URBAN TREE MANAGEMENT

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REPORT:

ARBORICULTURAL IMPACT ASSESSMENT

RSL Anzac Village

1. **Old Darby and Joan**
2. **New Darby and Joan**

Prepared 10 November 2009
Reference 11087

Contents

SUMMARY

This report considers the redevelopment of Old Darby & Joan and New Darby & Joan sections of the RSL Anzac Village, Collaroy Plateau and the impact of excavation and associated infrastructure works on existing trees. To ameliorate these impacts the report considers possible remediation works, or replacing trees to be removed with new plantings as per the Landscape Plan. The encroachment towards each tree has been considered for windthrow and the feasibility of retaining some trees *in situ* with works such as root pruning, crown pruning and ongoing remediation as irrigation, fertilizing and mulching to maintain vigour as maintenance during and after the project. Of the 180 Trees in the Old Darby and Joan area 54 are able to be retained and of the 82 trees in the New Darby and Joan area 25 are able to be retained. Many of the trees to be removed are diseased and potentially structurally unsound.

Site Plan section of RSL Anzac Village, Collaroy Plateau
showing Old and New Darby & Joan and Village Centre

From New Darby and Joan Site Masterplan, Drawing No. PDA2.01, issue A, date 30/09/2009, Scale 1:750 @ A1 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 97799.

Old Darby and Joan

Of the 180 trees (numbers 1-180) examined it is proposed to retain 54 (Table 3.0) and protect them *in situ* and remove 126.

Table 1.0 General condition of tree/s – **Old Darby and Joan**. Tree described in greater detail in section 5.0.

UTM Tree No. / Stand No.	*Genus and species*	Common name	Condition G = Good, F = Fair, P = Poor, D = Dead
1	*Banksia integrifolia*	Coast Banksia	G
2	*Eucalyptus haemastoma*	Scribbly Gum	F
3	*Glochidion ferdinandi*	Cheese Tree	G
4	*Eucalyptus haemastoma*	Scribbly Gum	F
5	*Eucalyptus haemastoma*	Scribbly Gum	P
6	*Corymbia gummifera*	Red Bloodwood	P
7	*Eucalyptus haemastoma*	Scribbly Gum	F
8	*Corymbia gummifera*	Red Bloodwood	G
9	*Corymbia gummifera*	Red Bloodwood	F
10	*Corymbia gummifera*	Red Bloodwood	G
11	*Corymbia gummifera*	Red Bloodwood	G
12	*Citharexylum spinosum*	Fiddlewood	G
13	*Callitris rhomboidea*	Oyster Bay Cypress	G
14	*Acer palmatum*	Japanese Maple	G
15	*Eucalyptus haemastoma*	Scribbly Gum	G
16	*Eucalyptus haemastoma*	Scribbly Gum	G
17	*Omalanthus populifolius*	Bleeding Heart	G
18	*Glochidion ferdinandi*	Cheese Tree	F
19	*Glochidion ferdinandi*	Cheese Tree	F
20	*Pittosporum undulatum*	Sweet Pittosporum	G
21	*Glochidion ferdinandi*	Cheese Tree	G
2	*Eucalyptus punctata*	Grey Gum	G
23	*Allocasuarina torulosa*	Forest Oak	G
24	*Pittosporum undulatum*	Sweet Pittosporum	G
25	*Melaleuca quinquenervia*	Broad-leaved Paperbark	G
26	*Pittosporum undulatum*	Sweet Pittosporum	G
27	*Glochidion ferdinandi*	Cheese Tree	G
28	*Pittosporum undulatum*	Sweet Pittosporum	G
29	*Pittosporum undulatum*	Sweet Pittosporum	G
30	*Citharexylum spinosum*	Fiddlewood	G
31	*Pittosporum undulatum*	Sweet Pittosporum	F
32	*Allocasuarina torulosa*	Forest Oak	G
33	*Glochidion ferdinandi*	Cheese Tree	F
34	*Glochidion ferdinandi*	Cheese Tree	F
35	*Brachychiton acerifolius*	Illawarra Flame Tree	G
36	*Schefflera actinophylla*	Umbrella Tree	G
37	*Chamaecyparis obtusa* 'Crippsii'	Hinoki False Cypress	G
38	*Chamaecyparis obtusa* 'Crippsii'	Hinoki False Cypress	G
39	*Archontophoenix alexandrae*	Alexandra Palm	G
40	*Camellia sasanqua*	Camellia	F

Table 1.0 General condition of tree/s – **Old Darby and Joan**, continued.

UTM Tree No. / Stand No.	*Genus and species*	Common name	Condition G = Good, F = Fair, P = Poor, D = Dead
41	*Jacaranda mimosifolia*	Jacaranda	G
42	*Citharexylum spinosum*	Fiddlewood	G
43	*Eucalyptus haemastoma*	Scribbly Gum	P
44	*Eucalyptus haemastoma*	Scribbly Gum	G
45	*Cryptomeria japonica* 'Elegans'	Japanese Red Cedar cultivar	G
46	*Prunus domestica*	Plum	G
47	*Archontophoenix alexandrae*	Alexandra Palm	G
48	*Melaleuca bracteata*	River Tea Tree	G
49	*Fraxinus angustifolia* subsp. *oxycarpa* 'Raywood'	Claret Ash	G
50	*Callistemon salignus*	Pink Tips Bottlebrush	G
51	*Pittosporum undulatum*	Sweet Pittosporum	G
52	3 x *Schefflera actinophylla*	Umbrella Tree	G
53	*Mangifera indica*	Mango	G
54	*Callistemon citrinus*	Crimson Bottlebrush	G
55	*Brachychiton acerifolius*	Illawarra Flame Tree	G
56	*Eucalyptus punctata*	Grey Gum	G
57	*Allocasuarina torulosa*	Forest Oak	G
58	*Corymbia gummifera*	Red Bloodwood	G
59	*Melaleuca linariifolia*	Snow-in-summer	G
60	*Eucalyptus haemastoma*	Scribbly Gum	F
61	*Eucalyptus haemastoma*	Scribbly Gum	F
62	*Eucalyptus haemastoma*	Scribbly Gum	F
63	*Eucalyptus haemastoma*	Scribbly Gum	F
64	*Callitris rhomboidea*	Oyster Bay Cypress	F
65	*Callistemon citrinus*	Crimson Bottlebrush	G
66	*Eucalyptus haemastoma*	Scribbly Gum	F
67	*Callistemon citrinus*	Crimson Bottlebrush	G
68	*Callistemon salignus*	Pink Tips Bottlebrush	G
69	*Eucalyptus haemastoma*	Scribbly Gum	F
70	4 x *Archontophoenix alexandrae*	Alexandra Palm	G
71	*Acmena smithii* var. *minor*	Small-leaved Lilly Pilly	P
72	*Callistemon citrinus*	Crimson Bottlebrush	G
73	*Acacia parramattensis*	Sydney Green Wattle	F
74	*Acacia elata*	Cedar Wattle	F
75	*Eucalyptus elata*	River Peppermint	G
76	*Eucalyptus haemastoma*	Scribbly Gum	G
77	*Eucalyptus nicholii*	Narrow-barked Black Peppermint	P
78	*Corymbia maculata*	Spotted Gum	G
79	*Eucalyptus haemastoma*	Scribbly Gum	G
80	*Eucalyptus haemastoma*	Scribbly Gum	P
81	*Acacia floribunda*	Sally Wattle	P
82	*Eucalyptus haemastoma*	Scribbly Gum	F
83	*Eucalyptus haemastoma*	Scribbly Gum	G
84	*Acacia parramattensis*	Sydney Green Wattle	G
85	*Eucalyptus haemastoma*	Scribbly Gum	G

Table 1.0 General condition of tree/s – **Old Darby and Joan**, continued.

UTM Tree No. / Stand No.	*Genus and species*	Common name	Condition G = Good, F = Fair, P = Poor, D = Dead
86	*Banksia serrata*	Old Man Banksia	G
87	*Melaleuca linariifolia*	Snow-in-summer	G
88	*Eucalyptus haemastoma*	Scribbly Gum	G
89	*Eucalyptus haemastoma*	Scribbly Gum	G
90	*Eucalyptus haemastoma*	Scribbly Gum	F
91	*Eucalyptus haemastoma*	Scribbly Gum	G
92	*Eucalyptus haemastoma*	Scribbly Gum	F
93	*Acacia elata*	Cedar Wattle	G
94	*Eucalyptus haemastoma*	Scribbly Gum	P
95	*Eucalyptus haemastoma*	Scribbly Gum	F
96	*Eucalyptus haemastoma*	Scribbly Gum	G
97	*Eucalyptus haemastoma*	Scribbly Gum	F
98	*Eucalyptus haemastoma*	Scribbly Gum	F
99	*Acacia elata*	Cedar Wattle	P
100	*Acacia parramattensis*	Sydney Green Wattle	F
101	*Eucalyptus haemastoma*	Scribbly Gum	P
102	*Eucalyptus haemastoma*	Scribbly Gum	F
103	*Corymbia gummifera*	Red Bloodwood	F
104	*Eucalyptus haemastoma*	Scribbly Gum	F
105	*Eucalyptus haemastoma*	Scribbly Gum	P
106	*Eucalyptus haemastoma*	Scribbly Gum	F
107	*Eucalyptus haemastoma*	Scribbly Gum	F
108	*Eucalyptus haemastoma*	Scribbly Gum	F
109	*Eucalyptus haemastoma*	Scribbly Gum	F
110	*Eucalyptus haemastoma*	Scribbly Gum	F
111	*Eucalyptus haemastoma*	Scribbly Gum	P
112	*Eucalyptus haemastoma*	Scribbly Gum	P
113	*Liquidamber styraciflua*	Liquidamber	G
114	*Angophora hispida*	Dwarf Apple	F
115	*Angophora hispida*	Dwarf Apple	P
116	*Glochidion ferdinandi*	Cheese Tree	G
117	*Allocasuarina torulosa*	Forest Oak	G
118	*Allocasuarina torulosa*	Forest Oak	G
119	*Allocasuarina torulosa*	Forest Oak	F
120	*Allocasuarina torulosa*	Forest Oak	F
121	*Allocasuarina torulosa*	Forest Oak	F
122	*Allocasuarina torulosa*	Forest Oak	P
123	*Allocasuarina torulosa*	Forest Oak	G
124	*Glochidion ferdinandi*	Cheese Tree	G
125	*Allocasuarina torulosa*	Forest Oak	F
126	*Allocasuarina torulosa*	Forest Oak	G
127	*Allocasuarina torulosa*	Forest Oak	P
128	*Allocasuarina torulosa*	Forest Oak	F
129	*Elaeocarpus reticulatus*	Blueberry Ash	G
130	3 x *Allocasuarina torulosa*	Forest Oak	G

Table 1.0 General condition of tree/s – **Old Darby and Joan**, continued.

UTM Tree No. / Stand No.	*Genus and species*	Common name	Condition G = Good, F = Fair, P = Poor, D = Dead
131	*Eucalyptus botryoides*	Bangalay	G
132	*Hymenosporum flavum*	Native Frangipani	F
133	*Acacia podalyriifolia*	Mount Morgan Wattle	G
134	*Archontophoenix alexandrae*	Alexandra Palm	G
135	*Callistemon citrinus*	Crimson Bottlebrush	G
136	*Callistemon citrinus*	Crimson Bottlebrush	G
137	*Eucalyptus melliodora*	Yellow Box	G
138	*Acacia parramattensis*	Sydney Green wattle	F
139	*Fraxinus angustifolia*	Narrow-leaved Ash	G
140	*Eucalyptus melliodora*	Yellow Box	F
141	*Lagerstroemia indica*	Crepe Myrtle	G
142	*Banksia integrifolia*	Coast Banksia	G
143	*Eucalyptus melliodora*	Yellow Box	F
144	*Eucalyptus melliodora*	Yellow Box	F
145	*Banksia serrata*	Old Man Banksia	G
146	*Callistemon citrinus*	Crimson Bottlebrush	G
147	*Cinnamomum camphora*	Camphor Laurel	G
148	*Juniperus chinensis*	Chinese Juniper	G
149	*Juniperus chinensis*	Chinese Juniper	G
150	*Eucalyptus haemastoma*	Scribbly Gum	F
151	*Eucalyptus haemastoma*	Scribbly Gum	P
152	*Corymbia gummifera*	Red Bloodwood	G
153	*Eucalyptus haemastoma*	Scribbly Gum	G
154	*Eucalyptus haemastoma*	Scribbly Gum	G
155	*Eucalyptus haemastoma*	Scribbly Gum	F
156	*Eucalyptus haemastoma*	Scribbly Gum	F
157	*Eucalyptus haemastoma*	Scribbly Gum	G
158	*Corymbia gummifera*	Red Bloodwood	G
159	*Ceratopetalum gummiferum*	NSW Christmas Bush	G
160	*Jacaranda mimosifolia*	Jacaranda	G
161	*Ceratopetalum gummiferum*	NSW Christmas Bush	G
162	*Araucaria columnaris*	Cook Island Pine	G
163	*Ficus macrophylla*	Moreton Bay Fig	G
164	*Liquidamber styraciflua*	Liquidamber	G
165	*Eucalyptus haemastoma*	Scribbly Gum	F
166	*Eucalyptus haemastoma*	Scribbly Gum	F
167	*Eucalyptus haemastoma*	Scribbly Gum	G
168	*Eucalyptus haemastoma*	Scribbly Gum	G
169	*Eucalyptus haemastoma*	Scribbly Gum	F
170	*Eucalyptus haemastoma*	Scribbly Gum	G
171	*Eucalyptus haemastoma*	Scribbly Gum	G
172	*Eucalyptus haemastoma*	Scribbly Gum	F
173	*Washingtonia filifera*	American Cotton Palm	G
174	*Eucalyptus nicholii*	Narrow-barked Black Peppermint	G
175	*Eucalyptus nicholii*	Narrow-barked Black Peppermint	G
176	*Liquidamber styraciflua*	Liquidamber	G
177	*Michelia figo*	Port Wine Magnolia	G
178	*Eucalyptus nicholii*	Narrow-barked Black Peppermint	G
179	*Eucalyptus nicholii*	Narrow-barked Black Peppermint	G
180	*Banksia integrifolia*	Coast Banksia	G

Table 2.0 Schedule of works and trees affected – **Old Darby and Joan**. Trees described in greater detail in section 5.0.

UTM Tree No. / Stand No.	Common Name	Description of work to be done
1	Coast Banksia	Remove and replace with new trees as per the Landscape Plan.
2	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
3	Cheese Tree	Remove and replace with new trees as per the Landscape Plan.
4	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
5	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
6	Red Bloodwood	Remove and replace with new trees as per the Landscape Plan.
7	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
8	Red Bloodwood	Remove and replace with new trees as per the Landscape Plan.
9	Red Bloodwood	Remove and replace with new trees as per the Landscape Plan.
10	Red Bloodwood	Remove and replace with new trees as per the Landscape Plan.
11	Red Bloodwood	Remove and replace with new trees as per the Landscape Plan.
12	Fiddlewood	Remove and replace with new trees as per the Landscape Plan.
13	Oyster Bay Cypress	Remove and replace with new trees as per the Landscape Plan.
14	Japanese Maple	Remove and replace with new trees as per the Landscape Plan.
15	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
16	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
17	Bleeding Heart	Remove and replace with new trees as per the Landscape Plan.
18	Cheese Tree	Remove and replace with new trees as per the Landscape Plan.
19	Cheese Tree	Remove and replace with new trees as per the Landscape Plan.
20	Sweet Pittosporum	Remove and replace with new trees as per the Landscape Plan.
21	Cheese Tree	Remove and replace with new trees as per the Landscape Plan.
22	Grey Gum	Remove and replace with new trees as per the Landscape Plan.
23	Forest Oak	Remove and replace with new trees as per the Landscape Plan.
24	Sweet Pittosporum	Remove and replace with new trees as per the Landscape Plan.
25	Broad-leaved Paperbark	Remove and replace with new trees as per the Landscape Plan.
26	Sweet Pittosporum	Remove and replace with new trees as per the Landscape Plan.
27	Cheese Tree	Remove and replace with new trees as per the Landscape Plan.
28	Sweet Pittosporum	Remove and replace with new trees as per the Landscape Plan.
29	Sweet Pittosporum	Remove and replace with new trees as per the Landscape Plan.
30	Fiddlewood	Remove and replace with new trees as per the Landscape Plan.
31	Sweet Pittosporum	Remove and replace with new trees as per the Landscape Plan.
32	Forest Oak	Remove and replace with new trees as per the Landscape Plan.
33	Cheese Tree	Remove and replace with new trees as per the Landscape Plan.
34	Cheese Tree	Remove and replace with new trees as per the Landscape Plan.
35	Illawarra Flame Tree	Remove and replace with new trees as per the Landscape Plan.
36	Umbrella Tree	Remove and replace with new trees as per the Landscape Plan.
37	Hinoki False Cypress	Remove and replace with new trees as per the Landscape Plan.
38	Hinoki False Cypress	Remove and replace with new trees as per the Landscape Plan.
39	Alexandra Palm	Remove and replace with new trees as per the Landscape Plan.
40	Camellia	Remove and replace with new trees as per the Landscape Plan.
41	Jacaranda	Remove and replace with new trees as per the Landscape Plan.
42	Fiddlewood	Remove and replace with new trees as per the Landscape Plan.
43	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
44	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
45	Japanese Red Cedar cultivar	Remove and replace with new trees as per the Landscape Plan.
46	Plum	Remove and replace with new trees as per the Landscape Plan.
47	Alexandra Palm	Remove and replace with new trees as per the Landscape Plan.
48	River Tea Tree	Remove and replace with new trees as per the Landscape Plan.
49	Claret Ash	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
50	Pink Tips Bottlebrush	Remove and replace with new trees as per the Landscape Plan.

Table 2.0 Schedule of works and trees affected – **Old Darby and Joan**, continued.

UTM Tree No. / Stand No.	Common Name	Description of work to be done
51	Sweet Pittosporum	Remove and replace with new trees as per the Landscape Plan.
52	Umbrella Tree	Remove and replace with new trees as per the Landscape Plan.
53	Mango	Remove and replace with new trees as per the Landscape Plan.
54	Crimson Bottlebrush	Remove and replace with new trees as per the Landscape Plan.
55	Illawarra Flame Tree	Remove and replace with new trees as per the Landscape Plan.
56	Grey Gum	Remove and replace with new trees as per the Landscape Plan.
57	Forest Oak	Remove and replace with new trees as per the Landscape Plan.
58	Red Bloodwood	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
59	Snow-in-summer	Remove and replace with new trees as per the Landscape Plan.
60	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
61	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
62	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
63	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
64	Oyster Bay Cypress	Remove and replace with new trees as per the Landscape Plan.
65	Crimson Bottlebrush	Remove and replace with new trees as per the Landscape Plan.
66	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
67	Crimson Bottlebrush	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
68	Pink Tips Bottlebrush	Remove and replace with new trees as per the Landscape Plan.
69	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
70	Alexandra Palm	Remove and replace with new trees as per the Landscape Plan.
71	Small-leaved Lilly Pilly	Remove and replace with new trees as per the Landscape Plan.
72	Crimson Bottlebrush	Remove and replace with new trees as per the Landscape Plan.
73	Sydney Green Wattle	Remove and replace with new trees as per the Landscape Plan.
74	Cedar Wattle	Remove and replace with new trees as per the Landscape Plan.
75	River Peppermint	Remove and replace with new trees as per the Landscape Plan.
76	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
77	Narrow-barked Black Peppermint	Remove and replace with new trees as per the Landscape Plan.
78	Spotted Gum	Remove and replace with new trees as per the Landscape Plan.
79	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
80	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
81	Sally Wattle	Remove and replace with new trees as per the Landscape Plan.
82	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
83	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
84	Sydney Green Wattle	Remove and replace with new trees as per the Landscape Plan.
85	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
86	Old Man Banksia	Remove and replace with new trees as per the Landscape Plan.
87	Snow-in-summer	Remove and replace with new trees as per the Landscape Plan.
88	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
89	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
90	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
91	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
92	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
93	Cedar Wattle	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
94	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
95	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
96	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
97	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
98	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
99	Cedar Wattle	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
100	Sydney Green Wattle	Remove and replace with new trees as per the Landscape Plan.

Table 2.0 Schedule of works and trees affected – **Old Darby and Joan**, continued.

UTM Tree No. / Stand No.	Common Name	Description of work to be done
101	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
102	Red Bloodwood	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
103	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
104	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
105	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
106	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
107	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
108	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
109	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
110	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
111	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
112	Liquidamber	Remove and replace with new trees as per the Landscape Plan.
113	Dwarf Apple	Remove and replace with new trees as per the Landscape Plan.
114	Dwarf Apple	Remove and replace with new trees as per the Landscape Plan.
115	Cheese Tree	Remove and replace with new trees as per the Landscape Plan.
116	Forest Oak	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
117	Forest Oak	Remove and replace with new trees as per the Landscape Plan.
118	Forest Oak	Remove and replace with new trees as per the Landscape Plan.
119	Forest Oak	Remove and replace with new trees as per the Landscape Plan.
120	Forest Oak	Remove and replace with new trees as per the Landscape Plan.
121	Forest Oak	Remove and replace with new trees as per the Landscape Plan.
122	Forest Oak	Remove and replace with new trees as per the Landscape Plan.
123	Cheese Tree	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
124	Forest Oak	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
125	Forest Oak	Remove and replace with new trees as per the Landscape Plan.
126	Forest Oak	Remove and replace with new trees as per the Landscape Plan.
127	Forest Oak	Remove and replace with new trees as per the Landscape Plan.
128	Blueberry Ash	Remove and replace with new trees as per the Landscape Plan.
129	Forest Oak	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
130	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
131	Bangalay	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
132	Native Frangipani	Remove and replace with new trees as per the Landscape Plan.
133	Mount Morgan Wattle	Remove and replace with new trees as per the Landscape Plan.
134	Alexandra Palm	Remove and replace with new trees as per the Landscape Plan.
135	Crimson Bottlebrush	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
136	Crimson Bottlebrush	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
137	Yellow Box	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
138	Sydney Green wattle	Remove and replace with new trees as per the Landscape Plan.
139	Narrow-leaved Ash	Remove and replace with new trees as per the Landscape Plan.
140	Yellow Box	Remove and replace with new trees as per the Landscape Plan.
141	Crepe Myrtle	Remove and replace with new trees as per the Landscape Plan.
142	Coast Banksia	Remove and replace with new trees as per the Landscape Plan.
143	Yellow Box	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
144	Yellow Box	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
145	Old Man Banksia	Remove and replace with new trees as per the Landscape Plan.
146	Crimson Bottlebrush	Remove and replace with new trees as per the Landscape Plan.
147	Camphor Laurel	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
148	Chinese Juniper	Remove and replace with new trees as per the Landscape Plan.
149	Chinese Juniper	Remove and replace with new trees as per the Landscape Plan.
150	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
151	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
152	Red Bloodwood	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.

Table 2.0 Schedule of works and trees affected – **Old Darby and Joan**, continued.

UTM Tree No. / Stand No.	Common Name	Description of work to be done
153	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
154	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
155	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
156	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
157	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
158	Red Bloodwood	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
159	NSW Christmas Bush	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
160	Jacaranda	Remove and replace with new trees as per the Landscape Plan.
161	NSW Christmas Bush	Remove and replace with new trees as per the Landscape Plan.
162	Cook Island Pine	Remove and replace with new trees as per the Landscape Plan.
163	Moreton Bay Fig	Remove and replace with new trees as per the Landscape Plan.
164	Liquidamber	Remove and replace with new trees as per the Landscape Plan.
165	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
166	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
167	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
168	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
169	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
170	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
171	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
172	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
173	American Cotton Palm	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
174	Narrow-barked Black Peppermint	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
175	Narrow-barked Black Peppermint	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
176	Liquidamber	Remove and replace with new trees as per the Landscape Plan.
177	Port Wine Magnolia	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
178	Narrow-barked Black Peppermint	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
179	Narrow-barked Black Peppermint	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
180	Coast Banksia	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.

New Darby and Joan

Of the 82 trees (numbers 181-262) examined it is proposed to retain 25 (Table 3.0) and protect them *in situ* and remove 57.

Table 1.0 General condition of tree/s – **New Darby and Joan**. Tree described in greater detail in section 5.0.

UTM Tree No. / Stand No.	*Genus and species*	Common name	Condition G = Good, F = Fair, P = Poor, D = Dead
181	*Jacaranda mimosifolia*	Jacaranda	G
182	*Brachychiton acerifolius*	Illawarra Flame Tree	G
183	*Eucalyptus scoparia*	Wallangarra White Gum	G
184	*Fraxinus angustifolia*	Narrow-leaved Ash	G
185	*Fraxinus angustifolia* ssp. *oxycarpa* 'Raywood'	Claret Ash	G
186	*Thuja occidentalis*	Chinese Arborvitae	G
187	*Eucalyptus haemastoma*	Scribbly Gum	G
188	*Eucalyptus haemastoma*	Scribbly Gum	G
189	*Eucalyptus haemastoma*	Scribbly Gum	G
190	*Eucalyptus haemastoma*	Scribbly Gum	G
191	*Corymbia gummifera*	Red Bloodwood	F
192	*Corymbia gummifera*	Red Bloodwood	F
193	*Eucalyptus haemastoma*	Scribbly Gum	G
194	*Eucalyptus haemastoma*	Scribbly Gum	G
195	*Eucalyptus nicholii*	Narrow-leaved Black Peppermint	G
196	*Eucalyptus haemastoma*	Scribbly Gum	G
197	*Eucalyptus haemastoma*	Scribbly Gum	G
198	*Callistemon citrinus*	Crimson Bottlebrush	G
199	*Angophora costata*	Smooth-barked-Apple	G
200	*Angophora costata*	Smooth-barked-Apple	F
201	3 x *Corymbia gummifera*	Red Bloodwood	F
202	*Corymbia maculata*	Spotted Gum	G
203	*Corymbia maculata*	Spotted Gum	G
204	*Eucalyptus nicholii*	Narrow-leaved Black Peppermint	F
205	*Eucalyptus melliodora*	Yellow Box	F
206	*Eucalyptus haemastoma*	Scribbly Gum	G
207	*Eucalyptus haemastoma*	Scribbly Gum	F
208	*Banksia serrata*	Old Man Banksia	G
209	*Eucalyptus haemastoma*	Scribbly Gum	F
210	*Eucalyptus haemastoma*	Scribbly Gum	F
211	*Eucalyptus haemastoma*	Scribbly Gum	F
212	*Allocasuarina torulosa*	Forest Oak	F
213	*Callistemon citrinus*	Crimson Bottlebrush	G
214	*Corymbia gummifera*	Red Bloodwood	G
215	*Melia azedarach*	White Cedar	G
216	*Eucalyptus umbra*	Broad-leaved White Mahogany	G
217	*Corymbia gummifera*	Red Bloodwood	F
218	*Angophora costata*	Smooth-barked-Apple	G
219	*Eucalyptus umbra*	Broad-leaved White Mahogany	F
220	*Corymbia gummifera*	Red Bloodwood	G

Table 1.0 General condition of tree/s – **New Darby and Joan**, continued.

UTM Tree No. / Stand No.	*Genus and species*	Common name	Condition G = Good, F = Fair, P = Poor, D = Dead
221	*Corymbia gummifera*	Red Bloodwood	F
222	*Corymbia gummifera*	Red Bloodwood	G
223	*Corymbia gummifera*	Red Bloodwood	F
224	*Angophora costata*	Smooth-barked-Apple	G
225	*Angophora costata*	Smooth-barked-Apple	G
226	*Angophora costata*	Smooth-barked-Apple	F
227	*Eucalyptus haemastoma*	Scribbly Gum	F
228	*Eucalyptus haemastoma*	Scribbly Gum	F
229	*Eucalyptus haemastoma*	Scribbly Gum	P
230	*Eucalyptus haemastoma*	Scribbly Gum	P
231	*Angophora costata*	Smooth-barked-Apple	G
232	*Chamaecyparis pisifera*	Sawara Cypress	G
233	*Eucalyptus umbra*	Broad-leaved White Mahogany	G
234	*Glochidion ferdinandi*	Cheese Tree	G
235	*Corymbia gummifera*	Red Bloodwood	F
236	*Angophora costata*	Smooth-barked-Apple	G
237	*Angophora costata*	Smooth-barked-Apple	P
238	*Eucalyptus nicholii*	Narrow-leaved Black Peppermint	G
239	*Callistemon citrinus*	Crimson Bottlebrush	G
240	*Callistemon viminalis*	Weeping Bottlebrush	G
241	*Eucalyptus umbra*	Broad-leaved White Mahogany	F
242	*Eucalyptus haemastoma*	Scribbly Gum	G
243	*Eucalyptus haemastoma*	Scribbly Gum	F
244	*Corymbia gummifera*	Red Bloodwood	G
245	*Allocasuarina torulosa*	Forest Oak	P
246	*Corymbia gummifera*	Red Bloodwood	G
247	*Banksia integrifolia*	Coast Banksia	G
248	*Eucalyptus haemastoma*	Scribbly Gum	G
249	*Corymbia gummifera*	Red Bloodwood	F
250	*Eucalyptus haemastoma*	Scribbly Gum	F
251	*Allocasuarina torulosa*	Forest Oak	P
252	*Corymbia gummifera*	Red Bloodwood	G
253	*Angophora costata*	Smooth-barked-Apple	F
254	*Corymbia gummifera*	Red Bloodwood	G
255	*Eucalyptus umbra*	Broad-leaved White Mahogany	G
256	*Eucalyptus umbra*	Broad-leaved White Mahogany	G
257	*Corymbia gummifera*	Red Bloodwood	G
258	*Eucalyptus umbra*	Broad-leaved White Mahogany	F
259	*Corymbia maculata*	Spotted Gum	G
260	*Angophora floribunda*	Rough-barked Apple	G
261	*Corymbia gummifera*	Red Bloodwood	F
262	*Eucalyptus umbra*	Broad-leaved White Mahogany	G

Table 2.0 Schedule of works and trees affected – **New Darby and Joan**. Trees described in greater detail in section 5.0.

UTM Tree No. / Stand No.	Common Name	Description of work to be done
181	Jacaranda	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
182	Illawarra Flame Tree	Remove and replace with new trees as per the Landscape Plan.
183	Wallangarra White Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
184	Narrow-leaved Ash	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
185	Claret Ash	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
186	Chinese Arborvitae	Remove and replace with new trees as per the Landscape Plan.
187	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
188	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
189	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
190	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
191	Red Bloodwood	Remove and replace with new trees as per the Landscape Plan.
192	Red Bloodwood	Remove and replace with new trees as per the Landscape Plan.
193	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
194	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
195	Narrow-leaved Black Peppermint	Remove and replace with new trees as per the Landscape Plan.
196	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
197	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
198	Crimson Bottlebrush	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
199	Smooth-barked-Apple	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
200	Smooth-barked-Apple	Remove and replace with new trees as per the Landscape Plan.
201	Red Bloodwood	Remove and replace with new trees as per the Landscape Plan.
202	Spotted Gum	Remove and replace with new trees as per the Landscape Plan.
203	Spotted Gum	Remove and replace with new trees as per the Landscape Plan.
204	Narrow-leaved Black Peppermint	Remove and replace with new trees as per the Landscape Plan.
205	Yellow Box	Remove and replace with new trees as per the Landscape Plan.
206	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
207	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
208	Old Man Banksia	Remove and replace with new trees as per the Landscape Plan.
209	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
210	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
211	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
212	Forest Oak	Remove and replace with new trees as per the Landscape Plan.
213	Crimson Bottlebrush	Remove and replace with new trees as per the Landscape Plan.
214	Red Bloodwood	Remove and replace with new trees as per the Landscape Plan.
215	White Cedar	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
216	Broad-leaved White Mahogany	Remove and replace with new trees as per the Landscape Plan.
217	Red Bloodwood	Remove and replace with new trees as per the Landscape Plan.
218	Smooth-barked-Apple	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
219	Broad-leaved White Mahogany	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
220	Red Bloodwood	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
221	Red Bloodwood	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
222	Red Bloodwood	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
223	Red Bloodwood	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
224	Smooth-barked-Apple	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
225	Smooth-barked-Apple	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
226	Smooth-barked-Apple	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
227	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
228	Scribbly Gum	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
229	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
230	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.

Table 2.0 Schedule of works and trees affected – **New Darby and Joan**, continued.

UTM Tree No. / Stand No.	Common Name	Description of work to be done
231	Smooth-barked-Apple	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
232	Sawara Cypress	Remove and replace with new trees as per the Landscape Plan.
233	Broad-leaved White Mahogany	Remove and replace with new trees as per the Landscape Plan.
234	Cheese Tree	Remove and replace with new trees as per the Landscape Plan.
235	Red Bloodwood	Remove and replace with new trees as per the Landscape Plan.
236	Smooth-barked-Apple	Remove and replace with new trees as per the Landscape Plan.
237	Smooth-barked-Apple	Remove and replace with new trees as per the Landscape Plan.
238	Narrow-leaved Black Peppermint	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
239	Crimson Bottlebrush	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
240	Weeping Bottlebrush	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
241	Broad-leaved White Mahogany	Retain and protect within a Tree Protection Zone (TPZ) as per the Tree Protection Plan.
242	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
243	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
244	Red Bloodwood	Remove and replace with new trees as per the Landscape Plan.
245	Forest Oak	Remove and replace with new trees as per the Landscape Plan.
246	Red Bloodwood	Remove and replace with new trees as per the Landscape Plan.
247	Coast Banksia	Remove and replace with new trees as per the Landscape Plan.
248	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
249	Red Bloodwood	Remove and replace with new trees as per the Landscape Plan.
250	Scribbly Gum	Remove and replace with new trees as per the Landscape Plan.
251	Forest Oak	Remove and replace with new trees as per the Landscape Plan.
252	Red Bloodwood	Remove and replace with new trees as per the Landscape Plan.
253	Smooth-barked-Apple	Remove and replace with new trees as per the Landscape Plan.
254	Red Bloodwood	Remove and replace with new trees as per the Landscape Plan.
255	Broad-leaved White Mahogany	Remove and replace with new trees as per the Landscape Plan.
256	Broad-leaved White Mahogany	Remove and replace with new trees as per the Landscape Plan.
257	Red Bloodwood	Remove and replace with new trees as per the Landscape Plan.
258	Broad-leaved White Mahogany	Remove and replace with new trees as per the Landscape Plan.
259	Spotted Gum	Remove and replace with new trees as per the Landscape Plan.
260	Rough-barked Apple	Remove and replace with new trees as per the Landscape Plan.
261	Red Bloodwood	Remove and replace with new trees as per the Landscape Plan.
262	Broad-leaved White Mahogany	Remove and replace with new trees as per the Landscape Plan.

1.0 INTRODUCTION

URBAN TREE MANAGEMENT © has prepared this report for TSA Management, Level 16, 207 Kent Street, Sydney NSW 2000 on behalf of RSL LifeCare Limited, to examine all trees within the vicinity of excavation and associated infrastructure works for the RSL Anzac Village, Veterans Parade, Collaroy NSW , sections – Old Darby & Joan and New Darby & Joan. The land is located in the Warringah Council (*the Council)* Local Government Area (*LGA*) and the trees are protected under a Tree Preservation Order.

The development proposes to demolish existing dwellings and buildings in each section and construct new dwellings and facilities. From the 262 trees being 180 in Old Darby and Joan and 82 in New Darby and Joan, 182 trees are to be removed; 126 and 57 trees, and retention of 54 and 25 respectively. Where a tree is subject to a major encroachment, works within the Tree Protection Zone require supervision and certification by the Project Arborist in accordance with AS4970 (2009). The design has provided protection for the most significant trees which will be protected by construction techniques and protection works to assist their viability and stability.

Mr Danny Draper (*the author*) attended sections of RSL Anzac Village, Collaroy Plateau NSW (*the site*) on the following dates and the trees and their growing environment in each section were examined by a visual assessment conducted from the ground:

- Old Darby and Joan, 12/1/2009 – 21/1/2009;
- New Darby and Joan, 21/1/2009, 24/2/2009 and 4/3/2009; and

The site is subject to Development Application and this report and any works recommended herein, that require approval from the consenting authority are provided to form part of that development application and its consent conditions.

The tree/s are indicated in Appendix I – Survey of Subject Tree/s. This report has relied upon the following plan/s and documents by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799:

1. Old Darby and Joan Demolition Survey Plan, Drawing, No. DA3.02, issue 2, date Sept 2009, Scale 1:300
2. New Darby and Joan Demolition Plan, Drawing No. DA2.02, issue 2, date 24/11/2009, Scale 1:250, 1:200
3. New Darby and Joan Site Masterplan, Drawing No. PDA2.01, issue A, date 30/09/2009, Scale 1:750 @ A1
4. Old Darby and Joan Demolition Survey Plan, Drawing, No. DA3.02, issue 2, date Sept 2009, Scale 1:300
5. Old Darby and Joan Site Plan North L1, Drawing No. DA3.04, issue 5, date Sept 2009, Scale 1:200 @ A1
6. Old Darby and Joan Site Plan North L2, Drawing No. DA3.05, issue 5, date Sept 2009, Scale 1:200 @ A1
7. Old Darby and Joan Site Plan South L2, Drawing No. DA3.06, issue 3, date Sept 2009, Scale 1:200 @ A1
8. Old Darby and Joan Site Plan North L3, Drawing No. DA3.07, issue 4, date Sept 2009, Scale 1:200 @ A1
9. Old Darby and Joan Site Plan South L3, Drawing No. DA3.08, issue 4, date Sept 2009, Scale 1:200 @ A1
10. Old Darby and Joan Site Plan North L4, Drawing No. DA3.09, issue 4, date Sept 2009, Scale 1:200 @ A1
11. Old Darby and Joan Site Plan South L4, Drawing No. DA3.10, issue 4, date Sept 2009, Scale 1:200 @ A1
12. Old Darby and Joan Site Plan S-East L4, Drawing No. DA3.11, issue 4, date Sept 2009, Scale 1:200 @ A1
13. Old Darby and Joan Site Plan L5, Drawing No. DA3.12, issue 4, date Sept 2009, Scale 1:200 @ A1
14. New Darby and Joan Site Plan South L1, Drawing No. DA2.02, issue 5, Plot date 24/11/2009, Scale 1:200 @ A1
15. New Darby and Joan Site Plan North L1, Drawing No. DA2.03, issue 5, Plot date 24/11/2009, Scale 1:200 @ A1
16. New Darby and Joan Site Plan North L2, Drawing No. DA2.05, issue 5, Plot date 24/11/2009, Scale 1:200 @ A1
17. New Darby and Joan Site Plan South L2, Drawing No. DA2.06, issue 5, Plot date 24/11/2009, Scale 1:200 @ A1
18. New Darby and Joan Site Plan North L3, Drawing No. DA2.07, issue 5, Plot date 24/11/2009, Scale 1:200 @ A1
19. New Darby and Joan Site Plan South L3, Drawing No. DA2.08, issue 5, Plot date 24/11/2009, Scale 1:200 @ A1
20. New Darby and Joan Site Plan North L4, Drawing No. DA2.09, issue 5, Plot date 24/11/2009, Scale 1:200 @ A1

2.0 AIMS & OBJECTIVES

Aims

Detail the condition of the tree/s on the site or on adjoining properties where such trees may be affected by the proposed works. This will be undertaken by assessment of individual specimens or stands, and indicate remedial works or protection measures for their retention in a safe and healthy condition, or a condition not less than that at the time of initial inspection for this report, or in a reduced but sustainable condition due to the impact of the development. Where possible expected impacts will be ameliorated through tree protection measures able to be applied, and will consider the location and condition of the trees in relation to the proposed building works, or recommend removal and replacement where appropriate.

Provide as an outcome of the assessment, the following: a description of the trees, observations made, discussion of the effects the location of the proposed building works may have on the trees, and make recommendations required for remedial or other works to the trees, if and where appropriate.

Determine from the assessment a description of the works or measures required to ameliorate the impact upon the trees to be retained, by the proposed building works or future impacts the trees may have upon the new building works if and where appropriate, or the benefits of removal and replacement if appropriate for the medium to long term safety and amenity of the site.

Objectives

Assess the condition of the subject tree/s.

Determine impact of development on the subject tree/s.

Provide recommendations for retention or removal of the subject tree/s.

Provide specifications for protection of tree/s to be retained.

Provide recommendations for replacement tree/s where appropriate.

3.0 METHODOLOGY

Note: Individual methodologies applied as applicable.

3.1 The method of assessment of tree/s applied is adapted from the principles of visual tree assessment undertaken from the ground, which considers:

1. Tree health and subsequent stability, both long and short term
2. Sustainable Retention Index Value (SRIV) Version 3 - IACA (2009)©
3. Hazard potential to people and property
4. Amenity values
5. Habitat values
6. Significance – Rating System for Tree Significance - IACA (2009)©

3.2 This assessment is undertaken using standard tree assessment criteria for each tree based on the values above and is implemented as a result of at least one comprehensive and detailed site inspection to undertake a visual tree assessment of each individual tree, or stand of trees, or a representative population sample.

3.3 Any dimensions recorded as averages, or by approximation are noted accordingly.

3.4 This report adopts Australian Standard AS4970 (2009) *Protection of trees on development sites* as a point of reference and guide for the recommended minimum setbacks (Appendix B) from the centre of a tree's trunk to development works and the distances may be increased or decreased by the author in accordance with AS4970 as a result of other factors providing mitigating circumstances or constraints as indicated by but not restricted to the following:

1. Condition of individual trees,
2. Tolerance of individual species to disturbance,
3. Geology e.g. physical barriers in soil, rock floaters, bedrock to surface
4. Topography e.g. slope, drainage,
5. Soil e.g. depth, drainage, fertility, structure,
6. Microclimate e.g. due to landform, exposure to dominant wind,
7. Engineering e.g. techniques to ameliorate impact on trees such as structural soil, gap graded fill, lateral boring,
8. Construction e.g. techniques to ameliorate impact on trees such as pier and beam, bridge footings, suspended slabs,
9. Root mapping,
10. Physical limitations - existing modifications to the environment and any impact to tree/s by development e.g. property boundaries, built structures, houses, swimming pools, road reserves, utility services easements, previous impact by excavation, or construction in other directions, soil level changes by cutting or filling, existing landscaping works within close proximity, modified drainage patterns,
11. Extraneous factors e.g. potential future impacts from development on adjoining land when the tree is located on or near to a property boundary.

3.5 Trees in groups may be referred to as stands and a stand may exclusively contain specimens to be either retained or removed or a combination of both. A stand may be used to discuss all the trees on a given site to expedite their assessment, or refer to trees growing proximate to one another or within a defined space. Stands may be comprised by mass boundary or screen plantings, to form a group of the same or a mixture of taxa. Each stand is considered as a single unit with each component tree assessed and expressed in tabular form, or indicated by a given percentage as a population sample of each stand. Where it is appropriate for a stand of trees to be retained in full or part, the location and setback of Tree Protection Zone fences or works, are prescribed to provide for the preservation of the stand or selected component trees, in a condition not less than that at the time of initial inspection for its incorporation into the landscape works for the site, or in a reduced but sustainable condition due to the impact of the development but ameliorated through tree protection measures.

3.6 The trees/s have been allocated a significance rating as determined by the Rating System for Tree Significance - IACA (2009), Appendix A, which allows the retention value to be determined.

3.7 The meanings for terminology used herein are taken from the IACA Dictionary for Managing Trees in Urban Environments 2009. An extract from the IACA Dictionary forms a glossary of terms included as Appendix G.

4.0 PRUNING STANDARDS

4.1 Any pruning recommended in this report is to be to the Australian Standard® AS4373 *Pruning of amenity trees*, and conducted in accordance with the NSW Work Cover Authority Code of Practice, Tree Work, 2007.

4.2 All pruning or removal works are to be in accordance with the appropriate Tree Management Policy where applicable, or Tree Management Order (TMO), or Tree Preservation Order (TPO).

4.3 Tree maintenance work is specialised and in order to be undertaken safely to ensure the works carried out are not detrimental to the survival of a tree being retained, and to assist in the safe removal of any tree, should be undertaken by a qualified arboriculturist with appropriate competencies recognised within the Australian Qualification Framework, with a minimum of 5 years of continual experience within the industry of operational amenity arboriculture, and covered by appropriate and current types of insurance to undertake such works.

