

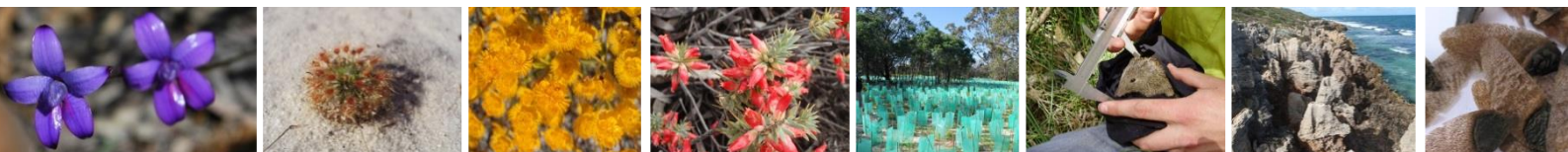


Natural Area  
CONSULTING MANAGEMENT SERVICES

## City of Wanneroo

# Estrel Park Vegetation Assessment

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Ngala kaaditj Noongar moort keyen kaadak nidja boodja.

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## Executive Summary

Natural Area Consulting Management Services (Natural Area) was contracted by City of Wanneroo to undertake a vegetation assessment within Estrel Park. The vegetation assessment was composed of a basic and targeted flora survey within the track alignments. The results from the assessment will provide information to assist with the development of a Native Vegetation Clearing Permit.

The vegetation assessment determined:

- A total of 70 flora species (taxa) comprised of 21 (30 %) introduced (weeds) and 49 (70 %) native species were present across the site.
- One vegetation type across the site, *Eucalyptus marginata* over *Banksia attenuata*, and *Banksia menziesii* open woodland.
- The vegetation is representative of the threatened ecological community Banksia Woodlands of the Swan Coastal Plain.
- Vegetation condition within the track alignments ranged from good to completely degraded.
- One conservation significant flora species, *Jacksonia sericea*, was present within the survey area.
- No declared pests or Weeds of National Significance were present.

The optimal season for flora surveys within the Swan Coastal Plain subregion is spring. This survey was conducted in summer outside of flowering season. This out-of-season survey timing is associated with limitations regarding flora identification as a result of the lack of diagnostic features (i.e. flowers, fruit and seeds) for perennial species and dormancy for annual species. This impacts the recorded species diversity for the survey area and may also exclude conservation significant flora.

An assessment of the proposed clearing of the track alignments against the ten native vegetation clearing principles suggests that this action is not likely to be at variance with three principles. The clearing may be at variance with seven principles (A, B, C, D, E, H and I).

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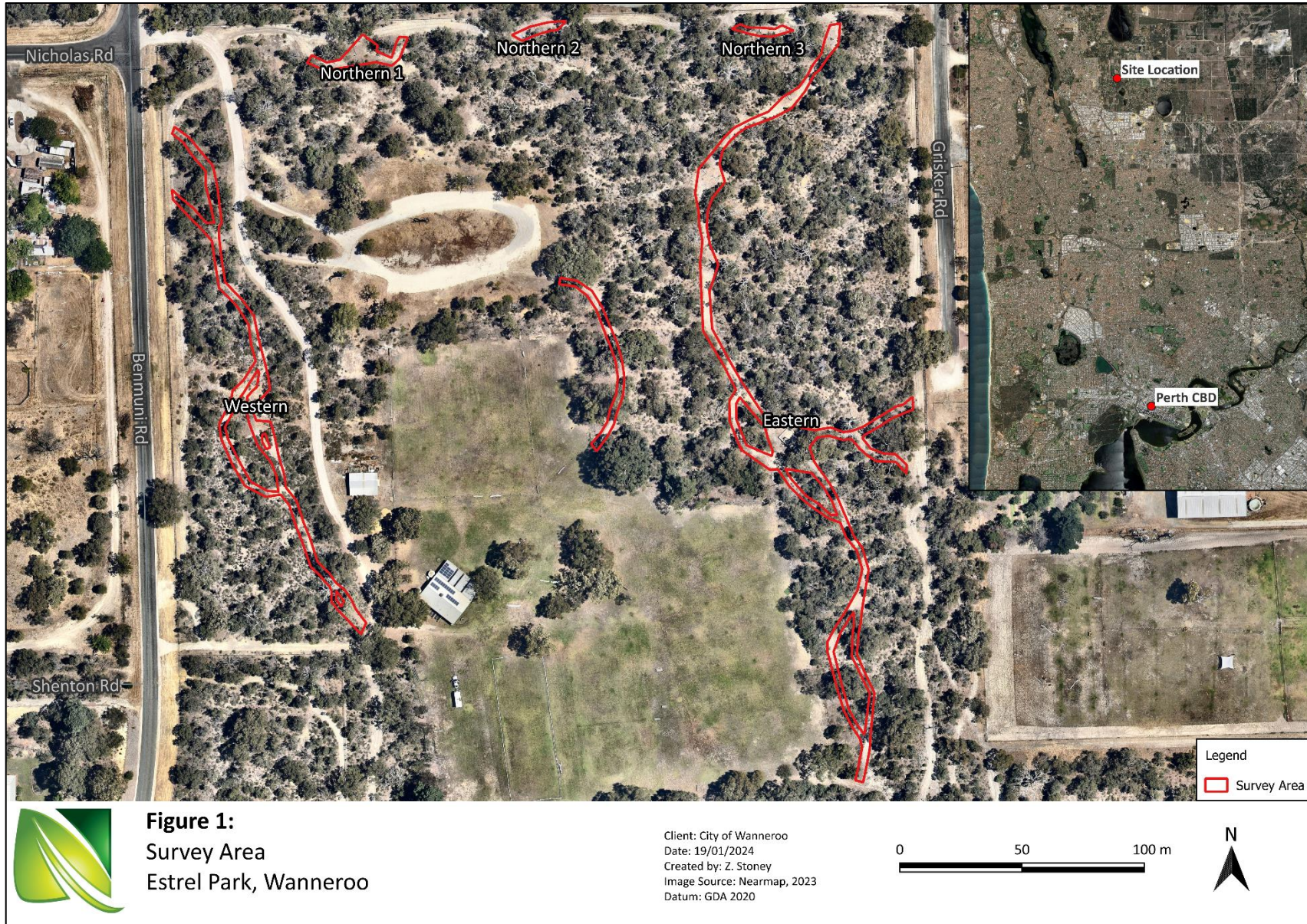
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## **1.0 Introduction**

