



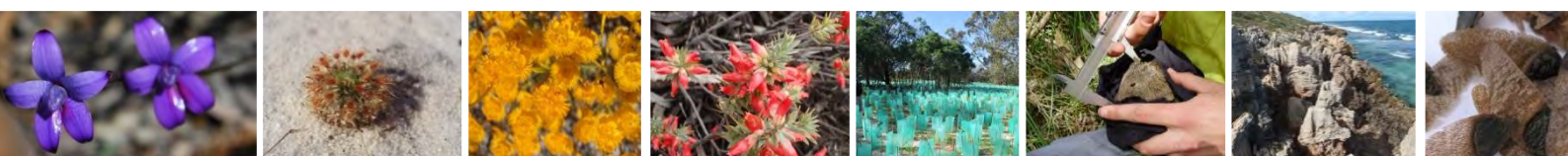
Natural Area
CONSULTING MANAGEMENT SERVICES

City of Wanneroo

Edgar Griffiths

Detailed Flora Survey

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Acknowledgement of Country

Ngala kaaditj Noongar moort keyen kaadak nidja boodja.

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Document Title	COW-R-Edgar Griffiths Flora and Vegetation Survey				
Location	/ConsultingSP/Shared Documents/City of Wanneroo/RFQ24102 Biological Survey Edgar Griffiths Park/5. Reporting/COW-R-Edgar Griffiths Flora and Vegetation Report.docx				
Draft/Version No.	Date	Changes	Prepared by	Approved by	Status
D1	13/11/2024	New Document	KE	JW/LI	Superseded
V1	Dec 2024	Addressing Client Comments	KE	JW	Released

Executive Summary

Natural Area Consulting Management Services (Natural Area) was contracted by the City of Wanneroo to undertake a detailed flora survey at Edgar Griffiths Bushland, Wanneroo. The survey is required to provide baseline data to facilitate the production of a revegetation plan for the surrounding parkland in order to meet offset requirements for CPS 9981-1.

The survey was undertaken to determine:

- flora species present (native and introduced)
- the extent and boundaries of vegetation types and condition
- the presence and location of any conservation significant or priority flora and ecological communities
- the presence and location of any declared pests or Weeds of National Significance (WoNS).

The detailed flora assessment determined:

- A total of total of 172 flora species (taxa) were recorded from 46 families, comprising of 56 introduced (weeds) and 116 native species.
- One conservation significant flora species *Jacksonia sericea* (Priority 4) was identified within the site, with 478 individuals recorded.
- Two declared pests were identified within the site including Bridal Creeper (**Asparagus asparagoides*) and One-leaf Cape Tulip (**Moraea flaccida*).
- The survey area met the diagnostic characteristic and biotic thresholds for the Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain threatened ecological community.
- The survey area met the diagnostic characteristics and patch size requirements for the *Banksia* Woodlands of the Swan Coastal Plain threatened ecological community.
- Vegetation condition across the survey area ranged from degraded to excellent with 99.68 % of vegetation in good or better condition with representative strata present and low weed loads present.

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1.0 Introduction

Natural Area Consulting Management Services (Natural Area) was commissioned by the City of Wanneroo (the City) to undertake a detailed flora and vegetation survey at Edgar Griffiths Bushland, Wanneroo to assist with gathering baseline data to facilitate the production of a revegetation plan for the surrounding parkland reserve in order to meet offset requirements for CPS 9981-1.

1.1 Location

The site is located in the northeast of the suburb Wanneroo and is approximately 24 km north from Perth's Central Business District (CBD). The bushland site has an area of 5.87 ha and resides northeast of the Garden Park Drive and Casuarina Way intersection (Figure 1). The survey site contains an environmentally sensitive area Bush Forever site 470 (Department of Planning, Land and Heritage (DPLH), 2019; Department of Water and Environmental Regulation (DWER), 2021).

1.2 Scope

Natural Area undertook a detailed flora and vegetation survey. Activities undertaken included:

- Desktop assessment of available data including:
 - Protected Matters Search Tool (PMST)
 - NatureMap
 - Department of Biodiversity, Conservation and Attractions (DBCA) database searches to identify conservation significant species and threatened/priority ecological communities.
- Detailed flora and vegetation survey to determine:
 - The extent of vegetation condition and type.
 - Flora (native and introduced) species present, including the presence of threatened or priority species and declared pests (DP) or Weeds of National Significance (WoNS).
 - Mapping and reporting outcomes of assessment activities.



Figure 1:
Edgar Griffiths
Site Location

City of Wanneroo

Legend

 Site Boundary

Client: City of Wanneroo
Date: 13/11/2024
Created by: K.Evans
Image Source: Nearmap, 2024
Datum: GDA2020 / MGA zone 50
Scale: 1: 1500

0 25 50 m



2.0 Site Characteristics

The characteristics of a site have a strong bearing on the flora, vegetation, fauna, and ecological communities present. The key characteristics of Edgar Griffiths Reserve are outlined in this section.

2.1 Regional Context

The Interim Biogeographic Regionalisation of Australia (IBRA) classifies bioregions within Western Australia based on environmental factors such as climate, geology and vegetation and fauna assemblies. The site is located within the Swan Coastal Plain (SWA02) IBRA subregion (Department of Climate Change, Energy the Environment and Water (DCCEEW), 2024a). This region is characterised by low lying coastal plains, typically comprised of sands of colluvial and aeolian origin, as well as alluvial river flats and coastal limestone. It is dominated by *Banksia* or Tuart on sandy soils, *Casuarina* on outwash plains and *Melaleuca* in wetland areas (Mitchell *et. al.*, 2002).

2.2 Climate

The climate experienced in the area is Mediterranean, with dry, hot summers and cool, wet winters. According to the Bureau of Meteorology (2024); Perth Metro WA, site number 009225, 2024, the region has an:

- average rainfall of 730.80 mm per annum, with majority of rainfall between June and August (Figure 2) (1993 - 2024) (BoM, 2024)
- average maximum temperature range of 22.8 °C in winter to 40.6 °C in summer (1993 - 2024) (Figure 2) (BoM, 2024)
- average minimum temperature ranging from 2.0 °C in winter to 13.2°C in summer (1993 – 2024) (Figure 2) (BoM, 2024)

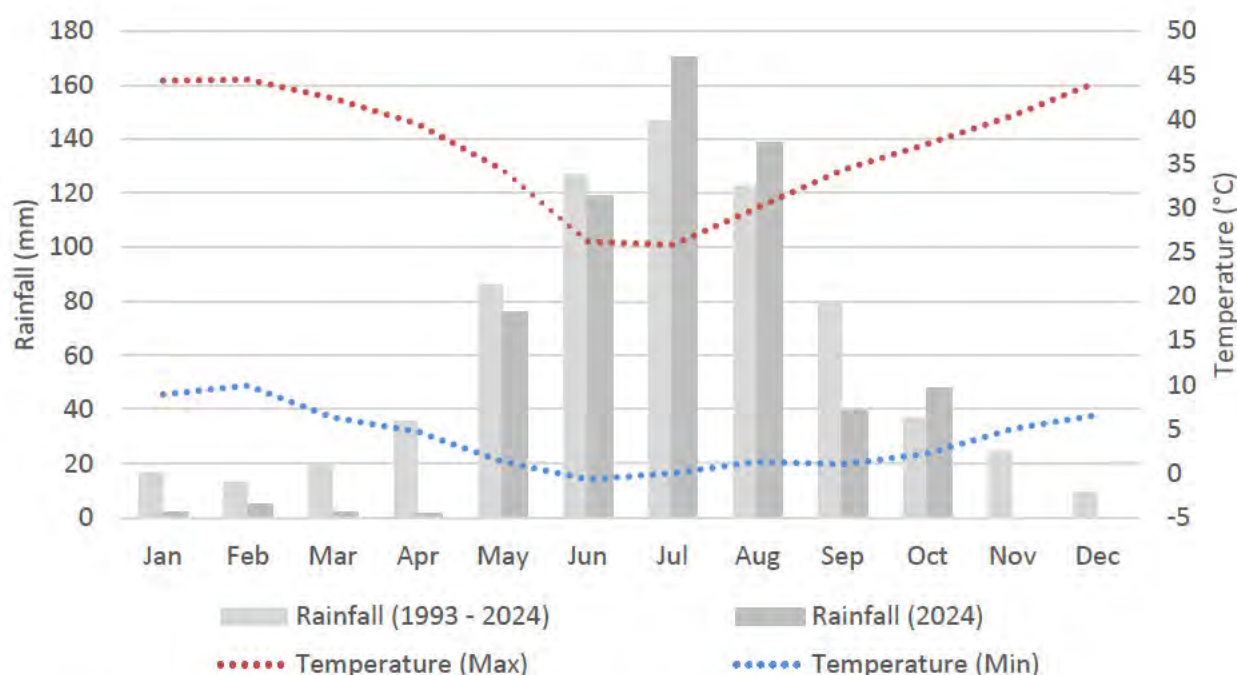


Figure 2: Temperature and rainfall data. Source: BoM, 2024.

2.3 Topography and Soils

One soil type was identified on site, being the Karrakatta Sand Yellow phase (Department of Primary Industries and Regional Development (DPIRD), 2022a). The site ranges from 62 m Australian Height Datum (AHD) in the northwest corner and gently rises to 80 m AHD in the southeast (DPIRD, 2019) (Figure 3).

Karrakatta Sand Yellow phase (211Sp_Ky) is described as low hilly to gently undulating terrain. Yellow sand over limestone at 1-2 m. *Banksia* spp. woodland with scattered emergent *Eucalyptus gomphocephala* and *E. marginata* and a dense shrub layer.

2.4 Vegetation Complex

One vegetation complex exists within the site boundary, the Karrakatta Complex – Central and South. It is described by Heddle *et al.* (1980) as being predominantly open forest of *Eucalyptus gomphocephala* (Tuart) - *Eucalyptus marginata* (Jarrah) - *Corymbia calophylla* (Marri) and woodland of *Eucalyptus marginata* (Jarrah) - *Banksia* species.

The pre-European extent of this vegetation complex remaining is:

- 24.41 % within the Swan Coastal Plain
- 21.94 % within the City of Wanneroo (Government of Western Australia, 2019).



Figure 3:
Edgar Griffiths
Topography and Soil Type

Legend

- Site Boundary
- Soil Type
- Karakatta Sand Yellow phase
- 2 m Contours

Client: City of Wanneroo
Date: 19/11/2024
Created by: K.Evans
Image Source: Nearmap, 2024
Datum: GDA2020 / MGA zone 50
Scale: 1: 1500

0 25 50 m



3.0 Methodology

3.1 Desktop and Literature Review

The desktop survey included reviewing online databases to gather contextual knowledge and determine preliminary site characteristics including:

- likely native and non-native flora and fauna species present
- current extent of native vegetation
- general floristic community types
- likely presence of threatened or priority flora and fauna species
- likely presence of any threatened or priority ecological communities.

The following databases were accessed to obtain relevant information:

- NatureMap (Department of Biodiversity, Conservation and Attractions (DBCA), 2024a)
- Protected Matters Search Tool (DCCEEW, 2024b) (Appendix 1)
- FloraBase (WA Herbarium, 2024)
- Threatened and priority flora/ecological community database searches (DBCA, 2024b; DBCA, 2024c).

Conservation code definitions for the State and Commonwealth are provided in Appendix 2. Information relating to conservation significant species from database searches were summarised into field reference guides to aid with on-ground flora which is provided in Appendix 3.

3.2 On-ground Flora Survey

The flora and vegetation survey was conducted in accordance with *Technical Guidance-Flora and Vegetation Surveys for Environmental Impact Assessment* (Environmental Protection Authority (EPA), 2016). Samples were collected, or photographs taken of unfamiliar species to enable later identification.

Natural Area environmental scientists undertook the survey between September 5 and October 23, 2024, with key data recorded using QField software on a handheld tablet. Survey activities included:

- Setting out a total of six 10 x 10 m quadrats across the two vegetation types present (Figure 4).
- Photographing each quadrat in the north-west corner and recording GPS coordinates using GDA2020 Zone 50 datum.
- Recording landscape characteristics including soil types/colour, aspect, slope, surface rock, topography and drainage using Natural Area's modified recording sheets based on the NAIA templates developed for the Perth Biodiversity Project.
- Determining leaf litter depth, percentage cover, and percentage of bare ground.
- Recording percentage cover, height, number alive/dead stems and life form for each flora species in the quadrats.
- Marking locations of any conservation significant flora, DPs and/or WoNS identified.
- Recording vegetation type including dominant over, middle and understorey species to describe vegetation type in line with the National Vegetation Information System (NVIS) Level V – Association (Executive Steering Committee for Australian Vegetation Information (ESCAVI), 2003).
- Determining vegetation condition using the scale attributed to Keighery (Table 1) (Government of Western Australia, 2000).

- The use of GPS to map significant species and boundaries of differing vegetation type and condition.
- Recording evidence of disturbance, such as fire.

Table 1: Vegetation condition ratings

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

Source: EPA, 2016

3.2.1 Threatened and Priority Ecological Community Assessment

To assess the presence or absence of a potential threatened ecological community (TEC) and/or priority ecological community (PEC) sampled quadrats were compared to the datasets from Gibson *et al.* (1994). This dataset was compiled from regional floristic assessments conducted by Gibson *et al.* (1994), where a total of 509 10 x 10m quadrats were established to sample the vegetation in the best available condition across the Swan Coastal Plain (DBCA, 2024d). This survey considered the patterning of plant distributions on the plain and assessed the presence and absence of individual species to define floristic groupings based on shared species with the aid of multivariate analysis (Keighery, 1997). These floristic groupings are commonly referred to as Floristic Community Types (FCTs).

Analysis of the 509 quadrats distinguished four super groups (Foothills/Pinjarra Plain, Seasonal Wetlands, Uplands centred on Bassendean Dunes and Uplands Centred on Spearwood and Quindalup Dunes). Within these super groups 43 FCTs were classified. The assessment conducted by Gibson *et al.* (1994) is a point of reference for the characterisation of FCTs on the Swan Coastal Plain which assists in the classification of vegetation as representative of a range of threatened and priority ecological communities (EPA, 2016). Of the 43 FCTs 18 have been classified as threatened ecological communities (DBCA, 2024d).

To infer the relevant FCT, a multivariant comparative (cluster) analysis was performed using a species by site matrix to measure the similarity between sites based on the presence and absence of species producing, a dendrogram to illustrate the similarities between vegetation units (EPA, 2016). A site with a large quantity of weeds, may exclude the weed species from the analysis as they may bias FCT alignments towards FCTs with a greater number of weeds.

Once the FCT similarity has been determined, further interpretation is required to determine if it corresponds to the potential TEC/PEC. An occurrence of new a TEC/PEC should generally be in good or better condition to be considered an extant occurrence of a community. The determination of the extant to be a TEC/PEC may be dependent on the community type and location of the occurrence (DBCA, 2024d). There is no minimum size criteria for a TEC or PEC listed under the BC Act (WA) (DBCA, 2024d); however, TECs listed under the EPBC Act may be dependent on specific size and condition.

