



ARBORICULTURAL IMPACT ASSESSMENT REPORT
FARNELL ST, FORBES

14 December 2023

Version 3

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c/- ADW Johnson

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INTRODUCTION

Background

This Arboricultural Impact Assessment was prepared for Mathew London of ADW Johnson concerning the subdivision proposed for Farnell and Dawson St, Forbes.

The site is located in the Forbes Shire Council area, which does not have a tree protection policy for trees on private land.

The report seeks to assess the impact of the proposed development on the trees and give recommendations and control measures to mitigate or reduce any negative impact on those trees.

In preparing this report, the author is aware of and considers the objectives of the:

- *Forbes Development Control Plan 2013 (Forbes DCP)*
- *Australian Standard AS 4970-2009 Protection of trees on development sites (AS4970)*
- *AS4790* has been used as a benchmark in preparing this report.

The following plans have been provided and referenced:

Project/ Title	Author	Date	Reference on document
Constraints Plan	ADW Johnson	23/08/2022	Dwg ref.: QS0502-CONS-001[A] Ver.: A
Detail and Contour Survey Upon Crown Land Lots	ADW Johnson	18/05/2023	Dwg ref.: 240380(2)-DET-001-A Ver.: A Pages 1 - 14
Forbes Subdivision – Plan Package, 3 Sheets.	ADW Johnson	17/08/2023	Proj. No.: 240380(2)-CENG No.: 001-003 Rev.:A
Forbes Subdivision – Proposed Subdivision Plan Package, 23 Sheets.	ADW Johnson	12/12/2023	Proj. No.: 240380(2)-CENG No.: 001-003, 101-104, 111, 201-206, 211, 401, 501-504, 801-805. Rev.:F

Methodology

A site visit was conducted on the 13th July 2023, to assess the relevant trees, collect data and make comments concerning the trees and the site.

The assessment is based upon a visual inspection from ground level using the Visual Tree Assessment (VTA) approach developed by Mattheck & Broeler (1994). The inspection was limited to a visual inspection of the trees without dissection, probing, aerial inspections (climbing) or tree root mapping. The assessment information relates to observations and data collected on the day of the inspection only and does not include changes after that.

Trunk diameter at breast height (DBH) was measured 1.4m above ground level (unless otherwise stated) using a Yamayo Diameter Tape. Tree heights were estimated. Tree Protection Zones (TPZ) were calculated using *AS4790* guidelines.

Aims

- Determine the impact of the proposed development on the subject trees.
- Identify the trees to be removed in relation to the proposed design.
- To give recommendations and control measures to mitigate or reduce any negative impact on the retained trees.
- Prepare tree protection measures for the retained trees.

