



ARBORICULTURAL IMPACT ASSESSMENT

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REPORT COMMISSIONED BY:
Emmaus College

DATE OF ASSESSMENT:
Monday, March 30, 2026

SUBJECT SITE:
17-23 Stevens Road, Vermont Vic 3133

DATE OF REPORT:
Wednesday, April 08, 2026

REPORT PREPARED BY:
Nicholas Holian
Consulting Arborist
AQF Level 5 Arboriculture

VERSION 2

**ADVERTISED
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1 Items to action







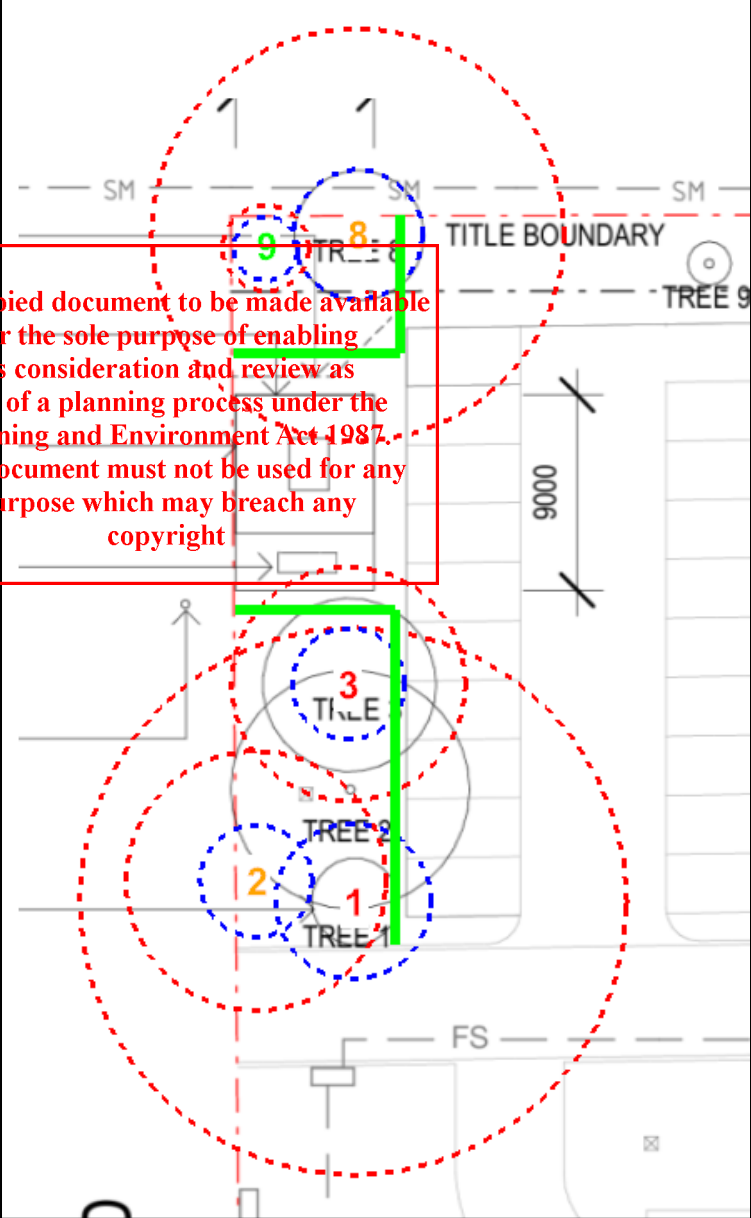



1.1 Stage 1 - Approval stage

Tree retention			
Trees to be retained	The following trees are proposed to be retained:		
	<ul style="list-style-type: none"> • Tree 1 • Tree 2 • Tree 3 	<ul style="list-style-type: none"> • Tree 8 • Tree 9 	
Pruning	No trees that are proposed to be retained require pruning for clearance purposes. Pruning should therefore not be undertaken.		
Works permit	An SLO9 permit is required to carry out works within 4m of the following trees that are proposed to be retained.		
	<ul style="list-style-type: none"> • Tree 1 • Tree 2 • Tree 3 • Tree 8 		
Root investigation	N/A		
Redesign	N/A		
Tree removal			
Trees to be removed	The following trees are proposed to be removed:		
	<ul style="list-style-type: none"> • Tree 4 • Tree 5 • Tree 6 • Tree 7 		
Removal permit	The following trees require an SLO9 permit to be removed.		
	<ul style="list-style-type: none"> • Tree 4 • Tree 5 • Tree 6 • Tree 7 		
	The following trees require a permit to be removed under Clause 52.37.		
	<ul style="list-style-type: none"> • Tree 4 • Tree 5 • Tree 7 		

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1.2 Stage 2 – Protection stage

Tree Protection Fencing (TPF)	TPF is recommended to be installed for the following trees (refer to section 1.4 for specific details):								
	<ul style="list-style-type: none"> • Tree 1 • Tree 2 • Tree 3 • Tree 8 • Tree 9 								
Ground protection	N/A								
Tree protection signage	Install Tree Protection Signage on TPF (refer to section 1.4 for specific details):								
Tree protection map	The following map is an indication of the recommended locations of tree protection measures:								
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: left;">Legend</th> </tr> <tr> <td style="width: 20px; text-align: center;"></td> <td>TPF</td> </tr> <tr> <td style="width: 20px; text-align: center;"></td> <td>Ground protection</td> </tr> <tr> <td style="width: 20px; text-align: center;"></td> <td>Arborist supervision</td> </tr> </table>	Legend			TPF		Ground protection		Arborist supervision	 <div style="border: 2px solid red; padding: 10px; color: red; font-weight: bold; margin: 10px;"> <p style="text-align: center;">This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright</p> </div>
Legend									
	TPF								
	Ground protection								
	Arborist supervision								

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1.3 Stage 3 – Less invasive construction measures

Less invasive construction measures	The following less invasive construction measures are recommended to ensure that trees that are proposed to be retained would remain viable post construction:
Underground services	<p>In the event that any drains or services are included in a moderate or major encroachment (10.10), a suitably qualified arborist should be engaged to determine if the following should be undertaken:</p> <ul style="list-style-type: none"> • Install underground services via low pressure hydro-excavation under arborist supervision, unless a root investigation determines that the trees would remain viable. <p><i>Note: encroachment calculations must consider additional encroachments e.g. site cuts, retaining walls, building footprint.</i></p>

