Arboricultural Impact Assessment and Management Plan.

18 Rockbath Road, Palm Beach.

Prepared For: **Richard Cole Architecture.**

Prepared By: **George Palmer, Botanics P/L.**

Dated: **June, 2023.**

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1.0 INTRODUCTION

1.1 Background

1.1.1 This Arboricultural Impact Assessment and Management Plan has been prepared for Richard Cole Architects on behalf of the property owners, Drew and Bridget Hall. This report has been requested to document the arboricultural significance of those trees located within and neighbouring the site and make recommendations for their preservation or removal, based on this and their location in relation to the proposed construction.

1.1.2 Current arboricultural amenity comes from a the over grown nature reserve adjacent to Rockbath Road. This area has become overgrown with different plant materials including self seeded weeds, some Wattles and Eucalyptus as well as a significant stand of Kaffir Plums. The majority of the exotic species have been as Low Value exotic tree species that are exempt from Northern Beaches Development Controls and can be removed without seeking formal approval, unless located within a heritage area, or within Public Lands. The remaining trees on site include a semi mature Paperbark and a Frangipani. None of these documented trees have been considered as being a material constraint to the proposed development although both are documented for preservation.

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).

1.1.4 This assessment references Lot 292, DP 16362 and the following plans only:

- **C.M.S Surveyors:** Site Survey- Lot 292, DP 16362. Dated: 31.03.2022.
- **Richard Cole Architecture:** Preliminary Site Plan- DA-02. Rev: K. Dated: 22.05.2023.
- **Richard Cole Architecture:** Preliminary Ground Floor Plan- DA-03. Rev: K. Dated: 22.05.2023.
- **Richard Cole Architecture:** Preliminary Elevations, East- DA-06. Rev: K. Dated: 22.05.2023.
- **Richard Cole Architecture:** Preliminary Elevations, West- DA-07. Rev: K. Dated: 22.05.2023.
- **Richard Cole Architecture:** Preliminary Elevations, North- DA-08. Rev: K. Dated: 22.05.2023.
- **Richard Cole Architecture:** Preliminary Elevations, South- DA-09. Rev: K. Dated: 22.05.2023.
- **Richard Cole Architecture:** Preliminary Long Section- DA-10. Rev: K. Dated: 22.05.2023.
- **Richard Cole Architecture:** Preliminary Cross Section, A- DA-11. Rev K. Dated: 22.05.2023.
- **Richard Cole Architecture:** Preliminary Cross Section, B- DA-12. Rev: K. Dated: 22.05.2023.
- **Richard Cole Architecture:** Preliminary Site Analysis- DA-13. Rev: K. Dated: 22.05.2023.
- **Richard Cole Architecture:** Preliminary Landscape Area, Existing- DA-18. Rev: K. Dated: 22.05.2023.
- **Richard Cole Architecture:** Preliminary Landscape Area, Proposed- DA-19 Rev: K. Dated: 22.05.2023.
- **Richard Cole Architecture:** Preliminary Demolition Plan- DA-20. Rev K. Dated: 22.05.2023.

1.2 The Proposal

1.2.1 The DA seeks approval for the following:

- The demolition of the existing residence.
- The re contouring and excavation required to provide vehicular access.
- The excavation to allow for construction.
- The reconfiguration of the foreshore garden including the construction of a swimming pool.

1.2.2 These works are an extension of the existing construction footprint requires the removal of those trees located within it. All removal recommendations including that of the Kaffir plum have been made primarily based on species characteristics and will have been made irrespective of the proposed works.

2.0 RESULTS

2.1 The Site

2.1.1 The site is an irregular shaped block located on the ocean foreshore. The site provides pedestrian and theoretical vehicular access through Rockbath Road. As noted, this is an overgrown open space that has seen a number of exotic weed species including Kaffir Plum trees establish.

2.1.2 The site covers a total area of 1147.5m2. This slopes down to the north east and to the coastal foreshore reserve. The site's western boundary is a brick wall that supports the site's only neighbour. This is a well structured wall that will be supported on a slab footing that will have directly affected the abiotic spread and development of both site and neighbouring tree roots.

2.1.3 The site is within the Northern Beaches Local Government Area (LGA) and is Zoned C4, Environmental Living. The existing residence has been constructed within the south western portion of the block and extends to the north east, with retaining walls supporting raised gardens to the east.

2.1.4 Site contours drop to the north east of the lower foreshore boundary. This lower area is vegetated predominantly by endemic grasses, and trees affected by wind throw in this front line coastal location.

