

Construction in the Vicinity of and Protection of Council Underground Assets Procedure

1 Purpose

All individuals have a duty of care they must observe when working in the vicinity of any underground Network Asset. And Council requires reasonable access to any Network Asset to enable maintenance, repair and/or possible replacement in perpetuity.

2 Scope

This Procedure applies to any developer or contractor, building or undertaking earthworks in the vicinity of any Council underground assets.

3 Procedure

3.1 Types of Construction Activity

3.1.1 Buildings and Structures

This applies to but is not limited to heavy or permanent structures such as: dwelling houses/units, factories, warehouses, enclosed garages / workshops, concrete rainwater tanks etc.

Where a Network Asset is less than 1.5 metres deep, a structure may be built to one (1) metre from the main or manhole/pit, providing the building's footings are supported by approved piers to the invert level of the main or manhole/pit. The piers must support the footings for a distance away from the main or manhole/pit, equal to the depth of the main or manhole/pit. See Figure 1.

Where a Network Asset is more than 1.5 metres deep, a structure may be built no closer than two (2) metres from the near side of the main or manhole/pit, providing the building's footings are supported by approved piers to the invert level of the main or manhole/pit. The piers must support the footings for a distance away from the main or manhole/pit, equal to the depth of the main or manhole/pit. See Figure 1.

A corner of a structure may be allowed to within 0.5 metres of a Network Asset, if the corner is cantilevered on footings that meet the criteria above.

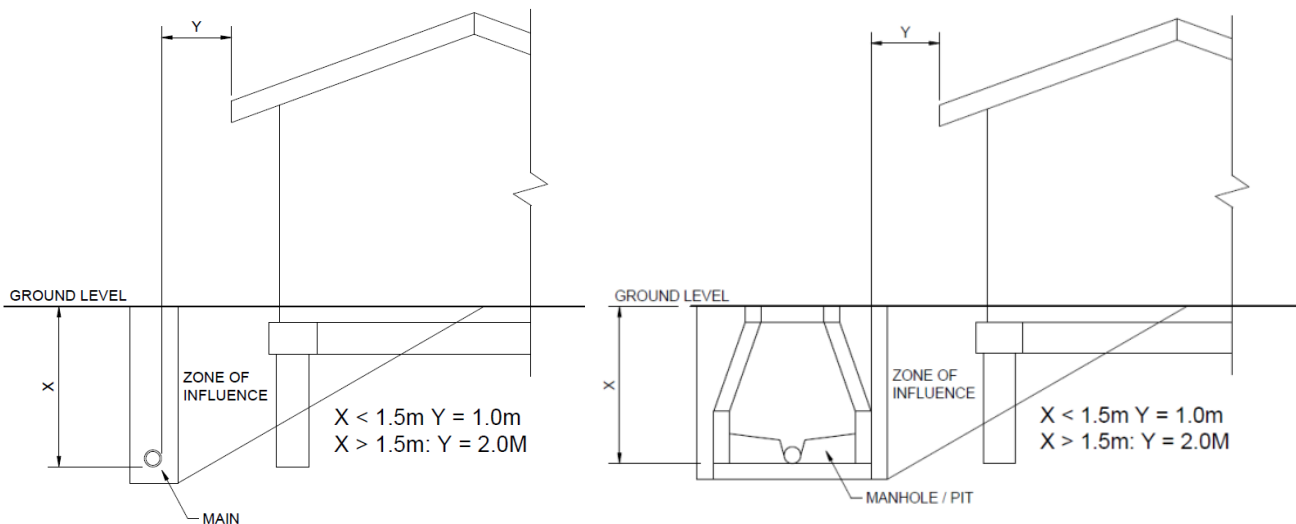


Figure 1: Building in Vicinity of Underground Assets Clearances

3.1.2 Swimming Pools

Where it is proposed to build a pool in the vicinity of a Network Asset, and the main or manhole/pit is above the bottom of the pool, the pool may be positioned no closer than one (1) metre from any network main or manhole. Pool coping above allowable network mains is acceptable.