1.4 Tree protection measures

Pruning	<ul style="list-style-type: none"> • Pruning is not required for clearance purposes and should therefore not be undertaken.
Tree protection fencing	<ul style="list-style-type: none"> • TPF should be installed in accordance with the Tree Protection Map image in section 1.2. • The existing site perimeter fencing may be used as TPF for neighbouring trees and vegetation. • TPF should be installed prior works commencing. • TPF should be installed in accordance with the Tree Protection Map image in section 1.2 and comprised of wire mesh (or similar) supported by concrete feet (or similar). • TPF should remain intact for the duration of the project. • TPF should only be removed or shifted with the approval of the Project Arborist and the Responsible Authority.
Tree protection signage	<ul style="list-style-type: none"> • A TPZ sign provides clear and readily accessible information to indicate that a TPZ has been established. • The sign should be minimum A3 size: <div style="border: 2px solid green; padding: 10px; margin-top: 10px;"> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 10px; text-align: center; width: 30%;"> <p>TREE PROTECTION ZONE</p> <p>NO ACCESS</p> </div> <div style="margin-left: 20px;"> <p>Activities excluded from the TPZ include —</p> <ul style="list-style-type: none"> (a) Excavation or disturbance of the soil, including scraping of the surface (b) Spreading or stockpiling of fill (c) Cultivation (d) Equipment and material storage (e) Preparation of chemicals, including preparation of cement products (f) Parking of vehicles and plant (g) Refuelling (h) Dumping of waste (i) Wash down and cleaning of equipment (j) Fires (k) Physical damage to the tree </div> </div> <p>Contact: Contact Project Manager for copy of the Tree Protection Specifications (TPS).</p> </div>

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Ground protection	<ul style="list-style-type: none"> • Ground protection is not required.
Site storage	<ul style="list-style-type: none"> • A designated storage area where building materials, chemicals etc. can be stored should be located outside the TPZ of retained trees.
Prohibitions within the TPZ	<ul style="list-style-type: none"> • Excavation, cultivation or disturbance of the soil, including scraping of the surface. • Equipment and material storage. • Preparation of chemicals, including preparation of cement products. • Movement or parking of vehicles and plant. • Dumping of waste. • Spreading or stockpiling of fill. • Refuelling. • Washing down and cleaning of equipment or hard surfaces. • Fires. • Physical damage to the tree.

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2 Assignment

2.1 Author / Consulting Arborist

Name	Company
Nicholas Holian	TMC Reports
Consulting Arborist	Phone
AQF Level 5 Arboriculture	0401 442 604
	Email
	info@tmcreports.com.au

2.2 Client

Name	Intended Audience
Emmaus College	<ul style="list-style-type: none">○ The property/tree owner(s)
Site Address	<ul style="list-style-type: none">○ The development project manager and associated construction staff
17-23 Stevens Road, Vermont Vic 3133	<ul style="list-style-type: none">○ Council Planning Department

2.3 Brief

The purpose of this report is to provide an independent arboricultural assessment of prominent trees that are located within the north-western corner of the subject site, within proximity to the proposed kiosk/substation.

Detail has been requested in relation to the following instructions:

- To assess the overall condition and retention value of the subject trees.
- To determine the Notional Root Zones (NRZ), Tree Protection Zones (TPZ) and Structural Root Zones (SRZ) of the subject trees.
- To determine whether the subject trees are expected to remain viable following the proposed development.
- To propose recommendations that are expected to ensure that the subject trees would remain viable post construction.

2.4 Summary

2.4.1 Permit requirements

The following trees that are proposed to be removed require an SLO9 permit:

- Tree 4
- Tree 5
- Tree 6
- Tree 7

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The following trees that are proposed to be removed require a permit under Clause 52.37:

- Tree 4
- Tree 5
- Tree 7

The following trees that are proposed to be retained require an SLO9 permit to carry out works within 4m of the trunk:

- Tree 1
- Tree 2
- Tree 3
- Tree 8

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2.4.2 Less invasive construction measures

Less invasive construction measures or development redesign is not required (unless underground services are proposed to be included in a moderate or major encroachment – 10.10).

3 Data collection

3.1 Site visit

- Nicholas Holian, of TMC Reports, visited the site for an arboricultural assessment on Monday the 30th of March 2026 at 12:15pm.

3.2 Method of data collection

- The subject trees were assessed from observations made as viewed from ground level.
- Access to neighbouring properties was not permitted. Assessment was therefore limited only to parts of the trees that were visible from within the subject site.
- A digital camera was used at ground level to obtain photographs within this report.
- The height of the trees was measured by using a Nikon Forestry Pro 2 Laser Range Finder.
- A circumference tape measure was used to determine the trunk dimensions of Trees 1 - 9, except where stated.

3.2.1 Documents viewed

- Proposed site plan (14/01/2026)
- Whitehorse Council Planning Scheme
- Australian Standard AS4970 – 2025 ‘Protection of Trees on Development Sites’
- Australian Standard AS4373 – 2007 ‘Pruning of Amenity Trees’

4 Site description

- The subject site is located in a General Residential Zone – Schedule 1 (GRZ1) within the Whitehorse Council.
- The subject site is located in a Significant Landscape Overlay – Schedule 9 (SLO9).
- The site is subject to Clause 52.17 (Native Vegetation).
- The site is subject to Clause 52.37 (Canopy Trees).
- The terrain of the site appeared to be predominately flat.
- The subject trees are all located within the north-west corner of the subject site.
- No additional vegetation was observed, as requested by the client.

