

Arboricultural Impact Assessment



Figure 1 Tree 1 *Archontophoenix cunninghamiana*

Site Address: 15 Threlfall St Eastwood, NSW

Client: Jenny Ainsworth and Carl Mihailovich

Date: August 2023

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 City of Ryde

Approved Plans
LDA No. LDA2023/0121
Date: 28 September 2023
Council Officer: Colin Murphy
Subject to Conditions of Consent

**Note: See Condition No. 1 (b) - Tree 4
is to be retained and protected.**

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1.0 Summary

Accurate Tree Assessment has been commissioned by Jenny Ainsworth and Carl Mihailovich (the clients) to undertake an assessment of development impacts for sixteen (16) trees on and adjoining the property at 15 Threlfall St Eastwood where it is proposed to construct a secondary dwelling in the rear yard.

This report is prepared to address the Request for Information from Ryde City Council reference LDA 2023/0121 dated 10 July 2023.

The property is zoned R2 Low Density Residential and is currently occupied by a single dwelling and attached garage with areas of lawn and paving making up the landscape, private trees are subject to the provisions of City of Ryde Development Control Plan, 2014, Part 9.5 "Tree Preservation" (DCP).

Conclusions

Tree 1 *Archontophoenix cunninghamiana* will be subject to minor encroachment caused by excavation for stormwater drainage and is proposed for retention.

Tree 2 *Araucaria heterophylla* will be subject to minor encroachment caused by excavation for stormwater absorption pit and is proposed for retention.

Trees ~~4 *Angophora costata*~~, 5 *Corymbia maculata* and 6 *Eucalyptus racemosa* are near or within the proposed building footprint and are proposed for removal.

Trees 1a *Callistemon viminalis*, 3 *Eucalyptus pilularis*, 7 *Stenocarpus sinuatus*, 9 and 11 *Syncarpia glomulifera*, 10 *Syzigium smithii*, 8 and 12 *Eucalyptus saligna x botryoides*, 15 *Grevillea robusta* and 16 *Liquidambar styraciflua* are setback from the proposed works and are proposed for retention.

Tree 13 *Jacaranda mimosifolia* will be subject to minor and acceptable encroachment caused by excavation for the proposed supporting piers of the dwelling, the trunk and branches will be adequately protected by retention of the existing boundary fence. Potential encroachment of the TPZ caused by the installation of stormwater pipework will be addressed by attaching pipework to the underside of the structure.

Tree 14 *Eucalyptus microcorys* will be subject to minor and acceptable encroachment caused by construction of the dwelling, the trunk and branches will be adequately protected by retention of the existing boundary fence.

Recommendations

That Tree 1 *Archontophoenix cunninghamiana* will be protected by fencing and/or armouring in accordance with the Tree Protection Plan at appendix 12.3 and Section 4 of the Standard as detailed at appendix 12.4.B.

That Trees ~~4 *Angophora costata*~~, 5 *Corymbia maculata* and 6 *Eucalyptus racemosa* are approved for removal subject to the provision of suitable replacement planting within the property boundary.

That Trees 1a *Callistemon viminalis*, 2 *Araucaria heterophylla*, 3 *Eucalyptus pilularis*, 7 *Stenocarpus sinuatus*, 9 and 11 *Syncarpia glomulifera*, 10 *Syzigium smithii*, 8 and 12 *Eucalyptus saligna x botryoides*, 15 *Grevillea robusta* and 16 *Liquidambar styraciflua* are retained in conjunction with the proposed construction of a secondary dwelling.

The trunks and canopies of Trees 13 *Jacaranda mimosifolia* and 14 *Eucalyptus microcorys* will be adequately protected from adverse impacts of development by retention of the existing boundary

fence. Roots will be protected during excavation for proposed pier by non-destructive excavation methods and the location of piers a minimum of 200 millimetres from any retained root.

That stormwater pipes on the Western side of the secondary dwelling will be installed above ground level to remove the need for excavation within the TPZ of Tree 13.

That Tree Protection Zones meeting the provisions of AS4970-2009, 'Protection of Trees on Development Sites' are established around retained trees prior to the commencement of works in accordance with the Tree Protection Plan at appendix 12.3 and Section 4 of the Standard as detailed at appendices 12.4.A and 12.4.B.

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2.0 Disclaimer

This report is to be read and considered in its entirety. The subject trees were inspected from the ground using Visual Tree Assessment methodology and from photographs, no aerial investigations; underground or internal investigations were undertaken. It is the responsibility of the client to implement all recommendations contained in this report.

The assessment is made having regard for the prevailing site conditions; and does not account for the effects that extreme weather events may have on trees.

Information contained in this report reflects the condition of the trees at the time of the inspection. As trees are living organisms their condition will change over time, there is no guarantee that problems or deficiencies of the subject trees may not arise in the future. It must be accepted that living near trees involves some level of risk.

This report is for the use of the client and City of Ryde Council to assist in determining the tree management measures to be undertaken in conjunction with the proposed development. Distribution to other parties is not permitted except with the express permission of the author, Ian Hills.

