City of Armadale

William and Alfred Skeet Oval Reconnaissance Flora Survey

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Executive Summary

Natural Area Consulting Management Services (Natural Area) was commissioned by the City of Armadale to undertake a reconnaissance flora survey within a proposed clearing area between William and Alfred Skeet Ovals in Forrestdale. The survey area is approximately 5,250 m^2 of degraded vegetation located between two playing fields 23 km from the Perth Central Business District. This survey was undertaken to inform a clearing application.

A desktop assessment was undertaken to determine habitat suitability for conservation significant flora and fauna and the likelihood of conservation significant ecological communities. A total of 26 conservation significant flora species have been previously recorded within the area; it was determined that the site may be suitable for 14 of these species. Desktop surveys indicated that the site may be utilised by Black Cockatoos and Quenda, and a habitat assessment was required on site to determine if it was suitable for conservation significant invertebrates and reptiles. The area may also contain Banksia Woodland of the Swan Coastal Plain, a threatened ecological community.

The on ground reconnaissance survey confirmed the presence of a Degraded to Completely Degraded mixed woodland. Dominant species included non-native *Eucalyptus* spp., *Kunzea glabrescens, Jacksonia furcellata*, Perennial Veldt Grass (**Ehrharta calycina*) and Pigface (**Carpobrotus edulis*). Although the area may have been previously Banksia Woodland in the north and *Eucalyptus rudis* and *Melaleuca preissiana* woodland in the south, the understorey has been historically cleared, non-native trees planted, and there is a high presence of annual and perennial weeds. No conservation significant flora was observed, and the site is likely too degraded to support conservation significant annual species. The area represented poor foraging habitat for Black Cockatoos and Quenda and is likely unsuitable habitat for all conservation significant invertebrates and reptiles recorded in the area. Forrestdale Lake, located to the south of the site was also in a Degraded condition, although it did not have the same level of weed invasion as the survey site.

An assessment against the 10 clearing principles was undertaken, and it was determined that the proposed clearing was not likely to trigger any of the principles. Based on the outcomes of this reconnaissance flora survey it is not likely that the clearing of this vegetation will have a significant impact to the biodiversity of the local area.

Contents

1.0 Introduction

Natural Area Consulting Management Services (Natural Area) was commissioned by the City of Armadale to undertake a reconnaissance flora survey within a proposed clearing area between William and Alfred Skeet Ovals, Forrestdale. The survey area is approximately 5,250 m^2 of degraded vegetation approximately 23 km south south-west of the Perth Central Business District (Map 1). This survey was undertaken to inform a clearing proposal for the area.

1.1 Scope

Activities undertaken by Natural Area personnel included:

- desktop database searches to identify potential conservation significant flora species occurring within the proposed clearing area
- desktop search to determine habitat suitability of conservation significant flora potentially occurring within the proposed clearing area
- a reconnaissance survey of the site to assess habitat suitability of species and any conservation significant species presenting
- reporting outcomes of the survey.

2.0 Site Characteristics

The proposed clearing area is a narrow strip of vegetation located between William Skeet and Alfred Skeet Ovals, approximately 5,250 m^2 (Map 1).

2.1 Regional Context

According to Interim Biogeographical Regionalisation of Australia (IBRA) descriptions, Forrestdale is located in the Perth Swan Coastal Plain subregion (SW02). This area of the Swan Coastal Plain subregion is characterised by Banksia woodlands in sandy soils and paperbark in swampy areas (Mitchell, Williams & Desmond, 2002).

2.2 Climate

The climate experienced in the area is Mediterranean, with dry, hot summers and cool, wet winters. According to the Bureau of Meteorology (Perth Airport, Station ID 009021, 2019):

- average rainfall is 765.3 mm pa, with the majority falling between May and August;
- average maximum temperature ranges from 17.9 ^oC in winter to 31.9 ^oC in summer, with the highest recorded maximum being 46.7 ^oC;
- average minimum temperatures range from 8.0 ^oC in winter to 17.5 ^oC in summer, with the lowest recorded minimum being -1.3 ^oC; and
- predominant wind directions include morning easterlies and westerly sea breezes during summer months, with an average wind speed of 16.6 km/h and gusts of more than 100 km/h.

