

Appendix 11

PRELIMINARY ARBORICULTURAL REPORT

Accurate Tree Assessment

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Preliminary Arboricultural Assessment

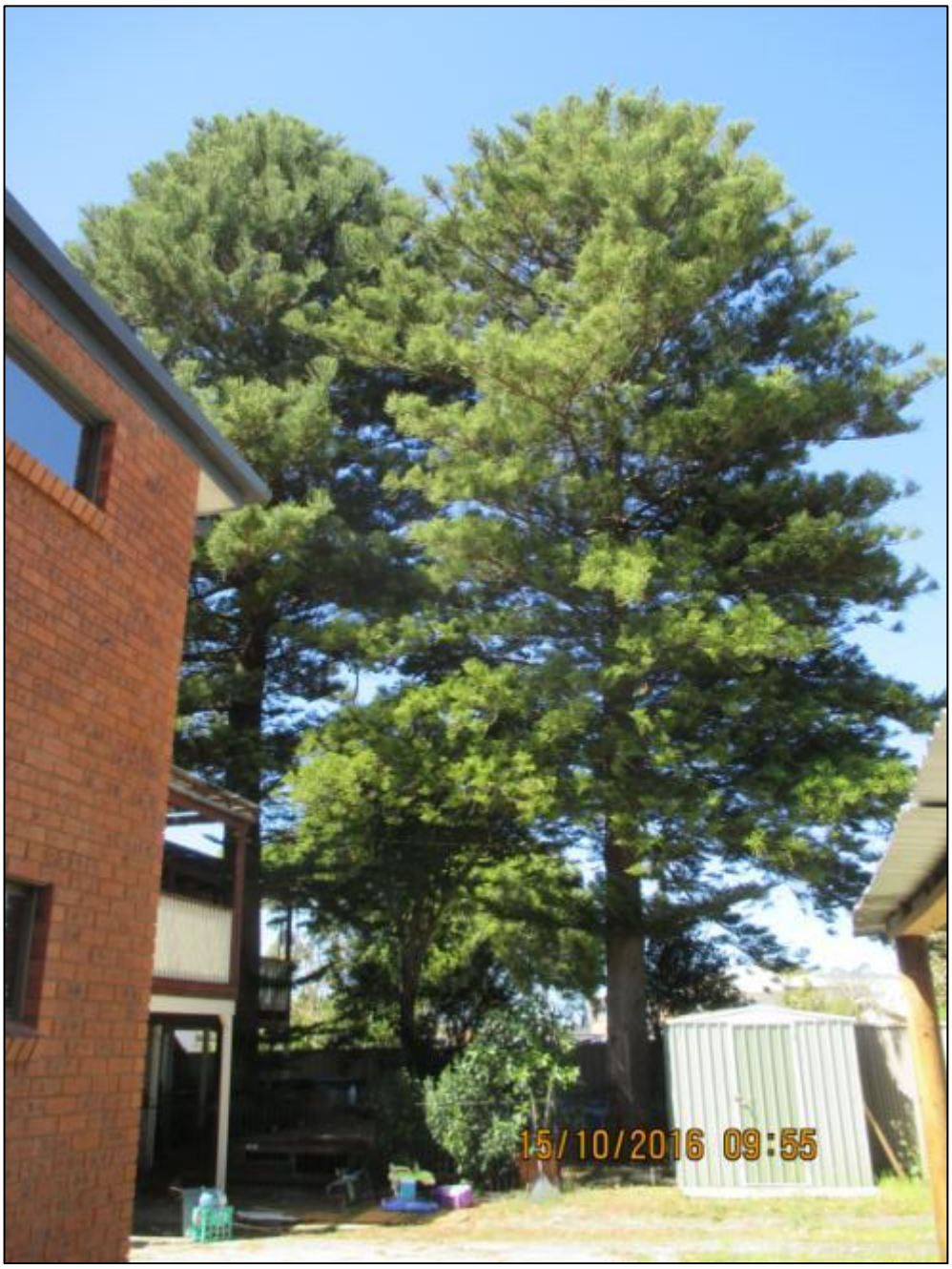

Figure 1 Trees 7 *Schleferra actinophylla*, 8 and 9 *Araucaria heterophylla*

Site Address: 2 – 6 Kantara Rd Canton Beach NSW

Client: Pacific Link Housing Limited

Date: June 2018

Prepared by Ian Hills - Assoc. Dip Hort.
Cert III Arboriculture
Diploma Arboriculture
P: 0412 607 658
F: (02) 4393 6590
E: info@accuratetreeassessment.com.au

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1.0 Summary

This report has been amended following a desktop review of the report prepared in October 2016, and site visit on 21 June 2018.

