Arboricultural Impact Assessment

15 Dress Circle Avalon

Prepared by Alex Austin

For

David Tory

July 2020

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1 Summary

Alex Austin, an AQF level 8 Arborist, was commissioned by David Tory to complete an Arboricultural Assessment (AIA), to assess the trees that could be impacted by the proposed renovations and driveway works at 15 Dress Circle Road Avalon Beach.

This document has been prepared in accordance with Australian Standard 4970: 2009 *Protection of trees on development sites.*

The site inspection was completed Friday the 29th June 2020 where 3 trees were inspected and are now subject to this report. The site is a large residential north facing block with landscaped gardens. 3 trees were found to be in proximity to the proposed works. All other site trees in the rear garden are well away from the proposed works and did not require assessment, nor do they require protection from the works.

The Tree Survey revealed that the site trees grow within the Pittwater Spotted Gum Forest. This plant community is listed as an Endangered Ecological Community in the Sydney Basin Bioregion under The Biodiversity Conservation Act (2016) (NSW).

3 trees were assessed and are subject to this report, including

- 2 B (Moderate) Retention Value Trees including; the neighbours Lilly Pilly (Tree 1) and the Council Spotted Gum (Tree 3).
- 1 C (Low) Retention Value Tree- Site Spotted Gum (Tree 2)

No impacts are proposed to Trees 1 & 2. A minor 5 % encroachment into the TPZ is proposed. This 5 % encroachment will not impact the health and structure of Tree 3.

In order to ensure the 3 trees nominated for retention remain viable during and post construction, tree protection measures including, the engagement of a project arborist, tree protection fencing, tree protection signage, a restriction of activities within Tree Protection Zones (TPZ's) and compliance reporting, must be incorporated into the works.

A Tree Protection plan has been prepared and can be located in the Appendix.

This document must be used in its entirety.

Further questions are to be directed to:

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2 Background

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2.1 Reviewed Documents

- Site plan, Titled 'PROPOSED NEW WORKS IN RELATION TO EXISTING TREES', by David Tory Architect, dated 13/07/20,

3 Legislation.

3.1 Vegetation SEPP

Trees proposed for removal that are covered by the Vegetation SEPP other than a trees that are an imminent danger to life and property (By a AQF Level 5 or above Arborist) require a permit to be issued by the Council.

Northern Beaches Council will not approve;

- Removing healthy, stable trees or trees for views
- Removing trees for solar access, leaf, fruit or sap drop, bird or bat droppings, or damage to sewer pipes or built structures
- Removal of trees for fences, footpaths, or driveways

3.2 Pittwater Spotted Gum Forest

The species identified in this report form part of The Pittwater Spotted Gum Forest. This plant community is listed as an Endangered Ecological Community in the Sydney Basin Bioregion under The Biodiversity Conservation Act (2016) (NSW). The subject trees are protected The State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 (Vegetation SEPP).

Figure 1:Indicates the location of the mapped Pittwater Spotted Gum Forest in proximity to the site. (Source: SEED 2020)

4 Aims and Objectives

- Determine the Retention Value and required area for each tree to be protected and remain viable during and post construction.
- Identify and reduce potential conflicts between subject trees and site development by providing accurate information on the area required for tree retention and methods/techniques suitable for tree protection during construction.
- Encroachments to the TPZs are to be minimized prior to construction.
- Works within the defined Tree Protection Zone shall utilize special measures to avoid or minimize adverse impacts on trees.
- Provide information on restricted activities within the area nominated for tree protection, as well as suitable construction methods to be adopted during construction.
- The trees to be retained must be protected from all other demolition, excavation and construction activities.

5 Methodology

5.1 Tree Health and Condition

The inspection of the trees was made from the ground and involved inspection of the external features only. No invasive, diagnostic or laboratory testing was carried out.

Tree height and canopy spread were estimated and trunk diameter (DBH) and Diameter at Root Crown (DRC), have been measured with a diameter tape where applicable.

Data including species, age class, health, structure, landscape significance, defects, life expectancy were recorded. Tree species were identified using available seed and fruit during the site inspection.

