

Consultants Advice Notice

Project:	Gas Pipeline	Ref No.:	RCE-22085
From:	Renton Parker	Date:	12 th of May, 2022
		Revision:	0
	Attention	Company	Email
To:	Grace Macdonald	ESR	Grace.macdonald@esr.com
	Olivia Ridgewell	ESR	Olivia.ridgewell@esr.com
Re: AS 2885 Safety Management Study			

1.0 Introduction

1.1 Background

ESR has a development lease on Bringelly Road Business Hub which is undergoing a staged development to build warehouses. The existing concept approval requires any future development approvals to show consistency to the concept plan and address conditions of consent including:

B24. Future development applications must be accompanied by a Safety Management Study prepared by a suitably qualified person that addresses the requirements of Australia Standard AS 2885 – Pipelines – Gas and Liquid Petroleum.

To satisfy this condition, it is necessary to prepare an assessment of the gas pipeline which runs along the south and eastern side of the lot in accordance with the requirements of AS 2885. ESR has engaged Riskcon Engineering Pty Ltd to prepare a Consultants Advice Notice (CAN) to assess the pipeline.

1.2 Objectives

The objectives of the study are to;

- Identify the location of high-pressure dangerous goods or gas pipelines within or in the vicinity of the proposed development,
- Consult with the operators of the identified pipelines and determine the potential impact of the development on the pipeline(s),
- Where there is potential for impact of the development on the pipelines, determine how the safeguards will meet the requirements of AS 2885 (Ref. [1]),
- Make recommendations for increased safeguards, where required, to ensure the risks are controlled to So Far As Is Reasonably Practicable, and
- Report on the findings of the study in support of the Development Application for the proposed development.

1.3 Scope

The scope of work is for the identification of the high-pressure gas pipeline on or within the vicinity of the proposed warehouse and to consult with the pipeline operators to ensure appropriate safeguards have been implemented to meet the requirements of AS 2885 (Ref. [1]). The scope of work is for the Lot 1 warehouse at the Bringelly Road Business Hub only and does not include any other development within the Hub.

2.0 Assessors Qualifications, Competency and Experience

The assessment will be performed by Renton Parker who is a Director at Riskcon Engineering Pty Ltd. Renton is a chartered chemical engineer with 10 years of experience working the field of risk engineering dealing specifically with Dangerous Goods consulting. He is a full member of the Australasian Institute of Dangerous Goods Consultants (AIDGC) in addition he has held roles as President, Vice President and Board Member of the AIDGC. Renton has performed numerous risk, DG, and fire assessments for industrial facilities storing DGs and other materials with unique hazards ranging from minor storage below SEPP 33 up to Major Hazard Facilities.

3.0 Methodology

The methodology used in this assessment is as follows:

- Identify the high-pressure gas pipeline on or within the vicinity of the proposed development using the “dial before you dig” organisation,
- Contact the high-pressure dangerous goods or gas pipeline operators, identified from the “Dial before you dig” (DBYD) inquiry, and consult on the potential impacts of the proposed development (the Development) on the specific pipeline,
- Obtain details, from each operator, of the requirements associated with the impacts of the Development on pipeline operations and any safeguards required during the Development process, and
- Report on the findings of the assessment including recommendations from operators regarding required safeguards during the Development process.

4.0 General Description

4.1 Lot 1 Warehouse Development

The proposed development involves a total site area of 12,892 m² of area which comprises a 4,470 m² warehouse with a 1,000 m² office area over two levels. The site is bounded by Stuart Road and Bringelly Road with site access provided from the cul-de-sac on Skyline Crescent. To the south and south east of the site is an Asset Protection Zone (APZ) which is where the gas pipeline easement passes through the site. A layout of the site is provided in **Figure 4-1**.

