



CONSULTANCY  
ARBORICULTURE  
PLANT PATHOLOGY

ARBORICULTURAL IMPACT ASSESSMENT  
&  
TREE PROTECTION SPECIFICATION

REF: L&C02367 | 25 May 2023 | v1  
SITE ADDRESS | 32 Trevenar St, Ashbury  
PREPARED FOR | Andrew Murphy c/- Designcorp Architects  
PREPARED BY |  
**Dr Matthew Laurence**  
BSc. (Hons)  
PhD (Plant Pathology)  
Grad Cert (Arboriculture)

**Ms Allison Mertin**  
BSc. (Hons)

info@laurenceco.com.au  
0404 282 825  
ABN: 61 625 300 530

[www.laurenceco.com.au](http://www.laurenceco.com.au)

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## 1.0 EXECUTIVE SUMMARY |

- 1.1 The proposal, outlined in the supplied plans, shows the construction of a single residential dwelling with swimming pool and associated landscaping at 32 Trevenar St, Ashbury.
- 1.2 A total of four (4) trees were assessed that were a mix of Australian native and exotic species.
- 1.3 The supplied plans show no works are proposed within the TPZ of Trees 3 & 4. However, the tree protection measures outlined in this report should be implemented to avoid indirect impacts.
- 1.4 The proposed works represent a *Minor Encroachment* (as defined by AS4970) on Tree 2. However, a minor encroachment is considered acceptable by the standard when it is compensated for elsewhere and contiguous within the TPZ, as in the current cases. Further, the tree protection measures outlined in this report will reduce the likelihood of negative impacts on Tree 2.
- 1.5 The proposed driveway and house footprint are within the SRZ of Tree 1. The overall TPZ encroachment was over 40% and tree will need to be removed to accommodate the proposal. Tree 1 was assigned a Moderate Landscape Significance Value.
- 1.6 The location of the underground services was not detailed in the supplied plans. The installation of underground services should be located outside of the TPZs detailed in this report. Where this is not possible, they should be installed around or below roots (>25mmØ) using either hydrovac or hand excavation and supervised by the Project Arborist.

## **2.0 INTRODUCTION |**

### **2.1 Background**

2.1.1 This Arboricultural Impact Assessment and Tree Protection Specification Report was prepared for Andrew Murphy c/- Designcorp Architects in relation to the proposed development of 32 Trevenar St, Ashbury. This report has determined the impact of the proposed works on the trees at 32 Trevenar St, Ashbury and neighbouring properties and where appropriate, has provided tree sensitive construction methods to minimise negative impacts to the trees.

2.1.2 In preparing this report, the author is aware of and has considered the objectives of the Inner West Council's *Comprehensive Inner West Development Control Plan Part C4: Tree Preservation and Management (2016)*, *Ashfield Local Environmental Plan (2013)*; *Ashfield Street Tree Strategy (2015)*, *Australian Standard 4970 Protection of Trees on Development Sites (2009)*, *Australian Standard 4373 Pruning of Amenity Trees (2007)* and *Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016)*.

2.1.3 Further methodology used in the preparation of this report is detailed in Appendix 1.

2.1.4 This Arboricultural Impact Assessment was based on an assessment of the following supplied documentation/plans only (Appendix 4):

- Ground Floor Plan Issue f. (Dwg. No. C4). Prepared by Urbanance Pty Ltd. Dated 20.04.2023.
- Elevations Issue f. (Dwg. No. C6). Prepared by Urbanance Pty Ltd. Dated 20.04.2023.
- Plan of levels and details. (Dwg. No. 205694-1). Prepared by W. Buxtn Pty. Ltd. Dated 20.03.2023.

### **2.2 The Proposal**

2.2.1 The supplied plans show the shows the construction of a single residential dwelling with swimming pool and associated landscaping at 32 Trevenar St, Ashbury.

## **3.0 RESULTS |**

### **3.1 The Site**

3.1.1 The site is a corner block with a total area stated in the plans as 439.5m<sup>2</sup>. The site is currently an empty block.

3.1.2 The site is bounded by Trevenar Street to the north, King Street to the west and residential properties to the south, with Peace Park to the east.

### **3.2 The Trees**

3.2.1 A Visual Tree Assessment (VTA) (Mattheck & Breloer, 2003) has been undertaken on trees growing within the site to determine their health and structural condition (Appendix 2). A full VTA of trees located outside of the site boundaries was not undertaken due to limited access. The species and trunk diameter were recorded for the purposes of determining Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) calculations only. The distance of each tree from the site boundary is an approximation due to limited access.



3.2.2 The Australian Standard 4970: *Protection of Trees on Development Sites* (2009) Clause 2.3.2, requires the allocation of a Tree Retention Value. This value is based on the Useful Life Expectancy (ULE) and Landscape Significance, which considers the tree's health, structural condition and site suitability. The Retention Value does not consider any proposed development works and is not a schedule for tree retention or removal. The trees have been allocated one of the following Retention Values:

- Priority for Retention
- Consider for Retention
- Consider for Removal
- Priority for Removal

3.2.3 The Australian Standard 4970: *Protection of Trees on Development Sites* (2009) also requires the calculation of the Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) for each tree (Appendix 1).

3.2.4 A total of four (4) trees and group trees were assessed which were a mix of Australian native and exotic species.

3.2.5 A search of the BioNet Atlas of NSW Wildlife Database was undertaken in May 2023. No individual threatened tree species that were listed within this database for the area were identified during the current field investigations of the site. The ecological significance and habitat value of the trees has not been assessed and is beyond the scope of this report.

3.2.6 Tree 1 was within the site boundary and are covered by the Council's tree management controls.

3.2.7 Tree 2 is exempt from the Council's tree management controls.

3.2.8 Tree 3 is a street tree and is managed by the Council.

3.2.9 Tree 4 was located on the adjacent property. All trees on adjacent properties were allocated a Retention Value of *Priority for Retention*.

#### **4.0 ARBORICULTURAL IMPACT ASSESSMENT |**

##### **4.1 Tree 1**

4.1.1 Tree 1 was identified as *Lophostemon confertus* (Brush Box) and was allocated a Moderate Landscape Significance Value and a Retention Value of *Consider for Retention*.

4.1.2 The Tree was allocated a fair structural rating due to a cavity observed on the trunk and first order branches and there is potential for a column of decay extend above and below the opening (Appendix 9). However, internal investigations on the extent of the decay column were beyond the scope of this Report.

4.1.3 The supplied plans show the proposed driveway and building is within the SRZ of Tree 1. Works within the SRZ represent a *Major Encroachment* as defined by AS-4970 as root severance within the SRZ can lead to the destabilisation of the tree. The overall TPZ encroachment was estimated to be 40% and also represents a Major Encroachment as defined by AS-4970.,

4.1.4 Given the size and location of the encroachment, the long term structural and physiological viability of Tree 1 is highly likely to be compromised by the proposed encroachment and the tree will need to be removed to accommodate the works.

4.1.5 Refer to Appendix 5 for further detail.

4.1.6 Removal and replacement with a healthy advanced size specimen would replace the loss of amenity within a medium to long timeframe.

4.1.7 Refer to Appendix 5 and Plates a & b of Appendix 9 for further detail.

##### **4.2 Tree 2**

4.2.1 Tree 2 was identified as *Howea forsteriana* (Kentia Palm) and was allocated a Low Landscape Significance Value and a Retention Value of *Consider for Removal*. This tree is exempt from the Council's Tree Management based on dimensions and can be removed without Council consent.