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5 Tree data

Tree No.	Botanical Name & Common Name	Age	Origin	Height	Canopy	DSH CA1 DAB	Health	Structure	ULE	Amenity Value	Retention Value	NRZ Radius	SRZ Radius	Permit Required	Comments	
1	<i>Eucalyptus scoparia</i>	Mature	Native NSW QLD	20.0 m	N-S 14.0 m	1.05 m	Good	Fair	20+ years	High	High	12.6 m	3.6 m	SLO9 + Clause 52.37	Large tree. Dynamic cables have been installed within the canopy. Access road and carpark within NRZ.	
	E-W 14.0 m				3.46 m											
	Area 153.9 m ²				1.21 m											
	Willow gum															
2	<i>Grevillea robusta</i>	Mature	Native NSW QLD	10.0 m	N-S 8.0 m	0.50 m	Fair/good	Fair/good	20+ years	Moderate	Moderate	6.0 m	2.6 m	SLO9 + Clause 52.37	Low hanging branches to 1.5m above ground level.	
	E-W 8.0 m				1.60 m											
	Area 50.3 m ²				0.57 m											
	Silky oak															
3	<i>Corymbia maculata</i>	Mature	Native NSW VIC	16.0 m	N-S 10.0 m	0.45 m	Good	Fair/good	20+ years	High	High	5.4 m	2.6 m	SLO9 + Clause 52.37	Existing carpark within NRZ.	
	E-W 10.0 m				1.48 m											
	Area 78.5 m ²				0.54 m											
	Spotted gum															
4	<i>Eucalyptus cinerea</i>	Mature	Native NSW VIC	14.0 m	N-S 10.0 m	0.39 m 0.73 m (0.82 m)	Fair	Fair	20+ years	Moderate	Moderate	9.8 m	3.2 m	SLO9 + Clause 52.37	Pruned to accommodate HV powerlines. Co-dominant stems at 1.3m above ground level.	
	E-W 6.0 m				2.51 m											
	Area 50.3 m ²				0.89 m											
	Argyle Apple															
5	<i>Eucalyptus saligna</i>	Mature	Native NSW QLD	14.0 m	N-S 7.0 m	0.30 m	Good	Fair/good	20+ years	Moderate	Moderate	3.6 m	2.2 m	SLO9 + Clause 52.37	Existing carpark within NRZ.	
	E-W 7.0 m				0.97 m											
	Area 38.5 m ²				0.38 m											
	Sydney blue gum															
6	<i>Acacia obliquinervia</i>	Mature	Native VIC NSW	11.5 m	N-S 8.0 m	0.44 m	Fair	Fair	20+ years	Moderate	Moderate	5.3 m	2.6 m	SLO9	Co-dominant stems at 2.5m above ground level. Existing carpark within NRZ.	
	E-W 8.0 m				1.51 m											
	Area 50.3 m ²				0.57 m											
	Mountain Hickory															

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Tree No.	Botanical Name & Common Name	Age	Origin	Height	Canopy	DSH CA1 DAB	Health	Structure	ULE	Amenity Value	Retention Value	NRZ Radius	SRZ Radius	Permit Required	Comments
7	<i>Eucalyptus cephalocarpa</i>	Mature	Native NSW VIC	8.5 m	N-S 6.0 m	0.25 m 0.28 m (0.37 m)	Fair/ good	Fair/ poor	10- 20 years	Moderate	Moderate	4.4 m	2.3 m	SLO9 + Clause 52.37	Co-dominant stems at 0.6m above ground level. Severe lean.
	E-W 5.0 m				0.82 m 0.94 m (1.76 m)										
	Area 23.8 m ²				0.43 m										
8	<i>Eucalyptus nicholii</i>	Mature	Native NSW QLD	10.0 m	N-S 7.0 m	0.39 m 0.44 m 0.54 m (0.79 m)	Fair	Fair	10- 20 years	Moderate	Moderate	9.5 m	3.0 m	SLO9 + Clause 52.37	Comprised of 3 stems at 1m above ground level. Pruned to accommodate HV powerlines. Leaning to the west. Fungal fruiting bracket present at 0.8m on the southern side of the trunk.
	E-W 9.0 m				1.29 m 1.45 m 1.76 m (4.49 m)										
	Area 50.3 m ²				0.80 m										
9	<i>Cupressus macrocarpa</i>	Semi Mature	Exotic	3.8 m	N-S 2.6 m	0.10 m	Good	Fair/ good	20+ years	Low	Low	2.0 m	1.5 m	No	2 trees growing very close to each other. Tree dimensions averaged. Trunk dimensions estimated due to restricted access.
	E-W 2.6 m				0.31 m										
	Area 5.3 m ²				0.14 m										

*Tree Protection Zones (10.1) are identical to the Notional Root Zones (NRZ) unless stated otherwise.

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5.1 Photographic evidence



Tree 1



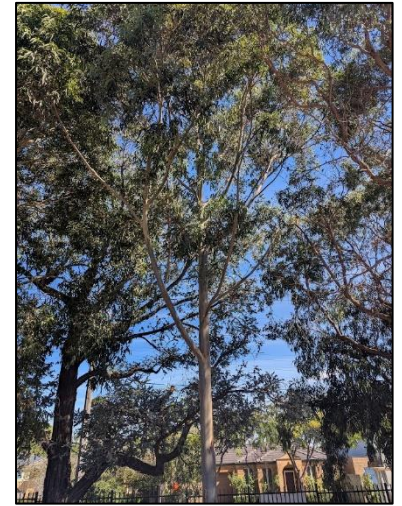
Tree 2



Tree 3



Tree 4



Tree 5



Tree 6



Tree 7



Tree 8



Tree 8 fungal fruiting body



Tree 9

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Subject site as viewed from the north-east



Subject site as viewed from the south-east

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Proposed construction area as viewed from the south



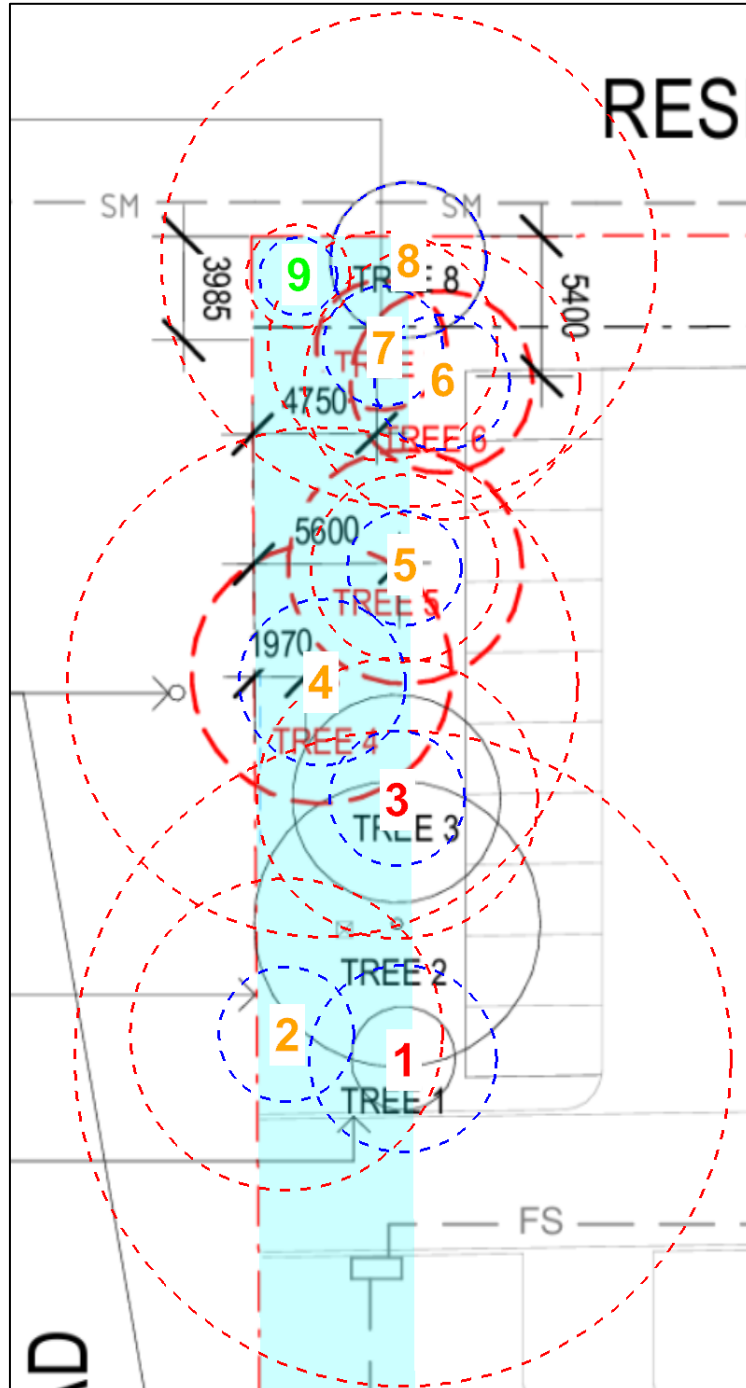
Proposed construction area as viewed from the north