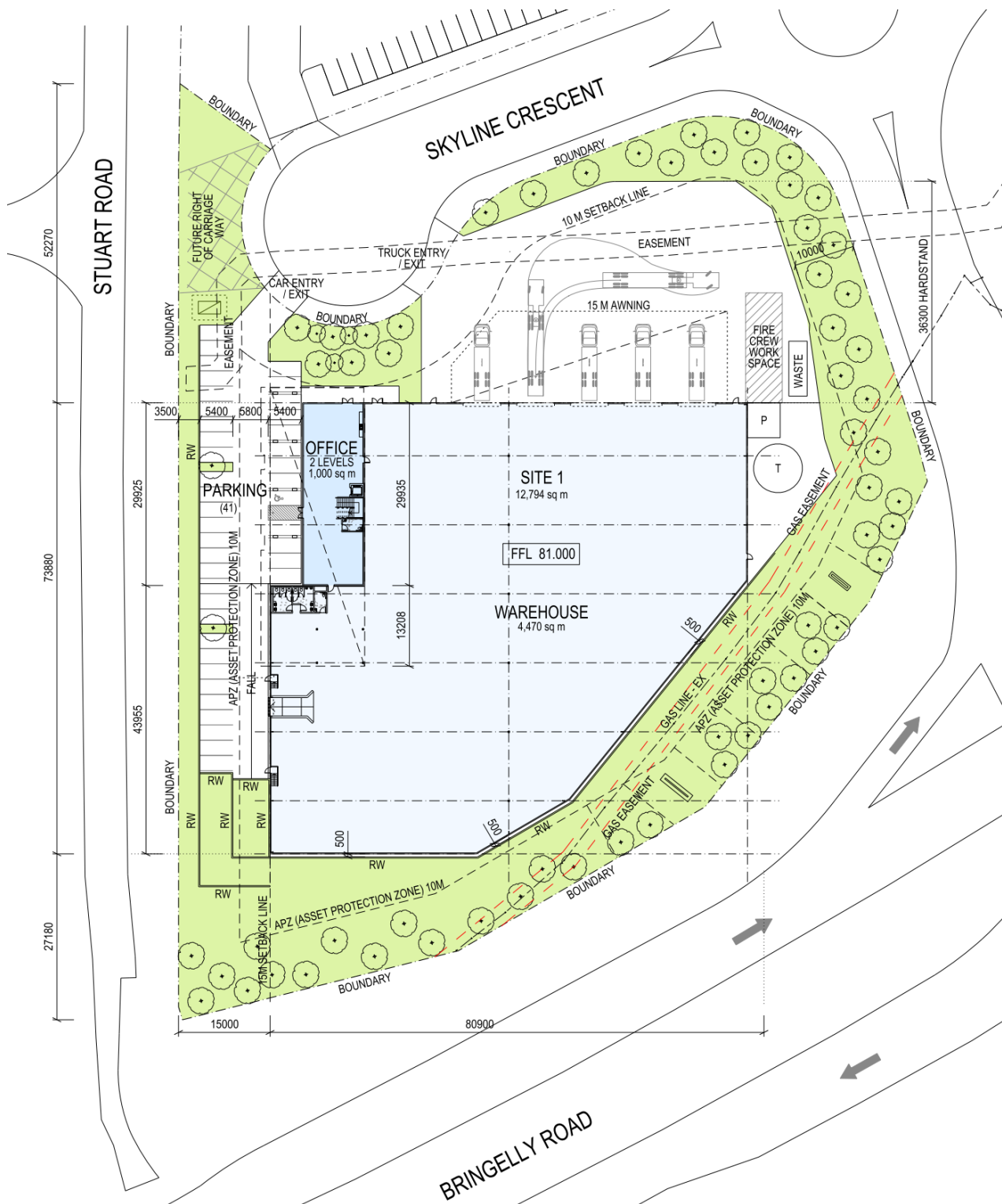


Figure 4-1: Site Layout

4.2 Gas Pipeline

The gas pipeline has a nominal diameter of 500 mm and operates at a pressure of 3,500 kPa. As noted above, the gas pipeline skirts through the APZ along the southern and southeastern side of the site at a depths ranging from 1.7 m to 2.2 m. Provided in **Figure 4-2** is the gas pipeline location as provided from DBYD.

