DELWP BIOSITE 3546, ST ALBANS

CONSERVATION MANAGEMENT AND BUTTON WRINKLEWORT RECOVERY PLAN

ANNUAL MONITORING REPORT, DECEMBER 2018

Prepared By

Brett Lane & Associates Pty. Ltd.
Ecological Research & Management

Suite 5 61 - 63 Camberwell Road, Hawthorn, VIC 3123
P.O. Box 337, Camberwell, VIC 3124
Ph. (03) 9815 2111
Fax. (03) 9815 2685

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Report No. 18208 (1.2)

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Acknowledgement:

This report was prepared by Brett Macdonald, Senior Ecologist from Brett Lane & Associates Pty Ltd.

1. INTRODUCTION

The approved Conservation Management and Button Wrinklewort Recovery Plan (the 'CMP', Brett Lane and Associates (BL&A) Report 12152 (10.5), dated April 2016) for the Main Road, St Albans Level Crossing Removal Project was prepared to manage Biosite 3546, referred to herein as the 'Biosite'.

The CMP requires that for every year for five years after the commencement of construction activities, surveys for listed threatened species and communities are to be undertaken by a suitably qualified expert in accordance with the most recent version of the Department of the Environment's guidelines. The person undertaking the action shall provide a report of these monitoring surveys to the Minister within ten days of completion of the monitoring surveys.

The following are to be monitored and detailed within monitoring reports:

- Fencing and signage integrity;
- Dates and mapped extent of ecological burns;
- Mortality or observed stress in Spiny Rice-flower and Button Wrinklewort plants and assessment of causes;
- Undertake vegetation quality mapping as per;
- Biomass levels;
- Documentation of any areas of off-target kills (from weed control) exceeding 1% projective foliage cover over at least 1m^2; and
- Photo points will also be taken annually at each photo point location within each management zone.

Prior to August 2018, the St Albans Biosite was managed by LXRA / VicRoads Major Projects team with the VicRoads MNW Environmental and Roadside Management Team providing advice / assistance on environmental management for the site. In September 2018, VicRoads Metro Assets Environmental and Roadside Management Team (previously MNW) was formally awarded the management of the site from LXRA for the duration of the CMP. Since taking over the management of the site in September 2018, the following items have occurred as per the CMP requirements:

- BL&A were awarded and have undertaken the Annual Monitoring reporting in November 2018;
- A purchase order was raised for Weed Control (focussing on High Threat Weeds & reduction of biomass around the perimeter) & Rubbish Control across the site; and
- Environmental Works Program including the Ecological Burn contract awarded with works to commence in early January 2019.

As there has been minimal management undertaken within the Biosite to date, this first annual report since works ceased in C. 2017 represents the baseline condition of the vegetation community which comprises the Biosite, against which the success of future management can be compared (in subsequent annual monitoring reports).

As per the requirements of the CMP, a completed monitoring and reporting form has been provided on the next page.

Monitoring and reporting form – December 2018

Person Undertaking Action	VicRoads
Location and address of Conservation Reserve	DELWP Biosite 3546 (2A Mansfield Avenue, Sunshine North 3020)
Approval reference	EPBC 2014/7203
Administering Authority	Commonwealth Department of the Environment
Report No.	18208 (1.0)
Name	
Signature	
Date	

2. OBJECTIVES OF THE CMP

As stated in the CMP, the objectives of the plan are to:

- Satisfy Conditions 2, 4 and 5 of the Commonwealth approval for the Project (reference EPBC 2014/7203);
- Protect and enhance the listed threatened species and communities present at Biosite 3546, including but not limited to the Spiny Rice-flower and the Button Wrinklewort;
- Identify threats to the listed threatened species and communities present at Biosite 3546;
- Provide methods to manage threats to the listed threatened species and communities present at Biosite 3546; and
- Identify environmental rehabilitation measures that are appropriately designed and implemented where required.
- Satisfy Condition 5.3 of the Main Road, St Albans Level Crossing Removal project Incorporated Document.

3. MONITORING METHODS, RESULTS AND RECOMENDATIONS

Monitoring of the Biosite was undertaken by Brett Macdonald, Senior Ecologist from BL&A, between the 20th November and 6th December 2018 in accordance with the requirements of the CMP.

The methods employed, monitoring results and recommendations for future management are provided in the following sub-sections. For context, a summary of the CMP objectives and requirements is provided as an introduction to each sub-chapter.

3.1. Fencing and signage integrity

New 1.8m high cyclone fencing was erected around the perimeters of the three individual components of the Biosite c. 2016, as part of the pre-construction phase of the Project. This fencing is considered to be sufficient to physically prevent undesirable access into, and activity within the Biosite.

Existing fencing will be supported by deterrent signage with the aim of discouraging pedestrian, rail personnel and project personnel, equipment, machinery and vehicle movement into and/or through the Biosite.

Fencing and signage integrity will be maintained for the duration of this Plan.

All signage shall be simple, clear and consistent in design. NO GO ZONE signage with contact details for access will be erected around the perimeters of the Biosite.

3.1.1. Methods

A site inspection was undertaken on foot to assess the integrity of the fencing and signage enclosing the three components of the Biosite.

3.1.2. Results

Fencing around all three components of the Biosite was found to be in excellent condition. The fencing gates at each of the Biosite components are adequately locked and a finer mesh skirt has been installed at the base of all fencing to reduce debris and weed seed blowing into the Biosite.

Adequate ‘No-go Zone’ signage is in place around the three components of the Biosite.

3.1.3. Recommendations

It is suggested that interpretive signage be installed on the fencing of each of the components of the Biosite in locations where they will be readily seen by the local community. The aim of the signage would be to raise awareness in the local community of the importance of the Biosite vegetation community for the conservation of biodiversity.

3.2. Ecological burns

Biomass control measures are to be undertaken in the Biosite. This will comprise ecological burning during March each year, which is the period when EPBC-listed species in the Biosite are likely to be least impacted upon by fire.

Only part of the Biosite will be burnt in any given year. Ecological burning must retain at least 25% of the Conservation Reserve as unburnt after each individual burn (i.e. be a mosaic burn). At least one of the three sections of the Biosite shall be left unburned in any given year to provide refuge for the Striped Legless Lizard. The area left unburned shall be different each burn year.

The frequency of burns will depend upon the level of biomass build-up. Burns in a given area shall be undertaken at a frequency of one to three years during wetter periods when

biomass growth will be greater and three to five years during dryer periods when biomass growth will be less.

3.2.1. Methods

A site inspection within all three components of the Biosite was undertaken in late November to map the extent of March ecological burns, if undertaken. If biomass reduction was achieved via another method, this area was mapped.

3.2.2. Results

Biomass control was completed within all three components of the Biosite between May and August 2017, after the weather conditions in April / May 2017 were unfavourable for burning. The biomass control works included hand weeding in the immediate vicinity of Button Wrinklewort / Spiny Rice Flower and brush cutting (and removal of slashed material) in the general area of these species. This was completed in conjunction with a weed management program (May - September 2017) by Merri Creek Management Committee (MCMC).

3.2.3. Recommendations

If weather conditions are favourable, commence annual ecological burning in March 2019 in accordance with the CMP.

If weather conditions are not favourable for ecological burning, repeat the biomass control activities undertaken in 2017.

3.3. Mortality and stress in Spiny Rice-flower and Button Wrinklewort plants and NTGVVP community

Plant health monitoring will be undertaken by a suitably-qualified botanist or ecologist, annually between September and November during construction and then annually post-construction. Plant health monitoring will involve visually inspecting Spiny Rice-flower and Button Wrinklewort plants for mortality and signs of stress.

Stress in Spiny Rice-flower plants is observed as yellowing and/or shedding of leaves while stress in Button Wrinklewort is observed as leave or stem die-back during periods of active growth (i.e. between September and November).

As per Condition 6 of the EPBC Act approval, if the monitoring surveys identify that construction activities result in a loss of greater than five (5) Spiny Rice-flower plants, any Button Wrinklewort plants or of greater than 1.5 hectares of Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP), such as though changes in hydrology, the person taking the action must notify the Minister, prepare an updated CMP identify and secure an offsets; and prepare an Offset Management Plan.

3.3.1. Methods

A site inspection within all three components of the Biosite was undertaken in late November to assess the health, mortality or observed stress in all Spiny Rice-flower and Button Wrinklewort plants previously recorded and tagged in the Biosite, as well as the NTGVVP community.

Assessment of plant health, or stress, primarily involved inspection of foliage for condition, as described in the CMP. Plant mortality was determined through observed absence of plants at tagged locations or presence of dead plant material.

Reasons for any plant mortality or stress observed were also explored in an attempt to determine whether or not this was attributable to construction activities.

3.3.2. Results

All previously tagged, and newly discovered, Spiny Rice-flower and Button Wrinklewort plants were inspected and no signs of mortality or stress were observed in any individuals. All previously tagged plants were found to be in situ and in a healthy state. The NTGVVP community also showed no signs of mortality or stress. A selection of photos of plants and edges of the NTGVVP community nearest the fencing (edge of construction) is provided below.

New Button Wrinklewort plants recorded during this current survey are discussed in Section 3.8.2 below.

Plates - selection of photos of plants and edges of the NTGVVP community nearest the fencing (edge of construction) – Habitat Zone D

Spiny Rice-flower

NTGVVP

Button Wrinklewort

Plates - selection of photos of plants and edges of the NTGVVP community nearest the fencing (edge of construction) – Habitat Zone E

Spiny Rice-flower

Spiny Rice-flower

Plates - selection of photos of plants and edges of the NTGVVP community nearest the fencing (edge of construction) – Habitat Zone F

Spiny Rice-flower

NTGVVP

3.3.3. Recommendations

Remove dumped rubbish from within the Biosite on a regular basis to reduce the likelihood of Spiny Rice-flower and Button Wrinklewort plants and the NTGVVP community being smothered and potentially killed.

Remove small area of dumped soil (Approximately 1X1.5 metres) from northern end of Management Zone D4.

3.4. Vegetation quality mapping and flora composition

Baseline vegetation quality mapping and flora composition estimates were undertaken on 1st June 2015 for each management zone within each of the three components of the Biosite (i.e. Habitat Zones D, E and F).

As minimal management has been undertaken since baseline mapping and data was collected, the results of this current monitoring exercise will be taken as baseline, against which the success of future management can be compared.

3.4.1. Methods

A site inspection within all three components of the Biosite was undertaken in late November to update vegetation quality mapping as per Figures 2 and 3 in the CMP, as well as document the plant composition in management zones in accordance with the method employed in the CMP. Enquiry

3.4.2. Results

Several adjustments were made to the vegetation quality mapping as a result of irregularities in the original (2015) mapping. Some zones were amalgamated, as they didn't display any discernible defences; several new zones were created, as they did display discernible defences with the zones they were split from; and the quality rating of one of the zones was elevated. Current vegetation quality mapping is provided as Appendix 1.

Mapping of the extent of the NTGVVP community within the Biosite was also revised, as it was assessed at a finer management zone scale. This is depicted in the vegetation quality mapping at Appendix 1.

Baseline plant composition monitoring data differed to that collected in 2015, primarily because several introduced weed species were raised to high threat status, particularly the perennial broad-leaf weed Ribwort *Plantago lanceolata*, which is the most entrenched weed within the Biosite.

A summary of baseline plant composition monitoring data for each management zone is provided in Table 1 (Habitat Zone F), Table 2 (Habitat Zone E) and Table 3 (Habitat Zone D). Detailed raw data are provided in Appendix 2 (Habitat Zone F), Appendix 3 (Habitat Zone E) and Appendix 4 (Habitat Zone D).

