

VOLUNTARY DECLARATION REHABILITATION PLAN - WEED TREATMENT & REMOVAL (1)

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND								
Rk	Family	Scientific and common names	Sr	R	S	LFS	Non-Chemical Control	Chemical Control
1	Verbenaceae	Lantana camara var. camara (lantana)	10	455	5	S/O	Seedlings: Hand pull	Herbicides must be applied by appropriately qualified / supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to South East Queensland Ecological Restoration Framework for additional guidance.
2	Asteraceae	Baccharis halimifolia (groundsel bush)	10	168	5	S/O	Seedlings: Hand pull	
3	Crassulaceae	Bryophyllum delagoense (mother of millions)	8	38	5	H/O	Hand pull and dispose	
4	Bignoniaceae	Macfadyena unguicati (cat's claw creeper)	5	36	5	V/O	Tubers: crown or dig up, bag and remove.	
	Basellaceae	Anredera cordifolia (madeira vine)	8	16	5	V/O	Small Vines & Tubers: Hand pull. Bag and dispose.	
6	Asparagaceae	Asparagus africanus (ornamental asparagus, asparagus fern)	7	26	5	V/O	dig out roots and dispose of at local council landfill site. remove entire crown and underground stem to prevent regrowth	
7	Ulmaceae	Celtis sinensis (Chinese celtis)	8	19	5	T/O	remove when small, hand pull or dig out small seedlings. combine dozing, burning and controlled grazing for large infestations	
8	Lauraceae	Cinnamomum camphora (camphor laurel)	7	25	5	T/O	Seedlings: Hand pull	
9	Anacardiaceae	Schinus terebinthifolius (broad-leaf pepper tree)	6	49	5	T/O	Seedlings: Hand pull	
	Salviniaceae	Salvinia molesta (salvinia)	8	57	5	Ha/F	Mechanical removal of small infestations; Salvinia weevil (Biological control)	
11	Cabombaceae	Cabomba caroliniana (cabomba, fanwort)	4	12	5	Ha/F	Mechanical removal of small infestations	
12	Asteraceae	Chrysanthemoides monilifera subsp. rotundata (bitou bush)	3	23	5	S/OA	N/A	
13	Pontederiaceae	Eichhornia crassipes (water hyacinth)	4	8	5	Ha/OF	Mechanical removal of small infestations	
14	Acanthaceae	Hygrophila costata (Glush weed)	3	7	5	Ha/F	Hand pull smal infestations. Can be controlled by planting competitive native species.	
	Oleaceae	Ligustrum lucidum (tree privet)	5	9	5	T/O	Seedlings: Hand pull	
16	Asteraceae	Sphagneticola trilobata (Singapore daisy)	6	34	5	H/O	Hand pull	
17	Asteraceae	Ageratina adenophora (crofton weed)	6	38	5	H/O	Hand pull and hang to dry.	
18	Verbenaceae	Lantana montevidensis (creeping lantana)	8	62	5	S/O	Fire and/or mechanical control	
19	Fabaceae	Neonotonia wightii (glycine)	5	16	5	H/A	N/A	
	Poaceae	Panicum maximum (green panic and guinea grass)	8	78	5	H/A	Hand or mechanical removal of small infestations	
21	Oleaceae	Ligustrum sinense (Chinese privet)	4	11	5	T/O	Seedlings: Hand pull	
22	Ochnaceae	Ochna serrulata (ochna)	7	33	5	S/O	N/A	
23	Asparagaceae	Asparagus aethiopicus cv. Sprengeri (asparagus ground fern)	5	35	5	H/O	dig out unwanted plants and dispose of at the appropriate council landfill. remove the entire crown of underground stem of plant to prevent regrowth	
24	Poaceae	Sporobolus pyramidalis and S. natalensis (giant rat's tail grasses)	8	72	5	H/U?	Hand or mechanical removal of small infestations	

Rk	Family	Scientific and common names	Sr	R	S	LFS	Non-Chemical Control	Chemical Control
25	Asteraceae	Ageratina riparia (mistflower)	5	38	5	H/O	Hand pull and hang to dry.	Herbicides must be applied by appropriately qualified / supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to South East Queensland Ecological Restoration Framework for additional guidance.
26	Asclepiadaceae	Araujia sericifera (mothvine)	9	38	4	V/O	Seedlings & Vines: Hand pull. Bag and remove fruit.	
27	Crassulaceae	Bryophyllum daigremontianum x B. delagoense (hybrid mother-of millions)	6	15	5	H/O	Hand pull and dispose	
28	Convolvulaceae	Ipomoea cairica (mile-a-minute)	7	56	4	V/O	Vines & Runners: hand pull, roll up and hand up to dry.	
29	Sapindaceae	Cardiospermum grandiflorum (balloon vine)	7	31	4	V/O	Seedlings & Small Vines: Hand Pull	
30	Asclepiadaceae	Cryptostegia grandiflora (rubber vine)	6	19	4	V/O	Scattereded or medium-density infestations: Where possible, repeated slashing close to ground level is recommended.	
31	Phytolaccaceae	Rivina humilis (baby pepper)	8	61	4	H/O	Hand pull and hang to dry.	
32	Poaceae	Sporobolus africanus (Parramatta grass)	8	48	5	H/U	Hand or mechanical removal of small infestations	
33	Poaceae	Sporobolus fertilis (giant Parramatta grass)	9	27	5	H/U	Hand or mechanical removal of small infestations	
34	Poaceae	Eragrostis curvula (African lovegrass)	7	29	4	H/U	Chipped out before they flower. When chipping out the plant ensure that the tussock crowns are removed, as this will prevent regrowth. If in seed, the stems must be cut and bagged first.	
35	Asteraceae	Gymnocoronis spilanthoides (Senegal tea)	3	4	5	Ha/F	place plant material in a sealed plastic bag, leave in sunlight to rot then burn or dispose of at a council-approved land fill tip	
36	Amaranthaceae	Alternanthera philoxeroides (alligator weed)	1?	3	5	Ha/U	physical removal of plant should not be attempted	
37	Passifloraceae	Passiflora suberosa (cork passionflower)	8	166	4	V/O	N/A	
38	Poaceae	Melinis minutiflora (molasses grass)	5	17	5	H/A	Grazing or mowing	
39	Aristolochiaceae	Aristolochia elegans (Dutchman's pipe)	8	30	4	V/O	Stems: Hand pull; Fruit: Bag and remove	
40	Convolvulaceae	Ipomoea indica (blue morning glory)	5	24	4	V/O	Vines and Runners: hand pull, roll up and hang to dry.	
41	Mimosaceae	Leucaena leucocephala (leucaena)	6	14	4	ST/A	Small plants: Hand pull or mechanical removal	
42	Poaceae	Brachiaria mutica (para grass)	6	18	4	Ha/A	Grazing	
43	Hydrocharitaceae	Egeria densa (egeria waterweed)	2	7	4	Ha/F	hand pulling, cutting and digging with machines effective	
44	Pinaceae	Pinus elliottii (slash pine)	4	22	4	T/A	Seedlings: Hand pull; Saplings and Trees: cut close to ground or ring-bark	
41	Mimosaceae	Leucaena leucocephala (leucaena)	6	14	4	ST/A	Small plants: Hand pull or mechanical removal	
42	Poaceae	Brachiaria mutica (para grass)	6	18	4	Ha/A	Grazing	
43	Hydrocharitaceae	Egeria densa (egeria waterweed)	2	7	4	Ha/F	hand pulling, cutting and digging with machines effective	
44	Pinaceae	Pinus elliottii (slash pine)	4	22	4	T/A	Seedlings: Hand pull; Saplings and Trees: cut close to ground or ring-bark	
45	Caesalpiniaceae	Senna pendula var. glabrata (Easter cassia)	7	33	4	ST/O	Seedlings: Hand pull	

Rk	Family	Scientific and common names	Sr	R	S	LFS	Non-Chemical Control	Chemical Control
46	Poaceae	Chloris gayana (Rhodes grass)	9	55	4	H/A	Hand pulling and removal and digging of larger clumps	Herbicides must be applied by appropriately qualified / supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to South East Queensland Ecological Restoration Framework for additional guidance.
47	Crassulaceae	Bryophyllum pinnatum (resurrection plant)	6	17	4	H/O	Hand pull and dispose	
48	Asteraceae	Parthenium hysterophorus (parthenium weed)	6	14	4	H/U	hand pulling of small areas is not recommended	
49	Caprifoliaceae	Lonicera japonica (Japanese honeysuckle)	3	6	4	V/O	Vines and Runners: hand pull, roll up and hang to dry.	
50	Acanthaceae	Thunbergia alata (black eyed susan)	5	22	4	H/O	N/A	
51	Fabaceae	Macroptilium atropurpureum (siratro)	8	39	4	V/A	N/A	
52	Rosaceae	Rubus ellipticus (yellowberry)	4	26	4	S/O	slashing hinders growth, giving some control if plants are slashed before they seed	
53	Colchicaceae	Gloriosa superba (glory lily)	3	26	4	V/O	N/A	
54	Verbenaceae	Phyla canescens (lippia, Condamine couch)	3	4	4	Ha/O	a combined approach of different control methods including chemical and mechanical with land management practices is most effective	
55	Solanaceae	Solanum seaforthianum (Brazilian nightshade)	8	78	4	V/O	Hand pull	
56	Araceae	Pistia stratiotes (water lettuce)	3	8	4	Ha/OF	Mechanical removal of small infestations	
57	Asparagaceae	Asparagus plumosus (asparagus fern)	4	8	4	V/O	Rhizomes: crown and hang to dry.	
58	Commelinaceae	Tradescantia fluminensis (Qld use T. albiflora) (wandering jew)	5	9	4	H/O	N/A	
59	Solanaceae	Cestrum parqui (green cestrum)	6	36	4	S/O	Seedlings: Hand pull	
60	Caesalpiniaceae	Senna septemtrionalis (arsenic bush, was S. floribunda)	6	25	4	S/O	Seedlings: Hand pull	
61	Solanaceae	Solanum mauritanium (wild tobacco tree)	8	30	4	S/O	Seedlings: Hand pull	
62	Apocynaceae	Catharanthus roseus (pink periwinkle)	5	22	4	S/O	Hand pull	
63	Passifloraceae	Passiflora subpeltata (white passion flower)	10	60	4	V/O	Stems: Hand pull	
64	Fabaceae	Desmodium uncinatum (silverleaf desmodium)	5	14	4	H/A	Hand pull or crown and dispose	
65	Poaceae	Melinis repens (red Natal grass)	10	134	4	H/A	Grazing or mowing	
66	Nymphaeaceae	Nymphaea caerulea subsp. zanzibarensis (blue lotus)	4	17	4	Ha/OF	Hand pull small infestations.	
67	Onagraceae	Oenothera drummondii subsp. drummondii (beach evening primrose)	3	17	4	H/O	Hand pull	
68	Tiliaceae	Triumfetta rhomboidea (Chinese burr)	7	44	4	H/U	Hand pull	
69	Haloragaceae	Myriophyllum aquaticum (parrot's feather)	3	15	4	Ha/F	N/A	
70	Passifloraceae	Passiflora foetida (stinking passion flower)	7	50	4	V/O	Hand Pull	
71	Asteraceae	Verbesina encelioides (crownbeard)	7	34	4	H/U	Vines: Hand pull and remove; Runners: Roll up and hang to dry.	
72	Poaceae	Paspalum mandiocanum (broad leaf paspalum)	3	6	4	H/A	N/A	
73	Poaceae	Paspalum dilatatum (paspalum grass)	10	30	4	H/A	Hand pull or dig up	



CLIENT:



Everleigh

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REFERENCES:

Queensland Herbarium Invasive Naturalised Plants in South East Queensland

AMENDMENTS:

Issue	Date	Description	Checked
A	15/04/2019	Client Draft	AD

PROJECT:

423 - 520 Greenbank Road,  
Greenbank (1/SP297192)



PLAN OF:

Weed Treatment  
& Removal

DATE:	15/04/2019	CHECKED:	AD
CLIENT REF:	7598	DRAWN:	MC
DRAWING No.:	7598 E A07 VDEC RMP A		

Everleigh, Greenbank

VOLUNTARY DECLARATION REHABILITATION PLAN - WEED TREATMENT & REMOVAL (2)

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND								
Rk	Family	Scientific and common names	Sr	R	S	LFS	Non-Chemical Control	Chemical Control
73	Poaceae	Paspalum dilatatum (paspalum grass)	10	30	4	H/A	Hand pull or dig up	Herbicides must be applied by appropriately qualified / supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to South East Queensland Ecological Restoration Framework for additional guidance.
74	Ruppiaceae	Ruppia maritima (sea tassel)	2	8	4	Ha/F	Hand pull or dig up	
75	Arecaceae	Syagrus romanzoffiana (queen palm)	4?	10	4	T/O	Seedlings: Hand pull or crown; Trees: cut below growing point	
76	Poaceae	Hymenachne amplexicaulis cv. Olive (hymenachne)	1?	1	4	Ha/A	a combined approach of different control methods including mechanical, chemical and biological with land management practices is most effective	
77	Asteraceae	Senecio tamoides (Canary creeper)	3	8	4	V/O	Vines: Hand pull and remove; Runners: Roll up and hang to dry.	
78	Poaceae	Cenchrus ciliaris (buffel grass)	4	15	4	H/A	Hand or mechanical removal of young plants	
79	Acanthaceae	Thunbergia grandiflora (thunbergia, blue thunbergia)	2	3	5?	V/O	N/A	
80	Cactaceae	Opuntia tomentosa (velvet tree pear)	8	46	4	S/O	Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used.	
81	Euphorbiaceae	Ricinus communis (castor oil plant)	7	20	4	S/O	Seedlings: Hand pull	
82	Asteraceae	Senecio madagascariensis (fire weed)	6	28	4	H/U	Vines: Hand pull and remove; Runners: Roll up and hang to dry.	
83	Cyperaceae	Cyperus involucratus (African sedge)	6	15	4	Ha/OF	Each has to be dug out with a spade and the entire plant turned over, exposing the root system while making sure all aerial parts of the plant are completely covered.	
84	Asteraceae	Tithonia diversifolia (Mexican sunflower)	5	11	4	H/O	N/A	
85	Poaceae	Setaria sphacelata (South African pigeon grass)	9	41	4	H/A	Hand pull or dig up	
86	Asclepiadaceae	Gomphocarpus physocarpus (balloon cotton bush)	10	132	4	S/OU	Slash in winter and burn cuttings. Wanderer Butterfly can also be used as biological control.	
87	Poaceae	Digitaria didactyla (Queensland blue couch)	9	70	4	H/A	Hand pull or cultivation	
88	Caesalpiniaceae	Gleditsia triacanthos (honey locust)	7	12	4	T/O	For the control of dense infestations on grazing land, burning followed by spot spraying is an economical control method.	
89	Poaceae	Paspalum notatum (bahia grass)	4	10	4	H/A	Hand pull or dig up	
90	Cactaceae	Opuntia monacantha (drooping tree pear, syn. O. vulgaris)	2	3	4	S/O	Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used.	
91	Poaceae	Paspalum conjugatum (paspalum grass)	7	38	4	H/A	Cut below crown.	
92	Malpighiaceae	Hiptage benghalensis (hiptage)	3	5	4	S,V/O	Hand pull small infestations.	

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93	Solanaceae	Solanum torvum (devil's fig)	6	39	4	S/O	Seedlings: Hand pull	Herbicides must be applied by appropriately qualified / supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to South East Queensland Ecological Restoration Framework for additional guidance.
94	Caesalpiniaceae	Caesalpinia decapetala (thorny poinciana)	4	20	4	S,V/O	Seed-heads: Bag and remove.	
95	Poaceae	Pennisetum alopecuroides (swamp foxtail)	7	29	4	H/O	Hand Pull	
96	Verbenaceae	Duranta erecta (duranta)	6	14	4	ST/O	Shrubs: CS&P (1:1.5)	
97	Brassicaceae	Nasturtium officinale (Qld use Rorippa nasturtium-aquaticum) (watercress)	7	19	4	Ha/FU	Manually grub and destroy.	
98	Polygonaceae	Acetosa sagittata (rambling dock)	4	18	4	V/U	Tubers: Dig up, bag and remove.	
99	Poaceae	Cynodon dactylon (couch, Bahama grass introduced cultivars)	10	45	4	H/OA	Hand pull small infestations, removing all roots or smother with mulch.	
100	Bignoniaceae	Tecoma stans (yellow bells)	4	16	4	ST/O	N/A	
101	Rosaceae	Rhaphiolepis indica (Indian hawthorn)	3	10	4	ST/O	Seedlings: Hand pull	
102	Mimosaceae	Mimosa pudica (common sensitive plant)	4	12	4	S/A	N/A	
103	Commelinaceae	Callisia fragrans (purple succulent)	3	9	4	H/O	N/A	
104	Scrophulariaceae	Paulownia tomentosa (paulownia)	3	5	4	T/AO	Seedlings: Hand pull	
105	Commelinaceae	Tradescantia zebrina (zebrina)	3	12	4	H/O	N/A	
106	Acanthaceae	Ruellia malacosperma (ruellia)	5	16	4	H/O	N/A	
107	Poaceae	Pennisetum clandestinum (kikuyu grass)	4	12	4	H/A	Hand Pull	
108	Liliaceae	Lilium formosanum (Taiwan lily)	5	10	4	H/O	Hand pull or crown and dispose	
109	Asteraceae	Sigesbeckia orientalis (Indian weed)	10	148	4	H/U	Hand pull or cultivation.	
110	Asteraceae	Bidens pilosa (cobbler's pegs)	10	110	4	H/U	Hand pull or cultivation.	
111	Cactaceae	Opuntia stricta (common prickly pear)	7	67	4	S/O	Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used.	
112	Poaceae	Eleusine indica (crowsfoot grass)	8	55	4	H/A	Pull and chip. Replant with native couch.	
113	Poaceae	Axonopus compressus ( broad leaved carpet grass)	5	23	4	H/AO	Cut stems from roos.	
114	Lamiaceae	Salvia coccinea (red salvia)	9	46	4	H/O	remove small areas by hand or machine	
115	Asteraceae	Ageratum houstonianum (blue billygoat weed)	8	81	4	H/UO	N/A	
116	Myrtaceae	Psidium guajava and P. guineense (yellow guava and West Indies guava)	4	7	4	ST/AO	N/A	
117	Rosaceae	Rubus bellobatus (kittatinny blackberry)	5	22	4	S/O	slashing hinders growth, giving some control if plants are slashed before they seed	
118	Myrtaceae	Eugenia uniflora (Brazilian cherry)	4	19	4	ST/O	N/A	
119	Oleaceae	Olea europaea (olive)	2	6	4?	T/A	Seedlings: Hand pull	
120	Poaceae	Bracharia decumbens (signal grass)	4	14	4	H/A	Grazing	
121	Fabaceae	Stylosanthes scabra (shrubby stylo)	4	4	4.3?	H/A	N/A	

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122	Commelinaceae	Commelina benghalensis (hairy wandering jew)	4	7	4	H/O	Collect and Bag	Herbicides must be applied by appropriately qualified / supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to South East Queensland Ecological Restoration Framework for additional guidance.
123	Poaceae	Pennisetum purpureum (elephant grass)	2	9	4	H/O	Grazing or mechanical removal	
124	Zingiberaceae	Hedychium coronarium (wild ginger)	2	2	4	H/O	Small Plants: Hand pull and dispose	
125	Phytolaccaceae	Phytolacca octandra (inkweed)	10	50	3	H/O	Hand pull or crown	
126	Asclepiadaceae	Asclepias curassavica (red cotton bush)	9	43	3	S/O	Hand pull; Slash	
127	Solanaceae	Lycium ferocissimum (African boxthorn)	1?	5	4.4?	S/O	N/A	
128	Mimosaceae	Prosopis pallida (algaroba)	2	2	4	ST/O	When using mechanical control methods, it is important to remove the bud zone of the root system (about 30 cm below the ground surface). If this is not removed, re-shooting can occur.	
129	Juncaceae	Juncus articulatus (jointed rush)	1	2	4	Ha/FO	Hand pull.	
130	Cactaceae	Opuntia aurantiaca (tiger pear)	1	2	4	S/O	Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used.	
131	Poaceae	Arundo donax (giant reed)	1	4	4	H/O	Physical removal of small infestations.	
132	Cactaceae	Opuntia imbricata (rope pear)	1	1	4	H/O	Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used.	
133	Bignoniaceae	Pyrostegia venusta (flame vine)	1	1	4	V/O	N/A	
134	Poaceae	Cortaderia selloana (pampas grass)	2	1	4	H/O	Small Plants: dig out by hand or machine	
135	Solanaceae	Solanum hispidum (giant devil's fig)	5	23	4	S/O	Hand pull	
136	Agavaceae	Furcraea foetida (Cuban hemp)	3	4	4.3?	S/OA	Dig out by hand or machine	
137	Agavaceae	Furcraea selloa (hemp)	1	2	4?	S/OA	Dig out by hand or machine	
138	Agavaceae	Agave americana (century plant)	4	9	4	S/OA	Dig out by hand or machine	
139	Rutaceae	Murraya paniculata cv. Exotica (murraya)	6	26	4	S/O	Seedlings: Hand pull	
140	Rosaceae	Rubus discolor (R. fruticosus complex, a blakberry)	4	10	4	S/OA	slashing hinders growth, giving some control if plants are slashed before they seed	
141	Brassicaceae	Cakile edentula (American sea rocket)	4	24	4	H/U	Manually grub and destroy.	
142	Balsaminaceae	Impatiens walleriana (balsam)	2	6	4	H/O	N/A	
143	Agavaceae	Agave sisalana (sisal)	2	4	4	S/OA	Dig out by hand or machine	
144	Agavaceae	Agave vivipara var. vivipara (sisal)	2	3	4	S/OA	Dig out by hand or machine	
145	Rosaceae	Prunus munsoniana (wild goose plum)	7	31	4	ST/A	Seedlings: Hand pull	
146	Poaceae	Echinochloa crus-galli (barnyard grass)	6	34	4	H/A	Hand pull or dig out small infestations.	



