

JACKSONS NATURE WORKS

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ARBORICULTURAL IMPACT ASSESSMENT REPORT

At

**14 – 22 Wentworth Street & 19 – 21 South Steyne
Manly**

Prepared for

Royal Far West

**10th June 2022 Revision 01.
AB-RPT - 0001**

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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.
- There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future; &
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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 works at Royal Far West Campus Redevelopment – 14 – 22 Wentworth Street & 19 – 21 South Steyne, Manly – The Site.
- 1.2 The report was prepared by Royal Far West 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 project sees the implementation of Stages 3 and 4 of the Concept Approval as modified (Application # MP10_0159 MOD 1) and involves the retention and alterations to the previously constructed Stages 1 and 2 (hospital facility "Centre for Excellence" now known as the 'CCK' building) as well as alterations and additions to Drummond House and the construction of mixed use buildings which incorporate tourist and visitor accommodation, residential apartments and retail/commercial uses with basement parking and landscaping.
- 1.5 The trees were identified by ground level Visual Tree Assessment (VTA) ¹ only in the data collection, taken on 27.1.2022. 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 Mattheck, Dr. Clause & Breloer, Helge (1994) – Sixth Edition (2001) **The Body Language of Trees – A Handbook for Failure Analysis** The Stationery Office, London, England

1.13 Useful Life Expectancy (ULE)².

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 Veris Australia Pty Ltd dated 25.2.2021.
- Architectural plans by Murcutt Candalepas updated Issue 1.
- 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 (27.1.2022)

2.1 Our tree observations can be found in Annexure A.

3. DISCUSSIONS

3.1 We have been commissioned by Royal Far West, to examine the health and condition of the trees on and around this development site.

It is proposed to undertake alterations and additions to the existing on Site (development works).

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

1. Trees 1, 2 & 3 *Araucaria heterophylla* are all showing good condition with Tree 2 showing minor die-back in its apical point and Tree 3 has an old basal injury (stable) – refer plates 1, 2 & 3.

These street trees have a high retention and landscape value.

These trees are growing in Wentworth Street in small garden beds surrounded by asphalt.

Despite the harsh environment these trees are thriving.

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

The development works is confined to the Site with a concrete kerb and gutter, then a segmented pavement and boundary walls. All of these structures have acted as a root barrier which then ensures their retention.

Before any construction works commence on Site, trunk protection and temporary fencing shall be installed – refer Annexure D.

Note these trees for retention and protection in the Tree Management Plan (TMP).



Plate 1: Tree 1



Plate 2: Tree 2



Plate 3: Tree 3.

2. The following trees are located within the proposed building footprint: Tree 4, 5, 6 & 7 *Callistemon viminalis* (fair vitality, fair vitality, good vitality & fair vitality), tree 8 *Callistemon viminalis* (Exempt tree <5m), tree 9 *Hibiscus rosa-sinensis* (Exempt tree <5m), tree 10 *Murraya paniculata* (Exempt tree <5m), tree 11 *Hibiscus rosa-sinensis* (fair – good vitality), tree 12 & 13 *Coprosma repens* (Exempt tree <5m) – refer plates 4, 5, 6.

These trees are a mixture of protected trees (4, 5, 6, 7, 11) and Exempt species (8, 9, 10, 12 & 13) with an assessed low retention value (can be easily replaced in the landscape works).

Removal of these trees is supported with the replanting of replacement trees on site.

Note these trees for removal in the TMP.



Plate 4: Trees 4 – 10.



Plate 5: Trees 10 – 4.



Plate 6: Trees 11, 12 & 13.

3. Tree 14 *Araucaria columnaris* is showing good vitality and has been pruned away from the existing buildings on site – refer plate 7.

This tree is located in the adjoining site to the east of the site and has a high retention value.

The development works near this tree are over the existing building footprint which will not result in any root disturbance. Plus, no canopy pruning is required.

The scaffolding can be installed with any small branches can be tied back or carefully push away.

During the construction works the appointed project arborist shall be present to monitor if any roots from this tree have grown beyond the existing building and its foundations when undertaking localised excavations.

If required a root mapping investigation shall detail the size, location and depth of any roots from this tree to determine the potential impact on its stability, viability and longevity. This report will form the basis of actions to retain Tree 14.

The root mapping shall be undertaken by an experienced arborist who holds AQF Level 5 in Horticulture (Arboriculture) and

Note this neighbour's tree for retention in the TMP.



