JACKSONS NATURE WORKS
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ARBORICULTURAL IMPACT ASSESSMENT REPORT

At

1795 – 1797 Pittwater Road and 38 Park Street Mona Vale

Prepared for

Mona Vale 3 Pty Ltd

25th September 2019

Prepared by: Ross Jackson
Graduate Certificate in Arboriculture (AQF L 8)
Dip. Horticulture (Arboriculture – AQF L 5)
Certificate III in Horticulture (Arboriculture)
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DISCLAIMER

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 METHODODOLGY

1.1 The purpose of this Tree Report is to inform and accompany the development application works at 1795 – 1797 Pittwater Road and 38 Park Street, Mona Vale – The Site.

1.2 The report was commissioned by Mona Vale 3 Pty Ltd 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 three properties with gardens at Mona Vale.

1.5 The trees were identified by ground level Visual Tree Assessment (VTA) [1] only in the data collection, taken on 2nd April 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)[2].

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

[2] 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

A systematic pre-development tree assessment procedure developed by Jeremy Barrell, Hampshire, England. It gives a length of time that the Arborist feels a particular tree can be retained with an acceptable level of risk based on the information available at the time of the inspection. SULE ratings are Long (retainable for 40 years or more with an acceptable level of risk), Medium, (retainable for 16 – 39 years), Short (retainable for 5 – 15 years) and Removal (tree requiring immediate removal due to imminent hazard or absolute unsuitability).

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.

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

- Detail survey by DP Surveying, dated 16.1.2019;
- Architectural plans by Gartner Trovato Architects, dated 3.9.2019 Rev B;
- Landscape plan by Gartner Trovato Architects, dated 24.9.2019, Rev A;
- 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 (2.4.2019)

2.1 Our tree observations can be found in Annexure A.

3. DISCUSSIONS

3.1 We have been commissioned by Mona Vale 3 Pty Ltd, to examine the health and condition of the trees on and around this development site.

It is proposed to demolish the existing and the construction of a Seniors Living Development on Site (development works).

3.2 We have examined the trees on site and can suggest the following considerations for the development works:

1. The following street trees are located along Pittwater Road and Park Street: Tree 1 *Grevillea robusta*, tree 2 & 3 *Melaleuca quinquenervia* and tree 27 & 28 *Corymbia maculata*. The following trees can be retained as part of the development works as the encroachment is considered acceptable as the existing concrete pedestrian footpath has restricted root growth onto the Site: Tree 27 & 28 – note these trees for retention. Tree 2 is within the proposed driveway to the basement parking and will need to be removed. Tree 1 & 3 are causing issues for Council along Pittwater Road and have been requested to be removed. To compliment the streetscape trees are being planted at the Site frontage along Pittwater Road to maintain the appearance of street trees. Note the following trees for retention: Tree 27 & 28 and tree 1, 2 & 3 for removal in the Tree Management Plan (TMP);

2. The following trees are found on site and the neighbour's properties: Tree 4 *Glochidion ferdinandi* (good vitality), tree 7 *Michelia figo* (good vitality), tree 8 *Magnolia grandiflora* (good vitality), tree 23 *Acmena smithii* (good vitality but heavily suppressed by tree 31), tree 25 *Melaleuca quinquenervia* (good vitality & next

door site), tree 26 *Callistemon saligna* (good vitality & next door site), tree 36 *Ulmus carpinifolia Variegata* (good vitality), tree 38 *Livistona australis* (good vitality), tree 43 *Cedrus deodara* (good vitality).

The development works have the following encroachments within each of these trees: Tree 4 <10% of TPZ, tree 7 <10% of TPZ, tree 8 <10% of TPZ, tree 23 > 10% of the TPZ which will compromise the stability and viability of this tree, tree 25 >10% of TPZ but existing brick wall & concrete footing has restricted root growth across the boundary (refer plate 1), tree 26 >10% of TPZ but existing brick wall & concrete footing has restricted root growth across the boundary (refer plate 1), tree 36 <10% of the TPZ, tree 38: 100% of TPZ, tree 43: 30% of the TPZ, but with the existing building and the height differential to the northern property (roots not growing under existing building and into the next door site plus with the pathway & entry being at or above grade the encroachments are considered acceptable to ensure the retention of this tree) – refer Annexure C.

