

Camden Gas Project
Spring Farm and Menangle Park

Environmental Assessment – Spring Farm and Menangle Park Gas Gathering System Modification

Action statement

Date	Name	Position	Action required <i>(Review/Endorse/Approve)</i>	Due date

Prepared by Duncan Peake/Adam Lollback
Title Environmental Assessment – Spring Farm and Menangle Park Gas Gathering Systems Modifications
Business Unit Upstream Gas
Location AGL, North Sydney
Version date A
Status Final
File/Doc no.



DOCUMENT CONTROL SHEET

Contact for enquiries and proposed changes

If you have any questions regarding this document or if you have a suggestion for improvements, please contact:

Project Manager **Adam Lollback**

Phone **(02) 9921 2017**

Version history

Version no.	Date	Changed by	Nature of amendment

Contents

1.	Introduction.....	5
1.1	Background	5
1.2	Approvals Framework.....	5
1.3	Justification for Modification	7
2.	Project Description.....	8
2.1	Overview	8
2.2	Proposed Activities for the Modification.....	8
2.3	Proposed Modification	9
3.	Statutory Framework	12
3.1	Local Planning Matters	12
3.2	EP&A Act	14
3.3	Other State Planning Matters	14
3.4	Environment Protection and Biodiversity Conservation Act 1999	16
3.5	Existing Environmental Licences and Approvals.....	16
4.	Consultation	17
5.	Environmental Impact Assessment	18
5.1	Flora and Fauna.....	18
5.2	Aboriginal Heritage	21
5.3	Other Environmental Issues.....	23
6.	Conclusion	26



Figures

Figure 1 –Proposed Gas Gathering Corridor between MP03 and MP05

Appendices

Appendix A – Natural Heritage

Appendix B – Cultural Heritage

1. INTRODUCTION

1.1 Background

The Camden Gas Project (CGP) is a major coal seam methane (CSM) project involving the extraction of CSM gas located within the Southern Coalfield of the Sydney Basin. It is within Petroleum Exploration License 2 (PEL 2) which extends from Newcastle to Wollongong. The CGP currently consists of 123 wells, low pressure gas gathering lines, access roads, the Rosalind Park Gas Plant (RPGP) and a high pressure gas sales pipeline. The Petroleum Production Leases (PPLs) and planning approvals for the CGP have been issued individually from 2002, following initial gas production under Petroleum Assessment Lease 1 (PAL1) issued in November 2000 which became PPL1. Petroleum Exploration Licence (PEL) 2 surrounds the PPL areas, with the ongoing exploration for the future of the project being conducted within the PPLs and PEL 2.

AGL Gas Production (Camden) Pty Limited (AGL) currently operates four PPLs (PPL 1, 2, 4 and 5) in New South Wales (NSW). As the production operator for PPL4, AGL is responsible for the carrying out of the CGP and is the Proponent for the modification.

This Environmental Assessment (EA) has been prepared to assess an application for modification of the Project Approval 06_0291 for Spring Farm and Menangle Park Project Areas.

AGL proposes to construct a gas gathering system between well surface locations MP03 and MP05 within the Menangle Park well field. The location of the proposed gas gathering system is shown in **Figure 1**.

The proposed route of the gas gathering line is outside the approved gas gathering routes described in the original EA and Project Approval for the Spring Farm and Menangle Park Project Areas, approved in 2008.

1.1.1 Existing Project Approval – Spring Farm and Menangle Park Project Areas - 06_0291

The NSW Minister for Planning approved the Project Application in accordance with section 75J of the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act). The conditions of the Project Approval (PA 06_0291, dated 4 September 2008) relate to the Spring Farm and Menangle Park Project Areas.

The existing Project Approval allows for the development of four (4) well surface locations in Spring Farm and 12 well surface locations in Menangle Park as well as the associated infrastructure such as the gas gathering system. The Approval also allows for the construction of the gas gathering system within a designated corridor of 25m either side of the proposed routes outlined in the EA.

1.2 Approvals Framework

Section 75W of the EP&A Act provides for the modification of an approval for a Project granted under Part 3A. Section 75W(2) allows a proponent to request the NSW Minister for Planning's approval to modify an existing Project Approval. If the modification is considered 'consistent' with the existing approval the Minister's approval is not required. However, if the modification is deemed to be 'inconsistent' with the Project Approval then the Minister's approval is required.

AGL consider that the proposed modification for Project Approval (PA 06_0291) is 'inconsistent' with the existing Project Approval, as the proposed routes are outside the designated environmental envelopes. Consequently, the NSW Minister for Planning's approval is required for the modification.

1.3 Proposed Modification

As part of the existing Project Approval (PA 06_0291), the construction and operation of a gas gathering network between MP03 and MP05 was originally proposed to be located on the southern side of the Southern Railway Line. Following Project Approval in September 2008, detailed engineering design of the gas gathering system was undertaken and it identified a number of engineering constraints within the existing approved envelope between MP03 and MP05. As a result of this design work, a more desirable alternative gas gathering route has been identified.

The proposed modification to the existing Project Approval (PA 06_291) is for the construction and operation of a gas gathering network via pipes between MP03 and MP05 located on the northern side of the Southern Railway Line, adjacent to Mount Annan Botanical Gardens. This is shown in **Figure 2**.

Whilst the construction and operation of the gas gathering system between MP03 and MP05 is part of the approved Project and the well surface locations have each been surveyed, the proposed route along the northern side of the Southern Railway Line is located outside the approved 50m corridor outlined in the original EA (HLA ENSR, 2007). As a result, AGL considers that the proposed modification (as described in Section 2) would alter the Project so as to be 'inconsistent' with the existing Project Approval.

Pursuant to section 75W(2) of the EP&A Act, AGL is seeking the NSW Minister for Planning's approval for the modification of the Approval to permit the proposed modification. Specifically, to Schedule 2 Condition 2 to incorporate this modification application and supporting report.

- Schedule 2, Condition 2 states:
 - *'The Proponent shall carry out the Project generally in accordance with the:*
 - (a) *The Project Application 06_0291;*
 - (b) *EA titled "Environmental Assessment – Expansion of Stage 2 Camden Gas Project Stage 2 Concept Area Spring Farm Project Area Menangle Park Project Area", Volume 1 and 2 prepared by ENSR Australia Pty Limited, and dated September 2007;*
 - (c) *Submissions Report prepared by ENSR Australia Pty Limited, and dated December 2007;*
 - (d) *Statement of Commitments; and*
 - (e) *Conditions of this approval.'*

The amendment sought is:

- (f) *EA titled 'Environmental Assessment – Spring Farm and Menangle Park Gas Gathering System Modifications', prepared by AGL Gas Production (Camden) Pty Ltd, dated November 2010.*



1.4 Justification for Modification

The proposed modification involves the construction of a gas gathering line that provides a link between MP03 and MP05. The gas gathering system link between well surface locations and well fields will enable more efficient transportation and distribution of gas to the RPGP.

