2018

CITY OF ROCKINGHAM

Wetland Management Plan

city of Rockingham

where the coast comes to life

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Appendices

1 Introduction

1.1 Background

The City of Rockingham municipality contains approximately 11,516 ha of natural areas, of which 1,229 ha are the City's responsibility, this includes local reserves, parks and verges. Of these, it is estimated that 122 ha are City managed wetland reserves containing important conservation and recreation values.

In 2015, the City prepared a Reserve Prioritisation Report that provided a broad framework for the ongoing management of the majority of the City's managed reserves. This Wetland Management Plan (the Plan) contains a more detailed assessment focused exclusively on wetland reserves. It has been prepared under the direction of Community Plan Strategy: Natural Area Conservation, guided by the City's overarching Strategic Community Plan 2015-2025.

1.2 Vision

This Plan addresses the following aspiration contained in the City's Strategic Community Plan 2015-2025:

Aspiration D: Sustainable Environment

Coastal and *Bushland Reserves that are well used* and *sustainably managed preserving them for future generations to enjoy.*

1.3 Purpose

The purpose of this Plan is to identify the environmental attributes and condition of the City's wetland reserves and to provide key directions for the ongoing use and management of the reserves over the next five years.

1.4 Objectives

This Plan is driven by the following overarching objectives:

- Protect and enhance conservation values through the removal of threatening processes
- Encourage a range of sustainable recreational experiences through suitably located infrastructure and services
- Ensure equity and safety of all reserve users

1.5 Study Area

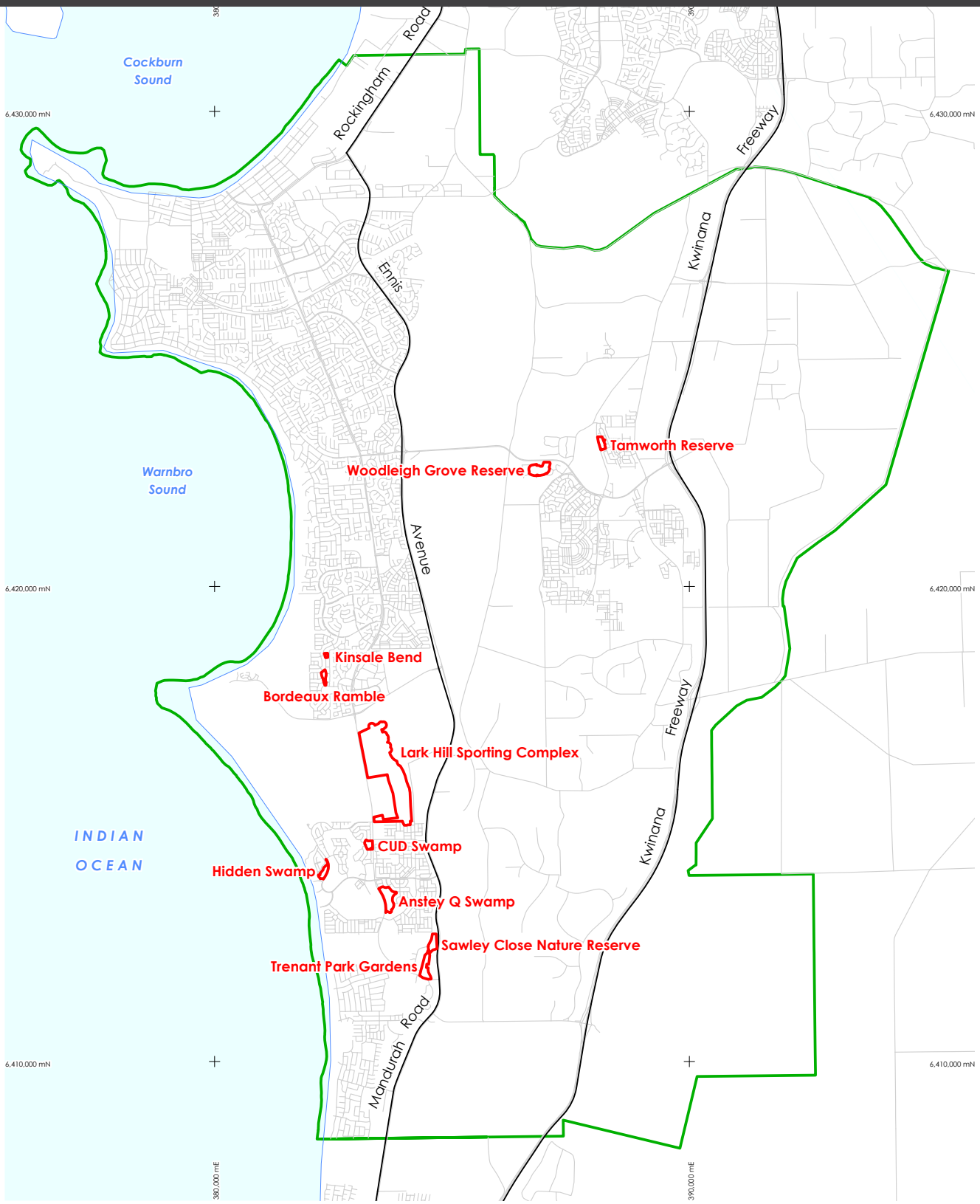
This Plan focuses on 10 reserves containing Conservation Category Wetlands and Resource Enhancement Wetlands, under the management of the City. All Conservation Category Wetlands that partly fall within the Lark Hill Sporting Complex Reserve have been included in the study area, along with a 50 metre buffer, to ensure a comprehensive assessment of all associated ecological values.

The reserves included in this Plan are listed in Table 1 and shown on Figure 1.

TABLE 1 - Reserves included in this Plan

	Reserves	Size (ha)
1	Anstey Q Swamp	10.13
2	Bordeaux Ramble	2.02
3	CUD Swamp	2.56
4	Hidden Swamp	3.24
5	Kinsale Bend	0.56
6	Lark Hill Sporting Complex	105.18
7	Sawley Close Nature Reserve	4.83
8	Trenant Park Gardens	7.47
9	Tamworth Reserve (adjacent to Tamworth Hill Swamp)	2.98
10	Woodleigh Grove Reserve	9.20

FIGURE 1 - Locality map



2 Methods

2.1 Desktop Assessment

A desktop assessment was undertaken to identify flora and fauna species likely to occur within the study area.

2.1.1 Database Searches

The following databases were searched for records of conservation significant flora, fauna ecological communities previously recorded within or in the locality of the study area.

1. Department of Biodiversity, Conservation and Attractions (DoBCA) NatureMap database
2. Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) Protected Matters Search Tool (PMST)
3. The Atlas of Living Australia
4. DoBCA database of Threatened and Priority Flora, Fauna and Ecological Communities.

The database searches (points one to three) requested the return of records from within 5 km of the City's wetland reserves. The DBCA database searches returned records within the City's boundary.

2.1.2 Literature Review

Publicly available literature was searched for relevant biological surveys conducted within 20 km of the study area. Thirty previous biological surveys and environmental management plans within or nearby the wetland reserves were reviewed as part of the desktop assessment. A number of publically available information sources were used to identify the existing environment within the reserves, most of which are available on the City's Intramaps Environmental Module.

2.1.3 Assessment of Likelihood of Occurrence

In order to determine which conservation significant species have the potential to occur in the study area, the results of the database, literature searches and survey records were examined in the context of known habitat preferences, last known records and distributions for the species.

A set of criteria were applied to assess the likelihood of occurrence of conservation significant flora and fauna within the study area (Table 2):

TABLE 2 - Ranking System for Conservation Significant Species Likelihood of Occurrence

Rank	Criteria
Recorded	1. The species has been previously recorded in the study area.
Likely to occur	1. There are existing records of the species within 10 km of the study area; and • the species is strongly linked to a specific habitat, which is present in the study area; or • the species has more general habitat preferences, and suitable habitat is present.
May potentially occur	1. There are existing records of the species within 20 km of the study area, however: • the species is strongly linked to a specific habitat, of which only a small amount is present in the study area; or • the species has more general habitat preferences, but only some suitable habitat is present 2. There is suitable habitat in the study area, but the species is recorded infrequently in the locality.
Unlikely to occur	1. The species is linked to a specific habitat, which is absent from the study area; or 2. Suitable habitat is present, however there are no existing records of the species from the locality despite reasonable previous search effort in suitable habitat; or 3. There is some suitable habitat in the study area, however the species is very infrequently recorded in the locality.
Would not occur	1. The species is strongly linked to a specific habitat, which is absent from the study area; and/or 2. The species' range is very restricted and does not include the study area.

For flora species, the likelihood of occurrence was refined following the field survey once the habitats were verified by botanists.

2.2 Field Surveys

The timing of the field surveys were selected to provide optimal conditions for the detection of flora and fauna species of conservation significance that may have been present in the study area. The surveys were undertaken between the end of October and the start of November 2017 by suitably qualified environmental consultants Biota Environmental Sciences and Western Botanical.

2.2.1 Flora and Vegetation

A targeted and detailed flora and vegetation survey was undertaken in accordance with Environmental Protection Authority (EPA) Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016).

In order to identify, describe and map the flora and vegetation in the study area (including conservation significant species and communities, and invasive weeds), the field survey included:

- traversing transects and circuits in the reserves, where accessible
- quadrat sampling (10 m x 10 m in size). Three quadrats per vegetation association were assessed within each reserve, unless the vegetation association was too small to assess three quadrats.

Species Identification and Nomenclature

Flora specimens were collected (where practicable) to enable confirmation or determination of species at Western Botanical's Herbarium and the Western Australian Herbarium. Relevant taxonomic keys and publications were utilised where available to assist with accuracy of species determinations.

Species nomenclature for mammals, reptiles and amphibians follows that of the Western Australian Museum (WAM) fauna taxonomic checklist, which was last revised in September 2017.

Species nomenclature for avifauna follows that of Christidis and Boles (2008). Flora nomenclature and conservation significance rankings used in this report are in accordance with the current listing of flora recognised by the WA Herbarium, as per FloraBase (Western Australian Herbarium 1998).

Weeds

Locations and numbers of significant weeds (Weeds of National Significance (WoNS) and Declared Pest plants) were recorded when encountered, and the locations of larger-sized weeds of lower priority were also recorded. Where weeds were widespread, these were identified and mapped by weed suites (weeds grouped by treatment methods).

Vegetation Associations

Statistical analysis of quadrat vegetation data was conducted to verify and adjust (field findings where necessary) final vegetation associations and the vegetation maps for each reserve of the study area. All weed species were excluded from analysis to ensure vegetation associations were defined based on native species. Analysis was conducted using PATN v3.12 (Belbin 2013).

Vegetation Condition

The vegetation condition of the study area was assessed using the Keighery vegetation condition rating scale as defined in EPA (2016) for the South West and Interzone Botanical Provinces (Table 3):

TABLE 3 - Vegetation condition rating scale (EPA 2016)

Vegetation Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees and shrubs.

2.2.2 Fauna

A Level 1 Fauna Reconnaissance Survey was undertaken in accordance with EPA Guidance Statement No. 56: Guidance Statement for Terrestrial Fauna Surveys for EIA in Western Australia (2004). The survey involved describing and mapping the fauna habitats present, and undertaking selective low intensity sampling such as opportunistic sightings and secondary signs, including tracks, scats and diggings. Foot traverses were carried out to map broad fauna habitat areas.

A Black Cockatoo Habitat Assessment was undertaken which included assessing potential breeding trees (trees with a diameter at breast height [DBH] of ≥ 500 mm and/or suitable nest hollows) and potential foraging and roosting habitat. Visual signs of breeding and foraging activity were noted (i.e. chewed nuts or marks on trunks).

2.2.3 Infrastructure

The adequacy of infrastructure within each reserve was assessed. The following was identified in the infrastructure assessment:

Fencing

- type (i.e. wire, mesh, bollards, limestone wall etc.)
- condition (length in good or poor condition)
- height (high – above 1.5 m, low – 1.5 m or below)
- ability to restrict pedestrian and vehicle access (yes or no).

Paths

- type (i.e. crushed limestone, soil/sand, mulch, concrete etc.)
- fenced (yes, no or some)
- condition (length in good condition – no visible issues, length in poor condition – broken/unsafe/covered by sand/overgrown).

Signs

- type (regulatory, interpretive, reserve name)
- material (i.e. metal, plaque, board etc.)
- number
- number in poor condition.

In addition, other infrastructure such as recreation facilities, picnic seats and boardwalks were recorded.

2.2.4 Wetland Management Categories

A wetland management category assessment was undertaken to identify if the wetlands in the study area are accurately mapped and classified under the Swan Coastal Plain Geomorphic Wetland data set (DoBCA 2017).

The approach and methodology used for the wetland management category assessment primarily followed the framework set out by *A methodology for the evaluation of specific wetland types on the Swan Coastal Plain, Western Australia* (Department of Parks and Wildlife 2013).

The current wetland mapping was compared to the vegetation type and condition mapping. Wetland ecological attributes were then initially screened against the Step 1: Preliminary Evaluation criteria specified by the previously named Department of Parks and Wildlife (2013). The Secondary Evaluation criteria were then also considered to re-score wetlands where a management category was not automatically determined from the Preliminary Evaluation.

2.2.5 Field Survey Limitations

Access to some areas of the reserves was limited due to inundation within Sedgelands and *Melaleuca rhaphiophylla* Woodland (primarily at Woodleigh Grove Reserve). Therefore, some plant species may not have been encountered and included within the species inventory.

As the identity of the Priority 3 plant *Sphaerolobium calcicola* was not confirmed until after the field survey, there is potential that it could be more widespread at Lark Hill Sporting Complex rather than in the single location reported.

The Level 1 fauna survey was not a comprehensive assessment of the reserves and not all fauna species would have been recorded. However, the survey provides a good indication of the species likely to be present in the reserves based on the habitat types present and species identified opportunistically.

3 Biophysical Environment

The conservation framework relevant to this section is detailed in Appendix A.

3.1 Land Use

The Rockingham area was originally a farming settlement and timber port. It was a relatively small coastal settlement until the second half of the twentieth century when commercial, light industry and residential development increased. During the last few decades the City has experienced rapid urban development and associated population growth. The reserves within the study area are primarily used for conservation and recreation by the local community, offering a range of active and passive recreation opportunities such as walking, dog walking and nature observation. These reserves are not typically visited by the wider community or tourists.

3.2 Bioregion

The study area is situated in the Swan Coastal Plain (SWA) bioregion and the Perth (SWA2) subregion as described by the Interim Biogeographic Regionalisation for Australia (IBRA) (DotEE 2018a). The Perth subregion is characterised by colluvial and aeolian sands, alluvial river flats, coastal limestone, Banksia and Jarrah - Banksia Woodlands on Quarternary marine dunes of various ages, Marri on colluvial and alluvials (Mitchell et al. 2002).

3.3 Climate

The study area has a warm Mediterranean climate, with hot, dry summers and cool, wet winters. Mean minimum and maximum temperatures range from 17.6°C to 31.5°C in summer and 8.2°C to 18.3°C in winter. The mean annual rainfall is approximately 745.5 mm, with most falling between May and September.

3.4 Landforms

The three main landforms that occur in the study area comprise the youngest Quindalup dunes, situated close to the coast, the Spearwood dunes, associated with limestone ridges, and the oldest Bassendean dunes situated to the east, containing leached, infertile and slightly acidic sands (Davidson 1995, Bolland 1998). All three dune systems are largely comprised of sands, which are unstructured and very infertile (Bolland 1998). Conversely, the soils of the lakes and swamps that occur between the three dune types are very fertile as they are rich in organic matter.

3.5 Geology and Soils

The surface geology of the study area consists primarily of Quaternary regolith, comprising Bassendean Sand and Guildford Clay in the east, Tamala Limestone in the central area and Safety Bay Sand in the west (Davidson 1995).

The study area contains three soil units (CSIRO 2014). The description of the soil units and breakdown across the reserves are included in Table 4.

TABLE 4 - Soil units in the study area

Soil Unit	Description
A13	Coastal dune formations backed by the low-lying deposits of inlets and estuaries: chief soils are calcareous sands on the dunes.

Reserve	Extent in Reserve (Ha)
Anstey Q Swamp	10.13
Bordeaux Ramble	2.02
CUD Swamp	2.59
Hidden Swamp	3.24
Kinsale Bend	0.56
Lark Hill Sporting Complex	105.19

Soil Unit	Description
B24	Undulating dune landscape underlain by aeolianite, which is frequently exposed; small swales of estuarine deposits are included: chief soils are siliceous sands with smaller areas of brown sands and leached sands in the wetter sites.

Reserve	Extent in Reserve (Ha)
Sawley Close Nature Reserve	4.82
Trenant Park Gardens	7.47
Woodleigh Grove Reserve	9.20
Lark Hill Sporting Complex	0.28

Soil Unit	Description
JK9	Undulating dune landscape with some steep dune slopes and underlain by aeolianite at depth: chief soils are brown sands. Associated are siliceous sands on the deeper dunes, especially on the western side of the unit; and leached sands on the more subdued dunes, especially on the eastern side of the unit.

Reserve	Extent in Reserve (Ha)
Tamworth Reserve	2.98

3.6 Vegetation

3.6.1 Vegetation Complexes

Pre-European vegetation complexes on the Swan Coastal Plain have been mapped by the EPA (2015), with the extent remaining within the City calculated by Eco Logical Australia (2017).

Nine mapped vegetation complexes occur within the City, with majority being the Quindalup complex. Four vegetation complexes are represented within the study area, of which three still retain >30% of their pre-European extent within the City and the Swan Coastal Plain (Table 5). The 'Karrakatta Complex – Central and South' has 14% of its pre-European extent remaining within the Swan Coastal Plain, however 47% of its pre-European extent within the City remains.

TABLE 5 - Extent of pre-European vegetation complexes within the reserves

		Pre-European extent		Pre-European extent remaining (ha and %)	
Vegetation Complex	**Description**	**Swan Coastal Plain**	**City of Rockingham**	**Swan Coastal Plain (2015)**	**City of Rockingham (2016)**
Quindalup Complex	Coastal; dune complex consisting mainly of two alliances – the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of *Melaleuca lanceolata – Callitris preissii* and the closed scrub of *Acacia rostellifera*.	39,336 ha	9,894 ha	21,620 ha (55%)	4,461 ha (45%)
Cottesloe Complex - Central and South	Mosaic of Woodland of *Eucalyptus gomphocephala* and open forest of *E. gomphocephala – E. marginata – Corymbia calophylla*; closed heath on the limestone outcrops.	45,226 ha	2,017 ha	15,180 ha (34%)	1,172 ha (58%)
Herdsman Complex	Sedgelands and fringing Woodland of *E. rudis – Melaleuca* species.	8,309 ha	532 ha	2,821 ha (34%)	417 ha (78%)
Karrakatta Complex - Central and South	Predominantly open forest of *E. gomphocephala – E. marginata – C. calophylla* and Woodland of *E. marginata* – Banksia species.	50,080 ha	4,276 ha	11,518 ha (14%)	1,990 ha (47%)

The breakdown of vegetation complexes across the study area is shown in Table 6.

TABLE 6 - Breakdown of vegetation complexes across the study area (ha)

Vegetation Complex	Anstey Q Swamp	Bordeaux Ramble	CUD Swamp	Hidden Swamp	Kinsale Bend	Lark Hill Sporting Complex	Sawley Close	Tamworth	Trenant Park Gardens	Woodleigh Grove	Total	% of the study area
Quindalup Complex	10.13	2.02	2.59	3.24	0.56	104.91					123.45	83.30
Cottesloe Complex - Central and South						0.28			6.84	9.20	16.32	11.01
Herdsman Complex							4.83		0.63		5.46	3.68
Karrakatta Complex - Central and South								2.98			2.98	2.01
Total	10.13	2.02	2.59	3.24	0.56	105.19	4.83	2.98	7.47	9.20	148.21	100

3 Biophysical Environment (continued)

3.6.2 Vegetation Associations

The flora and vegetation survey identified twelve vegetation associations within the study area. These are summarised in Table 7, listed in order from the largest represented vegetation associations across the study area. Descriptions and area breakdowns of the vegetation associations across the reserves are included in Appendix B. Maps of the vegetation associations are shown under individual reserve snapshots (sections 6 - 15)

The most widespread vegetation association across the study area was *Acacia rostellifera* Shrubland (52%), followed by pasture (17%), *Melaleuca rhaphiophylla* Woodland (6.5%) and *Spyridium globulosum* Shrubland (6%).

TABLE 7 - Vegetation associations across the study area

Vegetation Association	Photograph	Anstey Q Swamp	Bordeaux Ramble	CUD Swamp	Hidden Swamp	Kinsale Bend	Lark Hill Sporting Complex	Sawley Close	Tamworth	Trenant Park Gardens	Woodleigh Grove
Acacia rostellifera Shrubland		●		●		●	●	●			
Pasture (sparse shrubs and weedy grassland)							●				
Melaleuca rhaphiophylla (Paperbark) Woodland		●		●			●	●	●	●	●
Spyridium globulosum Shrubland		●					●	●			
Eucalyptus gomphocephala (Tuart) Woodland		●						●		●	●

TABLE 7 - Vegetation associations across the study area (continued)

Vegetation Association	Photograph	Anstey Q Swamp	Bordeaux Ramble	CUD Swamp	Hidden Swamp	Kinsale Bend	Lark Hill Sporting Complex	Sawley Close	Tamworth	Trenant Park Gardens	Woodleigh Grove
Ficinia nodosa and *Baumea juncea* Sedgeland		●	●		●	●	●				●
Alyxia buxifolia Coastal Heathland					●						
Baumea articulata and *Lepidosperma longitudinale* Sedgeland										●	
Xanthorrhoea preissii Shrubland			●			●	●				
Jacksonia furcellata Shrubland							●				
Hakea varia and *Spyridium globulosum* Tall Shrubland										●	
Melaleuca lanceolata Woodland		●									

3.6.3 Vegetation Condition

Vegetation condition across the study area ranged from completely degraded to excellent, with 61.31% being in very good condition (Table 8). Vegetation condition was strongly tied to weed abundance and density. Vegetation condition maps are shown under the individual reserve snapshots (sections 6 - 15). The maps provide an appropriate indication to the extent and severity of weed invasion.

TABLE 8 - Vegetation condition within the study area (ha) using the Keighery condition scale

Vegetation Condition	Anstey Q Swamp	Bordeaux Ramble	CUD Swamp	Hidden Swamp	Kinsale Bend	Lark Hill Sporting Complex	Sawley Close	Tamworth	Trenant Park Gardens	Woodleigh Grove	Total Area (ha)	Total Area (%)
Excellent	4.60	1.66		0.10	0.08	4.79	1.22			2.20	14.65	9.88
Very Good	2.29			2.70	0.27	69.53	2.92		6.64	6.52	90.87	61.31
Good	0.81		1.40				0.08	1.44			3.73	2.52
Degraded	0.53				0.17	2.85					3.55	2.40
Completely Degraded	1.90	0.36	1.19	0.44	0.05	28.01	0.61	1.54	0.83	0.48	35.41	23.89
Total Area (ha)	10.13	2.02	2.59	3.24	0.57	105.18	4.83	2.98	7.47	9.20	148.21	100

3.6.4 Conservation Significant Vegetation

The DoBCA threatened and priority ecological communities database identified two Threatened Ecological Communities (TECs) within the study area: 'Sedgelands in Holocene dune swales of the southern Swan Coastal Plain' and the 'Banksia Woodlands of the Swan Coastal Plain' (Figure 2). The database did not identify any Priority Ecological Communities (PEC's) in the study area. An additional two TECs and four PECs are known to occur within the City's municipal boundary but outside of the study area.

Sedgelands in Holocene dune swales of the southern Swan Coastal Plain

The 'Sedgelands in Holocene dune swales of the southern Swan Coastal Plain' TEC is federally listed as Endangered under the EPBC Act, and is recognised at State level as Critically Endangered. This TEC occurs primarily in Quindalup dunes in linear damplands and occasionally in sumplands in the swales between Holocene dunes. Typical dominant flora species include *Acacia rostellifera, A. saligna, Xanthorrhoea preissii,* the sedges *Baumea juncea, Ficinia nodosa, Lepidosperma gladiatum,* and the grass *Poa porphyroclados* (Department of Environment and Conservation 2011).

Though treated as one entity, two subcategories of this TEC are recognised (Government of Western Australia 2000, Department of Environment and Conservation 2011):

- SCP19a: 'Sedgelands in Holocene dune swales' - generally occurs in younger swales, and is the majority subcategory
- SCP19b 'Woodlands over Sedgelands in Holocene dune swales' - tends to occur in older swales and has an overstorey of Woodland including *Eucalyptus gomphocephala*, *Melaleuca rhaphiophylla*, and *Banksia littoralis*.

The DoBCA database identified the TEC within seven of the ten reserves in the study area as seen in Figure 2 (Anstey Q Swamp, Bordeaux Ramble, Hidden Swamp, Kinsale Bend, Lark Hill Sporting Complex, Sawley Close Nature Reserve and Trenant Park Gardens). The field survey confirmed the TEC occurrences, although they were typically smaller in size than the DoBCA mapped boundaries. The field survey identified a new occurrence of the TEC at Tamworth Reserve and four additional occurrences of the TEC at Lark Hill Sporting Complex.

The vegetation associations within the study area that are equivalent to the TEC (subject to meeting the condition requirements of the TEC) are listed in Table 9. The vegetation associations present within the study area are identified in Table 7 and are mapped under the individual reserve snapshots (section 6 - 15).

TABLE 9 - Vegetation associations within the study area equivalent to the Sedgelands in Holocene dune swales of the southern Swan Coastal Plain TEC

TEC	TEC subcategory	Vegetation associations	Key considerations
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain	Sedgelands19a	*Ficinia nodosa* and *Baumea juncea* Sedgeland (FnBjS)	Except Woodleigh Grove Reserve - as it is not within Holocene dune swales.
		Baumea articulata and *Lepidosperma longitudinale* Sedgeland (BaLlS)	
		Xanthorrhoea preissii Shrubland (XpS)	
	Woodlands over Sedgelands 19b	*Melaleuca rhaphiophylla* Woodland (MrW)	All restricted/small polygons occurring within Holocene dune swales.
			Larger polygons fringing/adjacent to TEC Sedgeland vegetation associations FnBjS and BaLlS, except at Woodleigh Grove Reserve (as it is not within Holocene dune swales in that reserve).

PLATE 1 - Example of the Sedgelands in Holocene dune swales of the southern Swan Coastal Plain TEC in the study area

3 Biophysical Environment (continued)

Banksia Woodlands of the Swan Coastal Plain

The 'Banksia Woodlands of the Swan Coastal Plain' TEC is federally listed as Endangered under the EPBC Act. Some of these floristic community types that correspond to the TEC are also recognised as Threatened or Priority Ecological Communities by DoBCA at the State level.

The database search identified the TEC as being present within Tamworth Reserve, however the field survey found this to be a database error.

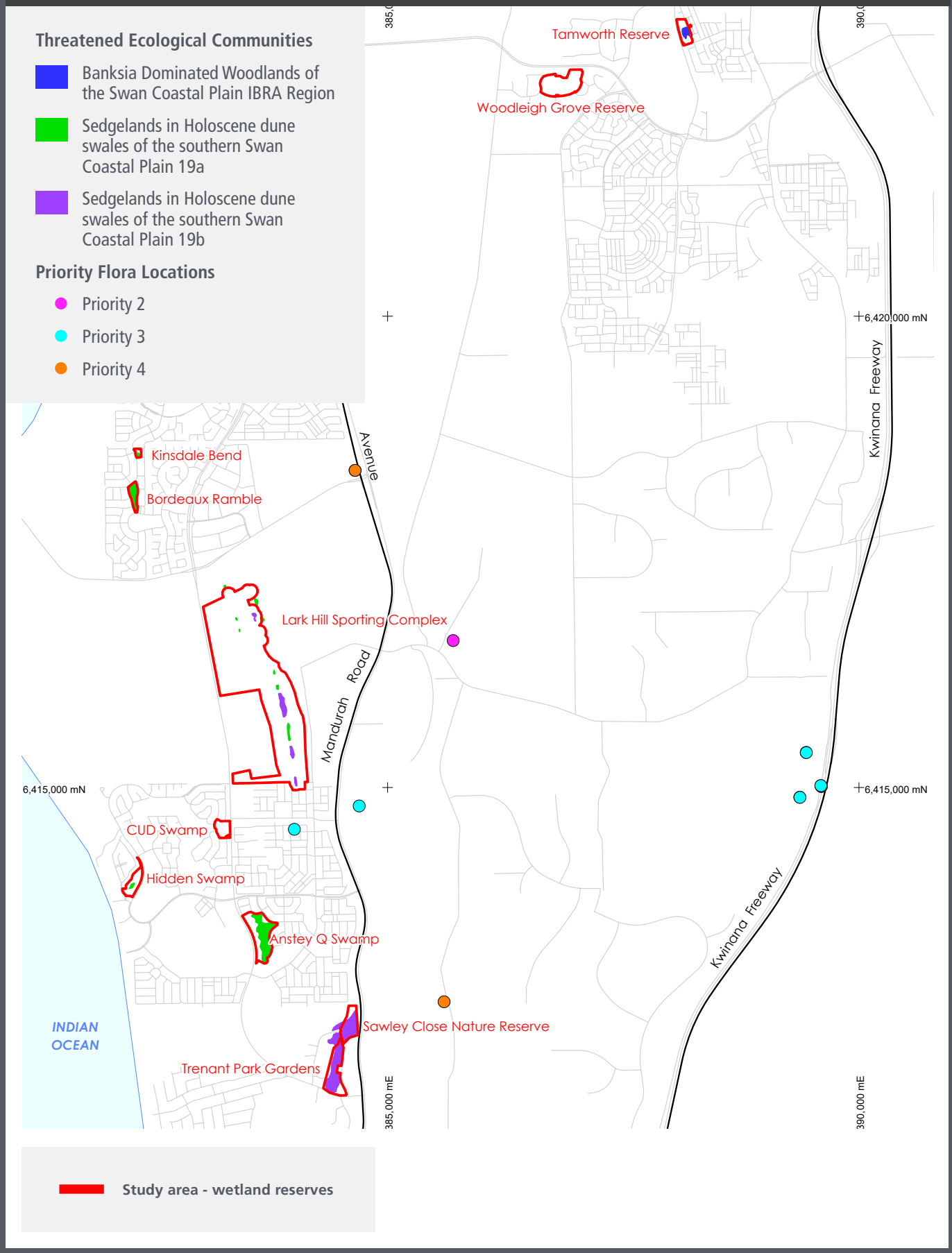
Tuart Woodlands of the Swan Coastal Plain

Despite not being identified in the DoBCA database search, the *Eucalyptus gomphocephala* Woodland (EgW) vegetation association in the study area exhibits elements of the Priority 3 'Tuart Woodlands of the Swan Coastal Plain'. This PEC is currently under assessment for elevation to a TEC under the EPBC Act. The EgW vegetation in the study area should cautiously be considered as unrecorded occurrences of the PEC.

Though weeds and some ground disturbance generally impacted the EgW vegetation association, it would still meet the PEC condition requirements of Degraded (Keighery Scale) or above (Stack et al. 2011).

PLATE 2 - Example of Tuart Woodlands of the Swan Coastal Plain PEC in the study area

FIGURE 2 - DoBCA Threatened Ecological Communities and Priority Flora Records in the study area



3.7 Flora

3.7.1 Flora Diversity

A total of 215 flora species, consisting of 122 native species (57%) and 93 weed species (43%) were recorded in the study area. The species identified within the study area represented 67 families and 162 genera. The sampling effort was comprehensive and it is considered that few, if any, additional species are likely to be recorded with further sampling. Flora species lists for each reserve in the study area are presented in Appendix C.

A summary of the number of species, including the proportion of weeds identified at each reserve in the study area is presented in Table 10. Lark Hill Sporting Complex had the highest species richness (104 species), while Tamworth Reserve had the lowest species richness (31 species).

TABLE 10 - Summary of total number of flora species recorded within each reserve

Reserve	Number of Species	% of Total No. Species in study area	Number of Weed Species	Proportion of Weed Species in Reserve (%)
Anstey Q Swamp	83	38.61%	37	44.6%
Bordeaux Ramble	69	32.09%	29	42.0%
CUD Swamp	77	35.81%	28	36.4%
Hidden Swamp	72	33.49%	35	48.6%
Kinsale Bend	51	23.72%	17	33.3%
Lark Hill Sporting Complex	104	48.37%	38	36.5%
Sawley Close	58	26.98%	30	51.7%
Tamworth	31	14.42%	15	48.4%
Trenant Park Gardens	85	39.54%	33	38.8%
Woodleigh Grove	77	35.81%	41	53.2%

3.7.2 Weeds

Weeds were common and widespread in all reserves in the study area and consisted of 43% of flora species recorded. The proportion of weed species ranged from 33.3% at Kinsale Bend to 53.2% at Woodleigh Grove (Table 10). Two weed species, Bearded Oat (*Avena barbata*) and Geraldton Carnation Weed (*Euphorbia terracina*) were common to all ten reserves.

A weed species list summarising presence at each reserve is presented in Table D1 in Appendix D. The weed species have been sorted by weed suites, which groups the weeds based on their recommended treatment (control method and season).

The four weed suites are:

- **Suite 1:** manual removal (hand pull and/or fell mature plants any time of year)
- **Suite 2:** spring application of broad spectrum systemic herbicide
- **Suite 3:** spring application of grass selective herbicide
- **Suite 4:** summer application of grass selective herbicide.

Weed suite mapping, including locations of WoNS, Declared Pests and larger more prominent lower priority weeds, is included in each individual reserve snapshot (sections 6 - 15).

Thirteen larger and more prominent weeds within the study area include:

- *Acacia iteaphylla* (Flinders Range Wattle)
- *Cortaderia selloana* subsp. *selloana* (Pampas Grass)
- *Eriobotrya japonica* (Loquat)
- *Ficus carica* (Common Fig)
- *Ipomoea indica* (Morning Glory)
- *Olea europaea* subsp. *europaea* (Olive)
- *Phoenix canariensis* (Canary Island Date Palm)
- *Physalis peruviana* (Cape Gooseberry)
- *Polygala myrtifolia* (Myrtleleaf Milkwort)
- *Ricinus communis* (Castor Oil Plant)
- *Schinus terebinthifolius* (Brazilian Pepper Tree)
- *Typha orientalis* (Bulrush)
- *Vitis vinifera* (Grape Vine).

The GPS locations of these larger and more prominent weed species within each reserve of the study area are presented in Table D2 in Appendix D, with descriptions and photos of the species included in Appendix E.

Significant Weeds

Two significant weeds were encountered in the study area, including Bridal Creeper (*Asparagus asparagoides* - a WoNS and a Declared Pest plant) and Narrow-leaf Cotton Bush (*Gomphocarpus fruticosus* - a Declared Pest plant). Photos of these significant weeds are shown in Plates 3A and 3B and their GPS locations are included in Table D2 in Appendix D.

Bridal Creeper is regarded as one of the worst weeds in Australia because of its invasiveness, potential for spread, and economic and environmental impacts. Bridal Creepers climbing stems and foliage smother native plants. It forms a thick mat of underground tubers that impede the root growth of other plants and often prevents seedling establishment. The flowers are white, with flowering recorded between August and September. Bridal Creeper is known to grow across a number of different soils including sandy, loam, clay and granite soils. Bridal Creeper plants can produce more than 1000 berries per square metre. The seeds of this species are effectively distributed by birds, rabbits and foxes that eat the berries (DotEE 2018b). One Bridal Creeper plant was recorded at Woodleigh Grove Reserve.

The Narrow-leaf Cotton Bush is an erect slender short-lived shrub one to two metres high, with narrow opposite leaves and bladder-like fruit. It reproduces by seed and suckers. Flowering has been recorded as occurring from February through to July. Narrow-leaf Cotton Bush plants can form dense thickets many hectares in size if not controlled (DPIRD 2018). A total of 64 Narrow-leaf Cotton Bush plants were recorded during the survey in three reserves; Trenant Park Gardens, Sawley Close Nature Reserve and Lark Hill Sporting Complex.

