Gorodok Pty Limited ABN 30 057 156 751
Level 1 121 Wharf Street
Spring Hill QLD 4000
GPO Box 1390. QLD 4001
APA Group | apa.com.au

Department Ref: SSI-9714
APA Ref: 444238

13 November 2019

Lisa Mitchell
Department of Planning, Industry and Environment
GPO Box 39
Sydney NSW 2001

Dear Lisa,

RE: Submission on the Botany Rail Duplication

Thank you for the opportunity to review and provide comment on the Botany Rail Duplication Environmental Impact Statement (the Statement) material prepared by Australian Rail Track Corporation (ARTC). APA has a keen interest in this statement given our Gorodok Pty Ltd (APA) pipeline runs through the Botany Rail Corridor. APA has recently established an Urban Planning Team that seeks to be involved early in planning processes to ensure that relevant issues are addressed at an appropriate stage (such as this Statement process). APA appreciates the notice provided and opportunity to provide input.

This submission is structured in three parts. Firstly, background information is provided on APA, and our obligations in managing and operating high pressure gas transmission pipelines. This background is important to understand in relation to the submission we are making. The second part contains specific information in relation to the document on public exhibition. Lastly is a summary of key points.

1. Background to APA and High Pressure Gas Transmission Pipelines

About APA

APA Group (APA) is Australia's largest natural gas infrastructure business and has direct management and operational control over its assets and investments. APA's gas transmission pipelines span across Australia, delivering approximately half of the nation's gas usage. APA owns and operates over 15,000 km's of high pressure gas transmission pipelines (HPGTPs) across Australia.

The high pressure gas pipeline infrastructure plays an important role in:

- supplying energy needs to residential customers;
- supplying power generators; and
- providing energy needs to business and industry and thereby supporting economic activity in New South Wales.

APA owns and operates one pipeline that is located within the Botany Rail Corridor between Southern Cross Drive and Anderson Street, being APA's Moomba to Sydney Ethane Pipeline (see Table 1 for details):

Table 1: Transmission pipelines in the area of consideration

Pipeline	Pipeline Licence	Diameter (mm)	Measurement Length (m)
Moomba – Sydney Ethane Pipeline	15	200	600
Note: measurement length is applied to either side of the pipeline.			

APA**'s** statutory obligations

As a licence holder for HPGTPs APA has statutory obligations under the *Pipelines Act 1967 (the Act)*. The *Pipelines Regulation 2013* states a licensee must ensure the design, construction, operation and maintenance of a pipeline is in accordance with Australian Standards 2885 (AS2885).

APA also has a role to play in ensuring development compliance with Clause 66C 'Development adjacent to pipeline corridors' in Division 12A of *SEPP (Infrastructure) 2007*, which states the following.

> *(1) Before determining a development application for development adjacent to land in a pipeline corridor, the consent authority must:*
>
> *(a) be satisfied that the potential safety risks or risks to the integrity of the pipeline that are associated with the development to which the application relates have been identified, and*
>
> *(b) take those risks into consideration, and*
>
> *(c) give written notice of the application to the pipeline operator concerned within 7 days after the application is made, and*
>
> *(d) take into consideration any response to the notice that is received from the pipeline operator within 21 days after the notice is given.*

In considering a development proposal or rezoning APA is obligated to ensure its pipelines are not damaged, nor subject to development which may increase the future risk of damage. Furthermore, APA must ensure the pipeline is designed to *"reflect the threats to pipeline integrity, and risks to people, property and the environment"* (AS2885, s4.3.1). Location classes which classify an area based upon the threats to the pipeline from land usage and the consequences for the surrounding population in the event of a loss of containment, are used to determine the appropriate pipeline design and management of an area. If the location class changes a Safety Management Study (SMS) is required to assess the additional risk and ensure the risk is reduced to an acceptable level. The primary location class for the pipeline is Residential (T1) and High Density (T2) and several secondary location classes including Sensitive (S) and Heavy Industry (HI) at the subject location.

Changes in land use may require that both procedural and physical controls be put in place to ensure new development is appropriately located and the pipeline is sufficiently protected in its new environment. These measures can be costly and require substantial forward planning. Therefore, it is in the interests of the plan makers and development proponents to communicate with the pipeline operator as early as possible in the planning process. The earlier that notice of planning proposals affecting APA's pipelines is provided to APA, the better the information available to address public safety and the better equipped planners and APA will be to design efficient and effective outcomes, including ensuring safety near transmission pipelines both during development and after public settlement in the new areas.

Under AS2885, APA is not only responsible for activities or development on its easements but it also has responsibilities for managing the risks associated with land use well outside of the pipeline easements. This includes both increased risk of physical damage to the pipeline from development and ongoing land use activities, as well as the risk to surrounding development from a loss of containment. The two risks are related and are explained in more detail below under the heading 'Measurement Length (ML) and Safety'.

Measurement Length (ML) and Safety

In managing HPGTPs and considering land use changes APA must focus on that area geographically defined by the ML. The ML area is the heat radiation zone associated with a full-bore pipeline rupture. APA is mandated to consider community safety in the ML due to the high consequences of pipeline rupture to life, property and the economy. The ML is determined taking account:

- design criteria of the pipe (driven by the environment within which it was designed for at the time of construction), and

- Maximum Allowable Operating Pressure (MAOP) of the pipe.

For reference, the ML of the Moomba – Sydney Ethane Pipeline is 600m. Note that the ML is a radial dimension, and therefore applies to both sides of the pipe.

AS2885 requires APA to consider community and operational safety aspects in the event of a change in land use or significant increase in population density within the ML of the pipeline. This consideration is typically undertaken through a SMS. Where required, we strongly recommend the Department, the proponent and APA coordinate to undertake this process so future land use and construction within the ML can be undertaken taking account of any identified safety considerations and in compliance with AS2885 and its enabling legislation.

The SMS process does not preclude development from occurring, but ensures it occurs in a manner which maintains the pipeline integrity and community safety. Typical recommendations of an SMS are improved physical protection of the pipeline through protective slabbing installed below ground and over the pipeline and excluding sensitive uses from the ML.

Easement Management

APA is the beneficiary of a pipeline easement in which the subject pipeline is located within the Botany Rail Corridor. The following details on easement restrictions are provided for the Department's general information.

To ensure compliance with the safety requirements of AS2885, APA needs to ensure our easement is managed to an appropriate standard. This includes:

- ensuring the easement is maintained free of inappropriate vegetation and structures (standard agricultural cultivation practices are permitted)
- place warning signs at various mandated points along the pipeline route, including any change in property description/boundaries
- maintain a constant line of sight between warning signs
- undertake physical patrols and inspections of the easement.

APA will not accept outcomes that do not enable us to achieve our safety responsibilities to the surrounding community. APA seeks to limit crossings of the pipeline easement and works within the easement. Any proposed works within the easement must only occur following assessment by APA, and authorisation through our Third Party Works process. This process will ensure all works are undertaken in a safe manner that does not physically affect the pipeline. Works within the easement include landscaping, changes in ground level, road/driveway crossings, and services crossings. APA will not allow roads running along the easement and any road crossings should be perpendicular to the easement and only as necessary to facilitate access.

Any party seeking to undertake works on property containing a pipeline, or are seeking details on the physical location of the pipeline, must contact Dial Before You Dig on 1100 or APA directly at APAprotection@apa.com.au.

APA does not seek to unnecessarily inhibit future development proximate to our assets and is happy to work with Department and development proponents to achieve mutually acceptable and compliant outcomes. It should be noted that State and local governments can access pipeline information via the Australian Pipelines and Gas Association which maintain an online mapping database from which data can be exported as an ESRI Shapefile or Google KML file.

This includes the measurement length for all APA transmission pipelines as well as other pipelines. Registration is available at https://maps.landpartners.com.au/apd/APGALogin.aspx.

2. Submission specifics

ARTC Botany Duplication Project
It is understood the Project seeks to increase capacity along the Botany Line to meet forecast growth in demand for the container freight transport to and from the Port of Botany. Subject to project approval, construction is planned to start at the end of 2020 and take approximately three (3) years with commissioning activities to be undertaken in early 2024.

Key aspects of the Project noted include:

- New two-span rail bridge to be constructed over Southern Cross Drive.
- New two-span rail bridge to be constructed over Mill Stream.
- Proposed duplication to be south of existing rail alignment.
- Existing access track to be realigned to be allow for additional track.
- Two new track crossover points to be installed.
- New signalling and wiring throughout corridor.
- Existing track to be slewed to connect to existing rail line.
- Track duplication to tie into existing track at this point.

APA welcomes the due consideration of APA's Moomba to Sydney Ethane Pipeline throughout the submitted EIS documentation.

