Arboricultural Impact Assessment Report

Prepared for: Anita Jacoby

Site Address: 141 Riverview Rd Avalon Beach NSW 2107

Date: 01/12/19

Prepared by: Damian Green
Diploma of Arboriculture, Ryde TAFE 2015

Arboriculture Australia™
Membership #2845

Version: 1

Contents

1 Summary

This report was commissioned by Anita Jacoby, Damian Green attended an onsite inspection on 21/11/19. The report is an assessment of nine (9) native and exotic tree species located on an in the north east corner of 141 Riverview Rd and within the boundary of 143 Riverview Rd. At the time of inspection, the health and condition of all trees assessed was considered good, typical of species and age class.
A development has been proposed to build a steel constructed carport and storeroom. Excavation is required for the steel piers.
T1, 2 & 3 are protected under Northern Beaches Council Tree Protection Polices, T4 is not protected but is located within the boundary of 143 Riverview Rd. T5, 6, 7, 8 & 9 are under 5m in height and are not protected.
Construction has been highlighted in the impact assessment as having a major impact to T1 & 2, both trees are not in a viable location for retention, as these trees have a low retention value they are not considered important for retention, nor require special works or design modification to be implemented for their retention.
The removal of T1, 2, 5, 6, 7, 8 & 9 have been recommended with the retention of T3 & 4, a tree protection plan details the areas required to be supervised during excavation.

2 Introduction

This report was commissioned by Anita Jacoby, Damian Green attended an onsite inspection on 21/11/19. The report is an assessment of nine (9) mixed native and exotic species located within the roadside (eastern) boundary of 141 Riverview Rd Avalon Beach. A development has been proposed to construct a pier and beam carport/storeroom. Excavation within the proposed construction area to front garden is required for concrete and piers.

The aim of this assessment is to identify the subject trees, comment on their current health & condition, to discuss the proposed development and its potential impacts, and to provide recommendations taking into consideration Northern Beaches Council tree protection measures & Australian Standard 4970-2009 (Protection of trees on development sites).

3 Location of Site

Site location 141 Riverview Rd Avalon Beach, the subject trees are located within the highlighted proposed work area.

Figure 1 Site location (Google maps).

Figure 2 Aerial image of site and proposed work area (Google maps).

4 Method

4.1 An onsite inspection was undertaken by Damian Green on 21/11/19, comments and recommendations in this report are based on findings from the site inspection.

4.2 The subject tree was assessed by the process of a stage one visual tree assessment (VTA) as formulated by Mattheck & Broloer (1994) and practices consistent with modern arboriculture. The tree was inspected from ground level without the use of any invasive or diagnostic tools or testing. No aerial inspections or root mapping were undertaken.

4.3 Tools used to take measurements and photographs.

- iPhone X
- Trimble TerraFlex data collection software

4.4 Tree heights, trunk diameters and canopy dimensions were estimated.

5 Provided Documents

- Floor plans & elevations (Prepared by R. Conway)
- Elevations & section (Prepared by R. Conway)
- Site, landscape drainage & sediment plan (Prepared by R. Conway)

6 Observations/Discussion

6.1 Nine (9) trees were assessed in preparing the report. Details of the trees, dimensions, condition, Safe Useful Life Expectancy (SULE) and landscape significance (STARS) are attached in **Appendix A**. Location of trees are shown in **Appendix D**.

6.2 Tree locations and surrounding environment

6.3 The front garden of 141 Riverview Rd has a steep decline sloping down toward the residence, the roadside is lined with native & exotic trees. The proposed building site in the north-eastern corner of the block adjacent to the roadside has a clearing and is the best suited location available.

6.4 Tree Preservation

6.4.1 A tree vegetation policy for Northern Beaches Council applies, trees with a height of 5m or greater are protected with the exemption of trees listed as exempt species.

6.4.2 T1, 2 & 3 are protected under Council's Tree Management Controls.

6.4.3 T5 is listed as an exempt species and T6, 7, 8 & 9 are under 5m in height. These trees are not protected.

6.4.4 T4 is also listed as an exempt species but is located within the neighbouring boundary of 143 Riverview Rd. Without authority to remove this tree it shall be considered high priority for retention. This report will provide advice for retention of T4.

6.5 AS4970-2009 Protection of Trees on Development Sites

6.5.1 The standard was established to provide appropriate guidelines to ensure the long-term viability and stability of trees to be retained on development sites.

6.6 Tree Protection Zone (TPZ)

6.6.1 The tree protection zone (TPZ) is the principal means of protecting trees on development sites. The TPZ is a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains un-damaged during development and remains viable. (Minor encroachment = less than 10%, major encroachment = 10-35%)

6.7 Structural Root Zone (SRZ)

6.7.1 The SRZ is the area required for tree stability. A larger area is required to maintain a viable tree. The SRZ only needs to be calculated when major encroachment into a TPZ is proposed (Any works within the SRZ is considered major encroachment).

