µg/L	1	5000	60	5000
Ethanolamine[7]	µg/L	1	1000	600	1000
Methyldiethanolaimine	µg/L	1	N/A	N/A	-
Glycols					
2-butoxyethanol	µg/L	2000	N/A	N/A	-
2-Ethoxyethanol acetate	µg/L	2000	N/A	N/A	-
Diethylene glycol	µg/L	2000	N/A	N/A	-
Diethylene glycol, monobutyl ether	µg/L	2000	N/A	N/A	-
Ethylene glycol	µg/L	2000	N/A	N/A	-
Propylene glycol	µg/L	2000	N/A	N/A	-
Triethylene glycol	µg/L	2000	N/A	N/A	-

Notes:

* - all results non-detect; detection limit adopted for threshold

TRH denotes total recoverable hydrocarbons (analysis conducted before silica gel cleanup)

TPH denotes total petroleum hydrocarbons (analysis conducted after silica gel cleanup)

1 - ANZECC (2000) Fresh Water Ecosystem Trigger Values for 95% Species Protection.

2 - NHMRC (2011) Drinking Water Guidelines (Health).

3 - Range of values for NSW lowland rivers.

4 - Chromium guidelines are for Chromium VI.

5 - ANZECC Indicative Interim Working Level (IIWL) – Low Reliability Trigger Values.

6 - NHMRC (2011) Drinking Water Guidelines (Aesthetic).

7 – Alberta Environment and Parks (2016) – Groundwater (potable and or aquatic life)

EQL denotes estimated quantitation limit.

N/A denotes no guideline available.

Analyte	Units	EQL	Ecosystem Guidelines1	Drinking Water Guidelines2	Adopted Surface Water Thresholds

NT denotes analyte not tested.

"-" denotes no threshold defined.

Appendix D: Bore licence 20BL172769 conditions

20BL172769

NSW Office of Water

CONDITIONS STATEMENT REFERRED TO ON 20BL172769 ISSUED UNDER PART V OF THE WATER ACT, 1912 ON 14-Apr-2011

(1) THE LICENCE SHALL LAPSE IF THE WORK IS NOT COMMENCED AND COMPLETED WITHIN THREE YEARS OF THE DATE OF THE ISSUE OF THE LICENCE.

(2) THE LICENSEE SHALL WITHIN TWO MONTHS OF COMPLETION OR AFTER THE ISSUE OF THE LICENSE IF THE WORK IS EXISTING, FURNISH TO NSW OFFICE OF WATER:-

(A) DETAILS OF THE WORK SET OUT IN THE ATTACHED FORM "A" (MUST BE COMPLETED BY A DRILLER).

(B) A PLAN SHOWING ACCURATELY THE LOCATION OF THE WORK, IN RELATION TO PORTION AND PROPERTY BOUNDARIES.

(C) A ONE LITRE WATER SAMPLE FOR ALL LICENCES OTHER THAN THOSE FOR STOCK, DOMESTIC, TEST BORES AND FARMING PURPOSES.

(D) DETAILS OF ANY WATER ANALYSIS AND/OR PUMPING TESTS.

(3) THE LICENSEE SHALL ALLOW NSW OFFICE OF WATER OR ANY PERSON AUTHORISED BY IT, FULL AND FREE ACCESS TO THE WORKS, EITHER DURING OR AFTER CONSTRUCTION, FOR THE PURPOSE OF CARRYING OUT INSPECTION OR TEST OF THE WORKS AND ITS FITTINGS AND SHALL CARRY OUT ANY WORK OR ALTERATIONS DEEMED NECESSARY BY THE DEPARTMENT FOR THE PROTECTION AND PROPER MAINTENANCE OF THE WORKS, OR THE CONTROL OF THE WATER EXTRACTED AND FOR THE PROTECTION OF THE QUALITY AND THE PREVENTION FROM POLLUTION OR CONTAMINATION OF SUB-SURFACE WATER.

(4) IF DURING THE CONSTRUCTION OF THE WORK, SALINE OR POLLUTED WATER IS ENCOUNTERED ABOVE THE PRODUCING AQUIFER, SUCH WATER SHALL BE SEALED OFF BY:-

(A) INSERTING THE APPROPRIATE LENGTH(S) OF CASING TO A DEPTH SUFFICIENT TO EXCLUDE THE SALINE OR POLLUTED WATER FROM THE WORK.

(B) CEMENTING BETWEEN THE CASING(S) AND THE WALLS OF THE BORE HOLE FROM THE BOTTOM OF THE CASING TO GROUND LEVEL.

ANY DEPARTURE FROM THESE PROCEDURES MUST BE APPROVED BY THE DEPARTMENT BEFORE UNDERTAKING THE WORK.

(5) (A) THE LICENSEE SHALL NOTIFY NSW OFFICE OF WATER IF A FLOWING SUPPLY OF WATER IS OBTAINED. THE BORE SHALL THEN BE LINED WITH CASING AND CEMENTED AND A SUITABLE CLOSING GEAR SHALL BE ATTACHED TO THE BOREHEAD AS SPECIFIED BY NSW OFFICE OF WATER.

(B) IF A FLOWING SUPPLY OF WATER IS OBTAINED FROM THE WORK, THE LICENSEE SHALL ONLY DISTRIBUTE WATER FROM THE BORE HEAD BY A SYSTEM OF PIPE LINES AND SHALL NOT DISTRIBUTE IT IN DRAINS, NATURAL OR ARTIFICIAL CHANNELS OR DEPRESSIONS.

(6) IF A WORK IS ABANDONED AT ANY TIME THE LICENSEE SHALL NOTIFY NSW OFFICE OF WATER THAT THE WORK HAS BEEN ABANDONED AND SEAL OFF THE AQUIFER BY:-

(A) BACKFILLING THE WORK TO GROUND LEVEL WITH CLAY OR CEMENT AFTER WITHDRAWING THE CASING (LINING); OR

(B) SUCH METHODS AS AGREED TO OR DIRECTED BY NSW OFFICE OF WATER.

(7) THE LICENSEE SHALL NOT ALLOW ANY TAILWATER/DRAINAGE TO DISCHARGE INTO OR ONTO:-

- ANY ADJOINING PUBLIC OR CROWN ROAD;
- ANY OTHER PERSONS LAND;
- ANY CROWN LAND;
- ANY RIVER, CREEK OR WATERCOURSE;
- ANY NATIVE VEGETATION AS DESCRIBED UNDER THE NATIVE VEGETATION CONSERVATION ACT 1997;
- ANY WETLANDS OF ENVIRONMENTAL SIGNIFICANCE.

(8) WATER SHALL NOT BE PUMPED FROM THE BORE AUTHORISED BY THIS LICENSE FOR ANY PURPOSE OTHER THAN GROUNDWATER INVESTIGATION.

End Of Conditions

Appendix B1

Noise Management Plan

Noise Management Plan

Newcastle Gas Storage Facility
August 2025

AGL Energy Limited
ABN: 74 115 061 375
Level 24, 200 George St
Sydney NSW 2000
Locked Bag 1837
St Leonards NSW 2065
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Document Controls

Approval and Authorisation

Title	Noise Management Plan – Newcastle Gas Storage Facility
Accepted on behalf of AGL by:	John Moraitis
Signed:	
Dated:	20.08.25

Document Status

Document status	Date	Prepared by	Reviewed by
Rev 0	26/11/2014	WorleyParsons	AGL
Rev 1	12/3/2015	WorleyParsons	AGL
Rev 2.1 Draft	23/01/2018	Isabella See / Philip Burns	Emma Dean
Rev 3	20/03/2024	John Moraitis	AGL
Rev 4	06/08/2024	John Moraitis	AGL

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Appendices

1. Introduction

1.1 Scope

This document is the AGL Energy Limited (AGL) Noise Management Plan (NMP) for the Newcastle Gas Storage Facility (NGSF). The NMP describes AGL's system for managing noise during operation of the NGSF.

AGL has developed the NGSF, located at Tomago and Hexham, New South Wales, to meet peak gas demands and provide additional security of gas supply during supply disruption events. The NGSF includes the following components:

- The gas plant site.
- An access road and utility corridor.
- A gas pipeline corridor.
- A high-pressure gas pipeline to Jemena trunk main, the Tomago – Hexham pipeline; and
- A low-pressure pipeline to an industrial user south of the site

1.2 Background

Project approval for the NGSF was granted on 10 May 2012 (File No. 11/08788) and approvals for five modifications of the project were subsequently granted on 5 February 2013, 31 January 2014, 27 February 2018, 8 June 2023, and 6 September 2023 comprising:

- Modification 1 (10_0133 MOD1) – authorising the washing out of concrete mixers during construction and for the waste water to be removed off site by pump-out trucks
- Modification 2 (10_0133 MOD2) – authorising construction and operation of a 4.5km low pressure natural gas pipeline between the gas storage facility and an industrial user to the south of the site
- Modification 3 (10_0133 MOD3) – authorising additional infrastructure to allow processing of the tail gas produced as part of the operation of the NGSF, including construction and operation of a maintenance flare and minor changes to existing infrastructure.
- Modification 4 (10_0133 MOD4) – authorising the cessation of proactive annual noise monitoring in the absence of noise complaints being received by NGSF or the NSW EPA.
- Modification 5 (10_0133 MOD5) – authorising a reduction in the frequency of air quality monitoring at Heaters H101, H501A, H501B and H501C, from annually to once every five years.

Further information is provided in Appendix A1 of the Operation Environmental Management Plan (OEMP).

Several commitments were made in Environmental Assessment for the NGSF relating to the management of noise. This document has been prepared to fulfil those operations related commitments and is an appendix to the OEMP for the NGSF.

1.3 Objectives

The objectives of the NMP are to:

- Describe the system for management of noise during operation of the NGSF.
- Fulfil the requirements of the project approval and modifications of project approval (refer Section 1.2 above) about operational noise management.

- Address the requirements of the Environmental Assessments (EAs) prepared for the project (Coffey 2011a, AGL 2012, EMM 2013 and EMM 2017) and the Preferred Project Report (Coffey 2011b) about operational noise management.
- Identify relevant statutory requirements and other obligations that AGL is required to meet about noise management during operation of the NGSF.
- Identify noise management measures to be implemented during operation of the NGSF.
- Identify noise monitoring and reporting required during operation of the NGSF.
- Identify the methodology to be adopted for review and improvement (where necessary) of noise management performance during operation of the NGSF.
- Identify procedures for periodic review and update of the NMP.

1.4 Structure of the NMP

The NMP has been structured to meet the requirements of the relevant commitments made for the NGSF project (refer to Section 2.1).

The NMP is divided into the following sections:

- Section 1: Introduces the NMP.
- Section 2: Identifies statutory and other requirements that must be met by AGL regarding noise management during operation of the NGSF.
- Section 3: Identifies sensitive receivers in the vicinity of the Project, potential operational noise sources, operational noise goals details noise management measures.
- Section 4: Provides details of how the NMP will be implemented, including responsibilities, training and communication.
- Section 5: Identifies monitoring, audit, review and reporting requirements and provides details relating to incident management and management review of the NMP.
- Section 6: Provides a list of references for the NMP.

Additional information is included in appendices.

2. Statutory and Other Requirements

2.1 New South Wales Legislation

2.1.1 Environmental Planning and Assessment Act 1979

Approval for the NGSF project under Section 75J of the *Environmental Planning and Assessment Act 1979* (*EP&A Act*) was provided by the NSW Department of Planning and Infrastructure on 10 May 2012. Five modifications of the project were subsequently granted on 5 February 2013, 31 January 2014, 27 February 2018, 8 June 2023, and 6 September 2023.

The project approval and modifications to the approval were issued subject to a number of conditions. Several commitments were also made in the Environmental Assessment for the project that relate to noise management during the operation of the NGSF. Modifications following the initial Environmental Assessment for the project did not significantly alter the existing noise management considerations on site.

The conditions of approval relevant to noise management during operation of the NGSF and reference to where each of these conditions has been addressed in the NMP are included in Table 2.1.

Table 2.1: Conditions of Approval

<table>
<tr><th>No</th><th>Conditions</th><th>Reference</th></tr>
<tr><td>C8</td><td>The Proponent shall design, construct, operate and maintain the project to ensure that the noise contribution from the project at each receiver location does not exceed the noise limits specified in Table C1.
Table C1: Maximum Allowable Noise Limits (dB(A))
<table>
<tr><th rowspan="2">Location</th><th>Day
7:00am to 6:00pm
Mondays to Saturdays
8:00am to 6:00pm
Sundays and public holidays</th><th>Evening
6:00pm to 10:00pm on any day</th><th colspan="2">Night
10:00pm to 7:00am
Mondays to Saturdays
10:00pm to 8:00am
Sundays and public holidays</th></tr>
<tr><th>$L_{Aeq(15\text{-}minute)}$</th><th>$L_{Aeq(15\text{-}minute)}$</th><th>$L_{Aeq(15\text{-}minute)}$</th><th>$L_{A1(1\text{-}minute)}$</th></tr>
<tr><td>217 Old Maitland Road</td><td>49</td><td>42</td><td>42</td><td>55</td></tr>
<tr><td>Hunter Botanical Gardens</td><td>50</td><td>50</td><td>50</td><td>N/A</td></tr>
<tr><td>5 Graham Drive</td><td>35</td><td>35</td><td>35</td><td>45</td></tr>
<tr><td>185 Old Maitland Road</td><td>35</td><td>35</td><td>35</td><td>45</td></tr>
<tr><td>45 School Drive</td><td>35</td><td>35</td><td>35</td><td>45</td></tr>
<tr><td>Tomago Caravan Park</td><td>35</td><td>35</td><td>35</td><td>45</td></tr>
</table>
The receiver locations set out in Table C1 are those identified in Table 7.39 and Figure 7.29 of the EA.
If noise from the project is substantially tonal, intermittent or impulsive in nature or contains major components within the low frequency range (as described in Chapter 4 of the NSW Industrial Noise Policy (EPA, 2000)), 5 dB(A) shall be added to the measured noise level when comparing the measured noise with the limits specified in Table C1, in accordance with the requirements of the NSW Industrial Noise Policy.
The noise limits set out in Table C1 do not apply under: wind speeds greater than 3 m/s at 10 metres above ground level; or under stability category F temperature inversion conditions when wind speeds are greater than 2 m/s at 10 metres above ground level; or under stability category G temperature inversion conditions. Stability category temperature inversion conditions shall be determined by the sigma-theta method referred to in Part 4E of Appendix E of the NSW Industrial Noise Policy. The meteorological data to be used for determining meteorological conditions shall be those recorded by monitoring station referred to under condition B37.</td><td>Section 3.2</td></tr>
<tr><td>C9</td><td>The Proponent shall develop and implement a Noise Monitoring Programme in consultation with and to meet the requirements of the EPA. The Programme shall aim to demonstrate compliance with the noise limits under condition C8 of this approval during operation of the project.</td><td>Section 5.1</td></tr>
</table>

A Statement of Commitments was prepared under Section 75F of the EP&A Act and included in the Preferred Project and Response to Submissions Report (Coffey 2011b). The commitments relevant to noise management during operation of the NGSF and reference to where each of these conditions has been addressed in the NMP are included in Table 2.2.

Table 2.2: Statement of Commitments

No	Commitment	Reference
7.11.1	A noise and vibration management plan will be prepared as part of the CEMP and OEMP to ensure noise levels are adequately controlled and any impacts managed.	This NMP
7.11.2	Construction and operation activities will be undertaken with a focus on noise control at source, noise attenuation and in consultation with potentially affected receptors to minimise the risk of noise exceeding noise criteria and disturbing sensitive receptors.	Table A-1, Appendix A
	The following measures will be implemented (where practical) to manage impacts of noise and ensure Project goals are met:	
7.11.3	Ensure vehicles and equipment are in good working order and have effective noise reduction features.	Table A-2, Appendix A
7.11.4	Consult potential noise receptors about the nature of operations noise emissions and avoidance and mitigation practices to be adopted. Feedback and complaints will be recorded and addressed where practical.	Table A-1, Appendix A
7.11.5	Monitor noise levels during operations to ensure localised noise creep (increase in local ambient noise) is not occurring due to the Project.	Table A-1, Appendix A
7.11.6	Noise and vibration monitoring programs will be developed as part of the noise and vibration management plan. The programs will focus on monitoring	Table A-1, Appendix A
7.11.7	Noise emissions during construction and operations to ensure equipment is meeting noise certification and criteria requirements and detect any faulty or damaged equipment.	Table A-2, Appendix A
7.11.8	Responding to community complaints in line with EPA licence conditions.	Table A-1, Appendix A

2.1.2 Protection of the Environment Operations Act 1997

Noise Management

Part 5.5 of the *Protection of the Environment Operations Act 1997* (POEO Act) details noise pollution offences and requirements for the proper and efficient operation, maintenance and handling of plant, equipment and materials.

Environment Protection Licence

An Environment Protection Licence (EPL) 20130 has been issued by the NSW Environment Protection Authority (EPA) for the NGSF project under the POEO Act (refer Appendix A8 of the OEMP). Conditions within the EPL relevant to noise management are included in Table 2.3.

Table 2.3: Environment Protection Licence Conditions

<table>
<tr><th>Licence Condition</th><th>Requirement</th></tr>
<tr><td>L5.1</td><td>Noise generated at the premises that is measured at each noise monitoring point established under this licence must not exceed the noise levels specified in Column 4 of the table below for that point during the corresponding time periods specified in Column 1 when measured using the corresponding measurement parameters listed in Column 2.
Point 2
<table>
<tr><th>Time period</th><th>Measurement parameter</th><th>Measurement frequency</th><th>Noise level dB(A)</th></tr>
<tr><td>Day</td><td>Day-LAeq (15 minute)</td><td>Yearly</td><td>50</td></tr>
<tr><td>Evening</td><td>Evening-LAeq (15 minute)</td><td>Yearly</td><td>50</td></tr>
<tr><td>Night</td><td>Night-LAeq (15 minute)</td><td>Yearly</td><td>50</td></tr>
</table>
Point 3
<table>
<tr><th>Time period</th><th>Measurement parameter</th><th>Measurement frequency</th><th>Noise level dB(A)</th></tr>
<tr><td>Day</td><td>Day-LAeq (15 minute)</td><td>Yearly</td><td>35</td></tr>
<tr><td>Evening</td><td>Evening-LAeq (15 minute)</td><td>Yearly</td><td>35</td></tr>
<tr><td>Night</td><td>Night-LAeq (15 minute)</td><td>Yearly</td><td>35</td></tr>
<tr><td>Night</td><td>Night-LA1 (1 minute)</td><td>Yearly</td><td>45</td></tr>
</table>
Point 5
<table>
<tr><th>Time period</th><th>Measurement parameter</th><th>Measurement frequency</th><th>Noise level dB(A)</th></tr>
<tr><td>Day</td><td>Day-LAeq (15 minute)</td><td>Yearly</td><td>35</td></tr>
<tr><td>Evening</td><td>Evening-LAeq (15 minute)</td><td>Yearly</td><td>35</td></tr>
<tr><td>Night</td><td>Night-LAeq (15 minute)</td><td>Yearly</td><td>35</td></tr>
<tr><td>Night</td><td>Night-LA1 (1 minute)</td><td>Yearly</td><td>45</td></tr>
</table>
Point 6</td></tr>
</table>

Licence Condition	Requirement
	<table><tr><th>Time period</th><th>Measurement parameter</th><th>Measurement frequency</th><th>Noise level dB(A)</th></tr><tr><td>Day</td><td>Day-LAeq (15 minute)</td><td>Yearly</td><td>35</td></tr><tr><td>Evening</td><td>Evening-LAeq (15 minute)</td><td>Yearly</td><td>35</td></tr><tr><td>Night</td><td>Night-LAeq (15 minute)</td><td>Yearly</td><td>35</td></tr><tr><td>Night</td><td>Night-LA1 (1 minute)</td><td>Yearly</td><td>45</td></tr></table>
L5.2	The noise limits set out in the Noise Limits table\s for Noise Monitoring Points 1 to 6 inclusive apply under all meteorological conditions except for the following: • Wind speeds greater than 3 metres/second at 10 metres above ground level; or • Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or • Stability category G temperature inversion conditions. For the purposes of this condition: • Data recorded by the meteorological station identified as EPA Identification Point Nine (9) must be used to determine meteorological conditions; and • Temperature inversion conditions (stability category) are to be determined by the sigma-theta method referred to in Part E4 of Appendix E to the NSW Industrial Noise Policy
L5.3	**Determining Compliance** To determine compliance: • with the Leq(15 minute) noise limits in the Noise Limits table, the noise measurement equipment must be located: – approximately on the property boundary, where any dwelling is situated 30 metres or less from the property boundary closest to the premises; or – within 30 metres of a dwelling façade, but not closer than 3m, where any dwelling on the property is situated more than 30 metres from the property boundary closest to the premises; or, where applicable – within approximately 50 metres of the boundary of a National Park or a Nature Reserve. • with the LA1(1 minute) noise limits in the Noise Limits table, the noise measurement equipment must be located within 1 metre of a dwelling façade. • with the noise limits in the Noise Limits table, the noise measurement equipment must be located: – at the most affected point at a location where there is no dwelling at the location; or – at the most affected point within an area at a location prescribed by part (a) or part (b) of this condition.
L5.4	For the purposes of determining the noise generated at the premises the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.
L5.5	A non-compliance with respect to the noise limits table\s will still occur where noise generated from premises in excess of the appropriate limit is measured:

Licence Condition	Requirement
	a) at a location other than an area prescribed by the above conditions and/or b) at a point other than the most affected point at a location.