5.0 TREE ASSESSMENT

5.1 Assessment of tree/s or stand/s of trees – Old Darby and Joan

Tree No. / Stand No.	Genus & species / Common Name	Age Y = Young M = Mature O = Overmature	Condition G = Good F = Fair P = Poor D = Dead	Crown Form D = Dominant C = Co-dominant I = Intermediate S = Suppressed F = Forest E = Emergent	Ht. Approx. metres	Crown spread approx. metres / Orientation R = Radial, or other	Crown Symmetry 1 = symmetrical 2 = asymmetrical / Orientation	Crown cover / Crown density % / D = dormant	DBH in mm @ 1.4m, or other, as indicated and trunk orientation other than R = radial, e.g. N/S / DARB Diameter above root buttress	Trunk Lean 1 = Upright-Slight 2 = Moderate 3 = Severe 4 = Critical. 5 = Acaulescent / Orientation / ST = Static P = Progressive Sc = Self-correcting	Roots evident @ root crown 1. = None 2. = Adventitious 3. = Basal Flare 4. = Buttresses 5. = First Order Roots (FOR), No. & distribution e.g. R = radial, or one each to N, S, E, NE and W	Pests & diseases 1 = No or 2 = Yes (If 2. see comments)	Branch Bark included 1 = No or 2 = Yes or 3 = N/A	Vigour 1 = Normal Vigour 2 = Low Vigour	Form 1 = Good form 2 = Poor form	SRIV Age, Vigour, Condition / Index Rating www.iaca.org.au / ESTIMATED LIFE EXPECTANCY 1. Long 2. Medium 3. Short	Significance scale 1=High 2=Medium 3=Low 4= Weed 5=Hazard / Retention Value 1=High 2=Medium 3=Low 4=Remove
1	*Banksia integrifolia* Coast Banksia	M	G	I - D	8	2.5 R	1	90 90	230, R / 300	1	1	1	1	1	1	MGVG – 10 1	2 1
2	*Eucalyptus haemastoma* Scribbly Gum	M	F	C	10	4.5 R	2 NW	90 90	230 R / 270 Av	1	1	1	1	1	1	MGVG – 10 1	2 2
3	*Glochidion ferdinandi* Cheese Tree	M	G	C	9	8 x 5 N/S	2 W	90 90	280 R / 300	1	1	1	1	1	1	MGVG – 10 1	2 1
4	*Eucalyptus haemastoma* Scribbly Gum	M	F	I	10	9 x 5 NW/SE	1	80 90	800 @ ground / 800	1	1	2	1	1	1	MGVF - 9 1	2 1
5	*Eucalyptus haemastoma* Scribbly Gum	M	P	C	11	8 x 5 N/S	2 S	90 90	370x430, 400 Av, E/W / 420	1	1	2	1	1	1	MGVP – 6 2	3 3
6	*Corymbia gummifera* Red Bloodwood	M	P	I	7	3 R	1	40 80	350x240, 295 Av, @ 200, N/S / 230	5	5. x 1 W	2	1	1	2	MGVP – 6 3	3 3
7	*Eucalyptus haemastoma* Scribbly Gum	M	F	I	9	4 R	2 W	85 90	240x220,230 Av,, N/S / 250	2, N St, Sc	1	1	1	1	1	MGVF – 9 1	2 2
8	*Corymbia gummifera* Red Bloodwood	M	G	I	8	3 R	2 E	80 90	230, R / 260	1	5. x 2 NE, NW	1	1	1	2	MGVG – 10 1	2 2
9	*Corymbia gummifera* Red Bloodwood	M	F	I - C	6	5 x 3 N/S	2 NE	85 85	200, R / 230	2, W St	5. x 1 E	2	1	1	1	MGVF – 9 1	3 2
10	*Corymbia gummifera* Red Bloodwood	M	G	C	10	5 R	2 E	90 90	370x230, 300 Av @ 300, N/S / 350	5	1	1	1	1	1	MGVG – 10 1	2 2

No.	Comments
2	Basal wound x 2 N & S.
4	Basal wounds x 2, N & S.
5	Basal wound, N-W, extensive decay evident expected to be structurally deteriorated.

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11	*Corymbia gummifera* Red Bloodwood	M	G	C - I	10	3 R	1	90 90	200, R / 220	1	3. x1 SW	1	1	1	2	MGVG – 10 1	2 2
12	*Citharexylum spinosum* Fiddlewood	Y	G	C	7	2 R	2 E	90 90	250x150, 200 Av, @ ground, N/S / 230	5	1	1	2	1	1	YGVG – 9 1	3 3
13	*Callitris rhomboidea* Oyster Bay Cypress	M	G	C – D	10	4 R	2 N	90 90	450x300, 375 Av @ ground, N/S / 400	5	1	1	1	1	1	MGVG – 10 1	2 2
14	*Acer palmatum* Japanese Maple	Y	G	S – C	5	2.5 R	2 NE	90 90	150, R @ 150 / 150	5	3 R	1	1	1	1	YGVG - 9 2	3 3
15	*Eucalyptus haemastoma* Scribbly Gum	M	G	D	10	5 R	1	90 90	270, R / 270	1	1	1	1	1	1	MGVG – 10 1	1 1
16	*Eucalyptus haemastoma* Scribbly Gum	Y	G	D	10	4 R	2 E	90 90	160, R / 160	1	4	1	1	1	1	YGVG – 9 1	1 1
17	4 x *Omalanthus populifolius* Bleeding Heart	M	G	C – I	5	3 x 1 – 3 – 2 N/S	2 N	90 90	70-110, 90 Av, R, / 100	1	4	1	1	1	1	MGVG – 10 3	3 3
18	*Glochidion ferdinandi* Cheese Tree	M	F	C	6	8 x 6 E/W	2 E	90 90	500, R, @ ground, / 500	5	4 R	1	1	1	1	MGVF – 9 1	2 2
19	*Glochidion ferdinandi* Cheese Tree	M	F	D – C	10	4.5 R	2 SE	90 90	400, r @ ground / 400	5	4 R	1	1	1	1	MGVF – 9 1	2 2
20	*Pittosporum undulatum* Sweet Pittosporum	M	G	I	9	2.5 R	1	90 90	170x150, 160 Av / 170	1	1	1	1	1	1	MGVG - 10 1	3 3

No.	Comments
17	Stand of 4 small trees – large shrubs. Likely to have been self sown.
19	Likely to have been self sown. Appears to be partly uprooted but stable.

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21	*Glochidion ferdinandi* Cheese Tree	Y	G	F – D	10	3 R	1	90 90	140, R / 140	1	3. R	1	1	1	1	YGVG – 9 1	3 2
22	*Eucalyptus punctata* Grey Gum	Y	G	D – C	12	3 R	1	90 90	160, R / 160	2, S St	5 x 5 N, E, NW, NNW, SW	1	1	1	1	YGVG – 9 1	2 1
23	*Allocasuarina torulosa* Forest Oak	M	G	C – D	13	5 x 4 N/S	2 NE	85 85	200, R / 200	1	4. x 4, N, S, E, NE	1	1	1	1	MGVG – 10 2	2 2
24	*Pittosporum undulatum* Sweet Pittosporum	Y	G	I – S	5	4 x 1.5 N/S	2 N	90 90	160x180, 170 Av, N/S, / 180	1	1	1	1	1	1	YGVG – 10 1	3 3
25	*Melaleuca quinquenervia* Broad-leaved Paperbark	M	G	D	14	4 R	1	90 90	400, R / 400	1	1	1	2	1	1	MGVG – 10 1	2 2
26	*Pittosporum undulatum* Sweet Pittosporum	M	G	C – S	5	2 R	2 S	90 90	130 @ 800, R / 150	1	3 R	1	1	1	1	MGVG – 10 1	3 3
27	*Glochidion ferdinandi* Cheese Tree	M	G	C – I	7	2.5 R	1	90 90	160x130, 145 Av, N/S / 160	1	5. x 2 E, S	1	1	1	1	MGVG – 10 1	2 2
28	*Pittosporum undulatum* Sweet Pittosporum	M	G	C	5.5	3.5 R	2 S	90 90	250 @ ground, R, / 250	5	1	1	2	1	1	MGVG – 10 1	3 3
29	*Pittosporum undulatum* Sweet Pittosporum	Y	G	C – S	4	1.5 x 2 E/W	2 W	90 90	90x60, 75 Av, E/W, / 75	1 Sc	3. R	1	1	1	1	YGVG – 9 1	3 3
30	*Citharexylum spinosum* Fiddlewood	M	G	C	6	3 R	2 E	99 90	140, R / 150	1	1	1	1	1	2	MGVG – 10 1	3 3

No.	Comments

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31	*Pittosporum undulatum* Sweet Pittosporum	M	F	C	6.5	5 x 3.5 N/S	2 E	80 85	400 R, @ ground / 400	5	1	1	2	1	1	MGVF – 9 1	2 2
32	*Allocasuarina torulosa* Forest Oak	M	G	D – F	11	2.5 R	2 SW	85 90	200x160, 180 Av, E/W / 200	1	3. x R 5. x 1, W	1	1	1	1	MGVG – 10 2	2 2
33	*Glochidion ferdinandi* Cheese Tree	M	F	C	9	8 x 4 N/S	2 E	90 90	400, R, @ ground / 400	5	3 R	1	2	1	1	MGVF – 9 1	3 2
34	*Glochidion ferdinandi* Cheese Tree	M	F	C – D	12	10 x 6 NE/SW	2 N	80 90	500, R, @ ground / 500	5	3. x R 5. x 1, SE	1	1	1	1	MGVF – 9 2	2 3
35	*Brachychiton acerifolius* Illawarra Flame Tree	Y	G	C	6	2.5 R	2 W	85 85	150x160, 155 Av, N/S / 160	1	1	1	1	1	1	YGVG – 9 1	2 3
36	*Schefflera actinophylla* Umbrella Tree	M	G	D	6	3 x 2.5 E/W	1	90 90	230x170, 200 Av, @ 900, N/S / 210	1	4. x 3, N, SE, S	1	2	1	1	MGVF – 9 1	2 2
37	*Chamaecyparis obtusa* 'Crippsii' Hinoki False Cypress	M	G	D	7	3 R	1	90 90	330x290, 310 Av @ ground, N/S / 310	5	1	1	2	1	1	MGVG – 10 1	2 2
38	*Chamaecyparis obtusa* 'Crippsii' Hinoki False Cypress	M	G	D	5	3 R	1	90 90	300, r @ ground / 300	5	1	1	2	1	1	MGVG – 10 1	2 2
39	*Archontophoenix alexandrae* Alexandra Palm	M	G	D	8	4 R	1	90 90	170, R / 170	1	2. R	1	3	1	1	MGVG – 10 1	2 3
40	*Camellia sasanqua* Camellia	M	F	D	4	1.5 R	1	90 90	250, R, @ ground / 250	5	1	1	2	1	1	MGVF – 9 2	3 3

No.	Comments
34	Likely to have been self sown. Low volume small and large deadwood, lower-mid crown to NW. High volume epicormic shoots, mid-upper crown to NW.

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41	*Jacaranda mimosifolia* Jacaranda	M	G	D	6	8 R	2 SW	90 90	500x600, 550 Av @ ground, NW/SE / 550	5	3. x R, 5. x 1, N	1	2	1	1	MGVG - 10 1	2 2
42	*Citharexylum spinosum* Fiddlewood	M	G	C	8	4 R	1	90 90	500, R, @ ground / 500	5	1	1	1	1	1	MGVG - 10 1	2 3
43	*Eucalyptus haemastoma* Scribbly Gum	M	P	D	11	8 x 10 NW/SE	2 N	85 90	500, R / 500	1	1	2	1	1	1	MGVP - 6 1	2 3
44	*Eucalyptus haemastoma* Scribbly Gum	M	G	D	12	14 x 9 E/W	2 N	90 90	450x500, 475 Av, N/S / 500	1	1	1	1	1	1	MGVG - 10 1	1 1
45	*Cryptomeria japonica* 'Elegans' Japanese Incense Cedar	M	G	D	5.5	2.5 R	1	90 90	150, R / 150	1	1	1	1	1	1	MGVG - 10 1	1 1
46	*Prunus domestica* Plum	M	G	D	4	5 R	1	90 90	400, R @ ground / 400	5	1	1	1	1	1	MGVG - 10 1	2 2
47	*Archontophoenix alexandrae* Alexandra Palm	M	G	D	7	3.5 R	1	90 90	200, R / 200	1	1	1	3	1	1	MGVG - 10 1	2 2
48	*Melaleuca bracteata* River Tea Tree	M	G	D	6.5	8 x 5 E/W	2 N	85 90	700x450, 575 Av @ ground, E/W / 580	5	3. R	1	1	1	1	MGVG - 10 1	2 3
49	*Fraxinus angustifolia ssp. oxycarpa* 'Raywood' Claret Ash	M	G	D	5.5	6 R	1	90 90	300x340, 320 Av @ 600, E/W / 340	1	3. R	1	1	1	1	MGVG - 10 1	1 1
50	*Callistemon salignus* Pink Tips bottlebrush	M	G	D	6	3.5 R	2 E	80 90	160, R / 160	1	1	1	2	1	1	MGVG - 10 1	2 3

No.	Comments
43	Termites evident in trunk – Coptotermes acinaciformis. Slightly crooked. Previously pruned in lower crown from over dwelling. Large pruning wound to N @ 1.8 m, average diameter 380 mm. High volume small deadwood, lower crown.
44	Medium volume epicormic shoots, lower-mid crown on 2nd and lower order branches.
49	Commemorative planting.

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51	*Pittosporum undulatum* Sweet Pittosporum	M	G	D	5.5	5 R	1	90 90	300, R, 2 ground / 300	1	3 R	1	1	1	1	MGVG – 10 2	2 3
52	3 x *Schefflera actinophylla* Umbrella Tree	Y	G	C – D	5	1.5 – 2 x 1.5-2 N/S	1	90 90	170-80, R / 170	1	1	1	2	1	1	YGVG – 9 2	3 3
53	*Mangifera indica* Mango	M	G	D	4.5	2.5 R	1	90 90	210x140, 175 Av, @ 800, N/S / 180	1	1	1	1	1	1	MGVG – 10 2	2 3
54	*Callistemon citrinus* Crimson Bottlebrush	M	G	D	4.5	4 R	2 N	90 90	280 R @ aground / 280	5	5. x 4, 2xSE, 2x W	1	2	1	1	MGVG – 10 2	2 2
55	*Brachychiton acerifolius* Illawarra Flame Tree	M	G	D	12	5 R	1	90 90	400 R / 420	1	5. x 5 R	1	1	1	1	MGVG – 10 1	1 1
56	*Eucalyptus punctata* Grey Gum	Y	G	D	5	1.5 R	1	90 90	90 R / 100	1	1	1	1	1	1	YGVG – 9 1	2 1
57	*Allocasuarina torulosa* Forest Oak	M	G	D	10	8 x 5 N/S	1	90 90	300 R / 320	1	1	1	1	1	1	MGVG – 10 2	2 2
58	*Corymbia gummifera* Red Bloodwood	M	G	D	14	12 R	2 S	90 90	1500x1100, 1300 Av @ ground, E/W / 1300	5	3.	1	1	1	1	MGVG – 10 1	1 1
59	*Melaleuca linariifolia* Snow-in-summer	M	G	C	5.5	2.5 R	2 N	90 90	150 R / 150	1	1	1	1	1	1	MGVG – 10 2	2 3
60	*Eucalyptus haemastoma* Scribbly Gum	M	F	C	10	10 x 5 NW/SE	2 SW	85 85	1100x400, 750 Av, NW/SE / 800	5	1	2	1	1	1	MGVF – 9 2	1 3

No.	Comments
58	Acaulescent, crown comprised of 4 codominant first order structural branches (FOSB) derived from epicormic shoots from an old stump, no longer present.
60	Acaulescent, crown comprised of 3 codominant first order structural branches (FOSB) derived from epicormic shoots from an old stump, no longer present. Basal wound evident on all FOSB with possible decay and termites.

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61	*Eucalyptus haemastoma* Scribbly Gum	M	F	S – C	6	5 x 3 E/W	2 W	80 85	550x250, 400 Av @ ground, N/S / 400	5	1	1	1	1	1	MGVF – 9 2	2 2
62	*Eucalyptus haemastoma* Scribbly Gum	M	F	D	11	8 R	@ N	80 85	800x700, 760 Av @ ground, N/S / 750	5	3 R	2	1	1	1	MGVF – 9 2	2 2
63	*Eucalyptus haemastoma* Scribbly Gum	M	F	C	6	7 x 3 NE/SW	2 NE	80 80	800x400, 600 Av @ ground, E/W / 600	5	1	1	1	1	1	MGVF – 9 3	1 3
64	*Callitris rhomboidea* Oyster Bay Cypress	M	F	I – D	5.5	1.5 R	1	85 85	290x210, 250 Av, @ 300, N/S / 250	1	1	1	2	1	1	MGVF – 9 2	2 3
65	*Callistemon citrinus* Crimson Bottlebrush	Y	G	C	5	3 x 2 N/S	2 W	90 90	120, R @ 500 / 140	1	1	1	1	1	1	YGVG – 9 2	2 3
66	*Eucalyptus haemastoma* Scribbly Gum	M	F	C – D	11	10 x 8 E/W	2 N	90 90	800x1100, 950 Av @ ground, N/S / 950	5	1	1	1	1	1	MGVF – 9 1	1 1
67	*Callistemon citrinus* Crimson Bottlebrush	Y	G	C	4.5	3 x 2 N/S	2 W	90 90	100 R @ 400 / 110	1	1	1	1	1	1	YGVG – 9 2	2 3
68	*Callistemon salignus* Pink Tips Bottlebrush	Y	G	I – D	6.5	3 R	1	90 90	120 R / 120	1	1	1	2	1	1	YGVG – 9 2	3 3
69	*Eucalyptus haemastoma* Scribbly Gum	M	F	C	9	6 x 4 E/W	2 N	80 85	250x600, 425 Av @ ground, E/W / 425	5	1	1	1	1	2	MGVF – 9 1	3 3
70	*Archontophoenix alexandrae* Alexandra Palm	M	G	D	9	3.5 R	1	90 90	600, R @ 200 / 600	5	1	1	3	1	2	MGVG – 10 1	2 3

No.	Comments
62	Basal wound to NW, coarse frass evident indicative of possible borers. Previously pruned for clearance over dwelling. Wounds on 2nd and lower order branches, mid-upper crown, possible fungal infection as canker causing fungus *Botryosphaeria ribis* evident on other trees in vicinity.
63	Tree partly wind thrown with root plate partly dislodged, trunk critically leaning but appears to have stabilised with basal epicormic shoot to W on the windward side mature forming an inferior first order branch (FOB).

5.1 Assessment of tree/s or stand/s of trees – Old Darby and Joan

Tree No. / Stand No.	Genus & species / Common Name	Age Y = Young M = Mature O = Overmature	Condition G = Good F = Fair P = Poor D = Dead	Crown Form D = Dominant C = Co-dominant I = Intermediate S = Suppressed F = Forest E = Emergent	Ht. Approx. metres	Crown spread approx. metres / Orientation R = Radial, or other	Crown Symmetry 1 = symmetrical 2 = asymmetrical / Orientation	Crown cover / Crown density % / D = dormant	DBH in mm @ 1.4m, or other, as indicated and trunk orientation other than R = radial, e.g. N/S / DARB Diameter above root buttress	Trunk Lean 1 = Upright-Slight 2 = Moderate 3 = Severe 4 = Critical. 5 = Acaulescent / Orientation / ST = Static P = Progressive Sc = Self-correcting	Roots evident @ root crown 1. = None 2. = Adventitious 3. = Basal Flare 4. = Buttresses 5. = First Order Roots (FOR), No. & distribution e.g. R = radial, or one each to N, S, E, NE and W	Pests & diseases 1 = No or 2 = Yes (If 2. see comments)	Branch Bark included 1 = No or 2 = Yes or 3 = N/A	Vigour 1 = Normal Vigour 2 = Low Vigour	Form 1 = Good form 2 = Poor form	SRIV Age, Vigour, Condition / Index Rating www.iaca.org.au / ESTIMATED LIFE EXPECTANCY 1. Long 2. Medium 3. Short	Significance scale 1=High 2=Medium 3=Low 4= Weed 5=Hazard / Retention Value 1=High 2=Medium 3=Low 4=Remove
71	*Acmena smithii* var. *minor* Small-leaved Lilly Pilly	M	P	C	6	5 x 4 E/W	2 S	90 90	330x230, 280 Av @ground, E/W / 280	5	1	2	2	2	1	MLVP– 2 3	2 1
72	*Callistemon citrinus* Crimson Bottlebrush	M	G	C	5	4.5 R	2 E	90 90	270x180, 225Av @ ground, E/W / 225	5	1	1	1	1	1	MGVG – 10 2	2 2
73	*Acacia parramattensis* Sydney Green Wattle	M	F	C – D	11	3.5 R	1	90 90	130, R / 150	1	4. x 5 R	1	1	1	1	MGVF – 9 3	2 3
74	*Eucalyptus elata* Cedar Wattle	M	F	C – S	5	3 R	2 E	85 85	130x110, 120 Av, E/W / 140	1	1	1	1	1	2	MGVF – 9 3	2 3
75	*Eucalyptus elata* Cedar Wattle	Y	G	D	12	5 R	1	85 85	180, R / 150	1	1	1	1	1	1	YGVG – 9 3	2 3
76	*Eucalyptus haemastoma* Scribbly Gum	M	G	C – D	13	12 x 8 E/W	2 S	90 90	700x600, 650 Av @ 600, N/S / 675	1	3. R	1	1	1	1	MGVG – 10 1	1 1
77	*Eucalyptus nicholii* Narrow-leaved Black Peppermint	Y	P	I – S	7	2.5 R	1	<10 30	120, R / 140	1	1	1	1	1	2	YGVP – 5 2	3 3
78	*Corymbia maculata* Spotted Gum	Y	G	F – D	12	2.5 R	1	90 90	110x130, 120 Av @ ground, NE/SW / 120	1	1	1	2	1	1	YGVG – 9 1	2 2
79	*Eucalyptus haemastoma* Scribbly Gum	M	G	C – I	13	6 x 5 E/W	2 N	80 80	330x430, 380 Av, E/W / 400	1	1	1	2	1	1	MGVG – 10 1	1 1
80	*Eucalyptus haemastoma* Scribbly Gum	M	P	C	13	8 x 4.5 E/W	2 N	50 60	1000x400, 700 Av @ ground, E/W / 700	5	1	2	1	2	2	MGVP – 6 3	2 3

No.	Comments
71	Leaf scale evident with sooty mould on some leaves.
74	Trunk slightly crooked, lower-mid trunk. Basal wound to S partly occluded. Basal epicormic shoots to W.
76	High volume large deadwood, throughout.
80	Acaulescent, crown comprised of 2 codominant first order structural branches (FOSB); orientation E/W; 1 superior to W, erect and divergent to N; 1 inferior to E, acutely divergent and ascending to E. Inferior FOSB has basal wound to E, 1400 mm high affecting half trunk circumference with extensive decay. High volume dieback, throughout. Previously pruned and may be infected with virulent fungal canker *Botryosphaeria ribis* which is evident on other trees on site.

5.1 Assessment of tree/s or stand/s of trees – Old Darby and Joan

Tree No. / Stand No.	Genus & species / Common Name	Age Y = Young M = Mature O = Overmature	Condition G = Good F = Fair P = Poor D = Dead	Crown Form D = Dominant C = Co-dominant I = Intermediate S = Suppressed F = Forest E = Emergent	Ht. Approx. metres	Crown spread approx. metres / Orientation R = Radial, or other	Crown Symmetry 1 = symmetrical 2 = asymmetrical / Orientation	Crown cover / Crown density % / D = dormant	DBH in mm @ 1.4m, or other, as indicated and trunk orientation other than R = radial, e.g. N/S / DARB Diameter above root buttress	Trunk Lean 1 = Upright-Slight 2 = Moderate 3 = Severe 4 = Critical. 5 = Acaulescent / Orientation / ST = Static P = Progressive Sc = Self-correcting	Roots evident @ root crown 1. = None 2. = Adventitious 3. = Basal Flare 4. = Buttresses 5. = First Order Roots (FOR), No. & distribution e.g. R = radial, or one each to N, S, E, NE and W	Pests & diseases 1 = No or 2 = Yes (If 2. see comments)	Branch Bark included 1 = No or 2 = Yes or 3 = N/A	Vigour 1 = Normal Vigour 2 = Low Vigour	Form 1 = Good form 2 = Poor form	SRIV Age, Vigour, Condition / Index Rating www.iaca.org.au / ESTIMATED LIFE EXPECTANCY 1. Long 2. Medium 3. Short	Significance scale 1=High 2=Medium 3=Low 4= Weed 5=Hazard / Retention Value 1=High 2=Medium 3=Low 4=Remove
81	*Acacia floribunda* Sally Wattle	O	P	D	5	3 R	1	50 50	200, R / 220	1	1	1	2	2	2	MLVP – 2 3	3 3
82	*Eucalyptus haemastoma* Scribbly Gum	M	F	I – D	14	9 x 4 N/S	1	80 85	500x900, 700 Av @ ground, N/S / 700	5	1	1	1	1	1	MGVF – 9 2	2 2
83	*Eucalyptus haemastoma* Scribbly Gum	M	G	C	13	10 x 6 N/S	2 W	85 90	380x400, 390 Av, N/S / 410	1	1	1	1	1	1	MGVG – 10 1	1 1
84	*Acacia parramattensis* Sydney Green Wattle	M	G	I – D	9	3 R	1	90 90	105, R / 120	1	1	1	1	1	1	MGVG – 10 3	2 3
85	*Eucalyptus haemastoma* Scribbly Gum	M	G	C	9	5 x 3 E/W	2 W	85 85	1300x500, 900 Av @ ground, NE/SW / 900	5	1	1	1	1	1	MGVG – 10 1	1 1
86	*Banksia serrata* Old Man Banksia	Y	G	D	5	1.5 R	2 E	85 85	250x200, 225 Av, N/S / 240	5	1	1	1	1	1	YGVG – 9 1	2 3
87	*Melaleuca linariifolia* Snow-in-summer	M	G	D	5.5	3 R	1	85 85	300x150, 225 Av @ ground, N/S / 225	5	1	1	1	1	1	MGVG – 10 2	2 3
88	*Eucalyptus haemastoma* Scribbly Gum	M	G	D	9	10 x 8 N/S	2 S	85 90	900x500, 700 Av @ ground, N/S / 700	5	1	1	1	1	1	MGVG – 10 1	1 1
89	*Eucalyptus haemastoma* Scribbly Gum	M	G	C	10	8 x 6 E/W	2 W	90 90	800, R @ ground / 800	5	1	1	1	1	1	MGVG – 10 1	1 1
90	*Eucalyptus haemastoma* Scribbly Gum	M	F	C	10	3 R	2 W	80 90	260, R / 300	1	1	1	1	1	1	MGVF – 9 1	3 3

No.	Comments
82	High volume large deadwood, throughout.
83	High volume large deadwood, throughout.
85	Acaulescent, crown comprised of 3 codominant first order structural branches (FOSB) derived from epicormic shoots from an old stump, no longer present.
88	High volume large deadwood, mid crown to S. Medium volume epicormic shoots, mid crown.
89	Acaulescent, crown comprised of 3 codominant first order structural branches (FOSB) derived from epicormic shoots from an old stump, no longer present.
90	Trunk cut to a 1.6 m stump and crown comprised of epicormic shoots that have arisen distally as a consequence of the wounding stimulus.

5.1 Assessment of tree/s or stand/s of trees – Old Darby and Joan

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91	*Eucalyptus haemastoma* Scribbly Gum	M	G	C	10	5 R	2 NW	90 90	350 , R / 400	1	3. NW	1	1	1	1	MGVG - 10 1	2 1
92	*Eucalyptus haemastoma* Scribbly Gum	Y	F	C – S	6	4.5 R	2 S	80 80	200x400, 300 Av @ ground, NW/SE / 300	5	1	2	1	1	1	YGVF – 8 3	2 4
93	*Acacia elata* Cedar Wattle	M	G	F – D	8	1.5 R	1 	85 85	140x120, 130 Av, E/W / 150	1	1	1	1	1	1	MGVG – 10 3	2 3
94	*Eucalyptus haemastoma* Scribbly Gum	M	P	C – S	7	5 x 2.5 N/S	2 W	80 85	600x250, 425 Av @ ground, N/S / 425	5	1	2	1	1	1	MGVP – 6 3	2 4
95	*Eucalyptus haemastoma* Scribbly Gum	Y	F	C - S	6	3 x 1 N/S	2 W	80 80	180, R / 220	1	1	1	1	1	1	YGVF – 8 1	2 2
96	*Eucalyptus haemastoma* Scribbly Gum	Y	G	I – G	10	5 x 3 N/S	2 W	90 90	400x800, 600 Av @ ground, N/S / 600	5	1	1	1	1	1	YGVG – 9 1	2 1
97	*Eucalyptus haemastoma* Scribbly Gum	M	F	C	11	5 R	2 NE	85 85	330, R / 350	1	1	1	1	1	1	MGVF – 9 1	2 2
98	*Eucalyptus haemastoma* Scribbly Gum	M	F	C – S	7	6 x 2 N/S	2 N	90 90	650x350, 500 Av @ ground, N/S / 500	5	1	1	1	1	2	MGVF – 9 1	2 2
99	*Acacia elata* Cedar Wattle	O	P	I – F	11	1.5 R	2 N	20 80	170, R / 190	1	1	2	1	1	2	OGVP – 4 3	3 3
100	*Acacia parramattensis* Sydney Green Wattle	O	F	C - S	8	2 R	2 N	75 80	130x120, 125 Av, N/S / 140	2, N St	1	2	1	1	2	OGVF – 5 3	3 3

No.	Comments
92	Acaulescent, crown comprised of 3 codominant first order structural branches (FOSB) derived from epicormic shoots from an old stump, no longer present. Low volume dieback, lower crown, from fungal canker apparently virulent decay fungus *Botryosphaeria ribis*, evident in other trees on site.
94	Caulescent, crown comprised of 2 codominant FOSB, 1 superior, acutely divergent and ascending to S with canker wound proximally apparently virulent decay fungus *Botryosphaeria ribis*, evident in other trees on site. Small wound, lower trunk, from borers.
95	High volume epicormic shoots, throughout. Medium volume dieback, throughout. Medium volume small deadwood, throughout.
99	High volume small and large deadwood, throughout.
100	Active borers evident from fresh medium frass on lower trunk.

5.1 Assessment of tree/s or stand/s of trees – Old Darby and Joan

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101	*Eucalyptus haemastoma* Scribbly Gum	M	P	C – S	8	6 x 4 N/S	2 N	85 85	400x700, 550 Av @ ground, N/S , 550	5	1	2	1	1	1	MGVP - 6 3	3 3
102	*Eucalyptus haemastoma* Scribbly Gum	Y	F	I	10	5 x 2.5 N/S	1	85 85	230x210, 220 Av, N/S / 250	1	3. R	1	1	1	1	YGVF – 8 1	2 2
103	*Corymbia gummifera* Red Bloodwood	M	F	D	5	6 x 3 N/S	2 W	90 90	450x150, 300 Av @ ground, NE/SW / 300	5	1	1	1	1	1	MGVF – 9 1	2 1
104	*Eucalyptus haemastoma* Scribbly Gum	M	F	C – D	10	6 R	2 N	85 85	1350x750, 1050 Av @ ground, N/S / 1050	5	1	1	1	1	1	MGVF – 9 1	2 1
105	*Eucalyptus haemastoma* Scribbly Gum	M	P	C - I	9	3.5 x 2 N/S	2 N	80 85	250, R / 275	1	3. N	2	1	1	2	MGVP – 6 1	2 3
106	*Eucalyptus haemastoma* Scribbly Gum	M	F	S – I	10	2.5 R	2 N	85 90	230, R / 250	2, N St, P?	1	2	1	1	2	MGVF – 9 1	2 2
107	*Eucalyptus haemastoma* Scribbly Gum	M	F	C	9.5	5 x 3 NW/SE	2 NW	75 80	260x300, 280 Av, N/S / 300	1	3. W	2	1	1	2	MGVF – 9 1	2 2
108	*Eucalyptus haemastoma* Scribbly Gum	M	F	C	12	5 R	2 N	90 90	300, R / 320	1	3. R	1	1	1	1	MGVF – 9 1	2 2
109	*Eucalyptus haemastoma* Scribbly Gum	M	F	C	11	5 R	2 NW	90 90	800, R @ ground / 800	5	1	1	1	1	1	MGVF – 9 1	2 2
110	*Eucalyptus haemastoma* Scribbly Gum	M	F	C - I	10	6 R	2 N	85 85	670x500, 585 Av @ ground, NE/SW / 585	5	1	2	1	1	1	MGVF – 9 1	2 3

No.	Comments
101	Caulescent, with canker wound proximally on first order structural branch to N, apparently virulent decay fungus *Botryosphaeria ribis*, evident in other trees on site. High volume large deadwood, throughout. High volume epicormic shoots, throughout. Medium volume dieback, throughout.
102	Low volume small deadwood, throughout.
103	Acaulescent, crown comprised of 3 codominant first order structural branches (FOSB) derived from epicormic shoots from an old stump, no longer present.
104	Acaulescent, crown comprised of 3 codominant first order structural branches (FOSB) derived from epicormic shoots from an old stump, no longer present. *Dendrophthoe vitellina* – Mistletoe, on second order branch in lower crown.
105	Basal wound on trunk to S. Possibly mechanical in origin from an abrasion impact event as close to road. Medium volume dieback with a series of spiral wounds along trunk and extending to inferior FOSB to N. High volume large deadwood, throughout. Medium volume epicormic shoots, throughout. Mature epicormic shoots on trunk @ 1.8 m.
106	Basal wound on trunk to S. Possibly mechanical in origin from an abrasion impact event as close to road. Low volume small deadwood, throughout. Basal FOSB previously removed leaving a stub 330x300 @ 150 mm, hollow, occupied by a *Lomandra longifolia* – Spiny-headed Mat Rush.
107	Low volume small and large deadwood, lower-mid crown. High volume epicormic shoots, throughout.
110	Basal wound on codominant dual leader FOSB to N, apparently virulent decay fungus *Botryosphaeria ribis*, evident in other trees on site. Low volume large deadwood, lower crown.

5.1 Assessment of tree/s or stand/s of trees – Old Darby and Joan

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111	*Eucalyptus haemastoma* Scribbly Gum	M	P	I – C	8	8 x 3 E/W	2 S	80 80	500x700, 60 Av @ ground, NE/SW / 600	5	3. SW	2	1	1	2	MGVP - 6 2	2 3
112	*Eucalyptus haemastoma* Scribbly Gum	M	P	C	6	7 x 4.5 E/W	1	80 80	1400x800, 1100 Av @ ground, NE/SW / 1100	5	1	1	2	1	1	MGVP – 6 1	2 3
113	*Liquidamber styraciflua* Liquidamber	M	G	D	8	10 R	1	90 90	340x300, 320 Av @ 1100, E/W / 380	1	3. R 5. x 2 W, SW	1	1	1	1	MGVG – 10 1	2 3
114	*Angophora hispida* Dwarf Apple	M	F	D	5	10 x 7 N/S	1	70 85	1100x600, 850 Av @ ground, E/W / 850	5	1	1	1	1	2	MGVF – 9 2	2 2
115	*Angophora hispida* Dwarf Apple	M	P	D	3	6 x 4 E/W	2 N	80 80	900x350, 625 Av, E/W / 700	5	1	1	1	1	2	MGVP – 6 2	2 2
116	*Glochidion ferdinandi* Cheese Tree	Y	G	D	6	4 R	1	90 90	220, R / 250	5	1	1	1	1	1	YGVG – 9 1	1 1
117	*Allocasuarina torulosa* Forest Oak	Y	G	D – F	10	1 R	1	90 90	90x110, 100 Av, N/S / 100	1	1	1	1	1	1	YGVG – 9 2	2 2
118	*Allocasuarina torulosa* Forest Oak	M	G	D	8	4 x 3 N/S	2 S	90 90	400x200, 300 Av @ ground, NE/SW / 300	5	1	1	1	1	1	MGVG – 10 3	2 2
119	*Allocasuarina torulosa* Forest Oak	M	F	C	8	6 x 3 N/S	2 W	80 80	230x210, 220 Av, N/S / 250	1	4. x 3, E, S, W	1	1	1	2	MGVF – 9 3	2 3
120	*Allocasuarina torulosa* Forest Oak	M	F	C - F	11	2.5 R	1	90 90	140, R / 160	1	1	1	1	1	1	MGVF – 9 3	2 2

No.	Comments
111	Caulescent, with canker wound proximally on first order structural branch to S, apparently virulent decay fungus *Botryosphaeria ribis*, evident in other trees on site.
112 113	Termite lead on trunk to lower crown of superior first order structural branch (FOSB) to SW leading to an arboreal nest, inspection of the lead identified *Nasutitermes walkeri* – Arboreal Termites. Canker wounds proximally on trunk to S, apparently virulent decay fungus *Botryosphaeria ribis*, evident in other trees on site. Medium volume large deadwood, lower-mid crown.
114	Low volume dieback, upper crown.
117	Low volume dieback, upper crown. Medium volume small deadwood, mid-upper crown.
119	Trunk slightly crooked @ 1200 mm. Loss of apical meristem due to borers with secondary crown formed from lateral branches.

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121	*Allocasuarina torulosa* Forest Oak	Y	F	F – D	6	1.5 R	1	40 60	90, R / 90	1	1	1	1	1	1	YGVF – 8 2	2 2
122	*Allocasuarina torulosa* Forest Oak	Y	P	F – I	8	1 R	1	40 50	250x220, 225 Av @ 200, E/W / 230	5	3. R	2	2	1	2	YGVP – 5 3	3 3
123	*Allocasuarina torulosa* Forest Oak	Y	G	D	7	3 R	1	90 90	330x130, 230 Av @ ground, NE/SW / 230	5	1	1	1	1	1	YGVG – 9 2	2 2
124	*Glochidion ferdinandi* Cheese Tree	Y	G	C	6	3.5 x 2 N/S	2 E	90 90	120, R / 120	1	4. x 1, E 5. x 1, E	1	2	1	1	YGVG – 9 1	2 2
125	*Allocasuarina torulosa* Forest Oak	M	F	C - I	8	3 x 2 N/S	1	85 85	400x200, 300 Av @ ground, N/S / 300	5	1	1	1	1	2	MGVF – 9 2	2 2
126	*Allocasuarina torulosa* Forest Oak	M	G	C – D	6.5	2.5 R	2 E	85 90	100, R / 100	1 Sc	1	1	1	1	1	MGVG – 10 2	2 2
127	*Allocasuarina torulosa* Forest Oak	M	P	I – C	5.5	1.5 R	1	30 70	150, R / 160	1	1	2	1	2	2	MGVP – 6 3	3 3
128	*Allocasuarina torulosa* Forest Oak	M	F	C – D	6	1.5 R	2 W	80 85	70, R / 90	1	1	1	1	1	1	MGVF – 9 2	2 2
129	*Eleaocarpus reticulatus* Blueberry Ash	M	G	C – D	8	3.5 R	2 SE	90 90	270, R @ ground / 270	5	3. R	1	1	1	1	MGVG – 10 2	2 2
130	3 x *Allocasuarina torulosa* Forest Oak	Y - M	G	I - C	7 - 9	1.5 – 2 R	2 NE	90 90	80 – 140 Av, R / 100 – 160 Av	1	1	1	1	1	1	YGVG – 9 – MGVG - 10 2	2 2

No.	Comments
122	Loss of an upright second order branch at 4 m due to Longicorn Borer (Order *Cerambycidae*).
124	Previously top lopped at 1.8 m.
125	Previously pruned, lower crown.
126	Trunk slightly crooked.
127	Borers, throughout. Causing structural branches to be ringbarked. High volume dieback, upper crown.

5.1 Assessment of tree/s or stand/s of trees – Old Darby and Joan

Tree No. / Stand No.	Genus & species / Common Name	Age Y = Young M = Mature O = Overmature	Condition G = Good F = Fair P = Poor D = Dead	Crown Form D = Dominant C = Co-dominant I = Intermediate S = Suppressed F = Forest E = Emergent	Ht. Approx. metres	Crown spread approx. metres / Orientation R = Radial, or other	Crown Symmetry 1 = symmetrical 2 = asymmetrical / Orientation	Crown cover / Crown density % / D = dormant	DBH in mm @ 1.4m, or other, as indicated and trunk orientation other than R = radial, e.g. N/S / DARB Diameter above root buttress	Trunk Lean 1 = Upright-Slight 2 = Moderate 3 = Severe 4 = Critical. 5 = Acaulescent / Orientation / ST = Static P = Progressive Sc = Self-correcting	Roots evident @ root crown 1. = None 2. = Adventitious 3. = Basal Flare 4. = Buttresses 5. = First Order Roots (FOR), No. & distribution e.g. R = radial, or one each to N, S, E, NE and W	Pests & diseases 1 = No or 2 = Yes (If 2. see comments)	Branch Bark included 1 = No or 2 = Yes or 3 = N/A	Vigour 1 = Normal Vigour 2 = Low Vigour	Form 1 = Good form 2 = Poor form	SRIV Age, Vigour, Condition / Index Rating www.iaca.org.au / ESTIMATED LIFE EXPECTANCY 1. Long 2. Medium 3. Short	Significance scale 1=High 2=Medium 3=Low 4= Weed 5=Hazard / Retention Value 1=High 2=Medium 3=Low 4=Remove
131	*Eucalyptus botryoides* Bangalay	M	G	D	12	7 R	1	90 90	300x350, 325 Av, N/S / 375	1	3. E	1	1	1	1	MGVG - 10 1	1 1
132	*Hymenosporum flavum* Native Frangipani	M	F	D	6	5 x 2.5 N/S	1	90 90	200x400, 300 Av @ ground, NE/SW / 300	5	1	1	1	1	1	MGVF – 9 1	2 1
133	*Acacia podalyriifolia* Mount Morgan Wattle	O	G	D	5	8 R	1	90 90	250x500, 375 Av @ ground, E/W / 375	5	1	1	2	1	1	OGVG – 6 3	2 2
134	*Archontophoenix alexandrae* Alexandra Palm	M	G	D	8	4.5 R	1	90 90	230, R / 260	1	1	1	3	1	1	MGVG – 10 1	2 3
135	*Callistemon citrinus* Crimson Bottlebrush	M	G	C	5.5	6 x 4 E/W	2 N	90 90	240, R @ 500 / 270	1	3. R	1	2	1	1	MGVG – 10 2	2 2
136	*Callistemon citrinus* Crimson Bottlebrush	M	G	C	5.5	6 x 3 N/S	2 E	85 90	240, R 2 100 / 240	5	5. x 1 W	1	2	1	1	MGVG – 10 2	2 2
137	*Eucalyptus melliodora* Yellow Box	M	G	D	13	7 R	2 W	90 90	390x290, 340 Av, E/W / 360	1	5. x 3 NE, S, W	1	1	1	1	MGVG – 10 2	2 1
138	*Eucalyptus melliodora* Yellow Box	O	F	C	6	6 x 4.5 N/S	2 E	80 85	200, R @ 500 / 220	1	1	2	2	1	1	OGVF – 5 3	2 3
139	*Fraxinus angustifolia* Narrow-leaved Ash	M	G	C	6	4.5 R	2 W	90 90	250x350, 300 Av @ ground, NE/SW / 300	5	5. x 4 N, SE, SSE, S	1	1	1	1	MGVG – 10 2	2 1
140	*Eucalyptus melliodora* Yellow Box	M	F	C - D	7	9 x 8 N/S	2 W	70 90	250, R / 270	2	5. x 2 E, S	1	1	1	2	MGVF – 9 2	2 1

No.	Comments
136	Previously pruned in lower crown for access.
137	Previously pruned in lower crown for clearance from over dwelling.
138	Previously pruned in lower crown for access. High volume small deadwood, lower-mid crown. Borers evident with fresh medium frass in included branch crotches, lower crown.
139	High volume small deadwood, throughout.
140	High volume dieback, upper crown. High volume small and large deadwood, throughout.

5.1 Assessment of tree/s or stand/s of trees – Old Darby and Joan

Tree No. / Stand No.	Genus & species / Common Name	Age Y = Young M = Mature O = Overmature	Condition G = Good F = Fair P = Poor D = Dead	Crown Form D = Dominant C = Co-dominant I = Intermediate S = Suppressed F = Forest E = Emergent	Ht. Approx. metres	Crown spread approx. metres / Orientation R = Radial, or other	Crown Symmetry 1 = symmetrical 2 = asymmetrical / Orientation	Crown cover / Crown density % / D = dormant	DBH in mm @ 1.4m, or other, as indicated and trunk orientation other than R = radial, e.g. N/S / DARB Diameter above root buttress	Trunk Lean 1 = Upright-Slight 2 = Moderate 3 = Severe 4 = Critical. 5 = Acaulescent / Orientation / ST = Static P = Progressive Sc = Self-correcting	Roots evident @ root crown 1. = None 2. = Adventitious 3. = Basal Flare 4. = Buttresses 5. = First Order Roots (FOR), No. & distribution e.g. R = radial, or one each to N, S, E, NE and W	Pests & diseases 1 = No or 2 = Yes (If 2. see comments)	Branch Bark included 1 = No or 2 = Yes or 3 = N/A	Vigour 1 = Normal Vigour 2 = Low Vigour	Form 1 = Good form 2 = Poor form	SRIV Age, Vigour, Condition / Index Rating www.iaca.org.au / ESTIMATED LIFE EXPECTANCY 1. Long 2. Medium 3. Short	Significance scale 1=High 2=Medium 3=Low 4= Weed 5=Hazard / Retention Value 1=High 2=Medium 3=Low 4=Remove
141	*Lagerstroemia indica* Crepe Myrtle	M	G	C	5.5	5 x 3.5 N/S	2 W	90 90	300x220, 260 Av @ ground, N/S / 260	5	3. R	1	2	1	1	MGVG - 10 1	2 2
142	*Banksia integrifolia* Coast Banksia	Y	G	C – I	5	1.5 R	2 E	90 90	110, R / 120	1	3. R	1	2	1	1	YGVG – 9 1	2 2
143	*Eucalyptus melliodora* Yellow Box	M	F	D	7	7 R	1	90 90	300, R / 320	1	3. W	2	1	1	1	MGVF – 9 1	2 2
144	*Eucalyptus melliodora* Yellow Box	M	F	C	6	4.5 R	2 N	90 90	250x210, 230 Av @ 1 m, N/S / 260	1	3. R	2	2	1	1	MGVF – 9 1	2 2
145	*Banksia serrata* Old Man Banksia	M	G	D	5	3.5 R	1	90 90	250x350, 300 Av @ ground, NW/SE / 300	5	1	1	1	1	1	MGVG – 10 1	2 2
146	*Callistemon citrinus* Crimson Bottlebrush	M	G	D	5	3 R	1	90 90	500x350, 425 Av @ ground, N/S / 425	5	1	1	1	1	1	MGVG – 10 2	2 2
147	*Cinnamomum camphora* Camphor Laurel	M	G	D	10	11 R	1	90 90	1100x1200, 1150 Av @ ground, N/S / 1150	5	5. x 5 R	1	1	1	1	MGVG – 10 1	2 2
148	*Juniperus chinensis* Chinese Juniper	M	G	D	7	1.5 R	1	90 90	160, R / 190	1	1	1	1	1	1	MGVG – 10 1	2 3
149	*Juniperus chinensis* Chinese Juniper	M	G	D	7	1.5 R	1	90 90	380, R / 410	5	1	1	2	1	1	MGVG – 10 1	2 3
150	*Eucalyptus haemastoma* Scribbly Gum	M	F	S - C	9	7 x 5 N/S	2 N	80 85	900, R @ ground / 900	5	3. R	2	1	1	1	MGVF – 9 2	2 2

No.	Comments
143	Numerous small lesions approximately 30-50 mm diameter on trunk and first order structural branches possibly canker wounds as virulent decay fungus *Botryosphaeria ribis*, evident in other trees on site mainly *E. haemastoma* but may also be unrelated and innocuous. Large volume small deadwood, throughout.
144	Numerous small lesions approximately 30-50 mm diameter on trunk and first order structural branches possibly canker wounds as virulent decay fungus *Botryosphaeria ribis*, evident in other trees on site mainly *E. haemastoma* but may also be unrelated and innocuous. Large volume small deadwood, throughout.
147	Large first order root, girdling, deflected from east to west by kerb.
150	Acaulescent, crown deliquescent, comprised of 3 codominant first order structural branches (FOSB); orientation radial; 1 superior, 2 inferior. 1 inferior FOSB to N with basal wound and decay with termite mud evident to S. Possibly structurally unsound but could be retained and treated after Resistograph testing to determine structural integrity.

