PREFERRED PROJECT AND RESPONSE TO SUBMISSIONS REPORT

Newcastle Gas Storage Facility Project

Major Project Application Number 10-0133

September 2011

CR 6023_10_v3

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2. PROJECT DESCRIPTION

This section provides an updated description of the project since the exhibition of the EA. The description of the Project set out below remains subject to final detailed design. This section also outlines the indicative timeframe and staging of the construction and operation associated with each Project component.

2.1 Project Construction

The construction of the Project will consist of the following components (Figure 2.1):

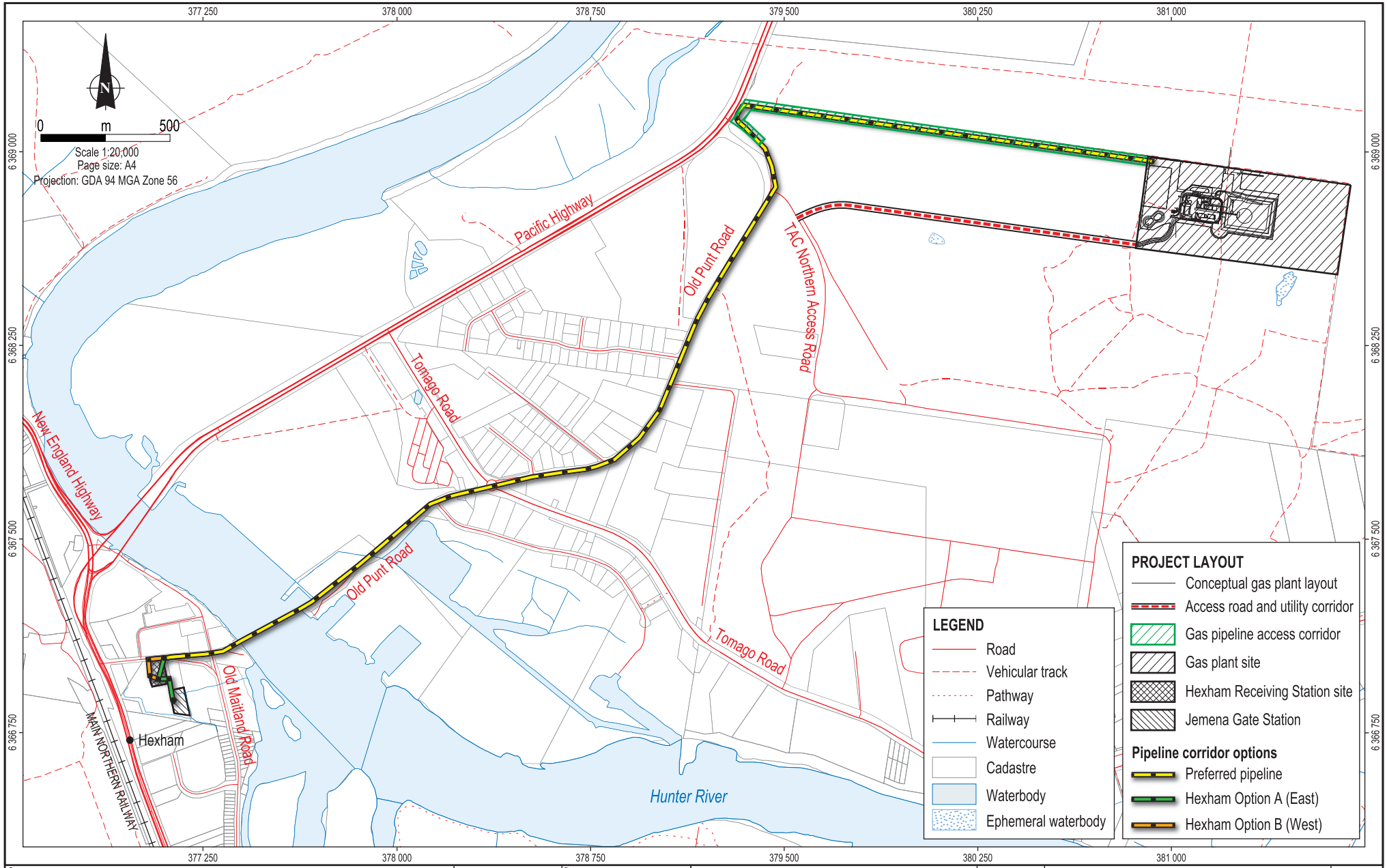
- The gas plant site.
- An access road and utility corridor.
- The gas pipeline access corridor, including temporary construction areas.
- The pipeline corridor.
- The Hexham receiving station.
- Gas pipeline connection into the Jemena Gate Station.
- Associated and ancillary infrastructure.

The 'Primary Project Area' (PPA) in this EA refers to the three Project components that are proposed to be located within the northern portion of Lot 105. These are the gas plant site, the access road and utility corridor and the gas pipeline access corridor.

AGL aims to have the facility in operation by the winter of 2014 with construction proposed to start in the first quarter of 2012. The current indicative construction schedule for the Project is shown in Table 2.1.

Table 2.1 Indicative construction schedule

Project Component	Proposed Timeframe
Gas Storage Facility	
Procurement and final design Site preparation and bulk earthworks	Commence fourth quarter 2011. First quarter 2012.
Construction	First quarter 2012 – third quarter 2014.
Access Road and Utility Corridor	
Construction	First quarter 2012 – third quarter 2012.
Gas Pipeline Access Corridor	
Construction	2012 – 2014.
Gas Pipeline Corridor	
Construction	2012 – 2014.
Hexham Receiving Station	
Construction	2012 – 2014.



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Place names, roads, railways, watercourses and waterbodies from LPMA © Land & Property Management Authority, 2010.
Cadastre and proposed gas plant site from AGL.
Proposed pipeline corridor from Monteath & Powys.
Proposed gas plant layout from Worley Parson (August 2011).
Note: Proposed pipeline corridor options and access road are indicative only and may be subject to change.

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Indicative conceptual project layout

Figure No: **2.1**

2.1.1 Gas Plant

The fenced gas plant infrastructure area will occupy less than half of the 28 ha gas plant site.

The key infrastructure which will be located on the gas plant site is outlined at section 2.2.1 of this Report.

The construction and commissioning of the gas plant will include site preparation, bulk earthworks, structural works and rehabilitation and landscaping.

Power is not currently available at the gas plant site. Power during construction will be supplied by an adjacent Ausgrid 11kV supply along the midpoint of the northern boundary.

2.1.2 Access Road and Utility Corridor

The access road and utility corridor (approximately 1.4 km in length) will connect the TAC Northern Access Road, approximately 140 m south of the Old Punt Road and TAC Northern Access Road intersection, to the southwest corner of the gas plant site.

The road to access the gas plant has been redesigned to minimise the clearing of the Earp's gum.

It is envisaged that vehicular movement will peak at approximately 50 vehicles per day during the site preparation phase when peak workforce is engaged.

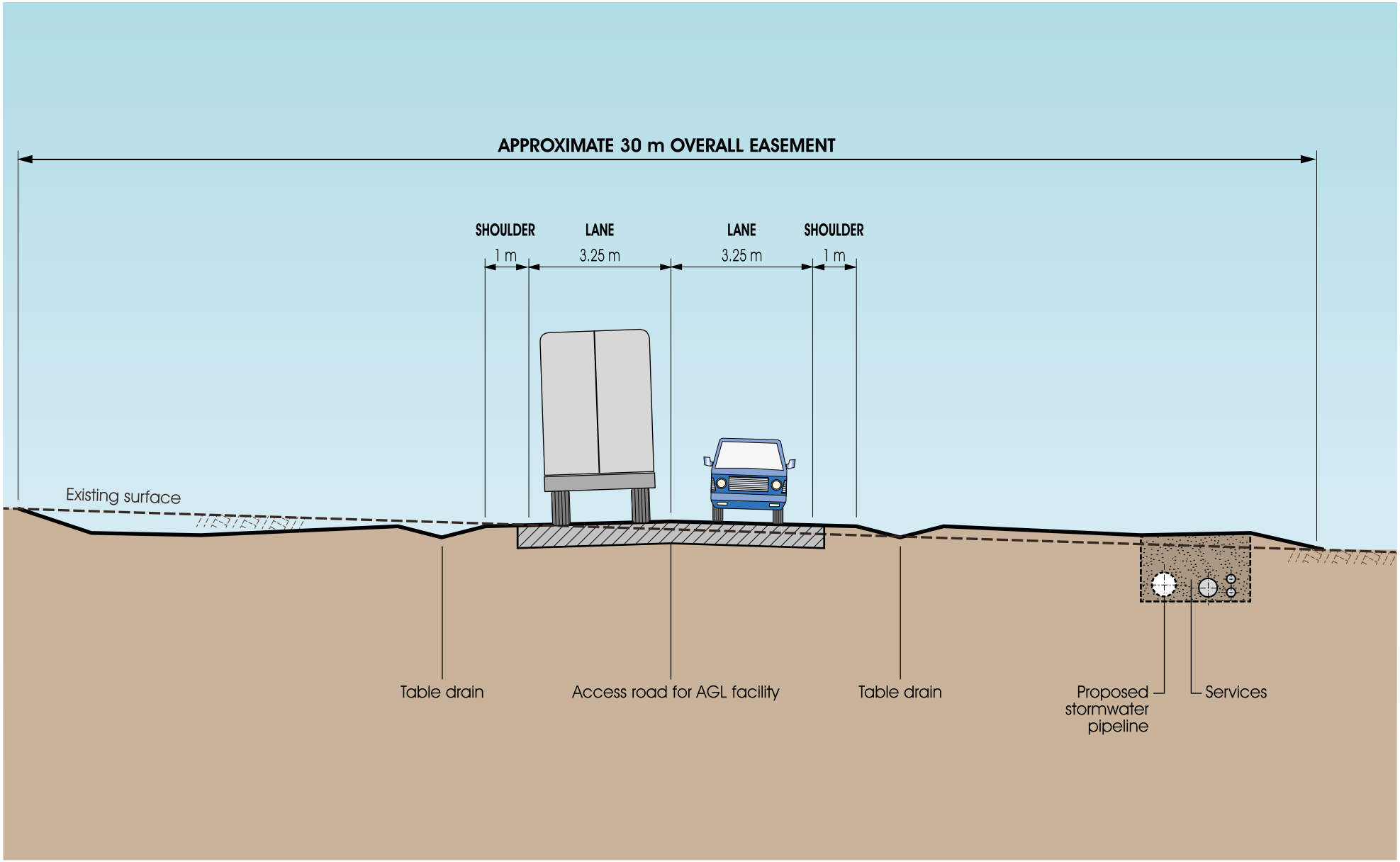
The access road will be within a 30 m wide cleared easement (Figure 2.2). Subject to detailed design, it is proposed that the Access Road will consist of two lanes with formal stormwater drainage, shoulders and setbacks to house utilities to service the gas plant site, including the new stormwater pipeline that will pump out stormwater to a discharge point at Old Punt Road. A gate will be located approximately 170 m from the TAC Northern Access Road intersection. Lighting of this intersection will be via connection to existing power supply along Old Punt Road.

