

# Arboricultural Assessment and Report

51-53 Hope Street & 66-76  
Autumn Street, Geelong West

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Prepared for [REDACTED] Hub  
Property Group Pty Ltd

Prepared by [REDACTED]  
Consulting Arborist  
Tree Logic Pty. Ltd.

4 December 2024

Tree Logic Ref. 013768

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### 013639\_TLrpt\_Malop Street, Geelong

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## Objectives

Tree Logic was engaged by Hub Property Group Pty Ltd to undertake a tree assessment and prepare an arboricultural impact assessment report for trees associated with 51-53 Hope Street & 66-76 Autumn Street, Geelong West 3218 to assist in a town planning development application. The primary objectives of the arboricultural report include;

- Ascertain the species and origin of the subject street trees within the site and provide information including dimensions, health, structural condition, and the arboricultural value of the trees.
- Determine appropriate tree protection zone dimensions compliant with Australian Standard AS4970 'Protection of trees on development sites'.
- Identify if trees are subject to permit and/or offset requirement under various planning overlays.
- Assess potential impacts associated with a supplied proposed architectural plan.

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## 1. Executive Summary

- 1.1. Twenty-two (22) trees and three (3) group features were inspected within the properties.
- 1.2. Observations of species, dimensions and condition were made of the trees identified on supplied survey plans. Tree assessment data is provided in Appendix 1 and tree location and TPZ mapping is provided in Appendix 2.
- 1.3. Eleven (11) different species were recorded comprising a majority of exotic deciduous specimens along with some isolated Victorian and Australian Natives. Refer to Section 4 for site species observations.
- 1.4. Each tree feature was attributed an arboricultural rating which reflects the retention value of the trees.
  - Only one (1) tree was rated Moderate B, being a prominent *Paulownia tomentosa* (Royal Paulownia) with a significant canopy located in the backyard of 76 Autumn Street Geelong West VIC.
  - Seven (7) trees and one (1) group feature were rated Moderate C, being larger specimens, overall fair in health and structural condition given its limited growing conditions.
  - Fourteen (14) trees were rated as Low, being young, small-sized specimens growing in a recently constructed landscape garden bed.

Refer to Table 4 in Section 4 for Trees sorted by Arboricultural Rating.

- 1.5. The site is located within the area covered by the Greater Geelong Planning Scheme and is zoned as both Commercial 1 Zone (C1Z) and General Residential Zone (GRZ) for the properties at Hope Street and Autumn Street respectively. No specific tree controls apply under the overlay.

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1.6. Under Native Vegetation – Clause 52.17 specifies that any proposal for the removal of native vegetation should be considered regarding the ‘three step approach’ to avoid, minimize or offset.

- Avoid the removal of native vegetation where possible, if not possible,
- Minimize the removal of native vegetation or,
- Provide appropriate offsets for the loss of native vegetation.

Based on the assessment of the origins of the subject trees, it is concluded that no trees are subject to Clause 52.17

1.7. At the time of preparing the tree report an architectural proposal plan (240819 H&A - Plan Set (1).pdf) prepared by Austin Maynard architects was provided for basis of a design review and impact assessment to assess design feasibility for a redevelopment of the combined properties, featuring demolition of the current structures, construction of a basement carpark followed by multi-level residential allotments. Under the current basement plan design,

- Eighteen (18) out of the twenty-five (25) tree features (Tree 3, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, G2) have their entirety encroached by proposed demolition and basement works. They cannot be retained.
- Three (3) tree features (Tree 1, 8, 19) will have encroachment of the Structural Root Zone (SRZ) and are deemed unsustainable due to its susceptibility to being blown over due to excessive root loss.
- Western Neighbouring Group Feature G1 will have its SRZ encroached by the proposed works. Given, the current concrete driveway infrastructure at 51-53 Hope street, it is unlikely that major structural roots from G1 would have grown into eastward into the property. It can be retained with TPZ fencing and tree sympathetic construction methods.
- Three (3) tree features (Tree 2, 4, G3) will have minor TPZ encroachment and can be retained with TPZ fencing. However, it is worth noting that the ground level proposal design highlights the removal of these trees and replanting multiple shrubs and canopy trees in place. These affected trees (2, 4, G3) are deemed of low arboricultural value and should not provide any design constraint.

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## 2. Method

- 2.1. A site inspection was carried out on Wednesday, July 26<sup>th</sup>, 2024, during mild conditions by Ethan Lua (ISA Certified Arborist, TRAQ trained and qualified).
- 2.2. Tree locations were recorded on a mobile field computer equipped with GIS software displaying level & feature survey data, property cadastral data, GPS and geo-referenced aerial imagery.
- 2.3. Observations were made of the assessed trees to determine the species, age category, and condition with measurements taken to establish tree crown height (measured with a height meter) and crown width (paced) and trunk dimensions (measured 1.4 metres above ground level with a diameter tape unless otherwise stated).
- 2.4. Assessment details of individual trees are listed in Appendix 1 and a copy of the tree location plan can be seen in Appendix 2.  
Descriptors used in the assessment can be seen in Appendix 3.
- 2.5. Photographs of the trees and the environs were taken for further reference when preparing the report.
- 2.6. Each of the assessed trees was attributed an 'Arboricultural Rating'. The arboricultural rating correlates the combination of tree condition factors (health and structure) with tree amenity value. Definitions of arboricultural ratings can be seen in Appendix 3.
- 2.7. The assessed trees have been allocated tree protection zones (TPZ). The Australian Standard, AS 4970-2009, has been used as a guide in the allocation of TPZs for the assessed trees. This method provides a TPZ that addresses both the stability and growing requirements of a tree. TPZ distances are measured as a radius, from the centre of the trunk at (or near) ground level. All TPZ measurements for are provided in Appendix 1.
  - Planning Property reports for 51-53 HOPE STREET GEELONG WEST 3218 and 66-82 AUTUMN STREET GEELONG WEST 3218
  - Proposed Architectural Plan of 51-53 Hope Street & 66-76 Autumn Street, Geelong West3218 (240819 H&A - Plan Set (1).pdf) prepared by Austin Maynard Architects dated 19th August 2024.

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### 3. Tree Permit Requirements

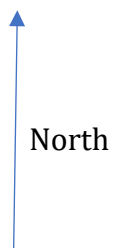
- 3.1. The site is located within the area covered by the City of Greater Geelong Planning Scheme and is zoned as both Commercial 1 Zone (C1Z) and General Residential Zone (GRZ) for the properties at Hope Street and Autumn Street respectively. No specific tree controls apply under the overlay,
- 3.2. Under Native Vegetation – Clause 52.17 specifies that any proposal for the removal of native vegetation should be considered in regard to the ‘three step approach’ to avoid, minimize or offset.
  - Avoid the removal of native vegetation where possible, if not possible,
  - Minimize the removal of native vegetation or,
  - Provide appropriate offsets for the loss of native vegetation.

Based on the assessment of the origins of the subject trees, it is concluded that no trees are subject to Clause 52.17

### 4. Observations

- 4.1. The subject site involves multiple residential allotments in a highly urbanised environment at the southern sector of Hope Street and north of Autumn Street.

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Plate 1. Aerial view of the subject tree study area defined by red line



#### 4.2. **Tree population**

Twenty-two (22) trees and three (3) group features were recorded within the study area, all of which planted for amenity purposes.

Eleven (11) different tree species were identified during the assessment comprising a majority of exotic deciduous and evergreen species with isolated Australian and Victorian natives. Refer to Appendix 1 to the full list of trees, species and origins.

4.3. **Tree health** was assessed based on foliage colour, size and density as well as shoot initiation and elongation where possible. Majority of the trees featured below average foliage vigor and density, attributing to their Fair to poor health characteristics for the species growing in this location under current conditions. Main issues noted include epicormic crowns from past pruning wounds, reduced foliage density and overall dieback. Tree 19 was a declining Silver Birch with apical dieback, and Tree 10 was deemed dead at the time of inspection

4.4. **Tree structure** was assessed for structural defects and deficiencies, likelihood of failures and risk to potential targets. Close to half (52%) of the tree population featured fair to poor structural characteristics, with main issues being crossing branches, acute forks and lopped leaders from poor pruning practices.