Plate 7: Tree 14.

4. Tree 15 *Schefflera actinophylla* is showing good vitality and has been pruned away from the existing buildings on site – refer plate 8.

This tree is located in the adjoining site to the east of the site.

The development works near this tree are over the existing building footprint which will not result in any root disturbance. Plus, no canopy pruning is required.

The scaffolding can be installed and any small branches should be tied back or carefully pushed away.

The same monitoring of this tree shall be undertaken during localised excavations by the appointed project arborist with AQF Level 5.

Note this neighbour's tree for retention in the TMP.

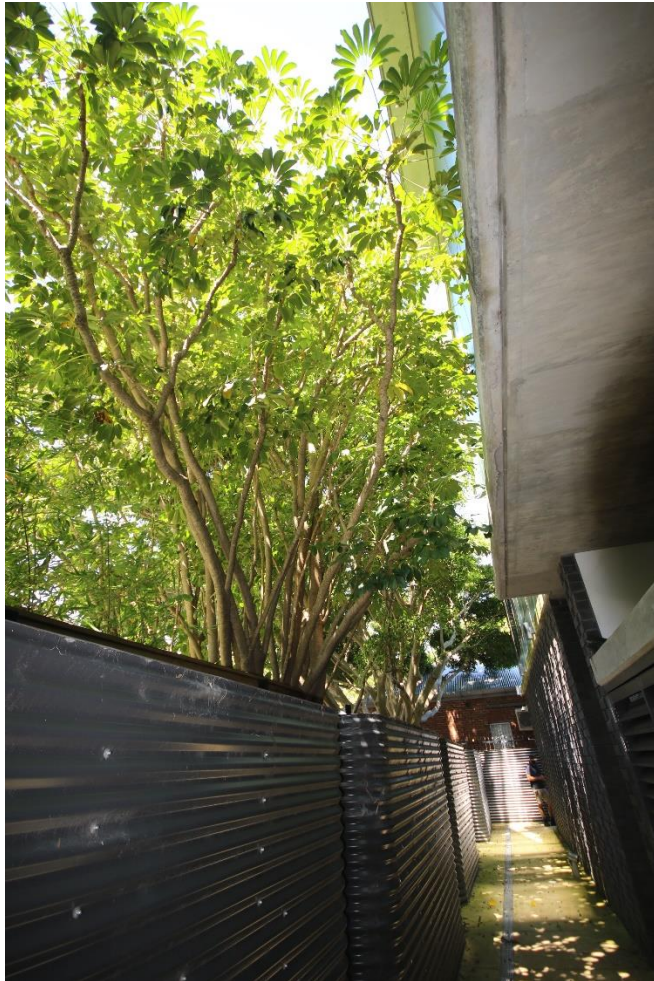


Plate 8: Tree 15.

5. Tree 16 *Ficus benjamina* is showing good vitality and has been pruned away from the existing buildings on site – refer plate 9.

This tree is located in the adjoining site to the east of the site.

The development works near this tree are over the existing building footprint which will not result in any root disturbance. Plus, no canopy pruning is required.

The scaffolding can be installed with any small branches can be tied back or carefully push away.

The same monitoring of this tree shall be undertaken during localised excavations by the appointed project arborist with AQF Level 5.

Note this neighbour's tree for retention in the TMP.



Plate 9: Tree 16.

4. RECOMMENDATIONS

The following recommendations are advised:

- a) Retain the following council street trees: Trees 1, 2 & 3
- b) Remove the following tree on site: Trees 4, 5, 6, 7, 8, 9, 10, 11, 12 & 13.
- c) Retain the following trees in the next-door site: Tree 14, 15 & 16.
- d) 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)*.
- e) Install the following Tree Protection Measures around the retained street trees: Tree 1, 2 & 3, 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 – refer Annexure D.
- f) 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 trees 1, 2 & 3 – refer Annexure D.

