

MEMORANDUM

TO

[REDACTED]
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FROM

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[REDACTED]

DATE

6 December 2019

SUBJECT

City of Cockburn Rose Shanks Reserve Vegetation Condition and Weed Mapping 2019 Final Report

1.1 INTRODUCTION

1.1.1 Project background

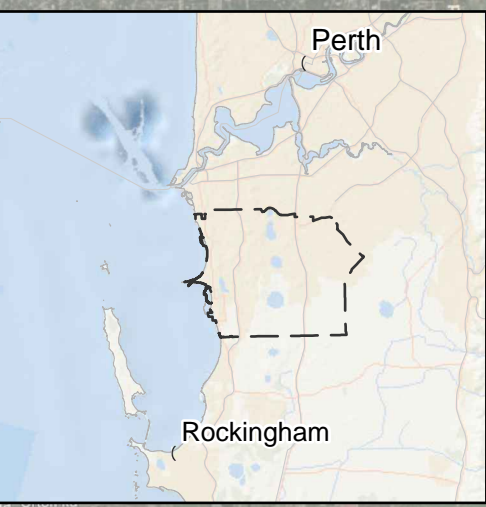
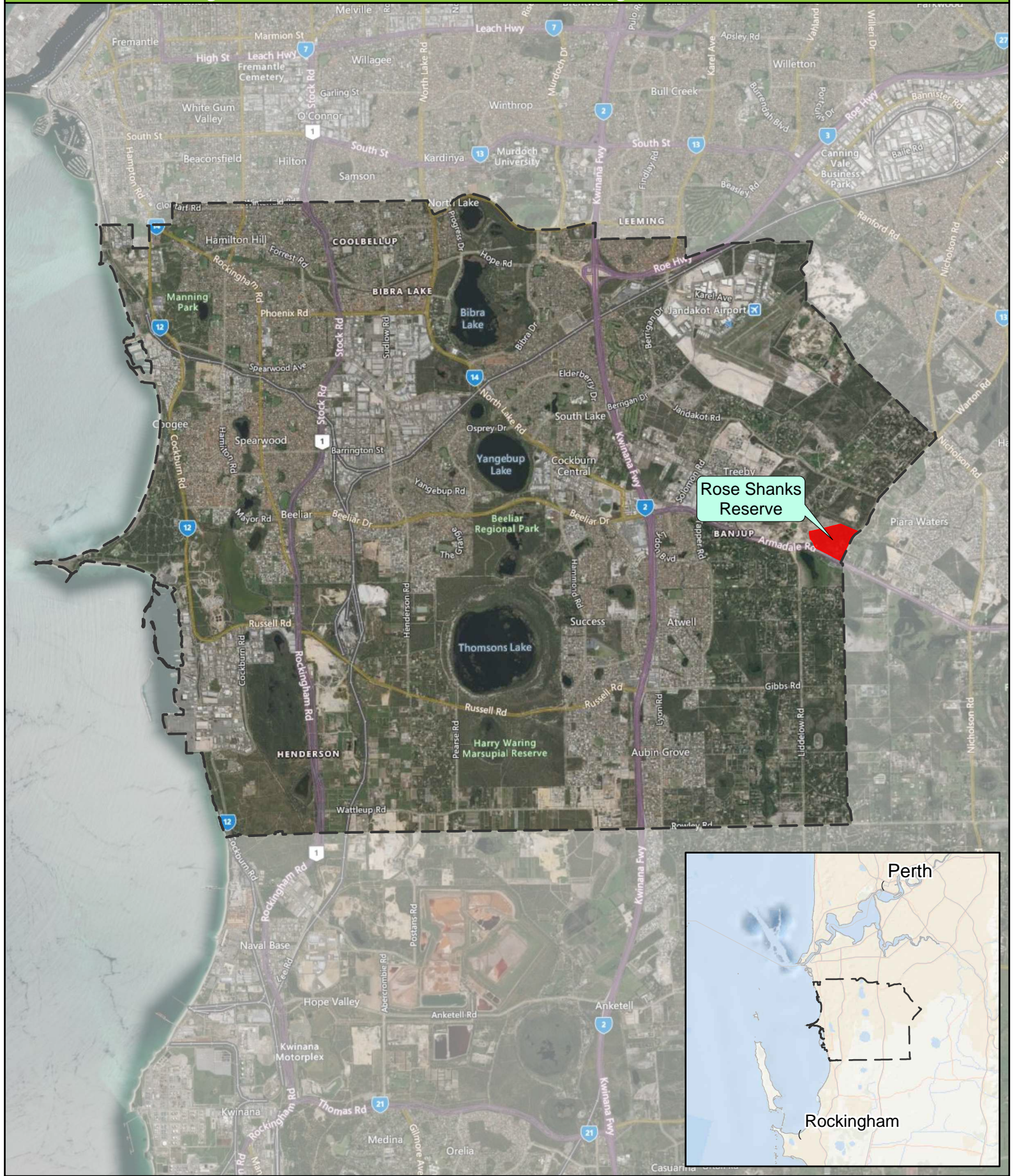
The City of Cockburn (the City) vegetation community, condition and weed mapping program is part of an ongoing project to progressively assess the condition and values of the City's reserves to guide long-term management and enhancement of biodiversity values in the City's natural areas. By achieving this, the City can observe changes over time regarding vegetation condition and floristic community types to ensure that vegetation quality throughout the City is maintained or improved wherever possible. Weed mapping will allow the City to identify weed cover throughout conservation reserves, provide information on the success of control methods and to identify any new outbreaks of significant weed species.

Eco Logical Australia (ELA) was commissioned by the City to undertake a vegetation condition assessment, floristic community identification and weed mapping at Rose Shanks Reserve, an area of bushland 34.49 hectares in size located on the corner of Armadale Road and Warton Road in Treeby, Western Australia. This assessment was based on the Perth Biodiversity Project (PBP) Natural Area Initial Assessment (NAIA) Templates, Field Assessments A and B. An Assessment Summary and Viability Estimate was completed for this reserve. This assessment provides an initial basis for prioritising a site for protection and management based on its relative ecological values and shows which Local Significant Criteria are met by a natural area. Any natural area confirmed as meeting one or more of the ecological criteria in the Assessment Summary are then referred to as being a Locally Significant Natural Area (LSNA).

The scope for this project included:

- Weed mapping of targeted species;
- Mapping and assessment of Rose Shanks Reserve in accordance with the PBP NAIA Templates (Assessment A and B); and
- A report outlining the project background, survey methodology, survey results (including the NAIA template and figures), assessment summary and viability estimates, and a discussion of findings.

Location of surveyed conservation reserves in the City of Cockburn



- Legend**
- Reserve Footprint
 - City of Cockburn LGA

0 0.75 1.5 3
 Kilometres
 Datum/Projection:
 GDA 1994 MGA Zone 50

1.1.2 Climate

The Swan Coastal Plain experiences a warm, Mediterranean climate with hot dry summers and mild wet winters (Mitchell et al. 2002). Climatic data is based on records from nearby Bureau of Meteorology (BoM) weather stations. The nearest weather station to the survey area is the Jandakot Aero weather station (station number 9172, rainfall data 1972 - current) which is located approximately 4 km to the north/northwest of the survey area.

The area receives an average annual rainfall of 820.3 millimetres (mm), with most rainfall occurring during the winter months of June, July and August (153.5 mm, 173.1 mm and 129.1 mm respectively; BoM 2019). Jandakot Aero weather station received a total of 200 mm of rainfall in the three months prior to the field survey (August-October), which lower than the historical average for the same period (259.3 mm; BoM 2019). Local rainfall data for the twelve months prior to the field survey compared to the average annual rainfall data is presented in **Table 1**.

Table 1: Rainfall data recorded at the Jandakot weather station (9172) 12 months prior to the field survey compared to the long-term average (BoM 2019)

Month	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Total monthly rainfall 2018-19 (mm)	11.0	1.8	4.0	1.8	7.4	43.0	24.4	204.4	132.8	132.4	31.2	36.4	630.6
Average monthly rainfall 1972-current	27.1	10.7	16.5	17.6	16.1	41.6	104.8	153.5	173.1	129.1	84.2	46.0	820.3

1.1.3 Literature review and conservation significant flora and fauna

A Department of Biodiversity, Conservation and Attractions (DBCA) NatureMap search and a Commonwealth *Environment Protection and Biodiversity Act 1999* (EPBC Act) Protected Matters Search Tool (PMST) search were conducted to obtain a list of conservation significant flora and fauna species that have previously been recorded within a 10 km radius of the survey area (DBCA 2007-2019; Department of the Environment and Energy [DotEE] 2019). Conservation significant flora and fauna species include species listed under the EPBC Act, the State *Biodiversity Conservation Act 2016* (BC Act) and as Priority species listed by DBCA. Marine mammals and reptiles were excluded from these searches as they do not occur within Rose Shanks Reserve.

A total of 47 conservation significant flora species have been previously recorded within 10 km of Rose Shanks Reserve. Of these, 17 species are listed as Threatened under the EPBC Act and BC Act and 30 as Priority (P) species by DBCA; comprising two P1, four P2, thirteen P3 and eleven P4 species.

A total of 68 conservation significant fauna species have been previously recorded within 10 km of Rose Shanks Reserve. Of these, 20 species are listed as Threatened under the EPBC Act and BC Act, 30 species are listed as Migratory species under the EPBC Act, two species are listed as Special fauna under the BC Act and 18 species are listed as Priority species by DBCA; comprising one P1, seven P3 and ten P4 species. Database searches are presented in **Appendix A**, **Appendix B** and **Appendix C**.

1.2 FIELD SURVEY METHODS

1.2.1 Survey team and timing

The field survey was conducted by Daniel Marsh (Botanist), Jeni Morris (Ecologist) and Sarah Muller (Environmental Scientist) on the 19th and 20th November 2019. The survey team's qualifications and relevant experience are listed in **Table 2** below.

Table 2: Field staff qualifications and experience

Name	Qualification	Flora licence	Relevant experience
Daniel Marsh	BSc. Hons. Biological Sciences (Murdoch University 2001)	Flora collection: FB62000074 DRF licence: TFL 14-1920	Daniel has over 10 years' experience conducting botanical surveys and vegetation monitoring on the Swan Coastal Plain.
Jeni Morris	BSc. Conservation and Wildlife Biology (Murdoch university 2015)	Flora collection: FB62000070 DRF licence: TFL 13-1920	Jeni has four years' experience undertaking flora and vegetation surveys for ELA. Jeni conducted the Vegetation Condition and Bushland Weed Assessment for the City of Cockburn in 2018, including undertaking the field survey, report preparation and completion of NAIA templates.
Sarah Muller	BSc. Environmental Science, and Conservation and Wildlife Biology (Murdoch University 2016)	Flora collection: FB62000011 DRF licence: TFL 12-1920	Sarah joined ELA as an Environmental Scientist in 2018. Sarah conducted the Vegetation Condition and Bushland Weed Assessment for the City of Cockburn in 2018, including undertaking the field survey and assisting in report and NAIA template preparation.

1.2.2 Vegetation community and condition mapping

Mapping and assessment of vegetation communities and condition was undertaken using the PBP NAIA Templates. Vegetation communities were assessed and mapped based on dominant species present, landform, vegetation structural classes and soil type. Vegetation condition was described using the Keighery (1994) condition scale. NAIA Field Assessment Templates A and B were completed for Rose Shanks Reserve.

Assessment template A required the following information to be recorded:

- Delineation and mapping of each vegetation community based on 10 metre (m) x 10 m quadrats, including species inventory;
- Inventory of weed species and distribution patterns;
- Fauna and fungi, with consideration of fauna habitat values, with particular emphasis on Black Cockatoos, bandicoots and any other significant or Priority species;
- Vegetation health and condition;
- Disturbance factors and threatening processes;
- Management infrastructure and recommendations for management; and
- Social significance values and surrounding land uses.

Assessment template B was only completed if significant flora or fauna species, and/or ecological communities were recorded. This included species and communities listed under the EPBC Act, BC Act or by DBCA.

Each vegetation community was mapped based on a minimum of one (1) quadrat per vegetation community. Quadrats previously established by ELA in 2015 were revisited for consistency between survey periods. All native taxa within the quadrat were identified and recorded. In the event that taxa could not be identified in the field, specimens were collected and tagged for submission to the City.

The north-west corner of each quadrat was permanently marked with a stainless-steel fence dropper with a yellow cap. Quadrat photos were taken from the permanent north-west marker. Two maps of Rose Shanks Reserve were produced detailing vegetation condition and vegetation communities.

1.2.3 Weed mapping

Weed species were recorded using point and/or density data for specified weed species in categories of Woody, Bulbous, Grass, Aquatic and Other, as shown in **Table 3**. Where density mapping applied, four density categories were used: <5 %, 6 – 30 %, 31 – 60 % and > 61 %.

Weed species encountered that were not on the City of Cockburn target list and are currently listed as Declared Pests under the State *Biosecurity and Agriculture Management Act 2007* (BAM Act) or as a Weed of National Significance (WoNS) were also recorded and mapped.

The weed mapping included:

- Field inspection to identify presence of weeds and to determine the need for collection of either point or density data for each weed species; and
- Development of up to six weed maps, comprising:
 - one each of the five weed types; Woody, Bulbous, Grass, Aquatic and Other; and
 - one combined % weed cover.