APA Requirements
APA has a number of requirements that are applicable to the Project as it progresses from Concept to Detailed Design Phase. These are as follows:

- APA's Moomba to Sydney Ethane Pipeline must be protected in-situ. Relocation is impracticable as identified in Table 6.1 of the Statement.
- All interactions with APA's pipeline must be designed in accordance with APA's conditions. Refer to the attached *580-POL-L-0001 – Standard Conditions for Works Near APA Group Gas Transmission Pipelines*.
- The vibration limits cited exceed APA's requirements. Vibration limits will be governed by 580-POL-L-0001. PPV measurements during works will be required.
- A Safety Management Study (SMS) is required to be completed as part of the design process for the project.
- The cost of undertaking an SMS including any mitigation measures required are to be borne by the proponent as the 'agent of change'. APA has developed a list of preferred SMS facilitators. This ensures facilitators are both independent and satisfactorily qualified to undertake this assessment. This list is available from APA on request.
- The AS2885 Safety Management Study (SMS) is a critical step in ensuring safety for the works and future rail operation. The SMS will require engineering design inputs to assess the impacts. The SMS will govern the mitigation measures for interaction with APA's pipeline.
- APA engineering requires involvement / review of the project design at multiple stages to ensure it progresses in compliance with APA's requirements.
    - APA requests involvement at 70% Design, 100% Design and IFC Stages at a minimum.
- APA will require its own consultant to perform a peer review of the design and perform finite element analysis for areas of excessive loading.

3. Summary

As a licence holder of HPGTPs APA has significant statutory obligations. This is the key driver for APA in seeking the outcomes outlined in the submission.

APA thanks the Department of Planning, Industry and Environment for the opportunity to comment on the Botany Rail Duplication Project. APA would welcome the opportunity to discuss the contents of this submission in a meeting with the Department, if required.

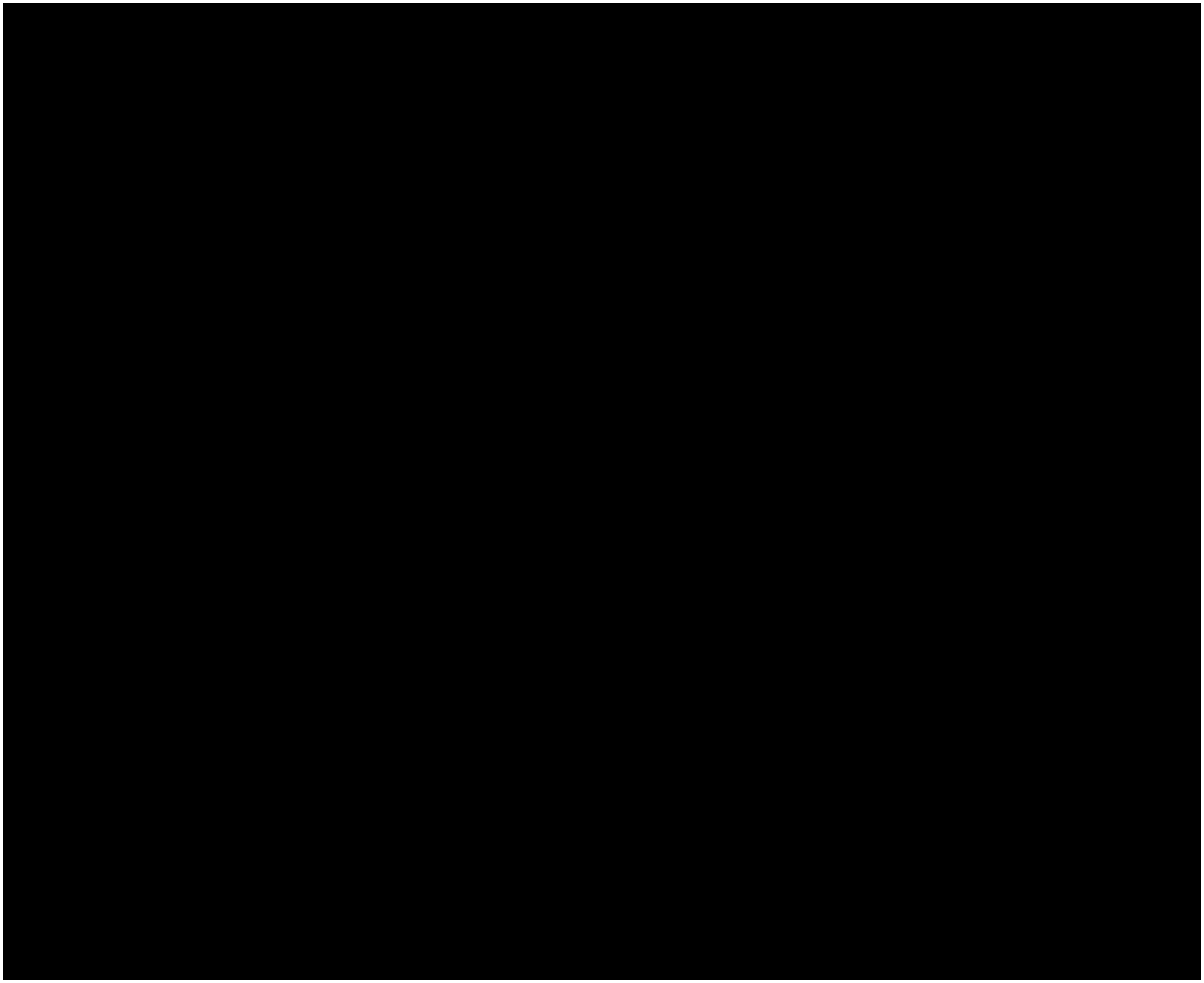
Please contact Ben Setchfield on 07 3223 3385 or email planningnsw@apa.com.au to further discuss the contents of this correspondence.

Yours faithfully,

Ben Setchfield
Senior Urban Planner
Infrastructure Planning and Protection

Att: APA Pipeline Mapping Aerial Extracts within the Project Area

Att 1: APA Pipeline Mapping Aerial Extracts within Project Area



Standard conditions for works near APA Gas Transmission Pipelines

ASSET ENGINEERING

Document No		580-POL-L-0001			
Rev	Date	Status	Originated/ Custodian	Checked	Approved
2.0	28/08/2019	Issued For use	CK	SAM	
			Chris Karambelas	Scott Mitchell	Craig Bonar
			Acting Manager Project Design & Delivery Infrastructure Asset Engineering	Acting Project Development Manager, Infrastructure Asset Engineering	Manager Pipeline Engineering, Infrastructure Asset Engineering

energy. connected.

Table Of Contents

TERMS OF USE

This document must only be used by the person or entity who received it directly from APA ("You").

APA has provided this document to You subject to the terms of use set out below. By retaining possession of this document, You acknowledge and agree to the following conditions:-

1. This document is provided to You for information purposes only, to assist in the development of design plans, construction and land use activities. You must not undertake works of any nature near any APA Gas Transmission Pipeline without APA's express written authorisation (exercising its absolute discretion) in accordance with all relevant laws and APA policies applicable from time to time.
2. The information contained in this document relates only to APA Gas Transmission Pipelines (as defined in this document) and does not relate to any other utility assets owned or operated by APA, such as APA network or distribution pipelines.
3. Any proposed works in the vicinity of APA Gas Transmission Pipelines may also require approval from other utility providers or government agencies. APA has no responsibility for, and makes no representations in relation to, any requirements that may be necessary to obtain such approvals.
4. This document does not relieve any person from the requirement to make appropriate Dial Before You Dig (**DBYD**) enquiries, and otherwise discuss any proposed works with APA, either for initial or subsequent works.
5. You must not copy, reproduce, alter or amend this document.
6. You must not provide this document to any other person without APA's prior written consent.
7. APA reserves its right to modify, amend, supplement, delete or withdraw any part of this document or any reference contained in this document, at any time without notice.
8. You must not rely upon any information contained in this document and You must make your own independent enquiries (including obtaining all necessary express written consents and approvals from APA) in relation to any works that are proposed to be undertaken in the vicinity of any APA Gas Transmission Pipelines.
9. Except as required by law and only to the extent so required, APA and its related bodies corporate, officers, employees, agents and contractors:-
    a) do not make any representation, warranty or undertaking, express or implied, as to, or accept any responsibility or liability for; and
    b) are not in any way liable, directly or indirectly, to You or any other person for any loss, damages, costs, expenses or reliance arising out of or in connection with the validity, accuracy, completeness, relevance, or any errors in or omissions from, any information or statement contained in this document.
10. APA reserves all its rights in the information contained in this document. No rights or obligations are granted or to be implied from the contents of this document. You acknowledge that all intellectual property and other tangible and intangible rights in the information contained in this document are and remain the exclusive property of APA.
11. You agree to release and indemnify APA and its related bodies corporate, officers, employees, agents and contractors against all reasonably foreseeable claims, costs,

expenses, losses and liabilities (including legal costs on a full indemnity basis) suffered or incurred by them as a result or in connection with the use of this document by You.

