Vegetation Management Plan Precinct 5 Road Crossing and Interim Flood Bund

Prepared for: Lend Lease
Prepared by: Dr M. Runkowski, M. Brett, T. Parnell, K. Richardt
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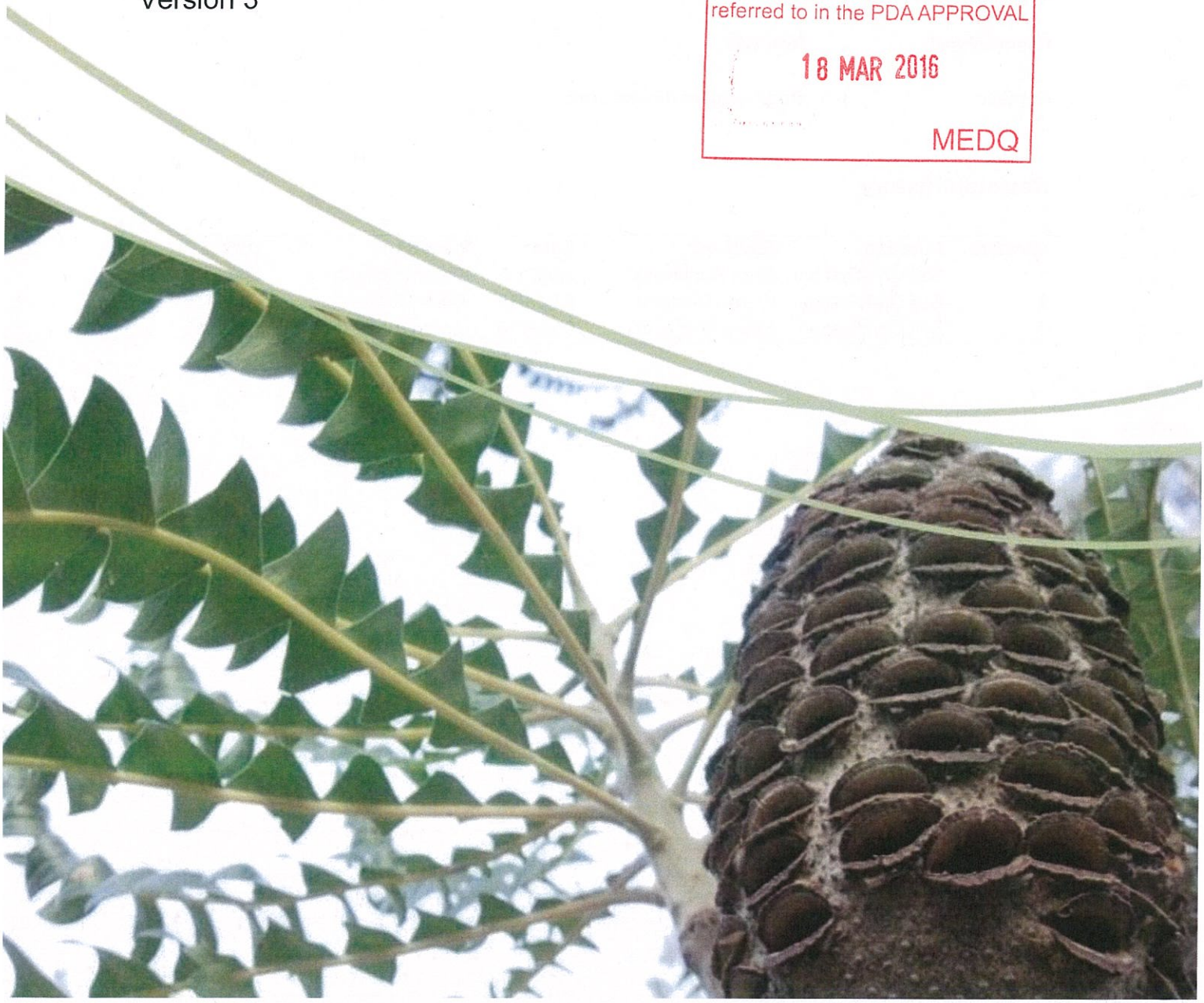

Document control sheet

Yarrabilba – Precinct 5 Road Crossing and Interim Flood Bund

Title:	**Vegetation Management Plan**
Authors:	**Dr M. Runkowski, M. Brett, T. Parnell, K. Richardt**
Mapping:	**Dr M. Runkowski**
File reference:	**NCO11-0011 Yarrabilba**
Project leader:	**K. Richardt**
Phone:	**+(61) 7 557 65568, +(61) 4 1541 3408**
Email:	**kieran@natura-consulting.com**
Client:	**Lend Lease**
Client contact:	**Rob Ball**
Contact:	**Rob.ball@lendlease.com**

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1	Self Certification	Mark Runkowski	26/02/15	Kieran Richardt	26/02/15
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1. Background

Natura Consulting was engaged by Lend Lease, to carry out a Vegetation Management Plan (VMP) within a small section of Precinct 5 of the Yarrabilba development. Clearing is proposed within this area for the purposes of an interim flood bund and road crossing, as part of the wider Yarrabilba development. This VMP is provided for the purpose of identifying flora and fauna values within and adjacent to areas of the proposed works.

This VMP has been prepared in accordance with the endorsed OSS (7 March 2014) for Yarrabilba, particularly Section 3 of the OSS, which are outlined in Section 1 and Section 11 of this report, and the recommendations for achieving the outcomes sought within the OSS are listed in Section 6, 7 and 8 of this report.

The interim flood bund is for flood management/mitigation purposes for downstream catchment affecting development footprint within the northern section of the Yarrabilba site, which is under construction. The design and construction must incorporate fauna passage requirements as outlined in the Endorsed Fauna Corridor Master Plan and fish passage requirements as outlined under the Department of Agriculture Fisheries and Forestry Code for self-assessable development waterway barrier works.

It is also noted that the interim flood bund bisects a section of the southern Fauna Corridor, however, it has been strategically placed to ensure it is located within the same footprint as a proposed road crossing. Given this, it is proposed that the clearing extent required for the flood bund is no greater than what is required to construct the proposed road crossing which will replace the flood bund as the development progresses. It must be noted that, to protect environmental values associated with this section of the fauna corridor, no additional road crossings will be permitted within the vicinity of this crossing in the future.

2. Survey Methods

Natura Consulting ecologists carried out a flora and fauna survey during February 2016 within the proposed interim flood bund footprint area. A number of steps were undertaken during this assessment, including:

1. Identifying species, characteristics and mapping trees to be removed and those in close proximity to earthworks that may be retained

2. Recording incidental fauna sightings and observations as well as undertaking camera trapping during the assessment period

3. Providing input into potential design, location of earthworks and suggested improvements to conserve ecological values

4. Providing recommendations and mitigation measures to minimise impacts of development on flora and fauna

The assessment was undertaken within the interim flood bund and future road crossing footprint and the following information was captured:

- GPS locations of native trees within the survey area

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- The significance of the vegetation was determined, with regards to presence of habitat, hollows, mature trees etc
- Dominant species were identified in each of the upper, mid and lower stratum (where present)
- Average height, Diameter at Breast Height (DBH) and trunk spacing for each stratum was ascertained
- Identification of fauna species through direct sightings, vocalisation, scats and tracks.

During the survey, locations of trees were recorded using a GPS. Information was captured including species, height, spread, health, and habitat values (hollows, scratching, arboreal termite nests, scats, bird nests etc).

