Arboricultural Impact Assessment

Prepared for Skermanic Pty Ltd
Site Address: 50-88 Parraween Street and 59-67 Gerard Street Cremorne
5th July 2024

Date	Revision	Change	Stage
27/4/23	A	Tree numbering	DA
16/6/23	B	Design	DA Submission
5/7/2024	C	Design	DA Submission

Member of Arboriculture Australia, Registered Consulting Arborist No. 1286

Member of International Society of Arboriculture No. 157768

Bachelor of Horticultural Science, University Sydney.

AQF Level 2, 3 & 5 Diploma in Arboriculture

Graduate Certificate AQF Level 8 University Melbourne

Tree Risk Assessment Qualification (TRAQ)

Statement

Bradshaw Consulting Arborists is a company that exclusively provides tree consultancy within the tree industry. There are no conflicts of interests concerning the recommendations outlined in this report.

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1 Introduction

This report has been prepared by Tristan Bradshaw of Bradshaw Consulting Arborists for Skermanic Pty Ltd for the properties 50-88 Parraween Street and 59-67 Gerard Street Cremorne. The report request was to inspect one hundred and eighty-six trees throughout the property and surrounding properties.

The trees' characteristics have been listed in Table 1 page 6. The aim is to determine the health and condition of the trees and the impact of the proposed development. The inspection of the site was undertaken on 6th April 2023.

The report was completed on 18th April 2023 with this revision completed on the 5th July 2024.

The site's trees are managed under North Sydney Council's Urban Tree Management Policy.

The property is not bushfire prone and not within the RFS 10/50 vegetation entitlement clearing area.

No trees are listed on council's significant tree register.

The property is not mapped as having Terrestrial Biodiversity.

1.1 Plans used in this Assessment

Consultant	Company	Date	Revision
Survey	Geoserv Pty Ltd	4/8/2022	-
Architectural	Morrison Design Partnership Pty Ltd	2/7/2024	-
Hydraulic Engineering	ENTEC Engineering	9/6/2023	-
Landscaping	Savalbe & Co and Brendan Moar	June 2024	-

1.2 Soils

It is anticipated that parts of the soil profile within the site are highly disturbed and are termed an Anthroposol. Those profiles that have not been altered are likely to resemble those of Brightmore park close to this proposed site. The soil profile at this park was excavated and tested.

The soil profile consisted of layers within A, B and C horizons.

Horizon	Depth	Texture	pH
A	0-0.34	Loamy Sand	4
B	0.34-0.64	Light Medium Clay	4
C	0.64-1.64	NA (Earthy Structure)	Not available

While Brightmore Park is further down hill and soil characteristics may alter slightly it is expected the soil profile at this site would be similar. This was shown in a soil profile 400 metres away that is consistent with a site across the road at a similar elevation.

1.3 The Site

The site is composed of several dwellings and surrounding garden.

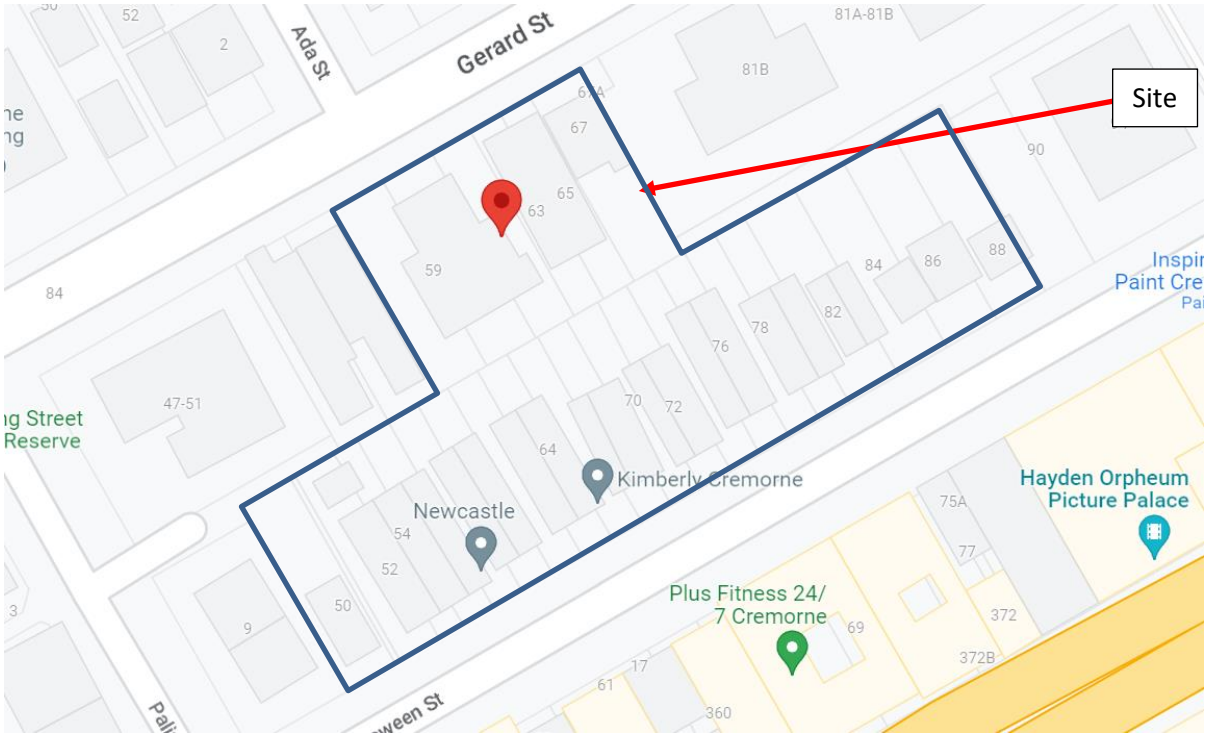

Figure 1 Site location (Google Maps 2023)

1.4 Method

The inspection of the site was undertaken on 6th April 2023.

The inspection method used was the Visual Tree Assessment (VTA) method (Mattheck & Breloer 2010). This method involves inspecting the trees from ground level, using binoculars to aid in identification of any external's signs of decay, physical damage, growth related structural defects and the site conditions where the tree is growing. This method will ascertain whether there is need for a more detailed inspection of any part of the tree. No aerial or subterranean inspections were carried out. See appendix A for the complete flow chart.

The Diameter at Breast Height (DBH) was measured with a diameter tape measure. The height of the measurement was at 140 cm above the ground unless stated.

The height of the tree was estimated.

The canopy spread of the tree was estimated.

Health: Based on vigour, callus development, % of deadwood, dieback, fruiting levels, internode lengths

(E) Excellent

(G) Good

(F) Fair

(P) Poor

(D) Dead

Age Class: (Y) Young=Recently Planted

(S) Semi mature <20% of life expectancy

(M) Mature 20-80% of life expectancy

(O) Over Mature >80% of life expectancy

Condition: Based on the structural integrity of the tree, cavities, fungal decay, branch failure, branch taper, sap or Kino exudate, fruiting bodies, root condition.

(E) Excellent

(G) Good

(F) Fair

(P) Poor

(D) Dead

Landscape Significance and Retention Value see sections 6.2 and 6.3.

Safe Useful Life Expectancy (SULE)

In a planning context, the time a tree can expect to be usefully retained is the most important long-term consideration. SULE is a system designed to classify trees into a number of defined categories so that information regarding tree retention can be concisely communicated in a non-technical manner. SULE categories are easily verifiable by experienced personnel without great disparity.

A tree's SULE category is the life expectancy of the tree modified by its age, health, condition, safety and location (to give safe life expectancy), then by economics (i.e. cost of maintenance; retaining trees at an excessive management cost is not normally acceptable), effects on better trees, and sustained amenity (i.e. establishing range of age classes in a local population).

SULE assessments are not static but may be modified as dictated by changes in tree health and environment. Trees with short SULE may at present be making a contribution to the landscape but their value to the local community will decrease rapidly towards the end of this period, prior to their

being removed for safety or aesthetic reasons. For details of SULE categories see Appendix A, adapted from Barrell (1993 and 1996).

Visual Habitat

This assessment is based on a visual observation of the tree, included in the VTA method.

Habitat trees are trees that provide microhabitats, these can include hollows, deeply fissured bark, cracks, epiphytes or forms of decay (Bütler, R., Lachat, T., Larrieu, L., & Paillet, Y., 2013).

Tree Protection Zone (TPZ) – A specified area above and below ground and at a given distance from the trunk, set aside for the protection of a tree's roots and crown to provide for the viability and stability of a tree that is to be retained where it is potentially subject to damage by development.

Structural Root Zone (SRZ) - The area around the base of a tree required for the tree's stability in the ground. The woody root growth and soil cohesion in this area are necessary to hold the tree upright. The SRZ is nominally circular with the trunk at its centre and is expressed by its radius in metres. This zone considers a tree's structural stability only, not the root zone required for a tree's vigour and long-term viability, which will usually be a much larger area.

2 Body Observations Results

Table 1 Individual tree characteristics

Tree Number	*Botanical Name* (Common Name)	DBH (mm)	DAB (mm)	Canopy N	Canopy S	Canopy E	Canopy W	Height	Health	Age	Condition/ Structure	SULE	Visual Habitat	Landscape significance	Retention Value	Structural Root Zone (SRZ)	Tree Protection Zone (TPZ)	Percentage TPZ Incursion	Retain or Remove notes
1	*Lophostemon confertus* (Brush Box)	470	470	4	4	4	4	8	G	M	G	>40	No	High	High	2.4	5.6	0%	Retain
2	*Callistemon viminalis* (Weeping Bottlebrush)	410 @ 200 AGL	410	3	3	3	3	6	P	O M	P	<5	No	Moderate	Very Low	2.3	4.9	100% Driveway	Remove
3	*Buckinghamiana celsissimia* (Ivory Cur Tree)	100	100	1	1	1	1	2	G	S M	G	>40	No	Low	Moderate	1.5	2	100% Driveway	Remove
4	*Archontophoenix cunninghamiana* (Bangalow Palm)	230	230	3	3	3	3	9	G	M	G	>40	No	Moderate	Moderate	1.8	4	0%	Retain
5	*Plumeria rubra* (Frangipani)	300	300	4	0	3	3	<5	G	M	F	15-40	No	Low	Low	2.0	3.6	100% Building, Transplant	Retain and transplant
6	*Plumeria rubra* (Frangipani)	240	240	2	2	2	2	4	G	M	G	>40	No	Low	Moderate	1.8	2.9	100% Building, Transplant	Retain and transplant
7	*Callistemon viminalis* (Weeping Bottlebrush)	370	370	4	4	4	4	6	P	O M	P	<5	No	Moderate	Very Low	2.2	4.4	0%	Remove

Tree Number	*Botanical Name* (Common Name)	DBH (mm)	DAB (mm)	Canopy N	Canopy S	Canopy E	Canopy W	Height	Health	Age	Condition/ Structure	SULE	Visual Habitat	Landscape significance	Retention Value	Structural Root Zone (SRZ)	Tree Protection Zone (TPZ)	Percentage TPZ Incursion	Retain or Remove notes
8	*Lophostemon confertus* (Brush Box)	450	450	4	4	4	4	7	G	M	G	>40	No	High	High	2.4	5.4	11.6% Basement wall	Retain
9	*Largerstroemia indica* (Crepe Myrtle)	160	160	2	2	2	2	6	E	M	E	>40	No	Moderate	Moderate	1.5	2	100% Building	Remove
10	*Buckinghamiana celsissimia* (Ivory Cur Tree)	170	170	1	1	1	1	3	G	S M	G	>40	No	Low	Moderate	1.6	2.0	0%	Retain
11	*Callistemon viminalis* (Weeping Bottlebrush)	270	270	3	3	3	3	<5	G	S M	G	>40	No	Low	Moderate	1.9	3.2	0%	Retain
12	*Callistemon viminalis* (Weeping Bottlebrush)	200	200	2	1	0	3	<5	P	O M	P	<5	No	Low	Very Low	1.7	2.4	3.3% Building	Remove
13	*Callistemon viminalis* (Weeping Bottle Brush)	314	300	5	1	2	2	6	P	O M	F	<5	No	Moderate	Very Low	2.0	3.8	17.7% Building	Remove
14	*Callistemon viminalis* (Weeping Bottle Brush)	120	120	2	2	2	2	3	P	S M	G	5-15	No	Low	Very Low	1.5	2	0%	Remove
15	*Pyrus ussuriensis* (Manchurian Pear)	240	240	3	3	3	3	6	G	S M	G	15-40	No	Moderate	Moderate	1.8	2.9	100% Building	Retain and transplant