4.2.2 The supplied plans show that the proposed wall demolition is within the TPZ of Tree 2. The TPZ encroachment is approximately 5.1% and represents a *Minor Encroachment* as defined by AS-4970. A *Minor Encroachment* is considered acceptable by the standard when it is compensated for elsewhere and contiguous within the TPZ as in the current case. Given the good physiological condition of the tree and the size of the encroachment, the proposed development can be accommodated without affecting the long term structural and physiological viability of Tree 2.

4.2.3 Refer to Appendix 5 for further detail.

##### **4.3 Trees 3 & 4**

4.3.1 Tree 3 was identified as *Callistemon viminalis* (Weeping Bottlebrush) and was allocated an adjusted Retention Value of *Priority for Retention*, given it was located outside of the site and a street tree. Tree 4 was identified as *Lophostemon confertus* (Brush Box) and was allocated an adjusted Retention Value of *Priority for Retention*, given it was located outside of the site, in the adjacent parkland.

- 4.3.2 The supplied plans show no works are proposed within the TPZ of Trees 3 & 4. However, TPZ fencing should be installed prior to any site works (including demolition) and remain in place for the duration of the construction. Materials, waste storage and temporary services should not be located within the TPZ fenced area. If works are required within the TPZ fenced area, then they should be supervised by the Project Arborist.
- 4.3.3 The tree protection measures must be inspected by the Project Arborist prior to the start of site works, including demolition.
- 4.3.4 Refer to AS4970 and Appendices 5, 6 & 7 for further details.
- 4.4 **Removal & Replacement Planting**
- 4.4.1 Removal works should be carried out by a practising arborist. The practising arborist should hold a minimum qualification equivalent (using Australian Qualifications Framework) of Level 3 or above in arboriculture or its recognised equivalent. The practising arborist should have a minimum of 3 years of practical experience. Removal works should be undertaken in accordance with the Australian Standard 4373: Pruning of Amenity Trees (2007), Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016) and other applicable legislation and codes.
- 4.4.2 Replacement tree planting should be provided when trees are removed. Replacement trees should be supplied as advanced size stock to help offset the loss of amenity resultant from the tree removals.
- 4.4.3 Replacement planting should be supplied in accordance with Australian Standard 2303: Tree Stock for Landscape Use (2015).



Dr Matthew Laurence

Director

BSc. (Hons), PhD (Plant Pathology), GradCert (Arboriculture)

Institute of Australian Consulting Arboriculturists (Accredited Member – ACM0502016)

Australasian Plant Pathology Society

ResearchGate Profile - [https://www.researchgate.net/profile/Matthew\\_Laurence](https://www.researchgate.net/profile/Matthew_Laurence)

## 5.0 REFERENCES |

Mattheck & Breloer (2003), *The Body Language of Trees – A Handbook for Failure Analysis*.

NSW Office of Environment and Heritage's Atlas of NSW Wildlife (2011), *BioNet Atlas of NSW Wildlife*.

Standards Australia (2009) Protection of Trees on Development Sites AS4970.

Standards Australia (2007) Pruning of Amenity Trees AS4373.

Standards Australia (2015) Tree Stock for Landscape Use AS2303.

## 6.0 APPENDIX 1 | METHODOLOGY

- 6.1 This report was based on data from a site inspection conducted on the 21.4.23. The recommendations in this report are based on and limited to observations from these site inspections.
- 6.2 The subject tree(s) was assessed using the Visual Tree Assessment methodology described in *The Body Language of Trees – A Handbook for Failure Analysis* (Mattheck et al., 2003). Subject trees were assessed from the ground only to provide an Arboricultural Impact Assessment and Tree Protection Specification report. No internal diagnostic testing was undertaken as part of this assessment. Trees outside the subject site were assessed from the property boundaries only.
- 6.3 The dimensions of the subject tree(s) are an approximation only.
- 6.4 The location of the subject tree(s) was determined from the location plan provided. Trees not shown on this plan have been plotted in their approximate location only.
- 6.5 Tree Protection Zones & Structural Root Zones for the subject tree(s) was based on methods outlined in Australian Standard 4970: *Protection of Trees on Development Sites* (2009).
- 6.6 The health of the subject tree(s) was determined by assessing:
- Foliage size and colour
  - Pest and disease infestation
  - Extension growth
  - Crown density
  - Deadwood size and volume
  - Presence of epicormic growth
- 6.7 The structural condition of the subject tree(s) was assessed by:
- Visible evidence of structural defects or instability
  - Evidence of previous pruning or physical damage
- 6.8 The Useful Life Expectancy (ULE) is used to estimate a tree's longevity in its growing environment. The ULE is based on a tree's species, health, structural condition and site suitability. The tree(s) has been allocated one of the following ULE categories (modified from Barrell, 2001):
- 40 years +
  - 15-40 years
  - 5-15 years
  - Less than 5 years
- 6.9 The Landscape Significance is based on a qualitative assessment of a tree's cultural, environmental and aesthetic value. This provides a relative measure of a tree's Landscape Significance and can be used to determine its Retention Value. Trees are rated under the following categories:
- Very High
  - High
  - Moderate
  - Low
  - Insignificant



LANDSCAPE SIGNIFICANCE	DESCRIPTION
VERY HIGH	<p>The subject tree is listed as a Heritage Item under the Local Environmental Plan with a local or state level of significance.</p> <p>The subject tree is listed on Council's Significant Tree Register.</p> <p>The subject tree is a remnant tree.</p>
HIGH	<p>The subject tree creates a 'sense of place' or is considered 'landmark' tree.</p> <p>The subject tree is of local, cultural or historical importance or is widely known.</p> <p>The subject tree has been identified by a suitably qualified professional as a species scheduled as a Threatened or Vulnerable Species or forms part of an Endangered Ecological Community associated with the subject site, as defined under the provisions of the Threatened Species Conservation Act 1995 (NSW) or the Environmental Protection and Biodiversity Conservation Act 1999.</p> <p>The subject tree is known to provide habitat to a threatened species.</p> <p>The subject tree is an excellent representative of the species in terms of aesthetic value.</p> <p>The subject tree is of significant size, scale or makes a significant contribution to the canopy cover of the locality.</p> <p>The subject tree forms part of the curtilage of a heritage item with a known or documented association with that item.</p>
MODERATE	<p>The subject tree makes a positive contribution to the visual character or amenity of the area.</p> <p>The subject tree provides a specific function such as screening or minimising the scale of a building.</p> <p>The subject tree has a known habitat value.</p> <p>The subject tree is a good representative of the species in terms of aesthetic value.</p>
LOW	<p>The subject tree is an environmental pest species or is exempt under the provisions of the local Council's Tree Management Controls.</p> <p>The subject tree makes little or no contribution to the amenity of the locality.</p> <p>The subject tree is a poor representative of the species in terms of aesthetic value.</p>
INSIGNIFICANT	<p>The subject tree is declared a Noxious Weed under the Noxious Weeds Act.</p>

The above table was provided by Anna Hopwood of TreelQ™ and was modified from the Earthscape Criteria for Assessment of Landscape Significance.

