

Arboricultural Impact Assessment



Figure 1 Tree 1 *Eucalyptus racemosa*.

Site Address: 6 Killawarra Rd Duffys Forest, NSW

Client: Jane Brooks

Date: February 2025

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1.0 Summary

Accurate Tree Assessment has been commissioned by Jane Brooks (the clients) to provide an assessment of development impact for nine (9) trees and groups of trees located on the property at 6 Killawarra Rd Duffys Forest, NSW where it is proposed to construct additions and alterations to the existing dwelling.

The subject property is occupied by a single dwelling and ancillary structures with areas of lawn and hardstand, the trees assessed in this report are subject to the provisions of Northern Beaches (Warringah) DCP 2011 Part E1, '*Preservation of Trees or Bushland Vegetation*' (DCP).

The property is located in an RFS 10/50 Vegetation Clearing entitlement area (6/1/25)

Conclusions

Trees 1 *Eucalyptus racemosa*, 2 *Hakea salicifolia*, 4-5 *Banksia integrifolia* and 6 *Banksia serrata* will be subject to nil encroachment caused by construction of the proposed arena shelter and gazebo.

Tree 5 *Banksia integrifolia* is not affected by the proposal but can be removed if required under Council's exempt removal provisions due to being dead and damaged by recent storms.

Tree 7 *Banksia serrata* will be subject to major and unsustainable encroachment caused by construction of the proposed tennis court and aluminium Vergola®.

Trees 8 *Citrus x limon* and 9a-9k *Cupressocyparis x Ileylandii* meet Council's criteria for exempt removal.

Recommendations

That Trees 1 *Eucalyptus racemosa*, 2 *Hakea salicifolia*, 4 *Banksia integrifolia* and 6 *Banksia serrata* will be retained and protected by the implementation of protective measures in accordance with the provisions of AS4970-2009, "*Protection of Trees on Development Sites*" as detailed at section 9.0 and appendices 12.2-12.3.A of this report.

That Tree 5 *Banksia integrifolia* is removed due to its poor condition.

That tree protection measures are installed prior to the commencement of works on the subject property and maintained in serviceable condition for the duration of the project.

That Trees 8 *Citrus x limon* and 9a-9k *Cupressocyparis x Ileylandii* will be removed as required to accommodate the proposed development.

That Tree 7 *Banksia serrata* is approved for removal to accommodate the construction of the proposed tennis court and aluminium Vergola®, subject to Council's requirements for the provision of replacement planting within the property boundary.

That tree removal is to be undertaken by a suitably qualified and insured contracting arborist in accordance with the provisions of AS4373-2007, Pruning of Amenity Trees and the Safework Australia Code of practice for Tree works

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.

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 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 and Northern Beaches 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 Jane Brooks (the clients) to provide an assessment of development impact for nine (9) trees and groups of trees located on the property at 6 Killawarra Rd Duffys Forest, NSW where it is proposed to construct additions and alterations to the existing dwelling.

4.0 Method

A site inspection was carried out on 7 January 2025; 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'*.

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 architectural plans the following documents have been used in the preparation of this assessment:

- Site Plan (partial survey) prepared by Pagano Architects, Job No. 2416, Sheet 02, Revision B, dated 8 November 2024 (appendix 12.2)

5.0 Site Conditions

The subject property is occupied by a single dwelling and ancillary structures with areas of lawn and hardstand, the trees assessed in this report are subject to the provisions of Northern Beaches (Warringah) DCP 2011 Part E1, 'Preservation of Trees or Bushland Vegetation' (DCP).

The site is approximately 20778m² and has an approximately Westerly aspect. The property is located in an RFS 10/50 Vegetation Clearing entitlement area (6/1/25)

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

"Landscape - gently undulating to rolling rises on deeply weathered Hawkesbury Sandstone plateau. Local relief to 40 m; slopes <15% Rock outcrop is absent. Crests are broad and convex, slopes are long, and drainage lines are narrow. Extensively cleared low eucalypt open-woodland and scrubland.

Soils - moderately deep to deep (100–300 cm) Yellow Earths and Earthy Sands on crests and slopes with Grey Earths in poorly drained areas and Leached Sands and Siliceous Sands along drainage lines.