2.3 Vegetation Complex

The vegetation complex associated with the proposed clearing area is defined as the Southern River Complex, which is characterised by an open woodland of jarrah-marri-banksia in elevated areas and fringing *Eucalyptus rudis* and *Melaleuca rhaphiophylla* along streams and in wetland areas (Heddle, Loneragan & Havel, 1980).

2.4 Soil Types

One soil type was identified within the survey area using the NRInfo Portal (DPIRD, 2019), namely Bassendean B2 Phase (212Bs_B2) which is characterised by flat to very gently undulating sandplain with well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan 1-2 m.

3.0 Methodology

3.1 Desktop and Literature Review

The desktop flora survey was undertaken to determine the likely presence of conservation significant flora and threatened ecological communities within the survey area. A NatureMap (State) and Protected Matters Tool Search (PMST, Commonwealth) report for a 3 km buffer around the survey site was generated (DBCA, 2019a; DEE, 2019). A DBCA database search for conservation significant flora, fauna and ecological communities was also reviewed, including a buffer of 1.5 to 5 km depending on the number of records in the area (DBCA, 2019b). Soil and vegetation type were also determined prior to the site visit to assess the suitability of the area to conservation significant species. Photographs and descriptions of the conservation significant flora were sourced from FloraBase (DBCA, 2019c) or Natural Area's internal database and summarised in a table for ease of reference in the field (Appendix 1).

3.2 Field Survey

An on-ground reconnaissance flora survey was undertaken to determine vegetation type and condition, habit suitability for conservation significant flora species, and the presence of any perennial conservation significant species. The survey was undertaken in accordance with the *EPA Technical Guidance – Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment* (Environmental Protection Authority, 2016). Habitat suitability of conservation significant flora was assessed on the basis of the dominant soil type, vegetation type, and vegetation condition. Soil type was assessed on ground to determine clay-loam-sand consistency, rock type and content (%). Vegetation condition was assessed using the rating scale attributed to Keighery (1994) in Bush Forever Volume 2 (Government of Western Australia, 2000; Table 1). The vegetation type was determined using the structural classes described in Bush Forever Volume 2 (Government of Western Australia, 2000), and records dominant over storey, middle and understory species (Table 2).

An assessment of habitat suitability for conservation significant fauna outlined in the desktop survey results was also undertaken. All spatial field data was recorded on a tablet using Mappt software, the outcomes of which were used to provide graphical representation of results. Maps were generated using QGIS (V3.2) GIS software (2019), with aerial imagery sourced from Nearmap (2019).

3.3 Limitations

The survey was carried out mid-winter which is not the optimal time for assessing some flora species, particularly geophytes and annual species.

Table 1: Vegetation condition ratings

Category		Description
1	Pristine	Pristine or nearly so, no obvious signs of disturbance.
2	Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
3	Very Good	Vegetation structure altered obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
4	Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.
5	Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
6	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 or shrubs.

(Source: Government of Western Australia, 2000)

Table 2: Vegetation structural classes

Life Form/Height Class	Canopy Percentage Cover			
	100 – 70%	**70 – 30%**	**30 - 10%**	**10 – 2 %**
Trees over 30 m	Tall closed forest	Tall open forest	Tall woodland	Tall open woodland
Trees 10 – 30 m	Closed forest	Open forest	Woodland	Open woodland
Trees under 10 m	Low closed forest	Low open forest	Low woodland	Low open woodland
Tree Mallee	Closed tree mallee	Tree mallee	Open tree mallee	Very open tree mallee
Shrub Mallee	Closed shrub mallee	Shrub mallee	Open shrub mallee	Very open shrub mallee
Shrubs over 2 m	Closed tall scrub	Tall open scrub	Tall shrubland	Tall open shrubland
Shrubs 1 – 2 m	Closed heath	Open heath	Shrubland	Open shrubland
Shrubs under 1 m	Closed low heath	Open low heath	Low shrubland	Low open shrubland
Grasses	Closed grassland	Grassland	Open grassland	Very open grassland
Herbs	Closed herbland	Herbland	Open herbland	Very open herbland
Sedges	Closed sedgeland	Sedgeland	Open sedgeland	Very open sedgeland

