9 July 2020

Jessica Fountain
Key Sites, Industry & Regional Assessments
Department of Planning, Industry & Environment
4 PSQ Level 17, 12 Darcey Street,
Parramatta NSW 2150

Jessica.Fountain@planning.nsw.gov.au

Jemena Gas Networks
(NSW) Ltd
ABN 87 003 004 322

Level 14
99 Walker St
North Sydney NSW 2060
PO Box 1220
North Sydney NSW 2060
T +61 2 9867 7000
F +61 2 9867 7010
www.jemena.com.au

Dear Jessica,

Project: Powerhouse Parramatta

Reference : SSD-10416

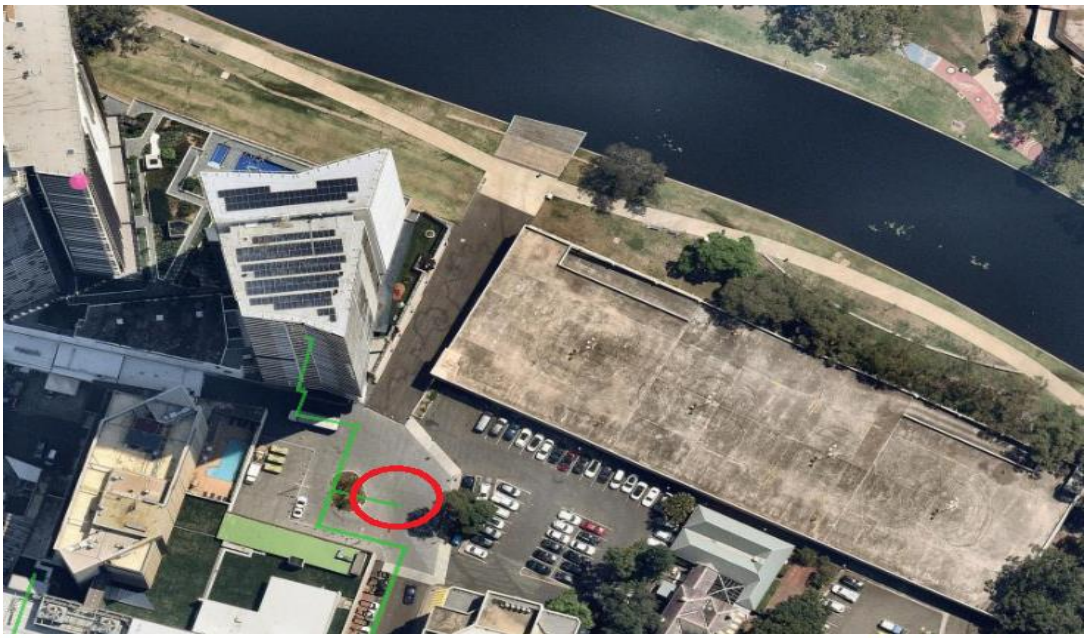
Location : 30B Phillip Street, Parramatta (Lots 1&2 DP1247122 and Lot 1 DP 128474)

Jemena Asset Management Pty Ltd on behalf of Jemena Gas Networks (NSW) Ltd (collectively Jemena) has reviewed and assessed the SSD with respect to safety and impacts on or from the Jemena gas main which traverses the land parcel (Lot 2 DP1247122) which is the subject of the State Significant Development application. A registered easement is on title (DP1235084) – Easement for gas mains 1 metre wide and variable width which favours Jemena and gives it the right to own, operate, maintain and access a gas main and associated apparatus.

Jemena confirms that it supports the redevelopment of the site and will actively work with the State to ensure that the proposed development proceeds with the following conditions (below) to ensure the integrity of the gas distribution network servicing the adjoining community is retained, whilst ensuring community safety during the construction phasing of the development and ongoing operations of the gas main in proximity to the development.