6.10 The Retention Value is based on a tree's ULE and Landscape Significance. The subject tree(s) has been allocated one of the following Retention Values:

- Priority for Retention
- Consider for Retention
- Consider for Removal
- Priority for Removal

ULE	LANDSCAPE SIGNIFICANCE				
	VERY HIGH	HIGH	MODERATE	LOW	INSIGNIFICANT
40 years +	Priority for Retention	Priority for Retention		Consider for Removal	Priority for Removal
15-40 years		Priority for Retention	Consider for Retention		
5-15 years	Consider for Retention			Consider for Removal	Priority for Removal
Less than 5 years	Consider for Removal	Priority for Removal			

The above table was provided by Anna Hopwood of TreeIQ™

- 6.11 The Tree Protection Zone (TPZ) is the area above and below ground required to preserve the vigour and long-term viability of the tree. The TPZ is based on scientific research and is generally considered by the arboricultural industry as the area required to provide adequate tree protection during construction. The TPZ is the primary means of protecting trees on development sites (Australian Standard 4970: *Protection of Trees on Development Sites*, 2009).
- 6.12 Works within the TPZ should be avoided. However, *Minor Encroachments*, defined in AS4970 as less than 10% of the TPZ area, are considered acceptable when it is compensated for elsewhere and contiguous within the TPZ. A *Major Encroachment*, defined in AS4970 as greater than 10% of the TPZ area or within the Structural Root Zone (SRZ), may require root investigations by non-destructive methods and tree sensitive construction methods.
- 6.13 The TPZ is the area within a circle that is centred on the trunk. The radius of the TPZ is calculated by the following formula:

$$TPZ = DBH \times 12$$

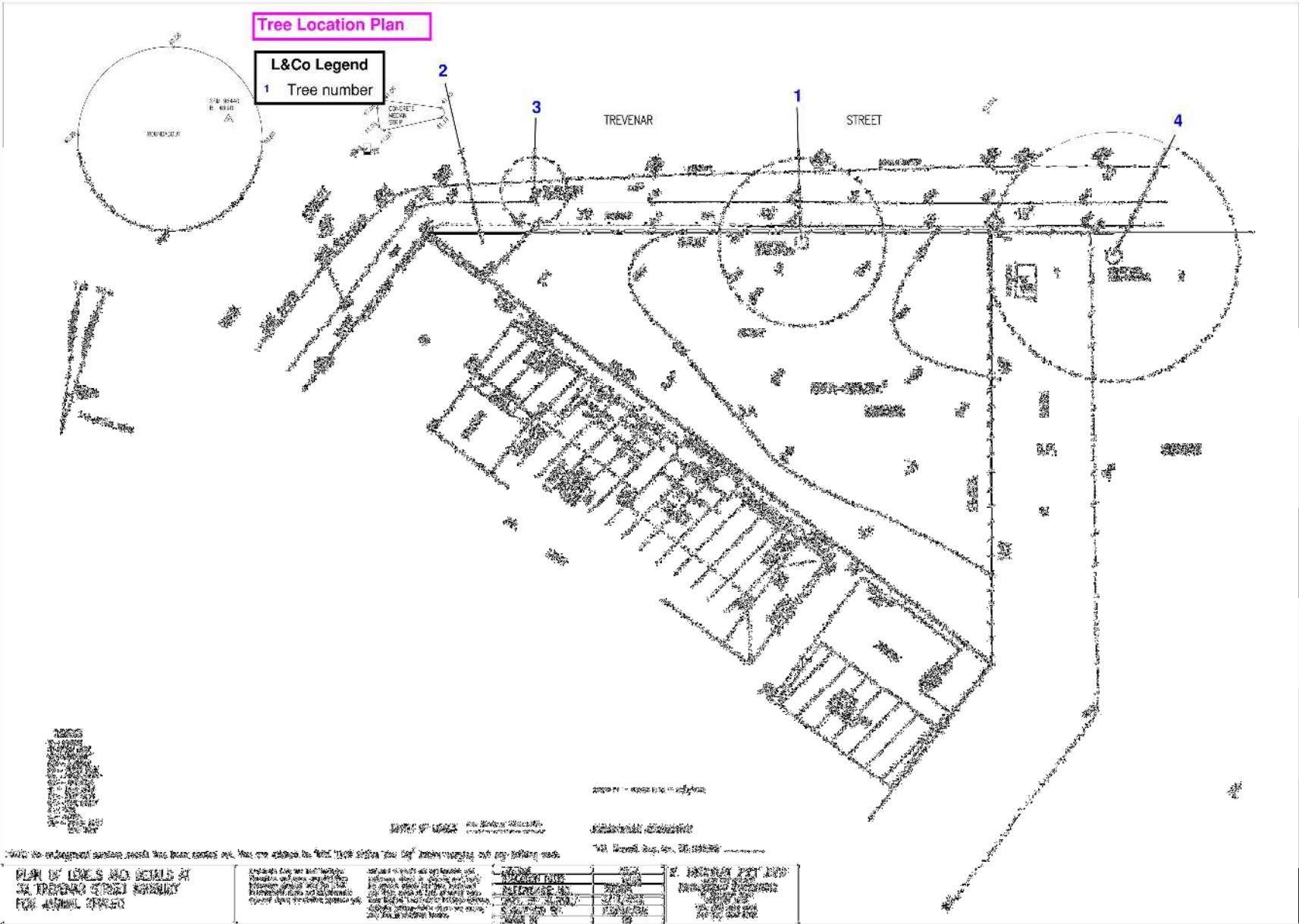
where

DBH= Diameter at Breast Height (1.4m)

- 6.14 The SRZ is the minimum area around the base of the tree required for the tree's stability. The SRZ only relates to tree stability and not the vigour and long-term viability of the tree.
- 6.15 The SRZ is the area within a circle that is centred on the trunk. The radius of the SRZ is calculated by the following formula:  
$$SRZ = (D \times 50)^{0.42} \times 0.64$$
  
where  
$$D = \text{Trunk diameter (m) above the root buttress}$$
- 6.16 Encroachment into SRZ (i.e. severance of structural roots >25mmØ) may lead to the destabilisation of the tree and the long-term viability must be demonstrated in such cases. This may require root investigations by non-destructive methods.
- 6.17 For further details on the TPZ and SRZ please refer to Australian Standard 4970: *Protection of Trees on Development Sites* (2009).

## 7.0 APPENDIX 2 | TREE ASSESSMENT SCHEDULE

Tree No.	Species	Height (m)	Radial Crown Spread (m)	DBH comb. (mm)	Radial TPZ (m)	TPZ Area (m²)	Radial SRZ (m)	Health Rating	Structural Rating	Age Class	ULE (years)	L/Sign	Retention Value	Comments	TPZ Encroachment (%)
1	<i>Lophostemon confertus</i> (Brush Box)	16	6	700	8	222	3.0	Good	Fair	Mature	15-40	Moderate	Consider for Retention	Trunk cavity requires further investigation. Crown density 75-95%. Small (<25mmØ) deadwood in low volumes. Mechanical damage to exposed surface roots. Pruned/lopped for powerline clearance. Wound(s), early signs of decay. Trunk cavity(s), major. Structures within SRZ.	40% (within SRZ)
2	<i>Howea forsteriana</i> (Kentia Palm)	4	3	75	2	13	1.5	Good	Good	Young	5-15	Low	Consider for Removal	Structures within SRZ.	5.1%
3	<i>Callistemon viminalis</i> (Weeping Bottlebrush)	5	3	200	2	18	1.8							Street tree.	No Encroachment
4	<i>Lophostemon confertus</i> (Brush Box)	16	8	650	8	191	2.9								No Encroachment