6.7.2 When determining the impacts of an encroachment into the TPZ, some consideration maybe given to the following.

- The potential loss of root mass resulting from the encroachment determined by root mapping (number, size, percentage)
- Species tolerance to root disturbance
- Age and vigour of trees
- The presence of existing or past structures (with solid footings) or obstacles which may affect root growth.

6.8 Restrictions within the TPZ

- machine excavation including trenching;
- excavation for silt fencing;
- storage including fill;
- preparation of chemicals, including preparation of cement products;
- parking of vehicles and plant;
- refuelling;
- dumping of waste;
- wash down and cleaning of equipment;
- Placement to fill;
- Soil level changes;
- Temporary or permanent installation of utilities and or signs;
- lighting of fires;
- physical damage to the tree, above and below ground level.

6.9 Tree Retention Value and Landscape Significance

6.9.1 It is possible to determine a tree's significance and retention value based upon several factors including size, condition and maturity coupled with methodologies STARS and SULE. See **Appendix B & C**

6.9.2 Trees identified with a SULE of Young (b) Trees which are over 5m in height, but less than 25 years old and Medium landscape value are not considered important for retention, nor require special works or design modification to be implemented for their retention.

- T1, 2 & 3 meet these criteria

6.9.3 Trees identified with a SULE of Young (a) Trees which are less than 5 meters (m) in height and Low landscape value are not considered important for retention, nor require special works or design modification to be implemented for their retention.

- T4 meets these criteria but as previously stated the tree is located on the adjacent property and should be considered high retention.

7 Impact Assessment

7.1 Due to the steep slope of the proposed worksite, heavy machinery will not be utilised, reducing root disturbance and compaction. The majority of TPZ encroachment is excavation for setting steel posts.

7.2 T1 has an estimated TPZ encroachment of 50%, the building footprint is approximately 400mm from the trunk. The majority of the trees canopy lies to the south within the building footprint. Removal of first order stems consisting of approximately 50% total live canopy would be required to accommodate the proposed design. Impact to T1 is considered major and may affect long term tree health and stability.

7.3 The trunk of T2 falls within the proposed building footprint, 100% encroachment will occur.

7.4 T3 has an estimated TPZ encroachment of 19% into the construction footprint, when taken into consideration the pier and beam construction and suspended entrance this could be further reduced to approximately 10%. No canopy disturbance should be incurred during construction process. Impact is considered minor; no health or stability issues were noted.

7.5 T4 has an estimated TPZ encroachment of 28% into the construction footprint, when taken into consideration the pier and beam construction and suspended entrance this could also be further reduced to approximately 10%. An approximate 10% live canopy incursion into the construction footprint was also noted. Impact is considered minor; no health or stability issues were noted.

8 Conclusions

8.1 Nine (9) trees were assessed as part of this report. Excavation of the front garden area is required for steel posts for the proposed carport/storeroom.

8.2 T5, 6, 7, 8 & 9 are not protected and may be removed without council consultation/permission.

8.3 T4 is also not protected but located within the boundary of 143 Riverview Rd and should be considered for retention.

8.4 T1, 2 & 3 are protected Northern Beaches Council tree vegetation policy.

8.5 Construction has been highlighted in the impact assessment as having a major impact to T1 & 2, both trees are not in a viable location for retention, as these trees have a low retention value they are not considered important for retention, nor require special works or design modification to be implemented for their retention.

8.6 T3 & 4 have minor TPZ incursions T4 also requires canopy pruning to clear the construction footprint.

10 Recommendations

10.1 Retain T3 & 4

- Pruning of T4 back to property boundary.
- Refer to section 11 Tree Protection

10.2 Remove T1, 2, 5, 6, 7, 8 & 9

- Council consultation and permission is required prior to the removal of T1 & 2.

All tree work is to be carried out by arborists with a minimum AQF Level 3 qualification in Arboriculture, in accordance with Australian Standard AS 4373 – 2007 'Pruning of Amenity Trees' and the NSW WorkCover Code of Practice for the Amenity Tree Industry (1998).

11 Tree Protection

The location and the difficulty of access to the site will naturally restrict access, therefore minimal tree protection measures shall be required. Tree protection fencing shall not be required, trunk protection is required on T3 only & pruning of T4 is required prior to work commencing on site.

11.1 Agreement

Contractors and site workers shall be informed of Tree Protection and Management specifications and the significance of the tree to be retained.
The Site Foreman is responsible for all tree protection procedures on site as per this document and whenever the arborist is not on site.

