Arboricultural Impact Assessment

Figure 1 Trees 2 *Angophora floribunda, 4 and 5 Jacaranda mimosifolia.*

Site Address: 121 Memorial Ave Ettalong Beach NSW

Client: Ingrid Heintz

Date: March 2024

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1.0 Summary

Accurate Tree Assessment has been commissioned by Ingrid Heintz (the client), to provide an assessment of development impact for seven(7) trees growing on and adjoining the property at 121 Memorial Ave Ettalong Beach where it is proposed to demolish existing structures and construct a new three-unit dwelling with driveway access and off-street parking.

Conclusions

Trees 3 *Callistemon citrinus*, 4 and 5 *Jacaranda mimosifolia* are eligible for removal as exempt development in accordance with the provisions of Central Coast DCP Chapter 3.5 section 3.3.3.2.a

Trees 1 *Ficus elastica*, 2 *Angophora floribunda*, 6 *Banksia integrifolia* and 7 *Magnolia figo* will be subject to nil or manageable levels of encroachment caused by construction of the proposed dwelling and are proposed for retention.

Recommendations

That Trees 3 *Callistemon citrinus*, 4 and 5 *Jacaranda mimosifolia* will be removed during the demolition phase of the proposed development.

That all tree work is carried out by a suitably qualified and insured contracting arborist, in accordance with the Workcover Draft Code of Practice for Tree Works and Australian Standard AS4373-2007, "*Pruning of Amenity Trees*".

That Trees 1 *Ficus elastica*, 2 *Angophora floribunda*, 6 *Banksia integrifolia* and 7 *Magnolia figo* are protected from adverse impacts of development by the installation of temporary fencing panels or retention of the boundary fence in accordance with the tree protection plan at appendix 12.3 and the provisions of AS4970 detailed at appendix 12.4.A.

That tree protection measures are noted on all construction plans and explained in the site induction for all staff.

That underground services are to be located outside the TPZ of retained trees wherever possible, if excavation is required within an established TPZ it is to be conducted by hand to preserve all roots greater than 40 millimetres diameter.

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, 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.

Photographs used in this report are originals taken at the time of inspection and are not altered in any way.

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 Central Coast Council to assist in determining the tree management options to be implemented in conjunction with the proposed development; distribution to others is not permitted except with the express permission of the author, Ian Hills, no responsibility is accepted by the author for situations arising from unauthorised distribution of the report to others.

3.0 Brief

Accurate Tree Assessment has been commissioned by Ingrid Heintz (the client), to provide an assessment of development impact for seven (7) trees growing on and adjoining the property at 121 Memorial Ave Ettalong Beach where it is proposed to demolish existing structures and construct a new three-unit dwelling with driveway access and off-street parking.

4.0 Method

An inspection of the subject trees was conducted from the ground on 15 March 2024. The assessment of trees was made using Visual Tree Assessment (VTA) procedure (Matheny & Clark, 1994), (Mattheck & Breloer, 2004), having regard for the provisions of AS4970-2009, 'Protection of Trees on Development Sites'.

Tree height was determined using a Nikon Forestry Pro™ and standard arboricultural diameter tape. The canopy structure was examined visually from ground level. Dimensions of trees on adjoining property have been estimated.

Trees have each been allocated a reference number which is marked on the existing floor plan and will be used as reference throughout this report.

4.1. Documents

The client has provided copies of the architectural plans; the following documents are relied upon and have been used as reference in the preparation of this report:

- Existing Floor Plan prepared by Council Approval Group, Drawing DA-002, Revision 4, dated 11 November 2023 (Appendix 12.2)
- Demolition Plan prepared by prepared by Council Approval Group, Drawing DA-003, Revision 4, dated 11 November 2023 (Appendix 12.3)
- Proposed Site Plan prepared by prepared by Council Approval Group, Drawing DA-004, Revision 4, dated 11 November 2023 (Appendix 12.4)

5.0 Site Conditions

The property which is zoned R1- General Residential is occupied by a single-story dwelling and is generally level giving the site a Northerly aspect.

The trees are subject to Central Coast Council's tree management measures which are detailed at Chapter 3.5 of Central Coast DCP 2022.