1. INTRODUCTION

Scope of this document

APA Gas Transmission Pipelines usually operate at pressures between 1,050 to 15,000 kPa, and are generally used for transporting large quantities of gas across the country. Design, construction, operation and maintenance of these assets is governed by the AS/NZS 2885 suite of Australian Standards.

This document addresses APA's requirements for considering how the Proponent's proposed works may impact APA Gas Transmission Pipelines under the following parts:-

Part 1 – APA notification and authorisation requirements.

Part 2 – Design and pipeline protection requirements.

Part 3 – Construction and land use requirements.

A glossary of all terms and definitions used in this document is contained in **Schedule 1**.

A list of all relevant external standards and APA reference documents is contained in **Schedule 2**.

Damage and emergencies

If damage to any APA Gas Transmission Pipeline is known to have occurred, or suspected to have occurred, you must contact APA emergency number **1800 017 000 for all states other than Victoria and 1800 686 634 for Victoria.**

Any unreported damage has the potential to escalate and endanger public safety.

The following immediate action is required when damage has resulted in a release of gas:-

- Clear the area of all people. Do not under any circumstance re-enter the damage area;
- Where safe to do so, shut off or remove all ignition sources and devices in the area e.g. naked flames, vehicle engines, power tools, mobile phones;
- Do not attempt to stop the flow or repair the damage;
- Allow the gas to vent to air;
- Once clear of the area, contact the emergency number **1800 017 000 for all states other than Victoria and 1800 686 634 for Victoria.**

The conditions and requirements set out in this document and as otherwise specified by APA from time to time are intended to protect the relevant assets as well as keep safe any construction crews and the general public in the vicinity of the APA Gas Transmission Pipelines.

General duty of care and responsibility to obtain information

Any person undertaking work near an APA Gas Transmission Pipeline, or responsible for such work, has a duty of care to exercise caution, to maintain a safe working environment, to meet the requirements of all relevant occupational health and safety laws and to comply with all requirements of the relevant pipeline licensee.

For general enquiries about DBYD please contact APAProtection@apa.com.au

The Proponent should make contact with APA through the applicable email addresses below to determine the approval processes for any proposed design plans in the Pipeline Corridor,

construction activities and land use in the Pipeline Zone of Influence (**ZOI**). The same email address is subsequently used to obtain the Consent to Issue a Statement of Compliance (SoC).

- For Vic: APA Third Party Works VIC tpwvic@apa.com.au
- For WA & NT: APA Third Party Works WA tpwwa@apa.com.au
- For QLD: APA Third Party Works QLD tpwqld@apa.com.au
- For NSW: APA Third Party Works NSW tpwnsw@apa.com.au

Any works proposed by the Proponent will only be authorised if APA is satisfied that the works will not affect the integrity of the APA Gas Transmission Pipeline. No work is permitted to proceed without express written authorisation from APA.

Where the works proposed by the Proponent may result in a change in land use within the Measurement Length (as defined in AS/NZS 2885.6 for Pipelines – Gas and Liquid Petroleum), such works may also be subject to formal approval requirements through APA and applicable local and state government planning processes. This may also require Safety Management Study (**SMS**) Report to be completed and approved by APA. The SMS Report is generated from the SMS workshop involving the SMS Facilitator, Proponent and APA. APA is the owner of the SMR Report and any resulting recommendations/actions must be implemented to the satisfaction of APA prior to the commencement of any physical works.

Certain categories of development are not appropriate to be located within the Measurement Length. In certain circumstances, the otherwise unacceptable risks associated with such developments may be alleviated with the aid of installing protective slabbing over the APA Gas Transmission Pipeline or undertaking other protection and mitigation measures.

Any person undertaking work near an APA Gas Transmission Pipeline, or responsible for such work, must familiarise themselves with the relevant pipeline's zone of influence (ZOI), being the area which is otherwise referred to as in the vicinity of the APA Gas Transmission Pipeline.

Working around any gas pipelines without appropriate planning and controls as specified by APA can be extremely dangerous that can result in the following:-

- Gas escaping at pressures up to 15,000 KPag (2,200 psig) which may escalate to a higher consequence;
- Loss of gas supply to thousands of customers;
- Substantial repair and gas restoration liability costs to the authority or principal responsible;
- Prosecution under the relevant laws governing pipelines and gas safety.

Prior to the commencement of any works within the pipeline ZOI, the contractor performing the work must receive a Third Party Works Authorisation (**TPWA**) from APA.

Any works within the pipeline ZOI must comply with any conditions attached to a TPWA and be supported by an approved Construction Management Plan (**CMP**).

Written authorisation in the form of the TPWA must be kept on site at all times, and the holder of the authorisation must comply with all the conditions of the TPWA. The performance of any works near APA Gas Transmission Pipelines without a valid TPWA and in full compliance with its conditions, will constitute a safety incident and may also result in an infringement notice and associated penalties issued by the regulator of the APA Gas Transmission Pipeline.

2. PART 1 - APA NOTIFICATION AND AUTHORISATION REQUIREMENTS

2.1 DBYD Requests

The Proponent must raise a DBYD enquiry in order to initiate a TPWA process and be advised of the steps required to approve the design plans and associated construction activities.

The holder of the TPWA must also maintain the current DBYD plans. The DBYD process can be initiated at https://www.1100.com.au/safety-information/digging- safely/.

A response to a DBYD enquiry can generally be expected from APA within two business days. After a DBYD enquiry is submitted, APA will contact the Proponent if the works need further assessment and possible authorisation. No work is permitted to proceed until APA has advised the Proponent in writing of its requirements. APA will request further detail or plans if required.

For some DBYD requests, APA may provide different responses relating to different assets affected by the proposed works. In all instances it is the responsibility of the Proponent to review and follow the direction of all DBYD responses.

The information provided by APA in response to a DBYD request, along with any other plans or subsequent information provided by APA necessarily show only the indicative location of the relevant APA Gas Transmission Pipeline at the time and are to be used as a guide only.

In most instances it will be necessary to prove the location of all buried pipelines forming part of the APA Gas Transmission Pipeline. This is further explained in 320-PR-OM-0067 Transmission Excavation.

Any response provided by APA to a DBYD enquiry is only valid for 30 days. It is the responsibility of the Proponent to contact APA to seek the update or renewal of any information after this time.

2.2 APA Notification and Authorisation Process

A land owner may provide access to others to use the surface of their land provided that such use is not inconsistent or otherwise in breach of any Pipeline Corridor conditions that apply to that land.

A written request to APA is required for use of the Pipeline Corridor as part of the design planning phase and prior to the commencement of the works. Works subject to this requirement are deemed to include, but not limited to, the following activities that fall under Table 2 Pipeline ZOI and Minimum Clearances for Construction and Land Use Activities:-

- Non Destructive Digging (NDD);
- Mechanical Excavation includes Trenchless Excavation ie Drilling (boring, HDD and pipeline bursting);
    - Roadways, driveways, railways, pavement;
    - Electrical (installation of cables, overhead transmission lines or telecommunications cable and replacement of power poles);
    - Installation of pipe (water, drainage, sewer or reticulation);

- Landscaping.

APA will not approve certain activities and structures in the Pipeline Corridor, including the following:-

- Permanent fence posts for non-land owners can only be installed on the boundary of the Pipeline Corridor unless approved otherwise by APA;
- Structures forming part of any house, house extensions, carports, entertainment areas;
- Airstrips;
- Use and storage of explosives, flammables, corrosives;
- Blasting;
- Dams and other manmade water features. Locations of dams off the Pipeline Corridor must not create run off or drainage towards the Pipeline Corridor;
- Construction of storm water basins, artificial lakes, swimming pools;
- Garbage, sandfill, refuse disposal;
- Installation of bill boards structures;
- Permanent storage.

The Proponent must submit an enquiry to APA at the earliest possible stage to allow sufficient time for assessment. Submissions should include the following information:-

- Land description and map identifying location of the proposed works;
- Type of works to be carried out;
- Intended future use of the land;
- Type and weight of machinery that will be used;
- Any plans or diagrams of the works;
- Timeframe for the works.

