MARGOT BLUES
CONSULTING ARBORIST

ARBORICULTURAL IMPACT ASSESSMENT (AIA) REPORT

Prepared For:	Mr. Anthony and Mrs. Sue Jeffcoat C/- Marston Architects
Site Address:	22 Hay Street, Collaroy NSW, 2097
Inspection Date:	8/7/2019
Report Date:	5/08/2019

Figure 1: Street view of property: Image C/- Google Maps accessed 5/08/2019.

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1 Contents

1 Introduction

1.1 Background

1.1.1 Margot Blues Consulting Arborist has been engaged by Marston Architects on behalf of the owners, Mr. & Mrs. Jeffcoat to inspect and report on two trees located at the rear of the property for development application purposes.

1.1.2 The aim of this report is to assess construction impact to the assessed trees.

1.1.3 Alterations and additions are proposed to the existing dwelling. A new above-grade carpark is proposed at the rear of the property, accessed via a road reserve off Lancaster Crescent is proposed close to the trees.

1.1.4 Information supplied and relied upon in the preparation of this report included:

- Architectural suite of drawings inclusive of detail survey, floor plans, and carport detail produced by Marston Architects, received 05/08/2019.
- Dial Before You Dig; Job Reference 86099473, Requested 29/07/2019.
- NSW Planning Portal Property report; Downloaded 30/07/2019.

1.1.5 The use of these documents is acknowledged with thanks.

2 Methodology

2.1.1 Site attendance occurred on the 8th July, 2019. The trees were visually inspected from ground level only in accordance with VTA (Visual Tree Assessment); a methodology derived by Mattheck and Breloer (1994).

2.1.2 Inspection included foliage condition (volume and colour); the presence of pests and diseases, canopy dieback, deadwood and epicormic growth.

2.1.3 Tree condition included assessment of structural stability, previous pruning and any damage/disturbance which may have occurred. No destructive or aerial investigations occurred to any trees. Tree data is displayed in Appendix 1.

2.1.4 Appendix 2 – Plan Scale; Identifies trees and is to be read in conjunction with Appendix 1. Tree Protection Zones (TPZ) and Structural Root Zones (SRZ) areas have been plotted to scale on the supplied plans.

2.1.5 Appendix 3 – TPZ Encroachment

2.1.6 Appendix 4 – Observed Surface Roots

2.1.7 Appendix 5 – Photographs

2.1.8 Appendix 6: Significance Ratings Methodology

2.1.9 Tree height and canopy width were estimated.

2.1.10 This report is considered limited to what could reasonably be seen from ground level at the time of inspection and expresses no commentary on changes which may have, or will, impact the trees or their environment outside the scope of works.

2.1.11 Engineering details pertaining to footing size have not been sighted therefore for the purpose of this report, footings sizes have been over-estimated to provide a "worst-case" estimate of TPZ encroachment.

3 Results

3.1 Desktop research

3.1.1 In accordance with the NSW Planning portal, the following data was returned:

- Zoning: R2 – Low density Residential
- No heritage conservation status applies to the property.
- Landslide risk land: Area D & E (Collaroy Plateau area).

3.2 The Site

3.2.1 The property is located on the eastern side of Collaroy Plateau with access to both Hay Street and Lancaster Avenue. The property, spread across two lots as identified in the supplied survey, demonstrates a distinct North-Easterly aspect. The sole dwelling is located centrally to the land parcel with an inground swimming pool at the rear.

3.2.2 A road reserve exists at the rear of the property providing vehicular access to 1-3 Lancaster Avenue. Refer to Image 2.

3.3 Trees

3.3.1 Tree 1, Hills Fig, was located outside the rear boundary presented in excellent health and condition. A large number of surface roots were visible within the property and will require protection during construction. This is a council owned tree and any required works will be require subject to a tree works request from Council. Refer to Image 1.

3.3.2 A single protected tree, T2, was located within the rear of the property. This tree was unidentified during site inspection due to a defoliated state, most likely caused by possum grazing.

3.3.3 No other trees were assessed as part of the scope of works due to their exempt status (small size) and the minor nature of the proposed works. Refer to Appendix 5 – Photographs.

