ARUP

Cook Cove Inlet Pty Ltd

Cooks Cove Planning Proposal (PP-2022-1748) Concept Infrastructure Design

Servicing and Utilities Infrastructure Strategy Report

Reference: Revision 2

2 | 31 March 2023

Job number 252942-00

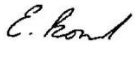
Arup Australia Pty Ltd | ABN 76 625 912 665

Arup Australia Pty Ltd
Level 5
151 Clarence Street
Sydney
NSW 2000
Australia
arup.com

ARUP

Document Verification

Project title	Cooks Cove Planning Proposal (PP-2022-1748) Concept Infrastructure Design
Document title	Servicing and Utilities Infrastructure Strategy Report
Job number	252942-00
Document ref	Revision 2
File reference	

Revision	**Date**	**Filename**			
Rev 1	19 December 2022	**Description**	Draft for client review		
			Prepared by	**Checked by**	**Approved by**
		Name	Vlatko Stoilovski	Edward Bond	Edward Bond
		Signature			
Rev 2	31 March 2023	**Filename**			
		Description	Client comments addressed		
			Prepared by	**Checked by**	**Approved by**
		Name	Vlatko Stoilovski	Edward Bond	Edward Bond
		Signature			
		Filename			
		Description			
			Prepared by	**Checked by**	**Approved by**
		Name			
		Signature			

Issue Document Verification with Document ☑

Contents

Tables

Figures

Appendices

1. Executive Summary

This report has been prepared, on behalf of Cook Cove Inlet Pty Ltd, to support the public exhibition and assessment of the Cooks Cove Planning Proposal (PP-2022-1748) which was issued a Gateway Determination by the Department of Planning and Environment on 5 August 2022. The Planning Proposal seeks to amend *Bayside Local Environmental Plan 2021* (BLEP 2021) to rezone and insert planning controls for certain land known as Cook Cove, within the BLEP 2021.

The Cooks Cove Planning Proposal is supported by long term and ongoing coordination with Sydney Desalination Plant, Sydney Water, Ausgrid, NBN Co, APA Group and Jemena with respect to servicing requirements and aims to facilitate the long-planned transformation of 36.2 ha of underutilised and strategically important land at Arncliffe, located to the north of the M5 Motorway and adjacent the western foreshore of the Cooks River. The project seeks a renewed focus on delivering a contemporary logistics and warehousing precinct within a well-connected location, surrounded by enhanced open space provisions. The site forms part of the broader Bayside West 2036 Precinct and generally comprises the footprint of the Kogarah Golf Club.

This report addresses servicing and utility infrastructure impacts at the proposed development site. The following utilities have been evaluated as part of this report: stormwater drainage, sewerage, water supply, electricity, telecommunications, gas, the Moomba-Sydney High Pressure Ethane Pipeline, and the Sydney Desalination Plant Pipeline.

The site is generally free of public utilities as it is currently a golf club. However, there are two large utilities that traverse the site in a north-south direction that impact on the developable site area, these being the Moomba-Sydney High Pressure Ethane Pipeline and the Sydney Desalination Pipeline. An existing 225mm diameter Sydney Water Corporation (SWC) sewer services the existing Golf Club house in the northeast corner of the site. This sewer was designed to service the golf club only. It is understood that the sewer will have minimal capacity for the future development and may only have capacity to serve Block 1 of the Planning Proposal Scheme, which is the land located north of Marsh Street. All other utilities are outside of the proposed development site area.

The works proposed would require the following augmentations for each utility:

Drainage: A new drainage network will need to be constructed across the site with water quality treatment measures included in association with the road construction.

Sewerage: In coordination with the precinct Water Service Coordinator (WSC) and Sydney Water Corporation (SWC), a feasibility study for a new gravity sewerage reticulation network with either a sewage pumping station or a pressure sewer system, and a sewage pressure main with the potential to connect to the SWC Southern and Western Suburbs Ocean Outfall Sewer (SWSOOS) to the south of the development, is currently being investigated. If the feasibility design for a new sewage pumping station is ultimately adopted, an area of land approximately 35m by 35m would be provided for the pumping station plot with all-weather semi-trailer road access.

Water supply: Also, in coordination with the WSC and SWC, a feasibility study for two new lead-in water supply reticulation pipelines is being investigated. The pipelines would need to be installed north of the site to bring water to the development from the existing SWC 500mm diameter and 750mm diameter trunk water mains along the Princes Highway from two separate locations. A new looped reticulation network would need to be constructed within the development.

Electricity: In coordination with the precinct Electrical Services Strategy Consultant (TRACA Engineering Group), coordination is currently ongoing with Ausgrid to confirm how the development

will be provided with an electricity supply. Depending on the final loading, timing, and staging of the development, investigations are currently being undertaken to determine whether a new zone substation will need to be established, or alternatively, whether high voltage feeders can be provided to supply the development from a single or multiple zone substation within the area.

If a new zone substation option is adopted for the development, Ausgrid requires an area of approximately 2,000m^2 in size, depending on the shape and location, with all-weather access. A new electrical reticulation network will need to be constructed within the development.

Telecommunication: Telstra infrastructure exists in the area. Due to the size of the development, NBN Co were approached and advised that optical fibre services can be provided to the site and reticulated though the development. The revised precinct scheme has been provided to the NBN Co Case Manager and coordination with NBN Co will continue as the project progresses.

Gas: Jemena advised that gas would be supplied off a high pressure 1050kPa gas main at Marsh Street. To facilitate a suitable supply, pressure reduction of this high-pressure supply will be via a below ground pressure reduction station to be accommodated within the development site. A site approximately 6m long by 3m wide will need to be allocated for this device. From this device, a suitable medium pressure 210kPa plastic pipe network can be reticulated through the site for retail/commercial applications. A new reticulation network will need to be constructed within the development.

Moomba-Sydney High Pressure Ethane Pipeline: A Safety Management Study (SMS) was undertaken to document the considerations of all stakeholders in relation to this pipeline. Since the initial consultations with APA Group (APA) which sought a staged relocation of the pipeline, ongoing consultation with APA and ongoing site development refinements have led to the development of a Master Plan with a lot and road network that avoids direct impact to this pipeline. Localised protection measures to the requirements of APA will need to be implemented where working within the minimum setback/easement requirements to the pipeline. Cook Cove Inlet Pty Ltd are in ongoing consultation with APA with respect to the development of suitable pipeline protection measures and obtain APA approval.

Sydney Desalination Plant Pipeline: Following a meeting with the Sydney Desalination Plant Pty Ltd, it was proposed that the Sydney Desalination Plant Pipeline should not be moved and any works above the pipeline be outside the existing easement. An air release valve and cathodic protection pit for the pipeline exists in the middle of the site and access is to be provided for maintenance of the valve and cathodic protection equipment at all times. Additionally, should the cathodic protection equipment require replacement, the location of the power source is to be confirmed.

In summary: The site can be serviced by all utilities required for the proposed development. As the rezoning application progresses and the design advances, it is recommended that utilities planning continues to be coordinated with relevant utilities, especially where relocations and lead-in works are required to service the site which can have long lead times and the potential to result in delays.

2. Introduction

This report has been prepared, on behalf of Cook Cove Inlet Pty Ltd, to support the public exhibition and assessment of the Cooks Cove Planning Proposal (PP-2022-1748), which was issued a Gateway Determination by the Department of Planning and Environment on 5 August 2022. The proposal seeks to amend Bayside Local Environmental Plan 2021 (BLEP 2021) to rezone and insert planning controls for certain land known as Cooks Cove within the BLEP 2021.

The Cooks Cove Planning Proposal aims to facilitate the long-planned transformation of 36.2ha of underutilised and strategically important land at Arncliffe, located to the north of the M5 Motorway and adjacent the western foreshore of the Cooks River. The project seeks a renewed focus on delivering a contemporary logistics and warehousing precinct within a well-connected location, surrounded by enhanced open space provisions. The site forms part of the broader Bayside West 2036 Precincts and generally comprises the footprint of the former Kogarah Golf Club, now in part occupied by a temporary M6 Stage 1 construction compound.

2.1 Report Scope

This report addresses the provision of utilities to the site and the management of existing utilities that pass through the site for the works relating to the Cooks Cove Planning Proposal only.

2.2 Consultation

This strategy has been developed in close consultation with key utility stakeholders such as APA Group, Sydney Water Corporation (SWC), Sydney Desalination Plant Pty Ltd, Ausgrid, NBN Co and Jemena, over a consultation period dating back to 2016, and in coordination with an accredited Water Service Coordinator (WSC) and an Accredited Service Provider Level 3 (ASP3) Electrical Services Strategy Consultant. A summary of the most recent consultation undertaken is provided in Table 1.

Table 1: Summary of most recent stakeholder consultation

Agency/Stakeholder	Date	Method of Correspondence	Parties Involved	Discussion Details/ Response/Outcome
APA Group	15/12/2022	Meeting	APA Group, Arup, Cook Cove Inlet Pty Ltd, Arup, Ethos Urban	Meeting held with APA Group to confirm the engineering feasibility and commercial assessment of the Moomba-Sydney Ethane pipeline works in relation to the proposed master plan.
Sydney Water Corporation	29/11/2022	Feasibility Application via portal submission	Application made by RARi on behalf of Cook Cove Inlet Pty Ltd	Following initial consultations with Sydney Water Corporation and refinements to the proposed Cooks Cove Proposal, a formal application had been lodged to Sydney Water advising them of the revised water supply and sewerage high-level demand estimates in order for Sydney Water to advise of the options available / requirements for the provision of water supply and sewerage services to the development.
Sydney Desalination Plant Pty Ltd	27/10/2022	Meeting	Sydney Desalination Plant Pty Ltd, Arup, Cook Cove Inlet Pty Ltd, Arup, Ethos Urban	Meeting held between Sydney Desalination Plant Pty Ltd and the proposal team to confirm constraints related to the desalinated water pipeline running through the site, specifically with relation to the proposed master plan.
Ausgrid	27/11/2022	Feasibility Application via portal submission	Application made by Traca on behalf of Cook Cove Inlet Pty Ltd	Formal application for connection for the proposed development has been made to Ausgrid noting the estimates of the required electrical loads including a plan of proposed design scope. A response is expected from Ausgrid by 20 December 2022 to advise of the options available / requirements for the provision of electrical supply services to the development.
NBN Co	22/11/2022	Email	Arup, NBN Co	Email received from NBN Co confirming that the development has been accepted for servicing.
Jemena	23/11/2022	Email	Arup, Jemena	Email received from Jemena confirming that the development has been accepted for servicing.

3. Existing Site

3.1 Cooks Cove

Cooks Cove is located in the suburb of Arncliffe within the Bayside Council Local Government Area (LGA). The site is located to the west of the Cooks River, approximately 10km south of the Sydney Central Business District (CBD). The site enjoys adjacency to key trade-related infrastructure being immediately west of Sydney Kingsford Smith International Airport and approximately 6km west of Port Botany.

Cooks Cove is strategically located within close proximity to a number of railway stations including Banksia, Arncliffe, Wolli Creek, and the International Airport Terminal, which vary in distance from the site between 700m and 1.1km. The M5 Motorway, providing regional connectivity to the Sydney Metropolitan area, runs in an east-west direction immediately to the south of the site. The M8 and M6 Motorways are, and will be, constructed in tunnels approximately 60 metres beneath the adjoining Bayside Council 'Trust' lands. The Sydney Gateway project, presently under construction to the immediate north of Cooks Cove and Sydney Airport, will substantially improve future accessibility to the St Peters interchange and the wider M4/M5 WestConnex network, via toll free connections, as well as the Domestic Airport and Port Botany.

The Cooks Cove Development Zone is located to the north of the Southern and Western Suburbs Ocean Outfall Sewer (SWSOOS) and is generally bound by the Cooks River to the east and Marsh Street to the north and west. The site is approximately 36.2ha and is owned and managed by a number of landowners, both public and private. Surrounding development includes the Sydney Airport International Terminal precinct, Mercure Sydney Airport, an area of low-density dwellings presently transitioning to medium-high density residential flat buildings, recreation and open space facilities, and road and airport related infrastructure.

3.1.1 Kogarah Golf Club

Kogarah Golf Club was established in 1928, with the Club occupying the land subject to the Planning Proposal boundary since 1955. At this time, the Cooks River was reconfigured to its current alignment to accommodate the expansion of Sydney Airport. The land presents a highly modified environment, with relatively flat topography, gently moulded fairways and greens, separated by strips of vegetation and man-made water bodies. The golf course clubhouse, car park and maintenance facilities are located in the northern corner of the site, adjacent the Cooks River. Access is provided via Levey Street. The members of Kogarah Golf Club will relocate from the site in May 2024 to new playing facilities.

3.1.2 Arncliffe Motorway Operations Complex

The temporary construction compound for the WestConnex M8 and M6 Stage 1 Motorway tunnelling works was originally established in June 2016. The temporary construction facility occupies approximately 7.5ha and is expected to remain until 2025. At this time, the facility will reduce to 1.5ha to accommodate the permanent Arncliffe Motorway Operations Complex, located in the western corner of the site, adjacent Marsh Street. The complex will house ventilation and water treatment plant and maintenance equipment for both the M6 and M8 sub-grade motorways.

3.1.3 Easements and Affectations

The Sydney Desalination Plant pipeline runs through the development zone, north-south adjacent the Cooks River. The pipe has a diameter of 1.8m and sits within an easement of 6-9m in width. From south to north the pipeline is constructed in a combination of trench and above ground with mounded cover and then transitions to micro-tunnel with a typical depth of circa 11m.

The Moomba to Sydney Pipeline, containing mixed-phase ethane liquid and gas, follows a similar general alignment north-south adjacent the Cooks River. The pipe has a nominal 225mm diameter, within an easement generally 5m wide and with the pipe located at a depth of 1.2m-2.3m.

4. The Proposal

The Cooks Cove Master Plan 2022, as prepared by Hassell, represents an optimised and refined reference scheme, to guide best practice design and the preparation of detailed planning controls to achieve an attractive precinct with high amenity.

Key features of the Cooks Cove Master Plan are:

- A net development zone of approximately 15ha with up to 343,250m2 Gross Floor Area (GFA) comprising
    - 290,000m^2 of multi-level logistics and warehousing
    - 20,000m^2 for hotel and visitor accommodation uses
    - 22,350m^2 for commercial office uses
    - 10,900m^2 of retail uses.
- Multi-level logistics with building heights generally up to 5 storeys (approx. 48m).
- A retail podium with commercial office and hotel above, up to a total of 12 storeys (approx. 51m).
- Built form of a scale and composition which caters for the generation of approximately 3,300 new jobs.
- A surrounding open space precinct including:
    - A highly activated waterfront including the Fig Tree Grove outdoor dining and urban park precinct
    - A substantial contribution to the extension of the regional Bay to Bay cycle link, 'Foreshore Walk', including active and passive recreational uses, together with environmental enhancements
    - Master planned and Council-owned 'Pemulwuy Park' – with an agreed embellishment outcome of passive open space and environmental enhancements to be delivered in stages post construction of the M6 Stage 1 Motorway.
- Complementary on- and off-site infrastructure to be delivered by way of State and Local Voluntary Planning Agreements.

Figure 1: Proposed Cooks Cove Master Plan 2022 – Hassell

4.1.1 Proposed Planning Controls

The Planning Proposal Justification Report, as prepared by Ethos Urban, details the intention to insert new planning provisions covering the Cooks Cove development zone and adjoining lands, through the amendment of the BLEP 2021, accordingly removing this same area from State Environmental Planning Policy (Precincts—Eastern Harbour City) 2021 (formerly Sydney Regional Environmental Plan No. 33 – Cooks Cove).

Specifically, the Planning Proposal will:

- Seek new land use zones within the development zone, including a primary SP4 Enterprise Zone across the majority of the Kogarah Golf Course freehold land, RE1 Public Recreation foreshore and passive open space zones and elements of SP2 Infrastructure.
- Impose an overall maximum building height of RL51m with appropriate transitions to respond to aviation controls within limited sections of the site.
- Limit gross floor area (GFA) to the south of Marsh Street to 340,000m^2, with a further 1.25:1 Floor Space Ratio (circa 3,243m^2 of GFA) to the north of Marsh Street, to achieve the overall intended logistics, commercial, retail, and short-term accommodation land uses.
- Other additional permitted uses and site-specific planning provisions.
- Reclassification of Lot 14 DP213314 and Lot 1 DP108492 (Council owned and the subject of Charitable Trusts), initially from 'community' to 'operational' to ensure appropriate access, improve utility of public open space and to create a contiguous boundary. Following rezoning and subdivision, it is subsequently intended that Council reclassify residue RE1 parcels as 'community' by resolution.

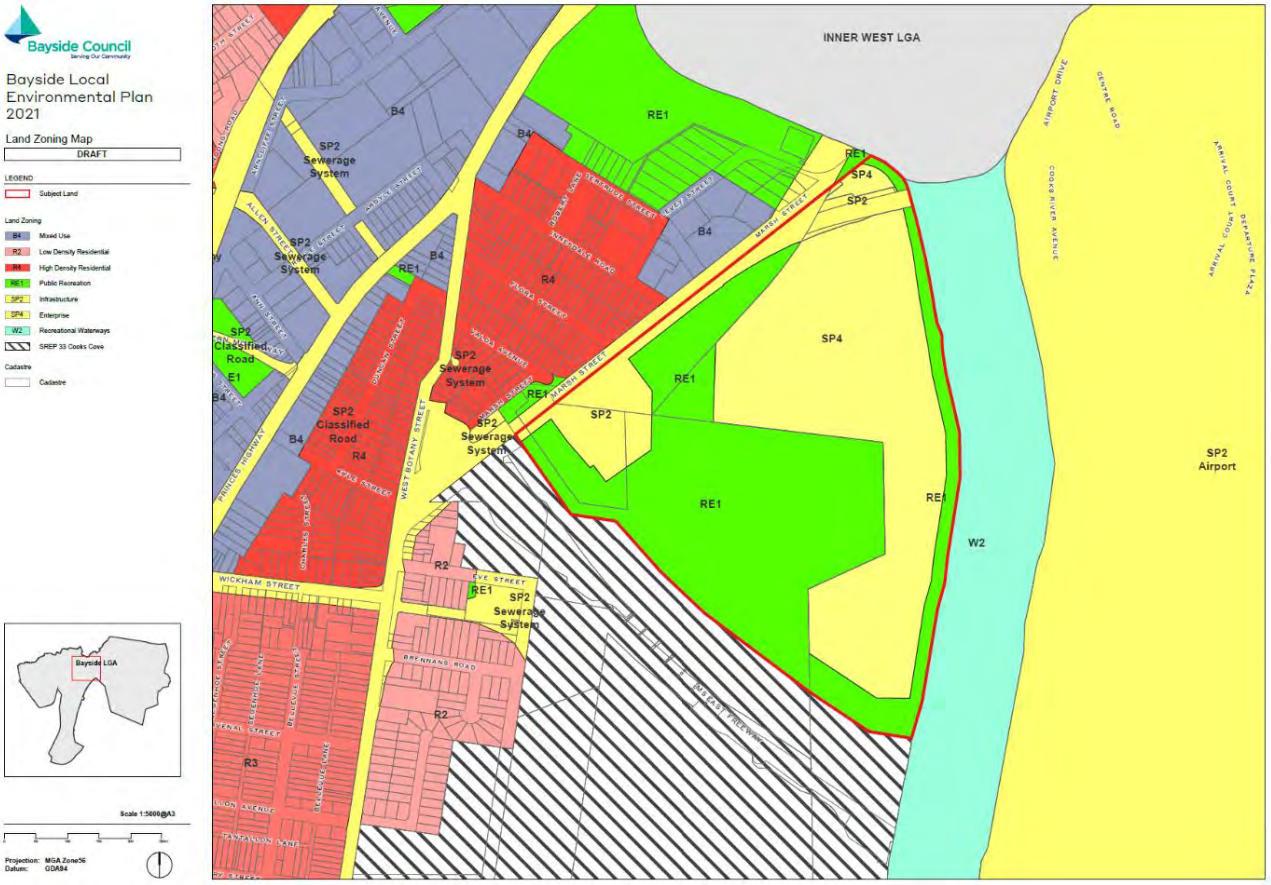


Figure 2: Proposed Draft Bayside LEP 2021 Zoning Map – Source: Ethos Urban

The proposal is in response to Bayside West Precincts 2036 – Arncliffe, Banksia, and Cooks Cove (released August 2018) and the subsequent Ministerial Directions under s9.1 of the EP&A Act, being Local Planning Directions 1.11 Implementation of Bayside West Precincts 2036 Plan and 1.12 Implementation of Planning Principles for the Cooks Cove Precinct.

5. Servicing and Utility Strategy

The following servicing and utility strategy has been undertaken in two parts:

- Part 1 – Investigation into the existing utilities servicing the site and their availability in the area surrounding the site. This was done by submitting a Before You Dig Australia (BYDA) enquiry, obtaining any available as-constructed drawings from relevant utility authorities where any specific additional details were required, detailed utilities surveys at select areas; and
- Part 2 – Review of the existing and potential future requirements for each utility to service the proposed project. Further refinement and utility sizing will be required following the rezoning and ultimate layout for the development through the Development Application and Construction Certificate documentation process. The current concepts have been determined based on the Cooks Cove Precinct Master Plan.

5.1 Utilities Corridor

As part of the proposed Cooks Cove Precinct development, it is recommended that a utilities corridor is provided in one or both street verges to accommodate water supply, electricity, telecommunications, and gas utilities. The preferred utility allocations are as described in the New South Wales Streets Opening Conference publication, Guide to Codes and Practices for Street Opening (NSW Streets Opening Coordination Council, 2018). There are two options available for utilities allocations, for footways 3 – 3.6m wide (refer to Figure 3), and footways wider than 3.6m wide (refer to Figure 4).

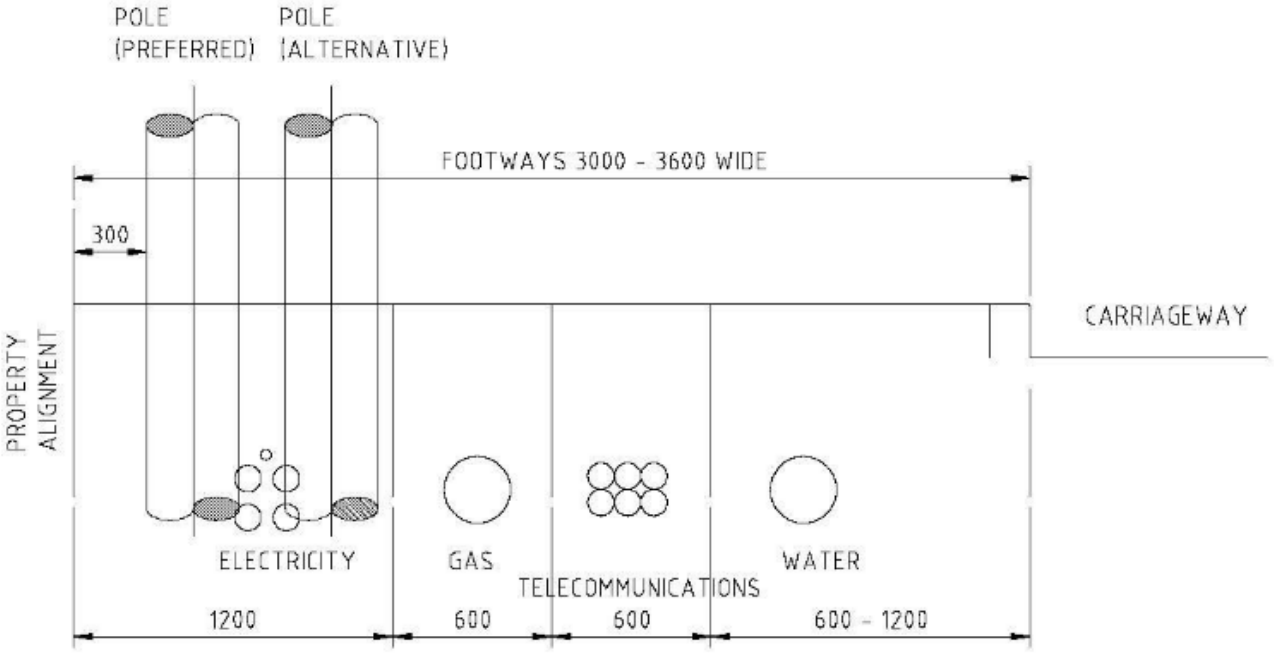


Figure 3: Traditional utility trench allocation after January 1991 – footways 3 – 3.6m wide (source: Guide to Codes and Practices for Streets Opening, NSW Streets Opening Coordination Council, 2018)

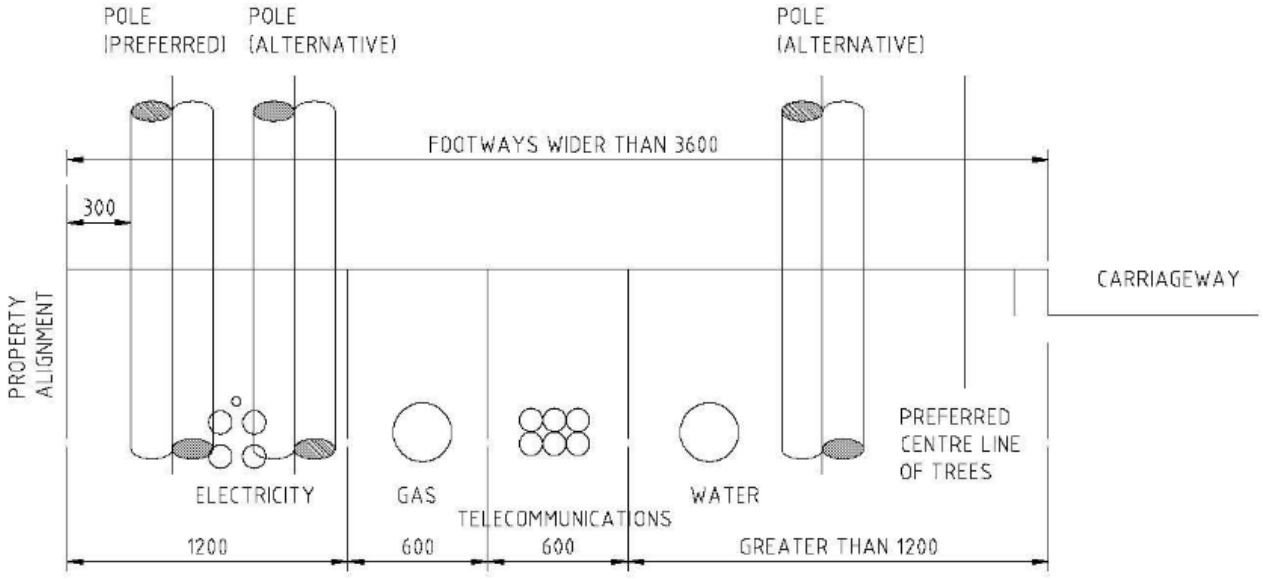


Figure 4: Traditional utility trench allocation after January 1991 – footways wider than 3.6m (source: Guide to Codes and Practices for Streets Opening, NSW Streets Opening Coordination Council, 2018)

It is recommended that footway widths are minimum 3m wide to allow minimum width services allocations, excluding recycled water and tree bays. Where dual water supply network is proposed (potable and recycled water supply), where possible, it is recommended to have these water mains in opposite footpaths.

