Project No: LONG/REEF/24 Report No: LONG/REEF/AIA/A

ARBORICULTURAL IMPACT ASSESSMENT
TREE PROTECTION SPECIFICATION

Long Reef Golf Club

Anzac Avenue
COLLAROY

Prepared for: LONG REEF GOLF CLUB

4th April 2025

Revision A

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Contents

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1.0 INTRODUCTION

1.1 Background

1.1.1 This Arboricultural Impact Assessment Report (AIA) and Tree Protection Specification was prepared for Long Reef Golf Club, Collaroy. The purpose of this AIA is to undertake a Visual Tree Assessment[1] (VTA), determine the impact of the proposed works on the trees, and where appropriate, recommend the use of sensitive construction methods and tree protection measures to minimise adverse impacts. The ecological and heritage values of the trees have not been assessed and is beyond the scope of this AIA.

1.1.2 In preparing this AIA, the authors are aware of and have considered the objectives of the following:

- *State Environmental Planning Policy - Biodiversity and Conservation (2021)*
- *Warringah Development Control Plan (2011) E1 Preservation of Trees or Bushland Vegetation*
- *Northern Beaches Council Exempt Species List*
- *Australian Standard 4970 Protection of Trees on Development Sites (2009)*
- *Australian Standard 4373 Pruning of Amenity Trees (2007)*
- *Australian Standard 2303 Tree Stock for Landscape Use (2015)*
- *Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016)*

Refer to Methodology **(Appendix 1)**

1.1.3 This AIA is based on an assessment of the following supplied documentation/plans only:

- Landscape Masterplan (LA LP 002/002), dated 04.04.25
  prepared by Black Bettle Landscape Architecture and Design

Refer to Plans **(Appendix 2)**

1.2 The Proposal

1.2.1 The supplied plans show the proposed works are for the refurbishment of the Long Reef Golf Club including:

- partial demolition of the existing structures and pavements
- construction of new entry with driveway, pickup and drop off zone and lobby
- construction of ground floor and first floor facilities with function rooms, members lounges, shared spaces and restaurant and bar terraces
- landscaping and associated works

[1] Mattheck & Breloer (2003)

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2.0 RESULTS

2.1 The Site

2.1.1 The site is the Long Reef Golf Club and comprises of the club house complex, car park, internal access road and adjacent landscape areas. The site is bound by Fisherman's Beach/Anzac Avenue to the north and east, the golf course to the south and Griffith Park to the west.

2.1.2 The site is generally level with a gentle slope to the north-east.

2.2 The Trees

2.2.1 Fourteen (14) trees were assessed using the Visual Tree Assessment (VTA) criteria and consist of a mix of locally indigenous, Australian-native and exotic species. Five (5) species are represented including *Araucaria heterophylla* (Norfolk Island Pine), *Phoenix canariensis* (Canary Island Date Palm), *Casuarina glauca* (Swamp She-Oak), *Leptospermum laevigatum* (Coastal Tea Tree) and *Cupaniopsis anacardioides* (Tuckeroo).

2.2.2 The trees are not listed within Schedule 5 Environmental Heritage of the *(Warringah Local Environmental Plan 2011).*[2]

2.2.3 Six (6) trees as outlined in Table 1 are on the Northern Beaches Council Exempt Species List.[3]

2.2.4 Table 1: Exempt Species

Species	Tree Number
Phoenix canariensis (Canary Island Date Palm)	3, 4, 5 & 7
Cupaniopsis anacardioides (Tuckeroo)	6 & 14

2.2.5 As required by Clause 2.3.2 of *Australian Standard 4970 (2009) Protection of Trees on Development Sites (AS-4970)*, each of the trees assessed has been allocated a Retention Value. TreeiQ allocates one of four Retention Value categories based on a combination of Landscape Significance and Useful Life Expectancy (ULE). The assessment of Landscape Significance and ULE involves a degree of subjectivity and there will be a range of tree quality and value within each of the Retention Value categories. The Retention Values do not consider any proposed development works and are not a schedule for tree retention or removal. The trees have been allocated one of the following Retention Values:

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

Refer to Tree Assessment Schedule **(Appendix 3)**

[2] Northern Beaches Council (2024)
[3] Penrith City Council (2019)

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2.2.6 The allocation of a Retention Value to each tree is a key step in the tree management process as it helps the architect, other project consultants and the consent authority identify which are the most valuable trees on site. It may not be possible to retain all existing trees on a development site. However, the proposal should demonstrate that the retention of the higher value trees have been prioritised within the design process.

3.0 ARBORICULTURAL IMPACT ASSESSMENT

3.1 Tree 1

3.1.1 Tree 1 was identified as *Araucaria heterophylla* (Norfolk Island Pine) and is a large, mature specimen located to the south-east of the existing golf club building. The tree is good health and good structural condition with no significant defects identified at the time of assessment. Tree 1 is of high Landscape Significance and has been allocated a Retention Value of *Priority for Retention.*

3.1.2 The supplied plans show footpaths and minor grading is proposed within the Tree Protection Zone (TPZ) of Tree 1. The extent of work represents a *Major Encroachment* as defined by AS-4970. Clause 3.3.4 of AS-4970 outlines that design factors should be considered when determining the potential impact of the encroachment.

3.1.3 Recommendations

- TPZ fencing should be established at the perimeter of the TPZ to the north of the tree and along the edge of the existing footpath to the south of the tree. To provide for development access, fencing should be set back along the edges of the proposed footpaths in the eastern and western sections of the TPZ.
- The new pavements within the TPZ should be installed above the existing grade (including sub-base layers). Alternatively, the footpath footprint could be excavated by hand with the finished levels adjusted or pavement/subbase materials thinned to allow for the retention of roots (>25mmø) as required by the Project Arborist
- Over excavation beyond the footprint of the pavements should be avoided.
- Minor grading works should be limited to less than 10% of TPZ and outside of the Structural Root Zone (SRZ)

3.2 Tree 2

3.2.1 Tree 2 was identified as *Araucaria heterophylla* (Norfolk Island Pine) and is a large, mature specimen located within outdoor terrace adjacent to the northern site boundary. The tree is good health and good structural condition with no significant defects identified at the time of assessment. Tree 2 is of high Landscape Significance and has been allocated a Retention Value of *Priority for Retention.*

3.2.2 The supplied plans show refurbishment of the golf club building, removal and replacement of the existing pavement surface within the outdoor terrace and the installation of a new bench seat is proposed within the TPZ of Tree 2. The extent of work represents a *Major Encroachment* as defined by AS-4970. Clause 3.3.4 of AS-4970 outlines that design factors and the presence of existing or past structures or obstacles affecting root growth should be considered when determining the potential impact of the encroachment. The proposed works fall within the footprint of the existing golf club building and terrace area, and the proposed internal floor and external paving level is above existing landscape levels within the TPZ.