The soil is mapped as the Woy Woy Soil Landscape (9131ww) and has the following characteristics:

> *"Landscape—level to gently undulating non-tidal sand flats and beach ridges on marine sands. Local relief <3m; slopes <5%. Watertable at a depth of <200cm. Extensively cleared low eucalypt woodland.*
>
> *Soils—deep (>200 cm) Siliceous Sands and occasional Podzols on well drained older beach ridges, Humus Podzols in poorly drained areas.*
>
> *Limitations—permanently high water-tables, localised flooding, periodic water-logging in depressions, very low to low soil fertility, localised areas of high soil erosion hazard."*
> (NSW Environment and Heritage, 2024)

According to data from the Terrey Hills AWS weather station which is approximately 22 kilometres from the subject property the prevailing winds are from the West occurrences of wind-speeds above 40 Km/h (Willyweather 2024). The subject trees are exposed to strong winds due to their canopy projection above surrounding structures.

Figure 2 Subject site (source Sixmaps, 2024)

6.0 Tree Assessment

No	Common Name	Species	DBH (M)	TPZ (M)	SRZ (M)	HEIGHT (M)	SPREAD (M)	Vigour	Age Class	SULE	Comments
1	Rubber Fig	*Ficus elastica*	multi	6.00	4.43	10	10	g	m	2b	Exempt species, appears structurally sound, 3.9m from dwelling
2	Rough-barked Applegum	*Angophora floribunda*	0.52	6.24	2.71	13	9	g	m	1a	Appears structurally sound, street tree, minor deadwood noted.
3	Common Bottlebrush	*Callistemon citrinus*	0.1 x 2, 0.075	2.00	1.68	5	5	g	sm	2a	Appears structurally sound, exempt-within 3m dwelling
4	Jacaranda	*Jacaranda mimosifolia*	0.25, 0.35	5.16	2.67	12	10	g	m	2a	Appears structurally sound, minor deadwood and epicormic re-growth, within 3m dwelling.
5	Jacaranda	*Jacaranda mimosifolia*	.45, .3, .27	7.20	2.85	12	12	g	m	2a	Appears structurally sound, minor deadwood and epicormic re-growth, within 3m dwelling.
6	Coast Banksia	*Banksia integrifolia*	0.12	1.44	1.68	5	3	g	sm	2a	Appears structurally sound, located in rear yard 4m from existing dwelling
7	Port Wine Magnolia	*Magnolia figo*	0.2	2.40	2.00	4	3	g	sm	2a	Appears structurally sound, located on adjoining property, 0.0m from boundary, 3m from existing dwelling.

DBH = Diameter at 1.4 metres above ground level
TPZ = Tree Protection Zone calculated in accordance with AS4970
SRZ = Structural Root Zone calculated in accordance with AS4970

SULE = Useful Life Expectancy (Barrel, J -1993-95) see appendix 12.2.
Age class – J = Juvenile, SM =Semi-mature M = Mature, OM= Over mature

7.0 Tree retention value

No.	Species	Health and Vigour	Condition	Suitability	Sustainability	Landscape rating	Retention vale	Encroachment	Proposal
1	*Ficus elastica*	Good	Good	Medium	15-40 years	2	Moderate	7% TPZ	Retain tree
2	*Angophora floribunda*	Good	Good	High	40+ years	1	High	Nil	Retain tree
3	*Callistemon citrinus*	Good	Good	High	15-40 years	3	Moderate	100% TPZ/SRZ	Remove tree
4	*Jacaranda mimosifolia*	Good	Good	Medium	15-40 years	3	Moderate	34% TPZ 25% SRZ	Remove tree
5	*Jacaranda mimosifolia*	Good	Good	Medium	15-40 years	3	Moderate	45% TPZ 80% SRZ	Remove tree
6	*Banksia integrifolia*	Good	Good	High	15-40 years	3	Moderate	8% TPZ 4% SRZ	Retain tree
7	*Magnolia figo*	Good	Good	High	15-40 years	3	Moderate	4% TPZ	Retain tree

Vigour – based on production of new growth and wound occlusion 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).
AS4970 – Australian Standard AS4970-2009, "*Protection of Trees on Development Sites*"

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 trees' ability to function normally.