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REFERENCES:

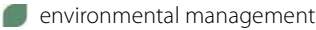
Queensland Herbarium Invasive Naturalised Plants in South East Queensland

AMENDMENTS:

Issue	Date	Description	Checked
A	15/04/2019	Client Draft	AD

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423 - 520 Greenbank Road,  
Greenbank (1/SP297192)



PLAN OF:

Weed Treatment  
& Removal

DATE:	15/04/2019	CHECKED:	AD
CLIENT REF:	7598	DRAWN:	MC
DRAWING No.:	7598 E A08 VDEC RMP A		



VOLUNTARY DECLARATION REHABILITATION PLAN - WEED TREATMENT & REMOVAL (3)

QUEENSLAND HERBARIUM INVASIVE NATURALISED PLANTS IN SOUTH EAST QUEENSLAND								
Rk	Family	Scientific and common names	Sr	R	S	LFS	Non-Chemical Control	Chemical Control
147	Asteraceae	Solidago canadensis var. scabra (Canadian goldenrod)	7	15	4?	H/O	Hand pull and hang to dry.	Herbicides must be applied by appropriately qualified / supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to South East Queensland Ecological Restoration Framework for additional guidance
148	Fabaceae	Pueraria lobata (kudzu)	3	4	4	V,S/O	Slash; Diminish by shading site	
149	Alismataceae	Sagittaria graminea var. platyphylla (sagittaria arrowhead)	3	7	4	Ha/FO	Physical removal of small infestations.	
150	Nymphaeaceae	Nymphaea mexicana (yellow waterlily)	2	4	4	Ha/OF	Hand pull small infestations.	
151	Poaceae	Phyllostachys aurea (fishpole bamboo)	1	2	4	S/O	N/A	
152	Euphorbiaceae	Jatropha gossypifolia (cotton-leaf physic nut, bellyache bush)	1	1	4	S/O	Hand pull	
153	Malvaceae	Sida rhombifolia (Paddy's lucerne)	9	69	4	S/U	Hand pull or dig out.	
154	Poaceae	Themeda quadrivalvis (grader grass)	8	25	4	H/A	Hand pull or dig out small infestations.	
155	Poaceae	Andropogon virginicus (whisky grass)	6	14	4	H/A	Hand pull or dig out small infestations.	
156	Bignoniaceae	Jacaranda mimosifolia (jacaranda)	4	12	3	T/O	Seedlings: Hand pull	
157	Acanthaceae	Justicia betonica (squirreltail)	2	4	4	S/O	Hand pull smal infestations. Can be controlled by planting competitive native species.	
158	Mimosaceae	Acacia boliviana (Bolivian wattle)	1	1	4	T/O	Mechanical or chain removal.	
159	Simaroubaceae	Ailanthus altissima (tree of heaven)	1?	3	4	T/O	Seedlings: Hand pull	
160	Poaceae	Echinochloa colona (awnless barnyard grass)	9	44	3	H/A	Hand or mechanical removal of small infestations	Each has to be dug out with a spade and the entire plant turned over, exposing the root system while making sure all aerial parts of the plant are completely covered.
161	Cyperaceae	Cyperus brevifolius (Mulumbimby couch)	8	53	3	H/O		

Rk	Family	Scientific and common names	Sr	R	S	LFS	Non-Chemical Control	Chemical Control
162	Moraceae	Morus alba (white mulberry)	3	10	3	T/O	N/A	Herbicides must be applied by appropriately qualified / supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to South East Queensland Ecological Restoration Framework for additional guidance
163	Arecaceae	Colocasia esculenta (taro)	3	4	3	H/AO	Hand pull.	
164	Cannaceae	Canna indica (canna lily)	3	9	3	H/O	Dig out entire plant	
165	Buddlejaceae	Buddleja madagascariensis (buddleja)	5	6	3	S,V/O	N/A	
166	Bignoniaceae	Tecoma capensis (Cape honeysuckle)	3	8	4	ST/O	N/A	
167	Cactaceae	Harrisia martinii (harrisia cactus)	2?	4	4	S/O	The use of the biological mealy-bug agent is recommended	
168	Acanthaceae	Thunbergia laurifolia (laurel clock vine)	1	1	4	V/O	N/A	
169	Fabaceae	Erythrina crista-galli (cockspur coral tree)	2?	4	4	T/O	N/A	
170	Sapindaceae	Koelreuteria elegans (Chinese rain tree)	1?	1	3.6?	T/O	Seedlings: Hand pull	
171	Zingiberaceae	Hedychium gardnerianum (ginger lily)	1?	3	4	H/O	Small Plants: Hand pull and dispose	
172	Acanthaceae	Hypoestes phyllostachya (polka-dot plant)	3	5	4	H/O	Hand pull or crown and dispose	
173	Caprifoliaceae	Sambucus canadensis (American elder)	3	7	3	ST/O	Vines and Runners: hand pull, roll up and hang to dry.	
174	Asteraceae	Conyza sumatrensis (tall fleabane)	9	45	3	H/U	Hand or mechanical removal of small infestations	
175	Fabaceae	Tipuana tipu (tipuana)	2	5	3	T/O	Seedlings: Hand pull	
176	Asteraceae	Tagetes minuta (stinking roger)	8	32	3	H/U	Hand pull and hang to dry.	
177	Caesalpiniaceae	Chamaecrista rotundifolia (round-leaf cassia)	6	14	3	ST/A	Seedlings: Hand pull	
178	Poaceae	Cenchrus echinatus (Mossman river grass)	8	43	3	H/A	Hand or mechanical removal of young plants	
179	Asteraceae	Conyza canadensis (Canadian fleabane)	10	55	3	H/U	Hand or mechanical removal of small infestations	
180	Euphorbiaceae	Euphorbia cyathophora (painted spuge)	8	20	3	H/O	Hand pull	
181	Poaceae	Setaria palmifolia (palm leaf setaria)	5	13	3	H/O	Hand pull or dig up	

Rk	Family	Scientific and common names	Sr	R	S	LFS	Non-Chemical Control	Chemical Control
182	Euphorbiaceae	Euphorbia heterophylla (milk weed)	5	12	3	H/O?	Hand pull	Herbicides must be applied by appropriately qualified / supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to South East Queensland Ecological Restoration Framework for additional guidance
183	Fabaceae	Desmodium intortum (greenleaf desmodium)	4	11	3	H/A	Hand pull or crown and dispose	
184	Poaceae	Pennisetum setaceum (fountain grass)	3	11	3	H/O	Hand Pull	
185	Asteraceae	Conyza bonariensis (flax-leaf fleabane)	7	38	3	H/U	Hand or mechanical removal of small infestations	
186	Solanaceae	Solanum erianthum (a tobacco bush)	7	19	3	S/O	Hand pull	
187	Poaceae	Stenotaphrum secundatum (buffalo grass)	3	23	3	H/AO	Hand or mechanical removal of small infestations	
188	Apocynaceae	Cascabela thevetia (syn. Thevetia peruviana) (yellow oleander)	5	9	3	ST/O	Hand pull small infesttions. Slashing can be used but should be followed up by herbicide application.	
189	Rubiaceae	Coffea arabica (coffee)	3	7	3	ST/A	Saplings: Hand pull	
190	Bignoniaceae	Spathodea campanulata (African tulip tree)	1?	1	3	T/O	N/A	
191	Fabaceae	Macrotyloma axillare (perennial horse gram)	4	12	3	V,H/A	N/A	
192	Iridaceae	Watsonia meriana var. bulbilifera (bulbil watsonia)	2	3	3	H/O	Dig up, bag and remove	
193	Passifloraceae	Passiflora edulis (passion fruit)	6	12	3	V/AO	Hand Pull	
194	Asteraceae	Zinnia peruviana (wild zinnia)	6	33	3	H/O	Seedlings: Hand pull	
195	Dracaenaceae	Sansevieria trifasciata (sansevieria)	2?	7	3	H/O	Hand pull or dig up	
196	Poaceae	Digitaria eriantha (pangola grass)	5	20	3	H/A	Hand pull or cultivation	
197	Rosaceae	Eriobotrya japonica (loquat)	3	5	3	T/O	Seedlings: Hand pull	
198	Cactaceae	Acanthocereus tetragonus (sword pear)	1	1	3	S/O	Biological controls available: cactoblastis cactorum successful. Mechanical control difficult. Fire can be used.	
199	Mimosaceae	Acacia nilotica subsp. indica (prickly acacia)	3	3	4.4?	T/A	Mechanical or chain removal.	
200	Mimosaceae	Acacia farnesiana (mimosa bush)	6	15	3	T/A	Mechanical removal of small plants.	

Explanatory notes.

Sub-region (Sr): Number of the ten sub-regions of the Southeast Queensland bioregion (Young and Dillewaard 1999) within which species recorded (Queensland Herbarium data).  
Rec no. (R): Total number of records for species within study area, Queensland Herbarium CORVEG and HERBRECS data.  
Scores (S): Based on panel data of invasiveness, 5 (highest) to 3 (moderate). ? indicate doubtful scores.  
Life forms (LFS): T-tree (woody plant >5m), ST-small tree (2-5m), S-shrub (woody <2m), H-herb (grasses & forbes), Ha-aquatic herbs.  
Source: A-agriculture, O-ornamental and landscaping, F-fish aquarium, U-unintentional introduction and/or contaminant.

Abbreviations: Control Methods

CS&P = cut scrape and paint  
S&P = scrape and paint  
C&P = cut and paint  
F/I = frill or inject stem

Abbreviations: Herbicides

G = Glyphosate, eg. Roundup Biactive, Weedmaster Duo  
MM = Metsulfuron methyl, eg. Brushhoff  
F = Fluroxypyr, eg. Starane

Abbreviations: Herbicide Dilution Rates for High Concentration Applications

GU = Glyphosate undiluted  
G1 = 1 part water to 1 part glyphosate  
G1.5 = 1.5 parts water to 1 part glyphosate  
G4 = 4 parts water to 1 part glyphosate

Abbreviations: Herbicide Spray Concentrations

G100 = 100mL glyphosate per 10L of water + surfactant, eg 20mL LI 700 per 10L  
G200 = 200mL glyphosate per 10L of water + surfactant, eg 50mL LI 700 per 10L  
  
G100 + MM = 100mL glyphosate + 1.5g metsulfuron methyl per 10L of water + wetting agent, eg. 2mL Agral per 10L water  
G200 + MM = 200mL glyphosate + 1.5g metsulfuron methyl per 10L of water + wetting agent, eg. 2mL Agral per 10L water  
  
MM = 1.5g metsulfuron methyl per 10L water + wetting agent, eg. 2mL Agral per 10L water  
F100 = 100mL fluroxypyr per 10L water  
F150 = 150mL fluroxypyr per 10L water

Other Abbreviations

# = Locally non-indigenous native species

Ref. 1. Big Scrub Rainforest Landcare Group (2008), 'Common Weeds of Subtropical Rainforests of Eastern Australia: A practical manual on their identification and control'  
Ref. 2. Department of Primary Industries and Fisheries (QLD), 'Weeds and pest animals and ants'.  
Ref. 3. Holland et al. (1996), 'Suburban Weeds', DPI QLD.  
Ref. 4. Port Stephens Council (NSW), 'Weed Busters'.  
Ref. 5. Depertment of Primary Industries (NSW), 'Noxious and Environmental Weed Handbook, 3rd Edition'.  
Ref. 6. Department of Environment and Conservation, 'Florabase', (DEC- WA)  
Ref. 7. Vitelli, J.S. and Madigan, B.A. and Van Haaren, P.E. and Setter, S. and Logan, P. (2009) Control of the invasive liana, Hiptage benghalensis. Weed Biology and Management, 9 (1). pp. 54-62.



### 3. Rehabilitation Area - *Melaleuca irbyana*



#### NOTES

This plan was prepared as a desktop assessment tool. The information on this plan is not suitable for any other purpose. Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havill Group therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of the Saunders Havill Group. Unless a development approval states otherwise, this is not an approved plan.

Layer Sources: QLD GIS Layers (QLD Gov. Information Service 2020), Aerial (Nearmap 2020)

\* This note is an integral part of this plan/data. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.

#### LEGEND

Project DCDB

Development footprint

Conservation area

Mature *Melaleuca irbyana* specimen to be impacted by clearing works

*Melaleuca Irbyana* planting/rehab site (Approx. 5,000m<sup>2</sup>)

Contours (0.5m)

1 Evolve Environmental Solutions photo monitoring points

Note: Juvenile *Melaleuca irbyana* are specimens less than 2 metres tall

Issue	Date	Description	Drawn	Checked
A	13/07/2020	Preliminary	MP	NG

Transverse Mercator | GDA 1984 | Zone 56 |

1:1,095 @ A3





## 4. Summary and Conclusion

Saunders Havill Group has been engaged by Mirvac Queensland Pty Ltd to prepare an Impact Management Plan (IMP) for *Melaleuca irbyana* located within the extent of works for the Everleigh Greenbank project. This IMP is intended to support the renewal of the Protected Plants Clearing Permit (Permit No. WA0009354) from Department of Environment and Science (DES). The IMP has been prepared in accordance with the *Nature Conservation (Wildlife Management) Regulation 2006 - Protected Plants Assessment Guidelines*.

A Protected Plants Clearing Permit (Permit No. WA0009354) was issued by the DES on 24 August 2018 which allows for clearing of *M. irbyana* over the entire Clearing Impact Area (i.e. 277 ha site). Conditions of the Permit (PPCM01) require all activities relating to the impact of EVNT plant species under the permit to be carried out in accordance with the procedures and actions in the IMP. This included rehabilitation planting of *M. irbyana* within future Conservation land in the eastern portion of the site to ensure no significant residual impact on the species occurs as a result of the development. Rehabilitation works in accordance with the IMP, including weed removal and advanced tubestock planting commenced in March 2019. Further, a 5,000m<sup>2</sup> *M. irbyana* rehabilitation area was made a declared area (Category A) under the *Vegetation Management Act 1999* and is subject to legal monitoring and reporting benchmarks set by DNRME.

While clearing within the Permit area has been undertaken, clearing at the locations of the *M. irbyana* patches has not yet occurred. Therefore, this IMP seeks to support renewal of the Protected Plants Clearing Permit (Permit No. WA0009354) which expires on 23 August 2020 for the clearing of protected plants within the 277 ha impact area at the project site.



## 5. Appendices

### Appendix A

Protected Plants Clearing Permit (WA0009354)

### Appendix B

Impact Management Plan *Melaleuca irbyana* 43-520 Greenbank Road, Greenbank prepared for Mirvac QLD Pty Ltd,  
dated 3 July 2018

### Appendix C

Declared Area Map

### Appendix D

Wildlife Online Search

*Nature Conservation Act 1992*



# Appendix A

Protected Plants Clearing Permit  
(WA0009354)



# Permit

## Protected Plant Clearing Permit

*This wildlife authority is issued under the following legislation: Nature Conservation (Administration) Regulation 2017 Part 2 Division 1.*

**Permit number:** WA0009354

**Valid from:** 24 August 2018 to 23 August 2020

**Activity:** Clearing endangered, vulnerable or near threatened plants

Role	Name	Registered address	
<b>Principal Holder:</b>	Saunders Havill Group Pty Ltd	9 Thompson St BOWEN HILLS QLD 4006 Australia	
<b>Person In Charge:</b>	Mark Clancy	Mark Clancy	
<b>Business name:</b>	144972949	<b>ABN/ACN</b>	Nature Conservation (Wildlife) Regulation 2006 /
<b>Activity location/licensed premises</b>	LOT 1/sp297192		

### Schedule

Family or Species or Schedule	Details	Category	Quantity	Unit
Species	bush house or weeping paperbark or swamp teatree, Melaleuca irbyana	Live	277	Hectares

Jenny Keys  
Department of Environment and Science  
Delegate of the administering authority  
Nature Conservation Act 1992

**Enquiries:**  
Wildlife Assessment Team  
Email: [wildlife@des.qld.gov.au](mailto:wildlife@des.qld.gov.au)  
WA0009354  
Postal Address: PO Box 102, Toowoomba, QLD, 4350

**Date issued: 24 August 2018**



## Legislative Requirements and Conditions of Wildlife Authority

### Legislative Requirements

- PPCLR06 Where monitoring by the permit holder of impact management actions with respect to endangered, vulnerable or near threatened species in the clearing area identifies that those actions appear to be unsuccessful or failing, the permittee must notify DES immediately in order to discuss the significant residual impact of the clearing and furthermore discuss any potential implementation of an offset action in accordance with the Queensland Environmental Offset Policy.  
This requirement may be found in Section 284(1) Of the Nature Conservation (Wildlife Management) Regulation 2006

### Nature Conservation

- PPCLR01 This permit does not exempt the permit holder from obtaining other approvals relevant to the harvest of whole protected plants at the site.
- PPCLR02 Activities carried out under this authority, unless otherwise authorised, apply to non-protected areas only.  
This requirement may be found in section 15 of the Nature Conservation (Administration) Regulation 2017
- PPCLR03 This permit includes the clearing of least concern protected plants within the clearing area.