Plate 1 – tree 43

In view of the above comments and site conditions it is proposed to retain the following trees: Tree 4, 7, 8, 25, 26, 36 & 43. Removal of tree 23 is proposed.

Tree 38 can be easily transplanted on site rather than merely cutting down this endemic palm.

Note the retention and protection of Trees 4, 7, 8, 25, 26, 36 & 43 with the removal of 23 and the transplanting of tree 38 in the TMP;

3. The following trees are classified as Exempt trees in Council's TPO: Tree 5, 10A, 16 *Ligustrum lucidum*, tree 6 Dead tree, tree 9, 17, 32 *Grevillea robusta*, tree 10, 11, 22, 33, 34, 37, 39, 40, 41, 42, *Jacaranda mimosifolia*, tree 12, 13, 14, 15, 18, 29, 44 *Cupressus sempervirens*, tree 19 & 20 *Syagrus romanzoffiana*, tree 21 *Morus nigra*, tree 24 *Brachychiton acerifolius*, tree 30 *Olea europaea subsp. Cupsidata*, tree 31 *Cinnamomum camphora*, tree 35 *Pittosporum undulatum & Cotoneaster sp.* tree 45 *Lagerstroemia indica*.

It is proposed to retain the following Exempt trees on site: Tree 22, 24, 30, 35, & 45 as part of the development works.

All other Exempt trees will be removed.

Note the retention of the following Exempt trees: Trees 22, 24, 30, 35 & 45 with the removal of all the other Exempt trees in the TMP.

4. RECOMMENDATIONS

In consideration of the data collected recommendations are provided for the removal or retention of trees including specific tree protection measures required to reduce the anticipated impacts from the proposed construction on those trees proposed to be retained.

The report specifically recommends:

a. The retention of the following street tree: Tree 27 & 28;
b. The removal of the following street trees: Tree 1, 2 & 3;
c. The replanting of two street trees in Park Street to compensate for the removal of Trees 2 & 3 in compliance with Council's Street Tree Planting Policy;
d. The retention of the following trees on site: Tree 4, 7, 8, 22, 24, 30, 35, 36, 43 & 45;
e. The retention of the following neighbour's trees: Tree 25 & 26;
f. The removal of the following trees on site: Tree 23,
g. The transplanting of the following tree on site: Tree 38;
h. The removal of the following Exempt trees on site: Tree 5, 6, 9, 10, 10A, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 29, 31, 32, 33, 34, 37, 39, 40, 41, 42, 44;
i. 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);*
j. Install the following Tree Protection Measures around the retained trees on site: 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. 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;
k. Trunk protection shall consist of a padding material such as hessian or thick carpet underlay wrapped around the trunk. Timber planks (50mm x 100mm or similar) shall be placed over the padding and around the trunk of the tree at 150mm centres. The planks shall be secured with 8-gauge wire or hoop steel at 300mm spacing. Trunk protection shall extend a minimum height of 2 metres on tree 1, 4, 7, 8, 30, 36, 43 – refer Annexure D;
l. That a Tree Management Plan & Palm Transplant Methodology 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;
m. An AQF Level 5 Project Arborist shall be engaged to supervise the building works and certify compliance with all Tree Protection Measures.

n. The tree location plan can be found on Annexure B; &
o. The tree impact plan can be found on Annexure C.