In addition, when branches are torn or improperly pruned the trees' 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 unnoticed 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 seven (7) trees subject of this report is assessed in conjunction with the plans provided detailing demolition of existing structures and construction of a new three unit dwelling with driveway access and off-street parking. Three (3) trees are proposed for removal.

Trees 3 *Callistemon citrinus*, 4 and 5 *Jacaranda mimosifolia* are located within 3 metres of the existing dwelling and are therefore eligible for removal under Councils exempt removal criteria which are detailed in CCDCP Chapter 3.5 Section 3.5.3.2.a. The trees will be removed during the demolition stage of the development.

Four (4) remaining trees are proposed for retention and will be protected from adverse impacts for the duration of the project.

Tree 1 *Ficus elastica* appears in good health and condition and is assessed with moderate retention value. The tree is located on the road reserve at the front of the property and will be retained in conjunction with the proposed development.

The tree will be subject to a minor and acceptable level of encroachment caused by construction of the proposed Unit 1 and will be protected by the installation of temporary fencing panels to establish an exclusion zone 4 metres radius from the nominal centre of the trunk.

Tree 2 *Angophora floribunda* appears in good health and condition and is assessed with high retention value. The tree is located on the road reserve at the front of the property and will be retained in conjunction with the proposed development.

The tree will not be subject to encroachment from any element of the proposed design and will be protected by the installation of temporary fencing panels at 6-metres radius from the centre of the trunk to establish an exclusion zone.

Tree 6 *Banksia integrifolia* has been added to the assessment schedule as it meets the size criteria for prescription under the provisions of CCDCP Chapter 3.5, the position of the tree has been estimated and should be confirmed by survey.

Tree 6 is a semi-mature native tree located in the rear yard of the subject property that appears in good health and vigour and is assessed with moderate retention value.

The tree will be subject to a manageable level of encroachment caused by the construction of the proposed Unit 3 and will be protected by the installation of temporary fencing panels at 2-metres radius from the centre of the trunk to establish an exclusion zone.

Tree 7 *Magnolia figo* has been added to the assessment schedule as it meets the size criteria for prescription under the provisions of CCDCP Chapter 3.5, the position of the tree has been estimated and should be confirmed by survey.

Tree 7 is a semi-mature exotic tree located against the boundary on the adjoining property to the East that appears in good health and vigour and is assessed with moderate retention value.

The tee will be subject to a minor and acceptable level of encroachment caused by the construction of the proposed Unit 2 and will be adequately protected by retention of the existing boundary fence. The fence is to be maintained in serviceable condition for the duration of the project.

All protective measures are to be installed prior to the commencement of demolition works in accordance with the tree protection plan at appendix 12.3 and the provisions of AS4970 detailed at appendix 12.4.A.

10.0 Conclusions

Trees 3 *Callistemon citrinus*, 4 and 5 *Jacaranda mimosifolia* are eligible for removal as exempt development in accordance with the provisions of Central Coast DCP Chapter 3.5 section 3.3.3.2.a

Trees 1 *Ficus elastica*, 2 *Angophora floribunda*, 6 *Banksia integrifolia* and 7 *Magnolia figo* will be subject to nil or manageable levels of encroachment caused by construction of the proposed dwelling and are proposed for retention.

11.0 Recommendations

That Trees 3 *Callistemon citrinus*, 4 and 5 *Jacaranda mimosifolia* will be removed during the demolition phase of the proposed development.

That all tree work is carried out by a suitably qualified and insured contracting arborist, in accordance with the Workcover Draft Code of Practice for Tree Works and Australian Standard AS4373-2007, "*Pruning of Amenity Trees*".

That Trees 1 *Ficus elastica*, 2 *Angophora floribunda*, 6 *Banksia integrifolia* and 7 *Magnolia figo* are protected from adverse impacts of development by the installation of temporary fencing panels or retention of the boundary fence in accordance with the tree protection plan at appendix 12.3 and the provisions of AS4970 detailed at appendix 12.4.A.

That tree protection measures are noted on all construction plans and explained in the site induction for all staff.

That underground services are to be located outside the TPZ of retained trees wherever possible, if excavation is required within an established TPZ it is to be conducted by hand to preserve all roots greater than 40 millimetres diameter.

Ian Hills - Principal Arborist
Accurate Tree Assessment

QTRA Registered User

Arboriculture Australia 2024 MEMBER

Figure 3 Tree 1 *Ficus elastica*.

