

Arboricultural Impact Assessment



Figure 1 Trees 2 and 3 *Syagrus romanzoffianum*.

Site Address: 62 New England Hwy Maitland

Client: Paul Lemmerman

Date: November 2021

Prepared by Ian Hills - Associate Diploma Horticulture
Certificate III Arboriculture
Diploma Arboriculture (AQF5)

P: 0412 607 658

E: info@accuratetreassessment.com.au

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1.0 Summary

Accurate Tree Assessment has been commissioned by Paul Lemmerman to provide an arboricultural impact assessment for trees located at 62 New England Hwy Maitland where it is proposed to construct a three-lot subdivision.

The subject trees are protected by the provisions of Maitland DCP-2011-Part-B5 'Tree Management'

Conclusions

Trees 1 *Ficus benjamina* and 4 *Syagrus romanzoffianum* are in positions where they can be retained in conjunction with the sub-division and subsequent development the subject site.

The remaining Trees 2 and 3 *Syagrus romanzoffianum*, 5 and 6 *Melaleuca linarifolia*, 7 and 8 *Ulmus parvifolia*, 9 *Olea europaea*, 10 *Celtis paniculatum*, 12 *Ficus benjamina* and 11 *Cupressus 'Brunniana'* will be subject to major and unsustainable levels of encroachment caused by construction of a dwelling on Lot 11, and driveway access to Lots 11 and 12.

Recommendations

That Trees 1 *Ficus benjamina* and 4 *Syagrus romanzoffianum* are retained and protected as detailed in section 9.0 of this report and in accordance with the provisions of the Australian Standard AS4970-2009, 'Protection of Trees on Development Sites' (AS4970).

That the remaining trees are approved for removal subject to the inclusion of compensatory replacement planting of suitable native trees in the landscaping of the subdivision.

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; Council consent may be required for substantial pruning and tree removal.

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.

No investigation into heritage significance or the presence on the site of threatened or endangered species of shrubs, groundcovers, grasses, herbs or orchids has been undertaken.

This report is for the use of the client, sub-contractors and Maitland City Council to assist in determining the tree management measures to be undertaken in conjunction with the proposed development of the site. 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 Paul Lemmerman to provide an arboricultural impact assessment for trees located at 62 New England Hwy Maitland where it is proposed to construct a three-lot subdivision.

4.0 Method

A site inspection was carried out on 16 November 2021; 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 AS4970-2009, 'Protection of Trees on Development Sites'.

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

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

4.1. Documents

The client has provided copies of the following plans which have been used in the preparation of this assessment:

- Preliminary Proposed Lot Layout prepared by Parker Scanlon Ref No. B2081SUB-Prelim-D, Revision A, dated 20 October 2021 (Appendix 12.2)

5.0 Site Conditions

The property is zoned R1 – General residential and is occupied by an existing dwelling and ancillary structures. The subject trees are protected by the provisions of Maitland DCP-2011-Part-B5 'Tree Management'

The soil is mapped as the Bolwarra Heights Landscape (9232bh) and has the following characteristics:

- Landscape—rolling low hills on Permian sediments in the centre-west of the sheet in the East Maitland Hills region. Slopes are 5–20%, elevation to 100 m, local relief to 80 m. Cleared tall open-forest.
- Soils—moderately deep (<150cm) well-drained Yellow Podzolic Soils, Brown Podzolic Soils with some moderately deep (<100cm) well drained soils on crests, moderately deep (<140cm) imperfectly drained yellow soils on lower slopes.
- Qualities and Limitations—moderate foundation hazard, water erosion hazard, high run-on (localised), seasonal waterlogging (localised), localised steep slopes with mass movement hazard. (*NSW Environment and Heritage, 2021*)

According to climate data from the Tocal AWS, which is approximately 11 kilometres from the site, the district experiences prevailing winds from the West to North-west, with infrequent occurrences of winds above 40km/h (Willy Weather, 2021). The subject trees are exposed in these directions due to the lack of dense vegetation or substantial structures.