- Ten (10) trees displayed Fair and acceptable structural condition.
- Eight (8) trees and one (1) group feature displayed Fair to Poor structural condition, attributed to acute unions and poor crown forms.
- Four (4) trees displayed Poor to Very poor structural characteristics, all of which had been lopped.
- One (1) tree displayed Fair to Poor structure with deficiencies such as past limb failure, a girdling root, sprawling form and epicormic crowns forming at previously lopped limbs.

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#### 4.5. Arboricultural Rating

The assessed trees were attributed an arboricultural rating. This rating relates to the combination of tree condition factors, including health and structure (arboricultural merit), and also conveys an amenity value. It should be noted that the arboricultural rating is different to the conservation / ecological values placed on trees by other professions. Refer to Table 3

Table 3 - Tree numbers sorted by Arboricultural rating.

Arboricultural rating	Total	Tree Numbers
Moderate B	1	22
Moderate C	8	1, 7, 8, 11, 13, 18, 20, G1
Low	15	2, 3, 4, 5, 6, 9, 12, 14, 15, 16, 17, 19, 21, G2, G3
Very Low	1	10
Total	25	

- Trees rated Moderate B are typical examples of the species growing in this setting under prevailing conditions.
  - Trees rated Moderate C are either established smaller trees of Fair condition or maturing trees that might be accumulating deficiencies and trending towards becoming of Low arboricultural value.
  - Trees attributed an arboricultural rating of Low and Very Low are generally not considered worthy of being a constraint on reasonable design intent and outcome delivery due to either health and / or structural deficiencies, or being young, small-sized specimens that are deemed easily replaceable.
- 4.6. Due to the semi mature nature, health and structural defects of the majority of trees, many of them have been attributed with Low arboricultural values.
- 4.7. The large prominent *Paulownia tomentosa* (Royal Paulownia) with an extensive crown located in the backyard of 76 Autumn Street is a maturing specimen. Despite its acute union at base and subsiding limbs, it provides significant canopy coverage for the vicinity. However, due to the extent of works proposed, it is not possible to be retained.
- 4.8. Refer to Appendix 1 for individual tree data, Appendix 2 for Tree location plan sorted by Arboricultural rating and Appendix 3 for definitions of arboricultural ratings.

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## 5. Photo examples



**Image 1:**  
Tree 1– *Betula pendula* (Silver Birch)  
Moderate C arboricultural rating.  
Crossing Branches.



**Image 2:**  
Tree 3– *Betula pendula* (Silver Birch)  
Low arboricultural rating.  
Main leader dead, tip dieback. Upper canopy dieback.



**Image 3:**  
Tree 7– *Banksia menziesii* (Menzies' Banksia)  
Moderate C arboricultural rating.  
Bowling Stem



**Image 4:**  
Tree 8 – *Eucalyptus caesia* (Gungurru)  
Moderate C arboricultural rating.  
Co-dominant stems. Possibly indigenous. Moderately end weighted, subsiding crown.

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**Image 3:**

Tree 9– *Robinia pseudoacacia* (Locust)  
Low arboricultural rating.  
Acute forks, crossing branches, dieback patches, reduced foliage density. Poor unions in canopy.



**Image 4:**

Tree 12 – *Pyrus communis* (Common Pear)  
Low arboricultural rating.  
Crossing branches, epicormic crown. Congested unions of epicormics from past pruning points.



**Image 3:**

Tree 13– *Betula pendula* (Silver Birch)  
Moderate C arboricultural rating.  
Over-extended limbs developing.



**Image 4:**

Tree 22 – *Paulownia tomentosa* (Royal Tomentosa)  
Moderate B arboricultural rating.  
Acute forks, co-dominant forks, deadwood, over-extended limbs, past branch failure, subsiding limbs.

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## 6. Tree Protection Zones

The Tree Protection Zones (TPZs) provided for each tree in the Tree Assessment Table in Appendix 1 are calculated using the formula provided in the Australian Standard AS4970 where the Radial TPZ = Trunk diameter (DBH) measured at 1.4m above grade and multiplied by 12. TPZ distances are measured as a radius from the centre of the trunk at (or near) ground level. The method for calculating, applying and managing the tree protection zone is described in Appendix 4.

The TPZ forms an area around a tree or group of trees that addresses both the stability and growing requirements of a tree. Within the TPZ the following activities are either excluded or controlled; excavating or raising existing soil levels, vehicle movements, installation of underground services and other construction activities.

Minor encroachment, up to 10% of the TPZ area, is generally permissible provided encroachment is compensated for by recruitment of an equal area contiguous with the TPZ. Encroachment greater than 10% is considered major encroachment under AS4970 and is only permissible if it can be demonstrated that after such encroachment the tree would remain viable. Refer to Figure 2A and 2B.

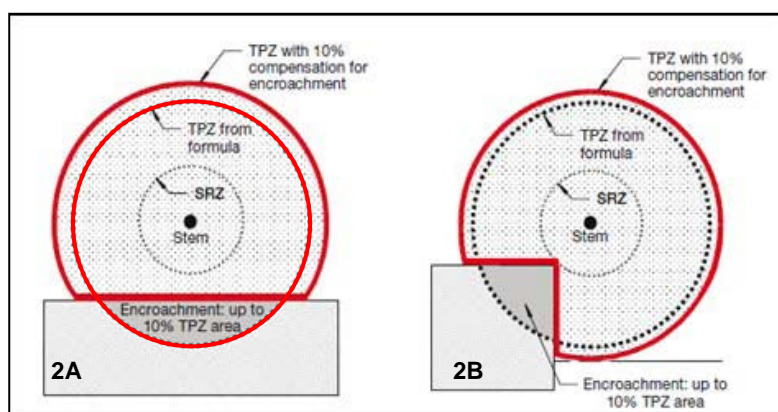


Figure 2: 2A & 2B - Examples of minor encroachment into a TPZ.

Extract from: AS4970-2009, Appendix D, pg. 30 of 32

The Structural Root Zone (SRZ) provided for each tree has been calculated using the method provided in AS4970. The SRZ is the area in which the larger woody roots required for tree stability are found close to the trunk and which then generally taper rapidly. This is the minimum area recommended to maintain tree stability but does not reflect the area required to sustain tree health. No works should occur within the SRZ radius as tree stability could be compromised. See Appendix 4 for TPZ establishment and types of encroachment.

The TPZs for all trees to be retained must be transferred and overlaid on all design plans.

All TPZ measurements are provided in the tree assessment data in Appendix 1 and displayed on the tree location plan in Appendix 2.

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## 7. Design review and Tree impact assessment

The pre – development arboricultural inspection report provides planners and designers with information on whether trees are worthy or not of being a constraint on the proposed works within the subject site.

It also provides a basis on which to identify when and where potential impacts to trees will occur from various design elements and evaluates the possible severity of the impact during the design phase of any site redevelopment.

Trees grow in a delicate balance with their environment and any changes to that balance must be minimised if a tree is to remain in a healthy state and fulfil its potential.

It is rarely possible to repair stressed and injured trees, so damage needs to be avoided during all stages of development and construction.

Tree protection cannot be achieved without a proactive approach. The planning and design stages of any construction project can be instrumental and determine the success of tree preservation.

The hierarchy of principles for tree protection are:

- Avoid damage to the subject trees
- Minimise damage to the subject trees
- Replace the subject trees and improve the landscape (as a last resort)

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7.1. At the time of preparing the tree report an architectural proposal plan (240819 H&A - Plan Set (1).pdf) prepared by Austin Maynard architects was provided for basis of a design review and impact assessment to assess design feasibility for a redevelopment of the combined properties, featuring demolition of the current structures, construction of a basement carpark followed by multi-level residential allotments. Under the current basement plan design,

- Eighteen (18) out of the twenty-five (25) tree features (Tree 3, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, G2) have their entirety encroached by proposed demolition and basement works. They cannot be retained.
- Three (3) tree features (Tree 1, 8, 19) will have encroachment of the Structural Root Zone (SRZ) and are deemed unsustainable due to its susceptibility to being blown over due to excessive root loss.
- Western Neighbouring Group Feature G1 will have its SRZ encroached by the proposed works. Given, the current concrete driveway infrastructure at 51-53 Hope street, it is unlikely that major structural roots from G1 would have grown into eastward into the property. It is hence recommended that prior to any excavation works, non-destructive root investigations be performed to identify any roots that may be in the piling zone.
- Three (3) tree features (Tree 2, 4, G3) will have minor TPZ encroachment and can be retained with TPZ fencing. However, it is worth noting that the ground level proposal design highlights the removal of these trees and replanting multiple shrubs and canopy trees in place. These affected trees (2, 4, G3) are deemed of low arboricultural value and should not provide any design constraint.

