# *Arboricultural Impact Assessment Report*

# *40 Richmond St. Wardell,NSW 2477*

***Prepared for:*** ***Ballina Shire Council***
***Prepared on:*** ***29 April 2020***
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29 April 2020

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## Introduction

This report was requested by Ballina Shire Council to assess the Fig Tree and its potential damage to nearby structures and mitigation options pertaining to the tree. Cracks and adventitious surface roots are present in joins of the foot path and shop fronts at 40 Richmond Street, Wardell. On the 04th February 2020 the author of this report conducted a site inspection and Visual Tree Assessment where the biological and mechanical characteristics of the tree were considered as well as the determining details of the site.

## Methodology

A Visual Tree Assessment was conducted from the ground only and no invasive or diagnostic techniques were used when examining the tree. VTA observes the external indications given by the tree at the time of inspection to determine health and the structural integrity of the tree.

A tangent height gauge was used to measure tree height. Diameter at Breast Height (DBH) and other site measurements were taken using a double sided 10m diameter/measuring tape.

DBH was measured at the narrowest point below the whorls or fork in the trunk.

SRZ was calculated by measuring the trunks diameter immediately above ground level.

TPZ and SRZ radius was calculated using the arborlogix.com.au calculator.

Fig tree roots were identified by scraping the tissues to promote sap bleed. Fig trees excrete a white latex sap as an identifying characteristic.

## Observations

### Tree Schedule 40 Richmond Street, Wardell

| Tree No. | Species | Common name | DBH | Height | Canopy Spread | Health | Age | TPZ | SRZ | SULE |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Ficus microcarpa var.hillii | Hills Weeping Fig | 1090mm | 15m | 22m E-W | Good | Semi mature | 13.1m | 3.4m | 1C |

The tree is located in a 4.2 x 4.9m planter box confined by the road. The areas south west and north east of the tree are designated for parking. A low set single storey building with retail and food outlets operates to the north with the nearest eaves being approx. 9m away.

The area from the shop fronts to the curb is concreted in several individual slabs and serves as a public footpath. Tree roots are visible in numerous locations in between the slab joins

and interfaces between the slab and walls. The diameter of these roots varies between 20-40mm. The roots cannot be visibly traced back to the tree and there is no indication of roots breaching the tree pit. The roots are identified by the author of this report as roots pertaining to the subject tree.

Underground Telstra services are located in the street and indicated to be in line and parallel with the shop awnings. An underground low voltage line is indicated from the power pole north east of the tree in the direction of the shops. A professional service locator is required for a more accurate identification of services.

The tree appears in good health, abundant with fruit and healthy new growth, minor indication of pests (mites on new growth) and no diseases or fungal pathogens present at the time of inspection. The canopy is dense with no signs of dieback and less than 5% dead wood present.

Previous pruning works to raise the trees canopy for road clearances have occluded successfully. The tree is has a Safe Useful Life Expectancy (S.U.L.E) Rating of 1C : Trees that could be made suitable for long-term retention by remedial tree care. The tree appeared to be retainable at the time of assessment for over 40 years with an acceptable degree of risk, assuming reasonable maintenance.

## Discussion

The Fig forms part of an avenue of plantings along Richmond Street and is also listed on the Ballina Shire Council Significant Tree Register. Significant trees have a high level public profile and are governed by the requirements in BSC Urban Vegetation on Public Land Policy.

The planter box surrounding the tree comprises an area of 20.6m² or 7% of the total 539m² available in the Tree Protection Zone (a radius of 13.1m measured from the centre of the stem at ground level). The TPZ is a hypothetical area designated for protection of the root and crown of the tree. Development has encroached upon the TPZ by 93% over the years. The available area for root growth is limited yet the tree appears to be coping with this very well. Fig tree roots are extremely opportunistic and are expected to be colonising the area within the planter box as well as beneath the surrounding hard surfaces wherever conditions are favourable. This is evident in the joins of the concrete slabs and interfaces between the slab and walls. The damage caused is presumed to increase as the trees roots expand further in the future.

The location and size of the roots beneath the slab is unknown and halting their progress is difficult unless a linear approach is taken to cut a line between the tree and the shops.

Severing the roots outside the SRZ to install an impermeable root barrier would be the only feasible way to prevent further damage in the long term.

