

*Detailed Flora and Vegetation Survey
Talbot Road Nature Reserve,
Swan View*



Prepared for: Department of Biodiversity, Conservation and
Attraction (DBCA)
Perth Hills District
District Nature Conservation Program

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June 2023

EXECUTIVE SUMMARY

This report has been prepared by Del Botanics Environmental Consulting on behalf of the Department of Biodiversity, Conservation and Attractions (DBCA) to present the results of a spring Detailed Flora and Vegetation survey within Talbot Rd Nature Reserve, Swan View. The location of the site is shown on **Figures 1 & 2**.

The recent Flora and Vegetation Assessment undertaken in the area described above identified 202 flora species. The vegetation condition varies across the site ranging from “Completely Degraded” to “Very Good”.

Five vegetation communities were recorded at a local level during the survey. One Priority 3 flora species (*Isopogon autumnalis*) was recorded and one Threatened flora species (*Conospermum undulatum*) was observed during the survey. No other flora, pursuant to *Biodiversity Conservation Act* 2016 or the *EPBC Act* 1999 and listed by the Department of Biodiversity, Conservation and Attractions (DBCA) were located during the time of the survey. It is likely that seven of the listed TEC’s and Priority communities will occur within the survey area due to the vegetation condition, community and the soil complexes, however a TEC assessment was not undertaken as part of this survey.

STATEMENT OF LIMITATIONS

This environmental report has been prepared in accordance with the scope of services set out in the original quotation. In preparing the report, Del Botanics has relied on data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations, most of which are referred to in the report. Del Botanics has not verified the accuracy or completeness of the data to the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report are based in whole or in part on the data, those conclusions are contingent upon the accuracy and completeness of the data. Del Botanics will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, unavailable, misrepresented or otherwise not fully disclosed.

In accordance with the scope of services, Del Botanics has relied on the data and have conducted environmental field monitoring in the preparation of the report. The nature and extent of monitoring conducted is described in the report. Within the limitations imposed by the scope of services, the monitoring and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care. No other warranty, express or implied, is made.

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TABLE OF CONTENTS

	PAGE
EXECUTIVE SUMMARY	II
1. INTRODUCTION.....	6
1.1 BACKGROUND.....	6
1.2 PURPOSE OF THIS REPORT	7
2. EXISTING ENVIRONMENT	9
2.1 LANDFORM, TOPOGRAPHY AND SOILS.....	9
2.2 VEGETATION	9
2.2.1 <i>Regional vegetation</i>	9
2.2.2 <i>Vegetation Complex</i>	9
2.3 CLIMATE.....	10
3. FLORA AND VEGETATION ASSESSMENT	11
3.1 VEGETATION METHODS.....	11
3.2 DECLARED RARE AND PRIORITY FLORA.....	12
3.2.1 <i>Environment Protection and Biodiversity Conservation Act (1999) – Species level significance</i>	15
3.2.2 <i>Department of Biodiversity, Conservation and Attractions (DBCA) Database Search</i>	16
3.3 THREATENED ECOLOGICAL COMMUNITIES.....	18
3.3.1 <i>Department of Biodiversity, Conservation and Attractions (DBCA) Database Search</i>	20
4. FLORA AND VEGETATION ASSESSMENT RESULTS	21
4.1 INTRODUCED SPECIES	21
4.2 THREATENED AND PRIORITY FLORA.....	22
4.3 THREATENED ECOLOGICAL COMMUNITIES.....	22
4.4 LOCAL VEGETATION COMMUNITIES	22
4.5 VEGETATION CONDITION.....	25
5. CONCLUSIONS AND RECOMMENDATIONS	28
6. REFERENCES	30

TABLES

Table 1	Definition of Threatened and Priority Flora species
Table 2	Naturemap's listed Threatened and Priority species
Table 3	Categories of Threatened species
Table 4	DAWE Protected Matters Threatened and Priority Flora database search results and likelihood of occurrence
Table 5	DBCA Threatened and Priority Flora database search results and likelihood of occurrence
Table 6	Categories of DBCA's Threatened Ecological Communities
Table 7	Protected Matters listed Threatened Ecological Communities
Table 8	DBCA listed Threatened Ecological Communities
Table 9	Introduced Flora Recorded in the Survey Area
Table 10	Vegetation Structure Classes
Table 11	Local Vegetation Communities Recorded
Table 12	Vegetation Condition Scale

FIGURES

Figure 1	Site Location
Figure 2	Project Area
Figure 3	Weather Data
Figure 4	Vegetation Communities and Quadrat Locations
Figure 5	Vegetation Condition and Quadrat Locations

APPENDICES

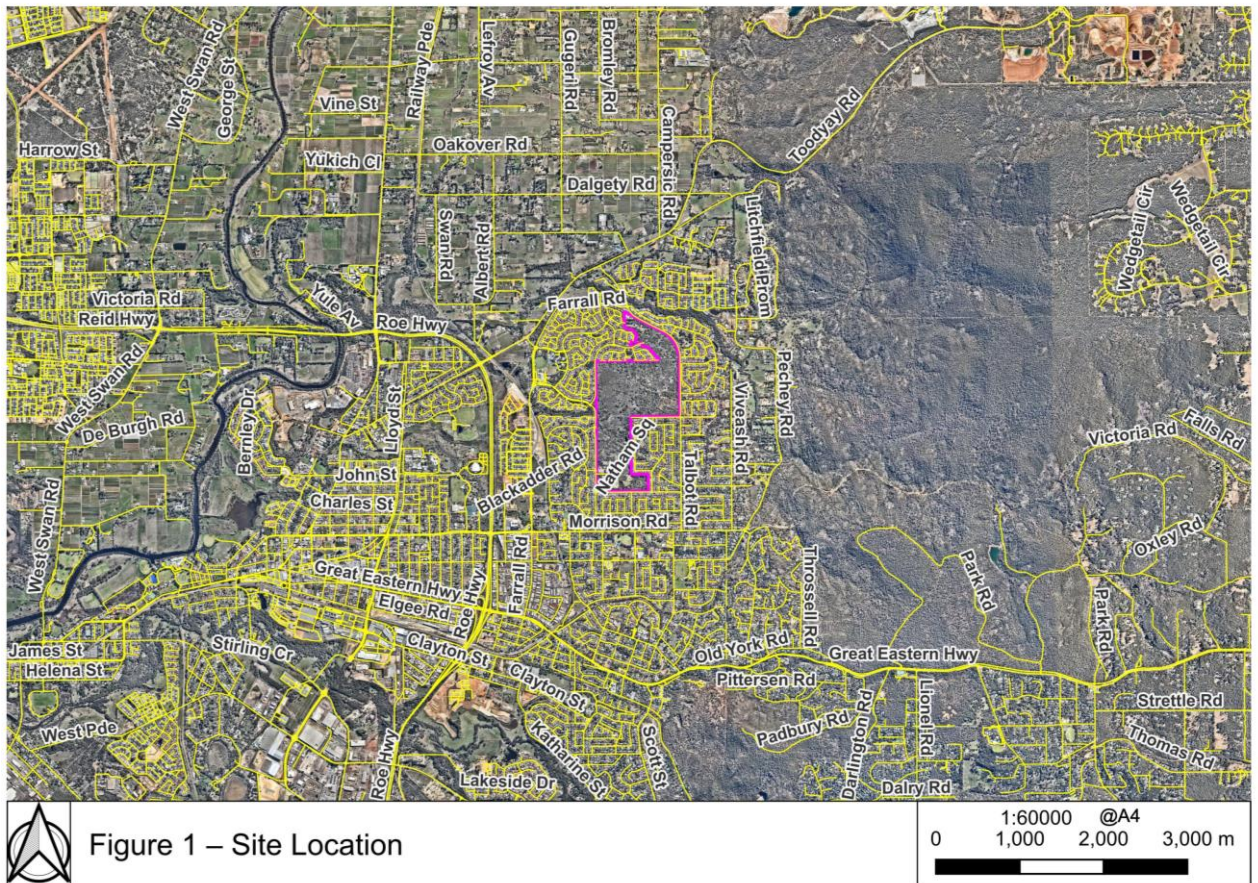
Appendix A	Vascular Plant Species Recorded
Appendix B	Quadrat Data
Appendix C	BAM Act Definitions