Figure 4 Tree 3 *Callistemon citrinus.*

Figure 5 Tree 6 *Banksia integrifolia*.

Figure 6 Tree 7 *Magnolia figo* on the adjoining property.

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.

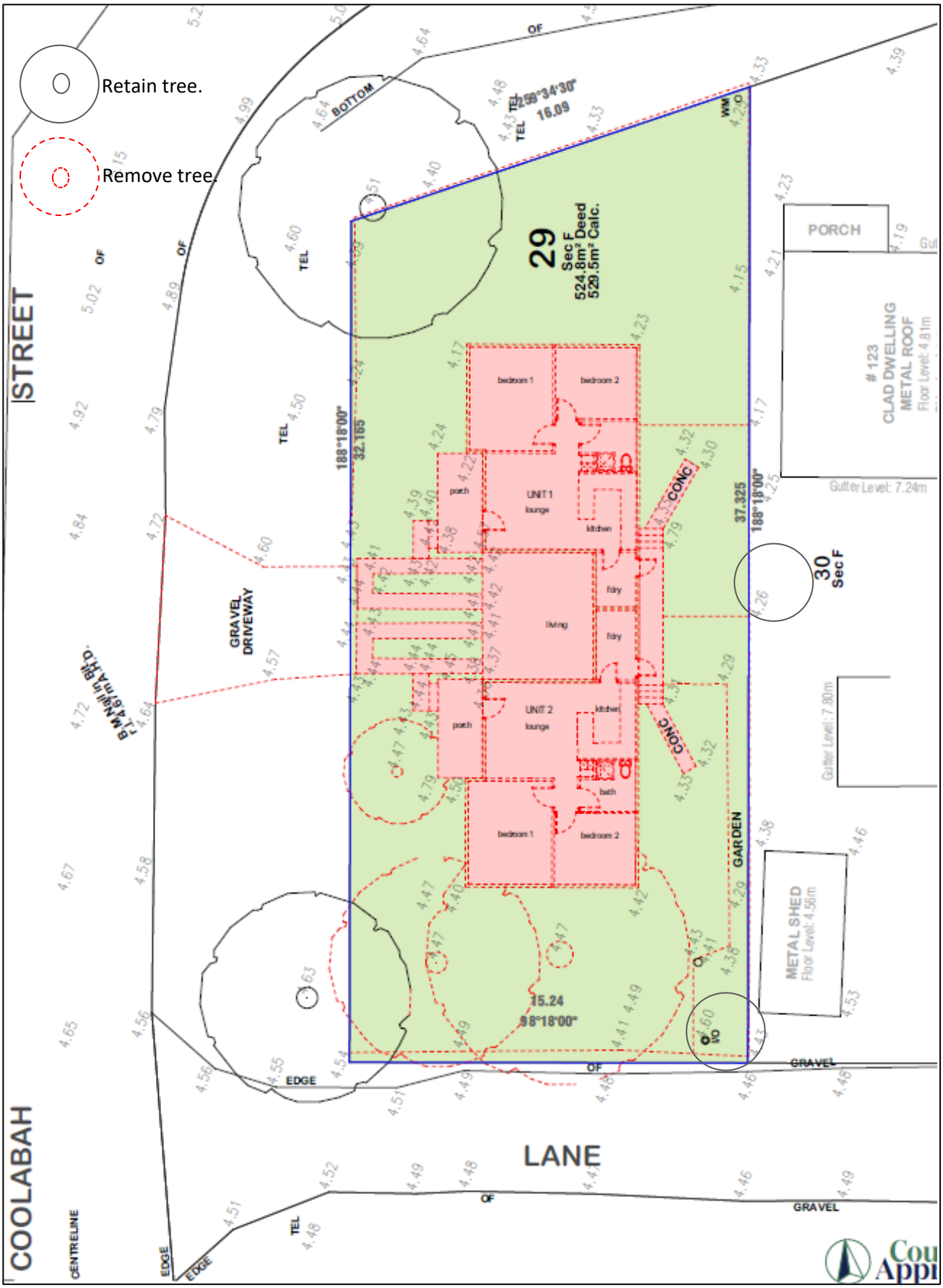
3: Short SULE: Trees that appeared to be retainable at the time of assessment for 5–15 years with an acceptable level of risk.
(a) Trees that may only live between 5 and 15 more years.
(b) Trees that could live for more than 15 years but may be removed for safety or nuisance reasons.
(c) Trees that could 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.

