ARBORICULTURAL IMPACT ASSESSMENT

57 MACMILLIAN STREET, SEAFORTH 2093

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1. INTRODUCTION

1.1 Complete Arborcare was commissioned by Green Homes Australia P/L to undertake an Arboricultural Impact Assessment (AIA) regarding the proposed development of Lot 11/DP18517,No.57 Macmillan St,Seaforth 2029 (the subject site).

1.2 This AIA is to be presented to Northern Beaches Council (NBC) as part of the DA. It has been prepared following the guidelines provided in the Australian Standard (AS) 4970-2009*, Protection of Trees on Development Sites* and AS 4373,2007,*Pruning of Amenity Trees.*

2. LEGISLATION REQUIREMENTS

2.1 The subject site is zoned as R2-Low Density Residential (NSW Government, 2018).

2.2 State Environmental Planning Policy (Vegetation in Non–Rural Areas) 2017 (NSW Government, 2017) has been considered in the preparation of this report. The aims of the policy are to;

(a) to protect the biodiversity values of trees and other vegetation in non-rural areas of the State, and

(b) to preserve the amenity of non-rural areas of the State through the preservation of trees and other vegetation.

2.3 NBC (Northern Beaches Council, 2017) considers a tree to be:

(a) any palm or woody perennial plant greater than five (5) metres in height or any palm or woody perennial plant with a canopy greater than 10 m in width; or

(b) any native palm or native woody perennial plant at any stage of its lifecycle that is 0.5 metres or greater in height and is within any area mapped by Council as containing:

- Threatened and High Conservation Habitat
- Wildlife Corridors
- Native Vegetation known or potential habitat for threatened species, populations or ecological communities

3. THE SITE



Figure 1: The subject site outlined in red (*nearmap 2019*).

4. METHOD

4.1 The subject site and tree/s were visually assessed from ground level on the 20th April 2019. The *Genus/ species* of the subject tree/s were recorded as well as dimensions at Diameter at Breast Height (DBH) & Diameter at Base (DAB), along with crown and canopy width. Height and age of the tree/s were estimated as well as the percentage of deadwood. The subject tree/s were given a condition / vigour rating and signs and symptoms of pests and diseases were noted (if apparent). Structural defects were looked for and comments recorded.

4.2 Calculations have been made using guidelines supplied in AS 4970-2009, specifically in relation to:

- Tree Protection Zone (TPZ)
- Structural Root Zone (SRZ)
- Live Crown Size (LCS)

4.3 The tree/s have been allocated a landscape significance rating of Low, Medium or High using the *IACA Significance of a Tree, Assessment Rating System* (STARS)© (IACA, 2010). Stars assessment criteria includes:

- Condition and Vigour
- Form, species specific
- Provenance, age and botanical significance
- Heritage and Ecological significance
- Size, shape, and local amenity value
- Restrictions to tree growth

Appendix B contains the assessment criteria in full.

4.4 The tree/s have been given a Useful Life Expectancy (ULE) rating, categorised as either;

- Long – 40+ years
- Medium – 15-40 years
- Short – 5-15 years
- Consider for removal - <5 years

4.5 Plants or vegetation upon/or adjacent to the subject site that were not recorded, were assessed as being exempt from the current NBC tree management plan.

5. OBSERVATIONS

5.1 Listed in Table 1 below are observations from the subject tree relating to:

- Health and vigour.
- Deadwood. An overall % has been estimated.
- Structural defects and comments.
- Any signs/symptoms of pest and disease attack.
- Previous pruning or wounds.

Tree No.	Common Name *Genus/species*	Health/ Vigour	Dead wood %	Structural Defects/ Comments	Pests/ Disease	Pruning/Wounds
1	Swamp Oak *Casuarina glauca*	F/G	<5	Stem inclusion	None observed	Previously pruning

Table 1: Tree Observations

5.2 Listed in Table 2 below are measurements from the subject tree relating to:

- Age.
- Tree height.
- Lowest scaffold branch.
- Canopy spread – measured to the North, South,East and West (N,S,E,W).
- Diameter at breast height (DBH).
- Diameter above buttress (DAB).