Limitations - localised permanent and seasonal waterlogging, moderate erosion hazard, stoniness, very low soil fertility, highly permeable soil." (NSW Environment and Heritage, 2025)

According to climate data from the weather station at Terrey Hills, which is approximately 3 kilometres from the site, the district experiences frequent occurrences of winds over 30km/h with Westerly winds prevailing (Willy Weather, 2025), the taller trees are exposed due to their projection above surrounding trees and nearby structures.



Figure 2 Site location (Sixmaps, 2025)

6.0 Tree Assessment

No.	Common Name	Species	DBH (M)	TPZ (M)	SRZ (M)	HEIGHT (M)	SPREAD (M)	Vigour	Age Class	SULE	Comments
1	Snappy Gum	<i>Eucalyptus racemosa</i>	0.35	4.2	2.37	8	6	G	m	2a	Appears structurally sound, small deadwood noted, wounds on trunk
2	Willow Hakea	<i>Hakea salicifolia</i>	0.2	2.4	2.0	5	4	G	m	2a	Appears structurally sound
3	Forest Oak	<i>Allocasuarina torulosa</i>	0.1, 0.2	2.64	2.05	5	3	F	m	3b	Appears in declining condition excessive branch dieback noted
4	Coast Banksia	<i>Banksia integrifolia</i>	0.15	2.0	0.15	7	3	G	sm	2a	Appears structurally sound
5	Coast Banksia	<i>Banksia integrifolia</i>	0.1, 0.12	2.0	1.8	5	2	P	dead	4a	Co-dominant trunks, dead tree, no hollows noted, storm damaged.
6	Old-man Banksia	<i>Banksia serrata</i>	0.3	3.6	2.25	4	4	G	m	2a	Appears structurally sound
7	Old-man Banksia	<i>Banksia serrata</i>	0.3	3.6	2.25	4	5	G	m	2a	Appears structurally sound
8	Lemon	<i>Citrus x limon</i>	0.1 x 2	2.0	1.75	3	3	G	m	3b	Appears structurally sound, exempt species
9	Lleylands Cypress x 11	<i>Cupressocyparis x lleylandii</i>	0.15-0.25	2.0-3.0	2.0-2.13	6-8	2-3	Av	m	3b	Appears structurally sound, hedge planting, exempt species

DBH – 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>Eucalyptus racemosa</i>	Good	Good	High	15-40 years	2	High	Nil	Retention
2	<i>Hakea salicifolia</i>	Good	Good	High	15-40 years	4	Moderate	Nil	Retention
3	<i>Allocasuarina torulosa</i>	Fair	Fair	High	5-15 years	5	Low	80% TPZ/SRZ	Removal
4	<i>Banksia integrifolia</i>	Good	Good	High	15-40 years	4	Moderate	Nil	Retention
5	<i>Banksia integrifolia</i>	Poor	Dead	Very low	< 5 years	5	Very low	Nil	Removal
6	<i>Banksia serrata</i>	Good	Good	Moderate	15-40 years	3	Moderate	Nil	Retention
7	<i>Banksia serrata</i>	Good	Good	Moderate	15-40 years	3	Moderate	25% TPZ/SRZ	Removal
8	<i>Citrus x limon</i>	Good	Good	Low	5-15 years	5	Low	100% TPZ/SRZ *	Removal
9	<i>Cupressocyparis x Ileylandii</i>	Average	Good	Low	5-15 years	4	Low	17-27% TPZ 17-19% 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 12.5)

* 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 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

Impacts of development for the nine (9) trees and groups of trees subject to this report have been assessed against the plans provided that detail the alterations and additions to the existing dwelling.

Five (5) trees and groups of trees on the subject property are proposed for removal including trees listed as exempt species under Northern Beaches (Warringah) DCP 2014 Part E1, '*Preservation of Trees or Bushland Vegetation*' (DCP).

Tree 1 *Eucalyptus racemosa* is a mature example of the locally endemic vegetation that appears in good health and condition and is assessed with high retention value.

Tree 2 *Hakea salicifolia* is a mature native tree that appears in good health and condition. The tree has been planted and is assessed with moderate retention value.

Due to their distance from the proposed arena shelter the trees will not be subject encroachment from the proposal and will be retained in conjunction with the development.

Tree 3 *Allocasuarina torulosa* is a mature example of the locally endemic vegetation that appears in fair health and condition indicated by extensive branch die-back of branches, the tree is assessed with low retention value.

The tree is located within the plan area of the proposed arena shelter and consent is sought for its removal in conjunction with the proposed development. The removal of the tree can be supported based on its lack of vigour and subject to the provision of replacement planting in a suitable position on the property.