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6 Site map

6.1 Existing conditions

The following map indicates the tree locations in relation to the existing conditions:



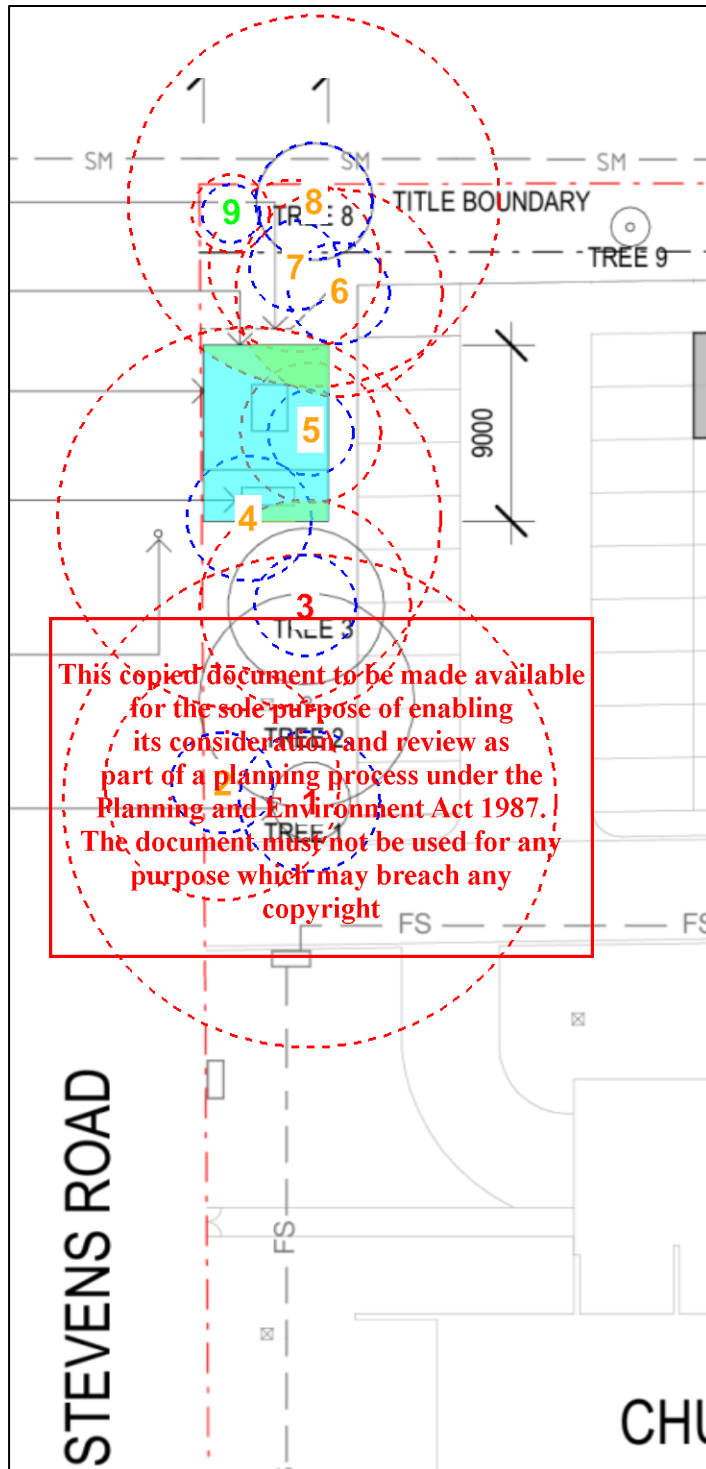
LEGEND

#	LOW RETENTION VALUE	#	COUNCIL OWNED TREE	○	NOTIONAL ROOT ZONE
#	MODERATE RETENTION VALUE	#	NEIGHBOURING TREE	○	STRUCTURAL ROOT ZONE
#	HIGH RETENTION VALUE		CLAUSE 52.37 BOUNDARY		

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6.2 Proposed plan

The following map indicates the tree locations in relation to the proposed plans:



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LEGEND					
#	LOW RETENTION VALUE	#	COUNCIL OWNED TREE	○	NOTIONAL ROOT ZONE
#	MODERATE RETENTION VALUE	#	NEIGHBOURING TREE	○	STRUCTURAL ROOT ZONE
#	HIGH RETENTION VALUE				
■	MINOR ENCROACHMENT	■	MODERATE ENCROACHMENT	■	MAJOR ENCROACHMENT

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7 Permit requirements

The site is subject to the following permit requirements:

7.1.1 Significant Landscape Overlay – Schedule 9 (SLO9)

A permit is required to remove, destroy, lop, or construct or carry out works (except the like-for-like replacement of a front fence) within 4m of the base of, any tree which:

- Has a height of 5m or more, or
- Has a single trunk circumference of 1.0m or greater, measured at a height of 1.0m above ground level.