Where the main or manhole/pit is below the bottom of the pool, a strip footing along the length of the pool adjacent to the main or manhole/pit must be provided. This footing must be supported by concrete piers to the invert level of the main or manhole/pit. Similar to structures, allowable clearance between the main and the pool will vary with the depth of the main or manhole/pit:

- Less than 1.5 metres deep – one (1) metre clearance, see Figure 1
- More than 1.5 metres deep- two (2) metres clearance, see Figure 1

3.1.3 Retaining Walls and Masonry Fences

Where a retaining wall or masonry fence is proposed to be constructed parallel to a Network Asset the strip footing along the length of the retaining wall/fence must be supported by approved piers to the invert level of the main or manhole/pit. Similar to structures, allowable clearance between the main or manhole/pit and the retaining wall/fence will vary with the depth of the main or manhole/pit:

- Less than 1.5 metres deep – one (1) metre clearance, see Figure 1
- More than 1.5 metres deep- two (2) metres clearance, see Figure 1

Where the retaining wall/fence crosses the Council main the strip footings shall be constructed to bridge the main and be supported on approved piers at least 1.0 metre from the sides of the main, and to the invert of the main. A retaining wall or masonry fence is not permitted to be built over a Council manhole/pit etc.

3.1.4 Earthworks Over and Adjacent to Network Assets

General

Caution must be exercised when altering the cover to gravity mains and pressure mains.

Consequences

Increased cover may cause the pipe to fail under increased bearing forces; or local increases (such as mass retaining walls) may cause failure due to differential settlement. Manholes/pits might be buried

by landscaping. Toes of fill batters may be unstable near pipe trenches, or become unstable when trenches are excavated.

Decreased vertical cover may expose the pipe to accidental breakage by transient loading from vehicles. Decreased lateral cover may result in slumping out of the backfill and/or pipe, or washing out of sand bedding carrying groundwater.

Filling over Network Asset

The allowable depth of fill that can be placed over a Council main depends on the material type and stiffness class of the existing pipe. Site filling that increases the depth of the Council main to more than 2.5m will require an application to Council and subsequent approval.

The placing of fill to excessive depths over Council mains is not permitted (3 metres is a maximum depth for practical access) regardless of the structural capacity of the pipe.

No fill is to be placed over any manhole, pit or shaft and any manhole, pit, or shafts are to be raised in conjunction with any site filling. As Council does not permit private contractors to work on Council’s live assets, the raising of any manhole, pit or shaft etc. shall be carried out by Council.

Excavation over Network Asset

Excavations over a sewer main should not to reduce the earth cover over the main to less than:

- Private residential property, not subject to vehicular loading – 600mm
- Private residential property, subject to vehicular loading – 750mm
- Non-residential property – 750mm

Any proposal to reduce cover over a sewer to less than the above will require an application to Council and subsequent approval.

Excavation adjacent to Network Asset

There is potential that excavations adjacent to an existing Network Asset could present a risk of land slip or erosion of soil providing cover and/or side support to the main or manhole/pit.

Any proposed excavation adjacent to an existing main or manhole/pit should not disturb the assets zone of stability.

The zone of stability shall be determined by extending a line at an angle of 3 (Horizontal) to 1 (Vertical) to the surface, starting from a point 1 metre from the pipes centreline and the minimum cover over the pipe, as shown in Figure 2.