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3.2.3 Recommendations

- TPZ fencing should be established at the perimeter of the TPZ to the south of the tree and along the edge of the existing golf club building.
- Trunk protection should be installed to protect the tree from impact damage.
- The existing pavement should be demolished using a compact excavator (<2.5t) and monitored by the Project Arborist. The excavator should be fitted with a flat bladed bucket and guided by a spotter to identify roots. The excavator should work from un-demolished sections of existing pavement at all times. Existing sub-base/slab materials within the TPZ should remain in-situ and be reused where possible. If the existing sub-base is to be removed, these works should be undertaken using hand tools with roots (>25mmø) retained and protected as required by the Project Arborist.
- Exposed roots (>25mmø) should be protected from direct sunlight, drying out and extremes of temperature by covering with a damp 10mm thick jute geotextile fabric.
- Installation of the new subbase/slab should avoid excavation within the TPZ. Where required the subbase/slab layer should be locally thinned over any surface roots. A protective covering of a compressible layer (e.g. AbelFlex) should be installed over roots prior to the subbase/slab installation.
- The new bench seat should be installed on top of the new slab. Where required, piers should be installed using hand excavation with the piers located to allow for the retention of significant roots (as determined by the Project Arborist).

3.3 Trees 3 & 4

3.3.1 Trees 3 and 4 were identified as *Phoenix canariensis* (Canary Island Date Palm) are mature specimens located at the entry to the existing golf club building. The trees are in good health and good structural condition with no significant defects identified at the time of assessment. Trees 3 and 4 are of moderate Landscape Significance and have been allocated a Retention Value of *Consider for Retention.*

3.3.2 The supplied plans show that Trees 3 and 4 are proposed for removal to accommodate the new guest drop off area. *Phoenix canariensis* (Canary Island Date Palm) is an exotic palm species which was introduced to Australia in the late 1800s. It may be possible to transplant these palms. However, new plantings of this species are now uncommon due to its propensity to self-seed and become weedy, and its susceptibility to the fungal disease *Fusarium oxysporum* f. sp. *Canariensis*.

3.3.3 Recommendations

- Replacement trees should be planted as part of the development works to help off-set the loss of canopy cover and amenity resultant from the tree removal.
- Replacement trees should be supplied as advanced size specimens and in accordance with *Australian Standard 2303 (2015) Tree Stock for Landscape Use.*

3.4 Tree 5

3.4.1 Tree 5 was identified as *Phoenix canariensis* (Canary Island Date Palm) is a mature specimens located to the west of the existing golf club building. The tree is in good health and good structural condition with no significant defects identified at the time of assessment. Tree 5 is of moderate Landscape Significance and has been allocated a Retention Value of *Consider for Retention.*

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3.4.2 The supplied plans show a new pavement area is proposed within the TPZ of Tree 5. The extent of work represents a *Minor Encroachment* as defined by AS-4970. The encroachment into TPZ should be compensated for by extending the TPZ to the north.

3.4.3 Recommendations

- TPZ fencing should be established at the perimeter of the TPZ setback to accommodate the installation of new pavement areas.
- Trunk protection should be installed to protect the tree from impact damage.

3.5 Trees 6 & 14

3.5.1 Trees 6 and 14 were identified as *Cupaniopsis anacardioides* (Tuckeroo) and are located directly north of the existing golf club building. The trees are in good health and fair structural condition. Tree 6 shows signs of previous, partial root plate failure however the tree appears to have restabilsied. Trees 6 and 14 are of low Landscape Significance and have been allocated a Retention Value of *Consider for Removal.*

3.5.2 The supplied plans show refurbishment of the golf club building and installation of landscape wall is proposed within their TPZ areas. The extent of work represents *Major Encroachments* as defined by AS-4970. Clause 3.3.4 of AS-4970 outlines that the presence of existing or past structures or obstacles affecting root growth should be considered when determining the potential impact of the encroachment. The proposed refurbishment works fall within the footprint of the existing golf club building. It should be noted that where root growth has been deflected by an inground obstruction such as footing, particularly within a tree's SRZ, the obstruction may be providing additional stability to the tree's root plate. Where possible, inground structures should be left in situ as part of the demolition works.

3.5.3 Recommendations

- TPZ fencing should be established at the perimeter of the TPZ areas setback to allow for demolition of the existing golf glub building.
- TPZ fencing should be moved to the perimeter of the southern perimeter of the TPZ areas once the demolition works are completed. TPZ fencing on the northern side of the trees should be setback to allow for construction of the sandstone wall.
- The demolition works should be undertaken within the footprint of the existing building ('top down, pull back') and away from the trees. The footings of the existing building within the SRZ should be assessed by the Project Arborist to determine if these structures can be removed without impacting the stability of the trees.
- If roots (>25mmø) are encountered during the demolition works, these roots must be retained in an undamaged condition and advice sought from the Project Arborist.
- Exposed roots (>25mmø) should be protected from direct sunlight, drying out and extremes of temperature by covering with a damp 10mm thick jute geotextile fabric.
- The sandstone wall should be installed at existing grade without a footing. Where required, a layer of crushed blue metal may be installed above grade to provide a level base for installation of the sandstone blocks.

3.6 Tree 7

3.6.1 Tree 7 was identified as *Phoenix canariensis* (Canary Island Date Palm) and is a mature specimen located within the carpark to the west of the existing golf club building. The tree was good health and good structural condition with no significant defects identified at the time of assessment in November 2024. However, the golf club has advised this tree has now died. TreeiQ have reviewed photos of the tree and it is likely to have been infected with the fungal disease *Fusarium oxysporum* f. sp. *Canariensis.*

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3.6.2 **Recommendations**

- A replacement tree should be planted as part of the development works to help off-set the loss of canopy cover and amenity resultant from the tree removal.
- The replacement tree should be supplied as advanced size specimens and in accordance with *Australian Standard 2303 (2015) Tree Stock for Landscape Use.*

3.7 Tree 8

3.7.1 Tree 8 was identified as *Araucaria heterophylla* (Norfolk Island Pine) and is a large, mature specimen located to the north-west of the existing golf club building. The tree is good health and good structural condition with no significant defects identified at the time of assessment. Tree 8 is of high Landscape Significance and has been allocated a Retention Value of *Priority for Retention.*

3.7.2 The supplied plans show no works are proposed within the TPZ of Tree 8.

3.7.3 **Recommendations**

- No specific tree protection measures are required as the tree is located outside of the site.

3.8 Tree 9

3.8.1 Tree 9 was identified as *Casuarina glauca* (Swamp She-Oak) and is a mature specimen located to the west of the existing carpark and driveway. The tree is in fair health with a reduced crown density of 50-75% and the presence of small (<25mmø) and medium (25-75mmø) deadwood in moderate volumes. Tree 9 is of moderate Landscape Significance and has been allocated a Retention Value of *Consider for Retention.*

3.8.2 The supplied plans show no works are proposed within the TPZ of Tree 9.

3.8.3 **Recommendations**

- No specific tree protection measures are required as the tree is located outside of the site.

