

# **JACKSONS NATURE WORKS**

34 CALOOLA CRESCENT, BEVERLY HILLS 2209

9 150 4430  
04 18) 414 502

## **ARBORICULTURAL IMPACT ASSESSMENT REPORT**

**At**

**2 Macpherson Street, Warriewood**

**Prepared for**

**Meriton Group**

**20<sup>th</sup> November 2019**

**Prepared by: Ross Jackson**

Graduate Certificate in Arboriculture (AQF L 8)

Dip. Horticulture (Arboriculture – AQF L 5)

Certificate III in Horticulture (Arboriculture)

Certificate in Horticulture (Landscape)

Member of the Arboriculture Australia (MAA)

Member of the Australian Institute of Horticulture

Consulting Arborist Nos.1695

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<b>DISCLAIMER</b>
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The Client acknowledges that this Report, and any opinions, advice or recommendations expressed or given in it, are the information supplied by the Client and on the data inspections, measurements and analysis carried out or obtained by Jacksons Nature Works (JNW) and referred to in the Report. The Client should rely on The Report, and on its contents, only to that extent.

Care has been taken to obtain all information from reliable sources. All data has been verified as far as possible. However, Ross Jackson – Consulting Arborist 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 trees examined and reflects the health and structure of the trees at the time of inspection. The documented, observations, results, recommendations and conclusions given may vary after the site visit due to environmental conditions.
- The inspection was limited to visual examination from the base of the subject tree without dissection, probing or coring; and
- There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.

Ross Jackson.

Consulting Arborist

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# 1. BACKGROUND and METHODOLOGY

- 1.1 The purpose of this Tree Report is to inform and accompany the development application Nos. DA2019/0887 at 2 Macpherson Street, Warriewood – The Site.
- 1.2 The report was commissioned by Meriton Group to respond to Council's requirements to consider the development impacts on trees located on and around the Site.
- 1.3 This report outlines the health and condition of the subject trees, the remaining life expectancy of the trees, identifies any visible defects or other problems, describes which trees require pruning, removal, retention or represent a potential hazard and comments on the impact on these trees in relation to the works proposed. The report also provides recommended tree protection measures (Tree Management Plan) to ensure the long-term preservation of the trees to be retained where appropriate.
- 1.4 The Site is a vacant site with two access crossings at Warriewood.
- 1.5 The trees were identified by ground level Visual Tree Assessment (VTA) <sup>1</sup> only in the data collection, taken on 11.11.2019. No aerial (climbing) was undertaken.
- 1.6 All site photographs were taken by the author at the site. All photographs were taken using a digital camera (Canon 7D) with no image enhancement either within the camera or on computer.
- 1.7 The subject trees were located on plans supplied. The trees have been plotted and can be found on Annexure B – Tree Location Plan.
- 1.8 The trees were identified and their genus species and common name used. The trees were identified by the use of data collected and compared to G Burnie, S Forrester et al (1997) **Botanica** Random House, Milsons Point, NSW, Australia.
- 1.9 DBH. The Trunk Diameter at Breast Height (1.4 metres above ground level) in centimetres was measured over bark using a metal tape which automatically converts to diameter and assumes a circular trunk cross section.
- 1.10 DRB. The trunk Diameter above Root Buttress in centimetres was measured over bark using a metal tape which automatically converts to diameter and assumes a circular trunk cross section.
- 1.11 Height. Estimated overall height in metres.
- 1.12 Spread. Measured with a metal tape measure and shown in metres.
- 1.13 Useful Life Expectancy (ULE)<sup>2</sup>.  
A systematic pre-development tree assessment procedure developed by Jeremy Barrell, Hampshire, England. It gives a length of time that the Arborist feels a

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<sup>1</sup> Mattheck, Dr. Clause & Breloer, Helge (1994) – Sixth Edition (2001) **The Body Language of Trees – A Handbook for Failure Analysis** The Stationery Office, London, England

<sup>2</sup> Barrell, Jeremy (1996, 2001) **Pre-development Tree Assessment** Proceedings of the International Conference on Trees and Building Sites (Chicago) International Society of Arboriculture, Illinois, USA

particular tree can be retained with an acceptable level of risk based on the information available at the time of the inspection. SULE ratings are Long (retainable for 40 years or more with an acceptable level of risk), Medium, (retainable for 16 – 39 years), Short (retainable for 5 – 15 years) and Removal (tree requiring immediate removal due to imminent hazard or absolute unsuitability).