1. Jemena has a secondary gas main in the road reserve of Phillip Street and Dirrabarri Lane before it transitions into the development site. Jemena will request the project to determine the exact alignment and depth of cover of the secondary main within the land parcel and within the road reserve so that it can be adequately protected during the construction phasing. Any proposed works within the easement, including change in levels, will need to be submitted to Jemena for review.
2. Site supervision of the gas main will need to coordinated with the constructor with a Jemena Pipeline Protection Officer supervising any construction works within 3 metres of the gas main. (See Jemena Construction Guidelines attached GAS-960-GL-PL-001)
3. The Concon regulator is currently situated within the footpath of Dirrabarri Lane. As the proposed works will have an impact on the Cocon regulator, Jemena will request that the Cocon regulator be relocated outside of the construction zone at the projects expense.
4. Any request for a new connection, augmentation of the gas main alignment, the removal or further isolation of the existing gas main will need to be coordinated through Jemena Gas Network Development (Zachary Kennett). Jemena has previously installed a stub contemplated a future connection point for gas into the property parcel (see highlight section in map below). ARUP have been advised of the stub connection as part of the early engagement with the Powerhouse project in April 2020.

5. At a high level, any future meter room associated with the Powerhouse development, can be either external or internal room on an exterior facing wall on levels B1, Ground or Level 1. The service line between the below point and the meter can't be built on top of other than where it penetrates into an internal meter room.



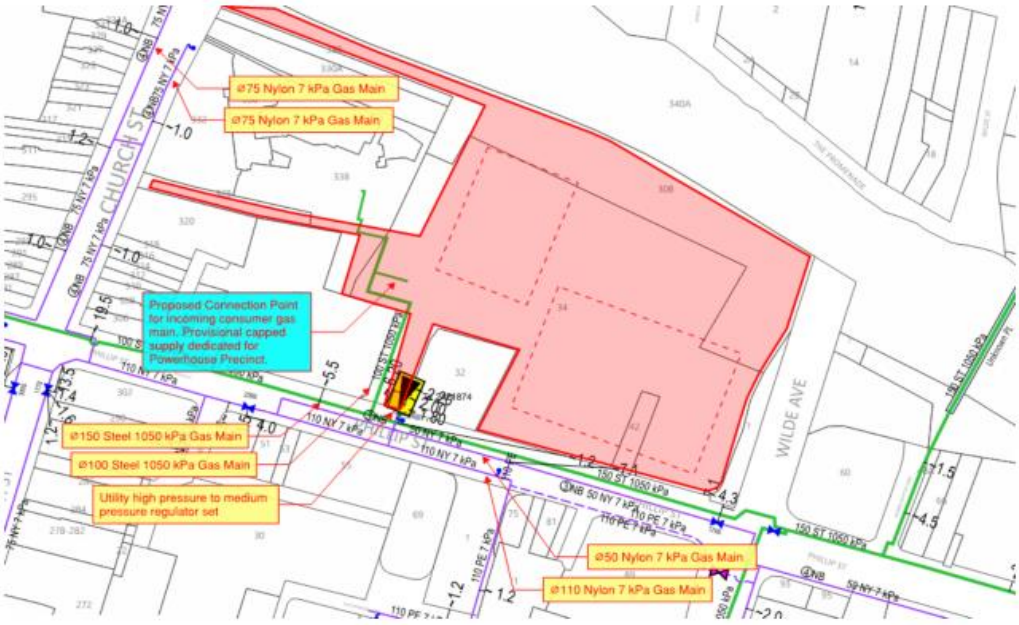


Figure 5 - Surrounding Utility Gas Infrastructure

Jemena Gas Networks (NSW) Ltd is the authorised reticulator for its gas distribution networks in NSW as defined in the Gas Supply Act 1996. The Reticulator's Authorisation granted to Jemena Gas Networks (NSW) Ltd (JGN) under the Gas Supply Act 1996 authorises JGN to operate a distribution system for the purpose of conveying natural gas within a number of NSW distribution districts. The JGN provides gas to 1.4 million Sydney and NSW costumers.

The majority of the gas distribution network is situated within urban environments, with most mains located below the ground surface (i.e. located beneath roads, pavements and footpaths). Many of these mains are within close proximity to other below ground utilities, including electricity, water and fibre optic cables. A small proportion of mains are above the ground surface and exposed (i.e. located on bridges and across stormwater channels).

To provide some greater context to Jemena's recommendation to the exhibition of the project and Jemena's infrastructure utility interface. The secondary gas main operates at pressures greater than 1,050 kPa. Jemena manages the operation of the secondary gas main to the Australia Standard AS 4645.1, 2 and 3. Jemena takes its rights and obligations under the Australian Standard seriously as they relate to ensuring the ongoing safety and integrity of its mains/ pipelines and the community at large.

