



Arboricultural Assessment and Tree Management Plan



32 Bower Street, Manly.

Prepared For: **Rob + Deborah Gregor C/o Eaton Molina Architects.**

Prepared By: **George Palmer, Botanics Pty Ltd.**

Dated: **18th October, 2022.**



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1.0 INTRODUCTION

1.1 Background

1.1.1 This Arboricultural Assessment + Tree Management Plan has been prepared for Eaton Molina Architects on behalf of the property owners Rob and Deborah Gregor. This report has been requested to detail the arboricultural impacts associated with the approved works (DA2019/0916) and to make recommendations for the protection and preservation of those trees considered as a material constraint to the development as per Condition 10 of the Conditions of Consent.

1.1.2 A Construction Impact Assessment and Management Plan has previously been completed in January 2019. This details all trees on and adjacent to the site and makes recommendations for their preservation, transplantation or removal based on species significance, as well location in relation to the proposed and approved development.

1.1.3 In the preparation of this Report consideration has been given to the objectives of the following:

- State Environment Planning Policy Vegetation in Non-Rural Areas (2017).
- Australian Standard 4373 Pruning of Amenity Trees (2007).
- Australian Standard 4970 Protection of Trees on Development Sites (2009).
- Australian Standard 2303 Tree Stock for Landscape Use (2015).
- Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal work (2016).

2.0 RESULTS

2.1 The Site

2.1.1 The site is a large residential block located on the northern side of Bower Street, Manly. Both vehicular and pedestrian access is via a driveway from Bower Street. This driveway approximately follows existing and natural site contours.

2.1.2 The existing construction footprints and historic landscape works have lead to the removal of most of the site's endemic vegetation.

2.1.3 The site will have been part of the Eastern Suburbs Banksia Scrub, although much this will have been cleared as part of earlier works. The foreshore boundary has remained relatively clear of construction works and retains open vegetation. This includes remnant Port Jackson Fig trees, native Coastal Banksia as well as a stand of Cabbage tree palms.

2.2 The Trees

2.2.1 This report focuses on assessments made on documented trees only. This has been done 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. The inspection was limited to a visual examination of the subject tree(s) from ground level only. Tree(s) outside the site have been assessed from property boundaries only. No internal diagnostic or tissue testing was undertaken as part of this assessment.

2.2.2 Tree dimensions and locations are approximate only. The locations of the subject tree(s) was determined from the supplied plans, tree(s) not shown on the supplied plans have been plotted in their approximate location only.

2.2.3 Tree Protection Zones, Tree Protection Measures and Sensitive Construction Methods for the subject trees were based on methods outlined in *Australian Standards 4970-2009 Protection of Trees on Development Sites*. The Tree Protection Zone (TPZ) is described in AS-4970 as a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable.

2.2.4 The Structural Root Zone (SRZ) is described in AS-4970 as the area around the base of a tree required for the tree's stability in the ground. Severance of structural roots within the SRZ is not recommended as it may lead to the destabilisation of the tree at ground level. The site was inspected by Level 5 arborist, George Palmer on the 18th October, 2022.

2.2.5 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.

2.3 Tree Data

2.3.1 The approved works require the removal of selected trees. Additional Low Value trees and vegetation as well as well recognised environmental weed species have also been recommended for removal. As previously detailed, these have been recommended for removal irrespective of this or any proposed development.

2.3.2 The approved works require the removal of Trees 3, 6, 7, 8, 9, 10, 13, 14, 20, 26, and 32. These have been considered as Low Value for a range of reasons.

2.3.3 The proposed landscape works will include the transplantation of all suitable trees on site to maintain a horticultural link to the past and maintain amenity. This includes all *Howea forsteriana*, or Kentia palms including Trees 11 and 12. The well established *Dracaena marginata*, or Dragon trees documented as Trees 5 and 15.

2.3.4 The remainder of the trees on site have been considered as being of sufficient value to be a material constraint to the proposed development and the construction footprint has been set back to allow retention. These will be separated from the more direct impacts of the construction process with the installation of tree



protection fencing in accordance with Australian Standards AS4970 for the Protection of Trees on Development Sites.

3.0 ARBORICULTURAL ASSESSMENT

3.1 Tree Removal/Retention.

3.1.1 Approved works require the removal of Trees 3, 6, 7, 8, 9, 10, 13,14, 20, 26, and 32. These have been considered as Low Value for a range of reasons. All have been marked with red spray paint as per Conditions of Consent.

