



Arboricultural Impact Assessment and Management Plan



231 Whale Beach Road, Whale Beach.

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1.0 INTRODUCTION

1.1 Background

1.1.1 This updated Arboricultural Impact Assessment and Management Plan has been prepared as part of an application to Section 4.55 application to modify the approved Development Application. This has been requested by Richard Cole Architecture on behalf of the property owners to detail the theoretical impacts associated with the partial reconfiguration approved building footprint and vehicular access.

1.1.2 There are no trees located on site. All documented trees are located within neighbouring properties and on the site's front verge. No trees are required for removal to allow for the proposed construction. Removal recommendations have been made for selected trees for the reasons outlined.

1.1.3 Both the approved and currently proposed construction footprints are predominantly within that of the existing and will have theoretically limited impacts on adjacent trees. https://en.wikipedia.org/wiki/Abiotic_component

1.1.4 The purpose of this report is to identify existing trees, assess both health and condition, determine landscape significance and safe useful life expectancy and make recommendations for preservation, removal or transplantation based on sustainability and suitability within the landscape. This report has assessed the likely impacts of the proposed development will have on the subject trees. An assessment of these impacts has been made in accordance with Australian Standard (AS) 4970 *for the Protection of Trees on Development Sites*. Pruning and removal works will be based on AS4373 *for the Pruning of Amenity trees* wherever applicable.

1.1.5 This assessment references the following plans only:

- **Richard Cole Architecture:** Section 4.55 Modification- Site Plan- May 2024.
- **Richard Cole Architecture:** Section 4.55 Modification Basement Plan- May 2024.
- **Richard Cole Architecture:** Section 4.55 Modification Ground Floor Plan- May 2024.
- **Richard Cole Architecture:** Section 4.55 Modification Level 1 Plan- May 2024.
- **Richard Cole Architecture:** Section 4.55 Modification Level 2 Plan- May 2024.
- **Richard Cole Architecture:** Section 4.55 Modification Level 3 Plan- May 2024.
- **Richard Cole Architecture:** Section 4.55 Modification Level 4 Plan- May 2024.
- **Richard Cole Architecture:** Section 4.55 Modification Roof Plan- May 2024.
- **Richard Cole Architecture:** Section 4.55 Modification Elevations- May 2024.
- **Richard Cole Architecture:** Section 4.55 Modification Boundary Elevations- May 2024.
- **Richard Cole Architecture:** Section 4.55 Modification Sections 1 and 2- May 2024.

1.1.6 The proposed modifications will reconfigure the vehicular access and extend the construction footprint as detailed. This is not within the theoretical or practical root zones of neighbouring trees and will directly affect them.



1.2 Methodology

1.2.1 A Visual Tree Assessment (VTA) was performed from ground level and consideration was given to the overall health of each documented tree, percentage of canopy, epicormic growth, deadwood and form for this species. The tree heights and canopy spreads have been estimated and where relevant the orientation of the canopy spread noted. The trunk diameters of each tree has been measured at breast height of 1.4 meters (DBH) and with a diameter tape to calculate Tree Protection Zones (TPZ) and Structural Root Zone (SRZ). The site was inspected by consulting arborist George Palmer most recently on the 19th June, 2024.

2.0 RESULTS

2.1 The Site

2.1.1 Site topography slopes down to the east. This has been practically retained with the existing construction footprint. There are no trees located on site. All documented trees are located both on the Whale Beach road front verge and within neighbouring properties.

2.1.2 All remnant vegetation will have been removed as part of the original subdivision and subsequent construction. All existing vegetation will have been planted here as part of more recent works.

2.2 The Trees

2.2.1 A total of eight (8) trees have been assessed for the purpose of this report. These trees have been assessed using Visual Tree Assessment (VTA) criteria and notes. This is a requirement of Clause 2.3.2 of the *Australian Standard 4970* (2009) for the *Protection of Trees on Development Sites*, each tree has been allocated a Retention Value based on the tree's Useful Life Expectancy and Landscape Significance with consideration to its health, structure, condition and site suitability.