If you have any questions or quires, please do not hesitate to contact the undersigned.

Kind Regards

Luke Duncan
Property Officer
Gas Distribution

GUIDELINE

GUIDELINE TO DESIGNING, CONSTRUCTING AND OPERATING AROUND EXISTING AS2885 NATURAL GAS PIPELINES

GAS-960-GL-PL-001

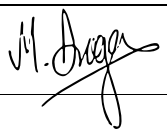
Revision Number: 8
Revision Date: 4/11/2016

AUTHORISATION

REVIEWED BY

Name	Job Title	Signature	Date
James Wu	Engineering Support Manager - Pipelines		04/11/16

Approved by

Name	Job Title	Signature	Date
Mark Dragar	Asset Manager - Pipelines		04/11/16

INTERNAL

Jemena
bringing energy to life

DOCUMENT HISTORY

Revision	Date	Author	Description of Changes
0	4/11/2016	R. JEYARAJAH	New Jemena Template and general changes. Addition of Feedback Form, and supersede all other Jemena encroachment guidelines

OWNING FUNCTIONAL GROUP & DEPARTMENT / TEAM

Asset Management : Asset Strategy Gas : Pipelines

REVIEW DETAILS

Review Period:	As required
Next Review Due:	As required

TABLE OF CONTENTS

1 INTRODUCTION

1.1 PURPOSE

This document has been developed to provide general guidelines to assist the Third Party in their design/construction proposal prior to submitting it to Jemena for review.

This document does **NOT** authorise the Third Party to carry out any construction activities unless the design/construction proposal has been reviewed, assessed and accepted by Jemena.

Jemena Pipelines are licensed under the legislative provisions of each State. The Legislations contain a number of requirements including the:

- Approval from the relevant statutory authority for any modification to the assets as a result of the encroachment.
- Where required separate easements for third party services crossing Jemena Pipelines, and
- Approvals from the easement licence holder for works within the easement.

Jemena aims to continuously improve the guidelines it provides to help avoid delays or additional work or costs being incurred. The Feedback Form located in Appendix A of this guideline can be used to provide suggestions/or questions for continuous improvement.

1.2 DEFINITION

Term	Definition
Easement	A corridor for Jemena Pipelines that are laid in land other than road reserve (Private property) require an easement. The easement terms and conditions are listed in the current Jemena 88B document, to obtain the 88B document refer to Jemena Land Services.
Encroachment	Any design or construction activity and changes in operating condition that may impact on the integrity of the pipeline; Also see Standard and Non-Standard Encroachment
Encroachment Management Study (EMS)	The process that identifies threats to the pipeline system and applies controls to them, and (if necessary) undertakes assessment and treatment of any risks to ensure that residual risk is reduced to an acceptable level. This will include conducting workshops that will include relevant Stakeholders from the Third Party, Jemena lands, Service Delivery and Asset Management.
Jemena Pipeline (AS2885 pipeline)	A Jemena owned/operated natural gas pipeline that operates above 1050 kPa.
Jemena Representative	Responsible for providing site instructions to the Third Party as part of ensuring the safety and integrity of the Jemena Pipeline.

Term	Definition
Non-Standard Encroachment	An encroachment that does not meet the requirements set out in Section 6 of this Guideline.
Road Reserves	Road reserve is measured from boundary to boundary which includes the footpath, stormwater drains, roadways, medium strips, bus lanes and cycleway.
Shall	Designates a mandatory action
Standard Encroachment	An encroachment that meets the requirements set out in Section 5 of this Guideline.
Third Party	Developer, Builder, Owner, Contractor or Customer planning or conducting works in the vicinity of Jemena Pipelines.

1.3 REFERENCE DOCUMENT S

- AS2885.1 Pipelines - Gas and liquid petroleum-Design and construction
- Jemena Excavation Procedure document number; GAS PR 0005
- Jemena Backfilling Procedure
- Jemena Pipeline Survey Specification Procedure.