Furthermore, it needs to be noted that:

- Where footpath widths of 3m or less are proposed, special consideration is required for both the utility allocation widths, i.e., use of shared trenches, and the street tree allocation. These will need to be discussed and agreed with the utility authority, especially for new greenfield developments.
- Where footpaths less than 3.6m are proposed, consultation with utility authorities is required in regard to street tree allocations.

Due to the size of the proposed development and size of utilities required, the development may require a wide verge to accommodate the larger / trunk utilities within. Where trunk utility services are to be installed, these are typically installed under a road carriageway and not the footway.

To accommodate for the proposed services, an initial verge width of minimum 3.6m has been included in the Cooks Cove Precinct Master Plan.

Where public utilities cross private land or proposed open space, easements are to be placed over the utilities to provide access to asset owners for maintenance. The width of easements will be as required by relevant service authorities.

5.2 Stormwater Drainage Infrastructure

5.2.1 Existing Stormwater Drainage

The existing stormwater drainage on the site is limited to minor drainage to accommodate runoff from within the golf club to local ponds which form part of the existing golf course layout. A more detailed description of the existing stormwater drainage network is included in the Flooding, Stormwater and WSUD Report prepared by Arup.

5.2.2 Proposed Stormwater Drainage

The local stormwater drainage network for the development site is proposed to follow the philosophy of Water Sensitive Urban Design (WSUD) and will include swales, absorption and bioretention swales within road reserves and green space, all of which will discharge to the proposed stormwater system. A more detailed summary of the proposed stormwater collection network is included in the Flooding, Stormwater and WSUD Report prepared by Arup.

5.3 Sewerage Infrastructure

5.3.1 Existing Sewerage

Existing sewerage infrastructure in the vicinity of the development are the assets of SWC.

These assets include an existing 225 mm diameter cast iron sewer located at the northeast corner of the site that services the existing Kogarah Golf Club clubhouse only (refer to Appendix D). This sewer was built in 1936 on 3-inch diameter piles at 12-foot centres in water charged ground (SWC Plan No. SO 44679). This sewer drains to Sewage Pumping Station No. SPO 099 northwest of the Princes Highway. Any works in the vicinity of this sewer will require monitoring using CCTV inspection prior to and following construction to monitor damage. Levels are required to be surveyed at regular intervals to monitor for any subsidence as directed by SWC.

There is also an existing 225 mm diameter cast iron sewer that services the existing lots fronting Marsh Street between Valda Avenue and Innesdale Road on the northwest side of Marsh Street. This sewer was also built in 1936 on 4-inch diameter piles at 12-foot centres in water charged ground (SWC plan No. SO 44679). This sewer drains to the sewer noted above and then to Sewage Pumping Station No. SPO 099 northwest of the Princes Highway. There are no other existing sewers that service the proposed development site.

The Southern and Western Suburbs Ocean Outfall Sewer (SWSOOS) aqueduct passes through the south of the site. The SWSOOS is both above and below ground and is a critical piece of SWC infrastructure that services the southern and western parts of Sydney and drains ultimately to the Malabar Sewage Treatment Works. It is a heritage structure of brick barrel and concrete construction. Any works in the vicinity of this sewer outfall will require monitoring using CCTV inspection prior to and following construction to monitor any damage. Levels should be surveyed at regular intervals to monitor for any subsidence as directed by SWC.

The Mean High-Water Mark from Deposited Plan DP1152790 was defined at RL 0.555 mAHD in the vicinity of the development. However, based on current data, this has increased to 0.67mAHD (Australian Hydrographic Office, 2019).

Following a review of the existing sewerage infrastructure and the low ground levels of the development site, there seems little opportunity to service the site with the existing gravity sewerage infrastructure. Subject to staging and SWC approval, the existing 225 mm diameter sewer that

services the existing Kogarah Golf Club clubhouse may be used to service only development on Lot 1 to the north of Marsh Street at the northeast of the site.

5.3.2 Proposed Sewerage

The current ground levels at the proposed development site are generally low compared to the existing surrounding sewerage infrastructure. The existing detailed sewerage plans show that the previous sewerage reticulation catchments were not designed to cater for the proposed development site with the exception of the existing Kogarah Golf Club building.

Due to the nature of the development site with its low-lying land, sandy soils, acid sulphate soils and tidal high water table, it is considered necessary to consider various sewerage options. The options available are:

1. Traditional gravity sewerage reticulation;
2. Pressure sewerage reticulation; and
3. Vacuum sewerage reticulation.

A meeting was initially held with SWC on 8 February 2017 to discuss these potential sewerage servicing options (refer to Appendix E for SWC correspondence). These discussions will continue as the development proposal and design phases progress. It is recommended that the options of pressure or vacuum sewerage collection are further investigated to limit excavation in the sandy, water charged ground with acid sulphate soils found below the high water table. The options of pressure or vacuum sewerage will also provide further options in the staging and cost of the proposed works.

In order to demonstrate the serviceability of the proposed development, an indicative traditional gravity sewerage collection network for the development has been developed. The schematic concept plan for this network is included in Appendix D.

Due to the population density of the proposed development, in the schematic design, all sewers have been sized as 225 mm diameter or larger. During detailed design all sizes will need to be reviewed and confirmed.

SWC advised that significant modelling of the existing and proposed sewerage system will be required during the design phase to determine new main sizes and confirm capacities of existing receiving sewers to confirm their remaining capacity. This modelling is to be undertaken by the developer at their cost.

Coordination is also currently underway between the precinct WSC Rose Atkins Rimmer (RAR) and SWC to investigate the feasibility of the following new sewerage options to service the development site to SWC requirements:

1. A new gravity sewerage collection system capable of draining and servicing the entire development to the south of Marsh Street with discharge to the SWSOOS; and
2. One of the following three pumped options with discharge to the SWSOOS:
    a) A new sewage pumping station located within the development to collect and pump sewage from the lots to a discharge point through a 300 mm diameter pressure main (sizing subject to final population densities, modelling, and detailed design). This station will need to include an offline storage structure, vents at the sewage pumping station and pressure main discharge point, an electrical switch room building and an overflow structure. A plot of land with a minimum area of 35 m by 35 m is required

to site the pumping station and associated infrastructure complete with an all-weather semi-trailer access road and security fencing (refer to Appendix D);

b) A new sewage pumping station with the same requirements as above, but positioned on Sydney Water land within the west of the Northern Precinct (i.e. adjacent to the SWSOOS); and

c) A pressure sewer system with individual pumps and storage within each lot. Sewerage would be pumped within a pressure main reticulation system to discharge to the SWSOOS.

As there is currently no alternative discharge point if detailed modelling indicates the SWSOOS is near to capacity, SWC informed Arup and Cook Cove Inlet Pty Ltd at meetings on 31 October and 12 November 2019 (refer to Appendix E for SWC correspondence), and that the following feasibility options are currently being investigated by SWC to serve the projected population growth of southwest Sydney for the foreseeable future:

1. A new alternative sewer trunk main;
2. Amplification of the existing SWSOOS; and
3. Sewer loading reduction strategies across southwest Sydney, such as the adoption of widespread greywater recycling.

In order to work with SWC's ongoing sewer strategy planning for southwest Sydney and to ensure best practice sustainability for the development, Arup is also currently investigating options for greywater recycling to reduce sewer loading from the precinct in coordination with the precinct sustainability assessment.

Irrespective of the final sewage disposal option adopted in coordination with the WSC and SWC, this review has demonstrated that the site can be serviced by sewerage infrastructure and that there will be a disposal option for sewage available via the SWSOOS or another appropriate means to SWC requirements.

A feasibility application has recently been submitted by the project appointed WSC to Sydney Water detailing the proposed development and estimated sewerage demand. This feasibility application is currently with Sydney Water for review. Sydney Water have confirmed receipt of the Feasibility Application and a formal response from Sydney Water is expected in the coming weeks.

5.4 Potable Water Supply Infrastructure

5.4.1 Existing Potable Water supply

Existing potable water supply infrastructure in the area are the assets of SWC.

There is an existing 100 mm diameter cast iron cement lined water main, built in 1972 (SWC plan No. WO 92778) on the north-western side of Marsh Street which services the lots fronting Marsh Street between Valda Avenue and Rockwell Avenue.

All other mains to the northwest of Marsh Street are 100 mm diameter cement lined cast iron with the exception of a new augmented 200 mm diameter PVC-U main built in 2012 in Innesdale Road.

There is an existing 150 mm diameter cast iron cement lined main (SWC plan No. DO35499) built in 1936 on the northern side of the SWSOOS to the south of the site.

Following a review of the existing potable water supply infrastructure, it appears that there is insufficient water supply infrastructure locally of a size sufficient to service the development. However, there are two large trunk water mains in the Princes Highway approximately 350 m to 450 m north of the site which can be accessed for water supply (refer to Appendix F). These mains include a 750 mm diameter cast iron cement lined water main, built in 1918 (SWC plan No. WO4746), and a 500 mm diameter cast iron cement lined water main, built in 1896 (refer SWC plan No. CO 50).

At a meeting held with SWC on 8 February 2017, this proposed supply option was discussed and SWC advised that this would be the point of supply.

5.4.2 Proposed Potable Water supply

The existing potable water supply infrastructure adjoining the site has insufficient capacity to service the proposed development site. The developer would need to install water supply connections and supply points away from the site. This would require the construction of lead-in works through the surrounding existing residential area and streets to the north.

Any supply to service the site would need to be a looped supply, thus resulting in two lead-in mains to the development site (refer to Appendix F). To achieve this, new connections would be required to the existing 250 mm diameter main that connects to the 500 mm diameter and 750 mm diameter mains in the Princes Highway at the intersection of West Botany Street. This new 300 mm diameter main would then extend to the site via West Botany Street and Flora Street.

Subject to network modelling and sizing, it is anticipated that up to two development precincts could be serviced by a single water main connection. Once more than two development blocks are developed, a second 300 mm diameter main would need to connect to both the 500 mm diameter and 750 mm diameter mains at the Princes Highway at the intersection of Gertrude Street. This main would then extend down Gertrude Street and Rockwell Avenue to service the development site.

The following potable water supply infrastructure will be required to service the development site internally:

- New distribution mains capable of providing required peak hour and fire demands;
- A looped reticulation system with linked mains and dead-end mains avoided where possible; and
- All pipework to be PVC-O material unless advised otherwise.

The 300 mm diameter lead-in mains are to be extended around the site to provide a distribution loop and also provide dual feed points for the water supply reticulation supply to the site. All distribution mains shall be a minimum of 200 mm in diameter.

A meeting was held with SWC on 8 February 2017 to discuss potential potable water servicing options for the development site. SWC advised that significant modelling of the existing and proposed water supply network will be required during the design phase to determine new potable water main sizes and confirm that the capacity of existing water mains is not affected. This is to be undertaken by the developer at the developer's cost.

In order to demonstrate the serviceability of the proposed development, a schematic design of an indicative potable water reticulation network has been prepared. The schematic concept plan for this network is included in Appendix G. Due to the population density of the proposed development, all lead-in and distribution water mains have been sized as 300 mm in diameter and all reticulation mains as 200 mm in diameter.

Irrespective of the final water supply option chosen, this review has demonstrated that the site can be serviced by potable water infrastructure with the construction of some lead-in infrastructure.

Similar to the sewerage infrastructure investigations, a feasibility application has recently been submitted by the project appointed WSC to Sydney Water detailing the proposed development and estimated water supply demand. This feasibility application is currently with Sydney Water for review. Sydney Water have confirmed receipt of the Feasibility Application and a formal response from Sydney Water is expected in the coming weeks.

5.5 Sydney Desalination Plant Pipeline

5.5.1 Existing Desalinated Water Pipeline

The existing Sydney Desalination Plant Pipeline is the asset of Sydney Desalination Plant Pty Ltd under contract from the New South Wales State Government for a period of 50 years.

The pipeline runs through the Cook Cove Northern Precinct from south to north (refer to Appendix H) and has an 1829 mm outside diameter and 12 mm thick walls. The pipeline alignment varies and is approximately 40 m to 100 m west of the Cooks River embankment and contained within a 6 m wide easement. The main crosses over the SWSOOS in the south of the site and then dives to allow for a future stormwater channel to pass over for a distance of 110 m north of the SWSOOS. The main then gradually rises and is under fill material to a distance of 370 m north of the SWSOOS. At this point, the main drops vertically to an invert level of -10.0 mAHD and deeper where it continues north and is contained within a 2500 mm outer diameter Reinforced Concrete jacked pipe (micro tunnel) for the full length of the remainder of the development site to the north.

The alignment of the existing desalinated water main encroaches on a significant area of developable land. The ability to relocate or build over and around the main was discussed with Sydney Desalination Plant Pty Ltd at a meeting held on 14 February 2017. Sydney Desalination Plan Pty Ltd noted that the pipeline has a design life of 100 years and any works in and around the pipeline should consider this design life for access should it be needed. Where the pipeline dips to the deep invert level of -10.0 mAHD, there is cathodic protection equipment and an air release valve which will need to be accessed for maintenance – this should be considered in any future design. Preferably the point of access for the cathodic protection and air release valve should be built into a future pit for maintenance and the pit is to be sited in an open public space free of traffic.

5.5.2 Sydney Desalination Plant Pipeline within the Proposed Development

Sydney Desalination Plant Pty Ltd was approached to discuss and advise on the relocation and building over and adjacent to the Sydney Desalination Plant Pipeline through the development site. A meeting was held on 14 February 2017 with the minutes attached in Appendix I. Following consultation with Sydney Desalination Plant Pty Ltd the preferred option was to:

1. Maintain the easement access and rights over the easement;
2. Build any structures outside of the existing easement;
3. Preferably build any works outside the zone of influence for the pipe. The zone of influence being a line from the invert of and outside diameter of the pipe to the finished surface on each side of the pipe at a one (1) vertical to one (1) horizontal batter slope as per the Sydney Water Corporation, Technical Guidelines, *Building over and adjacent to pipe assets* (October 2015). Sydney Desalination Plant Pty Ltd further requested at the meeting that a one (1) vertical to two (2) horizontal batter slope be considered during design due to the sandy soils in the area;

4. All works where building over or adjacent to the Sydney Desalination Plant Pipeline is to be done in accordance with the Sydney Water Corporation, Technical Guidelines, *Building over and adjacent to pipe assets* (October 2015);
5. Any works built over the pipeline are to be built with the minimum cover and to the loading criteria as supplied by Sydney Desalination Plant Pty Ltd; and
6. Preference is to be given to a road being built over the pipeline alignment if possible.

In order to comply with these requirements, it will be necessary for structures within the zone of influence of the pipeline to be founded beneath the zone of influence of the pipeline. This can be achieved by piling to the required depth beneath the zone of influence. Given soil conditions at the site, which are anticipated to require deep piles, this is not anticipated to present a significant design constraint in these areas.

5.6 Electrical Infrastructure

5.6.1 Existing Electrical Infrastructure

Existing electrical infrastructure in the area are the assets of Ausgrid. Preliminary discussions with Ausgrid on 9 February 2017 (their reference No. 700003432) advised that there is no redundancy in their existing electrical system in the area. Since then, discussions with Ausgrid have been ongoing. An ASP3 service provider has recently been appointed to estimate the required power demand and develop a servicing concept.

The existing 11kV Ausgrid kiosks on Marsh Street (S76825 and S76826) are believed to be currently serving the M8 Motorway tunnelling construction. The two High Voltage connections (HVCs) are fed from the Rockdale Zone Substation via two separate dedicated underground 11kV feeders. We assume the two HVCs will no longer be required once the tunnel construction is completed. This can be considered as a major connection opportunity to supply power to the Cooks Cove development.

5.6.2 Proposed Electrical Infrastructure

Following the initial consultation with Ausgrid on 9 February 2017, Ausgrid have since advised that they will have electrical supply/supplies in the area by the end of 2017 (refer to Appendix J for a copy of the correspondence).

In coordination with the precinct Electrical Services Strategy Consultant (TRACA Engineering), coordination is currently ongoing with Ausgrid to confirm in further detail how the development will be serviced based on the current power supply demand estimates. Depending on the final loading, timing, and staging of the development, Ausgrid is investigating whether a new zone substation will need to be established on site, or alternatively, whether high voltage feeders can be provided to supply the development from a single or multiple zone substations within the area.

Initial consultations with Ausgrid suggested a new 11kV lead-in feeder to the development site from an existing zone substation approximately 3km away. Investigations are underway for an option for multiple connections, 2 off, to Ausgrid's existing underground network in Marsh Street and Gertrude Street as shown in Figure 6 below.

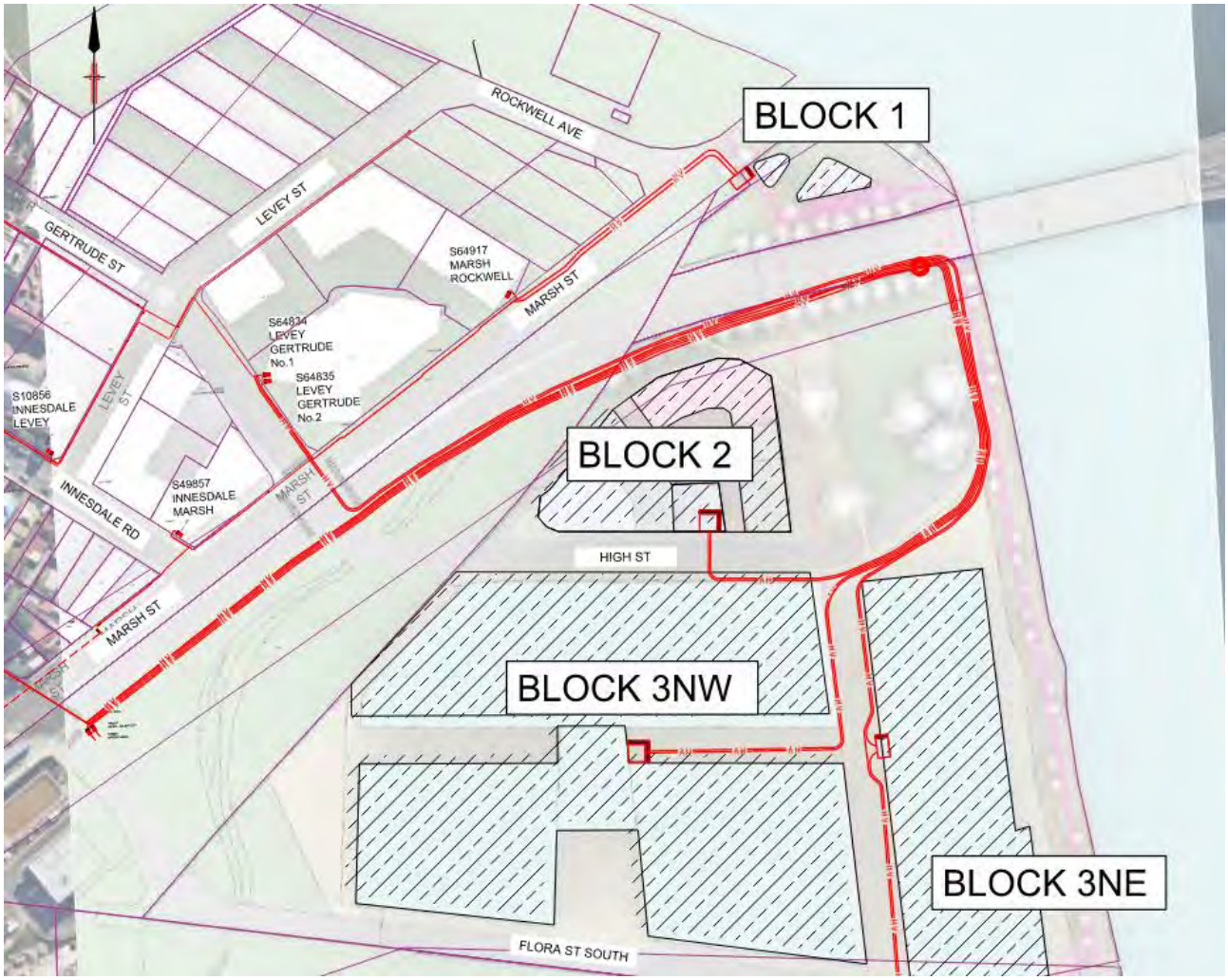


Figure 5: Ausgrid Proposed Design Scope plan

Following the formal feasibility application to Ausgrid, Ausgrid have advised of two (2) potential supply routes. These are currently being investigated and priced for a high-level construction cost estimate. A high-level construction cost estimate with relevant Ausgrid correspondence is expected to be provided by the project ASP3 consultant in the coming weeks.

If a zone substation option is adopted, a 2,000 m^2 (approximate) block of land would be required, depending on the available shape and location of land and the site access. It is suggested that a block be provided with a 50 m by 40 m allotment with road frontage and all-weather access for delivery of transformers and other large equipment to the site and for large maintenance vehicles.

The development will also need to install an underground electricity distribution network involving multiple kiosks or chamber substations across the site.

A concept plan for the proposed electrical layout for the site is included in Appendix K.

Any electricity supply in the vicinity of the Moomba-Sydney Pipeline is not to be laid parallel where possible due to the electrolysis which may occur with the pipeline. Crossings are to be limited where possible.

5.7 Telecommunications Infrastructure

5.7.1 Existing Telecommunications

Existing telecommunications infrastructure in the area are the assets of Telstra, NBN Co and Optus. Due to the size of the site and proposed development, only NBN Co servicing was investigated further. There is NBN Co cabling in Innesdale Road and Levey Street to the north of Marsh Street. There is no closer NBN Co cabling near the site.

There is an Optus optical fibre cable in a Telstra duct on the north side of the Marsh Street deviation and then across the Cooks River. The cable on the north side of the original Marsh Street extends from Innesdale Road to Rockwell Avenue servicing the lots facing Marsh Street.

NBN Co have been contacted with regards to the updated master plan. Refer to Appendix M for confirmation from NBN CO that the development has been accepted for servicing.

5.7.2 Proposed Telecommunications

No discussion was held with Telstra or Optus. Due to the size of the proposed development, the site would be serviced with NBN Co fibre optic services.

Following consultation with NBN Co, they advised by phone that all pit and pipework would be installed by the developer and all cabling would later be installed by NBN Co. A copy of the correspondence is attached in Appendix M.

A concept plan for the site telecommunications network is included in Appendix L.

5.8 Natural Gas Infrastructure

5.8.1 Existing Natural Gas

Existing Natural Gas infrastructure in the area are the assets of Jemena. These assets include an existing 100 mm diameter secondary 1050kPa gas main on the south side of Marsh Street leading over the Giovanni Brunetti Bridge and the Cooks River. The main then crosses over Marsh Street at the western end of Lot 1 into Rockwell Avenue and continues along the northwest footpath of Marsh Street as a 50 mm diameter nylon main to Innesdale Road. The gas main was adjusted as part of the current Marsh Street widening works.

5.8.2 Proposed Natural Gas

Following consultation with Jemena on 13 January 2017, Jemena advised that they had undertaken a desktop study of the development proposal and advised that natural gas can be made available to the development. Jemena confirmed on 19 February 2020 that this arrangement would still be the case regarding the revised precinct scheme. Copies of these correspondence are attached in Appendix N.

Supply to this site will need to come from the high pressure 1050kPa gas network located in Marsh Street. To facilitate suitable supply to the site, reduction of this high-pressure gas pipeline will be required via a below ground pressure reduction station to be accommodated within the development site. The station would be approximately 6 m long by 3 m wide. From this device a suitable medium pressure 210kPa plastic network can be reticulated to the site for retail and commercial applications.

Jemena have been contacted with regards to the updated master plan. Refer to Appendix M for confirmation from Jemena that the development has been accepted for servicing.

5.9 Moomba-Sydney Pipeline

5.9.1 Existing Moomba-Sydney Pipeline

The existing 225 mm diameter Moomba-Sydney Pipeline runs through the site from south to north adjacent the Cooks River embankment (refer Appendix O). The pipeline carries ethane at high pressure. Ethane is a colourless and odourless gas which is heavier than air. The pipeline is the asset of the APA Group Pty Ltd who provide maintenance services for their own pipelines.

The pipeline primarily runs along the riparian zone of the Cooks River through the north of the site, and further away from the river on a varying alignment from the river to the south of the site. The pipeline is contained within an easement generally 5 m wide across the site, but can also vary in width from 1 m to 2 m, 5 m to 10 m.

North of Marsh Street in Lot 1, an above ground valve station is located in the Block 1 area of the development (refer to Figure 6). The valve station comprises a small brick building and another louvered enclosure. These structures and the associated parking area are surrounded by a chain wire fence located within a 10 m wide by approximately 40 m long easement around the buildings.

Figure 6: Above ground valve station and enclosure

5.9.2 Moomba-Sydney Pipeline within Proposed Development

APA Group are to be advised of any works within 50 m of the Moomba-Sydney High Pressure Pipeline.

In preliminary discussions held on 16 February 2017 with APA Group, the following was advised:

- Any works to be undertaken in accordance with Australian Standard AS2885;
- Cover to the pipe is generally a minimum 1.2 m;

- A maximum cover of 3 m would be considered subject to independent engineering evaluation;
- Minimum separation to any service crossing the pipeline to be 1 m and to cross perpendicularly to the pressure main;
- All crossings to be open excavated, not bored;
- All works will need to be monitored for vibration and stress during any construction near the main;
- Any parallel utilities to have a minimum separation of 3 m to 5 m preferred;
- Any electricity distribution should not run parallel to the pressure main due to the ultimate effect of electrolysis. It was also noted that the main is protected by Cathodic protection; and
- Preferably no roads are to be built over the pipeline or along its length.

On the 28 February 2017 APA Group responded to the Department of Planning and Environment detailing comments on the planning of the Arncliffe, Banksia, and Cook Cove developments (refer to the letter attached in Appendix P).