Two new road splays will be constructed along both sides at the corner of the TAC Northern Access Road and the Access Road and Utility Corridor intersection. This will enable sufficient space for turning trucks approaching and egressing the area during the Project construction and operational phases. It is proposed the splays will be approximately 7.5 m wide. The two splays will be constructed within existing cleared areas and no clearing of native vegetation will be required for these splays.

During construction, the access road will be an all-weather, unpaved road. Construction of the access road and utility corridor will employ standard road construction techniques. Activities will include:

- Installation of sediment and erosion control measures.
- Clearing vegetation for a 30 m wide corridor.
- Removal and stockpiling topsoil.
- Earth compaction.
- Installation of drainage works.
- Road surfacing.
- Rehabilitation along the access road corridor.

It is envisaged approximately 10 service and personnel vehicles per day will be associated with the construction of the access road and utility corridor. This number may vary during peak periods.



Not to scale Note: Dimensions approximate.	coffey natural systems	Job No: 6032 File Name: 6032_01_PPR_F02.02_HB	AGL Energy Limited Newcastle Gas Storage Facility Project	AGL	Indicative access road and utility corridor cross section	Figure No: 2.2

2.1.3 Gas Pipeline Access Corridor

The gas pipeline access corridor (approximately 1.7 km in length) will contain the underground high pressure gas pipeline along the northern boundary of the PPA. This corridor will also serve as an alternative all weather secondary access road from the gas plant to the Old Punt Road for emergency purposes. A 30 m wide corridor will need to be cleared to allow for the construction of this pipeline and emergency access corridor.

The portion of the pipeline located within the gas pipeline access corridor will be buried at a minimum depth of 0.75 m. Construction of the pipeline will be by conventional pipeline construction methods. The corridor will be rehabilitated after construction.

2.1.4 Preferred Gas Pipeline Corridor

The high pressure pipeline supplying gas from the main Trunkline (which terminates at the Jemena Gate Station at Hexham) to the gas storage facility will be designed, constructed and operated to meet the requirements in AS 2885:2008 Pipelines – Gas and Liquid Petroleum (Standards Australia, 2008). The diameter of the gas pipeline will be up to 400 mm. The pipeline will be constructed from coated steel pipe and will incorporate a cathodic protection system to prevent corrosion. It will be buried between 0.75 to 2.5 m below the ground surface (depth to top of pipe). The trench for the gas pipeline will be up to 2 m wide. The pipeline will be designed for the maximum operating pressure of 6,895 kPa.

The following route options for the gas pipeline were considered and assessed in the EA:

- Option 1.
- Option 2.
- A hybrid option.

Section 4.1.4 of the EA Main Report set out details of each of these route options.

Option 2 has been selected as the final proposed route for the gas pipeline as it:

- Avoids the SEPP 14 Coastal Wetlands.
- Predominately follows cleared existing roadways and will require less clearing of native vegetation.
- Has less environmental impacts than other options outlined in the EA.

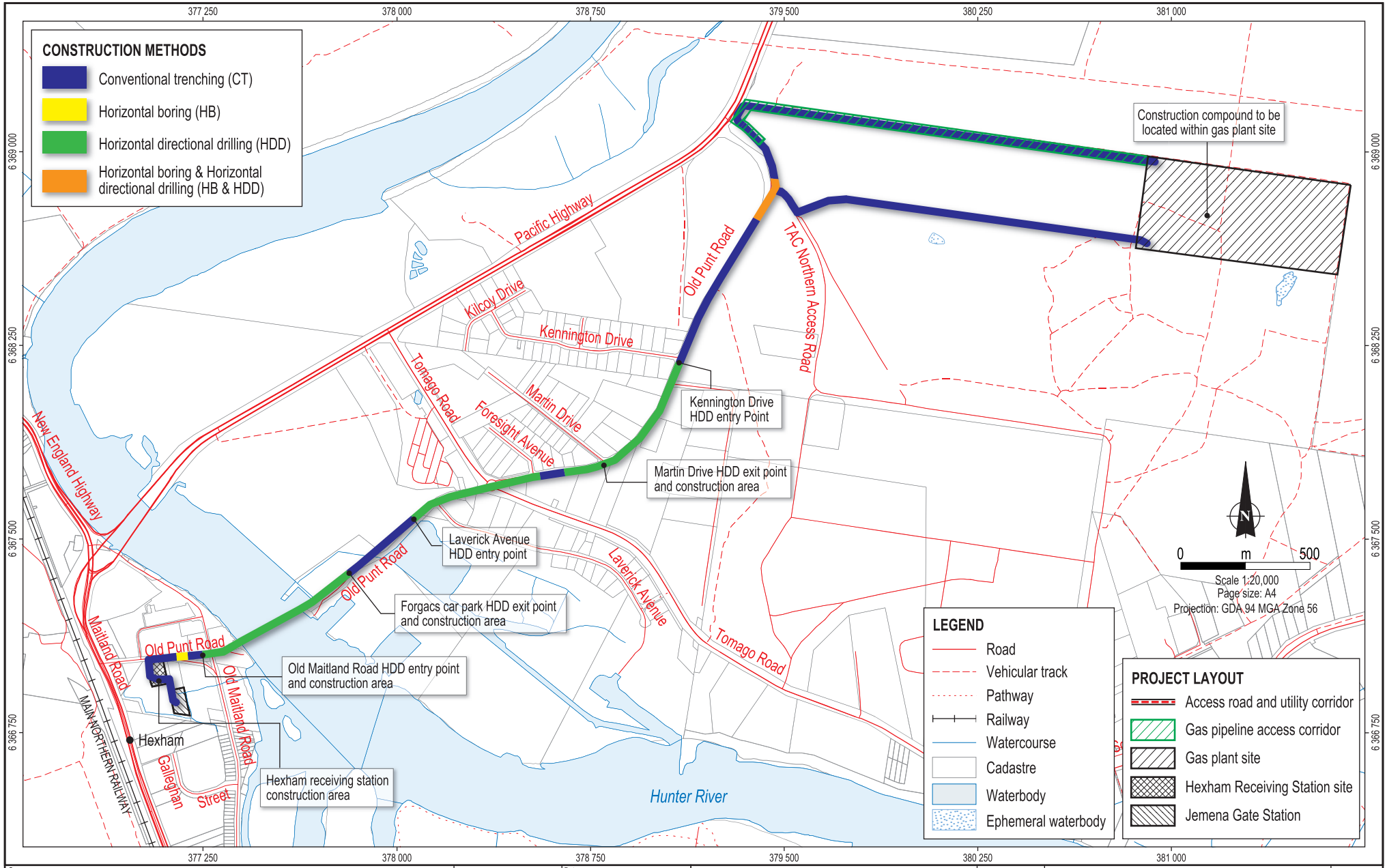
The total pipeline length from the gas plant site to the Hexham receiving station will be approximately 5.1 km for the preferred pipeline option.

The corridor to construct the gas pipeline will be:

- 30 m wide from Old Punt Road to the gas plant site.
- Up to 5 m wide along the road verges.
- Up to 20 m within privately owned land.

The design life of the pipeline will be in the order of 60 years. The gas pipeline corridor will be rehabilitated after construction, including re-seeding with native grasses where applicable.

The construction of the gas pipeline within the corridor will use a combination of methods: conventional trenching, horizontal boring and horizontal directional drilling (HDD). These are shown in Figure 2.3 and discussed in Table 2.2.



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Place names, roads, railways, watercourses and waterbodies from LPMA © Land & Property Management Authority, 2010.
Cadastre and proposed gas plant site from AGL.
Proposed pipeline corridor from Monteath & Powys.
Proposed gas plant layout from Worley Parson (August 2011).
Note: Proposed pipeline corridor options and access road are indicative only and may be subject to change.