PLATE 3A - *Gomphocarpus fruticosus*
(Narrow Leaf Cotton Bush)

PLATE 3B - *Asparagus asparagoides*
(Bridal Creeper)

3.7.3 Conservation Significant Flora

The database and literature searches identified 22 flora species of conservation significance known to occur in the locality of the study area (Table 11). The DoBCA database did not identify any known records of conservation significant flora within the study area. One conservation significant species, *Grevillea olivacea* (Priority 4) was previously recorded at Trenant Park Gardens in 2011; however this record likely represents a planting.

The likelihood of the flora species of conservation significance occurring in the study area was assessed based on criteria outlined in Table 2. The results of the likelihood assessment completed following the field survey are detailed in Table 11.

TABLE 11 - Conservation Significant Flora Likelihood Assessment.

Conservation Ranking	Species	Likelihood of Occurrence
Threatened under the WC Act and EPBC Act	*Diuris drummondii*	May potentially occur
	Drakaea elastica	Unlikely to occur
	Synaphea sp. Serpentine (G.R. Brand 103)	Unlikely to occur
Priority 1	*Lachnagrostis nesomytica* subsp. *paralia*	Unlikely to occur
Priority 2	*Acacia benthamii*	Would not occur
	Cardamine paucijuga	May potentially occur
Priority 3	*Beyeria cinerea* subsp. *cinerea*	Unlikely to occur
	Calandrinia oraria	Likely to occur
	Dillwynia dillwynioides	May potentially occur
	Lasiopetalum membranaceum	Unlikely to occur
	Pimelea calcicola	Would not occur
	Schoenus capillifolius	Unlikely to occur
	Sphaerolobium calcicola	Recorded
Priority 4	*Aponogeton hexatepalus*	May potentially occur
	Conostylis pauciflora subsp. *pauciflora*	Unlikely to occur
	Dodonaea hackettiana	Unlikely to occur
	Grevillea olivacea	Would not occur
	Jacksonia sericea	Unlikely to occur
	Lepidium puberulum	Would not occur
	Myosotis australis	Unlikely to occur
	Parsonsia diaphanophleba	Would not occur
	Stylidium longitubum	Unlikely to occur

No threatened flora species were identified during the field survey. The survey identified one priority flora species at Lark Hill Sporting Complex: *Sphaerolobium calcicola* (Priority 3) within *Ficinia nodosa* and *Baumea juncea* Sedgeland. The location of the priority species is shown in the individual reserve snapshot (Section 11).

Despite optimal survey timing to detect most conservation significant species, detectability of the two priority species *Cardamine paucijuga* and *Calandrinia oraria* was reduced as the survey timing was outside of the flowering period for these species.

PLATE 4 - *Sphaerolobium calcicola* found at Lark Hill Sporting Complex

3.8 Fauna

Fauna records compiled from the database and literature searches identified a total of 258 vertebrate species with potential to occur in the study area, including 35 species of conservation significance. This total comprised 49 reptile species (including one introduced species), 11 amphibian species, 25 mammal species (including seven introduced species) and 172 avifauna species (Table 12).

TABLE 12 - Overview of the vertebrate fauna with potential to occur in the study area.

Fauna Group	Number of Species	Number of Conservation Significant Species
Reptiles	49	3
Introduced reptiles	1	0
Amphibians	11	0
Native non-volant mammals	11	6
Introduced non-volant mammals	7	0
Volant mammals	7	1
Avifauna	172	25
Total	258	35

Table F1 in Appendix F summarises the 35 conservation significant species that were returned from the database and literature searches of the locality. The likelihood of occurrence of each of these species in the study area was considered by assessing the species' habitat preference, current known distribution and last known records. Many species were considered to potentially occur within the study area, however no species were considered 'likely to occur'.

3.8.1 Reconnaissance Field Survey Findings

During the reconnaissance survey of the study area, 35 fauna species (including introduced species) were observed and recorded. These findings are summarised in Table F2 in Appendix F.

Three species of conservation significance were recorded in the study area:

- Southern Brown Bandicoot, *Isoodon obesulus* (Priority 4) at Woodleigh Grove Reserve
- Forest Red-tailed Black-Cockatoo, *Calyptorhynchus banksii* (Vulnerable, Schedule 3) at Tamworth Reserve
- Carnaby's Black-Cockatoo, *Calyptorhynchus latirostris* (Endangered, Schedule 2) at Tamworth Reserve.

3.8.2 Fauna Habitats

A total of six broad fauna habitat types were recorded in the field survey in addition to cleared parkland areas. The description of these habitat types and their representation across the different reserves in the study area are shown in Table 13. Fauna habitats across the study area can be identified in the vegetation association maps in individual reserve snapshots (sections 6 - 15).

3.8.3 Black Cockatoo Habitat

The three species of Black Cockatoo endemic to the south-west; Carnaby's, Baudin's and Forest Red-tailed Black Cockatoo, have been recorded, or are likely to occur in the study area. This indicates they utilise portions of habitat available for key ecological activities such as breeding, foraging and roosting.

The following reserves contain potential foraging, roosting and breeding habitat for Black Cockatoos: Anstey Q Swamp, Sawley Close, Tamworth Reserve, Trenant Park Gardens and Woodleigh Grove. Table F3 in Appendix F contains information about the potential breeding and roosting trees (>500 mm diameter at breast height) in the study area.

3.8.4 Introduced Fauna

Observations of introduced fauna species in the field survey included Koi fish at Hidden Swamp, a rabbit warren at Lark Hill Sporting Complex and European honeybees at Trenant Park Gardens. Locations of these observations are included in Table F4 in Appendix F.

TABLE 13 - Fauna Habitat Types throughout the study area

Fauna Habitat Types	Description	Anstey Q Swamp	Bordeaux Ramble	CUD Swamp	Hidden Swamp	Kinsale Bend	Lark Hill Sporting Complex	Sawley Close	Tamworth	Trenant Park Gardens	Woodleigh Grove
Dune Swale Shrubland	A single occurrence of a *Jacksonia furcellata* open Shrubland in a broad dune swale						●				
Open Water	A permanently inundated lake basin in the south of the reserve, with a fringing Sedgeland of *Lepidosperma gladiatum*, *Juncus* sp. and *Typha orientalis*				●						
Paperbark Woodland	*Melaleuca rhaphiophylla* Woodland over seasonally inundated soils	●		●			●	●	●	●	●
Sedgeland	Sedgeland generally dominated by *Ficinia nodosa* and *Baumea juncea*	●	●		●	●	●			●	●
Tuart Woodland/ Potential Black Cockatoo Habitat	Open to Closed Woodland of Tuart (*Eucalyptus gomphocephala*) on higher elevation margins of reserve	●						●		●	●
Upland Quindalup Dunes	Upland portions of the reserve consisting of Quindalup dune vegetation	●	●	●	●	●		●		●	

3.9 Wetlands

The ten reserves in the study area encompass a total of 33 separately identified features in the Swan Coastal Plain Geomorphic Wetlands dataset, including Conservation Category Wetlands and Resource Enhancement Wetlands.

The findings of the flora, vegetation and fauna surveys were used to revisit the current management categories and boundaries for each wetland feature present within the reserves. This primarily followed the framework provided by the methodology for the evaluation of specific wetland types on the Swan Coastal Plain, Western Australia (DPaW 2013).

Table 14 summarises the current wetland type and management category for all wetland features within each reserve in the Geomorphic Wetlands dataset, along with the outcomes of the reassessment and a summary of key reasons for the revised outcome. The majority of the wetland features (28 of the 33 current uniquely identified features [UFI]) are appropriately classified under the Geomorphic Wetlands dataset.

The wetland boundaries mapped in the current dataset are broad and generally do not reflect the true extent of wetland habitats present. Mapping showing the mismatches between the actual wetland boundaries and management categories and the Geomorphic Wetlands dataset are shown in the individual reserve snapshots (sections 6 - 15).

TABLE 14 - Wetland Management Category Assessment for the study area

				Management Category		
Reserve	UFI	Wetland Suite	Wetland Type*	Geomorphic Wetlands Dataset	Reassessment Outcome	Reason for Revised Management Category
Anstey Q Swamp	6487	Becher	Sumpland	Conservation	Conservation	
Bordeaux Ramble	13806	Peelhurst	Dampland	Conservation	Conservation	
	14641	Peelhurst	Dampland	Conservation	Conservation	
CUD Swamp	6499	Becher	Dampland	Conservation	Conservation	
	6500	Becher	Dampland	Conservation	Conservation	
Hidden Swamp	6306	Peelhurst	Dampland	Conservation	Conservation	
	New	-	Lake	-	Resource Enhancement	Not currently mapped in the dataset. Lake setting linked to surface run-off management.
Kinsale Bend	14640	Peelhurst	Dampland	Conservation	Conservation	
Lark Hill Sporting Complex	6455	Becher	Sumpland	Conservation	Conservation	
	6456	Becher	Sumpland	Conservation	Conservation	
	6457	Becher	Sumpland	Conservation	Conservation	
	6458	Becher	Sumpland	Conservation	Conservation	
	6460	Becher	Sumpland	Conservation	Conservation	
	6461	Becher	Sumpland	Conservation	Conservation	
	6463	Becher	Sumpland	Conservation	Conservation	
	6469	Becher	Sumpland	Conservation	Conservation	
	6470	Becher	Sumpland	Conservation	Conservation	
	6475	Becher	Sumpland	Conservation	Conservation	
	6476	Becher	Sumpland	Conservation	Conservation	
	6477	Becher	Sumpland	Conservation	Conservation	
	6479	Becher	Sumpland	Conservation	Conservation	
	6480	Becher	Sumpland	Conservation	Conservation	
	6481	Becher	Dampland	Conservation	Resource Enhancement	Vegetation degraded, does not meet any Step 1 criteria. Secondary evaluation suggests no longer Conservation.
	6482	Becher	Sumpland	Conservation	Conservation	
	6483	Becher	Dampland	Conservation	Conservation	
	6484	Becher	Sumpland	Conservation	Conservation	
	6485	Becher	Sumpland	Conservation	Resource Enhancement	Vegetation degraded, does not meet any Step 1 criteria. Secondary evaluation suggests no longer Conservation.
	6486	Becher	Sumpland	Conservation	Resource Enhancement	
	6494	Becher	Sumpland	Conservation	Conservation	
Sawley Close Nature Reserve	15528	Stakehill	Sumpland	Conservation	Conservation	
Trenant Park Gardens	15528	Stakehill	Sumpland	Conservation	Conservation	
Tamworth Reserve	6618	Stakehill	Sumpland	Conservation	Conservation	
	15187	Stakehill	Sumpland	Multiple Use	Not a wetland	Area is upland parkland vegetation.
Woodleigh Grove Reserve	6403	Stakehill	Sumpland	Resource Enhancement	Conservation	>90% of the wetland vegetation in good or better condition.

*Sumplands are described as wetlands that are seasonally inundated, whereas damplands are wetlands that are seasonally waterlogged.

3 Biophysical Environment (continued)

3.10 Conservation Areas

Approximately 3,894 ha of natural areas in the City are managed by the DoBCA and 1,229 ha are managed by the City predominantly for conservation purposes. The City contains approximately 5,312 ha of Bush Forever sites. Lark Hill Sporting Complex and Woodleigh Grove both contain Bush Forever sites (Site No. 356 and 495 respectively).

These extensive natural areas form important ecological linkages, which were defined as part of the City's natural areas technical assessment (2017), as shown in Figure 3. All of the wetland reserves in the study area, except Kinsale Bend and Bordeaux Ramble, either fall within or directly adjacent to an ecological linkage.

3.11 Heritage Sites

The Rockingham area has long been occupied by the Nyungar people. The area holds significance to the traditional owners and many sacred sites occur within the region (Conservation Commission 2010).

A search of the Department of Aboriginal Affairs (DAA) Aboriginal Heritage Inquiry System for registered Nyungar heritage sites identified one registered site in close proximity to Tamworth Reserve (Table 15 and Figure 3).

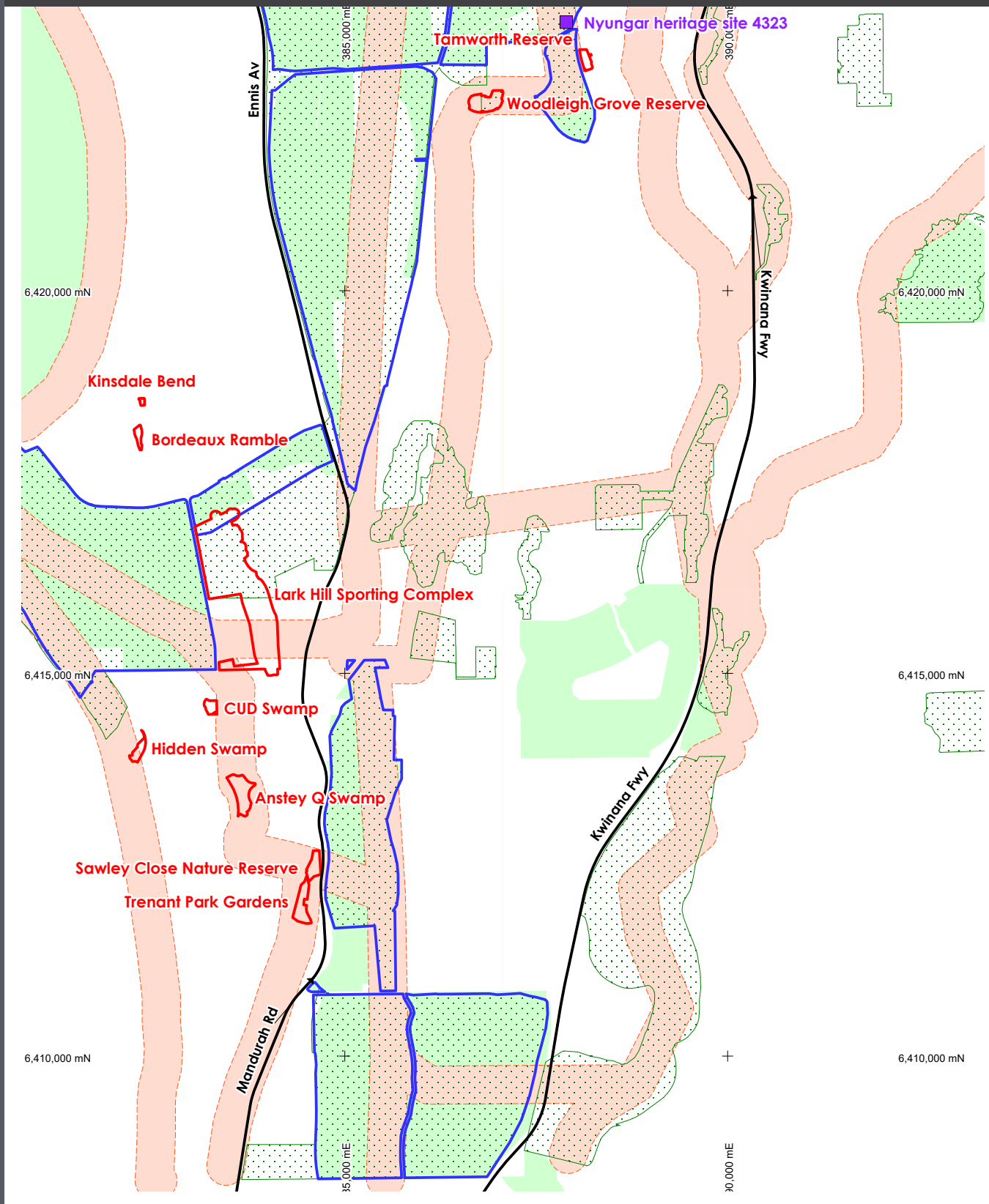
A search of the State Heritage Office InHerit heritage register identified that the study area does not contain any known local, state or federal European heritage sites.

TABLE 15 - Nyungar heritage sites near the study area.

Site ID	Name	Type	Location
4323	Gas Pipeline 82	Artefacts/Scatter	360 m north of Tamworth Reserve

PLATE 5 - Bush Forever Site No. 495 at Woodleigh Grove

FIGURE 3 - Conservation and heritage areas



4 Infrastructure Assessment

Well maintained and appropriately located reserve infrastructure plays an important role in ensuring recreational uses within the reserves are controlled and do not adversely impact on conservation values. Individual reserve snapshots (sections 6 - 15) contain maps of the current and proposed infrastructure to maximise recreational benefits and enhance conservation values.

Representative photos of infrastructure in each reserve in the study area are shown in Appendix G. Photos of poor condition infrastructure potentially in need of repair or upgrades are included in this Appendix.

4.1 Fencing

Fencing of sensitive areas is important to prevent impacts from uncontrolled access such as trampling of native vegetation and potential spreading of weeds. All reserves in the study area contain fencing to varying degrees. The majority of fencing in the study area is in good condition, however, there are exceptions where fencing is inadequate or in need of repair.

New fencing is proposed for Anstey Q Swamp, CUD Swamp, Hidden Swamp and Sawley Close Nature Reserve to prevent vehicle and/or pedestrian access and major repairs are recommended for Lark Hill Sporting Complex and Woodleigh Grove Reserve.

The type, condition, extent, height and adequacy of fencing restricting vehicles and pedestrians are summarised for each reserve in the study area in Table 16.

PLATE 6 - Fencing along the boardwalk at Bordeaux Ramble

TABLE 16 - Fencing within the study area

Reserve	Fence Type	Condition		Height	Restrict Access to?	
		Good (m)	Poor (m)		Vehicles	Pedestrians
Anstey Q Swamp	Wood posts and wire	1,009	0	Low	✓	✗
	Bollard	683	0	Low	✓	✗
	Wire mesh	323	4 (holes)	Low	✓	✓
Bordeaux Ramble	Wood posts and wire mesh	733	4 (holes)	Low	✓	✓
	Limestone wall	17	0	Low	✓	✗
CUD Swamp	Bollard	566	0	Low	✓	✗
	Wood posts and wire	673	0	Low	✓	✗
	Chain gate	3	0	Low	✓	✗
Hidden Swamp	Gate	9	0	Low	✓	✓
	Wood posts and wire	345	0	Low	✓	✓
	Limestone wall	77	0	Low	✓	✓
	Residential fencing	488	0	High	✓	✓
	Chain gate	3	0	Low	✓	✗
Kinsale Bend	Wood post and wire mesh	139	0	Low	✓	✓
	Limestone wall	20	0	Low	✓	✗
	Residential fence	89	0	High	✓	✓
	Gate	3	0	Low	✓	✓
Lark Hill Sporting Complex	Wire and barbed wire	0	649	Low	✓	✓
	Wood posts and wire	3008	0	Low	✓	✓
	Gate	9	3 (damage)	Low	✓	✓
	Metal railing	248	0	Low	✓	✓
Sawley Close Nature Reserve	Gate	3	0	Low	✗	✓
	Wood posts and wire	157	0	Low	✗	✓
Tamworth Reserve	Bollard	411	0	Low	✓	✓
	Wire mesh and barbed wire	81	0	High	✓	✓
	Chain gate	3	0	Low	✓	✗
Trenant Park Gardens	Gate	6	0	Low	✓	✓
	Wood posts and wire	1,454	0	Low	✓	✓
Woodleigh Grove Reserve	Gate	12	0	Low	✓	✓
	Wood post and wire	1,231	60 (degraded)	Low	✓	✓
	Bollard	45	0	Low	✓	✗
	Chain gate	3	0	Low	✓	✗

4 Infrastructure Assessment (continued)

4.2 Paths and Access

Paths are an important feature in providing access to the reserves for recreation. However, this access needs to be managed to ensure uncontrolled vehicle and pedestrian access does not lead to the degradation of the nature reserves.

All of the reserves contain formalised paths ranging from well-maintained concrete paths, to limestone tracks and sandy tracks. The majority of the paths in the study area are in good condition, with the exception of Lark Hill Sporting Complex which contains over 4 km of overgrown sand track in need of maintenance. Woodleigh Grove Reserve also has an overgrown mulch track in need of maintenance. A new fenced path is proposed at Anstey Q Swamp from Warnbro Sound Avenue to formalise an unauthorised access track.

The type, condition, extent of paths and whether or not they are fenced are summarised for each reserve in the study area in Table 17.

TABLE 17 - Paths within the study area

Reserve	Path Type	Fenced	Condition	
			Good (m)	Poor (m)
Anstey Q Swamp	Paved concrete	✓	1,072	1.5 (trip hazard)
Bordeaux Ramble	Paved concrete	✓	706	1 (trip hazard)
CUD Swamp	Bitumen	✗	293	7 (cracked)
	Crushed limestone	✓	550	28 (eroded)
	Mulch	✗	38	0
Hidden Swamp	Mulch and sand	✗	500	5 (weeds growing through)
	Wood stairs	✗	51	1 (sand covering)
	Sand	✗	297	0
Kinsale Bend	Paved concrete	✓	196	6 (cracked)
	Sand	✓	89	0
Lark Hill Sporting Complex	Sand	✗	0	4,338 (overgrown)
	Gravel	✓ (some)	3,720	0
	Paved concrete	✓	124	0
Sawley Close Nature Reserve	Sand	✗	1,193	50 (soft sand)
Tamworth Reserve	Paved concrete	✓	706	1 (cracked)
Trenant Park Gardens	Crushed limestone	✓ (one side; around boundary)	1,424	0
Woodleigh Grove Reserve	Mulch	✗	338	180 (overgrown/sticks covering)
	Paved concrete	✗	126	2 (cracked)
	Crushed limestone	✗	429	0

4.3 Signage

It is important that signs balance the need to educate and inform people without creating visual clutter. Typical signs across the study area include reserve names, regulatory and interpretive information. All of the reserves, except Sawley Close and Trenant Park Gardens, contain signs. The majority of signs in the study area require upgrades as they are in poor condition (i.e. sun bleached, peeling off) and are not legible.

New signage is proposed for Anstey Q Swamp, Hidden Swamp, Sawley Close Nature Reserve and Trenant Park Gardens.

The type and condition of signs recorded in the study area are summarised in Table 18 below.

TABLE 18 - Signage within the study area

Reserve	Sign Type	Material	Number	Number Poor Condition
Anstey Q Swamp	Regulatory *(Dog Act 1976)*	Laminated metal	1	1 (peeling off)
	Interpretive (flora and fauna information)	Information board	1	1 (sun bleached)
Bordeaux Ramble	Interpretive (TEC information)	Metal	2	0
CUD Swamp	Reserve name and regulatory	Wood	1	1 (regulatory images on sign worn off)
Hidden Swamp	Regulatory and reserve name	Wood	1	0
Kinsale Bend	Interpretive (TEC information)	Metal	3	1 (fallen off post)
Lark Hill Sporting Complex	Interpretive and reserve name	Metal	4	1
	Interpretive (TEC information)	Metal	1	1 (peeling off)
	Interpretive (plant information)	Plastic plaque	5	5 (sun bleached and peeling)
	Interpretive (flora and fauna information)	Metal and plastic	4	3 (vandalised)
Sawley Close Nature Reserve	No signage	-	-	-
Tamworth Reserve	Regulatory *(Dog Act 1976)*	Paint on pavement	4	0
Trenant Park Gardens	No signage	-	-	-
Woodleigh Grove Reserve	Regulatory (pest baiting)	Board	4	0
	Interpretive (tree information)	Plaque	1	1 (worn)

4 Infrastructure Assessment (continued)

4.4 Other Infrastructure and Amenities

As all of the reserves in the study area are local reserves they do not contain barbeques or picnic facilities. CUD Swamp is the only reserve that contains a playground. Dog waste bags and/or bins are proposed in the following reserves: Anstey Q Swamp, Bordeaux Ramble, CUD Swamp, Lark Hill Sporting Complex and Trenant Park Gardens.

The type and condition of other infrastructure and amenities recorded in the study area are summarised in Table 19 below.

TABLE 19 - Other Infrastructure and amenities in the study area

Anstey Q Swamp

Bin
Number: 2 Number in Poor Condition: 0

Dog waste bags
Number: 2 Number in Poor Condition: 0

Information hut
Number: 1 Number in Poor Condition: 0

Car parking facilities
None; residential parking only

Bordeaux Ramble

Gazebo
Number: 1 Number in Poor Condition: 0

Bench seat
Number: 4 Number in Poor Condition: 0

Wood boardwalk
Number: 1 Number in Poor Condition: 0

Car parking facilities
Street parking available for two cars

CUD Swamp

Playground
Number: 1 Number in Poor Condition: 0

Bin
Number: 2 Number in Poor Condition: 0

Dog waste bags
Number: 1 Number in Poor Condition: 0

Bench seat
Number: 5 Number in Poor Condition: 0

Car parking facilities
None; residential parking only

Hidden Swamp

None

Car parking facilities
None; residential parking only

Kinsale Bend

Wood boardwalk
Number: 1 Number in Poor Condition: 0

Car parking facilities
Street parking available close to reserve for four cars

Lark Hill Sporting Complex

Pedestrian turnstile
Number: 4 Number in Poor Condition: 0

Bench seat
Number: 4 (3 inside heritage house) Number in Poor Condition: 1 (screws loose)

Shade hut
Number: 4 Number in Poor Condition: 0

Heritage house
Number: 1 Number in Poor Condition: 0

Windmill
Number: 1 Number in Poor Condition: 0

Toilet block
Number: 1 Number in Poor Condition: 1 (out of order at time of field visit)

Bore water tank
Number: 1 Number in Poor Condition: 0

Car parking facilities
Parking at the sporting complex only

Sawley Close

None

Car parking facilities
Cul-de-sac parking on Sawley Close

Tamworth Reserve

Bench seat
Number: 2 Number in Poor Condition: 0

Bin
Number: 2 Number in Poor Condition: 0

Dog waste bags
Number: 1 Number in Poor Condition: 0

Car parking facilities
Street and cul-de-sac parking on Trenant Park Gardens

Woodleigh Grove Reserve

Bin
Number: 2 Number in Poor Condition: 0

Dog waste bags
Number: 2 Number in Poor Condition: 0

Pedestrian turnstile
Number: 1 Number in Poor Condition: 0

Car parking facilities
Cul-de-sac parking on Tincombe Grove and Foxton Green, car bay available for one car on Chandler Ramble

5 Threatening Processes

One of the key overarching objectives for the ongoing management of the wetland reserves is to protect and enhance conservation values through the removal of threatening processes. Threatening processes, management approaches and the corresponding key management objectives are discussed in this section.

Representative photos of threatening processes in each reserve in the study area are included in Appendix G.

5.1 Weed Invasion

Invasive weeds are amongst the most serious threats to Australia's natural environment, threatening our unique biodiversity and reducing overall species abundance and diversity (DotEE 2018c). Weeds are plants that grow in areas where they are not wanted and where they have an environmental or economic impact. Weeds can impact natural values by:

- out-competing native species for nutrients, water, space and sunlight
- reducing the natural diversity by smothering native plants or preventing them from growing back
- reducing habitat for native animals
- altering fire regimes (DoBCA 2018).

Weeds were common and widespread throughout the study area (93 species total). Two significant weeds were found that are highly likely to threaten native vegetation if they are not actively managed:

- *Asparagus asparagoides* (WoNS and Declared Pest plant): a single plant recorded at Woodleigh Grove Reserve; and
- *Gomphocarpus fruticosa* (Declared Pest plant): 64 plants recorded at three reserves.

Other weeds identified within the study area listed under Section 3.7.2, while of lower priority than WoNS and Declared Pests, should also be actively managed to limit their spread and impacts on the conservation value of the reserves. These weeds are typically larger or woody weeds with a currently restricted distribution within the reserves of the study area.

Dynamic and sensitive environments such as the reserves in the study area should utilise an integrated approach to weed management, which involves a combination of mechanical and chemical treatment, coupled with revegetation to increase the ecosystems resilience in the long term.

5.1.1 Revegetation of Degraded Areas

Various vegetation conditions were recorded within the study area, ranging from excellent to completely degraded. Reserves that may benefit from revegetation include Anstey Q Swamp, CUD Swamp, Hidden Swamp, Kinsale Bend, Lark Hill Sporting Complex, Sawley Close and Tamworth Reserve. Areas within these reserves recommended for revegetation are illustrated under the individual reserve snapshots (sections 6 -15), utilising a revegetation priority and plant density scale of high, medium, and low as follows:

- **High** – high intensity mass planting, approximately 10,000 plant per ha (1 plant per m^2)
- **Medium** – moderate density infill planting, approximately 2,500 plants per ha (0.25 plants per m^2)
- **Low** – low density infill or supplementary planting, approximately 1,000 plants per ha (0.1 plants per m^2).

Successful revegetation is best achieved through selection of species appropriate to the vegetation association. Planting of species appropriate to a given location will likely enhance plant survival rates, reduce revegetation costs, and help limit change in natural species composition. Appendix H provides a list of recommended revegetation species appropriate for key vegetation associations in the study area. Recommended species have been selected based on their prominence within the study area and their availability as tubestock or ease of propagation from seed for areas requiring extensive revegetation.

The key objectives for weed management within the study area are to:

- prevent the introduction of additional weed species
- reduce the extent of weed suite coverage and density
- ensure weed control actions do not negatively impact flora and fauna
- support weed management with revegetation of suitable native species.

5.2 Inappropriate Access

Inappropriate access, such as the use of undefined tracks through the reserves can result in habitat degradation or loss through trampling of native vegetation. Trampling of vegetation can also lead to changes in flora composition through introduction of non-native species and reduced vegetation cover. Trampling impacts can also lead to soil erosion which can affect wetland health.

Inappropriate access was observed at Anstey Q Swamp, CUD Swamp, Hidden Swamp and Sawley Close. Management recommendations are detailed in individual reserve snapshots (sections 6 - 15), with the photos included in Appendix G and the GPS locations included in Appendix I.

The key objectives for access management within the study area are to:

- formalise undefined tracks where suitable
- rehabilitate unauthorised tracks through weed control and revegetation
- ensure areas of native vegetation are fenced to restrict unauthorised access
- ensure areas of damaged or absent fencing are repaired/upgraded in a timely manner.

5.3 Vandalism and Rubbish Dumping

Residents utilising the reserves inappropriately can have significant impacts on conservation values. Vandalism and dumping of rubbish and garden waste reduces the visual amenity of the reserves and the overall recreational value to the wider community. Management recommendations are detailed in individual reserve snapshots (sections 6 - 15), with the photos included in Appendix G and the GPS locations included in Appendix I.

5.3.1 Vandalism and Dumping of Rubbish

A flow-on effect of inappropriate access (discussed in Section 5.2) is that it may promote vandalism and rubbish dumping, or the use of campfires, which can lead to severe detrimental environmental impacts if bushfires result. Rubbish dumping can also cause the spread of non-native plant species, which can contribute to fuel loads and create a fire hazard. Vandalism and rubbish dumping was observed at Anstey Q Swamp, CUD Swamp, Hidden Swamp, Kinsale Bend, Lark Hill Sporting Complex and Sawley Close.

PLATE 7 - Example of vandalism in the study area

5.3.2 Dumping of Garden Waste

Occasional dumping of garden waste was observed at Anstey Q Swamp, Bordeaux Ramble and Kinsale Bend, all in close proximity to residential properties of smaller block sizes. Garden waste consisted of dead or live potted plants and large garden plant prunings. Subject to the species in question, live dumped plants generally have a low risk of establishing and becoming weeds in reserves.

Installation of fences or signage is unlikely to prevent dumping of garden waste; those responsible are likely to know it is not permitted. Distribution of information leaflets to residences neighbouring these three reserves summarising the impact and reminding of dumping penalties may be a cost-effective management action.

The key objectives for rubbish management within the study area are to ensure:

- adequate provisions of rubbish bins in the reserves, particularly around parkland and seating areas
- bins are emptied regularly
- unauthorised access is restricted and aim to increase visual surveillance of reserves known for rubbish dumping

5.4 Feral Animals

Feral animals are introduced animals that can have detrimental effects on the conservation value of native ecosystems through:

- predation on native fauna
- habitat destruction
- competition for food and shelter with native fauna
- introduction and spreading of diseases.

Observations of introduced animals in the reserves made during the field survey included Koi fish at Hidden Swamp, a rabbit warren at Lark Hill Sporting Complex and European honeybees at Trenant Park Gardens.

Rabbits (*Oryctolagus cuniculus*), foxes (*Vulpes vulpes*) and feral cats (*Felis mellifera*) are listed under the EPBC Act as key threatening processes to the conservation of biodiversity in Australia. A feral animal control program for reducing the population of foxes, feral cats and rabbits is currently in place by the City in Woodleigh Grove Reserve, Lark Hill Sporting Complex, Sawley Close Nature Reserve and Trenant Park Gardens. These reserves were selected for feral animal control based on containing known native fauna populations or habitat to support native fauna (particularly Southern Brown Bandicoots) and/or reported feral animal presence from residents.

The key objectives for feral animal control within the study area are to:

- ensure feral animal control methods are suitable for use in an urban environment
- target known locations of feral animals to prevent further outbreaks.

Anstey Q Swamp

Warnbro Sound Avenue, Secret Harbour

Anstey Q Swamp (10.13 ha) includes areas of landscaped lawns, an extensive Conservation Category Wetland and bushland. The vegetation within the reserve ranges from upland Quindalup dunes Shrubland and Tuart Woodland to sumpland *Ficinia nodosa* and *Baumea juncea* Sedgeland and Paperbark Woodland in a predominantly very good to excellent condition. The central portion of the reserve contains degraded areas that require management.

Anstey Q Swamp includes a walking trail that circles an area of bushland fenced on one side. The current infrastructure within Anstey Q Swamp does not appropriately restrict pedestrian access along the western portion of the reserve. An informal track exists from Warnbro Sound Avenue that could be formalised and fenced off. Fencing is required along Warnbro Sound Avenue and on the outside of the footpath in the reserve.

Conservation Significant Species and Communities

- Contains potential Black Cockatoo foraging, roosting and breeding habitat including a number of nesting boxes within large tuarts.
- Contains Threatened Ecological Community 'Sedgelands in Holocene Dune Swales of the Swan Coastal Plain'.

Fauna Habitat

Eleven bird species were recorded during the field survey.

