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29th January 2025

Addendum B: Arboricultural Impact Assessment Report – 60 Hudson Parade, Clareville, NSW

1.0 Background

This Addendum (B) to the Arboricultural Impact Assessment (AIA) Report (Rev B, 25.09.23) prepared for 60 Hudson Parade, Clareville, NSW (the site) provides additional information relating to the Development Application for the site. The AIA Report should be read in conjunction with this Addendum.

The following plans/documentation has been reviewed in the preparation of this Addendum:

- Site Plan DA_00 – DA_41 (Revision F), dated 27.09.24 – prepared by Bennett Murada Architects
- Cut And Fill Diagram (undated) – prepared by Bennett Murada Architects
- Root mapping investigation documentation - prepared by Newmark Constructions

The proposed development works covered by the Development Application include the construction of a new boatshed, retaining walls, stairs and footpaths in the rear of the site.

Details of the trees covered in this Addendum are provided within Appendix A – Tree Assessment Results. The locations of the trees are shown in Appendix B – Site Plan. Images of the trees are contained within Appendix C – Photographs. Details of root mapping investigations are contained within Appendix E – Root Mapping.

2.0 Design Development

The location for the proposed boatshed, retaining walls, stairs and footpaths have been determined based on analysis of the potential impact of construction upon the trees growing within the rear garden at the site, and neighbouring properties.

The potential to locate the boatshed etc. in the northwestern corner of the site was investigated as part of the design development stage. However, it was determined that the extent of excavation that would be required within the Tree Protection Zone (TPZ) area of the neighbours Tree F could potentially impact the health of the tree.

Tree F (*Corymbia maculata* - Spotted Gum) is a large, mature specimen which is in good health and has moderate landscape value. Therefore, it is proposed to locate the boatshed in the southwestern section of the site, which will impact trees of lesser quality and value than Tree F.

3.0 Comments

Construction of the proposed boatshed, retaining walls, stairs and footpaths will impact Trees T15, T16 and T17 only. The proposed works within the TPZ areas of these trees are discussed below. Existing structures and pavements within the TPZ areas of Trees T14, F and G are to be retained with no works (other than soft landscaping) proposed within their TPZ areas.

Tree 15 (*Corymbia maculata* - Spotted Gum) is a mature specimen in good health and structural condition. The tree has a Useful Life Expectancy (ULE) of 15-40 years and has been allocated a Retention Category of Consider for Retention.

It should be noted that ULE is an arboricultural term used to describe the minimum time frame over which a tree is likely to provide a positive contribution to its growing environment, with an acceptable level of risk, rather than the trees potential biological lifespan. The trees ULE is based on the condition of the tree at the time of assessment; therefore, trees that remain in good health and structural condition may exceed the allocated ULE category.

The supplied plans show Tree T15 is to be retained and will be subject to a Minor Encroachment (i.e. <10% of the TPZ area) from the proposed retaining wall to the west of the tree. A Minor Encroachment should not significantly impact the health or long-term viability of the tree. However, during construction, over excavation benching or battering to the rear of the retaining wall should be avoided to minimise potential root impacts.

Tree T16 (*Corymbia maculata* - Spotted Gum) is a mature specimen in good health and poor structural condition. The tree has a Useful Life Expectancy (ULE) of <5 years and has been allocated a Retention Category of Priority for Removal.

As part of the tree assessment undertaken for the Development Application (DA) for the whole site, internal diagnostic testing of the trunk of Tree T16 was undertaken using a Resistograph, and resonance sounding of the first order branches was undertaken using a nylon mallet. Test results determined that a continuous column of decay is likely present that links the cavities in the trunk and western first order branch. When interpreting the Resistograph test results in accordance with the t/R ratio model[1], decay at two of the four points tested in the trunk exceeded the minimum 'safe' ratio of healthy tissue to decayed tissue/hollowness.

Where the trunk of a tree becomes more than two thirds hollow the potential for torsional fracturing and cross-sectional flattening of the trunk significantly increases, particularly during high winds [2]. Based on the test results the trees ULE was estimated at <5 years, and the tree was allocated a Retention Category of Priority for Removal (refer AIA Report: Appendix C - Internal Diagnostic Testing Results).