From this letter it was recommended that a Safety Management Study (SMS) should be undertaken to understand and manage risks associated with the pipeline. This SMS workshop was held on 25 August 2017 (refer to the report attached in Appendix Q) and resulted in the following outcomes:

- Provision of a protection slab will likely be required over the pipeline for the entire site;
- Construction works associated with the reconstructed seawall will require plant, material, and equipment to cross the pipeline. APA to approve detailed design and construction plan;
- Servicing the waterfront area will require utilities to cross the pipeline. The preference of APA is for any pipeline crossings to occur in designated corridors will all necessary utilities crossing in the same location;
- APA required unfettered access to the pipeline easement at all times during construction and once the project has been completed;
- There were a number of concerns surrounding construction works adjacent to the pipeline. Construction works adjacent to the pipeline would be subject to a number of APA requirements and approval, including (but not limited to) access, training, vibration, loading and direct current voltage grading (DCVG) testing; and

The most recent meeting with APA was held on 15 December 2022 with the minutes of the meeting attached in Appendix R).

The outcomes of the SMS will be incorporated into the layout, design, and ongoing management of the project.

This high-pressure ethane pipeline solely supplies the Qenos Botany complex at Botany. It is understood Qenos have a storage limit of approximately 3 days at their plant.

The current master plan does not propose any relocation works for the pipeline. However, localised protection measures to the requirements of APA will need to be implemented where working within the minimum setback/easement requirements to the pipeline.

6. Conclusion

Cook Cove Inlet Pty Ltd propose to rezone the existing Kogarah Golf Club to a contemporary warehouse and logistics precinct. Once rezoned, it is proposed that the site would be developed to include , retail, commercial buildings, hotel, and serviced apartments, multi storey warehouse, recreational facilities, and roads. To support this application, Arup has prepared this report summarising the proposed servicing strategy for major utilities and provisional projected utility demands.

Existing utilities are primarily to the northwest and south of the site. The site will be able to be serviced with drainage, sewerage, potable water supply, electricity, telecommunications, and domestic gas.

The Sydney Desalination Plant Pipeline is to remain in its existing position and the development is to maintain access by including roads or open space above the existing easement alignment.

The Moomba-Sydney High Pressure Ethane Pipeline passes through the Cook Cove Northern Precinct site. Based on recommendations from the asset owner, APA Group, it was proposed to undertake an independent SMS in order to understand and manage risks associated with building in the vicinity of the pipeline and the requirements associated with relocating the pipeline. The outcomes of the SMS will be incorporated into the layout, design, and ongoing management of the project.

In summary, the site can be serviced by all utilities required for the proposed development. As the rezoning application progresses and designs advance, it is recommended that utilities planning continues to be coordinated with the relevant utilities authorities. In particular, where relocations and lead-in works are required to service the site, early planning is essential to accommodate lead times and prevent delays.

7. References

Australian National Tide Tables (AHP 11), Australian Hydrographic Office, 2019.

Bayside West Precincts (Arncliffe, Banksia and Cooks Cove) Draft Land Use and Infrastructure Strategy, NSW Planning and Environment, November 2016.

Cook Cove Northern Precinct – Planning Proposal Flood Impact Assessment, Arup, May 2020.

Cook Cove Northern Precinct – Planning Proposal Stormwater Management Concept Plan, Arup, May 2020.

Cook Cove Northern Precinct Master Plan, Skidmore, Owings & Merrill (SOM), February 2020.

Cook Cove Southern Precinct DA Amended Site Infrastructure and Services Assessment, Advisian, July 2017

Guide to Codes and Practices for Street Opening, NSW Streets Opening Coordination Council, 2009.

Guide to Codes and Practices for Street Opening, NSW Streets Opening Coordination Council, 2018.

Technical Guidelines: Building Over and Adjacent to Pipe Assets, Sydney Water Corporation, October 2015.

Appendix A

Existing Site Aerial Photograph

A.1


Gertrude Street
Flora Street
Marsh Street
SITE
COOKS RIVER
M5 East

Appendix B

Bayside West – Precinct Plan

B.1

Bayside West Precinct
LUIS Structure Plan
(DPE, Nov 2016

Appendix C

Proposed Site Layout Plan

C.1

Appendix D

Proposed Sewage Pumping Station and Pressure Main Location

D.1

Appendix E

SWC Correspondence

Sydney Water -
Checklist of critical information to be lodged with an e-Developer application

Case Number: 203282

Application Type is: ☐ **S73 Complying** ☒ **Non S73 Complying** (Adjustment and Deviation / Feasibility / Minor Extension* / Road Closure / Anticipated Requirements / S73 - Development / S73 - Dual Occupancy) (* NOT a 'Minor service extension')

Section 1: Complete for *ALL* applications	Yes	No	Comments
Hydra Download is on the correct address	☒	☐	
Correct application type has been determined & selected	☒	☐	
Both Developer and Applicant details and spelling are **correct** (because they're used in NORs, letters and Deeds plus the S73 Certificate)	☒	☐	
Hydra download number is allocated to the correct application and the Application Entry form 'Kept'	☒	☐	
Download plan included in Application (modified to include location and lot information as per *Section 73 Plan requirements*)	☐	☒	NA
Lead address is correct (St number, St name etc entered)	☒	☐	
Developer's email address is correct (it IS developer's email address and IS correct)	☒	☐	
Proposed Development description is **exactly** as stated in the Council Consent	☐	☒	NA
Proposed development details are correct (including 'development type' and 'development sub-type', lot, dwelling and stage details have been entered correctly)	☒	☐	
Subdivision plan conforms to the *Section 73 Plan requirements*	☐	☒	NA
Subdivision plan has been attached	☐	☒	NA
Development Plan has been approved by council and conforms to the *Section 73 Plan requirements*	☐	☒	NA
LUD form (V1), subd plan and PPN sent to CSD mailbox	☐	☒	NA
LUD form (V2) received from CSD	☐	☒	NA
Attached consent is valid and has all the details for the proposed development	☐	☒	NA
Dual Occupancy **or** other servicing requirements have been determined and included in the 'Additional Information' and the form has been attached	☒	☐	Intro letter requesting meeting
I have confirmed the application type in e-Developer is correct	☒	☐	
I have confirmed all the above have been entered correctly.	**Date:** 2/11/22		**Initial:** AR

Section 2: Non *S73 Complying* applications ONLY	Yes	No	Comments
Anticipated Requirements	☐	☒	
Completed the Anticipated Requirements Information Form and attached to the 'Attach Consent Document' field	☐	☐	
Stormwater cases	☐	☒	
On-site detention (City of Sydney Council applications) required?	☐	☐	
Stormwater connection required?	☐	☐	
Road Closures, Adjustment and Deviation, Minor Extensions*	☐	☒	
Only service(s) relating to the application have been selected	☐	☐	
Concept and engineering plans show the entire scope of works	☐	☐	
All existing Sydney Water services within the vicinity of the adj/dev works have been identified	☐	☐	
All proposed and existing Sydney Water assets are clearly shown on the	☐	☐	

plan			
Options presented for adj/dev of affected Sydney Water assets	☐	☐	
Provide flow schedule	☐	☐	
Special, Commercial, Industrial or Mixed Developments	☒	☐	
'Expected Requirements' section has been completed	☐	☒	
Engineering Plans attached	☐	☒	
Hydraulic information has been determined and entered	☐	☒	
I have confirmed all the above have been entered correctly	**Date:** 2/11/22		**Initial:** AR

Section 3: *S73 Complying* applications ONLY	**Yes**	**No**	**Comments**
M2M required?	☐	☐	
LUD form (V3) completed (with tag numbers) & attached	☐	☐	
Main to Meter services have been locked and tagged	☐	☐	
WAC plan conforms to *Section 73 Plan requirements*	☐	☐	
WAC Plan file naming convention has been followed	☐	☐	
Main to Meter PCP attached	☐	☐	
BPA required?	☐	☐	
BPA requirement Blue Form completed and attached	☐	☐	
Minor Works Sewer required?	☐	☐	
Notice Of Entry was **not** required	☐	☐	
Construction Commencement Notice attached	☐	☐	
WAC Plan attached and conforms to *Section 73 Plan requirements*	☐	☐	
WAC Plan file naming convention has been followed	☐	☐	
Connection Report attached	☐	☐	
Design/Project Management/Construction Costs attached	☐	☐	
Total Project Costs is correct (per attachment and matches 'Installed assets' in e-Developer)	☐	☐	
Refundable GST is correct	☐	☐	
Declaration is read and confirmed	☐	☐	
MLiM required?	☐	☐	
Undertaking copy attached	☐	☐	
Asset Installation data entered:	☐	☐	
Type of Asset(s) is correct	☐	☐	
Material used for asset(s) is correct	☐	☐	
Length and Diameter of asset(s) is correct	☐	☐	
Project Management costs is correct	☐	☐	
Design costs is correct	☐	☐	
Construction costs (less GST) is correct	☐	☐	
GST amount is correct	☐	☐	
S73 *Additional Advice sheet* was issued to the developer	☐	☐	
Requirements for Business Customers for Commercial and Industrial Property Developments Advice was issued to developer	☐	☐	
I have confirmed all the above have been entered correctly.	**Date:**		**Initial:**

I CERTIFY BY THE SUBMISSION OF THIS APPLICATION THAT THE APPLICATION HAS BEEN PREPARED AND SUBMITTED IN ACCORDANCE WITH SYDNEY WATER REQUIREMENTS

_____	*Anneke Rimmer*	*31_11/22*
Signature	**Name**	**Date**

ROSE ATKINS RIMMER
(Infrastructure) Pty Ltd
WATER RELATED INFRASTRUCTURE
DESIGN & MANAGEMENT
LICENSED WATER SERVICING COORDINATOR

Additional Information

17 November 2022

CASE – 203282
Feasibility Application for Cook Cove Northern Development
Response to application rejections comments:

Master Plan provided references Block 2 and 3, however Structure Plan references Blocks, 1, 2 and 3. Is there further information available on Block 1 on what Specific type of Development will be built on this Block, or are these existing Buildings?

Block 1 will have a max of 2,000sqm of gross floor area – in the format of 2x 3-4 storey commercial building, food and beverage premises and commercial office.

Please provide Hydraulic calculations for the proposed Commercial and Industrial Buildings.

Included are sewer equivalent EP calculation and water supply demand estimated based on the GFA breakdowns as provided in the attached PDF from Hassell, the Architect.

With respect to the potable water demand calculations, we have assumed for the Net Hectare Area (Nha) to be 80% of the GFA. We have run this past our building services team and they have confirmed that this is industry best practice estimate for projects at this early phase of the proposed development.

The attached water demands spreadsheet also includes 2 additional tabs for Nha=70%GFA and Nha=90%GFA as a sensitivity analysis to the demand calcs.

Please provide hydra Download plan showing the location of the proposed Building footprints. This is required for all Applications.

Please refer to attached plan.

Is there any Drinking Water servicing advice available for review by Sydney Water's internal stakeholders.

Please see the attached relevant water supply and sewer sketches from the previous master plan design (issued March 2020).

The Hydra download Case is only referencing one lot. Can you please review?

This has been reviewed and all development lots have been selected as best as possible.

ROSE ATKINS RIMMER
(Infrastructure) Pty Ltd
WATER RELATED INFRASTRUCTURE
DESIGN & MANAGEMENT
LICENSED WATER SERVICING COORDINATOR

Additional Information

2 November 2022

CASE – 203282
Feasibility Application for Cook Cove Northern Development

To Whom It May Concern,

In relation to case 203282, RAR has been engaged as the WSC to provide servicing advice and submit a Feasibility Application to Sydney Water for the proposed Cook Cove Northern Development. Sydney Water's response is required to assist in the Planning Proposal phase of the project, which successfully received rezoning during August 2022. In support of the Feasibility Application submission, we have included the following documentation:

- Sydney Water Growth Servicing Data Form (please refer to this as the figures in the eDeveloper form are not accurate due to eDeveloper limitations/restrictions)
- Current concept masterplan and massing details

We note that the nature of this project is quite large scale and that previous discussions with Sydney Water regarding this project have taken place. In order to continue the investigations regarding the future Sydney Water servicing arrangement for the project, RAR is also submitting this Feasibility Application as a way of continuing the line of communication with Sydney Water. Accordingly, it is expected that the outcome of this Feasibility Application and discussion with Sydney Water is to gain a better understanding on the below key Sydney Water issues regarding the sewer servicing:

1. Whether the proposed development can discharge directly to the heritage Southern and Western Suburbs Ocean Outfall Sewer (SWSOOS) by the year 2026, and if so, where is the best point to connect (e.g. at the existing Georges River submain mixing station)? This would require a pumped connection (either a new pumping station or via a pressure sewer system, refer below).
2. Due to possible sewerage system constraints, would Sydney Water consider a dedicated sewer pump out strategy whereby localised pump out tanks would be located within each lot with effluent pumped directly into a Sydney Water pressure sewer system?
3. If the development will not likely be permitted to connect to the SWSOOS, where else could the site realistically connect to by 2026? Can a connection to the existing sewer reticulation network west of Marsh St (either via gravity or pumped via a pressure sewer system) be made?
4. If a new sewer pumping station (SPS) is required (not the preferred option at this stage), can this be located within the Sydney Water land adjacent that borders the SWSOOS (Lot 17)? If so, then please confirm whether an allocation will need to be left vacant for the SWSOOS to extend into, assuming that future amplification is likely to take place.

In addition to this Feasibility Application under case 203282, we request that Sydney Water facilitate a meeting between all relevant stakeholders. Once a meeting request has been issued by Sydney Water, RAR will forward this to the client to ensure all parties can attend as it is expected that this will be extremely beneficial for this Feasibility study.

If there are any queries, please contact me on the number below.

Regards,

Anneke Rimmer
Project Coordinator
ROSE ATKINS RIMMER (Infrastructure) Pty Ltd
Water Related Infrastructure Design and Management.
P: (02) 9853 0200 | F: (02) 9671 7399

Growth Servicing Data

The data collected will inform Sydney Water's planning investigations for servicing of the proposed development. Updated data must be provided every quarter for each development. The data collected will be treated as commercial in confidence.

Growth Data	
Date (select):	21-Sep-2022
Developer:	Cook Cove Inlet Pty Ltd
Project/Development name:	Cooks Cove Development Zone
Precinct:	
Growth Area:	Arncliffe Banksia Growth Area
LGA:	Bayside Council
Development Status (select):	Planning Proposal
Anticipated date of rezoning:	01-Dec-2023
Type of development and ultimate yield: Low density residential N/A Medium density residential N/A High density residential N/A	Commercial (m2) 52,000sqm GFA Industrial (m2) 290,000sqm GFA
Any known high water users e.g. data centre	Primarily warehouse / logistics, with short term accommodation, commercial office and retail.
First s73 expected (month and year):	01-Jan-2025
First dwelling connection (month and year):	N/A

10 Year Forecast									
Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
Rezoning	Rezoning	Construct	Construct	20%	20%	20%	20%	20%	-

Services Required		
Potable Water ✓	Wastewater ✓	Recycled Water ✓

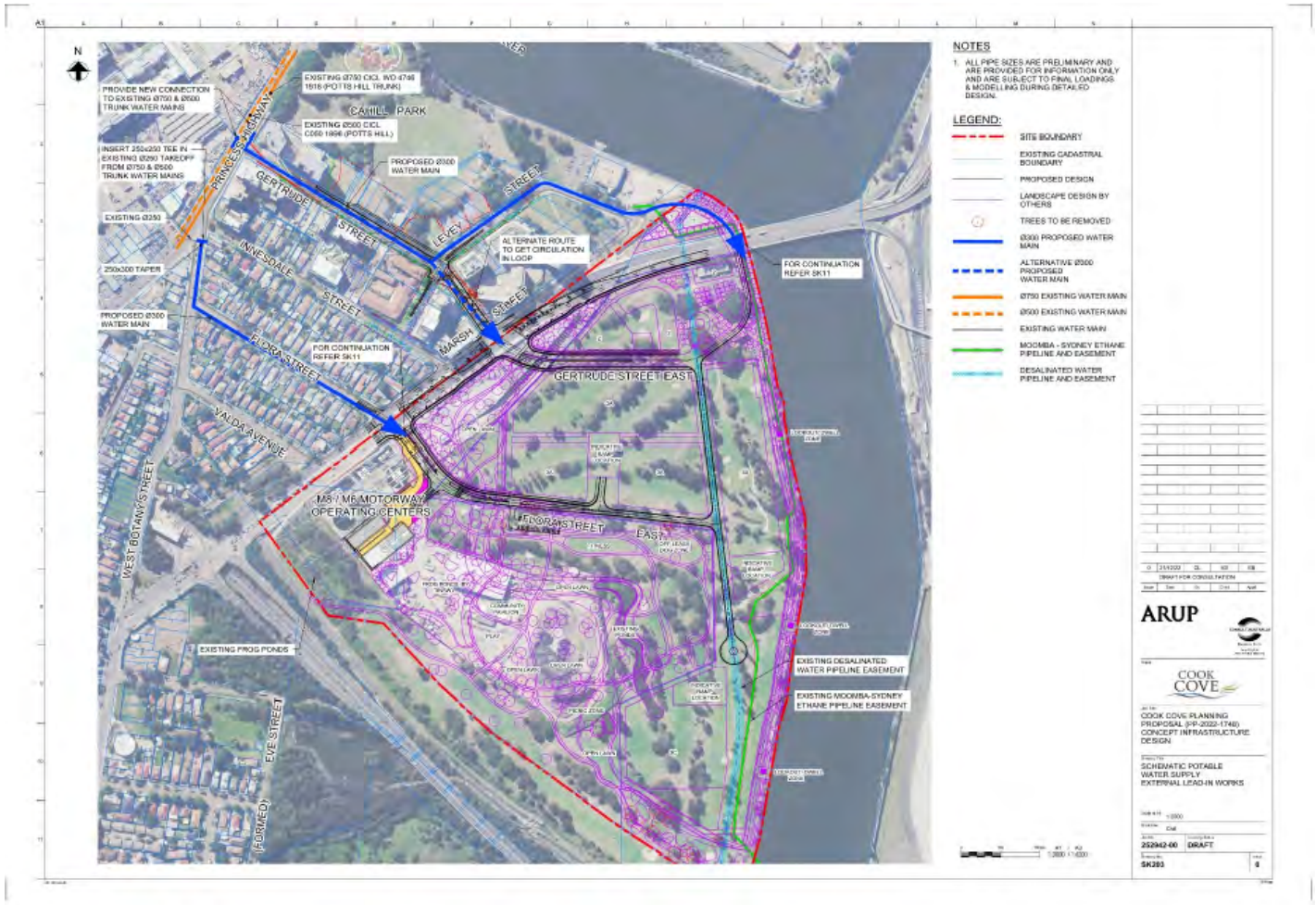
Attachments (please submit):

1. Overall site plan
2. Staging plan for the entire development

Appendix F

Water Supply Lead-in Works

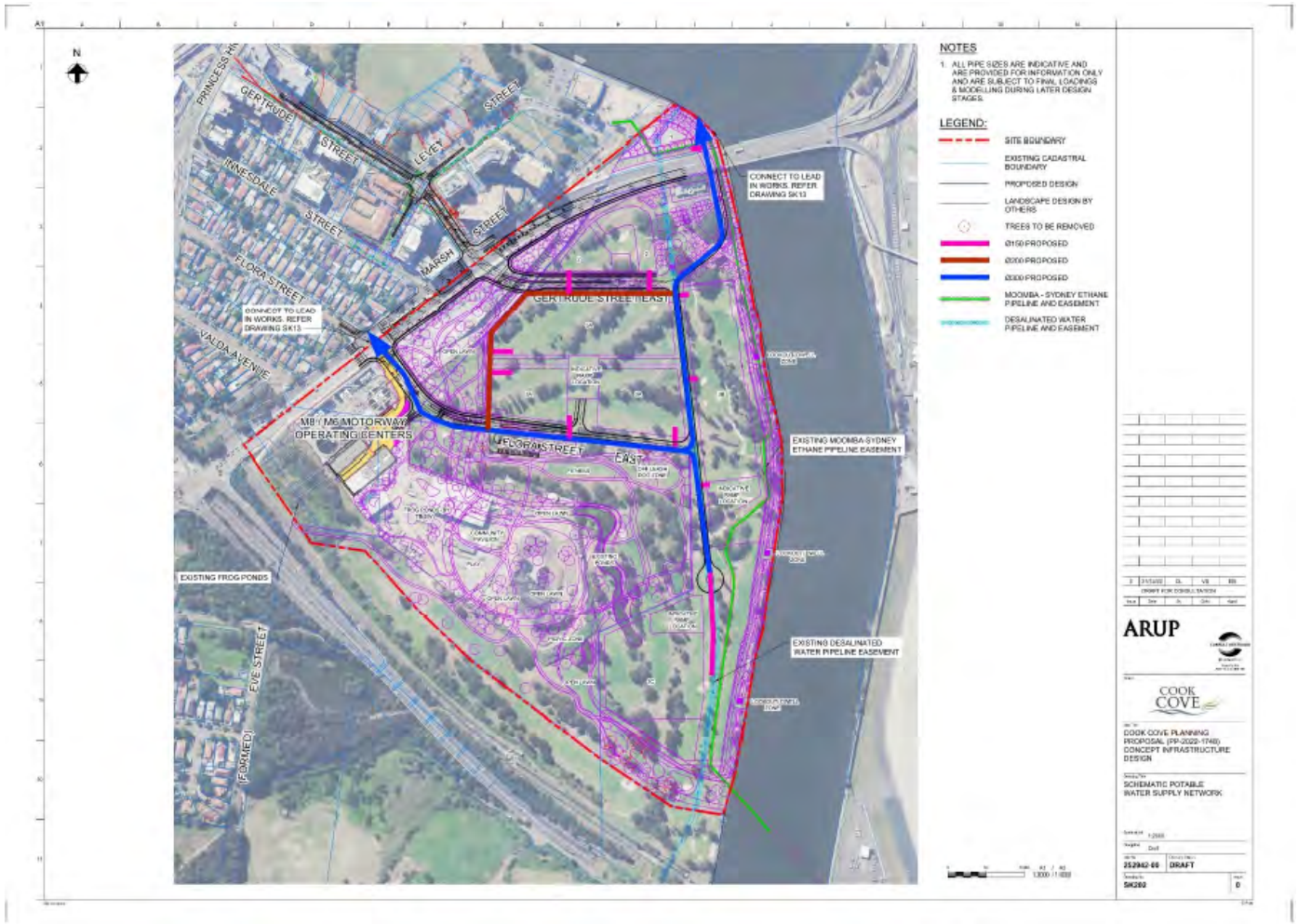
F.1


NOTES
1. ALL PIPE SIZES ARE PRELIMINARY AND ARE PROVIDED FOR INFORMATION ONLY AND ARE SUBJECT TO FINAL LOADINGS & MODELLING DURING DETAILED DESIGN.
LEGEND:
SITE BOUNDARY
EXISTING CADASTRAL BOUNDARY
PROPOSED DESIGN
LANDSCAPE DESIGN BY OTHERS
TREES TO BE REMOVED
Ø300 PROPOSED WATER MAIN
ALTERNATIVE Ø300 PROPOSED WATER MAIN
Ø750 EXISTING WATER MAIN
Ø500 EXISTING WATER MAIN
EXISTING WATER MAIN
MOOMBA - SYDNEY ETHANE PIPELINE AND EASEMENT
DESALINATED WATER PIPELINE AND EASEMENT
PROVIDE NEW CONNECTION TO EXISTING Ø750 & Ø500 TRUNK WATER MAINS
EXISTING Ø750 CICL WD 4746 1918 (POTTS HILL TRUNK)
CAHILL PARK
EXISTING Ø500 CICL CO60 1896 (POTTS HILL)
PROPOSED Ø300 WATER MAIN
INSERT 250x250 TEE IN EXISTING Ø250 TAKEOFF FROM Ø750 & Ø500 TRUNK WATER MAINS
EXISTING Ø250
250x200 TAPER
PROPOSED Ø300 WATER MAIN
PRINCESS HIGHWAY
GERTRUDE STREET
INNESDALE STREET
LEVEY STREET
MARSH STREET
FLORA STREET
VALDA AVENUE
WEST BOTANY STREET
EVE STREET (FORMED)
ALTERNATE ROUTE TO GET CIRCULATION IN LOOP
FOR CONTINUATION REFER SK11
FOR CONTINUATION REFER SK11
GERTRUDE STREET EAST
M8 / M6 MOTORWAY OPERATING CENTERS
FLORA STREET EAST
EXISTING FROG PONDS
EXISTING DESALINATED WATER PIPELINE EASEMENT
EXISTING MOOMBA-SYDNEY ETHANE PIPELINE EASEMENT
ARUP
COOK COVE
COOK COVE PLANNING PROPOSAL (PP-2022-1748) CONCEPT INFRASTRUCTURE DESIGN
SCHEMATIC POTABLE WATER SUPPLY EXTERNAL LEAD-IN WORKS
252942-00
DRAFT
SK203

Appendix G

Water Supply Concept Plan

G.1


N
NOTES
1. ALL PIPE SIZES ARE INDICATIVE AND ARE PROVIDED FOR INFORMATION ONLY AND ARE SUBJECT TO FINAL LOADINGS & MODELLING DURING LATER DESIGN STAGES.
LEGEND:
SITE BOUNDARY
EXISTING CADASTRAL BOUNDARY
PROPOSED DESIGN
LANDSCAPE DESIGN BY OTHERS
TREES TO BE REMOVED
Ø150 PROPOSED
Ø200 PROPOSED
Ø300 PROPOSED
MOOMBA - SYDNEY ETHANE PIPELINE AND EASEMENT
DESALINATED WATER PIPELINE AND EASEMENT
CONNECT TO LEAD IN WORKS. REFER DRAWING SK13
GERTRUDE STREET EAST
FLORA STREET EAST
M8 / M5 MOTORWAY OPERATING CENTERS
EXISTING MOOMBA-SYDNEY ETHANE PIPELINE EASEMENT
EXISTING DESALINATED WATER PIPELINE EASEMENT
EXISTING FROG PONDS
FIVE STREET (FORMED)
ARUP
COOK COVE
COOK COVE PLANNING PROPOSAL (PP-2022-1748) CONCEPT INFRASTRUCTURE DESIGN
SCHEMATIC POTABLE WATER SUPPLY NETWORK
DRAFT

Appendix H

Desalinated Water Pipeline Route

H.1

LEGEND:
SITE BOUNDARY
EXISTING CADASTRAL BOUNDARY
PROPOSED DESIGN
LANDSCAPE DESIGN BY OTHERS
TREES TO BE REMOVED
DESALINATED WATER PIPELINE
FLOODWATER OVERLAND FLOWPATH
BIORETENTION SWALE
MOOMBA - SYDNEY ETHANE PIPELINE AND EASEMENT
DESALINATED WATER PIPELINE AND EASEMENT
GERTRUDE STREET EAST
FLORA STREET EAST
M8 / M6 MOTORWAY OPERATING CENTERS
ARUP
COOK COVE
COOK COVE PLANNING PROPOSAL (PP-2022-1748) CONCEPT INFRASTRUCTURE DESIGN
SCHEMATIC LAYOUT OF EXISTING DESALINATED WATER PIPELINE
DRAFT

Appendix I

Sydney Desalination Plant Meeting Minutes

Vlatko Stoilovski

Subject: FW: Cook Cove - Desal and APA meeting minutes

From: Edward Bond <Edward.Bond@arup.com>
Sent: Thursday, 22 December 2022 11:00 AM
To: Vlatko Stoilovski <Vlatko.Stoilovski@arup.com>
Subject: Cook Cove - Desal and APA meeting minutes

Hi Vlatko,

Here are the Cook Cove desal meeting minutes:

Notes:

1. Buildings are not allowed to be placed over the desal easement so maintenance access can be maintained.
2. The pipeline should be concrete-encased where roads will be built overhead. Protection slabs may be required also where the pipeline is particularly shallow. Slabs may need to tie-into piles – site specific.
3. Air valve chamber, flange and cathodic protection require appropriate access for maintenance and replacement in the proposed case.
4. If fill needs to be placed over the air valve, the top of the air valve needs to be raised so it's exposed to the air. Don't allow the air valve to flood or to sit in a low point where overland flow could affect it.

