Arboricultural Impact Assessment Report

10 Beverley Place Curl Curl

Version 1

Prepared For:

Angus Doak, Refine Living

Date:

27th February 2025

Document Control

Document Title:	10 Beverley Place AIA
Report type:	Arboricultural Impact Assessment Report
Prepared for:	Angus Doak Refine Living
Contact details:	E | angus@refineliving.com.au P | 0402 179 195
Prepared by:	Daniel Leonard Senior Arborist AQF level 5 TRAQ Qualified
Contact details:	Daniel.leonard@heartwood.services M | 0402 992 578
Version:	1

Contents

Table of Figures

1. Background

1.1. Introduction

Daniel Leonard (Author) was commissioned by Angus Doak of Refine Living (Client) to provide Arboricultural advice on the potential impact the proposed development will have on existing trees at 10 Beverly Place Curl Curl (the site).

The Client requested the Author compile an Arboricultural Impact Assessment Report (AIA) on their behalf on the 20th February 2025. This assessment will include:

- The identification of all trees that have the potential to be impacted by the building proposal,
- A ground based Visual Tree Assessment (VTA) of all trees potentially affected by the building proposal,
- A retention rating for all trees potentially affected by the building proposal,
- Any encroachments to the existing trees and their ability to be retained,
- Any recommendations for pruning or removal, and a
- Tree Protection Plan (TPP) for trees to be retained.

1.2. Purpose of this report

This report provides an analysis of the impact the proposed development may have on existing trees on the site and will provide specifications for the effective management of the existing trees including tree protection measures and supervision of works.

The primary purpose of the report is to:

- identify which trees can be retained under the building proposal,
- provide evidence to Council that those trees will remain viable and be protected prior to, during and after construction.

1.3. The Proposal

The site consists of a triple-story residence with a driveway and a garage. The block slopes relatively steeply from the rear of the property towards the ocean. The site consists mostly of a rocky outcrop. It is surrounded by similar properties and is not listed as a heritage item (see attached survey plans).

The proposal is to demolish the existing structure and construct 3 multi story semidetached homes on the site.

1.4. Subject Trees

There are a total of 15 prescribed trees on or near the site.

Of these 15 trees 9 are Strelitzia Nicolai with a low retention value. 7 Robinia pseudoacacia that do not meet the height requirements of a prescribed tree have also been included in the report as they are located on the neighboring property and will need to be retained and protected. These trees will be the focus of this report.

There are numerous shrubs and small trees located on the site that do not meet Northern Beaches Council's definition of a prescribed tree. These trees are not protected and have not been included in this report.

Specific details such as observations, species, and measurements on each tree can be found in Section 3.4 Assessment Results.

Numbered tree locations can be found in *Figure 3*.

1.5. Documents Referenced

- (IACA) Significance of a Tree Assessment Rating System (STARS),
- AS4970 - 2009 Protection of trees on development Sites,
- Heritage.nsw.gov.au,
- Site analysis and Survey plan provided by the Client.
- Northern Beaches Council DCP.

2. Method

2.1. Assessment Method

The subject trees were assessed in accordance with a stage one limited visual tree assessment as formulated by *Mattheck & Breloer (1994),* and practices consistent with modern arboriculture.

This method is subject to the following limitations:

- Tree heights and canopy widths were estimated unless stated otherwise,
- Tree identification was based on the broad taxonomical features present, available, and visible from the ground at the time of the assessment unless stated otherwise,
- A complete visual assessment was not undertaken on trees that were not easily accessible or located in restricted areas,
- The subject trees were assessed from ground level without the use of any invasive diagnostic tools. The following non-invasive tools may have been used; binoculars, probe, sounding hammer, diameter tape, electronic data collection device.

2.2. Retention Value

The retention value of a tree or group of trees is determined using a combination of environmental, cultural physiological and social values.