Excavations required to carry out the works would encroach upon the TPZ of the tree but remain outside the SRZ. The proposed site to excavate and severe the roots would be between 3.7m & 4.2m from the tree, a trench 500mm wide and 24m in long. This equates to a 12.1m² or 2.4% incursion of the total area available within TPZ radius and would be considered a minor encroachment by Australian Standard 4970-2009 Protection of trees on development sites.

The impacts of development upon a tree can take several years to become evident. Damage to the root system is common cause of tree decline and death and is the most common form of damage associated with development sites. (AS 4970 p24).

Fig trees are known to have a high tolerance to disturbance and the ability to adapt to changes in the landscape. The subject fig is a healthy tree with good vigour that has shown tolerance to disturbance and limiting growth factors, without any current indication of stress or decline. It is my opinion the tree will remain viable for many years to come given the correct protection and good horticultural practices to complement its recovery.

## Recommendations

Fig tree roots are robust and 1000um grade non permeable root barrier should be installed to specifics as detailed in the appendix of this report.

Installing the barrier will require cutting the concrete and trenching beneath the concourse to a depth of 1m. With regards to underground services the proposed site of the works would be along the south eastern edge where it meets the curb and drainage of the road. At its closest point the excavations would be 4.7m from the trunk of the tree. The trench should be between 300-500mm in width, beginning in line with eastern property boundary and 1-2m from the power pole. The trench will run adjacent to the gutter traversing in a south east direction for approximately 24m to stop in line with the western boundary. Dial before You Dig plans must be adhered to. The barrier should be installed flush along the southern side of the trench (or roadside) backfilled and compacted. Bentonite clay must line the bottom of the trench to a minimum depth of 50mm.This prevents root growth and inhibits roots from creeping under the barrier. The top of the barrier should remain visible but is recommended to be concreted into the join flush with the surrounding surfaces in the final phase of the works. Completion of the works is to be carried out be councils engineering department to repair the curb and walkway back to its original condition, leaving the top edge of the barrier enclosed but just visible below the concrete surface.

The location and size of the roots that may be encountered is unknown. Care should be taken to identify roots during the process by using careful excavation techniques (such as vacuum excavation) Any roots encountered with a diameter greater than 50mm are considered structural and are required to be neatly severed using clean sharp tools such as a reciprocating or hand saw. AQF level 5 Arborist is required to supervise all works and ensure they are carried out to Australian Standards. Any tree roots exposed during excavations should be kept moist until they can be reburied. Dampened hessian cloth wrapped around larger roots or draped over and into the trench will aid in reducing moisture loss and prevent roots from drying out.

The use of a beneficial soil fungicide such as Trichoderma would aid the recovery of severed roots. Trichoderma sp. establish in the root zone crowding out harmful pathogens reducing the risk of infection to the tree.

Tree roots noted in between the slab joins and interfaces between the slab and walls, will begin to dieback and dry out, this should induce some shrinking or reduction in size and diameter. The visible roots should be inspected by AQF L5 arborist 6 weeks after completion of works to determine the success of the procedure. The roots causing damage to the

structures may require removal for repair of the building. This works is suggested to be carried out by competent trade's people.

Following works the tree requires monitoring at regular 6 month intervals for a minimum period of 2 years. This should be carried out by an AQF L5 arborist to assess the impacts and monitor for signs of decline. At this time the root barrier should be checked for signs of breach.

The tree would benefit from good horticultural practices to complement its recovery. Deep watering of the tree at least once a week for a 3 week period and a clean layer of compost and mulch would improve soil quality and provide nutrients.