All photographs were taken at the time of the site inspection by the inspecting arborist. Photographs have been altered for brightness and/or cropped only.

5.2 Tree Protection Zone and Structural Root Zone

The Tree Protection Zone method has been derived from the Australian Standard 4970–2009: *Protection of trees on development sites*.

The Tree Protection Zone (TPZ) is defined as a specified area above and below ground and at a given distance from the trunk set aside for the protection of a tree's roots and crown. It is the area required to provide for the viability of a tree to be retained where it is potentially subject to damage by development.

The radius of the TPZ is calculated for each tree by multiplying its Diameter at Breast Height (DBH) by 12

$$TPZ\ radius = DBH \times 12$$

The trunk diameter method has been used in this report to determine the TPZ. This area provides a general guide where the roots are likely to be located.

The Structural Root Zone (SRZ) is the area around the base of a tree required for the tree's stability in the ground. The woody root growth and soil cohesion in this area are necessary to hold the tree upright. The SRZ is nominally circular with the trunk at its centre and is expressed by its radius in metres.

$$SRZ\ radius = (D \times 50)^{0.42} \times 0.64$$

5.3 Retention Value

A simplified rating system consisting of 4 categories as a summary of the survey's cascading process. The retention value considers the trees health and structure, age class, defects, life expectancy and significance in the landscape. The retention value method has been derived from the British Standard 5837:2012.

- A– Retention Value (Green) Trees of high quality suggesting considerable efforts should be made to retain these trees.
- B – Retention Value (Blue) Trees of moderate quality suggesting reasonable efforts should be made to retain these trees.
- C – Retention Value (Grey) Trees of low quality and significance, These trees may be removed or retained without significant impact to the longevity of the landscape.
- R – Remove (Red). Trees that are not worthy of preservation and should be removed due to defects, weed species and high hazard values.

6 Findings

6.1 Suburb Map

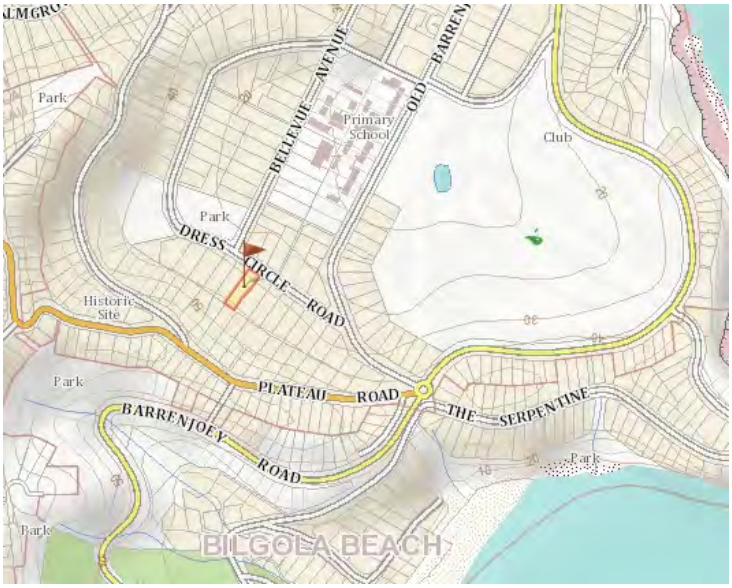


Figure 2. The map of the suburb showing the location of the site. (Source: Sixmaps 2020)

6.2 Aerial Photo

Figure 3. Aerial photo with the tree locations indicated by the green circles. (Source: Sixmaps 2020)

6.3 Site Conditions

The site is a large residential north facing block with landscaped gardens.

- Large trees dominate the landscape.
- Extensive re planting has occurred in the landscape

7 Proposed Construction

The proposed development works onsite include the increase in the house footprint to the north, a new retaining wall across the rear of the house and a new driveway.