5.1 Assessment of tree/s or stand/s of trees – Old Darby and Joan

Tree No. / Stand No.	Genus & species / Common Name	Age Y = Young M = Mature O = Overmature	Condition G = Good F = Fair P = Poor D = Dead	Crown Form D = Dominant C = Co-dominant I = Intermediate S = Suppressed F = Forest E = Emergent	Ht. Approx. metres	Crown spread approx. metres / Orientation R = Radial, or other	Crown Symmetry 1 = symmetrical 2 = asymmetrical / Orientation	Crown cover / Crown density % / D = dormant	DBH in mm @ 1.4m, or other, as indicated and trunk orientation other than R = radial, e.g. N/S / DARB Diameter above root buttress	Trunk Lean 1 = Upright-Slight 2 = Moderate 3 = Severe 4 = Critical. 5 = Acaulescent / Orientation / ST = Static P = Progressive Sc = Self-correcting	Roots evident @ root crown 1. = None 2. = Adventitious 3. = Basal Flare 4. = Buttresses 5. = First Order Roots (FOR), No. & distribution e.g. R = radial, or one each to N, S, E, NE and W	Pests & diseases 1 = No or 2 = Yes (If 2. see comments)	Branch Bark included 1 = No or 2 = Yes or 3 = N/A	Vigour 1 = Normal Vigour 2 = Low Vigour	Form 1 = Good form 2 = Poor form	SRIV Age, Vigour, Condition / Index Rating www.iaca.org.au / ESTIMATED LIFE EXPECTANCY 1. Long 2. Medium 3. Short	Significance scale 1=High 2=Medium 3=Low 4= Weed 5=Hazard / Retention Value 1=High 2=Medium 3=Low 4=Remove
151	*Eucalyptus haemastoma* Scribbly Gum	M	P	C	9	6 R	2 W	80 85	900x650, 775 Av @ ground, N/S / 775	5	3. R	2	1	1	1	MGVP - 6 2	2 2
152	*Corymbia gummifera* Red Bloodwood	M	G	D	12	5 R	1	90 90	420x320, 370 Av, N/S / 400	1	3. R	1	1	1	1	MGVG – 10 1	1 1
153	*Eucalyptus haemastoma* Scribbly Gum	M	G	C	11	11 x 5 NE/SW	2 S	90 90	1000x780, 875 Av @ ground, NW/SE / 875	5	3. R	1	1	1	1	MGVG – 10 1	1 1
154	*Eucalyptus haemastoma* Scribbly Gum	M	G	C	10	7 R	2 NE	80 85	1200x700, 950 Av @ ground, E/W / 950	5	3. R	2	1	1	1	MGVG – 10 1	2 1
155	*Eucalyptus haemastoma* Scribbly Gum	M	F	I - C	6.5	9 x 3 NE/SW	2 N	85 85	800x450, 625 Av @ ground, NE/SW / 625	5	1	2	1	1	1	MGVF – 9 2	2 2
156	*Eucalyptus haemastoma* Scribbly Gum	M	F	C – S	6	6 x 4 NE/SW	2 S	85 85	600x350, 475 Av @ ground, E/W / 475	5	1	1	1	1	1	MGVF – 9 2	2 2
157	*Eucalyptus haemastoma* Scribbly Gum	M	G	C – I	6	6 x 3.5 NE/SW	2 NE	85 90	350 , R / 400	1 St	1	1	1	1	1	MGVG – 10 1	1 1
158	*Corymbia gummifera* Red Bloodwood	M	G	D	11	11 x 8 NE/SW	1	90 90	440, R / 460	1	5. x 5 R	1	1	1	1	MGVG – 10 1	1 1
159	*Ceratopetalum gummiferum* NSW Christmas Bush	M	G	C	4.5	2.5 R	2 W	90 90	500x600, 550 Av @ ground, N/S / 550	5	3. R	1	1	1	1	MGVG – 10 1	1 1
160	*Jacaranda mimosifolia* Jacaranda	Y	G	C	5	4.5 R	2 N	90 90	160, R / 180	2	5. x 3 R	1	1	1	1	YGVG – 9 1	1 1

No.	Comments
151	Acaulescent, crown deliquescent, comprised of 3 codominant first order structural branches (FOSB); orientation radial; 1 superior with canker lesion at 4 m below union of second order branches, apparently virulent decay fungus *Botryosphaeria ribis*, evident in other trees on site.
152	Mature basal epicormic shoot forming inferior FOSB.
154	Acaulescent, basal wound to N, decay extending into trunk expected but may be localized. Possibly structurally unsound but could be retained and treated after Resistograph testing to determine structural integrity. High volume large deadwood, throughout.
155	Acaulescent, basal wound to S, decay extending to inferior FOSB to S on its N side. Stub up to 1 m long on Inferior FOSB to S. Medium volume small deadwood, throughout.
156	Acaulescent, 2 wounds, wound 1 basal to S, from borers on superior FOSB, wound 2 @ 1.2 m and possibly canker of virulent decay fungus *Botryosphaeria ribis*, evident in other trees on site.
157	Previously pruned removing upright second order branch to SE. Slightly crooked.
160	Crossed inferior FOSB, lower crown.

5.1 Assessment of tree/s or stand/s of trees – Old Darby and Joan

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161	*Ceratopetalum gummiferum* NSW Christmas Bush	M	G	D	5	2.5 R	1	90 90	270, R / 290	1	1	1	2	1	1	MGVG - 10 2	2 2
162	*Araucaria columnaris* Cook Island Pine	Y	G	D	6	2 R	1	90 90	160, R / 180	1	1	1	1	1	1	YGVG – 9 2	2 2
163	*Ficus macrophylla* Moreton Bay Fig	M	G	D	6	9 R	1	90 90	900x500, 700 Av @ 400, NW/SE / 750	5	4. x 6 R	1	1	1	1	MGVG – 10 2	1 1
164	*Liquidamber styraciflua* Liquidamber	M	G	D	8	7 R	1	90 90	400x440, 420 Av@ ground, E/W / 420	1	3. R	1	1	1	1	MGVG – 10 2	2 2
165	*Eucalyptus haemastoma* Scribbly Gum	M	F	D	7	6 x 4 NE/SW	2 SE	90 90	550x400, 475 Av @ 1 m, NW/SE / 500	2 St	1	1	1	1	1	MGVF – 9 2	2 2
166	*Eucalyptus haemastoma* Scribbly Gum	M	F	C	6	3 x 4 N/S	2 SW	80 80	230x280, 225 Av, E/W / 270	3 St	3. x 1 N	1	1	1	2	MGVF – 9 1	2 3
167	*Eucalyptus haemastoma* Scribbly Gum	M	G	D	8	6 x 5 E/W	2 S	80 85	400x360, 380 Av, NW/SE / 400	2, S Sc., St	3. R	1	1	1	2	MGVG – 10 1	1 1
168	*Eucalyptus haemastoma* Scribbly Gum	M	G	C	10	9 R	2 E	80 85	700x520, 610 Av, E/W / 630 Av	1	3. R	1	1	1	1	MGVG – 10 1	1 1
169	*Eucalyptus haemastoma* Scribbly Gum	M	F	S - C	7	7 x 4 N/S	2 N	85 85	460x360, 410 Av @ 1100, E/W / 450	2	3. R	2	1	1	2	MGVF – 9 2	2 2
170	*Eucalyptus haemastoma* Scribbly Gum	M	G	C	10	5 R	2 W	85 85	450, R / 470	1	3. R	1	1	1	1	MGVG – 10 1	1 1

No.	Comments
161	Possibly structurally unsound but could be retained and treated after Resistograph testing to determine structural integrity.
162	Possibly structurally unsound but could be retained and treated after Resistograph testing to determine structural integrity.
163	Acaulescent with pocket crotch at union of 3 FOSB.
165	Dieback wounds on some 1st and lower order branches from pruning.
166	Crown appears to be regrowth from an old stump, N-NW. Tree severely leaning (30-45O) but appears stable with target areas as lawn, garden beds and clothes line in lawn. Poor form.
167	Trunk slightly crooked. Previously pruned removing FOSB at 1.6 m to W, epicormic shoots emanating from this point proximal to pruning wound.
168	Slightly crooked. High volume small and large deadwood, throughout.
169	Trunk to approximately 1.2 m, descending hollow with cavity opening on S side of trunk below crotch of 2 FOSB. Possibly structurally unsound but could be retained and treated after Resistograph testing to determine structural integrity.

5.1 Assessment of tree/s or stand/s of trees – Old Darby and Joan

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171	*Eucalyptus haemastoma* Scribbly Gum	M	G	I – D	12	5 R	1	85 90	560c400, 490 Av, E/W / 500	1	3. R	1	1	1	1	MGVG - 10 1	1 1
172	*Eucalyptus haemastoma* Scribbly Gum	M	F	C	9	6 x 5 N/S	2 NW	85 85	1000x1200, 1100 Av@ ground, E/W / 1100	5	1	1	2	1	1	MGVF – 9 1	1 1
173	*Washingtonia filifera* American Cotton Palm	M	G	D	9	2 R	1	90 90	300, R / 340	1	1	1	3	1	1	MGVG – 10 1	2 2
174	*Eucalyptus nicholii* Narrow-leaved Black Peppermint	M	G	C	11	6 x 4 NW/SE	2 NE	85 85	320x380, 350 Av, N/S / 370	1	1	1	1	1	1	MGVG – 10 3	2 3
175	*Eucalyptus nicholii* Narrow-leaved Black Peppermint	M	G	D	11	5 R	1	85 90	650x350, 500 Av @ 1 m, NW/SE / 400	1	1	2	1	1	1	MGVG – 10 3	2 3
176	*Liquidamber styraciflua* Liquidamber	M	G	D	13	8 R	1	90 90	560x500, 530 Av, N/S / 540	1	3. R 5. x 10, R	1	2	1	1	MGVG – 10 2	2 1
177	*Michelia figo* Port Wine Magnolia	M	G	D	5	5 R	1	90 90	800, R @ ground, / 800	5	3. R	1	2	1	1	MGVG – 10 2	1 1
178	*Eucalyptus nicholii* Narrow-leaved Black Peppermint	M	G	D	11	9 R	1	85 85	480x520, 500 Av, N/S / 520	1	1	1	1	1	1	MGVG – 10 3	2 3
179	*Eucalyptus nicholii* Narrow-leaved Black Peppermint	O	G	S – C	6	10 x 8 E/W	2 NW	85 85	400x220, 310 Av @ 900, NW/SE / 350	1	1	1	1	1	1	OGVG – 6 3	2 3
180	*Banksia integrifolia* Coast Banksia	M	G	D - C	5	3 R	2 W	90 90	350x300, 325 Av @ ground, N/S / 360	3, SW St	1	1	1	1	1	MGVG – 10 1	2 2

No.	Comments
172	Large volume small deadwood, throughout.
175	Borers evident at pruning wound on inferior FOSB to W, indicated by fresh medium frass. 2 mature epicormic shoots on W side of lower trunk.
176	Branch bark included but round-edged ribs evident below crotch indicative of stable growth.
177	Appears to be a commemorative planting.
178	High volume small deadwood, throughout. Medium volume epicormic shoots, mid-upper crown.

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181	*Jacaranda mimosifolia* Jacaranda	Y	G	C – D	5	6 x 5 NW/SE	1	90 90	210, R @ 1 m / 250	1	1	1	1	1	1	YGVG – 9 1	3 2
182	*Brachychiton acerifolius* Illawarra Flame Tree	M	G	D	6	2.5 R	1	90 90	230, R / 250	1	3. R	1	1	1	1	MGVG – 10 1	2 2
183	*Eucalyptus scoparia* Wallangarra White Gum	M	G	D	8	8 R	1	90 90	500, R / 560	1	1	1	1	1	1	MGVG – 10 2	2 2
184	*Fraxinus angustifolia* Narrow-leaved Ash	Y	G	C	5	4 R	2 W	90 90	170x130, 150 Av, N/S / 170	1	3. R	1	1	1	1	YGVG – 9 1	3 2
185	*Fraxinus angustifolia* ssp. *oxycarpa* 'Raywood' Claret Ash	M	G	C	5.5	4.5 R	2 SW	85 90	170x210, 190 Av, N/S / 220	1	3. R 5. x 6, R	1	2	1	1	MGVG – 10 1	2 2
186	*Thuja occidentalis* Western Arborvitae	M	G	D	5	2.5 R	1	90 90	300x250, 275 Av @ ground, N/S / 250	5	3. R	1	2	1	1	MGVG – 10 2	2 1
187	*Eucalyptus haemastoma* Scribbly Gum	M	G	C	5.5	5 x 4 N/S	2 S	90 90	300, R / 340	1	1	1	1	1	1	MGVG – 10 1	1 1
188	*Eucalyptus haemastoma* Scribbly Gum	Y	G	C	5.5	5 x 3 E/W	2 E	90 90	230x260, 245 Av, E/W / 260	1	3. R	1	1	1	1	YGVG – 9 1	1 1
189	*Eucalyptus haemastoma* Scribbly Gum	M	G	D	8	7 R	1	90 90	750x650, 700 Av @ 1100, E/W 750	1 Sc., St	3. R	1	1	1	1	MGVG – 10 1	1 1
190	*Eucalyptus haemastoma* Scribbly Gum	M	G	C	7	6 x 4 N/S	2 W	90 90	550x300, 450 Av @ ground, N/S / 450	5	1	1	1	1	1	MGVG – 10 1	1 1

No.	Comments
183	Medium volume small deadwood, throughout.
187	High volume small and large deadwood, throughout.
188	Medium volume small and large deadwood, throughout.
189	High volume small and large deadwood, throughout.

5.1 Assessment of tree/s or stand/s of trees – New Darby and Joan

Tree No. / Stand No.	Genus & species / Common Name	Age Y = Young M = Mature O = Overmature	Condition G = Good F = Fair P = Poor D = Dead	Crown Form D = Dominant C = Co-dominant I = Intermediate S = Suppressed F = Forest E = Emergent	Ht. Approx. metres	Crown spread approx. metres / Orientation R = Radial, or other	Crown Symmetry 1 = symmetrical 2 = asymmetrical / Orientation	Crown cover / Crown density % / D = dormant	DBH in mm @ 1.4m, or other, as indicated and trunk orientation other than R = radial, e.g. N/S / DARB Diameter above root buttress	Trunk Lean 1 = Upright-Slight 2 = Moderate 3 = Severe 4 = Critical. 5 = Acaulescent / Orientation / ST = Static P = Progressive Sc = Self-correcting	Roots evident @ root crown 1. = None 2. = Adventitious 3. = Basal Flare 4. = Buttresses 5. = First Order Roots (FOR), No. & distribution e.g. R = radial, or one each to N, S, E, NE and W	Pests & diseases 1 = No or 2 = Yes (If 2. see comments)	Branch Bark included 1 = No or 2 = Yes or 3 = N/A	Vigour 1 = Normal Vigour 2 = Low Vigour	Form 1 = Good form 2 = Poor form	SRIV Age, Vigour, Condition / Index Rating www.iaca.org.au / ESTIMATED LIFE EXPECTANCY 1. Long 2. Medium 3. Short	Significance scale 1=High 2=Medium 3=Low 4= Weed 5=Hazard / Retention Value 1=High 2=Medium 3=Low 4=Remove
191	*Corymbia gummifera* Red Bloodwood	M	F	C	7	5 x 3 N/S	2 W	85 85	260, R / 280	1	3. R 5. x 5, R	1	1	1	1	MGVF – 9 1	2 2
192	*Corymbia gummifera* Red Bloodwood	M	F	C	7	4.5 x 3 NW/SE	2 NW	85 90	240, R @ 1 m / 260	1	1	1	2	1	1	MGVF – 9 1	2 2
193	*Eucalyptus haemastoma* Scribbly Gum	M	G	C – D	7.5	5 R	2 S	85 90	500, R / 530	2 SE	1	1	1	1	1	MGVG – 10 1	2 2
194	*Eucalyptus haemastoma* Scribbly Gum	M	G	C – D	7	* R	2 E	85 85	1900x1300, 1600 Av @ ground, NE/SW / 1600	5	1	1	1	1	1	MGVG – 10 1	2 2
195	*Eucalyptus nicholii* Narrow-leaved Black Peppermint	M	G	D	7	5.5 R	1	90 90	400x500, 450 Av, E/W / 470	1	1	1	1	1	1	MGVG – 10 3	2 3
196	*Eucalyptus haemastoma* Scribbly Gum	Y	G	D – C	5	3.5 R	2 E	90 90	500x250, 375 Av @ ground, NW/SE / 375	5	1	1	1	1	1	YGVG – 9 1	2 2
197	*Eucalyptus haemastoma* Scribbly Gum	Y	G	D	6	6 R	2 E	90 90	360x300, 330 Av @ 800, NW/SE / 360	2 N	1	1	1	1	1	YGVG – 9 1	2 2
198	*Callistemon citrinus* Crimson Bottlebrush	Y	G	D	4	5 R	2 E	90 90	200, R @ ground / 200	5	1	2	1	1	1	YGVG – 9 1	2 2
199	*Angophora costata* Smooth-barked Apple	M	G	C – D	13	10 R	2 E	90 90	1200x650, 925 Av @ 500, NW/SE / 1000	5	5. x 1 NW	1	2	1	1	MGVG – 10 1	1 1
200	*Angophora costata* Smooth-barked Apple	M	P	C - D	13	9 R	2 W	80 80	500x550, 525 Av, E/W / 560	1	4. x 4 NW, S, SSE, E	2	1	1	1	MGVP – 6 2	2 2

No.	Comments
191	Trunk slightly crooked.
192	Crown comprised of 2 codominant first order structural branches (FOSB), branch bark included with enclosed bark 500 mm above original crotch.
193	Occlusion seam on NW side of trunk, concave with bark inclusion.
194	High volume small deadwood, throughout.
200	Lesion on NW side of trunk forming a canker, basal to 2 m, affecting approximately10% of trunk circumference *in situ*. Longicorn Borers evident from oval exit holes approx. 8x10 mm. Wound on N side of NW buttress. High volume large deadwood, throughout.

5.1 Assessment of tree/s or stand/s of trees – New Darby and Joan

Tree No. / Stand No.	Genus & species / Common Name	Age Y = Young M = Mature O = Overmature	Condition G = Good F = Fair P = Poor D = Dead	Crown Form D = Dominant C = Co-dominant I = Intermediate S = Suppressed F = Forest E = Emergent	Ht. Approx. metres	Crown spread approx. metres / Orientation R = Radial, or other	Crown Symmetry 1 = symmetrical 2 = asymmetrical / Orientation	Crown cover / Crown density % / D = dormant	DBH in mm @ 1.4m, or other, as indicated and trunk orientation other than R = radial, e.g. N/S / DARB Diameter above root buttress	Trunk Lean 1 = Upright-Slight 2 = Moderate 3 = Severe 4 = Critical. 5 = Acaulescent / Orientation / ST = Static P = Progressive Sc = Self-correcting	Roots evident @ root crown 1. = None 2. = Adventitious 3. = Basal Flare 4. = Buttresses 5. = First Order Roots (FOR), No. & distribution e.g. R = radial, or one each to N, S, E, NE and W	Pests & diseases 1 = No or 2 = Yes (If 2. see comments)	Branch Bark included 1 = No or 2 = Yes or 3 = N/A	Vigour 1 = Normal Vigour 2 = Low Vigour	Form 1 = Good form 2 = Poor form	SRIV Age, Vigour, Condition / Index Rating www.iaca.org.au / ESTIMATED LIFE EXPECTANCY 1. Long 2. Medium 3. Short	Significance scale 1=High 2=Medium 3=Low 4= Weed 5=Hazard / Retention Value 1=High 2=Medium 3=Low 4=Remove
201	3 x *Corymbia gummifera* Red Bloodwood	M	F	C - D	8 – 12	4.5 – 2 R	1	30 – 90 60 - 90	170 – 185, Av / 190 – 220 Av	1	1	1	1	1	1	MGVF – 9 2	2 2
202	*Corymbia maculata* Spotted Gum	Y	G	F – D	12	3.5 R	1	90 90	180, R / 190	1	1	1	1	1	1	YGVG – 9 1	2 1
203	*Corymbia maculata* Spotted Gum	M	G	D	15	6 R	1	90 90	300x340, 320 Av, E/W / 360	1	5. x 2 S, W	1	1	1	1	MGVG – 10 1	1 1
204	*Eucalyptus nicholii* Narrow-leaved Black Peppermint	Y	F	S – C	7	4 x 2.5 NW/SE	2 SE	80 80	180, R / 220	1	1	1	1	1	1	YGVF – 8 2	3 3
205	*Eucalyptus melliodora* Yellow Box	Y	F	S - C	5	3 x 3 N/S	2 SE	80 85	105x115, 110 Av, N/S / 110	1	1	1	1	1	1	YGVF – 8 1	3 4
206	*Eucalyptus haemastoma* Scribbly Gum	M	G	D	9	7 R	1	90 90	320, R / 350	1	1	1	1	1	1	MGVG – 10 1	1 1
207	*Eucalyptus haemastoma* Scribbly Gum	M	F	C	6	6 x 4 E/W	2 S	80 80	300x320, 310 Av @ 300 / E/W / 330	2 NW	1	2	1	1	1	MGVF – 9 1	2 2
208	*Banksia serrata* Old Man Banksia	Y	G	D	5.5	3 R	1	90 90	240, R / 280	5	3. R	1	1	1	1	YGVG – 9 1	2 2
209	*Eucalyptus haemastoma* Scribbly Gum	M	F	D	7	11 R	1	90 90	1040x600, 875 Av @ ground, E/W / 875	5	5. x 1 W	2	1	1	1	MGVF – 9 1	1 2
210	*Eucalyptus haemastoma* Scribbly Gum	M	F	C	6	5 x 6 E/W	2 N	85 85	300, R / 340	3 St	1	1	2	1	1	MGVF – 9 1	2 2

No.	Comments
201	1 tree in poor condition closest to Tree 200 with high volume epicormic shoots, throughout and high volume dieback throughout.
202	Growth splits as superficial cracks along lower trunk.
203	Growth splits as superficial cracks along lower-mid trunk.
204	Medium volume small deadwood, lower-mid crown.
205	Planted 400 mm from foot path and will grow to disrupt foot path creating a trip hazard and trunk also leans over path and will create a hazard of obstruction.
206	Mature basal epicormic shoot to W forming an inferior FOSB supporting approx 15% of crown, tree becoming acaulescent.
207	Basal wound on NW side of trunk extending to 1 m, margins entire with depth 20-30mm. Medium volume epicormic shoots, throughout.
209	Acaulescent, crown deliquescent comprised of 2 codominant FOSB; orientation E/W; 1 superior to E; 1 inferior to W; both acutely divergent and ascending; supporting approx 70% and 30% of the live crown, respectively. Basal wound on W side of superior FOSB 450 mm high and 280 mm wide, termite mud evident and cavity at base of right margin. Basal wound on NW side of inferior FOSB, ants evident in small holes (1-2 mm diameter) in wound face, well formed wound margins 20-30 mm deep. Single and separate fungal fruiting bodies evident at base of trunk.
210	Basal wound, narrow linear, almost occluded on W side, 400 mm high. Fresh fine frass evident at base of wound indicative of possible presence of *Lyctus brunneus* – Powder Post Borer in deadwood of wound face. Previously pruned, lower crown for clearance of vegetable gardens within area of crown projection.

5.1 Assessment of tree/s or stand/s of trees – New Darby and Joan

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211	*Eucalyptus haemastoma* Scribbly Gum	M	F	C	5	6 x 5 NW/SE	2 SW	80 90	240x260, 250 Av, N/S / 270	2 St	1	2	1	1	1	MGVF – 9 1	2 2
212	*Eucalyptus haemastoma* Scribbly Gum	M	F	C – D	6.5	5 x 2 NW/SE	1	85 85	200x180, 190 Av, N/S / 210	1	1	1	2	1	1	MGVF – 9 2	2 2
213	*Eucalyptus haemastoma* Scribbly Gum	M	G	C – D	5	3.5 R	2 N	90 90	200x180, 190 Av @ 900, NE/SW / 220	1	1	1	2	1	1	MGVG – 10 1	3 2
214	*Banksia integrifolia* Coast Banksia	O	G	D	6.5	8 x 5 NW/SE	1	90 90	2300x500, 1400 Av @ ground, NW/SE / 1400 Av	5	1	1	1	1	1	OGVG – 6 1	1 1
215	*Corymbia gummifera* Red Bloodwood	M	G	S - C	4.5	6 x 3 NW/SE	2 N	85 90	200, R @ 900 / 240	1	1	1	1	1	1	MGVG – 10 1	3 3
216	*Eucalyptus umbra* Broad-leaved White Mahogany	M	G	C	12	6 x 8 NW/SE	2 NE	80 85	300, R / 320	1	1	1	1	1	1	MGVG – 10 1	1 1
217	*Corymbia gummifera* Red Bloodwood	M	F	D	8	3 R	1	80 85	800x300, 550 Av @ ground, N/S / 550	5	1	1	1	1	1	MGVF – 9 1	3 3
218	*Angophora costata* Smoot-barked Apple	M	G	D	12	13 R	1	90 90	700x450, 575 Av @ ground, N/S / 575	5	1	1	1	1	1	MGVG – 10 1	1 1
219	*Eucalyptus umbra* Broad-leaved White Mahogany	M	F	C – I	10	8 x 5 N/S	2 W	85 90	270x330, 300 Av, N/S / 350	3, W St	1	1	1	1	1	MGVF – 9 1	2 2
220	*Corymbia gummifera* Red Bloodwood	M	G	F	14	4.5 R	2 E	90 90	330x370, 350 Av, N/S / 370	1	1	1	1	1	1	MGVG – 10 1	1 1

No.	Comments
211	Basal wound x 2 N & S.
212	Basal wound x 2 N & S.
213	Basal wound x 2 N & S.
216	Mature basal epicormic shoot to WS, forming an inferior FOSB, supporting 10% crown cover.
217	Acaulescent, crown deliquescent, comprised of 2 codominant FOSB as regrowth from an old stump, no longer present.
218	High volume small deadwood, throughout. Low volume dieback, throughout outer extremity of crown.
219	Old occluded wound, concave, linear to 3 m, on tension side of trunk to E, possibly branch tear wound. Medium volume small and large deadwood, throughout.
220	Low volume dieback, lower-mid crown. Low volume small deadwood, lower-mid crown.

5.1 Assessment of tree/s or stand/s of trees – New Darby and Joan

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221	*Corymbia gummifera* Red Bloodwood	M	F	C	9	8 x 6 E/W	2 NW	90 90	280, R / 300	1	1	1	1	1	1	MGVF - 9 1	2 2
222	*Corymbia gummifera* Red Bloodwood	M	G	C	10	10 x 8 E/W	2 W	90 90	470, R / 500	1	1	1	1	1	1	MGVG - 10 1	1 1
223	*Corymbia gummifera* Red Bloodwood	M	F	D	6	6 R	1	90 90	950x200, 575 Av @ ground, N/S / 575	5	1	1	1	1	1	MGVF - 9 1	1 2
224	*Angophora costata* Smoot-barked Apple	M	G	D	13	12 R	1	90 90	500x450, 475 Av, N/S / 500	1	4. x 2 NE, W	1	1	1	1	MGVG - 10 1	1 1
225	*Angophora costata* Smoot-barked Apple	M	G	D	9	9 R	2 SE	90 90	300x450, 375 Av, N/S / 400	1 N	3	1	1	1	1	MGVG - 10 1	1 1
226	*Angophora costata* Smoot-barked Apple	M	F	D	12	12 R	1	75 90	700x400, 550 Av, NE/SW / 580	1	4. x 3 NW, E, W	1	1	1	1	MGVF - 9 1	1 1
227	*Eucalyptus haemastoma* Scribbly Gum	M	F	C – S	6	8 x 4 E/W	2 W	70 80	240, R / 260	1	1	2	1	1	1	MGVF - 9 1	2 2
228	*Eucalyptus haemastoma* Scribbly Gum	M	F	C	7	12 x 7 E/W	2 S	80 85	300x800, 550 Av @ ground, NW/SE / 550 Av	5	1	1	1	1	1	MGVF - 9 1	2 2
229	*Eucalyptus haemastoma* Scribbly Gum	M	P	S – C	7	8 x 5 E/W	2 N	80 85	320, R / 350	2	3. R	2	1	1	1	MGVP - 6 1	3 3
230	*Eucalyptus haemastoma* Scribbly Gum	O	P	I - C	7	9 x 5 NE/SW	2 NE	80 85	900, R @ ground / 900	5	1	2	1	1	1	OGVP - 4 3	3 4

No.	Comments
221	Tree located immediately adjacent to a drainage pit in street and previously pruned removing apical meristem, crown consequently comprised of epicormic regrowth.
222	Trunk twisted, lower trunk. Low volume large deadwood, lower-mid crown.
223	Acaulescent, crown deliquescent, comprised of 4 codominant FOSB as regrowth from an old stump, present. Stump should be removed.
224	High volume small and large deadwood, throughout.
225	Medium volume large deadwood, throughout.
226	Low volume large deadwood, mid crown. Medium volume epicormic shoots, throughout inner crown.
227	Trunk wound from 1150-1450 mm on S side and 100 mm at widest at center; margins entire, depth 25 and 20 mm deep left and right respectively, base and apex acute, wound face absent with decay forming cavity to heartwood. Canker of margins possible caused by *Botryosphaeria ribis* – Canker Fungus, with small lesions evident throughout crown and consistent with infestation of *E. haemastoma* on site. Medium volume small and large deadwood, throughout.
228	Lesions in crown possibly caused by *Botryosphaeria ribis* – Canker Fungus, consistent with infestation of *E. haemastoma* on site.
229	Lesions in crown possibly caused by *Botryosphaeria ribis* – Canker Fungus, consistent with infestation of *E. haemastoma* on site. Trunk to 1900 mm with wound distally on S side forming a hollow, wound 280 mm long and 160 mm wide with hollow at base of crotch of 2 first order structural branches and structurally unsound.
230	Acaulescent, crown deliquescent, comprised of 3 codominant FOSB as regrowth from an old stump, no longer present. One FOSB each to N, E and S, all acutely divergent and ascending. Basal wound on FOSB to E on tension side with decay evident with target the dwelling Unit 50. Basal wound on FOSB to N. Tree is structurally unsound and should be removed for reasons of safety.

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231	*Angophora costata* Smoot-barked Apple	M	G	D	11	10 R	1	85 90	350, R / 370	1	5. x 2 N, S	1	1	1	1	MGVG – 10 1	1 1
232	*Chamaecyparis pisifera* Sawara Cypress	M	G	D	8	2.5 R	1	90 90	400x300, 350 Av @ ground, E/W / 350 Av	5	1	1	2	1	1	MGVG – 10 1	2 2
233	*Eucalyptus umbra* Broad-leaved White Mahogany	M	G	D	14	12 R	1	90 90	1100x550, 825 Av @ ground, E/W / 825 Av	5	1	1	2	1	1	MGVG – 10 1	1 1
234	*Glochidion ferdinandi* Cheese Tree	M	G	C	6	6 x 5 N/S	2 W	90 90	400x500, 450 Av @ ground, N/S / 450 Av	5	1	1	2	1	1	MGVG – 10 1	2 2
235	*Corymbia gummifera* Red Bloodwood	M	F	C	9	7 x 3 N/S	2 E	80 85	900x450, 675 Av @ ground, N/S / 675 Av	5	1	1	1	1	1	MGVF – 9 1	2 2
236	*Angophora costata* Smoot-barked Apple	M	G	D	11	9 R	2 W	85 85	460, R / 490	1	1	1	1	1	1	MGVG – 10 1	1 1
237	*Angophora costata* Smoot-barked Apple	M	P	D	6	7 x 5 N/S	1	70 85	550x450, 500 Av, N/S / 500 Av	1	1	2	1	1	1	MGVP– 6 3	2 2
238	*Eucalyptus nicholii* Narrow-leaved Black Peppermint	M	G	C	8	6 R	2 N	80 85	400, R / 430	2 NW	1	1	1	1	1	MGVG – 10 3	2 2
239	*Callistemon citrinus* Crimson Bottlebrush	M	G	C	5	6 x 4 NE/SW	2 SE	80 80	340x460, 400 Av @ ground, E/W / 400 Av	5	1	1	2	1	1	MGVG – 10 1	2 2
240	*Callistemon viminalis* Weeping Bottlebrush	M	G	C	6	6 x 5 N/S	2 E	80 85	400x370, 385 Av @ 200, N/S / 400	1	1	1	2	1	1	MGVG – 10 1	2 2

No.	Comments
231	High volume large deadwood, throughout.
235	Acaulescent, crown deliquescent, comprised of 2 codominant FOSB as regrowth from an old stump, no longer present.
236	Previously pruned, lower crown.
237	Lesion from Longicorn Borer (order Cerambycidae) in upper trunk to W. Medium volume dieback, throughout. Medium volume large deadwood, throughout.
238	High volume large deadwood, throughout. High volume small deadwood, throughout.
240	First order structural branches branch bark included, with round-edge ribs on both sides of the branch union.

5.1 Assessment of tree/s or stand/s of trees – New Darby and Joan

Tree No. / Stand No.	Genus & species / Common Name	Age Y = Young M = Mature O = Overmature	Condition G = Good F = Fair P = Poor D = Dead	Crown Form D = Dominant C = Co-dominant I = Intermediate S = Suppressed F = Forest E = Emergent	Ht. Approx. metres	Crown spread approx. metres / Orientation R = Radial, or other	Crown Symmetry 1 = symmetrical 2 = asymmetrical / Orientation	Crown cover / Crown density % / D = dormant	DBH in mm @ 1.4m, or other, as indicated and trunk orientation other than R = radial, e.g. N/S / DARB Diameter above root buttress	Trunk Lean 1 = Upright-Slight 2 = Moderate 3 = Severe 4 = Critical. 5 = Acaulescent / Orientation / ST = Static P = Progressive Sc = Self-correcting	Roots evident @ root crown 1. = None 2. = Adventitious 3. = Basal Flare 4. = Buttresses 5. = First Order Roots (FOR), No. & distribution e.g. R = radial, or one each to N, S, E, NE and W	Pests & diseases 1 = No or 2 = Yes (If 2. see comments)	Branch Bark included 1 = No or 2 = Yes or 3 = N/A	Vigour 1 = Normal Vigour 2 = Low Vigour	Form 1 = Good form 2 = Poor form	SRIV Age, Vigour, Condition / Index Rating www.iaca.org.au / ESTIMATED LIFE EXPECTANCY 1. Long 2. Medium 3. Short	Significance scale 1=High 2=Medium 3=Low 4= Weed 5=Hazard / Retention Value 1=High 2=Medium 3=Low 4=Remove
241	*Eucalyptus umbra* Broad-leaved White Mahogany	Y	F	D	6	3 R	1	85 85	190x230, 210 Av, E/W / 250	1	1	1	1	1	1	YGVF – 8 1	3 3
242	*Eucalyptus haemastoma* Scribbly Gum	M	G	C	9	8 R	2 W	85 85	400, R @ 1 m / 430	1	3. N	1	1	1	1	MGVG – 10 1	2 2
243	*Eucalyptus haemastoma* Scribbly Gum	Y	F	C	6	4 R	2 S	80 85	210, R / 230	1	1	1	1	1	1	YGVF – 8 1	1 1
244	*Corymbia gummifera* Red Bloodwood	M	G	F – D	9	3 R	1	85 85	900x350, 625 Av @ ground, N/S / 625 Av	5	1	1	1	1	1	MGVG – 10 1	2 2
245	*Allocasuarina torulosa* Forest Oak	M	P	D	5	5 R	2 W	50 85	190x150, 170 Av, NE/SW / 200	2, N St	1	2	1	1	2	MGVP – 6 3	3 3
246	*Corymbia gummifera* Red Bloodwood	M	G	S – C	9	5 x 4 N/S	2 S	80 85	160x180, 170 Av, E/W / 220	1	1	1	1	1	1	MGVG – 10 1	2 2
247	*Banksia integrifolia* Coast Banksia	Y	G	D	6	1.5 R	1	90 90	140x120, 130 Av, E/W / 150	1	1	1	1	1	1	YGVG– 9 1	2 2
248	*Eucalyptus haemastoma* Scribbly Gum	M	G	C	6	10 x 5 N/S	2 NW	90 90	350x310, 330 Av @ 1100, N/S / 380	1	1	1	1	1	1	MGVG – 10 1	1 1
249	*Corymbia gummifera* Red Bloodwood	M	F	D – F	11	8 x 3 NE/SW	2 NE	90 90	270, R / 290	1	4. x 1 SW	1	1	1	1	MGVF – 9 1	2 2
250	*Eucalyptus haemastoma* Scribbly Gum	M	F	D	10	7 R	1	90 90	700x450, 575 Av @ ground, N/S / 575 Av	5	3. x 1 E	2	1	1	1	MGVF – 9 2	2 2

No.	Comments
241	Mature basal epicormic shoot forming inferior FOSB to N, tending to S.
242	Medium volume epicormic shoots, throughout.
244	Acaulescent, crown deliquescent, comprised of 2 codominant FOSB as regrowth from an old stump, no longer present.
245	Lesion on S side of trunk at 900 mm with fruiting body of *Phellinus sp.* – Bracket Fungus. High volume dieback, throughout.
246	Slight butt sweep at base.
249	Medium volume large deadwood, throughout.
250	Medium volume large deadwood, throughout. Mature basal epicormic shoot forming inferior FOSB to N, convergent, tending to E and then south, forming a union at 1 m with the trunk, possibly grafted. Small basal hollow at ground to W.

5.1 Assessment of tree/s or stand/s of trees – New Darby and Joan

Tree No. / Stand No.	Genus & species / Common Name	Age Y = Young M = Mature O = Overmature	Condition G = Good F = Fair P = Poor D = Dead	Crown Form D = Dominant C = Co-dominant I = Intermediate S = Suppressed F = Forest E = Emergent	Ht. Approx. metres	Crown spread approx. metres / Orientation R = Radial, or other	Crown Symmetry 1 = symmetrical 2 = asymmetrical / Orientation	Crown cover / Crown density % / D = dormant	DBH in mm @ 1.4m, or other, as indicated and trunk orientation other than R = radial, e.g. N/S / DARB Diameter above root buttress	Trunk Lean 1 = Upright-Slight 2 = Moderate 3 = Severe 4 = Critical. 5 = Acaulescent / Orientation / ST = Static P = Progressive Sc = Self-correcting	Roots evident @ root crown 1. = None 2. = Adventitious 3. = Basal Flare 4. = Buttresses 5. = First Order Roots (FOR), No. & distribution e.g. R = radial, or one each to N, S, E, NE and W	Pests & diseases 1 = No or 2 = Yes (If 2. see comments)	Branch Bark included 1 = No or 2 = Yes or 3 = N/A	Vigour 1 = Normal Vigour 2 = Low Vigour	Form 1 = Good form 2 = Poor form	SRIV Age, Vigour, Condition / Index Rating www.iaca.org.au / ESTIMATED LIFE EXPECTANCY 1. Long 2. Medium 3. Short	Significance scale 1=High 2=Medium 3=Low 4= Weed 5=Hazard / Retention Value 1=High 2=Medium 3=Low 4=Remove
251	*Allocasuarina torulosa* Forest Oak	O	P	I	12	3 R	2 S	20 90	200x250, 225 Av, NE/SW / 260	1	1	2	1	1	2	OGVP – 4 3	3 3
252	*Corymbia gummifera* Red Bloodwood	M	G	C – I	13	4 R	1	90 90	1100x450, 775 Av @ ground, N/S / 775 Av	5	1	1	1	1	1	MGVG – 10 1	2 2
253	*Angophora costata* Smoot-barked Apple	M	F	C	9	10x 8 E/W	2 N	90 90	400x370, 385 Av, E/W / 400	1	1	1	2	1	1	MGVF – 9 2	2 2
254	*Corymbia gummifera* Red Bloodwood	M	G	S - C	8	5 x 3 E/W	2 N	80 85	190, R / 200	1	5. x 5 R	1	1	1	1	MGVG – 10 1	2 2
255	*Eucalyptus umbra* Broad-leaved White Mahogany	M	G	C	9	5 x 3.5 N/S	2 E	90 90	350x400, 375 Av, N/S / 400	1	1	1	1	1	1	MGVG – 10 1	2 2
256	*Eucalyptus umbra* Broad-leaved White Mahogany	Y	G	I	9	5 x3 E/W	2 N	80 80	270x200, 235 Av, NW/SE / 250	2, NW St	1	1	1	1	1	MGVG – 10 1	2 2
257	*Corymbia gummifera* Red Bloodwood	M	G	I – C	11	3 R	2 N	90 90	250x200, 225 Av, E/W / 260	2, NW St	5. x 2 E, W	1	1	1	1	MGVG– 10 1	2 2
258	*Eucalyptus umbra* Broad-leaved White Mahogany	Y	F	S – I	7	2.5 R	2 N	80 85	150, R / 160	1	3. R	1	1	1	1	MGVF – 8 1	3 3
259	*Corymbia gummifera* Red Bloodwood	M	G	D	8	4.5 R	1	85 85	1100x1300, 1200 Av @ ground, E/W / 1200 Av	5	1	1	1	1	1	MGVG – 10 1	2 2
260	*Angophora floribunda* Rough-barked Apple	M	G	D	12	4.5 R	1	90 90	240, R / 260	1	1	1	2	1	1	MGVG – 10 2	2 2

No.	Comments
251	Last remaining stem of 3 codominant FOSB.
252	Acaulescent, crown deliquescent, comprised of 2 codominant FOSB as regrowth from an old stump, no longer present.
253	Trunk slightly crooked. Previously pruned to S for clearance from over clothes line within crown projection. Discoloration of pruning wounds from kino exudate and possibly from infection by *Botryosphaeria ribis* fungus evident on site.
255	Previously pruned for clearance over building. High volume large deadwood, throughout.
256	Medium volume epicormic shoots, upper trunk and lower crown.
257	Crown deliquescent, derived from regrowth of epicormic shoots from an old stump, no longer present.
259	Acaulescent, crown deliquescent, comprised of 3 codominant FOSB as regrowth from an old stump, no longer present.

5.1 Assessment of tree/s or stand/s of trees – New Darby and Joan

Tree No. / Stand No.	Genus & species / Common Name	Age Y = Young M = Mature O = Overmature	Condition G = Good F = Fair P = Poor D = Dead	Crown Form D = Dominant C = Co-dominant I = Intermediate S = Suppressed F = Forest E = Emergent	Ht. Approx. metres	Crown spread approx. metres / Orientation R = Radial, or other	Crown Symmetry 1 = symmetrical 2 = asymmetrical / Orientation	Crown cover / Crown density % / D = dormant	DBH in mm @ 1.4m, or other, as indicated and trunk orientation other than R = radial, e.g. N/S / DARB Diameter above root buttress	Trunk Lean 1 = Upright-Slight 2 = Moderate 3 = Severe 4 = Critical. 5 = Acaulescent / Orientation / ST = Static P = Progressive Sc = Self-correcting	Roots evident @ root crown 1. = None 2. = Adventitious 3. = Basal Flare 4. = Buttresses 5. = First Order Roots (FOR), No. & distribution e.g. R = radial, or one each to N, S, E, NE and W	Pests & diseases 1 = No or 2 = Yes (If 2. see comments)	Branch Bark included 1 = No or 2 = Yes or 3 = N/A	Vigour 1 = Normal Vigour 2 = Low Vigour	Form 1 = Good form 2 = Poor form	SRIV Age, Vigour, Condition / Index Rating www.iaca.org.au / ESTIMATED LIFE EXPECTANCY 1. Long 2. Medium 3. Short	Significance scale 1=High 2=Medium 3=Low 4= Weed 5=Hazard / Retention Value 1=High 2=Medium 3=Low 4=Remove
261	*Corymbia gummifera* Red Bloodwood	M	F	D	10	11 x 7 N/S	1	80 85	330, R / 400	1	3. R	1	1	1	1	MGVF – 9 1	2 2
262	*Eucalyptus umbra* Broad-leaved White Mahogany	M	G	C	11	5 R	2 SW	90 90	400x300, 350 Av, N/S / 400	1	1	1	1	1	1	MGVG – 10 1	2 2
No.	Comments																

Observations

5.2 Planted evergreen and deciduous, indigenous, non-locally indigenous and exotic trees.

Tree Significance

5.3 See Appendix A for Assessment Criteria.

Old Darby and Joan

5.3.1 The majority of trees in or adjacent to the proposed works area were of medium significance. Of the 30 trees of high significance 16 are able to be retained. The majority of trees to be removed were of medium significance.

New Darby and Joan

5.3.2 The majority of trees in or adjacent to the proposed works area were of medium significance. Of the 23 trees of high significance 7 are able to be retained. The majority of trees to be removed were of medium significance.

Significant Trees as established by the Rating System for Tree Significance – IACA (2009), Appendix A.

