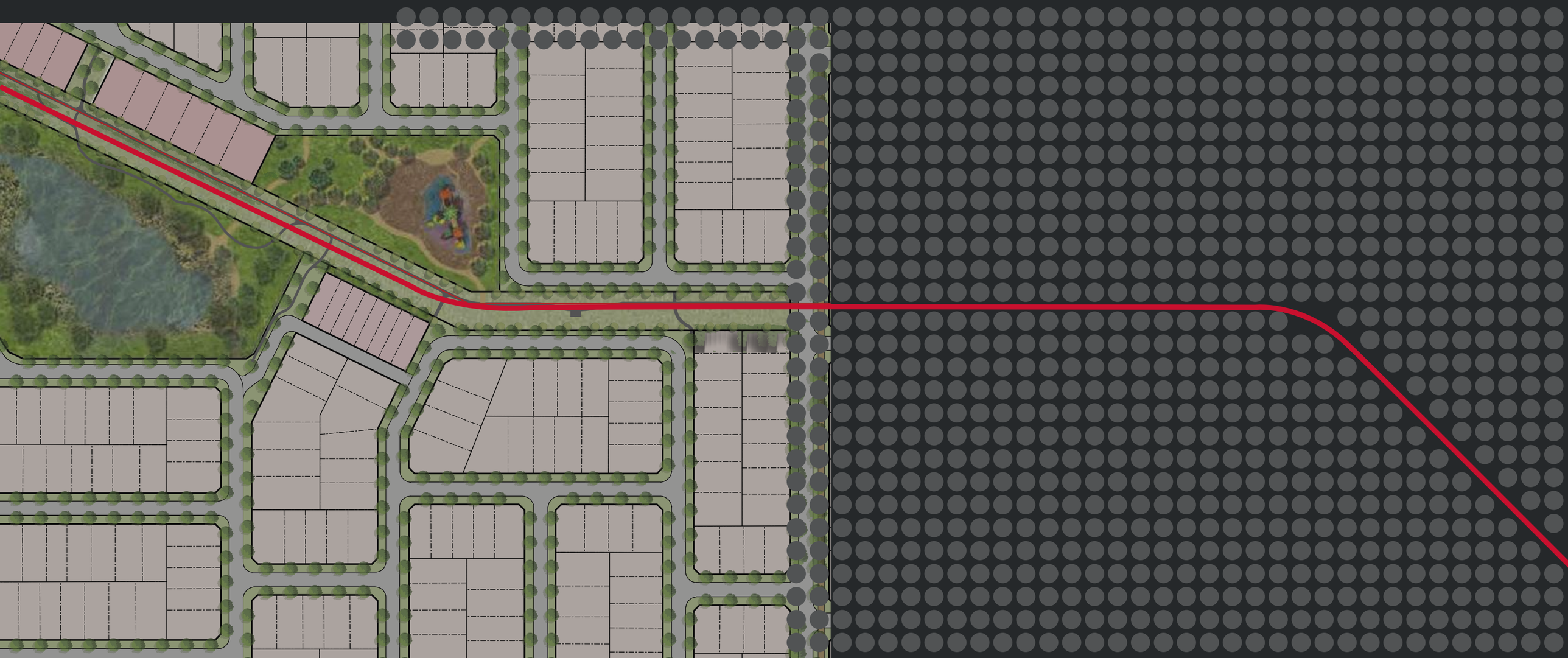
site planning + landscape
national guidelines



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energy. connected.

SMEC
Member of the Surbana Jurong Group

contents

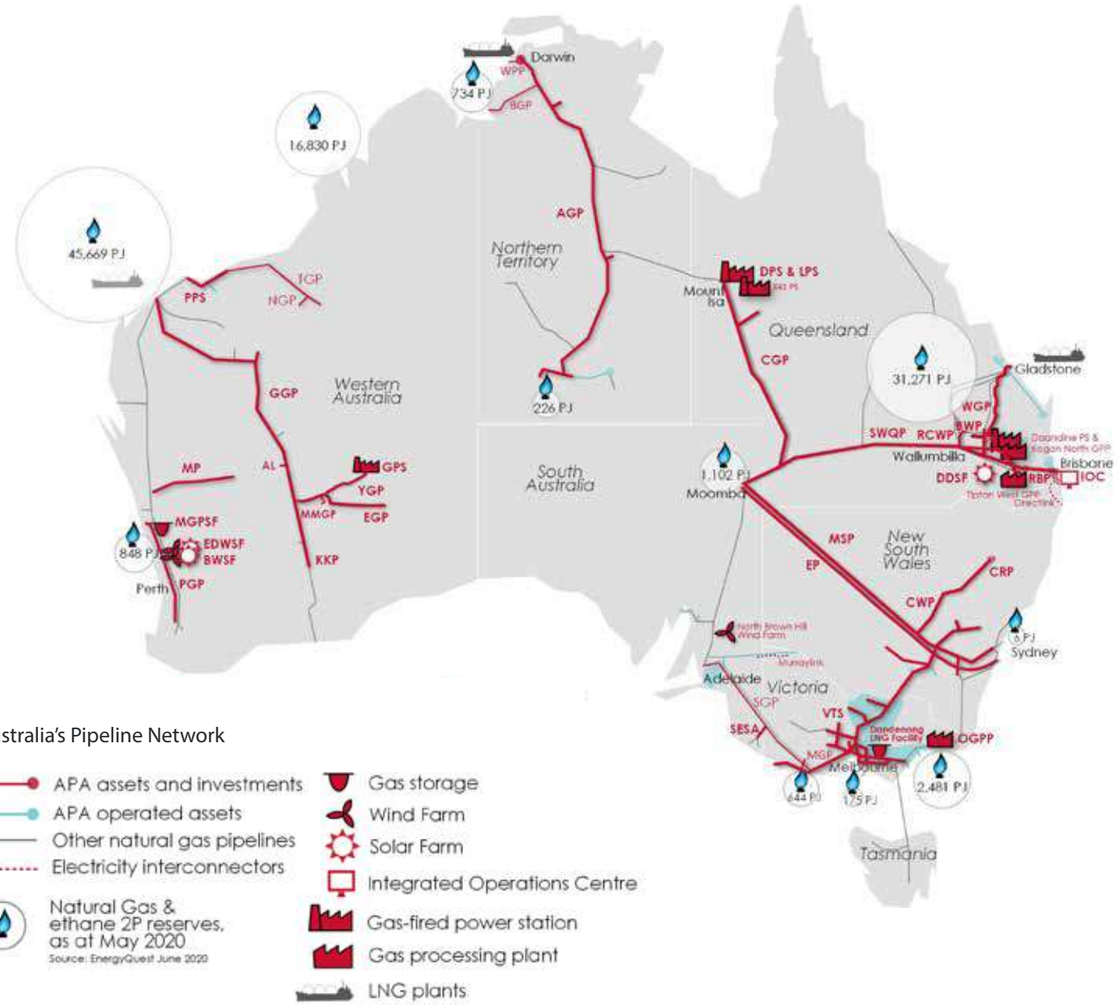
1
introduction.

apa and its role

APA Group (APA) is Australia's largest natural gas infrastructure business with gas transmission pipelines spanning across Australia to deliver approximately half of the nation's gas.

Gas transmission pipelines are regulated under federal, state and local legislation and statutory requirements. These requirements help protect the pipeline from external interference and ensure the integrity of the pipeline and the safety of the surrounding community.

APA's pipelines are designed, constructed, operated and maintained in accordance with Australian Standards (AS 2885 Pipelines – gas and liquid petroleum). While APA has direct management and operational control over its assets and investments, it is a critical role for APA to manage any emerging risks in keeping with AS 2885.



Australia's Pipeline Network

- APA assets and investments
- APA operated assets
- Other natural gas pipelines
- Electricity interconnectors
- Natural Gas & ethane 2P reserves, as at May 2020 (Source: EnergyQuest June 2020)
- Gas storage
- Wind Farm
- Solar Farm
- Integrated Operations Centre
- Gas-fired power station
- Gas processing plant
- LNG plants

purpose of this document

Australian high pressure gas pipelines have an excellent safety record, but as land use changes around them, due to increasing urban growth across Australia, the risk to pipeline safety also becomes greater.

APA transmission pipelines are increasingly coming into contact with land development projects. Therefore, these guidelines have been created to steer planners and developers towards the best ways to incorporate the pipelines and their associated safety requirements in the design phase of any planning scheme or development.

This document clarifies APA's minimum requirements for landscape and urban design in areas where transmission pipelines exist.

Adherence to these Guidelines does not exempt the developer from meeting the requirements of the relevant environment, access and safety legislation as well as AS2885 and local Council requirements.

These guidelines contain specific information on how to plan and design around APA transmission pipelines and achieve the best outcomes and safety for urban developments.

how to use these guidelines

These guidelines set out APA's expectations for site planning, urban design and landscape outcomes and should be consulted in the early stages of the planning and design process to guide the preparation of masterplans for subdivisions.

This document will inform landscape architects of the required conditions and general rules for the installation of landscape hard elements (like paths, pavements, furniture, signage, etc) and soft elements like planting within an easement.

These guidelines are applicable to all development types including residential, commercial and industrial.