- **Low:** These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.
- **Medium:** These trees are moderately important for retention. Their removal should only be considered if they are adversely affecting the proposed building/ works and all other alternatives have been considered and exhausted.
- **High:** These trees are considered important for retention and should be retained and protected. Design modification or relocation of buildings should be considered to accommodate the setbacks as prescribed by the Australian standard *AS4970 Protection of trees on development sites.*

This tree retention assessment has been undertaken in accordance with the Institute of Australian Consulting Arboriculturists (IACA) Significance of a Tree Assessment Rating System (STARS). The System uses a scale of High, Medium, and Low significance in the landscape. Once the landscape significance of a tree has been defined, the retention value can be determined. Each tree must meet a minimum of three assessment criteria in order to be classified within a category. Further details and the assessment criteria can be found in Appendix 3.

2.3. Tree Protection Zones

The most important consideration for the successful retention of trees is to ensure appropriate crown and root area of the trees remain unaffected during construction/works thus allowing them to continue to grow. This requires the allocation of Tree Protection Zones (TPZ) for all trees to be retained within the construction footprint.

As detailed in the Australian Standard for Protection of Trees on Development Sites (AS4970 – 2009), a TPZ. defines an area in which construction activity is either avoided, or as a minimum controlled, in order to successfully retain the tree/s.

The Structural Root Zone (SRZ) represents the minimum area required to maintain tree stability without consideration to the ongoing health of the tree. Severing roots within the SRZ that are >50mm is not recommended as it may lead to the decline or structural failure of the tree/s

All TPZ measurements are provided in the tree assessment data in *table 2.*

Figure 1: TPZ and SRZ cross section

2.4. Encroachment Assessment

Encroachment into the TPZ is generally broken into the three categories listed below:

- **No Encroachment:** No likely foreseeable encroachment within the TPZ,
- **Minor Encroachment (<10%):** If the proposed encroachment within the TPZ is less than 10% and there is no encroachment into the SRZ then detailed root investigations should not be required. The area that has been encroached upon should be compensated for elsewhere and be contiguous with the TPZ,
- **Major Encroachment (>10%):** The project arborist must be able to demonstrate that the subject tree/s remain viable if the encroachment is greater than 10%. The area that has been encroached upon should be compensated for elsewhere and be contiguous with the TPZ,

Figure 2: Encroachment zones

2.5. Mitigation Measures

Any encroachment within a TPZ must be compensated for to ensure the impacts of the encroachment are mitigated. The amount of compensation required increases as the level of encroachment increases.

The following table outlines the levels of encroachment and the corresponding mitigation measures that are required.

Encroachment	Mitigation Measures
No Encroachment (0%)	No mitigation measures required
Minor Encroachment (<10%)	A detailed noninvasive root investigation should not be required under most circumstances, The area that has been lost must be compensated for elsewhere, contiguous with the TPZ, and Any roots that are cut must be done so with a sharp saw to ensure a clean cut.
Major Encroachment (>10%)	A detailed noninvasive root investigation should be carried out using approved methods such as air spade, Vacuum Excavator, or hand digging. The Project Arborist must be onsite to determine which roots may be severed, The area that has been lost must be compensated for elsewhere, contiguous with the TPZ, The project arborist must be able to demonstrate the tree/s would remain viable, and consideration should be given to, size, age, species, root diameter, location and species.

Table 1: encroachment

2.6. Tree Protection Plan

A detailed site-specific Tree Protection Plan (TPP) is to be prepared by an AQF Level 5 Arboricultural Consultant and submitted for approval to the nominated certifier prior to issue of the Construction Certificate. The TPP is to be prepared in accordance with the principles and specifications identified in AS4970 - 2009 Protection of trees on development sites and is to include, but not be limited to the following:

- A site plan showing locations of proposed tree protection fencing, trunk and ground protection within the identified Tree Protection Zones (TPZ) of trees identified for retention,
- Tree Protection fences and other protection methods such as trunk protection,
- Specifications for any proposed pruning to above ground parts of the tree,
- Tree root protection specifications for excavations or soil fill within the TPZ,
- Hold points and site compliance reporting schedules if applicable, and
- Ground protection for vehicular access to limit compaction if required.

The Tree Protection Plan can be found in the appendix of this report.