A permit is *not* required where:

- The tree base is located within three metres of the wall of an existing dwelling or dependent person’s unit (excluding outbuildings).
- The tree base is located within 3m of an existing inground swimming pool.
- The tree is dead or dying, or has become dangerous to the satisfaction of the responsible authority.
- The tree is identified as a weed species within the schedule.
- Pruning for regeneration or ornamental shaping is carried out.
- A tree is outside the minimum street setback requirement in the Residential Growth Zone and Environment Act 1987.

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Refer to link for details: <https://www.whitehorse.vic.gov.au/planning-building/whitehorse-planning-scheme/schedule-9-landscape-overlay-amendment-c219>

7.2 Clause 52.37

Clause 52.37 considerations	
Clause 52.37 and other permit requirements such as Local Laws and overlays	<p>Clause 52.37 does not override or limit the operation of other relevant planning provisions such as overlays or bushfire requirements.</p> <p>Clause 52.37 may override a local law regarding tree removal only when it duplicates the considerations of the local law. The local law may continue to operate for any matters that are beyond the scope of Clause 52.37.</p>
Definitions	<p>Canopy Trees</p> <p>The clause defines ‘Canopy Trees’ as trees which meet all of the following triggers:</p> <ul style="list-style-type: none"> ○ The tree has a height greater than 5m ○ The tree has a trunk circumference of more than 0.5m, measured at 1.4m above ground level ○ The tree has a canopy diameter of at least 4m

Boundary Canopy Trees	
	Clause 52.37 separately defines 'Boundary Canopy Trees' as Canopy Trees (as defined above) where: <ul style="list-style-type: none">○ any part of the trunk is located within 6m of the narrowest street frontage of a lot, or○ any part of the trunk is located within 4.5m of the rear boundary of a lot.

Refer to link for details: <https://www.planning.vic.gov.au/guides-and-resources/guides/all-guides/protecting-and-enhancing-our-tree-canopy-for-a-greener-victoria>

7.3 Clause 52.17 (Native Vegetation)

All of the assessed trees appear to have been planted, therefore are not protected under this clause.

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7.4 Permit table

The following table provides information on how it is determined if a tree requires a permit:

Tree No.	Species	Height	Canopy spread	DSH	CA1 (largest stem)	Proposed retention	Clause 52.37 protection area	Permit required to remove?	Permit required for works
1	<i>Eucalyptus scoparia</i>	20.0 m	14 x 14 m	1.05 m	3.46 m	Retain	Yes	SLO9 / Clause 52.37	Yes - for works within 4m of the trunk
2	<i>Grevillea robusta</i>	10.0 m	8 x 8 m	0.50 m	1.60 m	Retain	Yes	SLO9 / Clause 52.37	Yes - for works within 4m of the trunk
3	<i>Corymbia maculata</i>	16.0 m	10 x 10 m	0.45 m	1.48 m	Retain	Yes	SLO9 / Clause 52.37	Yes - for works within 4m of the trunk
4	<i>Eucalyptus cinerea</i>	14.0 m	10 x 6 m	0.82 m	2.51 m	Remove	Yes	SLO9 / Clause 52.37	Yes - for works within 4m of the trunk
5	<i>Eucalyptus saligna</i>	14.0 m	7 x 7 m	0.30 m	0.97 m	Remove	Yes	SLO9 / Clause 52.37	Yes - for works within 4m of the trunk
6	<i>Acacia obliquinervia</i>	11.5 m	8 x 6 m	0.44 m	1.51 m	Remove	No	SLO9	Yes - for works within 4m of the trunk
7	<i>Eucalyptus cephalocarpa</i>	8.5 m	6 x 5 m	0.37 m	0.94 m	Remove	Yes	SLO9 / Clause 52.37	Yes - for works within 4m of the trunk
8	<i>Eucalyptus nicholii</i>	10.0 m	7 x 9 m	0.79 m	1.76 m	Retain	Yes	SLO9 / Clause 52.37	Yes - for works within 4m of the trunk
9	<i>Cupressus macrocarpa</i>	3.8 m	2.6 x 2.6 m	0.10 m	0.31 m	Retain	Yes	No	No

Refer to Council or an experienced town planner for personalised advice to assist with the permit application process

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8 Impact Assessment

The following table details the encroachments associated with the proposed development for each subject tree :

Tree No.	Encroachment type	NRZ encroachment	SRZ encroachment	Encroachment category	Retention value	Permit required	Proposed retention	Comments
1	N/A	0%	0%	N/A	High	SLO9 / Clause 52.37	Retain	<ul style="list-style-type: none"> The construction of the proposed development is not expected to compromise the tree's long-term viability. Less invasive construction measures are therefore not required.
2	N/A	0%	0%	N/A	Moderate	SLO9 / Clause 52.37	Retain	<ul style="list-style-type: none"> The construction of the proposed development is not expected to compromise the tree's long-term viability. Less invasive construction measures are therefore not required.
3	Kiosk / substation	4.0%	0%	Minor	High	SLO9 / Clause 52.37	Retain	<ul style="list-style-type: none"> The construction of the proposed development is not expected to compromise the tree's long-term viability. Less invasive construction measures are therefore not required.
4	Kiosk / substation	Entire tree	Entire tree	Major	Moderate	SLO9 / Clause 52.37	Remove	<ul style="list-style-type: none"> This tree is required to be removed in order to achieve the proposed design. In the event of tree removal, less invasive construction measures are not required.
5	Kiosk / substation	Entire tree	Entire tree	Major	Moderate	SLO9 / Clause 52.37	Remove	<ul style="list-style-type: none"> This tree is required to be removed in order to achieve the proposed design. In the event of tree removal, less invasive construction measures are not required.
6	Kiosk / substation	8.3%	0%	Minor	Moderate	SLO9	Remove	<ul style="list-style-type: none"> In the event of tree removal, less invasive construction measures are not required.
7	Kiosk / substation	1.4%	0%	Minor	Moderate	SLO9 / Clause 52.37	Remove	<ul style="list-style-type: none"> In the event of tree removal, less invasive construction measures are not required.
8	Kiosk / substation	3.6%	0%	Minor	Moderate	SLO9 / Clause 52.37	Retain	<ul style="list-style-type: none"> The construction of the proposed development is not expected to compromise the tree's long-term viability. Less invasive construction measures are therefore not required.
9	N/A	0%	0%	N/A	Low	No	Retain	<ul style="list-style-type: none"> The construction of the proposed development is not expected to compromise the tree's long-term viability. Less invasive construction measures are therefore not required.

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Refer to section 10.10 for specific details in relation to encroachments

9 Limitation of liability

TMC Reports and their employees are tree specialists who use their qualifications, education, knowledge, training, diagnostic tools and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risk of living near trees. Clients may choose to accept or disregard the recommendations of this assessment and report.