3. Regional Ecosystem Mapping

The Queensland Herbarium Regional Ecosystem (RE) GIS mapping shows that vegetation in the surrounding areas (within 1 to 2 km) predominately contains:

Table 1: Regional Ecosystems

RE Code	Short Description	Status
12.9-10.4	*Eucalyptus racemosa woodland on sedimentary rocks*	No concern at present
12.9-10.12	*Eucalyptus seeana, Corymbia intermedia, Angophora leiocarpa woodland on sedimentary rocks*	Endangered RE
12.11.12	*Araucarian complex microphyll vine forest on metamorphics +/- interbedded volcanics; usually northern half of bioregion*	Of concern RE
12.3.7	*Eucalyptus tereticornis, Callistemon viminalis, Casuarina cunninghamiana fringing forest*	Least concern
12.11.5	*Open forest complex with Corymbia citriodora, Eucalyptus siderophloia, E. major on metamorphics +/- interbedded volcanics*	Least concern
12.9-10.17	*Open forest complex often with Eucalyptus acmenoides, E. major, E. siderophloia +/- Corymbia citriodora on sedimentary rocks*	Least concern
12.9-10.19	*Eucalyptus fibrosa subsp. fibrosa open forest on sedimentary rocks*	Least concern
12.3.11	*Eucalyptus siderophloia, E. tereticornis, Corymbia intermedia open forest on alluvial plains usually near coast*	Of concern RE

The vegetation within the Precinct 5 road crossing and interim flood bund area does not contain vegetation that is of a height or cover to be considered Regional Ecosystem (RE) vegetation, however is to the south of an area mapped as RE 12.3.11. This mapped RE will not be impacted during these works.

4. Ground Truthed Vegetation

Two main vegetation types exist within the subject area. The majority of the subject area has been cleared within the last 12 months for agricultural purposes as part of the leased balance of land. Some small areas have not been recently cleared, which appears to have been determined

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by the frequency of inundation events. Standing water was noted at approximately 25 m AHD, with an ephemeral zone extending to approximately 27 m AHD. Within the ephemeral zone, *Melaleuca linarifolia* dominates with a mixed graminoid groundlayer.

Above the 27 m AHD, some scattered canopy species remain post clearing, however the majority of the land is dominated by regenerating pioneer species such as *Acacia* spp. The native component of this scattered canopy vegetation is dominated by species including *Lophostemon suaveolens, Angophora leiocarpa* and *Eucalyptus tereticornis,* with less dominant species such as *Corymbia intermedia, Eucalyptus seeana and Eucalyptus siderophloia*. Overall, the site is regenerating naturally in most areas. The understorey is predominately Acacia and Melaleuca regrowth (0.5 m to 2.5 m high), with patches of *Lantana camara,* regenerating cohorts of native species, immature *Pinus elliottii* and mixed graminoids.

A drainage line is within proximity to the subject area which has been identified as future open space area and/or fauna movement corridor. This contains likely habitat features for wetland species such as Eastern Dwarf Tree-frog (*Litoria fallax*) and Buff-banded Rail (*Gallirallus philippensis*) and the ephemeral wetland seems contain large cohorts of native aquatic and riparian vegetation. Attention is to be given to these species, and other similar species, during clearing works and fauna friendly design incorportated into the ultimate road crossing design as per the conditions set out it the endorsed OSS (7 March 2014) for Yarrabilba.

5. Individual and Significant Trees

Assessment for extant significant native trees was undertaken within the survey area. A number of semi-mature native canopy trees were identified within the earthworks footprint, although many large introduced pines (*Pinus elliottii*) were also observed.

Table 2: Native Trees Identified the Survey Area:

Tree #	Species	Height (m)	Spread (m)	DBH (cm)	Habitat	Health	Survey Tag #
1	*Melaleuca linariifolia*	5.5	3.5	20	No hollows	good	Tag 22
2	*Melaleuca linariifolia*	6	4.5	20	No hollows	good	Tag 23
3	*Melaleuca linariifolia*	7	5	28	No hollows	good	Tag 24
4	*Melaleuca linariifolia*	6	3	22	No hollows	good	Tag 25
5	*Melaleuca linariifolia*	5	2.8	21	No hollows	good	Tag 26
6	*Eucalyptus tereticornis*	10	2.4	32	No hollows	good	Tag 27
7	*Melaleuca linariifolia*	6.5	4.5	26	No hollows	good	Tag 28
8	*Lophostemon suaveolens*	7	4	18	No hollows	good	No tag
9	*Corymbia intermedia*	5.5	2.5	12	No hollows	good	No tag
10	*Melaleuca linariifolia*	4.5	3.5	12	No hollows	good	No tag
11	*Eucalyptus tereticornis*	7	3	18	No hollows	good	No tag
12	*Melaleuca linariifolia*	5.5	3.5	20	No hollows	good	Tag 29
13	*Melaleuca linariifolia*	5	2	18	No hollows	good	No tag
14	*Lophostemon suaveolens*	6	3	12	No hollows	good	No tag
15	*Lophostemon suaveolens*	7	2.5	12	No hollows	good	No tag
16	*Lophostemon suaveolens*	5	4	12	No hollows	good	No tag
17	*Melaleuca linariifolia*	6	1	12	No hollows	good	No tag
18	*Melaleuca linariifolia*	6	2	15	No hollows	good	No tag
19	*Melaleuca linariifolia*	5.5	1.5	15	No hollows	good	No tag

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Tree #	Species	Height (m)	Spread (m)	DBH (cm)	Habitat	Health	Survey Tag #
20	*Melaleuca linariifolia*	6	2	18	No hollows	good	No tag
21	*Melaleuca linariifolia*	5	1	10	No hollows	good	No tag
22	*Melaleuca linariifolia*	4	2	10	No hollows	good	No tag
23	*Melaleuca linariifolia*	6	3	18	No hollows	good	No tag
24	*Melaleuca linariifolia*	5.5	3.5	10	No hollows	good	No tag
25	*Lophostemon suaveolens*	5.5	2.5	10	No hollows	good	No tag
26	*Lophostemon suaveolens*	5	1	10	No hollows	good	No tag
27	*Angophora leiocarpa*	5.5	2.5	12	No hollows	good	No tag
28	*Melaleuca decora*	7.5	4	20	No hollows	good	Tag 30
29	*Melaleuca linariifolia*	5	2	15	No hollows	good	No tag
30	*Lophostemon suaveolens*	7	3	15	No hollows	good	No tag
31	*Melaleuca linariifolia*	5	3	12	No hollows	good	No tag
32	*Melaleuca linariifolia*	5.5	3	15	No hollows	good	No tag
33	*Lophostemon suaveolens*	5	2.5	10	No hollows	good	No tag
34	*Melaleuca decora*	4	3	12	No hollows	good	No tag
35	*Melaleuca linariifolia*	5	3.5	20	No hollows	good	Tag 40
36	*Angophora leiocarpa*	9.2	4.5	18	No hollows	good	No tag
37	*Lophostemon suaveolens*	9	4	18	No hollows	good	No tag
38	*Melaleuca linariifolia*	5.5	4	22	No hollows	good	Tag 43
39	*Lophostemon suaveolens*	5.5	4	15	No hollows	good	No tag
40	*Lophostemon suaveolens*	5	2	10	No hollows	good	No tag
41	*Lophostemon suaveolens*	6	2.5	12	No hollows	good	No tag
42	*Melaleuca linariifolia*	5	2.5	12	No hollows	good	No tag
43	*Lophostemon suaveolens*	4.5	3	10	No hollows	good	No tag
44	*Melaleuca linariifolia*	4.5	2	12	No hollows	good	No tag
45	*Melaleuca decora*	4	3.5	12	No hollows	good	No tag
46	*Melaleuca decora*	3.5	1	10	No hollows	good	No tag
47	*Lophostemon suaveolens*	4	2.5	10	No hollows	good	No tag
48	*Eucalyptus tereticornis*	9.5	3.5	18	No hollows	good	No tag
49	*Lophostemon suaveolens*	5.5	1.5	10	No hollows	good	No tag
50	*Lophostemon suaveolens*	8	4	15	No hollows	good	No tag
51	*Lophostemon suaveolens*	5	3	10	No hollows	good	No tag
52	*Lophostemon suaveolens*	6	4.5	15	No hollows	good	No tag
53	*Lophostemon suaveolens*	5.5	1.5	12	No hollows	good	No tag
54	*Lophostemon suaveolens*	5.5	1.5	10	No hollows	good	No tag
55	*Lophostemon suaveolens*	5.5	1.5	10	No hollows	good	No tag
56	*Lophostemon suaveolens*	5	1.5	10	No hollows	good	No tag
57	*Lophostemon suaveolens*	9	4	15	No hollows	good	No tag
58	*Lophostemon suaveolens*	8	3	18	No hollows	good	No tag
59	*Lophostemon suaveolens*	4.5	1	10	No hollows	good	No tag
60	*Lophostemon suaveolens*	5.5	3.5	18	No hollows	good	No tag
61	*Lophostemon suaveolens*	6	3	15	No hollows	good	No tag
62	*Lophostemon suaveolens*	6	3	15	No hollows	good	No tag