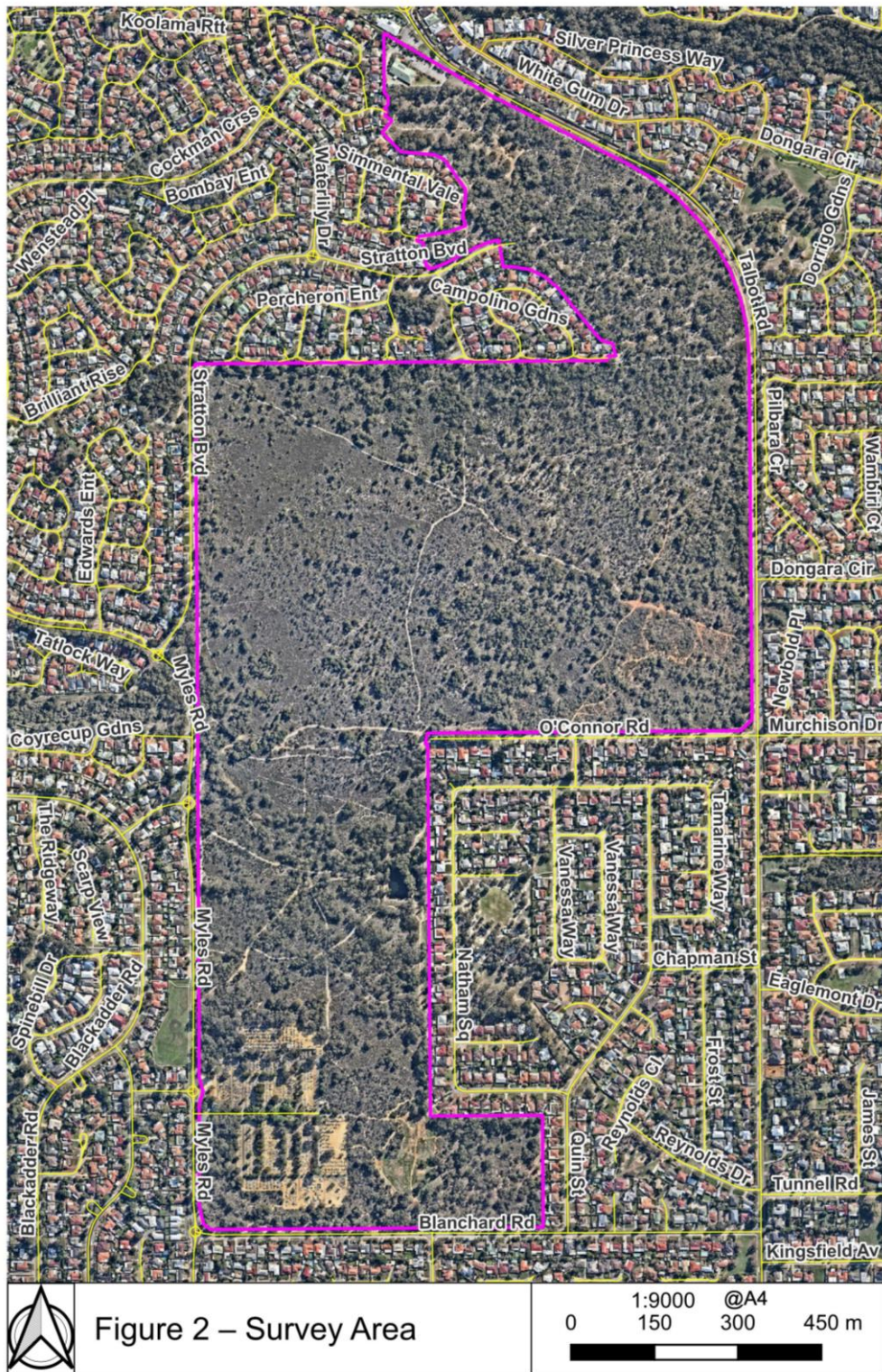
1. INTRODUCTION

1.1 BACKGROUND

This report has been prepared by Del Botanics on behalf of the Department of Biodiversity, Conservation and Attractions (DBCA) to present the results of a spring Detailed Flora and Vegetation survey within Talbot Rd Nature Reserve, Swan View. The location of the site is shown on **Figures 1 & 2**.

The botanical survey of the flora species and vegetation was undertaken on 19th and 21st October 2022. The site is approximately 33 kilometres east of the Perth central area.





1.2 PURPOSE OF THIS REPORT

This report was prepared to present the results of the of the spring Detailed Flora and Vegetation survey and to describe the flora and vegetation occurring within the project area described above.

In summary this report provides:

- A Threatened (T), Priority (P) Flora and Threatened Ecological Communities (TEC's) Department of Biodiversity, Conservation and Attractions (DBCA) database search for the site;
- A Department of Agriculture, Water and the Environment (DAWE) database search for the site;
- The results of a spring botanical survey; and
- The results from a vegetation communities and conditions assessment.

2. EXISTING ENVIRONMENT

2.1 LANDFORM, TOPOGRAPHY AND SOILS

Soil-landscape system mapping of Western Australia describes broad soil and landscape characteristics from regional to local scales. The Survey Area is within the Forrestfield System which is described as undulating foot slopes of the Darling and Whicher scarps. Duplex sandy gravels, pale deep sands and grey deep sandy duplexes. (Department of Agriculture and Food WA, 2012).

2.2 VEGETATION

The survey area lies in the Drummond Botanical Subdistrict within the Southwest Botanical Province as described by Beard (1990). Flora composition has been described by Beard (1990) as predominantly consisting of low Banksia woodlands on leached sands with Melaleuca swamps where ill drained and Woodlands of Eucalyptus spp. on less leached soils.

2.2.1 *Regional vegetation*

The Biogeographic Regionalisation of Australia (IBRA) divides Australia into 89 bioregions based on major biological and geographical/geological attributes. Western Australia has 26 biogeographic regions and 53 subregions based on dominant landscape characteristics of climate, lithology, geology, landform and vegetation. The study area is in the Swan Coastal Plain (SWA) subregion, part of the Swan Coastal bioregion. This bioregion is characterised by open forest and fringing woodland and ridge hill shelf (Williams and Mitchell 2001).

2.2.2 *Vegetation Complex*

The term vegetation complex describes pre-1750 distribution of vegetation communities of the south west forest region of Western Australia as described by Mattiske and Havel (1998). This was part of the biodiversity assessment for the comprehensive regional assessment for the southwest forest region.

Based on this mapping at a scale of 1:50,000, the Department of Primary Industries and Regional Development (DPIRD) has compiled a list of vegetation extent and types across WA. This mapping suggests two vegetation complexes occur within the survey area. The majority of the site is part of the Forrestfield Complex, with a small area in the north being part of the Guildford Complex.

The Forrestfield Vegetation Complex is described as open forest of *Corymbia calophylla* (Marri) - *Eucalyptus wandoo* (Wandoo) - *Eucalyptus marginata* (Jarrah) to open forest of *Eucalyptus marginata*

(Jarrah) - *Corymbia calophylla* (Marri) - *Allocasuarina fraseriana* (Sheoak) - Banksia species. Fringing woodland of *Eucalyptus rudis* (Flooded Gum) occurs in the gullies that dissect this landform (WALGA, 2021).