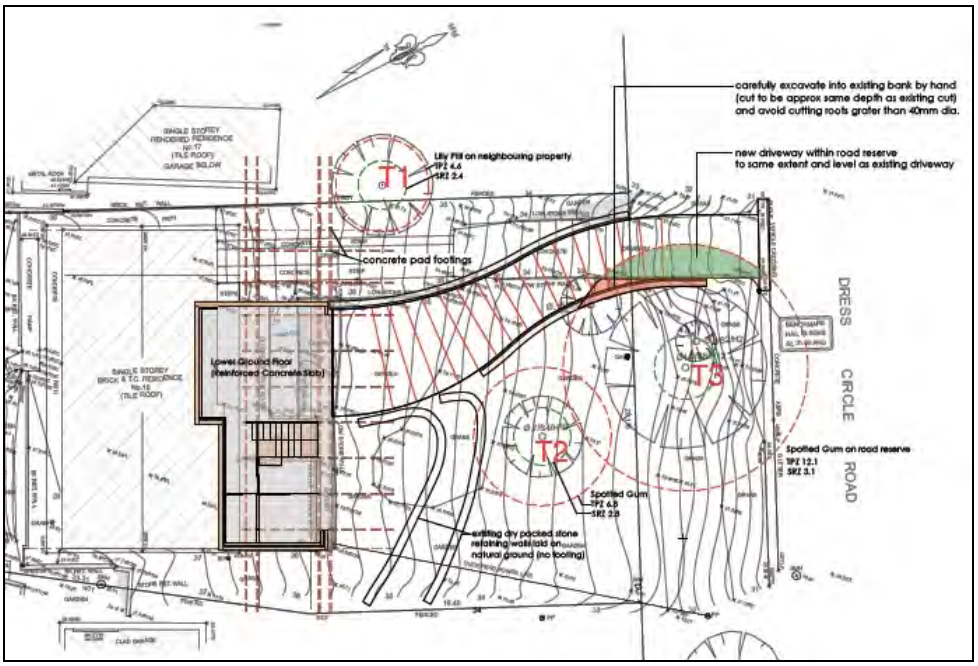


Figure 4: The site plan indicating the location of the 3 trees in relation to the proposed construction. . (Source: Site plan, Titled 'PROPOSED NEW WORKS IN RELATION TO EXISTING TREES', by David Tory Architect, dated 13/07/20, modified by Austin 15/07/20)

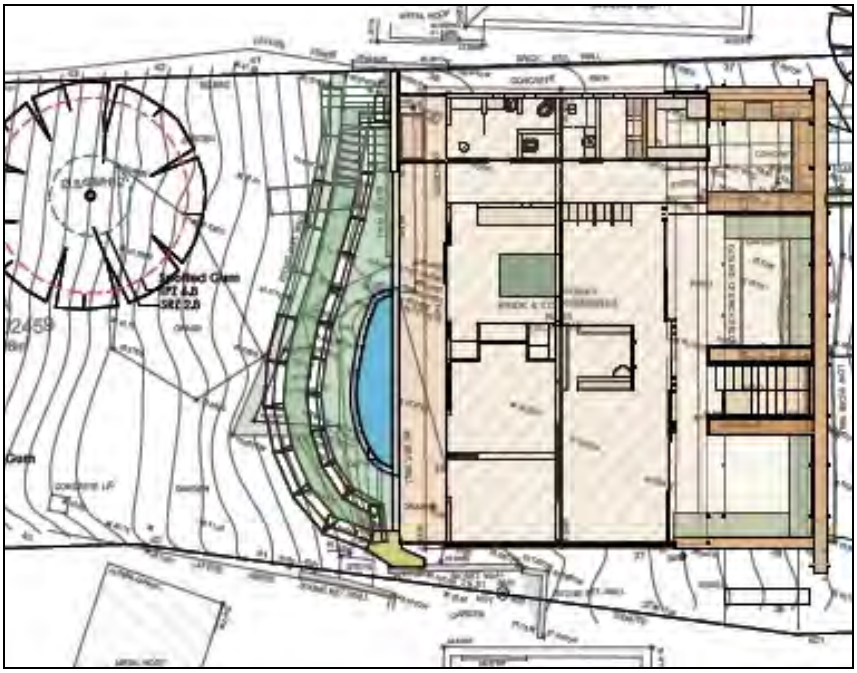


Figure 5: The rear garden site plan indicating the location of the proposed construction is away from all rear garden trees. (Source: Site plan, Titled 'PROPOSED NEW WORKS IN RELATION TO EXISTING TREES', by David Tory Architect, dated 13/07/20)

8 Tree Survey

3 trees were inspected and had their attributes recorded.