Actions:

1. Arup to provide a list of requested documents to Sydney Desal, which Sydney Desal will provide as soon as they are able to.
2. KBR to provide the general high level requirements for when the desal pipeline should be concrete-encased and/or protected by slabs.
3. Sydney Desal to provide access requirements for pipeline repair e.g. crane heights and loads for pavement design.
4. Sydney Desal and Boyd Properties to exchange letters regarding covering appropriate costs to Sydney Desal for Cook Cove development coordination time.
5. Brendan and KBR to coordinate regarding site risk and appropriate pipeline protection and access.

Regards,

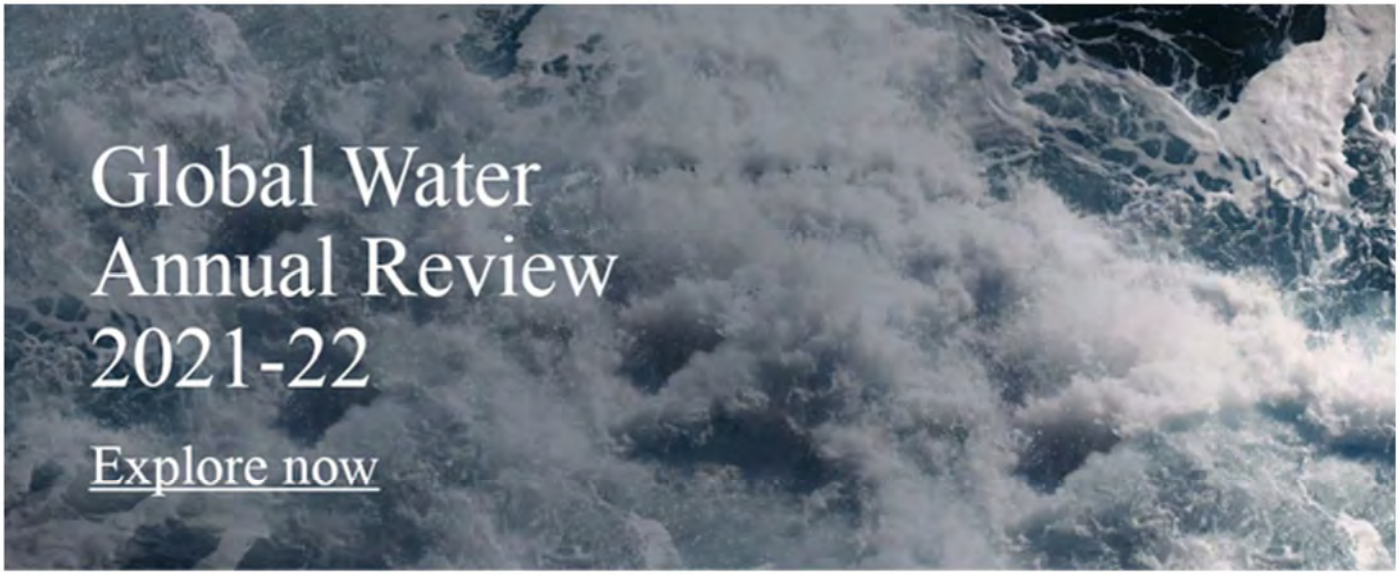
Edward Bond
He/him/his
Senior Civil Engineer | NSW & ACT Infrastructure
BSc(Hons) MSc(Distinct) TMIEAust CEngT NER

Arup
Gadigal Country
Barrack Place, Level 5, 151 Clarence St
Sydney, NSW, 2000, Australia
d +61 2 9320 9366
arup.com

Connect with us on LinkedIn
Follow us on Twitter Instagram YouTube Facebook

I acknowledge the Traditional Owners and Custodians of the lands on which we work and recognise their continuing connection to land, water and community. I pay respect to Elders past, present and emerging

Arup is a flexible employer, with teams working across multiple time zones. Although I have sent this at a time that is convenient for me, it is not my expectation that you read, respond or follow up on this email outside your hours of work.



Appendix J

Ausgrid Correspondence

Ausgrid

Preliminary Enquiry

Reference Code : 1069341

Preliminary Enquiry

LOCATION

Property Name
Cook Cove
Property Type
Building
Land Title Type
Torrens
Street Number/RMB
19A
Nearest Cross Street
Innesdale Rd
Location Address
Marsh Street, Arncliffe, 2205
Land Zoning
Urban

APPLICANT

Applicant Type
Asp On Behalf Of A Retail Customer Or Real Estate Developer
Full Name
Mr Richard Saliba
Email Address
richard.saliba@tracagroup.com.au
ABN/ACN
12604669776
Company Name
Traca Group Pty Ltd
Po Box/Locked Bag
Po Box 2214
Applicant Address
North Parramatta 2214
Phone Number
1300470350
Other Number
0404898456
Asp Number
4280
Asp Level
Level 3

CUSTOMER

Customer Type
Real Estate Developer
Full Name
Mr Vlatko Stoilovski
Email Address
vlatko.stoilovski@arup.com
Phone Number

0410 586 621

Company Name

Arup

ENQUIRY

Type

I Have An Enquiry Related To A New Or Altered Residential Or Small Commercial/Industrial Load Connection (Up To 10mva) That I Cannot Answer After Reviewing Your Website.

Your Question

A Building Development (Cook Cove) Consisting Of Commercial, Retail & Warehouses Is Proposed To Be Built Over Stages. We Would Like To Start The Discussion With Ausgrid Regarding The Power Supply Configurations To The Site. Please Find Attached Our Proposal Which Is Based On The Limited Data We Have From Webgis. Attachments: - Estimated Electrical Maximum Demand Calculations - Estimated 11kv Ausgrid Feeders Remaining Capacity (Reduced 80%) - Our Connection Proposal For Discussion Thank You

Supporting documents

File name	Ausgrid filename reference	Size
Ausgrid 11kV feeders Capacity.pdf	SupportingAttachmentFilePath_1	0.071 MB
Maximum Demand_20221128.pdf	SupportingAttachmentFilePath_2	0.095 MB
PS148A_Cooks_Cove_20221127.pdf	SupportingAttachmentFilePath_3	2.91 MB
016462_PR_Cooks-Cove_BaysideCouncil-03_221012_LR.pdf	SupportingAttachmentFilePath_4	10.281 MB

DECLARATION

Applicant Name

Mr Richard Saliba

Application Date

30-Nov-2022

Price Description

Preliminary Enquiry.

Price Including GST

AUD $473.07

Total Price

AUD $473.07

Terms and Conditions:

In submitting this preliminary enquiry you are engaging Ausgrid to provide you with a written response. Once submitted the fee charged is consumed. Ausgrid will aim to provide you with a written response within 10 business days. If additional work and/or fees are required, we will contact you to advise prior to providing the response.

*I acknowledge the terms & conditions. ☑

Project: Cook Cove
Description: Master Development Plan
Calcs By: Richard Saliba
Date: 28/11/2022

Checked by: Richard Saliba
Date: 28/11/2022

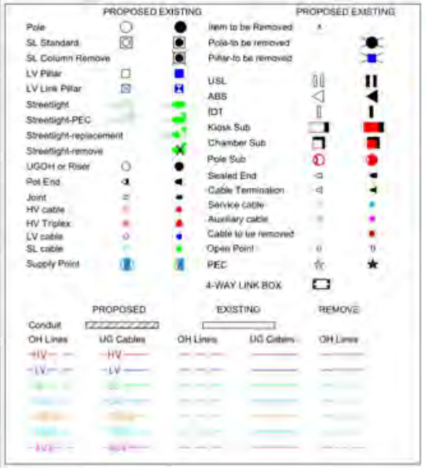
AREA DETAILS			AS/NZS3000 POWER DENSITY (VA/sqm)		CHOSEN POWER DENSITY (VA/sqm)				GENERAL POWER	ADDITIONAL DIVERSITY (kV	GENERATOR BACKED (%)			GENERATOR	UPS (%)		UPS
AREA NAME	AREA TYPE	AREA SIZE (sqm)	LIGHT AND POWER	MECHANICAL	LIGHTING	POWER	MECHANICAL	TOTAL	DEMAND (KVA)	0.7	LIGHTING	POWER	MECHANICAL	Demand (KVA)	LIGHTING	POWER	DEMAND (KVA)
Block 1N - Retail GFA	Retail Shop Airconditioning	185	40-100	20-40	20	20	40	80	15	10	0%	0%	0%	0	0%	0%	0
Block 1N - Office GFA	Offices with Cooling	370	40-60	30-40	20	30	35	85	31	22	0%	0%	0%	0	0%	0%	0
Block 1S - Retail GFA	Retail Shop Airconditioning	940	40-100	20-40	20	20	40	80	75	53	0%	0%	0%	0	0%	0%	0
Block 1S - Office GFA	Offices with Cooling	940	40-60	30-40	20	30	35	85	80	56	0%	0%	0%	0	0%	0%	0
Block 2 - Retail GFA	Retail Shop Airconditioning	3970	40-100	20-40	20	20	40	80	318	223	0%	0%	0%	0	0%	0%	0
Block 2 - Office GFA	Offices with Cooling	28121	40-60	30-40	20	30	35	85	2390	167.3	0%	0%	0%	0	0%	0%	0
Block 2 - Hotel GFA	Other	26370	NA	NA	10	30	35	75	1978	1384	0%	0%	0%	0	0%	0%	0
Block 2 - Carpark Basement GFA	Carpark with Basement	50000	10-20	Included in power load	5	5	0	10	500	350	0%	0%	0%	0	0%	0%	0
Block 3NW - Logistics	Warehouse with Ventilation	171065	5-15 + equipment loads for special equipment	5	5	5	10	20	3421	2395	0%	0%	0%	0	0%	0%	0
Block 3WE - Logistics	Warehouse with Ventilation	91985	5-15 + equipment loads for special equipment	5	5	5	10	20	1840	1288	0%	0%	0%	0	0%	0%	0
Block 3S - Logistics	Warehouse with Ventilation	97750	5-15 + equipment loads for special equipment	5	5	5	10	20	1955	1368	0%	0%	0%	0	0%	0%	0

	AMP 3PH	KVA
TOTAL	18212.4	12602.985
ADDITIONAL DIVERSITY	0.7	
DEMAND	12748.7	8822.0895

	AMP 3PH	KVA
TOTAL	0	0
ADDITIONAL DIVERSITY	1	
DEMAND	0	0

	AMP	KVA
TOTAL	0	0
L DIVERSITY	1	
DEMAND	0	0

NOTES



ASP LEVEL 2 WORK

ALL LEVEL 2 ASP WORK DEPICTED ON THIS DRAWING IS SHOWN FOR INFORMATION PURPOSES ONLY AND DOES NOT FORM PART OF THE CERTIFIED DESIGN.

WARNING

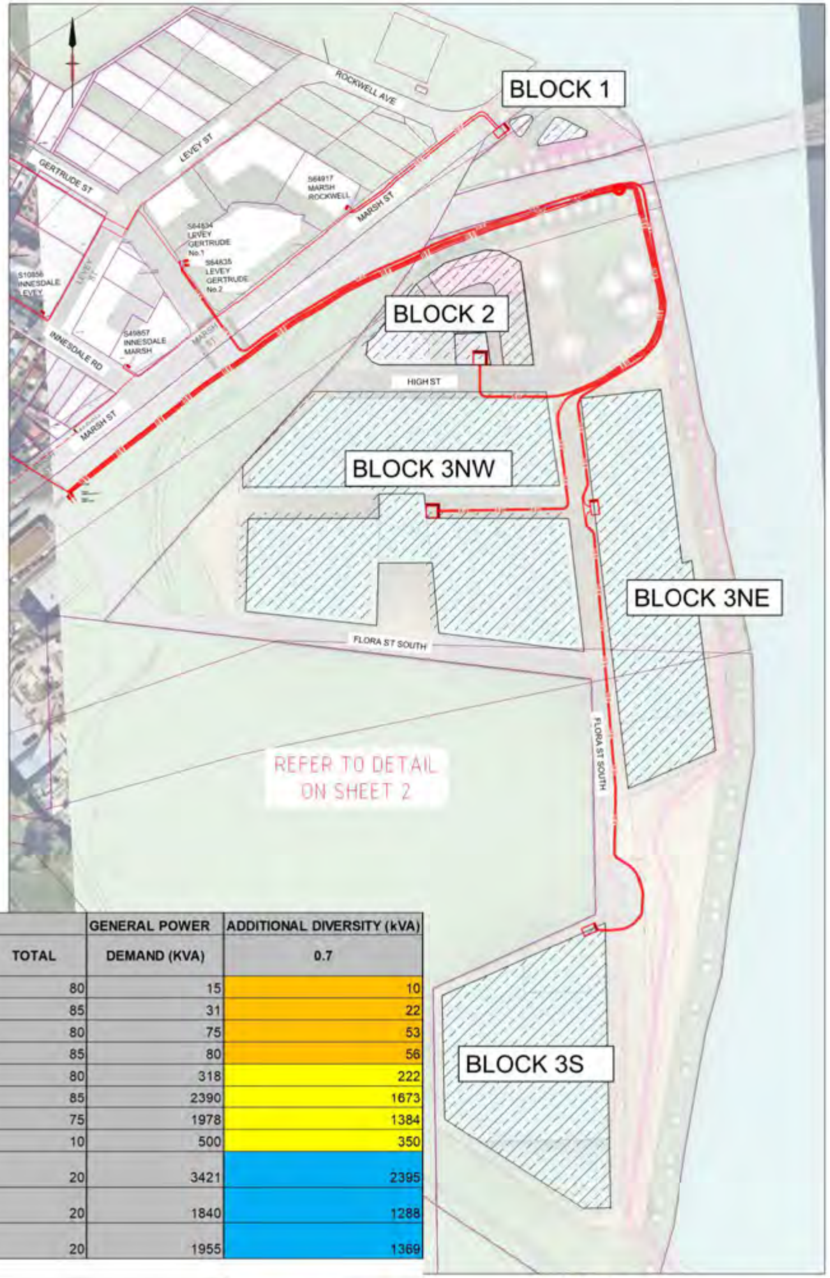
- THIS DESIGN CANNOT BE USED FOR CONSTRUCTION PURPOSES UNTIL THE LOCATION OF ALL EXISTING SERVICES IS VERIFIED.
- THE INFORMATION PROVIDED IN THIS DESIGN MUST BE CHECKED ON SITE AND THE MOST CURRENT INFORMATION ON THE CONFIGURATION OF ALL SERVICES, INCLUDING AUSGRID'S NETWORK, MUST BE VERIFIED IMMEDIATLEY BEFORE CONSTRUCTION COMMENCES BY CONTACTING BEFORE-YOU-DIG BY TELEPHONE ON 1100 OR AT www.1100.com.au.
- DIAL-BEFORE-YOU-DIG INFORMATION MUST NOT BE OLDER THAN 20 BUSINESS DAYS AT THE TIME OF CONSTRUCTION.

NOTES:

1. DETAILED PLANS OF ALL UTILITY CONSTRUCTIONS MUST BE OBTAINED PRIOR TO UNDERTAKINANY EXCAVATIONS. MACHINE EXCAVATION MUST NOT BE USED IN THE VICINITY OF LIVE ELECTRICITY CABLES.
2. ALL WORK TO BE UNDERTAKEN IN ACCORDANCE WITH ALL RELEVANT AUSGRID NETWORK STANDARDS AND THE NECESSARY SAFETY, TRAFFIC AND ENVIRONMENTAL MEASURES.
3. CLAIMS FOR VARIATIONS TO THE COST OF WORKS, INCLUDING ROCK EXCAVATION, WILL NOT BE ACCEPTED UNLESS VERIFIED ON SITE BY AUSGRID WHILE THE WORKS ARE IN PROGRESS.
4. THE CONSTRUCTOR MUST MINIMISE THE IMPACT OF THE WORKS ON THE ELECTRICITY SUPPLY TO CUSTOMERS AND INTERRUPTIONS TO SUPPLY MUST BE AVOIDED, WHEREVER POSSIBLE UNLESS THE CONSTRUCTOR CAN PROVIDE AUSGRID WITH WRITTEN AGREEMENT FROM THE AFFECTED CUSTOMER(S), THEN AUSGRID MAY REQUIRE THE CONSTRUCTOR TO PROVIDE A GENERATOR(S) IN ORDER TO MAINTAIN SUPPLY TO CUSTOMERS BEING INTERRUPTED. WHERE INTERRUPTIONS ARE PERMITTED, AT LEAST FOUR (4) CLEAR BUSINESS DAYS NOTICE MUST BE PROVIDED TO ALL AFFECTED CUSTOMERS PRIOR TO ANY PLANNED INTERRUPTIONS TO THE ELECTRICITY SUPPLY. NOTICE MUST BE IN WRITING IN ACCORDANCE WITH CLAUSE 90 OF THE NATIONAL ENERGY RETAIL RULES.
5. ADEQUATE PUBLIC LIGHTING LEVELS ARE TO BE MAINTAINED FOR THE DURATION OF THE WORKS. IF NECESSARY, THE CONSTRUCTOR TO ARRANGE FOR SUITABLE TEMPORARY STREET LIGHTING TO BE PROVIDED UNTIL PERMANENT LIGHTING IS RE-ESTABLISHED.
6. THE CONSTRUCTOR MUST TAKE APPROPRIATE SAFETY AND ENVIRONMENTAL PRECAUTIONS AND ARRANGE FOR THE APPROPRIATE LICENCES AND AUTHORISATIONS IN HANDLING AND TRANSPORTING HAZARDOUS EQUIPMENT AND ANY OIL FILLED EQUIPMENT TO ENSURE COMPLIANCE WITH RELEVANT LEGISLATION AND AUSGRID'S NS174 ENVIRONMENTAL PROCEDURES.
7. REINSTATE FOOTPATH AND ROAD AS PER COUNCIL REQUIREMENTS.
8. FOR IDENTIFICATION AND JOINTING PURPOSES, ALL CABLE ENDS SHALL BE LABELLED AT THE TERMINATIONS AND IN JOINT BAYS DURING CABLE INSTALLATION. THE CABLES MUST BE LABELLED AS PER CERTIFIED DESIGN.
9. THIS INFORMATION INCLUDES DATA FROM THE NSW DIGITAL CADASTRAL DATABASE BY LAND AND PROPERTY INFORMATIONO 2016, USED UNDER CREATIVE COMMONS LICENCE VERSION 4.0.
10. ALL WORK TO COMPLY WITH AUSGRID NETWORK STANDARDS, UNLESS NETWORK STANDARD VARIATION IN ACCORDANCE WITH NS181 HAS BEEN APPROVED IN WRITING BY AUSGRID. IN THE EVENT OF A DISCREPANCY BETWEEN THIS CERTIFIED DESIGN AND AUSGRID'S NETWORK STANDARDS, THE NETWORK STANDARD REQUIREMENTS SHALL PREVAIL.

AREA DETAILS			AS/NZS3000 POWER DENSITY (VA/sqm)		CHOSEN POWER DENSITY (VA/sqm)				GENERAL POWER	ADDITIONAL DIVERSITY (kVA)
AREA NAME	AREA TYPE	AREA SIZE (sqm)	LIGHT AND POWER	MECHANICAL	LIGHTING	POWER	MECHANICAL	TOTAL	DEMAND (KVA)	0.7
Block 1N - Retail GFA	Retail Shop Airconditioning	185	40-100	20-40	20	20	40	80	15	10
Block 1N - Office GFA	Offices with Cooling	370	40-60	30-40	20	30	35	85	31	22
Block 1S - Retail GFA	Retail Shop Airconditioning	940	40-100	20-40	20	20	40	80	75	53
Block 1S - Office GFA	Offices with Cooling	940	40-60	30-40	20	30	35	85	80	56
Block 2 - Retail GFA	Retail Shop Airconditioning	3970	40-100	20-40	20	20	40	80	318	222
Block 2 - Office GFA	Offices with Cooling	28121	40-60	30-40	20	30	35	85	2390	1673
Block 2 - Hotel GFA	Other	26370	NA	NA	10	30	35	75	1978	1384
Block 2 - Carpark Basement GFA	Carpark with Basement	50000	10-20	Included in power load	5	5	0	10	500	350
Block 3NW - Logistics	Warehouse with Ventilation	171065	5-15 + equipment loads for special equipment	5	5	5	10	20	3421	2395
Block 3WE - Logistics	Warehouse with Ventilation	91985	5-15 + equipment loads for special equipment	5	5	5	10	20	1840	1288
Block 3S - Logistics	Warehouse with Ventilation	97750	5-15 + equipment loads for special equipment	5	5	5	10	20	1955	1369

MAXIMUM DEMAND CALCULATIONS



GENERAL SITE PLAN

SCALE 1 : 2000 — 0 50 100 150 200 METRES

ASSOCIATED DRAWINGS

TRACA ENGINEERING GROUP

ASP REF: PS148A

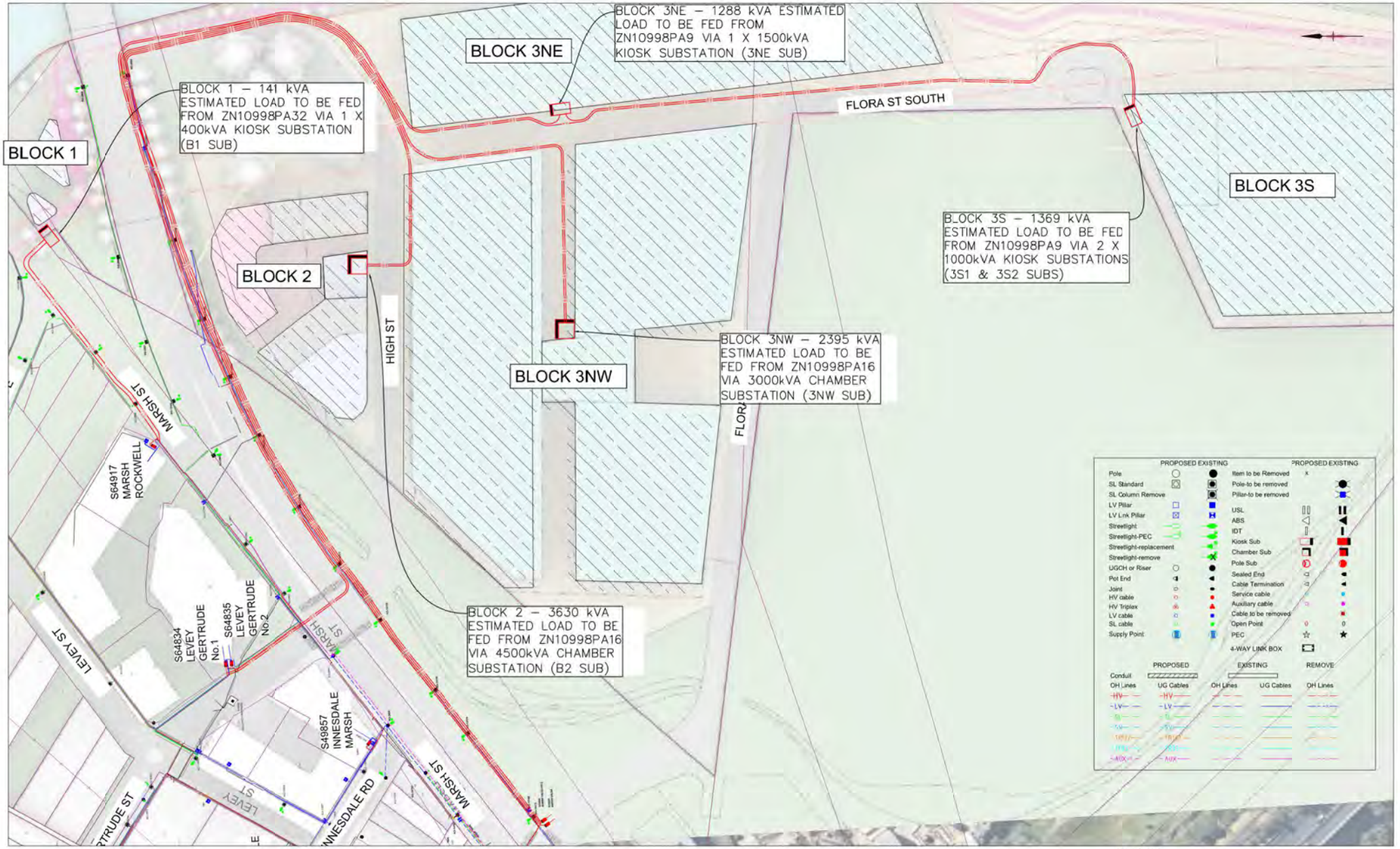
CERTIFICATION NUMBER: ##/##

DESIGNED BY	RICHARD SALIBA
AUTH NO.	4260
SUBMIT DATE	SUBMITTED 28/11/2022
LGA	BAYSIDE
MAP REF	UBD or STREET DIR. REF
AUSGRID REF	AUSGRID MAP REF.
PR/TRAK No.	

