

Arboricultural Impact Statement.

On: Tree Specimens

**Location: 4 Bellara Avenue NORTH
NARRABEEN NSW 2101**

TREEHAVEN ENVIRONSCAPES.
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For: Sydney Water Corporation Pty Ltd
C/- RJK Architects
On. 22/9/2023

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Whilst every attempt is made to be accurate and factual with regard to references used in this document no liability is assumed for the work done by others.

Please note that trees are living organisms which are subject to natural growth, change and also to ‘Acts of God’ such as storms and lightning strikes. This report contains empirical data gathered on the day for the purpose of tree assessment in terms of their health and long term viability. Given the transitory nature of living things such data only gives a ‘snapshot’ of the organism on the day and cannot be applied to future events, ‘Acts of God’, mechanical, pathogen attack or chemical damage to the organism after that time.

The information supplied herein is given in good faith and to the best available scientific and industry standards which apply to the Author’s level of education and experience.

1 INTRODUCTION

- 1.1** The following document is a review of an Arborist report by Hugh the Arborist dated 12/10/2022 and Architectural plans by RJK Architects for the property at 4 Bellara Avenue North Narrabeen, henceforth referred to as the Site,
- 1.2** The land is owned by Sydney Water who are considering a development on their land in the form of a re zoning of the land for domestic housing purposes¹. In order to facilitate the development of the land several trees will need to be removed (See Appendix 2a).
- 1.3** The property is within the jurisdiction of Northern beaches Council (NBC) which has in place Tree Management Controls (TMC) which prohibit
- a) Removal or cutting down of any tree over five (5) metres in height;
 - b) Pruning of more than ten percent (10%) of a tree canopy.
 - c) The removal or cutting down of vegetation in "Bushland".
...without Council's written consent².

Council may consider a variation to the requirements where:

- Council is satisfied a tree or other vegetation is dying or dead and is not required as habitat for native fauna.
- Council is satisfied a tree or other vegetation is a risk
- The tree is within 2m of a Council approved structure.

For the removal or major pruning of trees covered by the TMC, NBC requires an arborist report whose purpose is to examine and appraise them prior to, and post any development of the site.

Further to this Council has requested further information in regard to tree T4, a *Eucalyptus microcorys*, which was recommended for removal in that previous report as follows;

"During the rezoning application process, the proponent indicated via indicative building footprint and Arboricultural assessment that 2 Category A trees would be required to be removed to enable development as indicated on the plans provided, which also accommodated clearances to the sewer easement. Under this application, it is proposed to remove 3 Category A trees. The Arborist's Report prepared by Hugh the Arborist indicates that in addition to Trees 5 and 6 previously indicated to be required to be removed, an additional tree, Tree 4, would be subject to major incursion into the Tree Protection Zone due to retaining walls, and cut and fill proposed.

¹ Planning Proposal to re-zone the land from SP2 Infrastructure to R2 Low Density Residential.

² Northern Beaches Council (Formally Warringah Council) 2011 Development Control Plan Part E1 Preservation of Trees and Vegetation.

Removal of Trees 5 and 6 were anticipated in the rezoning application which was considered prior to re-zoning approval, however removal of Tree 4 was not contemplated in the rezoning assessment”.

1.4 Consequently RJK Architects, on behalf of Sydney water, have engaged, Mr. Stephen McLoughlin of Treehaven Environscapes, to visit the Site and appraise the trees which will be affected by the proposed development. This report details my site visits on 5/4/22 where I examined 6 trees, designated **T1** to **T6** inclusive which will be affected by the development.

1.5 This report contains empirical data collected regarding the tree specimens supported by digital photos, a Discussion regarding the relevance of the specimens and presents Conclusions and Recommendations as to the future treatment of the trees. Tables and plans relating to this report are included as Appendix 1 & 2 at the end of the document. The report acknowledges the work done by Hugh the Arborist and adopts the tree numbering schedule and Tree Protection Zones (TPZ) used in the previous Arborist report. This document pays heed to NBC’s TMC and utilizes the Australian Standards 4790-2009 *Trees on development sites* and 4373-2007 *Pruning of Amenity Trees* as a set of guiding principles.

2. SITE DESCRIPTION

2.1 The land on which the trees are sited is on a rhomboidal shaped block on a Southerly facing slope with a medium gradient heading towards Nareen Park and is in the South Creek Catchment.

2.2 There are no structures on the Site at present and there is a stormwater easement through the middle of the Site which forms a major constraint in regard to the placement of structures.

2.3 Tree specimens **T1, T2, T3, T4, T5 & T6** are located within the Site (See Fig. 1).

2.4 There are no street trees located on nature strip to the South of the Site (See Fig 1).



Fig 1. Aerial photo of the site from Six Viewer showing position of the trees to be removed, in red circles,

3. METHODOLOGY.

3.1 The tree specimens were visually assessed using non-destructive means by employing the Visual Tree Assessment (VTA) as developed by Matteck and Broeler (2006).

The information gathered was used to

- i) Calculate Tree protection Zones (TPZ) and Structural Root Zones (SRZ) with reference to the Australian Standard (AS) 4970-2009 and
- ii) Provide a qualitative assessment of the tree utilizing Jeremy Barrell's Safe Usable Life Expectancy (SULE) of which a table outlining the different categories appears in Appendix 3 of this document.

3.2 No invasive procedures, such as coring or drilling, were used in the examination of the specimen.

3.3 Structural Root Zone (SRZ) calculations provided in section **3.3.5** of Australian Standard 4970 -2010 are given as

$$SRZ = (D \times 50)^{0.42} \times 0.64$$

Where D is the diameter of the tree as measured just above the root buttress and the result is the radius of a circle enclosing the tree. This is referred to as the tree's Diameter at Ground Level (DGH) in the table in Appendix 1.