2.2 Guidelines

The NSW Industrial Noise Policy (EPA 2000) is applicable to the NGSF.

2.3 Summary of Approvals and Licences

Approvals and licences relating to noise management during operation of the NGSF are included in Table 2.4.

Table 2.4: Summary of Approvals and Licences

Title	Agency Responsible	Reference
Project Approval and Modifications	NSW Department of Planning and Infrastructure (now the Department of Planning and Environment)	Appendices A1 and A6 of OEMP
Environment Protection Licence NSW	Environment Protection Authority	Appendix A8 of OEMP

2.4 Management Policies

AGL's health, safety and environmental management system includes AGL's Environment Policy, Environmental Standards, and Environmental Methodologies.

Environmental Standard *AGL-HSE-STD-009.5 Noise Emissions Standard* is relevant to noise management during the operation of the NGSF.

3. Noise Management

3.1 Sensitive Receivers

Sensitive receptors in the vicinity of the NGSF include:

- Hunter Region Botanic Gardens.
- Residences at 5 Graham Drive and 45 School Drive.
- Tomago Village Caravan Park.
- Properties at 185 and 217 Old Maitland Road.

The locations of these receptors are shown on Figure 2. Details of the receptors are provided in Table 3.1.

Table 3.1: Sensitive Noise Receivers

ID	Location	Distance from Project (m)	Description of Receptor
R1	Hunter Region Botanic Gardens (EPL 20130 Point 2)	460	Passive Recreation Area
R2	5 Graham Drive (EPL 20130 Point 3)	1300	Residential
R3	45 School Drive (EPL 20130 Point 5)	1200	Residential
R4	Tomago Village Caravan Park (EPL 20130 Point 6)	1300	Active Recreation Area
R5	217 Old Maitland Road	330	Residential
R6	185 Old Maitland Road	150	Residential

Source: Coffey (2011)

3.2 Noise Limits

Condition of Approval C8 for the project included maximum allowable noise limits at each of the sensitive receivers identified in Table 3.1. These noise limits are included in Table 3.2.

Table 3.2: Maximum Allowable Noise Limits

ID	Location	Day 7:00am to 6:00pm Mondays to Saturdays 8:00am to 6:00pm Sundays and public holidays (dB(A))	Evening 6:00pm to 10:00pm on any day (dB(A))	Night 10:00pm to 7:00am Mondays to Saturdays 10:00pm to 8:00am Sundays and public holidays (dB(A))	
		LA_{eq}(15-minute)	**LA_{eq}(15-minute)**	**LA_{eq}(15-minute)**	**LA1(1-minute)**
R1	Hunter Region Botanic Gardens (EPL 20130 Point 2)	50	50	50	N/A
R2	5 Graham Drive (EPL 20130 Point 3)	35	35	35	45
R3	45 School Drive (EPL 20130 Point 5)	35	35	35	45
R4	Tomago Village Caravan Park (EPL 20130 Point 6)	35	35	35	45
R5	217 Old Maitland Road	49	42	42	55
R6	185 Old Maitland Road	35	35	35	45

Source: Coffey (2011)

The following should be noted about the noise limits in Table 3.2:

- If noise from the project is substantially tonal, intermittent or impulsive in nature or contains major components within the low frequency range, 5 dB(A) is to be added to the measured noise level when comparing the measured noise with the limits specified in Table 3.23.2.
- The noise limits set out in Table 3.2 do not apply under: wind speeds greater than 3 m/s at 10 metres above ground level; or under stability category F temperature inversion conditions when wind speeds are greater than 2 m/s at 10 metres above ground level; or under stability category G temperature inversion conditions.

Further details are included in Table 2.1.

3.3 Noise Sources

Noise sources during operation of the NGSF include (Coffey 2011):

- Gas plant site:
  - Gas turbines (including air intakes, enclosure ventilation systems and exhaust stack noise).
  - Lube-oil radiator fans.
  - Heating, ventilation and air conditioning for the buildings.
  - Compressors (including motors and fans).
  - Pumps (including truck loading pumps).
  - Flare system.
  - Emergency response alarms and vehicle alarms.
  - General works associated with routine operations, maintenance and plant upgrades.
- HRS site:
  - Dry gas filters.
  - Meters.
  - Flow control valves.
  - General works associated with routine operations, maintenance and plant upgrades.

Traffic noise sources during operations will include LNG tankers and light vehicles. Wastewater will be collected by tankers, which will require approximately 180 tanker trips per year. Noise due to traffic will occur primarily along the northern end of Old Punt Road and along the Pacific Highway.

3.4 Noise Management Measures

Noise management measures are included in Appendix A.

4. Implementation and operation

4.1 Responsibilities

Key roles and responsibilities for noise management during the operation of the NGSF are included in Table 4.1.

Table 4.1: Noise Management Roles and Responsibilities

Role	Responsibility
Operations Manager	Overall responsibility for implementation of the NMP. Responsible for ensuring that employees are aware of their obligations under the NMP and for providing resources for environmental training.
Environment Business Partner	Responsible for development, implementation, monitoring and reporting in compliance with the NMP. Responsible for informing staff of any issues relating to noise and for implementing the noise management measures included in Appendix A of the NMP. Responsible for notifying the EPA in the event of any noise pollution event.
Community Relations Manager	Responsible for recording and resolving complaints received in relation to noise.
Operations Supervisors	Directly responsible for understanding the requirements of the NMP and for overseeing and fulfilment of commitments contained in the NMP.
All employees and contractors	Responsible for understanding the NMP and that works are carried out in compliance with the NMP.

4.2 Training and Competence

The site induction will include a noise management component. Examples of noise management topics that may be covered during the project induction include:

- Location of noise sensitive areas.
- Operational activities likely to generate significant noise.
- Noise management measures.
- Responsibilities of personnel about noise management.

Further detail about training and competence is included in Section 5.2 of the OEMP.

4.3 Internal and External Communication

Communication about noise management will be undertaken in accordance with Section 5.3 of the OEMP and the measures included in Appendix A.

4.4 Document Control

Document control for the NMP will be undertaken in accordance with Section 5.5 of the OEMP.

5. Monitoring and compliance

5.1 Noise Monitoring

5.1.1 General

Noise monitoring will be undertaken annually to determine whether compliance with the maximum allowable noise limits in Table 3.2 is being achieved. The results of this noise monitoring will determine whether noise mitigation measures and / or further noise monitoring is required.

5.1.2 Scope

The noise monitoring will be undertaken by a competent and qualified acoustic consultant and will comprise the following:

- Monitoring of noise will be undertaken at each of the sensitive receivers identified in Table 3.1 and on Figure 2.
- Noise monitoring will consist of noise measurements during each time period specified in Table 3.2 at each receiver.
- Noise monitoring will include background noise and account noise emissions characteristics including volume, intensity, duration and time and place.
- Noise monitoring will also be undertaken at the gas plant site and the HRS to determine whether equipment and machinery is performing within expected noise limits.

The scope of the noise monitoring program will be reviewed in consultation with the acoustic consultant prior to commencement of monitoring.

5.1.3 Reporting

A report will be prepared following the initial noise monitoring presenting results, conclusions and recommendations.

5.1.4 Non-compliances

If noise monitoring indicates the maximum allowable limits have been exceeded because of operational noise from the NGSF, the EPA will be notified and AGL will prepare a Noise Monitoring Report including the following steps:

- Review of the monitoring data to determine the potential cause of the non-compliance.
- Identification of the noise level, location and cause of the exceedance.
- Review of the existing noise management and control measures.
- Implementation of corrective actions as required.
- Update to this NMP as required.

A system of records which provides full documentation of all noise monitoring results, complaints handling and responses to non-compliances will be established and maintained for the NGSF.

Where a non-compliance is identified because of a complaint, the complainant shall be notified of the corrective action being undertaken.

5.1.5 Further monitoring

If results of the initial noise monitoring conclude that the maximum allowable limits have been exceeded, additional monitoring events (following implementation of noise mitigation measures) will be undertaken to confirm the success of those measures.

Additional monitoring may also be undertaken in the event that:

- Complaints are received regarding operational noise from the NGSF.
- Significant changes to operations are proposed.
- Changes to surrounding land use are identified.

Additional monitoring because of a community complaint will be undertaken at the complainant's premises under conditions similar as to when the complaint was made.

5.2 Audit and Review

The audit process outlined in Section 6.2 of the OEMP will include auditing of the noise monitoring programme and other noise management measures during operation of the NGSF.

5.3 Reporting

5.3.1 Formal Reporting

Formal reporting requirements for the Project are included in Section 5.4 of the OEMP.

The project team meetings will include discussion of noise management, including the results of noise monitoring and any noise complaints received.

The following reports will include a noise management component:

- Internal audit report.
- External audit report (if required).
- Community Dialogue Group updates.
- EPL Annual Return Report (if required).

5.3.2 Records

The following records relating to noise management are to be maintained:

- Noise monitoring reports.
- Community complaints records.

5.4 Management Review

The OEMP and its relevant sub plans, including the NMP, are regularly reviewed by AGL management to ensure the documents suitability and effectiveness. This sub plan and its details will be reviewed, and if necessary amended:

- Following any major incident.
- Upon receipt of new approval conditions, approvals, consents or licences.
- Upon changes in relevant legislation, guidelines or protocols regarding noise.
- When directed to do so by the Secretary of the Department of Planning and Environment.
- Every two years.

The review is undertaken by the Environment Business Partner and includes:

- The findings of audits.
- Any major non-conformances or incidents.
- Issues raised by government authorities (if any).

Reviews are documented and approved by management, along with any subsequent modifications.

5.5 Incident management

Environmental incidents will be managed in accordance with Section 6.3 of the OEMP.

6. References

AGL 2015 *Newcastle Gas Storage Facility - Operation Environmental Management Plan*

Coffey (2011a) *Environmental Assessment – Newcastle Gas Storage Facility Project*. Coffey Natural Systems. May 2011.

Coffey (2011b) *Preferred Project and Response to Submissions Report – Newcastle Gas Storage Facility Project*. Coffey Natural Systems. September 2011.

EMM (2013) *Newcastle Gas Storage Facility – Modification 2 Environmental Assessment*. EMGA Mitchell McLennan. September 2013.

EMM (2017), *Newcastle Gas Storage Facility – Modification 3 Environmental Assessment – Tail Gas Project*. EMGA Mitchell McLennan. October 2017.

NSW EPA (1999) *Environmental Criteria for Road Traffic Noise*. Environment Protection Authority. May 1999.

NSW EPA (2000) *NSW Industrial Noise Policy*. Environment Protection Authority. January 2000.

NSW EPA (2013) Noise Guide for Local Government. Environment Protection Authority. May 2013.

Figures

Figure 1

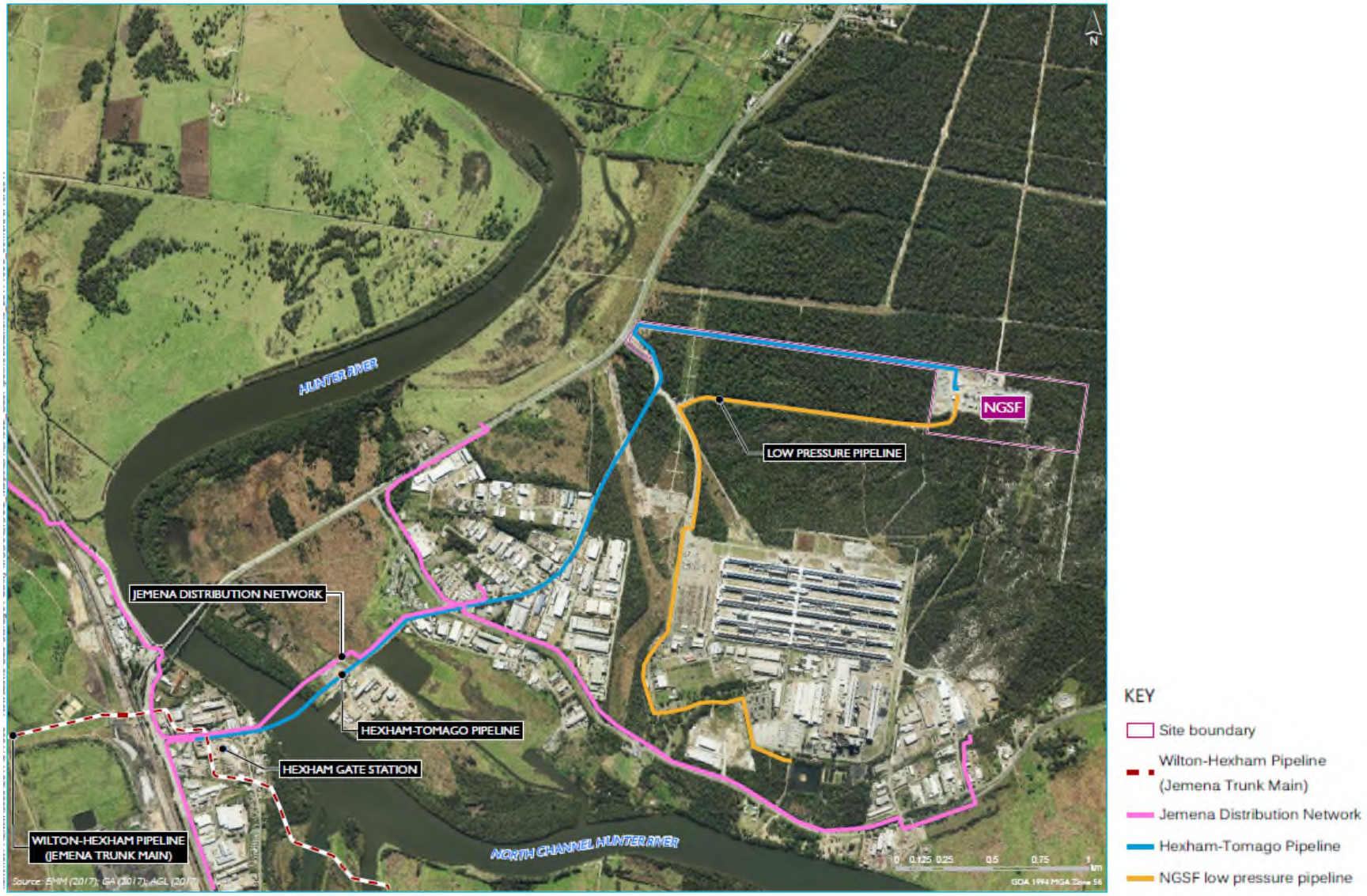
HUNTER RIVER
NGSF
LOW PRESSURE PIPELINE
JEMENA DISTRIBUTION NETWORK
HEXHAM-TOMAGO PIPELINE
HEXHAM GATE STATION
WILTON-HEXHAM PIPELINE
(JEMENA TRUNK MAIN)
NORTH CHANNEL HUNTER RIVER
N
0 0.125 0.25 0.5 0.75 1 km
GDA 1994 MGA Zone 56
KEY
Site boundary
Wilton-Hexham Pipeline
(Jemena Trunk Main)
Jemena Distribution Network
Hexham-Tomago Pipeline
NGSF low pressure pipeline

Figure 2


HUNTER RIVER
WOODBERRY ROAD
OAKFIELD ROAD
HEATHERBRAE
MASONITE ROAD
TOMAGO SANDBEDS
Tilligerry State Conservation Area
N
P2
AL1
AL2
Meteorological Station
OLD PUMP ROAD
WILCOX DRIVE
MARY DRIVE
MAITLAND ROAD
PACIFIC HIGHWAY
P6
LAVERICK AVENUE
TOMAGO ROAD
F3
P5
SCHOOL DRIVE
HEXHAM
OLD MAITLAND ROAD
MAITLAND NORTH HERN RAILWAY
SOUTH CHANNEL HUNTER RIVER
NORTH CHANNEL HUNTER RIVER
TOMAGO
Hunter Wetlands National Park
0 0.25 0.5 1 1.5 2 km
GDA 1994 MGA Zone 56
Source: EMM (2017); GA (2017)
KEY
Site boundary
Attended noise monitoring location type
EPL monitoring location
Additional monitoring location
Meteorological station
Rail line
Site boundary
NPWS reserve

Appendix A

Noise Management Measures

Noise management hierarchy

Noise impacts would be managed in line with the risk control hierarchy:

1. **Elimination of noise sources:** Noise sources will be eliminated where feasible and reasonable
2. **Substitution of noise plant or processes**: Noise would be reduced through selection of the quietest plant and modifications operating processes where feasible and reasonable.
3. **Engineering controls:** Where noise cannot be eliminated or substituted controls such as absorbent linings, silencers, dampening materials and sound-reducing enclosures will be implemented to reduce noise.
4. **Administrative controls**: Administrative controls such as reducing the length of time noise is produced, increasing the distance between noise sources and workers, signposting noisy areas and providing quiet areas for rest breaks for workers would be implemented where it is not possible to eliminate reduce noise through engineering controls.
5. **Personal Protection Equipment (PPE**): Personal hearing protectors would be provided to staff and visitors to noisy areas. The operations manager and supervisors must ensure the PPE provided is suitable for the work conditions and of correct rating, that staff and visitors are instructed in correct use and that it is maintained or replaced as required.

Table A.1: General

ID	Management Measure	Source
1	The site induction is to include a noise management component.	Good practice
2	Operational activities are to be undertaken with a focus on noise control at source, noise attenuation and in consultation with potentially affected receptors to minimise the risk of noise exceeding noise criteria and disturbing sensitive receptors.	SoC 7.11.2
3	Potential noise receptors are to be contacted about the nature of operations noise emissions and avoidance and mitigation practices to be adopted.	SoC 7.11.4
4	Noise monitoring will be undertaken to ensure that noise received at sensitive locations is free of intrusive characteristics of tonality, modulation and impulsiveness.	SoC 7.11.7
5	Feedback and complaints relating to noise are to be recorded and addressed.	SoC 7.11.4 SoC 7.11.8
6	Noise levels are to be monitored during operations to ensure localised noise creep (increase in local ambient noise) is not occurring due to the Project.	SoC 7.11.5

Table A.2: Vehicles, Machinery and Equipment

ID	Management Measure	Source
1	Vehicles and equipment are to be kept in good working order and have effective noise reduction features.	SoC 7.11.3
2	Noise emissions during operations is to be monitored to ensure equipment is meeting noise certification and criteria requirements and detect any faulty or damaged equipment.	SoC 7.11.7

Appendix B2

Air Quality Management Plan

Air Quality Management Plan

Newcastle Gas Storage Facility
August 2025

AGL Energy Limited
ABN: 74 115 061 375
Level 24, 200 George St
Sydney NSW 2000
Locked Bag 1837
St Leonards NSW 2065
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Document Controls

Approval and Authorisation

Title	Air Quality Management Plan – Newcastle Gas Storage Facility
Accepted on behalf of AGL by:	John Moraitis
Signed:	
Dated:	Aug 2025

Document Status

Document status	Date	Prepared by	Reviewed by
Rev 0	26/11/2014	WorleyParsons	AGL
Rev 1	12/03/2015	WorleyParsons	AGL
Rev 2	09/06/2015	WorleyParsons	AGL
Rev 3.1 Draft	23/01/2018	Isabella See / Philip Burns	Emma Dean
Rev 3.2	06/08/2023	John Moraitis	AGL
Rev 3.3	06/08/2025	John Moraitis	AGL

Table of Contents

Tables

Appendices

1. Introduction

1.1 Scope

This document is the AGL Energy Limited (AGL) Air Quality Management Plan (AQMP) for the Newcastle Gas Storage Facility (NGSF). The AQMP describes AGL's system for managing air quality aspects during operation of the NGSF.