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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	*Grevillea robusta*	M	12	4	31	36	3.7	2.2	G vitality, ST, crown-lifted OHPL	2a
2	*Melaleuca quinquenervia*	M	8	5	62	52	7.4	2.5	F vitality, ST, OHPL pruning	2a
3	*Melaleuca quinquenervia*	M	6	6	52	60	6.2	2.7	F vitality, ST, OHPL pruning	2a
4	*Glochidion ferdinandi*	M	8	8	52	66	6.2	2.8	G vitality	2a
5	*Ligustrum lucidum*	M	-	-	-	-	-	-	Exempt species	-
6	*Dead Tree*	D	-	-	-	-	-	-	Exempt species	4a
7	*Michelia figo*	M	6	6	6 x 10	46	2.7	2.4	G vitality	2b
8	*Magnolia grandiflora*	M	7	4	28	36	3.4	2.2	G vitality	2a
9	*Grevillea robusta*	M	14	8	76	94	9.1	3.2	Exempt species	-
10	*Jacaranda mimosifolia*	M	8	10	4 x 16	32	3.8	2.1	Exempt species	-
10A	*Ligustrum lucidum & Nerium oleander*	M	3	-	-	-	-	-	Exempt species	4e
11	*Jacaranda mimosifolia*	M	8	5	30	32	3.6	2.1	Exempt species	-
12	*Cupressus sempervirens*	M	10	6	46, 28	62	6.5	2.7	Exempt species	-
13	*Cupressus sempervirens*	M	10	6	50	58	6.0	2.6	Exempt species	-
14	*Cupressus sempervirens*	M	10	6	32, 38	48	6.0	2.4	Exempt species	-
15	*Cupressus sempervirens*	M	10	6	42	52	5.0	2.5	Exempt species	-
16	*Ligustrum lucidum*	M	-	-	-	-	-	-	Exempt species	-
17	*Grevillea robusta*	M	12	10	64	76	7.7	2.9	Exempt species	-
18	*Cupressus sempervirens*	M	7	5	32	38	3.8	2.2	Exempt species	-
19	*Syagrus romanzoffiana*	M	-	-	-	-	-	-	Exempt species	-
20	*Syagrus romanzoffiana*	M	-	-	-	-	-	-	Exempt species	-
21	*Morus nigra*	M	3	3	60	80	7.2	3.0	Exempt species	-
22	*Jacaranda mimosifolia*	M	10	14	52	54	6.2	2.6	Exempt species	-

23	*Acmena smithii*	M	9	8	2 x 30	59	5.1	2.7	G vitality, heavily suppressed North by T31	2a
24	*Brachychiton acerifolius*	M	9	5	34	38	4.1	2.2	Exempt species	-
25	*Melaleuca quinquenervia*	M	11	10	100	88	12.0	3.1	G vitality, mulit-trunk, ND	2a
26	*Callistemon saligna*	M	9	6	2 x 32	42	5.4	2.3	G vitality, ND	2a
27	*Corymbia maculata*	M	12	12	55	61	6.6	2.7	G vitality, ST	2a
28	*Corymbia maculata*	M	10	8	30	42	3.6	2.3	G vitality, ST	2a
29	*Cupressus sempervirens*	M	7	2	20	22	2.4	1.8	Exempt species	-
30	*Olea europaea subsp. Cupsidata*	M	9	7	40	44	4.8	2.3	Exempt species	-
31	*Cinnamomum camphora*	M	12	12	92	110	11.0	3.4	Exempt species	-
32	*Grevillea robusta*	M	14	10	46	56	5.5	2.6	Exempt species	-
33	*Jacaranda mimosifolia*	M	8	8	34	38	4.1	2.2	Exempt species	-
34	*Jacaranda mimosifolia*	M	10	10	2 x 32	44	5.4	2.3	Exempt species	-
35	*Pittosporum undulatum & Cotoneaster sp*	M	7	7	28	30	3.4	2.0	Exempt species	-
36	*Ulmus carpinifolia 'Variegata'*	M	9	7	34	38	4.1	2.2	G vitality	2a
37	*Jacaranda mimosifolia*	M	9	10	47	53	5.6	2.5	Exempt species	-
38	*Livistona australis*	M	10	6	50	58	6.0	2.6	G vitality, vine up trunk > 5m	2a
39	*Jacaranda mimosifolia*	M	8	6	17	22	2.0	1.8	Exempt species	-
40	*Jacaranda mimosifolia*	M	8	3	14	16	2.0	1.5	Exempt species	-
41	*Jacaranda mimosifolia*	M	8	4	14	16	2.0	1.5	Exempt species	-
42	*Jacaranda mimosifolia*	M	6	5	12, 12	21	2.0	1.7	Exempt species	-
43	*Cedrus deodara*	M	12	14	85	92	10.2	3.2	G vitality, second leader @ 3m, topped @ 4m	2a
44	*Cupressus sempervirens Variagata*	M	6	5	16, 18	30	2.9	2.0	Exempt species	-