3.9 Trees 10-13

3.9.1 Trees 10-12 were identified as *Casuarina glauca* (Swamp She-Oak) and Tree 13 was identified as *Leptospermum laevigatum* (Coastal Tea Tree). Tree 10 is in fair structural condition due to the presence of minor bark inclusions and wounds with decay. Trees 11 and 12 are in fair health due to the presence of small (<25mmø) and medium (25-75mmø) deadwood in moderate volumes. Tree 13 is in fair health due to a reduced crown density and the presence of small (<25mmø) and medium (25-75mmø) deadwood in moderate volumes. The tree is in fair structural condition due to the presence of bark inclusions (some which have partially failed) and wounds with decay. Trees 10-13 are of low Landscape Significance and have been allocated a Retention Value of *Consider for Removal.*

3.9.2 The supplied plans show that Trees 10-13 are proposed for removal as part of the landscape treatment associated with the raised shared zone.

3.9.3 **Recommendations**

- Replacement trees should be planted as part of the development works to help off-set the loss of canopy cover and amenity resultant from the tree removal.
- Replacement trees should be supplied as advanced size specimens and in accordance with *Australian Standard 2303 (2015) Tree Stock for Landscape Use.*

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3.10 Pruning

3.10.1 Minor pruning to provide building clearance and access during construction may be required for Tree 2. These works can be limited to the Reduction Pruning of branches less than 100mm to provide a 2m clearance to the existing building. These pruning works should not significantly impact the health, ULE or amenity value of the tree.

3.10.2 Pruning work should be undertaken in accordance with *Australian Standard 4373: Pruning of Amenity Trees (2007), Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016)* and other applicable legislation and codes. Deadwood greater 30mmø should be removed from the crowns of the trees in areas with high value targets.

3.10.3 It should be noted that the assessment of pruning requirements was made from ground level with no set-out of the proposed footprints provided. During the construction phase of a project some additional minor pruning works may be required to provide building clearances. Additional pruning requirements should be determined by the Project Arborist at the time of construction. Where additional clearance is required for scaffolding/hoarding, branches should be temporarily pushed or tied back and/or the scaffolding/hoarding modified and constructed around branches (with appropriate branch protection installed as required). Additional minor pruning for scaffolding/hoarding should only be proposed where no other alternative is feasible.

4.0 CONCLUSION

4.1.1 Fourteen (14) trees were addressed within this AIA and consist of a mix of locally indigenous, Australian-native and exotic species.

4.1.2 The supplied plans show the proposed works include the refurbishment of the Long Reef Golf Club.

4.1.3 The supplied plans show seven (7) trees (Trees 3, 4, 7 & 10-13) are proposed for removal as part of the development works. Trees 3, 4 and 7 (dead) are species listed on Council's exempt species list. Trees 10-13 are approximately 5m in height, of low Landscape Significance and have been allocated a Retention Value of *Consider for Removal.* Replacement tree planting using healthy, advanced-size specimens could replace the loss of amenity from tree removal within a short timeframe.

4.1.4 The supplied plans show seven (7) trees (Trees 1, 2, 5, 6, 8, 9 & 14) are proposed for retention. Tree sensitive methods will be required for Trees 1, 2, 6 & 14 to minimise adverse impacts. Refer to Section 3. The trees to be retained should be protected in accordance with the Tree Protection Specification **(Appendix 5)** and Typical Tree Protection Details **(Appendix 6).** A detailed Tree Protection Plan should be prepared based on the Construction Certificate Plans and Construction Management Plan with individual tree specific protection requirements to be determined on site through consultation between the Project Manager and the Project Arborist. Where tree protection fencing is set back to provide for development access, the installation of trunk and ground protection will be required.

4.1.5 The supplied plans show that Tree 2 may need to be pruned for building access. Pruning work should be undertaken in accordance with *Australian Standard 4373: Pruning of Amenity Trees (2007), Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016)* and other applicable legislation and codes

4.1.6 The supplied plans show new tree planting is proposed to help off-set the loss of canopy cover and amenity resultant from the tree removal. Trees should be supplied as advanced size specimens (i.e. ≥ 75L) and in accordance with *Australian Standard 2303 (2015) Tree Stock for Landscape Use.*

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5.0 LIMITATIONS & DISCLAIMER

TreeiQ takes care to obtain information from reliable sources. However, TreeiQ can neither guarantee nor be responsible for the accuracy of information provided by others. Plans, diagrams, graphs and photographs in this Arboricultural Report are visual aids only and are not necessarily to scale. This Report provides recommendations relating to tree management only. Advice should be sought from appropriately qualified consultants regarding design/construction/ecological/heritage etc issues.

This Report has been prepared for exclusive use by the client. This Report shall not be used by others or for any other reason outside its intended target or without the prior written consent of TreeiQ. Unauthorised alteration or separate use of any section of the Report invalidates the Report.

Many factors may contribute to tree failure and cannot always be predicted. TreeiQ takes care to accurately assess tree health and structural condition. However, a tree's internal structural condition may not always correlate to visible external indicators. There is no warranty or guarantee, expressed or implied that problems or deficiencies regarding the trees or site may not arise in the future. Information contained in this Report covers only the trees assessed and reflects the condition of the trees at the time of inspection. Additional information regarding the methodology used in the preparation of this Report is attached as Appendix 1. A comprehensive tree risk assessment and management plan for the trees is beyond the scope of this Report.

Reference should be made to any relevant legislation including Tree Management Controls. All recommendations contained within this Report are subject to approval from the relevant Consent Authority.

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6.0 BIBLIOGRAPHY & REFERENCES

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Standards Australia (2007), *Pruning of Amenity Trees AS-4373*

Standards Australia (2015), *Tree Stock for Landscape Use AS-2303*

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7.0 APPENDICES

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Appendix 1: Methodology

1.1 **Site Inspection**: This report was determined as a result of a comprehensive site inspection during November 2024. The comments and recommendations in this report are based on findings from this site inspection.

1.2 **Visual Tree Assessment (VTA)**: The subject tree(s)was assessed using the Visual Tree Assessment criteria and notes as described in *The Body Language of Trees – A Handbook for Failure Analysis.*[4]The inspection was limited to a visual examination of the subject tree(s)from ground level only. No internal diagnostic testing was undertaken as part of this assessment. Trees outside the subject site were assessed from the property boundaries only.

1.3 **Tree Dimensions**: The dimensions of the subject tree(s) are approximate only.

1.4 **Tree Locations:** The location of the subject tree(s) was determined from the supplied plans. Trees not shown on the supplied plans have been plotted in their approximate location only.

1.5 **Trees & Development**: Tree Protection Zones, Tree Protection Measures and Sensitive Construction Methods for the subject tree were based on methods outlined in *Australian Standard 4970-2009 Protection of Trees on Development Sites*.

The *Tree Protection Zone* (TPZ) is described in AS-4970 as a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable.

The *Structural Root Zone* (SRZ) is described in AS-4970 as the area around the base of a tree required for the tree's stability in the ground. Severance of structural roots within the SRZ is not recommended as it may lead to the destabilisation and/or demise of the tree.