TABLE 20 - Fauna Habitat

Tuart Woodlands	Potential Black Cockatoo foraging, roosting and breeding habitat
Upland Quindalup Dunes (Shrubland)	Habitat for bushland birds and reptiles
Sedgeland and Paperbark Woodland	Birds, Southern Brown Bandicoots, macroinvertebrates and refugia in summer

TABLE 21 - Proposed Management Actions		
Major Threats/Issues	**Actions**	**Priority**
Weed invasion and spread	Ongoing control of weeds, with a particular focus on individually mapped larger and more prominent weeds (Suite 1)	**Medium**
Vegetation degradation from weed dominance, reducing native species coverage	Revegetation of degraded to good areas (0.6 ha), ensuring weed spraying is undertaken prior to tubestock planting	**Medium**
Degradation on the perimeter of the 'excellent' vegetation and within the 'good' vegetation from pedestrians and weeds resulting in reduced plant coverage	Revegetation of good to excellent areas (1.15 ha), ensuring weed spraying is undertaken prior to tubestock planting	**Low**
Inappropriate access from Warnbro Sound Avenue and from people not staying on the formal footpath	Fence reserve along Warnbro Sound Avenue and along both sides of the formal path in the west of the reserve	**Medium**
Informal paths created (see Appendix I for locations)	Revegetate informal paths	**Medium**
Informal access path created from Warnbro Sound Avenue to the formal footpath in the reserve	Formalise path with paving to allow formal access to reserve from Warnbro Sound Avenue. Fence new path to discourage access to bushland	**High**
Informal access through the centre of the wetland	Investigate need for a boardwalk through wetland to protect the wetland vegetation, enable a shortcut through the wetland and promote wetland enjoyment	**Low**
Dumping of garden waste along the northern boundaries of the reserve	Remove garden waste	**High**
	Educate residents that dumping garden waste is not permitted and about the environmental impacts it can have on the reserve (i.e. leaflet drop)	**Medium**
Dumping of rubbish and asbestos sheeting (see Appendix I for locations)	Remove dumped rubbish and asbestos sheeting	**High**
Poor condition fencing (4 holes in wire mesh)	Investigate need for repair	**Low**
1.5 m paved concrete (trip hazard)	Investigate need for repair	**Medium**
One regulatory sign and one interpretive sign peeling off	Two signs to be replaced/repaired	**Medium**
Lack of appropriate signage in the information hut	Provide new interpretive signage that promotes an understanding of the fauna within the reserve	**Low**
	Provide new regulatory signage regarding the impacts of introduced and domestic animals on native fauna	**Low**
Lack of bins and dog waste bags	Install a bin and dog waste bags at proposed new formalised access path entrance	**Low**

FIGURE 4


Cleared/
Parkland
FnBjS
FnBjS
SgS
EgW
FnBjS
SgS
FnBjS
FnBjS
MlW
MlW
FnBjS
EgW
EgW
EgW
MrW
Cleared/
Parkland
ArS
FnBjS
SgS
Vegetation Associations
Melaleuca rhaphiophylla Woodland (MrW) - 0.81ha
Melaleuca lanceolata Woodland (MlW) - 0.53ha
Ficinia nodosa and Baumea juncea Sedgeland (FnBjS) - 1.39ha
Eucalyptus gomphocephala Woodland (EgW) - 1.80ha
Spyridium globulosum Shrubland (SgS) - 3.22ha
Acacia rostellifera Shrubland (ArS) - 0.49ha
Cleared/Parkland - 1.90ha
N
0 m
100 m

FIGURE 5


Vegetation Condition
Completely degraded - 1.90ha
Degraded - 0.53ha
Good - 0.81ha
Very good - 2.29ha
Excellent - 4.60ha
N
0 m
100 m

FIGURE 6


Weed Suites
Suite 1 (20m buffer)
Suite 2
Suite 3
Suite 4 (20m buffer)
Weed Descriptions
Ficus carica
Phoenix canariensis
Schinus terebinthifolius
Typha orientalis
N
0 m
100 m

FIGURE 7


UFI: 6487
Geomorphic Assessment Outcome
CCW boundary
Geomorphic Wetlands Dataset
Conservation
Resource enhancement
N
0 m
100 m

FIGURE 8


Revegetation Level
Low: 1000 plants/ha - 1.15ha
Medium: 2.500 plants/ha - 0.60ha
N
0 m
100 m

FIGURE 9


Infrastructure
Fences
Bollard
Proposed fencing
Wire mesh
Wood posts and wire
Paths
Paved concrete
Proposed path
Other Infrastructure
Information hut
Interpretive sign
Proposed interpretive sign
Bin and dog waste bags
Proposed bin and dog waste bags
Regulatory sign
Proposed regulatory sign
N
0 m
100 m

Bordeaux Ramble

Bordeaux Ramble, Port Kennedy

Bordeaux Ramble is a very small low lying reserve (2.02 ha) within a residential area. The bushland in the reserve is fenced off and surrounded by a paved walking path and an edging of lawn, with a wood boardwalk crossing through the centre. The boardwalk entrance includes a gazebo, park benches and an interpretive sign. The reserve contains two unique Conservation Category Wetlands which make up a small portion of the bushland.

The vegetation within the reserve consists predominantly of *Xanthorrhoea preissii* Shrubland with a small portion containing *Ficinia nodosa* and *Baumea juncea* Sedgeland in excellent condition.

Conservation Significant Species and Communities

- Contains Threatened Ecological Community 'Sedgelands in Holocene Dune Swales of the Swan Coastal Plain'.

Fauna Habitat

Two bird species were recorded during the field survey; a Galah and a Red Wattlebird.

TABLE 22 - Fauna Habitat

Upland Quindalup Dunes (Shrublands)	Good quality habitat, particularly for reptiles and birds
Sedgeland	

TABLE 23 - Proposed Management Actions

Major Threats/Issues	Actions	Priority
Weed invasion and spread	Ongoing control of weeds	Medium
Dumping of garden waste along western boundary of reserve	Educate residents about the illegality of dumping garden waste and the environmental impacts it can have on the reserve (i.e. leaflet drop)	Low
Poor condition fencing (4 holes in wire mesh)	Investigate need for repair	Low
1 m paved concrete (trip hazard)	Investigate need for repair	Medium
Lack of bins and dog waste bags	Install a bin and dog waste bags near gazebo entrance	Low

FIGURE 10

FIGURE 11

FIGURE 12

FIGURE 13

FIGURE 14


Infrastructure
Fences
Limestone wall
Wood posts and wire
Paths
Paved concrete
Wood boardwalk
Other Infrastructure
Bench seat
Gazebo
Interpretive sign
Proposed bin and dog waste bags
N
0 m
100 m

CUD Swamp

Warnbro Sound Avenue, Secret Harbour

CUD Swamp is a relatively small reserve (2.56 ha) within a residential area that contains a number of walking trails, patches of lawn, a children's playground and a lookout. The bushland within the reserve is fragmented by the walking trails which has resulted in general disturbance to the bushland. Part of the bushland in the reserve is fenced off, however the two Conservation Category Wetlands within the western portion of the reserve are open to public access which requires management.

CUD Swamp comprises *Acacia rostellifera* Shrubland on the dunes and *Melaleuca rhaphiophylla* Woodland in the two wetlands. Significant rehabilitation plantings were evident during the field survey, however additional revegetation is recommended in the reserve to improve the vegetation condition.

Conservation Significant Species and Communities

- None recorded.

Fauna Habitat

One blue-tongued skink and four bird species were recorded during the field survey.

TABLE 24 - Fauna Habitat

Paperbark Woodland	Habitat for birds, frogs and potentially Southern Brown Bandicoots
Upland Quindalup Dunes	Habitat for birds and reptiles

TABLE 25 - Proposed Management Actions

Major Threats/Issues	Actions	Priority
Weed invasion and spread	Ongoing control of weeds, with a particular focus on the individual *Olea europaea* subsp. *Europaea* (Olive plant)	Medium
Vegetation degradation from weed dominance and human disturbance, reducing native species coverage	Revegetation of entire bushland (1.4 ha), ensuring weed spraying is undertaken prior to tubestock planting	Medium
Inappropriate access to the Conservation Category Wetlands leading to further degradation	Fence off the Conservation Category Wetlands	High
Inappropriate access from open access points in the dunes (see Appendix I for locations)	Close access points to dunes with fencing and revegetate eroded dune areas	Medium
Lack of rubbish bins resulting in dumping of rubbish (see Appendix I for locations)	Remove rubbish Install two rubbish bins	High
7 m of cracked bitumen path	Investigate need for repair	Medium
28 m of eroded crushed limestone path	Investigate need for repair	Medium
One regulatory sign worn	Sign to be replaced/repaired	Medium

FIGURE 15

FIGURE 16

FIGURE 17

FIGURE 18

FIGURE 19

FIGURE 20

Hidden Swamp

Secret Harbour Boulevard, Secret Harbour

Hidden Swamp is a small coastal reserve (3.24 ha) adjacent to a residential area that contains two Conservation Category Wetlands. The reserve includes sand and mulch walking trails and wood stairs leading to a lookout on the top of the dunes. There is inappropriate access to the dunes from the wood stairs that requires management.

The reserve contains a lake surrounded by *Alyxia buxifolia* Coastal Heathland on the steep dunes and *Ficinia nodosa* and *Baumea juncea* Sedgeland. The vegetation in the reserve ranges from very good to excellent condition. The lake is not currently mapped in the Geomorphic Wetlands Dataset, however the Wetland Management Category assessment found the lake to be reflective of a Resource Enhancement Wetland.

Conservation Significant Species and Communities

- Contains Threatened Ecological Community 'Sedgelands in Holocene Dune Swales of the Swan Coastal Plain'.

Fauna Habitat

One Slender Tree Frog, one Tiger Snake and five Eurasian Coots were recorded during the field survey.

TABLE 26 - Fauna Habitat

Sedgeland	Bushland birds and reptiles, habitat refuge
Upland Quindalup Dunes	Bushland birds and reptiles
Open water	Frogs, waterbird habitat and potentially marine bird habitat due to close proximity to the coast

TABLE 27 - Proposed Management Actions

Major Threats/Issues	Actions	Priority
Weed invasion and spread	Ongoing control of weeds, with a particular focus on the 12 *Olea europaea* subsp. *Europaea* (Olive plants) and *Typha orientalis* in lake	Medium
Vegetation degradation from weed dominance and human disturbance, reducing native species coverage	Revegetation of disturbed areas (0.07 ha), ensuring weed spraying is undertaken prior to tubestock planting	Low
Introduced koi fish in lake	Engage a contractor specialised in the removal of introduced fish species from wetland	Medium
	Install interpretive and regulatory signage to inform the community about illegal dumping of introduced species and the adverse effects on native fauna	Medium
Inappropriate access into the dunes from the wooden stairs leading to lookout at: 32°24'21" (S), 115°44'53" (E)	Fence wooden stairs to discourage access to dunes	High
Rubbish dumping on western border along residential fencing	Remove rubbish	High
	Educate residents about illegal dumping (i.e. leaflet drop)	Medium
5 m of mulch and sand path is overgrown with weeds	Spray weeds	Medium
1 m of sand covering wood stairs	Maintain stairs	Low
Lack of signage	Provide new interpretive signage that promotes an understanding of the fauna within the reserve, particularly relating to snakes	Low
	Provide new regulatory signage discouraging feeding of birds	Low

FIGURE 21

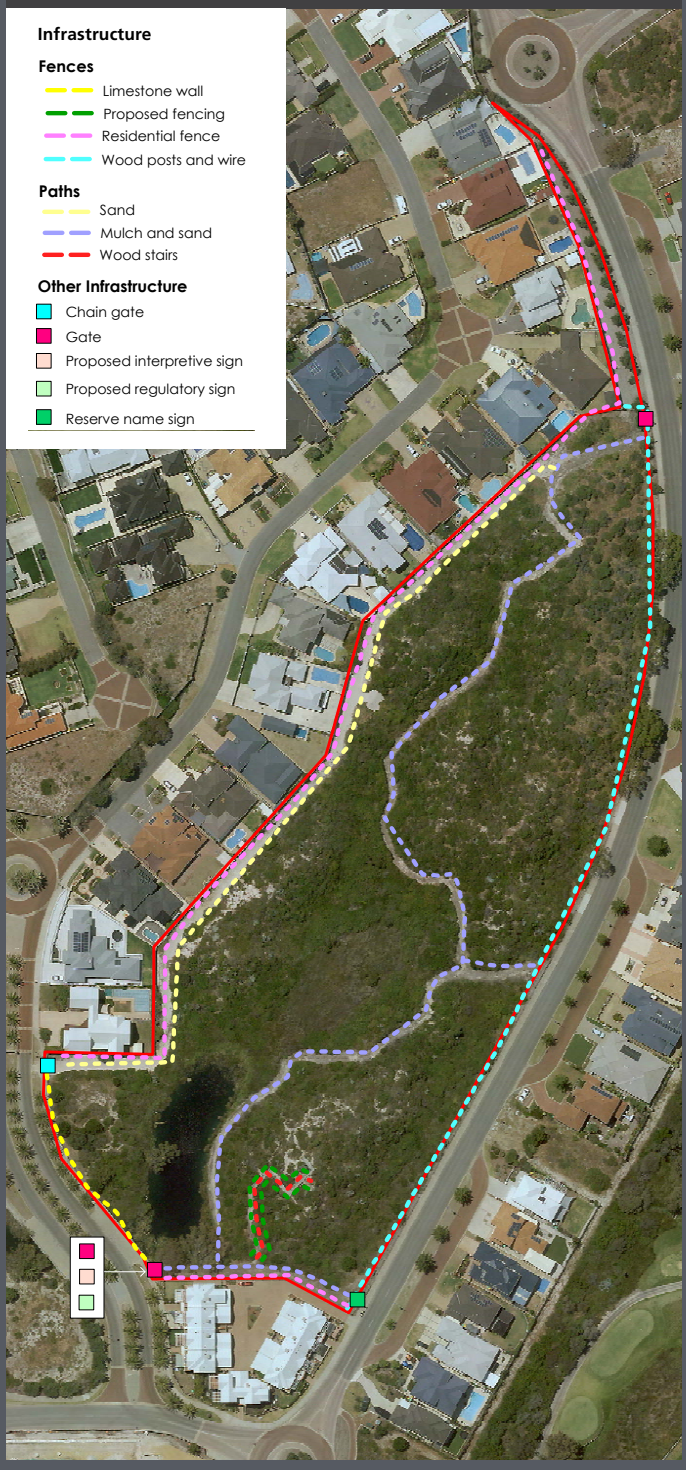
FIGURE 22

FIGURE 23

FIGURE 24

FIGURE 25

FIGURE 26



Kinsale Bend

Kinsale Bend, Port Kennedy

Kinsale Bend is a very small low lying reserve (0.56 ha) that exists within a residential area. A paved concrete path and fence exists between the bushland and the lawn landscaped area. There is a small viewing platform overlooking the Conservation Category Wetland. The vegetation within the reserve ranges from upland *Acacia rostellifera* Shrubland to dampland *Xanthorrhoea preissii* Shrubland and *Ficinia nodosa* and *Baumea juncea* Sedgeland. The bushland ranges from very good to excellent condition. A small portion of the north-eastern part of the reserve is in a completely degraded condition and requires management.

Conservation Significant Species and Communities

- Contains Threatened Ecological Community 'Sedgelands in Holocene Dune Swales of the Swan Coastal Plain'.

Fauna Habitat

Three Laughing Doves and one Singing Honeyeater were recorded during the field survey.

TABLE 28 - Fauna Habitat

Sedgeland Upland Quindalup Dunes	Good quality habitat, particularly for birds and reptiles

TABLE 29 - Proposed Management Actions

Major Threats/Issues	Actions	Priority
Weed invasion and spread	Ongoing control of weeds	Medium
Vegetation degradation from weed dominance, reducing native species coverage	Revegetation of disturbed areas (0.02 ha), ensuring weed spraying is undertaken prior to tubestock planting	Low
Dumping of garden waste along the main paved footpath	Educate residents about the illegality of dumping garden waste and the environmental impacts it can have on the reserve (Ie. leaflet drop)	Low
Dumping of rubbish at: 32°21'50" (S), 115°44'58" (E)	Remove rubbish	High
6 m cracked paved concrete path	Investigate need for repair	Low
1 interpretive sign fallen off post	Repair/replace sign	Medium

FIGURE 27

Vegetation Associations

- *Ficinia nodosa* and *Baumea juncea* Sedgeland (FnBjS) - 0.02ha
- *Acacia rostellifera* Shrubland (ArS) - 0.27ha
- *Xanthorrhoea preissii* Shrubland (XpS) - 0.06ha
- Cleared/Parkland - 0.21ha

FIGURE 28

Vegetation Condition

- Completely degraded - 0.05ha
- Degraded - 0.17ha
- Very good - 0.27ha
- Excellent - 0.08ha

N 0 m 50 m

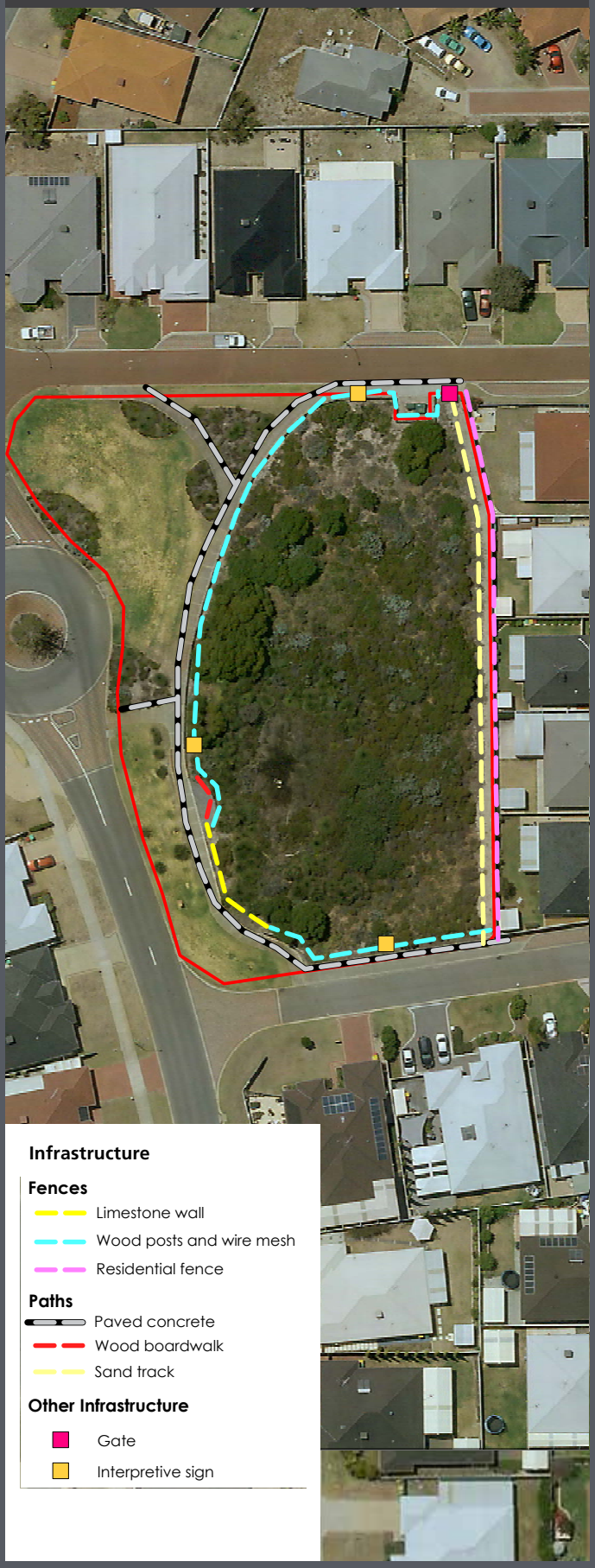
FIGURE 29

FIGURE 30

N 0 m 50 m

FIGURE 31

FIGURE 32



Lark Hill Sporting Complex

Warnbro Sound Avenue, Port Kennedy

Lark Hill Sporting Complex is the largest reserve in the study area (105.18 ha). The conservation reserve forms part of a major sporting and recreation reserve. Further sporting complex development is anticipated in the northern portion of the reserve, however no detailed planning has been undertaken. The northern portion of the reserve forms part of Bush Forever Site No. 356.

The reserve contains 21 unique wetlands classified as Conservation Category Wetlands under the Geomorphic Wetlands Dataset. However the Wetland Management Category assessment identified that three of these wetlands are more reflective of Resource Enhancement Wetlands.

The majority of the reserve was not wetland habitat, with much of its extent being historically cleared for land uses such as market gardens, containing scattered regrowth and landscape plantings of some native flora.

The dominant vegetation in the reserve consists of *Acacia rostellifera* Shrubland (66.31 ha), followed by pasture and sumpland sedgelands and shrublands. The vegetation in the reserve ranges from very good to completely degraded condition, with the majority of vegetation being in very good condition. The degraded to completely degraded portions of the reserve that are not subject to future development require management.

The reserve contains numerous sand and gravel walking trails meandering around the wetlands. It contains a range of infrastructure, including bench seats, shade huts, a toilet block, windmill and heritage house.

Conservation Significant Species and Communities

- Contains Threatened Ecological Community 'Sedgelands in Holocene Dune Swales of the Swan Coastal Plain' and 'Woodlands over Sedgelands in Holocene dune swales of the Swan Coastal Plain'.
- Priority 3 flora species '*Sphaerolobium calcicola*' in the southern portion of the reserve within *Ficinia nodosa* and *Baumea juncea* Sedgeland.

Fauna Habitat

A total of nine fauna species were recorded during the field survey, including: one blue-tongued skink, one bearded dragon, six bird species and one rabbit (identified by a warren).

TABLE 30 - Fauna Habitat

Paperbark Woodland	Habitat for birds and Southern Brown Bandicoots
Sedgeland	Good quality habitat, particularly for birds and reptiles
Upland Quindalup Dunes	Habitat for birds and reptiles
Dune Swale Shrubland	

Proposed Wetland Buffers

Due to the potential future development of Lark Hill Sporting Complex, draft wetland buffers were considered for this reserve, following the guidance provided in *Guideline for the Determination of Wetland Buffer Requirements* (WAPC 2005). This was based on site-specific assessments of the attributes and values of each specific wetland, consistent with the approach recommended for developing buffers by WAPC (2005). The wetlands within the reserve fell into two groups:

1. Conservation Category Wetlands, which generally support good or better condition wetland vegetation and occurrences of a TEC – to which a 100 m buffer is recommended; and
2. Wetlands currently listed as Conservation Category, but the re- assessment suggests they can be downgraded to Resource Enhancement due to their degraded state (UFI 6481, 6485 and 6486) to which a 50 m buffer is recommended.

The recommended buffers for Lark Hill Sporting Complex are shown in Figures 40 and 41. These buffers will need to be further interrogated at the time of future planning.

TABLE 31 - Proposed Management Actions

Major Threats/Issues	Actions	Priority
Weed invasion and spread	Ongoing control of weeds in wetland/TEC habitat as identified on the weed suite and vegetation association maps in addition to hand pulling ~85 (*Olea europaea* subsp. *Europaea*) Olive plants and controlling other individually mapped prominent weeds	Medium
	Control of Declared Pest weed- 3 *Gomphocarpus fruticosus* (Narrow-leaf Cotton Bush plants) by hand pulling or spray control	High
	The circular buffer areas along the northern and north-eastern boundaries of the study area are not managed by the City. The City will need to advocate to adjacent landowner(s) for the management of the prominent weeds in these areas	Medium
Vegetation degradation from weed dominance and historical disturbance, reducing native species coverage	Revegetation in completely degraded areas (4.28 ha) using 2.5 kg seed per hectare to achieve 10,000 plants per hectare. Ensure weed spraying is undertaken prior to seeding. Areas subject to possible development should not be considered until master planning for future Lark Hill Sporting Complex is resolved	High
	Revegetation of degraded areas (4.42 ha) using 0.625 kg seed per hectare to achieve 2,500 plants per hectare, ensuring weed spraying is undertaken prior to seeding. Areas subject to possible development should not be considered until master planning for future Lark Hill Sporting Complex is resolved	Medium
Feral animals	Ongoing fox, cat and rabbit population control	Medium
Dumping of rubbish and car body at: 32°22'39" (S), 115°45'39" (E)	Remove rubbish and car body	Medium
Disused vandalised remnant building structure in the northern portion of the reserve	Demolish disused vandalised remnant building structure	Medium
Vandalism of signs (see Appendix I for locations)	Clean graffiti and/or replace damaged signs	High
649 m of poor condition wire and barbed wire fencing	Remove fencing	Low
3 damaged gates	Investigate need for repair	Low
4,338 m overgrown sand track	Remove overgrown vegetation on track	Medium
6 interpretive signs sun bleached and/or peeling off	Replace/repair signs	Medium
3 interpretive signs vandalised with graffiti	Remove graffiti	Medium
1 bench with loose screws (under shade hut)	Investigate need for repair	Medium
Lack of bins and dog waste bags	Install two bins and dog waste bags at two entrances to the reserve	Low

FIGURE 33

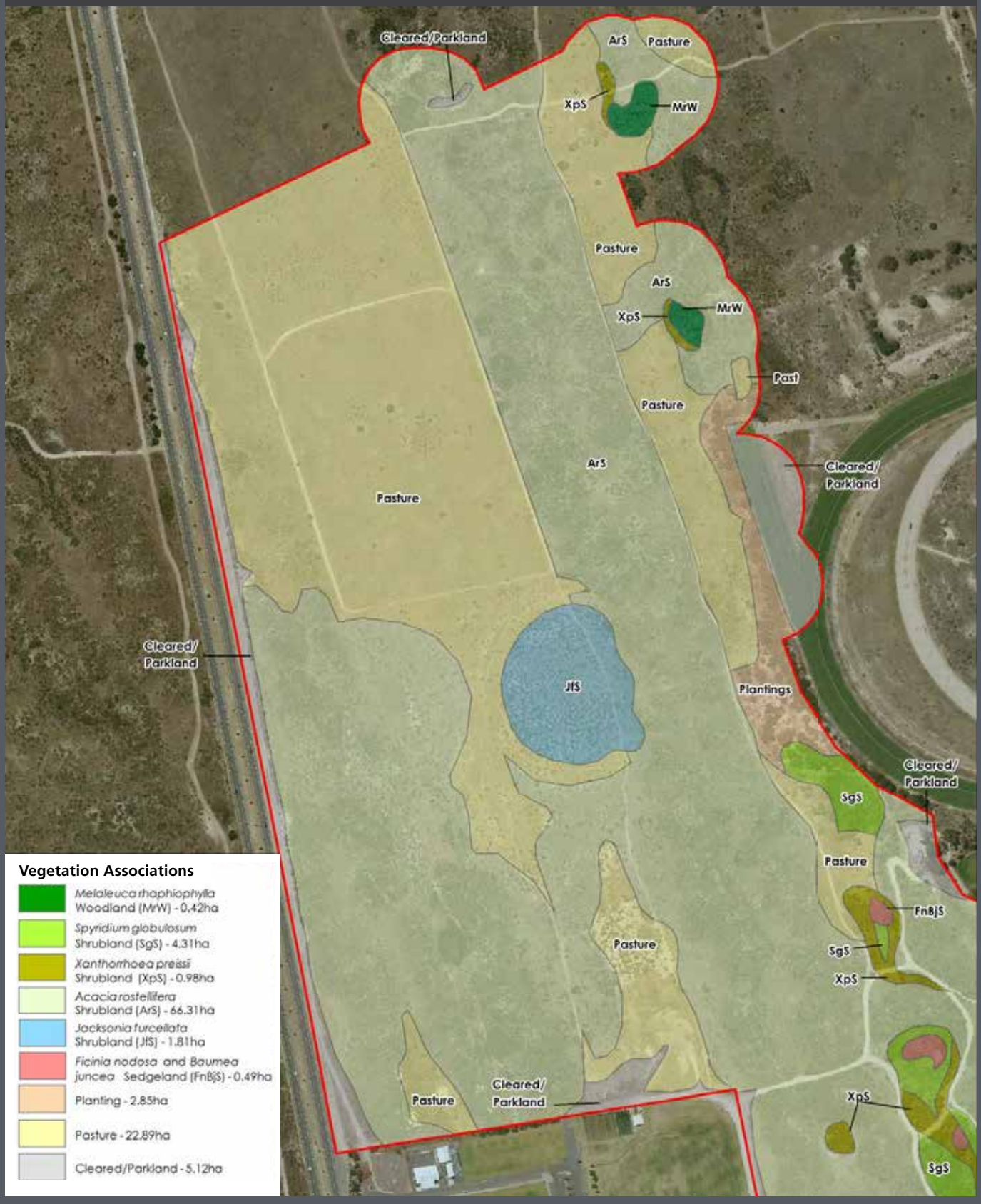

Cleared/Parkland
ArS
Pasture
XpS
MrW
Pasture
ArS
XpS
MrW
Past
Pasture
ArS
Cleared/
Parkland
Pasture
Cleared/
Parkland
JfS
Plantings
Cleared/
Parkland
SgS
Pasture
FnBjS
Pasture
SgS
XpS
Pasture
Cleared/
Parkland
XpS
SgS
Vegetation Associations
Melaleuca rhaphiophylla Woodland (MrW) - 0.42ha
Spyridium globulosum Shrubland (SgS) - 4.31ha
Xanthorrhoea preissii Shrubland (XpS) - 0.98ha
Acacia rostellifera Shrubland (ArS) - 66.31ha
Jacksonia furcellata Shrubland (JfS) - 1.81ha
Ficinia nodosa and Baumea juncea Sedgeland (FnBjS) - 0.49ha
Planting - 2.85ha
Pasture - 22.89ha
Cleared/Parkland - 5.12ha
N
0 m
200 m

FIGURE 34


Pasture
Pasture
Cleared/Parkland
XpS
FnBjS
ArS
Cleared/Parkland
XpS
FnBjS
FnBjS
FnBjS
MrW
Cleared/Parkland
FnBjS
Planting
SgS
Planting
Cleared/Parkland
Pasture
ArS
Cleared/
Parkland
Pasture
Planting
FnBjS
Vegetation Associations
Melaleuca rhaphiophylla Woodland (MrW) - 0.42ha
Spyridium globulosum Shrubland (SgS) - 4.31ha
Xanthorrhoea preissii Shrubland (XpS) - 0.98ha
Acacia rostellifera Shrubland (ArS) - 66.31ha
Jacksonia furcellata Shrubland (JfS) - 1.81ha
Ficinia nodosa and Baumea juncea Sedgeland (FnBjS) - 0.49ha
Planting - 2.85ha
Pasture - 22.89ha
Cleared/Parkland - 5.12ha
N
0 m
200 m

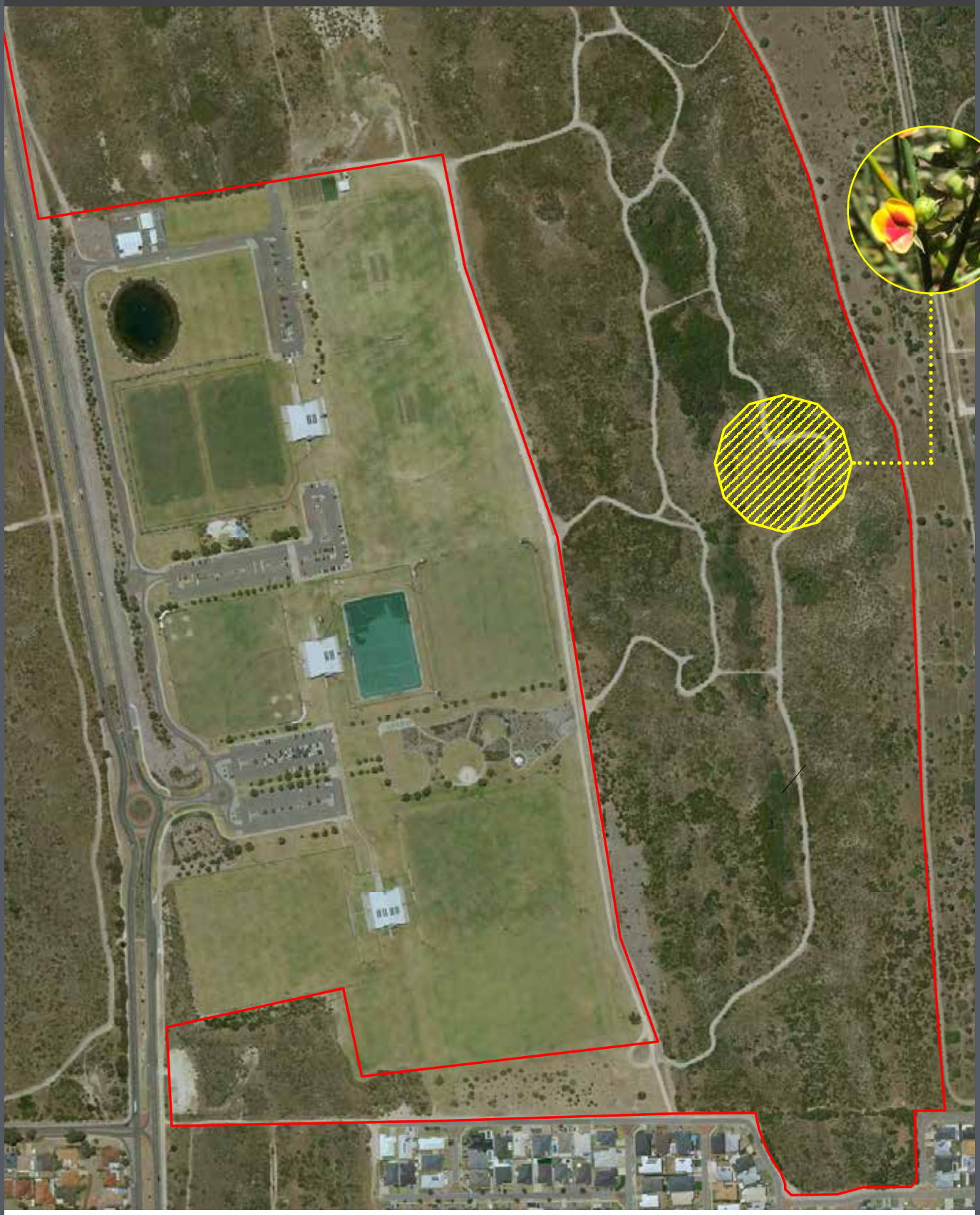
FIGURE 35


Vegetation Condition
Completely degraded - 28.01ha
Degraded - 2.85ha
Very good - 69.53ha
Excellent - 4.79ha
N
0 m
200 m

FIGURE 36


Vegetation Condition
Completely degraded - 28.01ha
Degraded - 2.85ha
Very good - 69.53ha
Excellent - 4.79ha
N
0 m
200 m

FIGURE 37

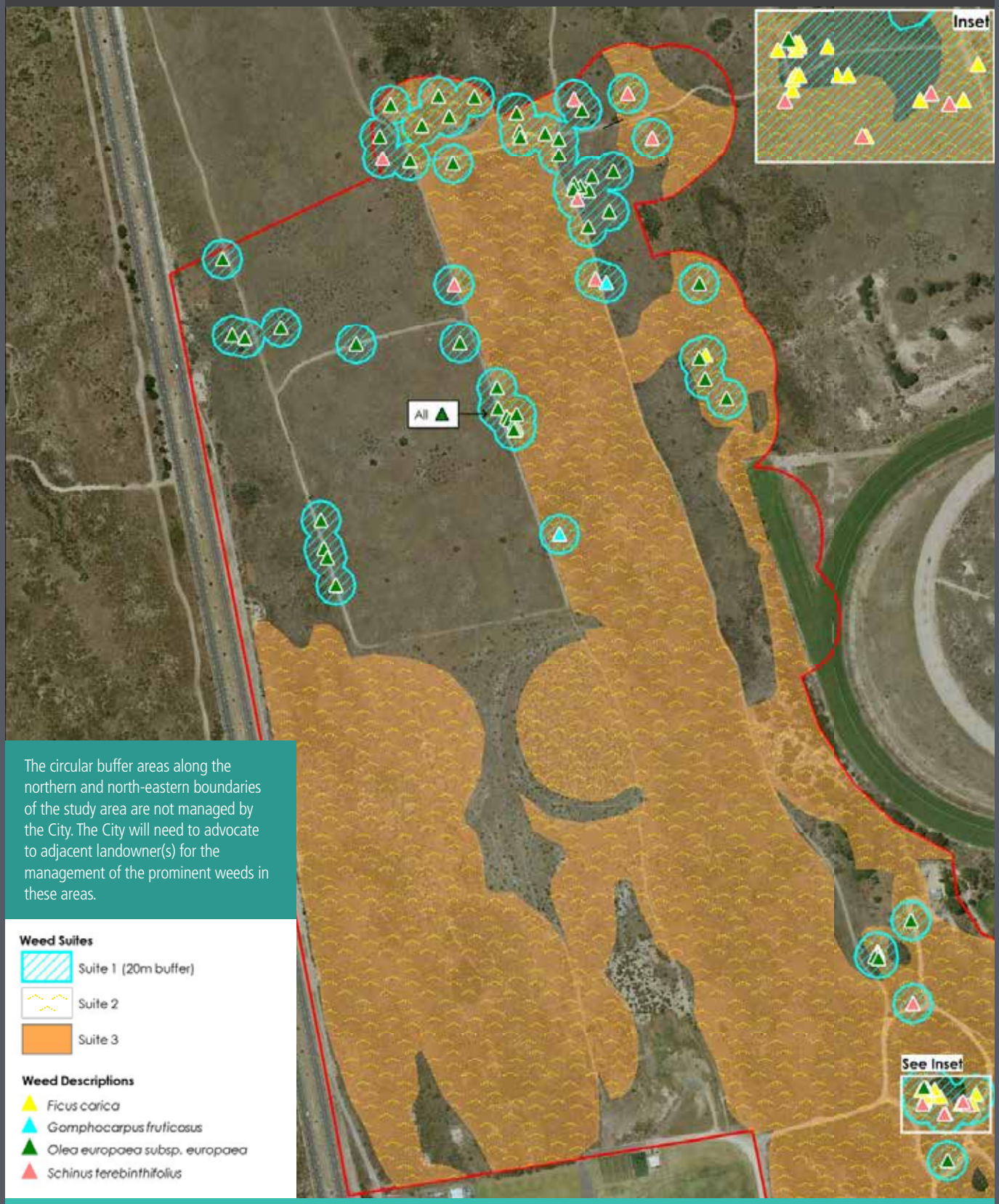


Approximate location of Priority 3 flora species '*Sphaerolobium calcicola*' identified within *Ficinia nodosa* and *Baumea juncea* Sedgeland

N

0 m 200 m

FIGURE 38



The circular buffer areas along the northern and north-eastern boundaries of the study area are not managed by the City. The City will need to advocate to adjacent landowner(s) for the management of the prominent weeds in these areas.

