

# Tree Rapport

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## Arboricultural Impact Assessment & Tree Protection Management Plan

**26 Kestrel Pl, Ocean Grove, Vic 3226**

**Commissioned by: Nine Muses Architecture and Design**

**Version 5; 23/07/2026**

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## Contents

|                                                                                                       |    |
|-------------------------------------------------------------------------------------------------------|----|
| Addendum.....                                                                                         | 3  |
| 1.0 Introduction.....                                                                                 | 4  |
| 2.0 Methodology.....                                                                                  | 4  |
| 3.0 Planning Controls.....                                                                            | 5  |
| 4.0 Description of the Subject Site.....                                                              | 6  |
| 5.0 Site Survey and Tree Numbers .....                                                                | 7  |
| 6.0 Tree Data.....                                                                                    | 8  |
| 7.0 TPZ, SRZ and Encroachment Calculations.....                                                       | 9  |
| 8.0 Summary of Recommended Tree Removal.....                                                          | 10 |
| 9.0 Proposed Addition to the Dwelling and TPZs .....                                                  | 11 |
| 9.1 Proposed Addition to the Dwelling, TPZ Encroachments and Existing Soil Compaction.....            | 12 |
| 9.2 Proposed Addition to the Dwelling and Dripline Encroachment.....                                  | 13 |
| 9.3 Proposed Addition to the Dwelling and TPZ Fence Plan .....                                        | 14 |
| 10.0 Conclusion/Recommendations .....                                                                 | 15 |
| 11.0 Stages, Development and the Tree Management Process .....                                        | 18 |
| Appendix 1: Tree Photos .....                                                                         | 19 |
| Appendix 2: Signs and Fencing .....                                                                   | 21 |
| Addendum to Arboricultural Impact Assessment and Tree Protection Management Plan – Pruning Plan ..... | 22 |
| Terms and Limitations of the Report.....                                                              | 23 |
| Glossary of Terms.....                                                                                | 24 |
| References .....                                                                                      | 29 |

## Addendum

24 Kestrel Pl, Ocean Grove – Nature Strip Tree

**Species:** *Eucalyptus leucoxylon* / Yellow Gum

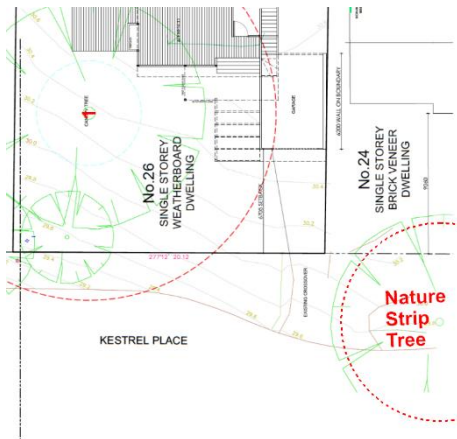
**DSH:** 53cm

**NRZ:** 6.4m

**Distance from subject site boundary:** 7.0m



24 Kestrel Pl, Ocean Grove – Nature Strip Tree. The tree's crown does not cross the subject site boundary.



The tree's NRZ does not cross the subject site boundary.

This nature strip tree at 24 Kestrel Pl was not assessed in the original report as it is located more than 4m from the subject site boundary and its NRZ does not extend into the subject site.

The tree's crown does not extend across the subject site boundary.

As the tree's NRZ does not enter the subject site, no Tree Protection Zone (TPZ) fencing or other tree protection measures are required for the proposed works at 26 Kestrel Pl.

## 1.0 Introduction

Tree Rapport has been engaged by Nine Muses Architecture and Design to carry out an Arboricultural Impact Assessment and Tree Protection Management Plan at 26 Kestrel Pl, Ocean Grove, Victoria 3226. The proposed development is buildings and works associated with an existing dwelling.

This report will address:

- Privately owned trees
- Trees owned by other parties that are located within 4 metres of the property boundary
- TPZ, SRZ and Dripline calculations
- TPZ and Dripline encroachment calculations
- Recommendations
- Tree protection management plan

**A copy of this report must always be kept onsite during the demolition and construction phases.**

## 2.0 Methodology

David Stevens (AQF III and V (Dip) Horticulture (Arboriculture) Melbourne Polytechnic) from Tree Rapport collected data on 20/03/2025. An Addendum was added to the report on 12/09/2025 in response to an RFI for a Pruning Plan.

The site survey was provided by Macrae & CO Land Surveyors. House plans were supplied by Nine Muses Architecture and Design.

Nine trees were assessed: five onsite trees; four neighbours' trees.

This report acknowledges and draws on detail from AS 4970 – 2009 Protection of Trees on Development Sites.

The tree species were identified, measured (height [estimated], width, Diameter at Breast Height {DBH}) 1.4m above ground level, Diameter Above Root Buttressing {DARB} (40cm above ground level), health, structure, and retention value and ULE were assessed.

A visual assessment of the trees was made from ground level in line with modern Arboricultural Practices and Principles, 'AS 4970 – 2009 Protection of Trees on Development Sites'; 'AS 4373 – 2007 – Pruning of Amenity Trees'; AS/NZS ISO 31000:2009 Risk Management. The trees were not climbed, and no samples of the trees or site soil were taken.

Access to neighbouring properties was restricted. Assessment of the trees was limited to the parts of the trees that were visible from the subject site and all neighbouring tree dimensions are estimated. TPZ and SRZ encroachment percentages have been calculated using ArborCAD V8.

The Tree Protection Zone is referred to as TPZ.

The Structural Root Zone is referred to as SRZ.

### 3.0 Planning Controls

26 Kestrel Pl, Ocean Grove, is in the **City of Greater Geelong** and is subject to the following zones and overlays:

#### Planning Zones:

NEIGHBOURHOOD RESIDENTIAL ZONE – SCHEDULE 4 (NRZ4)

#### Planning Overlays:

SIGNIFICANT LANDSCAPE OVERLAY – SCHEDULE 15 (SLO15)

A permit is required to remove, destroy or lop a tree. This does not apply to:

- Australian native trees less than 3 metres in height.
- Exotic trees.
- A tree listed within the incorporated document, *Environmental Weeds*, City of Greater Geelong, September 2008.
- Pruning a tree to improve its health or appearance, provided its normal growth habit is not retarded.
- A tree that presents an immediate risk of personal injury or damage to property, if only that part of the tree which presents the immediate risk is removed, destroyed or lopped.
- Pruning or lopping a tree to remove any branch that overhangs an existing dwelling or is within 2 metres of an existing dwelling.
- A tree that is dead.
- Maintaining a Minor Utility Installation to the minimum extent necessary by the relevant authority.
- Works carried out in accordance with the Geelong Street Tree Policy by or on behalf of the responsible authority.

Neighbouring trees are to be retained and protected throughout the development, unless otherwise agreed upon.

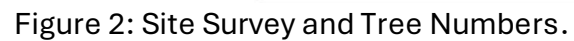
The owner of the subject site has the ‘Right of Abatement’ to prune any trees crossing the boundary.