In some cases it may be possible to encroach into or make variations to the theoretical TPZ. A *Minor Encroachment* is less than 10% of the area of the TPZ and is outside the SRZ. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ. A *Major Encroachment* is greater than 10% of the TPZ or inside the SRZ. In this situation the Project Arborist must demonstrate that the tree would remain viable. This may require root investigation by non-destructive methods or the use of sensitive construction methods.

1.6 **Tree Health**: The health of the subject tree(s) was determined by assessing:

I. Foliage size and colour
II. Pest and disease infestation
III. Extension growth
IV. Crown density
V. Deadwood size and volume
VI. Presence of epicormic growth

1.7 **Tree Structural Condition**: The structural condition of the subject tree(s) was assessed by:

I. Assessment of branching structure
(i.e co-dominant/bark inclusions, crossing branches, branch taper, terminal loading, previous branch failures)
II. Visible evidence of structural defects or instability
(i.e root plate movement, wounds, decay, cavities, fungal brackets, adaptive growth)
III. Evidence of previous pruning or physical damage
(root severance/damage, lopping, flush-cutting, lions tailing, mechanical damage)

1.8 **Useful Life Expectancy (ULE)**: The ULE is an estimate of the longevity of the subject tree(s) in its growing environment. The ULE is modified where necessary to take in consideration tree(s) health, structural condition and site suitability. The tree(s) has been allocated one of the following ULE categories (Modified from Barrell, 2001):

I. 40 years +
II. 15-40 years
III. 5-15 years
IV. Less than 5 years

[4]Mattheck&Breloer (2003)

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1.9 **Landscape Significance**: Landscape Significance was determined by assessing the combination of the cultural, environmental and aesthetic values of the subject tree(s). Whilst these values are subjective, a rating of high, moderate, low or insignificant has been allocated to the tree(s). This provides a relative value of the tree's Landscape Significance which may aid in determining its Retention Value. If the tree(s) can be categorized into more than one value, the higher value has been allocated.

Landscape Significance	Description
Very High	The subject tree is listed as a Heritage Item under the *Local Environmental Plan* with a local or state level of significance.
	The subject tree is listed on Council's Significant Tree Register or meets the criteria for significance assessment of trees and/or landscapes by a suitably qualified professional. The criteria are based on general principles outlines in the Burra Charter and on criteria from the Register of the National Estate.
High	The subject tree creates a 'sense of place' or is considered 'landmark' tree.
	The subject tree is of cultural or historical importance or is widely known.
	The subject tree is a prominent specimen which forms part of the curtilage of a heritage item with a known or documented association with that item.
	The subject tree has been identified by a suitably qualified professional as a species scheduled as a Threatened or Vulnerable Species for the site defined under the provisions of the NSW *Biodiversity Conservation Act (2016)* or the Commonwealth *Environmental Protection and Biodiversity Conservation Act* (1999).
	The subject tree is known to contain nesting hollows to a species scheduled as a Threatened or Vulnerable Species for the site as defined under the provisions of the NSW *Biodiversity Conservation Act (2016)* or the Commonwealth *Environmental Protection and Biodiversity Conservation Act* (1999).
	The subject tree is an excellent representative of the species in terms of aesthetic value.
	The subject tree is of significant size, scale or makes a significant contribution to the canopy cover of the locality.
Moderate	The subject tree makes a positive contribution to the visual character or amenity of the area.
	The subject tree provides a specific function such as screening or minimising the scale of a building.
	The subject tree is a good representative of the species in terms of aesthetic value.
Low	The subject tree is a known environmental weed species or is exempt under the provisions of the local Council's Tree Management Controls
	The subject tree makes little or no contribution to the amenity of the locality.
	The subject tree is a poor representative of the species in terms of aesthetic value.

1.10 **Retention Value**: Retention Value was based on the subject tree's Useful Life Expectancy and Landscape Significance. The Retention Value was modified where necessary to take in consideration the subject tree's health, structural condition and site suitability. The subject tree(s) has been allocated one of the following Retention Values:

I. Priority for Retention
II. Consider for Retention
III. Consider for Removal
IV. Priority for Removal

<table>
<tr><th>ULE</th><th></th><th colspan="4">Landscape Significance</th></tr>
<tr><td></td><td>Very High</td><td>High</td><td>Moderate</td><td>Low</td><td>Insignificant</td></tr>
<tr><td>40 years +</td><td rowspan="3">Priority for Retention</td><td colspan="2">Priority for Retention</td><td rowspan="3">Consider for Removal</td><td rowspan="3">Priority for Removal</td></tr>
<tr><td>15-40 years</td><td>Priority for Retention</td><td>Consider for Retention</td></tr>
<tr><td>5-15 years</td><td colspan="2">Consider for Retention</td></tr>
<tr><td>Less than 5 years</td><td>Consider for Removal</td><td colspan="4">Priority for Removal</td></tr>
</table>

The above table has been modified from the Footprint Green Tree Significance and Retention Value Matrix.

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Appendix 2: Plans

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LEGEND

- Crown Spread as per survey
- Tree Protection Zone (TPZ)
- Structural Root Zone (SRZ)
- Tree location and trunk diameter as shown on Site Survey
- Tree Number
- Orange coloured tree - location not shown on Site Survey, estimated location only. Crown spread as measured on site

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11 T12 T13 T14

ANZAC AVENUE

PT1 DP 1144187 (3692m²) (BY DP 1144187)

MUST BE READ IN CONJUNCTION WITH ARBORICULTURAL IMPACT ASSESSMENT REPORT

BASED ON SURVEY BY SURVEYPLUS REV. A DATED 04/08/2023

REV	DESCRIPTION	DRAWN	REVIEW	DATE
A	TPZ/SRZ PLAN - FOR COORDINATION	KB	AH	22/11/24

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ADDRESS: ANZAC AVENUE, COLLAROY

PROJECT: LONG REEF GOLF CLUB

CLIENT: ASSEMBLY PROJECTS

DRAWING: TPZ/SRZ PLAN

SCALE: 1:400 @ A3 | ISSUE: DA | SHEET: T - 01

DRAWN: KB | REVIEW: AH | DATE: 22/11/24

Do not scale - use dimensions & callouts on drawings & schedules. Refer discrepancies to Landscape Architect for clarification.