- g) Install the following Tree Protection Measures around the retained trees: Trees 1, 2, 3, 14, 15 & 16, 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 – refer Annexure D.
- h) 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.
- i) An AQF Level 5 Project Arborist shall be engaged to supervise the building works and certify compliance with all Tree Protection Measures and to undertake root mapping details near Tree 14, 15 & 16.
- j) The tree location plan can be found on Annexure B; &
- k) 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	<i>Araucaria heterophylla</i>	M	16	8	80	110	9.6	3.4	G vitality, ST, growing in road reserve.	1
2	<i>Araucaria heterophylla</i>	M	16	8	80	95	9.6	3.2	G vitality, ST, apical dead	1
3	<i>Araucaria heterophylla</i>	M	16	8	95	130	11.4	3.7	G vitality, ST, basal injury	1
4	<i>Callistemon viminalis</i>	M	5	2	15	20	2.0	1.7	F vitality, suppressed	3
5	<i>Callistemon viminalis</i>	M	5	3	15	20	2.0	1.7	F vitality, suppressed	3
6	<i>Callistemon viminalis</i>	M	6	6	20	25	2.4	1.8	G vitality	3
7	<i>Callistemon viminalis</i>	M	5	4	10, 15	25	2.2	1.8	F vitality, suppressed	3
8	<i>Callistemon viminalis</i>	M	4	2	10	15	2.0	1.5	Exempt species <5m.	4
9	<i>Hibiscus rosa-sinensis</i>	M	4	4	2 x 10	20	2.0	1.7	Exempt species <5m.	4
10	<i>Murraya paniculata</i>	M	4	3	10	15	2.0	1.5	Exempt species <5m.	4
11	<i>Hibiscus rosa-sinensis</i>	M	5	4	15	20	2.0	1.7	F - G vitality, suppressed by building and roof.	3 (4c)
12	<i>Coprosma repens</i>	M	4	3	15	20	2.0	1.7	Exempt species <5m.	4
13	<i>Coprosma repens</i>	M	3	3	15	20	2.0	1.7	Exempt species <5m.	4
14	<i>Araucaria columnaris</i>	M	14	5	45	55	5.4	2.6	G vitality, ND, pruned away from building	1
15	<i>Schefflera actinophylla</i>	M	8	8	6 x 15	70	4.3	2.8	G vitality, ND, pruned away from building	2
16	<i>Ficus benjamina</i>	M	8	10	70	60	8.4	2.7	G vitality, ND, pruned away from building	1

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.

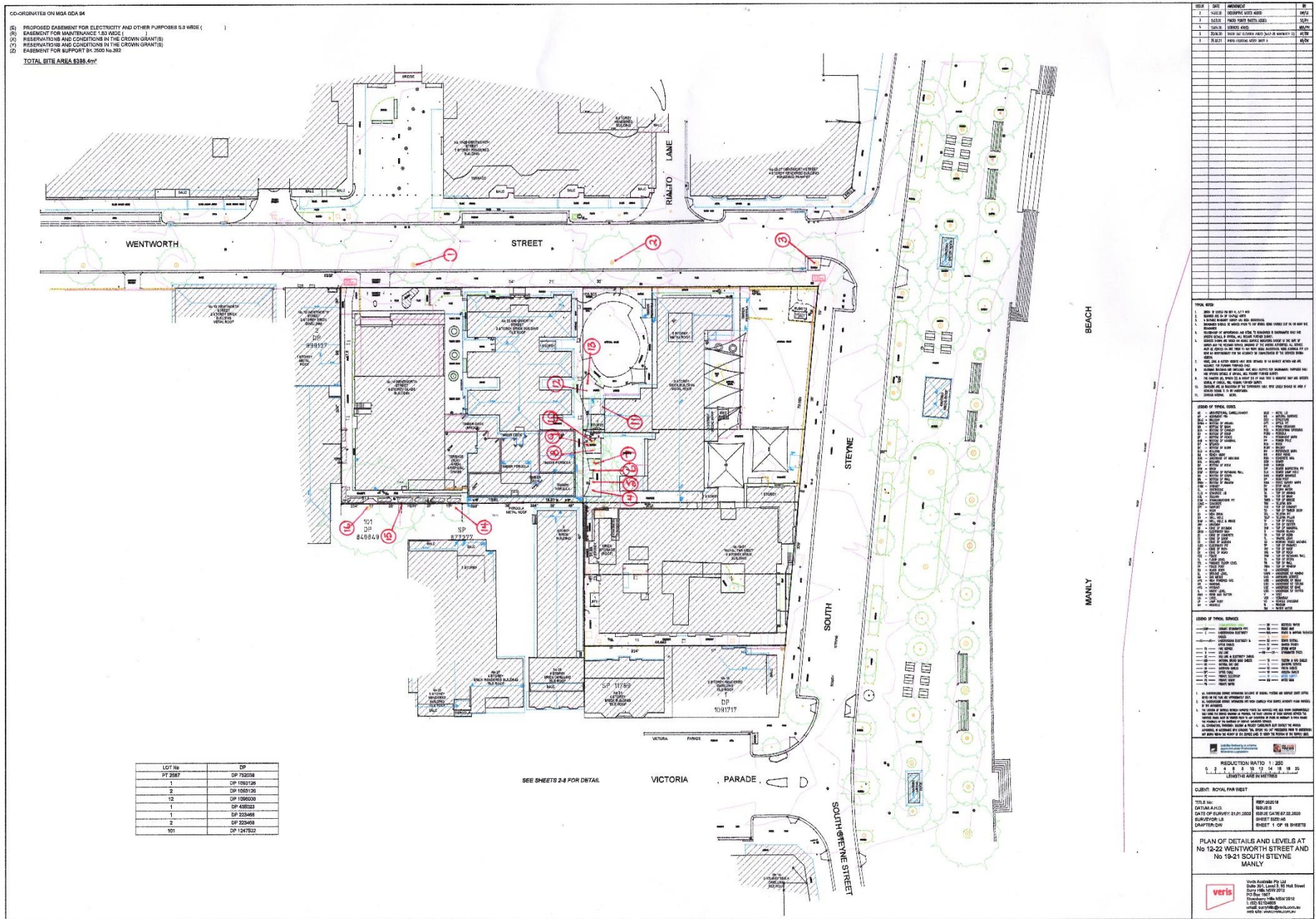
(TPZ) Tree Protection Zone & Structural Root Zone (SRZ) as defined by AS 4970 – 2009 Section 3

