ARBORIST REPORT

8 Grant Street,
Maitland, NSW, 2320

Arboricultural Impact Assessment
For proposed development.

Performed February 29, 2024

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REPORT REF JN19420 VERSION 1

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TABLE OF CONTENTS

1 SUMMARY

This Arboricultural report was prepared for Brown Commercial Building to provide an Arboricultural Impact Assessment of nine (9) trees located within or on the adjacent neighbouring properties (within 3-10m) to the proposed development at 8 Grant Street, Maitland, NSW (The subject site). The report has been prepared to aid in the assessment of a Development Proposal (Lots 3-4 / DP 38006 Maitland City Council) for the Construction of a Multi Storey Residential (15 x Unit) Development.

It seeks to identify the trees within the site, provide information on their current health and condition and to assess their remaining useful life expectancy. Along with landscape significance, these factors are then used determine their suitability for retention and preservation.

This report will assess the potential impact of the proposed development on the subject trees and, where viable, make recommendations for amendments to the design or construction methodology where necessary to minimise any adverse impact. The report also provides recommended tree protection measures to ensure the long-term preservation of the trees to be retained where appropriate.

On the 29th of February 2024, an on-site inspection and ground level visual tree assessment was undertaken by Matthew Taylor. (9) untagged trees were identified on neighbouring properties or within the proposed development a range of (3-10m), consisting of native and non-native species. The impact of the proposed development was assessed based on the drawings prepared by Becerra Architects, drawing reference number A101 B dated Oct 2023 (Site Plan) with T9 the only tree not plotted on this drawing.

The proposed development will necessitate the removal of five (5) low retention trees being T3 (Mango), T6 (Murraya),T7 (Murraya),T8 (Callistemon) and T9 (Callistemon).

The footprint of the Multi Storey Residential (15 x Unit) Development is also located within the TPZ of trees T1 (Himalayan Cedar),T2 (Silky Oak),T4 (English Oak) and T5 (Norfolk Island Pine).It represents a minor encroachment of 2.46% in the TPZ of T1 and 2.42% in the TPZ of T4 and an acceptable encroachment of 9.05% into the TPZ of T2 and 10.49% into the TPZ of T5.

Using Australian Standard AS 4970-2009 (Protection of Trees on Development Sites) as a point of reference and guide, recommendations have been made regarding tree protection measures and tree sensitive construction measures to limit the impact of these works on retained trees. No notable impact on the health or stability of these trees is expected if the recommendations of this report are followed.

No habitat hollows were observed in any of the subject trees at the time of the inspection and as such the proposed development is unlikely to impact local wildlife habitat.

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2 INTRODUCTION

This Arboricultural report was prepared for Brown Commercial Building to provide an Arboricultural Impact Assessment of nine (9) trees located within neighbouring properties or adjacent (within 3-10m) to the proposed development at 8 Grant Street, Maitland, NSW (The subject site). The report has been prepared to aid in the assessment of a Development Proposal (DP 38006 Maitland City Council) for the Construction of a Multi Storey Residential (15 x Unit) Development.

2.1 SITE

The subject property is a residential allotment known as Lots 3-4 / DP 38006 being 8 Grant Street, Maitland, NSW. As indicated by the site survey, the property is a quadrilateral shaped parcel of land at on Sothern side of Grant Street, Maitland. A one storey weatherboard building and garage with concrete driveway currently occupy the site.

2.1.1 SITE LOCATION

Figure 1 shows the location of 8 Grant Street, Maitland.

FIGURE 1 - LOCATION OF SITE (SIX MAPS)

2.1.2 RELEVANT LEGISLATION

The site resides in the Maitland City Council local government area (LGA), is zoned MU1 (Mixed Use Lot).

The following documents contain the LGA legislation covering the site:

- *Maitland Local Environmental Plan 2011 (MLEP)*
- *Maitland Development Control Plan 2011(DCP) : B5 – Tree and Vegetation Management.*
- *Environmental Planning & Assessment Act 1979.*
- *Environmental Planning & Assessment Regulation 2000.*

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2.2 Subject Trees

The subject trees were inspected by Matthew Taylor on the 29th of February 2024. All trees were untagged and apart from T9 had been previously plotted by surveyors on site plans prepared by Becerra Architects, drawing reference number A101 B dated Oct 2023 (Site Plan). For reference, the trees have been plotted on the attached Tree Protection Plan (Appendix 8), based on the above drawing and numbered corresponding to their order of assessment.

The numbers used in this plan correlate with the Tree Assessment Schedule (Appendix 7.1). All trees listed in this report are greater than 3m in height and therefore considered trees with the Maitland City Council legislation.

The health of the 9 existing trees within the site was rated as good (8), fair/good (1) during the site assessment. The individual ratings are listed in the Tree Assessment Schedule (Appendix 7.1). Refer to section 7.6 for explanation of tree assessment terms.

The structure of the 9 existing trees (woody perennials) within the site was rated as good (9) during the site assessment. The individual ratings are listed in the Tree Assessment Schedule (Appendix 7.1). Refer to section 7.6 for explanation of tree assessment terms.

2.3 Heritage and Environmental Overlays

The subject site is not listed as a heritage item in the *Maitland City Council Local Environmental Plan 2011.* The site is not shown as having terrestrial biodiversity on the LEP maps. None of the subject trees are listed as a threatened species by the *NSW Biodiversity Conservation Act 2016* or the *Commonwealth Environmental Protection and Biodiversity Conservation Act 1999*.

None are a listed weed species in NSW. (Deptartment of Primary Industries, 2023)

2.4 Scope / Aim

The purpose of this report is to identify the trees on the site or on the neighbouring properties within 3-10m of the proposed development, provide information on their current health and condition and to assess their remaining useful life expectancy. The significance of the subject tree will be assessed with consideration given to habitat, ecological, cultural and historical factors and then use these factors to determine their suitability for retention and preservation.

This report will assess the potential impact of the proposed development on the subject trees and make recommendations for amendments to the design or construction methodology where necessary to minimize any adverse impact. The report also provides recommended tree protection measures to ensure the long-term preservation of the trees to be retained where appropriate.

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3 METHOD

3.1 TREE DATA COLLECTION, STRUCTURE AND HEALTH ASSESSMENT

An on-site inspection and ground level visual tree assessment (VTA) was undertaken by Matthew Taylor on the 29th of February 2024. The tree data was recorded in a Tree Assessment Table and is attached as (Appendix 7.1).

The approximate age of the trees was estimated. The height was estimated using a Clinometer. Defects and anomalies were identified, assessed, and measured using a measuring tape or estimated if at height. Photographs were taken at the time of the site inspection by the inspecting arborist.

Structure and health were assessed using the VTA procedure (Mattheck & Breloer, 1994) on both biological and mechanical factors. More detailed inspections including aerial inspections, root crown excavation, sounding or internal wood strength testing were not undertaken.

More detailed inspections including, root crown excavation, basic or electronic sounding or internal wood strength testing were not undertaken.

3.2 SULE, SIGNIFICANCE & TREE RETENTION VALUE

SULE (Useful Life Expectancy) is an estimate of the tree's sustainability in the landscape. This was calculated using a method from Barrell Consultancy (Barrell, 2001). Tree significance was assessed using criteria developed by Andrew Morton (Morton, 2006) shown in appendix 7.3.

Retention values are derived from a combination of SULE and Landscape Significance and were determined using Table 1 below (Couston & Howden, 2001)

- HIGH Retention Value: These trees are worthy of retention and design consideration should be made where possible to allow their retention.
- MODERATE Retention Value: These trees are worthy of retention and minor design consideration should be made to retain these trees wherever possible (e.g., placement of ancillary structures, garden retaining walls, driveway levels).
- LOW Retention Value: These trees should not be a constraint to design layout.
- VERY LOW Retention Value: Potentially hazardous, poor specimens or weeds. These trees should be removed irrespective of any proposed development.

The SULE, significance and retention value of each tree is listed in the Tree Assessment Schedule (Appendix 7.1).