Currently, the RPGP remains the only gas treatment facility within the CGP where gas extracted from the existing wells is transported to and treated for subsequent distribution within the high pressure sales pipeline. There are sections within the CGP where the gas gathering system limits available capacity to accommodate future increases in the transportation of CSM gas to RPGP. The proposed modification would increase the capacity of some of the sections where current capacity is limited.

The construction works generally comprise the installation of pipes within a designated environmental envelope which is consistent with the remainder of the gas gathering system for the CGP and connections between well surface locations via either trenching or underboring. The installation of a larger pipe within the gas gathering system is considered to be more efficient than constructing smaller pipes as this would require greater environmental disturbance and greater maintenance frequency than the construction of a single larger pipe.

The proposed modification to the gas gathering systems is required to improve the efficiency of transportation of extracted CSM gas from wells within the CGP, which would be in the public interest.

The proposed location of the modification has been determined following detailed engineering studies subsequent to Project Approval. Locational principles were applied to the detailed design phase. These locational principles included utilising previously or currently disturbed land areas and existing access roads wherever possible. As a result, the proposed modification has been placed in the vicinity of an easement, which contains an Integral Energy overhead power line, and an existing access track. The modification would have minimal levels of disturbance.

It is considered that the proposed modification would be in the public interest and that the site selected is suitable.

2. PROJECT DESCRIPTION

2.1 Overview

This EA outlines the proposed modification to the existing Project Approval (PA 06_0291) for the Spring Farm and Menangle Park Project Areas. The modification is for a proposed gas gathering system between MP03 and MP05 located on the northern side of the Southern Railway Line.

The activities associated with the modification are described in the following section. It is expected that the construction activities for the gas gathering system of the modification would be similar.

2.2 Proposed Activities for the Modification

As described in the original EA (HLA ENSR, 2007) submitted with the Project Approval (PA 06_0291) for the Spring Farm and Menangle Park Project Areas, the gas gathering system route will be designed, constructed and operated in accordance with the requirements of *Australian Standard AS 4645.3 - 2008 Installation and Maintenance of Plastic Pipe Systems for Gas*. The gas gathering system will be buried to a minimum depth of 750mm and up to 1,200mm in some areas, including unsealed and sealed road crossings, and creek and drainage line crossings. The principal activities involved in the construction of the gas gathering system are as follows:

- Survey of pipeline route;
- Clear and grade 'Right of Way' pipeline route including stripping of any topsoil;
- Stringing of pipe;
- Welding of pipe joints;
- Trenching and underboring where necessary;
- Lowering-in of pipe strings (including trench preparation and padding);
- Installation of tracer lines (for pipe tracing) as polyethylene (PE) pipe is non conductive;
- Installation of gas marker tape above PE gas pipe;
- Backfilling and compaction of trench;
- Pressure testing of pipeline;
- Rehabilitation of ground along pipeline route;
- Installation of gas line signposts to mark and identify pipeline location; and
- Register gas gathering line on 'Dial before you dig'.

All work would be conducted in accordance with AGL's Environmental Management System (EMS) for the CGP. An ancillary water transfer system (i.e. water pipes), if required, would be co-located in the trenches for the gas gathering system and installed simultaneously.

The gas gathering route would be inspected annually by a specialist third party gas detection inspection service that performs a leakage survey of the below ground pipelines. The survey is conducted at 10 parts per million (ppm) sensitivity for gases and the 10ppm sensitivity reflects the measurement capability of the equipment used to check for leaks. It does not arise from an Australian Standard or any requirement. It represents AGL best practice which has been adopted from the practices used by high pressure gas pipeliners to inspect for gas leaks once a year (AGL only operates low pressure gas gathering lines at the CGP and consequently, this is a very high standard).

At the end of the network's operational life, the preferred method of closure and rehabilitation for the gas gathering system would be to purge with air or water to remove remaining gas, seal and then leave in position to prevent any further disturbance. This method would be subject to consultation with the affected landowners, such as Mount Annan Botanical Gardens. Should removal of the gas gathering system be required, the excavated trench would be backfilled and rehabilitated, including contouring and revegetating.

The above described activities are also applicable to 'twinning' of the gas gathering system. Twinning is a process whereby similar gas gathering pipes are laid adjacent to the existing gas gathering pipes to allow for additional gas distribution capacity with minimal additional ground disturbance. This modification also includes the activities of twinning the proposed routes .

2.2.1 Construction Timeframes

The proposed construction activities for the modification are anticipated to be completed within a maximum of five (5) weeks.

2.3 Proposed Modification between MP03 and MP05

2.3.1 Site Description

The proposed modification involves the construction and operation of a gas gathering system between MP03 and MP05 (see **Figure 1**). As shown in **Figure 1**, the proposed gas gathering system has an environmental envelope of 25m either side of the designated route.

The proposed route of the gas gathering system is located on land north of the Southern Railway Line and owned by Mount Annan Botanical Gardens. A transmission line traverses the Mount Annan Botanical Gardens and there is an existing unsealed access track used by maintenance vehicles associated with the transmission line. An existing fenced easement owned by Railcorp is located adjacent to the Southern Railway Line. The existing easement is located between the Southern Railway Line and the maintenance access track and currently contains a newly constructed overhead power line owned by Integral Energy. As part of the construction programme for this overhead power line, Integral Energy has some clearing of vegetation to complete as part of the provision of adequate clearance zones within the easement.

It is proposed that the gas gathering line be located within this existing fenced easement, where possible, and utilise the areas that have been previously cleared or will be cleared as part of the overhead power line development by Integral Energy.

The Southern Railway Line, F5 and the Upper Canal (owned by Sydney Catchment Authority) are key items of infrastructure along the proposed gas gathering system route. It is proposed that the railway line, the F5 and the Upper Canal be underbored to enable the gas gathering system to connect MP03 and MP05. The details of these crossings will be determined during the detailed engineering and design phase of the project in consultation with the relevant authorities.

MP05 is a well surface location that has already been constructed as per Project Approval (PA 06_0291). It is located on a small parcel of land, triangular in shape, and bounded by railway lines on each side. The vegetation on the site is highly degraded as it has been cleared, levelled and filled. Very little vegetation exists and, that which does, comprises weed species such as African Olive (HLA ENSR, 2007).