[1] Body Language of Trees, 1994, Mattheck & Breoler, HMSO Publishing
[2] Failure mechanism of hollow tree trunks, Y-S Huang et al. 2017, The Royal Society Publishing

The supplied plans show Tree T16 is to be retained and will be subject to a Major Encroachment (as defined by AS4970) from excavation within the Structural Root Zone (SRZ) as part of boatshed construction (refer Appendix E – Root Mapping). In accordance with AS4907 where a tree is subject to a Major Encroachment, further investigations are required to determine the potential impact of the proposed works upon the tree.

Based on the above, root mapping investigations were undertaken within the SRZ to determine whether excavation could impact the stability of the tree. The extent of exploratory excavation was specified and supervised by Martin Peacock Tree Care and the works were undertaken by the Builder working on the project (Newmark Constructions). It should be noted that a small amount of additional excavation is required beyond the SRZ within the trees TPZ area. However, as the total area of proposed excavation (SRZ + TPZ) amounts to 5.32% of the overall TPZ only (refer Appendix E – Root Mapping, Cut And Fill Diagram) this additional excavation should not significantly impact the tree.

The root mapping trench was excavated by hand to a maximum depth of 800mm (bottom of proposed slab). Two (2) roots of 60mm and 70mm diameter were located within the trench. Although roots in the SRZ are important in providing stability to a tree's root plate, the pruning of these two relatively small diameter roots should not have a significant impact on the stability of Tree T16. These roots should be pruned by the Project Arborist at the time of Boatshed construction.

The eastern section of the boatshed and stairs are to be constructed above existing grade and can be installed using tree sensitive methods to minimise the impact of construction upon the tree.

It should be noted that the extensive internal decay identified within the trunk of Tree T16 will continue to develop. Repeat internal diagnostic testing at the same testing location as previous is recommended in April 2025 (36 months after the initial test) to monitor the rate of spread of decay. Tree management recommendations (where required) should be based on the test results.

Tree T17 (*Corymbia maculata* - Spotted Gum) is a mature specimen in fair health and poor structural condition, based on the upper crown of the tree having either died back or failed due to storm damage. The 'crown' of the tree comprises of two first order branches only. The tree has a ULE of 5-15 years and has been allocated a Retention Category of Consider for Removal.

The supplied plans show Tree T17 falls within the footprint of the proposed boatshed and is therefore proposed for removal.

4.0 Conclusion

Locating the proposed boatshed in the south western corner of the site will have a limited impact on the canopy cover at the site as Tree T17 is a relatively small, poor-quality specimen with limited canopy.

Tree T15 is a good quality specimen which is in the early stages of maturity. This tree can be expected to develop into a large specimen that will provide a significant contribution to the canopy cover and amenity of the site over the long term.

Although Tree T16 is to be retained as part of the proposed development works the tree has a very short ULE due to extensive internal decay. Periodic internal diagnostic testing should be undertaken to monitor the rate of spread of decay.

To maintain/enhance canopy cover and amenity at the site the Landscape Plans should include additional replacement tree planting to offset the removal of Tree T17, and to establish a replacement for Tree T16, based on the trees very short ULE.

5.0 Recommendations

Tree T17 is proposed for removal. Approved tree removal works shall be undertaken by a qualified Arborist (minimum AQF level 3) covered by adequate public liability insurance. Arborists and ground staff shall comply with the *Work Cover Code of Practice for the Amenity Tree Industry*.

Prior to the commencement of the construction stage of the project, TPZ areas shall be established for Trees T14, T15, T16, F and G. To provide for construction access, the detailed set out for TPZ fencing, trunk protection and ground protection shall be determined through consultation between the Project Arborist and the Project Manager prior to the commencement of the works (refer Appendix D – Tree Protection Details).

Demolition of existing structures and pavements within TPZ areas shall leave footings and sub base layers in situ (where possible) to minimise ground disturbance. Demolition works shall be supervised by the Project Arborist.