11.2 Signage

A sign shall be required at the roadside and on the trunk protection of T3. The sign shall be plastic, no smaller than A4 paper size, shall state 'No Access – Tree Protection Zone' and include the contact details of the Site Foreman.

11.2.1 Trunk protection

2m wooden posts with steel tape and screws are required to be placed around the trunk of T3, care must be taken to avoid contact with screws and the trunk.

11.3 Pre-determined Arborist Supervision- Witness Points

The following pre-determined Site Arborist stages are witness points and will require the attendance of the site arborist who will document the works and provide their signature stating an inspection has taken place and all works are completed in accordance to this report and AS4970-2009 Protection of Trees on Development Sites.

Table 1 Witness points for Site Arborist Inspections

Witness Point	Action	Check Box
Work within the TPZ	The Site Arborist is to monitor all earthworks within the TPZ of T3 & 4.	Inspected, documented & certified by Site Arborist. YES/NO
Practical Completion	The Site Arborist is to inspect and assess the condition of T3 & 4 and provide certification of the above-mentioned Supervision stage.	Inspected, documented & certified by Site Arborist. YES/NO

11.5 Works within the Tree Protection Zone

(Pre-determined Witness Point)

Any proposed earthwork within a 3m radius of T3 and 7.2m radius of T4 shall be undertaken under instruction and guidance of the Site Arborist. If or when a root has been exposed it will be of the Site Arborists discretion whether pruning shall take place. Pruning of roots shall be done with a sharp implement such as a chainsaw or handsaw.

11.6 Tree damage

Any damage to a protected tree shall be reported to the site arborist immediately.

11.7 Post Construction

(Pre-determined Witness Point)

The Site Arborist shall make a final inspection to assess tree health and condition.

12 Limitations on the use of this report

This report is to be used in its entirety only. Any written or verbal submission, report or presentation that includes statements taken from the findings, discussions, conclusions or recommendations made in this report may only be used where the whole original report (or a copy) is referenced to and directly attached to that submission, report or presentation. Information contained in this report covers only the trees that were inspected and reflects the trees condition at the time of the inspection. There is no guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future. The report does not provide evidence or documentation of the stability or strength of the sandstone rock face.

13 Works Cited

Barrell Tree Consultancy,. (1993). Pre-Planning tree surveys: Safe Useful Life Expectancy (SULE) is the natural progression. TreeAZ.

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14 Appendix

A: Tree assessment schedule A & B
B: Safe Useful Life Expectancy description and categories
C: Significance of a Tree Assessment Rating System (STARS)
D: Tree Location

Appendix A: Tree assessment schedule A

Tree number	Tree name		Tree dimensions			
	Botanical name	**Common name**	**Height (m)**	**Spread (N,E,S,W)**	**D.B.H (mm)**	**DAB (mm)**
1	*Casuarina cunninghamiana*	Sheoak	7	2,2,3,2	200	220
2	*Casuarina cunninghamiana*	Sheoak	7	2,3,3,3	300	350
3	*Casuarina cunninghamiana*	Sheoak	7	2,2,2,2	250	300
4	*Cotoneaster glauophyllus*	Cotoneaster	5	5,1,3,5	600	450
5	*Jacaranda mimosifolia*	Jacaranda	5	3,2,2,3	150	200
6	*Grevillea whiteana*	Grevillea moonlight	2	1,1,1,1	60	70
7	*Grevillea whiteana*	Grevillea moonlight	2	1,1,1,1	60	70
8	*Grevillea whiteana*	Grevillea moonlight	2	1,1,1,1	60	70
9	*Grevillea whiteana*	Grevillea moonlight	2	1,1,1,1	60	70

Tree assessment schedule B

Tree number	Vigour Low, Normal, Excellent	Condition Poor, Fair, Good	Age class Young, Mature, Old, Dead	Crown Form Dominant, Forest, Codominant, Emergent, Intermediate, Suppressed	SULE category	TPZ radius (m)Approx.	SRZ radius (m)Approx.	Landscape significance	Retention Value	Comments
1	N	G	M	E	Y(b)	2.4	1.75	M	L	
2	N	G	M	E	Y(b)	3.6	2.1	M	L	
3	N	G	M	E	Y(b)	3	2	M	L	
4	N	G	M	E	Y(a)	7.2	2.3	L	L	Located within boundary of 143 Riverview Rd, listed as exempt tree species.
5	N	G	M	E	Y(a)	N/A	N/A	N/A	N/A	Listed as exempt tree species.
6	N	G	Y	I	Y(a)	N/A	N/A	N/A	N/A	Less than 5m in height no approval required.
7	N	G	Y	I	Y(a)	N/A	N/A	N/A	N/A	Less than 5m in height no approval required.
8	N	G	Y	I	Y(a)	N/A	N/A	N/A	N/A	Less than 5m in height no approval required.
9	N	G	Y	I	Y(a)	N/A	N/A	N/A	N/A	Less than 5m in height no approval required.