Accurate Tree Assessment has been commissioned by Pacific Link Housing Limited to provide a preliminary arboricultural assessment of trees on the property at 2-6 Kantara Rd Canton Beach where it is proposed to demolish the existing buildings and redevelop the site to provide multi-unit residential accommodation. Twenty-two (22) trees have been considered on the basis of :

- the provisions of Central Coast DCP 2013, Chapter 3.6 (as amended March 2018)
- health and condition
- suitability for retention

The property which is approximately 25000m² in area is occupied by three main buildings with a number of other ancillary structures, and is bound by residential properties to the South and East with Wallis Ave to the North and Kantara Rd to the West. The site is generally level with a slight Southerly aspect.

The site and adjoining properties are vegetated with a mix of native and exotic tree species which form a moderately dense canopy over the property, with the larger trees on site making a positive contribution to the local landscape amenity of the area.

Conclusions

The removal of Trees 8, and 11 are exempt from the requirement for Council consent, however consideration should be given to retaining those trees that can be accommodated within the landscape of the proposed development.

Trees 1, 2, 3, 4, 6, 7, 13, 12, 14, 15, 16 and 18 are protected by the provisions of Central Coast DCP 2013 and except for Trees 14 and 16, appear in structurally sound condition and located in positions that are suited to retention. Should their removal be required Council consent may be sought through Council's tree works application process or in conjunction with the Development Application for the site.

Trees located on the adjoining properties are to be retained and protected in accordance with AS4970-2009, '*Protection of Trees on Development Sites'*.

Recommendations

That wherever possible, trees on the site are retained and protected during the demolition and re-development.

That any trees that are removed are replaced within the landscaping of the site

That all work on private trees is undertaken by a suitably qualified and insured contracting arborist in accordance with the provisions of the Australian Standard AS4373-2007, '*Pruning of Amenity Trees' and* The Draft Code of Practice for Amenity Tree Work 2013.

That retained trees are protected in accordance with the provisions of AS4970-2009, '*Protection of Trees on Development Sites*'

That the retained trees are monitored bi-annually or after severe weather events, to identify and manage any risks that may arise.

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 anyway.

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 in close proximity to trees involves some level of risk.

This report is for the use of the client and Central Coast Council to assist in determining tree management options in conjunction with the proposed re-development of the site or subsequent applications for tree removal; distribution to others is not permitted except with the express permission of the author, Ian Hills.

3.0 Brief

This report has been amended following a desktop review of the report prepared in October 2016, and site visit on 21 June 2018.

Accurate Tree Assessment has been commissioned by Pacific Link Housing Limited to provide a preliminary arboricultural assessment of trees on the property at 2-6 Kantara Rd Canton Beach where it is proposed to demolish the existing buildings and redevelop the site to provide multi-unit residential accommodation. Twenty-two (22) trees have been considered on the basis of :

- the provisions of Central Coast DCP 2013, Chapter 3.6 (as amended March 2018)
- health and condition
- suitability for retention

4.0 Method

An inspection of the subject trees was conducted from the ground on 15 October 2016. The assessment of the trees was made using a combination of both the relevant elements of Visual Tree Assessment (VTA) procedure (Matheny & Clark, 1994), (Mattheck & Breloer, 2004) with the aid of a Visual tree assessment form developed by International Society of Arborists in accordance with industry best practice.

Tree height and canopy spread was determined by visual estimation. The DBH was determined using a Million™ 12 tree diameter tape.

The canopy structure was examined by eye from ground level.

Trees were identified and tagged during the on-site inspection, and each tree allocated a number which is used as reference throughout this report.