Due to the extensive nature of Lark Hill and the costs associated with weed control, only the following vegetation associations are proposed to undergo weed control, in addition to the individually mapped prominent weed species (Suite 1):

Melaleuca rhaphiophylla Woodland, *Spyridium globulosum* Shrubland, *Xanthorrhea preissii* Shrubland and *Ficinia nododa* and *Baumea juncea* Sedgeland (shown on Figures 33 and 34)

This equates to approximately 6.2 ha

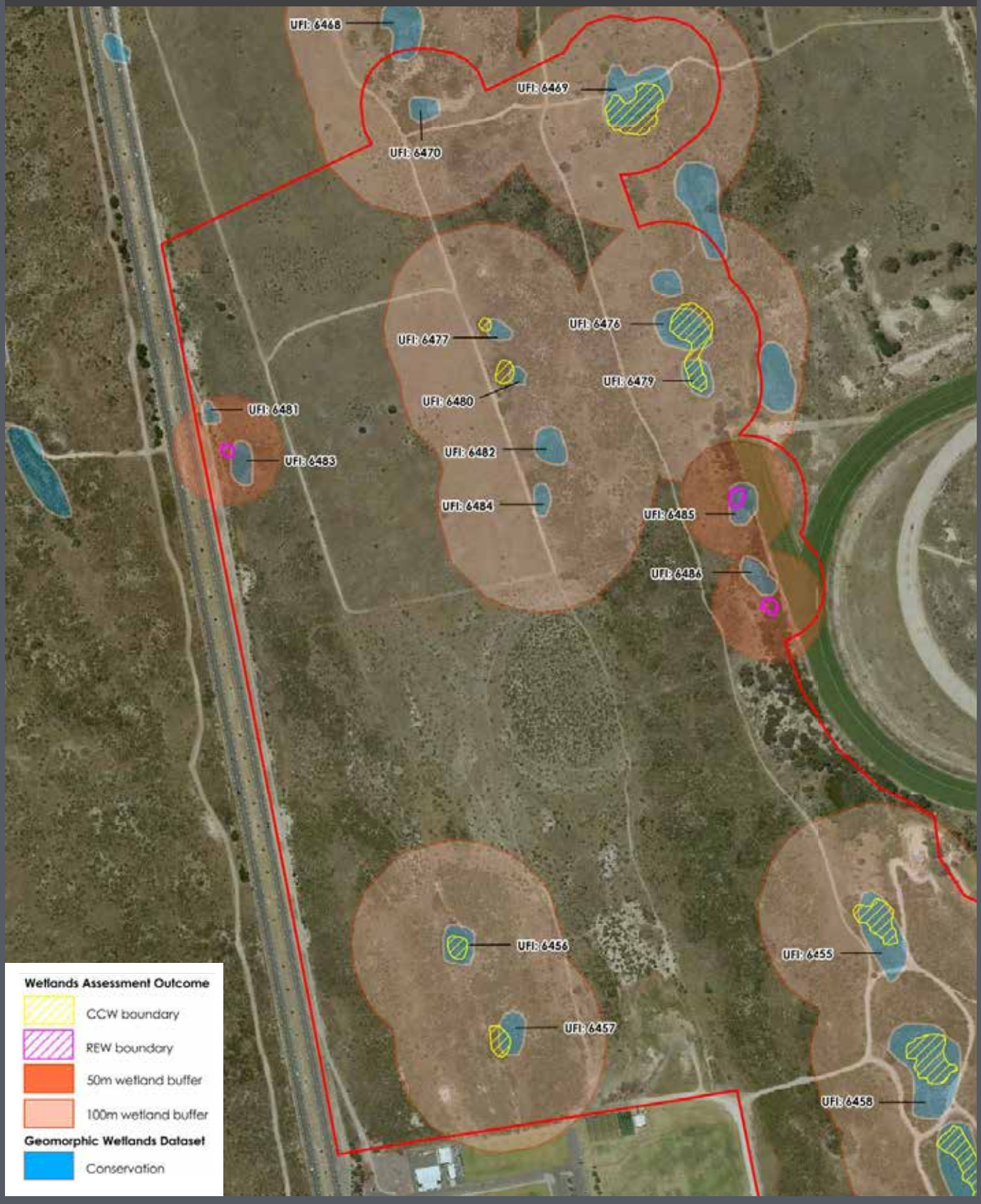
FIGURE 39

Due to the extensive nature of Lark Hill and the costs associated with weed control, only the following vegetation associations are proposed to undergo weed control, in addition to the individually mapped weed species:

Melaleuca rhaphiophylla Woodland, *Spyridium globulosum* Shrubland, *Xanthorrhea preissii* Shrubland and *Ficinia nododa* and *Baumea juncea* Sedgeland

This equates to approximately 6.2 ha of weed spraying

FIGURE 40


UFI: 6468
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UFI: 6482
UFI: 6483
UFI: 6484
UFI: 6485
UFI: 6486
UFI: 6456
UFI: 6455
UFI: 6457
UFI: 6458
Wetlands Assessment Outcome
CCW boundary
REW boundary
50m wetland buffer
100m wetland buffer
Geomorphic Wetlands Dataset
Conservation
N
0 m
200 m

FIGURE 41

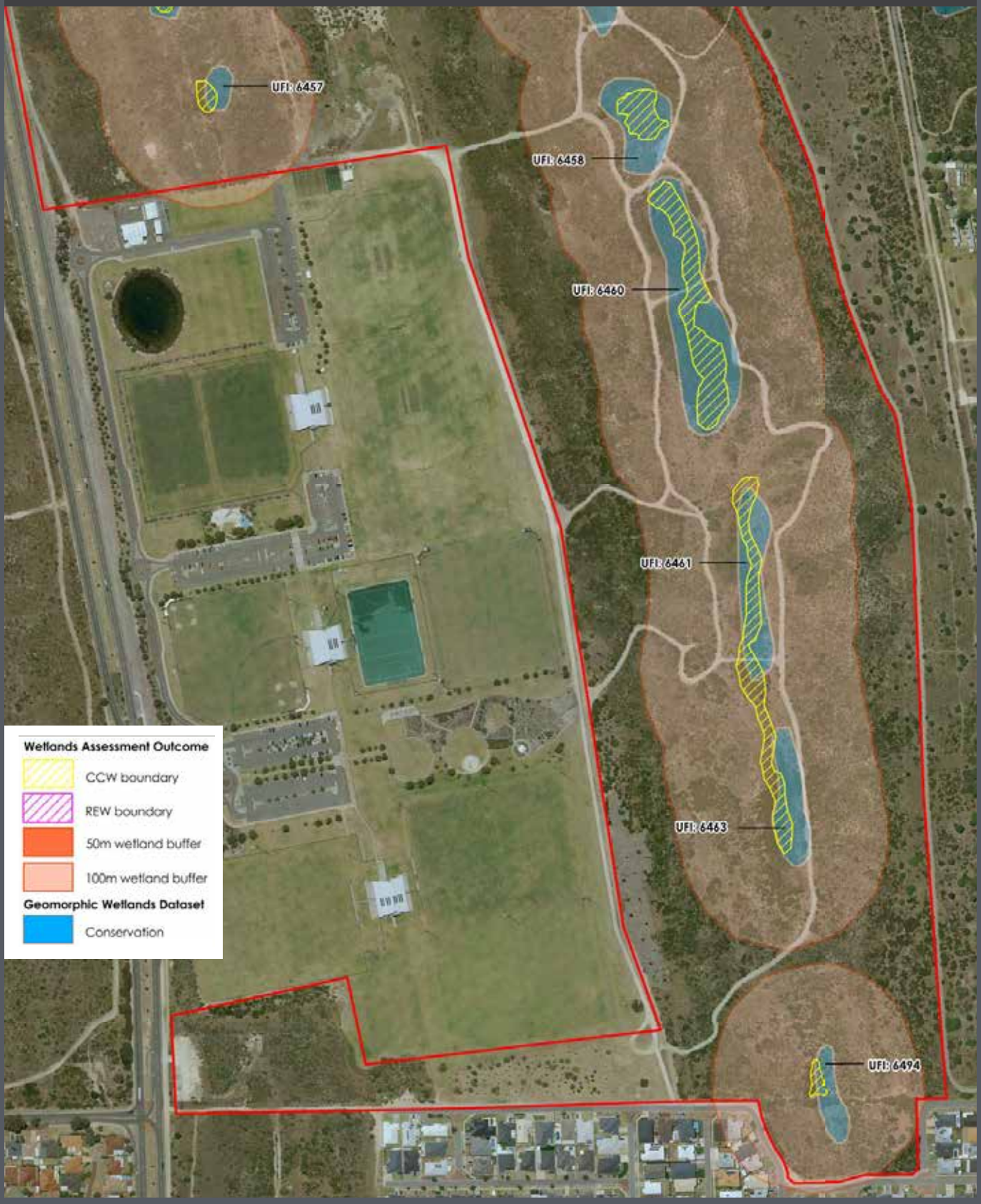

UFI: 6457
UFI: 6458
UFI: 6460
UFI: 6461
UFI: 6463
UFI: 6494
Wetlands Assessment Outcome
CCW boundary
REW boundary
50m wetland buffer
100m wetland buffer
Geomorphic Wetlands Dataset
Conservation
N
0 m
200 m

FIGURE 42

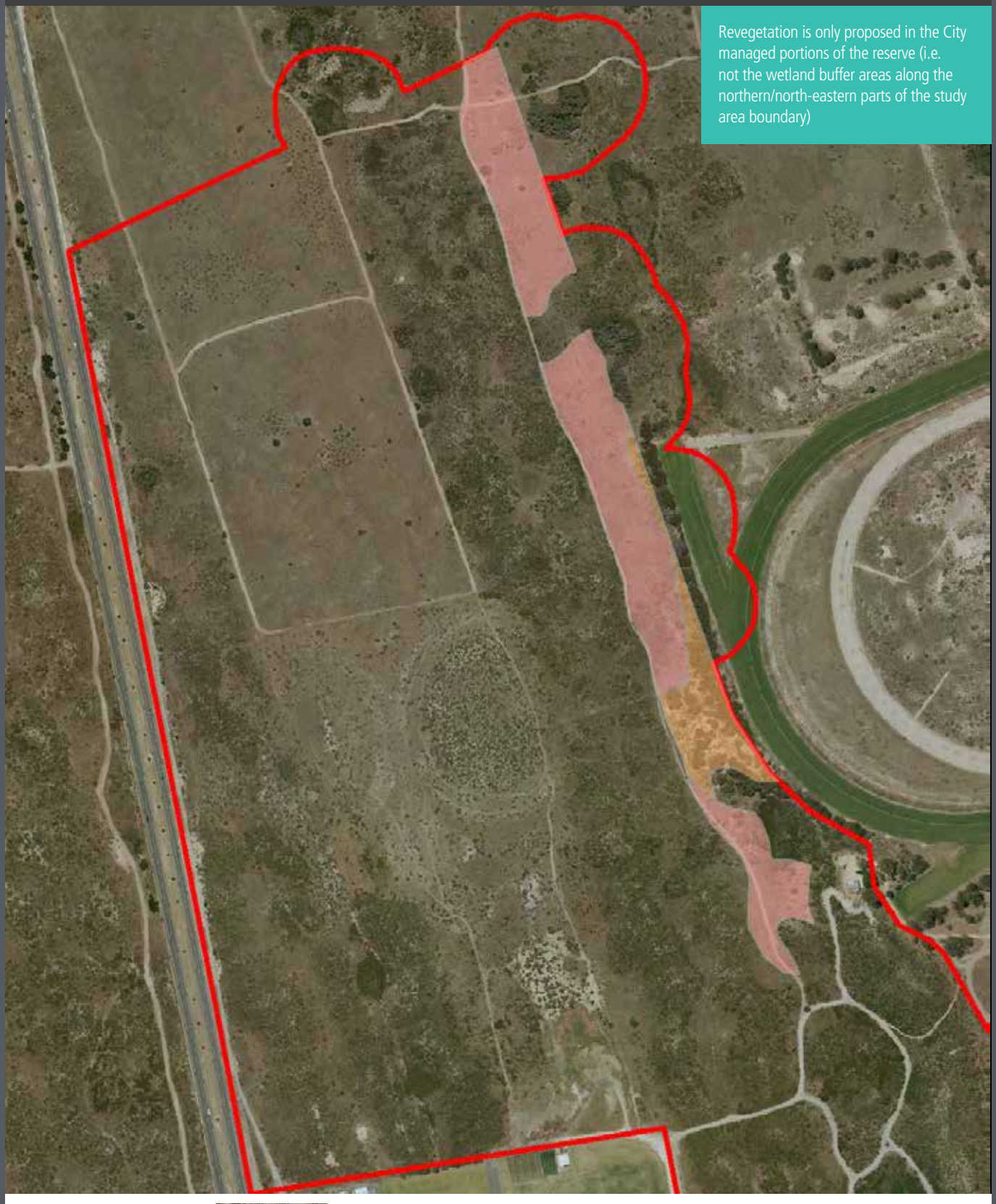

Revegetation is only proposed in the City managed portions of the reserve (i.e. not the wetland buffer areas along the northern/north-eastern parts of the study area boundary)
Revegetation Level
Medium: 2,500 plants/ha - 4.42ha
High: 10,000 plants/ha - 4.28ha
N
0 m
200 m

FIGURE 43

Revegetation Level

- Medium: 2,500 plants/ha - 4.42ha
- High: 10,000 plants/ha - 4.28ha

N

0 m 200 m

FIGURE 44


Infrastructure
Fences
Wire and barbed wire
Wood posts and wire
Paths
Gravel
Sand track
Other Infrastructure
Bench seat
Bore water tank
Gate
Heritage house
Intrepretive sign
Shade hut
Proposed bin and dog waste bags
Windmill
Toilet block
3 x
N
0 m
200 m

FIGURE 45


Infrastructure
Fences
Metal railing
Wood posts and wire
Paths
Gravel
Sand track
Paved concrete
Other Infrastructure
Gate
Pedestrian turnstile
Interpretive sign
Shade hut
Bench seat
Proposed bin and dog waste bags
N
0 m
200 m

Sawley Close Nature Reserve

Sawley Close, Golden Bay

Sawley Close is 4.83 ha and surrounded by Special Residential and Special Rural areas. Sawley Close contains a large Conservation Category Wetland and consists of a variety of sumpland Paperbark Woodland and upland Tuart Woodland and coastal Shrubland vegetation. The vegetation in the reserve ranges from completely degraded to excellent condition. Majority of the completely degraded areas are sandy tracks.

Except for a number of sandy tracks that meander through the reserve, infrastructure is limited at Sawley Close as it is not a highly visited reserve. Informal 4WD vehicle tracks have been observed in the reserve as entering from Mandurah Road and are being used for rubbish dumping. A portion of the reserve in completely degraded condition is not a path and therefore requires management.

Conservation Significant Species and Communities

- Contains Threatened Ecological Community 'Woodlands over Sedgelands in Holocene dune swales of the Swan Coastal Plain'.
- Contains potential Black Cockatoo foraging, roosting and breeding habitat.

Fauna Habitat

Tracks of a Western Grey Kangaroo were recorded during the field survey but no fauna species were identified.

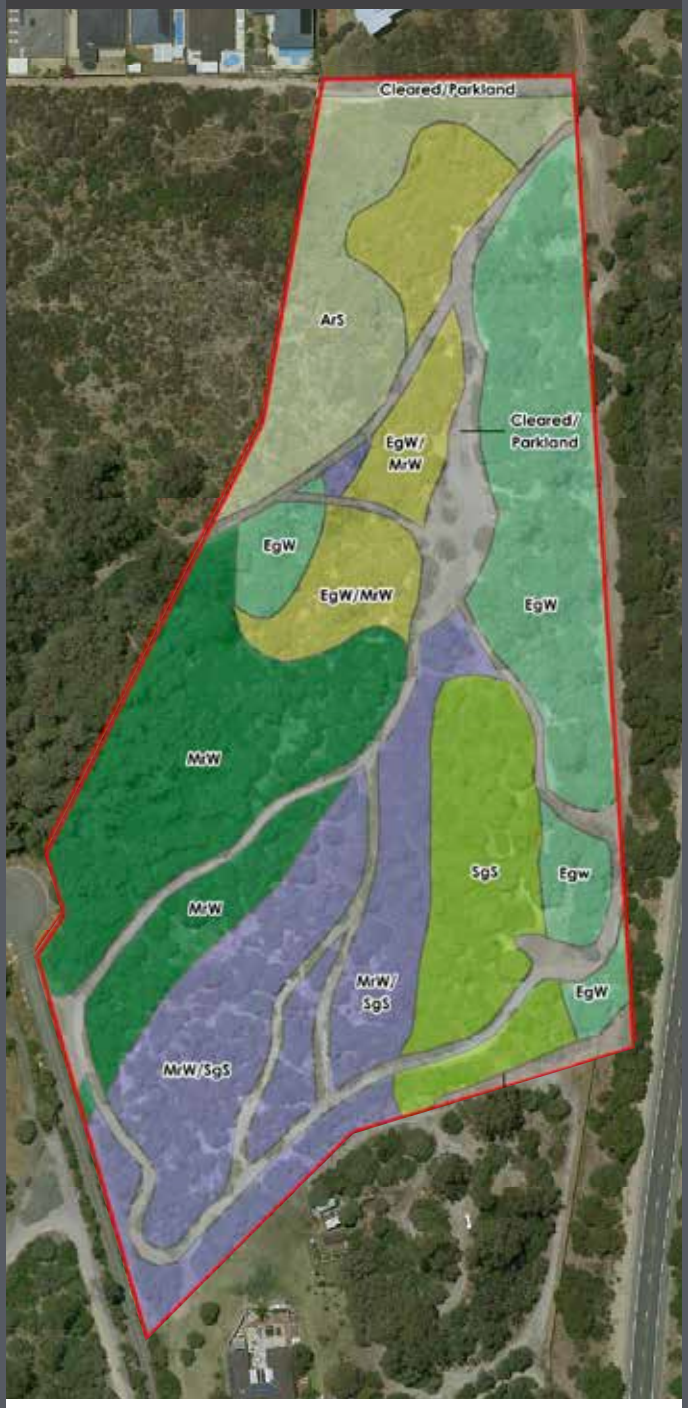
TABLE 32 - Fauna Habitat

Paperbark Woodland	Good quality habitat for birds and Southern Brown Bandicoots
Tuart Woodland	Potential Black Cockatoo foraging, roosting and breeding habitat
Upland Quindalup Dunes	Diverse habitat for birds, reptiles and kangaroos

TABLE 33 - Proposed Management Actions

Major Threats/Issues	Actions	Priority
Weed invasion and spread	Ongoing control of weeds, with a particular focus on the 1 *Ficus carica* plant and 1 *Cortaderia selloana* subsp. *selloana* plant	Medium
	Control of Declared Pest weed: ~60 *Gomphocarpus fruticosus* (Narrow-leaf Cotton Bush plants) by pulling or spray control	High
Vegetation degradation from weed dominance and uncontrolled access, reducing native species coverage	Revegetation of completely degraded area (0.13 ha), ensuring weed spraying is undertaken prior to tubestock planting	Medium
	Revegetation of area in good condition (0.08 ha), ensuring weed spraying is undertaken prior to tubestock planting	Low
Informal 4WD vehicle tracks degrading the reserve (see Appendix I for locations)	Fence informal vehicle tracks along northern and eastern boundaries of the reserve and install a gate at the two unauthorised access points	High
Rubbish dumping in central parts of the reserve (see Appendix I for locations)	Remove rubbish	High
Wall vandalised with graffiti at: 32°25'10" (S), 115°46'25" (E)	Remove graffiti	Medium
50 m soft sand track	Investigate the need to formalise the track (i.e. to crushed limestone)	Low
Lack of appropriate signage	Install an interpretive sign on the TEC	Low
Feral animals	Continue fox, cat and rabbit population control	Medium

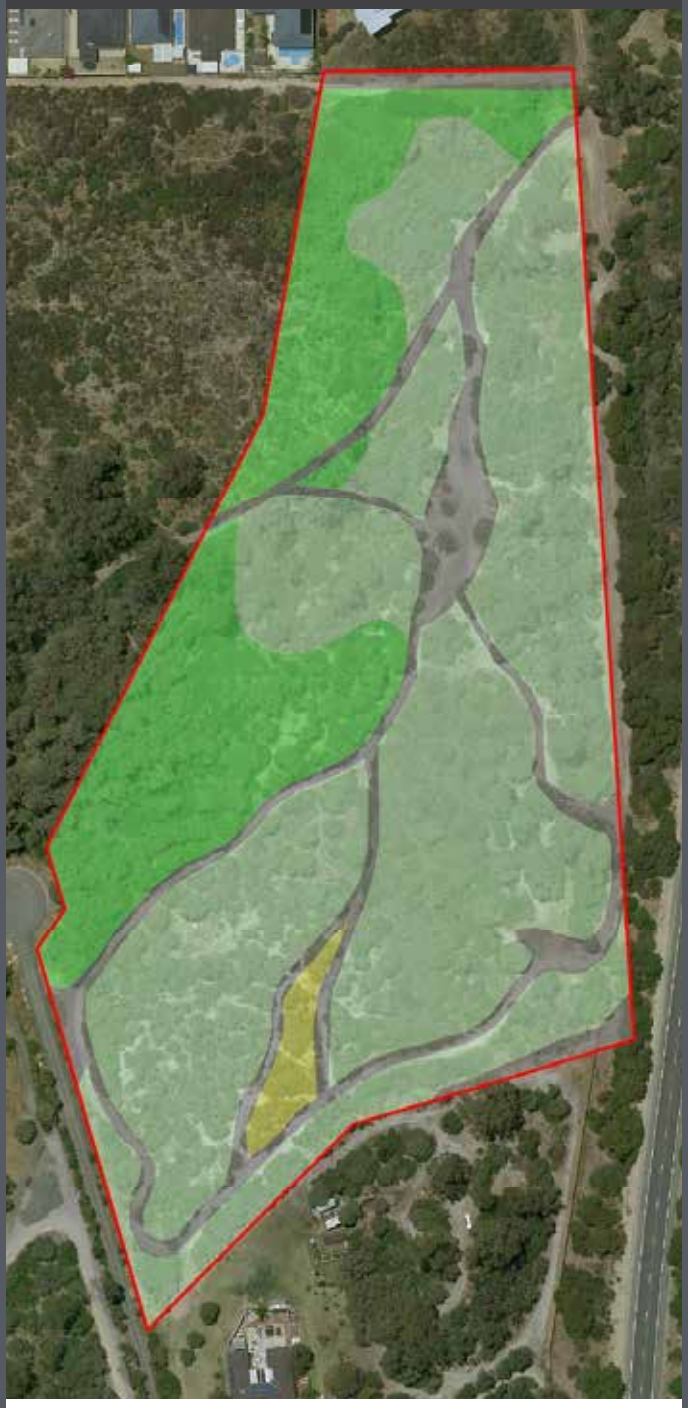
FIGURE 46



Vegetation Associations

- *Melaleuca rhaphiophylla* Woodland (MrW) - 0.91ha
- *Eucalyptus gomphocephala* Woodland (EgW) - 0.88ha
- *Spyridium globulosum* Shrubland (SgS) - 0.47ha
- *Acacia rostellifera* Shrubland (ArS) - 0.46ha
- Cleared/Parkland - 0.65ha
- Mix *Melaleuca rhaphiophylla* Woodland & *Spyridium globulosum* Shrubland (MrW/SgS) - 0.98ha
- Mix *Eucalyptus gomphocephala* Woodland & *Melaleuca rhaphiophylla* Woodland (EgW/MrW) - 0.48ha

FIGURE 47



Vegetation Condition

- Completely degraded - 0.65ha
- Good - 0.08ha
- Very good - 2.92ha
- Excellent - 1.18ha

N

0 m 100 m

FIGURE 48

FIGURE 49

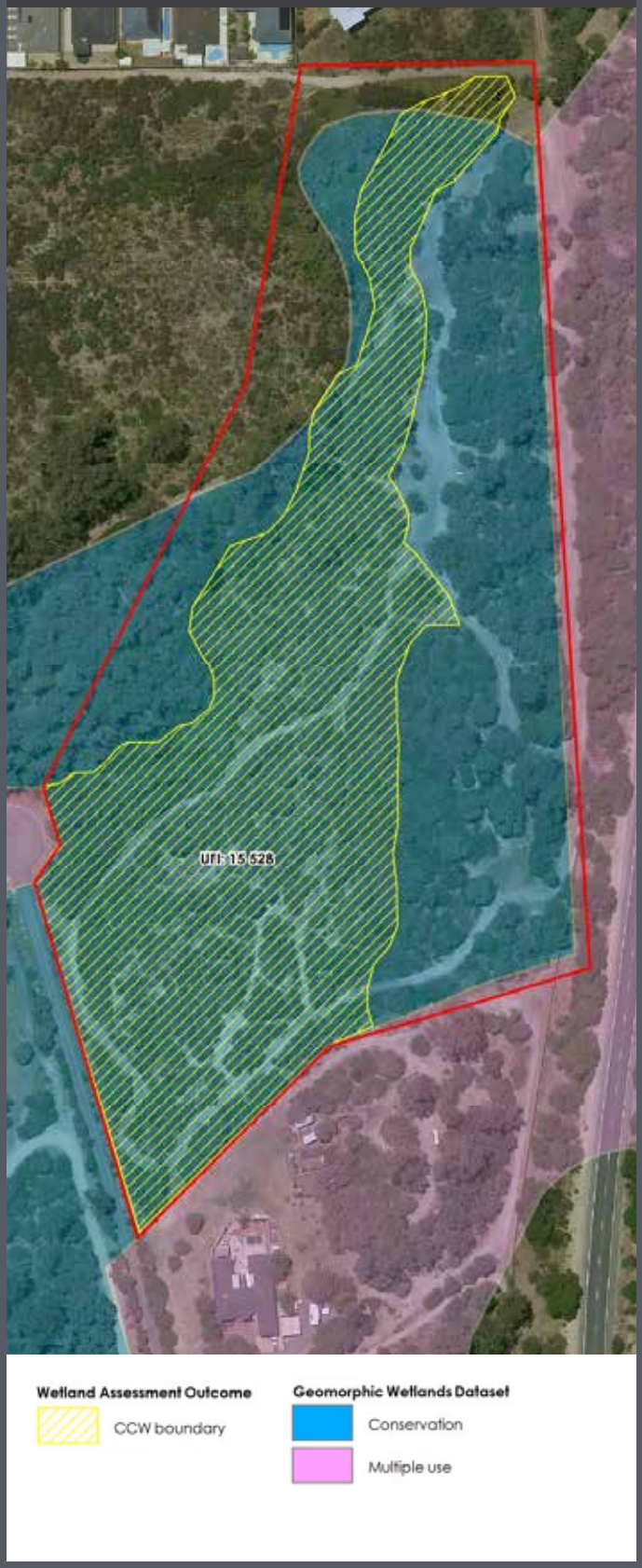


FIGURE 50

Revegetation Level

- Low: 1000 plants/ha - 0.08ha
- High: 10.000 plants/ha - 0.13ha

FIGURE 51

Infrastructure

Fences

- Proposed fencing
- Wood posts and wire

Paths

- Sand track

Other Infrastructure

- Gate
- Proposed gate
- Proposed interpretive sign

N

0 m 100 m

Tamworth Reserve

Corner Tamworth Boulevard and Nairn Drive, Baldivis

Tamworth Reserve is a relatively small reserve (2.98 ha) that exists within a residential area. Tamworth Reserve exists directly to the east of Tamworth Hill Swamp, a large conservation reserve forming part of Bush Forever Site No. 356, across Nairn Drive. The reserve contains a Conservation Category Wetland that consists of Paperbark Woodland in good condition. Revegetation is recommended in the reserve to improve the vegetation condition.

The reserve contains paved concrete paths that meander around the wetland and includes bollards on the edges of the reserve adjoining roads. The reserve includes landscaped lawns and park benches around the wetland.

Conservation Significant Species and Communities

- Contains potential Black Cockatoo foraging, roosting and breeding habitat.

Fauna Habitat

Surprisingly based on the size of the reserve, the second largest number of fauna records and species were identified in Tamworth Reserve. This included thirteen bird species, including foraging evidence from the Red-tailed Black-Cockatoo and Carnaby's Black-Cockatoo.

TABLE 34 - Fauna Habitat

Scattered *Eucalyptus rudis, Eucalyptus gomphocephala* and *Corymbia calophylla* trees	Potential Black Cockatoo foraging, roosting and breeding habitat
Paperbark Woodland	Habitat for birds, reptiles and Southern Brown Bandicoots

TABLE 35 - Proposed Management Actions

Major Threats/Issues	Actions	Priority
Weed invasion and spread	Ongoing control of weeds	Medium
Vegetation degradation from weed dominance, reducing native species coverage	Revegetation of entire bushland with understorey plants (1.44 ha), ensuring weed spraying is undertaken prior to tubestock planting	Medium
1 m cracked paved concrete	Investigate need for repair	Low

FIGURE 52

Vegetation Associations

- *Melaleuca rhaphiophylla* Woodland (MrW) - 1.44ha
- Cleared/parkland - 1.54ha

FIGURE 53

Vegetation Condition

- Completely degraded - 1.54ha
- Good - 1.44ha

N

0 m 50 m

FIGURE 54

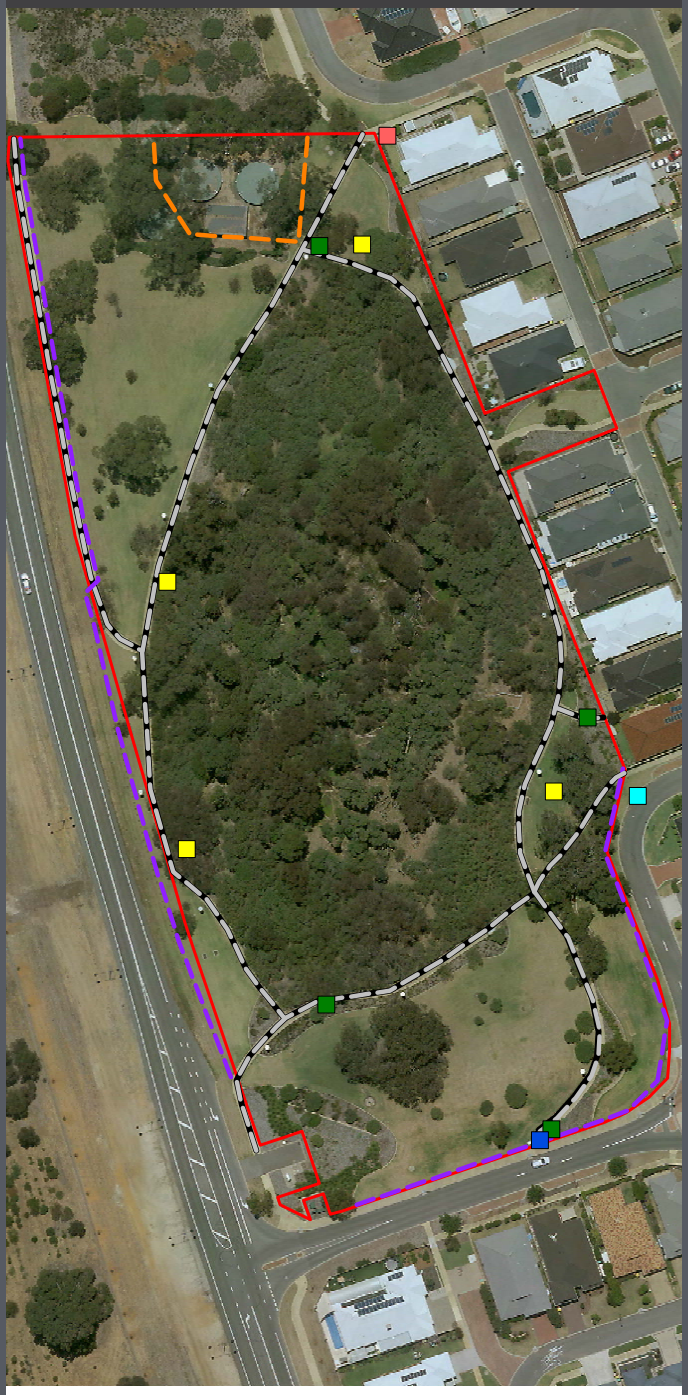
FIGURE 55

FIGURE 56

Revegetation Level

Low: 1000 plants/ha - 1.44ha

FIGURE 57



Infrastructure

Fences

- Bollard
- Wire mesh and barbed wire

Paths

- Paved concrete

Other Infrastructure

- Bench seat
- Bin
- Bin and dog waste bags
- Chain gate
- Regulatory sign

N

0 m 50 m

Trenant Park Gardens

Trenant Park Gardens and Dampier Drive, Golden Bay

Trenant Park Gardens is 7.47 ha and surrounded by Special Residential and Special Rural areas. A crushed limestone walking trail and fence exists around the edges of the reserve and an information hut exists at the entrance. The reserve contains a large Conservation Category Wetland consisting of Paperbark Woodland and *Baumea articulata* and *Lepidosperma longitudinale* Sedgeland, surrounded by Tuart Woodland and *Hakea varia* and *Spyridium globulosum* Shrubland.

Substantial revegetation and weed control has been undertaken in the reserve as an offset for the Mundijong Road extension. These management works have greatly improved the overall condition of the reserve. A survey from 2012 found the vegetation condition within the reserve ranging from completely degraded to very good to excellent, whereas the vegetation condition across the whole reserve in 2017 was very good.

Conservation Significant Species and Communities

- Contains Threatened Ecological Community 'Woodlands over Sedgelands in Holocene dune swales of the Swan Coastal Plain'.
- Contains potential Black Cockatoo foraging, roosting and breeding habitat.

Frog Habitat

One Clicking Frog, one Western three-lined skink and seven bird species were recorded during the field survey. One Oblong Turtle was recorded in the firefighting reservoir managed by the City directly to the east of the reserve boundary.