#### 4.0 Description of the Subject Site

26 Kestrel Pl, Ocean Grove has an existing single storey house and a garden shed.



Figure 1: Satellite image of 26 Kestrel Pl, Ocean Grove



## 6.0 Tree Data

| Tree # | Botanical Name<br>Common Name                           | Age    | Origin     | DBH (cm) | DARB (cm) | Height (m) | Width (m) | Health | Structure | Retention Value  | ULE (years) | Hazard | Comments                                                                                                                        |
|--------|---------------------------------------------------------|--------|------------|----------|-----------|------------|-----------|--------|-----------|------------------|-------------|--------|---------------------------------------------------------------------------------------------------------------------------------|
| 1      | <i>Eucalyptus viminalis</i> / Manna Gum                 | Mature | Indigenous | 103      | 106       | 13         | 12        | Good   | Good      | High             | >20         | Medium | Onsite tree; co-dominant stem; branches over boundary; deadwood throughout; existing soil compaction; exposed structural roots. |
| 2      | <i>Allocasuarina verticillata</i> / Drooping Sheoak     | Mature | Native     | 19       | 28        | 4          | 3         | Fair   | Fair      | Low              | 10-20       | Low    | Onsite tree; phototropic growth pattern; deadwood throughout.                                                                   |
| 3      | <i>Eucalyptus leucoxylon</i> / Yellow Gum               | Mature | Native     | 45       | 56        | 9          | 7         | Fair   | Good      | High             | >20         | Medium | Onsite tree; co-dominant stem; existing soil compaction.                                                                        |
| 4      | <i>Leptospermum laevigatum</i> / Coast Tea-tree         | Mature | Native     | 28       | 38        | 6          | 5         | Good   | Fair      | Low              | >20         | Low    | Onsite tree; co-dominant stem; phototropic growth pattern; branches over boundary.                                              |
| 5      | <i>Leptospermum laevigatum</i> / Coast Tea-tree         | Mature | Native     | 21       | 25        | 5          | 3         | Good   | Fair      | Low              | >20         | Low    | Onsite tree; co-dominant stem; phototropic growth pattern; branches over boundary.                                              |
| 6      | <i>Eucalyptus leucoxylon</i> / Yellow Gum               | Mature | Native     | 75       | 90        | 12         | 13        | Good   | Good      | Neighbour's Tree | >20         | Medium | Neighbour's tree; co-dominant stem; branches over boundary; existing soil compaction, temporary moving pod within TPZ.          |
| 7      | <i>Melaleuca quinquenervia</i> / Broad-leaved Paperbark | Mature | Native     | 24       | 38        | 7          | 4         | Good   | Good      | Neighbour's Tree | >20         | Low    | Neighbour's tree; co-dominant stem; branches over boundary.                                                                     |
| 8      | <i>Prunus armeniaca</i> / Apricot Tree                  | Mature | Exotic     | 12       | 14        | 3          | 3.5       | Good   | Good      | Neighbour's Tree | 10-20       | Low    | Neighbour's tree; multi-stem; 2.5m from the boundary.                                                                           |
| 9      | <i>Lophostemon confertus</i> / Brush Box                | Mature | Native     | 40       | 51        | 9          | 6         | Good   | Good      | Neighbour's Tree | >20         | Low    | Neighbour's tree; bifurcated stem; branches over boundary; existing soil compaction.                                            |

Table 1: Tree Data

## 7.0 TPZ, SRZ and Encroachment Calculations

The following table shows the TPZ and SRZ calculations.

- All distances are measured from the centre of the trunk.

| Tree # | Botanical Name                                          | TPZ Radius (m) | Compensated TPZ Radius (m) from Encroachment | Total TPZ Area (sqm) | SRZ Radius (m) | Encroachment % into TPZ | Encroachment % into SRZ | Dripline Encroachment | Encroachment from                     | Type of Encroachment AS4970 | Reason                                                         |
|--------|---------------------------------------------------------|----------------|----------------------------------------------|----------------------|----------------|-------------------------|-------------------------|-----------------------|---------------------------------------|-----------------------------|----------------------------------------------------------------|
| 1      | <i>Eucalyptus viminalis</i> / Manna Gum                 | 12.36          | 12.60                                        | 479.94               | 3.39           | 2.3%, 0.3% - 2.6%       | NA                      | 7.7%                  | Decking (17 Stumps), Dwelling, Garage | Minor                       | Onsite Tree, TPZ Encroachment, 17 Stumps                       |
| 2      | <i>Allocasuarina verticillata</i> / Drooping Sheoak     | 2.28           | NA                                           | 16.33                | 1.94           | NA                      | NA                      | NA                    | NA                                    | NA                          | Onsite Tree, No TPZ Encroachment                               |
| 3      | <i>Eucalyptus leucoxylon</i> / Yellow Gum               | 5.40           | 5.45                                         | 91.61                | 2.59           | 0.6                     | NA                      | 7.8%                  | Dwelling, Decking (17 Stumps)         | Minor                       | Onsite Tree, TPZ Encroachment, 17 Stumps                       |
| 4      | <i>Leptospermum laevigatum</i> / Coast Tea-tree         | 3.36           | NA                                           | 35.47                | 2.20           | Yes                     | Yes                     | NA                    | Dwelling                              | Major                       | Remove Tree                                                    |
| 5      | <i>Leptospermum laevigatum</i> / Coast Tea-tree         | 2.52           | NA                                           | 19.95                | 1.85           | Yes                     | Yes                     | NA                    | Dwelling                              | Major                       | Remove Tree                                                    |
| 6      | <i>Eucalyptus leucoxylon</i> / Yellow Gum               | 9.00           | NA                                           | 254.47               | 3.17           | NA                      | NA                      | NA                    | NA                                    | NA                          | Neighbour's Tree, TPZ Enters Subject Site, No TPZ Encroach.    |
| 7      | <i>Melaleuca quinquenervia</i> / Broad-leaved Paperbark | 2.88           | NA                                           | 26.06                | 2.20           | NA                      | NA                      | NA                    | NA                                    | NA                          | Neighbour's Tree, TPZ Enters Subject Site, No TPZ Encroach.    |
| 8      | <i>Prunus armeniaca</i> / Apricot Tree                  | 2.00           | NA                                           | 12.57                | 1.50           | NA                      | NA                      | NA                    | NA                                    | NA                          | Neighbour's Tree, TPZ Does Not Enter Subject Site              |
| 9      | <i>Lophostemon confertus</i> / Brush Box                | 4.80           | NA                                           | 72.38                | 2.49           | NA                      | NA                      | NA                    | NA                                    | NA                          | Neighbour's Tree, TPZ Enters Subject Site, No TPZ Encroachment |

Table 2: TPZ and SRZ Calculations

## 8.0 Summary of Recommended Tree Removal

| Tree # | Botanical Name                                  | Permit needed to remove | No permit needed to remove | Reason                     |
|--------|-------------------------------------------------|-------------------------|----------------------------|----------------------------|
| 4      | <i>Leptospermum laevigatum</i> / Coast Tea-tree | ✓                       |                            | Proposed Dwelling Addition |
| 5      | <i>Leptospermum laevigatum</i> / Coast Tea-tree | ✓                       |                            | Proposed Dwelling Addition |