Tree 4 *Banksia integrifolia* is a semi-mature native tree that appears in good health and condition. The tree has been planted and is assessed with moderate retention value.

Tree 5 *Banksia integrifolia* is an over-mature native tree that appears dead and has fallen during recent storms, the tree is assessed with very low retention value.

Due to their distance from the proposed arena shelter the trees will not be subject encroachment from the proposal and can be retained in conjunction with the development. If required, Tree 5 can be removed under Council's exempt tree removal provisions.

Tree 6 *Banksia serrata* is a mature native tree that appears in good health and condition, the tree is assessed with moderate retention value.

The tree is located approximately 6 metres from the existing retaining wall and will not be subject to encroachment from construction of the proposed gazebo. Accordingly, the tree will be retained in conjunction with the development.

Retained trees numbered 1, 2, 4, 5 and 6 will be protected by the installation of temporary fencing to create an exclusion zone enclosing the respective TPZ's; no vehicle access, storage of equipment or materials is permitted within the fenced area.

Tree protection is to be installed prior to demolition in accordance with the tree protection plan at Appendix 12.2 and the provisions of AS4970 detailed at Appendix 12.3.A prior to the commencement of any works on the subject property and maintained in serviceable condition for the duration of the project.

Tree 7 *Banksia serrata* is a mature native tree that appears in good health and condition, the tree is assessed with moderate retention value.

The tree is located approximately 3 metres from the existing dwelling and will be subject to major and unsustainable encroachment affecting 25% of the TPZ and SRZ caused by construction of the proposed tennis court and aluminium Vergola®.

Consent is sought for the removal of Tree 7 in conjunction with the proposed development. The removal of the tree can be supported subject to the provision of replacement planting in a suitable position on the property.

Trees 8 *Citrus x limon* and 9a-9k *Cupressocyparis x lleylandii* are planted exotic trees that appear in average to good health and condition. The trees will be subject to major and unsustainable encroachment affecting 100% of the TPZ/SRZ of Tree 8, and 17-27% of the TPZ and 17-19% of the SRZ of Trees 9a-9k caused by construction of the proposed tennis court.

Trees 8 and 9a-9k are listed in Northern Beaches Council's exempt species list and can therefore be removed as required without the requirement for gaining consent.

10.0 Conclusions

Trees 1 *Eucalyptus racemosa*, 2 *Hakea salicifolia*, 4-5 *Banksia integrifolia* and 6 *Banksia serrata* will be subject to nil encroachment caused by construction of the proposed arena shelter and gazebo.

Tree 5 *Banksia integrifolia* is not affected by the proposal but can be removed if required under Council's exempt removal provisions due to being dead and damaged by recent storms.

Tree 7 *Banksia serrata* will be subject to major and unsustainable encroachment caused by construction of the proposed tennis court and aluminium Vergola®.

Trees 8 *Citrus x limon* and 9a-9k *Cupressocyparis x lleylandii* meet Council's criteria for exempt removal.

11.0 Recommendations

That Trees 1 *Eucalyptus racemosa*, 2 *Hakea salicifolia*, 4 *Banksia integrifolia* and 6 *Banksia serrata* will be retained and protected by the implementation of protective measures in accordance with the provisions of AS4970-2009, "Protection of Trees on Development Sites" as detailed at section 9.0 and appendices 12.2-12.3.A of this report.

That Tree 5 *Banksia integrifolia* is removed due to its poor condition.

That tree protection measures are installed prior to the commencement of works on the subject property and maintained in serviceable condition for the duration of the project.

That Trees 8 *Citrus x limon* and 9a-9k *Cupressocyparis x lleylandii* will be removed as required to accommodate the proposed development.

That Tree 7 *Banksia serrata* is approved for removal to accommodate the construction of the proposed tennis court and aluminium Vergola®, subject to Council's requirements for the provision of replacement planting within the property boundary.