	Tree 1	Tree 2	Tree 3
Owner	Neighbour (17 Dress Cricle)	Site (15 Dress Cricle)	Council
Species	Lilly Pilly	Spotted Gum	Spotted Gum
Sc name	*Syzygium paniculatum*	*Corymbia maculata*	*Corymbia maculata*
DBH (cm)	38	57	92
TPZ radius (m)	4.6	6.8	12.1
DRB(cm)	47	70	112
SRZ radius (m)	2.4	2.8	3.1
Height (m)	12	10	15
Canopy Spread Diameter (m)	8	12	20
Age Class	Semi Mature	Semi Mature	Mature
Health	Good	Fair	Good
Biological	None Observed	Active Nesting hollow	Active Nesting hollow
Structural Condition	Good	Poor	Fair
Defects	Epicormic growth	Previous stem failure, cavity, minimal branching remains	Previous stem failure, cavity, excessive end weight over driveway, comms wire attached to trunk, trunk wound
Stability	No issues observed.	No issues observed	No issues observed
Life Expectancy	15-25	10-15	15-25
Significance Rating	Low – Amenity Low – Heritage Moderate - Environmental	Low – Amenity Low – Heritage High - Environmental	High – Amenity Low – Heritage High - Environmental
Notes	No works planned in TPZ	Reduced canopy requires smaller TPZ	Minor works within TPZ
Retention Value	Moderate (B)	Low (C)	Moderate (B)
Action	Retain and Protect	Retain and Protect	Retain and Protect