3.4 The Development

3.4.1 Alterations of the existing dwelling are proposed and focus primarily on internal features with no external construction occurring near trees.

3.4.2 A new carport is proposed and is to be constructed entirely above grade with isolated piers at the rear of the property. Image 8 depicts slope of the land and the need for an elevated structure.

3.4.3 Alterations to the road reserve will be required as part of development. Works include the re-grading of the road reserve to tie in with the proposed carport. Regrading of the reserved is proposed to extend south towards the boundary of property 1-3 Lancaster Ave.

3.4.4 Due to the existence of a stormwater easement and associated restrictions, part of the driveway is proposed to be built in a demountable manner for future maintenance. It is assumed that this will be a suspended steel grated section however details of which have not been confirmed.

3.5 Construction Impact to each tree

3.5.1 **Tree 1**:

This tree will experience minor encroachment due to the necessary excavation for footings. Engineering detail of these piers was not available for the writing of this report however it is assumed that 450mm diameter piers will be required beneath the footprint of the carport and connecting rampway. Images 3-5 highlight significant roots observed.

Minor canopy pruning (under pruning) of this tree will likely be required for construction and to allow for canopy-roof clearance on the longer term. Pruning requirements are anticipated to be less than 10% of the total canopy volume.

Regrading of the driveway is proposed to be conducted by topping the existing slab. The supplied plans indicate that the development will be located above existing features with resultant tree impact to be low.

The development will incur a minor impact to the tree on the basis of the above comments, assuming that root loss / damage is kept to a minimum.

Based on the supplied information and assumptions made, the development represents a TPZ incursion of 1.5% - A *minor* encroachment per AS4970:2009.

This tree is recommended for retention – Council shall be consulted regarding any pruning works to this tree.

3.5.2 **Tree 2:**

This tree is unretainable under the current proposal as it lies within the construction footprint.

Removal supported.

4 Discussion

4.1.1 The distinct easterly aspect with a gradient of approximately 33% presents a challenge for the transport of excavation equipment into site. As mentioned in section 7, particular attention to ground and root protection measures will be required.

4.1.2 The property is flagged as at risk of landslide. The opportunities for root protection mentioned with in AS4970:2009 – *Protection of trees on development sites* may cause considerable difficulty for the movements of equipment around the carport development area; alternative measures should be considered.

4.1.3 An engineering detail of proposed pier locations has not been provided at the time of this report. Careful placement of piers will directly influence the degree of impact on Tree 1.

4.1.4 Pier locations requiring the severance of structural roots will pose a risk of tree impact and possible destabilisation. Where practical, pier locations should remain flexible to accommodate structural roots, where discovered. Alternatively, as recommended, cross referencing of proposed pier locations with observed roots will significantly reduce impacts attributed by development.

5 Conclusion

5.1.1 Two trees have been inspected for health and vigour, construction impact with the findings submitted for development application purposes.

5.1.2 Both of the assessed trees were identified as mature. Tree 1 was observed to be in excellent health, whilst Tree 2 was observed to be in poor health due to possum grazing.

5.1.3 Construction impact will occur however it was considered low. The development seeks to minimise impact by proposing construction above grade with limited ground engagement necessary.

5.1.4 The design utilises accepted methods of tree-sensitive construction, being an elevated structure on isolated piers. The location of the carport is located sufficiently away from the tree, reducing the degree of pruning required as part of development.

6 Recommendations

6.1.1 It is recommended that Tree 1 is retained and protected as part of this development. A methodology for tree protection can be found in section 7.

6.1.2 It is recommended that pier locations remain flexible in location to enable strategic placement around significant roots belonging to Tree 1. Cross referencing proposed pier locations with root locations will allow for better placement of piers without causing impact to the tree.

6.1.3 It is recommended that significant roots with a diameter of 50mm or more are protected during development; such roots are seen in Images 3-5 and shall be protected. Roots shall not be severed or cut without consultation with the site arborist.

6.1.4 Tree 2 is unretainable under the proposed development and its removal is supported due to the tree's presentation of poor health.