Figure 2 Aerial Photomap showing tree locations (Sixmaps, 2021)

6.0 Tree Assessment

No.	Common Name	Species	DBH (M)	TPZ (M)	SRZ (M)	HEIGHT (M)	SPREAD (M)	Vigour	Age Class	SULE	Comments
1	Weeping Fig	<i>Ficus benjamina</i>	.3 x 2	5.04	2.00	6	4	ex	m	1a	Appears structurally sound, 2.7m from dwelling
2	Cocos Palm	<i>Syagrus sp.</i>	0.25	3	2.13	6	4	g	m	3b	Minor deadwood noted
3	Cocos Palm	<i>Syagrus sp.</i>	0.35	4.2	2.37	7	5	g	m	3b	Minor deadwood noted
4	Cocos Palm	<i>Syagrus sp.</i>	0.25	3	2.13	7	5	g	m	3b	2m from dwelling
5	Flax-leaved Paperbark	<i>Melaleuca linarifolia</i>	1	12	3.01	8	9	g	m	1a	Appears structurally sound
6	Flax-leaved Paperbark	<i>Melaleuca linarifolia</i>	.3 x 2	5.04	2.67	5	4	av	m	2a	Sparse canopy, poor form
7	Chinese Elm	<i>Ulmus parvifolia</i>	.3, .1	3.84	2.13	6	8	g	sm	2a	Appears structurally sound
8	Chinese Elm	<i>Ulmus parvifolia</i>	0.2	2.4	1.85	5	5	g	sm	2a	Appears structurally sound
9	Olive	<i>Olea europea</i>	.2 x 2	3.36	2.00	4	5	av	sm	2a	Suppressed by adjacent tree, asymmetrical form
10	Green Celtis	<i>Celtis paniculata</i>	.3 x 2	5.04	2.25	7	5	av	m	2a	Pruned for powerline clearance, asymmetrical form
11	Cypress Pine	<i>Cupressus 'Brunniana'</i>	0.25	2	2.00	4	2	g	sm	2a	Appears structurally sound
12	Weeping Fig	<i>Ficus benjamina</i>	.1 x 10	3.84	1.85	5	3	g	m	2a	Appears structurally sound

DBH – Trunk diameter at 1.4 metres

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

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)

7.0 Tree Retention Value

No.	Species	Health and Vigour	Condition	Suitability	Sustainability	Landscape rating	Retention Value	Encroachment level	Proposal
1	<i>Ficus benjamina</i>	Excellent	Good	Medium	40+ years	2	High	Nil	Retention
2	<i>Syagrus sp.</i>	Good	Good	High	5-15 Years	4	Low	100% TPZ/SRZ	Removal
3	<i>Syagrus sp.</i>	Good	Good	High	5-15 Years	4	Low	100% TPZ/SRZ	Removal
4	<i>Syagrus sp.</i>	Good	Good	High	5-15 Years	4	Low	Nil	Retention
5	<i>Melaleuca linarifolia</i>	Good	Good	Medium	40+ years	2	High	45% TPZ 96% SRZ	Removal
6	<i>Melaleuca linarifolia</i>	Average	Fair	Medium	15-40 Years	3	Moderate	32% TPZ 31% SRZ	Removal
7	<i>Ulmus parvifolia</i>	Good	Good	Medium	15-40 Years	3	Moderate	18% TPZ	Removal
8	<i>Ulmus parvifolia</i>	Good	Good	Medium	15-40 Years	3	Moderate	24% TPZ	Removal
9	<i>Olea europea</i>	Average	Fair	Medium	15-40 Years	4	Very low	100% TPZ/SRZ	Removal
10	<i>Celtis paniculata</i>	Average	Good	Medium	15-40 Years	3	Moderate	100% TPZ/SRZ	Removal
11	<i>Cupressus 'Brunniana'</i>	Good	Good	High	15-40 Years	3	Moderate	50% TPZ/SRZ	Removal
12	<i>Ficus benjamina</i>	Good	Good	Medium	15-40 Years	3	Moderate	50% TPZ/SRZ	Removal

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 12.4)

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 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 impacts of development on the subject trees are assessed against the design of the sub-division which details the location of proposed building envelopes and proposed access to lots 11 and 12. Two trees on the existing site are proposed for retention and ten trees that will be subject to major encroachment are proposed for removal.