- 7.2. On the basis of future site safety and potential amenity, preference should be given to retaining trees of High and Moderate arboricultural value in built areas, or areas of increased target potential.
- Small trees of Low arboricultural value that are otherwise in reasonable condition (Fair-poor or better Health and /or Structure) may offer a potential established tree resource, even if only as an interim measure.
  - Trees of Low arboricultural value should not compromise reasonable design intent.
  - Very Low rated trees with health or structural deficiencies (Poor or worse Health and/or Structure) or trees recognized as environmental weed species should generally be considered for removal based on sound arboricultural opinion.
- 7.3. All trees that are to be retained in the vicinity of any proposed works will require Tree Protection Zones to be established prior to commencing any works onsite including demolition, bulk earthworks, trenching, construction, landscaping activity, delivery and storage of materials or placement of site sheds.
- 7.4. Appropriate tree protection fencing must be established and maintained around all trees to be retained.
- 7.5. No form of excavation or trenching for installation of underground services is permitted within the nominated TPZ areas of any retained trees without prior consultation with the council and / or site arborist, to avoid or minimise severing roots that could be vital to the continued sustainability and stability of the retained trees.
- 7.6. Design should ensure appropriate growing space is allocated for all trees that are to be retained. If infrastructure is constructed too close to any of the retained trees, there is potential for damage to occur resulting from incremental root growth.  
Damage to paving from root activity is most likely to occur within 2 m of the trunk base of a tree where the large woody structural root zone may contribute to upheaval. It is recommended that a minimum 2 metre clearance is provided from any tree to any hard paved surface.
- 7.7. Any trees that are to be retained in the vicinity of any proposed works will require Tree Protection Zones to be established prior to commencing any works onsite including demolition, bulk earthworks, civil works, trenching, construction, landscaping activity, delivery and storage of materials or placement of site sheds.
- 7.8. Tree protection must be incorporated into the design and appropriate construction controls, fencing and management practices must be implemented prior to commencing any construction related activity, including demolition, bulk earthworks construction of gantries, etc.
- 7.9. The tree protection zones for all trees to be retained within the site must be clearly shown on all design drawings and plans with appropriate notations so that all staff and contractors are aware of the responsibility to protect trees throughout the design, development and delivery of the project.
- 7.10. The following activities must be excluded from or controlled within the Tree Protection Zones (TPZ) unless otherwise approved by the relevant authority or the Project Arborist
- Machine excavation (including trenching) for continuous strip footings or installation of underground services or road base
  - Alteration of soil levels including placement of fill

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- Storage of wastes or materials (including fuels, oils or chemicals)
- Preparation of or cleaning of any cement products
- Storage and or parking of vehicles or any plant/machinery within TPZ
- Washing down of equipment
- Installation of utilities
- Physical damage of any kind to the tree (including direct attachment of anything into the tree)
- Soil cultivation

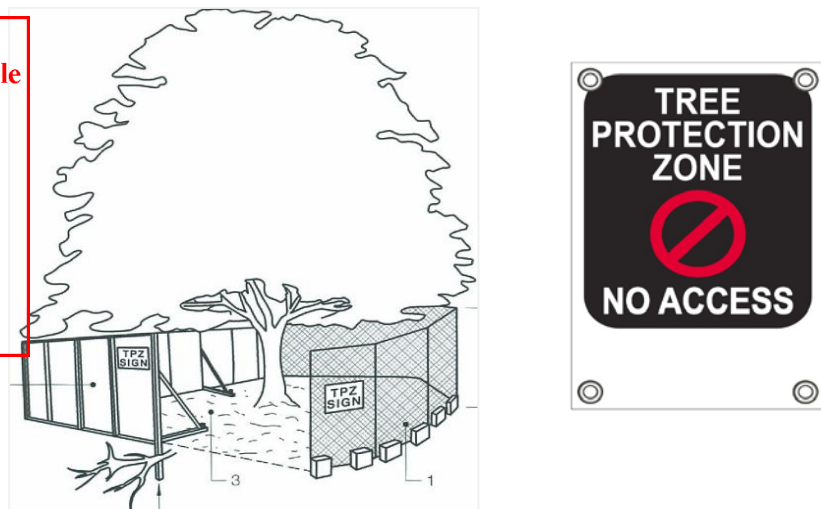
7.11. The TPZ fencing must be in the form of either temporary fencing panels with concrete block feet and locked together, water filled barriers with locking pins installed or 2 metre tall star pickets at 2 metre spacing with top wire supporting fluoro para-webbing.

Whichever TPZ fencing is used, it must be sufficiently robust to withstand knocks and bumps from plant and machinery, delivery vehicles and effectively exclude or prevent any storage of materials dumping of spoil or waste products being disposed of in the Tree Protection Zone.

7.12. Appropriate signage stating 'Tree Protection Zone- No access' is to be fixed to the fencing to alert people as to importance of the tree protection zone. Refer to Figure 1 for fencing example.

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**Figure 1.** Above left - Example of TPZ fencing above right -Example of TPZ signage.

7.13. No form of excavation for trenching for installation of underground services is permitted within the nominated TPZ areas for any retained trees without prior consultation with the council and / or site arborist, to avoid severing roots that could be vital to the stability and continued sustainability of the retained trees.

- Trenching for the installation of all underground services must be designed to avoid encroaching the TPZ of retained trees.
- If it is unavoidable that an underground service must pass through a defined TPZ, the service must be installed via directional boring at a minimum depth of 750mm to the top of the bore head.  
All entry and exit points for the boring must be located beyond the TPZ radius.
- Lubricants or waste water from the boring process must not be permitted to enter or contaminate the soils within the TPZ.

- 7.14. Refer to Appendix 1 for all tree data, Appendix 2 for tree location and TPZ maps and Appendix 3 for Tree Descriptors.

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### 8. Conclusion.

- 8.1. Twenty-two (22) trees and three (3) group features were recorded within the study area, all of which were likely planted for amenity purposes.
- 8.2. The majority of trees displayed below average health and structural conditions and characteristics that are considered fair to poor for these specimens in this area under prevailing conditions. Many of which had been subjected to poor tree pruning maintenance practices. More details are provided at Section 4.
- 8.3. The trees were attributed an arboricultural rating that summarises the species, origin, size, age, health & structure and location of each tree. Tree numbers sorted by the Arboricultural rating are provided in Table 3 in Section 4.5.
- 8.4. Based on the design review, all of the trees with the exception of neighbouring Group G1, will be unsustainable to retain. Proposed plantings of canopy trees throughout the ground level should exceed the current vegetation and canopy coverage of the site.
- 8.5. Any trees that are to be retained in the vicinity of any proposed works (G1) will require Tree Protection Zones to be established prior to commencing any works onsite including demolition, bulk earthworks, trenching, construction, landscaping activity, delivery and storage of materials or placement of site sheds.
- 8.6. Tree conditions can change quickly in response to environmental conditions or altered landscape conditions. Retained trees should be re-inspected on a 3-5 year basis or following any locally damaging weather events and appropriate remedial works undertaken as required.

I am available to answer any questions arising from this report.

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Signed 

 Consultant Arborist – Tree Logic (ISA Cert Arb, TRAQ Qualified, BEnv(LscapeArch))

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## References and bibliography:

Australian Standard (4970-2009) Protection of Trees on development sites. Standards Australia, Sydney NSW Australia

Harris, R.W, Clark, J.R. & Matheny, N.P. (2004), *Arboriculture: Integrated Management of Landscape trees, shrubs and vines*, Prentice Hall, New Jersey.

Clark, J.R. & Matheny, N.P (1998), *Trees and Development: A technical guide to preservation of trees during land development*. ISA, Champaign, Illinois.

Standards Australia (2007), Australian Standard (4373-2007) - Pruning of Amenity trees, Standards Australia, Homebush.

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## Appendix 1: Tree Assessment Data: 51-53 Hope Street & 66-76 Autumn Street, Geelong West

Refer to Following Page

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## Appendix 1: Tree assessment numbers and details

DBH = diameter at breast height (measured in centimetres at 1.4 m above ground unless otherwise stated). TPZ = tree protection zone (metre radius). SRZ = structural root zone. Radius distances measured in metres from the centre of trunk. ULE = useful life expectancy. For tree locations and numbering refer Appendix 2. See Appendix 3 for tree descriptors. Est. = dimensions estimated.