3. Results

The results were calculated by overlaying the TPZ radius onto the survey plans provided. The results can be found in *Table 2*.

Any discrepancies to the Survey Plans may result in inaccuracies in the TPZ encroachment calculation.

Trees 7, 8 and 12-16 will have no encroachment into their TPZs.

3.1. Minor Encroachment (<10%)

The following trees have minor encroachment of less than 10%:

- Trees 6, 9, 10 and 11 will have a minor encroachment of around <10% of the TPZ due to the proposed driveway, pool and building.

3.2. Major Encroachment (>10%)

The following trees have a major encroachment of more than 10%:

- Trees 1, 2, 3, 4 and 5 will have a major encroachment between 12-20%. Tree sensitive excavation methods must be used when excavating around these trees.

3.3. Trees unable or unworthy of retention

All prescribed trees are able to be retained and protected throughout the development.

3.4. Assessment Results

Arboricultural Impact Assessment - 10 Beverley Place Curl Curl																Project Name:
Results																
Survey Number	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16
Number of trees	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	2
Genus	Robinia	Robinia	Robinia	Robinia	Robinia	Robinia	Robinia	Cupaniopsis	Cupaniopsis	Cupaniopsis	Cupaniopsis	Howea	Howea	Plumeria	Strelitzia	Strelitzia
Species	pseudoacacia	pseudoacacia	pseudoacacia	pseudoacacia	pseudoacacia	pseudoacacia	pseudoacacia	anacardioides	anacardioides	anacardioides	anacardioides	forsteriana	forsteriana	acutifolia	nicolai	nicolai
Common Name	Black Locust	Black Locust	Black Locust	Black Locust	Black Locust	Black Locust	Black Locust	Tuckeroo	Tuckeroo	Tuckeroo	Tuckeroo	Kentia Palm	Kentia Palm	Frangipani	Giand Bird of Paradise	Giand Bird of Paradise
Height (M)	3	3	3	3	3	3	2	6	7	6	7	6	6	3	5	5
Canopy Spread (M)	2	2	2	2	2	2	2	5	6	4	5	5	5	4	2	2
Age Class	Semi Mature	Semi Mature	Semi Mature	Semi Mature	Semi Mature	Semi Mature	Semi Mature	Mature	Mature	Mature	Mature	Mature	Mature	Mature	Mature	Mature
DBH (CM)	18	18	18	18	18	18	18	22	25	22	25	20	20	18	15	15
Health	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Good	Good	Good	Good	Good	Good	Good	Good	Good
Structural condition	Poor	Poor	Poor	Poor	Poor	Poor	Poor	Fair	Fair	Fair	Fair	Good	Good	Good	Good	Good
Defects	pruned into a ball	pruned into a ball	pruned into a ball	pruned into a ball	pruned into a ball	pruned into a ball	pruned into a ball									
Significance	Low	Low	Low	Low	Low	Low	Low	Medium	Medium	Medium	Medium	Medium	Medium	Low	Low	Low
Useful Life Expactancy	Short 5-15Y	Short 5-15Y	Short 5-15Y	Short 5-15Y	Short 5-15Y	Short 5-15Y	Short 5-15Y	Medium 15-40Y	Medium 15-40Y	Medium 15-40Y	Medium 15-40Y	Medium 15-40Y	Medium 15-40Y	Medium 15-40Y	Short 5-15Y	Short 5-15Y
Retention Priority	Consider for removal	Consider for removal	Consider for removal	Consider for removal	Consider for removal	Consider for removal	Consider for removal	Consider for retention	Consider for retention	Consider for retention	Consider for retention	Consider for retention	Consider for retention	Consider for retention	Consider for removal	Consider for removal
TPZ Radius (M)	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.64	3	2.64	3	2.4	2.4	2.16	2	2
SRZ Radius (M)	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.8	1.8	1.8	1.8	1.7	1.7	1.6	1.5	1.5
Encroachment (%)	14.2	12.0	13.3	18.4	19.6	3.8	0.0	0.0	4.7	3.3	5.5	0.0	0.0	0.0	0.0	0.0
Comments	neighbouring tree	neighbouring tree	neighbouring tree	neighbouring tree	neighbouring tree	neighbouring tree	neighbouring tree	neighbouring tree	neighbouring tree	neighbouring tree	neighbouring tree	neighbouring tree	neighbouring tree		9 separate plants growing in the same garden bed.	2 separate plants growing in the same garden bed.