AGL has developed the NGSF, located at Tomago and Hexham, New South Wales, to meet peak gas demands and provide additional security of gas supply during supply disruption events. The NGSF includes the following components:

- The gas plant site.
- An access road and utility corridor.
- A gas pipeline corridor.
- A high-pressure gas pipeline to Jemena trunk main, the Tomago – Hexham pipeline; and
- A low-pressure pipeline to an industrial user south of the site.

1.2 Background

Project approval for the NGSF was granted on 10 May 2012 (File No. 11/08788) and approvals for five modifications of the project were subsequently granted on 5 February 2013, 31 January 2014, 27 February 2018, 8 June 2023, and 6 September 2023 comprising:

- Modification 1 (10_0133 MOD1) – authorising the washing out of concrete mixers during construction and for the waste water to be removed off site by pump-out trucks
- Modification 2 (10_0133 MOD2) – authorising construction and operation of a 4.5km low pressure natural gas pipeline between the gas storage facility and an industrial user to the south of the site
- Modification 3 (10_0133 MOD3) – authorising additional infrastructure to allow processing of the tail gas produced as part of the operation of the NGSF, including construction and operation of a maintenance flare and minor changes to existing infrastructure.
- Modification 4 (10_0133 MOD4) – authorising the cessation of proactive annual noise monitoring in the absence of noise complaints being received by NGSF or the NSW EPA.
- Modification 5 (10_0133 MOD5) – authorising a reduction in the frequency of air quality monitoring at Heaters H101, H501A, H501B and H501C, from annually to once every five years.

Several commitments were made in Environmental Assessment for the NGSF relating to the management of air quality. This document has been prepared to fulfil those operations related commitments and is an appendix to the OEMP for the NGSF.

1.3 Objectives

The objectives of the AQMP are to:

- Describe the system for management of air quality during operation of the NGSF.
- Fulfil the requirements of the project approval and modifications of project approval (refer Section 1.2 above) regarding operational air quality.
- Address the requirements of the Environmental Assessments (EAs) prepared for the project (Coffey 2011a, AGL 2012, EMM 2013 and EMM 2017) and the Preferred Project Report (Coffey 2011b) with regard to operational air quality.
- Identify relevant statutory requirements and other obligations that AGL is required to meet about air quality during operation of the NGSF.
- Identify air quality management measures to be implemented during operation of the NGSF.
- Identify air quality monitoring and reporting required during operation of the NGSF.
- Identify the methodology to be adopted for review and improvement (where necessary) of air quality performance during operation of the NGSF.
- Identify procedures for periodic review and update of the AQMP.

1.4 Structure of AQMP

The AQMP has been structured to meet the requirements of the relevant conditions of approval for the NGSF project (refer Section 1.2 above and Appendix A).

The AQMP is divided into the following sections:

- Section 1: Introduces the AQMP.
- Section 2: Identifies statutory and other requirements that must be met by AGL with regard to air quality during operation of the NGSF.
- Section 3: Identifies emission sources and details air quality management measures.
- Section 4: Provides details of how the AQMP will be implemented, including responsibilities, training and communication.
- Section 5: Identifies monitoring, audit, review and reporting requirements and provides details relating to incident management and management review of the AQMP.
- Section 6: Provides a list of references for the AQMP.

Additional information is included in appendices.

2. Statutory and Other Requirements

2.1 Commonwealth Legislation

2.1.1 National Greenhouse as and Energy Reporting Act 2007

AGL is registered under the *National Greenhouse and Energy Reporting Act 2007* (NGER Act) and is obliged to report greenhouse gas emissions, energy production and energy consumption to the Clean Energy Regulator.

2.2 New South Wales Legislation

2.2.1 Environmental Planning and Assessment Act 1979

Project approval for the NGSF was granted on 10 May 2012 (File No. 11/08788) and approvals for five modifications of the project were subsequently granted on 5 February 2013, 31 January 2014, 27 February 2018, 8 June 2023, and 6 September 2023.

Modifications following the initial Environmental Assessment for the project did not significantly alter the existing air quality management considerations on site.

The project approval and modifications to the approval were issued subject to several conditions. The conditions of approval relevant to air quality during operation of the NGSF and reference to where each of these conditions has been addressed in the AQMP are included in Table 2.1.

Table 2.1: Conditions of Approval

<table>
<tr><th>No</th><th>Conditions</th><th>Reference</th></tr>
<tr><td>C10</td><td>During operation, the Proponent shall ensure no offensive odour as defined under the Protection of the Environment Operations Act 1997 is emitted from the project site, which impacts on any sensitive receiver.</td><td>Table A-1, Appendix A</td></tr>
<tr><td>C11</td><td>The Proponent shall employ reasonable and feasible measures to ensure that the project is operated in a manner that minimised or prevents the emission of dust.</td><td>Table A-2, Appendix A</td></tr>
<tr><td>C12</td><td>The Proponent shall design, construct, operate and maintain the project to ensure that the discharge concentration limits specified in Table C2 are not exceeded at the nominated discharge point at the listed reference conditions. For the purpose of this condition, discharge locations are as identified in Figure 2.1 of Air Quality and Greenhouse Gas Assessment – Newcastle Gas Storage Facility (Coffey Natural Systems Pty Ltd, February 2011), provided as Appendix 14 to the EA.
Table C2: Maximum Allowable Air Discharge Limits
<table>
<tr><th>Discharge Point</th><th>Pollutant</th><th>Limit</th><th>Reference Conditions</th></tr>
<tr><td rowspan="4">Stack associated with the Gas Liquefaction System (Point 9 in the EA)</td><td>Nitrogen oxides (as NO_2)</td><td>250 mg/m^3</td><td>273K, 101.3kPa</td></tr>
<tr><td>Volatile organic compounds (VOCs, as n-propane) or carbon monoxide (CO)</td><td>5 mg/m^3 (VOCs)
100 mg/m^3 (CO)</td><td>Dry, 273K, 101.3kPa, 3% O_2</td></tr>
<tr><td>Solid particles</td><td>5 mg/m^3</td><td>273K, 101.3kPa</td></tr>
<tr><td>Sulphur oxides (includes SO_2 and SO_3 or sulphuric acid mist)</td><td>60 mg/m^3</td><td>273K, 101.3kPa</td></tr>
<tr><td rowspan="4">Stack associated with the Regassifier or LNG Vaporiser (Point 4 in the EA)</td><td>Nitrogen oxides (as NO_2)</td><td>190 mg/m^3</td><td>273K, 101.3kPa</td></tr>
<tr><td>Volatile organic compounds (VOCs, as n-propane) or carbon monoxide (CO)</td><td>20 mg/m^3 (VOCs)
125 mg/m^3 (CO)</td><td>Dry, 273K, 101.3kPa, 3% O_2</td></tr>
<tr><td>Solid particles</td><td>40 mg/m^3</td><td>273K, 101.3kPa</td></tr>
<tr><td>Sulphur oxides (includes SO_2 and SO_3 or sulphuric acid mist)</td><td>5 mg/m^3</td><td>273K, 101.3kPa</td></tr>
</table>
</td><td>Section 3.2</td></tr>
</table>

<table>
<tr><th>No</th><th>Conditions</th><th>Reference</th></tr>
<tr><td>C13</td><td>For the purpose of demonstrating compliance with discharge limits specified under condition C12 of this approval, the Proponent shall monitor the pollutants listed in Table C3 at each of the discharge points listed under condition C12, and applying the sampling methods and units of measure specified. Monitoring shall be undertaken quarterly for the first year following commissioning, and thereafter as may be agreed by the EPA. Two consecutive non-detectable results may be the basis for discontinuation of monitoring of that particular pollutant at any time.
Table C3: Discharge Monitoring Requirements
<table>
<tr><th>Pollutant</th><th>Units of Measure</th><th>Sampling Method</th></tr>
<tr><td>Nitrogen oxides</td><td>mg/m^3</td><td>TM-11</td></tr>
<tr><td>Volatile organic compounds (VOCs)</td><td>mg/m^3</td><td>OM-2</td></tr>
<tr><td>Solid particles</td><td>mg/m^3</td><td>TM-15</td></tr>
<tr><td>Sulphuric acid mist and sulphur dioxide</td><td>mg/m^3</td><td>TM-3</td></tr>
<tr><td>Sulphur dioxide</td><td>mg/m^3</td><td>TM-4</td></tr>
<tr><td>Dry gas density</td><td>kg/m^3</td><td>TM-23</td></tr>
<tr><td>Moisture</td><td>%</td><td>TM-22</td></tr>
<tr><td>Molecular weight of stack gas</td><td>g/gmol</td><td>TM-23</td></tr>
<tr><td>Oxygen</td><td>%</td><td>TM-25</td></tr>
<tr><td>Carbon dioxide</td><td>%</td><td>TM-25</td></tr>
<tr><td>Temperature</td><td>K</td><td>TM-2</td></tr>
<tr><td>Velocity</td><td>m/s</td><td>TM-2</td></tr>
<tr><td>Volumetric flow rate</td><td>m^3/s</td><td>TM-2</td></tr>
<tr><td>Selection of sampling points</td><td>N/A</td><td>TM-1</td></tr>
</table></td><td>Section 5.1</td></tr>
<tr><td>C22</td><td>The proponent shall prepare and implement an Operation Environmental Management Plan (OEMP) for the project, in accordance with Guidelines for the Preparation of Environmental Management Plans (DIPNR, 2004) or its latest version. The Plan shall be prepared in consultation with councils, NOW and HWC and include, but not necessarily be limited to:
(f)(ii) environmental performance issues relating to air quality impacts.</td><td>Section 5.1</td></tr>
</table>

A Statement of Commitments was prepared under Section 75F of the EP&A Act and included in the Preferred Project and Response to Submissions Report (Coffey 2011b). The commitments relevant to air quality during operation of the NGSF and reference to where each of these conditions has been addressed in the AQMP are included in Table 2.2.

Table 2.2: Statement of Commitments

No.	Commitment	Reference
Control measures will be implemented during construction and operation to minimise dust and other emissions:		
7.12.1	A monitoring program will be established to ensure regular monitoring of air emissions.	Section 5.1
7.12.2	The access road will be sealed during operations to prevent the generation of dust by vehicles using the road and to dirt being carried onto the TAC Northern Access Road or Old Punt Road where it could form dust.	Table A.2, Appendix A
7.12.3	Monitoring of the Project emissions will be in accordance with current AGL practice. Emissions of pollutants are reported annually in the National Pollutant Inventory (NPI).	Section 5.1
7.12.4	Chemicals and analytes used across the Project for dehydration, rehydration and refrigeration will be monitored and modelled.	Section 6.1 of OEMP
7.12.5	There will not be any gas venting during shutdown other than in an emergency.	Table A.1, Appendix A
7.13	Establish measurable greenhouse gas emission reduction targets	Section 3.4

2.2.2 Protection of the Environment Operations Act 1997

Air Quality

Part 5.4 of the *Protection of the Environment Operations Act 1997* (POEO Act) details air pollution offences and requirements for the operation and maintenance of plant and standards for air impurities and emission of odours.

Environment Protection Licence

An Environment Protection Licence (EPL) 20130 has been issued by the NSW Environment Protection Authority (EPA) for the NGSF project under the POEO Act (refer Appendix A8 of the OEMP). Conditions within the EPL relevant to air quality are included in Table 2.3.

Table 2.3: Environment Protection Licence Conditions

Licence Condition	Requirement
L3.1	For each monitoring/discharge point or utilisation area specified in the table\s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.

<table>
<tr><td>L3.2</td><td>To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than
those specified in the table\s.</td></tr>
<tr><td>L3.3</td><td>Air Concentration Limits
Point 7 - Stack associated with the WPG Gas Fired Heater servicing the Amine Regeneration Unit
<table>
<tr><th>Pollutant</th><th>Units of measure</th><th>100 percentile concentration limit</th><th>Reference conditions</th><th>Oxygen correction</th><th>Averaging period</th></tr>
<tr><td>Nitrogen Oxides</td><td>milligrams per cubic metre</td><td>250</td><td>273K,101.3kPa</td><td></td><td></td></tr>
<tr><td>volatile organic compounds as n-propane equivalent</td><td>milligrams per cubic metre</td><td>5</td><td>Dry, 273K, 101kPa</td><td>3 percent</td><td></td></tr>
<tr><td>Carbon monoxide</td><td>milligrams per cubic metre</td><td>100</td><td>Dry, 273K,101kPa</td><td>3 percent</td><td></td></tr>
<tr><td>Solid Particles</td><td>milligrams per cubic metre</td><td>5</td><td>273K, 101.3kPa</td><td></td><td></td></tr>
<tr><td>Sulfur Oxides</td><td>milligrams per cubic metre</td><td>60</td><td>273K, 101.3kpa</td><td></td><td></td></tr>
</table>
Points 8, 10 and 11 - Stacks associated with the regasifier or LNG Vaporiser
<table>
<tr><th>Pollutant</th><th>Units of measure</th><th>100 percentile concentration limit</th><th>Reference conditions</th><th>Oxygen correction</th><th>Averaging period</th></tr>
<tr><td>Nitrogen Oxides</td><td>milligrams per cubic metre</td><td>190</td><td>273K, 101.3kPa</td><td></td><td></td></tr>
<tr><td>volatile organic compounds as n-propane equivalent</td><td>milligrams per cubic metre</td><td>20</td><td>Dry, 273K, 101.3kPa</td><td>3 percent</td><td></td></tr>
<tr><td>Solid Particles</td><td>micrograms per cubic metre</td><td>40</td><td>273K, 101.3kPa</td><td></td><td></td></tr>
<tr><td>Sulfur Oxides</td><td>milligrams per cubic metre</td><td>5</td><td>273K,101.3kPa</td><td></td><td></td></tr>
<tr><td>Carbon monoxide</td><td>milligrams per cubic metre</td><td>125</td><td>Dry, 273K,101.3kPa</td><td>3 percent</td><td></td></tr>
</table></td></tr>
<tr><td>M2.2</td><td>Air Monitoring Requirements</td></tr>
</table>

POINT **7,8,10,11**

Pollutant	Units of measure	Frequency	Sampling Method
Carbon dioxide	percent	Special Frequency 1	TM-24
Dry gas density	kilograms per cubic metre	Special Frequency 1	TM-23
Moisture	percent	Special Frequency 1	TM-22
Molecular weight of stack gases	grams per gram mole	Special Frequency 1	TM-23
Nitrogen Oxides	milligrams per cubic metre	Special Frequency 1	TM-11
Oxygen (O2)	percent	Special Frequency 1	TM-25
Solid Particles	milligrams per cubic metre	Special Frequency 1	TM-15
Sulfuric acid mist and sulfur trioxide (as SO3)	milligrams per cubic metre	Special Frequency 1	TM-3
Sulphur dioxide	milligrams per cubic metre	Special Frequency 1	TM-4
Temperature	Kelvin	Special Frequency 1	TM-2
Velocity	metres per second	Special Frequency 1	TM-2
Volatile organic compounds	milligrams per cubic metre	Special Frequency 1	OM-2
Volumetric flowrate	cubic metres per second	Special Frequency 1	TM-2

Note: For the purposes of Monitoring Pollutants discharged to air at discharge Points 7, 8, 10 and 11 "Special Frequency 1" is defined as monitoring twice per year during any period when the heaters are in operation. Based on site operations this is only likely to occur during the cooler winter months when there is increased gas demand. As a consequence it is understood monitoring may only occur during three months of the year.

Monitoring for any pollutant can be discontinued if two consecutive test results are non-detects.

The monitoring frequency will be reviewed, upon request, after four samples have been collected during normal operations of the plant.

2.2.3 Protection of the Environment Operations (Clear Air) Regulation 2010

Part 4 of the *Protection of the Environment Operations (Clean Air) Regulation 2010* (POEO (Clean Air) Regulation) deals with air pollution from motor vehicles, while Part 5 of the regulation details standards for emission of air impurities from activities and plant.

2.3 Summary of Approvals and Licences

Approvals and licences relating to air quality during operation of the NGSF are included in Table 2.4.

Table 2.4:Summary of Approvals and Licences

Title	Agency Responsible	Reference
Project Approval and Modifications	NSW Department of Planning and Infrastructure (now the Department of Planning and Environment)	Appendices A1 and A6 of OEMP
Environment Protection Licence	NSW Environment Protection Authority	Appendix A8 of OEMP

2.4 Management Policies

AGL's health, safety and environmental management system includes AGL's Environment Policy, Environmental Standards, and Environmental Methodologies.

- Environmental Standard *AGL-HSE-STD-009.4 Air Emissions Standard* is relevant to air quality management during the operation of the NGSF.

3. Air Quality Management

3.1 Emission Sources

The primary emissions from the gas plant during operation will be combustion gases emitted from (Coffey 2011):

- Hot oil heater during liquefaction.
- The process flare or maintenance flare during liquefaction.
- The LNG regasifiers during regasification.
- The process flare or maintenance flare during start up, shut down and emergencies.

The emissions from gas combustion and flares will include nitrogen oxides (NOx), carbon monoxide (CO), volatile organic compounds (VOCs), small amounts of sulphur dioxide (SO_2) and particulates. Low concentrations of hydrogen sulphide, VOCs and methane (CH_4) may occur in the flare.

Fugitive emissions from leaks and vents and vehicle use on site are expected to be minor and no open air burning will be undertaken. The MEX system will be used to manage and monitor the site including any fugitive emissions.

3.2 Emissions Limits

EPL 20130 Condition L3.3 prescribes the maximum allowable air discharge limits at four discharge points within the gas plant. These discharge limits are included in **Error! Reference source not found.** The m onitoring locations are shown on Figure 2.

3.3 Air Quality Management Measures

Air quality management measures are included in Appendix A.

3.4 Greenhouse Gas Reduction

The NGSF is a new facility, using currently available plant and equipment. There are limited opportunities to provide for tangible reduction in greenhouse gas emissions during initial operations.

Plant and equipment performance efficient assessments will be undertaken after the first 10 years of operations to review if there are any feasible and reasonable measures that can be taken to reduce greenhouse gas emissions. Any GHG reduction opportunities will be incorporated into a plan that will deliver measurable performance improvements.

4. Implementation and Operation

4.1 Responsibilities

Table 4.1: Air Quality Management Roles and Responsibilities

Role	Responsibilities
Operations Manager	Overall responsibility for implementation of the AQMP. Responsible for the reporting requirements contained in the AQMP. Responsible for ensuring that employees are aware of their obligations under the AQMP and for providing resources for environmental training.

Environment Business Partner	Responsible for development, implementation, monitoring and reporting in compliance with the AQMP. Responsible for informing staff of any issues relating to air quality and for implementing the air quality management measures included in Appendix A of the AQMP. Responsible for notifying the EPA in the event of any air pollution event.
Community Relations Manager	Responsible for recording and resolving complaints received in relation to air quality.
Operations Supervisors	Directly responsible for understanding the requirements of the AQMP and for overseeing and fulfilment of commitments contained in the AQMP.
All Employees and Contractors	Responsible for understanding the AQMP and for ensuring that their works are in compliance with the AQMP.

4.2 Training and Competence

Operators employed at the NGSF will be competent in the operation and maintenance of the plant.

The site induction will include an air quality component. Daily toolbox meetings will include discussion of emissions management, if relevant to works currently being undertaken at the site.

Examples of air quality management topics that may be covered during the project induction include:

- Emission sources.
- Air quality management measures.
- Responsibilities of personnel about air quality management.

Further detail with regard to training and competence is included in Section 5.2 of the OEMP.

4.3 Internal and External Communication

Communication regarding air quality will be undertaken in accordance with Section 5.3 of the OEMP.

4.4 Document Control

Document control for the AQMP will be undertaken in accordance with Section 5.5 of the OEMP.

5. Monitoring and Compliance

5.1 Air Quality Monitoring

5.1.1 General

Air quality monitoring will be undertaken to determine whether compliance with the maximum allowable emissions limits in Table 3.1 is being achieved.

Air monitoring points are to be maintained in a condition suitable for use, with a reasonable means of access available.

5.1.2 Scope

In accordance with EPL 20130 Condition M2.2, air quality monitoring will be undertaken twice per year. These monitoring requirements are shown in Table 2.3 and supersede the Condition of Approval C13.In

the event that there are two consecutive non-detectable results for a particular pollutant, monitoring of that pollutant may be discontinued once approved by the EPA.