OBSERVATIONS

The Site

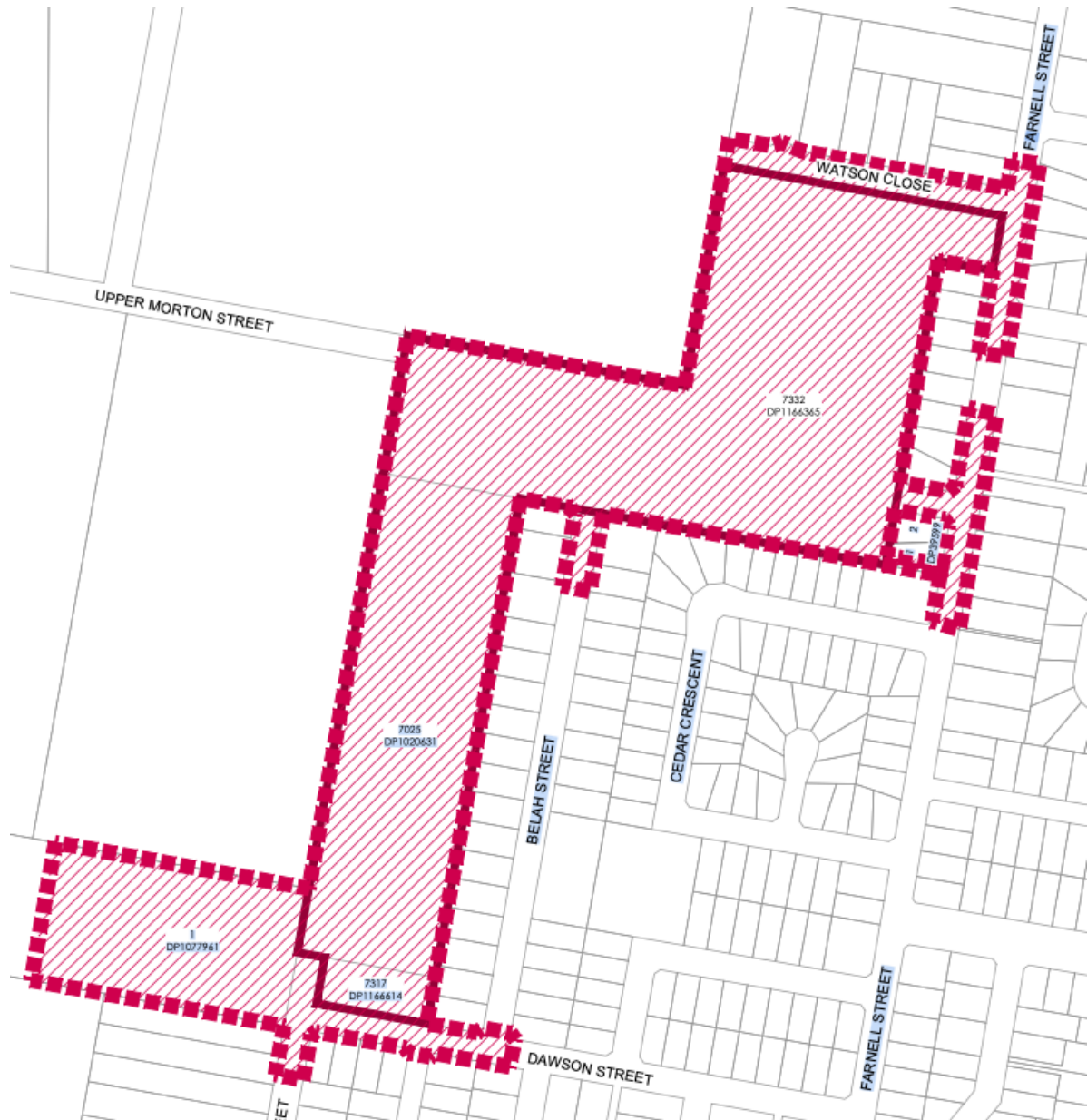


Figure 1 The area marked Red shows the onsite area considered for this report.

The Plan

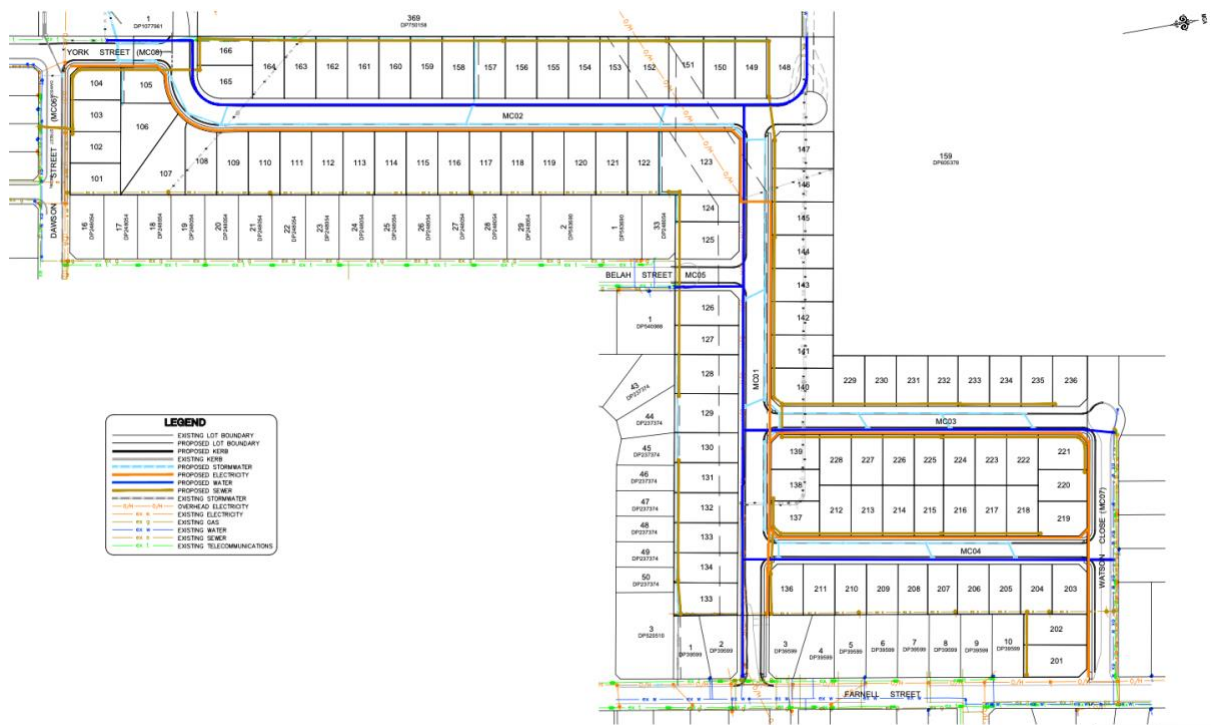


Figure 2 Servicing Plan, showing proposed stormwater (light Blue dash line) and sewer (Brown line).

Proposed Stormwater and Sewer

A proposed stormwater and sewer line will be installed along the western boundary, adjacent to Lot 369, and the south-eastern boundary north of Cedar Crescent.

The proposed stormwater trench will be offset from the property boundary by 1.7m.

The proposed sewer line trench will be installed beyond the adjacent stormwater trench and further away from the boundary.

The Trees

123 trees or tree groups are located onsite.

Only vegetation of tree species of significant size and landscape value have been included. This does not include large shrubs, hedge plants or woody weeds.

Refer to Appendix 1 for detailed tree data and Appendix 2 for the Tree Location Plan.

Onsite Trees

33 trees were found located onsite and may be removed without consent.

Protected Offsite Trees

90 trees were located close to the boundary line within adjacent properties or are street trees.

Under AS4970, these trees must be protected from development impact.

DISCUSSION

Tree Protection Zone (TPZ)

Australian Standard AS 4970-2009 Protection of trees on development sites (AS4970) defines the TPZ as 'A specified area above and below the 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 of a tree to be retained where it is potentially subjected to damage by development.'

AS4970 states, 'If the proposed encroachment is less than 10% of the TPZ or outside the SRZ, detailed root investigations should not be required. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ.' And 'If the encroachment is greater than 10% of the TPZ or inside the SRZ, the project arborist must demonstrate that the tree(s) would remain viable.'

Structural Root Zone (SRZ)

AS4970 defines the SRZ as 'The area around the base of a tree required for the tree's stability in the ground.'

Onsite Trees

All 33 onsite trees will be removed.

Protected Off Site Trees Impacted by the Development

The following trees are to be retained and have their TPZ encroached by the proposed stormwater trench.