The following guidelines were used for point and density mapping:

- Scattered individuals in a small area - less than ten per 100 m² were recorded as a point;
- Scattered individuals in a large area - more than 20 per 400 m² plus were recorded as a density;
- Clumps of Bulbous weeds (e.g. African Cornflag) were recorded as a single point per clump;
- Rhizomatous grasses (Couch, Kikuyu and Buffalo) were mapped as a single unit; and
- Fumaria and Lachenalia species were mapped as a single unit.

The following methods were used to determine the combined % weed cover figures:

- Weed cover ranges and percentages were assigned a numerical value in order to allow for the summation of covers:
 - <5% = 2.5;
 - 6-30% = 18.5;
 - 31-60% = 45.5; and
 - >61% = 79.5.
- A union process was undertaken in ArcMap 10.2 to ‘intersect’ all weed cover polygons with each other. This created unique polygons for every overlap area yet retained all the original cover values.
- A dissolve was undertaken on the “Shape_Area” field in order to aggregate each unique polygon. The statistics feature of the dissolve tool was set to the numerical cover field and a

'sum' statistics type was utilised. This summed all numerical cover values together for each group of unique polygons resulting from the union, ultimately providing a single polygon with a summed cover value for each weed cover polygon.

Encountered target weed species were recorded by taking a point location, using a Panasonic Toughbook tablet, of each individual and/or a centroid location for a group of individuals. The Panasonic Toughbook tablets can have errors in accuracy of between 3-20 m (subject to availability of satellites on the day). When a large population was encountered, the population boundary was mapped on a hard copy map and later digitised to record a polygon. The software used to collect the point data was the ArcGIS Collector app, which has been developed by Environmental Systems Research Institute (ESRI).

Table 3: Weed species targeted within Rose Shanks Reserve in the City of Cockburn

Weed type	Scientific name	Common name	
Grass weed	<i>*Ammophila arenaria</i>	Marram Grass	
	<i>*Cenchrus</i> sp.	Buffel Grass, Burr Grass	
	<i>*Cortaderia selloana</i>	Pampas Grass	
	<i>*Hyparrhenia hirta</i>	Tambookie Grass	
	<i>*Ehrharta villosa</i>	Pyp Grass	
	<i>*Eragrostis curvula</i>	African Lovegrass	
	<i>*Ehrharta calycina</i>	Perennial Veldt Grass	
	<i>*Pennisetum setaceum</i>	Fountain Grass	
	<i>*Thinopyrum distichum</i>	Sea Wheat	
	<i>*Cynodon dactylon</i>	Couch	Rhizomatous grass
	<i>*Pennisetum clandestinum</i>	Kikuyu	
<i>*Stenotaphrum secundatum</i>	Buffalo		
Woody weeds	<i>*Acacia longifolia</i>	Sydney Golden Wattle	
	<i>*Ficus carica</i>	Edible Fig	
	<i>*Leptospermum laevigatum</i>	Victorian Tea Tree	
	<i>*Melaleuca nesophila</i>	Mindiyed	
	<i>*Melia azedarach</i>	Cape Lilac	
	<i>*Olea europaea</i>	Olive	
	<i>*Schinus terebinthifolia</i>	Japanese Pepper	
Bulbous Weeds	<i>*Asphodelus fistulosus</i>	Onion Weed	
	<i>*Chasmanthe floribunda</i>	African Cornflag	
	<i>*Ferraria crispa</i>	Black Flag	
	<i>*Freesia hybrid</i>	Freesia	
	<i>*Gladiolus caryophyllaceus</i>	Gladiolus	
	<i>*Lachenalia reflexa, Lachenalia</i> sp.	Yellow Soldiers, Soldiers	
	<i>*Moraea flaccida</i>	One-leaf Cape Tulip	
	<i>*Trachyandra divaricata</i>	Dune Onion Weed	
	<i>*Watsonia meriana</i> subsp. <i>bulbillifera</i>	Watsonia	
<i>*Zantedeschia aethiopica</i>	Arum Lily		

Weed type	Scientific name	Common name
Other weeds	<i>*Anredera cordifolia</i>	Potato Creeper, Madeira Vine
	<i>*Asparagus asparagoides</i>	Bridal Creeper
	<i>*Cakile maritima</i>	Sea Rocket
	<i>*Carpobrotus edulis</i>	Pigface
	<i>*Cirsium vulgare</i>	Spearthistle
	<i>*Echium plantagineum</i>	Paterson's Curse
	<i>*Emex australis</i>	Doublegee
	<i>*Euphorbia paralias</i>	Sea Spurge
	<i>*Euphorbia terracina</i>	Geraldton Carnation
	<i>*Foeniculum vulgare</i>	Fennel
	<i>*Fumaria bastardii, *F. capreolata, *F. muralis</i>	Fumitory
	<i>*Gomphocarpus fruticosus</i>	Narrow-leaf Cotton Bush
	<i>*Lupinus cosentinii</i>	Sandplain Lupin
	<i>*Juncus acutus</i>	Spiny Rush
	<i>*Pelargonium capitatum</i>	Rose Pelargonium
	<i>*Opuntia stricta</i>	Prickly Pear
	<i>*Persicaria maculosa</i>	Redshank
	<i>*Raphanus raphanistrum</i>	Wild Raddish
	<i>*Ricinus communis</i>	Castor Oil
	<i>*Rubus discolor</i>	Blackberry
<i>*Tetragonia decumbens</i>	Sea Spinach	
<i>*Tribulus terrestris</i>	Caltrop	
<i>Typha orientalis#</i>	Bulrush	
<i>*Vicia sativa</i>	Vetch	
Aquatic weeds	<i>*Bacopa monnieri</i>	Bacopa
	<i>*Eichhornia crassipes</i>	Water Hyacinth
	<i>*Hydrocotyle bonariensis</i>	Large-leaf Pennywort
	<i>*Limnobium laevigatum</i>	Amazon Frogbit

Note: *Typha orientalis* has undergone a reclassification as naturalised or native in parts of WA. However, mapping occurrences of *T. orientalis* were still undertaken for management consideration.

1.2.4 Viability estimate and Local Significance Criteria

The Assessment Summary and Viability Estimate template was completed following completion of the desktop and field assessments. Rose Shanks Reserve was measured against the ecological criteria specified in the template to determine if the reserve met Local Significance Criteria, and therefore representative of an LSNA. The same criteria were utilised to determine the priority level for protection and management based on their relative ecological values. LSNAs are assigned a primary Priority rating of 1 (A or B), 2 or 3 based on the ecological values described by the Local Significance Criteria and are prioritised in that order (Molly et al. 2007). Priority 1A LSNAs are 'natural areas that are of high value in a regional (or greater) context for the ecological values, even if this has not been formally recognised in Government legislation and/or policy' (Molly et al. 2007). Priority 1A LSNAs are areas that:

- Meet any of the regional representation criteria (except for Criteria 1 a) iii);
- Meet any of the rarity criteria;
- Are part of a regional ecological linkage; or
- Meet any of the criteria for protection of wetland, streamline and estuarine fringing vegetation and coastal vegetation.

To determine the Local Significance Criteria, the PBP spatial and statistical analysis of 2018 remnant vegetation extent data by vegetation complexes and administrative categories across the Interim Biogeographic Regionalisation for Australia (IBRA) sub-regions and in Perth and Peel regions, was utilised (Government of Western Australia 2017).

1.2.5 Limitations

Survey limitations are discussed in **Table 4** below.

Table 4: Survey limitations

Constraint	Limitations
Sources of information	<p>Not a constraint: The Swan Coastal Plain has been relatively well surveyed, with extensive survey work occurring due to the ongoing urban development of the Perth metropolitan area.</p> <p>Broad-scale vegetation mapping at a scale of 1:1,000,000 was available. Land system mapping at a scale of 1:2,000,000 and soil and landform mapping was also available. The information which was available was sufficient and as such sources of information were not considered a major limitation.</p>
Scope of work	<p>Not a constraint: The scope of work was adequate to undertake the NAIA and to identify conservation significant flora species.</p>
Completeness of survey	<p>Not a constraint: The survey area was surveyed in a targeted fashion in order to collect sufficient data to determine vegetation communities, condition and conservation significant flora present within the survey area.</p>
Intensity of survey	<p>Not a constraint: In order to describe the vegetation communities a minimum of one quadrat was installed per vegetation community within each reserve. This is a suitable intensity to complete the NAIA assessment.</p>
Timing, weather, season, cycle	<p>Not a constraint: The survey was conducted in November 2019. A total of 200 mm of rain fell in the three months leading up to the survey, which is also comparable than the historical average of 259.3 mm (BoM 2019). The amount of rainfall received prior to the field survey was sufficient for flowering for most species during the spring season.</p>
Disturbances	<p>Not a constraint: The survey area has been subject to a number of disturbances, including weed invasion, clearing, proliferation of track and rubbish dumping. These disturbances did not negatively impact the ability to meet objectives outlined in the scope of works.</p>
Resources	<p>Not a constraint: The field staff undertaking the surveys were suitably qualified to undertake the assessment. The field survey was undertaken using Panasonic Toughbook tablets operating the ArcGIS Collector application. These units can have errors in accuracy between 3-20 m subject to availability of satellites on the day.</p>
Accessibility/remoteness	<p>Not a constraint: All relevant areas of the reserve were easily accessed and able to be surveyed.</p>

1.3 RESULTS AND DISCUSSION

1.3.1 Vegetation community and condition

A completed NAIA Template A and B for Rose Shanks Reserve is presented in **Appendix D**. A total of two vegetation communities were delineated and mapped within Rose Shanks Reserve, as shown in **Table 5** and in **Figure 2**. Both vegetation communities are inferred to represent floristic aspects of the *Banksia Woodlands of the Swan Coastal Plain ecological community*, listed as Threatened under the EPBC Act (TSSC 2016).

Table 5: Vegetation communities recorded within Rose Shanks Reserve

Image	Vegetation community	Area (ha) within the survey area
	<p>BaBmLW: <i>Banksia attenuata</i> and <i>B. menziesii</i> low woodland over <i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i>, <i>Allocasuarina humilis</i> and <i>Eremaea pauciflora</i> var. <i>pauciflora</i> tall sparse shrubland over <i>Hibbertia hypericoides</i>, <i>Hibbertia subvaginata</i> and <i>Scholtzia involucrata</i> low sparse shrubland over <i>Lyginia barbata</i>, <i>Stylidium repens</i> and <i>Desmocladius asper</i> mid sparse forbland over <i>Amphipogon turbinatus</i> and <i>*Briza maxima</i> low sparse grassland.</p>	<p>26.12</p>
	<p>BmAfEmLW: <i>Banksia menziesii</i>, <i>Allocasuarina fraseriana</i> and <i>Eucalyptus marginata</i> subsp. <i>marginata</i> low woodland over <i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i> tall sparse shrubland over <i>Hypocalymma robustum</i> and <i>Stirlingia latifolia</i> mid sparse shrubland over <i>Hibbertia hypericoides</i>, <i>Scholtzia involucrata</i> and <i>Xanthorrhoea preissii</i> low sparse shrubland over <i>Lyginia barbata</i>, <i>Dasyopogon bromeliifolius</i> and <i>Desmocladius asper</i> low sparse forbland over <i>Amphipogon turbinatus</i>, <i>*Ehrharta calycina</i> and <i>*Briza maxima</i> low sparse grassland.</p>	<p>3.73</p>

Natural areas (bushland) account for 86.5% (29.84 ha) of the total survey area, with the remaining 13.5% (4.65 ha) comprising areas of ‘Firebreaks / Tracks’ (4.7%; 1.63 ha), ‘Revegetation – Established’ (1.7%; 0.58 ha) and ‘Other Uses’ (7.1%; 2.43 ha; **Figure 2**).

Total area used in the calculation of vegetation condition as a proportion of the survey area only encompasses natural areas (bushland) and excludes other areas such as ‘Firebreaks / Tracks’, ‘Other Uses’, ‘Open Water’ and ‘Parkland’. Vegetation condition within Rose Shanks Reserve ranged from Completely Degraded to Excellent, based on the Keighery (1994) vegetation scale (**Table 6**). Threatening processes that have reduced vegetation condition within Rose Shanks Reserve include weed invasion, clearing of vegetation (through fire or otherwise), historical land use practices, minor rubbish dumping and proliferation of tracks.