The sequence of obtaining APA approval is as follows:-

a) Initial meeting is held between APA and the Proponent, and the Proponent's designer/project manager, in order to assist APA to understand the proposed works and for APA to explain its requirements.

b) APA issues minutes of meeting and provides relevant information for the Proponent to be able to prepare its preliminary designs which captures the following from Schedule 2 of this document:-

- 580-POL-L-0001 Standard Conditions for Works Near APA Group Gas Transmission Pipelines (This document)
- 580-GD-A-0001 Third Party Project Service Delivery (Explains the approval process and the service delivery timeframes)
- The applicable standard drawings showing clearances and physical pipeline protections to APA Gas Transmission Pipeline (List shown in Schedule 2 Document References)

- 580-TP-L-0001 Third Party CMP Template
- 580-SP-L-0001 Surveying Existing Pipelines Specification
- 320-PR-OM-0067 Transmission Excavation Procedure
- 580-FRM-A-0001 Consent to issue Statement of Compliance (**SoC**).

c) APA advises if a SMS is required as a result of the proposed designs and whether any specialist engineering assessments are required.

d) APA or (at the direction of APA) the Proponent obtain depth of cover proving data.

e) APA performs integrity checks on relevant part of the APA Gas Transmission Pipeline, if required.

f) APA issues in-principle approval to the Proponent for its design plans, identifying APA's required pipeline protection measures.

g) The Proponent prepares the CMP using 580-TP-L-0001 Third Party CMP Template, with supporting 'Approved For Construction' drawings and Safe Work Method Statement (**SWMS**).

h) APA approves the CMP, Approved For Construction drawings and SWMS.

i) APA prepares the TPWA with any special conditions incorporated into the CMP, construction drawings and SWMS.

j) APA issues the TPWA to the Proponent's contractor to initially sign who is the holder of the authorisation then it is returned to APA for it to be counter signed.

k) APA makes a formal request to book a Permit Issuing Officer.

l) An APA Permit Issuing Officer is appointed and issues a Permit To Work (**PTW**) on the job site.

A PTW under a TPWA is required for work within a defined ZOI as per Table 2 Pipeline ZOI and Minimum Clearances for Construction Activities.

The APA Permit Issuing Officer is the spotter and supervisor of all the construction activities under the PTW.

m) The APA Permit Issuing officer and the Proponent's authorised supervisor sign the TPWA, which constitutes the final approval for work to commence.

n) When relevant work has been completed, the Proponent may request APA to issue a Consent to Issue a SoC.

o) If satisfied that the works have been completed in accordance with all relevant requirements, APA will prepare and deliver to the Proponent the Consent to Issue a SoC, and have the Proponent or its representative sign it.

p) APA will approve the Consent to Issue a SoC and forward a copy to APA Urban Planning for formal issue.

The documents take precedence in the following order:-

- APA Permit To Work
- Third Party Works Authorization
- APA approved Third Party Construction Management Plan
- APA approved Third Party Construction Drawings
- Standard Conditions for Works Near APA Group Gas Transmission Pipelines (this

document)

- APA approved Third Party SWMS.

2.3 Commercial Agreement and Service Delivery

APA will typically undertake Minor APA Supervision/Engineering assessment for Third Party Works that APA considers to be "low risk" at no cost to the Proponent.

Minor APA Supervision/Engineering assessment is generally considered to be any assessment which can be undertaken by APA in less than 2 days (using an 8 hour day) in relation to the Third Party's total work scope.

Any Third Party Works requiring blasting, seismic and/or tunnelling work near APA assets will not be considered to be "low risk".

Contractor performing the work to sign Third Party Works Condition without any alterations

For commercial service delivery requirements, refer to 580-GD-A-0001, Third Party Project Service Delivery Guideline.

2.4 Abandoned Pipelines

Abandoned gas pipelines that remain in the ground are not always shown on DBYD plans.

Where unknown assets are identified or suspected on site but are not on APA plans, they must be treated as being live. In this instance, the Proponent must contact all the utility owners and operators in the area of the DBYD and notify them of the findings.

APA must be contacted and will advise on the course of action to take.

In some cases, certain pipelines may not be currently in use but are required for future use by APA (sometimes noted as "Idle" on APA plans). These assets must be treated as live using the same criteria outlined in this document and must not be removed or altered without APA's express written approval.

3 PART 2 - DESIGN AND PIPELINE PROTECTION REQUIREMENTS

3.1 Standard Clearances

Minimum clearance dimensions outlined in this section must be met to allow for safe future maintenance access and protection of existing APA Gas Transmission Pipelines. If separation clearances cannot be achieved, APA will review the proposed infrastructure on a case-by-case basis to determine whether a resolution can be achieved before any pipeline relocation is considered. Authorisation of works by APA is still required, regardless of being able to achieve the required separation distances.

Clearances specified in Table 1 below are measured from the closest edges of the APA Gas Transmission Pipeline to the proposed infrastructure. Depending on the exact nature of proposed infrastructure, additional clearance may be required.

Table 1 Minimum Clearances for Infrastructure to Pipelines

Infrastructure Type (Notes 4,5,6)		Minimum Horizontal Clearance to edge of Pipeline (mm) (Note 7)	Minimum Vertical Clearance to edge of Pipeline (mm)
	Telecommunication conduits and cables	500	**Note 8**
	Electrical conduits and cables laid parallel to a steel pipeline <11 kV	500 Engineering Assessment is required if running more than 100 m parallel	**Note 8**
	Electrical conduits and cables laid parallel to a steel pipeline ≥ 11 kV	Engineering Assessment required **(Note 1)**	Engineering Assessment required **(Note 1)**
	Stormwater drains < DN500	1,000 **(Note 5)**	**Note 8**
	Stormwater drains ≥ DN500	3,000 **(Note 5)**	**Note 8**
	Water Mains < DN500	1,000 **(Note 5)**	**Note 8**
	Water Mains ≥ DN500	3,000 **(Note 5)**	**Note 8**
	Sewers < DN500	1,000 **(Note 5)**	**Note 8**
	Sewers ≥ DN500	3,000 **(Note 5)**	**Note 8**
	Electrical poles including street lighting	3,000 **(Note 1)**	
	Distribution Gas Mains < DN400	1,000 **(Note 5)**	**Note 8**
	Distribution Gas Mains ≥ DN400	3,000 **(Note 5)**	**Note 8**
	Minimum distance from casing vent stack discharge point to any electrical installation or overhead structure	1,000	
	Any other installations crossing over a pipeline or laid parallel to pipeline that could add excessive loads to the pipeline or restrict access to the pipeline	3,000	Engineering assessment required
	Any installations that may need underpinning must APA need to expose its pipeline	3,000	Engineering assessment required
	From the top of the pipeline to the underside of road pavement boxing		Engineering assessment required
	Distance from property boundary for non-land owners	Outside of Pipeline Corridor	
	Sensitive Use Locations (Refer to	Requires a setback distance	

	Infrastructure Type (Notes 4,5,6)	Minimum Horizontal Clearance to edge of Pipeline (mm) (Note 7)	Minimum Vertical Clearance to edge of Pipeline (mm)
	Schedule 1 Glossary of Terms)	to stay away from the Pipeline Interaction Distance (Refer to Schedule 1 Glossary of Terms). Alternatively, the setback distance maybe reduced to if protection slabbing is installed along the Pipeline Interaction Distance. This may also be limited to the development area subject to Engineering Assessment	
	Any structure (includes building) excluding sensitive use location	**Note 2, Notes 5**	
	Canopies longer than 15m parallel to the edge of the pipeline **(Note 3)**	3,000	
	Tree Root Barrier	1,000	
	Any temporary stake, e.g. star picket	No limit	300 from ground surface
	Permanent fence posts for non-land owners	Outside of Pipeline Corridor	
	Road safety barriers	1,500	
	Earthing stakes **(Note 1)**	1,000	
	Piles and piers	15,000	
	Roads parallel to the pipeline	1,500 from the back of the kerb to the centreline of the pipeline	
	Separation distances for vegetation	Refer to 3.3 Landscape Plans	
	Permanent Heavy Vehicle (Greater than 4.5T) Loads	Refer to 3.8 Temporary and Permanent Vehicle Loads	
	Proximity from industrial/commercial sized wind turbine	1.5 times the fixed mast height excluding turbine of the wind turbine	

Note 1: In accordance with AS/NZS 4853 "Electrical hazards on metallic pipelines" without further information and engineering assessment, no pole must be within the following:-

- If power line has Overhead Earth Wire (OHEW) - 15 m;
- If no Overhead Earth Wire (OHEW) - 100 m.

Require engineering assessment for Earth Potential Rise (EPR) and Low Frequency Induction

(LFI) to AS/NZS 4853.

Clearance for electrical cables and earthing stakes from steel pipelines must also be reviewed in accordance with Section 3.6 Earthing and Electrical Effects.

Note 2: No structures are to be constructed on the Pipeline Corridor. Where approved by APA, such structures must be a minimum horizontal distance of 5 m from the edge of the APA Pipeline.