7 Tree protection plan

7.1.1 Tree protection is required for Tree 1 only for the proposed works. Tree protective fencing is impractical due to site constraints and is to be substituted for the following:

7.2 Trunk Protection

7.2.1 Trunk protection shall be installed around the base of this tree to a height of 2m metres above the base of the tree in accordance with AS4970:2009. Trunk armouring should include first order roots within the vicinity of the driveway and include the two lower limbs growing toward the proposed carport.

7.2.2 Trunk protection is essential in protecting the main trunk of the tree from injury relating to impact, bumps and scrapes from equipment, personnel and materials moving around the site. The project manager / builder may extend the extent of armouring at their discretion with the objective of minimising tree injury.

7.2.3 It is recommended that trunk armouring consist of the following:

- Wrap trunk in porous material such as hessian to create a cushion at any points of contact on trunk.
- Use timber battens of ideally 100mm x 50mm to armour the trunk of the tree.
- Galvanised steel strapping (used in carpentry) or nylon ratchet straps can be utilised to secure battens to the tree.
- **The fixing, nailing or screwing into the tree is not permitted.** Doing so causes injury to the tree and is a possible pathogen entry point.

7.2.4 Under the standard, no part of the tree may be utilised for the fixing of guys, stays, ropes etc.

Figure 2: An example of trunk armouring. Photo for reference only and unrelated to site.

7.3 Ground / Root Protection

7.3.1 Compaction of soils within the TPZ and SRZ area of a tree is a known cause of detriment to tree health. The proposed carport, whilst located above ground on isolated piers, will still require earthmoving equipment to enter the TPZ area.

7.3.2 The standard recommends a layer of woodchip mulch be laid over access routes to distribute compaction loadings on the soil. Given the degree of slope for the anticipated access route, it is thought that a layer of wood mulch alone may detriment tree health due to likely slipping of machinery.

7.3.3 A possible solution for accessing this site could include the use of aluminium ramps laid atop a woodchip mulch layer. Ramps could be secured to the ground by means of Reo bar or star-pickets hammered into selectively chosen locations.

7.3.4 Installation of such ramps will distribute soil loading and provide traction for machinery to operate safely within the TPZ of this tree.

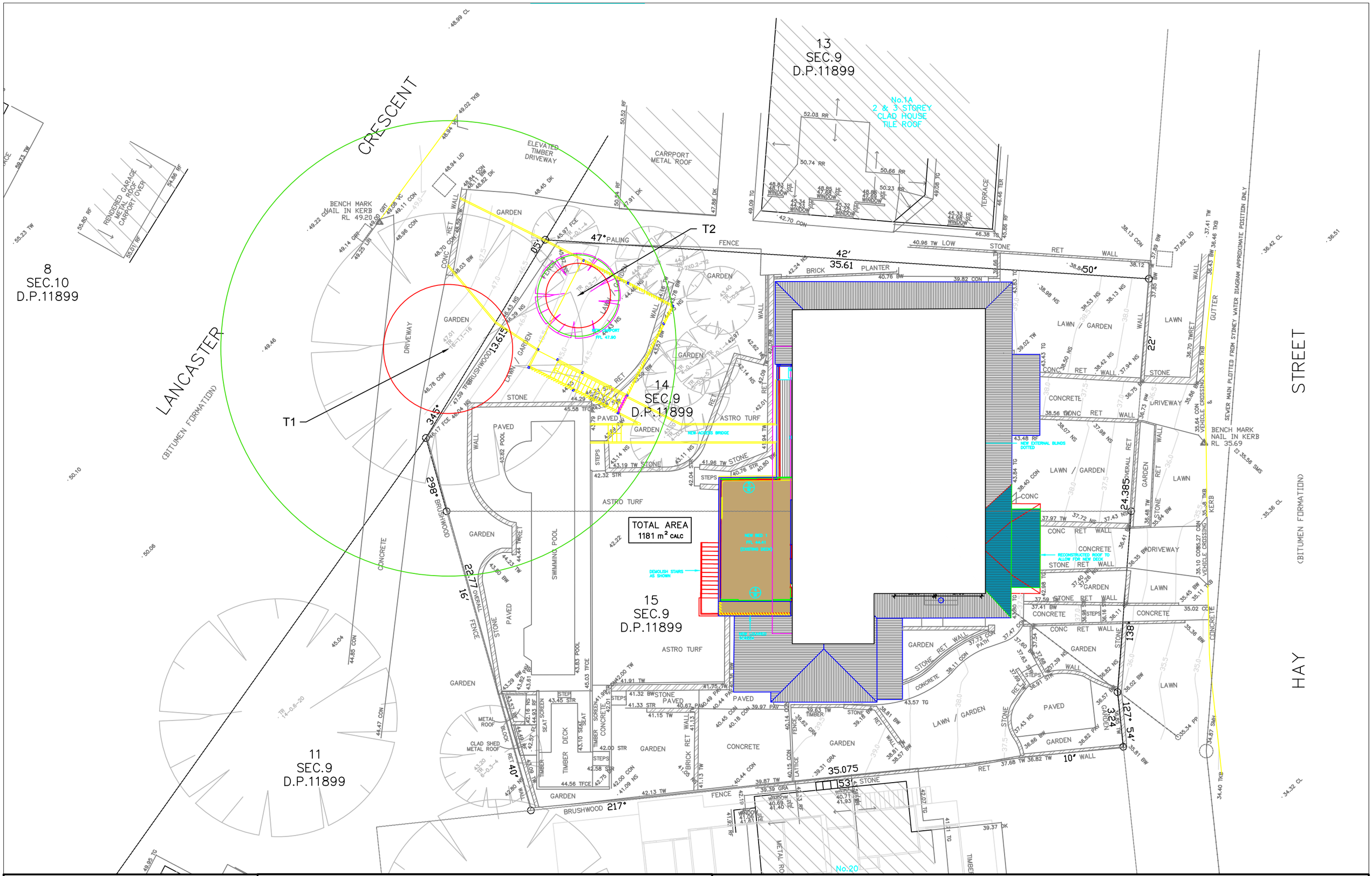
7.3.5 No part of the TPZ or SRZ may be used for the storage of materials or stockpiling of waste products.

