BIODIVERSITY | BUSHFIRE | ARBORICULTURE

NEWCASTLE SYDNEY

Preliminary Arborist Assessment

Proposed Update of Fire trails on land

Lot 2 DP 791551

8 Fleet Street, Salamander Bay, NSW

Prepared for: Wanda Beach Estate

c/ EJE

May 2025

AEP Ref: 5466

Revision: 01

Newcastle | Sydney
10 Darvall St Carrington 2294 | 275 Stanmore Rd Petersham 2049
P 0420 624 707 E info@andersonep.com.au ABN 57 659 651 537

Executive Summary

At the request of EJE on behalf of Wanda Beach Estate (the client), Anderson Environment & Planning (AEP) have prepared a Preliminary Arborist Assessment to assist the client in identifying the important trees to retain in the proposed Update of Firetrail and Paths on land known as Lot 2 DP791551 (the Proposal) at 8 Fleet Street, Salamander Bay, NSW (the Subject Site).

The arborist site survey was undertaken on 26 February 2025. Tree Assessment was undertaken by the following methodologies:

- A visual tree assessment as described by Mattheck and Breloer (1994).
- Characteristic features for each tree were recorded;
- Structural Root Zone (SRZ) and Tree Retain (Protection) Zone (TPZ) using methods of calculation as outlined in AS 4970 – 2009.
- Landscape Significance Rating (LSR) and Retention Values as outlined by Morton (2006).

A total of 26 trees identified within the site and surrounds were assessed. The condition of the assessed trees includes two (2) in poor or dead condition, four (4) in fair condition and 20 in good condition.

The following landscape significance ratings (LSRs) have been applied to the assessed trees:

- One (1) 'Very High' This tree is all over-mature *Eucalyptus piperita* (Sydney Peppermint). This tree exhibits a crown density exceeding 70% crown cover (categorised as normal to dense), demonstrate visual prominence and serve as a representation of the area's original vegetation, with significant habitat potential;
- Eight (8) 'High' due to their canopy size, good structural or health conditions, and their role as representatives of the area's original vegetation;
- Nine (9) 'Moderate' due to their medium canopy size, fair representation of the species, moderate deviations from typical form, and fair contribution to the visual character as native cultivar status; and
- Eight (8) 'Low' due to a small live crown size of less than 40m², being poor representatives of the species, showing significant deviations from the typical form and branching habit, with potential to become environmental weeds or dead trees; or as native species in poor to fair structural or health condition.

With consideration of the estimated life expectancy for each tree, Retention Values were assigned to each tree within the site. This identified the following;

- Nine (9) 'High';
- 11 'Moderate'; and
- Six (6) 'Low' Retention Value Trees.

Of the 26 trees assessed, 17 are recommended for retention, nine (9) for removal.

Of the trees to be retained, it is recommended that 13 of these are protected by barriers set at the Structural Root Zone distance from the trunk on the side nearest earthworks, or have timber battens strapped against the trunk. Two (2) small trees require pruning for vehicle access. Two (2) trees are to be retained, with no protective measures required.

The trees to be removed will permit access for vehicles off Fleet Street and turning space for larger trucks.

Document Control

Document Name	Preliminary Arborist Assessment to assist the client in identifying the important trees to retain in the proposed Update of Firetrail and Paths on land Lot 2 DP 791551 at 8 Fleet Street, Salamander Bay, NSW
Project Number	5466
Client Name	Wanda Beach Estate c/ EJE
AEP Project Team	John Atkins Angie Guevara

Revision

Revision	Date	Author	Reviewed	Approved
00	21/03/2025	Angie Guevara	John Atkins	John Atkins
01	20/05/2025	Angie Guevara	John Atkins	John Atkins

Distribution

Revision	Date	Name	Organisation
00	21/03/2025	Georgie Collins	EJE
01		Georgie Collins	EJE

Disclaimer

Direct observations are relevant only to the trees identified within this report. This report utilizes a rapid assessment of tree health and condition to inform retention value. This assessment of tree health and condition is based on non-destructive visual observations from ground level. Thus, it is not possible to identify all structural faults at high levels in the tree, internal structural faults or within the root system. Observations about Tree Health, Structure, and other characteristics have been made at the time of assessment and these characteristics may change over time due to natural growth of the tree as a living organism or due to unforeseen events. As such the observations that are supplied within are relevant for a period of 12 months from the time of assessment, after which re-assessment may be required for the trees assessed within this report. The recommendations and methodologies for Tree Retain (Protection) within this report are relevant only to the Trees assessed within this report. The author is not responsible for tree damage related to failure to apply these recommendations or methodologies for Tree Retain (Protection) in full within this report or for tree damage relating to works conducted by an unaffiliated person. No responsibility for damage to persons or property is accepted for damage by trees referred to within this report.

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1.0 Introduction

1.1 Background

At the request of EJE on behalf of Wanda Beach Estate (the client), Anderson Environment & Planning (AEP) have prepared a Preliminary Arborist Assessment to assist the client in identifying the important trees to retain in the proposed Update of Firetrail and Paths on land known as Lot 2 DP791551 (the Proposal) at 8 Fleet Street, Salamander Bay, NSW (the Subject Site).

1.2 Objectives

Further to the above the following objectives for this report have been assigned:

- Tree identification plan and schedule identifying tree species, size, canopy spread and other dimensions;
- Assessment of all internal and external trees within the Subject Site, including, but not limited to, the health and vigour of the trees, structural integrity, life expectancy, retention value and landscape significance;
- Provide guidance on suitable trees to retain for the upgrading of existing fire trails and access off Fleet St to the site, ensuring minimal tree loss and impact.

2.0 Site Description and Locality

Table 1 provide the site details for the Subject Site.