Tree No.	TPZ Encroachment
7, 12, 26, 75, 79, 82, 84 – 90, 94 – 97, 100 - 104	Minor <10%
24, 25, 92, 98, 105, 107, 108	Major >10%

Note: All other trees not listed above have no TPZ encroachment and no impact on tree health.

Trees 7, 12, 26, 75, 79, 82, 84 – 90, 94 – 97, 100 – 104

These trees have a TPZ encroachment of under 10%, which is deemed a 'Minor encroachment' according to AS4970.

The trenching works is not expected to impact the tree's health significantly.

This is because the trees and the more significant percentage of their TPZs are located offsite within the adjacent backyards, and the ground within is not expected to be altered.

The area of TPZ lost due to the proposed development can be compensated for within the backyards in accordance with AS4970.

Trees 24, 92, 98 and 105

These trees have a TPZ encroachment of 10%. Under AS 4970, this is deemed a 'major encroachment', and the project arborist must demonstrate that the tree is to remain viable.

These four trees are all in good condition, and the more significant percentage of their root zones are located offsite within the adjacent property and are growing within what appears to be unimpacted natural soil.

Therefore, the trenching works are not expected to significantly impact the tree's health, and a detailed root investigation is not deemed necessary for these four trees.

The area of TPZ lost due to the proposed development can be compensated for within the backyards in accordance with AS4970.

Trees 25, 107 and 108

These trees have a TPZ encroachment of over 10%. Under AS 4970, this is deemed a 'major encroachment', and the project arborist must demonstrate that the tree is to remain viable.

The level of root loss caused by the excavation of the stormwater trench is potentially significant, with a possible and unacceptable moderate to high level of impact on the trees.

To determine the potential impacts of the encroachment into the TPZs of Trees 25, 107 and 108, root mapping is required to identify the location, distribution, and size of the roots that would need to be removed for the proposed trench. The potential root mass loss can then be assessed to establish if the tree will remain viable post root severance and/or to implement measures to ensure that the tree remains healthy and viable.

Alternatively, the directional drilling method could be used to underbore beneath the root zones of Trees 25, 107 and 108 and install the stormwater pipe. This would need to be achieved outside of the TPZ of all trees and to a minimum depth of 0.9m.

RECOMMENDATIONS

- The following 33 onsite trees are within the footprint of the proposed development and will require removal:
Trees 1, 9, 19 - 23, 31 - 43, 62 - 74.
- Within the TPZ of **Trees 7, 12, 24, 25, 75, 79, 82, 84 – 90, 92, 94 – 98, 100 – 105, 107, and 108**, the stormwater trench setback will be no closer than 1.7m from the property boundary.
- **Trees 25, 107 and 108** - A Root Mapping Report undertaken by an AQF 5 Arborist is recommended to assess the impact of the proposed stormwater trench. The root investigation will establish if the trees will remain viable under the current trenching plans and/or establish measures to be implemented to ensure that the trees remain healthy and viable.
- Alternatively, the stormwater pipe could be installed beneath the root zone of **Trees 25, 107 and 108** using directional drilling equipment. This would need to be achieved outside of the TPZ of all surrounding trees and to a minimum depth of 0.9m.
- The Project Arborist is to supervise all works within the TPZ of **Trees 25, 107 and 108**.
- No works are to be undertaken within the TPZ of any retained trees without the approval of the Project Arborist.

Tree Protection Measures

- For **Trees 75 – 108**, located along the western boundary tree protection fencing shall be installed 1.7m from the boundary of Lot 369, running the entirety of the western fence line. No works are to be undertaken within the TPZ without the approval of the Project Arborist.
- For **Trees 10, 11 and 48**, tree protection zone fencing is to be installed at the extent of their TPZ area within the site. See Appendix 1 for individual tree's TPZ measurements.
- For **Trees 24 and 25**, tree protection zone fencing is to be installed at the extent of their TPZ area within the site and immediately adjacent to the proposed stormwater trench at 1.7m from the boundary. See Appendix 1 for individual tree's TPZ measurements.
- Refer to Appendix 3 for Standard Tree Protection Zone Measures.



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Disclaimer: The information in the report is true and accurate to the author's best knowledge. Best professional judgement was used to make recommendations. However, the author of this report is not responsible for any action taken or not taken in reliance on it. This report remains the property of the author and "the Client". It may not be used or reprinted without their express permission.

