

Arboricultural Impact Assessment



SITE ADDRESS
30 FAIRLIGHT STREET
FAIRLIGHT NSW 2094

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1 Introduction

1.1 Brief

- 1.1.1 This Arboricultural Impact Assessment (AIA) was prepared by Chantalle Hughes of Treeism Arboricultural Services. This report was commissioned by Mr Aaron Hatch of Adjani Pty Ltd, owner of the subject site. The site is identified as Lot 50 in DP 705739 and is known as 30 Fairlight Street, Fairlight, New South Wales.
- 1.1.2 The purpose of this report is to identify the species of each assessed tree, assess their vigour, condition, landscape prominence and ascribe a Retention Value to each tree.
- 1.1.3 The Structural Root Zone (SRZ) and the Tree Protection Zone (TPZ) of each tree is established using the formula provided within the Australian Standard 4970-2009 Protection of trees on development sites (AS4970).
- 1.1.4 This report aims to provide guidelines for tree protection and maintenance during the alterations and additions.
- 1.1.5 Care has been taken to obtain all information from reliable sources. All data has been verified as far as possible; however, I can neither guarantee nor be responsible for the accuracy of information provided by others.
- 1.1.6 This report is not intended to be a comprehensive tree risk assessment; however, the report may make recommendations, where appropriate, for further assessment, treatment or testing of trees where potential structural problems have been identified, or where below ground investigation may be required.
- 1.1.7 This AIA is not intended as an assessment of any impacts on the trees by any proposed future development of the site.

1.2 Methodology

- 1.2.1 Ground level, visual tree assessments* or limited VTA (e.g. where access was limited), of forty (40) trees were completed by the author of this report on 6th August 2021. Inspection details of these trees are provided in Appendix 5 —Schedule of Assessed Trees.
- 1.2.2 The tree heights were visually estimated or measured using a Nikon ForestryPro, unless otherwise noted in Appendix 5, the trunk Diameter at Breast Height were measured at 1.4 metres above ground level (DBH) using a diameter tape unless indicated otherwise. Tree canopy spreads were stepped out with field observations written down, and photographs of the site and trees were taken using an iPhone SE.
- 1.2.3 No aerial inspections, root mapping or woody tissue testing were undertaken as part of this tree assessment.
- 1.2.4 Information contained in this report only reflects the condition of the trees at the time of inspection. Trees are dynamic, living things which can be subject to change without notice in certain circumstances.
- 1.2.5 Plans and documents referenced for the preparation of this report include:
 - AS4970-2009 Protection of trees on development sites, Standards Australia.
 - AS4373-2007 Pruning of Amenity Trees, Standards Australia.

* Visual Tree Assessment (VTA) is a procedure of defect analysis developed by Mattheck and Breloer (1994) that uses the growth response and form of trees to detect defects.

- Part 3 Section 3.3.2 Preservation of Trees or Bushland Vegetation Manly Development Control Plan (MDCP) 2013.
- Survey Plan, reference no. 6348-DET, Sheet no. B1, authored by Usher and Company Surveying and Land Development Consultants, dated 31 March 2021.
- Architectural Plans, Project no. 00012781, Revision 1, Drawing no's. DA200-DA204, DA300-DA301 and DA400, authored by DKO Architecture (NSW) Pty Ltd, dated 15 July 2021.

- 1.2.6 This AIA takes account the State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 'Vegetation SEPP', and Part 3 Section 3.3.2 Preservation of Trees or Bushland Vegetation Manly Development Control Plan (MDCP) 2013.
- 1.2.7 The subject trees are shown on marked-up excerpt of the Survey Plan. This marked-up plan is attached as Appendix 7—Tree Location Plan.

2 Observations and Discussion

2.1 Assessed Trees

- 2.1.1 Forty (40) trees (prescribed and non-prescribed) were assessed or identified and are included in this report. Details of these are included in the Schedule of Assessed Trees—Appendix 5.
- 2.1.2 **Tree numbers** — of the forty (40) assessed trees the following is noted:
- One (1) tree is located adjacent to the subject site—Tree 37.
 - One (1) tree is located partially on the subject site and on neighbouring property—Tree 27.
 - Thirty-eight (38) trees are located within the subject site—Tree 1, Tree 1A, Trees 2-4, Tree 4A, Trees 5-12, Tree 12A, Trees 13-26 and Trees 28-36.
- 2.1.3 **Prescribed or non-prescribed** — Of the forty (40) assessed trees the following is noted:
- Five (5) are prescribed (protected trees) —Tree 13, Tree 16, Tree 17, Tree 25 and Tree 37.
 - Whilst Tree 27 is a non-prescribed species, it is partially located on neighbouring property and would require protection.
 - Thirty-four (34) assessed trees are non-prescribed (exempt) —Tree 1, Tree 1A, Trees 2-4, Tree 4A, Trees 5-12, Tree 12A, Tree 14, Tree 15, Tree 18-24, Tree 26 and Trees 28-36.
- 2.1.4 **Retention Value (RV)** — Of the six (6) prescribed/neighbouring trees, the following is noted—refer to Appendix 3 for the methodology used to assess the Retention Value of a tree:
- Tree 13 and Tree 37 have been ascribed a High Retention Value.
 - Tree 16, Tree 17, Tree 25 and Tree 27 have been ascribed a Medium Retention Value.

2.2 Threatened Species

- 2.2.1 No species of assessed tree is subject to threatened conservation status under Australian and/or State Government legislation (i.e. NSW Biodiversity Conservation Act 2016 and the Commonwealth Environment Protection and Biodiversity Conservation Act 1999).

3 Impact of the Proposed Development

3.1 Potential Required Removal of Prescribed/Neighbours Trees

- 3.1.1 Four (4) prescribed trees are proposed to be removed to facilitate the proposal.

- Tree 13 — *Cedrus deodara* (Himalayan Cedar) - This Medium RV mature tree is located within the proposed basement and could not be safely retained.
- Tree 16 & 17 — *Yucca aloifolia* (Coastal Yucca) – These Medium RV trees are located within the proposed basement and could not be safely retained.
- Tree 25 — *Pittosporum undulatum* (Sweet Pittosporum) - This Medium RV tree is located within the proposed basement and could not be safely retained.