Natural Area Consulting Management Services (Natural Area) was contracted by City of Wanneroo to undertake a vegetation assessment within Estrel Park. The vegetation assessment was composed of a basic and targeted flora survey within the track alignments. The results from the assessment will provide information to assist with the development of a Native Vegetation Clearing Permit to formalise the tracks within the site.

### **1.1 Location**

The site that is proposed for clearing is located at Lot 159 Benmuni Road, Wanneroo in the City of Wanneroo (Figure 1). The site is located approximately 20 km from the Perth Central Business District. The track alignments cover an area of approximately 0.38 ha.



## 2.0 Methodology

The flora and vegetation survey was conducted with reference to *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 on January 12, 2024, with key data recorded using Mappt software on a handheld tablet. Survey activities included:

- traversing the entirety of the site and recording all species present, including native and invasive species
- marking locations of any conservation significant flora, declared pests (DP) and/or Weeds of National Significance (WoNS) identified
- recording vegetation type including dominant over, middle and understorey species and condition
- the use of GPS to map significant species and boundaries of differing vegetation type and condition
- recording evidence of disturbance, such as fire.

### 2.1 Vegetation Type

The vegetation type was determined using the structural classes outlined in NVIS Level V (Executive Steering Committee for Australian Vegetation Information (ESCAVI), 2003), and records dominant over, middle and understorey species.

### 2.2 Vegetation Condition

Vegetation condition was assessed using the rating scale attributed to Keighery in *Technical Guidance-Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016) (Table 1). Table 1 provides a description of the rating scale.

**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.

Category	Description
	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

## 2.3 Weed Assessment

Weed mapping of the survey area was conducted on January 12, 2024. Weed mapping was conducted in accordance with *Techniques for mapping weed distribution and cover in bushland and wetlands* (DEC, 2011). Weed mapping consisted of traversing the site in a grid pattern with the following attributes recorded:

- GPS location and density of environmental weed species including WoNS and declared pests
- species density using either a point or polygon, using the DEC (2011) density categories (<5 %, 6-75 %, >75 %)
- collection of samples or photographs of unfamiliar species to enable later identification.

## 2.4 Limitations

Limitations associated with this survey are provided in Table 2.

**Table 2:** Flora survey limitations

Potential Limitation	Degree of Limitation	Comments
Availability of contextual information	None	Regional and local contextual information was 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.
Proportion of flora recorded/collected, any identification issues	None	A total of 70 flora species (taxa) were recorded from 30 families during the field survey, comprised of 22 introduced (weeds) and 48 native species. All species were able to be identified.
Survey effort and extent	None	The entirety of the site was able to be surveyed over the course of a day.
Access restrictions	None	There were no access restrictions across the survey area.
Survey timing	Moderate	The survey was undertaken outside of the optimal survey period. The



Potential Limitation	Degree of Limitation	Comments
		<p>optimal season for flora surveys within the Swan Coastal Plain subregion is spring.</p> <p>This out-of-season survey timing is associated with limitations regarding flora identification as a result of the lack of diagnostic features (i.e. flowers, fruit and seeds) for perennial species and dormancy for annual species. This impacts the recorded species diversity for the survey area and may also exclude conservation significant flora.</p>
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.

### 3.0 Survey Results

#### 3.1 Vegetation Types

One vegetation type, *Eucalyptus marginata* over *Banksia attenuata*, and *Banksia menziesii* open woodland, was recorded within Estrel Park (Figure 2). This vegetation is an open woodland of *Eucalyptus marginata*, *Banksia attenuata*, and *Banksia menziesii*, and scattered *Allocasuarina fraseri* over *Xanthorrhoea preissii*, *Dasypogon bromeliifolius*, *Lepidosperma squamatum*, and *Stirlingia latifolia*, over *Hibbertia hypericoides*, *Conostylis spp.* and *Thysanotus spp.*