0 5 10 20 30

REVISION: A

NEW SIGNAGE TOTEM INDICATING MAIN ENTRY & GUEST DROP OFF

ANZAC AVENUE

PROPOSED STREET TREES
Waterhousea floribunda 'Green Avenue'

NEW SIGNAGE TOTEM INDICATING GUEST DROP OFF AND GOLF CLUB PARKING

PROPOSED CAR PARK TREE
Waterhousea floribunda 'Green Avenue'
UNDER PLANTED WITH
Lomandra 'Lime Tuff'
Grevillea 'Mt Tamboritha'

GOLF CLUB CAR PARK
EXISTING CARPARK TO BE RETAINED

PROPOSED CAR PARK TREE
Banksia integrifolia
UNDER PLANTED WITH
Lomandra 'Lime Tuff'
Grevillea 'Mt Tamboritha'

GUEST DROP OFF

LOADING ZONE

CAFE

RAISED 'SHARED ZONE'

BEACH

RELOCATED PICNIC TABLE AND CONCRETE PATH

P2 - PAVEMENT TYPE 02 - EXTEND PATHWAY. TIMBER EDGE AND CRUSHED SANDSTONE

UPGRADE / REFRESH PLANTING ALONG GOLF COURSE BOUNDARY / REMOVE EXISTING TREES

G1 - GARDEN PROFILE 01- GARDEN ON GRADE AND IRRIGATION EXTENT (DRIP IRRIGATION) 300MM SOIL DEPTH
(300MM ORGANIC MATTER OVER CULTIVATED BASE)
UPGRADE / REFRESH PLANTING
Carpobrotus glaucescens
Banksia 'Bush Candles'
Lomandra 'Lime Tuff'
Myoporum parvifolium
Westringia mundi

PROPOSED TREE
Banksia integrifolia

SANDSTONE BLOCK SEATING EDGE TO GARDEN BEDS.

NEW PAVEMENT AROUND EXISTING PAVILION
P1 - PAVEMENT TYPE 01 - TILE

EXISTING PAVILION TO BE PAINTED TO MATCH NEW CLUB HOUSE

NEW FURNITURE
2 X TABLE AND BENCH SETTINGS

PROPOSED SUBSTATION - REFER TO ARCHITECTS DOCUMENTATION

G1 - GARDEN PROFILE 01- GARDEN ON GRADE AND IRRIGATION EXTENT (DRIP IRRIGATION) 300MM SOIL DEPTH
(300MM ORGANIC MATTER OVER CULTIVATED BASE)
UPGRADE / REFRESH PLANTING
Carpobrotus glaucescens
Banksia 'Bush Candles'
Lomandra longifolia
Lomandra 'Lime Tuff'
Myoporum parvifolium
Westringia mundi
Rhagodia spinescens

NOT FOR CONSTRUCTION

REV:	DATE:	DOCUMENT STATUS/ AMENDMENTS
02	02.08.24	REVISED PRELIMINARY ISSUE
03	21.11.24	DSAP
04	07.02.25	FOR COORDINATION
05	20.02.25	DRAFT DA
06	04.04.25	FOR DA

1:200 @ A1
0 2 5 10 15m

NORTH

black beetle
Landscape Architecture and Design

Black Beetle pty ltd
Level 1, 1073 Pittwater Road, Collaroy NSW 2097
Tel: 0422 104 416
email: blackbeetle@blackbeetle.com.au

PROJECT
Long Reef Golf Club
Anzac Avenue
COLLAROY, NSW

DRAWING TITLE
Landscape Plan - MASTERPLAN

Drawn IK	Client: Long Reef Golf Club
L.Architect Authorised IK	Status: Development Application
Scale: 1:200 @ A1	

JOB NUMBER	DRAWING NUMBER / ISSUE
BB 1348	LA LP 002 / 06

Appendix 3: Tree Assessment Schedule

Tree No.	Species	DBH comb. (mm)	Height (m)	Radial Crown Spread (m)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Sign	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implication
1	*Araucaria heterophylla* (Norfolk Island Pine)	1020	25+	10	Good	Good	Medium (75mmø+) deadwood in low volumes. Mechanical damage to exposed surface roots.	Mature	15-40	High	Priority for Retention	12.2	3.4	Retain. Major encroachment. Use tree sensitive methods.
2	*Araucaria heterophylla* (Norfolk Island Pine)	1230	25+	10	Good	Good	Lifted to 6m. Pavement at base.	Mature	15-40	High	Priority for Retention	14.8	3.7	Retain. Major encroachment. Use tree sensitive methods.
3	*Phoenix canariensis* (Canary Island Date Palm)	550	15	4	Good	Good	Old spike damage on trunk.	Mature	15-40	Moderate	Consider for Retention	3.0	n/a	Remove.
4	*Phoenix canariensis* (Canary Island Date Palm)	560	15	4	Good	Good	Old spike damage on trunk.	Mature	15-40	Moderate	Consider for Retention	3.0	n/a	Remove.
5	*Phoenix canariensis* (Canary Island Date Palm)	580	15	4	Good	Good	Old spike damage on trunk.	Mature	15-40	Moderate	Consider for Retention	3.0	n/a	Retain. Minor encroachment.
6	*Cupaniopsis anacardioides* (Tuckeroo)	200 200	5	4	Good	Fair	Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Wind pruned. Previously failed at root plate, now appears stable.	Mature	5-15	Low	Consider for Removal	3.5	2.0	Retain. Major encroachment. Use tree sensitive methods.
7	*Phoenix canariensis* (Canary Island Date Palm)						DEAD							

Tree No.	Species	DBH comb. (mm)	Height (m)	Radial Crown Spread (m)	Health Rating	Structural Condition Rating	Comments	Age Class	ULE (years)	L/Sign	Retention Value	Radial TPZ (m)	Radial SRZ (m)	Implication
8	*Araucaria heterophylla (*Norfolk Island Pine)	1000	25+	10	Good	Good	Lifted to 7m.	Mature	15-40	High	Priority for Retention	12.0	3.4	Retain. No works within TPZ.
9	*Casuarina glauca* (Swamp She-Oak)	350	8	5	Fair	Good	Small (<25mmø) & medium (25-75mmø) deadwood in moderate volumes. Crown density 50-75%. Asymmetrical crown form from prevailing winds.	Mature	5-15	Moderate	Consider for Retention	4.2	2.2	Retain. No works within TPZ.
10	*Casuarina glauca* (Swamp She-Oak)	220	5	3	Good	Fair	Branch inclusions, minor. Rubbing branches, decay on top side of branch.	Mature	5-15	Low	Consider for Removal	2.6	1.8	Remove.
11	*Casuarina glauca* (Swamp She-Oak)	200 200 150	5	2	Fair	Good	Small (<25mmø) & medium (25-75mmø) deadwood in moderate volumes.	Mature	5-15	Low	Consider for Removal	4.0	2.1	Remove.
12	*Casuarina glauca* (Swamp She-Oak)	200 200 200	5	4	Fair	Good	Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Previously failed root plate, now appears stable.	Mature	5-15	Low	Consider for Removal	4.2	2.2	Remove.
13	*Leptospermum laevigatum* (Coastal Tea Tree)	200 200 100	5	4	Fair	Fair	Small (<25mmø) & medium (25-75mmø) deadwood in moderate volumes. Crown density 75-95%. Branch inclusions, some with partial failures. Wounds, various stages of decay. Lopped. Previously failed root plate, now appears stable.	Mature	5-15	Low	Consider for Removal	3.6	2.0	Remove.
14	*Cupaniopsis anacardioides* (Tuckeroo)	400	5	4	Good	Fair	Small (<25mmø) & medium (25-75mmø) deadwood in low volumes. Wind pruned. Branch inclusions, major. Lopped. Wounds, various stages of decay.	Mature	5-15	Low	Consider for Removal	4.8	2.3	Retain. Major encroachment. Use tree sensitive methods.