MP03 is located on the eastern side of the F5 and north of the railway line. Much of the site has been previously cleared and the remnant vegetation is disrupted by the presence of an existing access road and the underground high pressure gas pipeline and its associated right of way. The site contains some scattered Acacia species although, African Olive dominates the shrub layer of the site.

There are a number of residences in the vicinity of MP03, MP05 and the proposed gas gathering system corridor, with the nearest being approximately 200m from MP03. The proposed gas gathering system route does not encroach upon residences assessed in the previous EA.

2.3.2 Environmental Effects

The expected area of disturbance for the proposed gas gathering system would be approximately five (5) metres wide along the proposed route (within the designated corridor) and up to a depth of 1,200mm (dependent upon localised conditions).

The construction and operation of the gas gathering network between MP03 and MP05 would have the following primary environmental effects:

- Stripping of topsoil and grading along the gas gathering route could impact upon Aboriginal heritage;
- Stripping of topsoil and grading along the gas gathering route could impact upon soil and weathered materials could cause erosion; and
- Clearing of existing trees along the route could impact upon the ecology of the area.

The environmental effects of the proposed modification are discussed in **Section 5** of this report.



2.4 Employment and Public Benefit

The construction of the proposed gas gathering line between MP03 and MP05 will contribute to the development of the CGP. As stated in the Project Approval (PA 06_0291), the development of Spring Farm and Menangle Park Project Areas is expected to generate 35 jobs during construction and three (3) jobs during operation.

The proposed modification would also allow for the efficient distribution of gas from well surface locations from the northern sections of the CGP (such as Menangle Park Project Area and the future Camden North well field). The gas would be transported to the RGP for treatment and distribution via the high pressure sales pipeline.

The successful distribution of the gas produced from the wells within the CGP will enable the supply of gas to the wider NSW market (CGP currently supplies up to 6% of NSW gas).

3. STATUTORY FRAMEWORK

3.1 Local Planning Matters

The proposed modification will be undertaken on land within the Campbelltown Local Government Area (LGA). Environmental planning instruments relevant to the proposed modification are:

- *Campbelltown (Urban Area) Local Environmental Plan 2002;*
- *Interim Development Order No.15 – City of Campbelltown;* and
- *Campbelltown Local Environmental Plan – District 8 (Central Hills Land).*

The relevant zoning for the land associated with the proposed modification is shown in the table below.

Table 1: Local Environmental Planning Instruments and Zoning

Modification	Component	Environmental Planning Instrument	Zoning
MP03 to MP05	MP03	Campbelltown (Urban Area) LEP 2002	10(a) Regional Comprehensive Centre
	MP05	Interim Development Order No.15 – City of Campbelltown	1 Non-Urban (40ha)
	Gas Gathering System	Campbelltown (Urban Area) LEP 2002	10(a) Regional Comprehensive Centre
		Interim Development Order No.15 – City of Campbelltown	1 Non-Urban (40ha)
		Campbelltown Local Environmental Plan – District 8 (Central Hills Land)	5(g) Special Uses (Botanical Gardens)

3.1.1 Definition of the Development Interim Development Order No.15 – City of Campbelltown

As shown in **Table 1**, Interim Development Order No.15 – City of Campbelltown (IDO 15) applies to MP05 and the connection to the proposed gas gathering system from MP03.

Clause 3 of the IDO 15 adopts the *Environmental Planning and Assessment (Model Provisions) 1980* (Model Provisions) for the purposes of the order. Under the Model Provisions, the proposed modification fits into the definition of a ‘public utility undertaking’, that is:

‘any of the following undertakings carried on or permitted or suffered to be carried on by or by authority of any Government Department or under the authority of or in pursuance of any Commonwealth or State Act:

(a) railway, road transport, water transport, air transport, wharf or river undertakings,

(b) undertakings for the supply of water, hydraulic power, electricity or gas or the provision of sewerage or drainage services, and a reference to a person carrying on a public utility undertaking shall be construed as including a reference to a council, county council, Government Department, corporation, firm or authority carrying on the undertaking.'

It is also relevant to note that as the proposal is for works to be carried out for the primary purpose of the supply of gas, authorised under the *NSW Petroleum (Onshore) Act 1991* (see 'in pursuance of any ... State Act' in definition of public utility undertaking above). Thus, it satisfies this aspect of the definition.

Additionally, under the Model Provisions a 'utility installation' is defined as:

'a building or work used by a public utility undertaking, but does not include a building designed wholly or principally as administrative or business premises or as a showroom'.

As the proposed development is defined as a 'public utility undertaking' and the definition of a utility installation involves 'a building or work used by a public utility undertaking', it is considered that the proposed development may also be defined as a 'utility installation' under the Model Provisions.

Therefore, the activities for the proposed modification are defined as either a 'public utility undertaking; or as a 'utility installation'. The relevant zones within IDO 15 are 1 – Non Urban (40ha) and 1 – Non Urban (100ha). Within these zones, public utility undertakings and utility installations are permissible with consent as provided by clause 4 of the IDO 15.

Campbelltown (Urban Area) Local Environmental Plan 2002 (LEP 2002)

As demonstrated in the EA (HLA ENSR, 2007), Schedule 3 of LEP 2002 provides a range of definitions including that of a 'public utility undertaking', which is the same as the definition provided in the Model Provisions.

Additionally, under Schedule 3 of LEP 2002 a 'utility installation' is defined as in the Model Provisions.

As the proposed development is defined as a 'public utility undertaking' and the definition of a utility installation involves 'a building or work used by a public utility undertaking', it is therefore considered that the proposed development may also be defined as a 'utility installation' under the provisions of LEP 2002.

The relevant zone to the proposed modification (see **Table 1**) is 10(a) Regional Comprehensive Centre. Within this zone, utility installations are permissible without consent.

Campbelltown Local Environmental Plan – District 8 (Central Hills Lands)

The Central Hills LEP applies to the proposed route of the gas gathering system between MP03 and MP05.

Clause 6 of the Central Hills Lands LEP adopts of the Model Provisions. As previously discussed, it is considered that the proposed modification can be defined as both a 'public utility undertaking' and 'utility installation' as per the definitions provided within the Model Provisions.

The relevant zone for the proposed modification is 5(g) Special Uses (Botanical Gardens). Whilst neither a 'utility installation' or a 'public utility undertaking' are permissible within this zone, clause 35(a) of the Model Provisions states that:

‘Nothing in the local environmental plan shall be construed as restricting or prohibiting or enabling the consent authority to restrict or prohibit:

(a) the carrying out of development of any description specified in Schedule 1,

Schedule 1 of the Model Provisions states:

‘The carrying out by persons carrying on public utility undertakings, being water, sewerage, drainage, electricity or gas undertakings, of any of the following development, being development required for the purpose of their undertakings, that is to say:

(a) development of any description at or below the surface of the ground,...’