Key diagnostic characteristics may be required to further assess the presence of the TEC/PEC. Both desktop and on-ground data are used to determine if the key diagnostic characteristics outlined for each community type is met in the corresponding conservation advice outlined by DCCEEW or DBCA (2024d). This includes but is not limited to hydrology, geology, soil type, location and landform.



Figure 4:
Edgar Griffiths
Quadrat Locations

City of Wanneroo

Legend

-  Site Boundary
-  Quadrat Locations

Client: City of Wanneroo
Date: 19/11/2024
Created by: K.Evans
Image Source: Nearmap, 2024
Datum: GDA2020 / MGA zone 50
Scale: 1: 1500

0 25 50 m



3.3 Limitations

Table 2: Flora survey limitations

Potential Limitation	Degree of Limitation	Comments
Availability of contextual information	None	All regional and local contextual information readily available was readily available for the site.
Competency/experience of team	None	Survey activities were undertaken by experienced environmental scientists who have extensive experience undertaking detailed flora surveys within the Swan Coastal Plain bioregion.
Proportion of flora recorded/collected, any identification issues	None	A total of 172 flora species (taxa) were recorded from 46 families during the field survey, comprised of 56 introduced (weeds) and 116 native species. All species were able to be identified to the species level.
Survey effort and extent	None	The entirety of the site was able to be traversed over the two-day detailed flora survey.
Access restrictions	None	The entirety of site was accessible.
Survey timing	None	The survey was undertaken during Spring which is the optimal season for flora surveys within the Swan Coastal Plain subregion. Whilst the survey was undertaken during flowering season, some species may flower earlier or later in the season and therefore may not be able to be identified. Of the 12 conservation significant flora species identified in the desktop survey as being likely to occur within the survey area, four have flowering periods outside of the survey period. All of these species are perennial shrubs or trees and would likely be identified during the survey.
Disturbances	None	No recent disturbances which may have had an impact on survey results (e.g. fire, recent clearing or floods) were identified during the survey.

4.0 Flora Survey Results

4.1 Desktop Survey

A desktop survey of online databases indicated the potential for a total of 53 conservation significant species to occur within 10 km of the survey area (Table 3). NatureMap indicated 36 conservation significant flora species listed under the *Biodiversity Conservation Act 2016* (WA) or by the Western Australian Herbarium (1998-2024), as potentially occurring within 10 km radius of the site (DBCA, 2024a). A review of the Protected Matters Search Tool (PMST) (DCCEEW, 2024b) indicated 20 significant flora species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) as potentially occurring within a 10 km radius of the site (Appendix 1).

A review of the DBCA (2024b) threatened and priority flora database indicated 36 threatened or priority species have been recorded within 10 km of the site. Of the conservation significant species potentially found in the area, it was determined that the site conditions (soil type, drainage, location) may be suitable for 12 (highlighted green) of these species (Table 3). Conservation code descriptions are provided in Appendix 2.

Table 3: Threatened and Priority flora species listed by NatureMap, PMST and DBCA

Species Name	Cons Code (WA)	Cons Code (Cwlth)	Nature Map	PMST	DBCA
<i>Acacia benthamii</i>	2		x		x
<i>Andersonia gracilis</i>	EN			x	
<i>Anigozanthos humilis</i> subsp. <i>chrysanthus</i>	4		x		x
<i>Anigozanthos viridis</i> subsp. <i>terraspectans</i>	VU			x	
<i>Austrostipa mundula</i>	3		x		x
<i>Baeckea</i> sp. <i>Limestone</i>	1		x		x
<i>Banksia mimica</i>	EN			x	
<i>Caladenia huegelii</i>	T	CR	x	x	x
<i>Paracaleana dixonii</i>	EN			x	
<i>Calectasia elegans</i>	T	CR	x		x
<i>Conostylis bracteata</i>	3		x		x
<i>Cyathochaeta teretifolia</i>	3		x		x
<i>Dampiera triloba</i>	3		x		x
<i>Darwinia carnea</i>	T		x		x
<i>Darwinia foetida</i>	CR			x	
<i>Darwinia macrostegia</i>	4		x		x
<i>Darwinia meeboldii</i>	T		x		x

Species Name	Cons Code (WA)	Cons Code (Cwlth)	Nature Map	PMST	DBCA
<i>Darwinia oxylepis</i>	T		x		x
<i>Diuris micrantha</i>	VU			x	
<i>Diuris purdiei</i>	EN			x	
<i>Drakaea elastica</i>	EN			x	
<i>Drakaea micrantha</i>	VU			x	
<i>Drosera patens</i>	1		x		x
<i>Drosera x badgerupii</i>	2		x		x
<i>Drosera x sidjamesii</i>	1		x		x
<i>Eleocharis keigheryi</i>	VU			x	
<i>Eucalyptus argutifolia</i>	T		x	x	x
<i>Eucalyptus foecunda</i> subsp. <i>foecunda</i>	4		x		x
<i>Fabronia hampeana</i>	2		x		x
<i>Grevillea christineae</i>	EN			x	
<i>Grevillea curviloba</i> subsp. <i>incurva</i>	EN			x	
<i>Grevillea</i> sp. Ocean Reef	1		x		x
<i>Hibbertia leptotheca</i>	3		x		x
<i>Jacksonia sericea</i>	4		x		x
<i>Leucopogon maritimus</i>	1		x		x
<i>Macarthuria keigheryi</i>	EN			x	
<i>Marianthus paralius</i>	T	EN	x	x	x
<i>Melaleuca</i> sp. Wanneroo	EN			x	
<i>Millotia tenuifolia</i> var. <i>laevis</i>	2		x		x
<i>Pimelea calcicola</i>	3		x		x
<i>Poranthera moorokatta</i>	2		x		x
<i>Sarcozona bicarinata</i>	3		x		x
<i>Schoenus griffinianus</i>	4		x		x
<i>Stenanthemum sublineare</i>	2		x		x
<i>Stylidium paludicola</i>	3		x		x
<i>Stylidium striatum</i>	4		x		x
<i>Styphelia filifolia</i>	3		x		x
<i>Synaphea</i> sp. Fairbridge Farm	CR			x	

Species Name	Cons Code (WA)	Cons Code (Cwlth)	Nature Map	PMST	DBCA
<i>Thelymitra dedmaniarum</i>	EN			x	
<i>Thelymitra variegata</i>	T		x		x
<i>Thryptomene velutina</i>	2		x		x
<i>Utricularia oppositiflora</i>	3		x		x

4.1.1 Threatened and Priority Ecological Communities

A review of the PMST report and DBCA database searches identified four listed Threatened Ecological Communities that could potentially occur within 10 km of the site (DCCEEW, 2024; DBCA, 2024b) (Table 4).

Table 4: Potential Threatened Ecological Communities within the Edgar Griffiths Bushland

Name	Status	Presence
<i>Banksia</i> Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion	Critically Endangered	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
Empodisma peatlands of southwestern Australia	Endangered	Community may occur within area

Source: DCCEEW, 2024

4.2 Flora Survey Results

4.2.1 Vegetation Types

Two vegetation types were recorded within the Edgar Griffiths Bushland, *Eucalyptus gomphocephala* Woodland (EgW) was located within the eastern half of the bushland and *Banksia* spp. woodland (BsppW) was located in the western half of the bushland. Vegetation types are described in Table 5 and shown in Figure 5.

Table 5: Vegetation type within Edgar Griffiths Bushland

Vegetation Type	Description	Photograph
<i>Eucalyptus gomphocephala</i> Woodland (EgW)	<i>Eucalyptus gomphocephala</i> woodland over <i>Hibbertia hypericoides</i> , <i>Grevillea vestita</i> and mixed shrubs and herbs.	
<i>Banksia</i> spp. Woodland (BSppW)	<i>Banksia attenuata</i> and <i>Banksia menziesii</i> woodland over <i>Hibbertia hypericoides</i> , <i>Mesomelaena pseudostygia</i> and mixed shrubs and herbs.	

4.2.2 Vegetation Condition

Vegetation condition on site ranged from degraded to excellent (Table 6, Figure 6). The 6 ha to the south and west of Edgar Griffiths bushland has been recorded as parkland cleared and in a completely degraded vegetation condition. The surrounding parkland cleared area is not included within the survey site. This is shown in Figure 6; however, has not been included in Table 6.

Table 6: Vegetation condition within Edgar Griffiths Bushland

Vegetation Condition	Pristine	Excellent	Very Good	Good	Degraded	Completely Degraded	Total
Area (ha)	0	1.19	2.42	1.80	0.02	0	5.43
Area (%)	0	21.94	44.56	33.18	0.32	0	100



Figure 5:
Edgar Griffiths
Vegetation Type

City of Wanneroo

Legend

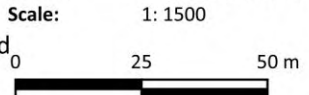
Site Boundary

Vegetation Type

Banksia spp. Woodland

Eucalyptus gomphocephala (Tuart) Woodland

Client: City of Wanneroo
Date: 19/11/2024
Created by: K. Evans
Image Source: Nearmap, 2024
Datum: GDA2020 / MGA zone 50
Scale: 1: 1500



388296

388416

388536

388656

388776

6488321

6488321

6488201

6488201

6488081

6488081

6487961

6487961

6487841

6487841

6487721

6487721

Casuarina Wy

Garden Park Dr



Figure 6:
Edgar Griffiths
Vegetation Condition

City of Wanneroo

Legend

- Site Boundary
- Vegetation Condition
- Excellent
- Very Good
- Good
- Degraded
- Completely Degraded

Client: City of Wanneroo
Date: 19/11/2024
Created by: K.Evans
Image Source: Nearmap, 2024
Datum: GDA2020 / MGA zone 50
Scale: 1: 3000

0 50 100 m



4.2.3 Flora

A total of 172 flora species (taxa) were recorded from 46 families during the field survey, comprised of 56 introduced (weeds) and 116 native species. Examples of native flora species are shown in Figure 7 and weed species in Figure 8. A complete flora species list is provided in Appendix 4.

One significant flora species *Jacksonia sericea* was recorded during the survey. *Jacksonia sericea* is listed as a Priority 4 species under the *Biodiversity Conservation Act 2016* (WA). 478 individuals of *Jacksonia sericea* were recorded throughout the survey site and were predominantly found within the *Eucalyptus gomphocephala* (Tuart) Woodland vegetation type in the east of the site. Locations are shown in Figure 9 and locations in relation to vegetation type is shown in Figure 10.

Two Declared Pests were identified within the survey site, including Bridal Creeper (**Asparagus asparagoides*) and One-leaf Cape Tulip (**Moraea flaccida*), their locations are shown in Figure 11. Declared pests are listed on the Western Australian Organism List (WAOL) under the *Biosecurity and Agriculture Management Act 2007* (WA). This classification requires the landowner/land manager to control the population to limit damage as a result of the presence of these species (Department of Primary Industries and Regional Development (DPIRD), 2024b).



Jacksonia sericea (Waldjumi)



Caladenia arenicola (Carousel Spider Orchid)



Synaphea spinulosa

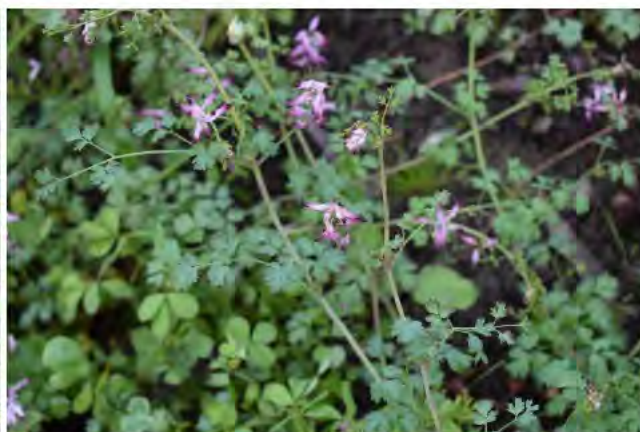


Thysanotus manglesianus (Mangles' Fringed Lily)

Figure 7: Examples of native flora species recorded.



Bridal Creeper (**Asparagus asparagoides*)



Wall Fumitory (**Fumaria muralis*)

Figure 8: Examples of introduced flora species recorded.

4.2.4 Threatened and Priority Communities

Of the four threatened and priority ecological communities that were identified as likely to occur within a 10 km radius of the survey area during the desktop assessment two communities were identified to potentially occur within the site boundary. The species composition identified within the site was consistent with:

- *Banksia* Woodlands of the Swan Coastal Plain ecological community
- Tuart (*Eucalyptus gomphocephala*) Woodlands and forests of the Swan Coastal Plain.

Banksia Woodlands of the Swan Coastal Plain Ecological Community

The key diagnostic characteristics of *Banksia* Woodlands of the Swan Coastal Plain TEC were met in the *Banksia* dominated vegetation types identified across the survey area (Table 7) (Department of Agriculture, Water and the Environment (DAWE), 2016). The condition of suitable patches ranged from good to excellent. The patch within the southwest of the site met the size criteria at excellent condition vegetation, to be classified as a *Banksia* Woodland of the Swan Coastal Plain TEC (Table 8). The extent and condition of the patch deemed to be part of the *Banksia* Woodlands of the Swan Coastal Plain ecological community is shown in Figure 12.

Floristic analysis results indicate that the *Banksia* spp. woodland within Edgar Griffiths Bushland corresponds with floristic community type 28 previously described as Spearwood *Banksia attenuata* or *Banksia attenuata* – *Eucalyptus* Woodlands (Gibson *et al.*, 1994) (Appendix 6). Edgar Griffiths quadrats have the greatest similarity with WOODV-2 ranging between 31.46 % and 35.29 %.

Table 7: Key Diagnostic Characteristics for Determining a *Banksia* Woodlands of the Swan Coastal Plain TEC (green denotes the criteria has been met)

Key Diagnostic Characteristics	Description	Site Specifics
Local and physical environment	Swan Coastal Plain IBRA Bioregion	The entirety of the site falls within the Swan Coastal Plain IBRA Bioregion.