TABLE 36 - Fauna Habitat

Paperbark Woodland	Good quality habitat for birds and Southern Brown Bandicoots
Sedgeland	Offers good quality habitat for a variety of mammal, bird, reptile, amphibian and macroinvertebrate species
Tuart Woodland	Potential Black Cockatoo foraging, roosting and breeding habitat
Upland Quindalup Dunes	Diverse habitat for bird and reptiles and potentially kangaroos (recorded in Sawley Close just north of the reserve)

TABLE 37 - Proposed Management Actions

Major Threats/Issues	Actions	Priority
Weed invasion and spread	Ongoing control of weeds, with a particular focus on the 118 *Ficus carica* (Common Figs) and 1 *Olea europaea* subsp. *europaea* (Olive plant)	Medium
	Control of Declared Pest weed - 1 *Gomphocarpus fruticosus* (Narrow-leaf Cotton Bush plants) by pulling or spray control	High
Impacts to native fauna species from weed control	Investigate potential impacts of weed spraying (glyphosate and fusillade) on Oblong Turtle nests and methods for avoiding impacts	High
Feral animals	Continue fox, cat and rabbit population control	Medium
	Remove honeybee hive at 32°25'23" (S), 115°46'13" (E)	Medium
	Investigate nest boxes adjacent to bee hive for invasion of honeybees	Medium
Lack of bins and dog waste bags	Install a bin and dog waste bags at the reserve entrance	Low
Lack of appropriate signage	Provide new interpretive signage that promotes an understanding of the fauna within the reserve and the conservation value of the reserve	Low
	Provide new regulatory signage regarding the impacts of introduced and domestic animals on native fauna	Low
	Install three interpretive signs as per recommendations from the Environmental Management and Implementation Plan of Trenant Park (Coterra Environment 2013b): The signs must include interesting and relevant facts relating to the natural local environment, along with a message highlighting the importance of keeping these natural areas clean and well maintained. The TEC should be mentioned	High

FIGURE 58

Vegetation Associations

- *Melaleuca rhaphiophylla* Woodland (MrW) - 1.41ha
- *Hakea varia* and *Spyridium globulosum* Tall Shrubland (HvSgs) - 1.46ha
- *Eucalyptus gomphocephala* Woodland (EgW) - 1.31ha
- *Baumea articulata* and *Lepidosperma longitudinale* Sedgeland (BaLIS) - 2.46ha
- Cleared/Parkland - 0.83ha

FIGURE 59

Vegetation Condition

- Completely degraded - 0.83ha
- Very good - 6.64ha

0 m 100 m

FIGURE 60

FIGURE 61

FIGURE 62


Infrastructure
Fences
Wood posts and wire
Paths
Crushed limestone
Other Infrastructure
Gate
Pedetrian turnstile
Information hut
Proposed interpretive sign
Proposed regulatory sign
Proposed bin and dog waste bags
N
0 m
100 m

Woodleigh Grove Reserve

Chandler Ramble, Baldivis

Woodleigh Grove is 9.2 ha and surrounded by Special Residential areas. The Geomorphic Wetlands Dataset identified Woodleigh Grove as containing a large Resource Enhancement Wetland. However the Wetland Management Category assessment identified Woodleigh Grove as being more reflective of a Conservation Category Wetland. This is because active management by the City has improved the quality of the reserve with >90% of the wetland being in good or better condition. Woodleigh Grove Reserve forms part of Bush Forever Site No. 495.

The reserve consists of predominantly sumpland vegetation including Paperbark Woodland and *Ficinia nodosa* and *Baumea juncea* Sedgeland and includes Tuart Woodland on the edges. The vegetation within the reserve is generally in very good to excellent condition. Crushed limestone and mulch walking trails exist on the north and southern sides of the wetland, in addition to the "Settlers Hills Tree Walk" interpretive historical trail in the parkland areas surrounding the reserve. The wetland is fenced and the outside of the fence contains a strip of lawn with scattered native trees.

Conservation Significant Species and Communities

- Contains potential Black Cockatoo foraging, roosting and breeding habitat.
- *Isoodon obesulus* (Southern Brown Bandicoot) digging.

Fauna Habitat

Woodleigh Grove contained the greatest number of fauna records and fauna species in the study area, which included 41 fauna records and 17 fauna species. The field survey identified 16 bird species and one mammal species (Southern Brown Bandicoot).

TABLE 38 - Fauna Habitat

Paperbark Woodland	Habitat for birds and Southern Brown Bandicoots
Sedgeland	Good quality habitat, particularly for birds and reptiles
Tuart Woodland	Potential Black Cockatoo foraging, roosting and breeding habitat

TABLE 39 - Proposed Management Actions

Major Threats/Issues	Actions	Priority
Weed invasion and spread	Ongoing control of weeds	Medium
	Control of *Asparagus asparagoides* (Bridal Creeper) with glyphosate	High
Feral animals	Continue fox, cat and rabbit population control	Medium
60 m of degraded wood post and wire fencing	Investigate need for repair or replacement	Low
180 m of overgrown mulch path	Remove overgrown vegetation	Medium
2 m of cracked paved concrete	Investigate need for repair or replacement	Low
1 interpretive sign (plaque) is worn	Investigate need for repair or replacement	Medium

FIGURE 63

FIGURE 64

FIGURE 65


Weed Suites
Suite 1 (20m buffer)
Suite 2
Suite 3
Suite 4 (20m buffer)
Weed Descriptions
Acacia iteaphylla
Asparagus asparagoides
Cortaderia selloana subsp. selloana
Eriobotrya japonica
Ficus carica
Phoenix canariensis
Physalis peruviana
Polygala myrtifolia
Schinus terebinthifolius
Typha orientalis
Vitis vinifera
N
0 m
100 m

FIGURE 66

FIGURE 67

16 Implementation

The recommended management actions and potential costs, priorities and timing broken into individual reserves across the study area are shown in Table 40.

The Parks Services team are responsible for majority of the management actions identified in Table 40. This includes delegating follow up actions to the other teams where required, such as Asset Services.

Consideration must be given to co-locating signage in reserves where new signs or upgrades are proposed, to minimise sign proliferation.

16.1 Measuring success

The City's Parks Services and Strategic Planning and Environment teams will meet at the start of each calendar year to discuss and review:

- the completion of management actions identified for the financial year
- the plan to undertake management actions remaining for the financial year
- the plan to undertake management actions for the next financial year
- success from management actions implemented
- lessons learnt and potential improvements for the following years.

Implementation progress will be reported annually in the Sustainability Snapshot Report.

PLATE 8 - Example of revegetation in the study area

TABLE 40 - Proposed management implementation

Major Threats/Issues	Recommendation No.	Proposed Management Actions	Potential Costs*	Team Plan	Indicative Timing	Priority
Anstey Q Swamp						
Weed invasion and spread	1	Ongoing control of weeds, with a particular focus on individually mapped larger and more prominent weeds (Suite 1)	$41,200	O	Ongoing	Medium
Vegetation degradation from weed dominance, reducing native species coverage	2	Revegetation of degraded to good areas (0.6 ha) using a planting density of 2,500 plants/ha, ensuring weed spraying is undertaken prior to tubestock planting	$9,000	O	2019/2020	Medium
Degradation on the perimeter of the 'excellent' vegetation and within the 'good' vegetation from pedestrians and weeds resulting in a reduced plant coverage	3	Revegetation of good to excellent areas (1.15 ha) using a planting density of 1,000 plants/ha, ensuring weed spraying is undertaken prior to tubestock planting	$10,350	O	2020/2021	Low
Inappropriate access from Warnbro Sound Avenue and from people not staying on the formal footpath	4	Fence reserve along Warnbro Sound Avenue and along both sides of formal paths in the west of reserve	$17,450	C	2018/2019	Medium
Informal paths created (see Appendix I for locations)	5	Revegetate informal paths	$400	O	2018/2019	Medium
Informal access path created from Warnbro Sound Avenue to the formal footpath in the reserve	6	Formalise path with paving to allow formal access to reserve from Warnbro Sound Avenue. Fence new path to discourage access to bushland	$3,900	O	2018/2019	High
Informal access through the centre of the wetland	7	Investigate need for a boardwalk through wetland to protect the wetland vegetation, enable a shortcut through the wetland and promote wetland enjoyment	-	O	2018/2019	Low
Dumping of garden waste along the northern boundaries of the reserve	8	Remove garden waste	-	O	2018/2019	High
	9	Educate residents about the illegality of dumping garden waste and the environmental impacts it can have on the reserve (i.e. leaflet drop)	-	O	Ongoing	Medium
Dumping of rubbish and asbestos sheeting (see Appendix I for locations)	10	Remove dumped rubbish and asbestos sheeting	-	O	2018/2019	High
Poor condition fencing (4 holes in wire mesh)	11	Investigate need for repair	-	O	2018/2019	Low
1.5 m paved concrete (trip hazard)	12	Investigate need for repair	-	O	2018/2019	Medium
One regulatory sign and one interpretive sign peeling off	13	Two signs to be replaced/repaired	$600	O	2018/2019	Medium
Lack of appropriate signage in the information hut	14	Provide new interpretive signage that promotes an understanding of the fauna within the reserve	$500	O	2018/2019	Low
	15	Provide new regulatory signage regarding the impacts of introduced and domestic animals on native fauna	$100	O	2018/2019	Low
Lack of bins and dog waste bags	16	Install a bin and dog waste bags at proposed new formalised access path	$2,300	O	2019/2020	Low

TABLE 40 - Proposed management implementation (continued)

Major Threats/Issues	Recommendation No.	Proposed Management Actions	Potential Costs*	Team Plan	Indicative Timing	Priority
Bordeaux Ramble						
Weed invasion and spread	17	Ongoing control of weeds	$8,300	O	Ongoing	Medium
Dumping of garden waste along western boundary of reserve	18	Educate residents about the illegality of dumping garden waste and the environmental impacts it can have on the reserve (i.e. leaflet drop)	-	O	Ongoing	Low
Poor condition fencing (4 holes in wire mesh)	19	Investigate need for repair	-	O	2018/2019	Low
1 m paved concrete (trip hazard)	20	Investigate need for repair	-	O	2018/2019	Medium
Lack of bins and dog waste bags	21	Install a bin and dog waste bags near gazebo entrance	$2,300	O	2018/2019	Low
CUD Swamp						
Weed invasion and spread	22	Ongoing control of weeds, with a particular focus on the individual *Olea europaea* subsp. *Europaea* (Olive plant)	$7,000	O	Ongoing	Medium
Vegetation degradation from weed dominance and human disturbance, reducing native species coverage	23	Revegetation of entire bushland (1.4 ha) using a planting density of 1,000 plants/ha, ensuring weed spraying is undertaken prior to tubestock planting	$5,600	O	2019/2020	Medium
Inappropriate access to the Conservation Category Wetlands leading to further degradation	24	Fence off the Conservation Category Wetlands	$6,400	C	2018/2019	High
Inappropriate access from open access points in the dunes (see Appendix I for locations)	25	Close access points to dunes with fencing and revegetate eroded dune areas	$100	O	2018/2019	Medium
Lack of rubbish bins resulting in dumping of rubbish (see Appendix I for locations)	26	Remove rubbish	-	O	2018/2019	High
	27	Install two rubbish bins	$4,600	O	2018/2019	Medium
7 m of cracked bitumen path	28	Investigate need for repair	-	O	2018/2019	Medium
28 m of eroded crushed limestone path	29	Investigate need for repair	-	O	2018/2019	Medium
One regulatory sign worn	30	Sign to be replaced/repaired	$100	O	2018/2019	Medium

TABLE 40 - Proposed management implementation (continued)

Major Threats/Issues	Recommendation No.	Proposed Management Actions	Potential Costs*	Team Plan	Indicative Timing	Priority
Hidden Swamp						
Weed invasion and spread	31	Ongoing control of weeds, with a particular focus on the 12 *Olea europaea* subsp. *Europaea* (Olive plants) and *Typha orientalis* in lake	$13,400	O	Ongoing	Medium
Vegetation degradation from weed dominance and human disturbance, reducing native species coverage	32	Revegetation of disturbed areas (0.07 ha) using a planting density of 2,500 plants/ha, ensuring weed spraying is undertaken prior to tubestock planting	$1,050	O	2019/2020	Low
Introduced Koi fish in lake	33	Engage a contractor specialised in the removal of introduced fish species from wetland	TBD	O	2018/2019	Medium
	34	Install interpretive and regulatory signage to inform the community about illegal dumping of introduced species and the adverse effects on native fauna	$600	O	2018/2019	Medium
Inappropriate access into the dunes from the wooden stairs leading to lookout	35	Fence wooden stairs to discourage access to dunes	$1,700	O	2018/2019	High
Rubbish dumping on western border along residential fencing	36	Remove rubbish	-	O	2018/2019	High
	37	Educate residents about illegal dumping (i.e. leaflet drop)	-	O	Ongoing	Medium
5 m of mulch and sand path is overgrown with weeds	38	Spray weeds	$10	O	2018/2019	Medium
1 m of sand covering wood stairs	39	Maintain stairs	-	O	Ongoing	Low
Lack of signage	40	Provide new interpretive signage that promotes an understanding of the fauna within the reserve, particularly relating to snakes	$500	O	2019/2020	Low
	41	Provide new regulatory signage discouraging feeding of birds	$100	O	2019/2020	Low
Kinsale Bend						
Weed invasion and spread	42	Ongoing control of weeds	$1,750	O	Ongoing	Medium
Vegetation degradation from weed dominance, reducing native species coverage	43	Revegetation of disturbed areas (0.02 ha) using a planting density of 2,500 plants/ha, ensuring weed spraying is undertaken prior to tubestock planting	$300	O	2019/2020	Low
Dumping of garden waste along the main paved footpath	44	Educate residents about the illegality of dumping garden waste and the environmental impacts it can have on the reserve (i.e. leaflet drop)	-	O	Ongoing	Low
Dumping of rubbish at: 32°21'50" (S), 115°44'58" (E)	45	Remove rubbish	-	O	2018/2019	High
6 m cracked paved concrete path	46	Investigate need for repair	-	O	2018/2019	Low
1 interpretive sign fallen off post	47	Repair/replace sign	$500	O	2018/2019	Medium

TABLE 40 - Proposed management implementation (continued)

Major Threats/Issues	Recommendation No.	Proposed Management Actions	Potential Costs*	Team Plan	Indicative Timing	Priority
Lark Hill Sporting Complex						
Weed invasion and spread	48	Ongoing control of weeds in 6.2 ha of the reserve (in wetland/TEC habitat) in addition to removing ~85 (*Olea europaea* subsp. *Europaea*) Olive plants and controlling other individually mapped prominent weeds	$31,000	O	Ongoing	**Medium**
	49	Control of Declared Pest weed- 3 *Gomphocarpus fruticosus* (Narrow-leaf Cotton Bush plants) by hand pulling or spray control	-	O	2018/2019	**High**
	50	The circular buffer areas along the northern and north-eastern boundaries of the study area are not managed by the City. The City will need to advocate to the adjacent landowner(s) for the management of the prominent weeds in these areas	-	O	2018/2019	**Medium**
Vegetation degradation from weed dominance and historical disturbance, reducing native species coverage	51	Revegetation in completely degraded areas (4.28 ha) using 2.5kg seed per hectare to achieve 10,000 plants per hectare. Ensure weed spraying is undertaken prior to seeding. Areas subject to future development not considered	$28,900	O	2019/2020	**High**
	52	Revegetation of degraded areas (4.42 ha) using 0.625kg seed per hectare to achieve 2,500 plants per hectare, ensuring weed spraying is undertaken prior to seeding. Areas subject to future development not considered	$23,650	O	2020/2021	**Medium**
Feral animals	53	Ongoing fox, cat and rabbit population control	$3,700	O	Ongoing	**Medium**
Dumping of rubbish and car body at: 32°22'39" (S), 115°45'39" (E)	54	Remove rubbish and car body	-	O	2018/2019	**Medium**
Disused vandalised remnant building structure in the northern portion of the reserve	55	Demolish disused vandalised remnant building structure	-	O	2018/2019	**Medium**
Vandalism of signs (see Appendix I for locations)	56	Clean graffiti and/or replace damaged signs	-	O	2018/2019	**High**
649 m of poor condition wire and barbed wire fencing	57	Remove fencing	-	O	2019/2020	**Low**
3 damaged gates	58	Investigate need for repair	-	O	2018/2019	**Low**
4,338 m overgrown sand track	59	Remove overgrown vegetation on track	-	O	2018/2019	**Medium**
6 interpretive signs sun bleached and/or peeling off	60	Signage to be replaced/repaired	$3,000	O	2018/2019	**Medium**
3 interpretive signs vandalised with graffiti	61	Remove graffiti	-	O	2018/2019	**Medium**
1 bench with loose screws (under shade hut)	62	Investigate need for repair	-	O	2018/2019	**Medium**
Lack of bins and dog waste bags	63	Install two bins and dog waste bags at two entrances to the reserve	$4,600	O	2019/2020	**Low**

TABLE 40 - Proposed management implementation (continued)

Major Threats/Issues	Recommendation No.	Proposed Management Actions	Potential Costs*	Team Plan	Indicative Timing	Priority
Sawley Close Nature Reserve						
Weed invasion and spread	64	Ongoing control of weeds, with a particular focus on the 1 *Ficus carica* plant and 1 *Cortaderia selloana* subsp. *selloana* plant	$23,550	O	Ongoing	**Medium**
	65	Control of Declared Pest weed: ~60 *Gomphocarpus fruticosus* (Narrow-leaf Cotton Bush plants) by pulling or spray control	-	O	2018/2019	**High**
Vegetation degradation from weed dominance and uncontrolled access, reducing native species coverage	66	Revegetation of completely degraded area (0.13 ha) using a planting density of 10,000 plants/ha, ensuring weed spraying is undertaken prior to tubestock planting	$5,850	O	2019/2020	**Medium**
	67	Revegetation of area in a good condition (0.08 ha) using a planting density of 1,000 plants/ha, ensuring weed spraying is undertaken prior to tubestock planting	$720	O	2020/2021	**Low**
Informal 4WD vehicle tracks degrading the reserve	68	Fence informal vehicle tracks along northern and eastern boundaries of the reserve and install a gate at the two unauthorised access points	$7,300	C	2018/2019	**High**
Rubbish dumping in central parts of the reserve (see Appendix I for locations)	69	Remove rubbish	-	O	2018/2019	**High**
Wall vandalised with graffiti at: 32°25'10" (S), 115°46'25" (E)	70	Remove graffiti	-	O	2018/2019	**Medium**
50 m soft sand track	71	Investigate the need to formalise the track (i.e. to crushed limestone)	-	O	2018/2019	**Low**
Lack of appropriate signage	72	Install an interpretive sign on the TEC	$500	O	2019/2020	**Low**
Feral animals	73	Continue fox, cat and rabbit population control	$800	O	Ongoing	**Medium**
Tamworth Reserve						
Weed invasion and spread	74	Ongoing control of weeds	$7,200	O	Ongoing	**Medium**
Vegetation degradation from weed dominance, reducing native species coverage	75	Revegetation of entire bushland with understorey plants (1.44 ha) using a planting density of 1,000 plants/ha, ensuring weed spraying is undertaken prior to tubestock planting	$12,960	O	2019/2020	**Medium**
1 m cracked paved concrete	76	Investigate need for repair	-	O	2018/2019	**Low**

TABLE 40 - Proposed management implementation (continued)

Major Threats/Issues	Recommendation No.	Proposed Management Actions	Potential Costs*	Team Plan	Indicative Timing	Priority
Trenant Park Gardens						
Weed invasion and spread	77	Ongoing control of weeds, with a particular focus on the 118 *Ficus carica* (Common Figs) and 1 *Olea europaea* subsp. *europaea* (Olive plant)	$33,200	O	Ongoing	Medium
	78	Control of Declared Pest weed- 1 *Gomphocarpus fruticosus* (Narrow-leaf Cotton Bush plants) by pulling or spray control	-	O	2018/2019	High
Impacts to native fauna species from weed control	79	Investigate potential impacts of weed spraying (glyphosate and fusillade) on Oblong Turtle nests and methods for avoiding impacts	-	O	2018/2019	High
Feral animals	80	Continue fox, cat and rabbit population control	$600	O	Ongoing	Medium
	81	Remove honeybee hive at 32°25'23" (S), 115°46'13" (E)	TBD	O	2018/2019	Medium
	82	Investigate nest boxes adjacent to bee hive for invasion of honeybees	TBD	O	2018/2019	Medium
Lack of bins and dog waste bags	83	Install a bin and dog waste bags at the reserve entrance	$2,300	O	2019/2020	Low
Lack of appropriate signage	84	Provide new interpretive signage that promotes an understanding of the fauna within the reserve and the conservation value of the reserve	$500	O	2019/2020	Low
	85	Provide new regulatory signage regarding the impacts of introduced and domestic animals on native fauna	$100	O	2019/2020	Low
	86	Install three interpretive signs as per recommendations from the Environmental Management and Implementation Plan of Trenant Park (Coterra Environment 2013b)	$1,500	O	2018/2019	High
Woodleigh Grove Reserve						
Weed invasion and spread	87	Ongoing control of weeds	$43,600	O	Ongoing	Medium
	88	Control of *Asparagus asparagoides* (Bridal Creeper) with glyphosate	$10	O	2018/2019	High
Feral animals	89	Continue fox, cat and rabbit population control	$1,200	O	Ongoing	Medium
60 m of degraded wood post and wire fencing	90	Investigate need for repair or replacement	-	O	2018/2019	Low
180 m of overgrown mulch path	91	Remove overgrown vegetation	-	O	2018/2019	Medium
2 m of cracked paved concrete	92	Investigate need for repair or replacement	-	O	2018/2019	Low
1 interpretive sign (plaque) is worn	93	Investigate need for repair	-	O	2018/2019	Medium

Team Plan - O: operational, C: capital

* A dash indicates that costs are covered by the City's existing operational budgets i.e. officer time.

The costs quoted for ongoing management actions are for one financial year. However, the costs for 'ongoing control of weeds' has been calculated for 2018/2019. It is assumed the cost will reduce in subsequent years relative to the control effort required.

The implementation of these management actions is ultimately subject to securing funding relative to other operational priorities.

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Appendices

18 Appendix A Legislation, Background Information and Conservation Codes

Federal *Environment Protection* and *Biodiversity Conservation Act 1999*

The *Environment Protection* and *Biodiversity Conservation Act 1999* (EPBC Act) is the Australian Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the EPBC Act as matters of national environmental significance (MNES).

There are currently nine MNES protected under the EPBC Act, these include:

- World heritage properties
- National heritage places
- Wetlands of international importance (listed under the Ramsar Convention)
- Listed threatened species and ecological communities
- Migratory species
- Commonwealth marine areas
- The Great Barrier Reef Marine Park
- Nuclear actions (including uranium mines)
- A water resource, in relation to coal seam gas development and large coal mining development.

The Federal conservation level of flora and fauna species and their significance status is assessed under the EPBC Act. The significance levels for fauna used in the EPBC Act are those recommended by the International Union for the Conservation of Nature and Natural Resources (IUCN).

The EPBC Act is administered by the Federal Department of the Environment and Energy (DotEE).

State *Wildlife Conservation Act 1950*

The *Wildlife Conservation Act 1950* (WC Act) provides for the conservation and protection of wildlife. It is administered by the DoBCA and applies to both flora and fauna. Any person wanting to capture, collect, disturb or study fauna requires a permit to do so. A permit is required under the WC Act if removal of threatened species is required.

The WC Act is the primary wildlife conservation legislation in the State and the Minster for the Environment can declare taxa (species, subspecies or variety) as "Threatened" if they are considered to be in danger of extinction, rare or otherwise in need of special protection.

The State conservation level of fauna species and their significance status are listed on the *Wildlife Conservation (Specially Protected Fauna) Notice 2017*. The WC Act uses a set of Schedules but also classifies species using some of the IUCN categories.

The WC Act is anticipated to be replaced by the *Biodiversity Conservation Act 2016*, however this piece of legislation will not take effect until the necessary Biodiversity Conservation Regulations have been made.

State *Biosecurity* and *Agriculture Management Act 2007*

The Biosecurity and Agriculture Management Act 2007 (BAM Act) provides for the declaration of Declared Pests by the Department of Primary Industries and Regional Development (DPIRD) which are prohibited organisms or organisms for which a declaration under Section 22(2) is in force.

The main purposes of the BAM Act and its regulations are to:

- prevent new animal and plant pests and diseases from entering Western Australia
- manage the impact and spread of those pests already present in the state
- safely manage the use of agricultural and veterinary chemicals
- increase control over the sale of agricultural products that contain violative chemical residues.

Introduced plants (weeds)

Declared Pests

The DPIRD maintains a list of Declared Pests for Western Australia that have been declared under the BAM Act. If a Pest is declared for the whole of the State or for particular Local Government Areas, all landholders are obliged to comply with the specific category of control. Declared Pests are gazetted under categories, which define the action required. The category may apply to the whole of the State, districts, individual properties or even paddocks. Among the factors considered in categorising Declared Pests as Category C1 to C3 (with C3 being the most severe pests):

- the impact of the plant on individuals, agricultural production and the community in general
- whether it is already established in the area
- the feasibility and cost of possible control measures.

Weeds of National Significance

To help focus national efforts to address weed problems in Australia, a list of Weeds of National Significance (WoNS) was compiled. The assessment of WoNS is based on four major criteria:

- invasiveness
- impacts
- potential for spread
- environmental, social and economic impacts.

Australian state and territory governments have identified thirty two WoNS; a list of 20 WoNS was endorsed in 1999 and a further 12 were added in 2012.

Conservation Codes for Western Australian Flora and Fauna (DPaW 2017)

Specially protected fauna or flora are species which have been adequately searched for and are deemed to be, in the wild, either rare, at risk of extinction, or otherwise in need of special protection, and have been gazetted as such.

Categories of specially protected fauna and flora are:

T Threatened species

Published as Specially Protected under the *Wildlife Conservation Act 1950*, and listed under Schedules 1 to 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora (which may also be referred to as Declared Rare Flora).

Threatened fauna is that subset of 'Specially Protected Fauna' declared to be 'likely to become extinct' pursuant to section 14(4) of the Wildlife Conservation Act.

Threatened flora is flora that has been declared to be 'likely to become extinct or is rare, or otherwise in need of special protection', pursuant to section 23F(2) of the Wildlife Conservation Act.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

CR Critically endangered species

Threatened species considered to be facing an extremely high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

EN Endangered species

Threatened species considered to be facing a very high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

VU Vulnerable species

Threatened species considered to be facing a high risk of extinction in the wild. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna and Wildlife Conservation (Rare Flora) Notice for Threatened Flora.

EX Presumed extinct species

Species which have been adequately searched for and there is no reasonable doubt that the last individual has died. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Presumed Extinct Fauna and Wildlife Conservation (Rare Flora) Notice for Presumed Extinct Flora.

IA Migratory birds protected under an international agreement

Birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and the Bonn Convention, relating to the protection of migratory birds. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice.

CD Conservation dependent fauna

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice.

OS Other specially protected fauna

Fauna otherwise in need of special protection to ensure their conservation. Published as Specially Protected under the *Wildlife Conservation Act 1950*, in Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice.

P Priority species

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened flora or fauna.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

Priority 1: Poorly-known species

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

Priority 2: Poorly-known species

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

Priority 3: Poorly-known species

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

Priority 4: Rare, Near Threatened and other species in need of monitoring

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for Vulnerable, but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

18 Appendix B Vegetation Associations

TABLE B1 - Vegetation association information

Vegetation Association	Code	Description	Associated native species in order of prominence	Associated weed species in order of prominence
Acacia rostellifera Shrubland	ArS	*Acacia rostellifera* and *Spyridium globulosum* Shrubland over *Acanthocarpus preissii, Austrostipa flavescens,* and *Lomandra caespitosa* groundstorey.	*Jacksonia furcellata, Conostylis candicans* subsp. *candicans, Desmocladus asper, Melaleuca systena, Olearia axillaris, Clematis linearifolia, Lepidosperma squamatum,* and *Senecio pinnatifolius.*	*Lolium rigidum, Bromus diandrus, Euphorbia terracina, Lagurus ovatus, Avena barbata, Pelargonium capitatum, Trachyandra divaricata, Puccinellia ciliata,* and *Romulea rosea.*
Pasture	Past	Very sparse shrubs of *Adriana quadripartita, Acacia rostellifera,* and *Hakea prostrata* over *Avena barbata, Bromus diandrus,* and *Euphorbia terracina* weedy grassland.	n/a	*Asphodelus fistulosus, Pelargonium capitatum, Hypochaeris glabra, Lagurus ovatus, Olea europaea* subsp. *europaea,* and *Sonchus oleraceus.*
Melaleuca rhaphiophylla Woodland	MrW	*Melaleuca rhaphiophylla* Woodland over *Spyridium globulosum* and *Clematis linearifolia* Shrubland over variable groundstorey (moisture dependent) of *Lepidosperma gladiatum, Rhagodia baccata* subsp. *baccata,* and various weed grasses.	*Baumea juncea, Lobelia anceps, Centella asiatica, Enchylaena tomentosa* var. *tomentosa, Ficinia nodosa,* and *Sporobolus virginicus.*	*Lolium rigidum, Ehrharta longiflora, Olea europaea* subsp. *europaea, Bromus diandrus, Sonchus oleraceus, Pelargonium capitatum, Ficus carica, Euphorbia terracina,* and *Melilotus indicus.*
Spyridium globulosum Shrubland	SgS	*Spyridium globulosum* (dominant), *Acacia rostellifera,* and *Clematis linearifolia* tall Shrubland over *Austrostipa flavescens* and *Lomandra caespitosa* groundstorey.	*Lepidosperma longitudinale, Baumea juncea, Hakea varia, Exocarpos sparteus, Jacksonia furcellata,* and *Melaleuca systena.*	*Sonchus oleraceus, Euphorbia terracina, Avena barbata,* and *Lolium rigidum.*
Eucalyptus gomphocephala Woodland	EgW	*Eucalyptus gomphocephala* (occasionally with *Banksia littoralis*) Woodland over *Spyridium globulosum, Templetonia retusa, Acacia pulchella* var. *glaberrima* open Shrubland over *Gahnia trifida* (variable), *Austrostipa flavescens,* and *Opercularia hispidula* groundstorey.	*Acanthocarpus preissii, Acacia pulchella* var. *glaberrima, Acacia saligna* subsp. *saligna, Clematis linearifolia, Hardenbergia comptoniana,* and *Trachymene pilosa.*	*Euphorbia terracina, Briza maxima, Ehrharta longiflora, Avena barbata, Lysimachia arvensis, Sonchus oleraceus, Eragrostis curvula, Pelargonium capitatum, Bromus diandrus, Lagurus ovatus,* and *Lolium rigidum.*
Ficinia nodosa and *Baumea juncea* Sedgeland	FnBjS	*Ficinia nodosa, Baumea juncea, and Juncus kraussii* subsp. *australiensis* Sedgeland.	*Centella asiatica, Lepidosperma gladiatum, Sporobolus virginicus, Melaleuca rhaphiophylla, Adriana quadripartita, Spyridium globulosum,* and *Clematis linearifolia.*	*Avena barbata, Lolium rigidum, Pelargonium capitatum, Sonchus oleraceus, Ficus carica, Trachyandra divaricata, Cirsium vulgare, Conyza bonariensis,* and *Lysimachia arvensis.*

TABLE B1 - Vegetation association information (continued)

Vegetation Association	Code	Description	Associated native species in order of prominence	Associated weed species in order of prominence
Alyxia buxifolia Coastal Heathland	AbH	*Alyxia buxifolia, Scaevola crassifolia, Acacia rostellifera,* and *Spyridium globulosum* coastal heath over *Lepidosperma gladiatum, Acanthocarpus preissii* groundstorey.	*Hibbertia cuneiformis, Cassytha sp., Comesperma integerrimum, Conostylis candicans* subsp. *candicans, Hardenbergia comptoniana, Kennedia coccinea* subsp. *calcaria, Leucopogon propinquus, Parietaria debilis* and *Thysanotus manglesianus.*	*Pelargonium capitatum, Lagurus ovatus, Arctotheca populifolia, Bartsia trixago, Conyza bonariensis, Crassula glomerata, Euphorbia terracina, Lolium rigidum, Lysimachia arvensis, Puccinellia ciliata, Sonchus oleraceus,* and *Tetragonia decumbens.*
Baumea articulata and *Lepidosperma longitudinale* Sedgeland	BaLlS	*Baumea articulata, Lepidosperma longitudinale,* and *Centella asiatica* Sedgeland.	*Baumea juncea,* and *Epilobium billardiereanum* subsp. *billardiereanum.*	*Bromus diandrus, Trachyandra divaricata, Euphorbia terracina, Avena barbata, Ficus carica, Hypochaeris glabra, Lolium rigidum,* and *Sonchus oleraceus.*
Xanthorrhoea preissii Shrubland	XpS	*Xanthorrhoea preissii* and *Acacia rostellifera* tall Shrubland over *Baumea juncea, Austrostipa flavescens, Acacia lasiocarpa* var. *lasiocarpa,* and *Dianella revoluta* var. *divaricata* Sedgeland/groundstorey.	*Spyridium globulosum, Jacksonia furcellata, Ficinia nodosa, Leucopogon parviflorus, Rhagodia baccata* subsp. *baccata, Adriana quadripartita, Lepidosperma squamatum,* and *Opercularia hispidula.*	*Lysimachia arvensis, Bromus diandrus, Euphorbia terracina, Puccinellia ciliata, Lolium rigidum, Romulea rosea,* and *Sonchus oleraceus.*
Jacksonia furcellata Shrubland	JfS	*Jacksonia furcellata, Acacia saligna* subsp. *saligna,* and *Olearia axillaris* open Shrubland over *Hemiandra linearis* and *Acanthocarpus preissii* open low Shrubland.	*Austrostipa flavescens, Conostylis candicans* subsp. *candicans, Lomandra caespitosa, Senecio pinnatifolius* var. *latilobus,* and *Tetraria octandra.*	*Bromus diandrus, Avena barbata, Euphorbia terracina, Asphodelus fistulosus,* and *Pelargonium capitatum.*
Hakea varia and *Spyridium globulosum* Tall Shrubland	HvSgS	*Hakea varia, Spyridium globulosum,* and *Banksia littoralis* (variably present) tall Shrubland over a variable groundstorey of *Lepidosperma longitudinale* (dominant), *Opercularia hispidula,* and *Desmocladus asper.*	*Acacia pulchella* var. *glaberrima, Melaleuca incana* subsp. *incana, Melaleuca rhaphiophylla, Clematis linearifolia, Dianella revoluta* var. *divaricata, Opercularia vaginata, Patersonia occidentalis* var. *occidentalis, Trachymene pilosa,* and *Tricoryne tenella.*	*Briza maxima, Ursinia anthemoides, Eragrostis curvula, Euphorbia terracina, Fumaria capreolata, Hypochaeris glabra, Lysimachia arvensis, Arctotheca calendula, Avena barbata, Briza minor, Lagurus ovatus, Petrorhagia dubia, Silene gallica,* and *Sonchus oleraceus.*
Melaleuca lanceolata Woodland	MlW	*Melaleuca lanceolata* planted Woodland over *Spyridium globulosum, Jacksonia furcellata,* and *Acanthocarpus preissii* open Shrubland.	*Acacia rostellifera, Kennedia coccinea* subsp. *calcaria, Kennedia prostrata, Lepidosperma squamatum, Leucopogon parviflorus,* and *Rhagodia baccata* subsp. *baccata.*	*Lagurus ovatus, Lolium rigidum, Pelargonium capitatum,* and *Sonchus oleraceus.*

18 Appendix B (continued)

TABLE B2 - Vegetation association area breakdown across the study area

Vegetation Association	Code	Anstey Q Swamp	Bordeaux Ramble	CUD Swamp	Hidden Swamp	Kinsale Bend	Lark Hill Sporting Complex	Sawley Close	Tamworth	Trenant Park Gardens	Woodleigh Grove	Total area (ha)	Total (%)
Acacia rostellifera Shrubland	ArS	0.49		1.06		0.27	66.31	0.46				68.59	51.76
Pasture	Past						22.89					22.89	17.27
Melaleuca rhaphiophylla Woodland	MrW	0.81		0.34			0.42	0.91	1.44	1.41	4.20	8.72	6.58
Spyridium globulosum Shrubland	SgS	3.22					4.31	0.47				8	6.04
Eucalyptus gomphocephala Woodland	EgW	1.80						0.88		1.31	2.32	6.31	4.76
Ficinia nodosa and *Baumea juncea* Sedgeland	FnBjS	1.39	0.08		0.10	0.02	0.49				2.20	4.28	3.23
Alyxia buxifolia Coastal Heathland	AbH				2.58							2.58	1.95
Baumea articulata and *Lepidosperma longitudinale* Sedgeland	BaLIS									2.46		2.46	1.86
Xanthorrhoea preissii Shrubland	XpS		1.22			0.06	0.98					2.26	1.71
Jacksonia furcellata Shrubland	JfS						1.81					1.81	1.37
Hakea varia and *Spyridium globulosum Tall* Shrubland	HvSgS									1.46		1.46	1.10
Melaleuca lanceolata Woodland	MlW	0.53										1.34	1.01
Mix Melaleuca rhaphiophylla Woodland *& Spyridium globulosum* Shrubland	MrW/ SgS							0.98				0.98	0.74
Mix Eucalyptus gomphocephala Woodland *& Melaleuca rhaphiophylla* Woodland	EgW/ MrW							0.48				0.48	0.36
Mix Xanthorrhoea preissii Shrubland *& Ficinia nodosa* and *Baumea juncea* Sedgeland	Xps/ FnBjS		0.35									0.35	0.26
Total area (ha)		8.24	1.65	1.4	2.68	0.35	97.21	4.18	1.44	6.64	8.72	132.51	100