Trees are living organisms that fail in ways the arboriculture industry does not fully understand. Conditions are often hidden within trees and below ground. Unless otherwise stated, observations have been made from ground level and limited to accessible components without dissection, excavation or probing. There is no guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments cannot be guaranteed.

Treatment, pruning and removal of trees may involve considerations beyond the scope of this report, such as property boundaries and ownership, disputes between neighbours, sight lines, landlord-tenant matters, and related incidents. Such issues cannot be taken into account unless complete and accurate information is given prior to or at the time of site inspection.

Information contained in this report covers those items that were examined and reflect the condition of those items at the time of inspection. There is no warranty or guarantee expressed or implied that the problems or deficiencies of the trees or property in question may not arise in the future. Trees can be managed, but they cannot be controlled. To live or work near a tree involves a degree of risk. The only way to eliminate all risks involved with a tree is to eliminate the tree.

All written reports must be read in their entirety, at no time shall part of the written assessment be referred to unless taken in full context of the whole written report.

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10 Definition of terms

10.1 Terms within the tree data table

Category	Description
NRZ	<p>The Notional Root Zone (NRZ) is defined in Clause 1.3.11 of AS 4970:2025 as: <i>"a zone enclosed by a radius of 12 times DSH that is a primary trigger for arboricultural input on a development site."</i></p> <ul style="list-style-type: none"> The radius of the NRZ is calculated by multiplying the tree's diameter at standard height (DSH) by 12. The DSH is measured at 1.4m above ground level. The minimum NRZ radius shall not be less than 2m, and the maximum shall not exceed 15m.
SRZ	<p>The Structural Root Zone (SRZ) is defined in Clause 1.3.17 of AS 4970:2025 as: <i>"theoretical area around the base of a tree required for the tree's stability in the ground."</i></p> <p>The SRZ radius is determined using the following formula:</p> <ul style="list-style-type: none"> SRZ radius = $(D \times 50)^{0.42} \times 0.64$ Where D = trunk diameter (in metres), measured above the root buttress flare. <p>The SRZ only accounts for structural stability, not the full extent of the root zone needed for long-term health and viability</p> <ul style="list-style-type: none"> The SRZ calculation does not apply to palms, cycads, tree ferns and the like. The minimum SRZ radius shall not be less than 1.5m
TPZ	<p>The Tree Protection Zone (TPZ) is defined in Clause 1.3.19 of AS 4970:2025 as: <i>"specified zone above and below ground and at given offsets from the trunk set aside to protect a tree's roots and crown where these might be damaged by development."</i></p> <ul style="list-style-type: none"> The NRZ is the starting point for determining the TPZ. The TPZ should be determined using various considerations in relation to the tree and proposed encroachments.
DSH:	Diameter at Standard Height (DSH) (1.4m from ground level). The DSH measurement is what is used to calculate the Notional Root Zone (NRZ).
DAB:	The Diameter Above Buttress is the diameter of the trunk measured immediately above the root buttress flare. The DAB measurement is what is used to calculate the Structural Root Zone (SRZ).
CA1 / CA1.5:	Circumference of trunk at either 1m or 1.5m from ground level. Combined circumference is the sum of individual stem circumferences.

10.2 Tree health

Category	Description
Good:	The tree is demonstrating good or exceptional growth for the species. The tree is exhibiting a full canopy of foliage and may have only minor pest or disease problems. Foliage colour size and density is typical of a healthy specimen of that species.
Fair:	The tree is in reasonable condition and growing well for the species. The tree may exhibit an adequate canopy of foliage. There may be some dead wood in the crown, some grazing by insect or animals may be evident, and/or foliage colour, size or density may be atypical for a healthy specimen of that species.
Poor:	The tree is not growing to its full capacity. Extension growth of the laterals may be minimal. The canopy may be thinning or sparse. Large amounts of dead wood may be evident throughout the crown, as well as significant pest and disease problems. Other symptoms of stress indicating tree decline may be present.
Very poor:	The tree appears to be in a state of decline, and the canopy may be very thin and sparse. A significant volume of dead wood may be present in the canopy, or pest and disease problems may be causing a severe decline in tree health.
Dead:	The tree is no longer alive.

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10.3 Structure

Category	Description
Good:	The tree has a well-defined and balanced crown. Branch unions appear to be strong, with no defects evident in the trunks or the branches. Major limbs are well defined. The tree would be considered a good example for the species. Probability of significant failure is highly unlikely.
Fair:	The tree has some minor problems in the structure of the crown. The crown may be slightly out of balance at some branch unions or branches may be exhibiting minor structural faults. If the tree has a single trunk, this may be on a slight lean, or be exhibiting minor defects. Probability of significant failure is low.
Poor:	The tree may have a poorly structured crown, the crown may be unbalanced, or exhibit large gaps. Major limbs may not be well defined; branches may be rubbing or crossing over. Branch unions may be poor or faulty at the point of attachment. The tree may have suffered major root damage. Probability of significant failure is moderate.
Very poor:	The tree has a poorly structured crown. The crown is unbalanced or exhibits large gaps. Major limbs are not well defined. Branch unions may be poor or faulty at the point of attachment. A section of the tree has failed or is in imminent danger of failure. Active failure may be present, or failure is probably in the immediate future.
Failed:	A significant section of the tree or the whole tree has failed.

10.4 Useful life expectancy (ULE)

Category	Description
Unsafe:	The tree is considered dangerous in the location and should be addressed as a priority.
0 years:	The tree no longer provides any amenity value.
Less than 5 years:	The tree under normal circumstances and without extra stress should be safe and have value of maximum of 5 years. The tree will need to be replaced in the short term. Replacement plants should be established as soon as possible if there is efficient space, or consideration should be given to the removal of the tree to facilitate replanting.
5 to 10 years:	The tree under normal circumstances and without extra stress should be safe and have value of maximum of 10 years. Trees in this category may require regular inspections and maintenance particularly if they are large specimens. Replacement plants should be established in the short term if there is sufficient space, or consideration should be given to the removal of the tree to facilitate replanting.
10 to 20 years:	The tree under normal circumstances and without extra stress should be safe and of value of up to 20 years. During this period, regular inspections and maintenance will be required.
20 + years:	The tree under normal circumstances and without extra stress should be safe and of value of more than 20 years. During this period, regular inspections and maintenance will be required.