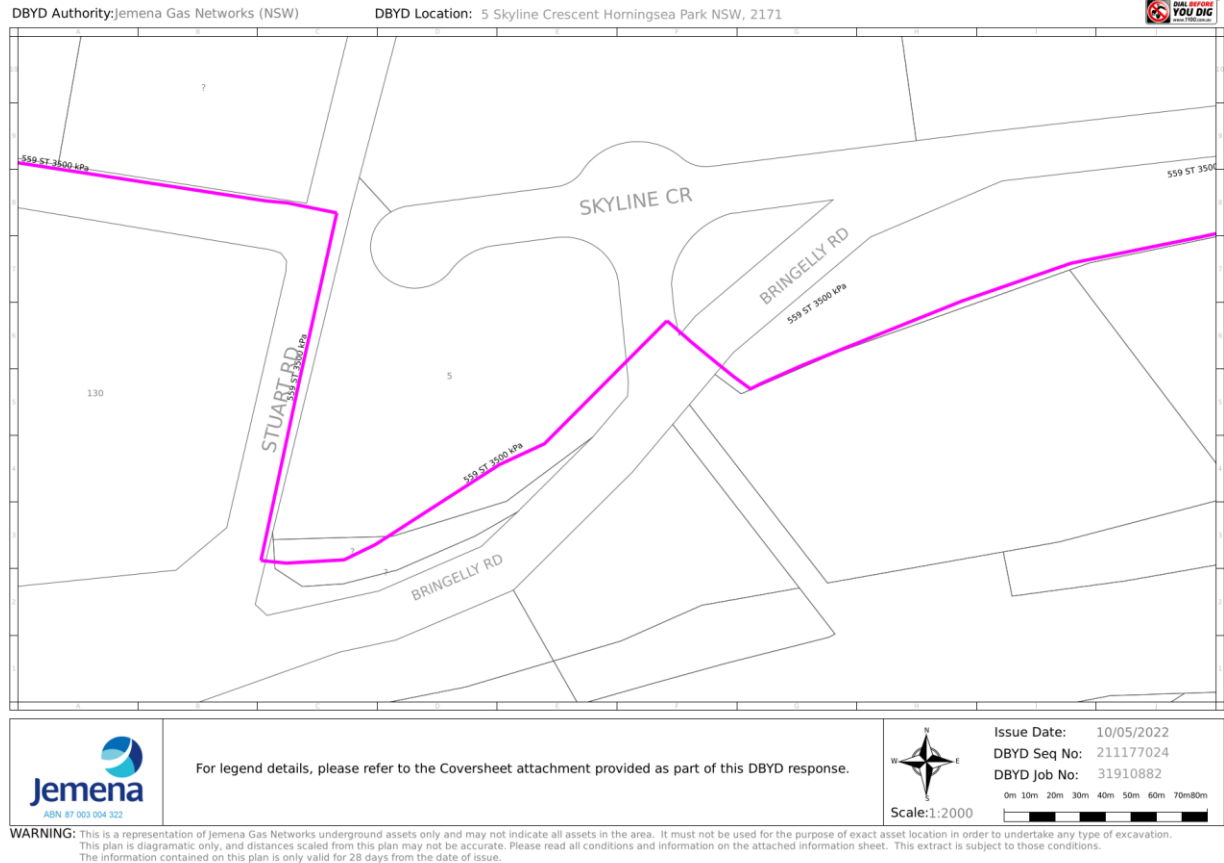


Figure 4-2: Gas Pipeline Location

5.0 Hazard Assessment

5.1 High Pressure Gas Pipeline in the Vicinity of The Development

5.1.1 Consultation

A request for details on the Jemena 3500 kPa pipeline (the gas pipeline) was submitted to Jemena, who provided a map of the pipeline location with regards to the proposed Development. It can be seen from **Figure 4-1** that the closest point of the pipeline easement to the proposed Development is 3 m along the southeastern corner of the site. The closest distance from the development to the gas pipeline itself is 5.5 m.