Dispersion modelling is not required for the NGSF.

Monitoring will be undertaken at the four discharge points shown on Figure 2. The pollutants to be monitored are included in **Error! Reference source not found.**

5.1.3 Reporting

A report will be prepared following each round of air quality monitoring presenting results, conclusions and recommendations. This data from this report will be uploaded to the NGSF website within 14 business days of it being received by AGL.

5.1.4 Further Monitoring

Additional monitoring will be undertaken in the event that:

- Monitoring detects emissions above limits.
- A notification is issued by a regulatory authority.
- Changes are made to the relevant statutory and regulatory protocols.

The monitoring data will be used to confirm operational practices and identify measures to bring emissions within limits if required.

5.2 Audit and Review

The audit process outlined in Section 6.2 of the OEMP will include auditing of the air quality monitoring programme and other air quality management measures during operation of the NGSF.

5.3 Reporting

5.3.1 Formal Reporting

Formal reporting requirements for the Project are included in Section 5.4 of the OEMP.

The project team meetings will include discussion of air quality management, including the results of air quality monitoring and any air quality complaints received.

The following reports may include an air quality component:

- Monthly project report.
- Internal audit report.
- External audit report (if required).
- Community Dialogue Group updates.
- EPL Annual Return report.

5.3.2 Records

The following records relating to air quality management are to be maintained:

- Air quality monitoring reports.

5.4 Management Review

The OEMP and its relevant sub plans, including the AQMP, are regularly reviewed by AGL management to ensure the documents suitability and effectiveness. This sub plan and its details will be reviewed, and if necessary amended:

- Following any major incident.
- Upon receipt of new approval conditions, approvals, consents or licences.
- Upon changes in relevant legislation, guidelines or protocols regarding air quality.
- When directed to do so by the Secretary of the Department of Planning and Environment.
- Every two years.

The review is undertaken by the Environment Manager and includes:

- The findings of audits.
- Any major non-conformances or incidents.
- Issues raised by government authorities (if any).

Reviews are documented and approved by management, along with any subsequent modifications.

5.5 Incident Management

Environmental incidents will be managed in accordance with Section 6.3 of the OEMP.

6. References

AGL (2012) *Section 75W Application – Washing out of Concrete Trucks*. AGL Energy Limited. 13 December 2012.

Coffey (2011a) *Environmental Assessment – Newcastle Gas Storage Facility Project*. Coffey Natural Systems. May 2011.

Coffey (2011b) *Preferred Project and Response to Submissions Report – Newcastle Gas Storage Facility Project*. Coffey Natural Systems. September 2011.

EMM (2013) *Newcastle Gas Storage Facility – Modification 2 Environmental Assessment*. EMGA Mitchell McLennan. September 2013.

EMM (2017), *Newcastle Gas Storage Facility – Modification 3 Environmental Assessment – Tail Gas Project*. EMGA Mitchell McLennan. October 2017.

Figures

Figure 1

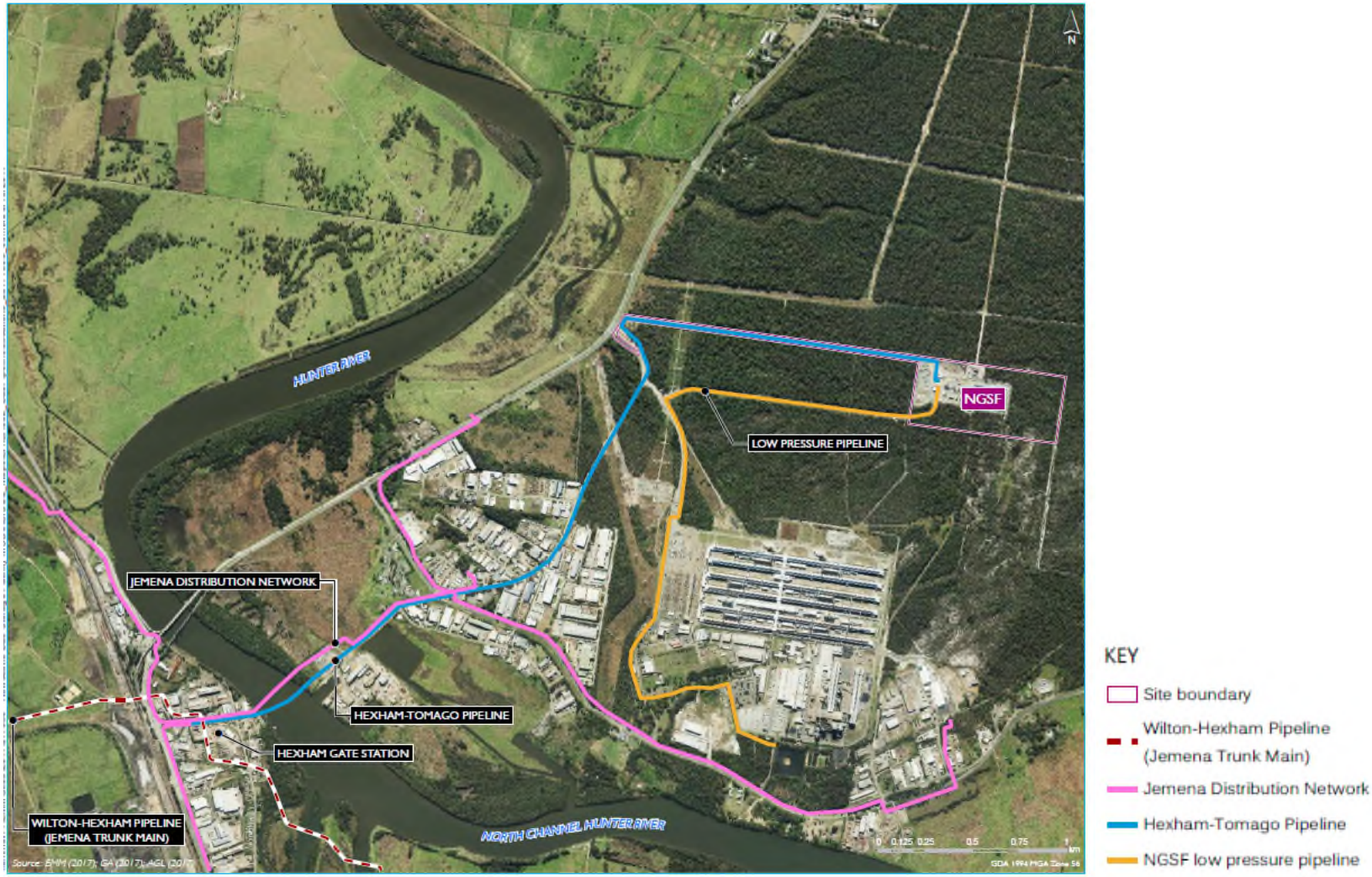
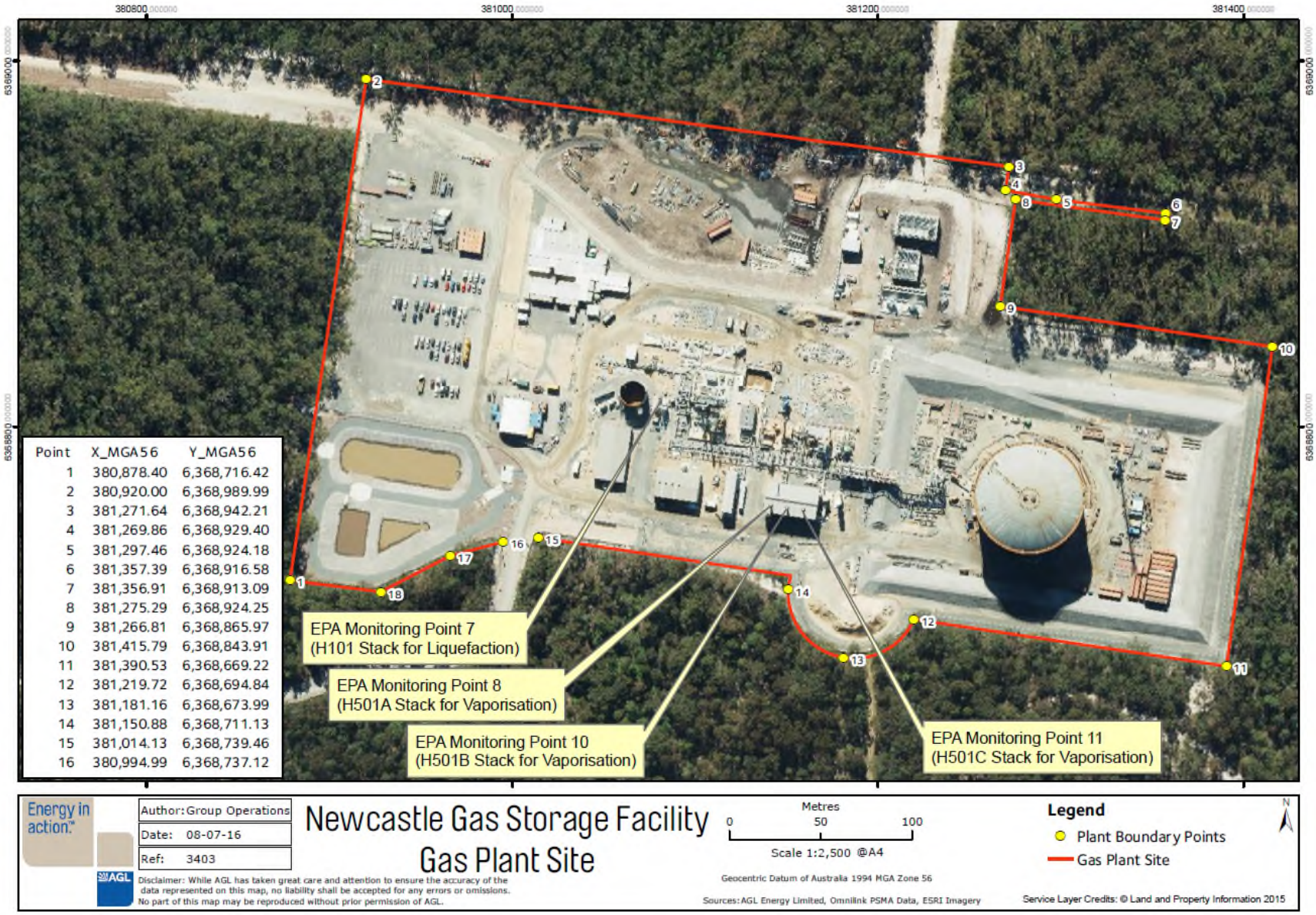

HUNTER RIVER
NGSF
LOW PRESSURE PIPELINE
JEMENA DISTRIBUTION NETWORK
HEXHAM-TOMAGO PIPELINE
HEXHAM GATE STATION
WILTON-HEXHAM PIPELINE
(JEMENA TRUNK MAIN)
NORTH CHANNEL HUNTER RIVER
KEY
Site boundary
Wilton-Hexham Pipeline
(Jemena Trunk Main)
Jemena Distribution Network
Hexham-Tomago Pipeline
NGSF low pressure pipeline

Figure 2



Point	X_MGA56	Y_MGA56
1	380,878.40	6,368,716.42
2	380,920.00	6,368,989.99
3	381,271.64	6,368,942.21
4	381,269.86	6,368,929.40
5	381,297.46	6,368,924.18
6	381,357.39	6,368,916.58
7	381,356.91	6,368,913.09
8	381,275.29	6,368,924.25
9	381,266.81	6,368,865.97
10	381,415.79	6,368,843.91
11	381,390.53	6,368,669.22
12	381,219.72	6,368,694.84
13	381,181.16	6,368,673.99
14	381,150.88	6,368,711.13
15	381,014.13	6,368,739.46
16	380,994.99	6,368,737.12

Appendix A

Air Quality Management Measures

Table A.1: General

ID	Management Measure	Source
1	No offensive odour as defined under the *Protection of the Environment Operations Act 1997* is to be emitted from the project site that would impact on any sensitive receiver.	CoA C10
2	There will not be any gas venting during shutdown other than in an emergency.	SoC 7.12.5

Table A.2: Dust Emissions

ID	Management Measure	Source
1	Reasonable and feasible measures are to be employed to ensure that the project is operated in a manner that minimises or prevents the emission of dust.	CoA C11
2	The access road is to be sealed during operations to prevent the generation of dust by vehicles using the road and to prevent dirt being carried onto the TAC Northern Access Road or Old Punt Road where it could form dust.	7.12.2

Appendix B3

Waste Management Plan

Waste Management Plan

Newcastle Gas Storage Facility
August 2025

AGL Energy Limited
ABN: 74 115 061 375
Level 24, 200 George St
Sydney NSW 2000
Locked Bag 1837
St Leonards NSW 2065
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Document Controls

Approval and Authorisation

Title	Noise Management Plan – Newcastle Gas Storage Facility
Accepted on behalf of AGL by:	John Moraitis
Signed:	
Dated:	6 August 2025

Document Status

Document status	Date	Prepared by	Reviewed by
Rev 0	26/11/2014	WorleyParsons	AGL
Rev 1	12/03/2015	WorleyParsons	AGL
Rev 2.1	23/01/2018	Isabella See / Philip Burns	Emma Dean
Rev 3.0	6 Aug 2023	John Moraitis	AGL
Rev 3.1	7 Aug 2025	John Moraitis	AGL

Table of Contents

Tables

Appendices

1. Introduction

1.1 Scope

This document is the AGL Energy Limited (AGL) Waste Management Plan (WMP) for the Newcastle Gas Storage Facility (NGSF). The WMP describes AGL's system for managing waste during operation of the NGSF.

AGL has developed the NGSF, located at Tomago and Hexham, New South Wales, to meet peak gas demands and provide additional security of gas supply during supply disruption events.

The NGSF includes the following components:

- The gas plant site.
- An access road and utility corridor.
- A gas pipeline corridor.
- A high pressure gas pipeline to Jemena trunk main, the Tomago – Hexham pipeline; and

A low-pressure pipeline to an industrial user south of the site.An overview of the NGSF is included as Figure 1.

1.2 Background

Project approval for the NGSF was granted on 10 May 2012 (Application No. 10_0133) five modifications of the project were subsequently granted on 5 February 2013, 31 January 2014, 27 February 2018, 8 June 2023, and 6 September 2023 comprising:

- Modification 1 (10_0133 MOD1) – authorising the washing out of concrete mixers during construction and for the waste water to be removed off site by pump-out trucks
- Modification 2 (10_0133 MOD2) – authorising construction and operation of a 4.5km low pressure natural gas pipeline between the gas storage facility and an industrial user to the south of the site
- Modification 3 (10_0133 MOD3) – authorising additional infrastructure to allow processing of the tail gas produced as part of the operation of the NGSF, including construction and operation of a maintenance flare and minor changes to existing infrastructure.
- Modification 4 (10_0133 MOD4) – authorising the cessation of proactive annual noise monitoring in the absence of noise complaints being received by NGSF or the NSW EPA.
- Modification 5 (10_0133 MOD5) – authorising a reduction in the frequency of air quality monitoring at Heaters H101, H501A, H501B and H501C, from annually to once every five years.

Further information is provided in Appendix A1 of the Operation Environmental Management Plan (OEMP).

Several commitments were made in Environmental Assessment for the NGSF relating to the management of waste. This document has been prepared to fulfil those operations related commitments and is an Appendix to the OEMP for the NGSF.

1.3 Objectives

The objectives of the WMP are to:

- Describe the system for management of waste during operation of the NGSF.
- Fulfil the requirements of the project approval and modifications of project approval (refer Section 1.2 above) about operational waste management.
- Address the requirements of the Environmental Assessments (EAs) prepared for the project (Coffey 2011a, AGL 2012, EMM 2013, and EMM 2017) and the Preferred Project Report (Coffey 2011b) about operational waste management.
- Identify relevant statutory requirements and other obligations that AGL is required to meet about waste management during operation of the NGSF, including approvals, licences and consultation.
- Identify waste management measures to be implemented during operation of the NGSF.
- Describe waste reporting required during operation of the NGSF.
- Identify procedures for periodic review and update of the WMP.

1.4 Structure of WMP

The WMP has been structured to meet the requirements of the relevant conditions of approval for the NGSF project (refer Section 1.2 above and Appendix A).

The WMP is divided into the following sections:

- Section 1: Introduces the WMP.
- Section 2: Identifies statutory and other requirements that must be met by AGL regarding waste management during operation of the NGSF.
- Section 3: Describes the waste management approach to be adopted during operation of the NGSF, identifies potential waste streams and details waste management measures.
- Section 4: Provides details of how the WMP will be implemented, including responsibilities, training and communication.
- Section 5: Identifies monitoring, audit, review and reporting requirements and provides details relating to incident management and management review of the WMP.
- Section 6: Provides a list of references for the WMP.

Additional information is included in appendices.

2. Statutory and Other Requirements

2.1 New South Wales Legislation

2.1.1 Environmental Planning and Assessment Act 1979

Approval for the NGSF project under Section 75J of the *Environmental Planning and Assessment Act 1979* (*EP&A Act*) was provided by the NSW Department of Planning and Infrastructure on 10 May 2012. Five modifications of the project were subsequently granted on 5 February 2013, 31 January 2014, 27 February 2018, 8 June 2023, and 6 September 2023.

Copies of the original approval and modifications are included in Appendix A1 of the OEMP. Several commitments were made in the Environmental Assessment for the project that relate to waste management during the operation of the NGSF. Modifications following the initial Environmental Assessment for the project did not significantly alter the existing waste management considerations on site.

The project approval and modifications to the approval were issued subject to a number of conditions. The conditions of approval relevant to waste management during operation of the NGSF and reference to where each of these conditions has been addressed in the WMP are included in Table 2.1.

Table 2.1: Conditions of Approval

No	Conditions	Reference
C17	The Proponent shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site during operation, except as expressly permitted by a licence under the *Protection of the Environment Operations Act 1997*, if such a licence is required in relation to that waste.	Table A-1, Appendix A
C18	The Proponent shall maximise the reuse and/or recycling of operation waste materials generated on site, to minimise the need for treatment or disposal of those materials outside the site.	Table A-1, Appendix A
C19	The Proponent shall ensure that all liquid and / or non-liquid operation waste generated by the project is assessed and classified in accordance with the Waste Classification Guidelines (NSW EPA 2014, or any future guideline that may supersede that document) and where removed from the site is only directed to a waste location lawfully permitted to accept those materials (unless otherwise permitted by an applicable Environment Protection Licence under the *Protection of the Environment Operations Act 1997*).	Table A-3, Appendix A
C20	The Proponent must seek prior approval under the Local Government Act 1993 for the installation and operation of a human waste storage facility.	Table A-4, Appendix A

A Statement of Commitments was prepared under Section 75F of the EP&A Act and included in the Preferred Project and Response to Submissions Report (Coffey 2011b). The commitments relevant to waste management during operation of the NGSF and reference to where each of these conditions has been addressed in the WMP are included in Table 2.2.

Table 2.2: Statement of Commitments

No	Commitment	Reference
7.1.1	Use licensed contractors to collect, transport and dispose of hazardous materials such as waste solvents, paints, mercury absorption medium and hydrocarbons to a licensed off-site facility in accordance with EPA guidelines.	Table A-3, Appendix A
7.1.2	Remove wastewater and sewage from site by an EPA licensed operator for treatment at an EPA-approved wastewater treatment facility.	Table A-4, Appendix A
7.2.1	Transport trade wastewater, amenities wastewater and waste process water offsite by a licensed operator to a licensed disposal facility.	Table A-4, Appendix A
7.14.1	If any evidence of illegal dumping of wastes on the Project area is observed the dumped material will be removed immediately. If any liquid sludge or chemical waste is observed then appropriate sampling and monitoring will be implemented to determine whether any impact to groundwater has occurred.	Table A-5, Appendix A

2.1.2 Protection of the Environment Operations Act 1997

Waste Management

Parts 5.2 and 5.6 of the *Protection of the Environment Operations Act 1997* (POEO Act) states that it is an offence for a person to:

- Wilfully or negligently dispose of waste in a manner that harms or is likely to harm the environment.
- Wilfully or negligently cause any substance to leak, spill or otherwise escape (whether or not from a container) in a manner that harms or is likely to harm the environment.
- Transport waste to a place that cannot lawfully be used as a waste facility for that waste, or cause or permit waste to be transported to such a place.
- Use a place, or cause or permit a place to be used, as a waste facility without lawful authority.
- Supply false or misleading information about waste to another person while dealing with the waste.