1.4 CONTACT DETAILS

1.4.1 FAULTS AND EMERGENCIES

For faults and emergencies only:

- Eastern Gas Pipeline (VIC/NSW) **1800 620 492**
- Queensland Gas Pipeline (QLD) **1800 177 008**
- Jemena Gas Network (NSW) / ActewAGL Distribution (NSW/ACT) **131 909**

1.4.2 JEMENA SERVICE DELIVERY

The Contact numbers to book a Jemena Representative are as follows:

1. NSW Jemena Gas Network **1300 665 380**;
2. Eastern Gas Pipeline (VIC/NSW) **(02) 9867 7700** ;
3. Queensland Gas Pipeline (QLD) **(07) 3498 7500**
4. ActewAGL Distribution **1300 503 237**

2 DUTY OF CARE FOR WORKING AROUND JEMENA PIPELINES

Working next to high pressure gas pipelines is extremely dangerous. You should always exercise due care and caution when working near any gas infrastructure. In addition to your general duty of care, there may be other obligations under relevant state legislations which require you to maintain safe practices.

Due care shall be taken at all time not to damage the Jemena pipeline or the protective coating covering the pipelines.

Any damage to Jemena Pipelines, their protective coating or other assets shall be reported immediately to Jemena (see SECTION 1.4.1 for contact numbers).

3 APPROVAL PROCESS

3.1 JEMENA LANDS TEAM:

The Third Party shall contact the Jemena Lands Team on Land.Services@jemena.com.au.

Jemena Lands Team will register the new enquiry and will advise the Third Party of the next steps based on the proposal.

3.2 SITE MEETING:

The purpose of the site meeting with the Lands Coordinator and a Jemena Representative is to:

- Identify the location of the Jemena Pipeline **(refer to Section 5.2.2)**;
- Discuss and review (where applicable) the design/construction scope of work.

Jemena Lands Coordinator and a Jemena Representative, will decide if the proposed design/work is a **STANDARD ENCROACHMENT (refer to Section 5)** or a **NON STANDARD ENCROACHMENT (refer to Section 6)**.

If the site meeting determines that the proposed design/work is a **STANDARD ENCROACHMENT**, a discussion and an agreement of the next step will be undertaken to ensure a Jemena Representative will be available to oversee that the works are undertaken as per Section 5.

If the proposed design/construction is a **NON STANDARD ENCROACHMENT**, Jemena Lands Coordinator will escalate the proposed design/construction.

3.3 JEMENA PIPELINE ENGINEER ENGAGEMENT:

The pipeline engineer will review the proposed design/construction package **(refer to Section 4)** and provide any drawing mark-ups or comments on the methodology to ensure that there are sufficient controls to ensure the integrity of the Jemena asset. Where the proposed design/construction package is acceptable, the Jemena engineer will provide a dated digital acceptance stamp on reviewed drawings.

In some cases, the Pipeline Engineer may elect to conduct an Encroachment Management Study (EMS) with the relevant stakeholders (Third Party and Jemena) to ensure that the threats from the

proposed design/construction are considered and effective controls are put in place. Any action items from the EMS will be communicated to the third party in a formal written response. Any additional controls identified shall be incorporated in the design/construction documents and re-submitted to Jemena for approval by the Third Party.

3.4 COMMERCIAL

Commercial agreement may be required if there is a permanent crossing that leads to restriction of access to Jemena pipeline or modification. If so, this will be discussed and negotiated with the Lands Team.

Where a Commercial Agreement is required, the agreement shall be in place prior to any design acceptance and construction occurring.

4 DESIGN AND CONSTRUCTION PACKAGE

The Third Party shall provide the Design/Construction Package to Jemena for review and acceptance.

The package shall include but not be limited to the following:

- Due Dates or Project Program;
- Scope/Description of the project impacting on the Jemena Pipeline/s;
- Site Layout: Site Layout drawings shall include the following:
    - The location/address of the proposed work.
    - Site Access Designated Area including Jemena pipeline location and depth of cover (confirmed by positive identification) relative to the works
    - Sheds: The Third Party shall not install sheds directly over pipeline or within the easement without obtaining Jemena approval.
    - Temporary Stockpile: The Third Party shall not stockpile any heavy material directly over the pipeline, temporary Stockpile should be kept away from the pipeline to a distance equivalent to pipeline depth of cover plus 1 m.
- Design: depending on the proposed design/work, the drawings shall include the following **(refer to Section 5 or 6):**
    - Plan drawing: show the location of the Jemena's pipeline and the new service crossing including the separation distance;
    - Cross sectional drawing: show the vertical separation distance between Jemena's pipeline and the new service.
    - Details of Cathodic Protection where applicable for the new service
- Construction **(refer to Section 5):**
    - Construction alignment sheet (if applicable);
    - Construction methodology: Specify the construction activities, what equipment and how it will be used around the Jemena Pipeline
    - Plant and Equipment Specifications including:
        - Size of the plant, equipment or machinery that will be used within the Jemena Easement or where there is no easement, within a 10 m distance;
        - Load per axle where the vehicles will be crossing the Jemena pipeline;
        - Wheels configuration or track dimensions where the vehicle will be crossing the Jemena pipeline

The design documents required in this Section shall take into account the requirements outlined within this document, along with any other controls that may be required by Jemena.