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16	*Pyrus ussuriensis* (Manchurian Pear)	150	150	2	2	2	2	<5	G	S M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove
17	*Pyrus ussuriensis* (Manchurian Pear)	150	150	2	2	2	2	<5	G	S M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove
18	*Buckinghamiana celsissimia* (Ivory Cur Tree)	30	30	1	1	1	1	2	G	S M	G	>40	No	Low	Moderate	1.5	2	0%	Retain
19	*Callistemon viminalis* (Weeping Bottle Brush)	467	467	4	4	4	4	<5	P	O M	P	<5	No	Low	Low	2.4	5.6	13.2% Building	Remove
20	*Buckinghamiana celsissimia* (Ivory Cur Tree)	100	100	1	1	1	1	3	E	S M	E	15-40	No	Low	Low	1.5	2	0%	Retain
21	*Callistemon viminalis* (Weeping Bottle Brush)	340	400	2	4	3	3	6	F	O M	G	5-15	No	Moderate	Low	2.3	4.1	3.7% Building	Remove
22	*Buckinghamiana celsissimia* (Ivory Cur Tree)	250	250	2	2	2	2	5	G	M	G	>40	No	Moderate	Moderate	1.8	3.0	0%	Retain
23	*Camellia japonica* (Japanese Camellia)	50	50	1	1	1	1	2	E	M	E	>40	No	Low	Moderate	1.5	2	100% Building	Remove

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24	*Grevillea* 'Moonlight'	100	100	2	2	2	2	3	P	M	F	<5	No	Low	Very Low	1.5	2	100% Building	Remove
25	*Lophostemon confertus* (Brush Box)	490	500	5	5	5	5	9	E	M	E	>40	No	High	High	2.7	6.2	16.4% Building	Retain
26	*Lophostemon confertus* (Brush Box)	390	420	4	4	2	2	6	G	M	G	>40	No	High	High	2.3	5.0	10.1% Building	Retain
27	*Lophostemon confertus* (Brush Box)	550	650	5	5	5	5	10	E	M	E	>40	No	High	High	2.8	7.1	20.5% Building	Retain
28	*Cupressocyparis leylandii* (Leighton Green)	240	240	3	3	3	3	6	G	M	G	>40	No	Moderate	Moderate	1.8	2.9	100% Building	Remove
29	*Cupressocyparis leylandii* (Leighton Green)	240	240	3	3	3	3	6	G	M	G	>40	No	Moderate	Moderate	1.8	2.9	100% Building	Remove
30	*Cupressocyparis leylandii* (Leighton Green)	240	240	3	3	3	3	6	G	M	G	>40	No	Moderate	Moderate	1.8	2.9	100% Building	Remove
31	*Cupressocyparis leylandii* (Leighton Green)	240	240	3	3	3	3	6	G	M	G	>40	No	Moderate	Moderate	1.8	2.9	100% Building	Remove

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32	*Cupressocyparis leylandii* (Leighton Green)	240	240	3	3	3	3	6	G	M	G	>40	No	Moderate	Moderate	1.8	2.9	100% Building	Remove
33	*Cupressocyparis leylandii* (Leighton Green)	240	240	3	3	3	3	6	G	M	G	>40	No	Moderate	Moderate	1.8	2.9	100% Building	Remove
34	*Tristaniopsis laurina* (Water Gum)	150	150	1	1	1	1	3	F	M	G	5-15	No	Low	Low	1.5	1.8	100% Building	Remove
35	*Lophostemon confertus* (Brush Box)	400	400	3	3	3	3	6	P	O M	F	5-15	No	Moderate	Low	2.3	4.8	0%	Retain
36	*Buckinghamiana celsissimia* (Ivory Cur Tree)	30	30	1	1	1	1	1	F	S M	G	>40	No	Low	Moderate	1.5	2	0%	Retain
37	*Archontophoenix cunninghamiana* (Bangalow Palm)	200	200	2	2	2	2	<5	G	S M	G	15-40	No	Low	Low	1.7	3	100% Building	Remove
38	*Juniper chinensis* (Chinese Juniper)	420	420	0	5	3	3	9	F	O M	P	<5	No	Moderate	Very Low	2.3	5.0	100% Building	Remove
39	*Alnus jorullensis* (Evergreen Alder)	140	140	2	2	2	2	7	P	O M	F	<5	No	Moderate	Very Low	1.5	2	0%	Remove

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40	*Alnus jorullensis* (Evergreen Alder)	200	200	3	3	3	3	9	P	O M	F	<5	No	Moderate	Very Low	1.7	2.4	0%	Remove
41	*Eucalyptus saligna* (Sydney Blue Gum)	740	740	8	8	8	8	18	G	M	F	5-15	No	High	Moderate	2.9	8.9	3.9% Building	Retain
42	*Camellia sasanqua* (Sasanqua Camellia)	200	200	2	2	2	2	<5	G	M	G	>40	No	Low	Moderate	1.7	2.4	0%	Retain
43	*Grevillea robusta* (Silky Oak)	690	700	6	6	6	6	22	F	M	G	5-15	No	Moderate	Low	2.8	8.4	0%	Retain
44	*Brachychiton acerifolius* (Illawarra Flame Tree)	570	580	5	5	5	5	13	G	M	G	>40	No	High	High	2.6	7.0	0%	Retain
45	*Archontophoenix cunninghamiana* (Bangalow Palm)	150	150	2	2	2	2	7	G	S M	G	>40	No	Moderate	Moderate	1.5	3	0%	Retain
46	*Syzygium paniculatum* (Magenta Cherry)	200	200	3	3	3	3	7	G	M	G	>40	No	Moderate	Moderate	1.7	2.4	0%	Retain
47	*Jacaranda mimosifolia* (Jacaranda)	391	400	6	3	5	2	9	G	M	F	15-40	No	Moderate	Moderate	2.3	4.7	0%	Retain

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48	*Grevillea robusta* (Silky Oak)	540	540	6	6	6	3	16	G	M	G	5-15	No	Moderate	Low	2.6	6.5	1.4% Courtyard	Retain
49	*Eucalyptus robusta* (Swamp Mahogany)	440	440	5	5	5	5	14	G	M	G	>40	No	High	High	2.4	5.6	17% Courtyard	Retain
50	*Jacaranda mimosifolia* (Jacaranda)	300	300	0	0	0	5	6	G	M	F	>40	No	Moderate	Moderate	2.0	3.6	16% Courtyard, sewer man hole	Retain
51	*Tristaniopsis laurina* (Water Gum)	140	140	2	2	2	2	4	F	S M	F	>40	No	Low	Moderate	1.5	2	4.5% retaining wall	Retain
52	*Callistemon salignus* (Willow Bottlebrush)	240	240	3	3	3	3	6	G	M	G	>40	No	Moderate	Moderate	1.8	2.9	9.5% Retaining wall	Retain
53	*Tristaniopsis laurina* (Water Gum)	170	170	2	2	2	2	<5	F	M	G	5-15	No	Low	Low	1.6	2.0	4.5% retaining wall	Retain
54	*Callistemon salignus* (Willow Bottlebrush)	330	330	4	4	4	4	9	G	<	P	5-15	No	Moderate	Low	2.1	4.0	9.5% retaining wall	Retain
55	*Ficus benjamina* (Weeping Fig)	300	300	4	4	4	4	6	E	M	E	>40	No	Moderate	Moderate	2.0	3.6	100% Building	Remove

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56	*Ficus benjamina* (Weeping Fig)	230	230	3	2	3	2	<5	E	M	G	>40	No	Low	Moderate	1.8	2.8	100% landscaping	Remove
57	*Tristaniopsis laurina* (Water Gum)	380	380	3	3	3	3	<5	F	M	F	15-40	No	Moderate	Moderate	2.2	4.6	0%	Retain
58	*Tristaniopsis laurina* (Water Gum)	270	270	3	3	3	3	<5	F	M	G	15-40	No	Moderate	Moderate	1.9	3.2	0%	Retain
59	*Tristaniopsis laurina* (Water Gum)	290	290	3	3	3	3	<5	G	M	G	>40	No	Moderate	Moderate	2.0	3.5	0%	Retain
60	*Tristaniopsis laurina* (Water Gum)	360	360	4	4	4	4	<5	G	M	G	>40	No	Moderate	Moderate	2.2	4.3	0%	Retain
61	*Camellia sasanqua* (Sasanqua Camellia)	280 @ 200 AGL	280	4	4	4	4	7	G	M	G	15-40	No	Moderate	Moderate	1.9	3.4	100% Building	Retain and transplant
62	*Largerstroemia indica* (Crepe Myrtle)	300	300	2	2	2	2	4	F	M	G	5-15	No	Low	Low	2.0	3.6	100% Building	Remove
63	*Ochna serrulata* (Ochna)	50	50	1	1	1	1	3	G	M	G	15-40	No	Very Low	Low	1.5	2	100% Building	Remove

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64	*Cupressocyparis leylandii* (Leighton Green)	140	140	2	2	2	2	6	G	M	G	>40	No	Moderate	Moderate	1.5	2	10% Courtyard	Retain
65	*Cupressocyparis leylandii* (Leighton Green)	140	140	2	2	2	2	6	G	M	G	>40	No	Moderate	Moderate	1.5	2	10% Courtyard	Retain
66	*Cupressocyparis leylandii* (Leighton Green)	140	140	2	2	2	2	6	G	M	G	>40	No	Moderate	Moderate	1.5	2	10% Courtyard	Retain
67	*Cupressocyparis leylandii* (Leighton Green)	140	140	2	2	2	2	6	G	M	G	>40	No	Moderate	Moderate	1.5	2	10% Courtyard	Retain
68	*Cupressocyparis leylandii* (Leighton Green)	140	140	2	2	2	2	6	G	M	G	>40	No	Moderate	Moderate	1.5	2	10% Courtyard	Retain
69	*Grevillea robusta* (Silky Oak)	580	580	5	3	4	0	14	P	O M	P	<5	No	Moderate	Very Low	2.6	7.0	100% Building	Remove
70	*Plumeria rubra* (Frangipani)	320	320	3	0	3	0	<5	G	M	F	15-40	No	Low	Low	2.1	3.8	100% Building	Remove
71	*Camellia japonica* (Japanese Camellia)	200	200	2	2	2	2	4	E	M	E	>40	No	Low	Moderate	1.7	2.4	100% Building	Remove

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72	*Camellia japonica* (Japanese Camellia)	190	190	3	3	3	3	6	G	S M	G	>40	No	Moderate	Moderate	1.6	2.3	100% Building	Retain and transplant
73	*Persea americana* (Avocado)	200	200	0	3	2	0	3	DE AD				No	Very Low	Very Low	1.7	2.4	100% Building	Remove
74	*Persea americana* (Avocado)	500	500	7	7	7	7	12	E	M	E	>40	No	High	High	2.5	6.0	100% Building	Remove
75	*Camellia japonica* (Japanese Camellia)	200	200	1	1	1	1	3	G	M	G	>40	No	Low	Moderate	1.7	2.4	100% Building	Retain and transplant
76	*Camellia japonica* (Japanese Camellia)	200	200	1	1	1	1	3	G	M	G	>40	No	Low	Moderate	1.7	2.4	100% Building	Retain and transplant
77	*Juniper chinensis* (Chinese Juniper)	530	530	0	4	3	3	12	F	M	F	5-15	No	Moderate	Low	2.5	6.4	100% Building	Remove
78	*Plumeria rubra* (Frangipani)	200	200	1	1	1	1	4	G	M	G	>40	No	Low	Moderate	1.7	2.4	100% Building	Retain and transplant
79	*Citrus* sp.	30	30	1	1	1	1	2	P	S M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove

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80	*Citrus* sp.	50	30	1	1	1	1	2	P	S M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove
81	*Citrus* sp.	30	30	1	1	1	1	2	P	S M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove
82	*Largerstroemia indica* (Crepe Myrtle)	225	225	2	2	2	2	6	G	M	G	>40	No	Moderate	Moderate	1.8	2.7	100% Building	Remove
83	*Pittosporum tenuifolium* 'Stirling Silver'	198	230	3	3	3	3	7	G	M	G	<5	No	Moderate	Very Low	1.8	2.4	100% Building	Remove
84	*Howea forsteriana* (Kentia Palm)	160	160	2	2	2	2	6	F	M	G	15-40	No	Moderate	Moderate	1.5	3	100% Building	Retain and transplant
85	*Viburnum odoratissimum* (Sweet Viburnum)	150	150	1	1	1	1	2	G	M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove
86	*Viburnum odoratissimum* (Sweet Viburnum)	150	150	1	1	1	1	2	G	M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove
87	*Viburnum odoratissimum* (Sweet Viburnum)	150	150	1	1	1	1	2	G	M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove

Tree Number	*Botanical Name* (Common Name)	DBH (mm)	DAB (mm)	Canopy N	Canopy S	Canopy E	Canopy W	Height	Health	Age	Condition/ Structure	SULE	Visual Habitat	Landscape significance	Retention Value	Structural Root Zone (SRZ)	Tree Protection Zone (TPZ)	Percentage TPZ Incursion	Retain or Remove notes
88	*Viburnum odoratissimum* (Sweet Viburnum)	150	150	1	1	1	1	2	G	M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove
89	*Viburnum odoratissimum* (Sweet Viburnum)	150	150	1	1	1	1	2	G	M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove
90	*Viburnum odoratissimum* (Sweet Viburnum)	150	150	1	1	1	1	2	G	M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove
91	*Viburnum odoratissimum* (Sweet Viburnum)	150	150	1	1	1	1	2	G	M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove
92	*Viburnum odoratissimum* (Sweet Viburnum)	150	150	1	1	1	1	2	G	M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove
93	*Viburnum odoratissimum* (Sweet Viburnum)	150	150	1	1	1	1	2	G	M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove
94	*Viburnum odoratissimum* (Sweet Viburnum)	150	150	1	1	1	1	2	G	M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove
95	*Syzygium paniculatum* (Magenta Lilly Pilly)	50	50	1	1	1	1	2	G	M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove

Tree Number	*Botanical Name* (Common Name)	DBH (mm)	DAB (mm)	Canopy N	Canopy S	Canopy E	Canopy W	Height	Health	Age	Condition/ Structure	SULE	Visual Habitat	Landscape significance	Retention Value	Structural Root Zone (SRZ)	Tree Protection Zone (TPZ)	Percentage TPZ Incursion	Retain or Remove notes
96	*Syzygium paniculatum* (Magenta Lilly Pilly)	50	50	1	1	1	1	2	G	M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove
97	*Syzygium paniculatum* (Magenta Lilly Pilly)	50	50	1	1	1	1	2	G	M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove
98	*Syzygium paniculatum* (Magenta Lilly Pilly)	50	50	1	1	1	1	2	G	M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove
99	*Syzygium paniculatum* (Magenta Lilly Pilly)	50	50	1	1	1	1	2	G	M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove
100	*Syzygium paniculatum* (Magenta Lilly Pilly)	50	50	1	1	1	1	2	G	M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove
101	*Syzygium paniculatum* (Magenta Lilly Pilly)	50	50	1	1	1	1	2	G	M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove
102	*Syzygium paniculatum* (Magenta Lilly Pilly)	50	50	1	1	1	1	2	G	M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove
103	*Syzygium paniculatum* (Magenta Lilly Pilly)	50	50	1	1	1	1	2	G	M	G	15-40	No	Low	Low	1.5	2	100% Building	Remove

Tree Number	*Botanical Name* (Common Name)	DBH (mm)	DAB (mm)	Canopy N	Canopy S	Canopy E	Canopy W	Height	Health	Age	Condition/ Structure	SULE	Visual Habitat	Landscape significance	Retention Value	Structural Root Zone (SRZ)	Tree Protection Zone (TPZ)	Percentage TPZ Incursion	Retain or Remove notes
104	*Michelia figo* (Port Wine Magnolia)	170	170	1	1	1	1	4	G	M	G	>40	No	Low	Moderate	1.6	2.0	100% Building	Remove
105	*Pyrus ussuriensis* (Manchurian Pear)	240	240	1	1	1	1	6	G	S M	G	15-40	No	Moderate	Moderate	1.8	2.9	100% Building	Remove
106	*Pyrus ussuriensis* (Manchurian Pear)	180	180	1	1	1	1	6	G	S M	G	15-40	No	Moderate	Moderate	1.6	2.2	100% Building	Remove
107	*Pyrus ussuriensis* (Manchurian Pear)	180	180	1	1	1	1	6	G	S M	G	15-40	No	Moderate	Moderate	1.6	2.2	100% Building	Remove
108	*Pyrus ussuriensis* (Manchurian Pear)	210	210	1	1	1	1	6	G	S M	G	15-40	No	Moderate	Moderate	1.7	2.5	100% Building	Remove
109	*Pyrus ussuriensis* (Manchurian Pear)	180	180	1	1	1	1	6	G	S M	G	15-40	No	Moderate	Moderate	1.6	2.2	100% Building	Remove
110	*Pyrus ussuriensis* (Manchurian Pear)	200	200	1	1	1	1	6	G	S M	G	15-40	No	Moderate	Moderate	1.7	2.4	100% Building	Remove
111	*Pyrus ussuriensis* (Manchurian Pear)	150	150	1	1	1	1	6	G	S M	G	15-40	No	Moderate	Moderate	1.5	2	100% Building	Remove

Tree Number	*Botanical Name* (Common Name)	DBH (mm)	DAB (mm)	Canopy N	Canopy S	Canopy E	Canopy W	Height	Health	Age	Condition/ Structure	SULE	Visual Habitat	Landscape significance	Retention Value	Structural Root Zone (SRZ)	Tree Protection Zone (TPZ)	Percentage TPZ Incursion	Retain or Remove notes
112	*Pyrus ussuriensis* (Manchurian Pear)	150	150	1	1	1	1	6	G	S M	G	15-40	No	Moderate	Moderate	1.5	2	100% Building	Remove
113	*Pyrus ussuriensis* (Manchurian Pear)	200	200	3	3	3	3	6	G	S M	G	15-40	No	Moderate	Moderate	1.7	2.4	100% Building	Remove
114	*Largerstroemia indica* (Crepe Myrtle)	200	200	2	2	2	2	4	G	S M	G	>40	No	Low	Moderate	1.7	2.4	100% Building	Remove
115	*Pyrus ussuriensis* (Manchurian Pear)	380	450	5	3	4	0	6	F	M	F	<5	No	Moderate	Low	2.4	4.6	100% Building	Remove
116	*Magnolia* 'Little Gem'	140	140	2	2	2	2	<5	G	S M	G	>40	No	Low	Moderate	1.5	2	100% Building	Remove
117	*Callistemon viminalis* (Weeping Bottle Brush)	390	390	4	4	4	4	5	DE AD				No	Very Low	Very Low	2.2	4.7	100% Building	Remove
118	*Callistemon viminalis* (Weeping Bottle Brush)	300	300	7	3	3	3	5	DE AD	-	-	-	No	Very Low	Very Low	2.0	3.6	100% Building	Remove
119	*Plumeria rubra* (Frangipani)	230	230	3	1	2	2	4	G	M	G	>40	No	Low	Moderate	1.8	2.8	100% Building	Retain and transplant

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120	*Rothmania globosa* (September Bells)	180	180	2	2	2	2	4	F	S M	G	<5	No	Low	Very Low	1.6	2.2	100% Building	Remove
121	*Cupressocyparis leylandii* Leighton Green)	150	150	1	1	1	1	6	P	M	F	5-15	No	Moderate	Low	1.5	2	100% Building	Remove
122	*Cupressocyparis leylandii* Leighton Green)	150	150	1	1	1	1	6	P	M	F	5-15	No	Moderate	Low	1.5	2	100% Building	Remove
123	*Cupressocyparis leylandii* Leighton Green)	150	150	1	1	1	1	6	P	M	F	5-15	No	Moderate	Low	1.5	2	100% Building	Remove
124	*Cupressocyparis leylandii* Leighton Green)	150	150	1	1	1	1	6	P	M	F	5-15	No	Moderate	Low	1.5	2	100% Building	Remove
125	*Cupressocyparis leylandii* Leighton Green)	150	150	1	1	1	1	6	P	M	F	5-15	No	Moderate	Low	1.5	2	100% Building	Remove
126	*Cupressocyparis leylandii* Leighton Green)	150	150	1	1	1	1	6	P	M	F	5-15	No	Moderate	Low	1.5	2	100% Building	Remove
127	*Cupressocyparis leylandii* Leighton Green)	150	150	1	1	1	1	6	P	M	F	5-15	No	Moderate	Low	1.5	2	100% Building	Remove

Tree Number	*Botanical Name* (Common Name)	DBH (mm)	DAB (mm)	Canopy N	Canopy S	Canopy E	Canopy W	Height	Health	Age	Condition/ Structure	SULE	Visual Habitat	Landscape significance	Retention Value	Structural Root Zone (SRZ)	Tree Protection Zone (TPZ)	Percentage TPZ Incursion	Retain or Remove notes
128	*Cupressocyparis leylandii* Leighton Green)	150	150	1	1	1	1	6	P	M	F	5-15	No	Moderate	Low	1.5	2	100% Building	Remove
129	*Cupressocyparis leylandii* Leighton Green)	150	150	1	1	1	1	6	P	M	F	5-15	No	Moderate	Low	1.5	2	100% Building	Remove
130	*Cupressocyparis leylandii* Leighton Green)	150	150	1	1	1	1	6	P	M	F	5-15	No	Moderate	Low	1.5	2	100% Building	Remove
131	*Cupressocyparis leylandii* Leighton Green)	150	150	1	1	1	1	6	P	M	F	5-15	No	Moderate	Low	1.5	2	100% Building	Remove
132	*Cupressocyparis leylandii* Leighton Green)	150	150	1	1	1	1	6	P	M	F	5-15	No	Moderate	Low	1.5	2	100% Building	Remove
133	*Cupressocyparis leylandii* Leighton Green)	150	150	1	1	1	1	6	P	M	F	5-15	No	Moderate	Low	1.5	2	100% Building	Remove
134	*Celtis sinensis* (Hackberry)	490	600	5	5	5	5	12	G	M	G	>40	No	Very Low	Low	2.7	5.9	100% Building	Remove
135	*Brachychiton acerifolius* (Illawarra Flame Tree)	250	250	3	3	3	3	7	F	M	G	>40	No	Moderate	Moderate	1.8	3.0	0%	Remove