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Tree #	Species	Height (m)	Spread (m)	DBH (cm)	Habitat	Health	Survey Tag #
63	*Lophostemon suaveolens*	6	3	15	No hollows	good	No tag
64	*Lophostemon suaveolens*	6	3	15	No hollows	good	No tag
65	*Lophostemon suaveolens*	6	3	15	No hollows	good	No tag
66	*Lophostemon suaveolens*	6	3	15	No hollows	good	No tag
67	*Lophostemon suaveolens*	6	3	15	No hollows	good	No tag
68	*Lophostemon suaveolens*	4	1.5	10	No hollows	good	No tag
69	*Lophostemon suaveolens*	4	1.5	10	No hollows	good	No tag
70	*Eucalyptus seeana*	9	4	18	No hollows	good	No tag
71	*Lophostemon suaveolens*	4.5	1	10	No hollows	good	No tag
72	*Lophostemon suaveolens*	6	3	15	No hollows	good	No tag
73	*Lophostemon suaveolens*	6	3	15	No hollows	good	No tag
74	*Lophostemon suaveolens*	6	3	15	No hollows	good	No tag
75	*Lophostemon suaveolens*	10	4	20	No hollows	good	Tag 46
76	*Lophostemon suaveolens*	10.5	4.5	20	No hollows	good	Tag 47
77	*Lophostemon suaveolens*	8.5	3	15	No hollows	good	No tag
78	*Corymbia intermedia*	6.5	1.5	16	No hollows	good	No tag
79	*Eucalyptus tereticornis*	11.5	3	22	No hollows	good	Tag 48
80	*Lophostemon suaveolens*	9	4	16	No hollows	good	No tag
81	*Lophostemon suaveolens*	5.5	1.5	11	No hollows	good	No tag
82	*Lophostemon suaveolens*	5.5	1.5	11	No hollows	good	No tag
83	*Lophostemon suaveolens*	5.5	1.5	11	No hollows	good	No tag
84	*Lophostemon suaveolens*	5.5	1.5	11	No hollows	good	No tag
85	*Lophostemon suaveolens*	5.5	1.5	11	No hollows	good	No tag
86	*Angophora leiocarpa*	9	3.5	20	No hollows	good	Tag 50
87	*Lophostemon suaveolens*	5	1.5	12	No hollows	good	No tag
88	*Lophostemon suaveolens*	7.5	3.5	18	No hollows	good	No tag
89	*Angophora leiocarpa*	8.5	3	18	No hollows	good	No tag
90	*Eucalyptus tereticornis*	8	2	12	No hollows	good	No tag
91	*Eucalyptus tereticornis*	9.5	2	12	No hollows	good	No tag
92	*Eucalyptus tereticornis*	5	1	10	No hollows	good	No tag
93	*Melaleuca linarifolia*	6	1	14	No hollows	good	No tag
94	*Melaleuca linarifolia*	6	4	20	No hollows	good	No tag
96	*Melaleuca linarifolia*	4	2.5	15	No hollows	good	No tag
97	*Melaleuca decora*	6	2	22	No hollows	good	No tag
98	*Eucalyptus seeana*	15	8	35	No hollows	good	No tag
99	*Melaleuca linarifolia*	4	1.5	10	No hollows	good	No tag
100	*Lophostemon suaveolens*	5.5	2.5	15	No hollows	good	No tag
101	*Lophostemon suaveolens*	5	2	10	No hollows	good	No tag
102	*Lophostemon suaveolens*	6	3	15	No hollows	good	No tag
103	*Melaleuca linarifolia*	9	2.5	12	No hollows	good	No tag
104	*Melaleuca linarifolia*	6	3	18	No hollows	good	No tag
105	*Melaleuca linarifolia*	5	2.5	12	No hollows	good	No tag
106	*Melaleuca linarifolia*	4	2.5	10	No hollows	good	No tag

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Tree #	Species	Height (m)	Spread (m)	DBH (cm)	Habitat	Health	Survey Tag #
107	*Eucalyptus tereticornis*	9	4	15	No hollows	good	No tag
108	*Lophostemon suaveolens*	8	3	18	No hollows	good	No tag
109	*Melaleuca linarifolia*	5	3	18	No hollows	good	No tag
110	*Lophostemon suaveolens*	5	3	12	No hollows	good	No tag
111	*Lophostemon suaveolens*	5	2.5	12	No hollows	good	No tag
112	*Lophostemon suaveolens*	8	3	15	No hollows	good	No tag
113	*Eucalyptus tereticornis*	8	4	18	No hollows	good	No tag
114	*Eucalyptus tereticornis*	8	4	20	No hollows	good	No tag
115	*Melaleuca linarifolia*	7	4	25	No hollows	good	No tag
116	*Melaleuca linarifolia*	4	2	10	No hollows	good	No tag
117	*Lophostemon suaveolens*	5	3	12	No hollows	good	No tag
118	*Melaleuca linarifolia*	5	3	10	No hollows	good	No tag
119	*Lophostemon suaveolens*	8	5	18	No hollows	good	No tag
120	*Eucalyptus tereticornis*	5	2	10	No hollows	good	No tag
121	*Lophostemon suaveolens*	5	2	10	No hollows	good	No tag
122	*Melaleuca linarifolia*	4	3	12	No hollows	good	No tag
123	*Melaleuca linarifolia*	5.5	4	29	No hollows	good	No tag
124	*Angophora leiocarpa*	5	3	10	No hollows	good	No tag
125	*Eucalyptus tereticornis*	5.5	2	12	No hollows	good	No tag
126	*Melaleuca linariifolia*	4	3	12	No hollows	good	No tag
127	*Lophostemon suaveolens*	5	2	12	No hollows	good	No tag
128	*Lophostemon suaveolens*	6	4	15	No hollows	good	No tag
129	*Melaleuca linarifolia*	4	1	10	No hollows	good	No tag
130	*Lophostemon suaveolens*	5	2	12	No hollows	good	No tag
131	*Melaleuca linarifolia*	6	2	15	No hollows	good	No tag
132	*Melaleuca linarifolia*	6	4	20	No hollows	good	No tag
133	*Lophostemon suaveolens*	5	3	12	No hollows	good	No tag
134	*Melaleuca linarifolia*	7	4	18	No hollows	good	No tag
135	*Melaleuca linarifolia*	7	3	18	No hollows	good	No tag
136	*Melaleuca linarifolia*	8	3	22	No hollows	good	No tag
137	*Melaleuca linarifolia*	7	3	18	No hollows	good	No tag
138	*Melaleuca linarifolia*	5	1	10	No hollows	good	No tag
139	*Lophostemon suaveolens*	6	2	12	No hollows	good	No tag
140	*Melaleuca linarifolia*	5	1	10	No hollows	good	No tag
141	*Lophostemon suaveolens*	6	3	15	No hollows	good	No tag
142	*Melaleuca linariifolia*	5	1	10	No hollows	good	No tag
143	*Melaleuca linariifolia*	5	1	10	No hollows	good	No tag
144	*Melaleuca linariifolia*	5	1	10	No hollows	good	No tag
145	*Melaleuca linariifolia*	5	1	10	No hollows	good	No tag
146	*Lophostemon suaveolens*	6	2	12	No hollows	good	No tag
147	*Lophostemon suaveolens*	6	2	12	No hollows	good	No tag
148	*Lophostemon suaveolens*	6	2	12	No hollows	good	No tag
149	*Lophostemon suaveolens*	6	2	12	No hollows	good	No tag