Table 1: Summary of baseline monitoring results – Habitat Zone F

Measure	Management Zone										
	1	2a	2b	3	4a	4b	5	6	7	8	9
No. indigenous species	4	6	6	22	20	21	12	5	12	4	17
No. weed species	20	5	9	17	15	17	13	11	26	7	8
No. high threat weed species	16	4	5	13	11	11	9	9	20	5	8
% cover high threat weeds	45	15	10	7	5	5	8	20	45	15	10

Table 2: Summary of baseline monitoring results – Habitat Zone E

Measure	Management Zone						
	1	2	3	4	5	6	7
No. indigenous species	24	19	14	16	10	7	10
No. weed species	11	14	16	9	8	12	20
No. high threat weed species	6	9	14	8	7	9	14
% cover high threat weeds	2	7	20	5	50	25	5

Table 3: Summary of baseline monitoring results – Habitat Zone D

Measure	Management Zone								
	1	2	3	4	6	7	8	9	10
No. indigenous species	7	6	19	21	3	5	7	5	8
No. weed species	27	8	4	13	5	6	6	3	7
No. high threat weed species	18	5	2	10	4	5	3	1	6
% cover high threat weeds	45	30	5	7	20	30	25	45	7

3.4.3. Recommendations

Remove Golden-wreath Wattle from Management Zones D10 and D1 to enable re-establishment of native graminoids and forbs and an ultimate increase in the area of NTGVVP. Likewise, remove Golden Wattle from Management Zone D6.

Remove all tree and shrub seedlings from all management zones in the Biosite.

Initiate the weed control program in the early summer of 2018.

Control the small outbreaks of Chilean Needle-grass in Habitat Zone D as a management priority. The locations of these outbreaks are shown on the Appendix 1.2 figure.

3.5. Biomass levels

Native grasslands dominated by Kangaroo Grass (*Themeda triandra*) require frequent biomass removal to prevent senescence of Kangaroo Grass and the build-up of detritus. Senescence and senescence die-back of Kangaroo Grass and resulting detritus build-up can smother out inter-tussock forbs, reduce species diversity and leave gaps which can be more swiftly invaded by high threat weeds, such as Chilean Needle-grass.

Biomass control measures will comprise ecological burning during March as set out in the CMP.

Any burning must occur prior to planting any Button Wrinklewort seedlings in the Biosite to avoid impacts to newly established plants.

3.5.1. Methods

A site inspection within all three components of the Biosite was undertaken in late November to assess vegetation biomass levels. As biomass levels are correlated with graminoid and forb health and recruitment potential, biomass levels were measured as the percentage cover of bare ground (including bryophytes and soil crust, but not organic litter).

3.5.2. Results

Percentage cover of bare ground (including bryophytes and soil crust, but not organic litter) within all management zones of the Biosite is provided below in Table 4.

Ideally, percentage cover of bare ground should be maintained at between 20% and 30%. Percentage cover of bare ground was within this range in only 9 of the 27management zones and this is mainly attributable to ground cover flora competition with the trees and shrubs in the Biosite.

Table 4: Percentage cover of bare ground in management zones throughout the Biosite.

Bare ground cover (%)	Hz F Management Zones										
	1	2a	2b	3	4a	4b	5	6	7	8	9
	40	30	5	18	45	20	30	10	40	10	10

Bare ground cover (%)	Hz E Management Zones						
	1	2	3	4	5	6	7
	5	8	7	5	40	10	5

Bare ground cover (%)	Hz D Management Zones								
	1	2	3	4	6	7	8	9	10
	35	15	10	7	15	15	5	25	3

3.5.3. Recommendations

Commence annual ecological burning in March 2019 in accordance with the CMP.

3.6. Off-target plant mortality

Weed control will be the most intrusive management action within the Biosite and has the potential to cause considerable damage to the native vegetation there. As such, the CMP requires that a high degree of care be taken to ensure that no Spiny Rice-flower or Button Wrinklewort plants, or any other indigenous species, are damaged as a result of weed control activities.

All non-target mortality (i.e. cover of indigenous flora species killed as a result of weed control works) will be documented and provided in an annual report. Non-target mortality is not to exceed 1% projective foliage cover over at least 1m^2 in any given area.

3.6.1. Methods

A site inspection within all three components of the Biosite was undertaken in late November to determine the extent, if any, of off-target plant mortality as a result of weed control works. The threshold for this assessment was mortality of off-target indigenous species exceeding 1% projective foliage cover over at least 1m^2 in any given area.

3.6.2. Results

One area of off-target plant mortality was observed in the southern end of Management Zone E5 (see the Appendix 1.2 figure for location), which was well above the threshold.

It is understood that this occurred as result of treatment of the weed Blue Periwinkle in November / December 2016.

It is unlikely that any threatened flora species were affected by this, as none have been recorded in the vicinity.

3.6.3. Recommendations

Review weed control techniques and restore the area of off-target plant mortality as a management priority.

3.7. Photo points

Photo points will be taken annually at each photo point location within each management zone of the three components of the Biosite.

As there has been minimal management of the Biosite to date, the photo point photos taken this year will be treated a baseline, against which future photos can be compared.

3.7.1. Methods

A site inspection within all three components of the Biosite was undertaken in late November to update the photo points documented in the CMP.

3.7.2. Results

Current photo points photos are provided as Appendix 6. Several of the 2015 photo points have been shifted to more representative locations and new photo points have been established in new management zones.

3.7.3. Recommendations

Nil.

3.8. Incidental observations

3.8.1. New species observed

Tussock Skink *Pseudemoia pagenstecheri* was observed basking in habitat zones E and D during the monitoring exercise. Tussock Skink is listed as vulnerable on DELWP's Advisory List of Threatened Vertebrate Fauna (2013). Tussock Skink was suspected to be resident in the Biosite, but has not been observed until now.

3.8.2. Adjustments to threatened flora species census and mapping

Since 2015, additional Button Wrinklewort plants have appeared in all three habitat zones, raising the total number of plants in the Biosite from 12 to 16. To reflect this change, an amended threatened species figure has been provided in Appendix 5 and an amended threatened species census list has been provided as Appendix 7. As there has been minimal management of the Biosite to date, this will be treated as the baseline census.

Perhaps up to 20 (or more) new Large-headed Fireweed *Senecio macrocarpus* plants may have recruited in habitat zones D and E since the 2015 botanical surveys. At the time of this November 2018 survey however, the plants observed in these zones were in the senescing stage of their annual cycle, preventing positive identification to species level. Leafy Fireweed *Senecio squarrosus* is also resident in these habitat zones and is quite similar to Large-headed Fireweed.

As Large-headed Fireweed is a species of concern (EPBC Act listed) in the Biosite, ongoing September to October targeted surveying would enable positive identification of the species and an accurate census of the species in the Biosite.

Recommendations

Annual September to October targeted surveying for Large-headed Fireweed.

Appendix 1: Vegetation quality mapping

F7
F6
F3
F9
F9
F8
F5
F1
F1
F1
F4B
F3
F5
F1
F1
F5
F4A
F1
F2A
F1
F1
F2B

Habitat Zone F

Legend

- Existing fencing
- Sensitive 2 m threatend species buffer zone - careful precision weed control required
- Chilean needle grass
- Off target plant mortality

Vegetation quality

- Introduced vegetation
- Native vegetation - Moderate quality with high-threat weeds
- Native vegetation - Moderate quality with negligible high-threat weeds
- Native vegetation - High quality with high-threat weeds
- Native vegetation - Highquality with negligible high-threat weeds
- NTGVVP

Metres
0 5 10 20

Appendix 1.1: Conservation Reserve and management zones - Habitat Zone F

Project: Main Road St. Albans Level Crossing Removal

Client: VicRoads

Project No.: 18208	Date: 21/12/2018	Created By: NM

BL&A Brett Lane & Associates Pty. Ltd.
Ecological Research & Management
Experience Knowledge Solutions
Suite 5, 61 - 63 Camberwell Road
Hawthorn East ,VIC 3123
PO Box 337, Camberwell, VIC 3124, Australia
Ph (03) 9815 2111 / Fax (03) 9815 2685
enquiries@ecologicalresearch.com.au
www.ecologicalresearch.com.au

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Habitat Zone E

Habitat Zone D

Legend

- Existing fencing
- Sensitive 2 m threatend species buffer zone - careful precision weed control required
- Chilean needle grass
- Off target plant mortality

Vegetation quality

- Introduced vegetation
- Native vegetation - Moderate quality with high-threat weeds
- Native vegetation - Moderate quality with negligible high-threat weeds
- Native vegetation - High quality with high-threat weeds
- Native vegetation - Highquality with negligible high-threat weeds
- NTGVVP

Metres

0 5 10 20

Appendix 1.2: Conservation Reserve and management zones - Habitat Zones E and D

Project: Main Road St. Albans Level Crossing Removal

Client: VicRoads

Project No.: 18208	Date: 21/12/2018	Created By: NM

BL&A Brett Lane & Associates Pty. Ltd.
Ecological Research & Management
Experience Knowledge Solutions
Suite 5, 61 - 63 Camberwell Road
Hawthorn East ,VIC 3123
PO Box 337, Camberwell, VIC 3124, Australia
Ph (03) 9815 2111 / Fax (03) 9815 2685
enquiries@ecologicalresearch.com.au
www.ecologicalresearch.com.au

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Appendix 2: Raw baseline data for species composition and high-threat weed cover – Habitat Zone F

Cover estimates

Cover Estimate Measures	Hz F Management Zones										
	1	2a	2b	3	4a	4b	5	6	7	8	9
Total cover (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Overall species cover (%)	50	60	85	67	40	70	55	75	50	75	80
Indigenous species cover (%)	5	45	75	60	35	65	47	55	5	60	70
Introduced species cover (%)	45	15	10	7	5	5	8	20	45	15	10
Bare ground cover (%)	40	30	5	18	45	20	30	10	40	10	10
Organic litter cover (%)	10	10	10	15	15	10	15	15	10	15	10

Indigenous species

Scientific Name	Common Name	Hz F Management Zones - Presence (X)										
		1	2a	2b	3	4a	4b	5	6	7	8	9
Acaena echinata	Sheep's Burr				X	X	X					X
Asperula conferta	Common Woodruff		X	X	X	X	X		X	X		X
Atriplex semibaccata	Berry Saltbush							X				
Austrostipa scabra subsp. falcata	Slender Spear-grass				X	X	X	X				
Austrostipa sp.	Spear Grass				X							
Calocephalus citreus	Lemon Beauty-heads				X							X
Chloris truncata	Windmill Grass				X						X	
Chrysocephalum sp. 1	Plains Everlasting					X	X	X				X
Convolvulus angustissimus subsp, omnigracilis	Slender Bindweed		X	X	X	X	X					
Dianella admixta	Black-anther Flax-lily	X	X	X	X	X	X	X	X	X		X
Epilobium hirtigerum	Hairy Willow-herb									X		
Eryngium ovinum	Blue Devil					X	X					
Geranium retrorsum s.l.	Grassland Crane's-bill	X	X	X	X	X	X	X	X	X	X	X

Scientific Name	Common Name	Hz F Management Zones - Presence (X)										
		1	2a	2b	3	4a	4b	5	6	7	8	9
Goodenia pinnatifida	Cut-leaf Goodenia					X	X					X
Juncus pallidus	Pale Rush									X		
Juncus spp.	Rush				X					X		
Juncus subsecundus	Finger Rush									X		
Lomandra micrantha subsp. micrantha	Small-flower Mat-rush				X	X	X					
Oxalis perennans	Grassland Wood-sorrel	X				X	X				X	X
Pimelea curviflora var. 1	Curved Rice-flower				X	X	X					X
Pimelea glauca	Smooth Rice-flower											X
Pimelea spinescens subsp. spinescens	Spiny Rice-flower				X	X	X	X		X		X
Plantago gaudichaudii	Narrow Plantain				X	X	X	X				X
Poa labillardierei var. labillardierei	Common Tussock-grass				X				X			
Poa sieberiana	Grey Tussock-grass			X	X			X				
Pycnosorus chrysanthes	Golden Billy-buttons					X	X			X		X
Rutidosis leptorhynchoides	Button Wrinklewort				X							
Rytidosperma caespitosum	Common Wallaby-grass							X				
Rytidosperma racemosum var. racemosum	Slender Wallaby-grass					X	X	X				
Rytidosperma setaceum	Bristly Wallaby-grass				X							
Rytidosperma sp.	Wallaby Grass							X				
Senecio quadridentatus	Cotton Fireweed				X	X	X			X		X
Themeda triandra	Kangaroo Grass	X	X	X	X	X	X	X	X	X	X	X
Velleia paradoxa	Spur Velleia				X	X	X					X
Vittadinia cuneata	Fuzzy New Holland Daisy						X					
Wahlenbergia communis s.s.	Tufted Bluebell		X		X	X	X					X
Walwhalleya proluta	Rigid Panic									X		
	No. indigenous species	**4**	**6**	**6**	**22**	**20**	**21**	**12**	**5**	**12**	**4**	**17**