3.2 Potential Impacts on Prescribed Trees to be Retained

- 3.2.1 Under the Australian Standard 4970-2009 *Protection of trees on development sites* (AS4970), encroachments less than 10% of the *Tree Protection Zone* (TPZ) are considered to be minor. No specifications are provided in AS4970 for potential impacts of 10% or greater. This 10% is interpreted as the threshold figure, and the trigger where arboricultural investigations into TPZ encroachments beyond this figure need to be considered under the consideration set out in Section 3.3.4 of AS4970.
- 3.2.2 Disturbance within the *Structural Root Zone* (SRZ), and extent of encroachments into the TPZ's of prescribed trees to be retained are summarised in Table 1, below.

Table 1 – Indicates whether encroachment occurs into the SRZ and/or TPZ of trees proposed for retention. Site-specific constraints will heavily influence the presence of roots in a particular location.

Tree No.	Tree Common name	Tree located on site	SRZ affected	TPZ area (m ²)	TPZ encroachment (approx. m ²)	TPZ encroachment (approx. %)
27	Camphor laurel	x✓	✓	327	87	27
37	Rose Apple	x	✓	191	75.2	39

3.2.3 Tree 27 — Camphor laurel

- Structural Root Zone impacts:

The proposed basement excavation falls just within the calculated SRZ. However, additionally a reduction of the ground levels within the rear yard is proposed up to 300mm and within close proximity to the tree stem.

- Tree Protection Zone impacts:

An encroachment of 87m² or 27% has been calculated for this specimen in relation to the proposed basement excavation and soil level stripping. (See Figure 1 for visual encroachment reference). Encroachments greater than 10% are considered *major* encroachment under AS4970. Works also fall within the

SRZ and thus are deemed *major* encroachment under AS4970, no matter the numerical calculated TPZ encroachment.

Retention of this tree given the level of impact, could not be supported. The area specifically related to the basement could potentially be supportable but the additional ground level reductions to the extent of the rear boundary would most likely affect tree stability and viability in the short to long term.

This tree is partially located on neighbouring property, owner permission would be required for removal should the consent authority authorise removal.

- Pruning impacts:

The canopy is restricted over the subject site by existing non-prescribed trees and major pruning is not foreseen to accommodate the proposed works.

Additionally, the dynamic of this trees canopy has been previously significantly altered due to lopping and any pruning works to reduce overhang into the site are unlikely to have a detrimental affect on tree structure.

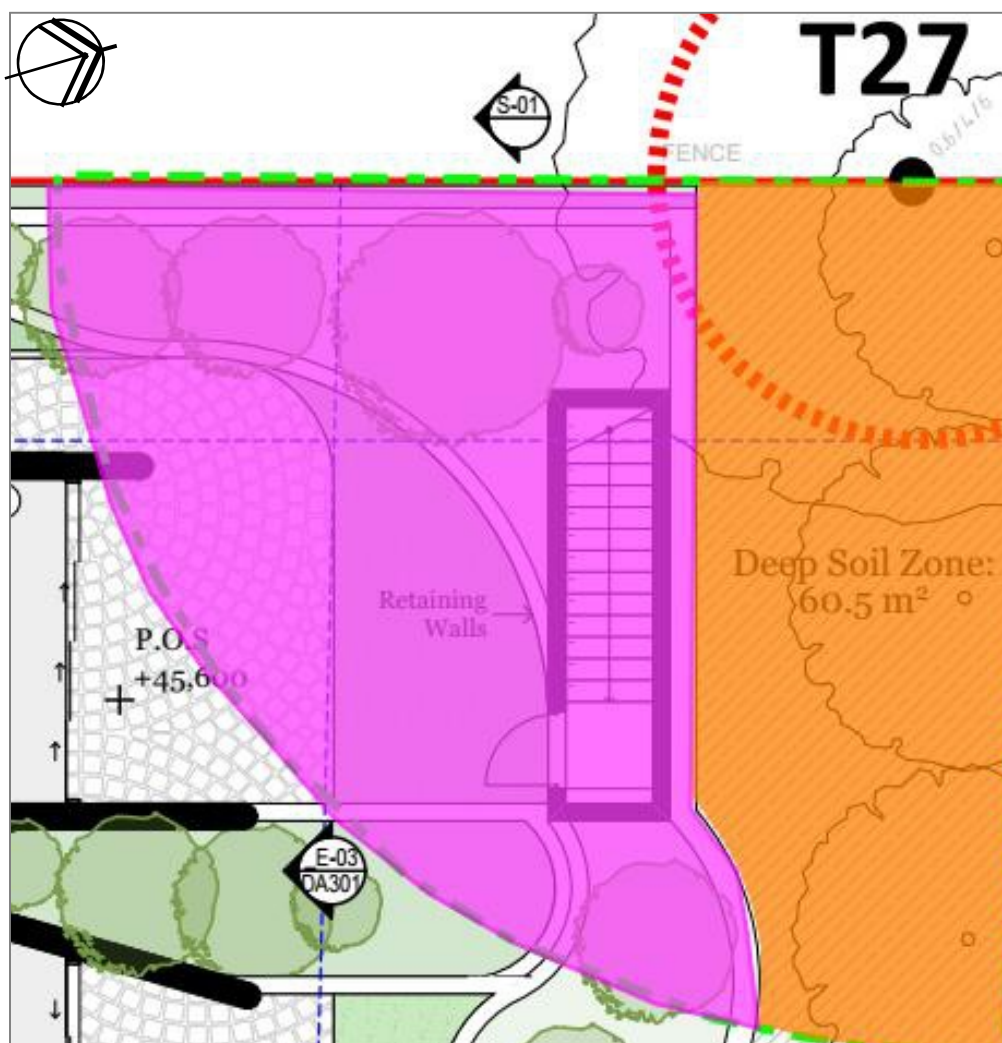


Figure 1 – Tree 27 - Estimated encroachment into the SRZ and TPZ of Tree 27. SRZ noted as red dotted circle, green hashed area denotes TPZ. Pink shading denotes encroachment created by proposed basement and retaining walls , whilst orange shading details soil level stripping within the TPZ. Marked up Ground Level Plan by DKO Architecture, drawing no. DA201. NOT TO SCALE.