8.1 Tree Plan

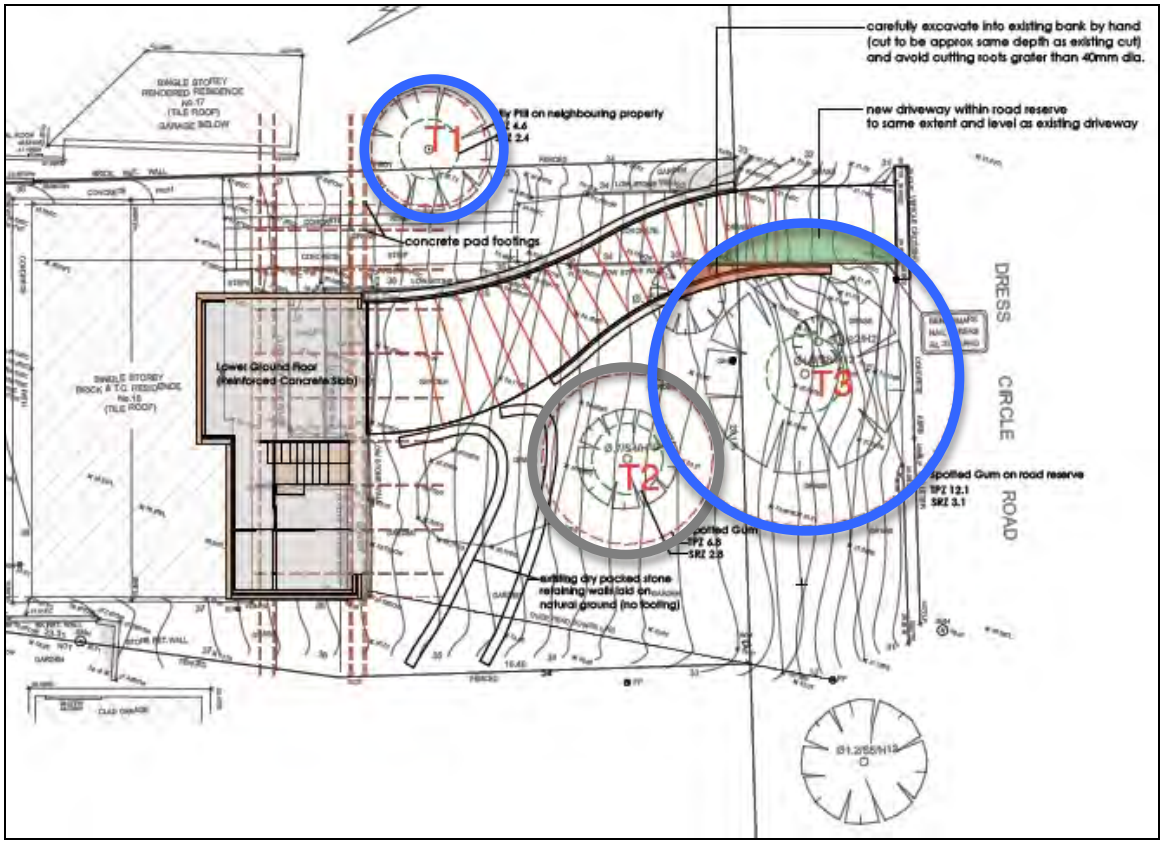


Figure 6: The site plan indicating the location of the 3 trees, The Blue circles indicates Moderate retention value and Grey Circles indicate C (Low) Retention values. (Source: Site plan, Titled 'PROPOSED NEW WORKS IN RELATION TO EXISTING TREES', by David Tory Architect, dated 13/07/20, modified by Austin 15/07/20)

8.2 2 B Retention Value tree

Tree numbers 1 & 3 are the B Retention Values trees. Trees in this category generally posses fair or better health and structure and have life expectancies greater than 15 years. Reasonable attempts should be made to retain the trees through the project as they have the ability to be continuing components of the landscape

8.2.1 Tree 1 – Neighbours Lilly Pilly

Tree 1 is located at on the boundary between 15 & 17 Dress Circle Road. The boundary is not fenced at the tree location. The tree is to be retained. No works are planned in the TPZ, however, Tree 1 is vulnerable to construction damage due to its proximity to the works and must be protected from damage.

Figure 7: Tree 1 in the landscape. (Source: Austin 1/5/2020)

8.2.2 Tree number 3 Council Spotted Gum

Tree number 3 appears to be located on the council verge. A large stem failure has previously occurred in the upper canopy which has created a cavity. The previous failure appears to be storm related and has resulted in fair structure. A cavity and excessive end weight over the driveway were observed. A comms cable is attached to the trunk. The tree is to be retained. Minor driveway expansion works are planned within the TPZ. The required excavation works are to be completed by hand and must not damage roots larger than 40mm.

Figure 8 (Left): The cavity and previous failure wound in Tree 3 can be observed.. (Source: Austin 1/5/2020)

Figure 9 (Right): Tree 3 in the landscape. (Source: Austin 1/5/2020)

8.3 1 C Retention Value tree

C Retention Value trees should not be considered a constraint on development as they have reduced health or condition, or have short life expectancies or have low landscape significance or are easily replaceable due to their small size. If trees in this category are to be retained, they must be protected from construction activities.

8.3.1 Tree 2 Site Spotted Gum

Tree 2 has had a previous major stem failure that has resulted is a cavity and a significantly reduced canopy volume. The tree receives a C retention value due to its poor remaining structure. Active fauna nesting was observed in the hollow. The tree is to be retained. No works are planned in the TPZ, however, Tree 1 is vulnerable to construction damage due to its proximity to the works and must be protected from the works.

Figure 10. Tree 2 in the landscape. The previous failure wounds, cavity and reduced size due to previous failures can be observed. (Source: Austin 1/5/2020)

9 Impact from the Proposed Works.

9.1 Minor Root zone encroachment to Tree 3.

The existing drive levels are to stay the same. The alignment of the driveway is to expand to the east and into the TPZ. All required excavation works are to be completed by hand. The orange area in the figure below represents the new encroachment into the TPZ of Tree 3. The orange area is 3.5 square metres, representing 3.06% of the 115m TPZ. Considering the need for over excavation, a total of a 5% encroachment is considered to be necessary. This is considered a minor encroachment under Australian Standard 4970–2009: *Protection of trees on development sites*. The required excavation works are to be completed by hand and must not damage roots larger than 40mm.