(Source: Government of Western Australia, 2000)

4.0 Survey Results

4.1 Desktop survey

A review of NatureMap indicated 18 conservation significant flora species listed under the *Biodiversity Conservation Act 2016* (WA) as potentially occurring within 3 km of the site (DBCA, 2019a). A review of Protected Matters Search Tool (PMST) (DEE, 2019) indicated 13 threatened flora species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) as potentially occurring within a 3 km radius of the site (Table 3). The DBCA database search had records of 10 species of flora occurring within 2 km of the site (DBCA 2019b, Table 3). Species information, including description, habitat requirements and photographs (where possible) of the 26 conservation significant species found in the area was summarised into a reference sheet for the field survey; it was determined that the site conditions (soil type, drainage, location) may be suitable for 14 of these species (Table 3, Appendix 1).

Two threatened ecological communities (TECs) were listed in the PMST search; Banksia Woodlands of the Swan Coastal Plains and Claypans of the Swan Coastal Plain. It was determined that the site conditions may be suitable for Banksia Woodlands of the Swan Coastal Plain, an endangered TEC characterised by an overstory of *Banksia* species overstorey and a highly diverse shrub and herb layer (DEE, 2016). Additionally, Forrestdale Lake, located adjacent to the site, is listed as a wetland of international importance (Ramsar site), which is also protected under the *EPBC Act 1999*. The DBCA database search for Threatened and Priority Ecological communities confirmed that three records of Banksia Woodlands of the Swan Coastal Plain are within 200 m of the site.

NatureMap, PMST and DBCA database searches indicated the presence or potential presence of three mammal, seven bird, two reptile, and three invertebrate species. As the vegetation is located adjacent to Forrestdale Lake, many of the species captured by the databases prefer wetland and waterway habitat. It was determined that the site may be suitable for the following species:

- Carnaby's Cockatoo (*Calyptorhynchus latirostris*) – Endangered/Threatened
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) – Vulnerable/Threatened
- Quenda (*Isoodon fusciventer*) – Priority 4

Habitat suitability for the following conservation significant invertebrate and reptile species was also assessed:

- Swan Coastal Plain shield-backed trapdoor spider (*Idiosoma sigillatum*) – Priority 3
- a short tongued bee (*Neopasiphae simplicior*) – Critically Endangered/Threatened
- a short tongued bee (*Leioproctus douglasiellus*) – Critically Endangered/Threatened
- a short tongued bee (*Leioproctus contrarius*) – Priority 3
- Perth Slider (*Lerista lineata*) – Priority 3
- Black-striped Snake (*Neelaps calonotos*) – Priority 3

Table 3: Conservation significant flora, conservation code, and database results. Site conditions may be suitable for species highlighted in green

Name	Common Name	Cons. Code	NM	PMST	DBCA
Andersonia gracilis	Slender Andersonia	EN/T		X	
Austrostipa jacobsiana		CR/T		X	
Byblis gigantea	Rainbow Plant	P3	X		
Caladenia huegelii	Grand Spider Orchid	EN/T	X	X	
Diuris micrantha	Dwarf Bee-Orchid	VU/T		X	
Diuris purdiei	Purdie's Donkey Orchid	EN/T	X	X	X
Drosera occidentalis	Western Sundew	P4	X		X
Drakaea elastica	Glossy-leaved Hammer Orchid	EN/T	X	X	
Drakaea micrantha	Dwarf Hammer Orchid	VU/T	X	X	
Eucalyptus x balanites	Cadda Road Mallee	EN/T		X	
Eryngium pinnatifidum subsp*. Palustre*		P3	X		
Grevillea curviloba subsp. *incurva*	Narrow curved-leaf Grevillea	EN/T		X	
Jacksonia gracillima		P3	X		X
Jacksonia sericea	Waldjumi	P4	X		X
Lepidosperma rostratum	Beaked Lepidosperma	EN/T	X	X	X
Meionectes tenuifolia		P3	X		X
Ornduffia submersa		P4	X		X
Schoenus pennisetis		P3	X		X
Stylidium aceratum		P3	X		
Stylidium longitubum	Jumping Jacks	P4	X		X
Synaphea sp. *Fairbridge Farm*	Selena's Synaphea	CR/T		X	
Synaphea sp. *Serpentine*		CR/T		X	
Tripterococcus sp. *Brachylobus*		P4	X		X
Thelymitra stellate	Star Sun-orchid	EN/T		X	
Thysanotus anceps		P3	X		
Verticordia lindleyi subsp. *lindleyi*		P4	X		