When constructing the proposed retaining wall and the Boatshed within the TPZ areas of Trees T15 and T16, over excavation, benching or battering to the rear of the wall/Boatshed slab shall be avoided. A slimline drain-cell type product shall be installed to below ground level sections of the Boatshed walls to avoid the need to over excavate for the installation of sub surface drainage.

Excavation works and the pruning of the two (2) roots identified by root mapping investigations in the SRZ of Tree T16 shall be supervised/undertaken by the Project Arborist.

Above grade sections of the Boatshed and stairs within TPZ areas shall be installed on isolated, piered footings. Pier locations shall be excavated by hand to a minimum depth of 600mm (or rock) and where roots >20mm diameter are encountered the pier location shall be adjusted (unless root pruning is approved by the Project Arborist). Mechanical augering of confirmed pier locations is permissible at depths >600mm. Where required, pier holes shall be sleeved to prevent contact between roots and freshly poured concrete.

Underground services within TPZ areas shall be installed using tree sensitive methods and retain all roots >20mm diameter (or as specified by the Project Arborist). Tree sensitive methods include the following:

- Hand excavation – trenches shall be excavated using hand tools only.

- Hydrovac excavation - trenches shall be excavated using low water pressures and the lance shall not be pointed directly at roots to avoid bark damage.
- A combination of compact excavator/hand excavation – trenches shall be excavated using a compact excavator (<2T) fitted with a flat bladed bucket. Soil levels shall be lowered in small increments. The excavator operator shall be guided by a spotter at all times to identify and carefully expose all roots >20mm diameter using hand tools.

Pipework/conduits shall be installed under or around significant roots (as determined by the Project Arborist), unless root pruning is approved by the Project Arborist.

Installation of new landscape plantings in TPZ areas shall be undertaken using hand tools only and shall retain all roots >20mm diameter.

This Addendum should be read in conjunction with the Arboricultural Impact Assessment Report (Rev B, 25.09.23). The recommendations of this Addendum are subject to Council approval.

Martin Peacock
(Consultant Arborist – AQF level 8)

BSc (hons.) Arboriculture (UK)
Higher National Diploma Arboriculture (UK)
National Diploma Horticulture (Arb.) (UK)
Diploma Horticulture (Landscape Design) (AUS)

Appendix A – Tree Assessment Results

Tree no.	Species	Age Class	DBH (mm)	Height (m)	Crown Spread r - (m)	Physiological Condition	Structural Condition	Useful Life Expectancy (yrs)	Quality & Value	Retention Category	TPZ (m)	SRZ (m)
T14	*Corymbia maculata* (Spotted Gum)	Mature	600	20	6	Poor	Good	5-15	C	Consider for Removal	7.2	2.7
T15	*Corymbia maculata* (Spotted Gum)	Mature	300	13	4	Good	Good	15-40	B	Consider for Retention	3.6	2.0
T16	*Corymbia maculata* (Spotted Gum)	Mature	750	18	7	Good	Poor	<5	D	Priority for Removal	9.0	2.9
T17	*Corymbia maculata* (Spotted Gum)	Mature	325	7	5	Fair	Poor	5-15	C	Consider for Removal	3.6	2.1
F	*Corymbia maculata* (Spotted Gum)	-	800	-	-	-	-	-	-	Retain – outside of site	9.6	3.0
G	*Jacaranda mimosifolia* (Jacaranda)	-	400	-	-	-	-	-	-	Retain – outside of site	4.8	2.3

	Comments / Preliminary Management Recommendations
T14	Moderate landscape value. Crown density 25-50%. Declining health and short Useful Life Expectancy due to burying of root collar. **Proposed for Retention**
T15	Moderate landscape value. Partially supressed. **Proposed for Retention**
T16	Moderate landscape value. Trunk cavity at 3m, internal diagnostic testing indicates extensive decay. Wounds in various stages of decay. **Proposed for Retention**
T17	Low landscape value. Top of tree missing, poor form. Partially supressed. **Proposed for Removal**
F	Neighbours tree.
G	Neighbours tree. Exempt species under NBC Tree Management Policy.