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Indicative construction methods

Figure No: **2.3**

Table 2.2 Preferred gas pipeline corridor – indicative route description

Estimated Distance from Gas Plant (km)	Construction Method	Indicative Route Description	Approx. Section Length (km)
Preferred Pipeline Corridor (Option 2 in EA)			
0.00 – 1.9395	Conventional trenching	The pipeline will start at the gas storage facility. It will run along the gas pipeline access corridor, then turn south along Old Punt Road until it reaches TAC Northern Access Road.	1.9395
1.9395 – 2.13	Horizontal directional drilling or Horizontal boring	The pipeline will be drilled/bored beneath TAC Northern Access Road to avoid clearing of the Alluvial Tall Moist Forest vegetation community along Old Punt Road and to run underneath the road culvert at 2.10.	0.21
2.15 – 2.47	Conventional trenching	The pipeline will run south along the eastern side of the Old Punt Road within the road easement to the HDD entry point north of the Kennington Drive and Old Punt Road intersection (referred to as 'Hennington Drive HDD entry point').	0.32
2.47 – 3.09	Horizontal directional drilling	The pipeline will cross beneath the Tomago industrial estate, following the alignment of Old Punt Road, to the HDD exit point north of the Martin Drive and Old Punt Road intersection (referred to as 'Martin Drive HDD exit point 1').	0.62
3.09 – 3.34	Conventional Trenching	A short section of pipeline will connect the two HDDs.	0.25
3.34 – 3.90	Horizontal directional drilling	A second HDD bore will then continue south and cross beneath the intersection of Tomago and Old Punt Road, along the alignment of Old Punt Road, to the HDD entry point south of Laverick Avenue (referred to as 'Laverick Avenue HDD entry point').	0.56
3.90 – 4.2	Conventional trenching	The pipeline will continue from Laverick Avenue HDD entry point, along Old Punt Road alignment, to the Hunter River crossing HDD exit point within the Forgacs shipbuilding yard car park area.	0.3
4.2 – 4.95	Horizontal directional drilling	The pipeline will continue from the Forgacs car park HDD exit point, crossing beneath the coastal wetlands and the Hunter River to the HDD entry point at Old Maitland Road in Hexham (referred to as the 'Old Maitland Road Entry Point').	0.75
4.95 – 5.1	Conventional trenching	The pipeline will continue from the Old Maitland Road HDD entry point in a westerly alignment until it meets the Old Maitland Road (Y-junction).	0.17
5.1 – 5.15	Horizontal boring	The pipeline will be horizontally bored beneath Old Maitland Road (Y- junction).	0.05
5.15 – 5.28	Conventional trenching	The pipeline will continue from the Old Maitland Road (Y-junction), until it meets the Hexham receiving station at the rear of 235 Old Maitland Road. The pipeline may run down either the Western or Eastern side of the AGL property.	0.06

Pipeline Construction Methods

Conventional Pipeline Construction

Pipeline construction will require a small construction 'spread' (Figure 2.4), supplemented with smaller crews to manage the more developed areas of the pipeline route. A spread is the vehicles, plant, equipment and personnel required to sequentially excavate a trench and bury the pipeline. Some activities will occur in advance of the main part of the spread (in particular, road and major utility crossings).

Conventional construction of the pipeline will include surveying, clearing, pipe delivery and stringing, pipe welding, trenching, pipe laying, back filling, hydrostatic testing and rehabilitation.

Commissioning and the installation of a cathodic protection system will occur prior to operation of the pipeline.

It is envisaged that approximately 20 service and personnel vehicles per day will be associated with the construction of the pipeline. This number may vary during peak periods.

Horizontal Directional Drilling

Hunter River and Coastal Wetlands Crossing

The preferred pipeline option will establish a small HDD exit site adjacent to the Forgacs car park on Old Punt Road being Lot 142 DP 605461. The HDD rig will be located on the Old Maitland Road at Hexham. The work area for the HDD rig will be established in previously disturbed areas and will be up to 80 m by 100 m. The work area for the HDD exit site will be up to 40 m by 40 m.

Detailed investigations for the final pipeline route have been carried out to determine the suitability and proposed design of the HDD. These included geotechnical drilling to below the maximum depth of the proposed borehole. Seismic surveys have been carried out across the Hunter River to obtain a detailed understanding of the structure of the underlying strata. It has been confirmed HDD is a technical feasible option for this river crossing.

Appropriate mitigation measures outlined in section 7.3 of the EA Main Report will be utilised during HDD operations. The Project will employ an experienced contractor in HDD construction with a proven track record in construction quality, deliverability and environmental management.

It is envisaged that a crew of up to eight people will be required to support the larger drilling operation. The duration of the HDD will last up to three weeks. Approximately 5 service and personnel vehicles per day will be associated with the construction of the HDD pipeline. Drilling will occur 24 hours per day, seven days per week.

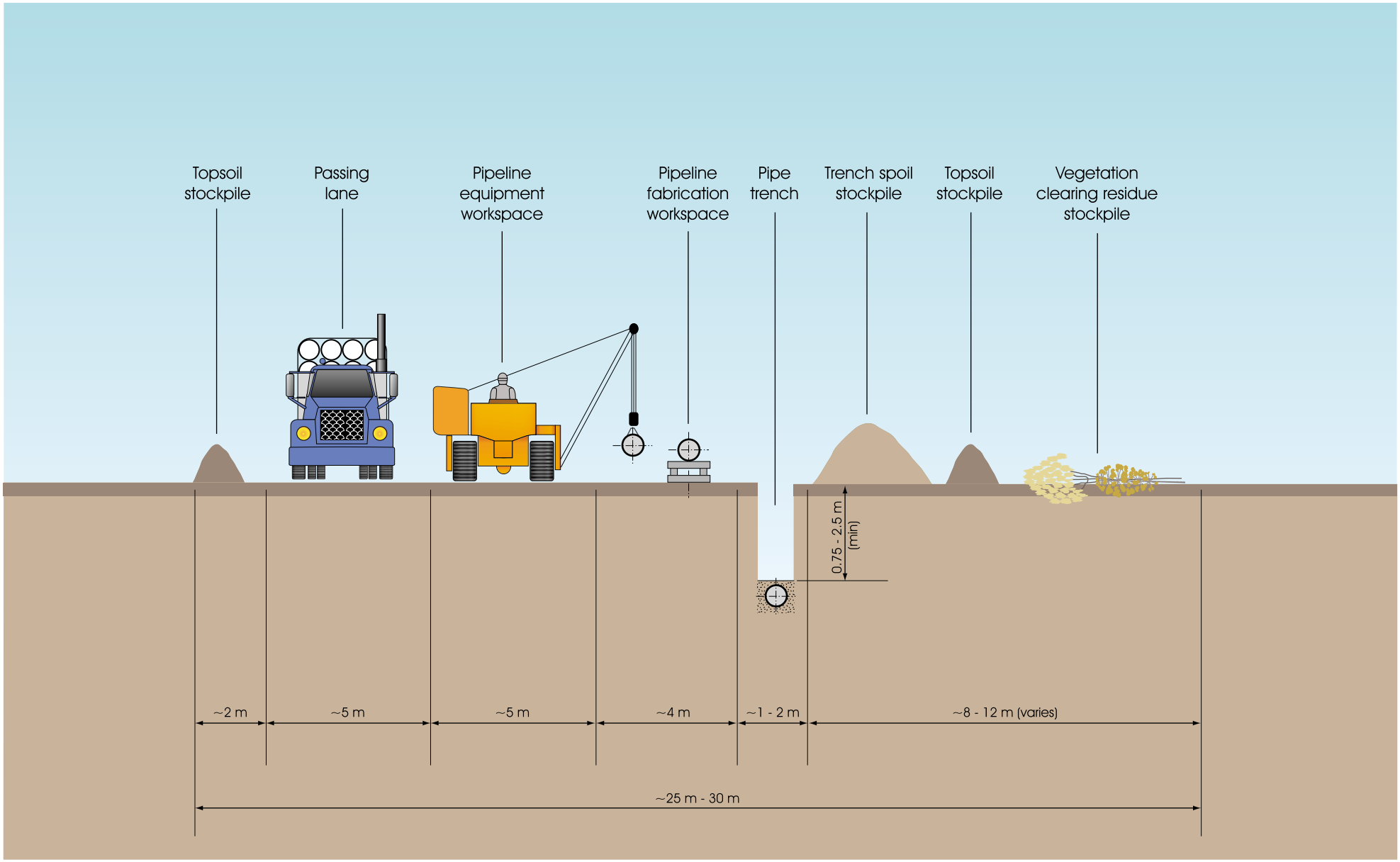
A typical HDD layout is shown in Figure 2.5.

Tomago Industrial Estate

Horizontal directional drilling will be used to bore beneath Old Punt Road adjacent to the Tomago industrial estate. A HDD rig will be established adjacent to the corner of the Old Punt Road and Kennington Drive; the exit point will be within the road reserve on Old Punt Road adjacent to Martin Drive.