3.0 Brief

Accurate Tree Assessment has been commissioned by Jenny Ainsworth and Carl Mihailovich (the clients) to undertake an assessment of development impacts for thirteen (13) trees on and adjoining the property at 15 Threlfall St Eastwood where it is proposed to construct a secondary dwelling in the rear yard.

This report is prepared to address Point 1(c) of the Request for Information from Ryde City Council reference No. PAN-308436.

4.0 Method

A ground based site inspection was carried out on 15 March 2023; the assessment of the trees was made using Visual Tree Assessment (VTA) procedure (Matheny & Clark, 1994), (Mattheck & Breloer, 2004) having regard for the provisions of the Australian Standard AS4970-2009, '*Protection of Trees on Development Sites*' (AS4970).

Tree dimensions have been measured using a standard arboricultural diameter tape and Nikon Forestry Pro® laser hypsometer.

Trees subject to assessment have been tagged and allocated a number which is marked on the site plan and will be used as reference throughout this report.

4.1. Documents

The following plans or documents have been reviewed in the process of this assessment:

- Site Plan prepared by Granny Flat Solutions Job no. N214426, Sheet 1, Revision E, dated 17 March 2023 (Appendix 12.2)
- Concept Stormwater Drainage plan prepared by SDS Engineering, Job No. 23058. Drawing No. C001, Revision E, dated 21 August 2023 (Appendix 12.3)

5.0 Site Conditions

The property is zoned R2 Low Density Residential and is currently occupied a single dwelling and attached garage with areas of lawn and paving making up the landscape, private trees are subject to the provisions of City of Ryde Development Control Plan, 2014, Part 9.5 “*Tree Preservation*” (DCP). The property is not located in a heritage conservation area, or on the NSW Biodiversity Values map.

The site is approximately 929m² and slopes down to the rear boundary giving the site a Northerly aspect.

The soil is mapped as the Glenorie Soil landscape (9130gn) and are shallow to moderately deep (200cm) soils derived from Wianamatta Group shale parent material with high erosion hazard and moderate reactivity (NSW Environment and Heritage, 2023)

According to climate data from the weather station at Canterbury, which is approximately 5 kilometres from the site, the district experiences prevailing winds from the South-east, with frequent strong winds above 40km/h (Willy Weather, 2023). Taller trees are exposed by their canopy projection above surrounding trees and structures.



Figure 2 Site location (Sixmaps, 2023)

6.0 Tree Assessment

No.	Common Name	Species	DBH (M)	TPZ (M)	SRZ (M)	HEIGHT (M)	SPREAD (M)	Vigour	Age Class	SULE	Comments
1	Bangalow	<i>Archontophoenix cunninghamiana</i>	0.24	2.88	2.10	8	4	g	m	2a	Appears structurally sound, minor deadwood and spent flowers
1a	Weeping Bottlebrush	<i>Callistemon viminalis</i>	0.1 x 3	2.04	2.0	3	3	g	m	2a	Appears structurally sound, street tree
2	Norfolk Is. Pine	<i>Araucaria heterophylla</i>	1.1	13.2	3.57	20	14	g	m	2a	Appears structurally sound, minor deadwood noted
3	Blackbutt	<i>Eucalyptus pilularis</i>	0.7	8.4	3.01	19	12	g	m	2a	Minor deadwood noted, tropism to South over yard
4	Smooth Barked Apple	<i>Angophora costata</i>	0.22, 0.1	2.88	2.34	16	4	av	m	2a	Co-dominant from base, slender habit
5	Spotted Gum	<i>Corymbia maculata</i>	0.36	4.32	2.39	20	14	g	m	2a	Minor deadwood noted, sparse canopy
6	Snappy Gum	<i>Eucalyptus racemosa</i>	0.2	2.4	2.00	5	4	g	sm	1a	Appears structurally sound
7	Qld Fire Wheel	<i>Stenocarpus sinuatus</i>	0.11, 0.15	2.28	1.61	7	3	g	sm	2a	Included fork union @ 1.2m, decay pocket in crotch
8	Sydney Blue Gum X	<i>Eucalyptus saligna x botryoides</i>	0.69	8.28	3.00	22	15	g	m	1a	Appears structurally sound, minor deadwood noted
9	Turpentine	<i>Syncarpia glomulifera</i>	0.19	2.28	1.68	7	2	g	sm	1a	Appears structurally sound
10	Lilly Pilly	<i>Syzigium smithii</i>	0.19	2.28	1.68	7	3	g	sm	1a	Appears structurally sound
11	Turpentine	<i>Syncarpia glomulifera</i>	0.12	2.0	1.50	5	2	g	j	1a	Appears structurally sound
12	Sydney Blue Gum X	<i>Eucalyptus saligna x botryoides</i>	0.29	3.48	2.23	13	7	av	sm	2a	Asymmetry, tropism to West over adjoining property
13	Jacaranda	<i>Jacaranda mimosifolia</i>	0.47	5.64	2.61	15	9	g	m	1a	Appears structurally sound, located on adjoining property to West 2.6 from boundary