Significant Scale

1 – High
2 – Medium
3 – Low

Old Darby and Joan			
Significance Scale	**1**	**2**	**3**
UTM Tree No.	15, 16, 44, 45, 49, 55, 58, 60, 66, 76, 79, 83, 85, 88, 89, 116, 131, 152, 153, 157, 158, 159, 160 , 163, 167, 168, 170, 171, 172, 177	1, 2, 3, 4, 7, 8, 10, 11, 13, 18, 19, 22, 23, 25, 27, 31, 32, 33, 34, 35, 36, 37, 38, 39, 41, 42, 43, 46, 47, 48, 50, 51, 53, 54, 56, 57, 59, 61, 62, 64, 65, 67, 68, 70, 71, 72, 73, 74, 75, 78, 80, 82, 84, 86, 87, 91, 92, 93, 94, 95, 96, 97, 98, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 117, 118, 119, 120, 121, 123, 124, 125, 126, 128, 129, 130, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 154, 155, 156, 161, 162, 164, 165, 166, 169, 173, 174, 175, 176, 178, 179, 180	5, 6, 9, 12, 14, 17, 20, 21, 24, 26, 28, 29, 30, 40, 52, 63, 69, 77, 81, 90, 99, 100, 101, 122, 127

New Darby and Joan			
Significance Scale	**1**	**2**	**3**
UTM Tree No.	187, 188, 189, 190, 199, 203, 206, 209, 214, 216, 218, 220, 222, 223, 224, 225, 226, 231, 233, 236, 243, 248, 262	182, 183, 185, 186, 191, 192, 193, 194, 195, 196, 197, 198, 200, 201, 202, 207, 208, 210, 211, 212, 219, 221, 227, 228, 232, 234, 235, 237, 238, 239, 240, 242, 244, 246, 247, 249, 250, 252, 253, 254, 255, 256, 257, 259, 260, 261	181, 184, 204, 205, 213, 215, 217, 229, 230, 241, 245, 251, 258

Tree Retention Value

5.4 See Appendix A for Retention Value Matrix.

Retention Value

High – Priority for Retention, **Medium** – Consider for Retention, **Low** – Consider for Removal, **Remove** - Priority for Removal

Old Darby and Joan				
Retention Value	**High** Priority for Retention	**Medium** Consider for Retention	**Low** Consider for Removal	**Remove** Priority for Removal
UTM Tree No.	1, 3, 4, 15, 16, 22, 35, 44, 45, 49, 55, 56, 58, 66, 76, 79, 83, 85, 88, 89, 91, 96, 103, 104, 116, 131, 132, 137, 139, 140, 152, 153, 154, 157, 158, 159, 160, 163, 167, 168, 170, 171, 172, 176, 177	2, 7, 8, 9, 10, 11, 13, 18, 19, 21, 23, 25, 27, 31, 32, 33, 36, 37, 38, 41, 46, 47, 54, 57, 61, 62, 72, 78, 82, 95, 97, 98, 102, 106, 107, 108, 109, 114, 115, 117, 118, 120, 121, 123, 124, 125, 126, 128, 129, 130, 133, 135, 136, 141, 142, 143, 144, 145, 146, 147, 150, 151, 155, 156, 161, 162, 164, 165, 169, 173, 180	5, 6, 12, 14, 17, 20, 24, 26, 28, 29, 30, 34, 35, 39, 40, 42, 43, 48, 50, 51, 52, 53, 59, 60, 63, 64, 65, 67, 68, 69, 70, 71, 73, 74, 75, 77, 80, 81, 84, 86, 87, 90, 93, 99, 100, 101, 105, 110, 111, 112, 113, 119, 122, 127, 134, 138, 148, 149, 166, 174, 175, 178, 179	

New Darby and Joan				
Retention Value	**High** Priority for Retention	**Medium** Consider for Retention	**Low** Consider for Removal	**Remove** Priority for Removal
UTM Tree No.	187, 188, 189, 190, 199, 202, 203, 206, 214, 216, 218, 220, 222, 224, 225, 226, 231, 233, 236, 243, 248, 262	181, 182, 183, 184, 185, 186, 191, 192, 193, 194, 196, 197, 198, 198, 200, 201, 207, 208, 209, 210, 211, 212, 213, 219, 221, 223, 227, 228, 232, 234, 235, 237, 238, 239, 240, 242, 244, 246, 247, 249, 250, 252, 253, 254, 255, 256, 257, 259, 260, 261	195, 204, 215, 217, 229, 241, 245, 251, 258	205, 230

Discussion

5.5 Of the trees to be retained and protected the majority of trees have sufficient setbacks with only minor encroachments of 10% of area of the Tree Protection Zones as provided by encroachment in AS4970 (2009) section 3, 3.3.3 or slightly greater as shown in Table 3.0. The calculation for Structural root zone (SRZ) which provides a radial setback for stability against possible windthrow, were calculated for trees to be retained and are shown in Table 3.0 and Appendix I with the SRZ of no retained tree to be encroached.

5.5.1 Trees to be retained are generally in stands with a few solitary specimens allowing the forested areas of these sections of the site to be retained to maintain their landscape character.

5.5.2 The trees examined comprised some remnant vegetation or regrowth from basal sprouts from stumps of original trees no longer present, hence the number of seemingly acaulescent trees branching from near to the ground. Predominantly ***Eucalyptus haemastoma*** – **Scribbly Gum** and ***Corymbia gummifera*** – **Red Bloodwood**. ***E haemastoma*** – **Scribbly Gum** being the dominant trees and then ***C gummifera*** – **Red Bloodwood**, ***Allocasuarina torulosa*** – **Forest Oak** and successively a mixture of planted taxa including some commemorative plantings e.g. Tree 49 ***Fraxinus angustifolia*** ssp. ***oxycarpa*** 'Raywood' - **Claret Ash**, between existing units 15-16 and 19-20. Many shrubs have also been planted over time but were not considered by this report due to their small dimensions and minor contribution to the landscape compared to the stature of trees and their often shorter life spans and relative ease of replacement and establishment, however many can be retained an protected to protect existing amenity.

5.5.3 Many of the seemingly iconic or synonymous Scribbly Gum are infected with a virulent fungal canker ***Botryosphaeria ribis*** (See 5.1) evident as large brown patches of dead tissue (lesions) or similarly are stepped forming a successional wound as new increments of growth forming around the perimeter of the wound are infected and die back. The decay weakens and can kill the tree and is known to infest ***Eucalyptus haemastoma*** in the Sydney area.

5.5.4 Of these many appeared to have been encroached by pruning of their crowns for access and clearance from over dwellings or root disturbance for roads, kerb and gutter, underground utilities, car port slabs and from abrasion impact events from collisions with cars due to being retained too close to roads as opposed to removal and replacement at the time. There is no evidence of recent plantings of ***Eucalyptus haemastoma*** – **Scribbly Gum** to prepare for the replacement or replenishment and enhancement of these trees that are synonymous with this section of the village and its forest character. As a consequence all the trees are mature with many tending to overmature and hence the predation and general decline in their population.

5.5.5 A normal population of any organism is comprised of a mixture of all age classes and new and ongoing plantings should be considered integral to any future works further to the Landscape Plan for the proposed development. This will create a perpetual mechanism to not only maintain but enhance the particular treed character that the taxon provides. This must include removing diseased trees and replanting with healthy stock into locations with sufficient space both above and below ground for the trees to spread their crowns and root plates to provide for their dimensions at maturity and sustain each tree in good vigour enabling it to resist disease and the risks associated with hazardous trees that are inherent around people and buildings but exacerbated with disease ridden, structurally deteriorated and declining stock. Many of the trees to be removed are diseased and the proposal provides an opportunity restock the landscape with new plantings.

Table 3.0 Notes This table only applies to trees being retained. Tree Protection Zone fencing locations as measured from the centre of each tree and the recommended distances for the side closest to the building construction works e.g. excavation (see explanatory notes below). Tree Protection Zone fences and setbacks where applicable are indicated in the Tree Protection Plan for each station.

Explanatory notes for Table 3.0.

This table is based upon Australian Standard AS4970 2009 *Protection of trees on development sites*, Section 3 Determining the protection zone of the selected trees (see Appendix B), where the approved building works should be no closer, including excavation, than the dimensions stated above.

"3.3 Variations to the TPZ

3.3.2 Minor Encroachment

If the proposed encroachment is less than 10% of the area of the TPZ and is 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.

3.3.3 Major Encroachment

If the proposed encroachment is greater than 10% of the area of the TPZ or inside the SRZ the project arborist must demonstrate that the tree(s) would remain viable. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ."

Refer also to sections 3.4 and Appendix F, 1.1.3 for further explanation of modifications to these setbacks.

Table 3.0 Old Darby and Joan

1. UTM Tree No. / UTM Stand No.	2. **T**runk **D**iameter at **B**reast **H**eight **DBH** 1.4 m above ground, AS4970 (2009), or mm or m above ground where indicated. # = average.	3. **S**tructural **R**oot **Z**one **SRZ** From center of trunk (COT), trunk diameter above root buttress (DARB) AS4970 (2009) Section 3, 3.3.5 (see Appendix C) where applicable	4. **T**ree **P**rotection **Z**one (TPZ) = **12 x DBH** From center of trunk (COT) in metres AS4970 (2009) Section 3 (see Appendix B)	5. Distance of fence with TPZ setback **reduced by 10%** of area on one side of tree only, in metres equating to approx. 0.3 radius as per AS4970 (2009) Section 3, 3.3	6. Proposed distance of tree protection fence/works on the side closest to building construction[2], in metres by UTMA P/L
49	320# @ 600	2.0	3.8	2.6	3.3
58	1300# @ ground	3.7	15.6 [23]	10.5	5.0
66	950#	3.3	11.4	8.0	4.9 [7]
67	100 @ 400	1.2	1.2 [22]	N/A [22]	2.0
82	700# @ ground	2.8	8.4	5.9	3.1 [6, 7]
83	390#	2.2	4.7	3.3	3.3
85	900# @ ground	3.2	10.8	7.6	1.7 [6, 7]
91	350	2.1	4.2	3.0	3.0
92	300# @ ground	2.0	3.6	2.5	2.5
93	130#	1.4	1.5 [22]	N/A [22]	2.0
94	425# @ ground	2.3	5.1	3.6	3.6
95	180	1.6	2.16	N/A [22]	2.0
96	600# @ ground	2.7	7.2	5.0	3.1 [6, 7]
99	170	1.6	2.0	N/A [22]	2.0
102	220#	1.7	2.6	N/A [22]	2.0
103	300# @ ground	2.0	3.6	2.5	2.5
104	1050# @ ground	3.4	12.6	8.8	8.8
106	230	1.8	2.7	N/A [22]	2.7
107	280#	1.9	3.4	2.4	2.4
108	300	2.0	3.6	2.5	2.3 [6, 7]
110	585# @ ground	2.6	7.0	4.9	1.0 [6, 7]
116	220	1.8	2.6	N/A [22]	2.0 [6, 7, 11]
123	230	1.8	2.7	N/A [22]	2.7
124	120	1.4	1.4 [22]	N/A [22]	2.0
129	270	1.9	3.2	N/A [22]	2.0
130	120#	1.4 [22]	1.4	N/A [22]	2.0

Descriptors for modified setbacks.

1 Special conditions apply to protect the roots of trees generally, see Appendix E.
2 Additional protective fencing information is detailed in Appendices E and I.
3 Acceptable due to the good relative tolerance of the species to development impacts.
4 Range of setbacks for the trees at each end of a linear stand, see Appendix I.
5 Acceptable as fence located at a substantial distance beyond dripline, or may also include the location of a smaller tree in proximity to a larger tree to be retained and the smaller tree being protected well within the protective fencing for that larger tree.
6 Acceptable due to additional special protection works, see Section 5.0 for this tree.
7 Acceptable as pre-existing site conditions were conducive to having restricted the development of root growth in this direction.
8 Street tree with protective fencing of minimal width to allow for pedestrian access along road reserve.
9 Acceptable as tree transplanted reducing the area of the root zone.
10 Acceptable as not effected by development.
11 Young tree not expected to have established a substantially expansive root system and able to re-establish or modify growth to be sustainable due to age and good vigour.
12 Set back prescribed by the consent authority.
13 Acceptable as tree growing on a lean and encroachment on compression wood side where root growth is of reduced structural importance.
14 Acceptable as root mapping has indicated extent of structural woody roots with a diameter of 20 mm or more.
15 Acceptable as a specimen of palm taxa tolerant of encroachment.
16 Acceptable as excavation on down slope or across slope side of tree.
17 Acceptable as encroachment into growing area below ground minor, with one corner of building or excavation works extending to within the radius of the dripline.
18 Acceptable as encroachment by pier, including screw piles, with minimal disturbance.
19 Distance of tree from common boundary.
20 Acceptable as located within 0.5 m from edge of dripline.
21 Acceptable as encroachment with gap graded fill that can accommodate gaseous exchange between roots/soil and the atmosphere and ongoing root growth.
22 Minimum setback 2 m, AS4970 (2009) section 3, 3.2.
23 Maximum setback 15 m, AS4970 (2009) section 3, 3.2.
24 Tree is a palm, other monocot, cycad or tree fern TPZ is to be 1 m outside crown projection AS4970 (2009) section 3, 3.2.

Table 3.0 Old Darby and Joan continued.

1. UTM Tree No. / UTM Stand No.	2. **T**runk **D**iameter at **B**reast **H**eight **DBH** 1.4 m above ground, AS4970 (2009), or mm or m above ground where indicated. # = average.	3. **S**tructural **R**oot **Z**one **SRZ** From center of trunk (COT), trunk diameter above root buttress (DARB) AS4970 (2009) Section 3, 3.3.5 (see Appendix C) where applicable	4. **T**ree **P**rotection **Z**one (TPZ) = **12 x DBH** From center of trunk (COT) in metres AS4970 (2009) Section 3 (see Appendix B)	5. Distance of fence with TPZ setback **reduced by 10%** of area on one side of tree only, in metres equating to approx. 0.3 radius as per AS4970 (2009) Section 3, 3.3	6. Proposed distance of tree protection fence/works on the side closest to building construction[2], in metres by UTMA P/L
131	325#	2.0	3.9	2.7	2.7
135	240 @ 500	1.8 [22]	2.9	2.0	2.0
136	240 @ 100	1.8 [22]	2.9	2.0	2.0
137	340#	2.1	4.0	2.8	2.8
143	300	2.0	3.6	2.5	2.5
144	230# @ 1 m	1.8 [22]	2.7	N/A [22]	2.0
147	1150# @ ground	3.5	13.8	9.6	5.0 [6, 7]
150	900 @ ground	3.2	10.8	7.5	6.2 [6, 7]
152	370#	2.2	4.4	3.0	3.0
153	875# @ ground	3.1	10.5	7.3	4.0 [16]
154	950# @ ground	3.2	11.4	8.0	8.0
155	625# @ ground	2.7	7.5	5.2	3.3 [16]
156	475# @ ground	2.4	5.7	4.0	4.0
157	350	2.1	4.2	3.0	3.0
158	440	2.3	5.3	3.7	3.7
159	550# @ ground	2.6	6.6	4.6	3.3
168	610#	2.7	7.3	5.1	3.0 [16]
169	410# @ 1.1 m	2.3	5.0	3.5	3.5
170	450	2.4	5.4	3.8	3.8
171	490#	2.5	5.9	4.1	4.1
172	1100# @ ground	3.4	13.2	9.2	4.0
173	300	2.0	3.6	2.5	2.5
174	350#	2.1	4.2	3.0	3.0
175	500# @ 1 m	2.5	6.0	4.2	4.2
177	800 @ ground	2.5	6.0	3.2	3.0
178	500#	2.5	6.0	3.2	3.2
179	310# @ 900	2.0	3.7	2.6	2.6
180	325# @ ground	2.1	3.9	2.7	1.4 [17]

Descriptors for modified setbacks.

1 Special conditions apply to protect the roots of trees generally, see Appendix E.
2 Additional protective fencing information is detailed in Appendices E and I.
3 Acceptable due to the good relative tolerance of the species to development impacts.
4 Range of setbacks for the trees at each end of a linear stand, see Appendix I.
5 Acceptable as fence located at a substantial distance beyond dripline, or may also include the location of a smaller tree in proximity to a larger tree to be retained and the smaller tree being protected well within the protective fencing for that larger tree.
6 Acceptable due to additional special protection works, see Section 5.0 for this tree.
7 Acceptable as pre-existing site conditions were conducive to having restricted the development of root growth in this direction.
8 Street tree with protective fencing of minimal width to allow for pedestrian access along road reserve.
9 Acceptable as tree transplanted reducing the area of the root zone.
10 Acceptable as not effected by development.
11 Young tree not expected to have established a substantially expansive root system and able to re-establish or modify growth to be sustainable due to age and good vigour.
12 Set back prescribed by the consent authority.
13 Acceptable as tree growing on a lean and encroachment on compression wood side where root growth is of reduced structural importance.
14 Acceptable as root mapping has indicated extent of structural woody roots with a diameter of 20 mm or more.
15 Acceptable as a specimen of palm taxa tolerant of encroachment.
16 Acceptable as excavation on down slope or across slope side of tree.
17 Acceptable as encroachment into growing area below ground minor, with one corner of building or excavation works extending to within the radius of the dripline.
18 Acceptable as encroachment by pier, including screw piles, with minimal disturbance.
19 Distance of tree from common boundary.
20 Acceptable as located within 0.5 m from edge of dripline.
21 Acceptable as encroachment with gap graded fill that can accommodate gaseous exchange between roots/soil and the atmosphere and ongoing root growth.
22 Minimum setback 2 m, AS4970 (2009) section 3, 3.2.
23 Maximum setback 15 m, AS4970 (2009) section 3, 3.2.
24 Tree is a palm, other monocot, cycad or tree fern TPZ is to be 1 m outside crown projection AS4970 (2009) section 3, 3.2.

Table 3.0 New Darby and Joan

1. UTM Tree No. / UTM Stand No.	2. **T**runk **D**iameter at **B**reast **H**eight **DBH** 1.4 m above ground, AS4970 (2009), or mm or m above ground where indicated. # = average.	3. **S**tructural **R**oot **Z**one **SRZ** From center of trunk (COT), trunk diameter above root buttress (DARB) AS4970 (2009) Section 3, 3.3.5 (see Appendix C) where applicable	4. **T**ree **P**rotection **Z**one (TPZ) = **12 x DBH** From center of trunk (COT) in metres AS4970 (2009) Section 3 (see Appendix B)	5. Distance of fence with TPZ setback **reduced by 10%** of area on one side of tree only, in metres equating to approx. 0.3 radius as per AS4970 (2009) Section 3, 3.3	6. Proposed distance of tree protection fence/works on the side closest to building construction[2], in metres by UTMA P/L
181	210 @ 1 m	1.7	2.5	N/A [22]	2.0
183	500	2.5	6.0	3.2	3.2
184	150#	1.5 [22]	1.9 [22]	N/A [22]	2.0
185	190#	1.6 [22]	2.3	N/A [22]	2.0
196	375# @ ground	2.2	4.5	3.1	3.0
197	330# @ 800	2.0	4.0	2.8	2.8
198	200 @ ground	1.7 [22]	2.4	N/A [22]	2.0
199	925# @ 500	3.2	11.1	7.7	5.5
215	200 @ 900	1.7 [22]	2.4	N/A [22]	2.0
218	575# @ ground	2.6	6.9	4.8	4.8
219	300#	2.0	3.6	2.5	2.5
220	350#	2.1	4.2	3.0	3.0
221	280	1.9	3.4	2.8	2.8
222	470	2.4	5.6	3.9	3.9
223	575# @ ground	2.6	6.9	4.8	4.8
224	475#	2.4	5.7	4.0	4.0
225	375#	2.2	4.5	3.1	3.1
226	550#	2.6	6.6	4.6	4.6
227	240	1.8 [22]	2.9	2.0	2.0
228	550# @ ground	2.6	6.6	4.6	4.6
231	350	2.1	4.2	3.0	3.0
238	400	2.3	4.8	3.4	3.4
239	400# @ ground	2.3	4.8	3.4	3.4
240	385# @ 200	2.2	4.6	3.2	3.2
241	210#	1.7 [22]	2.5	N/A [22]	2.0

Descriptors for modified setbacks.

1 Special conditions apply to protect the roots of trees generally, see Appendix E.
2 Additional protective fencing information is detailed in Appendices E and I.
3 Acceptable due to the good relative tolerance of the species to development impacts.
4 Range of setbacks for the trees at each end of a linear stand, see Appendix I.
5 Acceptable as fence located at a substantial distance beyond dripline, or may also include the location of a smaller tree in proximity to a larger tree to be retained and the smaller tree being protected well within the protective fencing for that larger tree.
6 Acceptable due to additional special protection works, see Section 5.0 for this tree.
7 Acceptable as pre-existing site conditions were conducive to having restricted the development of root growth in this direction.
8 Street tree with protective fencing of minimal width to allow for pedestrian access along road reserve.
9 Acceptable as tree transplanted reducing the area of the root zone.
10 Acceptable as not effected by development.
11 Young tree not expected to have established a substantially expansive root system and able to re-establish or modify growth to be sustainable due to age and good vigour.
12 Set back prescribed by the consent authority.
13 Acceptable as tree growing on a lean and encroachment on compression wood side where root growth is of reduced structural importance.
14 Acceptable as root mapping has indicated extent of structural woody roots with a diameter of 20 mm or more.
15 Acceptable as a specimen of palm taxa tolerant of encroachment.
16 Acceptable as excavation on down slope or across slope side of tree.
17 Acceptable as encroachment into growing area below ground minor, with one corner of building or excavation works extending to within the radius of the dripline.
18 Acceptable as encroachment by pier, including screw piles, with minimal disturbance.
19 Distance of tree from common boundary.
20 Acceptable as located within 0.5 m from edge of dripline.
21 Acceptable as encroachment with gap graded fill that can accommodate gaseous exchange between roots/soil and the atmosphere and ongoing root growth.
22 Minimum setback 2 m, AS4970 (2009) section 3, 3.2.
23 Maximum setback 15 m, AS4970 (2009) section 3, 3.2.
24 Tree is a palm, other monocot, cycad or tree fern TPZ is to be 1 m outside crown projection AS4970 (2009) section 3, 3.2.

General – Tree Protection works – Prior to Demolition and Tree Removal

All sections

5.6 The Tree Protection Zone for each tree is to be incorporated into the construction works for the site and the protection fencing or works to be located as indicated on the Tree Protection Plan – Tree Protection Plan. The setbacks from building works on the side closest to each tree are to be carried out as indicated in Table 3.0, and Tree Protection Zones be constructed as described here and detailed in Appendices B Tree Protection Plans. The trees will be sustained within the constraints of the modifications to the site by the proposed development works. Attention is drawn specifically to Appendix F for the protection of all tree/s to be retained and particular parts as indicated for all retained tree/s being 1.0, 1.2.0, 1.2.1, 1.2.2, 1.3.0, 1.3.1, 1.3.2, 1.3.3, 1.4.0, 1.4.1, 1.4.1.1, 1.4.2, 1.4.2.1, 1.4.2.2, 1.4.2.3, 1.4.4.2, 1.4.5 and 1.4.6.

5.7 Trees to be retained for the following sections are to be retained and protected and Tree Protection Zone fencing or works to be marked accordingly on the Landscape Plan, where appropriate and installed prior to any demolition or construction. Extant soil levels are not to be disturbed or modified within the TPZ.

Old Darby and Joan

5.7.1 Trees 49, 58, 66, 76, 82, 83, 85, 91-96, 99, 102, 103, 104, 106, 107, 108, 110, 116, 123, 124, 129, 130, 131, 135, 136, 137, 143, 144, 147, 150, 152-159, 168-175 and 177-180.

New Darby and Joan

5.7.2 Trees 181, 183, 184, 185, 196-199, 215, 218-224, 227, 228, 231 and 238-241.

5.8 ***Trunk and branch protection*** As per AS4970 (2009) *Protection of trees on development sites*, Section 4 Tree protection measures, 4.5.2 Trunk and branch protection, the trunk of each nominated tree is to be protected from possible damage from collision with trucks or plant equipment and is to be wrapped with 4 layers of hessian or a single layer of carpet underfelt around the trunk for a minimum of 2 m and extending to first order branches, then metal strapping, wire or rope is to be used to secure 75x50x2000 mm hardwood battens around the trunk (do not nail or screw to the trunk). The number of battens to be used is as required to encircle the trunk and the battens are to extend to the base of the tree as per Appendix E, section 1.4.

Old Darby and Joan

5.8.1 Trees 49, 58, 66, 76, 82, 83, 85, 91-96, 99, 102, 103, 104, 106, 107, 108 and 110.

New Darby and Joan

5.8.2 Trees 183, 219-224, 227, 228 and 231.

Specific - Tree Protection Works - Prior to Demolition

5.9 ***Trees Removal*** - are to be removed from within the area of the work site building envelope prior construction of the Tree Protection Zone fencing to be formed by the works area perimeter fence.

Old Darby and Joan

5.9.1 Remove Trees 1-48, 50-57, 59, 60-65, 68-81, 84, 86-90, 97, 98, 101, 105, 109, 111-115, 117-122, 126, 127, 128, 132, 133, 134, 139-142, 145, 146, 148, 149, 151, 160-167 and 176.

New Darby and Joan

5.9.2 Remove Trees 182, 186-195, 200-214, 216, 217, 230, 232-237 and 242-262.

5.10 ***Tree Protection Zone*** - Prior to demolition works and post tree removal the following trees for each station are to be placed within a Tree Protection Zone with protective fencing as or as formed by *the site* perimeter fencing for each section and maintained and retained until the completion of works. Protective fencing or works is to be installed as shown in Appendix E - Tree Protection Zone - Standard Procedure and the Tree Protection Plan for each section.

Old Darby and Joan

5.10.1 Trees 49, 58, 66, 76, 82, 83, 85, 91-96, 99, 102, 103, 104, 106, 107, 108, 110, 116, 123, 124, 129, 130, 131, 135, 136, 137, 143, 144, 147, 150, 152-159, 168-175 and 177-180.

New Darby and Joan

5.10.2 Trees 181, 183, 184, 185, 196-199, 215, 218-224, 227, 228, 231 and 238-241.

Specific - Tree Protection Works – During Demolition

The Tree Protection Zone fencing and works for each tree is to remain unaltered.

5.11 ***Demolition of existing structures*** retaining walls, pavement, and concrete slabs as floors of outer buildings or driveways within each Tree Protection Zone (Table 3.0 and Appendix I, Tree Protection Plan) is to be done to minimise disturbance of structural roots (roots greater than >20 mm diameter) and is to be supervised, monitored and certified by the Project Arborist. Excavation is not to extend deeper than existing pavement or footing for any retaining walls. Plant equipment is to remain on the existing pavement during demolition working back towards the pavement away from each protected tree to minimise root damage from soil compaction or disturbance. Top soil from the site is to be used to fill excavated areas to levels contiguous with adjoining extant grade.

5.12 ***Maintaining existing soil levels within TPZ*** - The extant soil levels within the Tree Protection Zone of each tree are to remain unaltered.

Specific - Tree Protection works – Post Demolition

5.13 ***Tree Protection Zone Fencing*** - The Tree Protection Zone Fences erected prior to demolition are to remain unaltered.

5.14 ***Tree Pruning*** - Pruning is to be undertaken in accordance with AS4373 (2007) Pruning amenity trees, and is to comply with the Warringah Council Tree Preservation Order. Such works are to be supervised and certified by the Project Arborist.

Old Darby and Joan

5.14.1 To be arranged with Project Arborist as required.

New Darby and Joan

5.14.2 To be arranged with Project Arborist as required.

Specific - Tree Protection works – Root protection during Excavation and Construction

5.15 ***Driveway and Parking Space Construction*** For the following trees the driveway or parking space section within the Tree Protection Zone is to be located above existing grade with a 100 mm deep bed of gap graded fill as 20 mm diameter gravel with no fines which is to be rolled to achieve compaction. Concrete pavement is to be constructed on top of the gap graded fill. The gap graded fill is to be retained with a timber plinth or suitable edging material and back filled with top soil to retain the gravel. Structural roots are to be protected and not severed except in consultation with the Project Arborist as per AS4970 (2009).

Old Darby and Joan

5.15.1 Trees 49, 147 and 154.

New Darby and Joan

5.15.2 Trees 225, 226 and 231.

5.16 ***Footpath Construction within a TPZ*** For all protected trees a footpath section through a Tree Protection Zone is to be located above existing grade with a 100 mm deep bed of gap graded fill as 20 mm diameter gravel with no fines which is to be rolled to achieve compaction, where required. Concrete pavement is to be constructed on top of the gap graded fill. The gap graded fill is to be retained with a timber plinth or suitable edging material and back filled with top soil and mulch to retain the gravel. Structural roots are to be protected and not severed except in consultation with the Project Arborist as per AS4970 (2009).

Old Darby and Joan

5.17 ***New Community Room – Trees 85, 103, 104, 106, 107 and 110*** To mitigate the major encroachment of the TPZ and minimise soil disturbance and therefore root plate disturbance this structure should be to be constructed on piers with a minimum clearance above extant grade of 100 mm. Prior to hand excavation the TPZ is to be protected from soil compaction and root damage by the application of ground protection as per AS4970 (2009) section 4, 4.5.3 Ground Protection, where a permeable membrane such as geotextile fabric is to be located at existing ground level beneath a layer of mulch or crushed rock with no fines 100 mm deep and covered with rumble boards or steel plates as per AS4970 (2009) Figure 4, (see Appendix F 1.2.2). Piers are to be excavated with non-motorized hand tools to a minimum depth of 600 mm, the depth to which the majority of roots grow. This is to be undertaken with the flexibility of design to relocate any pier 100 mm clear of any structural root (a root greater than >20 mm diameter) encountered. Where a pier footing manually excavated to 600 mm, (clear of structural roots), is required deeper, excavation can be undertaken mechanically while maintaining the width of the initial manual excavation, to protect structural roots. Hand excavation is to be monitored and certified by the Project Arborist.

5.17.1 After completion of hand excavation works within the TPZ, mechanical excavation to a greater depth may be undertaken with portable motorized tools or with plant equipment. Plant equipment is to work from outside of the TPZ reaching into the TPZ to minimise soil disturbance and compaction. The ground protection works are to remain in place beneath the dwelling until the floor of the ground floor is completed. The ground protection works between the dwelling and the Tree Protection Zone fence are to remain in place until building works are completed.

Both sections

Specific - Tree Protection Works – During Construction

5.18 ***Location of underground utilities within a Tree Protection Zone***
Utilities should not be located within a TPZ. Any utility services to be located underground within the TPZ of any tree are to be undertaken utilising excavation techniques that prevent or minimise damage to structural roots (roots greater than >20 mm diameter). Such works should be conducted with non-motorised hand tools of with an air knife or water knife and vacuum truck or with directional drilling to prevent soil compaction and root damage. Such works are to be supervised and certified by the Project Arborist.

5.19 If the area between the Tree Protection Zone fence and dwelling requires scaffolding it is to be applied with ground protection remaining to prevent compaction and soil contamination and damage to the tree from chemical spillage as per AS4970 (2009) section 4, 4.5.6, (see Appendix F, 1.2.2).

5.20 ***Root Pruning*** Where a situation occurs that a structural root (a root greater than >20 mm diameter) requires pruning or removal, the root is to be severed with a final cut to undamaged tissue to remove injured and crushed tissues allowing the tree to develop strong internal boundaries and generate new roots (Shigo 1989, p. 199) and protect their growing environment below ground. This will prevent tearing damage to the roots from excavation equipment which can extend beyond the point of excavation back towards the tree.

6.0 CONCLUSION

Old Darby and Joan

Of the 180 trees assessed as part of the proposed development for Old Darby and Joan, 126 trees are to be removed and 54 retained and protected. Replacement plantings will be undertaken as per the Landscape Plan.

New Darby and Joan

Of the one 82 trees assessed as part of the proposed development for New Darby and Joan, 57 trees are to be removed and 25 retained and protected. Replacement plantings will be undertaken as per the Landscape Plan.

General

If all the recommendations and procedures detailed herein are adhered to, the subject tree/s to be retained will continue to grow and develop as important landscape component/s providing element/s of long term amenity for the property and its owners or occupants, and the local community.

The recommendations made in this report are subject to approval by the consent authority.

As a renewable and dynamic natural resource the urban tree and the growing environment essential for its survival must be understood and carefully managed to balance its needs with those of people. It is crucial that as required: this resource be planned for, planted, nurtured, protected, maintained and replaced, to ensure appropriateness and suitability of new plantings and trees retained, for safety and viability, so that it remains vital, and is sustainable in continuity.

7.0 RECOMMENDATIONS

Old Darby and Joan

7.1 Trees 49, 58, 66, 76, 82, 83, 85, 91-96, 99, 102, 103, 104, 106, 107, 108, 110, 116, 123, 124, 129, 130, 131, 135, 136, 137, 143, 144, 147, 150, 152-159, 168-175 and 177-180 are to be retained and protected within Tree Protection Zone/s and are to be maintained and special protection works undertaken as detailed in 5.6–5.8 and 5.10-5.20, Appendices B, E and I and maintained until all building works are completed.

7.2 Trees 1-48, 50-57, 59, 60-65, 68-81, 84, 86-90, 97, 98, 101, 105, 109, 111-115, 117-122, 126, 127, 128, 132, 133, 134, 139-142, 145, 146, 148, 149, 151, 160-167 and 176 are to be removed as detailed in 5.9.1 and Survey of Subject Trees and Tree Protection Plan.

7.3 Where Tree Protection Zone works are to be modified or relocated this must be undertaken in consultation with the Project Arborist to ensure that tree protection is maintained.

New Darby and Joan

7.4 Trees 181, 183, 184, 185, 196-199, 215, 218-224, 227, 228, 231 and 238-241 are to be retained and protected within Tree Protection Zone/s and are to be maintained and special protection works undertaken in 5.6–5.8 and 5.10-5.20, Appendices B, E and I and maintained until all building works are completed.

7.5 No pruning is required.

7.6 Trees 10, 11, 18-27, 30-52 and 57 are to be removed as detailed in 5.9.2 and Survey of Subject Trees and Tree Protection Plan.

7.7 Where Tree Protection Zone works are to be modified or relocated this must be undertaken in consultation with the Project Arborist to ensure that tree protection is maintained.

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DISCLAIMER

The author and Urban Tree Management take no responsibility for actions taken and their consequences, contrary to those expert and professional instructions given as recommendations pertaining to safety by way of exercising our responsibility to our client and the public as our duty of care commitment, to mitigate or prevent hazards from arising, from a failure moment in full or part, from a structurally deficient or unsound tree or a tree likely to be rendered thus by its retention and subsequent deterioration from modification/s to its growing environment either existing or proposed, either above or below ground, contrary to our advice.

Appendix A

Rating System for Tree Significance - IACA (2009) ©

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 tree significance 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. 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.

Once the landscape significance of an individual tree has been defined, the retention value can then be determined.

The terms used in the Assessment Criteria and Tree Retention Value - Priority Matrix, are taken from the IACA Dictionary for Managing Trees in Urban Environments 2009.

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 significant age;
- The tree is listed as a Heritage Item, Threatened Species or part 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 growing environment supports the tree to its full dimensions above and below ground without conflict or constraint.

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 area,
- The tree is moderately constrained by above or below ground influences of the built environment to reach full dimensions.

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 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 is severely constrained by above or below ground influences of the built or natural environment and therefore will not reach full dimensions - 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.

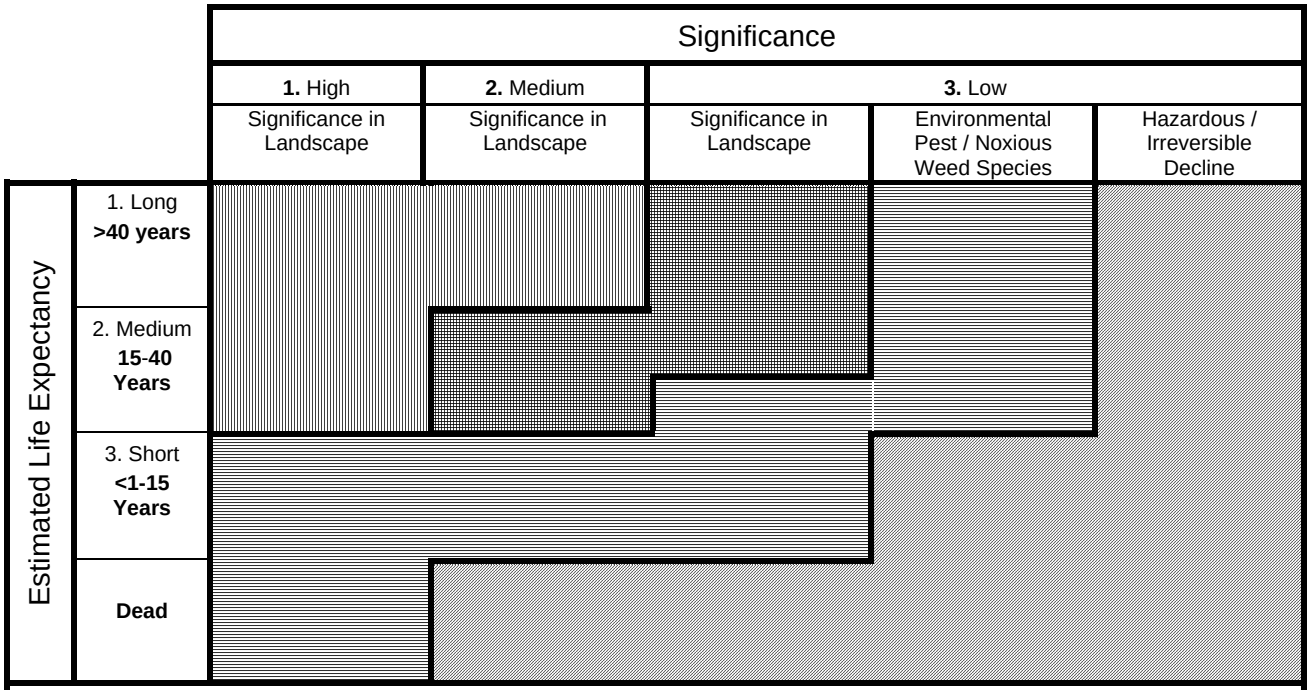
Hazardous/Irreversible Decline

- 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 it can be applied to a monocultural stand in its entirety e.g. hedge.

Table 1.0 Tree Retention Value - Priority Matrix.



Legend for Matrix Assessment

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 *Protection of trees on development sites*. 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.

Appendix B

Extract from Australian Standard AS4970 2009 Protection of trees on development sites

Section 3, Determining the tree protection zones of the selected trees

3.1 Tree protection zone (TPZ)

"The tree protection zone (TPZ) is the principal means of protecting trees on development sites. The TPZ is a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable.

The TPZ incorporates the structural root zone (SRZ) (refer to Clause 3.3.5)."

3.2 Determining the TPZ

The radius of the TPZ is calculated for each tree by multiplying its DBH x 12.

TPZ = DBH x 12

where

DBH = trunk diameter measured at 1.4 m above ground

Radius is measured from the centre of the stem at ground level.

Appendix C

Extract from Australian Standard AS4970 2009 Protection of trees on development sites

Section 3, Determining the protection zones of the selected trees

3.3.5 Structural root zone (SRZ)

"The SRZ is the area required for street stability. A larger area is required to maintain a viable tree. The SRZ only needs to be calculated when a major encroachment into a TPZ is proposed. Root investigation may provide more information on the extent of these roots."

Determining the SRZ

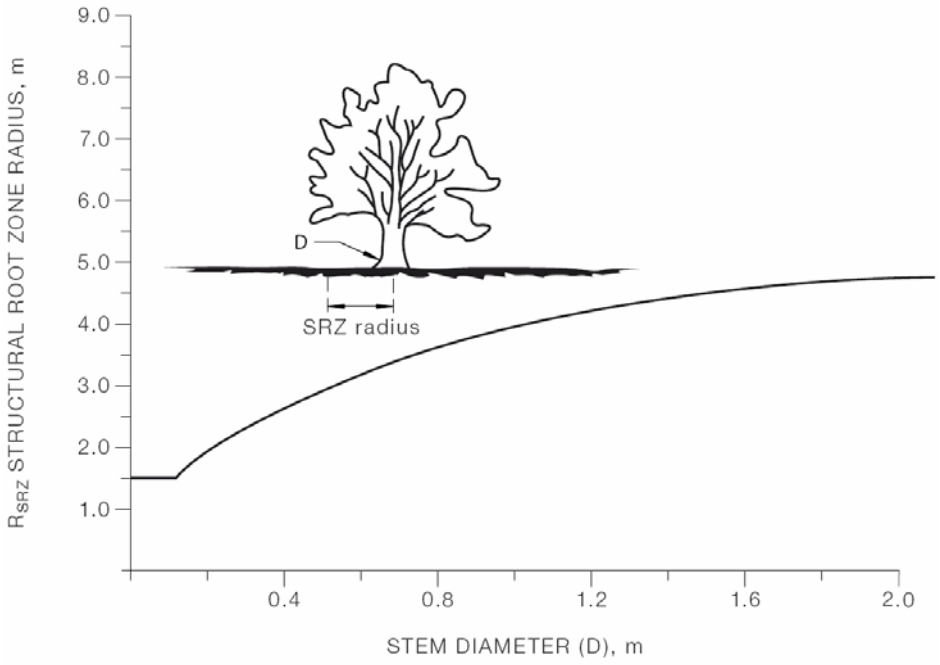
The radius of the TPZ is calculated for each tree by multiplying its DBH x 12.

SRZ radius = $(D \times 50)^{0.42} \times 0.64$

where

D = trunk diameter, in metres, measured above the root buttress.

Note: The SRZ for trees with trunk diameters less than 0.15 m will be 1.5 m (see Figure 1).



The curve can be expressed by the following formula:
$R_{SRZ} = (D \times 50)^{0.42} \times 0.64$

NOTES:

1 R_{SRZ} is the structural root zone radius.
2 D is the stem diameter measured immediately above root buttress.
3 The SRZ for trees less than 0.15 m diameter is 1.5 m.
4 The SRZ formula and graph do not apply to palms, other monocots, cycads and tree ferns.
5 This does not apply to trees with an asymmetrical root plate.

FIGURE 1 STRUCTURAL ROOT ZONE

Appendix D

Matrix - Sustainable Retention Index Value (S.R.I.V.) ©

Version 3, 2009

Developed by IACA – Institute of Australian Consulting Arboriculturists www.iaca.org.au

To be used with the values defined in the Glossary.
An Index value as indicated where ten (10) is the highest value.

Age Class	Vigour Class and Condition Class					
	Good Vigour & Good Condition (GVG)	Good Vigour & Fair Condition (GVF)	Good Vigour & Poor Condition (GVP)	Low Vigour & Good Condition (LVG)	Low Vigour & Fair Condition (LVF)	Low Vigour & Poor Condition (LVP)
	Able to be retained if sufficient space available above and below ground for future growth. No remedial work or improvement to growing environment required. May be subject to high vigour. Retention potential - Medium – Long Term.	Able to be retained if sufficient space available above and below ground for future growth. Remedial work may be required or improvement to growing environment may assist. Retention potential - Medium Term. Potential for longer with remediation or favourable environmental conditions.	Able to be retained if sufficient space available above and below ground for future growth. Remedial work unlikely to assist condition, improvement to growing environment may assist. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	May be able to be retained if sufficient space available above and below ground for future growth. No remedial work required, but improvement to growing environment may assist vigour. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	May be able to be retained if sufficient space available above and below ground for future growth. Remedial work or improvement to growing environment may assist condition and vigour. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	Unlikely to be able to be retained if sufficient space available above and below ground for future growth. Remedial work or improvement to growing environment unlikely to assist condition or vigour. Retention potential - Likely to be removed immediately or retained for Short Term. Potential for longer with remediation or favourable environmental conditions.
Young (Y)	Index Value 9 Retention potential - Long Term. Likely to provide minimal contribution to local amenity if height <5m. High potential for future growth and adaptability. Retain, move or replace.	Index Value 8 Retention potential - Short – Medium Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height <5m. Medium-high potential for future growth and adaptability. Retain, move or replace.	Index Value 5 Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height <5m. Low-medium potential for future growth and adaptability. Retain, move or replace.	Index Value 4 Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height <5m. Medium potential for future growth and adaptability. Retain, move or replace.	Index Value 3 Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height <5m. Low-medium potential for future growth and adaptability. Retain, move or replace.	Index Value 1 Retention potential - Likely to be removed immediately or retained for Short Term. Likely to provide minimal contribution to local amenity if height <5m. Low potential for future growth and adaptability.
Mature (M)	Index Value 10 Retention potential - Medium - Long Term.	Index Value 9 Retention potential - Medium Term. Potential for longer with improved growing conditions.	Index Value 6 Retention potential - Short Term. Potential for longer with improved growing conditions.	Index Value 5 Retention potential - Short Term. Potential for longer with improved growing conditions.	Index Value 4 Retention potential - Short Term. Potential for longer with improved growing conditions.	Index Value 2 Retention potential - Likely to be removed immediately or retained for Short Term.
Over-mature (O)	Index Value 6 Retention potential - Medium - Long Term.	Index Value 5 Retention potential - Medium Term.	Index Value 4 Retention potential - Short Term.	Index Value 3 Retention potential - Short Term. Potential for longer with improved growing conditions.	Index Value 2 Retention potential - Short Term.	Index Value 0 Retention potential - Likely to be removed immediately or retained for Short Term.