APPENDIX 1 – TREE SCHEDULE

Tree No.	Botanical Name	Common Name	Age	Height [m]	Canopy [m]	DBH [cm]	Health	Structure	TPZ [m]	ULE	Retention Value	Protection Status	TPZ Enc. %	Observations
1	<i>Fraxinus excelsior</i> 'Raywood'	Claret Ash	M	7	6	30	Good	Fair	3.6	M	M	No		Onsite tree. Asymmetrical crown
2	<i>Callistemon viminalis</i>	Weeping Bottlebrush	M	6	6	45	Good	Good	5.4	M	H	Yes		Growing on boundary line. DBH measured at 0.5cm
3	<i>Melaleuca sp.</i>		M	3	2	15	Poor	Poor	2	S	L	Yes		
4	<i>Fraxinus excelsior</i> 'Raywood'	Claret Ash	M	4	5	29.21	Good	Fair	3.51	M	H	Yes		Multi trunk
5	<i>Fraxinus excelsior</i> 'Raywood'	Claret Ash	M	4	4	20	Good	Fair	2.4	M	H	Yes		
6	<i>Fraxinus excelsior</i> 'Raywood'	Claret Ash	M	4	5	26.68	Good	Fair	3.2	M	H	Yes		Multi trunk
7	<i>Fraxinus excelsior</i> 'Raywood'	Claret Ash	M	4	5	30	Good	Fair	3.6	M	H	Yes	6	
8	<i>Acacia sp.</i>	Wattle	M	7	6	30	Good	Good	3.6	L	H	Yes		Approximately 2.5m from boundary.
9	<i>Brachychiton populneus</i>	Kurrajong	M	7	7	55	Good	Good	6.6	L	H	No		Onsite tree.
10	<i>Jacaranda mimosifolia</i>	Jacaranda	M	7	5	30	Good	Good	3.6	M	M	Yes		Approximately 1m from boundary. Canopy over hangs site by 2m
11	<i>Ceratonia siliqua</i>	Carob	M	6	7	40	Good	Fair	4.8	L	M	Yes		DBH estimated. 1m from boundary. Canopy overhangs site by 4.5m
12	<i>Fraxinus excelsior</i> 'Raywood'	Claret Ash	M	6	5	35	Good	Fair	4.2	M	H	Yes	2	
13	<i>Fraxinus excelsior</i> 'Raywood'	Claret Ash	M	6	5	30	Fair	Fair	3.6	S	M	Yes		
14	<i>Fraxinus excelsior</i> 'Raywood'	Claret Ash	M	7	6	35	Fair	Fair	4.2	M	H	Yes		
15	<i>Fraxinus excelsior</i> 'Raywood'	Claret Ash	M	7	6	35	Fair	Fair	4.2	M	H	Yes		
16	<i>Fraxinus excelsior</i> 'Raywood'	Claret Ash	M	7	5	30	Fair	Fair	3.6	S	M	Yes		
17	<i>Fraxinus excelsior</i> 'Raywood'	Claret Ash	M	6	5	30	Fair	Poor	3.6	S	M	Yes		
18	<i>Fraxinus excelsior</i> 'Raywood'	Claret Ash	M	5	5	30	Good	Fair	3.6	M	M	Yes		

Tree No.	Botanical Name	Common Name	Age	Height [m]	Canopy [m]	DBH [cm]	Health	Structure	TPZ [m]	ULE	Retention Value	Protection Status	TPZ Enc. %	Observations
19	<i>Melia azedarach</i>	White Cedar	M	7	7	42.43	Fair	Poor	5.09	S	L	No		Onsite tree. Lopped, history of branch failure. Multi trunk
20	<i>Melia azedarach</i>	White Cedar	M	7	7	49.24	Fair	Poor	5.91	S	L	No		Onsite tree. Lopped, history of branch failure, decay in trunk. Multi trunk
21	<i>Melia azedarach</i>	White Cedar	M	3	3	15	Fair	Poor	2	S	L	No		Onsite tree.
22	<i>Melia azedarach</i>	White Cedar	M	3	3	12.17	Fair	Poor	2	S	L	No		Onsite tree. Stump regrowth. Multi trunk
23	<i>Melia azedarach</i>	White Cedar	M	3	3	20	Poor	Poor	2.4	S	L	No		Onsite tree. Dieback, decay in trunk.
24	<i>Acacia sp.</i>	Wattle	M	6	6	45	Good	Fair	5.4	L	H	Yes	10	DBH estimated. Approximately 2m from boundary
25	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	6	40	Fair	Fair	4.8	M	M	Yes	16	DBH estimated. Approximately 1m from boundary
26	<i>Grevillea robusta</i>	Silky Oak	M	8	6	30	Good	Fair	3.6	L	H	Yes	4	Approximately 3m from boundary
27	<i>Ulmus parvifolia</i>	Chinese Elm	M	8	8	42	Good	Fair	5.04	L	H	Yes		Street tree
28	<i>Ulmus parvifolia</i>	Chinese Elm	M	7	7	43	Fair	Fair	5.16	L	H	Yes		Street tree
29	<i>Fraxinus griffithii</i>	Evergreen Ash	S	3	2	1	Fair	Fair	2	S	L	Yes		Street trees. Group of 5 small trees
30	<i>Fraxinus excelsior</i> 'Raywood'	Claret Ash	S	4	3	20	Good	Good	2.4	M	H	Yes		Street tree
31	<i>Pistacia chinensis</i>	Chinese Pistachio	M	3	4	25	Good	Good	3	L	M	No		Onsite tree. DBH measured at 0.5m
32	<i>Pistacia chinensis</i>	Chinese Pistachio	M	3	3	25	Fair	Poor	3	M	L	No		Onsite tree. Branch failure, poor structure
33	<i>Eucalyptus polyanthemos</i>	Red Box	M		5	35.36	Fair	Poor	4.24	S	L	No		Onsite tree. Major branch failure, broken head. Multi trunk
34	<i>Eucalyptus polyanthemos</i>	Red Box	M	7	4	30	Dead	Poor	3.6	D	L	No		Onsite tree. Dead
35	<i>Eucalyptus polyanthemos</i>	Red Box	M	7	5	15	Dead	Very Poor	2	D	R	No		Onsite tree. Dead
36	<i>Eucalyptus polyanthemos</i>	Red Box	M	7	5	15	Fair	Fair	2	M	M	No		Onsite tree.
37	<i>Eucalyptus polyanthemos</i>	Red Box	M	7	5	35.36	Dead	Very Poor	4.24	D	R	No		Onsite tree. Dead. Multi trunk
38	<i>Sapium sebiferum</i>	Chinese Tallow Tree	M	5	6	23	Good	Good	2.76	L	H	No		Onsite tree.
39	<i>Eucalyptus polyanthemos</i>	Red Box	J	3	3	12.88	Fair	Poor	2	M	R	No		Onsite tree. Stump regrowth. Multi trunk
40	<i>Eucalyptus polyanthemos</i>	Red Box	S	4	2	12.21	Fair	Poor	2	M	R	No		Onsite tree. Dieback, stunted, poor structure. Multi trunk
41	<i>Lagunaria patersonia</i>	Norfolk Island Hibiscus	M	5	3	20	Good	Good	2.4	M	M	No		Onsite tree.
42	<i>Pistacia chinensis</i>	Chinese Pistachio	M	3	4	14.73	Fair	Fair	2	M	M	No		Onsite tree. Multi trunk
43	Unknown		M		3	15	Good	Fair	2	M	L	No		Onsite tree. DBH measured at base
44	<i>Eucalyptus leucoxylon</i>	Yellow Gum	M	7	7	30	Good	Fair	3.6	L	H	Yes		Private tree approximately 1m from boundary. DBH estimated