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Tree #	Species	Height (m)	Spread (m)	DBH (cm)	Habitat	Health	Survey Tag #
150	*Lophostemon suaveolens*	6	2	12	No hollows	good	No tag
151	*Melaleuca linariifolia*	5	1	10	No hollows	good	No tag
152	*Melaleuca linariifolia*	5	1	10	No hollows	good	No tag
153	*Lophostemon suaveolens*	6	3	15	No hollows	good	No tag
154	*Melaleuca linariifolia*	5	1	10	No hollows	good	No tag
155	*Melaleuca linariifolia*	5	1	10	No hollows	good	No tag
156	*Melaleuca decora*	5	1	10	No hollows	good	No tag
157	*Melaleuca linariifolia*	5	1	10	No hollows	good	No tag
158	*Melalueca decora*	7	3	18	No hollows	good	No tag
159	*Melaleuca linariifolia*	8	3	22	No hollows	good	No tag
160	*Melaleuca decora*	5	1	10	No hollows	good	No tag
161	*Melaleuca linarifolia*	8	3	22	No hollows	good	No tag
162	*Eucalyptus tereticornis*	10	3	12	No hollows	good	No tag
163	*Melaleuca linariifolia*	8	3	22	No hollows	good	No tag
164	*Melaleuca linariifolia*	7	3	18	No hollows	good	No tag
165	*Melaleuca linariifolia*	7	3	18	No hollows	good	No tag
166	*Eucalyptus tereticornis*	7	3	21	No hollows	good	No tag
167	*Eucalyptus tereticornis*	9	4	15	No hollows	good	No tag
168	*Eucalyptus tereticornis*	8	4	18	No hollows	good	No tag
169	*Eucalyptus tereticornis*	9	4	22	No hollows	good	No tag
170	*Eucalyptus tereticornis*	8	3	16	No hollows	good	No tag
171	*Lophostemon suaveolens*	6	3	12	No hollows	good	No tag
172	*Lophostemon suaveolens*	6	4	15	No hollows	good	No tag
173	*Allocasuarina torrulosa*	9	4	18	No hollows	good	No tag
174	*Angophora leiocarpa*	7.5	2.5	10	No hollows	good	No tag
175	*Lophostemon suaveolens*	7.5	3	15	No hollows	good	No tag
176	*Lophostemon suaveolens*	7.5	3	12	No hollows	good	No tag
177	*Lophostemon suaveolens*	8	4	15	No hollows	good	No tag
178	*Melaleuca linariifolia*	4.5	4.5	10	No hollows	good	No tag
179	*Angophora leiocarpa*	7	2.5	12	No hollows	good	No tag
180	*Fallen dead wood*	0.5	6	0	No hollows	good	No tag
181	*Lophostemon suaveolens*	7	3	12	No hollows	good	No tag
182	*Melaleuca linariifolia*	6	4	21	No hollows	good	No tag
183	*Melaleuca linariifolia*	7	3	18	No hollows	good	No tag
184	*Lophostemon suaveolens*	6	3	12	No hollows	good	No tag
185	*Lophostemon suaveolens*	5	2	10	No hollows	good	No tag
186	*Eucalyptus tereticornis*	7	4	18	No hollows	good	No tag
187	*Eucalyptus tereticornis*	7	3.5	15	No hollows	good	No tag
188	*Lophostemon suaveolens*	6	3	12	No hollows	good	No tag
189	*Eucalyptus tereticornis*	4.5	2	12	No hollows	good	No tag
190	*Eucalyptus tereticornis*	7	3.5	15	No hollows	good	No tag
191	*Lophostemon suaveolens*	5	3	10	No hollows	good	No tag
192	*Lophostemon suaveolens*	6	3.5	12	No hollows	good	No tag

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Tree #	Species	Height (m)	Spread (m)	DBH (cm)	Habitat	Health	Survey Tag #
193	*Melaleuca linariifolia*	4.5	2.5	10	No hollows	good	No tag
194	*Lophostemon suaveolens*	5	2.5	12	No hollows	good	No tag
195	*Lophostemon suaveolens*	7	3	15	No hollows	good	No tag
196	*Lophostemon suaveolens*	7	3	15	No hollows	good	No tag
197	*Lophostemon suaveolens*	7	3	15	No hollows	good	No tag
198	*Lophostemon suaveolens*	6.5	3.5	15	No hollows	good	No tag
199	*Angophora leiocarpa*	9	3.5	18	No hollows	good	No tag
200	*Lophostemon suaveolens*	5.5	2.5	15	No hollows	good	No tag
201	*Lophostemon suaveolens*	4.5	2	12	No hollows	good	No tag
202	*Eucalyptus tereticornis*	8	2	12	No hollows	good	No tag
203	*Eucalyptus tereticornis*	9.5	2	12	No hollows	good	No tag
204	*Eucalyptus tereticornis*	7	2	10	No hollows	good	No tag
205	*Eucalyptus tereticornis*	5	1	10	No hollows	good	No tag
206	*Melaleuca linariifolia*	6	1	14	No hollows	good	No tag
207	*Melaleuca linariifolia*	6	4	20	No hollows	good	No tag
209	*Melaleuca linarifolia*	4	2.5	15	No hollows	good	No tag
210	*Melaleuca decora*	6	2	22	No hollows	good	No tag
211	*Eucalyptus seeana*	15	8	35	No hollows	good	No tag
212	*Melaleuca linariifolia*	4	1.5	10	No hollows	good	No tag
213	*Melaleuca linariifolia*	4	1.5	10	No hollows	good	No tag
214	*Lophostemon suaveolens*	8	2.5	15	No hollows	good	No tag
215	*Melaleuca linariifolia*	5	3	18	No hollows	good	No tag
216	*Lophostemon suaveolens*	5	2.5	12	No hollows	good	No tag
217	*Lophostemon suaveolens*	5	2.5	12	No hollows	good	No tag
218	*Lophostemon suaveolens*	8	2.5	15	No hollows	good	No tag
219	*Eucalyptus tereticornis*	8	3.5	18	No hollows	good	No tag
220	*Eucalyptus tereticornis*	8	4	20	No hollows	good	No tag
221	*Melaleuca linariifolia*	7	4	25	No hollows	good	No tag
222	*Melaleuca linariifolia*	3.5	1.5	10	No hollows	good	No tag
223	*Lophostemon suaveolens*	5	2.5	12	No hollows	good	No tag
224	*Melaleuca linariifolia*	5	3	10	No hollows	good	No tag
225	*Lophostemon suaveolens*	8	5	18	No hollows	good	No tag
226	*Eucalyptus tereticornis*	5	2	10	No hollows	good	No tag
227	*Lophostemon suaveolens*	6	2.5	12	No hollows	good	No tag
228	*Melaleuca linariifolia*	4	3	12	No hollows	good	No tag
229	*Melaleuca linariifolia*	5.5	4	28	No hollows	good	No tag
230	*Angophora leiocarpa*	4.5	2.5	10	No hollows	good	No tag
231	*Lophostemon suaveolens*	5	2	12	No hollows	good	No tag
232	*Lophostemon suaveolens*	6	4	15	No hollows	good	No tag
233	*Melaleuca linariifolia*	3.5	1	10	No hollows	good	No tag
234	*Lophostemon suaveolens*	6	3	15	No hollows	good	No tag
235	*Melaleuca linariifolia*	6	2	15	No hollows	good	No tag
236	*Melaleuca linariifolia*	6	3.5	20	No hollows	good	No tag