Key Diagnostic Characteristics	Description	Site Specifics
Soils and Landforms	Well drained, low nutrient soils on sandplain landforms, particularly on Bassendean and Spearwood sands (occasionally Quindalup sands). Common on sandy colluvium and aeolian sands of the Ridge Hill Shelf, Whicher Scarp and Dandaragan Plateau.	The survey area had well-draining low nutrient soils. The survey area falls within the Spearwood System (DPIRD, 2022).
Structure	Distinctive upper sclerophyllous layer of low trees dominated by <i>Banksias</i> . Emergent tall <i>Eucalyptus</i> or <i>Allocasuarina</i> may be present	One vegetation type consisting of an upper layer of <i>Banksia</i> species was recorded within the survey area (<i>Banksia</i> spp. woodland). The remainder of the site consisted of tall <i>Eucalyptus gomphocephala</i> woodland with sparse <i>Allocasuarina</i> present throughout.
Composition	Canopy dominated by <i>B. attenuata</i> and/or <i>B. menziesii</i> (although other <i>Banksias</i> can be dominant). Patch must include one of the following diagnostic species: ▪ <i>Banksia attenuata</i> ▪ <i>B. menziesii</i> ▪ <i>B. prionotes</i> ▪ <i>B. ilicifolia</i>.	Both <i>B. attenuata</i> and <i>B. menziesii</i> were dominant within the survey area. The tree layer does not include <i>Corymbia calophylla</i> however <i>Eucalyptus marginata</i> , and <i>E. gomphocephala</i> were present adjacent and throughout. The only medium height tree species present was <i>Allocasuarina fraseriana</i> .
	If present, emergent tree layer often includes <i>Corymbia calophylla</i> , <i>Eucalyptus marginata</i> , or less commonly <i>E. gomphocephala</i> . Other trees of a medium height that may be present, and may be codominant with the <i>Banksia</i> species include: ▪ <i>Eucalyptus tottiana</i> ▪ <i>Nuytsia floribunda</i> ▪ <i>Allocasuarina fraseriana</i> ▪ <i>Callitris arenaria</i> ▪ <i>Callitris pyramidalis</i> ▪ <i>Xylomelum occidentale</i>. Very high diversity of understory species that vary from patch to patch. See the description above and vegetation types that relate to <i>Banksia</i> woodlands (Gibson <i>et al.</i>, 1994).	The following key species in the sclerophyllous shrub layer outlined by the listing advice are present within the survey area: ▪ <i>Adenanthos cygnorum</i> ▪ <i>Bossiaea eriocarpa</i> ▪ <i>Conostephium pendulum</i> ▪ <i>Daviesia</i> spp. ▪ <i>Gompholobium tomentosum</i> ▪ <i>Hibbertia hypericoides</i> ▪ <i>Jacksonia</i> spp. ▪ <i>Petrophile linearis</i> ▪ <i>Stirlingia latifolia</i> ▪ <i>Xanthorrhoea preissii</i> The following key herbaceous ground layer species outlined by the listing advice are present within the survey area:

Key Diagnostic Characteristics	Description	Site Specifics
		▪ <i>Amphipogon turbinatus</i> ▪ <i>Burchardia congesta</i> ▪ <i>Caladenia</i> spp. ▪ <i>Drosera erythrorhiza</i> ▪ <i>Mesomelaena pseudostygia</i> ▪ <i>Patersonia occidentalis</i> ▪ <i>Trachymene pilosa</i>.
Contra-indicators	Patches clearly dominated by <i>Banksia littoralis</i> or <i>Banksia burdettii</i> are not part of the Banksia Woodlands ecological community. Floristic Community Type (FCT) 20c – Eastern shrublands and woodlands, corresponds with a separate EPBC ecological community listing, Shrublands and Woodlands of the eastern Swan Coastal Plain	Neither <i>Banksia littoralis</i> or <i>B. burdettii</i> were dominant within the survey area. FCT 20c was not found within the survey area.

Source: DAWE, 2016, Gibson *et al.*, 1994.

Table 8: Vegetation Condition Criteria for Determining a Banksia Woodland of the Swan Coastal Plains TEC (green denotes the patch meets the condition threshold)

Vegetation Condition	Condition Threshold	Patch Size
Pristine	No minimum patch size	0.00 ha
Excellent	0.5 ha	1.174 ha
Very Good	1 ha	0.617 ha
Good	2 ha	0.488 ha

Tuart (Eucalyptus gomphocephala) Woodlands and forests of the Swan Coastal Plain

The Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community has characteristics represented within this site in line with the Approved Conservation Advice (incorporating listing advice) for the Tuart (*Eucalyptus gomphocephala*) woodlands of the Swan Coastal Plain Ecological Community (DAWE, 2019) (Table 9). The *Eucalyptus gomphocephala* woodland patch across the site is over 2 ha in size (3.15 ha). The 10 m x 10 m quadrats within the *Eucalyptus gomphocephala* patch ranged from 31 to 37 native understorey species in the good and very good condition.

All quadrats meet the very high condition category biotic threshold; therefore, the patch is considered to be part of the threatened ecological community (Table 10). The component of the *Eucalyptus gomphocephala* woodland patch within the survey area which meets the very high condition category is 3.15 ha. Floristic analysis results indicate that the *Eucalyptus gomphocephala* woodland within Edgar Griffiths Bushland corresponds with floristic community type 25 previously described as Southern *Eucalyptus*

gomphocephala – *Agonis flexuosa* Woodlands (Gibson *et al.*, 1994) (Appendix 7). Edgar Griffiths quadrats have the greatest similarity with MYALUP-1 ranging between 31.8 % and 33.1 %.

Table 9: Key diagnostic characteristics of Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain (green denotes the criteria has been met)

Key Diagnostic Characteristics	Site Specifics
Occurs in the Swan Coastal Plain Bioregion, Western Australia	Site occurs in the Swan Coastal Plain Bioregion
Primarily occurs on the Spearwood and Quindalup dune systems but can also occur on the Bassendean dunes and Pinjarra Plain. It can occur on the banks of rivers and wetlands	Occurs on the Spearwood dune systems (DPIRD, 2022).
The presence of at least two living, established (DBH ≥ 15 cm) Tuart trees within the upper canopy, with a gap of ≤ 60 m between the canopy edges of adjacent Tuart trees	More than two Tuart trees were present
The presence of an understorey of native species, often modified by disturbance	A native understorey is present in across sections of the vegetation. Evidence of disturbance is present in surrounding vegetation.
A patch size of at least 0.5 ha	Patch is at least 0.5 ha

Source: DAWE, 2019

Table 10: Condition and Biotic Thresholds of Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain

Condition	Biotic Thresholds (must meet one)	Patch size	
		≥ 2 ha < 5 ha	≥ 0.5 ha < 2 ha
Very High	≥ 80 % of all understorey vegetation cover is native	Part of the protected ecological community	Part of the protected ecological community
	At least 12 native understorey species per 0.01 ha (10 m x 10 m plot or equivalent sample unit)		
High	≥ 60 % of all understorey vegetation cover is native	Part of the protected ecological community	AND has an important landscape role (≤ 100 m to native vegetation) OR has a habitat role (≥ 2 very large trees per 0.5 ha)
	At least 8 native understorey species per 0.01 ha (10 m x 10 m plot or equivalent sample unit)		OR shows regeneration (≥ 15 seedlings and/or saplings per 0.5 ha) Part of the protected ecological community

Condition	Biotic Thresholds (must meet one)	Patch size	
		≥ 2 ha < 5 ha	≥ 0.5 ha < 2 ha
Moderate	≥ 50 % of all understorey vegetation cover is native At least 4 native understorey species per 0.01 ha (10 m x 10 m plot or equivalent sample unit)	AND That either: have an important landscape role (≤ 100 m to native vegetation) * OR have a habitat role (≥ 2 very large trees per 0.5 ha) * OR show regeneration (≥ 15 seedlings and/or saplings per 0.5 ha) *	Not part of the protected ecological community (but may be a focus for local protection or restoration)
	< 50 % of all understorey vegetation cover is native# Less than 4 native understorey species per 0.01 ha (10 m x 10 m plot or equivalent sample unit)	Part of the protected ecological community Not part of the protected ecological community	Not part of the protected ecological community

Source: DAWE, 2019

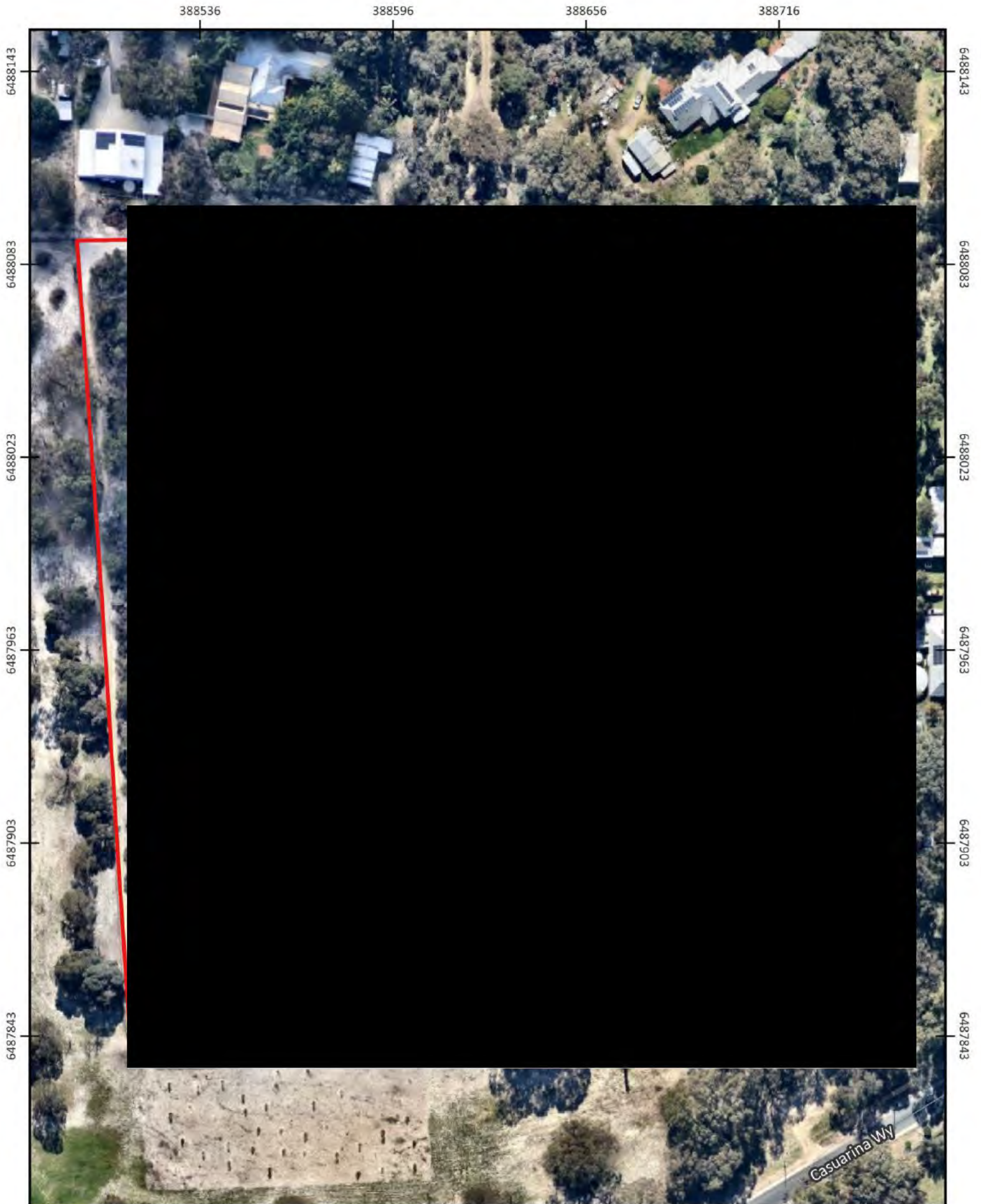


Figure 9:
Edgar Griffiths
Conservation Significant
Species

City of Wanneroo

Legend

- Site Boundary
- *Jacksonia sericea*

Client: City of Wanneroo
Date: 19/11/2024
Created by: K.Evans
Image Source: Nearmap, 2024
Datum: GDA2020 / MGA zone 50
Scale: 1: 1500

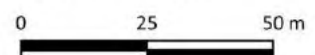




Figure 10:
 Edgar Griffiths
 Conservation Significant
 Species and Vegetation
 Type
 City of Wanneroo

Legend

- Site Boundary
- Jacksonia sericea

Vegetation Type

- Banksia spp. Woodland
- Eucalyptus gomphocephala Woodland

Client: City of Wanneroo
 Date: 19/11/2024
 Created by: K.Evans
 Image Source: Nearmap, 2024
 Datum: GDA2020 / MGA zone 50
 Scale: 1: 1500

0 25 50 m





Figure 11:
Edgar Griffiths
Locations of
Declared Pests

City of Wanneroo

Legend

Site Boundary

Declared Pests

- *Asparagus asparagoides* <5%
- *Moraea flaccida* <5%

Client: City of Wanneroo
Date: 19/11/2024
Created by: K.Evans
Image Source: Nearmap, 2024
Datum: GDA2020 / MGA zone 50
Scale: 1: 1500

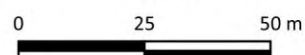




Figure 12:
 Edgar Griffiths
 Threatened Ecological
 Communities Boundaries

City of Wanneroo

Legend

- Site Boundary
- Banksia spp. Woodland TEC
- Tuart Woodland TEC

Client: City of Wanneroo
Date: 19/11/2024
Created by: K. Evans
Image Source: Nearmap, 2024
Datum: GDA2020 / MGA zone 50
Scale: 1: 1500

0 25 50 m



5.0 Implications of Results

5.1 Flora and Vegetation

Two vegetation types were recorded during the survey namely, *Eucalyptus gomphocephala* (Tuart) Woodland (EgW) and *Banksia* spp. Woodland (BspW). The vegetation condition ranged from degraded to excellent with 0.32 % in degraded condition isolated in historical tracks in the centre of the bushland. 99.68 % of the site was in good or better condition with representative strata present and low weed loads throughout.

A total of 172 flora species (taxa) were recorded from 46 families during the survey. Of these, two declared pests Bridal Creeper (**Asparagus asparagoides*) and One-Leaf Cape Tulip (**Moraea flaccida*) were identified. Landowners/managers are required to control populations of declared pests under the *Biosecurity and Agriculture Management Act 2007* (WA).

5.2 Significant Flora

One conservation significant species *Jacksonia sericea* was identified during the survey. 478 individuals of *Jacksonia sericea* a priority 4 species were recorded during the survey. Individuals were predominantly recorded within the *Eucalyptus gomphocephala* (Tuart) Woodland vegetation type however some individuals were located within the *Banksia* spp. Woodland.

Of the 12 conservation significant flora species identified within the desktop survey as being likely to occur within the survey area, four have flowering periods outside of the survey period. All of these species are perennial shrubs or trees and would likely be identified during the survey.

5.3 Threatened Ecological Communities

Two threatened ecological communities were identified as likely to occur within Edgar Griffiths bushland. The species composition identified within the survey area was consistent with *Banksia* Woodlands of the Swan Coastal Plain and Tuart (*Eucalyptus gomphocephala*) Woodland and Forests of the Swan Coastal Plain ecological communities.

Banksia Woodlands of the Swan Coastal Plain ecological community is listed as Endangered under the EPBC Act. Key diagnostic feature includes a prominent overstorey layer of *Banksia* spp. with scattered eucalyptus. The understorey is a rich mix of sclerophyllous shrubs, graminoids and forbs. The ecological community is characterised by a high endemism and considerable localised variation in species composition across its range, as such a number of different floristic community types (FCT) are encompassed within the *Banksia* Woodland ecological community. Some of these FCTs are highly restrictive and listed as Threatened or Priority under the BC Act (DAWE, 2016). *Banksia* woodland within Edgar Griffiths aligns closest with FCT 28 described by Gibson *et al.* (1998) as Spearwood *Banksia attenuata* or *Banksia attenuata* – *Eucalyptus* woodlands. FCT 28 is not listed as a priority or threatened ecological community in Western Australia however is considered to be a part of the Endangered *Banksia* Woodlands of the Swan Coastal Plain Ecological Community under the EPBC Act.