### Conditions

- PPCM01 Activities relating to the impact of EVNT plant species under this permit must be in accordance with the procedures and actions outlined in the following documents, except where conditions below indicate otherwise:  
  
'Impact Management Plan Melaleuca irbyana 432-520 Greenbank Road, Greenbank prepared for Mirvac QLD Pty Ltd 3 July 2018', and associated appendices and supporting documentation.
- PPCM02 The permit holder is to notify DES in writing at least 48 hours in advance of clearing commencing, for example, via an email to [wildlife.management@ehp.qld.gov.au](mailto:wildlife.management@ehp.qld.gov.au)
- PPCM04 Should the project not proceed, in addition to the requirement to rehabilitate the area/s once cleared, the site/s must not be further disturbed and must be maintained to ensure erosion and weed control.
- PPCM08 It is the permit holder's responsibility to ensure that the proposed rehabilitation area with EVNT species *Melaleuca irbyana* is legally secured.



PPCM09 Rehabilitation and/or translocation reporting must be maintained from the commencement date of clearing and continue for a minimum period of 24 months.  
The written report (including advice on each monitoring period) must be lodged with the Wildlife Assessment Team, Department of Environment and Heritage Protection, via an email to [wildlife@des.qld.gov.au](mailto:wildlife@des.qld.gov.au) within 10 business days after each annual period.



# Appendix B

Impact Management Plan *Melaleuca irbyana* 43-520  
Greenbank Road, Greenbank prepared for Mirvac  
QLD Pty Ltd, dated 3 July 2018





# Impact Management Plan

## *Melaleuca irbyana*

432-520 Greenbank Road, Greenbank  
Prepared for Mirvac Queensland Pty Ltd  
3 July 2018

Job No. 7598



# Document Control

Document: Impact Management Plan for 432-520 Greenbank Road, prepared by Saunders Havill Group for Mirvac Queensland Pty Ltd.

## Document Issue

Issue	Date	Prepared By	Checked By
A	14.02.2018	KG / JG	AD
B	03.07.2018	JG	AD

Prepared by

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# Plans

Plan 1:	Impact Assessment
Plan 2:	Rehabilitation Area
Plan 3:	Rehabilitation Plan
Plan 4:	Rehabilitation Area Assessment

# Abbreviations and Acronyms

DES	Department of Environment and Science (Qld) (formally EHP)
EDQ	Economic Development Queensland (Qld)
EHP	Former Department of Environment and Heritage Protection (Qld) (now DES)
EVNT	Endangered, Vulnerable or Near Threatened (as defined by the NCA)
NCA	<i>Nature Conservation Act 1992</i> (Qld)
NCWR	Nature Conservation (Wildlife) Regulation 2006
PDA	Priority Development Area (herein referencing the Greater Flagstone Priority Development Area)
SHG	Sunders Havill Group



# 1. Introduction

Saunders Havill Group (SHG) was engaged by Mirvac Queensland Pty Ltd (Mircvac) to prepare an Impact Management Plan (IMP) for *Melaleuca irbyana* (Swamp Tee Tree) specimens located within the Greenbank project area located at 432-520 Greenbank Road, Greenbank.

The Greenbank project was referred to the Commonwealth Department of the Environment and Energy (DEE) on behalf of Mirvac by SHG and deemed a Controlled Action for potential impacts on the Koala and Grey-headed Flying-fox under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) to be assessed on Preliminary Documentation. Of note, Area 1 was approved by the DEE to be excised from the referral area. The Preliminary Documentation for the assessment of the project is nearing completion.

The Greenbank project has received preliminary approval under the Greater Flagstone Urban Development Area Development Scheme 2011 (PDA Development Scheme) by Economic Development Queensland (EDQ) who are the administering authority for development in the Greater Flagstone Priority Development Area (PDA).

As part of a protected plants flora trigger survey in accordance with the Protected Plants Guidelines, specimens of *M. irbyana*, listed as Endangered under the *Nature Conservation Act 1992* (NCA), were recorded within the Greenbank project area. This IMP has been prepared to support a clearing permit (protected plants) application to the Department of Environment and Science (DES) in accordance with Section 3.2 of the *Nature Conservation (Wildlife Management) Regulation 2006 – Protected Plants Assessment Guidelines*.

The IMP has been prepared in accordance with Section 3.2.1 of the *Protected Plants Assessment Guidelines*, as follows:

## 3.2.1 Impact management plan

An impact management plan must include the following sections:

- attempts to avoid and minimise impact
- nature of impact
- management of impact
- justification of impact management
- survival of plant in the wild

Contextually, the site is located 30 kilometres (km) south of Brisbane and 10 km west of Logan Village, within the western suburb of Greenbank. The site is bound by Greenbank and Teviot Roads to the west and is predominately surrounded by rural residential development. Wearing Park immediately adjoins the site to the east and Greenbank Shopping Centre and Community Centre are located opposite the site, on the western side of Teviot Road. The site is located approximately 1.5 km southeast of Greenbank Military Training Camp and 500 metres east of the Brisbane – Sydney Railway Line. An infrastructure easement traverses the site parallel to the northern boundary. The site remains one of the last large rural properties in the immediate landscape predominately comprised of rural residential development. Refer to Figure 1 for the site context and Figure 2 for the site aerial.

The proposed clearing works will be undertaken over parts of the 412 hectare (ha) site to facilitate a master planned development and will be subject to future operational works approvals from EDQ. It is noted that a NCA Protected Plants Flora Survey has been undertaken and exemption obtained from the DES, formally the Department of Environment and Heritage Protection (EHP), for clearing over Area 1 to the west (Lot 2 & Lot 3 on SP297192 and along the boundary fence

line to support existing operational works approvals (Ref: APP0007102, APP0007278, respectively). No EVNT species were recorded within these clearing areas.

Flora surveys were conducted where clearing is proposed, including within areas mapped as 'High risk' under the Protect Plants Flora Survey Trigger Map High Risk (refer Figure 3) and as per the Flora Survey Guidelines – Protected Plants.

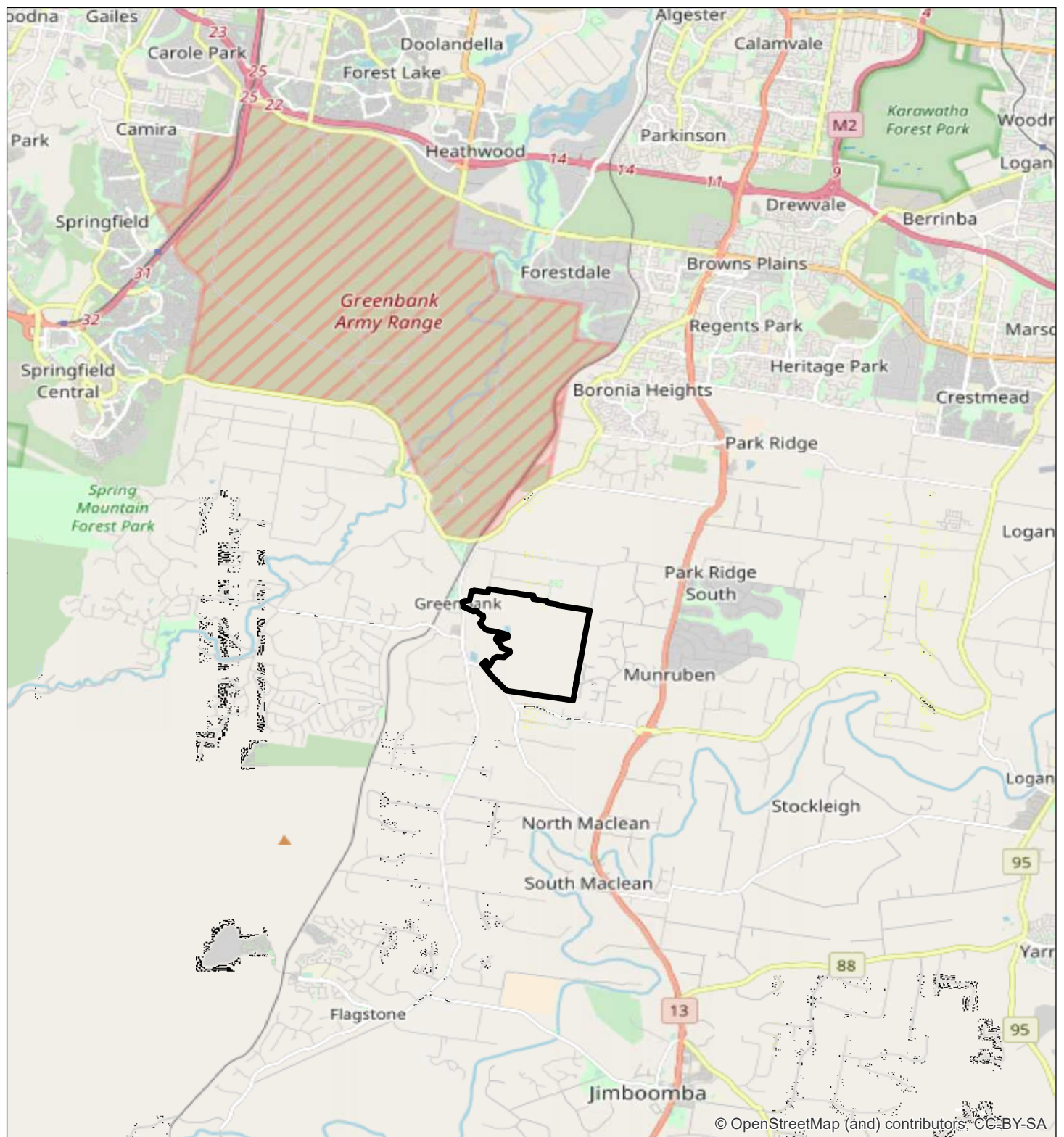
## 1.1. Property Summary

Key site details are provided in Table 1 below.

**Table 1: Property Summary**

<b>Address</b>	423-520 Greenbank Road, Greenbank
<b>RPD</b>	Lot 1 on SP297192
<b>Local Government Area</b>	Logan City
<b>Administering Authority</b>	Economic Development Queensland
<b>Priority Development Area</b>	Greater Flagstone PDA
<b>Planning Scheme</b>	Greater Flagstone PDA Development Scheme
<b>Area Classification / Zone</b>	Urban Living
<b>Existing Land Use</b>	Rural





#### Legend

 Site DCDB

#### Figure 1

#### Site Context

**File ref.** 7598 E Figure 1 NCA 2 Site Context B  
**Date** 19/02/2018  
**Project** Greater Flagstone Project, Greenbank (1/SP297192)

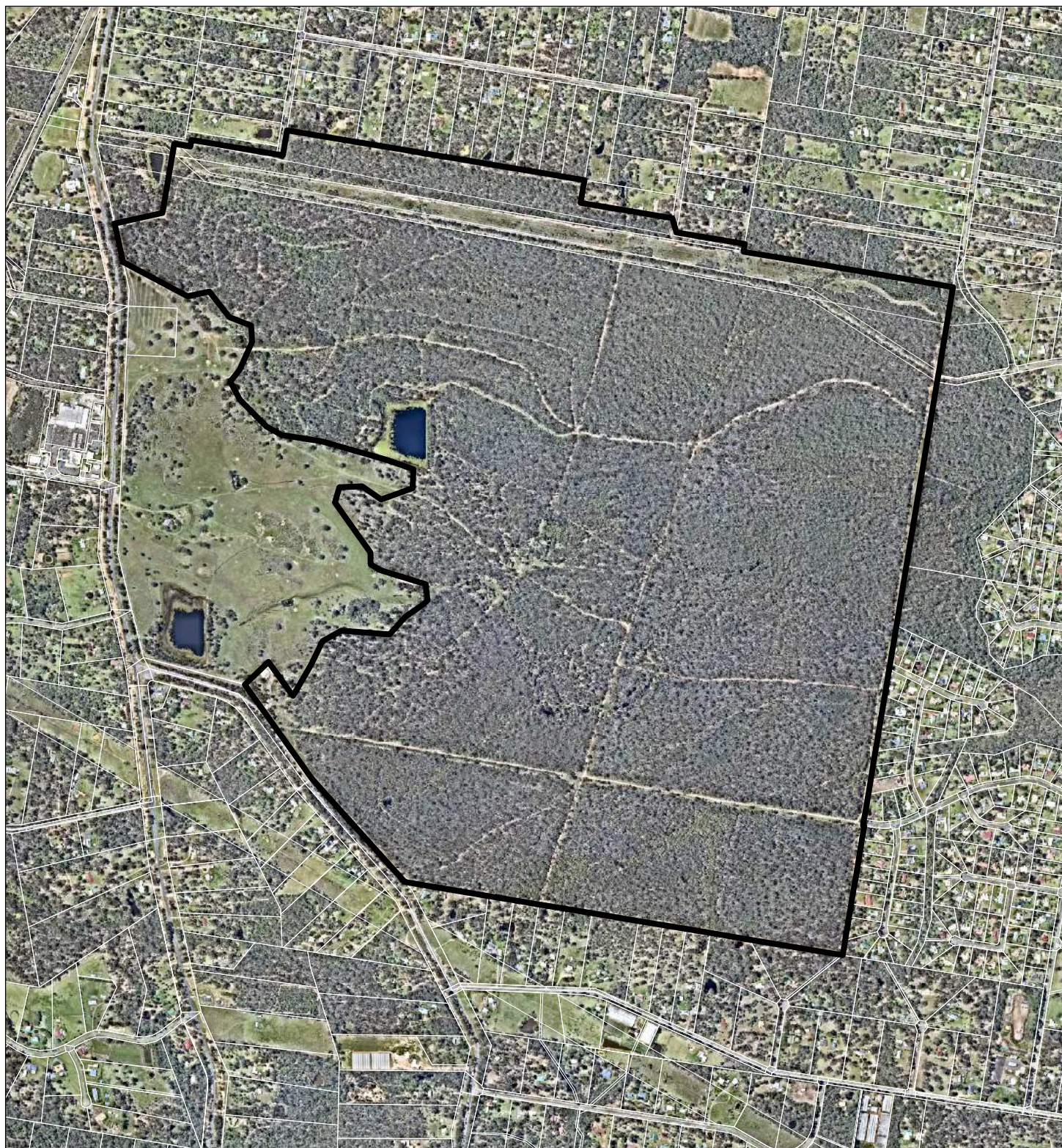
0 1,000 2,000 3,000 4,000 m

Scale (A4): 1:125,000 [GDA 1994 MGA Z56]



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## Legend

-  Project Site DCDB
-  Qld DCDB

## Figure 2

### Site Aerial

**File ref.** 7598 E Figure 2 NCA 2 Site Aerial B  
**Date** 19/02/2018  
**Project** Greater Flagstone Project, Greenbank (1/SP297192)

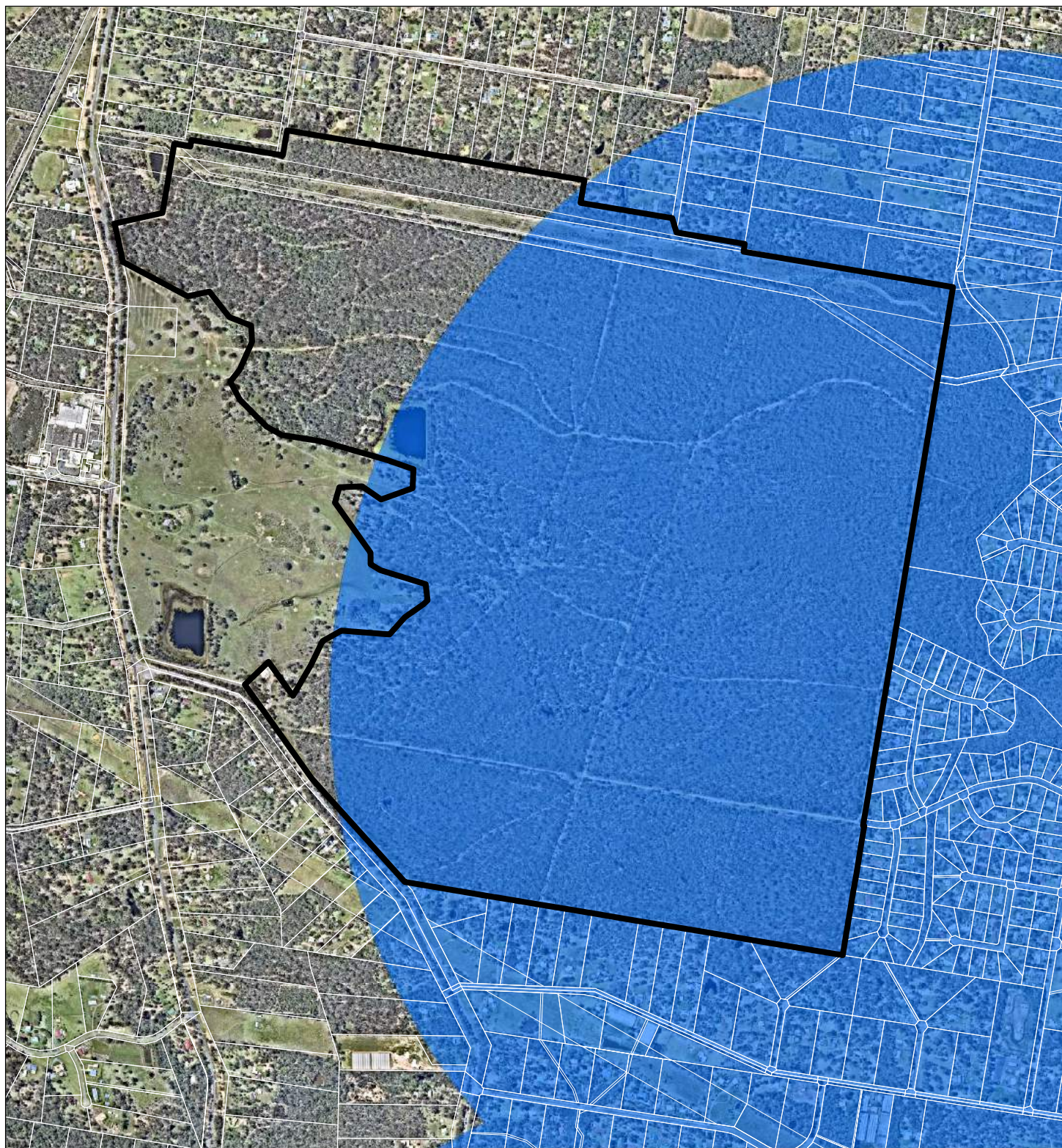
0 100 200 400 600 800 m

Scale (A4): 1:17,000 [GDA 1994 MGA Z56]






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## Legend

-  Project Site DCDB
-  Qld DCDB
-  Flora survey trigger area

## Figure 3

### NCA - Protected Plants Flora Survey Trigger Mapping

**File ref.** 7598 E Figure 3 NCA 2 Protected Plants B  
**Date** 19/02/2018  
**Project** Greater Flagstone Project, Greenbank (1/SP297192)

0 100 200 400 600 800 m

Scale (A4): 1:17,000 [GDA 1994 MGA Z56]



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## 1.2. Nature Conservation Act 1992

The *Nature Conservation Act 1992* (NCA) classifies and protects significant areas (Protected Areas) and protects threatened plant and animal species. The *Nature Conservation (Wildlife) Regulation 2006* (NCWR) lists plant and animal species presumed extinct, endangered, vulnerable, near threatened, least concern, international or prohibited.