That tree removal is to be undertaken by a suitably qualified and insured contracting arborist in accordance with the provisions of AS4373-2007, Pruning of Amenity Trees and the Safework Australia Code of practice for Tree works



Ian Hills - Principal Arborist
Accurate Tree Assessment



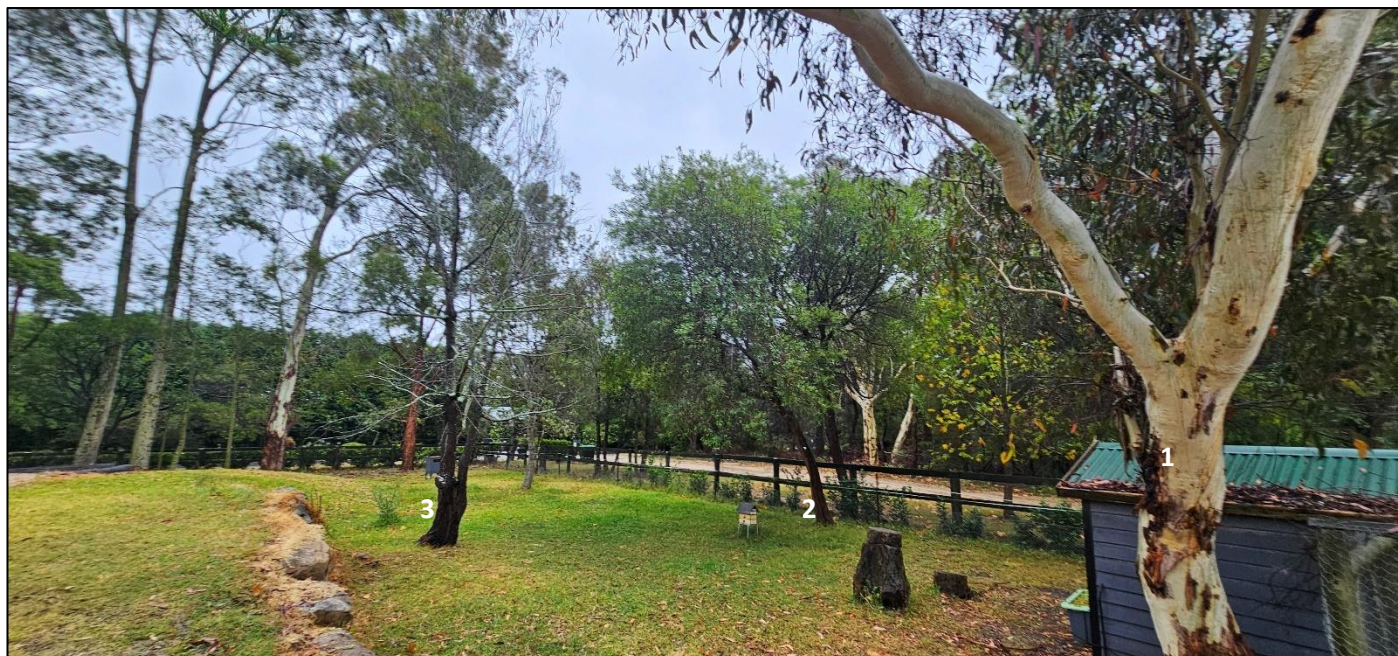


Figure Trees 2 *Hakea saligna* and 3 *Allocasuarina torulosa*.



Figure 3 Trees 4 and 5 *Banksia integrifolia*.



Figure 4 Tree 6 *Banksia serrata*.



Figure 5 Tree 7 *Banksia serrata*.



Figure 6 Tree 8 Citrus x limon.



Figure 7 Trees 9a – 9k Cupressocyparis X leylandii.

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.