Tree Number	*Botanical Name* (Common Name)	DBH (mm)	DAB (mm)	Canopy N	Canopy S	Canopy E	Canopy W	Height	Health	Age	Condition/ Structure	SULE	Visual Habitat	Landscape significance	Retention Value	Structural Root Zone (SRZ)	Tree Protection Zone (TPZ)	Percentage TPZ Incursion	Retain or Remove notes
136	*Howea forsteriana* (Kentia Palm)	250	250	3	3	3	3	10	G	M	G	>40	No	Moderate	Moderate	1.8	4	0%	Retain
137	*Camellia japonica* (Japanese Camellia)	100	100	1	1	1	1	3	G	M	G	>40	No	Low	Moderate	1.5	2	0%	Retain
138	*Archontophoenix cunninghamiana* (Bangalow Palm)	270	270	3	3	3	3	6	G	S M	G	>40	No	Moderate	Moderate	1.9	4	0%	Retain
139	*Archontophoenix cunninghamiana* (Bangalow Palm)	210	210	3	3	3	3	6	G	S M	G	>40	No	Moderate	Moderate	1.7	4	0%	Retain
140	*Acer negundo* (Box Elder)	250	250	4	0	3	3	6	G	M	F	15-40	No	Very Low	Low	1.8	3.0	0%	Retain
141	*Archontophoenix cunninghamiana* (Bangalow Palm)	200	200	3	3	3	3	10	G	M	G	>40	No	Moderate	Moderate	1.7	4	0%	Retain
142	*Elaeocarpus reticulatus* (Blue Berry Ash)	150	150	1	3	4	1	6	G	M	F	>40	No	Moderate	Moderate	1.5	2	0%	Retain
143	*Viburnum odoratissimum* (Sweet Viburnum)	130	130	2	2	2	2	6	G	M	G	>40	No	Moderate	Moderate	1.5	2	0%	Retain

Tree Number	*Botanical Name* (Common Name)	DBH (mm)	DAB (mm)	Canopy N	Canopy S	Canopy E	Canopy W	Height	Health	Age	Condition/ Structure	SULE	Visual Habitat	Landscape significance	Retention Value	Structural Root Zone (SRZ)	Tree Protection Zone (TPZ)	Percentage TPZ Incursion	Retain or Remove notes
144	*Callistemon viminalis* (Weeping Bottle Brush)	200	200	2	2	2	2	6	P	M	F	<5	No	Moderate	Low	1.7	2.4	0%	Retain
145	*Buckinghamiana celsissimia* (Ivory Cur Tree)	230	230	3	3	3	3	6	G	M	G	>40	No	Moderate	Moderate	1.8	2.8	0%	Retain
146	*Elaeocarpus reticulatus* (Blue Berry Ash)	150	150	4	0	2	2	6	G	M	F	>40	No	Moderate	Moderate	1.5	2	0%	Retain
147	*Viburnum odoratissimum* (Sweet Viburnum)	200	200	3	3	3	3	6	G	M	G	>40	No	Moderate	Moderate	1.7	2.4	0%	Retain
148	*Archontophoenix cunninghamiana* (Bangalow Palm)	200	200	3	3	3	3	10	G	M	G	>40	No	Moderate	Moderate	1.7	2.4	0%	Retain
149	*Tristaniopsis laurina* (Water Gum)	170	170	2	2	2	2	6	G	M	G	>40	No	Moderate	Moderate	1.6	2.0	0%	Retain
150	*Tristaniopsis laurina* (Water Gum)	710 @ 500 AGL	710	4	6	6	6	6	G	M	G	15-40	No	Moderate	Moderate	2.9	8.5	0%	Retain
151	*Ficus elastica* (Rubber Tree)	200	200	2	2	2	2	4	G	S M	G	>40	No	Very Low	Low	1.7	2.4	100% Building	Remove

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152	*Fraxinus grifithii* (American Ash)	200	200	2	2	2	2	<5	G	S M	G	15-40	No	Low	Low	1.7	2.4	100% Building	Remove
153	*Fraxinus grifithii* (American Ash)	200	200	2	2	2	2	<5	G	S M	G	15-40	No	Low	Low	1.7	2.4	100% Building	Remove
154	*Viburnum odoratissimum* (Sweet Viburnum)	50	50	1	1	1	1	2	G	M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove
155	*Viburnum odoratissimum* (Sweet Viburnum)	50	50	1	1	1	1	2	G	M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove
156	*Viburnum odoratissimum* (Sweet Viburnum)	50	50	1	1	1	1	2	G	M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove
157	*Viburnum odoratissimum* (Sweet Viburnum)	50	50	1	1	1	1	2	G	M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove
158	*Viburnum odoratissimum* (Sweet Viburnum)	50	50	1	1	1	1	2	G	M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove
159	*Viburnum odoratissimum* (Sweet Viburnum)	50	50	1	1	1	1	2	G	M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove

Tree Number	*Botanical Name* (Common Name)	DBH (mm)	DAB (mm)	Canopy N	Canopy S	Canopy E	Canopy W	Height	Health	Age	Condition/ Structure	SULE	Visual Habitat	Landscape significance	Retention Value	Structural Root Zone (SRZ)	Tree Protection Zone (TPZ)	Percentage TPZ Incursion	Retain or Remove notes
160	*Viburnum odoratissimum* (Sweet Viburnum)	50	50	1	1	1	1	2	G	M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove
161	*Viburnum odoratissimum* (Sweet Viburnum)	50	50	1	1	1	1	2	G	M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove
162	*Syzygium smithii* (Lilly Pilly)	50	50	1	1	1	1	2	G	M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove
163	*Syzygium smithii* (Lilly Pilly)	50	50	1	1	1	1	2	G	M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove
164	*Syzygium smithii* (Lilly Pilly)	50	50	1	1	1	1	2	G	M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove
165	*Syzygium smithii* (Lilly Pilly)	50	50	1	1	1	1	2	G	M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove
166	*Syzygium smithii* (Lilly Pilly)	50	50	1	1	1	1	2	G	M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove
167	*Syzygium smithii* (Lilly Pilly)	50	50	1	1	1	1	2	G	M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove

Tree Number	*Botanical Name* (Common Name)	DBH (mm)	DAB (mm)	Canopy N	Canopy S	Canopy E	Canopy W	Height	Health	Age	Condition/ Structure	SULE	Visual Habitat	Landscape significance	Retention Value	Structural Root Zone (SRZ)	Tree Protection Zone (TPZ)	Percentage TPZ Incursion	Retain or Remove notes
168	*Syzygium smithii* (Lilly Pilly)	50	50	1	1	1	1	2	G	M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove
169	*Syzygium smithii* (Lilly Pilly)	50	50	1	1	1	1	2	G	M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove
170	*Syzygium smithii* (Lilly Pilly)	50	50	1	1	1	1	2	G	M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove
171	*Syzygium smithii* (Lilly Pilly)	50	50	1	1	1	1	2	G	M	G	5-15	No	Low	Low	1.5	2	100% Building	Remove
172	*Grevillea johnsonii* (Johnsons Grevillea)	200	200	3	3	0	3	<5	F	M	F	<5	No	Low	Very Low	1.7	2.4	100% Building	Remove
173	*Ficus benjamina* (Weeping Fig)	250	250	4	4	4	4	6	G	M	G	>40	No	Moderate	Moderate	1.8	3.0	100% Building	Remove
174	*Acer negundo* (Box Elder)	785	980	4	8	8	8	14	H	O M	G	5-15	No	Low	Low	3.3	9.4	7.3% Building	Retain
175	*Acer* sp. (Maple)	250	250	3	3	3	3	8	F	M	G	5-15	No	Low	Low	1.8	3.0	0%	Retain

Tree Number	*Botanical Name* (Common Name)	DBH (mm)	DAB (mm)	Canopy N	Canopy S	Canopy E	Canopy W	Height	Health	Age	Condition/ Structure	SULE	Visual Habitat	Landscape significance	Retention Value	Structural Root Zone (SRZ)	Tree Protection Zone (TPZ)	Percentage TPZ Incursion	Retain or Remove notes
176	*Pittosporum undulatum* (Sweet Pittosporum)	200	200	3	3	3	3	5	F	M	F	5-15	No	Low	Low	1.7	2.4	0%	Retain
177	*Acer negundo* (Box Elder)	565	650	4	7	7	7	13	G	M	G	5-15	No	Low	Low	2.8	6.8	0%	Retain
178	*Cupressocyparis leylandii* Leighton Green)	460	460	3	3	3	3	14	P	M	F	5-15	No	Moderate	Low	2.4	5.5	0%	Retain
179	*Murraya paniculata* (Orange Jessamine)	200	200	2	2	2	2	4	F	M	G	>40	No	Low	Moderate	1.7	2.4	0%	Retain
180	*Acer negundo* (Box Elder)	490	490	6	6	6	6	14	G	M	G	15-40	No	Very Low	Low	2.5	5.9	9.3% Building	Retain
181	*Cupressus sempervirens* (Italian Cypress)	240	240	1	1	1	1	12	P	O M	P	<5	No	Moderate	Low	1.8	2.9	0%	Retain
182	*Tristaniopsis laurina* (Water Gum)	238	280	3	3	3	3	7	G	M	G	>40	No	Moderate	Moderate	1.9	2.9	0%	Retain
183	*Pittosporum undulatum* (Sweet Pittosporum)	160	160	3	3	3	3	5	F	M	F	5-15	No	Low	Low	1.5	2	0%	Retain

Tree Number	*Botanical Name* (Common Name)	DBH (mm)	DAB (mm)	Canopy N	Canopy S	Canopy E	Canopy W	Height	Health	Age	Condition/ Structure	SULE	Visual Habitat	Landscape significance	Retention Value	Structural Root Zone (SRZ)	Tree Protection Zone (TPZ)	Percentage TPZ Incursion	Retain or Remove notes
184	*Viburnum tinus* (Laurustinus)	200	200	2	2	2	2	<5	G	M	G	15-40	No	Low	Low	1.7	2.4	0%	Retain
185	*Acer palmatum* (Japanese Maple)	300	300	3	3	3	3	<5	F	M	G	15-40	No	Low	Low	2.0	3.6	0%	Retain
186	*Syzygium smithii* (Lilly Pilly)	100	100	2	2	2	0	4	F	M	G	15-40	No	Low	Low	1.5	2	10% retaining wall	Retain

3 Discussion

One hundred and eighty-six trees have been included in this assessment.

Trees located on council property road reserves

Trees 1, 2, 3, 7, 8, 10, 11, 12, 13, 14, 18, 19, 20, 21, 22, 25, 26, 27, 35, 36, 57, 58, 59, 60, 149, 150.

Trees located on the property

Trees 5, 6, 9, 15, 16, 17, 23, 24, 28-33, 34, 37, 38, 39, 40, 41, 55, 56, 61, 62, 63, 64-68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85-94, 95-103, 104, 105-113, 114, 115, 116, 117, 118, 119, 120,121-133, 134, 135-148, 151, 152, 153, 154-161, 162-171, 172, 173.

Trees located on neighbouring properties within 10 metres of the development

Trees 4, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186.

Trees Located on Council Property, Road Reserves

Trees 1, 2, 3, 7, 8, 10, 11, 12, 13, 14, 18, 19, 20, 21, 22, 25, 26, 27, 35, 36, 57, 58, 59, 60, 149, 150.

It is proposed trees 2 and 3 are removed for the entry driveway into the site. Tree 2 is in poor health and condition and of very low retention value. Tree 3 has recently been planted and is readily replaceable.

Council has been undertaking the progressive removal Callistemon trees that are in poor health and has been replacing these with Ivory Curl trees. It is recommended additional trees are removed because of poor health, these include trees 7, 12, 13, 14, 19, 21.

There is no projected impact to trees 1, 10, 11, 18, 20, 22, 35, 36, 57, 58, 59, 60, 149 and 150 they will be retained and protected during works.

The proposed basement wall creates an incursion into the TPZ of 11.6% for tree 8. This marginally greater than the acceptable 10% incursion in AS4970-2009 and this is very tolerant species to tree root loss. This tree will be retained and protected.