Therefore, it is considered that the proposed modification satisfies clause 35(a) of the Model Provisions and the proposed modification within 5(g) Special Uses (Botanical Gardens) is permissible.

3.2 EP&A Act

As previously stated, the proposed modification is subject to section 75W of the EP&A Act. Section 75W of the EP&A Act permits a proponent to modify an Approval. The requirement for an approval from the Minister for Planning is based on the following criteria:

- If the Project as modified would be consistent with the existing Approval then no approval of the modification is required; and
- If the Project as modified would be inconsistent with the existing Approval then approval of the modification is required from the Minister for Planning.

AGL considers that the proposed modification (as set out in **Section 1.3**) would alter the existing Project Approval (06_0291) so as to be ‘inconsistent’. As a result, AGL is seeking the Minister for Planning’s approval for the modification of the Approval to permit the proposed modification, pursuant to section 75W(2) of the EP&A Act.

Section 75W(3) requires that the request for the Minister’s approval is to be lodged with the Department of Planning (DoP). The Director General may notify the proponent of environmental assessment requirements with respect to the proposed modification that the proponent must comply with before the proposed modification will be considered by the Minister. AGL has consulted with DoP with regard to the modification and no formal environmental assessment requirements (EARs) have been issued. However, AGL has completed the assessment in accordance with matters identified by DoP in discussions about the proposed modification.

3.3 Other State Planning Matters

The relevant State planning matters for the proposed modification include:

- *NSW Petroleum (Onshore) Act 1991;*
 - The activities associated with the proposed modification are in accordance with the requirements of the PPL4. Namely, section 41 that states with respect to the rights of production lease holders;

- *'The holder of a production lease has the exclusive right to conduct petroleum mining operations in and on the land included in the lease together with the right to construct and maintain on the land such works, buildings, plant, waterways, roads, pipelines, dams, reservoirs, tanks, pumping stations, tramways, railways, telephone lines, electric powerlines and other structures and equipment as are necessary for the full enjoyment of the lease or to fulfill the lessee's obligations.'*
- *NSW Threatened Species Conservation Act 1997 (TSC Act);*
 - The activities associated with the proposed modification do not impact upon threatened or endangered species listed in the TSC Act (see **Section 5.1**).

As stated in the EA (HLA ENSR, 2007), a number of State Environmental Planning Policies (SEPPs) apply to the Camden Gas Project, and the proposed modification. These SEPPs include:

- *SEPP (Major Development) 2005;*
 - As stated in **Section 1.1.1**, the Minister declared the Spring Farm and Menangle Park Project Application as a 'Major Project' as the proposed development falls within the definition under Group 6 of Schedule 1 of the SEPP. The proposed modification is to amend the current Project Approval under Part 3A of the EP&A Act.
- *SEPP (Sydney Region Growth Centre) 2006; and*
 - As stated in the EA, the Growth Centre SEPP provides land use zones, objectives and land use tables which identify the permissibility of development and matters for consideration by the consent authority. The land use zones identify development for the purposes of 'public utility installations' as being permissible without consent.
- *SEPP (Mining, Petroleum Production and Extractive Industries) 2007 (Mining SEPP).*
 - Clause 7(2) of the Mining SEPP identifies development which can be carried out with consent and includes the following of relevance to the proposed modification:
 - ‘Petroleum production development for any of the following purposes:
 - (a) Petroleum production on land which development for the purposes of agriculture or industry may be carried out (with or without consent),
 - (b) Petroleum production on land that is, immediately before the commencement of this clause, the subject of a production lease under the NSW Petroleum (Onshore) Act 1991,
 - (c) Facilities for the processing or transportation of petroleum on land which petroleum production may be carried out (with or without development consent), but if the petroleum being processed or transported was recovered from that or adjoining land.
 - The proposed modification is considered to be consistent with the objectives of the Mining SEPP.



3.4 Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) contains an assessment and approvals framework for actions that will have, or are likely to have, significant impact on matters of National Environmental Significance (NES).

Under the EPBC Act there are seven matters of NES. The proposed works associated with the modification are not considered to create a significant impact upon these matters of NES under the EPBC Act. As such, the modification has not been referred to the Commonwealth Sustainability, Environment, Water, Population and Communities Minister for assessment under the EPBC Act.

3.5 Existing Environmental Licences and Approvals

3.5.1 Environment Protection Licence

The existing CGP is subject to an Environment Protection Licence (EPL) (Licence No. 12003) for its operations under the *NSW Protection of the Environment Operations Act 1997* (PoEO Act). AGL currently reports annually to the NSW Department of Environment, Climate Change and Water (DECCW). It is proposed that the EPL (L12003) is updated to include the proposed modification should approval be granted by the Minister.

4. CONSULTATION

AGL has consulted with the landowners (Mount Annan Botanical Gardens), Integral Energy, RTA and DoP regarding the proposed modification to the CGP. As the proposed modification is not expected to result in significant environmental impacts and the modification is considered to be substantially the same development, DoP determined that EARs were not required. However, DoP outlined some environmental aspects to be addressed in the modification process. These aspects are listed below:

- Potential ecological impacts along the proposed gas gathering system as a result of clearing;
- Potential archaeological impacts along the proposed gas gathering system as a result of ground disturbance; and
- Potential erosion impacts as a result of the construction of the gas gathering system.

AGL has also consulted with the NSW Department of Investment and Industry (DII), formerly the Department of Primary Industries, regarding the proposed gas gathering line.

Additionally, in accordance with the existing Project Approval (PA 06_0291), AGL will consult with landowners prior to the commencement of construction of the gas gathering system.

5. ENVIRONMENTAL IMPACT ASSESSMENT

5.1 Flora and Fauna

5.1.1 Introduction

The Flora and Fauna assessment focused on the proposed modification area, namely the proposed gas gathering route between MP03 and MP05.

The Flora and Fauna assessment (provided in **Appendix A**) included an assessment of a separate proposed modification (MP11 to MP22 via MP19). The proposed gas gathering route between MP11 and MP22 via MP19 is subject to a separate modification application.

This Flora and Fauna assessment included a site inspection aimed at identifying terrestrial ecological values of significance in accordance with Section 5A of the EP&A Act, TSC Act and the EPBC Act.

5.1.2 Methodology

The survey provided an assessment of the general condition of the corridor and of flora and fauna species and habitats present. Vegetation and fauna habitats were assessed as being in Good, Moderate, Poor or Disturbed condition or an unnatural landscape.