Introduced species

Origin	Scientific Name	Common Name	High Threat	Hz F Management Zones - Presence (x) / Projected Foliage Cover (%)										
				1	2a	2b	3	4a	4b	5	6	7	8	9
#PI	*Acacia pycnantha*	Golden Wattle	Yes					+	+			1		
*	*Aster subulatus*	Aster-weed	No								X	X		
*	*Avena sp.*	Oat	No	X		X	X	X	X	X	X	X	X	
*	*Brassica fruticulosa*	Twiggy Turnip	Yes	15	5	1	+	+	+	2	5	15	3	+
*	*Briza maxima*	Large Quaking-grass	No	X	X	X	X		X	X				
*	*Bromus catharticus var. catharticus*	Prairie Grass	Yes	+										
*	*Bromus hordeaceus subsp. hordeaceus*	Soft Brome	No	X		X	X						X	
*	*Cenchrus clandestinus*	Kikuyu	Yes							+		+		
*	*Cirsium vulgare*	Spear Thistle	Yes	+								+		
*	*Corymbia citriodora subsp. citriodora*	Lemon-scented Gum	Yes				+			+				
*	*Cynara cardunculus subsp. flavescens*	Artichoke Thistle	Yes	+			+							
*	*Cynodon dactylon var. dactylon*	Couch	Yes	+				+	+		+	+		+
*	*Dactylis glomerata*	Cocksfoot	Yes	+	+	5	+			+	2	+	+	2
*	*Ehrharta erecta var. erecta*	Panic Veldt-grass	Yes									+		
*	*Ehrharta longiflora*	Annual Veldt-grass	No	X								X		
*	*Erigeron sp.*	Fleabane	Yes								+	+		
*PI	*Eucalyptus cladocalyx*	Sugar Gum	Yes	7								4		
*PI	*Fraxinus angustifolia*	Desert Ash	Yes	+								+		
*	*Galenia pubescens var. pubescens*	Galenia	Yes				+							
*	*Gazania linearis*	Gazania	Yes				+							
*	*Geranium molle*	Dove's Foot	Yes											
*	*Helminthotheca echioides*	Ox-tongue	Yes	+				+	+		1	5		
*	*Hypochaeris radicata*	Cat's Ear	Yes						+					
*	*Lactuca serriola*	Prickly Lettuce	No									X		
*	*Lepidium africanum*	Common Peppercress	No					X	X					

Origin	Scientific Name	Common Name	High Threat	Hz F Management Zones - Presence (x) / Projected Foliage Cover (%)										
				1	2a	2b	3	4a	4b	5	6	7	8	9
	Cynara cardunculus subsp. flavescens	Artichoke Thistle	Yes	+										
*	*Lysimachia arvensis (Blue-flowered variant)*	Blue Pimpernel	No					X	X					
*	*Nassella trichotoma*	Serrated Tussock	Yes			+	+	+	+			+		
*	*Oxalis pes-caprae*	Soursob	Yes	+			+	+	+	+		5		+
*	*Oxalis purpurea*	Large-flower Wood-sorrel	Yes	+			+	+	+	+	+	+	+	+
*	*Paspalum dilatatum*	Paspalum	Yes	+			+			+		+		
*	*Phalaris aquatica*	Toowoomba Canary-grass	Yes	2			+	+	+		+	5		
*	*Plantago coronopus subsp. coronopus*	Buck's-horn Plantain	Yes					+				+		+
*	*Plantago lanceolata*	Ribwort	Yes	20	10	5	5	5	3	6	12	10	12	8
*	*Romulea rosea*	Onion Grass	Yes	+	+	+	+	+	+	+	+	+	+	+
*	*Rumex crispus*	Curled Dock	No									X		
*	*Sonchus oleraceus*	Common Sow-thistle	No				X		X	X				
*	*Tragopogon porrifolius subsp. porrifolius*	Salsify	No									X		
*	*Vicia sativa*	Common Vetch	No			X		X	X	X		X		
			No. weed species	20	5	9	17	15	17	13	11	26	7	8
			No. high threat weed species	16	4	5	13	11	11	9	9	20	5	8
			% cover high threat weed species	45	15	10	7	5	5	8	20	45	15	10

Legend for all tables

***** = introduced species; **#** = native species occurring outside of natural range; **PI** = planted, **X** = species recorded but cover not assessed (i.e. not high-threat weed species); **+** = negligible cover

Appendix 3: Raw baseline data for species composition and high-threat weed cover – Habitat Zone E

Cover estimates

Cover Estimate Measures	Hz E Management Zones						
	1	2	3	4	5	6	7
Total cover (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Overall species cover (%)	87	82	80	65	55	70	85
Indigenous species cover (%)	85	75	60	60	5	45	80
Introduced species cover (%)	2	7	20	5	50	25	5
Bare ground cover (%)	5	8	7	5	40	10	5
Organic litter cover (%)	8	10	13	30	5	20	10

Indigenous species

Scientific Name	Common Name	Hz E Management Zones - Presence (X)						
		1	2	3	4	5	6	7
Acaena echinata	Sheep's Burr	X	X					
Asperula conferta	Common Woodruff	X	X	X	X	X	X	X
Austrostipa bigeniculata	Kneed Spear-grass			X				X
Austrostipa scabra subsp. falcata	Slender Spear-grass		X		X			
Austrostipa sp.	Spear Grass	X	X		X			
Calocephalus citreus	Lemon Beauty-heads	X						
Chloris truncata	Windmill Grass							X
Comesperma polygaloides	Small Milkwort	X						
Convolvulus angustissimus subsp. omnigracilis	Slender Bindweed	X	X					
Dianella admixta	Black-anther Flax-lily	X	X	X	X	X	X	X
Einadia nutans	Nodding Saltbush		X	X	X			
Eryngium ovinum	Blue Devil			X				
Geranium retrorsum s.l.	Grassland Crane's-bill	X	X	X	X	X	X	

Scientific Name	Common Name	Hz E Management Zones - Presence (X)						
		1	2	3	4	5	6	7
Goodenia pinnatifida	Cut-leaf Goodenia	X						
Lachnagrostis filiformis s.l.	Common Blown-grass							X
Lomandra micrantha subsp. micrantha	Small-flower Mat-rush	X			X		X	
Minuria leptophylla	Minnie Daisy	X						
Oxalis perennans	Grassland Wood-sorrel	X	X		X	X		
Pimelea curviflora var. 1	Curved Rice-flower	X	X		X			
Pimelea glauca	Smooth Rice-flower	X	X		X	X	X	X
Pimelea spinescens subsp. spinescens	Spiny Rice-flower	X	X	X		X		
Plantago gaudichaudii	Narrow Plantain	X	X			X		
Poa labillardierei var. labillardierei	Common Tussock-grass		X	X				
Poa sieberiana	Grey Tussock-grass	X	X		X	X		
Rutidosis leptorhynchoides	Button Wrinklewort	X	X		X			
Rytidosperma caespitosum	Common Wallaby-grass			X	X		X	
Rytidosperma duttonianum	Brown-back Wallaby-grass					X		
Rytidosperma sp.	Wallaby Grass							X
Senecio macrocarpus	Large-headed Fireweed	X						
Senecio quadridentatus	Cotton Fireweed	X		X				
Themeda triandra	Kangaroo Grass	X	X	X	X	X	X	X
Velleia paradoxa	Spur Velleia	X						
Veronica gracilis	Slender Speedwell		X	X				X
Wahlenbergia communis s.s.	Tufted Bluebell	X		X	X			
Wahlenbergia communis s.s.	Tufted Bluebell		X	X	X			
Walwhalleya proluta	Rigid Panic	X						X
	No. indigenous species	**24**	**19**	**14**	**16**	**10**	**7**	**10**

Introduced species

Origin	Scientific Name	Common Name	High Threat	Hz E Management Zones - Presence (x) / Projected Foliage Cover (%)						
				1	2	3	4	5	6	7
#PI	*Acacia pycnantha*	Golden Wattle	Yes				+			
*	*Agrostis capillaris*	Brown-top Bent								+
*	*Aira spp.*	Aira	No	X	X					
*	*Allium triquetrum*	Angled Onion	Yes		+	+		+		+
*	*Aster subulatus*	Aster-weed	No							X
*	*Avena sp.*	Oat	No	X	X	X	X		X	X
*	*Brassica fruticulosa*	Twiggy Turnip	Yes	+	2	2	2	25	5	+
*	*Briza maxima*	Large Quaking-grass	No	X	X			X		
*	*Bromus catharticus var. catharticus*	Prairie Grass	Yes							+
*	*Bromus hordeaceus subsp. hordeaceus*	Soft Brome	No	X	X					
*	*Cenchrus clandestinus*	Kikuyu	Yes			3	+		+	+
*	*Cynara cardunculus subsp. flavescens*	Artichoke Thistle	Yes							+
*	*Cynodon dactylon var. dactylon*	Couch	Yes			+			+	+
*	*Dactylis glomerata*	Cocksfoot	Yes		+				+	
*	*Ehrharta erecta var. erecta*	Panic Veldt-grass	Yes		+	+			+	+
*PI	*Eucalyptus cladocalyx*	Sugar Gum	Yes	+			+			
*PI	*Fraxinus angustifolia*	Desert Ash	Yes	+	+				+	
*	*Galenia pubescens var. pubescens*	Galenia	Yes			+				
*	*Geranium molle*	Dove's Foot	Yes			+		+		+
*	*Helminthotheca echioides*	Ox-tongue	Yes		+		+	7		+
*	*Holcus lanatus*	Yorkshire Fog	No	X						X
*	*Iridaceae*	Iris	Yes		+					
*	*Nassella trichotoma*	Serrated Tussock	Yes			+		+	+	
*	*Oxalis pes-caprae*	Soursob	Yes			+	+		+	+
*	*Oxalis purpurea*	Large-flower Wood-sorrel	Yes			+	+			

Origin	Scientific Name	Common Name	High Threat	Hz E Management Zones - Presence (x) / Projected Foliage Cover (%)						
				1	2	3	4	5	6	7
*	*Paspalum dilatatum*	Paspalum	Yes							+
*	*Phalaris aquatica*	Toowoomba Canary-grass	Yes	+						
*	*Plantago coronopus subsp. coronopus*	Buck's-horn Plantain	Yes			+				
*	*Plantago lanceolata*	Ribwort	Yes	2	5	15	3	17	20	5
*	*Romulea rosea*	Onion Grass	Yes	+	+	+		+		+
*	*Rumex crispus*	Curled Dock	No							X
*	*Sonchus oleraceus*	Common Sow-thistle	No						X	X
*	*Tragopogon porrifolius subsp. porrifolius*	Salsify	No		X					
*	*Vicia sativa*	Common Vetch	No			X			X	X
*	*Vinca major*	Blue Periwinkle	Yes			+				
			No. weed species	11	14	16	9	8	12	20
			No. high threat weed species	6	9	14	8	7	9	14
			% cover high threat weed species	2	7	20	5	50	25	5

Legend for all tables

***** = introduced species; **#** = native species occurring outside of natural range; **Pl** = planted, **X** = species recorded but cover not assessed (i.e. not high-threat weed species); **+** = negligible cover

Appendix 4: Raw baseline data for species composition and high-threat weed cover – Habit Zone D

Cover estimates

Cover Estimate Measures	Hz D Management Zones								
	1	2	3	4	6	7	8	9	10
Total cover (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Overall species cover (%)	50	70	80	77	35	70	80	60	22
Indigenous species cover (%)	5	40	75	70	15	40	55	15	15
Introduced species cover (%)	45	30	5	7	20	30	25	45	7
Bare ground cover (%)	35	15	10	7	15	15	5	25	3
Organic litter cover (%)	15	15	10	16	50	15	15	15	75