Tree No.	Botanical Name	Common Name	Age	Height [m]	Canopy [m]	DBH [cm]	Health	Structure	TPZ [m]	ULE	Retention Value	Protection Status	TPZ Enc. %	Observations
45	<i>Eucalyptus leucoxylon</i>	Yellow Gum	M	13		55	Good	Good	6.6	L	H	Yes		Private tree approximately 1m from boundary. DBH estimated
46	<i>Ulmus parvifolia</i>	Chinese Elm	M	5	6	29	Good	Fair	3.48	M	H	Yes		Street tree
47	<i>Callistemon viminalis</i>	Weeping Bottlebrush	M		6	28	Good	Fair	3.36	L	H	Yes		Street tree. Growing on property boundary.
48	<i>Fraxinus excelsior</i> 'Raywood'	Claret Ash	S	3	4	13	Fair	Fair	2	S	M	Yes		Street tree
49	<i>Pyrus calleryana</i> 'Bradford'	Bradford Callery Pear	S	4	2	12	Good	Good	2	M	H	Yes		Street tree
50	<i>Pyrus calleryana</i> 'Bradford'	Bradford Callery Pear	S	4	2	12	Good	Good	2	M	H	Yes		Street tree
51	<i>Pyrus calleryana</i> 'Bradford'	Bradford Callery Pear	S	4	2	12	Good	Good	2	M	H	Yes		Street tree
52	<i>Pyrus calleryana</i> 'Bradford'	Bradford Callery Pear	S	4	2	12	Good	Good	2	M	H	Yes		Street tree
53	<i>Pyrus calleryana</i> 'Bradford'	Bradford Callery Pear	S	4	2	12	Good	Good	2	M	H	Yes		Street tree
54	<i>Pyrus calleryana</i> 'Bradford'	Bradford Callery Pear	S	4	2	12	Good	Good	2	M	H	Yes		Street tree
55	<i>Sapium sebiferum</i>	Chinese Tallow Tree	M	4	5	25	Good	Good	3	L	H	Yes		Street tree
56	<i>Sapium sebiferum</i>	Chinese Tallow Tree	M	5	6	30	Good	Good	3.6	M	H	Yes		
57	<i>Robinia pseudoacacia</i>	Black Locust	S	4	4	20	Fair	Fair	2.4	M	M	Yes		Street tree
58	Unknown	Conifer	S	4	4	15	Fair	Fair	2	M	M	Yes		Street tree
59	<i>Fraxinus griffithii</i>	Evergreen Ash	S	3	3	15	Good	Good	2	M	H	Yes		
60	<i>Fraxinus griffithii</i>	Evergreen Ash	S	2	2	12	Good	Good	2	M	H	Yes		
61	<i>Sapium sebiferum</i>	Chinese Tallow Tree	M	5	6		Good	Good		L	H	Yes		
62	<i>Acacia sp.</i>	Wattle	M	4	4	25	Good	Fair	3	S	L	No		Onsite tree.
63	<i>Callitris sp.</i>	Cypress Pine	M	4	3	25	Good	Fair	3	L	M	No		Onsite tree.
64	<i>Casuarina sp.</i>	She-oak	M	6	3	25	Good	Fair	3	L	M	No		Onsite tree.
65	<i>Callitris sp.</i>	Cypress Pine	M	5	4	30	Good	Fair	3.6	L	M	No		Onsite tree.
66	<i>Callitris sp.</i>	Cypress Pine	M	6	4	25	Good	Good	3	L	M	No		Onsite tree.
67	<i>Callitris sp.</i>	Cypress Pine	M	7	4	28	Good	Good	3.36	L	M	No		Onsite tree.