45	*Lagerstroemia indica*	M	6	8	50	52	6.0	2.5	Exempt species	-

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

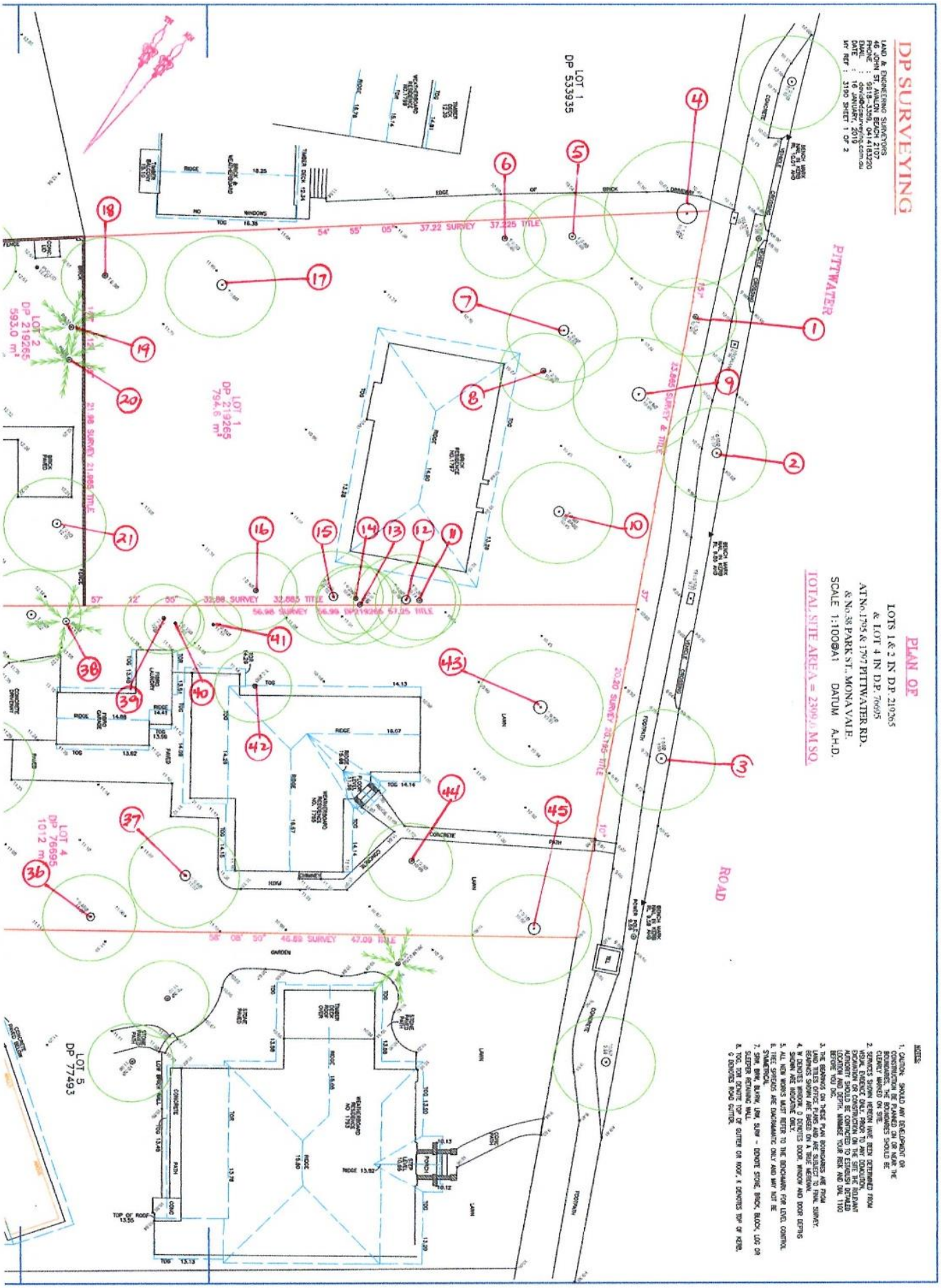
(ULE) The various ULE categories indicate the useful life anticipated for an individual tree or trees assessed as a group. Factors such as the location, age,