Tree ID	Species	Common Name	Age Class	Origin	DBH (cm)	Basal Diameter (cm)	Height (m)	Width (m)	Health	Structure	Arb.rating	ULE (years)	Comments	Design Impacts - Incursion percentages	TPZ Incursion Exents	TPZ (m) radius	SRZ (m) radius
1	<i>Betula pendula</i>	Silver Birch	Early-mature	Exotic deciduous	21	26	7	5	Good	Fair	Mod.C	21 to 40	Crossing branches. 3.5m from kerb..	Basement - 19.55%	SRZ	2.5	1.9
2	<i>Betula pendula</i>	Silver Birch	Semi-mature	Exotic deciduous	10	12	4	3	Fair to Poor	Poor	Low	11 to 20	Lopped, minor dieback, trunk wounds.	Basement - 2.01%	TPZ	2	1.5
3	<i>Betula pendula</i>	Silver Birch	Early-mature	Exotic deciduous	18	23	10	5	Fair to Poor	Fair	Low	11 to 20	Main leader dead, tip dieback. Upper canopy dieback.	Basement - 89.58%	Within	2.2	1.8
4	<i>Betula pendula</i>	Silver Birch	Semi-mature	Exotic deciduous	12	15	4	3	Fair to Poor	Fair to Poor	Low	21 to 40	Acute forks, deadwood, dieback patches.	Basement - 0.42%	TPZ	2	1.5
5	<i>Betula pendula</i>	Silver Birch	Semi-mature	Exotic deciduous	11	14	6	3	Fair to Poor	Fair	Low	11 to 20	Epicormic shoots, tip dieback.	Basement - 73.63%	Within	2	1.5
6	<i>Betula pendula</i>	Silver Birch	Semi-mature	Exotic deciduous	13	17	3	3	Fair	Poor	Low	11 to 20	Epicormic crown, lopped.	Basement - 100.01%	Within	2	1.6
7	<i>Banksia menziesii</i>	Menzies' Banksia	Early-mature	Australian native	12	15	4	3	Fair	Fair	Mod.C	21 to 40	Bowing stem.	Basement - 100.01%	Within	2	1.5
8	<i>Eucalyptus caesia</i>	Gungurru	Early-mature	Australian native	13,12	30	8	7	Good	Fair to Poor	Mod.C	11 to 20	Co-dominant stems. Possibly indigenous. Moderately end weighted, subsiding crown.	Basement - 63.03%	SRZ	2.1	2
9	<i>Robinia pseudoacacia</i>	Locust	Early-mature	Exotic deciduous	27,20	40	12	7	Fair to Poor	Fair to Poor	Low	11 to 20	Acute forks, crossing branches, dieback patches, reduced foliage density. Poor unions in canopy.	Basement1 - 45.57%	Within	4	2.3
10	<i>Unknown evergreen</i>	Unknown evergreen	Over-mature	Unknown evergreen	22	28	2	3	Dead	Very Poor	Very Low	<1	Dead tree.	Basement1 - 75.04%	Within	2.6	1.9
11	<i>Pyrus communis</i>	Common Pear	Early-mature	Exotic deciduous	24	29	8	5	Fair	Fair to Poor	Mod.C	11 to 20	Crossing branches, epicormic crown. Congested unions of epicormics from past pruning points.	Basement1 - 71.38%	Within	2.9	2
12	<i>Pyrus communis</i>	Common Pear	Semi-mature	Exotic deciduous	19	23	3	3	Fair	Fair to Poor	Low	11 to 20	Acute forks, epicormic crown.	Basement1 - 85.95%	Within	2.3	1.8

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Tree ID	Species	Common Name	Age Class	Origin	DBH (cm)	Basal Diameter (cm)	Height (m)	Width (m)	Health	Structure	Arb.rating	ULE (years)	Comments	Design Impacts - Incursion percentages	TPZ incursion Extents	TPZ (m) radius	SRZ (m) radius
13	<i>Betula pendula</i>	Silver Birch	Early-mature	Exotic deciduous	28	36	10	7	Good	Fair	Mod.C	21 to 40	Over-extended limbs developing.	Basement1 - 100.0%	Within	3.4	2.2
14	<i>Cordyline australis</i>	Cabbage Tree	Semi-mature	Exotic evergreen	8,8,7,6,5	30.	3	3	Fair	Fair	Low	11 to 20	NA	Basement1 - 100.01%	Within	2	2
15	<i>Cordyline australis</i>	Cabbage Tree	Semi-mature	Exotic evergreen	16	20	4	3	Fair	Fair	Low	21 to 40	NA	Basement1 - 100.01%	Within	2	1.7
16	<i>Cordyline australis</i>	Cabbage Tree	Early-mature	Exotic evergreen	16,10,8,6	35.	4	3	Fair	Fair	Low	21 to 40	NA	Basement1 - 100.01%	Within	2.3	2.1
17	<i>Betula pendula</i>	Silver Birch	Semi-mature	Exotic deciduous	13	15	4	3	Fair to Poor	Poor	Low	11 to 20	Lopped, suppressed, tip dieback.	Basement1 - 100.01%	Within	2	1.5
18	<i>Betula pendula</i>	Silver Birch	Early-mature	Exotic deciduous	22,16	35.	8	5	Fair to Poor	Fair to Poor	Mod.C	21 to 40	Acute forks, minor dieback.	Basement1 - 81.41%	Within	3.3	2.1
19	<i>Betula pendula</i>	Silver Birch	Early-mature	Exotic deciduous	22	26	5	5	Poor	Fair to Poor	Low	11 to 20	Declining, tip dieback.	Basement1 - 34.16%	SRZ	2.6	1.9
20	<i>Washingtonia robusta</i>	Mexican Fan Palm	Early-mature	Exotic palm	60.	70.	14	5	Fair	Fair	Mod.C	21 to 40	NA	Basement1 - 99.99%	Within	3.5	2.8
21	<i>Pittosporum undulatum</i>	Sweet Pittosporum	Semi-mature	Victorian native	20	24	7	7	Fair	Fair	Low	21 to 40	Epicormic crown, woody weed sp	Basement1 - 84.97%	Within	2.4	1.8
22	<i>Paulownia tomentosa</i>	Royal Paulownia	Maturing	Exotic deciduous	45,40	80.	16	15	Good	Fair to Poor	Mod.B	21 to 40	Acute forks, co-dominant forks, deadwood, over-extended limbs, past branch failure, subsiding limbs.	Basement1 - 100.0%	Within	7.2	3
G1	<i>Magnolia sp.</i>	Magnolia	Semi-mature	Exotic deciduous	11	16	5	3	Fair	Fair	Mod.C	21 to 40	5 Stems	Basement - 33.05%	SRZ	2	1.5
G2	<i>Citrus sp.</i>	Citrus Tree	Semi-mature	Exotic evergreen	8.	12.	4	2	Fair	Fair to Poor	Low	11 to 20	9 Stems, Amenity Planted. 2427	Basement1 - 100.0%	Within	2	1.5
G3	<i>Magnolia sp.</i>	Magnolia	Semi-mature	Exotic deciduous	12	15	4	3	Fair	Fair	Low	21 to 40	5 Stems	Basement1 - 5.51%	TPZ	2	1.5

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## Appendix 2: Existing Tree Location Plan: 51-53 Hope Street & 66-76 Autumn Street, Geelong West

Refer to Following Page

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LEGEND

Arboricultural Value

- Mod-B
- Mod-C
- Low
- Very Low

Group Arboricultural Value

- Mod-C
- Low

Tree Protection Zone  
Structural Root Zone

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APPENDIX 2  
TREE LOCATIONS  
AND PROTECTION  
ZONES

PROJECT  
51-53 Hope Street & 66-82  
Autumn Street, Geelong West  
3218

TL REF. 013768	MAP NO. 1 / 1
CLIENT Hub Property Group	DATE 2024-10-08

DATA SOURCES

TREE LOCATION DISCLAIMER  
Tree locations are approximate

COORDINATE REFERENCE SYSTEM  
EPSG:28355 | GDA 94 MGA Zone 55



TREELOGIC PTY LTD ABN: 95 080 021 610 TEL: 1300 656 926	4 / 21 Eugene Tce Ringwood, VIC Australia 3134
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LEGEND