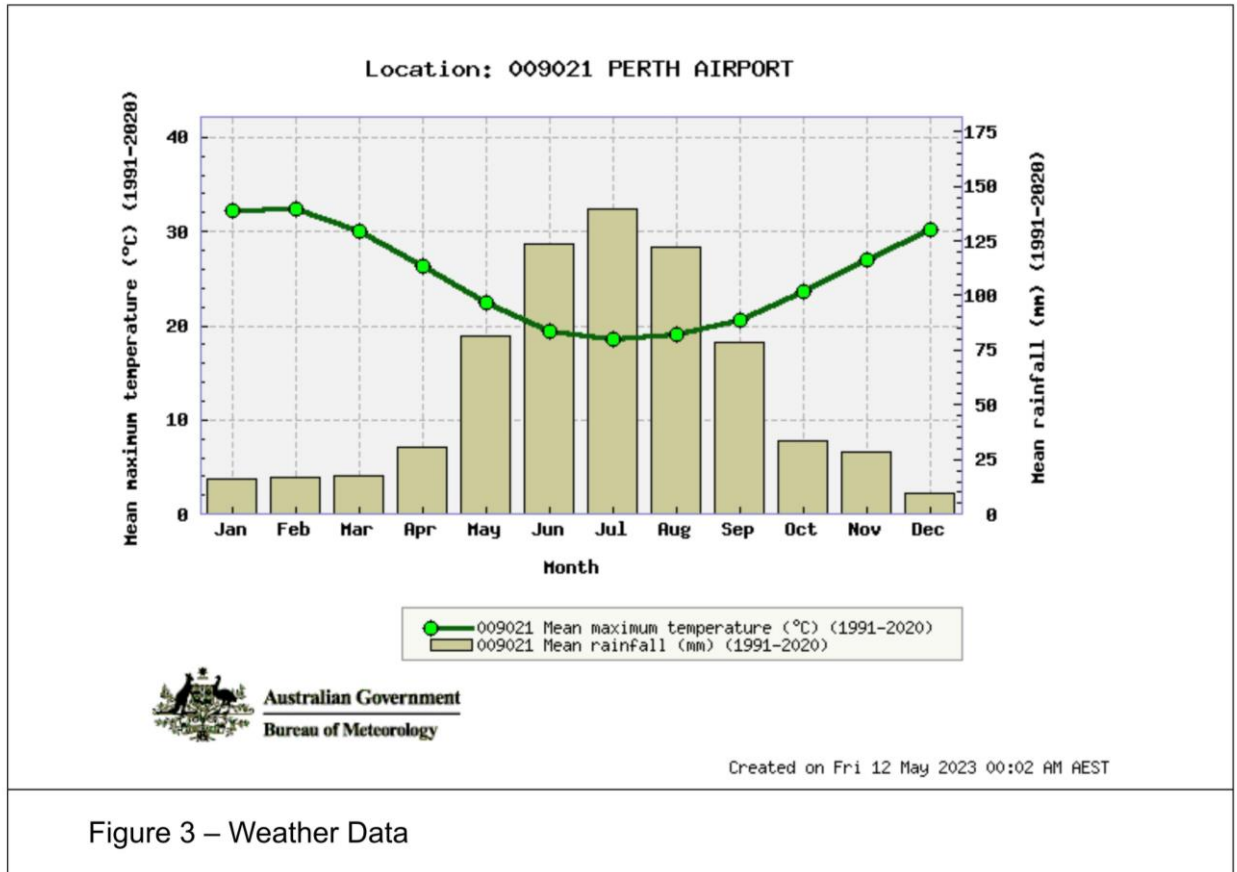
The Guildford Vegetation Complex is described as a mixture of open forest to tall open forest of *Corymbia calophylla* (Marri) - *Eucalyptus wandoo* (Wandoo) - *Eucalyptus marginata* (Jarrah) and woodland of *Eucalyptus wandoo* (Wandoo) (with rare occurrences of *Eucalyptus lane-poolei* (Salmon White Gum)). Minor components include *Eucalyptus rudis* (Flooded Gum) - *Melaleuca raphiophylla* (Swamp Paperbark) (WALGA, 2021).

2.3 CLIMATE

The closest Bureau of Meteorology (BoM) weather station is approximately 9.6 km South West of the survey area at Perth Airport (Site No.009021) The long-term mean minimum temperature for Perth Airport ranged from 8.2°C in July to 17.8°C in February between 1991 and 2020. The long-term mean maximum temperature ranged from 18.5°C in July to 32.4°C in January between 1994 to 2020 (Bureau of Meteorology, 2020).

The long-term annual average rainfall is 698.8 millimetres (mm) from 1991 to 2022 (Bureau of Meteorology, 2020). Data is show below on **Figure 3**.

The temperature recorded in October 2022 was within the normal climatic conditions historically recorded for this area. The rainfall recorded in October 2022 was 66 mm less than recorded in October 2021. The rainfall recorded in October 2021 appears significantly greater than rainfall recorded in October over the previous 10 years. These results overall would not have a significant impact on the flora recorded within the survey area.



3. FLORA AND VEGETATION ASSESSMENT

3.1 VEGETATION METHODS

A Detailed Flora and Vegetation Survey was undertaken on the 19th and 21st October 2022. The site was surveyed for flora species and vegetation condition. Each variation or difference in vegetation was recorded with three 10 metre by 10 metre quadrats. Data was recorded to statistically determine vegetation communities. In total, fifteen quadrats were assembled to record each vegetation community. Each quadrat recorded flora species, heights, percentage cover and percentage dead and alive. Quadrats were not assembled permanently. Quadrat data is available in **Appendix B**.

The survey methodology was undertaken in accordance with EPA Position Statement No.3: *Terrestrial Biological Surveys as an Element of Biodiversity Protection* and EPA Guidance Statement No. 51: *Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia*.

All plant specimens collected during the field survey were dried, pressed and then sorted in accordance with the requirements of the Western Australian State Herbarium. Identification of specimens occurred through comparison with named material and through the use of taxonomic keys.

The use of standard data collection forms ensured the data was collected in a systematic and consistent manner. At each quadrat the following information was recorded:

- Vegetation condition;
- Vegetation community;
- Flora species;
- Local disturbances;
- Topography;
- Soils; and
- Age since fire.

The vegetation communities occurring on this site were described in detail. Aerial photography was used to extrapolate and map plant communities in combination with running notes made during the course of the survey.

3.2 DECLARED RARE AND PRIORITY FLORA

Species of flora acquire “Threatened” “Presumed Extinct” or “Priority” conservation status where populations are restricted geographically or threatened by local processes.

The Department of Biodiversity, Conservation and Attractions (DBCA) recognise these threats and subsequently applies regulations towards population protection and species conservation. The DBCA enforces regulations under the *Biodiversity Conservation Act 2016* to conserve Threatened species and protect significant populations. Priority Flora species are potentially rare or threatened and are classified in order of threat. Threatened and Priority Flora category definitions are listed in **Table 1**.

The likelihood of each flora species and vegetation community occurring onsite is determined by background research on the known soil types, vegetation communities and flowering times of each species. This information together with botanical knowledge provides an informative result on whether the flora species is likely to occur on the site. The likelihood of occurrence remains unknown if there is not enough publicly available information about the species.