Under the POEO Act, offences can relate to both the person who disposes of the waste and the owner of the waste.

Any waste generated outside of the NGSF site cannot be brought to the site for storage, treatment, processing, reprocessing or disposal, unless expressly permitted by an Environment Protection Licence (EPL) issued under the POEO Act (refer below).

Environment Protection Licence

An Environment Protection Licence (EPL) 20130 has been issued by the NSW Environment Protection Authority (EPA) for the NGSF project under the POEO Act (refer Appendix A8 of the OEMP). Conditions within the EPL relevant to waste management are included in Table 2.3.

Table 2.3: Environment Protection Licence Conditions

Licence Condition	Requirement	Reference
L4.1	The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.	Table A-1, Table A-3. Appendix A
L4.2	This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if those activities require an environment protection licence.	Table A-1, Appendix A

2.1.3 Protection of the Environment Operations (Waste) Regulation 2005

Part 3 of the Protection of the Environment Operations (Waste) Regulation 2005 (POEO (Waste) Regulation) provides requirements for tracking of waste. AGL will need to track the movement of wastes generated by the project in accordance with this regulation. A waste tracking register is included in Appendix B.

2.1.4 Local Government Act 1993

Under the *Local Government Act 1993*, the approval of Council is required to operate a sewage management system. Approval from Port Stephens Council to operate the sewage management system at the NGSF site is included in Appendix A12 of the OEMP.

2.2 Guidelines

All liquid and non-liquid wastes generated during operation of the project are to be assessed and classified in accordance with the Waste Classification Guidelines (NSW EPA 2014).

2.3 Summary of Approvals and Licences

Approvals and licences relating to waste management during operation of the NGSF are included in Table 2.4.

Table 2.4: Summary of Approvals and Licences

Title	Agency Responsible	Reference
Project Approval and Modifications	NSW Department of Planning and Infrastructure (now the Department of Planning and Environment)	Appendices A1 and A6 of OEMP
Environment Protection Licence	NSW Environment Protection Authority	Appendix A8 of OEMP

Approval to operate sewage management system	Port Stephens Council	Appendix A12 of OEMP

2.4 Management Policies

AGL's health, safety and environmental management system includes AGL's Environment Policy, Environmental Standards, and Environmental Methodologies.

- Environmental Standard *AGL-HSE-STD-009.7 Waste Standard* is relevant to waste management during the operation of the NGSF.

3. Waste Management

3.1 Waste Management Approach

Waste generated during operation of the project will be managed in accordance with the waste management hierarchy:

- Reduce.
- Re-use.
- Recycle.
- Dispose.

Waste reduction and reuse strategies will be implemented where practical and cost effective. Recycling initiative will be implemented where possible. There are no waste treatment facilities on site.

Disposal of wastes will occur when the material cannot be reused on site or recycled. All wastes will be classified in accordance with the (NSW EPA 2014), which classifies wastes into the following streams:

- Special (e.g. asbestos and tyres).
- General Solid (putrescible) (e.g. general litter and food waste).
- General Solid (non-putrescible) (e.g. glass, paper, building demolition waste, concrete).
- Restricted Solid (currently no wastes pre-classified as restricted).
- Liquid (e.g. oil, fuels, chemical and pesticides).
- Hazardous (e.g. lead-acid batteries and lead paint).

As per the Waste Classification Guidelines, some wastes have been "pre-classified", therefore sampling and confirmation of the waste is not required. Wastes outside of the scope of pre-classified waste will need to be tested to confirm its waste classification. The EPA provides exemptions from waste classification for particular wastes, which do not need to be disposed of at an EPA licenced waste facility.

3.2 Potential Waste Streams

Wastes generated during operation of the project include (Coffey 2011a):

- The combustion gases carbon dioxide, sulphur dioxide and nitrous oxides will be released to vents and stacks from the gas plant.
- Trace volumes of waste gases, hydrogen sulphide, volatile organic compounds, methane and particulates may be released to the atmosphere from the gas plant, with the majority combusted in the flare system.
- Wastewater will be generated by site amenities.
- Mercury waste will be generated by the gas plant during the mercury removal process.

- Hydrocarbons (oils/grease) and domestic/office waste will be generated during normal site operations.

A summary of potential waste streams that could be generated during operation of the NGSF and the proposed reuse, recycling or disposal method is included in Table 3.1.

Table 3.1: Potential waste streams and management

Source	Waste	Classification	Management
Combustion gases	Carbon dioxide	n/a	Released from the gas plant via vents and stacks
	Sulphur dioxide		
	Nitrous oxides		
Mercury removal process	Mercury	Hazardous waste	Removed from site by a licensed contractor
Other waste materials produced by the gas plant	Waste gases	n/a	Combusted in the flare system Released from the gas plant via vents and stacks
	Hydrogen sulphide		
	Volatile organic compounds		
	Methane		
	Particulates		
Site facilities	Wastewater	Liquid waste (such as J120)	Removed from site by a licenced contractor
	Oil and grease		Removed from site and disposed of by a licensed contractor

Source	Waste	Classification	Management
General/office waste	Domestic waste	General solid waste (putrescible)	Removed from site and disposed of by a licensed contractor
	Ink cartridges	General solid waste (non-putrescible)	Off-site recycling
	Batteries		Off-site disposal at an approved facility
	Paper, plastic, cardboard		Off-site recycling
	Glass bottles and aluminium cans		Off-site recycling

3.3 Waste Management Measures

Waste management measures are included in Appendix A. A waste tracking register is included in Appendix B.

4. Implementation and Operation

4.1 Responsibilities

Key roles and responsibilities for waste management during operation of the NGSF are included in Table 4.1.

Table 4.1: Waste Management Roles and responsibilities

Roles	Responsibilities
Operations Manager	Overall responsibility for implementation of the WMP. Responsible for the reporting requirements contained in the WMP. Responsible for ensuring that employees are aware of their obligations under the WMP and for providing resources for environmental training.
Environment Business Partner	Responsible for development, implementation, monitoring and reporting in compliance with the WMP. Responsible for informing staff of any issues relating to waste and for implementing the waste management measures included in Appendix A of the WMP. Responsible for notifying the EPA in the event of any waste related pollution event.
Community Relations Manager	Responsible for recording and resolving complaints received in relation to waste.
Operations Supervisors	Directly responsible for understanding the requirements of the WMP and for overseeing and fulfilment of commitments contained in the WMP.
All Employees and Contractors	Responsible for understanding the WMP and for ensuring that their works are in compliance with the WMP.

4.2 Training and Competence

The site induction will include a waste management component. Examples of waste management topics that may be covered during the project induction include:

- Waste storage and segregation.
- Waste disposal and recycling.
- Waste reporting.
- Responsibilities of personnel with regard to waste management.

Further detail with regard to training and competence is included in Section 5.2 of the OEMP.

4.3 Internal and External Communication

Communication regarding waste management will be undertaken in accordance with Section 5.3 of the OEMP.

4.4 Document Control

Document control for the WMP will be undertaken in accordance with Section 5.5 of the OEMP.

5. Monitoring and Compliance

5.1 Monitoring

5.1.1 Site Inspections

Inspections will be undertaken if specific concerns are raised about waste management. Employees will be encouraged to report environmental incidents or near misses about environmental matters including waste management.

5.1.2 Waste Tracking

Wastes generated by the Project will be tracked in accordance with the Protection of the Environment Operations (Waste) Regulation 2005. There are no additional licence or approval conditions about waste monitoring and reporting.

The waste tracking register included in Appendix B will be used to track all wastes leaving the site.

The requirements of notices or orders issued by the regulatory authority in regard to waste would be communicated in accordance with Section 5.3 of the OEMP to ensure compliance.

5.2 Audit and Review

The audit process outlined in Section 6.2 of the OEMP will include auditing of waste management during operation of the NGSF. This will include periodic auditing of off-site waste recycling and waste disposal facilities used for the NGSF to ensure that these processes are conducted appropriately.

5.3 Reporting

5.3.1 Formal Reporting

Formal reporting requirements for the Project are included in Section 5.4 of the OEMP.

The following reports will include a waste management component:

- Internal audit report.
- Annual Environmental Footprint Report

- External audit report (if required).
- EPL Annual Return Report (if required).

5.3.2 Waste Tracking Register

A waste tracking register (refer Appendix B) will be maintained to track the movement of wastes from the site.

Waste dockets / receipts / manifests will also be retained to record the date of waste removal, the waste transport contractor and the waste destination.

5.3.3 Records

The following records relating to waste management are to be maintained for a period of four years:

- Waste tracking register.
- Laboratory analysis results.
- Waste dockets / receipts / manifests from landfills, recycling facilities and waste contractors.
- Letters regarding waste classifications, general resource recovery exemptions or suitability of material to be re-used on site.
- Records of site inspections. \
- Notices or orders issued by a regulatory authority.

5.4 Management Review

The OEMP and its relevant sub plans, including the WMP, are regularly reviewed by AGL management to ensure the documents suitability and effectiveness. This sub plan and its details will be reviewed, and if necessary amended:

- Following any major incident.
- Upon receipt of new approval conditions, approvals, consents or licences.
- Upon changes in relevant legislation, guidelines or protocols regarding waste.
- When directed to do so by the Secretary of the Department of Planning and Environment.
- Every two years.

The review is undertaken by the Environment Business Partner and includes:

- The findings of audits.
- Any major non-conformances or incidents.
- Complying with any notices or orders issued by government authorities (if any).

Reviews are documented and approved by management, along with any subsequent modifications.

5.5 Incident Management

Environmental incidents will be managed in accordance with Section 6.3 of the OEMP.

6. References

AGL (2012) *Section 75W Application – Washing out of Concrete Trucks.* AGL Energy Limited. 13 December 2012.

Coffey (2011a) *Environmental Assessment – Newcastle Gas Storage Facility Project. Coffey Natural Systems.* May 2011.

Coffey (2011b) *Preferred Project and Response to Submissions Report – Newcastle Gas Storage Facility Project.* Coffey Natural Systems. September 2011.

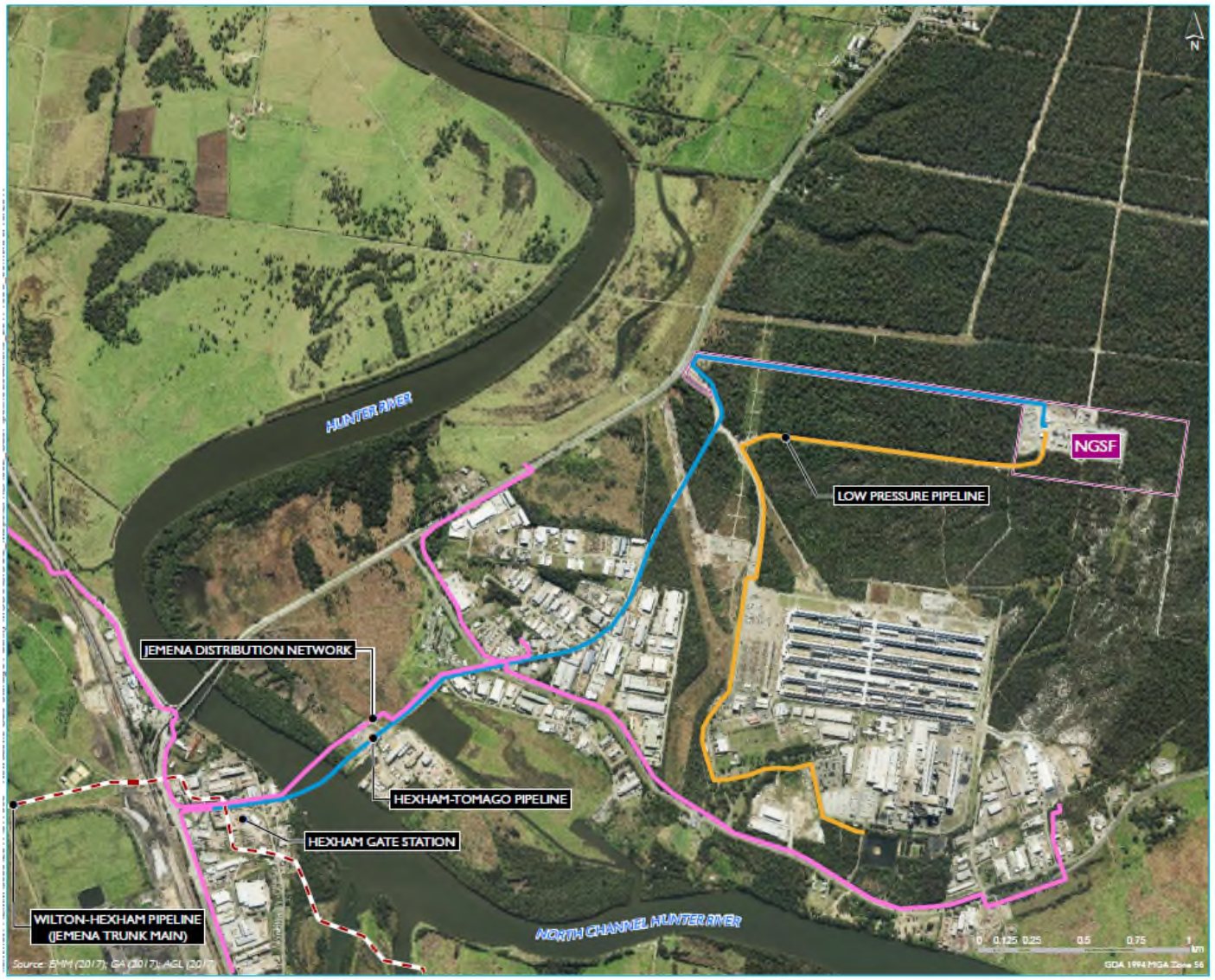
NSW EPA (2014) *Waste Classification Guidelines. Department of Environment and Climate change.* April 2008.

EMM (2013) *Newcastle Gas Storage Facility – Modification 2 Environmental Assessment*. EMGA Mitchell McLennan. September 2013.

EMM (2017), *Newcastle Gas Storage Facility – Modification 3 Environmental Assessment – Tail Gas Project*. EMGA Mitchell McLennan. October 2017.

Figures

Figure 1



KEY

- Site boundary
- Wilton-Hexham Pipeline (Jemena Trunk Main)
- Jemena Distribution Network
- Hexham-Tomago Pipeline
- NGSF low pressure pipeline

Appendix A

Waste Management Measures

Table A.1: General

ID	Management Measure	Source
1	The site induction is to include a waste management component.	Good practice
2	No waste generated outside of the site is to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site during operation, except as permitted by an Environment Protection Licence.	CoA C17
3	Reuse and/or recycling of operation waste materials generated on site is to be maximised, to minimise the need for treatment or disposal of those materials outside the site.	CoA C18

Table A.2: Waste Storage

ID	Management Measure	Source
1	Waste and recycling bins are to be provided at the project office and other locations within the site. These bins are to be: • Appropriate design and material to safely contain the waste • Impervious to water • Identifiably coloured or labelled for each waste stream The bins are to be maintained in good condition.	Good practice
2	Waste and recycling bins are to be emptied regularly to prevent accumulation of wastes on site. Prior to transportation, regulated waste must be contained in designated waste containers fit for safe transport.	Good practice
3	Waste is to be stored in a protected designated area(s) away from vermin and weather.	Good practice
4	Quantities of waste stored on site are to be kept to a minimum.	Good practice
5	Non-recyclable plastic and domestic waste are to be placed into skip bins for collection by a waste contractor.	Good practice
6	Recyclable plastics will be placed into a recycling skip bin for collection by a recycling contractor.	Good practice
7	Paper and cardboard are to be placed in a paper recycling skip bin for collection by a recycling contractor.	Good practice

Table A.3: Waste Disposal

ID	Management Measure	Source
1	All liquid and / or non-liquid operation waste generated by the project is to be assessed and classified in accordance with the Waste Classification Guidelines (NSW EPA 2014) (or any future guideline that may supersede that document) and where removed from the site is to be directed to a waste location lawfully permitted to accept those materials (unless otherwise permitted by an applicable EPL under the POEO Act).	CoA C19
2	Licensed contractors are to be used to collect, transport and dispose of hazardous materials such as waste solvents, paints, mercury absorption medium and hydrocarbons to a licensed off-site facility in accordance with EPA guidelines.	SoC 7.1.1
3	On-site waste disposal is not permitted. Prior to transportation, regulated waste must be contained in designated waste containers fit for safe transport.	Good practice
4	Periodic auditing of off-site waste recycling and waste disposal facilities used for the NGSF should be carried out to ensure that these processes are conducted appropriately.	Good practice

Table A.4: Wastewater

ID	Management Measure	Source
1	AGL is to seek prior approval under the Local Government Act 1993 for the installation and operation of a human waste storage facility.	CoA C20
2	Wastewater (including waste process water) and sewage is to be removed from site by an EPA licensed operator for treatment at an EPA-approved wastewater treatment or disposal facility.	SoC 7.1.2 SoC 7.2.1

Table A.5: Illegal Dumping

ID	Management Measure	Source
1	If any evidence of illegal dumping of wastes on the Project area is observed the dumped material is to will be removed immediately. If any liquid sludge or chemical waste is observed then appropriate sampling and monitoring will be implemented to determine whether any impact to groundwater has occurred.	SoC 7.14.1

Table A.6: Material Tracking

ID	Management Measure	Source
1	Waste materials are to be tracked so that the appropriate management of wastes can be demonstrated. A register containing the following information must be kept for four years: • The material type and volume. • The classification of the waste. • Where it was re-used, i.e. location on the Project site or property address if re-used off-site (if re-used); • Where it was disposed, i.e. landfill name and address (if disposed); • Reference number of relevant documentation, (i.e. waste dockets, waste classification letters), if applicable. Documentation regarding the classification re-use, recycling and/or disposal must be retained. This could include waste dockets from landfills, and letters from consultants.	Good practice

Appendix B

Waste Tracking Register

Waste Tracking Register

	Volume (m^3)	Has the waste been "preclassified" under the waste classification guideline?	Waste classification (if testing and confirmation required – non preclassified waste and no exemption)	Waste transporter EPL#	Location recycled?	Disposed to landfill (y/n)	Landfill disposed to (EPL #)?	Reference
Example - concrete	20	N			Concrush - Teralba NSW	N	NA	Docket No. 12345

Appendix B4

Operational Traffic Management Measures

Operational Traffic Management Measures

Activities associated with the NGSF require the use of existing public roads in the Tomago and Hexham areas. During operational activities, impacts on local traffic are very minimal with only a minor number of light vehicles and trucks accessing the NGSF site each day. Maintenance activities have the potential for minor, short term impact on roadways through the increase in vehicles, however, this is not expected to significantly impact on the locality given the temporary nature of the activities. The following management measures are in place to minimize traffic impacts.

ID	Management Measure	Source
1	Implement driver and pedestrian safety awareness programs for AGL employees and contractors.	SoC 7.10
2	Implement a random alcohol and drug testing program for all site personnel.	SoC 7.10
3	Establish operational speed limits at the gas plant site and the HRS site.	SoC 7.10
4	All personnel are to adhere to posted speed limits when on site.	Good practice
5	Transport any oversized equipment and machinery in accordance with RMS guidelines for oversized movements and ensure necessary permits are obtained.	Good practice
6	Apply appropriate signage and traffic management facilities during maintenance work on roads or within road corridors.	Good practice
7	Undertake heavy vehicles movements in accordance with a specific plan or as directed by police.	Good practice
8	Ensure all AGL vehicles are adequately maintained.	Good practice
9	Ensure carriageways are not obstructed by parked vehicles, stored goods, industrial bins etc.	Good practice
10	Ensure that adequate emergency vehicle access is available at all times.	Good practice
11	Private vehicles of personnel (including contractors) and visitors are to access the gas plant site and HRS site only via the designated access ways and are to be parked only in the designated car park.	Good practice
12	Where specific operational activities are likely to impact upon traffic, consultation with stakeholders is to be undertaken in accordance with AGL's Community Engagement Plan.	Good practice
13	Any damage caused to public roads by AGL activities will be treated as an Incident in accordance with Section 6.2 of the OEMP. The incident will be investigated by AGL, and the appropriate regulatory authority will be notified to coordinate suitable repairs.	CoA C22(f)
14	Driver and pedestrian awareness is to be included in the site induction.	EA commitment
15	Drivers are to adhere to the sign posted speed limits.	EA commitment
16	All employees, contractors and visitors are to be subjected to AGL's random alcohol and drug testing program.	AGL policy

Appendix B5

Flora and Fauna Management Plan

Flora and Fauna Management Plan

Newcastle Gas Storage Facility
August 2025

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Document Controls

Approval and authorisation

Title	Flora and Fauna Management Plan – Newcastle Gas Storage Facility
Accepted on behalf of AGL by:	John Moraitis
Signed:	
Dated:	6 August 2025

Document status

Document status	Date	Prepared by	Reviewed by
Draft 1.1	19/01/2018	Angus Fanning / Philip Burns	Emma Dean
Version 2.0	06/08/2023	John Moraitis	AGL
Version 2.1	06/08/2025	John Moraitis	AGL

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Table of Contents

1. Introduction

1.1. Scope

This document is the AGL Energy Limited (AGL) Flora and Fauna Management Plan (FFMP) for the Newcastle Gas Storage Facility (NGSF). The FFMP describes AGL's system for managing flora and fauna aspects during operation of the NGSF.