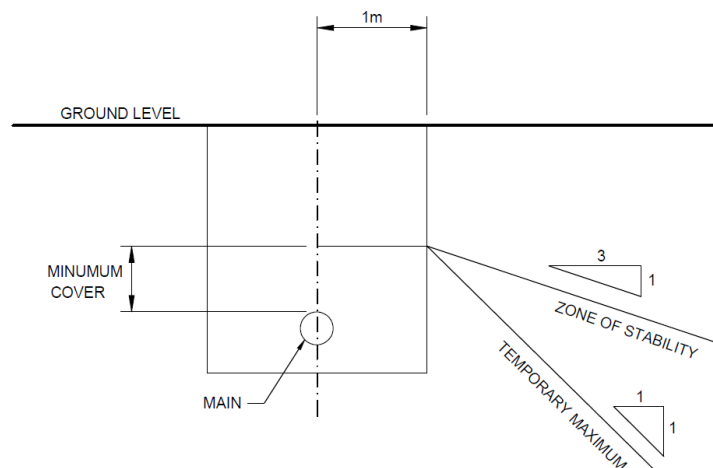


Figure 2: Zone of Stability

Excavation within the zone of stability would be permitted only where a suitably qualified and experienced geotechnical engineer has certified that the excavation will not jeopardise the stability of the sewer main.

The angle of repose may be increased (max (1H:1V) for temporary earthworks.

Retaining walls may be required to provide support down slope of existing sewer mains if substantial regrading is proposed.

3.1.5 Existing Structures

Where structures have been built over any Network Asset without Council approval then Council may require that the structure be demolished, moved or substantially modified so that it complies with this procedure.

Where it is necessary to access any Network Asset for maintenance or repair work Council will not be liable for the cost of restoring any structures erected without Council approval and the property owner may be charged to fund any additional work required to be undertaken because of that structure.

Where council has previously granted permission for a structure to be built in the vicinity of any Network Asset, no further extensions, additions or reconstructions will be allowed without further assessment.

3.1.6 Demolition Works

Demolition works are not to damage any Network Asset and are not to proceed without Council approval or contrary to any conditions of approval.

It is the responsibility of the landholder or their agents to undertake an inspection, recording the condition of Council's assets (manhole, manhole lid(s), meter assembly, hydrants and valve covers etc.) before demolition works commence. A failure to identify faults prior to the commencement of demolition works may result in Council attributing the cost of repairs to the landholder. Any faults found should be reported to Council prior to works commencing.

Council may inspect the site upon completion of the demolition, or prior to redevelopment to ensure all conditions of the demolition approval are adhered to. And the following actions to be adhered to:

- Any network valve, hydrants, manholes, inspection shaft etc. must be located, marked and protected from damage.
- All valves, hydrants, manholes, meters, inspection shaft etc. must be accessible to Council at all times.
- All hydrants must be accessible to the fire brigade at all times.
- Before demolition works commence, a licensed plumber must disconnect the internal water plumbing from the downstream side of the meter.
- Before demolition works commence, a licensed drainer must cap the internal sanitary drain (approximately 3 metres from the sewer inspection shaft)
- If required, disconnection of the water service will be undertaken by Council at the property owner's expense.
- If required, capping or permanent disconnection of the property sewer connection will be undertaken by Council at the property owner's expense.

If network assets are damaged by demolition related activities, Council repair costs will be charged to the person(s) responsible for that damage. Damage occurring inside the property boundaries will be attributed to the property owner. Costs to repair damage occurring outside the property boundary are commonly assigned to the responsible party causing the damage.

3.1.7 Construction / Civil Works on Public Land or Road Reserves

The following steps must be taken to positively identify any underground Network Asset prior to performing mechanical excavation or driving objects into the ground near buried services:

- A minimum separation distance of **300 mm** must be maintained between any Network Asset and mechanical digging / boring components.
- Physical inspection of the planned worksite and surrounding areas to assess the working environment and identify any other visual indicators of underground Network Asset.
- Positive identification of any Network Asset with potential to encroach within minimum 5 m of the planned area of works. Positive identification includes the use of non-destructive methods to confirm the location, depth and direction of buried services. Such methods may include the use of vacuum excavation, ground penetrating radar/technology, insulated prodder, locators or hand digging.
- Mandatory potholing (visual verification using vacuum excavation or hand digging) of any Network Asset that encroaches within **500 mm** of the planned area of mechanical excavation or ground penetration.
- Protect any Network Asset when working in the vicinity of it.
- Driveways constructed in residential, commercial or industrial areas to comply with Council's Driveway Policy and Standard Drawing SD DW01. A driveway cannot be built over any visible asset, being but not limited to a valve, hydrant, stormwater pit, access chamber etc.