4.1. Documents

Mark Glew has provided a copy of the Erosion and Sediment Control plan prepared by EJE Architecture Job No. NL171681 drawing C01DA revision B dated 15/6/18 (appendix 11.2) which has been used as reference to this report.

5.0 Site Conditions

The property which is approximately 25000m² in area is occupied by three main buildings with a number of other ancillary structures, and is bound by residential properties to the South and East with Wallis Ave to the North and Kantara Rd to the West. The site is generally level with a slight Southerly aspect.

The site and adjoining properties are vegetated with a mix of native and exotic tree species which form a moderately dense canopy over the property, with the larger trees on site making a positive contribution to the local landscape amenity of the area.

The soil is a grey sand that appears well drained and therefore suitable to plant growth.

The site somewhat exposed to Strong Southerly winds which travel unabated across the nearby Tuggerah Lake however the close grouping of the larger trees affords them some protection from high wind-loads.

Figure 2 Subject site (source Google maps)

6.0 Tree Assessment

No.	Common Name	Species	DBH (mm)	TPZ (M)	Height X Spread		Condition	Age class	ULE	Comments
1	Weeping Bottlebrush	*Callistemon viminalis*	220ea	2.64 ea	5	10	Good	M	1A	Group of 6 small trees in good health and vigour, TPO applies
2	Cocos Palm	*Syagrus sp.*	300ea	3.6 ea	10	10	Good	M	1B	Group of seven trees in good health and vigour, undesirable species, Exempt A
3	Oleander	*Nerium oleander*	450ea	5.4 ea	4	8	Fair	M	1B	Group of 3 small trees in fair health and vigour.
4	Port Jackson Fig	*Ficus rubiginosa*	320	2.0	6	6	Good	SM	1A	Young tree in good health and vigour, TPO applies.
5	Liquidamber	*Liquidambar styraciflua*	500	3.84	15	9	Good	M	2A	Mature tree in good health and vigour, TPO applies
6	Liquidamber	*Liquidambar styraciflua*	480	5.76	13	9	Good	M	2A	Mature tree in good health and vigour, TPO applies.
7	Umbrella Tree	*Schleferra actinophylla*	400	4.8	6	4	Fair	M	4A	Mature tree in fair health and condition, undesirable species, exempt A
8	Norfolk Is. Pine	*Araucaria heterophylla*	820	9.84	20	10	Good	M	1B	Mature tree in good health and vigour, exempt B
9	Norfolk Is. Pine	*Araucaria heterophylla*	650	7.8	18	10	Good	M	1B	Mature tree in good health and vigour, TPO applies
10	Fiddlewood	*Citharexylem spinosum*								No longer present
11	Smooth-barked Apple Gum	*Angophora costata*	950	11.4	22	18	Good	M	2A	Mature tree in good health and vigour, minor deadwood noted, exempt B

6.0 Tree Assessment (Cont.)

No.	Common Name	Species	DBH (mm)	TPZ (M)	Height X Spread		Condition	Age class	ULE	Comments
12	Forest Red Gum	*Eucalyptus tereticornis*	950	11.4	20	12	Good	M	2A	Mature tree in good health and vigour, minor deadwood noted , TPO applies
13	Rough Barked Apple Gum	*Angophora floribunda*	520	6.24	12	8	Poor	M	3A	Mature tree in poor form due to suppression, TPO applies
14	Silky Oak	*Grevillea robusta*	350	4.2	13	3	Poor	M	3A	Mature tree in poor form due to suppression, TPO applies
15	Silver-Top Ash	*Eucalyptus sieberi*	320	3.84	10	10	Average	M	1B	Mature tree, exhibits minor deadwood, TPO applies
16	Willow Leaved Hakea	*Hakea salicifolia*	220	2.64	4	4	Good	M	1B	Mature tree, exhibits minor deadwood, TPO applies
17	Gum	*Eucalyptus sp.*								No Longer present
18	Silver-Top Ash	*Eucalyptus sieberi*	380	4.56	12	12	Good	M	2A	Mature tree, exhibits minor deadwood, TPO applies

DBH – Trunk diameter at 1.4 metres

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

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

ULE = Useful Life Expectancy (Barrel, J -1993-95) appendix 11.1

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

TPO Applies = Protected in accordance with Wyong DCP Ch 3.6

Exempt trees are those that can be removed without the requirement for approval in accordance with Council regulation as listed below:

A = Listed as undesirable **(CC DCP Ch.3.6 Appendix 6.0 Appendix 1)**

B = Trees located within 3 metres of an approved structure **(CC DCP, Ch 3.6 Exempt Tree Removal and Pruning, section a)**

C = Dead trees that do not provide habitat for native fauna **(CC DCP, Ch 3.6 Exempt Tree Removal and Pruning, section d)**

7.0 Tree Retention Value

No.	Species	Sustainability				Landscape Significance Rating	Retention Value	Retain Tree
		Health and Vigour	Condition	Suitability				
1	*Callistemon viminalis*	Good	Good	High	40+years	3	High	Yes, if proposed design permits
2	*Syagrus sp.*	Good	Good	Low	40+years	6	Low	No
3	*Nerium oleander*	Average	Fair	Low	40+years	6	Low	No
4	*Ficus rubiginosa*	Good	Good	Medium	40+years	3	High	Yes, if proposed design permits
5	*Liquidambar styraciflua*	Average	Good	Medium	15-40 years	3	High	Yes, if proposed design permits
6	*Liquidambar styraciflua*	Good	Good	Medium	15-40 years	3	High	Yes, if proposed design permits
7	*Schleferra actinophylla*	Poor	Fair	Medium	< 5 years	4	Very low	No
8	*Araucaria heterophylla*	Good	Good	Medium	40+years	3	High	Yes, if proposed design permits
9	*Araucaria heterophylla*	Good	Good	Medium	40+years	3	High	Yes, if proposed design permits
10	*Citharexylem spinosum*	Poor	Poor	Low	< 5 years	4	Very low	No
11	*Angophora costata*	Good	Good	High	15-40 years	3	Moderate	Yes, if proposed design permits
12	*Eucalyptus tereticornis*	Good	Good	High	15-40 years	3	Moderate	Yes, if proposed design permits
13	*Angophora floribunda*	Average	Poor	High	5-15 years	4	Low	Yes, if 12 is retained
14	*Grevillea robusta*	Fair	Poor	High	5-15 years	4	Low	No
15	*Eucalyptus sieberi*	Good	Average	High	40+years	3	High	Yes
16	*Hakea salicifolia*	Fair	Good	High	40+years	3	High	No
17	*Eucalyptus sp.*	Dead	Dead	Low	Dead	7	Very low	No
18	*Eucalyptus sieberi*	Good	Good	High	15-40 years	3	Moderate	Yes

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 11.3).

Figure 3 Tree 1 (group) of *Callistemon viminalis*

Figure 4 Trees in the front setback of the subject property

8.0 Discussion

Trees 8 and 11 are noted as exempt under Central Coast DCP 2013 due to their position within 3 metres of an approved structure; the trees can therefore be removed without any requirement for Council consent. However the trees appear structurally sound and in good health and vigour making them suitable for retention; this will be dependent on the design of the proposed development which would need to provide adequate root-zone volume and space for the canopy of the trees which are quite large. Observance of the Tree Protection Zones (TPZ) detailed at section 6.0 of this report during the design process will enable retention of suitable trees. In addition to the subject trees there are numerous shrubs on the property which do not meet the size requirements of Wyong DCP Chapter 3.6 and so can also be removed as exempt development.

Trees 1, 2, 3, 4, 6, 7, 13, 12, 14, 15, 16 and 18 are protected by Central Coast DCP Ch 3.6 although two trees (14, 16) are recommended for removal on the basis of poor health and condition the removal of these trees can be undertaken by lodging a tree works application for assessment by Council or by including the removal of the trees in the current Development Application which will require their inclusion in the associated documentation.

A number of trees located on adjoining properties will require the implementation of tree protection measures during the demolition and re-development of the site to ensure that they are not adversely affected by any aspects of the work. The trees are listed below with their respective TPZ's:

Location	Species	TPZ radius in metres
Road reserve in Wallis Ave	Melaleuca quinquenervia	8.4
"	Eucalyptus robusta	11.4
"	Melaleuca quinquenervia	6.0
"	Melaleuca quinquenervia	6.0
Private property 1 Wallis Ave	Cupressus. Sp.	4.8
"	Archontophoenix sp.	3.6
"	Washingtonia sp.	4.8
"	Callistemon viminalis	3.6

8.1 Tree Protection Measures

Implementation of the following measures will ensure that retained trees are not damaged during construction.