Figure 11: The site plan indicating the location of the encroachment into Tree 3. (Source: Site plan, Titled 'PROPOSED NEW WORKS IN RELATION TO EXISTING TREES', by David Tory Architect, dated 13/07/20)

9.2 Trees 1 & 2

No impacts to trees 1 & 2 are anticipated, however the trees must be fenced off to protect them from construction activities.

10 Measures to minimise impacts to retained trees.

In order to minimise the impact of the proposal, the following measures must be incorporated into the works;

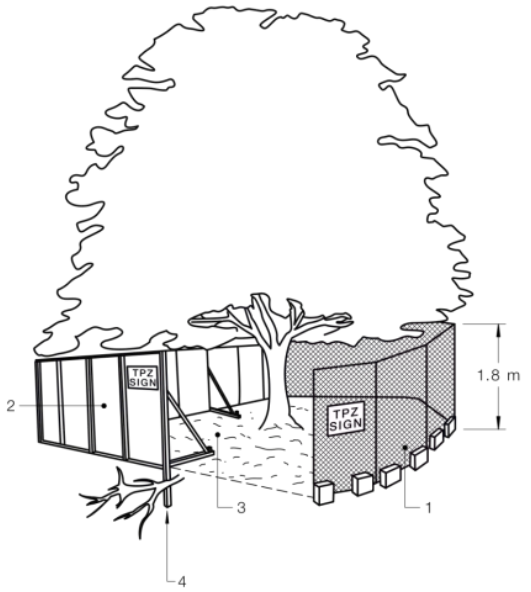
10.1 Project Arborist

An official "Project Arborist" should be commissioned to oversee the tree protection, any works within the TPZ's and complete certification.

The Project Arborist should have minimum five (5) years industry experience in the field of arboriculture, horticulture with relevant demonstrated experience in tree management on construction sites, and Diploma level qualifications in arboriculture - AQF Level 5.

10.2 Tree protection fencing

Trees numbers 1, 2 & 3 need to be fenced off and protected from construction activities as per the Tree Protection plan located in the appendices. Once in place, the TPZ cannot be moved with out Project Arborist approval.



LEGEND:
1 Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
2 Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ.
3 Mulch installation across surface of TPZ (at the discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.
4 Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots.

Figure 12: TPZ fencing specification. (Source: AS 4970:2007).

10.3 Tree Protection Signage

The tree protection signage below should be installed at 10m intervals along the Tree Protection Fences.

Figure 13: TPZ signage specification. (Source: Austin July 2020).

10.4 Works within TPZ's

All excavation works within the TPZs must be completed by techniques that do not damage tree roots. Works should be undertaken using techniques that are sensitive to tree roots to avoid unnecessary damage. Such techniques include:

- Excavation by hand.
- Excavation using a high pressure water jet and vacuum truck.
- Excavation using an Air Spade with vacuum truck.

Machine excavation is prohibited within the remaining TPZ areas of retained trees unless undertaken under direct supervision from the project arborist.

10.5 Activities Restricted within the TPZ

- Machine excavation
- Excavation for silt fencing
- Storage
- Preparation of chemicals, including preparation of cement products
- Dumping of waste
- Wash down and cleaning of equipment
- Placement of fill
- Soil level changes
- Temporary or permanent installation of utilities and signs
- Physical damage to the tree
- Parking

10.6 Compliance Reporting

Inspections should be conducted by the Project Arborist at key points during the construction in order to ensure that protection measures are being adhered to during construction stages and decline in tree health or additional remediation measures can be identified.

Tree inspections and compliance reporting by the project arborist is required:

1. Following the installation of the tree protection fencing.
2. During the minor excavation within the TPZ of Tree 3
3. At the practical completion of the project.

Following each inspection, the project arborist shall prepare a brief Compliance report detailing the condition of the trees. These reports should certify whether or not the works have been completed in compliance with the tree protection measures.

These reports should contain photographic evidence where required to demonstrate that the protection measures are in place as specified.

Matters to be monitored and included in these reports should include tree health and condition, tree protection measures and impact of site works which may arise from changes to the reviewed plans.