Table 3: Summary of Recommended Tree Removal

## 9.0 Proposed Addition to the Dwelling and TPZs

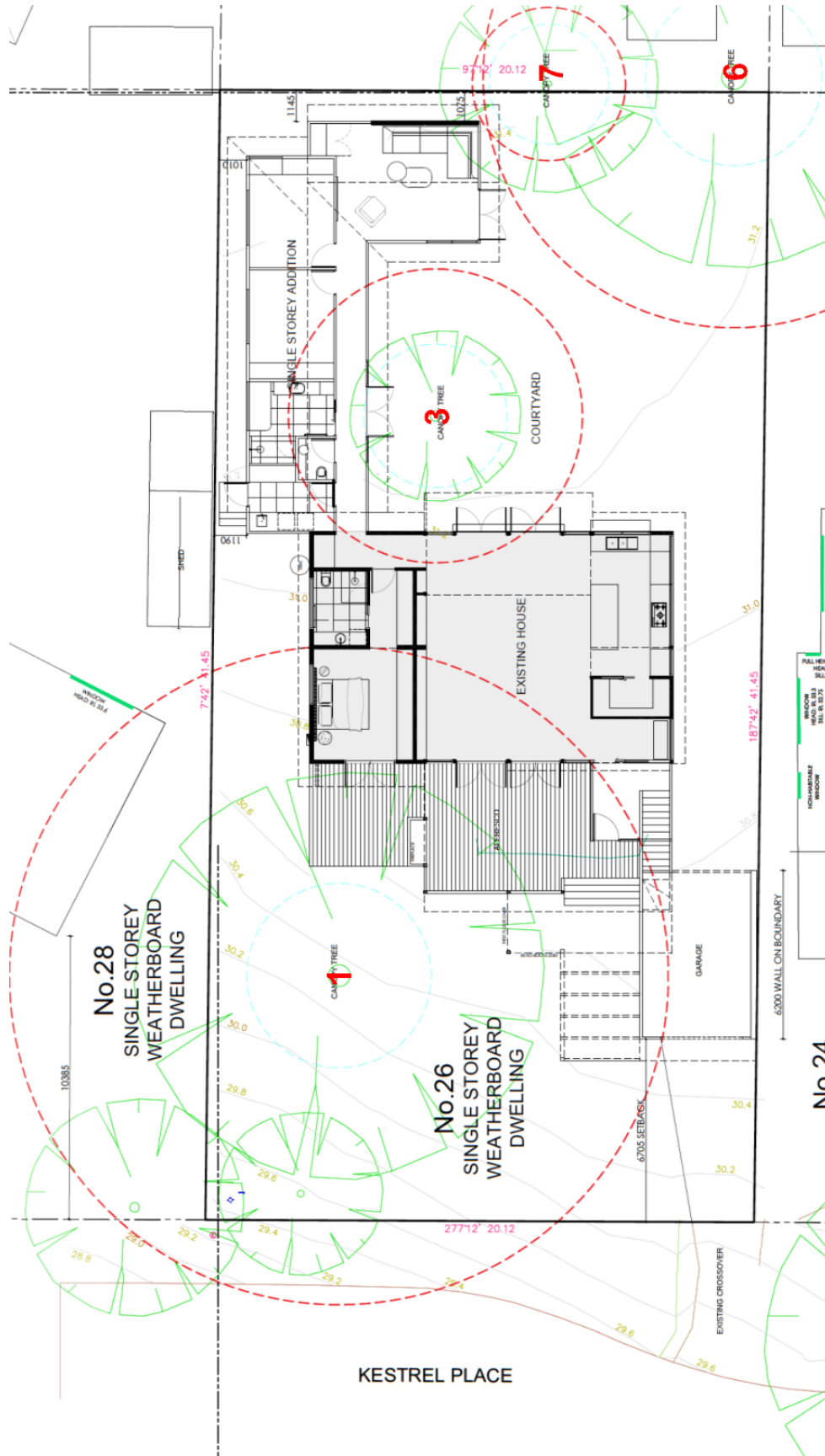