No.	Common Name	Species	DBH (M)	TPZ (M)	SRZ (M)	HEIGHT (M)	SPREAD (M)	Vigour	Age Class	SULE	Comments
14	Tallowwood	<i>Eucalyptus microcorys</i>	0.8	9.6	3.17	20	14	g	m	1a	Appears structurally sound, located on adjoining property to North 1.9 from boundary
15	Silky Oak	<i>Grevillea robusta</i>	0.48	5.76	2.63	20	10	g	m	1a	Appears structurally sound, located on adjoining property to East 2.7 from boundary
16	Sweet Gum	<i>Liquidambar styraciflua</i>	0.6	7.2	2.85	18	12	g	m	1a	Appears structurally sound, located on adjoining property to North 2.5 from boundary

DBH – Estimated Trunk diameter at 1.4 metres

Vigour - P = Poor, F = Fair, Av = Average, G = Good

Age class – J = Juvenile, SM = Semi-mature M = Mature, OM = Over mature

TPZ = Tree Protection Zone (calculated in accordance with AS4970)

SRZ = Structural Root Zone (calculated in accordance with AS4970)

SULE = Safe Useful Life Expectancy (Barrel, J. 1993-5 Appendix 12.1)

7.0 Tree Retention Value

No.	Species	Health and Vigour	Condition	Suitability	Sustainability	Landscape rating	Retention Value	Encroachment level	Proposal
1	<i>Archontophoenix cunninghamiana</i>	Good	Good	High	15-40 years	2	High	11% TPZ 16% SRZ	Retention
1a	<i>Callistemon viminalis</i>	Good	Good	High	15-40 years	2	High	Nil	Retention
2	<i>Araucaria heterophylla</i>	Good	Good	Medium	15-40 years	1	High	20% TPZ*	Retention
3	<i>Eucalyptus pilularis</i>	Good	Good	High	15-40 years	2	High	8% TPZ	Retention
4	<i>Angophora costata</i>	Average	Average	High	15-40 years	3	High	2% TPZ	Retention Removal
5	<i>Corymbia maculata</i>	Good	Good	High	15-40 years	3	High	25% TPZ 30% SRZ	Removal
6	<i>Eucalyptus racemosa</i>	Good	Good	High	40+ years	3	High	65% TPZ/SRZ	Removal
7	<i>Stenocarpus sinuatus</i>	Good	Good	High	15-40 years	3	High	Nil	Retention
8	<i>Eucalyptus saligna x botryoides</i>	Good	Good	High	40+ years	2	High	7% TPZ	Retention
9	<i>Syncarpia glomulifera</i>	Good	Good	High	40+ years	3	High	Nil	Retention
10	<i>Syzigium smithii</i>	Good	Good	High	40+ years	3	High	2% TPZ	Retention
11	<i>Syncarpia glomulifera</i>	Good	Good	High	40+ years	3	High	Nil	Retention
12	<i>Eucalyptus saligna x botryoides</i>	Average	Average	High	15-40 years	3	High	Nil	Retention
13	<i>Jacaranda mimosifolia</i>	Good	Good	High	40+ years	3	mm	14%TPZ	Retention
14	<i>Eucalyptus microcorys</i>	Good	Good	High	40+ years	3	High	9%TPZ	Retention

No.	Species	Health and Vigour	Condition	Suitability	Sustainability	Landscape rating	Retention Value	Encroachment level	Proposal
15	<i>Grevillea robusta</i>	Good	Good	High	40+ years	3	High	Nil	Retention
16	<i>Liquidambar styraciflua</i>	Good	Good	High	40+ years	3	High	Nil	Retention

Vigour – based on production of new growth and wound occlusion E = Excellent, G = Good, Av = Average, P = Poor, F = Fair.

Condition – based on structural faults or diseases or provides comparison to an archetypal example of the species.

Suitability - High = adequate space to accommodate future growth and growing conditions suited to the species, Medium = inadequate space and good growing conditions, Low = inadequate space and poor growing conditions.

Retention Value – combines Landscape significance and sustainability to rank the trees value (Refer Appendix 12.5)

***Existing encroachment**

8.0 Development impact

All parts of a tree may be damaged by construction activities, and the effects of damage are often cumulative meaning that seemingly minor damage to the tree can have adverse effects that may not become apparent until well after the project has been completed.

Crown damage often occurs when machinery impacts branches of the tree resulting in a loss of foliage. As the foliage is where the tree produces the sugars required for healthy growth it therefore stands to reason that any loss of foliage will affect the tree's ability to function normally.

In addition, when branches are torn or improperly pruned the tree's ability to recover is affected and pathogens that cause wood decay or disease have an increased opportunity to penetrate the trees natural defenses.

Trunk damage is usually caused by mechanical impact, and again wounding predisposes the tree to infection by pathogens.

Root damage is the most common cause of damage to trees on development sites, and often has the most serious effects as it commonly goes un-noticed for some time. Damage can be caused by mechanical factors such as tearing during excavation, as well as factors such as chemical contamination, changes in hydrology and altering gaseous exchange rates by filling, and compaction during movement of equipment.