## 9.0 APPENDIX 4 | PROPOSED DEVELOPMENT PLANS



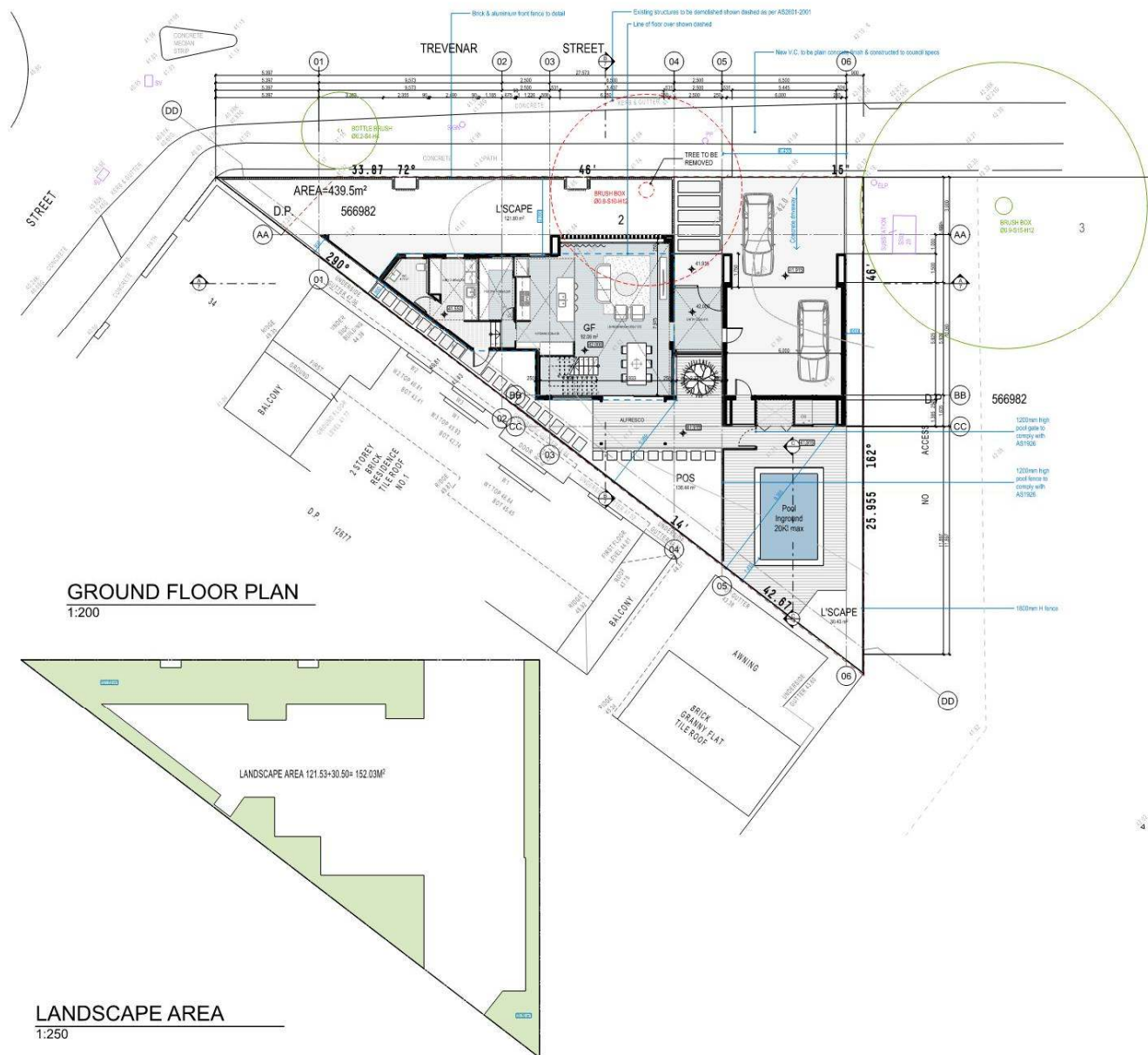
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32 Trevenar St Ashbury

date: 20/04/2023

job no: 2023-111





	Issue k:	Issue j:	Issue i:	Issue h:	Issue g:	Issue f:
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						04/04/2025
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						14/03/2025
						21/02/2025
						21/02/2025

drawing: **GROUND FLOOR PLAN**  
 project: **PROPOSED HOUSE DEVELOPMENT @ 32**  
**Trevener St Ashbury**  
 client: **URBANANCE**  
 draught: **X.X.** scale: **as shown** sheet size: **A3** Council  
 date: **15/07/2021** by: **00073** ref: **2021.111** URC

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urbanance pty ltd  
teln 53 072 932 846  
urbanarchitects + urban designers + builders  
nominated architect:



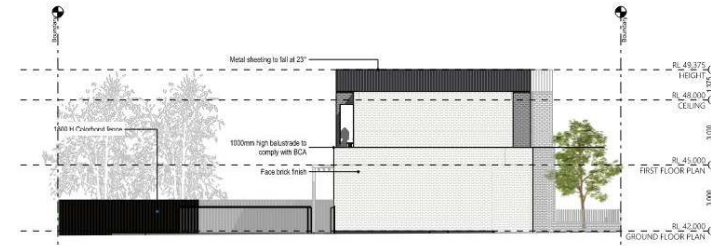
PO Box 2169  
Clovelly, NSW 2031  
info@laurenceco.com.au  
0404 282 825  
ACN: 625 300 530



**NORTH TREVENAR ELEVATION**  
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**EAST ELEVATION**  
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**WEST ELEVATION**  
1:200