Figure 3: Proposed Additions to the Dwelling and TPZs

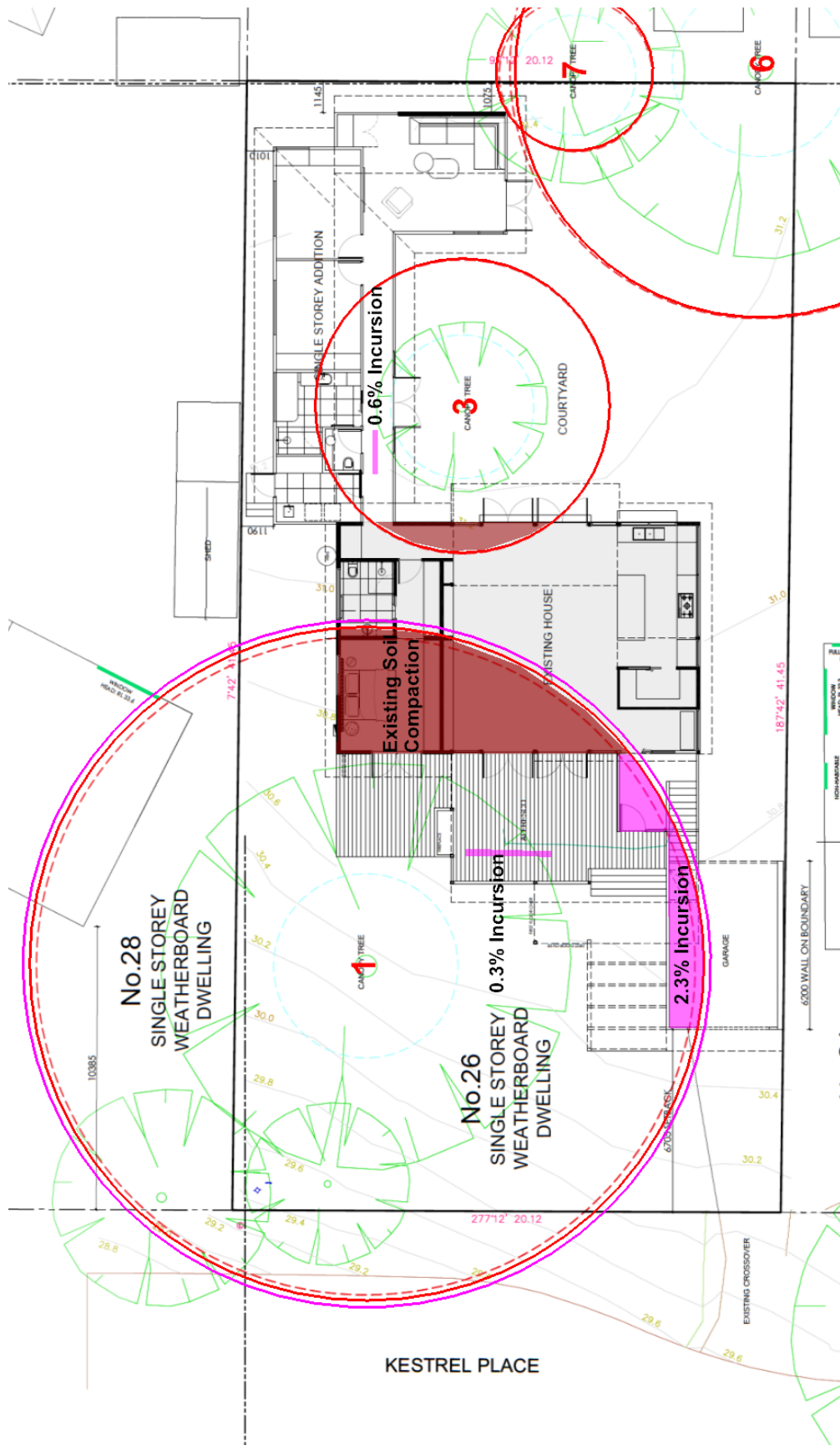
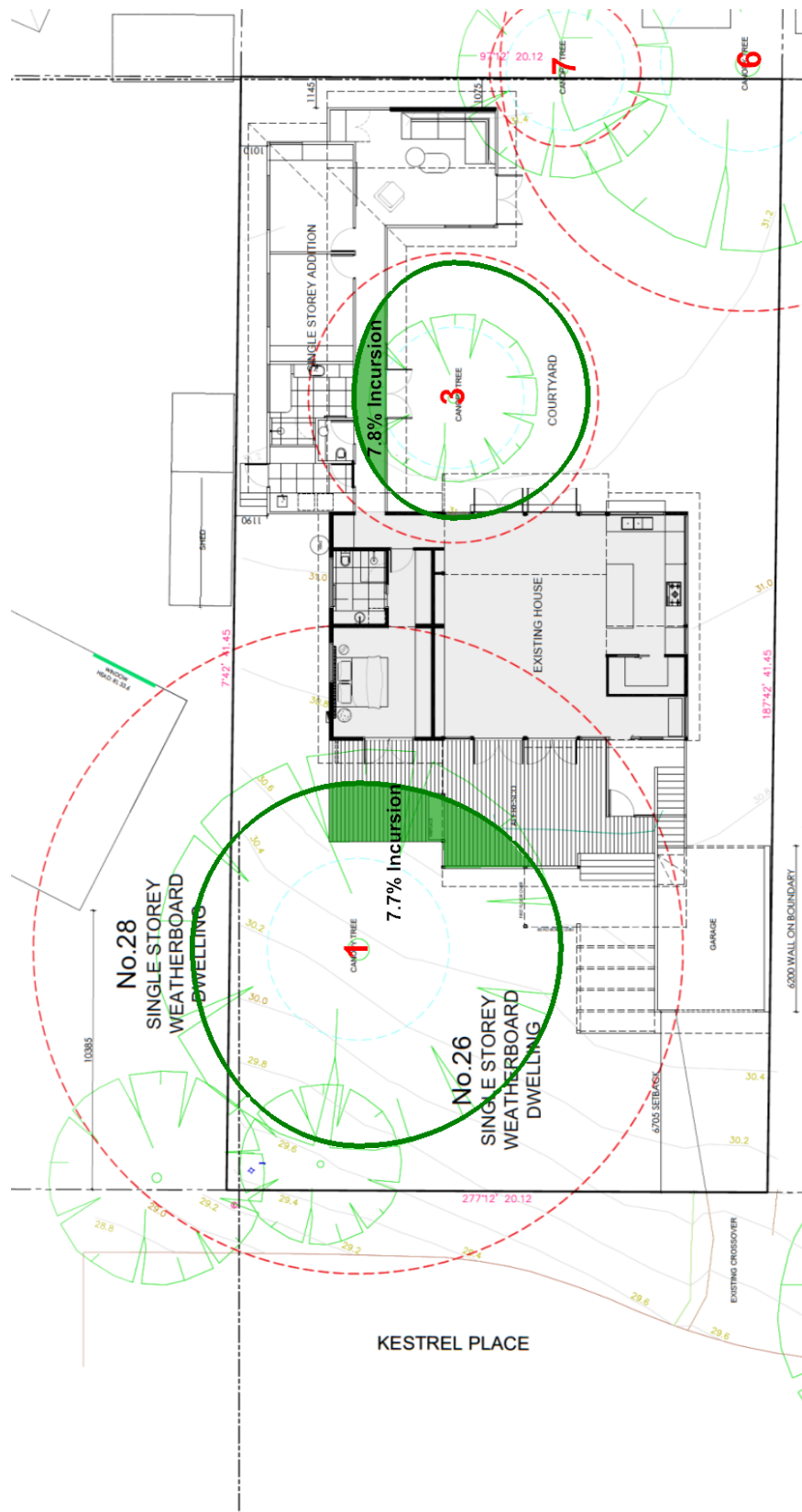
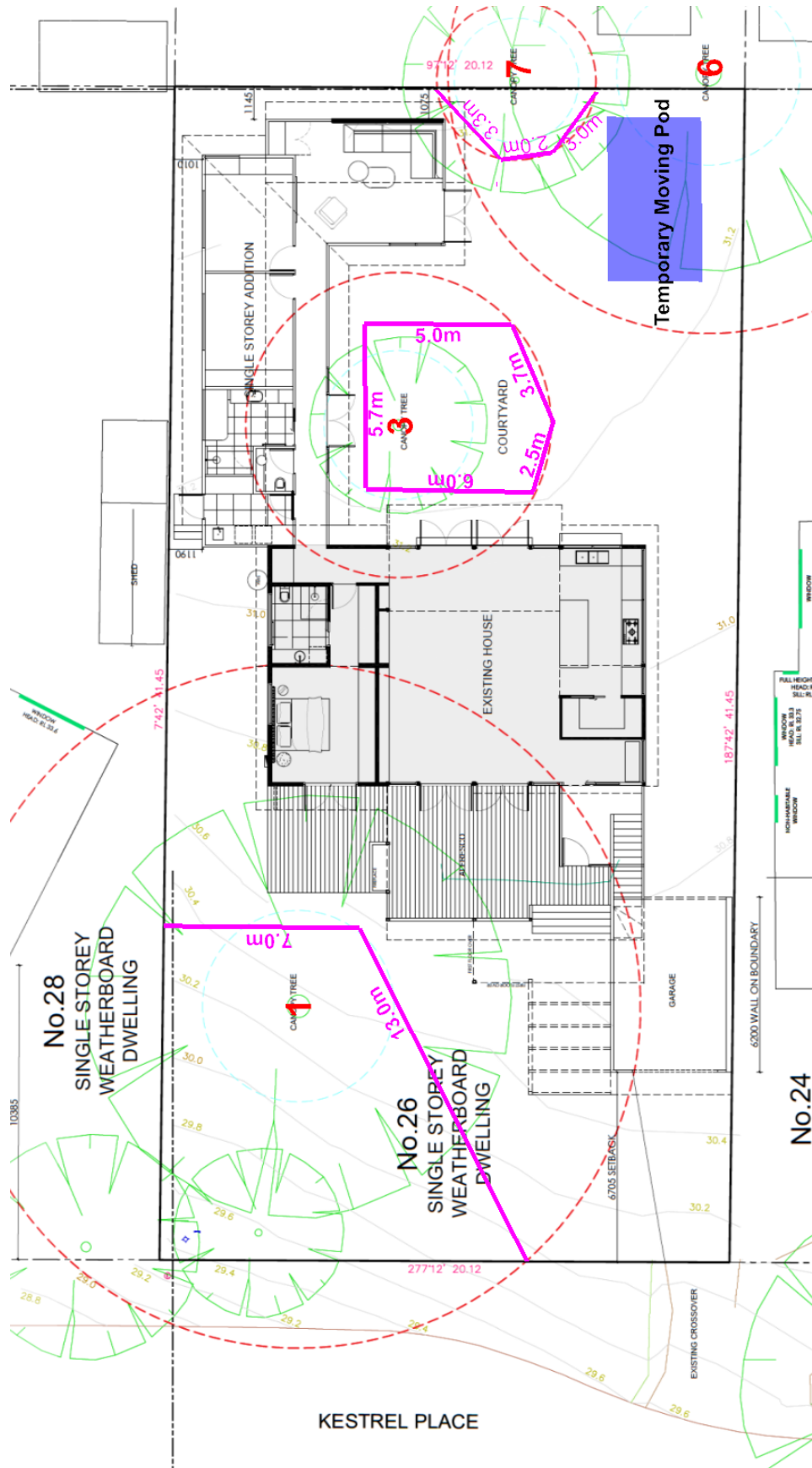