Table 1: Definition of Threatened and Priority Flora Species (DEC 2012)

Conservation Code	Category
T	<p>Threatened Flora (Declared Rare Flora – Extant). Schedule 1 under the Wildlife Conservation Act 1950 Rare Flora Notice Taxa which have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such</p> <p>Threatened Flora (Schedule 1) are further ranked by the Department according to their level of threat using IUCN Red List criteria: CR: Critically Endangered - considered to be facing an extremely high risk of extinction in the wild. EN: Endangered –considered to be facing a very high risk of extinction in the wild. VU: Vulnerable - considered to be facing a high risk of extinction in the wild</p>
X	<p>Presumed Extinct Flora (Declared Rare Flora – Extinct) Schedule 2 under the Wildlife Conservation Act 1950 Rare Flora Notice Taxa which have been adequately searched for and there is no reasonable doubt that the last individual has died, and have been gazetted as such.</p>
P1	<p>Priority One: Poorly-known species species that are known from one or a few collections or sight records (generally less than five), all on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, Shire, Westrail and Main Roads WA road, gravel and soil reserves, and active mineral leases and under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes</p>
P2	<p>Priority Two: Poorly-known species Species that are known from one or a few collections or sight records, some of which are on lands not under imminent threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes.</p>
P3	<p>Priority Three: Poorly-known species Species that are known from collections or sight records from several localities not under imminent threat, or from few but widespread localities with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and known threatening processes exist that could affect them.</p>
P4	<p>Priority Four: Rare, Near Threatened and other species in need of monitoring (a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands. (b) Near Threatened. Species that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. (c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.</p>
P5	<p>Priority Five: Conservation Dependent species Species that are not threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years</p>

A search of the Department of Biodiversity, Conservation and Attractions (DBCA) NatureMap database identified fourteen Threatened (T), four Priority 1 (P1), three Priority 2 (P2), twenty-two Priority 3 (P3) and sixteen Priority 4 (P4) species, likely to occur within a 10km radius of the area. These species are listed in **Table 2** below.

Table 2: NatureMap listed species

Species Name	Conservation Code	Likely to occur onsite	Survey undertaken in flowering time
<i>Acacia aphylla</i>	T	No	Yes
<i>Acacia benthamii</i>	P2	No	Yes
<i>Acacia drummondii</i> subsp. <i>affinis</i>	P3	Yes	No
<i>Acacia horridula</i>	P3	Yes	No
<i>Acacia oncinophylla</i> subsp. <i>oncinophylla</i>	P3	Yes	Yes
<i>Anthocercis gracilis</i>	T	Yes	Yes
<i>Asteridea gracilis</i>	P3	Yes	Yes
<i>Banksia pteridifolia</i> subsp. <i>vernalis</i>	P3	Yes	Yes
<i>Beaufortia purpurea</i>	P3	Yes	Yes
<i>Bolboschoenus fluviatilis</i>	P1	Unknown	Unknown
<i>Cyanothamnus tenuis</i>	P4	Unknown	Unknown
<i>Byblis gigantea</i>	P3	Yes	Yes
<i>Calectasia cyanea</i>	T	Yes	Yes
<i>Calothamnus accedens</i>	P4	Yes	Unknown
<i>Calytrix breviseta</i> subsp. <i>breviseta</i>	T	Yes	Yes
<i>Carex tereticaulis</i>	P3	Yes	Yes
<i>Conospermum undulatum</i>	T	Yes	Yes
<i>Cyathochaeta teretifolia</i>	P3	Yes	Unknown
<i>Darwinia apiculata</i>	T	Yes	Yes
<i>Darwinia pimelioides</i>	P4	Yes	Yes
<i>Diplolaena andrewsii</i>	T	Yes	Yes
<i>Diuris drummondii</i>	T	Yes	Yes
<i>Eryngium</i> sp. <i>subdecumbens</i>	P3	Unknown	Unknown
<i>Grevillea curviloba</i>	T	Yes	Yes
<i>Grevillea dissectifolia</i>	P3	Unknown	Unknown
<i>Grevillea pimeleoides</i>	P4	Yes	Yes
<i>Halgania corymbosa</i>	P3	Yes	Yes
<i>Hydrocotyle lemnoides</i>	P4	Yes	Yes
<i>Hydrocotyle striata</i>	P1	Unknown	Unknown
<i>Jacksonia sericea</i>	P4	Yes	No
<i>Lasiopetalum bracteatum</i>	P4	Yes	Yes
<i>Lasiopetalum glutinosum</i> subsp. <i>glutinosum</i>	P3	Unknown	Unknown
<i>Lepyrodia curvescens</i>	P2	Yes	Yes
<i>Lepyrodia heleocharoides</i>	P3	Yes	No
<i>Levenhookia preissii</i>	P1	Yes	Yes
<i>Macarthuria keigheryi</i>	T	Yes	Yes
<i>Meionectes tenuifolia</i>	P3	Unknown	Unknown
<i>Myriophyllum echinatum</i>	P3	Yes	No
<i>Ornduffia submersa</i>	P4	Unknown	Unknown
<i>Persoonia sulcata</i>	P4	Yes	Yes
<i>Phyllangium palustre</i>	P2	Yes	Yes
<i>Pimelea rara</i>	P4	Yes	No
<i>Pithocarpa corymbulosa</i>	P3	No	No
<i>Schoenus griffinianus</i>	P4	Yes	Yes
<i>Senecio gilbertii</i>	P1	Yes	Yes
<i>Senecio leucoglossus</i>	P4	Yes	Yes
<i>Sporobolus blakei</i>	P3	Yes	No
<i>Stackhousia</i> sp. <i>Red-blotched corolla</i>	P3	Unknown	Unknown
<i>Stylidium longitubum</i>	P4	Yes	Yes
<i>Stylidium striatum</i>	P4	Yes	Yes
<i>Synaphea</i> sp. <i>Pinjarra Plain</i>	T	Yes	Yes
<i>Tetraloche pilifera</i>	P3	Yes	Yes
<i>Thelymitra dedmaniarum</i>	T	Yes	No
<i>Thelymitra magnifica</i>	T	Unknown	Unknown
<i>Thysanotus anceps</i>	P3	Yes	Yes
<i>Thysanotus glaucus</i>	P4	Yes	Yes

<i>Trithuria occidentalis</i>	T	Unknown	Unknown
<i>Verticordia lindleyi</i> subsp. <i>lindleyi</i>	P4	Yes	No
<i>Verticordia serrata</i> var. <i>linearis</i>	P3	Yes	Yes

3.2.1 *Environment Protection and Biodiversity Conservation Act (1999) – Species level significance*

The *Environment Protection and Biodiversity Conservation (EPBC) Act, 1999*, promotes the conservation of biodiversity by providing strong protection for plants at a species level. Section 178 and 179 provides the lists and categories of threatened species under the Act and is presented in **Table 3** below.

Table 3: Categories of Threatened Species (EPBC Act, Section 179, 1999)

1	<p>Extinct A native species is eligible to be included in the extinct category at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.</p>
2	<p>Extinct in the Wild A native species is eligible to be included in the extinct in the wild category at a particular time if, at that time:(a) it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or (b) it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.</p>
3	<p>Critically Endangered A native species is eligible to be included in the critically endangered category at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.</p>
4	<p>Endangered A native species is eligible to be included in the endangered category at a particular time if, at that time: (a) it is not critically endangered; and (b) it is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.</p>
5	<p>Vulnerable A native species is eligible to be included in the vulnerable category at a particular time if, at that time: (a) it is not critically endangered or endangered; and (b) it is facing a high risk of extinction in the wild in the medium term future, as determined in accordance with the prescribed criteria..</p>
6	<p>Conservation Dependant A native species is eligible to be included in the conservation dependent category at a particular time if, at that time: (a) the species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or (b) the following subparagraphs are satisfied: (i) the species is a species of fish; (ii) the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised; (iii) the plan of management is in force under a law of the Commonwealth or of a State or Territory; (iv) cessation of the plan of management would adversely affect the conservation status of the species.</p>

A search using the Department of Agriculture, Water and the Environment (DAWE) Protected Matters Tool was undertaken within a 10km radius of the site. The search result noted twenty-eight flora species of significance likely to occur in the area. Two flora species are listed as Critically Endangered, seventeen flora species have been listed as Endangered and nine species is listed as Vulnerable. **Table 4** below lists

the species resultant from the DAWE database search and an indication of the likelihood of their occurrences on site.