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Tree #	Species	Height (m)	Spread (m)	DBH (cm)	Habitat	Health	Survey Tag #
237	*Lophostemon suaveolens*	5	2.5	12	No hollows	good	No tag
238	*Melaleuca linariifolia*	7	3.5	20	No hollows	good	No tag
239	*Melaleuca linariifolia*	7	3	18	No hollows	good	No tag
240	*Melaleuca linariifolia*	8	3	22	No hollows	good	No tag
241	*Melaleuca linariifolia*	8	3	22	No hollows	good	No tag
242	*Melaleuca linariifolia*	7	3	18	No hollows	good	No tag
243	*Melaleuca linariifolia*	7	3	18	No hollows	good	No tag
244	*Melaleuca linariifolia*	5	1	10	No hollows	good	No tag
245	*Melaleuca linariifolia*	5	1	10	No hollows	good	No tag
246	*Melaleuca linariifolia*	5	1	10	No hollows	good	No tag
247	*Melaleuca linariifolia*	5	1	10	No hollows	good	No tag
248	*Melaleuca linariifolia*	5	1	10	No hollows	good	No tag
249	*Melaleuca linariifolia*	5	1	10	No hollows	good	No tag
250	*Lophostemon suaveolens*	6	2	12	No hollows	good	No tag
251	*Lophostemon suaveolens*	6	2	12	No hollows	good	No tag
252	*Lophostemon suaveolens*	6	2	12	No hollows	good	No tag
253	*Lophostemon suaveolens*	6	2	12	No hollows	good	No tag
254	*Lophostemon suaveolens*	6	2	12	No hollows	good	No tag
255	*Melaleuca linariifolia*	5	1	10	No hollows	good	No tag
256	*Melaleuca linariifolia*	5	1	10	No hollows	good	No tag
257	*Lophostemon suaveolens*	6	3	15	No hollows	good	No tag
258	*Melaleuca decora*	5	1	10	No hollows	good	No tag
259	*Melaleuca linariifolia*	8	3	22	No hollows	good	No tag
260	*Eucalyptus tereticornis*	9.5	3	12	No hollows	good	No tag
261	*Eucalyptus tereticornis*	7	3	21	No hollows	Axe scar	No tag
262	*Eucalyptus tereticornis*	9	4	15	No hollows	good	No tag
263	*Eucalyptus tereticornis*	8	4	18	No hollows	good	No tag
264	*Eucalyptus tereticornis*	9	4	22	No hollows	good	No tag
265	*Eucalyptus tereticornis*	8	3	16	No hollows	good	No tag
266	*Lophostemon suaveolens*	6	3	12	No hollows	good	No tag
267	*Lophostemon suaveolens*	6	4	15	No hollows	good	No tag
268	*Angophora leiocarpa*	7.5	2.5	10	No hollows	good	No tag
269	*Lophostemon suaveolens*	7.3	3	15	No hollows	good	No tag
270	*Lophostemon suaveolens*	7.5	3	12	No hollows	good	No tag
271	*Lophostemon suaveolens*	8	4	15	No hollows	good	No tag
272	*Melaleuca linariifolia*	4.5	4.5	10	No hollows	good	No tag
273	*Eucalyptus tereticornis*	7	4	18	No hollows	good	No tag
274	*Eucalyptus tereticornis*	7	3.5	15	No hollows	good	No tag
275	*Lophostemon suaveolens*	6	3	12	No hollows	good	No tag
276	*Eucalyptus tereticornis*	4.5	2	12	No hollows	good	No tag
277	*Eucalyptus tereticornis*	7	3.5	15	No hollows	good	No tag
278	*Lophostemon suaveolens*	5	3	10	No hollows	good	No tag
279	*Lophostemon suaveolens*	6	3.5	12	No hollows	good	No tag

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Tree #	Species	Height (m)	Spread (m)	DBH (cm)	Habitat	Health	Survey Tag #
280	*Melaleuca linariifolia*	4.5	2.5	10	No hollows	good	No tag
281	*Lophostemon suaveolens*	5	2.5	12	No hollows	good	No tag
282	*Lophostemon suaveolens*	7	3	15	No hollows	good	No tag
283	*Lophostemon suaveolens*	7	3	15	No hollows	good	No tag
284	*Lophostemon suaveolens*	7	3	15	No hollows	good	No tag
285	*Lophostemon suaveolens*	6.5	3.5	15	No hollows	good	No tag
286	*Angophora leiocarpa*	9	3.5	18	No hollows	good	No tag
287	*Lophostemon suaveolens*	5.5	2.5	15	No hollows	good	No tag
288	*Lophostemon suaveolens*	4.5	2	12	No hollows	good	No tag
289	*Eucalyptus tereticornis*	21	10	130	Potential hollows	good	Tag 51
290	*Eucalyptus tereticornis*	16	8	40	No hollows	good	Tag 52
291	*Corymbia intermedia*	5	1	12	No hollows	good	No tag
292	*Eucalyptus siderophloia*	8	3	15	No hollows	good	No tag
293	*Lophostemon suaveolens*	6	3	15	No hollows	good	No tag
294	*Lophostemon suaveolens*	6	1	10	No hollows	good	No tag
295	*Lophostemon suaveolens*	6	3	15	No hollows	good	No tag
296	*Lophostemon suaveolens*	6	3	15	No hollows	good	No tag
297	*Angophora leiocarpa*	5	1	10	No hollows	good	No tag
298	*Lophostemon suaveolens*	8	3	15	No hollows	good	No tag
299	*Lophostemon suaveolens*	5	3	10	No hollows	good	No tag
300	*Lophostemon suaveolens*	6	2	10	No hollows	good	No tag
301	*Lophostemon suaveolens*	6	2	12	No hollows	good	No tag
302	*Lophostemon suaveolens*	7	3	15	No hollows	good	No tag
303	*Lophostemon suaveolens*	6	1	12	No hollows	good	No tag
304	*Lophostemon suaveolens*	6	2	10	No hollows	good	No tag
305	*Lophostemon suaveolens*	7	3	13	No hollows	good	No tag
306	*Lophostemon suaveolens*	6	2	12	No hollows	good	No tag
307	*Lophostemon suaveolens*	6	3	12	No hollows	good	No tag
308	*Lophostemon suaveolens*	7	3	15	No hollows	good	No tag
309	*Lophostemon suaveolens*	7	4	12	No hollows	good	No tag
310	*Lophostemon suaveolens*	7	4	15	No hollows	good	No tag
311	*Lophostemon suaveolens*	7	4	18	No hollows	good	No tag
312	*Angophora leiocarpa*	8	2	12	No hollows	good	No tag
313	*Angophora leiocarpa*	11	3	15	No hollows	good	No tag
314	*Eucalyptus siderophloia*	7	4	15	No hollows	good	No tag
315	*Eucalyptus siderophloia*	8	3	12	No hollows	good	No tag
316	*Eucalyptus siderophloia*	10	4	18	No hollows	good	No tag
317	*Eucalyptus siderophloia*	6	2	10	No hollows	good	No tag
318	*Eucalyptus siderophloia*	7	2	12	No hollows	good	No tag
319	*Eucalyptus siderophloia*	7	2	12	No hollows	good	No tag
320	*Eucalyptus siderophloia*	8	3	18	No hollows	good	No tag
321	*Lophostemon suaveolens*	6	2	10	No hollows	good	No tag
322	*Lophostemon suaveolens*	5	2	12	No hollows	good	No tag