(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).

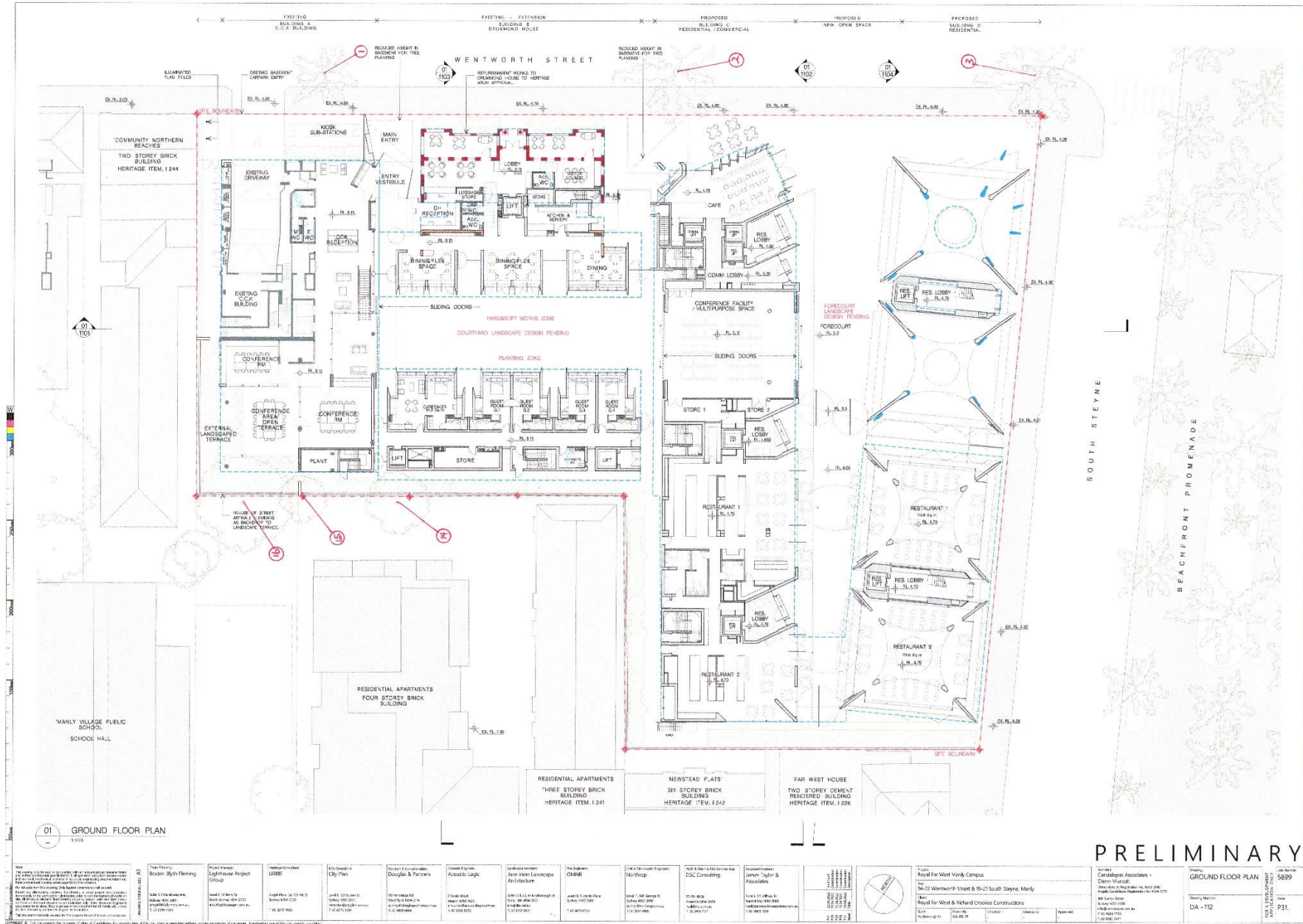
ULE RATING (UPDATED 1/4/01) BARRELL

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.	

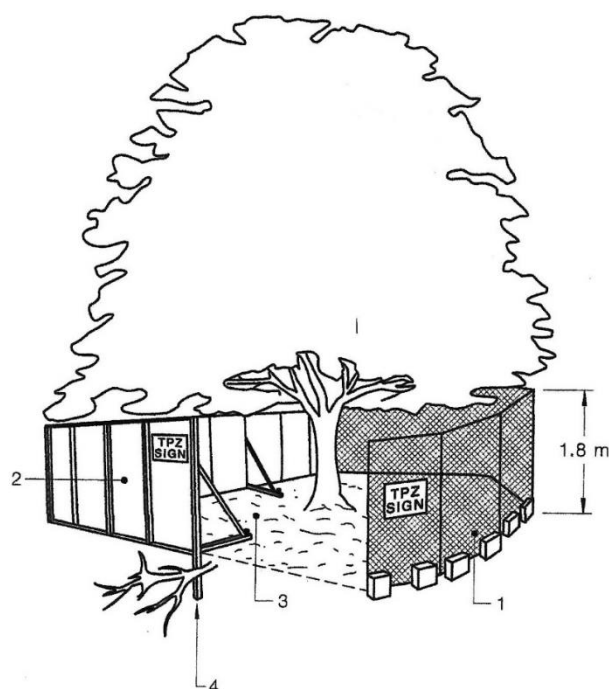
Annexure B: Tree location plan



Annexure C: Tree impact plan