3.1.2 Trees 3, 6, 8, 9,13,14 and 20 are documented as exempt under Northern Beaches Exempt tree species list. <https://www.northernbeaches.nsw.gov.au/environment/trees/exempt-tree-species-list>

3.1.3 Trees recommended for transplantation include selected *Howea forsteriana*, or Kentia palms including Trees 11 and 12 as well as the well established *Dracaena marginata*, or Dragon trees documented as Trees 5 and 15.

3.1.4 All remaining trees have been documented for retention.

4.0 SUMMARY + CONCLUSIONS

4.1 The mature *Banksia integrifolia*, or Coastal Banksia documented as Tree 16 has entered into a cycle of decline and died. This has occurred prior to the commencement of the construction process and has led to a recommendation for removal.

4.2 The neighbouring *Ficus rubiginosa*, or Port Jackson Fig tree documented as Tree 17 has on the other hand recovered well from previously noted poor health. Pruning works have been recommended to provide building line clearance and to allow for the removal of dead wood and stubs.

5.0 RECOMMENDATIONS

5.1 It will be recommended that Trees 3, 6, 7, 8, 9, 10, 13,14, 20, 26, and 32 be removed to both allow the proposed works and to provide the opportunity for replanting.

5.2 The *Howea forsteriana*, or Kentia palms including Trees 11 and 12 as well as the *Dracaena marginata*, or Dragon trees documented as Trees 5 and 15 have been recommended for transplantation. This should be done in accordance with current industry standards as part of the proposed landscape works.



5.3 The remainder of the trees on site have all been documented for preservation to maintain amenity. These will be 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.

5.4 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 and remain within the current construction footprint wherever practical. All construction on site will require consideration for the preservation of topography outside the construction footprint.

5.5 The remainder of the indirect construction impacts should be mitigated with the implementation of the following requirements to meet the Australian Standard AS4970 for the Protection of Trees on Development Sites. **Appendix 1.**

APPENDIX 1- Protection of Trees on Development Sites.

6.1 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.

6.2 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.

6.3 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.



6.4 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.

6.5 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.

6.6 Signage

Tree Protection Signage shall be attached to the TPZ 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.

6.7 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.

6.8 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.



6.9 Site Management

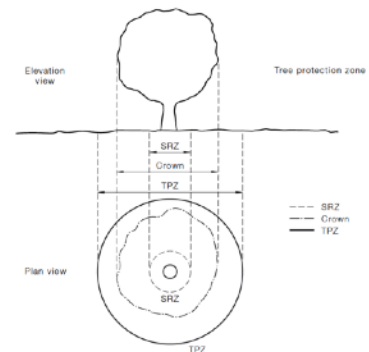
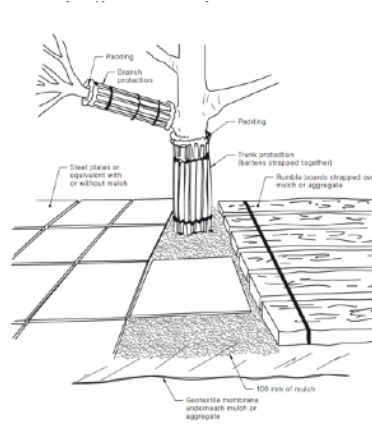
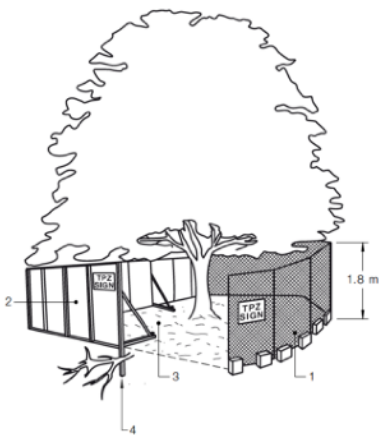
Materials and waste storage, site sheds and temporary services shall not be located within the TPZ unless specified. Storage points shall be covered when not in use and be no greater than 2m in height.

6.10 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.

6.11 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 for the Protection of Trees on Development Sites.

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Diploma Horticulture- Arboriculture (Level 5)
Associate Diploma Horticulture- Landscape.

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. No 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.



