Arboricultural Impact Assessment

Proposed Alterations & Additions at

6 and 7 Kara Crescent, Bayview

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2 Summary

This Arboricultural Impact Assessment (AIA) is based on fifty three (53) trees located at 6 and 7 Kara Crescent, Bayview (subject site). Alterations and additions to the existing house and landscaping works are proposed.

This report aims to describe the likely impacts of the proposed works on the site trees and make recommendations to limit the potential for adverse impacts on retained trees.

The Retention Values of the subject trees were rated as outlined in the following Table. Refer to Figure A (following page) and the Tree Protection Plan (Attachment C) for tree locations.

Table A: Retention Values of the Subject Trees.

	High Retention Value (Tree Number)	**Medium Retention Value (Tree Number)**	**Low Retention Value (Tree Number)**
To be Retained	1, 4, 7, 8, 9, 10, 14, 15, 16, 18, 20, 21, 22, 23, 24, 25, 27, 31, 32, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 46, 47, 48, 50	2, 3, 5, 5a, 11, 12, 17, 26, 29, 30, 33, 45, 49	6, 13
To be Removed	19	-	51, 52, 28

The majority of the High and all of the Medium Retention Value trees are able to be retained and remain viable in the long-term.

Four (4) trees are proposed to be removed as part of this project. No notable impact on the environmental value or landscape amenity of the site is expected.

There are construction works proposed within the Tree Protection Zones (TPZ) of Trees 10, 18, 20 and 21. The trees are worthy of retention and have a reasonable prospect of tolerating the proposed works and remaining viable in the long-term.

Recommendations have been made regarding tree protection measures to limit the potential for impact on the retained trees.

3 Introduction

3.1 Background

This Arboricultural Impact Assessment (AIA) was prepared for Campbell Architecture in relation to the existing trees and proposed alterations and additions at 6 and 7 Kara Crescent, Bayview (subject site).

The purpose of this AIA is to assess the likely impacts of the proposed works on the existing site trees and make recommendations regarding construction methods and tree protection measures to limit adverse impacts on trees recommended for retention.

This AIA has been prepared in accordance with the Australian Standard 4970-2009, *Protection of trees on development sites.*

3.2 Subject Site/Proposed Works

The subject site is currently occupied by a two and three storey residential dwelling, garage, swimming pool, tennis court and landscaped gardens.

It is proposed to undertake alterations and additions to the existing dwelling including construction of a new swimming pool, garage and landscaping works.

3.3 Subject Trees

All trees within the site have been assessed. The tree population of the site is made up of planted exotics and planted Australian natives.

Refer to Figure A (following page) for tree locations and numbers. A detailed description of the subject trees is included in the Tree Assessment Table (Attachment A).

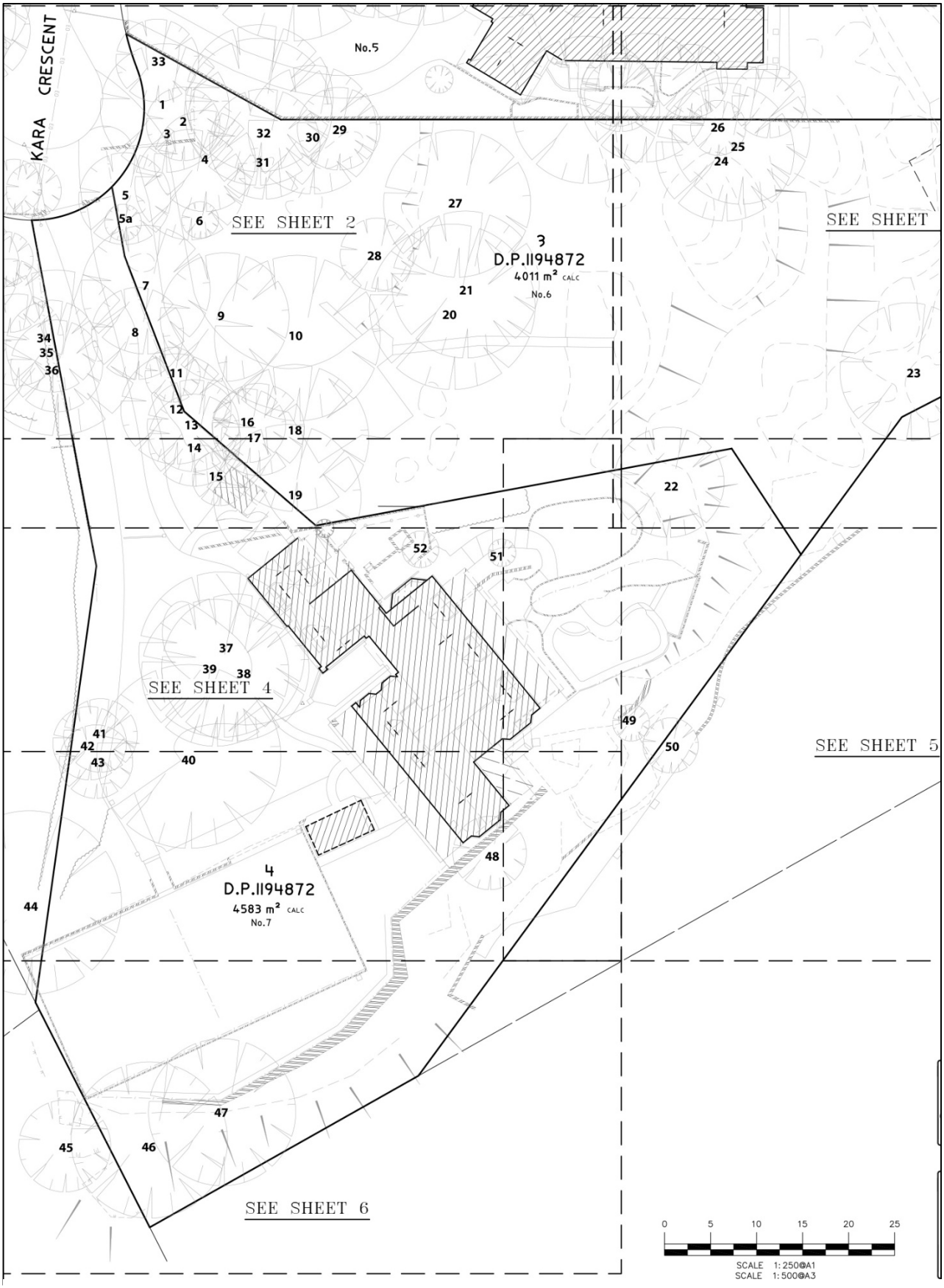

Figure A: Excerpt from the Survey Plan showing tree locations and numbering.