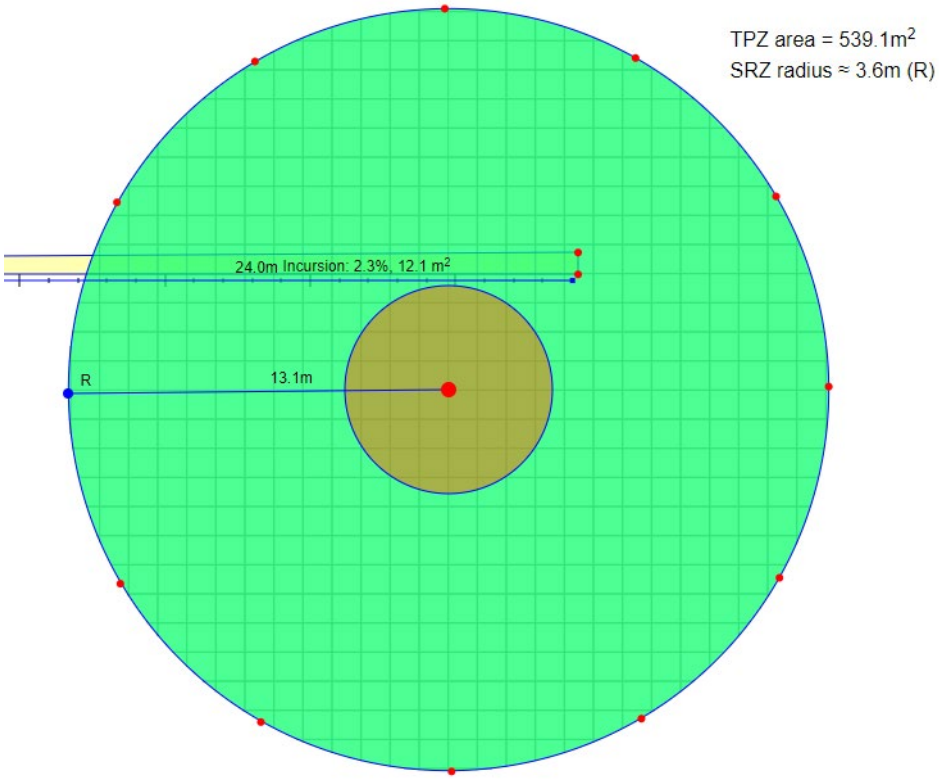
## Conclusion

Root barrier is considered a necessary and viable option. The tree plays an important role in the character of the street. Every effort should be made to ensure the effects from proposed works upon the tree are minimised and that future development give consideration to the health of the tree. The tree is in a vigorous state and has demonstrated past tolerance for disturbance within the TPZ and SRZ. However some decline in the trees health is to be expected from the works.

The indications of this may take several years to become evident and continued monitoring is required.

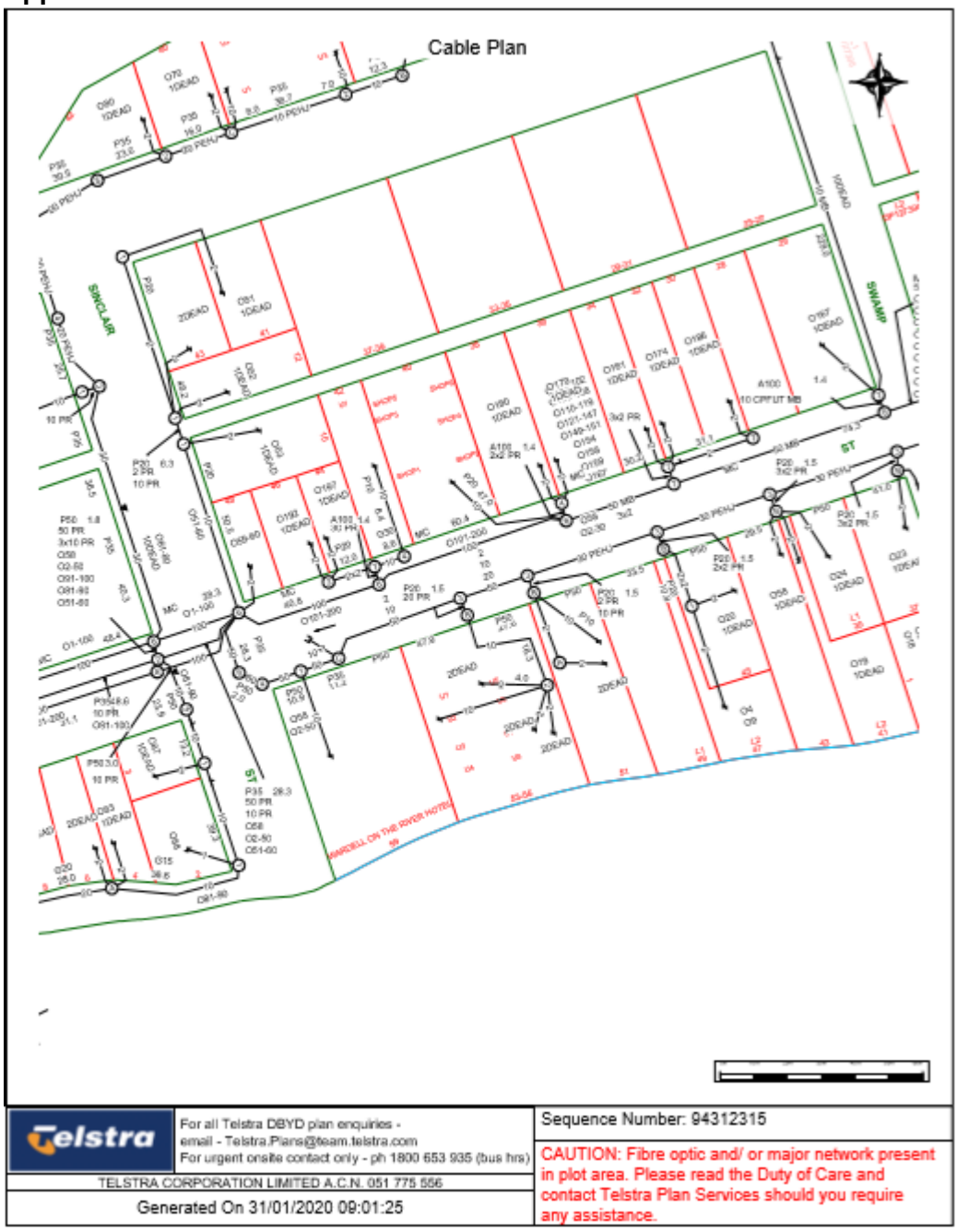
**Appendix 1:** Tree Location showing Root Barrier