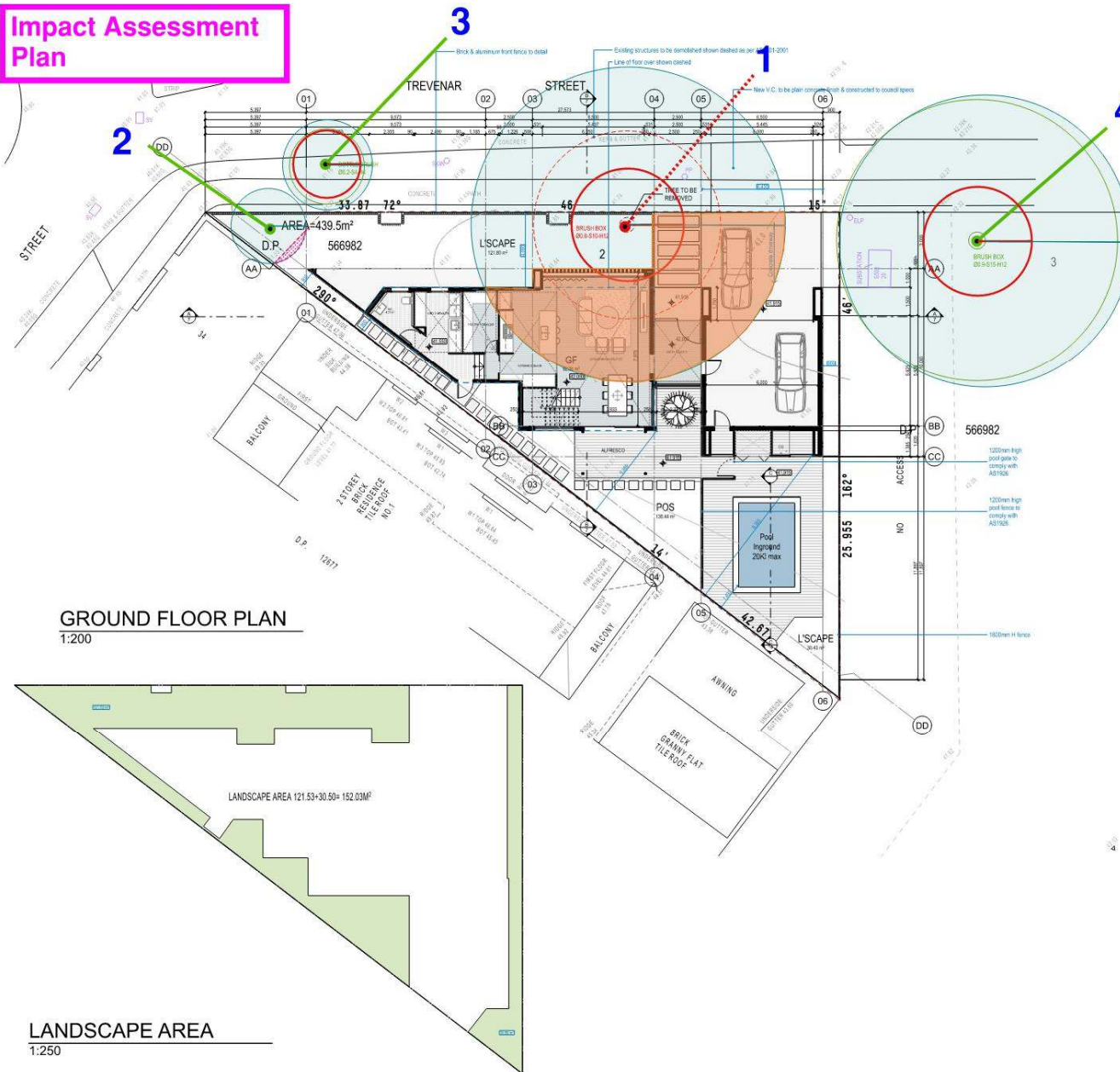


**SOUTH ELEVATION**  
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**EAST STREETSCAPE ELEVATION**  
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# 10.0 APPENDIX 5 | ARBORICULTURAL IMPACT ASSESSMENT PLANS



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Issue 2:	06/05/2023
Issue 3:	21/05/2023
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Issue 7:	21/05/2023
Issue 8:	21/05/2023
Issue 9:	21/05/2023
Issue 10:	21/05/2023
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Issue 99:	21/05/2023
Issue 100:	21/05/2023

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project: PROPOSED HOUSE DEVELOPMENT @ 32	date: APR23	HCC
client: URBANANCE	scale: as shown	
drawn: X.X.	checked: J.E.	
date: APR23	ref: 2023-111	

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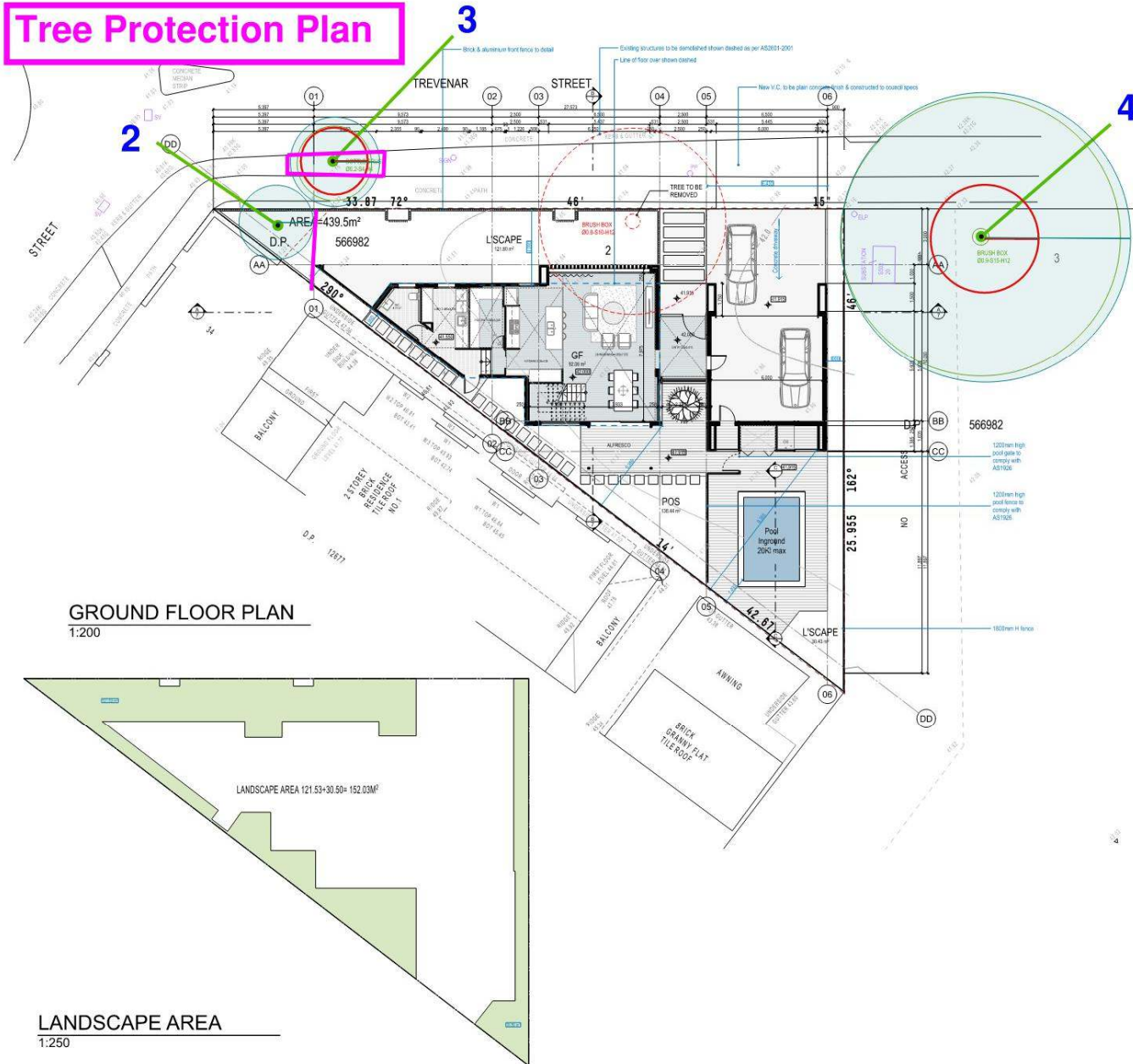
urbanance pty ltd  
abn 53 072 932 846  
architects + urban designers + builders  
nominated architect:  
jamal hamdan nsw reg no. 8697



PO Box 2169,  
Clovelly, NSW 2031  
info@laurenceco.com.au  
0404 282 825  
ACN: 625 300 530



# 11.0 APPENDIX 6 | TREE PROTECTION PLAN



urbanance pty ltd  
abn 53 072 932 846  
architects + urban designers + builders

PO Box 2169,  
Clovelly, NSW 2031  
nfo@laurenceco.com.au  
0404 282 825  
ACN: 625 300 530