7.3.6 The ground beneath the carport may not be used for the wash-down of concrete slurry at the conclusion of concrete pouring. Doing so will contaminate the soil, potentially increasing soil pH to levels detrimental for tree health.

Appendix 1 – Tree Data Summary

Tree Data Summary - 22 Hay St, Collaroy - Assessed 8/7/2019																		
Tree ID	**Species**	**Height (m)**	**Canopy dims n/s in metres**	**DBH (cm)**	**DGL (cm)**	**Foliage condition**	**Maturity**	**Trunk type**	**Trunk lean**	**Canopy Balanced**	**Past Pruning**	**Stability**	**Vigour**	**Canopy deadwood**	**Retention value**	**Notes**	**TPZ (M) Radius**	**SRZ (M) Radius**
T1	*Ficus hillii* (Hills Fig)	18	18	112	135	Excellent	Mature	Single to 1m	Upright	Yes	Throughout canopy above driveway	Appears Stable	Good	0-5%	High	2 major limbs equating to approximately 45% canopy volume located within vicinity of proposed development.	13.4	3.8
T2	*Unidentified*	7	6	20	28	Defoliated	Assumed Mature	Single to 2m then twin	Upright	No	Historical pruning only	Appears Stable	Fair	0-5%	Low	Tree has been completely defoliated by Possums. Tree located within proposed development footprint	2.4	1.9