Indigenous species

Scientific Name	Common Name	Hz D Management Zones - Presence (X)								
		1	2	3	4	6	7	8	9	10
Acaena echinata	Sheep's Burr	X		X	X					
Asperula conferta	Common Woodruff		X					X		
Austrostipa bigeniculata	Kneed Spear-grass		X							
Austrostipa sp.	Spear Grass	X			X	X	X		X	X
Calocephalus citreus	Lemon Beauty-heads			X	X					
Chrysocephalum sp. 1	Plains Everlasting			X						
Convolvulus angustissimus subsp., omnigracilis	Slender Bindweed			X						X
Dianella admixta	Black-anther Flax-lily	X	X	X	X	X	X	X		X
Dianella sp. aff. longifolia (Benambra)	Arching Flax-lily				X					
Eryngium ovinum	Blue Devil				X					X

Scientific Name	Common Name	Hz D Management Zones - Presence (X)								
		1	2	3	4	6	7	8	9	10
Geranium retrorsum s.l.	Grassland Crane's-bill	X	X	X	X			X		
Goodenia pinnatifida	Cut-leaf Goodenia			X	X					
Minuria leptophylla	Minnie Daisy			X	X					
Oxalis perennans	Grassland Wood-sorrel			X				X	X	
Pimelea curviflora var. 1	Curved Rice-flower			X	X					
Pimelea glauca	Smooth Rice-flower	X		X	X		X			X
Pimelea spinescens subsp. spinescens	Spiny Rice-flower			X	X					
Plantago gaudichaudii	Narrow Plantain			X	X					
Poa labillardierei var. labillardierei	Common Tussock-grass				X					
Poa sieberiana	Grey Tussock-grass			X	X			X		X
Pycnosorus chrysanthes	Golden Billy-buttons			X						
Rutidosis leptorhynchoides	Button Wrinklewort			X	X					
Rytidosperma caespitosum	Common Wallaby-grass	X	X				X			
Rytidosperma duttonianum	Brown-back Wallaby-grass				X					
Rytidosperma sp.	Wallaby Grass				X				X	X
Senecio quadridentatus	Cotton Fireweed							X		
Solenogyne dominii	Smooth Solenogyne			X						
Themeda triandra	Kangaroo Grass	X	X	X	X	X	X	X	X	X
Velleia paradoxa	Spur Velleia			X	X					
Veronica gracilis	Slender Speedwell				X					
Walwhalleya proluta	Rigid Panic								X	
	No. indigenous species	**7**	**6**	**19**	**21**	**3**	**5**	**7**	**5**	**8**

Introduced species

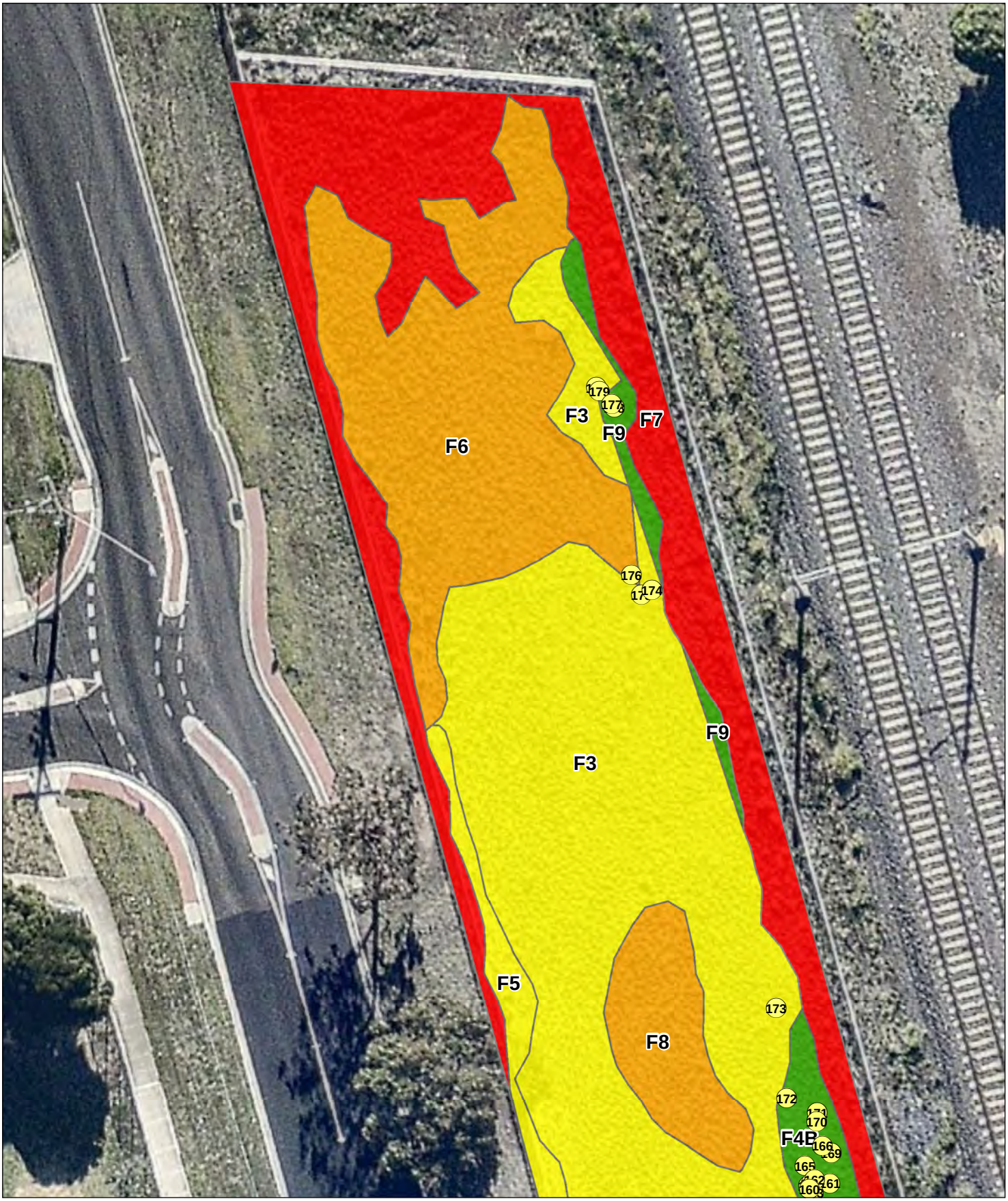
Origin	Scientific Name	Common Name	High Threat	Hz D Management Zones - Presence (x) / Projected Foliage Cover (%)								
				1	2	3	4	6	7	8	9	10
*PI	*Acacia saligna*	Golden-wreath Wattle	Yes	+			+					+
*	*Avena sp.*	Oat	No	X	X	X	X			X	10	2
*	*Brassica fruticulosa*	Twiggy Turnip	Yes	10			+	+	+	+		2
*	*Briza maxima*	Large Quaking-grass	No	X		X	X		X	X	X	X
*	*Bromus catharticus var. catharticus*	Prairie Grass	Yes	+								
*	*Bromus hordeaceus subsp. hordeaceus*	Soft Brome	No	X			X	X		X		
*	*Cenchrus clandestinus*	Kikuyu	Yes	3	5							1
*	*Cirsium vulgare*	Spear Thistle	Yes	+								
*	*Cynara cardunculus subsp. flavescens*	Artichoke Thistle	Yes		+							
*	*Cynodon dactylon var. dactylon*	Couch	Yes	+			+					
*	*Ehrharta erecta var. erecta*	Panic Veldt-grass	Yes	+					+			
*PI	*Fraxinus angustifolia*	Desert Ash	Yes	+								+
*	*Geranium molle*	Dove's Foot	Yes		+							
*	*Helminthotheca echioides*	Ox-tongue	Yes	5			+					
*	*Hypochaeris radicata*	Cat's Ear	Yes	+								
*	*Iridaceae*	Iris	Yes				+					
*	*Lactuca serriola*	Prickly Lettuce	No	X								
*	*Lolium spp.*	Rye grass	No	X								
	Cynara cardunculus subsp. flavescens	Artichoke Thistle	Yes	+								
*	*Nassella neesiana*	Chilean Needle-grass	Yes	+				15				
*	*Nassella trichotoma*	Serrated Tussock	Yes				+					
*	*Oxalis pes-caprae*	Soursob	Yes	+	+			+	+			
*	*Paspalum dilatatum*	Paspalum	Yes	+			+					

Origin	Scientific Name	Common Name	High Threat	Hz D Management Zones - Presence (x) / Projected Foliage Cover (%)								
				1	2	3	4	6	7	8	9	10
*	*Phalaris aquatica*	Toowoomba Canary-grass	Yes	2	10		+			1		
*	*Plantago lanceolata*	Ribwort	Yes	25	15	5	6	5	30	20	35	2
*	*Rapistrum rugosum*	Giant mustard	Yes	+								
*	*Romulea rosea*	Onion Grass	Yes	+	+	+	+		+			
*	*Rumex crispus*	Curled Dock	No	X								
*	*Sonchus oleraceus*	Common Sow-thistle	No	X								
*	*Tragopogon porrifolius subsp. porrifolius*	Salsify	No	X	X							
*	*Vicia sativa*	Common Vetch	No	X	X							
			No. weed species	27	8	4	13	5	6	6	3	7
			No. high threat weed species	18	5	2	10	4	5	3	1	6
			% cover high threat weed species	45	30	5	7	20	30	25	45	7

Legend for all tables

***** = introduced species; **#** = native species occurring outside of natural range; **PI** = planted, **X** = species recorded but cover not assessed (i.e. not high-threat weed species); **+** = negligible cover

Appendix 5: Locations of threatened species in Biosite - November 2018



Appendix 5.1: Locations of threatened species recorded in the Conservation Reserve

Project: Main Road St. Albans Level Crossing Removal **Client**: VicRoads **Date**: 3/01/2019

Untagged species

- Arching Flax-lily
- Button Wrinklewort
- Large-headed Fireweed

- Introduced vegetation
- Native vegetation - Moderate quality with high-threat weeds
- Native vegetation - Moderate quality with negligible high-threat weeds
- Native vegetation - High quality with high-threat weeds
- Native vegetation - Highquality with negligible high-threat weeds

MoNES locations and tag numbers

- 101 Spiny Rice-flower
- 242 Button Wrinklewort
- 124 Small Milkwort

1 2 3 4 5 8 6 9 7 10 11

N

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Appendix 5.2: Locations of threatened species recorded in the Conservation Reserve

Project: Main Road St. Albans Level Crossing Removal **Client**: VicRoads **Date**: 3/01/2019

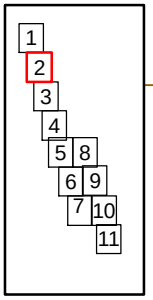
Untagged species

- Arching Flax-lily
- Button Wrinklewort
- Large-headed Fireweed

- Introduced vegetation
- Native vegetation - Moderate quality with high-threat weeds
- Native vegetation - Moderate quality with negligible high-threat weeds
- Native vegetation - High quality with high-threat weeds
- Native vegetation - Highquality with negligible high-threat weeds