18 Appendix C Flora Species Recorded per Reserve

TABLE C1 - Anstey Q Swamp Reserve

Family	Species	Status
Anacardiaceae	*Schinus terebinthifolius*	Weed
Apiaceae	*Centella asiatica*	
Apocynaceae	*Vinca major*	Weed
Arecaceae	*Phoenix canariensis*	Weed
Asparagaceae	*Acanthocarpus preissii*	
Asparagaceae	*Dracaena sp*	Weed
Asparagaceae	*Lomandra caespitosa*	
Asparagaceae	*Thysanotus arenarius*	
Asphodelaceae	*Asphodelus fistulosus*	Weed
Asphodelaceae	*Trachyandra divaricata*	Weed
Asteraceae	*Arctotheca calendula*	Weed
Asteraceae	*Cirsium vulgare*	Weed
Asteraceae	*Conyza bonariensis*	Weed
Asteraceae	*Hypochaeris glabra*	Weed
Asteraceae	*Lactuca serriola*	Weed
Asteraceae	*Olearia axillaris*	
Asteraceae	*Senecio pinnatifolius* var. *latilobus*	
Asteraceae	*Sonchus oleraceus*	Weed
Basellaceae	*Anredera cordifolia*	Weed
Brassicaceae	*Brassica tournefortii*	Weed
Campanulaceae	*Lobelia anceps*	
Chenopodiaceae	*Enchylaena tomentosa* var. *tomentosa*	
Chenopodiaceae	*Rhagodia preissii*	
Crassulaceae	*Crassula glomerata*	Weed
Cyperaceae	*Baumea juncea*	
Cyperaceae	*Ficinia nodosa*	
Cyperaceae	*Gahnia trifida*	
Cyperaceae	*Isolepis cernua* var. *cernua*	
Cyperaceae	*Lepidosperma gladiatum*	
Cyperaceae	*Lepidosperma squamatum*	
Cyperaceae	*Tetraria octandra*	
Dilleniaceae	*Hibbertia cuneiformis*	
Ericaceae	*Leucopogon parviflorus*	
Euphorbiaceae	*Adriana quadripartita*	
Euphorbiaceae	*Euphorbia cyathophora*	Weed
Euphorbiaceae	*Euphorbia terracina*	Weed
Fabaceae	*Acacia lasiocarpa* var. *lasiocarpa*	
Fabaceae	*Acacia rostellifera*	
Fabaceae	*Gompholobium tomentosum*	
Fabaceae	*Hardenbergia comptoniana*	
Fabaceae	*Jacksonia furcellata*	

18 Appendix C (continued)

TABLE C1 - Anstey Q Swamp Reserve (continued)

Family	Species	Status
Fabaceae	*Kennedia prostrata*	
Fabaceae	*Medicago polymorpha*	Weed
Fabaceae	*Melilotus indicus*	Weed
Geraniaceae	*Pelargonium capitatum*	Weed
Goodeniaceae	*Scaevola anchusifolia*	
Haemodoraceae	*Conostylis candicans* subsp. *candicans*	
Iridaceae	*Romulea rosea*	Weed
Juncaginaceae	*Cycnogeton huegelii*	
Lamiaceae	*Hemiandra linearis*	
Lamiaceae	*Hemiandra pungens*	
Loganiaceae	*Logania vaginalis*	
Malvaceae	*Guichenotia ledifolia*	
Malvaceae	*Malva parviflora*	Weed
Moraceae	*Ficus carica*	Weed
Myrtaceae	*Agonis flexuosa* var. *flexuosa*	
Myrtaceae	*Eucalyptus gomphocephala*	
Myrtaceae	*Melaleuca lanceolata*	
Myrtaceae	*Melaleuca rhaphiophylla*	
Onagraceae	*Oenothera drummondii* subsp. *drummondii*	Weed
Orchidaceae	*Caladenia sp. Indet*	
Papaveraceae	*Fumaria muralis*	Weed
Poaceae	*Austrostipa flavescens*	
Poaceae	*Avena barbata*	Weed
Poaceae	*Bromus diandrus*	Weed
Poaceae	*Ehrharta erecta*	Weed
Poaceae	*Ehrharta longiflora*	Weed
Poaceae	*Hordeum leporinum*	Weed
Poaceae	*Lagurus ovatus*	Weed
Poaceae	*Lolium rigidum*	Weed
Poaceae	*Rostraria cristata*	Weed
Poaceae	*Sporobolus virginicus*	
Poaceae	*Stenotaphrum secundatum*	Weed
Polygalaceae	*Comesperma integerrimum*	
Primulaceae	*Lysimachia arvensis*	Weed
Ranunculaceae	*Clematis linearifolia*	
Rhamnaceae	*Spyridium globulosum*	
Rhamnaceae	*Spyridium globulosum*	
Rubiaceae	*Opercularia vaginata*	
Rutaceae	*Diplolaena dampieri*	
Scrophulariaceae	*Eremophila glabra*	
Solonaceae	*Solanum nigrum*	Weed
Typhaceae	*Typha orientalis*	Weed

TABLE C2 - Bordeaux Ramble

Family	Species	Status
Apiaceae	*Centella asiatica*	
Asparagaceae	*Acanthocarpus preissii*	
Asparagaceae	*Dracaena sp.*	Weed
Asparagaceae	*Lomandra caespitosa*	
Asparagaceae	*Thysanotus arenarius*	
Asphodelaceae	*Trachyandra divaricata*	Weed
Asteraceae	*Arctotheca calendula*	Weed
Asteraceae	*Conyza bonariensis*	Weed
Asteraceae	*Hypochaeris glabra*	Weed
Asteraceae	*Lactuca serriola*	Weed
Asteraceae	*Olearia axillaris*	
Asteraceae	*Osteospermum ecklonis*	
Asteraceae	*Senecio pinnatifolius* var. *latilobus*	
Asteraceae	*Sonchus oleraceus*	Weed
Brassicaceae	*Brassica tournefortii*	Weed
Campanulaceae	*Lobelia anceps*	
Caprifoliaceae	*Scabiosa atropurpurea*	Weed
Caryophyllaceae	*Petrorhagia dubia*	Weed
Caryophyllaceae	*Polycarpon tetraphyllum*	Weed
Chenopodiaceae	*Rhagodia baccata* subsp. *baccata*	
Crassulaceae	*Crassula glomerata*	Weed
Cyperaceae	*Baumea juncea*	
Cyperaceae	*Cyperus tenuiflorus*	Weed
Cyperaceae	*Ficinia nodosa*	
Cyperaceae	*Lepidosperma gladiatum*	
Cyperaceae	*Lepidosperma squamatum*	
Euphorbiaceae	*Adriana quadripartita*	
Euphorbiaceae	*Euphorbia drummondii*	
Euphorbiaceae	*Euphorbia terracina*	Weed
Fabaceae	*Acacia rostellifera*	
Fabaceae	*Gompholobium tomentosum*	
Fabaceae	*Hardenbergia comptoniana*	
Fabaceae	*Jacksonia furcellata*	
Fabaceae	*Kennedia prostrata*	

18 Appendix C (continued)

TABLE C2 - Bordeaux Ramble (continued)

Family	Species	Status
Fabaceae	*Medicago polymorpha*	Weed
Fabaceae	*Melilotus indicus*	Weed
Geraniaceae	*Pelargonium capitatum*	Weed
Goodeniaceae	*Scaevola anchusifolia*	
Haemodoraceae	*Conostylis aculeata*	
Haemodoraceae	*Conostylis candicans* subsp. *candicans*	
Hemerocallidaceae	*Dianella revoluta* var. *divaricata*	
Iridaceae	*Romulea rosea*	Weed
Lamiaceae	*Hemiandra linearis*	
Linaceae	*Linum marginale*	
Malvaceae	*Malva parviflora*	
Myrtaceae	*Melaleuca systena*	
Oxalidaceae	*Oxalis corniculata*	
Poaceae	*Austrostipa flavescens*	
Poaceae	*Avena barbata*	Weed
Poaceae	*Briza maxima*	Weed
Poaceae	*Bromus diandrus*	Weed
Poaceae	*Ehrharta longiflora*	Weed
Poaceae	*Eragrostis curvula*	
Poaceae	*Holcus setiger*	
Poaceae	*Lagurus ovatus*	
Poaceae	*Lolium rigidum*	Weed
Poaceae	*Puccinellia ciliata*	Weed
Poaceae	*Sporobolus virginicus*	
Polygalaceae	*Comesperma confertum*	
Primulaceae	*Lysimachia arvensis*	Weed
Proteaceae	*Hakea prostrata*	
Restionaceae	*Desmocladus asper*	
Rhamnaceae	*Spyridium globulosum*	
Rubiaceae	*Opercularia vaginata*	
Santalaceae	*Exocarpos sparteus*	
Scrophulariaceae	*Bartsia trixago*	Weed
Solanaceae	*Solanum nigrum*	Weed
Verbenaceae	*Phyla nodiflora* var. *nodiflora*	Weed
Xanthorrhoeaceae	*Xanthorrhoea preissii*	

TABLE C3 - CUD Swamp Reserve

Family	Species	Status
Apiaceae	*Apium prostratum* var. *prostratum*	
Asparagaceae	*Acanthocarpus preissii*	
Asparagaceae	*Lomandra caespitosa*	
Asparagaceae	*Thysanotus arenarius*	
Asphodelaceae	*Trachyandra divaricata*	Weed
Asteraceae	*Arctotheca calendula*	Weed
Asteraceae	*Cirsium vulgare*	Weed
Asteraceae	*Hypochaeris glabra*	Weed
Asteraceae	*Lactuca serriola*	Weed
Asteraceae	*Olearia axillaris*	
Asteraceae	*Senecio pinnatifolius* var. *latilobus*	
Asteraceae	*Sonchus oleraceus*	Weed
Brassicaceae	*Brassica tournefortii*	Weed
Caryophyllaceae	*Petrorhagia dubia*	Weed
Chenopodiaceae	*Enchylaena tomentosa* var. *tomentosa*	
Chenopodiaceae	*Rhagodia preissii*	
Crassulaceae	*Crassula glomerata*	Weed
Cupressaceae	*Callitris preissii*	
Cyperaceae	*Bulbostylis barbata*	
Cyperaceae	*Ficinia nodosa*	
Cyperaceae	*Lepidosperma gladiatum*	
Cyperaceae	*Lepidosperma squamatum*	
Cyperaceae	*Tetraria octandra*	
Dilleniaceae	*Hibbertia cuneiformis*	
Ericaceae	*Leucopogon parviflorus*	
Euphorbiaceae	*Euphorbia terracina*	Weed
Fabaceae	*Acacia lasiocarpa* var. *lasiocarpa*	
Fabaceae	*Acacia rostellifera*	
Fabaceae	*Acacia saligna* subsp. *saligna*	
Fabaceae	*Gompholobium tomentosum*	
Fabaceae	*Hardenbergia comptoniana*	
Fabaceae	*Jacksonia furcellata*	
Fabaceae	*Kennedia coccinea* subsp. *calcaria*	
Fabaceae	*Kennedia prostrata*	
Fabaceae	*Medicago polymorpha*	Weed
Fabaceae	*Melilotus indicus*	Weed
Geraniaceae	*Pelargonium capitatum*	Weed
Goodeniaceae	*Scaevola anchusifolia*	

18 Appendix C (continued)

TABLE C3 - CUD Swamp Reserve (continued)

Family	Species	Status
Goodeniaceae	*Scaevola crassifolia*	
Haemodoraceae	*Conostylis candicans* subsp. *candicans*	
Iridaceae	*Romulea rosea*	Weed
Lamiaceae	*Hemiandra linearis*	
Lauraceae	*Cassytha glabella forma casuarinae*	
Malvaceae	*Malva parviflora*	
Myrtaceae	*Agonis flexuosa* var. *flexuosa*	
Myrtaceae	*Calothamnus quadrifidus* subsp. *quadrifidus*	Planting
Myrtaceae	*Eucalyptus gomphocephala*	
Myrtaceae	*Melaleuca incana* subsp. *incana*	
Myrtaceae	*Melaleuca lanceolata*	
Myrtaceae	*Melaleuca systena*	
Myrtaceae	*Melaleuca urceolaris*	
Oleaceae	*Olea europaea* subsp. *europaea*	Weed
Papaveraceae	*Fumaria muralis*	Weed
Poaceae	*Austrostipa flavescens*	
Poaceae	*Austrostipa flavescens*	
Poaceae	*Avena barbata*	Weed
Poaceae	*Bromus diandrus*	Weed
Poaceae	*Ehrharta longiflora*	Weed
Poaceae	*Hordeum leporinum*	Weed
Poaceae	*Lagurus ovatus*	Weed
Poaceae	*Lolium rigidum*	Weed
Poaceae	*Stenotaphrum secundatum*	Weed
Poaceae	*Vulpia bromoides*	Weed
Primulaceae	*Lysimachia arvensis*	Weed
Proteaceae	*Adenanthos cygnorum* subsp. *cygnorum*	
Proteaceae	*Hakea prostrata*	
Ranunculaceae	*Clematis linearifolia*	
Restionaceae	*Desmocladus asper*	
Rhamnaceae	*Spyridium globulosum*	
Rubiaceae	*Opercularia vaginata*	
Rutaceae	*Diplolaena dampieri*	
Santalaceae	*Exocarpos sparteus*	
Santalaceae	*Santalum acuminatum*	
Scrophulariaceae	*Bartsia trixago*	Weed
Scrophulariaceae	*Dischisma arenarium*	Weed
Scrophulariaceae	*Eremophila glabra*	
Solonaceae	*Solanum nigrum*	Weed

TABLE C4 - Hidden Swamp Reserve

Family	Species	Status
Aizoaceae	*Carpobrotus edulis*	Weed
Aizoaceae	*Tetragonia decumbens*	Weed
Apiaceae	*Centella asiatica*	
Apocynaceae	*Alyxia buxifolia*	
Asparagaceae	*Acanthocarpus preissii*	
Asparagaceae	*Lomandra caespitosa*	
Asparagaceae	*Thysanotus manglesianus*	
Asphodelaceae	*Trachyandra divaricata*	Weed
Asteraceae	*Arctotheca calendula*	Weed
Asteraceae	*Arctotheca populifolia*	Weed
Asteraceae	*Cirsium vulgare*	Weed
Asteraceae	*Conyza bonariensis*	Weed
Asteraceae	*Lactuca serriola*	Weed
Asteraceae	*Olearia axillaris*	
Asteraceae	*Osteospermum ecklonis*	Weed
Asteraceae	*Senecio pinnatifolius* var. *latilobus*	
Asteraceae	*Sonchus oleraceus*	Weed
Brassicaceae	*Brassica tournefortii*	Weed
Campanulaceae	*Lobelia anceps*	
Chenopodiaceae	*Enchylaena tomentosa* var. *tomentosa*	
Chenopodiaceae	*Rhagodia preissii*	
Crassulaceae	*Crassula glomerata*	Weed
Cupressaceae	*Callitris preissii*	
Cyperaceae	*Baumea juncea*	
Cyperaceae	*Cyperus congestus*	Weed
Cyperaceae	*Ficinia nodosa*	
Cyperaceae	*Gahnia trifida*	
Cyperaceae	*Lepidosperma gladiatum*	
Dilleniaceae	*Hibbertia cuneiformis*	
Ericaceae	*Leucopogon parviflorus*	
Euphorbiaceae	*Euphorbia terracina*	Weed
Fabaceae	*Acacia cochlearis*	
Fabaceae	*Acacia lasiocarpa* var. *lasiocarpa*	
Fabaceae	*Acacia longifolia* subsp. *sophorae*	Weed
Fabaceae	*Acacia rostellifera*	
Fabaceae	*Gompholobium aristatum*	

18 Appendix C (continued)

TABLE C4 - Hidden Swamp Reserve (continued)

Family	Species	Status
Fabaceae	*Hardenbergia comptoniana*	
Fabaceae	*Kennedia coccinea* subsp. *calcaria*	
Fabaceae	*Medicago polymorpha*	Weed
Fabaceae	*Melilotus indicus*	Weed
Geraniaceae	*Pelargonium capitatum*	Weed
Goodeniaceae	*Scaevola crassifolia*	
Hemerocallidaceae	*Dianella revoluta* var. *divaricata*	
Juncaceae	*Juncus kraussii* subsp. *australiensis*	
Lauraceae	*Cassytha glabella forma casuarinae*	
Malvaceae	*Malva parviflora*	Weed
Myrtaceae	*Callistemon viminalis*	
Myrtaceae	*Eucalyptus camaldulensis*	Planting
Myrtaceae	*Eucalyptus platypus* subsp. *platypus*	Planting
Myrtaceae	*Eucalyptus rudis*	Planting
Myrtaceae	*Melaleuca nesophila*	
Oleaceae	*Olea europaea* subsp. *europaea*	Weed
Onagraceae	*Oenothera stricta* subsp. *stricta*	Weed
Papaveraceae	*Fumaria muralis*	Weed
Plantaginaceae	*Veronica arvensis*	Weed
Poaceae	*Austrostipa flavescens*	
Poaceae	*Avena barbata*	Weed
Poaceae	*Bromus diandrus*	Weed
Poaceae	*Eragrostis curvula*	Weed
Poaceae	*Lagurus ovatus*	Weed
Poaceae	*Lolium rigidum*	Weed
Poaceae	*Puccinellia ciliata*	Weed
Poaceae	*Stenotaphrum secundatum*	Weed
Polygalaceae	*Comesperma integerrimum*	
Primulaceae	*Lysimachia arvensis*	Weed
Ranunculaceae	*Clematis linearifolia*	
Rhamnaceae	*Spyridium globulosum*	
Santalaceae	*Exocarpos sparteus*	
Scrophulariaceae	*Bartsia trixago*	Weed
Typhaceae	*Typha orientalis*	Weed
Urticaceae	*Parietaria debilis*	Weed
Vitaceae	*Vitis vinifera*	Weed

TABLE C5 - Kinsale Bend

Family	Species	Status
Asparagaceae	*Acanthocarpus preissii*	
Asphodelaceae	*Trachyandra divaricata*	Weed
Asteraceae	*Arctotheca calendula*	Weed
Asteraceae	*Conyza bonariensis*	Weed
Asteraceae	*Hypochaeris glabra*	Weed
Asteraceae	*Olearia axillaris*	
Asteraceae	*Senecio pinnatifolius* var. *latilobus*	
Asteraceae	*Sonchus oleraceus*	Weed
Brassicaceae	*Brassica tournefortii*	Weed
Caryophyllaceae	*Polycarpon tetraphyllum*	Weed
Chenopodiaceae	*Rhagodia baccata* subsp. *baccata*	
Chenopodiaceae	*Rhagodia preissii*	
Crassulaceae	*Crassula glomerata*	Weed
Cupressaceae	*Callitris preissii*	
Cyperaceae	*Baumea juncea*	
Cyperaceae	*Bulbostylis barbata*	
Cyperaceae	*Cyperaceae sp. indet.*	
Cyperaceae	*Ficinia nodosa*	
Cyperaceae	*Gahnia trifida*	
Cyperaceae	*Lepidosperma gladiatum*	
Cyperaceae	*Lepidosperma squamatum*	
Ericaceae	*Leucopogon parviflorus*	
Euphorbiaceae	*Adriana quadripartita*	
Euphorbiaceae	*Euphorbia terracina*	Weed
Fabaceae	*Acacia lasiocarpa* var. *lasiocarpa*	
Fabaceae	*Acacia rostellifera*	

18 Appendix C (continued)

TABLE C5 - Kinsale Bend (continued)

Family	Species	Status
Fabaceae	*Gompholobium aristatum*	
Fabaceae	*Hardenbergia comptoniana*	
Fabaceae	*Jacksonia furcellata*	
Fabaceae	*Medicago polymorpha*	Weed
Fabaceae	*Melilotus indicus*	Weed
Geraniaceae	*Pelargonium capitatum*	Weed
Goodeniaceae	*Scaevola anchusifolia*	
Goodeniaceae	*Scaevola crassifolia*	
Haemodoraceae	*Conostylis candicans* subsp. *candicans*	
Hemerocallidaceae	*Dianella revoluta* var. *divaricata*	
Lamiaceae	*Hemiandra linearis*	
Loganiaceae	*Logania vaginalis*	
Myrtaceae	*Agonis flexuosa* var. *flexuosa*	
Myrtaceae	*Eucalyptus gomphocephala*	
Myrtaceae	*Melaleuca systena*	
Phyllanthaceae	*Phyllanthus calycinus*	
Poaceae	*Austrostipa flavescens*	
Poaceae	*Avena barbata*	Weed
Poaceae	*Bromus diandrus*	Weed
Poaceae	*Ehrharta longiflora*	Weed
Poaceae	*Lolium rigidum*	Weed
Poaceae	*Sporobolus virginicus*	
Primulaceae	*Lysimachia arvensis*	Weed
Rhamnaceae	*Spyridium globulosum*	
Xanthorrhoeaceae	*Xanthorrhoea preissii*	

TABLE C6 - Lark Hill Sporting Complex

Family	Species	Status
Aizoaceae	*Carpobrotus edulis*	Weed
Aizoaceae	*Tetragonia decumbens*	Weed
Anacardiaceae	*Schinus terebinthifolius*	Weed
Apiaceae	*Centella asiatica*	
Apocynaceae	*Gomphocarpus fruticosus*	Declared Pest
Araucariaceae	*Araucaria heterophylla*	Planting
Asparagaceae	*Acanthocarpus preissii*	
Asparagaceae	*Lomandra caespitosa*	
Asparagaceae	*Sansevieria trifasciata*	Weed
Asparagaceae	*Thysanotus arenarius*	
Asparagaceae	*Thysanotus triandrus*	
Asphodelaceae	*Asphodelus fistulosus*	Weed
Asphodelaceae	*Trachyandra divaricata*	Weed
Asteraceae	*Arctotheca calendula*	Weed
Asteraceae	*Asteridea pulverulenta*	
Asteraceae	*Conyza bonariensis*	Weed
Asteraceae	*Hypochaeris glabra*	Weed
Asteraceae	*Lactuca serriola*	Weed
Asteraceae	*Olearia axillaris*	
Asteraceae	*Osteospermum ecklonis*	Weed
Asteraceae	*Senecio pinnatifolius* var. *latilobus*	
Asteraceae	*Sonchus oleraceus*	Weed
Brassicaceae	*Brassica tournefortii*	Weed
Campanulaceae	*Lobelia tenuior*	
Campanulaceae	*Monopsis debilis*	Weed
Campanulaceae	*Wahlenbergia gracilenta*	
Caprifoliaceae	*Centranthus macrosiphon*	Weed
Casuarinaceae	*Casuarina obesa*	Planting
Chenopodiaceae	*Rhagodia baccata* subsp. *baccata*	
Chenopodiaceae	*Rhagodia preissii*	
Convolvulaceae	*Ipomoea indica*	Weed
Crassulaceae	*Crassula glomerata*	Weed
Cyperaceae	*Baumea articulata*	
Cyperaceae	*Baumea juncea*	
Cyperaceae	*Ficinia nodosa*	
Cyperaceae	*Lepidosperma gladiatum*	
Cyperaceae	*Lepidosperma squamatum*	
Cyperaceae	*Tetraria octandra*	
Ericaceae	*Leucopogon parviflorus*	
Euphorbiaceae	*Adriana quadripartita*	

18 Appendix C (continued)

TABLE C6 - Lark Hill Sporting Complex (continued)

Family	Species	Status
Euphorbiaceae	*Euphorbia terracina*	Weed
Euphorbiaceae	*Ricinus communis*	Weed
Fabaceae	*Acacia cochlearis*	
Fabaceae	*Acacia lasiocarpa* var. *lasiocarpa*	
Fabaceae	*Acacia rostellifera*	
Fabaceae	*Acacia saligna* subsp. *saligna*	
Fabaceae	*Hardenbergia comptoniana*	
Fabaceae	*Jacksonia furcellata*	
Fabaceae	*Kennedia coccinea* subsp. *calcaria*	
Fabaceae	*Kennedia prostrata*	
Fabaceae	*Medicago polymorpha*	Weed
Fabaceae	*Melilotus indicus*	Weed
Fabaceae	*Sphaerolobium calcicola*	Priority 3
Geraniaceae	*Pelargonium capitatum*	Weed
Haemodoraceae	*Conostylis candicans* subsp. *candicans*	
Hemerocallidaceae	*Dianella revoluta* var. *divaricata*	
Hemerocallidaceae	*Tricoryne tenella*	
Iridaceae	*Patersonia occidentalis*	
Iridaceae	*Romulea rosea*	Weed
Lamiaceae	*Hemiandra pungens*	
Lauraceae	*Cassytha glabella forma casuarinae*	
Malvaceae	*Malva parviflora*	Weed
Moraceae	*Ficus carica*	Weed
Moraceae	*Ficus macrophylla*	Planting
Myrtaceae	*Agonis flexuosa* var. *flexuosa*	Planting
Myrtaceae	*Chamelaucium uncinatum*	Planting
Myrtaceae	*Eucalyptus botryoides*	Planting
Myrtaceae	*Eucalyptus camaldulensis*	Planting
Myrtaceae	*Eucalyptus erythrocorys*	Planting
Myrtaceae	*Eucalyptus foecunda*	Planting
Myrtaceae	*Eucalyptus gomphocephala*	Planting
Myrtaceae	*Eucalyptus platypus* subsp. *platypus*	Planting
Myrtaceae	*Melaleuca huegelii* subsp. *huegelii*	Planting
Myrtaceae	*Melaleuca incana* subsp. *incana*	
Myrtaceae	*Melaleuca lanceolata*	
Myrtaceae	*Melaleuca rhaphiophylla*	
Myrtaceae	*Melaleuca systena*	
Oleaceae	*Olea europaea* subsp. *europaea*	Weed
Onagraceae	*Oenothera drummondii* subsp. *drummondii*	Weed
Onagraceae	*Oenothera stricta* subsp. *stricta*	Weed

TABLE C6 - Lark Hill Sporting Complex (continued)

Family	Species	Status
Papaveraceae	*Fumaria muralis*	Weed
Poaceae	*Austrostipa flavescens*	
Poaceae	*Avena barbata*	Weed
Poaceae	*Bromus diandrus*	Weed
Poaceae	*Ehrharta longiflora*	Weed
Poaceae	*Eragrostis curvula*	Weed
Poaceae	*Lagurus ovatus*	Weed
Poaceae	*Lolium rigidum*	Weed
Poaceae	*Sporobolus virginicus*	
Polygalaceae	*Comesperma integerrimum*	
Primulaceae	*Lysimachia arvensis*	Weed
Proteaceae	*Hakea prostrata*	
Ranunculaceae	*Clematis linearifolia*	
Restionaceae	*Desmocladus asper*	
Rhamnaceae	*Spyridium globulosum*	
Rhamnaceae	*Trymalium ledifolium* var. *ledifolium*	
Rubiaceae	*Opercularia hispidula*	
Rubiaceae	*Opercularia vaginata*	
Santalaceae	*Exocarpos sparteus*	
Scrophulariaceae	*Myoporum insulare*	
Solanaceae	*Anthocercis littorea*	
Solanaceae	*Solanum linnaeanum*	Weed
Solanaceae	*Solanum symonii*	
Thymelaeaceae	*Pimelea rosea* subsp. *rosea*	

18 Appendix C (continued)

TABLE C7 - Sawley Close Nature Reserve

Family	Species	Status
Apocynaceae	*Gomphocarpus fruticosus*	Declared Pest
Araliaceae	*Trachymene pilosa*	
Asparagaceae	*Acanthocarpus preissii*	
Asparagaceae	*Lomandra caespitosa*	
Asphodelaceae	*Asphodelus fistulosus*	Weed
Asphodelaceae	*Trachyandra divaricata*	Weed
Asteraceae	*Centaurea melitensis*	Weed
Asteraceae	*Hypochaeris glabra*	Weed
Asteraceae	*Olearia axillaris*	
Asteraceae	*Sonchus oleraceus*	Weed
Basellaceae	*Anredera cordifolia*	Weed
Brassicaceae	*Brassica tournefortii*	Weed
Brassicaceae	*Heliophila pusilla*	Weed
Caprifoliaceae	*Centranthus macrosiphon*	Weed
Caprifoliaceae	*Scabiosa atropurpurea*	Weed
Caryophyllaceae	*Petrorhagia dubia*	Weed
Caryophyllaceae	*Silene gallica*	Weed
Casuarinaceae	*Casuarina obesa*	
Crassulaceae	*Crassula colorata*	Weed
Cyperaceae	*Baumea juncea*	
Cyperaceae	*Lepidosperma gladiatum*	
Dilleniaceae	*Hibbertia cuneiformis*	
Ericaceae	*Leucopogon parviflorus*	
Ericaceae	*Leucopogon propinquus*	
Euphorbiaceae	*Euphorbia terracina*	Weed
Fabaceae	*Acacia rostellifera*	
Fabaceae	*Hardenbergia comptoniana*	
Fabaceae	*Trifolium campestre*	Weed
Geraniaceae	*Pelargonium capitatum*	Weed

TABLE C7 - Sawley Close Nature Reserve (continued)

Family	Species	Status
Haemodoraceae	*Conostylis candicans* subsp. *candicans*	
Hemerocallidaceae	*Tricoryne tenella*	
Moraceae	*Ficus carica*	Weed
Myrtaceae	*Eucalyptus gomphocephala*	
Myrtaceae	*Melaleuca rhaphiophylla*	
Myrtaceae	*Melaleuca systena*	
Myrtaceae	*Melaleuca teretifolia*	
Papaveraceae	*Fumaria muralis*	Weed
Poaceae	*Austrostipa flavescens*	
Poaceae	*Avena barbata*	Weed
Poaceae	*Briza maxima*	Weed
Poaceae	*Briza minor*	Weed
Poaceae	*Bromus diandrus*	Weed
Poaceae	*Cortaderia selloana*	Weed
Poaceae	*Ehrharta longiflora*	Weed
Poaceae	*Eragrostis curvula*	Weed
Poaceae	*Hyparrhenia hirta*	Weed
Poaceae	*Lolium rigidum*	Weed
Poaceae	*Puccinellia ciliata*	Weed
Poaceae	*Sporobolus virginicus*	
Primulaceae	*Lysimachia arvensis*	Weed
Primulaceae	*Samolus junceus*	
Proteaceae	*Banksia ilicifolia*	
Proteaceae	*Banksia littoralis*	
Ranunculaceae	*Clematis linearifolia*	
Restionaceae	*Desmocladus asper*	
Rhamnaceae	*Spyridium globulosum*	
Rubiaceae	*Opercularia hispidula*	
Santalaceae	*Exocarpos sparteus*	

18 Appendix C (continued)

TABLE C8 - Tamworth Reserve

Family	Species	Status
Apiaceae	*Centella asiatica*	
Asteraceae	*Cirsium vulgare*	Weed
Asteraceae	*Conyza bonariensis*	Weed
Asteraceae	*Lactuca serriola*	Weed
Brassicaceae	*Brassica tournefortii*	Weed
Cyperaceae	*Lepidosperma gladiatum*	
Euphorbiaceae	*Euphorbia terracina*	Weed
Fabaceae	*Acacia pulchella* var. *glaberrima*	
Fabaceae	*Acacia rostellifera*	
Fabaceae	*Acacia saligna* subsp. *saligna*	
Fabaceae	*Templetonia retusa*	
Fabaceae	*Trifolium campestre*	Weed
Geraniaceae	*Pelargonium x domesticum*	Weed
Juncaceae	*Juncus kraussii* subsp. *australiensis*	
Juncaginaceae	*Cycnogeton huegelii*	
Lauraceae	*Cassytha glabella forma casuarinae*	
Malvaceae	*Malva parviflora*	Weed
Myrtaceae	*Corymbia calophylla*	
Myrtaceae	*Eucalyptus gomphocephala*	
Myrtaceae	*Eucalyptus rudis*	
Myrtaceae	*Melaleuca incana* subsp. *incana*	
Myrtaceae	*Melaleuca rhaphiophylla*	
Myrtaceae	*Melaleuca thymoides*	
Myrtaceae	*Regelia ciliata*	
Oxalidaceae	*Oxalis corniculata*	Weed
Poaceae	*Avena barbata*	Weed
Poaceae	*Ehrharta longiflora*	Weed
Poaceae	*Eragrostis curvula*	Weed
Poaceae	*Holcus setiger*	Weed
Solanaceae	*Solanum nigrum*	Weed
Urticaceae	*Parietaria debilis*	Weed

TABLE C9 - Trenant Park Gardens

Family	Species	Status
Aizoaceae	*Carpobrotus edulis*	Weed
Apiaceae	*Centella asiatica*	
Apocynaceae	*Gomphocarpus fruticosus*	Declared Pest
Araliaceae	*Trachymene pilosa*	
Asparagaceae	*Acanthocarpus preissii*	
Asparagaceae	*Thysanotus triandrus*	
Asphodelaceae	*Trachyandra divaricata*	Weed
Asteraceae	*Arctotheca calendula*	Weed
Asteraceae	*Conyza bonariensis*	Weed
Asteraceae	*Hypochaeris glabra*	Weed
Asteraceae	*Olearia axillaris*	
Asteraceae	*Sonchus oleraceus*	Weed
Asteraceae	*Ursinia anthemoides* subsp. *anthemoides*	Weed
Basellaceae	*Anredera cordifolia*	Weed
Brassicaceae	*Brassica tournefortii*	Weed
Brassicaceae	*Heliophila pusilla*	Weed
Campanulaceae	*Lobelia tenuior*	
Campanulaceae	*Monopsis debilis*	Weed
Campanulaceae	*Wahlenbergia capensis*	Weed
Campanulaceae	*Wahlenbergia gracilenta*	
Caryophyllaceae	*Silene gallica*	
Chenopodiaceae	*Rhagodia baccata* subsp. *baccata*	
Chenopodiaceae	*Rhagodia preissii*	
Crassulaceae	*Crassula glomerata*	Weed
Cupressaceae	*Callitris preissii*	
Cyperaceae	*Baumea articulata*	
Cyperaceae	*Baumea juncea*	
Cyperaceae	*Ficinia nodosa*	
Cyperaceae	*Gahnia trifida*	
Cyperaceae	*Lepidosperma gladiatum*	
Cyperaceae	*Lepidosperma longitudinale*	
Cyperaceae	*Lepidosperma squamatum*	
Ericaceae	*Leucopogon propinquus*	
Euphorbiaceae	*Euphorbia terracina*	Weed
Fabaceae	*Acacia pulchella* var. *glaberrima*	
Fabaceae	*Acacia rostellifera*	
Fabaceae	*Hardenbergia comptoniana*	
Fabaceae	*Jacksonia furcellata*	
Fabaceae	*Kennedia prostrata*	
Fabaceae	*Melilotus indicus*	Weed
Fabaceae	*Viminaria juncea*	
Geraniaceae	*Pelargonium capitatum*	Weed

18 Appendix C (continued)

TABLE C9 - Trenant Park Gardens (continued)