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10.5 Tree retention value

Category	Description
High:	The tree may be significant in the landscape, offer shade and other amenities such as screening. The tree may assist with erosion control, offer a windbreak or perform a vital function in the location (e.g. habitat, shade, flowers or fruit). The tree is free from structural defects and is vigorous. Consider the retention of the tree and designing the development to accommodate the tree.
Moderate:	The tree may offer some screening in the landscape or serve a particular function in the location and have minor structural defects. The tree may be entering the mature stage of its life cycle. The tree may be retained if it does not hamper the design intent.
Low:	The tree offers very little in the way of screening or amenity and may have significant structural defects. The tree may also be mature and entering the senescent stage of its life cycle. The tree may be removed if necessary.
Neighbouring tree:	The tree is located within an adjoining private property/land. The tree is to be protected unless written consent from the tree owner(s) and/or responsible authority is obtained. Consider the retention of the tree unless written consent is obtained from the tree owner and/or responsible authority.
Council owned tree:	The tree is located within Council owned land. The tree is to be protected unless written consent from the responsible authority is obtained. Consider the retention of the tree unless written consent is obtained from the tree owner and/or responsible authority.

10.6 Age

Category	Description
Young:	Juvenile or recently planted approximately 1 year old.
Semi Mature:	An established tree but one which has not reached its potential ultimate height and has significant growth potential. Tree is actively growing.
Mature:	Tree has reached expected size in its growing conditions.
Senescent:	Tree is over mature and has started to decline.
Dead:	The tree is no longer alive.

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10.7 Amenity value

Category	Description
Very Low:	Tree makes little or no amenity value to the site or surrounding areas. In some cases, the tree might be detrimental to the area's amenity value (e.g. unsightly, risk of weed spread).
Low:	Tree makes some contribution of amenity value to the site but makes no contribution to the amenity value of surrounding areas. The removal of the tree may result in little loss of amenity. Juvenile trees, including street trees are generally included in this category. However, they may have the potential to supply increased amenity in the future.
Moderate:	The tree makes a moderate contribution to the amenity of the site and/or contributes to the amenity of the surrounding area.
High:	The tree makes a significant contribution to the amenity value of the site, or the tree makes a moderate contribution to the amenity value of the larger landscape.

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10.8 Root investigation

Description

Where it is proposed that development is considered to be a major encroachment, a non-destructive root exploratory investigation may be required within the alignment of the proposed encroachment.

By undertaking a non-destructive root exploratory investigation, the extent of roots within that particular area may be determined. If a negligible amount of roots are required to be removed or damaged in order to construct the proposed development, the tree may remain viable. If a significant amount of roots are proposed to be removed or damaged in order to construct the proposed development, the tree may not remain viable.

Obstructions (paving, vegetation, structures) within the alignment of proposed encroachments may be required to be removed prior to the non-destructive root exploratory investigation occurring.

The non-destructive root exploratory investigation report should:

- Be undertaken by a suitably qualified Arborist (AQF Level 5 Arboriculture).
- Detail the total distance of each excavation line.
- Detail the closest distance from the trunk centre to the excavation line.
- The size (diameter) and number of roots discovered and the depth of roots (where relevant).
- Include photographs of the subject tree(s) trenches and roots.
- Include a discussion of the findings of the root investigation and the impact of the proposed works on the long-term health/ structural stability of the tree(s).

10.9 Less invasive footings

Description

Clause 3.3.4 (H) of the Australian Standard 'Protection of Trees on Development Sites' states that "tree sensitive construction measures such as pier and beam, suspended slabs cantilevered building sections, screw pile and contiguous piling can minimise the impact of encroachment".

- Footing design which allows the structure to bridge over the top of a tree's root has been described by Harris et al (2004) and Roberts et al (2006). Pier and beam and screw piles (figures below) are two methods of achieving this outcome. This must be designed by an appropriately qualified engineer. It is recommended the project arborist be onsite to supervise the installation of footings within the TPZ/NRZ and SRZ.

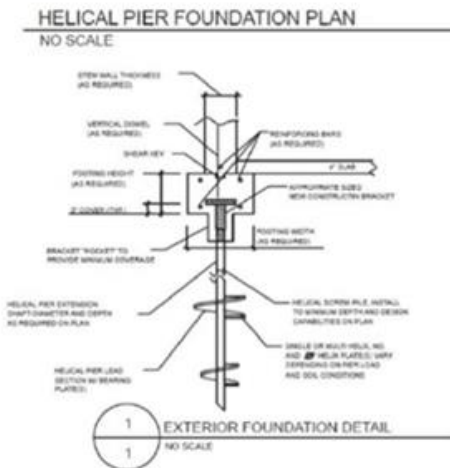
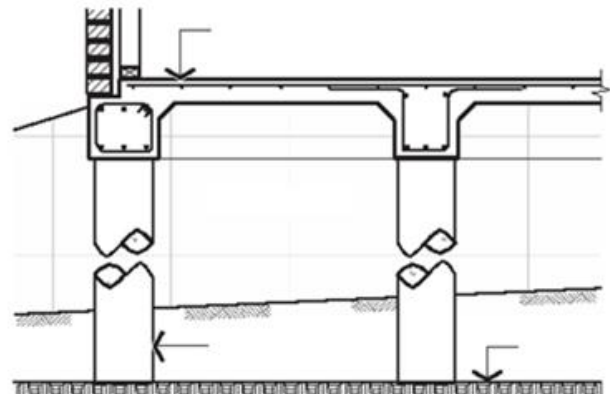


Image of screw pile construction (Google images).



An example of pier and beam construction (google images).

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10.10 Encroachments

Category	Description
Minor encroachment	A proposed encroachment is considered to be 'minor' if works (structures, surfaces, site cuts, underground services, fill etc.) are proposed to encroach into the NRZ by 10% or less and is outside the SRZ. Generally, trees are likely to tolerate minor encroachments. However, tolerance can vary depending on several factors such as tree age, species, health, existing conditions etc. (refer to section 10.9 for more details).
Moderate encroachment	A proposed encroachment is considered to be 'moderate' if it is greater than 10% and less than or equal to 20% of the area of the NRZ and is outside of the SRZ. It is possible that a tree could tolerate a moderate encroachment. However, tolerance can vary depending on several factors such as tree age, species, health, existing conditions etc. (refer to section 10.9 for more details). In some situations, less invasive construction measures such as permeable paving, less invasive footings or arborist supervision may be required.
Major encroachment	A proposed encroachment is considered to be 'major' if it is greater than 20% of the area of the NRZ or inside the SRZ. Generally, trees are less likely to tolerate major encroachments. However, tolerance can vary depending on several factors such as tree age, species, health, existing conditions etc. (refer to section 10.9 for more details). In some situations, less invasive construction measures or a non-destructive root investigation (10.8) may be required to assess the tree's root system and determine if the tree is expected to tolerate the loss of roots that may need to be pruned in order to accommodate the proposed design.