Trees 25, 26 and 27 may be impacted by the proposed stormwater, it is preferable the pit to the northwest of tree 25 be drained to the street outside the TPZ of tree 25. This should avoid the connection between pits passing through the TPZ of trees 25, 26 and 27. Should this unattainable, non-destructive excavation or tunnel boring can be performed to install the pipes reducing any impact to trees 25, 26 and 27.

Trees Located on the Property

Trees 5, 6, 9, 15, 16, 17, 23, 24, 28-33, 34, 37, 38, 39, 40, 41, 55, 56, 61, 62, 63, 64-68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85-94, 95-103, 104, 105-113, 114, 115, 116, 117, 118, 119, 120,121-133, 134, 135-148, 151, 152, 153, 154-161, 162-171, 172, 173.

Of the trees listed trees 16, 17, 23, 24, 34, 37, 56, 62, 63, 70, 71, 73, 79, 80, 81, 85-104, 114, 116, 117, 118, 120, 134, 153, 154-171 are all exempt. They are not considered trees as they are less than 5 metres in height, do not have a canopy spread greater than 5 metres or a trunk diameter greater than 500mm. No approval is required to remove these trees.

Trees 38, 39, 40, 69, 77, 83 and 172 are of poor health and are of low or very low retention value. It is proposed these trees are removed.

Trees 28-33, 105-113 and 121-133 are small hedges within the property. It is proposed these are removed and new screening around the perimeter of the property be used.

It is proposed Trees 82, 115, and 173 are removed as the proposal has a negative effect to these trees and removal is required.

Trees 9, 55, 135, 151 and 152 are small trees insignificant in the landscape, it is proposed these are removed.

It is proposed trees 41, 64-68, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147 and 148 are retained and protected during the development. Some trees have a projected incursion greater than 10%, while this is not within the guidelines of AS4970-2009 many are young trees and can tolerate a higher incursion.

The proposed sewer diversion through the TPZ of tree 41 must be tunnel bored, its proposed depth will not impact the tree's root system. Non destructive vacuum excavation is a suitable second option to install the pipes. This tree will be retained and any works within the TPZ for the duration of the project must be supervised by the project arborist.

Tree 74 is impacted by the proposed courtyard and basement, while this tree is in good health it is recommended the tree be removed due to its species. The Avocado produces large amounts of fruit that would become a significant maintenance issue for the property and a liability for patients spending time beneath the tree. This tree is not suitable for this proposed development.

It is proposed trees 5, 6, 15, 61, 72, 75, 76, 78, 84, 119 are retained and transplanted.

Trees Located on Neighbouring Properties within 10 Metres of the Development.

Trees 4, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186.

It is proposed all neighbouring trees are retained and protected throughout the development. Trees 4, 42, 43, 44, 45, 46, 47, 175, 176, 177, 178, 179, 181, 182, 183, 184 and 185 have no incursion into the TPZ. The proposed stormwater pit should be moved outside the TPZ of surrounding trees, if this us unattainable vacuum excavation and tunnel boring should be used to install this service.

Trees 48, 174,180 and 186 have an incursion into the TPZ of less than 10%, this is within the guidelines of AS4970-2009.

Trees 49 has an incursion of approximately 17%, while this is considered a major incursion the tree is actively growing and the large tension root growing towards the southeast will be retained. This will retain a considerable portion of the tree's root system. Irrigation will aid in compensating for any root loss.

Tree 50 has an incursion of 16% and works are proposed within the SRZ. Due to the lean of this tree, it will have tension roots towards the southeast. These will be retained including those tree roots to the northwest under compression. This is a small tree and a tolerant species. It will be retained and protected. Irrigation will aid in compensating for any root loss.

51, 52, 53 and 54 have a projected incursion less than 10%, this is within the guidelines of AS4970-2009.

The sewer diversion passes within the TPZ of trees 43, 44, 45, 46, 47, 48, 49 and 50. The pipe should be tunnel bored or delicate non-destructive vacuum excavation will allow the retention of these trees. The new proposed manholes must be hand dug for the upper 700mm beside tree 50. Works are proposed within the SRZ; however this is a young tree and it is unlikely to be affected.

Non destructive excavation must be undertaken when excavation for the stormwater pits and pipes for trees 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53 and 54.

4 Recommendations

1. Retain trees 1, 4, 8, 10, 11, 18, 20, 22, 25, 26, 27, 35, 36, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 57, 58, 59, 60, 64, 65, 67, 68, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185 and 186.
2. It is proposed trees 5, 6, 15, 61, 72, 75, 76, 78, 84 and 119 are retained and transplanted.
3. Remove trees 2, 3, 5, 6, 7, 9, 12, 13, 14,15, 16, 17, 19, 21, 23, 24, 28, 29, 30, 31, 32, 33, 34, 37, 38, 39, 40, 55, 56, 61, 63, 63, 69-135, 151-173.
4. Tunnel boring must be undertaken for the main stormwater line passing within the TPZ of trees within the road reserve along Gerard Street.
5. Tree removal should be conducted by an Arborist with a minimum (Australian Qualification Framework) AQF level 3.

6. Work must be undertaken as per the Code of Practice Amenity Tree Industry 1998 and AS4373-Pruning of Amenity trees.
7. The tree removal/pruning process and staff should be skilled and undertake the removal of the tree as per the minimum industry standards.
8. Appoint project arborist. Minimum AQF Level 5 with 5 years' experience.
9. Retained trees must be protected to AS4970-2009. Tree protection plan will be provided as the project progresses.

5 References

1. Bütler, R., Lachat, T., Larrieu, L. and Paillet, Y., 2013. 2.1 Habitat trees: key elements for forest biodiversity. *Integrative approaches as an opportunity for the conservation of forest biodiversity*, p.84.
2. Australian Standard, A.S., 4970, 2009. *Protection of trees on development sites,* Sydney.
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4. https://www.google.com/maps/place/Parraween+St,+Cremorne+NSW+2090/@-33.829734,151.2276573,18.42z/data=!4m6!3m5!1s0x6b12aea1453b52e7:0xf2bf54ef2a59c09b!8m2!3d-33.8285979!4d151.2280255!16s%2Fg%2F1tptqs0k?entry=ttu. 7. Viewed 13th June 2023.
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6. NSW Government e planning spatial viewer, 2020. https://www.planningportal.nsw.gov.au/propertyreports/9de60642-47ca-4f2d-a485-19a7c1d9cbe8.pdf. Viewed 31st January 2020.
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8. RFS 10/50. https://www.rfs.nsw.gov.au/plan-and-prepare/1050-vegetation-clearing/tool. Viewed 10th July 2020.
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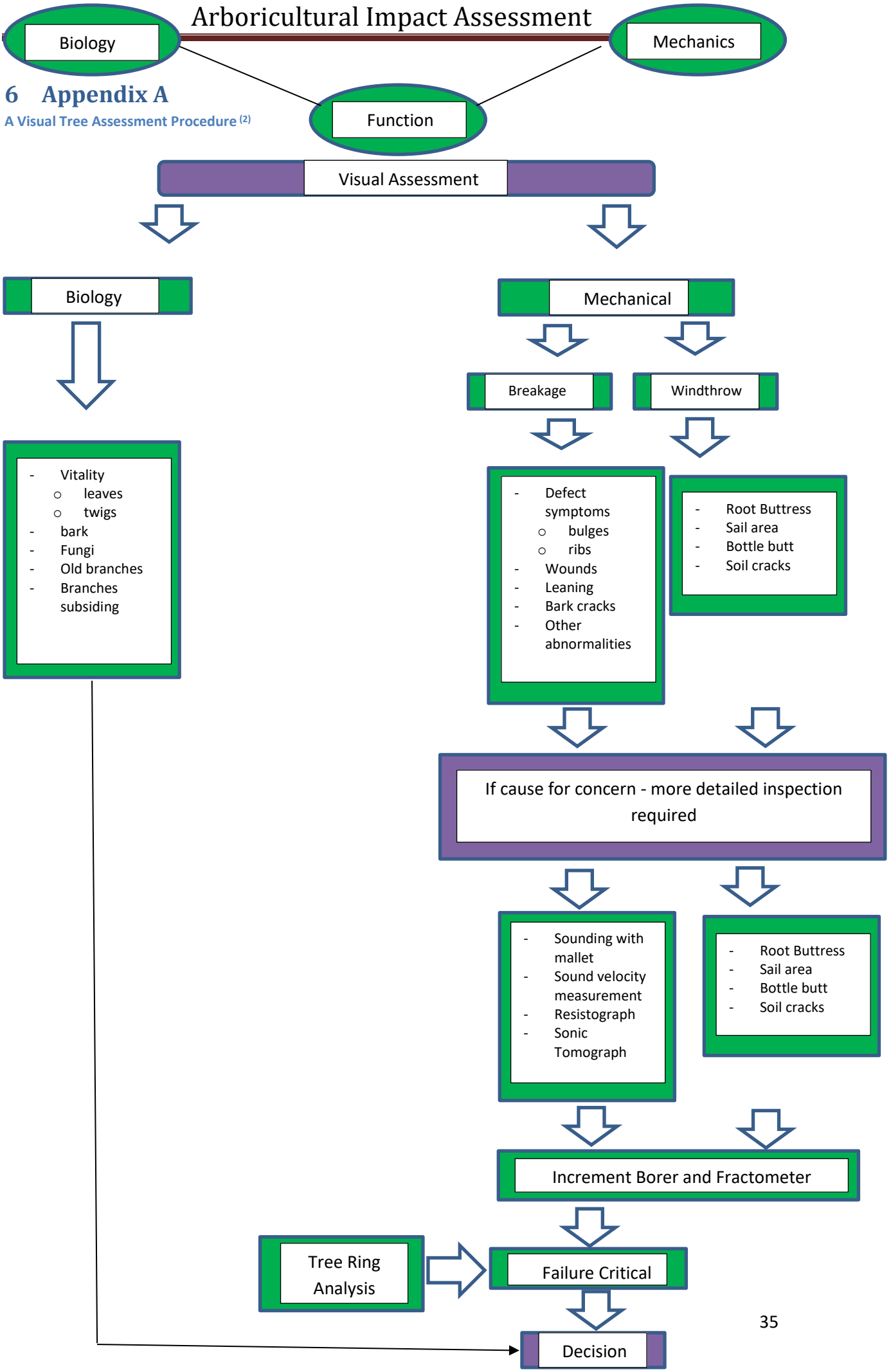
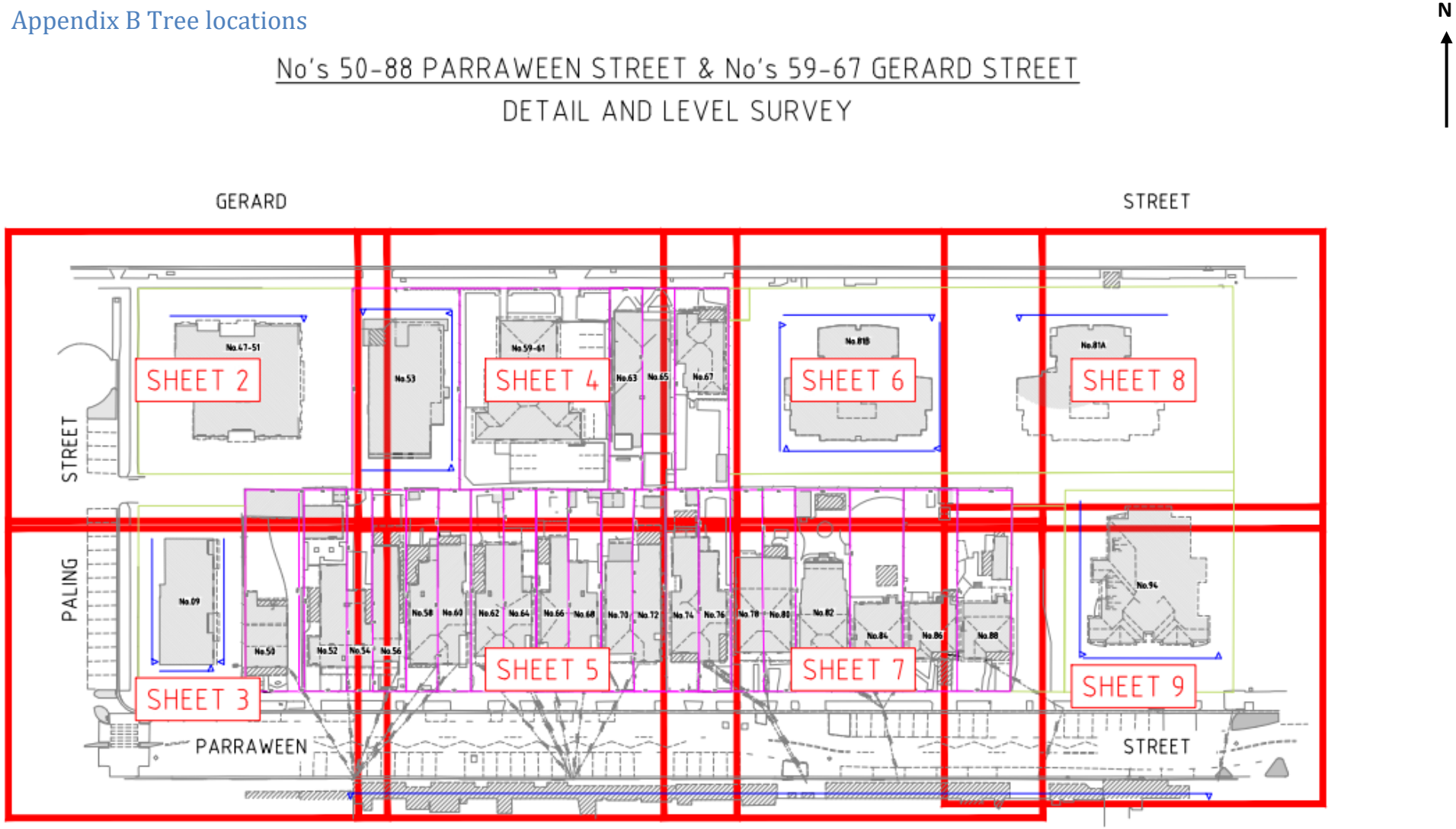
6 Appendix A