5.1.3 Results

Plant Communities

Towards the west of the study area near the Southern Railway Line, vegetation consisted of mainly exotic species, including *Digitaria sanguinalis*, *Chloris gayana*, *Verbena bonariensis*, *Eragrostis curvula* and *Senecio madagascariensis*. The shrub layer was sparse, and no canopy trees existed. Some regeneration of native vegetation was present heading east towards the Upper Canal. The regeneration is located within a fenced area (i.e. the easement containing the Integral Energy overhead power line), approximately 3m from the access track. The regeneration would most likely represent that of the nearby Cumberland Plain vegetation community.

Vegetation to the west near the Upper Canal was dominated by exotic species and to the east of the Upper Canal, the vegetation is in a Poor to Moderate condition in some sections. *Eucalyptus moluccana* and *Eucalyptus Tereticornis* were the dominant canopy species. The understorey was dominated by *Olea europaea* subsp. *europaea* and ground layer exotic species. Previous vegetation mapping undertaken by DECCW stated that this community corresponds with Shale Plains Woodland, with Shale Hills Woodland in close proximity. Both of these are components of CPW. CPW is listed as an EEC in both the TSC Act and EPBC Act. This is supported by the presence of *Eucalyptus moluccana*, *Eucalyptus Tereticornis* and *Bursaria spinosa*.

Towards the east of the F5, flora consists mainly of exotic grasses such as *Digitaria sanguinalis*, *Eragrostis curvula*, *Lolium perene* and *Bromus mulliformis*.

Significant Plant Communities

Previous mapping undertaken for the study identified a vegetation community as CPW which is a CEEC under both TSC and EPBC Acts. The proposed gas gathering system corridor is located in close proximity to an existing access track and an existing utility easement and no mature trees will be removed. The construction of the gas gathering system may require the removal of a very small amount of juvenile trees, but it is understood that the majority of these juvenile trees are scheduled for removal as part of the completion of the construction of the Integral Energy overhead power line.

An Assessment of Significance under the TSC Act and the EPBC Act was prepared for the area of CPW potentially impacted by the gas gathering system and is attached to this report in **Appendix A** (Biosis Research, 2010). Due to the minimal clearing of native vegetation, and resulting minimal indirect impacts, these assessments found that the proposed gas gathering system is not likely to have a significant impact on CPW.

Nevertheless, it is recommended that the proposed gas gathering line be constructed south of the access track in this location, or to either side of the access track where no native trees will be removed.

Flora

A total of 37 plant species were recorded in the study area, comprising 17 (46%) local native species and 20 (54%) exotic species.

Significant Flora Species

None of the plant species recorded in the survey is listed as Threatened in the TSC Act or EPBC Act. However, a total of 28 threatened plant species have previously been recorded in the region as listed on databases of DECCW and Department of Sustainability, Environment, Water, Population and Communities (DSEWPC). Due to the proximity of the previous records and information gathered during field surveys within the study area, *Pimelea spicata* has potential to occur within the study area. On this basis, an Assessment of Significance under the TSC Act and the EPBC Act was prepared and is attached to this report (Biosis Research, 2010). The assessments concluded that the proposed gas gathering system is unlikely to have a significant impact on this species.

Fauna Habitat

The proposed gas gathering system corridor supports little native groundcover vegetation, with some leaf litter, debris or fallen logs. The exotic shrub layer and small tree layer would provide shelter and foraging habitat for a range of common birds and reptiles. Most of the trees within the impact area were all relatively young, with no tree hollows recorded.

Fauna Habitat Condition

The habitat features (shelter and foraging) within the proposed gas gathering corridor are considered to be in Poor condition and provide limited opportunities for native fauna, particularly rare and threatened species. Only habitat generalist avifauna (those adapted to in urban environments) is likely to occur within the corridor on any regular basis.

Significant Fauna

A total of 55 threatened fauna species have previously been recorded in the region as listed on databases of DECCW and DSEWPC. Of these, there is potential habitat for 20 of these species. Potential habitat for the threatened and migratory species in the proposed gas gathering system corridor exists in a small area of foraging habitat only. These species are likely to only use the resources in the corridor on a temporary basis and are unlikely to be dependent on these resources given the availability of similar habitats in the vicinity of the corridor. However, as a precautionary approach, an Assessment of Significance under the TSC Act has been prepared for the Cumberland Land Snail, as the ecology of the species is not yet fully understood, and may use the limited leaf litter within the Cumberland Plain vegetation community east of the Upper Canal, as habitat. The assessment, provided in **Appendix A**, concluded that the proposed gas gathering system is unlikely to have a significant impact on this species.

5.1.4 Recommendations

Whilst the proposed gas gathering system is unlikely to have a significant impact on threatened species, endangered communities or populations, it is recommended that the following points be taken into consideration to minimise any disturbances on ecological values of the proposed gas gathering system corridor:

- Access to the sites should be via existing access tracks;
- Native trees should be avoided as far as is practicable. Some impacts to small trees of DBH less than 10 cm may be unavoidable, but trees greater than DBH of 10cm will be avoided;
- Sediment and erosion control measures will be put in place where the proposed gas gathering system occurs in close proximity to native vegetation and any areas upslope of the creek to prevent erosion and sedimentation of these adjoining areas;
- Stags and trees with hollows should be avoided. Works should not be undertaken within 2m of the drip line of the trees to avoid root disturbance;
- The disturbed areas should be re-established at the completion of construction, involving the reinstatement of the soil and allowing the area to revegetate naturally;
- Where possible, the area will be rehabilitated using seed bearing branches from nearby native species and native seed stock; and
- Noxious weed material cleared along the proposed route of the gas gathering system should be disposed of appropriately off site at a green waste facility to limit further spread.

5.2 Aboriginal Heritage

5.2.1 Introduction

The Aboriginal Heritage assessment focussed on the proposed gas gathering route between MP03 and MP05.

The Aboriginal Heritage assessment included a site inspection of the proposed gas gathering line corridor between MP03 and MP05. The site inspection involved Aboriginal stakeholders that had previously been involved in the original Archaeological Heritage Assessment (HLA ENSR, 2007) of the Menangle Park Project Area. These stakeholders included participants from the Tharawal Local Aboriginal Land Council (LALC) (Donna Whillock) and Cubbitch Barta Native Title Claimants Aboriginal Corporation (NTCAC) (Glenda Chalker). The assessment is provided in **Appendix B**.

As with the Flora and Fauna assessment, the Aboriginal Heritage assessment (provided in Appendix B) included an assessment of a separate modification, namely a proposed gas gathering route between MP11 and MP22, via MP19. This proposed section of gas gathering line is subject to a separate modification application.