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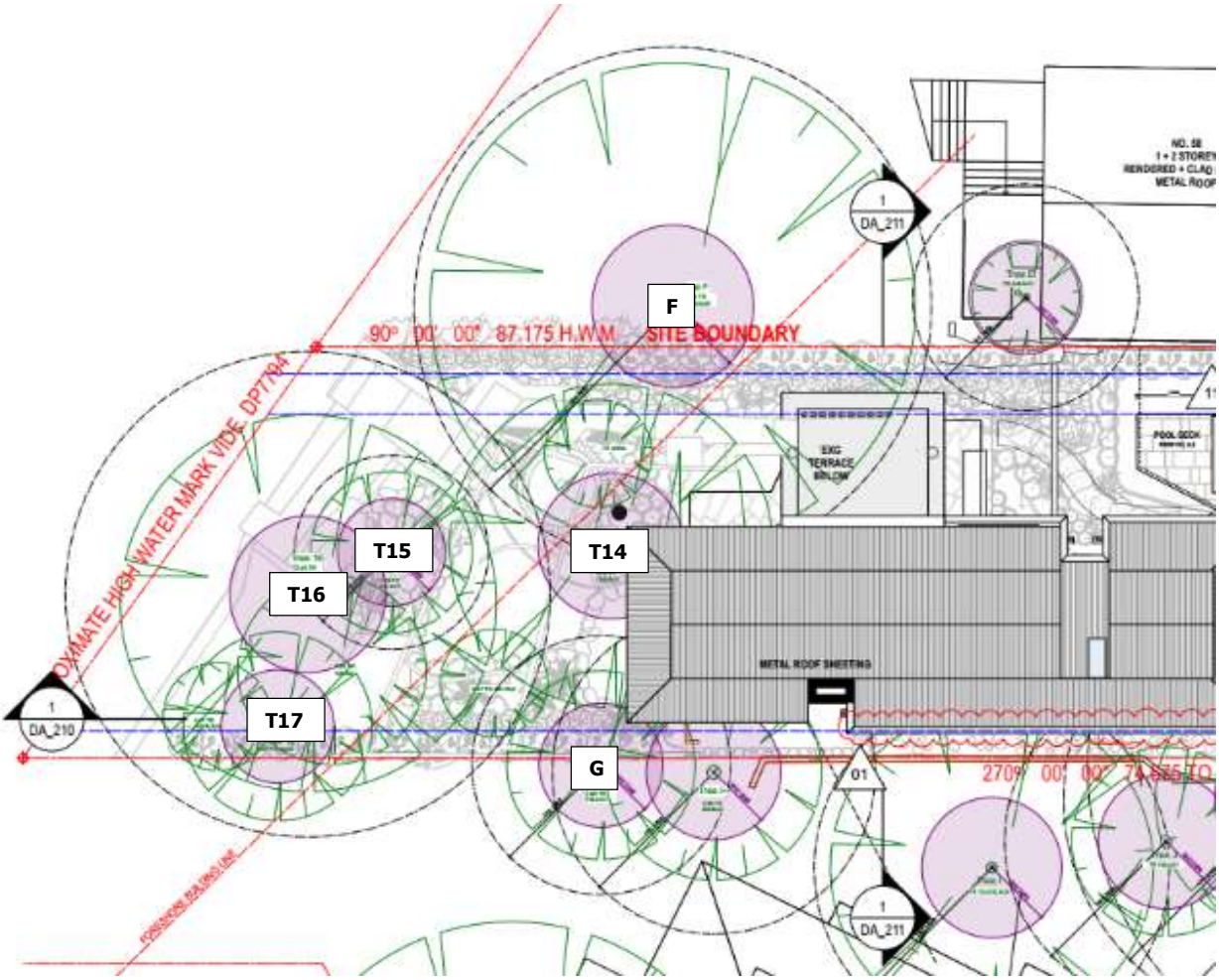
Appendix B – Site Plan