AGL has developed the NGSF, located at Tomago and Hexham, New South Wales, to meet peak gas demands and provide additional security of gas supply during supply disruption events. The NGSF includes the following components:

- The gas plant site
- An access road and utility corridor
- A gas pipeline corridor
- A high-pressure pipeline to Jemena trunk main, the Tomago – Hexham pipeline; and
- A low-pressure pipeline to an industrial user south of the site.

1.2. Background

Project approval for the NGSF was granted on 10 May 2012 (File No. 11/08788) and approvals for five modifications of the project were subsequently granted on 5 February 2013, 31 January 2014, 27 February 2018, 8 June 2023, and 6 September 2023 comprising:

- Modification 1 (10_0133 MOD1) – authorising the washing out of concrete mixers during construction and for the waste water to be removed off site by pump-out trucks
- Modification 2 (10_0133 MOD2) – authorising construction and operation of a 4.5km low pressure natural gas pipeline between the gas storage facility and an industrial user to the south of the site
- Modification 3 (10_0133 MOD3) – authorising additional infrastructure to allow processing of the tail gas produced as part of the operation of the NGSF, including construction and operation of a maintenance flare and minor changes to existing infrastructure.
- Modification 4 (10_0133 MOD4) – authorising the cessation of proactive annual noise monitoring in the absence of noise complaints being received by NGSF or the NSW EPA.
- Modification 5 (10_0133 MOD5) – authorising a reduction in the frequency of air quality monitoring at Heaters H101, H501A, H501B and H501C, from annually to once every five years.

Further information is provided in Appendix A1 of the Operation Environmental Management Plan (OEMP).

Several commitments were made in Environmental Assessment for the NGSF relating to the management of flora and fauna. This document has been prepared to fulfil those operations related commitments and is an appendix to the OEMP for the NGSF.

1.3. Objectives

The objectives of the FFMP are to:

- Provide details on significant flora and fauna within the bushland areas surrounding the NGSF plant.

- Describe the location of significant flora and fauna around the site.
- Describe the management and ongoing conservation of those species on the site and within the offset site.
- Detail weed and pest control measures
- Provide guidance on the management of site infrastructure to reduce impacts on significant fauna.

1.4. Structure of the FFMP

The FFMP has been structured to meet the requirements of the relevant commitments made for the NGSF project (refer to Section 2.1).

The FFMP is divided into the following sections:

- Section 1: Introduces the FFMP
- Section 2: Identifies statutory and other requirements that must be met by AGL about flora and fauna management during operation of the NGSF
- Section 3: Identifies and provides background information on significant flora and fauna species
- Section 4: Provides details on threats posed to significant flora and fauna from weeds and other pests
- Section 5: Identifies management measures to assist in the conservation of ecological values
- Section 6: Provides an overview of project offsets designed to provide enduring conservation of significant species and their habitat
- Section 7: Provides details on the implementation of the plan, responsibilities and training
- Section 8: Provides details on auditing, review and reporting.

2. Statutory and Other Requirements

2.1. New South Wales Legislation

2.1.1. Environmental Planning and Assessment Act 1979

Approval for the NGSF project under Section 75J of the *Environmental Planning and Assessment Act 1979* (*EP&A Act*) was provided by the NSW Department of Planning and Infrastructure on 10 May 2012. five modifications of the project were subsequently granted on 5 February 2013, 31 January 2014, 27 February 2018, 8 June 2023, and 6 September 2023

Copies of the original approval and modifications are included in Appendix A1 of the OEMP. Several commitments were made in the Environmental Assessment for the project that relate to flora and fauna management during the operation of the NGSF.

Modifications following the initial Environmental Assessment for the project did not significantly alter the existing flora and fauna management considerations on site. Minor amendments to the Environmental Assessment and approval controls in relation to flora and fauna management have been updated following the most recent modification.

The commitments relevant to existing flora and fauna management and reference to where each of these commitments has been addressed in the FFMP are included in Table 2-1.

Commitment	**Reference**
Develop and implement comprehensive Construction Environmental Management Plan (CEMP) and Operational Environmental Management Plan (OEMP). These documents will include detailed information about significant flora and fauna species, their management and ongoing conservation recommendations.	Sections 3,4,5 and 6
The CEMP and OEMP will include vegetation and weed management plans to prevent spread of weed species and avoid disturbance on quality and functioning of sensitive ecological communities	Section 4
Implement a pest animal control program on areas owned and/or managed by AGL to prevent increases in pest animal populations in the vicinity of the gas plant site	Section 4
Fencing will be in accordance with PSC's Koala Plan of Management to allow for fauna dispersion. Fencing around facility will be vermin proof security fencing to prevent fauna entering the site	Section 5
Speed limits along the access road and utility corridor will be in accordance with PSC's Koala	Section 5

Plan of Management to minimise injury or death to koalas and other wildlife	

3. Significant species

3.1. Earp's Gum

3.1.1. Description

Earp's Gum *(Eucalyptus parramattensis subsp. Decadens)* is listed as vulnerable under both the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and State *Biodiversity Conservation Act 2016.*

According to the Commonwealth Department of Environment, *E. parramattensis subsp. Decadens* is a small tree, usually less than 7 m in height, although it can grow to 15 m. The bark is smooth but sheds over the whole trunk in large plates or flakes to leave a smooth or granular mottled surface of white and various shades of grey.

The girth of these trees can be substantial, with one stump measured at over 200 cm in diameter.

3.1.2. Preferred habitat

Earp's Gum is endemic to the Hunter Region, with two distinct mega populations on the Tomago Sandbeds and at Cessnock-Kurri. This subspecies is known from six small populations occurring within these regions in New South Wales, in dry sclerophyll woodland on sandy soils, in low often wet sites.

3.1.3. Distribution on site

Distribution of the Earp's Gum on the NGSF site is limited to the bushland area on the southern side of the plant and around the area where the access road transitions to an "S" bend. The trees had been planted as part of previous sand mining activities, however, they are local to the area. Figure 3.1 provides an overview of Earp's Gums on the site.

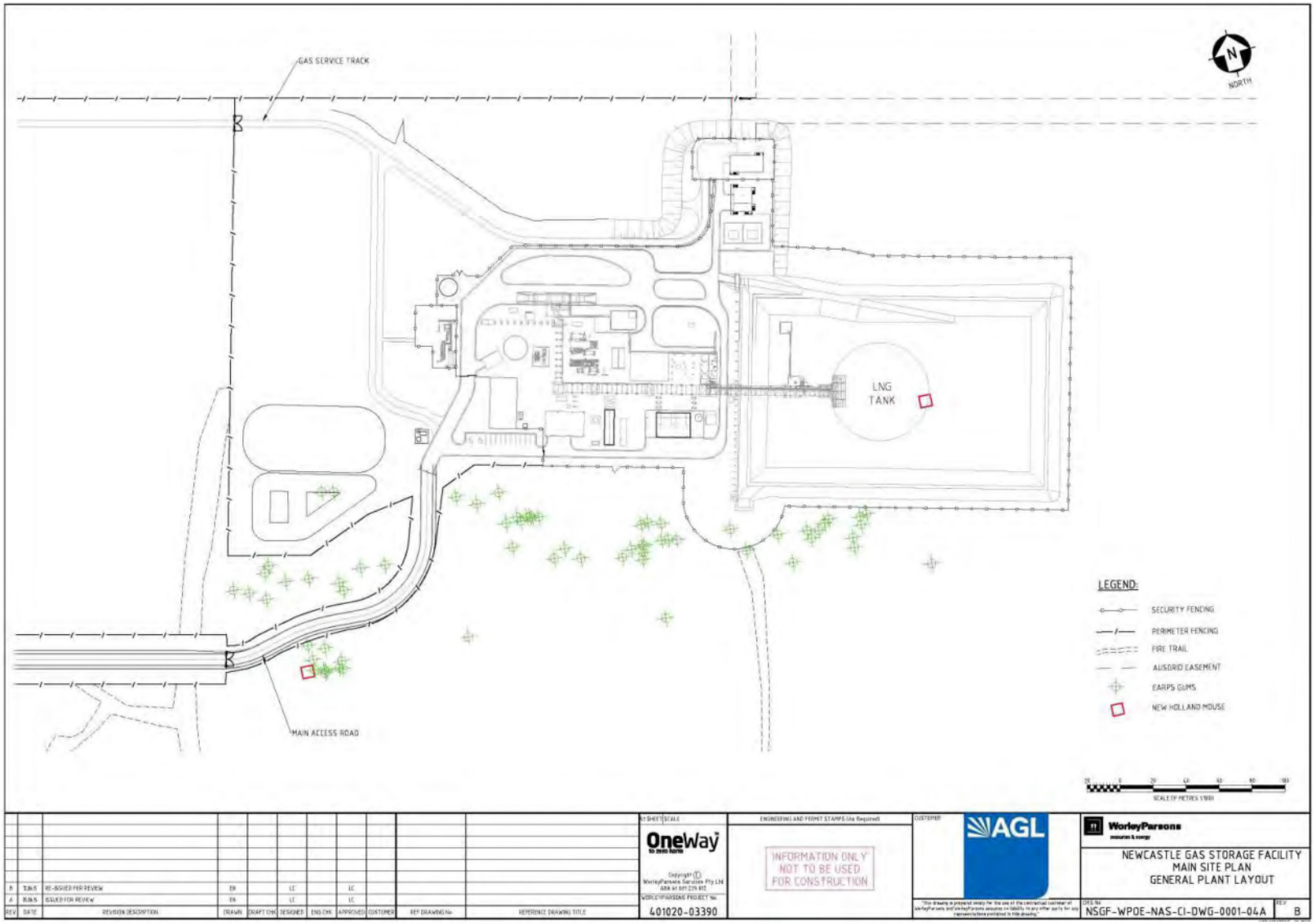


Figure 3.1: Location of Earp's Gums on site

3.2. New Holland Mouse

3.2.1. Description

The New Holland Mouse *(Pseudomys novaehollandiae)* is listed as vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.*

According to the NSW Office of Environment and Heritage, the New Holland Mouse is a small native rodent similar in size and appearance to the introduced House Mouse. It can be distinguished from the House Mouse by its dusky-brown tail which is longer than the rest of the body and darker on the dorsal surface, the absence of a notch on the upper incisors, and the absence of a distinctive 'mousy' odour.

3.2.2. Preferred Habitat

The New Holland Mouse has a fragmented distribution across Tasmania, Victoria, New South Wales and Queensland. Genetic evidence indicates that the New Holland Mouse once formed a single continuous population on mainland Australia and the distribution of recent subfossils further suggest that the species has undergone a large range contraction since European settlement. Total population size of mature individuals is now estimated to be less than 10,000 individuals although, given the number of sites from which the species is known to have disappeared between 1999 and 2009, it is likely that the species' distribution is smaller than current estimates.

Additionally, the mouse:

- Is known to inhabit open heathlands, woodlands and forests with a heathland understorey and vegetated sand dunes;
- Is a social animal, living predominantly in burrows shared with other individuals; and
- Distribution is patchy in time and space, with peaks in abundance during early to mid-stages of vegetation succession typically induced by fire.

3.2.3. Distribution on site

During the environmental impact assessment phase for the NGSF, the New Holland Mouse was recorded in the Heath Rehabilitation vegetation community. This vegetation community is located close to the eastern boundary of the NGSF plant boundary, and extends towards the south. Figure 3.2 provides a location map of vegetation communities on the NGSF site. Figure 3.1 also contains the location of where the New Holland Mouse was detected during the Environmental Impact Assessment phase.

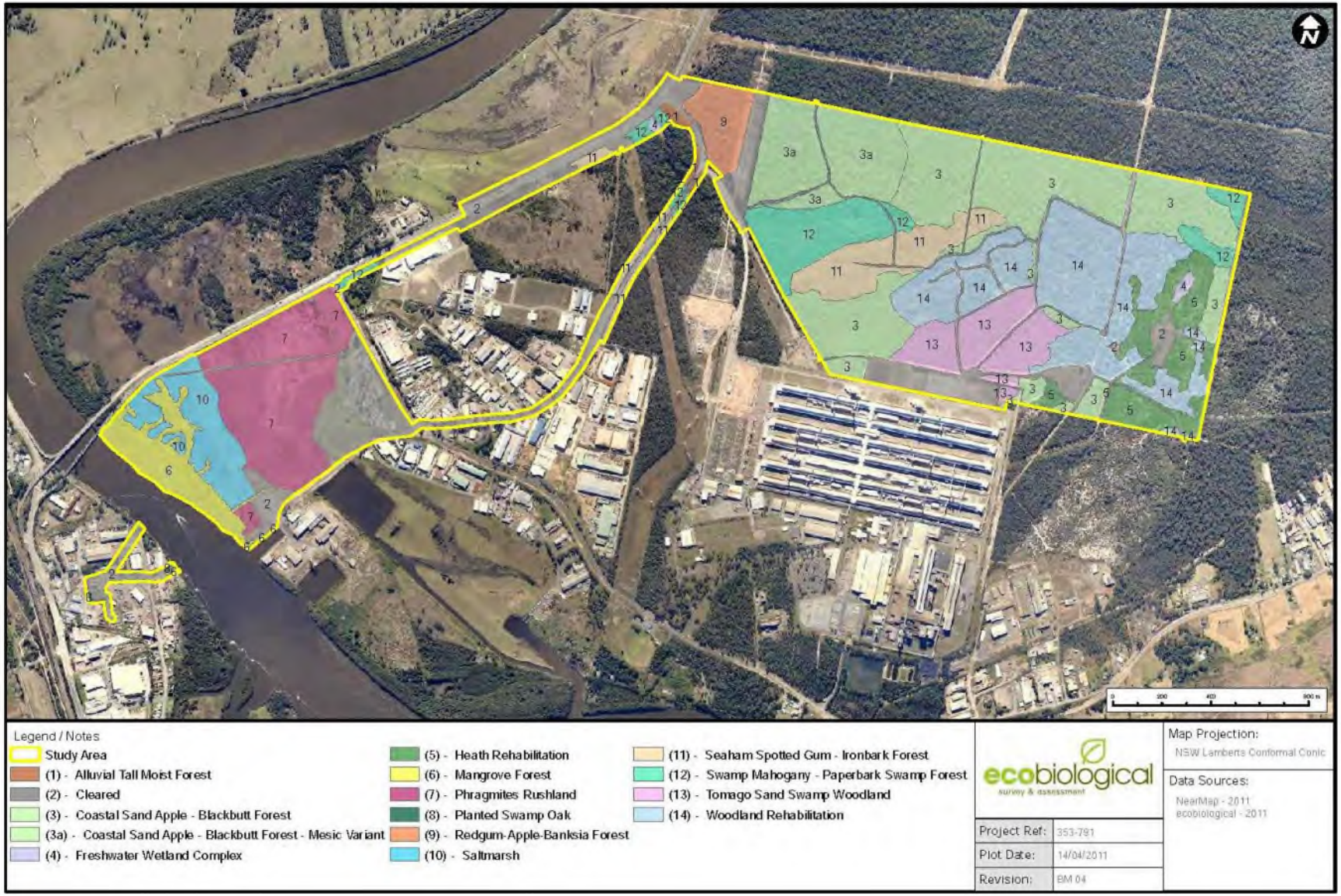


Figure 3.2 Vegetation communities onsite

3.3.Koala

3.3.1. Description

The Koala *(Phascolarctos cinereus)* is listed as vulnerable under both Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and State *Biodiversity Conservation Act 2016*.

According to the NSW Office of Environment and Heritage, the Koala is an arboreal marsupial with fur ranging from grey to brown above, and is white below. It has large furry ears, a prominent black nose and no tail. It spends most of its time in trees and has long, sharp claws, adapted for climbing. Adult males weigh 6 - 12 kg and adult females weigh 5 - 8 kg. During breeding, males advertise with loud snarling coughs and bellows.

3.3.2. Preferred habitat

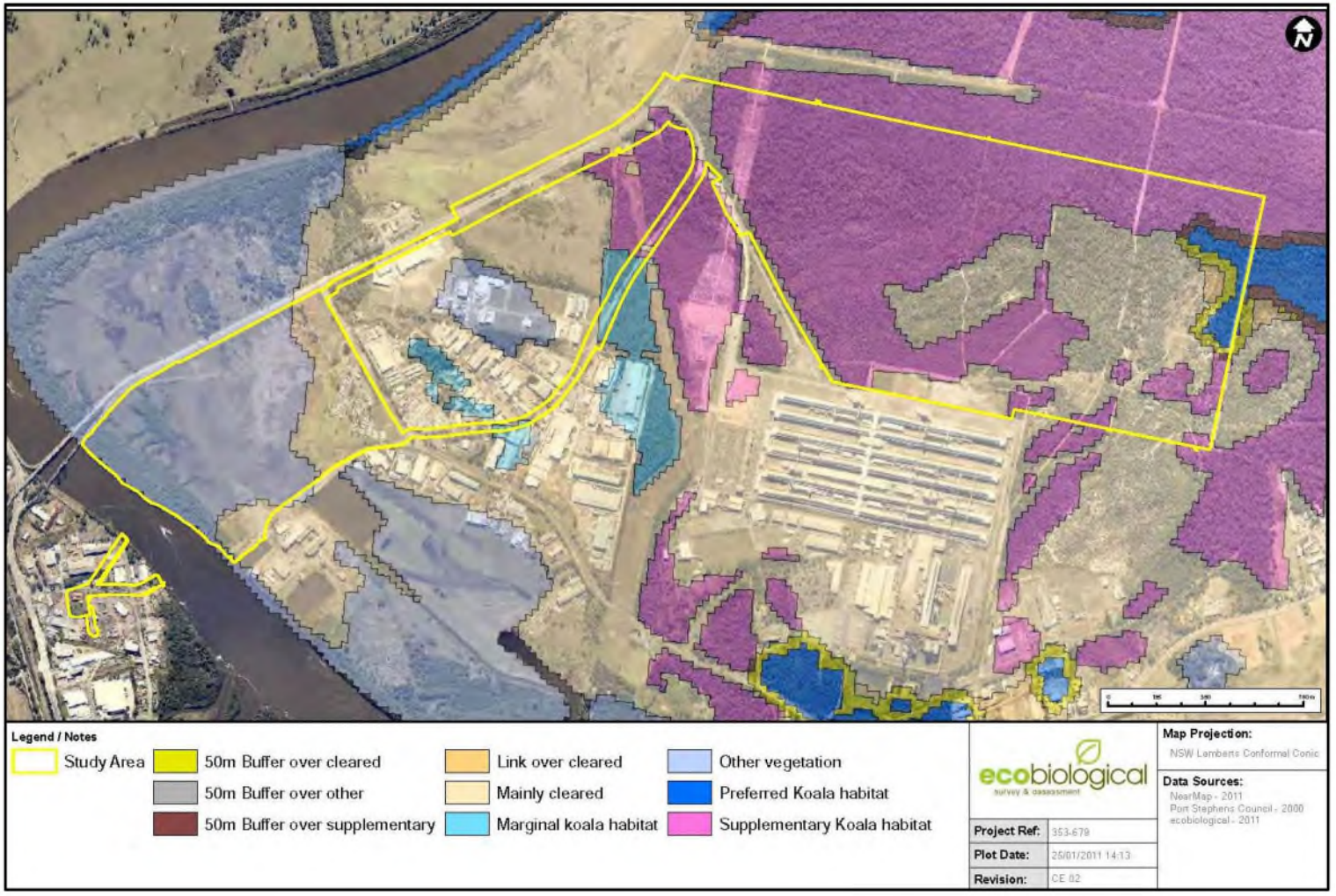
The Koala has a fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In NSW, it mainly occurs on the central and north coasts with some populations in the west of the Great Dividing Range. It was briefly historically abundant in the 1890s in the Bega District on the south coast of NSW, although not elsewhere, but it now occurs in sparse and possibly disjunct populations. Koalas are also known from several sites on the southern tablelands.