Site establishment

- trees to be retained have been identified by tagging and/or numbering on the landscape plan.
- protective fencing is erected at the perimeter of the respective TPZ, the fenced areas are to be included on the landscape plan and marked as a "no go zone"
- where space does not permit fencing of the entire TPZ branch or trunk armouring can be used, the ground is to be protected from compaction by rumble boards or steel plates laid over a 100mm mulch layer
- staff are to be made aware of tree protection measures during induction to the site
- the area of the TPZ is to be mulched using 100mm depth of organic material, mulch must be kept clear of the base of tree trunks
- fencing is to include signage clearly denoting the TPZ as a "no go zone"
- tree protection is to be certified by an AQF5 qualified arborist

During construction

- tree protection measures are to be maintained in serviceable condition
- no storage of equipment or materials is permitted within the TPZ, no cement wasting or other pollutants must be allowed to enter the TPZ
- damage to any part of a protected tree is to be reported to the certifying arborist for assessment and remediation
- if services must pass through an established TPZ excavation is to carried out by hand
- no roots are to be severed within an established TPZ, except under the supervision of the certifying arborist

Post construction

- protective fencing is to be removed from site
- at 12 months following completion retained trees are to be inspected by the certifying arborist for signs of decline.
- steps can be taken to improve growing conditions if required such as de-compaction of soil, introduction of irrigation
- general maintenance pruning can be undertaken (in accordance with AS4373-2007) to remove deadwood or other defective branches up to 10% of the total canopy area of retained trees if required

Figure 5 Trees on the road reserve in Wallis Ave

9.0 Conclusions

The removal of Trees 8, and 11 are exempt from the requirement for Council consent, however consideration should be given to retaining those trees that can be accommodated within the landscape of the proposed development.

Trees 1, 2, 3, 4, 6, 7, 13, 12, 14, 15, 16 and 18 are protected by the provisions of Central Coast DCP 2013 and except for Trees 14 and 16, appear in structurally sound condition and located in positions that are suited to retention. Should their removal be required Council consent may be sought through Council's tree works application process or in conjunction with the Development Application for the site.

Trees located on the adjoining properties are to be retained and protected in accordance with AS4970-2009, '*Protection of Trees on Development Sites'*.

10.0 Recommendations

That wherever possible, trees on the site are retained and protected during the demolition and re-development.

That any trees that are removed are replaced within the landscaping of the site

That all work on private trees is undertaken by a suitably qualified and insured contracting arborist in accordance with the provisions of the Australian Standard AS4373-2007, '*Pruning of Amenity Trees' and* The Draft Code of Practice for Amenity Tree Work 2013.

That retained trees are protected in accordance with the provisions of AS4970-2009, '*Protection of Trees on Development Sites*'

That the retained trees are monitored bi-annually or after severe weather events, to identify and manage any risks that may arise.

Ian Hills - Principal Arborist
Accurate Tree Assessment

11.0 Appendices

11.1. 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.