2.2 The Trees

2.2.1 This report focuses on both existing site and neighbouring trees. A total of twenty one (21) trees have been assessed for the purpose of this report. 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. The site was inspected by Level 5 Arborist, George Palmer in February, 2023 and subsequently in May, 2023..

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.

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 Tree 1 is a semi mature *Melaleuca quinquenervia,* or Paperbark located directly adjacent to the site's south western boundary wall. The tree has grown to approximately 8m in height with similar canopy spread. This is supported on a trunk 58cm in diameter with a basal flare 80cm. The tree has been planted within 1m of the boundary wall. The tree has been reduction pruned and significantly affected by wind-throw in this front line coastal location. Moderate Value. Retain and Protect.

2.3.2 Tree 2 is a semi mature *Plumeria acutifolia,* or Frangipani located within the lower foreshore garden. This is a common tree species that will have been installed as part of the site's more recent works and has been considered as being a Low Value tree. Consider for transplantation or removal as part of the landscape works only.

2.3.3 Tree 3 is a *Strelitzia nicolai* or Bird of Paradise. This is a well recognised environmental weed species. Recommended for removal irrespective. **https://weeds.dpi.nsw.gov.au**

2.3.4 Tree 4, 5, 6, 7 and 8 are all *Harpephyllum caffrum,* or Kaffir Plums. These are another well recognised environmental weed species in the Northern Beaches Local Environment Plan and are exempt under Northern

Beaches Council development controls. Remove irrespective. **https://www.northernbeaches.nsw.gov.au/environment/trees/exempt-tree-species-list**

2.3.5 The clump of Senegal date palms, or *Phoenix reclinata* on the upper portion of the escarpment have been documented as Tree 9. These are another exempt tree species under Northern Beaches Councils tree preservation legislation, although these are located well outside the construction footprint of the proposed and are documented for preservation to maintain amenity and visual screening to the neighbouring residence. Low Value. Retain.

2.3.6 Trees 10, 11, 12, 20 and 21 are all *Corymbia gummifera,* or Bloodwoods located throughout the open space between the pedestrian access stairway and Rockbath Road. These are an endemic tree species that are likely to have self seeded here over a period of time. All have grown to heights of approximately 8m and are supported on trunks of less than 30cm in diameter. All remain in fair health and have been considered as being of Moderate value and documented for retention. Moderate Value. Retain.

2.3.7 Trees 13, 14, 15 and 16 are all *Glochidion ferdinadii,* or Cheese trees that have established adjacent to the pedestrian access way. These are another endemic tree species that are well suited to the local environmental conditions. All appear to have been cut to ground level and allowed to regrow. All have been considered as being of Low Value and documented for retention. Low Value. Retain.

2.3.8 Tree 17 is a small *Senna pendular,* or Cassia. This is another well recognised environmental weed species that is exempt under Northern Beaches tree preservation legislation and has been recommended for removal irrespective of the proposed. Low Value. Remove.

2.3.9 Tree 18 is a semi mature *Casuarina glauca,* or She Oak that has established centrally within the upper portion of the area between the vehicular and pedestrian access way. This is a native tree species that is likely to have been planted here as part of earlier works and is outside its preferred micro climatic range. The tree remains a small fraction of its full biological potential and while remaining in good health can be expected to continue to grow towards this in time. Low Value. Retain.

2.3.10 The final tree documented (Tree 19) is a semi mature *Acacia longifolia,* or Wattle that has again established between the pedestrian and vehicular access. The tree has grown to a height of approximately 8m and is supported on a trunk of less than 30cm in diameter. This is a fast growing and relatively short lived tree species that has been considered as being of Low Value and documented for retention. Low Value. Retain.

2.4 Tree 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**
		1, 10, 11, 12, 20 + 21		9, 13, 14, 15, 16, 18 + 19	2		3, 4, 5, 6, 7, 8 + 17
Total: 0	**Total: 0**	**Total: 6**	**Total: 0**	**Total: 7**	**Total: 1**	**Total: 0**	**Total: 7**

3.0 ARBORICULTURAL IMPACT ASSESSMENT

3.1 Tree Removal/Retention.

3.1.1 The proposed works require the removal of Trees 2, 3, 4, 5, 6, 7, 8 and 17.

3.1.2 The proposed works have been set back to allow for the retention of Trees 1, 9, 10,11, 12, 13, 14, 15, 16, 18, 19, 20 and 21.

3.2 Works within SRZ and TPZ Areas

3.3.1 The Frangipani documented as Tree 2 has been recommended for removal and replacement or transplantation, as part of the landscape works only.