4 Methodology

4.1 Site Inspection

Site inspection and tree assessment was undertaken on the 19th of April, 2023. The trees were assessed from ground level using a Tree Assessment Table, which is included as Attachment A. The definitions and explanations of terms used are outlined in the Tree Table Definitions page which is included at Attachment B.

The tree assessment was undertaken for the purpose of pre-development planning. Detailed tree risk assessment was not requested or included in the scope of works.

4.2 Plan Review

-The set of architectural plans provided by Campbell Architecture (Issue A) were reviewed as part of this assessment.
-The Landscape Plan prepared by Spirit Level (Revision A) was reviewed.

4.3 Tree Protection Zones

Tree assessments in accordance with the Australian Standard 4970-2009, *Protection of trees on development sites*, require calculation of a Tree Protection Zone (TPZ) and Structural Root Zone (SRZ). The following is a brief explanation of these terms:

Tree Protection Zone -TPZ: This is the area that should be isolated from construction disturbance so that the tree remains viable. Some disturbance within the TPZ may be possible following arboricultural assessment.

Structural Root Zone -SRZ: This is the area or undisturbed soil and roots required to maintain tree stability. Excavation within the SRZ can lead to whole tree failure.

Refer to the Tree Assessment Table (Attachment A) for the Tree Protection Zones of the assessed trees.

4.4 Retention Values

Retention values are derived from a combination of Estimated Life Expectancy rating and Landscape and Environmental Significance ratings.

- **HIGH Retention Value**: These trees are worthy of retention and design consideration should be made where possible to allow their retention.
- **MEDIUM Retention Value**: These trees are worthy of retention and minor design consideration should be made to retain these trees wherever possible (e.g. placement of ancillary structures, stormwater pipes, garden retaining walls, driveway levels).
- **LOW Retention Value**: These trees should not be considered to be a constraint to design layout. Some of these trees should be removed irrespective of any proposed development.

The method of determining and defining retention values used in this report has been derived from the ©Retention Index developed by Tree Wise Men® Australia Pty Ltd.

4.5 Consideration for Tree Retention and Removal

Where demolition of existing structures, excavation or fill is proposed within the Tree Protection Zone (TPZ), arboricultural assessment and sensitive construction methods will be required. Where works are proposed outside of the TPZ, no sensitive construction methods are required.

Tree removal recommendations have been based on tree Retention Values and construction offsets. Trees may generally be recommended for removal in the following circumstances:

- Trees located within construction footprints.
- Trees with construction proposed within SRZ where root loss cannot be avoided through sensitive design.
- Trees with a TPZ loss of more than 25%, may be recommended for removal providing tree sensitive design cannot be implemented to avoid significant root and canopy loss.
- Trees with low Retention Values may be recommended for removal irrespective of proposed development.

5 Potential Impacts of Proposed Works

5.1 Trees to be Removed

Tree Number	Retention Value	Reason for Removal
19	High	Located within the footprint of the proposed porte cochere. Considering the remaining thirty four (34) High Retention Value trees retained on the site, the removal of this tree is not likely to have a notable impact on the environmental value or landscape amenity of the site. Tree 19 did not have any observable wildlife nesting sites or specific habitat features.
28	Low	Crown thinning and small dead branches indicating low vitality and declining health. This tree species (*Pittosporum undulatum* < 8m height) is exempt within the Northern Beaches LGA and may be removed without council approval.
51, 52	Low	Located within the proposed construction footprint. Trees 51 and 52 are small planted exotic landscape trees. These trees are less than 5m in height and are therefore not protected under SEPP (Biodiversity & Conservation) 2021. Council approval is not required to remove these trees.

5.2 Potential Impacts of Proposal on Retained Trees

Tree Number	Retention Value	Works proposed within the Tree Protection Zone (TPZ)
10	High	Excavation for building footings is proposed within the TPZ. Approximately 6.8% of the TPZ area will be affected. Some root pruning may be required. The tree is likely to tolerate this and remain viable.
18	High	Driveway and garage construction is proposed within the TPZ. The area of excavation will occupy 18.5% of the TPZ area. It is likely that some root pruning will be required. The proposed works are clear of the Structural Root Zone and the in-ground stability of the tree is unlikely to be affected. This tree is worthy of retention and has a reasonable prospect of tolerating the root pruning and remaining viable in the long-term. Project Arborist guidance will be required to manage this tree throughout the project.
20	High	Proposed swimming pool construction and hard landscaping works are proposed within the TPZ. Approximately 19.1% of the TPZ area will be affected.

		The proposed works are clear of the Structural Root Zone and the in-ground stability of the tree is unlikely to be affected. It is likely that some root pruning will be required. This tree is worthy of retention and has a reasonable prospect of tolerating the root pruning and remaining viable in the long-term. Project Arborist guidance will be required to manage this tree throughout the project.
21	High	Proposed swimming pool construction and hard landscaping works are proposed within the TPZ. Approximately 12.4% of the TPZ area will be affected. It is likely that some root pruning will be required. The proposed works are clear of the Structural Root Zone and the in-ground stability of the tree is unlikely to be affected. This tree is worthy of retention and has a reasonable prospect of tolerating the root pruning and remaining viable in the long-term. Project Arborist guidance will be required to manage this tree throughout the project.