10.11 Considerations for encroachments

Consideration	Description
Tree species	Different tree species vary significantly in their ability to tolerate root pruning. The same extent of root loss may have minimal impact on one species while causing severe decline or instability in another. As such, species tolerance is a critical factor when assessing the potential impact of a proposed encroachment. A consulting arborist must consider the biological characteristics and root sensitivity of the tree species when determining whether the tree is likely to tolerate root disturbance. Some species exhibit greater resilience to root loss due to their growth habits, rooting patterns, or adaptive capacity, while others may be highly susceptible to even minor disturbances. Therefore, species tolerance should be a key component of any encroachment assessment, especially in situations involving root pruning or excavation within the NRZ.
Tree health	A tree's health is a critical factor in its ability to tolerate root loss. Healthy trees have greater energy reserves, primarily produced through photosynthesis, which fuels vital functions such as compartmentalisation, root regeneration, and stress response. Trees with a full, vigorous canopy are typically more efficient at photosynthesis, enabling them to recover more effectively from pruning or disturbance. In contrast, trees in poor health or with a sparse canopy may lack the photosynthetic capacity to generate the energy needed for recovery, making them more susceptible to decline following root loss. Therefore, overall tree health and canopy condition are important considerations when assessing the potential impacts of encroachment within the NRZ.
Tree age	Young trees typically have a smaller, more concentrated, and vigorous root system, which allows them to respond more effectively to disturbance. Their high growth rates and metabolic activity mean they are generally more resilient to root pruning and can regenerate lost roots more quickly than mature trees. In addition, younger trees often have greater photosynthetic capacity relative to their size, enabling them to allocate more energy toward recovery and new growth. In contrast, mature trees usually have a much larger and more structurally complex root system that supports a greater canopy mass. The loss of structural or fine roots in older trees can significantly affect their stability and function. Furthermore, mature trees tend to have reduced growth rates and slower physiological responses, making recovery from root damage less efficient. As a result, tree age and developmental stage are important factors for a consulting arborist to consider when evaluating a tree's capacity to tolerate root disturbance associated with a proposed encroachment.
Lean of tree	The lean of a tree can provide valuable insight into the distribution of its root system. Structural roots typically develop more extensively on the side opposite the direction of the lean—known as the <i>tension side</i> —to provide mechanical support and resist gravitational forces. The tension side plays a critical role in tree stability and is expected to have a higher concentration of anchoring roots. Therefore, when assessing proposed encroachments within the NRZ (Notional Root Zone), particular attention should be given to the tension side, as disturbances in this area may have a greater impact on the tree's structural integrity.
Soil characteristics	Soil type plays a critical role in determining root architecture and has direct implications for assessing encroachments. In coarse-textured soils, such as sandy soils, tree roots typically grow deeper and develop larger diameters due to lower compaction, better aeration, and improved drainage. As a result, a greater proportion of the root system is often located at depth rather than near the surface. This deeper rooting habit means that surface-level or shallow encroachments—such as driveways, paths, or trenching less than 200 mm deep—are less likely to intersect major structural roots in sandy soils compared to clay soils. Consequently, trees growing in sandy conditions may be more likely to tolerate shallow encroachments within the NRZ or TPZ, provided deeper roots remain undisturbed. However, a site-specific assessment by a suitably qualified arborist is essential, as root depth and distribution can still vary based on other factors such as species, age, water availability, and past site disturbance.
Existing retaining wall	Depending on the soil type, tree roots can extend to depths of approximately 600–800 mm below ground level. In well-drained soils such as sand, roots may grow deeper, while in compacted or poorly drained soils like clay, root growth is typically shallower and more lateral. Retaining walls can influence root distribution by acting as physical barriers. If a retaining wall is located near a tree, particularly within the TPZ or NRZ, it may have already restricted root development beyond its base—especially if the wall is deep or constructed with

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Consideration	Description
	impermeable materials such as concrete. In such cases, root growth is often concentrated on the near side of the wall, and there may be significantly fewer or no structural roots extending beyond it.
Existing soil level difference	<p>Tree roots generally grow in the path of least resistance, favouring areas with adequate oxygen, moisture, and loose, uncompacted soil. When there is a change in soil level—such as a raised or lowered area, or a sharp transition created by a retaining wall or excavation—root growth into the adjacent zone may be restricted.</p> <p>This is particularly true if the difference in soil level results in increased compaction, reduced aeration, or a physical barrier. For example, if a tree is growing on a higher plane, roots may be less likely to extend into a lower, excavated area due to the added resistance and potential moisture accumulation. Conversely, roots may not grow upward into a raised area if the fill is heavily compacted or lacks adequate conditions for root development.</p> <p>Therefore, changes in soil level can significantly influence root distribution, and should be considered when assessing potential impacts of encroachment or planning construction near trees.</p>
Existing vegetation	<p>Existing vegetation in close proximity to a tree can create competition for essential resources such as water, nutrients, and space within the soil profile. Dense or well-established vegetation, particularly other trees or large shrubs, may create a zone of intense competition that can deter root growth from neighbouring trees into that area.</p> <p>As a result, a tree's root system may be less developed in areas where strong competition exists, especially if the surrounding vegetation has already established dominance over the available soil resources. This can influence root distribution patterns and should be considered when assessing the likely presence or absence of roots in a particular area.</p>
Hard encroachment	A hard encroachment involves works that typically require deep excavation or substantial soil modification such as strip footings, site cuts and retaining walls greater than 200mm in depth, basements etc.
Soft encroachment	A soft encroachment refers to less invasive works that have a lesser impact on tree roots and soil conditions. Such as driveways, paving, fill, site cuts or retaining walls less than 200mm in depth etc.
Hard and soft encroachment comparison	<p>Trees are generally able to tolerate a higher percentage of soft encroachment compared to hard encroachments due to the reduced likelihood of root damage and soil disruption.</p> <p>When determining if a tree is expected to tolerate a moderate or major encroachment, suitably qualified arborist (AQF Level 5) will not only consider the encroachment percentage but also consider if type of encroachment (i.e. hard or soft) and its potential to impact a tree's root system.</p>
Compensatory area	In the event of an encroachment into the NRZ, a compensatory area may be considered within the TPZ. If a suitable portion of the TPZ remains available for root growth and is accessible to the tree, it can help offset the encroachment and increase the likelihood of the tree's ongoing health and structural stability.

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