Landscape Design Professionals:

All planning applications involving the development of an area adjacent to an APA easement should include a professionally prepared landscape plan. Lists of qualified landscape architects are available from:

The Australian Institute of Landscape Architects
Ph (02) 6248 9970 http://www.aila.org.au

2
apa easements & urban growth areas.

apa easements

APA assets are generally located within easements ranging from 7 to 35 metres in width. Easements provide protection of APA's assets (pipelines) and ensure:

- APA has preserved the opportunity to looping pipelines in the future.
- APA is able to access the pipeline for working and maintenance purposes.
- Access for patrols.

For the purpose of these guidelines a typical 20m wide easement with a single pipeline 6m in from one boundary has been assumed. Whilst typical, there are numerous variations to these dimensions across APA assets.

A 20m easement with one pipeline has the potential for another pipeline in the future. For the purpose of these guidelines the future pipeline is assumed to be 6m from the opposite side of the easement.

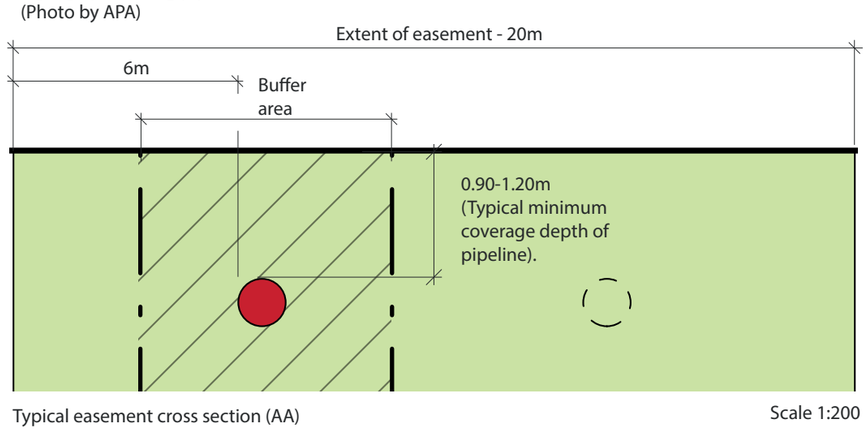
The larger vacant side of the easement which is likely to be used for future looping of the pipeline is called the "live side" of the easement.

Easements are typically linear following the pipeline alignment, so if there is a change of direction in the pipeline (corner) then the easement will follow.

All easements will have pipeline marker posts installed within line of sight of each other and as close as possible to the pipeline. Their primary purpose is identifying and warning of the existence of underground gas assets.

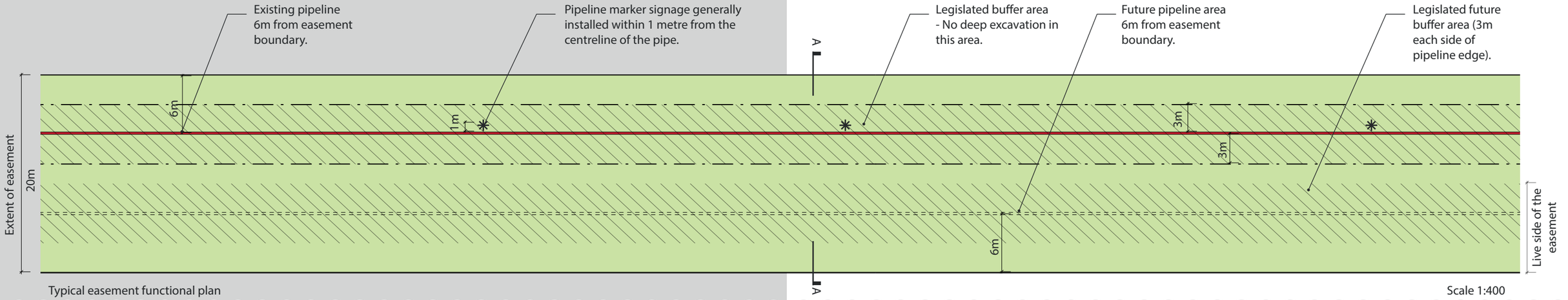
Refer to chapter 4 landscape guidelines for further information.

Signage post along pipeline
(Photo by APA)



Typical easement cross section (AA)

Scale 1:200



Typical easement functional plan

Scale 1:400

preferred outcomes

APA pipeline easements can provide a great opportunity to increase open spaces and green amenities within new urban areas. With the ongoing pressure to urbanise peri-urban and rural areas, there is no doubt that green corridors can add value for growing communities and also be a marketing differential for new developments.

It is APA's preferred position that the easements are designed to be linear green spaces and that these spaces will ultimately become council public reserves and opens spaces.

Precedent image

Landscaped areas with sculptures

Precedent image

Potential for long view lines and long green corridors

Precedent image

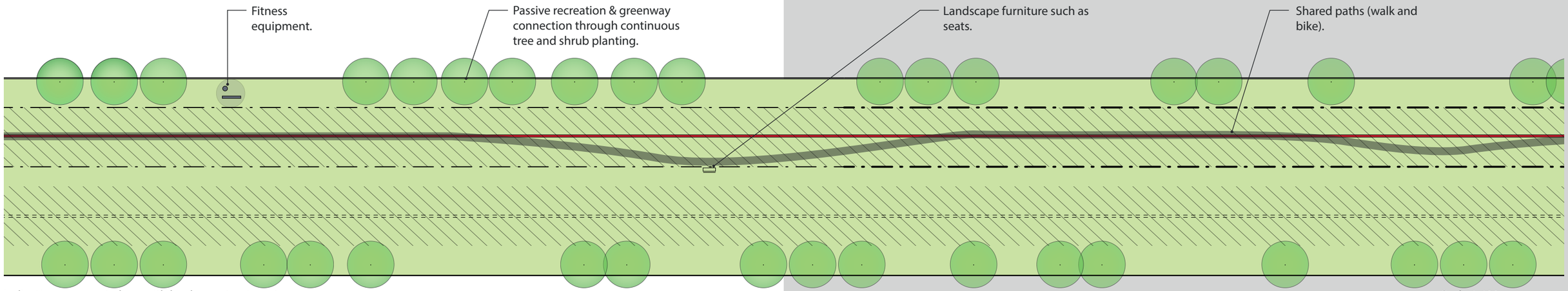
Easement corridors with landscape treatment combined with reserves

Precedent image

Potential to expand and connect shared path network

Precedent image

Expansive grass and low planting areas



Indicative easement plan - with landscape treatment

Scale 1:400

3

urban design guidelines.

urban design criteria

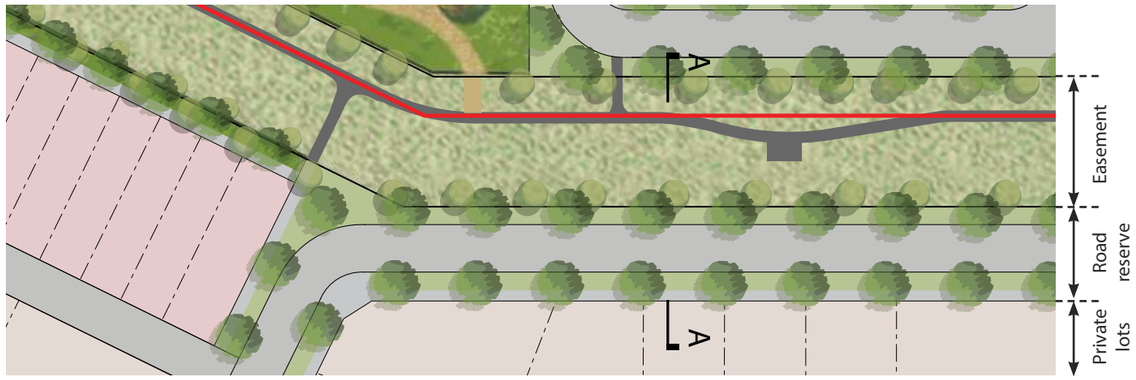
APA easements can be integrated into urban development projects in many different ways. The identification of an existing APA easement and pipeline corridor in the early stages of planning and urban design will result in better outcomes. The following key criteria should be considered when planning and designing around and within APA easements:

- The primary purpose of the easement is for the transmission of gas through existing and future gas transmission infrastructure.
- The easement and warning signage are statutory safety features pursuant to Australian Standard 2885. They are a fundamental tool in ensuring the safe operation of the transmission network, compliance with the relevant safety standards and provide for the safety of the public and assets from implications of a pipeline failure.
- Create a liner landscape reserve that runs the full length of the gas pipeline easement.
- Optimise passive recreation uses of the gas pipeline easement through the provision of a connective shared pathway network.
- Possibility for visual integration of gas pipeline easement into adjacent passive open spaces, drainage reserves, wetlands, retarding basin areas and road reservations.
- Minimised number of crossing and extent of road pavement over the pipeline easement.
- Roads and road reserves are to be located outside of the easement, except where there is a 90 degree road crossing.
- Service infrastructure (e.g. drains, other utilities etc) are not permitted to be located within the easement except at crossings.
- 'Easements on easements' is an unacceptable outcome except for infrastructure crossings.
- APA may require that a Construction Management Plan (CMP) be prepared to address any road crossings and works over the pipeline (including landscaping works), however this can be incorporated within any CMP required by Council.
- After works in the vicinity of APA's pipeline are completed, APA will issue a statement of compliance (where applicable) on request from the developer.