2.2.2 The Retention Value does not take into account any proposed development. All trees have been allocated 1 of 4 Retention Values;

- **High Value** - Priority for Retention.
- **Moderate Value** - Consider for Retention.
- **Low Value** - Consider for Removal.
- **Remove** - Recommended for Removal Irrespective of works.

Refer to the Tree Assessment Schedule- 2.3.

2.2.3 **Tree 1** is a semi mature *Ficus benjamina*, or Benjamina fig located on the front verge. This tree has grown to approximately 8m with a similar canopy spread. This is an indoor ornamental tree species that is supported on multiple leaders that are included at ground level. This is a structural fault that may lead to failure. The tree does not comply with Australian Standard 2303 for Tree Stock for Landscape Use and is also exempt under Northern Beaches Development Control Plans and can be removed without seeking formal consent. The tree is however located outside the construction footprint and has been documented for retention.



2.2.4 **Trees 2 and 3** are both *Melaleuca viminalis*, or Bottle Brush trees again located on the site's front verge. Both are located within a small planter adjacent to the site's south western corner. This planter will have affected the spread and development of the tree's structural and broader feeder root network. Both trees share a root plate and canopy. Located outside the approved and proposed construction footprints. Retain and protect.

2.2.5 **Tree 4** is a semi mature *Lagunaria patersonia*, or Cow Itch tree located within the neighbouring residence. This is a Low Value tree species and exempt under Northern Beaches Council development controls. Located within the neighbouring residence and outside the construction footprint of both approved and proposed. Documented for retention.

2.2.6 **Tree 5** is a clump of *Strelitzia nicholii*, or Giant Bird of Paradise again located within the neighbouring residence. Another Low Value species exempt under Northern Beaches Council development controls. Retain and protect.

2.2.7 **Tree 6** is a small *Olea europaea*, or African Olive located within the neighbouring residence. This is a well recognised environmental weed species that comes with a Biosecurity Duty to eliminate. The tree is however located within the neighbouring residence and has been documented for preservation. Retain.

2.2.8 **Tree 7** is a small *Banksia integrifolia*, or Coastal Banksia. This is an important endemic tree species located within the neighbouring residence. Retain.

2.2.9 The final tree documented (**Tree 8**) is a small *Agonis flexuosa*, or Willow Myrtle again located within the neighbouring residence and outside the construction impact zone. Retain.

2.3 Tree Assessment Schedule

Retention Value 1 High		Retention Value 2 Moderate		Retention Value 3 Low		Retention Value 4 Remove	
Retain	Remove	Retain	Remove	Retain	Remove	Retain	Remove
		7		2, 3 + 8		1, 4, 5 + 6	
Total: 0	Total: 0	Total: 1	Total:	Total: 3	Total: 0	Total: 4	Total: 0



3.0 ARBORICULTURAL IMPACT ASSESSMENT

3.1 As noted, both the approved and proposed works are predominantly within the existing construction footprint and outside the practical Tree Protection Zone of all assessed trees. None of the documented trees are required for removal or be directly affected to allow for this.

4.0 DISCUSSION

4.1 There are no tree on site and none of the documented trees will be directly affected by either the currently approved or currently proposed Section 4.55 application to modify this.

4.2 Trees 1, 2 and 3 will be separated from the indirect impacts of the construction process with the implementation of the following Tree Protection Recommendations. This will see them fenced off and separated from the surrounding construction process. Neighbouring trees will affectively be separated by existing boundary fencing.

5.0 CONCLUSIONS

5.1 The impacts associated with the documented and modified works will be limited. The excavation to allow for the construction are unlikely to require the removal of any larger diameter roots and will not affect the structural integrity of any of the documented trees. Incursions into both SRZ and TPZ will be theoretical only.

5.2 As noted, the indirect impacts of the construction are accumulative and will require consideration throughout the construction process.