The Queensland Government has adopted a regulatory framework that captures activities that pose a high risk to plant biodiversity. Under the framework, when a non-exempt clearing activity is proposed within a 'High Risk' area, the proponent of that activity is required to complete a flora survey prior to commencement of clearing. The Protected Plants Flora Survey Trigger Map shows 'High Risk' areas for protected plants and is used to help determine flora survey and clearing permit requirements for a particular location.

A search of the Protected Plants Flora Survey Trigger Mapping indicated proposed clearing areas within the subject site are overlaid as 'High Risk' and so are subject to flora survey requirements (refer Figure 3).

Prior to flora surveys, the schedules of the NCWR were considered in this report using a Wildlife Online Database Search with a 10 km radius from the site. Three (3) flora species listed under the NCWR were identified as having the potential to occur on site and are presented in Table 1. Refer to Appendix A for full search results.

**Table 2: Wildlife Online Search Results–Flora**

Scientific Name	Common Name	NCA Status
<i>Marsdenia coronata</i>	Slender Milkvine	Vulnerable
<i>Plectranthus habrophyllus</i>	-	Endangered
<i>Melaleuca irbyana</i>	-	Endangered

## 2. Nature of the Impact

### 2.1. Background

The only EVNT species located within the Greenbank project area was *Melaleuca irbyana* (Swamp Tea Tree). The profile of this species is detailed below in Section 2.2.

### 2.2. Protected Plant Profile

*Melaleuca irbyana*, a member of the Myrtaceae family, is listed as a threatened species under Schedule 2 of the *Nature Conservation (Wildlife) Regulation 2006* (NCWR) and is classified as “endangered”. *Melaleuca irbyana* is also included as part of Endangered Regional Ecosystems (RE) 12.3.18, 12.3.19, 12.9-10.11 and 12.9-10.27 under the *Vegetation Management Act 1999* (VMA). This vegetation community is also listed as a Critically Endangered when present as a Threatened Ecological Community under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC).

*M. irbyana* forms communities that occur in two (2) structural forms: the more common form consists of a dominant eucalypt canopy with an understorey containing *M. irbyana* thickets 8-12 metres in height; the less common form is an open forest or thicket of *M. irbyana* with emergent eucalypt trees. The understorey is sparse and can comprise of grasses, sedges, and herbs with a few shrubs, vines and possibly orchids present. There are fairly clear descriptions of *M. irbyana* communities, however, there are no clear indications of the point at which an individual tree or small number of trees are considered to be part of a community. An individual tree may still contribute reproductively to a community, or may have the potential to regenerate and in time create a community.

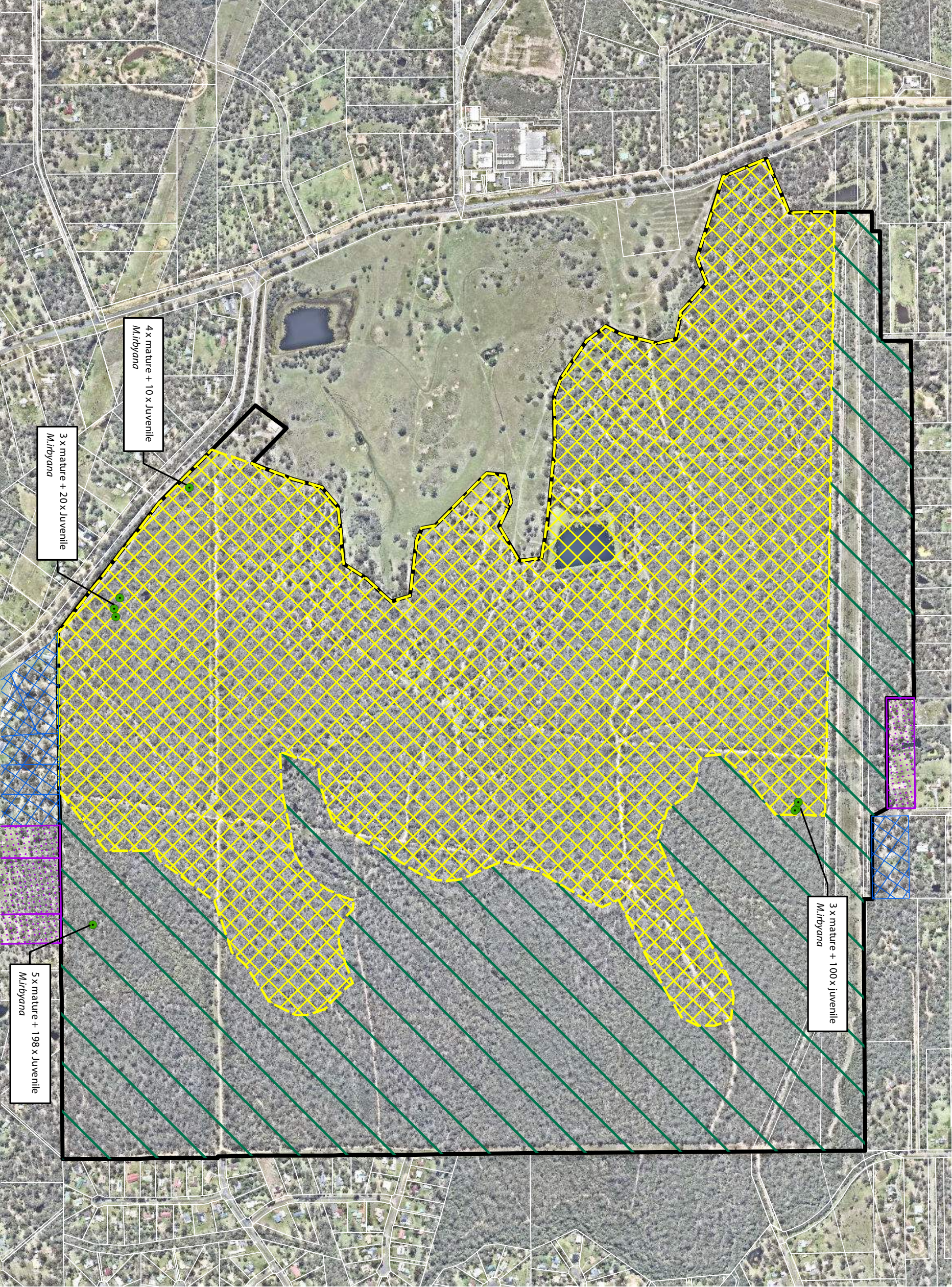
Logan City Council defines an *M. irbyana* community as, “where *Melaleuca irbyana* occur in a patch size of 0.25 hectares or greater, or where a patch of *Melaleuca irbyana* less than 0.25 hectares adjoins a second patch and the sum of the patches is greater than 0.25 hectares”. This definition has been determined using methodology from the *Melaleuca irbyana* (Swamp Tea-tree) Community 1:25,000 Scale Mapping Project (Ryan, 2010).

### 2.3. *Melaleuca irbyana* On-site

The entire site was traversed as part of previous and contemporary NCA searches. While *Melaleuca irbyana* were not previously recorded in the Clearing Impact Area associated with Area 1 and the Perimeter Clearing works extents, surveys conducted as part of this reporting, over the balance of the site, recorded the species in four (4) separate locations. Refer to Plan 1 for *Melaleuca irbyana* onsite locations.



# 1. Clearing Impact - *Melaleuca irbyana*



NOTES  
This plan was prepared as a desktop assessment tool.  
The information on this plan is not suitable for any other purpose.  
Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havill Group therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purposes of accompanying a development application and which may be subject to alteration beyond the control of the Saunders Havill Group. Unless a development approval states otherwise, this is not an approved plan.

Layer Sources: QLD GIS Layers (QLD Gov. Information Service 2016), Aerial (Qld Gov and Google 2016)

\* This note is an integral part of this plan. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.

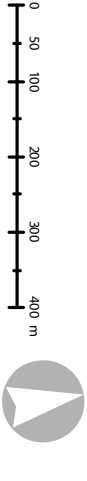
## LEGEND

- Project DCDB
- Development footprint
- Conservation area
- NCA flora survey trigger area
- No Access under NCA
- Exemption (AP0007102)
- Surveyed under NCA
- Exemption (AP0007102)
- Mature *Melaleuca irbyana* specimen

Note: Juvenile *Melaleuca irbyana* are specimens less than 2 metres tall

Issue	Date	Description	Drawn	Checked
A	5/01/2018	Preliminary	TC	AD
B	11/05/2018	Updated impact area	TC	AD

Transverse Mercator (GDA 1994 (Zone 56) 1:10,000 @ A3





### Location 1:

Location 1 is situated in the northern aspect of the site, adjacent to the power easement. This patch is located within mapped composite 'Of Concern' Regional Ecosystem RE12.9-10.2/12.9-10.7 as confirmed via PMAV 2016/002969 certified on the 11<sup>th</sup> of May 2017. Refer to Plan 1 for *Melaleuca irbyana* on site locations and Table 3 for a description of the Regional Ecosystems). This patch of *Melaleuca irbyana* (Swamp Tea-tree) consisted of three (3) established specimens and one-hundred (100) juveniles. This patch of *Melaleuca irbyana* was surrounded by vegetation dominated by *Acacia spp.*, *Allocasuarina littoralis* (Black She-oak) and *Alphitonia excelsa* (Soap Tree) regrowth with *Corymbia citriodora* (Spotted Gum) dominated canopy.



Photo Plate 1: Location 1

### Location 2:

Location 2 is situated towards the south-western property boundary, adjacent to Greenbank Road. This patch is located within mapped non-remnant vegetation as confirmed via PMAV 2016/002969 certified on the 11<sup>th</sup> of May 2017. This *Melaleuca irbyana* (Swamp Tea-tree) patch consisted of three (3) established specimens and twenty (20) juveniles. This patch of *Melaleuca irbyana* was found within a regrowth vegetation community, with surrounding vegetation dominated by *Allocasuarina littoralis* (Black She-oak) and *Acacia spp.* regrowth.



Photo Plate 2: Location 2



### Location 3:

Location 3 is situated towards the south-western property boundary, adjacent to Greenbank Road and approximately 380 m west of Location 2. This patch is located within mapped non-remnant vegetation as confirmed via PMAV 2016/002969 certified on the 11<sup>th</sup> of May 2017. This patch of *Melaleuca irbyana* (Swamp Tea-tree) consisted of four (4) established specimens and ten (10) juveniles. The patch of *Melaleuca irbyana* was found within a regrowth vegetation community, with surrounding vegetation dominated by *Acacia spp.*, *Allocasuarina littoralis* (Black She-oak) and *Alphitonia excelsa* (Soap Tree) regrowth.



**Photo Plate 3: Location 3**

### Location 4:

Location 4 is situated towards the southern property boundary, approximately 800 m east of Location 2. This patch is located within mapped composite 'Of Concern' Regional Ecosystem RE12.9-10.2/12.9-10.7 as confirmed via PMAV 2016/002969 certified on the 11<sup>th</sup> of May 2017. These Regional Ecosystems are described in Table 3 below. This patch consists of five (5) established specimens and one hundred and ninety-eight (198) juveniles. This patch of *Melaleuca irbyana* was surrounded by vegetation dominated by *Acacia spp.*, *Allocasuarina littoralis* (Black She-oak) and *Alphitonia excelsa* (Soap Tree) regrowth with *Corymbia citriodora* (Spotted Gum) dominated canopy.



**Photo Plate 4: Location 4**



**Table 3: Regional Ecosystems Descriptions**

Status	Code	Description
<b>Endangered</b>	12.9-10.12	<i>Corymbia intermedia</i> , <i>Angophora leiocarpa</i> , <i>Eucalyptus seeana</i> +/- <i>E. siderophloia</i> , <i>E. tereticornis</i> , <i>E. racemosa</i> subsp. <i>racemosa</i> , <i>C. citriodora</i> subsp. <i>variegata</i> woodland to open forest. <i>Lophostemon suaveolens</i> is often present as a sub-canopy or understorey tree. Occasional <i>Melaleuca quinquenervia</i> on lower slopes. Does not include areas dominated by <i>Eucalyptus racemosa</i> subsp. <i>racemosa</i> . Occurs on Cainozoic and Mesozoic sediments. (BVG1M: 9g).
<b>Of Concern</b>	12.9-10.7:	<i>Eucalyptus crebra</i> +/- <i>E. tereticornis</i> , <i>Corymbia tessellaris</i> , <i>Angophora leiocarpa</i> , <i>E. melanophloia</i> woodland. Occurs on Cainozoic and Mesozoic sediments. (BVG1M: 13c).
<b>Of Concern</b>	12.3.11	<i>Eucalyptus tereticornis</i> +/- <i>E. siderophloia</i> and <i>Corymbia intermedia</i> open forest to woodland. <i>Corymbia tessellaris</i> , <i>Lophostemon suaveolens</i> and <i>Melaleuca quinquenervia</i> frequently occur and often form a low tree layer. Other species present in scattered patches or low densities include <i>Angophora leiocarpa</i> , <i>E. exserta</i> , <i>E. grandis</i> , <i>C. trachyphloia</i> , <i>C. citriodora</i> subsp. <i>variegata</i> , <i>E. latisinensis</i> , <i>E. tindaliae</i> , <i>E. racemosa</i> and <i>Melaleuca sieberi</i> . <i>E. seeana</i> may be present south of Landsborough and <i>Livistona decora</i> may occur in scattered patches or low densities in the Glenbar SF and Wongi SF areas. Occurs on Quaternary alluvial plains and drainage lines along coastal lowlands. Rainfall usually exceeds 1000mm/y. (BVG1M: 16c)
<b>Least Concern</b>	12.3.6:	<i>Melaleuca quinquenervia</i> +/- <i>Eucalyptus tereticornis</i> , <i>Lophostemon suaveolens</i> , <i>Corymbia intermedia</i> open forest to woodland with a grassy ground layer dominated by species such as <i>Imperata cylindrica</i> . <i>Eucalyptus tereticornis</i> may be present as an emergent layer. Occurs on Quaternary floodplains and fringing drainage lines in coastal areas. (BVG1M: 22a)
<b>Least Concern</b>	12.9-10.2:	<i>Corymbia citriodora</i> subsp. <i>variegata</i> open forest or woodland usually with <i>Eucalyptus crebra</i> . Other species such as <i>Eucalyptus tereticornis</i> , <i>E. moluccana</i> , <i>E. acmenoides</i> and <i>E. siderophloia</i> may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of <i>Lophostemon confertus</i> (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments. (BVG1M: 10b).

Based on the information provided in **Section 2.2**, the specimens located on site are not consistent with a *Melaleuca irbyana* community due to the patches predominately containing juvenile individuals with very few mature specimens. Importantly, these patches are not associated with Endangered Regional Ecosystems. Locations 1 and 4 were confirmed via a certified PMAV to be located within composite 'Of Concern' Regional Ecosystem RE12.9-10.2/12.9-10.7 while locations 2 and 3 were located within non-remnant areas.

While Location 1 contains a substantial amount of juvenile species, overall, the significance of these patches is considered less than if they formed part of a broader existing community. The habitat value they currently provide is considered relatively limited, with no obvious noteworthy habitat for flora or fauna observed at the time of survey.

## 2.4. Avoidance and Minimisation of Impact

The proposed works are for the development of Greenbank master planned development in the Greater Flagstone PDA. Preliminary approval for the context plan and master plan has been issued by EDQ. These plans were informed by detailed analysis of the site by specialist consultants, including a detailed ecological analysis by SHG. Subsequently, areas for development shown are concentrated to areas of least constraint. Areas of highest ecological value have been identified for retention as conservation.

The proposed works will include the creation of residential allotments, a proposed school site, new roads, park and conservation areas and corridors. Minimisation of overall clearing impacts are evident through location of the proposed development, located outside Endangered remnant vegetation and waterway corridors. Rehabilitation of conservation areas and waterways is proposed as part of the development.

The proposed earthworks to facilitate the development footprint will require the removal of three (3) relatively small patches of predominately juvenile *Melaleuca irbyana* specimens, and ongoing property boundary maintenance within 100 m of a fourth patch. These specimens are located within Of Concern and non-remnant regrowth areas (refer Plan 1).

As per the EDQ endorsed Natural Environment Site Strategy, extensive conservation of greater than 89 hectares of proposed Conservation Parkland adjoining Norris Creek and Wearing Park is proposed as part of the development. In accordance with best practice management, restoration and rehabilitation works will seek to stabilise and reverse the negative effects of ongoing habitat fragmentation. The intent is for managed areas of rehabilitation and restoration to rectify canopy gaps and restore bare or denuded areas to provide additional habitat and refugia within the lower strata to maintain connectivity with external approval corridors and improve terrestrial corridor viability. Rehabilitation works within the conservation area and waterway corridors will include weed management and replanting with native species consistent with mapped Regional Ecosystems to augment ecological values and enhance connectivity.

*Melaleuca irbyana* grows in flat areas that are periodically waterlogged, in eucalypt forest, mixed forest and *Melaleuca* woodland with a sparse and grassy understorey. The species prefers poorly draining, heavy clay soils (Byrnes 1984; Barlow 1987). The proposed conservation land rehabilitation works will include establishing a *Melaleuca irbyana* thicket within remnant woodland forest to the north of the central waterway. This land is relatively low lying and adjoins an ephemeral waterway that contains permanent billabongs. The proposed *Melaleuca irbyana* planting site is therefore considered ideal for the species, which is dependent on specific groundwater and / or surface water hydrology. Impacts to *Melaleuca irbyana* have been minimised to the greatest practical extent and include establishing a *Melaleuca irbyana* community, on the project site, within future conservation land and managing potential impacts from ongoing works that will occur within 100 m of a retained patch.

## 2.5. Survival of the Plant in the Wild

Based on the current disturbed nature of the site and the locations of the *Melaleuca irbyana* specimens along property boundaries, it is not anticipated that the removal of three (3) relatively small patches of predominately juvenile *Melaleuca irbyana* specimens will significantly hinder the future success of the species in the area. Importantly, the fourth patch is to be preserved within the conservation area and proposed rehabilitation works seek to establish a *Melaleuca irbyana* community on the site allowing the community to be protected in perpetuity.

## 3. Offset Assessment

The *Protected Plants Assessment Guideline* states that an offset compensates for residual impacts after impact management requirements of the guideline have been met. The specimens located are not considered to constitute ecological communities (as described in Section 2.2.), and therefore the viability of *Melaleuca irbyana* local populations are not considered to be impacted by this proposal.

The proposed earthworks to facilitate the development footprint will require the removal of three (3) relatively small patches of predominately juvenile *Melaleuca irbyana* specimens. In consideration of the extensive rehabilitation works proposed within the onsite conservation land, including the establishment of an *Melaleuca irbyana* thicket, the proposed rehabilitation works will ensure a net gain in *Melaleuca irbyana* across the site. IN light of rehabilitation efforts, the removal of small patches of *Melaleuca irbyana* specimens is not considered to impose a Significant Residual Impact, as defined under the DES policy, and therefore offsets are not considered applicable in this case.

### 3.1. Rehabilitation works

It is considered that the proposed rehabilitation works will mitigate the impact to the extent that the impact on the Matter of State Environmental Significance (MSES) would not be considered significant.

To demonstrate this mitigation of impact, a response to the four (4) points of consideration within Section 1.2 of the *Significant Residual Impact Guideline* is provided below.