Australian Standard 4970, *Protection of Trees on Development Sites* was adopted in 2009 to provide Arborists and the construction industry with a guide to assist in the preservation of retained trees on all types of development sites.

To assist professionals working to protect trees the Standard proposes the following:

"Tree Protection Zone - A specified area above and below ground level at a given distance from the trunk set aside for the protection of a tree's roots and crown to provide for the viability and stability of a tree to be retained where it is potentially subject to damage by development.

Structural Root Zone – *The area around the base of a tree required for the tree's stability in the ground. The woody root growth and soil cohesion in this area are necessary to hold the tree upright. The SRZ is nominally circular with the trunk at its centre and is expressed by its radius in metres.*

This zone considers a tree's structural stability only, not the root zone required for a tree's vigour and long-term viability, which will usually be much larger." (Ref. AS4970-2009)

Minor encroachment of the TPZ is sometimes unavoidable and at levels less than 10% of the total TPZ area can be tolerated if there is scope to increase the area of the TPZ contiguously about the unaffected perimeter. Where encroachment exceeds 10% further investigation will be required to determine the measures required to offset the incursion. Encroachment of the SRZ is not recommended as tree health and condition will almost certainly be adversely affected.

9.0 Discussion

The impact of the proposed development on the thirteen (13) trees subject of this report is assessed against the proposed site plan provided, that details construction of a secondary dwelling in the rear yard. Three trees are proposed for removal.

Tree 1 *Archontophoenix cunninghamiana* is a mature example of the species assessed with high retention value due to being in good health and condition. The tree is located against the Western boundary and will be subject to minor encroachment caused by excavation for the provision of stormwater drainage.

The stormwater pipe from the grated drain to the absorption pit will pass 2 metres from the trunk of Tree 1 causing a potential encroachment of 9.6% which is a minor and acceptable level of encroachment under the provisions of AS4970.

Tree 1 is to be protected from possible mechanical impacts by the installation of temporary fencing 2 metres radius from the trunk in accordance with the provisions of AS4970 detailed at Appendix 12.3.A. If the fence needs to be moved for access the trunk is to be protected by armouring of the trunk, whereby timber slats are fixed over a layer of padding to create a protective shell, Appendix 12.4.B.

Tree 1a *Callistemon viminalis* is a semi mature public tree located on the road reserve of Threlfall St. Excavation for the proposed stormwater pipe is located 2.8 metres from the tree and will not cause an encroachment of the TPZ.

The tree will be retained and protected by the by the installation of temporary fencing at the perimeter of the TPZ 2.04 metres from the trunk of the tree.

Tree 2 *Araucaria heterophylla* is a mature example of the species assessed with high retention value due to being in good health and condition. The tree is located against the Eastern boundary and is subject to an existing encroachment calculated at 20% of the TPZ.

The amended stormwater design will utilise an absorption pit located within the existing hardstand and causing an 8.5% encroachment which meets the provisions of AS4970 for a minor and acceptable encroachment.

The lawn area below the tree is to be maintained as a TPZ by the installation of temporary fencing at the edge of the hardstand. This is proposed to ensure that materials are not stored around the tree and vehicles are kept on the hardstand to protect against soil compaction within the TPZ.

Tree 3 *Eucalyptus pilularis* is a mature example of the species assessed with high retention value due to being in good health and condition. The tree is behind a low retaining wall adjacent to the proposed work area and will be subject to minor encroachment of the TPZ.

The tree will be retained and protected during the project by the installation of temporary fencing to create an exclusion zone covering the SRZ, 3.01 metres radius from the trunk.

Trees 4 *Angophora costata*, 5 *Corymbia maculata* and 6 *Eucalyptus racemosa* are assessed with reduced longevity and being located near or within the building footprint and are proposed for removal. The proposed building has been sited to preserve trees better suited to retention towards the rear boundary.

Removal of the trees is supported subject to the provision of suitable replanting within the landscaping of the site.

Tree 8 *Eucalyptus saligna x botryoides* is a mature example of the species assessed with high retention value due to being in good health and condition. The tree is located in the North-eastern corner of the property and will be subject to minor encroachment of the TPZ.

Trees 7 *Stenocarpus sinuatus*, 9 and 11 *Syncarpia glomulifera* 10 *Syzigium smithii* and 12 *Eucalyptus saligna x botryoides* located across the Northern property boundary are setback from the proposed building and will not be subject to encroachment.

Trees 8-12 will be retained and protected by the establishment of a TPZ around the Northern portion of the site by the installation of temporary fencing to enclose the greater portion of the respective TPZ's.

Tree 13 located on the adjoining property to the West is located 2.6 metres from the boundary. The proposed secondary dwelling covers approximately 14% of the TPZ which is a major but manageable level of encroachment.

Given that the Southern elevation of the structure is supported on piers the actual encroachment is reduced to the area of those piers within the TPZ which is not likely to adversely affect the tree. It is proposed that piers within the TPZ are excavated by hand or other non-destructive method so that all roots greater than 40 millimetres diameter can be located and retained without being damaged.