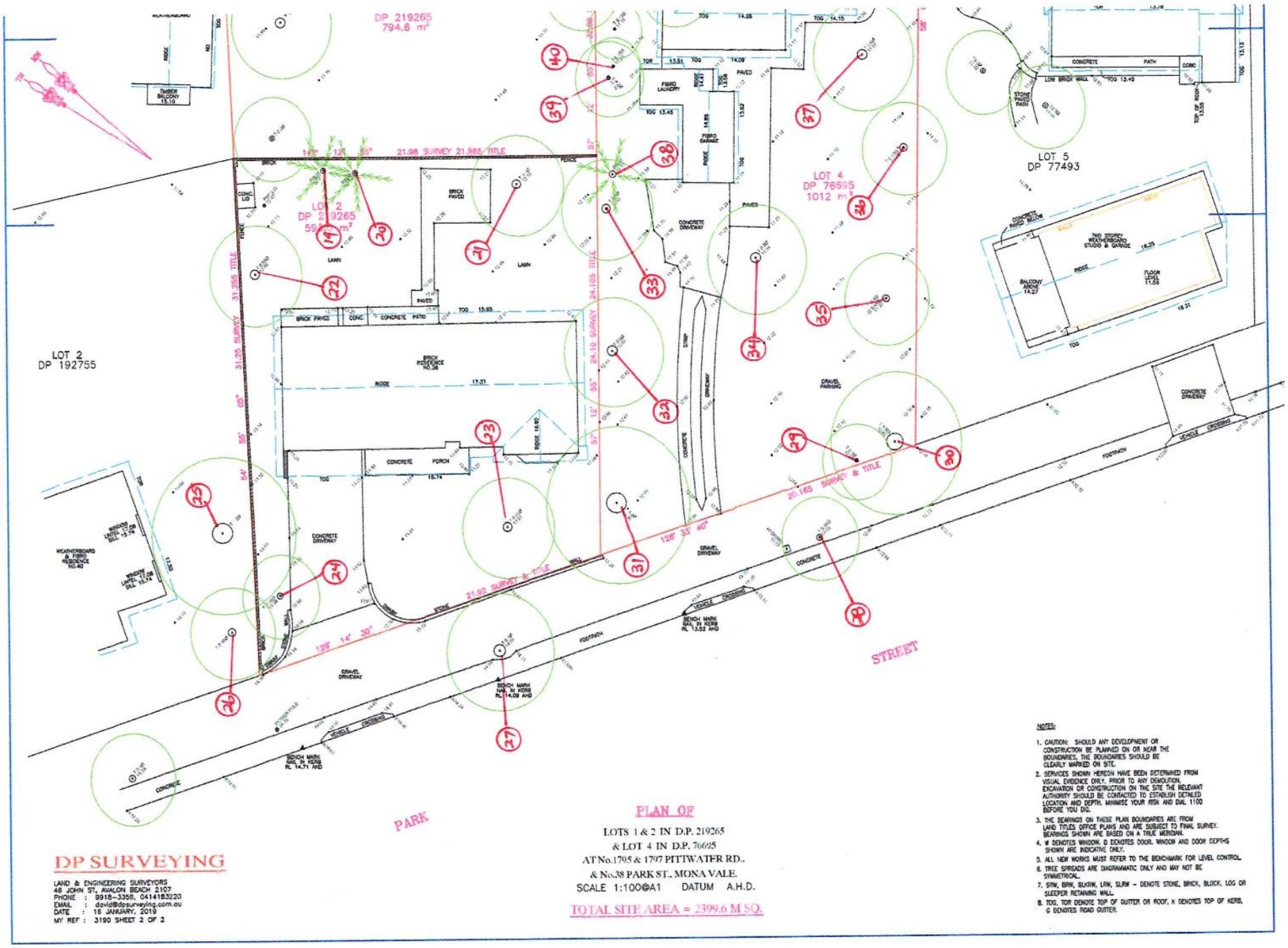
condition and vitality of the tree are significant to the determination of this rating. Other influences such as the tree's effect on better specimens and the economics of managing the tree successfully in its location are also relevant to ULE (Barrell 1993, 1995, 2001).