Note 3: Clearance may be dependent on demonstrating that there is sufficient continuous ventilation.

Note 4: Pipeline protection needs to be assessed and shown on the design plans with design clearances. This includes recoating, bridge slab or asset strike protection slab.

Note 5: Structures and large utility crossing APA pipelines need to be self-supporting so that future pipelines repairs or maintenance of the pipeline can be accessed as per Section 3.2 Third Party Assets to be Self Supporting.

Note 6: All crossings must be at 90 degrees to APA pipelines or justification provided to for crossings that are between 75 to 90 degrees. Any crossings less than 75 degrees requires a formal deviation with a supporting risk assessment with appropriate controls and approved by APA.

Note 7: APA will advise which side of the pipeline requires unrestricted access for future pipeline.

Note 8: Refer to the following Standard drawings for the minimum vertical clearance to the edge of the Pipeline:-

- 530-DWG-L-1001 Crossing Below APA Pipeline(Open Cut)
- 530-DWG-L-1002 300 to 500 mm Clearance Above APA Pipeline (Open Cut)
- 530-DWG-L-1003 Greater than 500 mm Clearance above APA Pipeline (Open Cut)
- 530-DWG-L-1004 Foreign Installation by HDD or Boring Beneath APA Pipeline
- 530-DWG-L-1010 Foreign Installation by HDD or Boring Above APA Pipeline.

Table 2 Pipeline ZOI and Minimum Clearances for Construction and Land Use Activities

Zone Of Influence (ZOI) under Permit Issuing Officer Supervision	Minimum Horizontal Clearance to edge of Pipeline (mm)	Minimum Vertical Clearance to edge of Pipeline (mm)
Excavation **(Note 1)** without APA Supervision	Pipeline Corridor	
Trenchless Excavation **(Note 1)**	1,000	1,000
Lifting over exposed pipelines	Refer to Section 4.3 No Go Zone for Cranes and Suspended Materials Above the Pipeline	Engineering assessment required
Clearance of Crane Outriggers to pipelines	Refer to Section 4.3 No Go Zone for Cranes and Suspending Materials Above the Pipeline	Not permitted over the pipeline

Zone Of Influence (ZOI) under Permit Issuing Officer Supervision	Minimum Horizontal Clearance to edge of Pipeline (mm)	Minimum Vertical Clearance to edge of Pipeline (mm)
Temporary Heavy Vehicle (Greater than 4.5T) Traffic	If the load has not been accessed, maintain a separation of 3,000mm Refer to Section 3.8 Temporary and Permanent Vehicle Loads	Not permitted over the pipeline unless it is supported by calculation and if required calls for pipeline protection
Compaction	Refer to Table 6 Maximum Compaction Limits	
Vibration Limits	No vibration within 3 m of the pipeline and greater distance to comply with 4.4 Vibration Limits for Pipeline Protection	
Hot Works from Construction Activities	Refer to Section 4.5 Hot Works from Construction Activities	
Piling and Piers	Refer to Section 4.6 Piling and Piers	Not permitted over the pipeline
Blasting Activities	Refer to Section 4.7 Blasting and Seismic Survey	Not permitted over the pipeline
Electrical	Installation of cables, overhead transmission lines or telecommunications cable and replacement of power poles)	
Clearance of temporary material from pipeline	Refer to Section 4.8 Temporary Materials	Not permitted over the pipeline

Note 1 Excavation covers NDD, mechanical excavation and trenchless excavation (boring, HDD and pipeline bursting)

3.2 Third Party Assets to be Self Supporting

Structures should not transfer any loads to the APA Gas Transmission Pipelines without supporting calculations being approved by APA.

Any structures over the APA Gas Transmission Pipeline must be designed to be self-supporting and allow for a minimum excavation window of 1 metre on either side of the pipeline and 700 mm above and below the edge of the pipeline, for maintenance of the pipeline. This information is required to be shown the construction drawings supported by geotechnical data and calculations.

Structures and large utilities (200DN diameter and larger) need to be self-supported such that the excavation window does not cause any integrity issues with the third party assets.

The construction of any structures on a Pipeline Corridor is not permitted except with the express written consent of APA.

Posts or poles which are located in a road reserve, or otherwise exposed to vehicle impact, must be designed such that there will be no damage to the APA Gas Transmission Pipeline in the

event of a vehicle impact.

For works in Victoria, consent from the relevant State Minister is required under Section 120 of the *Pipelines Act 2005* (Vic) for the erection of structures or buildings within 3,000 mm of an applicable pipeline. Ministerial consent must be arranged through Energy Safe Victoria (ESV) following review and acceptance of the proposed designs by APA.

3.3 Landscape Plans

Vegetation may limit line of site, access and passage along an existing APA Gas Transmission Pipeline alignment, while the roots from vegetation may damage existing buried pipe, coating or other ancillary equipment (e.g. cables). Above ground gas infrastructure may also be exposed to hazards from falling vegetation and increased fire risk.

Table 3 Requirements for Vegetation provides guidance for planting new vegetation in the vicinity of existing APA Gas Transmission Pipelines.

Landscape plans which include vegetation that may impact any APA Gas Transmission Pipeline must be submitted to APA for review and acceptance prior to being approved and implemented.

Table 3 Requirements for Vegetation

Separation between pipeline edge	Requirements
> 5,000 mm or pipelines easement whichever is the greatest value	Trees or large shrubs and shall not limit line of site along the pipeline alignment. Trees will require root barrier protection (e.g. robust permeable polyethylene/nylon sheeting, or solid concrete cylinders). The root barrier must be installed with the separations provided in Table 1 Minimum Clearances for Infrastructure to Pipelines. Continuous parallel plastic sheeting over the pipeline may impact cathodic protection systems and hence requires engineering assessment
> 3,000 mm	Medium and small shrubs
< 3,000 mm	Ground cover and grasses

Note 1: Vegetation must not obstruct the line of sight between the marker posts.

3.4 Surface Levels and Conditions

Decreases or increases to surface levels must consider depth of cover requirements for pipelines specified in Table 4 Minimum Depth of Cover Requirements for Pipelines.
Where existing surfaces are to be modified, finished cover levels are not to be reduced to less than existing levels, unless meeting the minimum requirements of Table 4 Minimum Depth of Cover Requirements for Pipelines. Depending on the location, local councils and relevant road authorities may have minimum requirements that APA are required to meet which are more stringent than those listed in Table 4.

Details of any additional fill proposed to be placed on or within 3 metres of the APA Gas Transmission Pipeline, or within any applicable easement, must be clearly shown on plans and

must be approved by APA in writing.

Table 4 Minimum Depth of Cover Requirements for Pipelines

Pipeline Location	Pipeline Minimum Depth of Cover (Note 2)
Under Minor Road Pavement **(Note 1)**	1,200 mm 1000 mm with slabbing and engineering assessment
Under Major Road Pavement **(Note 1)**	1,200 mm 1000 mm with slabbing and engineering assessment
Suburban Areas	1,200 mm
Rural Areas	900 mm

Note 1: Major road pavement typically includes all highways and roads owned or operated by the state road authority.

Note 2: Protective slabbing must be installed where minimum depth of cover requirements cannot be met and bridge slabbing installed for protecting the pipeline from excessive loads.

Changes to surface conditions (e.g. changing from nature strip to road pavement) or which place the APA Gas Transmission Pipeline in an inaccessible position (e.g. with excessive cover) may require slabbing, recoating and/or relocation. Changes to surrounding surface levels or conditions must also consider drainage and the potential to result in erosion of cover for pipelines.

3.5 Casings Vent Stacks

Casings provide mechanical protection and protection to pipelines from external loadings.

Some cased crossings are sealed and fitted with a casing vent stacks.

The following APA requirements are to be applied for works near casing vent stacks:-

- Casing vent stacks cannot be removed unless an alternative arrangement has been approved by APA or they have been assessed as being redundant;
- Unfettered access is to be maintained to casing vent stacks.

3.6 Earthing and Electrical Effects

APA Gas Transmission Pipelines are susceptible to adverse effects from electrical sources such as above and below ground cables, substations, transformers, earthing rods, cathodic protection systems or electrified tram/train lines.

The Proponent must provide to APA detailed plans of any such sources proposed to be located in the vicinity of the APA Gas Transmission Pipeline, with an assessment report compliant with AS4853 Electrical Hazards on Metallic Pipeline. This assessment report is to determine any effects to existing cathodic protection or induced voltage mitigation systems from these types of installations.