4.2 Field Survey

The field survey was undertaken by botanists Harley Taylor and Sharon Hynes on the 2nd of July 2019. The soil type identified during the desktop survey was confirmed to be accurate, with well-draining, bleached grey sand noted on site. Vegetation condition ranged from Completely Degraded to Degraded, with a high level of invasive weeds dominating the understory and mature, non-native trees throughout the area (Map 1, Figure 1). The vegetation type was determined to be a mixed woodland of non-native *Eucalyptus* spp. over *Kunzea glabrescens* and *Jacksonia furcellata*, with an understorey of non-native Perennial Veldt Grass (*Ehrharta calycina*) and Pigface (*Carpobrotus edulis*) (Figure 1). Scattered native understorey species included *Corynotheca micrantha*, *Burchardia bairdiae*, and *Dianella revoluta*, and were predominantly located in the Degraded area of bushland. The north portion of the site is currently being maintained as a parkland with a playground (Figure 1). A list of the species noted during the site visit is provided in Table 4.

Based on the remnant native vegetation it is likely that the survey area was previously Banksia Woodland in the north and *Eucalyptus rudis* and *Melaleuca preissiana* woodland in the south, however a series of historic clearing events and non-native plantings have altered this community to its current state. It was determined that the survey site did not have a vegetation community consistent with the listing information for Banksia Woodland of the Swan Coastal Plain, nor does it satisfy the vegetation condition or size to trigger the *EPBC Act*.

Figure 1: Completely Degraded (left) and Degraded (right) vegetation condition and maintained parkland (bottom).

Map 1: Site Location and Vegetation Condition William and Alfred Skeet Ovals

0 25 50 m

N

Client: City of Armadale
Date: 15/07/2019
Created by: Harley Taylor

Image Source: nearmap 2019
Datum: GDA 94

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Table 4: Species noted during the site survey. * denotes a non-native species.

Species	Common Name	Comments
**Acacia longifolia*	Sydney Golden Wattle	
**Agonis flexuosus*	Peppermint Tree	Native to WA, planted in area
**Arctotheca calendula*	Cape Weed	
**Brachychiton populneus*	Kurrajong	
**Carpobrotus edulis*	Pigface	
**Cotula turbinata*	Funnel Weed	
**Ehrharta calycina*	Perennial Veldt Grass	
**Ehrharta longiflora*	Annual Veldt Grass	
**Eragrostis curvula*	African Lovegrass	
**Eucalyptus caesia*	Silver Princess	Native to WA, planted in area
*Non-native *Eucalyptus* spp.	Gum Trees	
**Freesia alba x leichtlinii*	Freesia	
**Oxalis pes-caprae*	Soursob	
**Romulea rosea*	Guildford Grass	
**Schinus terebinthifolia*	Brazilian Pepper Tree	
**Stellaria media*	Chickweed	
**Ursinia anthemoides*	Ursinia	
Acacia pulchella	Prickly Moses	
Adenanthos cygnorum	Woolly Bush	
Banksia attenuata	Slender Banksia	
Burchardia bairdiae		
Conostylis aculeata	Prickly Conostylis	
Corynotheca micrantha	Sand Lily	
Dianella revoluta	Blueberry Lily	
Eucalyptus marginata	Jarrah	
Eucalyptus rudis	Flooded Gum	
Gompholobium tomentosum	Hairy Yellow Pea	
Jacksonia furcellata	Grey Stinkwood	
Kunzea glabrescens	Spearwood	
Lomandra caespitosa	Tufted Mat Rush	
Loxocarya cinerea		
Lyginia imberbis		
Macrozamia riedlei	Zamia	
Melaleuca preissiana	Moonah	
Nuytsia floribunda	Christmas Tree	
Patersonia occidentalis	Purple Flag	
Xanthorrhoea preissii	Grass Tree	