Incidental Impacts: There is the potential for incidental/accidental damage to the trunk, canopy and shallow roots of all retained trees throughout the construction process. Trees are commonly impacted on construction sites in the following ways.

- Stripping of topsoil and removal of organic material form the soil surface.
- Compaction of the topsoil and damage to surface roots through use of heavy machinery and frequent foot traffic.
- Soil contamination through washing out barrows and disposal or spillage of chemical materials.
- Root loss due to unforeseen excavation for plumbing upgrades and landscape construction.
- Bark/trunk and branch injuries from accidental contact with machinery.

These impacts can be easily avoided through communication with building contractors and basic tree protection measures.

6 Recommendations

6.1 Site Establishment –Prior to Construction

Appointment of a Project Arborist: An Arborist with an AQF Level 5 qualification in Arboriculture and experience in tree protection within construction sites should be engaged prior to the commencement of work on the site. The Project Arborist should be present at the following times:

- Project Commencement to meet with the Site Foreman and discuss tree protection requirements.
- Following installation of tree protection fencing, compost, mulch and irrigation.
- During excavation within the TPZ of Trees 10, 18, 20 and 21.
- At any time that tree roots greater than 40mm diameter are exposed with the TPZ of any retained tree.
- At project completion to verify tree protection and retention.

Tree Protection Fencing: Tree Protection Fencing should be installed prior to any machinery or materials being bought on site and remain in position throughout the entire project. Tree Protection Fencing should be erected around the Tree Protection Zones as defined in the Tree Protection Plan (Attachment C). Tree Protection Fencing should consist of 1.8 metre high chainlink panels on moveable concrete pads. Tree Protection Fencing should be clamped at each panel junction.

Tree Protection Fencing should not be moved at any time without consultation with the Project Arborist. An example of adequate tree protection fencing is detailed below.

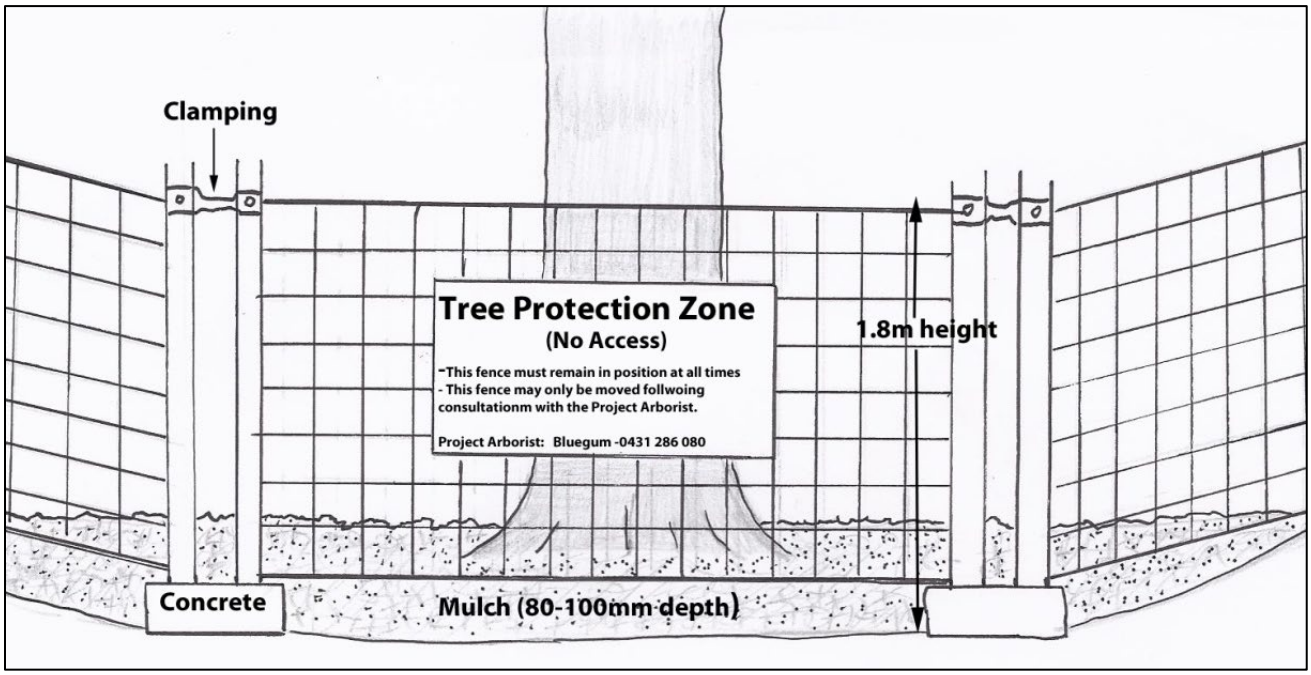

Figure B: Example of adequate tree protection fencing

Compost, Mulch and Irrigation (Trees 18, 20, 21): Installation of compost, mulch and irrigation is recommended within the Tree Protection Zones of Trees 18, 20 and 21 to improve soil conditions and encourage new root growth. The purpose of this is to help offset the likely loss of roots from proposed excavation within the TPZ's. Refer to Figure C below for detail of the recommended soil improvement works. The sprinkler should be installed on a timer with settings to be determined in consultation between the Site Foreman and Project Arborist.