Table 2 Results from site survey

4. Specifications

The following specifications are required if the proposed development is to proceed:

A detailed site-specific Tree Protection Plan (TPP) is to be prepared by an AQF Level 5 Arboricultural Consultant along with an AIA and submitted to the nominated certifier for approval (*See Appendix 2 for TPP*).

- Excavation around trees 1-5 must be undertaken using tree sensitive methods such as hand or vacuum excavation, any roots uncovered larger than 25mm must be referred to the project arborist.
- The Project Arborist must be informed prior to any further unplanned encroachment within the TPZs.
- The area within the tree protection fencing should be mulched with good quality leaf mulch to a depth of 100mm prior to construction to promote better tree health during the construction period.
- Ensuring that the soil moisture content stays above 50% within the TPZs will greatly benefit the trees to be retained on the site and will help offset the impacts of construction.

4.1. Tree removals

All prescribed trees can be retained and protected.

Appendix 1 – Tree locations

Below is an image of the tree locations showing the TPZ and encroachments.

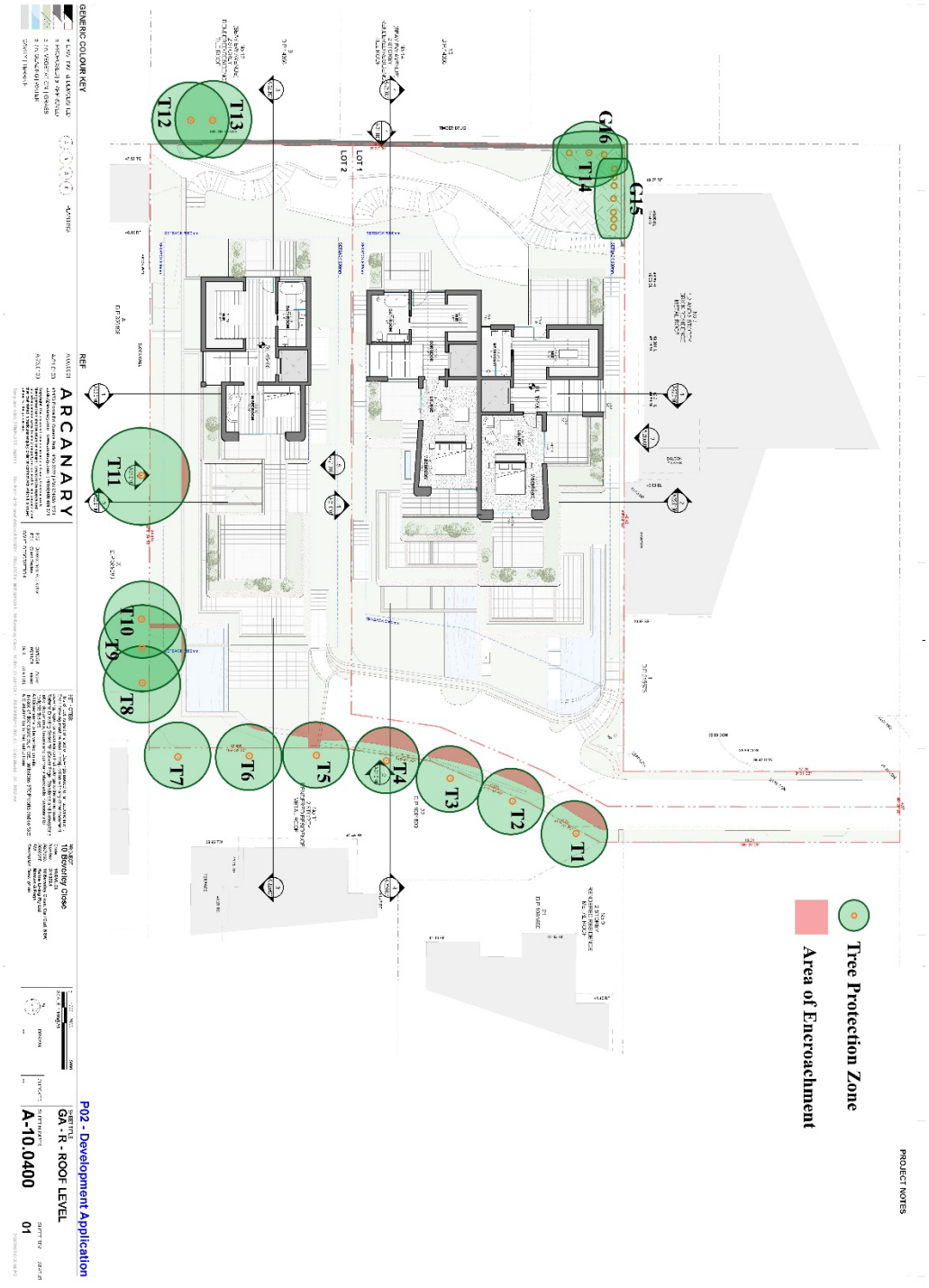

Figure 3: Showing the TPZ and area of encroachment

Appendix 2 – Tree Protection Plan

Specifications

The following specifications are required if the proposed development is to proceed:

- Excavation around trees 1-5 must be undertaken using tree sensitive methods such as hand or vacuum excavation, any roots uncovered larger than 25mm must be referred to the project arborist.
- The Project Arborist must be informed prior to any further unplanned encroachment within the TPZs.
- The area within the tree protection fencing should be mulched with good quality leaf mulch to a depth of 100mm prior to construction to promote better tree health during the construction period.