Arboricultural Value

- Mod-B
- Mod-C
- Low
- Very Low

Group Arboricultural Value

- Mod-C
- Low
- Design footprint

Proposed Design Impacts

- SRZ
- TPZ
- Within

- Tree Protection Zone
- Structural Root Zone

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APPENDIX 2B  
TREE IMPACTS AND INCURSIONS FROM PROPOSED DESIGN

PROJECT  
51-53 Hope Street & 66-82 Autumn Street, Geelong West 3218

TL REF. 013768  
MAP NO. 1 / 1  
CLIENT Hub Property Group  
DATE 2024-10-08

DATA SOURCES

TREE LOCATION DISCLAIMER  
Tree locations are approximate

COORDINATE REFERENCE SYSTEM  
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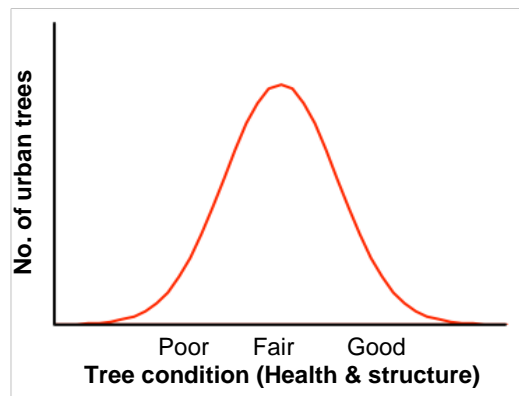
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## Appendix 3: Arboricultural Descriptors (June 2018)

Note that not all of the described tree descriptors may be used in a tree assessment and report. The assessment is undertaken with regard to contemporary arboricultural practices and consists of a visual inspection of external and above-ground tree parts.

### 1. Tree Condition

The assessment of tree condition evaluates factors of health and structure. The descriptors of health and structure attributed to a tree evaluate the individual specimen to what could be considered typical for that species growing in its location under current climatic conditions. For example, some species can display inherently poor branching architecture, such as multiple acute branch attachments with included bark. Whilst these structural defects may technically be considered arboriculturally poor, they are typical for the species and may not constitute an increased risk of failure. These trees may be assigned a structural rating of fair-poor (rather than poor) at the discretion of the assessor.



**Diagram 1:** Indicative normal distribution curve for tree condition

Diagram 1, provides an indicative distribution curve for tree condition to illustrate that within a normal tree population the majority of specimens are centrally located within the condition range (normal distribution curve). Furthermore, that those individual trees with an assessed condition approaching the outer ends of the spectrum occur less often.

### 2. Tree Name

Provides botanical name, (genus, species, variety and cultivar) according to accepted international code of taxonomic classification, and common name.

### 3. Tree Type

Describes the general geographic origin of the species and its type e.g. deciduous or evergreen.

Category	Description
Indigenous	Occurs naturally in the area or region of the subject site. Remnant.
Victorian native	Occurs naturally within some part of the State of Victoria (not exclusively) but is not indigenous (component of EVC benchmark). Could be planted indigenous trees.
Australian native	Occurs naturally within Australia but is not a Victorian native or indigenous
Exotic deciduous	Occurs outside of Australia and typically sheds its leaves during winter
Exotic evergreen	Occurs outside of Australia and typically holds its leaves all year round
Exotic conifer	Occurs outside of Australia and is classified as a gymnosperm
Native conifer	Occurs naturally within Australia and is classified as a gymnosperm
Native Palm	Occurs naturally within Australia. Woody monocotyledon
Exotic Palm	Occurs outside of Australia. Woody monocotyledon

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## 4. Height and Width

Indicates height and width of the individual tree; dimensions are expressed in metres. Crown heights are measured with a height meter where possible. Due to the topography of some sites and/or the density of vegetation it may not be possible to do this for every tree. Tree heights may be estimated in line with previous height meter readings in conjunction with assessor's experience. Crown widths are generally paced (estimated) at the widest axis or can be measured on two axes and averaged. In some instances the crown width can be measured on the four cardinal direction points (North, South, East and West).

Crown height, crown spread are generally recorded to the nearest half metre (crown spread would be rounded up) for dimensions up to 10 m and the nearest whole metre for dimensions over 10 m. Estimated dimensions (e.g. for off-site or otherwise inaccessible trees where accurate data cannot be recovered) shall be clearly identified in the assessment data.

## 5. Trunk diameters

The position where trunk diameters are captured may vary dependent on the requirements of the specific assessment and an individual trees specific characteristics. DBH is the typical trunk diameter captured as it relates to the allocation of tree protection distances. The basal trunk diameter assists in the allocation of a structural root zone. Some municipalities require trunk diameters be captured at different heights, with 1.0 m above grade being a common requirement. The specific planning schemes will be checked to ascertain requirements.

Stem diameters shall be recorded in centimetres, rounded to the nearest 1 cm (0.01 m).

### ***Diameter at Breast Height (DBH)***

Indicates the trunk diameter (expressed in centimetres) of an individual tree measured at 1.4m above the existing ground level or where otherwise indicated, multiple leaders are measured individually. Plants with multiple leader habit may be measured at the base. The range of methods to suit particular trunk shapes, configurations and site conditions can be seen in Appendix A of Australian Standard AS 4970-2009 *Protection of trees on development sites*. Measurements undertaken using foresters tape or builders tape.

### ***Basal trunk diameter***

The basal dimension is the trunk diameter measured at the base of the trunk or main stem(s) immediately above the root buttress. Used to ascertain the Structural Root Zone (SRZ) as outlined in AS4970.

## 6. Age class

Relates to the physiological stage of the tree's life cycle.

Category	Description
Young	Sapling tree and/or recently planted. Approximately 5 or less years in location.
Semi-mature	Tree increasing in size and yet to achieve expected size in situation. Primary developmental stage.
Early-mature	Tree established, generally growing vigorously. > 50% of attainable age/size.
Mature	Specimen approaching expected size in situation, with reduced incremental growth.
Over-mature	Mature full-size with a retrenching crown. Tree is senescent and in decline. Significant decay generally present.

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## 7. Health

Assesses various attributes to describe the overall health and vigour of the tree.

Health Category	Vigour, Extension growth	Decline symptoms, Deadwood, Dieback	Foliage density, colour, size, intactness	Pests and or disease
<b>Good</b>	Above typical. Excellent. Full canopy density	Negligible	Better than typical	Negligible
<b>Fair</b>	Typical vigour. >80% canopy density	Minor or expected. Little or no dead wood	Typical. Minor deficiencies or defects could be present.	Minor, within damage thresholds
<b>Fair to Poor</b>	Below typical - low vigour	More than typical. Small sub-branch dieback	Exhibiting deficiencies. Could be thinning, or smaller	Exceeds damage thresholds
<b>Poor</b>	Minimal - declining	Excessive, large and/or prominent amount & size of dead wood	Exhibiting severe deficiencies. Thinning foliage, generally smaller or deformed	Extreme and contributing to decline
<b>Dead</b>	N/A	N/A	N/A	N/A

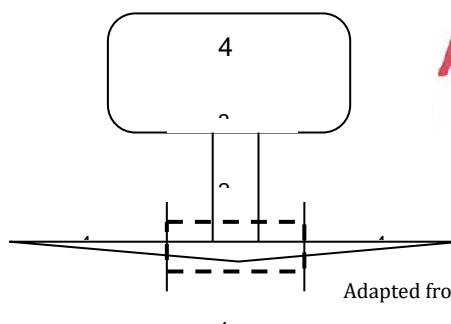
## 8. Structure

Assesses principal components of tree structure (Diagram 2).

Structure ratings will also take into account general branching architecture, stem taper, live crown ratio, crown symmetry (bias or lean) and crown position such as tree being suppressed amongst more dominant trees.

Diagram 2: Tree structure zones

1. Root plate & lower stem
2. Trunk
3. Primary branch support
4. Outer crown & roots



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Adapted from Coder (1996)

The lowest or worst descriptor assigned to the tree in any column could generally be the overall rating assigned to the tree. The assessment for structure is limited to observations of external and above ground tree parts. It does not include any exploratory assessment of underground or internal tree parts unless this is requested as part of the investigation. Trees are assessed and then given a rating for a point in time. Generally, trees with a poor or very poor structure are beyond the benefit of practical arboricultural treatments.



The management of trees in the urban environment requires appropriate arboricultural input and consideration of risk. Risk potential will take into account the combination of likelihood of failure and impact, including the perceived importance of the target(s). See table over page.