Appendix E

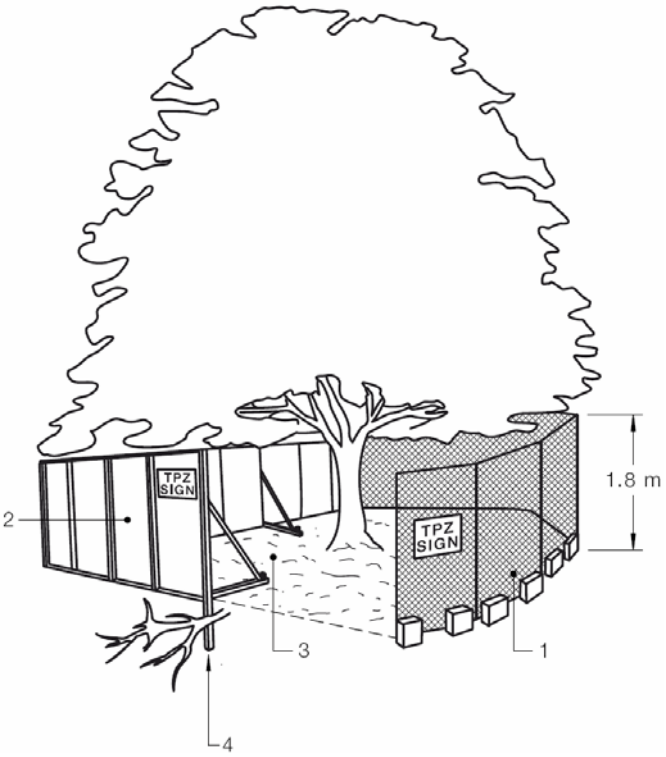
1.0 TREE PROTECTION ZONES - STANDARD PROCEDURE

1.1 The Protective fencing where required may delineate the ***TPZ*** and should be located as determined by the project arborist in accordance with AS4970 *Protection of trees on development sites*, Section 4, 4.3. *"Fencing should be erected before any machinery or materials are brought onto the site and before the commencement of works including demolition. Once erected, protective fencing must not be removed or altered without approval by the project arborist. The TPZ must be secured to restrict access. AS4687 Temporary fencing and hoardings specifies applicable fencing requirements. Shade cloth or similar should be attached to reduce the transport of dust, other particulate matter and liquids into the protected area. Fence posts and supports should have a diameter greater than 20 mm and be located clear of roots. Existing perimeter fencing and other structures may be suitable as part of the protective fencing."*

AS4970 Section 4, Tree protection measures, Figure 3 Protective fencing shows examples of such fencing.

"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. The 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. "



1.2 AS4970 Section 4, Tree protection measures, 4.2 Activities restricted within the TPZ

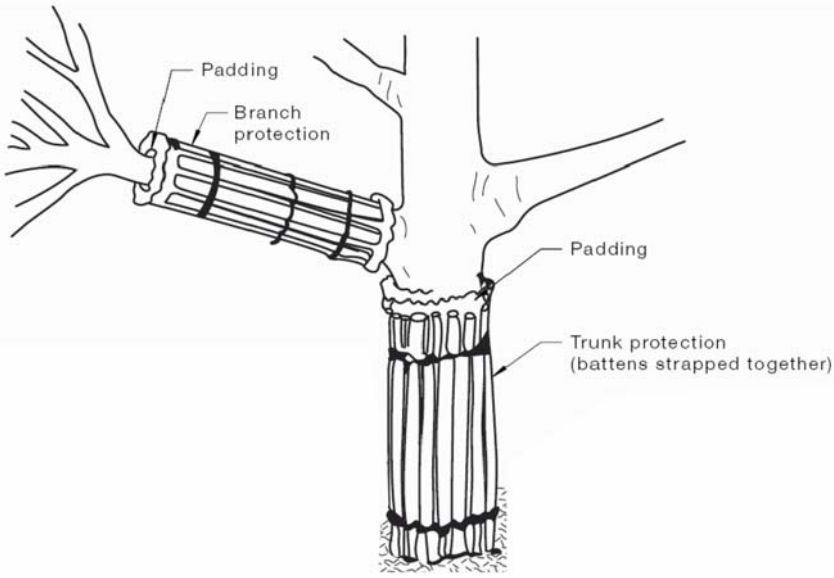
"Activities generally excluded from the TPZ included but are not limited to-

(a) Machine excavation including trenching;
(b) Excavation for silt fencing;
(c) cultivation;
(d) storage;
(e) preparation of chemicals, including preparation of cement products;
(f) parking of vehicles and plant;
(g) refuelling;
(h) dumping of waste;
(i) wash down and cleaning of equipment;
(j) placement of fill;
(k) lighting of fires;
(l) soil level changes;
(m) temporary or permanent installation of utilities and signs, and
(n) physical damage to the tree."

1.3 Tree Protection signage is to be attached to each ***Tree Protection Zone*** and displayed from within the development site in accordance with AS4970 2009 *Protection of trees on development sites*, Section 4.4 and example Appendix C1 (as shown) and lettering to comply with AS1319.

FIGURE C1 TREE PROTECTION ZONE SIGN

1.4 Where a tree is to be retained and a ***Tree Protection Zone*** cannot be adequately established due to restricted access e.g. tree located along side an access way, the trunk and branches in the lower crown will be protected by wrapping 2 layers of hessian or carpet underfelt around the trunk and branches for a minimum of 2 m or as lower branches permit, then wire or rope secures 75x50x2000 mm hardwood battens together around the trunk (do not nail or screw to the trunk or branches). The number of battens to be used is as required to encircle the trunk and the battens are to extend to the base of the tree (AS4970 2009 *Protection of trees on development sites*, Figure 4 Examples of Trunk, Branch and ground protection).



1.5 If a tree is growing down slope from an excavation, a silt fence located along the contours of the site in the area immediately above the ***Tree Protection Zone*** fencing may need to be installed and regularly maintained to prevent burial and asphyxiation of the roots of the tree. To allow for the maintenance of both fences, the silt fence must be constructed separately to the tree protection fence and the 2 fences must be constructed independently of each other and standalone. To reduce competition with the tree the area within the ***Tree Protection Zone*** is to be kept free of weeds. These are best removed by the application of foliar herbicide with Glyphosate as the active constituent. This is the preferred method rather than removal by cultivation of the soil within the dripline, to minimise root disturbance to the tree. The removal of woody weeds such as Privet should use the cut and paint method of herbicide application. Weeds to be controlled within the ***Tree Protection Zone***, for the duration of the project.

1.6 The area of the Tree Protection Zone to be mulched to a depth of 100 mm with organic material being 75% leaf litter and 25% wood, and this being composted material preferably from the same genus and species of tree as that to where the mulch is to be applied, i.e. species specific mulch. The depth of mulch and type as indicated, to be maintained for the duration of the project. Where deep excavation will expose the soil profile to drying out the root plate is to be protected by pegging jute matting across the ground surface 2 m back from the edge of the profile and 2 m down the face of the profile and is to be in one continuous sheet or layers up to 5 mm thick and overlapped 300 mm and pegged. Pegs are to be a minimum length of 200 mm and spaced at 500 mm increments in a grid pattern. Once installed mulch is to be placed on top of the jute matting previously described.

1.7 No services either temporary or permanent are to be located within the ***Tree Protection Zone***. If services are to be located within the ***Tree Protection Zone***, special details will need to be provided by the Project Arborist for the protection of the tree regarding the location of the service/s.

1.8 A tree will not be fertilised during its protection within the ***Tree Protection Zone***, as this may hasten its decline if it were to decline. If a tree is to be fertilised this should be in consultation with the Project Arborist as per AS4970 (2009).

1.9 In the event of prolonged dry periods, or where a tree has been transplanted, or where excavation nearby, especially up slope, leads to drying out of a soil profile, or modification to ground water flow, or flows across an existing ground surface to the tree and its growing environment; deep root watering thoroughly at least twice a week is to be undertaken to irrigate the tree. The need for such watering is determined readily by observing the dryness of the soil surface within the dripline of the tree by scraping back some mulch. Mulch is to be reinstated afterwards. In the event of disrupted ground or surface water flows to the tree due to excavation, filling or construction, a reticulated irrigation system may be required to be installed within the ***Tree Protection Zone***. If an irrigation system is to be installed, consideration must be given to volume, frequency, and drainage of water delivered, and this should be in consultation with the Project Arborist as per AS4970 (2009).

Appendix F

1.0 TREE PROTECTION ON CONSTRUCTION SITES

Note: Individual protection measures to be applied where stated as applicable.

1.1.0 General notes
1.2.0 Cautionary notes for the protection of retained trees
1.3.0 Demolition of built structures - precautions to protect trees
1.4.0 Excavation and construction close to Tree Protection Zones

1.1.0 General notes

1.1.1 The application of any measures for the protection of trees on development sites is determined by the species characteristics of the subject tree, and the existing physical constraints of the growing environment on site both above and below ground.

1.1.2 This report considers where applicable, Australian Standard AS4970 2009 *Protection of trees on development sites*.

1.1.3 This report applies the ***Tree Protection Zone - Standard Procedure*** as developed and continually improved over time by URBAN TREE MANAGEMENT ® © for the effective protection of trees on development sites (see Appendix E). However, this does not restrict the author from applying additional or alternative conditions where it is deemed appropriate by the author for the protection of trees on development sites. Such additional or alternative conditions may be founded upon professional judgement based on:

- the experience of the Project Arborist
- scientific research
- new technology
- industry best practice
- consideration of the individual tree species and its relative tolerance to development impacts
- the individual or cumulative factors present or proposed to impact upon the growing environment essential for the trees' survival

1.1.4 Where this report makes reference to the retention of subject trees it is for their incorporation into the landscaping works for the site, and they are to be documented on a Landscape Plan for the site (*the Landscape Plan*).

1.2.0 Cautionary notes for the protection of retained trees

1.2.1 Installing underground services within TPZ

If an underground utility service is to be located within the area of the TPZ Australian Standard AS4970 2009 *Protection of trees on development sites*, Section 4, 4.5.5 Installing underground services within TPZ provides the following:

"All services should be routed outside the TPZ. If underground services must be routed within the TPZ, they should be installed by directional drilling or in manually excavated trenches.

The directional drilling bore should be at least 600 mm deep. The project arborist should assess the likely impacts of boring and bore pits on retained trees.

For manual excavation trenches the project arborist should advise on roots to be retained and should monitor the works. Manual excavation may include the use of pneumatic and hydraulic tools. Refer Clause 4.5.3."

1.2.1.1

Location of services Option B (Driveway Construction)

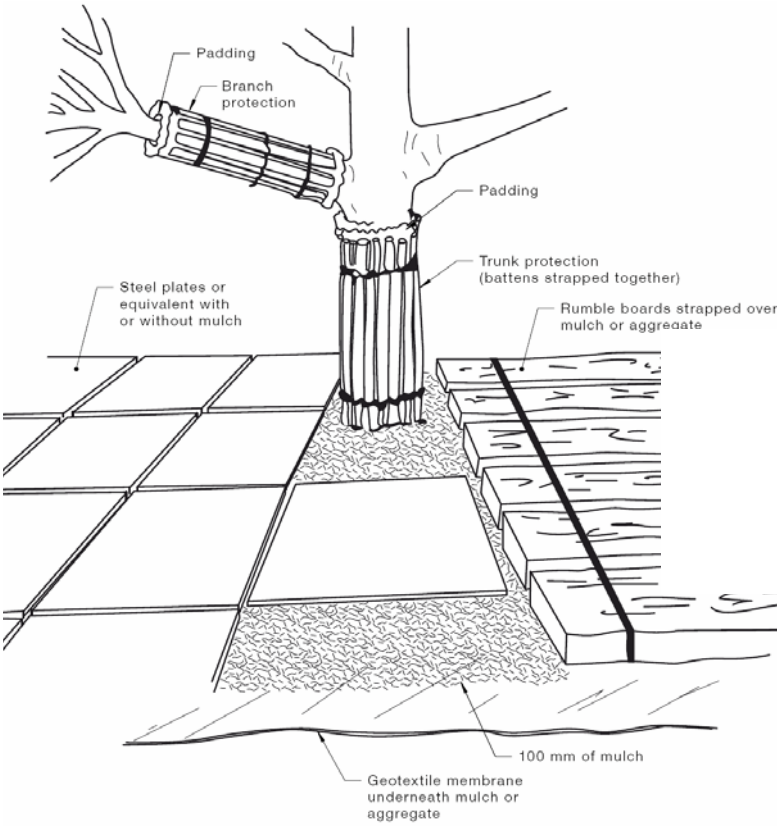
If a service is to be located within the area of the dripline of a protected tree or within the Tree Protection Zone, and site conditions such as shallow bed rock or if mass rooting has occurred from multiple trees growing in close proximity to each other, the service trench is to be elevated and positioned above natural ground level within the new driveway structure. The existing driveway surface is to be scabbled and a reinforced concrete topping is to be provided with down turned thickened edges constructed under the kerb edging to prevent lateral movement. A suitable subgrade material to manufacturers' recommendations is to be utilised if and where appropriate. Construction is to occur in a manner so as not to cause damage to the subject trees root system. All works to be in accordance with engineers' details.

1.2.2 Precautions in respect of temporary work

For Precautions in respect of temporary work, Australian Standard AS4970 2009 *Protection of trees on development sites*, Section 4, Tree protection measures, 4.5 Other tree protection measures, provides the following:

"4.5.3 Ground protection

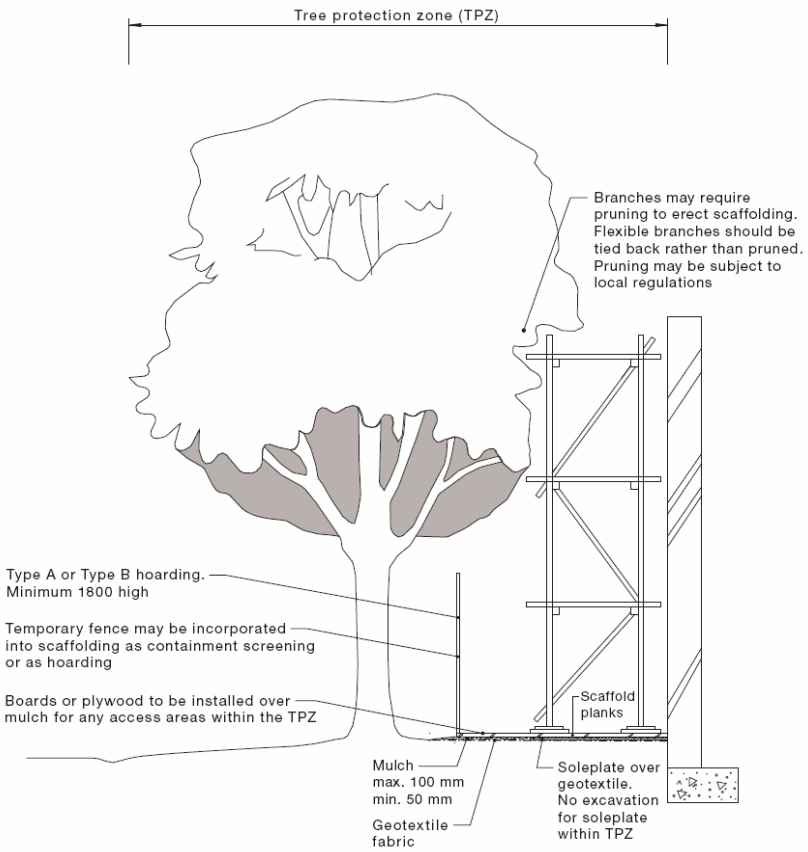
If temporary access for machinery is required within the TPZ ground protection measures will be required. The purpose of ground protection is to prevent root damage and soil compaction within the TPZ. Measures may include a permeable membrane such as geotextile fabric beneath a layer of mulch or crushed rock below rumble boards as per Figure 4. These measures may be applied to root zones beyond the TPZ."



"4.5.6 Scaffolding

Where scaffolding is required it should be erected outside the TPZ. Where it is essential for scaffolding to be erected within the TPZ, branch removal should be minimized. This can be achieved by designing scaffolding to avoid branches or tying back branches. Ground below the scaffolding should be protected by boarding (e.g. scaffolding board or plywood sheeting) as shown in Figure 5. Where access is required, a board walk or other surface material should be installed to minimise soil compaction. Boarding should be placed over a layer of mulch and impervious sheeting to prevent soil contamination. The boarding should be left in place until the scaffolding is removed."

"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 a suitable thickness to prevent soil compaction and root damage."



NOTE: Excavation required for the insertion of support posts for tree protection fencing should not involve the severance of any roots greater than 20 mm in diameter, without the prior approval of the project arborist.

FIGURE 5 INDICATIVE SCAFFOLDING WITHIN A TPZ

1.3.0 Demolition of built structures - precautions to protect trees

1.3.1 Demolition of existing Buildings

The demolition of the buildings should be undertaken with access restricted to the driveway and the building platform for each of the existing buildings, or to areas of the land where no trees are growing within 6m of any tree to be retained. Where access or space for a safe working environment is restricted, or where the area of the 6m set back must be compromised, a 100 mm layer of Eucalyptus wood mulch must be laid over the area of encroachment. Where vehicular access is required across the mulch layer further root protection should be provided by laying a temporary pathway over the mulch. The temporary pathway should be constructed of a grated steel material capable of supporting the vehicles used during demolition e.g. similar to ramps used to load vehicles onto the backs of trucks. Trunks of trees are to be protected from vehicular damage as per section 1.2.2.

1.3.2 Demolition of landscape structures

The demolition of walls, driveways retaining walls, paths and pools etc. within 6 m of a tree to be retained should be undertaken manually using hand tools. Where a driveway is to be demolished being of concrete strip or slab type construction, it should be undertaken by working from the end of the driveway closest to the building back towards the street by utilising the driveway as a stable platform to prevent soil compaction. Where a concrete slab driveway passes less than 1 m from the base of a tree and the area beneath the driveway is to be undisturbed and incorporated into the landscape works for the site, the volume of space previously occupied by the driveway must be replaced with local top soil from the site or otherwise a loamy sand, to replace the mass of the concrete on the root plate which may be critical to the ballast and centre of mass for the stability of the tree. If the tree becomes unstable immediately contact the Project Arborist.

1.3.3 Removal of existing trees near trees to be retained

Removal of a tree within 6 m of a tree to be retained should be undertaken only by cutting down such a tree without damaging the trees to be retained, and by grinding out its stump. Where possible the structural roots of 20 mm diameter or greater of the tree to be cut down should not be removed, to minimise soil disturbance and to reduce the impact on the roots of any tree to be retained nearby. Where structural roots are to be removed this should be undertaken manually by the use of non-motorized hand tools after the stump has been ground out when such roots are often easier to locate from the site of the stump from which they have been severed.

1.4.0 Excavation and construction close to Tree Protection Zones

1.4.1 Excavation close to Tree Protection Zones

1.4.1.1

Where structural woody roots with a diameter of 20 mm or greater are to be pruned outside the area of the Tree Protection Zone, they are to be excavated manually first by using hand tools to determine their location. A Waterknife or Airknife can be used as a mechanised alternative to locate such structural woody roots. Once located those roots to be severed are to be cut cleanly with a final cut to undamaged woody tissue and this will prevent tearing damage to the roots from excavation equipment which can extend beyond the point of excavation back towards the tree.

1.4.1.2

Where a large vigorous tree is to be retained near to built structure, and dependent upon its taxa, age class and propensity for its roots system to regenerate, it may be prudent to install a root barrier immediately adjacent to the footing of the new building, or to deepen and strengthen the footings themselves to act as a root barrier, but for such structural advice an appropriately qualified chartered structural engineer should be consulted.

1.4.2 Root location and protection where structures are to be positioned near a retained tree

1.4.2.1

If walls or a driveway or other structures are to be constructed near a protected tree, careful excavation is to be undertaken manually by using non-motorized hand tools to determine the location of first order and lower order structural roots with a diameter of 20 mm (*structural woody roots*) or greater, without damaging them. Boundary walls or fences should use columns or posts with in fill panels, or a wall to be constructed with suspended sections 100 mm clear above or beside any structural woody root or further as required, or any new wall to be built only to the depth of that existing. Structural woody roots to be further protected by utilising the construction techniques of pier or bridge footings, or screw piles between or over them with a minimum clearance above or beside of 100 mm, or further as required to allow for future and ongoing growth.

1.4.2.2

Where a driveway or footpath is to pass by the tree a suspended slab is to be constructed or approved similar, to protect the roots that may be encountered at, near, or above ground, and may be constructed on gap graded fill. Where such a driveway or footpath is to be constructed the edge of the structure closest to the tree is to terminate no closer than 0.5 m from the closest edge of trunk, or further depending on the species and its likely further growth to allow for future development and expansion of the trunk, buttresses, and first order and lower order roots as may be advised the Project Arborist. The side of the driveway closest to a tree is to be edged with a concrete kerb of minimum dimensions of 150 x 150 mm, to prevent vehicular collision with the trunk. Here a W*aterknife* or an A*irknife* can be used as a mechanised alternative to locate first order and lower order structural woody roots.

1.4.2.3

Alternatively a footpath or driveway may be constructed at ground level without any excavation, removing turf by raking, having sprayed with herbicide first if time permits. Here the path or driveway section is to extend for a distance past the tree equivalent to the lateral spread of the crown of that tree alongside the footpath, or driveway.

1.4.2.4

Watering / Gaseous exchange vents are to be installed in the area of the driveway that passes within the crown projection of the tree or the prescribed ***Tree Protection Zone*** area and the number and location are to be determined by the Project Arborist and the driveway design approved by a Certified Engineer. Alternatively the driveway section could be constructed on permeable concrete to Engineer's specifications to allow percolation of water and gaseous exchange. Exposed edges of the path are to be concealed with the finished level beside the path equivalent to the top of the path by minimal filling with a sandy soil and turf, or mulch, or a garden bed with minimal cultivation, or other landscape treatments as appropriate.

1.4.3 ***Root protection where a driveway close to a tree is to be demolished and a new driveway constructed in a similar location to a previous driveway.***

After demolition of an existing driveway as per 1.3.2, the level of the base for the new driveway should be located at the same existing level as that of the base of the previous driveway, and should extend for a distance past the tree equivalent to the lateral spread of the crown of that tree alongside the driveway. To prevent excavation from damaging the existing roots which may be located at, near or above the surface of the soil beneath the base of the previous driveway, the new driveway may need to be raised by constructing it on pier or bridge footings between or over them (see 1.4.2 for minimum clearances), or based on a gap graded fill and the driveway constructed with any exposed edges concealed to the top of the driveway by minimal filling with a sandy soil and turf, or mulch, or a garden bed with minimal cultivation, or other landscape treatments as appropriate. Where roots have grown to occupy the soil between the concrete strips of a concrete, stone or brick strip driveway, they and the soil may be excavated to the level of the base of the concrete strips, but where such roots have a diameter of 20 mm or greater, the Project Arborist should be contacted prior to such works being undertaken. Where roots are to be severed, they are to be cut cleanly with a final cut to undamaged woody tissue.

1.4.4 ***Root protection where a footpath is to be constructed close to a tree.***

1.4.4.1

A footpath may be constructed at ground level without any excavation, by first killing with herbicide the plants to be removed from the pathway area, and then removing that plant material by cutting the trunks of woody shrubs to ground level and by raking all other plant material to expose the top soil surface without organic matter. This will remove the need for physically disturbing the soil and the roots of the tree. The path section is to extend for a distance past each tree equivalent to the lateral spread of the crown of that tree where it extends alongside the footpath.

1.4.4.2

To prevent excavation from damaging the existing roots which may be located at, near, or above the surface of the soil, a gap graded fill as a fill material of a media as appropriate, to a depth of 100 mm above the soil surface, or above the top of the root of any tree to be retained, or above the soil surface may be utilised as a base treatment to construct the foot path. Any exposed edges to be concealed to the top of the edges of the footpath and tapering back to the base of the trunk of each tree by minimal filling at each trunk of no greater than 100 mm with a sandy soil and turf, or mulch, or a garden bed with minimal cultivation with ground covers, or other landscape treatments as appropriate. The Project Arborist should be contacted prior to such works being undertaken or if any structural roots are considered appropriate to be severed being those roots of 20 mm diameter or greater.

1.4.5 ***Structural Soil to accommodate load bearing conditions***

A structural soil should only be considered as a new media into which the trees could be planted if the planting was into a new area where the area surrounding was to be load bearing such as a footpath, driveway or road.

1.4.6 ***Gap graded fill to accommodate compacted sub grade and root growth***

To further protect woody roots with a diameter of 20 mm or greater, a gap graded fill with no fines such as gravel 40 mm diameter should only be considered as a fill media above existing grade when soil levels are to be increased near existing trees and the roots can utilise the new media to develop ongoing and future root growth and provide for gaseous exchange between the soil and the atmosphere.

Appendix G

Glossary

From
Dictionary for Managing Trees in Urban Environments
Institute of Australian Consulting Arboriculturists (IACA) 2009.

Vigour

Vigour Ability of a tree to sustain its life processes. This is independent of the *condition* of a tree but may impact upon it. Vigour can appear to alter rapidly with change of seasons (seasonality) e.g. *dormant*, deciduous or semi-deciduous trees. Vigour can be categorized as *Normal Vigour, High Vigour*, *Low Vigour* and *Dormant Tree Vigour*.

Normal Vigour Ability of a tree to maintain and sustain its life processes. This may be evident by the *typical* growth of leaves, *crown cover* and *crown density*, branches, roots and trunk and *resistance* to *predation*. This is independent of the *condition* of a tree but may impact upon it, and especially the ability of a tree to sustain itself against predation.

High Vigour *Accelerated growth* of a tree due to incidental or deliberate artificial changes to its growing *environment* that are seemingly beneficial, but may result in *premature aging* or failure if the favourable conditions cease, or promote *prolonged senescence* if the favourable conditions remain, e.g. water from a leaking pipe; water and nutrients from a leaking or disrupted sewer pipe; nutrients from animal waste, a tree growing next to a chicken coop, or a stock feed lot, or a regularly used stockyard; a tree subject to a stringent watering and fertilising program; or some trees may achieve an extended lifespan from continuous *pollarding* practices over the life of the tree.

Low Vigour Reduced ability of a tree to sustain its life processes. This may be evident by the *atypical* growth of leaves, reduced *crown cover* and reduced *crown density*, branches, roots and trunk, and a deterioration of their functions with reduced *resistance* to *predation*. This is independent of the *condition* of a tree but may impact upon it, and especially the ability of a tree to sustain itself against predation.

Dormant Tree Vigour Determined by existing turgidity in lowest order branches in the outer extremity of the crown, with good bud set and formation, and where the last *extension growth* is distinct from those most recently preceding it, evident by bud scale scars. Normal vigour during dormancy is achieved when such growth is evident on a majority of branches throughout the crown.

Age of Trees

Age Most trees have a stable biomass for the major proportion of their life. The estimation of the age of a tree is based on the knowledge of the expected lifespan of the taxa in situ divided into three distinct stages of measurable biomass, when the exact age of the tree from its date of cultivation or planting is unknown and can be categorized as *Young*, *Mature* and *Over-mature* (British Standards 1991, p. 13, Harris *et al*, 2004, p. 262).

Young Tree aged less than <20% of life expectancy, *in situ*.

Mature Tree aged 20-80% of life expectancy, *in situ*.

Over-mature Tree aged greater than >80% of life expectancy, *in situ,* or *senescent* with or without reduced *vigour*, and declining gradually or rapidly but irreversibly to death.

Periods of Time

Periods of Time The life span of a tree in the urban environment may often be reduced by the influences of encroachment and the dynamics of the environment and can be categorized as *Immediate*, *Short Term*, *Medium Term* and *Long Term*.

Immediate An *episode* or occurrence, likely to happen within a twenty-four (24) hour period, e.g. tree failure or collapse in full or part posing an imminent danger.

Short Term A period of time less than <1 – 15 years.

Medium Term A period of time 15 – 40 years.

Long Term A period of time greater than >40 years.

Trunk

Trunk A single stem extending from the *root crown* to support or elevate the *crown*, terminating where it divides into separate *stems* forming *first order branches*. A trunk may be evident at or near ground or be absent in *acaulescent* trees of *deliquescent* habit, or may be continuous in trees of *excurrent* habit. The trunk of any *caulescent* tree can be divided vertically into three (3) sections and can be categorized as *Lower Trunk*, *Mid Trunk* and *Upper Trunk*. For a *leaning* tree these may be divided evenly into sections of one third along the trunk.

Acaulescent A *trunkless* tree or tree growth forming a very short *trunk*. See also *Caulescent.*

Caulescent Tree grows to form a *trunk*. See also *Acaulescent*.

Condition of Trees

Condition A tree's *crown form* and growth habit, as modified by its *environment* (aspect, suppression by other trees, soils), the *stability* and *viability* of the *root plate*, trunk and structural branches (first (1^{st}) and possibly second (2^{nd}) order branches), including structural defects such as wounds, cavities or hollows, *crooked* trunk or weak trunk/branch junctions and the effects of predation by pests and diseases. These may not be directly connected with *vigour* and it is possible for a tree to be of *normal vigour* but in *poor condition*. Condition can be categorized as *Good Condition*, *Fair Condition*, *Poor Condition* and *Dead*.

Good Condition Tree is of good habit, with *crown form* not severely restricted for space and light, physically free from the adverse effects of *predation* by pests and diseases, obvious instability or structural weaknesses, fungal, bacterial or insect infestation and is expected to continue to live in much the same condition as at the time of inspection provided conditions around it for its basic survival do not alter greatly. This may be independent from, or contributed to by vigour.

Fair Condition Tree is of good habit or *misshapen*, a form not severely restricted for space and light, has some physical indication of *decline* due to the early effects of *predation* by pests and diseases, fungal, bacterial, or insect infestation, or has suffered physical injury to itself that may be contributing to instability or structural weaknesses, or is faltering due to the modification of the *environment* essential for its basic survival. Such a tree may recover with remedial works where appropriate, or without intervention may stabilise or improve over time, or in response to the implementation of beneficial changes to its local environment. This may be independent from, or contributed to by vigour.

Poor Condition Tree is of good habit or *misshapen*, a form that may be severely restricted for space and light, exhibits symptoms of advanced and *irreversible decline* such as fungal, or bacterial infestation, major die-back in the branch and *foliage crown*, *structural deterioration* from insect damage e.g. termite infestation, or storm damage or lightning strike, ring barking from borer activity in the trunk, root damage or instability of the tree, or damage from physical wounding impacts or abrasion, or from altered local environmental conditions and has been unable to adapt to such changes and may decline further to death regardless of remedial works or other modifications to the local *environment* that would normally be sufficient to provide for its basic survival if in *good* to *fair* condition. Deterioration physically, often characterised by a gradual and continuous reduction in vigour but may be independent of a change in vigour, but characterised by a proportionate increase in susceptibility to, and *predation* by pests and diseases against which the tree cannot be sustained. Such conditions may also be evident in trees of advanced senescence due to normal phenological processes, without modifications to the growing environment or physical damage having been inflicted upon the tree. This may be independent from, or contributed to by vigour..

Dead Tree is no longer capable of performing any of the following processes or is exhibiting any of the following symptoms;
Processes
Photosynthesis via its foliage crown (as indicated by the presence of moist, green or other coloured leaves);
Osmosis (the ability of the root system to take up water);
Turgidity (the ability of the plant to sustain moisture pressure in its cells);
Epicormic shoots or *epicormic strands* in Eucalypts (the production of new shoots as a response to stress, generated from latent or adventitious buds or from a *lignotuber*);
Symptoms
Permanent leaf loss;
Permanent wilting (the loss of turgidity which is marked by desiccation of stems leaves and roots);
Abscission of the *epidermis* (bark desiccates and peels off to the beginning of the sapwood).

Removed No longer present, or tree not able to be located or having been cut down and retained on a site, or having been taken away from a site prior to site inspection.

Leaning Trees

Leaning A tree where the *trunk* grows or moves away from upright. A lean may occur anywhere along the *trunk* influenced by a number of contributing factors e.g. genetically predetermined characteristics, competition for space or light, prevailing winds, aspect, slope, or other factors. A *leaning* tree may maintain a *static lean* or display an increasingly *progressive lean* over time and may be hazardous and prone to *failure* and *collapse*. The degrees of leaning can be categorized as *Slightly Leaning*, *Moderately Leaning*, *Severely Leaning* and *Critically Leaning*.

Slightly Leaning A leaning tree where the trunk is growing at an angle within 0^{O}-15^{O} from upright.

Moderately Leaning A leaning tree where the trunk is growing at an angle within 15^{O}-30^{O} from upright.

Severely Leaning A leaning tree where the trunk is growing at an angle within 30^{O}-45^{O} from upright.

Critically Leaning A leaning tree where the trunk is growing at an angle greater than $>45^{O}$ from upright.

Progressively Leaning A tree where the degree of *leaning* appears to be increasing over time.

Static Leaning A leaning tree whose lean appears to have stabilized over time.

Form of Trees

Crown Form The shape of the crown of a tree as influenced by the availability or restriction of space and light, or other contributing factors within its growing environment. Crown Form may be determined for tree shape and habit generally as *Dominant*, *Codominant*, *Intermediate*, *Emergent*, *Forest* and *Suppressed*. The habit and shape of a *crown* may also be considered qualitatively and can be categorized as *Good Form* or *Poor Form*.

Good Form Tree of *typical* crown shape and habit with proportions representative of the taxa considering constraints such as origin e.g. indigenous or exotic, but does not appear to have been adversely influenced in its development by environmental factors in situ such as *soil water* availability, prevailing wind, or cultural practices such as lopping and competition for space and light.

Poor Form Tree of *atypical* crown shape and habit with proportions not representative of the species considering constraints and appears to have been adversely influenced in its development by environmental factors in situ such as *soil water* availability, prevailing wind, cultural practices such as lopping and competition for space and light; causing it to be *misshapen* or disfigured by disease or vandalism.

Crown Form Codominant Crowns of trees restricted for space and light on one or more sides and receiving light primarily from above e.g. constrained by another tree/s or a building.

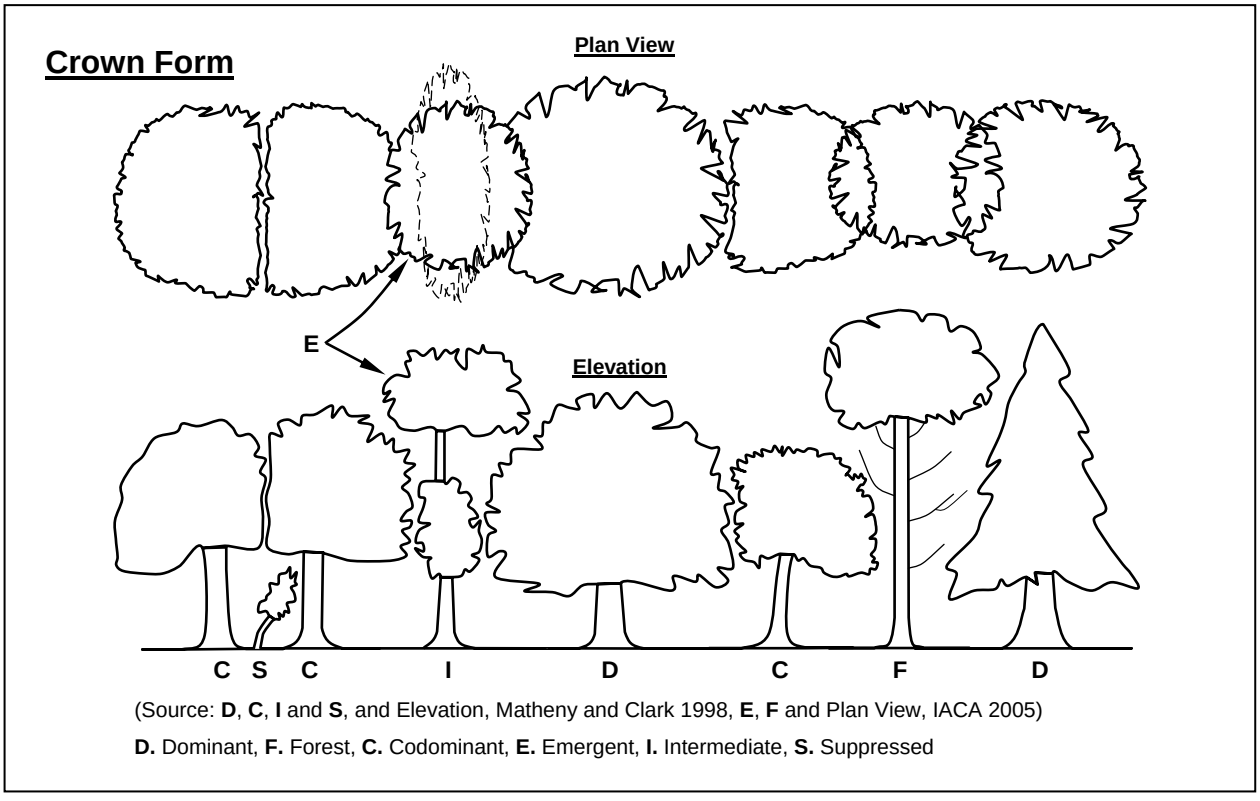
Crown Form Dominant Crowns of trees generally not restricted for space and light receiving light from above and all sides.

Crown Form Emergent Crowns of trees restricted for space on most sides receiving most light from above until the *upper crown* grows to protrude above the canopy in a stand or forest environment. Such trees may be *crown form dominant* or transitional from *crown form intermediate* to *crown form forest* asserting both *apical dominance* and *axillary dominance* once free of constraints for space and light.

Crown Form Forest Crowns of trees restricted for space and light except from above forming tall trees with narrow spreading crowns with foliage restricted generally to the top of the tree. The trunk is usually erect, straight and continuous, tapering gradually, crown often excurrent, with first order branches becoming structural, supporting the live crown concentrated towards the top of the tree, and below this point other first order branches arising radially with each *inferior* and usually temporary, divergent and ranging from horizontal to ascending, often with internodes exaggerated due to competition for space and light in the *lower crown*.

Crown Form Intermediate Crowns of trees restricted for space on most sides with light primarily from above and on some sides only.

Crown Form Suppressed Crowns of trees generally not restricted for space but restricted for light by being *overtopped* by other trees and occupying an understorey position in the canopy and growing slowly.



(Source: **D**, **C**, **I** and **S**, and Elevation, Matheny and Clark 1998, **E**, **F** and Plan View, IACA 2005)

D. Dominant, **F.** Forest, **C.** Codominant, **E.** Emergent, **I.** Intermediate, **S.** Suppressed

Symmetry

Symmetry Balance within a *crown,* or *root plate,* above or below the *axis* of the trunk of branch and foliage, and root distribution respectively and can be categorized as *Asymmetrical* and *Symmetrical*.

Asymmetrical Imbalance within a crown, where there is an uneven distribution of branches and the foliage *crown* or *root plate* around the vertical *axis* of the trunk. This may be due to *Crown Form Codominant* or *Crown From Suppressed* as a result of natural restrictions e.g. from buildings, or from competition for space and light with other trees, or from exposure to wind, or artificially caused by pruning for clearance of roads, buildings or power lines. An example of an expression of this may be, crown asymmetrical, bias to west.

Symmetrical Balance within a crown, where there is an even distribution of branches and the *foliage crown* around the vertical *axis* of the trunk. This usually applies to trees of *Crown Form Dominant* or *Crown Form Forest*. An example of an expression of this may be crown symmetrical.

Crown Spread Orientation Direction of the *axis* of *crown spread* which can be categorized as *Orientation Radial* and *Orientation Non-radial*.

Crown Spread Orientation Non-radial Where the crown extent is longer than it is wide, e.g. east/west or E/W. Further examples, north/south or N/S, and may be *Crown Form Codominant*, e.g. **A** or **B**, *Crown Form Intermediate* e.g. **A**, or *Crown Form Suppressed* e.g. **B***, and* crown symmetry is *symmetrical* e.g. **A**, or *asymmetrical* e.g. **B**.

Crown Spread Orientation Radial Where the *crown spread* is generally an even distance in all directions from the trunk and often where a tree has *Crown Form Dominant* and is *symmetrical.*

Significant Important, weighty or more than ordinary.

Significant Tree A tree considered important, weighty or more than ordinary. Example: due to prominence of location, or *in situ*, or contribution as a component of the overall landscape for *amenity* or aesthetic qualities, or *curtilage* to structures, or importance due to uniqueness of taxa for species, subspecies, variety, *crown form*, or as an historical or cultural planting, or for age, or substantial dimensions, or habit, or as *remnant vegetation*, or habitat potential, or a rare or threatened species, or uncommon in cultivation, or of aboriginal cultural importance, or is a commemorative planting.

Substantial A tree with large dimensions or proportions in relation to its place in the landscape.

Sustainable Retention Index Value (SRIV) A visual tree assessment method to determine a qualitative and numerical rating for the viability of urban trees for development sites and management purposes, based on general tree and landscape assessment criteria using classes of *age*, *condition* and *vigour*. SRIV is for the professional manager of urban trees to consider the tree *in situ* with an assumed knowledge of the *taxon* and its growing environment. It is based on the physical attributes of the tree and its response to its environment considering its position in a matrix for age class, vigour class, condition class and its sustainable retention with regard to the safety of people or damage to property. This also factors the ability to retain the tree with remedial work or beneficial modifications to its growing environment or removal and replacement. SRIV is supplementary to the decision made by a tree management professional as to whether a tree is retained or removed (IACA - Institute of Australian Consulting Arboriculturists 2005).

Diameter at Breast Height (DBH) Measurement of trunk width calculated at a given distance above ground from the base of the tree often measured at 1.4 m. The trunk of a tree is usually not a circle when viewed in cross section, due to the presence of *reaction wood* or *adaptive wood*, therefore an average diameter is determined with a *diameter tape* or by recording the trunk along its narrowest and widest axes, adding the two dimensions together and dividing them by 2 to record an average and allowing the orientation of the longest axis of the trunk to also be recorded. Where a tree is growing on a lean the distance along the top of the trunk is measured to 1.4m and the diameter then recorded from that point perpendicular to the edge of the trunk. Where a *leaning* trunk is *crooked* a vertical distance of 1.4m is measured from the ground. Where a tree branches from a trunk that is less than 1.4m above ground, the trunk diameter is recorded perpendicular to the length of the *trunk* from the point immediately below the base of the flange of the *branch collar* extending the furthest down the trunk, and the distance of this point above ground recorded as *trunk* length. Where a tree is located on sloping ground the DBH should be measured at half way along the side of the tree to average out the angle of slope. Where a tree is *acaulescent* or *trunkless* branching at or near ground an average diameter is determined by recording the radial extent of the trunk at or near ground and noting where the measurement was recorded e.g. at ground.

Crown Projection (CP) Area within the *dripline* or beneath the lateral extent of the *crown* (Geiger 2004, p. 2). See also *Crown spread* and *Dripline*.

Dripline A line formed around the edge of a tree by the lateral extent of the *crown*. Such a line may be evident on the ground with some trees when exposed soil is displaced by rain shed from the crown. See also *Crown Projection*.

Structural Root Zone (SRZ) The minimal radial distance around the base of a tree and its *root plate* required for its stability in the ground against *windthrow*, and applied only to trees with a circular *root plate* (Mattheck and Breloer 1994, pp. 77–87).

Tree protection zone (TPZ) Area around a tree set aside to protect the trunk, roots and crown during development works. This is to protect the tree physically and a sufficient proportion of its growing environment above and below ground to assist *stability* and prolong viability. The TPZ is often delineated by an enclosed fence and established prior to demolition or construction and maintained until the completion of works. The fenced-off area around the tree is usually located at a specific distance from the trunk determined as multiples of the trunk diameter, usually *Diameter at breast height* (DBH). Special protection or construction works may provide a TPZ without a fence having been erected, e.g. a barrier formed by site sheds located on piers. Such a protection area may form an exclusion zone for all works including the temporary or permanent location of utility services. Note: Any *encroachment* into the area would require additional tree protection specifications or works in consultation with the *Project arborist*.

Deadwood

Deadwood Dead branches within a tree's crown and considered quantitatively as separate to *crown cover* and can be categorised as *Small Deadwood* and *Large Deadwood* according to diameter, length and subsequent *risk* potential. The amount of dead branches on a tree can be categorized as *Low Volume Deadwood*, *Medium Volume Deadwood* and *High Volume Deadwood*. See also *Dieback.*

Deadwooding Removing of dead branches by *pruning*. Such pruning may assist in the prevention of the spread of *decay* from *dieback* or for reasons of safety near an identifiable target.

Small Deadwood A dead branch up to 10mm diameter and usually <2 metres long, generally considered of low *risk* potential.

Large Deadwood A dead branch >10mm diameter and usually >2 metres long, generally considered of high *risk* potential.

Low Volume Deadwood Where <5 dead branches occur that may require *removal*.

Medium Volume Deadwood Where 5-10 dead branches occur that may require *removal*.

High Volume Deadwood High Volume Deadwood Where >10 dead branches occur that may require *removal*.

Dieback

Dieback The death of some areas of the *crown*. Symptoms are leaf drop, bare twigs, dead branches and tree death, respectively. This can be caused by root damage, root disease, bacterial or fungal canker, severe bark damage, intensive grazing by insects, *abrupt changes* in growth conditions, drought, water-logging or over-maturity. Dieback often implies reduced *resistance, stress* or *decline* which may be temporary. Dieback can be categorized as *Low Volume Dieback*, *Medium Volume Dieback* and *High Volume Dieback*.

Low Volume Dieback Where <10% of the *crown cover* has died. See also *Dieback*, *High Volume Dieback* and *Medium Volume Dieback*.

Medium Volume Dieback Where 10-50% of the *crown cover* has died.

High Volume Dieback Where >50% of the *crown cover* has died.

Epicormic shoots

Epicormic Shoots Juvenile shoots produced at branches or trunk from *epicormic strands* in some Eucalypts (Burrows 2002, pp. 111-131) or sprouts produced from dormant or latent buds concealed beneath the bark in some trees. Production can be triggered by fire, pruning, wounding, or root damage but may also be as a result of *stress* or *decline*. Epicormic shoots can be categorized as *Low Volume Epicormic Shoots*, *Medium Volume Epicormic Shoots* and *High Volume Epicormic Shoots*.

Low Volume Epicormic Shoots Where <10% of the c*rown cover* is comprised of live *epicormic shoots*.

Medium Volume Epicormic Shoots Where 10-50% of the *crown cover* is comprised of live *epicormic shoots*.