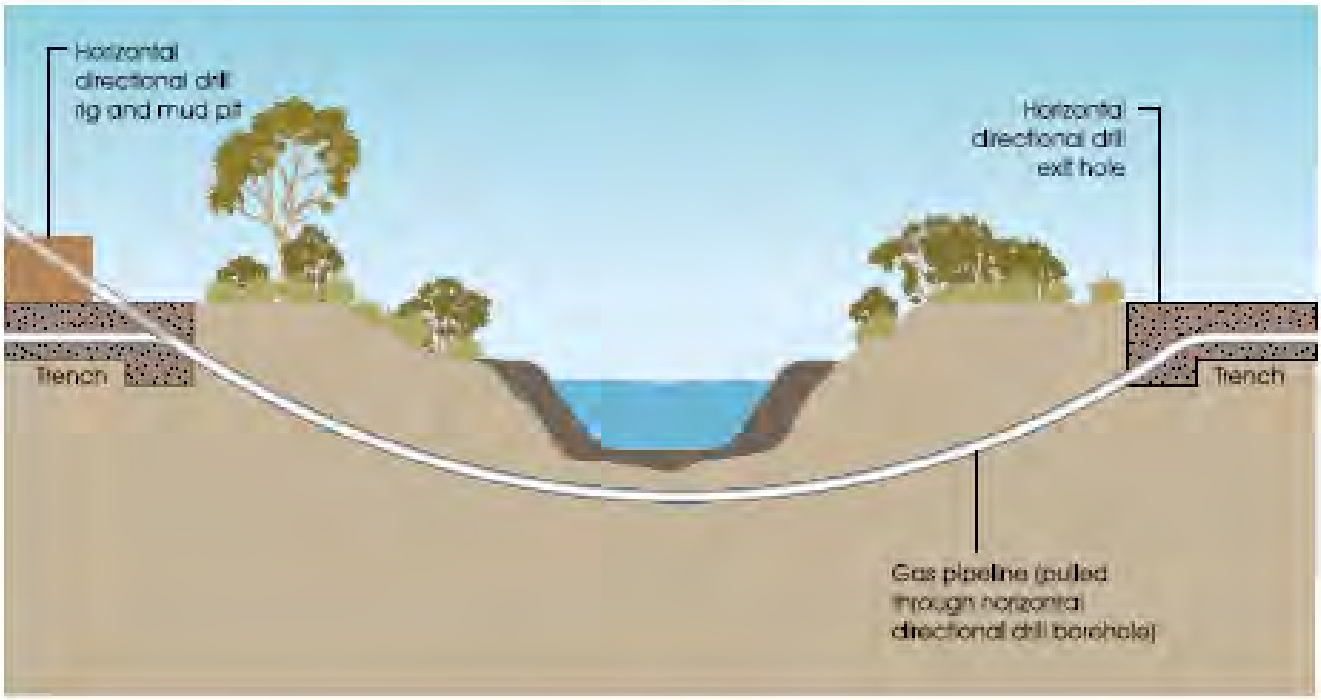
Tomago Road Crossing

A second HDD will immediately follow within road reserves from the Martin Drive HDD site to cross beneath Tomago Road, and Laverick Avenue. The HDD rig will pull through both HDD strings from the Martin Drive HDD site after the bores have been drilled. The entry point for this HDD will be the southern side of Laverick Avenue.

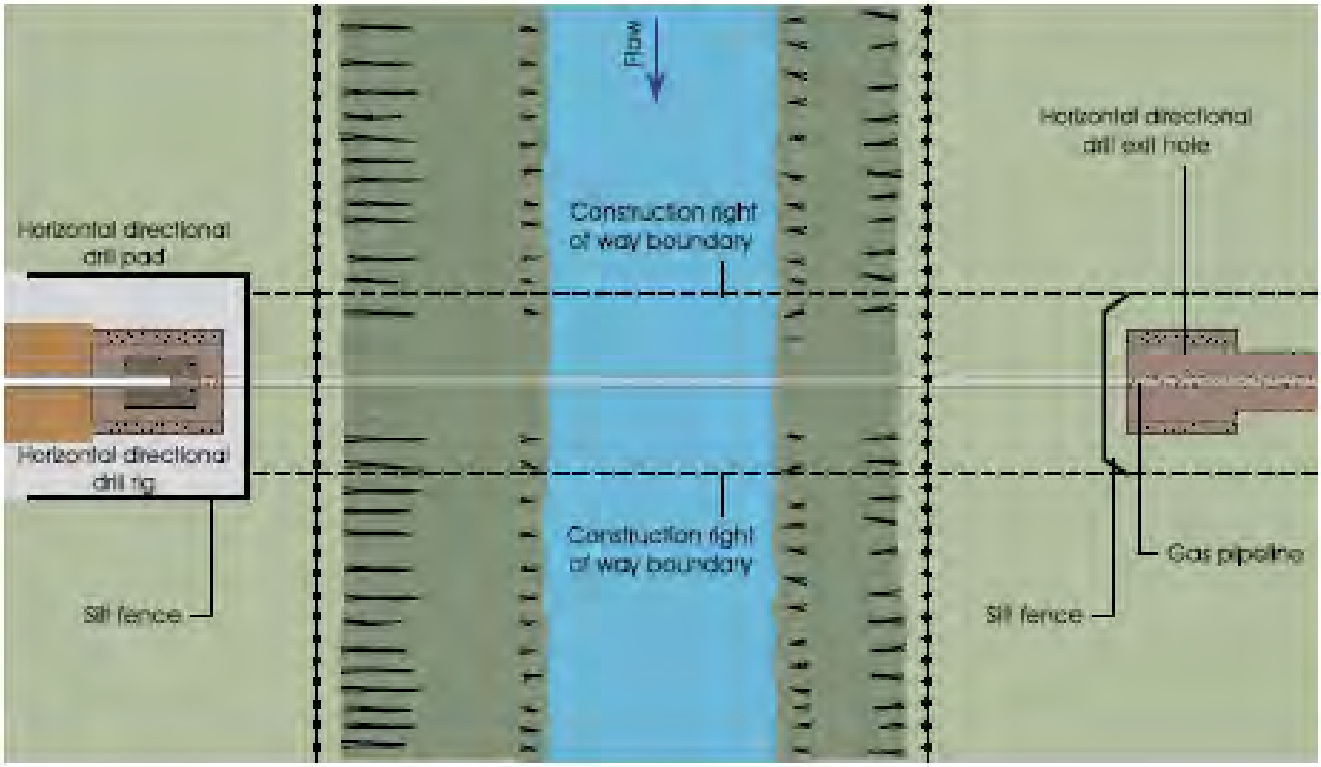


Not to scale Note: Dimensions approximate.	coffey natural systems	Job No: 6032 File Name: 6032_01_PPR_F02.04_HB	AGL Energy Limited Newcastle Gas Storage Facility Project	AGL	Typical pipeline construction right of way layout	Figure No: 2.4

Cross section



Plan



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TAC Northern Access Road and Old Punt Road Intersection

Horizontal directional drilling is being considered as an option to avoid the clearing of the Alluvial Tall Moist Forest vegetation community along Old Punt Road. Detailed field investigations will be undertaken to determine the suitability of HDD and its design. These will include geotechnical drilling to below the maximum depth of the proposed borehole, together. In the event that HDD is determined not to be suitable then the pipeline will be constructed by conventional methods within this area.

Horizontal Boring

Horizontal boring is used to drill short distances under major roads. Unlike HDD, which uses a bore hole with a shallow curve, horizontal boring involves drilling a straight horizontal bore under the feature. To enable horizontal boring to occur, sumps or bell holes are excavated either side of the feature. The boring machine is placed in one sump and then drills under the feature to the other sump. Pipe lengths are pushed into the completed bore hole one length at a time with welding, testing and coating taking place in the sump. Horizontal boring rigs are smaller than HDD rigs.

2.1.5 Hexham Receiving Station

The Hexham receiving station will occupy approximately 0.25 ha - approximately 40% of the total site area (Figure 2.6). The receiving station will consist of piping and equipment to facilitate the filtering, metering, flow control, and communications for the safe operation of the receiving station. These will be located on concrete pad or pier foundations. The size of the concrete pads where required will be between 20 m by 5 m and 30 m by 10 m. The equipment will be up to 3 m high. This facility will connect into the Jemena Gate Station by way of a conventionally trenched pipeline. The gas pipeline will enter the receiving station via the front boundary of the property. Construction of the Hexham receiving station will use standard construction techniques including site preparation, structural works, commissioning, rehabilitation and landscaping.

Approximately 20 service and personnel vehicles per day will be associated with the construction of the receiving station. This number may vary during peak periods.

2.1.6 Construction Hours and Workforce

Construction hours will typically be between 7.00 a.m. to 6.00 p.m. Mondays to Fridays and 8.00 a.m. to 1.00 p.m. on Saturdays. However the following construction work will be undertaken outside of these hours:

- Horizontal directional drilling – work will be required to be undertaken 24 hours, seven days per week. Such activities will be undertaken in consultation with potentially affected landowners.
- Major activities that require completion outside of normal working hours (e.g., pouring of the foundations or delivery of oversized building components).
- Any emergency work.
- Pipeline work around roads to minimise traffic disruption and reduce traffic risk to construction workers.
- Construction work which is inaudible at the nearest receiver.

Source:
Place names and roads from LPMA © Land & Property Management Authority, 2010.
Cadastre from AGL. Hexham metering & pigging stations from Coffey.
Proposed pipelines from AGL.
Note: Proposed pipelines and Hexham metering & pigging stations are indicative only and may be subject to change.
Imagery from Google Earth (Downloaded January 2011).

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Indicative Hexham receiving station layout

Figure No: 2.6

The construction workforce for the Project is expected to peak at approximately 300 people. It is anticipated that the majority of the construction workforce will come from Newcastle and its surrounds and will travel to the site by a combination of light vehicles and buses. A construction camp will not be used.

2.1.7 Materials, Stockpiling and Laydown Areas

Soil removed from the pipeline trench, HDD or horizontal boring will be stored adjacent to the excavation as part of standard practice. An acid sulfate soil management plan will address any acid sulfate soils (ASS) encountered during construction (see section 7.2 of EA Main Report).

Materials such as pipes and machinery required for construction will be stockpiled within construction compounds. The pipeline construction compounds will range in size from 50 m by 30 m to 80 m by 100 m. In addition, the gas plant site will require two construction compounds which will be between 140 to 180 m by 100 m.

Indicative locations of compounds are shown in Figure 2.3. A number of potential pipeline construction compounds are situated on privately owned land or land owned by Port Stephens Council (PSC) and Newcastle City Council (NCC). It is envisaged that the compounds will be located on previously disturbed areas, which include sufficient area for parking of construction worker vehicles (see Figures 2.3, 2.7a and 2.7b). Agreements with relevant landowners to temporarily lease or licence the required areas for the duration of construction works will be reached. The final locations of the construction compounds will be determined during detailed design and specified in the construction environmental management plan (CEMP) which will include measures to address any site specific issues. The CEMP will be prepared prior to commencement of construction.