3.3.2 The proposed works include the excavation to allow for the construction of the vehicular access driveway through Rock Bath Road reserve. This is within the theoretical SRZ and broader TPZ of the stand of *Harpephyllum caffrum,* or Kaffir Plums.

3.3 Existing Construction

3.4.1 The existing construction footprint includes the rear boundary retaining wall. This, and the residence will have directly affected the abiotic spread and development of all site and neighbouring tree roots. **https://en.wikipedia.org/wiki/Abiotic_component**

4.0 SUMMARY + CONCLUSIONS

4.1 The proposed construction footprint is predominantly within that of the existing and will not require the removal of the site's most significant tree. (Tree 1) This tree will have been planted following the construction of the existing residence to provide some privacy from the neighbouring residence. This front line coastal location is outside this tree's preferred microclimatic range, affecting canopy spread and development. Despite this, the tree remains in good health and will be retained throughout the construction process.

4.2 Existing pedestrian and vehicular access is via a poorly structured path that has become overgrown with vegetation including *Harpephyllum caffrum,* or Kaffir Plums. As noted, these are a well recognised environmental weed species that have naturalised throughout this area. All are recommended for removal irrespective of their location in relation to the proposed driveway to eliminate the multiple hazards associated with their retention.

4.4 The Frangipani documented as Tree 2 is located within the proposed construction footprint and is required for removal. Consideration should be given to this tree's transplantation to the rear garden, as part of he proposed landscape works.

4.5 The re contouring of the Rockbath Road access is will not require the removal of any of the sites more significant trees. As noted, all removal recommendations have been made due to poor species characteristics and will have been made irrespective of the proposed.

5.0 RECOMMENDATIONS

5.1 It will be recommended that Trees 2, 3, 4, 5, 6, 7, 8 and 17 be removed to both allow the proposed construction and to provide the opportunity to replace with more appropriate endemic trees to improve the arboricultural amenity contribution currently being provided. All are Low Value and none have been considered as being of sufficient Value to be considered as a material constraint to this or any significant development proposal.

5.2 The remaining *Melaleuca quinquenervia,* or Paperbark documented as Tree 1 will be retained and protected throughout the construction process with the implementation of the following Tree Protection Recommendations.

5.3 The remaining Moderate Value trees recommended for retention are all well outside the proposed construction footprint and will not be affected by it. These include trees: 10, 11, 12, 20 and 21.

5.4 Construction impacts must be limited to those detailed. All works will need to be completed from within the existing or proposed construction footprints.

5.5 All permeable soil surface areas should be treated as being part of a Tree Protection Zone (TPZ) 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.

5.6 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.

5.7 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 the 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 ProtectionFencing, Silt fencing and Signage prior to the commencement of works on site.

6.9 Site Management

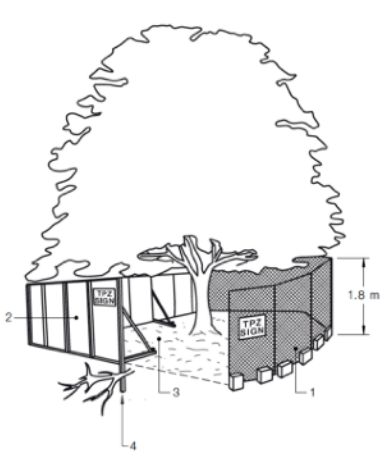
Materials and waste storage, site sheds and temporary services shall not be located within the TPZ unless specified. Storage points shall be covered when not in use and be no greater than 2m in height.

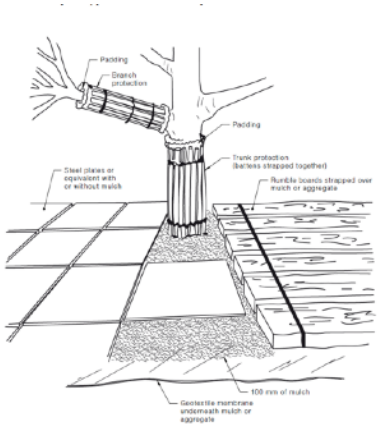
6.10 Works Within the TPZ

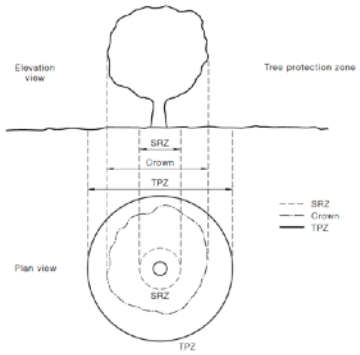
The TPZ may need to be modified during the works to allow access between the protected tree and the proposed construction. The TPZ shall remain as specified and only those works detailed in the proposed construction undertaken.