**Appendix 2:** TPZ incursion calculator showing proposed trenching

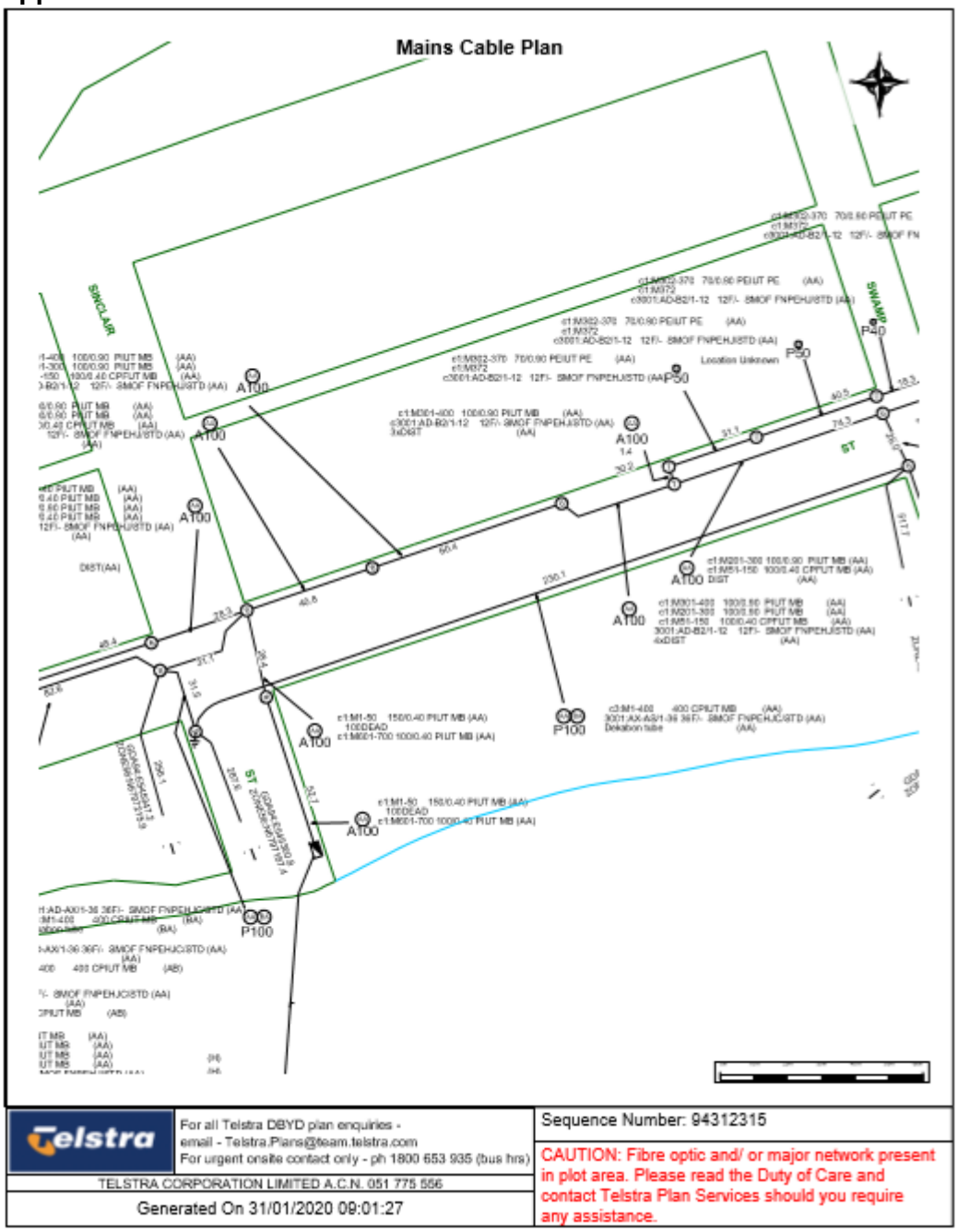



TPZ incursion calculator showing extent of proposed root barrier works.