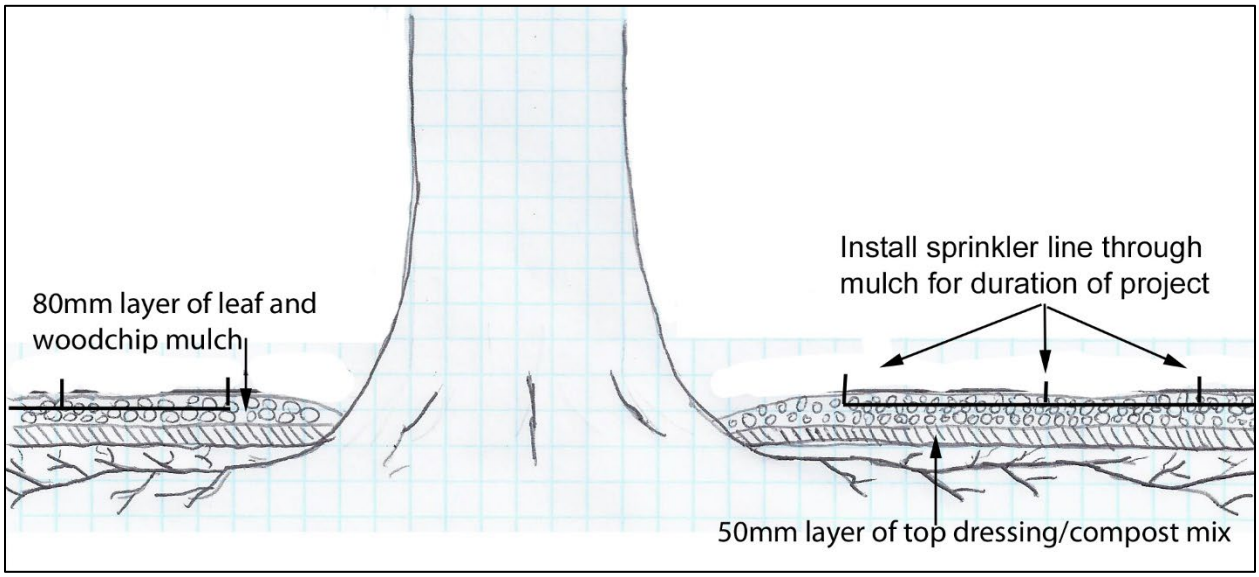

Figure C: Detail of compost, mulch and irrigation for Trees 18, 20, 21.

Tree Removal: Four (4) trees are proposed to be removed as part of the project. Tree removal contractors should be briefed on the need to protect retained trees during tree removal operations.

Tree removal works should be undertaken in accordance with the WorkSafe Australia *Guide to Managing Risks of Tree Trimming & Removal Work.*

Site Clearing and Grading: There must no soil scraping or grading within the Tree Protection Zones of retained trees. The existing ground cover vegetation and topsoil within the Tree Protection Zones must be retained throughout the project.

6.2 During Construction/Landscaping

Tree Protection Zones: Refer to the Tree Assessment Table (Attachment A) and Tree Protection Plan (Attachment C) for the spread of TPZ's of trees nominated for retention. The following should be prohibited within the Tree Protection Zones:

- Stripping of topsoil or organic surface material.
- Stockpiling of spoil or fill
- Storage of building material, vehicles and machinery.
- Disposal of solid, liquid or chemical waste.

- Any excavation, fill or other construction activity other than that discussed in this report.

Earthworks within the TPZ of Trees 10, 18, 20, 21: Excavation for the driveway, porte cochere, building footings and pool level is proposed within the TPZ of Trees 10, 18, 20 and 21. Project Arborist guidance will be required during this process. All excavation above the sandstone bed-rock depth must be undertaken with hand tools. The area where this is recommended is outlined on the Tree Protection Plan (Attachment C). Any roots encountered should be cleanly cut using a sharp saw or secateurs. The purpose of this is to minimise the surface area of pruning wounds and avoid additional root damage (tearing/splintering) that typically occurs when roots are pruned using an excavator.

6.3 Post Construction Tree Care

At the completion of the project, the retained trees should be inspected by the Project Arborist. Depending on the health and vitality of retained trees, the Project Arborist may prescribe some remedial tree care. This may include installation of temporary or permanent irrigation, application of soil conditioners, compost application and installation of mulch.

7 Statement of Impartiality

- This report prepared by Bluegum Tree Care & Consultancy (BTCC) reflects the impartial and expert opinion of Alexis Anderson.
- BTCC is acting independently of and not as the advocate for the owners of the subject trees.
- BTCC does not undertake tree pruning and removal works and will not have any involvement with pruning or removing trees which are the subject of this report.

8 Limitations

- The findings of this report are based upon and limited to visual examination of trees from ground level without any climbing, internal testing or exploratory excavation.
- The tree assessment was undertaken for the purpose of pre-development planning. Detailed tree risk assessment was not requested or included in the scope of works.
- This report reflects the health and structure of trees at the time of inspection. Bluegum cannot guarantee that a tree will be healthy and safe under all circumstances or for a specified period of time. There is no guarantee that problems or defects with assessed trees, will not arise in the future. Liability will not be accepted for damage to person or property as a result of failure of assessed trees.