5.3 The preservation of selected trees will be done with the implementation of the following list of tree preservation recommendations. These have been made to represent both site conditions and current industry standards.



6.0 RECOMMENDATIONS

6.1 It will be recommended that these trees are retained and protected throughout the construction process. Construction impacts must be limited to those detailed. All works will need to be completed from within the existing or proposed construction footprints.

6.2 All permeable soil surface areas should be treated as being part of a Tree Protection Zone and allocated appropriate protection. Access will need to follow existing walkways and remain within the current construction footprint. All construction on site will require consideration for the preservation of topography outside the construction footprint.

6.3 Tree Protection Fencing design and locations have been detailed and should be installed prior to the commencement of site works.

6.4 All construction will require the preservation of larger diameter (30mm +) roots associated with preserved trees. All roots within the SRZ of a preserved tree will require preservation where possible. A pier and beam based construction method will limit the direct impacts of the construction to those detailed.

6.5 The remainder of the indirect construction impacts should be mitigated with the implementation of the following:

6.6 Appointment of Site Arborist

A site arborist shall be appointed prior to the commencement of work on site. The Site Arborist shall clearly mark out all trees to be removed and ensure that all trees documented for retention are preserved with the implementation of the following tree protection measures. The Site Arborist shall have a minimum qualification equivalent to a NSW TAFE Certificate Level 5 or above in Arboriculture.

6.7 Inspection Points

Give 5 working days notice to allow inspections to be undertaken at the following stages;

Inspection Point	Inspection Personnel
Installation of Tree Protection Zones including Tree Protection Fencing, Silt Fencing and Signage	Site Arborist
Modification of the Tree Protection Zone	Site Arborist
Works within the Tree Protection Zone	Site Arborist
Completion of Construction Works	Site Arborist Site Supervisor.



6.8 Education

Contractors and site workers shall receive a copy of these specifications prior to the commencement of work. Contractors and site workers undertaking any works within a TPZ shall sign the site log to confirm that they have read and understand these specifications prior to their undertaking.

6.9 Tree Protection Zones

Where applicable, all trees to be retained through the construction process shall be protected from mechanical damage and the indirect impacts of the construction process with the installation of Tree Protection Zones. Unless otherwise stated, the following activities must not be carried out within a TPZ;

- modification of existing soil levels
- excavation or trenching
- cultivation of soil
- mechanical removal of vegetation
- movement of natural rock
- storage of materials, plant or equipment
- erection of site sheds
- affixing signage or hoarding to trees
- disposal of chemical waste or construction material
- any activity that may directly or indirectly affect the health of these or surrounding trees.

Note: If access to a TPZ is required as part of the approved development, prior authorisation is required by the Site Arborist.

6.10 Tree Protection Fencing

Tree Protection Fencing shall be installed at the perimeter of the TPZ. As a minimum the Tree Protection Fencing shall be 1.8 meters high temporary chain supported by steel stakes. This shall be fastened and supported to prevent sideways movement. The trees woody roots shall not be damaged during the installation of this Tree Protection Fencing.

This Tree Protection Fencing shall be erected prior to the commencement of works on site and shall be maintained for the duration of the construction process.

6.11 Signage

Tree Protection Signage shall be attached to the PTZ and displayed in a prominent location. These signs shall be repeated in 10m intervals or closer where the fence changes direction. These shall be a minimum of a 72 font size and each sign at-least 600 x 500mm.

6.12 Mulching

The area within the TPZ shall be mulched and maintained with 80mm of leaf litter mulch for the duration of the construction process. This mulch shall be spread by hand to limit the impact on underlying roots and shall be installed prior to the commencement of works on site.



6.13 Site Arborist

The Site Arborist shall inspect and approve the TPZ including mulching, signage, Tree Protection Fencing, Silt fencing and Signage prior to the commencement of works on site.