1.14 The Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) have been calculated in terms of AS 4970 – 2009 Protection of trees on development site Section 3.

1.15o prepare this report we have reviewed the following documents:

- Experts Arboricultural Comment in reply to Statement of Facts & Contentions – Land and Environment Court Case 2018/244034 by Jacksons Nature Works, dated 11.12.2018;
- Landscape plans by Meriton Group, dated 4.4.2019 – Rev F;
- Northern Beaches Council, B4.22 Preservation of Trees or Bushland Vegetation (TPO); &
- Australian Standard AS 4970 – 2009 Protection of trees on development sites.

## **2. OBSERVATIONS as seen on the days of inspection (11.11.2019)**

2.1 Our tree observations can be found in Annexure A. Tree numbered 45 – 62 have been tagged with an aluminium tag for ease of location.

## **3. DISCUSSIONS**

3.1 We have been commissioned by Meriton Group, to confirm which trees at 2 Macpherson Street, Warriewood are to be retained and removed as part of DA 2019/0887 (development works).

3.2 We have examined the trees along Macpherson Street, Warriewood and can advise the following details:

1. Remove the following trees within the development area:

- a. *Eucalyptus robusta*: Tree 1, 2, 55, 66, 67;
- b. *Ficus microcarpa* var. *hillii*: Tree 46, 48, 49, 54B, 56, 57, 68, 69, 70, 71, 72, 73;
- c. *Casuarina glauca*: Tree 50, 51, 53, 54, 54A, 63, 64, 65;
- d. *Ficus benjamina*: Tree 56A, 56B;
- e. *Melaleuca decora*: Tree 61, 62.

2. Retain the following trees not impacted by the development works:

- a. *Ficus microcarpa* var. *hillii*: Tree 33, 34, 37, 38, 40, 41, 42, 43, 44, 47, 47A, 57A, 58, 59;
- b. *Casuarina glauca*: Tree 35, 36, 39, 52, 60;
- c. *Ficus benjamina*: Tree 60A, 60B, 60C, 60D, 60E, 60F, 60G, 60H, 60I.

## **4. RECOMMENDATIONS**

The following recommendations are advised:

- a) Remove the following trees: Tree 1, 2, 46, 48, 49, 50, 51, 53, 54, 54A, 54B, 55, 56, 56A, 56B, 57, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72 & 73;
- b) Retain the following trees: Tree 33 – 44, 45, 47, 47A, 52, 56C, 58, 59, 60, 60A – 60I;
- c) Tree removal work shall be carried out by an experienced tree surgeon in accordance with *Safe Work Australia Guide for Managing Risks of Tree Trimming and Removal (2016)*;
- d) Install the following Tree Protection Measures around the retained trees: tree protection measures shall be a temporary fence of chain wire panels 1.8 metres in height (or equivalent), supported by steel stakes or concrete blocks as required and fastened together and supported to prevent sideways movement. Existing boundary fences or walls are to be retained shall constitute part of the tree protection fence where appropriate. A sign is to be erected on the tree protection fences of the trees to be retained that the trees are covered by Council's tree preservation orders and that "No Access" is permitted into the tree protection zone;
- e) That a Tree Management Plan be prepared as part of the Construction Certificate by a consulting arborist who holds the Diploma in Horticulture (Arboriculture), Level 5 or above under the Australian Qualification Framework;
- f) An AQF Level 5 Project Arborist shall be engaged to supervise the building works and certify compliance with all Tree Protection Measures.
- g) Our tree location & impact plan can be found on Annexure B.



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 Consulting Arborist 1695  
 Graduate Certificate in Arboriculture AQF Level 8  
 Diploma Horticulture (Arboriculture) – AQF Level 5  
 Certificate III in Horticulture  
 Certificate in Horticulture (Landscape – Honours)