- Trees highlighted in **Green** are of high landscape and SULE and should be retained and protected.
- Trees highlighted in **Blue** are considered less critical for retention, however their retention should be a priority with removal considered only if adversely affecting the proposal.
- Trees highlighted in **pink** are not considered important for retention, nor require special works or design modification to be implemented for their retention.
- Trees highlighted in **Yellow** are considered hazardous or in irreversible decline or environmental weeds and should be removed irrespective of development

Appendix B: Safe Useful Life Expectancy description and categories

Safe Useful Life Expectancy (SULE)

SULE is the length of time that the arboriculturist assesses an individual tree can be retained with an acceptable level of risk based on the information available at the time of inspection. It is a snapshot in time of the potential an individual tree has for survival in the eyes of the assessor. SULE is not static – it is closely related to tree health and the surrounding conditions. Alterations in these variables may result in changes to the SULE assessment. Consequently, the reliability all SULE assessments have will decrease as time passes from the initial assessment and the potential for changes in variables increases.

SULE Assessment Categories

Long SULE: Trees that appear to be retainable with an acceptable level of risk for more than 40 years.

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

Medium SULE: Trees that appear to be retainable with an acceptable level of risk for 15 to 40 years.

(a) Trees that may only live between 15 and 40 more years.
(b) Trees that may live for more than 40 years but would be removed to allow the safe development of more suitable individuals.
(c) Trees that may live for more than 40 years but would be removed during normal management for safety or nuisance reasons.
(d) Storm damaged or defective trees that can be made more suitable for retention in the medium term by remedial work.

Short SULE: Trees that appear to be retainable with an acceptable level of risk for 5 to 15 years.

(a) Trees that may only live between 5 and 15 more years.
(b) Trees that may live for more than 15 years but would be removed to allow the safe development of more suitable individuals.
(c) Trees that may live for more than 15 years but would be removed during normal management for safety or nuisance reasons.
(d) Storm damaged or defective trees that require substantial remedial work to make safe and are only suitable for retention in the short term.

Remove: Trees with a high level of risk that would need removing within the next 5 years.

(a) Dead trees.
(b) Dying or suppressed and declining trees through disease or inhospitable conditions.
(c) Dangerous trees through instability or recent loss of adjacent trees.
(d) Dangerous trees through structural defects including cavities, decay, included bark, wounds or poor form.
(e) Damaged trees that are considered unsafe to retain.
(f) Trees that will become dangerous after removal of other trees for the reasons given in (a) to (e).

Young or Small Trees:
(a) Trees which are less than 5 meters (m) in height. (b) Trees which are over 5m in height but less than 25 years old.

Appendix C: Significance of a Tree Assessment Rating System (STARS)

Tree Significance - Assessment Criteria - STARS©		
Low	**Medium**	**High**
The tree is in fair-poor condition and good or low vigour. The tree has form atypical of the species The tree is not visible or is partly visible from the surrounding properties or obstructed by other vegetation or buildings The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area The tree is a young specimen which may or may not have reached dimensions to be protected by local Tree Preservation Orders or similar protection mechanisms and can easily be replaced with a suitable specimen The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa in situ – tree is inappropriate to the site conditions The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms The tree has a wound or defect that has the potential to become structurally unsound. The tree is an environmental pest species due to its invasiveness or poisonous/allergenic properties. The tree is a declared noxious weed by legislation	The tree is in fair to good condition The tree has form typical or atypical of the species The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street The tree provides a fair contribution to the visual character and amenity of the local area The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa in situ	The tree is in good condition and good vigour The tree has a form typical for the species The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age. The tree is listed as a heritage item, threatened species or part of an endangered ecological community or listed on council's significant tree register The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity. The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values. The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa in situ – tree is appropriate to the site conditions.

Safe Useful Life Expectancy	Tree Significance					
		High	**Medium**	**Low**		
	Long >40 years					
	Medium 15-40 years					
	Short <1-15 years					
	Dead					

Legend for Matrix Assessment	
	Priority for retention (High): These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 Protection of trees on development sites. Tree sensitive construction measures must be implemented if works are to proceed within the Tree Protection Zone.
	Consider for retention (Medium): These trees may be retained and protected. These are considered less critical; however, their retention should remain priority with the removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.
	Consider for removal (Low): These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.
	Consider for removal (Low): These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.

Appendix D Tree Location

Table 1 Tree location (not to scale)