MoNES locations and tag numbers

- 101 Spiny Rice-flower
- 242 Button Wrinklewort
- 124 Small Milkwort



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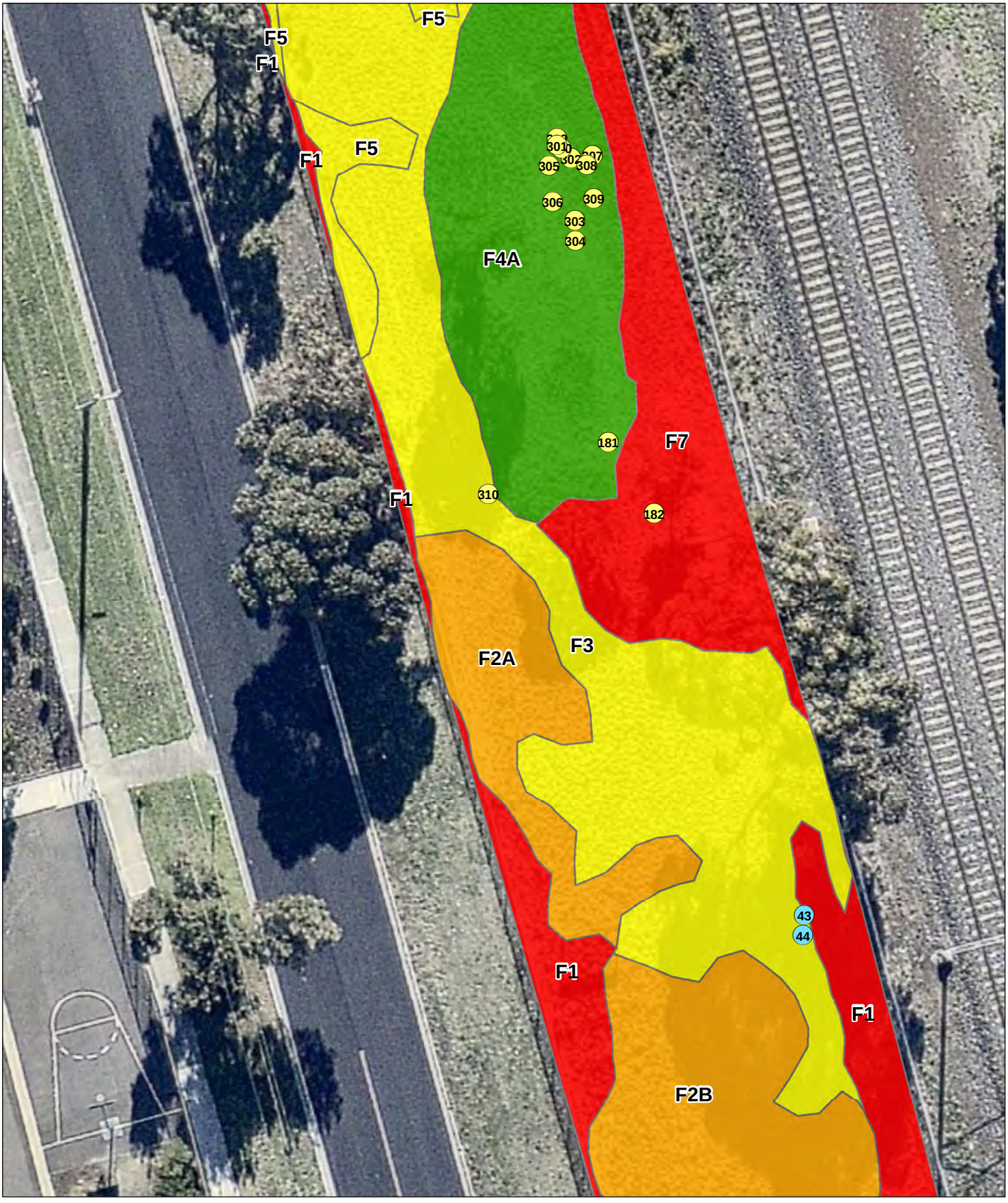


Appendix 5.3: Locations of threatened species recorded in the Conservation Reserve

Project: Main Road St. Albans Level Crossing Removal **Client**: VicRoads **Date**: 3/01/2019

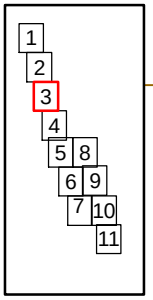
Untagged species

- Arching Flax-lily
- Button Wrinklewort
- Large-headed Fireweed

- Introduced vegetation
- Native vegetation - Moderate quality with high-threat weeds
- Native vegetation - Moderate quality with negligible high-threat weeds
- Native vegetation - High quality with high-threat weeds
- Native vegetation - Highquality with negligible high-threat weeds

MoNES locations and tag numbers

- 101 Spiny Rice-flower
- 242 Button Wrinklewort
- 124 Small Milkwort



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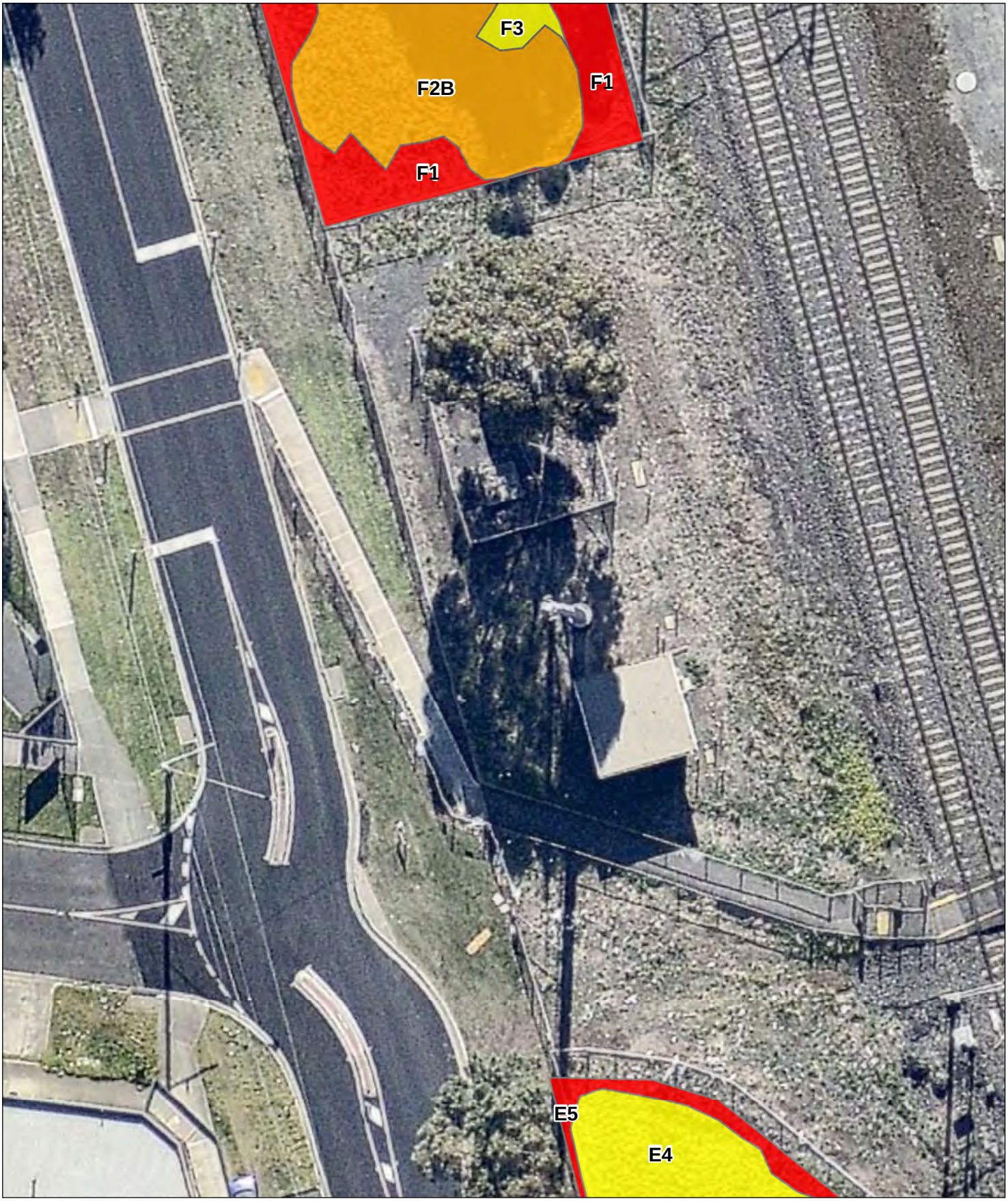


Appendix 5.4: Locations of threatened species recorded in the Conservation Reserve

Project: Main Road St. Albans Level Crossing Removal **Client**: VicRoads **Date**: 3/01/2019

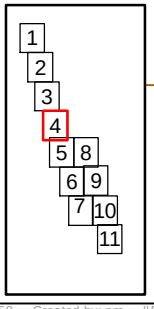
Untagged species

- Arching Flax-lily
- Button Wrinklewort
- Large-headed Fireweed

- Introduced vegetation
- Native vegetation - Moderate quality with high-threat weeds
- Native vegetation - Moderate quality with negligible high-threat weeds
- Native vegetation - High quality with high-threat weeds
- Native vegetation - Highquality with negligible high-threat weeds

MoNES locations and tag numbers

- 101 Spiny Rice-flower
- 242 Button Wrinklewort
- 124 Small Milkwort



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Appendix 5.5: Locations of threatened species recorded in the Conservation Reserve

Project: Main Road St. Albans Level Crossing Removal **Client**: VicRoads **Date**: 3/01/2019

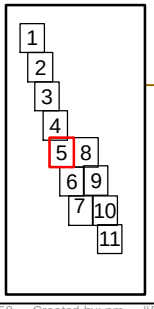
Untagged species

- Arching Flax-lily
- Button Wrinklewort
- Large-headed Fireweed

- Introduced vegetation
- Native vegetation - Moderate quality with high-threat weeds
- Native vegetation - Moderate quality with negligible high-threat weeds
- Native vegetation - High quality with high-threat weeds
- Native vegetation - Highquality with negligible high-threat weeds

MoNES locations and tag numbers

- 101 Spiny Rice-flower
- 242 Button Wrinklewort
- 124 Small Milkwort



N

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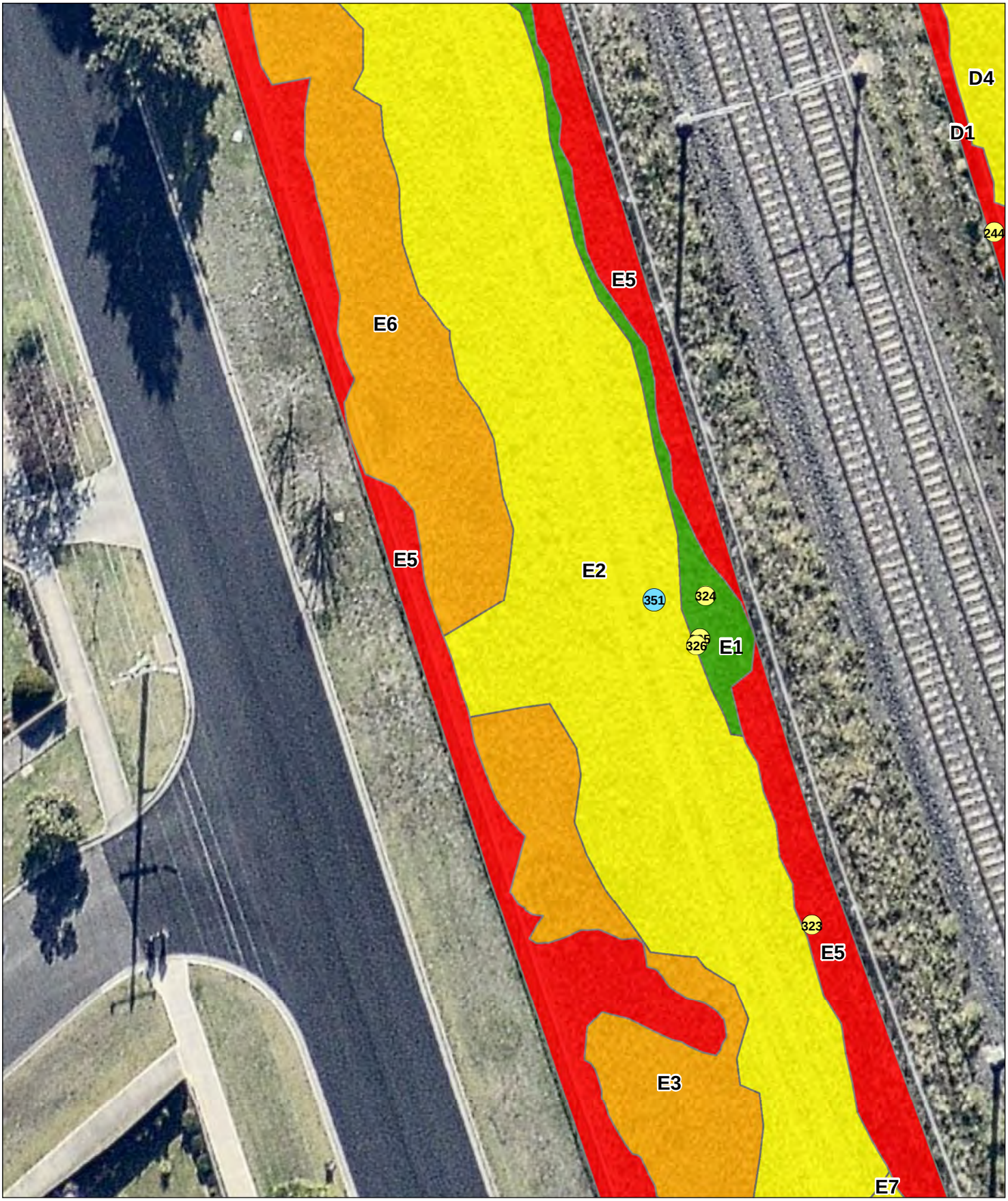