Where a proposed pier conflicts with a retained root the pier is to be relocated so that a minimum of 200 millimetres lateral clearance is provided, this will have the added benefit of protecting the structure from secondary growth (thickening) of roots as the tree continues to grow.

Stormwater pipes from the rainwater tank to the absorption pit are to be attached to the side of the dwelling so that excavation through the TPZ is avoided.

Tree 14 located on the adjoining property North of the subject site is located 2.57 metres from the boundary. The proposed secondary dwelling which is setback 4.705 metres from the boundary covers approximately 6% of the TPZ which is a minor and acceptable level of encroachment.

Trees 15 and 16 located on the adjoining property to the East are setback 2.66 and 2.54 metres respectively from the boundary. As the secondary dwelling is setback 6.43 metres from the boundary there will be no encroachment on these trees.

TPZ fencing is to be installed prior to the commencement of works in accordance with the Tree Protection Plan at appendix 12.3, and the provisions of Section 4 of AS4970 detailed at appendix 12.4.A.

10.0 Conclusions

Tree 1 *Archontophoenix cunninghamiana* will be subject to minor encroachment caused by excavation for stormwater drainage and is proposed for retention.

Tree 2 *Araucaria heterophylla* will be subject to minor encroachment caused by excavation for stormwater absorption pit and is proposed for retention.

Trees 4 *Angophora costata*, 5 *Corymbia maculata* and 6 *Eucalyptus racemosa* are near or within the proposed building footprint and are proposed for removal.

Trees 1a *Callistemon viminalis*, 3 *Eucalyptus pilularis*, 7 *Stenocarpus sinuatus*, 9 and 11 *Syncarpia glomulifera* 10 *Syzigium smithii*, 8 and 12 *Eucalyptus saligna x botryoides*, 15 *Grevillea robusta* and 16 *Liquidambar styraciflua* are setback from the proposed works and are proposed for retention.

Tree 13 *Jacaranda mimosifolia* will be subject to minor and acceptable encroachment caused by excavation for the proposed supporting piers of the dwelling, the trunk and branches will be adequately protected by retention of the existing boundary fence. Potential encroachment of the TPZ caused by the installation of stormwater pipework will be addressed by attaching pipework to the underside of the structure.

Tree 14 *Eucalyptus microcorys* will be subject to minor and acceptable encroachment caused by construction of the dwelling, the trunk and branches will be adequately protected by retention of the existing boundary fence.

11.0 Recommendations

That Tree 1 *Archontophoenix cunninghamiana* will be protected by fencing and/or armouring in accordance with the Tree Protection Plan at appendix 12.3 and Section 4 of the Standard as detailed at appendix 12.4.B.

That Trees 4 *Angophora costata*, 5 *Corymbia maculata* and 6 *Eucalyptus racemosa* are approved for removal subject to the provision of suitable replacement planting within the property boundary.

That Trees 1a *Callistemon viminalis*, 2 *Araucaria heterophylla*, 3 *Eucalyptus pilularis*, 7 *Stenocarpus sinuatus*, 9 and 11 *Syncarpia glomulifera* 10 *Syzygium smithii*, 8 and 12 *Eucalyptus saligna x botryoides* 15 *Grevillea robusta* and 16 *Liquidambar styraciflua* are retained in conjunction with the proposed construction of a secondary dwelling.

The trunks and canopies of Trees 13 *Jacaranda mimosifolia* and 14 *Eucalyptus microcorys* will be adequately protected from adverse impacts of development by retention of the existing boundary fence. Roots will be protected during excavation for proposed pier by non-destructive excavation methods and the location of piers a minimum of 200 millimetres from any retained root.

That stormwater pipes on the Western side of the secondary dwelling will be installed above ground level to remove the need for excavation within the TPZ of Tree 13.

That Tree Protection Zones meeting the provisions of AS4970-2009, 'Protection of Trees on Development Sites' are established around retained trees prior to the commencement of works in accordance with the Tree Protection Plan at appendix 12.3 and Section 4 of the Standard as detailed at appendices 12.4.A and 12.4.B.



Ian Hills - Principal Arborist
Accurate Tree Assessment





Figure 3 Tree 2 *Araucaria heterophylla*.



Figure 4 Trees 3 *Eucalyptus pilularis*, 4 *Angophora costata* and 8 *Eucalyptus saligna x botryoides*



Figure 5 Trees 5 *Corymbia maculata* and 6 *Eucalyptus racemosa*



Figure 6 Trees 9 and 11 *Syncarpia glomulifera*, 10 *Syzigium smithii* and 12 *Eucalyptus saligna* x *botryoides*

12.0 Appendices

12.1. Safe Useful Life Expectancy Categories

1: Long SULE: Trees that appeared to be retainable at the time of assessment for more than 40 years with an acceptable level of risk.

- (a) Structurally sound trees located in positions that can accommodate future growth.
- (b) Trees that could be made suitable for retention in the long term by remedial tree care.
- (c) Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long-term retention.