COOK COVE NORTHERN PRECINCT

PROPOSED CONNECTIONS PRELIMINARY DESIGN

SIZE: A1 AUSGRID PROJECT No.: TBA SHEETS: 1 of 3



SITE PLAN

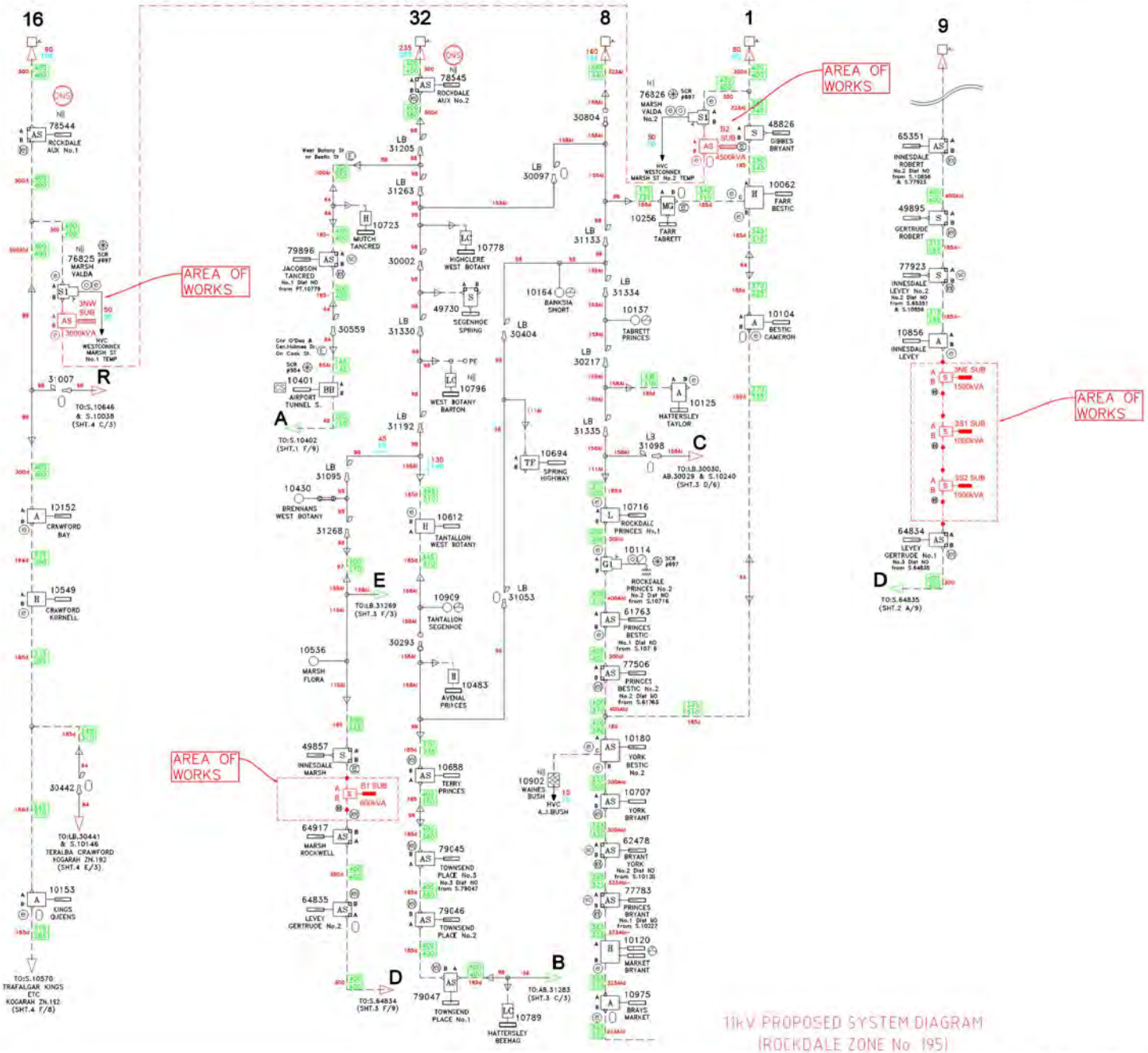
SCALE 1 : 1000

0 20 40 60 80 100 METRES

CAD DRAWING AMENDMENTS

20160817

TRACA ENGINEERING GROUP	DESIGNED BY	RICHARD SALIBA	COOK COVE NORTHERN PRECINCT
	AUTH NO.	4280	
	SUBMIT DATE	SUBMITTED 28/11/2022	PROPOSED CONNECTIONS PRELIMINARY DESIGN
	LGA	BAYSIDE	
	MAP REF.	LBD or STREET DIR. REF.	
	AUSGRID REF.	AUSGRID MAP REF.	
	PRJTRAK No.		
	ASP REF.	PS148A	
ASSOCIATED DRAWINGS	CERTIFICATION NUMBER	##/##	SIZE A1 · AUSGRID PROJECT No. TBA · SHEETS 2 of 3 · AMD



11kV PROPOSED SYSTEM DIAGRAM
(ROCKDALE ZONE No. 195)

CAD DRAWING AMENDMENTS

TRACA ENGINEERING GROUP

DESIGNED BY	RICHARD SALIBA
AUTH NO.	4280
SUBMIT DATE	SUBMITTED 28/11/2022
LGA	BAYSIDE
MAP REF	LBD or STREET DIR. REF.
AUSGRID REF	AUSGRID MAP REF.
PI/TRAK No.	
ASP REF	PS1484

ASSOCIATED DRAWINGS | CERTIFICATION NUMBER | ##/##

COOK COVE
NORTHERN PRECINCT

PROPOSED CONNECTIONS
PRELIMINARY DESIGN

SIZE A1 | AUSGRID PROJECT No. TBA | SHEETS 3 of 3 | AMD.

Appendix K

Electrical Concept Plan

K.1


N
PRINCESS HWY
GERTRUDE STREET
LEVEY STREET
INNESDALE STREET
MARSH STREET
FLORA STREET
VALDA AVENUE
GERTRUDE STREET EAST
FLORA STREET EAST
M8 / M6 MOTORWAY OPERATING CENTERS
EXISTING FROG PONDS
EVE STREET
(FORMED)
LEGEND:
SITE BOUNDARY
EXISTING CADASTRAL BOUNDARY
PROPOSED DESIGN
LANDSCAPE DESIGN BY OTHERS
TREES TO BE REMOVED
ELECTRICAL TRENCH LOCATED 600mm CENTRELINE FROM PROPERTY LINE WITH HV, LV & SL CABLE PLUS SPARE CONDUITS
STEEL STREET LIGHT COLUMN LOCATED 350mm CENTRELINE FROM BOUNDARY
1,000 kVA KIOSK OR STANDARD (MINI) CHAMBER
CHAMBER SUB STATION
PIPELINE AND EASEMENT
DESALINATED WATER PIPELINE AND EASEMENT
DRAFT FOR CONSULTATION
ARUP
COOK COVE
COOK COVE PLANNING PROPOSAL (PP-2022-1748) CONCEPT INFRASTRUCTURE DESIGN
SCHEMATIC ELECTRICAL TRENCHING, STREET LIGHT COLUMN LOCATIONS AND SUBSTATION LOCATIONS
DRAFT
SK207

Appendix L

Telecommunication Concept Plan

L.1


LEGEND
SITE BOUNDARY
EXISTING CADASTRAL BOUNDARY
PROPOSED DESIGN
LANDSCAPE DESIGN BY OTHERS
TREES TO BE REMOVED
MINIMUM CONDUIT REQUIREMENT 1 x P100
FIBRE DISTRIBUTION HUB LOCATION (SUBJECT TO CARRIER REQUIREMENTS)
DESALINATED WATER PIPELINE AND EASEMENT
GERTRUDE STREET EAST
FLORA STREET EAST
MB / M6 MOTORWAY OPERATING CENTERS
EXISTING FROG PONDS
EVE STREET (FORMED)
PRINCESS HWY
GERTRUDE STREET
INNESDALE STREET
FLORA STREET
VALDA AVENUE
LEVEY STREET
MARSH STREET
ARUP
COOK COVE
COOK COVE PLANNING PROPOSAL (PP-2022-1748) CONCEPT INFRASTRUCTURE DESIGN
SCHEMATIC TELECOMMUNICATIONS LAYOUT
DRAFT

Appendix M

NBN Co Correspondence

Vlatko Stoilovski

From: Kareena Prado <kareenaprado@nbnco.com.au>
Sent: Thursday, 24 November 2022 2:46 PM
To: Vanessa Khuu
Cc: Edward Bond; Vlatko Stoilovski
Subject: DEV-00102121 - Cook Cove Northern Precinct Development - Request for Information

Hello Vanessa,

Thank you for your email,

I will forward back to planning for review.

This was previously submitted for residential as the Bayside West Precinct redevelopment area.

We can provide **nbn** to this site however I am wanting to discuss this further with you as it looks to have changed to commercial?

Please do not hesitate to contact me

Kind Regards

Kareena Prado
Senior Account Manager (NSW/ACT) – New Developments
M +61 428 537 208 | **E** kareenaprado@nbnco.com.au
100 Mount Street, North Sydney NSW 2060
Cammeraygal Country

nbn acknowledges and pays respects to the traditional custodians of all the lands upon which we work.

From: Vanessa Khuu <Vanessa.Khuu@arup.com>
Sent: Tuesday, 22 November 2022 12:28 PM
To: Kareena Prado <kareenaprado@nbnco.com.au>

Cc: Edward Bond <Edward.Bond@arup.com>; Vlatko Stoilovski <Vlatko.Stoilovski@arup.com>
Subject: [External] Cook Cove Northern Precinct Development - Request for Information

EXTERNAL SENDER – Be cautious opening Links and Attachments
Dear Kareena,

We have previously submitted an application to confirm that NBNCo are able to service the Cook Cove Northern development – please see the attached email and correspondence from 2016 – 2020 for the trailing emails, application and project history.

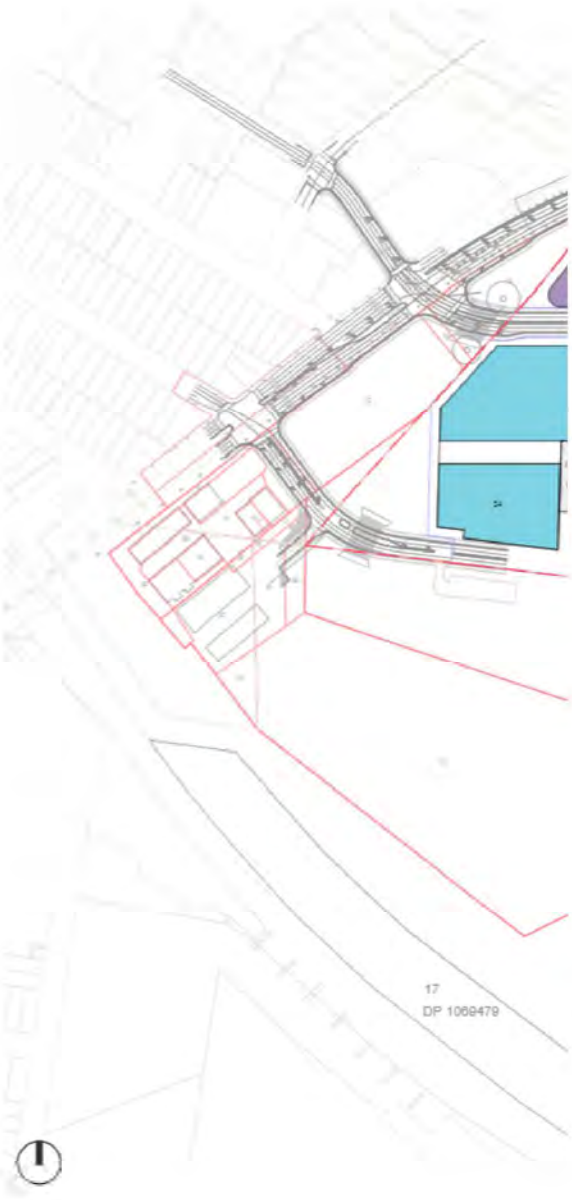
I am writing on behalf of the client who are undertaking the Rezoning Application and future development of the site with revised development yields as below.

MASTER PLAN BUILT FORM

Adjacent plan illustrates the proposed master plan and built form configuration across site.

Area Summary

	Block 1	Block 2	Block 3	Total
Hotel		20,800m²		20,800m²
Commercial	1,110m²	20,500m²		21,610m²
Retail	900m²	9,100m²		10,000m²
Logistics			290,400m²	290,400m²
Total	2,010m²	50,400m²	290,400m²	342,810m²



Could you please re-confirm that NBN is able to service the precinct?

Let me know if you need any further information.

Vanessa Khuu
She/her/hers
Graduate Civil Engineer

B Civil Eng (Hons)

Arup
Gadigal Country
Barrack Place, Level 5, 151 Clarence Street,
Sydney, NSW, 2000, Australia
m +61 2 9320 9378
LinkedIn Twitter Instagram YouTube Facebook

Appendix N

Jemena Correspondence

Vlatko Stoilovski

From: Vanessa Khuu
Sent: Wednesday, 23 November 2022 1:54 PM
To: Neale Hilton
Cc: Edward Bond; Vlatko Stoilovski
Subject: RE: Cook Cove Northern Precinct Development - Request for Information

Hi Neale,

Thanks for the confirmation.

Best,
Vanessa Khuu
She/her/hers
Graduate Civil Engineer
B Civil Eng (Hons)

Arup
Gadigal Country
Barrack Place, Level 5, 151 Clarence Street,
Sydney, NSW, 2000, Australia
m +61 2 9320 9378
LinkedIn Twitter Instagram YouTube Facebook

From: Neale Hilton <Neale.Hilton@jemena.com.au>
Sent: Wednesday, November 23, 2022 9:43 AM
To: Vanessa Khuu <Vanessa.Khuu@arup.com>
Subject: RE: Cook Cove Northern Precinct Development - Request for Information

Vanessa
Thank you for your recent correspondence. Jemena maintains the original advise from 2017 is still relevant to accomplish supply to this development. Regards.

Neale Hilton
Network Development Specialist –
Residential Medium Density/High Rise
Jemena
Level 14, 99 Walker Street, North Sydney, NSW 2060
M 0402 060 151
neale.hilton@jemena.com.au | www.jemena.com.au

Natural Gas Jemena bringing energy

From: Vanessa Khuu <Vanessa.Khuu@arup.com>
Sent: Tuesday, 22 November 2022 12:31 PM
To: Neale Hilton <neale.hilton@jemena.com.au>
Cc: Edward Bond <Edward.Bond@arup.com>; Vlatko Stoilovski <Vlatko.Stoilovski@arup.com>
Subject: Cook Cove Northern Precinct Development - Request for Information

Dear Neale,

We have previously submitted an application to confirm that Jemena are able to service the Cook Cove Northern development – please see the attached email and correspondence from 2016 – 2020 for the trailing emails, application and project history.

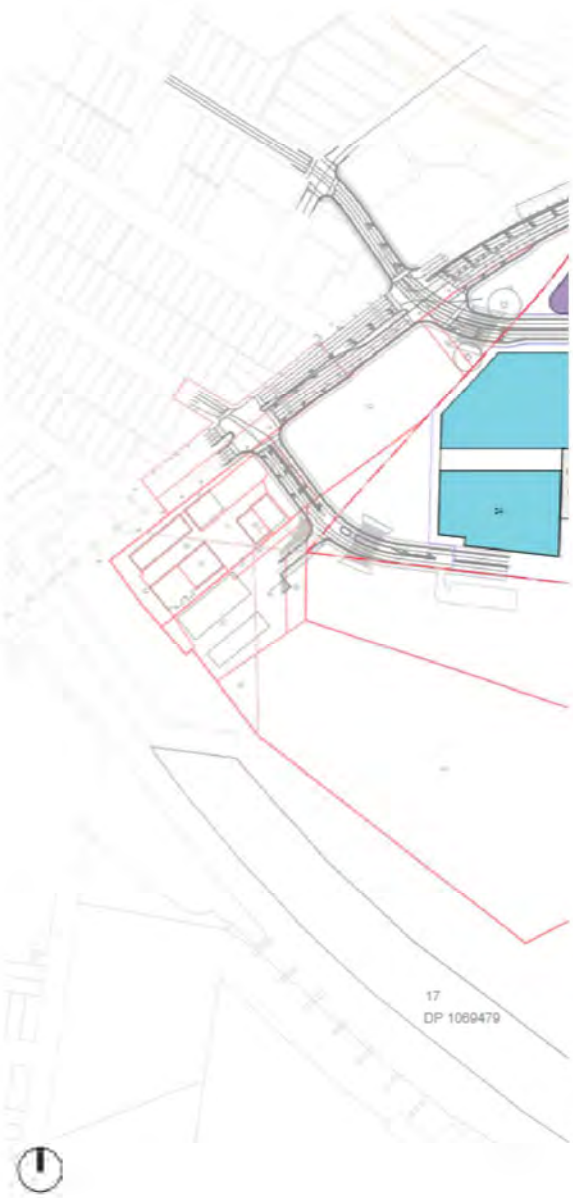
I am writing on behalf of the client who are undertaking the Rezoning Application and future development of the site with revised development yields as below.

MASTER PLAN BUILT FORM

Adjacent plan illustrates the proposed master plan and built form configuration across site.

Area Summary

	Block 1	Block 2	Block 3	Total
Hotel		20,800m²		20,800m²
Commercial	1,110m²	20,500m²		21,610m²
Retail	900m²	9,100m²		10,000m²
Logistics			290,400m²	290,400m²
Total	2,010m²	50,400m²	290,400m²	342,810m²



Could you please re-confirm that Jemena is able to service the precinct?

Let me know if you need any further information.

Vanessa Khuu
She/her/hers
Graduate Civil Engineer
B Civil Eng (Hons)

Arup
Gadigal Country
Barrack Place, Level 5, 151 Clarence Street,
Sydney, NSW, 2000, Australia
m +61 2 9320 9378
LinkedIn Twitter Instagram YouTube Facebook

Appendix O

Moomba – Sydney Pipeline Route

O.1


N
LEGEND:
SITE BOUNDARY
EXISTING CADASTRAL BOUNDARY
PROPOSED DESIGN
LANDSCAPE DESIGN BY OTHERS
TREES TO BE REMOVED
MOOMBA - SYDNEY ETHANE PIPELINE AND EASEMENT
DESALINATED WATER PIPELINE AND EASEMENT
GERTRUDE STREET EAST
M8 / M6 MOTORWAY OPERATING CENTERS
FLORA STREET EAST
5m CLEARANCE / SETBACK TO MOOMBA-SYDNEY ETHANE PIPELINE TO BE MAINTAINED
EXISTING FROG PONDS
EXISTING DESALINATED WATER PIPELINE EASEMENT
EXISTING MOOMBA-SYDNEY ETHANE PIPELINE EASEMENT
EVE STREET
(FORMED)
PRINCESS HWY
GERTRUDE STREET
INNESDALE STREET
LEVEY STREET
MARSH STREET
FLORA STREET
VALDA AVENUE
ARUP
COOK COVE
COOK COVE PLANNING PROPOSAL (PP-2022-1748) CONCEPT INFRASTRUCTURE DESIGN
SCHEMATIC LAYOUT OF EXISTING MOOMBA - SYDNEY ETHANE PIPELINE
DRAFT
SK305

Appendix P

APA Group Draft LUIS Submission Letter

APA Group ACN 083 009 278
Level 1, 121 Wharf Street
Spring Hill, QLD 4000
GPO Box 1390, QLD 4001
APA Group | apa.com.au

APA Ref: 170228_LO_Qld State Planning Policy

28th February 2017

Department of Planning and Environment
GPO Box 39
Sydney NSW 2001

Dear Sir or Madam,

RE: Submission on planning documents for Arncliffe, Banksia and Cooks Cove

Thank you for the opportunity to review and provide comment on the *Bayside West Precincts (Arncliffe, Banksia and Cooks Cove) Land Use and Infrastructure Strategy*; and the *Arncliffe and Banksia Priority Precincts, Rezoning Proposal*.

This submission contains three key 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 submissions we are making. The second part contains specific submissions in relation to the two documents on public consultation. 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
- providing energy needs to business and industry and thereby supporting economic activity in New South Wales.

APA owns and operates the Moomba-Sydney Ethane Pipeline which runs through the subject area. The pipeline is located outside the northern extent of the subject area, but crosses the Princes Highway and then follows the eastern side of the Cooks Cove Precinct before crossing the River near the southern end of Kogarah Golf Club. While the pipeline is outside and along the edge of the study area, the Measurement Length (ML) of the pipeline extends for 590m, well into the study area (but excluding the Banksia Precinct. The ML is explained below under the heading 'Measurement Length (ML) and Safety'.

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 55 'Development adjacent to corridor' in Division 9 of SEPP (Infrastructure) 2007, which states the following.

> *(1) Before determining an application (or any application for modification of a consent) for development adjacent to a gas 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 or modification to which the application relates have been identified, and*
>
> *(b) take those risks into consideration.*

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 are used to determine the appropriate pipeline design and management for the circumstances. If the location class changes a Safety Management Study is required to assess the additional risk and ensure the risk is reduced to an acceptable level.

Under AS2885, APA is not only responsible for activities or development on its easements, or land which includes an easement in favour of APA. APA 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, with measures to protect the integrity of the pipeline also reducing risk to surrounding people and development. These issues are explained in more detail below under the heading 'Measurement Length (ML) and Safety'.

APA's role

When considering land use and development proximate to HPGTPs and associated infrastructure, APA must consider safety as a key priority. We wish to emphasise it is APA's intent and duty to ensure high pressure gas pipelines and local communities are safely protected.

APA has a number of responsibilities and duties to perform under a complex framework of legislation, standards and controls across Federal, State and Local Government landscapes. In discharging these duties, APA needs to continuously review what is happening around its assets, what land use changes are occurring and what development is taking place, to ensure it remains in a positon to comply with applicable operational and safety standards and legislation whilst meeting its commercial obligations and imperatives.

In order to maintain pipeline safety, it is essential APA is informed of changes in land use in areas potentially affected by a pipeline failure in order that plans to control new threats and consequences can be developed and implemented. 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.

In addition to the macro level perspective outlined above, APA also needs to ensure future land use and development patterns do not inadvertently (or intentionally) erode, reduce or extinguish the current controls and contractual rights commercially obtained by APA though easement agreements within which pipelines and associated infrastructure are located. It is important to avoid such outcomes which threaten the integrity of the pipeline and efficiency of ongoing operations.

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 essentially the area within which APA is mandated to consider community safety in the event the pipe is impacted in some way and we have a loss of pipeline containment. The ML is the area of safety consequence should a full bore rupture occur. 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.

Due to the factors above the ML can vary significantly, and in the case of the subject area the ML is 590m either side of the pipeline. Therefore, APA must discharge its statutory obligations over a significant area well beyond the extent of any pipeline easements.

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 Measurement Length (ML) of the pipeline. This consideration is typically undertaken through a Safety Management Study (SMS). Where required, we strongly recommend Council, the proponent and APA coordinate to undertake this process so future land use and construction within the ML can be undertaken taking account 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 by slabbing installed below ground over the pipeline, and excluding or reducing the risk to sensitive uses within the ML.

State and local government 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

Arncliffe and Banksia Precinct Proposal

The proposed rezoning for the Arncliffe and Banksia Precincts proposes significantly higher density urban development, when compared with existing development, or development allowed under existing planning controls. APA appreciates the urban planning rationale for higher density development in well serviced areas and does not oppose the principle of the proposed rezoning. However, as a result of the proposed rezoning the increased community risk should be assessed through an SMS. In our experience the outcomes of an SMS may include increased physical protection (slabbing) of the pipeline and appropriate control of additional sensitive uses within the ML. It is important this process be completed now so it can inform land use decisions at an early stage and avoid re-work of detailed planning and design. It should be noted only the Arncliffe Precinct is within the pipeline ML.

The location of the pipeline should be clearly shown on relevant planning constraint mapping to ensure direct impacts on the pipeline are avoided. These includes:

- avoiding roads over the pipeline easement, with crossings only allowed at limited locations at 90 degrees to the pipelines
- avoiding any reconfiguration which segments the easement
- work in the easement or within 50m of the easement requiring prior approval from APA.

The utilisation of the easement as a linear open space reserve with limited embellishment held in single title is the preferred outcome.

The following recommendations relate to the Precinct Proposal.

Recommendation 1 – The Precinct Proposal should explicitly detail the presence of the Moomba-Sydney Ethane Pipeline and the need to address relevant requirements under AS2885 in relation to community safety and pipeline integrity. This should be included in Section 3 - Key Considerations. Gas pipeline and transmission infrastructure should be shown on Figure 15: Opportunities and Constraints. This will assist in giving due consideration to this important economic asset and risk hazard.

Recommendation 2 – Mapping of gas pipeline and transmission infrastructure should accompany the proposed zoning, and other land use control maps in the Rockdale Local Environmental Plan (LEP) and other relevant planning instruments. This will ensure that the gas pipeline is considered as part of development applications.

Recommendation 3 – The Department of Planning and Environment should immediately commission an SMS to ensure risks of change in land use, and increased urban density, are appropriately mitigated.

Recommendation 4 – The recommendations of the SMS should be implemented by the agent of change at their cost. This should be considered as part of the Special Infrastructure Contribution proposed in Section 5.6 - Funding.

Recommendation 5 – The SMS must consider the risk to any sensitive uses proposed within the ML (which extends into the Arncliffe precinct). While not seeking to pre-empt the outcomes of the SMS, given the pressure of the pipeline and wall thickness in this location, there may be some sensitive uses permitted within parts of the ML. Where a sensitive use is found to be at risk, it is APA's preferred approach to relocate the use to eliminate the risk. This relates to the mixed use zoning to the north east of the Arncliffe Station, between the railway line and Princes Highway and east of Princes Highway (see Figure 17: Land Use Plan). This appears to be the only non-residential zoning areas within the ML. Sensitive uses for the purpose of the SMS include:

- child care centre
- entertainment facility
- correctional centre
- educational establishment
- hospital
- place of public worship
- residential care facility
- retail premises
- seniors housing
- service station.

Recommendation 6 – As part of the rezoning to occur through an amendment to the Rockdale LEP, it should be a clearly requirement that the following development be referred to the pipeline license holder in order to meet the requirements of Division 9 of SEPP (Infrastructure) 2009. Referral should be made for the following:

- subdivision of any lots which contain a HPGTP or easement
- a change in land use to a sensitive use as listed in Recommendation 5, and where located within the ML
- development involving any works within the easement and within 50m of the easement.

The benefit of completing an SMS at the current stage of proposed land use change is that the major issues associated with the pipeline will be addressed, in a holistic and coordinated manner, and the potential impact on subsequent development applications will be significantly reduced.