## Appendix 3: Service Locations

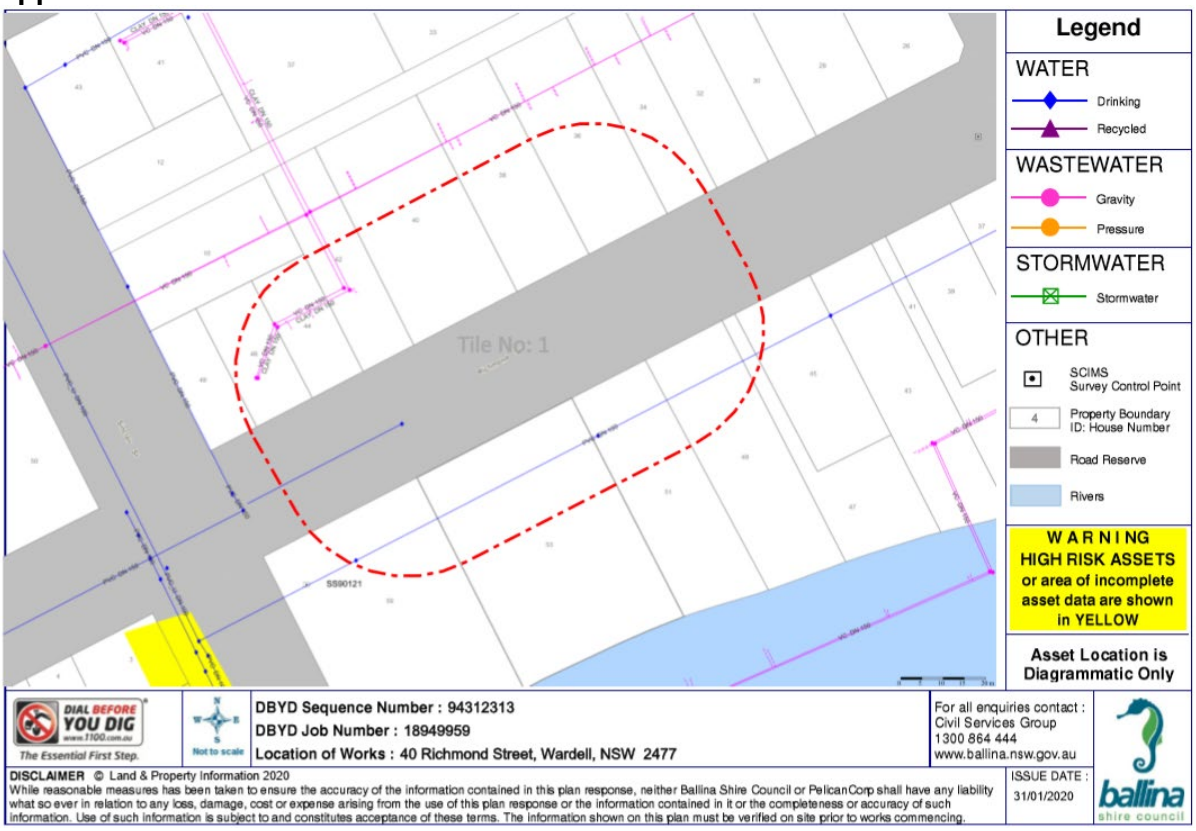


## Appendix 3.1: Service Locations



## Appendix 3.2: Service Locations

## Appendix 3.4: Service Locations



**Appendix 4:** Typical root barrier installation specifics

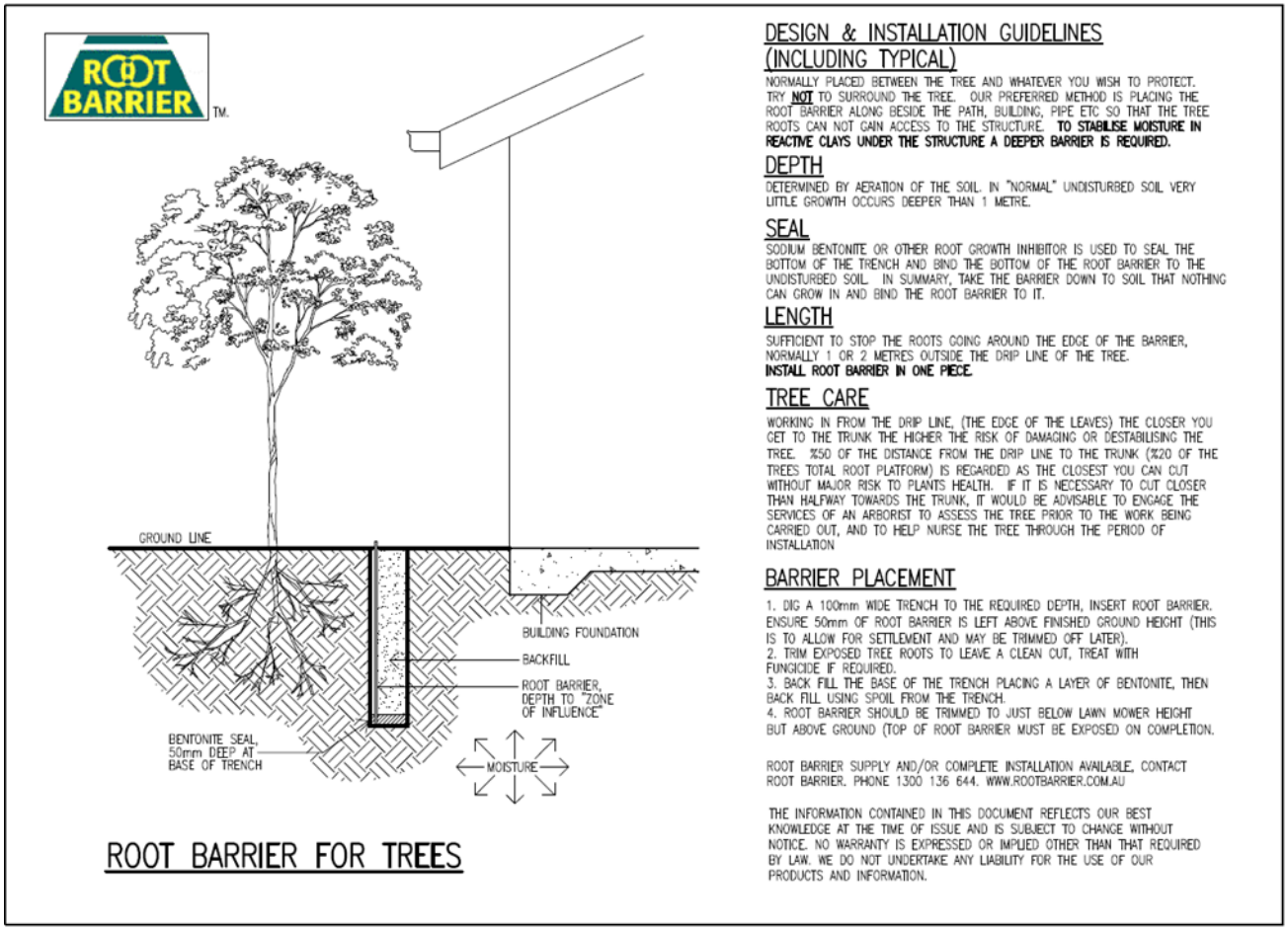



Image: https://rootbarrier.com.au

**Appendix 5:** Tree images

Fig tree and site looking north east. *B. Branch 04/02/2020*

Fig tree root between slab and wall B. Branch 04/02/2020


Tree pit and gutting looking down proposed line of root barrier. B. Branch 04/02/2020

Fig tree root between slab and wall B. Branch 04/02/2020