Table 4: DAWE Protected Matters Threatened and Priority Flora database search results and likelihood of occurrence

Species Name	Conservation Code	Likely to occur onsite	Survey undertaken in flowering time
<i>Acacia anomala</i>	Vulnerable	Yes	Yes
<i>Acacia aphylla</i>	Vulnerable	No	Yes
<i>Andersonia gracilis</i>	Endangered	Yes	Yes
<i>Anthocercis gracilis</i>	Vulnerable	Yes	Yes
<i>Banksia mimica</i>	Endangered	Yes	No
<i>Caladenia huegelii</i>	Endangered	Yes	Yes
<i>Calytrix breviseta</i> subsp. <i>breviseta</i>	Endangered	Yes	Yes
<i>Chamelaucium lullfitzii</i>	Endangered (listed as Chamelaucium sp. Gingin (N.G.Marchant 6))	Unknown	Unknown
<i>Conospermum undulatum</i>	Vulnerable	Yes	Yes
<i>Darwinia apiculata</i>	Endangered	Yes	Yes
<i>Darwinia foetida</i>	Critically Endangered	Unknown	Unknown
<i>Diplolaena andrewsii</i>	Endangered	Yes	Yes
<i>Diuris drummondii</i>	Vulnerable	Yes	Yes
<i>Diuris micrantha</i>	Vulnerable	Yes	Yes
<i>Diuris purdiei</i>	Endangered	Yes	Yes
<i>Drakaea elastica</i>	Endangered	Yes	Yes
<i>Drakaea micrantha</i>	Vulnerable	Yes	Yes
<i>Eleocharis keigheryi</i>	Vulnerable	Yes	Yes
<i>Eremophila glabra</i> subsp. <i>chlorella</i>	Endangered	Yes	Yes
<i>Eucalyptus x balanites</i>	Endangered	Yes	Yes
<i>Grevillea christineae</i>	Endangered	Yes	Yes
<i>Grevillea curviloba</i>	Endangered	Yes	Yes
<i>Grevillea flexuosa</i>	Vulnerable	Yes	Yes
<i>Macarthuria keigheryi</i>	Endangered	Yes	Yes
<i>Synaphea</i> sp. Fairbridge Farm	Critically Endangered	Yes	Yes
<i>Thelymitra dedmaniarum</i>	Endangered	Yes	No
<i>Thelymitra stellata</i>	Endangered	Yes	Yes
<i>Trithuria occidentalis</i>	Endangered	Unknown	Unknown

3.2.2 Department of Biodiversity, Conservation and Attractions (DBCA) Database Search

In addition to the background searches undertaken through the DBCA NatureMap and the DAWE Protected Matters searches, a Threatened and Priority flora search was undertaken through the DBCA. The search is undertaken on records from the Threatened and Priority Flora Database (TPFL) and the WA Herbarium database (WAHerb), which provides known locations of each species. **Table 5** below lists the species resultant from the DBCA database searches and an indication of the likelihood of their occurrences on site. The search was conducted within a 10km radial area from the central coordinate. Threatened flora species *Conospermum undulatum* was observed during the site visit.

Table 5: DBCA Threatened and Priority Flora database search results and likelihood of occurrence.

Taxon	Conservation Status		Likely to occur onsite	Survey undertaken in flowering time
	DBCA	EPBC		
<i>Acacia aphylla</i>	T	VU	No	Yes
<i>Acacia benthamii</i>	2		No	Yes
<i>Acacia drummondii</i> subsp. <i>affinis</i>	3		Yes	No
<i>Acacia horridula</i>	3		Yes	No
<i>Acacia oncinophylla</i> subsp. <i>oncinophylla</i>	3		Yes	Yes
<i>Alyogyne</i> sp. Great Victoria Desert	3		Unknown	Unknown
<i>Amanita carneiphylla</i>	3		Yes	N/A
<i>Anthocercis gracilis</i>	T	VU	Yes	Yes
<i>Asteridea gracilis</i>	3		Yes	Yes
<i>Banksia pteridifolia</i> subsp. <i>vernalis</i>	3		Yes	Yes
<i>Beaufortia purpurea</i>	3		Unknown	Unknown
<i>Bolboschoenus fluviatilis</i>	1		Unknown	Unknown
<i>Byblis gigantea</i>	3		Yes	Yes
<i>Calothamnus accedens</i>	4		Yes	Yes
<i>Calytrix breviseta</i> subsp. <i>breviseta</i>	T		Yes	Unknown
<i>Carex tereticaulis</i>	3		Yes	Yes
<i>Conospermum undulatum</i>	T	VU	Yes	Yes
<i>Cyanothamnus tenuis</i>	4		Unknown	Unknown
<i>Cyathochaeta teretifolia</i>	3		Yes	Unknown
<i>Darwinia apiculata</i>	T	EN	Yes	Yes
<i>Darwinia pimelioides</i>	4		Yes	Yes
<i>Diplolaena andrewsii</i>	T	EN	Yes	Yes
<i>Diuris drummondii</i>	T		Yes	Yes
<i>Drosera patens</i>	1		Unknown	Unknown
<i>Eryngium</i> sp. <i>subdecumbens</i>	3		Yes	Yes
<i>Grevillea dissectifolia</i>	3		Unknown	Unknown
<i>Grevillea pimeleoides</i>	4		Unknown	Unknown
<i>Halgania corymbosa</i>	3		Yes	Yes
<i>Hydrocotyle lemnoides</i>	4		Yes	Yes
<i>Hydrocotyle striata</i>	1		Yes	Yes
<i>Isopogon autumnalis</i>	3		Unknown	Unknown
<i>Jacksonia gracillima</i>	3		Yes	Unknown
<i>Jacksonia sericea</i>	4		Yes	No
<i>Johnsonia pubescens</i> subsp. <i>cygnorum</i>	2		Yes	Yes
<i>Lasiopetalum bracteatum</i>	4		Yes	Yes
<i>Lasiopetalum glutinosum</i> subsp. <i>glutinosum</i>	3		Unknown	Unknown
<i>Lepyrodia curvescens</i>	2		Yes	Yes
<i>Lepyrodia heleocharoides</i>	3		Yes	No
<i>Levenhookia preissii</i>	1		Yes	Yes
<i>Macarthuria keigheryi</i>	T		Yes	Yes
<i>Meionectes tenuifolia</i>	3		Unknown	Unknown
<i>Myriophyllum echinatum</i>	3		Yes	No

<i>Ornduffia submersa</i>	4		Unknown	Unknown
<i>Persoonia sulcata</i>	4		Yes	Yes
<i>Phyllangium palustre</i>	2		Yes	Yes
<i>Pimelea rara</i>	4		Yes	No
<i>Pithocarpa corymbulosa</i>	3		No	No
<i>Schoenus griffinianus</i>	4		Yes	Yes
<i>Schoenus pennisetis</i>	3		Yes	Yes
<i>Senecio gilbertii</i>	1		Yes	Yes
<i>Senecio leucoglossus</i>	4		Yes	Yes
<i>Sporobolus blakei</i>	3		Yes	No
<i>Stackhousia</i> sp. Red-blotched corolla	3		Unknown	Unknown
<i>Stylidium longitubum</i>	4		Yes	Yes
<i>Stylidium striatum</i>	4		Yes	Yes
<i>Tetrateca pilifera</i>	3		Yes	Yes
<i>Thelymitra dedmaniarum</i>	T		Yes	No
<i>Thelymitra magnifica</i>	T	CR	Unknown	Unknown
<i>Thysanotus anceps</i>	3		Yes	Yes
<i>Thysanotus brachiatus</i>	2		Yes	No
<i>Thysanotus glaucus</i>	4		Yes	Yes
<i>Thysanotus</i> sp. Badgingarra	2		Yes	No
<i>Tricostularia drummondii</i>	3		Unknown	Unknown
<i>Trithuria occidentalis</i>	T		Unknown	Unknown
<i>Verticordia lindleyi</i> subsp. <i>lindleyi</i>	4		Yes	No
<i>Verticordia serrata</i> var. <i>linearis</i>	3		Yes	Yes

3.3 THREATENED ECOLOGICAL COMMUNITIES

In Western Australia Threatened Ecological Communities (TEC's) are assessed through a procedure coordinated by the DBCA and are assigned to one of the categories outlined below in **Table 6**. While they are not afforded direct statutory protection at a state level (unlike Threatened Flora under the *Biodiversity Conservation Act 2016*) their significance is acknowledged through other State environmental approval processes (i.e. Environmental Impact Assessment pursuant to Part IV of the *Environmental Protection Act 1986*). The department has been identifying and listing threatened ecological communities since 1994 through the non-statutory process. Scheduled TEC's are afforded statutory protection at a Federal level pursuant to the EPBC Act.