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 reinstallation of fencing the TPZ shall be modified by the Site Arborist.







Australian Standards: AS4970 for the Protection of Trees on Development Sites.

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/foliage 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 ofSRZ. 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- BIBLIOGRAPHY

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- Standards Australia (2009), Protection of Trees on Development Sites AS-4970.

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Figure 1 Shows the location of the Paperbark documented as Tree 1 in relation to the boundary.

Figure 2 Shows the co dominant and included base of the Kaffir plum documented as Tree 6.

Figure 3 Shows the kino leaking from the base of Tree 4.

7.0 TREE PLAN

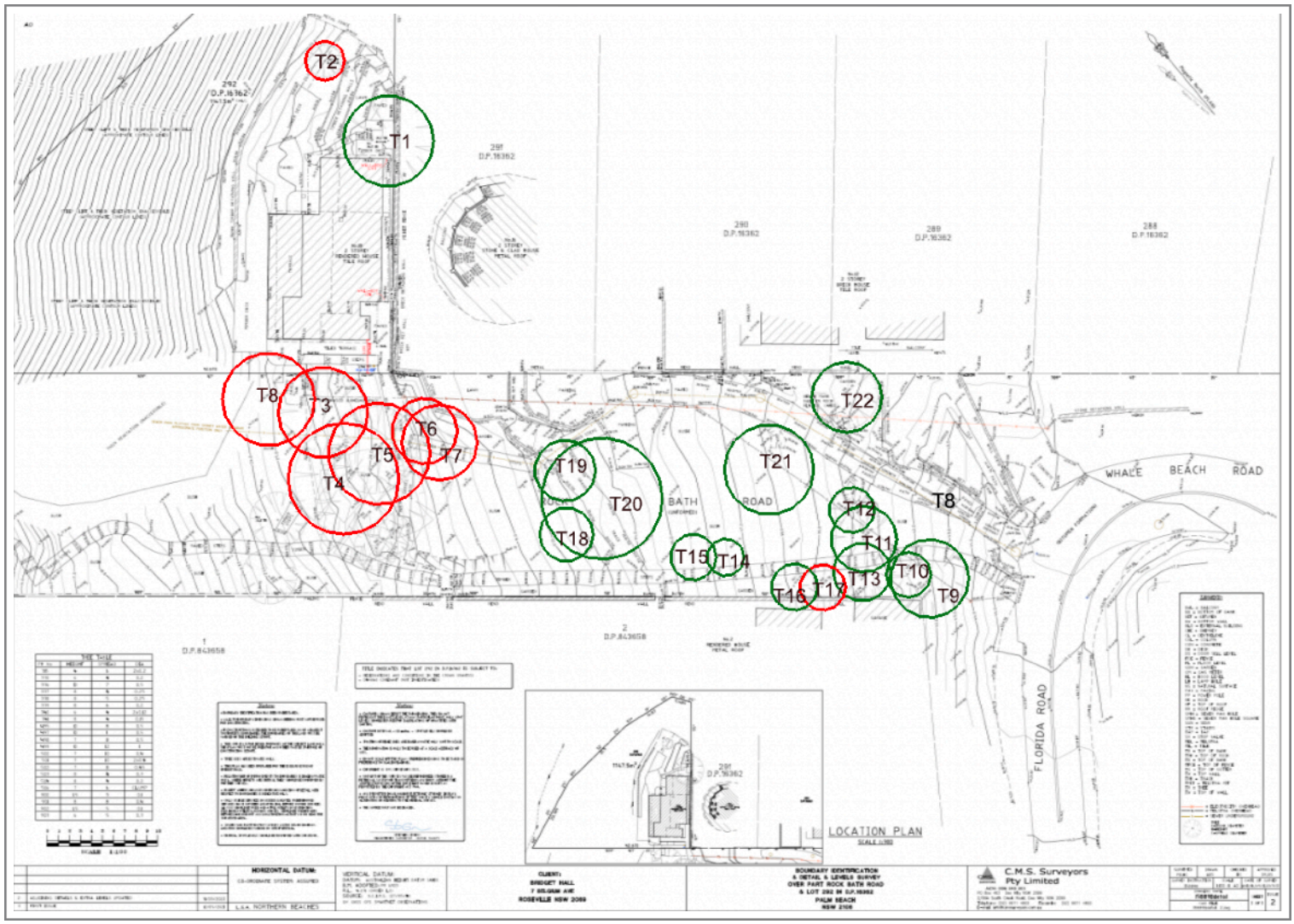

Figure 4 Shows the locations of the documented trees in relation to the existing Site Survey.