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





PLAN OF

LOTS 1 & 2 IN D.P. 219265
& LOT 4 IN D.P. 76695
AT No.1795 & 1797 PITTWATER RD.,
& No.38 PARK ST., MONA VALE.
SCALE 1:100@A1 DATUM A.H.D.

TOTAL SITE AREA = 2399.6 M SQ.

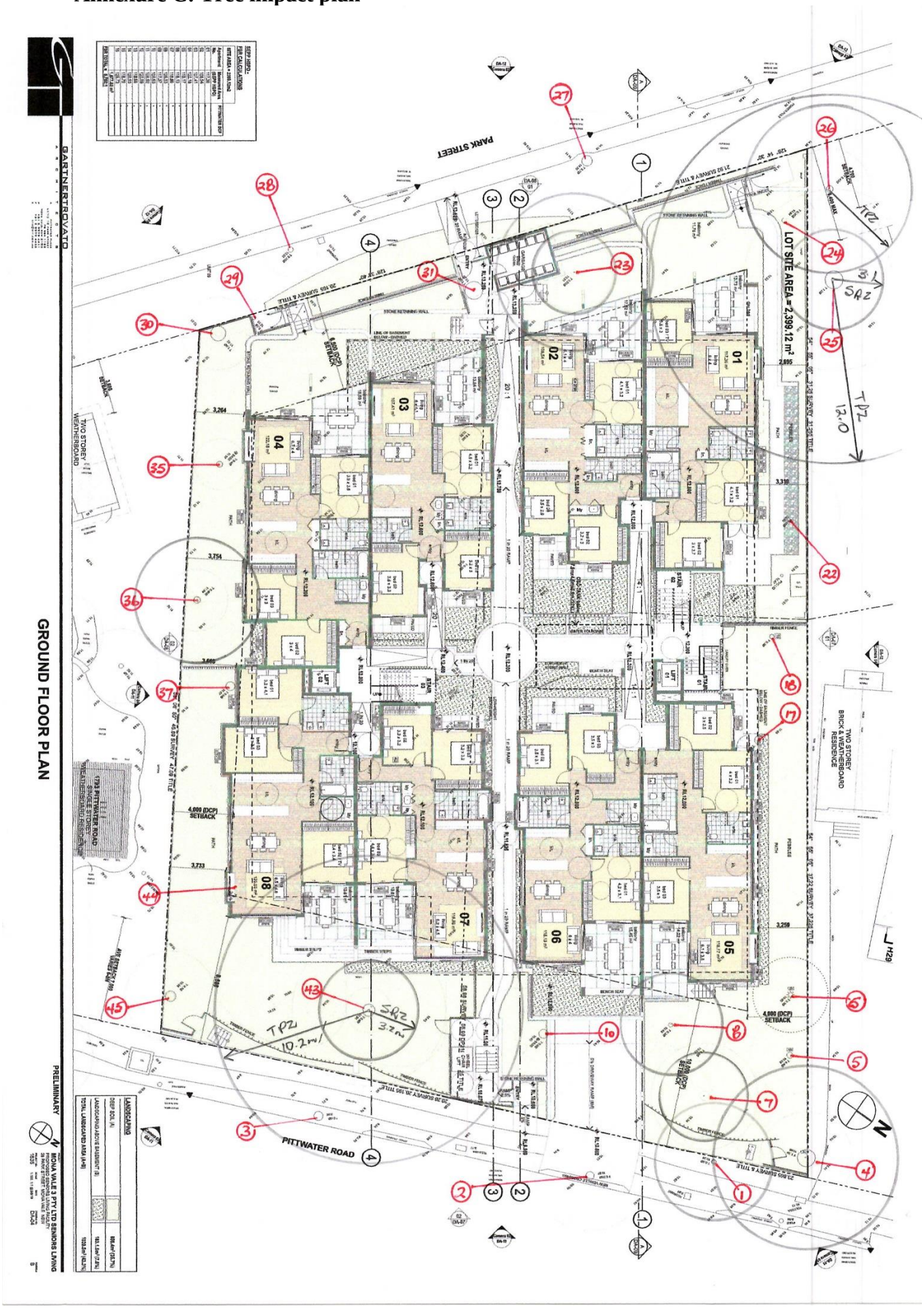
DP SURVEYING

LAND & ENGINEERING SURVEYORS
46 JOHN ST, AVALON BEACH 2107
PHONE : 9918-3358, 0414183220
EMAIL : david@dpsurveying.com.au
DATE : 16 JANUARY, 2019
MY REF : 3190 SHEET 2 OF 2

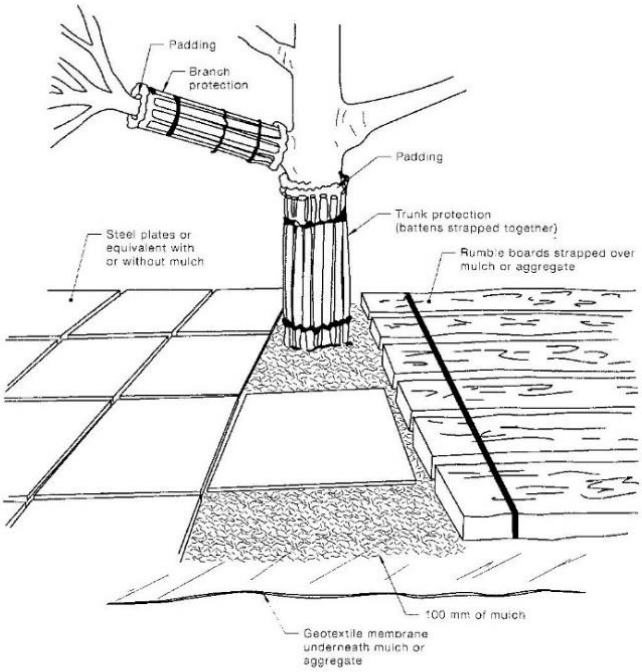
NOTES:

1. CAUTION: SHOULD ANY DEVELOPMENT OR CONSTRUCTION BE PLANNED ON OR NEAR THE BOUNDARIES, THE BOUNDARIES SHOULD BE CLEARLY MARKED ON SITE.
2. SERVICES SHOWN HEREON HAVE BEEN DETERMINED FROM VISUAL EVIDENCE ONLY. PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THE SITE THE RELEVANT AUTHORITY SHOULD BE CONTACTED TO ESTABLISH DETAILED LOCATION AND DEPTH. MINIMISE YOUR RISK AND DIAL 1100 BEFORE YOU DIG.