Extract from Site Plan (DA003, Rev 2) – 02.10.24

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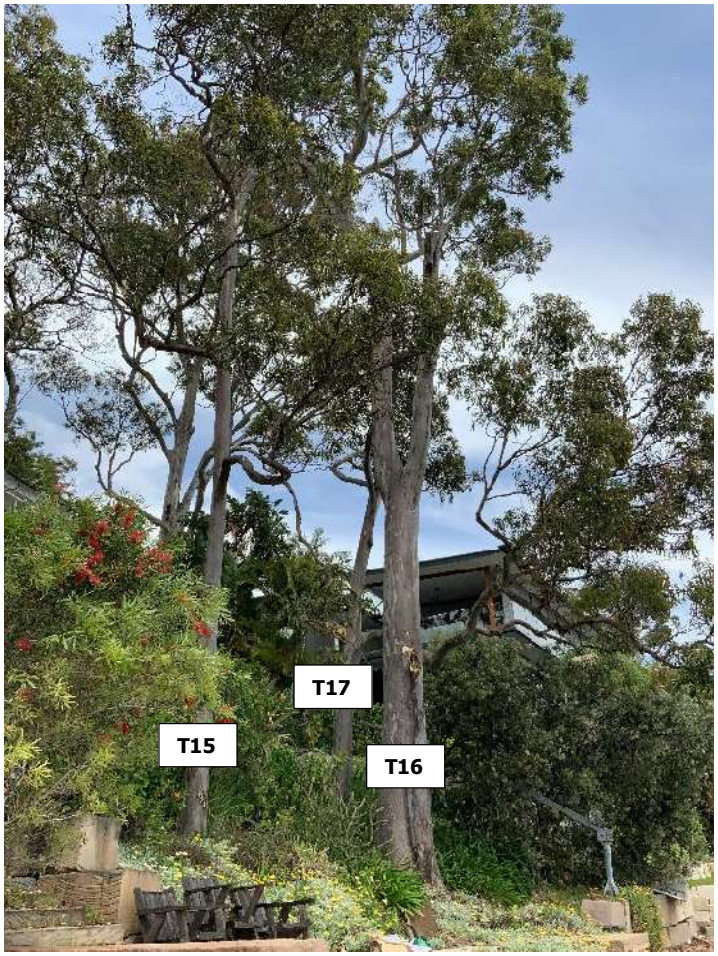
Appendix C – Photographs



1: Trees T15, T16 & T17

2: Tree F

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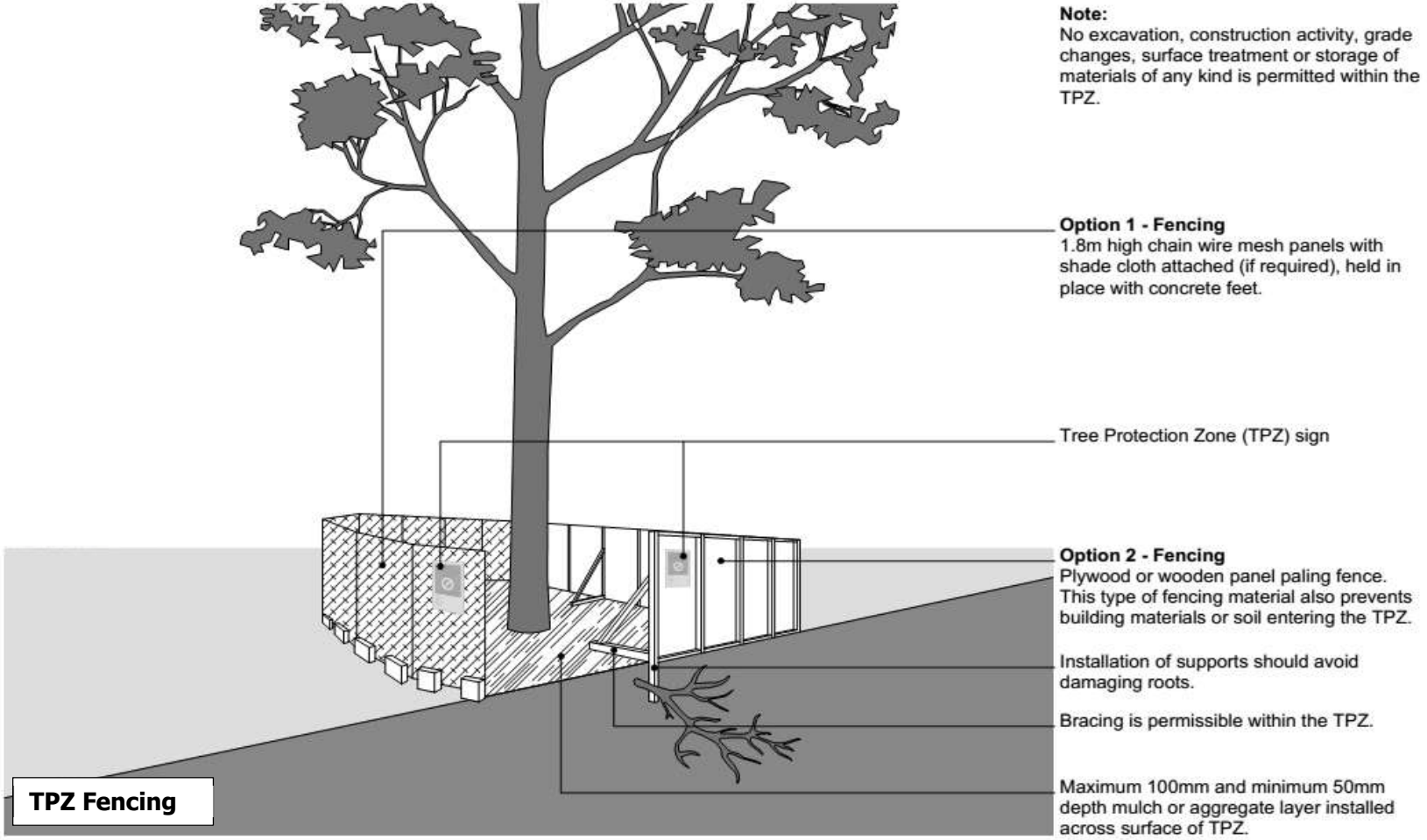
Appendix D – Tree Protection Details