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Tree #	Species	Height (m)	Spread (m)	DBH (cm)	Habitat	Health	Survey Tag #
323	*Lophostemon suaveolens*	6	3	10	No hollows	good	No tag
324	*Lophostemon suaveolens*	4	2	10	No hollows	good	No tag
325	*Lophostemon suaveolens*	9	2	12	No hollows	good	No tag
326	*Lophostemon suaveolens*	8	3	10	No hollows	good	No tag
327	*Eucalyptus siderophloia*	4	3	10	No hollows	good	No tag
328	*Lophostemon suaveolens*	4	2	10	No hollows	good	No tag
329	*Lophostemon suaveolens*	5	2	10	No hollows	good	No tag
330	*Lophostemon suaveolens*	5	1	10	No hollows	good	No tag
331	*Lophostemon suaveolens*	5	2	10	No hollows	good	No tag
332	*Lophostemon suaveolens*	7	2	12	No hollows	good	No tag
333	*Eucalyptus siderophloia*	7	2	12	No hollows	good	No tag
334	*Melaleuca decora*	5	2	15	No hollows	good	No tag
335	*Melaleuca decora*	5	2	10	No hollows	good	No tag
336	*Lophostemon suaveolens*	5	2	12	No hollows	good	No tag
337	*Melaleuca linariifolia*	5	2	10	No hollows	good	No tag
338	*Melaleuca decora*	5	2	10	No hollows	good	No tag
339	*Lophostemon suaveolens*	8	3	15	No hollows	good	No tag
340	*Lophostemon suaveolens*	8	4	18	No hollows	good	No tag
341	*Melaleuca linariifolia*	8	4	22	No hollows	good	Tag 53
342	*Melaleuca linariifolia*	6	2	22	No hollows	good	Tag 54

6. Habitat Values

All trees were assessed for habitat values which included collecting data on observations of hollows, scratch marks, exfoliating bark, arboreal termite's nests, bird's nests and animal scats. Some of the assessed vegetation did display evidence of recent arboreal faunal activity, particularly from possums (likely Common Brush-tail Possum (*Trichosurus vulpecula*) and Common Ring-tail Possum (*Pseudocheirus peregrinus*)) and goannas (likely Lace Monitors (*Varanus varius*)).

7. Weed Species

High densities of weeds were identified within the subject area, particularly where additional sunlight and nutrients provide ideal conditions for growth. Historical clearing of the ground stratum and historic changes in land use have encouraged the colonisation of exotic ground layer species. Minimal understorey and ground layer weed species are present amongst the pine-dominated areas.

Table 3: Common weeds identified within the survey area

Botanical Name	Common Name	State Legislation Class
Ageratum houstonianum	Blue billy-goat weed	
Andropogen virginicus	Whiskey grass	
Bidens pilosa	Cobblers Pegs	
Conyza bonariensis	Flax-leaved Fleabane	

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Hypochaeris radicata	Common Cat's-ear	
Lantana camara	Lantana	Class 3
Lantana montevidensis	Creeping Lantana	Class 3
Melinus minutiflora	Molasses grass	
Panicum maximum	Guinea Grass	
Paspalum spp.	Paspalum	
Passiflora subpeltata	White Passion-flower	
Pennisetum alopecuroides	Swamp Foxtail	
Pinus elliottii	Slash Pine	
Richardia brasiliensis	Mexican Clover	
Scoparia dulcis	Licorice weed	
Senna pendula	Easter Cassia	
Solanum mauritianum	Wild Tobacco	
Solanum chrysotrichum	Giant Devil's fig	
Sporobolus fertilis	Giant Parramatta Grass	Class 2
Verbena rigida	Tuberous Vervain	

Pest plant management is legislated by the Queensland State Government under *the Land Protection (Pest and Stock Route) Management Act 2002.* This State legislation directly determines pest plants and regulates their possession, cultivation, sale, and spread.

Pest plants are classified under 3 classes:

- **Class 1 Pest plants** are serious weeds that are either not present or not generally established in Queensland and have the potential to cause extreme damage to economy, social well-being and environment. All landholders are required by law to keep their land free of Class 1 pests.
- **Class 2 Pest plants** are generally established in Queensland and are responsible for the majority of economic and social impacts caused by weeds. Landholders are responsible for treating infestations to prevent spread to other properties and working towards removing the infestation.
- **Class 3 Pest plants** are environmental weeds generally well established in Queensland and are responsible for the majority of environmental impacts caused by weeds. The management objective of all C3 weeds is containment and reduction in and adjacent to Environmentally Significant Areas (ESAs) (*The LP Act 2002* provides a list of criteria by which an ESA is determined).

All weeds will be removed during clearing and civil earthworks.

8. General Vegetation Protection

During construction on site, disturbance to areas of retained vegetation is prohibited. Whereby disturbance includes the following:

- Earthworks, cut, fill and erosion
- Movement and/or storage of machinery and equipment
- Dumping of site waste, including vegetation waste and soil
- Native vegetation removal (directly or indirectly by mechanical removal or herbicide application)
- Introduction of non-native species (weeds).

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Retained vegetation is to be marked with flagging tape or will be located behind vegetation protection/safety fencing as delineated in this plan (refer to Figure 2 for details).

Trees require protection from earth works and construction activities on the site. Adequate protection measures should include, but are not limited to, the following:

- Fenced tree protection zone (TPZ)
- Maintenance of adequate soil moisture levels within root protection zones
- Where required, stem wraps or other devices to protect trunk and branches from damage during specific construction activities
- Compaction bridging to protect tree roots from soil compaction and compression damage
- Correct treatment, under arboricultural supervision, of any roots that may be exposed
- Correct treatment, under arboricultural supervision, of any other damage that may occur.

Tree protection measures and TPZ fencing should be installed before any earthworks or construction activities begin. A pre-start inspection shall be carried out to ensure adequate protection measures are in place.

9. Tree Protection Zone (TPZ)/Safety Fencing

Vegetation protection/safety fencing or similar is to be erected around areas of retained vegetation and individual retained trees, to the outer drip line (or in instances where the drip line will be impacted, to the edge of proposed works). It shall remain in place before and during construction to prevent disturbance of or damage to the retained vegetation, understorey and root zones. Refer to Figure 2 for the location of required tree protection fencing. Fencing must be installed by the civil works contractor and inspected prior to commencement of any works on the subject site. In summary:

- Tree protection/safety fencing must be installed prior to all construction works and must be retained in place during the construction period
- Tree protection/safety fencing will ideally consist of 2-metre high weldmesh temporary builders' fence (relocatable panels) or other approved fencing (refer to Figure 2) to the limit of the canopy drip-line or the edge of proposed works (or as per Australian Standard 4970:2009, where applicable). Alternative fencing materials will be utilised where specific site conditions (such as sloping, boggy or unstable ground) exist.
- When required, fences may be erected around distinct groups of trees or at the limit of works (Fencing trees in groups ensures that the maximum volume of soil shared by forest grown trees is protected during the construction)
- Signs should be erected on the exterior of the fence that clearly indicate the tree protection zone and that no entry is permitted inside the fence
- With few exceptions, work is not permitted within the drip zones of protected vegetation to reduce impacts on surface and feeder roots

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- A 'duty of care' is applied to all contractors and sub-contractors in regard to the protection and retention of indicated trees as noted within this plan

- No removal of trees can occur prior to the endorsement of a VMP (this report), prepared in accordance with the OSS

- The Civil Contractor is to obtain a copy of approval prior to any construction

- Tree removals will be carried out in such a way as to prevent damage to above and below-ground parts of any adjacent trees that are to be retained.

10. Protection of Significant Flora

No significant EVNT species as listed under either the *Nature Conservation Act 1992* or *Environmental Protection (and Biodiversity) Act 1999* were observed within the proposed development footprint.

One tree greater than 50 cm DBH was identified within the works area (tree 289). Discussions with design engineers identify that retention of this tree is possible through modification of the toe of batter within the drip zone of this tree. Given this, tree protection measures for a single tree are to be adhered to as per the conditions of this report (particularly section 9 and Figure 2 relating to tree protection zones).