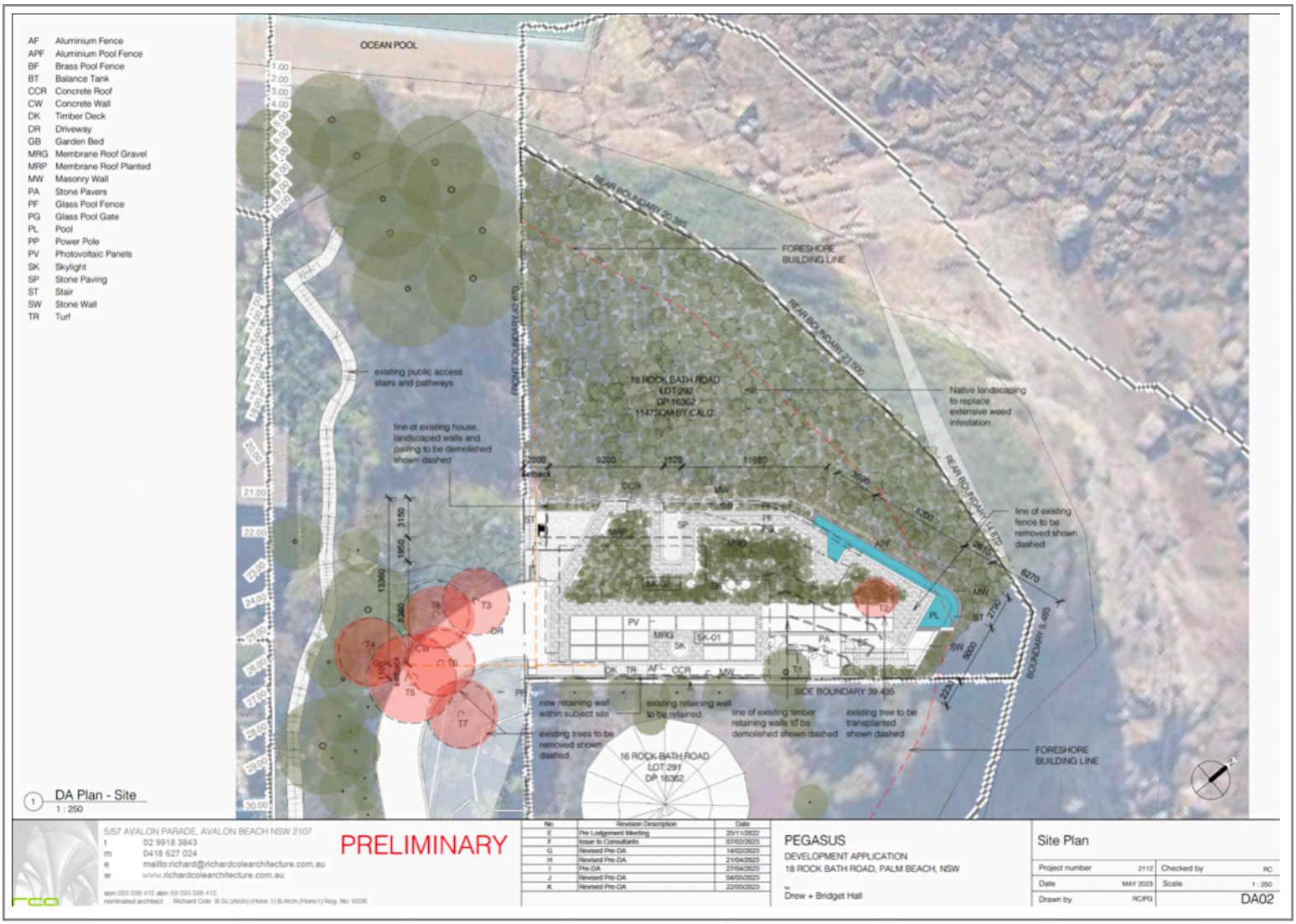

Figure 5 Shows the trees documented for removal or retention in relation to the proposed Site Plan.