Structure Category	Zone 1 - Root plate & lower stem	Zone 2 - Trunk	Zone 3 - Primary branch support	Zone 4 - Outer crown and roots
<b>Good</b>	No obvious damage, disease or decay; obvious basal flare / stable in ground	No obvious damage, disease or decay; well tapered	Well formed, attached, spaced and tapered. No history of failure.	No obvious damage, disease, decay or structural defect. No history of failure.
<b>Fair</b>	Minor damage or decay. Basal flare present.	Minor damage or decay	Generally well attached, spaced and tapered branches. Minor structural deficiencies may be present or developing. No history of branch failure.	Minor damage, disease or decay; minor branch end-weight or over-extension. No history of branch failure.
<b>Fair to Poor</b>	Moderate damage or decay; minimal basal flare.	Moderate damage or decay; approaching recognised thresholds	Weak, decayed or with acute branch attachments; previous branch failure evidence.	Moderate damage, disease or decay; moderate branch end-weight or over-extension. Minor branch failure evident.
<b>Poor</b>	Major damage, disease or decay; fungal fruiting bodies present. Excessive lean placing pressure on root plate	Major damage, disease or decay; exceeds recognised thresholds; fungal fruiting bodies present. Acute lean. Stump re-sprout	Decayed, cavities or has acute branch attachments with included bark; excessive compression flaring; failure likely. Evidence of major branch failure.	Major damage, disease or decay; fungal fruiting bodies present; major branch end-weight or over-extension. Branch failure evident.
<b>Very Poor</b>	Excessive damage, disease or decay; unstable / loose in ground; altered exposure; failure probable	Excessive damage, disease or decay; cavities. Excessive lean. Stump re-sprout	Decayed, cavities or branch attachments with active split; failure imminent. History of major branch failure.	Excessive damage, disease or decay; excessive branch end-weight or over-extension. History of branch failure.

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### Useful life expectancy

Assessment of useful life expectancy provides an indication of health and tree appropriateness and involves an estimate of how long a tree is likely to remain in the landscape based on species, stage of life (cycle), health, amenity, environmental services contribution, conflicts with adjacent infrastructure and risk to the community. It would enable tree managers to develop long-term plans for the eventual removal and replacement of existing trees in the public realm. It is not a measure of the biological life of the tree within the natural range of the species. It is more a measure of the health status and the trees positive contribution to the urban landscape.

Within an urban landscape context, particularly in relation to street trees, it could be considered a point where the costs to maintain the asset (tree) outweigh the benefits the tree is returning.

The assessment is based on the site conditions not being significantly altered and that any prescribed maintenance works are carried out (site conditions are presumed to remain relatively constant and the tree would be maintained under scheduled maintenance programs). See table over page.

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Useful Life Expectancy category	Typical characteristics
<1 year (No remaining ULE)	Tree may be dead or mostly dead. Tree may exhibit major structural faults. Tree may be an imminent failure hazard. Excessive infrastructure damage with high risk potential that cannot be remedied.
1-5 years (Transitory, Brief)	Tree is exhibiting severe chronic decline. Crown is likely to be less than 50% typical density. Crown may be mostly epicormic growth. Dieback of large limbs is common (large deadwood may have been pruned out). Tree may be over-mature and senescing. Infrastructure conflicts with heightened risk potential. Tree has outgrown site constraints.
6-10 years (Short)	Tree is exhibiting chronic decline. Crown density will be less than typical and epicormic growth is likely to present. The crown may still be mostly entire, but some dieback is likely to be evident. Dieback may include large limbs. Over-mature and senescing or early decline symptoms in short-lived species. Early infrastructure conflicts with potential to increase regardless of management inputs.
11-20 years (Moderate)	Tree not showing symptoms of chronic decline, but growth characteristics are likely to be reduced (bud development, extension growth etc.). Tree may be over-mature and beginning to senesce. Potential for infrastructure conflicts regardless of management inputs.
21-40 years (Moderately long)	Trees displaying normal growth characteristics but vigour is likely to be reduced (bud development, extension growth etc.). Tree may be growing in restricted environment (e.g. streetscapes) or may be in late maturity. Semi-mature and mature trees exhibiting normal growth characteristics. Juvenile trees in streetscapes.
>40 years (Long)	Generally juvenile and semi-mature trees exhibiting normal growth characteristics within adequate spaces to sustain growth, such as in parks or open space. Could also pertain to maturing, long-lived trees. Tree well suited to the site with negligible potential for infrastructure conflicts.

Note that ULE may change for a tree dependent on the prevailing climatic conditions, which can either increase or decrease, or sudden changes to a tree's growing environment creating an acute stress.

The ULE may not be applicable for trees that are manipulated, such as topiary, or grown for specific horticultural purposes, such as fruit trees.

There may be instances where remedial tree maintenance could be extend a tree's ULE.

## 9. Arboricultural Rating

Relates to the combination of tree condition factors, including health and structure (arboricultural merit), and also conveys an amenity value. Amenity relates to the trees biological, functional and aesthetic characteristics (Hitchmough 1994) within an urban landscape context. The presence of any serious disease or tree-related hazards that would impact risk potential are taken into account. See table over page.

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Arboricultural rating Category	Description
High	<p>Tree of high quality in good to fair condition; good vigour. Generally a prominent arboricultural/landscape feature. Particularly good example of the species; rare or uncommon. Tree may have significant conservation or other cultural value.</p> <p>These trees have the potential to be a medium- to long-term components of the landscape (moderately long to long ULE) if managed appropriately.</p> <p>Retention of these trees is highly desirable.</p>
Moderate	<p><i>General -</i></p> <p>Tree of moderate quality, in fair or better condition. Tree may have a condition, and or structural problem that will respond to arboricultural treatment.</p> <p>These trees have the potential to be a moderate- to long-term component of the landscape (moderate to long ULE) if managed appropriately. Retention of these trees is generally desirable. The following sub-categories relate predominately to age and size and amenity.</p>
	<p>A. Moderate to large, maturing tree. Contributes to the landscape character. Tree may have conservation or other cultural value.</p>
	<p>B. Moderate sized, established tree, &gt; 50% of attainable age/size. Contributes to the landscape character.</p> <p>Maturing tree with amenity value but with identified deficiencies</p>
	<p>C. Small and/or semi-mature tree, established, &gt;5 years in the location. May not be a dominant canopy. No special qualities.</p> <p>Maturing tree, accumulating deficiencies, trending towards being of Low arboricultural value.</p>
Low	<p>Unremarkable tree of low quality or little amenity value. Tree in either poor health or with poor structure or a combination. Short to transitory useful life expectancy.</p> <p>Tree is not significant because of either its size or age, such as young trees with a stem diameter below 15 cm. Trees regularly pruned to restrict size. These trees are easily replaceable.</p> <p>Tree (species) is functionally inappropriate to specific location and would be expected to be problematic if retained.</p> <p>Retention of such trees may be considered if not requiring a disproportionate expenditure of resources for a tree in its condition and location.</p>
Very Low	<p>Trees of low quality with an estimated remaining life expectancy of less than 5 years.</p> <p>Tree has either a severe structural defect or health problem or combination that cannot be sustained with practical arboricultural techniques and the loss of the tree would be expected in the short term.</p> <p>Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline. Tree infected with pathogens of significance to either the health or safety of the tree or other adjacent trees.</p> <p>Tree whose retention would not be viable after the removal of adjacent trees (includes trees that have developed in close spaced groups and would not be expected to acclimatise to severe alterations to surrounding environment – removal of adjacent shelter trees).</p> <p>Tree has a detrimental effect on the environment, for example, the tree is a recognised environmental woody weed with potential to spread into waterways or natural areas.</p> <p>Unremarkable tree of no material landscape, conservation or other cultural value.</p>

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Trees have many values, not all of which are considered when an arboricultural assessment is undertaken. However, individual trees or tree group features may be considered important community resources because of unique or noteworthy characteristics or values other than their age, dimensions, health or structural condition. Recognition of one or more of the following criterion is designed to highlight other considerations that may influence the future management of such trees.