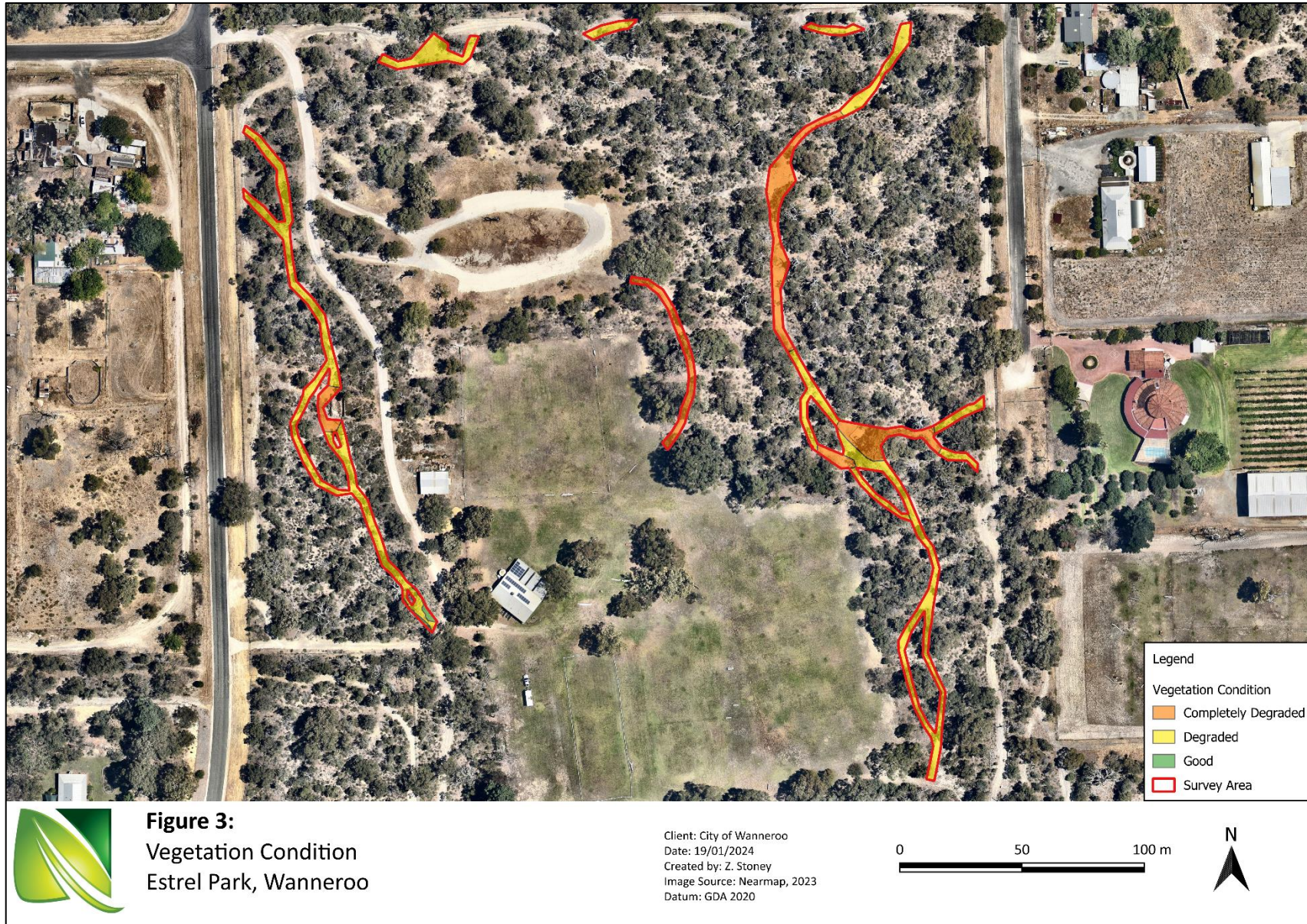
Figure 2: Example photo of vegetation type in the vegetation surrounding the proposed clearing area.

#### 3.2 Vegetation Condition

Vegetation condition within the survey area ranged from good to completely degraded (Table 3 and Figure 3). Vegetation condition outside of the survey areas was in a higher vegetation condition ranging from very good to excellent. Majority of the survey area was regarded as degraded to completely degraded with evidence of historic disturbance and clearing within the survey boundaries. Reference photographs across the site are provided in Appendix 3.

Table 3: Vegetation condition across the proposed development area

Vegetation Condition	Pristine	Excellent	Very Good	Good	Degraded	Completely Degraded	Total
Area (ha)	0.00	0.00	0.00	0.004	0.26	0.12	0.384
Area (%)	0	0	0	1	68	31	100



### 3.3 Flora

A total of 70 flora species (taxa) were recorded from 30 families during the field survey, comprised of 21 (30 %) introduced (weeds) and 49 (70 %) native species. Examples of native flora species are shown in Figure 4. A complete flora species list is provided in Appendix 1. No declared pests or Weeds of National Significance (WoNS) were identified within the track alignments.



*Billardiera fraseri* (Elegant Pronaya)



*Thysanotus sparteus* (Leafless Fringed Lily)



*Jacksonia floribunda* (Holly Pea)



*Dasypogon bromeliifolius* (Pineapple Bush)



*Lyginia imberbis*



*Mesomelaena pseudostygia* (Semaphore Sedge)