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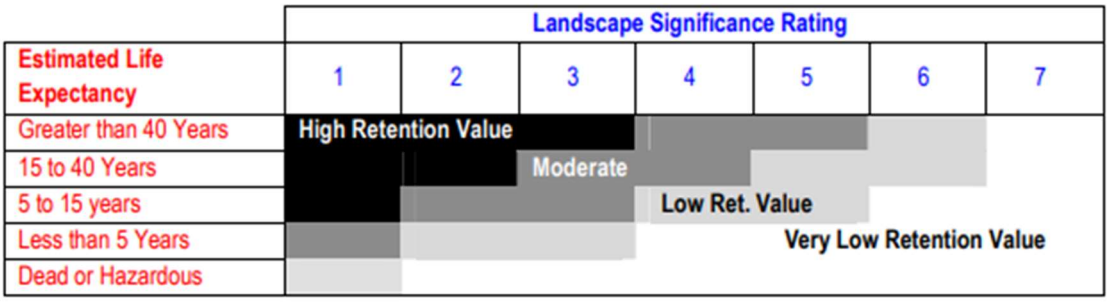
Table 1 - Determining Tree Retention Values (Couston & Howden, 2001)



3.3 Tree Protection Zones

The Tree Protection Zone (TPZ) is a radial distance measured from the centre of the trunk of the tree as specified in Appendix 7.2. An indicative TPZ has been calculated in accordance with AS 4970-2009 (Protection of Trees on Development Sites) at 12 x DBH of the tree and listed in the Impact Assessment Schedule (Appendix 7.2).

The intention of the TPZ is to ensure protection of the root system and canopy from any potential damage from construction works and ensure the long-term health and stability of each tree to be retained.

Incursions to the root zone occur due to excavations, changes in ground levels, (either lowering or raising the grade), trenching or other forms or soil disturbance such as ripping, grading or inverting the soil profile. Such works may cause damage or loss of part of the root system, leading to an adverse impact on the tree.

3.4 Structural Root Zones

The Structural Root Zone (SRZ) is a radial measurement that depicts the area required for tree stability. An indicative SRZ has been calculated in accordance with AS 4970-2009 (Protection of Trees on Development Sites), being $(DAB \times 50)^{0.42} \times 0.64$. The SRZ of the trees on site are specified in the Impact Assessment Schedule (Appendix 7.2).

Incursions into the SRZ are not recommended as they are likely to damage the woody roots which may affect the trees stability in the ground (Mattheck, 2007) and may cause the tree to decline or die (Urban, 2008).

3.5 Acceptable Encroachments to Root Zone or Canopy

3.5.1 Minor Encroachment

Unavoidable encroachment into the TPZ, that is outside the SRZ and where the area less than 10% of the area of the TPZ may be accepted. The area lost to this encroachment should be

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compensated for elsewhere and contiguous with the TPZ. Examples of acceptable incursions are shown in Appendix 7.4. Greater incursions to the TPZ may result in an adverse impact on the tree.

3.5.2 Major Encroachment

Where incursions greater than 10% of the TPZ are unavoidable, exploratory excavation using non-destructive methods may be required to evaluate the extent of the root system affected and determine whether the tree can remain viable (Standards Australia, 2009).

3.5.3 Canopy Encroachment

Where pruning of the canopy is required, the removal of foliage and branches to the extent of less than 10% of the total foliage volume is generally tolerable provided the removal of branches does not create large wounds or disfigure the natural form and habit of the tree. The minimum pruning as required to accommodate any proposed works is desirable. Extensive pruning can result in a detrimental impact on tree health and may lead to exposure of remaining branches to wind forces that they were previously sheltered from, leading to a greater risk of branch failure.

Clearance to between the building line and canopy should consider any projecting structures, such as balconies, awnings and the roofline and any requirement for temporary scaffolding to be erected during construction (typically 1-1.5 metres wide). High structures should preferably be located outside the canopy drip line in order to avoid or minimise canopy pruning.

3.6 Limitations

1. This report relates to the tree on the days of the inspection only, any changes to the site location, such as unsighted construction or landscape works may alter the results of this report.
2. Only the plans, specifications and pending development applications listed in section 4 were considered. It is possible that any other such documents that were not assessed or amendments to those plans could alter the results of this report.
3. This report, and any advice, opinions and recommendations given in it, is based on information supplied by the client and on data from inspections, measurements and analysis carried out by Matthew Taylor of Agility Professional Tree Service Pty Ltd. No guarantee is implied for future tree safety. The client should rely on the report and its contents only to that extent.

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4 IMPACT ASSESSMENT

The intention of this assessment is to determine the incursions to the root zones and canopies created by the proposed Multi Storey Residential (15 x Unit) Development and evaluate the likely impact of the proposed works on the subject trees. Details shown on the following plans and documents were reviewed for this assessment:

TABLE 2 - REVIEWED PLANS AND DOCUMENTS

Title	Author	Drawing Number	Date
Residential Development 6-8 Grant Street Maitland - Site Plan	Becerra Architects	A 101 Rev B Project 2350	23/10/23
Residential Development 6-8 Grant Street Maitland – Ground Floor Plan	Becerra Architects	A 102 Rev B Project 2350	23/10/23
Residential Development 6-8 Grant Street Maitland – Roof Plan	Becerra Architects	A 125 Rev A Project 2350	23/10/23
AS4970-2009 Protection of Trees on Development sites	Standards Australia		
AS4373-2007 Pruning of Amenity Trees	Standards Australia		

No landscape plans, underground plumbing or services plans, irrigation plans, excavation plans, geo-technical reports or sediment control plans were viewed relating to the proposed development.

A summary of the impact by the proposed development on each subject tree is shown in the Impact Assessment Schedule (Appendix 7.2). The following has been used to form the impact assessment:

- Tree protection zone (TPZ).
- Structural root zone (SRZ).
- Footprint and envelope of the proposed building works including estimated excavation for footings.
- Incursions into canopy as part of the proposed building envelope or temporary structures.
- Assessment of impact of works to the existing trees.

The proposed development will necessitate the removal of four trees, T3 (Mango),T6 (Murraya), T7 (Murraya), T8 (Callistemon) and T9 (Callistemon) of low retention value as they reside within the building footprint or within proximity. These trees are not considered significant or worthy of protection due to size, health and structure as shown in Figure 2, Figure 3, Figure 4 and Figure 5.

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ABN 58 123 727 515
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The footprint of the Multi Storey Residential (15 x Unit) Development is also located within the TPZ of trees T1 (Himalayan Cedar),T2 (Silky Oak),T4 (English Oak),T5 (Norfolk Island Pine) as shown in Figure 6,Figure 7 and Figure 8 below. It represents a minor encroachment of 2.46% in the TPZ of T1 and 2.42% in the TPZ of T4 and an acceptable encroachment of 9.05% into the TPZ of T2 and 10.49% into the TPZ of T5.

The current existing fence adjacent to T2 will be sufficient to maintain acceptable encroachment to the TPZ ,however if existing fence line is removed then tree protection fencing (section 5.3) must be installed in its place.

Tree protection fencing (as per section 5.3) should be installed as close as practicable to the proposed building footprint, being approximately 6m from T4 and 6m from T5. Works on building side of this fence, still within the TPZ of site trees must comply with restricted activities listed in section 5.2. Works should not have any adverse impact on the trees provided excavation adheres to section 5.9.

FIGURE 2 – TREE 3 TO BE REMOVED

FIGURE 3 – TREE 6 AND TREE 7 TO BE REMOVED

FIGURE 4 – TREE 8 TO BE REMOVED

FIGURE 5 – TREE 9 TO BE REMOVED

No retained trees require canopy pruning to accommodate the proposed development. No other trees will be adversely affected by the proposed development.

No habitat hollows were observed in any of the subject trees at the time of the inspection and as such the proposed development is unlikely to impact local wildlife habitat.