The Minister for Environment previously listed ecological communities as threatened through a non-statutory process if the community was presumed to be totally destroyed or at risk of becoming totally destroyed. The *Biodiversity Conservation Act 2016* (BC Act) provides for the statutory listing of threatened ecological communities (TECs) by the Minister. The new legislation also describes statutory processes for preparing recovery plans for TECs, the registration of their critical habitat, and penalties for unauthorised modification of TECs.

The Department has been identifying and listing TECs since 1994 through the non-statutory process. The WA Minister for Environment has endorsed 69 ecological communities as threatened in the following categories:

- 20 critically endangered
- 17 endangered
- 28 vulnerable
- 4 presumed totally destroyed.

25 of these are listed under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999*. As at January 2019, an additional 393 ecological communities (community types and sub-types) with insufficient information available to be considered a TEC, or which are rare but not currently threatened, have been placed on the Priority list and referred to as priority ecological communities (PECs).

Table 6: Categories of DBCA’s Threatened Ecological Communities

PD	Presumably Totally Destroyed An ecological community that has been adequately searched for but for which no representative occurrences have been located.
CE	Critically Endangered An ecological community that has been adequately surveyed and is found to be facing an extremely high risk of total destruction in the immediate future.
E	Endangered An ecological community that has been adequately surveyed and is not critically endangered but is facing a very high risk of total destruction in the near future.
V	Vulnerable An ecological community that has been adequately surveyed and is not critically endangered or endangered but is facing a high risk of total destruction or significant modification in the medium to long-term future.

The EPBC Act provides for the strong protection of TEC’s, which are listed under section 181 of the Act and are described as ‘Critically Endangered’, ‘Endangered’ or ‘Vulnerable’ under section 182. Schedules of protected TECs maintained pursuant to the EPBC Act are based on the same Floristic Community Type’s (FCT’s) as adopted by DBCA, however not all TEC’s listed by the DBCA are scheduled under the EPBC Act.

A Department of Agriculture, Water and the Environment (DAWE) Protected Matters Report indicated there are eight known Threatened Ecological Communities (TEC’s) likely to occur within a 10km radius of the area, listed in **Table 7** below.

Table 7: DAWE listed Threatened Ecological Communities

Community Name	Conservation Code	Likely to occur on site
<i>Corymbia calophylla</i> - <i>Xanthorrhoea preissii</i> woodlands and shrublands of the Swan Coastal Plain	Endangered	Yes
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Yes
Clay Pans of the Swan Coastal Plain	Critically Endangered	No
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	No
Tuart (<i>Eucalyptus gomphocephala</i>) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	No
Shrublands and Woodlands of the eastern Swan Coastal Plain	Endangered	Yes
<i>Corymbia calophylla</i> - <i>Kingia australis</i> woodlands on heavy soils of the Swan Coastal Plain	Endangered	Yes
Assemblages of plants and invertebrate animals of tumulus (organic mound) springs of the Swan Coastal Plain	Endangered	Yes

3.3.1 Department of Biodiversity, Conservation and Attractions (DBCA) Database Search

In addition to the background searches undertaken through the DAWE Protected Matters search, a Threatened Ecological Community (TEC) search was undertaken through the DBCA. The search is undertaken on records from the DBCA, which provides known locations of TEC's. The results are provided below in **Table 8**. The search was conducted within a 10km radial area from the central coordinate.

It is likely that seven of the listed TEC's and Priority communities will occur within the survey area due to the vegetation condition, community and the soil complexes, however a TEC assessment was not undertaken as part of this survey.

The search results identified two significant ecological communities as occurring within the survey area. The communities are *Corymbia calophylla* - *Xanthorrhoea preissii* woodlands and shrublands of the Swan Coastal Plain and Shrublands and woodlands of the eastern side of the Swan Coastal Plain.

The flora and vegetation assessment identified seven of the significant ecological communities as potentially occurring within the survey area.

Table 8: DBCA listed Threatened Ecological Communities

Community Name	Conservation Code	Likely to occur on site
<i>Banksia attenuata</i> and/or <i>Eucalyptus marginata</i> woodlands of the eastern side of the Swan Coastal Plain (Endangered	Yes
<i>Banksia attenuata</i> woodlands over species rich dense shrublands	Endangered	Yes
Banksia Woodlands of the Swan Coastal Plain ecological community	Priority 3	Yes
Central Northern Darling Scarp Granite Shrubland Community	Priority 4	No

<i>Corymbia calophylla</i> - <i>Kingia australis</i> woodlands on heavy soils, Swan Coastal Plain	Critically Endangered	Yes
<i>Corymbia calophylla</i> - <i>Xanthorrhoea preissii</i> woodlands and shrublands of the Swan Coastal Plain	Endangered	Yes
Herb rich saline shrublands in clay pans	Critically Endangered	No
Low lying <i>Banksia attenuata</i> woodlands or shrublands	Priority 3	Yes
Shrublands and woodlands of the eastern side of the Swan Coastal Plain	Critically Endangered	Yes
Subtropical and Temperate Coastal Saltmarsh	Priority 3	No

4. FLORA AND VEGETATION ASSESSMENT RESULTS

A total of 176 taxa, comprising of 37 families and 117 genera were recorded on site. A list of these species has been provided in **Appendix A**. Species representation was greatest among the Fabaceae, Poaceae and Proteaceae families.

4.1 INTRODUCED SPECIES

Eighteen introduced flora species were recorded on the site. Species representation was greatest among the Iridaceae and Poaceae families. This represents 10% of the total number of flora species recorded on site. BAM Act definitions are provided in **Appendix D**.

Table 9: Introduced Flora Recorded in the Survey Area

Taxa	Common Name	BAM Act
* <i>Aira caryophylla</i>	Silvery Hairgrass	Permitted - s11
* <i>Briza maxima</i>	Quaking grass	Permitted - s11
* <i>Ehrharta calycina</i>	Perennial Veldt	Permitted - s11
* <i>Ehrharta longiflora</i>	Annual Veldt	Permitted - s11
* <i>Freesia alba</i> × <i>leichtlinii</i>	Freesia	Permitted - s11
* <i>Gladiolus caryophyllaceus</i>	Wild Gladiolus	Permitted - s11
* <i>Hesperantha falcata</i>	Hesperantha	Permitted - s11
* <i>Hypochaeris glabra</i>	Flatweed	Permitted - s11
* <i>Lolium perenne</i>	Perennial Rye Grass	Permitted - s11
* <i>Lysimachia arvensis</i>	Blue Pimpernel	Permitted - s11
* <i>Oxalis pes-caprae</i>	Sourgrass	Permitted - s11
* <i>Romulea rosea</i>	Guildford Grass	Permitted - s11
* <i>Sonchus oleraceus</i>	Common Sowthistle	Permitted - s11
* <i>Taraxacum khatoonae</i>	Dandelion	Permitted - s11
* <i>Ursinia anthemoides</i>	Solar Fire	Permitted - s11
* <i>Vicia benghalensis</i>	Purple Vetch	Permitted - s11
* <i>Vulpia bromoides</i>	Squirrel Tail Fescue	Permitted - s11
* <i>Watsonia meriana</i> var. <i>bulbillifera</i>	Watsonia	Permitted - s11

4.2 THREATENED AND PRIORITY FLORA

One Priority 3 flora species (*Isopogon autumnalis*) was recorded and one Threatened flora species (*Conospermum undulatum*) was observed during the survey. No other flora, pursuant to *Biodiversity Conservation Act 2016* or the *EPBC Act 1999* and listed by the Department of Biodiversity, Conservation and Attractions (DBCA) were located during the time of the survey. The botanical survey was undertaken in spring to coincide with the majority of the flowering times of the threatened species.