Construction laydown areas, hardstands and car parks for will be compacted and surfaced as required. All areas will have appropriate drainage systems and erosion controls installed and will be rehabilitated post construction.

2.1.8 Construction Traffic Management

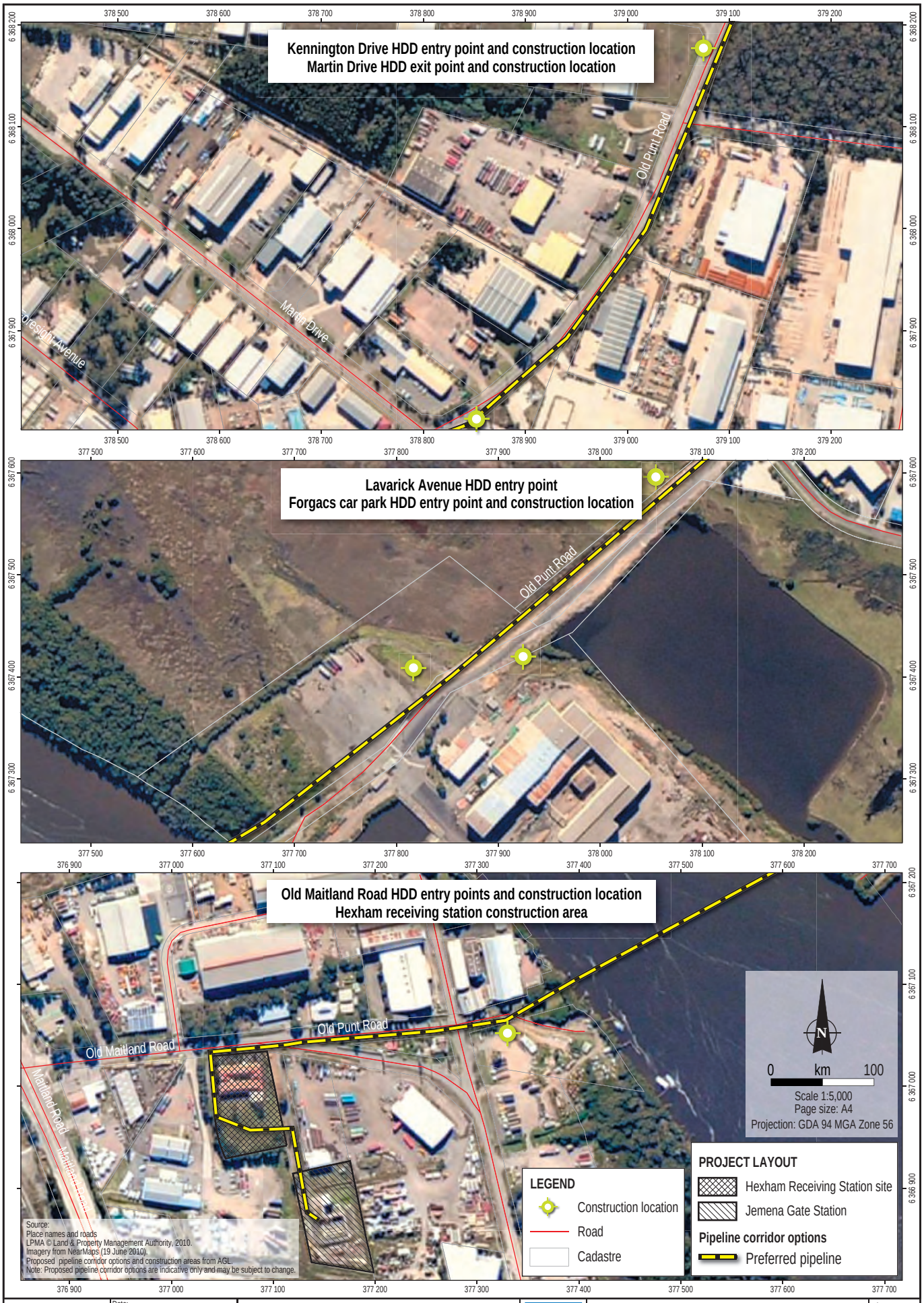
Movement of construction materials, personnel and equipment will increase light and heavy vehicle traffic in the area during construction, although the Project components will be constructed in industrial areas that already experience this type of traffic.

Some local traffic may be affected for short periods during construction of the pipeline, or the movement of oversize loads. The traffic impacts of the Project, including during construction, are summarised in section 7.11 on the EA Main Report. A construction traffic management plan will be prepared and implemented for the Project to manage any traffic impacts.

2.1.9 Construction Water Supply and Management

Water will be required for dust suppression, revegetation, drilling and concrete preparation during construction. Access tracks and the construction alignment will be watered to suppress dust using water trucks, with the frequency of watering depending on prevailing weather conditions. It is envisaged that Hunter Water Corporation (HWC) will supply water during construction. AGL is continuing to consult with HWC in this regard.

There may be a requirement for dewatering of excavations during construction. The CEMP will outline how water from excavations will be tested and treated (if required) then infiltrated at source if the water quality is suitable, or alternatively disposed offsite at a licensed facility.



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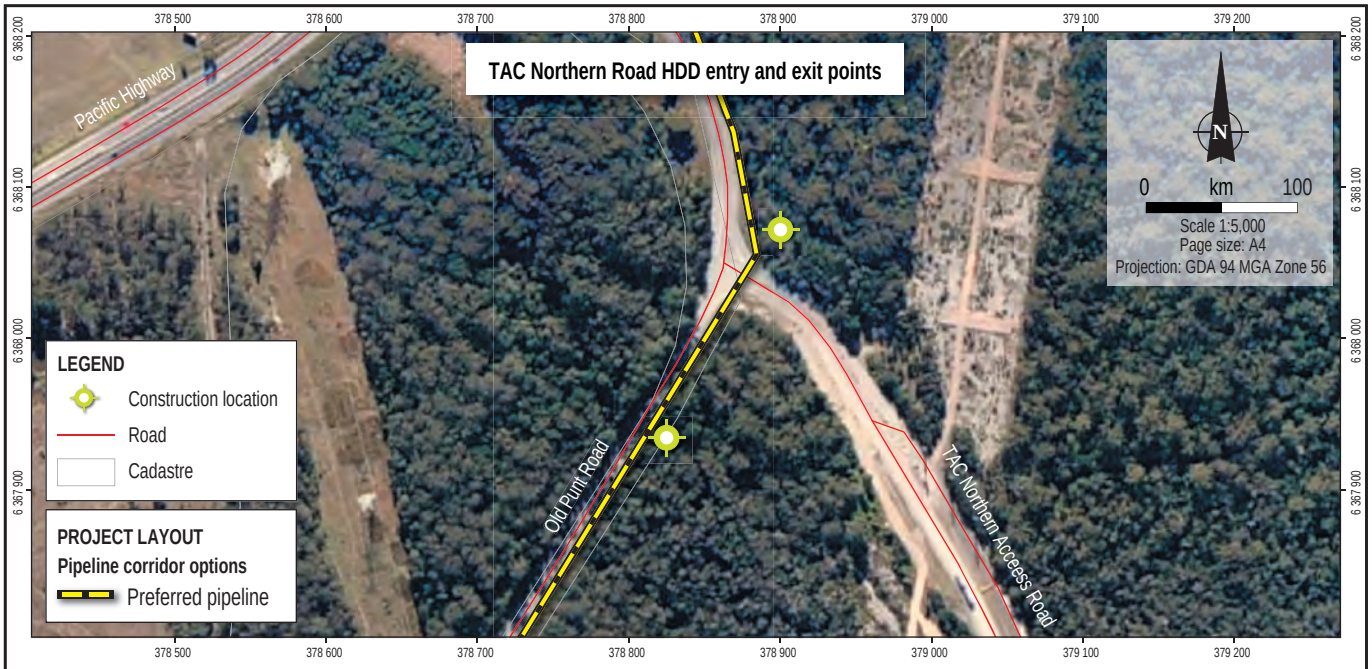
Indicative construction locations - pipeline option 2

Figure No: 2.7a



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Place names and roads
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Imagery from NearMaps (19 June 2010).
Proposed pipeline corridor options and construction areas from AGL.
Note: Proposed pipeline corridor options are indicative only and may be subject to change.

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Discussions are ongoing with HWC, the NSW Office of Water (NOW) and the Office of Environment and Heritage (OEH) about sourcing and disposing of the hydrostatic test water. Disposal of hydrostatic test water will be managed under the surface water management plan in consultation with relevant agencies.

2.1.10 Hazardous Materials

Fuels, lubricants and chemicals required for construction will be stored in bunded areas. Oily wastes from any stormwater accumulating in these enclosures will be collected and disposed of to an appropriately licensed facility by a licensed contractor. Stormwater runoff from vehicle, plant and equipment servicing areas, workshops and storage areas that might be contaminated with hydrocarbons and oily substances will be directed to sumps for collection, transport and disposal by a licensed contractor.

Construction waste will include timber and packaging, domestic garbage, scrap steel, excess soil from excavations, green waste, asphalt, concrete and drill mud generated from the HDD. All construction waste will be managed in accordance with the waste hierarchy (prevention, minimisation, reuse, recycling, energy recovery and recycle). Waste management facilities will include provision for the segregation of waste into streams that reflect the waste hierarchy.