Also section **3.2** Tree Protection Zones (TPZ) is given as,

$$TPZ = DBH \times 12$$

Where DBH is the diameter of the trunk of the trunk measured at 1.4m from the ground.

3.4 The position of the trees has been determined by survey plans as forwarded from RJK Architects.

3.5 Minor & Major Encroachments are defined in AS 4970-2009 as being up to 10%, for the former, and greater than 10% for the latter of a tree's TPZ.

4. DESCRIPTION OF THE TREES (See Appendix 1).

4.1 Tree **T1** is an *Araucaria heterophylla* or 'Norfolk Island Pine' which is a native conifer endemic to Norfolk Island and widely planted in the Sydney Region and the Northern Beaches Council LGA (See Fig. 2). The specimen has a significant defect in the main stem at approx. 2m from the ground where the main stem differentiates into three stems which adjoin in 'V' shape stem unions³.

Impact of the development:

The tree will be subjected to a Major Encroachment into its TPZ from the excavation and placement of a new

4.2 Tree **T2** is a *Eucalyptus saligna* or 'Sydney Blue Gum' which is an endemic species common to the Sydney Region and the Northern Beaches Council LGA (See Figs. 4 & 5). The specimen has been planted in the Eastern portion of the Site in a row and in close proximity to trees T3 and T4. There is a large scar at the base and has formed an asymmetric canopy with a bias to the South due to overarching branches from tree **T3** that are blocking the sunlight. The tree will have formed a corresponding asymmetric root plate due to its proximity to tree **T3** with which it will be competing for space, water and nutrients below ground level.

Impact of the development:

This tree will be subjected to a Minor Encroachment into its TPZ from the proposed new driveway (See Appendix 2).

4.3 Tree **T3** is a *Corymbia citriodora* or 'Lemon scented Gum' which is a native species common to the coastal areas of Northeastern NSW and Queensland (See Figs. 4 & 6). The specimen has been planted in the Eastern portion of the Site in a row and in close proximity to trees **T3** and **T4**. The tree will have formed an asymmetric root plate due to its proximity to tree **T2** and **T4** with which it will be competing for space, water and nutrients below ground level. There are some dead limbs in the canopy.

Impact of the development:

This tree will be subjected to a Minor Encroachment into its TPZ from the proposed new driveway (See Appendix 2).

4.4 Tree **T4** is a *Eucalyptus microcorys* or 'Tallowwood' which is a native species common to the coastal areas of Northeastern NSW and Queensland (See Figs. 4 & 7). The specimen has been planted in the Eastern portion of the Site in a row and in close proximity to trees **T2** and **T3**. The tree will have formed an asymmetric root plate due to its proximity to tree **T2** and **T4** with which it will be competing for space, water and nutrients below ground level. There are some dead limbs in the canopy. Also an eastern buttress in the lower stem is located 2m from the neighbour's carport (See Figs. 13, 14 & 15).

Impact of the development:

³ 'V' shaped stem junctions are weak and inclined to failure and can result in the tearing of large limbs and stems which can fall on people and property (Mattheck and Breloer 2005).
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This tree will be subjected to a Major Encroachment into its TPZ from the proposed new building footprint and retaining walls. It is anticipated that many roots from this tree will be severed during excavation for these proposed structures. (See Appendix 2).

- 4.5** Tree **T5** is a *Eucalyptus saligna* or 'Sydney Blue Gum' which is an endemic species common to the Sydney Region and the Northern Beaches Council LGA (See Fig. 11). The specimen has been planted in the Northeastern portion of the Site. The tree is already very large and healthy.

Impact of the development:

This tree will be engulfed by the proposed new dwelling and will need to be removed for the development to proceed as planned (See Appendix 2).

- 4.6** Tree **T6** is a *Casuarina glauca* or 'Swamp Sheoak' which is an endemic species common to the Sydney Region and the Northern Beaches Council LGA (See Fig. 12). The specimen has been planted in the Northwestern portion of the Site. The tree was in good health and condition at the time of my inspection.

Impact of the development:

This tree will be engulfed by the proposed new dwelling and will need to be removed for the development to proceed as planned (See Appendix 2).

5. DISCUSSION

- 5.1** It is considered that the trees noted in this report are all planted specimens
- 5.2** Trees **T1** has a significant defect in the form of 'V' shaped stem junctions where the main stem differentiates into three smaller stems. This is considered to be a weak union which will be inclined to failure as the stems increase in size and weight. Previously this tree was recommended for retention dependant on the results of a tree root investigation however it is considered that this would be irrelevant in view of the afore mentioned defect in the stems.
- 5.3** Trees **T2 & T3** will suffer Minor Encroachment into their relative TPZs and SRZs from the new driveway and I concur with the findings in the previous report that these specimens be retained (See Appendix 2). Nonetheless these trees can be inadvertently damaged by deliveries, trades vehicles and the passage of plant equipment and so a protective fence and signage is recommended for these trees (See Appendix 4a & 4b).
- 5.4** Tree **T4**, which is the main subject of Council's request for further information, is a large growing species of *Eucalyptus* which can attain heights of 40m (occasionally 60m)⁴ and I have personally observed them in their natural habitat to have diameters greater than 2m. This

⁴ Plantnet

tree is already 2m from the neighbour's carport to the easternmost buttress and it is anticipated that it will increase in girth which will further decrease the distance between the tree and the structure and increase the risk of damage to that structure from tree roots. This tree will be subjected to root severing from retaining walls and the new building footprint which would further weaken its structural integrity on the Northwestern side and may cause stem failure were the tree to fail.

5.5 It is noted that Council has already conceded to the removal of trees **T5 & T6** as retaining them would render the Site un developable.

6. CONCLUSIONS & RECOMENDATIONS

6.1. It is concluded that, for the development to proceed as planned, trees **T1, T4, T5 & T6** will need to be removed.

6.2 Trees **T2 & T3** are to be retained and protected throughout the duration of the development by fencing with signage as depicted in Appendix 4a and 4b.