Hypothetical Masterplan for Residential Development with APA easement

design examples

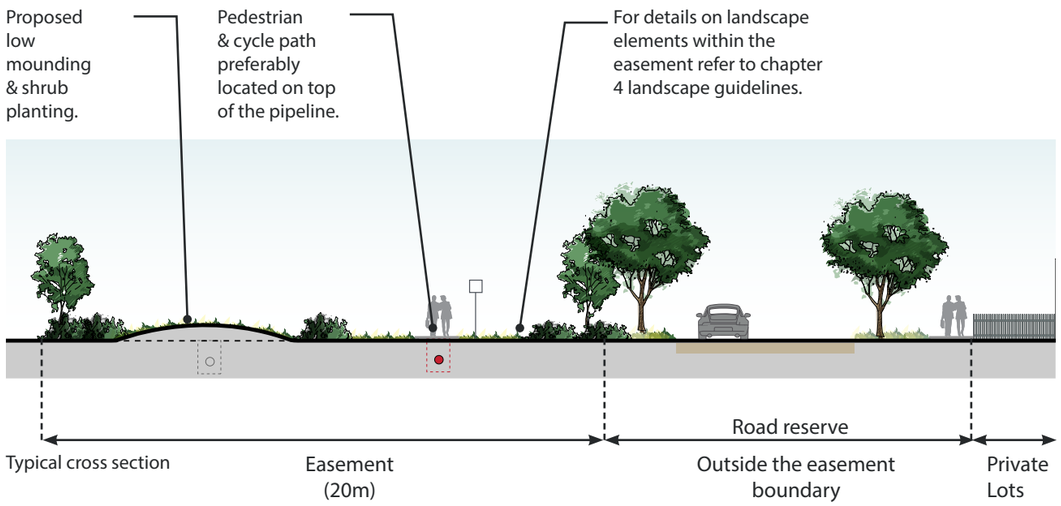
Road frontage interface



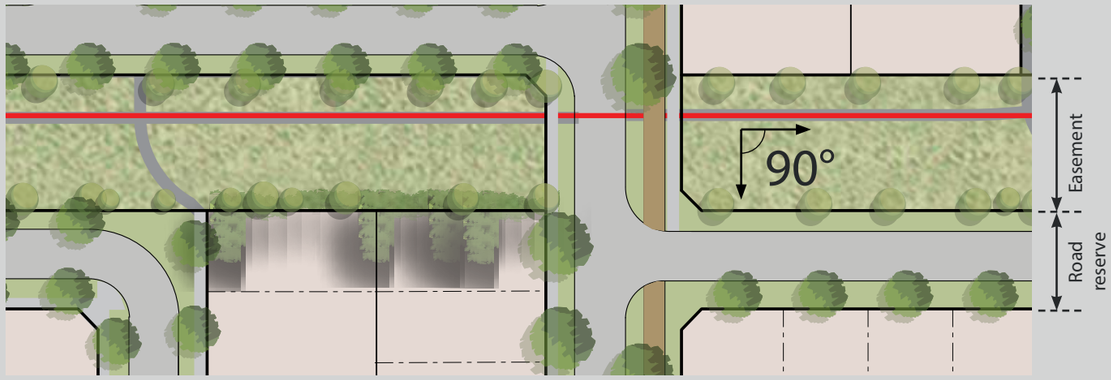
Typical plan

APA does not allow streets to be located over its easements other than road crossings.

Roads and road reserves can be located alongside APA easements but not encroaching into it. The easement can provide a visual " connection" of the road reserve nature strip.



Road crossing



Typical plan

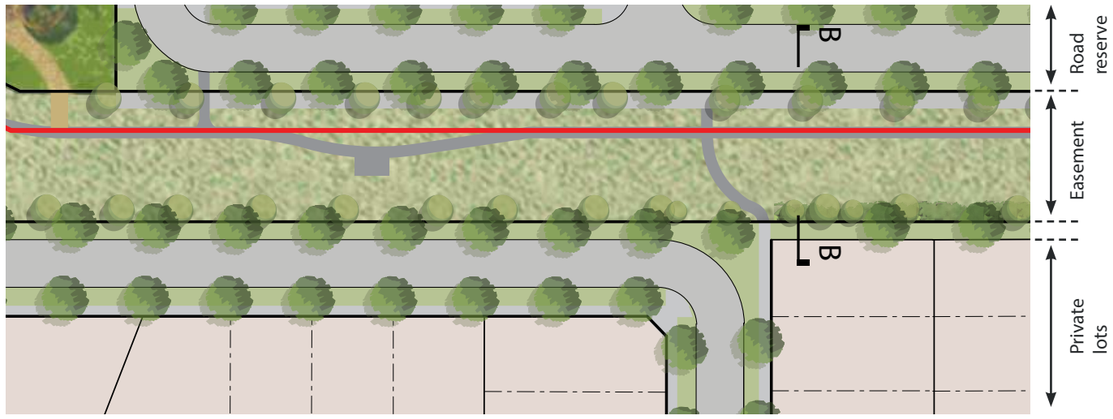
APA allows for roads and streets to cross the easement. Crossings should be at 90 degrees to the easement alignment. It is APA's preference to reduce the number of crossing points and refer to local design criteria guiding typical urban block lengths.

The cost associated with crossing the pipeline should be taken into consideration. The potential protective measures such as slabbing, proving and possible recoating costs, can be significant which the proponent needs to be aware of and account for.

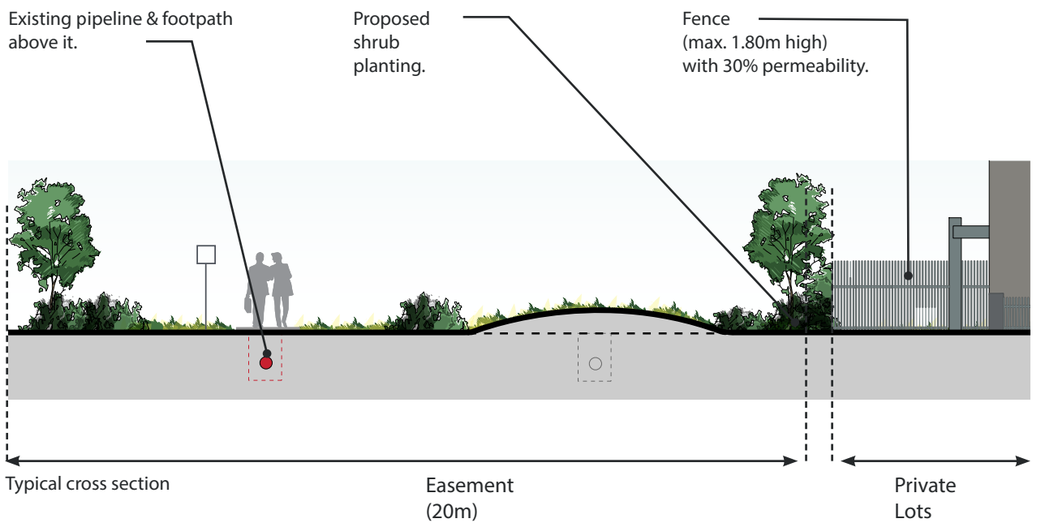
Typically infrastructure including utility crossing points should be grouped. APA strongly discourages the parallel co-location of other services within its easements and will only consider a proposal to do so in exceptional circumstances. Road and services crossings are subject to APA's third party works approval process.

Minimum depth of cover to the top of pipeline is typically between 0.90-1.20m. Refer to chapter 4 - landscape guidelines on page 26 for details. Any works over the pipeline will require the pipeline to be positively proved to confirm its exact depth and location.