Table 1 – Site Particulars

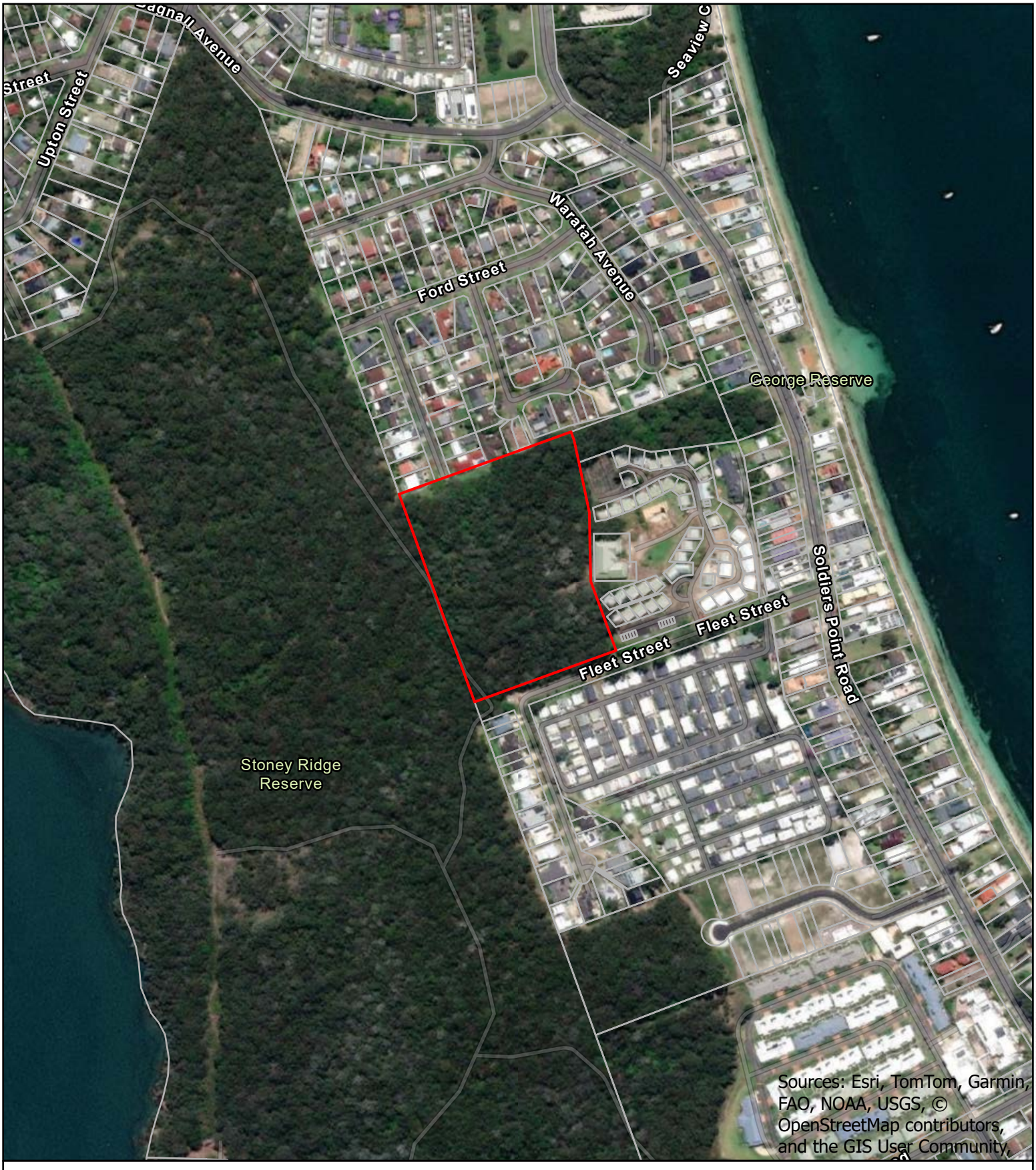
Detail	Comments
Client	Wanda Beach Estate c/ EJE
Address	8 Fleet Street, Salamander Bay, NSW
Title(s)	Lot 2 DP791551
Subject Site	The Subject Site encompasses an existing bushland with firetrails and paths on land.
LGA	Port Stephens Council
Zoning	The property is zoned as “C2 - Environmental Conservation” and “R2 - Low Density Residential”.
Current Land Use	The Subject Site is located in Salamander Bay and it is an existing bushland with firetrails and paths on land known as Lot 2 DP79155. The dominant tree species includes *Eucalyptus resinifera, Eucalyptus piperita, Corymbia gummifera, Melaleuca quinquenervia.*
Surrounding Land Use	The Subject Site is bordered by low-density residential zoned land to the north and east, remnant bushland to the west, and a large holiday caravan park to the south.
Soil	The Subject site is characterised by Dark weakly structured light sandy clay loam within the topsoil. (eSpade, 2025).

3.0 Proposed Development

It is proposed to upgrade the fire trails and paths on land known as Lot 2 DP791551 at 8 Fleet Street, Salamander Bay, NSW (the Subject Site). The work proposed will allow access for larger vehicles to the Asset Protection Zone adjacent to the proposed development area.

This document is prepared prior to the development of a concept plan and does not assess specific impacts.

Figure 1 Depicts the extent of the Subject Site.



Legend

Study Area

Cadastre

Figure 1 - Site Location

0 80 160 m

Scale: 1:4,800

N

AEP

Address: 8 Fleet Street, Salamander Bay, NSW
Client: Wanda Beach Estate - EJE
AEP Ref: | Date: 19 March 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 56

4.0 Methodology

The arborist site survey was undertaken on 26 February 2025. Each tree observed within the Subject Site was assigned a unique tree number. Tree species were identified based on guidance from regional identification guides (Lucid ID app - Euclid), and descriptions and records provided by the Royal Botanic Gardens (Plantnet 2022).