- Ensuring that the soil moisture content stays above 50% within the TPZs will greatly benefit the trees to be retained on the site and will help offset the impacts of construction.

Tree Protection Fencing

Tree protection fencing must be established in the locations shown in *Figure 6*. Existing fencing, site hoarding or structures (such as a wall or building) may be used as tree protection fencing, providing the TPZ remains isolated from construction footprint.

Tree protection fencing must be installed prior to site establishment and remain intact until completion of works. Once erected, protective fencing must not be removed or altered without the approval of the project arborist.

Tree protection fencing shall be:

- Enclosed to the full extent of the TPZ (or as specified in the Specifications and Tree Protection Plan).
- Temporary mesh panel fencing (minimum height 1.8m).
- Certified and inspected by the project arborist.
- Installed prior to the commencement of works.
- Prominently signposted with 300mm x 450mm boards stating, “NO ACCESS - TREE PROTECTION ZONE”.

If tree protection fencing cannot be installed due to sloping or uneven ground, tree protection barriers must be installed as an alternative.

Specifications for tree protection barriers are as follows:

- Star pickets spaced at 2m intervals,
- Connected by a continuous high-visibility barrier/hazard mesh.
- Maintained at a minimum height of 1m.

Where approved works are required within the TPZ, fencing may be setback to provide construction access. Trunk, branch and ground protection shall be installed and must comply with AS 4970-2009, Protection of Trees on Development Sites. Any additional construction activities within the TPZ of the subject trees must be assessed and approved by the Project Arborist.

TPZ Fencing Plan

Below is an image of the Fencing plan.