Trees 1 *Ficus benjamina* and 4 *Syagrus romanzoffianum* are located on the proposed Lot 13 which houses the existing dwelling which will be retained in its existing form. Accordingly, the trees will not be subject to adverse impacts of development and will be retained. Construction fencing at the boundary of the worksite (lots 11 and 12) will provide adequate protection for the trees during the works.

Trees 2 and 3 *Syagrus romanzoffianum* are located in the front setback of the proposed Lot 12 within the proposed concrete driveway. This species is generally considered to be undesirable due to its capacity to spread into bushland where it adversely affects biodiversity values. The trees are proposed for removal to facilitate development of the site.

Trees 5 and 6 *Melaleuca linarifolia*, 7 and 8 *Ulmus parvifolia* are located on the proposed Lot 11 near the building envelope where they will be subject to major encroachment as detailed at table 7.0; the trees are proposed for removal to facilitate the proposed development.

Tree 5 which is a large and apparently healthy example of the species is assessed with high retention value and its removal is to be offset by compensatory replacement planting in accordance with Council's requirements. Replacement tree(s) can be accommodated within the front or rear setback of Lots 12 and 13 and the rear setback of Lot 11.

Trees 9 *Olea europaea*, 10 *Celtis paniculatum*, 12 *Ficus benjamina* and 11 *Cupressus 'Brunniana'* will be subject to major and unsustainable levels of encroachment due to their position within the proposed concrete driveway access. The trees are assessed with low to moderate retention value and are proposed for removal in conjunction with the proposed development.

10.0 Conclusions

Trees 1 *Ficus benjamina* and 4 *Syagrus romanzoffianum* are in positions where they can be retained in conjunction with the sub-division and subsequent development the subject site.

The remaining Trees 2 and 3 *Syagrus romanzoffianum*, 5 and 6 *Melaleuca linarifolia*, 7 and 8 *Ulmus parvifolia*, 9 *Olea europaea*, 10 *Celtis paniculatum*, 12 *Ficus benjamina* and 11 *Cupressus 'Brunniana'* will be subject to major and unsustainable levels of encroachment caused by construction of a dwelling on Lot 11, and driveway access to Lots 11 and 12.

11.0 Recommendations

That Trees 1 *Ficus benjamina* and 4 *Syagrus romanzoffianum* are retained and protected as detailed in section 9.0 of this report and in accordance with the provisions of the Australian Standard AS4970-2009, 'Protection of Trees on Development Sites' (AS4970).

That the remaining trees are approved for removal subject to the inclusion of compensatory replacement planting of suitable native trees in the landscaping of the subdivision.



Ian Hills - Principal Arborist
Accurate Tree Assessment





Figure 3 Tree 1 *Ficus benjamina*



Figure 4 Tree 6 *Melaleuca linarifolia*



Figure 5 Tree 5 *Melaleuca linarifolia*



Figure 6 Trees 7 and 8 *Ulmus parvifolia*, 9 *Olea europaea* and 10 *Celtis paniculata*



Figure 7 Tree 11 *Cupressus 'Brunninana'* with small exempt species



Figure 8 Tree 12 *Ficus benjamina*

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.