- **The extent and duration of impact on the matter and its sensitivity to disturbance.**

The impact on the matter is the removal of three (3) relatively small patches of predominately juvenile *Melaleuca irbyana* specimens from former paddock areas that have already been subject to high disturbance from cattle grazing and historical clearing. A fourth patch will be retained with ongoing adjoining works within 100 m limited to the maintenance of the nearby property boundary. The sites are described in detail in Section 2.3, shown in Plan 1 and summarised below:

- Location 1: 3 x mature s + 100 juvenile specimens, located within the north-east along a drainage feature
- Location 2: 4 x mature + 10 juvenile specimens, located along the southern boundary
- Location 3: 3 mature +20 juvenile specimens, located along the southern boundary
- Location 4: 5 mature + 198 juvenile specimens, located along the southern boundary in the south-west

- **Timeframe for rehabilitation relative to the impact occurring and the ability of the matter to maintain its viability during this timeframe.**

The rehabilitation proposed is the planting of six hundred and twenty-five (625, equates to 140 cleared specimens at 4:1 plus an additional 65 specimens over 5,000 m<sup>2</sup> at 1 per 8 m<sup>2</sup>) advanced tube stock specimens of *M. irbyana* within a relatively isolated portion of the central waterway corridor of the conservation zone (refer Plans 2 to 4). Although it is expected that these plantings will take approximately four (4) years to reach the size of the impacted matter, they will be planted in a thicket to replicate as close to natural conditions for a *M. irbyana* ecological community as possible and maintained as part of the extensive rehabilitation works for the conservation zone. The area of planting of this thicket adjoins the central waterway corridor and is not within 100 m of future development areas. This location has been chosen to avoid human disturbance and as far away as possible from conflicting uses.



It is noted that the rehabilitated creek corridor will be handed over to Logan City Council following the on-maintenance period. Further, the fourth patch of *M. irbyana* that is to be retained within the conservation area will be subject to regular compatible weed suppression and monitored for persistence as part of site maintenance due to its proximity to ongoing property boundary maintenance works within 100 m.

- **Likely success of rehabilitation works to return the impacted matter to its original condition, and;**

It is important to note that the Regional Ecosystems within and adjoining the creek corridor reflect those where the *M. irbyana* patches are currently located on-site. The proposed rehabilitation area was chosen after detailed ecological survey of site attributes, including the prevailing low-lying topography, proximity to the creek, and canopy gaps with limited existing understorey (refer Plans 2 & 4). Thus, the planting of *M. irbyana* in the creek corridor has a high likelihood of success given the suitable landscape and habitat. Given that the impact is the removal of a 140 single individual specimens of *M. irbyana* which are almost entirely juveniles, the planting of six hundred and twenty-five (625) specimens of *M. irbyana* as a thicket within the conservation zone to be rehabilitated will far exceed the original condition of the impacted matter at an offset ratio of greater than 4:1.

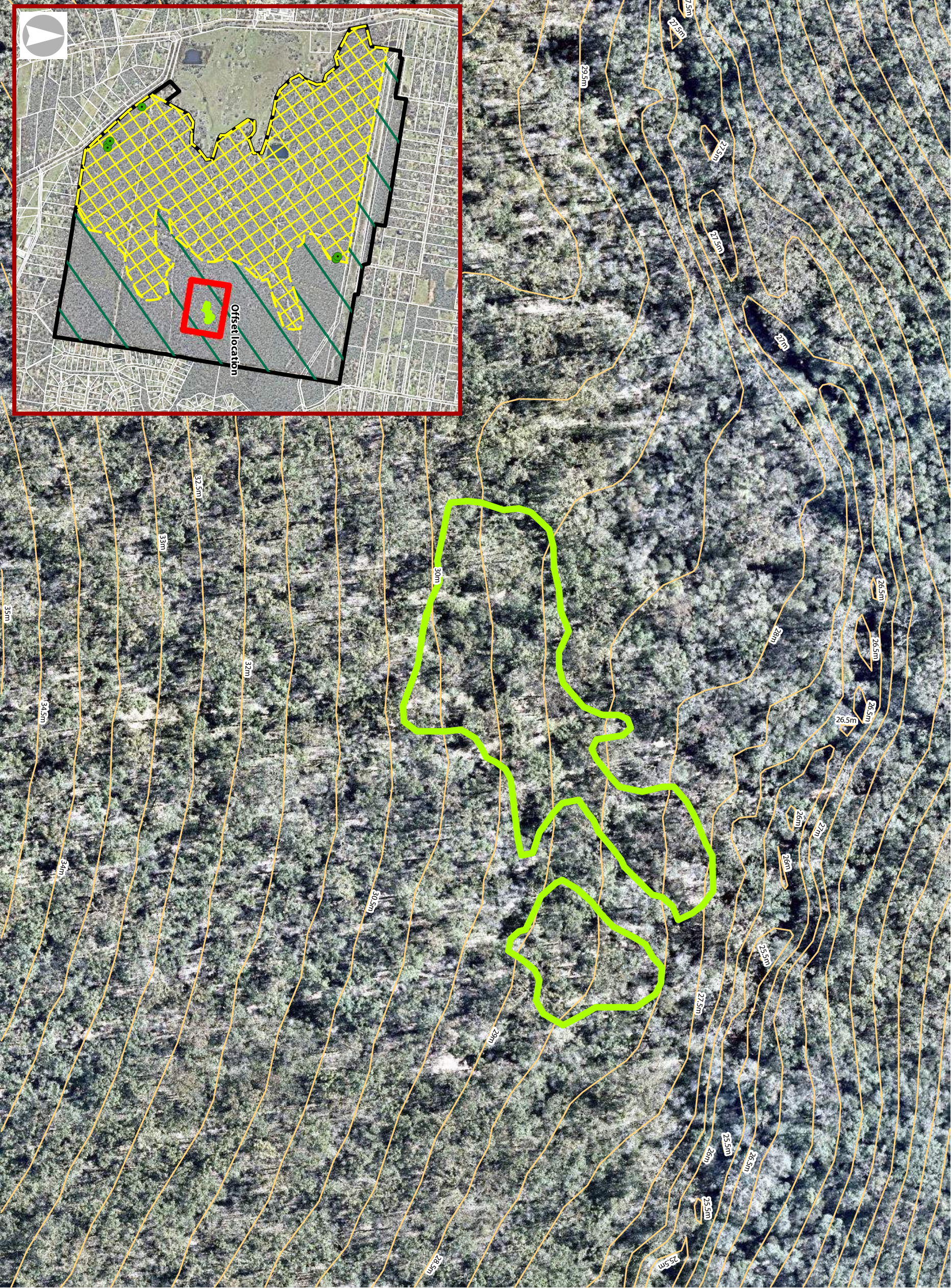
- **The time-lag effect—between impact and rehabilitation successfully delivering the original condition for the matter—on the matter’s viability.**

As mentioned previously, the removal of three small patches of *M. irbyana* is not considered to significantly impact upon the viability of local populations nor remove significant habitat values. Although there will be a time-lag between the removal of the predominantly juvenile *M. irbyana* specimens and the maturity of the tube stock of *M. irbyana* to be planted. Overall, the rehabilitation proposed is considered a far superior ecological outcome for viability of local populations.

The extent and number of *M. irbyana* to be planted is intended to establish a self-sustaining thicket of *M. irbyana* in a safe and secluded buffer environment that is capable of mitigating the proposed impacts. It is acknowledged that any future unavoidable loss of *M. irbyana* from the development area will be assessed by DES on a case by case basis.



2. Offset Assessment - *Melaleuca irbyana*



NOTES

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Layer Source: QLD GIS Layers (QLD Gov. Information Service 2016), Aerial (Aeromaps 2018)

\* This role is an integral part of this plan. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.

LEGEND

Project DCDB

Development footprint

Conservation area

Mature *Melaleuca irbyana* specimen to be impacted by clearing works

*Melaleuca irbyana* planting/rehab site (Approx. 5,000m<sup>2</sup>)

Contours (0.5m)

Note: Juvenile *Melaleuca irbyana* are specimens less than 2 metres tall

Issue	Date	Description	Drawn	Checked
A	11/06/2018	Preliminary	TC	AD

Transverse Mercator (GDA 1994 (Zone 56)) 1:1,095 @ A3





### 3. Melaleuca Irbyana - Rehabilitation/Planting Site Notes

#### INTRODUCTION

Saunders Havill Group (SHG) was engaged by MIRVAC to prepare an Impact Management Plan (IMP) for the clearing of 140 *Melaleuca irbyana* (Swamp Tree Tree) specimens. The replacement plants will be located within the approved conservation area of the Everleigh project (herein referred to as 'the site'). The clearing works, current and future will facilitate the creation of residential lots, a school and internal roads for the site's ultimate development layout.

The rehabilitation proposal for the clearing of 140 *Melaleuca Irbyana* is the planting of four (4) advanced tube stock specimens of *Melaleuca Irbyana* per tree cleared. A total of 625 (560+65 additional) *Melaleuca Irbyana* will be planted as a result. The planting area is proposed within the site's conservation zone (refer Plan 2) and will cover 5,000 m². The specific location of the planting area was determined onsite by Ecologists from SHG. The percentage of exiting canopy cover and the land zone features were taken into consideration when determining the optimal location for planting. Although it is expected that these plantings will take approximately four (4) years to reach the size of the impacted matter, they will be planted in a thicket to replicate as close to natural conditions for a *Melaleuca Irbyana* ecological community as possible and maintained as part of the rehabilitation works for the conservation zones. The area of planting of this thicket is centralised within the conservation zone and adjacent the waterway corridor, as stipulated by the EDQ approved NESS, and not within 100m of future development areas.

This Rehabilitation Plan is drafted to identify and manage the site disturbances for the planting of the 625 *Melaleuca Irbyana* specimens within a 5,000m². The planting will involve low impact weed removal and the retention of any existing native vegetation in the immediate area.

#### SITE PREPARATION

Once the planting locations have been determined not to impact existing native vegetation, the location is to be spot sprayed prior to soil cultivation. Herbicides must be applied by appropriately qualified/supervised persons in accordance with the Agricultural Chemicals and Distribution Control Act 1966 at rates identified on registered product labels, or on an Australian Pesticides and Veterinary Medicines Authority (APVMA) issued off-label permit where applicable. Refer to South East Queensland Ecological Restoration Framework for additional guidance.

The planting will provide a net benefit of greater than 4 to 1 in an area protected under the NESS. Rehabilitation treatment is to generally include the following points:

- A number of weeds are recorded for removal within shrub & ground layer
- Weed removal and management will utilise low impact methods
- Planting of the 625 specimens will be planted at approximately 1 per 8m² to form a *Melaleuca Irbyana* thicket.

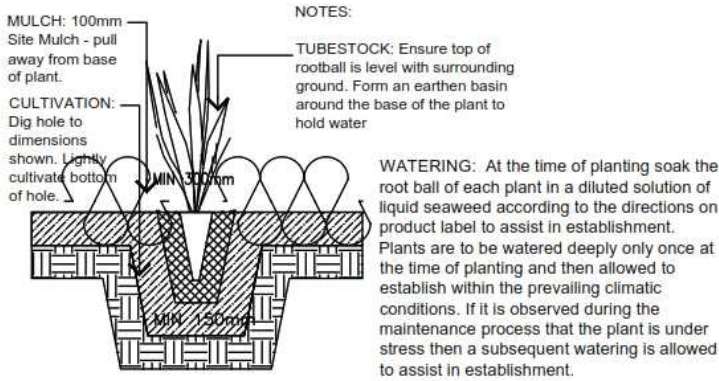
Ecologists from SHG have assessed the site's vegetation. Broadly, it was determined that the assisted natural regenerate approach will be used on site. This approach is described below:

ASSISTED NATURAL REGENERATION
Applies:
<ul style="list-style-type: none"><li>• To natural areas where the native plant community is largely healthy and functioning</li><li>• When native plant seed is still stored in the soil or will be able to reach the site from nearby natural areas, by birds or other animals, wind or water</li><li>• Where the natural regeneration processes (seedling germination, root suckering, etc.) are being inhibited by external factors, such as weed invasion, soil compaction, cattle grazing, mechanical slashing, etc.</li><li>• When limited human intervention, such as weed control, minor amelioration of soil conditions, erection of fencing, cessation of slashing, etc. will be enough to trigger the recovery processes through natural regeneration</li><li>• When the main management issue is weed infestation and/or current land use practices</li></ul>
Role of planting:
<ul style="list-style-type: none"><li>• Planting in such areas should be limited to where species cannot return to site without direct intervention.</li></ul>
Goal vegetation community:
<ul style="list-style-type: none"><li>• The re-establishing plant community will be substantially similar in structure, composition and diversity to the original vegetation</li></ul>

#### MULCH

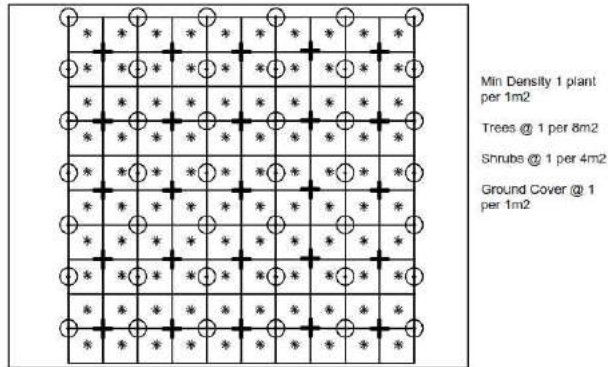
Areas to be blanket mulched to a minimum depth of 100mm leaving a 50mm gap surrounding the trunk of planted stock. Areas which are too steep or where overland flows may occur, a combination of mulch and Jute mat and or suitably anchored natural fibre weed mat installed to manufactures specifications have been specified.

Each individual planting location should be spot cultivated to at least 2 times the depth and twice the width of the plant stock size. Refer detail for more specifications:



#### PLANTING

Planting locations shall be generally set out in accordance with a typical random grid pattern as shown on this drawing sheet below with the *Melaleuca Irbyana* to be planted at 1 per 8m².



All stock shall be advanced tube stock specimens of *Melaleuca Irbyana*, well formed, and hardened off to suit final revegetation location, nursery stock. The root system should be well formed without being tube bound or large roots extruding from the tube container. The environmental coordinator has the right to inspect and reject stock prior to planting.

#### INSTALLATION

The following outlines the preferred installation methodology for revegetation works within the rehabilitation areas. It has been designed to maximise plant establishment success rates and minimise plant mortality. Revegetation works shall be either undertaken or directly supervised by an experienced and qualified bush regenerator. All works shall be in accordance with the provisions of this sheet, local government policies and Australian Standards. Plant installation methods shall include:

- Plants are to be vigorous, well established, hardened off, consistent with species or variety, free from disease and insect pests, with large root systems and no evidence of having been restricted or damaged.
- Plants are to be planted immediately after delivery to the planting site. If not possible, they should be stored in the shade and watered sufficiently during the day.
- Planting is to be undertaken in accordance with the planting grid contained within this drawing sheet.
- Excavate planting medium to a depth suitable for the installation of tube or pot specimens. In areas where planting substrate is deemed to be very poor (compacted, nutrient depauperate, hydrophobic etc.) and above areas of potential frequent inundation and water flow, topsoil may be used or the ground mechanically ripped where access is feasible.
- Pre-water plant hole, if soil is dry, to decrease root stress upon planting and assess the infiltration of water through the soil
- Incorporate into the planting substrate the appropriate quantity of prepared water crystals or other suitable hydrating product such as Hortex 'Rainsaver' or 'Moisturaid'.
- Place plant into hole and backfill ensuring that the plant is upright and the stem is not covered in any less than 10mm or any more than 20mm of planting medium
- Plants are to be watered thoroughly immediately after planting (ensure deep irrigation) and thereafter as required during the construction phase of the development depending on climatic conditions. Creation of a concave hollow around the base of each plant will aid water infiltration to the plant roots.

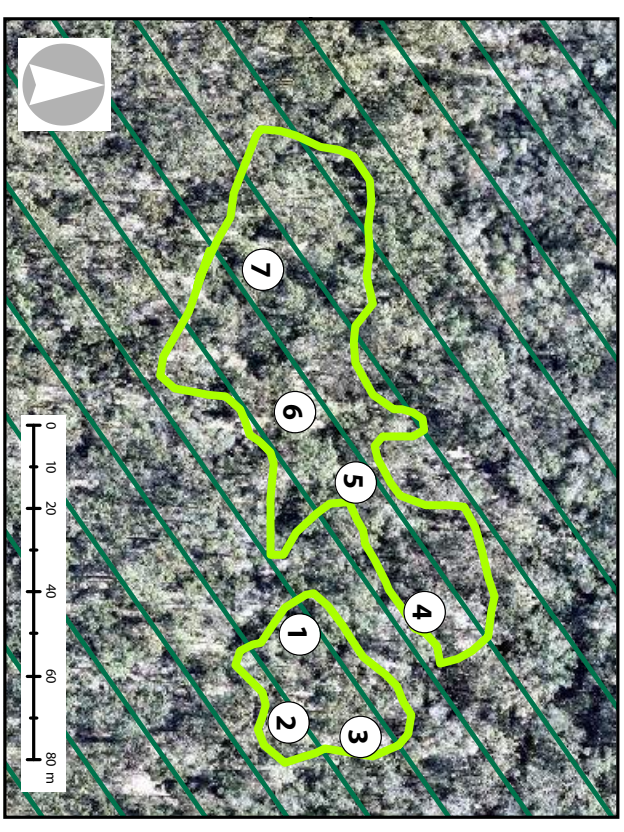
- A complete, slow release fertiliser is recommended, and is to be administered appropriately during planting. Top dressing with slow release fertiliser is preferred to avoid toxic levels of fertiliser accumulating in the plant hole around the plant roots.
- To ensure successful establishment, all planting surfaces must be covered in:
  - 100mm layer of high quality weed-free composted chip mulch (site mulch) - Note: to avoid possible stem rot in some 'drier' species ensure mulch is 'dished' and not covering plant stem by more than 200mm
  - suitable individual anchored natural fibre weed mat; or
  - As presented within other section, where available mulch material will be sourced from cleared vegetation material if adequately seasoned.
- A long term slow release fertiliser, such as Nutricote or similar product should be used for all plantings after initial plant establishment.
- Seedlings and saplings are to be encouraged and maintained throughout the establishment period.

#### MAINTENANCE & MONITORING







MAINTENANCE SCHEDULE	
Maintenance schedule for revegetation areas of the proposed development as specified on the Landscape Plans	
ESTABLISHMENT	Establishment is to occur at the completion of the primary and secondary weed removal phases and any rehabilitation planting. During this period any failed stock are to be replaced and/or defects identified then reparations are to be made to site works.
1. Watering	Watering shall be carried out to ensure establishment of revegetation.
	At the time of planting soak the root ball of each plant in a diluted solution of liquid seaweed according to the directions on product label to assist in establishment.
	Plants are to be watered deeply only once at the time of planting and then allowed to establish within the prevailing climatic conditions. If it's observed during the maintenance process that the plant is under stress then a subsequent watering is allowed
2. Weed Removal	Weeds evident during the Establishment period but should be removed as part of a monthly weed management program. Best Practice weed management techniques should be employed for weed removal amongst revegetation areas.
	Where grass seeding or turf establishes within planted areas it should be treated with approved herbicide for waterways.
MAINTENANCE	(Weeks 13- 2 years)
1. Watering	No specified watering regime is provided during the maintenance period. The intent is for the area to become self sufficient in utilising natural rain patterns and run off. Watering should occur during extended dry periods to ensure continued establishment
2. Weed Removal	Weeds should be tended to on a monthly program. Treatment techniques vary within the landscape planted areas versus revegetation and retention areas.
3. Management	Throughout the establishment and maintenance periods areas where planting stock has not achieved a 90% success survival additional planting shall be installed.
4. Erosion Control	Prior to the commencement of works and to remain throughout the establishment and maintenance period an erosion and sediment control measures shall be employed over the rehabilitaion area of the site.