Tuart (*Eucalyptus gomphocephala*) Woodlands of the Swan Coastal Plain ecological community of listed as Critically Endangered Under the EPBC Act and Priority 3 under the BC Act. The primary defining feature is the presence of at least two long established *Eucalyptus gomphocephala* (Tuart) trees in the uppermost canopy layer, although they may occur with trees of other species. There is a gap of no more than 60 m between the outer edge of the canopies of adjacent Tuart trees. These trees may occur either as single stemmed trees or as a mallee growth form. Other tree species may be present in the canopy or sub canopy. They commonly include, *Agonis flexuosa*, and *Banksia grandis* (in the southern part of the range) *Banksia attenuata*, *Eucalyptus marginata* and less commonly *Corymbia calophylla*, *Banksia menziesii* and *Banksia prionotes*. An understory of native plants is typically present, which may include grasses, herbs and shrubs although this is often modified by disturbance (DAWE, 2019).

Analysis of key diagnostic characteristics, condition categories and thresholds as defined in the conservation advice for the Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain indicate that the patch of Tuart woodland within Edgar Griffiths Bushland is a very high condition Tuart (*Eucalyptus gomphocephala*) woodlands and forests of the Swan Coastal Plain TEC. FCT analysis indicated that the Edgar Griffiths Bushland aligns with FCT 25 described as Southern *Eucalyptus gomphocephala* – *Agonis flexuosa* woodlands (Gibson *et al.*, 1994). Whilst the quadrats at Edgar Griffiths align closest FCT 25 it is typically restricted to the southwestern part of the Swan Coastal Plain from Woodman Point to Busselton.

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Appendix 1: PMST Report 10 km



Australian Government

Department of Climate Change, Energy,
the Environment and Water

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. Please see the caveat for interpretation of information provided here.

Report created: 19-Aug-2024

[Summary](#)

[Details](#)

[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment 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 (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	66
Listed Migratory Species:	50

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 <https://www.dcceew.gov.au/parks-heritage/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 Lands:	60
Commonwealth Heritage Places:	None
Listed Marine Species:	74
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	11
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	64
Key Ecological Features (Marine):	None
Biologically Important Areas:	9
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

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.

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area	In feature area
Empodisma peatlands of southwestern Australia	Endangered	Community may occur within area	In feature area
Honeymyrtle shrubland on limestone ridges of the Swan Coastal Plain Bioregion	Critically Endangered	Community likely to occur within area	In buffer area only
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species

[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat may occur within area	In buffer area only
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area
Zanda latirostris listed as Calyptorhynchus latirostris			
Carnaby's Black Cockatoo, Short-billed Black-cockatoo [87737]	Endangered	Breeding known to occur within area	In feature area
FISH			
Galaxiella nigrostriata			
Blackstriped Dwarf Galaxias, Black-stripe Minnow [88677]	Endangered	Species or species habitat may occur within area	In buffer area only
INSECT			
Hesperocolletes douglasi			
Douglas' Broad-headed Bee, Rottnest Bee [66734]	Critically Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Bettongia penicillata ogilbyi			
Woylie [66844]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Dasyurus geoffroii			
Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eubalaena australis			
Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
Macroderma gigas			
Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In feature area
Neophoca cinerea			
Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Pseudocheirus occidentalis			
Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat likely to occur within area	In buffer area only
PLANT			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat likely to occur within area	In feature area
Anigozanthos viridis subsp. terraspectans Dwarf Green Kangaroo Paw [3435]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Banksia mimica Summer Honeypot [82765]	Endangered	Species or species habitat may occur within area	In feature area
Caladenia huegelii King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat likely to occur within area	In feature area
Caleana dixonii listed as Paracaleana dixonii Sandplain Duck Orchid [87944]	Endangered	Species or species habitat may occur within area	In buffer area only
Darwinia foetida Muchea Bell [83190]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area	In feature area
Drakaea elastica Glossy-leafed Hammer Orchid, Glossy-leafed Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area	In feature area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat may occur within area	In feature area
Eleocharis keigheryi Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Eucalyptus argutifolia Yanchep Mallee, Wabling Hill Mallee [24263]	Vulnerable	Species or species habitat known to occur within area	In feature area
Grevillea christineae Christine's Grevillea [64520]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Grevillea curviloba subsp. curviloba Curved-leaf Grevillea [64908]	Endangered	Species or species habitat may occur within area	In buffer area only
Grevillea curviloba subsp. incurva Narrow curved-leaf Grevillea [64909]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Macarthuria keigheryi Keighery's Macarthuria [64930]	Endangered	Species or species habitat may occur within area	In feature area
Marianthus paralius [83925]	Endangered	Species or species habitat known to occur within area	In buffer area only
Melaleuca sp. Wanneroo (G.J. Keighery 16705) [89456]	Endangered	Species or species habitat known to occur within area	In buffer area only
Synaphea sp. Fairbridge Farm (D.Papenfus 696) Selena's Synaphea [82881]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Thelymitra dedmaniarum Cinnamon Sun Orchid [65105]	Endangered	Species or species habitat may occur within area	In buffer area only
REPTILE			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

SHARK			
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In buffer area only

Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area	In buffer area only
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Hydroprogne caspia Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Onychoprion anaethetus Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sterna dougallii Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Marine Species			
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area	In buffer area only
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In buffer area only
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Breeding known to occur within area	In buffer area only
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area	In buffer area only
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In buffer area only
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In buffer area only
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Terrestrial Species			
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area	In feature area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area	In buffer area only
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands

[[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.

Commonwealth Land Name	State	Buffer Status
Defence		
Defence - MUCHEA ARMAMENT RANGE [50074]	WA	In buffer area only
Defence - MUCHEA ARMAMENT RANGE [50089]	WA	In buffer area only
Unknown		
Commonwealth Land - [50448]	WA	In buffer area only
Commonwealth Land - [50689]	WA	In buffer area only
Commonwealth Land - [50705]	WA	In buffer area only
Commonwealth Land - [50704]	WA	In buffer area only
Commonwealth Land - [50440]	WA	In buffer area only
Commonwealth Land - [50706]	WA	In buffer area only
Commonwealth Land - [50700]	WA	In buffer area only
Commonwealth Land - [50561]	WA	In buffer area only
Commonwealth Land - [50562]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [50563]	WA	In buffer area only
Commonwealth Land - [50701]	WA	In buffer area only
Commonwealth Land - [50271]	WA	In buffer area only
Commonwealth Land - [50508]	WA	In buffer area only
Commonwealth Land - [50630]	WA	In buffer area only
Commonwealth Land - [50716]	WA	In buffer area only
Commonwealth Land - [50747]	WA	In buffer area only
Commonwealth Land - [50502]	WA	In buffer area only
Commonwealth Land - [50713]	WA	In buffer area only
Commonwealth Land - [50674]	WA	In buffer area only
Commonwealth Land - [50680]	WA	In buffer area only
Commonwealth Land - [50439]	WA	In buffer area only
Commonwealth Land - [50587]	WA	In buffer area only
Commonwealth Land - [50586]	WA	In buffer area only
Commonwealth Land - [50588]	WA	In buffer area only
Commonwealth Land - [50489]	WA	In buffer area only
Commonwealth Land - [50584]	WA	In buffer area only
Commonwealth Land - [50585]	WA	In buffer area only
Commonwealth Land - [50582]	WA	In buffer area only
Commonwealth Land - [50583]	WA	In buffer area only
Commonwealth Land - [50667]	WA	In buffer area only
Commonwealth Land - [50801]	WA	In buffer area only
Commonwealth Land - [50553]	WA	In buffer area only
Commonwealth Land - [50575]	WA	In buffer area only
Commonwealth Land - [50574]	WA	In buffer area only
Commonwealth Land - [50576]	WA	In buffer area only
Commonwealth Land - [50711]	WA	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - [50668]	WA	In buffer area only
Commonwealth Land - [50559]	WA	In buffer area only
Commonwealth Land - [50436]	WA	In buffer area only
Commonwealth Land - [51120]	WA	In buffer area only
Commonwealth Land - [50312]	WA	In buffer area only
Commonwealth Land - [50625]	WA	In buffer area only
Commonwealth Land - [50606]	WA	In buffer area only
Commonwealth Land - [51130]	WA	In buffer area only
Commonwealth Land - [51111]	WA	In buffer area only
Commonwealth Land - [51132]	WA	In buffer area only
Commonwealth Land - [50430]	WA	In buffer area only
Commonwealth Land - [51118]	WA	In buffer area only
Commonwealth Land - [50494]	WA	In buffer area only
Commonwealth Land - [50682]	WA	In buffer area only
Commonwealth Land - [50594]	WA	In buffer area only
Commonwealth Land - [50702]	WA	In buffer area only
Commonwealth Land - [50703]	WA	In buffer area only
Commonwealth Land - [50626]	WA	In buffer area only
Commonwealth Land - [50560]	WA	In buffer area only
Commonwealth Land - [50598]	WA	In buffer area only
Commonwealth Land - [50592]	WA	In buffer area only
Commonwealth Land - [50593]	WA	In buffer area only

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area	In buffer area only
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardena carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area	In buffer area only
Ardena grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area	In buffer area only
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Larus pacificus Pacific Gull [811]		Foraging, feeding or related behaviour may occur within area	In buffer area only
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area	In buffer area only
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Sterna dougallii Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area	In buffer area only
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat may occur within area overfly marine area	In feature area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Fish			
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area	In buffer area only
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area	In buffer area only
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area	In buffer area only
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area	In buffer area only
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area	In buffer area only
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area	In buffer area only
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area	In buffer area only
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In buffer area only
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area	In buffer area only
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area	In buffer area only
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area	In buffer area only
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In buffer area only
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area	In buffer area only
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area	In buffer area only
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In buffer area only
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In buffer area only
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area	In buffer area only
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In buffer area only
Mammal			
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In buffer area only
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Reptile			
Aipysurus pooleorum Shark Bay Sea Snake [66061]		Species or species habitat may occur within area	In buffer area only
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area	In buffer area only
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Whales and Other Cetaceans [Resource Information]			
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Balaenoptera acutorostrata Minke Whale [33]	Endangered	Species or species habitat may occur within area	In buffer area only
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Balaenoptera musculus Blue Whale [36]		Species or species habitat likely to occur within area	In buffer area only
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area	In buffer area only
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In buffer area only
Eubalaena australis Southern Right Whale [40]		Breeding known to occur within area	In buffer area only
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In buffer area only
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In buffer area only
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In buffer area only

Current Scientific Name	Status	Type of Presence	Buffer Status
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In buffer area only
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In buffer area only

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Errina Road	Nature Reserve	WA	In buffer area only
Jandabup	Nature Reserve	WA	In buffer area only
Lake Joondalup	Nature Reserve	WA	In buffer area only
Marmion	Marine Park	WA	In buffer area only
Neerabup	National Park	WA	In buffer area only
Unnamed WA21176	5(1)(h) Reserve	WA	In buffer area only
Unnamed WA43290	Conservation Park	WA	In buffer area only
Unnamed WA46756	Conservation Park	WA	In buffer area only
Unnamed WA46926	5(1)(h) Reserve	WA	In buffer area only
Unnamed WA50514	5(1)(h) Reserve	WA	In buffer area only
Woodvale	5(1)(h) Reserve	WA	In buffer area only

Nationally Important Wetlands		[Resource Information]
Wetland Name	State	Buffer Status
Joondalup Lake	WA	In buffer area only

EPBC Act Referrals					[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status	
Alkimos Seawater Desalination	2019/8453		Completed	In feature area	
Land clearing for timber storage	2022/09367		Completed	In buffer area only	
Land Development, James Street and Well Street, East Wanneroo, Elberton Property	2021/9106		Assessment	In buffer area only	

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Mariginiup Residential Development	2023/09675		Assessment	In buffer area only
Northern Terminal to Neerabup Terminal 330kV Transmission Line	2024/09799		Assessment	In buffer area only
Residential Subdivision development	2011/6040		Post-Approval	In buffer area only
Wattle Avenue East Quarry	2022/09326		Referral Decision	In buffer area only
Controlled action				
Catalina Residential Development	2010/5785	Controlled Action	Post-Approval	In buffer area only
East Landsdale Residential Development	2008/4676	Controlled Action	Post-Approval	In buffer area only
East Wanneroo Cell 9 residential subdivision - Lots 50,51,52,154 & 404	2010/5772	Controlled Action	Completed	In buffer area only
Excavate sand and limestone resources	2010/5621	Controlled Action	Completed	In buffer area only
Limestone extraction on Lot 8 Wattle Avenue, Nowergup	2013/6767	Controlled Action	Post-Approval	In buffer area only
Lot 1665 Wanneroo Road, Sinagra.	2017/7921	Controlled Action	Post-Approval	In buffer area only
Lot 9000 Wanneroo Road Sinagra Mixed Use Development, Western Australia	2020/8798	Controlled Action	Proposed Decision	In buffer area only
Meridian Business Park Industrial Development	2007/3479	Controlled Action	Post-Approval	In buffer area only
Mitchell Freeway Extension between Burns Beach Rd and Hester Av, Neerabup, WA	2013/7091	Controlled Action	Post-Approval	In buffer area only
Mitchell Freeway Principal Shared Path Gaps Project Ocean Reef Road to Hepburn Avenue	2020/8833	Controlled Action	Post-Approval	In buffer area only
National Lifestyle Villages Development	2011/6020	Controlled Action	Post-Approval	In buffer area only
Nava-1 Cable System	2001/510	Controlled Action	Completed	In buffer area only
Neerabup Industrial Area, WA	2021/8917	Controlled Action	Assessment Approach	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Neerabup Industrial Estate, Lot 701 Flynn Drive Neerabup WA	2012/6424	Controlled Action	Post-Approval	In buffer area only
Ocean Reef Marina Development	2009/4937	Controlled Action	Completed	In buffer area only
Perth-Darwin National Highway alignment (Swan Valley Section), WA	2013/7042	Controlled Action	Post-Approval	In buffer area only
Shark Hazard Mitigation Drum Line Program, WA	2014/7174	Controlled Action	Completed	In buffer area only
Subdivision of Lot 902 Flynn Drive Neerabup for Industrial Development	2021/8977	Controlled Action	Assessment Approach	In buffer area only
Not controlled action				
Commercial development of Lot 9004 Hodges Drive, Joondalup, WA	2016/7844	Not Controlled Action	Completed	In buffer area only
Connect Joondalup - Lot 9000 McLarty Ave and Lot 999 Piccadilly Circus, Joondalup, WA	2016/7758	Not Controlled Action	Completed	In buffer area only
Container Deposit Scheme Project	2019/8517	Not Controlled Action	Completed	In buffer area only
Development of 39 (Lot 3000) Hardcastle Avenue, Landsdale, WA	2017/8100	Not Controlled Action	Completed	In buffer area only
Development of ECU Engineering Annex, Joondalup Campus, WA	2017/7995	Not Controlled Action	Completed	In buffer area only
Eradication of the European House Borer, Perth metropolitan area, WA	2009/5027	Not Controlled Action	Completed	In feature area
Flynn Drive / Pinjar Road Intersection Works, Lot 9000 Flynn Drive, Neerabup, WA	2017/7983	Not Controlled Action	Completed	In buffer area only
Gnangara Road upgrade project, city of Swan, WA	2013/6966	Not Controlled Action	Completed	In buffer area only
Groundwater Replenishment Scheme (GWRS) Stage 2	2016/7786	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Landsdale Primary School Development, WA	2015/7597	Not Controlled Action	Completed	In buffer area only
Landsdale Residential Subdivision Development	2011/6027	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Lot 158 Landsdale Rd, Landsdale, WA	2012/6403	Not Controlled Action	Completed	In buffer area only
Lot 594 Wanneroo Road development, Hocking	2020/8621	Not Controlled Action	Completed	In buffer area only
Lots 71 & 72 Queensway Rd, East Landsdale	2012/6541	Not Controlled Action	Completed	In buffer area only
Ocean Reef Marina Development, City of Joondalup, WA	2014/7237	Not Controlled Action	Completed	In buffer area only
Pearsall Primary School, Lots 62, 269, 1008, 1009 & Part Lot 23, Pearsall, WA	2012/6405	Not Controlled Action	Completed	In buffer area only
Pinjar Motorcycle Park Raceway Development	2012/6419	Not Controlled Action	Completed	In buffer area only
Quinns Main sewer extension, Clarkson - Neerabup, WA	2018/8215	Not Controlled Action	Completed	In buffer area only
Realignment of Flynn Drive	2011/6170	Not Controlled Action	Completed	In buffer area only
Residential and commercial development, Lot 1981 Alexander Drive & Lot 152 Gnangara Road, Landsdale,	2013/6982	Not Controlled Action	Completed	In buffer area only
Residential Development, 50 Lot 2 Driver Road, Darch, Western Australia	2020/8677	Not Controlled Action	Completed	In buffer area only
Residential development, Landsdale, WA	2013/6964	Not Controlled Action	Completed	In buffer area only
Residential Development, Lot 4 Coogee Road, Mariginiup, WA	2019/8452	Not Controlled Action	Completed	In buffer area only
Residential development, Lot 55 Alexander Drive, Landsdale, WA	2013/6971	Not Controlled Action	Completed	In buffer area only
Residential Development, Lots 10 Dundobar Road and 28 and 29 Belgrade Road, East Wanneroo, WA	2019/8521	Not Controlled Action	Completed	In buffer area only
Residential development of 118 Coogee Road, Mariginiup, WA	2017/8011	Not Controlled Action	Completed	In buffer area only
Residential Subdivision	2012/6410	Not Controlled Action	Completed	In buffer area only
Residential subdivision - lot 169 Kingsway Road, Landsdale WA	2012/6412	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Residential Subdivision - Lots 12, 36 & 38 Capron St, Wanneroo	2012/6409	Not Controlled Action	Completed	In buffer area only
Residential subdivision - Lots 156 and 157 Landsdale Road Landsdale WA	2012/6407	Not Controlled Action	Completed	In buffer area only
Telstra PITC O3B Clearing Application	2011/6147	Not Controlled Action	Completed	In buffer area only
Wangara Industrial Extension Area, WA	2012/6501	Not Controlled Action	Completed	In buffer area only
Wanneroo Road/Ocean Reef Road Grade Separation, Pearsall, WA	2017/8110	Not Controlled Action	Completed	In buffer area only
Wanneroo Road Duplication, WA	2015/7632	Not Controlled Action	Completed	In buffer area only