4.3 THREATENED ECOLOGICAL COMMUNITIES

The survey identified seven potential Threatened and Priority Ecological Communities listed by Department of Agriculture, Water and the Environment (DAWE) and the Department of Biodiversity, Conservation and Attractions (DBCA) as potentially occurring within the survey area.

4.4 LOCAL VEGETATION COMMUNITIES

Canopy cover and height classes are used to determine the structure class in each vegetation community. Vegetation Structure Classes are provided in **Table 9**. These vegetation structure classes are defined and used in the Technical Guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (2016).

Table 10: Vegetation Structure Classes

Life Form/ Height Class	Canopy Cover (percentage)			
	100% - 70%	70% - 30%	30% - 10%	10% - 2%
Trees 10-30m	Closed Forest	Open Forest	Woodland	Open Woodland
Trees < 10m	Low Closed Forest	Low Open Forest	Low Woodland	Low Open Woodland
Shrub Mallee	Closed Shrub Mallee	Shrub Mallee	Open Shrub Mallee	Very Open Shrub Mallee
Shrubs > 2m	Closed Tall Scrub	Tall Open Scrub	Tall Shrubland	Tall Open Shrubland
Shrubs 1-2m	Closed Heath	Open Heath	Shrubland	Open Shrubland
Shrubs < 1m	Closed Low Heath	Open Low Heath	Low Shrubland	Low Open Shrubland
Grasses	Closed Grassland	Grassland	Open Grassland	Very Open Grassland
Herbs	Closed Herbland	Herbland	Open Herbland	Very Open Herbland
Sedges	Closed Sedgeland	Sedgeland	Open Sedgeland	Very Open Sedgeland

Five vegetation communities were represented on the site at a local level; which has been described below in **Table 11**. Photographic representations of the vegetation community are shown in the Quadrat data sheets in **Appendix B**. The vegetation community, conditions and quadrat locations are shown on **Figures 4 & 5**.

Table 11: Local Vegetation Communities Recorded within Talbot Rd Nature Reserve, October 2022.

Community Descriptions
Vegetation Community 1 – Banksia Woodland
Low woodland of <i>Banksia attenuata</i> and <i>Banksia menziesii</i> over shrubland of <i>Allocasuarina humilis</i> over low shrubland of <i>Eremaea pauciflora</i> , <i>Isopogon autumnalis</i> (P3) and <i>Leucopogon ?capitellatus</i> over open sedgeland of <i>Mesomelaena pseudostygia</i> , <i>Lyginea barbata</i> and <i>Neurostylis</i> sp. Jarrah Forest
Vegetation Community 2 – Jarrah (<i>Eucalyptus marginata</i>) Woodland
Open forest of <i>Eucalyptus marginata</i> over shrubland of <i>Allocasuarina humilis</i> over open shrubland of <i>Xanthorrhoea preissii</i> , <i>Banksia sessilis</i> and <i>Adenanthos cygnorum</i> over low open shrubland of <i>Conostylis aculeata</i> and <i>Dasypogon bromeliifolius</i> over very open sedgeland of <i>Mesomelaena pseudostygia</i> and <i>Schoenus pedicellatus</i>
Vegetation Community 3 –Marri (<i>Corymbia calophylla</i>)– Wandoo (<i>Eucalyptus wandoo</i>) Woodland
Open forest of <i>Eucalyptus wandoo</i> and <i>Corymbia calophylla</i> over open shrubland of <i>Hakea lissocarpha</i> , <i>Xanthorrhoea preissii</i> , <i>Banksia armata</i> and <i>Banksia nivea</i> over very open sedgeland of <i>Tetraria octandra</i> and <i>Lepidosperma pubisquamum</i> .
Vegetation Community 4–Marri (<i>Corymbia calophylla</i>) Woodland
Open forest of <i>Corymbia calophylla</i> over open shrubland of <i>Allocasuarina humilis</i> , <i>Xanthorrhoea preissii</i> and <i>Kingia australis</i> over low open sedgeland of <i>Banksia nivea</i> and <i>Conostylis aculeata</i> over very open sedgeland of <i>Tetraria octandra</i> , <i>Mesomelaena pseudostygia</i> and <i>Schoenus pedicellatus</i>
Vegetation Community 5– <i>Eucalyptus tottiana</i> Heath
Low open woodland of <i>Eucalyptus tottiana</i> and <i>Nuystia floribunda</i> over open heath of <i>Allocasuarina humilis</i> , <i>Xanthorrhoea preissii</i> and <i>Lambertia multiflora</i> over very open sedgeland of <i>Mesomelaena pseudostygia</i> , <i>Tetraria octandra</i> , <i>Lyginea barbata</i> and <i>Schoenus pedicellatus</i>



4.5 VEGETATION CONDITION

Many bushland remnants have been historically degraded and current land use activities continue degradation and fragmentation processes. As a result, these remnants are especially susceptible to disturbances arising from indirect impacts such as surrounding developments and human activity. Degradation is caused by a wide range of factors, including isolation and edge effects, weed invasion, plant diseases, changes in fire frequency and behaviour, landscape fragmentation, increased predation on native fauna by feral animals, resulting in a decrease in species richness and general modification of ecological function.