5.2.2 Archaeological Context

The Nepean River hill slopes south of Camden have been subject to continuous archaeological study during the last 20 years. Most of this work has been undertaken for impact assessments and a small number of archaeological excavations.

There are three previous Aboriginal Heritage assessments or documents that are relevant to the proposed gas gathering corridor, with these reports being:

- Archaeological Heritage Assessment: Camden Gas Project Stage 2 – Spring Farm and Menangle Park Project Areas, Environmental Assessment, prepared by HLA ENSR (2007);
- Cultural Heritage Assessment: Mount Annan, NSW 66kV Overhead Lines, prepared by Navin Officer Heritage Consultants Pty Ltd (2008); and
- Camden Gas Project: Aboriginal Cultural Heritage Management Plan, prepared by Biosis Research (2008).

These assessments included identified artefacts and items in the vicinity of the proposed gas gathering corridor, with three previously identified items located within the proposed MP03 to MP05 gas gathering line corridor. These items are:

- MA 1;
- MA 2; and
- CG-IA-16.

5.2.3 Archaeological Survey Methods and Results

A comprehensive ground surface inspection was conducted along the entire proposed gas gathering line corridor for MP03 to MP05. Observations of archaeological exposure, ground surface visibility, extent and type of disturbance (if present), and landform element were made during the survey.

There were three (3) Aboriginal archaeological sites, including previously identified sites, recorded within the gas gathering line corridor between MP03 and MP05. MA 2 was originally recorded as five (5) flake fragments, however, these fragments were not located in the survey. Instead, 3 previously unidentified fragments and a fragment of an historical bottle were located. These artefacts were moved off the road, to behind a fence that identified the previously registered artefacts.

MA 1 was previously recorded as an isolated red silcrete artefact. However, this site was not located within the current survey.

In addition to the two (2) previously registered sites mentioned above, CG-IA-16 was recorded during the current survey, located south of MA 2. The site consists of a single isolated silcrete flake.

5.2.4 Recommendations

Due to the location of two (2) of the Aboriginal archaeological sites (MA 2 and CG-IA-16) being within the proposed gas gathering system corridor, it is recommended that both artefact sites be collected and relocated prior to the construction of the gas gathering line, to avoid their disturbance.

The Tharawal LALC and Cubbitch Barta NTCAC have agreed with the above recommendation.

Additionally, as per the EMS for the CGP, it is recommended that the following be implemented:

- Both archaeological sites be preserved through relocation as redirecting the gas gathering line will result in impacts to previously undisturbed vegetation and cultural landscapes;
- All vehicles and work movements must stay in previously cleared and disturbed areas along the existing access track and cut drainage channel;
- All Aboriginal objects and places are protected under the *NSW National Parks and Wildlife Act 1974*. Should any Aboriginal relics be encountered during works associated with this proposal, works must cease in the vicinity of the find and the NSW Department of Environment, Climate Change and Water (DECCW) as well as Aboriginal stakeholders be notified. A qualified archaeologist may also be required to assess the find; and
- It is an offence to knowingly disturb an Aboriginal site without a consent permit issued by DECCW.

It should be noted that all management strategies within the Aboriginal Cultural Heritage Management Plan, which is part of the CGP EMS, were formulated in consultation with the Tharawal LALC and Cubbitch Barta NTCAC.

5.3 Other Environmental Issues

The construction of the gas gathering system for the proposed modification will be undertaken in accordance with the AGL EMS. Within the EMS, there are a number of sub-plans (see **Section 6**) that address and manage particular environmental issues associated with the construction of gas gathering system. These issues are addressed in the following sections.

5.3.1 Noise

The construction of the gas gathering system will involve the use of a trenching machine, which is considered to be the noisiest machine in the construction process. As stated in Appendix F of the EA for Spring Farm and Menangle Park (HLA ENSR, 2007), the typical sound power level for the equipment used for excavation of trenches and pipe laying is 100 dBA. Usually, dependent of terrain, construction of the gas gathering system moves at a rate of up to 400m per day. Therefore, the noise is transient and short term, and will occur once during construction.

Typically, the noise criteria for this activity can be defined as the background level plus 20 dBA. The background level for each of the well surface location construction areas has been defined in previous studies. It can be summarised as follows:

Table 2: Construction Noise Criteria at well surface locations for gas gathering line modification

Representative Locations	Rating Background Level (RBL)	Construction Criteria
	Weekday (7am to 6pm) and Saturday (7am to 1pm)	
MP03	44 dBA	64 dBA
MP05	35 dBA	55 dBA

Assessment

As stated in **Section 2**, there are no residences located within 200m of the proposed modification, with distances ranging from between 200 and 360m. Table 2 demonstrates that the well surface locations associated with the proposed modification have a measured daytime background noise levels of between approximately 35 and 44 dBA. The previous EA stated that the noise criterion for construction of gas gathering line is unlikely to be exceeded unless the gas gathering system encroaches within 70m of a residence (HLA ENSR, 2007).

Therefore it is unlikely that the proposed modification will cause a significant noise disturbance at any residential receiver.

5.3.2 Traffic

The proposed modification is located in the vicinity of the F5 (Hume Highway), Glenlee Road (east) and Menangle Road. The F5 Freeway extends south of the M5 Motorway at the Cross Roads and is the principle route serving Macarthur and the Southern Highlands. The F5 is the primary link between Canberra and Sydney and forms part of the national highway network. Menangle Road is a sub-arterial

road connecting the township of Menangle with the City of Campbelltown and is currently a sealed single-lane (each direction) road with travel speeds of up to 100 km/h. Glenlee Road (east) is an east-west road off Menangle Road passing over the freeway and forming an access point to Glenlee House. The suburb of Menangle Park is located to the west off Menangle Road and local roads include Cummins Road and Fitzpatrick Street.

The well surface locations and proposed gas gathering systems route would be accessed via existing roads and access tracks. These access arrangements are listed below:

- MP03 is currently accessed by an existing access track located off Menangle Road; and
- MP05 is currently accessed via Glenlee Road and an underpass under the Southern Railway Line.

Previous assessments undertaken for the Spring Farm and Menangle Park Project Application (06_0291) concluded that the existing traffic flow of Menangle Road is relatively low for a sub-arterial roadway, although road capacity envisages future growth in the area.

The construction of the gas gathering system requires the use of plant and equipment. Typically, the construction activities include the utilisation of an underbore machine, grader, excavator, water truck, two 4WDs, a vacuum vehicle and utility vehicle. During the construction activities machinery would be generally maintained on-site for the duration of the works resulting in only two heavy vehicle movement cycles (one for the machinery to come in and one to take the machinery out).