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Ph 02 49468958

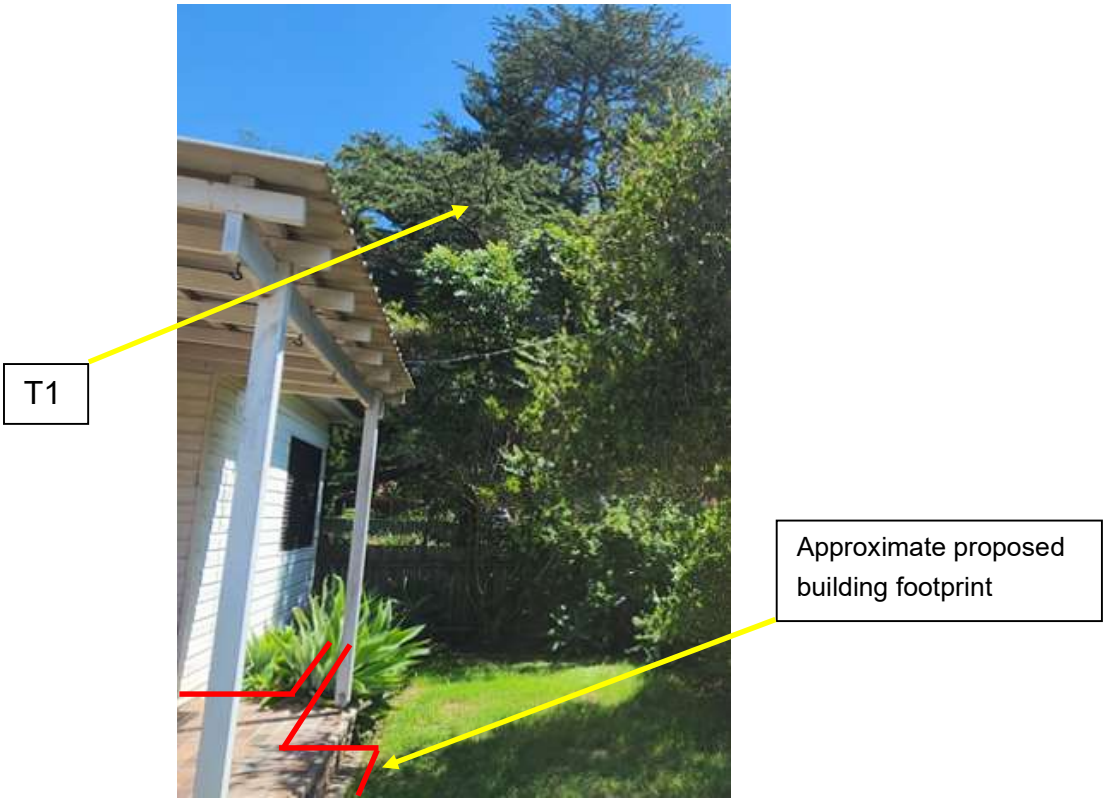

FIGURE 6 – T1 AND APPROXIMATE LOCATION OF PROPOSED DWELLING

FIGURE 7 – T2 AND APPROXIMATE LOCATION OF PROPOSED DWELLING

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ABN 58 123 727 515
8/6 Woodbine Pl, Toronto NSW 2283
Ph 02 49468958

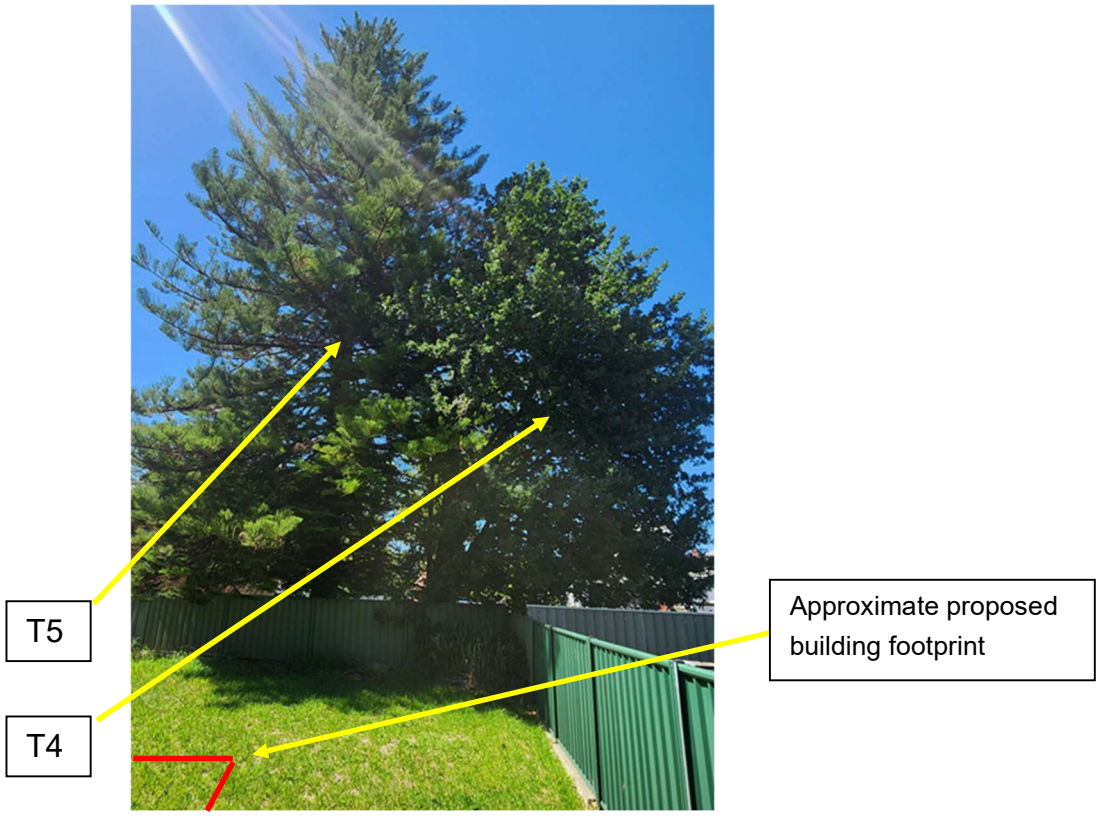

FIGURE 8 – T4 AND T5 APPROXIMATE LOCATION OF PROPOSED DWELLING

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8/6 Woodbine Pl, Toronto NSW 2283
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5 TREE PROTECTION RECOMMENDATIONS

5.1 TREE PROTECTION PLAN & ARBORIST INVOLVEMENT

This report adopts Australian Standard AS 4970-2009 (Protection of Trees on Development Sites) as a point of reference and guide for the recommended tree protection measures. The following tree protection measures should be read in conjunction with the Tree Protection Plan (Appendix 8) and must be available onsite prior to the commencement of and during works.

It is recommended that a project arborist, of minimum AQF 5 and experienced in tree protection on construction sites, be engaged and appointed prior to commencement of any work. They should be present (with sufficient notice) for 'Hold Points' listed in this document. Those being:

- Prior to works commencement to certify tree protection measures are in place.
- Post construction, prior to the removal of tree protection, to certify tree protection and the maintenance of tree health and condition.

Arborist recommendations and tree protection measures listed in this report are to be added to information provided during site induction for all workers prior to their commencement of work.

5.2 PROHIBITED ACTIVITIES

The position of tree protection measures including the recommended tree protection zones are indicated in the Tree Protection Plan (Appendix 8). These measures ensure the retained trees can be protected during the proposed development. In accordance with AS4970-2009 the following activities are restricted within the TPZ:

A. Machine excavation, including trenching.
B. Excavation for silt fencing.
C. Cultivation.
D. Storage.
E. Preparation of chemicals, including preparation of cement products.
F. Parking of vehicles and plant.
G. Refuelling.
H. Dumping of waste.
I. Wash down and cleaning of equipment.
J. Placement of fill.
K. Lighting of fires.
L. Soil level changes.
M. Temporary or permanent installation of utilities and signs.
N. Physical damage to the tree.