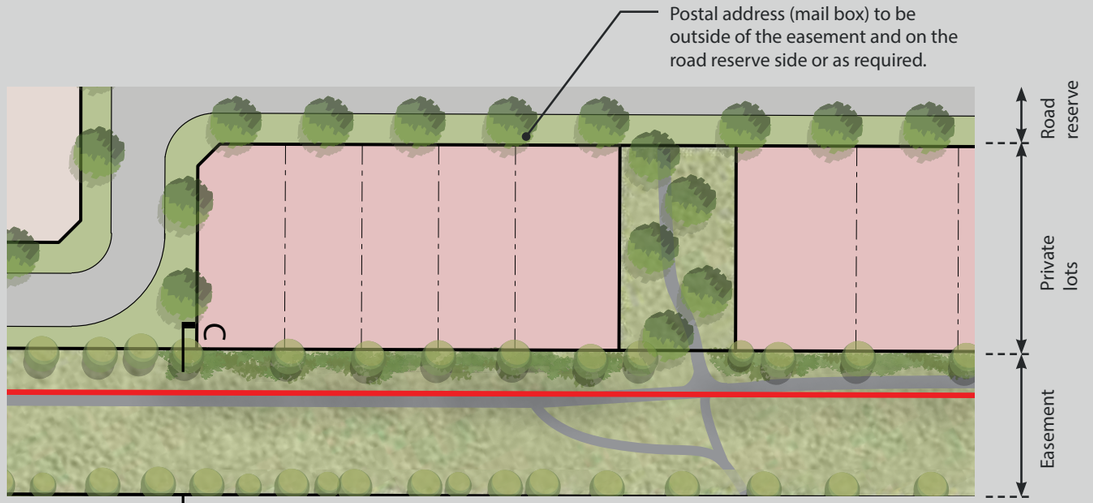
Side fence interface



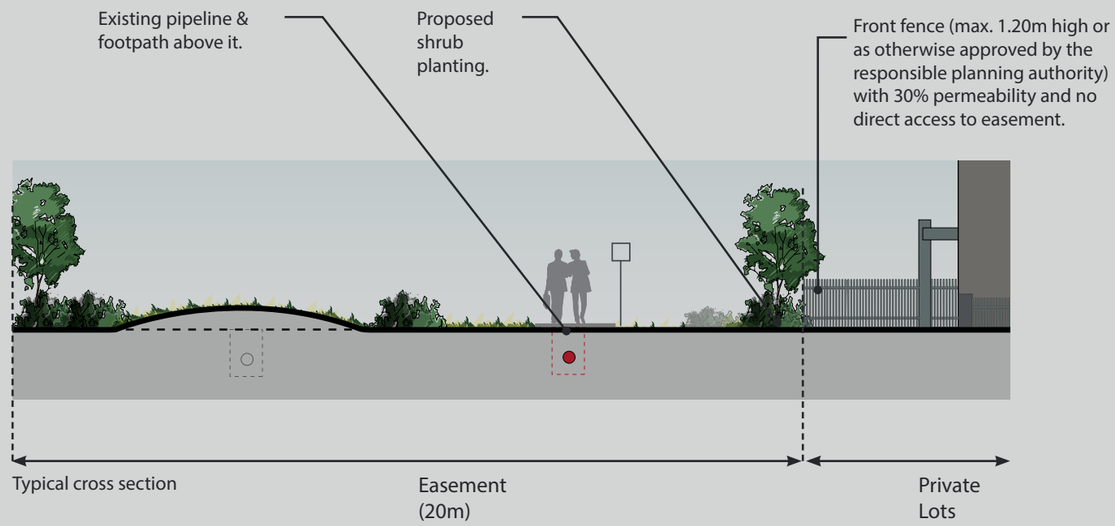
Typical plan



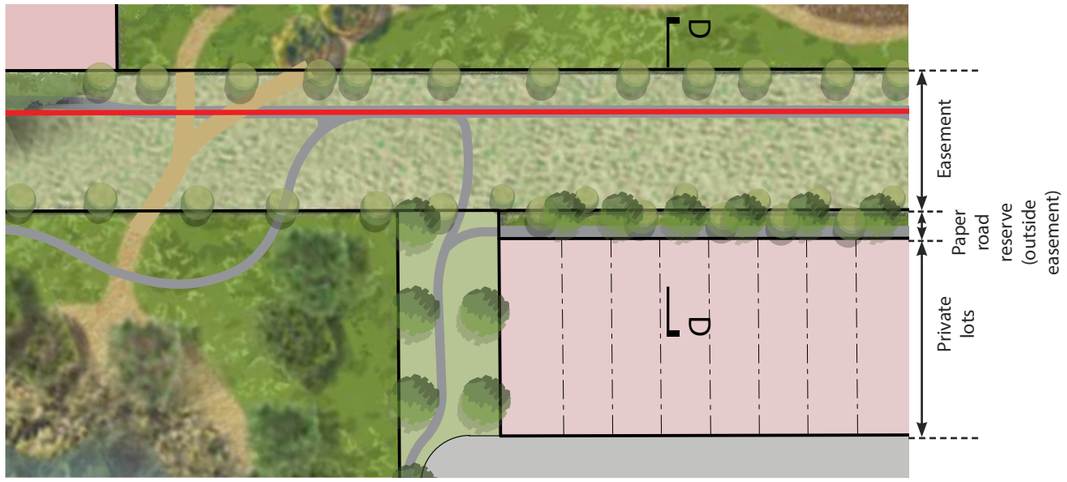
Double fronted lots interface



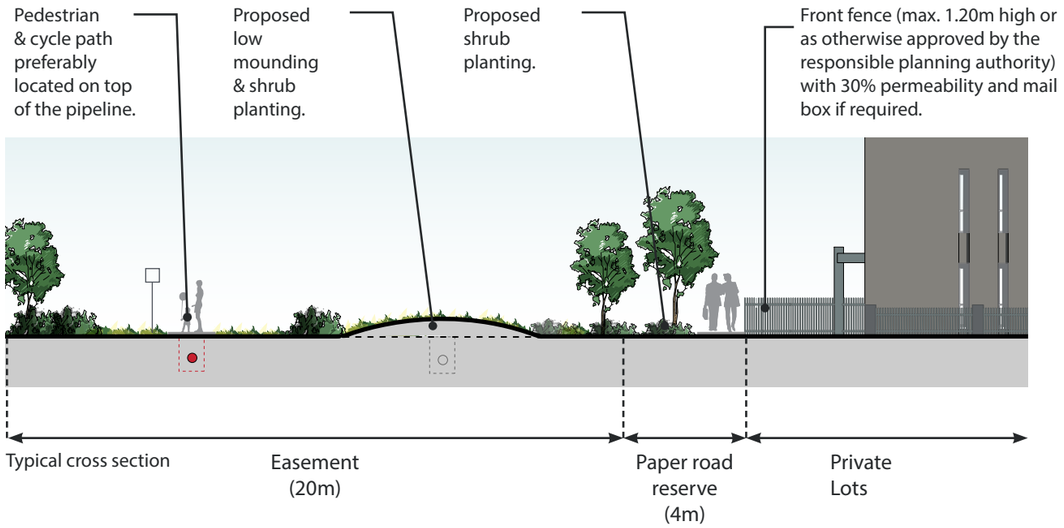
Typical plan



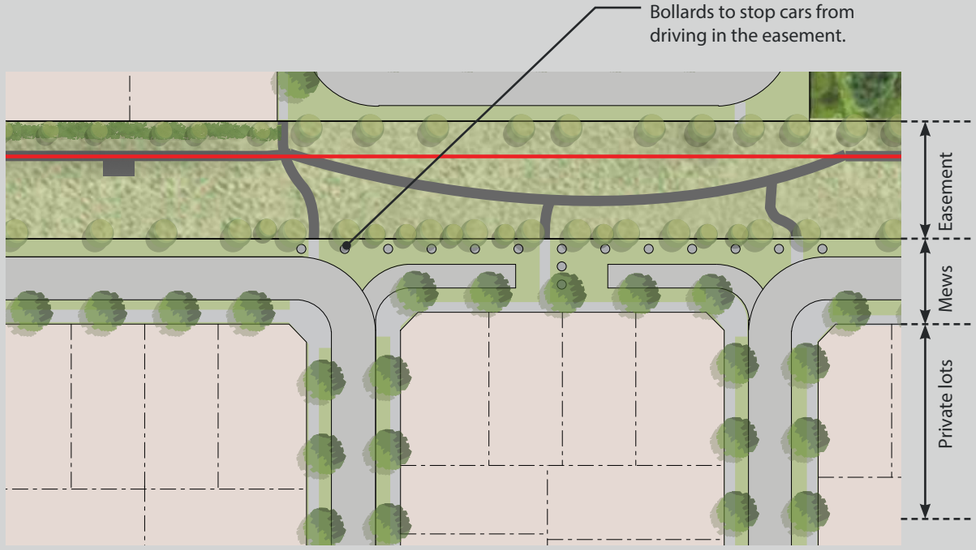
Terrace interface



Typical plan



Mews interface



Typical plan

4
landscape design guidelines.

landscape design criteria

The following general criteria apply to all landscape design and works within easements, regardless of location and context:

- Shared paths are acceptable within the easement to optimise connectivity within the development.
- Paths to be mostly located on top of the pipeline, acknowledging that in order to achieve good design outcomes some meandering of the path may be accepted.
- Potential opportunity for artworks and other hard infrastructure (eg. benches) to be installed in selected locations and integrated within the landscape.
- Select landscaping species which ensure unobstructed views between pipeline indicator markers and avoid any impact on existing subterranean pipe infrastructure and likely future pipeline routes.
- Selected plant species list to be agreed with APA.
- Landscaping and hardscaping outcomes must be mindful of future council and APA maintenance requirements and cost.

Refer to the next sections in this chapter on pages 18-28 for detailed guidelines on landscape design.

Hypothetical easement reserve with landscape treatment illustration

landscape design within apa easements

Pipeline markers & sight line preservation

All APA easements have Pipeline Markers installed along their entirety. Pipeline Markers have the primary purpose of identifying and warning of the existence of underground gas assets. Pipeline Markers will provide an emergency contact number. It is imperative that line of sight between markers exists so that the pipelines alignment is visible and can be evaluated from the ground.

Pipeline Markers will be placed at intervals in accordance with the Location Classes of the pipeline as determined by AS2885:

Residential
Land that is developed for community living. Markers to be spaced at a maximum of 100m intervals.