6.3 Removal of trees is a loss of amenity for the community and it is recommended that all trees scheduled for removal be replaced with complementary plantings in a suitable location on the property. Further to this there is an opportunity for additional tree planting in the nature strip to the South of the Site.

Yours sincerely



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7. THE AUTHOR'S QUALIFICATIONS AND EXPERIENCE.

Stephen McLoughlin obtained a Horticultural Certificate (1982) with Arboriculture as the third year elective whilst an employee of 10 years service with Baulkham Hills Shire Council (BHSC) now The Hills Council. Most of this time employed in the Council's Parks and Gardens and street tree plantings and, later, managing the Council's Nursery. This was augmented with a Bush Regeneration Certificate (1987) where he studied native plant communities, the means necessary to protect and restore them and the identification and eradication of weed species. Additional to this he obtained a Bachelor of Environmental Science Degree (1997) involving the study of natural environments, Ecology, data collection, analysis and documentation, report writing as well studies in relevant Common Law, current Environmental and Heritage Legislation. Since obtaining his degree Stephen writes reports on a regular basis covering Environmental, Heritage and Horticultural / Arboricultural subjects.

Further to this he upgraded his qualifications to that of Arborist Qualification 5 (AQF5) having completed the Associate Diploma of Horticulture / Arboriculture, a standard of qualification which is currently expected by many Local Government and statutory bodies.

Stephen also has a current NSW Structural Landscaper's Licence and has been involved in regular landscape construction works as both Principle and Sub Contractor on many Public, Private and Commercial ventures since commencing his contracting business in 1989. He has many garden and estate maintenance contracts, and Bush Regeneration projects involving large scale properties with many trees under his care, including the providing of advice and practical solutions to the issues of Bush Fire Asset Protection Zones.

Consequently Stephen has well grounded experience in both Public and Private tree plantings, the care and maintenance of them as well as hands on experience of what occurs on construction sites and the results of mechanical disturbance to trees on such sites.

The Author is also an accredited Root Barrier Australia ® installer and has been involved with many excavations involving tree roots.

In 2014 Stephen completed his Diploma of Environmental Management at the Ryde campus of North Sydney TAFE involving studies with regard to Bushfire Management, Global Information Systems (GIS), Mapping, Managing Native Fauna (for which he obtained a distinction) and River Restorations.

Also he has recently completed the Quantified Tree Risk Assessment Course (QTRA)

Yours sincerely

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REFERENCES

Australian Standard 4373 1996 *Pruning of amenity trees*.

Australian Standard 4790 2009 *Trees on development sites*.

Barrell, J. 1996. '*Predevelopment tree assessment*'

Millington H. Arboricultural Impact Assessment for 4 Bellara Avenue
12/10/2022

Northern Beaches Council (Formally Warringah Council).2011 Development
Control Plan Part E1 Preservation of Tree and Vegetation.

Northern Beaches Council Request for Further information letter dated 2
August 2023

Matteck C and Breloer H. 2006 '*The Body Language of Trees*'

Six Maps. Aerial view of site (fig 1).

APPENDIX 1A. Schedule of trees identified on the site listing condition and physical dimensions of trees on the site.

Table describes trees growing on the development site. Tree numbers correspond with numbers on site plan appendix. 2.

*DBH Diameter at Breast Height. **DGH Diameter at Ground Height. ***SULE ratings are included as Appendix 3 of this report.

Specimen name	Est. Height	Diameter DBH* DGH**	Crown	Comments	SULE ***	TPZ	SRZ
T1 <i>Araucaria heterophylla</i> Common name 'Norfolk Island Pine' Age class. 50 years See Fig. 2 & 3.	9m	41cm 47cm at the base	N 3m E 3m S 3m W 3m	A native tree endemic Norfolk Island and widely planted along the Coast NSW the Northern Beaches LGA. The tree is located in the South west portion of the Site. The tree has 3 co dominant stems which adjoin in 'V' shaped stem junctions at 2m from the ground which is considered to be a significant defect.	A4	4.9m	2.4m
T2 <i>Eucalyptus saligna</i> Common name 'Sydney Blue Gum' Age class. 40 years See Figs. 4 & 5.	16m	48cm 52cm at the base	N 2m E 5m S 6m W 4m	An endemic tree common to the Sydney region and the Northern Beaches LGA. The tree is located in the Eastern portion of the Site and was good health and condition at the time of my assessment. The tree has a large scar and resin is dripping down	A1	4.8m	Asym metric
T3 <i>Corymbia citriodora</i> Common name 'Lemon scented Gum'. Age class. 50 years See Figs. 4 & 6.	18m	35cm 40cm at the base	N 3m E 2m S 3m W 3m	A native tree common to the Northern. The tree is located in the Eastern portion of the Site and was good health and condition at the time of my assessment. There were no apparent pathogens nor significant defects at the time of my inspection.	A1	4.4m	Asym metric
T4 <i>Eucalyptus microcorys</i> Common name 'Sydney Blue Gum' Age class. 40 years See Figs. 4 & 7.	18m	40cm 52cm at the base	N 5m E 6m S 4m W 4m	An endemic tree common to the Sydney region and the Northern Beaches LGA. The tree is located in the eastern portion of the Site and was good health and condition at the time of my assessment. There were no apparent pathogens nor significant defects at the time of my inspection.	A1	8m	Asym metric

T5 <i>Eucalyptus saligna</i> Common name 'Sydney Blue Gum' Age class. 40 years See Fig. 11.	18m	81cm 92cm at the base	N 5m E 6m S 4m W 4m	An endemic tree common to the Sydney region and the Northern Beaches LGA. The tree is located in the Northeastern portion of the Site and was good health and condition at the time of my assessment. There were no apparent pathogens nor significant defects at the time of my inspection.	A1	9.8m	3.2m
T6 <i>Casurina glauca</i> Common name 'Swamp Sheoak' Age class. 40 years See Fig. 12.	10m	24cm 25cm at the base	N 5m E 6m S 4m W 4m	An endemic tree common to the Sydney region and the Northern Beaches LGA. The tree is located in the Northwestern portion of the Site and was good health and condition at the time of my assessment. There were no apparent pathogens nor significant defects at the time of my inspection.	A1	2.9m	1.9m

APPENDIX 1B. Figures 2 to 15. Photos of Trees as listed in Appendix 1 A.