Tree No.	*Genus/species*	Age	Height (m)	Lowest Scaffold (m)	Spread (m)				DBH / Multi (cm)	DAB (cm)
					N	S	E	W		
1	*Casuarina glauca*	M	14	2.5	6	7	5	5	70	85

Table 2: Tree Measurements

5.3 Listed in Table 3 Below are calculations from the subject trees relating to:

- Tree Protection Zone (TPZ).
- Structural Root Zone (SRZ).
- Live Crown Size (LCS).

Tree No.	*Genus/species*	SRZ (m)	TPZ (m)	Live Crown Size (m^2)
1	*Casuarina glauca*	3.09	8.4	130

Table 3: Tree Calculations

6. TREE RETENTION VALUES

6.1 Trees have been allocated a retention value using the priority Matrix in the *IACA Significance of a Tree, Assessment Rating System* (STARS)© (IACA, 2010). The Matrix uses the Landscape Significance rating combined with the Useful Life Expectancy (ULE) to determine a retention value of either;

- Priority for Retention (High) – All measures must be taken to retain and protect these trees. If the guidelines set out in AS4970-2009 Protection of trees on development sites cannot be used to protect the trees, design modification or re-location of the proposed development should be considered.
- Consider for Retention (Medium) – Retention of these trees should remain a priority. If the trees are adversely affecting the proposed development and all protection measures have been considered but are not viable, removal can be considered.
- Consider for Removal (Low) – Retention of these trees is not important. No modification to design should be considered for their retention.
- Priority for Removal – Trees in an irreversible decline, weed species or hazardous trees. These trees should be removed.

Tree No.	*Genus/species*	Landscape Significance Rating	Useful Life Expectancy	Retention Value
1	*Casuarina glauca*	Medium	Medium	Medium

Table 4: Tree Retention Values

7. CONSTRUCTION IMPACTS

7.1 Listed in table 5 below are likely impacts from the proposed construction upon the trees.

Tree No.	Proposed encroachments into TPZ and/or canopy	Likely Impacts from proposed construction (Discussion)	Conclusion
1	A major 40% encroachment into the TPZ/SRZ Minor lower canopy encroachment upon the western face may take place.	Possible loss of woody & non-woody roots, resulting in a decreased ability for the tree to uptake water & potentially compromising overall stability. Loss of canopy may result in reduced photosynthesis.	Root investigation will be required to determine possible impact. If roots >50mmø are removed, tree health & stability may be compromised.

Table 5: Construction Impacts

8. DOCUMENTS USED IN THE PREPARATION OF THIS REPORT

8.1 Listed in Table 6 below are documents used in the preparation of this report.

Document type	Source/ Author	Title	Date	Summary
Plan	Ukalovic Architectural Drafting Services	Site Plan	6/05/2019	Site plan shown over the subject
Plan	Ukalovic Architectural Drafting Services	Site Plan	6/05/2019	Development application plans shown over the subject
Plan	Complete Arborcare	TPZ/SRZ Plan	06/05/2019	TPZ/SRZ plan shown over the subject site.

Table 6: Documents used in the preparation of this report.

9. RECOMMENDATIONS/CONCLUSIONS

9.1 If the proposed development is to take place, it is recommended that an AQF[1] Level 5 Arborist is engaged to undertake non-destructive root investigating as described in clause 3.3.4 (TPZ encroachment considerations) of AS 4970-2009. If roots >50mmø are encounted, tree removal & replacement may be required (subject to the tree owner and NBC approval).

9.2 If roots are discovered that can be removed (which are to be <50mmø), pruning methods must be undertaken in accordance with Section 9 (Root Pruning) of AS 4373-2007.