Hazards which may arise due to electrical systems located in vicinity of an APA Gas Transmission Pipeline include the following:-

- Accidental contact between pipelines and electrical systems;

- Capacitive coupling;
- Conductive coupling;
- Electromagnetic induction;
- Low Frequency Induction (LFI);
- Earth Potential Rise (EPR), including due to fault current or lightning discharge;
- Adverse cathodic protection interference in excess of those allowed under AS/NZS 2832.1 or relevant state regulations.

3.7 Third Party Service Crossings

Service crossings on the Pipeline Corridor must be kept to a minimum and grouped wherever possible without causing future access issues to the APA Gas Transmission Pipeline. Services should not be grouped beyond a physical equivalent of 200 DN diameter.

3.8 Temporary and Permanent Vehicle Loads

Vehicle crossings over existing APA Gas Transmission Pipelines are limited to light vehicles (Gross Vehicle Mass not greater than 4.5 tonnes unless advised otherwise by APA in writing) on unsealed surfaces or Heavy Vehicles (compliant General Access Vehicles) on established road pavements.

Any proposed new crossings must be assessed and authorised in writing by APA.

A maximum surface pressure of 400 kPa is allowable directly above the pipeline. However, any surface pressure exceeding this limit or where cover over the pipeline has been reduced from Table 4 Minimum Depth of Cover Requirements for Pipelines will require an APA engineering assessment and approval issued under a TPWA.

Vehicle loads are assessed under AS/NZS 2885.1 which in turn makes reference to API RP1102. Where the design parameters are outside of API RP1102 (Example: greater than 3 m cover, less than 0.9 m cover, pipeline has elbows, lateral loads from retaining walls), then further analysis is required which will include Finite Element Analysis (FEA). This analysis is directly managed by APA.

The landowner of any property which contains an APA Gas Transmission Pipeline must take appropriate measures to not reduce cover over the pipeline.

Crane footings or bog mats must not be placed where the angle of repose can influence an existing APA Gas Transmission Pipeline without express written approval by APA. In circumstances where an existing APA Gas Transmission Pipeline is within the relevant angle of repose, the maximum surface pressure caused by the crane must be provided to APA for consideration.

4 PART 3 – CONSTRUCTION AND LAND USE REQUIREMENTS

4.1 Coating Surveys and Leakage Surveys

Where any proposed works have potential to indirectly damage pipeline coating (i.e. due to compaction) or result in a leak of the APA Gas Transmission Pipeline, additional monitoring activities such as Direct Current Voltage Gradient (**DCVG**) or gas leakage surveys may be

required.

If surveys are required they will need to be performed by an approved APA contractor or, if surveys are managed by APA, they will be charged to the Proponent unless otherwise advised.

Survey work will be done prior to construction, and before and after final reinstatement to determine any coating defects which will be repaired by APA and charged to the Proponent unless otherwise advised.

A similar chargeable survey program can be applied where leakage surveys are required. However, additional leakage surveys may be necessary throughout works to ensure work crews do not operate in a gaseous environment in the event of a leak occurring.

4.2 Pipeline Repairs, Recoating and Slabbing

Buried portions of APA Gas Transmission Pipelines are coated to provide protection from corrosion.

The Proponent's works will likely trigger an assessment of the condition of the APA Gas Transmission Pipeline coating prior to development commencing, particularly were future access will be restricted.

The requirement for pipeline recoating is assessed by APA on a case by case basis, based on the proposed development, but will generally be dependent on the following:-

- The existing coating type, age and condition;
- Increase in loading that can bring forward any pipeline anomalies;
- Changes limiting access to the existing asset such as the installation of slabbing, road pavement, culverts, embankment ramps or any other feature.

Re-coating and associated slabbing works are determined from relevant engineering and integrity assessments and any applicable SMS.

Pipeline repairs, re-coating and slabbing that form part of any third party commercial agreement will be charged to the Proponent.

The requirement for, and the extent of, slabbing over any APA Gas Transmission Pipeline will be determined by APA at its sole discretion and may depend on factors other than only changes in depth of cover.

Slabbing may also be required for the following reasons:-

- Removable protective slab to provide pipeline protection from third party mechanical excavation;
- Removable protective slab which includes side slab to provide pipeline protection from third party trenchless excavation;
- Bridging slab to provide pipeline protection from external loadings e.g. excessive depth of cover or insufficient depth of cover combined with vehicle traffic.

Slabbing must be installed with adequate separation from the APA Gas Transmission Pipeline, which may impact the undisturbed cover requirement.

Any bridging slab designs prepared by a Proponent must be accompanied by certification from a registered practicing structural engineer (RPEQ required for works in Queensland) confirming that the design is adequate to prevent pipeline loading.

4.3 No Go Zone for Cranes and Suspended Materials Above the Pipeline

Where the APA Gas Transmission Pipeline is exposed, no cranes, excavators or backhoes are permitted to carry or suspend materials over or across the pipeline without an APA approved lifting plan and SWMS.

Outriggers must be set up outside a 5 meter radius from the APA Gas Transmission Pipeline unless otherwise approved by APA in writing.

4.4 Vibration Limits for Pipeline Protection

Significant vibration may arise from activities such as blasting, piling, tunneling, and HDD/Boring or compaction.

To avoid damage to existing APA Gas Transmission Pipelines and coatings, the following vibration limits must not be exceeded at any point on an APA Gas Transmission Pipeline:

a. For coal tar enamel pipeline coatings or poorly coated pipelines: 10 mm/s maximum Peak Particle Velocity (PPV) measured at the pipeline.

b. For non-coal tar enamel pipeline coatings: 20 mm/s maximum Peak Particle Velocity (PPV) measured at the pipeline.

For vibration monitoring adopt an alarm at 80% of the acceptable PPV value and when the alarm is activated, the work must stop and be re-assessed.

Monitoring must be undertaken by the Proponent unless otherwise agreed in writing by APA.

The ZOI (Zone Of Influence) for vibration assessment is shown below:-

- For piling refer to Section 9.6 Piling and Piers
- For blasting, refer to Section 9.7 Blasting and Seismic survey
- For tunneling, use 100 m notification
- For HDD/Boring, refer to 530-DWG-L-1004 Foreign Installation by HDD or Boring Beneath APA Pipeline
- For HDD/Boring, refer to 530-DWG-L-1010 Foreign Installation by HDD or Boring Above APA Pipeline
- For compaction, refer to Table 6 Maximum Compaction Limits.

4.5 Hot Works from Construction Activities

In order to safely undertake hot works, response procedures in the event of fire or flammable gas detection must be prepared and monitoring for flammable gases must be undertaken before and during works.

APA must approve any hot works where there is less than 300 mm ground cover to buried pipelines, or within 5,000 mm of any exposed pipelines (including any pits or valve covers) and piping from meter stations.

A heat shield or barrier may be required to provide protection if it cannot be demonstrated

that works can be undertaken without impacting the pipeline.

4.6 Piling and Piers

APA needs to assess piling such as pile-driving, sheet-piling or hammer-piling within 30 metres of an APA Gas Transmission Pipeline. In all instances, vertical bored piers or piles are preferred.

The area directly below the proposed pile or pier location must be excavated to a level equivalent to the bottom (invert) of the APA Gas Transmission Pipeline, and piling started from that depth to reduce vibration on the pipeline.

4.7 Blasting and Seismic Survey

The Proponent must to issue for APA review and approval the proposed CMP with supporting Blasting Plan and calculations to demonstrate that the proposed blasting will not cause any adverse impact to APA Gas Transmission Pipeline.

For quarry operations, only a blasting plan is required with supporting calculations.

Blasting Plans and supporting calculations submitted to APA must comply with the following:-

- AS 2187 series Explosives Storage, Transport and Use; and
- Design Guideline for Buried Steel Pipe - American Lifelines Alliance ASCE.

A person must not undertake blasting, seismic survey or the use of explosives within 700 meters of an APA Gas Transmission Pipeline without APA's prior written approval APA recognises that the DBYD buffer does not extend to 500 meters.

When blasting in the vicinity of any APA Gas Transmission Pipelines, the following conditions will usually be required by APA:-

a. The person who is using the explosives on the site is to be the holder of a current license to use explosives in accordance with all relevant laws and statutory provisions.

b. Detonating type fuses are not to cross the line of any APA Gas Transmission Pipelines. Carriers containing explosives must not be left within 5 meters of an APA Gas Transmission Pipeline during blasting operations.

c. Blasting methods (includes size and quantity of explosives) must be arranged to limit ground vibration so that the peak particle velocity does not exceed the vibration limits specified in Section 9.4 Vibration Limits for Pipeline Protection. Prior to blasting, tests must be carried out from the greatest distance away from the APA Gas Transmission Pipeline in similar geotechnical conditions to demonstrate that this requirement will be adhered to and the documented results must then be supplied to APA. Further, the peak particle velocity must be continuously monitored on the relevant APA Gas Transmission Pipeline during blasting.

d. In all cases where explosives are to be used within 50 meters of an APA Gas Transmission Pipeline, an authorised APA representative must be present during the blasting operations.

e. No blasting must proceed until APA has given approval.

f. Notwithstanding anything above, blasting must undertaken be in accordance with

g. AS 2187 series Explosives Storage, Transport and Use. Restrictions may only be modified after express written agreement with APA.