Tree Table: 18 Rockbath Road, Palm Beach

T#	Species	Remnant Native, Exotic.	Age Class	Canopy Height and Spread.	Trunk Diameter DBH	Basal Diameter DGL	Significance	Amenity value	Ecological Value	TPZ Incursion	SRZ	TPZ	Implications/Locations
T1	Melaleuca quinquenervia (Paperbark)	N	M	8 x 8m	58cm	80cm	Moderate	Moderate	Moderate	10%	3m	7m	A well established locally native tree species that has been seen as Moderate Value. Retain and Protect.
T2	Plumeria acutifolia (Frangipani)	E	SM	4 x 4m	10cm	15cm	Low	Low	Low	40%	1.5m	3m	A semi mature example of this exotic tree species. Low Value. Consider for Transplantation.
T3	Strelitzia nicolai (Bird of Paradise)	E	SM	7 x 7m	40cm	40cm	Low	Low	Low		NA	NA	Well recognised Weed species. Low Value. Remove Irrespective.
T4 - T8	Harpephyllum caffrum (Kaffir Plum)	E	SM	8 x 8m	60cm	80cm	Low	Low	Low		NA	NA	Well recognised Weed species. Low Value. Remove Irrespective.
T9	Phoenix reclinata (Senegal Date palm)	E	M	4 x 3m	2 x 20cm	40cm	Low	Low	Low		2m	4m	Exotic Palm species. Low Value. Retain for screening.
T10 - T12	Corymbia gummifera (Bloodwood)	N	SM	8 x 4m	30cm	35cm	Moderate	Moderate	Moderate		2.3m	4m	Located throughout the open space. Moderate Value. Retain.
T13 - T16	Glochidion ferdinadii (Cheese tree)	N	M	6 x 2m	10cm	15cm	Low	Low	Low		2m	4m	Located adjacent to pedestrian walkway. Low Value. Retain.
T17	Senna pendular (Cassia)	E	SM	3 x 3m	10cm	10cm	Low	Low	Low		NA	NA	Well recognised Weed species. Low Value. Remove.
T18	Casuarina glauca (She Oak)	N	SM	8 x 4m	20cm	30cm	Low	Moderate	Low		2m	3.8m	Located in the upper portion of the driveway/walkway. Low Value. Retain.

Tree Table: 18 Rockbath Road, Palm Beach

T19	Acacia longifolia (Wattle)	N	M	8 x 6m	30cm	35cm	Low	Low	Low		2m	6m	Located between the driveway and walkway. Low Value. Retain.
T20 + T21	Corymbia gummifera (Bloodwood)	N	SM	8 x 4m	30cm	35cm	Moderate	Moderate	Moderate		2m	6m	Located throughout the open space. Moderate Value. Retain.

Genus, Species, and Common name
The botanical and common name of each tree is identified and recorded. Occasionally the exact species name is unknown; sp. Is recorded to indicate this.

Height, Spread, Trunk Diameter, DBH and DRB
The Trees height and spread are recorded in meters.
The tree DBH is recorded in millimeters. DBH is an abbreviation of diameter (of the trunk) measured at breast height (or 1.4 meters from the base of the trunk). If more than one trunk is present the DBH is calculated in accordance with AS4970-2009 Protection of Trees on Development Sites.
If the tree has multiple trunks each trunk DBH will be recorded individually.
The tree DRB is recorded in millimeters. DRB is an abbreviation of Diameter (of the trunk) measured above the root buttress. It is required to calculate the SRZ in accordance with AS4970-2009 Protection of Trees on Development Sites when there is major encroachment within the TPZ, i.e. greater than 10% is encroached upon or if there is an encroachment within the SRZ.

Age
The age class of each tree is estimated as either:
J- Juvenile, a young sapling, easily replaced from nursery stock
SM- Semi mature, a tree that has not grown to mature size
M- Mature, a tree that has reached mature size and will slowly increase in size over time.
OM- Over mature, a tree that has been mature for a long period and is beginning to display signs of decline, e.g. large dead branches
S- Senescent, an over mature tree that is now in decline.

Health
The Tree's health is recorded as a measurement of:
G- Good, the does not appear stressed with no excessive dieback, insect infestation, decay, deadwood or epicormic shoots
Avg- Average health, the tree appears stressed and has some crown dieback, and/or areas or few epicormic shoots, and/0r some deadwood in the crown and some new growth at the branch tips. These trees may benefit from remediation of the growing environment to reduce stress and return it to good health.
F- Fair, the tree may have areas of crown die back, and/or many epicormic shoots, and/or reduced new growth at branch tips. These trees have been stressed fort a short period of time; remediation of the growing environment may improve the trees health.
P- Poor, the tree may have large areas of crown die back, and/or many epicormic shoots, and/or reduced new growth at branch tips. These trees have been stressed for a long time, remediation of the growing environment would not return the tree to good health.