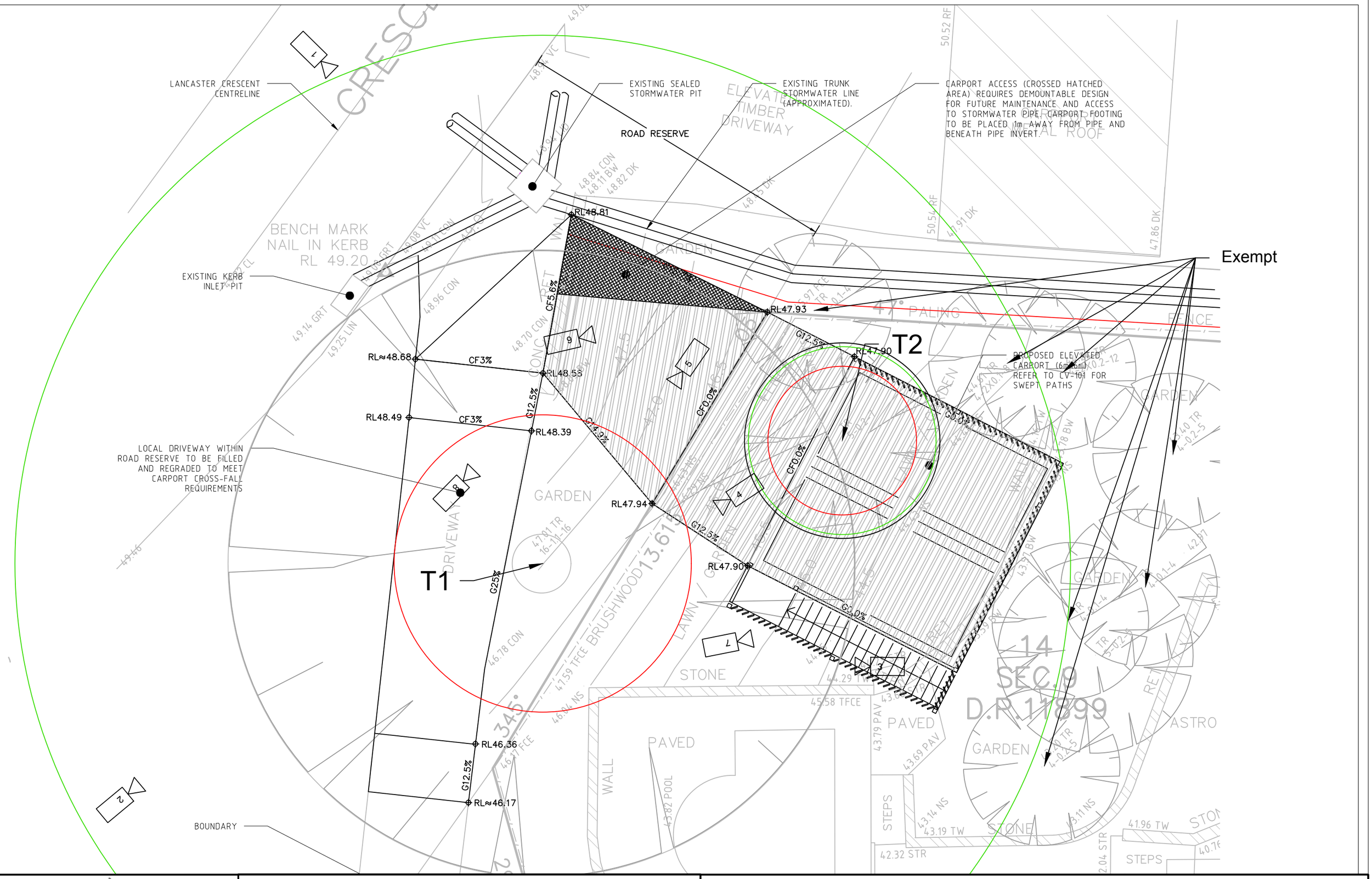
Appendix 2 - Tree identification



Margot Blues Consulting Arborist - Appendix 2	
Title:	Tree Identification
DATE:	8/5/2019
Project:	A2 22 Hay St, Collaroy.dwg
Scale:	Relative to supplied documents

Key:

- Tree Protection Zone (TPZ)
- TPZ Encroachment
- Observed Surface / First Order Root Growth
- Protective fencing line
- Sructural Root Zone (SRZ)
- Proposed Root-mapping area
- Access path