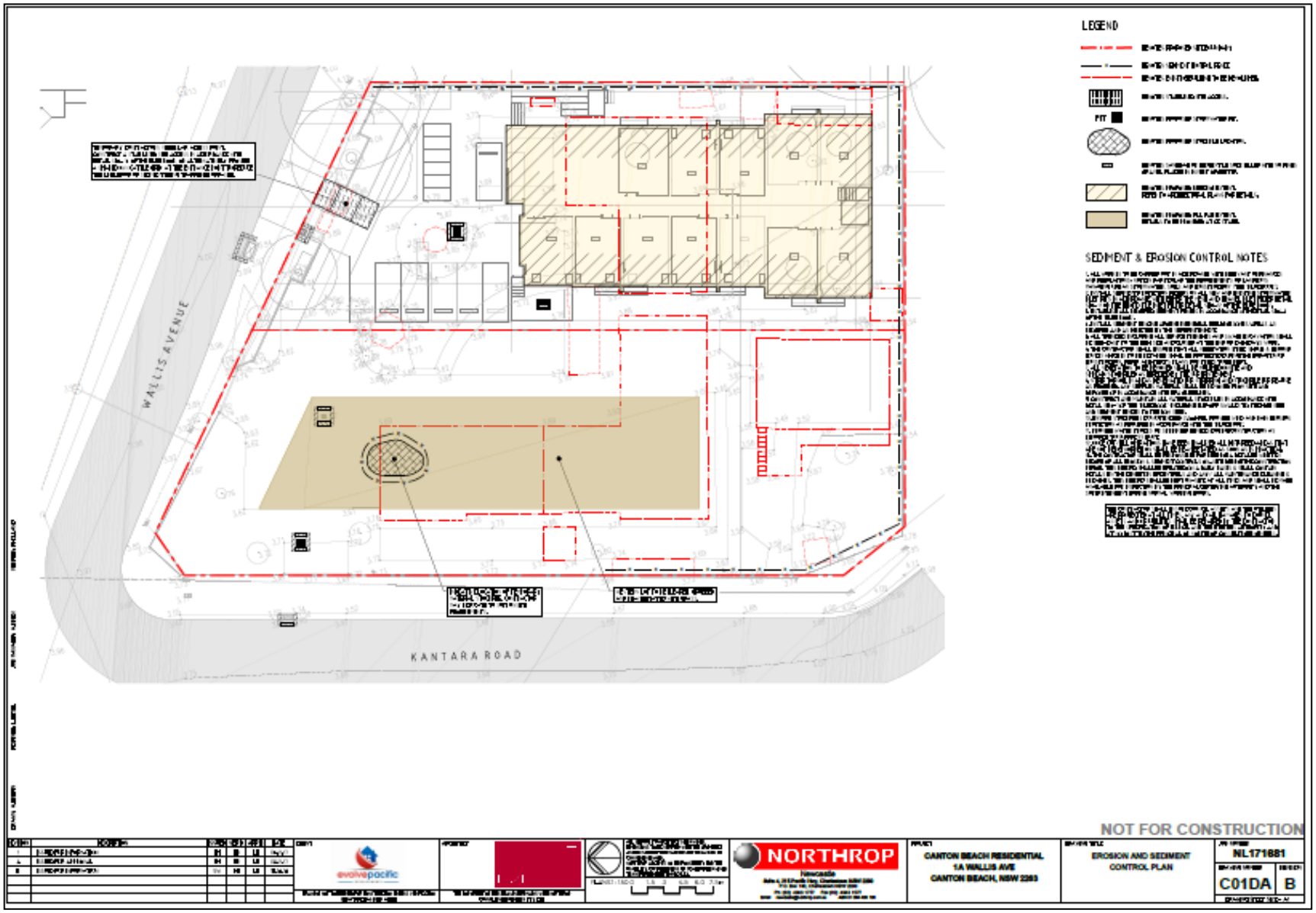
2: Medium SULE: Trees that appeared to be retainable at the time of assessment for 15–40 years with an acceptable level of risk.
(a) Trees that may only live between 15 and 40 more years.
(b) Trees that could live for more than 40 years but may be removed for safety or nuisance reasons.
(c) Trees that 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.