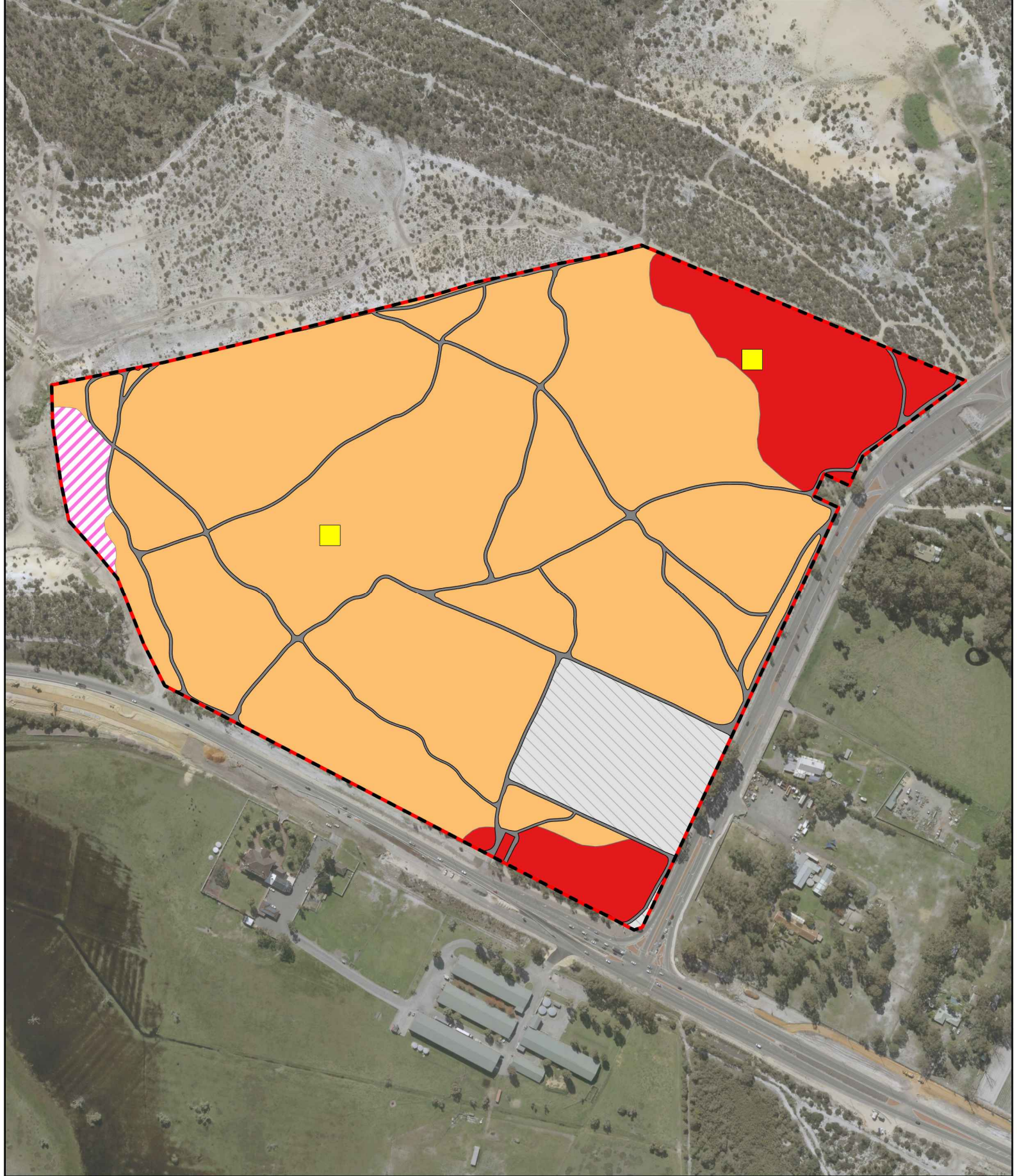
Table 6: Vegetation condition recorded within the survey area

Condition rating	Area (ha)	% of Bushland areas	% of Reserve
Pristine	0	0	0
Excellent	18.42	61.7	53.4
Very Good	5.73	19.2	16.6
Good	4.42	14.8	12.8
Degraded		0	0
Completely Degraded	1.28	4.3	3.7
Total	29.84	100	86.5

1.3.2 Assessment summary and ecological viability estimate

Rose Shanks Reserve was given a viability estimate score of 23.18 (**Appendix D**). As a result, this reserve meets the criteria for a Priority 1A protection level due to features such as regional representation, rarity and regional ecological linkages.

Vegetation Communities - Rose Shanks Reserve



Legend

Reserve Footprint

Quadrat Location

Vegetation Community

1 - BaBmLw

2 - BmAfEmLw

Other

Revegetation - Established

Fire Breaks / Tracks

Open Water

Other Uses

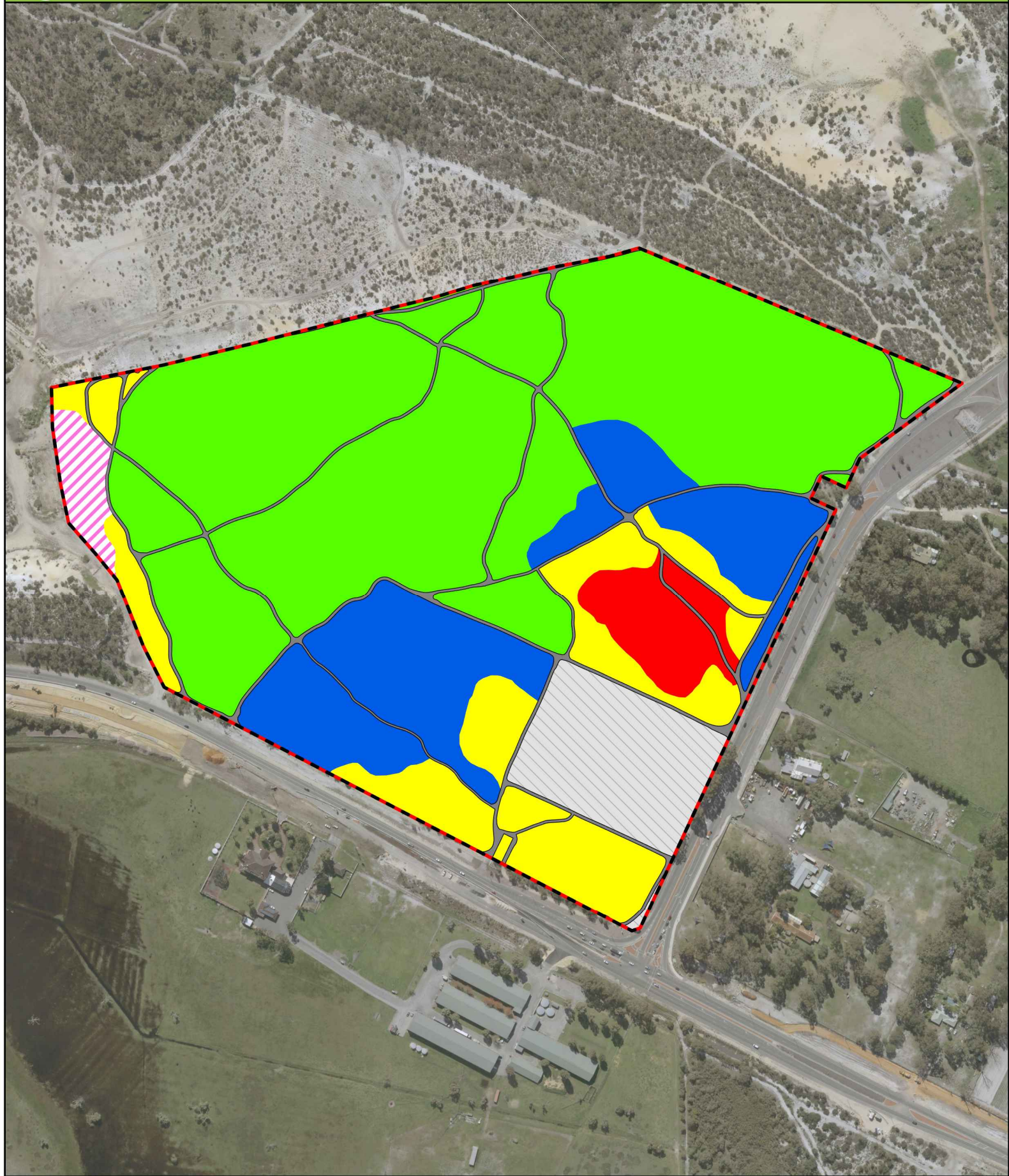
Parkland

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Metres
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Vegetation Condition - Rose Shanks Reserve



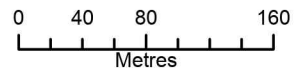
Legend
 Reserve Footprint

Vegetation Condition

- Excellent
- Very Good
- Good
- Degraded
- Completely Degraded

Other

- Revegetation - Established
- Fire Breaks / Tracks
- Open Water
- Other Uses
- Parkland



Datum/Projection:
GDA 1994 MGA Zone 50



1.4 REFERENCES

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Molly, S., O'Connor, T., Wood, J. and Wallrodt, S. 2007. *Addendum for the South West Biodiversity Project Area*. Western Australia Local Government Association, West Perth

Mitchell, D., Williams, K. and Desmond, A. 2002. Swan Coastal Plain 2 (SCP2 – Swan Coastal Plain subregion), in: (CALM (Ed) *A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002*, pp. 606 – 623. Department of Conservation and Land Management, Perth, Western Australia.

Threatened Species Scientific Committee (TCCS). 2016. *Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community*. Canberra: Department of the Environment and Energy. Available from: <http://www.environment.gov.au/biodiversity/threatened/communities/pubs/131-conservation-advice.pdf>. In effect under the EPBC Act from 16-Sep-2016.

Appendix A NatureMap search results - flora

NatureMap Species Report

Created By Guest user on 02/12/2019

Kingdom Plantae
Conservation Status Conservation Taxon (T, X, IA, S, P1-P5)
Current Names Only Yes
Core Datasets Only Yes
Data Source Threatened and Priority Flora Database or WA Herbarium Specimen Database
Method 'By Circle'
Centre 115° 53' 42" E, 32° 07' 55" S
Buffer 10km
Group By Conservation Status

Conservation Status	Species	Records
Priority 1	2	2
Priority 2	4	5
Priority 3	13	43
Priority 4	11	69
Rare or likely to become extinct	10	129
TOTAL	40	248

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Rare or likely to become extinct				
1.	38481 <i>Austrostipa jacobiana</i>		T	
2.	1596 <i>Caladenia huegelii</i> (Grand Spider Orchid)		T	
3.	10796 <i>Diuris drummondii</i> (Tall Donkey Orchid)		T	
4.	12938 <i>Diuris micrantha</i>		T	
5.	1637 <i>Diuris purdiei</i> (Purdie's Donkey Orchid)		T	
6.	1639 <i>Drakaea elastica</i> (Glossy-leaved Hammer Orchid)		T	
7.	13635 <i>Drakaea micrantha</i>		T	
8.	17150 <i>Eremophila glabra</i> subsp. <i>chlorella</i>		T	
9.	942 <i>Lepidosperma rostratum</i>		T	
10.	18590 <i>Synaphea</i> sp. Fairbridge Farm (D. Papenfus 696)		T	
Priority 1				
11.	14932 <i>Acacia lasiocarpa</i> var. <i>bracteolata</i> long peduncle variant (G.J. Keighery 5026)		P1	
12.	11074 <i>Hydrocotyle striata</i>		P1	
Priority 2				
13.	3237 <i>Acacia benthamii</i>		P2	
14.	19704 <i>Stenanthemum sublineare</i>		P2	
15.	1717 <i>Thelymitra variegata</i> (Queen of Sheba)		P2	
16.	13783 <i>Thysanotus</i> sp. Badgingarra (E.A. Griffin 2511)		P2	
Priority 3				
17.	3178 <i>Byblis gigantea</i> (Rainbow Plant)		P3	
18.	16245 <i>Cyathochaeta teretifolia</i>		P3	
19.	7485 <i>Dampiera triloba</i>		P3	
20.	20462 <i>Jacksonia gracillima</i>		P3	
21.	33638 <i>Meionectes tenuifolia</i>		P3	
22.	11557 <i>Phlebocarya pilosissima</i> subsp. <i>pilosissima</i>		P3	
23.	5237 <i>Pimelea calcicola</i>		P3	
24.	974 <i>Schoenus benthamii</i>		P3	
25.	980 <i>Schoenus capillifolius</i>		P3	
26.	1008 <i>Schoenus pennisetis</i>		P3	
27.	18564 <i>Stylidium aceratum</i>		P3	
28.	25800 <i>Stylidium paludicola</i>		P3	
29.	48297 <i>Styphelia filifolia</i>		P3	
Priority 4				
30.	141 <i>Aponogeton hexatepalus</i> (Stalked Water Ribbons)		P4	
31.	4763 <i>Dodonaea hackettiana</i> (Hackett's Hopbush)		P4	
32.	3115 <i>Drosera occidentalis</i> (Western Sundew)		P4	

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
33.	4027 <i>Jacksonia sericea</i> (Waldjumi)		P4	
34.	4035 <i>Kennedia beckxiana</i> (Cape Arid Kennedia)		P4	
35.	33742 <i>Microtis quadrata</i>		P4	
36.	36200 <i>Ornduffia submersa</i>		P4	
37.	7756 <i>Stylidium longitubum</i> (Jumping Jacks)		P4	
38.	1334 <i>Thysanotus glaucus</i>		P4	
39.	44444 <i>Tripterococcus</i> sp. <i>Brachylobus</i> (A.S. George 14234)		P4	
40.	14714 <i>Verticordia lindleyi</i> subsp. <i>lindleyi</i>		P4	

Conservation Codes

- T - Rare or likely to become extinct
- X - Presumed extinct
- IA - Protected under international agreement
- S - Other specially protected fauna
- 1 - Priority 1
- 2 - Priority 2
- 3 - Priority 3
- 4 - Priority 4
- 5 - Priority 5

¹ For NatureMap's purposes, species flagged as endemic are those whose records are wholly contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

Appendix B NatureMap search results - fauna

NatureMap Species Report

Created By Guest user on 02/12/2019

Kingdom Animalia
Conservation Status Conservation Taxon (T, X, IA, S, P1-P5)
Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 115° 53' 42" E, 32° 07' 55" S
Buffer 10km
Group By Conservation Status

Conservation Status	Species	Records
Other specially protected fauna	2	48
Priority 1	1	4
Priority 3	7	259
Priority 4	10	792
Protected under international agreement	23	1106
Rare or likely to become extinct	15	2440
TOTAL	58	4649