Fig. 2. Photo of T1 a *Melaleuca quinquinervia* to the Northwest of the Site

Fig. 3. Photo of structural defect in the form of 3 stems adjoining in 'V' shape

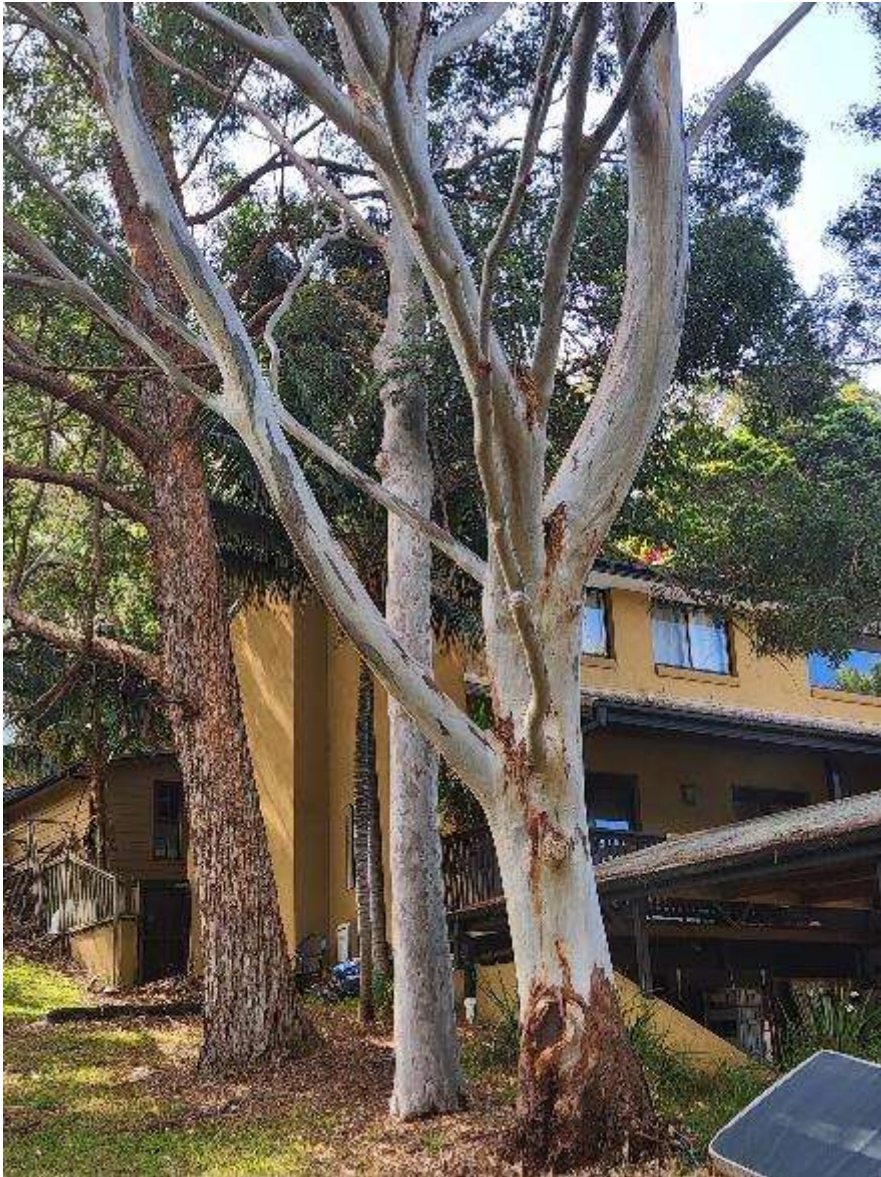


Fig. 4. Photo of T3, T4 & T5 a *E. saligna*, *C. citriodora* & *E. microcorys*



Fig. 5. Photo of tree T2 a *Eucalyptus saligna* (In centre of the frame).