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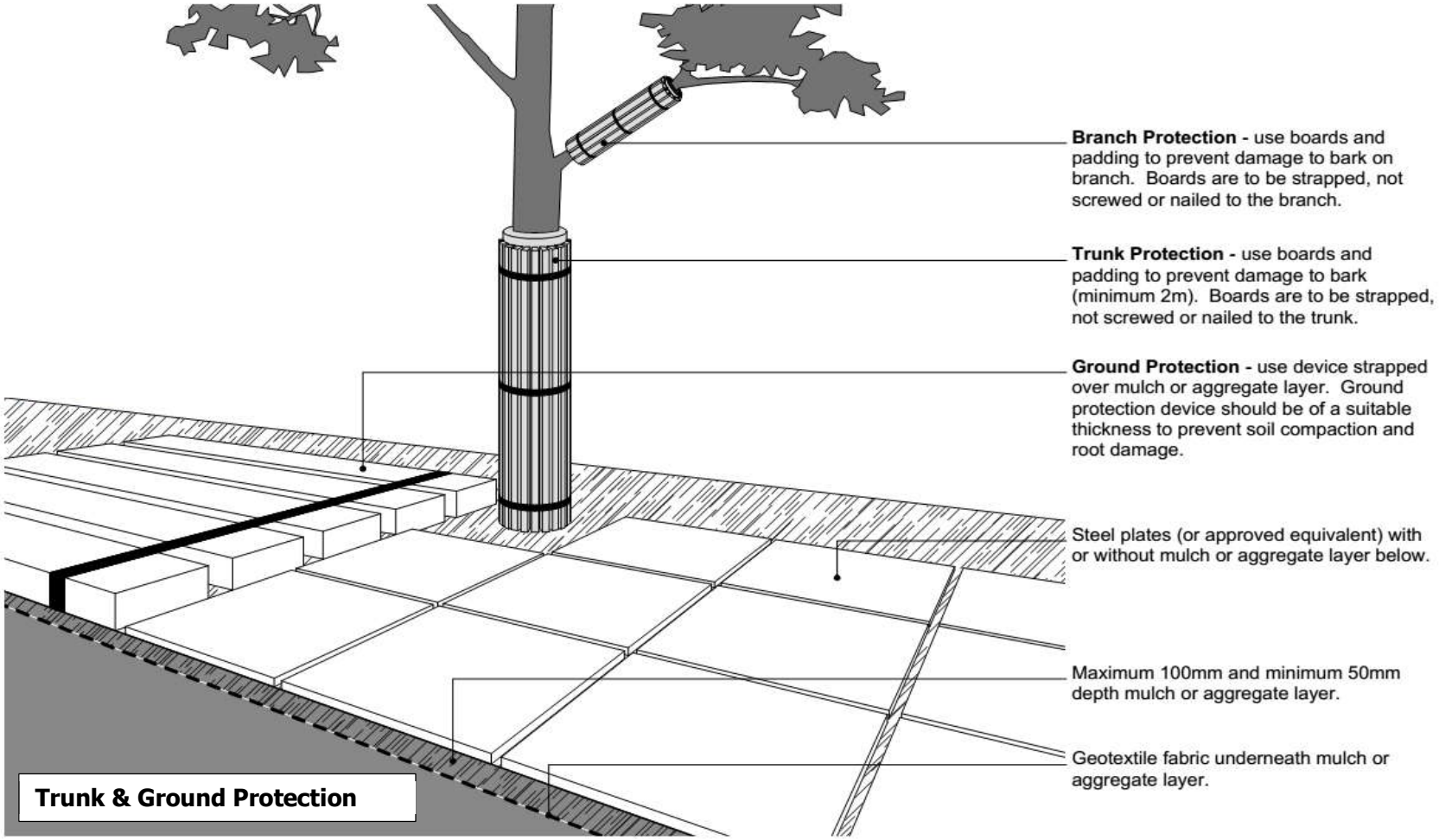