Name ID	Species Name	Naturalised	Conservation Code	Endemic To Query Area
Rare or likely to become extinct				
1.	24345 <i>Botaurus poiciloptilus</i> (Australasian Bittern)		T	
2.	24784 <i>Calidris ferruginea</i> (Curlew Sandpiper)		T	
3.	24790 <i>Calidris tenuirostris</i> (Great Knot)		T	
4.	24731 <i>Calyptorhynchus banksii</i> subsp. <i>naso</i> (Forest Red-tailed Black Cockatoo)		T	
5.	24733 <i>Calyptorhynchus baudinii</i> (Baudin's Cockatoo, White-tailed Long-billed Black Cockatoo)		T	
6.	24734 <i>Calyptorhynchus latirostris</i> (Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo)		T	
7.	48400 <i>Calyptorhynchus</i> sp. (white-tailed black cockatoo)		T	
8.	25575 <i>Charadrius leschenaultii</i> (Greater Sand Plover)		T	
9.	24092 <i>Dasyurus geoffroi</i> (Chuditch, Western Quoll)		T	
10.	33983 <i>Leioproctus douglasiellus</i> (a short-tongued bee)		T	
11.	24146 <i>Myrmecobius fasciatus</i> (Numbat, Walpurti)		T	
12.	33984 <i>Neopasiphae simplicior</i> (a short-tongued bee)		T	
13.	48237 <i>Rostratula australis</i> (Australian Painted Snipe)		T	
14.	24145 <i>Setonix brachyurus</i> (Quokka)		T	
15.	34113 <i>Westralunio carteri</i> (Carter's Freshwater Mussel)		T	
Protected under international agreement				
16.	41323 <i>Actitis hypoleucos</i> (Common Sandpiper)		IA	
17.	25554 <i>Apus pacificus</i> (Fork-tailed Swift, Pacific Swift)		IA	
18.	25736 <i>Arenaria interpres</i> (Ruddy Turnstone)		IA	
19.	24779 <i>Calidris acuminata</i> (Sharp-tailed Sandpiper)		IA	
20.	24786 <i>Calidris melanotos</i> (Pectoral Sandpiper)		IA	
21.	24788 <i>Calidris ruficollis</i> (Red-necked Stint)		IA	
22.	24789 <i>Calidris subminuta</i> (Long-toed Stint)		IA	
23.	25574 <i>Charadrius dubius</i> (Little Ringed Plover)		IA	
24.	41332 <i>Chlidonias leucopterus</i> (White-winged Black Tern, white-winged tern)		IA	
25.	24791 <i>Gallinago hardwickii</i> (Latham's Snipe, Japanese snipe)		IA	
26.	47954 <i>Gelochelidon nilotica</i> (Gull-billed Tern)		IA	
27.	48587 <i>Hydroprogne caspia</i> (Caspian Tern)		IA	
28.	25741 <i>Limosa limosa</i> (Black-tailed Godwit)		IA	
29.	48591 <i>Pandion cristatus</i> (Osprey, Eastern Osprey)		IA	
30.	24802 <i>Philomachus pugnax</i> (Ruff, reeve)		IA	
31.	24843 <i>Plegadis falcinellus</i> (Glossy Ibis)		IA	
32.	24382 <i>Pluvialis fulva</i> (Pacific Golden Plover)		IA	
33.	24383 <i>Pluvialis squatarola</i> (Grey Plover)		IA	
34.	24516 <i>Stercorarius longicaudus</i> (long-tailed jaeger, long-tailed skua)		IA	
35.	24806 <i>Tringa glareola</i> (Wood Sandpiper)		IA	

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
36.	24808 <i>Tringa nebularia</i> (Common Greenshank, greenshank)		IA	
37.	24809 <i>Tringa stagnatilis</i> (Marsh Sandpiper, little greenshank)		IA	
38.	41351 <i>Xenus cinereus</i> (Terek Sandpiper)		IA	
Other specially protected fauna				
39.	25624 <i>Falco peregrinus</i> (Peregrine Falcon)		S	
40.	24475 <i>Falco peregrinus subsp. macropus</i> (Australian Peregrine Falcon)		S	
Priority 1				
41.	33994 <i>Throscodectes xiphos</i> (Stylet Bush Cricket, Stylet Throsco (Jandakot))		P1	Y
Priority 3				
42.	25242 <i>Acanthopis antarcticus</i> (Southern Death Adder)		P3	
43.	41641 <i>Ctenotus ora</i> (Coastal Plains Skink)		P3	
44.	48935 <i>Idiosoma sigillatum</i> (Swan Coastal Plain shield-backed trapdoor spider)		P3	
45.	33982 <i>Leioproctus contrarius</i> (a short-tongued bee)		P3	
46.	25147 <i>Lerista lineata</i> (Perth Slider, Lined Skink)		P3	
47.	25249 <i>Neelaps calonotos</i> (Black-striped Snake, black-striped burrowing snake)		P3	
48.	24855 <i>Tyto novaehollandiae subsp. novaehollandiae</i> (Masked Owl (southwest))		P3	
Priority 4				
49.	24189 <i>Falsistrellus mackenziei</i> (Western False Pipistrelle, Western Falsistrelle)		P4	
50.	24215 <i>Hydromys chrysogaster</i> (Water-rat, Rakali)		P4	
51.	48588 <i>Isoodon fusciventer</i> (Quenda, southwestern brown bandicoot)		P4	
52.	47975 <i>Ixobrychus dubius</i> (Australian Little Bittern)		P4	
53.	48024 <i>Notamacropus eugenii subsp. derbianus</i> (Tammar Wallaby, Tammar)		P4	
54.	48022 <i>Notamacropus irma</i> (Western Brush Wallaby)		P4	
55.	24328 <i>Oxyura australis</i> (Blue-billed Duck)		P4	
56.	24663 <i>Phaethon rubricauda</i> (Red-tailed Tropicbird)		P4	
57.	33992 <i>Synemon gratiosa</i> (Graceful Sunmoth)		P4	
58.	48135 <i>Thinornis rubricollis</i> (Hooded Plover, Hooded Dotterel)		P4	

Conservation Codes

T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement
S - Other specially protected fauna
1 - Priority 1
2 - Priority 2
3 - Priority 3
4 - Priority 4
5 - Priority 5

¹ For NatureMap's purposes, species flagged as endemic are those whose records are wholly contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

Appendix C PMST search results



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 02/12/19 13:41:40

[Summary](#)

[Details](#)

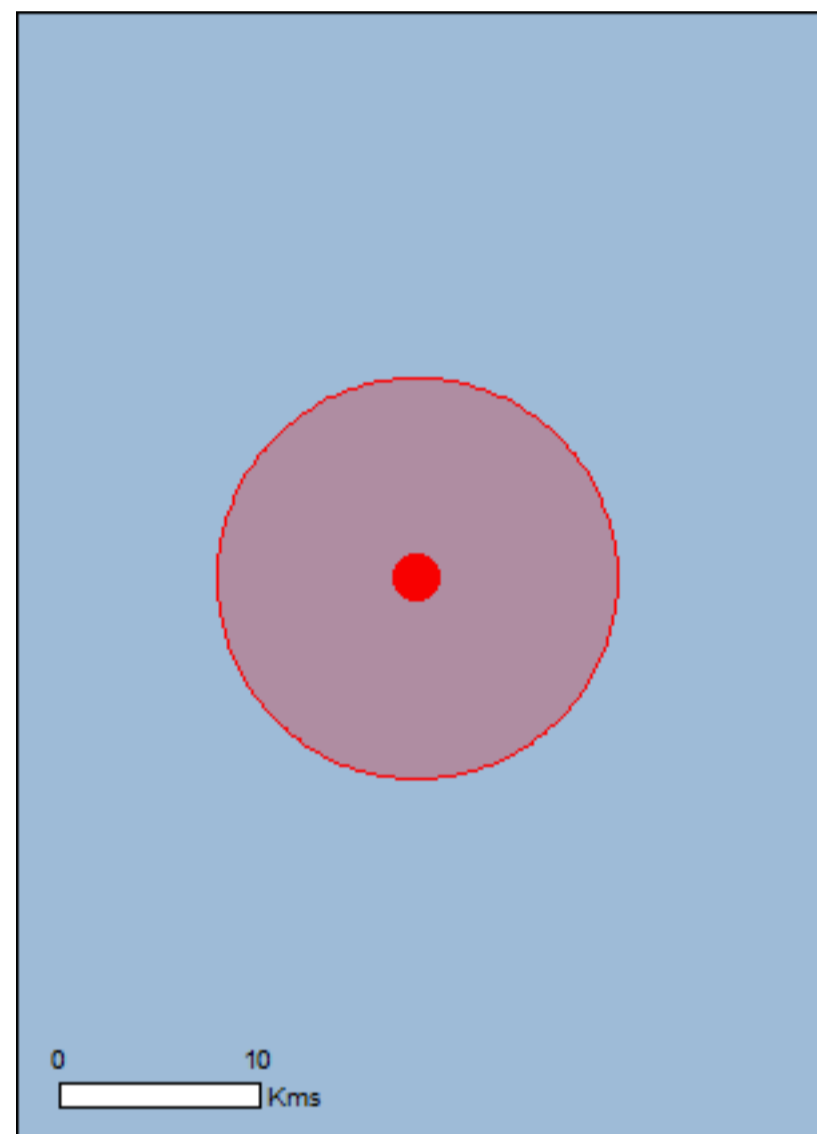
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

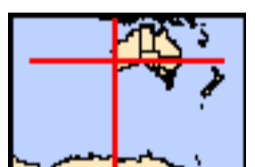
[Acknowledgements](#)



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

[Coordinates](#)

[Buffer: 10.0Km](#)



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	35
Listed Migratory Species:	20

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	30
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	11
Regional Forest Agreements:	None
Invasive Species:	42
Nationally Important Wetlands:	3
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Forrestdale and thomsons lakes	Within Ramsar site
Peel-yalgorup system	30 - 40km upstream

Listed Threatened Ecological Communities	[Resource Information]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.	

Name	Status	Type of Presence
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area
Clay Pans of the Swan Coastal Plain	Critically Endangered	Community likely to occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area
Tuart (<i>Eucalyptus gomphocephala</i>) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area

Listed Threatened Species	[Resource Information]	
Name	Status	Type of Presence
Birds		
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area
Calyptorhynchus baudinii Baudin's Cockatoo, Long-billed Black-Cockatoo [769]	Endangered	Roosting known to occur within area
Calyptorhynchus latirostris Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat known to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area
Insects		
Leioproctus douglasiellus a short-tongued bee [66756]	Critically Endangered	Species or species habitat known to occur within area
Neopasiphae simplicior A native bee [66821]	Critically Endangered	Species or species habitat likely to occur within area
Mammals		
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat may occur within area
Dasyurus geoffroi Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat likely to occur within area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat may occur within area
Other		
Westralunio carteri Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat known to occur within area
Plants		
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area
Austrostipa jacobiana [87809]	Critically Endangered	Species or species habitat known to occur within area
Caladenia huegelii King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat known to occur within area
Diuris drummondii Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat known to occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat known to occur within area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat known to occur within area
Drakaea elastica Glossy-leaved Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat known to occur within area

Name	Status	Type of Presence
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat known to occur within area
Eleocharis keigheryi Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat may occur within area
Eremophila glabra subsp. chlorella [84927]	Endangered	Species or species habitat likely to occur within area
Eucalyptus x balanites Cadda Road Mallee, Cadda Mallee [87816]	Endangered	Species or species habitat likely to occur within area
Grevillea curviloba subsp. incurva Narrow curved-leaf Grevillea [64909]	Endangered	Species or species habitat may occur within area
Lepidosperma rostratum Beaked Lepidosperma [14152]	Endangered	Species or species habitat likely to occur within area
Synaphea sp. Fairbridge Farm (D. Papenfus 696) Selena's Synaphea [82881]	Critically Endangered	Species or species habitat likely to occur within area
Synaphea sp. Serpentine (G.R. Brand 103) [86879]	Critically Endangered	Species or species habitat may occur within area
Thelymitra dedmaniarum Cinnamon Sun Orchid [65105]	Endangered	Species or species habitat may occur within area
Thelymitra stellata Star Sun-orchid [7060]	Endangered	Species or species habitat likely to occur within area

Listed Migratory Species

[[Resource Information](#)]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species

Name	Threatened	Type of Presence
Calidris ruficollis Red-necked Stint [860]		habitat known to occur within area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area
Charadrius dubius Little Ringed Plover [896]		Roosting known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Philomachus pugnax Ruff (Reeve) [850]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [\[Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land -

Listed Marine Species [\[Resource Information \]](#)

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Breeding known to occur within area

Name	Threatened	Type of Presence
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area
Charadrius dubius Little Ringed Plover [896]		Roosting known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Philomachus pugnax Ruff (Reeve) [850]		Roosting known to occur within area

Name	Threatened	Type of Presence
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat known to occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Balannup Lake	WA
Forrestdale Lake	WA
Gibbs Road	WA
Harry Waring Marsupial Reserve	WA
Modong	WA
Piara	WA
Thomsons Lake	WA
Unnamed WA48291	WA
Unnamed WA49299	WA
Unnamed WA49561	WA
Wandi	WA

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Name	Status	Type of Presence
Birds		
<i>Acridotheres tristis</i> Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
<i>Anas platyrhynchos</i> Mallard [974]		Species or species habitat likely to occur within area
<i>Carduelis carduelis</i> European Goldfinch [403]		Species or species habitat likely to occur within area
<i>Columba livia</i> Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
<i>Passer domesticus</i> House Sparrow [405]		Species or species habitat likely to occur within area
<i>Passer montanus</i> Eurasian Tree Sparrow [406]		Species or species

Name	Status	Type of Presence
Streptopelia chinensis Spotted Turtle-Dove [780]		habitat likely to occur within area Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Funambulus pennantii Northern Palm Squirrel, Five-striped Palm Squirrel [129]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Brachiaria mutica Para Grass [5879]		Species or species habitat may occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892] Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Olea europaea Olive, Common Olive [9160]		Species or species habitat may occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323] Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk,		Species or species

Name	Status	Type of Presence
Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		habitat likely to occur within area
Reptiles		
Hemidactylus frenatus		
Asian House Gecko [1708]		Species or species habitat likely to occur within area

Nationally Important Wetlands	[Resource Information]
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Name	State
Forrestdale Lake	WA
Gibbs Road Swamp System	WA
Thomsons Lake	WA

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-32.13193 115.89511

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

Appendix D Rose Shanks Reserve field assessment template and weed mapping

Natural Area Initial Desktop Assessment

Date of assessment 19/11/2019 Native Vegetation Unique ID No. _____

Name of area Rose Shanks Reserve

Other names used _____

Location (address/street name incl. suburb, nearest street corner, Local Government)
Corner of Armadale Road and Warton Road, Treeby, Western Australia

Street Directory Page and Grid Ref. (Street Smart/ Gregory's/ UBD) _____

Prepare the following maps and label with the name of the area.