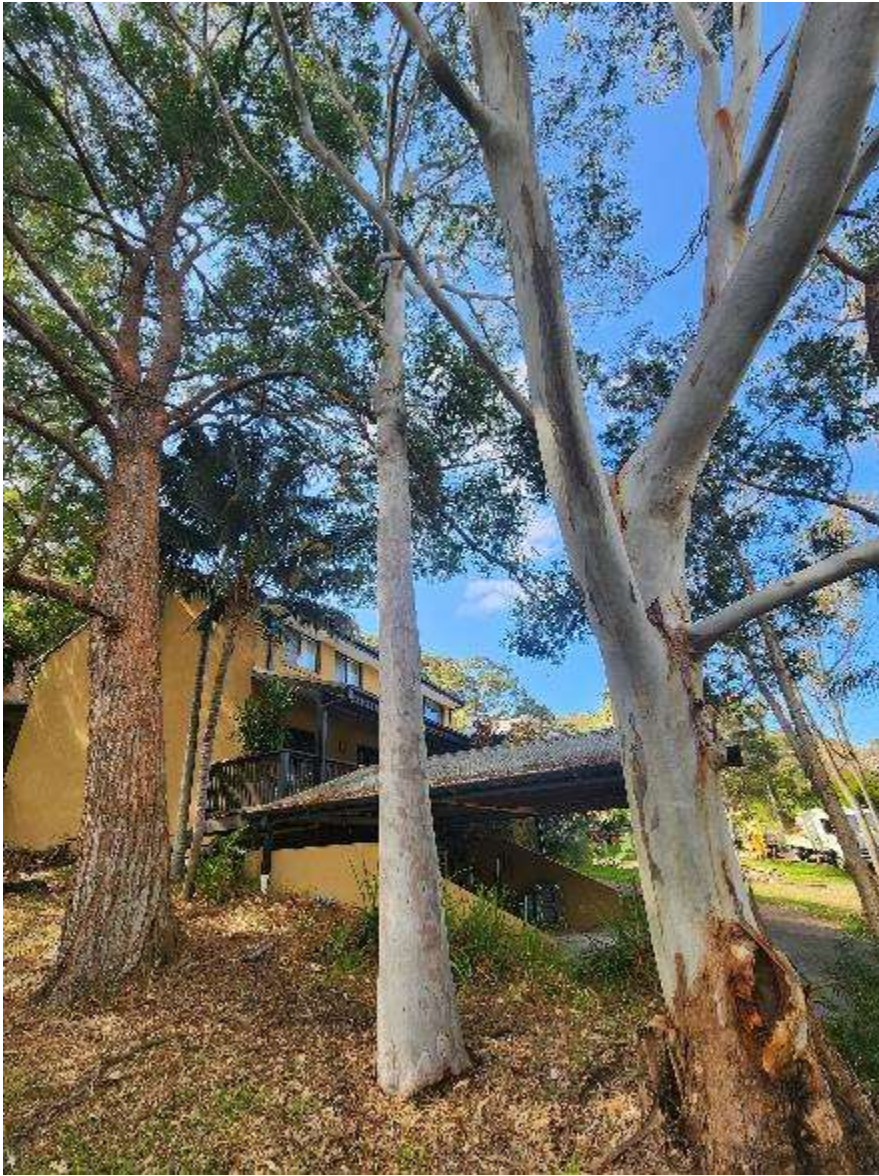


Fig. 6. Photo of T3 a *Corymbia citriodora* In center of the frame.

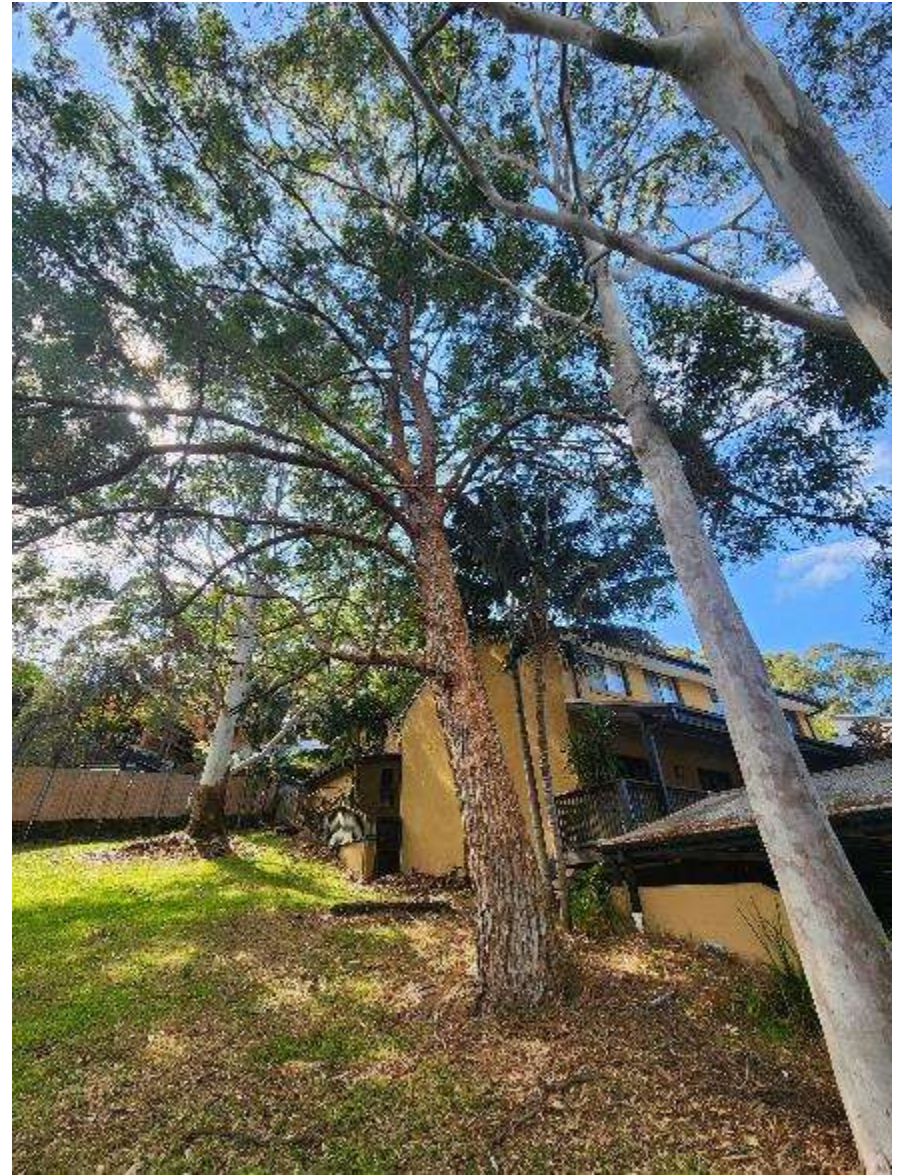


Fig. 7. Photo of tree T4 a *Eucalyptus microcorys* in the center of the frame.



Fig. 8. Photo of the canopy of T3 showing many dead branches.



Fig. 9. Photo of the canopy of T4 overhanging the neighbour's dwelling.