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ABN 58 123 727 515
8/6 Woodbine Pl, Toronto NSW 2283
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5.3 TREE PROTECTION FENCING

Tree Protection Fencing shall be installed at the perimeter of the Tree Protection Zone in the locations shown on the Tree Protection Plan (Appendix 8). The Tree Protection Fence shall consist of 1.8m high temporary chain wire panels supported by steel poles (with diameter greater than 20mm), anchored by movable weighted blocks. They shall be fastened together and supported to prevent sideways movement. The fence must have a lockable opening for access. Shade cloth material shall be attached to the outer surface of the Tree Protection Fence. The tree's woody roots shall not be damaged during the installation of the Tree Protection Fencing and machinery should not enter the TPZ. Figure 9 shows an example of appropriate tree protection fencing.

The Tree Protection Fence shall be erected prior to the commencement of works onsite and shall be maintained in good condition for the duration of the development period. The Tree Protection Fence shall only be removed, altered, or relocated with the authorization from the site arborist in consultation with the site supervisor.

RECOMMENDED HOLD POINT - Site Arborist must be present to inspect the installation of the tree protection fencing prior to any work commencing.

Where tree protection fencing is not feasible or inhibits safe access, modified tree protection fencing and/or trunk battering, and ground protection will be required as an alternative as per Appendix 7.5.

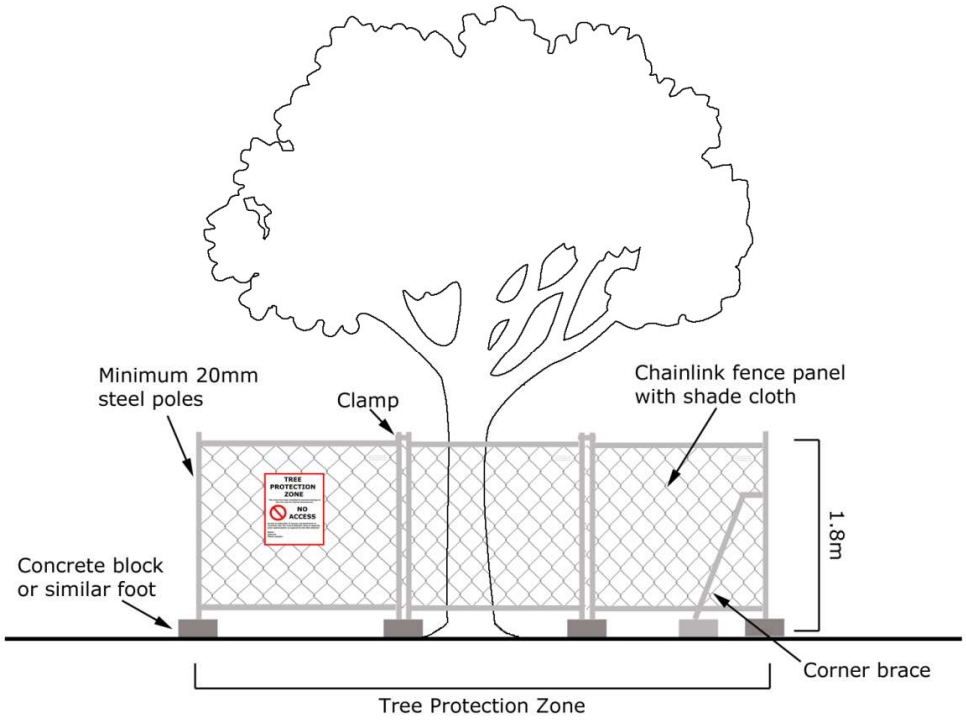

FIGURE 9 - EXAMPLE TREE PROTECTION FENCING (MATTHEW TAYLOR)

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8/6 Woodbine Pl, Toronto NSW 2283
Ph 02 49468958

5.4 MODIFIED TREE PROTECTION FENCING

Where the topography of the site or practicality prevents installation of Tree Protection Fence as per Section 5.3 and restriction is still required, Modified Tree Protection Fencing shall be installed at the perimeter of the Tree Protection Zone in the locations shown on the Tree Protection Plan (Appendix 8). The Modified Tree Protection Fence shall consist of 1m high temporary orange safety netting or similar supported by in-ground star stakes or anchored by movable weighted blocks. They shall be fastened together and supported to prevent sideways movement. The tree's woody roots shall not be damaged during the installation of the Tree Protection Fencing and machinery should not enter the TPZ. Figure shows an example of appropriate Modified Tree Protection Fencing.

The Tree Protection Fence shall be erected prior to the commencement of works onsite and shall be maintained in good condition for the duration of the development period. The Tree Protection Fence shall only be removed, altered, or relocated with the authorization from the site arborist in consultation with the site supervisor.

RECOMMENDED HOLD POINT - Site Arborist must be present to inspect the installation of the tree protection fencing prior to any work commencing.

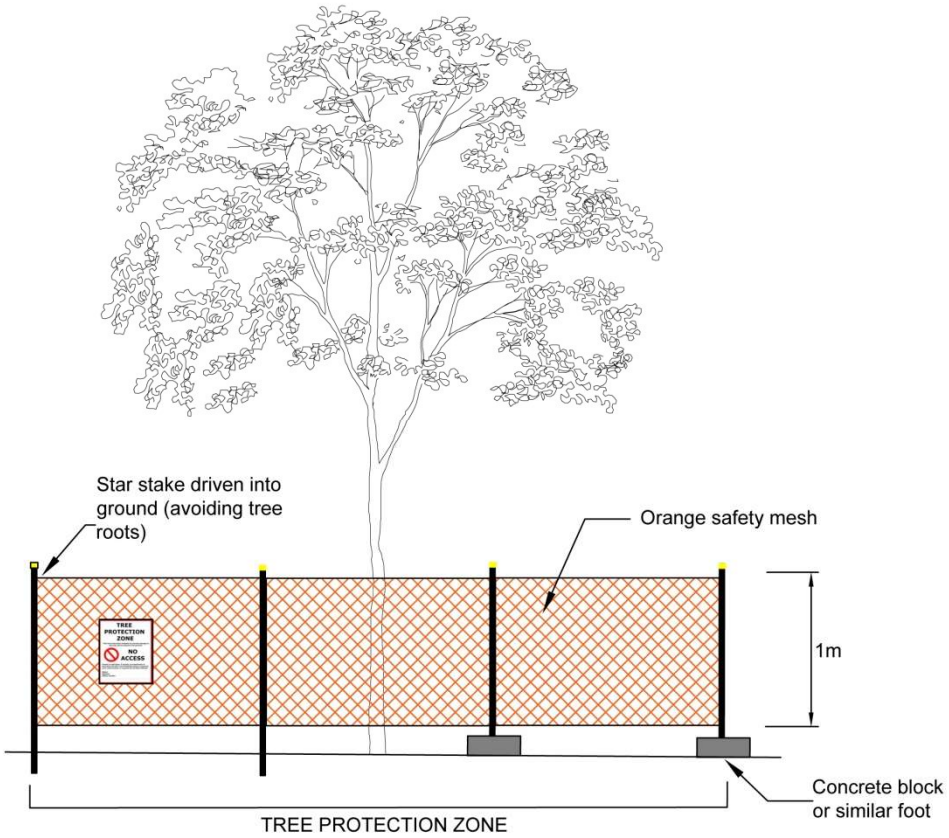

FIGURE 10 - EXAMPLE MODIFIED TREE PROTECTION FENCING (MATTHEW TAYLOR)

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5.5 SIGNAGE

Tree Protection Signage shall be attached to the Tree Protection Zone and displayed on each tree protection fencing, where clearly visible from within the development site. The signs shall be repeated at 10m intervals or closer where the fence changes direction. The signage shall be installed prior to the commencement of works onsite and shall be maintained in good condition for the duration of the development period.

The signs shall be a minimum size of 600 x 500mm. The lettering on the sign should comply with AS 1319. An example is shown in Figure 4.

Each sign shall advise the following details:

1. **TREE PROTECTION ZONE**
2. **NO ACCESS.**
3. If access, encroachment or incursion into this Tree Protection Zone is required, prior authorisation is required by the Site Arborist.
4. Name, address, and phone number the site arborist.