5 STANDARD ENCROACHMENT

This section describes the minimum design and construction guidelines for utility crossings (trenched /trenchless installations), vertical drilling, road work maintenance, changes to surface levels and vehicle crossings in the vicinity of the Jemena Pipelines.

For activities complying with the requirements in this Section, the design and construction packages shall be as per **Section 4**. Where the proposed design/construction does not meet the requirements in this Section, the Third Party shall comply with the additional documentation requirements outlined in **Section 6**.

5.1 DESIGN

The most effective means of reducing the risks of working around gas infrastructure is to plan works in locations where the gas infrastructure is not located, or locations where the impact can be minimised. Where this is not possible, risk can be minimised through accurate locating and maximising clearances during the design phase.

Safety in design should be paramount, with due consideration of safe methods for the construction of the works and the ability to apply effective controls for these activities.

5.1.1 SEPARATION DISTANCE FOR NEW SERVICE

Electrical assets encroaching on Jemena Pipeline are considered **NON STANDARD ENCROACHMENT (refer to Section 6) and have additional requirements to the separation requirements outlined in Section 5.**

5.1.1.1 Trenching (open cut)

The separation distance between a new service crossing a Jemena pipeline is as follows:

- **Major utility services** vertical separation to the nearest surface of the Jemena Pipeline:
  - **Crossing over** - minimum 500 mm
  - **Crossing under** – minimum 1000 mm

All services crossing above Jemena Pipelines are to be marked with buried gas warning marker tape at the bottom of the service trench.

All services crossing below Jemena Pipelines shall have a Jemena Pipeline Marker installed within 1 m of the crossing point.

The requirement for any service (pipe or cable) to be installed parallel to the Jemena Pipeline is as follows:

- Where there is a **Jemena easement**, the service shall be located **outside of the Jemena easement.**
- Where there is **no Jemena easement**, the service shall be installed with a **minimum horizontal clearance of 1000 mm** between the two nearest surfaces (Jemena Pipeline and new service).

5.1.1.2 Vertical Drill

Where Jemena Pipeline has an easement, all vertical augering, including drilling for any geotechnical investigation shall be outside the easement.

Where Jemena Pipeline does not have an easement: the minimum separation distance to Jemena Pipeline shall be a minimum of **5 m** for any vertical augering, including drilling for any geotechnical investigations.

5.1.1.3 Trenchless Installations

The minimum separation distance for trenchless installations (including Horizontal Direction Drill (HDD), Micro Tunnelling (Laser Bore), or horizontal bore) shall be **3 m**.

For trenchless crossings of Jemena Pipelines:

- The Jemena Pipeline shall be **fully excavated at least 1 m in all directions** to ensure the drill will cross the pipeline safely with sufficient clearance; and
- A visual window in the form of a **slot/witness trench** 2-3m away from the pipeline on the drill approach side shall be provided. The slot/witness trench should have a depth equivalent to the Jemena pipeline depth (positively identified) plus 1 m.

5.1.2 EXISTING ROAD WORK MAINTENANCE

The minimum cover including the reduction of cover for road maintenance shall be minimum **1.2 m** to the top of the pipe. And the maximum finish level to the top of the pipe is **3 m.**

5.1.2.1 Changes to ground levels or surface conditions

Ground levels within the easement shall not be altered without written permission from Jemena.

Any proposed alterations to the finished surface level, width or surfacing of any street or road (sealed/unsealed) reserve shall not be altered without written agreement from Jemena.

5.1.3 VEHICLE CROSSING AND CONSTRUCTION LOADINGS OVER JEMENA PIPELINES

The acceptable load/axle for construction vehicle or plant crossing over the Jemena Pipelines is limited to **8 Tonnes/axle**, the minimum depth of Jemena Pipeline shall be **1.2 m** at the crossing point. The crossing should be at right angles to the pipeline alignment.