Bayside West Precincts (Arncliffe, Banksia and Cooks Cove) Draft Land Use and Infrastructure Strategy

The Bayside West Precincts (Arncliffe, Banksia and Cooks Cove) Draft Land Use and Infrastructure Strategy (the Strategy) is a high level strategy document which supports the proposed land use change in the area. It does this through key actions including rezoning, special infrastructure contribution, community projects, social housing, infrastructure improvements and planning proposal for Cooks Cove. As explained above in relation to the Precinct Proposal APA is concerned that the presence of the Moomba-Sydney Ethane Pipeline is considered, to ensure additional risks are mitigated, and development does not directly impact on the pipeline and easement.

The following recommendations relate to the Strategy.

Recommendation 7 – The Strategy should explicitly detail the presence of the Moomba-Sydney Ethane Pipeline (and associated infrastructure) and the need to address relevant requirements under AS2885 in relation to community safety and pipeline integrity. This should be included in Section 5 - Key Considerations. Gas pipeline and transmission infrastructure should be shown on Figure 8: Opportunities and Constraints. This will assist in giving due consideration to this important economic asset and risk hazard.

Recommendation 8 – The Department of Planning and Environment should immediately commission an SMS for the entire Strategy area to ensure risks of change in land use and increased urban density are appropriately mitigated. Completing an SMS for the entire Strategy area ensures all development proponents are aware of risk mitigation and development requirements, and can work with the licence holder to advance planning and design. This will also streamline the assessment process for subsequent development applications.

Recommendation 9 – The recommendations of the SMS should be implemented by the agent of change at their cost. This should be considered as part of the Special Infrastructure Contributions under Action 2 of the Strategy.

Recommendation 10 – The SMS must consider the risk to any proposed sensitive uses within the ML (which includes the majority of the Cooks Cove Precinct). While not seeking to pre-empt the outcomes of the SMS, given the pressure of the pipeline and wall thickness in this location, there may be some sensitive uses permitted within parts of the ML. Where a sensitive use is found to be at risk, it is APA's preferred approach to relocate the use to eliminate the risk.

A proposed sensitive uses within Cooks Cove is a new school as noted in Section 6.6 (Strategic Intent) and Section 7.5 (Schools); and shown on Figure 19: Infrastructure Map.

Recommendation 11 – Proposed new infrastructure near the pipeline includes improved cycle and pedestrian connections (missing regional link) and a bridge across Cooks River (Figure 19: Infrastructure Map). These should be designed in close consultation with APA (as the pipeline licence holder) to avoid impacts on the pipeline, maintain the pipeline easement, and explore opportunities for placement of cycle/pedestrian paths to further protect the pipeline. Such infrastructure should be within public open

space which preserves the pipeline easement and provides ongoing protection. Design of open space incorporating the pipeline easement must be subject to consultation with APA to ensure the easement is appropriately managed. Open space associated with the riverfront and cycle/pedestrian links should be mentioned in Section 7.3 (Open Space), and Section 7.4 (Pedestrian and Cycling Connections).

Recommendation 12 – Table 3: Local Infrastructure Upgrades includes a section on Community infrastructure, however, item C6 (new district level branch library and community centre) cannot be located to determine the appropriateness of its location in relation to the ML. The location should be provided and considered as part of the SMS.

Recommendation 13 – The land use plan for Cooks Cove (Section 6.1-3) should note a majority of the site is within the ML of the Moomba-Sydney Ethane Pipeline, and constrained by the pipeline and easement. Development of this area must to subject to consultation with APA to ensure development meets the requirements of AS2885 and SEPP (Infrastructure). As per Recommendation 8 this development proposal should be subject to an SMS.

We note the development proponent for Cooks Cove has held preliminary discussions with APA regarding the site, and we look forward to continuing these discussions.

3. Key Points

1. Licence holders of HPGTPs (licence holders) have statutory obligations under the *Pipelines Act 1967* and the *Pipelines Regulation 2013 (P&G Reg)*. The *P&G Reg* states a licensee must ensure the design, construction, operation and maintenance of a pipeline is in accordance with Australian Standards 2885 (AS2885).

2. Under AS2885 licence holders must consider the implications of land use change in the vicinity of pipelines. It is important the Department of Planning and Environment gives appropriate consideration to APA addressing its obligations under NSW regulations.

3. While development must appropriately consider the impact of development on or near a pipeline and associated easement, regulations require consideration be given to land use change within the ML, which is 590m for the subject pipeline.

4. The above obligations are critical to managing the safety of people and development while maintaining economically important infrastructure.

5. The integrity of pipeline operations is critical to the efficient supply of gas.

6. An SMS should be immediately commenced for the subject areas to ensure issues are identified and addressed early in an effective and coordinated manner. Consideration of licence holder issues early in planning processes will make requirements clear for all parties, addressing major issues at an early stage, and resulting in streamlined development approval processes.

7. Recommendations of the SMS must be implemented, with any costs being borne by the agents of change. Such costs should be considered as part of a Special Infrastructure Contribution.

8. The location and constraints associated with the pipeline should be included in the subject documents and the Rockdale LEP along with any amendments resulting from the proposed rezoning.

9. The Rockdale LEP should include the requirement to refer relevant development applications to the licence holder for comment and consideration of SEPP (Infrastructure). Subject to an SMS

being completed and recommendations implemented this would streamline the development assessment process.

10. The SMS must consider the risk to any sensitive uses proposed within the ML. Where a sensitive use is found to be at risk, it is APA's preferred approach to relocate the use to eliminate the risk.

11. Cycle and pedestrian infrastructure improvements, along the eastern side of Cooks Cove must be designed in close consultation with APA and should incorporate open space including APA's pipeline and easement.

APA thanks the Department of Planning and Environment for the opportunity to comment on the *Bayside West Precincts (Arncliffe, Banksia and Cooks Cove) Land Use and Infrastructure Strategy;* and the *Arncliffe and Banksia Priority Precincts, Rezoning Proposal*. APA appreciates the time and effort spent by the Department on these documents. APA would welcome the opportunity to discuss the contents of this submission in a meeting with the Department.

Please contact Ross Larsen on 07 3223 3328 or email planningnsw@apa.com.au to further discuss the contents of this correspondence.

Yours faithfully,

Ross Larsen
Senior Urban Planner
Infrastructure Planning and Protection

Appendix Q

APA SMS Workshop Report

Agenda

ARUP

Project title	APA Ethane Pipeline	Job number	255952-00
Meeting name and number	SMS Workshop	File reference	
Location	Arup Offices, Level 10, 201 Kent St, Sydney	Time and date	9.00 25 August 2017
Purpose of meeting	Safety Management Study Workshop		
Attendance	Nigel Cann (facilitator) Alicia Baker Peter Bettridge Sean Brokman Bernard Gallagher Ross Larsen Chris Meades Ben Smith Mark Walker Martin Wong		
Apologies			
Circulation	Those attending		

		Action
1.	**Welcome/introductions (9.00 – 9.15)**	Arup
2.	**Introduction to SMS process (9.15 – 9.30)** • Background • Safety management process flowchart	Arup
3.	**Cooks Cove development (9.30 – 10.00)** • Plans • Measurement length • Land use	Developer

Prepared by: Ben Smith

Date of circulation: 22 August 2017

Agenda

Project title	Job number	Date of Meeting
APA Ethane Pipeline	255952-00	25 August 2017

		Action
4.	**Threat identification (10.00 – 12.30; 1.00 – 3.15)**	All

- Threat guide words:
  a) external interference
  b) corrosion
  c) natural events
  d) electrical events
  e) operations and maintenance activities
  f) construction defects
  g) design defects
  h) material defects
  i) intentional damage
  j) other threats such as seismic and blasting

5.	**Lot 10 (3.30 – 4.30)**	All

- Development plan
- Valve station relocation
- Pipeline realignment
- Construction
- Tie-ins
- Hot tapping

6.	**Wrap up/close out (4.30 – 5.00)**	Arup

THREAT IDENTIFICATION						EXISTING CONTROLS			ADDITIONAL CONTROLS (ACTION ITEM)			
ID	Category	Description	Consequence	Threat Credible?	If no, why?	Physical Controls	Procedural Controls	Failure Possible?	Additional Controls	Responsibility	Due	Failure Possible?
1	External interference	Third party excavation - during construction	Pipe penetration with ignition	Yes					Pipeline to be slabbed Equipment to be limited to 12T			
2	External interference	Third party excavation - post construction (e.g. during maintenance)	Pipe penetration with ignition	Yes					Pipeline to be slabbed			
3	External interference	Vibration from construction activities	Fatigue	Yes					Vibration monitoring to take place during construction; if threshold is reached, construction activity to be ceased and alternative construction method implemented			
4	External interference	First party excavation - maintenance of buried services or installation of new services	Pipe penetration with ignition	Yes					Pipeline to be slabbed			
5	External interference	Installation of posts or poles for fences or power cable installation (during construction)	Pipe penetration with ignition	Yes					Pipeline to be slabbed			
6	External interference	Installation of posts or poles for fences or power cable installation (post construction)	Pipe penetration with ignition	Yes					Pipeline to be slabbed			
7	External interference	Horizontal directional drilling	Pipe penetration with ignition	Yes								
8	External interference	Land development - grading, cropping, irrigation, forestry etc. (Outside the development area, but within one measurement length)	Pipe penetration with ignition	Yes					Pipeline to be slabbed one measurement length either end of development area			
9	External interference	Impacts by vehicles, including road, rail and aircraft crashes		No	Pipeline underground							
10	External interference	Bogged vehicles or plant over the pipeline	Excessive external pressure on pipeline - possible ovality Possible reduction of cover	Yes					Pipeline to be slabbed			
11	External interference	Vehicles crossing the pipeline at areas other than road crossings	Excessive external pressure on pipeline - possible ovality Fatigue	Yes					Pipeline to be slabbed			

THREAT IDENTIFICATION						EXISTING CONTROLS			ADDITIONAL CONTROLS (ACTION ITEM)			
ID	Category	Description	Consequence	Threat Credible?	If no, why?	Physical Controls	Procedural Controls	Failure Possible?	Additional Controls	Responsibility	Due	Failure Possible?
12	External interference	Excessive external loads from backfill or traffic	Excessive external pressure on pipeline - possible ovality	Yes		RockGuard fitted to pipeline to protect against backfill			Pipeline to be slabbed			
13	External interference	Interference from plant/ equipment repairing the sea wall	Excessive external pressure on pipeline	Yes					APA to approve detailed design APA to approve construction plan including equipment types			
14	Corrosion	External corrosion/erosion of pipe due to environmental factors		No	Threat unchanged as a result of land use change							
15	Corrosion	Internal corrosion due to contaminants (e.g. hydrogen sulfide, carbon dioxide, water)		No	Threat unchanged as a result of land use change							
16	Corrosion	Internal erosion due to the abrasive action of solids		No	Threat unchanged as a result of land use change							
17	Corrosion	Environmentally assisted cracking		No	Threat unchanged as a result of land use change							
18	Corrosion	Bacterial corrosion		No	Threat unchanged as a result of land use change							
19	Natural events	Earthquake		No	Threat unchanged as a result of land use change							
20	Natural events	Ground movement due to land instability		No	Threat unchanged as a result of land use change							
21	Natural events	Wind and cyclone		No	Threat unchanged as a result of land use change							
22	Natural events	Bushfires		No	Threat unchanged as a result of land use change							
23	Natural events	Lightning		No	Threat unchanged as a result of land use change							
24	Natural events	Floods, leading to erosion or impact damage		No	Threat unchanged as a result of land use change							
25	Natural events	Inundation, leading to flotation		No	Threat unchanged as a result of land use change							
26	Natural events	Erosion of cover or support		No	Threat unchanged as a result of land use change							

THREAT IDENTIFICATION						EXISTING CONTROLS			ADDITIONAL CONTROLS (ACTION ITEM)			
ID	Category	Description	Consequence	Threat Credible?	If no, why?	Physical Controls	Procedural Controls	Failure Possible?	Additional Controls	Responsibility	Due	Failure Possible?
27	Electrical events	Induced voltages from parallel electricity transmission lines		Yes								
28	Electrical events	Fault voltages from transmission towers		Yes								
29	Electrical events	Utilities lines crossing pipeline	Erosion of cathodic protection	Yes					Crossings to be limited as far as practicable (ideally no more than 2) by running all utilities across the pipeline in a corridor (with additional redundancy in the corridor)			
30	Operations and maintenance activities	Exceeding MAOP		No	Threat unchanged as a result of land use change							
31	Operations and maintenance activities	Incorrect operation of pigging		No	Threat unchanged as a result of land use change							
32	Operations and maintenance activities	Incorrect valve operating sequence		No	Threat unchanged as a result of land use change							
33	Operations and maintenance activities	Incorrect operation of control and protective equipment		No	Threat unchanged as a result of land use change							
34	Operations and maintenance activities	Bypass of logic, control or protection equipment		No	Threat unchanged as a result of land use change							
35	Operations and maintenance activities	Fatigue from pressure cycling		No	Threat unchanged as a result of land use change							
36	Operations and maintenance activities	Inadequate or incomplete maintenance procedures leading to equipment failure		No	Threat unchanged as a result of land use change							
37	Operations and maintenance activities	Maintenance actions contrary to maintenance procedures		No	Threat unchanged as a result of land use change							
38	Operations and maintenance activities	Inaccurate test equipment, leading to incorrect control and safety equipment settings		No	Threat unchanged as a result of land use change							
39	Operations and maintenance activities	Inadequate servicing of equipment		No	Threat unchanged as a result of land use change							
40	Construction defects	Undetected or unreported damage to the pipe, coating or equipment		No	Threat unchanged as a result of land use change							

THREAT IDENTIFICATION						EXISTING CONTROLS			ADDITIONAL CONTROLS (ACTION ITEM)			
ID	Category	Description	Consequence	Threat Credible?	If no, why?	Physical Controls	Procedural Controls	Failure Possible?	Additional Controls	Responsibility	Due	Failure Possible?
41	Construction defects	Undetected critical weld defects		No	Threat unchanged as a result of land use change							
42	Construction defects	Failure to install the specified materials or equipment		No	Threat unchanged as a result of land use change							
43	Construction defects	Failure to install equipment using the correct procedures or materials		No	Threat unchanged as a result of land use change							
44	Construction defects	Failure to install equipment in accordance with the specified location or in the specified manner		No	Threat unchanged as a result of land use change							
45	Construction defects	Inadequate testing of materials for defects prior to handover		No	Threat unchanged as a result of land use change							
46	Design defects	Failure to specify the correct material, component and equipment characteristics		No	Threat unchanged as a result of land use change							
47	Design defects	Incorrect design or engineering analysis of the pipeline and associated piping		No	Threat unchanged as a result of land use change							
48	Design defects	Failure to define the correct range of operating conditions, leading to incorrect settings on control or protective devices or unacceptable pressures, temperatures and loads		No	Threat unchanged as a result of land use change							
49	Design defects	Failure of design configuration and equipment features to allow for safe operations and maintenance		No	Threat unchanged as a result of land use change							
50	Material defects	Incorrectly identified components		No	Threat unchanged as a result of land use change							
51	Material defects	Incorrect specification, supply, handling, storage, installation or testing which allows faults to remain undetected, or which damages the item and renders its operation inadequate		No	Threat unchanged as a result of land use change							
52	Material defects	Understrength pipe		No	Threat unchanged as a result of land use change							
53	Material defects	Manufacturing defect		No	Threat unchanged as a result of land use change							

THREAT IDENTIFICATION						EXISTING CONTROLS			ADDITIONAL CONTROLS (ACTION ITEM)			
ID	Category	Description	Consequence	Threat Credible?	If no, why?	Physical Controls	Procedural Controls	Failure Possible?	Additional Controls	Responsibility	Due	Failure Possible?
54	Material defects	Lack of adequate inspection and test procedures to confirm the acceptability of material and equipment		No	Threat unchanged as a result of land use change							
55	Intentional damage	Sabotage		No	Threat unchanged as a result of land use change							
56	Intentional damage	Terrorism		No	Threat unchanged as a result of land use change							
57	Intentional damage	Malicious damage		No	Threat unchanged as a result of land use change							
58	Other threats	Seismic survey, resulting in blast or equivalent external pressure loads		No	Threat unchanged as a result of land use change							
59	Other threats	Mine subsidence		No	Threat unchanged as a result of land use change							

Appendix R

APA Group Meeting Minutes

ARUP

Minutes

Project title	Cook Cove - Northern Precinct
Job number	252942-19
Meeting name & number	APA Reference 439882 - Cooks Cove Planning Proposal (post-Gateway), 001
File ref	19-M001
Time and date	1500 hrs 15 December 2022
Location	Virtual
Purpose of meeting	Present Cooks Cove Planning Proposal
Present	Peter Bettridge, Daniel Howard, Omar Ashour, John Lawson, Denis Winterburn, Paul Walters, Scott Michelle, Michael Mielczarek, Ashima Choudhry, Nigel Cann
Apologies	Ed Bond
Circulation	Those present

Topic **Action**

1. Planning proposal overview

Daniel Howard of Ethos Urban and Peter Bettridge of Boyd Properties provided an overview of the Cooks Cove Planning Proposal based on the attached Urban Design report.

Key discussion items of note are:

- The previously proposed development scheme was not supported by Sydney Airport due to residential elements
- The new scheme which received a Gateway Determination from the NSW Department of Planning is a mix of logistical infrastructure, a hotel, commercial office and retail. Further detail will be revealed during the development application process
- The new scheme does not have permanent structures on top of APA's easement
- The hotel is approximately 20,000m² Gross Floor Area, 10 storeys high with a 2,000 m^2 footprint
- Should there be a childcare centre, it will be outside the measurement length.
- Boyd Properties has exchanged a contract to acquire the freehold land, and will settle in Apr'23 coinciding with the Public Exhibition of the Planning Proposal

ARUP

Project title	Cook Cove - Northern Precinct
Job number	252942-19
Date of Meeting	15 December 2022

Topic	Action
• The pipeline is mainly sitting under a bike path / common area between Marsh St and lot 3C, and South of lot 3C will be under a hardstand	

2. APA planning and landscape guidance

APA undertook to provide their standard conditions of works and landscaping guidelines. Attached to these minutes. — Completed

3. APA Process for Engagement

- Submit the Plan
- Boyd Properties and APA to establish a Commercial Agreement
- Complete a Safety Management Study with an External Independent Facilitator in accordance with AS 2885.6. APA to provide a list of recognised external independent facilitators. — Completed
- APA accept the detailed design
- APA ensure the design is applied

4. Status of Project

The project is post Gateway Determination (2022-1748) and preparing for the community consultation stage of rezoning process and is based on the attached concept design.

The SMS to be completed at this stage is on this concept and to be part of the public hearing and public exhibition process.

5. APA concerns

- Deep piling in proximity of the pipeline if required is a concern
- Recoating of the pipeline in section where future maintenance will be restricted may be required in accordance with a coating assessment
- SMS and engineering assessment are required.
- A more complete indicative list of concerns to be provided by APA — Completed

6. APA estimates of costs

Boyd Properties requested that APA provide an indicative estimate of costs for their engagement. APA agreed to do this. — Completed

ARUP

Project title	Cook Cove - Northern Precinct
Job number	252942-19
Date of Meeting	15 December 2022

Topic	Action
7. SMS Arup to proceed to organise SMS using one of APA's external Independent Facilitators.	Arup
8. Attachments • Urban Design Report • APA Standard Conditions of Work	

Hassell

COOKS COVE URBAN DESIGN + LANDSCAPE REPORT

(PLANNING PROPOSAL)

016462
Cooks Cove

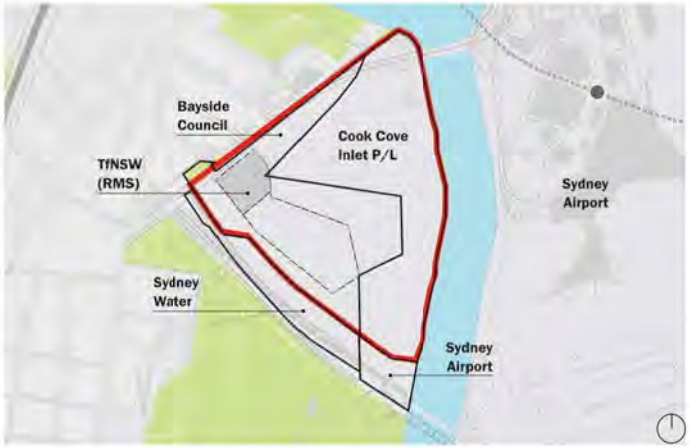
PRECINCT MASTERPLAN

A highly integrated precinct of logistics, commercial, retail and hotel that is intertwined with a highly diverse open space network. A centre of business, logistics and employment that is of local, state and national significance.

LEGEND

1	Block 1 - retail, commercial and waterfront plaza
2	Block 2 - commercial, retail, hotel
3	Fig Tree Grove pavilion
4	Fig Tree Grove
5	Marsh Street plaza
6	Block 3 - Logistics hub
7	Gertrude Street intersection upgrade and extension
8	Flora Street intersection upgrade and extension
9	Culvert under road
10	Frog ponds (by TfNSW)
11	Pemulwuy Park North (by Bayside Council)
12	Pemulwuy Park South (by Bayside Council)
13	Sydney Water Land
14	Commonwealth Land (Sydney Airport)
	Planning proposal boundary

SITE CONDITIONS



Land Ownership

The Cooks Cove Planning Proposal pertains to land owned by Cook Cove Inlet P/L, Bayside Council and Transport for NSW.

Land owned by the Commonwealth of Australia (Sydney Airport) and Sydney Water are adjacent land holdings that are external to the Planning Proposal.

The ownership of lots and sizes are listed below:

Cook Cove Inlet P/L

- → Lot 100 DP1231954 - 17.9Ha
- → Lot 31 DP1231486 - 0.59Ha

Bayside Council

- → Lot 14 DP213314 - 2.9Ha
- → Lot 1 DP108492 - 12Ha

Transport for NSW (RMS)

- → Lot 1 DP329283 - 1.8Ha

Legend

- Land ownership boundaries
- M6 Permanent and Temp Facilities
- Planning proposal boundary

OLS Height Controls

Due to proximity to the Sydney International Airport, the Cooks Cove Master Plan area is subject to Obstacle Limitation Surface (OLS) height controls. The OLS defines the airspace surrounding Sydney International Airport that must be protected from obstacles to ensure aircraft flying in good weather during the initial and final stages of flight, or in the vicinity of the airport, can do so safely.

Legend

- OLS Height Limit
- Planning proposal boundary

Heritage

The Southern and Western Suburbs Ocean Outfall Sewer (SWSOOS), located on the southern boundary, is a listed heritage item on the State Heritage Register. It is a significant infrastructure which passes in a west to east direction through the site and over the Cooks River. The SWSOOS was constructed in the late 1900s (1909-1916) and is the primary sewer line for south-western Sydney.

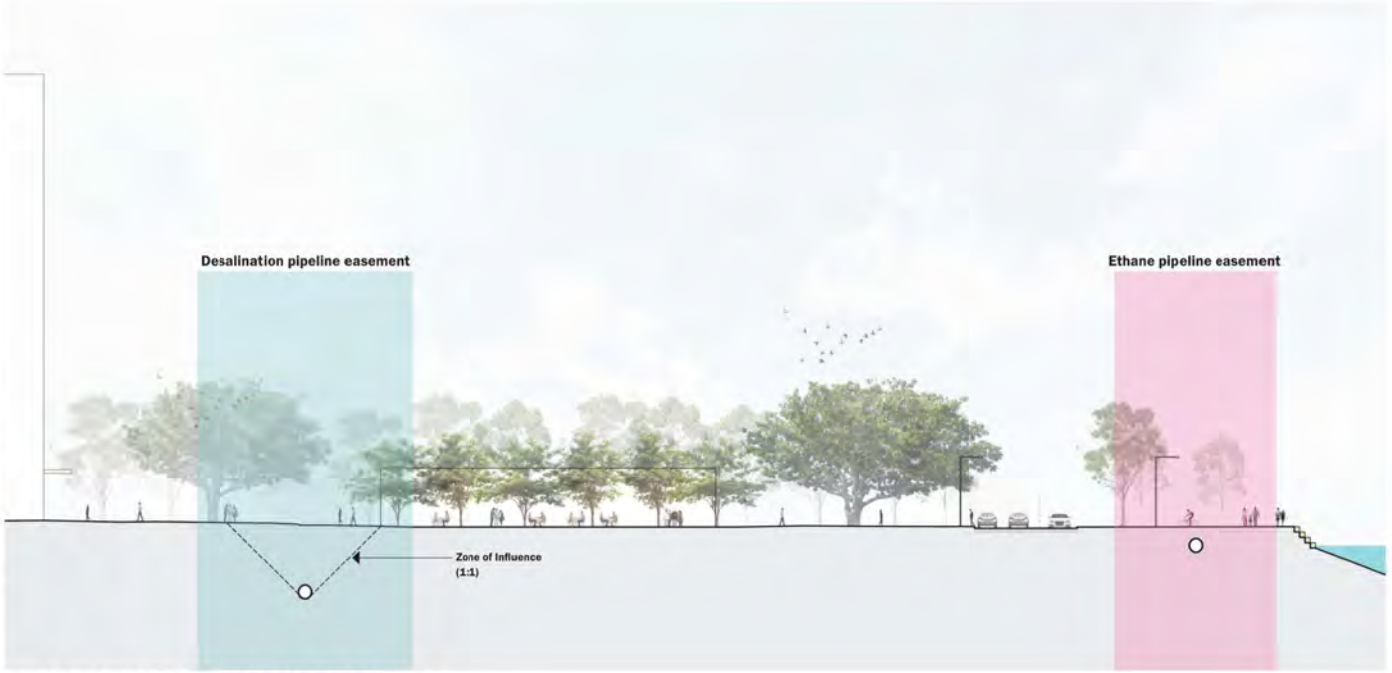
Legend

- SWSOOS
- Planning proposal boundary

Easements

The Sydney Desalination Plant pipeline runs through the development zone, north-south adjacent the Cooks River. The pipe has a diameter of 1.8m and sits within an easement of 6-9m in width. From south to north the pipeline is constructed in a combination of trench and above ground with mounded cover and then transitions to micro-tunnel and typical depth of circa 11m.

The Moomba to Sydney Ethane Pipeline containing ethane gas, follows a similar general alignment north-south adjacent the Cooks River. The pipe has a nominal 225mm diameter, within an easement generally 5m wide and with the pipe located at a depth of 1.2m-2.3m.