In terms of consultation, two emails have been sent to Jemena to notify them of the development and to seek advice; however, no response has been received. It is noted that Jemena have previously been consulted on the estate development and so they are aware that the land adjacent to the pipeline is undergoing development. It is expected that Jemena will be notified during the Development Application (DA) and will provide detailed guidance at this time.

5.1.2 Assessment

In lieu of detailed discussion with Jemena, an analysis has been conducted regarding the types of incidents and events that may impact a buried gas pipeline in order to confirm such incidents and events, as a result of the proposed Development, cannot cause impact to the Jemena 3500 kPa pipeline.

The European Gas Pipeline Incident Data Group (EGIG) collects and publishes a range of data in relation to high pressure gas pipelines. The EGIG comprises a group of major gas pipeline operators and related organisations in Europe and has collected data in relation to gas pipelines (operations, failures, etc.) over a 50-year period with over 4 million km.yr exposure to operation of gas pipelines. Hence, based on the vast experience available within this organisation, incidents that may affect the Jemena pipeline from the proposed Development have been selected for review.

The EGIG (Ref. [2]) reports on the types of events that result in pipeline failure leading to loss of gas containment from the pipeline. The list of events, extracted from the EGIG report (Ref. [2]) is provided below. An assessment of each incident/event is also made to indicate whether the specific incident/event could impact the gas pipeline.

- External Interference – excavations resulting in equipment impact to the pipeline. Excavations at the proposed development will all occur within the Development boundary (i.e. outside of the APZ as **Figure 4-1**). Therefore, works will occur 3 m from the gas pipeline easement and 5.5 m from the gas pipeline itself. In response to the DBYG, Jemena provided a list of restricted activities and safety controls that would be required to be implemented by the developer/builder to protect the pipeline. These have been provided in **Appendix A**.
- Hot-Tap by Error – work on adjacent pipelines in the same pipeline corridor resulting in identification of the wrong pipeline and hot tap to the gas pipeline. The development will not access the pipeline, nor are there adjacent pipelines that would require work; hence, hot-tap errors are not expected to occur.
- Corrosion – external or internal corrosion resulting in loss of pipeline thickness and pipeline failure. The construction operations at the Development will have no impact on pipeline internal/external corrosion. Notwithstanding this, it is known that Jemena ‘pigs’ the pipeline internally with an intelligent “pig” that performs corrosion detection along with a number of other condition monitoring functions.
- Ground Movement – subsidence as a result of earthquake or excavations close by causing ground collapse around the pipeline. Earthquake may have an impact on the pipeline; however, the proposed Development has no influence on earthquake in the Bringelly area. Excavation in close proximity to the pipeline may lead to land subsidence adjacent to the pipeline resulting in exposure of the pipeline and loss of pipeline support. A review of the proposed construction activities at the Development indicates the only excavations at the site will be for building foundation and connection of services. Excavation would typically not extend further than 1.5 to 2m below ground. Although, the greater depth may result in impacts to the pipeline as it is at a depth of 1.7 – 2.2 m. However, should such activities be required within the vicinity of the pipeline this will be observed and managed by the Jemena representative per their requirements (**Appendix A**). Furthermore, should earth support be required for this specific project, this will be identified during consultation with Jemena following submission of the DA.
- Construction Defect – incorrect weld installation (weld failure), poor ground preparation (i.e. pipeline bed contains rocks which damage the external corrosion protection) or poor overfill preparation (rocks in the overfill impacting the external corrosion protection). The proposed Development has no influence over construction defects that may have occurred when the pipeline was constructed.

- Material Defect – incorrect pipeline material selected for the specific application or poor material qualities not detected at time of pipeline section manufacture (i.e. poor-quality metallurgical assurance). The proposed Development has no influence over pipeline material selection or manufacture that may have occurred when the pipeline was constructed.
- Other Incidents – lightening impacts to the pipeline causing materials failure or maintenance induced failures (e.g. work on the pipeline leads to loss of containment during the project or after work is complete due to failure to complete the work correctly). The proposed Development has no influence over lightening impact or maintenance activities associated with the pipeline.