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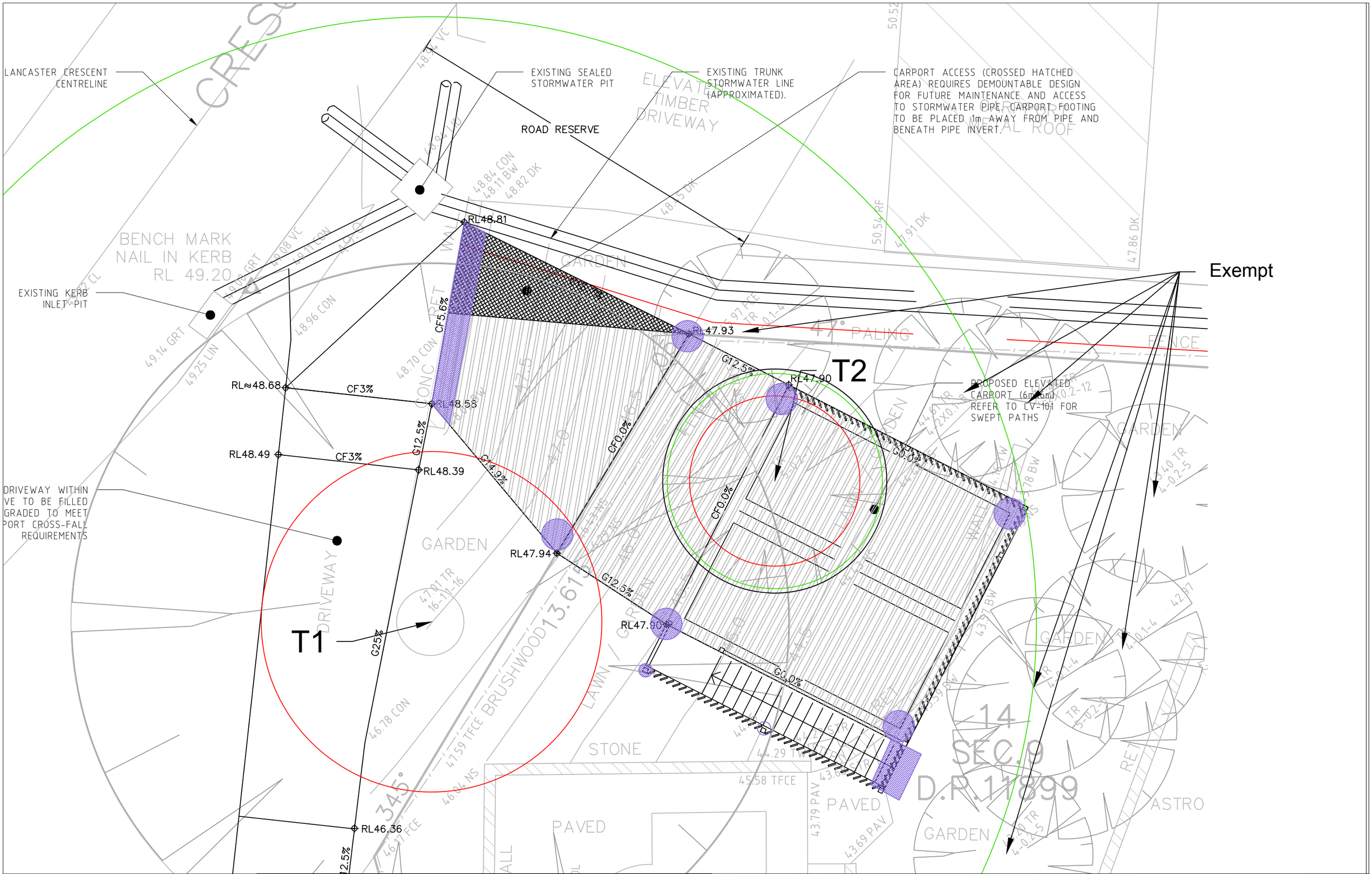
Margot Blues Consulting Arborist - Appendix 2

Title:	Tree Identification Detail
DATE:	8/5/2019
Project:	A2 22 Hay St, Collaroy.dwg
Scale:	Relative to supplied documents

Key:

- Tree Protection Zone (TPZ)
- TPZ Encroachment
- Observed Surface / First Order Root Growth
- Protective fencing line
- Sructural Root Zone (SRZ)
- Proposed Root-mapping area
- Access path
- # Photograph number and direction.

