



24. Infrastructure, utilities and services

This chapter considers the potential impact on utilities and other infrastructure intercepted by the Project.

24.1 Methodology

Information relating to the infrastructure, utilities and services located along the route was gained from a number of sources, including:

- Dial before you dig searches;
- Field assessments and identification of services pits, markers and easements; and
- Consultation with utilities and service providers to determine location of infrastructure, potential impacts to the services and methods to employ during construction.

24.2 Existing infrastructure

Various services are located in the vicinity of the pipeline route. Services are generally local in occurrence with the pipeline either intersecting or running parallel to these services over a relatively short distance. These services include Council owned water mains, a number of other gas pipelines, optic fibre cables, underground and above ground power cables and private irrigation systems. A summary of the main services intercepted by the pipeline is provided below.

24.2.1 Natural gas and ethane supply

For a large proportion of the alignment, the pipeline route runs adjacent an existing gas pipeline easement, the Moomba to Sydney Pipeline easement. This gas easement contains two separate gas pipelines; a 32 inch natural gas pipeline and an eight inch ethane pipeline, both with separate owners.

The gas pipelines are located within an existing nominally 25 m wide easement. The width varies depending on the requirements of various connections and other ancillary equipment forming part of those services works.

There are a number of off takes from the gas pipelines that the proposed water pipeline would cross. The three most prominent are located at Taralga Road in Goulburn, Brayton Road in Marulan and Sallys Corner Road in Sutton Forrest.

24.2.2 Electricity

The proposed pipeline route follows Transgrid 330 kV overhead powerlines for a portion of its alignment at the Wingecarribbe Reservoir end. The powerline easement is 60 m wide centred on the centreline of the infrastructure.

Various other overhead and underground powerlines are crossed locally along the pipeline route.

24.2.3 Sewerage

Local sewerage networks may be intercepted particularly in the area to the north of Goulburn.



The Goulburn sewerage treatment plant (STP) treated effluent irrigation scheme is intercepted by the pipeline to the north east of Goulburn

24.2.4 Water supply

The Goulburn Mulwaree water supply network may be intercepted on the northern side of Goulburn

The proposed pipeline route runs nearby to a number of farm dams located on properties along the easement. The dams vary in size and volume and are mainly used for stock watering.

Groundwater extraction bores occur along the route which is also primarily used for stock watering and domestic purposes. The exception is the commercial groundwater extraction activities undertaken in the

24.2.5 Telecommunications services

Various telecommunications cables are located in the vicinity of the pipeline route. Most notable is the AAPT (Powertel) Optic Fibre cables which generally run along the edge of the gas pipeline easement. The AAPT Powertel cables frequently cross between the north and south sides of the easement.

24.2.6 Road Reserves

The proposed route alignment would cross 68 roads including RTA roads, local Council roads, rural roads and unnamed roads. The RTA roads that would be crossed include the Hume Highway (~chainage 26 400), the Illawarra Highway (~chainage 7 607), Sheepwash Road (~chainage 839) and Crookwell Road (~chainage 76 715). All RTA roads would be crossed by thrust boring while local Council roads and unnamed roads would be crossed by open cut trenching.

At this stage, the proposed pipeline route would not run parallel within a road reserve. Road reserves would mostly be intersected perpendicular to the alignment.

24.2.7 Railways

Five railway crossings would occur along the proposed pipeline route. These include:

- ▶ Moss Vale Unanderra Railway (~chainage 4 566);
- ▶ Main Southern Railway (~chainage 13 873, ~chainage 52 626 and ~chainage 68 034); and
- ▶ Goulburn Crookwell Railway (~chainage 72 798).

All railway lines would be crossed by thrust boring an entry and exit point on either side of the railway line and boring under the railway line to install the pipeline. Railway lines would be intersected as close as practicable to 90°, however, it is considered preferable to have a greater oblique angle than to introduce bends within the railway reserve.

24.3 Impact assessment

Existing services invariably provide a constraint during construction of the pipeline. In this case the proposed route is following an existing gas pipeline easement and several power line easements. There are issues in relation to working in the vicinity of such services corridors and similarly the services can have some impacts on the proposed pipeline. A summary of the potential impacts in relation to specific services is provided below.



24.3.1 Gas pipelines

Construction within close proximity to the natural gas pipeline and ethane pipeline has been assessed in accordance with AS 2885-1-2007: *Pipelines - Gas and liquid petroleum - Design and construction* to assess the potential risks associated with the proposed work. A workshop was undertaken with the relevant infrastructure owners to assess the risks associated with the Project. Twelve potential hazards and associated risks were identified for the Project. The hazards and risks identified during the assessment are provided in more detail in Chapter 23.

The hazard with the highest assessed risk, even after implementation of recommendations, is rupture of one of the gas pipelines as a result of misdirected HDD at creek crossings and highways. Adverse interaction between adjacent cathodic protection systems is uncertain at this stage of the design. Further investigation into the issue would be undertaken during detailed design.

The pipeline route has been determined such that the gas pipeline easement is not crossed at any stage. The gas pipeline and easements are not expected to be impacted during the operation of the pipeline except when maintenance activities may occur.