High Density
Land that is developed for high density community use. Markers to be spaced at a maximum of 50m intervals.

Industrial and Heavy Industrial
Land that is developed for Industrial and heavy industrial use. Markers are to be spaced at a maximum of 100m intervals.

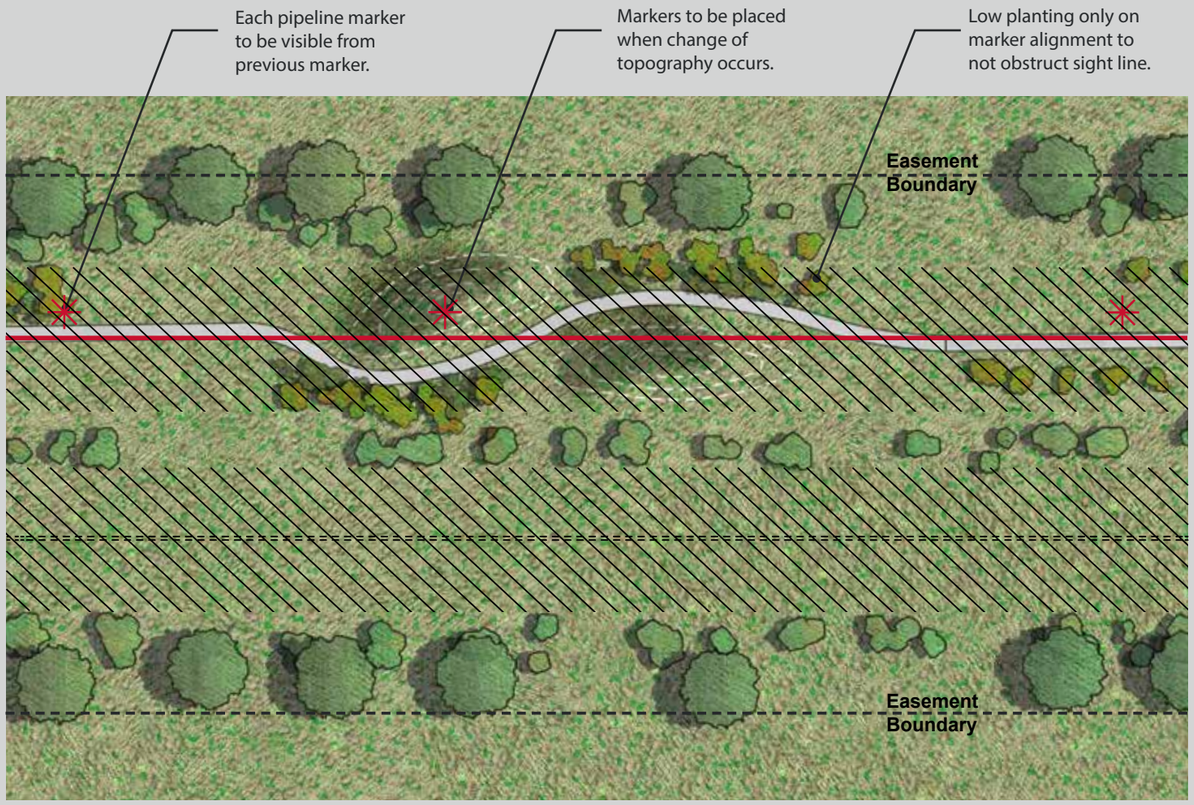
In addition to the spacing outlined above, Pipeline Markers will also be located at:

- Both sides of road, track or rail crossings.
- Utility crossings both above and below ground (where physically practical).
- Change in topography (where a cumulative change may impact on line of sight).
- Change of pipe direction (where physically practical).
- Property boundaries.

Markers are typically located directly above the pipeline or within 1m from the pipeline's edge. If not possible e.g. due to a road, footpath etc they are offset to the nature strip closest to the pipeline, but located so as to be visible from one another.

Vegetation and landscape furniture must be carefully considered and selected so it will not obstruct sightlines between markers. Refer to the section "Furniture and Planting" on page 20 for further information.

Consecutive pipeline markers must remain clearly visible. (Photo by APA)



20m Wide easement linear reserve - Typical plan

Clear zones and offset requirements

Excavation works

Excavations will be considered within the 3 metre buffer area, like pedestrian and cycle paths and roads crossing perpendicular to the pipeline alignment. Refer to chapter 3 Urban Design guidelines on page 13 for further information on road crossing.

The minimum cover of depth required from top of pipe to surface level is typically between 0.90 - 1.2 metres, as per Australian Standard AS 2885, and this cover needs to be maintained at all times unless an alternative protective measure is put in place to the satisfaction of APA. Prior to works this depth needs to be physically confirmed and proved on site, as in many instances surface levels change over time.

Excavation works within the easement or 3m of the pipeline edges,where no easement exists, will require APA third party approval and site supervision by an APA officer.

Landscape furniture & lighting:

Landscape furniture like seats and picnic tables can potentially be installed on the easement and will be subject to third party approval by APA.

Significant larger landscape structures such as small shelters or pergolas and fitness equipment can be proposed on the easements, outside of the 3m buffer area, however it will be assessed by APA on a case by case basis.

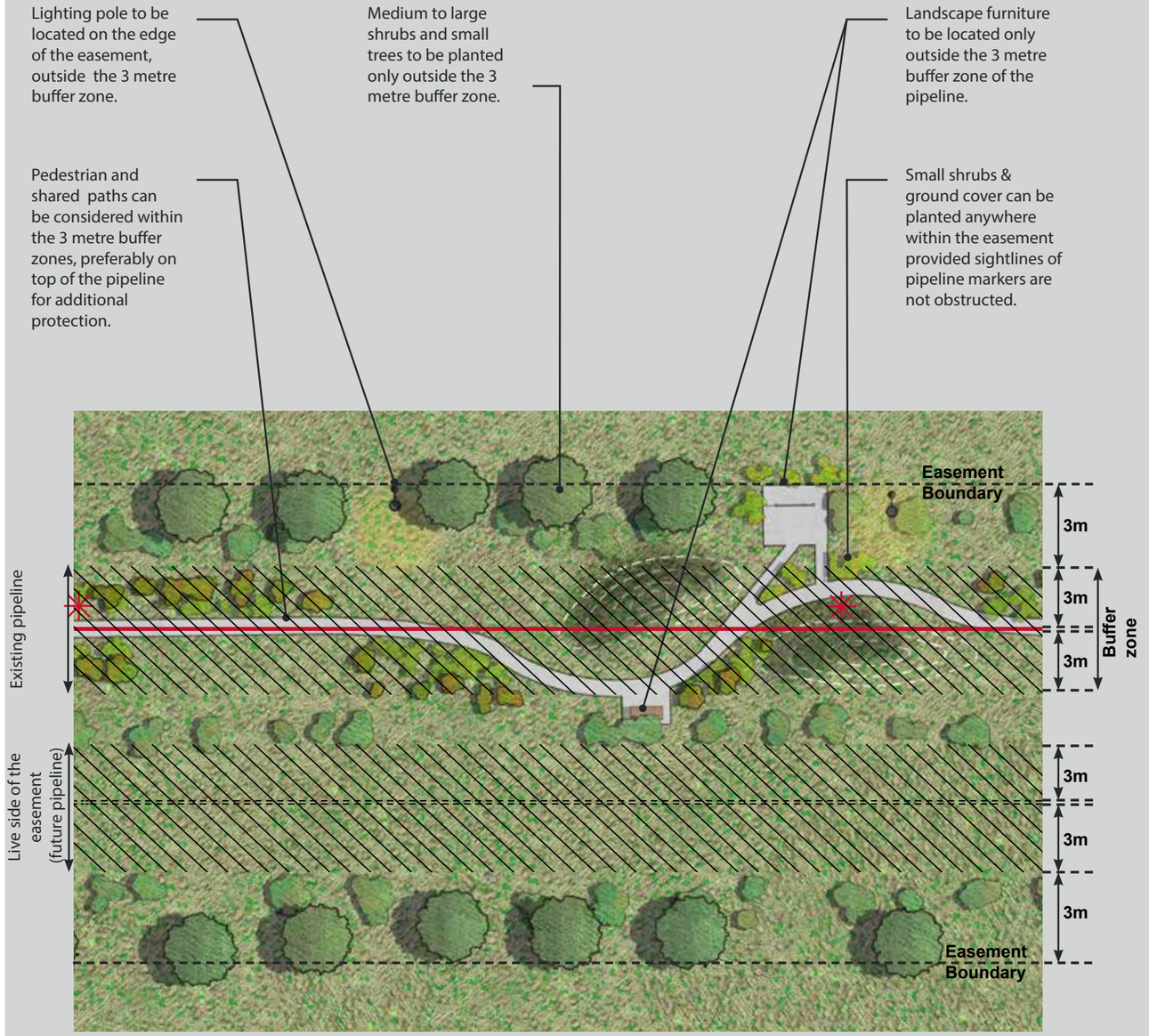
Likewise lighting poles can be proposed and would have the same requirements as described above.

Planting:

Small trees and medium/large shrub planting will be considered on the easement, however they should be located outside of the 3m buffer area on either side of the pipeline and preferably not on the live side of the easement.