Crown Condition
The crown condition of each tree is assessed and recorded as either:
G- Good Condition: the tree appears to have no visible indication of inherent structural effects.
Avg- Average Condition: the tree has minor structural defects which may be corrected with remedial works or pruning, allowing the tree to return to Good Condition.
F- Fair Condition: the tree has visible structural defects such as (but not limited to) dead branches, and/or an unbalanced crown, and/or leaning trunk and/or signs of decay. These trees do not demonstrate the typical form of their species, of have been damaged or have begun to deteriorate. Remedial works or pruning may return the tree to Average Condition.

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P- Poor Condition: the tree has significant structural defects such as (but not limited to) very large dead branches, and/or extremely unbalanced crown, and/or subsiding trunk, and/or large areas of decay. These trees do not demonstrate the typical form of their species, or have been severely damaged or have deteriorated significantly. Remedial pruning would not return the tree to fair condition.

Significance

The landscape significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. When determining a trees significance within the landscape context, the following questions are asked. Significance is measured as high, medium, or low. High being a affirmative answer for 4 or more questions, Medium being 3 affirmative answers, and Low being 2 or less affirmative answers.

- Is the tree a local native remnant; an endangered species, a part of an endangered species community; or does the tree provide critical habitat.

Amenity value

Amenity value is a subjective measurement based on the tree's contribution to the landscape, it may be based on the tree's visual form, however it also includes non visual attributes such as provision of shade for a seat, screening of poor views or for privacy, or if it has historical significance. The amenity value is recorded as:

H- High, the trees form is an excellent example of its species and it makes a great specimen and/or it has other attributes such as screening, or its historical significance. These trees are visually prominent and valuable to the community or public domain.

M- Medium, the tree may have an altered form and/or it has attributes that provide amenity to local residents only.

L-Low, the tree is not a good specimen and it does not provide substantial benefit to local residents or the community.

Ecological value

Ecological value is a measurement of the trees contribution to the environment. It is determined by the trees area of origin, its potential to provide habitat to native fauna and its potential to become an environmental pest. The ecological value is recorded as:

H- High, the tree is locally native or reminant and/or it has habitat for native fauna

M- Medium, the tree is native but not locally native

L- Low, the tree is not native and/or it may be a listed nuisance or weed species.

Ha- Habitat, is the tree valued by fauna for food (i.e. foliage, fruit, or sap) or shelter (i.e. nesting, roosting, dray, or hollow).

Form

The form, structure or shape of each tree is assessed and recorded as either one or a combination of several of the below terms may be used to describe the trees form; (U) Upright, (B) Broad, (C) Conical, (Sh) Shrub, (CS) Crown Shy (also referenced is the adjacent dominant tree canopy i.e. T4), (V) Vase, (D) Dome, (P) Palm, (S) Spreading, (L) Leaning or (BM) Basal Multi Trunked.

Crown form may also be assessed in accordance with the relationship with the neighbouring tree and recorded as either: S- Suppressed, the crown is located beneath another larger crown and is leaning away (Crown Shy); C- Codmoninant, the crown is adjacent to another crown of similar size, their crown areas may appear joined; D- Dominant, the crown is above the lower crowns; E- Emergent, the crown emerges from a lower canopy formed by the other dominant or co dominant crowns.

Defects

The presence of one or a combination of several defects is recorded (W) Wound, (D) Decay, (F) Fungus, (B) Bulge, (FB) Fibre Buckling, (C) Cracks, (S) Split, (H) Hollow, (DB) Die back, (Epicormic Shoots, (DW) Dead wood, (I) Inclusion, (CA) Cavities, (PF) Previous Failure, (R) Root Damage, (P) Pruning wound, (PD) Pests and Diseases, (ST) Storm Damage.

Structural Root Zone (SRZ

The SRZ is a radial area extending outwards from the center of the trunk. This area contains the majority of the structural woody roots. This area is primarily responsible for stability. Root damage or root loss within this zone greatly increases the opportunity for decay fungi to ingress in to the heartwood, causing internal decay in addition to destabilizing the trees structural integrity. The SRZ is calculated as follows (This calculation is derived from the Australian Standard $4970-2009 Protection of Trees on Development Sites):

$$\textbf{SRZ (Radius)} = (D \times 50)^{0.42} \times 0.6$$

Tree protection Zone (TPZ)

The TPZ is a circular area with a radius measured by multiplying the DBH by twelve, or a circular area the size of the trees drip line, whichever is greater. This area contains the majority of the essential structural and feeder roots responsible for stability, gaseous exchange and water and nutrient uptake. Excavation, back filling, compaction or other disturbance should not occur in this area. The TPZ is used to identify the minimum area required for the safe retention of a given tree. This calculation is derived from the Australian Standard 4970-2009 Protection of Trees on Development Sites. An incursion to 10% within the TPZ is potentially acceptable if no other option is available. A major encroachment (in excess of 10%) is required to be clearly justified by the project Arborist and compensated for elsewhere. Justification methodology mat vary depending on site or individual trees health, vigor and ability to withstand disturbance may require root investigation.