APPENDIX 2- 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.

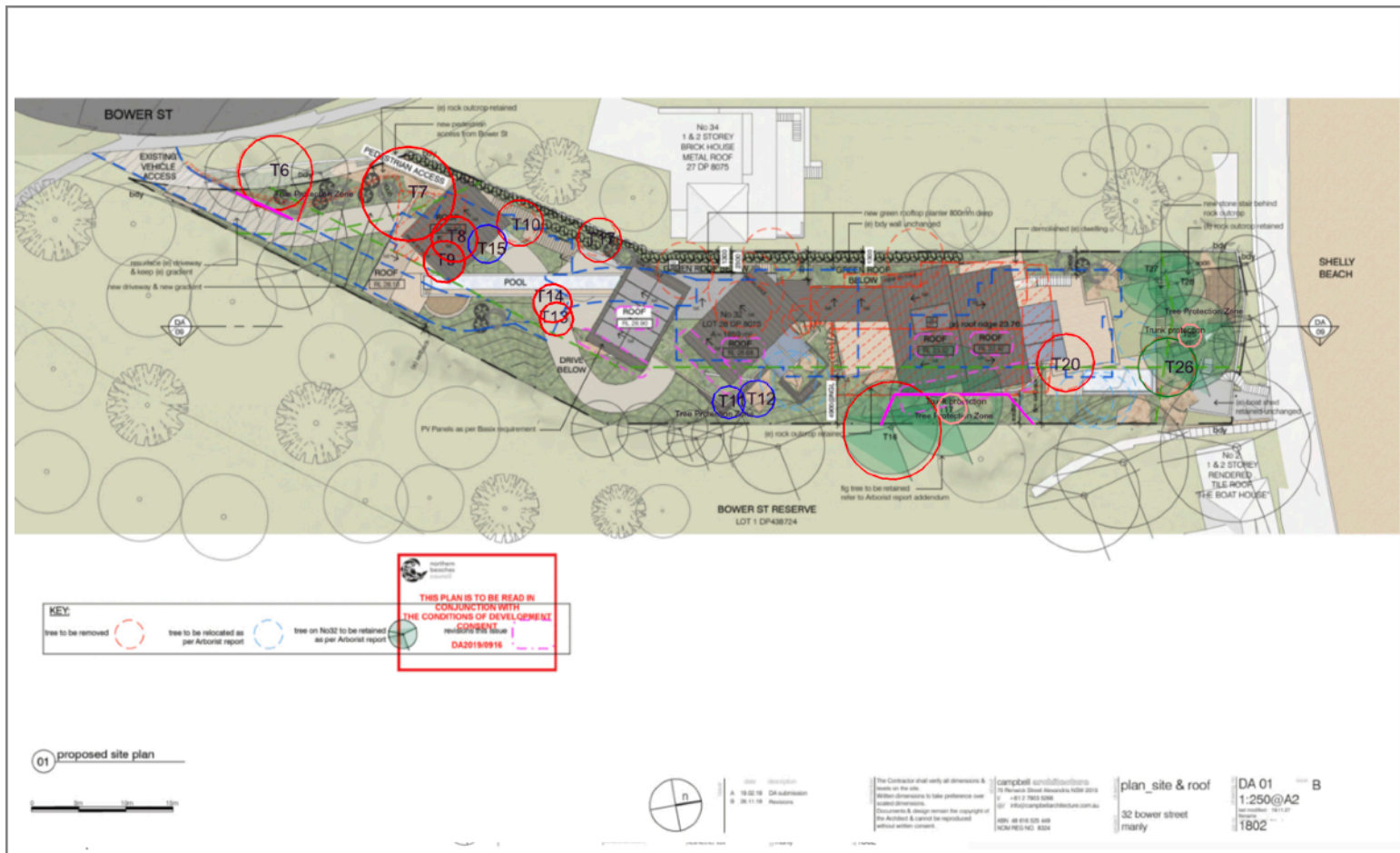
SULE – Safe Useful Life Expectancy. A systematic pre-development tree assessment procedure developed by Jeremy Barrell, Hampshire, England. The SULE method used in this assessment has been adapted for simplified use within the field. It gives a length of time that the Arborist feels a particular tree 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.



APPENDIX 3: Tree Protection Plan



The Tree Protection Plan Shows the locations of trees for removal, transplantation and protection.