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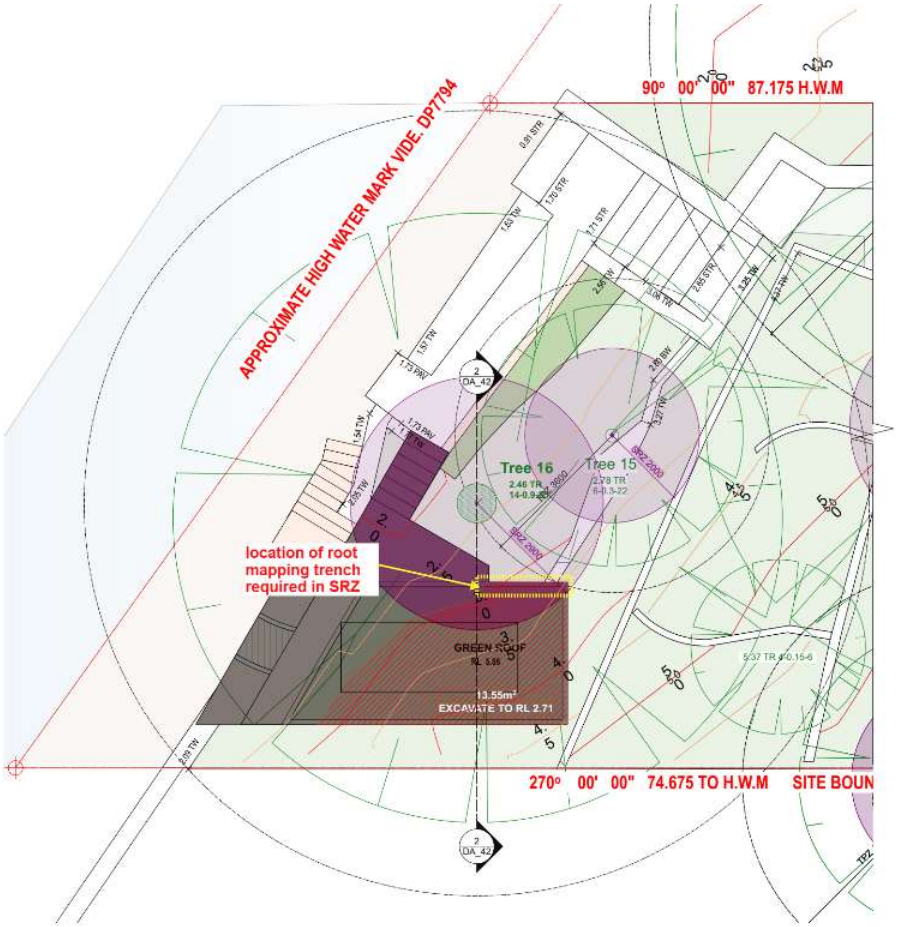
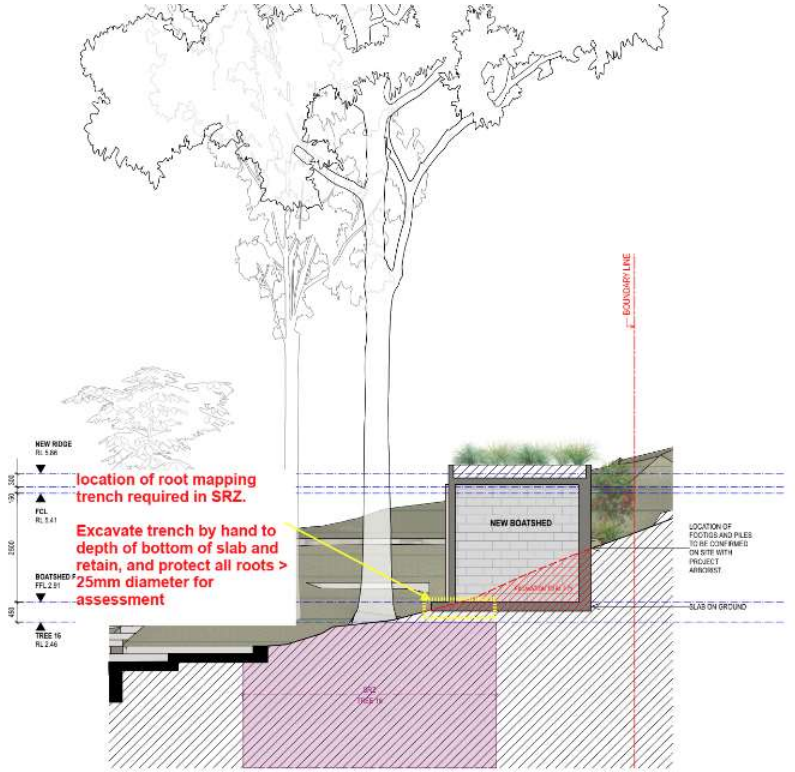
Appendix E – Root Mapping