Not controlled action (particular manner)

Ocean Reef Road Extension Works in Wangara	2010/5388	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Road realignment and widening	2009/4926	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Subdivision Lot 4 Flynn Drive and earthworks for industrial development, 240 Fl	2009/5028	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only

Referral decision

Boundary Road Sand Quarry	2019/8560	Referral Decision	Completed	In buffer area only
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Biologically Important Areas

[Resource Information]

Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
Ardena pacifica Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur	In buffer area only
Hydroprogne caspia Caspian Tern [808]	Foraging (provisioning young)	Known to occur	In buffer area only
Larus pacificus Pacific Gull [811]	Foraging (in high	Former Range	In buffer area only

Scientific Name	Behaviour numbers)	Presence	Buffer Status
Onychoprion anaethetus Bridled Tern [82845]	Foraging (in high numbers)	Known to occur	In buffer area only
Puffinus assimilis tunneyi Little Shearwater [59363]	Foraging (in high numbers)	Known to occur	In buffer area only
Sterna dougallii Roseate Tern [817]	Foraging	Known to occur	In buffer area only
Sternula nereis Fairy Tern [82949]	Foraging (in high numbers)	Known to occur	In buffer area only
Seals			
Neophoca cinerea Australian Sea Lion [22]	Foraging (male)	Likely to occur	In buffer area only
Whales			
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur	In buffer area only

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and 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

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

Where little information is available for a 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 detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

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.

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Appendix 2: Conservation Codes

Western Australia

Conservation Code	Name	Description
T	Threatened	Flora or fauna that is rare or likely to become extinct, ranked according to their level of threat using IUCN Red List criteria (Schedules 1-3 of the Wildlife Conservation (Specially Protected Fauna) Notice or the Wildlife Conservation (Rare Flora) Notice)
CR	Critically endangered	Species considered to be facing an extremely high risk of extinction within the wild in the immediate future
EN	Endangered	Species considered to be facing a very high risk of extinction in the wild in the near future
VU	Vulnerable	Species considered to be facing a high risk of extinction in the wild in the medium-term future
EX	Extinct Species	Species where 'there is no reasonable doubt that the last member of the species has died (Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice or the Wildlife Conservation (Rare Flora) Notice)
EW	Extinct in the Wild	Species that are known to only survive in cultivation, in captivity, or as a naturalised population well outside its past range; and it has not been recorded in its known or expected habitat at appropriate seasons anywhere in its past range, despite surveys over a timeframe appropriate to its life cycle and form
MI	Migratory Species	Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth (Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice)
CD	Conservation Dependent	Species of special conservation interest (conservation dependent fauna), being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened (Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice)
OS	Specially Protected	Fauna otherwise in need of special protection to ensure their conservation (Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice)
P	Priority Species	Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or

Conservation Code	Name	Description
		flora. Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.
P1	Priority One	Poorly known species – Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either very small or on lands not managed for conservation, such as road verges, urban areas, farmland, active mineral lease and under threat of habitat destruction or degradation.
P2	Priority Two	Poorly known species – Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, such as national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves and similar.
P3	Priority Three	Poorly known species – Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat
P4	Priority Four	Rare or near threatened and other species in need of monitoring.

(Source: Department of Biodiversity, Conservation and Attractions, 2020a)

Commonwealth

Category	Description
Critically Endangered	Species facing an extremely high risk of extinction in the wild in the immediate future
Endangered	Species facing a very high risk of extinction in the wild in the near future
Vulnerable	Species facing a high risk of extinction in the wild in the medium term

(Source: Department of Biodiversity, Conservation and Attractions, 2019)

Appendix 3: Significant Species

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
	Bentham's Wattle	Shrub, ca 1 m high. Fl. yellow,	Aug to Sep.	Sand. Typically on limestone breakaways.	P2	N	Habitat type unsuitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
    Andersonia gracilis Photos: K. Atkins & M. Hislop	-	Slender erect or open straggly shrub, 0.1-0.5(-1) m high. Fl. white-pink-purple.	Sep to Nov.	White/grey sand, sandy clay, gravelly loam. Winter-wet areas, near swamps.	VU	N	Habitat type unsuitable.
    Anigozanthos humilis subsp. chrysanthus Photos: S.F. Patrick & B. and B. Wells	Golden Catspaw	Rhizomatous, perennial, herb, 0.2-0.4(-0.8) m high. Fl. yellow	Jul to Oct	Grey or yellow sand.	P4	Y	May potentially occur. Habitat suitable

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
 <i>Anigozanthos viridis</i> subsp. <i>terraspectans</i> Photo: B. & B. W	Dwarf Green Kangaroo Paw	Rhizomatous, perennial, herb 0.05-0.2 m high, Fl.green/yellow-green,	Aug to sep	Grey sans, clay loam. Winter wet depressions	T	N	Habitat type unsuitable.
Austrostipa mundula					P3	N	Habitat type unsuitable.
Baeckea sp. Limestone (N. Gibson & M.N. Lyons 1425)		No Info			P1	N	Habitat type unsuitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
 <i>Banksia mimica</i> Photos: A.P. Brown & S. Patric	Summer Honeypot	Prostrate, lignotuberous shrub, 0.15-0.4 m high. Fl. yellow-brown.	Dec or Jan to Feb.	White or grey sand over laterite, sandy loam.	EN	N	Habitat type unsuitable.
 <i>Caladenia huegelii</i> Photos: I. & M. Greeve & J.L. Robson	Grand Spider Orchid	Tuberous, perennial, herb, 0.25-0.6 m high. Fl. green & cream & red.	Sep to Oct.	Grey or brown sand, clay loam.	T/CR	N	Habitat type unsuitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
 <i>Paracaleana dixonii</i> Photos: G. Brockman, A.P. Brown & I. & M. Greeve	Sandplain Duck Orchid	Tuberous, perennial, herb, 0.09-0.2 m high. Fl. yellow-brown,	Oct to Dec or Jan	Grey sand over granite	T	N	Habitat type unsuitable.
Calectasia elegans	Elegant Tinsel Lily				T	N	Habitat type unsuitable.
Conostylis bracteata		Rhizomatous, tufted or shortly proliferous perennial, grass-like or herb, 0.2-0.45 m high. Fl. Yellow.	Aug to Sep.	Sand, limestone. Consolidated sand dunes.	P3	Y	May potentially occur. Habitat suitable
Cyathochaeta teretifolia	-	Rhizomatous, clumped, robust perennial, grass-like or herb (sedge), to 2	-	Grey sand, sandy clay. Swamps, creek edges.	P3	N	Habitat type unsuitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment	
		m high, to 1.0 m wide. Fl. brown.						
Dampiera triloba	-	Erect perennial, herb or shrub, to 0.5 m high. Leaf oblong with dentate margins, Fl. Blue.	Aug to Dec.	Dark brown/black peaty soils.	P3	N	Habitat type unsuitable.	
 <i>Darwinia carnea</i> Photos: M. Hancock		Mogumber Bell	Spreading shrub, 0.2-0.45 m high. Fl. green & red,	Oct to Dec.	Lateritic loam & gravel.	T	N	Habitat type unsuitable.
Darwinia foetida		-	-	-	T	N	Habitat type unsuitable.	

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
 <i>Darwinia macrostegia</i> M. Hancock & B. & B. Wells	Mondurup Bell	Straggly shrub, 0.3-0.9(-1.8) m high. Fl. white & red,	May to Jun or Aug to Nov.	Stony soils, peaty sand. Rocky hillsides, gullies	P4	N	Habitat type unsuitable.
 <i>Darwinia meeboldii</i> Photos: M. Hancock & B. & B. Wells	Cranbrook Bell	Erect, spindly shrub, 0.5-3 m high. Fl. red & white & green,	Aug to Nov.	Peaty soils over quartzite. Hill slopes.	T	N	Habitat type unsuitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
  <i>Darwinia oxylepis</i> Photos: I.R. Dixon, J. Hooper & B. & B. Wells	Gillam's Bell	Upright, dense shrub, 0.6-1.5 m high. Fl. red,	Aug to Nov.	Stony, peaty sand. Rocky gullies.	T	N	Habitat type unsuitable.
    <i>Diuris micrantha</i> Photos: A.P. Brown, I. & M. Greeve & B. Jackson	Dwarf Bee Orchid	Tuberous, perennial, herb, 0.3-0.6 m high. Fl. yellow & brown.	Sep to Oct.	Brown loamy clay. Winter-wet swamps, in shallow water.	VU/T	N	Habitat type unsuitable.
				Diuris micrantha			

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
 <i>Diuris purdiei</i> Photos: I. & M. Greeve & S.D. Hopper	Purdie's Donkey Orchid	Tuberous, perennial, herb, 0.15-0.35 m high. Fl. Yellow.	Sep to Oct.	Grey-black sand, moist. Winter-wet swamps.	EN	N	Habitat type unsuitable.
 <i>Drakaea elastica</i> Photos: A. Brown & S.D. Hopper	Glossy-leaved Hammer Orchid	Tuberous, perennial, herb, 0.12-0.3 m high. Fl. red & green & yellow.	Oct to Nov.	White or grey sand. Low-lying situations adjoining winter-wet swamps.	T/CR	N	Habitat type unsuitable.
Drakaea elastica							

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
 <i>Drakaea micrantha</i> Photos: S.D. Hopper, A.P.Brown & I. & M. Greeve	-	Tuberous, perennial, herb, 0.15-0.3 m high. Fl. red & yellow.	Sep to Oct.	White-grey sand.	T	Y	May potentially occur. Habitat suitable
Drosera patens		Fibrous-rooted, rosetted perennial, herb, to 0.05 m high. Fl. white,.	Dec or Feb	Sandy soils. Margins of winter-wet depressions, swamps and lakes.	P1	N	Habitat type unsuitable.
Drosera x badgerupii		Rosetted, short-lived perennial, herb. Fl. yellow-green.	-	-	P2	N	Habitat type unsuitable.
Drosera x sidjamesii		Fibrous-rooted perennial, herb, to 0.06 m high. Fl. green-pink,	Nov to Dec or Jan to Mar.	Peaty sand. Along lake margins, close to	P1	N	Habitat type unsuitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
				winter high-water line.			
Eleocharis keigheryi	-	Rhizomatous, clumped perennial, grass-like or herb (sedge), to 0.4 m high. Fl. Green.	Aug to Nov.	Clay, sandy loam. Emergent in freshwater: creeks, claypans.	T/V U	N	Habitat type unsuitable.
 <i>Eucalyptus argutifolia</i> Photos: A.D. Crawford, S.D. Hopper & J.L. Robson							
	Wabbling Hill Mallee	(mallee) 0.5-4m high, bark smooth. Fl. White	Mar to Apr	Shallow soils over limestone. Slopes or gullies of limestone ridges, outcrops	T	Y	May potentially occur. Habitat suitable
Eucalyptus foecunda subsp. foecunda	Fremantle Mallee	Dense emergent mallee. Bark +/- smooth; buds golden.	-	Sand over limestone.	P4	Y	May potentially occur. Habitat suitable

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
Fabronia hampeana					P2	N	Habitat type unsuitable.
 <i>Grevillea christineae</i> Photos: S.F. Patrick	Christine's Grevillea	Erect, wiry shrub, 0.5-0.6 m high. Fl. white-cream,	Aug to Sep	Clay loam, sandy clay, often moist	T	N	Habitat type unsuitable.
		Prostrate to erect shrub, 0.1-2.5 m high. Fl. white	Aug to Oct.	Grey sand, sandy loam. Winter-wet heath.	T	N	Habitat type unsuitable.
Grevillea curviloba subsp. incurva					P1	N	Habitat type unsuitable.
Grevillea sp. Ocean Reef (D. Pike Joon 4)					P3	N	Habitat type unsuitable.
Hibbertia leptotheca							