FIGURE 4 - EXPAMPLE TPZ SIGN

5.6 STOCKPILING AND SITE SHEDS

The existing gravel hardstand area or the grassed area to the front of the proposed granny flat development are to be designated as the storage and stockpiling areas. This includes storage of building materials, waste and waste receptacles, stockpiling of spoil or fill, stockpiling of bulk materials, such as soil, sand, gravel, road base or the like and stockpiling of demolition waste.

Any required site buildings or sheds, such as offices, toilets or storage containers should be located within these areas. None of the above should be present within the TPZ of retained trees above the proposed development.

5.7 SERVICE CORRIDORS

Access to this site is to be via Grant Street using the driveway and the grassed area in front of the proposed Multi Storey Residential (15 x Unit) development only. Care to be taken with high vehicles when passing under the crown of tree monitoring height clearances. It is preferred that correct pruning is undertaken rather than uncontrolled breakages due to high vehicle/ plant movement. This area is marked in the Tree Protection Plan (Appendix 8).

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5.8 Tree Removal

Five (5) tree requires removal to facilitate the proposed works. The approval of Maitland City Council must be sought via the DA application process before the removal of any tree protected under the Maitland City Council DCP.

Tree removal contractors must manually remove the trees and are be briefed on the need to protect retained trees during tree removal operations. No plant or machinery shall enter the TPZ of retained trees during the removal process.

Tree removal works must be undertaken in accordance with the NSW Work Cover Authority Code of Practice, Tree Work 2007 and is recommended to be carried out by a qualified arborist, minimum AQF level 3.

5.9 Earthworks and Trenching

Excavations for footings and plumbing within the TPZ of T1 ,T4 and T5 are to be hand dug prior to machinery being used. Roots should be exposed to the edge of the required area and any encountered greater than 10mm should be cut neatly with pruning saw or secateurs. Hessian is to be laid over the exposed roots and soil profile and kept moist until such time as they are backfilled.

Excavators and machinery used to dig footings should always remain within the footprint of the building and minimize movement in those areas identified as within the root zone of retained trees.

5.10 Maintaining the TPZ and Retained Trees

5.10.1 During Construction

The site arborist is to inspect trees and tree protection measures whilst onsite and provide recommendations for repairs and modifications to the tree protection measures as required. Additionally, they will document and treat any tree injury, pest or disease that may present during construction.

T4 and T5 may be impacted by root removal and require additional maintenance and monitoring during construction.

T4 and T5 shall be temporarily irrigated on a schedule and to a volume to be determined by the site arborist in the absence of rainfall. Each irrigation shall wet the soil within the TPZ to a depth of 150-450mm (Fite & Smiley, 2016).

Any landscape or construction works including, planting, garden edging, soil importation and installation of irrigation or lighting not assessed for this report should be evaluated by the site arborist as they are identified and prior to their commencement.

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ABN 58 123 727 515
8/6 Woodbine Pl, Toronto NSW 2283
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5.10.2 Post Construction

The removal of tree protection measures post construction shall be done in such a way as to not damage any retained trees and only at the approval of the site arborist. No vehicles or plant are to enter the TPZ of retained trees in the process of device removal.

Trees preserved on construction sites will generally benefit from having 50-100mm layer of organic mulch beneath the canopy (Matheny & Clark, 1998). Apply mulch to all retained trees were practicable. Any mulch within the TPZ, not able to be retained, shall be removed by hand without damage to any tree roots.

Tree health and structure should be evaluated again by the site arborist post construction to determine if any changes have occurred during the construction process. Mitigation treatments should be recommended and implemented if any changes have been detected.

Pest, disease and weed management are also an important part of a post construction maintenance program (Matheny & Clark, 1998). Continue to monitor retained trees and seek arborist advice in the event treatment is required.

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7 APPENDICES

7.1 TREE ASSESSMENT SCHEDULE

Tree No.	Species	Height (M)	Spread (m)	Trunk Diameter DBH 1.4 (m)	DAB(m)	Age Class	Health/Vitality	Deadwood %	Structural Condition	SULE (Safe Useful Life Expectancy)	Condition (Defects/Pests/Disease)	Landscape Significance	Retention Value
T1	***Cedrus deodara*** (Himalayan Cedar)	17	8N 8E 7S 3W	0.84	1.01	Mature	Good	10%	Good	Medium	Minor mechanical damage to roots, minor amount of small diameter deadwood. Tree leans to the Northeast with asymmetric crown to the south. Possibly topped at 5.5m with secondary regrowth. Hangers in crown	5	**MODERATE**
T2	***Grevillea robusta*** (Silky Oak)	18	7N 6E 5S 5W	0.84	1.03	Mature	Fair / Good	10%	Good	Medium	Broken 1st and 2nd order branches on the Northwest side, deadwood greater than 30mm throughout crown.	5	**MODERATE**
T3	***Mangifera indica*** (Mango)	6.5	3N 3E 3S 3W	0.43 At 1m	0.51	Mature	Good	<5%	Good	Medium	Good overall structure and vitality.	4	**LOW**
T4	***Quercus Robur*** (English Oak)	13.5	4N 4E 7S 5W	0.57	0.71	Mature	Good	<5%	Good	Medium	Good overall condition given species type and climate, asymmetry and suppressed crown to the South due to adjacent tree.	5	**MODERATE**
T5	***Araucaria heterophylla*** (Norfolk Island Pine)	23	4N 4E 3S 5W	0.79	0.95	Mature	Good	<5%	Good	Medium	Minor deadwood in crown reduced crown size to the south due to adjacent tree. Good vitality	5	**MODERATE**
T6	***Murraya paniculata*** (Orange Jasmine)	5	2N 2E 2S 2W	0.26 Multi Stem	0.42	Mature	Good	<5%	Good	Medium	Multi stem tree, large flush cut wounds from poor pruning and previously topped to reduce height.	4	**LOW**
T7	***Murraya paniculata*** (Orange Jasmine)	5	2N 2E 2S 2W	0.29 Multi Stem	0.52	Mature	Good	<5%	Good	Medium	Multi stem tree, large flush cut wounds from poor pruning and previously topped to reduce height.	4	**LOW**
T8	***Callistemon citrinus*** (Crimson Bottlebrush)	5	2N 2E 2S 2W	0.34 Multi Stem	0.54	Mature	Good	<5%	Good	Medium	Multi stem tree previously topped at 2m to reduce height secondary regrowth forming crown.	4	**LOW**
T9	***Callistemon viminalis*** (Weeping Bottlebrush)	7	2N 2E 2S 2W	0.49	0.53	Mature	Good	<5%	Good	Medium	Tree covered in vine, multi stemmed at 0.8 m , previous poor pruning. Minor deadwood throughout crown.	4	**LOW**

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7.2 IMPACT ASSESSMENT SCHEDULE