Assessment

The gas gathering system would extend from the individual well surface locations to interconnect with existing low pressure gas gathering system to transport the gas to the RGP. This would involve trenching adjacent to roadways which may result in temporary disruptions to traffic flows. These works would be undertaken out of peak traffic times and would be conducted under controlled traffic conditions minimising impacts to road users.

As previously stated, AGL currently utilises an EMS for the CGP, which has been approved by the Director General. Within the EMS, a Traffic Management Sub-Plan (Appendix K of the EMS) has been prepared and implemented. This plan was prepared to satisfy a requirement of the existing Project Approval (PA 06-0291), which stated:

'The Proponent shall prepare and implement a Construction Traffic Management Plan for the project in consultation with the RTA, Camden Council and Campbelltown City Council, and to the satisfaction of the Director-General. The plan shall be submitted to the Director-General prior to construction commencing (or otherwise agreed by the Director-General) and shall include:

(a) A description of the measures that would be implemented to:

Maintain access;

Minimise the potential noise and safety impacts associated with the construction of the gas gathering lines and construction traffic; and

(b) Traffic control plans, where appropriate.'

It is considered that the implementation of the existing EMS for the proposed modification would minimise the potential traffic impacts associated with the construction of the gas gathering system.

5.3.3 Erosion Control

The proposed modification involves trenching and, potentially minor excavation works (e.g. underboring of infrastructure), for the construction of the gas gathering system. Ground disturbance activities may potentially impact upon the soils and water through an increase in erosion.

The proposed modification does not cross any watercourses. However, the proposed gas gathering system crosses the Upper Canal. and the proposed gas gathering system between MP11 and MP22 via MP19 (Modification 3) is located near a riparian zone of a tributary of the Nepean River.

The Upper Canal is encased within two 1,000mm steel pipes that are suspended via concrete columns approximately 8m above the ground, in order for the Upper Canal to cross the Southern Railway Line.

Assessment

The gas gathering system would either be trenched or bored under the Upper Canal. It would be virtually impossible for sediment to enter the Upper Canal with these construction techniques.

As previously stated, AGL currently utilises an EMS for the CGP, which has been approved by the Director General. Within the EMS, a Soil and Water Management Sub-Plan (Appendix E of the EMS) has been prepared and implemented. This plan was prepared to satisfy requirements within the existing Project Approval (PA 06-0291). These requirements relate to the minimisation of soil erosion and the discharge of sediments and water pollutants, as well not adversely affecting the water quality of the Upper Canal.

Environmental management measures that would be implemented, as part of the EMS, for the construction of the gas gathering system would include the following:

- Top soil would be stored separately to the underlying soils;
- The trench would be backfilled as soon as practical using the excavated spoil;
- Stormwater caught in the trench may be used for dust suppression on adjacent areas; and
- Underboring sites would comprise suitably sized pits to capture underboring drill cutting and drilling water.

It is considered that the implementation of the existing EMS for the proposed underboring and trenching within the modification would minimise the potential soil and water impacts associated with the construction of the gas gathering system.



6. CONCLUSION

AGL proposes to modify the existing Project Approval (PA 06_0291) for Spring Farm and Menangle Park with the construction of a gas gathering system between MP03 and MP05. The construction of the gas gathering system is considered to be inconsistent with the existing Project Approval.

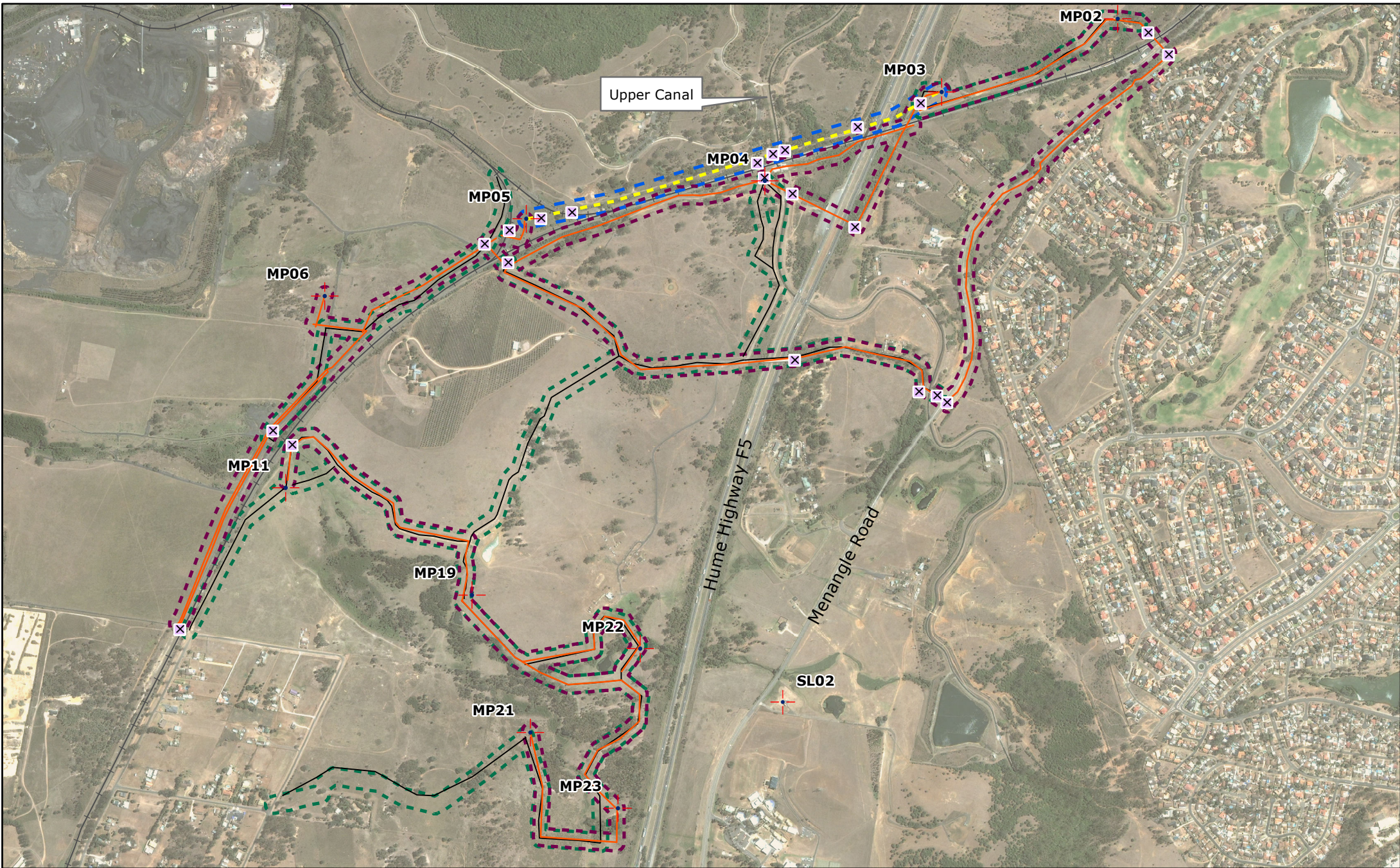
The proposed gas gathering system is required to upgrade the capacity of the gas gathering network for the CGP in order to facilitate the transportation of gas extracted from well surface locations to the Rosalind Park Gas Plant for treatment and distribution to the Sydney gas market via the high pressure sales pipeline.