3. THE BEARINGS ON THESE PLAN BOUNDARIES ARE FROM LAND TITLES OFFICE PLANS AND ARE SUBJECT TO FINAL SURVEY. BEARINGS SHOWN ARE BASED ON A TRUE MERIDIAN.
4. W DENOTES WINDOW, D DENOTES DOOR. WINDOW AND DOOR DEPTHS SHOWN ARE INDICATIVE ONLY.
5. ALL NEW WORKS MUST REFER TO THE BENCHMARK FOR LEVEL CONTROL.
6. TREE SPREADS ARE DIAGRAMMATIC ONLY AND MAY NOT BE SYMMETRICAL.
7. STRW, BRW, SLKRW, LRW, SLRW – DENOTE STONE, BRICK, BLOCK, LOG OR SLEEPER RETAINING WALL.
8. TOG, TOR DENOTE TOP OF GUTTER OR ROOF, K DENOTES TOP OF KERB, G DENOTES ROAD GUTTER.

Annexure C: Tree impact plan



Annexure D: Tree & trunk protection



NOTES:

1 For trunk and branch protection use boards and padding that will prevent damage to bark. Boards are to be strapped to trees, not nailed or screwed.

2 Rumble boards should be of a suitable thickness to prevent soil compaction and root damage.

FIGURE 4 EXAMPLES OF TRUNK, BRANCH AND GROUND PROTECTION