Family	Species	Status
Haemodoraceae	*Anigozanthos manglesii*	
Haemodoraceae	*Conostylis candicans* subsp. *candicans*	
Hemerocallidaceae	*Dianella revoluta* var. *divaricata*	
Hemerocallidaceae	*Tricoryne tenella*	
Iridaceae	*Patersonia occidentalis*	
Malvaceae	*Lagunaria patersonia*	Weed
Moraceae	*Ficus carica*	Weed
Myrtaceae	*Eucalyptus gomphocephala*	
Myrtaceae	*Melaleuca incana* subsp. *incana*	
Myrtaceae	*Melaleuca rhaphiophylla*	
Myrtaceae	*Melaleuca systena*	
Oleaceae	*Olea europaea* subsp. *europaea*	Weed
Onagraceae	*Epilobium billardiereanum* subsp. *billardiereanum*	
Orchidaceae	*Disa bracteata*	Weed
Papaveraceae	*Fumaria muralis*	Weed
Phyllanthaceae	*Phyllanthus calycinus*	
Pittosporaceae	*Billardiera heterophylla*	
Poaceae	*Austrostipa flavescens*	
Poaceae	*Avena barbata*	Weed
Poaceae	*Briza maxima*	Weed
Poaceae	*Briza minor*	Weed
Poaceae	*Bromus diandrus*	Weed
Poaceae	*Ehrharta longiflora*	Weed
Poaceae	*Eragrostis curvula*	Weed
Poaceae	*Lagurus ovatus*	Weed
Poaceae	*Lolium rigidum*	Weed
Poaceae	*Sporobolus virginicus*	
Portulacaceae	*Calandrinia corrigioloides*	
Primulaceae	*Lysimachia arvensis*	Weed
Primulaceae	*Samolus junceus*	
Proteaceae	*Banksia grandis*	
Proteaceae	*Hakea prostrata*	
Proteaceae	*Hakea varia*	
Ranunculaceae	*Clematis linearifolia*	
Restionaceae	*Hypolaena pubescens*	
Restionaceae	*Loxocarya cinerea*	
Rhamnaceae	*Spyridium globulosum*	
Rubiaceae	*Opercularia hispidula*	
Rubiaceae	*Opercularia vaginata*	
Solanaceae	*Solanum symonii*	
Solanaceae	*Solanum nigrum*	Weed
Thymelaeaceae	*Pimelea rosea* subsp. *rosea*	
Urticaceae	*Parietaria debilis*	Weed

TABLE C10 - Woodleigh Grove Reserve

Family	Species	Status
Anacardiaceae	*Schinus terebinthifolius*	Weed
Arecaceae	*Phoenix canariensis*	Weed
Asparagaceae	*Acanthocarpus preissii*	
Asparagaceae	*Asparagus asparagoides*	Weed of National Significance
Asphodelaceae	*Trachyandra divaricata*	Weed
Asteraceae	*Cirsium vulgare*	Weed
Asteraceae	*Conyza bonariensis*	Weed
Asteraceae	*Lactuca serriola*	Weed
Asteraceae	*Senecio pinnatifolius* var. *latilobus*	
Asteraceae	*Sonchus oleraceus*	Weed
Campanulaceae	*Lobelia anceps*	
Casuarinaceae	*Casuarina obesa*	
Chenopodiaceae	*Rhagodia preissii*	
Cyperaceae	*Baumea juncea*	
Cyperaceae	*Carex thecata*	
Cyperaceae	*Ficinia nodosa*	
Cyperaceae	*Lepidosperma gladiatum*	
Dilleniaceae	*Hibbertia cuneiformis*	
Euphorbiaceae	*Adriana quadripartita*	
Euphorbiaceae	*Euphorbia terracina*	Weed
Fabaceae	*Acacia cochlearis*	
Fabaceae	*Acacia iteaphylla*	Weed
Fabaceae	*Acacia pulchella* var. *glaberrima*	
Fabaceae	*Acacia rostellifera*	
Fabaceae	*Acacia saligna* subsp. *saligna*	
Fabaceae	*Hardenbergia comptoniana*	
Fabaceae	*Melilotus indicus*	Weed
Fabaceae	*Templetonia retusa*	
Fabaceae	*Trifolium campestre*	Weed
Fabaceae	*Vicia sativa* subsp. *nigra*	Weed
Geraniaceae	*Geranium solanderi*	
Geraniaceae	*Pelargonium capitatum*	Weed
Hemerocallidaceae	*Dianella revoluta* var. *divaricata*	
Hemerocallidaceae	*Tricoryne tenella*	
Juncaceae	*Juncus acutus* subsp. *acutus*	Weed
Juncaceae	*Juncus kraussii* subsp. *australiensis*	
Juncaginaceae	*Cycnogeton huegelii*	
Lauraceae	*Cassytha glabella forma casuarinae*	

18 Appendix C (continued)

TABLE C10 - Woodleigh Grove Reserve (continued)

Family	Species	Status
Loganiaceae	*Logania vaginalis*	
Malvaceae	*Guichenotia macrantha*	
Malvaceae	*Malva parviflora*	Weed
Malvaceae	*Malva pseudolavatera*	Weed
Moraceae	*Ficus carica*	Weed
Myrtaceae	*Corymbia calophylla*	
Myrtaceae	*Eucalyptus gomphocephala*	
Orobanchaceae	*Orobanche minor*	Weed
Oxalidaceae	*Oxalis pes-caprae*	Weed
Papaveraceae	*Fumaria muralis*	Weed
Plantaginaceae	*Veronica arvensis*	Weed
Poaceae	*Austrostipa flavescens*	
Poaceae	*Avena barbata*	Weed
Poaceae	*Briza maxima*	Weed
Poaceae	*Briza minor*	Weed
Poaceae	*Bromus diandrus*	Weed
Poaceae	*Catapodium rigidum*	Weed
Poaceae	*Cortaderia selloana*	Weed
Poaceae	*Dactylis glomerata*	Weed
Poaceae	*Ehrharta longiflora*	Weed
Poaceae	*Eragrostis curvula*	Weed
Poaceae	*Lolium rigidum*	Weed
Poaceae	*Rostraria cristata*	Weed
Poaceae	*Sporobolus virginicus*	
Poaceae	*Stenotaphrum secundatum*	Weed
Polygalaceae	*Polygala myrtifolia*	Weed
Proteaceae	*Banksia littoralis*	
Ranunculaceae	*Clematis linearifolia*	
Rhamnaceae	*Spyridium globulosum*	
Rosaceae	*Eriobotrya japonica*	Weed
Rubiaceae	*Opercularia hispidula*	
Scrophulariaceae	*Myoporum caprarioides*	
Solanaceae	*Physalis peruviana*	Weed
Solanaceae	*Solanum nigrum*	Weed
Solanaceae	*Solanum symonii*	
Typhaceae	*Typha orientalis*	Weed
Urticaceae	*Parietaria debilis*	Weed
Vitaceae	*Vitis vinifera*	Weed
Xanthorrhoeaceae	*Xanthorrhoea preissii*	

18 Appendix D Weed Species Locations and Treatment Methods

TABLE D1 - Weed species suites for each reserve and recommended treatment method

Weed Suite*	Species	Common Name	Status	Species Specific Treatment **	Species Specific Timing	Anstey Q Swamp	Bordeaux Ramble	CUD Swamp	Hidden Swamp	Kinsale Bend	Lark Hill Sporting Complex	Sawley Close	Tamworth	Trenant Park Gardens	Woodleigh Grove	Number of Reserves
One	*Acacia iteaphylla*	Flinders Range Wattle		H F	All										✓	1
	Acacia longifolia subsp. *sophorae*	Sydney Golden Wattle		H F	All				✓							1
	Anredera cordifolia	Madeira Vine		H Sb	Spr - Aut	✓						✓		✓		3
	Dracaena sp.			H F Sb	All	✓	✓									2
	Eriobotrya japonica	Loquat		H F Sb	NA										✓	1
	Ficus carica	Edible Fig		H F Sb	All	✓					✓	✓		✓	✓	5
	Gomphocarpus fruticosus	Narrow-leaf Cotton Bush	Declared Pest	H F Sb	All						✓	✓		✓		3
	Lagunaria patersonia	Norfolk Island Hibiscus		H F Sb	All									✓		1
	Oenothera drummondii subsp. *drummondii*	Beach Evening Primrose		H Sb	All	✓					✓					2
	Oenothera stricta	Common Evening Primrose		H Sb	All				✓		✓					2
	Olea europaea subsp. *europaea*	Olive		H F Sb	All			✓	✓		✓			✓		4
	Phoenix canariensis	Canary Island Date Palm		H Sb	All	✓									✓	2
	Polygala myrtifolia	Myrtleleaf Milkwort		H F Sb	All										✓	1
	Ricinus communis	Castor Oil plant		H F Sb	All						✓					1
	Sansevieria trifasciata	Snake Plant		H Sb	All						✓					1
	Schinus terebinthifolius	Brazilian Pepper Tree		H F Sb	All	✓					✓				✓	3
	Vitis vinifera	Grape		H F Sb	All				✓							1

18 Appendix D (continued)

TABLE D1 - Weed species suites for each reserve and recommended treatment method (continued)

Weed Suite*	Species	Common Name	Status	Species Specific Treatment **	Species Specific Timing	Anstey Q Swamp	Bordeaux Ramble	CUD Swamp	Hidden Swamp	Kinsale Bend	Lark Hill Sporting Complex	Sawley Close	Tamworth	Trenant Park Gardens	Woodleigh Grove	Number of Reserves
Two	*Asparagus asparagoides*	Bridal Creeper	WoNS / Declared	Sb	Win										✓	1
	Arctotheca calendula	Cape Weed		Sb	Win - Spr	✓	✓	✓	✓	✓	✓			✓		7
	Arctotheca populifolia	Dune Arctotheca		Sb	Win - Spr				✓							1
	Asphodelus fistulosus	Onion Weed		Sb	Win - Spr	✓					✓	✓				3
	Bartsia trixago	Mediterranean lineseed		Sb	Win - Spr		✓	✓	✓							3
	Brassica tournefortii	Mediterranean Turnip, Wild Turnip		Sb	Win - Spr	✓	✓	✓	✓	✓	✓	✓	✓	✓		9
	Carpobrotus edulis	Hottentot Fig		H Sb	All				✓		✓			✓		3
	Centaurea melitensis	Maltese Cockspur		Sb	Win - Spr							✓				1
	Centranthus macrosiphon			Sb	Win - Spr						✓	✓				2
	Cirsium vulgare	Spear Thistle		Sb	Win - Spr	✓		✓	✓				✓		✓	5
	Conyza bonariensis	Flaxleaf Fleabane		Sb	Win - Spr	✓	✓		✓	✓	✓		✓	✓	✓	8
	Crassula colorata	Dense Stonecrop		Sb	Win - Spr					✓		✓				2
	Crassula glomerata	Crassula		Sb	Win - Spr	✓	✓	✓	✓		✓			✓		6
	Disa bracteata	South African Weed Orchid		Sb	Spr									✓		1
	Dischisma arenarium			Sb	Win - Spr			✓								1
	Eragrostis curvula	African Love Grass		Sb	Spr - Aut				✓		✓	✓	✓	✓	✓	6
	Euphorbia cyathophora	Dwarf Poinsettia		Sb	Win - Spr	✓										1
	Euphorbia terracina	Geraldton Carnation Weed		Sb	Win - Spr	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10
	Fumaria muralis	Wall Fumitory		Sb	Win - Spr	✓		✓	✓		✓	✓		✓	✓	7
	Heliophila pusilla			Sb	Win - Spr							✓		✓		2
	Hypochaeris glabra	Smooth Cats-ear		Sb	Win - Spr	✓	✓	✓		✓	✓	✓		✓		7
	Ipomoea indica	Morning Glory		Sb	Win - Spr						✓					1

TABLE D1 - Weed species suites for each reserve and recommended treatment method (continued)

Weed Suite*	Species	Common Name	Status	Species Specific Treatment **	Species Specific Timing	Anstey Q Swamp	Bordeaux Ramble	CUD Swamp	Hidden Swamp	Kinsale Bend	Lark Hill Sporting Complex	Sawley Close	Tamworth	Trenant Park Gardens	Woodleigh Grove	Number of Reserves
Two	*Lactuca serriola*	Prickly Lettuce		Sb	Win - Spr	✓	✓	✓	✓		✓		✓		✓	7
	Lysimachia arvensis	Pimpernel		Sb	Win - Spr	✓	✓	✓	✓	✓	✓	✓		✓		8
	Malva parviflora	Marshmallow		Sb	Win - Spr	✓			✓		✓		✓		✓	5
	Malva pseudolavatera			Sb	Win - Spr										✓	1
	Medicago polymorpha	Burr Medic		Sb	Win - Spr	✓	✓	✓	✓	✓	✓					6
	Melilotus indicus	Sweet Clover		Sb	Win - Spr	✓	✓	✓	✓	✓	✓			✓	✓	8
	Monopsis debilis	Monopsis		Sb	Win - Spr						✓			✓		2
	Orobanche minor	Lesser Broomrape		H Sb	All										✓	1
	Osteospermum ecklonis	African Daisy		H Sb	All				✓		✓					2
	Oxalis corniculata	Yellow Wood Sorrel		Sb	Win - Spr								✓			1
	Oxalis pes-caprae	Soursob		Sb	Win - Spr										✓	1
	Parietaria debilis	Pellitory		Sb	Win - Spr				✓				✓	✓	✓	4
	Pelargonium capitatum	Wild Geranium		H Sb	Win - Spr	✓	✓	✓	✓	✓	✓	✓		✓	✓	9
	Pelargonium x domesticum	Wild Geranium		H Sb	Win - Spr								✓			1
	Petrorhagia dubia	Hairy Pink		Sb	Win - Spr		✓	✓				✓				3
	Phyla nodiflora	Frog Fruit		Sb	Win - Spr		✓									1
	Physalis peruviana	Cape Gooseberry		Sb	Win - Spr										✓	1
	Polycarpon tetraphyllum	Fourleaf Allseed		Sb	Win - Spr		✓			✓						2
	Scabiosa atropurpurea	Purple Pincushion		Sb	Win - Spr		✓					✓				2
	Silene gallica	French Catchfly		Sb	Win - Spr							✓				1
	Solanum linnaeanum	Apple of Sodom		Sb	Win - Spr						✓					1
	Solanum nigrum	Black Berry Nightshade		Sb	Win - Spr	✓	✓	✓					✓	✓	✓	6

18 Appendix D (continued)

TABLE D1 - Weed species suites for each reserve and recommended treatment method (continued)

Weed Suite*	Species	Common Name	Status	Species Specific Treatment **	Species Specific Timing	Anstey Q Swamp	Bordeaux Ramble	CUD Swamp	Hidden Swamp	Kinsale Bend	Lark Hill Sporting Complex	Sawley Close	Tamworth	Trenant Park Gardens	Woodleigh Grove	Number of Reserves
Two	*Sonchus oleraceus*	Common Sowthistle		Sb	Win - Spr	✓	✓	✓	✓	✓	✓	✓		✓	✓	9
	Tetragonia decumbens	Sea Spinach		Sb	All				✓		✓					2
	Trachyandra divaricata	Strapweed, False Onion Weed		Sb	Win - Spr	✓	✓	✓	✓	✓	✓	✓		✓	✓	9
	Trifolium campestre	Hop Clover		Sb	Win - Spr							✓	✓		✓	3
	Ursinia anthemoides subsp. *anthemoides*	Ursinia		Sb	Win - Spr									✓		1
	Veronica arvensis	Wall Speedwell		Sb	Win - Spr				✓						✓	2
	Vicia sativa subsp. *nigra*			Sb	Spr - Sum										✓	1
	Vinca major	Blue Periwinkle		Sb	Win - Spr	✓										1
	Wahlenbergia capensis	Cape Bluebell		Sb	Win - Spr									✓		1

TABLE D1 - Weed species suites for each reserve and recommended treatment method (continued)

Weed Suite*	Species	Common Name	Status	Species Specific Treatment **	Species Specific Timing	Anstey Q Swamp	Bordeaux Ramble	CUD Swamp	Hidden Swamp	Kinsale Bend	Lark Hill Sporting Complex	Sawley Close	Tamworth	Trenant Park Gardens	Woodleigh Grove	Number of Reserves
Three	*Avena barbata*	Wild Oats		Sg	Win - Spr	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10
	Briza maxima	Blowfly Grass		Sb Sg	Win - Spr		✓					✓		✓	✓	4
	Briza minor	Shivery Grass		Sb Sg	Win - Spr							✓		✓	✓	3
	Bromus diandrus	Great Brome		Sb Sg	Win - Spr	✓	✓	✓	✓	✓	✓	✓		✓	✓	9
	Catapodium rigidum	Rigid Fescue		Sb Sg	Win - Spr										✓	1
	Cortaderia selloana	Pampas Grass		Sb Sg	Win - Spr							✓			✓	2
	Cyperus congestus	Dense Flat-sedge		Sb Sg	Win - Spr				✓							1
	Cyperus tenuiflorus	Scaly Sedge		Sb Sg	Win - Spr		✓									1
	Ehrharta erecta	Panic Veldt Grass		Sg	Win - Spr	✓										1
	Ehrharta longiflora	Soft Veldt Grass		Sg	Win - Spr	✓	✓	✓		✓	✓	✓	✓	✓	✓	9
	Dactylis glomerata	Cocksfoot		Sb Sg	Win - Spr										✓	1
	Holcus setiger	Annual Fog		Sb Sg	Win - Spr		✓						✓			1
	Hordeum leporinum	Barley Grass		Sb Sg	Win - Spr	✓		✓								2
	Hyparrhenia hirta	Tambookie Grass		Sb Sg	Win - Spr							✓				1
	Lagurus ovatus	Hare's Tail Grass		Sb Sg	Win - Spr	✓		✓	✓		✓			✓		5
	Lolium rigidum	Wimmera Ryegrass		Sb Sg	Win - Spr	✓	✓	✓	✓	✓	✓	✓		✓	✓	9
	Puccinellia ciliata	Puccinellia		Sb Sg	Win - Spr		✓		✓			✓				3
	Romulea rosea	Guildford Grass		Sb	Win - Spr	✓	✓	✓			✓					4
	Rostraria cristata	Mediterranean hairgrass		Sb Sg	Win - Spr	✓									✓	2
	Vulpia bromoides	Squirrel Tail Fescue		Sb Sg	Win - Spr			✓							✓	2

18 Appendix D (continued)

TABLE D1 - Weed species suites for each reserve and recommended treatment method (continued)

Weed Suite*	Species	Common Name	Status	Species Specific Treatment **	Species Specific Timing	Anstey Q Swamp	Bordeaux Ramble	CUD Swamp	Hidden Swamp	Kinsale Bend	Lark Hill Sporting Complex	Sawley Close	Tamworth	Trenant Park Gardens	Woodleigh Grove	Number of Reserves
Three and Four	*Stenotaphrum secundatum*	Buffalo Grass		Sb Sg	Spr - Aut	✓		✓	✓						✓	4
Four	*Juncus acutus* subsp. *acutus*			Sb Sg	Sum										✓	1
	Typha orientalis	Bulrush		Sb Sg	Sum	✓			✓						✓	3
Species Counts at each Reserve						37	29	28	35	17	38	30	15	33	41	

* Key to Weed Suites

One Manual removal (hand pull and/or fell mature plants and treat stump with broad spectrum systemic herbicide (glyphosate)

Two Spring application of broad spectrum systemic herbicide (glyphosate)

Three Spring application of grass selective herbicide (Verdict™ or Fusillade™)

Four Summer application of grass selective herbicide (Verdict™ or Fusillade™)

**Key to species specific control treatments

H Hand pull

F Fell mature plants, treat stump with broad spectrum systemic herbicide (glyphosate)

Sb Spray with broad spectrum systemic herbicide (glyphosate)

Sg Spray with grass selective herbicide (Verdict™ or Fusillade™)

Where multiple herbicides are recommended for species specific treatments, either herbicide would work. However the recommended treatment for the weed suite is what should be applied for the given species.

TABLE D2 - Weed species locations

Reserve*	Weed Species	Weed Status	Easting	Northing	Number of Plants
Anstey Q Swamp Reserve	*Ficus carica*		383703	6413207	1
	Schinus terebinthifolius		383688	6413259	1
	Schinus terebinthifolius		383690	6413282	1
	Phoenix canariensis		383720	6413305	1
	Phoenix canariensis		383645	6413412	1
	Phoenix canariensis		383634	6413443	1
	Phoenix canariensis		383639	6413452	1
	Phoenix canariensis		383599	6413595	3
	Typha orientalis		383599	6413595	10
CUD Swamp Reserve	*Olea europaea* subsp. *europaea*		383211	6414561	1
Hidden Swamp Reserve	*Typha orientalis*		382216	6413868	1
	Olea europaea subsp. *europaea*		382205	6413875	1
	Olea europaea subsp. *europaea*		382210	6413895	1
	Olea europaea subsp. *europaea*		382206	6413906	1
	Olea europaea subsp. *europaea*		382196	6413907	1
	Olea europaea subsp. *europaea*		382195	6413907	1
	Olea europaea subsp. *europaea*		382208	6413908	1
	Olea europaea subsp. *europaea*		382211	6413914	1
	Olea europaea subsp. *europaea*		382317	6414097	1
	Vitis vinifera		382317	6414097	1
	Olea europaea subsp. *europaea*		382392	6414110	1
	Olea europaea subsp. *europaea*		382397	6414114	1
	Olea europaea subsp. *europaea*		382390	6414127	1
	Olea europaea subsp. *europaea*		382391	6414134	1
Lark Hill Sporting Complex	*Ricinus communis*		383375	6415046	10
	Ipomoea cairica		383431	6415071	1
	Gomphocarpus fruticosus	Declared Pest Plant	384216	6415109	5 (recorded outside of study area)
	Ficus carica		383994	6415353	1
	Olea europaea subsp. *europaea*		383958	6415482	1
	Ficus carica		384002	6415598	1
	Ficus carica		383922	6415616	1
	Ficus carica		383980	6415721	1
	Olea europaea subsp. *europaea*		383989	6415722	1
	Ficus carica		383988	6415728	1
	Ficus carica		383996	6415733	1
	Ficus carica		383994	6415733	1
	Olea europaea subsp. *europaea*		383838	6416008	1
	Ficus carica		383836	6416056	1
	Schinus terebinthifolius		383835	6416056	1
	Schinus terebinthifolius		383859	6416065	1
	Ficus carica		383863	6416066	1
	Ficus carica		383851	6416066	1

18 Appendix D (continued)

TABLE D2 - Weed species locations (continued)

Reserve*	Weed Species	Weed Status	Easting	Northing	Number of Plants
Lark Hill Sporting Complex	*Schinus terebinthifolius*		383813	6416066	1
	Schinus terebinthifolius		383854	6416068	1
	Ficus carica		383815	6416069	1
	Ficus carica		383815	6416072	1
	Ficus carica		383816	6416073	1
	Ficus carica		383817	6416073	1
	Ficus carica		383828	6416073	1
	Ficus carica		383831	6416073	1
	Ficus carica		383867	6416076	1
	Ficus carica		383816	6416080	1
	Ficus carica		383811	6416080	1
	Ficus carica		383825	6416081	1
	Ficus carica		383817	6416081	1
	Ficus carica		383817	6416082	1
	Ficus carica		383817	6416082	1
	Ficus carica		383816	6416082	1
	Olea europaea subsp. *europaea*		383814	6416083	1
	Schinus terebinthifolius		383803	6416169	1
	Olea europaea subsp. *europaea*		383768	6416215	1
	Olea europaea subsp. *europaea*		383764	6416217	1
	Olea europaea subsp. *europaea*		383767	6416218	1
	Olea europaea subsp. *europaea*		383767	6416220	1
	Olea europaea subsp. *europaea*		383767	6416222	1
	Olea europaea subsp. *europaea*		383801	6416254	1
	Olea europaea subsp. *europaea*		383211	6416598	1
	Olea europaea subsp. *europaea*		383202	6416626	1
	Olea europaea subsp. *europaea*		383199	6416635	3
	Gomphocarpus fruticosus	Declared Pest Plant	383440	6416650	1
	Olea europaea subsp. *europaea*		383196	6416664	1
	Olea europaea subsp. *europaea*		383395	6416757	1
	Olea europaea subsp. *europaea*		383393	6416757	1
	Olea europaea subsp. *europaea*		383396	6416760	1
	Olea europaea subsp. *europaea*		383396	6416760	1
	Olea europaea subsp. *europaea*		383394	6416764	1
	Olea europaea subsp. *europaea*		383389	6416767	1
	Olea europaea subsp. *europaea*		383386	6416770	1
	Olea europaea subsp. *europaea*		383396	6416773	1
	Olea europaea subsp. *europaea*		383377	6416779	1
	Ficus carica		383611	6416789	3
	Olea europaea subsp. *europaea*		383611	6416789	6
	Olea europaea subsp. *europaea*		383376	6416800	1
	Olea europaea subsp. *europaea*		383589	6416809	5
	Olea europaea subsp. *europaea*		383583	6416830	10

TABLE D2 - Weed species locations (continued)

Reserve*	Weed Species	Weed Status	Easting	Northing	Number of Plants
Lark Hill Sporting Complex	*Ficus carica*		383590	6416833	5
	Olea europaea subsp. *europaea*		383232	6416845	1
	Olea europaea subsp. *europaea*		383338	6416846	1
	Olea europaea subsp. *europaea*		383118	6416851	1
	Olea europaea subsp. *europaea*		383105	6416854	1
	Olea europaea subsp. *europaea*		383155	6416862	1
	Schinus terebinthifolius		383332	6416906	1
	Olea europaea subsp. *europaea*		383583	6416907	1
	Gomphocarpus fruticosus	Declared Pest Plant	383488	6416908	2
	Olea europaea subsp. *europaea*		383477	6416912	1
	Schinus terebinthifolius		383477	6416912	1
	Olea europaea subsp. *europaea*		383095	6416932	1
	Olea europaea subsp. *europaea*		383469	6416965	1
	Olea europaea subsp. *europaea*		383491	6416981	1
	Schinus terebinthifolius		383458	6416993	1
	Olea europaea subsp. *europaea*		383470	6417002	1
	Olea europaea subsp. *europaea*		383454	6417003	1
	Olea europaea subsp. *europaea*		383461	6417006	1
	Olea europaea subsp. *europaea*		383455	6417009	1
	Olea europaea subsp. *europaea*		383473	6417017	1
	Olea europaea subsp. *europaea*		383495	6417022	1
	Olea europaea subsp. *europaea*		383331	6417030	1
	Olea europaea subsp. *europaea*		383287	6417033	1
	Schinus terebinthifolius		383259	6417035	1
	Olea europaea subsp. *europaea*		383439	6417039	1
	Olea europaea subsp. *europaea*		383439	6417055	1
	Ficus carica		383535	6417056	6
	Olea europaea subsp. *europaea*		383535	6417056	20
	Schinus terebinthifolius		383535	6417056	30
	Olea europaea subsp. *europaea*		383400	6417057	1
	Olea europaea subsp. *europaea*		383256	6417058	5
	Olea europaea subsp. *europaea*		383425	6417061	1
	Olea europaea subsp. *europaea*		383399	6417063	1
	Olea europaea subsp. *europaea*		383299	6417069	1
	Olea europaea subsp. *europaea*		383327	6417078	1
	Olea europaea subsp. *europaea*		383396	6417082	1
	Olea europaea subsp. *europaea*		383463	6417085	1
	Olea europaea subsp. *europaea*		383267	6417090	1
	Schinus terebinthifolius		383455	6417096	1
	Olea europaea subsp. *europaea*		383353	6417098	1
	Olea europaea subsp. *europaea*		383316	6417099	1
	Olea europaea subsp. *europaea*		383510	6417102	3
	Schinus terebinthifolius		383510	6417102	1

18 Appendix D (continued)

TABLE D2 - Weed species locations (continued)

Reserve*	Weed Species	Weed Status	Easting	Northing	Number of Plants
Sawley Close Nature Reserve	*Cortaderia selloana* subsp. *selloana*		384614	6412354	1
	Gomphocarpus fruticosus	Declared Pest Plant	384620	6412459	10
	Gomphocarpus fruticosus	Declared Pest Plant	384605	6412465	20
	Gomphocarpus fruticosus	Declared Pest Plant	384624	6412489	30
	Ficus carica		384626	6412524	1
Trenant Park Gardens	*Ficus carica*		384442	6411844	100
	Ficus carica		384418	6411863	1
	Ficus carica		384468	6412010	5
	Gomphocarpus fruticosus	Declared Pest Plant	384454	6412022	1
	Ficus carica		384486	6412051	2
	Ficus carica		384492	6412159	10
	Olea europaea subsp. *europaea*		384496	6412163	1
Woodleigh Grove Reserve	*Physalis peruviana*		387010	6422449	1
	Polygala myrtyfolia		386624	6422455	1
	Typha orientalis		386624	6422455	5
	Ficus carica		386657	6422462	3
	Schinus terebinthifolius		386998	6422468	2
	Ficus carica		386993	6422481	1
	Phoenix canariensis		386632	6422481	1
	Schinus terebinthifolius		386993	6422481	1
	Schinus terebinthifolius		387008	6422484	3
	Asparagus asparagoides	Weed of National Significance	386643	6422485	1
	Ficus carica		386651	6422488	2
	Ficus carica		386792	6422497	1
	Ficus carica		386819	6422501	1
	Cortaderia selloana subsp. *selloana*		386692	6422504	3
	Ficus carica		386692	6422504	6
	Polygala myrtyfolia		386692	6422504	3
	Vitis vinifera		386785	6422508	1
	Ficus carica		386784	6422511	3
	Physalis peruviana		387020	6422513	2
	Schinus terebinthifolius		387020	6422513	3
	Cortaderia selloana subsp. *selloana*		386788	6422516	1
	Ficus carica		386892	6422523	3
	Schinus terebinthifolius		387029	6422529	1
	Ficus carica		386754	6422533	1
	Ficus carica		386781	6422540	1
	Schinus terebinthifolius		387034	6422541	5
	Ficus carica		386721	6422549	1
	Schinus terebinthifolius		387036	6422559	10

TABLE D2 - Weed species locations (continued)

Reserve*	Weed Species	Weed Status	Easting	Northing	Number of Plants
Woodleigh Grove Reserve	*Schinus terebinthifolius*		387036	6422559	1
	Physalis peruviana		386980	6422562	1
	Acacia iteaphylla		386768	6422563	1
	Ficus carica		386927	6422572	10
	Ficus carica		386969	6422572	10
	Cortaderia selloana subsp. *selloana*		386986	6422584	1
	Ficus carica		386986	6422584	8
	Schinus terebinthifolius		386986	6422584	4
	Schinus terebinthifolius		387003	6422588	1
	Schinus terebinthifolius		386995	6422590	1
	Physalis peruviana		386975	6422593	1
	Eriobotrya japonica		387036	6422595	1
	Schinus terebinthifolius		387036	6422595	5
	Cortaderia selloana subsp. *selloana*		386991	6422596	5
	Ficus carica		386991	6422596	5
	Physalis peruviana		387039	6422597	4
	Physalis peruviana		387039	6422598	2
	Schinus terebinthifolius		387019	6422600	1
	Schinus terebinthifolius		387029	6422600	1
	Ficus carica		386945	6422601	2
	Schinus terebinthifolius		387048	6422601	1

*No waypoint weeds were recorded for Bordeaux Ramble, Kinsale Bend or Tamworth Reserve.

18 Appendix E Descriptions of the larger and more prominent weeds within the study area

Acacia iteaphylla (Flinders Range Wattle)

Acacia iteaphylla (Flinders Range Wattle) is a dense large shrub growing from 2 to 5 m. The phyllodes are silvery blue green, narrow, linear and approximately 14 cm long with a prominent mid vein. The inflorescences are racemose with globular lemon yellow flowers emanating from the leaf axis (Plate1). Flowering has been recorded between March and September (Western Australian Herbarium 1998). *Acacia iteaphylla* has been recorded across the Avon Wheatbelt, Geraldton Sandplains, Jarrah Forest, Mallee, Swan Coastal Plain, and Warren IBRA bioregions (Plate 2) (Western Australian Herbarium 1998).

One plant of *Acacia iteaphylla* was recorded at Woodleigh Grove Reserve.

Plate 1:
Acacia iteaphylla (Flinders Range Wattle) in situ (Woodleigh Grove Reserve).

Plate 2:
Current known distribution of *Acacia iteaphylla* (Flinders Range Wattle) (image source: Western Australian Herbarium).

Cortaderia selloana subsp. *selloana* (Pampas Grass)

Cortaderia selloana subsp. *selloana* (Pampas Grass) is a very large tussocky perennial grass with leaves up to 1 m long, crowded at the base of the plant. The inflorescence is a large, silvery plume-like panicle to 4 m tall produced in late summer and autumn (Plate 3). It is a garden escape native to South America that has become a serious weed in wetlands from Perth to Albany (Hussey et al. 2007). *Cortaderia selloana* subsp. *selloana* has been recorded across the Avon Wheatbelt, Jarrah Forest, Mallee, Swan Coastal Plain, and Warren IBRA bioregions (Plate 4) (Western Australian Herbarium 1998).

Eleven plants of *Cortaderia selloana* subsp. *selloana* were recorded within the study area, at Woodleigh Grove Reserve and Sawley Close Nature Reserve.

Plate 3:
Cortaderia selloana subsp. *selloana* (Pampas Grass) in situ (Sawley Close Nature Reserve).

Plate 4:
Current known distribution of *Cortaderia selloana* subsp. *selloana* (Pampas Grass) (image source: Western Australian Herbarium).

Eriobotrya japonica (Loquat)

Eriobotrya japonica (Loquat) is a small sturdy tree belonging to the Rosaceae family, which grows to 4 to 5 m high. It has stiff elliptic, leathery leaves and new growth covered with rusty hairs. It produces soft sprays of white flowers in June followed by yellow fruit in winter (Plate 5) (Hussey et al. 2007). *Eriobotrya japonica* is native to southern and central China and has been recorded in WA growing within the Swan Coastal Plain, and Warren IBRA bioregions (Plate 6) (DoEE 2017).

One seedling of *Eriobotrya japonica* was recorded at Woodleigh Grove Reserve.

Plate 5:
Eriobotrya japonica (Loquat) in situ.

Plate 6:
Current known distribution of *Eriobotrya japonica* (Loquat) (source: Western Australian Herbarium).

Ficus carica (Common Fig)

Ficus carica (Common Fig) is a commonly cultivated small fruit tree, growing from 1 to 10 m high, belonging to family Moraceae. This tree has spread to riverbanks and creek lines around Perth. It is easily recognised by its large hand shaped leaves and green or purple pear-shaped edible fruits (Plate 7) (Hussey et al. 2007). *Ficus carica* has been recorded across the Jarrah Forest, Swan Coastal Plain, and Warren IBRA bioregions (Plate 8) (Western Australian Herbarium 1998).

A total of 216 plants of *Ficus carica* were recorded within five reserves during the field survey at Trenant Park Gardens, Sawley Close Nature Reserve, Woodleigh Grove Reserve, Anstey Q Swamp Reserve, and Lark Hill Sporting Complex.

Plate 7:

Ficus carica (Common Fig) in situ.

Plate 8:

Current known distribution of *Ficus carica* (Common Fig) (source: Western Australian Herbarium).

Ipomoea indica (Morning Glory)

Ipomoea indica (Morning Glory) is similar to *Ipomoea cairica*, but has tri-lobed leaves and bright purple/blue flowers that occur November through to May. It is a vigorous, twining, rampant climber (Plate 9) that is a garden escape occurring on disturbed ground from Geraldton to Albany (Hussey et al. 2007). It is native to Central America and has been recorded in WA within the Gascoyne, Geraldton Sandplains, Swan Coastal Plain, and Warren IBRA bioregions (Plate 10) (Western Australian Herbarium 1998).

One large vine was recorded growing amongst some rubbish dumped illegally in the southwestern corner of Lark Hill Sporting Complex.

Plate 9:

Ipomoea indica (Morning Glory) in situ.

Plate 10:

Current known distribution of *Ipomoea indica* (Morning Glory) (image source: Western Australian Herbarium).