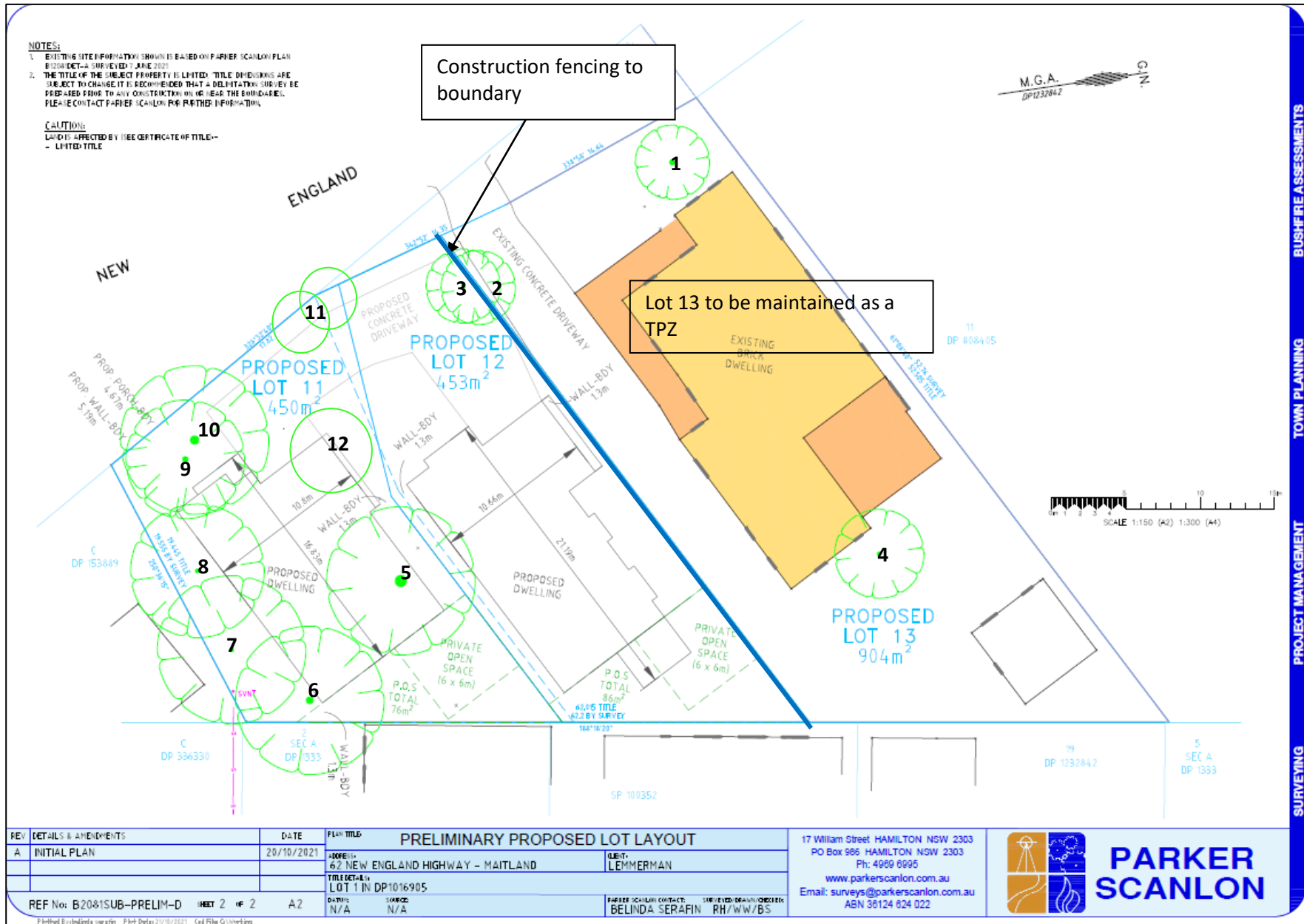
4: Remove: Trees that should be removed within the next 5 years.

- (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.