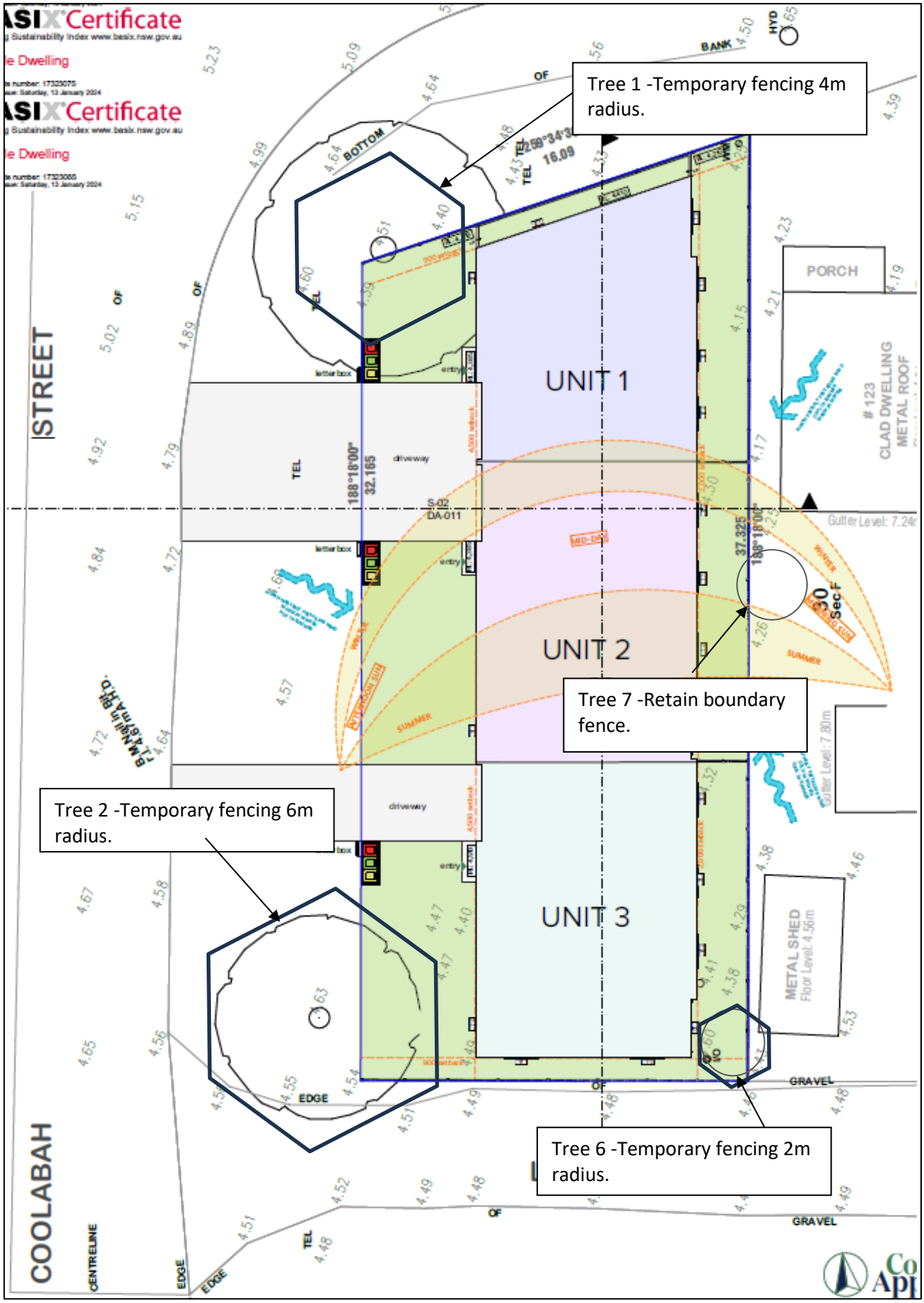
5: Small, young, or regularly pruned: Trees that can be reliably moved or replaced.
(a) Small trees less than 5m in height.
(b) Young trees less than 15 years old but over 5m in height.
(c) Formal hedges and trees intended for regular pruning to artificially control growth.