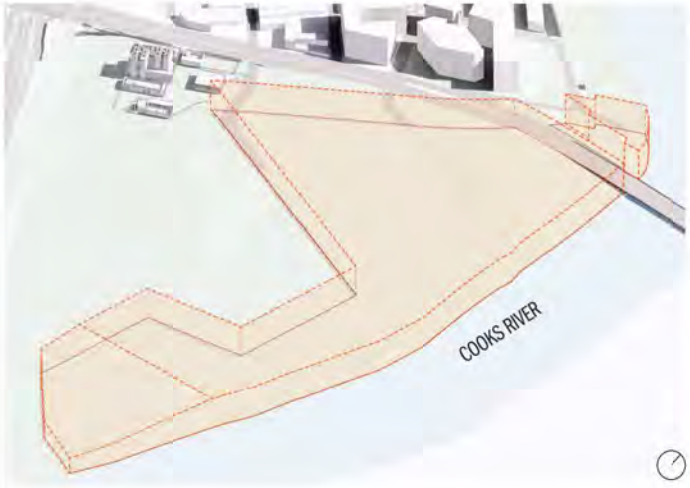
Section - Ethane Pipeline and Desalination Pipeline (with zone of influence)

Legend

- Desalination Pipe Easement
- High Pressure Ethane Gas
- Planning proposal boundary

BUILT FORM STRATEGY

The overall mass and form of Blocks 1, 2 and 3 have been developed in response to a number of factors including the existing context, underground services and to optimise the visual amenity from the foreshore and adjacent open space areas.

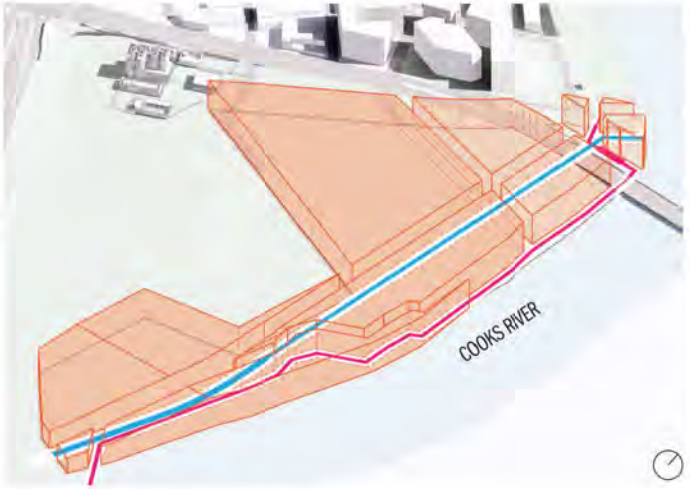


OLS

→ The OLS has defined the maximum building height of the proposed development, the lowest height from RL 26.52 to a maximum height of RL 51.00.

Streets and access

→ The road access to the development is proposed via two new streets from Marsh Street, including the extension of Gertrude Street in the north and Flora Street in the south.
→ The proposed block structure has been developed in response to the street structure, including Gertrude Street East defining the extent of Block 2 and Block 3.



Services Constraints

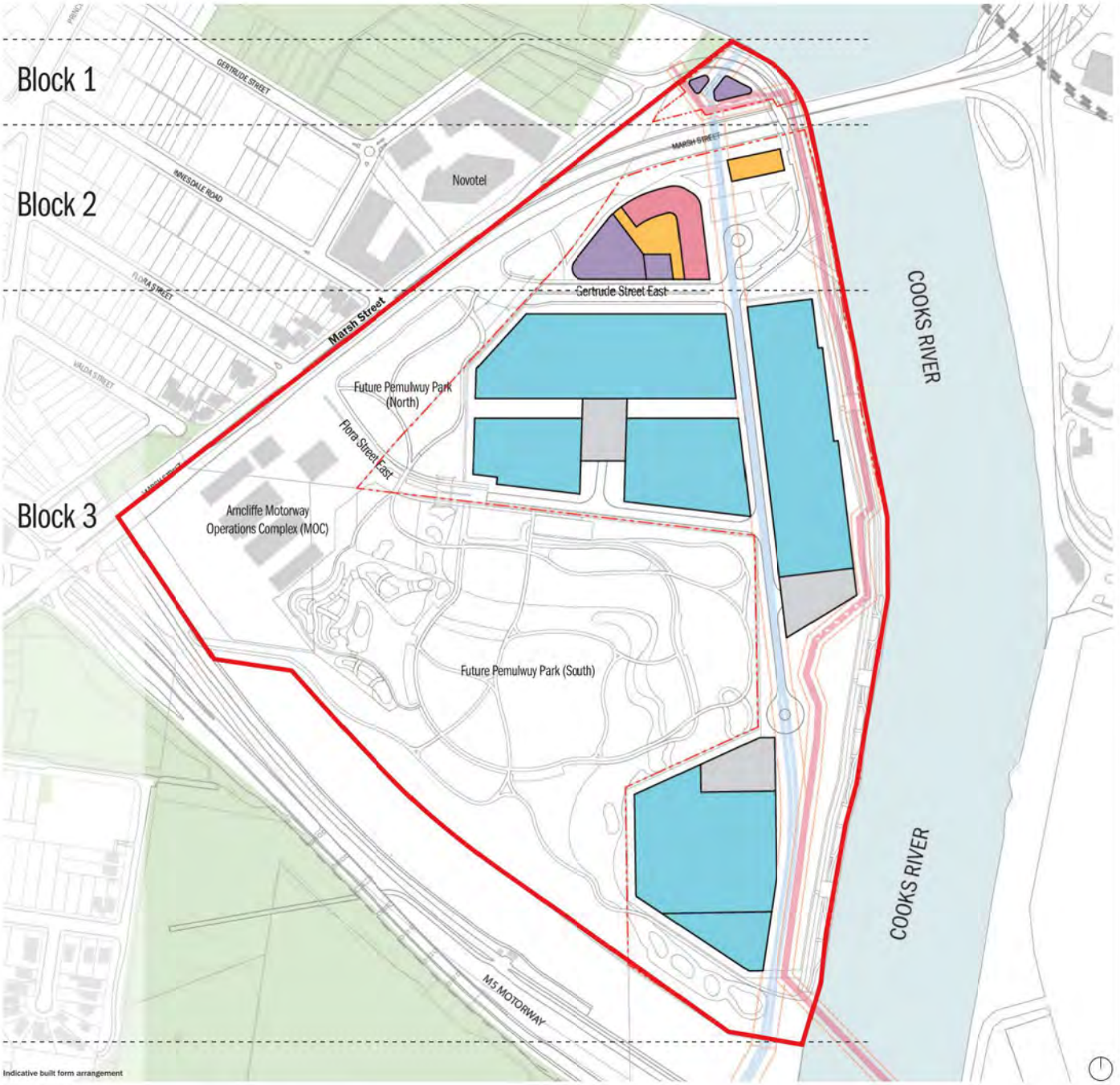
→ The existing underground services within the site include the desalination pipeline (blue) and the Moomba-Sydney ethane pipeline (red).
→ The proposed development is setback from the underground pipeline easements which has determined the extent of building envelopes, primarily within Block 1 and Block 3.

LAND USE PLAN

The Cooks Cove Planning Proposal is made up of Blocks 1, 2 and 3. Each block represents a specific area within the site. This Includes a commercial and retail parcel in Block 1 north of Marsh Street; a Hotel, Commercial and Retail parcel in Block 2 that addresses the waterfront; and a southern Logistics development in Block 3 that is made up of several large mass type buildings. A maximum floor area (GFA) of 343,250m2 is proposed across three blocks.

Area Schedule

	Block 1	Block 2	Block 3	Total
Hotel/ Accomodation		20,000m²		**20,000m²**
Commercial	2,350m²	20,000m²		**22,350m²**
Retail	900m²	10,000m²		**10,900m²**
Logistics/ warehouse			290,000m²	**290,000m²**
Total	**3.250m²**	**50.000m²**	**290,000m²**	**343,250m²**



BLOCK 1

Cooks Cover River office and retail precinct - key moves

The site is constrained by existing underground services that allow for two separate building parcels.

Located on Levey Street adjacent to the Cooks River the site of Block 1 has a waterfront aspect and affords high quality views north towards the Cooks River. The shape of the block is defined by Lot 31 (DP1231486) which extends from Marsh Street across Levey Street to the Cooks River. The site is crossed by the existing underground desalination pipeline and the ethane pipeline. Both services require buildings to be setback to preserve maintenance of easements.

These two easements divide the site into two separate building parcels and result in irregular forms.

The irregular forms present an opportunity to develop two unique waterfront pavilion buildings that respond to available building envelope and provide an interlinking at-grade plaza space.

Key moves

Existing site

→ Site is located along the Cooks River foreshore.
→ Extension of Levey Street runs along the north eastern edge of the site.

Site constraints

→ Existing Desalination line and gas pipeline divides the site into small parcels

Waterfront pavilions

→ Rationalise massing geometry to create pavilions to provide activation to the foreshore

BLOCK 2

Fig Tree office and accomodation precinct - key moves

The proposal for block 2 seeks to maximise the amenity and public domain adjacent to the Cooks River waterfront and to preserve existing mature fig trees. This outcome achieves a high quality public space activated by a pavilion in the park. The development includes a retail podium with commercial and hotel tower above.

The development is constrained by an existing underground desalination pipeline and ethane pipeline running north-south through the site. The buildings are setback from these services to preserve easement access.

Several existing large fig trees are retained due to the building setback, this preserves the existing amenity and landscape qualities of the site.

A hotel and/or short term accomodation is positioned adjacent to the open space, allowing for a high quality amenity and views north and east of towards the Cooks River. The commercial tower is positioned towards Marsh Street to provide more direct access from the main roads.

Key moves

Maximise public domain

- → Consolidate commercial, hotel and retail to the western end of the site.
- → Maximising the public domain by relocating commercial building.

Maximise amenity

- → Locate hotel to the north and east edge to maximise view and access to light.
- → Locate commercial building to the western end of the site to allow ease of access off main roads.

Pavilion in the park

- → Locate hotel to the north and east edge to maximise view and access to light.
- → Locate commercial building to the western end to provide a presence and address on Marsh St

BLOCK 3

Logistics Hub - users

The proposed heights and forms within block 3 have been designed to provide the greatest flexibility in future stages of the design to enable a number of user models

Single User

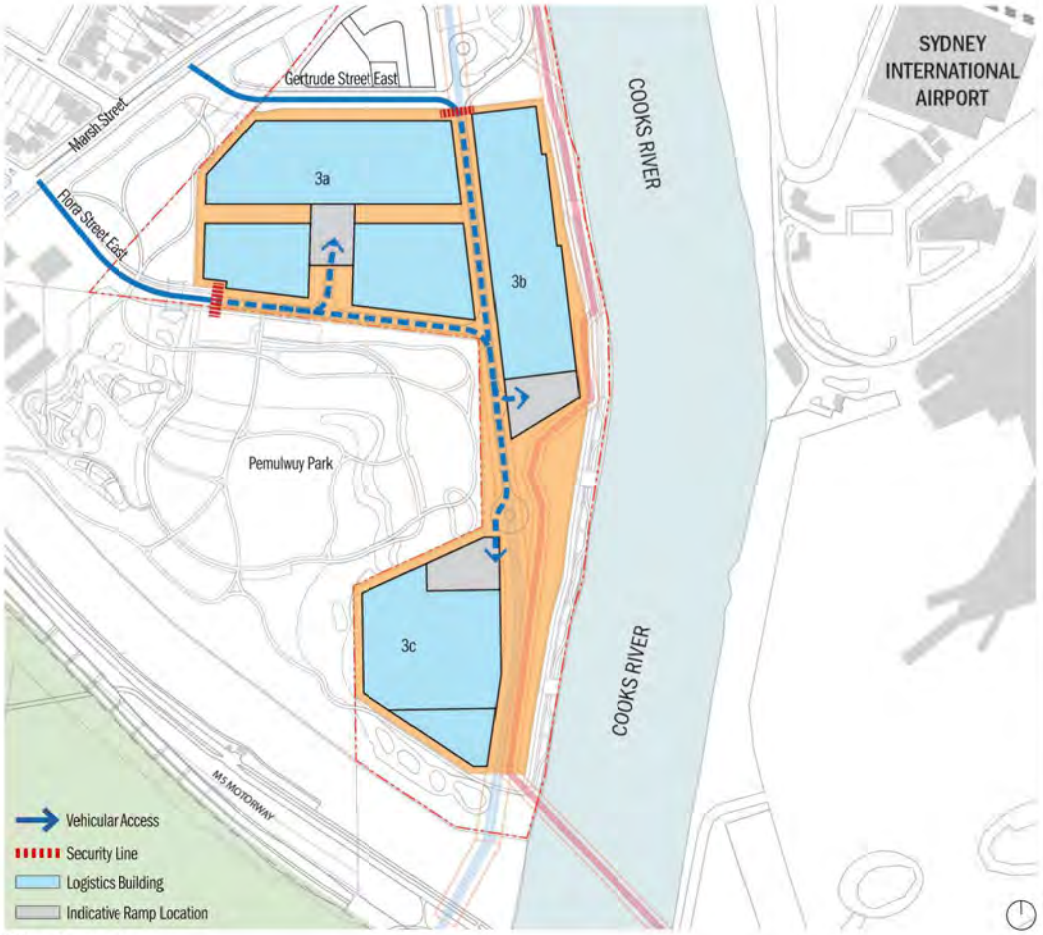
- → Single operator for block 3
- → Subdivided blocks with 3a, 3b and 3c each serviced by a vehicle ramp, office and car parking
- → Single security line at main entrance to Block 3

Multi-user

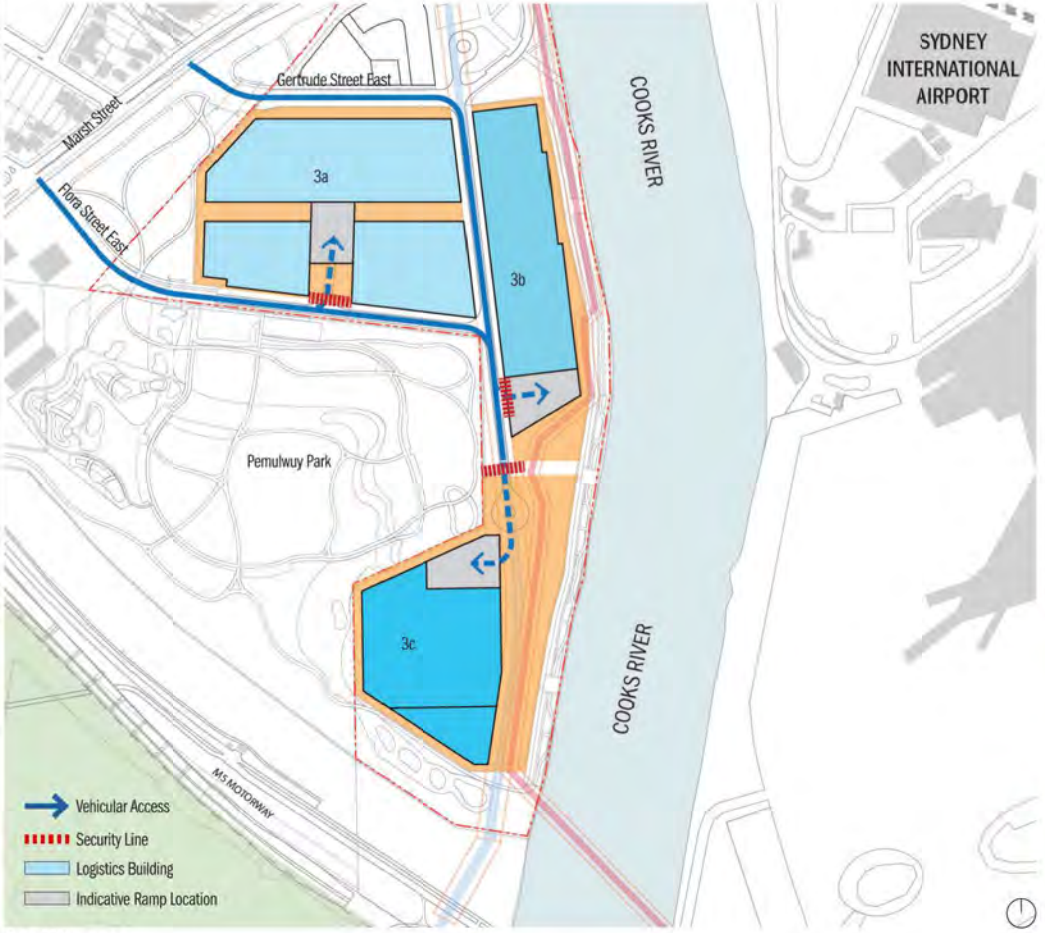
- → Multiple operators for block 3 broken up by subdivided blocks 3a, 3b and 3c
- → Subdivided blocks with 3a, 3b and 3c each serviced by a vehicle ramp, office and car parking
- → Secondary security line at Block 3a, 3b and 3c

Multi-user + Airport user

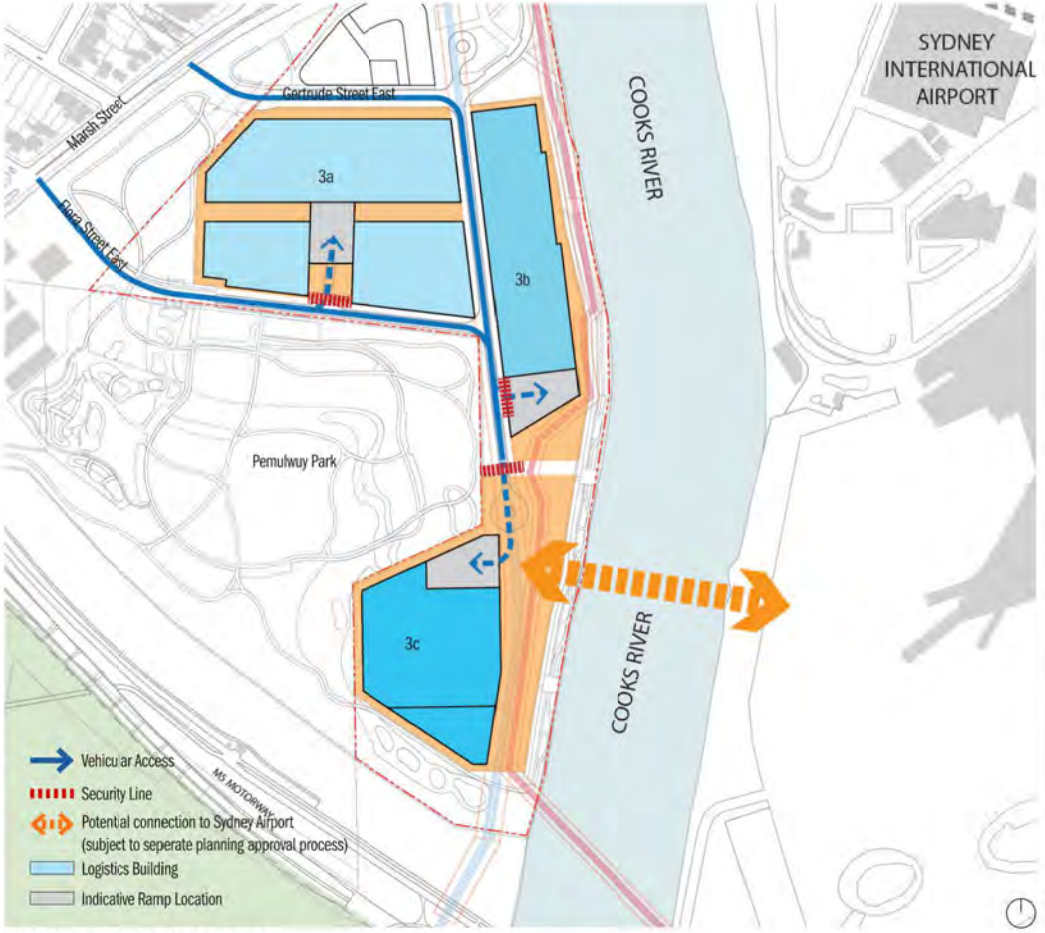
- → Multiple operators for block 3 broken up by subdivided blocks 3a, 3b and 3c
- → Subdivided blocks with 3a, 3b and 3c each serviced by a vehicle ramp, office and car parking
- → Secondary security line at Block 3a, 3b and 3c
- → Potential opportunity to connect to Sydney Airside operations via a new bridge connection over the Cooks River (not the subject of this proposal)



Single user



Multi-user



Multi-user / Airport user

FORESHORE

Detail Plan

The Cooks River foreshore is a 20m wide landscaped corridor approx. 1km in length. The foreshore will provide public waterfront access via pedestrian walkways and a separated two-way cyclepath. There will be areas of ecological restoration and salt marsh planting with boardwalks and lookouts.

The Cooks Cove foreshore will be an exciting new waterfront destination for the surrounding community, visitors and workers within the adjacent development. Accessible to the public the foreshore will connect with the existing Cahill Park to the north and the new Pemulwuy Park to the south. There will also be safeguarding for future pedestrian and cycle connections to the south over the existing SWSOOS, which will provide a regional link to the south, connecting with a future Muddy Creek crossing and existing pathways to Kyeemagh and Sans Souci.

The proposed foreshore aims to achieve the following outcomes:

- → maximise public and visual access and open view corridors
- → provide a dedicated two-way cyclepath, and safeguarding for a future cycle link to the south over the SWSOOS (by others)
- → provide a diverse and natural pedestrian waterfront experience through promenades, walkways and boardwalks
- → provide ecological restoration and habitat creation with mangroves and salt marsh planting
- → preserve corridor views to the adjacent Pemulwuy Park, and open views to the Cooks River
- → maximise public safety with pedestrian lighting and visual surveillance from the adjacent development.

LEGEND

1	Landscape promenade
2	Foreshore steps
3	Landscape buffer to road
4	Landscape embankment
5	Mangroves between MHWS and MWL
6	Elevated pedestrian boardwalk
7	Lookout nodes
8	Landscape swale with semi-aquatic planting
9	Cycle path
10	Kayak pull up zone with shelter and information signage

Legend

- Desalination Easement
- Gas Easement
- Planning proposal boundary

Images

1. Westbund Riverfront by Hassell. Photo: Isabel Tang
2. Hornsbergs Strandpark by Nyrens Arkitektkontor. Photo: Åke Eson Lindman
3. Narrabeen Lagoon by Aspect Studios. Photo: Simon Wood
4. Perreux River Banks by BASE. Photo: BASE

FORESHORE

Add image of each typology under

Marshland

Marshland 3 - Tidal saltmarsh with elevated boardwalk

Marshland 2 - Activity platform and lookout, with access to adjacent development

Marshland 1 - Tidal saltmarsh with boardwalk

Add image of each typology under

Natural

Natural Edge - Walkway and cyclepath behind a rock seawall

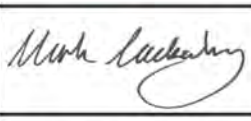
Urban

Urban 2 - Plaza and terraced water edge (building adjacent)

Urban 1 - Plaza and terraced water edge (plaza adjacent)

Standard conditions for works near APA Gas Transmission Pipelines

ASSET ENGINEERING

Document No		580-POL-L-0001			
Rev	Date	Status	Originated/ Custodian	Checked	Approved
4.0	08-06-2021	Issued For use			
			Omar Ashour	Scott Mitchell	Mark Lackenby
			Project Development Engineer	Team Lead Risk & Engineering	Manager Pipeline Engineering

energy. connected.

Table Of Contents

TERMS OF USE

This "Standard Conditions for Works Near APA Group Gas Transmission Pipelines" is used for APA Excavations or Third Party Excavations and must only be used by the person or entity who received it directly from APA (**"You"**) to ensure the latest version is used.

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 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. This document does not override or supersede APA's Third Party Work Authorisation (T**PTW**) or Excavation policies and procedures. All excavation and other relevant work that is carried out by APA within plant license areas MUST be conducted under full compliance of APA's PTW procedures. Where appropriate and approved, specific deviations can be arranged.
3. 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 which covers AGN Transmission and Distribution pipelines.
4. 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.
5. 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.
6. You must not reproduce this document without APAs permission and must not copy, alter or amend this document.
7. You must not provide this document to any other person without APA's prior written consent.
8. 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.
9. 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.
10. 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.

11. 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.
12. 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 and APA Managed work 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.

Part 4 – Guidelines for minor third party works

Please note that this document does not address APA's Networks encroachment requirements. Please contact APA Networks to understand requirements for working around APA's low pressure and distribution pipelines that are operated by APA.

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 686 634 for Victoria and all other States and Territories 1800 017 000.**

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 and territories 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 SMS 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 including explosion and or fire;
- 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. APA NOTIFICATION AND AUTHORISATION REQUIREMENTS (PART 1)

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 Excavation and Trenching Procedure.

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 including Trenchless Excavation i.e. Drilling (boring, HDD, pipeline bursting and tunneling) for installing infrastructure such as the following:-
    - Roadways, driveways, railways, pavement;
    - Electrical equipment (cables, overhead transmission lines or telecommunications cable and power poles);
    - Installation of culverts/pipes (water, drainage, sewer or reticulation);
    - Vertical boring (e.g. for geotechnical survey or piles construction)
    - 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;
- Chemically treated effluent coming in contact with the Pipeline Corridor;
- Construction of storm water basins, artificial lakes, swimming pools;
- Garbage, sand fill, 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 for Third Party Projects 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 where APA Engineering Assessments are required and

provides relevant information for the Proponent to be able to prepare its preliminary designs which captures the following from Schedule 2 Document Reference:-

- 580-POL-L-0001 Standard Conditions for Works Near APA Group Gas Transmission Pipelines (This document)
- 580-POL-L-0002 Competency Requirements for NDD Operators Proving APA Transmission Pipelines
- 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 Excavation and Trenching 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 APA Engineering Assessments are required.

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

e) APA performs integrity assessments 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**) and any other design drawings and documentation as required by APA.

h) APA accepts 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 an APA Permit Issuing Officer.

l) An APA Permit Issuing Officer is appointed and issues a Permit To Work (**PTW**) on the job site. The Third Party Contractors do not sign on to the PTW.

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**.

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
- APA Third Party Works Authorization
- APA accepted Third Party Construction Management Plan
- APA accepted Third Party Construction Drawings
- Standard Conditions for Works Near APA Group Gas Transmission Pipelines (this document)
- 580-POL-L-0002 Competency Requirements for NDD Operators Proving APA Transmission Pipelines
- APA accepted Third Party SWMS.

2.3 Commercial Agreement and Service Delivery

APA will typically undertake Minor APA Permit Issuing Officer Inspection and/or Engineering Assessment for Third Party Works that APA considers to be "low risk" at no cost to the Proponent.