Tree No.	Species	Tree Protection Zone (m Radius)	Structural Root Zone (m Radius)	TPZ (m^2)	SRZ (m^2)	Proposed encroachments to SRZ %	Proposed encroachments to TPZ % & canopy	Likely Impact	Recommendation
T1	***Cedrus deodara*** (Himalayan Cedar)	10.08	3.32	319.21	34.7	Nil	2.46%	The proposed building footprint represents a minor encroachment into the trees TPZ.	**RETAIN and PROTECT.** Apply caution when excavating footings within the TPZ.
T2	***Grevillea robusta*** (Silky Oak)	10.08	3.35	319.21	35.27	Nil	9.05%	The proposed building footprint represents an acceptable encroachment into the trees TPZ.	**RETAIN and PROTECT.** The current fence line is sufficient as the tree protection fence so long as the existing fence is retained. Apply caution when excavating footings within the TPZ.
T3	***Mangifera indica*** (Mango)	5.16	2.49	83.65	19.54	100%	78.95%	The tree resides within the footprint of the Multi Storey Residential (15 x Unit) Development.	**REMOVE TREE.**
T4	***Quercus Robur*** (English Oak)	6.84	2.87	146.98	25.8	Nil	2.42%	The proposed building footprint represents a minor encroachment into the trees TPZ.	**RETAIN and PROTECT.** Tree protection fencing (as per section 5.3) should be installed as close as practicable to the proposed building footprint with allowance of 1mtr for the scaffolding profile. Apply caution when excavating footings within the TPZ.
T5	***Araucaria heterophylla*** (Norfolk Island Pine)	9.48	3.24	282.34	32.96	Nil	10.49%	The proposed building footprint represents an acceptable encroachment into the trees TPZ.	**RETAIN and PROTECT.** Tree protection fencing (as per section 5.3) should be installed as close as practicable to the proposed building footprint with allowance of 1mtr for the scaffolding profile. Apply caution when excavating footings within the TPZ.
T6	***Murraya paniculata*** (Orange Jasmine)	3.12	2.3	30.58	16.6	36.28%	36.85%	The proposed building footprint represents a major encroachment into the trees TPZ and SRZ.	**REMOVE TREE.**
T7	***Murraya paniculata*** (Orange Jasmine)	3.48	2.51	38.05	19.86	37.39%	38.22%	The proposed building footprint represents a major encroachment into the trees TPZ and SRZ.	**REMOVE TREE.**
T8	***Callistemon citrinus*** (Crimson Bottlebrush)	4.08	2.55	52.3	20.5	16.89%	36.47%	The proposed building footprint represents a major encroachment into the trees TPZ and SRZ.	**REMOVE TREE.**
T9	***Callistemon viminalis*** (Weeping Bottlebrush)	5.88	2.55	108.62	20.47	37.81%	41.54%	The proposed building footprint represents a major encroachment into the trees TPZ and SRZ.	**REMOVE TREE.**

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7.3 ASSESSMENT OF TREE SIGNIFICANCE

TABLE 3 - DETERMINING LANDSCAPE SIGNIFICANCE RATING (MORTON, 2006)

RATING	HERITAGE VALUE	ECOLOGICAL VALUE	AMENITY VALUE
1. SIGNIFICANT	The subject tree is listed as a Heritage Item under the Local Environment Plan (LEP) with a local, state or national level of significance or is listed on Council's Significant Tree Register	The subject tree is scheduled as a Threatened Species as defined under the Threatened Species Conservation Act 1995 (NSW) or the Environmental Protection and Biodiversity Conservation Act 1999	The subject tree has a very large live crown size exceeding 300m² with normal to dense foliage cover, is located in a visually prominent position in the landscape, exhibits very good form and habit typical of the species
	The subject tree forms part of the curtilage of a Heritage Item (building /structure /artefact as defined under the LEP) and has a known or documented association with that item	The tree is a locally indigenous species, representative of the original vegetation of the area and is known as an important food, shelter or nesting tree for endangered or threatened fauna species	The subject tree makes a significant contribution to the amenity and visual character of the area by creating a sense of place or creating a sense of identity
	The subject tree is a Commemorative Planting having been planted by an important historical person (s) or to commemorate an important historical event	The subject tree is a Remnant Tree, being a tree in existence prior to development of the area	The tree is visually prominent in view from surrounding areas, being a landmark or visible from a considerable distance.
2. VERY HIGH	The tree has a strong historical association with a heritage item (building/structure/artefact/garden etc) within or adjacent the property and/or exemplifies a particular era or style of landscape design associated with the original development of the site.	The tree is a locally-indigenous species, representative of the original vegetation of the area and is a dominant or associated canopy species of an Endangered Ecological Community (EEC) formerly occurring in the area occupied by the site.	The subject tree has a very large live crown size exceeding 200m²; a crown density exceeding 70% (normal-dense), is a very good representative of the species in terms of its form and branching habit or is aesthetically distinctive and makes a positive contribution to the visual character and the amenity of the area
3. HIGH	The tree has a suspected historical association with a heritage item or landscape supported by anecdotal or visual evidence	The tree is a locally-indigenous species and representative of the original vegetation of the area and the tree is located within a defined Vegetation Link / Wildlife Corridor or has known wildlife habitat value	The subject tree has a large live crown size exceeding 100m²; The tree is a good representative of the species in terms of its form and branching habit with minor deviations from normal (e.g. crown distortion/suppression) with a crown density of at least 70% (normal); The subject tree is visible from the street and surrounding properties and makes a positive contribution to the visual character and the amenity of the area
4. MODERATE	The tree has no known or suspected historical association, but does not detract or diminish the value of the item and is sympathetic to the original era of planting.	The subject tree is a non-local native or exotic species that is protected under the provisions of this DCP.	The subject tree has a medium live crown size exceeding 40m²;The tree is a fair representative of the species, exhibiting moderate deviations from typical form (distortion/suppression etc) with a crown density of more than 50% (thinning to normal); and
			The tree is visible from surrounding properties, but is not visually prominent – view may be partially obscured by other vegetation or built forms. The tree makes a fair contribution to the visual character and amenity of the area.
5. LOW	The subject tree detracts from heritage values or diminishes the value of a heritage item	The subject tree is scheduled as exempt (not protected) under the provisions of this DCP due to its species, nuisance or position relative to buildings or other structures.	The subject tree has a small live crown size of less than 40m² and can be replaced within the short term (5-10 years) with new tree planting
6. VERY LOW	The subject tree is causing significant damage to a heritage item.	The subject tree is listed as an Environment Weed Species in the relevant Local Government Area, being invasive, or is a known nuisance species.	The subject tree is not visible from surrounding properties (visibility obscured) and makes a negligible contribution or has a negative impact on the amenity and visual character of the area. The tree is a poor representative of the species, showing significant deviations from the typical form and branching habit with a crown density of less than 50% (sparse).
7. INSIGNIFICANT	The tree is completely dead and has no visible habitat value	The tree is a declared Noxious Weed under the Noxious Weeds Act (NSW) 1993 within the relevant Local Government Area.	The tree is completely dead and represents a potential hazard.

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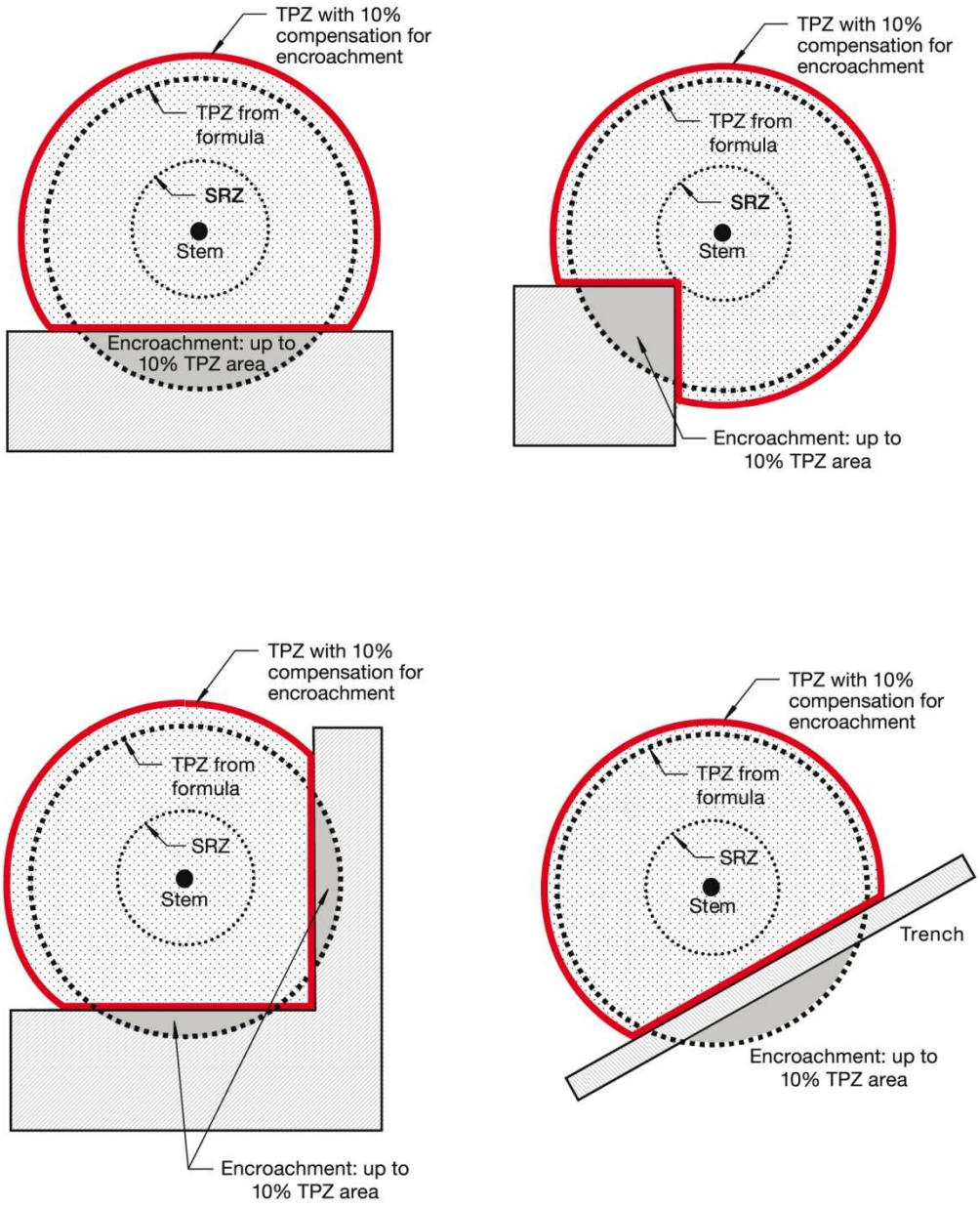
7.4 ACCEPTABLE INCURSIONS TO THE TREE PROTECTION ZONE (TPZ)