Tree No.	Common Name/ Genus Species	Trunk Diameter (cm)	Height (m)	Canopy Spread Radius (m)	Age Class	Health / Vitality	Structural Condition	Tree Protection Zone (m)	Structural Root Zone (m)	Estimated Life Expectancy (ELE)	Landscape and Environmental Significance	Retention Value	Comments	Likely Construction Impacts	Proposed Action.
1	Grey Gum, *Eucalyptus punctata*	41	13	5	M	G	G	4.9	2.3	Long (30+ yrs)	2	High	Dead branches in the lower canopy.	No works are proposed within the TPZ. No impact is expected.	Retain.
2	Sydney Red Gum, *Anghophora costata*	25	14	3	M	P	F	3.0	1.9	Medium (10-30 yrs)	3	Medium	Supressed. Crown thinning.	No works are proposed within the TPZ. No impact is expected.	Retain.
3	Cheese Tree, *Glochidion ferdinandi*	26, 10	7	4	M	G	G	3.8	2.0	Long (30+ yrs)	3	Medium		No works are proposed within the TPZ. No impact is expected.	Retain.
4	Grey Ironbark, *Eucalyptus paniculata*	36	12	5	M	G	G	4.3	2.2	Long (30+ yrs)	2	High		No works are proposed within the TPZ. No impact is expected.	Retain.
5	Forest She Oak, *Allocasuarina torulosa*	35, 32	10	5	M	G	G	5.5	2.4	Medium (10-30 yrs)	3	Medium		No works are proposed within the TPZ. No impact is expected.	Retain.
5a	Cheese Tree, *Glochidion ferdinandi*	13, 10, 9	6	3	M	G	G	3.0	1.5	Long (30+ yrs)	3	Medium		No works are proposed within the TPZ. No impact is expected.	Retain.
6	Loquot, *Eriobotrya japonica*	10, 10, 9	5	3	M	G	G	3.0	1.5	Long (30+ yrs)	4	Low	Exempt species. Not protected within the Northern Beaches LGA.	No works are proposed within the TPZ. No impact is expected.	Retain.
7	Sydney Red Gum, *Anghophora costata*	48	15	6	M	G	F	5.8	2.5	Long (30+ yrs)	2	High	Wounds from previous live branch failures.	No works are proposed within the TPZ. No impact is expected.	Retain.
8	Sydney Red Gum, *Anghophora costata*	40	15	5	M	F	F	4.8	2.3	Long (30+ yrs)	2	High		No works are proposed within the TPZ. No impact is expected.	Retain.
9	Grey Gum, *Eucalyptus punctata*	40	15	6	M	G	F	4.8	2.3	Long (30+ yrs)	2	High	Trunk decay and hollowing. Weight reduction pruning previously undertaken.	No works are proposed within the TPZ. No impact is expected.	Retain.
10	Grey Gum, *Eucalyptus punctata*	52	18	8	M	G	G	6.2	2.6	Long (30+ yrs)	2	High		Construction of building additions is proposed within the TPZ. Approximately 6.8% of the TPZ area will be affected. Some root pruning may be required. The tree is likely to tolerate this and remain viable.	Retain.
11	Illawarra Flame Tree, *Brachychiton acerifolius*	30, 30	9	3	M	F	G	4.5	2.3	Medium (10-30 yrs)	3	Medium	Upper crown thinning.	No works are proposed within the TPZ. No impact is expected.	Retain.
12	Red Bloodwood, *Corymbia gummifera*	22, 20	11	4	M	F	G	3.8	2.0	Long (30+ yrs)	3	Medium	Supressed. Crown thinning. Dead branches.	No works are proposed within the TPZ. No impact is expected.	Retain.
13	Sydney Red Gum, *Anghophora costata*	26	11	4	M	P	F	3.1	2.0	Short (0-10 yrs)	3	Low	Supressed. Crown thinning. Dead branches.	No works are proposed within the TPZ. No impact is expected.	Retain.
14	Sydney Red Gum, *Anghophora costata*	50	16	7	M	F	G	6.0	2.5	Long (30+ yrs)	2	High		No works are proposed within the TPZ. No impact is expected.	Retain.
15	Spotted Gum, *Corymbia maculata*	35	16	4	M	G	G	4.2	2.2	Long (30+ yrs)	2	High	Crown thinning. Dead branches.	No works are proposed within the TPZ. No impact is expected.	Retain.
16	Cheese Tree, *Glochidion ferdinandi*	45	7	5	M	G	G	5.4	2.4	Long (30+ yrs)	2	High		No works are proposed within the TPZ. No impact is expected.	Retain.

Tree No.	Common Name/ Genus Species	Trunk Diameter (cm)	Height (m)	Canopy Spread Radius (m)	Age Class	Health / Vitality	Structural Condition	Tree Protection Zone (m)	Structural Root Zone (m)	Estimated Life Expectancy (ELE)	Landscape and Environmental Significance	Retention Value	Comments	Likely Construction Impacts	Proposed Action.
17	Sydney Red Gum, *Anghophora costata*	28	11	3	M	F	G	3.4	2.0	Long (30+ yrs)	3	Medium		No works are proposed within the TPZ. No impact is expected.	Retain.
18	Grey Ironbark, *Eucalyptus paniculata*	40	17	6	M	G	G	4.8	2.3	Long (30+ yrs)	2	High		Driveway and garage construction is proposed within the TPZ. The area of excavation will occupy 18.5% of the TPZ area. It is likely that some root pruning will be required. This tree is worthy of retention and has a reasonable prospect of tolerating the root pruning and remaining viable in the long-term.	Retain.
19	Grey Gum, *Eucalyptus punctata*	46	18	6	M	F	F	5.5	2.5	Long (30+ yrs)	2	High		Within the footprint of the proposed new garage.	Remove.
20	Grey Ironbark, *Eucalyptus paniculata*	52	18	8	M	G	G	6.3	2.6	Long (30+ yrs)	2	High		Proposed swimming pool construction and hard landscaping works are proposed within the TPZ. Approximately 19.1% of the TPZ area will be affected. It is likely that some root pruning will be required. This tree is worthy of retention and has a reasonable prospect of tolerating the root pruning and remaining viable in the long-term.	Retain.
21	Grey Ironbark, *Eucalyptus paniculata*	60	23	8	M	G	G	7.2	2.7	Long (30+ yrs)	2	High	Heavily pruned.	Proposed swimming pool construction and hard landscaping works are proposed within the TPZ. Approximately 12.4% of the TPZ area will be affected. It is likely that some root pruning will be required. This tree is worthy of retention and has a reasonable prospect of tolerating the root pruning and remaining viable in the long-term.	Retain.
22	Chinese Weeping Elm, *Ulmus parvifolia*	40	7	6	M	G	G	4.8	2.3	Long (30+ yrs)	2	High		No works are proposed within the TPZ. No impact is expected.	Retain.
23	Sydney Red Gum, *Anghophora costata*	53	18	6	M	F	F	6.4	2.6	Long (30+ yrs)	2	High	Upper crown lopped for view clearance.	No works are proposed within the TPZ. No impact is expected.	Retain.
24	Spotted Gum, *Corymbia maculata*	53	18	7	M	F	G	6.4	2.6	Long (30+ yrs)	2	High		No works are proposed within the TPZ. No impact is expected.	Retain.
25	Spotted Gum, *Corymbia maculata*	57	17	7	M	F	G	6.8	2.7	Long (30+ yrs)	2	High		No works are proposed within the TPZ. No impact is expected.	Retain.
26	Cabbage Tree Palm, *Livistona australis*	36	5	2	M	G	G	4.3	2.2	Long (30+ yrs)	3	Medium		No works are proposed within the TPZ. No impact is expected.	Retain.
27	Sydney Red Gum, *Anghophora costata*	80	20	8	M	G	G	9.6	3.1	Long (30+ yrs)	2	High	Heavily pruned. Surface roots exposed and injured during previous demolition work. It is recommended that the ground surface be covered with 50mm of topsoil and 50mm of mulch.	No works are proposed within the TPZ. No impact is expected.	Retain.
28	Native Daphne, *Pittosporum undulatum*	22, 18, 18	4	4	M	F	F	4.0	2.0	Medium (10-30 yrs)	4	Low	Crown thinning. Small dead branches.	No works are proposed within the TPZ. No impact is expected.	Remove.
29	Forest She Oak, *Allocasuarina torulosa*	37	10	3	M	F	F	4.4	2.3	Medium (10-30 yrs)	3	Medium	Supressed.	No works are proposed within the TPZ. No impact is expected.	Retain.