11. Fauna Assessment and Management

11.1 Desktop assessment

The Queensland Governments wildlife database (Wildlife Online) contains recorded wildlife sighting and listings of flora and fauna in Queensland, and can serve as an indication of what flora and fauna is expected to occur within a defined area. The Wildlife Online search also indicates the Queensland and Australian Conservation status of each taxon under the Qld *Nature Conservation Act 1999* (NC Act) and the Commonwealth *Environment Protection and Biodiversity Act 1999* (EPBC Act) respectively.

A Wildlife Online search of a 5 km radius of the study site for all species, type, status, records and dates was conducted. The full Wildlife Online report is included in Appendix A. Results from the Wildnet and desktop assessment dictated the site assessment methods used during the fauna survey, which are described in the following sections.

11.2 Site Assessment

An assessment for fauna was carried out during the field assessment for the vegetation survey. Specifically this included:

- Observations for evidence of koala
- Observations for native bee hives at the base of suitable habitat trees
- Use of IR camera trapping
- Active searches for and recordings of arboreal fauna activity, during tree canopy measurements, including:
    - Stick and mud nests
    - Termitariums
    - Rooting sites

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- Scratch marks
- Chewings of seed casings from Allocasuarina (indicative of glossy black cockatoo)

The site provides limited habitat value with existing nesting and roosting opportunities for birds and some arboreal mammals. There is scrub and native regrowth growth in areas, which may support reptiles or small terrestrial mammals with loose debris and relatively low numbers of fallen logs. This shrub and ground layer vegetation is likely to support numerous habitats for insects and invertebrates. This in turn provides a feed resource for insectivorous birds such as flycatchers, bee eaters and other omnivorous species. A number of pools and ephemeral drainage areas exist within the site. It is anticipated that these areas provide habitat opportunities for various native frogs and other aquatic fauna species. The following table presents species identified during the survey period and the method of identification.

Table 4: Fauna Species Identified the Survey Area:

FAMILY	Genus and Species	Common Name	Method*	NCA1*	EPBC 2*
AVES					
Artamidae	*Gymnorhina tibicen*	Australian Magpie	O	C	C
Artamidae	*Cracticus torquatus*	Grey Butcherbird	O	C	C
Artamidae	*Cracticus nigrogularis*	Pied Butcherbird	O	C	C
Artamidae	*Strepera graculina*	Pied Currawong	O	C	C
Corvidae	*Corvus orru*	Torresian Crow	O	C	C
Dicruridae	*Rhipidura fuliginosa*	Grey Fantail	O	C	C
Dicruridae	*Grallina cyanoleuca*	Magpie-Lark	O	C	C
Dicruridae	*Rhipidura leucophrys*	Willie Wagtail	O	C	C
Halcyonidae	*Dacelo novaeguineae*	Laughing Kookaburra	O	C	C
Hirundinidae	*Hirundo neoxena*	Welcome Swallow	O	C	C
Maluridae	*Malurus melanocephalus*	Red-backed Fairy-wren	O	C	C
Meliphagidae	*Lichmera indistincta*	Brown Honeyeater	O	C	C
Meliphagidae	*Manorina melanocephala*	Noisy Miner	O	C	C
Meropidae	*Merops ornatus*	Rainbow Bee-eater	O	C	C
Psittacidae	*Trichoglossus haematodus haematodus*	Rainbow Lorikeet	O	C	C
Rallidae	*Gallirallus philippensis*	Buff-banded Rail	O	C	C
Zosteropidae	*Zosterops lateralis*	Silvereye	O	C	C
MAMMALS					
Phalangeridae	*Trichosurus vulpecula*	Common Brushtail Possum	C	C	C
Macropodidae	*Macropus giganteus*	Eastern Grey Kangaroo	O	C	C
Macropodidae	*Macropus rufogriseus*	Red-Necked Wallaby	O	C	C
Canidae	*Vulpes vulpes*	Red Fox	C	C	C
Canidae	*Canis familiaris*	Dog (wild)	C	C	C
Suidae	*Sus scrofa domesticus*	Wild Boar	C	C	C
REPTILES					
Scincidae	*Lampropholis delicata*	Grass Skink	O	C	C
Scincidae	*Cryptoblepharus pulcher*	Elegant Snake-eyed Skink	O	C	C
Varanidae	*Varanus varius*	Lace Monitor	C	C	C
Agamidae	*Physignathus lesueurii*	Eastern Water Dragon	O	C	C
Elapidae	*Pseudonaja textilis*	Eastern Brown Snake	O	C	C

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FAMILY	Genus and Species	Common Name	Method**	NCA1*	EPBC 2*
AMPHIBIANS					
Hylidae	*Litoria fallax*	Eastern dwarf tree frog	V	C	C
Bufonidae	*Rhinella marina*	Cane Toad	O	C	C
Insects					
Libellulidae	*Diplacodes haematodes*	Scarlet Percher	O	C	C

** V= Vocalisations, O= Observed, C= Evidence such as scats, tracks or scratches

Although no EVNT fauna species were observed, the following recommendations shall be adhered to:

- Vegetation is to be removed gradually in a north-west to north-east direction (refer to Figure 1) to allow fauna time to relocate and to allow an uninterrupted path of exit from the site:
  - The clearing of the site will occur in a controlled and precise manner to reduce the direct impacts on any fauna populations within the region
  - Clearing shall occur from developed areas towards areas of vegetation to be retained or bordering the site, using a staged clearing method
  - Due to the location of housing and infrastructure to the west of the subject area, clearing shall be conducted in such a manner that fauna is flushed in an eastward direction. Care must be taken around the previously cleared to ensure fauna escapes in the correct direction
  - Flushing animals towards roads, housing or populated areas shall be avoided
  - Staged clearing is a method of removing trees where operational works are conducted in discrete sections which ensures fauna are provided with sufficient time and space to move from the clearing site of their own accord, without their physical removal by a spotter catcher. This will reduce stress and ensure that fauna is not flushed out into an exposed area or disturbed needlessly
  - A qualified spotter catcher is assigned to each piece of machinery
  - A qualified spotter catcher must be employed to inspect felled trees for arboreal mammals prior to mulching
  - If a tree is identified containing fauna, it must be either allowed to move from the site on its own accord or be removed and relocated by the spotter catcher
  - To improve chances of survival, animals must not be relocated long distances
  - Koalas cannot be physically removed, but must move on their own accord.
- Clearing shall be undertaken in a sequential manner, with fauna management works planned prior to machinery arriving on site for the day.
- Injured fauna to be placed in an adequately ventilated box in a quiet and shady location and taken to Queensland Parks and Wildlife Service (QPWS)/veterinary surgery or registered wildlife carer for treatment.
- If conflicts occur during clearing works, the requirements of the spotter-catcher will take precedence over clearing requirements.

Refer to Figure 1 for direction of clearing. It is crucial that clearing be conducted as per Figure 1 as the site is adjacent to existing areas of previously cleared and/or developed land. All staff must discuss clearing with the Spotter Catcher or Natura Consulting staff prior to commencing works.

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Appendix B provides a summary of Fauna Management Actions, which is to provide to site contractors prior to commencing works. For further details on Koala management, refer to the Yarrabilba Koala Management Plan by Austecology (2012).

12. Mulching of Felled Trees

Cleared trees to be felled should be mulched for use onsite in revegetation and landscape works. Mulch must be allowed to age for at least 6-8 weeks before use to allow the breakdown of the material and the leaching of tannins. Mulch should be stockpiled in an open area. However, the site project manager must ensure it is not stored not within 10 metres of the waterbody (gully) or within a fire risk area. The final location shall confirmed by the civil contractor's site project manager.