9.3 Any limb pruning works that may be required must be undertaken by an arborist with a minimum AQF level 3 standing & be conducted in accordance with clause 7.2.4 (Selective pruning) of AS 4373-2007 & comply with the current Code of Practice: Amenity tree Industry 1998.

9.4 If tree removal was to take place, replacement must occur. Tree/s selected for replacement plantings should be endemic species that will attain a similar height & canopy spread of those removed. These tree/s are to be chosen in accordance with AS 2303-2015 (Tree Stock for Landscape Use) & planting is to be undertaken by a suitably qualified (AQF1) person/s before the issuing of a Certificate of Occupancy.

9.5 Due to the presence of existing boundary fencing, no additional tree protection measures have been assessed to be installed if the proposed development is undertaken.

[1] Australian Qualification Framework

10. LIMITATIONS ON THE USE OF THIS REPORT

This report is to be utilised 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 of the original report (or a copy) is referenced in, & directly attached to that submission, report or presentation.

11. ASSUMPTIONS

Care has been taken to obtain information from reliable resources. All data has been verified insofar as possible; however, the author of this report can neither guarantee nor be responsible for the accuracy of information provided by others.

Unless stated otherwise:

Information contained in this report covers only the trees that were examined & reflects the condition of the trees at the time of inspection.

The inspection was limited to visual examination of the subject trees without dissection, excavation, probing or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.

This report does not represent or contain a tree risk assessment.

12. REFERENCES

IACA, 2010. *IACA Significance of a Tree, Asessment Rating System (STARS), Institute of Australian Consulting Arboriculturists, Australia.* [Online]
Available at: www.iaca.org.au
[Accessed 19th June 2015].

Nearmap, 2016. [Online]
Available at: http://maps.au.nearmap.com/
[Accessed 1st May 2019**].**

Government NSW 2017. *State Environmental Planning Policy (Vegetation in Non- Rural Areas) 2017.* [Online]
Available at: https://www.legislation.nsw.gov.au/~/view/EPI/2017/454/full
[Accessed 14th October 2017].

Council, W., 2015. *Trees & Developments.* [Online]
Available at: http://www.warringah.nsw.gov.au/planning-and-development/trees-and-development
[Accessed 24th of June 2017].

NSW Government, 2018. *NSW Planning Portal.* [Online]
Available at: https://www.planningportal.nsw.gov.au/find-a-property

Standards Australia, 2009. *AS 4970-2009 Protection of trees on development sites.* Sydney: Standards Australia.

Standards Australia, 2007. AS 4373-2007, *Pruning of Amenity Trees*. Sydney: Standards Australia.

RELEVANT APPENDICES - APPENDIX A: GLOSSARY OF TERMS

Photographs – all images have been taken from near maps.

Common Name/*Genus species* - the common name and genus/ species of the tree.

Age Class- assessment of the trees current age.

Immature (IM) - refers to a tree at growth stages between immaturity and full size**.**

Semi-mature (SM) - refers to a full-sized tree with some capacity for further growth.

Mature (M)-refers to a full-sized tree with some capacity for further growth.

Over-mature (OM) - a mature tree has reached a near stable size (biomass) above and below the ground. Trees can have a Mature Age Class for > 90% of their life span. Over-mature (**OM**) trees show symptoms of irreversible decline and decreasing biomass.

Live Stag (LS) - refers to a tree in a significant state of decline. This is the last stage of a tree prior to death.

Height -estimated overall height of the tree.

Tree Protection Zone (TPZ) - is a "No Go Zone" surrounding a tree to aid in its ability to cope with disturbances associated with construction works. Tree protection involves minimising root damage that is caused by activities such as construction. Tree protection also reduces the chance of a tree's decline in health or death & the possibly damage to structural stability of the tree from root damage.

Structural Root Zone (SRZ) – the structural root zone is the area required for the tree's stability. A larger area is required to maintain a viable tree. The SRZ is only needed to be calculated when a major encroachment into the TPZ is proposed. There are many factors that affect the size of the SRZ (e.g. tree height, crown area, soil type, soil moisture). The SRZ may also be influenced by natural or built structures, such as rock and footings.