Council may hold individuals and/or companies liable for all damage caused to their network if it can be shown that negligent or careless behaviour caused the damage.

3.1.8 Planting over Gravity Sewers

Tree roots can penetrate into sewerage pipes through joints or damaged sections of pipe, causing blockages and subsequent overflows. As a result, certain species are not recommended to be planted near sewer mains. A list of the highest risk species is provided in Appendix A.

When any tree planting is proposed in the vicinity of Council underground ground services on private property, careful consideration of species selection, soil type, planting technique, available root space and the appropriateness of root control measures are needed to ensure damage is avoided or minimised. In the vicinity will generally mean within the expected mature "drip line" of a tree or at least a radius from the centre of the trunk equal to 10 times the mature trunk diameter, whichever is greater. Tree planting and growth from trees should also not place any undue burden in the form of risk or maintenance on adjacent land or property that may have Council underground ground services. Any person or organisation should seek Council advice prior to planting.

Where a tree/palm/shrub on a private property has roots that are constantly penetrating Councils sewerage pipes the property owner will be requested to remove the offending tree at their cost. Should a property owner refuse to remove an offending tree Council may impose a service charge for future call outs to clear blockages caused by root intrusion from the offending tree.

Any person or organisation wishing to plant trees, shrubs or undertake any landscaping within the road reserve, open space or other land under the control of Council must seek Council approval.

3.1.9 Miscellaneous Structures (on private land)

Structures in this category do not normally require protection of the sewer mains.

Structures in this category include:

- Fences (timber, steel, aluminium)
- Driveways (concrete, asphalt, gravel, etc.)
- Paved areas

As long as minimum depth requirements for underground services have been met, no special protection measures for the services should be required. The minimum depth requirements are:

- Private residential property, not subject to vehicular loading – 600mm
- Private residential property, subject to vehicular loading – 750mm
- Non-residential property – 750mm

However, if uncertainty exists in cases of anticipated high loadings or where mains are less than minimum depth, advice shall be sought from Council. Any special conditions applied to Miscellaneous Structures would be on a case-by-case basis. The requirements for access to the existing underground network outlined in this procedure apply.

Where Council is required to access the underground services for repairs or renewal, and Council causes damage to Miscellaneous Structures when carrying out that work, Council will arrange reinstatement to pre-access condition as far as is practicable.

3.2 General Requirements and Exemptions

Where footings are to be supported by piers, the pier size and spacing shall be certified by a suitably qualified engineer to be able to support the footings, and the footings certified to be able to bridge between the nominated pier spacing's.

The building and its foundations are to be designed in such a way that no building loads are transmitted to the Network Asset and where possible, the pipe can be repaired or replaced at any time without affecting the stability of the building.

Where a conflict may occur, the owner shall obtain survey accurate data to evaluate the relationship between the building and the Network Asset.

Minor structures, (e.g. open awnings, pergolas and single carports), may be permitted as encroachments over Council mains, conditional to these structures being able to be dismantled. Special Council approval is required in such instances.

Driveways and parking areas on private land are permitted over Network Asset. Manholes/Pits or Inspection Shafts (I.S.) in these areas to be flush with finished surface and isolated by jointing material around the manhole/pit or I.S.

In situations where the position of the Council main is seen to unduly encumber the building envelope, the owner may make special application to Council. Council will consider the approval of building encroachments over Council main in some circumstances, if Council Design Branch can ensure no damage will occur to the main and future access to the main will not be reasonably needed. Some methods include, but are not limited to:-

3.2.1 Relocation / Redesign of proposed Building

In all instances the first option considered should be the relocation of the proposed building away from the existing Network Asset.