Map 1: Location of _____

Photocopy of street directory showing location of site

Map 2: Reference Sites/Plots and Linkage for _____

A GIS print-out of general area showing vegetation complexes, potential reference sites and plots, mapped wetlands and their management category, areas of any previously recorded Declared Rare Flora, Specially Protected Fauna, Priority Flora or Fauna or Threatened Ecological Communities plus location of Draft Regional and, if available, Local Ecological Linkages. If no Local Ecological Linkages have been determined for the Local Government area, use this map to mark potential local ecological linkages to other natural areas.

Map 3: Aerial photograph of _____

Date of photography _____ Scale _____

GIS print-out of aerial photography (with topography, if available) at a scale that ensures site covers most of an A4 page. Easy-to-use scales are 1:2000 (1 cm = 20 m), 1:3000 (1 cm = 30 m), 1:4000 (1 cm = 40 m) or 1:5000 (1 cm = 50 m). For large sites, spread over several A4 pages at one of these scales if necessary.

Area (ha) 34.49 Perimeter (m) 2932.12

Perimeter (m) to area (m²) ratio 0.008 Priority for Further Investigation _____

Lot/Location/Reserve Number/s Reserve no. 8129 and 1820, Lot 614 and Lot 140

Ownership (Local Government Reserve / Other Govt (Agency?) / Private) Local Government Reserve

Land Manager City of Cockburn

Vesting Purpose Recreation

MRS Reservation or Zoning Parks and Recreation

TPS Reservation or Zoning Development Contribution Area 13; PR-Parks and Recreation; RR-Water Catchment

Protection Status (circle) none / conservation covenant / conservation zone / conservation vesting purpose / Bush Forever & Parks and Recreation in the MRS / protected CALM land

Current Status/Use of land Parks and recreation

Long term plans? Conservation

Initial Desktop Assessment

Name of area: Rose Shanks Reserve

Recognised International/ National/ State/ Regional Conservation Value Yes
 Specify State Bush Forever Site 390

Part of a Draft Regional Ecological Linkage Yes
 Specify (links which areas?): Yes, north-south

Mapped Vegetation Complex/es Bassendean Complex – central and south & Southern River Complex
 Mapped Soil Type/s (if mapping available) Bassendean sand, aeolian, coastal sediment. Basal conglomerate overlain by dune quartz sand with heavy mineral concentrations.

Mapped wetland/s: No Environmental Protection Policy (EPP) Lake: No
 Wetland Management Category: No
 Is it a mapped floodplain area? No

Potential Reference Sites and Plots (e.g. Bush Forever Sites; CALM Reserves, see Map 2). For Bush Forever Sites note floristic community type/s (FCTs) and whether FCTs actual or inferred.

This reserve contains Bush Forever Site 390. Contains inferred FCTs:

- 4 Melaleuca preissiana damplands
- 23a Central Banksia attenuata – B. menziesii woodlands

Existing biological information for area or for potential Reference Sites (reports/ surveys/ species lists)

- Natural Area Management Strategy 2012-20, City of Cockburn, 2012.
- Vegetation Condition, Floristic Community and Weed Mapping in the City of Cockburn. Prepared for the City of Cockburn. Eco Logical Australia 2016.

Conservation Management Plan No Current or Review needed? _____
 Title/Author/Year _____

Part of a Local Ecological Linkage Yes
 (if these have not already been determined by Local Government mark potential linkages on Map 2)

Time since isolation from other natural areas <5 years 5 - 20 years >20 years
 (consult local community, historical aerial photography)

Initial Desktop Assessment

Name of area: Rose Shanks Reserve

Does it contain any mapped Threatened Ecological Communities (see Map 2)? No

Specify: _____

Does it contain any mapped Declared Rare Flora (see Map 2) or is it a known location for any Specially Protected Fauna or significant habitat for these fauna? No

Specify: _____

Does it contain any mapped Priority (see Map 2) or other significant **flora** (e.g. see Table 13, Bush Forever, Vol. 2, p. 51) or is it a known location for any Priority or other significant **fauna** (e.g. see Tables 14 and 15, Bush Forever, Vol. 2, pp. 59-63) or significant habitat for these fauna? No

Specify _____

Riparian streamline vegetation expected No

Estuarine fringing vegetation expected No

Coastal vegetation expected (foredunes or secondary dunes) No

Fire History (consult with FESA/Volunteer Fire Brigades, local community, historical aerial photography)

There has been a fire in the eastern portion of the reserve between 1999 and 2004.

Known to be of particular value to the local community for conservation No

Active Friends/Environmental Group No

Name of group and contact details _____

Surrounding land uses with potential for community interest and possibly assistance with management

▪ educational facility No

▪ residential development Yes

▪ other (specify) – Cockburn Fremantle Pistol Club Yes

Indigenous or European Cultural or Historical Heritage Value None

Notes

Natural Area Initial Field Assessment A

Date of assessment 19/11/2019 Native Vegetation Unique ID No. _____

Name of area Rose Shanks Reserve

Location (address/street name) Corner of Armadale Road and Warton Road, Treeby, Western Australia

Assessor Daniel Marsh *Skill Level 6B

Recorder _____ Skill Level _____

Recorder _____ Skill Level _____

Recorder _____ Skill Level _____

**Important Note: Skill level 4 or above is required by the assessor to complete this template (see Appendix 1).*

Photographs

Indicate film roll no. and photograph no., location and direction of each photo on Map 4 during the field assessment. e.g. R1/P4 ↗ (Roll 1/Photo 4 looking ↗)

Photographer's Name _____

Latitude And Longitude (for various locations noted during assessment, optional)

GPS used: Yes GPS datum: GDA 1994 _____

Descriptor and Location No. Reading/calculation (mark location number on Map 4)

(eg. BMX jump GPS 1) Latitude (S) or Northing Longitude (E) or Easting

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Prepare the following map during the field assessment and label with the name of the area.

Map 4 (transparent overlay on aerial photograph, Map 3): Uplands/Wetlands, Structural Plant Communities, Vegetation Condition, Spot Weed Occurrences, Areas of Disturbance and Management Infrastructure of _____

Uplands, Wetlands And Structural Plant Communities – Description And Mapping

On Map 4 divide the site into upland versus wetland areas and then into broad sections based on structural plant communities. Allocate a number to each community and describe each community using a representative sample point. Note the vegetation condition of each sample point as well as drawing a vegetation condition map for the whole site.

Describe each community using page 5 and 6 of these templates

Each structural plant community is described by noting the dominant species in each growth form layer of the community (see Appendix 2). Collect specimens for identification if necessary, provided you have a licence from CALM and land owner permission. Carefully label all specimens. DO NOT collect species suspected of being DECLARED RARE FLORA instead take a good photo and accurately note location. Do not collect whole plants unless they are very small species and do not collect at all if only a few are present, take a good photo as an alternative

Initial Field Assessment A

Name of area: Rose Shanks Reserve

Photocopy this page and complete for each Structural Plant Community identified .

Structural Plant Community No. 1 Indicate location of sample point described on Map 4.

Latitude and Longitude
 GPS used: Yes GPS datum: GDA 1994 Easting.: 395659 Northing: 6444355

Landform and Soils
 SLOPE: Gentle ASPECT: SW
 SURFACE SOIL: Colour: White / light grey Texture: Sand
 EXPOSED ROCK (type and % of surface): n/a
 SUB-SURFACE SOIL: Colour: Grey brown Texture: Loamy sand
 UNDERLYING ROCK (type and depth if known): n/a
 DRAINAGE: Well WET: n/a
 CURRENT WATER DEPTH: 0 cm
 LITTER (% cover & depth): 20%, 1 cm BARE GROUND (% cover) 20%

Topographic Position Circle position of point described on a transect diagram of site below.

Upland or Wetland? (circle one)

Growth Form Layer	Dominant species for each growth form layer list all dominant species, in their order of dominance, up to a maximum of 3*. (* if more than 3 species are obviously dominant record as many as appropriate to describe the layer)	Crown Cover (Keighery 1994) 2-10% / 10-30% / 30-70% / over 70%	Height & Crown Cover (NVIS) Record max. height of layer & % crown cover to nearest 5%
Trees over 30 m			
Trees 10–30 m			
Trees under 10 m	<i>Banksia attenuata</i> , <i>B. menziesii</i>	10-30%	6m, 20%
Mallees over 8 m			
Mallees under 8 m			
Shrubs over 2 m			
Shrubs 1-2 m	<i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i> , <i>Allocasuarina humilis</i> , <i>Eremaea pauciflora</i> var. <i>pauciflora</i>	10-30%	1.8m, 25%
Shrubs under 1 m	<i>Hibbertia hypericoides</i> , <i>Hibbertia subvaginata</i> , <i>Scholtzia involucreta</i>	10-30%	0.9m, 15%
Herbs	<i>Lyginia barbata</i> , <i>Stylidium repens</i> , <i>Desmocladius asper</i>	2-10%	0.7m, 2%
Sedges/ Rushes			
Grasses	<i>Amphipogon turbinatus</i> , <i>Briza maxima</i>	2-10%	0.2m, 2%
Other (e.g. climbers)			

Common Native Species Note species observed.

Icon Flora Species (Note if present)

Vegetation Condition (Give reasoning and note scale used) (see Appendix 4) _____
 Excellent (Keighery 1994). Rabbit activity (diggings) and weeds present.

Description Of Structural Plant Community No. 1
Banksia attenuata and *B. menziesii* low woodland over *Adenanthos cygnorum* subsp. *cygnorum*,
Allocasuarina humilis and *Eremaea pauciflora* var. *pauciflora* tall sparse shrubland over *Hibbertia hypericoides*,
Hibbertia subvaginata and *Scholtzia involucreta* low sparse shrubland over *Lyginia barbata*,
Stylidium repens and *Desmocladius asper* mid sparse forbland over *Amphipogon turbinatus* and *Briza maxima*
 low sparse grassland.

Icon Community (tick if an icon community)

Initial Field Assessment A

Name of area: Rose Shanks Reserve

Photocopy this page and complete for each Structural Plant Community identified .

<u>Trees / Mallees</u>	<u>Herbs</u>
<i>Banksia attenuata</i>	<i>Lyginia barbata</i>
<i>Banksia menziesii</i>	<i>Schoenus clandestinus</i>
	<i>Desmocladius asper</i>
	* <i>Gladiolus caryophyllaceus</i>
	<i>Burchardia congesta</i>
	<i>Stylidium repens</i>
	* <i>Ursinia anthemoides</i> subsp. <i>anthemoides</i>
	<i>Arnocrinum preissii</i>
<u>Shrubs</u>	
<i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i>	
<i>Allocasuarina humilis</i>	
<i>Eremaea pauciflora</i> var. <i>pauciflora</i>	
<i>Acacia pulchella</i> var. <i>glaberrima</i>	
<i>Hibbertia hypericoides</i>	
<i>Hibbertia subvaginata</i>	
<i>Scholtzia involucrate</i>	
<i>Stirlingia latifolia</i>	
<i>Calytrix flavescens</i>	
<i>Calytrix fraseri</i>	
<i>Philothea spicata</i>	
<i>Gompholobium tomentosum</i>	
<i>Hemiandra pungens</i>	
<i>Petrophile linearis</i>	
<i>Leucopogon</i> sp.	
<u>Sedges / Rushes</u>	
<u>Grasses</u>	
* <i>Briza maxima</i>	
<i>Amphipogon turbinatus</i>	



Plant community no. 1 - photo taken from NW corner looking to the SE

Initial Field Assessment A

Name of area: Rose Shanks Reserve

Photocopy this page and complete for each Structural Plant Community identified .

Structural Plant Community No. 2 Indicate location of sample point described on Map 4.

Latitude and Longitude
 GPS used: Yes GPS datum: GDA 1994 Easting.: 396072 Northing: 6444525

Landform and Soils
 SLOPE: Gentle ASPECT: SE
 SURFACE SOIL: Colour: Light grey Texture: Sand
 EXPOSED ROCK (type and % of surface): n/a
 SUB-SURFACE SOIL: Colour: Grey Texture: Sand
 UNDERLYING ROCK (type and depth if known): n/a
 DRAINAGE: Well WET: n/a
 CURRENT WATER DEPTH: 0 cm
 LITTER (% cover & depth): 55%, 5 cm BARE GROUND (% cover) 20%

Topographic Position Circle position of point described on a transect diagram of site below.