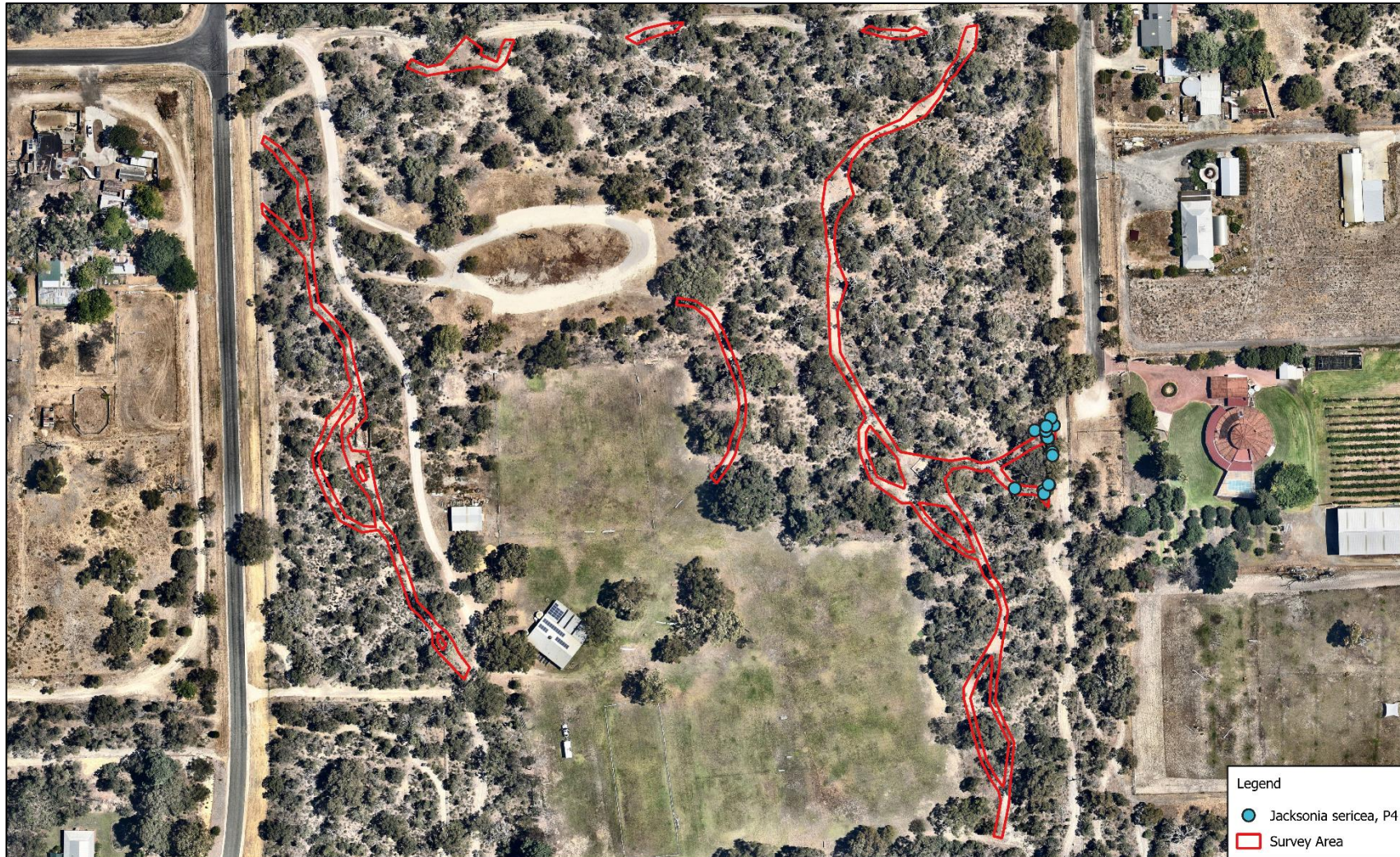
**Figure 4:** Examples of native flora species recorded.

### 3.3.1 Conservation Significant Flora

In the Eastern Area of the proposed clearing tracks, four *Jacksonia sericea*, Priority 4, individuals were present. Within a five-metre buffer from the proposed development an additional 10 *Jacksonia sericea* were present. Conservation codes are provided in Appendix 2. Examples of *Jacksonia sericea* within the track alignments are provided in Figure 5 and locations are displayed in Figure 6.



Figure 5: Examples of Priority 4, *Jacksonia sericea*, flora species recorded.



**Figure 6:**  
Conservation Significant Flora  
Estrel Park, Wanneroo

Client: City of Wanneroo  
Date: 19/01/2024  
Created by: Z. Stoney  
Image Source: Nearmap, 2023  
Datum: GDA 2020

0 50 100 m



### 3.4 Threatened and Priority Ecological Communities

The Banksia Woodlands of the Swan Coastal Plain ecological community has characteristics represented within Estrel Park, Lot 159 Benmuni Road, Wanneroo (Table 4). Estrel Park occurs in the Swan Coastal Plain bioregion on the Bassendean System (DPIRD, 2022). The vegetation type is composed of an upper storey structural layer dominated by *Banksia menziesii* and *Banksia attenuata* with emergent taller trees including *Eucalyptus marginata*, with a high diversity understorey containing correlating key species listed in the Approved Conservation Advice (Department of Agriculture, Water, and the Environment (DAWE), 2013).

The vegetation within the proposed clearing area is a component of the surrounding vegetation. The vegetation within Lot 159 Benmuni Road, Wanneroo meets the condition and patch size criteria to be classed as a Banksia Woodland of the Swan Coastal Plain threatened ecological community (Table 5). The vegetation ranges from completely degraded to excellent, with the vegetation condition predominantly ranging from good to excellent in the native vegetation extent outside of the track alignments. The vegetation on site meets the minimum patch size criteria of 2 ha at good condition. Further detailed surveys and statistical analysis would be required of the surrounding vegetation to determine the floristic community type and extent of the community.