Appendix 5.6: Locations of threatened species recorded in the Conservation Reserve

Project: Main Road St. Albans Level Crossing Removal **Client**: VicRoads **Date**: 3/01/2019

Untagged species

- Arching Flax-lily
- Button Wrinklewort
- Large-headed Fireweed

- Introduced vegetation
- Native vegetation - Moderate quality with high-threat weeds
- Native vegetation - Moderate quality with negligible high-threat weeds
- Native vegetation - High quality with high-threat weeds
- Native vegetation - Highquality with negligible high-threat weeds

MoNES locations and tag numbers

- 101 Spiny Rice-flower
- 242 Button Wrinklewort
- 124 Small Milkwort

1 2 3 4 5 8 6 9 7 10 11

N

Metres 0 5

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Appendix 5.7: Locations of threatened species recorded in the Conservation Reserve

Project: Main Road St. Albans Level Crossing Removal **Client**: VicRoads **Date**: 3/01/2019

Untagged species

- Arching Flax-lily
- Button Wrinklewort
- Large-headed Fireweed

- Introduced vegetation
- Native vegetation - Moderate quality with high-threat weeds
- Native vegetation - Moderate quality with negligible high-threat weeds
- Native vegetation - High quality with high-threat weeds
- Native vegetation - Highquality with negligible high-threat weeds

MoNES locations and tag numbers

- 101 Spiny Rice-flower
- 242 Button Wrinklewort
- 124 Small Milkwort

1 2 3 4 5 8 6 9 7 10 11

N

Metres 0 5

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Appendix 5.8: Locations of threatened species recorded in the Conservation Reserve

Project: Main Road St. Albans Level Crossing Removal **Client**: VicRoads **Date**: 3/01/2019

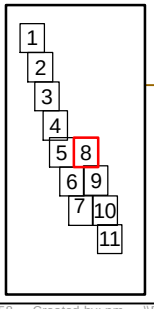
Untagged species

- Arching Flax-lily
- Button Wrinklewort
- Large-headed Fireweed

- Introduced vegetation
- Native vegetation - Moderate quality with high-threat weeds
- Native vegetation - Moderate quality with negligible high-threat weeds
- Native vegetation - High quality with high-threat weeds
- Native vegetation - Highquality with negligible high-threat weeds

MoNES locations and tag numbers

- 101 Spiny Rice-flower
- 242 Button Wrinklewort
- 124 Small Milkwort



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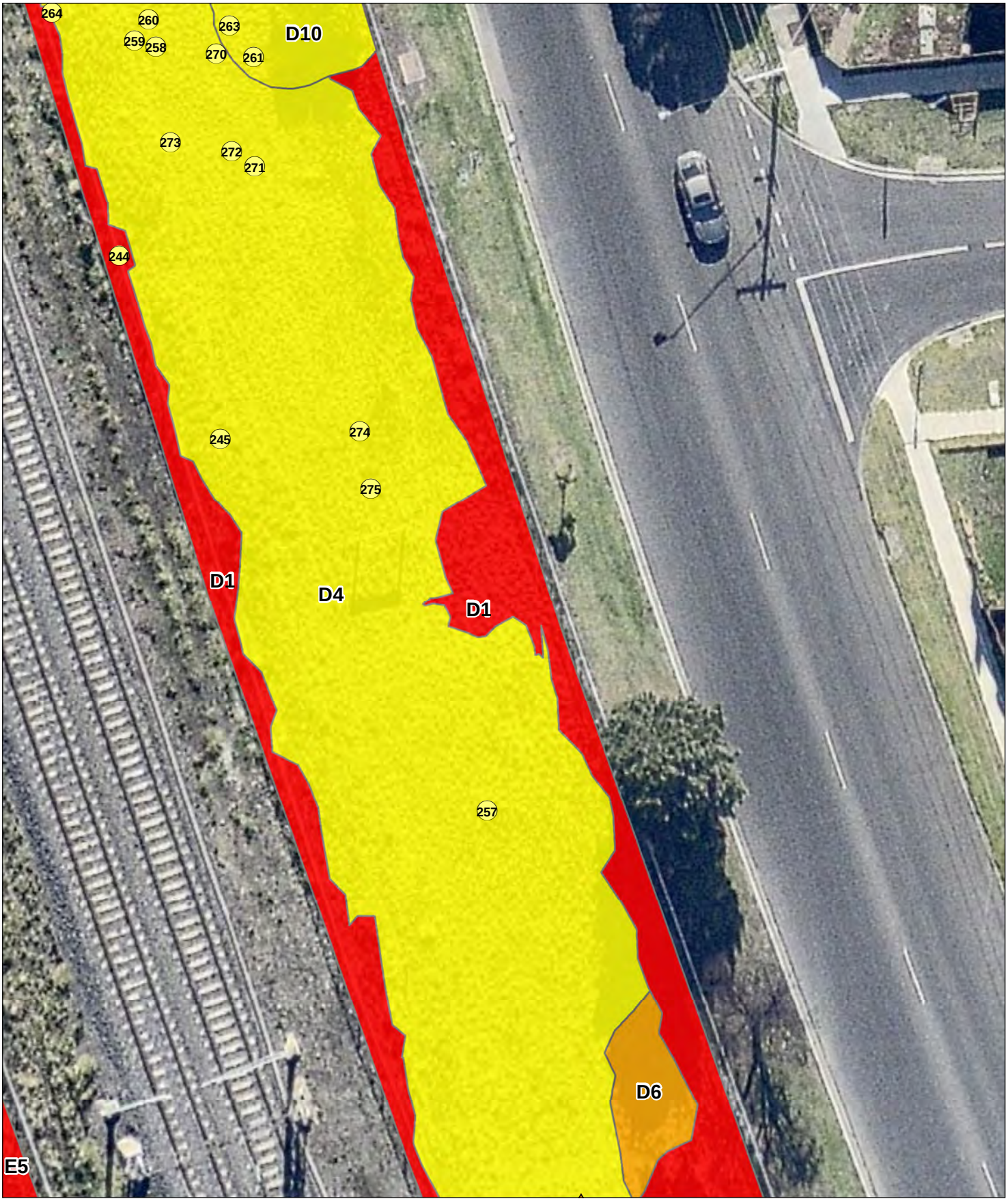


Appendix 5.9: Locations of threatened species recorded in the Conservation Reserve

Project: Main Road St. Albans Level Crossing Removal **Client**: VicRoads **Date**: 3/01/2019

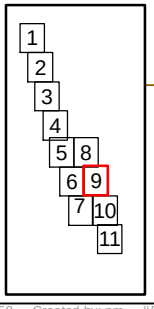
Untagged species

- Arching Flax-lily
- Button Wrinklewort
- Large-headed Fireweed

- Introduced vegetation
- Native vegetation - Moderate quality with high-threat weeds
- Native vegetation - Moderate quality with negligible high-threat weeds
- Native vegetation - High quality with high-threat weeds
- Native vegetation - Highquality with negligible high-threat weeds

MoNES locations and tag numbers

- 101 Spiny Rice-flower
- 242 Button Wrinklewort
- 124 Small Milkwort



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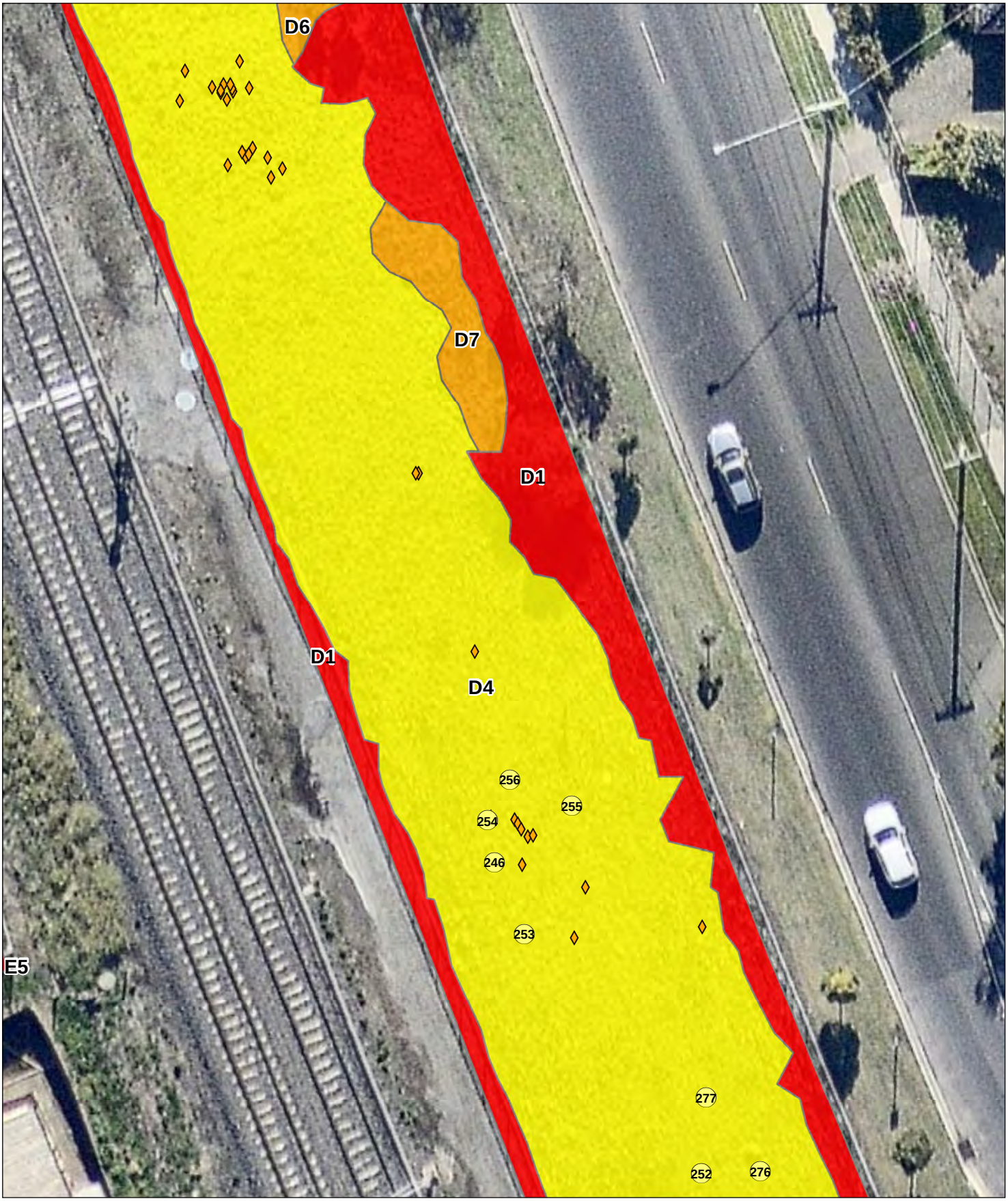


Appendix 5.10: Locations of threatened species recorded in the Conservation Reserve

Project: Main Road St. Albans Level Crossing Removal **Client**: VicRoads **Date**: 3/01/2019

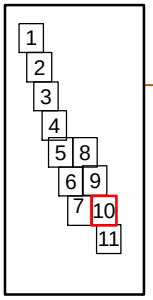
Untagged species

- Arching Flax-lily
- Button Wrinklewort
- Large-headed Fireweed

- Introduced vegetation
- Native vegetation - Moderate quality with high-threat weeds
- Native vegetation - Moderate quality with negligible high-threat weeds
- Native vegetation - High quality with high-threat weeds
- Native vegetation - Highquality with negligible high-threat weeds

MoNES locations and tag numbers

- 101 Spiny Rice-flower
- 242 Button Wrinklewort
- 124 Small Milkwort



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Appendix 5.11: Locations of threatened species recorded in the Conservation Reserve