4. Melaleuca Irbaryana - Rehabilitation/Planting Site Photos



LEGEND

-  Project DCDB
-  Development footprint
-  Conservation area
-  Mature *Melaleuca Irbaryana* specimen to be impacted by clearing works
-  Melaleuca Irbaryana planting/rehab site (Approx. 5,000m²)
-  Contours (0.5m)

**Note:** Juvenile *Melaleuca Irbaryana* are specimens less than 2 metres tall

NOTES

This plan was prepared as a desktop assessment tool. The information on this plan is not suitable for any other purpose. Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions. No reliance should be placed on the information on this plan for detailed design or for any financial dealings involving the land. Saunders Havill Group therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of the Saunders Havill Group. Unless a development approval states otherwise, this is not an approved plan.

Layer Sources: QLD GIS Layers (QLD Gov. Information Service 2016), Aerial (Mapmap 2018)

\* This note is an integral part of this plan/data. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.

Issue	Date	Description	Drawn	Checked
A	11/06/2018	Final map	TC	AD

Taravasa Macdonald | GDA 1994 | Zone 55 |

11.105 @ A3



## 4. Summary and Conclusion

Saunders Havill Group has been engaged by Mirvac Queensland Pty Ltd to complete an Impact Management Plan (IMP) for *Melaleuca irbyana* located within the extent of works for the Everleigh Greenbank project. This IMP is intended to support a clearing permit (protected plants) application to the Department of Environment and Science (DES) in accordance with the *Nature Conservation (Wildlife Management) Regulation 2006 - Protected Plants Assessment Guidelines*.

Earthworks associated with the development will necessitate the removal of three (3) relatively small patches of predominantly juvenile *M. irbyana* and the retention of a fourth within the conservation area but within 100 m of ongoing property boundary maintenance. The Protected Plants Assessment Guideline states that an offset compensates for residual impacts after impact management requirements of the guideline have been met. Activities are not anticipated to adversely impact on the viability of any localised *M. irbyana* ecological communities, and the removal of three small *M. irbyana* patches is not considered to impose a Significant Residual Impact as defined under the DES policy in consideration of proposed rehabilitation works within the central creek corridor of the conservation zone. Therefore, offsets are not considered applicable in this case. It is important to note that investment in the conservation zone rehabilitation works proposed, i.e. revegetation and weed removal and the establishment of 625 tube stock *M. irbyana* plantings, is considered to provide a superior ecological outcome relative to the removal of a single specimen at an offset ratio greater than 4:1.

## 5. Appendices

### Appendix A

Wildlife Online Search

*Nature Conservation Act 1992*



# Appendix A

Wildlife Online Search

*Nature Conservation Act 1992*



# Queensland Government

## Wildlife Online Extract

Search Criteria: Species List for a Specified Point

Species: All

Type: All

Status: Rare and threatened species

Records: All

Date: All

Latitude: -27.7401

Longitude: 152.9975

Distance: 10

Email: keiragrundy@saundershavill.com

Date submitted: Wednesday 14 Feb 2018 16:50:28

Date extracted: Wednesday 14 Feb 2018 17:00:02

The number of records retrieved = 13

### Disclaimer

As the DSITIA is still in a process of collating and vetting data, it is possible the information given is not complete. The information provided should only be used for the project for which it was requested and it should be appropriately acknowledged as being derived from Wildlife Online when it is used.

The State of Queensland does not invite reliance upon, nor accept responsibility for this information. Persons should satisfy themselves through independent means as to the accuracy and completeness of this information.

No statements, representations or warranties are made about the accuracy or completeness of this information. The State of Queensland disclaims all responsibility for this information and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs you may incur as a result of the information being inaccurate or incomplete in any way for any reason.

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Limnodynastidae	<i>Adelotus brevis</i>	tusked frog		V		3
animals	amphibians	Myobatrachidae	<i>Crinia tinnula</i>	wallum froglet		V		3/3
animals	birds	Cacatuidae	<i>Calyptorhynchus lathami lathami</i>	glossy black-cockatoo (eastern)		V		3
animals	birds	Falconidae	<i>Falco hypoleucos</i>	grey falcon		V		1
animals	birds	Psittacidae	<i>Lathamus discolor</i>	swift parrot		E	CE	1
animals	birds	Strigidae	<i>Ninox strenua</i>	powerful owl		V		5
animals	mammals	Dasyuridae	<i>Dasyurus maculatus maculatus</i>	spotted-tailed quoll (southern subspecies)		V	E	15
animals	mammals	Macropodidae	<i>Petrogale penicillata</i>	brush-tailed rock-wallaby		V	V	2
animals	mammals	Phascocaridae	<i>Phascocarcus cinereus</i>	koala		V	V	515
animals	mammals	Pseudochelidae	<i>Petauroides volans volans</i>	southern greater glider		V	V	12/2
plants	higher dicots	Apocynaceae	<i>Marsdenia coronata</i>	slender milkvine		V		2/2
plants	higher dicots	Lamiaceae	<i>Plectranthus habrophyllus</i>			E	E	6/6
plants	higher dicots	Myrtaceae	<i>Melaleuca irbyana</i>			E		7/6

## CODES

- I - Y indicates that the taxon is introduced to Queensland and has naturalised.
- Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992*. The codes are Extinct in the Wild (PE), Endangered (E), Vulnerable (V), Near Threatened (NT), Least Concern (C) or Not Protected ( ).
- A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999*. The values of EPBC are Conservation Dependent (CD), Critically Endangered (CE), Endangered (E), Extinct (EX), Extinct in the Wild (XW) and Vulnerable (V).
- Records – The first number indicates the total number of records of the taxon for the record option selected (i.e. All, Confirmed or Specimens). This number is output as 99999 if it equals or exceeds this value. The second number located after the / indicates the number of specimen records for the taxon. This number is output as 999 if it equals or exceeds this value.



# Appendix C

## Declared Area Map



Derived Reference Points for GPS  
Projection: UTM (MGA Zone 56)  
Datum: GDA94

Point	Easting	Northing	Point	Easting	Northing
1	500604	6931430	54	500530	6931398
2	500607	6931426	55	500534	6931398
3	500609	6931423	56	500538	6931398
4	500610	6931419	57	500546	6931403
5	500606	6931418	58	500549	6931407
6	500603	6931415	59	500550	6931409
7	500602	6931412	60	500550	6931412
8	500597	6931409	61	500552	6931414
9	500593	6931406	62	500554	6931415
10	500591	6931405	63	500556	6931412
11	500586	6931403	64	500556	6931405
12	500582	6931401	65	500558	6931403
13	500579	6931400	66	500561	6931404
14	500576	6931399	67	500567	6931407
15	500572	6931397	68	500570	6931409
16	500572	6931392	69	500573	6931415
17	500574	6931389	70	500572	6931421
18	500579	6931384	71	500573	6931424
19	500584	6931381	72	500578	6931427
20	500584	6931378	73	500583	6931428
21	500580	6931378	74	500590	6931430
22	500571	6931378	75	500594	6931431
23	500563	6931379	76	500598	6931431
24	500560	6931378	77	500623	6931412
25	500557	6931375	78	500627	6931411
26	500555	6931373	79	500630	6931409
27	500552	6931372	80	500633	6931402
28	500549	6931371	81	500631	6931391
29	500546	6931367	82	500632	6931389
30	500546	6931363	83	500632	6931386
31	500545	6931359	84	500634	6931381
32	500545	6931355	85	500630	6931376
33	500541	6931352	86	500626	6931375
34	500537	6931352	87	500623	6931376
35	500526	6931358	88	500620	6931377
36	500516	6931362	89	500617	6931376
37	500509	6931365	90	500614	6931373
38	500504	6931369	91	500611	6931369
39	500498	6931369	92	500607	6931371
40	500493	6931371	93	500606	6931374
41	500484	6931374	94	500605	6931376
42	500483	6931376	95	500601	6931379
43	500483	6931380	96	500597	6931381
44	500484	6931384	97	500594	6931386
45	500487	6931390	98	500593	6931388
46	500487	6931394	99	500597	6931392
47	500489	6931398	100	500601	6931395
48	500495	6931402	101	500604	6931397
49	500500	6931402	102	500609	6931400
50	500506	6931401	103	500613	6931406
51	500512	6931401	104	500616	6931408
52	500518	6931401	105	500620	6931410
53	500524	6931402			



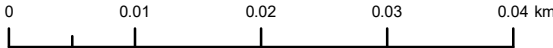
Includes material © The State of Queensland, © CNES reproduced under licence from Airbus DS, all rights reserved, ©

Declared Area Map 2019/002656 - Sheet 2 of 2

Lot on Plan:  
1/SP297192  
Local Government: Logan City  
Centre: Toowoomba  
Region: South  
Map Reference:  
Satellite Image: Logan 2017 10cm SISP  
Prepared By: JDC  
Map Date: 9 October 2019  
File Reference: -

Legend

- Derived Reference Points for GPS
- Declared Area
- Property boundary
- QLD DCDB



NON-STANDARD MAP

Disclaimer:  
While every care is taken to ensure the accuracy of this product, the Department of Natural Resources and Mines makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.  
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Horizontal Datum: Geocentric Datum of Australia 1994 (GDA94 MGA Zone 56)  
Cadastral data provided with the permission of the Department of Natural Resources and Mines  
Property boundaries shown on this map are provided as a locational aid only. DCDB boundaries do not represent legal cadastral boundaries.





# Appendix D

Wildlife Online Search

*Nature Conservation Act 1992*





# Queensland Government

## Wildlife Online Extract

Search Criteria: Species List for a Specified Point

Species: Plants (including other non-animals such as fungi and protists)

Type: All

Status: Rare and threatened species

Records: All

Date: All

Latitude: -27.737

Longitude: 152.995

Distance: 10

Email: keiragrundy@saundershavill.com

Date submitted: Wednesday 08 Jul 2020 12:17:20

Date extracted: Wednesday 08 Jul 2020 12:20:02

The number of records retrieved = 3

### **Disclaimer**

As the DSITIA is still in a process of collating and vetting data, it is possible the information given is not complete. The information provided should only be used for the project for which it was requested and it should be appropriately acknowledged as being derived from Wildlife Online when it is used.

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Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Apocynaceae	<i>Marsdenia coronata</i>	slender milkvine		V		6/2
plants	land plants	Lamiaceae	<i>Coleus habrophyllus</i>			E	E	8/8
plants	land plants	Myrtaceae	<i>Melaleuca irbyana</i>			E		6/4

# CODES

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  - Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992*. The codes are Extinct in the Wild (PE), Endangered (E), Vulnerable (V), Near Threatened (NT), Least Concern (C) or Not Protected ( ).
  - A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999*. The values of EPBC are Conservation Dependent (CD), Critically Endangered (CE), Endangered (E), Extinct (EX), Extinct in the Wild (XW) and Vulnerable (V).
- Records – The first number indicates the total number of records of the taxon for the record option selected (i.e. All, Confirmed or Specimens).  
This number is output as 99999 if it equals or exceeds this value. The second number located after the / indicates the number of specimen records for the taxon.  
This number is output as 999 if it equals or exceeds this value.



Everleigh



Environmental Pre-Start Checklist

# Attachment 6

Wildlife Protection and Management Plan & Thermal Clearance Survey

# Wildlife Protection and Management Plan

*SHADFORTH CIVIL CONTRACTORS*

81-SCC2205-D

EVERLEIGH PRECINCT 9.4-9.7

Teviot Road

Greenbank, Queensland

11<sup>th</sup> May 2022



## Document prepared by:


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## Revision History

Rev No	Issue Date	Revision Details	Prepared By	Reviewed By	Approved By
0	May 2022	Issue for Use	Alina Cherkasskaia	Yolande Venter	Yolande Venter
1					
2					

## Document Approval

<b>Approved:</b>  <i>Company Director</i>	<b>Name</b>  <i>Yolande Venter</i>	<b>Signature</b>  	<b>Date</b>  <i>November 2021</i>
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## 1. INTRODUCTION

### 1.1. Background

Australia Wide Environmental Consultants were commissioned by Shadforth Civil Contractors to manage fauna during the clearing and mulching works for Everleigh Precinct 9.3 - 9.7 subdivision development of Teviot Road in Greenbank, Queensland (**See Figure 1**).

The project is a master planned residential development located on allotments at the corner of Teviot Road and Greenbank Road. Precincts 9.4-9.7 are located within Lots 9002/9003/9004 on SP331504 (approx.18/86/ 320 ha respectively).

### 1.2. Ecologist and Qualifications

The AWEC nominated Ecologist is Yolande Venter who is a degree qualified ecologist/environmental scientist with over 15 years of field experience within the ecology and environmental sectors.

### 1.3. Scope

1. A desktop review of the site's potential ecological value and any planning constraints, including but not limited to-
  - a. QLD Nature Conservation Act 1992 (NC Act) flora and fauna species database (Wildlife Online).
  - b. QLD Sustainable Development Assessment Provisions Module 8 Native Vegetation Clearing State Code & QLD Vegetation Management Act 1999;
  - c. QLD SEQ Koala State Regulatory Planning Provisions.
  - d. Commonwealth's Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) Protected Matters Search Tool database.
2. A site inspection which included ground trothing the desktop review findings and a fauna survey.
3. Discussion of the likely impacts of the development upon the ecological value identified through the desktop review and site survey.

## 2. METHODOLOGY

### 2.1. Pre-clearance Survey

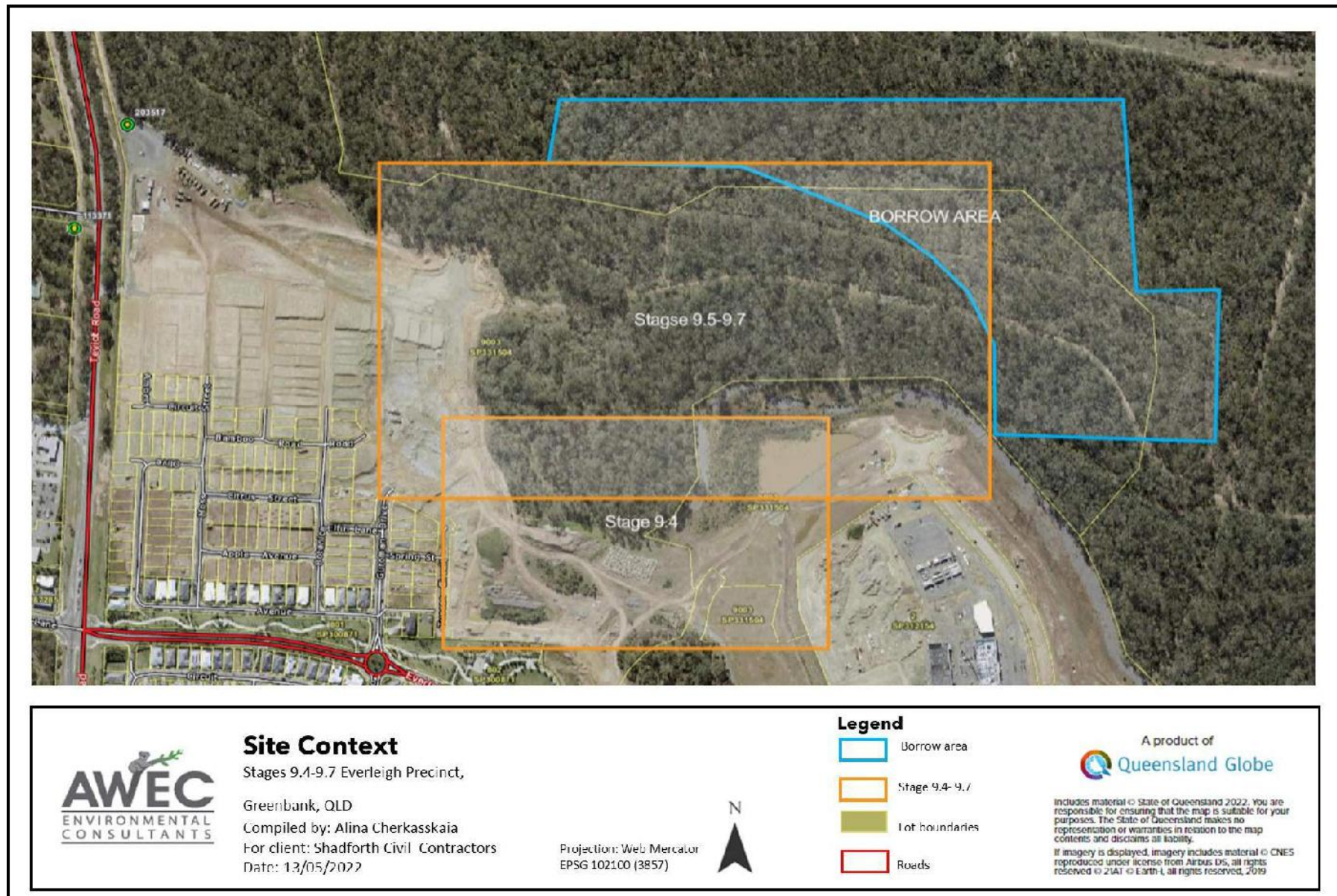
The purpose of the survey is to record the sites overall habitat value, significant habitat features, vegetation connectivity within the site and surrounding lots, fauna signs and opportunistic fauna sightings and the site's suitability for the significant flora species likely to occur in the area.

The site was surveyed on the 8<sup>th</sup>, 13<sup>th</sup> & 17<sup>th</sup> December 2021 and 11<sup>th</sup> May 2022. For this survey, significant fauna habitat features are described as tree hollows (branch and crown), native wildlife nests (stick nests), burrows (feeding burrows), fallen/felled timber, thick groundcover, fissured bark, rocky outcrops, aquatic habitat, and flora species considered Koala habitat trees under the Nature conservation (Koala) conservation plan 2006.

This survey is to include a targeted amphibian search which will incorporate frog call recording, playing frog calls and an active search in suitable habitat.