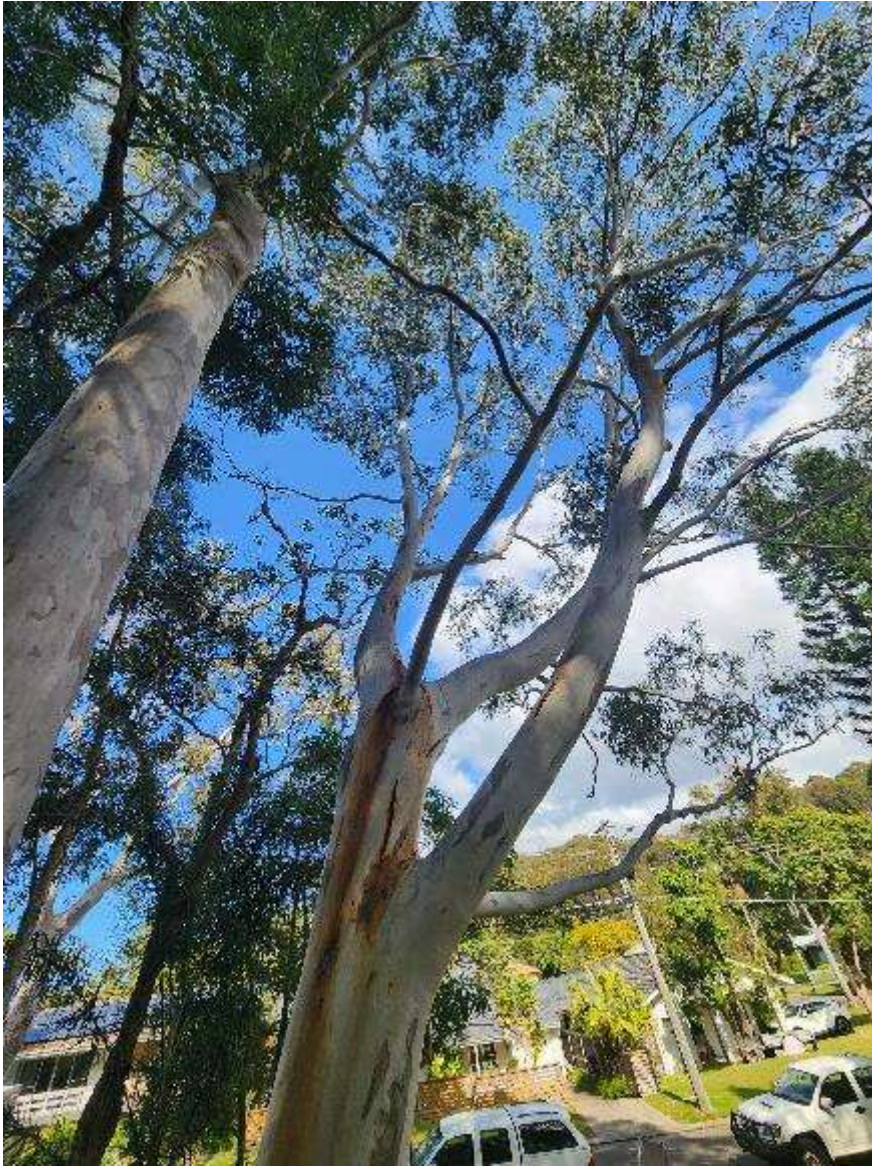


Fig. 10. Photo of the canopy of T2 showing dead limbs and resin

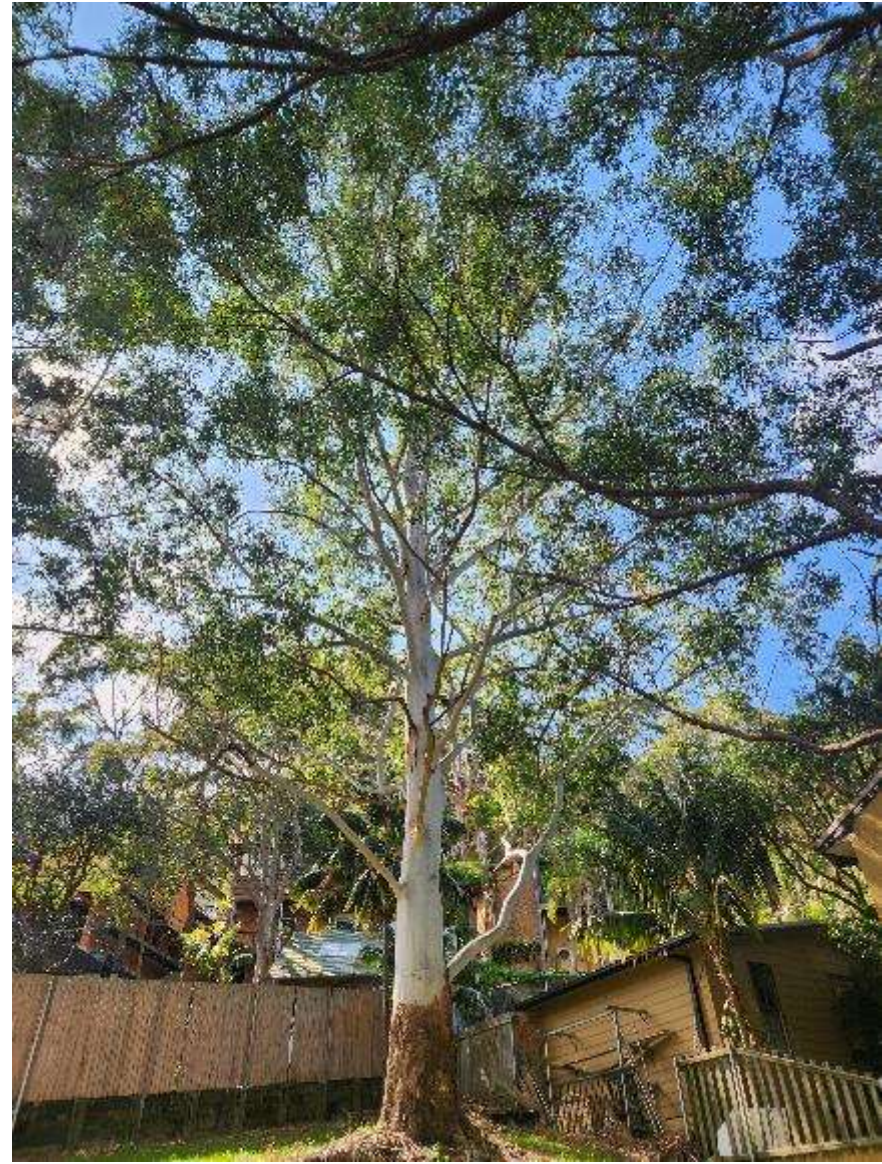


Fig. 11. Photo of tree T5 a *Eucalyptus saligna*



Fig. 12. Photo of Trees T6, T7, T8, T9, T10 and T11



Fig. 13. Photo of tape measure from eave of the neighbour's car port to the buttress roots of T4.