4.1 Visual Tree Assessment

A visual tree assessment to evaluate the health and condition of these trees in relation to the impacts of the required works was undertaken from ground level following the methodology described by Mattheck and Breloer (1994). Tree height was estimated following the guidance outlined in the Private Native Forestry Code of Practice (DECC 2007) and confirmed with a laser range finder. The Diameter at Breast Height (DBH) and Diameter Above Buttress (DAB) was determined using a DBH tape and methods of calculation for the Structural Root Zone (SRZ) and Tree Retain (Protection) Zone (TPZ) applied as outlined in Australian Standard 4970-2009 *Retain (Protection) of trees on development Sites* (AS 4970 – 2009) (Standards Australia 2009). Tree Total Canopy Area was estimated from the formula Pi x (average canopy spread)^2. The available space for fire fighting vehicles between existing trees was measured where trees lined both sides of the trails.

4.2 Tree Retention Value

To determine tree Retention Value a Landscape Significance Rating (LSR) was assigned to each tree. The LSR value provides consideration of the tree's amenity, environmental and heritage values (refer **Appendix B**). Trees are then assigned one of the following LSR categories:

- Significant (1);
- Very High (2);
- High (3);
- Moderate (4);
- Low (5);
- Very Low (6); and
- Insignificant (7).

Once the landscape significance value has been determined the following assessment matrix that utilises estimated life expectancy and landscape significance (**Table 2**) was applied to each tree.

Table 2 – Tree Retention Status Matrix Assessment matrix adopted from Morton (2006).

Landscape significance rating							
Estimated Life Expectancy	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Greater than 40 Years	High						
15 to 40 Years			Moderate				
5 to 15 Years				Low			
Less than 5 Years					Very low		
Dead or Hazardous							

4.3 Limitations

This report utilises a rapid assessment of tree health and condition to inform retention value. Should a detailed assessment of tree structural health and condition be required a tree risk assessment report should be commissioned.

This assessment of tree health and condition is based on non-destructive visual observations from ground level. Thus, it is not possible to identify all structural faults at high levels in the tree, internal structural faults or within the root system. Should a detailed assessment for structural faults be required a tree risk assessment report should be commissioned.

Weather conditions such as extreme wind, storm activity, lightning as well as other events or disturbances independent of the proposed activities are unpredictable. Unforeseeable damage to trees may occur as a result of unpredictable or unplanned weather events or disturbances.

Tree identifications are based on identifying features (fruit, inflorescence, etc.) found during February and made at ground level from within the Subject Site.

The total canopy area for each tree utilised within this report is an estimation based on field observation of canopy spread and the true amount of canopy area may differ.

Tree identified within by this plan are located to GPS accuracy and there may be some minor discrepancy in the true location.

5.0 Tree Assessment Results

A total of 26 individual trees were identified within the site. Observations were made for each assessed tree **(Appendix A).** Tree locations are shown in **Figure 2.**

5.1 Summary of Tree Condition and Characteristics

26 trees assessed are located within the Subject Site, all of which are native species. The condition of the assessed trees includes two (2) in poor condition, four (4) in fair condition and 20 in good condition.

Notable Trees within this grouping that are in poor or dead Structural and Health Condition including the following:

- Tree 3 – *Allocasuarina torulosa* (Forest Oak) is in poor structural condition due to fire damage and a cavity at the base of its trunk. This tree has low landscape significance as it is a poor representative of the species, displaying significant asymmetry in the canopy. Its live crown size is small, measuring less than 40m².
- Tree 4 – *Eucalyptus piperita* (Sydney Peppermint) is in fair structural condition due to its lean over the track and asymmetric crown. However, it remains in good health. This tree has low landscape significance displaying significant deviations from the typical form and branching habit. Its live crown size is small, measuring less than 40m².
- Tree 8 – *Eucalyptus piperita* (Sydney Peppermint) is in fair structural condition with an asymmetric crown and leans over the track. Tree 9 is in contact with Tree 8 at the base and has been partially compartmentalised within the trunk tissue. Effectively, Tree 8 is the “parent” tree with Tree9 the suppressed “child” tree. This tree has low landscape significance displaying significant deviations from the typical form. The 2 trees are likely to have intertwined root systems that effectively form one living organism of 2 species.
- Tree 9 – *Allocasuarina torulosa* (Forest Oak) is in fair structural condition and leans over the track as it is suppressed by tree 8. This tree has low landscape significance as it is a poor representative of the species, displaying significant deviations from the typical form and branching habit. Its live crown size is small, measuring less than 40m².
- Tree 10 – *Allocasuarina torulosa* (Forest Oak) has basal damage from vehicles and multiple branch failures in the canopy from age and storm damage. The tree has an asymmetrical form and has signs of decay in the middle section of the trunk. The tree is likely to be in close proximity to vehicles, and will obstruct turning movements for trucks.
- Tree 14 – *Allocasuarina torulosa* (Forest Oak) is in poor structural condition due to a damage at the base of its trunk. It is positioned directly on the edge of the fire trail and previous grading by machinery severed a structural root that has allowed decay to develop at the base of the tree below ground level. It has fair health condition, with a thinning crown. This tree has low landscape significance as it is a poor representative of the species. Its live crown size is small, measuring less than 40m².

5.2 Summary of Landscape Significance and Retention Value

The following landscape significance ratings (LSRs) have been applied to the assessed trees:

- One (1) ‘Very High’ This tree is an over-mature *Eucalyptus piperita* (Sydney Peppermint – Tree 112). This tree exhibits a crown density exceeding of approximately 70% crown cover (categorised as normal to dense), demonstrates visual prominence and serve as a

representation of the area's original vegetation, with significant habitat potential as there are numerous points of failed branches and hollows present;

- Eight (8) ‘High’, due to their canopy size, good structural or health conditions, and their role as representatives of the area's original vegetation, usually with a canopy exceeding 100m^2;
- Nine (9) ‘Moderate’ due to their medium canopy size, fair representation of the species, moderate deviations from typical form, and fair contribution to the visual character as native trees; and
- Eight (8) ‘Low’ due to a small live crown size of less than 40m^2, being poor to fair representatives of the species and showing significant deviations from the typical form and branching habit.