3.2.2 Relocation of Network Assets

Council will only consider relocation of existing Network Asset assets if the applicant can demonstrate that building away from the Network Asset adversely restricts the use of the land. Any relocation works need to ensure all required design standards (cover, grade, position) are still met and that the capacity/functionality of the assets is not reduced. Any relocation works to be designed by a certified engineer.

3.2.3 Building over Council Mains

Council will only consider a building/structure over the Council main in exceptional circumstances and then only if the applicant can demonstrate that relocating the building/structure and/or relocation of the Council main is not feasible. The Council main to be relayed in HDPE pressure pipe or equivalent and in the case of gravity sewer, from manhole to manhole. Other services to be assessed at the time of application. The Council main to be bridged with footings supported on concrete at least 1.0 metre from the sides of the Council main and with piers to the invert of the Council main.

3.2.4 Construction not permitted

Structures will not be permitted to be built over and/or in close proximity to the following:

- Pressure mains, surcharge mains, stormwater mains and critical sewer gravity mains (generally all sewer mains of diameter greater than 300mm and/or deemed to be excessively deep ie. greater than 3.0m), or as determined by Council.
- Any gravity sewer that, in the opinion of Council, is in a poor condition. Exposing of the sewer, and/or CCTV will be required prior to construction. This inspection may determine that repair/replacement may be required. Any subsequent repair/replacement work will be at the Applicant's cost.
- Sewer manholes, lampholes, maintenance points and junctions, pits where sufficient clearances cannot be achieved.
- No building within Council easements.

3.2.5 Zone of influence

The Zone of Influence is an area extending both horizontally and longitudinally along the alignment of an underground asset. This area is considered as that part of the ground where:

- Settlement or disturbance of the ground surrounding the pipe may cause damage to buildings or structures on the surface above
- Loads from buildings or structures on the surface may have an impact on the buried pipe

The zone of influence shall be determined by extending a line at an angle of 2 (Horizontal): 1 (Vertical) to the surface, starting from a point 150mm below the invert of the service main and half of the trench width measured horizontally from the pipes centreline, see Figure 3.

Table 1: Trench Widths

Pipe Diameter	Trench Width (W) for ZOI Calculation
≤300mm	900mm
>300mm - ≤450mm	Diameter + 700mm
> 450mm - ≤900mm	Diameter + 900mm

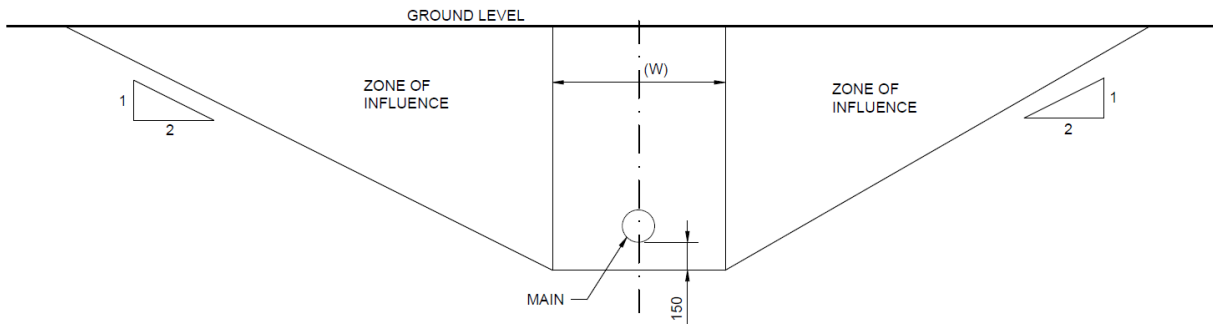


Figure 3: Zone of Influence

Note: The above trench width has made allowance for possible trench support requirements.