Figure 4: TPZ Encroachments and Existing Soil Compaction (Brown). Outer purple circle is the compensated TPZ. Rectangle area in Trees 1 and 2 is calculated stump area.

## 9.2 Proposed Addition to the Dwelling and Dripline Encroachment



### 9.3 Proposed Addition to the Dwelling and TPZ Fence Plan



## 10.0 Conclusion/Recommendations

A copy of this report must always be kept onsite during the demolition and construction phases.

The proposed development is buildings and works associated with an existing dwelling.

The subject site has a Neighbourhood Residential Zone – Schedule 4 (NRZ4) and a Significant Landscape Overlay – Schedule 15 (SLO15).

Nine trees were assessed: five onsite trees and four neighbours' trees.

Entry and exit to the subject site must be via the existing crossover and driveway.

Soil compaction has developed under the existing dwelling as outlined in Section 9.1: Proposed Addition to the Dwelling, TPZ Encroachments and Existing Soil Compaction. Trees 1 and 2, have established and grown within this pre-existing compacted soil environment. These trees demonstrate adaptive growth to site conditions, supporting that healthy trees can adjust to long-term soil compaction. Clause 3.3.4 (g) of AS 4970-2009 – Protection of Trees on Development Sites advises that when assessing TPZ encroachment impacts, consideration should be given to: "The presence of existing or past structures or obstacles affecting root growth." This clause recognises that existing site conditions—such as compacted soils—may already inhibit root growth. In such areas, trees are less likely to develop extensive non-woody roots due to reduced porosity, oxygen availability, and water infiltration. Consequently, TPZ encroachment in these zones may have less physiological impact on the tree. Clause 3.3.1 of AS 4970-2009 acknowledges that: "It may be possible to encroach into or make variations to the standard TPZ. Encroachment includes excavation, compacted fill and machine trenching." This clause permits modifications to the TPZ in response to existing constraints and tree tolerance, particularly where root development is already restricted. In this case, the proposed encroachment overlaps with a previously compacted zone—an area unlikely to host significant root activity. Based on site assessment and arboricultural experience, it is reasonable to conclude that the proposed development, which overlaps existing compacted soils, represents a manageable TPZ encroachment. This area has been modified to reflect no TPZ encroachment.

The proposed addition to the dwelling encroaches within the dripline of trees 1 and 3. The area of encroachment has been calculated to be 7.7% and 7.8% respectively of the area beneath the trees' canopy. While the concept of dripline is commonly used as a visual approximation of the tree's root zone, AS 4970-2009 does not use the dripline as a definitive measure for tree protection. Instead, it defines the TPZ and SRZ based on trunk diameter and other arboricultural considerations. An encroachment of less than 10% into the TPZ is generally considered minor under AS 4970-2009. Given the minor scale of this encroachment into the trees' dripline the impact on Trees 1 and 3's health is expected to be negligible.

Tree 1 is an onsite tree. Its TPZ will incur a 2.6% encroachment. This is by the proposed addition to the dwelling (2.3%) and timber decking (0.3% - 17 stumps, each stump hole is 300mm x 300mm, ie 900mm<sup>2</sup> per stump). The tree has low hanging branches within the vicinity of the proposed addition and decking. These branches may need pruning. The tree's TPZ will need to be protected during demolition and construction. This will be in the form of temporary fencing. Temporary fencing with TPZ signage delineating the tree's TPZ must be used during demolition and construction. TPZ fencing must be in place 14 days prior to works beginning and be signed off by the project arborist, see 9.3 Proposed Addition to the Dwelling and TPZ Fence Plan.

Tree 2 is an onsite tree. The tree will not incur a TPZ encroachment. The tree's TPZ is entirely encompassed within the TPZ of tree 1.

Tree 3 is an onsite tree. Its TPZ will incur a 0.6% encroachment from the proposed addition to the dwelling (stumps). The tree's TPZ will need to be protected during demolition and construction. This will be in the form of temporary fencing. Temporary fencing with TPZ signage delineating the tree's TPZ must be used during demolition and construction. TPZ fencing must be in place 14 days prior to works beginning and be signed off by the project arborist, see 9.3 Proposed Addition to the Dwelling and TPZ Fence Plan.

Trees 4 and 5 are located within the proposed west addition area. The trees will need to be removed. Under SLO15 a permit to remove will need to be applied for.

Trees 6 and 7 are neighbour's trees. Their TPZs and dripline will not incur an encroachment by the proposed development. The trees' TPZs enter the subject property. Tree 6 has a temporary moving pod within its TPZ. The pod is elevated and will not impact the tree. The trees' TPZs will need to be protected during demolition and construction. This will be in the form of temporary fencing. Temporary fencing with TPZ signage delineating the tree's TPZ must be used during demolition and construction. TPZ fencing must be in place 14 days prior to works beginning and be signed off by the project arborist, see 9.3 Proposed Addition to the Dwelling and TPZ Fence Plan.

Tree 8 is a neighbour's tree. Its TPZ does not enter the subject site.

Tree 9 is a neighbour's tree. The tree's TPZ enters the subject site. Its TPZ will not incur a TPZ encroachment. The tree's TPZ is entirely encompassed within the TPZ of tree 1.