The site was also inspected for conservation significant fauna habitat. Although mature *Eucalyptus* spp. were present, they are non-native species with small fruits, and represent poor quality foraging habitat. No evidence of feeding, roosting or nesting by black cockatoos was noted on the site. There was no evidence of quenda diggings or suitable nesting habitat. Swan Coastal Plain shield-backed trapdoor spider (*Idiosoma sigillatum*) predominantly use Sheoak (*Allocasuarina* and *Casuarina*) needles to form a burrow (Curtin University, 2019); as these plant species were not found on site it can be concluded that the habitat is not suitable for this species. The conservation significant short tongue bees (*Neopasiphae simplicior, Leioproctus douglasiellus* and *L. contrarius*) have been noted on perennial (*Goodenia filiformis*) and annual (*Lobelia tenuior, Velleia* sp.*, Anthotium junciforme*) herbs (DEE, 2008; DEE 2013). *Goodenia filiformis* was not noted on site, and the area is likely too degraded to support these annual herbs outlined; this area of remnant vegetation is likely unsuitable habitat for these conservation significant invertebrate species.

Of the conservation significant reptiles outlined in the database searches the Perth Slider (*Lerista lineata*) prefers patchy, well developed litter and is typically found in more coastal heath and shrublands, although it has been recorded in Forrestdale Lake previously (Maryan *et al.* 2015). The Black-striped Snake (*Neelaps calonotos*) has been recorded in *Melaleuca* wetlands and Banksia Woodlands previously (Valentine *et al.* 2009). Based on the understorey species composition and vegetation condition it is likely this site is not suitable habitat for these species.

The remnant vegetation to the south of the survey area was also inspected. The area is part of Forrestdale Lake, a Wetland of International Importance, and consisted of a degraded *Melaleuca preissiana* woodland, with a weedy understorey (Figure 2). Unlike the survey site, this area did not consist of a high level of perennial grasses, likely due to a fire in January 2016.

Figure 2: Vegetation adjacent to survey site (Forrestdale Lake).

5.0 Conclusion

The reconnaissance flora survey carried out within the vegetation separating William and Alfred Skeet Ovals in Forrestdale indicated the presence of a highly modified and degraded area of vegetation. Although this area may have provided a habitat corridor between the Jandakot Region Park north of Armadale Road and Forrestdale Lake previously, Armadale Road has likely restricted terrestrial animal movement, and the upgrade to a dual carriageway will restrict it further.

No conservation significant flora or threatened ecological communities were observed during the survey and, based on the vegetation condition, it is not likely that annual conservation significant species will be present in spring.

Based on the outcomes of this reconnaissance flora survey it is not likely that the clearing of this vegetation will have a significant impact to the biodiversity of the local area.

5.1 Clearing Principles

Under Schedule 5 of the *Environment Protection Act 1986* (WA) there are ten principles for clearing of native vegetation in Western Australia that need to be assessed in order for a clearing permit to be issued. If any of these principles are triggered the Department of Water and Environmental Regulation can refuse to issue a clearing permit. Table 5 shows the survey areas in relation to the clearing principles. Based on the flora survey, clearing of the site is unlikely to trigger any of the clearing principles.

Table 5: The ten clearing principles and assessment the site.