13. Road Crossing

To protect environmental values associated with this section of the fauna corridor, no additional road crossings will be permitted within the vicinity of this crossing in the future. It is possible that the road crossing will need to be re-designed in this location to replace the interim flood bund. Given this, any future design will need to incorporate fauna and fish passage requirements as outlined in the Endorsed Fauna Corridor Master Plan and under the Department of Agriculture Fisheries and Forestry Code for self-assessable development waterway barrier works.

14. Certification

This report is consistent with relevant industry standards and clearly identifies a number of conditions relating to:

- Project coordination and prestart meetings
- Tree protection measures during works
- Requirements for vegetation removal
- Vegetation management post works
- Recycle and reuse of site material
- Mulch storage and use
- Weed management
- Fauna management
- Road crossing locations

These conditions must be adhered to pre, during and post construction works.

Kieran Richardt
Senior Environmental Scientist
Natura Consulting

Address: PO Box 2959, Burleigh BC, QLD 4220 Phone: +61 (0)7 55 765 568 Mobile: +61(0)415 413 408
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Figure 1: Trees within Precinct 5 Interim Flood Bund

NATURA CONSULTING

Drawing Title:	Client:		
Figure 2: Protection Fencing Cross Sections	Lend Lease		
Project Name:	**Location:**	**Associated Consultants:**	**QA:**
Yarrabilba	Waterford- Tamborine Rd		

ROOT BARRIER AND PROTECTION FENCING DETAIL

(nts)

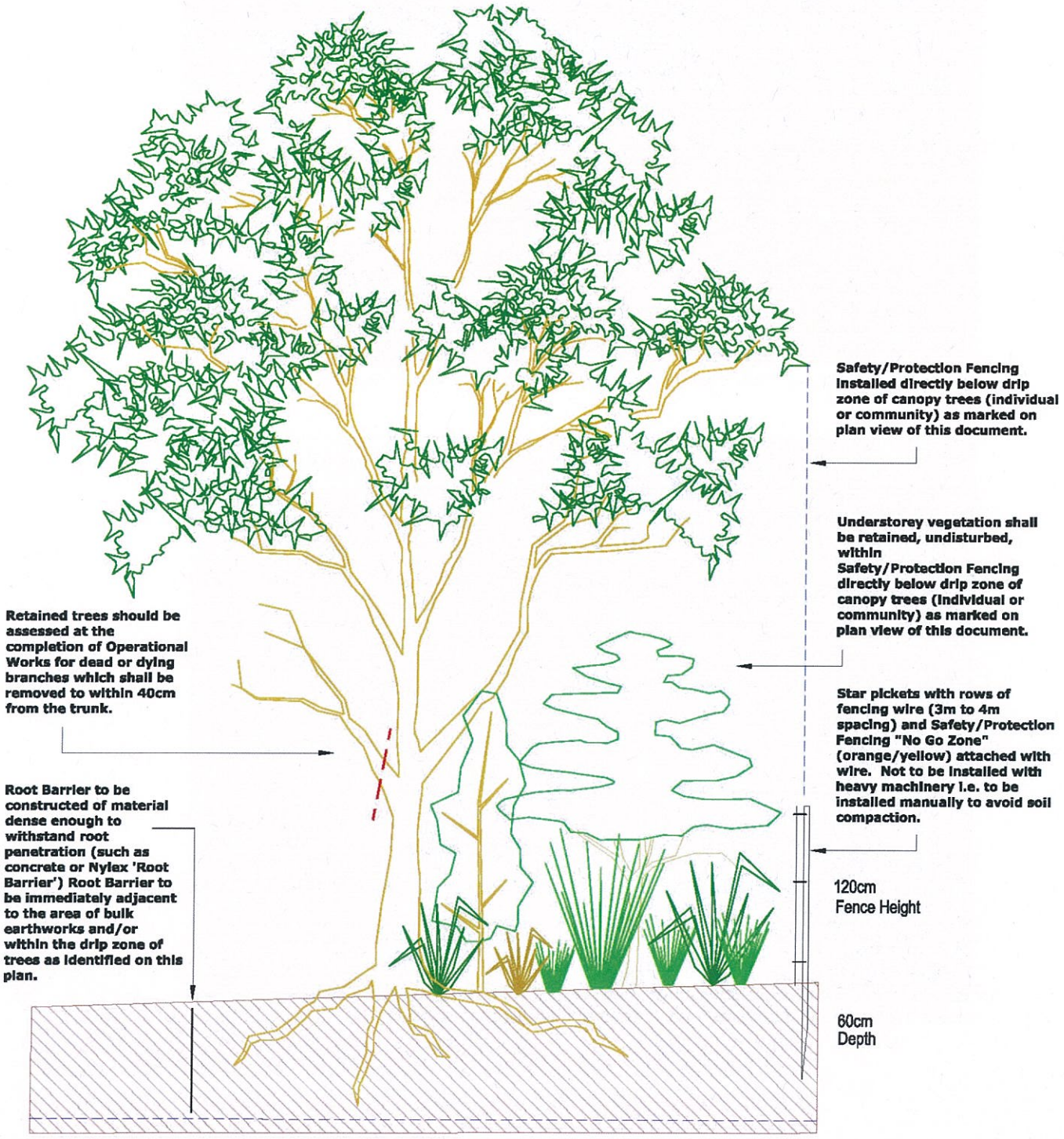

Figure 3: Site Photos

Open Pinus elliotii community with weedy ground layer and Acacia regrowth

Mixed community of scattered native trees and exotic pine species

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Macropus rufogriseus, foraging during early morning

Macropus giganteus, Eastern Grey Kangaroo, moving through the works are during night

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Appendix A – Summary of Fauna Management Actions

Fauna Management Actions	
Policy - To appropriately manage activities within the site to minimise impacts on fauna species.	
Performance Objectives/ Indicators	No injury of native fauna; • No destruction of habitat other than that designated for; and • Minimise impacts on fauna from the site activities through the implementation of environmental controls.
Control Measures	**Design** Identify clearly on plans areas to be protected from the development including: • Significant fauna areas • Location of services to minimise impacts on existing fauna habitat • Designation of transport routes during construction to minimise impacts to sensitive areas. **Construction** • The developer shall appoint a qualified ecologist (spotter catcher) to assess fauna habitat and clearly mark any habitat trees prior to any vegetation removal • The ecologist (spotter catcher) will identify and remove fauna from site before habitat disturbance • The developer shall ensure all contractors have a copy of this plan • The ecologist (spotter catcher) shall outline the contractors role and responsibilities to them prior to any vegetation removal • Clearing shall be undertaken in a sequential manner, with fauna management works planned prior to machinery arriving on site for the day • Injured fauna to be placed in an adequately ventilated box in a quiet and shady location and taken to Queensland Parks and Wildlife Service • (QPWS)/veterinary surgery or registered wildlife carer for treatment • No domestic pets (including dogs, cats) are allowed on the site during construction.
Monitoring	Daily inspection of the site and surrounding areas to ensure fauna has not re-established on the site: • Daily monitoring of clearing techniques • The ecologist (spotter catcher) shall supervise clearing works involving habitat tree removal until satisfied that native fauna have been suitably relocated • Inspection of retained fauna habitat in the area to ensure no impacts from site activities during construction.
Reporting/ Responsibility	**Reporting** • Any injured fauna to be reported to DEHP (QPWS) • The ecologist (spotter catcher) shall instruct the developer when no further action is required in relation to fauna relocation

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	• A Post Clearing Fauna Report is to be complied and forwarded to EDQ upon completion of clearing works. **Responsible Person** • The developer (or designated responsible person).
Contacts	• **DEHP/QPWS** • **Natura Consulting:** Kieran Richardt, 0415 413 408 • **Lend Lease:** David Wilson, 0477 754 217 • **Spotter Catcher:** Matt Hingley, 0457 350 820 or Tempe Parnell 0424789711 • **Local Wildlife Carers (Wild Care):** (07) 5527 2444 • **Closest Veterinarian** Village Veterinary Care, Wharf Street, Logan Village, (07) 5546 3909

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