TPZs must be maintained during demolition and construction (4.6 Maintaining the TPZ, AS 4970 – 2009 Protection of Trees on Development Sites.) Clause 4.6.1 Mulching, the area within the TPZ should be mulched. The mulch must be maintained to a depth of 50–100 mm using material that complies with AS 4454. Where the existing landscape within the TPZ is to remain unaltered (e.g. garden beds or turf) mulch may not be required. Clause 4.6.2 Watering, soil moisture levels should be regularly monitored by the project arborist. Temporary irrigation or watering may be required within the TPZ. An above-ground irrigation system should be installed and maintained by a competent individual. Clause 4.6.3 Weed Removal, all weeds should be removed by hand without soil disturbance or should be controlled with appropriate use of herbicide.

Any vegetation removed should be replaced with indigenous vegetation, or as otherwise approved by the responsible authority.

Where pruning of trees is required only the minimum amount necessary for clearance should be removed. Pruning should be undertaken by a suitably qualified arborist (minimum AQF Level 3). The pruning should be undertaken in accordance with the Australian Pruning Standard AS 4373-2007. Pruning should be completed at least 14 days before demolition or construction starts.

Where scaffolding is required, it should be erected outside the TPZ. When scaffolding must be erected within the TPZ, cover the ground with a 10cm layer of mulch and then cover this with boards and plywood to prevent soil compaction.

Where underground services such as drains, water, electrical etc is required and routed through a tree's TPZ they should be installed by directional drilling or in manually excavated trenches. The

directional drilling should be at least 600mm deep. For manual excavation of trenches the project arborist shall advise on roots to be retained and shall monitor works.

It is important that the following activities are restricted within the TPZ (AS 4970-2009 Protection of Trees on Development Sites (4.2 Activities Restricted Within the TPZ pg. 15). Activities generally excluded from the TPZ include but are not limited to:

- Machine excavation including trenching
- Excavation for silt fencing
- Cultivation
- Storage
- Preparation of chemicals, including preparation of cement products
- Parking vehicles and plant
- Re-fuelling
- Dumping of waste
- Wash down and cleaning of equipment
- Placement of fill
- Lighting of fires
- Soil level changes
- Temporary or permanent installation of utilities and signs
- Physical damage to trees.

## 11.0 Stages, Development and the Tree Management Process

The below table represents a guide for all parties involved in construction works within a site to ensure the long-term health and vigour of trees involved. Some stages within this process may not be deemed applicable by the governing bodies or other site representatives.

Section 2 Planning and the Tree Management Process, AS4970-2009 Protection of Trees on Development Sites, Table 1

| Stage in Development                           | Tree Management Process                                                                                                                                                                             |                                                                                                                                                                                                                                                               | Site Status | Sign & Date |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|
| <b>Planning (Section 2 and 3)</b>              | <b>Matters for Consideration</b>                                                                                                                                                                    | <b>Actions and Certification</b>                                                                                                                                                                                                                              |             |             |
| <b>Detail surveys</b>                          | Council plans and policies.<br>Planning instruments and controls.<br>Heritage.<br>Threatened species.                                                                                               | Existing trees accurately plotted on survey plan.                                                                                                                                                                                                             | Complete    | 30/06/25    |
| <b>Preliminary tree assessment</b>             | Hazards/risks.<br>Tree retention value.                                                                                                                                                             | Evaluate trees suitable for retention and mark on plan.<br>Provide preliminary arboricultural report and indicative TPZs to guide development layout.                                                                                                         | Complete    | 30/06/25    |
| <b>Preliminary development design</b>          | Condition of trees.<br>Proximity to buildings.<br>Location of services.<br>Roads.<br>Level changes.<br>Building operations space.<br>Long-term management.                                          | Planning selection of trees for retention.<br>Design review by proponent.<br>Design modifications to minimize impact to trees.                                                                                                                                | Complete    | 30/06/25    |
| <b>Development submission</b>                  | Identify trees for retention through comprehensive arboricultural impact assessment of proposed construction.<br>Determine tree protection measures.<br>Landscape design.                           | Provide arboricultural impact assessment including tree protection plan (drawing) and specifications.                                                                                                                                                         |             |             |
| <b>Development approval</b>                    | Development controls.<br>Conditions of consent.                                                                                                                                                     | Review consent conditions relating to trees.                                                                                                                                                                                                                  |             |             |
| <b>Pre-construction (Sections 4 and 5)</b>     |                                                                                                                                                                                                     |                                                                                                                                                                                                                                                               |             |             |
| <b>Initial site preparation</b>                | State based OHS requirements for tree work.<br>Approved retention/removal.<br>Refer to AS4373 for the requirements on the pruning of amenity trees.<br>Specifications for tree protection measures. | Compliance with conditions of consent.<br>Tree removal/tree retention/transplanting.<br>Tree pruning.<br>Certification of tree removal and pruning.<br>Establish/delineate TPZ.<br>Install protective measures.<br>Certification of tree protection measures. |             |             |
| <b>Construction (Sections 4 and 5)</b>         |                                                                                                                                                                                                     |                                                                                                                                                                                                                                                               |             |             |
| <b>Site establishment</b>                      | Temporary infrastructure.<br>Demolition, bulk earthworks, hydrology.                                                                                                                                | Locate temporary infrastructure to minimize impact on retained trees.<br>Maintain protective measures.<br>Certification of tree protection measures.                                                                                                          |             |             |
| <b>Construction work</b>                       | Liaison with site manager, compliance.<br>Deviation from approved plan.                                                                                                                             | Maintain or amend protective measures.<br>Supervision and monitoring.                                                                                                                                                                                         |             |             |
| <b>Implement hard and soft landscape works</b> | Installation of irrigation services.<br>Control of compaction work.<br>Installation of pavement and retaining walls.                                                                                | Remove selected protective measures as necessary.<br>Remedial tree works.<br>Supervision and monitoring.                                                                                                                                                      |             |             |
| <b>Practical completion</b>                    | Tree vigour and structure.                                                                                                                                                                          | Remove all remaining tree protection measures.<br>Certification of tree protection.                                                                                                                                                                           |             |             |
| <b>Post construction (Section 5)</b>           |                                                                                                                                                                                                     |                                                                                                                                                                                                                                                               |             |             |
| <b>Defects liability / maintenance period</b>  | Tree vigour and structure.                                                                                                                                                                          | Maintenance and monitoring.<br>Final remedial tree works.<br>Final certification of tree condition.                                                                                                                                                           |             |             |

## Appendix 1: Tree Photos

Tree #: 1



Tree #: 2



Tree #: 3



Tree #: 4



Tree #: 5



Tree #6



Tree #7



Tree #8



## Appendix 2: Signs and Fencing



Signs identifying the TPZ should be placed around the edge of the TPZ and be visible from within the development site. The lettering on the sign should comply with AS 1319. Above provides an example of a suitable TPZ sign.



Orange barrier mesh safety fence and star pickets are a good option for this property. AS 4970-2009 Protection of Trees on Development Sites clause 4.3 Protective Fencing, 'Figure 3 indicates an **example** of protective fencing'.

Why orange barrier mesh:

- Compliant: Meets the *intent* of AS 4970-2009 Clause 4.3 and Figure 3 when installed properly.
- Visibility: The orange mesh is easily noticeable, reducing the risk of accidental intrusion.
- Cost-effective: Affordable and quick to install.
- Flexible: Can be adapted to irregular TPZ shapes.