Appendix 4: Plates

Plate 1: Showing Tree 1

Plate 2: Showing Tree 2

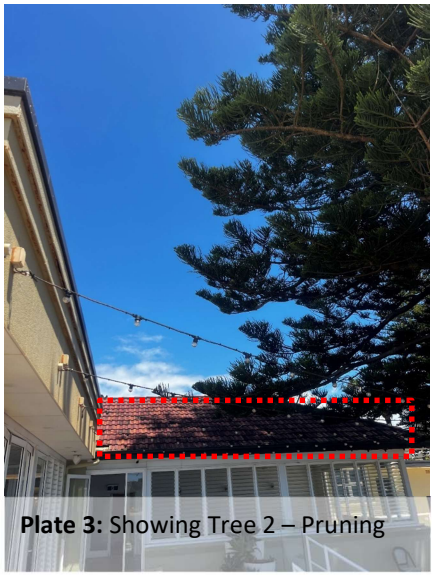

Plate 3: Showing Tree 2 – Pruning

Plate 4: Showing Tree 2 – Pruning

Plate 5: Showing Trees 3-5

Plate 6: Showing Tree 6

Plate 7: Showing Tree 7

Plate 8: Showing Tree 8

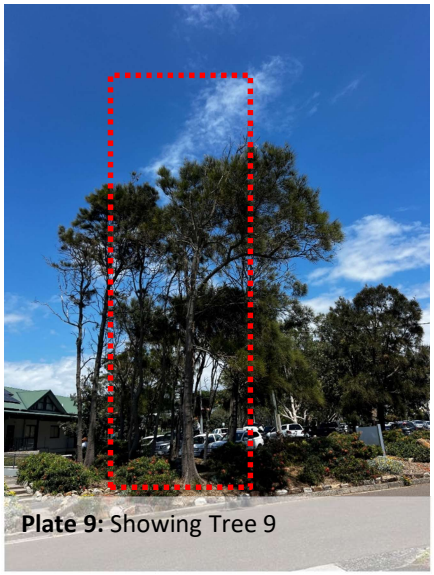

Plate 9: Showing Tree 9

Plate 10: Showing Trees 10 & 11

Plate 11: Showing Tree 12

Plate 12: Showing Tree 13

Plate 13: Showing Tree 14

Appendix 5: General Tree Protection Specification

1.0 Appointment of Project Arborist

A Project Arborist shall be engaged prior the commencement of work on-site and monitor compliance with the protection measures. The Project Arborist shall inspect the tree protection measures and Compliance Certification shall be prepared by the Project Arborist for review by the Principal Certifying Authority prior to the release of the Compliance Certificate.

The Project Arborist shall have a minimum qualification equivalent (using the Australian Qualifications Framework) of NSW TAFE Certificate Level 5 or above in Arboriculture.

1.1 Compliance

Contractors and site workers shall receive a copy of these specifications a minimum of 3 working days prior to commencing work on-site. Contractors and site workers undertaking works within the Tree Protection Zone shall sign the site log confirming they have read and understand these specifications, prior to undertaking works on-site.

The Project Arborist shall undertake regular site inspections and certify that the works are being undertaken in accordance with this specification.

Compliance Documentation shall be prepared by the Project Arborist following each site inspection. The Compliance Documentation shall include documentary evidence of compliance with the tree protection measures and methods as outlined within this Specification. Upon the completion of the works, a final assessment of the trees shall be undertaken by the Project Arborist and future recommended management strategies implemented as required.

1.2 Tree & Vegetation Removal

Tree removal works shall be undertaken in accordance with the *Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal Work (2016)* and other applicable codes and legislation.

Tree removal shall not damage the trees to be retained. Other vegetation to be removed within a TPZ shall be carefully lifted by hand/hand tools to avoid damaging roots (>25mmø) within the surrounding soil profile.

1.3 Tree Protection Zone

The trees to be retained shall be protected prior and during construction from activities that may result in an adverse effect on their health or structural condition. The area within the Tree Protection Zone (TPZ) shall exclude the following activities, unless otherwise stated: -

- Modification of existing soil levels, excavations and trenching
- Mechanical removal of vegetation
- Movement of natural rock
- Storage of materials, plant or equipment or erection of site sheds
- Affixing of signage or hoarding to the trees
- Preparation of building materials, refueling or disposal of waste materials and chemicals
- Lighting fires
- Movement of pedestrian or vehicular traffic
- Temporary or permanent location of services, or the works required for their installation
- Any other activities that may cause damage to the tree

NOTE: If access, encroachment or incursion into the TPZ is deemed essential, prior authorisation is required by the Project Arborist.

1.4 Tree Protection Fencing

TPZ fencing shall be installed at the perimeter of the TPZ. Refer The exact location of the fencing shall be confirmed through consultation between the Head Contractor/Project Manager and the Project Arborist prior to the commencement of works. Fencing may be setback to allow for demolition/construction access and for the installation of pavements only where appropriate ground protection is installed and approved by the Project Arborist.

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As a minimum, the Tree Protection Fence shall consist of 1.8m high wire mesh panels supported by concrete feet. Panels shall be fastened together and supported to prevent sideways movement. The tree shall not be damaged during the installation of the Tree Protection Fencing. Refer to Typical Tree Protection Details (3) **(Appendix 6)**.

1.5 Signage

Signs identifying the TPZ should be placed around the edge of the TPZ and be visible from within the development site. The lettering on the sign should comply with *Australian Standard - 1319 (1994) Safety signs for the occupational environment*. The signage shall be installed prior to the commencement of works on-site and shall be maintained in good condition for the duration of the development period.

1.6 Site Management

Materials, waste storage, and temporary services shall not be located within the TPZ.

1.7 Works within the Tree Protection Zones

In some cases works within the TPZ may be authorized by the determining authority. **These works shall be supervised by the Project Arborist**. When undertaking works within the TPZ, care should be taken to avoid damage to the tree's root system, trunks and lower branches.

1.8 Ground Protection

Ground protection shall be installed to any unfenced areas of the TPZ as required by the Project Arborist. Vehicular and machinery access shall be restricted to areas of existing pavement or from areas of temporary ground protection such as ground mats or steel road plates. Refer to Typical Tree Protection Details (3) **(Appendix 6).**

1.9 Trunk Protection

Trunk protection shall be installed as required by the Project Arborist by wrapping padding (either carpet underlay or 10mm thick jute geotextile mat) around the trunk and first order branches to a minimum height of 2m. Timber battens (90 x 45mm) spaced at 150mm centres shall be strapped together and placed over the padding. Timber battens must not be fixed to the trees. Refer to Typical Tree Protection Details (3) **(Appendix 6)**. Branch protection shall be installed as deemed necessary by the Project Arborist.