3.2.4 Tree 37 — Rose Apple

- Structural Root Zone impacts:

The proposed basement falls within the calculated SRZ of this tree.

- Tree Protection Zone impacts:

An encroachment of 75.2m² or 39% has been calculated for this specimen (see Figure 2 below/next page) in relation to the proposed basement. Encroachments greater than 10% are considered *major* under AS4970, works also fall within the SRZ.

When major encroachments are proposed within the TPZ, Section 3.3.4 – *TPZ encroachment considerations* of AS4970 needs to be addressed. Part (a) through to (h) detail what the project arborist should consider.

Part (a) discusses the determination of the *location and distribution of roots through non-destructive investigation* – Level changes between the sites are currently in affect. Existing garden retaining walls and paving around the existing dwelling are lower than that at the base of the tree stem. It cannot be known how much these level changes have limited root ingress into the site. Root investigation (in the form of non-destructive investigation methods such as hand or pneumatic digging or ground penetrating radar), would be required to know how limited root growth (if at all) has been into the subject site.

Part (b) related to *potential loss of root mass resulting from encroachment* – This cannot be known until investigation as discussed in Part (a) has taken place.

Part (c) refers to *tree species and tolerance of root disturbance* – This species has a moderate tolerance to root disturbance.

Part (d) relates to *age, vigour, and size of tree* – The tree is considered to be mature and in good vigour. Whilst still mature and actively growing this tree would be starting to lose tolerance to disturbances as it is at full mature height and potentially entering late maturity.

Part (e) discusses *tree stem lean and stability* – The subject tree orientation is relatively vertical, dynamics relating to tension roots is not considered a factor in relation to this specimen.

Part (f) *soil characteristics and volume* – The subject tree has quality soil and reasonable space in the remaining root area outside the area of the proposed basement to the northwest.

Part (g) presence of *existing or past structures* – Existing ground level disparities occur between the sites, given the current retaining walls and paved areas lower than the base of the tree stem around the existing dwelling. This will have some impact on root ingress into the site.

Part (h) *alternative design factors* – Understanding the level of impact on this tree through root investigation would be considered the primary driving force prior to any consideration of redesign.

- Pruning impacts:

The canopy of this specimen extends low and extensively over the subject site. Heavy reduction pruning would be required to facilitate the proposed development during the construction phase and to ensure building clearances of the final build.

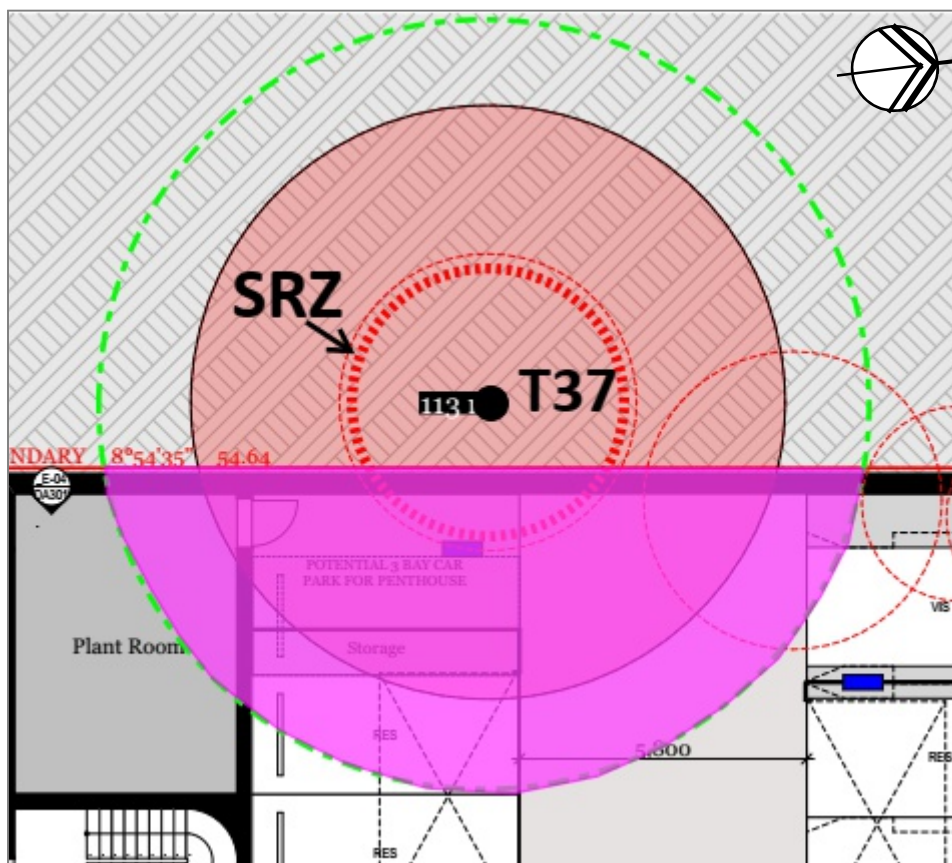


Figure 2 – Tree 37 - Estimated encroachment into the SRZ and TPZ of Tree 37. SRZ noted as thick red dotted circle, green hashed circle denotes TPZ. Pink shading denotes details new encroachment in relation to the proposed basement. Marked up Ground Level Plan by DKO Architecture, drawing no. DA201. NOT TO SCALE.

4 Conclusions

- 4.1.1 A total of forty (40) trees are included in this Arboricultural Impact Assessment. Trees 27 and 37 are located on adjoining property (partially in the case of Tree 27).
- 4.1.2 No assessed tree has been identified as endangered or threatened under State or Federal Government legislation.
- 4.1.3 Four (4) prescribed trees are proposed for removal to facilitate the works, Tree 13 has been ascribed a high Retention Value (RV) rating but is located within the footprint of the basement. Tree 16, 17 and 25 have been ascribed a medium RV and fall within the footprint of the proposed basement.
- 4.1.4 Two (2) assessed trees (Tree 27 and Tree 37) are located either partially or fully within neighbouring property. Tree 27 is partially located on neighbouring property and will be significantly impacted by the proposal. Owner permission for removal would be required, this tree is a Camphor laurel, a species considered an undesirable weed species within the Northern Beaches Council area.
- 4.1.5 Tree 37 has been assessed as having significant impacts occurring also, however existing site features may have limited root ingress into the site. Non-destructive root investigations are recommended to determine the level of impact on this ascribed high RV tree.