## Annexure A: Observations as seen on the day of inspection of trees

Tree No	Botanical Name	Age Class	Height (m)	Spread (m)	D.B.H. (cm)	D.R.B. (cm)	TPZ (radius m)	SRZ (radius m)	Condition comments as seen on site	ULE
1	<i>Eucalyptus robusta</i>	M	17	12	40	44	4.8	2.3	P vitality, 2 live branches remaining, suppressed	4a
2	<i>Eucalyptus robusta</i>	M	17	12	40	44	4.8	2.3	F vitality	3a
33	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	4	3	22	24	2.6	1.8	Exempt tree	3a
34	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	9	5	24	28	2.8	2.0	Exempt tree	3a
35	<i>Casuarina glauca</i>	M	17	12	45	47	5.4	2.4	G vitality	2b
36	<i>Casuarina glauca</i>	M	17	12	45	47	5.4	2.4	G vitality	2b
37	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	9	4	28	32	3.4	2.1	G vitality	2a
38	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	9	4	26	30	3.1	2.0	G vitality. ND	2a
39	<i>Casuarina glauca</i>	M	17	12	45	47	5.4	2.4	G vitality. ND	2b
40	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	9	4	29	32	3.5	2.1	G vitality. ND	2a
41	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	-	-	-	-	-	-	Exempt tree	-
42	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	8	4	28	32	3.4	2.1	G vitality	2a
43	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	8	7	32	38	3.8	2.2	G vitality	2a
44	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	9	6	30	34	3.6	2.1	G vitality	2a
46	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	12	10	32	38	3.8	2.2	G vitality	2a
47	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	8	8	3 x 19	56	3.9	2.6	G vitality, suppressed	3a
47A	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	9	6	30	34	3.6	2.1	G vitality	3a
48	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	8	4	26	32	3.1	2.1	G vitality, suppressed	3A
49	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	12	10	32	38	3.8	2.2	G vitality, suppressed	3a

50	<i>Casuarina glauca</i>	M	16	12	42	47	5.0	2.4	G vitality	2b
51	<i>Casuarina glauca</i>	M	16	12	42	47	5.0	2.4	G vitality	2b
52	<i>Casuarina glauca</i>	M	16	12	42	47	5.0	2.4	G vitality	2b
53	<i>Casuarina glauca</i>	M	16	12	43	48	5.2	2.4	G vitality	2b
54	<i>Casuarina glauca</i>	M	16	12	44	46	5.3	2.4	G vitality	2b
54A	<i>Casuarina glauca</i>	M	16	12	44	46	5.3	2.4	G vitality	2b
54B	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	6	4	22	24	2.6	1.8	G vitality	2b
55	<i>Eucalyptus robusta</i>	M	17	18	50	55	6.0	2.6	G vitality	2a
56	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	9	4	22	24	2.6	1.8	G vitality, suppressed	3a
56A	<i>Ficus benjamina</i>	M	4						Topped at 4m	4c
56B	<i>Ficus benjamina</i>	M	9	2	26	30	3.1	2.0	F vitality. Main stem topped at 3m	4c
56C	<i>Ficus benjamina</i>	M	9	3	24	28	2.8	2.0	G vitality	2a
57	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	6	4	20	24	2.4	1.8	G vitality, suppressed	3a
57A	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	9	4	25	30	3.0	2.0	G vitality, suppressed	2b
58	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	9	4	22	24	2.6	1.8	G vitality, suppressed	3a
59	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	9	4	22	24	2.6	1.8	G vitality, suppressed	3a
60	<i>Casuarina glauca</i>	M	15	4	32	34	3.8	2.1	G vitality	2b
60A	<i>Ficus benjamina</i>	M	7	2	28	23	3.4	1.8	G vitality, topped, suppressed	2b
60B	<i>Ficus benjamina</i>	M	4	2	28	38	3.4	2.2	G vitality, topped, suppressed	2b
60C	<i>Ficus benjamina</i>	M	8	6	30	40	3.6	2.3	G vitality, suppressed	2b
60D	<i>Ficus benjamina</i>	M	8	5	20	24	4.0	1.8	G vitality	2b
60E	<i>Ficus benjamina</i>	M	7	4	25	30	3.0	2.0	G vitality, suppressed	2b
60F	<i>Ficus benjamina</i>	M	8	2	12	15	1.4	1.5	G vitality	2b
60G	<i>Ficus benjamina</i>	M	4	2	18	25	2.2	1.8	F vitality, main stem topped, north stem suppressed	3b