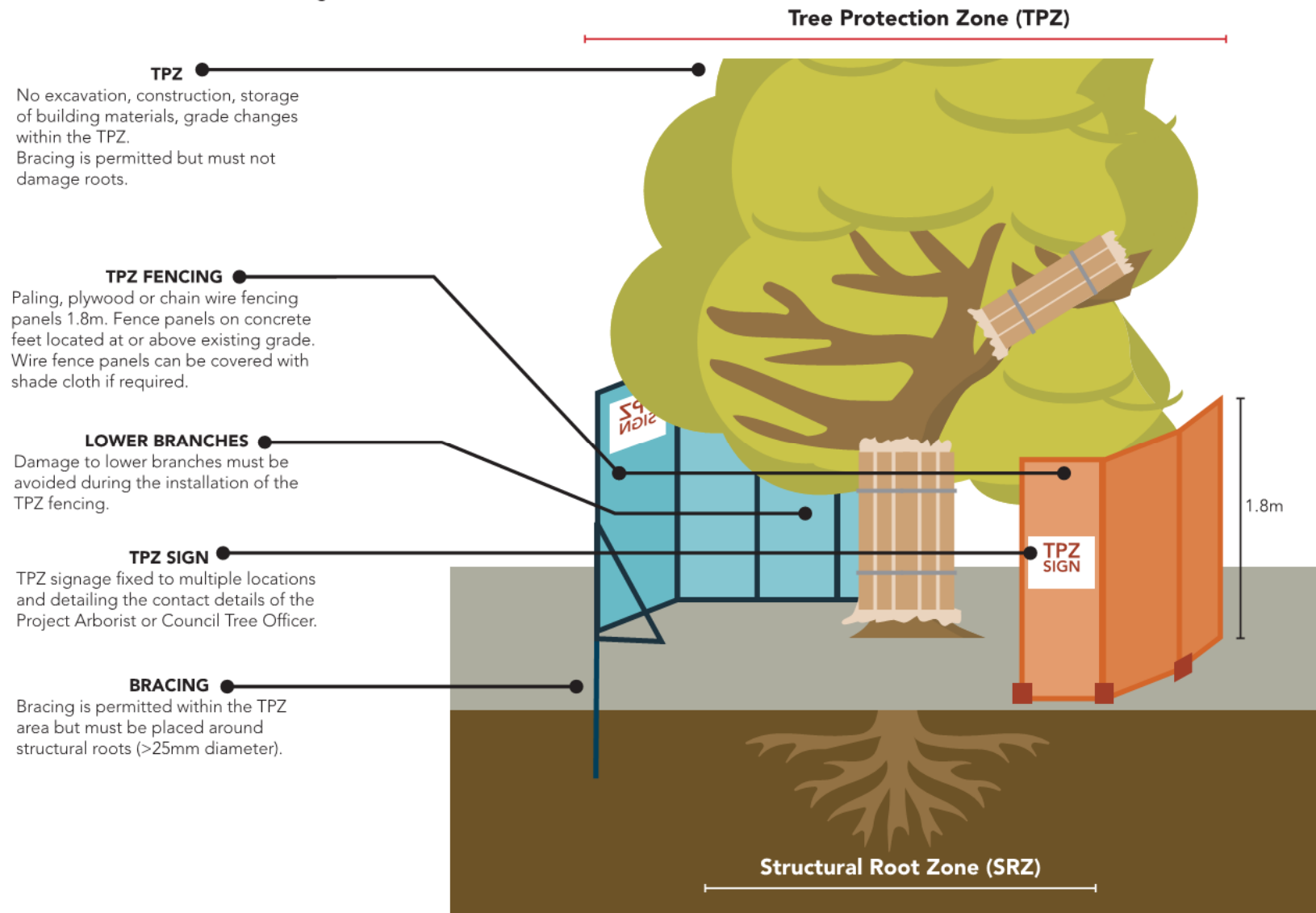
drawing: GROUND FLOOR PLAN  
project: PROPOSED HOUSE DEVELOPMENT @ 32  
Trevener St Ashbury

client: URBANANCE  
drawn: X.X. scale: as shown sheet size: A3 Council  
checked: J.E. date: 2023-11-11 ref: 2023-111 HCC

Issue 1: 28/04/2023  
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Issue 10: 28/04/2023

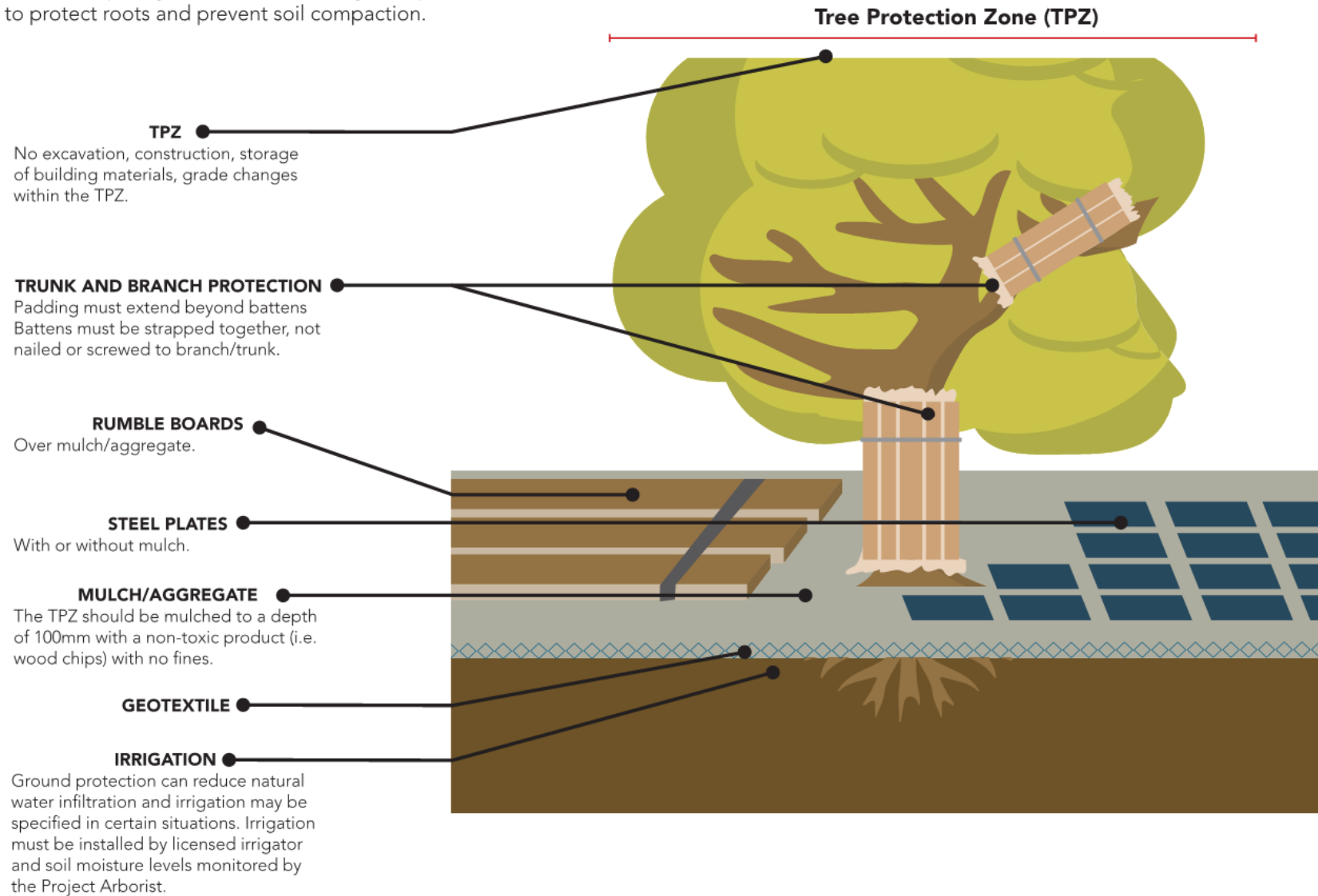
## 12.0 APPENDIX 7 | TYPICAL TREE PROTECTION DETAIL