Diameter at Breast Height (DBH) - the trunk diameter at breast height (in metres) of the tree, 1.4 meters above ground level.

Diameter above the Buttress (**DAB) -** refers to the tree trunk diameter measured above the root buttress and is used to calculate the radius of the SRZ.

Vigour - **Good (G), Fair (F) or Poor (P) -** the general appearance of the canopy of the tree at the time of inspection. Vigour can vary with the season and rainfall frequency

Health – **Excellent (E), Very Good (VG), Good (G), Fair (F), Declining (D), Poor (P),Very Poor (VP).**this refers to the tree's form & growth habit, as modified by its environment (aspect suppression by other tree/s, soils,) & the state of the scaffold (i.e. trunk & major branches),including structural defects such as cavities, crooked trunks or weak trunk/branch junctions. These are not directly connected with health & it is possible for a tree to be healthy but in poor condition/vigour.

Deadwood – this refers to any whole limb that no longer contains living issues (i.e. living leaves & /or bark).Some dead wood is common in a number of species.

Crown Spread - the greatest width from drip line to drip line of a branch across the trees crown.

Crown Form -the density of foliage (expressed as a percentage), that would be expected to be displayed in a tree of its genus/species. Many factors such as the presence of pests and/or diseases, drought and other associated environmental conditions contribute to crown form.

Epicormic Growth - these are advantageous shoots that grow from secondary bud development. They are an indicator that the tree has/or is under stress.

Live Crown Ratio (LCR) -the height of a trees crown, relative to the total height of the tree. Often used as an indicator of overall stability.

Live Crown Size (LCS) - the area of the crown as viewed from one aspect.

APPENDIX B: SIGNIFICANCE OF A TREE, ASSESSMENT RATING SYSTEM* (IACA 2010) – S.T.A.R.S. ©

Significance of a Tree, Assessment Rating System* (IACA 2010) – S.T.A.R.S. ©

The landscape significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is therefore necessary to have a rating system utilising structured qualitative criteria to assist in determining the retention value for a tree. To assist this process all definitions for terms used in the *Tree Significance - Assessment Criteria* and *Tree Retention Value - Priority Matrix*, are taken from the IACA Dictionary for Managing Trees in Urban Environments 2009.

This rating system will assist in the planning processes for proposed works, above and below ground where trees are to be retained on or adjacent a development site. The system uses a scale of *High*, *Medium* and *Low* significance in the landscape. Once the landscape significance of an individual tree has been defined, the retention value can be determined. An example of its use in an Arboricultural report is shown as Appendix A.

Tree Significance - Assessment Criteria

High Significance in landscape

- 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 Councils 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.

Medium Significance in landscape

- The tree is in Fair-Good condition and Good or Low vigour;
- 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*.

Low Significance in landscape

- 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 surrounding properties as 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 dimension 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 potential to become structurally unsound.

Environmental Pest / Noxious Weed Species
- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties,
- The tree is a declared noxious weed by legislation.