NOTE: Less than 10% TPZ area and outside SRZ. Any loss of TPZ compensated for elsewhere.

FIGURE 5 - ACCEPTABLE INCURSIONS INTO THE TPZ (STANDARDS AUSTRALIA, 2009)

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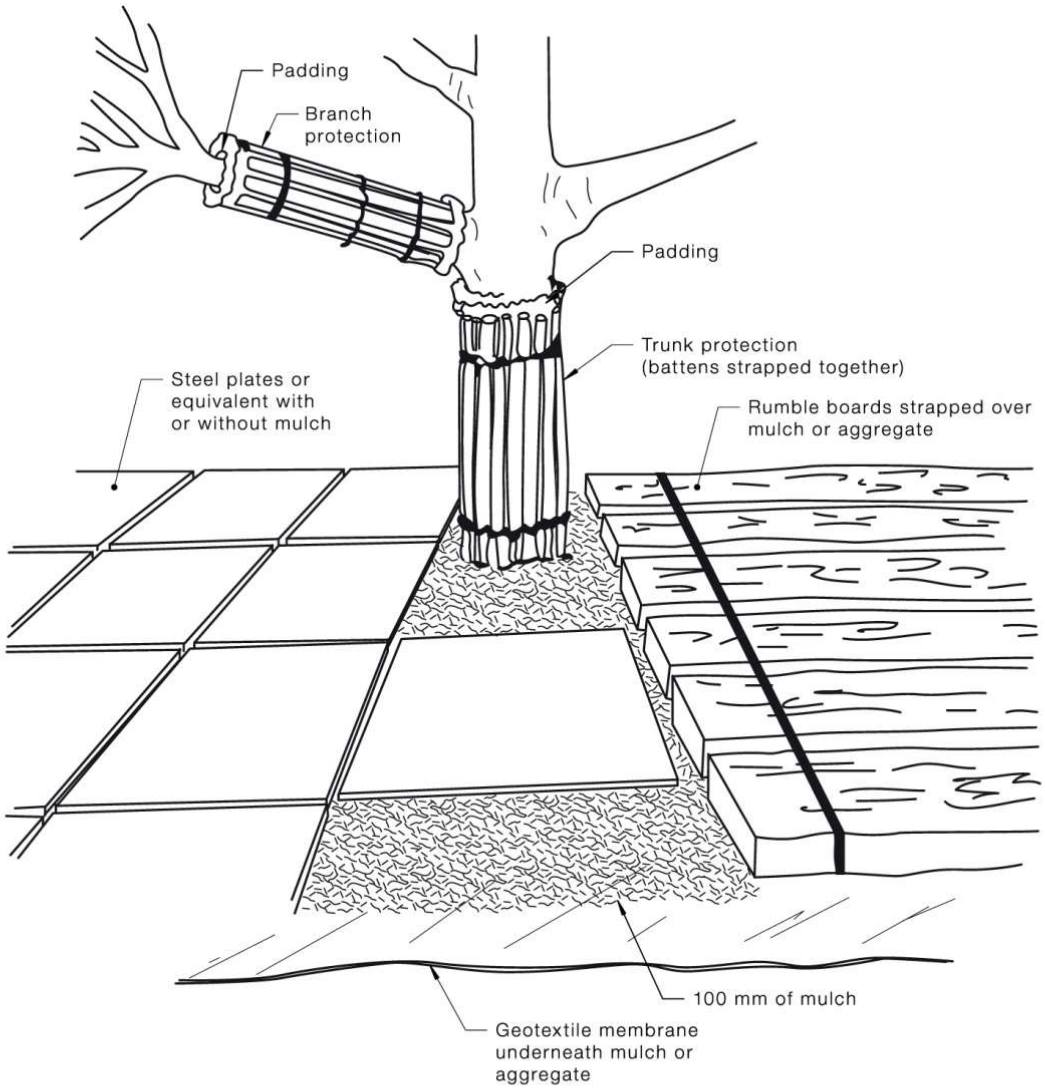
7.5 TRUNK, BRANCH AND GROUND PROTECTION



NOTES:

1 For trunk and branch protection use boards and padding that will prevent damage to bark. Boards are to be strapped to trees, not nailed or screwed.

2 Rumble boards should be of a suitable thickness to prevent soil compaction and root damage.

FIGURE 6 - EXAMPLES OF TRUNK, BRANCH AND GROUND PROTECTION (STANDARDS AUSTRALIA, 2009)

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7.6 GLOSSARY/ABBREVIATIONS

10-50	RFS vegetation clearing scheme for bushfire prone land.
Age Class	The assessment of the trees current age. Young: Small tree in terms of potential size, has not reached full reproductive ability, may have been recently planted. Semi-mature: Tree in active growth phase of life cycle, not yet attained maximum expected physical size for its species and/or location. Mature: Tree has reached maximum expected physical size for its species and/or location, is showing reduced seasonal extension growth. Over-Mature: Tree is approaching the end of its life cycle and is exhibiting a reduction in vigour often evidenced by deterioration in health or structure. Entering senescence.
Amenity Value	Recreational, functional, environmental, ecological, social, health or aesthetic value rather than for production purposes.
Canopy Spread Radius	Average canopy radius (widest + narrowest ÷ 2)
DAB	Diameter of trunk at base of tree.
DBH	Diameter of trunk at 1.4m above the ground.
Deadwood	Dead branches existing in the canopy.
Defect	An imperfection, weakness, or lack of something necessary. In trees, defects are injuries, growth patterns, decay, or other conditions that may reduce the tree's structural strength.
Dieback	The death of some areas of the crown. Symptoms are leaf drop, bare twigs and dead branches.
Dripline	A line formed around the edge of a tree by the lateral extent of the crown.
Encroachment	Construction activity within a portion of the TPZ expected to have an impact on the tree.
Epicormic Growth	Growth that arises from latent or adventitious buds that occur on stems and branches.
Health	Summaries the health and vigour of the tree. Excellent: Canopy full, with dense foliage, leaves are entire with excellent size and colour for species with no pathogen damage. Excellent growth indicators. Good: Canopy full, with minor variations to foliage density. Leaves are entire and of good size and colour for species with minimal or no visible pathogen damage. Good growth indicators. Fair: Canopy with moderate variations in foliage density, leaves are not entire with reduced size and/or atypical colour. Moderate pathogen damage. Reduced growth indicators and visible amounts of deadwood/dieback, and epicormic growth. Poor: Canopy density significantly reduced. Leaves are not entire, significantly reduced in size and/or discoloured. Significant pathogen damage. Significant amounts of deadwood and/or epicormic growth. Notable dieback of branch tips, possibly extensive.