High Volume Epicormic Shoots Where >50% of the *crown cover* is comprised of live *epicormic shoots*.

Roots

First Order Roots (FOR) Initial woody roots arising from the *root crown* at the base of the *trunk*, or as an *adventitious root mass* for structural support and *stability*. Woody roots may be buttressed and divided as a marked gradation, gradually tapering and continuous or tapering rapidly at a short distance from the root crown. Depending on soil type these roots may descend initially and not be evident at the root crown, or become buried by changes in soil levels. Trees may develop 4-11 (Perry 1982, pp. 197-221), or more first order roots which may radiate from the trunk with a relatively even distribution, or be prominent on a particular aspect, dependent upon physical characteristics e.g. leaning trunk, *asymmetrical* crown; and constraints within the growing *environment* from topography e.g. slope, soil depth, rocky outcrops, exposure to predominant wind, soil moisture, depth of *water table* etc.

Orders of Roots The marked divisions between woody roots, commencing at the initial division from the base of the trunk, at the *root crown* where successive branching is generally characterised by a gradual reduction in root diameters and each gradation from the trunk and can be categorized numerically, e.g. *first order roots*, second order roots, third order roots etc. Roots may not always be evident at the *root crown* and this may be dependant on species, age class and the growing environment. Palms at maturity may form an adventitious root mass.

Root Plate The entire root system of a tree generally occupying the top 300-600mm of soil including roots at or above ground and may extend laterally for distances exceeding twice the height of the tree (Perry 1982, pp. 197-221). Development and extent is dependent on water availability, soil type, *soil depth* and the physical characteristics of the surrounding landscape.

Root Crown Roots arising at the base of a trunk.

Zone of Rapid Taper The area in the *root plate* where the diameter of *structural roots* reduces substantially over a short distance from the *trunk.* Considered to be the minimum radial distance to provide structural support and *root plate* stability. See also *Structural Root Zone (SRZ)*.

Structural Roots Roots supporting the infrastructure of the *root plate* providing strength and *stability* to the tree. Such roots may taper rapidly at short distances from the *root crown* or become large and woody as with gymnosperms and dicotyledonous angiosperms and are usually 1st and 2nd order roots, or form an *adventitious root mass* in monocotyledonous angiosperms (palms). Such roots may be crossed and grafted and are usually contained within the area of *crown projection* or extend just beyond the *dripline*.

Appendices H & I

Appendix H – Survey of Subject Tree/s

Old Darby and Joan

New Darby and Joan

Trees the subject of this report are marked on the plans in the following appendices and are numbered before each section.

Appendix I – Tree Protection Plan

Old Darby and Joan

New Darby and Joan

Old Darby and Joan Tree numbers

UTM Tree No. / Stand No.	*Genus and species*	Common name
1	*Banksia integrifolia*	Coast Banksia
2	*Eucalyptus haemastoma*	Scribbly Gum
3	*Glochidion ferdinandi*	Cheese Tree
4	*Eucalyptus haemastoma*	Scribbly Gum
5	*Eucalyptus haemastoma*	Scribbly Gum
6	*Corymbia gummifera*	Red Bloodwood
7	*Eucalyptus haemastoma*	Scribbly Gum
8	*Corymbia gummifera*	Red Bloodwood
9	*Corymbia gummifera*	Red Bloodwood
10	*Corymbia gummifera*	Red Bloodwood
11	*Corymbia gummifera*	Red Bloodwood
12	*Citharexylum spinosum*	Fiddlewood
13	*Callitris rhomboidea*	Oyster Bay Cypress
14	*Acer palmatum*	Japanese Maple
15	*Eucalyptus haemastoma*	Scribbly Gum
16	*Eucalyptus haemastoma*	Scribbly Gum
17	*Omalanthus populifolius*	Bleeding Heart
18	*Glochidion ferdinandi*	Cheese Tree
19	*Glochidion ferdinandi*	Cheese Tree
20	*Pittosporum undulatum*	Sweet Pittosporum
21	*Glochidion ferdinandi*	Cheese Tree
2	*Eucalyptus punctata*	Grey Gum
23	*Allocasuarina torulosa*	Forest Oak
24	*Pittosporum undulatum*	Sweet Pittosporum
25	*Melaleuca quinquenervia*	Broad-leaved Paperbark
26	*Pittosporum undulatum*	Sweet Pittosporum
27	*Glochidion ferdinandi*	Cheese Tree
28	*Pittosporum undulatum*	Sweet Pittosporum
29	*Pittosporum undulatum*	Sweet Pittosporum
30	*Citharexylum spinosum*	Fiddlewood
31	*Pittosporum undulatum*	Sweet Pittosporum
32	*Allocasuarina torulosa*	Forest Oak
33	*Glochidion ferdinandi*	Cheese Tree
34	*Glochidion ferdinandi*	Cheese Tree
35	*Brachychiton acerifolius*	Illawarra Flame Tree
36	*Schefflera actinophylla*	Umbrella Tree
37	*Chamaecyparis obtusa* 'Crippsii'	Hinoki False Cypress
38	*Chamaecyparis obtusa* 'Crippsii'	Hinoki False Cypress
39	*Archontophoenix alexandrae*	Alexandra Palm
40	*Camellia sasanqua*	Camellia

Old Darby and Joan Tree numbers

UTM Tree No. / Stand No.	*Genus and species*	Common name
41	*Jacaranda mimosifolia*	Jacaranda
42	*Citharexylum spinosum*	Fiddlewood
43	*Eucalyptus haemastoma*	Scribbly Gum
44	*Eucalyptus haemastoma*	Scribbly Gum
45	*Cryptomeria japonica* 'Elegans'	Japanese Red Cedar cultivar
46	*Prunus domestica*	Plum
47	*Archontophoenix alexandrae*	Alexandra Palm
48	*Melaleuca bracteata*	River Tea Tree
49	*Fraxinus angustifolia* subsp. *oxycarpa* 'Raywood'	Claret Ash
50	*Callistemon salignus*	Pink Tips Bottlebrush
51	*Pittosporum undulatum*	Sweet Pittosporum
52	3 x *Schefflera actinophylla*	Umbrella Tree
53	*Mangifera indica*	Mango
54	*Callistemon citrinus*	Crimson Bottlebrush
55	*Brachychiton acerifolius*	Illawarra Flame Tree
56	*Eucalyptus punctata*	Grey Gum
57	*Allocasuarina torulosa*	Forest Oak
58	*Corymbia gummifera*	Red Bloodwood
59	*Melaleuca linariifolia*	Snow-in-summer
60	*Eucalyptus haemastoma*	Scribbly Gum
61	*Eucalyptus haemastoma*	Scribbly Gum
62	*Eucalyptus haemastoma*	Scribbly Gum
63	*Eucalyptus haemastoma*	Scribbly Gum
64	*Callitris rhomboidea*	Oyster Bay Cypress
65	*Callistemon citrinus*	Crimson Bottlebrush
66	*Eucalyptus haemastoma*	Scribbly Gum
67	*Callistemon citrinus*	Crimson Bottlebrush
68	*Callistemon salignus*	Pink Tips Bottlebrush
69	*Eucalyptus haemastoma*	Scribbly Gum
70	4 x *Archontophoenix alexandrae*	Alexandra Palm
71	*Acmena smithii* var. *minor*	Small-leaved Lilly Pilly
72	*Callistemon citrinus*	Crimson Bottlebrush
73	*Acacia parramattensis*	Sydney Green Wattle
74	*Acacia elata*	Cedar Wattle
75	*Eucalyptus elata*	River Peppermint
76	*Eucalyptus haemastoma*	Scribbly Gum
77	*Eucalyptus nicholii*	Narrow-barked Black Peppermint
78	*Corymbia maculata*	Spotted Gum
79	*Eucalyptus haemastoma*	Scribbly Gum
80	*Eucalyptus haemastoma*	Scribbly Gum
81	*Acacia floribunda*	Sally Wattle
82	*Eucalyptus haemastoma*	Scribbly Gum
83	*Eucalyptus haemastoma*	Scribbly Gum
84	*Acacia parramattensis*	Sydney Green Wattle
85	*Eucalyptus haemastoma*	Scribbly Gum

Old Darby and Joan Tree numbers

UTM Tree No. / Stand No.	*Genus and species*	Common name
86	*Banksia serrata*	Old Man Banksia
87	*Melaleuca linariifolia*	Snow-in-summer
88	*Eucalyptus haemastoma*	Scribbly Gum
89	*Eucalyptus haemastoma*	Scribbly Gum
90	*Eucalyptus haemastoma*	Scribbly Gum
91	*Eucalyptus haemastoma*	Scribbly Gum
92	*Eucalyptus haemastoma*	Scribbly Gum
93	*Acacia elata*	Cedar Wattle
94	*Eucalyptus haemastoma*	Scribbly Gum
95	*Eucalyptus haemastoma*	Scribbly Gum
96	*Eucalyptus haemastoma*	Scribbly Gum
97	*Eucalyptus haemastoma*	Scribbly Gum
98	*Eucalyptus haemastoma*	Scribbly Gum
99	*Acacia elata*	Cedar Wattle
100	*Acacia parramattensis*	Sydney Green Wattle
101	*Eucalyptus haemastoma*	Scribbly Gum
102	*Eucalyptus haemastoma*	Scribbly Gum
103	*Corymbia gummifera*	Red Bloodwood
104	*Eucalyptus haemastoma*	Scribbly Gum
105	*Eucalyptus haemastoma*	Scribbly Gum
106	*Eucalyptus haemastoma*	Scribbly Gum
107	*Eucalyptus haemastoma*	Scribbly Gum
108	*Eucalyptus haemastoma*	Scribbly Gum
109	*Eucalyptus haemastoma*	Scribbly Gum
110	*Eucalyptus haemastoma*	Scribbly Gum
111	*Eucalyptus haemastoma*	Scribbly Gum
112	*Eucalyptus haemastoma*	Scribbly Gum
113	*Liquidamber styraciflua*	Liquidamber
114	*Angophora hispida*	Dwarf Apple
115	*Angophora hispida*	Dwarf Apple
116	*Glochidion ferdinandi*	Cheese Tree
117	*Allocasuarina torulosa*	Forest Oak
118	*Allocasuarina torulosa*	Forest Oak
119	*Allocasuarina torulosa*	Forest Oak
120	*Allocasuarina torulosa*	Forest Oak
121	*Allocasuarina torulosa*	Forest Oak
122	*Allocasuarina torulosa*	Forest Oak
123	*Allocasuarina torulosa*	Forest Oak
124	*Glochidion ferdinandi*	Cheese Tree
125	*Allocasuarina torulosa*	Forest Oak
126	*Allocasuarina torulosa*	Forest Oak
127	*Allocasuarina torulosa*	Forest Oak
128	*Allocasuarina torulosa*	Forest Oak
129	*Elaeocarpus reticulatus*	Blueberry Ash
130	3 x *Allocasuarina torulosa*	Forest Oak

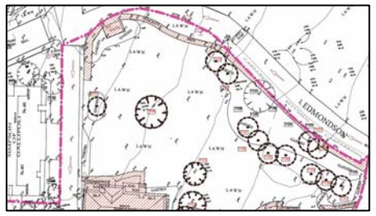
Old Darby and Joan Tree numbers

UTM Tree No. / Stand No.	*Genus and species*	Common name
131	*Eucalyptus botryoides*	Bangalay
132	*Hymenosporum flavum*	Native Frangipani
133	*Acacia podalyriifolia*	Mount Morgan Wattle
134	*Archontophoenix alexandrae*	Alexandra Palm
135	*Callistemon citrinus*	Crimson Bottlebrush
136	*Callistemon citrinus*	Crimson Bottlebrush
137	*Eucalyptus melliodora*	Yellow Box
138	*Acacia parramattensis*	Sydney Green wattle
139	*Fraxinus angustifolia*	Narrow-leaved Ash
140	*Eucalyptus melliodora*	Yellow Box
141	*Lagerstroemia indica*	Crepe Myrtle
142	*Banksia integrifolia*	Coast Banksia
143	*Eucalyptus melliodora*	Yellow Box
144	*Eucalyptus melliodora*	Yellow Box
145	*Banksia serrata*	Old Man Banksia
146	*Callistemon citrinus*	Crimson Bottlebrush
147	*Cinnamomum camphora*	Camphor Laurel
148	*Juniperus chinensis*	Chinese Juniper
149	*Juniperus chinensis*	Chinese Juniper
150	*Eucalyptus haemastoma*	Scribbly Gum
151	*Eucalyptus haemastoma*	Scribbly Gum
152	*Corymbia gummifera*	Red Bloodwood
153	*Eucalyptus haemastoma*	Scribbly Gum
154	*Eucalyptus haemastoma*	Scribbly Gum
155	*Eucalyptus haemastoma*	Scribbly Gum
156	*Eucalyptus haemastoma*	Scribbly Gum
157	*Eucalyptus haemastoma*	Scribbly Gum
158	*Corymbia gummifera*	Red Bloodwood
159	*Ceratopetalum gummiferum*	NSW Christmas Bush
160	*Jacaranda mimosifolia*	Jacaranda
161	*Ceratopetalum gummiferum*	NSW Christmas Bush
162	*Araucaria columnaris*	Cook Island Pine
163	*Ficus macrophylla*	Moreton Bay Fig
164	*Liquidamber styraciflua*	Liquidamber
165	*Eucalyptus haemastoma*	Scribbly Gum
166	*Eucalyptus haemastoma*	Scribbly Gum
167	*Eucalyptus haemastoma*	Scribbly Gum
168	*Eucalyptus haemastoma*	Scribbly Gum
169	*Eucalyptus haemastoma*	Scribbly Gum
170	*Eucalyptus haemastoma*	Scribbly Gum
171	*Eucalyptus haemastoma*	Scribbly Gum
172	*Eucalyptus haemastoma*	Scribbly Gum
173	*Washingtonia filifera*	American Cotton Palm
174	*Eucalyptus nicholii*	Narrow-barked Black Peppermint
175	*Eucalyptus nicholii*	Narrow-barked Black Peppermint
176	*Liquidamber styraciflua*	Liquidamber
177	*Michelia figo*	Port Wine Magnolia
178	*Eucalyptus nicholii*	Narrow-barked Black Peppermint
179	*Eucalyptus nicholii*	Narrow-barked Black Peppermint
180	*Banksia integrifolia*	Coast Banksia

Appendix H (**1** of 6) - Survey of Subject Tree/s
Old Darby and Joan

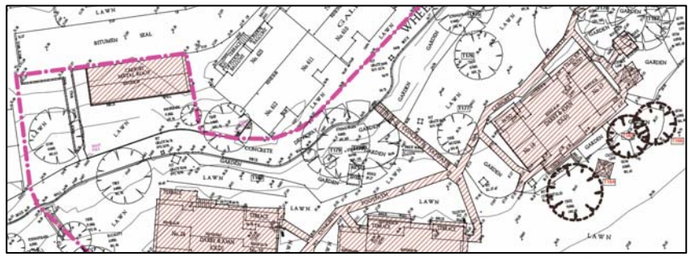
From Old Darby and Joan Demolition Survey Plan, **Drawing, No. DA3.02**, issue 2, date Sept 2009, Scale 1:300 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

URBAN TREE MANAGEMENT

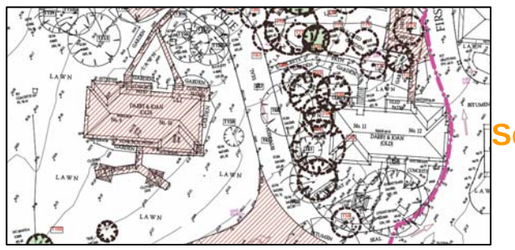


Section 5 – (6 of 6)

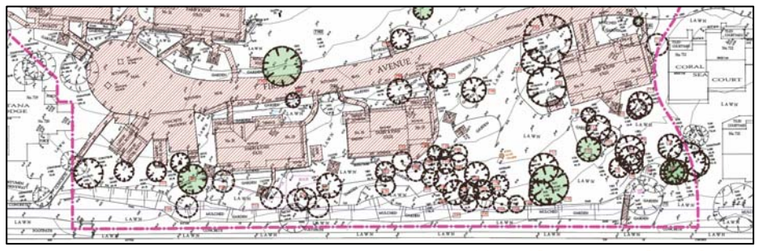
Section 4 – (5 of 6)



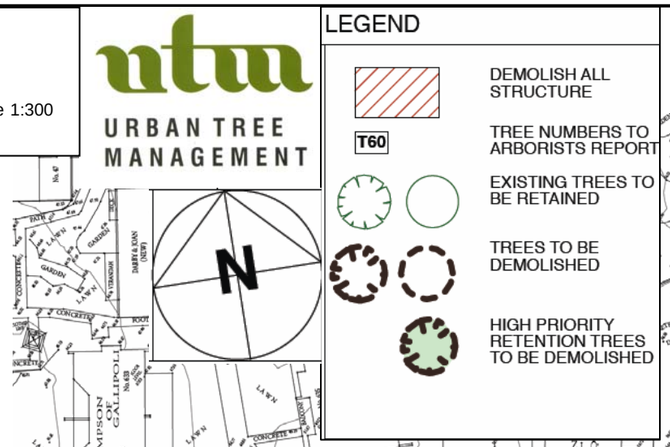
Section 3 – (4 of 6)

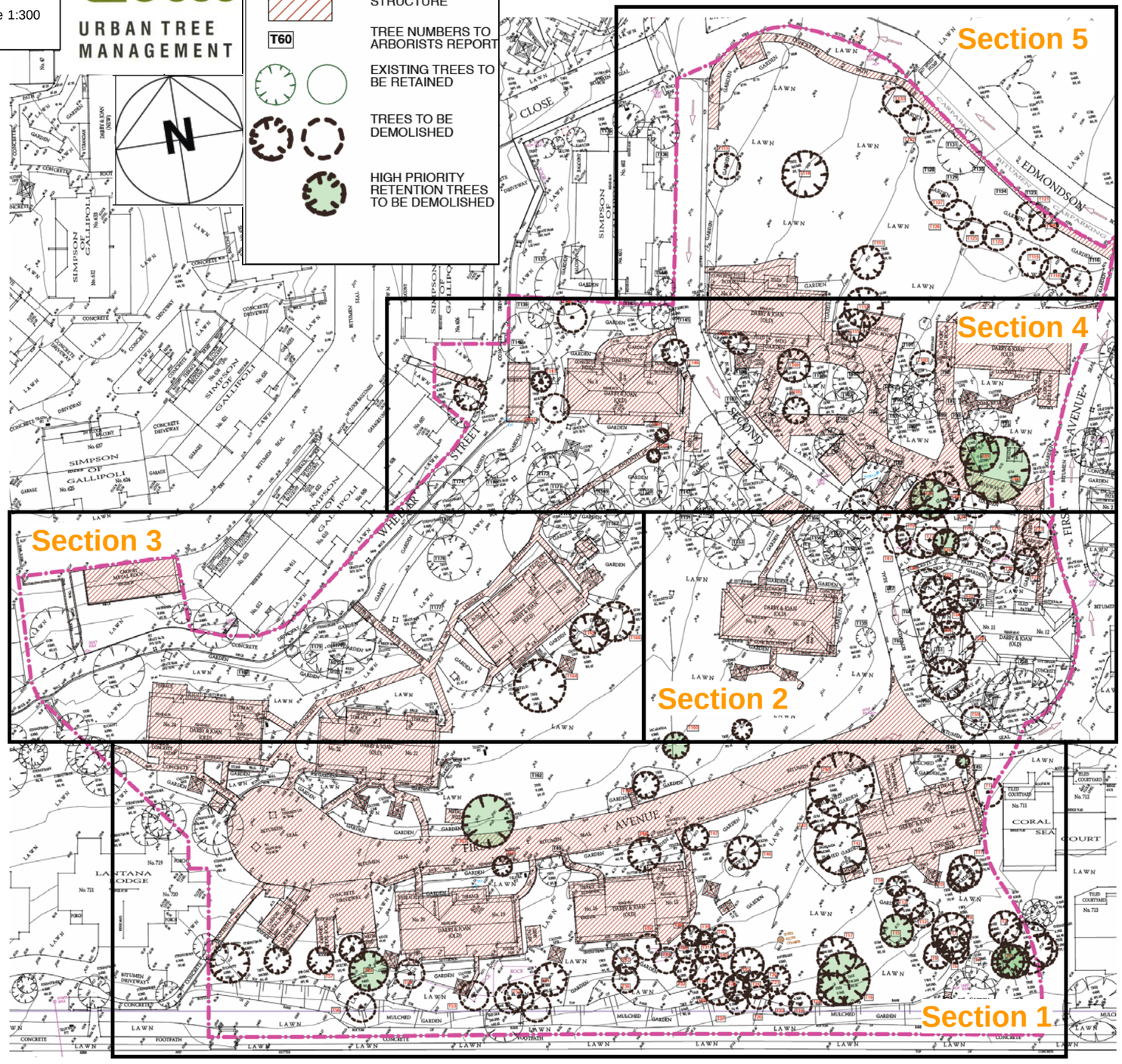


Section 2 – (3 of 6)



Section 1 – (2 of 6)





Appendix H (2 of 6) – Section 1 - Survey of Subject Tree/s Old Darby and Joan

From Old Darby and Joan Demolition Survey Plan, **Drawing No. DA3.02**, issue 2, date Sept 2009, Scale 1:300 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

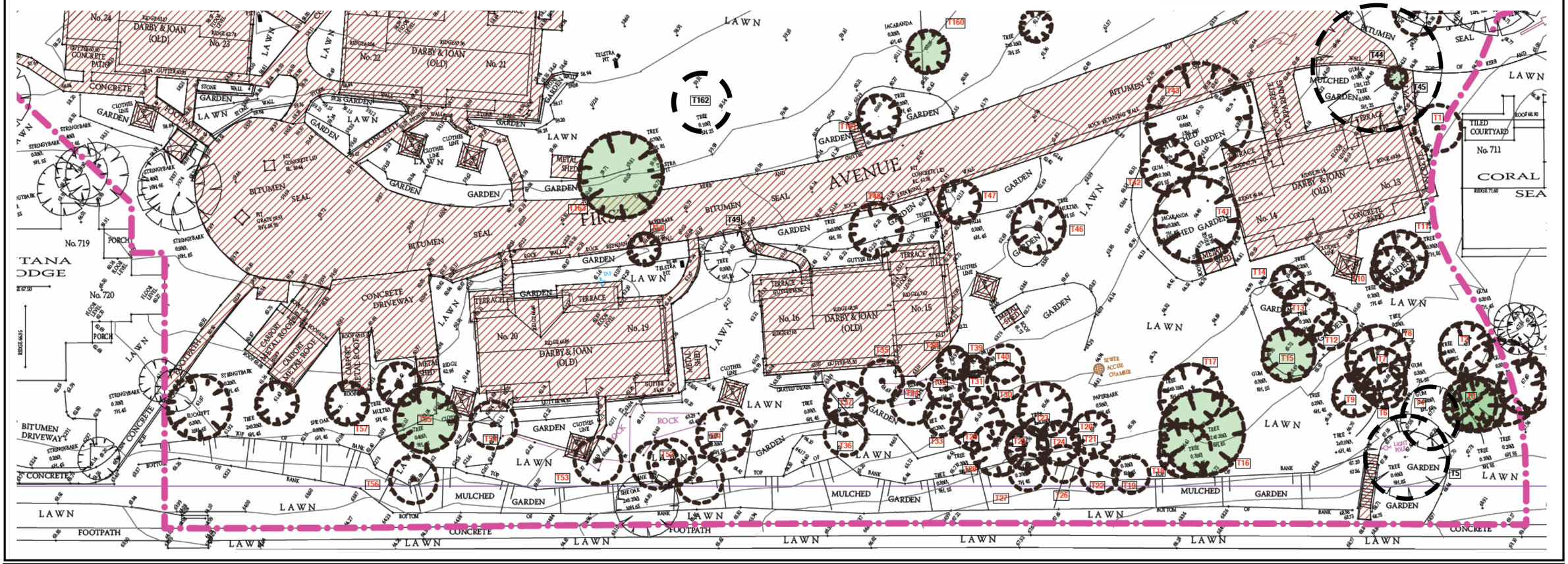
LEGEND

- DEMOLISH ALL STRUCTURE
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- TREES TO BE DEMOLISHED
- HIGH PRIORITY RETENTION TREES TO BE DEMOLISHED

URBAN TREE MANAGEMENT

N

Old Darby and Joan - Site Plan



Appendix H (**3** of 6) – Section 2 - Survey of Subject Tree/s Old Darby and Joan

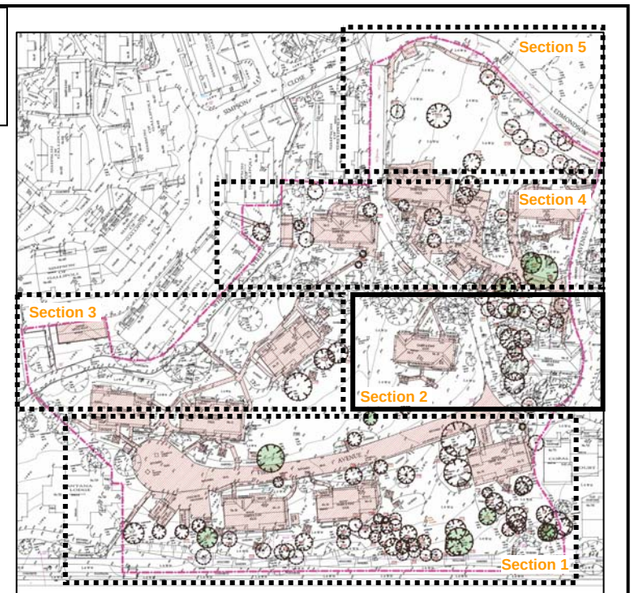
From Old Darby and Joan Demolition Survey Plan, **Drawing, No. DA3.02**, issue 2, date Sept 2009, Scale 1:300 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

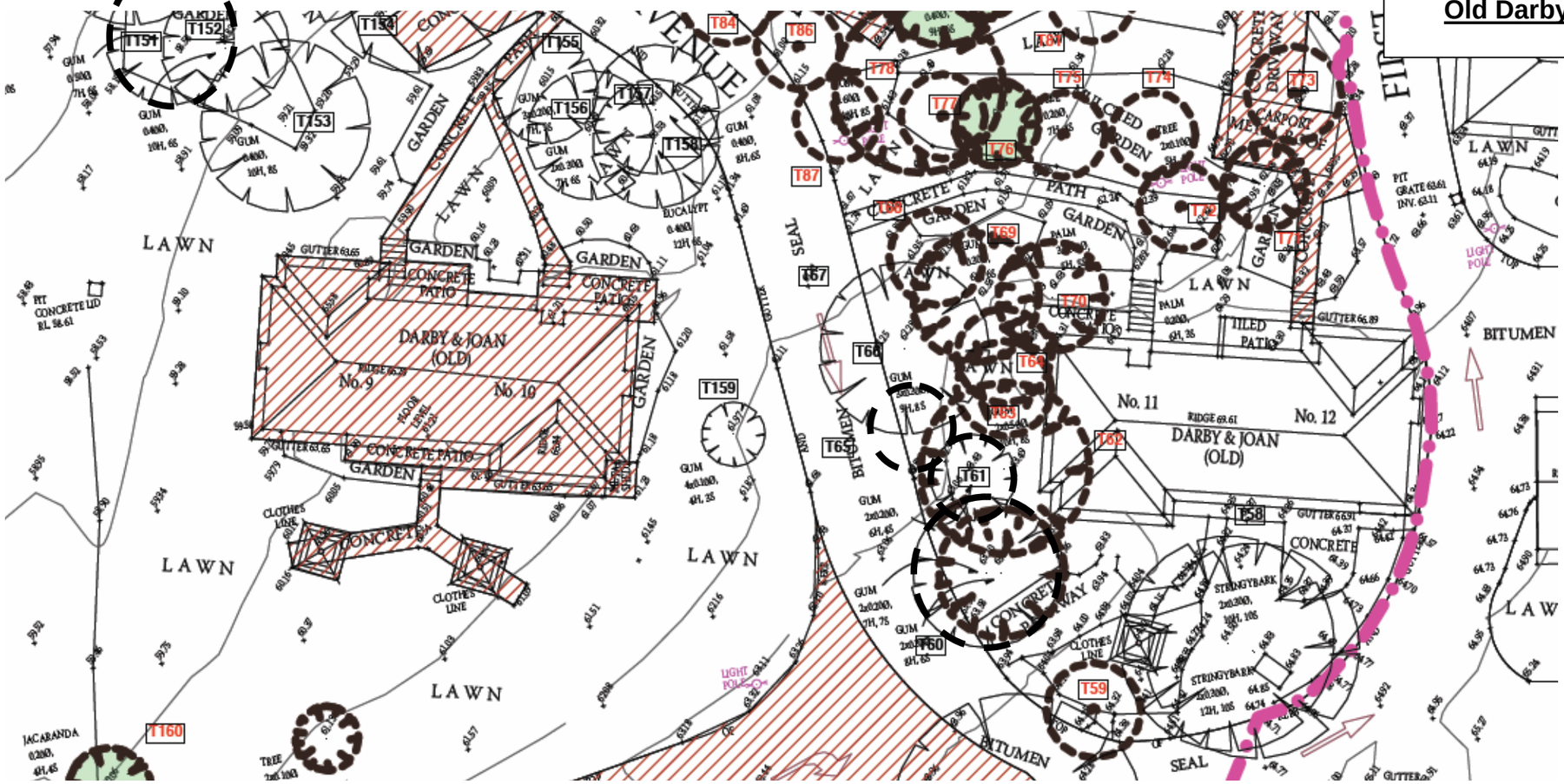
- DEMOLISH ALL STRUCTURE
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- TREES TO BE DEMOLISHED
- HIGH PRIORITY RETENTION TREES TO BE DEMOLISHED

URBAN TREE MANAGEMENT

N



Old Darby and Joan - Site Plan



Appendix H (**4** of 6) – Section 3 - Survey of Subject Tree/s Old Darby and Joan

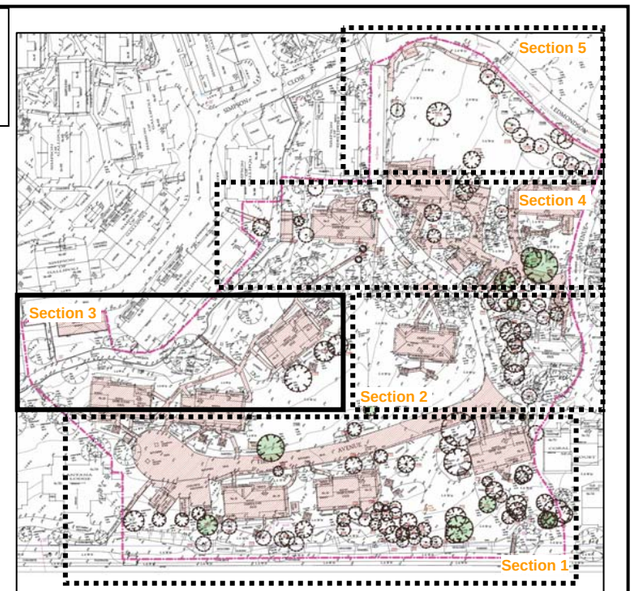
From Old Darby and Joan Demolition Survey Plan, **Drawing, No. DA3.02**, issue 2, date Sept 2009, Scale 1:300 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

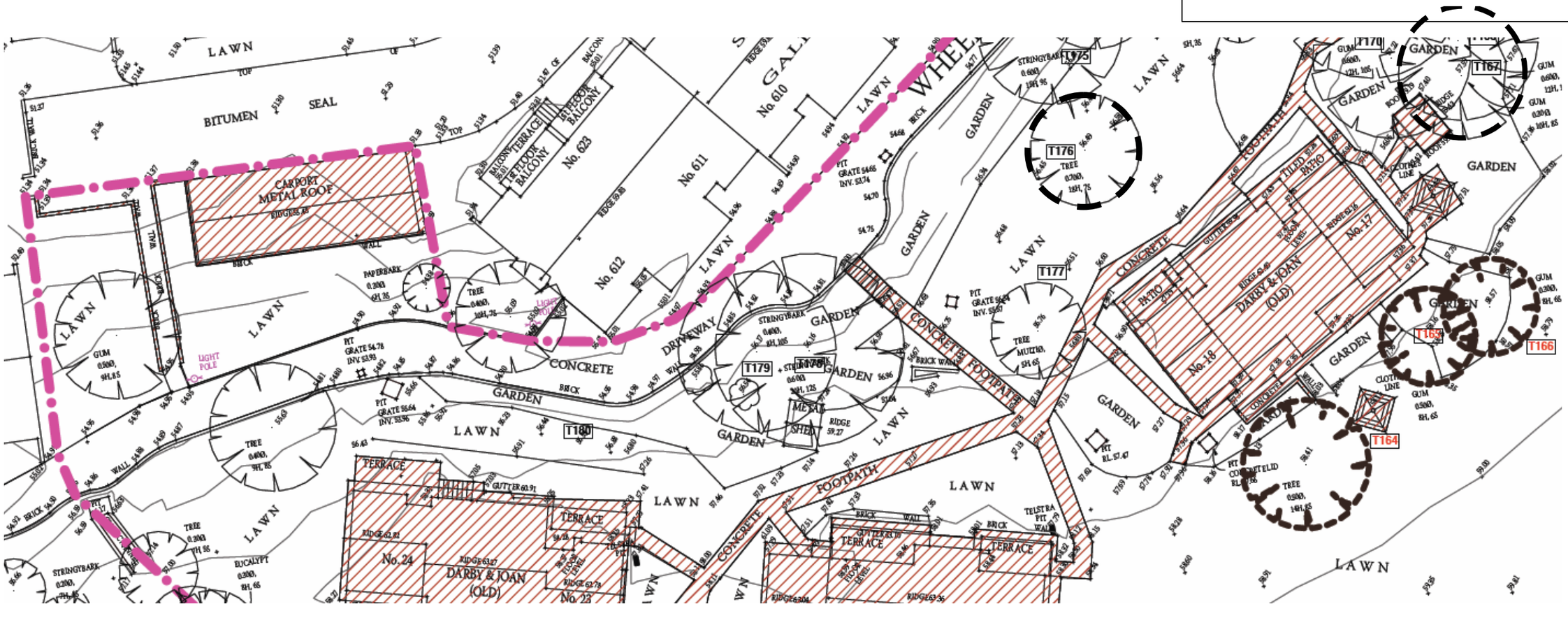
- DEMOLISH ALL STRUCTURE
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- TREES TO BE DEMOLISHED
- HIGH PRIORITY RETENTION TREES TO BE DEMOLISHED

URBAN TREE MANAGEMENT

N



Old Darby and Joan - Site Plan



Appendix H (5 of 6) – Section 4 - Survey of Subject Tree/s Old Darby and Joan

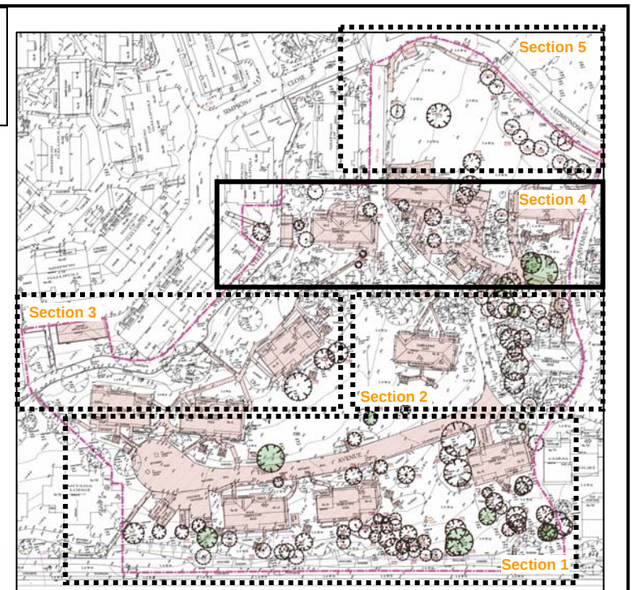
From Old Darby and Joan Demolition Survey Plan, **Drawing, No. DA3.02**, issue 2, date Sept 2009, Scale 1:300 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

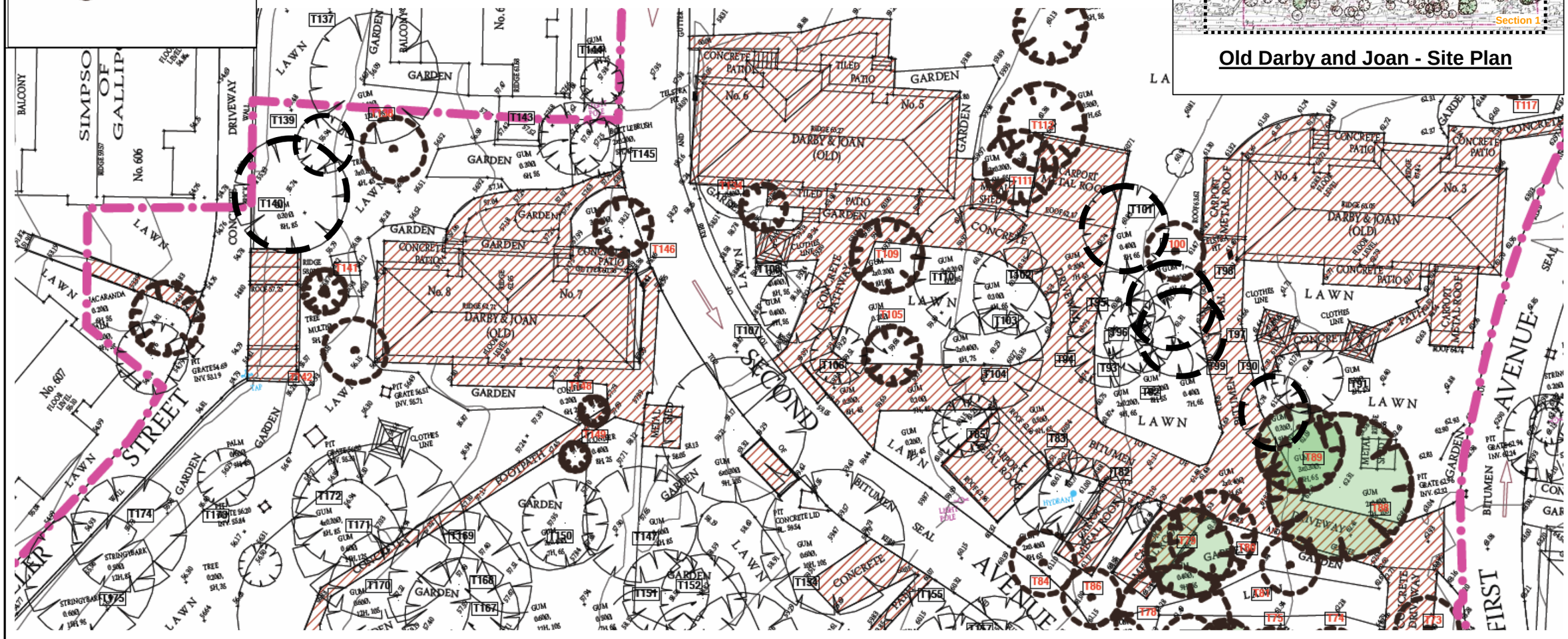
- DEMOLISH ALL STRUCTURE
- T60 TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- TREES TO BE DEMOLISHED
- HIGH PRIORITY RETENTION TREES TO BE DEMOLISHED

URBAN TREE MANAGEMENT

N



Old Darby and Joan - Site Plan



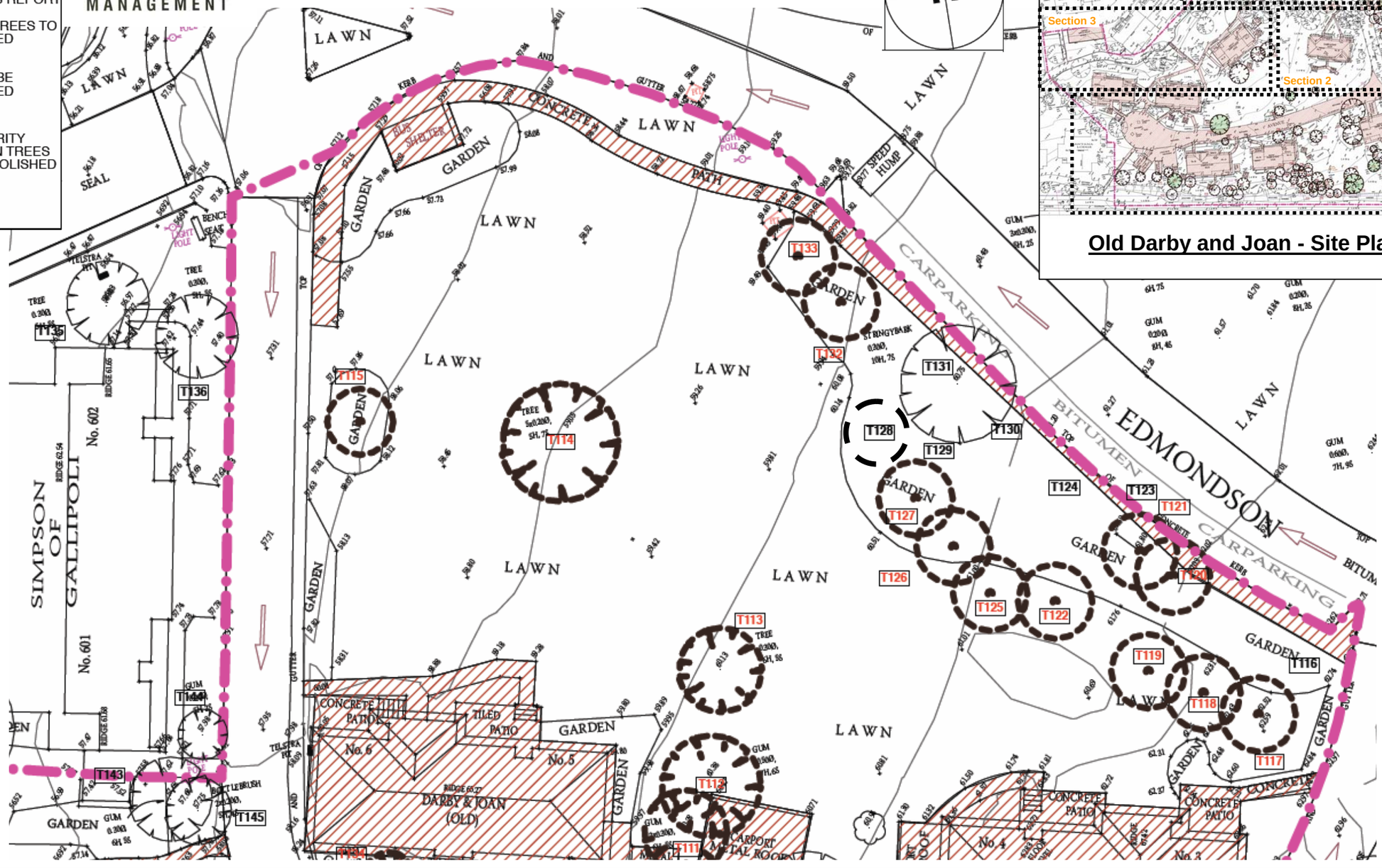
Appendix H (6 of 6) – Section 5 - Survey of Subject Tree/s Old Darby and Joan

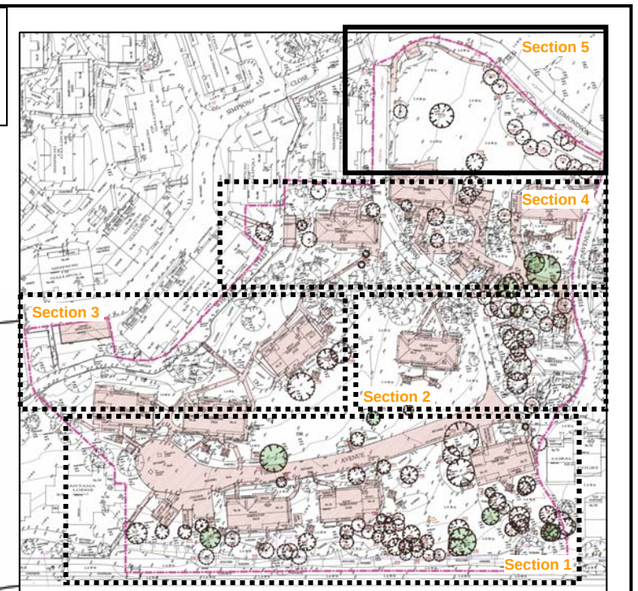
From Old Darby and Joan Demolition Survey Plan, **Drawing, No. DA3.02**, issue 2, date Sept 2009, Scale 1:300 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

- DEMOLISH ALL STRUCTURE
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- TREES TO BE DEMOLISHED
- HIGH PRIORITY RETENTION TREES TO BE DEMOLISHED

URBAN TREE MANAGEMENT





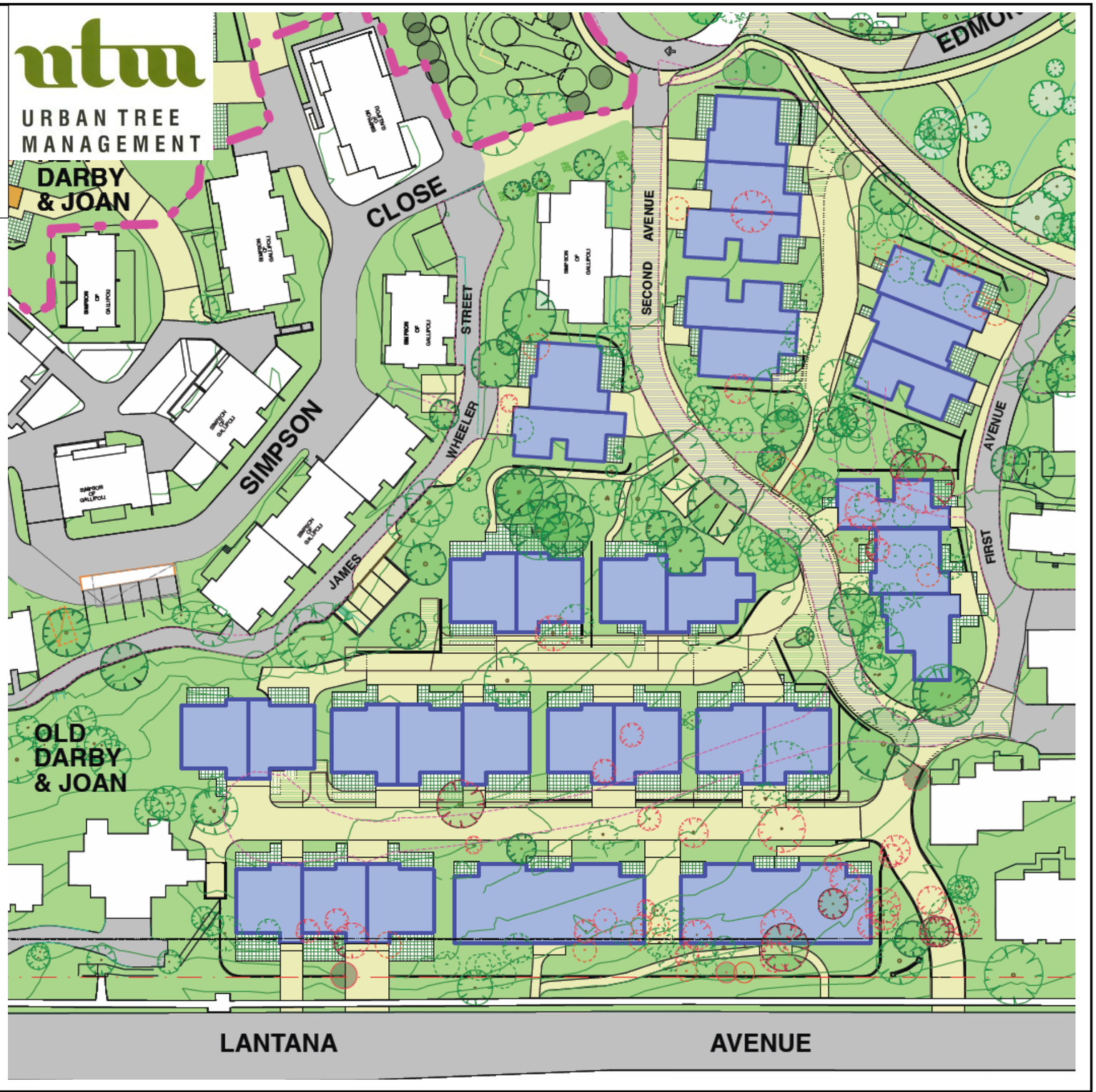
Old Darby and Joan - Site Plan

Appendix I (1 of 11) – Tree Protection Plan

Old Darby and Joan

Site: RSL Anzac Village – New Darby and Joan
Year: 2009,
Reference: 11087,
Prepared by Urban Tree Management Australia P/L, 65 Excelsior Street, Merrylands NSW 2160, tel. 02 9760 1389.