60H	<i>Ficus benjamina</i>	M	6	6	30	35	3.6	2.1	G vitality, suppressed	2b
60I	<i>Ficus benjamina</i>	M	9	5	30	45	3.6	2.4	G vitality, suppressed	2b
61	<i>Melaleuca decora</i>	M	8	6	32	36	3.8	2.2	G vitality, suppressed	2a
62	<i>Melaleuca decora</i>	M	8	6	33	35	4.0	2.1	G vitality, suppressed	2a
63	<i>Casuarina glauca</i>	M	17	10	42	46	5.0	2.4	G vitality	2b
64	<i>Casuarina glauca</i>	M	18	10	50	55	6.0	2.6	G vitality	2b
65	<i>Casuarina glauca</i>	M	18	10	41	44	4.9	2.3	G vitality	2b
66	<i>Eucalyptus robusta</i>	M	17	12	39	43	4.7	2.3	G vitality	2a
67	<i>Eucalyptus robusta</i>	M	17	12	43	47	5.2	2.4	F vitality	3a
68	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	9	5	2 x 24	40	4.1	2.3	G vitality, crown-lifted to 5m	3a
69	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	6	1	14	16	1.7	1.5	G vitality, suppressed	3a
70	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	9	5	25	27	3.0	1.9	G vitality, crown-lifted to 5m, suppressed	3a
71	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	9	4	28	30	3.4	2.0	G vitality, suppressed	3a
72	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	9	4	30	32	3.6	2.1	G vitality, suppressed	3a
73	<i>Ficus microcarpa</i> var. <i>hillii</i>	M	9	7	3 x 30	66	6.2	2.8	G vitality, multi-trunked	2a

### Terms used in Tree Survey & Report:

#### Age Class

**(Y) – Young** refers to a well-established but juvenile tree. Less than 1/3 life expectancy

**(SM) – Semi-mature** refers to a tree at growth stages between immaturity and full size. A tree has reached First Adult Form i.e. displays adult characteristics. 1/3 to 2/3 life expectancy

**(M)- Mature** refers to a full size tree with some capacity for future growth. Older than 2/3 life expectancy

**(OM) – Over-mature** refers to a tree approaching decline or already declining. Older than 2/3 life expectancy and showing signs of irreversible decline.

**Health** refers to a tree's vigour, growth rate, disease and/or insects.

**Vitality** summarises observations about the health and structure of the tree on a scale of: **(G) Good, (F) Fair, (P) Poor & (D) Dead.**

**Good:** Tree is generally healthy and free from obvious signs of structural weaknesses or significant effects of pests and diseases or infection;

**Fair:** Tree is generally vigorous although has some indication of being adversely affected by the early effects of disease or infection or environmental or mechanical damage. Appropriate tree maintenance can usually improve overall health and halt decline;

**Poor:** Tree in decline and is not likely to improve with reasonable maintenance practices or has a structural fault such as bark inclusion;

**Dead:** Tree no longer capable of sustained growth.

**Deadwood (DW)** – deadwood found in canopy as a percentage.

**Over Head Power Lines (OHPL)** – upper canopy pruned to accommodate power lines at a given height.

**Height** expressed in metres refers to estimated overall height of tree.

**Next Door tree (ND)** – tree located in the neighbour's property.

**Street Tree (ST)** – tree located in Councils footpath reserve.

**Spread** expressed in metres refers to estimated spread of crown at the drip line.

**(DBH) Diameter at Breast Height** expressed in millimetres refers to the trunk diameter at 1.4 metres above ground level. Where there are multiple trunks the combined diameter has been calculated in terms of Appendix A – AS 4970 – 2009, shown in brackets.