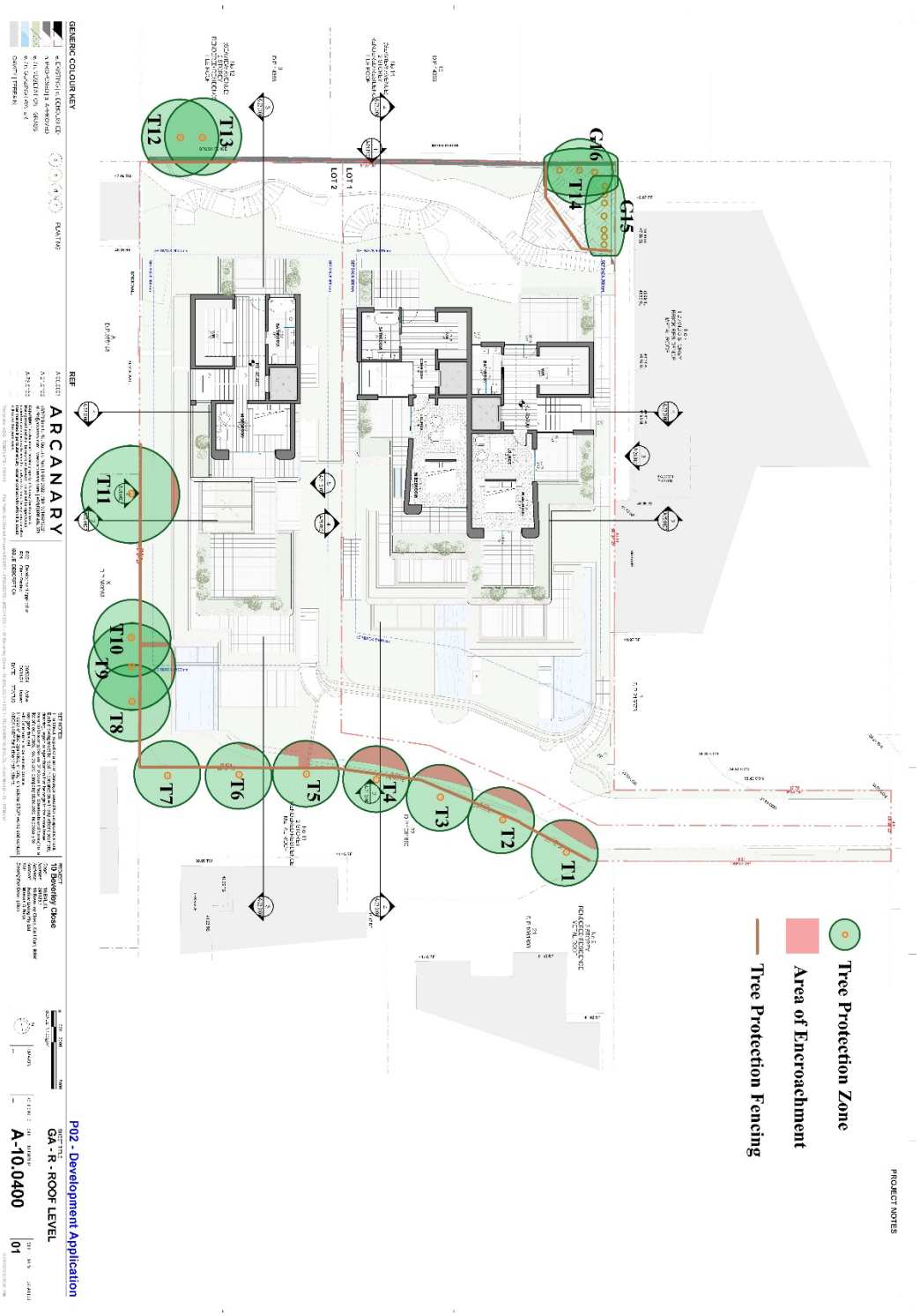

Figure 4: Fencing Plan - Fence in brown

Trunk protection

Where the provision of tree protection fencing is impractical or must be temporarily removed, trunk protection shall be installed to avoid accidental mechanical damage.

Specifications for trunk protection are as follows:

- A thick layer of carpet underfelt, geotextile fabric or similar wrapped around the trunk to a minimum height of 2m.
- 1.8m lengths of softwood timbers aligned vertically and spaced evenly around the trunk (with a small gap of approximately 50mm between the timbers).
- The timbers must be secured using galvanized hoop strap.

The timbers shall be wrapped around the trunk but not fixed to the tree, as this will cause injury/damage to the tree.

Ground protection

If temporary access for vehicles, plant or machinery is required within the TPZ, ground protection shall be installed. The purpose of ground protection is to prevent root damage and soil compaction within the TPZ. Where possible, areas of existing pavement shall be used as ground protection.