FIGURE 1- SITE CONTEXT



### 3. STATUTORY REQUIREMENTS AND GUIDELINES

TABLE 1- STATUTORY REQUIREMENTS AND GUIDELINES

LEGISLATION	PURPOSE OF LEGISLATION	IMPACT ON PROJECT PERSONNEL
<b><i>Environmental Protection Regulation 2019</i></b>	Gives legislative support to various national guidelines, plans and Australian Standards. This regulation also outlines requirements for the management of fauna and flora.	To abide by the regulations within the DES.
<b><i>Environmental Protection and Biodiversity Conservation Act 1999</i></b>	The EPBC Act focuses Australian Government interests on the protection of matters of national environmental significance, with the states and territories having responsibility for matters of state and local significance.	To comply with the relevant sections of the Act that relate to matters of national significance which are present in the vicinity of the project works.
<b><i>Nature Conservation Act 2016</i></b>	The Act provides for the legislative protection of Queensland's threatened biota. It is aligned with the IUCN redlist which categorises biota into their current status in the wild.	To comply with the relevant sections of the Act and regulations and the Environmental Authority administered by the DES.
<b><i>Nature Conservation (Wildlife) Regulation 2006</i></b>	This Regulation lists the plants and animals considered presumed extinct, endangered, vulnerable, rare, common, international, and prohibited. It discusses their significance and states the declared management intent and the principles to be observed in any taking and use for each group.	List those animals that may be potentially found on sites being developed as part of the project and limitations for management.
<b><i>Nature Conservation (Wildlife Management) Regulation 2006</i></b>	This Regulation provides for the management of wildlife (including taking, keeping and using wildlife including protected plants).	Provides guidance for the management of wildlife on site, particularly in relation to the interference with native wildlife during the clearing process.
<b><i>Nature Conservation and Other Legislation (Koala Protection) Amendment Regulation 2020</i></b>	<ul style="list-style-type: none"> <li>Guideline for identifying koala habitat</li> <li>Managing koala habitat</li> </ul>	Provides guidance on where spotter/catcher's are legally required and how they are to manage koala habitat
<b><i>Animal Care and Protection Act 2001</i></b>	<ul style="list-style-type: none"> <li>Animal Welfare</li> </ul>	Outlines that animal ethics approval is needed for research, survey and/or monitoring involving vertebrates, where activities such as trapping, census leading to disturbance of animals (such as spotlighting or call play-back), abnormal interruption of behaviour or marking/tagging are involved.
<b><i>Australian code for the care and use of animals for scientific purposes 8<sup>th</sup> edition (2013)</i></b>	<ul style="list-style-type: none"> <li>Ethical framework for animals used for scientific purposes</li> </ul>	Governing principles set out in the Code provide guidance for investigators, teachers, institutions, animal ethics committees and all the people involved in the care and use of animals for scientific purposes.
<b><i>Terrestrial Vertebrate Fauna Survey Guidelines for Queensland (2018)</i></b>	<ul style="list-style-type: none"> <li>Guidelines for Fauna Surveys</li> </ul>	Detailed guidelines on designing a survey, the different survey methodologies and the ethical considerations that need to be made for each methodology.
<b><i>Queensland Hygiene protocol for handling amphibians</i></b>	<ul style="list-style-type: none"> <li>Protocol for handling amphibian species</li> </ul>	Outlines how to handle and manage amphibian species to prevent the spread of diseases among specimens and colonies.



<b><i>Code of Practice- Care and rehabilitation of orphaned, sick or injured protected animals by wildlife carers(2013)</i></b>	<ul style="list-style-type: none"> <li>Provides guidelines on the rehabilitation and care of wildlife</li> </ul>	Detailed guidelines, in regards to hygiene, housing, capture and release, euthanasia and relevant legislation
<b><i>Seqwater-Guideline- Fish Stranding and Salvage</i></b>	<ul style="list-style-type: none"> <li>The purpose of this guidance document is to ensure native fish recovery operations are conducted in a timely and safe manner to minimise or eliminate loss of fish from stranding.</li> </ul>	Guideline on managing aquatic fauna during dewatering works.
<b><i>Fisheries Act 1994</i></b>	<ul style="list-style-type: none"> <li>The main purpose of the Fisheries Act is to provide for the use, conservation and enhancement of the community's fisheries resources and fish habitats in a way that seeks to apply the principles of ecologically sustainable development.</li> </ul>	Outlines fish habitats and fish movement and migration (regulation of waterway barriers). Guidelines on commercial, recreational and indigenous fishing.
<b><i>Biosecurity Act 2014</i></b>	<ul style="list-style-type: none"> <li>The Biosecurity Act provides a framework for an effective biosecurity system for Queensland, to ensure the safety and quality of agricultural inputs, and to align responses to biosecurity risks in the state with national and international obligations.</li> </ul>	Under the Biosecurity Act, pest species must not be kept, fed, given away, sold, or released into the environment without a permit. Under the Biosecurity Act, everyone has a general biosecurity obligation to take reasonable and practical steps to minimise the risks associated with restricted plants and animals.
<b><i>DAF Guidelines for Fish Salvage, 2018</i></b>	<ul style="list-style-type: none"> <li>Purpose of these guidelines is to minimise the risk to aquatic fauna during dewatering works.</li> </ul>	These guidelines provide detailed instructions for dewatering waterbodies and salvaging aquatic fauna.

Australia Wide Environmental Consultants (AWEC) holds a current DES rehabilitation permit (**Permit #WA0002250**), with an extended authority issued by the Department of Environment and Science specifying that the holder may take, keep, or use an animal whose habitat is about to be destroyed by human activity.

## 4. RESULTS

### 4.1 Desktop Review

Vegetation within this stage of the development is mapped as mostly non-remnant, with a small patch of Regional Ecosystems mapped as Least Concern (12.9-10.2) and Of Concern (12.9-10.7) ( See Figure 2, Table 2).




**TABLE 1 – REGIONAL ECOSYSTEMS**




RE	VM Act Status	Short Description
12.9-10.2	Least Concern	Corymbia citriodora subsp. variegata open forest or woodland usually with Eucalyptus crebra. Other species such as Eucalyptus tereticornis, E. moluccana, E. acmenoides and E. siderophloia may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of Lophostemon confertus (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments.
12.9-10.7	Of Concern	Eucalyptus crebra +/- E. tereticornis, Corymbia tessellaris, Angophora leiocarpa, E. melanophloia woodland. Occurs on Cainozoic and Mesozoic sediments. Potential habitat for NCA listed species: Callitris baileyi, Graptophyllum reticulatum, Melaleuca formosa, Melaleuca irbyana, Paspalidium grandispiculatum, Coleus habrophyllus, Polianthion minutiflorum and Zieria inexpectata. This ecosystem is known to provide suitable habitat for koalas (Phascolarctos cinereus). 12.9-10.7a: This ecosystem is known to provide suitable habitat for koalas (Phascolarctos cinereus).

The site is not located within a Priority Koala Area, but the areas proposed for disturbance contain sections of Core Koala Habitat (See Figure 2).



TABLE 3- SIGNIFICANT SPECIES

SIGNIFICANT FAUNA		
Significant Amphibian Species		
<p>Wallum froglet (<i>Crinia tinnula</i>)</p> 	<p>Listed in the Nature Conservation Act as Vulnerable</p> <p>0 Confirmed sightings within 2 km of the site</p> <p>Essential habitat for this species.</p>	<p>During wet weather some parts of the site become inundated and could be potential foraging habitat for this species. This species was not recorded during the fauna pre-clearance surveys. The probability of encountering this species on site is low.</p>
<p>Tusked frog (<i>Adelotus brevis</i>)</p> 	<p>Listed in the Nature Conservation Act as Vulnerable</p> <p>1 Confirmed sightings within 5 km of the site</p>	<p>The north to eastern border of the site contains some low value foraging habitat for this species, not suitable as a breeding site. The chance of encountering this species is low.</p>
Significant Avian Species		
<p>Glossy black cockatoo (<i>Calyptorhynchus lathamii</i>)</p> 	<p>Listed in the Nature Conservation Act as Vulnerable</p> <p>0 Confirmed sightings within 2 km of the site</p> <p>1 Confirmed sighting within 5 km of the site</p> <p>Essential habitat for this species</p>	<p>The eastern section of the site contains suitable food sources for this species. This species wasn't recorded during the fauna pre-clearance survey. There is a low probability of encountering this species.</p>

<p><b>Rufous Fantail (<i>Rhipidura rufifrons</i>)</b></p> 	<p>Listed in the Nature Conservation Act as Special Least Concern</p> <p>5 Confirmed sightings within 5 km of the site</p>	<p>This site provides low value breeding sites and moderate value foraging habitat for this species. The chance of encountering this species is low.</p>
<p><b>Powerful Owl (<i>Ninox strenua</i>)</b></p> 	<p>Listed in the Nature Conservation Act as Vulnerable</p> <p>4 Confirmed sightings within 5 km of the site</p>	<p>This site provides low value breeding and foraging habitat for this species. This species wasn't recorded during the pre-clearance surveys. There is a low probability of encountering this species.</p>
<p><b>Significant Mammal Species</b></p>		
<p><b>Koala (<i>Phascolarctos cinereus</i>)</b></p> 	<p>Listed in the Environmental Protection and Biodiversity Conservation Act as Vulnerable</p> <p>Listed in the Nature Conservation Act as Vulnerable</p> <p>138 Confirmed sightings within 5 km of the site</p> <p>Essential habitat for this species.</p>	<p>This species has been sighted during the pre-clearance survey on 11<sup>th</sup> May. The chance of encountering this species is high.</p>





<p><b>Greater Glider (<i>Petauroides volans</i>)</b></p> 	<p>Listed in the Environmental Protection and Biodiversity Conservation Act as Vulnerable</p> <p>Listed in the Nature Conservation Act as Vulnerable</p> <p>1 Confirmed sighting within 5 km of the site</p> <p>Essential habitat for this species</p>	<p>This site lacks large enough hollows for this species. The lack of connectivity means low value foraging habitat and high risk of predation for this species. No signs of this species were recorded during the fauna pre-clearance survey. The chances of encountering this species on site is low.</p>
<p><b>Spotted-tailed quoll (southern subspecies) (<i>Dasyurus maculatus maculatus</i>)</b></p> 	<p>Listed in the Environmental Protection and Biodiversity Conservation Act as Endangered</p> <p>Listed in the Nature Conservation Act as Vulnerable</p> <p>1 Confirmed sighting within 5 km of the site</p> <p>Essential habitat for this species</p>	<p>The groundcover and mid-storey vegetation layers are too sparse to provide breeding or foraging habitat for this species. No signs of this species were recorded during the pre-clearance survey. The probability of encountering this species on site is low.</p>

FIGURE 2-VEGETATION MANAGEMENT

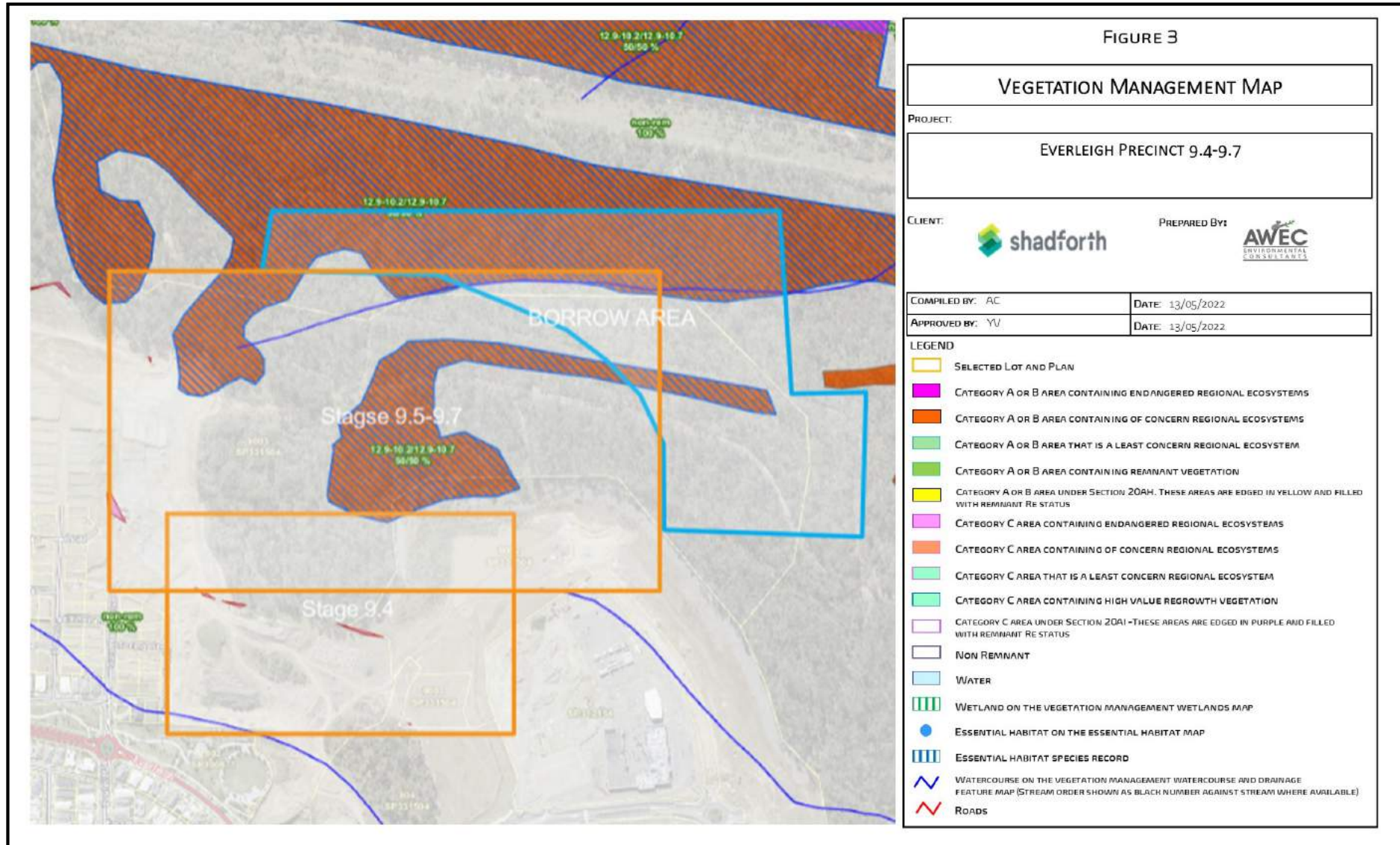
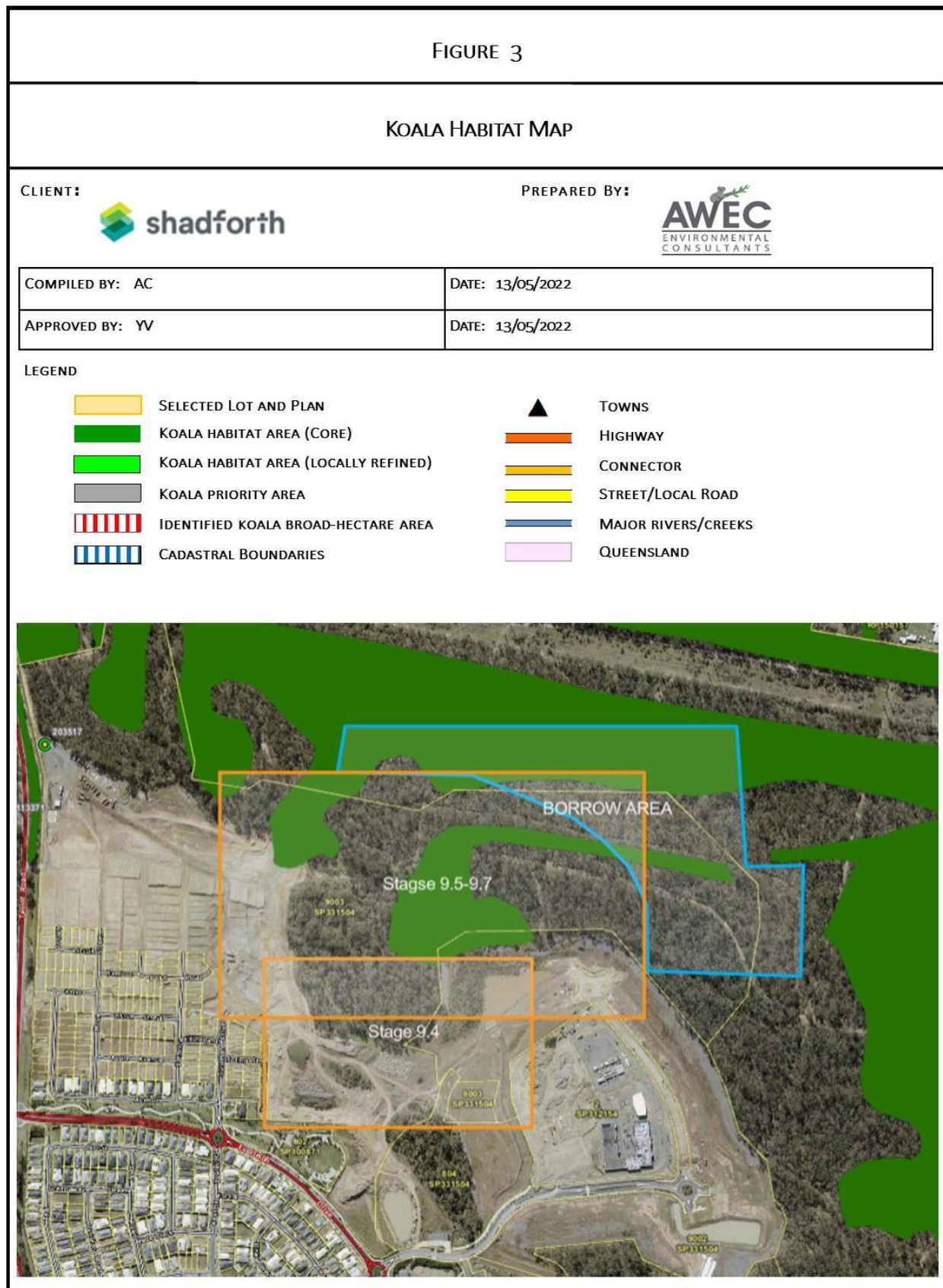




FIGURE 3- KOALA HABITAT



## 4.2 Survey Results

The vegetation community on site was predominantly Open Eucalypt Forest Regrowth. Mid-story regrowth is approximately 15 years old and lacking hollows suitable for fauna habitat. Some mature trees, suitable for Koala habitat are scattered through site. The ground cover is combination of leaf and grass. Vegetation within this stage of works contained multiple habitats features as well as a number of fauna signs (**See Table 4**).

A search of the State Government's Wildlife Online Database for confirmed fauna sightings recorded within 2km of the site. The Wildlife Online database hold records of 131 confirmed previously recorded fauna species comprised of:

- 17 reptile species,
- 19 mammal species,
- 12 amphibian species,
- 2 Ray-finned Fish, and
- 81 bird species

Fauna assemblage was dominated by avian species of Least Concern status (**See Table 3**). A Koala (*Phascolarctos cinereus*) was located in a tree during a drone fly-over (**Figure 4**). Site contains several potential breeding sites suitable for amphibian species: two confirmed call-backs from Stripped marshfrog (*Crinia parinsignifera*) and Beeping froglet (*Crinia parinsignifera*) were recorded during ground-truthing along the watercourse.

The survey concluded that, even though the site has been historically cleared, it still holds value for breeding and foraging of native fauna species.