Tree No.	Botanical Name	Common Name	Age	Height [m]	Canopy [m]	DBH [cm]	Health	Structure	TPZ [m]	ULE	Retention Value	Protection Status	TPZ Enc. %	Observations
68	<i>Callitris sp.</i>	Cypress Pine	M	5	3	25	Good	Fair	3	L	M	No		Onsite tree.
69	<i>Callitris sp.</i>	Cypress Pine	M	5	2	25	Good	Good	3	L	M	No		Onsite tree.
70	<i>Callitris sp.</i>	Cypress Pine	M	5	3	35	Good	Fair	4.2	L	M	No		Onsite tree.
71	<i>Callitris sp.</i>	Cypress Pine	M	5	3	35	Good	Poor	4.2	M	M	No		Onsite tree.
72	<i>Acacia sp.</i>	Wattle	M	7	8	34.41	Good	Poor	4.13	M	M	No		Onsite tree. Multi trunk
73	<i>Acacia sp.</i>	Wattle	M	7	8	38.85	Good	Poor	4.66	M	M	No		Onsite tree. Multi trunk
74	<i>Acacia sp.</i>	Wattle	M	8	10	44.82	Fair	Fair	5.38	M	M	No		Onsite tree. Multi trunk
75	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	5	33	Good	Fair	3.96	L	H	Yes	1	2m from boundary
76	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	5	30	Dead	Poor	3.6	D	R	Yes		Dead. 2m from boundary
77	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	5	30	Dead	Poor	3.6	D	R	Yes		Dead. 2m from boundary
78	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	5	30	Fair	Poor	3.6	M	M	Yes		2m from boundary
79	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	5	33	Good	Fair	3.96	L	H	Yes	1	2m from boundary
80	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	5	30	Good	Fair	3.6	L	H	Yes		2m from boundary
81	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	5	30	Dead	Poor	3.6	D	L	Yes		2m from boundary
82	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	5	36	Poor	Poor	4.32	S	L	Yes	3	2m from boundary
83	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	5	30	Poor	Poor	3.6	S	L	Yes		2m from boundary
84	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	11	5	38	Good	Fair	4.56	L	H	Yes	5	2m from boundary
85	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	9	6	38	Good	Poor	4.56	M	M	Yes	5	2m from boundary
86	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	9	6	35	Good	Fair	4.2	M	M	Yes	2	2m from boundary
87	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	9	6	35	Dead	Poor	4.2	D	R	Yes	2	Dead. 2m from boundary
88	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	9	6	35	Fair	Poor	4.2	M	L	Yes	2	2m from boundary
89	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	6	35	Good	Fair	4.2	L	H	Yes	2	2m from boundary
90	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	6	40	Good	Fair	4.8	L	H	Yes	7	2m from boundary
91	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	7	6	25	Fair	Fair	3	L	H	Yes		2m from boundary
92	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	12	6	45	Good	Fair	5.4	L	H	Yes	10	2m from boundary
93	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	4	2	20	Fair	Poor	2.4	M	M	Yes		2m from boundary
94	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	6	40	Good	Fair	4.8	L	H	Yes	6	2m from boundary
95	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	5	35	Good	Fair	4.2	L	H	Yes	2	2m from boundary

Tree No.	Botanical Name	Common Name	Age	Height [m]	Canopy [m]	DBH [cm]	Health	Structure	TPZ [m]	ULE	Retention Value	Protection Status	TPZ Enc. %	Observations
96	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	5	40	Good	Fair	4.8	L	H	Yes	6	2m from boundary
97	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	8	5	40	Good	Fair	4.8	L	H	Yes	6	2m from boundary
98	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	5	45	Good	Fair	5.4	L	H	Yes	10	2m from boundary
99	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	5	30	Good	Fair	3.6	L	H	Yes		2m from boundary
100	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	7	6	35	Good	Fair	4.2	L	H	Yes	2	2m from boundary
101	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	7	6	35	Poor	Poor	4.2	L	H	Yes	2	2m from boundary
102	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	6	40	Good	Fair	4.8	L	H	Yes	7	2m from boundary
103	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	9	5	35	Good	Fair	4.2	L	H	Yes	3	2m from boundary
104	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	6	35	Good	Fair	4.2	L	H	Yes	2	2m from boundary
105	<i>Eucalyptus cladocalyx</i>	Sugar Gum	M	10	6	45	Good	Fair	5.4	L	H	Yes	10	2m from boundary
106	<i>Schinus molle</i>	Peppercorn Tree	OM	5	5	25	Fair	Poor	3	S	L	Yes		2m from boundary
107	<i>Brachychiton populneus</i>	Kurrajong	M	7	8	55	Good	Good	6.6	L	H	Yes	20	2m from boundary
108	<i>Brachychiton populneus</i>	Kurrajong	M	9	8	55	Good	Good	6.6	L	H	Yes	31	2m from boundary
109	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	6	30	Good	Fair	3.6	L	H	Yes		2m from boundary
110	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	6	30	Good	Poor	3.6	M	L	Yes		2m from boundary
111	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	7	3	30	Fair	Fair	3.6	M	H	Yes		2m from boundary
112	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	12	6	47	Fair	Fair	5.64	L	H	Yes		2m from boundary
113	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	8	6	30	Good	Fair	3.6	L	H	Yes		2m from boundary
114	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	11	6	45	Good	Fair	5.4	L	H	Yes		2m from boundary
115	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	11	6	45	Good	Fair	5.4	L	H	Yes		2m from boundary
116	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	11	6	48	Good	Fair	5.76	L	H	Yes		2m from boundary
117	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	6	3	30	Poor	Poor	3.6	S	L	Yes		2m from boundary
118	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	6	3	30	Good	Fair	3.6	S	L	Yes		2m from boundary
119	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	13	7	65	Good	Fair	7.8	L	H	Yes		2m from boundary
120	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	7	5	35	Poor	Poor	4.2	S	L	Yes		2m from boundary
121	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	14	8	75	Good	Good	9	L	H	Yes		2m from boundary
122	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	10	6	45	Good	Fair	5.4	L	H	Yes		2m from boundary
123	<i>Eucalyptus sideroxylon</i>	Mugga Ironbark	M	12	8	45	Good	Good	5.4	L	H	Yes		2m from boundary

Notes on Tree Schedule

Tree No.: Tree identification number used to identify each tree or tree group.

Species: Botanical name and common name of the tree species. Where the species is unknown, "sp." Is indicated after genus.

Age: **J – Juvenile** that is yet to establish. **S – Semi-mature** - established tree that has not reached its genetic potential of form and/or size. **M – Mature** –tree that has attained its genetic potential for form and size. **OM – Over-mature** – tree that shows symptoms of irreversible decline.

Height: Tree height in metres.

Canopy: Average estimated canopy spread in metres. Where the canopy is significantly asymmetrical all directions of canopy radius are estimated.

DBH: Diameter at Breast Height measured at 1.4m above ground unless otherwise noted. Multiple measurements indicate multiple trunks.

Health: **G - Good** – In good health with no significant health issues noted. **F - Fair** – Some health issues that could be addressed by intervention. **P - Poor** – Significant health issues that could be addressed by intervention. **VP – Very Poor** – Significant health issues unlikely to be addressed by intervention.