With consideration of the estimated life expectancy for each tree, Retention Values were assigned to each tree within the site. This identified the following:

- Nine (9) ‘High’;
- 11 ‘Moderate’; and
- Six (6) ‘Low’ Retention Value Trees.

See **Figures 2 and 3** below for details.

Tree 1 has hollows present, indicating its potential as a habitat tree. Tree 112 exhibits multiple hollows and extensive scratch marks on its trunk, likely caused by possums. Tree 20 had Koala scats found beneath it, indicating Koala activity along the fire trail within the last 2 – 3 days.

Legend

Study Area | Cadastre | Proposed firetrail | Tree Locations

Figure 2 - Tree Locations

0 10 20 m

Scale: 1:900

N

AEP

Address: 8 Fleet Street, Salamander Bay, NSW
Client: Wanda Beach Estate - EJE
AEP Ref: | Date: 20 May 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 56

Legend

- Study Area
- Cadastre
- Proposed firetrail

Tree Retention Value

- High
- Moderate
- Low

Figure 3 – Tree Retention Values

0 10 20 m

Scale: 1:850

N

AEP

Address: 8 Fleet Street, Salamander Bay, NSW
Client: Wanda Beach Estate - EJE
AEP Ref: | Date: 20 May 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 56

6.0 Tree Assessment

The Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) are indicative areas critical for maintaining a tree's viability and stability respectively, holding the majority of the roots necessary for each function. Any ground works within the SRZ is highly likely to impact the stability of the tree by injuring the root system. Earthworks within the TPZ may occur but as the extent of encroachment increases, more negative impacts on a tree occurs as root functions are adversely impacted. **See Figure 4** below for details.

To undertake the proposed trail excavation work for access off Fleet Street, the goal is to retain the high value trees (Trees 1, 112 and 5) but allow access for trucks and turning.

The removal of Trees 2, 3 & 4 will allow adequate space outside of the SRZ distance of Tree 112, will have minimal impact on Tree 1. Tree 5 should be retained and the tree protected by barrier placed at the SRZ distance from the trunk.

Trees 6, 7, 8, 9, 10 and 14 are recommended for removal to allow effective turning zones for larger vehicles and removing hazardous trees.

Trees 19 & 20 have a space of 4.1 m between the trunks forming a "pinch point" in the fire trail. The space between trees 21 & 22 is 4.2 m forming a second "pinch point" . Access for fire fighting vehicles is just viable without removing any trees. In upgrading the trail between trees 19 – 22, the trunks of the trees should be protected by timber battens fixed around the trunk reducing damage to the trunks from accidental machinery contact.

7.0 Pruning

Two small trees (23 and 24) require pruning of branches where they have grown over the fire trails. It is recommended that the fire trails towards the north of the site are checked for palm fronds and smaller branches as well to allow vehicle access freely along them. Pruning cuts are likely to be undertaken from ground level using a pole saw, and should , where possible, conform to Australian Standard 4373-2007.

8.0 Retention

Tree 112 in particular is a high priority for retention as it has high habitat values. Trees 16 and 25 do not require protective measures as they are unlikely to be impacted by earthworks processes and machinery damage is unlikely.

Legend

- Study Area
- Cadastre
- Proposed firetrail
- SRZ
- TPZ

Tree Assessment

- Remove
- Pruning
- Retain
- Retain (Protection)

Figure 4 – Tree Assessment

0 10 20 m

Scale: 1:800

N

AEP

Address: 8 Fleet Street, Salamander Bay, NSW
Client: Wanda Beach Estate - EJE
AEP Ref: | Date: 20 May 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 56

9.0 Tree Protection

Tree 112 requires a tree protection fence set at a distance of 3.2 m from the eastern side of the trunk. No excavation is to occur within the 3.2 m distance. The fence will protect Tree 1 as well.

Tree 5 requires a protective fence at a distance of 3.0 m from the trunk on the western side, to minimise encroachment within the SRZ area.

Trees 11 – 13, 15 and 17 – 22 require trunk protection using battens strapped around the trunk to protect trees against machinery and vehicle damage. See **Figure 5** below for details

Legend

Study Area
Cadastre
Fence

Tree Assessment
Retain
Retain (Protection)

Figure 5 – Tree Protection Plan

0 10 20 m

Scale: 1:800

N

AEP

Address: 8 Fleet Street, Salamander Bay, NSW
Client: Wanda Beach Estate - EJE
AEP Ref: | Date: 20 May 2025

Imagery: ESRI
Spatial Reference: GDA2020 MGA Zone 56

10.0 Conclusion

The site has 26 trees located within close proximity to current fire – trails and consideration of the impact of improving access off Fleet Street for fire-fighting vehicles and construction vehicles and machinery has been assessed.

A tree of significant landscape value due to habitat opportunities is a high priority for retention.

17 trees are to be retained, 13 requiring protection measures and two (2) require pruning.

Nine (9) trees require removal to improve access for vehicles and reducing trees with poor structure.

These recommendations may be subject to change once further design and engineering details have been prepared. This report will require updating in accordance with these changes.

We trust this meets your requirements. Should you require further details or clarification, please do not hesitate to contact the undersigned or Natalie Black, Senior Environmental Manager (0431 249 360).

Yours faithfully,

John Atkins
Senior Arborist
Dip. Arb. (AQF 5)
Grad. Cert. Arb. (AQF 8)

11.0 References

Euclid App https://apps.lucidcentral.org/euclid/text/intro/index.html

Mattheck, C. and Breloer, H. (1999). The Body Language of Trees – a handbook for failure analysis 5th ed., London: The Stationery Office, UK.