Upland or Wetland? (circle one)

Growth Form Layer	Dominant species for each growth form layer list all dominant species, in their order of dominance, up to a maximum of 3*. (* if more than 3 species are obviously dominant record as many as appropriate to describe the layer)	Crown Cover (Keighery 1994) 2-10% / 10-30% / 30-70% / over 70%	Height & Crown Cover (NVIS) Record max. height of layer & % crown cover to nearest 5%
Trees over 30 m			
Trees 10–30 m			
Trees under 10 m	<i>Banksia menziesii</i> , <i>Allocasuarina fraseriana</i> , <i>Eucalyptus marginata</i> subsp. <i>marginata</i>	10-30%	25%, 5m
Mallees over 8 m			
Mallees under 8 m			
Shrubs over 2 m	<i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i>	10-30%	15%, 4m
Shrubs 1-2 m	<i>Hypocalymma robustum</i> , <i>Stirlingia latifolia</i>	2-10%	2%, 0.7m
Shrubs under 1 m	<i>Hibbertia hypericoides</i> , <i>Scholtzia involucrata</i> , <i>Xanthorrhoea preissii</i>	10-30%	15%, 1m
Herbs	<i>Lyginia barbata</i> , <i>Dasypogon bromeliifolius</i> , <i>Desmocladus asper</i>	2-10%	2%, 0.4m
Sedges/ Rushes			
Grasses	<i>Amphipogon turbinatus</i> , <i>*Ehrharta calycina</i> , <i>*Briza maxima</i>	2-10%	2%, 0.3m
Other (e.g. climbers)			

Common Native Species Note species observed.

Icon Flora Species (Note if present)

Vegetation Condition (Give reasoning and note scale used) (see Appendix 4) _____
 Excellent (Keighery 1994). Minor weeds present.

Description Of Structural Plant Community No. 2
Banksia menziesii, *Allocasuarina fraseriana* and *Eucalyptus marginata* subsp. *marginata* low woodland over *Adenanthos cygnorum* subsp. *cygnorum* tall sparse shrubland over *Hypocalymma robustum* and *Stirlingia latifolia* mid sparse shrubland over *Hibbertia hypericoides*, *Scholtzia involucrata* and *Xanthorrhoea preissii* low sparse shrubland over *Lyginia barbata*, *Dasypogon bromeliifolius* and *Desmocladus asper* low sparse forbland over *Amphipogon turbinatus*, **Ehrharta calycina* and **Briza maxima* low sparse grassland.

Icon Community (tick if an icon community)

Initial Field Assessment A

Name of area: Rose Shanks Reserve

Photocopy this page and complete for each Structural Plant Community identified .

<u>Trees / Mallees</u>	<u>Herbs</u>
<i>Banksia menziesii</i>	<i>Lyginia barbata</i>
<i>Allocasuarina fraseriana</i>	<i>Desmocladius asper</i>
<i>Eucalyptus marginata</i> subsp. <i>marginata</i>	<i>Dasypogon bromeliifolius</i>
<i>Banksia attenuata</i>	<i>Cassytha</i> sp.
<i>Nuytsia floribunda</i>	<i>Conostylis aculeata</i> subsp. <i>cygnorum</i>
	<i>Lomandra</i> sp.
	* <i>Gladiolus caryophyllaceus</i>
	<i>Stylidium repens</i>
<u>Shrubs</u>	* <i>Ursinia anthemoides</i> subsp. <i>anthemoides</i>
<i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i>	<i>Laxmannia grandiflora</i>
<i>Hypocalymma robustum</i>	
<i>Stirlingia latifolia</i>	
<i>Hibbertia hypericoides</i>	
<i>Scholtzia involucrata</i>	
<i>Xanthorrhoea preissii</i>	
<i>Hibbertia subvaginata</i>	
<i>Acacia huegelii</i>	
<i>Gompholobium tomentosum</i>	
<i>Bossiaea eriocarpa</i>	
<i>Petrophile linearis</i>	
<i>Philothea spicata</i>	
<i>Calytrix flavescens</i>	
<i>Leucopogon</i> sp.	
<u>Sedges / Rushes</u>	
<u>Grasses</u>	
<i>Amphipogon turbinatus</i>	
* <i>Ehrharta calycina</i>	
* <i>Briza maxima</i>	



Plant community no. 2 - photo taken from NW corner looking to the SE

Initial Field Assessment A

Name of area: Rose Shanks Reserve

Weed Species Note species observed, especially the occurrence of species in better condition areas, even if they only occur in small numbers or in small patches at present. Note the distribution of each species across the site, e.g. throughout the site, spot occurrences or disturbed areas only (edges/tracks/cleared areas). Mark spot occurrences and easily mapped distributions on Map 4. If a species is widespread, note whether it is restricted to specific plant communities or wetland areas.

Weed Species	Distribution e.g. throughout the site, spot occurrences or disturbed areas only (edges/tracks/cleared areas)
* <i>Acacia longifolia</i>	Disturbed areas only
* <i>Briza maxima</i>	Spot occurrences
* <i>Carpobrotus edulis</i>	Disturbed areas only
* <i>Cynodon dactylon</i>	Spot occurrences
* <i>Ehrharta calycina</i>	Throughout the site
* <i>Eragrostis curvula</i>	Spot occurrences
* <i>Euphorbia terracina</i>	Disturbed areas only
* <i>Freesia hybrid</i>	Disturbed areas only
* <i>Fumaria bastardii</i> , <i>F. capreolata</i> , <i>F. muralis</i>	Disturbed areas only
* <i>Gladiolus caryophyllaceus</i>	Throughout the site
* <i>Melaleuca nesophila</i>	Spot occurrences
* <i>Pelargonium capitatum</i>	Disturbed areas only
* <i>Pennisetum setaceum</i>	Spot occurrences
* <i>Ricinus communis</i>	Spot occurrences
* <i>Ursinia anthemoides subsp. anthemoides</i>	Spot occurrences
* <i>Watsonia bulbillifera</i>	Spot occurrences
* <i>Zantedeschia aethiopica</i>	Spot occurrences

Feral Fauna Note species observed or evidence for presence of species (scats, tracks or traces).

	✓	Comments
Evidence of Foxes (burrows, wildlife kills)		
Evidence of Rabbits (burrows, dung piles, grazing)	✓	Diggings and dung piles
Evidence of Dogs (droppings, scratchings)		
Evidence of Cats (wildlife kills)		
European Honey Bees (hives in tree hollows)		
Evidence of Horses/ Cattle/ Sheep (foot prints, droppings)		
Evidence of Pigs (soil disturbance)		
Rainbow Lorikeets		
Other		

Initial Field Assessment A

Name of area: Rose Shanks Reserve

Native Fauna and Fungi. Note species observed or evidence of presence for fauna species. Indicate icon species.

Species	Comments: Observed directly, evidence of presence (scats, tracks and traces) or likely habitat?
Australian Raven	Observed
Red Wattlebird	Observed
Black-faced Cuckoo Shrike	Observed
Splendid Fairywren	Observed
Western Grey Kangaroo	Observed
Willy Wagtail	Observed
Rufous Whistler	Heard
Laughing Kookaburra	Heard
Shingleback Lizard	Observed
Quenda *icon species	Diggings

Native Fauna and Fungi Habitat

Habitat	✓	Comments
Areas of trees (with or without understorey)	✓	
Areas of dense understorey vegetation	✓	
Tree hollows in old mature trees		
Dead branches as perches for hunting/ look outs	✓	
Dead vegetation for fungi/invertebrate habitat (leaf litter, branches/logs)	✓	
Large fallen logs on the ground		
Granite or other natural rocky outcrops		
Moss beds for fungi habitat		
Wetlands or waterways		

Vegetation Health

Note dead or dying trees, shrubs, herbs and so on. Note the species concerned and the pattern of deaths/changes in the vegetation. *Phytophthora* Root Rot moves in fronts and along drainage lines therefore noting patterns helps to determine whether *Phytophthora* spp. are present. Appendix 5 defines and provides the website address for a list of common indicator species that are affected by *Phytophthora* spp. Do not automatically assume dead or dying plants means that *Phytophthora* is present.

	✓	Comments
Numerous tree stumps (not from logging)		
Dead or dying species	✓	Some Banksia deaths
Obvious reduction of tree canopies (e.g. staghorns)		
Heavy leaf/stem damage by insects (e.g. lerps, stem borers)		
Diseases/pests suspected		
Drought/lowering of groundwater table suspected		
Flooding/rise in groundwater table suspected		

Miscellaneous Disturbance Factors and Threatening Processes

Determine the range and extent of disturbance factors and threatening processes occurring at the site. If appropriate, mark on Map 4 and photograph as required. If site is large it may be beneficial to divide into sections and evaluate each separately.

Factor/Process	✓	Comments
Evidence of salinisation (e.g. scalding, seeps)		
Erosion (e.g. gullies, bank collapse)		
Wetland eutrophication (e.g. algal blooms)		
Stormwater drains/sumps	✓	
Service corridors (e.g. Water Corp, Telstra, Western Power, Alinta Gas)		
Mining/extraction		
Evidence of past logging (e.g. selective removal of large trees)		
Previous clearing (may be partially cleared areas or evidence of previous clearing and regrowth over much of site)	✓	Established revegetation present, cleared areas of the reserve
Overgrazing (e.g. rabbits, stock, goats; over-population by kangaroos)	✓	Rabbits
Firewood collection (e.g. recent chainsaw/axe cuts, sawdust piles)		
Dope plants/ production equipment		
Soil movement (dumping or removal)	✓	In Degraded areas
Rubbish dumping (note type, e.g. construction, garden waste, weed source?)	✓	Some minor litter (metal, plastics)
Proliferation of tracks (fire breaks, walk trails)	✓	Walk trails
Off road vehicle use (4WD / trail bikes/ BMX/ mountain bikes)		
Cubby construction		
Vandalism (damage to plants)		
"Enrichment Planting" (revegetation with species not found in that local plant community, are these becoming weeds?)		
Impacts of High Fire Frequency and/or Intensity		
<ul style="list-style-type: none"> Reduced range of tree ages 		
<ul style="list-style-type: none"> Fire scars high up (due to a hot burn) 		
<ul style="list-style-type: none"> Major trunk damage 		
<ul style="list-style-type: none"> Trees suckering from trunk and branches 		
<ul style="list-style-type: none"> Amount of leaf litter reduced 		
<ul style="list-style-type: none"> Large fallen logs nearly burnt away 		
<ul style="list-style-type: none"> Evidence of arson (burnt grass tree skirts, matches, cigarette lighters, exploded spray cans) 		
Time since last fire (estimate)	✓	10-20 years

Initial Field Assessment A

Name of area: Rose Shanks Reserve

Vegetation Condition Map

For initial assessment, the overall vegetation condition of the site can be determined after familiarising yourself with the site. On Map 4, divide the site into broad sections based on condition, draw the boundaries of each section and record their condition. Using the map, estimate the % area each section occupies of the total site and note in the relevant boxes below using the Keighery (1994) condition scale (see Appendix 4). For example, 'Very Good: Section 1, 75% of site.' 'Degraded: Section 2, 25% of site.' For most sites there will be very degraded areas along tracks, for example, where rubbish has been dumped. If not extensive, these can be referred to by adding a statement such as 'areas of severe localised disturbance' in the comments.

Vegetation Condition Scales Indicate % area each section occupies of the total site (ensure adds up to 100%).						
Keighery (1994)	Pristine	Excellent	Very Good	Good	Degraded	Completely Degraded
% area	0	61.7	19.2	14.8	0	4.3

Comments Vegetation Condition Scale percentages above are equal to 100% of the mapped vegetation and 86.5% of the entire reserve.

Covers of additional condition categories of the entire reserve:

Revegetation: 1.7%

Firebreaks / Tracks: 4.7%

Parkland: 0%

Open Water: 0%

Other Uses: 7.1%

Existing Management Infrastructure

Describe type in box below and mark location on Map 4, photograph if required.

	✓	Comments
Fencing	✓	Wire with wooden bollards / metal fence droppers
Fence condition	✓	Excellent, some areas good
Gates	✓	Vehicle and pedestrian access
Paths	✓	Sandy, some sandy limestone
Path condition	✓	Good
Path fencing		
Path fence condition		
Fire access tracks	✓	Sandy tracks
Signs	✓	Reserve sign
Previous works	✓	Revegetation

Social Significance Values

	✓	Comments
Evidence of Community/ Passive recreation/ Education interest	✓	Adjacent rifle club
Landscape amenity (e.g. area screens/ buffers conflicting land uses)		
Scenic features (e.g. high point in landscape)	✓	High points
Indigenous/ European Heritage (Cultural or Historical)		
Other		

Initial Field Assessment A

Name of area: Rose Shanks Reserve

Surrounding Land Uses (mark on Map 4)

	Comments
Surrounding Land Uses (note type/s and indicate likely impacts/benefits e.g. source of rubbish; weed seeds blowing into site; potential for community interest and perhaps volunteers to assist management)	Urban. Potential for community interest, likely a source of rubbish and/or weeds.

Recommendations for Management

List potential management actions (for example, assessment for the presence of *Phytophthora* species by an accredited assessor; fencing; signage to identify as a conservation area; rubbish removal; detailed weed survey and mapping; fire response and management planning; detailed flora/fauna/fungi surveys).