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
 <i>Jacksonia sericea</i> Photo: I.R. Dixon	Waldjumi	Low spreading shrub, to 0.6 m high. Fl. orange,	Usually Dec or Jan to Feb.	Calcareous & sandy soils.	P4	Y	May potentially occur. Habitat suitable
Leucopogon maritimus					P1	N	Habitat type unsuitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
 <i>Macarthuria keigheryi</i>		Erect or spreading perennial, herb or shrub, 0.2-0.4 m high, 0.3-0.6 m wide.	Sep to Dec or Feb to Mar.	White or grey sand.	T	Y	May potentially occur. Habitat suitable
Marianthus paralius		Almost prostrate, eventually scandent, woody shrub. Fl. red,	Sep to Nov.	White sand over limestone. Low coastal cliffs	T	Y	May potentially occur. Habitat suitable
Melaleuca sp. Wanneroo (G.J. Keighery 16705)					T	N	Habitat type unsuitable.
Millotia tenuifolia var. laevis		Ascending to erect annual, herb, 0.02-0.1 m high. Fl. yellow	Sep – Oct	Granite or laterite soils.	P2	N	Habitat type unsuitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
 <i>Pimelea calcicola</i>	Coastal Banjine	Erect to spreading shrub, 0.2-1 m high. Fl. Pink.	Sep to Nov.	Sand. Coastal limestone ridges.	P3	Y	May potentially occur. Habitat suitable
Poranthera moorokatta					P2	N	Habitat type unsuitable.
Sarcozona bicarinata		Shrub, ca 0.1 m high. Fl. White.	Aug	White sand.	P3	Y	May potentially occur. Habitat suitable
Schoenus griffinianus		Small, tufted perennial, grass-like or herb (sedge), to 0.1 m high..	Sep to Oct	White sand	P4	Y	May potentially occur. Habitat suitable
Stenanthemum sublineare		Erect shrub, to 0.1 m high. Fl. green	Oct to Dec	Littered white sand. Coastal plain	P2	Y	May potentially occur. Habitat suitable

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
Stylidium paludicola		Reed-like perennial, herb, 0.35-1 m high, Leaves tufted, linear or subulate or narrowly oblanceolate, 0.5-4 cm long, 0.5-1.5 mm wide, apex acute, margin entire, glabrous. Scape mostly glabrous, inflorescence axis glandular. Inflorescence racemose. Fl. pink	Oct to Dec.	Peaty sand over clay. Winter wet habitats. Marri and Melaleuca woodland, Melaleuca shrubland.	P3	N	Habitat type unsuitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
 <i>Stylidium striatum</i>		Rosetted perennial, herb, 0.15-0.55 m high, Leaves erect, oblanceolate to spatulate, 1.5-4 cm long, 1.5-6 mm wide, apex acute to acuminate, margin entire, glabrous, striate. Scape sparingly glandular on inflorescence axis, glabrous below. Inflorescence racemose. Fl. yellow,	Oct to Nov.	Brown clay loam over laterite. Hillslopes. Jarrah/Marri forest, Wandoo woodland.	P4	N	Habitat type unsuitable.
	Styphelia filifolia				P3	N	Habitat type unsuitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
 <i>Synaphea</i> sp. Fairbridge Farm (D. Papenfus 696) Photos: R. Butcher		Dense, clumped shrub, to 0.3 m high, to 0.4 m wide. Fl. Yellow.	Oct.	Sandy with lateritic pebbles. Near winter-wet flats, in low woodland with weedy grasses.	T/V U	N	Habitat type unsuitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
 <i>Thelymitra dedmanianum</i> Photos: A.P. Brown, N. Hoffman & J.L. Robson	Cinnamon Sun Orchid	Tuberous, perennial, herb, to 0.8 m high. Fl. yellow	Nov to Dec or Jan	Granite.	T	N	Habitat type unsuitable.
 <i>Thelymitra variegata</i> Photos: S.D. Hopper & G. Brumbauer	Queen of Sheba	Tuberous, perennial, herb, 0.1-0.35 m high. Fl. orange & red & purple & pink.	Jun to Sep.	Sandy clay, sand, laterite.	T	N	Habitat type unsuitable.

Species Name	Common Name	Description	Flowering Period	Habitat Type	Cons code	Likelihood (Y/N)	Comment
Thryptomene velutina					P2	N	Habitat type unsuitable.
Utricularia oppositiflora					P3	N	Habitat type unsuitable.

Appendix 4: Species List

The complete flora list for the site is provided in the table below with flora listed by species, and vegetation type they occurred within indicated. *Denotes introduced species and # denotes species that are native to Western Australia but not to this local region.

Family	Species Name	Common Name	BsppW	EgW
Amaranthaceae	<i>Ptilotus manglesii</i>	Pom Poms	x	x
Amaranthaceae	<i>Ptilotus polystachyus</i>	Prince of Wales Feather	x	x
Amaranthaceae	<i>Ptilotus stirlingii</i>	Stirling's Mulla Mulla		x
Anarthriaceae	<i>Lyginia barbata</i>		x	
Anarthriaceae	<i>Lyginia imberbis</i>		x	x
Apiaceae	<i>Daucus glochidiatus</i>	Australian Carrot		x
Apiaceae	<i>Eryngium pinnatifidum</i>	Blue Devils	x	x
Apiaceae	<i>Xanthosia huegelii</i>			x
Araliaceae	<i>Trachymene pilosa</i>	Native Parsnip	x	x
Asparagaceae	* <i>Asparagus asparagoides</i>	Bridal Creeper		x
Asparagaceae	<i>Lomandra caespitosa</i>	Tuft Mat Rush	x	x
Asparagaceae	<i>Lomandra hermaphrodita</i>		x	x
Asparagaceae	<i>Lomandra preissii</i>	Preiss' Mat Rush		x
Asparagaceae	<i>Sowerbaea laxiflora</i>	Purple Tassels	x	x
Asparagaceae	<i>Thysanotus arenarius</i>	Sand-Dune Fringed Lily		x
Asparagaceae	<i>Thysanotus manglesianus</i>	Mangles' Fringed Lily	x	x
Asparagaceae	<i>Thysanotus multiflorus</i>	Many-flowered Fringe Lily		x
Asparagaceae	<i>Thysanotus sparteus</i>	Leafless Fringed Lily	x	x
Asteraceae	* <i>Arctotheca calendula</i>	Cape Weed	x	x
Asteraceae	* <i>Cotula turbinata</i>	Funnel Weed	x	x
Asteraceae	* <i>Erigeron bonariensis</i>		x	x
Asteraceae	* <i>Hypochaeris glabra</i>	Smooth Cats-ear	x	x
Asteraceae	* <i>Hypochaeris radicata</i>	Flat Weed		x
Asteraceae	* <i>Lactuca serriola</i>	Prickly Lettuce		x
Asteraceae	* <i>Senecio vulgaris</i>	Common Groundsel		x
Asteraceae	* <i>Sonchus asper</i>	Rough Sowthistle		x
Asteraceae	* <i>Sonchus oleraceus</i>	Common Sowthistle	x	x

Family	Species Name	Common Name	BsppW	EgW
Asteraceae	<i>*Urospermum picroides</i>	False Hawkbit	x	x
Asteraceae	<i>*Ursinia anthemoides</i>	Ursinia	x	x
Asteraceae	<i>Lagenophora huegelii</i>		x	x
Asteraceae	<i>Olearia axillaris</i>	Coastal Daisy	x	
Asteraceae	<i>Podotheca gnaphalioides</i>	Golden Long-heads	x	x
Asteraceae	<i>Rhodanthe chlorocephala</i>		x	
Asteraceae	<i>Rhodanthe citrina</i>		x	
Asteraceae	<i>Waitzia acuminata</i>	Orange immortelle	x	
Asteraceae	<i>Waitzia suaveolens</i>	Fragrant Waitzia	x	x
Brassicaceae	<i>*Brassica tournefortii</i>	Mediterranean Turnip	x	x
Brassicaceae	<i>*Diplotaxis muralis</i>	Wall Rocket	x	
Brassicaceae	<i>*Heliophila pusilla</i>		x	x
Brassicaceae	<i>*Raphanus raphanistrum</i>	Wild Radish	x	
Campanulaceae	<i>*Wahlenbergia capensis</i>	Cape Bluebell	x	x
Caryophyllaceae	<i>*Petrohragia dubia</i>		x	x
Caryophyllaceae	<i>*Silene gallica</i>	French Catchfly	x	x
Caryophyllaceae	<i>*Stellaria media</i>	Chickweed		x
Casuarinaceae	<i>Allocasuarina fraseriana</i>	Sheoak	x	x
Casuarinaceae	<i>Allocasuarina humilis</i>	Dwarf Sheoak		x
Colchicaceae	<i>Burchardia congesta</i>	Milkmaids	x	x
Crassulaceae	<i>*Crassula alata</i>		x	x
Cyperaceae	<i>*Ficinia marginata</i>	Coarse Club Rush	x	x
Cyperaceae	<i>Ammothryon grandiflorum</i>	Large Flowered Bog Rush	x	x
Cyperaceae	<i>Lepidosperma pubisquameum</i>			x
Cyperaceae	<i>Lepidosperma scabrum</i>		x	x
Cyperaceae	<i>Mesomelaena pseudostygia</i>	Semaphore Sedge	x	x
Dilleniaceae	<i>Hibbertia huegelii</i>		x	
Dilleniaceae	<i>Hibbertia hypericoides</i>	Yellow Buttercups	x	x
Dilleniaceae	<i>Hibbertia racemosa</i>	Stalked Guinea Flower	x	x
Droseraceae	<i>Drosera erythrorhiza</i>	Red Ink Sundew	x	
Droseraceae	<i>Drosera menziesii</i>	Pink Sundew	x	
Droseraceae	<i>Drosera pallida</i>	Pale Rainbow	x	x

Family	Species Name	Common Name	BsppW	EgW
Ericaceae	<i>Conostephium pendulum</i>	Pearl Flower	x	
Ericaceae	<i>Leucopogon parviflorus</i>	Coast Beard-heath	x	x
Ericaceae	<i>Styphelia propinqua</i>			x
Euphorbiaceae	* <i>Euphorbia peplus</i>	Petty Spurge	x	x
Euphorbiaceae	* <i>Euphorbia terracina</i>	Geraldton Carnation Weed	x	x
Fabaceae	* <i>Acacia iteaphylla</i>		x	x
Fabaceae	* <i>Lupinus cosentinii</i>			x
Fabaceae	* <i>Medicago polymorpha</i>	Burr Medic		x
Fabaceae	* <i>Ornithopus compressus</i>	Yellow Serradella	x	
Fabaceae	* <i>Trifolium arvense</i>	Hare's Foot Clover	x	
Fabaceae	* <i>Trifolium campestre</i>	Hop Clover	x	
Fabaceae	* <i>Vicia sativa</i>	Common Vetch	x	x
Fabaceae	<i>Acacia alata</i>	Winged Wattle		x
Fabaceae	<i>Acacia cochlearis</i>	Rigid Wattle	x	x
Fabaceae	<i>Acacia cyclops</i>	Coastal Wattle		x
Fabaceae	<i>Acacia huegelii</i>	Huegel's Wattle	x	x
Fabaceae	<i>Acacia pulchella</i>	Prickly Moses	x	
Fabaceae	<i>Acacia saligna</i>	Orange Wattle	x	x
Fabaceae	<i>Bossiaea eriocarpa</i>	Common Brown Pea	x	x
Fabaceae	<i>Daviesia divaricata</i>	Marno	x	x
Fabaceae	<i>Daviesia nudiflora</i>		x	x
Fabaceae	<i>Daviesia triflora</i>		x	x
Fabaceae	<i>Gastrolobium capitatum</i>	Bacon and Eggs		x
Fabaceae	<i>Gompholobium tomentosum</i>	Hairy Yellow Pea	x	x
Fabaceae	<i>Hardenbergia comptoniana</i>	Native Wisteria	x	x
Fabaceae	<i>Hovea trisperma</i>	Common Hovea	x	x
Fabaceae	<i>Isotropis cuneifolia</i>	Granny Bonnets		x
Fabaceae	<i>Jacksonia furcellata</i>	Grey Stinkwood	x	x
Fabaceae	<i>Jacksonia sericea</i>	Waldjumi	x	x
Fabaceae	<i>Jacksonia sternbergiana</i>	Stinkwood	x	x
Fabaceae	<i>Kennedia prostrata</i>	Scarlet Runner	x	x
Geraniaceae	* <i>Geranium molle</i>	Dove's Foot Cranesbill		x

Family	Species Name	Common Name	BsppW	EgW
Geraniaceae	<i>*Pelargonium capitatum</i>	Rose Pelargonium	x	x
Goodeniaceae	<i>Dampiera linearis</i>	Common Dampiera	x	x
Goodeniaceae	<i>Scaevola thesioides</i>		x	
Haemodoraceae	<i>Anigozanthos humilis</i>	Catspaw	x	
Haemodoraceae	<i>Anigozanthos manglesii</i>	Mangles Kangaroo Paw	x	x
Haemodoraceae	<i>Conostylis aculeata</i>	Prickly Conostylis	x	x
Haemodoraceae	<i>Haemodorum laxum</i>	Bloodroot		x
Haemodoraceae	<i>Haemodorum paniculatum</i>	Mardja	x	x
Hemerocallidaceae	<i>Corynotheca micrantha</i>	Hexagon Zigzag Lily	x	x
Hemerocallidaceae	<i>Dianella revoluta</i>	Blueberry Lily	x	x
Hemerocallidaceae	<i>Tricoryne elatior</i>	Yellow Autumn Lily	x	x
Iridaceae	<i>*Freesia leichtlinii</i> subsp. <i>alba x leichtlinii</i>			x
Iridaceae	<i>*Gladiolus caryophyllaceus</i>	Wild Gladiolus	x	x
Iridaceae	<i>*Moraea flaccida</i>	One-leaf Cape Tulip		x
Iridaceae	<i>*Romulea rosea</i>	Guildford Grass		x
Iridaceae	<i>Orthrosanthus laxus</i>	Morning iris	x	
Iridaceae	<i>Patersonia occidentalis</i>	Purple Flag	x	x
Lamiaceae	<i>Hemiandra glabra</i>		x	
Lamiaceae	<i>Hemiandra pungens</i>		x	
Malvaceae	<i>*Malva parviflora</i>	Marshmallow		x
Malvaceae	<i>Thomasia triphylla</i>			x
Montiaceae	<i>Calandrinia liniflora</i>	Parakeelya	x	x
Myrtaceae	<i>Eucalyptus gomphocephala</i>	Tuart		x
Myrtaceae	<i>Eucalyptus marginata</i>	Jarrah	x	x
Myrtaceae	<i>Hypocalymma robustum</i>	Swan River Myrtle	x	x
Oleaceae	<i>*Olea europaea</i>	Olive		x
Orchidaceae	<i>Caladenia arenicola</i>	Carousel Spider Orchid		x
Orchidaceae	<i>Caladenia flava</i>	Cowslip Orchid	x	x
Orchidaceae	<i>Diuris corymbosa</i>	Common Donkey Orchid	x	
Orchidaceae	<i>Diuris magnifica</i>	Large Pansy Orchid	x	x
Orchidaceae	<i>Microtis media</i>	Tall Mignonette Orchid	x	x
Orchidaceae	<i>Pterostylis recurva</i>	Jug Orchid	x	