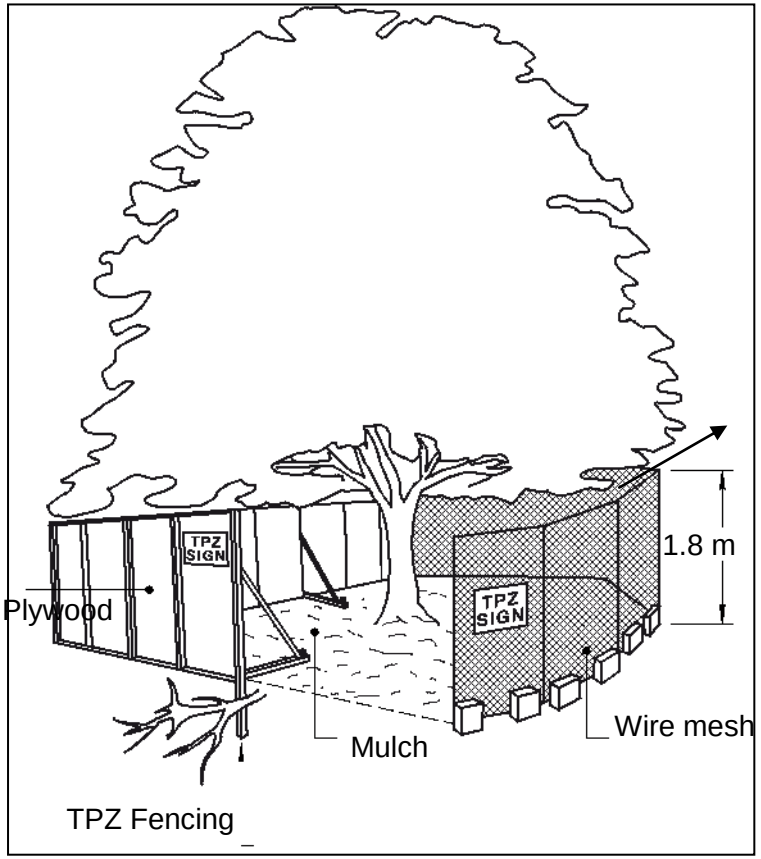
4: Remove: Trees that should be removed within the next 5 years.
(a) Dead, dying, suppressed or declining trees because of disease or inhospitable conditions.
(b) Dangerous trees because of instability or recent loss of adjacent trees.
(c) Dangerous trees because of structural defects including cavities, 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.