From New Darby and Joan Site Masterplan, **Drawing No. PDA2.01**, issue A, date 30/09/2009, Scale 1:750 @ A1 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799



Appendix I (2 of 11) – Tree Protection Plan

Old Darby and Joan

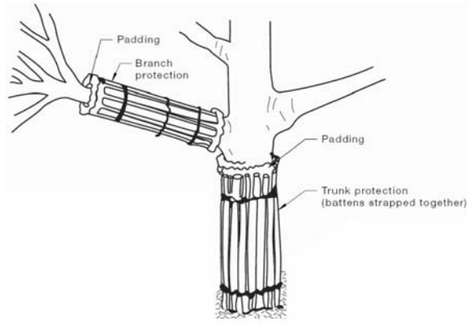
Site: RSL Anzac Village – Old Darby and Joan
Year: 2009,
Reference: 11087,
Prepared by Urban Tree Management Australia P/L, 65 Excelsior Street, Merrylands NSW 2160, tel. 02 9760 1389.

TREE PROTECTION ZONE (TPZ) works

Prior to Demolition and Tree Removal

Trees 49, 58, 66, 76, 82, 83, 85, 91-96, 99, 102, 103, 104, 106, 107, 108, 110, 116, 123, 124, 129, 130, 131, 135, 136, 137, 143, 144, 147, 150, 152-159, 168-175 and 177-180 are to be retained and protected and Tree Protection Zone fencing or works to be marked accordingly on the Landscape Plan or Construction Plans, where appropriate and installed prior to any demolition or construction. Extant soil levels are not to be disturbed or modified within the TPZ.

Trunk and Branch Protection - Trees 49, 58, 66, 76, 82, 83, 85, 91-96, 99, 102, 103, 104, 106, 107, 108 and 110 As per AS4970 (2009) *Protection of trees on development sites*, Section 4 Tree protection measures, 4.5.2 Trunk and branch protection, the trunk of each nominated tree is to be protected from possible damage from collision with trucks or plant equipment and is to be wrapped with 4 layers of hessian or a single layer of carpet underfelt around the trunk for a minimum of 2 m and extending to first order branches, then metal strapping, wire or rope is to be used to secure 75x50x2000 mm hardwood battens around the trunk (do not nail or screw to the trunk). The number of battens to be used is as required to encircle the trunk and the battens are to extend to the base of the tree as per Appendix E, section 1.4.



Prior to Demolition

Trees Removal – Trees 1-48, 50-57, 59, 60-65, 68-81, 84, 86-90, 97, 98, 101, 105, 109, 111-115, 117-122, 126, 127, 128, 132, 133, 134, 139-142, 145, 146, 148, 149, 151, 160-167 and 176 Prior to construction of the Tree Protection Zone fencing remove and grind stumps to 300 mm minimum below grade.

Tree Protection Zone - Trees 49, 58, 66, 76, 82, 83, 85, 91-96, 99, 102, 103, 104, 106, 107, 108, 110, 116, 123, 124, 129, 130, 131, 135, 136, 137, 143, 144, 147, 150, 152-159, 168-175 and 177-180 Prior to demolition works and post tree removals these trees are to be placed within a Tree Protection Zone with protective fencing as formed by the site perimeter fencing for each section and maintained and retained until the completion of works.

Protective Fencing The Protective fencing where required may delineate the *TPZ* and should be located as determined by the project arborist in accordance with AS4970 *Protection of trees on development sites*, Section 4, 4.3. *"Fencing should be erected before any machinery or materials are brought onto the site and before the commencement of works including demolition. Once erected, protective fencing must not be removed or altered without approval by the project arborist. The TPZ must be secured to restrict access. AS4687 Temporary fencing and hoardings specifies applicable fencing requirements. Shade cloth or similar should be attached to reduce the transport of dust, other particulate matter and liquids into the protected area. Fence posts and supports should have a diameter greater than 20 mm and be located clear of roots. Existing perimeter fencing and other structures may be suitable as part of the protective fencing."*

During Demolition

The Tree Protection Zone fencing and works for each tree is to remain unaltered.

Demolition of existing structures retaining walls, pavement, and concrete slabs as floors of outer buildings or driveways within each Tree Protection Zone (Table 3.0 and Appendix I, Tree Protection Plan) is to be done to minimise disturbance of structural roots (roots greater than >20 mm diameter) and is to be supervised, monitored and certified by the Project Arborist. Excavation is not to extend deeper than existing pavement or footing for any retaining walls. Plant equipment is to remain on the existing pavement during demolition working back towards the pavement away from each protected tree to minimise root damage from soil compaction or disturbance. Top soil from the site is to be used to fill excavated areas to levels contiguous with adjoining extant grade.

Maintaining existing soil levels within TPZ - The extant soil levels within the Tree Protection Zone of each tree are to remain unaltered.

Post Demolition

Tree Protection Zone fences and works erected prior to demolition are to remain unaltered.

Tree Protection Zone setbacks
extract from Table 3.0 and Appendix B.

UTM Tree No. / Stand No.	Tree Protection Zone (TPZ) = 12 x DBH From center of trunk (COT) in metres AS4970 (2009) Section 3 (see Appendix B)	Structural Root Zone SRZ From center of trunk (COT), trunk diameter above root buttress (DARB) AS4970 (2009) Section 3, 3.3.5 (see Appendix C) where applicable	Distance of fence with TPZ setback reduced by 10% of area on one side of tree only, in metres equating to approx. 0.3 radius as per AS4970 (2009) Section 3, 3.3	Proposed distance of tree protection fence/works on the side closest to building construction², in metres by UTMA P/L
49	2.0	3.8	2.6	3.3
58	3.7	15.6	10.5	5.0
66	3.3	11.4	8.0	4.9
67	1.2	1.2	N/A	2.0
82	2.8	8.4	5.9	3.1
83	2.2	4.7	3.3	3.3
85	3.2	10.8	7.6	1.7
91	2.1	4.2	3.0	3.0
92	2.0	3.6	2.5	2.5
93	1.4	1.5	N/A	2.0
94	2.3	5.1	3.6	3.6
95	1.6	2.16	N/A	2.0
96	2.7	7.2	5.0	3.1
99	1.6	2.0	N/A	2.0
102	1.7	2.6	N/A	2.0
103	2.0	3.6	2.5	2.5
104	3.4	12.6	8.8	8.8
106	1.8	2.7	N/A	2.7
107	1.9	3.4	2.4	2.4
108	2.0	3.6	2.5	2.3
110	2.6	7.0	4.9	1.0
116	2.6	2.0	N/A	2.0
123	1.8	2.7	N/A	2.7
124	1.4	1.4	N/A	2.0
129	1.9	3.2	N/A	2.0
130	1.4	1.4	N/A	2.0
131	2.0	3.9	2.7	2.7

Tree Protection Zone setbacks
extract from Table 3.0 and Appendix B.

UTM Tree No. / Stand No.	Tree Protection Zone (TPZ) = 12 x DBH From center of trunk (COT) in metres AS4970 (2009) Section 3 (see Appendix B)	Structural Root Zone SRZ From center of trunk (COT), trunk diameter above root buttress (DARB) AS4970 (2009) Section 3, 3.3.5 (see Appendix C) where applicable	Distance of fence with TPZ setback reduced by 10% of area on one side of tree only, in metres equating to approx. 0.3 radius as per AS4970 (2009) Section 3, 3.3	Proposed distance of tree protection fence/works on the side closest to building construction², in metres by UTMA P/L
135	1.8	2.9	2.0	2.0
136	1.8	2.9	2.0	2.0
137	2.1	4.0	2.8	2.8
143	2.0	3.6	2.5	2.5
144	1.8	2.7	N/A	2.0
147	3.5	13.8	9.6	5.0
150	3.2	10.8	7.5	6.2
152	2.2	4.4	3.0	3.0
153	3.1	10.5	7.3	4.0
154	3.2	11.4	8.0	8.0
155	2.7	7.5	5.2	3.3
156	2.4	5.7	4.0	4.0
157	2.1	4.2	3.0	3.0
158	2.3	5.3	3.7	3.7
159	2.6	6.6	4.6	3.3
168	2.7	7.3	5.1	3.0
169	2.3	5.0	3.5	3.5
170	2.4	5.4	3.8	3.8
171	2.5	5.9	4.1	4.1
172	3.4	13.2	9.2	4.0
173	2.0	3.6	2.5	2.5
174	2.1	4.2	3.0	3.0
175	2.5	6.0	4.2	4.2
177	2.5	6.0	3.2	3.0
178	2.5	6.0	3.2	3.2
179	2.0	3.7	2.6	2.6
180	2.1	3.9	2.7	1.4

Pruning is to be undertaken in accordance with AS4373 (2007) Pruning amenity trees, and is to comply with the Warringah Council Tree Preservation Order. Such works are to be supervised and certified by the Project Arborist.

Root protection during Excavation and Construction

Driveway and Parking Space Construction – Trees 49, 147 and 154 For the following trees the driveway or parking space section within the Tree Protection Zone is to be located above existing grade with a 100 mm deep bed of gap graded fill as 20 mm diameter gravel with no fines which is to be rolled to achieve compaction. Concrete pavement is to be constructed on top of the gap graded fill. The gap graded fill is to be retained with a timber plinth or suitable edging material and back filled with top soil to retain the gravel. Structural roots are to be protected and not severed except in consultation with the Project Arborist as per AS4970 (2009).

Footpath Construction within a TPZ For all protected trees a footpath section through a Tree Protection Zone is to be located above existing grade with a 100 mm deep bed of gap graded fill as 20 mm diameter gravel with no fines which is to be rolled to achieve compaction, where required. Concrete pavement is to be constructed on top of the gap graded fill. The gap graded fill is to be retained with a timber plinth or suitable edging material and back filled with top soil and mulch to retain the gravel. Structural roots are to be protected and not severed except in consultation with the Project Arborist as per AS4970 (2009).

During Construction

New Community Room – Trees 85, 103, 104, 106, 107 and 110 To mitigate the major encroachment of the TPZ and minimise soil disturbance and therefore root plate disturbance this structure should be to be constructed on piers with a minimum clearance above extant grade of 100 mm. Prior to hand excavation the TPZ is to be protected from soil compaction and root damage by the application of ground protection as per AS4970 (2009) section 4, 4.5.3 Ground Protection, where a permeable membrane such as geotextile fabric is to be located at existing ground level beneath a layer of mulch or crushed rock with no fines 100 mm deep and covered with rumble boards or steel plates as per AS4970 (2009) Figure 4, (see Appendix F 1.2.2). Piers are to be excavated with non-motorized hand tools to a minimum depth of 600 mm, the depth to which the majority of roots grow. This is to be undertaken with the flexibility of design to relocate any pier 100 mm clear of any structural root (a root greater than >20 mm diameter) encountered. Where a pier footing manually excavated to 600 mm, (clear of structural roots), is required deeper, excavation can be undertaken mechanically while maintaining the width of the initial manual excavation, to protect structural roots. Hand excavation is to be monitored and certified by the Project Arborist.

After completion of hand excavation works within the TPZ, mechanical excavation to a greater depth may be undertaken with portable motorized tools or with plant equipment. Plant equipment is to work from outside of the TPZ reaching into the TPZ to minimise soil disturbance and compaction. The ground protection works are to remain in place beneath the dwelling until the floor of the ground floor is completed. The ground protection works between the dwelling and the Tree Protection Zone fence are to remain in place until building works are completed.

Location of underground utilities within a Tree Protection Zone Utilities should not be located within a TPZ. Any utility services to be located underground within the TPZ of any tree are to be undertaken utilising excavation techniques that prevent or minimise damage to structural roots (roots greater than >20 mm diameter). Such works should be conducted with non-motorised hand tools of with an air knife or water knife and vacuum truck or with directional drilling to prevent soil compaction and root damage. Such works are to be supervised and certified by the Project Arborist.

Root Pruning Where a situation occurs that a structural root (a root greater than >20 mm diameter) requires pruning or removal, the root is to be severed with a final cut to undamaged tissue to remove injured and crushed tissues allowing the tree to develop strong internal boundaries and generate new roots (Shigo 1989, p. 199) and protect their growing environment below ground. This will prevent tearing damage to the roots from excavation equipment which can extend beyond the point of excavation back towards the tree.

All Tree Protection Works are to be maintained for the duration of works on the site.

Appendix I (**3** of 11) – Tree Protection Plan – Old Darby and Joan

From Old Darby and Joan Site Plan North L1, **Drawing No. DA3.04**, issue 5, date Sept 2009, Scale 1:200 @ A1 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

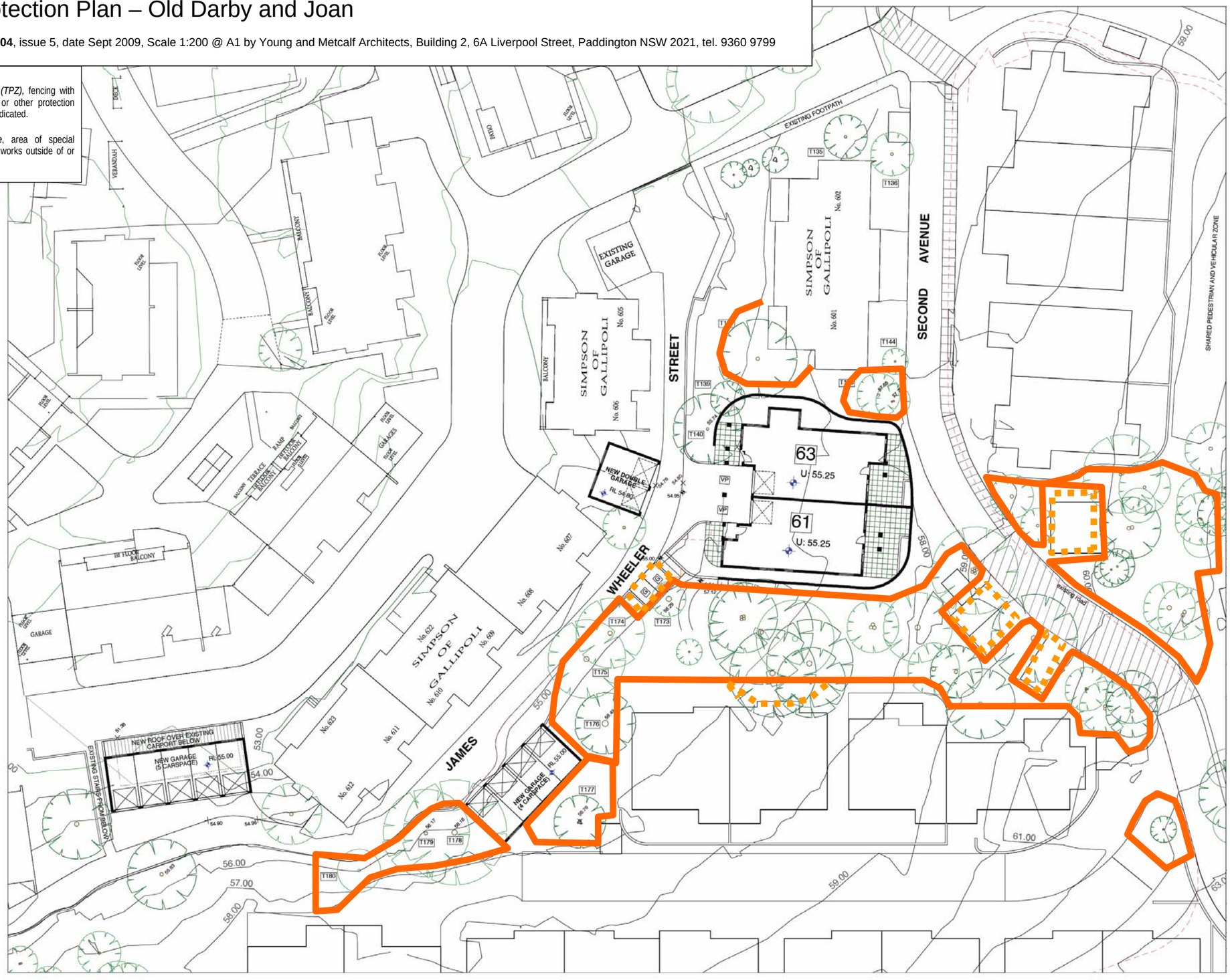
- 68.34 — EXISTING LEVELS
- 61.00 — PROPOSED LEVELS
- EXISTING ROAD
- NEW PAVED PEDESTRIAN ZONE
- U: 62.00 — UNIT FLOOR LEVELS (UNDER)
- O: 65.00 — UNIT FLOOR LEVELS (OVER)
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- VP — VISITOR PARKING
- LB 22 — LETTER BOX
- G — GARBAGE BIN STORE

Legend

Tree Protection Zone (TPZ), fencing with setbacks as indicated, or other protection measures or works as indicated.

Tree Protection Zone, area of special protection measures or works outside of or instead of a fenced area.

URBAN TREE MANAGEMENT



Appendix I (4 of 11) – Tree Protection Plan – Old Darby and Joan

From Old Darby and Joan Site Plan North L2, **Drawing No. DA3.05**, issue 5, date Sept 2009, Scale 1:200 @ A1 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

- 68.34 — EXISTING LEVELS
- 61.00 — PROPOSED LEVELS
- EXISTING ROAD
- NEW PAVED PEDESTRIAN ZONE
- U: 62.00 — UNIT FLOOR LEVELS (UNDER)
- O: 65.00 — UNIT FLOOR LEVELS (OVER)
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- VP — VISITOR PARKING
- LB 22 — LETTER BOX
- G — GARBAGE BIN STORE

Legend

Tree Protection Zone (TPZ), fencing with setbacks as indicated, or other protection measures or works as indicated.

Tree Protection Zone, area of special protection measures or works outside of or instead of a fenced area.

URBAN TREE MANAGEMENT

Appendix I (**5** of 11) – Tree Protection Plan – Old Darby and Joan

From Old Darby and Joan Site Plan South L2, **Drawing No. DA3.06**, issue 3, date Sept 2009, Scale 1:200 @ A1 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

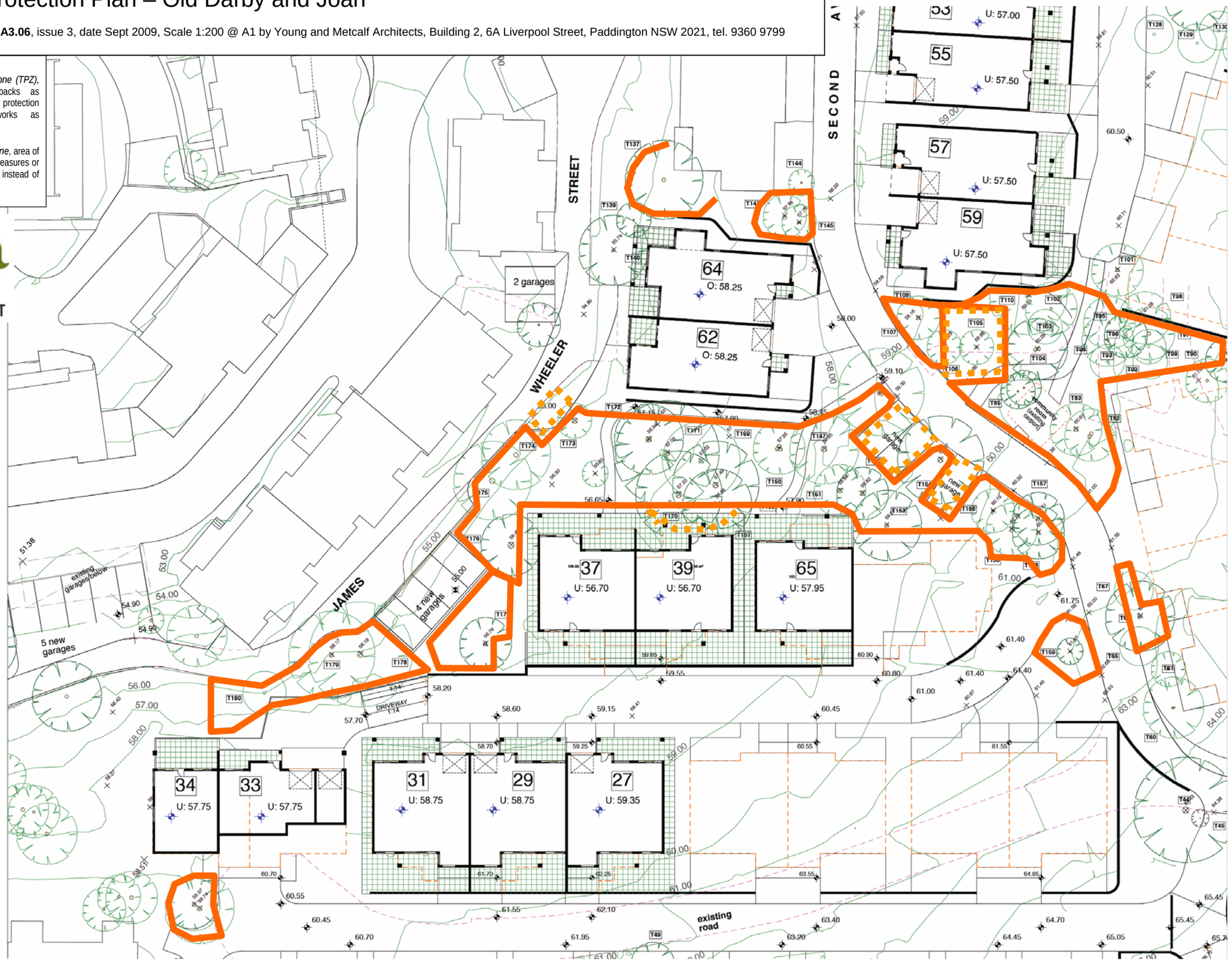
- 68.34 — EXISTING LEVELS
- 61.00 — PROPOSED LEVELS
- EXISTING ROAD
- NEW PAVED PEDESTRIAN ZONE
- U: 62.00 — UNIT FLOOR LEVELS (UNDER)
- O: 65.00 — UNIT FLOOR LEVELS (OVER)
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- VP — VISITOR PARKING
- LB 22 — LETTER BOX
- G — GARBAGE BIN STORE

Legend

Tree Protection Zone (TPZ), fencing with setbacks as indicated, or other protection measures or works as indicated.

Tree Protection Zone, area of special protection measures or works outside of or instead of a fenced area.

URBAN TREE MANAGEMENT



Appendix I (**6** of 11) – Tree Protection Plan – Old Darby and Joan

From Old Darby and Joan Site Plan North L3, **Drawing No. DA3.07**, issue 4, date Sept 2009, Scale 1:200 @ A1 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

- 68.34 — EXISTING LEVELS
- 61.00 — PROPOSED LEVELS
- EXISTING ROAD
- NEW PAVED PEDESTRIAN ZONE
- U: 62.00 — UNIT FLOOR LEVELS (UNDER)
- O: 65.00 — UNIT FLOOR LEVELS (OVER)
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- VP — VISITOR PARKING
- LB 22 — LETTER BOX
- G — GARBAGE BIN STORE

Legend

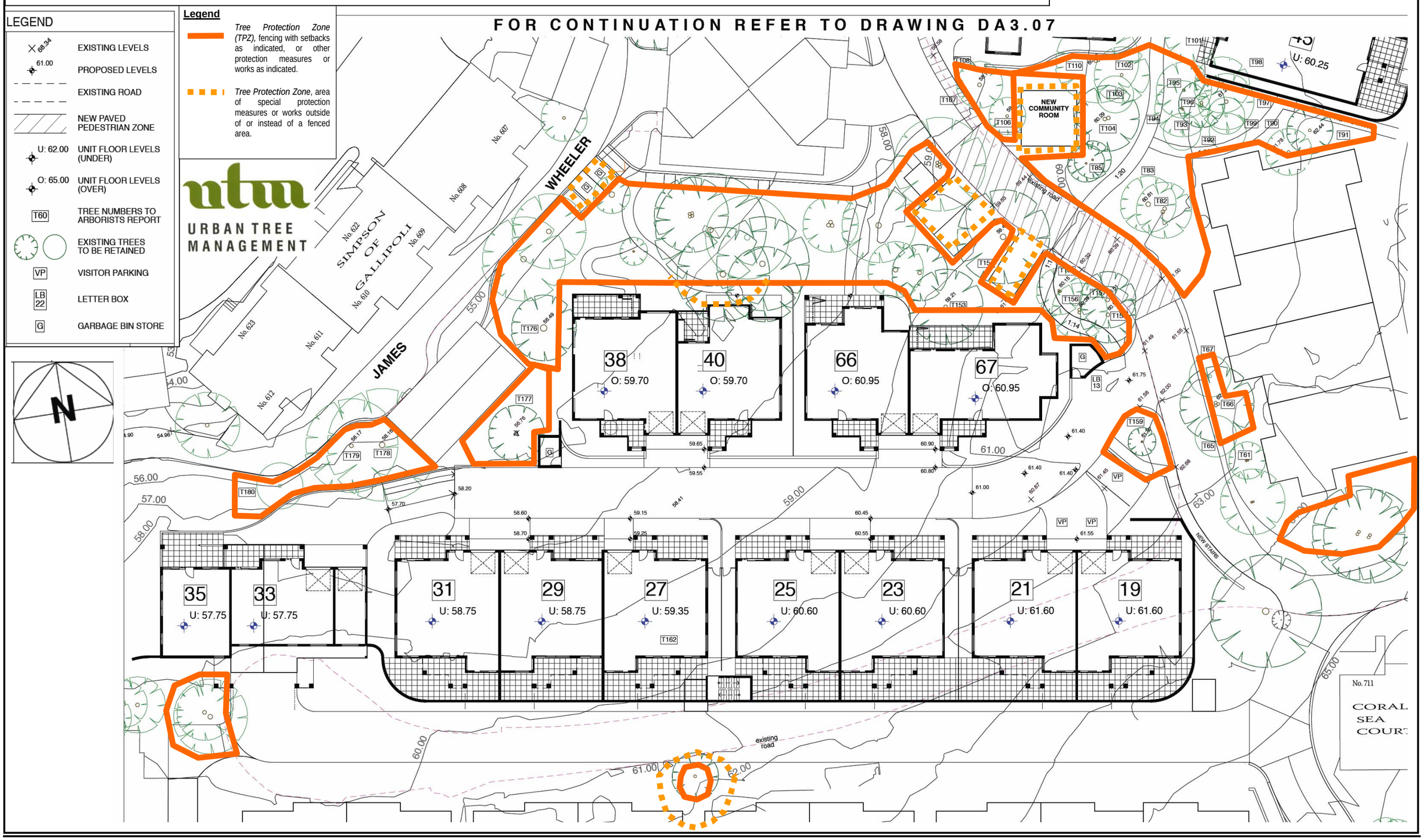
Tree Protection Zone (TPZ), fencing with setbacks as indicated, or other protection measures or works as indicated.

Tree Protection Zone, area of special protection measures or works outside of or instead of a fenced area.

URBAN TREE MANAGEMENT

Appendix I (7 of 11) – Tree Protection Plan – Old Darby and Joan

From Old Darby and Joan Site Plan South L3, **Drawing No. DA3.08**, issue 4, date Sept 2009, Scale 1:200 @ A1 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799



Appendix I (**8** of 11) – Tree Protection Plan – Old Darby and Joan

From Old Darby and Joan Site Plan North L4, **Drawing No. DA3.09**, issue 4, date Sept 2009, Scale 1:200 @ A1 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

- 68.34 — EXISTING LEVELS
- 61.00 — PROPOSED LEVELS
- EXISTING ROAD
- NEW PAVED PEDESTRIAN ZONE
- U: 62.00 — UNIT FLOOR LEVELS (UNDER)
- O: 65.00 — UNIT FLOOR LEVELS (OVER)
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- VP — VISITOR PARKING
- LB 22 — LETTER BOX
- G — GARBAGE BIN STORE

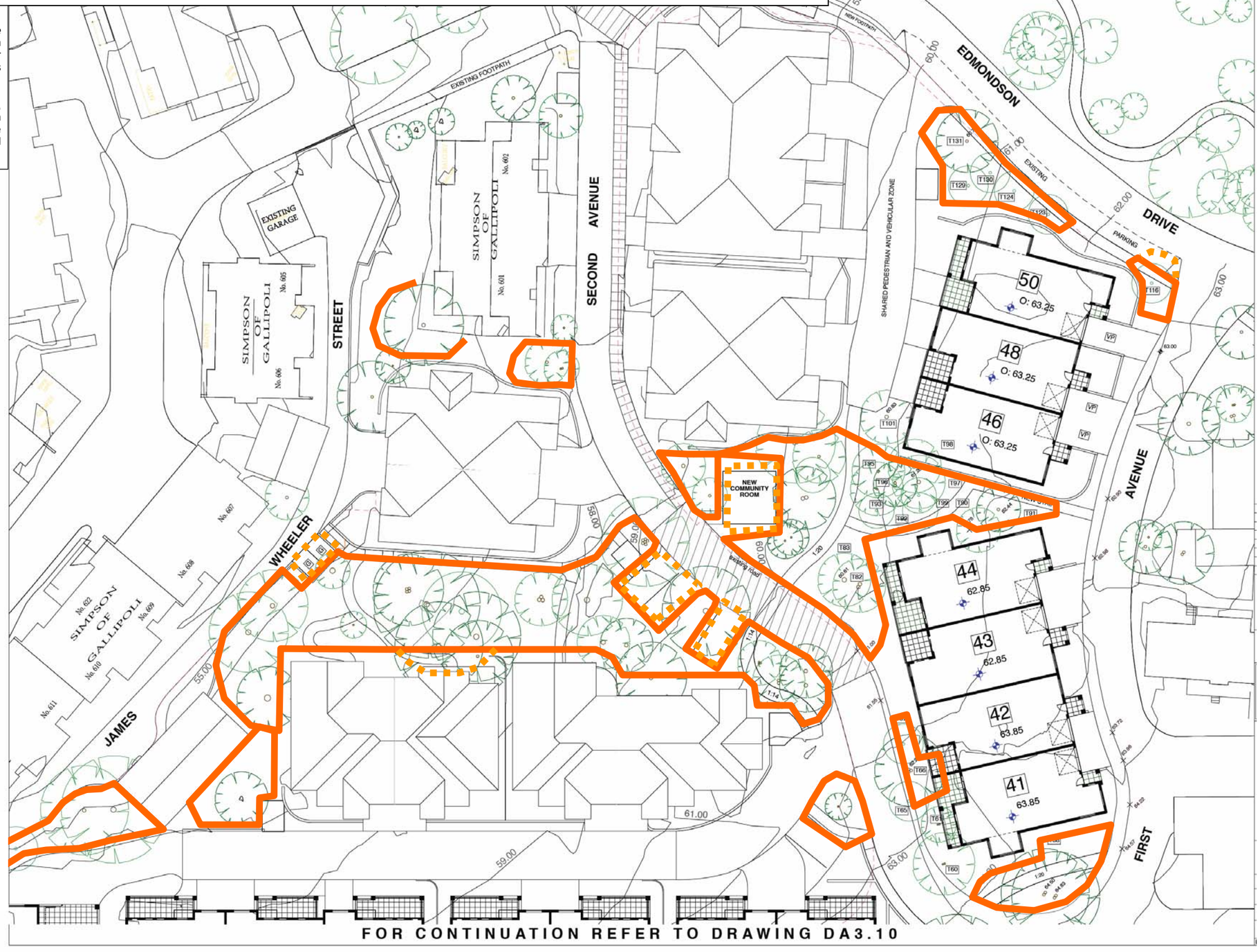
Legend

Tree Protection Zone (TPZ), fencing with setbacks as indicated, or other protection measures or works as indicated.

Tree Protection Zone, area of special protection measures or works outside of or instead of a fenced area.

URBAN TREE MANAGEMENT

N



Appendix I (**9** of 11) – Tree Protection Plan – Old Darby and Joan

From Old Darby and Joan Site Plan South L4, **Drawing No. DA3.10**, issue 4, date Sept 2009, Scale 1:200 @ A1 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

- 68.34 — EXISTING LEVELS
- 61.00 — PROPOSED LEVELS
- EXISTING ROAD
- NEW PAVED PEDESTRIAN ZONE
- U: 62.00 — UNIT FLOOR LEVELS (UNDER)
- O: 65.00 — UNIT FLOOR LEVELS (OVER)
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- VP — VISITOR PARKING
- LB 22 — LETTER BOX
- G — GARBAGE BIN STORE

Legend

Tree Protection Zone (TPZ), fencing with setbacks as indicated, or other protection measures or works as indicated.

Tree Protection Zone, area of special protection measures or works outside of or instead of a fenced area.

URBAN TREE MANAGEMENT

Appendix I (**10** of 11) – Tree Protection Plan – Old Darby and Joan

From Old Darby and Joan Site Plan S-East L4, **Drawing No. DA3.11**, issue 4, date Sept 2009, Scale 1:200 @ A1 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

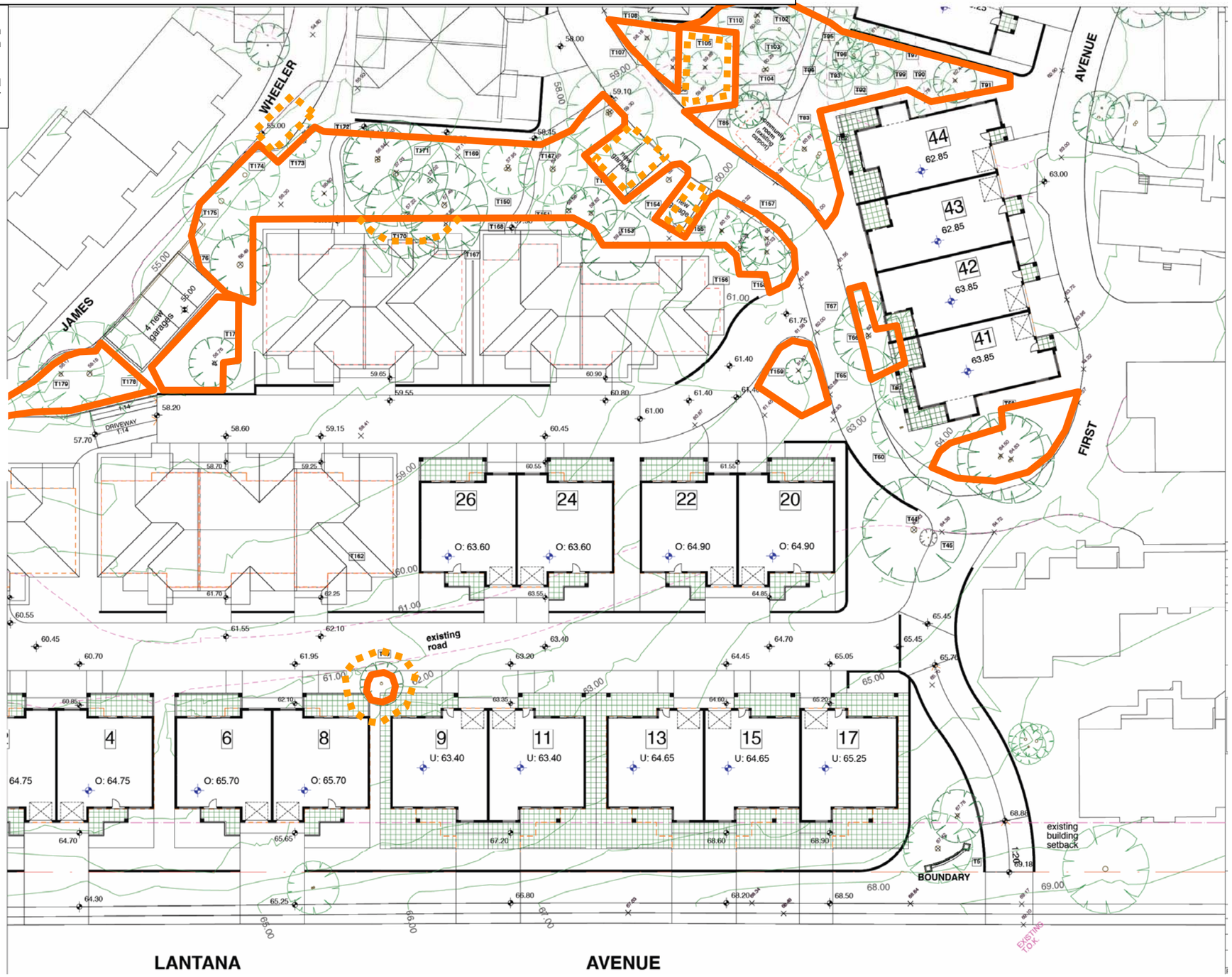
- 68.34 — EXISTING LEVELS
- 61.00 — PROPOSED LEVELS
- EXISTING ROAD
- NEW PAVED PEDESTRIAN ZONE
- U: 62.00 — UNIT FLOOR LEVELS (UNDER)
- O: 65.00 — UNIT FLOOR LEVELS (OVER)
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- VP — VISITOR PARKING
- LB 22 — LETTER BOX
- G — GARBAGE BIN STORE

Legend

Tree Protection Zone (TPZ), fencing with setbacks as indicated, or other protection measures or works as indicated.

Tree Protection Zone, area of special protection measures or works outside of or instead of a fenced area.

URBAN TREE MANAGEMENT



Appendix I (**11** of 11) – Tree Protection Plan – Old Darby and Joan

From Old Darby and Joan Site Plan L5, **Drawing No. DA3.12**, issue 4, date Sept 2009, Scale 1:200 @ A1 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

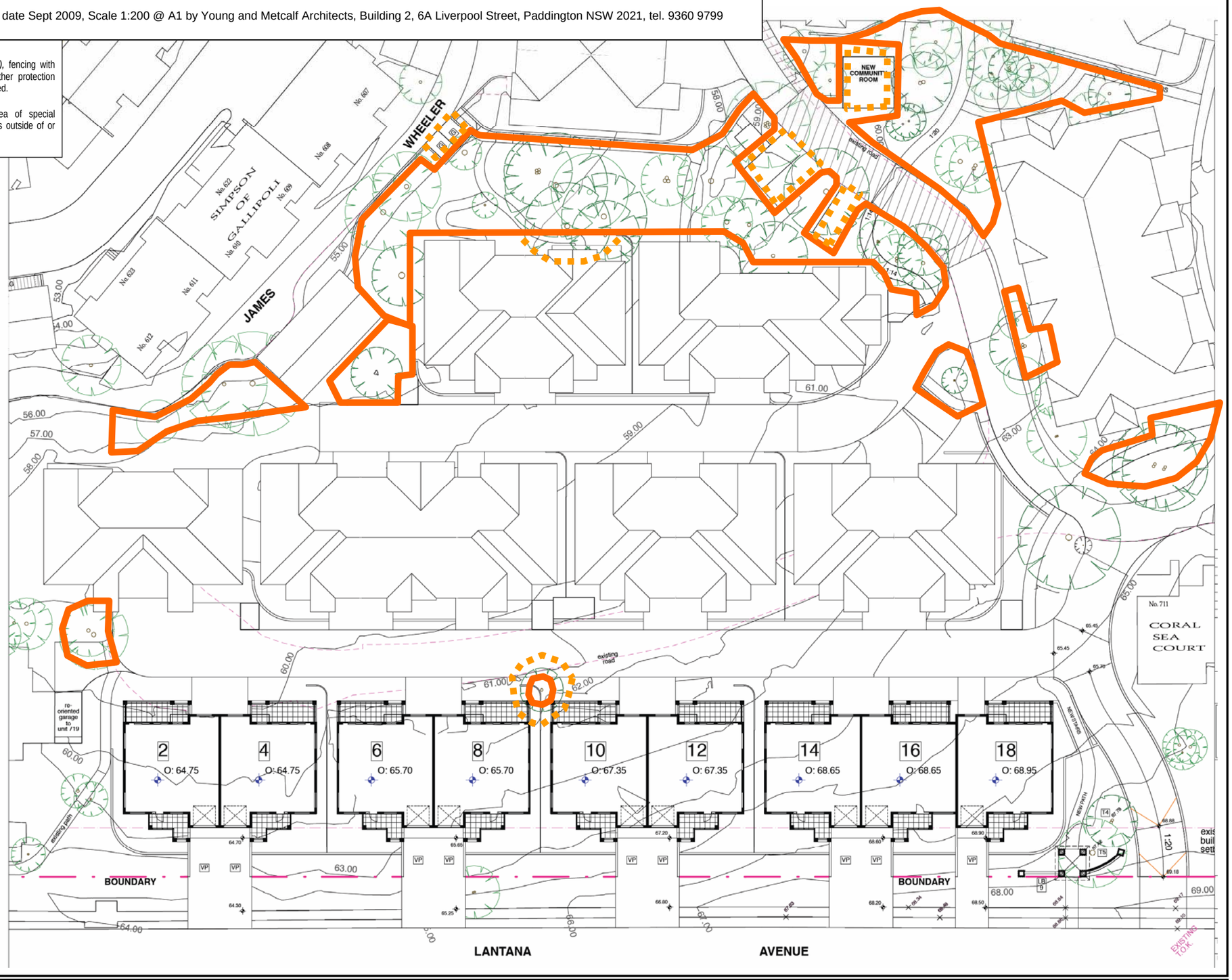
- EXISTING LEVELS
- PROPOSED LEVELS
- EXISTING ROAD
- NEW PAVED PEDESTRIAN ZONE
- U: 62.00 UNIT FLOOR LEVELS (UNDER)
- O: 65.00 UNIT FLOOR LEVELS (OVER)
- T60 TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- VP VISITOR PARKING
- LB 22 LETTER BOX
- G GARBAGE BIN STORE

Legend

Tree Protection Zone (TPZ), fencing with setbacks as indicated, or other protection measures or works as indicated.

Tree Protection Zone, area of special protection measures or works outside of or instead of a fenced area.