5 Recommendations

5.1 Tree Removal/Pruning

- 5.1.1 Tree removal works are to be undertaken in accordance with the NSW WorkCover Code of Practice for the Amenity Tree Industry (1998) and Safe Work Guide to Managing Risks of Tree Trimming and Removal Work 2016.
- 5.1.2 Tree removal works shall be in accordance with the Work Health and Safety Act 2011 and the Work Health and Safety (WHS) Regulations 2017.
- 5.1.3 Any tree pruning is subject to tree owner permission and permit from the relevant consent authority. All works shall comply with Section 5.5 of AS 4373-2007 Pruning of amenity trees.

5.2 Non-Destructive Investigation – Tree 37

- 5.2.1 Prior to works commencing, root investigation along the proposed line of excavation for the basement is recommended, within the subject site. This will determine if Tree 37 is retainable.
- 5.2.2 Additional tree protection measures may be required following the outcome of the root investigations.

6 General Tree Protection Measures

6.1 Stockpiling

- 6.1.1 Any ground identified for proposed stockpiling that is within the TPZ of trees to be retained shall be covered with thick, coarse mulch, placement of wooden pallets over the mulch, covering of the pallets with a tarpaulin (or similar), and the placement of materials on top of this device to prevent loose or potentially contaminating materials from moving into the soil profile.

6.2 Fill Material

- 6.2.1 Placement of fill material within the TPZ of trees to be retained should be avoided where possible. Where placement of fill cannot be avoided, the material should be a coarse, gap graded material such as 20 — 50mm crushed basalt or equivalent to provide some aeration to the root zone. Note that roadbase or crushed sandstone or other material containing a high percentage of fines is unacceptable for this purpose.
- 6.2.2 The fill material should be consolidated with a non-vibrating roller to minimise compaction of the underlying soil.
- 6.2.3 A permeable geotextile may be used beneath the sub-base to prevent migration of the stone into the sub-grade. No fill material should be placed in direct contact with the trunk.

6.3 Hygiene Practices

- 6.3.1 No washing or rinsing of tools or other equipment, preparation of any mortars, cement mixing, or brick cutting is to occur within 8m upslope of any palms/trees to be retained.

7 Post Construction Tree Care Measures

7.1 Mulching

- 7.1.1 The removal of mulch after construction to remove any contaminants and its replacement with a good quality mulch and addition of 10% organic matter will improve beneficial soil micro-organisms, retain moisture and improve aeration and water infiltration.

7.2 Irrigation

- 7.2.1 An arboriculturist should determine whether irrigation should be carried out during extended periods of drought.

7.3 Pest Management

- 7.3.1 Monitoring is required, as trees under stress are more prone to insect attack.

8 References

Barrell, J (1995) Pre-development Tree Assessment from Trees and Building Sites, Eds. Watson & Neely, International Society of Arboriculture, Illinois.

Hadlington, P. & Johnston, J. (1988) Australian Trees: Their Care & Repair. University of NSW Press, Kensington.

Mattheck, C. & Breloer, H. (1994) The Body Language of Trees: A handbook for failure analysis. Research for Amenity Trees No. 4, The Stationery Office, London.

Standards Australia AS4970-2009 Protection of trees on development sites, Standards Australia, Sydney.

https://www.treetec.net.au/tpz_srz_dbh_calculator/ Accessed 9 & 10/8/2021.

Report prepared by Chantalle Hughes –

August 2021




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Diploma of Horticulture (Arboriculture) *Credit*

ISA Tree Risk Assessment Qualification (TRAQ) 2016

Accredited Member of Institute of Australian Consulting Arboriculturists (IACA)

Affiliate Member of the Local Government Tree Resources of Australia (LGTRA)

Member of the International Society of Arboriculture (ISA)

8 Appendices

Appendix 1 – Terms and Definitions

Age classes

- Y** Young refers to an established but juvenile tree.
- SM** Semi-mature refers to a tree at growth stages between immaturity and full size.
- EM** Early-mature refers to a tree close to full sized still actively growing.
- M** Mature refers to a full sized tree with some capacity for further growth.
- LM** Late-Mature refers to a full sized tree with little capacity for growth that is not yet about to enter decline.
- OM** Over-Mature refers to a full sized tree with little capacity for growth that is entering or has entered decline.

Co-dominant: refers to stems or branches equal in size and relative importance.

Condition/Structure: refers to the tree's form and growth habit, as modified by its environment (aspect, suppression by other trees, soils) and the state of the scaffold (i.e. trunk and major branches), including structural defects such as cavities, crooked trunks or weak trunk/branch junctions. These are not directly connected with health and it is possible for a tree to be healthy but in poor condition/structure.

Deadwood: refers to any whole limb that no longer contains living tissues (e.g. live leaves and/or bark). Some dead wood is common in a number of tree species.

Diameter at Breast Height (DBH): Refers to the tree trunk diameter at breast height (1.4 metres above ground level).

Hazard: refers to anything with the potential to harm health, life or property.

Health: Refers to the tree's vigour as exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease invasion, and the degree of dieback.

Secondary Stem: refers to stems or branches with one of unequal size and relative importance.

SRZ: refers to the Structural Root Zone of the tree, this is the area required for tree stability.

TPZ: refers to the Tree Protection Zone of the tree, this is the primary method of protecting trees, it is a combination of the root area and the canopy and the SRZ is located within it.

Visual Tree Assessment (VTA): a procedure of defect analysis developed by Mattheck and Breloer (1994) that uses the growth response and form of trees to detect defects.