**Table 4:** Key Diagnostic Characteristics of the Banksia Woodlands of the Swan Coastal Plain ecological community

Key Diagnostic Characteristics	Description	Site Specifics
Location and Physical Environment	Occurs primarily in the Swan Coastal Plain IBRA Bioregion with pockets extending into the adjacent lower parts of the Darling and Whicher escarpments, within the Jarrah Forest IBRA bioregion.	Site occurs in the Swan Coastal Plain Bioregion.
Soils and Landform	Typically occurs on well drained, low nutrient soils on sandplain landforms particularly, Bassendean and Spearwood sands (occasionally Quindalup sands). Common on sandy colluvium and aeolian sands of the Ridge Hill Shelf, Whicher Scarp and Dandaragan Plateau.	Site occurs with the Bassendean System.
Structure	A low woodland forest with specific features including: <ul style="list-style-type: none"> <li>▪ a distinctive upper sclerophyllous layer of low trees, typically dominated or co-dominated by one or more of the Banksia species identified below</li> </ul> AND <ul style="list-style-type: none"> <li>▪ emergent trees of medium or tall (&gt;10 m) height Eucalyptus or</li> </ul>	The vegetation type on site is composed of an upper storey structural layer dominated by <i>Banksia menziesii</i> and <i>Banksia attenuata</i> with emergent taller trees including <i>Eucalyptus marginata</i> , with a high diversity understorey containing correlating key species listed in the Approved Conservation Advice.

Key Diagnostic Characteristics	Description	Site Specifics
	<p>Allocasuarina species may be above the Banksia canopy</p> <p>AND</p> <ul style="list-style-type: none"> <li>a highly species-rich understory of various heights</li> </ul> <p>AND,</p> <ul style="list-style-type: none"> <li>a herbaceous ground layer of cord rushes, sedges and perennial and ephemeral forbs, that sometimes includes grasses (ground layer may vary depending on the density of the shrub layer and disturbance history).</li> </ul>	
Contra-indicators	<p>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</p>	Patch does not meet the contra-indicators.

Source: (DAWE, 2016).

**Table 5:** Condition and patch size criteria

Vegetation Condition	Indicative Condition Measure / Threshold	Minimum Patch Size
Pristine	<p>Native plant species diversity fully retained or almost so</p> <p>Zero or almost so weed cover/abundance</p>	No minimum patch size
Excellent	<p>High native plant species diversity</p> <p>Weed cover less than 10 %</p>	0.5 ha
Very Good	<p>Moderate native plant species diversity</p> <p>Weed cover between 5 – 20%</p>	1 ha
Good	<p>Moderate native plant species diversity</p> <p>Weed cover between 5 – 50%</p>	2 ha
Degraded	<p>Very low native plant species diversity</p> <p>Weed cover between 20 – 70%</p>	Not considered as part of the ecological community.
Completely Degraded	<p>Very low to no native species diversity</p> <p>Weed cover greater than 70%</p>	Not considered as part of the ecological community.

Source: (DAWE, 2016).



### 3.5 Weed Mapping

A total of 21 introduced species from 10 families were identified during the weed assessment. The Poaceae (grasses) families were the most species rich, with nine species, followed by Asteraceae (daisies) with three species. Woody weeds present across the survey area included Coast Teatree (*\*Gaudium laevigatum*), and *Acacia iteaphylla*. Examples of weed species are shown in Figure 7. Location of weeds present across the track alignments are provided in Figure 8 to 10.



Coast Teatree (*\*Gaudium laevigatum*)