Additional tips for compliance:

- Ensure fencing is installed 14 days prior to any site works, including earthworks or machinery movement.
- Maintain fencing in good condition throughout the build.
- Avoid storing materials, excavating, or allowing access inside the fenced TPZ.
- Coordinate with an arborist to ensure fencing placement and tree protection strategies are effective.

**Addendum to Arboricultural Impact Assessment and Tree Protection Management Plan – Pruning Plan**

Tree1 has low hanging branches within the vicinity of the proposed addition and decking. These branches may need pruning.

Where pruning of trees is required only the minimum amount necessary for clearance should be removed. Pruning should be undertaken by a suitably qualified arborist (minimum AQF Level 3). The pruning should be undertaken in accordance with the Australian Pruning Standard AS 4373-2007. Pruning should be completed at least 14 days before demolition or construction starts.



## Terms and Limitations of the Report

- Any legal information in this report has been provided to *Tree Rapport* by an external source and it is assumed to be correct. All references to property title and/or control or ownership of land are assumed to be correct as *Tree Rapport* has been advised.
- Great care has been taken in sourcing information for this report so as it is correct. *Tree Rapport* cannot be responsible for information provided which is not directly under control of its staff.
- No *Tree Rapport* employee shall be required to give testimony or attend court for any matter in relation to this report, unless further contractual arrangements have been made.
- This report must not be altered in any shape or form. It has been written as a whole document and is intended for use as a whole document. Any changes or modifications to this report not undertaken by *Tree Rapport* shall render this report invalid in its entirety.
- In no way is this report biased or weighted. The content of the report is written in the full, honest opinion of *Tree Rapport* consulting arborist.
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- This report is developed around the information provided by our client in the project brief. Only issues covered by the project brief are discussed in this report.
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## Glossary of Terms

### Age Class

|                    |                                                                                                                                                                                                                                                        |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Juvenile</b>    | A Seedling or Sapling                                                                                                                                                                                                                                  |
| <b>Young</b>       | A tree that is actively growing and shows significant increases in annual growth. The duration and extent of the growth is dependent on the species and cultural conditions in which the tree is growing.                                              |
| <b>Semi-Mature</b> | A tree that shows active annual growth and has not yet reached its genetic potential with regard to canopy height and width. The onset and duration of semi-maturity is dependent on the species and cultural conditions in which the tree is growing. |
| <b>Mature</b>      | A tree that shows minor annual growth and has reached close to its maximum genetic potential. The onset and duration of maturity is dependent on the species and cultural conditions in which the tree is growing.                                     |
| <b>Senescent</b>   | A mature tree that is in physiological decline showing little or no annual growth. The onset of senescence is dependent on the species and cultural conditions in which the tree is growing.                                                           |
| <b>Decline</b>     | A tree with reduced vigour or showing no signs of annual growth due to environmental stress, pathogenic or natural causes.                                                                                                                             |

### Calculated DBH

Used to calculate the total DBH for multi-stemmed trees only.

Formula used:  $DBH = \sqrt{s1^2 + s2^2 + s3^2 + s4^2 + s5^2}$

### Decurrent

Tree form which develops when the lateral branches grow as fast or faster than the terminal shoot. This results in a tree with a broad spreading form and multiple trunks.

### Defect

An injury, growth pattern/habit, decay or other conditions that may reduce the tree's structural integrity or affect its health.

### Diameter at Breast Height (DBH)

The trunk diameter measured at 1.4m above ground level determined from the circumference of the trunk divided by  $\pi$  ( $\pi$ ).

### Diameter at Root Buttress (DARB)

The trunk diameter measured from the point at which the tree's root buttressing/flare initiates.

### Dieback

The progressive death of shoots or roots starting at the extremities.

### Dynamic Load

A force created by a moving load or a load that changes with time and/or motion.

### Encroachment

An incursion into a tree's TPZ from a proposed development or existing structure or buildings.

### Energy Production

The production of energy resulting from photosynthetic material that converts sunlight into carbohydrates and oxygen which is then used for tree growth, root development, root exudates for soil associates, reproduction, storage and defence.

### Excurrent

Tree form which develops when a dominant leading shoot outgrows the lateral branches. This results in a narrow, cone-shaped crown with a clearly defined central trunk.

#### Form

|             |                                                                                                                                           |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Good</b> | A tree with a typical canopy shape for its species.                                                                                       |
| <b>Fair</b> | A tree with a canopy presenting with signs of an altered shape such as a minor canopy bias, previous pruning or phototropic growth habit. |
| <b>Poor</b> | A tree with a significantly atypical or altered shape.                                                                                    |

#### Health

|                  |                                                                                                                                                                                |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Good</b>      | A tree that presents with a full, dense canopy, with no signs of pest or disease and strong vigour.                                                                            |
| <b>Fair</b>      | A tree which may show signs of reduced vigour with some small diameter deadwood. It may have some pest or disease damage that is not causing a significant impact to the tree. |
| <b>Poor</b>      | A tree which may be in decline with little to no annual growth. Pests and disease may be widespread throughout the tree and/or die-back present, sparse canopy.                |
| <b>Very Poor</b> | A tree in significant decline showing no annual growth. Large sections of die-back are present and is very unlikely to recover.                                                |
| <b>Dead</b>      | A tree with no signs of life and a completely dead canopy.                                                                                                                     |

#### Load

A term used to indicate the magnitude of a force.

#### Lopping

The indiscriminate cutting of a tree to reduce its size. (Not regarded as an acceptable practice and does not comply with AS4373-2007 '*Pruning of Amenity Trees*').

#### Nutrient Uptake

The process in which a tree captures elements that are essential for growth.

#### Nutrients

Molecules that all organisms need to make energy, grow, develop and reproduce.

#### Origin

|                   |                                                                                                      |
|-------------------|------------------------------------------------------------------------------------------------------|
| <b>Indigenous</b> | A species found in a specific region as a result of only natural process with no human intervention. |
| <b>Native</b>     | A species found in a broader region or country.                                                      |
| <b>Exotic</b>     | A species that is native to a country other than Australia.                                          |

#### Pathogen

A bacterium, virus or other microorganism that can cause disease or infection.

#### Percentage (%) Encroachment

The calculated level of encroachment into a tree's TPZ.

#### Primary Disorder

An initial, inhibiting or abnormal condition that impairs the performance of one or more vital functions of a tree.

#### Pruning

The process of removing branches or occasionally roots from a tree using approved arboricultural practices, to achieve a specified objective.

**Secondary Disorder**

A disorder that develops after a tree is stressed by a primary disorder.