6.14 Site Management

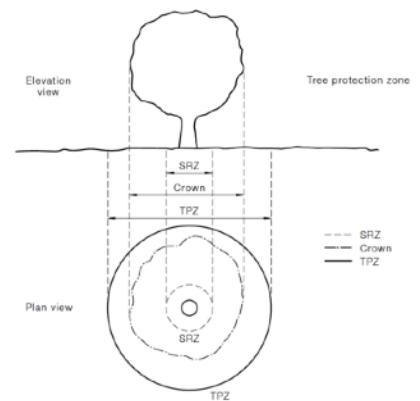
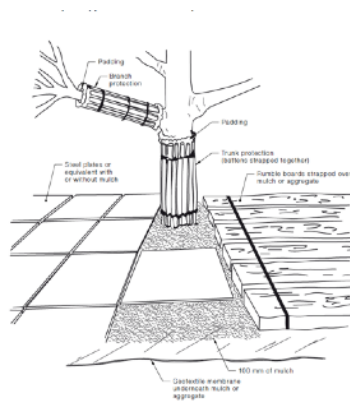
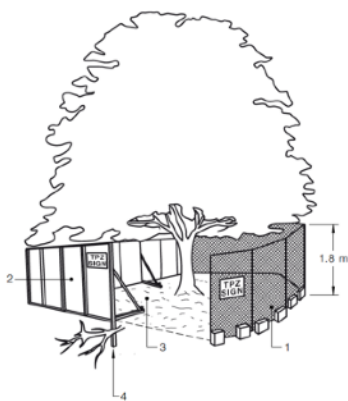
Materials and waste storage, site sheds and temporary services shall not be located within the TPZ unless specified. Storage points shall be covered when not in use and be no greater than 2m in height.

6.15 Works Within the TPZ

The TPZ may need to be modified during the works to allow access between the protected tree and the proposed construction. The TPZ shall remain as specified and only those works detailed in the proposed construction undertaken.

6.16 Completion of Works within Specified TPZ

Upon the completion of works within a TPZ the protective fencing shall be reinstated as specified. Where the construction of new structures does not allow for the reinstatement of fencing the TPZ shall be modified by the Site Arborist.



Australian Standards AS4970 Protection of Tree on Development Sites.