Small shrubs, groundcovers with limited size root balls and lawn can be installed in any location on the easement.

Refer to the section 'Planting' on page 21 for further information.



20m Wide easement linear reserve - Typical plan

Paths and hard surfaces

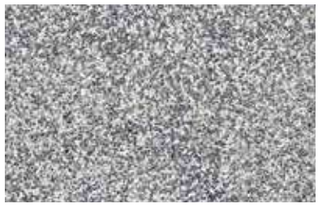
Material selections

Hard paved areas

Hard paved areas can be either paths and seating areas, and will be constructed in:

- Broom finish concrete
- Exposed aggregate and coloured concrete
- Any other finishes agreed with APA

Broom finish concrete



Exposed aggregate concrete

Gravel areas & edge

A cement stabilised, compacted gravel path can be used as an alternative to a hard paved treatment. Gravel paths can have timber or steel edges.

Gravel

Timber edge

	Recomended size	Material	Maximum depth of excavation
Paths	2.5m wide pedestrian & bike path	Concrete/ gravel	200mm
Other paved areas	Size of furniture + additional 300mm on each side	Concrete (so furniture can be bolted to it)	200mm

Steel edge

Furniture

Furniture selection

Simple furniture and feature elements can be proposed within the landscape design for APA easements (subject to approval), such as:

- Seats and benches
- Rubbish bins
- Sculptures
- Bike racks
- Directional signage
- Fitness equipment

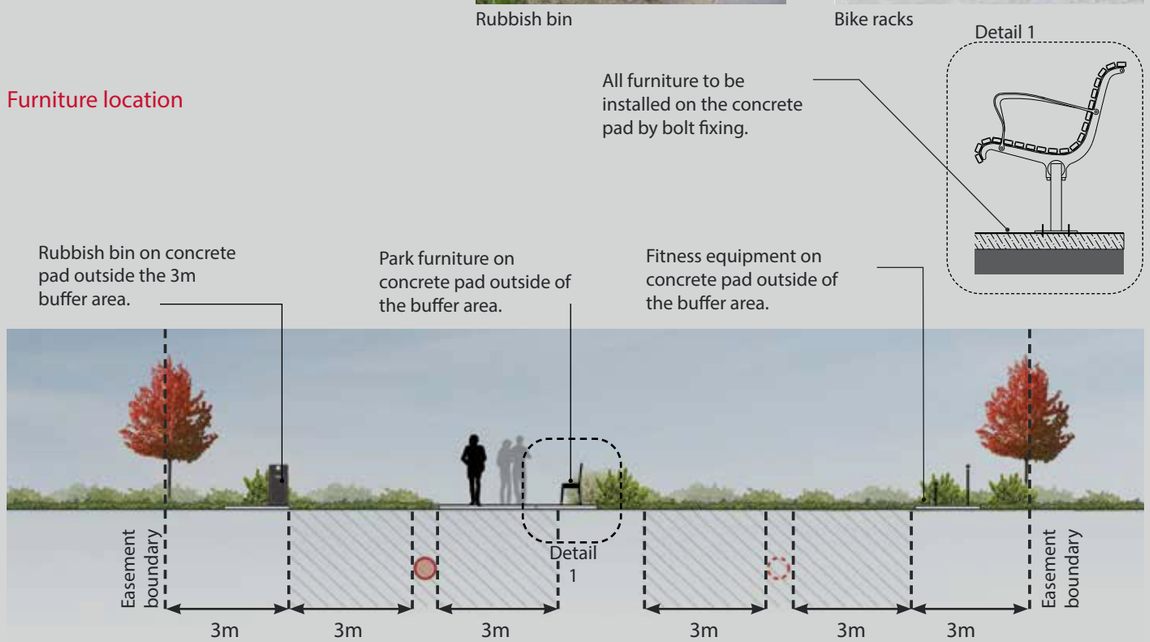
Fitness equipment

Seat & benches

Rubbish bin

Bike racks

Furniture location



20m Easement reserve & furniture location - Typical section

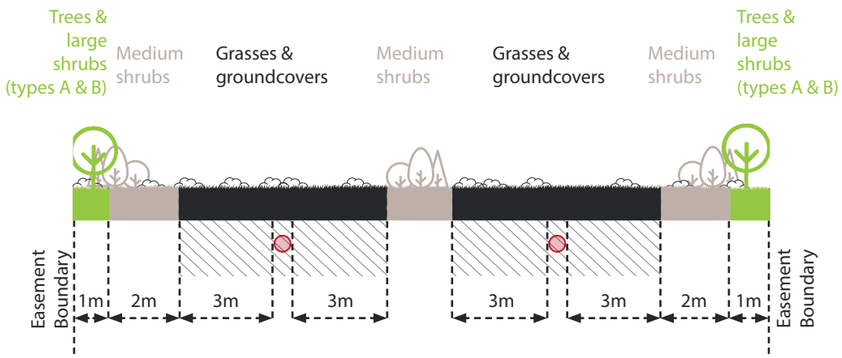
Planting

Planting is an important component of landscape design and good visual outcomes can be achieved within the easements with a well planned planting design.

Planting selection

Grass, small shrubs and groundcovers are permitted within APA easements. Small trees and large shrubs might be permitted however the key issues for consideration are:

- Be careful not to spread weeds.
- Choose appropriate plants for your area.
- For the purpose of pipeline accessibility, medium/small trees and large shrubs must be installed outside of the 3m buffer area.
- Small trees can be considered on the live side of the easement if located close to its edge.
- Proximity of tree roots can disband pipeline protective coating, which creates a risk to the pipeline. Also, roots wrapping around the pipeline can damage the pipeline in the event of tree removal.
- Ensure that trees and large shrubs do not obscure the visibility of marker posts from one another.
- Explore the possible use of root barriers as an option if appropriate.
- Applicants to clearly show information about maximum size of root balls, maximum tree growth on landscape plans for APA to review.
- It is APA's preference that higher vegetation is not installed on the 'live side' of the easement.



Planting selection & locations - Typical diagram

Tree & large shrub selection Type A

Small trees and large shrubs should adhere to the specification below:

	Mature Height	Mature Canopy Diameter	Mature root ball diameter
Maximum size	8m	5m	5m
Species example	*Acer platanoides 'Crimson Sentry'* *Agonis flexuosa burgundy* *Acmena smithii sublime* *Banksia marginate* *Corymbia citriodora dwarf* *Callistemon viminalis* *Tristaniopsis laurina 'luscious'* *Lagerstroemia sp* *Liquidambar styraciflua 'Golden sun'* *Koelreuteria paniculata* *Fraxinus griffithii*		

Corymbia citriodora dwarf

Callistemon viminalis

Fraxinus griffithii

Tree & large shrub selection Type B

Tall trees and shrubs can be selected if they have a rootball with a small diameter, as specified below;

	Mature Height	Mature Canopy Diameter	Mature root ball diameter
Maximum size	12m	3m	3m
Species examples	*Betula pendula fastigiata* *Cedrella sinensis* *Grevillea baileyana* *Pyrus calleriana capital / edgewood* *Syzygium australe pinnacle*		

Cedrella sinensis

Betula pendula 'fastigiata'

Pyrus calleriana 'Capital'

Planting

Medium & small shrubs selection:

	Mature Height	Mature Diameter	Mature root ball
Maximum size	2.5m	3m	2m
Species examples	*Correa alba* *Acacia cognata 'Limelight'* *Callistemon viminalis 'Captain Cook'* *Goodenia ovata* *Rhagodia spinescens* *Westringia naringa*		

Westringia naringa

Rhagodia spinescens

Ground cover & Grasses selection selection:

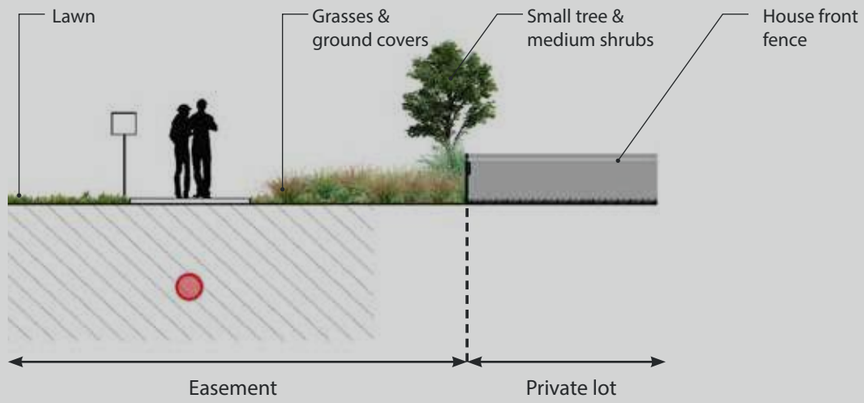
	Mature Height	Mature Diameter	Mature root ball
Maximum size	0.7m	1.5m	–
Species examples	*Myoporum parviflora* *Dianella sp* *Liriope sp* *Carex testacea* *Isolepis nodosa* *Carpobrotus rossii* *Rosemary officinalis prostrate* *Hibbertia scandens* *Grevillea 'Poorinda royale mantle'*		