### Tree Protection Detail - TPZ Fencing



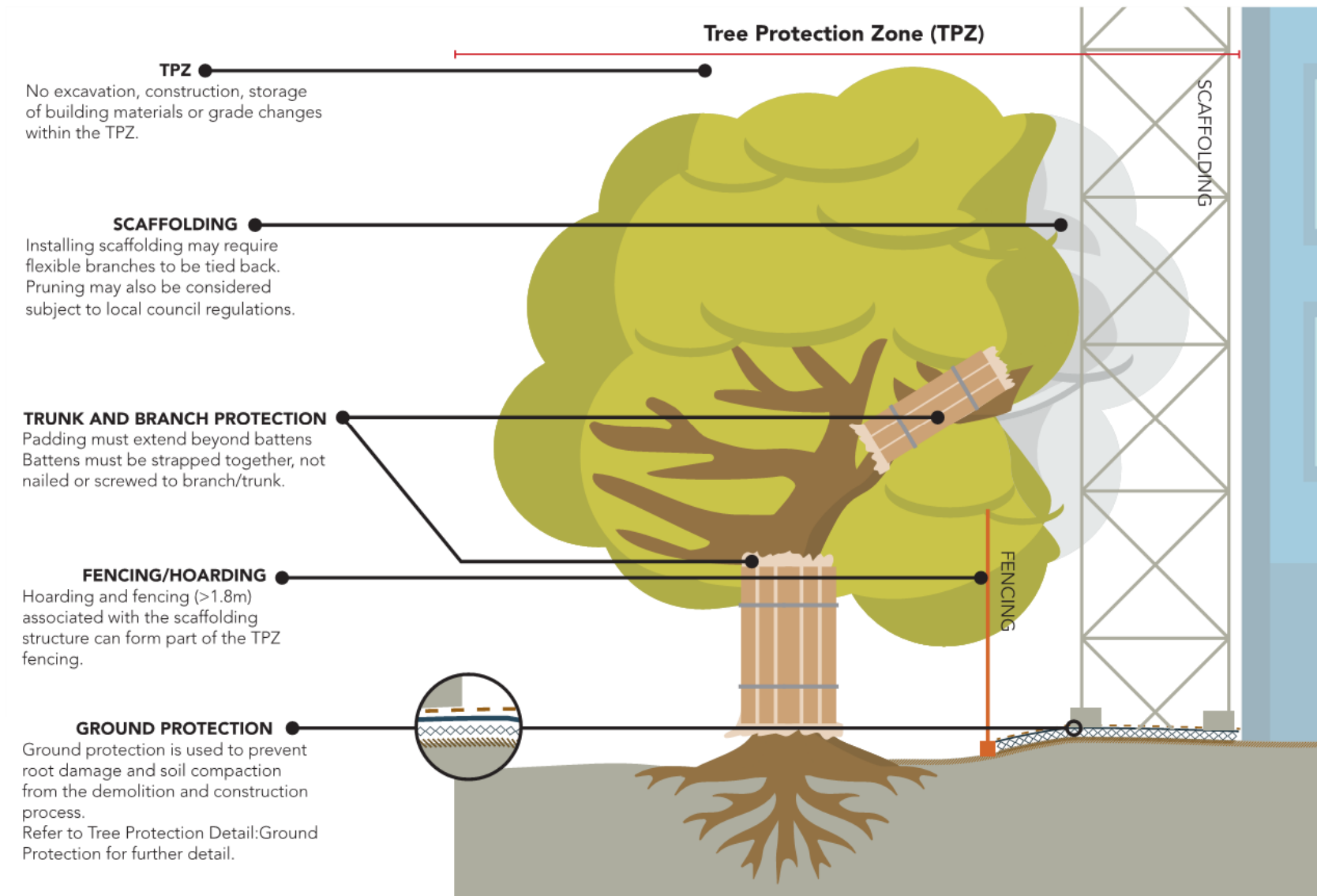
## Tree Protection Detail - Ground Protection

Required if temporary access for machinery is required within the TPZ to protect roots and prevent soil compaction.





## Tree Protection Detail - Scaffolding within TPZ



### **13.0 APPENDIX 8 | TREE PROTECTION SPECIFICATION**

#### **13.1 Appointment of Project Arborist**

13.1.1 Prior to commencement of works a Project Arborist should be engaged to monitor compliance with the protection measures. The Project Arborist will inspect tree protection measures and prepare a compliance certification for the principal certifying authority prior to the release of compliance certification. Contractors and site workers are to receive these specifications at least 3 days prior to commencing works. Contractors and site workers working within the TPZ should sign the site log confirming they have read and understood these specifications prior to commencing works.

#### **13.2 Compliance**

13.2.1 The Project Arborist will conduct regular site visits to certify the works are compliant with this specification. A compliance document will be prepared by the Project Arborist following each site inspection. The compliance document will include evidence of compliance with the tree protection measures detailed in this specification.

#### **13.3 Tree & Vegetation Removal**

13.3.1 Tree and vegetation removal will be undertaken prior to installation of tree protection measures. Tree removal works should be undertaken in accordance with the *Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work* (2016).

13.3.2 Tree and vegetation removal must not damage trees to be retained.

#### **13.4 Tree Protection Zone**

13.4.1 Trees that are to be retained must be protected prior to and during construction from works that could negatively impact their health and structural integrity. The following works should not occur within the TPZ unless authorised by the Project Arborist:

- Modification of existing soil levels, excavations and trenching
- Mechanical removal of vegetation
- Movement of naturally occurring rock
- Storage of materials, plant/equipment and building of sheds
- No signage or hoarding shall be fixed to the trees
- Preparation of building materials, refuelling or disposal of waste materials and chemicals
- No lighting of fires
- No pedestrian or vehicular traffic
- Temporary or permanent location of services, or works required for their installation
- Any other activities that may damage the tree

### 13.6 Tree Protection Fencing

- 13.6.1 The TPZ fencing must be positioned at the perimeter of the TPZ and may be combined to form a single area where the TPZs of multiple trees overlap. The approximate location of the TPZ fencing is outlined in the Arboricultural Impact Assessment with the exact location determined by consultation between the Principal Contractor/Project Manager and the Project Arborist prior to the commencement of works. Fencing may be setback to allow for demolition/construction access and for the installation of pavements only where appropriate ground protection is installed and approved by the Project Arborist. The TPZ fencing must be at least 1.8m above grade and made of wire mesh panels that are supported by concrete feet and fastened together to prevent sideways movement. Tree damage, including any low branches, must be avoided during the installation of the tree protection fencing. The TPZ fencing must include signage to identify the TPZ fencing and include the Project Arborist contact details.

### 13.7 Site Management

- 13.7.1 Materials, waste storage and temporary services should not be located within the TPZ.

### 13.8 Works within the Tree Protection Zones

- 13.8.1 In certain situations, works within the TPZ may be authorised by the determining authority. These works must be supervised by the Project Arborist. When working within the TPZ, special care should be taken to avoid damage to the tree's root system, trunks and lower branches.
- 13.8.2 If roots (>25mmØ) are encountered during excavation, demolition and construction works, these roots must be retained undamaged and advice sought from the Project Arborist. The design and final levels must remain flexible to enable the retention of roots >25mmØ where deemed necessary by the Project Arborist.

### 13.9 Ground Protection

- 13.9.1 The movement of machinery should be restricted to existing paved areas or in areas with temporary ground protection (i.e. steel road plates, ground mats) when deemed necessary by the Project Arborist.
- 13.9.2 Ground protection should be installed as per AS4970 and Appendix 7- *Typical Tree Protection Detail*.
- 13.9.3 If irrigation is considered necessary, it should be installed first and by a licensed irrigator under the supervision of the Project Arborist with no trenching.
- 13.9.4 The irrigation should be covered with a layer of geotextile and mulched to a depth of 100mm with a non-toxic product (i.e. woodchips) with no fines.
- 13.9.5 Once the irrigation, geotextile and mulch are in place then the ground protection boards (steel plates or rumble boards) can be installed.
- 13.9.6 Boards should remain in place for the entire build.