Standards Australia (2007). Australian Standards 4373 – 2007 Pruning of Amenity Trees. Prepared by Committee EV-018, Standards Australia.

Standards Australia (2009) *AS 4970 :2009 Retain (Protection) of Trees During Construction* Standards Australia Limited, NSW

Appendix A – Tree Schedule

Appendix A – Assessed Tree Schedule

Tree ID	*Scientific Name*	Common Name	DBH (m)	DAB (m)	Canopy Spread (m)				Canopy Spread Average	Estimated Total Canopy Area	Height (m)	Age Class	Health	Structure	Landscape significance rating	Estimated life expectancy	Retention Value	TPZ (m)	SRZ (m)	Remove/Retain
					N	E	S	W	(m)	(m^2)										
1	*Corymbia gummifera*	Red Bloodwood	0.65	0.72	4	5	3	3	3.75	44.18	22	Mature	good	good	high	40+	high	7.8	2.9	Retain
2	*Angophora costata*	Smooth-barked Apple	0.28	0.32	1	6	5	2	3.5	38.48	17	Semi-mature	good	good	moderate	40+	moderate	3.36	2.1	Remove
3	*Allocasuarina torulosa*	Forest Oak	0.30	0.35	4	2	3	3	3	28.27	12	Mature	good	poor	low	15-40	low	3.6	2.1	Remove
4	*Eucalyptus piperita*	Sydney Peppermint	0.20	0.22	0	2	6	3	2.75	23.76	12	Semi-mature	good	fair	low	40+	moderate	2.4	1.8	Remove
5	*Angophora costata*	Smooth-barked Apple	0.65	0.80	5	7	8	6	6.5	132.73	25	mature	good	good	high	40+	high	7.8	3.0	Retain (protection)
6	*Allocasuarina torulosa*	Forest Oak	0.16	0.19	2	2	2	2	2	12.57	12	Semi-mature	good	good	low	15-40	low	2	1.7	Remove
7	*Eucalyptus piperita*	Sydney Peppermint	0.40	0.43	5	3	2	3	3.25	33.18	18	Semi-mature	good	great	moderate	40+	moderate	4.8	2.3	Remove
8	*Eucalyptus piperita*	Sydney Peppermint	0.35	0.45	0	2	3	8	3.25	33.18	18	Mature	good	fair	low	40+	moderate	4.2	2.4	Remove
9	*Allocasuarina torulosa*	Forest Oak	0.26	0.25	2	2	1	3	2	12.57	12	Mature	good	fair	low	15-40	low	3.12	1.9	Remove
10	*Allocasuarina torulosa*	Forest Oak	0.40	0.48	5	0	4	4	3.25	33.18	15	Over-mature	fair	fair	moderate	15-40	moderate	4.8	2.4	Remove
11	*Eucalyptus piperita*	Sydney Peppermint	0.44	0.53	2	1	3	6	3	28.27	22	Mature	good	good	moderate	15-40	moderate	5.28	2.5	Retain (protection)
12	*Eucalyptus piperita*	Sydney Peppermint	0.55	0.60	7	5	6	6	6	113.1	20	Mature	good	good	high	40+	high	6.6	2.7	Retain (protection)
13	*Eucalyptus piperita*	Sydney Peppermint	0.59	0.63	7	5	3	5	5	78.54	22	Mature	good	good	high	40+	high	7.08	2.7	Retain (protection)
14	*Allocasuarina torulosa*	Forest Oak	0.28	0.30	3	2	0	2	1.75	9.62	15	Over-mature	fair	poor	low	.5-15	low	3.36	2.0	Remove
15	*Eucalyptus capitellata*	White Stringybark	0.28	0.30	2	2	4	4	3	28.27	10	Semi-mature	good	good	moderate	40+	moderate	3.36	2.0	Retain (protection)
16	*Eucalyptus resinifera*	Red Mahogany	0.40	0.45	4	2	3	6	3.75	44.18	9	Mature	good	good	moderate	40+	moderate	4.8	2.4	Retain
17	*Eucalyptus resinifera*	Red Mahogany	0.37	0.42	2	3	4	3	3	28.27	17	Mature	good	good	moderate	40+	moderate	4.44	2.3	Retain
18	*Eucalyptus resinifera*	Red Mahogany	0.23	0.24	2	2	1	2	1.75	9.62	11	Semi-mature	good	good	moderate	40+	moderate	2.76	1.8	Retain (protection)
19	*Melaleuca quinquenervia*	Broad-leaved Paperbark	0.40	0.45	3	4	3	3	3.25	33.18	22	Mature	good	good	high	40+	high	4.8	2.4	Retain (protection)
20	*Melaleuca quinquenervia*	Broad-leaved Paperbark	0.39	0.47	3	3	2	3	2.75	23.76	20	Semi-mature	good	good	high	40+	high	4.68	2.4	Retain (protection)
21	*Melaleuca quinquenervia*	Broad-leaved Paperbark	0.35	0.35	3	3	3	3	3	28.27	18	Semi-mature	good	good	moderate	40+	moderate	4.2	2.1	Retain (protection)
22	*Melaleuca quinquenervia*	Broad-leaved Paperbark	0.55	0.60	4	4	5	6	4.75	70.88	20	Mature	good	good	high	40+	high	6.6	2.7	Retain (protection)
23	*Glochidion ferdinandi var. ferdinandi*	Cheese Tree	0.10	0.10	0	1	5	3	2.25	15.9	4	Semi-mature	good	good	low	15-40	low	2	1.5	Pruning
24	*Glochidion ferdinandi var. ferdinandi*	Cheese Tree	0.14	0.15	0	2	3	2	1.75	9.62	5	Semi-mature	good	good	low	15-40	low	2	1.5	Pruning
25	*Eucalyptus resinifera*	Red Mahogany	0.85	0.97	8	7	7	8	7.5	176.71	26	Mature	good	good	high	40+	high	10.2	3.3	Retain
112	*Eucalyptus piperita*	Sydney Peppermint	0.80	0.89	5	11	6	4	6.5	132.73	22	Over-mature	good	good	very high	40+	high	9.6	3.2	Retain (protection)

Appendix B – Glossary

GLOSSARY AND DEFINITIONS

Age Classes:

- Juvenile refers to an immature tree;
- Semi-mature refers to a tree between immaturity and full size;
- Mature refers to a full-sized tree with some capacity for further growth; and
- Over-mature refers to a tree already in decline.