Continue pest/animal control in the reserve for rabbits

Monitor for signs of dieback

Continue weed control, particularly for **Gladiolus caryophyllaceus* and **Ehrharta calycina*

Remove fauna drift fence trapping line if no longer used

Natural Area Initial Field Assessment B – Significant Species and Communities

General Information

Date of assessment 19/11/2019 Native Vegetation Unique ID No. _____

Name of area Rose Shanks Reserve

Location (address/street name) Corner of Armadale Road and Warton Road, Treeby, Western Australia

Assessor Daniel Marsh *Skill Level 6B

Recorder _____ Skill Level _____

Recorder _____ Skill Level _____

Recorder _____ Skill Level _____

**Important Note: Skill level 5 or above is required by the assessor to survey natural areas for significant species. Skill Level 6 is required to survey for threatened ecological communities (see Appendix 1).*

<p>No significant species or communities recorded through Field Assessment B</p> <p>If searches for significant flora, significant fauna and Threatened Ecological Communities by an appropriately skilled assessor have NOT recorded any significant species or communities on this site during this assessment, tick the box and continue no further.</p>	<input checked="" type="checkbox"/>
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<p>Partial Assessment ONLY <input type="checkbox"/></p> <p>In situations where significant species or communities have been recorded during Field Assessment A but a comprehensive Field Assessment B has NOT yet taken place, transfer the relevant information to these forms for databasing purposes and tick this box.</p>	<input checked="" type="checkbox"/>
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Initial Field Assessment B

Name of area: Rose Shanks Reserve

Photographs

Indicate film roll no. and photograph no., location and direction of each photo on Map 4 during the field assessment. e.g. R1/P4 ↗ (Roll 1/Photo 4 looking ↗)

Photographer's Name _____

Latitude And Longitude (for various locations noted during assessment, compulsory)

GPS used: _____ yes	GPS datum: GDA 1994 _____	
Descriptor and Location No. (eg. Species A GPS 1)	Reading/calculation (mark location number on Map 6) Latitude (S) or Northing	Longitude (E) or Easting
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Prepare the following map during the field assessment and label with the name of the area. Consult Map 4 prepared for Natural Area Initial Field Assessment A for the structural plant communities and vegetation condition mapping, update on Map 6 if necessary.

Map 6 (overlay on aerial photograph): Location of Threatened Ecological Communities, significant native flora or fauna or suitable habitat for these fauna of _____

Threatened Ecological Communities (TECs) (see Appendix 6)
List the Threatened Ecological Communities present or believed to be present on the site and the reasons why. For those TECs based on floristic community types, map the boundary of each TEC by cross referencing with the structural plant communities mapped during the Natural Area Initial Field Assessment A (Map 4). During spring , describe a standard 10 x 10 m quadrat and compile a species list for each structural plant community representing a TEC (see page 15 , Threatened Ecological Communities – Description and Mapping).
Banksia Woodlands of the Swan Coastal Plain ecological community

Initial Field Assessment B

Name of area: Rose Shanks Reserve

Significant Native Flora (see Appendix 6)

Note presence of Declared Rare, Priority or other significant flora. Note location of species on Map 6. Indicate which structural plant communities they occur in (refer to Map 4 of the Natural Area Initial Field Assessment A).

Species and Significance	Comments e.g. Structural Plant Community, Population Size
None	

Significant Native Fauna (see Appendix 6)

Note presence or evidence for presence of Specially Protected, Priority or other significant fauna. Note location of species/evidence on Map 6. Indicate which structural plant communities they occur in or utilise.

Species and Significance	Comments: Observed Directly, Evidence of Presence or Likely Habitat?
Quenda (<i>Isoodon fusciventer</i>)	Diggings observed within the reserve, suitable habitat

Initial Field Assessment B

Name of area: Rose Shanks Reserve

Photocopy this page and complete for **each** Structural Plant Community identified as a TEC OR if preferred use Recording Sheets 1 & 2 of Keighery (1994) (see Appendix 3) to describe each community. Note that Appendix 3 contains minor modifications to the Keighery (1994) templates to include the additional information required below.

Threatened Ecological Communities – Description and Mapping

For TECs based on floristic community types, description and mapping needs to be undertaken during spring to provide the definitive floristic information needed to confirm the presence of a TEC. On Map 6, draw the boundary of each Threatened Ecological Community present and label with the TEC to which it belongs. These boundaries should be based on the structural plant communities identified on Map 4 of the Natural Area Initial Field Assessment A template. Allocate a number to each structural plant community representing a TEC and describe each below using a permanently located and representative 10 x 10 m quadrat. Note the vegetation condition of each quadrat. Compile a list of the plant species present within each quadrat.

Structural Plant Community No. 1 Indicate location of sample point described on Map 4.

Latitude and Longitude

GPS used: Yes GPS datum: GDA 1994 Easting.: 395659 Northing: 6444355

Landform and Soils

SLOPE: Gentle ASPECT: SW

SURFACE SOIL: Colour: White / light grey Texture: Sand

EXPOSED ROCK (type and % of surface): n/a

SUB-SURFACE SOIL: Colour: Grey brown Texture: Loamy sand

UNDERLYING ROCK (type and depth if known): n/a

DRAINAGE: Well WET: n/a

current water depth: 0 cm

LITTER (% cover & depth): 20%, 1 cm BARE GROUND (% cover) 20%

Topographic Position Circle position of point described on a transect diagram of site below.

Upland or Wetland? (circle one)

Growth Form Layer	Dominant species for each growth form layer list all dominant species, in their order of dominance, up to a maximum of 3*. (* if more than 3 species are obviously dominant record as many as appropriate to describe the layer)	Crown Cover (Keighery 1994) 2-10% / 10-30% / 30-70% / over 70%	Height & Crown Cover (NVIS) Record max. height of layer & % crown cover to nearest 5%
Trees over 30 m			
Trees 10–30 m			
Trees under 10 m	<i>Banksia attenuata</i> , <i>Banksia menziesii</i>	10-30%	6m, 20%
Mallees over 8 m			
Mallees under 8 m			
Shrubs over 2 m			
Shrubs 1-2 m	<i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i> , <i>Allocasuarina humilis</i> , <i>Eremaea pauciflora</i> var. <i>pauciflora</i>	10-30%	1.8m, 25%
Shrubs under 1 m	<i>Hibbertia hypericoides</i> , <i>Hibbertia subvaginata</i> , <i>Scholtzia involucrata</i>	10-30%	0.9m, 15%
Herbs	<i>Lyginia barbata</i> , <i>Stylidium repens</i> , <i>Desmocladius asper</i>	2-10%	0.7m, 2%
Sedges/ Rushes			
Grasses	<i>Amphipogon turbinatus</i> , <i>Briza maxima</i>	2-10%	0.2m, 2%
Other (e.g. climbers)			

Initial Field Assessment B

Name of area: Rose Shanks Reserve

Photocopy this page and complete for each Structural Plant Community identified as a TEC OR if preferred use Recording Sheet 3 of Keighery (1994) (see Appendix 3) to list species for each community. Note that Appendix 3 contains minor modifications to the Keighery (1994) templates to include the additional information required below.

Plant Species Note native and weed species observed within a standard 10 x 10 m quadrat.		
Trees / Mallees	Herbs	
<i>Banksia attenuata</i>	<i>Lyginia barbata</i>	
<i>Banksia menziesii</i>	<i>Schoenus clandestinus</i>	
	<i>Desmocladius asper</i>	
	* <i>Gladiolus caryophyllaceus</i>	
	<i>Burchardia congesta</i>	
Shrubs	<i>Stylidium repens</i>	
<i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i>	* <i>Ursinia anthemoides</i> subsp. <i>anthemoides</i>	
<i>Allocasuarina humilis</i>	<i>Arnocrinum preissii</i>	
<i>Eremaea pauciflora</i> var. <i>pauciflora</i>		
<i>Acacia pulchella</i> var. <i>glaberrima</i>		
<i>Hibbertia hypericoides</i>		
<i>Hibbertia subvaginata</i>		
<i>Scholtzia involucrate</i>		
<i>Stirlingia latifolia</i>		
<i>Calytrix flavescens</i>		Sedges / Rushes
<i>Calytrix fraseri</i>		
<i>Philothea spicata</i>		
<i>Gompholobium tomentosum</i>		
<i>Hemiandra pungens</i>		
<i>Petrophile linearis</i>		
<i>Leucopogon</i> sp.		
		Grasses
		* <i>Briza maxima</i>
		<i>Amphipogon turbinatus</i>
Vegetation Condition (Give reasoning and note scale used) (see Appendix 4) Excellent (Keighery 1994). Rabbit activity (diggings) and weeds present.		
Description Of Structural Plant Community No. <u> 1 </u> (see Appendix 2) _____		
BaBmLW: <i>Banksia attenuata</i> and <i>B. menziesii</i> low woodland over <i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i> , <i>Allocasuarina humilis</i> and <i>Eremaea pauciflora</i> var. <i>pauciflora</i> tall sparse shrubland over <i>Hibbertia hypericoides</i> , <i>Hibbertia subvaginata</i> and <i>Scholtzia involucrate</i> low sparse shrubland over <i>Lyginia barbata</i> , <i>Stylidium repens</i> and <i>Desmocladius asper</i> mid sparse forbland over <i>Amphipogon turbinatus</i> and * <i>Briza maxima</i> low sparse grassland.		



Plant community no 1 - photo taken from NW corner looking to the SE

Threatened Ecological Communities – Description and Mapping

For TECs based on floristic community types, description and mapping needs to be undertaken during spring to provide the definitive floristic information needed to confirm the presence of a TEC. On Map 6, draw the boundary of each Threatened Ecological Community present and label with the TEC to which it belongs. These boundaries should be based on the structural plant communities identified on Map 4 of the Natural Area Initial Field Assessment A template. Allocate a number to each structural plant community representing a TEC and describe each below using a permanently located and representative 10 x 10 m quadrat. Note the vegetation condition of each quadrat. Compile a list of the plant species present within each quadrat.

Structural Plant Community No. 2 Indicate location of sample point described on Map 4.

Latitude and Longitude

GPS used: Yes GPS datum: GDA 1994 Easting.: 396072 Northing: 6444525

Landform and Soils

SLOPE: Gentle ASPECT: SE

SURFACE SOIL: Colour: Light grey Texture: Sand

EXPOSED ROCK (type and % of surface): n/a

SUB-SURFACE SOIL: Colour: Grey Texture: Sand

UNDERLYING ROCK (type and depth if known): n/a

DRAINAGE: Well WET: n/a

CURRENT WATER DEPTH: 0 cm

LITTER (% cover & depth): 55%, 5 cm BARE GROUND (% cover) 20%

Topographic Position Circle position of point described on a transect diagram of site below.

Upland or Wetland? (circle one)

Growth Form Layer	Dominant species for each growth form layer list all dominant species, in their order of dominance, up to a maximum of 3*. (* if more than 3 species are obviously dominant record as many as appropriate to describe the layer)	Crown Cover (Keighery 1994) 2-10% / 10-30% / 30-70% / over 70%	Height & Crown Cover (NVIS) Record max. height of layer & % crown cover to nearest 5%
Trees over 30 m			
Trees 10–30 m			
Trees under 10 m	<i>Banksia menziesii</i> , <i>Allocasuarina fraseriana</i> , <i>Eucalyptus marginata</i> subsp. <i>marginata</i>	10-30%	25%, 5m
Mallees over 8 m			
Mallees under 8 m			
Shrubs over 2 m	<i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i>	10-30%	15%, 4m
Shrubs 1-2 m	<i>Hypocalymma robustum</i> , <i>Stirlingia latifolia</i>	2-10%	2%, 0.7m
Shrubs under 1 m	<i>Hibbertia hypericoides</i> , <i>Scholtzia involucreta</i> , <i>Xanthorrhoea preissii</i>	10-30%	15%, 1m
Herbs	<i>Lyginia barbata</i> , <i>Dasypogon bromeliifolius</i> , <i>Desmocladus asper</i>	2-10%	2%, 0.4m
Sedges/ Rushes			
Grasses	<i>Amphipogon turbinatus</i> , * <i>Ehrharta calycina</i> , * <i>Briza maxima</i>	2-10%	2%, 0.3m
Other (e.g. climbers)			

Initial Field Assessment B

Name of area: Rose Shanks Reserve

Photocopy this page and complete for each Structural Plant Community identified as a TEC OR if preferred use Recording Sheet 3 of Keighery (1994) (see Appendix 3) to list species for each community. Note that Appendix 3 contains minor modifications to the Keighery (1994) templates to include the additional information required below.