Tree No.	Common Name/ Genus Species	Trunk Diameter (cm)	Height (m)	Canopy Spread Radius (m)	Age Class	Health / Vitality	Structural Condition	Tree Protection Zone (m)	Structural Root Zone (m)	Estimated Life Expectancy (ELE)	Landscape and Environmental Significance	Retention Value	Comments	Likely Construction Impacts	Proposed Action.
30	Cedar Wattle, *Acacia elata*	58	14	5	M	G	F	7.0	2.7	Medium (10-30 yrs)	3	Medium	Dead branches. Roots causing lifting of the brick boundary wall.	No works are proposed within the TPZ. No impact is expected.	Retain.
31	Grey Ironbark, *Eucalyptus paniculata*	41	12	6	M	G	G	4.9	2.3	Long (30+ yrs)	2	High		No works are proposed within the TPZ. No impact is expected.	Retain.
32	Grey Gum, *Eucalyptus punctata*	54	22	8	M	F	F	6.5	2.6	Long (30+ yrs)	2	High	Dead branches.	No works are proposed within the TPZ. No impact is expected.	Retain.
33	Illawarra Flame Tree, *Brachychiton acerifolius*	30	8	3	M	F	G	3.6	2.1	Medium (10-30 yrs)	3	Medium		No works are proposed within the TPZ. No impact is expected.	Retain.
34	Large Fruited Red Mahogany, *Eucalyptus scias*	35	10	4	M	F	F	4.2		Medium (10-30 yrs)	2	High		No works are proposed within the TPZ. No impact is expected.	Retain.
35	Sydney Red Gum, *Anghophora costata*	41	12	6	M	G	G	4.9		Long (30+ yrs)	2	High		No works are proposed within the TPZ. No impact is expected.	Retain.
36	Sydney Red Gum, *Anghophora costata*	20, 15	9	4	M	G	G	3.6		Long (30+ yrs)	2	High		No works are proposed within the TPZ. No impact is expected.	Retain.
37	Large Fruited Red Mahogany, *Eucalyptus scias*	60	16	6	M	G	F	7.2		Long (30+ yrs)	1	High	Group of 3 trees. Biologically and structurally dependant on each other.	No works are proposed within the TPZ. No impact is expected.	Retain.
38	Large Fruited Red Mahogany, *Eucalyptus scias*	52	14	7	M	G	F	6.2		Long (30+ yrs)	1	High	Group of 3 trees. Biologically and structurally dependant on each other. Minor trunk cavity.	No works are proposed within the TPZ. No impact is expected.	Retain.
39	Large Fruited Red Mahogany, *Eucalyptus scias*	105	20	6	M	G	F	12.6		Long (30+ yrs)	1	High	Group of 3 trees. Biologically and structurally dependant on each other. Trunk cavity used as a lorikeet nesting site.	No works are proposed within the TPZ. No impact is expected.	Retain.
40	Grey Ironbark, *Eucalyptus paniculata*	83	22	10	M	G	G	10.0		Long (30+ yrs)	1	High	Prominent landscape feature.	No works are proposed within the TPZ. No impact is expected.	Retain.
41	Xylosma, *Xylosma senticosum*	31	8	4	M	G	G	3.7		Long (30+ yrs)	2	High	Forms part of a boundary screening hedge.	No works are proposed within the TPZ. No impact is expected.	Retain.
42	Xylosma, *Xylosma senticosum*	30	7	4	M	G	G	3.6		Long (30+ yrs)	2	High	Forms part of a boundary screening hedge.	No works are proposed within the TPZ. No impact is expected.	Retain.
43	Xylosma, *Xylosma senticosum*	34	7	4	M	G	G	4.1		Long (30+ yrs)	2	High	Forms part of a boundary screening hedge.	No works are proposed within the TPZ. No impact is expected.	Retain.
44	Grey Gum, *Eucalyptus punctata*	55	17	8	M	G	G	6.6		Long (30+ yrs)	2	High		No works are proposed within the TPZ. No impact is expected.	Retain.
45	Sydney Red Gum, *Anghophora costata*	20	7	3	M	G	F	2.4		Long (30+ yrs)	3	Medium		No works are proposed within the TPZ. No impact is expected.	Retain.
46	Sydney Red Gum, *Anghophora costata*	60	14	8	M	G	F	7.2		Long (30+ yrs)	2	High	Previous storm damage. Borer damage on the trunk. Lorikeets nesting in cavity.	No works are proposed within the TPZ. No impact is expected.	Retain.
47	Sydney Red Gum, *Anghophora costata*	60	15	7	M	G	G	7.2		Long (30+ yrs)	2	High		No works are proposed within the TPZ. No impact is expected.	Retain.