Myoporum parviflora

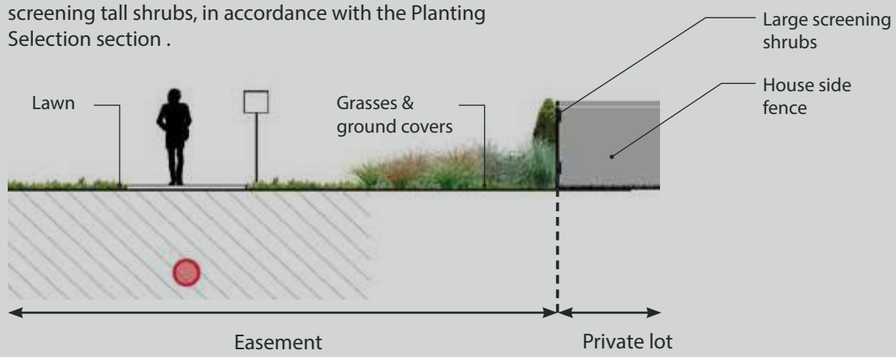
Carpobrotus rossii

Planting design

- Planting palettes are to be in accordance with the specifications provided on the Planting Selection section and will be subject to APA's approval.
- Planting design at the easement should respond to the proposed landscape design of adjacent areas (e.g. extending the visuals from adjacent parklands and streetscapes using the same trees if possible, and not blocking the views with large and medium shrubs at the easement boundary with those areas).
- Planting design at the easement should be cognisant of adjacent uses and building context (when applicable, e.g. by maintaining lower planting when adjacent to house frontage fences and not blocking solar light with trees and large shrub planting when adjacent to housing).



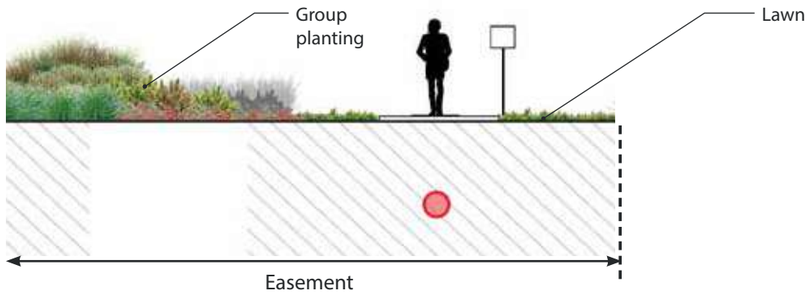
- Undesirable views from the easement linear reserve should be screened when possible, through the use of screening tall shrubs, in accordance with the Planting Selection section .



Planting

Planting design

• Planting should be proposed in large isolated groups and layered when possible to provide a contrasting composition of scales, colours and textures. Layering should be oriented to enhance the visual at interfaces such as back and side fences.

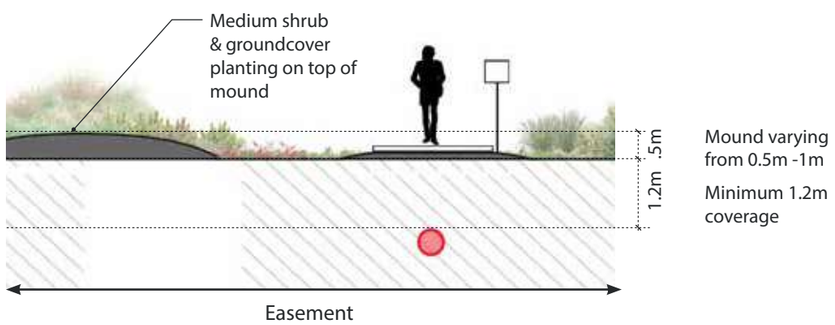


• Lawn is to be the predominant easement landscape treatment, in conjunction with groundcover and grass group planting in locations as specified on the Planting Selection section above. This will provide extensive green views along the linear reserve of easements. Ensure that consideration is given to ease of mowing, avoiding acute angles and tight spaces with a minimum lawn width of 2m to be provided.

Soil and Mounding

• Additional soil layers or mounding can be considered on the landscape design for the easement reserve. A minimum of 1.2m soil coverage is to be maintained at all times on the easement unless otherwise specified by APA. Soil can be added on top of this cover to add protection and provide some visual interest to the corridor.

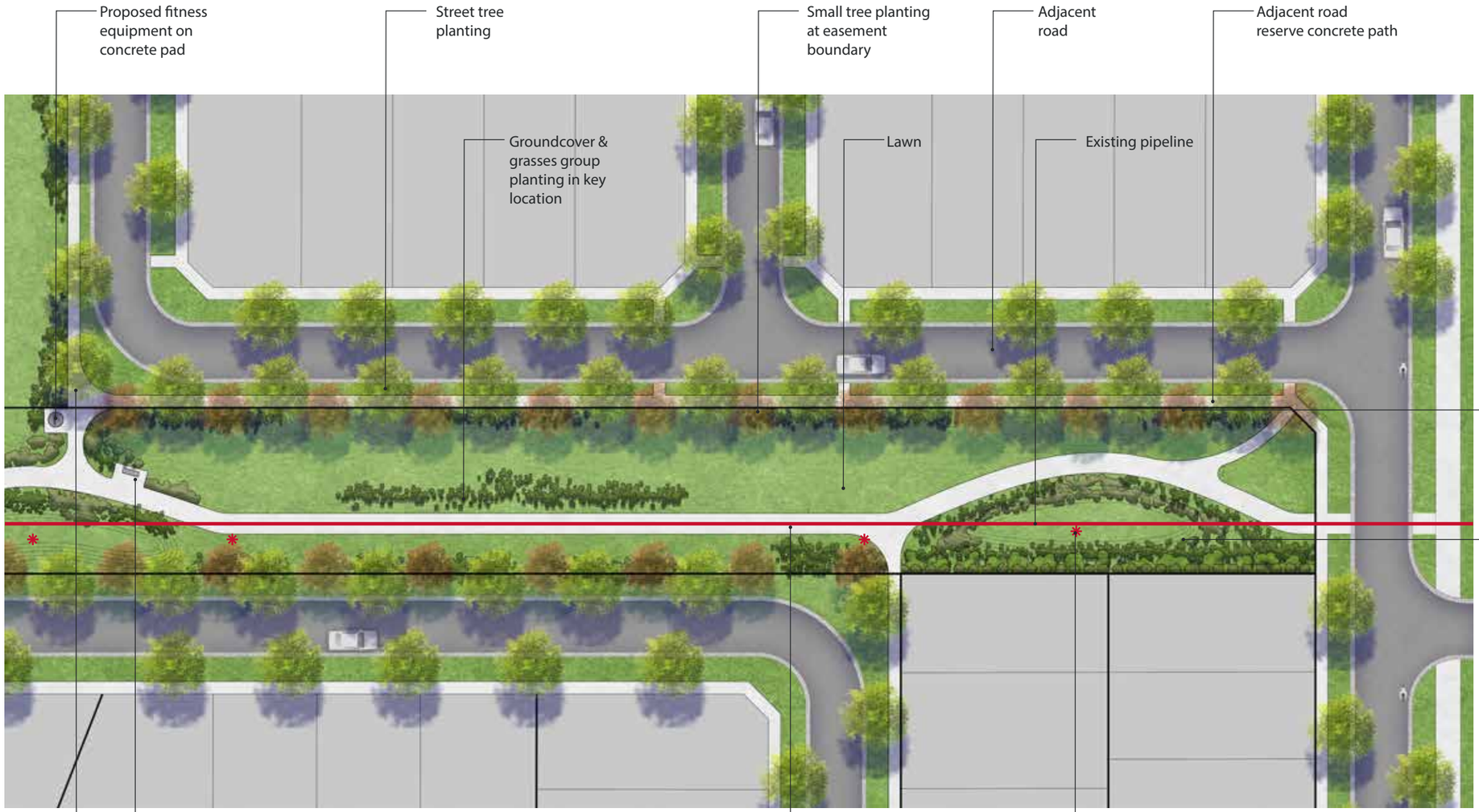
• Mounding can have shrub planting, paths and small furniture on it. Ensure that the pipeline marker is located over the pipeline and remains visible at all times.



Precedent images - Mounding with lawn

landscape design examples

Scenario 1 – Easement adjacent to Road or Street

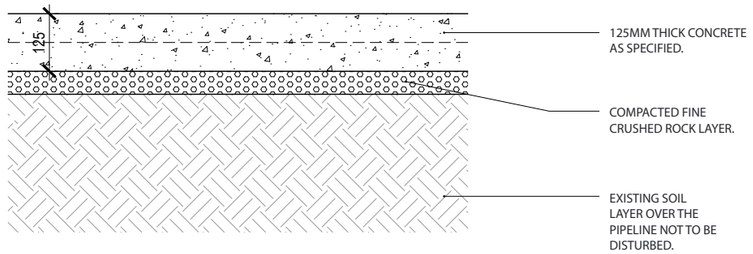


Scenario 2 – Easement adjacent to Reserve or Parkland

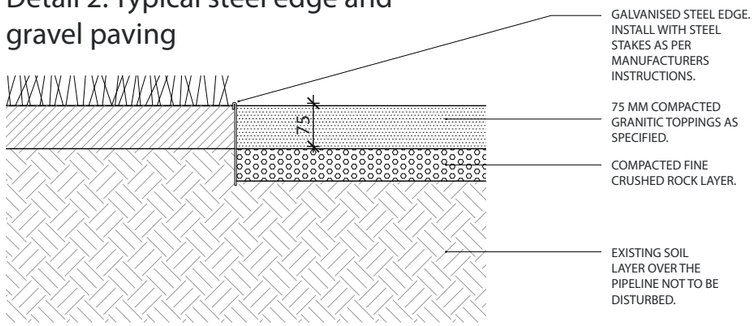
Technical details & notes

NOTE: DETAILS BELOW ARE INDICATIVE AND WILL BE SUPERSEDED BY COUNCIL STANDARD DETAILS.