Clearing Principle		Assessment
Native vegetation should not be cleared if:		
a)	it comprises a high level of biological diversity	There was a low native species diversity in the area surveyed
b)	it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia	Poor quality of vegetation indicates a low level of habitat suitability for native fauna; flora species associated with conservation significant species were not present.
c)	it includes, or is necessary for the continued existence of, rare flora	No declared rare flora was recorded within site, and evidence of historical clearing indicate it is unlikely that annual rare flora will be present in spring.
d)	it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community	No threatened ecological communities were recorded.
e)	it is significant as a remnant of native vegetation in an area that has been extensively cleared	As the survey site both small (~0.5 ha) and highly modified/degraded it is not likely to be considered a significant patch of remnant vegetation.

Clearing Principle		Assessment
f)	it is growing in, or in association with, an environment associated with a watercourse or wetland	Although the site is located adjacent to Forrestdale Lake the soil type and species composition are significantly different from the adjacent wetland.
g)	the clearing of the vegetation is likely to cause appreciable land degradation	Land is already in a Degraded to Completely Degraded condition, with modified landscapes adjacent.
h)	the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area	Land adjacent is all highly modified (ovals and roads). Forrestdale Lake is located to the south; clearing is likely to have no impact to this area, and may even have a positive impact due to potential weed spread from this site.
i)	the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water	No, as there was no surface water nearby. Due to the small proposed clearing area there will not be a significant change to the vegetation types of the landscape to affect underground water.
j)	the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.	Due to the small proposed clearing area there will not be a significant change to the vegetation types of the landscape to affect flooding.

6.0 References

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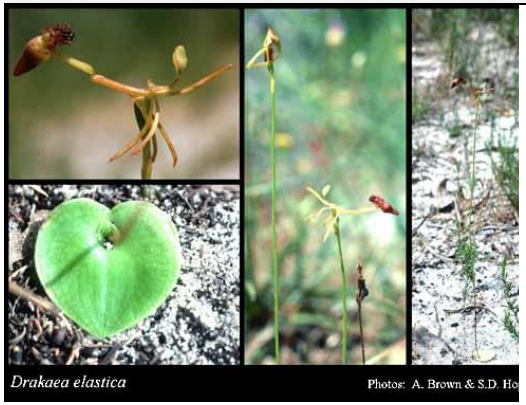
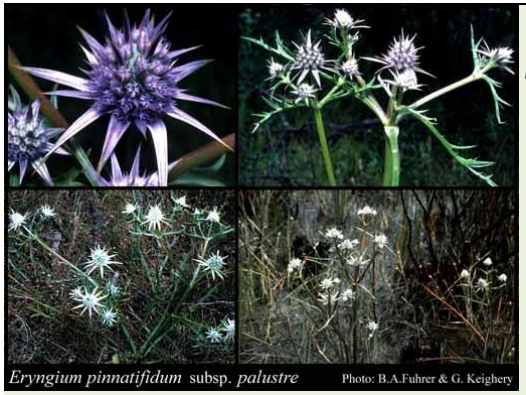
Appendix 1: Conservation Significant Flora Summary

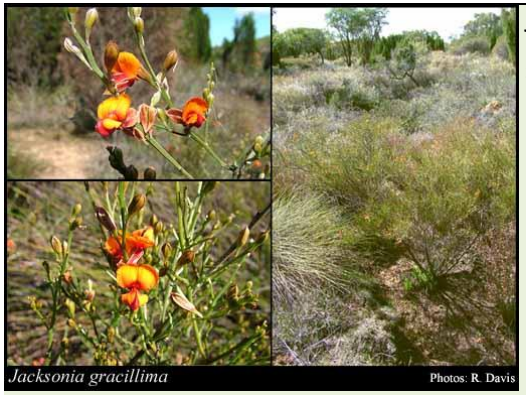
Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
	*Andersonia gracilis* (Slender Andersonia)	Slender erect or open straggly shrub, 0.1-0.5(-1) m high. Fl. white-pink-purple	Sep to Nov	White/grey sand, sandy clay, gravelly loam. Winter-wet areas, near swamps	EN	Y	Soil type and drainage may be suitable, occurs in adjacent LGA. Site may be too degraded.
  (Natural Area)	*Austrostipa jacobsiana*	Perennial rhizomatous grass to 1.2 metres tall including flower spikes. The leaves are up to 45cm long, folded and swollen giving a terete appearance. The abaxial surface is strongly ribbed. The inflorescence is 10−20cm long. (Williams 2011).	Oct- Nov Fruit matures in November–December	Low-lying area, fringing wetland vegetation	T, CR	Y	Found on roadside in one population so can exist in a degraded location, occurs in LGA