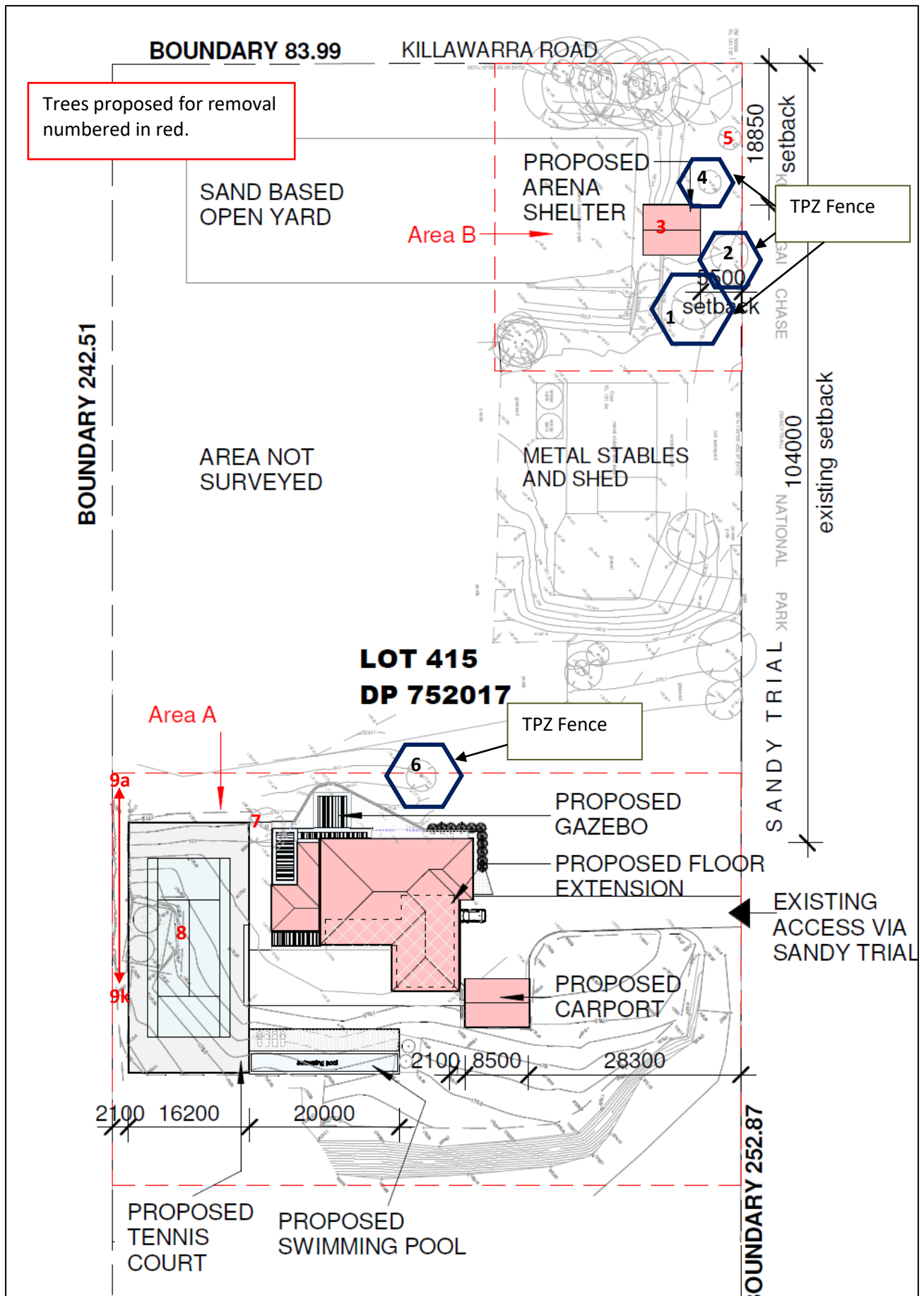
4: Remove: Trees that should be removed within the next 5 years.

- (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.