URBAN TREE MANAGEMENT



New Darby and Joan Tree numbers

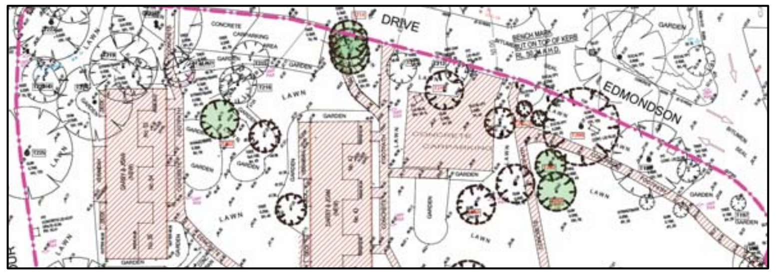
UTM Tree No. / Stand No.	*Genus and species*	Common name
181	*Jacaranda mimosifolia*	Jacaranda
182	*Brachychiton acerifolius*	Illawarra Flame Tree
183	*Eucalyptus scoparia*	Wallangarra White Gum
184	*Fraxinus angustifolia*	Narrow-leaved Ash
185	*Fraxinus angustifolia* ssp. *oxycarpa* 'Raywood'	Claret Ash
186	*Thuja occidentalis*	Chinese Arborvitae
187	*Eucalyptus haemastoma*	Scribbly Gum
188	*Eucalyptus haemastoma*	Scribbly Gum
189	*Eucalyptus haemastoma*	Scribbly Gum
190	*Eucalyptus haemastoma*	Scribbly Gum
191	*Corymbia gummifera*	Red Bloodwood
192	*Corymbia gummifera*	Red Bloodwood
193	*Eucalyptus haemastoma*	Scribbly Gum
194	*Eucalyptus haemastoma*	Scribbly Gum
195	*Eucalyptus nicholii*	Narrow-leaved Black Peppermint
196	*Eucalyptus haemastoma*	Scribbly Gum
197	*Eucalyptus haemastoma*	Scribbly Gum
198	*Callistemon citrinus*	Crimson Bottlebrush
199	*Angophora costata*	Smooth-barked-Apple
200	*Angophora costata*	Smooth-barked-Apple
201	3 x *Corymbia gummifera*	Red Bloodwood
202	*Corymbia maculata*	Spotted Gum
203	*Corymbia maculata*	Spotted Gum
204	*Eucalyptus nicholii*	Narrow-leaved Black Peppermint
205	*Eucalyptus melliodora*	Yellow Box
206	*Eucalyptus haemastoma*	Scribbly Gum
207	*Eucalyptus haemastoma*	Scribbly Gum
208	*Banksia serrata*	Old Man Banksia
209	*Eucalyptus haemastoma*	Scribbly Gum
210	*Eucalyptus haemastoma*	Scribbly Gum
211	*Eucalyptus haemastoma*	Scribbly Gum
212	*Allocasuarina torulosa*	Forest Oak
213	*Callistemon citrinus*	Crimson Bottlebrush
214	*Corymbia gummifera*	Red Bloodwood
215	*Melia azedarach*	White Cedar
216	*Eucalyptus umbra*	Broad-leaved White Mahogany
217	*Corymbia gummifera*	Red Bloodwood
218	*Angophora costata*	Smooth-barked-Apple
219	*Eucalyptus umbra*	Broad-leaved White Mahogany
220	*Corymbia gummifera*	Red Bloodwood

New Darby and Joan Tree numbers

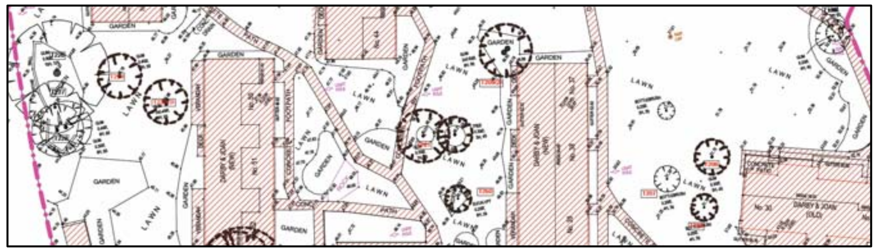
UTM Tree No. / Stand No.	*Genus and species*	Common name
221	*Corymbia gummifera*	Red Bloodwood
222	*Corymbia gummifera*	Red Bloodwood
223	*Corymbia gummifera*	Red Bloodwood
224	*Angophora costata*	Smooth-barked-Apple
225	*Angophora costata*	Smooth-barked-Apple
226	*Angophora costata*	Smooth-barked-Apple
227	*Eucalyptus haemastoma*	Scribbly Gum
228	*Eucalyptus haemastoma*	Scribbly Gum
229	*Eucalyptus haemastoma*	Scribbly Gum
230	*Eucalyptus haemastoma*	Scribbly Gum
231	*Angophora costata*	Smooth-barked-Apple
232	*Chamaecyparis pisifera*	Sawara Cypress
233	*Eucalyptus umbra*	Broad-leaved White Mahogany
234	*Glochidion ferdinandi*	Cheese Tree
235	*Corymbia gummifera*	Red Bloodwood
236	*Angophora costata*	Smooth-barked-Apple
237	*Angophora costata*	Smooth-barked-Apple
238	*Eucalyptus nicholii*	Narrow-leaved Black Peppermint
239	*Callistemon citrinus*	Crimson Bottlebrush
240	*Callistemon viminalis*	Weeping Bottlebrush
241	*Eucalyptus umbra*	Broad-leaved White Mahogany
242	*Eucalyptus haemastoma*	Scribbly Gum
243	*Eucalyptus haemastoma*	Scribbly Gum
244	*Corymbia gummifera*	Red Bloodwood
245	*Allocasuarina torulosa*	Forest Oak
246	*Corymbia gummifera*	Red Bloodwood
247	*Banksia integrifolia*	Coast Banksia
248	*Eucalyptus haemastoma*	Scribbly Gum
249	*Corymbia gummifera*	Red Bloodwood
250	*Eucalyptus haemastoma*	Scribbly Gum
251	*Allocasuarina torulosa*	Forest Oak
252	*Corymbia gummifera*	Red Bloodwood
253	*Angophora costata*	Smooth-barked-Apple
254	*Corymbia gummifera*	Red Bloodwood
255	*Eucalyptus umbra*	Broad-leaved White Mahogany
256	*Eucalyptus umbra*	Broad-leaved White Mahogany
257	*Corymbia gummifera*	Red Bloodwood
258	*Eucalyptus umbra*	Broad-leaved White Mahogany
259	*Corymbia maculata*	Spotted Gum
260	*Angophora floribunda*	Rough-barked Apple
261	*Corymbia gummifera*	Red Bloodwood
262	*Eucalyptus umbra*	Broad-leaved White Mahogany

Appendix H (**1** of 6) - Survey of Subject Tree/s New Darby and Joan

From New Darby and Joan Demolition Plan, **Drawing No. DA2.02**, issue 2, date 24/11/2009, Scale 1:250, 1:200 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799



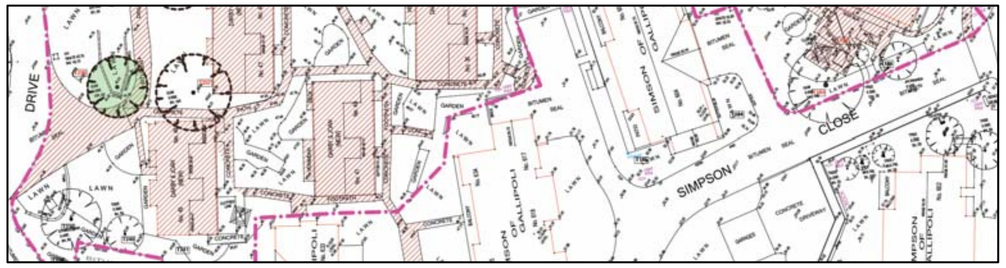
Section 5 – (6 of 6)



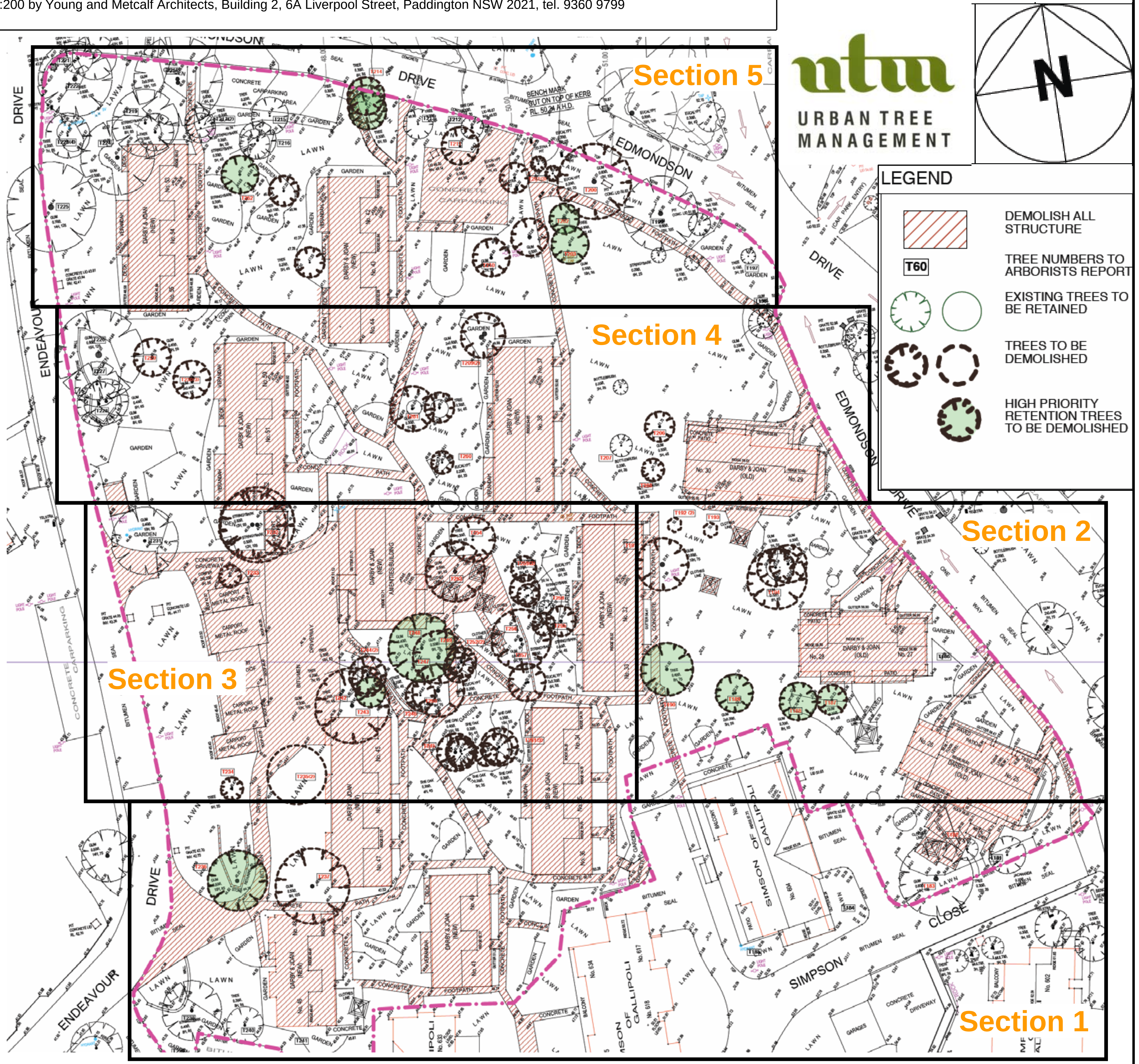
Section 4 – (5 of 6)

Section 3 – (4 of 6)

Section 2 – (3 of 6)



Section 1 – (2 of 6)



URBAN TREE MANAGEMENT

Appendix H (**2** of 6) – Section 1 - Survey of Subject Tree/s New Darby and Joan

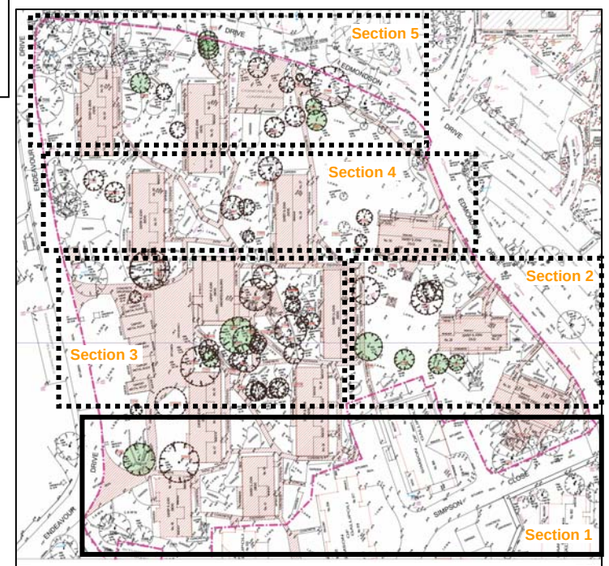
From New Darby and Joan Demolition Plan, **Drawing No. DA2.02**, issue 2, date 24/11/2009, Scale 1:250, 1:200 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

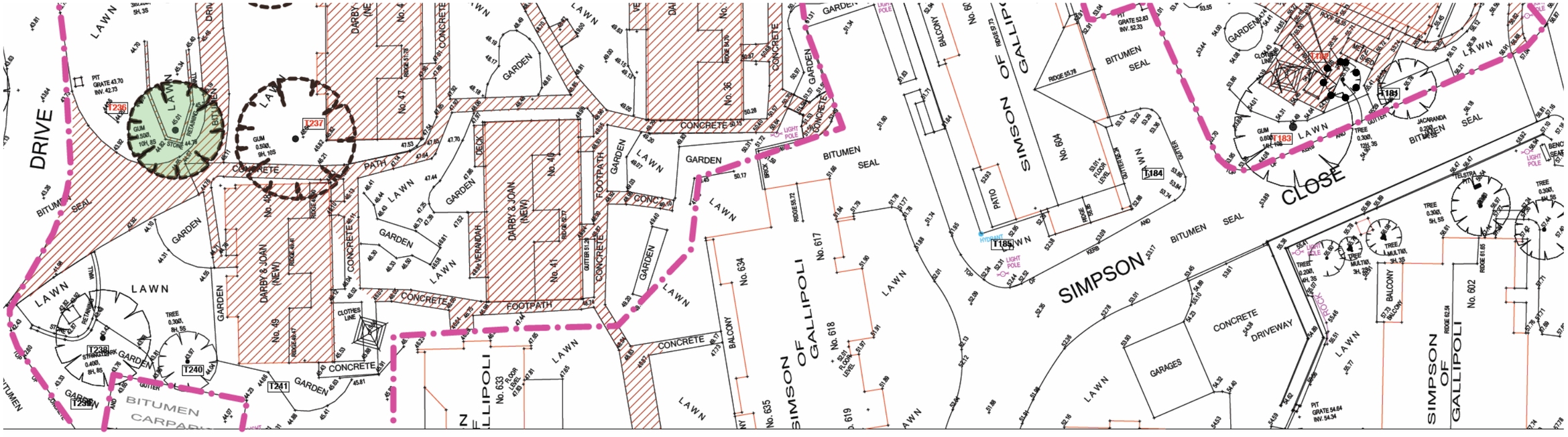
- DEMOLISH ALL STRUCTURE
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- TREES TO BE DEMOLISHED
- HIGH PRIORITY RETENTION TREES TO BE DEMOLISHED

URBAN TREE MANAGEMENT

N



New Darby and Joan - Site Plan



Appendix H (**3** of 6) – Section 2 - Survey of Subject Tree/s New Darby and Joan

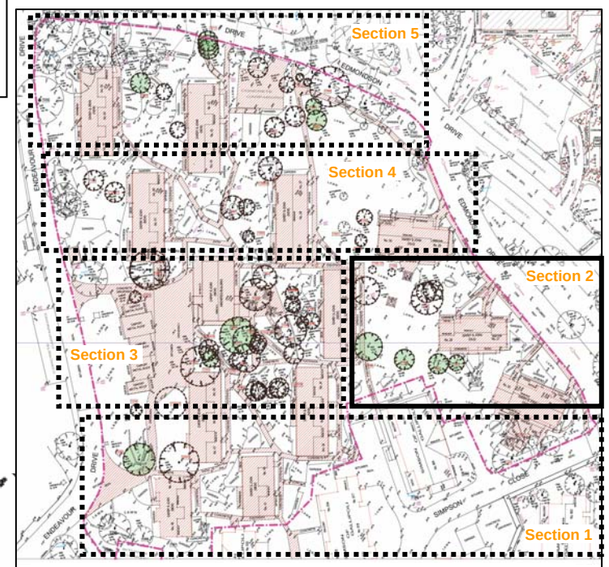
From New Darby and Joan Demolition Plan, **Drawing No. DA2.02**, issue 2, date 24/11/2009, Scale 1:250, 1:200 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

- DEMOLISH ALL STRUCTURE
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- TREES TO BE DEMOLISHED
- HIGH PRIORITY RETENTION TREES TO BE DEMOLISHED

URBAN TREE MANAGEMENT

N



New Darby and Joan - Site Plan

Appendix H (**4** of 6) – Section 3 - Survey of Subject Tree/s New Darby and Joan

From New Darby and Joan Demolition Plan, **Drawing No. DA2.02**, issue 2, date 24/11/2009, Scale 1:250, 1:200 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

- DEMOLISH ALL STRUCTURE
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- TREES TO BE DEMOLISHED
- HIGH PRIORITY RETENTION TREES TO BE DEMOLISHED

URBAN TREE MANAGEMENT

N

New Darby and Joan - Site Plan

Appendix H (**5** of 6) – Section 4 - Survey of Subject Tree/s New Darby and Joan

From New Darby and Joan Demolition Plan, **Drawing No. DA2.02**, issue 2, date 24/11/2009, Scale 1:250, 1:200 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

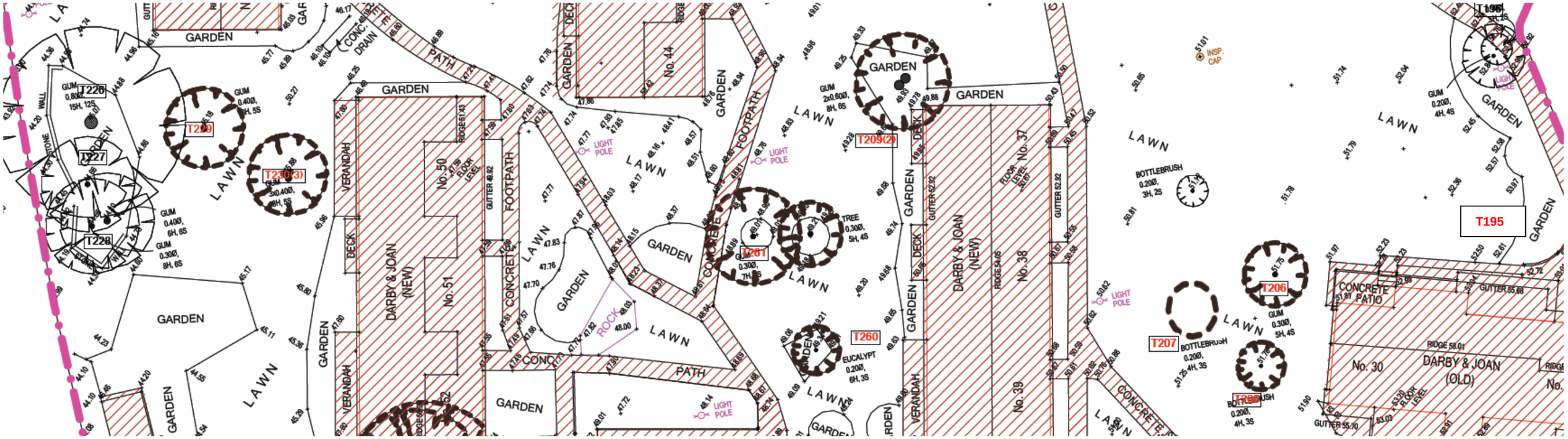
LEGEND

- DEMOLISH ALL STRUCTURE
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- TREES TO BE DEMOLISHED
- HIGH PRIORITY RETENTION TREES TO BE DEMOLISHED

URBAN TREE MANAGEMENT

N

New Darby and Joan - Site Plan



Appendix H (6 of 6) – Section 5 - Survey of Subject Tree/s New Darby and Joan

From New Darby and Joan Demolition Plan, **Drawing No. DA2.02**, issue 2, date 24/11/2009, Scale 1:250, 1:200 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

- DEMOLISH ALL STRUCTURE
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- TREES TO BE DEMOLISHED
- HIGH PRIORITY RETENTION TREES TO BE DEMOLISHED

URBAN TREE MANAGEMENT

N

New Darby and Joan - Site Plan

Appendix I (**1** of 9) – Tree Protection Plan

New Darby and Joan

Site: RSL Anzac Village – New Darby and Joan
Year: 2009,
Reference: 11087,
Prepared by Urban Tree Management Australia P/L, 65 Excelsior Street, Merrylands NSW 2160, tel. 02 9760 1389.

From New Darby and Joan Site Masterplan, **Drawing No. PDA2.01**, issue A, date 30/09/2009, Scale 1:750 @ A1 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

URBAN TREE MANAGEMENT

Appendix I (**2** of 9) – Tree Protection Plan

New Darby and Joan

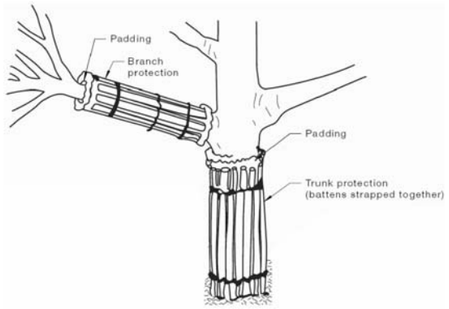
Site: RSL Anzac Village – New Darby and Joan
Year: 2009,
Reference: 11087,
Prepared by Urban Tree Management Australia P/L, 65 Excelsior Street, Merrylands NSW 2160, tel. 02 9760 1289

TREE PROTECTION ZONE (TPZ) works

Prior to Demolition and Tree Removal

Trees 181, 183, 184, 185, 196-199, 215, 218-224, 227, 228, 231 and 238-241 are to be retained and protected and Tree Protection Zone fencing or works to be marked accordingly on the Landscape Plan or Construction Plans, where appropriate and installed prior to any demolition or construction. Extant soil levels are not to be disturbed or modified within the TPZ.

Trunk and Branch Protection - Trees 183, 219-224, 227, 228 and 231 As per AS4970 (2009) *Protection of trees on development sites*, Section 4 Tree protection measures, 4.5.2 Trunk and branch protection, the trunk of each nominated tree is to be protected from possible damage from collision with trucks or plant equipment and is to be wrapped with 4 layers of hessian or a single layer of carpet underfelt around the trunk for a minimum of 2 m and extending to first order branches, then metal strapping, wire or rope is to be used to secure 75x50x2000 mm hardwood battens around the trunk (do not nail or screw to the trunk). The number of battens to be used is as required to encircle the trunk and the battens are to extend to the base of the tree as per Appendix E, section 1.4.



Prior to Demolition

Trees Removal – Trees 182, 186-195, 200-214, 216, 217, 230, 232-237 and 242-262 Prior to construction of the Tree Protection Zone fencing remove and grind stumps to 300 mm minimum below grade.

Tree Protection Zone - Trees 181, 183, 184, 185, 196-199, 215, 218-224, 227, 228, 231 and 238-241 Prior to demolition works and post tree removals these trees are to be placed within a Tree Protection Zone with protective fencing as formed by the site perimeter fencing for each section and maintained and retained until the completion of works.

Protective Fencing The Protective fencing where required may delineate the *TPZ* and should be located as determined by the project arborist in accordance with AS4970 *Protection of trees on development sites*, Section 4, 4.3. *"Fencing should be erected before any machinery or materials are brought onto the site and before the commencement of works including demolition. Once erected, protective fencing must not be removed or altered without approval by the project arborist. The TPZ must be secured to restrict access. AS4687 Temporary fencing and hoardings specifies applicable fencing requirements. Shade cloth or similar should be attached to reduce the transport of dust, other particulate matter and liquids into the protected area. Fence posts and supports should have a diameter greater than 20 mm and be located clear of roots. Existing perimeter fencing and other structures may be suitable as part of the protective fencing."*

During Demolition

The Tree Protection Zone fencing and works for each tree is to remain unaltered.

Demolition of existing structures retaining walls, pavement, and concrete slabs as floors of outer buildings or driveways within each Tree Protection Zone (Table 3.0 and Appendix I, Tree Protection Plan) is to be done to minimise disturbance of structural roots (roots greater than >20 mm diameter) and is to be supervised, monitored and certified by the Project Arborist. Excavation is not to extend deeper than existing pavement or footing for any retaining walls. Plant equipment is to remain on the existing pavement during demolition working back towards the pavement away from each protected tree to minimise root damage from soil compaction or disturbance. Top soil from the site is to be used to fill excavated areas to levels contiguous with adjoining extant grade.

Maintaining existing soil levels within TPZ - The extant soil levels within the Tree Protection Zone of each tree are to remain unaltered.

Tree Protection Zone setbacks
extract from Table 3.0 and Appendix B.

UTM Tree No. / Stand No.	Tree Protection Zone (TPZ) = 12 x DBH From center of trunk (COT) in metres AS4970 (2009) Section 3 (see Appendix B)	Structural Root Zone SRZ From center of trunk (COT), trunk diameter above root buttress (DARB) AS4970 (2009) Section 3, 3.3.5 (see Appendix C) where applicable	Distance of fence with TPZ setback reduced by 10% of area on one side of tree only, in metres equating to approx. 0.3 radius as per AS4970 (2009) Section 3, 3.3	Proposed distance of tree protection fence/works on the side closest to building construction², in metres by UTMA P/L
181	1.7	2.5	N/A	2.0
183	2.5	6.0	3.2	3.2
184	1.5	1.9	N/A	2.0
185	1.6	2.3	N/A	2.0
196	2.2	4.5	3.1	3.0
197	2.0	4.0	2.8	2.8
198	1.7	2.4	N/A	2.0
199	3.2	11.1	7.7	5.5
215	1.7	2.4	N/A	2.0
218	2.6	6.9	4.8	4.8
219	2.0	3.6	2.5	2.5
220	2.1	4.2	3.0	3.0
221	1.9	3.4	2.8	2.8

Tree Protection Zone setbacks
extract from Table 3.0 and Appendix B.

UTM Tree No. / Stand No.	Tree Protection Zone (TPZ) = 12 x DBH From center of trunk (COT) in metres AS4970 (2009) Section 3 (see Appendix B)	Structural Root Zone SRZ From center of trunk (COT), trunk diameter above root buttress (DARB) AS4970 (2009) Section 3, 3.3.5 (see Appendix C) where applicable	Distance of fence with TPZ setback reduced by 10% of area on one side of tree only, in metres equating to approx. 0.3 radius as per AS4970 (2009) Section 3, 3.3	Proposed distance of tree protection fence/works on the side closest to building construction², in metres by UTMA P/L
222	2.4	5.6	3.9	3.9
223	2.6	6.9	4.8	4.8
224	2.4	5.7	4.0	4.0
225	2.2	4.5	3.1	3.1
226	2.6	6.6	4.6	4.6
227	1.8	2.9	2.0	2.0
228	2.6	6.6	4.6	4.6
231	2.1	4.2	3.0	3.0
238	2.3	4.8	3.4	3.4
239	2.3	4.8	3.4	3.4
240	2.2	4.6	3.2	3.2
241	1.7	2.5	N/A	2.0

Post Demolition

Tree Protection Zone fences and works erected prior to demolition are to remain unaltered.

Pruning is to be undertaken in accordance with AS4373 (2007) Pruning amenity trees, and is to comply with the Warringah Council Tree Preservation Order. Such works are to be supervised and certified by the Project Arborist.

Root protection during Excavation and Construction

Driveway and Parking Space Construction – Trees 225, 226 and 231 For the following trees the driveway or parking space section within the Tree Protection Zone is to be located above existing grade with a 100 mm deep bed of gap graded fill as 20 mm diameter gravel with no fines which is to be rolled to achieve compaction. Concrete pavement is to be constructed on top of the gap graded fill. The gap graded fill is to be retained with a timber plinth or suitable edging material and back filled with top soil to retain the gravel. Structural roots are to be protected and not severed except in consultation with the Project Arborist as per AS4970 (2009).

Footpath Construction within a TPZ For all protected trees a footpath section through a Tree Protection Zone is to be located above existing grade with a 100 mm deep bed of gap graded fill as 20 mm diameter gravel with no fines which is to be rolled to achieve compaction, where required. Concrete pavement is to be constructed on top of the gap graded fill. The gap graded fill is to be retained with a timber plinth or suitable edging material and back filled with top soil and mulch to retain the gravel. Structural roots are to be protected and not severed except in consultation with the Project Arborist as per AS4970 (2009).

During Construction

Location of underground utilities within a Tree Protection Zone Utilities should not be located within a TPZ. Any utility services to be located underground within the TPZ of any tree are to be undertaken utilising excavation techniques that prevent or minimise damage to structural roots (roots greater than >20 mm diameter). Such works should be conducted with non-motorised hand tools of with an air knife or water knife and vacuum truck or with directional drilling to prevent soil compaction and root damage. Such works are to be supervised and certified by the Project Arborist.

Root Pruning Where a situation occurs that a structural root (a root greater than >20 mm diameter) requires pruning or removal, the root is to be severed with a final cut to undamaged tissue to remove injured and crushed tissues allowing the tree to develop strong internal boundaries and generate new roots (Shigo 1989, p. 199) and protect their growing environment below ground. This will prevent tearing damage to the roots from excavation equipment which can extend beyond the point of excavation back towards the tree.

All Tree Protection Works are to be maintained for the duration of works on the site.

Appendix I (**3** of 9) – Tree Protection Plan – New Darby and Joan

From New Darby and Joan Site Plan North L4, **Drawing No. DA2.09**, issue 5, Plot date 24/11/2009, Scale 1:200 @ A1 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

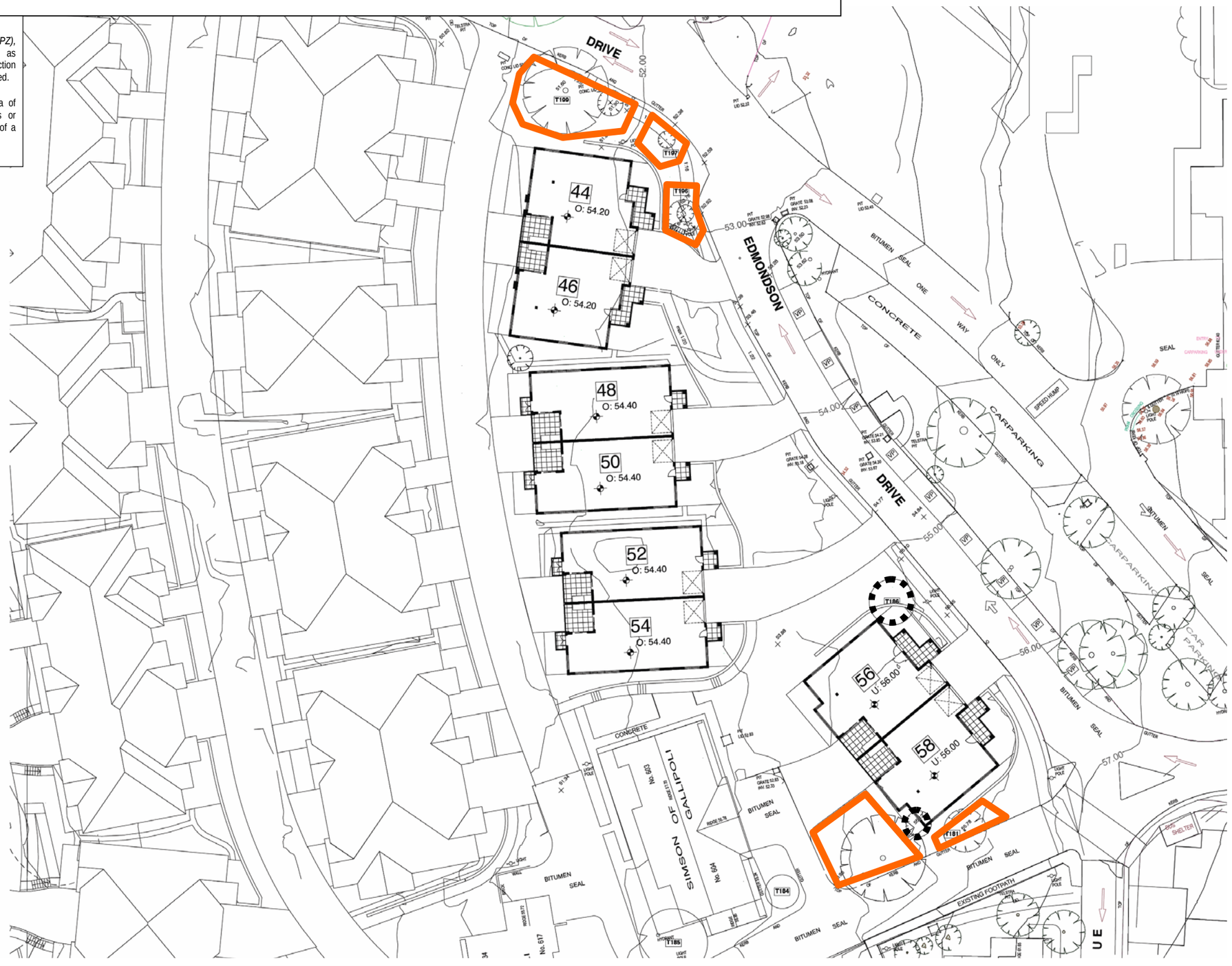
- 68.34 — EXISTING LEVELS
- 61.00 — PROPOSED LEVELS
- EXISTING ROAD
- NEW PAVED PEDESTRIAN ZONE
- U: 62.00 — UNIT FLOOR LEVELS (UNDER)
- O: 65.00 — UNIT FLOOR LEVELS (OVER)
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- VP — VISITOR PARKING
- LB 22 — LETTER BOX
- G — GARBAGE BIN STORE

Legend

Tree Protection Zone (TPZ), fencing with setbacks as indicated, or other protection measures or works as indicated.

Tree Protection Zone, area of special protection measures or works outside of or instead of a fenced area.

URBAN TREE MANAGEMENT



Appendix I (**4** of 9) – Tree Protection Plan – New Darby and Joan

From New Darby and Joan Site Plan South L3, **Drawing No. DA2.08**, issue 5, Plot date 24/11/2009, Scale 1:200 @ A1 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

- 68.34 — EXISTING LEVELS
- 61.00 — PROPOSED LEVELS
- EXISTING ROAD
- NEW PAVED PEDESTRIAN ZONE
- U: 62.00 — UNIT FLOOR LEVELS (UNDER)
- O: 65.00 — UNIT FLOOR LEVELS (OVER)
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- VP — VISITOR PARKING
- LB 22 — LETTER BOX
- G — GARBAGE BIN STORE

Legend

Tree Protection Zone (TPZ), fencing with setbacks as indicated, or other protection measures or works as indicated.

Tree Protection Zone, area of special protection measures or works outside of or instead of a fenced area.

URBAN TREE MANAGEMENT

Appendix I (**5** of 9) – Tree Protection Plan – New Darby and Joan

From New Darby and Joan Site Plan North L3, **Drawing No. DA2.07**, issue 5, Plot date 24/11/2009, Scale 1:200 @ A1 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

- 68.34 — EXISTING LEVELS
- 61.00 — PROPOSED LEVELS
- EXISTING ROAD
- NEW PAVED PEDESTRIAN ZONE
- U: 62.00 — UNIT FLOOR LEVELS (UNDER)
- O: 65.00 — UNIT FLOOR LEVELS (OVER)
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- VP — VISITOR PARKING
- LB 22 — LETTER BOX
- G — GARBAGE BIN STORE

Legend

Tree Protection Zone (TPZ), fencing with setbacks as indicated, or other protection measures or works as indicated.

Tree Protection Zone, area of special protection measures or works outside of or instead of a fenced area.

URBAN TREE MANAGEMENT

Appendix I (**6** of 9) – Tree Protection Plan – New Darby and Joan

From New Darby and Joan Site Plan South L1, **Drawing No. DA2.02**, issue 5, Plot date 24/11/2009, Scale 1:200 @ A1 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

- 68.34 — EXISTING LEVELS
- 61.00 — PROPOSED LEVELS
- EXISTING ROAD
- NEW PAVED PEDESTRIAN ZONE
- U: 62.00 — UNIT FLOOR LEVELS (UNDER)
- O: 65.00 — UNIT FLOOR LEVELS (OVER)
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- VP — VISITOR PARKING
- LB 22 — LETTER BOX
- G — GARBAGE BIN STORE

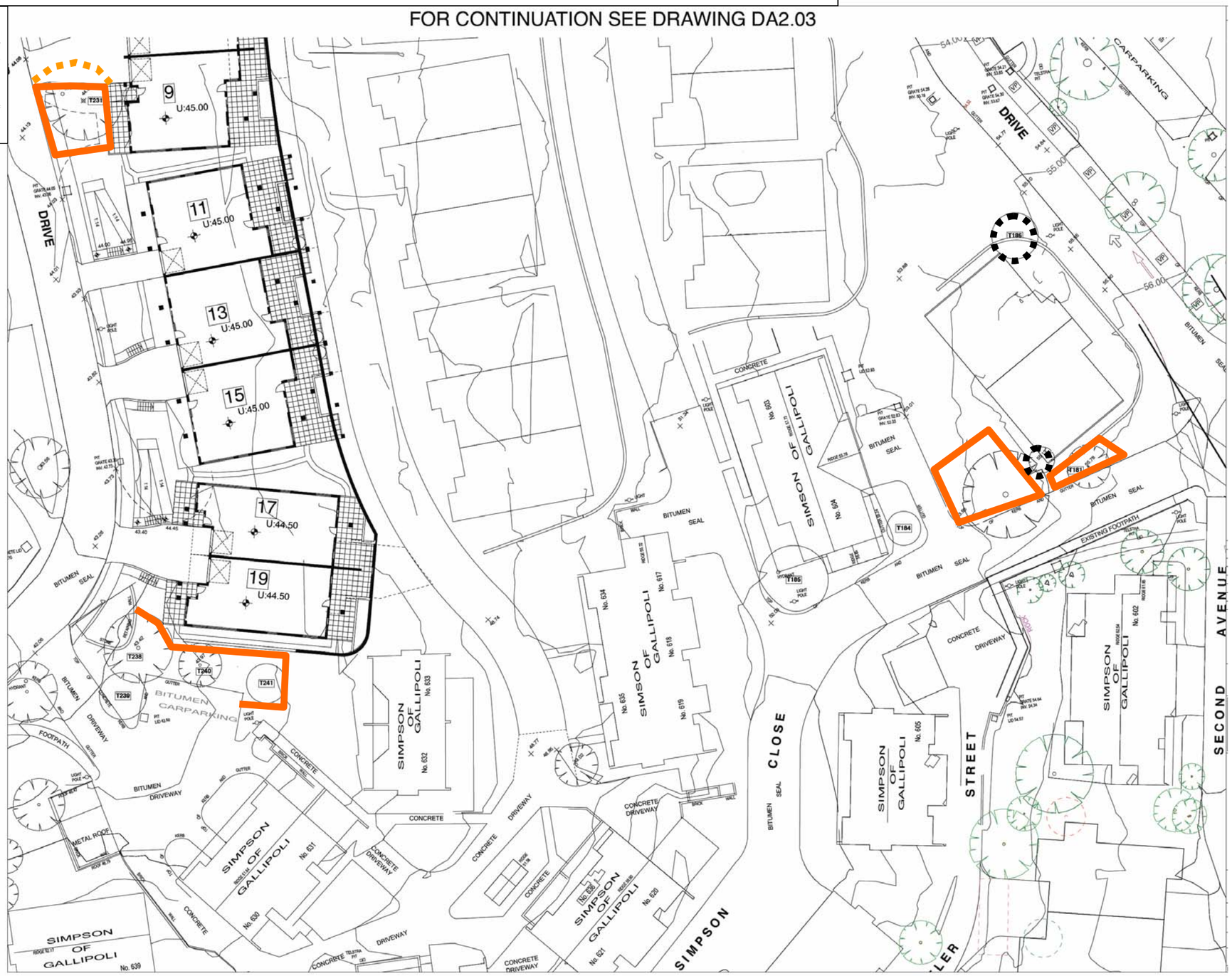
Legend

Tree Protection Zone (TPZ), fencing with setbacks as indicated, or other protection measures or works as indicated.

Tree Protection Zone, area of special protection measures or works outside of or instead of a fenced area.

URBAN TREE MANAGEMENT

N



Appendix I (**7** of 9) – Tree Protection Plan – New Darby and Joan

From New Darby and Joan Site Plan South L2, **Drawing No. DA2.06**, issue 5, Plot date 24/11/2009, Scale 1:200 @ A1 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

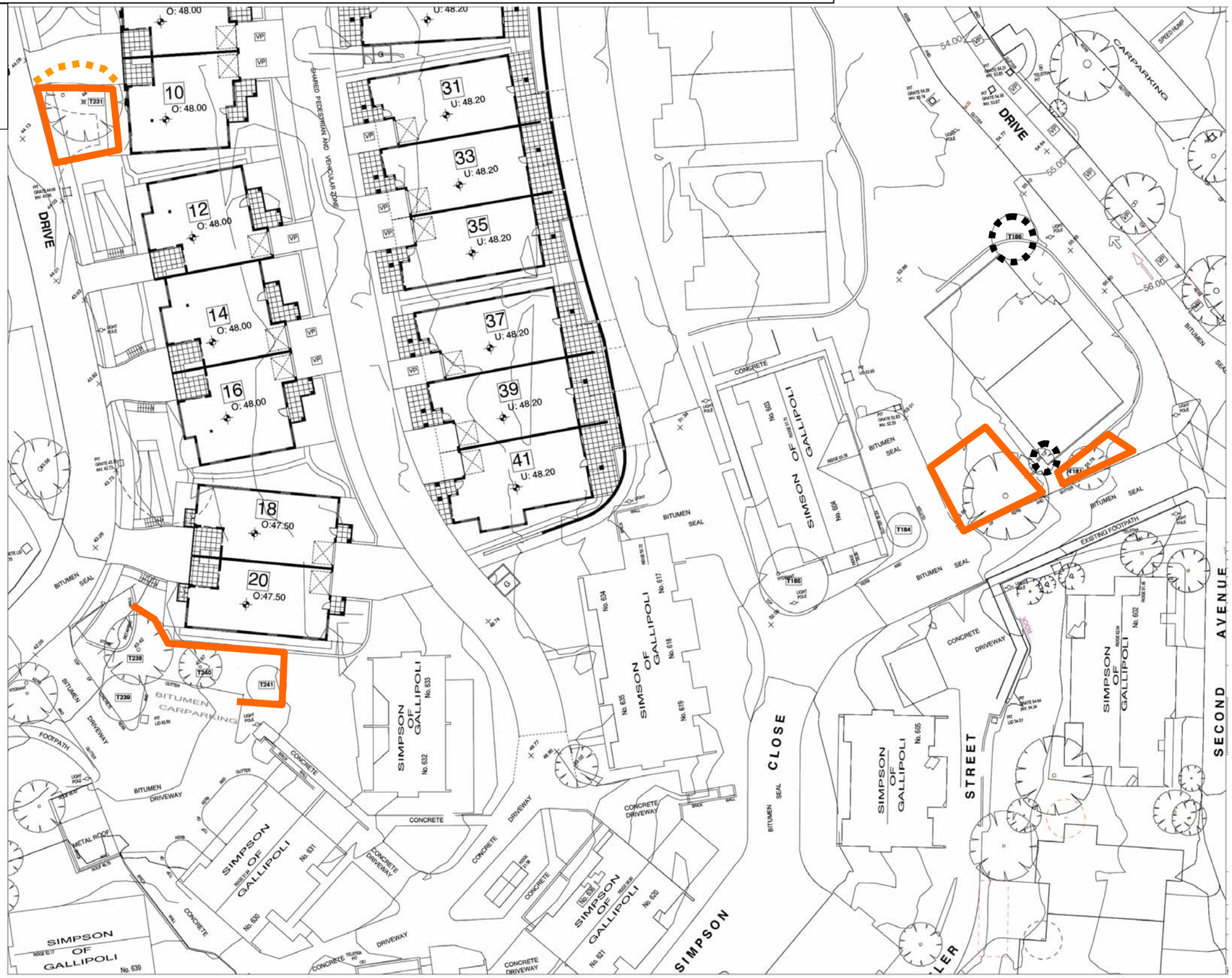
- EXISTING LEVELS
- PROPOSED LEVELS
- EXISTING ROAD
- NEW PAVED PEDESTRIAN ZONE
- U: 62.00 UNIT FLOOR LEVELS (UNDER)
- O: 65.00 UNIT FLOOR LEVELS (OVER)
- T60 TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- VP VISITOR PARKING
- LB 22 LETTER BOX
- G GARBAGE BIN STORE

Legend

Tree Protection Zone (TPZ), fencing with setbacks as indicated, or other protection measures or works as indicated.

Tree Protection Zone, area of special protection measures or works outside of or instead of a fenced area.

URBAN TREE MANAGEMENT



Appendix I (**8** of 9) – Tree Protection Plan – New Darby and Joan

From New Darby and Joan Site Plan North L2, **Drawing No. DA2.05**, issue 5, Plot date 24/11/2009, Scale 1:200 @ A1 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

- 68.34 — EXISTING LEVELS
- 61.00 — PROPOSED LEVELS
- EXISTING ROAD
- NEW PAVED PEDESTRIAN ZONE
- U: 62.00 — UNIT FLOOR LEVELS (UNDER)
- O: 65.00 — UNIT FLOOR LEVELS (OVER)
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- VP — VISITOR PARKING
- LB 22 — LETTER BOX
- G — GARBAGE BIN STORE

Legend

Tree Protection Zone (TPZ), fencing with setbacks as indicated, or other protection measures or works as indicated.

Tree Protection Zone, area of special protection measures or works outside of or instead of a fenced area.

URBAN TREE MANAGEMENT

N

Appendix I (**9** of 9) – Tree Protection Plan – New Darby and Joan

From New Darby and Joan Site Plan South L1, **Drawing No. DA2.02**, issue 5, Plot date 24/11/2009, Scale 1:200 @ A1 by Young and Metcalf Architects, Building 2, 6A Liverpool Street, Paddington NSW 2021, tel. 9360 9799

LEGEND

- 68.34 — EXISTING LEVELS
- 61.00 — PROPOSED LEVELS
- EXISTING ROAD
- NEW PAVED PEDESTRIAN ZONE
- U: 62.00 — UNIT FLOOR LEVELS (UNDER)
- O: 65.00 — UNIT FLOOR LEVELS (OVER)
- T60 — TREE NUMBERS TO ARBORISTS REPORT
- EXISTING TREES TO BE RETAINED
- VP — VISITOR PARKING
- LB 22 — LETTER BOX
- G — GARBAGE BIN STORE

Legend

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URBAN TREE MANAGEMENT

N