Solid construction waste will be reused or recycled where practicable and disposed of to a licensed off site facility where this is not practicable. Licensed contractors will collect, transport and dispose of liquid hazardous materials, waste solvents, paints and hydrocarbon products to an appropriately licensed off-site facility in accordance with relevant NSW Environment Protection Authority (EPA) guidelines.

Wastewater and sewage generated during construction will be transported for off-site treatment in an EPA-approved wastewater collection system.

2.1.11 Site Security

Temporary security fencing will enclose construction compounds. There will be security gates at each construction compound. Security personnel will monitor these compounds where necessary and as required.

2.2 Project Operation

Gas is currently transported from Sydney to Newcastle along the Wilton - Newcastle trunk pipeline which terminates at the Jemena Gate Station at Hexham.

Once the Project is operational, gas will be transferred via the proposed pipeline from the Hexham receiving station to the gas plant site. At the gas plant site, gas will be refrigerated to transform it to a liquid and transferred to the storage tank where it will be stored as liquid at -162°C at approximately atmospheric pressure. Liquefaction will occur for approximately nine months of the year during periods of low gas demand.

During periods of peak demand, the liquefied gas from the storage tank will be re-gasified by passing through the re-gasification unit where it is heated to the required temperature and transferred back along the proposed pipeline into the main trunk line via the Hexham receiving station. Reinjection into the main trunk line is expected to occur intermittently during periods of supply disruption or peak demand, primarily over winter. The gas plant operates in a gas storage mode outside of the liquefaction and re-gasification period i.e., when the storage tank is full and the gas plant is on stand-by to supply additional gas into the gas market. Therefore, the gas plant will operate in three modes; gas liquefaction, gas storage and re-gasification.

2.2.1 Gas Plant

It is envisaged that up to 15 operations staff will be required to operate the gas plant facility as well as additional contract labour for routine and major maintenance periods.

Production capacity will be approximately 66,500 t/year of stored natural gas. The gas liquefaction, storage and re-gasification process is shown in Figure 2.8. Key features of the gas plant infrastructure will include the natural gas liquefaction plant, storage tank (Figure 2.9), re-gasification unit, flare, gas plant infrastructure, buildings and buffer areas.

The following components of the gas plant facility have been modified since the public exhibition of the EA:

Flare System

The height of the flare stack has been reduced from up to 45 m to approximately 15 m. This will reduce the visual impacts of the facility.

It is anticipated that there will be a continuous pilot flare which will be approximately 1 m high. During liquefaction, the flare will be approximately 2 m to 3 m high. Additional flaring may also be required particularly during plant commissioning and when the plant is operating outside normal working conditions.

Buildings and Landscaping

The gas plant site footprint has been reduced from the area stated in the publically exhibited EA Refer to section 5.2 below for details of the proposed changes.

The gas plant site will include maintenance areas; offices and amenities; a control room; workshops; and warehouses. These structures will range in height between one to two storeys (Figure 2.10 and Figure 2.11). Design of the buildings will be undertaken at the detailed design stage of the Project.

Car Parks and Hardstands

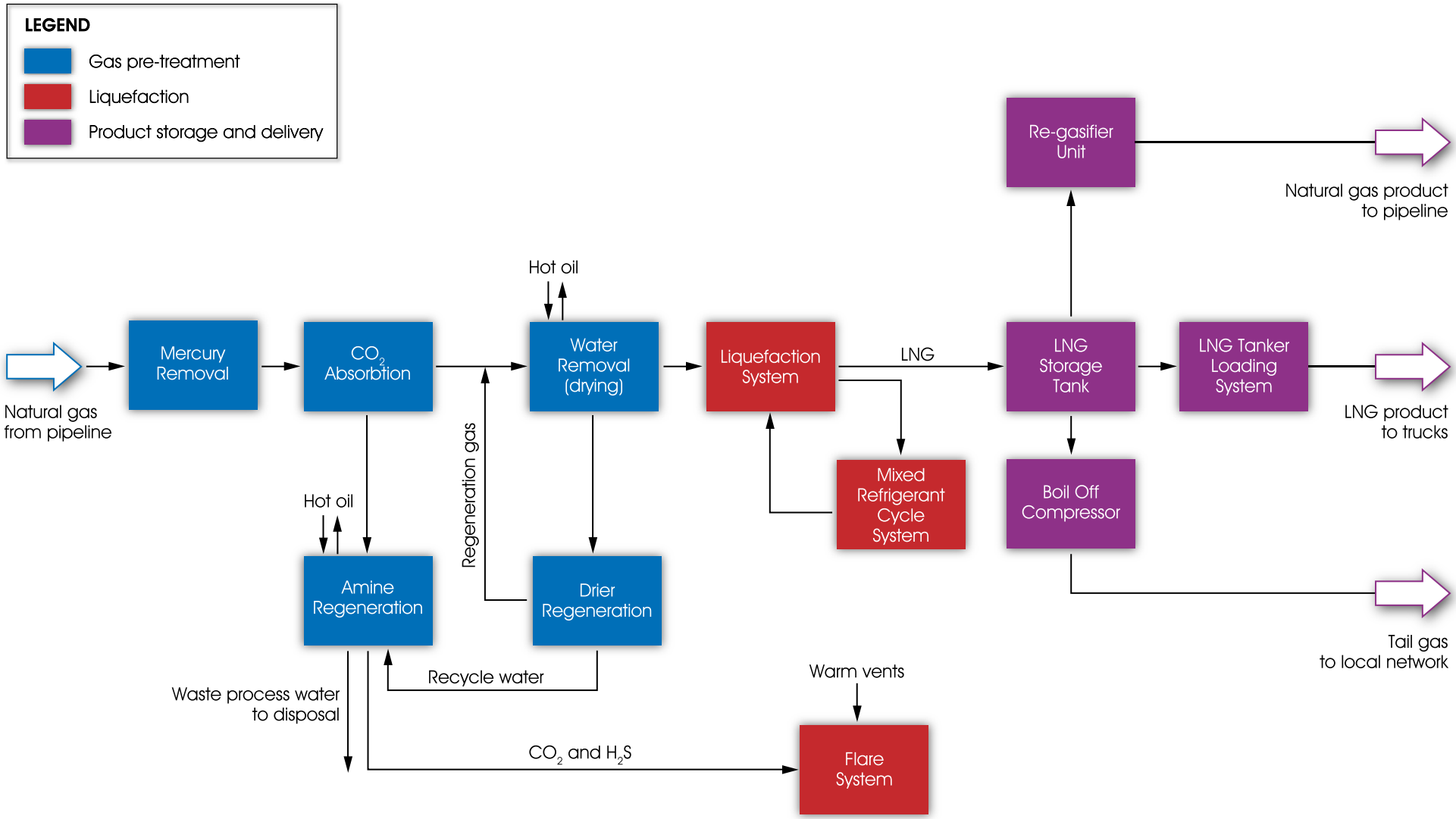
Car parks and hardstands for spare plant and equipment stored outside will be compacted and surfaced as required. All areas will have appropriate drainage systems installed (section 7.3 of the Main Report). The location of these components have been moved to the north of the gas plant site in order to reduce the number of Earp's gum to be cleared.

Buffer Zone

A minimum 46 m bush fire asset protection zone will be provided around the gas plant site. The European LNG Code, EN 1473:2007 recommends a radiant heat less than 15kW/m^2, which requires an APZ of 43 m. The Department of Planning recommends a radiant heat less than 23kW/m^2, which requires an APZ of 31 m.

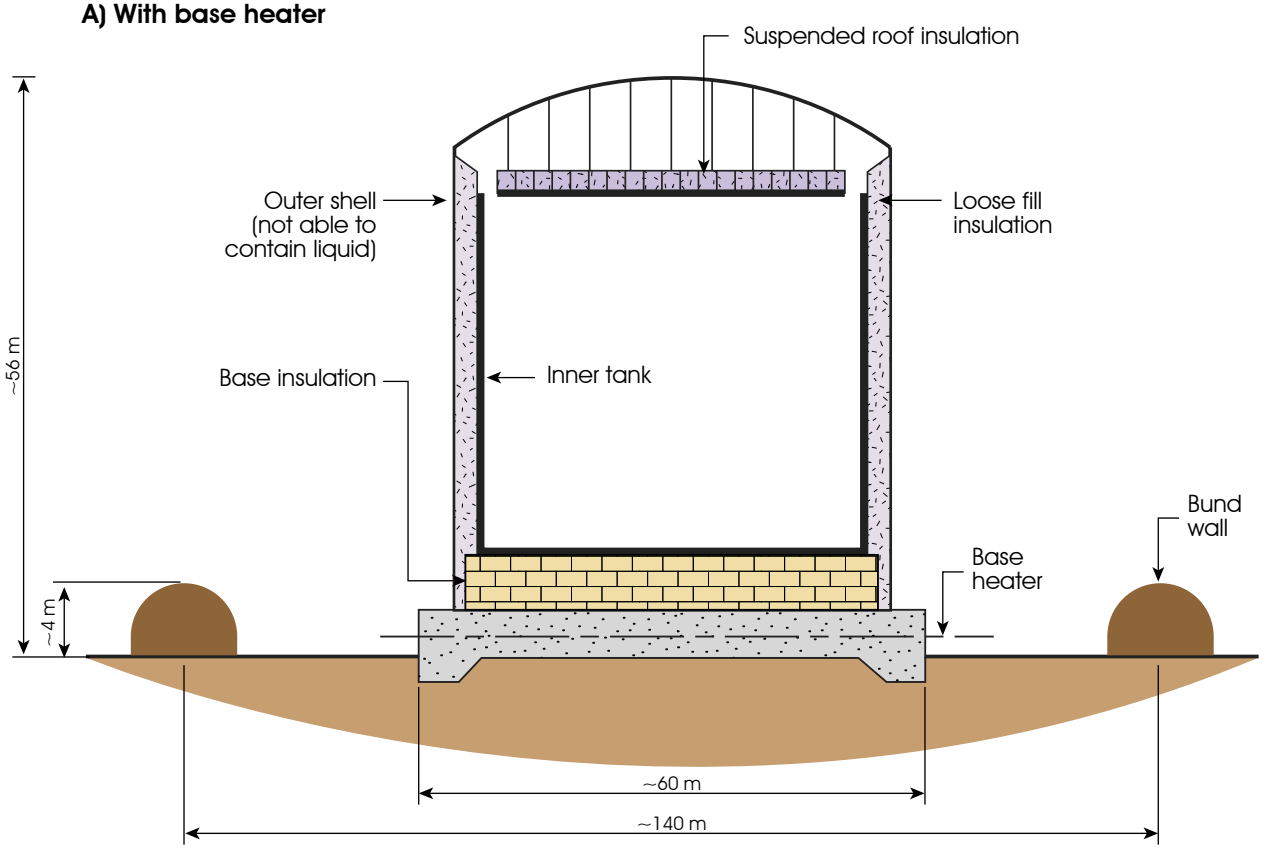
Site Security

Security fences will be erected around the gas plant site to prevent unauthorised access. Site access will now be controlled via a security gate on the Access Road.