2: Medium SULE: Trees that appeared to be retainable at the time of assessment for 15–40 years with an acceptable level of risk.

- (a) Trees that may only live between 15 and 40 more years.
- (b) Trees that could live for more than 40 years but may be removed for safety or nuisance reasons.
- (c) Trees that could live for more than 40 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting.
- (d) Trees that could be made suitable for retention in the medium term by remedial tree care.

3: Short SULE: Trees that appeared to be retainable at the time of assessment for 5–15 years with an acceptable level of risk.

- (a) Trees that may only live between 5 and 15 more years.
- (b) Trees that could live for more than 15 years but may be removed for safety or nuisance reasons.
- (c) Trees that could live for more than 15 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting.
- (d) Trees that require substantial remedial tree care and are only suitable for retention in the short term.

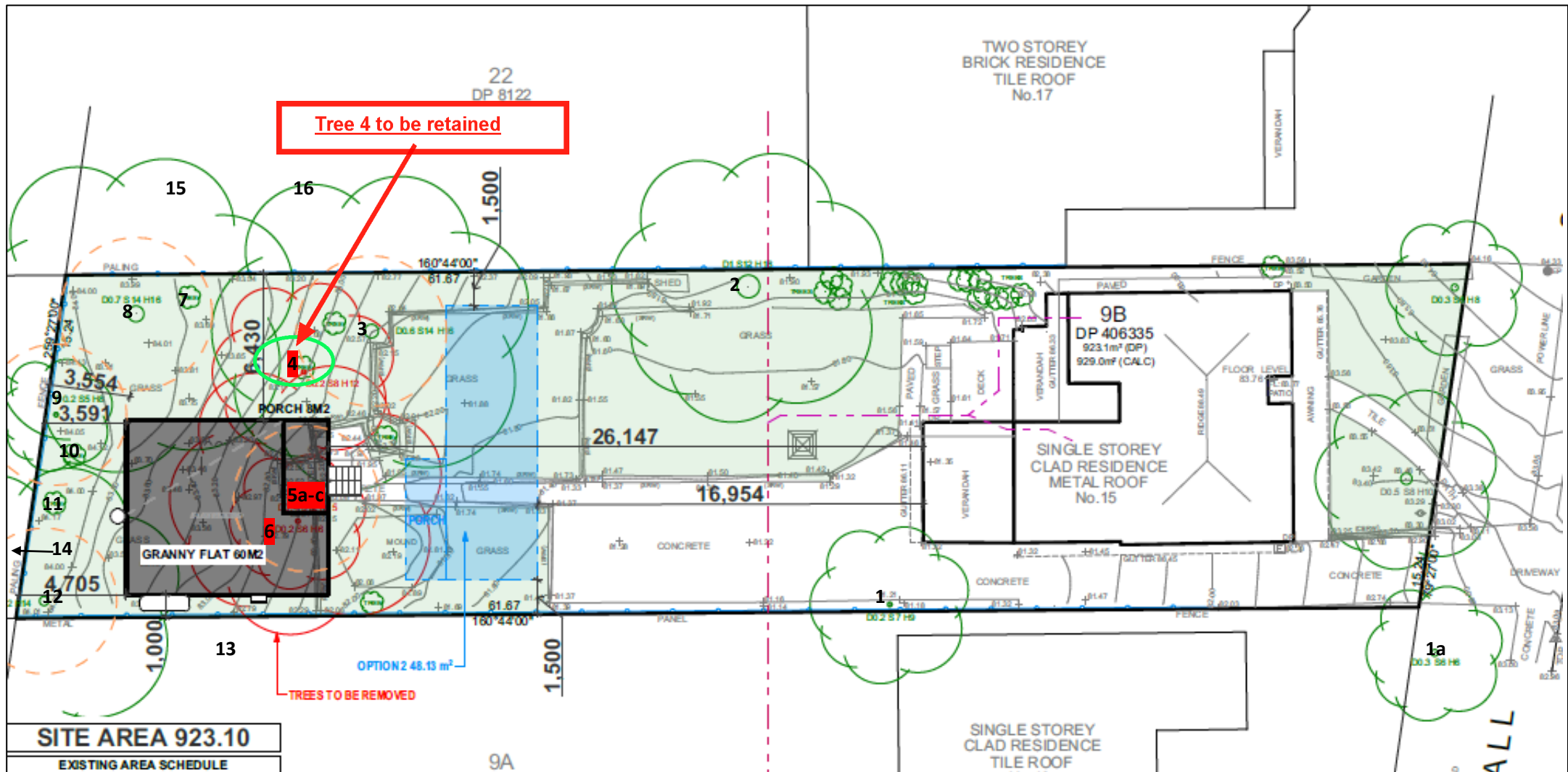
4: Remove: Trees that should be removed within the next 5 years.

- (a) Dead, dying, suppressed or declining trees because of disease or inhospitable conditions.
- (b) Dangerous trees because of 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 that could live for more than 5 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting.
- (f) Trees that are damaging or may cause damage to existing structures within 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.