Specifications for light traffic access (<3.5 tonne) are as follows:

- Permeable membrane such as geotextile fabric.
- Layer of mulch or crushed rock (at minimum depth of 100mm)

Specifications for heavy traffic access (>3.5 tonne) are as follows:

- Permeable membrane such as geotextile fabric.
- Layer of lightly compacted road base (at minimum depth of 200mm)
- Geotextile fabric shall extend a minimum of 300mm beyond the edge of the road base.

Pedestrian, vehicular and machinery access within the TPZ shall be restricted solely to areas where ground protection has been installed.

Excavations

All approved excavations (including root investigations) within the TPZ must be carried out using tree sensitive methods under supervision of the Project Arborist. These methods may include:

- Manual excavation (hand tools).
- Air spade.
- Hydro-vacuum excavations (sucker-truck).

Where approved by the Project Arborist, excavations using compact machinery fitted with a flat bladed bucket is permissible. Excavations using compact machinery shall be undertaking in small increments and guided by the Project Arborist who is to look for and prevent root damage to roots >50mm in diameter.

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 mapping shall be undertaken along excavation lines within the TPZ prior to the commencement of mechanical excavation (to prevent tearing and shattering of roots from excavation equipment). Any conflicting roots (>50mm in diameter) shall be pruned using clean, sharp secateurs or a pruning saw to ensure a clean cut free from tears. All root pruning must be documented and carried out by the project arborist.

Underground services

All underground services should be routed outside of the TPZ. If underground services need to be installed within the TPZ, they must be installed using tree sensitive excavation methods under supervision of the Project Arborist.

Alternatively, boring methods such as horizontal directional drilling (HDD) may be used for underground service installation, providing the installation is at minimum depth of 800mm below grade. Excavations for entry/exit pits must be located outside the TPZ.

Site Inspections

In accordance with the Australian Standard, *AS 4970-2009, Protection of Trees on Development Sites*, inspections must be conducted by the Project Arborist at the following key project stages:

- Prior to any work commencing on-site (including demolition, earthworks or site clearing) and following installation of tree protection.
- During any excavations, building works and any other activities carried out within the TPZ of any tree to be retained & protected.
- Following completion of the building works.

It shall be the responsibility of the Project Manager to notify the Project Arborist prior to any works within the TPZ, of any protected tree at a minimum of 48 hours' notice. To ensure the Tree Protection Plan is implemented, hold points have been specified in the schedule of work *(Table 4).*

Schedule of Work

Hold Point	Instruction
Pre - Construction Works	Tree protection (for trees that will be retained) shall be installed prior to demolition and site establishment, this may include mulching of areas within the TPZ. Project Arborist shall inspect and certify tree protection.
During Construction works	Project Arborist to supervise and document all works carried out within the TPZ of trees to be retained.
Post Construction Works	Inspection of trees by Project Arborist after all major construction has ceased, following the removal of tree protection measures.

Table 3: Hold points

Appendix 3 – STARS Retention Rating Method

Useful Life Expectancy	Tree Significance: High	Medium	Low		
Long >40 years					
Medium 15-40 years					
Short <1-15 years					
Dead					

Legend for Matrix Assessment	
	Priority for retention (High): These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 Protection of trees on development sites. Tree sensitive construction measures must be implemented if works are to proceed within the Tree Protection Zone.
	Consider for retention (Medium): These trees may be retained and protected. These are considered less critical; however, their retention should remain priority with the removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.
	Consider for removal (Low): These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.
	Consider for removal (Low): These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.

Reference

IACA, 2010, IACA Significance of a Tree, Assessment Rating System (STARS)
Institute of Australian Consulting Arboriculturists
Australia, www.iaca.org.au

Appendix 4 – Photos of the trees

Figure 5: Trees 1-7

Figure 6: Trees 8-10

Figure 7: Tree 11

Figure 8: Trees 12-13.

Figure 9: Tree 14

Figure 10: Groups 15-16