**Significance/Retention Value**

|               |                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>High</b>   | A mature tree that contributes positively to a site due to its botanical, historical or local significance in combination with good physiological characteristics such as health, form, structure and future development. Significant efforts should be made to retain this tree and it should be considered for retention within a proposed development.                          |
| <b>Medium</b> | A semi-mature to mature tree which exhibits fair or good characteristics of health, structure or form and/or may provide some amenity value to the surrounding area or habitat value. Should be considered for retention if possible, within a development design proposal and may be modified to allow for construction (eg: canopy pruning, root pruning etc).                   |
| <b>Low</b>    | A tree that provides minimal contribution to the surrounding landscape and/or may be in poor or declining health. This tree may have a poor structure, poor form, be a noxious/poisonous or listed weed species or a combination of these characteristics. It may be in an inappropriate location. This tree is not worthy of being a constraint to a development design proposal. |
| <b>Nil</b>    | A tree with no landscape significance and its retention is inappropriate. The removal of this tree would be of benefit to the landscape.                                                                                                                                                                                                                                           |

**Signs**

Objective physical evidence of a causal agent (eg: insect eggs, borer holes, frass).

**Soil Compaction**

The compression of soil resulting in reduced macropore space and soil volume. This restricts the infiltration of water through the soil profile, impedes the efficiency of nutrient and water uptake, restricts new root development and root exploration and impedes gaseous exchange between root cells and the atmosphere.

**Static Load**

A constant load exerted by a mass due to its weight.

**Strain**

The extent to which a material deforms under an applied force or stress.

**Stress**

A factor that negatively affects the health of a tree and stimulates a physiological response.

**Structural Root Zone (SRZ)**

The area around the base of a tree required for stability in the ground. Woody root growth and soil cohesion in this area are necessary to hold the tree upright. The SRZ is normally circular with the trunk at its centre and is expressed by its radius in metres.

This zone considers a tree's structural stability only and not the root zone required to maintain vigour and long-term viability. (*AS4970-2009 Protection of Trees on Development Sites*).

Formula Used:  $SRZ \text{ radius} = (D \times 50)^{0.42} \times 0.64$

D = Trunk Diameter, in meters, measured above the root buttress.

**Structure**

|                  |                                                                                                                                                                                                                              |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Good</b>      | A tree with structure that is typical of its species with no defects such as decay, included bark, cracks, splits, tears outs. Generally, with a single defined trunk with secondary limbs presenting with good attachments. |
| <b>Fair</b>      | A tree with minor defects in its canopy but is generally free of any significant structural issues. Pruning may be required to fix minor defects. Its canopy will mostly be symmetrical and typical of its species.          |
| <b>Poor</b>      | A tree presenting with 1 or more defects such as included bark, co-dominant stems, poor attachments and may also have an atypical or asymmetrical canopy. The defects may be able to be rectified with pruning.              |
| <b>Very Poor</b> | A tree with significant defects related to its primary stem or secondary scaffold limbs that cannot be rectified with pruning or other measures. This removal of this tree may be required in the short term.                |
| <b>Hazardous</b> | A tree with major defects that is likely to fail and should be removed as soon as possible.                                                                                                                                  |

**Symptoms**

Subjective reactions to a disease or disorder (eg: wilting, dieback, defoliation).

**Tree Protection Zone (TPZ)**

A specified area above and below ground and at a given distance from the centre of the trunk set aside for the protection of a tree's roots and crown to provide for the viability and stability of a tree to be retained where it is potentially subject to damage by development. (*AS4970-2009 Protection of Trees on Development Sites*).

Formula Used: TPZ radius = DBH x 12

**Useful Life Expectancy (ULE)**

|                     |                                                                                                                                                                                     |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>0 years</b>      | A dead, dying or dangerous tree with significant defects, poor health or requires removal in the short term.                                                                        |
| <b>&lt;5 years</b>  | A poor example of the species that is in decline or will likely die or requires removal within 5 years.                                                                             |
| <b>5-10 years</b>   | A tree in fair condition that contributes to the amenity of the landscape in which it is growing, can be retained with a tolerable level of management.                             |
| <b>10-20 years</b>  | A tree in fair-good condition that contributes to the amenity of the landscape in which it is growing and can be retained with an appropriate level of management.                  |
| <b>&gt;20 years</b> | A healthy tree in good condition that will contribute to the amenity of the landscape in which it is growing for at least another 20 years with an appropriate level of management. |

**Vigour**

The overall health, condition and resilience of a tree, reflected in the ability of the whole tree to grow.

**Work(s)**

Any physical activity in relation to land that is specified by the determining authority.

**Wound Response**

New wood developing in response to a wound.

**Woundwood**

Strong woody tissue that grows behind a callus which replaces it in that location. Woundwood closes wounds, then normal wood continues to form. After wounding, a callus forms around the margins of the wound. Woundwood forms later as the cells become lignified. It is not meristematic but is high in lignin.

**Glossary**

| <b>Term</b>                    | <b>Definition</b>                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Non-woody roots</b>         | Roots where the primary function is the absorption of water and nutrients in solution. Smallest non-woody roots also referred to as 'fibrous' or 'fine' roots.                                                                                                                                                                                                                                                     |
| <b>Wound wood</b>              | Refers to the tissue formed at the margins of a cavity or wound. The margins of this new tissue may eventually meet, closing off the face of the wound.                                                                                                                                                                                                                                                            |
| <b>Scaffold branch/root</b>    | A primary structural branch of the crown or primary structural root of the tree.                                                                                                                                                                                                                                                                                                                                   |
| <b>Epicormic</b>               | Shoots which arise from adventitious or latent buds. These shoots often have a weak point of attachment. They are often a response to stress in the tree. Epicormic growth/shoots are generally a survival mechanism, often indicating the presence of a current, or past stress event such as fire, pruning, drought, etc.                                                                                        |
| <b>Included Bark</b>           | The pattern of development at branch or stem junctions where bark is turned inward rather than pushed out. This fault is located at the point where the stems/branches meet. This is normally a genetic fault and potentially a weak point of attachment as the bark obstructs healthy tissue from joining together to strengthen the joint.                                                                       |
| <b>Lion tailed</b>             | Branches that are long with a crown on the end far from the trunk. Giving slenderness problems.                                                                                                                                                                                                                                                                                                                    |
| <b>Root plate</b>              | Generally, the area and the conditions in which tree root growth may occur or is occurring. Normally the minimum rooting environment is defined by the Tree Protection Zone (TPZ), however, as root growth can be restricted by structures, pavements, rock, soil type, soil moisture, etc, the area available for root growth may not be evenly distributed or develop in a symmetrical manner out from the tree. |
| <b>Bi-furcated</b>             | Natural division of a branch or stem into two or more stems or parts.                                                                                                                                                                                                                                                                                                                                              |
| <b>Borer (longhorn beetle)</b> | Bora is an insect that chews through the wood. This happens in the vascular system, this is where the tree function through water and nutrients. This can ring bark the tree or branch coursing it to die. This happens in the larvae stage.                                                                                                                                                                       |
| <b>Minor Encroachment</b>      | AS 4970-2009 Protection of Trees on Building Sites, 3.3.2 – An encroachment that is less than 10% of the area of the TPZ and is outside the SRZ.                                                                                                                                                                                                                                                                   |
| <b>Major Encroachment</b>      | AS 4970-2009 Protection of Trees on Building Sites, 3.3.3 - An encroachment that is greater than 10% of the area of the TPZ or inside the SRZ.                                                                                                                                                                                                                                                                     |

## References

AS 4970-2009 Protection of trees on development sites

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