A Visual Tree Assessment Procedure [2]



7 Appendix B Tree locations



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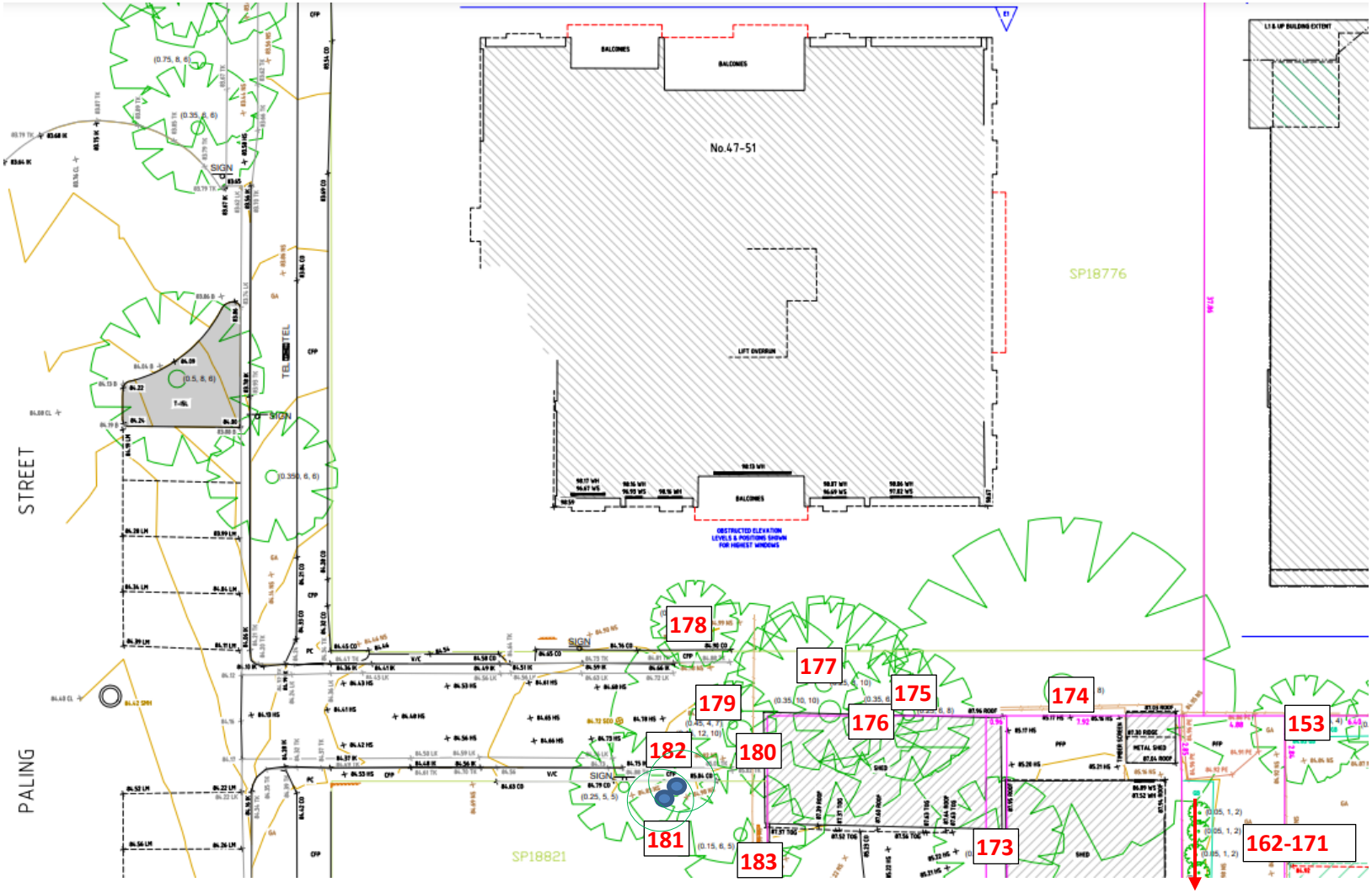
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162-171