Family	Species Name	Common Name	BsppW	EgW
Orchidaceae	<i>Pterostylis vittata</i>	Banded Greenhood	x	
Orobanchaceae	* <i>Orobanche minor</i>	Lesser Broomrape		x
Papaveraceae	* <i>Fumaria capreolata</i>	Whiteflower Fumitory		x
Papaveraceae	* <i>Fumaria muralis</i>	Wall Fumitory		x
Phyllanthaceae	<i>Lysiandra calycinus</i>	False Boronia	x	x
Plantaginaceae	* <i>Misopates orontium</i>	Lesser Snapdragon	x	
Poaceae	* <i>Aira caryophyllea</i>	Silvery Hairgrass		x
Poaceae	* <i>Briza maxima</i>	Blowfly Grass	x	x
Poaceae	* <i>Bromus diandrus</i>	Great Brome	x	
Poaceae	* <i>Ehrharta calycina</i>	Perrenial Veldt Grass	x	x
Poaceae	* <i>Ehrharta longiflora</i>	Annual Veldt Grass	x	x
Poaceae	* <i>Lagurus ovatus</i>	Hare's Tail Grass		x
Poaceae	* <i>Lolium rigidum</i>	Wimmera Ryegrass	x	x
Poaceae	* <i>Poa annua</i>	Winter Grass	x	
Poaceae	* <i>Vulpia myuros</i>	Rat's Tail Fescue	x	x
Poaceae	<i>Amphipogon turbinatus</i>		x	
Poaceae	<i>Austrostipa compressa</i>		x	x
Poaceae	<i>Austrostipa flavescens</i>		x	x
Poaceae	<i>Microlaena stipoides</i>	Weeping Grass	x	x
Primulaceae	* <i>Lysimachia arvensis</i>	Pimpernel	x	x
Proteaceae	<i>Adenanthos cygnorum</i>	Common Woollybush	x	x
Proteaceae	<i>Banksia attenuata</i>	Slender Banksia	x	x
Proteaceae	<i>Banksia dallanneyi</i>	Couch Honeypot	x	x
Proteaceae	<i>Banksia ilicifolia</i>	Holly-leaved Banksia	x	
Proteaceae	<i>Banksia menziesii</i>	Firewood Banksia	x	x
Proteaceae	<i>Conospermum stoechadis</i>	Common Smokebush	x	x
Proteaceae	<i>Grevillea vestita</i>		x	x
Proteaceae	<i>Hakea prostrata</i>	Harsh Hakea	x	x
Proteaceae	<i>Persoonia saccata</i>	Snottygobble	x	x
Proteaceae	<i>Petrophile brevifolia</i>		x	
Proteaceae	<i>Petrophile linearis</i>	Pixie Mops	x	x
Proteaceae	<i>Petrophile macrostachya</i>		x	x

Family	Species Name	Common Name	BsppW	EgW
Proteaceae	<i>Stirlingia latifolia</i>	Blueboy	x	x
Proteaceae	<i>Synaphea spinulosa</i>			x
Ranunculaceae	<i>Clematis pubescens</i>	Common Clematis	x	x
Restionaceae	<i>Desmocladius fasciculatus</i>		x	x
Restionaceae	<i>Alexgeorgea nitens</i>		x	x
Rubiaceae	* <i>Galium murale</i>	Small Goosegrass		x
Rubiaceae	<i>Opercularia vaginata</i>	Dog Weed	x	x
Scrophulariaceae	* <i>Dischisma arenarium</i>		x	x
Solanaceae	* <i>Solanum nigrum</i>	Black Berry Night Shade	x	x
Stylidiaceae	<i>Levenhookia stipitata</i>	Common Slywort	x	
Stylidiaceae	<i>Stylidium androsaceum</i>	Book Triggerplant	x	x
Stylidiaceae	<i>Stylidium neurophyllum</i>	Coastal Plain Triggerplant	x	x
Thymelaeaceae	<i>Pimelea sulphurea</i>	Yellow Banjine	x	
Violaceae	<i>Pigea calycina</i>	Wild Violet	x	
Xanthorrhoeaceae	<i>Xanthorrhoea brunonis</i>		x	x
Xanthorrhoeaceae	<i>Xanthorrhoea preissii</i>	Grass Tree	x	x
Zamiaceae	<i>Macrozamia fraseri</i>	Sandplain	x	x

Appendix 5: Quadrat Data

Quadrat No.:	EG01	
Survey Date:	5/09/2024	
Personnel:	KE, LC	
Easting:	██████████	
Northing:	██████████	
Topography:	Flat	
Aspect:	Southwest	
Slope:	< 1 %	
Soil:	Grey Brown Sand	
Gravel:	0 %	
Rock:	0 %	
Leaf Litter:	2 %	
Bare Ground:	1 %	
Drainage:	Well	
Condition:	Very Good	
Notes: <i>Eucalyptus gomphocephala</i> woodland over <i>Hibbertia hypericoides</i> , <i>Grevillea vestita</i> and mixed shrubs and herbs		

Native Species	Cover (%)	Height (m)	Weed Species	Height (m)	Cover (%)
<i>Alexgeorgea nitens</i>	0.5	0.1	* <i>Cotula turbinata</i>	0.15	0.1
<i>Allocasuarina fraseriana</i>	15	4	* <i>Ehrharta calycina</i>	0.7	2
<i>Ammothryon grandiflorum</i>	2	0.5	* <i>Ehrharta longiflora</i>	0.3	8
<i>Austrostipa flavescens</i>	1	0.4	* <i>Ficinia marginata</i>	0.1	1
<i>Banksia menziesii</i>	1	3	* <i>Fumaria capreolata</i>	0.15	0.5
<i>Briza maxima</i>	1	0.1	* <i>Fumaria muralis</i>	0.15	1
<i>Burchardia congesta</i>	0.5	0.4	* <i>Gladiolus caryophyllaceus</i>	0.6	0.5
<i>Caladenia flava</i>	0.1	0.12	* <i>Hypochaeris glabra</i>	0.01	20
<i>Calandrinia liniflora</i>	0.1	0.2	* <i>Lactuca serriola</i>	0.1	0.5
<i>Conostylis aculeata</i>	3	0.35	* <i>Lysimachia arvensis</i>	0.1	3
<i>Corynotheca micrantha</i>	6	0.4	* <i>Medicago polymorpha</i>	0.1	1
<i>Daviesia triflora</i>	1	1	* <i>Pelargonium capitatum</i>	0.2	0.1
<i>Dianella revoluta</i>	1	0.5	* <i>Romulea rosea</i>	0.2	0.01

Native Species	Cover (%)	Height (m)	Weed Species	Height (m)	Cover (%)
<i>Drosera pallida</i>	0.1	0.3	<i>*Senecio vulgaris</i>	0.1	0.2
<i>Eryngium pinnatifidum</i>	2	0.3	<i>*Sonchus oleraceus</i>	0.1	0.1
<i>Eucalyptus gomphocephala</i>	50	12	<i>*Stellaria media</i>	0.1	1
<i>Gastrolobium capitatum</i>	0.1	0.4	<i>*Ursinia anthemoides</i>	0.5	20
<i>Gompholobium tomentosum</i>	2	0.4	<i>*Vulpia myuros</i>	0.15	0.5
<i>Grevillea vestita</i>	17	1.2			
<i>Hardenbergia comptoniana</i>	2	2			
<i>Hibbertia hypericoides</i>	12	1			
<i>Hovea trisperma</i>	0.1	4			
<i>Hypocalymma robustum</i>	2.5	1			
<i>Isotropis cuneifolia</i>	0.1	0.1			
<i>Kennedia prostrata</i>	0.5	1			
<i>Lagenophora huegelii</i>	1	0.3			
<i>Lepidosperma scabrum</i>	0.3	0.4			
<i>Leucopogon parviflorus</i>	1	0.5			
<i>Lomandra caespitosa</i>	0.1	0.3			
<i>Lomandra hermaphrodita</i>	0.1	0.2			
<i>Mesomelaena pseudostygia</i>	0.5	0.4			
<i>Phyllanthus calycinus</i>	1	0.4			
<i>Podotheca gnaphalioides</i>	1	0.2			
<i>Sowerbaea laxiflora</i>	0.1	0.2			
<i>Thysanotus multiflorus</i>	0.1	0.15			
<i>Thysanotus sparteus</i>	0.1	4			
<i>Trachymene pilosa</i>	4	0.1			

Note: *denotes introduced species.

Quadrat No.:	EG02
Survey Date:	5/09/2024
Personnel:	KE, LC
Easting:	
Northing:	
Topography:	Flat
Aspect:	Southwest
Slope:	< 1 %
Soil:	Grey Brown Sand
Gravel:	0 %
Rock:	0 %
Leaf Litter:	2 %
Bare Ground:	0.5 %
Drainage:	Well
Condition:	Good



Notes: *Eucalyptus gomphocephala* woodland over *Hibbertia hypericoides*, *Grevillea vestita* and mixed shrubs and herbs

Native Species	Cover (%)	Height (m)	Weed Species	Height (m)	Cover (%)
<i>Acacia alata</i>	0.5	0.1	* <i>Briza maxima</i>	0.1	1
<i>Alexgeorgea nitens</i>	2	0.1	* <i>Crassula alata</i>	0.1	0.1
<i>Allocasuarina fraseriana</i>	2	3	* <i>Ehrharta calycina</i>	1	40
<i>Ammothryon grandiflorum</i>	1	0.4	* <i>Ehrharta longiflora</i>	0.1	5
<i>Austrostipa flavescens</i>	2	0.3	* <i>Gladiolus caryophyllaceus</i>	0.2	0.1
<i>Bossiaea eriocarpa</i>	0.3	0.3	* <i>Heliophila pusilla</i>	0.1	0.1
<i>Burchardia congesta</i>	0.5	0.3	* <i>Hypochaeris glabra</i>	0.1	10
<i>Caladenia arenicola</i>	0.1	0.35	* <i>Lactuca serriola</i>	0.1	2
<i>Caladenia flava</i>	0.1	0.1	* <i>Lysimachia arvensis</i>	0.1	0.1
<i>Conostylis aculeata</i>	3	0.3	* <i>Medicago polymorpha</i>	0.1	0.1
<i>Corynotheca micrantha</i>	0.5	0.3	* <i>Moraea flaccida</i>	0.2	4
<i>Dianella revoluta</i>	1	0.4	* <i>Petrorhagia dubia</i>	1	0.1
<i>Drosera pallida</i>	0.2	0.2	* <i>Senecio vulgaris</i>	0.2	0.1
<i>Eryngium pinnatifidum</i>	0.5	0.35	* <i>Sonchus oleraceus</i>	0.1	0.5
<i>Eucalyptus gomphocephala</i>	70	12	* <i>Stellaria media</i>	0.1	0.1

Native Species	Cover (%)	Height (m)	Weed Species	Height (m)	Cover (%)
<i>Gastrolobium capitatum</i>	0.1	0.1	* <i>Ursinia anthemoides</i>	0.2	5
<i>Gompholobium tomentosum</i>	1	0.3			
<i>Grevillea vestita</i>	10	1.2			
<i>Haemodorum paniculatum</i>	0.1	1.5			
<i>Hardenbergia comptoniana</i>	1	1			
<i>Hibbertia hypericoides</i>	10	1			
<i>Isotropis cuneifolia</i>	0.1	0.1			
<i>Kennedia prostrata</i>	0.1	0.1			
<i>Lagenophora huegelii</i>	1.5	0.3			
<i>Lepidosperma pubisquameum</i>	0.5	0.4			
<i>Leucopogon parviflorus</i>	0.5	0.5			
<i>Lomandra caespitosa</i>	0.1	0.1			
<i>Lomandra preissii</i>	0.1	0.2			
<i>Mesomelaena pseudostygia</i>	3	0.3			
<i>Phyllanthus calycinus</i>	0.2	0.3			
<i>Podotheca gnaphalioides</i>	0.2	0.1			
<i>Styphelia propinqua</i>	0.5	0.5			
<i>Thysanotus manglesianus</i>	0.5	0.1			
<i>Thysanotus multiflorus</i>	0.2	0.2			
<i>Trachymene pilosa</i>	2	0.1			
<i>Tricoryne elatior</i>	2	0.4			

Note: *denotes introduced species.

Quadrat No.:	EG03
Survey Date:	5/09/2024
Personnel:	KE, LC
Easting:	
Northing:	
Topography:	Slight Slope
Aspect:	Northeast
Slope:	< 1 %
Soil:	Grey Brown Sand
Gravel:	0 %
Rock:	0 %
Leaf Litter:	2 %
Bare Ground:	2 %
Drainage:	Well
Condition:	Good



Notes: *Eucalyptus gomphocephala* woodland over *Hibbertia hypericoides*, *Grevillea vestita* and mixed shrubs and herbs

Native Species	Cover (%)	Height (m)	Weed Species	Height (m)	Cover (%)
<i>Alexgeorgea nitens</i>	0.5	0.1	* <i>Briza maxima</i>	0.1	2
<i>Allocasuarina fraseriana</i>	2	5	* <i>Ehrharta calycina</i>	0.5	2
<i>Ammothryon grandiflorum</i>	1	0.4	* <i>Ehrharta longiflora</i>	0.1	2
<i>Austrostipa flavescens</i>	1	0.4	* <i>Ficinia marginata</i>	0.1	0.1
<i>Banksia attenuata</i>	1	1.5	* <i>Gladiolus caryophyllaceus</i>	0.3	0.1
<i>Burchardia congesta</i>	0.1	0.4	* <i>Hypochaeris glabra</i>	0.1	20
<i>Caladenia flava</i>	0.1	0.1	* <i>Lactuca serriola</i>	0.1	3
<i>Conostylis aculeata</i>	1	0.3	* <i>Moraea flaccida</i>	0.1	0.1
<i>Corynotheca micrantha</i>	0.1	0.2	* <i>Petrorhagia dubia</i>	0.1	5
<i>Daviesia nudiflora</i>	3.5	1	* <i>Romulea rosea</i>	0.2	0.1
<i>Dianella revoluta</i>	0.5	0.3	* <i>Silene gallica</i>	0.1	0.1
<i>Drosera pallida</i>	0.1	0.3	* <i>Sonchus oleraceus</i>	0.1	1
<i>Eryngium pinnatifidum</i>	0.5	0.2	* <i>Ursinia anthemoides</i>	0.3	2
<i>Eucalyptus gomphocephala</i>	70	14			
<i>Grevillea vestita</i>	3	1			

Native Species	Cover (%)	Height (m)	Weed Species	Height (m)	Cover (%)
<i>Hibbertia hypericoides</i>	25	0.8			
<i>Hibbertia racemosa</i>	0.5	0.4			
<i>Isotropis cuneifolia</i>	0.5	0.2			
<i>Kennedia prostrata</i>	1	0.1			
<i>Lepidosperma pubisquameum</i>	0.5	0.3			
<i>Lepidosperma scabrum</i>	2	0.4			
<i>Lomandra caespitosa</i>	1	0.2			
<i>Mesomelaena pseudostygia</i>	2	0.4			
<i>Microlaena stipoides</i>	0.3	0.4			
<i>Phyllanthus calycinus</i>	2	0.3			
<i>Podotheca gnaphalioides</i>	0.5	0.1			
<i>Sowerbaea laxiflora</i>	0.1	0.3			
<i>Stylidium neurophyllum</i>	0.1	0.1			
<i>Trachymene pilosa</i>	3	0.1			
<i>Tricoryne elatior</i>	0.3	0.2			
<i>Xanthosia huegelii</i>	0.1	0.2			

Note: *denotes introduced species.