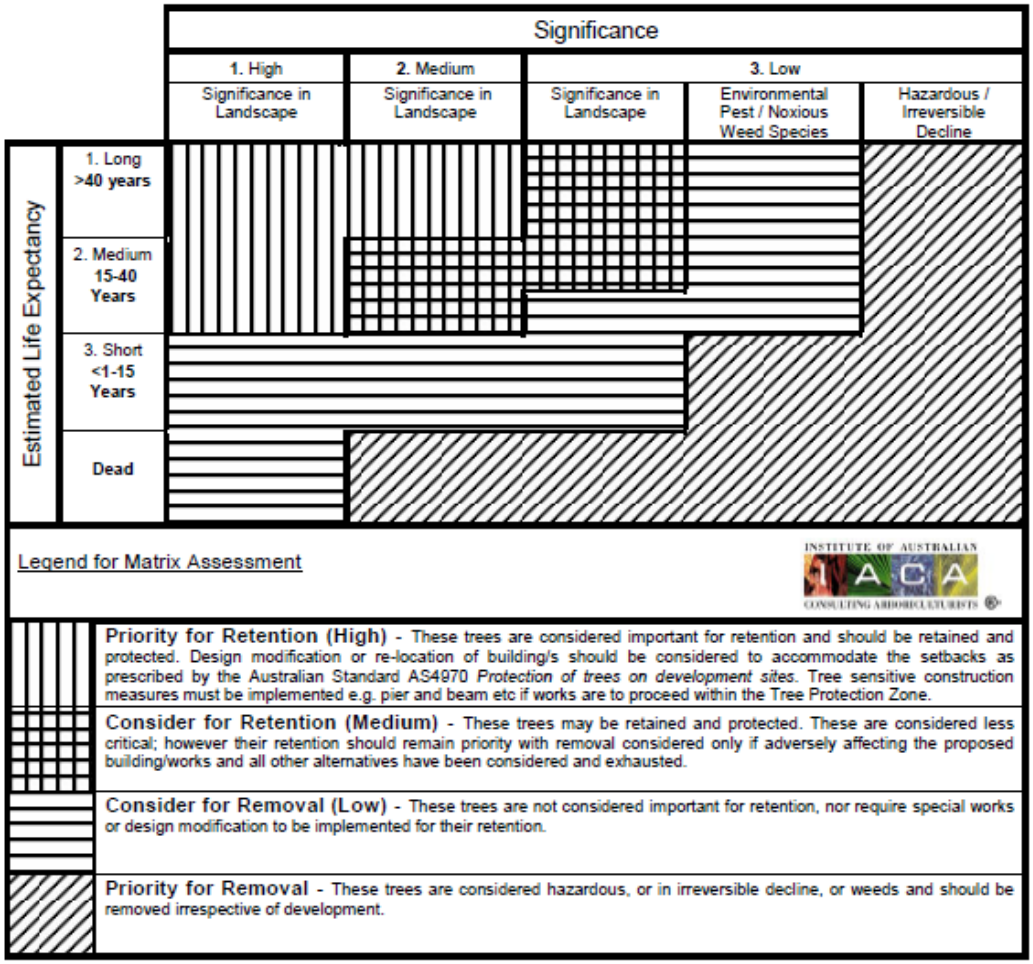
Hazardous/Irreversible Decline
- The tree is structurally unsound and/or unstable and is considered potentially dangerous,
- The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.

The tree is to have a minimum of three (3) criteria in a category to be classified in that group.

Note: The assessment criteria are for individual trees only, however, can be applied to a monoculture stand in its entirety e.g. hedge.

Institute of Australian Consulting Arboriculturists (IACA 2010), *IACA Significance of a Tree, Assessment Rating System (STARS)*, www.iaca.org.au

Table 1.0 Tree Retention Value - Priority Matrix.



USE OF THIS DOCUMENTAND REFERENCING The IACA Significance of a Tree, Assessment Rating System (STARS) is free to use, but only in its entirety and must be cited as follows', 2010, *IACA Significance of a Tree, Assessment Rating System (STARS)*, Institute of Australian Consulting Arboriculturists, Australia, www.iaca.org.au

REFERENCES Australia ICOMOS Inc. 1999, *The Burra Charter –The Australian ICOMOS Charter for Places of Cultural Significance*, International Council of Monuments and Sites, www.icomos.org/australia Draper BD and Richards PA 2009, *Dictionary for Managing Trees in Urban Environments*, Institute of Australian Consulting Arboriculturists(IACA), CSIRO Publishing, Collingwood, Victoria, Australia. Footprint Green Pty Ltd2001, *Footprint Green Tree Significance & Retention Value Matrix*, Avalon, NSW Australia, www.footprintgreen.com.auIACA 2010, *IACA Significance of a Tree, Assessment Rating System (STARS)*, Institute of Australian Consulting Arboriculturists, www.iaca.org.au

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