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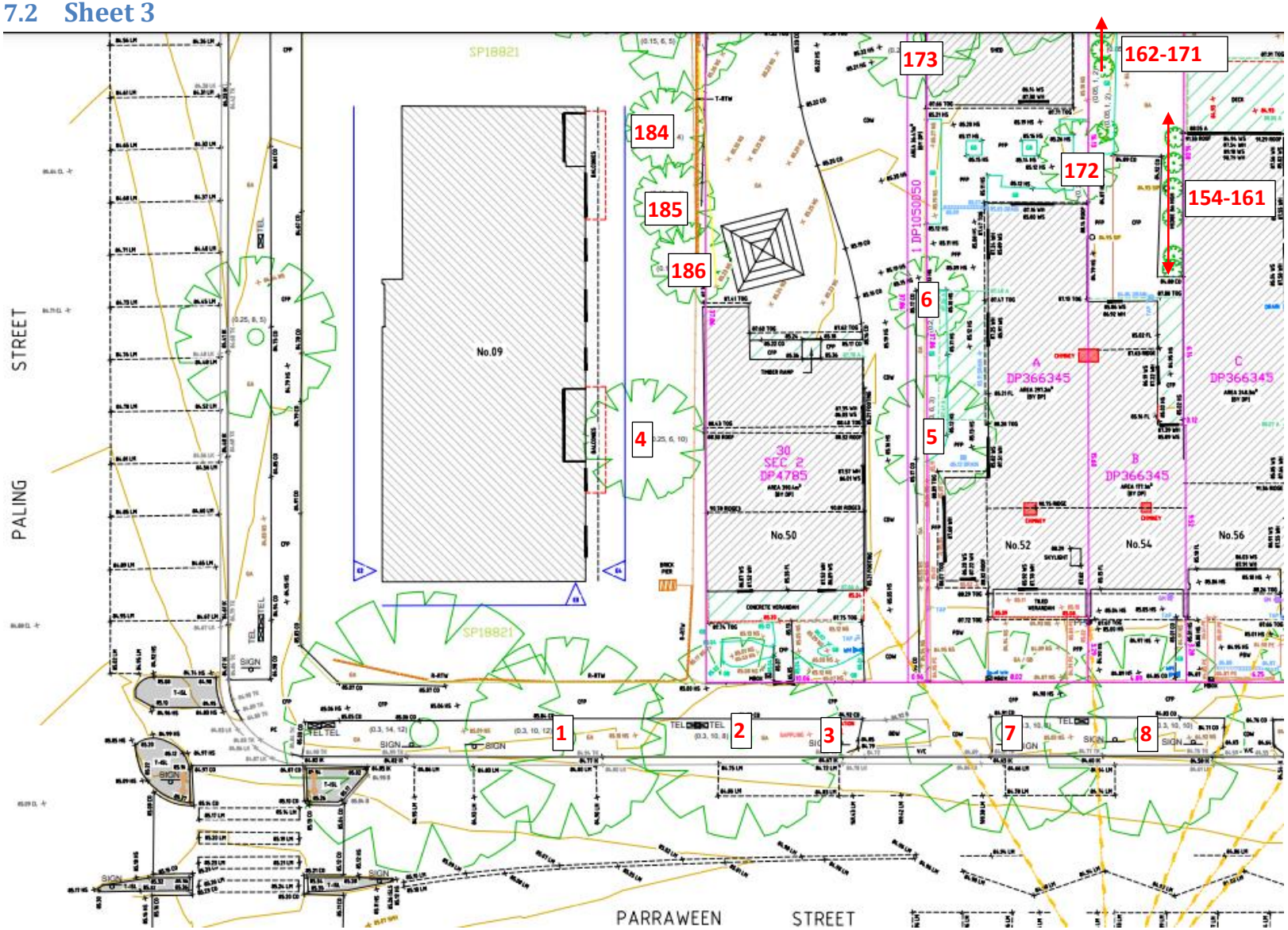
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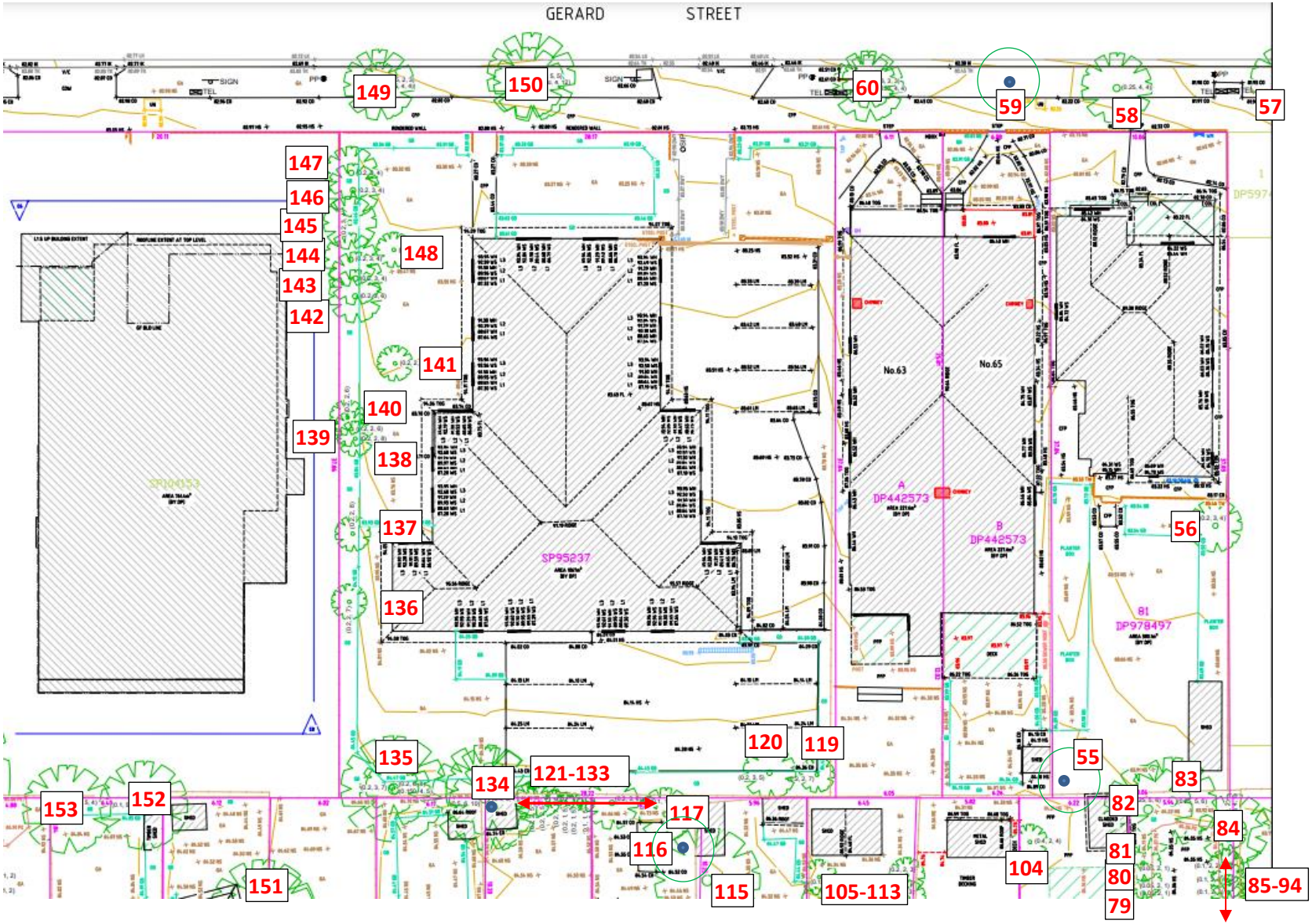
7.3 Sheet 4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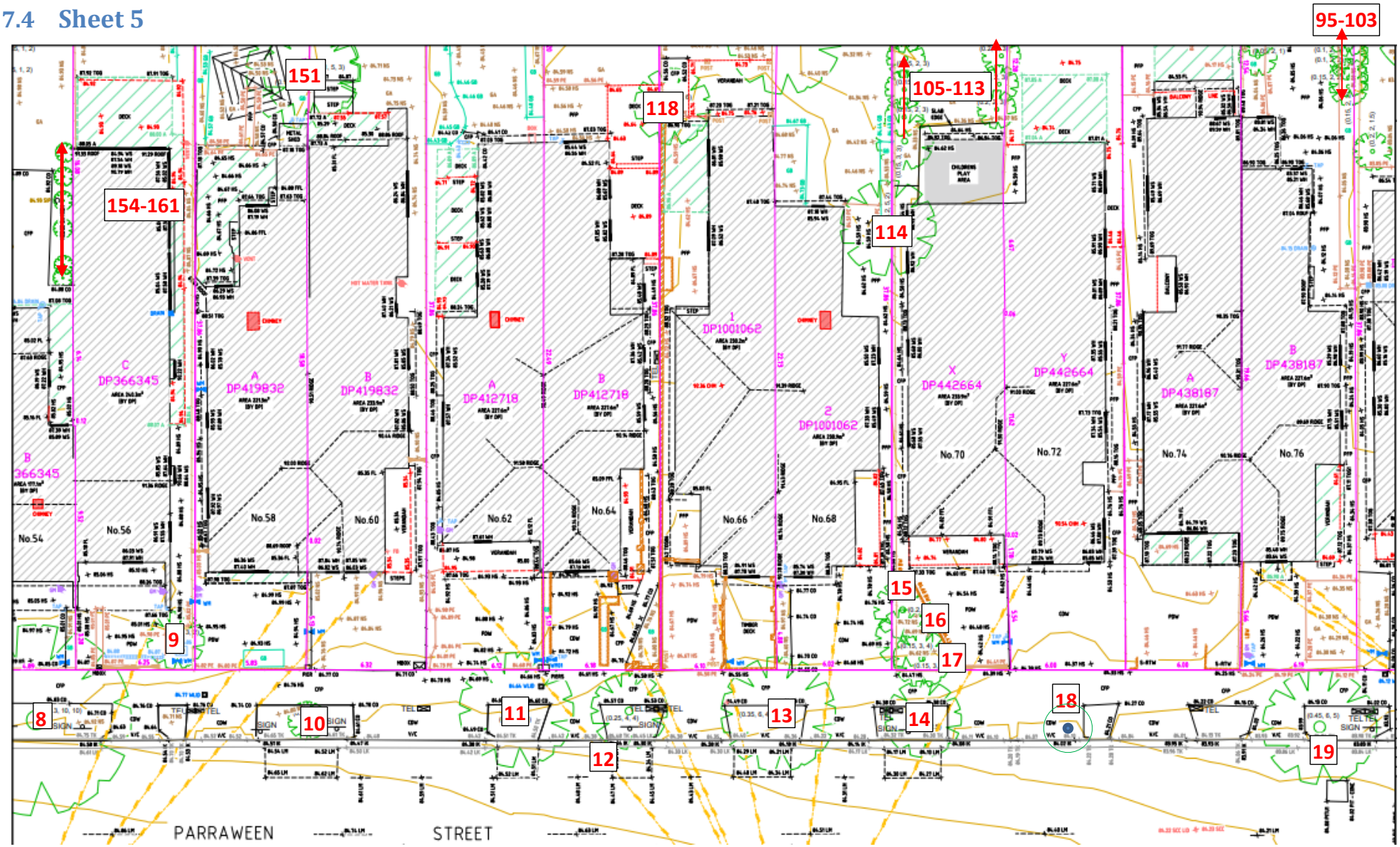
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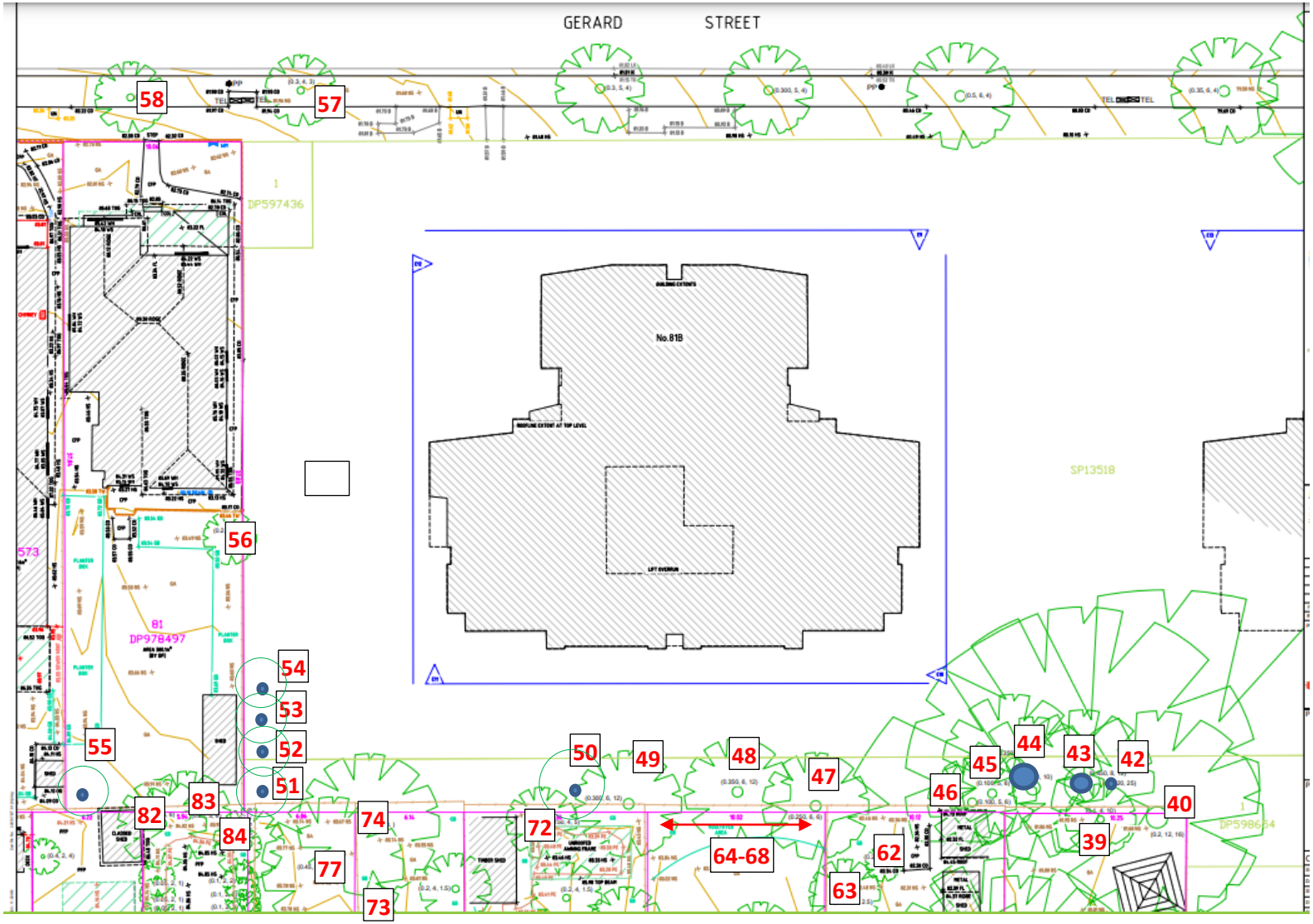
STREET

7.5 Sheet 6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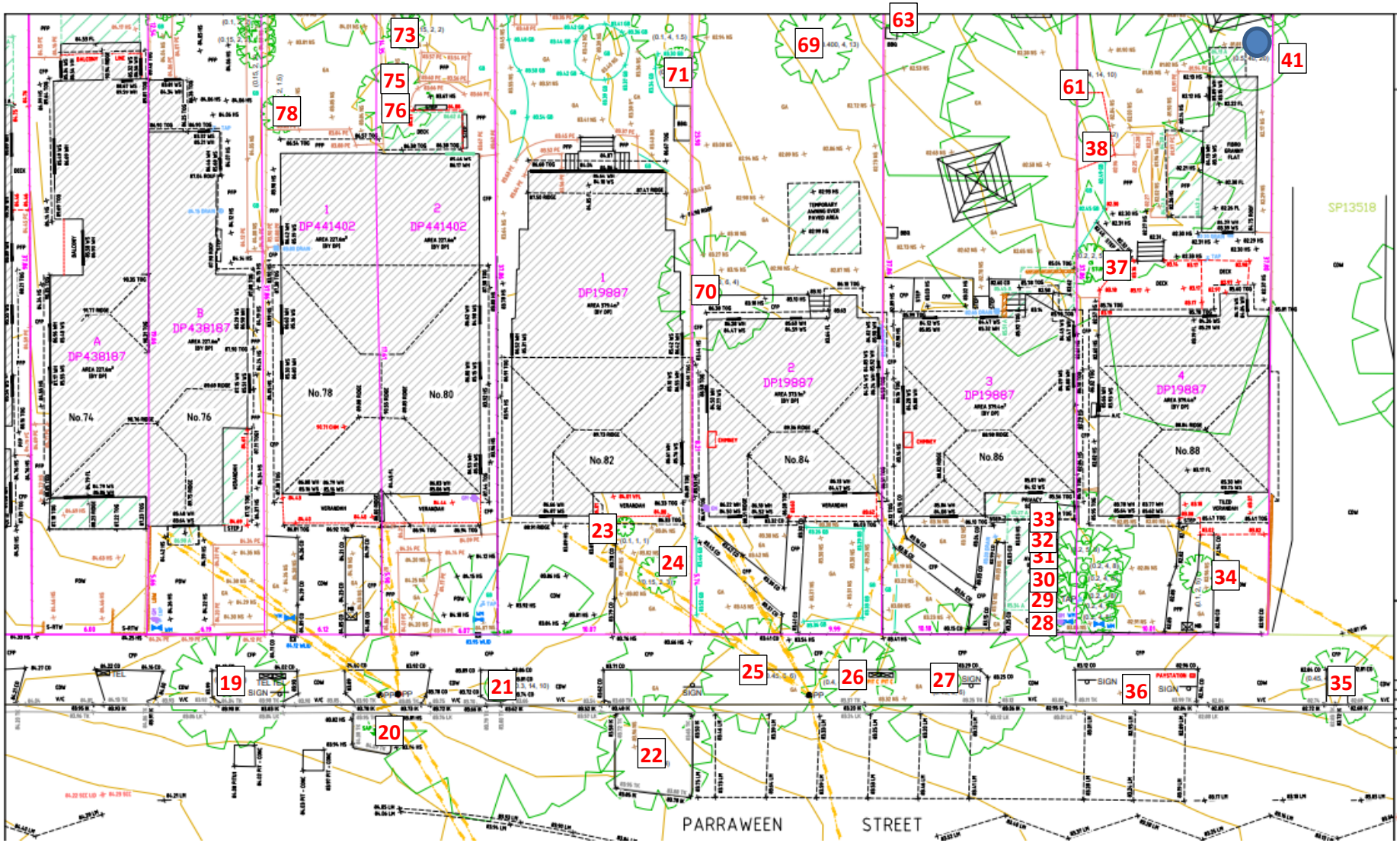
7.6 Sheet 7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PARRAWEEN
STREET
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SP13518