### 13.10 Trunk & Branch Protection

- 13.10.1 If trunk protection is required it should be installed by wrapping the trunk and first order branching with padding (i.e. carpet underlay or 10mm thick geotextile) to a minimum height of 2m. Timber battens (90 x 45mm), spaced at 150mm centres should be strapped together and placed over the padding (Refer to AS4970 for further details).
- 13.10.2 Branch protection should be installed when considered necessary by the Project Arborist.
- 13.10.3 Branches should be wrapped with padding (i.e. Ableflex) to provide protection. Where possible, branches should be tied back and construction works to take place around branches (with appropriate branch protection installed as required). If pruning is unavoidable it should be in accordance with AS4373 and supervised by the Project Arborist.

### 13.11 Structure & Pavement Demolition

- 13.11.1 The Project Arborist should supervise the demolition of existing structures/pavement within the TPZ. Machinery is to be excluded from the TPZ unless operating from existing slabs, pavements or areas of ground protection. Machinery should not contact the tree's roots, trunks, branches and crown.
- 13.11.2 Existing pavement should be hand lifted to minimise disturbance to the existing sub-base and to prevent damage to tree roots. Wherever possible, the existing sub-base material should remain in situ.
- 13.11.3 When removing slab sections within the TPZ, machinery must work from the tree outwards to ensure the machinery always remains on the un-demolished section of slab. Wherever possible, footings or elements below grade should be retained to minimise disturbance to the tree's roots.
- 13.11.4 Structures must be shattered with hand-operated pneumatic/electric breaker before removal when considered necessary by the Project Arborist.
- 13.11.5 If roots (>25mmØ) are encountered during excavation, demolition and construction works these roots must be retained undamaged and advice sought from the Project Arborist. Exposed roots must be protected from direct sunlight, drying out and extremes of temperature by using 10mm thick jute geotextile fabric. This fabric should be kept moist at all times.
- 13.11.6 Where the Project Arborist determines that the tree is using underground elements (i.e. footings, pipes, rocks etc.) for support, these elements should be left *in situ*.

### 13.12 Pavement/Kerb Installation

- 13.12.1 Installation of pavements and sub-base within the TPZ must be supervised by the Project Arborist. New surfaces and sub-base materials should be placed above grade to minimise excavations and retain roots (unless prior root mapping has determined that there are no roots within the area of construction).
- 13.12.2 If roots (>25mmØ) are encountered during the installation of the new sub-base and surfaces these roots must be retained undamaged and advice sought from the Project Arborist. The design and final levels must remain flexible to enable the retention of roots >25mmØ where deemed necessary by the Project Arborist.
- 13.12.3 Compaction of the ground prior to the installation of fill is not permitted.
- 13.12.4 New sub-base material should be a 20mm no-fines road base (i.e. Benedict Sand & Gravel- Product Code 20NF/RB or similar). Recycled concrete aggregates should not be used to avoid raising soil pH levels.
- 13.12.5 If required, bedding sand should be washed river sand (no crushed paving blends). The bedding sand should be consolidated with a pedestrian operated plate compactor only. If possible, pavement material should be permeable.

- 13.12.6 Kerbs within the TPZ should be modified to bridge roots (>25mmØ) unless root pruning is approved and undertaken by the Project Arborist.
- 13.13 **Underground Services**
- 13.13.1 The installation of underground services should be located outside of the TPZ. Where this is not possible they should be installed around or below roots (>25mmØ) using either hydrovac or hand excavation and supervised by the Project Arborist.
- 13.13.2 Boring methods may be used for the installation of services 800mm below grade. Excavations for starting and receiving pits for the boring equipment should be located outside of the TPZ or located to avoid roots (>25mmØ, or determined by the Project Arborist).
- 13.13.3 Excavations, Root Protection & Root Pruning
- 13.13.4 Excavations and root pruning within the TPZ must be supervised by the Project Arborist and should be avoided where possible.
- 13.13.5 No over-excavation, battering, or benching should be undertaken beyond the footprint of any structure unless approved by the Project Arborist. Hand excavation and root pruning along the excavation line should be completed prior to the commencement of mechanical excavation to prevent tearing and shattering damage to the roots.
- 13.13.6 Roots >25mmØ should be pruned by the Project Arborist only. Roots <25mmØ may be pruned by the Principal Contractor. Root pruning should be undertaken with clean, sharp secateurs or a pruning saw to ensure a smooth wound face, free from tears.
- 13.13.7 Damaged roots should be pruned behind the damaged tissues with the final cut made to the undamaged part of the root.



## 14.0 APPENDIX 9 | PLATES



a) Showing Tree 1. b) Showing trunk cavity on Tree 1. c) Showing detail of trunk cavity of Tree 1. d) Showing Tree 2. e) Showing street tree, Tree 3. f) Showing Tree 4.

## 15.0 APPENDIX 10 | LIMITATIONS & DISCLAIMERS

- 15.1 Subject trees were assessed from the ground only and for providing an Arboricultural Impact Assessment and Tree Protection Specification.
- 15.2 All recommendations in this Arboricultural Impact Assessment and Tree Protection Specification report are based on the observations made on the day of inspection (21.4.23). There is no warranty, expressed or implied, that problems or deficiencies relating to the subject trees, or the subject site may not arise in the future.
- 15.3 Laurence & Co Consultancy takes care to obtain information from reliable sources. However, Laurence & Co Consultancy can neither guarantee nor be responsible for the accuracy of information provided by others. Plans, diagrams, graphs and photographs in this Arboricultural Impact Assessment and Tree Protection Specification report are visual aids only and are not necessarily to scale. This report provides recommendations relating to tree management only. Advice should be sought from appropriately qualified consultants regarding design/construction/ecological/heritage etc. issues.
- 15.4 This report has been prepared for exclusive use by the client. This report should not be viewed by others or for any other reason outside its intended target or without the prior written consent of Laurence & Co Consultancy. Unauthorised alteration or separate use of any section of the report invalidates the report.
- 15.5 Many factors may contribute to tree failure and cannot always be predicted. Laurence & Co Consultancy takes care to accurately assess tree health and structural condition. However, a tree's internal structural condition may not always correlate to visible external indicators.
- 15.6 **Limitation of Liability.** Laurence & Co Consultancy shall be liable only for direct damages that result from negligence or wilful misconduct in the performance of its services. Under no circumstances shall Laurence & Co Consultancy be liable for indirect, consequential, special, or punitive damages, or for damages caused by the client's failure to perform its obligations under law or contract. Laurence & Co Consultancy shall not be liable for and Client shall indemnify Laurence & Co Consultancy from and against all claims, demands, liabilities and costs (including attorneys' and expert fees) arising out of or in any way related to our performance or non-performance of services, including all on-site activities except to the extent caused by Laurence & Co Consultancy's negligence or wilful misconduct. In no event shall Laurence & Co Consultancy's liability exceed the amount paid to Laurence & Co Consultancy by the Client for our professional services (net of reimbursable expenses) and Client specifically releases Laurence & Co Consultancy for any damages, claims, liabilities and costs in excess of that amount.
- 15.7 Reference should be made to any relevant legislation including Tree Management Controls. All recommendations contained within this report are subject to approval from the relevant Consent Authority.