Quadrat No.:	EG04
Survey Date:	5/09/2024
Personnel:	KE, LC
Easting:	
Northing:	
Topography:	Slight Slope
Aspect:	Northwest
Slope:	< 1 %
Soil:	Grey Brown Sand
Gravel:	0 %
Rock:	0 %
Leaf Litter:	4 %
Bare Ground:	2 %
Drainage:	Well
Condition:	Very Good



Notes: Banksia spp. woodland over *Hibbertia hypericoides*, *Mesomelaena pseudostygia* and mixed shrubs and herbs

Native Species	Cover (%)	Height (m)	Weed Species	Height (m)	Cover (%)
<i>Alexgeorgea nitens</i>	1	0.1	* <i>Briza maxima</i>	0.1	10
<i>Ammothryon grandiflorum</i>	1.5	0.5	* <i>Ehrharta calycina</i>	0.4	0.5
<i>Austrostipa flavescens</i>	1	0.4	* <i>Ehrharta longiflora</i>	0.2	1
<i>Banksia attenuata</i>	40	6	* <i>Gladiolus caryophyllaceus</i>	0.5	0.5
<i>Banksia dallanneyi</i>	0.5	0.1	* <i>Hypochaeris glabra</i>	0.1	10
<i>Banksia menziesii</i>	4	3	* <i>Pelargonium capitatum</i>	0.2	0.1
<i>Burchardia congesta</i>	0.5	0.4	* <i>Silene gallica</i>	0.2	0.1
<i>Caladenia flava</i>	0.2	0.2	* <i>Ursinia anthemoides</i>	0.2	5
<i>Conostylis aculeata</i>	0.5	0.3			
<i>Corynotheca micrantha</i>	1	0.3			
<i>Daviesia divaricata</i>	12	15			
<i>Daviesia nudiflora</i>	1	1.2			
<i>Dianella revoluta</i>	0.5	1			
<i>Drosera erythrorhiza</i>	2	0.1			
<i>Drosera pallida</i>	0.1	0.4			

Native Species	Cover (%)	Height (m)	Weed Species	Height (m)	Cover (%)
<i>Eryngium pinnatifidum</i>	0.2	0.2			
<i>Hardenbergia comptoniana</i>	0.5	0.3			
<i>Hibbertia huegelii</i>	0.1	0.3			
<i>Hibbertia hypericoides</i>	25	1.2			
<i>Lagenophora huegelii</i>	0.1	0.2			
<i>Mesomelaena pseudostygia</i>	7	0.4			
<i>Opercularia vaginata</i>	0.5	0.3			
<i>Petrophile brevifolia</i>	1	0.3			
<i>Petrophile linearis</i>	2	0.4			
<i>Podotheca gnaphalioides</i>	0.5	0.2			
<i>Ptilotus manglesii</i>	1	0.1			
<i>Ptilotus polystachyus</i>	1	0.1			
<i>Sowerbaea laxiflora</i>	1	0.4			
<i>Stylidium neurophyllum</i>	0.1	0.1			
<i>Thysanotus sparteus</i>	0.1	0.5			
<i>Trachymene pilosa</i>	1	0.1			

Note: *denotes introduced species.

Quadrat No.:	EG05
Survey Date:	5/09/2024
Personnel:	KE, LC
Easting:	
Northing:	
Topography:	Slight Slope
Aspect:	Northwest
Slope:	< 1 %
Soil:	Grey Brown Sand
Gravel:	0 %
Rock:	0 %
Leaf Litter:	2 %
Bare Ground:	0 %
Drainage:	Well
Condition:	Excellent



Notes: Banksia spp. woodland over *Hibbertia hypericoides*, *Mesomelaena pseudostygia* and mixed shrubs and herbs

Native Species	Cover (%)	Height (m)	Weed Species	Height (m)	Cover (%)
<i>Alexgeorgea nitens</i>	0.1	0.1	* <i>Briza maxima</i>	0.1	8
<i>Ammothryon grandiflorum</i>	2	1	* <i>Ehrharta calycina</i>	0.5	1.
<i>Amphipogon turbinatus</i>	1	0.2	* <i>Ehrharta longiflora</i>	0.1	2
<i>Banksia attenuata</i>	60	8	* <i>Ficinia marginata</i>	0.1	0.1
<i>Banksia dallanneyi</i>	0.1	0.2	* <i>Gladiolus caryophyllaceus</i>	0.6	1
<i>Banksia menziesii</i>	10	6	* <i>Hypochaeris glabra</i>	0.1	3
<i>Burchardia congesta</i>	1.5	0.3	* <i>Ursinia anthemoides</i>	0.2	2
<i>Caladenia flava</i>	0.1	0.1			
<i>Conostylis aculeata</i>	1.5	0.3			
<i>Corynotheca micrantha</i>	3	0.3			
<i>Dampiera linearis</i>	0.2	0.2			
<i>Daviesia divaricata</i>	3	1			
<i>Daviesia nudiflora</i>	1	1			
<i>Daviesia triflora</i>	1	5			
<i>Dianella revoluta</i>	0.5	0.3			

Native Species	Cover (%)	Height (m)	Weed Species	Height (m)	Cover (%)
<i>Drosera erythrorhiza</i>	1	0.1			
<i>Hardenbergia comptoniana</i>	1	5.0			
<i>Hibbertia hypericoides</i>	20	1.2			
<i>Jacksonia sternbergiana</i>	1	2.0			
<i>Lagenophora huegelii</i>	0.3	0.2			
<i>Mesomelaena pseudostygia</i>	30	0.4			
<i>Microlaena stipoides</i>	0.2	0.1			
<i>Petrophile linearis</i>	0.3	0.4			
<i>Ptilotus manglesii</i>	0.1	0.1			
<i>Sowerbaea laxiflora</i>	0.3	0.2			
<i>Stirlingia latifolia</i>	9	1.2			
<i>Stylidium neurophyllum</i>	0.1	0.1			
<i>Thysanotus sparteus</i>	0.1	1.2			
<i>Trachymene pilosa</i>	1	0.1			

Note: *denotes introduced species.

Quadrat No.:	EG06
Survey Date:	5/09/2024
Personnel:	KE, LC
Easting:	568552.70
Northing:	6467565
Topography:	Slight Slope
Aspect:	Northwest
Slope:	< 1 %
Soil:	Grey Brown Sand
Gravel:	0 %
Rock:	0 %
Leaf Litter:	6 %
Bare Ground:	6 %
Drainage:	Well
Condition:	Excellent



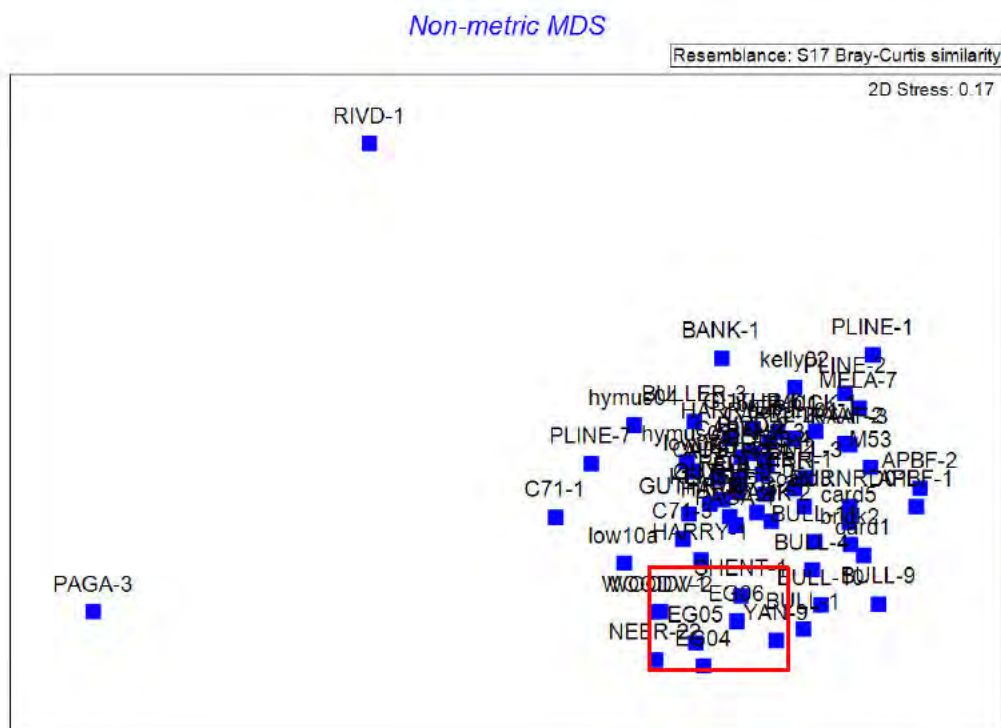
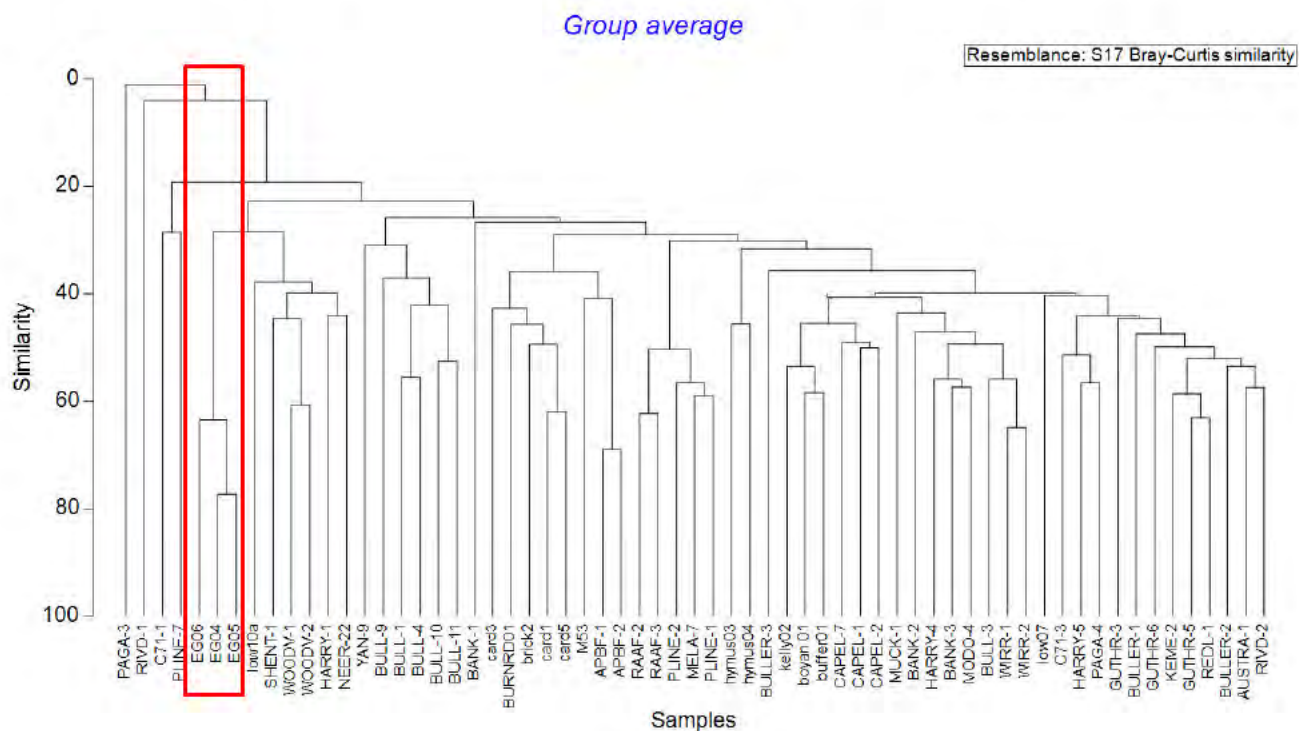
Notes: Banksia spp. woodland over *Hibbertia hypericoides*, *Mesomelaena pseudostygia* and mixed shrubs and herbs

Native Species	Cover (%)	Height (m)	Weed Species	Height (m)	Cover (%)
<i>Alexgeorgea nitens</i>	2	0.2	* <i>Ehrharta longiflora</i>	0.1	0.1
<i>Amphipogon turbinatus</i>	1	0.3	* <i>Ficinia marginata</i>	0.1	0.5
<i>Anigozanthos humilis</i>	0.1	0.1	* <i>Gladiolus caryophyllaceus</i>	0.2	0.1
<i>Austrostipa compressa</i>	0.1	0.1	* <i>Hypochaeris glabra</i>	0.1	1.5
<i>Banksia attenuata</i>	10	4	* <i>Sonchus oleraceus</i>	0.1	0.1
<i>Banksia menziesii</i>	20	4	* <i>Ursinia anthemoides</i>	0.2	0.5
<i>Bossiaea eriocarpa</i>	0.5	0.5			
<i>Burchardia congesta</i>	0.5	0.3			
<i>Caladenia flava</i>	0.1	0.1			
<i>Calandrinia liniflora</i>	0.1	0.2			
<i>Conostephium pendulum</i>	0.2	0.3			
<i>Conostylis aculeata</i>	0.5	0.3			
<i>Dampiera linearis</i>	0.2	0.2			
<i>Daviesia divaricata</i>	2	1.2			
<i>Daviesia nudiflora</i>	3	1.2			

Native Species	Cover (%)	Height (m)	Weed Species	Height (m)	Cover (%)
<i>Daviesia triflora</i>	1	1			
<i>Dianella revoluta</i>	1	1			
<i>Drosera erythrorhiza</i>	0.5	0.1			
<i>Drosera pallida</i>	0.1	0.3			
<i>Hibbertia hypericoides</i>	30	1			
<i>Jacksonia sternbergiana</i>	15	2			
<i>Lomandra caespitosa</i>	0.3	0.2			
<i>Lomandra hermaphrodita</i>	0.1	0.3			
<i>Lyginia imberbis</i>	0.2	0.4			
<i>Mesomelaena pseudostygia</i>	15	0.4			
<i>Microlaena stipoides</i>	1	0.2			
<i>Petrophile linearis</i>	0.3	0.3			
<i>Pigea calycina</i>	0.4	0.2			
<i>Ptilotus manglesii</i>	1	0.1			
<i>Rhodanthe citrina</i>	0.5	0.1			
<i>Scaevola thesioides</i>	7	0.1			
<i>Sowerbaea laxiflora</i>	2.5	0.2			
<i>Stylidium neurophyllum</i>	0.1	0.1			
<i>Thysanotus sparteus</i>	0.1	0.5			
<i>Trachymene pilosa</i>	2	0.1			
<i>Xanthorrhoea brunonis</i>	1	0.6			
<i>Xanthorrhoea preissii</i>	1	1.2			

Note: *denotes introduced species.

Appendix 6: Floristic Community Type Analysis *Banksia* Woodlands



Appendix 7: Floristic Community Type Analysis Tuart Woodlands