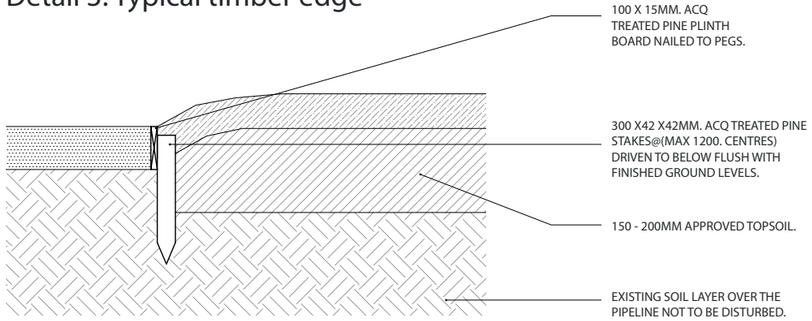
Detail 1: Typical concrete pavement



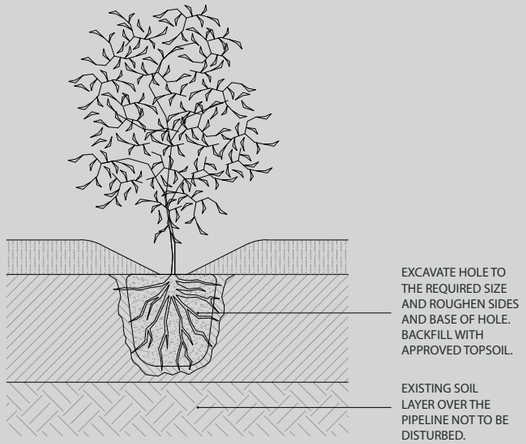
Detail 2: Typical steel edge and gravel paving



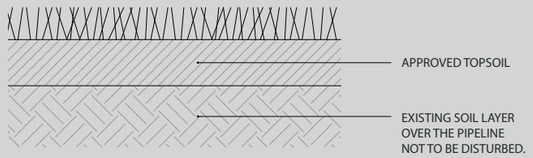
Detail 3: Typical timber edge



Detail 4: Typical small shrub / groundcover



Detail 5: Typical lawn



5
approvals.

approval process & requirements

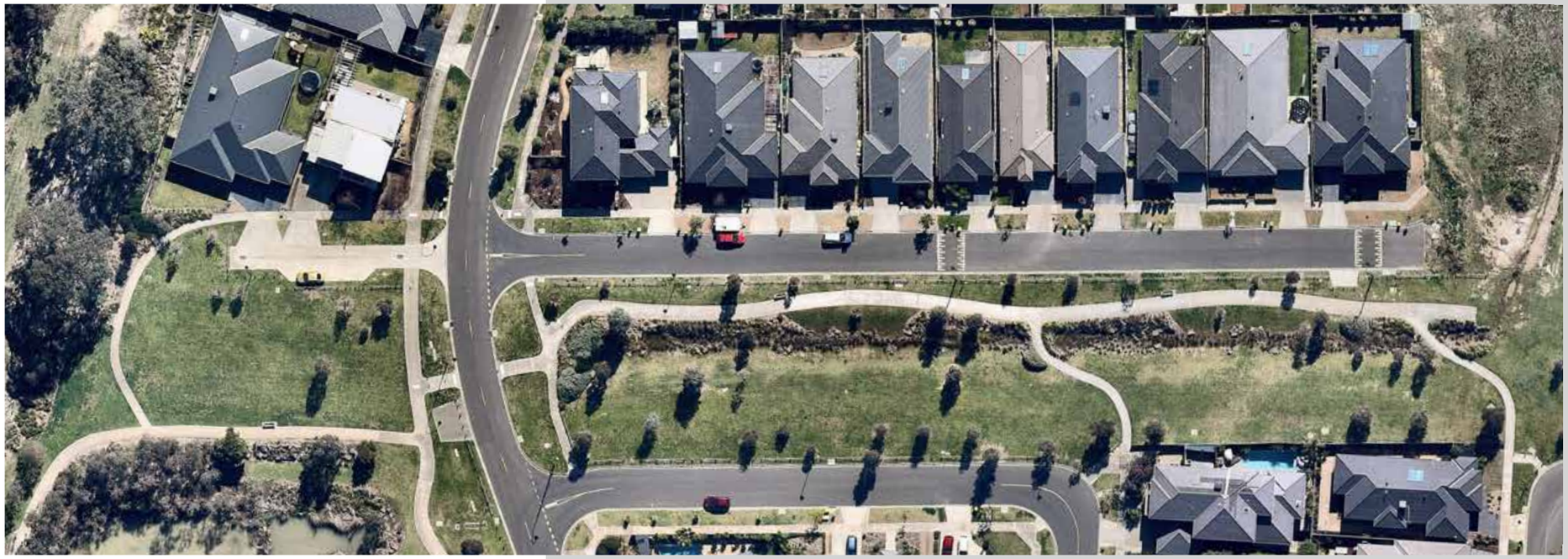
APA is a referral authority in all states and territories in Australia for planning application to subdivide land that includes an APA gas pipeline easement.

APA will continue to collaborate with local authorities to ensure safe land use around the gas pipelines, and can also provide local authorities with mapping via the Australian Pipeline Database to assist in identifying our pipelines and assets.

Third party works approval is required for any works within an APA easement or within three (3) metres of the pipeline, where no easement exists.

Applications for APA approval should include:
- A professionally prepared landscape plan by a qualified landscape architect.
- Details and specification of any earthworks proposed on the easement/pipeline area.
- Planting plan and schedule showing species, quantities, size when installed, mature size, height, canopy and root ball sizes.
- Likely timing of works.

Call APA on 1800 427 532 for further information or go to www.apa.com.au



Aerial view of apa easement in Victoria (apa photo)

6 questions.

frequently asked questions

Approval Process
What are the notification requirements for subdivisions containing APA easements?

APA is a referral authority for planning applications to subdivide land that include APA pipeline easement in all states and territories in Australia. As such, the Responsible Authority will notify APA directly, or require applicants to notify APA of their proposed subdivision for APA consideration.

What are the approval requirements for works within APA easements?

3rd party works approval is required for any works within APA's easements or within 3m of the pipeline (where no easement exists).

Pipeline Cover
What is the depth of the pipeline in relation to the finished surface level on an easement?

Typically the minimum depth of cover is between 0.90-1.2m from top of pipe to surface level, however the exact depth needs to be physically confirmed (proved) as in many instances surface levels change over time. APA will not permit the depth of cover to be reduced over the pipeline.

Services
Can services/infrastructure be located within easements or cross it?

APA does not generally allow other services to co-locate in its easements, however APA does permit service crossings. Crossings should be at 90 degrees and if possible the number of crossings should be limited. Service crossings require APA 3rd party works approval.

Roads and Streets
Can streets be located within easements or cross it?

APA does not allow roads to be located over its easements other than road crossings that are perpendicular to the easement (e.g at 90 degrees). Crossings will require protective slabbing of the pipeline and APA 3rd party works approval.

Is there a minimum distance between each crossing of streets, roads and services along an easement?

There is no minimum distance, however it is APA's preference to reduce the number of crossing points. APA would refer to relevant urban design block lengths in any given jurisdiction. Typically infrastructure crossing points should be grouped – all services together. There is also a cost associated with crossing the pipeline e.g. potential protective measures such as slabbing, possible recoating costs, proving and supervision costs, which are passed onto the developer as the agent of change.

Furniture & Playgrounds
Can furniture be installed within easements, like seats and picnic sets?

Yes, subject to 3rd party works approval, refer to these guidelines' Landscape Guidelines chapter. Please note that playground equipment should be located outside the easement.

Irrigation
Can irrigation be installed within easements?

Yes, as long as it is specific to managing the landscape on the linear reserve, subject to 3rd party works approval.

Lighting
Can light poles be installed within easements?

Yes, subject to 3rd party works approval.

Offset Distances
What is the minimum setback from the pipeline that needs to be maintained?

The minimum setback to be maintained from the pipeline within the easement is 3m for any excavation works. Preferably an additional 2m either side (total 5m) for future access/working room should not be significantly embellished.

Any excavation greater than 300mm within the easement will require supervision by an APA officer. Significant trees should not be located on the live side of the easement (to allow for future pipelines if required).