Significance	Description
Horticultural Value/ Rarity	Outstanding horticultural or genetic value; could be an important source of propagating stock, including specimens that are particularly resistant to disease or exposure. Any tree of a species or variety that is rare.
Historic, Aboriginal Cultural or Heritage Value	Tree could have value as a remnant of a particular important historical period or a remnant of a site or activity no longer in action. Tree has a recognised association with historic aboriginal activities, including scar trees.  Tree commemorates a particular occasion, including plantings by notable people, or having associations with an important event in local history.
Ecological Value	Tree could have value as habitat for indigenous wildlife, including providing breeding, foraging or roosting habitat, or is a component of a wildlife reserve.  Remnant Indigenous vegetation that contribute to biological diversity

#### Bibliography:

Coder, K D. (1996) Construction damage assessments: trees and sites, University of Georgia, USA

Hitchmough, J.D. (1994) Urban landscape management, Inkata Press, Australia

Gooding, R.F., Ingram, J.B., Urban, J.R., Bloch, L.B., Steigerwaldt, W.M, Harris, R.W. and Allen, E.N. (2000) Guide for plant appraisal, 9th edition, International society of Arboriculture, USA

Pollard, A. H. (1974) Introductory statistics: a service course, Pergamon Press Australia, Australia.

Standards Australia (2009) Australian Standard AS 4970-2009 Protection of trees on development sites.

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## Appendix 4: Tree protection zones.

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### Introduction

In order to sustain trees on a development site consideration must be given to the establishment of tree protection zones.

The physical dimensions of tree protection zones can sometimes be difficult to define. The projection of a tree's crown can provide a guide but is by no means the definitive measure. The unpredictable nature of roots and their growth, differences between species and their tolerances, and observable and hidden changes to the trees growing environment, as a result of development, are variables that must be considered.

Most vigorous, broad canopied trees survive well if the area within the drip-line of the canopy is protected. Fine root density is usually greater beneath the canopy than beyond (Gilman, 1997). If few to no roots over 3cm in diameter are encountered and severed during excavation the tree will probably tolerate the impact and root loss. A healthy tree can sustain a loss of between 30% and 50% of absorbing roots (Harris, Clark, Matheny, 1999), however encroachment into the structural root system of a tree may be problematic.

The structural root system of a tree is responsible for ensuring the stability of the entire tree structure in the ground. A tree could not sustain loss of structural root system and be expected to survive let alone stand up to average annual wind loads upon the crown.

### Allocation of tree protection zone (TPZ)

The method of allocating a TPZ to a particular tree will be influenced by site factors, the tree species, its age and developed form.

Once it has been established, through an arboricultural assessment, which trees and tree groups are to be retained, the next step will require careful management through the development process to minimise any impacts on the designated trees. The successful retention of trees on any particular site will require the commitment and understanding of all parties involved in the development process. The most important activity, after determining the trees that will be retained is the implementation of a TPZ.

The intention of tree protection zones is to:

- mitigate tree hazards;
- provide adequate root space to sustain the health and aesthetics of the tree into the future;
- minimise changes to the trees growing environment, which is particularly important for mature specimens;
- minimise physical damage to the root system, canopy and trunk; and
- define the physical alignment of the tree protection fencing

### Tree protection

The most important consideration for the successful retention of trees is to allow appropriate above and below ground space for the trees to continue to grow. This requires the allocation of tree protection zones for retained trees.

The Australian Standard AS 4970-2009 Protection of trees on development sites has been used as a guide in the allocation of TPZs for the assessed trees.

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The TPZ for individual trees is calculated based on trunk (stem) diameter (DBH), measured at 1.4 metres up from ground level. The radius of the TPZ is calculated by multiplying the trees DBH by 12. The method provides a TPZ that addresses both the stability and growing requirements of a tree. TPZ distances are measured as a radius from the centre of the trunk at (or near) ground level. The minimum TPZ should be not less than 2m and the maximum no more than 15m radius. The TPZ of palms should be not less than 1.0m outside the crown projection.

Encroachment into the TPZ is permissible under certain circumstances though is dependent on both site conditions and tree characteristics. Minor encroachment, up to 10% of the TPZ, is generally permissible provided encroachment is compensated for by recruitment of an equal area contiguous with the TPZ. Examples are provided in Diagram 1. Encroachment greater than 10% is considered major encroachment under AS4970-2009 and is only permissible if it can be demonstrated that after such encroachment the tree would remain viable.

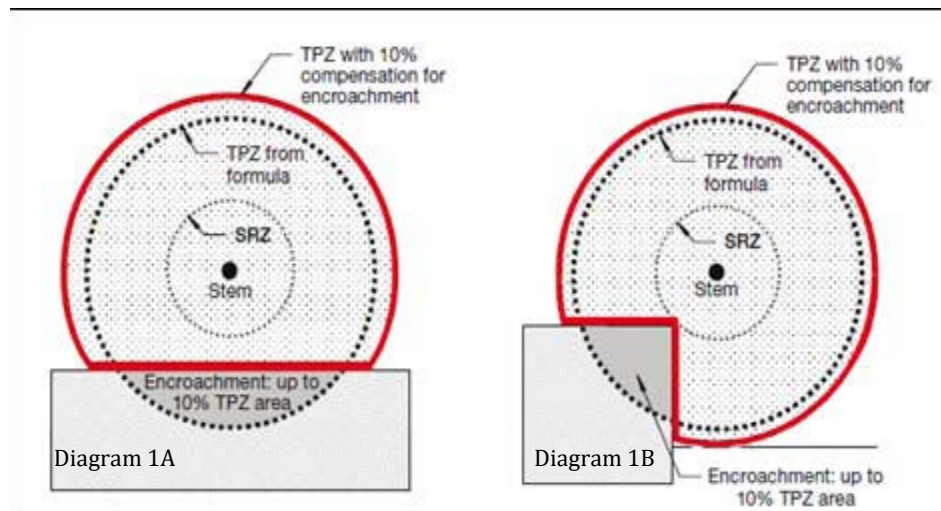


Diagram 1: Examples of minor encroachment into a TPZ.

(Extract from: AS4970-2009, Appendix D, p30 of 32)

The 10% encroachment on one side equates to approximately  $\frac{1}{3}$  radial distance. Tree root growth is opportunistic and occurs where the essentials to life (primarily air and water) are present. Heterogeneous soil conditions, existing barriers, hard surfaces and buildings may have inhibited the development of a symmetrically radiating root system.

Existing infrastructure around some trees may be within the TPZ or root plate radius. The roots of some trees may have grown in response to the site conditions and therefore if existing hard surfaces and building alignments are utilised in new designs the impacts on the trees should be minimal. The most reliable way to estimate root disturbance is to find out where the roots are in relation to the demolition, excavation or construction works that will take place (Matheny & Clark, 1998). Exploratory excavation prior to commencement of construction can help establish the extent of the root system and where it may be appropriate to excavate or build.

The TPZ should also give consideration to the canopy and overall form of the tree. If the canopy requires severe pruning in order to accommodate a building and in the process the form of the tree is diminished it may be worthwhile considering altering the design or removing the tree.

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## General tree protection guidelines

The most important factors are:

- Prior to construction works the trees nominated for tree works should be pruned to remove larger dead wood. Pruning works may also identify other tree hazards that require remedial works.
- Installation of tree protection fencing. Once the tree protection zones have been determined the next step is to mulch the zone with woodchip and erect tree protection fencing. This must be completed prior to any materials being brought on-site, erection of temporary site facilities or demolition/earth works. The protection fencing must be sturdy and withstand winds and construction impacts. The protection fence should only be moved with approval of the site supervisor. Other root zone protection methods can be incorporated if the TPZ area needs to be traversed.
- Appropriate signage is to be fixed to the fencing to alert people as to importance of the tree protection zone.
- The importance of tree preservation must be communicated to all relevant parties involved with the site.
- Inspection of trees during excavation works.

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### TPZ fencing

TPZ fencing must be in the form of either temporary fencing panels with concrete block feet and locked together or water filled barriers with locking pins installed. TPZ fencing must be sufficiently robust to withstand knocks and bumps from plant and machinery, delivery vehicles, storage of materials and dumping of spoil.

- Appropriate signage stating 'Tree protection Zone- No access' is to be fixed to the fencing to alert people as to importance of the tree protection zone.

Refer to Figure 1 for fencing example.