Minor APA Permit Issuing Officer Inspection and/or Engineering work 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 tunneling work near APA assets will not be considered to be "low risk".

For works that are not deemed low risk, The Contractor performing the works is required to sign a commercial agreement with APA. The type of the commercial agreement is dependent on the type of works and interaction with APA's asset as assessed by APA.

For types of commercial agreements between APA and proponents, and 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 DESIGN AND PIPELINE PROTECTION REQUIREMENTS (PART 2)

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 Minimum Clearances for Infrastructure to Pipelines** 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 3,4,5)	Minimum Horizontal Clearance to edge of Pipeline (mm) (Note 6)	Minimum Vertical Clearance to edge of Pipeline (mm)
Telecommunication conduits and cables	500	**Note 7**
Electrical conduits and cables laid parallel to a steel pipeline <11 kV	500 APA Engineering Assessment is required if running more than 100 m parallel	**Note 7**
Electrical conduits and cables laid parallel to a steel pipeline ≥ 11 kV	APA Engineering Assessment required **(Note 1)**	APA Engineering Assessment required **(Note 1)**
Stormwater drains < DN500	1,000 **(Note 4)**	**Note 7**
Stormwater drains ≥ DN500	3,000 **(Note 4)**	**Note 7**
Water Mains < DN500	1,000 **(Note 4)**	**Note 7**
Water Mains ≥ DN500	3,000 **(Note 4)**	**Note 7**
Sewers < DN500	1,000 **(Note 4)**	**Note 7**
Sewers ≥ DN500	3,000 **(Note 4)**	**Note 7**
Electrical poles including street lighting	3,000 **(Note 1)**	
Distribution Gas Mains < DN400	1,000 **(Note 4)**	**Note 7**
Distribution Gas Mains ≥ DN400	3,000 **(Note 4)**	**Note 7**
Minimum distance from casing vent stack discharge point to any electrical installation or overhead structure	1,000	

	Infrastructure Type (Notes 3,4,5)	Minimum Horizontal Clearance to edge of Pipeline (mm) (Note 6)	Minimum Vertical Clearance to edge of Pipeline (mm)
	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	APA Engineering Assessment required
	Any installations that may need underpinning must APA need to expose its pipeline	3,000	APA Engineering Assessment required
	From the top of the pipeline to the underside of road pavement boxing		APA Engineering Assessment required
	Distance from property boundary for non-land owners	Outside of Pipeline Corridor	
	Sensitive Use Locations (Refer to Schedule 1 Glossary of Terms)	Requires a setback distance 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 APA Engineering Assessment	
	Any structure (includes building) excluding sensitive use location	**Notes 2 & 4**	
	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	1,000 **(Note 1)**	
	Piles and piers	15,000	
	Roads parallel to the pipeline	1,500 from the back of the kerb to the centerline of the pipeline	
	Separation distances for vegetation	Refer to 3.3 Landscape Plans	

Infrastructure Type (Notes 3,4,5)	Minimum Horizontal Clearance to edge of Pipeline (mm) (Note 6)	Minimum Vertical Clearance to edge of Pipeline (mm)
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 APA 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.

Electrical cables in the vicinity of Pipelines require APA 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 which includes canopies 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: 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 4: 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 5: All crossings must be at 90 degrees to APA pipelines or justification provided to for crossings that are not 90 degrees which will require a formal deviation with a supporting risk assessment with appropriate controls and approved by APA.

Note 6: APA will advise which side of the pipeline requires unrestricted access for future pipeline.

Note 7: Refer to the following Standard drawings for the minimum vertical clearance to the edge of the Pipeline:-

- 530-DWG-L-1001 Concrete Slab Installation - Other Utility Crossing (by Open Cut) Details Beneath APA Pipeline
- 530-DWG-L-1003 Concrete Slab Installation - Other Utility Crossing (by Open Cut) Details, Above APA Pipeline, Greater than 500 mm Separation
- 530-DWG-L-1004 Foreign Installation by HDD or Boring Beneath APA Pipeline
- 530-DWG-L-1017 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 Inspection	Minimum Horizontal Clearance to edge of Pipeline (mm)	Minimum Vertical Clearance to edge of Pipeline (mm)
Excavation **(Note 1)** without APA Present	Pipeline Corridor	Permission to excavate is contingent on Third Party Works Authorisation (TPWA) conditions as issued by APA
Trenchless Excavation **(Note 1)**	Refer to Section 4.9.3 Trenchless Excavation	
Lifting over exposed pipelines	Refer to Section 4.3 No Go Zone for Cranes and Suspended Materials Above the Pipeline	APA 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
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 7 Maximum Compaction Limits**	
Vibration Limits	No vibration within 3 m of the pipeline and greater distance to comply with Section 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, pipeline bursting and tunneling).

3.2 Third Party Assets to be Self Supporting

Structures should be designed so as not transfer any loads to the APA Gas Transmission Pipelines. Adequate engineering calculations to support this requirement is the responsibility of the proponent.

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 in 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 Vegetation and Landscaping

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 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). APA may require the proponent to install a root barrier 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 which may require APA 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 Pipeline**s.

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 Minimum Depth of Cover Requirements for Pipeline**s.

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 3)
Under Minor Road Pavement **(Note 1)**	1,200 mm
Under Major Road Pavement **(Note 2)**	1,200 mm
Suburban Areas	1,200 mm
Rural Areas	900 mm

Note 1: Minor road pavement typically are owned by local councils.

Note 2: Major road pavement typically includes all highways and roads owned or operated by the state road authority.

Note 3: Protective slabbing must be installed where minimum depth of cover requirements cannot be met or required to meet specific safety requirements or 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.

Should the proponent be installing a steel pipeline crossing or parallel to the APA Pipeline, a Cathodic Protection (CP) test point shall be installed where required by APA.

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. Heavy Vehicles (compliant General Access Vehicles) on established road pavements are permitted.

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 APA Engineering Assessment 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 CONSTRUCTION AND LAND USE REQUIREMENTS (PART 3)

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 APA Engineering Assessments and any applicable SMS.

Pipeline repairs, re-coating and slabbing that form part of any third party commercial agreement, or are performed as an outcome of third party works, 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, or heavy vehicle and / or rail 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, and so on as required for other States and Territories) 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's approval and / or an approved lifting plan and SWMS.

Outriggers must be set up outside a 5 metre radius from the APA Gas Transmission Pipelines 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 4.6 Piling and Piers
- For blasting, refer to Section 4.7 Blasting and Seismic Survey
- For tunneling, use 500 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-1017 Foreign Installation by HDD or Boring Above APA Pipeline
- For compaction, refer to **Table 7 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 metering 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 vertical encroachments such as pile-driving, sheet-piling, hammer-piling or borehole drilling 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 Geotechnical and Vertical Boreholes

APA requires positive identification of APA Transmission Pipeline before providing approval to adjacent vertical boring activities.

In case the pipeline is buried deeply in location of interest (such as by HDD) so that it is not practical to positively locate or expose, the pipeline will have to be located in a manner that is acceptable to APA, or applying additional provisions before the commencement of the works. This could include changing the location of the drilling.

APA's approval is required before commencing piling and piers works near APA Transmission Pipelines.

4.8 Blasting and Seismic Survey

The Proponent must issue for APA's review and approval the proposed CMP with supporting evidence (such as 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.

Blasting, seismic survey or the use of explosives must not be undertaken within 500 metres of an APA Gas Transmission Pipeline without APA's prior written approval. APA recognises that the DBYD buffer does not extend to 500 metres.

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

a. The person/entity who is using the explosives on 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 above of any APA Gas Transmission Pipelines. Carriers containing explosives must not be left within 5 metres 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 4.4 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 metres 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 be undertaken be in accordance with

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

4.9 Temporary Materials

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

4.10 Excavation and Reinstatement Work

4.10.1 General

Excavation work covers Non-Destructive Digging (**NDD**), and mechanical excavation which includes trenchless excavation. All such excavations must be in accordance with 320-PR-OM-0067 Excavation and Trenching Procedure. All NDD must be compliant to 580-POL-L-0002 Competency Requirements for NDD Operators Proving APA Transmission Pipelines.

The Proponent or its Contractor can perform the provings of APA assets via NDD using vacuum excavation and subsequent mechanical excavation work under the following conditions:-

- Commercial agreement with APA to cover the costs for asset damage such as APA making coating repairs
- Approved Third Party Works Authorization supported by the following:-
  - Third party CMP using 580-TP-L-0001 Third Party CMP Template
  - Proving plans with eastern and northern coordinates
  - SWMS
  - Issue a proving report that complies with 580-SP-L-0001 Surveying Existing Pipelines Specification.
  - 580-POL-L-0002 Competency Requirements for NDD Operators Proving APA Transmission Pipelines.
- APA Permit Issuing Officer issuing an APA Permit To Work (Primary Spotter) and monitoring the NDD work.
- If the mechanical excavation operator cannot see the Spotter, he or she must stop moving immediately and not resume movement until contact has been established. Spotters must be aware of their surroundings and should never walk into the path of a vehicle, moving equipment or a swinging load. They need to scan the ground to become aware of any trip or fall hazards.

4.10.2 Pipeline 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
All Sizes	4 m 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 APA Permit Issuing Officer. APA must be notified of any condition likely to affect the stability of a trench.

4.10.3 Trenchless Excavation

Trenchless excavation covers HDD, boring, pipeline bursting and tunneling. For an example to pipe bursting, refer to the following You-Tube Video:-

https://www.youtube.com/watch?v=HX5beh0ubGY

The method statement for establishing the HDD or Boring across APA assets is presented in the following drawings:

- 530-DWG-L-1004 Foreign Installation by HDD or Boring Beneath APA Pipeline
- 530-DWG-L-1017 Foreign Installation by HDD or Boring Above APA Pipeline

If the boring/HDD is to run parallel to the pipeline, it must be no closer than 3 metres in the horizontal direction from the pipeline.

Pipe bursting to be a minimum 1 m in the horizontal direction from the pipeline.

4.10.4 Pipeline Bedding and Padding Material

Prior to backfill ensure all information in regards to the pipeline excavation has been recorded on APA Pipeline Excavation Form 320-FRM-OM-0434.

The bedding material refers to the material that the pipeline is encapsulated and the padding material refers to the material above the pipeline.

The allowable pipeline bedding and padding material and the compaction method and limits are used to avoid damaging pipelines coating and base metal.

Backfill of the trench can be carried out when the APA Permit Issuing Officer is satisfied that all works on the Pipeline have been completed.

The bedding and padding material around the pipeline shall comply with **Table 6 Testing requirements for Bedding and Padding Material** as to avoid damage to the pipeline coating.

Table 6 Testing requirements for Bedding and Padding Material

<table>
<tr><th>Test</th><th>Test Method</th><th>Limit</th></tr>
<tr><td>Sampling</td><td>AS 1141.3.1</td><td></td></tr>
<tr><td>Grading limits</td><td>AS 1289.3.6.1</td><td>The bedding and padding material where roads will be crossing the pipeline is to use cement stabilised sand (3%). The sand will be natural washed and have a maximum 5 mm aggregate at 100% slump. The Stabilised sand supplier shall ensure concrete mixer is clean and washed prior to transporting to ensure no residual aggregate or contaminants is present in supplied product.

When reusing material use a screening machine otherwise purchase of sand from a quarry.
The material must comply with the grading limits specified below:-
<table>
<tr><th colspan="2">Aggregate Grading Percentage passing as per AS 1141.11</th></tr>
<tr><th>SIEVE SIZE</th><th>RESULT%</th></tr>
<tr><td>6.70 mm</td><td>100</td></tr>
<tr><td>4.75 mm</td><td>93</td></tr>
<tr><td>2.36 mm</td><td>69</td></tr>
<tr><td>1.18 mm</td><td>48</td></tr>
<tr><td>0.60 mm</td><td>31</td></tr>
<tr><td>0.425 mm</td><td>26</td></tr>
<tr><td>0.30 mm</td><td>22</td></tr>
<tr><td>0.15 mm</td><td>17</td></tr>
</table></td></tr>
<tr><td>pH</td><td>AS 1289.4.3.1</td><td>pH of greater than 5
Applicable for purchase of sand from a quarry.</td></tr>
<tr><td>Electrical Resistivity</td><td>AS 1289.4 4.1</td><td>Material resistivity should be greater than 5,000 Ω.cm
Applicable for purchase of sand from a quarry.</td></tr>
<tr><td>Moisture Content</td><td>AS 1289.2.1.1</td><td>As per job specification</td></tr>
<tr><td>Sulfate Content</td><td>AS 1289.4.2.1</td><td>Less than 150 ppm
Applicable for purchase of sand from a quarry.</td></tr>
<tr><td>Chloride Content</td><td>ASTM D512</td><td>Less than 500 ppm
Applicable for purchase of sand from a quarry.</td></tr>
</table>

Test	Test Method	Limit
Excavation material being reused		Recycled bedding material and stabilised sand must not be used unless expressly approved by APA in writing. The excavation material being reused must be:- • clean. • free of sandbags, clay material, vegetable matter. • of a fine grain material of uniform composition, • free of ash, weeds and pest plants, salt or any chemicals, stones, sharp objects, building debris road paving material. • free of high expansion and/or contraction of clay is defined as reactive clay which is not suitable for bedding material and padding material.

Note 1: Coating will be spark tested ('jeeped', holiday detector, etc.) prior to backfilling when recoating works have been conducted or if coating verification is required. The spark test voltage and procedure is per 530-SP-M-9601 Coating for Buried Pipework, Valves and Fittings, or as approved by the APA Pipeline Engineer.

Where additional protection (e.g. concrete slabbing) was installed at construction, this shall be reinstated.

Pipeline marker tape shall be installed and located at least 300mm above the top of the pipeline for excavation of existing pipelines.

After completion of backfilling the top soil should be re-spread over the excavated area.

4.10.5 Pipeline Reinstatement

The pipeline reinstatement includes the following:-

- Remove all surplus material including padding material.
- Dispose of all contaminated spoil from the site.
- Any high traffic or compacted areas may require soil ripping at the appropriate depth and spacing.
- The pipeline corridor reinstated to its original condition or changed conditions as advised by APA, other asset owners, relevant local council, road authority or land owner, as applicable.
- Reinstatement of protective slabbing and pipeline marker posts.
- The reinstatement of pot holes and trenches must comply with protective slabbing and marker tape requirements in accordance with Standard Crossing Drawings seen referenced in Schedule 2, Document References.

- Prior to backfilling, a minimum of 150 mm material below the APA Gas Transmission Pipeline must be filled as bedding material with 300 mm padding material above the pipeline.
- APA may require geo-fabric installation between different trench reinstatement products to prevent sand migration.
- The APA Permit Issuing Officer is responsible for supplying the marker tape as required.
- 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 unless approved otherwise by APA for remote pipelines.
- Compaction limits in the vicinity of existing pipelines are specified in **Table 7 Maximum Compaction Limits**.

Table 7 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 referred to handheld equipment. APA Pipeline Engineer approval is required if vibrating compaction is to be used.

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 to APA for a Consent to Issue a SoC 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.

5 GUIDELINES FOR MINOR THIRD PARTY WORKS (Part 4)

5.1 Minor Backyard Works

There are a range of potential minor backyard works which are not considered structures (temporary or permanent). While location at least 3.5m from the pipeline centreline would be preferred, APA will accept such minor works in any location. This is on the basis that they do not pose a risk either during construction or to future pipeline maintenance, provided line of sight (within the yard) and access is not impeded. Such works include:

- raised vegetable beds (with any supports in the ground no more than 300mm)
- paths
- garden edging
- paving.

Works in this category will not be recorded as encroachments.

5.2 Storage

Material storage on industrial lots will be allowed, within reasonable limits, on the basis that the industrial lots have been allowed to be created, and storage is a regular activity and expectation of occupiers of industrial lots. Material storage within the easement will be considered on a case by case basis depending on compliance with the following conditions:

- safe access to the easement and the vicinity of the pipeline, for periodic inspection, notwithstanding some areas of restricted access and visibility
- adequate marker signs can be maintained in accordance with the guideline, at a minimum including markers at property boundaries and /or offset markers on rear fencing and/or rear of buildings
- long term storage is acceptable (when complying with other conditions), provided that materials can be readily removed within the time required to organise any emergency repairs
- storage of explosive, flammable or other unstable substances within the easement area will not be permitted
- proposed storage must be assessed by Pipeline Engineering to ensure the loading of the storage on the pipeline is acceptable
- any storage allowed must have clear and reasonable limits as a condition of authorisation to ensure that the extent of storage does not increase to a point where it creates issues.

Storage will be authorised at the CTO level provided all requirements can be achieved, otherwise approval from both Operations and Maintenance, and Engineering and Planning GM level is required.

5.3 Suburban Fencing

Any standard type of suburban boundary fencing will be permitted including colorbond, paling, and chainwire. Even though this may limit intervisibility of marker signs and access, it has been determined that the risk can be managed through appropriate signage, patrols (including use of regularly updated aerial imagery), and the annual landholder contact program. The placement of posts is the main area of concern when authorising fencing and the following requirements apply for suburban fences:

- fenceposts crossing the pipeline should be placed equidistant from the pipeline centreline and must be at least 1.5m offset from the pipeline's edge
- fenceposts parallel to the pipeline, and defining a property boundary will be allowed in any location, provided they comply with depth restrictions and Excavation Procedure (320-PR-OM-0067) – positioning the fence slightly off the boundary to increase the separation from the edge of the pipeline to at least 500mm should be negotiated with the landholder if possible
- fenceposts parallel to the pipeline, and not defining a property boundary should be located at least 3.5m from the pipeline's edge
- fenceposts must be no more than 600mm deep if within 1.5m horizontal distance from the nearest edge of the pipeline (and complying with Excavation Procedure requirements).

Where fencing impacts on intervisibility of signage marker posts the requirements of the Pipeline Marker Signs Guideline (320-RP-AM-0269) will be applied.

5.4 Rural and Rural Residential Fencing

Rural and Rural Residential fencing should be of post and wire or chain-wire type to permit line of sight. More recent approvals for rural residential subdivision may include this as an APA condition of approval, and the CTO should check for this. The following conditions apply:

- Internal fencing should be aligned to minimise, as much as possible, crossing the pipeline easement
- where fencing across the easement is necessary, fenceposts should be placed equidistant from the pipeline centreline and must be at least 1.5m offset from the edge
- gates within the fenceline for APA access must be installed according to APA requirements
- fenceposts parallel to the pipeline, and defining a property boundary will be allowed in any location, provided they comply with depth restrictions and Excavation Procedure (320-PR-OM-0067) – positioning the fence slightly off the boundary to increase the separation from the edge of the pipeline to at least 500mm should be negotiated with the landholder if possible
- fenceposts parallel to the pipeline, and not defining a property boundary should be located off easement
- fenceposts must be no more than 600mm deep if within 1.5m horizontal distance from the nearest edge of the pipeline (and complying with Excavation Procedure requirements).

SCHEDULE 1 – GLOSSARY OF TERMS

Term	Meaning
APA	Each entity that forms part of the APA Group
APA Assets	APA Assets refers to assets owned and/or operated by APA typically are operational gas transmission pipeline systems and associated facilities, processing, storage, and LNG plants. The Term APA Assets is to be used interchangeably with APA Gas Transmission Pipelines.
APA Engineering Assessment	Covers Technical Assessments which may involve field integrity assessments that may or may include the use of specialist Consultants managed by APA
APA Excavations	APA excavations is work performed by APA or APA Contractor's
APA Gas Transmission Pipelines	The APA gas transmission pipelines includes underground pipelines, above ground piping, above ground facilities, power lines and all associated equipment such as cathodic protection, earthing grid, instrument and electrical cables
APA Permit Issuing Officer	The APA Permit Issuing Officer is responsible for opening the Permit To Work, locating APA assets and being the Spotter for works within the Pipeline Corridor.
APA Pipeline Engineer	APA Pipeline Engineer refers to Pipeline Risk Engineer or Pipeline Integrity Engineer
CMP	Construction Management Plan (CMP Template per 580-TP-L-0001)
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.
Depth of Cover	Vertical distance from the existing natural ground surface to the top of the buried pipeline
DBYD	Dial Before You Dig
DCVG	Direct Current Voltage Gradient
EPR	Earth Potential Rise
Excavation	Excavation refers to manual digging or mechanised digging operation with plant or equipment which involves trenching and trenchless excavation. Trenchless excavation covers boring, Horizontal Directional Drilling (HDD), pipe bursting and tunneling.
HDD	Horizontal Directional Drilling

Term	Meaning
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 refers to either hand digging or Non-Destructive Pot Holing using a vacuum pipe connected to a vacuum truck with either a water lance or air lance. Hydro-Vacuum Excavation consists of a water lance and vacuum truck and is used to physically prove existing assets.
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 Pipelines.
Pipeline Easement	The pipeline area shown on a survey plan and referenced on the property title
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 Pipeline ROW is the pipeline alignment and area either side being the greater distance of each of the following:- 1) the width of any pipeline easement, 2) 6 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) Approved construction Pipeline ROW. The engineered setback distance refers to the buffer distance of the development to avoid coming in contact with the Pipeline Interaction Distance.
Plant	A general name for equipment and facilities such as on gas transmission pipelines, processing and storage plants, LNG plants and also mobile machinery, tools and appliances.

Term	Meaning
Plant License Area	A plant license area includes the following:- • the pipeline ROW; • all facilities within the compound fences of any plant worksite; and • plant control systems that are within and beyond the physical boundary of the site. Permit To Work is required for activities such as remote data uploads/downloads, that change or affect the operating conditions or functionality of a plant either temporarily or permanently.
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 Pipelines. Any identified Risk will not be tolerated by APA unless it is either negligible, low or medium [intermediate that require to be As Low As Reasonable Practicable (ALARP)] in accordance with AS/NZS 2885.6 Pipelines - Gas and liquid petroleum - Pipeline safety management. The ALARP is achieved by APAs Five Yearly Operational SMS Report or project specific SMS Report. If there is a project specific SMS Report, the default Third Party Work Classification is 3 irrespective of the pipeline protection design and requires demonstration that the actions from the SMS Report have been incorporated in the supporting documents to the Third Party Works Authorisation.
RPEQ	Registered Professional Engineer Queensland

Term	Meaning
Sensitive Use Locations	This is designated as Class "S" as per AS/NZS 2885.6 Pipelines - Gas and liquid petroleum - Pipeline safety management 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 story's; • 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 Pipelines 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
SMS	Safety Management Study to AS/NZS 2885.6 Pipelines - Gas and liquid petroleum - Pipeline safety management.
Spotter	The APA Permit Issuing Officer is the Spotter for excavation work within the Pipeline Corridor and is referred to as the primary spotter. The secondary spotter is provided by the Contractor. The primary spotter has the ultimate decision regarding works within the Pipeline Corridor. The Spotter is the nominated competent person responsible for the following- • Making themselves highly visible and everyone on the job site should be aware of the Spotter's role • Communication to personnel operating mobile plant and equipment ensuring minimum clearance to above and below ground assets is maintained and the excavation method statement is adhered to. • Ensuring personnel do not encroach within the swing radius of the operating machinery.
Structures	Structures refer to third party structures which includes but not limited to buildings, walls, canopies, footings, pile caps or retaining walls

Term	Meaning
SWMS	Safe Work Method Statement used by APA or Contractors to execute field work. The risks and associated control measures risk assessments should be transferred to SWMS.
Third Party	Third Party refers to a third party process or asset.
Third Party Assets	Third Party Assets includes services and structures
Third Party Excavation	Third Party Excavation which is **not** associated with APA (e.g. road works, utility installations, private development, fencing).
TPWA	Third Party Works Authorisation form (580-FRM-A-0002) issued by APA to the Proponent giving conditional approval for works to proceed that needs to be signed by both the APA Permit Issuing Officer and Contractor Supervisor.
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, tunneling, pile driving, ground compaction, earthworks, open and trenchless excavations)
APA Third Party Work Classification	The Third Work Classification is shown on 580-FRM-A-0002 Third Party Works Authorisation Form and covers the following three work classifications:- • Work Classification #1 No impact to the pipeline • Work Classification #2 Impact to the pipeline and does not require APA Engineering Assessment • Work Classification # 3 Impact to the pipeline and requires APA Engineering Assessment.
SoC	Consent to issue Statement of Compliance form (580-FRM-A-0001)
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**.
ZOI	Zone of Influence is 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 pipelines or works within the vicinity of the pipeline that may cause 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
Standard Policies, Procedures, Specifications, Guidelines, Forms and Templates	
320-PR-OM-0067	Transmission Excavation Procedure
320-FRM-OM-0433	APA Daily Excavation Inspection Form
320-FRM-OM-0434	APA Pipeline Excavation Record Form
320-SP-L-0001	HDPE (High-Density Polyethylene) Slab Specification
530-GD-L-0001	Physical Barrier Selection and Design for Existing Pipelines **(Internal use only)**
580-GD-L-0001	Pipeline Marker Signs Guideline **(Internal use only)**
580-POL-L-0002	Competency Requirements for NDD Operators Proving APA Transmission Pipelines

Document No.	Document Title
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
APA Standard 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	Vacuum Potholing Stand Off for Water Lance and Air Lance
530-DWG-L-0502	Marker Post Fabrication Details
530-DWG-L-0503	Danger Sign Plate Details - Cathodic Protection Buried Cable
530-DWG-L-0504	Marker Tape Installation Details
530-DWG-L-0505	Marker Tape Installation Details - E&I Cables Below CAT. A Wiring System
530-DWG-L-0506	High Level Warning Marker Post & Collar Assembly Details
530-DWG-L-0507	Post Assembly Marker Post
530-DWG-L-0508	High Level Warning Marker Installation Assembly
530-DWG-L-0510	Gas-Danger Sign - Plate
530-DWG-L-0511	Gas-Danger Sign for Power Pole
530-DWG-L-0512	Danger sign - Triangle Sign
530-DWG-L-0513	Danger sign - Triangle Sign Installation Assembly
530-DWG-L-0514	Gas-Danger Sign for Marker Post
530-DWG-L-1001	Concrete Slab Installation - Other Utility Crossing (by Open Cut) Details Beneath APA Pipeline
530-DWG-L-1003	Concrete Slab Installation - Other Utility Crossing (by Open Cut) Details, Above APA Pipeline, Greater than 500 mm Separation
530-DWG-L-1004	Foreign Installation by HDD or Boring Beneath APA Pipeline
530-DWG-L-1007	Protection Slab - Precast
530-DWG-L-1017	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

Document No.	Document Title
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
530-DWG-L-5014	Typical formed Non-Gazetted Track Crossing
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