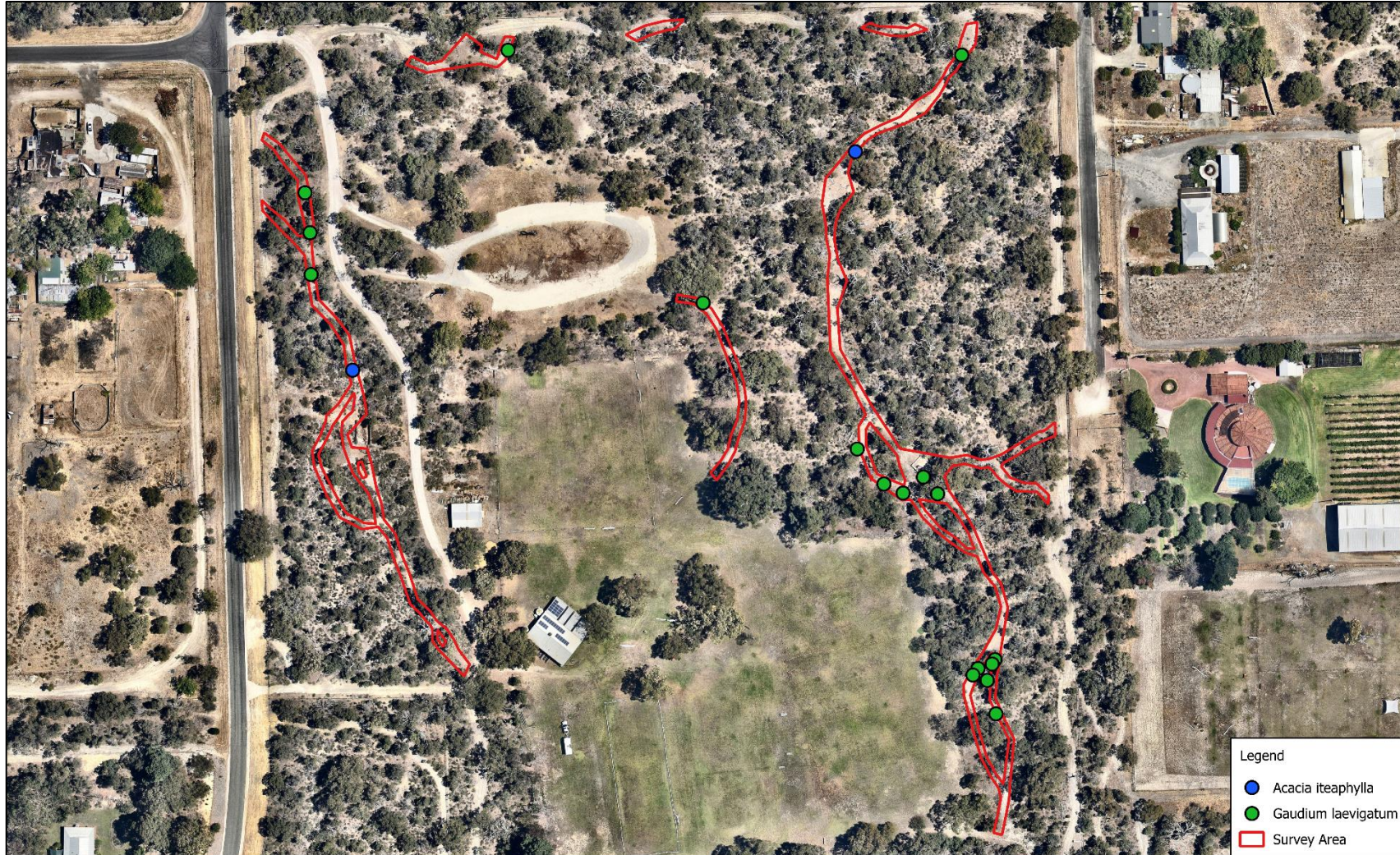


Hottentot Fig (*\*Carpobrotus edulis*)

**Figure 7:** Examples of introduced flora species recorded.







**Figure 10:**  
Weed Map  
Estrel Park, Wanneroo

Client: City of Wanneroo  
Date: 19/01/2024  
Created by: Z. Stoney  
Image Source: Nearmap, 2023  
Datum: GDA 2020

0 50 100 m



## 4.0 Implication of Results

### 4.1 Flora and Vegetation

A total of 70 flora species were identified within the track alignments, this comprised of 21 (30 %) introduced (weeds) and 49 (70 %) native species. The survey area contained one main vegetation types, *Eucalyptus marginata* over *Banksia attenuata*, and *Banksia menziesii* open woodland. The vegetation condition across the survey area ranged from completely degraded to good. The proposed clearing area is primarily composed of areas regarded as degraded which have evidence of historic disturbance with natural recruitment and regeneration prevalent.

### 4.2 Conservation Significant Flora

A total of four *Jacksonia sericea* (Priority 4) individuals were recorded across the proposed clearing area. In five metres of the proposed clearing an additional 10 *Jacksonia sericea* were recorded. The survey was conducted out of the recommended survey season during January. This out-of-season survey timing is associated with limitations regarding flora identification as a result of the lack of diagnostic features (i.e. flowers, fruit and seeds) for perennial species and dormancy for annual species. This impacts the recorded species diversity for the survey area and may exclude conservation significant flora.

### 4.3 Threatened Ecological Community

The vegetation type regarded as *Eucalyptus marginata* over *Banksia attenuata*, and *Banksia menziesii* open woodland meets the key diagnostic criteria to be classified as the Banksia Woodlands of the Swan Coastal Plain ecological community. The vegetation extent intersecting with the proposed clearing area that meets the key diagnostic criteria meets the condition and patch size criteria to be classed as part of the ecological community. The Banksia Woodlands of the Swan Coastal Plain ecological community is classed as endangered. The key threatening processes of this ecological community include land clearance, invasive species, dieback diseases, change in fire regime, hydrological degradation, and climate change (DCCEE, 2013)

### 4.4 Assessment Against Clearing Principles

An assessment of the proposed clearing of the track alignments against the ten native vegetation clearing principles suggests that this action is not likely to be at variance with three principles. The clearing may be at variance with seven principles (A, B, C, D, E, H and I). Assessment of all clearing principles are provided in Table 6.

**Table 6:** Native vegetation clearing principles and assessment.

Clearing Principle	Comment
A Native vegetation should not be cleared if it comprises a high level of biological diversity.	The proposed area may be at variance with this principle: <ul style="list-style-type: none"><li>A total of 70 flora species were identified within the track alignments, this comprised of 21 (30 %) introduced (weeds) and 49 (70 %) native species.</li><li>Priority 4 conservation significant flora <i>Jacksonia sericea</i> was recorded within the proposed area.</li></ul>