Any Non-Compliance Statements shall be submitted to the Project Manager if tree protection conditions have been breached. Reports should contain clear remedial action specifications to minimise any adverse impact on any subject tree.

11 Conclusion

This Arboricultural Impact Assessment has provided a detailed analysis of the trees that could be affected by development on the subject site.

The requirements for Tree Preservation Zones are in line with AS 4970:2009 *Protection of tree on development sites.*

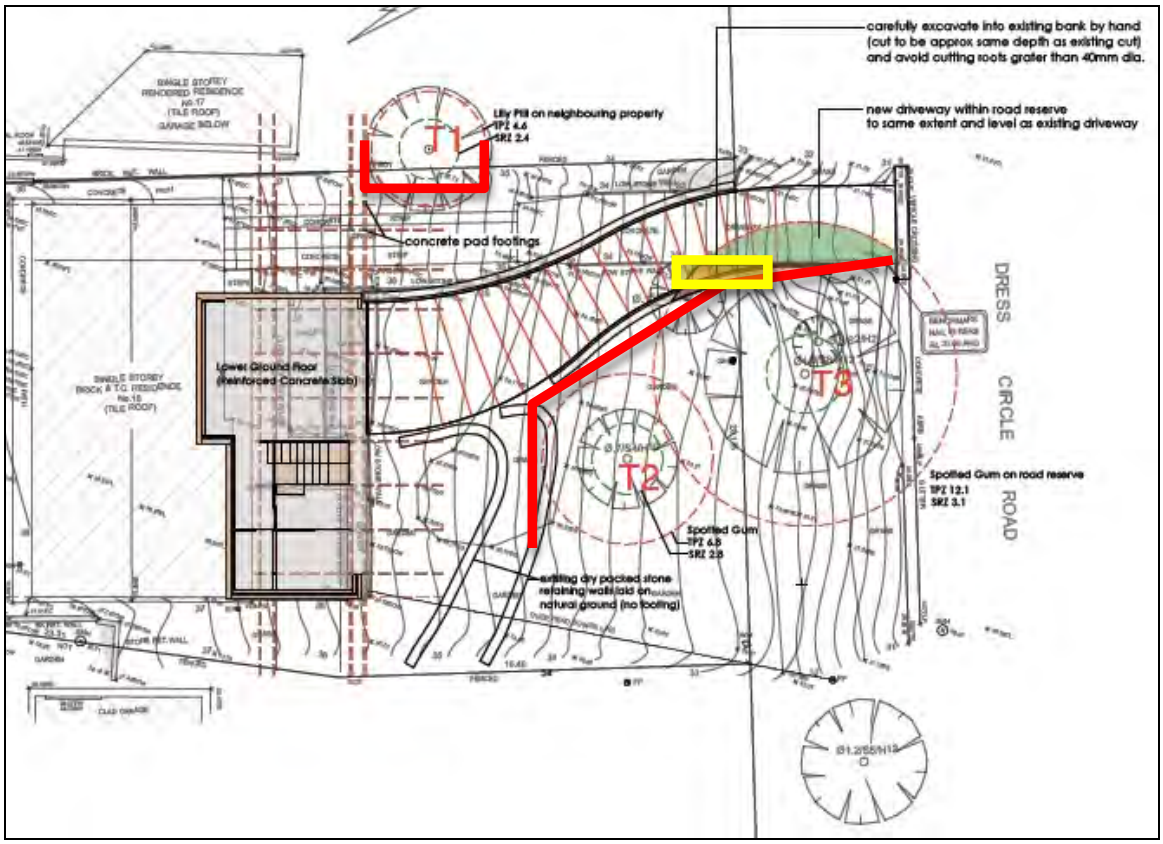
12 References

Australian Standard 4970: 2009 *Protection of trees on development sites.*

13 Industry Qualifications

- AQF Level 5 & 8 Consulting Arborist.
- ISA Certified Arborist # AU-0348A
- Tree Risk Assessment Qualification (TRAQ) (Exp Oct 2023)
- Advanced Quantified Tree Risk Assessment Registered User # 3692
- Masters of Environmental Law

14 Tree Protection Plan



Tree Protection Plan Key

Tree Protection Fence

Hand excavation