4.8 Temporary Materials

Temporary materials (e.g. soil, shipping containers) must not be stored within the Pipeline Corridor.

4.9 Excavation Work

4.9.1 General

Excavation work covers Non-Destructive Digging (NDD), and mechanical excavation which includes trenchless excavation. All such excavation must be in accordance with 320-PR-OM-0067 Transmission Excavation.

NDD includes hand digging or vacuum excavation.

Trenchless excavation covers boring and Horizontal Directional Drilling (HDD) and pipe bursting.

The proponent or its contractor can perform the provings of APA assets via Non Destructive Digging (NDD) using vacuum excavation under the following conditions:-

- Commercial agreement with APA
- APA Permit To Work under supervision by an APA Permit Issuing Officer
- Approved third party works authorization supported by the following:-
  - Third party CMP using 580-TP-L-0001 Third Party CMP Template
  - Provings plans with eastern and northern coordinates
  - SWMS
  - Issue a proving report that complies with 580-SP-L-0001 Surveying Existing Pipelines Specification.
  - Use APA preferred NDD Contractor or alternatively require to qualify alternative NDD contractors.

4.9.2 Protection During Exposure

Additional protection measures are required where an exposed APA Gas Transmission Pipeline is subject to impact from construction activities, sagging of exposed pipe and trench stability.

Physical protection must be applied as soon as any pipeline is exposed. This is to include barricades and security fencing.

Any existing APA Gas Transmission Pipeline supports and anchors and any cathodic protection must not be altered unless such alterations are within the scope of work expressly approved by APA.

Unsupported exposed pipe lengths require protection from sagging by using suitable supports such as sandbags or slings. Where slings or other support types come into contact with the APA Gas Transmission Pipeline, protection methods must be employed to prevent damage to the existing pipe or coating. Exposed unsupported joints must also be identified and supported during works. The maximum allowable length of exposed pipe without support is provided in Table 5 Maximum Unsupported Lengths of Exposed Pipeline.

Table 5 Maximum Unsupported Lengths of Exposed Pipeline

Pipe Diameter (mm)	Length of Exposed Pipe Unsupported Length (m)
All Sizes	4 and Greater than 4 m requires APA Engineering Assessment

Additional protection and support during trench or bell-hole excavation works to minimise ground instability may also be necessary to protect the integrity of APA Gas Transmission Pipelines during exposure works. Trenches are to be inspected prior to commencing works each day and monitored by the onsite party responsible for the excavation. APA must be notified of any condition likely to affect the stability of a trench.

4.10 Reinstatement

The reinstatement of pot holes and trenches must comply with APA marker tape and protective slabbing requirements in accordance with standard APA crossing drawings shown listed in Schedule 2 Document References, which can be provided by APA to third parties upon request.

Prior to backfilling, a minimum of 150 mm of soil below the APA Gas Transmission Pipeline must be filled using clean bedding material with 300 mm above it filled to APA specification as shown on the relevant APA Standard Drawings, which can be provided by APA to third parties upon request.

APA may require geo-fabric installation between different trench reinstatement products to prevent sand migration.

The bedding material must be clean, free from all sharp objects, sandbags, clay material, vegetable matter, building debris and disused road paving material, and otherwise according to the specifications provided by APA.

Recycled bedding material and stabilised sand must not be used unless expressly approved by APA in writing. The remainder of the excavation must be backfilled and compacted in accordance with the requirements described in this section.

Only clean sand must be used as bedding. The fill material 300 mm thick and the balance of material must be natural soil in the area, and free from ash, weeds and pest plants, salt or any chemicals which could harm the APA Gas Transmission Pipeline.

Where required, slabbing must be installed in accordance with Section 4.2 Pipeline Repairs, Recoating and Slabbing.

The APA Permit Issuing Officer is responsible for supplying the marker tape as required.

The excavated area must be reinstated to its original condition or as otherwise approved by APA and the relevant local council, road authority or land owner, as applicable.

Compaction should be made at in 300 mm layers to a density which is similar to the surrounding sub-grade material or higher for road and paving requirements in accordance with the land owner's specifications.

Compaction activities such as establishing a base course for a road pavement may result in damage to the pipes and coatings of existing pipelines. Compaction limits in the vicinity of existing pipelines are summarised in Table 6 Maximum Compaction Limits.

Table 6 Maximum Compaction Limits

Horizontal Separation from edge of pipeline (m)	Minimum Cover to Top of Pipeline (mm)	Compaction Limits (Note 2)
≤ 3 **(Note 1)**	300	Small hand held compactor only
	500	Large hand held compactor Maximum 4 tonne tandem drum static roller
	750	Maximum 8 tonne tandem drum static roller
	1,200	Maximum 10 tonne tandem drum static roller subject to APA Approval
>3 & ≤10	All	Maximum 8 tonne tandem drum vibrating roller
>10 & ≤15	All	Maximum 10 tonne tandem drum vibrating roller
>15	All	Any compaction method

Note 1: Compaction within 3 m of the pipeline is limited to static rollers only.

Note 2: Compaction shall be in accordance with Council, Main Roads and Rail Standard requirements which is obtained via Road/Rail Opening Permits/Approvals.

4.11 Consent to issue Statement of Compliance

The Proponent makes a request APA for a Consent to Issue a SoC to APA when there is a subdivision or it is triggered by APA pipeline protection requirements. APA will then forward the Consent to Issue SoC (Form No. 580-FRM-A-0001) to the Proponent to complete the form and have it resubmitted for processing.

SCHEDULE 1 – GLOSSARY OF TERMS

Term	Meaning
APA	Each entity that forms part of the APA Group
APA Gas Transmission Pipeline	The APA gas transmission pipeline which includes all associated equipment such as cathodic protection, instrument and electrical cables
CMP	Construction Management Plan
Damage	Physical damage to and interference with APA's assets. Damage includes reducing design life, coating damage, dents, scratches, rupture, cutting of cathodic protection cables. Damage can also include potential impacts that APA pipelines can have on third party assets. Interference includes unauthorised works around the APA pipelines or works that prevent or restrict access for operation and maintenance to APA pipelines
DBYD	Dial Before You Dig
DCVG	Direct Current Voltage Gradient
EPR	Earth Potential Rise
HDD	Horizontal Directional Drilling
Hot Works	Hot works are defined as grinding, welding, thermal or oxygen cutting or heating, and other related heat-producing or spark-producing operations. Heat sources or hot works must not impact pipelines, taking into consideration that the ground or adjacent structures may also be capable of transmitting heat.
LFI	Low Frequency Induction
Measurement Length	Radius of 4.7 kw/m^2 heat radiation contour for an ignited full bore rupture calculated in accordance with AS/NZS 2885.6
NDD	Non-Destructive Digging, also known as Non-Destructive Pot Holing. Hydro-Vacuum Excavation consists of a water lance and vacuum truck and is used to physically prove existing pipelines.
Pipe bursting	Pipe bursting refers to a pipe being inserted to a larger pipe that results in the larger pipe being damaged. For an example of pipe bursting, refer to the following You-Tube video https://www.youtube.com/watch?v=HX5beh0ubGY
Pipeline Corridor	The Pipeline ROW which surrounds an APA Gas Transmission Pipeline.
Pipeline Easement	The pipeline area shown on a survey plan and referenced on the property title

Term	Meaning
Pipeline Interaction Distance	The maximum length of pipeline route which presents an extended source of hazard on the basis that an event of failure could affect any part of the development or a specific location relevant to the development. For heat radiation hazard, if the pipeline is designed as a full rupture, then the Pipeline Interaction Distance corresponds to the Measurement Length, otherwise it corresponds to a credible leak size. The hazard can be related to electrical hazards or mechanical hazards.
Pipeline ROW	The greater distance of each of the following:- 1) the area of any pipeline easement, 2) 3 metres distance from either side of the edge of the pipeline, or such greater distance as otherwise prescribed in the applicable pipeline legislation in each State and Territory; 3) The area covered by any additional engineered setback distance determined by APA based on applicable risk assessments; and 4) the area required to accommodate future pipelines, as negotiated with the relevant land owner. The engineered setback distance refers to the buffer distance of the development to avoid coming in contact with the Pipeline Interaction Distance.
PPV	Peak Particle Velocity
Proponent	The person or entity and their agents or contractors that proposes to undertake work near APA assets, where 'near' refers to the ZOI in accordance with Table 2 Pipeline ZOI and Minimum Clearances for Construction and Land Use Activities
Risk	A credible threat to the APA Gas Transmission Pipeline. Any identified Risk will not be tolerated by APA unless it is either low, medium or ALARP (As Low As Reasonable Practicable) in accordance with AS/NZS 2885.6 Pipelines - Gas and liquid petroleum - Pipeline safety management
RPEQ	Registered Professional Engineer Queensland