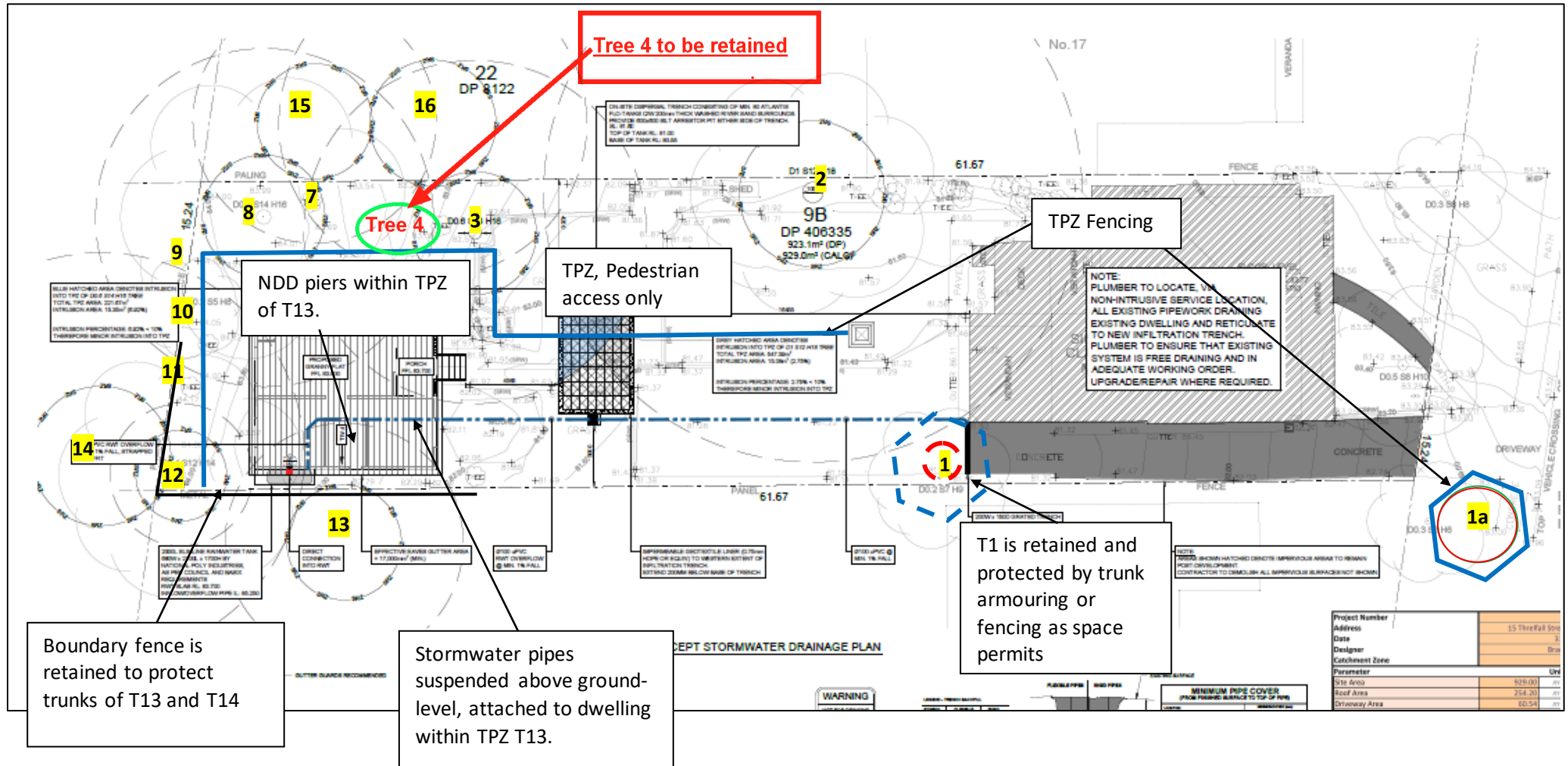
5: Small, young or regularly pruned: Trees that can be reliably moved or replaced.

- (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.