3.3.3. Distribution on site

Preferred and supplementary Koala habitat was identified on the NGSF site during the environmental impact assessment for the plant.

Large tracts of Swamp Sclerophyll Forest and some Forest Red Gum exist on the site, which are considered to provide suitable habitat for koalas. Evidence of Koalas utilising the site was noted during the environmental impact phase through scats being found at the base of selected Eucalyptus trees. In addition, there are seven previous records of the Koala from within the site and over 50 previous records from within 5km of the site, indicating a relatively high level of usage of habitat in the wider locality by this species.

Figure 3.3 provides an overview of Koala habitat in proximity to the site. The bushland areas surrounding the site provide an important habitat resources for transient visits by the species.



Error! No text of specified style in document.**3.3: Koala habitat map**

4. Threats

4.1. Threat management

4.1.1. Weed management

Seven declared noxious weeds have been previously recorded on the NGSF site as listed in Table 4.1.

Table 4.1: Noxious weeds recorded onsite

Common name	Scientific name	Weed control class
Lacy Ragweed	*Ambrosia tenuifolia*	4
Bitou Bush	*Chrysanthemoides monilifera subsp. Rotundata*	4
Pampas Grass	*Cortaderia selloana*	4
African Lovegrass	*Eragrostis curvula*	4
Coastal Morning Glory	*Ipomoea cairica*	4
Lantana	*Lantana camara*	5
Fireweed	*Senecio madagascariensis*	4

National Weed Control Class as defined in Section 8 of the *Noxious Weeds Act 1993* and summarised below.

Class 3 - Regionally Controlled Weeds: Plants that pose a serious threat to primary production or the environment of an area to which the order applies, and are likely to spread in the area or to another area. Legal requirements are that the plant must be fully and continuously suppressed and destroyed.

Class 4 - Locally Controlled Weeds: Plants that pose a threat to primary production, the environment or human health, are widely distributed in an area to which the order applies and are likely to spread in the area or to another area. Legal requirements are that the growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local authority.

Class 5 - Restricted Plants: Plants that are likely by their sale or the sale of their seeds or movement within the State or an area of the State, to spread in the State or outside the State. Legal requirements are that the requirements in the *Noxious Weeds Act 1993* must be complied with.

Weeds that are opportunistically observed as part of the NGSF internal environmental audit program will be noted, including their general location and type of weed. Where an infestation of weeds is identified, a program will be developed to target and control the weeds following the control measures outlined in Section 4.3.

4.1.2. Pest Management

The presence of feral fauna species is a threat to native species due to competition for resources, predation and general displacement. AGL has the responsibility under the *Local Land Services Amendment Act 2013* to control declared pest species within the site boundary. Employees will be encouraged to report on sightings of feral animals through toolbox talks and the Environment Manager

notified. Opportunistic observations on the presence of feral animals will also be noted during annual internal environmental audits.

Depending upon the type of pest identified, specific management programs will be implemented to manage and control pest infestations. A range of likely pests and their proposed control measures are provided in Section 4.2.2.

4.2. Threat Control Measures

Threat control measures are provided to minimise the introduction and spread of weeds and pests into, and out of the site. A Flora and Fauna Management Plan Compliance Audit is carried out annually by the Environment Manager (or delegate) to review the implementation and effectiveness of control measures on managing the site.

4.2.1. Weed Control

Weed control is to be undertaken in accordance with the following weed control methods.

Any spread of weeds or weed presence in disturbed and/or rehabilitated sites are to be monitored through internal environmental inspections. If necessary, exclusion areas, will be determined by the Environment Manager to separate and isolate areas of significant weed infestation. Treatment methods and timing will be determined by the species individual ecology, as informed by the Department of Primary Industries Weed Control guidelines. Where possible, weed removal should be undertaken prior to the development of seed (early spring is generally the best time for most weed treatment and removal). If weeds have produced a seed, seeds should be contained and removed prior to or during weed removal wherever feasible.

To prevent ongoing propagation of noxious weeds all machinery, vehicles and footwear used in any vegetation clearing will be cleaned when moving between sites. Soil and native vegetation disturbance will be minimised wherever possible within weed infested areas, and will be monitored after any weed removal takes place. Weeds and weed contaminated material, including affected soil, will be disposed at an appropriately licenced waste management facility. Vegetation or topsoil containing weed material will not be reused onsite unless appropriately treated, and all bare soils in the area should be stabilised to minimise erosion and further weed problems.

4.2.2. Pest Control

To guide and improve the management of any vertebrate pests that may be observed onsite, an overview of a range of likely pests based on their distribution is provided below with their proposed control measures. If any large-scale control measures are required, consultation with the Department of Primary Industries should occur.

Table 4.2: Likely pests and proposed control measures

Declared Pests in NSW		
Pest	**Potential Impacts**	**Proposed Control**
European Red Fox	Can have a serious impact on native animals and considered to be major contribution to the	Reducing the impact of the European Red Fox relies on a mixture of control techniques. Those relevant to the site may include poison baiting, trapping and fencing. No single control method

Declared Pests in NSW		
Pest	**Potential Impacts**	**Proposed Control**
	extinction of some native species	alone will be successful, and when foxes are removed reinvasion or immigration from existing untreated areas can occur within 2 to 6 weeks. A strategic coordinated program over a number of land holdings is required to be efficient in fox management. If deemed as required onsite by the Environment Manager, consultation with the Department of Primary Industries will take place to develop an integrated strategic management plan.
European Rabbit	Rapidly re-invade and colonise new areas, impacting on threatened plant species with flow on impacts to native fauna through direct competition. Rabbits are responsible for significant destabilisation and erosion of vulnerable areas.	Success of rabbit controls should be determined more by how many rabbits remain than by how many rabbits have been removed. Rabbits have the ability to rapidly re-invade and recolonise areas following control, so control programs should involve as large a number of properties as possible. The two broad rabbit control strategies that would be relevant for the site would be a combination of poisons and harbour destruction. If rabbit control strategies are required onsite, an appropriate site-specific management plan will be developed by the Environment Manager.

Declared Pests in NSW		
Pest	**Potential Impacts**	**Proposed Control**
Feral Pigs	Disturb natural environments through tramping and uprooting soils, spread a range of diseases and fungus, and consume a range of native animals.	Management of feral pigs normally requires a number of management measures in combination. Proposed control measures for the site if necessary may include: - Fencing - Ground poisoning - Trapping If management is deemed as necessary by the Environment Manager, consultation with the Department of Primary Industries will occur to develop a site specific strategic management plan. Initial control methods appropriate to the site may include large-scale poisoning. Secondary control methods would likely include trapping, and strategic poisoning.
Non-declared pest in NSW		
Pest	**Potential Impacts**	**Proposed Control**
Mice and other rodents	A range of infectious diseases can be carried by mice and other rodents, to livestock and humans. They can also have a significant impact to infrastructure by consumption of materials such as wire and insulation.	Baiting is the best management measure for introduced rodents and mice, and needs to be assessed depending on the individual site and severity. Any baiting will be informed through consultation with the Department of Primary Industries and/or Local Land Services due to the presence of the New Holland Mouse onsite and the relative potential threat to this species.

5. Management strategies

5.1. Species management

During the design and construction of the NGSF site, impacts to threatened species were avoided and residual impacts were offset. Clearing was minimised to the smallest extent possible and ongoing weed control was implemented during construction.

5.1.1. Operational management strategies

Native Vegetation

Any potential or likely impact to, or removal of, native vegetation as a result of operation onsite must, where required, be conducted under appropriate regulatory approvals in accordance with the *Biodiversity Conservation Act 2016* and *Local Land Services Amendment Act 2016.* All required approvals are to be obtained prior to undertaking the activity. If proposed clearing activity is exempt or does not require approval, the activity must comply with relevant vegetation codes wherever applicable. If any potential, or actual impact to native vegetation is to occur from the activity, it must also be managed in accordance with the following biodiversity management hierarchy:

1. **Avoid:** All efforts must be made to prevent or avoid impacts to biodiversity
2. **Minimise:** Any impacts that cannot be avoided must be minimised and reduced wherever possible through change of design and alternative methods for the proposed task or activity
3. **Remedy:** If there are remaining impacts on biodiversity, then all effort is required to repair or restore any adverse effects
4. **Offset:** After these steps, any significant residual effects should then be addressed via a 'biodiversity offset' in order to achieve 'no net loss' of biodiversity.

Impacts must be initially avoided using prevention and mitigation measures to avoid, minimise and remedy any activities before offsetting is considered. If an offset is not possible after the above measures are considered and implemented, some other form of compensation may be needed, and will be decided through consultation between the Environment Manager and the Office of Environment and Heritage (OEH) prior to any activities occurring.

Protected species

Impacts to protected species habitat is unlikely to be an issue as the main disturbance activities on site occurred during construction. If protected species habitat is likely to be impacted because of operational purposes, the clearing activity must be determined whether it is permissible without approval, or is the subject of an exemption after assessment by a suitably qualified and experienced ecologist. If approval is deemed as required, the management strategies highlighted above apply. Where native vegetation is to be disturbed or cleared, approval needs to be prepared and permitted prior to any activity commencing. If the proposed clearing activity is exempt or does not require approval, the activity must comply with the relevant vegetation codes wherever applicable.

If a protected species is injured, a fatality occurs, or an abandoned juvenile is located within the site boundary, the Environment Manager must be informed. The Environment Manager is responsible to notify the relevant authorities when required by legislation.

Operational management measures specific to each significant species are outlined in Table 5-1.

Table 5-1: Species Management Measures

Species	Management measures
Earp's Gum	Clearing of trees on the southern boundary and around the access road near the "S" bend will be avoided wherever reasonably practicable.
	Some clearing of juvenile species maybe required to maintain the asset protection zone. Any potential or actual impacts on Earp's Gum from AGL controlled site activities will be managed in accordance with the appropriate legislation, approvals and biodiversity management hierarchy
	General weeding when infestations are observed.
New Holland Mouse	Disturbance of land to the east and south east of the gas plant to be avoided unless necessary for maintenance or emergency purposes.
	Potential or actual impacts on habitat for the New Holland Mouse from AGL controlled site activities will be managed in accordance with the appropriate legislation, approvals and biodiversity management hierarchy
	General weeding when infestations are observed
	The harming or relocating of the New Holland Mouse by any means is prohibited on site, unless assessed by an experienced wildlife management professional and authorised by the Office of Environment and Heritage. If an individual is injured, killed or juvenile is abandoned on site, the Environment Manager is to be informed immediately.
	Land disturbance and tree clearing to be avoided where reasonably practicable. Potential or actual impacts on Koala or Koala habitat from AGL controlled activities must be managed in accordance with the appropriate legislation, approvals and management hierarchy
Koala	Fencing around the site perimeter to be Koala friendly. Fencing should consist of post and wire.
	Speed limit along the access road into site is 50km/h. This speed limit, for the purposes of reducing Koala fatalities, is appropriate due to the low traffic volumes, excellent road verge vision, road alignment (straight) and wide road verges.
	The harming or relocating of Koala by any means is prohibited on site, unless assessed by an experienced wildlife management professional and authorised by the Office of Environment and Heritage. If an individual is injured, killed or juvenile is abandoned on site, the Environment Manager is to be informed immediately.

6. Offsetting

6.1. Introduction

AGL entered into a voluntary conservation agreement (VCA) for two parcels of land to offset clearing undertaken for the NGSF. The parcels of land are described as Lot 16, DP 753200 and Lot 20, DP 753200, Old Swan Bay Road, Ferodale NSW. The offset site, comprising the two parcels, collectively protect an area of approximately 110ha.

6.2. Offset Management

As part of the voluntary conservation agreements, AGL has committed to undertaking active management and monitoring of the offset sites to enhance ecological values. Some of those measures comprises the following:

- Weed control;
- Supplementary planting in disturbed areas that are resistant to natural rehabilitation;
- Erosion control on disturbed areas and access tracks; and
- Site protection through fencing.

For the first five years annual monitoring of the offset site will be undertaken to measure the performance and condition of the site. After five years, frequency of monitoring will be reviewed and, depending upon the outcome of the review, revised.

Complementing the annual monitoring review will be the development of an annual monitoring report. The report will provide the basis for future management and monitoring of the site. The report will summarise conservation works, ecological value condition, changes occurring, effectiveness of management actions and recommendations for additional management actions.

6.3. Offset Security

Underpinning the offset site will be a VCA entered into for the two sites. VCAs are listed on the land title, thereby ensuring enduring protection of the site as the obligations under which the VCA has been entered into is carried across to any subsequent purchasers of the land.

7. Implementation and operation

7.1. Responsibilities

Key roles and responsibilities for flora and fauna management during the operation of the NGSF are included in Table 7-1.

Table 7.1: Flora and fauna management roles and responsibilities

Role	Responsibility
Operations Manager	Overall responsibility for implementation of the FFMP. Responsible for ensuring that employees are aware of their obligations under the FFMP and for providing resources for environmental training.
Environment Manager	Responsible for development and implementation of the management strategies identified in Section 4 and Section 5. Responsible for informing staff of any issues relating to flora and fauna management and notifying relevant authorities as prescribed in the FFMP.
Operations Supervisors	Responsible for understanding the management measures in Section 4 and Section 5 and ensuring that activities carried out on site are in compliance with the FFMP.
All employees	Responsible for understanding the FFMP and that works are carried out in compliance with the FFMP.

7.2. Training and competence

Senior management, including operation supervisors, will be informed of their flora and fauna responsibilities through site inductions and on the job training.

8. Monitoring and compliance

8.1. Monitoring

8.1.1. Site inspections

Site inspections will be regularly undertaken and if specific concerns are raised about pest infestations or flora and fauna management measures. Any required ecological surveys, biological assessments or surveys are required to be carried out by suitably qualified and experienced ecologists.

Employees are required to report environmental incidents or near misses about flora and fauna management.

8.2. Audit and review

The audit outline in Section 6.2 of the OEMP will include auditing of flora and fauna management during operation of the NGSF. All audits will be carried out by suitably qualified personnel.

A Flora and Fauna Management Plan Compliance Audit is carried out annually by the Environment Manager (or delegate) to review the implementation and effectiveness of control measures on managing the site.

8.3. Reporting

Reporting requirements for the NGSF are included in Section 5.4 of the OEMP.

The NGSF audit reports will include a component on flora and fauna management. Where required, regulatory authorities will be notified in relation to any relevant concerns regarding flora and fauna management, including pest mitigation measures on site.

Required approvals and

8.4. Review

The OEMP and its relevant sub plans, including the FFMP, are regularly reviewed by AGL management to ensure the documents suitability and effectiveness. This sub plan and its details will be reviewed, and if necessary amended:

- Following any major incident
- Upon receipt of new approval conditions, approvals, consents or licences
- Upon changes in legislation and definitions of flora and fauna
- When directed to do so by the Secretary of the Department of Planning and Environment
- Every two years

The review is undertaken by the Environment Manager and includes:

- The findings of audits
- Any major non-conformances or incidents
- Issues raised by government authorities (if any)

Reviews are documented and approved by management, along with any subsequent modifications.

8.5. Incident management

Environmental incidents will be managed in accordance with Section 6.3 of the OEMP.

If a protected species is injured or killed because of AGL activities or injured/sick protected species or abandoned juveniles are located within the site boundary, it must be reported to the Environment Manager. If required by legislation, the Environment Manager must also notify the OEH.

9. References

Coffey (2011a) *Environmental Assessment – Newcastle Gas Storage Facility Project*. Coffey Natural Systems. May 2011.

Coffey (2011b) *Preferred Project and Response to Submissions Report – Newcastle Gas Storage Facility Project.* Coffey Natural Systems. September 2011.

Appendix B6

Aboriginal Heritage Management Measures

Aboriginal heritage management measures

Table 1: Aboriginal heritage management measures

ID	Management Measure
Heritage and Archaeology	Site inductions will include an Aboriginal heritage component, including that it is an offence to move, disturb or destroy Aboriginal objects under the *National Parks & Wildlife Act 1974* (as amended). Cultural heritage knowledge or other information that is of sacred or secret in nature is not to be included in any AGL site inductions, reports, registers or databases.
Protection of Aboriginal Objects	All activities which have the potential to affect cultural heritage will require a permit or authorisation from the relevant regulatory authority (ies), prior to disturbing a cultural heritage site, unless an exemption or authorisation has been granted. All conditions in the permit or authorisation will be adhered to, and any variation (s) of the permit or authorisation is to be approved by the regulatory authority. Control measures for Aboriginal heritage will be identified through the Job Safety and Environmental Analysis (JSEA) process, and NGSF excavation permit, prior to any excavations or disturbance. In the event of an unexpected finds, the unexpected finds protocol would be implemented, as follows: Step 1 – Stop work immediately, protect the item from further disturbance (i.e. establish and demarcate a no-go zone) and advise the Environment Business Partner or delegate, then await further instructions on how to proceed. Step 2 – Environment Manager (or delegate) to engage the services of a suitably qualified and experienced archaeologist (and where required an Aboriginal Site Officer). Step 3 – Archaeologist to complete a preliminary assessment and recording of the unexpected item. If not a heritage item, proceed to Step 8. If a heritage item proceed to Step 4. Step 4 – Archaeologist to formulate an archaeological or heritage management plan. Aboriginal heritage management strategies are to be developed in consultation with Registered Aboriginal Parties (RAPs) for the NGSF. Step 5 – AGL to formally notify the NSW Office of Heritage (OEH) and other relevant agencies Step 6 – Implement archaeological or heritage management plan. Step 7 – Review OEMP Step 8 – Resume work.
Skeletal remains	All works must cease if suspected skeletal material is uncovered during the course of site works, and the OEH, the NSW Police and the NSW Coroner's office must be contacted immediately.

Appendix B7

Land Management Plan

Land Management Plan

Newcastle Gas Storage Facility
August 2025

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Document Controls

Approval and authorisation

Title	Land Management Plan – Newcastle Gas Storage Facility
Accepted on behalf of AGL by:	Aaron Clifton
Signed:	
Dated:	

Document status

Document status	Date	Prepared by	Reviewed by
Rev 0	27/04/2018	WSP	
Rev 1	08/08/2023	John Moraitis	AGL
Rev 2	08/08/2025	John Moraitis	AGL

Table of Contents

Tables

1. Introduction

1.1 Scope

This document is the AGL Energy Limited (AGL) Land Management Plan (LMP) for the Newcastle Gas Storage Facility (NGSF). The LMP describes AGL's system for managing the following aspects during operation of the NGSF:

- Soils
- Contaminated land
- Landscape and Rehabilitation.

AGL has developed the NGSF, located at Tomago and Hexham, New South Wales, to meet peak gas demands and provide additional security of gas supply during supply disruption events.

The NGSF includes the following components:

- The gas plant site.
- An access road and utility corridor.
- A gas pipeline access corridor.
- A high-pressure gas pipeline to Jemena trunk main, the Tomago – Hexham pipeline; and
- A low-pressure pipeline to an industrial user south of the site.

1.2 Background

Project approval for the NGSF was granted on 10 May 2012 (File No. 11/08788) and approvals for five modifications of the project were subsequently granted on 5 February 2013, 31 January 2014, 27 February 2018, 8 June 2023, and 6 September 2023 comprising:

- Modification 1 (10_0133 MOD1) – authorising the washing out of concrete mixers during construction and for the waste water to be removed off site by pump-out trucks
- Modification 2 (10_0133 MOD2) – authorising construction and operation of a 4.5km low pressure natural gas pipeline between the gas storage facility and an industrial user to the south of the site
- Modification 3 (10_0133 MOD3) – authorising additional infrastructure to allow processing of the tail gas produced as part of the operation of the NGSF, including construction and operation of a maintenance flare and minor changes to existing infrastructure.
- Modification 4 (10_0133 MOD4) – authorising the cessation of proactive annual noise monitoring in the absence of noise complaints being received by NGSF or the NSW EPA.
- Modification 5 (10_0133 MOD5) – authorising a reduction in the frequency of air quality monitoring at Heaters H101, H501A, H501B and H501C, from annually to once every five years.