**(DRB) Diameter above Root Buttress** expressed in millimetres refers to the trunk diameter above root buttress.

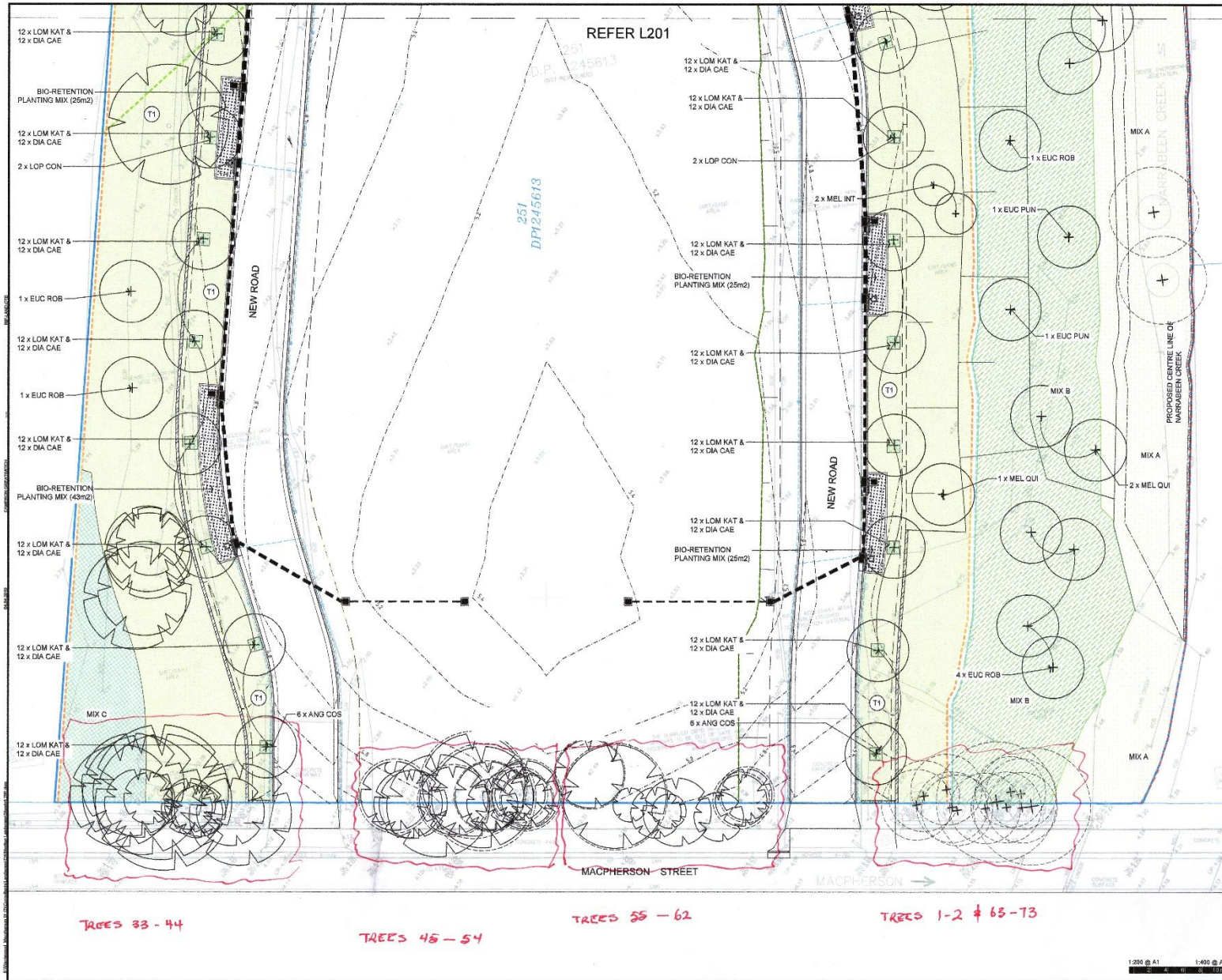
**(TPZ) Tree Protection Zone & Structural Root Zone (SRZ)** as defined by AS 4970 – 2009 Section 3

**(ULE)** The various ULE categories indicate the useful life anticipated for an individual tree or trees assessed as a group. Factors such as the location, age, condition and vitality of the tree are significant to the determination of this rating. Other influences such as the tree's effect on better specimens and the economics of managing the tree successfully in its location are also relevant to ULE (Barrell 1993, 1995, 2001).

# ULE RATING (UPDATED 1/4/01) BARRELL

1.Long ULE: Trees that appear to be retainable at the time of assessment for more than 40 years with an acceptable level of risk.	2.Medium ULE: Trees that appear to be retainable at the time of assessment for more than 15-40 years with an acceptable level of risk.	3.Short ULE: Trees that appear to be retainable at the time of assessment for more than 5-15 years with an acceptable level of risk.	4.Remove: Trees that should be removed within the next 5 years.	5.Small, young or regularly pruned: Trees that can be reliably moved or replaced.
(A) Structurally sound trees located in positions that can accommodate future growth	(A) Trees that may only live between 15 and 40 more years.	(A) Trees that may only live between 5 and 15 more years.	(A) Dead, dying, suppressed or declining trees because of disease or inhospitable conditions.	(A) Small trees less than 5 Metres in height.
(B) Trees that could be made suitable for retention in the long term by remedial tree care.	(B) Trees that could live for more than 40 years but may be removed for safety or nuisance reasons.	(B) Trees that could live for more than 15 years but may be removed for safety or nuisance reasons.	(B) Dangerous trees because of instability or recent loss of adjacent trees.	(B) Young trees less than 15 years old but over 5 metres in height.
(C) Trees of special significance for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long term retention.	(C) Trees that could live for more than 40 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting.	(C) Trees that could live for more than 15 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting.	(C) Dangerous trees because of structural defects including cavities, decay, included bark, wounds or poor form.	(C) Formal hedges and trees intended for regular pruning to artificially control growth.
	(D) Trees that could be made suitable for retention in the medium term by remedial tree care.	(D) Trees that require substantial remedial tree care and are only suitable for retention in the short term.	(D) Damaged trees that are clearly not safe to retain.	
			(E) Trees that could live for more than 5 years but may be removed to prevent interference with more suitable individuals or to provide space for new planting.	
			(F) Trees that are damaging or may cause damage to existing structures within 5 years.	
			(G) Trees that will become dangerous after removal of other trees for the reasons given in (A) to (F).	
			(H) Trees in categories (A) to (G) that have a high wildlife habitat value and, with appropriate treatment, could be retained subject to regular review.	