Appendix 2 – ULE Guide

ULE categories (after Barrell 1996, Updated 01/04/01)

The five categories and their sub-groups are as follows:

1. Long ULE - tree appeared retainable at the time of assessment for over 40 years with an acceptable degree of risk, assuming reasonable maintenance:
 - a) Structurally sound trees located in positions that can accommodate future growth
 - b) Trees which could be made suitable for long term retention by remedial care
 - c) Trees of special significance which would warrant extraordinary efforts to secure their long term retention
2. Medium ULE - tree appeared to be retainable at the time of assessment for 15 to 40 years with an acceptable degree of risk, assuming reasonable maintenance:
 - a) Trees which may only live from 15 to 40 years
 - b) Trees which may live for more than 40 years but would be removed for safety or nuisance reasons
 - c) Trees which may live for more than 15 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting
 - d) Trees which could be made suitable for retention in the medium term by remedial care
3. Short ULE - tree appeared to be retainable at the time of assessment for 5 to 15 years with an acceptable degree of risk, assuming reasonable maintenance:
 - a) Trees which may only live from 5 to 15 years
 - b) Trees which may live for more than 15 years but would be removed for safety or nuisance reasons
 - c) Trees which may live for more than 15 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting
 - d) Trees which require substantial remediation and are only suitable for retention in the short term.
4. Removal - trees which should be removed within the next 5 years:
 - a) Dead, dying, suppressed or declining trees because of disease or inhospitable conditions
 - b) dangerous trees through instability or recent loss of adjacent trees
 - c) Dangerous trees because of structural defects including cavities, decay, included bark, wounds or poor form
 - d) Damaged trees that are clearly not safe to retain
 - e) Trees which may live for more than 5 years but would be removed to prevent interference with more suitable individuals or to provide space for new planting
 - f) Trees which are damaging or may cause damage to existing structures within the next 5 years
 - g) Trees that will become dangerous after removal of other trees for the reasons given in (a) to (f)
 - h) Trees in categories (a) to (g) that have a high wildlife habitat value and, with appropriate treatment, could be retained subject to regular review
5. Small, young or regularly pruned - Trees that can be reliably moved or replaced:
 - a) small trees less than 5m in height
 - b) young trees less than 15 years old but over 5m in height
 - c) formal hedges and trees intended for regular pruning to artificially control growth

Appendix 3 – STARS – Significance of a Tree Assessment Rating System (IACA 2010)©

The landscape significance of a tree is an essential criterion for establishing the importance that a particular tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is therefore necessary to have a rating system utilising structured qualitative criteria to assist in determining the retention value for a tree.

This rating system will assist in the planning processes for proposed works, above and below ground where trees are to be retained on or adjacent a development site. The system uses a scale of *High*, *Medium* and *Low* significance in the landscape. Once the landscape significance and *Useful Life Expectancy* of an individual tree has been defined, the retention value can be determined.

Tree Significance - Assessment Criteria

1. High Significance in landscape.

- The tree is in good condition and good vigour;
- The tree has a form typical for the species;
- The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age;
- The tree is listed as a Heritage Item, Threatened Species or part of an Endangered ecological community or listed on Councils significant Tree Register;
- The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity;
- The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values;
- The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa *in situ* - tree is appropriate to the site conditions.

2. Medium Significance in landscape.

- The tree is in fair-good condition and good or low vigour;
- The tree has form typical or atypical of the species;
- The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area;
- The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street;
- The tree provides a fair contribution to the visual character and amenity of the local area;
- The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa *in situ*.

3. Low Significance in landscape.

- The tree is in fair-poor condition and good or low vigour;
- The tree has form atypical of the species;
- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings;
- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area;
- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen;
- The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa *in situ* - tree is inappropriate to the site conditions;
- The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms;
- The tree has a wound or defect that has potential to become structurally unsound.

Appendix 3 – STARS – Significance of a Tree Assessment Rating System (IACA 2010)©

Environmental Pest / Noxious Weed Species:

- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties;
- The tree is a declared noxious weed by legislation.

Hazardous/Irreversible Decline:

- The tree is structurally unsound and/or unstable and is considered potentially dangerous;
- The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.

The tree is to have a minimum of three (3) criteria in a category to be classified in that group.

Note: The assessment criteria are designed for individual trees only but can be applied to a monocultural stand in its entirety e.g. hedge.

In the development of this document IACA acknowledges the contribution and original concept of the Footprint Green Tree Significance & Retention Value Matrix, developed by Footprint Green Tree Pty Ltd and Andrew Morton in June 2001.


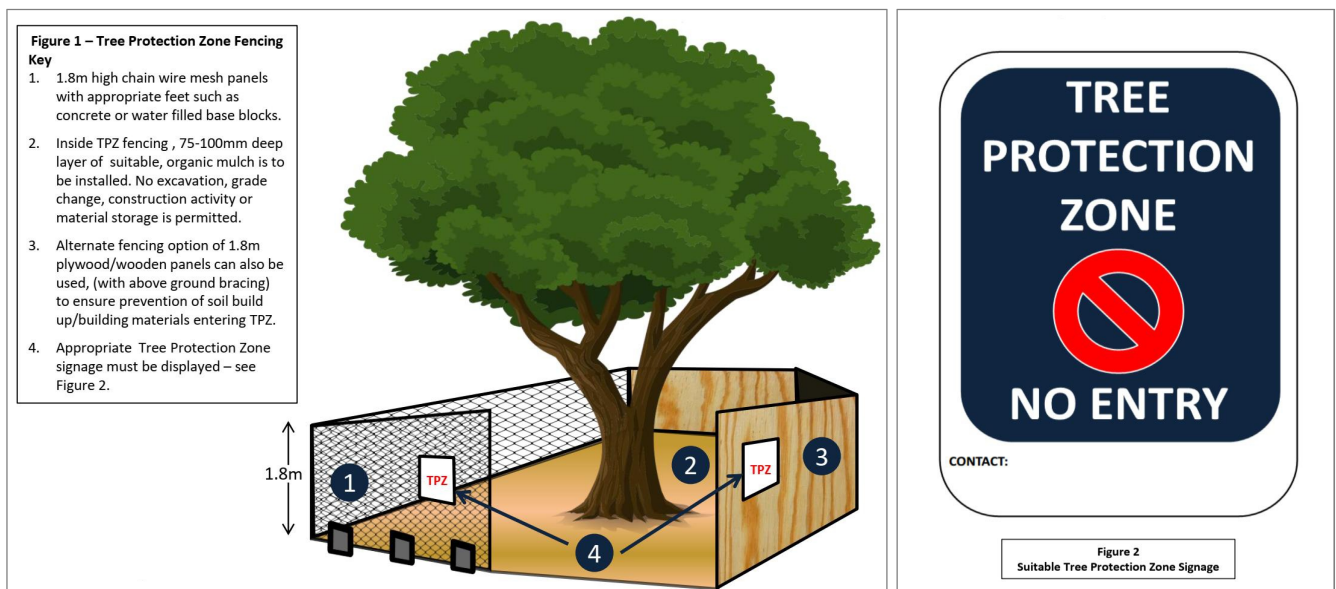
		Significance				
		1. High	2. Medium	3. Low		
		Significance in Landscape	Significance in Landscape	Significance in Landscape	Environmental Pest / Noxious Weed Species	Hazardous / Irreversible Decline
Estimated Life Expectancy	1. Long >40 years					
	2. Medium 15-40 Years					
	3. Short <1-15 Years					
	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 <i>Protection of trees on development sites</i> . Tree sensitive construction measures must be implemented e.g. pier and beam etc 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 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.					
	Priority for Removal -These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.					