Project: Main Road St. Albans Level Crossing Removal **Client**: VicRoads **Date**: 3/01/2019

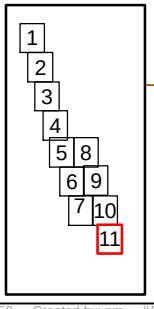
Untagged species

- Arching Flax-lily
- Button Wrinklewort
- Large-headed Fireweed

- Introduced vegetation
- Native vegetation - Moderate quality with high-threat weeds
- Native vegetation - Moderate quality with negligible high-threat weeds
- Native vegetation - High quality with high-threat weeds
- Native vegetation - Highquality with negligible high-threat weeds

MoNES locations and tag numbers

- 101 Spiny Rice-flower
- 242 Button Wrinklewort
- 124 Small Milkwort



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Appendix 6: Photo points November 2018

Legend

- Existing fencing
- Management zone photo points
- Photo direction

Metres
0 5 10 20

Appendix 6.1: Management zone photo points - Habitat Zone F

Project: Main Road St. Albans Level Crossing Removal

Client: VicRoads

Project No.: 18208	Date: 21/12/2018	Created By: A. Brennen / M. Ghasemi

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Ecological Research & Management
Experience Knowledge Solutions
Suite 3, 61 - 63 Camberwell Road
Hawthorn East ,VIC 3123
PO Box 337, Camberwell, VIC 3124, Australia
Ph (03) 9815 2111 / Fax (03) 9815 2685
enquiries@ecologicalresearch.com.au
www.ecologicalresearch.com.au

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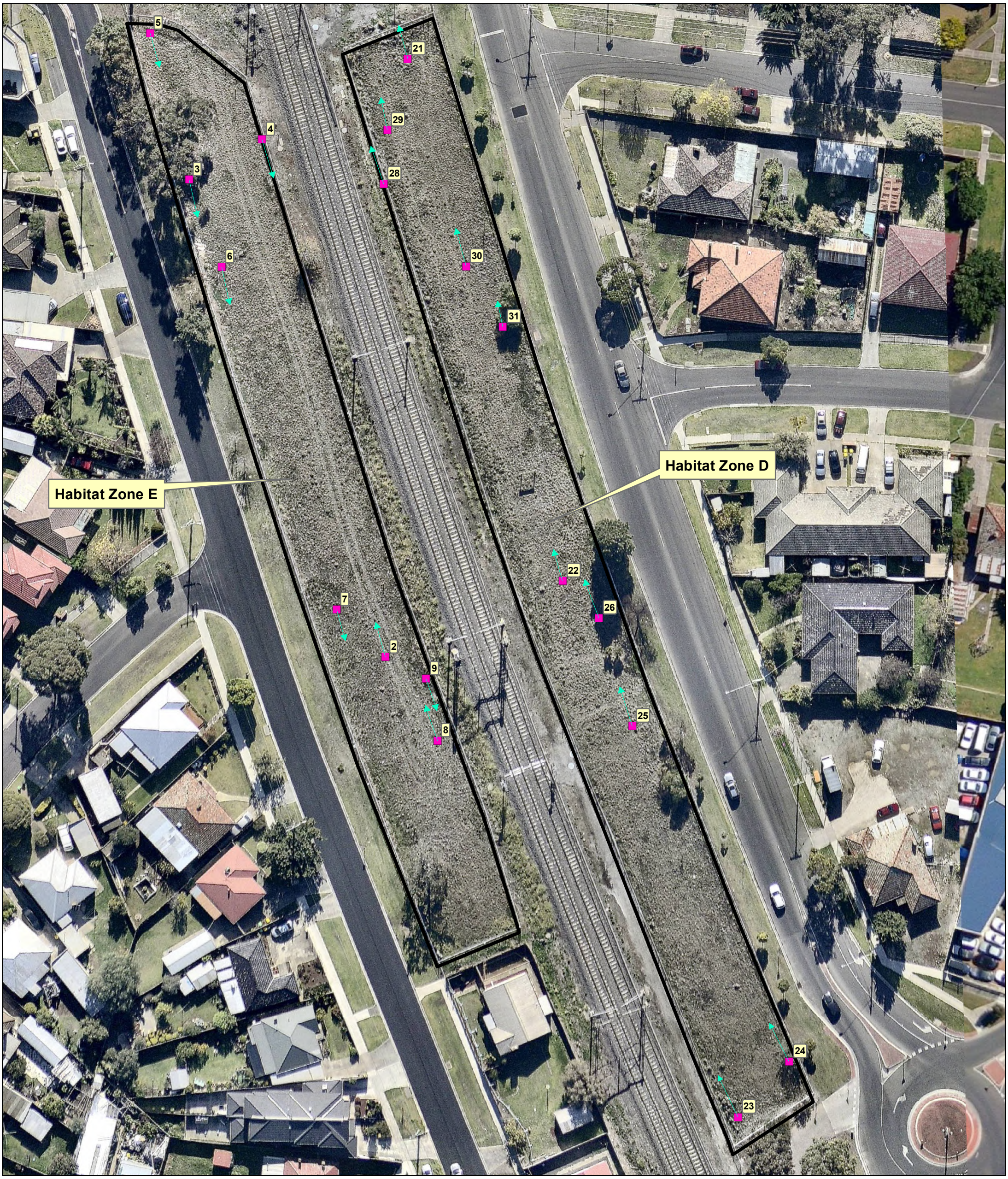

Legend

- Existing fencing
- Management zone photo points
- Photo direction

Metres
0 5 10 20

Appendix 6.2: Management zone photo points - Habitat Zones E and D

Project: Main Road St. Albans Level Crossing Removal

Client: VicRoads

Project No.: 18208	Date: 21/12/2018	Created By: A. Brennen / M. Ghasemi

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Suite 3, 61 - 63 Camberwell Road
Hawthorn East ,VIC 3123
PO Box 337, Camberwell, VIC 3124, Australia

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Habitat Zone F - Management Zone 1 (Photo point 10)

Habitat Zone F - Management Zone 2a (Photo point 11a)

Habitat Zone F - Management Zone 2b (Photo point 11b)

Habitat Zone F - Management Zone 3 (Photo point 12)

Habitat Zone F - Management Zone 4a (Photo point 13a)

Habitat Zone F - Management Zone 4b (Photo point 13b)

Habitat Zone F - Management Zone 5 (Photo point 14)

Habitat Zone F - Management Zone 6 (Photo point 15)

Habitat Zone F - Management Zone 7 (Photo point 20)

Habitat Zone F - Management Zone 8 (Photo point 19)

Habitat Zone F - Management Zone 9 (Photo point 16)

Habitat Zone E - Management Zone 1 (Photo point 4)

Habitat Zone E - Management Zone 2 (Photo point 2)

Habitat Zone E - Management Zone 3 (Photo point 7)

Habitat Zone E - Management Zone 4 (Photo point 3)

Habitat Zone E - Management Zone 4 (Photo point 5)

Habitat Zone E - Management Zone 5 (Photo point 9)

Habitat Zone E - Management Zone 6 (Photo point 6)

Habitat Zone E - Management Zone 7 (Photo point 8)

Habitat Zone D - Management Zone 1 (Photo point 24)

Habitat Zone D - Management Zone 1 (Photo point 28)

Habitat Zone D - Management Zone 2 (Photo point 21)

Habitat Zone D - Management Zone 3 (Photo point 29)

Habitat Zone D - Management Zone 4 (Photo point 22)

Habitat Zone D - Management Zone 6 (Photo point 26)

Habitat Zone D - Management Zone 7 (Photo point 25)

Habitat Zone D - Management Zone 8 (Photo point 23)

Habitat Zone D - Management Zone 9 (Photo point 30)

Habitat Zone D - Management Zone 10 (Photo point 31)

Appendix 7: Threatened species census list – November 2018

Species	Tag number (BL&A)	Tag number (MCMC)	Distance from fence (m)	Number of plants
Button Wrinklewort	-	35	-	1
Button Wrinklewort	-	40	-	1
Button Wrinklewort	-	42	-	1
Button Wrinklewort	-	43	-	1
Button Wrinklewort	-	44	-	1
Button Wrinklewort	-	45	-	1
Spiny Rice-flower	101		3	1
Spiny Rice-flower	102		2.5	3
Spiny Rice-flower	103		2.1	1
Spiny Rice-flower	104		2.5	1
Spiny Rice-flower	105		2.15	1
Spiny Rice-flower	106		1.7	1
Spiny Rice-flower	107		1.3	1
Spiny Rice-flower	108		2.15	2
Spiny Rice-flower	109		2.45	2
Spiny Rice-flower	110		2.25	1
Spiny Rice-flower	111		1.45	1
Spiny Rice-flower	112		1.75	1
Spiny Rice-flower	113		1.8	3
Spiny Rice-flower	114		2.05	2
Spiny Rice-flower	114		2.35	3
Spiny Rice-flower	115		1.35	1
Spiny Rice-flower	115		1.9	1
Spiny Rice-flower	116		2.5	1
Spiny Rice-flower	117		3.9	1
Spiny Rice-flower	118		2.7	1
Spiny Rice-flower	118		2.15	6
Spiny Rice-flower	119		2.05	1
Spiny Rice-flower	120		1.35	2
Spiny Rice-flower	121		1.9	3
Spiny Rice-flower	122		2.1	2
Spiny Rice-flower	123		2.35	4
Small Milkwort	124		2.9	1
Spiny Rice-flower	125		1.55	3
Spiny Rice-flower	126		3.85	2
Spiny Rice-flower	127		2.2	1
Spiny Rice-flower	128		3.5	1
Spiny Rice-flower	129		2.75	1
Spiny Rice-flower	130		2.4	1
Spiny Rice-flower	131		1.9	2

Species	Tag number (BL&A)	Tag number (MCMC)	Distance from fence (m)	Number of plants
Spiny Rice-flower	132		2.5	1
Spiny Rice-flower	132		3.1	2
Spiny Rice-flower	133		2.6	3
Spiny Rice-flower	134		2.95	3
Spiny Rice-flower	134		2.15	4
Spiny Rice-flower	135		3.1	1
Spiny Rice-flower	136		3	1
Spiny Rice-flower	137		3	1
Spiny Rice-flower	138		2.8	1
Spiny Rice-flower	138		3.6	1
Spiny Rice-flower	139		2.45	2
Spiny Rice-flower	140		1.5	1
Spiny Rice-flower	140		1.7	2
Spiny Rice-flower	141		1.9	1
Spiny Rice-flower	142		2.35	1
Spiny Rice-flower	143		1.9	1
Spiny Rice-flower	144		3	1
Spiny Rice-flower	145		3.05	1
Spiny Rice-flower	146		2.55	1
Spiny Rice-flower	147		1.3	2
Spiny Rice-flower	148		1.55	2
Spiny Rice-flower	149		2	2
Spiny Rice-flower	150		1.25	1
Spiny Rice-flower	151		2.2	1
Spiny Rice-flower	152		2.15	1
Spiny Rice-flower	153		1.8	2
Spiny Rice-flower	154		2.6	1
Spiny Rice-flower	155		2.9	1
Spiny Rice-flower	156		5.2	1
Spiny Rice-flower	156		3.3	4
Spiny Rice-flower	157		2	1
Spiny Rice-flower	158		1.4	1
Spiny Rice-flower	158		1.15	1
Spiny Rice-flower	159		2.6	1
Spiny Rice-flower	160		3	2
Spiny Rice-flower	160		2.2	2
Spiny Rice-flower	161		1.9	2
Spiny Rice-flower	161		3.1	1
Spiny Rice-flower	162		2.6	1
Spiny Rice-flower	162		2.35	3
Spiny Rice-flower	163		2.85	1