Diameter at breast height (DBH): Tree stem diameter at 1.4 metres above ground level.

Diameter at buttress (DAB): Tree stem diameter as measured above the root buttress at ground level.

Tree Retain (Protection) Zone (TPZ):

An indicative measure of the area necessary to protect for tree viability, encompassing the area necessary to protect both the crown and woody roots as calculated by the formula TPZ= DBH x 12

Structural Root Zone (SRZ):

An indicative measure of the spread of the primary woody and structural roots necessary for tree stability, as calculated by the formula SRZ= $(DAB*50)^{0.42}x0.64$

Visual Tree Assessment (VTA):

Visual inspection of tree only.

Co-dominant leaders

A tree where two or more stems are of similar diameter.

Included Bark Junctions

A junction where the angle of the union creates an area of ingrown bark. This can create a structural weakness, and is often found on co-dominant stems.

Crown

The portion of the tree consisting of branches and leaves and any part of the trunk from which branches arise.

Stem

The position of the tree consisting of branches and leaves and any part of the trunk from which branches arise. An organ which supports branches, leaves, flowers and fruits.

Epicormic Growth

Refers to shoots produced by dormant buds within the bark or stem of a tree as a result of stress, incorrect pruning or increased light.

Health Condition

Exceptional

- Visually complete crown with dense foliage throughout that indicates strong health and vigour.
- Leaf size and colour that is true to type for the species and free from pest (insect) and disease (pathogen) damage.
- Expected levels of primary growth or seasonal extension and internodal growth evident for the species.
- No evidence of colonising saprophytes and no deadwood evident.

Good

- Visually complete crown, varying in foliage density throughout.
- Leaf size and colour that is true to type for the species with none or minor levels of pest (insect) and/or disease (pathogen) damage evident.
- Expected levels of primary growth or seasonal extension and internodal growth evident for the species.
- No evidence of colonising saprophytes and low levels of deadwood present and approximately 10mm or less in size.

Fair

- Sparse crown, varying in foliage density throughout.
- Reduced leaf size and atypical in colour for the species.
- Low to medium levels of pest (insect) and/or disease (pathogen) damage.
- Reduced, seasonal extension and internodal growth.
- Deadwood easily visible and less than approximately 30mm in size.
- Epicormic growth may be evident.

Poor

- Obvious signs of crown decline, exhibiting significant reduction in live crown volume and foliage density with reduced leaf size and atypical in colour for the species.
- Evidence of defoliation and/or dieback of branch tips.
- Medium to high levels of pest (insect) and disease (pathogen) damage.
- Presence of exudates (kino and resins) from wounds (open and/or weeping).
- Significant reduction in seasonal extension and internodal growth, with significant levels of epicormic growth evident.
- Deadwood easily visible, approximately 30mm to 100mm in size.

Dead

- No evidence of live foliage observed throughout the crown.
- Obvious signs of cracking and shrinking wood.
- Visible evidence of delaminating bark to stems and branches.

Structure Condition

Very Good

- Strong branch unions at attachment points with no acute angles (compression and tension forks) and good branch taper at unions.
- No visibly, defective tree parts or structural defects.
- No wounds to stems and branches, no crossing and rubbing of branches and no wounds to exposed roots.
- No fungal fruiting bodies present to stems, branches and roots indicating, a presence of fungal pathogens.

Good to Fair

- Developing inclusions at unions of leading, codominant stems and branches.
- Evidence of defective tree parts (low levels) including branch and stem inclusions and crossing and rubbing of branches.
- Evidence of mechanical damage to periderm of stems, branches and roots, exposing vascular tissues.
- Exposed wounds for surface, colonising pathogens and entry points for developing decay.
- Presence of fungal fruiting bodies.
- Some evidence of cavities or hollows. (Fair only)
- No evidence of soil upheaval surrounding base of tree.

Poor

- Obvious signs and evidence of included bark to basal unions of codominant, leading stems and branches.
- Advanced, structural defects evident with failure of tree parts determined within 5 years from time of inspection and assessment.
- Evidence of decay from open wounds with presence of exudates (kino and resins) and exposed and degraded woody tissues.
- Presence of fungal fruiting bodies.
- Presence of cavities and hollows.
- Evidence of mechanical damage with advanced degradation of exposed roots.

a) Hazardous Tree

b) Immediate Removal

- Advanced, structural defects evident. Open cracks to codominant stem and branch unions evident.
- Previous branch and stem failures evident. Failure of remaining tree parts determined within 3 months 6 months, from time of inspection and assessment. Arboricultural works to be scheduled immediately to mitigate associated hazard and risk.
- Severed roots and soil upheaval evident indicating failure of root zone.
- Tree failure imminent within 12 months from time of inspection and assessment

Landscape Significance

Assesses a tree within the landscape and rates according to criteria taken from Morton (2006):

1. Significant

- The subject tree is listed as a Heritage Item under the Local Environment Plan (LEP) with a local, state or national level of significance; or
- The subject tree forms part of the curtilage of a Heritage Item (building / structure /artifact as defined under the LEP) and has a known or documented association with that item; or
- The subject tree is a Commemorative Planting having been planted by an important historical person (s) or to commemorate an important historical event; or

- The subject tree is scheduled as a Threatened Species or is a key indicator species of an Endangered Ecological Community as defined under the or Biodiversity Conservation Act 2016 (NSW) or The Environmental Retain (Protection) and Biodiversity Conservation Act 1999 (Federal); or
- The tree is a locally indigenous species, representative of the original vegetation of the area and is known as an important food, shelter or nesting tree for endangered or threatened fauna species; or
- The subject tree is a Remnant Tree, being a tree in existence prior to development of the area; or
- The subject tree has a very large live crown size exceeding 300m² with normal to dense foliage cover, is located in a visually prominent in the landscape, exhibits very good form and habit typical of the species and makes a significant contribution to the amenity and visual character of the area by creating a sense of place or creating a sense of identity; or
- The tree is visually prominent in view from surrounding areas, being a landmark or visible from a considerable distance.