Clearing Principle	Comment
	<ul style="list-style-type: none"> <li>▪ The proposed clearing area will be undertaken in the good to completely degraded condition of the <i>Eucalyptus marginata</i> over <i>Banksia attenuata</i>, and <i>Banksia menziesii</i> open woodland.</li> <li>▪ The vegetation condition within the proposed clearing area is predominately degraded with evidence of historic clearing.</li> </ul>
<p>B Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.</p>	<p>The proposed area may be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ Limited suitable habitat was identified within the track alignments. The vegetation adjacent to the track alignments provide suitable habitat for native fauna species, providing adequate areas for refuge.</li> <li>▪ The proposed clearing will not directly impact any significant trees.</li> </ul>
<p>C Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.</p>	<p>The proposed area may be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ Priority 4 conservation significant flora <i>Jacksonia sericea</i> was recorded within the track alignments.</li> <li>▪ No threatened flora species were recorded within the track alignments.</li> </ul>
<p>D Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.</p>	<p>The proposed clearing area may be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ The vegetation within the track alignments is a component of the surrounding vegetation. The vegetation across the site meets the key diagnostic criteria, and the condition and patch size to be a component of the of the Banksia Woodlands of the Swan Coastal Plain ecological community.</li> </ul>
<p>E Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.</p>	<p>The proposed clearing area may be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ The survey area is located within Karrakatta Complex- Central and South. Within the Swan Coastal Plain, there is 12.89 % of the Karrakatta Complex- Central and South remaining and 19.85 % remaining within the City of Wanneroo.</li> <li>▪ The clearing development footprint intersects with areas regarded as Native Vegetation Extent (DPIRD).</li> </ul>
<p>F Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.</p>	<p>The proposed area is unlikely to be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ There are no RAMSAR or geomorphic wetlands nearby.</li> <li>▪ No watercourses or wetlands were identified directly within the survey area.</li> </ul>
<p>G Native Vegetation should not be cleared if the clearing of the vegetation is</p>	<p>The proposed area is unlikely to be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ The proposed clearing area contains and is adjacent to native vegetation extents.</li> </ul>

Clearing Principle	Comment
likely to cause appreciable land degradation.	<ul style="list-style-type: none"> <li>▪ The track alignments are predominately degraded, proposed clearing is unlikely to cause appreciable land degradation. The clearing of vegetation in good or better condition are more likely to cause appreciable land degradation.</li> <li>▪ It is recommended that a construction environmental management plan is developed for the proposed clearing and includes environmental impact mitigation measures such as weed control, dieback hygiene, and dust suppression.</li> </ul>
H Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.	<p>The proposed area may be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ The proposed clearing will have direct impact on the environmental values nearby, particularly the Banksia Woodlands of the Swan Coastal Plain ecological community.</li> <li>▪ The clearing will not be impacting the vegetation in very good to excellent condition which was observed in the vegetation outside of the proposed clearing area.</li> </ul>
I Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.	<p>The proposed area may be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ The removal of the vegetation within the survey area may contribute to an increased infiltration and surface water run-off.</li> <li>▪ There is the potential for the clearing of the site to impact water quality through road run-off and machinery spills/contamination.</li> <li>▪ Contamination through road run-off and machinery are able to be mitigated during the clearing process. The development of a management plan and strategy is recommended to aid with the mitigation of any water quality impacts.</li> </ul>
J Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.	<p>The proposed area is unlikely to be at variance with this principle:</p> <ul style="list-style-type: none"> <li>▪ No established trees will be impacted during the clearing, reducing the potential for an increase in water run-off as a result of the loss of large, established trees during clearing</li> <li>▪ The development of a management plan and strategy is recommended to assist with the management of surface water on site.</li> </ul>

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## Appendix 1: Species List

The complete flora list for the site is provided in the table below with flora listed by family, and the areas that they occurred within indicated. \*Denotes introduced species

Family	Species	Common Name	W	N1	N2	N3	E
Aizoaceae	* <i>Carpobrotus edulis</i>	Hottentot Fig	X				X
Amaranthaceae	<i>Ptilotus manglesii</i>	Pom Poms					X
Anarthriaceae	<i>Lyginia imberbis</i>		X			X	X
Asparagaceae	<i>Dichopogon capillipes</i>		X				X
Asparagaceae	<i>Thysanotus sparteus</i>	Leafless Fringed Lily	X				X
Asteraceae	* <i>Erigeron bonariensis</i>		X		X	X	
Asteraceae	* <i>Hypochaeris radicata</i>	Flat Weed	X				
Asteraceae	* <i>Ursinia anthemoides</i>	Ursinia				X	X
Asteraceae	<i>Hyalosperma cotula</i>		X				X
Brassicaceae	* <i>Brassica tournefortii</i>	Mediterranean Turnip	X				X
Caryophyllaceae	* <i>Silene gallica</i>	French Catchfly	X				
Casuarinaceae	<i>Allocasuarina fraseriana</i>	Sheoak	X	X			X
Cyperaceae	<i>Mesomelaena pseudostygia</i>	Semaphore Sedge	X	X		X	X
Cyperaceae	<i>Lepidosperma squamatum</i>		X	X			X
Cyperaceae	<i>Schoenus caespitius</i>		X				
Dasygogonaceae	<i>Dasygogon bromeliifolius</i>	Pineapple Bush	X				X
Dilleniaceae	<i>Hibbertia hypericoides</i>	Yellow Buttercups	X			X	X
Ericaceae	<i>Conostephium pendulum</i>	Pearl Flower					X
Ericaceae	<i>Conostephium preissii</i>			X			
Euphorbiaceae	* <i>Euphorbia terracina</i>	Geraldton Carnation Weed			X		
Fabaceae	<i>Daviesia divaricata</i>	Marno	X				
Fabaceae	<i>Euchilopsis linearis</i>	Swamp Pea				X	X
Fabaceae	<i>Jacksonia sternbergiana</i>	Stinkwood	X	X	X		
Fabaceae	* <i>Acacia iteaphylla</i>		X				
Fabaceae	* <i>Trifolium campestre</i>	Hop Clover					X
Fabaceae	<i>Acacia pulchella</i>	Prickly Moses	X				
Fabaceae	<i>Acacia saligna</i>	Orange Wattle		X			
Fabaceae	<i>Bossiaea eriocarpa</i>	Common Brown Pea	X				X