Olea europaea subsp. *europaea* (Olive)

Olea europaea subsp. *europaea* (Olive) is a commonly cultivated small tree, growing to 1 to 15 m high. It has prominent stiff leaves that are white and scaly on the lower surface and dark green on the upper surface. Flowering has been recorded between October and November, when short racemes of white flowers are produced (Plate 11) (Hussey et al. 2007). *Olea europaea* subsp. *europaea* has been recorded across the Jarrah Forest, and Swan Coastal Plain IBRA bioregions (Plate 12) (Western Australian Herbarium 1998). It is an increasing weed around Perth and this is expected to increase further as a result of it being planted widely in commercial groves and residential plantings.

A total of 119 plants of *Olea europaea* subsp. *europaea* were recorded within four reserves during the field survey at Trenant Park Gardens, Cud Swamp Reserve, Hidden Swamp Reserve, and Lark Hill Sporting Complex.

Plate 11:

Olea europaea subsp. *europaea* (Olive) in situ.

Plate 12:

Current known distribution of *Olea europaea* subsp. *europaea* (Olive) (source: Western Australian Herbarium).

18 Appendix E (continued)

Phoenix canariensis (Canary Island Date Palm)

Phoenix canariensis (Canary Island Date Palm) is a slow growing date palm often grown as an ornamental garden plant or verge planting. It can reach up to 20 m in height with pinnate fronds up to 5 m in length (Plate 13). *Phoenix canariensis* has been recorded previously in Western Australia across the Swan Coastal Plain IBRA bioregion (Plate 14) (Western Australian Herbarium 1998).

Within the study area, eight records of *Phoenix canariensis* were recorded at two reserves, at Woodleigh Grove Reserve and Anstey Q Swamp Reserve.

Plate 13:

Phoenix canariensis (Canary Island Date Palm) in situ.

Plate 14:

Current known distribution of *Phoenix canariensis* (image source: Western Australian Herbarium).

Physalis peruviana (Cape Gooseberry)

Physalis peruviana (Cape Gooseberry) is a member of the Solanaceae family and is a short-lived perennial shrub to 1 m. The large ovate leaves are softly hairy, with flowering predominantly recorded through winter from June to August, with opportunistic flowering recorded in summer following rainfall events (Western Australian Herbarium 1998). It produces a yellow edible berry approximately 1 cm in diameter (Plate 15) (Hussey et al. 2007). *Physalis peruviana* has been recorded from the Jarrah Forest, Swan Coastal Plain, and Warren IBRA bioregions associated with winter-wet depressions and rich moist soil conditions from Perth to Albany (Plate 16) (Western Australian Herbarium 1998).

During the survey 11 plants were recorded at Woodleigh Grove Reserve.

Plate 15:

Physalis peruviana (Cape Gooseberry) in situ.

Plate 16:

Current known distribution of *Physalis peruviana* (image source: Western Australian Herbarium).

Polygala myrtifolia (Myrtleleaf Milkwort)

Polygala myrtifolia (Myrtleleaf Milkwort) is a member of the Polygalaceae family and is a shrub growing to 2 m tall. The pea-shaped white and purple flowers are produced from August through to December, however they differ from peas in the lowest petal having a forward-pointing, brush-like crest (Plate 17). The species is a garden escape and is often found associated with disturbed areas from Perth to Albany (Hussey et al. 2007).

In WA, *Polygala myrtifolia* has been recorded growing on brown-orange or grey sand, loam, associated with winter-wet gullies, roadsides, creek lines. It has been recorded within the Avon Wheatbelt, Jarrah Forest, Swan Coastal Plain, and Warren IBRA bioregions (Plate 18) (Western Australian Herbarium 1998).

During the survey, four *Polygala myrtifolia* plants were recorded at Woodleigh Grove Reserve.

Plate 17:

Polygala myrtifolia (Myrtleleaf Milkwort) in situ.

Plate 18:

Current known distribution of *Polygala myrtifolia* (Myrtleleaf Milkwort) (image source: Western Australian Herbarium).

Ricinus communis (Castor Oil Plant)

Ricinus communis (Castor Oil Plant) is a member of the Euphorbiaceae family, and is a soft-wooded spreading shrub to 5 m tall. The leaves are on stalks 20 to 60 cm long, and are palmate with 5 to 9 lobes that are 10 to 40 cm long (Plate 19). The male flowers are cream–yellow while female flowers are red. Flowering occurs from June to September, and the resultant seeds are very toxic (Hussey et al. 2007).

Ricinus communis is often associated with road and rail verges, wastelands, rubbish tips, rivers creeks and wetlands. It is native to Africa and has been recorded in WA growing within the Coolgardie, Geraldton Sandplains, Jarrah Forest, Murchison, Ord Victoria Plain, Pilbara, and Swan Coastal Plain IBRA bioregions (Plate 20) (Western Australian Herbarium 1998).

During the field survey 10 plants were recorded at one location within the southwestern corner of the Lark Hill Sporting Complex.

Plate 19:

Ricinus communis (Castor Oil Plant); Western Australian Herbarium image (top), in situ (bottom).

Plate 20:

Current known distribution of *Ricinus communis* (Castor Oil Plant) (image source: Western Australian Herbarium).

Schinus terebinthifolius (Brazilian Pepper Tree)

Schinus terebinthifolius (Brazilian Pepper Tree) is a member of the Anacardiaceae family, and is a shrub or a tree growing 1to 6 m tall. The leaves are composed of leathery, dark green oval leaflets that exude a clear resin and smell of turpentine when crushed. The flowers are white/cream and occur between February and March. The red berries produced are up to 5 mm in diameter and the seeds within are most likely spread by birds (Plate 21) (Hussey et al. 2007).

Schinus terebinthifolius is native to Brazil and South America. It has been recorded in WA growing within the Coolgardie, Geraldton Sandplains, Jarrah Forest, Murchison, Ord Victoria Plain, Pilbara, and Swan Coastal Plain IBRA bioregions (Plate 22) (Western Australian Herbarium 1998).

During the field survey, a total of 83 trees were recorded within three reserves at Woodleigh Grove Reserve, Anstey Q Swamp Reserve, and Lark Hill Sporting Complex.

Plate 21:

Schinus terebinthifolius (Brazilian Pepper Tree); Western Australian Herbarium image (top), in situ (bottom).

Plate 22:

Current known distribution of *Schinus terebinthifolius* (Brazilian Pepper Tree) (image source: Western Australian Herbarium).

Typha orientalis (Bulrush)

Typha orientalis (Bulrush) is a member of the Typhaceae family and is a rhizomatous, monoecious, emergent perennial sedge that can grow from 2 to 4.5 m high. The flowers are brown and occur from November through to January (Plate 23) (Western Australian Herbarium 1998). It is often associated on the Swan Coastal Plain with winter wet depressions, permanent wetlands, and irrigation channels.

Typha orientalis is native to Eastern Australia, but is not native to WA. In WA it has been recorded within the Avon Wheatbelt, Jarrah Forest, Mallee, Swan Coastal Plain, and Warren IBRA bioregions (Plate 24) (Western Australian Herbarium 1998).

Typha orientalis was recorded at Woodleigh Grove Reserve, Anstey Q Swamp Reserve, and Hidden Swamp Reserve.

Plate 23:

Typha orientalis (Bulrush); Western Australian Herbarium image (top), in situ (foreground) (bottom).

Plate 24:

Current known distribution of *Typha orientalis* (Source: Western Australian Herbarium).

18 Appendix E (continued)

Vitis vinifera (Grape Vine)

Vitis vinifera (Grape Vine) is a member of the Vitaceae family and has been in cultivation in the South-west of WA since the earliest days of settlement. It is a deciduous woody climber with palmate leaves and inconspicuous cream to green flowers (Plate 25). It is a common weed of creek and river banks, and lake margins (Hussey et al. 2007). In WA it has been recorded within the Jarrah Forest, Swan Coastal Plain, and Warren IBRA bioregions (Plate 26) (Western Australian Herbarium 1998).

Vitis vinifera was located at Woodleigh Grove Reserve and Hidden Swamp Reserve.

Plate 25:
Vitis vinifera (Grape Vine) in situ.

Plate 26:
Current known distribution of *Vitis vinifera* (Grape Vine)

18 Appendix F Significant Fauna Likelihood of Occurence

TABLE F1 - Significant Fauna Likelihood of Occurrence Assessment

CLASS	Conservation Status		Source of Record															
Species Name (Common Name)	Federal*	State*	NatureMap	ALA	DBCA Threatened Fauna	EPBC	(Biota 2015b)	(Bamford 2005)	(ENV 2011)	(City of Rockingham 2015)	(Harewood 2016)	(Cardno 2005)	(Overman et al. 2010)	(Coterra Environment 2013a)	(Department of Conservation and Land Management 2003)	(Government of Western Australia 2000)	(Gole 2006)	(Gole 2004)
REPTILES																		
Ctenotus gemmula		P3			●			●										
Lerista lineata		P3	●	●	●		●	●					●		●			
Neelaps calonotos (Black-striped Snake)		P3	●	●	●			●					●		●			
MAMMALS																		
Dasyurus geoffroii (Western Quoll, Chuditch)	V	S3	●		●	●												
Phascogale tapoatafa (Wambenger Brush-tailed Phascogale)		S6	●		●													
Isoodon obesulus (Southern Brown Bandicoot, Quenda)		P4	●	●	●		●	●	●	●	●	●	●	●	●	●		
Pseudocheirus occidentalis (Western Ringtail Possum)	V	S1				●												
Notamacropus irma (Western Brush Wallaby)		P4	●									●	●			●		
Hydromys chrysogaster (Water-rat)		P4	●					●										
Falsistrellus mackenziei (Western Falsistrelle)		P4						●										
AVIFAUNA																		
Oxyura australis (Blue-billed Duck)		P4	●	●	●													
Apus pacificus (Fork-tailed Swift)		S5	●	●	●			●										

	Assessment of Likelihood of Occurrence in the study area^									
Preferred Habitat	Anstey Q Swamp	Bordeax Ramble	CUD Swamp	Hidden Swamp	Kinsale Bend	Lark Hill Sporting Complex	Sawley Close	Tamworth	Trenant Park Gardens	Woodleigh Grove
Banksia Woodlands with low vegetation, shelters beneath leaf litter, in abandoned stick-ant nests and burrows.	U	U	U	U	U	U	M	U	M	**U**
Sandy coastal heath and Shrubland.	M	M	M	M	M	M	M	U	M	**U**
Dunes and sand-plains vegetated with heaths and eucalypt or banksia Woodlands mostly along the Swan Coastal Plain.	M	M	U	M	M	M	M	U	M	**U**
Confined to wet and dry sclerophyll forests and mallee remnants in southwest WA.	U	U	U	U	U	U	U	U	U	**U**
Dry sclerophyll forest, monsoonal forest and Woodland.	W	W	W	W	W	W	W	W	W	**W**
Sandy coastal heath and Shrubland.	M	U	U	M	U	M	M	U	M	**R**
Forest patches between Two Peoples Bay and Collie River.	W	W	W	W	W	W	W	W	W	**W**
Dry sclerophyll forest and Woodland, mallee, with grassy understorey and thickets of shrubs.	U	W	W	U	W	U	U	W	U	**U**
Variety of aquatic environments including streams, slow inland rivers, lakes, farm damns, estuaries and sheltered marine waters.	U	W	W	M	W	U	W	U	M	**U**
Mature Karri forest, Jarrah and Tuart, also Woodland on the SCP.	M	W	W	U	W	U	U	U	M	**M**
Inhabits well- vegetated freshwater swamps, large dams and lakes.	U	W	W	M	W	W	W	W	M	**U**
Thought to be exclusively aerial in Australia, where they overfly open country from semi-deserts to coasts, islands, and sometimes over forests and cities.	M	M	M	M	M	M	M	M	M	**M**

18 Appendix F (continued)

TABLE F1 - Significant Fauna Likelihood of Occurrence Assessment (continued)

CLASS	Conservation Status		Source of Record															
Species Name (Common Name)	Federal*	State*	NatureMap	ALA	DBCA Threatened Fauna	EPBC	(Biota 2015b)	(Bamford 2005)	(ENV 2011)	(City of Rockingham 2015)	(Harewood 2016)	(Cardno 2005)	(Overman et al. 2010)	(Coterra Environment 2013a)	(Department of Conservation and Land Management 2003)	(Government of Western Australia 2000)	(Gole 2006)	(Gole 2004)
AVIFAUNA																		
Botaurus poiciloptilus (Australasian Bittern)	E	S2		•		•							•					
Ixobrychus dubius (Australian Little Bittern)		P4		•									•					
Ardea modesta (Eastern Great Egret)	Ma	S5	•	•	•			•										
Ardea ibis (Cattle Egret)		S5	•	•	•													
Plegadis falcinellus (Glossy Ibis)	Mi	S5	•	•														
Pandion cristatus (Eastern Osprey)	Mi	S5		•	•	•		•					•					
Falco peregrinus (Peregrine Falcon)		S7	•	•	•			•					•					
Rostratula australis (Australian Painted Snipe)	E	S2				•												
Actitis hypoleucos (Common Sandpiper)	Mi	S5	•	•	•	•	•	•					•					
Tringa nebularia (Common Greenshank)	Mi	S5	•	•	•	•		•										
Tringa stagnatilis (Marsh Sandpiper)	Mi	S5	•	•		•												
Tringa glareola (Wood Sandpiper)	Mi	S5	•	•	•	•												
Calidris subminuta (Long-toed Stint)	Mi	S5	•	•		•												
Calidris melanotos (Pectoral Sandpiper)	Mi	S5		•		•												
Calidris acuminata (Sharp-tailed Sandpiper)	Mi	S5	•	•	•	•		•										

	Assessment of Likelihood of Occurrence in the study area^									
Preferred Habitat	Anstey Q Swamp	Bordeax Ramble	CUD Swamp	Hidden Swamp	Kinsale Bend	Lark Hill Sporting Complex	Sawley Close	Tamworth	Trenant Park Gardens	Woodleigh Grove
Associated with water in tall reedbeds, sedges and rushes and brackish wetlands.	U	W	W	M	W	W	W	W	M	**U**
Reed beds and other waterside vegetation.	U	W	W	M	W	W	W	W	M	**U**
Wide variety of freshwater and saline wetlands, estuaries, swamps, mudflats, agricultural lands.	U	W	W	M	W	W	W	W	M	**M**
Stock paddocks, pastures, croplands, garbage tips, wetlands and drains.	U	W	W	M	W	W	W	W	M	**U**
Well vegetated wetlands, wet pastures, floodplains, mangroves, mudflats.	U	W	W	M	W	W	W	W	M	**U**
Inhabits coastal and terrestrial wetland area, occasionally found along inland rivers.	U	W	W	M	W	W	W	W	M	**U**
Inhabits a wide range of habitats including forest, Woodlands, wetlands and open country.	M	U	U	M	U	M	U	U	M	**M**
Well vegetated shallows and wetlands, dams, sewage ponds, wet pastures, and irrigated areas.	U	W	W	M	W	U	U	U	M	**M**
Estuaries, rocky coasts, swamps, flood waters, coastal wetlands.	W	W	W	M	W	W	W	W	U	**U**
Mudflats, estuaries, saltmarshes, lakes, wetlands, sewage ponds.	W	W	W	M	W	W	W	W	U	**U**
Permanent or ephemeral wetlands including swamps, lagoons, saltpans, saltmarshes, estuaries, floodplains, and intertidal mudflats.	W	W	W	M	W	W	W	W	U	**U**
Well-vegetated, shallow, freshwater wetlands, such as swamps, billabongs, lakes, pools and waterholes.	W	W	W	M	W	W	W	W	U	U
Shallow freshwater or brackish wetlands including lakes, swamps, river floodplains, streams, lagoons and sewage ponds.	W	W	W	M	W	W	W	W	U	**U**
Shallow fresh to saline wetlands, including coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands.	W	W	W	M	W	W	W	W	U	**U**
Muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation.	W	W	W	M	W	W	W	W	U	**U**

18 Appendix F (continued)

TABLE F1 - Significant Fauna Likelihood of Occurrence Assessment (continued)

CLASS	Conservation Status		Source of Record															
Species Name (Common Name)	Federal*	State*	NatureMap	ALA	DBCA Threatened Fauna	EPBC	(Biota 2015b)	(Bamford 2005)	(ENV 2011)	(City of Rockingham 2015)	(Harewood 2016)	(Cardno 2005)	(Overman et al. 2010)	(Coterra Environment 2013a)	(Department of Conservation and Land Management 2003)	(Government of Western Australia 2000)	(Gole 2006)	(Gole 2004)
AVIFAUNA																		
Philomachus pugnax (Ruff)	Mi	S5				•												
Gelochelidon nilotica (Gull-billed Tern)	Mi			•				•										
Hydroprogne caspia (Caspian Tern)	Mi	S5	•	•	•			•										
Chlidonias leucopterus (White-winged Black Tern)	Mi	S5		•														
Calyptorhynchus banksii (Red-tailed Black-Cockatoo)	V	S3	•	•	•	•				•								•
Calyptorhynchus latirostris (Carnaby's Black-Cockatoo)	E	S2	•	•	•	•		•		•	•		•				•	•
Calyptorhynchus baudinii (Baudin's Black-Cockatoo)	V	S2	•	•	•	•												
Merops ornatus (Rainbow Bee-eater)	Ma	S5	•	•	•			•									•	•

*V= Vulnerable, E= Endangered, Mi= Migratory, Ma= Marine, P3= Priority 3, P4 = Priority 4, S1= Schedule 1, S2= Schedule 2, S3= Schedule 3, S5= Schedule 5, S6= Schedule 6, S7= Schedule 7

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Preferred Habitat	Assessment of Likelihood of Occurrence in the study area^									
	Anstey Q Swamp	Bordeax Ramble	CUD Swamp	Hidden Swamp	Kinsale Bend	Lark Hill Sporting Complex	Sawley Close	Tamworth	Trenant Park Gardens	Woodleigh Grove
Fresh, brackish or saline wetlands with exposed mudflats at the edges, including lakes, swamps, pools, tidal rivers and swampy fields.	W	W	W	M	W	W	W	W	U	**U**
Freshwater swamps, beaches, estuarine mudflats, irrigate croplands and grasslands.	W	W	W	M	W	W	W	W	U	**U**
Mostly coastal, but can occur in inland wetlands including lakes, waterholes, rivers and creeks.	W	W	W	M	W	W	W	W	U	**U**
Inhabits a variety of wetlands, including swamps, lakes, rivers, floodplains, reservoirs, saltworks, and sewage ponds.	W	W	W	M	W	W	W	W	U	**U**
Dense Jarrah, Karri and Marri forests, as well as Blackbutt, Wandoo, Tuart, Albany Blackbutt, Yate and Flooded Gum.	M	U	U	U	U	U	M	R	M	**M**
Proteaceous shrubs and heaths, and eucalypt Woodlands and forests.	M	U	U	U	U	U	M	R	M	**M**
Habitats supporting Marri, Karri and Jarrah.	M	U	U	U	U	U	M	M	M	**M**
Variety of habitats that are generally well watered, lightly wooded with suitable (sandy) soil for nesting and a tall stratum of vegetation for perching.	M	U	U	M	U	M	M	M	M	**M**

^ R= recorded this survey, L= likely to occur, M= May potentially occur, U= Unlikely to occur W= would not occur

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18 Appendix F (continued)

TABLE F2 - Vertebrate fauna species recorded during the reconnaissance survey (October 2017) of the study area.

Species Name	Common Name	Conservation Status	Anstey Q Swamp	Bordeaux Ramble	CUD Swamp	Hidden Swamp	Kindsdale Bend	Lark Hill Sporting Complex	Sawley Close	Tamworth	Trennant Park Gardens	Woodleigh Grove	Total
AMPHIBANS													
Litoria adelaidensis	Slender Tree Frog					1							1
Crinia glauerti	Clicking Frog										1		1
REPTILES													
Chelodina colliei	Oblong Turtle										1*		1
Pogona minor								1					1
Acritoscincus trilineatus											1		1
Tiliqua rugosa					1			1					2
Notechis scutatus	Tiger Snake					1							1
MAMMALS													
Isoodon obesulus	Southern Brown Bandicoot	P4										1 (D)	1 (D)
Macropus fuliginosus	Western Grey Kangaroo								1 (T)				1 (T)
Oryctolagus cuniculus	Rabbit							1(W)					1(W)
AVIFAUNA													
Streptopelia senegalensis	Laughing Dove						3						3
Threskiornis molucca	Australian White Ibis									1			1
Threskiornis spinicollis	Straw-necked Ibis										1		1
Fulica atra	Eurasian Coot					5							5
Calyptorhynchus banksii	Red-tailed Black-Cockatoo	Vulnerable; Schedule 3								1(C)			1 (C)
Calyptorhynchus latirostris	Carnaby's Black-Cockatoo	Endangered; Schedule 2								1(C)		1	1, 1 (C)
Eolophus roseicapillus	Galah			1									1
Barnardius zonarius	Australian Ringneck		6							9		3	18
Dacelo novaeguineae	Laughing Kookaburra									1		1	2
Malurus splendens	Splendid Fairy-wren		1					3				4	8
Smicrornis brevirostris	Weebill		1									1	2
Gerygone fusca	Western Gerygone		1							4	1	4	10
Acanthiza chrysorrhoa	Yellow-rumped Thornbill											3	3
Acanthiza apicalis	Inland Thornbill							4					4
Pardalotus striatus	Striated Pardalote		1							1	1	1	4

TABLE F2 - Vertebrate fauna species recorded during the reconnaissance survey (October 2017) of the study area. (continued)

Species Name	Common Name	Conservation Status	Anstey Q Swamp	Bordeaux Ramble	CUD Swamp	Hidden Swamp	Kindsdale Bend	Lark Hill Sporting Complex	Sawley Close	Tamworth	Trennant Park Gardens	Woodleigh Grove	Total
AVIFAUNA													
Lichenostomus virescens	*Singing Honeyeater*				1		1			1			3
Anthochaera carunculata	*Red Wattlebird*		1	1	1					4	1	2	10
Lichmera indistincta	*Brown Honeyeater*		1					1		2	1	2	7
Coracina novaehollandiae	*Black-faced Cuckoo-shrike*		1										1
Pachycephala rufiventris	*Rufous Whistler*							1			2	4	7
Cracticus torquatus	*Grey Butcherbird*				4								4
Cracticus tibicen	*Australian Magpie*									5		6	11
Rhipidura albiscapa	*Grey Fantail*										1	3	4
Rhipidura leucophrys	*Willie Wagtail*		1		1					3			5
Corvus coronoides	*Australian Raven*		2					3		1		2	8
Grallina cyanoleuca	*Magpie-lark*		2										2
Petroica boodang	*Scarlet Robin*											2	2
Zosterops lateralis	*Silvereye*							3				1	4
Total number of records			18	2	8	7	4	18	1	34	11	41	140
Total number of species			11	2	5	3	2	9	1	13	10	17	35

T = track, D = digging, W = warren, C = chewed nuts

*Found in the firefighting reservoir directly to the east of the study area.

18 Appendix F (continued)

TABLE F3 - Potential Black Cockatoo Breeding and Roosting Trees

Reserve	Location Latitide (S)	Location Longitude (E)	Tree Species	DBH (cm)	Tree Height (m)	Signs of Use	Potential Ecological Use
Sawley Close	32°25'09"	115°46'24"	Tuart	57	15-20	None	Breeding (potential to develop hollows) and night roosting
Tamworth Reserve	32°19'28"	115°48'40"	Flooded Gum	75	20-25	None	Night roosting
	32°19'28"	115°48'44"	Marri	63	25+	Chewed nuts	Foraging, breeding (potential for hollows to develop), night roosting
	32°19'28"	115°48'45"		108	25+	Chewed nuts	
	32°19'29"	115°48'44"		101	25+	Chewed nuts	
	32°19'27"	115°48'43"		84	25+	None	
	32°19'28"	115°48'43"		87	25+	None	
	32°19'24"	115°48'41"	Tuart	135	25+	None	Breeding (potential to develop hollows) and night roosting
	32°19'23"	115°48'40"		142	20-25	None	
Trenant Park Gardens	32°25'25"	115°46'17"	Tuart	106	15-20	None	Breeding (potential to develop hollows) and night roosting
	32° 25' 28"	115° 46' 17"		79	15-20	None	
	32°25'23"	115°46'13"		108*	20-25	None	
Woodleigh Grove Reserve	32° 19' 48"	115° 47' 51"	Tuart	99	25+	None	Breeding (potential to develop hollows) and night roosting
	32° 19' 46"	115° 47' 57"		81	25+	None	
	32° 19' 47"	115° 47' 57"		99	25+	None	
	32° 19' 46"	115° 47' 56"		80	25+	None	
	32° 19' 45"	115° 47' 59"		109	25+	None	
	32° 19' 46"	115° 47' 59"		164	25+	None	

TABLE F4 - Introduced Fauna Locations from Field Survey

Reserve	Introduced Fauna	Location Latitude (S)	Location Longitude (E)
Hidden Swamp	Koi fish in lake	32°24'21"	115°44'52"
Lark Hill Sporting Complex	Rabbit warren	32°23'41"	115°45'38"
Trenant Park Gardens	European honey bee hive	32°25'23"	115°46'13"

18 Appendix G Photos of infrastructure throughout the study area

ANSTEY Q SWAMP

Fencing

Wood posts and wire	
U-rail	
Wire mesh showing holes	
Wire mesh showing holes	

Paths

Concrete	
Concrete path showing trip hazard	

Signage

Regulatory sign peeling off	
Interpretive sign showing sun bleaching	

Other Infrastructure and Amenities

Bin and dog waste bags	
Information hut	

Threatening Process Representative Photographs

Informal path	
Informal path (proposed to be formalised)	
Access through wetland	
Dumped rubbish	
Dumped asbestos cement sheeting	

BORDEAUX RAMBLE

Fencing

Wood posts and wire mesh	
Hole in wire mesh	
Limestone wall	

Paths

Paved concrete	
Wood boardwalk	

Signage

Interpretive sign	

Other Infrastructure and Amenities

Gazebo	
Bench seat	

CUD SWAMP

Fencing

Bollards	
Wood posts and wire	
Chain gate	

Paths

Bitumen showing cracks	
Crushed limestone	
Eroded limestone	

Signage

Reserve name sign showing worn regulatory images	

Other Infrastructure and Amenities

Playground	
Bin and dog waste bags	
Bench seat	
Bench seat	

Threatening Process Representative Photographs

Access point to dunes	
Dumped rubbish	
Dumped rubbish	

HIDDEN SWAMP

Fencing

Gate	
Wood posts and wire	
Limestone wall	
Residential fencing	
Chain gate	

Paths

Mulch and sand	
Sand over wood stairs	

Signage

Reserve name	

Threatening Process Representative Photographs

Off path access to dunes	
Dumped rubbish	

18 Appendix G (continued)

KINSALE BEND

Fencing

Wood post and wire mesh	
Limestone wall	
Gate	

Paths

Paved concrete	
Concrete showing cracks	
Wood boardwalk	

Signage

Interpretive sign fallen off post	

Threatening Process Representative Photographs

Dumped rubbish	

LARK HILL SPORTING COMPLEX

Fencing	
Wood posts, wire and barbed wire	
Degraded barbed wire fencing	
Posts and wire	
Gate	
Gate showing damage	
Metal railing	

Paths	
Sand track and gate	
Gravel	
Paved concrete and metal railing	

18 Appendix G (continued)

LARK HILL SPORTING COMPLEX

Signage	
Interpretive and reserve name sign	
InterpretiveTEC information sign peeling off	
Interpretive and reserve name sign	
Sun bleached interpretive plant information sign	
Vandalised flora and fauna information sign	
Sun bleached interpretive plant information sign	
Vandalised flora and fauna information sign	
Peeling interpretive plant information sign	

Other Infrastructure and Amenities	
Pedestrian turnstile	
Shade hut	
Bench seat with loose screws	
Shade hut	
Heritage house	
Windmill	
Bench seat in heritage house	
Toilet block and bore water tank	
Toilet block out of order	

LARK HILL SPORTING COMPLEX

Threatening Process Representative Photographs	
Remnant building	
Rubbish and car body	
Graffiti on signs	

18 Appendix G (continued)

SAWLEY CLOSE

Fencing	
Gate	
Wood posts and wire	
Paths	
Sand	
Sand track showing boggy soft sand	
Sand track showing boggy soft sand	

Threatening Process Representative Photographs	
Informal vehicle access	
Dumped rubbish	
Dumped rubbish	
Dumped rubbish	
Dumped rubbish	
Graffiti	

TAMWORTH RESERVE

Fencing

Bollard	
Wire mesh and barbed wire	
Chain gate	

Paths

Paved concrete	

Signage

Regulatory sign	

Other Infrastructure and Amenities

Bench seat	
Bin and dog waste bags	

18 Appendix G (continued)

TRENANT PARK GARDENS

Fencing

Gate	
Gate showing damage	
Wood posts and wire	

Paths

Crushed limestone	

Other Infrastructure and Amenities

Pedestrian turnstile	
Information hut	

WOODLEIGH GROVE RESERVE

Fencing	
Gate	
Wood posts and wire	
Overgrown degraded wire fence	
Bollard	
Chain gate	
Paths	
Mulch	
Mulch path showing sticks and plant growth	
Paved concrete showing crack	

Paths	
Paved limestone	
Crushed limestone	
Signage	
Regulatory sign for pest baiting	
Interpretive tree information plaque showing wear	
Other Infrastructure and Amenities	
Pedestrian turnstile	
Bin and dog waste bags	

18 Appendix H Species List for Revegetation within each Vegetation Association

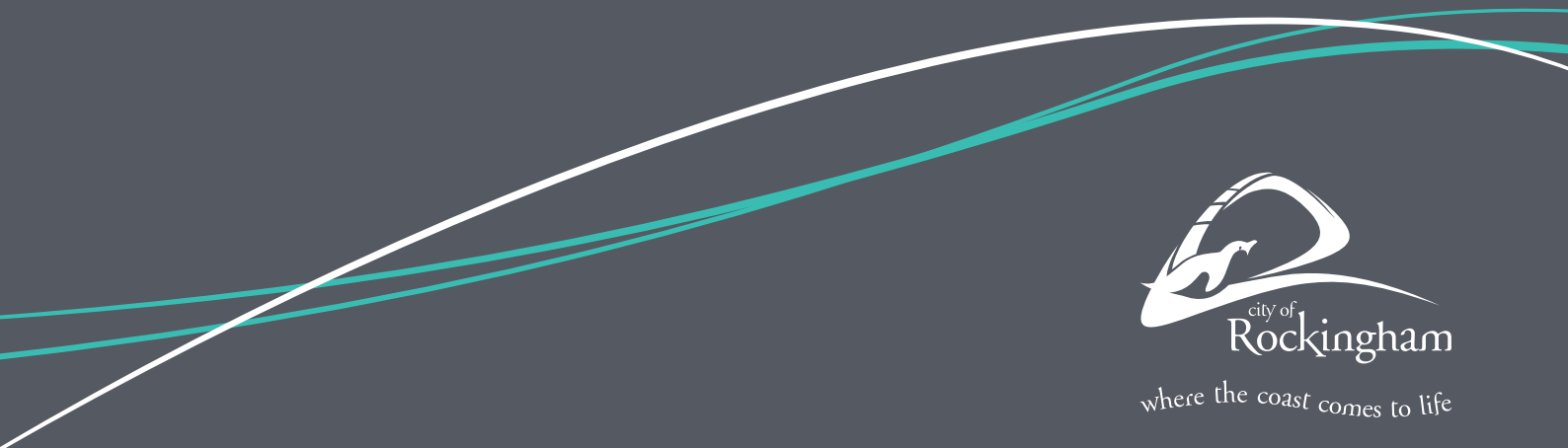
		Vegetation Association							
Family	Species Name	AbH	ArS	EgW	FnBjS	MlW	MrW	SgS	XpS
Apocynaceae	*Alyxia buxifolia*	✓							
Asparagaceae	*Lomandra caespitosa*		✓					✓	
Asteraceae	*Olearia axillaris*		✓					✓	
Chenopodiaceae	*Enchylaena tomentosa* var. *tomentosa*					✓	✓		✓
Chenopodiaceae	*Rhagodia baccata* subsp. *baccata*					✓	✓		✓
Chenopodiaceae	*Rhagodia preissii*					✓	✓		✓
Cupressaceae	*Callitris preissii*		✓						
Cyperaceae	*Ficinia nodosa*				✓				
Cyperaceae	*Gahnia trifida*						✓		
Cyperaceae	*Lepidosperma gladiatum*	✓			✓		✓		
Dilleniaceae	*Hibbertia cuneiformis*	✓		✓					
Ericaceae	*Leucopogon parviflorus*					✓			✓
Ericaceae	*Leucopogon propinquus*	✓	✓						
Fabaceae	*Acacia lasiocarpa* var. *lasiocarpa*								✓
Fabaceae	*Acacia pulchella* var. *glaberrima*			✓					
Fabaceae	*Acacia rostellifera*	✓						✓	
Fabaceae	*Hardenbergia comptoniana*	✓		✓					
Fabaceae	*Jacksonia furcellata*		✓	✓		✓			
Haemodoraceae	*Conostylis candicans* subsp. *candicans*	✓	✓						
Hemerocallidaceae	*Dianella revoluta* var. *divaricata*								✓
Myrtaceae	*Eucalyptus gomphocephala*			✓					
Myrtaceae	*Melaleuca incana* subsp. *incana*						✓		
Myrtaceae	*Melaleuca rhaphiophylla*						✓		
Myrtaceae	*Melaleuca systena*		✓					✓	
Poaceae	*Austrostipa flavescens*		✓					✓	✓
Rhamnaceae	*Spyridium globulosum*	✓	✓					✓	
Santalaceae	*Exocarpos sparteus*							✓	
Xanthorrhoeaceae	*Xanthorrhoea preissii*								✓

18 Appendix I GPS Locations of Inappropriate Access and Rubbish Dumping

Threats/Issues	Reserve	Location(s) - GPS coordinates and position in reserve
Inappropriate access - informal paths or vehicle access	Anstey Q Swamp	• 32°24'42" (S), 115°45'48"(E) (south) • 32°24'39" (S), 115°45'46" (E) (central) • 32°24'37" (S), 115°45'43" (E) (west) • 32°24'40" (S), 115°45'50" (E) (east)
	CUD Swamp	• 32°24'01" (S), 115°45'32" (E) • 32°24'00" (S), 115°45'32" (E) • 32°23'59" (S), 115°45'33" (E) • 32°23'58" (S), 115°45'31" (E) • 32°23'59" (S), 115°45'30" (E) (all central locations)
	Hidden Swamp	• 32°24'21" (S), 115°44'53" (E) (south)
	Sawley Close	• 32°25'06" (S), 115°46'20" (E) (north and east) • 32°25'01" (S), 115°46'24" (E) (north)
Vandalism/graffiti	Lark Hill Sporting Complex	• 32°23'05" (S), 115°45'54" (E) (east) • 32°23'17" (S), 115°45'56" (E) (central) • 32°23'29" (S), 115°45'58" (E) (central south)
	Sawley Close	• 32°25'10" (S), 115°46'25" (E) (east)
Rubbish Dumping	Anstey Q Swamp	• 32°24'42" (S), 115°45'48" (E) (south) • 32°24'30" (S), 115°45'46" (E) (central)
	CUD Swamp	• 32°23'57" (S), 115°45'32" (E) (north) • 32°23'58" (S), 115°45'29" (E) (west)
	Hidden Swamp	Western border along residential fencing.
	Kinsale Bend	• 32°21'50" (S), 115°44'58" (E) (central)
	Lark Hill Sporting Complex	• 32°22'39" (S), 115°45'39" (E) (north)
	Sawley Close	• 32°25'05" (S), 115°46'23" (E) • 32°25'08" (S), 115°46'24" (E) • 32°25'11" (S), 115°46'21" (E) • 32°25'07" (S), 115°46'23" (E) (all central areas)

CITY OF ROCKINGHAM

Wetland Management Plan



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