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
	*Byblis gigantea* (Rainbow Plant)	Small, branched perennial, herb (or sub-shrub), to 0.45 m high. Fl. pink-purple/white,	Sep to Dec or Jan	Sandy-peat swamps. Seasonally wet areas.	P3	N	Soil type mostly unsuitable
	*Caladenia huegelii* (Grand Spider Orchid)	Tuberous, perennial herb, 0.25 – 0.6m high. Green, cream and red flowers.	September to October.	Grey or brown sand, clay loam.	T, EN	N	Soil type suitable and site is within the species natural distribution, site likely too degraded

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
	*Diuris micrantha* (Dwarf Bee-Orchid)	Tuberous, perennial, herb, 0.3-0.6 m high. Fl. yellow & brown	Sep to Oct	Brown loamy clay. Winter-wet swamps, in shallow water	VU	N	Soil type/drainage not likely to be suitable
	*Diuris purdiei* (Purdie's Donkey Orchid)	Tuberous, perennial, herb, 0.15-0.35 m high. Fl. yellow	September to October	Grey-black sand, moist. Winter-wet swamps.	T, EN	Y	Soil type and drainage may be suitable. Site is within the species natural distribution.
Not available	*Dosera occidentalis* (Western Sundew)	Fibrous-rooted, rosetted perennial, herb, to 0.01 m high. Fl. pink/white	Nov to Dec.	Sandy & clayey soils. Swamps & wet depressions	P4	Y	Soil types and drainage suitable, found in City of Armadale

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
	*Drakaea elastica* (Glossy-leaved Hammer Orchid)	Tuberous, perennial, herb, 0.12-0.3 m high. Fl. red & green & yellow	October to November	White or grey sand. Low-lying situations adjoining winter-wet swamps	T, EN	N	Site likely too degraded
	*Drakaea micrantha* (Dwarf Hammer Orchid)	Tuberous, perennial, herb, 0.15-0.3 m high. Fl. red & yellow	September to October	White-grey sand	T, VU	N	Site likely too degraded

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
	*Eucalyptus x balanites* (Cadda Road Mallee)	(Mallee), to 5 m high, bark rough, flaky. Fl. white	Oct to Dec or Jan to Feb	Sandy soils with lateritic gravel.	EN	N	Soil type unsuitable, drainage unsuitable.
	*Eryngium pinnatifidum* subsp. *Palustre*	Erect perennial, herb, 0.15-0.5 m high. Fl. white/blue	Oct to Nov.	Claypans, seasonally wet flats.	P3	Y	Soil type may be suitable, recorded in adjacent LGA

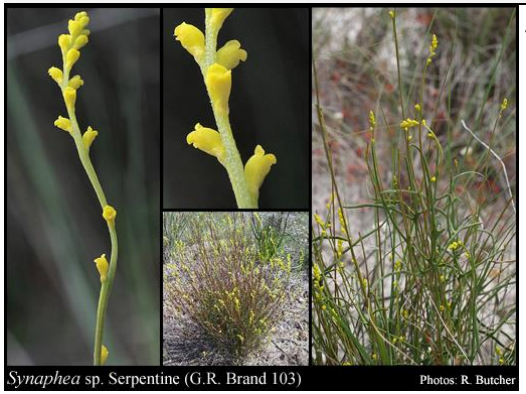
Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
	*Grevillea curviloba* subsp. *incurva* (Narrow curved-leaf Grevillea)	Prostrate to erect shrub, 0.1-2.5 m high. Fl. white-cream, Aug to Sep	Aug to Sep	Sand, sandy loam. Winter-wet heath.	EN	N	Drainage suitable, but well outside recorded extent.
	*Jacksonia gracillima*	Decumbent shrub, ascending branches to 50 cm, plant to 1.5 m across. Flowers yellow-red.	Oct-Nov	With Melaleuca preissiana, low sedges, damplands	P3	Y	Occurs nearby, soil type suitable