Where soil conditions exhibit poor compaction and load bearing characteristics, such as swamp areas or wet soil conditions, equipment is not permitted to cross the pipeline irrespective of weight without written approval from Jemena.

Temporary Stockpile is not allowed within Jemena easement. Where there is no Jemena easement, temporary stockpile should be kept away from the pipeline at a minimum distance equivalent to the pipeline depth of cover plus one meter.

5.2 CONSTRUCTION PARAMETERS

5.2.1 GENERAL

All construction personnel shall be made aware of the presence of gas infrastructure at the daily pre-start meetings and toolbox meetings, with due consideration given to the gas infrastructure within the relevant Job Safety Assessment.

Gas Marker sign posts shall not be disturbed, relocated, removed or altered without the prior written approval from Jemena.

5.2.2 LOCATING JEMENA'S PIPELINES

Jemena Pipeline locations shall be positively identified (potholing) in the presence of a Jemena Representative (see Section 1.4.2 for contact details) prior to any drilling or excavation that may impact Jemena's buried pipelines.

Potholing can be carried out by HydroVac or AirVac as per Jemena's Pipeline Excavation Procedure GAS PR 0005. **Water jetting at high pressures has the potential to damage buried assets**. Care should be taken if water jetting and the Third Party shall ensure that the water pressure will comply with the approved water pressure range depending on the type of Jemena Pipeline coating as per below:

Pipe material	**Maximum allowable water pressure, psig**	
	Rotating nozzle	**Fixed nozzle**
Nylon	2000	1500
PE	2500	2500
Uncoated steel pipe	3000	3000
PE coated steel pipe (yellow jacket)	2000	2000
Fusion bonded epoxy (FBE) coated steel	2000	2000
Coal Tar Enamel coated steel	1000	1000
Petroleum tape coated steel	1000	1000
Tek-Rap coated steel	1000	1000
Coated steel pipe (unknown coating)	1000	1000

5.2.3 EXCAVATORS AND EXCAVATION PROCEDURE

The biggest acceptable size of excavator that can be used during trenching (open cut) is 20 Tonnes fitted with general purpose bucket (blade bucket toothless bucket, mud bucket).

The excavation **SHALL** comply with Jemena's excavation procedure GAS PR 005. The requirement for a Jemena Representative during excavation will be advised by Jemena based on the Construction Methodology, typically Jemena supervision is required for the following:.

- Any excavation within the easement or crossing the easement
- For road reserves within 2 m or crossing the Jemena Pipeline

5.2.4 BACKFILLING MATERIAL

The general backfilling material surrounding the Jemena pipeline (**minimum 150 mm around the pipeline**) shall be:

- Free of shell, stones and other deleterious material,
- Have a particle size not exceeding 1mm,
- Have a water extract pH value in the range of 6-8

- Sand bags are NOT allowed to be used as permanent bedding
- Recycled material is not to be used even if it meets the above specifications.

5.2.5 STABILISED SAND

If the Third Party needs to use stabilised sand, the stabilised sand shall not exceed a ratio of **14:1 (sand: cement)**.

5.2.6 COMPACTION OVER JEMENA PIPELINE

Compaction over Jemena Pipelines is limited to static rollers only.

- Where **cover exceeds 1.2 m**, compactors weighing **up to 10 tonnes** may be used over the pipeline.
- Between **0.6m and 1.2m cover**, compactor weight shall be **limited to 8 tonnes**.
- **Below 0.6m** cover, only a **handheld mechanical tamper** is allowed to be used.

The use of vibrating equipment is restricted in the vicinity of the Jemena Pipelines. Without prior approval, **vibrating compaction equipment is not to be operated within 20 m of the pipeline**, and handheld jackhammers are not to be operated within 5 m of the pipeline.

5.2.7 VIBRATION

Vibrations from any equipment or processes including vibrating compaction equipment, jack hammers, rock hammers, seismic measuring processes, etc. **are not to exceed peak particle velocity readings of 20 mm/second** at the nearest surface of the buried pipeline.

In the event that such vibrating equipment is to be used close to the pipeline or in blasting operations, suitable trials are to be conducted prior to proceeding with the proposed development to ensure that the stipulated peak particle velocities will not be exceeded.