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	Dead: No live plant material observed in canopy. Bark possibly delaminating from the trunk and/or branches.
Incursion	See Encroachment.
ISA	International Society of Arboriculture
LCR	Live crown ratio % (crown height ÷ tree height)
LCS	Live crown size m^2 (average crown height x average crown width)
LEP	Local Environment Plan
LGA	Local Government Area
SRZ	Structural Root Zone as derived by AS4970-2009. The area around the base of the tree required for the trees stability in the ground.
Occlusion	Continued growth or successful closing of wound by callus tissue.
Structure	Summarises the structure of the tree from roots to crown. Good: Good form and branching habit. Minor structural defects that are insignificant and typical or common within the species. No fungal pathogens present. No visible wounds to the trunk or root plate. Fair: Moderate structural defects that impact longevity. Minor damage to structural roots. Small wounds present where decay could begin. No fungal pathogens present. A fair representation of the species. Poor: Significant structural defects present that have significant impact on longevity and result in poor representation of the species. Wounding evident with cavities and/or decay present. Damage to structural roots. Hazardous: Serious structural defects with failure determined to be imminent (<12 months). Defects may include active splits and/or partial branch or root plate failures. Trees require immediate Arboricultural work to alleviate the associated risks.
SULE	Useful life expectancy determined using (Barrell, 2001)
TPZ	Tree Protection Zone, indicative as derived by AS4970-2009 or actual as described by the Tree Location Plan. Specified area above and below ground set aside for the protection of the trees roots and crown.
Wind-throw	Whole tree failure due to the forces of wind.
Vitality	The general appearance of the canopy/ foliage at the time of inspection. (good/fair/poor)
VTA	Visual Tree Inspection as described by (Mattheck & Breloer, 1994)

8 PLANS

Attached are the following plans and drawings:

JN19420 01 - Tree Protection Plan - Plan showing location of the subject trees and the location of tree protection recommendations.

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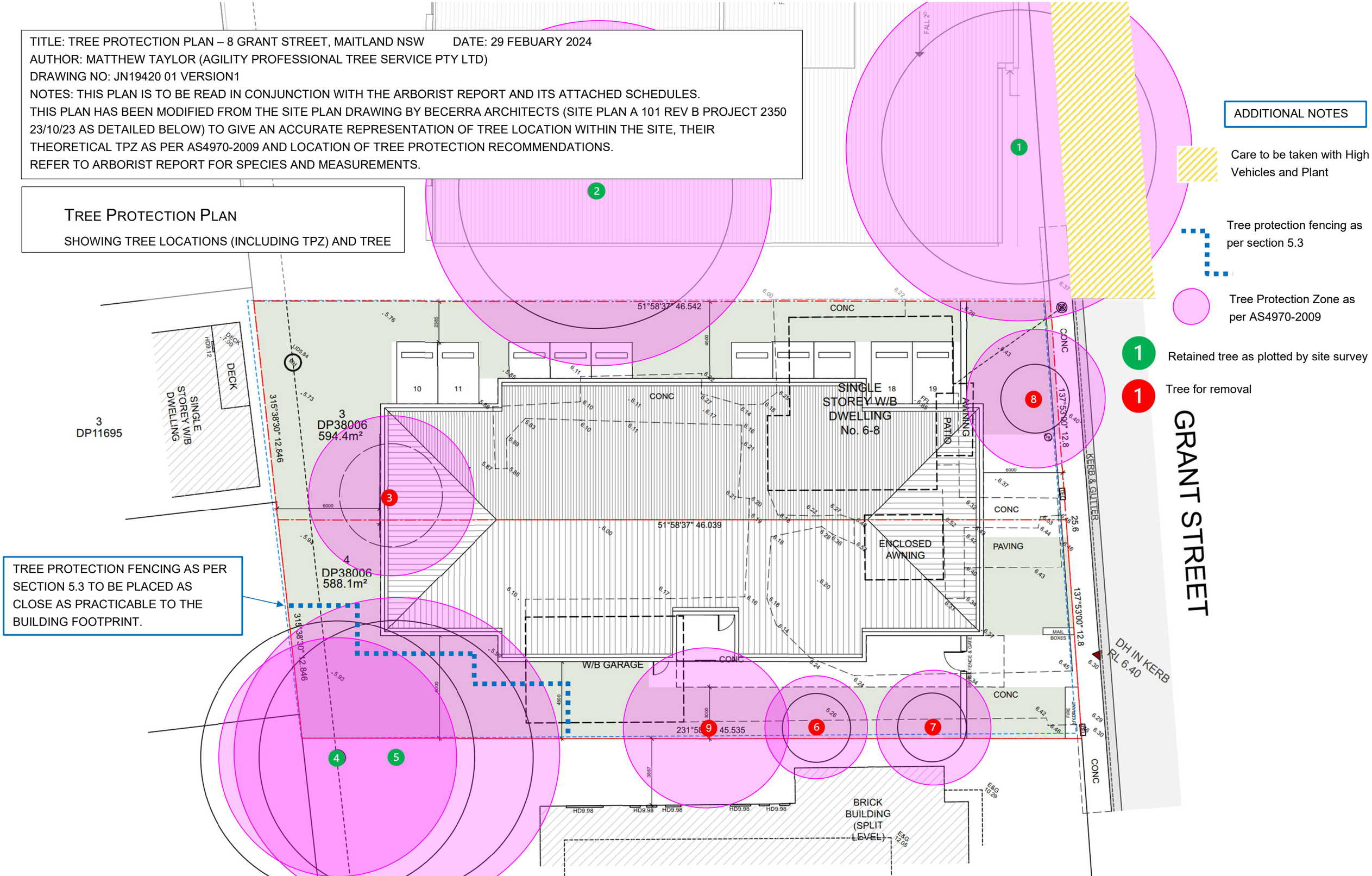
TITLE: TREE PROTECTION PLAN – 8 GRANT STREET, MAITLAND NSW DATE: 29 FEBUARY 2024
AUTHOR: MATTHEW TAYLOR (AGILITY PROFESSIONAL TREE SERVICE PTY LTD)
DRAWING NO: JN19420 01 VERSION1
NOTES: THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE ARBORIST REPORT AND ITS ATTACHED SCHEDULES.
THIS PLAN HAS BEEN MODIFIED FROM THE SITE PLAN DRAWING BY BECERRA ARCHITECTS (SITE PLAN A 101 REV B PROJECT 2350 23/10/23 AS DETAILED BELOW) TO GIVE AN ACCURATE REPRESENTATION OF TREE LOCATION WITHIN THE SITE, THEIR THEORETICAL TPZ AS PER AS4970-2009 AND LOCATION OF TREE PROTECTION RECOMMENDATIONS.
REFER TO ARBORIST REPORT FOR SPECIES AND MEASUREMENTS.

TREE PROTECTION PLAN

SHOWING TREE LOCATIONS (INCLUDING TPZ) AND TREE

TREE PROTECTION FENCING AS PER SECTION 5.3 TO BE PLACED AS CLOSE AS PRACTICABLE TO THE BUILDING FOOTPRINT.



ADDITIONAL NOTES

Care to be taken with High Vehicles and Plant

Tree protection fencing as per section 5.3

Tree Protection Zone as per AS4970-2009

1 Retained tree as plotted by site survey

1 Tree for removal

0 5 10 M

Revision		By	Date
B	Issued for review	PF	5/2/24
A	Issued for DA Approval	RL	23/10/23

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Project	RESIDENTIAL DEVELOPMENT 6-8 GRANT ST MAITLAND	Drawn By: RL	Dwg Date: Oct 2023	Project No. 2350
Client	BROWN COMMERCIAL	Checked By: AB	Scale: 1:200@A3	Drawing No. A101 Rev B
Title	SITE PLAN			