# Annexure B: Tree location plans



DO NOT SCALE  
USE PLANNED DIMENSIONS AT ALL TIMES. IF IN DOUBT CHECK WITH MERITON  
ANNEXURE B: TREE LOCATION PLANS. THIS PLAN AND ANY OTHER PLANS OR DOCUMENTS TO WHICH IT REFERS ARE THE PROPERTY OF MERITON GROUP PTY LTD. NO PART OF THIS PLAN OR ANY OTHER PLANS OR DOCUMENTS TO WHICH IT REFERS ARE TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF MERITON GROUP PTY LTD. THIS PLAN AND ANY OTHER PLANS OR DOCUMENTS TO WHICH IT REFERS ARE TO BE USED IN CONNECTION WITH THE PROJECT AND ARE NOT TO BE USED FOR ANY OTHER PURPOSE. THE USER OF THIS PLAN AND ANY OTHER PLANS OR DOCUMENTS TO WHICH IT REFERS IS TO BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE RELEVANT AUTHORITIES PRIOR TO THE COMMENCEMENT OF WORK AND DURING THE CONSTRUCTION PHASE.

**DISCLAIMER**  
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**GENERAL NOTES**

SEE PLAN

#	REV	DATE	BY	CHK	APP
1	001	06.04.19	W	J	
2	002	07.12.19	W	J	
3	003	07.12.19	W	J	
4	004	07.12.19	W	J	
5	005	07.12.19	W	J	
6	006	07.12.19	W	J	
7	007	07.12.19	W	J	
8	008	07.12.19	W	J	
9	009	07.12.19	W	J	
10	010	07.12.19	W	J	

**REVISIONS**

#	REV	DATE	BY	CHK	APP
1	001	06.04.19	W	J	
2	002	07.12.19	W	J	
3	003	07.12.19	W	J	
4	004	07.12.19	W	J	
5	005	07.12.19	W	J	
6	006	07.12.19	W	J	
7	007	07.12.19	W	J	
8	008	07.12.19	W	J	
9	009	07.12.19	W	J	
10	010	07.12.19	W	J	