Tree No.	Common Name/ Genus Species	Trunk Diameter (cm)	Height (m)	Canopy Spread Radius (m)	Age Class	Health / Vitality	Structural Condition	Tree Protection Zone (m)	Structural Root Zone (m)	Estimated Life Expectancy (ELE)	Landscape and Environmental Significance	Retention Value	Comments	Likely Construction Impacts	Proposed Action.
48	Cheese Tree, *Glochidion ferdinandi*	45	7	5	M	G	G	5.4		Long (30+ yrs)	2	High	Upper canopy pruned for view clearance.	No works are proposed within the TPZ. No impact is expected.	Retain.
49	Bangalow Palm, *Archontophoenix cunninghamiana*	17	6	2	M	F	F	2.0		Medium (10-30 yrs)	3	Medium	Limited soil available for root spread.	No works are proposed within the TPZ. No impact is expected.	Retain.
50	Brown Beech, *Cryptocaria glaucescens*	33	9	3	M	G	G	4.0		Long (30+ yrs)	2	High		No works are proposed within the TPZ. No impact is expected.	Retain.
51	Bull Bay Magnolia, *Magnolia grandiflora*	10	4	2	M	G	G	2.0		Long (30+ yrs)	4	Low		Within the proposed construction footprint.	Remove.
52	Black Locust, *Robinea psuedoacacia*	16	3	2	M	G	G	2.0		Long (30+ yrs)	4	Low		Within the proposed construction footprint.	Remove.

Attachment B: TREE ASSESSMENT DEFINITIONS

Height. Tree height is estimated from ground level. This assessment is made independently of data plotted on survey plan. These measurements have not been confirmed with clinometer or other surveying instrument.

Diameter at Breast Height (DBH). Trunk diameter is measured at 1.4 metres above ground level. A diameter tape is used which calculates the diameter from a measurement of the circumfrence. DBH is primarily used for the calculation of the TPZ. The trunk diameter above the root buttress is measured to calculate the Structural Root Zone. If a tree has more than 4 trunks, the diameter of the four largest trunks is recorded. For irregular trunk formations the DBH is calculated as outlined in Appendix A of AS4970-2009 -*Protection of Trees on Development Sites*.

Canopy Spread Radius. Average canopy spread radius is estimated from the centre of trunk to the outer edge of canopy. Refer to Comments column for detail of heavily skewed canopy spread.

Age Class - This is an estimation of the tree's current age class based on size, growth habit, local environmental conditions and comparison with surrounding trees.

- **Immature (IM)**: This is a juvenile specimen that is likely to have germinated within the previous 5 years.
- **Early Mature (EM)**: This is a tree that is established within its growing environment, though has not reached an age of reproductive maturity or the natural growth habit of a mature individual.
- **Mature (M)**: This is a tree has reached both reproductive maturity and a physical form and shape typical for the species. Trees can have a Mature Age Class for the majority of their life span.
- **Late-Mature (LM)**: There trees show early signs of senescence with symptoms such as reduced canopy density and an accumulation of dead branches.
- **Over-mature (OM)**: These trees show symptoms of irreversible decline such as canopy dieback with dead branches concentrated in the upper canopy.

Health/Vitality - Good (G), Fair (F) or Poor (P). This is primarily based on the extent of vigorous new foliage growth at branch tips and the colour, size and density of foliage generally. The percentage of live branches to dead branches is considered. The location of any dead branches is also considered. The presence of any pest or disease is considered as part of this assessment. Health can vary with climatic conditions.

Structural Condition - Good (G), Fair (F) or Poor (P). This is an assessment of tree structure and stability. Root anchorage, trunk lean, structural defects, canopy skew and any hazardous features are considered. Dead branches can be considered as part of Structural Condition if they are of a size and location that could cause injury or property damage.

Tree Protection Zone (TPZ). This is a radial distance of (12X) the DBH measured from centre of trunk. TPZ is rounded to the nearest 0.1 metre. A TPZ should not be less than 2m or greater than 15m. The TPZ for palms and other monocots should not be less than 1m outside of the crown projection. Existing constraints to root spread can vary the TPZ. For a tree to remain viable, construction activity should be excluded or undertaken with care within the TPZ. Disturbance within up to 10% of the TPZ area is considered to be a minor encroachment. Disturbance to more than 10% of the TPZ area is considered a major encroachment. Major encroachment into the TPZ is possible depending on the type of disturbance, and species tolerance to disturbance. Exploratory excavation may be required to quantify the presence of roots at the alignment of proposed ground disturbance.
This is based upon the Australian Standard AS 4970, 2009, *Protection of trees on development sites* and the Matheney & Clarke "*Guidelines for adequate tree preservation zones for healthy, structurally stable trees*".

Structural Root Zone (SRZ). This is a radial distance based on the following formula- **SRZ =(D x 50) $^{0.42}$ x 0.64** (for trees less than 150mm Diameter, a minimum SRZ of 1.5 metres). The **D** in the formula is the trunk diameter measured above the root buttress. This is recorded in the field notes. SRZ measurements are rounded to the nearest 0.1m.
The Structural Root Zone is the area of soil and roots required to maintain tree stability. Excavation within the SRZ can result in whole tree failure. Fully elevated construction is possible within SRZ with specific rootzone assessment. Existing constraints to root spread can vary the SRZ. This method of determining SRZ is outlined at Section **3.3.5** of Australian Standard AS 4970, 2009, *Protection of trees on development sites.*

Estimated Remaining Life Expectancy: This gives a length of time that the Arborist believes a particular tree can be retained from the time of assessment with an acceptable level of risk based on the information available at the time of the inspection. This system of rating does not take into consideration the likely impacts of any proposed development. Ratings are **Long** (retainable for 30 years or more with an acceptable level of risk), **Medium** (retainable for 10-30 years), **Short** (retainable for 0-10 years) and **Removal** (tree requiring removal due to risk/hazard or absolute unsuitability).