It is Council’s discretion whether to consider a steeper angle of repose (max 1H:1V) for stiff soils (clays etc.). Geotechnical investigations and a report from a suitably qualified and experienced Geotechnical Engineer need to be provided by the applicant to support such requests.

3.2.6 Existing Asbestos Cement (AC) and Vitreous Clay (VC) pipes

In all circumstances Council will not allow construction within the zone of influence of existing Asbestos Cement (AC) and Vitreous Clay (VC) pipes without their replacement/relining with PVC or equivalent pipe material and the installation of relevant protection measures.

In the case of gravity sewer Council may consider entering a cost sharing agreement where it is beneficial to Council to re-line a complete manhole to manhole length rather than the applicant just replacing a short section of pipe. This will be considered on a case by case basis where it is cost effective to Council.

This requirement is due to these pipe materials having a higher chance of disruptive failure modes e.g. collapse of AC pipe.

3.2.7 CCTV Inspection

Where a proposal to build in the vicinity of any Council gravity systems is conditionally accepted by Council the following will be required;

- A CCTV inspection of the subject Council gravity systems, undertaken by Council at the applicant’s expense.
- The results of the CCTV inspection are to be examined prior to the preparation of any design required to comply with this policy. The CCTV inspection may also be used as a dilapidation survey, as the basis to determine any repair work required to rectify damage to the gravity systems caused by the development.

3.2.8 Costs

The developer/applicant will be responsible for all costs associated with:

- Investigation and design, and any costs associated with seeking approval
- If approval is granted then all construction costs
- Repairing any damage to any Network Asset caused by construction near or over that existing Network Asset.

If Council decides to upsize a main that is to be relocated to accommodate development, then a cost sharing arrangement may be agreed to between both parties where Council will fund the additional

costs associated with installing a larger diameter main at the time of relocation. Note this will not apply where the increased capacity is required due to the subject development.

3.2.9 Access and Clearances

To facilitate access to mains for repairs or renewal an access corridor 3 metres wide over the main alignment is preferred.

Council requires that all access structures be accessible at all times in case of urgent maintenance, such as clearing blockages. Access structures include Manholes, Inspection Shafts and dead ends. Any proposed structure shall not prevent future access to maintenance access structures.

A minimum horizontal clearance of 1 metre is required around access structures as well as a minimum vertical clearance of 3 metres. The horizontal clearance shall increase to 2 metres if two or more sides of an access structure are built around. A fourth side must be open and accessible at all times.

Developments on properties with access manholes or dead ends must provide a minimum 0.9 metre wide clear access to the structures (eg. along the boundary between fence and building). This is necessary to allow council staff access with their "tools of trade" such as lid lifting and sewer cleaning equipment.

Developments that locate access structures in security areas must make suitable arrangements for access by Council's operations staff for maintenance or emergency work.

3.2.10 Works as Executed Plans

At the completion of the approved works, if there has been any engineering changes on site to the services, it is the Engineer/Surveyors responsibility to submit two (2) copies of Works as Executed plans supplied by a licenced surveyor prior to occupancy.

4 Definitions

Council: Coffs Harbour City Council

Network Asset: Any underground pipe, valve, pit, main, shaft or structure etc. owned by Council.

Sewer Pipes: Sewer pipes are any pipes that convey sewage by gravity.

Sewer Rising Mains: Sewer rising mains are pipes that convey sewage under pump pressure.

Water Mains: Water mains are pipes that convey drinking water under pressure.

Recycled Mains: Recycled mains are pipes that convey recycled water under pressure.

Stormwater Pipes: Stormwater pipes are any pipes that convey stormwater by gravity.

Inspection Shaft: This is the pipe rising to ground level that defines the connection point between the owner's pipes and Council's assets.

Manhole: Used to provide direct access to the sewer system for maintenance activities. Manholes are located where sewer pipes change direction or approximately every 120 metres on straight sections. Manholes are usually constructed of concrete and are a minimum 50mm above ground level to avoid ponding and inflow/infiltration problems.