Table 1 - Tree Retention Value - Priority Matrix.

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

Appendix 4 – Tree Protection Devices



Figures 1 & 2 – Tree Protection Fencing and appropriate signage.

Figure 3 - Stem, Branch & Ground protection measures

Key

1. Padding (such as geotextile membrane, natural hessian, rubber, or carpet to protect bark).
2. Battens/boards for branch/stem protection, strapped together NOT nailed into bark/tree. Minimum 2m in height on stem where feasible.
3. Ground protection base 75-100mm of fit for purpose mulch.
4. If machinery is required to move within the TPZ then steel rumble boards (4a) or wide, timber sheeting/boards thrashed together (4b) is to be placed over mulch layer (preferably with geotextile base layer), this to spread the weight and minimise soil compaction

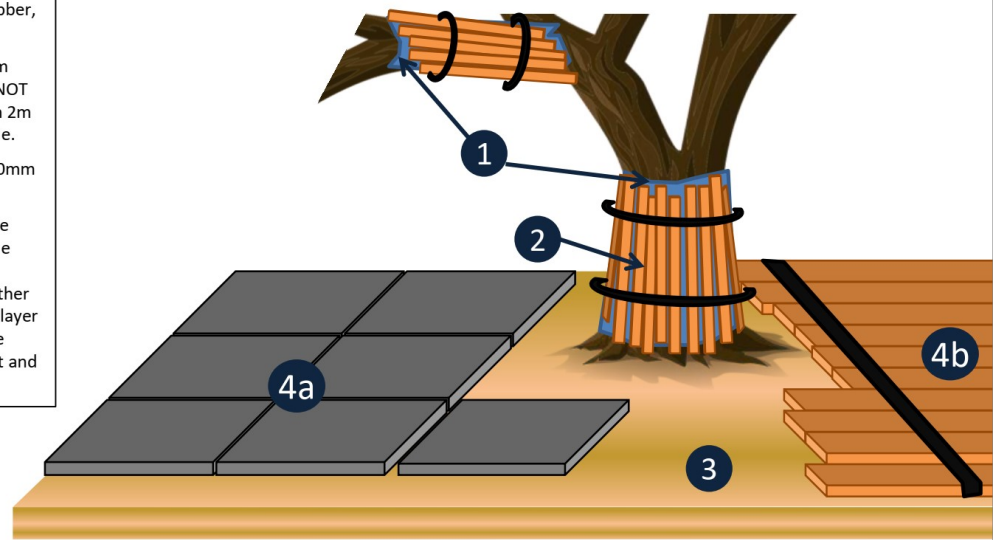


Figure 3 – Stem and ground protection measures.

Appendix 5 – Schedule of Assessed Trees – Site inspection 6/8/2021, 30 Fairlight Street, Fairlight.



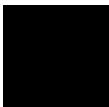



Tree No.	Genus & species Common Name	Ht (m)	Sp (m)				DBH (mm)	Age	V	S	Comments	ULE	TSR	RV	SRZ (m)	TPZ (m)	TPZ (area)
			N	S	E	W											
1	<i>Dyopsis lutescens</i> Golden Cane Palm	5	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	M	M	-	-	-
1A	<i>Plumeria acutifolia</i> Frangipani	4	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed under MDCP 2013 due to less than 5m in height.	2C	L	L	-	-	-
2	<i>Cupressus</i> sp. Conifer	4	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	L	L	-	-	-
3	<i>Howea forsteriana</i> Kentia Palm	7	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	L	L	-	-	-
4	<i>Cupressus</i> sp. Conifer	6	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	M	M	-	-	-
4A	<i>Castanospermum australe</i> Blackbean Tree	6	-	-	-	-	-	-	-	-	Introduced native species. Non-prescribed species under MDCP 2013.	2C	L	L	-	-	-
5	<i>Dyopsis lutescens</i> Golden Cane Palm	6	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	L	L	-	-	-
6	<i>Syagrus romanzoffiana</i> Cocos Palm	12	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	L	L	-	-	-
7	<i>Syagrus romanzoffiana</i> Cocos Palm	12	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	L	L	1.5	2	13