Suitable vibration monitoring equipment is to be used to record the tests and works as they progress in accordance with agreed procedures with Jemena.

5.2.8 BLASTING

Blasting is **not allowed within 500 m** of Jemena Pipelines without prior written approval from Jemena.

5.2.9 PROLONGED JEMENA PIPELINE EXPOSURE

If the Jemena Pipeline is to be exposed for more than one day, suitable barricades and steel plates to be installed to ensure the security of the exposed Jemena Pipeline from accidental (construction or vehicle impact) or deliberate damage (vandalism).

Damage to Jemena Pipeline due to sagging shall be prevented. For **any unsupported span of pipe exceeding 6 m**, written approval from Jemena will be required.

5.2.10 JEMENA PROTECTION MEASURES - POST CONSTRUCTION

All existing Jemena Pipeline's protection measures including but not limited to concrete slabs, marker posts, marker tape and Cathodic Protection Systems shall be retained, any protection measure that was temporarily removed with Jemena's approval as part of construction is to be reinstated to its original condition post construction.

6 NON STANDARD ENCROACHMENT

Where the proposed design/construction does not meet the requirements outlined in **Section 5**, the following additional documentation requirements shall be met. Based on the proposed methodology, the Jemena Engineer may deem that an EMS is required. The third party shall actively participate in the EMS and complete any action items before design and construction acceptance.

6.1 DESIGN PARAMETERS

6.1.1 VERTICAL DRILL

If Third Party cannot achieve the **STANDARD ENCROACHMENT** requirement, the Third Party shall provide Jemena the following information in the design package in addition to the minimum requirements set out in **Section 4**:

- The methodology of drilling activity, such as hammering, rotating, etc.;
- Findings of any Geotechnical assessment of formation being drilled to determine if ground settlement/heaving is likely and monitoring methodology to be used during works; and
- Demonstrate recommended physical mitigation measures.

6.1.2 TRENCHLESS CROSSING

If a trenchless crossing activity is proposed to be carried out near Jemena Pipelines is less than the minimum recommended distances in **Section 5.1.1.3**, the following documents (in addition to minimum requirements in **Section 4**) shall be provided by the Third Party to Jemena for review:

Trenchless installation details including:

- Drill path profile showing Separation distance between the new service and the existing Jemena pipeline.
- The location and setup of the launch and receive pits where they are located within the Jemena Easement, where there is no easement, if located within 10 m;
- Drill head control, accuracy and monitoring methodology;
- Geotechnical assessment of formation being drilled to determine if ground settlement/heaving is likely and monitoring methodology to be used during works;
- Contingencies in the event of frac-out where drilling fluids are used; and
- Demonstrate recommended physical mitigation measures.

6.1.3 NEW/UPGRADED ROAD CROSSINGS

The following specific design requirements will be required for road crossings:

- Minimum cover of 1200mm from the finished surface of the road or the invert of the drains to the top of the pipeline.
- Road alignment shall cross the pipeline at or close to a right angle.
- Road alignment shall not be parallel to and above the pipeline
- Where permanent protection measures are proposed, see Section 6**.1.6**

6.1.4 ELECTRICAL UTILITY INSTALLATION

For **High Voltage Electrical installation**, defined as **voltage above 1000 VAC and 1500 VDC**, the Electricity Asset Owner or representative shall perform an electrical hazards study on the Jemena steel Pipeline in accordance to the latest version of AS4853 (Electrical Hazards on Metallic Pipelines).

The study shall be completed by a certified practitioner. The types of electrical hazards that need to be covered are as follows:

- Low frequency induction (LFI);
- Earth potential rise (EPR);
- EPR due to lightning current;
- Capacitive coupling on the pipeline due to adjacent high voltage power lines; and
- Accidental contact of pipeline with other electrical systems.

This report shall be submitted to Jemena for acceptance prior to implementing any design. The report should clearly state the standards it refers to, e.g. AS 4853:2012, details of the proposed electrical infrastructure, the hazards that have been assessed, the assessment, findings and Jemena's pipe details (diameter, length, and distance to nearest pipeline facility where contact by personnel is expected, such as Cathodic Protection Test Points).