8 Appendix C Methodology for Determining Tree Retention Value

The aim of this process is to determine the relative value of each tree for retention (i.e. its Retention Value) in the context of development. This methodology assists in the decision-making process by using a systematic approach. The key objective of process is to ensure the retention of good quality trees that make a positive contribution to these values and ensure that adequate space is provided for their long term preservation. The Retention Value of a tree is a balance between its sustainability in the setting in which it is located (the 'landscape') and its significance within that setting (landscape significance).

Step 1: Determining the Landscape Significance Rating

The 'landscape significance' of a tree is a measure of its contribution to amenity, heritage, and ecological values. While these values are fairly subjective and difficult to assess consistently, some measure is necessary to assist in determining the Retention Value of each tree. To ensure in a consistent approach, the assessment criterion shown in Table 2 should be used. A Tree may be considered 'significant' for one or more reasons. A tree may meet one or more of the criteria in any value category (heritage, ecology or amenity) shown in Table 2 to achieve the specified rating. For example, a tree may be considered 'significant' and given a rating of 1, even if it is only significant based on the amenity criteria.

Based in the criterion in this table, each tree should be assigned a landscape significance rating as follows:

1. Significant
2. Very High
3. High
4. Moderate
5. Low
6. Very Low
7. Insignificant

Step 2: Determining Safe Useful Life Expectancy (SULE)

The sustainability of a tree in the landscape is a measure of its remaining lifespan in consideration of its current health, condition and suitability to the locality and site conditions. The assessment of the remaining lifespan of a tree is a fairly objective assessment when carried out by a qualified Consulting Arborist. Once a visual assessment of each tree is completed (using the Visual Tree Assessment criteria), the arborist can make an informed judgement about the quality and remaining lifespan of each tree. The Safe Useful Life Expectancy (SULE) methodology (refer to Table 3) can be used to categorise trees as follows:

- Long (Greater than 40 years)
- Medium (Between 15 and 40 years)
- Short (Between 5 and 15 years)
- Transient (less than 5 years)
- **Dead or Hazardous (no remaining SULE)**

The SULE of a tree is calculated based on an estimate of the average lifespan of the species in an urban area, less its estimated current age and then further modified where necessary in consideration of its current health, condition (structural integrity) and suitability to the site.

8.1 Appendix D Table 2 Step 1 Landscape Significance Rating

RATINGS	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 Conversation Act 1995 (NSW) or the Environmental Protection and Biodiversity Conservation Act 1999.	The subject tree has a very large live crown size exceeding 100m2 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 form 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 60m2, 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 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 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 form the street and/or 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 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 the DCP.	The subject tree has a medium live crown size exceeding 25m^2; 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).
			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 and diminishes the value of the 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 of less than 25m^2 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 Local Government Area, being invasive, or is a 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%.

8.2 Appendix E Table 3 Estimating Safe Useful Life Expectancy (SULE) Step 2

1	Estimate the age of the tree
2	Establish the average life span of the species
3	Determine whether the average life span needs to be modified due to local environmental situation
4	Estimate remaining life expectancy

Life Expectancy	=	average modified life span of species - age of tree

5	Consider how health may affect safety (& longevity)
6	Consider how tree structure may affect safety
7	Consider how location will affect safety
8	Determine safe life expectancy

Safe Life Expectancy	=	life expectancy modified by health, structure and location

9	Consider economics of management (cost vs benefit of retention)
10	Consider adverse impacts on better trees
11	Consider sustaining amenity - making space for new trees
12	Determine SULE

Safe Useful Life Expectancy	=	safe life expectancy modified by economics, effects on better trees and sustaining amenity

Ref: Barrell, Jeremy (1996)
Pre-development Tree Assessment
Proceedings of the International Conference on Trees and Building Sites (Chicago)
International Society of arboriculture, Illinois, USA

8.3 Appendix F Table 4 Determining Tree Retention Values

The Retention Value of a tree is increased or diminished based on its sustainability in the landscape, which is expressed as its SULE. A tree that has a high Landscape Significance Rating, but low remaining SULE, has a diminished value for retention and therefore has an appropriate Retention Value assigned. Conversely a tree with a low Landscape Significance Rating even with a long remaining SULE, is also considered of low Retention Value. This logic is reflected in the matrix shown in Table 1.

Once the landscape Significance Rating and SULE category have been determined, the following matrix can be used to determine a relative value (or priority) for retention:

TABLE 1 – DETERMINING TREE RETENTION VALUES

	Landscape Significance Rating						
SULE	1	2	3	4	5	6	7
Long - greater than 40 years	High Retention Value						
Medium - 15 to 40 years			Moderate Retention Value				
Short - 5 to 15 years				Low Retention Value			
Transient - less than 5 years				Very Low Retention Value			
Dead or Hazardous							

9 Glossary of Terms

AGL: above ground level

Basal flare: the rapid increase in diameter that occurs at the confluence of trunk and root crown, associated with both stem and root tissue.

Canopy Spread: measure from one side of the tree to the other, the canopy spread of the tree was estimated.

Condition: refers to the tree's form and growth habit, as modified by its environment (aspect, suppression by other trees, soils) and the state of the scaffold (i.e. trunk and major branches), including structural defects such as cavities, crooked trunks or weak trunk/branch junctions. These are not directly connected with health and it is possible for a tree to be healthy but in poor condition.

Decay: is the result of invasion by fungal diseases through a wound.

Decline: is the response of the tree to a reduction of energy levels resulting from stress. Recovery from a decline is difficult and slow; is usually irreversible.

Diameter at Breast Height (DBH)[(4)]: refers to the tree trunk diameter at breast height (1.4 metres above ground level) Estimated

Dieback: refers to the withdrawal of energy by the tree from some areas of the crown. Symptoms are leaf drop, bare twigs, dead branches and tree death, in order of progression. This can be caused by root damage, root disease, severe bark damage, intensive grazing by insects, abrupt changes in growth conditions, drought, water logging or over maturity. Dieback often implies stress or decline.

Epicormic shoots: are sprouts produced from dormant buds in the bark. Production can be triggered by fire, pruning or root damage but may also be as a result of stress or decline.

Hazard: refers to anything with the potential to harm health, life or property.

Height of tree: refers to the height of the tree from ground level to the highest point of the tree. This is estimated with the use of a clinometer.

Health: refers to the tree's vigour as exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease invasion, and the degree of dieback. Listed as Excellent, Good, Fair or Poor.

Inclusion: See weak junctions

Sparse crown: refers to reduced leaf density, often a precursor to dieback and may imply stress or decline. Also, possibly a response to drought or root damage.

Topping: or heading is a pruning practice that results in removal of terminal growth leaving a cut stub end. Topping causes serious damage to the tree.

Weak junctions: are points of possible failure in the scaffold. They are usually caused by the trunk or branch bark being squeezed within the junction so that the necessary interlocking of the wood fibres does not occur, and the junction is forced open by the annual increments in growth. This is often a genetic problem.

Weed species: are plants that are known to invade native remnant bushland. The species concerned may be exotic or may be native species from other parts of Australia.

Wounds: are areas where the bark has been damaged by branch breakage, impact or insect attack. Some wounds decay and cause structural defects or weakness. Healthy trees are able to resist and contain infection by walling off areas within the wood. Tree wounds are often eventually covered over by new bark but the walled off or infected areas still remain internally and may lead to weakness of the heartwood.

10 Qualifications and Experience

TRISTAN BRADSHAW

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Mobile: 0411 608 001 Email: bradshawarborists@gmail.com
Industry Licence AL1286-1

Professional Memberships

Member of the International Society of Arboriculture. No: 157768

Member of Arboriculture Australia No. 1286 (Certified Practicing Arborist)

Qualifications

2022 Tree Risk Assessment Qualification renewal (TRAQ)

2016-2018 Graduate Certificate in Arboriculture AQF8 at Melbourne University.

2015 Tree Risk Assessment Qualification (TRAQ)

2013-2014 Diploma of Arboriculture AQF5 at Ryde TAFE. Distinction

2012 Certificate III in Arboriculture at Ryde TAFE

2011 Certificate IV in Occupational Health and Safety

2010 Aboriginal Sites Awareness Course by Aboriginal Heritage Office

1996-1999 Bachelor of Horticultural Science at University of Sydney. Honours+

Tristan Bradshaw has been involved in the Horticultural and Arboricultural Industry since 1995. The business Bradshaw Horticultural Services was formed and incorporated Horticultural consulting work and landscaping. In 2000 Tristan undertook the Level 2 Arboriculture course at Ryde TAFE. The business progressively specialised in consulting, tree removal, pruning and stump grinding works. Extensive hands-on knowledge was developed during the climbing of trees undertaking pruning or removal and during storm events understanding the tolerances of trees.

In 2009 the new business name Bradshaw Tree Services was registered to reflect works only being undertaken in the tree industry. The business operated throughout Sydney employing up to 25 people. Tristan Bradshaw's main role was as a consultant advising clients and writing reports. In 2019 Bradshaw Tree Services ceased operations and Tristan Bradshaw began Bradshaw Consulting Arborists exclusively undertaking tree consultancy.

Tristan Bradshaw with continued education has attained a Level 8 qualification, attends the annual Arboriculture conferences taking part in the seminars to broaden his knowledge.

This assessment was carried out from the ground and covers what was reasonably able to be assessed and available to this assessor at the time of inspection. No subterranean inspections were carried out. The preservation methods recommended where applicable are not a guarantee of the tree survival but are designed to reduce impacts and give the trees the best possible chance of adapting to new surroundings.

Limitations on the use of this report:

This report is to be utilised in its entirety only. Any written or verbal submission, report or presentation that includes statements taken from the findings, discussions, conclusions or recommendations made in this report, may only be used where the whole or the original report is referenced in, and directly attached to that submission, report or presentation.

Assumptions:

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

Unless stated otherwise:

-Information contained in this report covers only the tree/s that was/were examined and reflects the condition of the tree at the time of the assessment: and
-The inspection was limited to visual examination of the subject tree without dissection, excavation, probing or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject tree may not arise in the future.
-The assessment does not identify hazards and associated risk; this report is not a risk assessment.

Yours sincerely,

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