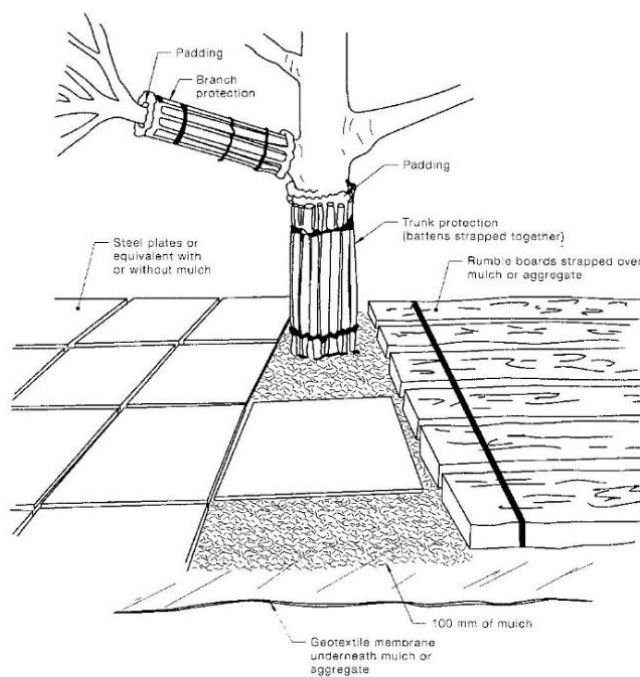
Annexure D: Tree protection details



LEGEND:

- 1 Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
- 2 Alternative plywood or wooden piling 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



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