Landscape & Environmental Significance*. This is an assessment of the impact of the tree on the surrounding landscape amenity and natural environment. Rarity, habitat value, physical prominence, historical and cultural significance of the tree are considered in this rating system. The Landscape & Environmental Value ratings used in this report are:

1. Very High Value: This is an outstanding specimen that holds irreplaceable environmental, landscape or cultural value.

2. High Value: An excellent specimen that holds environmental, landscape or cultural value that is present in other site trees or that could be replaced.

3. Moderate Value: Can be a good to fair specimen with environmental, landscape or cultural value that is common within other trees in the locality.

4. Low Value: Removal would not result in any loss of site amenity or environmental value. Can include undesirable or weed species or trees growing in unsuitable locations.

5. Very Low Value: Dead or hazardous with no other environmental or cultural value. Could also include weed species. These trees should be removed or pruned in a way to make safe irrespective of any development.

***Note**: The concept of using a five (5) point scale to assess tree significance was derived from the Tree Wise Men® Australia Pty Ltd ©Significance Rating Scale.

Retention Value*. Retention values are derived from a combination of Estimated Life Expectancy rating and Landscape and Environmental Significance ratings.

<table>
<tr><td rowspan="6">Landscape & Environmental Significance</td><td></td><td colspan="4">Estimated Life Expectancy</td></tr>
<tr><td></td><td>Long</td><td>Medium</td><td>Short</td><td>Removal</td></tr>
<tr><td>Very High (1)</td><td colspan="2" rowspan="2">HIGH</td><td rowspan="2">MEDIUM</td><td rowspan="2"></td></tr>
<tr><td>High (2)</td></tr>
<tr><td>Medium (3)</td><td colspan="2">MEDIUM</td><td rowspan="3" colspan="2">LOW</td></tr>
<tr><td>Low (4)</td><td colspan="2" rowspan="2"></td></tr>
<tr><td>Very Low (5)</td></tr>
</table>

HIGH Retention Value: These trees are worthy of retention and major design consideration should be made where feasible to allow this.

MEDIUM Retention Value: These trees are worthy of retention and minor design consideration should be made to retain these trees wherever possible (e.g. placement of ancillary structures, garden retaining walls, driveway levels).

LOW Retention Value: These trees should not be considered to be a constraint to design layout. Some of these trees should be removed irrespective of any proposed development.

***Note:** The method of determining and defining retention values used in this report has been derived from the ©Retention Index developed by Tree Wise Men® Australia Pty Ltd.

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proposed paved area

proposed addition to building footprint

existing building footprint kept

existing driveway

KARA CRESCENT

ENTRY(e)

No8
Lot 2
DP854002
vacant lot

No. 5
2& 3 storey
brick house
tile roof
Lot 2
DP237045

No. 6
Lot 3 DP1194872
vacant lot
4011m²

No. 7
Lot 4 DP1194872
4583m²

13
DP244777

14
DP244777

27B
1&2 storey

27C

summer sunset

winter sunset

Westerly winds winter

front set back 20000

rear setback 20000

6500 side setback

6500 side setback

proposed additional driveway

drive(e)

bdy

Compost, mulch and irrigation

Project Arborist guidance required during excavation

NEW POOL

void

CONVERT (E) POOL TO WATER TANK

TENNIS COURT(e)

views from subject site to pittwater

sunrise

N-E wind summ

t1 t2 t3 t4 t5 t5a t6 t7 t8 t9 t10 t11 t12 t13 t14 t15 t16 t17 t18 t19 t20 t21 t22 t23 t24 t25 t26 t27 t28 t29 t30 t31 t32 t33 t34 t35 t36 t37 t38 t39 t40 t41 t42 t43 t44 t45 t46 t47 t48 t49 t50 t51 t52

+89.0 +88.0 +87.0 +86.0 +85.0 +84.0 +82.0 +81.0 +80.0 +79.0 +78.0 +72.0 +71.0 +70.0 +69.0 +68.0 +67.0 +66.0 +65.0 +90.0 +86.54(n) +86.55(e) +85.18 (n) +85.00(e) +84.89(n) +86.10(e) +85.19(e) +83.15(e) +85.40(e) +86.10(e) +82.03(e) +89.72(e) +90.23(e)

38.29 312° 14' 18.03 121° 28" 47.915 330° 45' 10" 27.43 295° 55' 15" 33.52 203° 22' 15" 45.96 42° 19' 13.76 109° 38' 18.53 179° 03' 55" 31.835 205° 29' 10" 17.805 138° 14' 10" 70.325 52° 49' 15" 19.2 81° 48' 10"

Bluegum Tree Care and Consultancy®

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AQF Level 5 -Consulting Arborist

Tree Protection Plan

6 and 7 Kara Crescent, Bayview

issue	date	description
A	12/05/2023	DA

remember

LEGEND

Tree Protection Zone of Trees Close to Works		Tree Protection Fencing	
Compost, Mulch and Irrigation Recommended		Project Arborist Guidance	

-This plan must be read in conjunction with the Arboricultural Impact Assessment report dated May 2023.

-This Tree Protection Plan was prepared with DA 01 (Issue A), Campbell Architecture as a base.

-Tree protection requirements should be reviewed and finalised following the start-up meeting between the Project Arborist and Site Foreman.