Plant Species Note native and weed species observed within a standard 10 x 10 m quadrat.		
Trees / Mallees	Herbs	
<i>Banksia menziesii</i>	<i>Lyginia barbata</i>	
<i>Allocasuarina fraseriana</i>	<i>Desmocladius asper</i>	
<i>Eucalyptus marginata</i> subsp. <i>marginata</i>	<i>Dasypogon bromeliifolius</i>	
<i>Banksia attenuata</i>	<i>Cassytha</i> sp.	
<i>Nuytsia floribunda</i>	<i>Conostylis aculeata</i> subsp. <i>cygnorum</i>	
Shrubs	<i>Lomandra</i> sp.	
<i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i>	* <i>Gladiolus caryophyllaceus</i>	
<i>Hypocalymma robustum</i>	<i>Stylidium repens</i>	
<i>Stirlingia latifolia</i>	* <i>Ursinia anthemoides</i> subsp. <i>anthemoides</i>	
<i>Hibbertia hypericoides</i>	<i>Laxmannia grandiflora</i>	
<i>Scholtzia involucrata</i>		
<i>Xanthorrhoea preissii</i>		
<i>Hibbertia subvaginata</i>		
<i>Acacia huegelii</i>		
<i>Gompholobium tomentosum</i>		Sedges / Rushes
<i>Bossiaea eriocarpa</i>		
<i>Petrophile linearis</i>		
<i>Philothea spicata</i>		
<i>Calytrix flavescens</i>		
<i>Leucopogon</i> sp.		
		Grasses
		<i>Amphipogon turbinatus</i>
		* <i>Ehrharta calycina</i>
		* <i>Briza maxima</i>
Vegetation Condition (Give reasoning and note scale used) (see Appendix 4) Excellent (Keighery 1994). Minor weeds present.		
Description Of Structural Plant Community No. <u>2</u> (see Appendix 2) _____		
BmAFEmLW: <i>Banksia menziesii</i> , <i>Allocasuarina fraseriana</i> and <i>Eucalyptus marginata</i> subsp. <i>marginata</i> low woodland over <i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i> tall sparse shrubland over <i>Hypocalymma robustum</i> and <i>Stirlingia latifolia</i> mid sparse shrubland over <i>Hibbertia hypericoides</i> , <i>Scholtzia involucrata</i> and <i>Xanthorrhoea preissii</i> low sparse shrubland over <i>Lyginia barbata</i> , <i>Dasypogon bromeliifolius</i> and <i>Desmocladius asper</i> low sparse forbland over <i>Amphipogon turbinatus</i> , * <i>Ehrharta calycina</i> and * <i>Briza maxima</i> low sparse grassland.		



Plant community no 2 - photo taken from NW corner looking to the SE

Natural Area Initial Assessment Summary

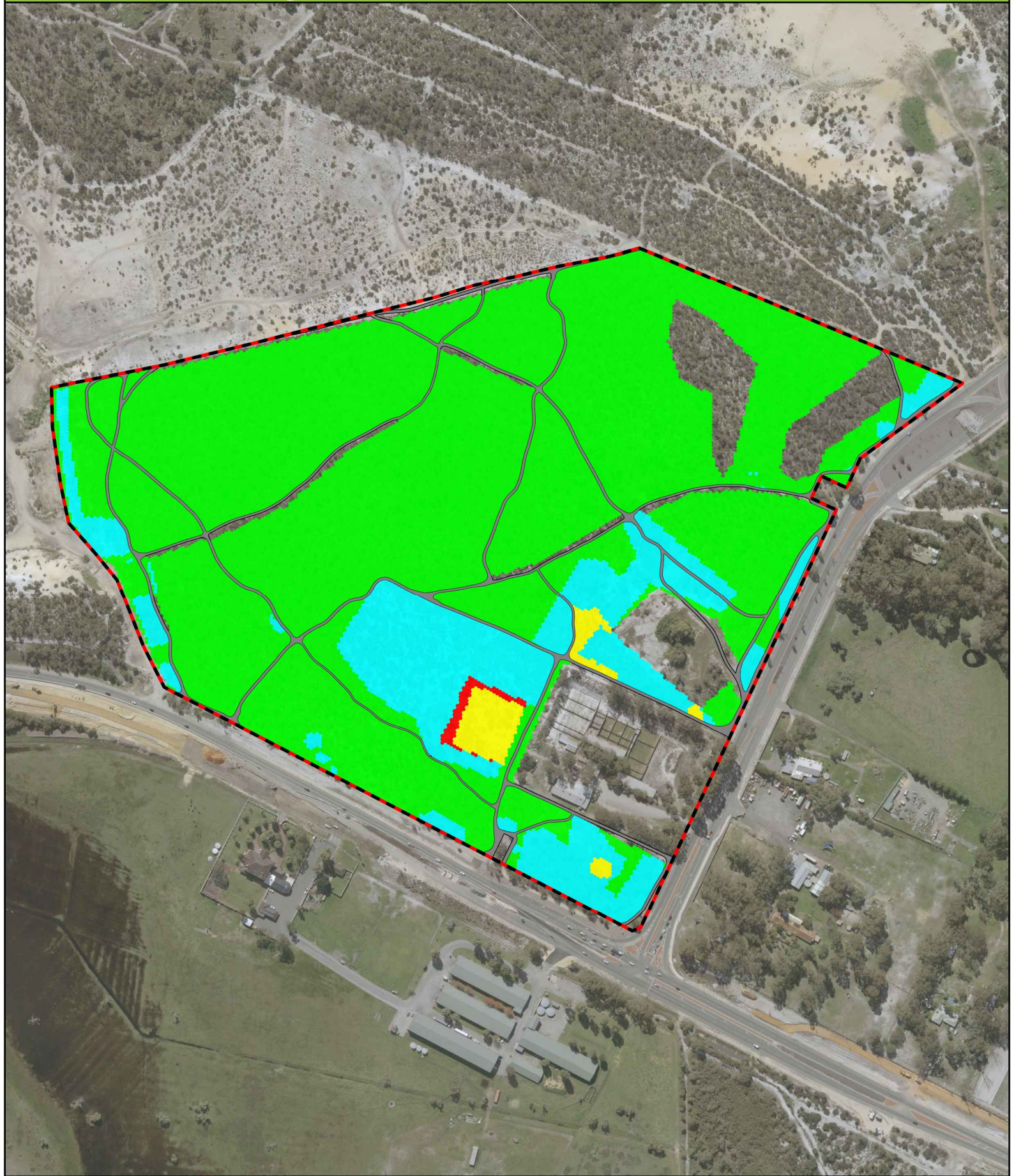
ECOLOGICAL CRITERIA	
1. Representation	
1a. Regional Representation	
i) recognised International, National, State or Regional conservation value but not already protected Specify:	No
ii) of an ecological community with only 1500 ha or 30% or less (whichever is the greater) remaining in IBRA subregion Specify: Bassendean 1001.1 has 11,394.19 ha and 21.38% remaining in the Perth (SWA02) subregion	No
iii) large (greater than 20 ha), viable natural areas in good or better condition of an ecological community with more than 30% remaining within the IBRA subregion	No
iv) of an ecological community with only 1500 ha or 15% or less (whichever is the greater) protected for conservation in the Jarrah Forest IBRA subregion Specify: Does not occur in the Jarrah Forest subregion	No
v) of an ecological community with only 400 ha or 10% or less (whichever is the greater) protected for conservation in the Bush Forever Study Area Specify: This area has <400 ha and >10% remaining	No
1b. Local Representation	
i) of an ecological community with 10% or less remaining of its pre-European extent within the Local Government Area Specify: Bassendean 1001.1 has 2,002.93 ha and 27.33% remaining in the City of Cockburn LGA	No
ii) of an ecological community with 30% or less remaining of its pre-European extent within the Local Government Area Specify: Bassendean 1001.1 has 2,002.93 ha and 27.33% remaining in the City of Cockburn LGA	Yes
iii) large (greater than 10 ha), viable natural areas in good or better condition of an ecological community with more than 30% remaining within the Local Government Area	No
2. Diversity	
i) natural area in good or better condition that contains both upland and wetland structural plant communities	No
3. Rarity	
i) of an ecological community with only 1500 ha or 10% or less (whichever is the greater) remaining in the IBRA subregion Specify: Bassendean 1001.1 has 11,394.19 ha and 21.38% remaining in the Perth (SWA02) subregion	No
ii) of an ecological community with only 400 ha or 10% or less (whichever is the greater) remaining in the Bush Forever Study Area Specify: Bassendean 1001.1 has 11,394.19 ha and 21.38%	No
iii) contains a Threatened Ecological Community Specify: Banksia Woodlands of the Swan Coastal Plain ecological community	Yes
iv) contains Declared Rare Flora, Specially Protected Fauna or significant habitat for these fauna Specify:	No
v) contains Priority or other significant flora or fauna or significant habitat for these fauna Specify: Quenda (<i>Isodon obesulus</i>)	Yes
4. Maintaining Ecological Processes or Natural Systems - Connectivity	
i) natural areas acting as stepping stones in a Regionally Significant Ecological Linkage	Yes
ii) natural areas acting as stepping stones in a locally significant ecological linkage	Yes
5. Protection of Wetland, Streamline and Estuarine Fringing Vegetation and Coastal Vegetation	
i) Conservation or Resource Enhancement category wetland plus buffer	No
ii) EPP Wetland plus buffer	No
iii) riparian vegetation plus buffer	No
iv) floodplain area plus buffer	No
v) estuarine fringing vegetation plus buffer	No
vi) coastal vegetation on foredunes and secondary dunes	No

Initial Assessment Summary

Name of area: Rose Shanks Reserve

VIABILITY ESTIMATE		
Viability Factor	Category	Score
Size	Greater than 20 ha	5
	Greater than 10 ha less than 20 ha	4
	Greater than 4 ha less than 10 ha	3
	Greater than 1 ha less than 4 ha	2
	Less than 1 ha	1
Shape	Circle, square or squat rectangle	3.5
	Oval, rectangle or symmetrical triangle	3
	Irregular shape with few indentations	2.5
	Irregular shape with many indentations	2
	Long thin shape with large proportion of area greater than 50 m wide	1.5
	Long thin shape with large proportion of area less than 50 m wide	1
Perimeter to area ratio	Less than 0.01	4
	Greater than 0.01 less than 0.02	3
	Greater than 0.02 less than 0.04	2
	Greater than 0.04	1
Vegetation condition NB: based on Keighery (1994) condition scale	Pristine 10 x 0% = 0	6.68
	Excellent 8 x 0.62% = 4.94	
	Very Good 6 x 0.19% = 1.15	
	Good 4 x 0.15% = 0.59	
	Degraded 2 x 0% = 0	
	Completely Degraded 0 x 0.04% = 0	
	Total calculated score =	
Connectivity No connectivity = 0	Forms part of a Regional Ecological Linkage and is contiguous with a protected natural area greater than 4ha	5
	Not part of a Regional Ecological Linkage but contiguous with a protected natural area greater than 4ha	4.5
	Forms part of a Regional Ecological Linkage and is within 500 m of more than 4 protected natural areas having an area greater than 4 ha	4
	Not part of a Regional Ecological Linkage but within 500 m of more than 4 protected natural areas having an area greater than 4 ha	3.5
	Forms part of a Regional Ecological Linkage and is within 500 m of 3 or 4 protected natural areas having an area greater than 4 ha	3
	Not part of a Regional Ecological Linkage but within 500 m of 3 or 4 protected natural areas having an area greater than 4 ha	2.5
	Forms part of a Regional Ecological Linkage and is within 500 m of 2 protected natural areas having an area greater than 4 ha	2
	Not part of a Regional Ecological Linkage but within 500 m of 2 protected natural areas having an area greater than 4 ha	1.5
	Forms part of a Regional Ecological Linkage and is within 500 m of less than 2 protected natural areas having an area greater than 4 ha	1
	Not part of a Regional Ecological Linkage but within 500 m of less than 2 protected natural areas having an area greater than 4 ha	0.5
	Forms part of a Regional Ecological Linkage but is not within 500 m of any protected natural areas having an area greater than 4 ha	0.25
	TOTAL SCORE (Viability Estimate)	

Combined Weed Coverage - Rose Shanks Reserve



Legend
Reserve Footprint
Fire Breaks / Tracks

Combined Weed Cover
Green <5%
Cyan 6-30%
Yellow 31-60%
Red 61-100%

0 40 80 160
Metres
Datum/Projection:
GDA 1994 MGA Zone 50

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Bulbous Weed Density and Locations - Rose Shanks Reserve



Legend

- Reserve Footprint
- Fire Breaks / Tracks

Bulbous Weed Locations

- *Gladiolus caryophyllaceus*
- *Zantedeschia aethiopica*

Bulbous Weed Density

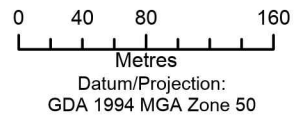
- *Freesia hybrid*
- <math>< 5\%</math>
- 6-30%

**Gladiolus caryophyllaceus>*

- <math>< 5\%</math>

**Watsonia bulbilifera*

- <math>< 5\%</math>



Grass Weed Density and Locations - Rose Shanks Reserve



Legend

Reserve Footprint

Fire Breaks / Tracks

Grass Weed Density

**Ehrharta calycina*

<5%

6-30%

31-60%

**Eragrostis curvula*

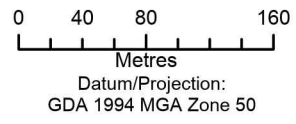
<5%

**Rhizomatous grass*

<5%

Grass Weed Locations

● **Pennisetum setaceum*



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Other Weed Density and Locations - Rose Shanks Reserve



Legend

Reserve Footprint

Fire Breaks / Tracks

Other Weed Locations

**Ricinus communis*

Other Weed Density

**Carpobrotus edulis*

<5%

6-30%

**Euphorbia terracina*

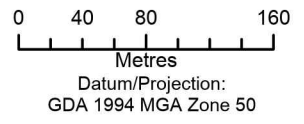
<5%

Fumaria bastardi,
F. capreolata, *F. muralis*

<5%

**Pelargonium capitatum*

<5%



Woody Weed Density and Locations - Rose Shanks Reserve



Legend
Reserve Footprint
Fire Breaks / Tracks

Woody Weed Locations
*Acacia longifolia
*Melaleuca nesophila

0 40 80 160
Metres
Datum/Projection:
GDA 1994 MGA Zone 50

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