12.2 Existing Site Plan (extract) + Locations

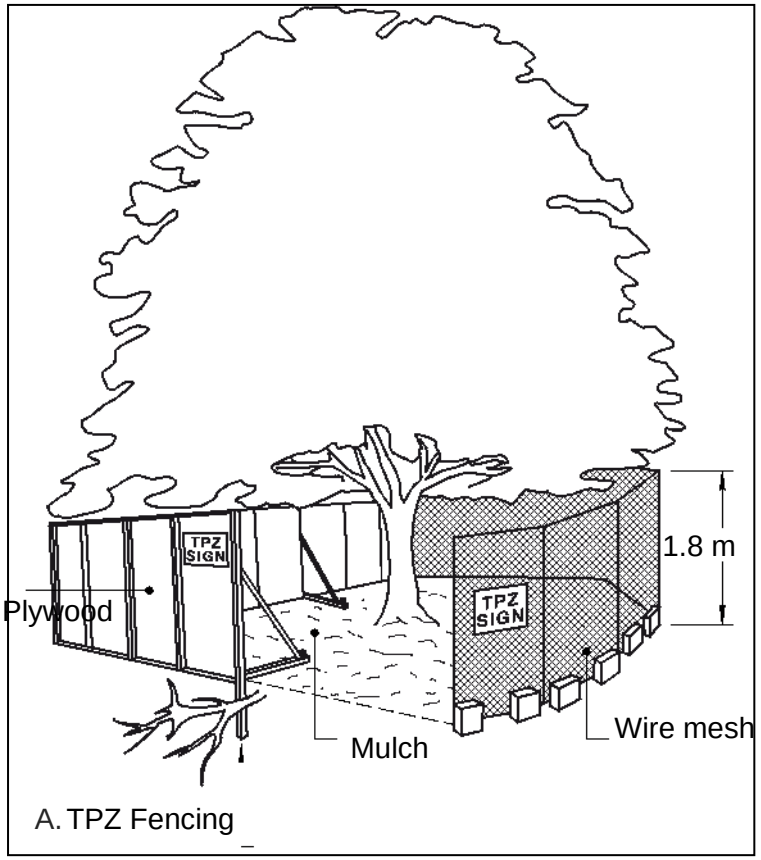
12.3 Demolition Plan (extract) + Tree retention/removal



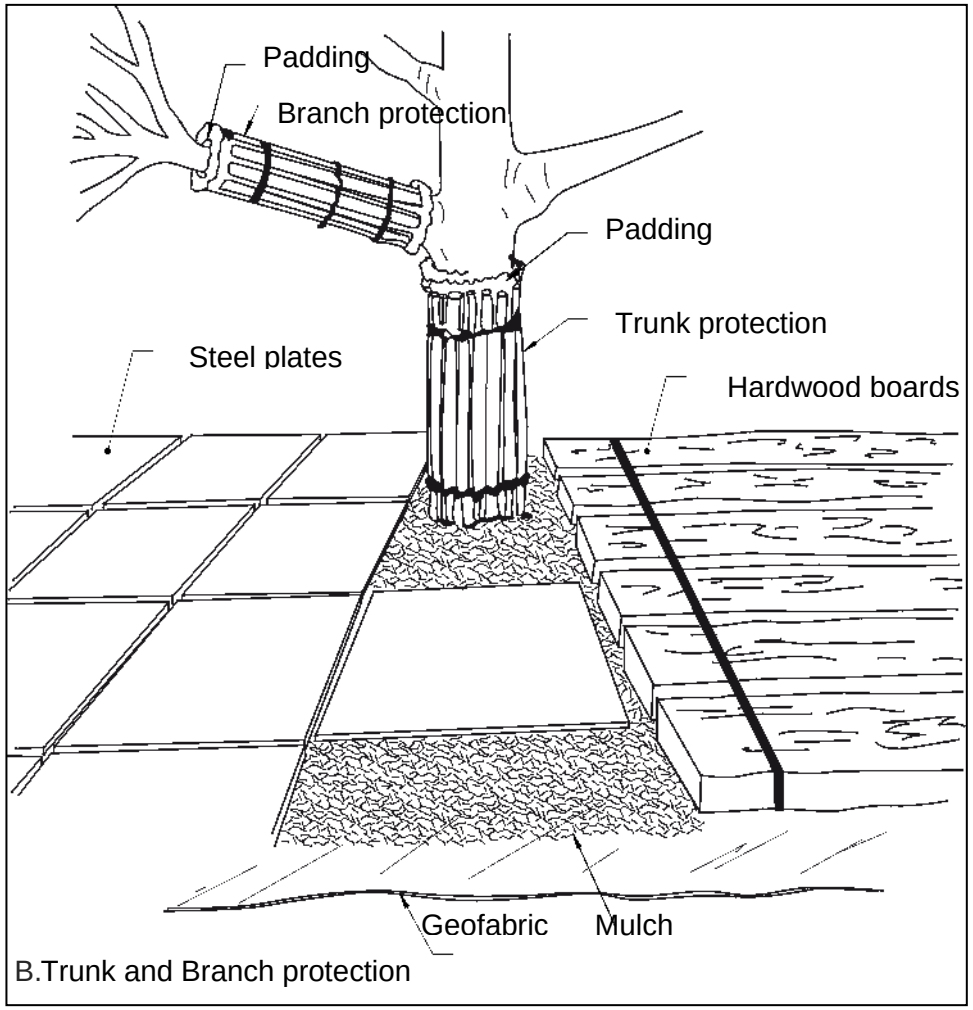
12.4 Proposed Site Plan (extract) + Tree protection