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
	*Jacksonia sericea* (Waldjumi)	Low spreading shrub, to 0.6 m high. Fl. orange, usually	Dec or Jan to Feb.	Calcareous & sandy soils.	P4	N	Soil type not suitable, typically occurs towards coast further.
 **(Natural Area)**	*Lepidosperma rostratum* (Beaked Lepidosperma)	Rhizomatous, tufted perennial, grass-like or herb (sedge), 0.5 m high. Fl. brown		Peaty sand, clay	T	Y	Soil type, drainage and location may be suitable.

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
 **(Kevin Theile)**	*Meionectes tenuifolia*	None Available – from Halgoraceae family	None Available	None Available	P3	N/A	

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
 (Bryony Fremlin)	Ornduffia submersa	Small aquatic waterlily-like plant with hairy white flowers and glossy leaves	Oct-Dec	Swamps	P4	Y	Found in Forrestdale and Kenwick, soil type and drainage suitable
 (Natural Area)	*Schoenus pennisetis*	Tufted annual, grass-like or herb (sedge), 0.05-0.15 m high. Fl. purple-black	Aug to Sep	Grey or peaty sand, sandy clay. Swamps, winter-wet depressions	P3	Y	Soil conditions suitable, found within LGA
Not available	*Stylidium aceratum*	Fibrous rooted annual, herb, 0.05-0.09 m high, leaves spathulate. Fl. pink/white	Oct- Nov	Sandy soils, Swamp heathland	P3	Y	Soil type suitable, occurs within City of Armadale

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
	*Stylidium longitubum* (Jumping Jacks)	Erect annual (ephemeral), herb, 0.05-0.12 m high. Fl. pink,	Oct-Dec	Sandy clay, clay. Seasonal wetlands	P4	Y	Soil type suitable, occurs within the City of Armadale
	*Synaphea* sp Fairbridge Farm (Selena's Synaphea)	Dense, clumped shrub, to 0.3 m high, to 0.4 m wide. Fl. yellow	Oct	Sandy with lateritic pebbles. Near winter-wet flats, in low woodland with weedy grasses.	CR	N	Drainage suitable but soil type unsuitable

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
	*Synaphea* sp Serpentine	perennial, erect, clumped shrub to 60cm high by 50cm wide with yellow flowers borne on long spikes well above the leaves.	Aug-Nov	grey-brown sandy-loam or clay in seasonally wet areas	CR	N	Drainage suitable, but occurs further to the south in narrow geographic range
Not available	*Tripterococcus* sp. Brachylobus	Perennial, herb, to 1 m high. Fl. yellow-green	Oct to Nov.	black or peaty sand; winter wet flats	P4	Y	Found in Armadale LGA, soil type and drainage may be suitable
	*Thelymitra stellata*	Tuberous, perennial, herb, 0.15-0.25 m high. Fl. yellow & brown	Oct to Nov	Sand, gravel, lateritic loam	EN	N	Soil type unsuitable

Picture	Common Name	Description	Flowering Period	Habitat Type	Cons Code	Likelihood (Y/N)	Comment
	*Thysanotus anceps*	Rhizomatous, leafless perennial, herb, to 0.4 m high. Fl. purple	Oct to Dec	White or grey sand, lateritic gravel, laterite	P3	N	Soil type unsuitable
	*Verticordia lindleyi* subsp. *lindleyi*	Erect shrub, 0.2-0.75 m high. Fl. pink	May or Nov to Dec or Jan	Sand, sandy clay. Winter-wet depressions.	P4	Y	Occurs in LGA, drainage and soil type suitable

Source: Florabase (DBCA 2019b) or Natural Area unless otherwise noted