Term	Meaning
Sensitive Use Locations	This is designated as Class "S" as per AS/NZS 2885.6 and refers to the sub location class. Sensitive Use Location Class (S) identifies land where the consequences of a FAILURE EVENT may be increased because it is developed for use by sectors of the community who may be unable to protect themselves from the consequences of a pipeline FAILURE EVENT. Sensitive uses are defined as follows:- • Schools which includes colleges; • hospitals ; • aged care facilities such as nursing homes, elderly people's homes; • prisons and jails; • convalescent homes; • sheltered housing; • buildings with five or more storeys; • large community and leisure facilities, large open air gatherings; • daycare facilities; • other potentially difficult to evacuate facilities; • other structures as defined by relevant local Councils. The Sensitive Use Location Class "S" must be assigned to any section of the APA Gas Transmission Pipeline where there is a sensitive development within the applicable Measurement Length.
Services	Includes water, waste water, drainage, telecommunications cables, gas mains, power poles and cables owned by individuals or organisations other than APA
Structures	Structures refer to third party structures which includes but not limited to buildings, walls, canopies, footings, pile caps or retaining walls
SWMS	Safe Work Method Statement used by contractors to execute field work. The risks and associated control measures should be transferred to SWMS.
Third Party	Third Party refers to a third party process or asset.
TPWA	Third Party Work Authorisation issued by APA to the Proponent giving conditional approval for works to proceed
Works	The development of any type of buildings, structures and other obstructions (including residential buildings, pools, sheds, carports, major developments, transport infrastructure, services, stockpiles, trees), and any work that causes changes to the ground (including movement of heavy vehicles, blasting, pile driving, ground compaction, earthworks, open and trenchless excavations)
SoC	Statement of Compliance
Vicinity	Vicinity refers to the ZOI (which also has the same meaning as works ***near*** APA Group Gas Transmission Pipelines, in accordance with Table 2 Pipeline ZOI and Minimum Clearances for Construction and Land Use Activities.

Term	Meaning
ZOI	Zone of Influence. The area extending both horizontally and longitudinally along a pipeline. It is the area where loads and/or any hot works may potentially cause damage to the pipeline. ZOI refers to works near APA gas transmission pipeline or works within the vicinity of the pipeline that causes an unacceptable risk to the pipeline in accordance with Table 2 Pipeline ZOI and Minimum Clearances for Construction and Land Use Activities.

SCHEDULE 2 – DOCUMENT REFERENCES

Document No.	Document Title
External Standards	
AS 2187.0-1998	Explosives - Storage, transport and use - Terminology
AS 2187.1-1998/Amdt 1-2000	Explosives - Storage, transport and use – Part 1 Storage
AS 2187.2-2006	Explosives - Storage and use – Part 2 Use of explosives
AS 4827.1:2008 (R2018)	Coating defect surveys for buried pipelines Part 1: Direct current voltage gradient (DCVG)
AS/NZS 4853:2012	Electrical Hazards on Metallic Pipelines
AS 2832.1:2015	Cathodic protection of metals : Pipes and cables
AS 2885.0:2018	Pipelines - Gas and liquid petroleum - General requirements
AS/NZS 2885.1:2018	Pipelines - Gas and liquid petroleum: Design and Construction
AS/NZS 2885.2:2016	Pipelines - Gas and liquid petroleum: Welding
AS 2885.3-2012	Pipelines - Gas and liquid petroleum: Operations and Maintenance
AS/NZS 2885.5:2012	Pipelines - Gas and liquid petroleum: Field Pressure Testing
AS/NZS 2885.6:2018	Pipelines - Gas and liquid petroleum - Pipeline safety management
API RP 1102 (R2017)	Steel Pipelines Crossing Railroads and Highways
July 2001 with addendums February 2005	Design Guideline for Buried Steel Pipe - American Lifelines Alliance ASCE
Procedures, Specifications, Guidelines, Forms and Templates	
320-PR-OM-0067	Transmission Excavation
320-SP-L-0001	HDPE (High-Density Polyethylene) Slab Specification
560-PR-QM-0004	Authorised Third Party Works Management Procedure (Internal use only)
580-FRM-A-0001	Consent to Issue Statement of Compliance (SoC)
580-FRM-A-0002	Third Party Works Authorisation Form
580-GD-A-0001	Third Party Project Service Delivery Guideline
580-PR-A-0002	Third Party Pipeline Protection Works Management Procedure (Internal use only)
580-SP-L-0001	Surveying Existing Pipelines Specification
580-TP-L-0001	Third Party CMP Template

Document No.	Document Title
APA Engineering Drawings (Will receive only relevant drawings for the specific work)	
530-DWG-L-0009	Hydro Vacuum Potholing Pipe End Connection for CTE (Coal Tar Enamel) or Poorly Coated Pipelines
530-DWG-L-0011	Hydro Vacuum Potholing Stand Off for Water Lance
530-DWG-L-0500	Typical Marker Post Location Plan
530-DWG-L-0501	Marker Post Installation Details
530-DWG-L-0502	Marker Post Fabrication Details
530-DWG-L-0504	Marker Tape Installation Details
530-DWG-L-1001	Crossing Below APA Pipeline (Open Cut)
530-DWG-L-1002	300 to 500 mm Clearance Above APA Pipeline (Open Cut)
530-DWG-L-1003	Greater than 500 mm Clearance above APA Pipeline (Open Cut)
530-DWG-L-1004	Foreign Installation by HDD or Boring Beneath APA Pipeline
530-DWG-L-1007	Concrete Slab for Road Crossings
530-DWG-L-1010	Foreign Installation by HDD or Boring Above APA Pipeline
530-DWG-L-1011	Field Record Sheet - Crossing below APA Pipeline
530-DWG-L-1012	Field Record Sheet - 300 to 500 mm Clearance Above APA Pipeline
530-DWG-L-1013	Field Record Sheet - Greater than 500 mm Other Utility Crossing Above Pipeline
530-DWG-L-1014	Typical Bank Stabilisation Detail
530-DWG-L-5000	Typical Unmade Gazetted Road Crossing
530-DWG-L-5001	Typical Sealed Road Crossing - Open Cut Crossing
530-DWG-L-5002	Bored & Uncased Road Crossing
530-DWG-L-5003	Road Crossing Type K - Bored Road Crossing-Concrete Cased Detail
530-DWG-L-5004	Directional Drilled Road Crossing - Major Road Crossing
530-DWG-L-5005	Watercourse Crossing - Directionally Drilled Crossing
530-DWG-L-5006	Typical Water Course Crossing - Major & Minor Type 1 Crossing
530-DWG-L-5007	Water Course Crossing - Minor Type 2 Crossing
530-DWG-L-5008	Typical Water Course - Bank Restoration Crossing
530-DWG-L-5009	Crossing of Underground Foreign Service Detail
530-DWG-L-5010	Railway Crossing - Bored & Cased Crossing
530-DWG-L-5011	Sand Dune Crossing Detail
530-DWG-L-5012	Temporary Heavy Vehicle Crossing General Detail

Document No.	Document Title
530-DWG-L-5013	Typical Seal Road Crossing and Fully Slabbed Detail
530-DWG-L-5016	Typical Unseal Road Crossing Open Cut General Crossing
530-DWG-L-6000	Barbwire Fence & Gate Details
530-DWG-L-6001	Restoration of Existing Fencing with Gate Details
530-DWG-L-6002	Temporary Fencing Along Easement Details
530-DWG-L-6003	Method of Maintaining Continuity of OP. of Electric Fence at Temporary Gateway Detail
530-DWG-L-6004	Temporary Electric Fencing Along Easement Details
530-DWG-L-6005	Temporary Gateway Across Easement Details
530-DWG-L-7000	Pipeline Placement - In Road Muster Easement
530-DWG-L-7001	Typical Pipeline ROW Details - Undeveloped Land
530-DWG-L-7002	Typical Trench Details
530-DWG-L-7003	Typical Trench Breaker Details
530-DWG-L-7004	Set on Weights for Buoyancy Control
530-DWG-L-7005	Trench Barrier - Sand Bag & Form Details
530-DWG-L-7006	Trench Barrier - Stabilised Sand Details
530-DWG-L-7007	Trench & Backfill - Padded & Unpadded Trench Details