**Figure 4- PICTURES OF THE SITE**





Table 4- SIGHTED FAUNA BIODIVERSITY

COMMON NAME	SCIENTIFIC NAME	CONSERVATION STATUS
<b>Insect</b>		
Native Bee	<i>Trigona</i>	
<b>Avian</b>		
Graceful tree frog	<i>Litoria gracilentia</i>	Least Concern
Beeping froglet	<i>Crinia parinsignifera</i>	Least Concern
Striped marshfrog	<i>Limnodynastes peronii</i>	Least Concern
<b>Avian</b>		
Australian Magpie	<i>Cracticus tibicen</i>	Least Concern
Black-faced cuckoo-shrike	<i>Coracina novaehollandiae</i>	Least Concern
Black-shouldered Kite	<i>Elanus axillaris</i>	Least Concern
Blue-faced Honeyeater	<i>Entomyzon cyanotis</i>	Least Concern
Crested Pigeon	<i>Ocyphaps lophotes</i>	Least Concern
Galah	<i>Cacatua roseicapilla</i>	Least Concern
Laughing Kookaburra	<i>Dacelo novaeguineae</i>	Least Concern
Magpie-lark	<i>Grallina cyanoleuca</i>	Least Concern
Masked Lapwing	<i>Vanellus miles</i>	Least Concern
Noisy Friarbird	<i>Philemon corniculatus</i>	Least Concern
Noisy miner	<i>Manorina melanocephala</i>	Least Concern
Pacific Black Duck	<i>Anas superciliosa</i>	Least Concern
Pale-headed Rosella	<i>Platycercus adscitus</i>	Least Concern
Pied Butcherbird	<i>Cracticus nigrogularis</i>	Least Concern
Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	Least Concern
Rufous fantail	<i>Rhipidura rufifrons</i>	Least Concern
Sacred Kingfisher	<i>Todiramphus sanctus</i>	Least Concern
Scaly-breasted Lorikeet	<i>Trichoglossus chlorolepidotus</i>	Least Concern
Spangled Drongo	<i>Dicrurus bracteatus</i>	Least Concern
Spangled drongo	<i>Dicrurus bracteatus</i>	Least Concern
Splendid fairy-wren	<i>Malurus splendens</i>	Least Concern
Straw-necked Ibis	<i>Threskiornis spinicollis</i>	Least Concern
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	Least Concern
Torresian Crow	<i>Corvus orru</i>	Least Concern
Welcome Swallow	<i>Hirundo neoxena</i>	Least Concern
White-eared honeyeater	<i>Nesoptilotis leucotis</i>	Least Concern

COMMON NAME	SCIENTIFIC NAME	CONSERVATION STATUS
Willie Wagtail	<i>Rhipidura leucophrys</i>	Least Concern
<b>Mammal</b>		
Eastern grey kangaroo	<i>Macropus giganteus</i>	Least Concern
Koala	<i>Phascolarctos cinereus</i>	Endangered

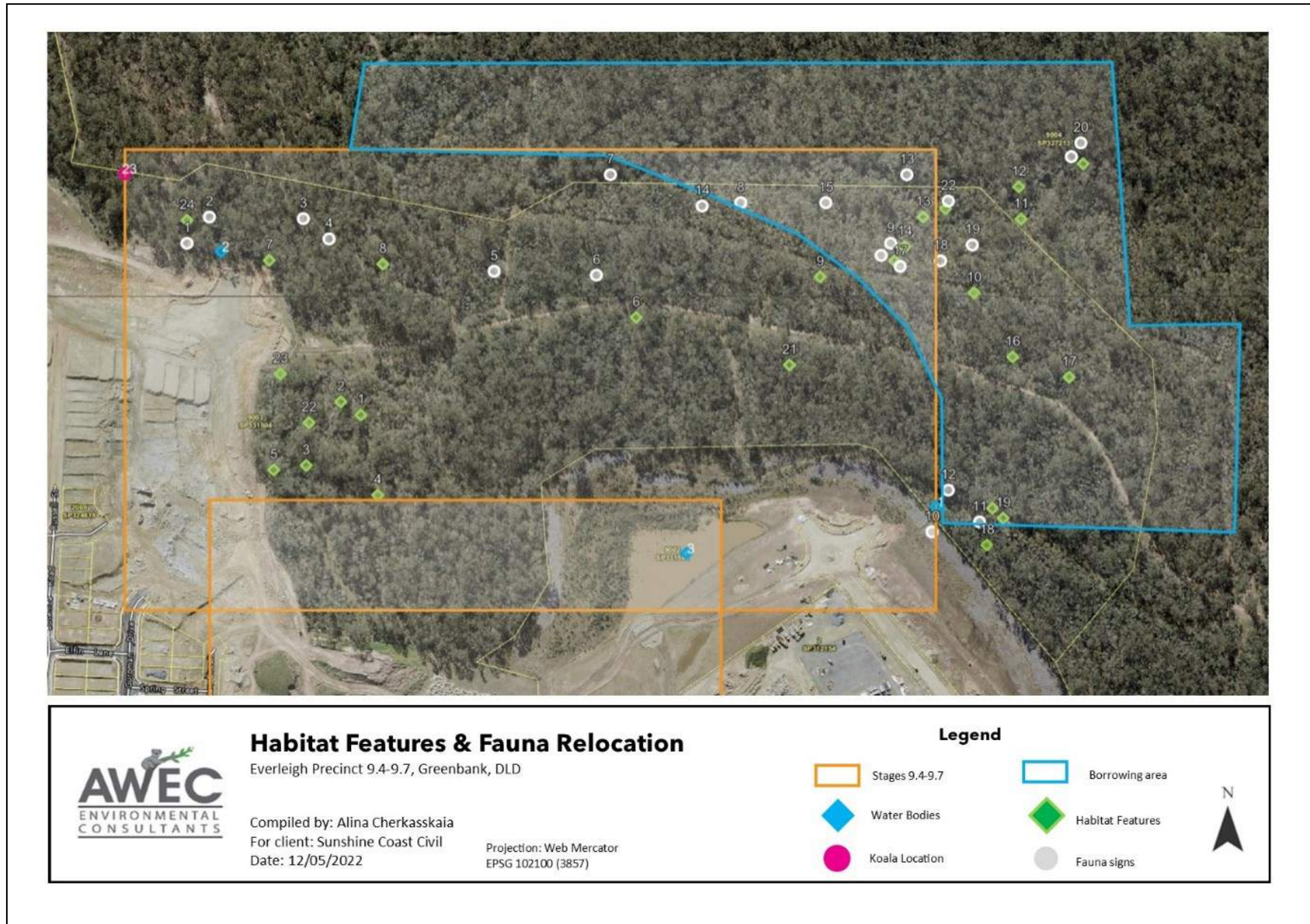
**TABLE 5- SIGNIFICANT HABITAT FEATURES**

NUMBER	HABITAT FEATURE DESCRIPTION	LOCATION	
Habitat Feature			
1	Branch and crown hollows	-27.735616	152.990660
2	Branch hollow	-27.735504	152.990464
3	Termite mound with hollow	-27.736053	152.990135
4	Termite mound with hollow	-27.736309	152.990819
5	Termite mound with hollow	-27.736092	152.989821
6	Active large stick nest, a pair of crows' seen coming and going from nest.	-27.73477	152.99330
7	Active to medium stick nest, an individual honeyeater sp. Seen lingering bringing sticks.	-27.73428	152.98978
8	Frog call backs at this location	-27.73431209	152.9908669
9	Arboreal termite mound	-27.73442078	152.9950617
10	Bandicoot diggings	-27.73455811	152.9965381
11	Woody debris	-27.73392203	152.9969871
12	Macropod scat	-27.73364258	152.9969693
13	Loose/ fissured bark	-27.73390198	152.9960532
14	Woody debris	-27.73416138	152.9958724
15	Woody debris, micro habitat	-27.73428345	152.9957794
16	Arboreal termite mound	-27.73511361	152.9969077
17	Diggings	-27.73529053	152.997452
18	Frogs call back point	-27.73674151	152.9966609
19	Arboreal termite mound	-27.73651123	152.996819
20	Thicket throughout area	-27.73642543	152.9967165
21	Arboreal termite mound	-27.73518372	152.9947693
22	Bandicoot diggings	-27.73568253	152.9901595
23	Woody debris	-27.73526192	152.9898851
24	Arboreal termite mound	-27.7339325	152.9889897
25	Hollow bearing arboreal termite mound	-27.73383207	152.9962628
26	Arboreal termite mound	-27.73344421	152.997585
Fauna sing			
1.	Scratch marks	-27.73413086	152.9889891



2.	Scat	-27.73390198	152.9892066
3.	Arboreal termite mound	-27.73391724	152.9901074
4.	Woody debris	-27.73409222	152.9903547
5.	Track marks macropod	-27.734375	152.9919367
6.	Frog calls (Beeping froglet)	-27.73440552	152.9929156
7.	Bandicoot	-27.73353577	152.9930542
8.	Beeping froglet	-27.73377991	152.9943
9.	Fissured bark, arboreal termite mound, good chance feathertail glider den	-27.73413086	152.9957385
10.	Scat	-27.7366304	152.9961353
11.	Bandicoot Diggings	-27.73654175	152.9965918
12.	Woody debris, More bandicoot nosings	-27.73626709	152.9962904
13.	Large stag good candidate for native beehive	-27.73353577	152.9958973
14.	Bandicoot diggings	-27.73381042	152.9939301
15.	Macropod	-27.73377991	152.995115
16.	Brush tail possum	-27.73423767	152.9956497
17.	Scat	-27.73432922	152.9958304
18.	Bandicoot	-27.73428345	152.9962155
19.	Scat	-27.73414612	152.9965219
20.	Old koala scratch marks	-27.73326111	152.9975633
21.	Macropod scat	-27.73338318	152.9974739
22.	Bandicoot diggings	-27.73376465	152.9962921
23.	Koala	-27.73353	152.98839
<b>Water Body</b>			
1.	Drainage lines	-27.73639959	152.9961821
2.	Drainage line approximately 3m wide stretches east to west	-27.73419189	152.9893223
3.	Dam to be filled		

Figure 5- HABITAT FEATURES & FAUNA SIGNS





## 5. DISCUSSION

### Development Impacts

#### 5.1 Flora

Vegetation within this stage of the development is mapped as mostly non-remnant, with a small patch of Regional Ecosystems mapped as Least Concern (12.9-10.2) and Of Concern (12.9-10.7). Adjoining the site is large, vegetated areas that provide a range of alternative nesting sites for the animals that previously used this site as a breeding site.

#### 5.2 Fauna

Site had a moderate density of habitat features and fauna signs. One significant species was sighted within site. Site does not contain any fauna movement corridor or significant ecological process.

The loss of this site won't have a significant Site had a moderate density of habitat or cumulative impact on the fauna assemblage in the area. The Wildlife and Habitat Impact Mitigation Plan further reduces the potential of direct or cumulative impacts on the local fauna population as a result of the proposed development.

## 6 CONCLUSION

Australia Wide Environmental Consultants were commissioned by Shadforth Civil Contractors to manage fauna during the clearing and mulching works for Everleigh Precinct 9.3 - 9.7 subdivision development of Teviot Road in Greenbank, Queensland (**See Figure 1**).

Fauna pre-clearance surveys determined that the site contained multiple significant habitat features of which are Least Concern avian active breeding sites. Due to the immature size of vegetation, this is low value habitat for arboreal mammals, small marsupials, and reptiles. The loss of this site won't have a significant direct or cumulative impact on the fauna assemblage in the area.

Wildlife and Habitat Impact Mitigation Plan further reduces the potential of direct or cumulative impacts on the local fauna population as a result of the proposed development.

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Everleigh



Environmental Pre-Start Checklist

# Attachment 7

Wildlife and Habitat Impact Mitigation Plan

# Wildlife and Habitat Mitigation Plan

*SHADFORTH CIVIL CONTRACTORS*

81-SCC2205-D

*EVERLEIGH- Precinct 9.3-9.7*

*Teviot Road*

*Greenbank, Queensland*

11<sup>th</sup> May 2022



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## Revision History

Rev No	Issue Date	Revision Details	Prepared By	Reviewed By	Approved By
0	May 2022	Issue for Use	Alina Cherkasskaia	Yolande Venter	Yolande Venter
1					
2					

## Document Approval

Approved:	Name	Signature	Date
Company Director	Yolande Venter		May 2022

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## 1. INTRODUCTION

### 1.1. Background

Australia Wide Environmental Consultants were commissioned by Shadforth Civil Contractors to manage fauna during the clearing and mulching works for Everleigh Precinct 9.3 - 9.7 subdivision development of Teviot Road in Greenbank, Queensland (**See Figure 1**).

The project is a master planned residential development located on allotments at the corner of Teviot Road and Greenbank Road. Precincts 9.4-9.7 are located within Lots 9002/9003/9004 on SP331504 (approx.18/86/ 320 ha respectively).

Site was surveyed on the 11<sup>th</sup> May 2022 by a suitably qualified ecologist.

### 1.2. Ecologist and Qualifications

The AWEC nominated Ecologist is Yolande Venter who is a degree qualified ecologist/environmental coordinator with over 15 years of field experience within the ecology and environmental sectors.

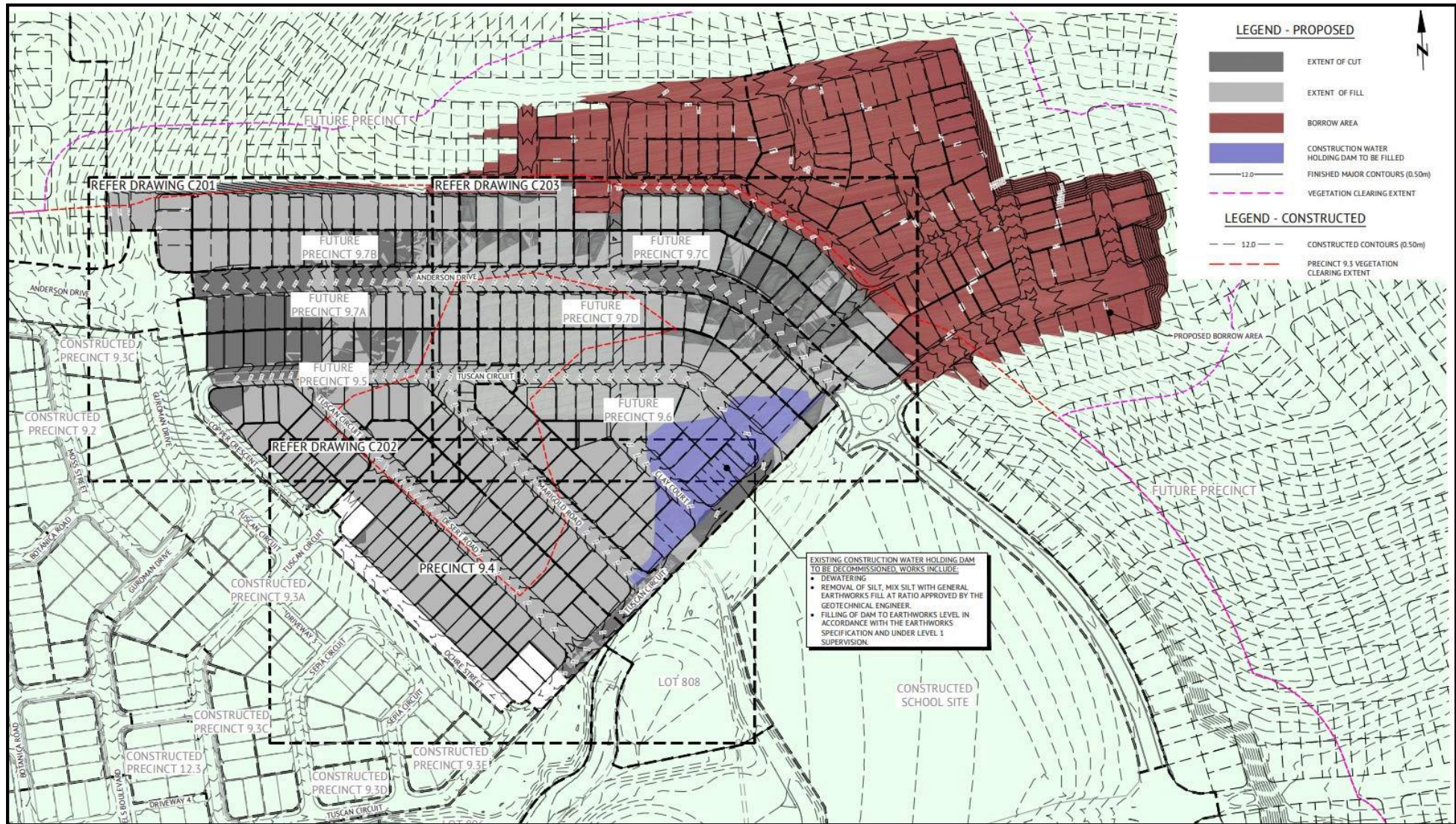
### 1.3. Scope

This report will aim to minimise and mitigate any risks to fauna raised in the Wildlife Protection and Management Plan.

1. Measures required to be completed to minimise wildlife and habitat impacts during operational works.
2. Wildlife capture and removal plan.
3. Contingency plan for wildlife requiring euthanasia, other veterinary procedures, or captive care.
4. Wildlife storage and housing plan
5. Wildlife release and disposal plan.
6. Post works measures to minimise impacts on wildlife.



FIGURE 1- PRECINCT LAYOUT PLAN





## 2. STATUTORY REQUIREMENTS AND GUIDELINES

TABLE 1- STATUTORY REQUIREMENTS AND GUIDELINES

LEGISLATION	PURPOSE OF LEGISLATION	IMPACT ON PROJECT PERSONNEL
<i>Environmental Protection Regulation 2019</i>	Gives legislative support to various national guidelines, plans and Australian Standards. This regulation also outlines requirements for the management of fauna and flora.	To abide by the regulations within the DES.
<i>Environmental Protection and Biodiversity Conservation Act 1999</i>	The EPBC Act focuses Australian Government interests on the protection of matters of national environmental significance, with the states and territories having responsibility for matters of state and local significance.	To comply with the relevant sections of the Act that relate to matters of national significance which are present in the vicinity of the project works.
<i>Nature Conservation Act 2016</i>	The Act provides for the legislative protection of Queensland's threatened biota. It is aligned with the IUCN redlist which categorises biota into their current status in the wild.	To comply with the relevant sections of the Act and regulations and the Environmental Authority administered by the DES.
<i>Nature Conservation (Wildlife) Regulation 2006</i>	This Regulation lists the plants and animals considered presumed extinct, endangered, vulnerable, rare, common, international, and prohibited. It discusses their significance and states the declared management intent and the principles to be observed in any taking and use for each group.	List those animals that may be potentially found on sites being developed as part of the project and limitations for management.
<i>Nature Conservation (Wildlife Management) Regulation 2006</i>	This Regulation provides for the management of wildlife (including taking, keeping and using wildlife including protected plants).	Provides guidance for the management of wildlife on site, particularly in relation to the interference with native wildlife during the clearing process.
<i>Nature Conservation and Other Legislation (Koala Protection) Amendment Regulation 2020</i>	<ul style="list-style-type: none"> <li>Guideline for identifying koala habitat</li> <li>Managing koala habitat</li> </ul>	Provides guidance on where spotter/catcher's are legally required and how they are to manage koala habitat
<i>Animal Care and Protection Act 2001</i>	<ul style="list-style-type: none"> <li>Animal Welfare</li> </ul>	Outlines that animal ethics approval is needed for research, survey and/or monitoring involving vertebrates, where activities such as trapping, census leading to disturbance of animals (such as spotlighting or call play-back), abnormal interruption of behaviour or marking/tagging are involved.
<i>Australian code for the care and use of animals for scientific purposes 8<sup>th</sup> edition (2013)</i>	<ul style="list-style-type: none"> <li>Ethical framework for animals used for scientific purposes</li> </ul>	Governing principles set out in the Code provide guidance for investigators, teachers, institutions, animal ethics committees and all the people involved in the care and use of animals for scientific purposes.
<i>Terrestrial Vertebrate Fauna Survey Guidelines for Queensland (2018)</i>	<ul style="list-style-type: none"> <li>Guidelines for Fauna Surveys</li> </ul>	Detailed guidelines on designing a survey, the different survey methodologies and the ethical considerations that need to be made for each methodology.
<i>Queensland Hygiene protocol for handling amphibians</i>	<ul style="list-style-type: none"> <li>Protocol for handling amphibian species</li> </ul>	Outlines how to handle and manage amphibian species to prevent the spread of diseases among specimens and colonies.