Species	Tag number (BL&A)	Tag number (MCMC)	Distance from fence (m)	Number of plants
Spiny Rice-flower	163		1.95	4
Spiny Rice-flower	164		3.5	1
Spiny Rice-flower	165		3	1
Spiny Rice-flower	165		3.4	1
Spiny Rice-flower	166		1.7	1
Spiny Rice-flower	166		1.4	1
Spiny Rice-flower	167		2.8	1
Spiny Rice-flower	168		3	2
Spiny Rice-flower	168		2.05	2
Spiny Rice-flower	169		1.35	2
Spiny Rice-flower	169		2.8	4
Spiny Rice-flower	170		1.65	1
Spiny Rice-flower	170		2.4	1
Spiny Rice-flower	171		1.5	1
Spiny Rice-flower	172		2.9	2
Spiny Rice-flower	173		2.15	2
Spiny Rice-flower	174		2.7	2
Spiny Rice-flower	174		2.35	2
Spiny Rice-flower	175		3.2	1
Spiny Rice-flower	175		2.3	3
Spiny Rice-flower	176		3.55	1
Spiny Rice-flower	176		2.6	1
Spiny Rice-flower	177		2.15	2
Spiny Rice-flower	177		2.9	1
Spiny Rice-flower	178		2.05	1
Spiny Rice-flower	178		1.8	4
Spiny Rice-flower	179		2.6	1
Spiny Rice-flower	179		2.05	2
Spiny Rice-flower	180		2.7	1
Spiny Rice-flower	180		2.55	3
Spiny Rice-flower	181		5.2	1
Spiny Rice-flower	182		3.8	1
Spiny Rice-flower	182		3.1	3
Spiny Rice-flower	183		3.4	1
Spiny Rice-flower	184		2.4	1
Spiny Rice-flower	185		2.7	4
Spiny Rice-flower	185		2.6	1
Spiny Rice-flower	186		3.15	1
Spiny Rice-flower	187		3.6	1
Spiny Rice-flower	188		2.75	2
Spiny Rice-flower	189		3.3	4

Species	Tag number (BL&A)	Tag number (MCMC)	Distance from fence (m)	Number of plants
Spiny Rice-flower	189		2.1	2
Spiny Rice-flower	190		2.9	3
Spiny Rice-flower	190		3.45	1
Spiny Rice-flower	191		2.65	1
Spiny Rice-flower	192		2.35	2
Spiny Rice-flower	193		2.05	2
Spiny Rice-flower	194		1.6	4
Spiny Rice-flower	195		3	1
Spiny Rice-flower	196		2.35	3
Spiny Rice-flower	197		3	6
Spiny Rice-flower	197		3	2
Spiny Rice-flower	198		2.55	4
Spiny Rice-flower	199		2.2	2
Spiny Rice-flower	200		2.35	3
Spiny Rice-flower	201		1.95	1
Spiny Rice-flower	202		3.8	1
Spiny Rice-flower	203		3.15	4
Spiny Rice-flower	204		2.9	6
Spiny Rice-flower	205		1.9	1
Spiny Rice-flower	206		2.15	6
Spiny Rice-flower	207		1.95	4
Spiny Rice-flower	208		1.6	3
Spiny Rice-flower	209		3.15	4
Spiny Rice-flower	210		2.85	3
Spiny Rice-flower	211		3.15	3
Spiny Rice-flower	212		3.15	3
Button Wrinklewort	213	37	3.7	1
Spiny Rice-flower	214		2.7	4
Spiny Rice-flower	215		2.4	3
Spiny Rice-flower	216		2	2
Spiny Rice-flower	217		2.2	4
Button Wrinklewort	218		3.25	1
Spiny Rice-flower	219	36	2.05	3
Button Wrinklewort	220	38	3	1
Spiny Rice-flower	222		2.5	1
Spiny Rice-flower	223		1.3	1
Spiny Rice-flower	224		1.1	1
Spiny Rice-flower	225		1.55	2
Spiny Rice-flower	226		2.95	2
Spiny Rice-flower	226		1.75	2
Spiny Rice-flower	227		3.15	1

Species	Tag number (BL&A)	Tag number (MCMC)	Distance from fence (m)	Number of plants
Spiny Rice-flower	227		1.95	3
Spiny Rice-flower	228		2.2	1
Spiny Rice-flower	228		2.5	4
Spiny Rice-flower	229		3.1	1
Spiny Rice-flower	229		2.5	6
Spiny Rice-flower	230		2.5	1
Spiny Rice-flower	230		2.2	2
Spiny Rice-flower	231		3	1
Spiny Rice-flower	231		2.1	4
Spiny Rice-flower	232		3.3	1
Spiny Rice-flower	232		3.1	2
Spiny Rice-flower	233		3.5	1
Spiny Rice-flower	233		3.3	2
Spiny Rice-flower	234		2.7	1
Spiny Rice-flower	234		1.6	2
Spiny Rice-flower	234		3.15	4
Spiny Rice-flower	235		3	1
Spiny Rice-flower	235		2	4
Spiny Rice-flower	236		3.35	1
Spiny Rice-flower	236		2.35	5
Spiny Rice-flower	237		2.6	1
Spiny Rice-flower	237		2.45	3
Spiny Rice-flower	238		3.3	1
Spiny Rice-flower	238		1.85	1
Spiny Rice-flower	239		2.8	2
Spiny Rice-flower	239		1.75	1
Spiny Rice-flower	240		1.9	1
Spiny Rice-flower	240		2.3	1
Spiny Rice-flower	241		3	1
Spiny Rice-flower	241		1.75	1
Spiny Rice-flower	242		2.3	1
Button Wrinklewort	242	39	2.45	1
Spiny Rice-flower	243		2.8	1
Button Wrinklewort	243	41	2.8	1
Spiny Rice-flower	244		2.7	1
Spiny Rice-flower	244		0.65	2
Spiny Rice-flower	245		2.1	2
Spiny Rice-flower	245		2.7	2
Spiny Rice-flower	246		2.2	1
Spiny Rice-flower	246		4.5	1
Spiny Rice-flower	247		2.3	1

Species	Tag number (BL&A)	Tag number (MCMC)	Distance from fence (m)	Number of plants
Spiny Rice-flower	247		9.3	1
Spiny Rice-flower	248		2.1	1
Spiny Rice-flower	248		9.25	1
Spiny Rice-flower	249		2.4	2
Spiny Rice-flower	249		8.9	1
Spiny Rice-flower	250		1.8	1
Spiny Rice-flower	250		11.4	1
Spiny Rice-flower	251		2.6	1
Spiny Rice-flower	251		8.4	3
Spiny Rice-flower	252		3.1	1
Spiny Rice-flower	252		8.25	1
Spiny Rice-flower	253		3.4	1
Spiny Rice-flower	253		4.5	2
Spiny Rice-flower	254		2.5	1
Spiny Rice-flower	254		5	2
Spiny Rice-flower	255		2.3	1
Spiny Rice-flower	255		9.35	2
Spiny Rice-flower	256		2.8	1
Spiny Rice-flower	256		6.9	1
Spiny Rice-flower	257		2.3	1
Spiny Rice-flower	257		9.4	1
Spiny Rice-flower	258		2	1
Spiny Rice-flower	258		5.8	1
Spiny Rice-flower	259		0.15	1
Spiny Rice-flower	259		5.15	1
Spiny Rice-flower	260		0.3	1
Spiny Rice-flower	260		5.85	1
Spiny Rice-flower	261		2.3	1
Spiny Rice-flower	261		10.5	1
Spiny Rice-flower	262		2.4	1
Spiny Rice-flower	262		10.5	2
Spiny Rice-flower	263		2.3	1
Spiny Rice-flower	263		9.8	1
Spiny Rice-flower	264		2.1	1
Spiny Rice-flower	264		1.3	1
Spiny Rice-flower	265		8.3	1
Spiny Rice-flower	266		1.85	2
Spiny Rice-flower	266		10.7	1
Spiny Rice-flower	267		1.65	1
Spiny Rice-flower	267		13	1
Spiny Rice-flower	268		1.5	1

Species	Tag number (BL&A)	Tag number (MCMC)	Distance from fence (m)	Number of plants
Spiny Rice-flower	268		10	2
Spiny Rice-flower	269		2.2	3
Spiny Rice-flower	269		11.5	1
Spiny Rice-flower	270		2.55	1
Spiny Rice-flower	270		8.7	2
Spiny Rice-flower	271		2.6	1
Spiny Rice-flower	271		8.8	2
Spiny Rice-flower	272		2.95	1
Spiny Rice-flower	272		7.9	1
Spiny Rice-flower	273		2.75	1
Spiny Rice-flower	273		5	2
Spiny Rice-flower	274		2.85	3
Spiny Rice-flower	274		9.7	3
Spiny Rice-flower	275		3	1
Spiny Rice-flower	275		9.25	1
Spiny Rice-flower	276		2.25	1
Spiny Rice-flower	276		11.15	1
Spiny Rice-flower	277		2.55	2
Spiny Rice-flower	277		10	1
Spiny Rice-flower	278		2.45	1
Spiny Rice-flower	278		11.5	1
Spiny Rice-flower	280		1.9	1
Spiny Rice-flower	281		1.75	1
Spiny Rice-flower	282		2.45	1
Spiny Rice-flower	283		2.1	1
Spiny Rice-flower	284		2.35	1
Spiny Rice-flower	285		2.6	2
Spiny Rice-flower	286		2.55	1
Spiny Rice-flower	287		2.85	1
Spiny Rice-flower	288		2.45	1
Spiny Rice-flower	289		3.2	1
Spiny Rice-flower	290		2.85	1
Spiny Rice-flower	291		2.4	1
Spiny Rice-flower	292		1.95	1
Spiny Rice-flower	293		1.95	2
Spiny Rice-flower	294		2	1
Spiny Rice-flower	295		2.5	2
Spiny Rice-flower	296		2.15	1
Spiny Rice-flower	297		1.8	2
Spiny Rice-flower	298		2.1	2
Spiny Rice-flower	299		3.6	1

Species	Tag number (BL&A)	Tag number (MCMC)	Distance from fence (m)	Number of plants
Spiny Rice-flower	300		3.5	1
Spiny Rice-flower	301		3.7	1
Spiny Rice-flower	302		3.1	1
Spiny Rice-flower	303		3.8	1
Spiny Rice-flower	304		4	1
Spiny Rice-flower	305		4.4	1
Spiny Rice-flower	306		4.7	1
Spiny Rice-flower	307		2.3	1
Spiny Rice-flower	308		2.4	1
Spiny Rice-flower	309		2.5	1
Spiny Rice-flower	310		12.2	1
Spiny Rice-flower	311		2	1
Spiny Rice-flower	312		2.35	1
Spiny Rice-flower	313		1.1	1
Spiny Rice-flower	314		1.6	1
Spiny Rice-flower	315		2.25	1
Spiny Rice-flower	316		3.5	1
Spiny Rice-flower	317		2.8	1
Spiny Rice-flower	318		2.8	1
Spiny Rice-flower	319		2.3	1
Spiny Rice-flower	320		3.8	1
Spiny Rice-flower	321		3.25	1
Spiny Rice-flower	322		7.4	1
Spiny Rice-flower	323		2.25	2
Spiny Rice-flower	324		1.75	1
Spiny Rice-flower	325		2.8	1
Spiny Rice-flower	326		3.1	1
Spiny Rice-flower	327		2.75	1
Spiny Rice-flower	328		4.45	1
Button Wrinklewort	329		4.4	1
Spiny Rice-flower	330		4.3	1
Spiny Rice-flower	331		2.1	1
Spiny Rice-flower	332		3.2	1
Spiny Rice-flower	333		3.2	3
Spiny Rice-flower	334		3.6	1
Spiny Rice-flower	335		3.7	3
Spiny Rice-flower	337		2.5	1
Spiny Rice-flower	338		1.8	2
Spiny Rice-flower	339		2.1	1
Spiny Rice-flower	340		1.35	3
Spiny Rice-flower	341		2.35	1

Species	Tag number (BL&A)	Tag number (MCMC)	Distance from fence (m)	Number of plants
Spiny Rice-flower	342		2.05	1
Spiny Rice-flower	343		1.7	2
Spiny Rice-flower	343		4.3	1
Spiny Rice-flower	344		2.7	1
Spiny Rice-flower	345		1.85	1
Spiny Rice-flower	346		2.05	1
Spiny Rice-flower	347		2.1	1
Spiny Rice-flower	348		2	5
Spiny Rice-flower	349		1.65	1
Spiny Rice-flower	350		1.85	2
Button Wrinklewort	351		-	1
Button Wrinklewort	352		-	1
Button Wrinklewort	353		-	1
Button Wrinklewort	354	34	-	1