Further information is provided in Appendix A1 of the Operation Environmental Management Plan (OEMP).

A land standard self-assessment was undertaken by AGL in November 2016 to determine compliance with the AGL Health, Safety and Environmental Management System (HSEMS) Standards. This LMP has been prepared to address the recommendations from the 2016 land standard self-assessment.

1.3 Objectives

The objectives of the LMP are to:

- Describe the system for management of soils, land contamination, and landscape and rehabilitation during operation of the NGSF.
- Identify relevant statutory requirements and other obligations that AGL is required to meet with regard to the management of land during operation of the NGSF.
- Identify land management measures to be implemented during operation of the NGSF.
- Identify the methodology to be adopted for review and improvement (where necessary) of land management performance during operation of the NGSF.
- Identify procedures for periodic review and update of the LMP.
- Describe the management, monitoring and compliance, audit and review and reporting processes for:
  - Soil management to minimise soil disturbance and promote and maintain soil stability throughout the life of the project
  - Contaminated land, to appropriately manage any future potential contamination
  - Landscape and rehabilitation management to avoid unauthorised land disturbance and minimise the impacts to the visual characteristics of the project.

1.4 Structure of the LMP

The LMP has been structured to meet the objectives and requirements made for the NGSF project (refer to Section 2.1). It includes sections on soils, contaminated land and remediation, and landscape and rehabilitation.

The LMP is divided into the following sections:

- Section 1: Provides an introduction to the LMP
- Section 2: Identifies statutory and other requirements that must be met by AGL regarding land management during operation of the NGSF
- Section 3: Identifies and provides background information on aspects of land management and the approaches to be adopted during operation of the NGSF
- Section 4: Provides details of how the LMP will be implemented, including responsibilities, training and communication.
- Section 5: Identifies monitoring, audit, review and reporting requirements and provides details relating to incident management and management review of the LMP.
- Section 6: Provides a list of references for the LMP.

2. Statutory and Other Requirements

2.1 New South Wales Legislation

2.1.1 Environmental Planning and Assessment Act 1979

Approval for the NGSF project under Section 75J of the *Environmental Planning and Assessment Act 1979* (*EP&A Act*) was provided by the NSW Department of Planning and Infrastructure on 10 May 2012. Three modifications to this approval under Section 75W of the *EP&A Act* were provided on 5 February 2013, 31 January 2014 and 27 February 2018. Copies of the original approval and modifications are included in Appendix A1 of the OEMP.

The project approval and modifications to the approval were issued subject to several conditions. Modifications following the initial Environmental Assessment for the project did not significantly alter the existing land management considerations on site.

The condition of approval relevant to land management during operation of the NGSF and reference to where each of these conditions has been addressed in the NMP are included in Table 2.1.

Table 2.1: Conditions of Approval

No	Conditions	Reference
C14	Except as may be expressly provided by an Environment Protection Licence for the project, the Proponent shall comply with section 120 of the *Protection of the Environment Operations Act 1997* during operation of the project.	Section 3

A Statement of Commitments was prepared under Section 75F of the EP&A Act and included in the Preferred Project and Response to Submissions Report (Coffey 2011b). However, none of these conditions of approval were directly relevant to land management during operation of the NGSF.

2.1.2 Protection of the Environment Operations Act 1997

Parts 5.2 and 5.6 of the *Protection of the Environment Operations Act 1997* (POEO Act) states that it is an offence for a person to:

- wilfully or negligently cause any substance to leak, spill or otherwise escape (whether or not from a container) in a manner that harms or is likely to harm the environment
- pollute land.

Section 120 of the POEO Act states that it is an offence to pollute waters.

Pollution incidents causing or threatening material harm are to be reported to the NSW Environment Protection Authority (EPA).

Environment Protection Licence

An Environment Protection Licence (EPL) 20130 has been issued by the EPA for the NGSF project under the POEO Act (refer Appendix A8 of the OEMP). The EPL has been prepared for the following scheduled activities:

- Chemical storage (petroleum product storage) – capacity to store between 5,000 and 100,000 kL

- Petroleum and fuel production (petroleum products and fuel production) – capacity to produce up to 70,000 tonnes of petroleum products or fuel per year.

Conditions within the EPL relevant to land management are included in Table 2.2.

Table 2.2: Environment Protection Licence Conditions

Licence Condition	Requirement
O4.1	All above ground tanks containing material that is likely to cause environmental harm must be bunded or have an alternative spill containment system in place.

2.1.3 Contaminated Land Management Act 1997

Under the *Contaminated Land Management Act 1997* (CLM Act), 'contamination of land' means the presence in, on or under the land of a substance at a concentration above the concentration at which the substance is normally present in, on or under (respectively) land in the same locality, being a presence that presents a risk of harm to human health or any other aspect of the environment. Part 3 of the *Contaminated Land Management Act 1997* specifies the regulation of significantly contaminated land and the processes that are to be undertaken if the land is declared to be contaminated by the EPA.

Land contamination must be reported to the EPA under Section 60 of the CLM Act, this is discussed further in section 5.3.2.

2.2 Management Policies

AGL's HSEMS includes AGL's Environment Policy, Environmental Standards, and Environmental Methodologies. The relevant environmental standards include:

- Land Standard *AGL-HSE-STD-009.1*
- Land Standard Methodology *AGL-HSE-SDM-009.1.*

2.3 Other guidelines

The land management approach will be in accordance with the following guidelines:

- ANZECC/NHMRC 1992, *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites.*
- Australian and New Zealand Environment Conservation Council (ANZECC) 2000, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*.
- NSW Office of Environment and Heritage 2004, *Landcom Managing Urban Stormwater Soils and Construction Volume 1.*
- National Environment Protection Council (NEPC) 2013, National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1) (NEPM).
- NSW EPA 2014, *Waste Classification Guidelines – Part 1: Classifying Waste*.

3. Land management

3.1 Potential impacts to soils

The operation and maintenance of the NGSF project does not include any plans for major excavation works. Any new major excavation works will require further assessment and approval, potentially including a construction environmental management plan (CEMP).

Main access roads within the NGSF are sealed, with parking areas surfaced with gravel.

The potential impacts to local soil resources during operation of the NGSF include soil erosion and sedimentation due to:

- Vehicle movements in undesignated areas
- Erosion from major rainfall events and flooding
- Any potential work associated with the maintenance and/or repair of access tracks and other areas of the NGSF

There is a low risk for encountering acid sulfate soils (ASS) onsite, however acid sulfate soils will be considered when assessing any new excavation works.

3.2 Soil management

To reduce potential impacts to soils, the following strategies would be implemented:

- Vehicle movements will be restricted to designated roads and parking areas as far as practical.
- Any areas where erosion has occurred will be rehabilitated as per Section 3.3 of this LMP
- For any work potentially resulting in soil disturbance:
  - A site map clearly showing the approved land disturbance area, no go areas and the current land conditions will be prepared on a case by case basis subject to the scope of the excavation.
  - Control measures for soil management will be identified depending on the level of disturbance through the Job Safety and Environmental Analysis (JSEA) process, NGSF excavation permit and as required under the *Landcom Managing Urban Stormwater Soils and Construction Volume 1, 2004.*
  - Further consideration of ASS would be undertaken prior to the works, with an Acid Sulfate Management Plan prepared where a potential risk is identified.
  - The NGSF Risk Register would be checked prior to the works to identify any potential risks, including land contamination (discussed in section 3.2 below).
  - Excavated soil will be managed in accordance with the waste management plan for the NGSF(Appendix B3 of the OEMP).

3.3 Potential contamination sources

There is no land that is currently identified as potentially contaminated within the NGSF.

Operation of the NGSF project involves the storage of up to 3,000L of diesel fuel, lubricants and other chemicals, such as amine which may result in future potential contaminated land if it leaks onto surrounding land.

The following hazardous materials are also approved for storage at the NGSF include:

- 30,000 tonnes (63,000 m^3) of liquid natural gas (flammable gas, Dangerous Goods Class 2.1)
- Less than 12 tonnes of propane or butane
- Less than 10 tonnes of ethylene
- Other flammable gasses including methane, butane, i-pentane and nitrogen
- Approximately 2m^3 of odourising agent.

3.4 Contaminated land management

As discussed above, there are no areas known to be contaminated within the NGSF. To reduce the potential for future contamination, the following strategies will be implemented:

- No discharges of contaminated material will be permitted.
- Limit on-site storage of fuel, lubricants and any chemicals used to a minimum, and ensure these items are correctly stored in bunded containment areas.
- Onsite containment of hazardous chemicals/wastes in bunds, in accordance with EPL licence condition O4.1, to prevent leakage. These bunds will be inspected and maintained regularly to ensure they remain suitable for their purpose.
- Limiting access of people and animals to the NGSF through implementing appropriate security measures, including fencing, to prevent any unauthorized activities that may result in contamination
- Awareness of hazards and risks, including through:
    - Verifying land contamination and remediation status, prior to the commencement of land disturbance works
    - Regularly updating the NGSF Risk Register
    - Managing chemical information via the 'Chemwatch' system, which includes a Material Safety Data Sheet (MSDS) for each registered chemical on site.

If land contamination is identified within the NGSF, control measures would be developed and implemented to manage land remediation works, and to ensure the health and safety of personnel involved in work on contaminated land.

Remediation

Land contamination requiring remediation is defined under section 60 of the CLM Act, and must be reported to the NSW EPA, discussed further in section 5.3.2

If any contaminated land areas are identified on the NGSF Risk Register or from site investigations, the need for remediation will need to be considered. Contaminated areas would be remediated as soon as practical.

The preferred remediation strategy will be selected in accordance with the National Environment Protection (Assessment of Site Contamination) Measure, which states that the preferred hierarchy of options is (NEPM, 2013):

i. on-site treatment of the soil, so that the contaminant is either destroyed or the associated hazard is reduced to an acceptable level
ii. off-site treatment of excavated soil, so that the contaminant is either destroyed or the associated hazard is reduced to an acceptable level, after which it is returned to the site.

If the two above options are not possible to be implemented, then other options for consideration should include:

i. removal of contaminated soil to an approved site or facility, followed by (where necessary) replacement with clean fill
ii. isolation of the contamination on-site in an appropriately designed and managed containment facility
iii. a less sensitive land use to minimise the need for remedial works which may include partial remediation
iv. Leaving contaminated material in-situ providing there is no immediate danger to the environment or community and the site has appropriate management controls in place.

Selection of the remediation option would consider the environmental, social and economic aspects of each option.

A remediation action plan, and validation report would be prepared for any remediation works, discussed further in section 5.3.1.

3.5 Landscape and rehabilitation management

No significant land disturbance requiring rehabilitation has occurred during operation and maintenance of the NGSF project. However, as identified in section 3.1, there are several activities that could result in minor land disturbance and impact on the visual characteristics of the project area. Where possible, these disturbed areas should be revegetated promptly after the disturbance, except if the areas are required for permanent use, access to the easement or NGSF or for bushfire protection.

Any rehabilitation works will aim to return disturbed lands to a safe, stable and non-polluting condition, and the agreed land uses. All rehabilitation works will be undertaken with maximum regard to environmental protection and rehabilitation, vegetation, subsoil and topsoil management, weed control, erosion and sedimentation management and re-vegetation in accordance with the requirements of this Sub Plan.

A Rehabilitation Plan must be developed, implemented and documented, for land area requiring rehabilitation. The Rehabilitation Plan must include:

- Objectives.
- Planning, and associated rehabilitation works.
- Evaluation, including development of appropriate rehabilitation criteria and indicators.
- Monitoring.

The following procedure will be generally followed during revegetation:

1. Reinstate topsoil
2. Respread cleared vegetation in the project area to facilitate natural regeneration of native vegetation, where appropriate, and to a standard consistent with the surrounding area.
3. Undertake weed control and prevention of pathogens and pest species where necessary to promote the rehabilitation of revegetated areas
4. Fence rehabilitated areas where required until successful revegetation is evident.
5. Monitor and maintain vegetation cover to ensure it is consistent with the surrounding environment.

Further rehabilitation requirements for any new works would be identified through an environmental impact assessment, including managing risks of potential human health and/or environmental harm for any long-term land rehabilitation.

4. Implementation and Operation

4.1 Responsibilities

Table 4.1: Land Management Roles and responsibilities

Roles	Responsibilities
Operations Manager	Overall responsibility for implementation of the LMP. Responsible for the reporting requirements contained in the LMP. Responsible for ensuring that

Roles	Responsibilities
	employees are aware of their obligations under the LMP and for providing resources for environmental training.
Environment Manager	Responsible for development, implementation, monitoring and reporting in compliance with the LMP. Responsible for informing staff of any issues relating to land and for implementing the management measures included in the LMP. Responsible for notifying the EPA in the event of any pollution event.
Community Relations Manager	Responsible for recording and resolving complaints received in relation to land management.
Operations Supervisors	Directly responsible for understanding the requirements of the LMP and for overseeing and fulfilment of commitments contained in the LMP.
All Employees and Contractors	Responsible for understanding the LMP and for ensuring that their works are in compliance with the LMP.

4.2 Training and Competence

The site induction will include a land management component. Examples of land management topics that may be covered during the project induction include:

- Hazardous goods and materials storage and segregation
- Land management reporting
-
- Prevention of soil disturbance during inspections and maintenance activities
- Rehabilitation management measures, control procedures for weeds, designated work areas and access routes

- Responsibilities of personnel with regard to land management.

Further detail regarding training and competence is included in Section 5.2 of the OEMP.

4.2.1 Contaminated land assessment and remediation

If assessment or remediation of contaminated land is required, it will be carried out by a suitably qualified and experienced external consultant, in accordance with the requirements in Schedule B(9) of the National Environment Protection (Assessment of Site Contamination) Measure 1999.

A National Association of Testing Authorities (NATA) or equivalent accredited laboratory will be used for the chemical analysis of any samples.

4.2.2 Land rehabilitation

Any land rehabilitation required would be carried out by suitably qualified and experienced professionals.

4.3 Internal and External Communication

Communication in regard to land management will be undertaken in accordance with Section 5.3 of the OEMP.

4.4 Document Control

Document control for the LMP will be undertaken in accordance with Section 5.5 of the OEMP.

5. Monitoring and Compliance

5.1 Site inspections

Regular site inspections will be undertaken during operation of the NGSF, including inspecting and monitoring:

- Chemical storage areas
- Hazardous material containment facilities to ensure their integrity and compliance with the Hazardous Chemicals and Substances Standard (AGL-HSE-STD-007.10)
- Soil stability, and any erosion and sedimentation control structures to ensure their adequacy, particularly following rainfall events, maintenance works and rehabilitation
- Visual and/or olfactory observations of potential contamination
- Rehabilitated areas to evaluate the success of rehabilitation procedures, controls, and identify where supplementary revegetation may be required
- Any new excavations to ensure that they are in accordance with the excavation standard methodology (AGL-HSE-SDM-007.8.1)
- Plant and equipment to ensure compliance with the Plant and Equipment Management Standard (AGL-HSW-STD-007.6).

Further inspections will be undertaken if specific concerns are raised with regards to land management.

The NGSF Risk Register (refer to section 4.2 of the OEMP) identifies the potential for land contamination, and the existing and proposed controls. This register should be regularly updated and monitored to document and check changes to contaminated land assessments for known and suspected contaminated land areas, including any non-conformities with remediation of land contamination.

The potential impacts on land from land disturbance operations will be identified from filling out an Environmental Matters Checklist form. The land contamination and remediation status will be confirmed via site inspection prior to the commencement of any land disturbance works.

5.2 Contaminated land monitoring

A contamination is identified within the NGSF, a Compliance Checklist would be developed to monitor and review the effectiveness of the controls, and ensure remediation works are carried out in accordance with the Remediation Action Plan (discussed in section 5.4.2).

5.3 Audit and Review

The audit process outlined in Section 6.1 of the OEMP will include auditing of land management, including contamination, land rehabilitation and remediation and soil management during operation of the NGSF. A Land Management Compliance Audit is carried out bi-annually to review the effectiveness of control measures on managing the site.

5.4 Reporting

5.4.1 Formal Reporting

Formal reporting requirements for the Project are included in Section 5.4 of the OEMP.

The following reports will include a land management component:

- Internal land management audit report.
- External audit report (if required).

The decommissioning of any sediment and erosion control works will be documented in accordance with the 'Managing Urban Stormwater: Soils and Construction' (Landcom, 2004).

5.4.2 Contaminated land and remediation

Notification of contaminated land

Under section 60 of the CLM Act, AGL is required to notify the EPA as soon as practical after they become aware of contamination, in accordance with the incident management procedures (see Section 5.6), which:

- Is equal to or above a level of contamination set out in Schedule B1 of the National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPC 2013) or other approved guideline value with respect to a current or approved use of the land, and people have been, or foreseeably will be, exposed to the contaminant
- The contamination meets a criterion prescribed by the Contaminated Land Management Regulation 2013
- The contaminant or a by-product has entered, or will foreseeably enter, neighbouring land, the atmosphere, groundwater or surface water, and is above, or will foreseeably be above, a level of contamination set out in National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPC 2013) or other approved guidelines and will foreseeably continue to remain equal to or above that level.

Remediation

Prior to carrying out any remediation, a remediation action plan will be prepared that would include:

- Identification of the contaminated land areas requiring remediation
- Remediation goals to ensure that, on completion of the remediation and validation, the land is suitable for its proposed use and poses no unacceptable risk to human health and the environment
- Remediation options to adequately deal with the nature and extent of land contamination
- Processes and procedures to reduce any risks to acceptable levels
- Environmental safeguards to complete the remediation works in an environmentally acceptable manner
- A compliance checklist to monitor and verify that remediation works are carried out in accordance with the remediation action plan.

A validation report must be prepared by a suitably qualified and experienced professional to verify any remediation works. The validation report must include details on the following:

- Remediation works (including contaminated soil transport and disposal).
- Assessment of post-remediation against the remediation goals, as set in the Remediation Action Plan.
- How regulatory authority(ies) approval, licence or permit conditions have been met (e.g. may require documentary evidence).

5.4.3 Records

The following records relating to land management are to be maintained for a period of four years:

- Laboratory analysis results.
- Records of site inspections, including any spills or other incidents.
- Records of potential or identified contaminated land in a contaminated land register, which includes information held by authorities on previous activities.
- Records of rehabilitation works.
- Notices or orders issued by a regulatory authority.

5.5 Management Review

The OEMP and its relevant sub plans, including the LMP, are regularly reviewed by AGL management to ensure the documents suitability and effectiveness. This sub plan and its details will be reviewed, and if necessary amended:

- Following any major incident.
- Upon receipt of new approval conditions, approvals, consents or licences.
- Upon changes in relevant legislation, guidelines or protocols regarding land management.
- When directed to do so by the Secretary of the Department of Planning and Environment
- At least every:
  - Two years for the soil management procedures
  - two years for the contaminated land management procedures, including reviewing the definition of land contamination, acid sulfate soils and any changes to regulatory requirements or guidelines
  - two years for the landscape and rehabilitation procedures to reflect changes that directly impact its implementation or when new knowledge on rehabilitation is likely to further enhance land management performance

The review is undertaken by the Environment Manager and includes:

- The findings of audits.
- Any major non-conformances or incidents.
- Complying with any notices or orders issued by government authorities (if any).

Reviews are documented and approved by management, along with any subsequent modifications.

5.6 Incident Management

Employees will be encouraged to report environmental incidents or near misses in regard to environmental matters including contamination, land rehabilitation and remediation and soil management. Environmental incidents will be managed in accordance with Section 6.2 of the OEMP.

In addition, any suspected or known contaminated land will be reported to the EPA in accordance with AGL's Pollution Incident Response Management Plan (PIRMP), Any loss of containment incidents will be cleaned up in accordance with the EMP and PIRMP.

6. References

- ANZECC/NHMRC 1992, Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites.
- Australian and New Zealand Environment Conservation Council (ANZECC) 2000, Australian and New Zealand Guidelines for Fresh and Marine Water Quality.
- *Landcom Managing Urban Stormwater Soils and Construction Volume 1, 2004*
- National Environment Protection Council (NEPC) 2013, National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1) (NEPM).
- NSW EPA 2014, Waste Classification Guidelines – Part 1: Classifying Waste.
- NSW EPA 2015, *Environment Protection Licence 20130*
- NSW Government 2018, *Project Approval Section 75J of the Environmental Planning and Assessment Act 1979*, (DA 10_0133).