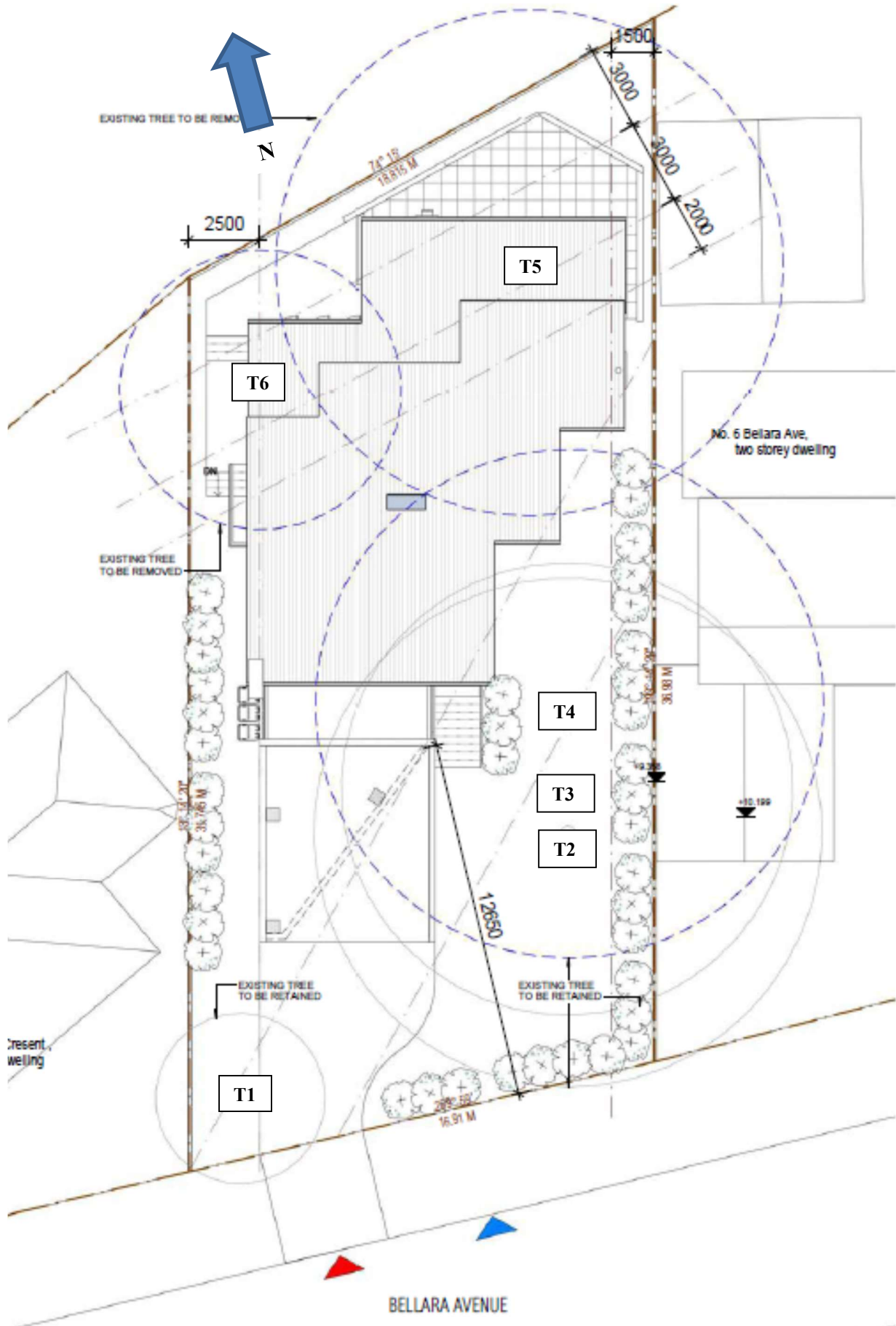


Fig. 14. Photo of tape measure buttress root of T4.



Fig. 15. Photo showing reading of the tape measure of 2m from the buttress to the eave of the carport.

APPENDIX 2 Excerpt from site plans showing the location of trees on the Site in relation to the proposed new building footprints.