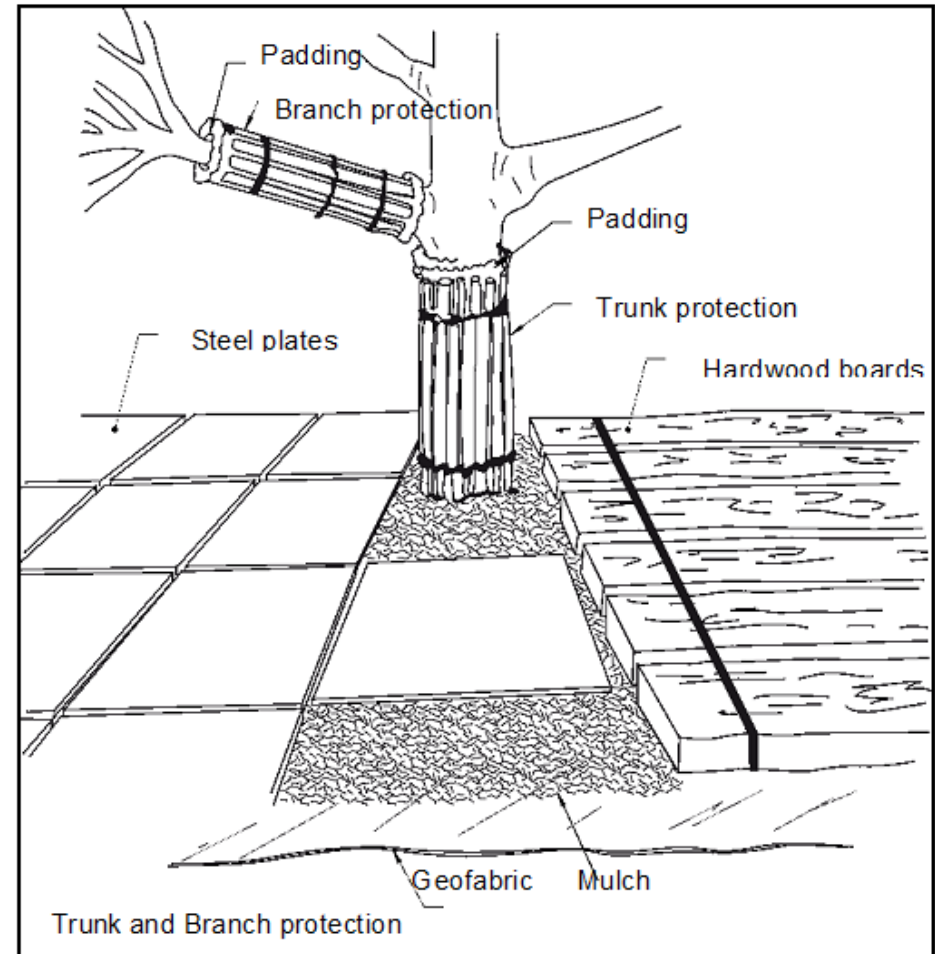
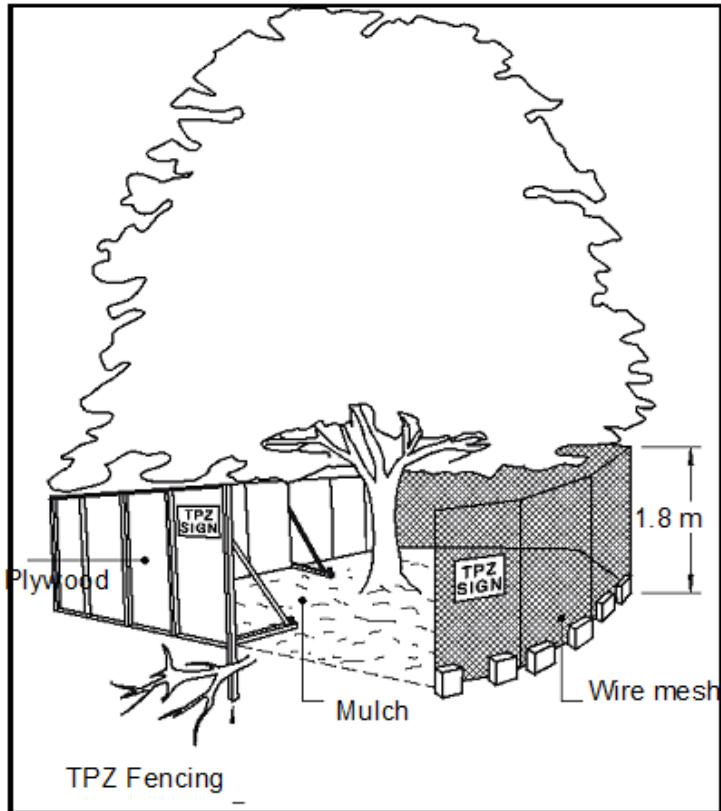
12.2 Site Plan + Tree Retention/Removal



12.3 Stormwater Plan + Tree Retention/Protection



12.4 Trunk and Branch Protection Methods (Source AS4970-2009)



12.5 Calculating Tree retention Value

	Landscape Significance Rating						
Tree Sustainability	1	2	3	4	5	6	7
Greater than 40 years	High Retention Value						
15 to 40 years			Moderate				
5 to 15 years				Low			
Less than 5 years					Very Low Retention Value		
Dead or Hazardous							

(Source NUFTM) Modified by A Morton from Couston and Howden (2001) Tree retention values table Footprint Green Pty Ltd Australia)

12.6 References

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12.7 Qualifications – Ian Hills

Associate Diploma Horticulture	Ryde TAFE 1984
AQF3 Horticulture (Arboriculture)	Ourimbah TAFE 1998
AQF5 Diploma Horticulture (Arboriculture)	Kurri Kurri TAFE 2009 (Dux) Cert No. 5934155
QTRA Registered User 2083	December 2013
QTRA Advanced User 4469	March 2018
Working with Children Check Number	WWC1780469E
National Coordinated Criminal History Check Certificate	CAD5579CB8
QTRA Advanced User 4469	March 2020