**REVISIONS**

**PROJECT INFORMATION**

PROJECT: 2 MACPHERSON ST, WARRIWOOD

CLIENT: 2 MACPHERSON ST, WARRIWOOD

DATE: 06.04.19

SCALE: 1:200 @ A1, 1:400 @ A3

DRAWN BY: W

CHECKED BY: J

APPROVED BY: W

DATE: 06.04.19

PROJECT: 2 MACPHERSON ST, WARRIWOOD

CLIENT: 2 MACPHERSON ST, WARRIWOOD

DATE: 06.04.19

SCALE: 1:200 @ A1, 1:400 @ A3

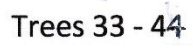
DRAWN BY: W

CHECKED BY: J

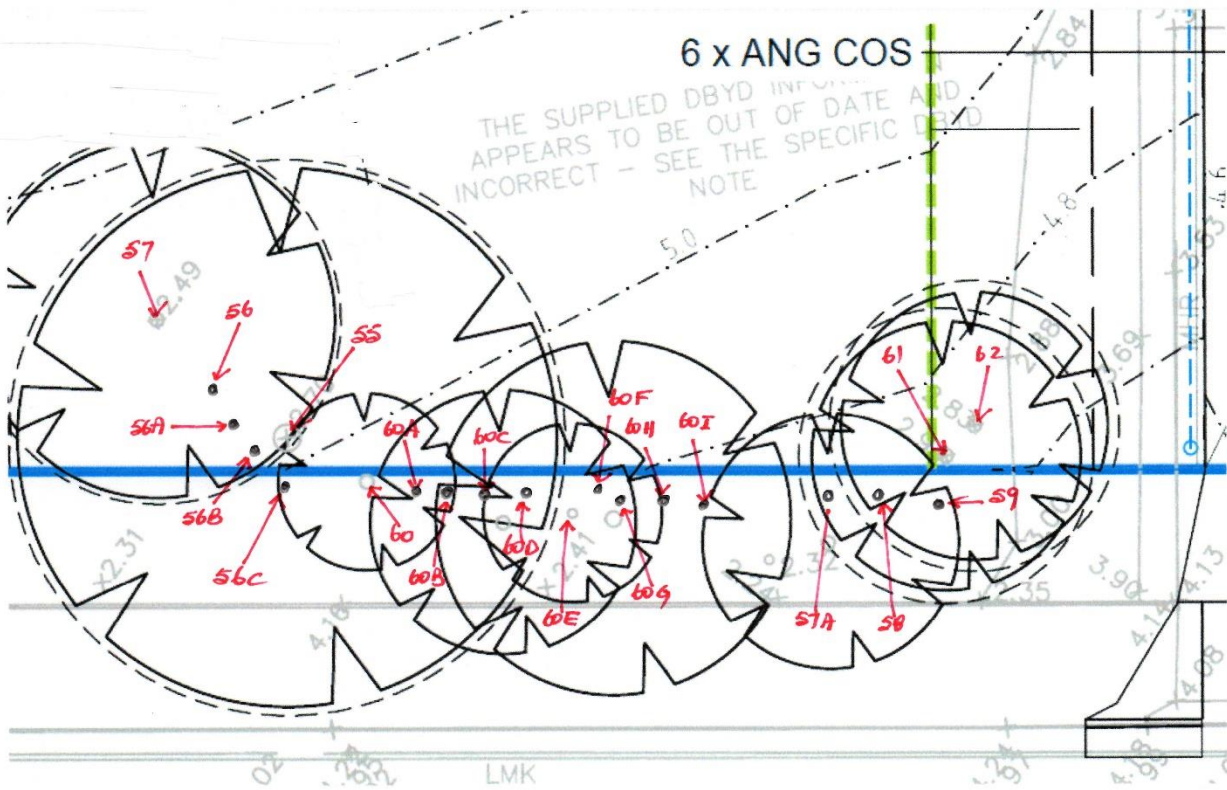
APPROVED BY: W

DATE: 06.04.19