Structure: **G – Good** – No defects noted within the tree. **F – Fair** – Minor defects noted within tree. **P – Poor** – Major defects noted within tree. **VP – Very Poor** – Significant defects have caused tree structure to fail.

ULE: Useful Life Expectancy – The estimated length of time the tree will live with an acceptable level of risk and provide a positive amenity value to the site. **L - Long** – 40 yrs. or more. **M – Medium** – 16 -39 yrs. **S – Short** – 5 -15 yrs. **R – Remove** – tree requires removal.

Retention Value: See STARS below. **H - High, M - Medium, L - Low, R - Remove.**

Protection Status: **No** - Onsite tree that maybe removed without approval. **Yes** – Offsite tree (private or street tree) requiring protection from development impact.

TPZ: Tree Protection Zone – A defined radial area around a tree within which certain activities are prohibited or restricted to prevent or minimise the potential negative impact on the tree. Calculated as per *AS4970*.

IACA Significance of a Tree, Assessment Rating System (STARS)© (IACA 2010)©

In the development of this document IACA acknowledges the contribution and original concept of the Footprint Green Tree Significance & Retention Value Matrix, developed by Footprint Green Pty Ltd in June 2001.

The landscape significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is therefore necessary to have a rating system utilising structured qualitative criteria to assist in determining the retention value for a tree. To assist this process all definitions for terms used in the *Tree Significance - Assessment Criteria* and *Tree Retention Value - Priority Matrix*, are taken from the IACA Dictionary for Managing Trees in Urban Environments 2009.

This rating system will assist in the planning processes for proposed works, above and below ground where trees are to be retained on or adjacent a development site. The system uses a scale of *High*, *Medium* and *Low* significance in the landscape. Once the landscape significance of an individual tree has been defined, the retention value can be determined. An example of its use in an Arboricultural report is shown as Appendix A.

Tree Significance - Assessment Criteria



1. High Significance in landscape

- The tree is in good condition and good vigour;
- The tree has a form typical for the species;
- The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age;
- The tree is listed as a Heritage Item, Threatened Species or part of an Endangered ecological community or listed on Councils significant Tree Register;
- The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity;
- The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values;
- The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa *in situ* - tree is appropriate to the site conditions.

2. Medium Significance in landscape

- The tree is in fair-good condition and good or low vigour;
- The tree has form typical or atypical of the species;
- The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area
- The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street,
- The tree provides a fair contribution to the visual character and amenity of the local area,
- The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa *in situ*.

3. Low Significance in landscape

- The tree is in fair-poor condition and good or low vigour;
- The tree has form atypical of the species;
- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings,
- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area,
- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen,
- The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa *in situ* - tree is inappropriate to the site conditions,
- The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms,
- The tree has a wound or defect that has potential to become structurally unsound.

Environmental Pest / Noxious Weed Species

- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties,
- The tree is a declared noxious weed by legislation.

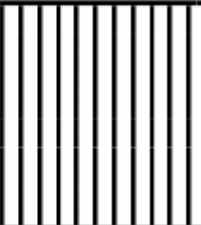
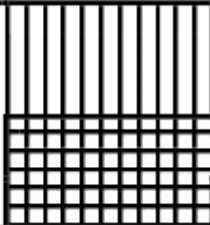
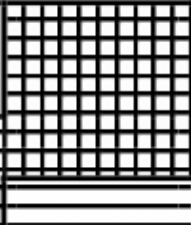

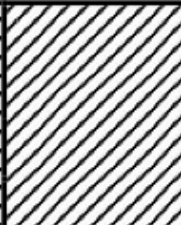
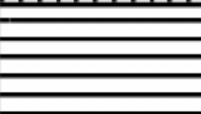









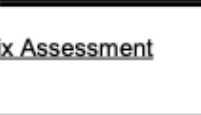




Hazardous/Irreversible Decline

- The tree is structurally unsound and/or unstable and is considered potentially dangerous,
- The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.


The tree is to have a minimum of three (3) criteria in a category to be classified in that group.

Note: The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety e.g. hedge.


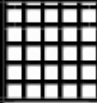
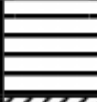

Table 1.0 Tree Retention Value - Priority Matrix.

		Significance				
		1. High	2. Medium	3. Low		
		Significance in Landscape	Significance in Landscape	Significance in Landscape	Environmental Pest / Noxious Weed Species	Hazardous / Irreversible Decline
Estimated Life Expectancy	1. Long >40 years					
	2. Medium 15-40 Years					
	3. Short <1-15 Years					
	Dead					

Legend for Matrix Assessment



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	Priority for Retention (High) - These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 <i>Protection of trees on development sites</i> . Tree sensitive construction measures must be implemented e.g. pier and beam etc if works are to proceed within the Tree Protection Zone.
	Consider for Retention (Medium) - These trees may be retained and protected. These are considered less critical; however their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.
	Consider for Removal (Low) - These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.
	Priority for Removal - These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.