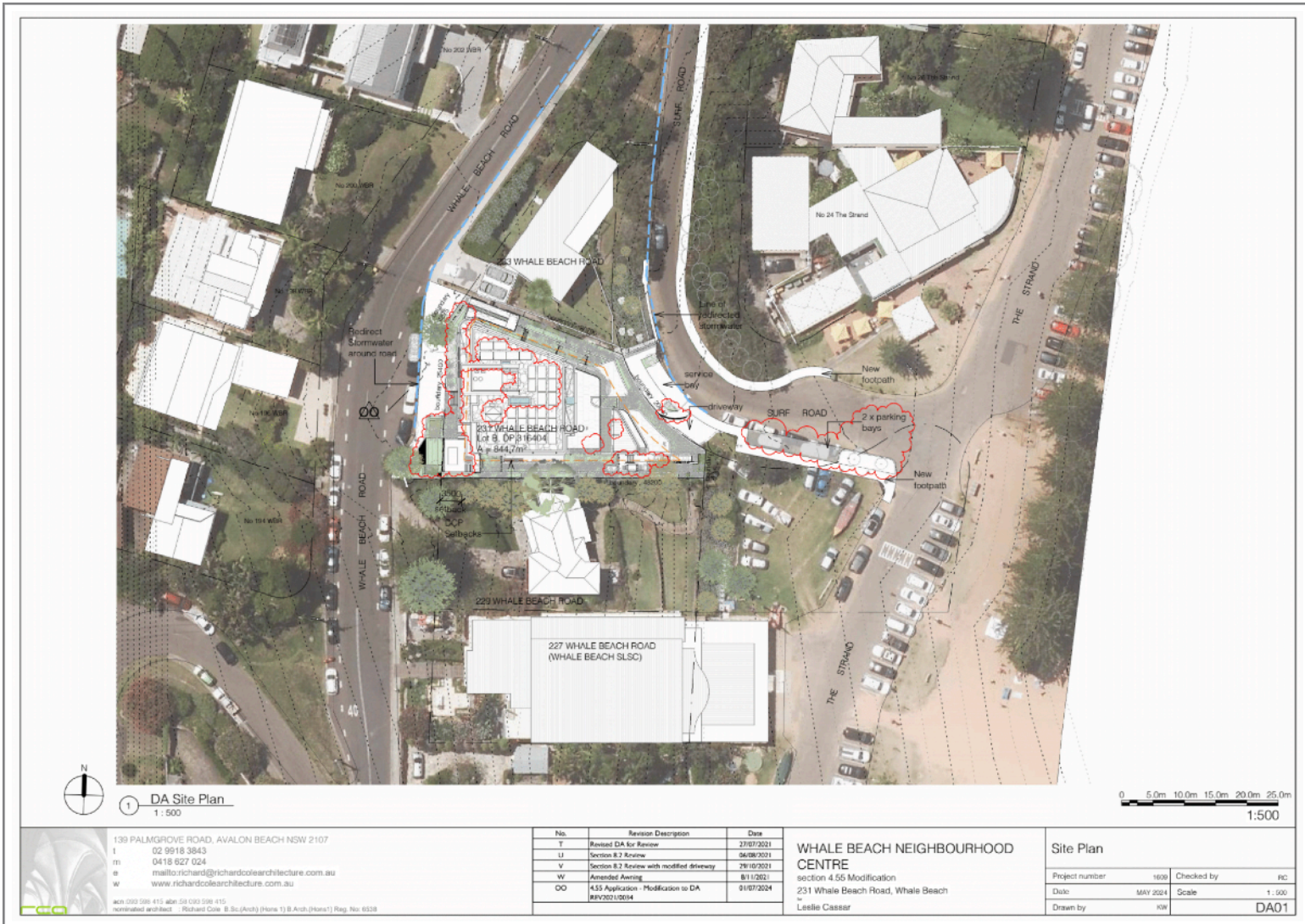


Figure 2: Shows the locations of the documented trees in relation to the approved and proposed construction.



7.0 GLOSSARY

COMMON NAME/GENUS SPECIES CULTIVAR – Common names can vary with selected texts. Where species is unknown, “sp.” indicated after genus. Where cultivar is unknown “cv” indicated after species. The number in brackets e.g. (x9) after the species indicates the number of trees in this tree group.

DBH – Diameter at Breast Height. Tree trunk diameter measured at breast height (1.4 metres above ground level). Fabric diameter tape is used which assumes a circular cross section. Multiple measurements indicate multiple trunks. More than three trunks are indicated as “multi”. Where DBH measurement cannot be taken at 1.4m the height at which it has been taken is indicated in the Comments column.

CANOPY SPREAD RADIUS – Average canopy radius (widest + narrowest 2). Circular canopy depictions on Tree Plan/Survey are indicative only. Where canopy spread was significantly skewed, all four cardinal point measurements were recorded.

AGE CLASS – Immature (IM), Semi-mature (SM), Mature (M), Over-mature (OM). Assessment of the tree’s current Age. A Mature (M) tree has reached a near stable size (biomass) above and below ground. Trees can have a Mature age class for >90% of life span. Over-mature (OM) trees show symptoms of irreversible decline and decreasing biomass.

VIGOUR–Good(G),Fair(F)orPoor(P). The general appearance of the canopy/foilage of the tree at the time of inspection. Vigour can vary with the season and rainfall frequency. A tree can have Good vigour but be hazardous due to Poor condition. A tree in Good vigour has the ability to sustain its life processes. Vigour is synonymous with health.

CONDITION – Good (G), Fair (F) or Poor (P). The general form and structure of the trunk/s and branching. Trunk lean, trunk/branch structural defects, canopy skewness or other hazard features are considered.