Tree No.	Genus & species Common Name	Ht (m)	Sp (m)				DBH (mm)	Age	V	S	Comments	ULE	TSR	RV	SRZ (m)	TPZ (m)	TPZ (area)
			N	S	E	W											
8	<i>Syagrus romanzoffiana</i> Cocos Palm	12	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	L	L	-	-	-
9	<i>Cupressus</i> sp. Conifer	6.5	-	-	-	-	-	-	-	-	Introduced exotic species. No special problems noted at time of assessment.	2C	M	M	N/A	2	13
10	<i>Cupressus</i> sp. Conifer	13	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	M	M	2.6	4.9	76
11	<i>Schefflera actinophylla</i> QLD Umbrella Tree	10	-	-	-	-	-	-	-	-	Introduced native species. Non-prescribed species under MDCP 2013.	2C	L	L	2.6	6.0	113
12	<i>Schefflera actinophylla</i> QLD Umbrella Tree	7	-	-	-	-	-	-	-	-	Introduced native species. Non-prescribed species under MDCP 2013.	2C	L	L	-	-	-
12A	<i>Gleditsia tricanthos</i> Honey Locust	5	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	L	L	-	-	-
13	<i>Cedrus deodara</i> Himalayan Cedar	12	5	5	7	7	600	M	G	G-F	Introduced exotic species. Slightly thin canopy. Vine up stem. Base of stem hard against retaining wall no measurement taken.	2A	H	H	2.8	7.2	163
14	<i>Archontophoenix cunninghamiana</i> Bangalow Palm	14	-	-	-	-	-	-	-	-	Introduced native species. Non-prescribed species under MDCP 2013.	2C	M	M	-	-	-
15	<i>Dypsis lutescens</i> Golden Cane Palm	5	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	L	L	-	-	-
16	<i>Yucca aloifolia</i> ? Coastal Yucca	6	1	1	1	1	85	M	G	G	Introduced exotic species. No special problems noted at time of assessment. AB 175mm diameter.	2A	M	M	1.6	2.0	13
17	<i>Yucca aloifolia</i> ? Coastal Yucca	7	1	1	1	1	110	M	G	G	Introduced exotic species. No special problems noted at time of assessment. Stem diameter 235mm above buttress/root flare.	2A	M	M	1.8	2.0	13

Tree No.	Genus & species Common Name	Ht (m)	Sp (m)				DBH (mm)	Age	V	S	Comments	ULE	TSR	RV	SRZ (m)	TPZ (m)	TPZ (area)
			N	S	E	W											
18	<i>Syagrus romanzoffiana</i> Cocos Palm	10	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	L	L	-	-	-
19	<i>Phoenix roebelenii</i> Dwarf Date Palm	4	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	L	L	-	-	-
20	<i>Phoenix canariensis</i> Canary Island Date Palm	7	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	L	L	-	-	-
21	<i>Archontopheonix cunninghamiana</i> Bangalow Palm	12	-	-	-	-	-	-	-	-	Introduced native species. Non-prescribed species under MDCP 2013.	2C	M	M	-	-	-
22	<i>Archontopheonix cunninghamiana</i> Bangalow Palm	12	-	-	-	-	-	-	-	-	Introduced native species. Non-prescribed species under MDCP 2013.	2C	M	M	-	-	-
23	<i>Syagrus romanzoffiana</i> Cocos Palm	11	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	L	L	-	-	-
24	<i>Cupressus</i> sp. Conifer	14	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	M	M	-	-	-
25	<i>Pittosporum undulatum</i> Sweet Pittosporum	9	4	3	3	3	70 / 130 (150)	EM	G	P	Locally native species. Secondary stem @ 0.1m AGL. Appears to have failed at root ball previously but continued to grow, poor form. 250mm above buttress/root flare.	2D	M	M	1.9	2.0	13
26	<i>Syagrus romanzoffiana</i> Cocos Palm	13	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	L	L	-	-	-
27	<i>Cinnamomum camphor</i> Camphor laurel	11	8	8	7	8	*850	M	G-F	F-P	Introduced exotic species. Located partially on neighbouring property. Lopped previously. Poor form and high percentage of epicormic growth. Estimated 875mm diameter of stem above buttress/root flare.	2C	M	M	3.1	10.2	327

Tree No.	Genus & species Common Name	Ht (m)	Sp (m)				DBH (mm)	Age	V	S	Comments	ULE	TSR	RV	SRZ (m)	TPZ (m)	TPZ (area)
			N	S	E	W											
28	<i>Syagrus romanzoffiana</i> Cocos Palm	13	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	L	L	-	-	-
29	<i>Syagrus romanzoffiana</i> Cocos Palm	13	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	L	L	-	-	-
30	<i>Syagrus romanzoffiana</i> Cocos Palm	13	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	L	L	-	-	-
31	<i>Murraya paniculatum</i> Orange Jessamine	4	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed under MDCP 2013 due to less than 5m in height.	2C	L	L	-	-	-
32	Dead stump	5-6	-	-	-	-	-	-	-	-	Dead. Non-prescribed under MDCP 2013.	4A	L	L	-	-	-
33	<i>Howea forsteriana</i> Kentia Palm – clump of 3 palms	10	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	M	M	-	-	-
34	<i>Syagrus romanzoffiana</i> Cocos Palm	12	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	L	L	-	-	-
35	<i>Archontophoenix cunninghamiana</i> Bangalow Palm	7	-	-	-	-	-	-	-	-	Introduced native species. Non-prescribed species under MDCP 2013.	2C	M	M	-	-	-
36	<i>Syagrus romanzoffiana</i> Cocos Palm	12	-	-	-	-	-	-	-	-	Introduced exotic species. Non-prescribed species under MDCP 2013.	2C	L	L	-	-	-
37	<i>Syzygium jambos</i> Rose Apple	12	8	8	9	9	AB 650	M	G	G-F	Introduced exotic species. Located on neighbouring property. Low branches over the subject site. Browsing noted on foliage. Multiple stems @ 1m AGL.	2A	H	H	2.8	7.8	191

KEY

	Trees to be retained.		Dead/non-prescribed tree or palm on site that may be removed or retained without Development Consent or Tree Management Permit.		Trees proposed to be removed.
	Low Retention Value-These trees are not considered important for retention.		Medium Retention Value-These trees may be retained & protected.		High Retention Value -These trees are considered important for retention and should be retained and protected.

* DBH is visually estimated (usually adjoining trees or those that are hard to access). AB – above *buttress roots*. AGL - above ground level.

Figures in brackets indicates the determined DBH and TPZ for a multi-stemmed tree based on the formula shown in Appendix A of AS4970-2009.

NOTE: According to AS4970, the TPZ of palms, other monocots, cycads, and tree ferns should not be less than 1m outside the crown projection. The AS4970 formula for calculating the SRZ of a tree does not apply to palms, other monocots, cycads, and tree ferns.