1.10 Structure & Pavement Demolition

Demolition of existing structures/pavement within the TPZ shall be supervised by the Project Arborist. Machinery is to be excluded from the TPZ unless operating from the existing slabs, pavements or areas of ground protection (refer to Section 1.8). Machinery shall work in conjunction with a spotter to guide the machinery operator and ensure that the ground surface/tree roots beneath the structure/pavement are not disturbed/damaged by demolition works. Machinery should not contact any part of a tree. Wherever possible, footings or elements below grade shall be retained to minimise disturbance to roots. The Project Arborist shall assess any inground structures within the SRZ prior to their removal and determine if these structures may be contributing to the stability of the tree. Where required, inground structures should be retained in situ.

Small structures to be demolished within a TPZ shall be carefully broken up in small sections using a hand-operated pneumatic/electric breaker and waste material removed by hand/hand tools. Large structures to be demolished within the TPZ shall be undertaken within the footprint of the existing structure ('top down, pull back') and away from the trees.

When removing slab/pavement sections within TPZ, machinery shall work backwards out of the TPZ to ensure machinery remains on un-demolished sections of slab at all times. Existing sub-base materials within a TPZ shall remain in-situ and (and reused) where possible. If the existing sub-base is to be removed, these works shall be undertaken by hand/hand tools ensuring that tree roots are retained and protected.

If roots (>25mmø) are encountered during the demolition works, these roots must be retained in an undamaged condition and advice sought from the Project Arborist. Exposed roots shall be protected from direct sunlight, drying out and extremes of temperature by covering with a 10mm thick jute geotextile fabric. The geotextile fabric shall be kept in a damp condition at all times. Where the Project Arborist determines that the tree is using underground elements (i.e footings, pipes, rocks etc.) for support, these elements shall be left in-situ.

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1.11 Pavement/Bench Installation

Installation of the pavements and sub-base within the TPZ shall be supervised by the Project Arborist. The new surfaces and sub-base materials shall be placed at (for areas of existing pavement only) or above grade to minimise excavations and retain roots (unless prior root mapping results show above sensitive construction to be unnecessary).

If roots (>25mmø) are encountered during the installation of the new sub-base and surfaces, these roots must be retained in an undamaged condition and advice sought from the Project Arborist. Adjustment of final levels and design shall remain flexible to enable the retention of structural roots (>25mmø) where deemed necessary by the Project Arborist. Compaction of the sub-base shall be consolidated with a pedestrian-operated plate compactor only. If possible, the pavement material shall be permeable.

Where required, the new bench within the TPZ should be modified to bridge tree roots (>25mmø) unless root pruning is approved and undertaken by the Project Arborist.

1.12 Underground Services

Underground service installation within the TPZ shall be supervised by the Project Arborist. The installation of underground services shall be located outside of the TPZ. Where this is not possible, they shall be installed using tree sensitive excavation methods (hand/hydrovac/airspade) with the services installed around/below roots (>25mmø, or as determined by the Project Arborist). Excavation using compact machinery fitted with a flat bladed bucket is permissible where approved by the Project Arborist. Excavation using compact machinery should be undertaken in small increments, guided by a spotter who is to look for and prevent damage to roots (>25mmø).

Alternatively, boring methods may be used for underground service installation where the obvert level (highest interior level of pipe) is greater than 1200mm below existing grade. Excavations for starting and receiving pits for boring equipment shall be located outside of the TPZ areas or located to avoid roots (>25mmø) as deemed necessary by the Project Arborist. OSD tanks (where required) should be located outside of the TPZ areas.

1.13 Excavations, Root Protection & Root Pruning

Excavations and root pruning within the TPZ shall be supervised by the Project Arborist. Excavations within the TPZ shall be avoided wherever possible.

Excavations within the TPZ shall be undertaken by hand or using hydro vacuum excavation methods (or similar approved device) to protect tree roots. If there is any delay between excavation works and backfilling, exposed roots shall be protected from direct sunlight, drying out and extremes of temperature by covering with a 10mm thick jute mat. The mat shall be kept in a damp condition at all times.

No over-excavation, battering or benching shall be undertaken beyond the footprint of any structure unless approved by the Project Arborist. Hand excavation and root pruning shall be undertaken along the excavation line prior to the commencement of mechanical excavation to prevent tearing and shattering damage to the roots from excavation equipment.

Roots (>25mmø) shall be pruned by the Project Arborist only. Roots (<25mmø) may be pruned by the Principal Contractor. Root pruning shall be undertaken with clean, sharp secateurs or a pruning saw to ensure a smooth wound face, free from tears. Damaged roots shall be pruned behind the damaged tissues with the final cut made to an undamaged part of the root.

1.14 Landscape Planting

Planting of new trees, shrubs and ground covers and the installation of turf within the TPZ areas shall be undertaken using hand tools and roots (>25mmø) shall be protected. No mechanical cultivation/ripping of soils shall be undertaken within TPZ areas.

Landscape planting shall be completed in the final stage of the development works and tree protection fencing and trunk protection shall remain in place until these works are due to commence.

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Appendix 6: Typical Tree Protection Details

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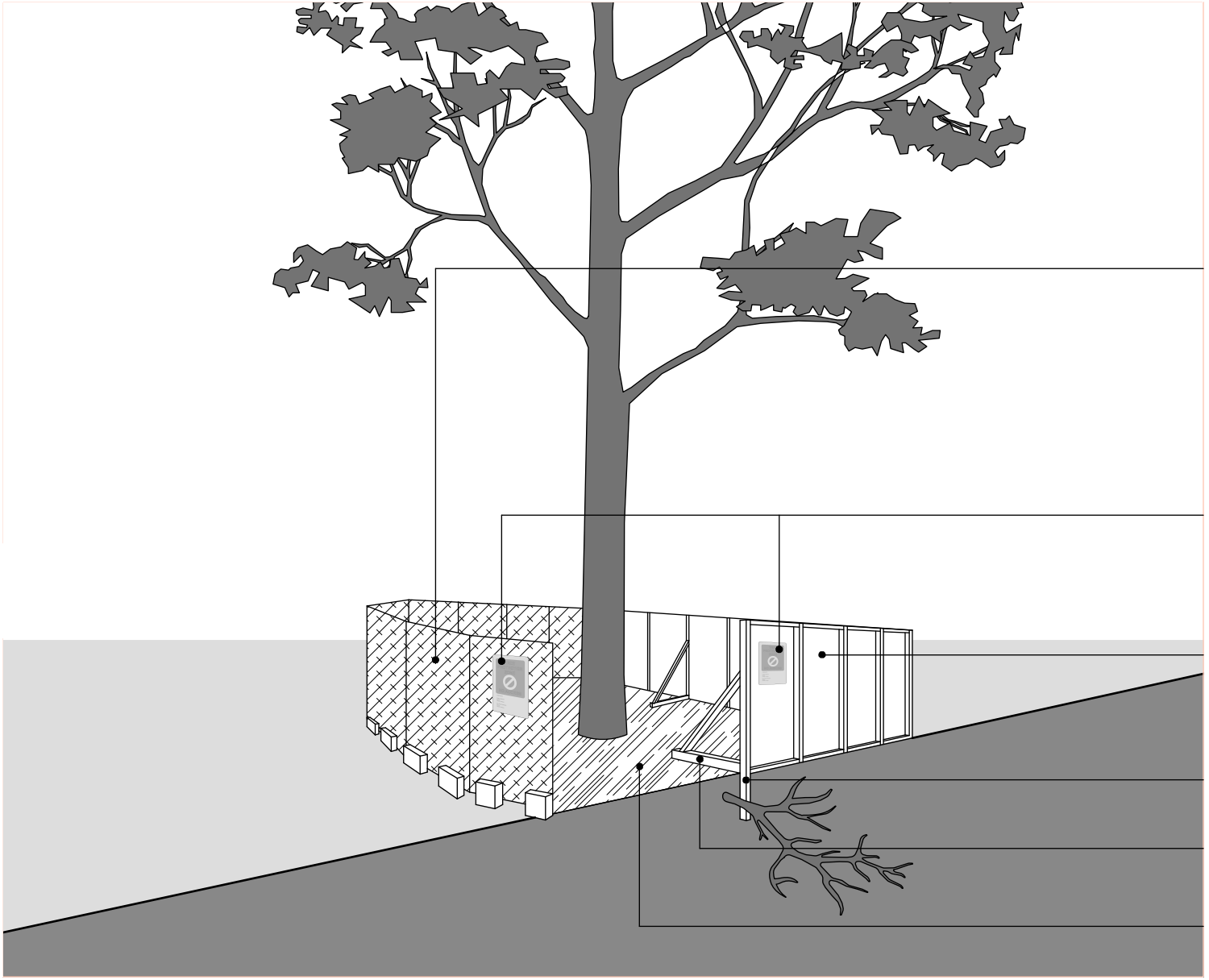