Construction Activities: Any structures including buildings, houses, outbuildings, carports, garden sheds, retaining walls, fences, driveways. Any earthworks including cutting and/or filling, directional drilling etc. Or any other works that may have the potential to impact Council underground assets.

Easement: Land dedicated for water supply and sewerage assets. Not all land has easements and not all assets are located in easements. If land has an easement it will be shown on the Deposited Plan and described in the Section 88b Instrument attached to the land title.

5 Key Responsibilities

General Manager: To lead staff through delegated authority in their understanding of this Procedure.

Director Sustainable Infrastructure and Group Leader Strategic Asset Management: To ensure the commitment made within this Procedure is implemented and met.

Water Services Team Leader: To oversee compliance with, and coordination of the Procedure.

Council Officers: To promote the use of, and knowledge of this Procedure.

6 References

- Local Government Act 1993;
- Local Government (General) Regulation 2005;
- AS / NZS 3500 National Plumbing and Drainage Code;
- National Construction Code 2016 – Volume 3 – Plumbing Code of Australia
- Construction in the Vicinity of and Protection of Council Underground Assets Policy
- Driveway Policy

7 Details of Approval and revision

- **Approval date:** 13/02/2018
- **Responsible Section:** Water and Sewer
- **Superseded policies/procedures:** N/A
- **Next review date:** 23/08/2021

Table of amendments

Amendment	Authoriser	Approval ref	Date

8 Appendix A

Table of species not recommended to be planted near sewer mains

Botanical Name	Common Name	Damage Rating
<i>Cinnamomum camphora</i>	Camphor Laurel	Extreme
<i>Ficus</i> species	Fig Trees and Rubber Plants	Extreme
<i>Brachychiton populneus</i>	Kurrajong	Extreme
<i>Populus</i> species	Poplars	Extreme
<i>Salix</i> species	Willows	Extreme
<i>Melia azedarach</i>	Australian White Cedar	Very High
<i>Lauris noblis</i>	Bay Laurel	Very High
<i>Casuarina</i> species	Casuarinas	Very High
<i>Erythrina</i> species	Coral Trees	Very High
<i>Ulmus</i> species	Elms	Very High
<i>Robinia pseudoacacia</i>	Golden Robinia	Very High
<i>Eucalyptus</i> species	Gum Trees	Very High
<i>Brachychiton acerifolius</i>	Illawarra Flame Tree	Very High
<i>Jacaranda mimosifolia</i>	Jacaranda	Very High
<i>Liquidambar styraciflua</i>	Liquidambar	Very High
<i>Araucaria</i> species	Norfolk Island and Bunya Pines	Very High
<i>Schinus molle</i>	Pepper Tree	Very High
<i>Pinus</i> species	Pine Trees	Very High
<i>Platanus acerifolia</i>	Plane Tree	Very High
<i>Acer pseudoplatanus</i>	Sycamore	Very High
<i>Phyllostachys</i> species	Bamboo	High
<i>Bougainvillea</i> species	Bougainvilleas	High
<i>Lophostemon confertus</i>	Brush Box, Tristania	High
<i>Phoenix canariensis</i>	Canary Island Date Palm	High
<i>Fraxinus ornus</i>	Claret Ash, Manna Ash	High
<i>Callistemon citron's</i>	Crimson Bottlebrush	High
<i>Ilex</i> species	Hollies	High
<i>Magnolia</i> species	Magnolias	High
<i>Lagunaria patersonii</i>	Norfolk Island Hibiscus	High
<i>Nerium oleander</i>	Oleander	High
<i>Cortaderia</i> species	Pampas Grass	High
<i>Ligustrum</i> species	Privets	High
<i>Toxicodendron</i> species	Rhus Trees	High
<i>Grevillea robusta</i>	Silky Oak	High
<i>Wisteria</i> species	Wisteria	High