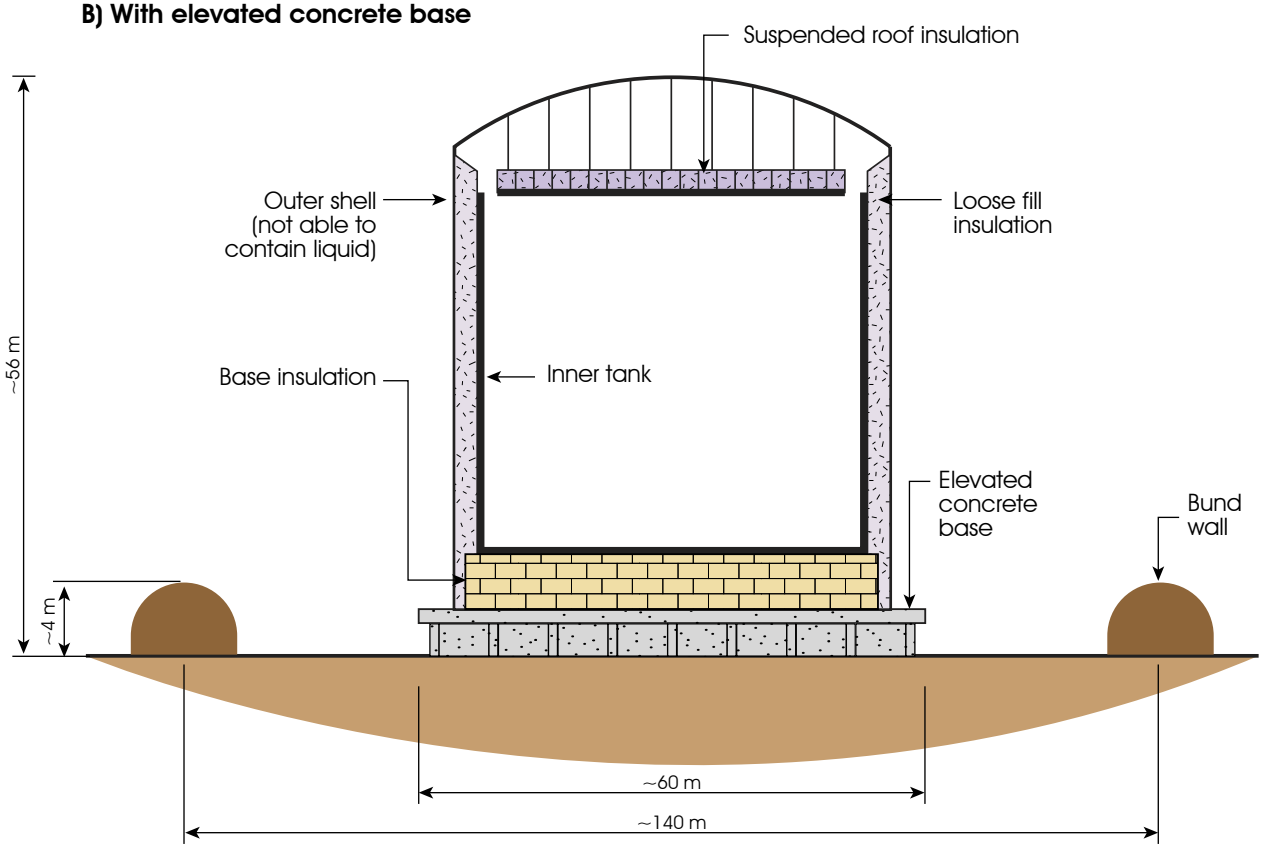


	coffey natural systems	Job No: 6023 File Name: 6023_01_PPR_F02.08_HB	AGL Energy Limited Newcastle Gas Storage Facility Project	AGL	Conceptual gas plant process flowsheet	Figure No: 2.8

A) With base heater



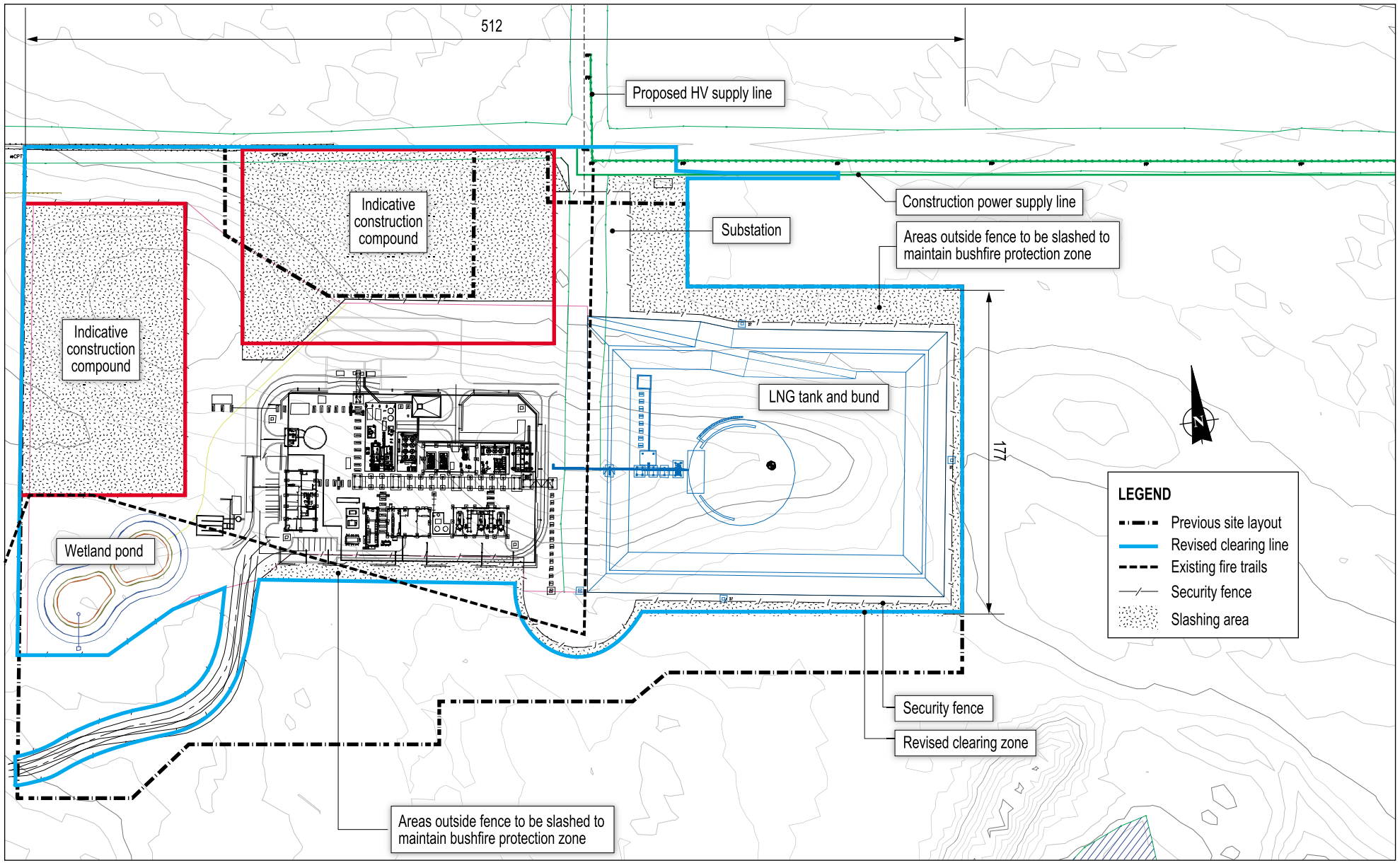
B) With elevated concrete base



Not to scale

Note:
Maximum gas storage tank dimension are provided and will be finalised pending detailed design.
The maximum overall volume of storage tank will remain 63,000 m3 of LNG.