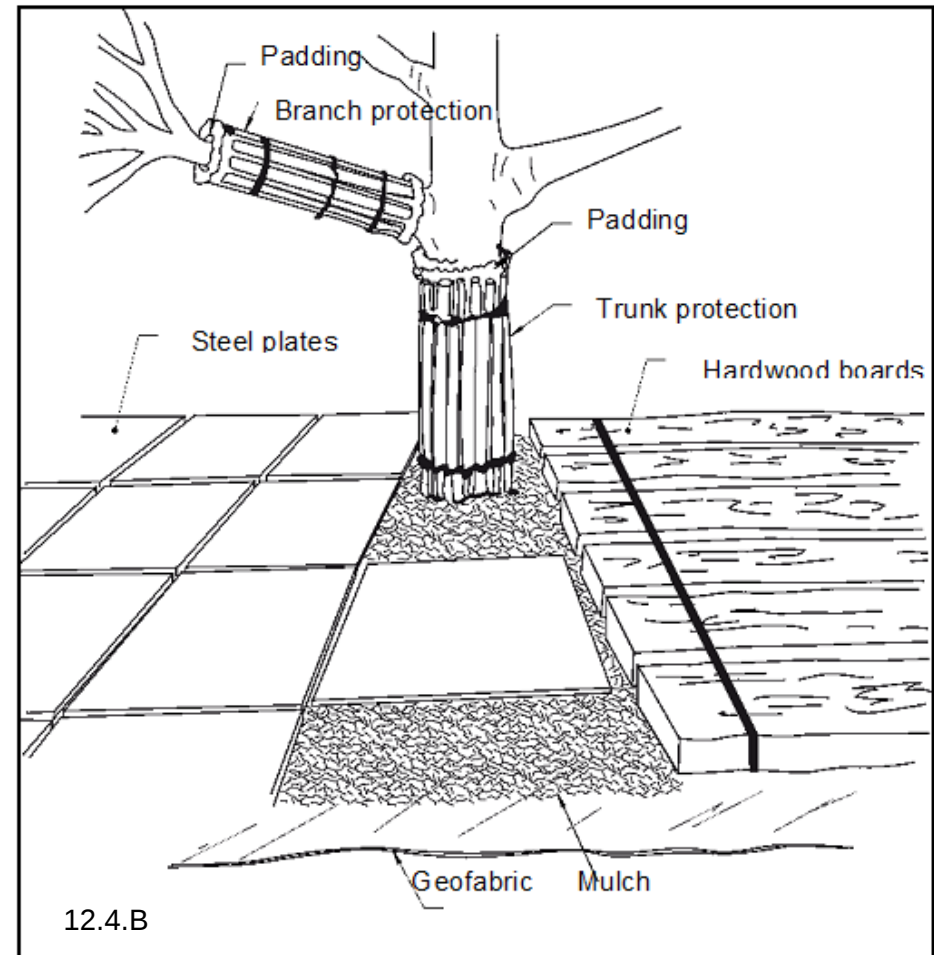
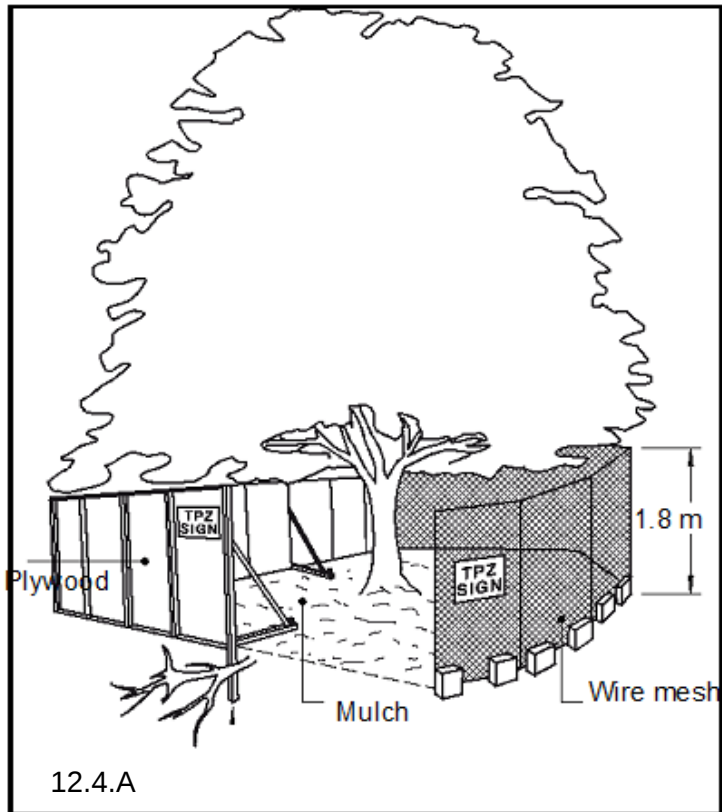
5: Small, young, or regularly pruned: Trees that can be reliably moved or replaced.

- (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 Removal/Retention/Protection



12.3 Tree Protection (AS4970)



12.4 Calculating Tree retention Value

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

Northern Beaches Council, 2025. Northern Beaches (Warringah) DCP 2011 Part E1, '*Preservation of Trees or Bushland Vegetation*' [online] Available at: <https://eservices.northernbeaches.nsw.gov.au/ePlanning/live/pages/plan/book.aspx?exhibit=DCP> [accessed 6 January 2025]

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12.6 Qualifications – Ian Hills

Associate Diploma Horticulture
AQF3 Horticulture (Arboriculture)
AQF5 Diploma Horticulture (Arboriculture)
QTRA Registered User 2083
QTRA Advanced User 4469
Working with Children Check Number
Digital National Police Certificate
QTRA Advanced User 4469
QTRA Advanced User 4469

Ryde TAFE 1984
Ourimbah TAFE 1998
Kurri Kurri TAFE 2009 (Dux) Cert No. 5934155
December 2013
March 2018
WWC1780469E
2024-667198
March 2020
April 2023