H refers to the approximate height of a tree in metres, from base of stem to top of tree crown.

Sp refers to the approximate and average spread in metres of branches/canopy (the 'crown') of a tree.

DBH refers to the approximate diameter of tree stem at breast height i.e. 1.4 metres above ground (unless otherwise noted) and expressed in millimetres. Figures in brackets indicate the minimum TPZ allowable as per Section 3.2 Determining the TPZ with AS4970-2009.

Age refer to Appendix 1 -Terms and Definitions for more detail.

V refers to the tree's vigour (health) Refer to Appendix 1 -Terms and Definitions for more detail.

C refers to the tree's structural condition. Refer to Appendix 1 -Terms and Definitions for more detail.

ULE refers to the estimated *Useful Life Expectancy* of a tree. Refer to Appendix 2 for details.

- TSR** The *Tree Significance Rating* considers the importance of the tree because of its prominence in the landscape and its amenity value, from the point of view of public benefit. Refer to Appendix 3 – Significance of a Tree Assessment Rating for more detail.
- RV** Refers to the retention value of a tree, based on the tree’s ULE *and* Tree Significance. Refer to Appendix 3 – Significance of a Tree Assessment Rating for more detail.
- SRZ** Structural Root Zone (SRZ) refers to the critical area required to maintain stability of the tree. Refer to Appendix 1 -Terms and Definitions for more detail. This is not calculated/does not apply for palms, cycads, tree ferns or monocot species.
- TPZ** Tree Protection Zone (TPZ) refers to the *tree protection zones* for trees to be retained. Refer to Appendix 1 -Terms and Definitions for more detail. For palms, cycads, tree ferns or monocot species it is calculated to be no less than 1m outside the crown projection.

Appendix 6 – Photographs



Plate 1 – Tree 1 – Arrow notes location of Tree 1, non-prescribed species, note Tree 1A below, less than 5m in height and thus also exempt under MDCP 2013.



Plate 2 – Tree 9 – Arrow notes non-prescribed tree located on subject site.



Plate 3 – Tree 12 & 12A – Two QLD Umbrella trees, exempt under MDCP 2013.



Plate 4 – Tree 13 (noted with arrow) – Prescribed tree that requires removal for the proposal. Note surrounding exempt Palm species.



Plate 5 – Tree 24 – Arrow notes Tree 24, Tree 25 can be seen to the right, this tree is prescribed.



Plate 6 – Tree 25 – Tree 25 has failed previously as noted with stem orientation seen above.



Plate 7 – Tree 27 – Arrow notes previously lopped tree canopy, tree has poor form.



Plate 8 – Tree 37 – Tree located on neighbouring property. Inset notes multiple stems and location within neighbours, on boundary fence.

Appendix 7 – Tree Location Plan

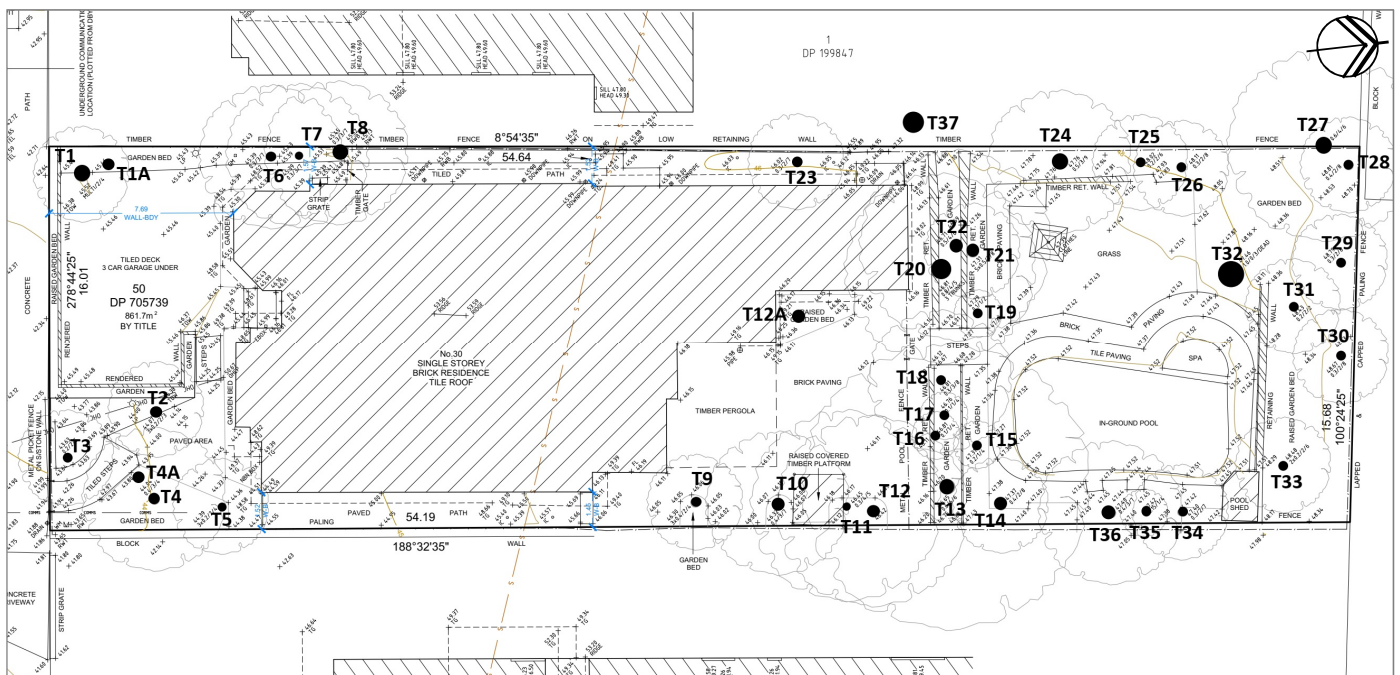


Figure 4 – Excerpt of Survey Plan, Ref. 6348-DET, by Usher and Company Surveying and Land Development Consultants, dated 31 March 2021. Marked up by C Hughes 9/8/21. (NOT TO SCALE)