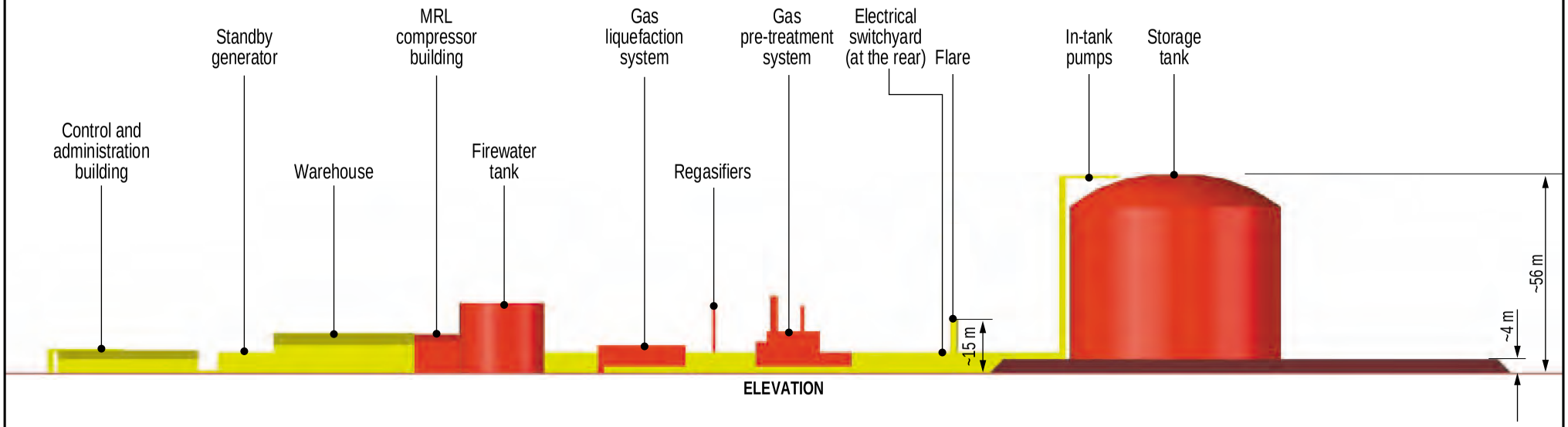
coffey natural systems	Job No: 6023	AGL Energy Limited	AGL	Gas storage tank	Figure No: 2.9
	File Name: 6023_01_PPR_F02.09_HB	Newcastle Gas Storage Facility Project			



	coffey natural systems	Job No: 6032 File Name: 6023_01_PPR_F02.10_HB	AGL Energy Limited Newcastle Gas Storage Facility Project	AGL	Gas plant layout site plan	Figure No: 2.10

WEST

EAST



ELEVATION

Source: Worley Parsons, April 2011.	coffey natural systems	Job No: 6023 File Name: 6023_01_PPR_F02.11_HB	AGL Energy Limited Newcastle Gas Storage Facility Project	AGL	Gas plant site - south elevation	Figure No: 2.11

Lighting

Lighting of the gas plant area at night will provide a safe working environment. There is no requirement to illuminate the gas storage tank. An aircraft warning light will be located on top of the gas storage tank and/or flare in consultation with the Civil Aviation Safety Authority. The intersection of TAC Northern Access Road and the Access Road will be illuminated for safety reasons.

2.2.3 Gas Pipeline

The gas pipeline will join the gas plant to the Hexham receiving station, feeding gas to the gas plant and returning gas to the network. A second pipeline from gas projects north of Hexham (e.g., Gloucester or Hunter projects) may be constructed to connect into the gas pipeline access corridor. This second pipeline does not form part of the Project and will be separately assessed.

Option 2 has been chosen as the preferred gas pipeline route to avoid the SEPP 14 Coastal Wetlands and other significant native vegetation.

2.2.4 Hexham Receiving Station

The Hexham receiving station will monitor the quality and control the volume of gas to and from the gas plant.

The gas pipeline will enter the receiving station via the front boundary of the property.

2.2.5 Operation Hours

The gas plant site, pipeline and Hexham receiving station will operate continuously, 365 days per year. It is anticipated that the workforce will travel to and from the site by light vehicles.

2.2.6 Water

Water Management

Water management for the site has been revised following consultation with HWC, NOW and OEH. The indicative project water balance is shown in Figure 2.12.

Stormwater

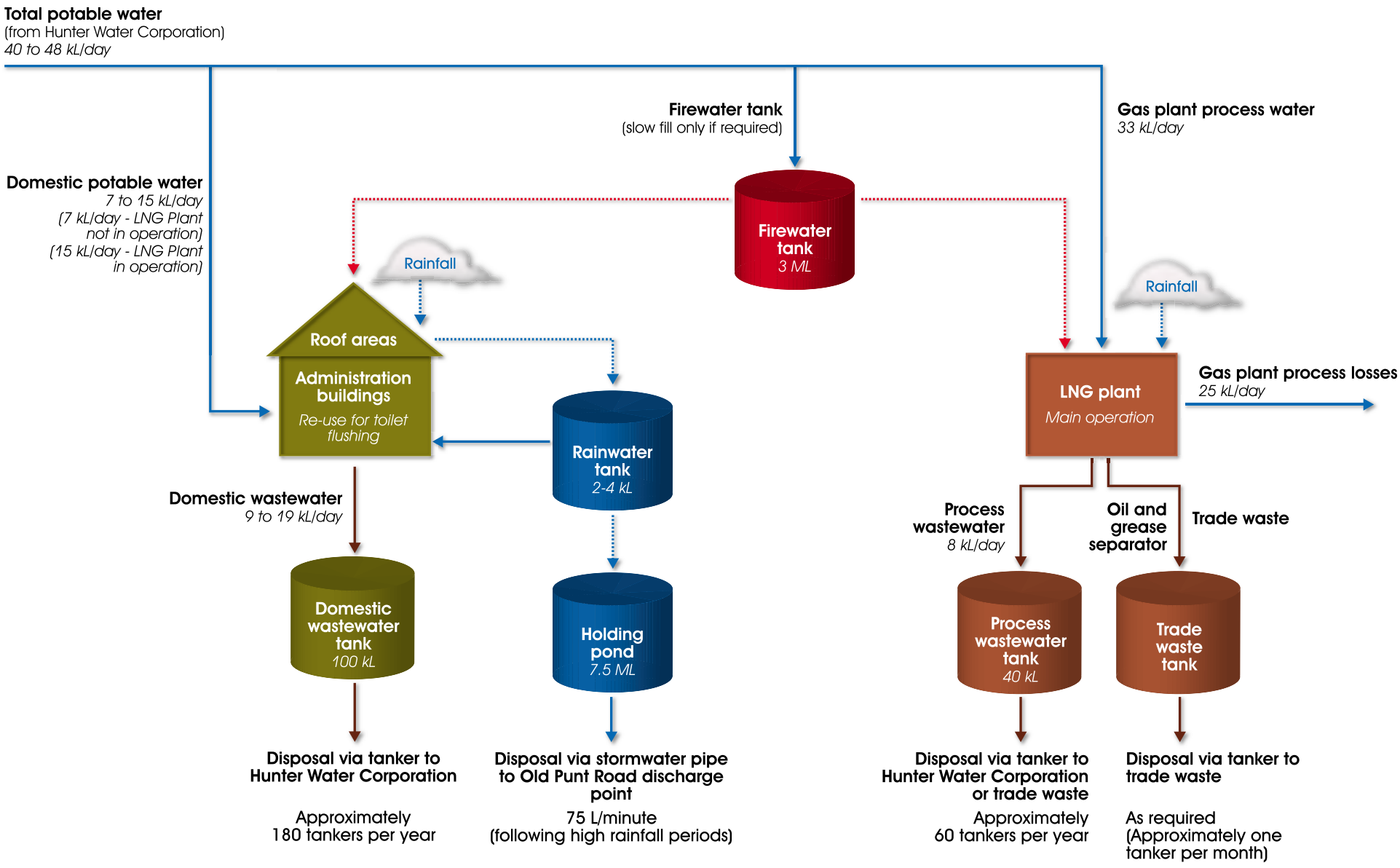
AGL has prepared a revised site stormwater management plan in consultation with HWC and Port Stephens Council (PSC).

The constructed wetland and infiltration ponds initially proposed as part of the Project have been replaced by a single holding pond along the western boundary to collect stormwater runoff. A pump station will be connected to the holding pond and will transport stormwater from the gas storage facility, via a 1.6 km underground (225 mm diameter) pipeline, to Old Punt Road along the proposed Access Road and Utility Corridor (Figure 2.13). The proposed discharge point will be along the western side of the culvert crossing on Old Punt Road.

Wastewater

The Project anticipates approximately 10 kL of human sewage per week will be generated and removed from site during operations

Following further consultation with HWC and PSC it has been determined that a pump out from the site is more appropriate than an onsite treatment system due to the increased ability to closely monitor the tank and local soil and groundwater conditions.



	coffey natural systems	Job No: 6032	AGL Energy Limited	AGL	Indicative project water balance	Figure No: 2.12
		File Name: 6032_01_PPR_F02.12_HB	Newcastle Gas Storage Facility Project			

Source:
Imagery from NearMap (June 2010).
Proposed GSF layout and stormwater main from Worley Parsons (August 2011).
Proposed gas plant site and pipeline corridor options from AGL.
Note: Proposed pipeline corridor options and access road are indicative only and may be subject to change.

coffey natural systems

Date: 09.09.2011
MXD: 6023AD_PPR_GIS006_v1_4
File Name: 6023_01_PPR_F02.13_GIS_HB

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Indicative stormwater discharge pipeline

Figure No: 2.13

2.2.7 Power

The main power supply will provide primary power for the gas storage facility.

A 33kV transmission line is located 300 m to the north and parallel to the northern boundary of the site. The main power supply will tap into this 33 kV transmission line and an underground cable will run south along the Ausgrid easement to the midpoint of the northern boundary. It will then terminate in a 33 kV switch room and a return underground cable will then run in the same trench back to the 33 kV transmission line. Adjacent to the 33 kV switch room will be a 33 kV/6.6 kV substation consisting of two transformers, which will feed the main switch room and switchboard.