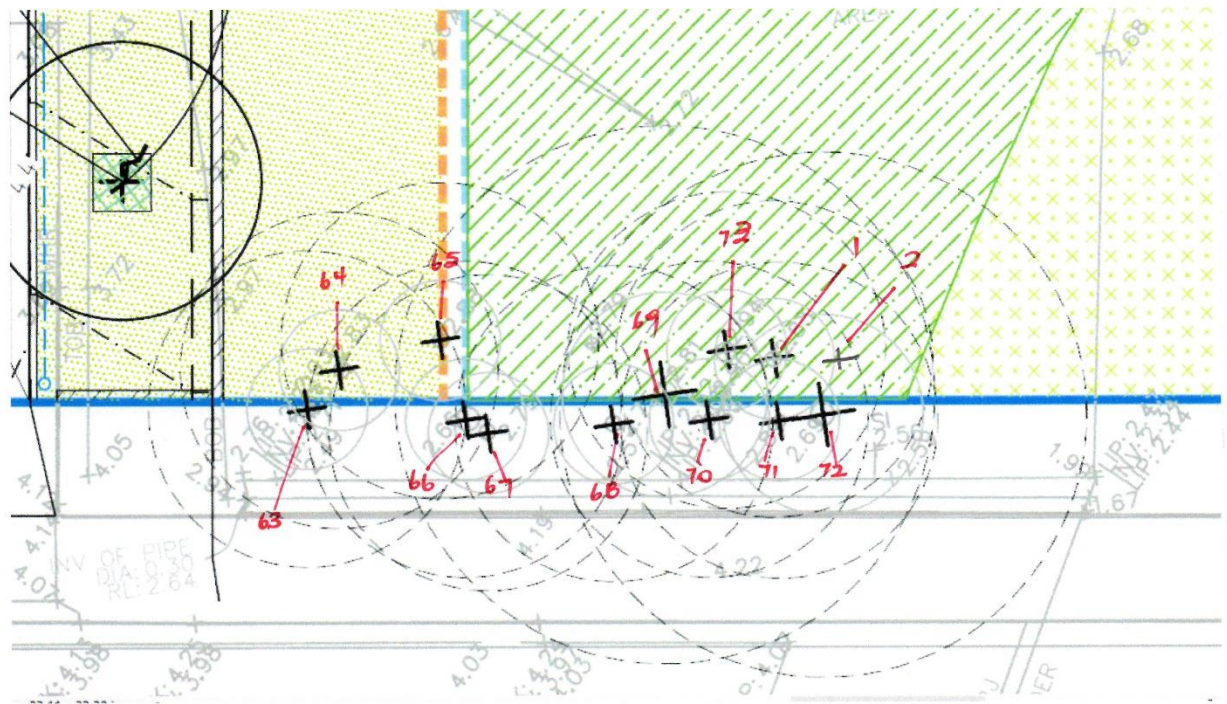






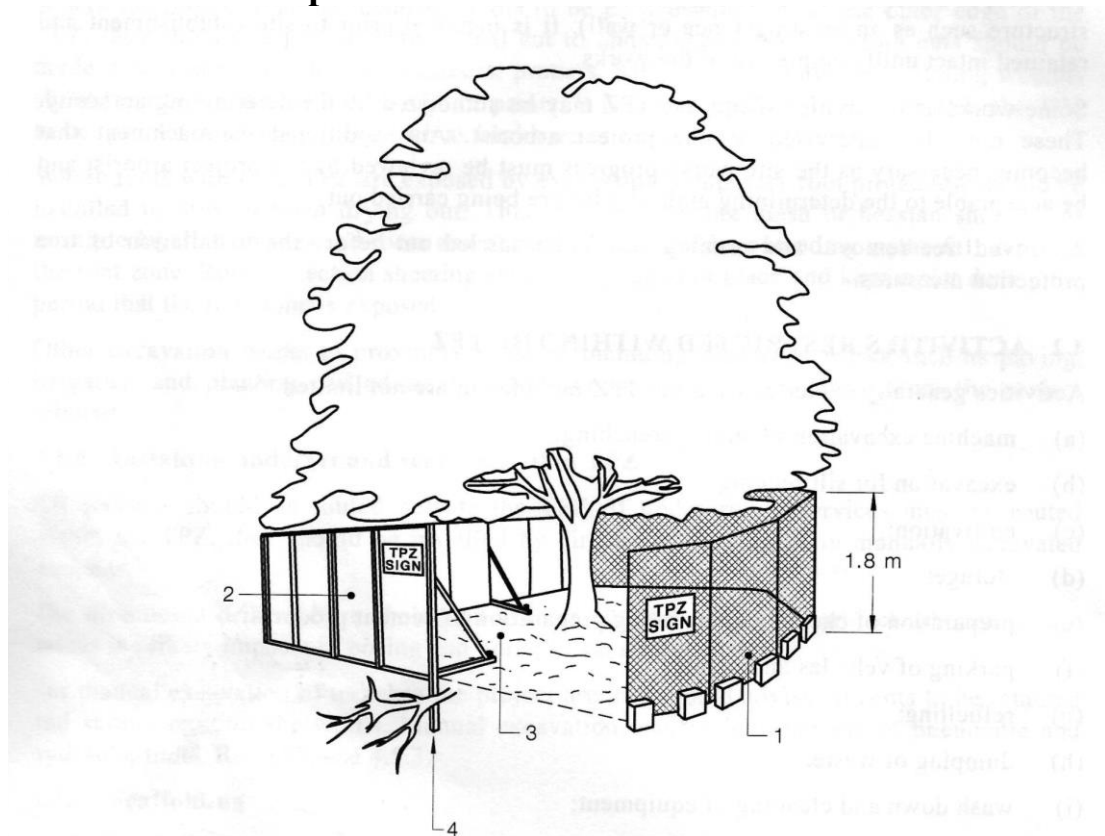


Trees 55 - 62



Trees 1 - 2 & 63 - 73

## Annexure C: Tree protection details



### LEGEND:

- 1 Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
- 2 Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ.
- 3 Mulch installation across surface of TPZ (at the discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.
- 4 Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots.

FIGURE 3 PROTECTIVE FENCING