For **Low Voltage Electrical installation** defined as voltage **below 1000 VAC and 1500 VDC**, the Electricity Owner or representative shall perform an electrical hazards study on the Jemena steel Pipeline in accordance to AS/NZ 5601 and AS 3000 by a certified practitioner.

6.1.5 BLASTING

If blasting activity is the proposed work, the following information shall be included in the design:

- The blasting distance from the pipeline;
- Depth of the blast;
- Shot size (kg);
- Shot sequence and delay; and
- Shot strength.
- Information on Peak Particle Velocity (PPV) and measures to be in place during blasting to monitor PPV (**refer to Section 5.2.7**)

6.1.6 NEW PERMANENT STRUCTURAL PROTECTION INSTALLATIONS OVER JEMENA PIPELINE

If the depth of the cover of Jemena Pipeline is Less than 1.2m or more than 3m, and the Third Party is proposing to design and install a new permanent structure on the top of Jemena Pipeline to provide protection from external loads or damage, the Third Party shall provide the following in the design package:

- The slab design drawing (plan and cross section);
- How the slab will be supported, i.e. vertical piers or similar
- Geotechnical investigations
- Design calculations; and
- Certification from the Structural Engineer certifying the adequacy of the design in ensuring the pipeline is isolated from excessive loading

The permanent structure shall be submitted to Jemena for review and acceptance.

7 ENVIRONMENTAL

The Third Party shall consider the following environmental requirements:

- Any tree planting within the vicinity of the Jemena Pipeline shall be reviewed and approved by Jemena. The proposed tree planting shall include the plan drawing showing the Layout of the

trees with respect to Jemena pipeline, and type of the trees that will be planted. Expected size of trees and shrubs at maturity demonstrating the location with respect to an easement, proximity of roots to a pipeline and placement of root barrier measures

- Clearing & grubbing, soil recovery management plans where work is carried in rehabilitated areas;
- Operations management plan, describing site layout, materials management and logistics/supply, traffic movements in/near gas mains area;
- Weed Management plan to ensure weeds, diseases are not imported/exported from site including vehicle cleaning process;
- Groundwater & construction water management plan, treatment & disposal means, including existing groundwater, water for hydro testing needed;
- Soil, erosion management plans;
- Area rehabilitation plan to ensure vegetation is reinstated consistent with local area;
- Management of local stakeholders;
- Information on type and source of soils/fill to be imported, to ensure material is suitable for use & not contaminated;
- Mitigation measures for air, noise, vibration, dust, erosion management issues on site
- Soil mechanics properties of fills to be imported, friction angle, calculation of soil pressures and mitigation measures for mains protection where surcharge may occur. Include design of protective slab, shoring and retaining walls to be proposed;
- Noise & Vibration management plan for works carried out near sensitive receivers or where vibration generating equipment is used.
- Check local authorities if excavation is to be performed within 50 m of a waterway. This activity may require state regulatory permission or advice.

8 AS-BUILT DRAWINGS

8.1 STANDARD ENCROACHMENTS

On completion of new **individual residential services**, a Jemena Representative shall provide As Built drawings in a site sketch including:

- Address
- Plan view;
- Cross section view;
- GPS coordinates.

On completion of new **major services** or changes to existing services, such as water and sewer mains that either parallel or cross a Jemena Pipeline, the following information shall be provided in hard copy and electronic medium format as agreed with Jemena:

- “As Built” drawings of the service in the vicinity of the Jemena Pipeline
- Obvert level of services crossing under, and invert level of services crossing over Jemena Pipelines
- Separation distance between new service and Jemena Pipeline
- Coordinates of the services on GDA datum.
- The location of each feature crossing the pipeline is to be accurate to ±100 mm.
- As-Built survey is an engineering survey, and may be undertaken by qualified Engineering Surveyors. A Registered Surveyor shall supervise all engineering surveys.

9 APPENDIX A – FEEDBACK FORM

Third Party Feedback Form

Please complete this form with your feedback and return to Land.Services@jemena.com.au

Publication Information					
Title:	GAS-960-GL-PL-001 Guideline to designing, constructing and operating around AS 2885 Pipelines	**Revision:**	8	**Issue Date:**	7/11/2016

Proposed Change Information			
Page No:		**Paragraph No:**	
Description of Change:			
Reason for Change:			

Your Information			
Name:		**Phone:**	
Email:			
Address:			
Signature:		**Date:**	