24.3.2 Road reserves

Road drainage works such as culverts, table drains, embankments and cuttings can provide considerable constraints for the construction of a pipeline. In many cases, the existing infrastructure would be removed or modified and reinstated after the construction of the pipeline. This is particularly the case where open cut trenching is undertaken.

The RTA roads that would be crossed by thrust boring under the road are unlikely to be impacted by the proposed work if standard construction methods and RTA guidelines are adhered to. The major potential impact is the risk of frac-outs (fractures occurring in the strata overlaying the boring work as a result of strain on the rock) and the drilling head steering off-course during thrust boring. These issues would be controlled through monitoring the drilling head under the road during construction. This would involve potentially closing lanes of traffic on the Hume Highway outside of peak road use hours (e.g. after 7:00pm and before 6:00am).

One of the main impacts when undertaking work within the pipeline corridor is the risk of damaging environmentally significant remnant vegetation which often exists in country road reserves as they are areas of vegetation which have not been modified over the years by the farming activities which has tended to modify the landscape.

Roads and road reserves are not expected to be impacted during the operation of the pipeline except where maintenance may occur.

24.3.3 Railways

ARTC manages the railways outside of the RailCorp Sydney Metropolitan region in NSW and as such has jurisdiction of the railways intersected by the proposed pipeline route. Construction of the pipeline within the railway boundary would be undertaken in accordance with:

- ▶ AS 4799-2000 *Installation of underground utility services and pipelines within railway boundaries* (see further discussion below);
- ▶ ARTC Standards EGS00 to EGS07 (old G5000) available from www.artc.com.au;



- ▶ Railway of Australia (ROA) – Code of installation; and
- ▶ AS/NZS 2566.2:2002 *Buried flexible pipelines - Installation*.

The pipeline corridor would cross the Main Southern Railway three times as well as the Goulburn Crookwell Railway and the Moss Vale Unanderra Railway. Construction in the vicinity of the railway line would be undertaken by thrust boring which involves excavating an entry and exit point either side of the railway line and boring under the railway line to install the pipeline. AS 4799-2000 *Installation of underground utility services and pipelines within railway boundaries* (Accessed 21 December 2009) describes the procedures for undertaking railway crossings and other work within the rail corridor. Further details on the construction requirements are provided in Chapter 6.

Given the necessary design precautions, the rail crossings in this project are relatively straight forward and would provide little difficulty in construction. The only difficulty arises from the fact that country rail lines are generally impassable by vehicles for several kilometres and machinery and personnel would have to approach the crossing from both sides.

Railways and railway reserves are not expected to be impacted during the operation of the pipeline except when maintenance may occur.

24.3.4 Other services

A preliminary Dial Before You Dig request has been undertaken and initial contact has been made with the service providers that would be impacted by the proposed works along the pipeline.

In many cases, the proposed pipeline would be located directly adjacent to existing services easements, particularly the gas pipelines, the AAPT fibre optics and the TransGrid overhead powerlines.

Consultation with the service providers is ongoing and potential impacts to the services would be clearly defined in the detailed design.

Where the fibre optic alignment deviates from the gas pipeline easement, the proposed water pipeline would also deviate to avoid crossing the fibre optic cable along the pipeline route. This would limit the potential impact to the services.

Local services that would be crossed during the pipeline construction, including power, water, telecommunications and sewerage, would be identified during detailed design and negotiations with the relative service providers would be undertaken, particularly where services may need to be temporarily disabled, realigned or shut down during construction.

All dams and groundwater extraction infrastructure would be avoided during construction. The pipeline alignment would be deviated around all such infrastructure. Specific potential impacts to groundwater and surface water are identified in Chapter 14 and Chapter 15.

24.4 Summary of results

A number of existing services and infrastructure would be crossed during the construction of the 83 km of pipeline from Wingecarribee Reservoir to Goulburn. Standard construction methods would be employed during construction such that the potential impacts to these services are minimised. It is not expected that these services would be impacted in the long term and discussions would be held with service providers such that disruptions to the operation of the infrastructure is avoided or limited.



The main potential impacts to infrastructure, utilities and services relate to construction in vicinity of the gas pipeline easement and the Hume Highway, railways, the fibre optic easement, and water and electricity supplies. Standard construction methods as determined by Gorodok and APA, the RTA and ARTC and other service providers would be employed to reduce the potential impacts to this infrastructure. Additional mitigation measures would be employed for construction undertaken adjacent to the gas pipeline easement.

24.5 Mitigation measures

The impacts to infrastructure, services and utilities would be managed in the risk management plan as part of the construction environmental management plan. The construction of the pipeline would be undertaken in accordance with standard construction methods defined by the relative service providers. An investigation would be undertaken to determine the location of utilities, infrastructure and services within the construction impact corridor. Consultation with the services and utilities providers would be ongoing throughout the Project.

Specific mitigation measures relating to the construction of the pipeline within proximity to the gas pipeline easement are as follows:

- ▶ In the event that blasting is required, approval of the blasting criteria must be obtained by APA and Gorodok;
- ▶ Increase the offset from the gas pipelines at locations where HDD is used;
- ▶ Ensure information on Cathodic Protection / Anode bed offtakes are transferred to detailed design; and

Employ the daily use of a gas detector prior to and during construction to detect potential fugitive emissions arising from the gas pipeline.