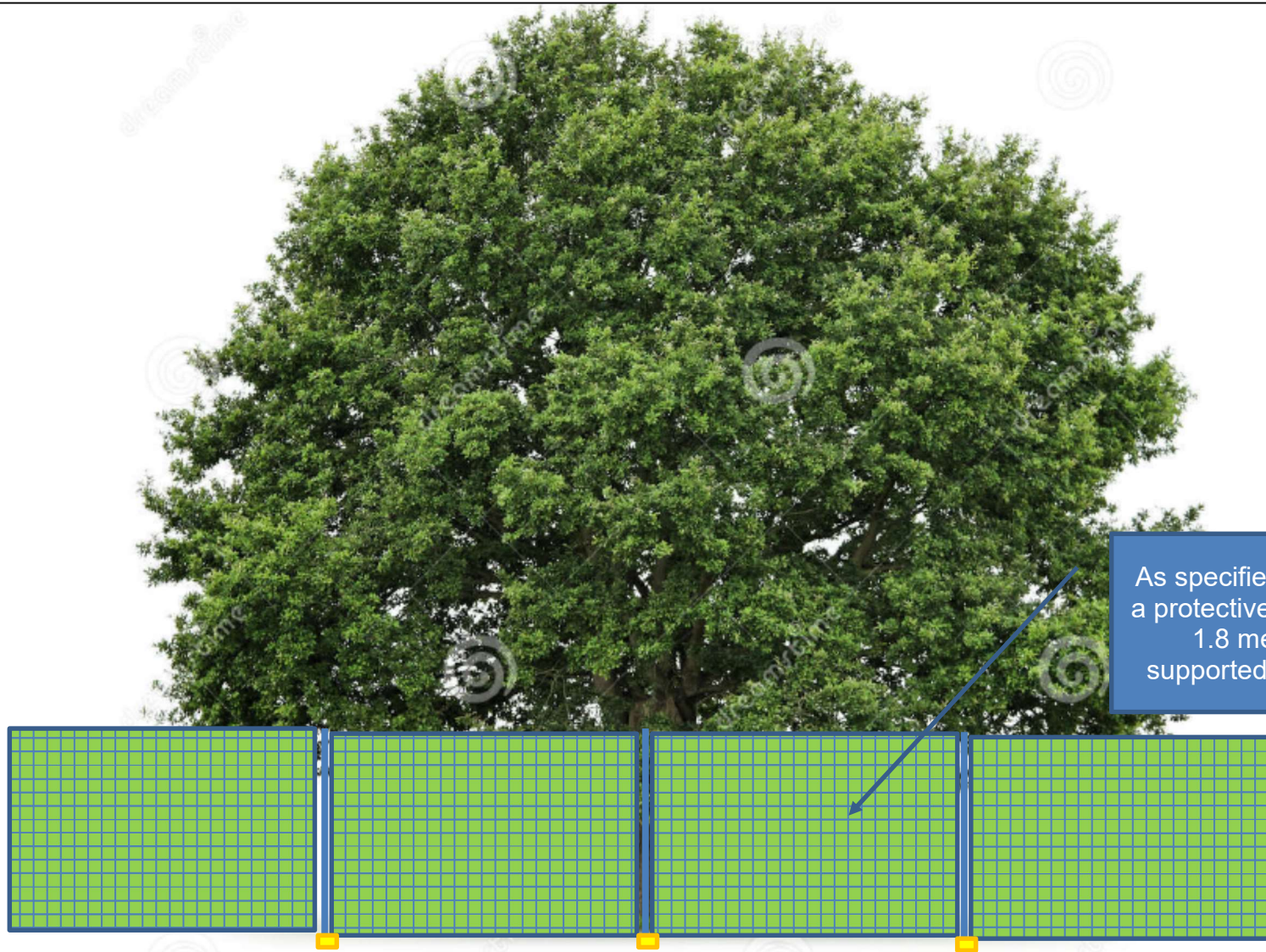
APPENDIX 3. TABLE 2. SULE CATAGORIES AND SUB-CATEGORIES.

	1	2	3	4	5
	Long SULE: Appeared to be retainable at the time of assessment for over 40 years with an acceptable degree of risk, assuming reasonable maintenance.	Medium SULE: Appeared to be retainable at the time of assessment for 15 to 40 years with and acceptable degree of risk assuming reasonable maintenance.	Short SULE: Appeared to be retainable at the time of assessment for 5 to 15 years with and acceptable degree of risk assuming reasonable maintenance.	Remove: Trees which should be removed within the next 5 years.	Small young or regularly clipped: Trees that can be reliably transplanted or replaced.
A	Structurally sound trees located in positions that can accommodate future growth	Trees that may only live for 15 and 40 more years.	Trees that may only live for between 5 and 15 more years	Dead, Dying suppressed or declining trees through disease or inhospitable conditions.	Small trees less than 5 m in height.
B	Trees that could be made suitable for retention in the long term by remedial care.	Trees that may live for than 40 years, but would need to be removed for safety or nuisance reasons	Trees that may live for than 15 years, but would need to be removed for safety or nuisance reasons	Dangerous trees through instability or recent loss of adjacent trees.	Young trees less than 15 years old but over 5m in height.
C	Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts	Trees that may live for more than 40 years but should be removed to prevent interference with more suitable individuals or to	Trees that may live for more than 15years but should be removed to prevent interference with more suitable individuals or to	Dangerous trees through structural defects including cavities, decay, included bark, wounds or poor form.	Trees that have been regularly pruned to artificially control their growth

	to secure their long term retention.	provide space for new plantings	provide space for new plantings		
D		Trees that could be made suitable for retention in the medium term by remedial care	Trees that require substantial remedial care and are only suitable for retention in the short term.	Damaged trees that are clearly not safe to retain.	
E				Trees that may live for more than 5 years but should be removed to prevent interference with more suitable individuals or to provide space for new plantings.	
F				Trees that may cause damage to existing structures within 5 years.	
G				Trees that will become dangerous after removal of other surrounding trees	

Table 2 Ref Barrell, Jeremy (1996). Predevelopment tree assessment. Proceedings of the International Conference on Trees and Building Sites (Chicago)

APPENDIX 4a. TYPICAL DIAGRAM FOR PLACEMENT OF TEMPORARY FENCING FOR PROTECTION AROUND TREES.



TREEHAVEN ENVIF

APPENDIX 4b. Typical signage for tree protection.

TREE PROTECTION ZONE



NO ACCESS

Builder contact details.....

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