SRZ RADIUS – Structural Root Zone. The area around a tree required for tree stability. Earthworks should be prohibited within the SRZ.. The area is calculated from the formula and graph at Figure 1 of AS4970-2009. The SRZ graph has been adapted from the work of Claus Mattheck (1994). DBH has been used instead of stem diameter above root buttress in the calculation of SRZ. 0.1m has been added to SRZ to allow for minor increases in stem diameter.

TPZ RADIUS – Tree Protection Zone. Radial offset (m) of twelve times (12X) trunk DBH measured from centre of trunk (for trees less than 0.3 metre DBH minimum TPZ is 2.0 metres). To satisfactorily retain the tree construction activity (both soil cut and fill) must be restricted within this offset. TPZ offsets are rounded to the nearest 0.1 metre. Existing constraints to root spread can vary TPZ. Generally an area equivalent to the TPZ should be available to the tree post development. Encroachment occupying up to 10% of the TPZ area is acceptable without detailed root zone assessment. Encroachments greater than 10% require specific arboricultural assessment.

SULE – Safe Useful Life Expectancy. A systematic pre-development tree assessment procedure developed by Jeremy Barrell, Hampshire, England. The SULE method used in this assessment has been adapted for simplified use within the field. It gives a length of time that the Arborist feels a particular tree can be retained with an acceptable level of risk based on the information available at the time of the inspection. SULE ratings are Long (retainable for 40 years or more with an acceptable level of risk), Medium (retainable for 16-39 years), Short (retainable for 5-15 years) and Removal (tree requiring immediate removal due to imminent hazard or absolute unsuitability).

RECOMMENDATIONS – Retain (R), Retain Plus (R+), Transplant (T) or Remove (Rm).

COMMENTS – Comments relating to the location, surroundings and hazard potential of the trees at the time of inspection and where applicable the reason for removal.



8.0 BIBLIOGRAPHY & REFERENCES

- BARRELL J (1993), 'Pre-planning tree surveys: Safe Useful Life Expectancy (SULE) , *Arboricultural Journal*.
- BARRELL J (1995) Tree Assessments', in Trees & Building Sites, Proceedings of an International Conference Held in the Interest of Developing a Scientific Basis for Managing Trees in Proximity to Buildings, *International Society of Arboriculture, Illinois, USA, pp. 132-142*.
- DUNSTER, J., SMILEY, T., MATHENY, N and LILLY, S (2013), Tree Risk Assessment Manual, Champaign, *International Society of Arboriculture, Illinois, USA*.
- HARRIS, RW., CLARK, JR and MATHENY, NP (2004), Arboriculture: Integrated Management of Landscape Trees, Shrubs and Vines, *Prentice Hall, New Jersey*.
- MATTHECK, C and BRELOER, H (1994), The Body Language of Trees: A Handbook for Failure Analysis, *The Stationary Office, London*.
- NSW Office of Environment and Heritage's Atlas of NSW Wildlife (2011), BioNet Atlas of NSW Wildlife.
- Lowson's Textbook of Botany, LOWSON, J., SIMON, E and DORMER, K. *London*.
- Standards Australia (2007), Pruning of Amenity Trees AS-4373.
- Standards Australia (2009), Protection of Trees on Development Sites AS-4970.

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Disclaimer

All care has been taken to assess potential hazards, but trees are inherently dangerous. This assessment was carried out from the ground, and covers what was reasonable to be assessed at the time of inspection. No aerial or underground inspections were carried out. Liability is accepted for damage or injury caused by trees and no responsibility is accepted if the recommendations in this report are not adhered to. Limitations on the use of this report: This report is to be utilised in its entirety only. Any written or verbal submission that includes statements taken from this report may only be used where the whole report is referenced. Assumptions: Care has been taken to obtain accurate information from reliable sources. Botanics can neither guarantee nor be responsible for the accuracy of information provided by others.