12.4 Tree Protection Methods (source AS4970-2009)

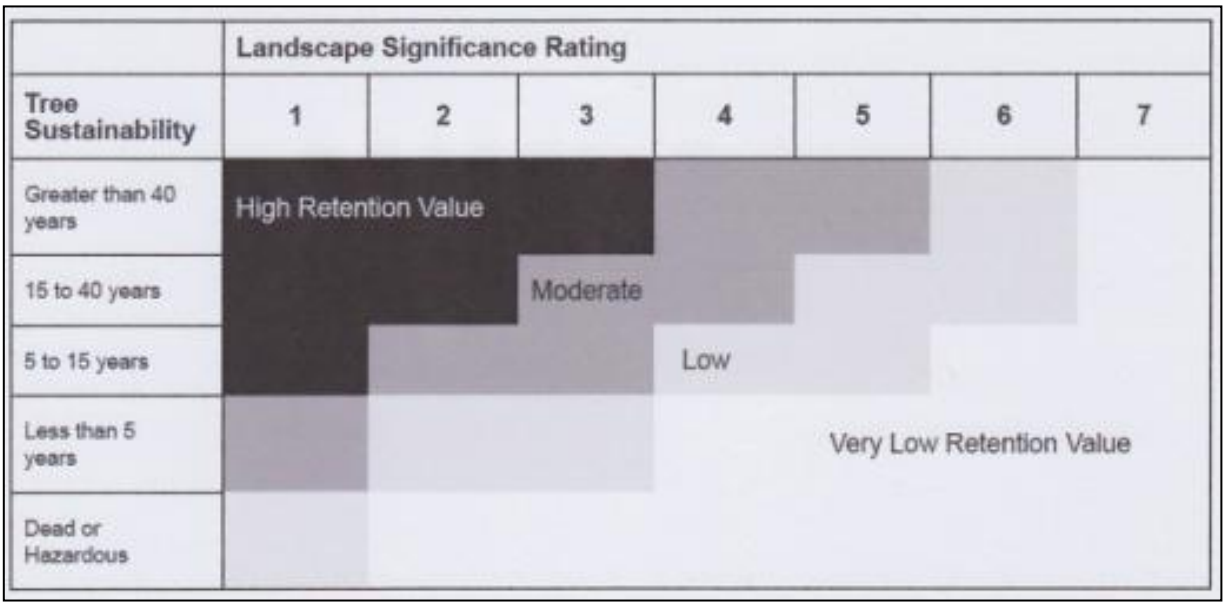


A. TPZ Fencing



B.Trunk and Branch protection

12.5 Calculating Tree retention Value



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

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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
QTRA Advanced User 4469	April 2023