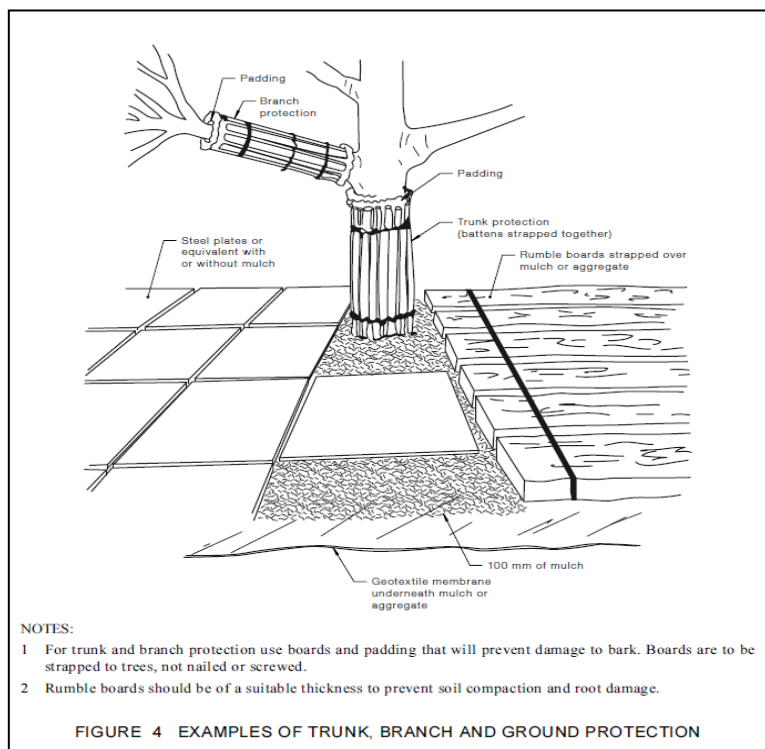
**Figure 1.** Above left - Example of TPZ fencing above right -Example of TPZ signage.

### Ground buffering

Where works are required to be undertaken within the Tree root zone without penetration of the surface, ground buffering and trunk and limb protection must be provided to minimise the potential for soil to become compacted and avoid potential for impact wounds to occur to surface roots, trunk or limbs.

Refer to Diagram 2 below.

Diagram 2: Examples of ground buffering and trunk and limb protection.



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(Extract from: AS4970-2009, Appendix D, pg17)

### Exploratory excavation

The most reliable way to estimate root disturbance is to find out where the roots are in relation to the demolition, excavation or construction works that will take place (Matheny & Clark, 1998).

Exploratory excavation prior to commencement of construction can help establish the extent of the root system and where it may be appropriate to excavate or build. This also allows management decisions to be made and allows time for redesign works if required.

Any exploratory excavation within the allocated TPZ is to be undertaken with due care of the roots. Minor exploration is possible with hand tools. More extensive exploration may require the use of high pressure water or air excavation techniques. Either hydraulic or pneumatic excavation techniques will safely expose tree roots; both have specific benefits dependent on the situation and soil type. An arborist is to be consulted on which system is best suited for the site conditions.

Substantial roots are to be exposed and left intact.

Once roots are exposed decisions can be made regarding the management of the tree. Decisions will be dependent on the tree species, its condition, its age, its relative tolerance to root loss, and the amount of root system exposed and requiring pruning.

Other alternative measures to encroaching the TPZ may include boring or tunnelling.

### How to determine the diameter of a substantial root

The size of a substantial root will vary according to the distance of the exposed root to the trunk of the tree. The further away from the trunk of a tree that a root is, the less significant the root is likely to be to the tree's health and stability.

The determination of what is a substantial root is often difficult because the form, depth and spread of roots will vary between species and sites. However, because smaller roots are connected to larger roots in a framework, there can be no doubt that if larger roots are severed, the smaller roots attached to them will die. Therefore, the larger the root, the more significant it may be.

Gilman (1997) suggests that trees may contain 4-11 major lateral roots and that the five largest lateral roots account (act as a conduit) for 75% of the total root system.

These large lateral roots quickly taper within a distance to the tree, this distance is identified as the Structural Root Zone (SRZ). Within the SRZ distance, all roots and the soil surrounding the roots are deemed significant.

No root or soil disturbance is permitted within the SRZ.

In the area outside the SRZ the tree may tolerate the loss of one or a number of roots. The table below indicates the size of tree roots, outside the SRZ that would be deemed substantial for various tree heights. The assessment of combined root loss within the TPZ would need to be undertaken by an arborist on an individual basis because the location of the tree, its condition and environment would need to be assessed.

Table 1: Estimated significant root sizes outside SRZ

Height of tree	Diameter of root
Less than 5m	≥ 30mm
Between 5m - 15m	≥ 50mm
More than 15m	≥ 70mm

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## References

- Bernatzky, A. 1978. *Tree Ecology and Preservation*. New York: Elsevier Publishing.
- British Standard 5837. 1991. *Guide for Trees in relation to construction*. British Standards Institute.
- Gilman, E. F. 1997. *Trees for Urban and Suburban Landscapes*. Delmar.
- Harris, R. W, Clark J.R. & Matheny N.P. 1999. *Arboriculture: Integrated Management of Landscape Trees, Shrubs and Vines, Third Edition*. Prentice - Hall, New Jersey.
- Helliwell, D. R. 1985. *Trees on Development Sites*. Arboricultural Association UK.
- Matheny, N. & Clark, J. R. 1998. *Trees and development – A technical guide to preservation of trees during land development*. International Society of Arboriculture, Publishers.
- Mattheck, C. & Breloer, H. 1994. *The Body Language of Trees* HMSO
- Mattheck C. 2002. *Tree Mechanics*, Forschungszentrum Karlsruhe GMBH
- Tattar, T. A. 1989. *Diseases of Shade Trees*, 2nd ed. San Diego: Academic Press.
- Watson, G. W. & Himelick, E. B. 1997. *Principals and Practices of Planting Trees and Shrubs*. International Society of Arboriculture.

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## Construction Guidelines

The following are guidelines that must be implemented to minimise the impact of the proposed construction works on the retained trees.

- The Tree Protection Zone (TPZ) is fenced and clearly marked at all times. The actual fence specifications should be a minimum of 1.2 - 1.5 metres of chain mesh or like fence with 1.8 meter posts (e.g. treated pine or star pickets) or like support every 3-4 metres and a top line of high visibility plastic hazard tape. The posts should be strong enough to sustain knocks from on site excavation equipment. This fence will deter the placement of building materials, entry of heavy equipment and vehicles and also the entry of workers and/or the public into the TPZ. Note: There are many different variations on the construction type and material used for TPZ fences, suffice to say that the fence should satisfy the responsible authority.
- Contractors and site workers should receive written and verbal instruction as to the importance of tree protection and preservation within the site. Successful tree preservation occurs when there is a commitment from all relevant parties involved in designing, constructing and managing a development project. Members of the project team need to interact with each other to minimise the impacts to the trees, either through design decisions or construction practices. The importance of tree preservation must be communicated to all relevant parties involved with the site.
- The consultant arborist is on-site to supervise excavation works around the existing trees where the TPZ will be encroached.
- A layer of organic mulch (woodchips) to a depth of no more than 100mm should be placed over the root systems within the TPZ of trees, which are to be retained so as to assist with moisture retention and to reduce the impact of compaction.
- No persons, vehicles or machinery to enter the TPZ without the consent of the consulting arborist or site manager.
- Where machinery is required to operate inside the TPZ it must be a small skid drive machine (i.e Dingo or similar) operating only forwards and backwards in a radial direction facing the tree trunk and not altering direction whilst inside the TPZ to avoid damaging, compacting or scuffing the roots.
- Any underground service installations within the allocated TPZ should be bored and utility authorities should common trench where possible.
- No fuel, oil dumps or chemicals shall be allowed in or stored on the TPZ and the servicing and re-fuelling of equipment and vehicles should be carried out away from the root zones.
- No storage of material, equipment or temporary building should take place over the root zone of any tree.
- Nothing whatsoever should be attached to any tree including temporary services wires, nails, screws or any other fixing device.
- Supplementary watering should be provided to all trees through any dry periods during and after the construction process. Proper watering is the most important maintenance task in terms of successfully retaining the designated trees. The areas under the canopy drip lines should be mulched with woodchip to a depth of no more than 100mm. The mulch will help maintain soil moisture levels. Testing with a soil probe in a number of locations around the tree will help ascertain soil moisture levels and requirements to irrigate. Water needs to be applied slowly to avoid runoff. A daily watering with 5 litres of water for every 30 mm of trunk calliper may provide the most even soil moisture level for roots (Watson & Himelick, 1997), however light frequent irrigations should be avoided. Irrigation should wet the entire root zone and be allowed to dry out prior to another application. Watering should continue from October until April.



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