1 CUT AND FILL DIAGRAM
Scale: 1:50



2 CROSS SECTION DIAGRAM
Scale: 1:50

Extract from Cut And Fill Diagram (undated) – prepared by Bennett Murada Architects

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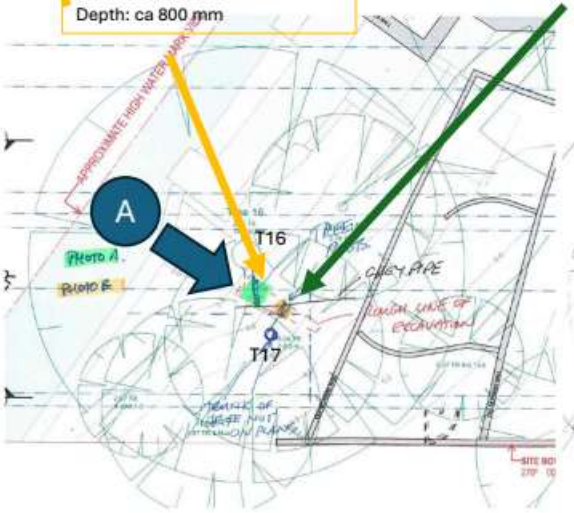
A trench of 2500 mm was dug up to a depth of 800 mm,
revealing two tree roots
Root 1 of T16 (probably potentially T17)
Root 2 of T17 (tree to be removed)
A grey pipe filled with soil was across the trench)

Tree root 1 of T16
(potentially also of T17)
Thickness: ca 60 mm
Depth: ca 800 mm

Tree root 2 of T17
Thickness: ca 60-70 mm
To be removed



Root mapping results - prepared by Newmark Constructions

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