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Family	Species	Common Name	W	N1	N2	N3	E
Fabaceae	<i>Gastrolobium linearifolium</i>						X
Fabaceae	<i>Gompholobium tomentosum</i>	Hairy Yellow Pea	X				X
Fabaceae	<i>Hovea trisperma</i>	Common Hovea					X
Fabaceae	<i>Jacksonia floribunda</i>	Holly Pea	X				X
Fabaceae	<i>Jacksonia sericea</i>	Waldjumi					X
Fabaceae	<i>Kennedia prostrata</i>	Scarlet Runner	X				
Geraniaceae	* <i>Pelargonium capitatum</i>	Rose Pelargonium	X				
Goodeniaceae	<i>Scaevola globulifera</i>		X				X
Goodeniaceae	<i>Scaevola thesioides</i>		X				
Haemodoraceae	<i>Haemodorum laxum</i>	Bloodroot	X				
Haemodoraceae	<i>Anigozanthos humilis</i>	Catspan		X			
Haemodoraceae	<i>Conostylis aurea</i>	Golden Conostylis					X
Myrtaceae	* <i>Gaudium laevigatum</i>	Coast Teatree	X	X			X
Myrtaceae	<i>Calothamnus hirsutus</i>		X				
Myrtaceae	<i>Eucalyptus marginata</i>	Jarrah	X	X		X	X
Myrtaceae	<i>Hypocalymma robustum</i>	Swan River Myrtle	X				X
Onagraceae	* <i>Oenothera stricta</i>	Common Evening Primrose	X				
Pittosporaceae	<i>Billardiera fraseri</i>	Elegant Pronaya	X				
Poaceae	* <i>Aira caryophylla</i>	Silvery Hairgrass	X			X	X
Poaceae	* <i>Avena barbata</i>	Bearded Oat	X		X		X
Poaceae	* <i>Briza maxima</i>	Blowfly Grass	X			X	X
Poaceae	* <i>Briza minor</i>	Shivery Grass	X				X
Poaceae	* <i>Bromus diandrus</i>	Great Brome	X				
Poaceae	* <i>Bromus hordeaceus</i>	Soft Brome	X				
Poaceae	* <i>Cynodon dactylon</i>	Couch	X				
Poaceae	* <i>Ehrharta calycina</i>	Perennial Veldt	X	X	X	X	X
Poaceae	* <i>Lolium rigidum</i>	Wimmera Ryegrass	X				
Poaceae	<i>Austrostipa flavescens</i>		X				
Proteaceae	<i>Banksia attenuata</i>	Slender Banksia	X	X			X
Proteaceae	<i>Banksia dallanneyi</i>	Couch Honeypot					X
Proteaceae	<i>Banksia grandis</i>	Bull Banksia	X				
Proteaceae	<i>Banksia menziesii</i>	Firewood Banksia	X	X			X

Family	Species	Common Name	W	N1	N2	N3	E
Proteaceae	<i>Petrophile linearis</i>	Pixie Mops			X		X
Proteaceae	<i>Stirlingia latifolia</i>	Blueboy	X	X		X	X
Restionaceae	<i>Desmocladius asper</i>		X			X	X
Restionaceae	<i>Desmocladius flexuosus</i>		X				
Restionaceae	<i>Hypolaena exsulca</i>		X				
Solanaceae	<i>Solanum nigrum</i>	Black Berry Nightshade	X				
Thymelaeaceae	<i>Pimelea rosea</i>	Rose Banjine					X
Typhaceae	<i>Typha orientalis</i>	Bulrush	X				
Xanthorrhoeaceae	<i>Xanthorrhoea preissii</i>	Grass tree	X	X	X	X	X
Zamiaceae	<i>Macrozamia riedlei</i>	Zamia					X

## 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

Conservation Code	Name	Description
		or 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: Reference Photos

ID	Easting	Northing	Reference Image
1	389972	6484268	
2	389949	6484319	
3	389943	6484348	

ID	Easting	Northing	Reference Image
4	389923	6484413	 A dirt path leads through a wooded area. A large black tarp is laid out on the ground in the middle of the path. Two pink survey markers are visible on either side of the tarp. The trees are mostly eucalyptus.
5	389915	6484421	 A dirt path leads through a wooded area. A red survey marker is visible on the right side of the path. The trees are mostly eucalyptus.
6	389998	6484487	 A dirt path leads through a wooded area. Three white survey markers are visible in the background. The trees are mostly eucalyptus.

ID	Easting	Northing	Reference Image
7	390051	6484495	
8	390139	6484497	
9	390177	6484498	



ID	Easting	Northing	Reference Image
10	390123	6484429	
11	390188	6484331	
12	390188	6484327	

ID	Easting	Northing	Reference Image
13	390187	6484261	
14	390084	6484333	
15	390084	6484373	