Appendix 3 – TPZ Encroachment



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Margot Blues Consulting Arborist - Appendix 3

Title:	TPZ Encroachment Map - Footing locations and dimensions TBC
DATE:	8/5/2019
Project:	A2 22 Hay St, Collaroy.dwg
Scale:	Relative to supplied documents

Key:

- Tree Protection Zone (TPZ)
- TPZ Encroachment
- Observed Surface / First Order Root Growth
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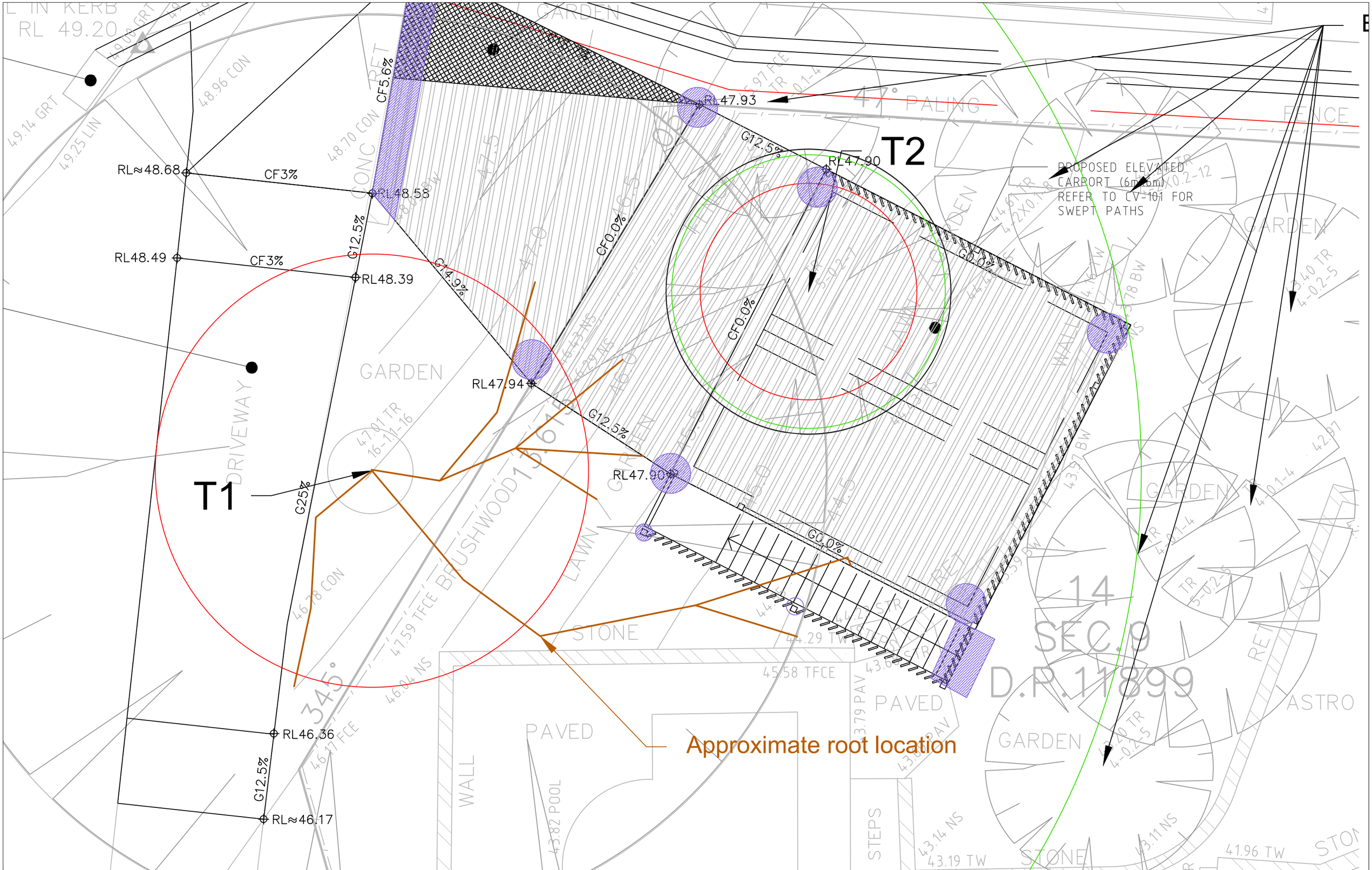
- Access path