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RATING	HERITAGE VALUE	ECOLOGICAL VALUE	AMENITY VALUE
1. SIGNIFICANT	The subject tree is listed as a Heritage Item under the Local Environment Plan (LEP) with a local, state or national level of significance or is listed on Council's Significant Tree Register	The subject tree is scheduled as a Threatened Species as defined under the Threatened Species Conservation Act 1995 (NSW) or the Environmental Protection and Biodiversity Conservation Act 1999	The subject tree has a very large live crown size exceeding 300m² with normal to dense foliage cover, is located in a visually prominent position in the landscape, exhibits very good form and habit typical of the species
	The subject tree forms part of the curtilage of a Heritage Item (building /structure /artefact as defined under the LEP) and has a known or documented association with that item	The tree is a locally indigenous species, representative of the original vegetation of the area and is known as an important food, shelter or nesting tree for endangered or threatened fauna species	The subject tree makes a significant contribution to the amenity and visual character of the area by creating a sense of place or creating a sense of identity
	The subject tree is a Commemorative Planting having been planted by an important historical person (s) or to commemorate an important historical event	The subject tree is a Remnant Tree, being a tree in existence prior to development of the area	The tree is visually prominent in view from surrounding areas, being a landmark or visible from a considerable distance.
2. VERY HIGH	The tree has a strong historical association with a heritage item (building/structure/artefact/garden etc) within or adjacent the property and/or exemplifies a particular era or style of landscape design associated with the original development of the site.	The tree is a locally-indigenous species, representative of the original vegetation of the area and is a dominant or associated canopy species of an Endangered Ecological Community (EEC) formerly occurring in the area occupied by the site.	The subject tree has a very large live crown size exceeding 200m²; a crown density exceeding 70% (normal-dense), is a very good representative of the species in terms of its form and branching habit or is aesthetically distinctive and makes a positive contribution to the visual character and the amenity of the area
3. HIGH	The tree has a suspected historical association with a heritage item or landscape supported by anecdotal or visual evidence	The tree is a locally-indigenous species and representative of the original vegetation of the area and the tree is located within a defined Vegetation Link / Wildlife Corridor or has known wildlife habitat value	The subject tree has a large live crown size exceeding 100m²; The tree is a good representative of the species in terms of its form and branching habit with minor deviations from normal (e.g. crown distortion/suppression) with a crown density of at least 70% (normal); The subject tree is visible from the street and surrounding properties and makes a positive contribution to the visual character and the amenity of the area
4. MODERATE	The tree has no known or suspected historical association, but does not detract or diminish the value of the item and is sympathetic to the original era of planting.	The subject tree is a non-local native or exotic species that is protected under the provisions of this DCP.	The subject tree has a medium live crown size exceeding 40m²;The tree is a fair representative of the species, exhibiting moderate deviations from typical form (distortion/suppression etc) with a crown density of more than 50% (thinning to normal); and
			The tree is visible from surrounding properties, but is not visually prominent – view may be partially obscured by other vegetation or built forms. The tree makes a fair contribution to the visual character and amenity of the area.
5. LOW	The subject tree detracts from heritage values or diminishes the value of a heritage item	The subject tree is scheduled as exempt (not protected) under the provisions of this DCP due to its species, nuisance or position relative to buildings or other structures.	The subject tree has a small live crown size of less than 40m² and can be replaced within the short term (5-10 years) with new tree planting
6. VERY LOW	The subject tree is causing significant damage to a heritage Item.	The subject tree is listed as an Environment Weed Species in the Leichhardt Local Government Area, being invasive, or is a known nuisance species.	The subject tree is not visible from surrounding properties (visibility obscured) and makes a negligible contribution or has a negative impact on the amenity and visual character of the area. The tree is a poor representative of the species, showing significant deviations from the typical form and branching habit with a crown density of less than 50% (sparse).
7. INSIGNIFICANT	The tree is completely dead and has no visible habitat value	The tree is a declared Noxious Weed under the Noxious Weeds Act (NSW) 1993 within the relevant Local Government Area.	The tree is completely dead and represents a potential hazard.