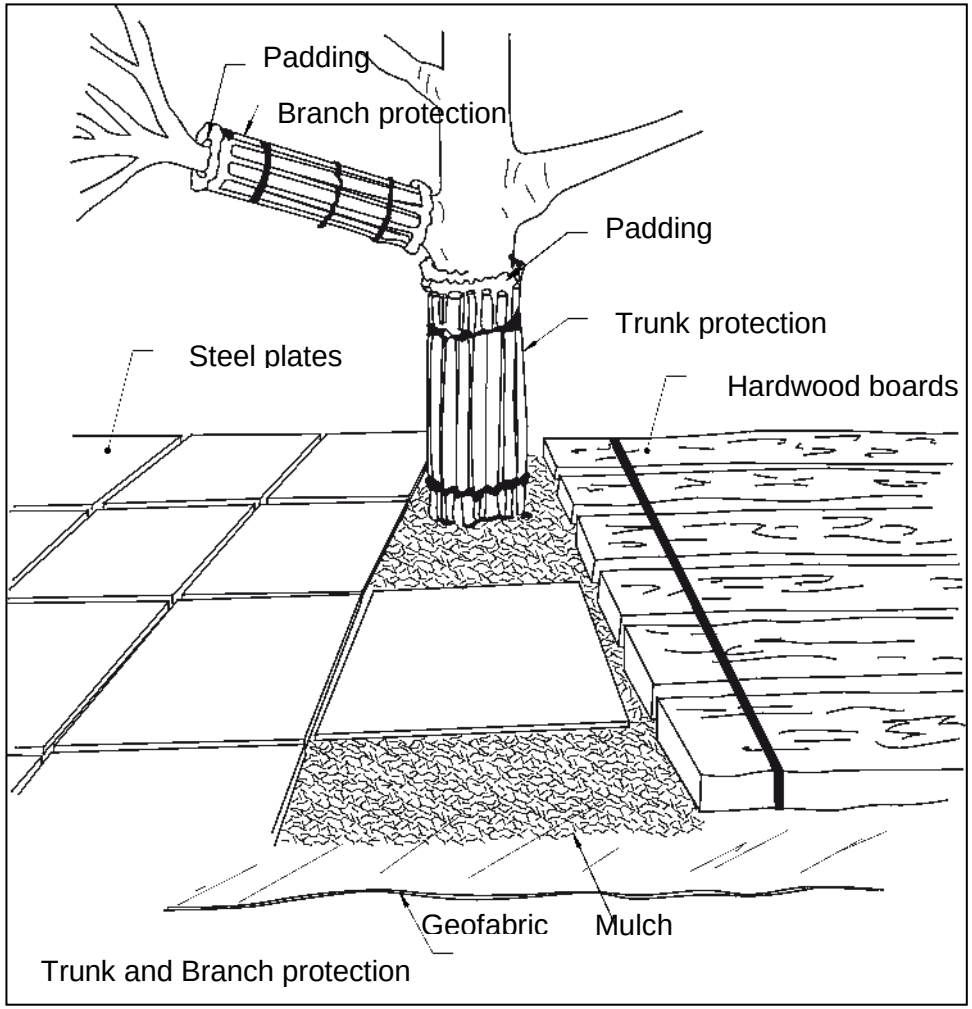
11.2 Erosion and Sediment Control Plan



11.3 Tree, Branch and Root Protection Methods (source AS4970-2009)

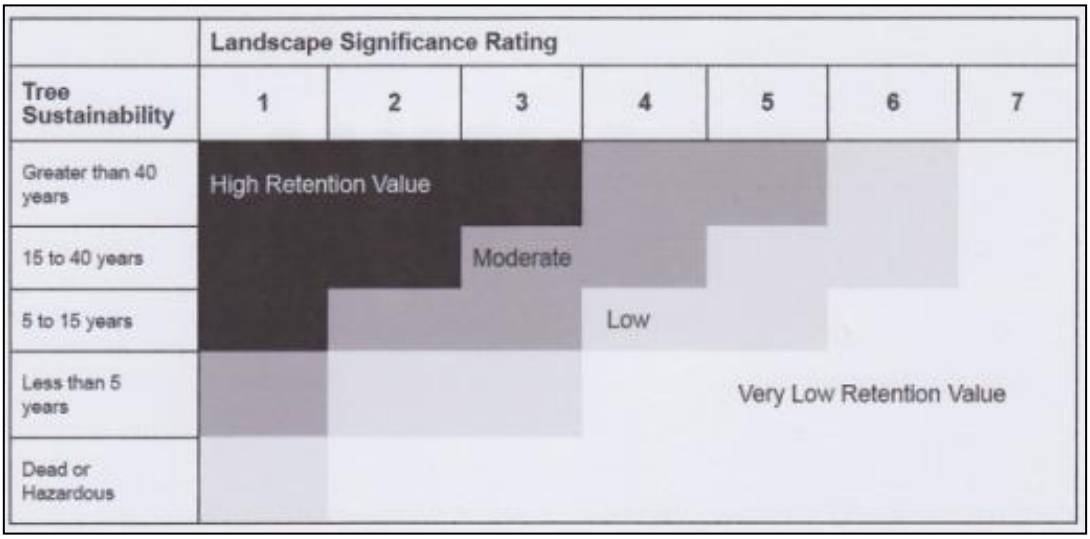


TPZ Fencing



Trunk and Branch protection

11.4 Calculating Tree retention Value



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

11.5. References

Clark R.J & Matheny N (1998) Trees & Development – A technical guide to Preservation of trees during land development: International Society of Arboriculture

Mattheck C., Breloer, (1999) The Body Language of Trees – a handbook for failure analysis 5th ed., London: The Stationery Office, U.K

Barrell, J. (1993-95) 'Pre-planning Tree Surveys Safe Useful Life Expectancy (SULE) is the Natural Progression' Arboricultural Journal Vol. 17, PP 33 - 46, Academic Publishers, Great Britain.

Standards Australia. 2007 'Australian Standard 4373-2007 '*Pruning of Amenity Trees'*, Standards Australia GPO Box 476 Sydney NSW 2001, Australia.

Standards Australia. 2009 'Australian Standard 4970-2009 Protection of Trees on Development Sites' Standards Australia GPO Box 476 Sydney NSW 2001, Australia.

Newcastle City Council (2013), Newcastle Urban Forest, Technical Manual Newcastle City Council PO Box 489,Newcastle NSW 2300

Central Coast Council (2018), Wyong Shire DCP 2013 [online] Available at: *Chapter 3.6:* Preservation of Trees and Vegetation [accessed 21 June 2018]

Google Maps 2016 [online] Available at: http://maps.google.com.au/maps [accessed 15 October 2016]

11.6 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 Registered Advanced User 4469	March 2018