2. Very high

- The tree has a strong historical association with a heritage item (building/structure/artifact/garden etc) within or adjacent the property and/or
- Exemplifies a particular era or style of landscape design associated with the original development of the site; or
- The subject tree is listed on Council's Significant Tree Register; or
- The tree is a locally-indigenous species and representative of the original vegetation of the area and the tree is located within a defined Vegetation Link/ Wildlife Corridor or has known wildlife habitat value;
- The subject tree has a very large live crown size exceeding 200m²; a crown density exceeding 70% Crown Cover (normal-dense), is a very good representative of the species in terms of its form and branching habit or is aesthetically distinctive and makes a positive contribution to the visual character and the amenity of the area.

3. High

- The tree has a suspected historical association with a heritage item or landscape supported by anecdotal or visual evidence; or
- The tree is a locally-indigenous species and representative of the original vegetation of the area; or
- The subject tree has a large live crown size exceeding 100m²; and
- The tree is a good representative of the species in terms of its form and branching habit with minor deviations from normal (eg crown distortion/suppression) with a crown density of at least 70% Crown Cover (normal); and
- The subject tree is visible from the street and surrounding properties and makes a positive contribution to the visual character and the amenity of the area.

4. Moderate

- The subject tree has a medium live crown size exceeding 40m²; and

- The tree is a fair representative of the species, exhibiting moderate deviations from typical form (distortion/suppression etc) with a crown density of more than 50% Crown Cover (thinning to normal); and
- The tree makes a fair contribution to the visual character and amenity of the area; and
- The tree is visible from surrounding properties, but is not visually prominent – view may be partially obscured by other vegetation or built forms.
- The tree has no known or suspected historical association.

5. Low

- The subject tree has a small live crown size of less than 40m² and can be replaced within the short term with new tree planting; or
- The tree is a poor representative of the species, showing significant deviations from the typical form and branching habit with a crown density of less than 50% Crown Cover (sparse); and
- The subject tree is not visible from surrounding properties (visibility obscured) and makes a negligible contribution or has a negative impact on the amenity and visual character of the area.

6. Very low

- The subject tree is listed as an Environment Weed Species in the relevant Local Government Area, being invasive, or a nuisance species.
- The subject tree is scheduled as exempt (not protected) under the provisions of the local Council's Tree Preservation Order due to its species, nuisance or position relative to buildings or other structures.

7. Insignificant

- The tree is a declared Noxious Weed under the Biosecurity Act (NSW) 2015 or identified as a priority weed within the local region.

Appendix C – Site Photographs

Plate 1 Above: Tree 3 – *Allocasuarina torulosa* exhibits poor structural condition.

Plate 2 Below: Tree 14 – *Allocasuarina torulosa* leans over the track. This tree has basal damage and should be removed.

Plate 3 Above: Tree 4 – *Eucalyptus piperita* showing fair structural condition, recommended for removal

Plate 4 Below: Trees 7, 8 & 9 – *Eucalyptus sp,* all recommended for removal.

Plate 5 Above: Tree 9 – *Allocasuarina torulosa* leans over the track, recommended for removal.

Plate 6 Below: Tree 10 – *Allocasuarina torulosa* to be removed.

Plate 7 above: Trees 19 – 22 (*Melaleuca quinquenervia)* create a reduced width in this section of the fire trail. Upgrading the trail surface will require protection of the trunks using timber battens strapped around the trunks in this area.

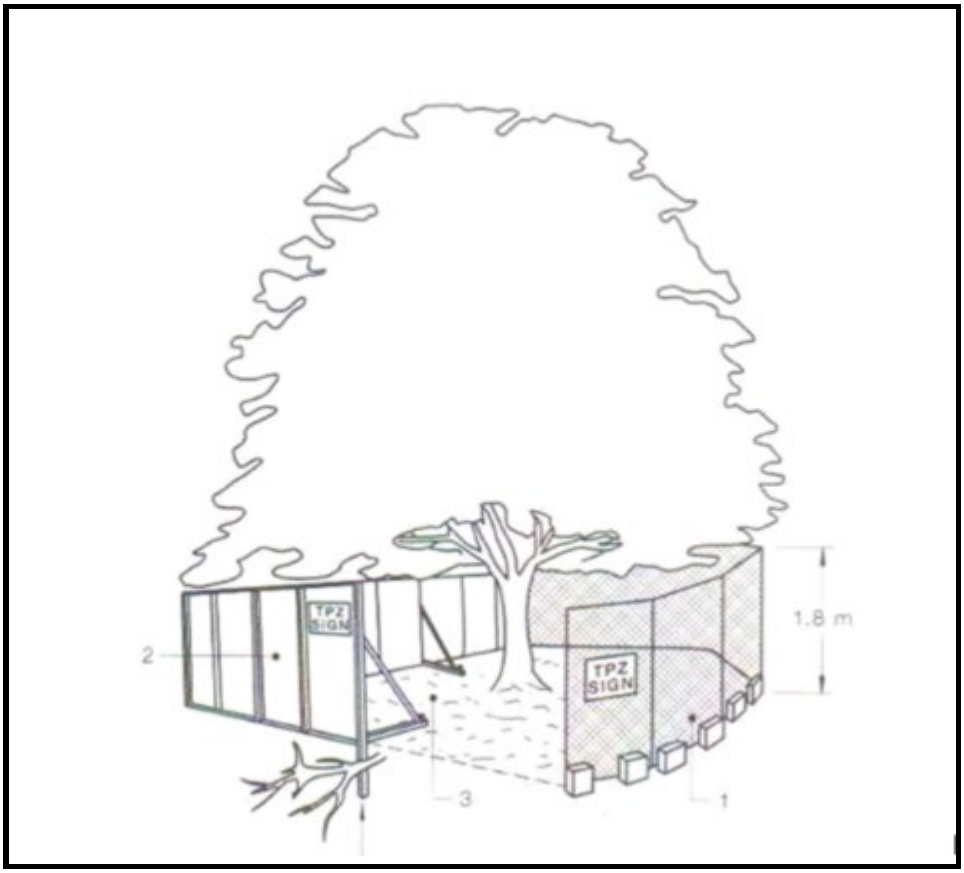
Appendix D –Tree Protection Fencing and Ground Protection