USE OF THIS DOCUMENT AND REFERENCING

The IACA Significance of a Tree, Assessment Rating System (STARS) is free to use, but only in its entirety and must be cited as follows:

IACA, 2010, *IACA Significance of a Tree, Assessment Rating System (STARS)*, Institute of Australian Consulting Arboriculturists, Australia, www.iaca.org.au

REFERENCES

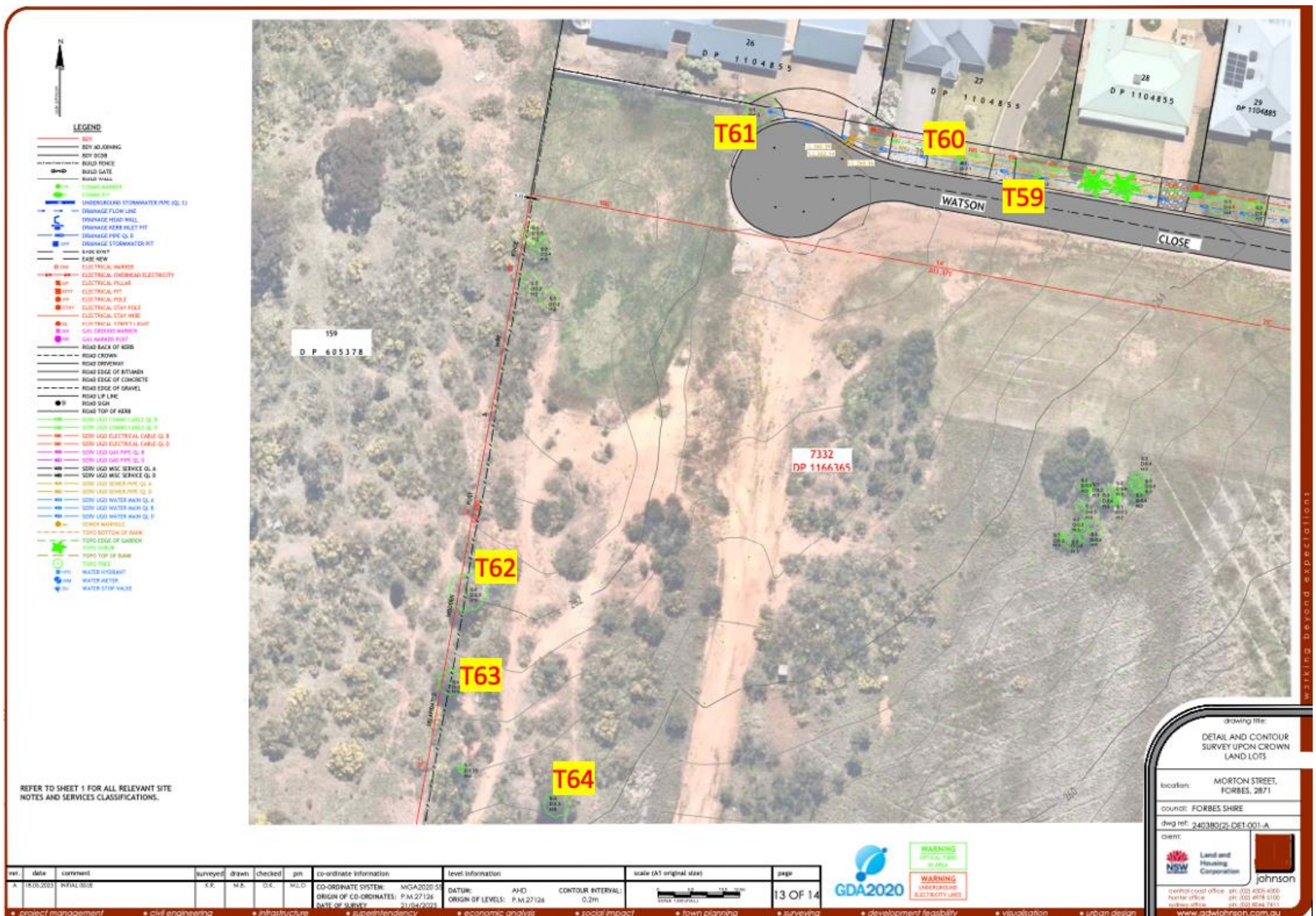
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APPENDIX 4 – STANDARD TREE PROTECTION ZONE MEASURES

The following tree protection measures must be followed to ensure that the TPZ is isolated, the impact of the development on the tree's health is kept to a minimum, and that the site complies with AS4970-2009.

- The TPZ is a restricted area to be delineated by a protective fence installed prior to site establishment and must remain intact until completion of the works.
- The fence must not be altered or removed without the approval of the project arborist. If access is required or minor activities are to be undertaken within the TPZ, it must be approved by the project arborist.
- No routing of services, parking of vehicles, stacking of builder's materials/ equipment, or disposing of fuels, paints, chemicals or any other liquids is to occur within the TPZ.
- The protective fence should be constructed from ridged chain wire mesh panels (or similar), 1.8m in height, and securely anchored without penetrating the ground. An example from AS4970-2009 is shown below.

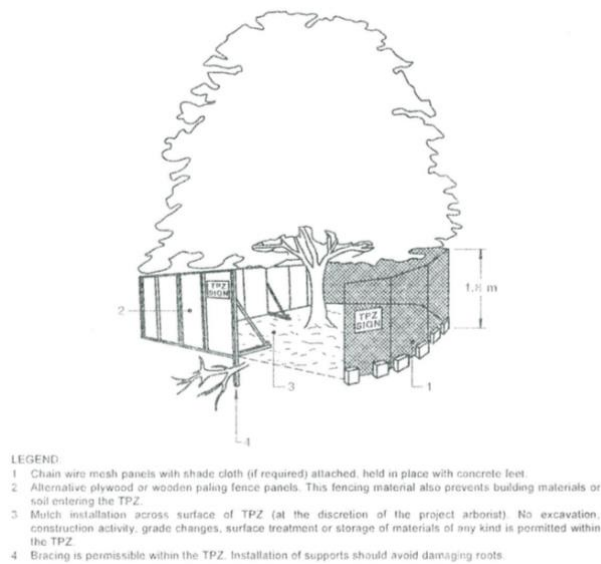


FIGURE 3 PROTECTIVE FENCING

- Signs identifying the TPZ should be placed on the fencing and be visible from within the development site from all angles. An example from AS4970-2009 is shown below.