Ecological and archaeological surveys were undertaken for the areas to be disturbed by the proposed modification. Mitigation measures, consistent with those contained within the existing EMS, would be implemented during the construction of the gas gathering system. The environmental assessment of the proposed gas gathering system concluded that there would be minimal environmental impact on the residences and the environment as a result of the construction works and the project's operations.

To ensure this occurs, the existing EMS for the CGP would be updated to include the proposed gas gathering system.



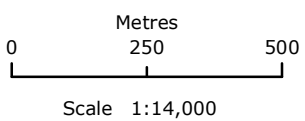
Figures



Energy in action™

Author: Upstream Gas
 Date: 24/11/2010
 Ref: 2156r5

Proposed Modifications for Camden Gas Project



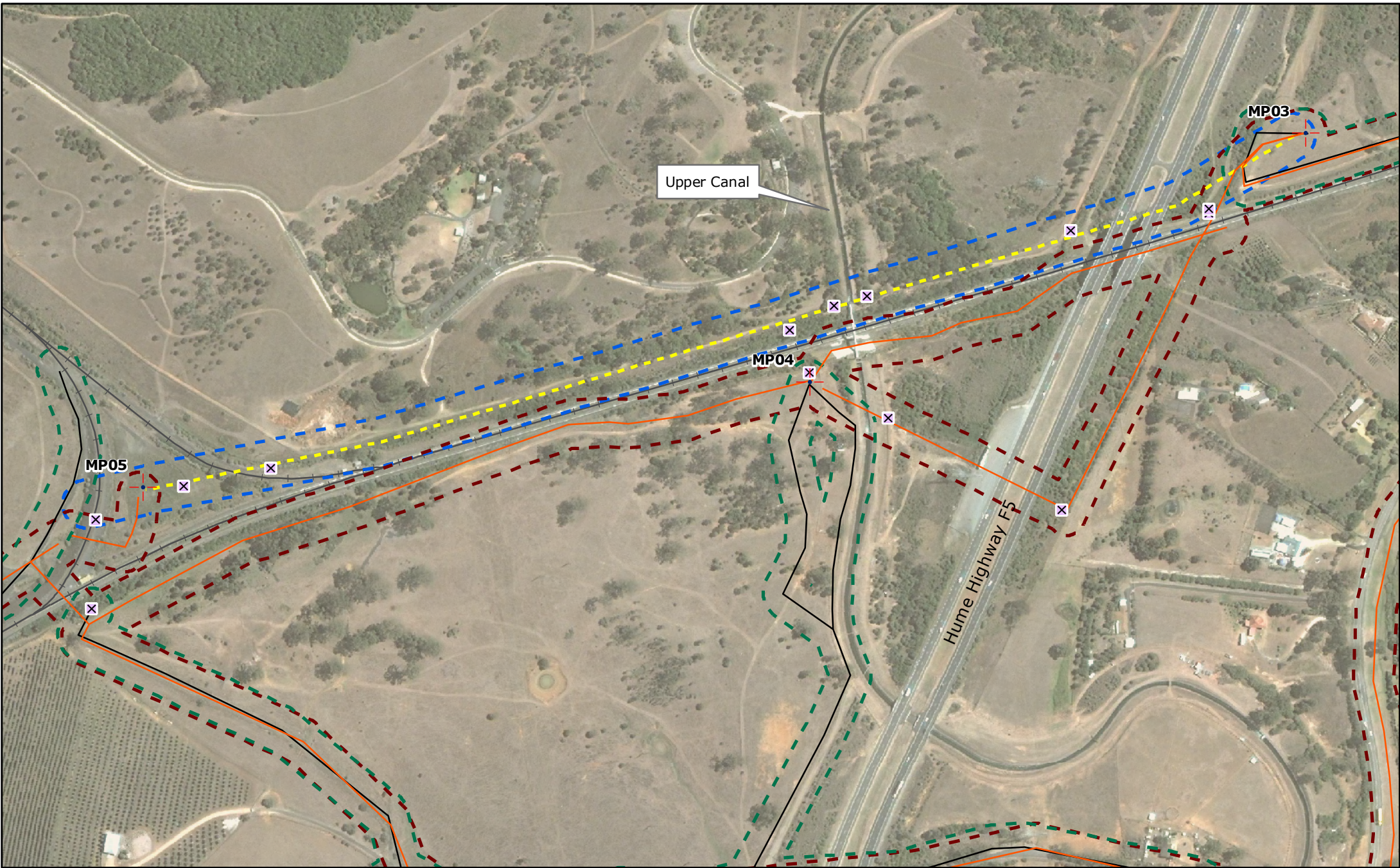
Legend

- Wells
- Underbore
- Gathering Pipelines
- Modification Gathering
- Access Road
- Existing 50m Corridor Gathering
- Existing 50m Corridor Road Access
- Proposed 50m Corridor Gathering
- Southern Railway Line



Disclaimer: While AGL has taken great care and attention to ensure the accuracy of the data represented on this map, no liability shall be accepted for any errors or omissions. No part of this map may be reproduced without prior permission of AGL.

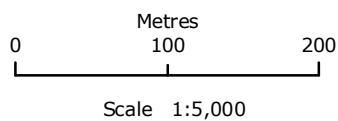




Energy in action™

Author: Upstream Gas
 Date: 15/09/2009
 Ref: 2158

Proposed Gas Gathering System between MP03 and MP05



Legend

- Wells
- Underbore
- Gathering Pipelines

- Access Road
- Modification Gathering
- Southern Railway Line
- Existing 50m Corridor Road Access
- Existing 50m Corridor Gathering
- Proposed 50m Corridor Gathering



Disclaimer: While AGL has taken great care and attention to ensure the accuracy of the data represented on this map, no liability shall be accepted for any errors or omissions. No part of this map may be reproduced without prior permission of AGL.