Based on the above analysis, the proposed Development is considered that the potential for impact upon the pipeline is relatively low due to the minimal works occurring within the immediate vicinity. The only real risk occurs during earthworks near the pipeline; however, it is expected that this will be reviewed in detail with consultation with Jemena prior to works commencing to determine whether additional controls would be required to protect the pipeline.

6.0 Conclusions and Observations

6.1 Conclusion

The high-pressure gas pipeline review and consultation study conducted for the proposed Lot 1 Development at the Bringelly Road Business Hub, has been assessed for the potential impact to the pipelines in the vicinity of the proposed Development.

It was identified that there is one high pressure gas pipeline within the vicinity of the Development which may be impacted by the proposed Development, these are:

- Jemena – high pressure gas pipeline (3500 kPa) that runs to the south and southeast of Lot 1.

At this stage Jemena has not responded to requests for consultation; however, a review of the potential impacts of the development on the pipeline which shows there would be a relatively low potential for impact. It is noted, that it was identified that earthworks could result in subsidence of the supporting earth around the pipeline; however, it is expected that this will be reviewed in consultation with Jemena as part of the DA process to determine whether additional protection would be required.

It is therefore concluded that it would be unlikely for the proposed to development to result in a serious impact the pipeline that cannot be managed with further consultation with the pipeline operator.

6.2 Recommendations

As a result of the assessment, the following recommendations have been made:

1. The Developer / Builder shall adhere to the requirements outlined within the Jemena Third Party Awareness Flyer (**Appendix A**).
2. Consultation shall be sought with Jemena with respect to the pipeline and any construction activities occurring at the site.
3. Where additional protection measures are requested by Jemena these shall be implemented.

7.0 References

- [1] Standards Australia, "AS 2885 Series – Pipelines – Gas and Liquid Petroleum," Standards Australia, Sydney.
- [2] European Gas Pipeline Incident Data Group, "10th Report of the European Gas Pipeline Incident Data Group (period 1970 – 2016), Document No. VA 17.R.0395," European Gas Pipeline Incident Data Group, March 2018.

Appendix A



THIRD PARTY AWARENESS FLYER

The purpose of this flyer is to provide third parties with information relating to the process for working in and around Jemena managed / operated Gas Transmission pipelines and easements. Prior to conducting any work activity, the third party must ensure:

- they have engaged with Jemena and a preliminary assessment has taken place;
- Dial Before You Dig (DBYD) information is on site for any excavation to proceed; and
- a Jemena representative is on site and they have received a signed Third Party Site Instruction.

The role of the Jemena representative is to ensure that the safety and integrity of Jemena asset(s) are not compromised.

THIRD PARTY SITE INSTRUCTION

The Jemena representative will meet with the third party to determine the impact of work and prepare the Third Party Site Instruction. The instruction includes mandatory conditions and other site / task specific conditions. The third party is to ensure they understand the instructions provided by the Jemena representative and agree to comply with these instructions at all times. It is expected that the third party will sign the Third Party Site Instruction to confirm their understanding and acceptance of the conditions.

MANDATORY CONDITIONS

- Pipeline is to be marked on site by a Jemena representative.
- Work can only be performed during the period of currency stated on the Third Party Site Instruction.
- No work is to be performed within three (3) metres of the pipeline without a Jemena representative on site or unless stipulated on the Third Party Site Instruction.
- No mechanical equipment is to be used for excavation within one (1) metre of the pipeline in any radial direction even after the pipeline location has been visually proven; unless under explicit direction from a Jemena representative.
- No mechanical works are allowed within 600mm in any radial direction of the pipeline without visually proving the pipeline location; excavation is to be conducted with hand tools only until the pipeline location has been visually proven.
- No mechanical equipment is to be used for excavation within 300mm in any radial direction; excavation is to be conducted with hand tools only.
- For backfill, suitable padding material (screened spoil or clean sand with particles less than 2.8mm in size) is required for at least 150mm around the pipe.