Example of tree protection fencing:

Fence off all trees noted for retention with 1.8m steel mesh fencing at the perimeter of the designated protection zone. Attach signs relating to the importance of tree protection and penalties for breaching tree protection orders to the fencing. If the area is large, install multiple signs.

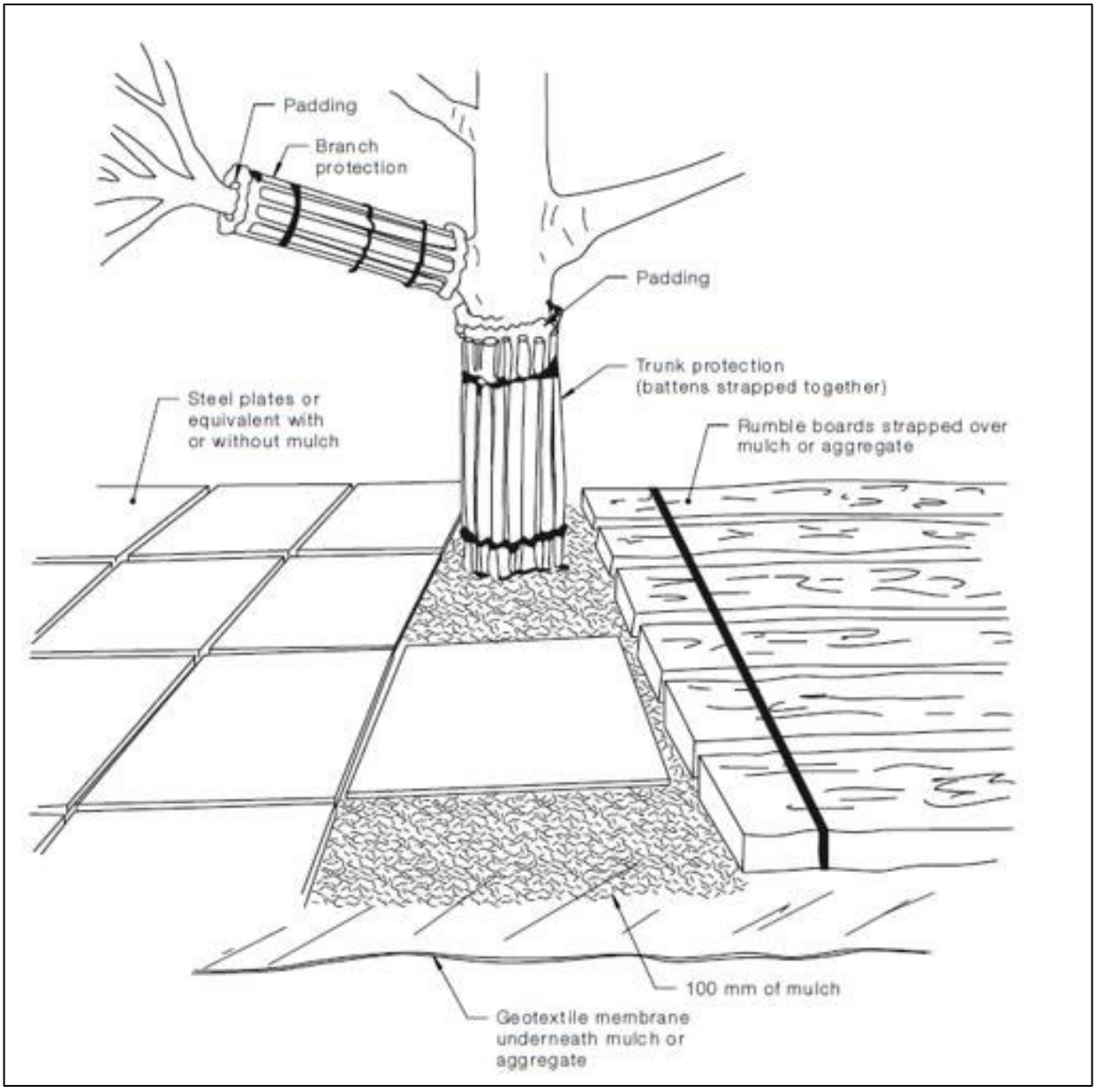
Signs should state that this is a restricted area, no entry unless in the company of the arborist. Authorised access to the protected zone could be through a locked gate or via ladders

Mulching and semi-regular watering for established protection zones.



Ground Protection

If temporary access for machinery is required within the TPZ ground protection measures will be required. The purpose is to prevent root damage and soil compaction within the TPZ. Measures may include a permeable membrane such as geotextile beneath a layer a mulch or crushed rock below rumble boards as per the below diagram.



Notes:

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

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