Appendix 4 – Observed Surface Roots



MARGOT BLUES	Margot Blues Consulting Arborist - Appendix 4 Title: Observed surface roots - Locations & length approximated DATE: 8/5/2019 Project: A2 22 Hay St, Collaroy.dwg Scale: Relative to supplied documents	Key: Tree Protection Zone (TPZ) TPZ Encroachment Observed Surface / First Order Root Growth Protective fencing line Sructural Root Zone (SRZ) Proposed Root-mapping area Access path

Appendix 5 – Photographs

Image 1: The property as viewed from Lancaster Ave. Note large canopy spread of T1 - A Significant specimen.

Image 2: T1 in relation to the local road reserve and western boundary. Extensive first order roots are visible.

Image 3: Surface roots belonging to T1 Located within the rear yard of the property. Piers will need to be located in-situ with these roots to minimise impact to the tree.

Image 4: Further imagery of surface roots of T1.

Image 5: Significant roots were also noted outside the property boundary.

Image 6: Two tree stumps were observed outside the property boundary as indicated.

Image 7: A general overlook of vegetation within the property.

Image 8: A perspective of the road reserve depicting the significant slope of the land. The development is proposed to be constructed above grade at this point

Appendix 6: Significance Ratings

Tree Significance - Assessment Criteria

1. High Significance in landscape

- The tree is in good condition and good vigour;
- The tree has a form typical for the species;
- The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age;
- The tree is listed as a Heritage Item, Threatened Species or part of an Endangered ecological community or listed on Councils significant Tree Register;
- The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity;
- The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values;
- The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa in situ - tree is appropriate to the site conditions.

2. Medium Significance in landscape

- The tree is in fair-good condition and good or low vigour;
- The tree has form typical or atypical of the species;
- The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area
- The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street,
- The tree provides a fair contribution to the visual character and amenity of the local area,
- The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa in situ.

3. Low Significance in landscape

- The tree is in fair-poor condition and good or low vigour;
- The tree has form atypical of the species;
- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings,
- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area,
- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen,
- The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa in situ - tree is inappropriate to the site conditions,
- The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms,
- The tree has a wound or defect that has potential to become structurally unsound.

Environmental Pest / Noxious Weed Species

- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties,
- The tree is a declared noxious weed by legislation.

Hazardous/Irreversible Decline

- The tree is structurally unsound and/or unstable and is considered potentially dangerous, - The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.

The tree is to have a minimum of three (3) criteria in a category to be classified in that group.

Note: The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety e.g.

USE OF THIS DOCUMENT AND REFERENCING

The IACA Significance of a Tree, Assessment Rating System (STARS) is free to use, but only in its entirety and must be cited as follows:

IACA, 2010, IACA Significance of a Tree, Assessment Rating System (STARS), Institute of Australian Consulting Arboriculturists, Australia, www.iaca.org.au

REFERENCES

Australia ICOMOS Inc. 1999, The Burra Charter - The Australian ICOMOS Charter for Places of Cultural Significance, International Council of Monuments and Sites,www.icomos.org/australia
Draper BD and Richards PA 2009, Dictionary for Managing Trees in Urban Environments, Institute of Australian Consulting Arboriculturists (IACA), CSIRO Publishing, Collingwood, Victoria, Australia.
Footprint Green Pty Ltd 2001, Footprint Green Tree Significance & Retention Value Matrix, Avalon, NSW Australia, www.footprintgreen.com.au

Tree Priority Retention Matrix

The retention model following visually describes the process used in determining retention values of the trees. Three retention classifications are clearly defined, they being, High; moderate and Low retention values.

	Landscape Significance Rating						
Estimated Life Expectancy (SULE)	Significant	Very High	High	Moderate	Low	Very Low	Insignificant 7
Long (> 40 years)	High retention values						
Medium (15 -40 Year			Moderate				
Short (5-15 years)				Low Ret . Value			
Less than 5 years					Very Low Retention Value		
Dead or Hazardous							

Source: (Moreton, A., 2006).