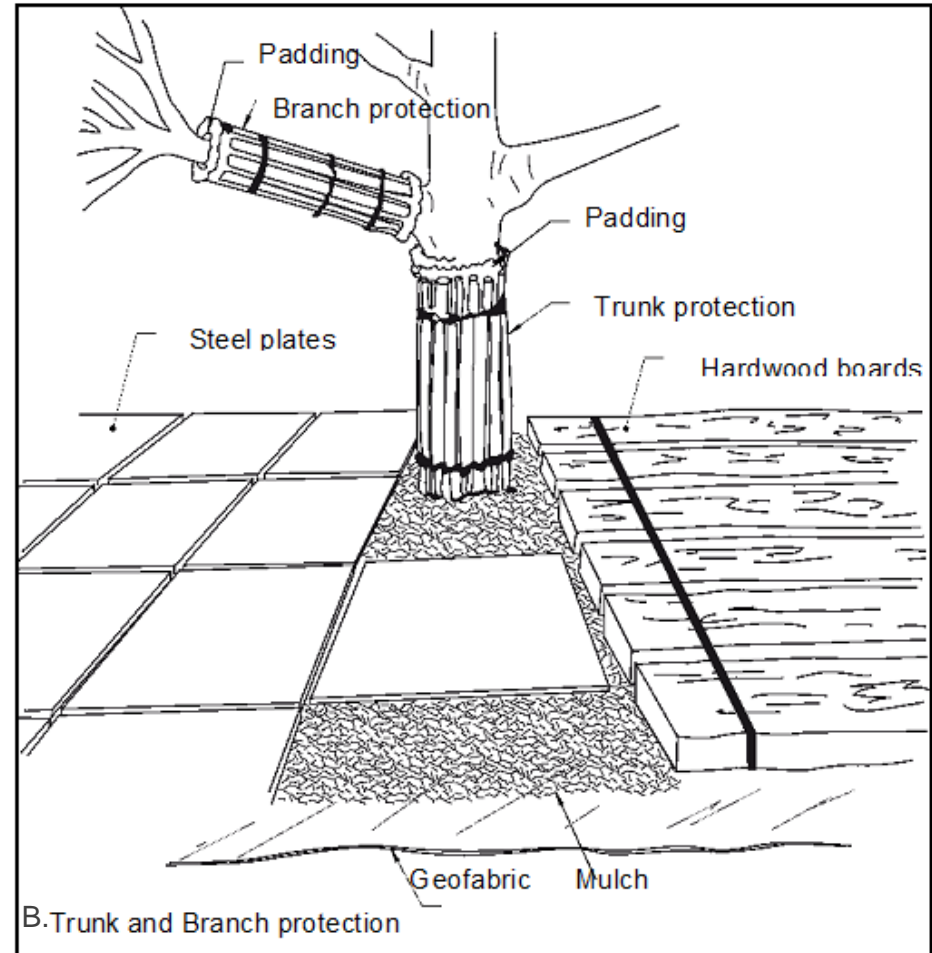
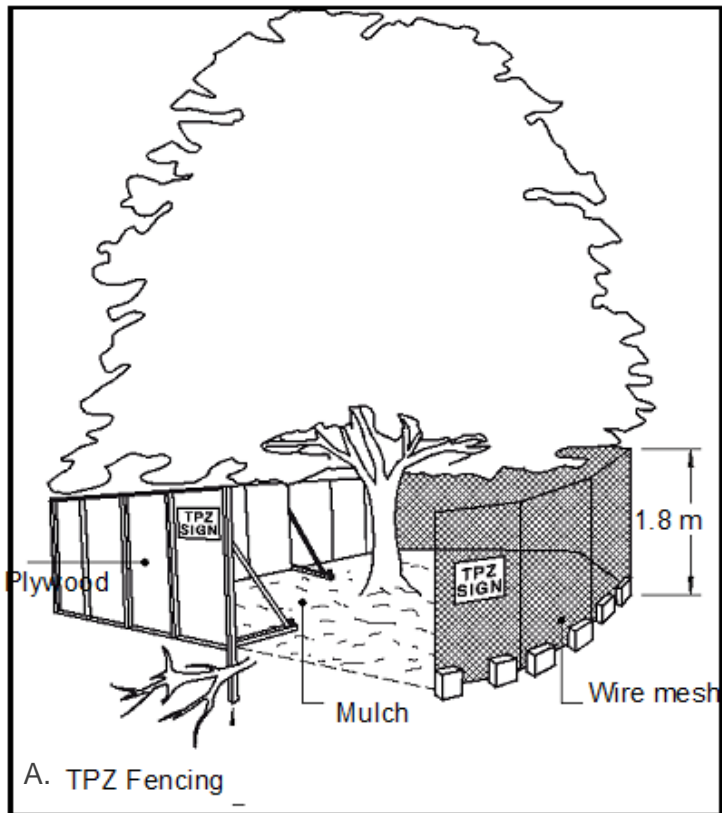
5: Small, young, or regularly pruned: Trees that can be reliably moved or replaced.

- (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 Preliminary Proposed layout + tree protection



12.3 Tree, Trunk and Branch Protection Methods (Source AS4970-2009)



12.4 Calculating Tree retention Value

Tree Sustainability	Landscape Significance Rating						
	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)

12.5 References

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<https://wind.willyweather.com.au/nsw/hunter/maitland.html> [accessed 12 November 2021]

12.6 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