Note:
No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.

Option 1 - Fencing
1.8m high chain wire mesh panels with shade cloth attached (if required), held in place with concrete feet.

Tree Protection Zone (TPZ) sign

Option 2 - Fencing
Plywood or wooden panel paling fence. This type of fencing material also prevents building materials or soil entering the TPZ.

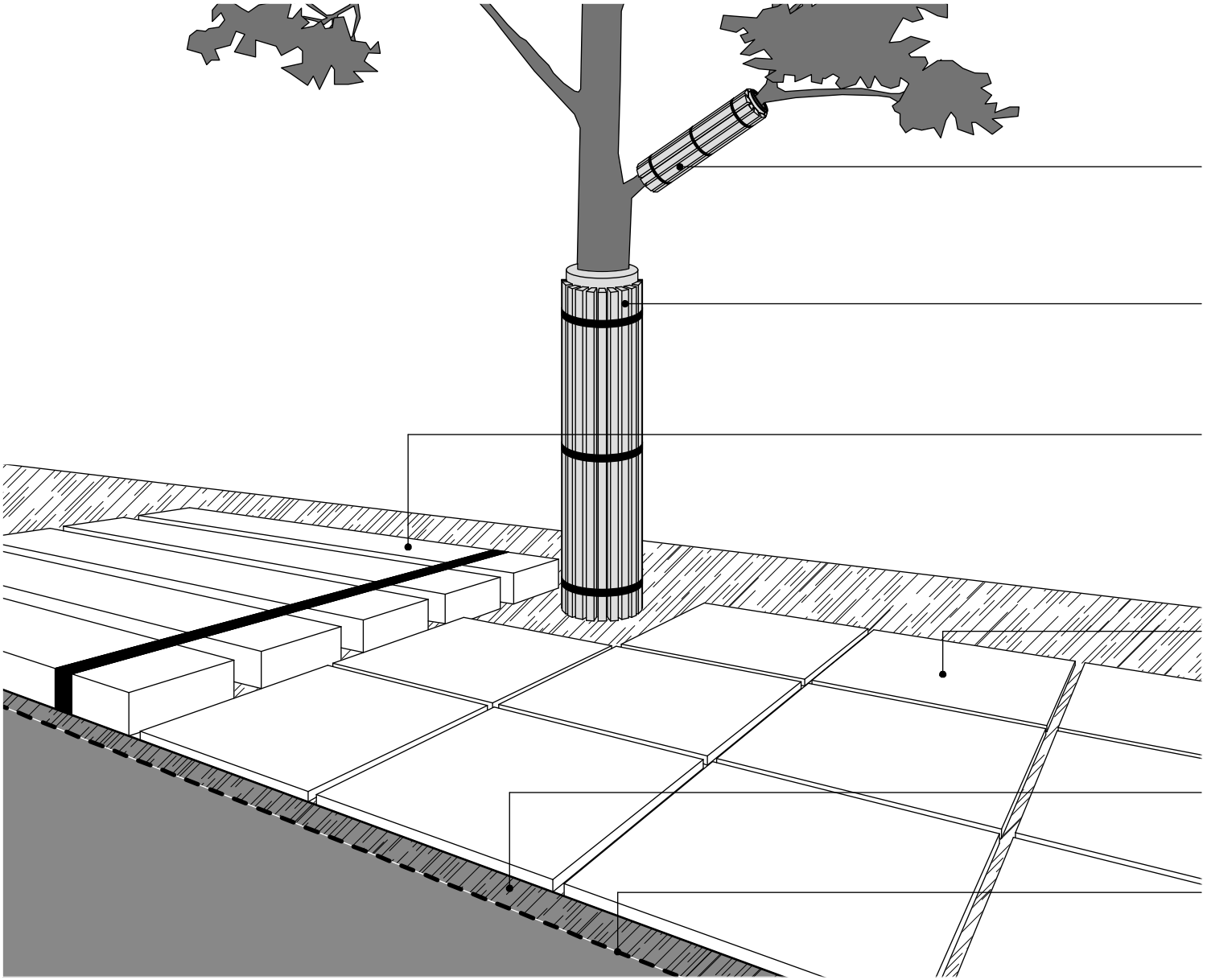
Installation of supports should avoid damaging roots.

Bracing is permissible within the TPZ.

Maximum 100mm and minimum 50mm depth mulch or aggregate layer installed across surface of TPZ.

03 Tree Protection Fencing

Not to Scale



Branch Protection - use boards and padding to prevent damage to bark on branch. Boards are to be strapped, not screwed or nailed to the branch.

Trunk Protection - use boards and padding to prevent damage to bark (minimum 2m). Boards are to be strapped, not screwed or nailed to the trunk.

Ground Protection - use device strapped over mulch or aggregate layer. Ground protection device should be of a suitable thickness to prevent soil compaction and root damage.

Steel plates (or approved equivalent) with or without mulch or aggregate layer below.

Maximum 100mm and minimum 50mm depth mulch or aggregate layer.

Geotextile fabric underneath mulch or aggregate layer.

04 Examples of Branch, Trunk and Ground Protection

Not to Scale