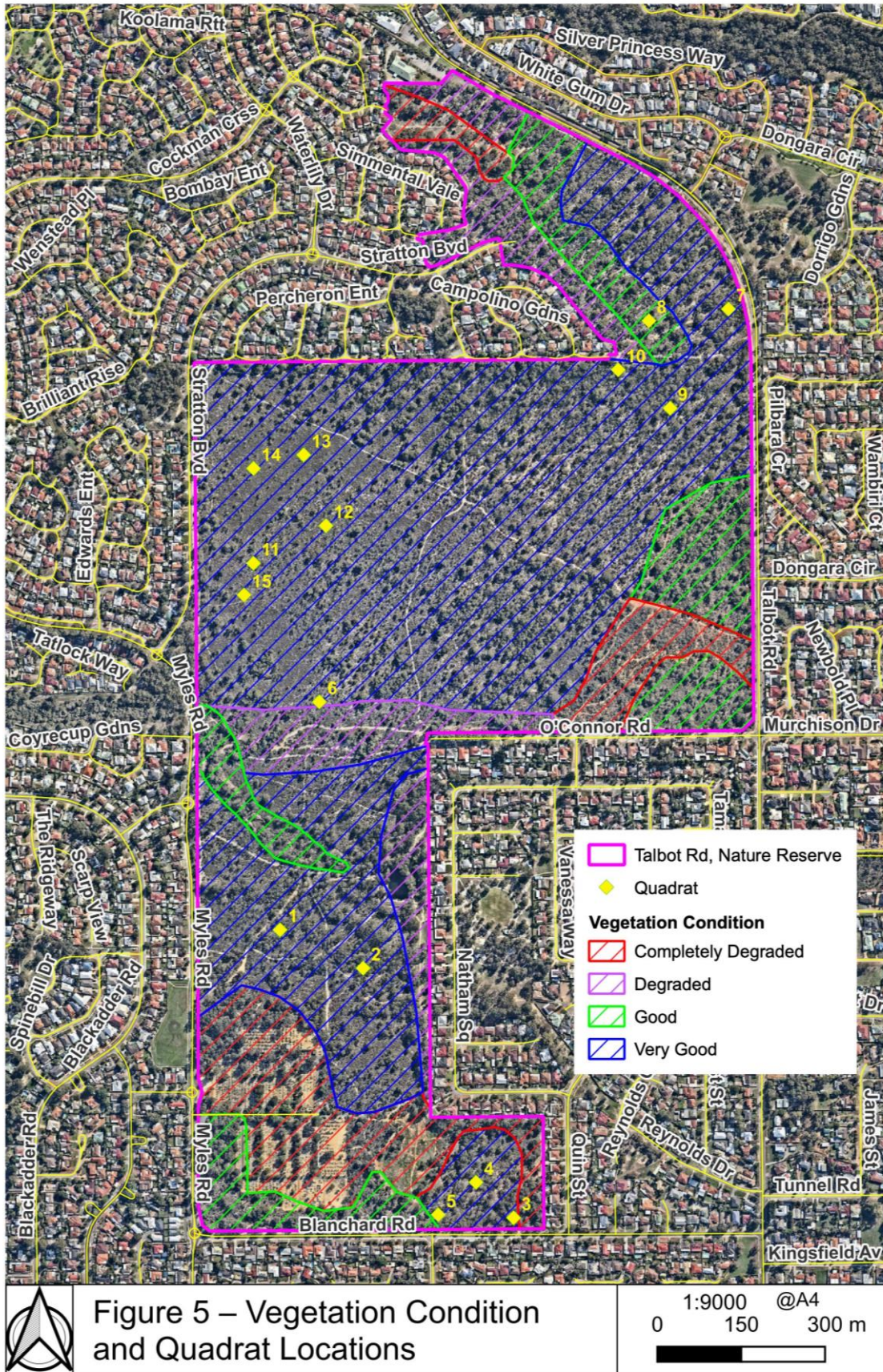
The site has had historic land disturbances in isolated areas. There are a number of invasive weeds that have the potential to impact the bushland that is currently in “Very Good” vegetation condition, if left unmanaged. The vegetation condition was rated according to the Vegetation Condition Scale used in the Technical Guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (2016). The definitions are described in **Table 12** below.

Table 12: Vegetation Condition Scale

Vegetation Condition	South West and Interzone Botanical Provinces	Eremaean and Northern Botanical Provinces
Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.	
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement
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.	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds
Poor		Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds
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.	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.

Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees and shrubs.	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs
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In general, the vegetation condition varied from “Completely Degraded” to “Very Good” in the survey area. Vegetation condition mapping is provided on **Figure 5**.



5. CONCLUSIONS AND RECOMMENDATIONS

The Detailed Flora and Vegetation survey within Talbot Rd Nature Reserve, Swan View, identified a total of 176 taxa, representing 117 genera and 37 families. Weeds species comprised of 10% of the total flora recorded. The vegetation condition across the site ranged from “Completely Degraded” to “Very Good”.

Five vegetation communities were recorded at a local level during the survey. Vegetation Community 1 – *Banksia Woodland* and Vegetation Community 2 – *Jarrah (Eucalyptus marginata) Woodland* shows similarities with the previously mapped Forrestfield Vegetation Complex, which is described as open forest of *Corymbia calophylla* (Marri) - *Eucalyptus wandoo* (Wandoo) - *Eucalyptus marginata* (Jarrah) to open forest of *Eucalyptus marginata* (Jarrah) - *Corymbia calophylla* (Marri) - *Allocasuarina fraseriana* (Sheoak) - *Banksia* species. Fringing woodland of *Eucalyptus rudis* (Flooded Gum) occurs in the gullies that dissect this landform. These similarities include species composition (Jarrah [*Eucalyptus marginata*], Marri [*Corymbia calophylla*]), Wandoo [*Eucalyptus wandoo*] and *Banksia* species and structure (open forest).

Vegetation Community 3 – *Marri (Corymbia calophylla)– Wandoo (Eucalyptus wandoo) Woodland* and Vegetation Community 4 – *Marri (Corymbia calophylla) Woodland*, shows similarities with the previously mapped Guildford Vegetation Complex, which is described as a mixture of open forest to tall open forest of *Corymbia calophylla* (Marri) - *Eucalyptus wandoo* (Wandoo) - *Eucalyptus marginata* (Jarrah) and woodland of *Eucalyptus wandoo* (Wandoo) (with rare occurrences of *Eucalyptus lane-poolei* (Salmon White Gum)). Minor components include *Eucalyptus rudis* (Flooded Gum) - *Melaleuca raphiophylla* (Swamp Paperbark). These similarities include species composition Marri [*Corymbia calophylla*] and Wandoo [*Eucalyptus wandoo*] and structure (open forest).

Vegetation Community 5 – *Eucalyptus todtiana* sandplain, is not similar to either of the previously mapped vegetation complexes. This vegetation complex is confined to a small area within the survey area.

One Priority 3 flora species (*Isopogon autumnalis*) was recorded and one Threatened flora species (*Conospermum undulatum*) was observed during the survey. No other species of Threatened (T) or Priority (P) flora pursuant to the Biodiversity Conservation Act 2016 were located during the time of the survey. No Threatened flora pursuant to the *EPBC Act* 1999 were recorded during the survey.

A possible seven Threatened and Priority Ecological Communities listed by Department of Agriculture, Water and the Environment (DAWE) or Department of Biodiversity, Conservation and Attractions (DBCA) may occur within the survey area.

Based on the results of this survey, Del Botanics proposes the following recommendations:

- Where possible retain vegetation in Good or better condition;
- Reduce tracks where possible; and
- Encourage best practice weed management.

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APPENDIX A
VASCULAR PLANT SPECIES RECORDED

**APPENDIX A:
VASCULAR PLANT SPECIES RECORDED AT TALBOT ROAD NATURE RESERVE
OCTOBER 2022**

(*Denotes a weed species)

Family	Genus/Species
Anarthriaceae	<i>Lepidobolus preissianus</i>
Anarthriaceae	<i>Lyginia barbata</i>
Apiaceae	<i>Xanthosia candida</i>
	<i>Xanthosia ciliata</i>
	<i>Xanthosia huegelii</i>
Araliaceae	<i>Trachymene pilosa</i>
Asparagaceae	<i>Laxmannia squarrosa</i>
	<i>Lomandra ?caespitosa</i>
	<i>Lomandra</i> sp
	<i>Thysanotus manglesianus</i>
	<i>Thysanotus sparteus</i>
Asteraceae	* <i>Hypochaeris glabra</i>
	* <i>Sonchus oleraceus</i>
	* <i>Taraxacum khatoonae</i>
	* <i>Ursinia anthemoides</i>
	<i>Asteraceae</i> sp
	<i>Hyalosperma cotula</i>
	<i>Olearia paucidentata</i>
	<i>Podolepis gracilis</i>
	<i>Podolepis lessonii</i>
	<i>Podotheca gnaphalioides</i>
	<i>Pterochaeta paniculata</i>
Casuarinaceae	<i>Allocasuarina fraseriana</i>
	<i>Allocasuarina humilis</i>
Celastraceae	<i>Tripterococcus brunonis</i>
Colchicaceae	<i>Burchardia congesta</i>
Cyperaceae	<i>Caustis dioica</i>
	<i>Cyathochaeta avenacea</i>
	<i>Isolepis</i> sp
	<i>Lepidobolus preissianus</i>
	<i>Lepidosperma ? apricola</i>
	<i>Lepidosperma pubisquamea</i>
	<i>Lepidosperma leptostachyum</i>
	<i>Mesomelaena pseudostygia</i>
	<i>Mesomelaena tetragona</i>
	<i>Morelotia octandra</i>
	<i>Neurostylis</i> sp. Jarrah Forest
Dasypogonaceae	<i>Calectasia narragara</i>
	<i>Dasypogon bromeliifolius</i>
	<i>Daucus glochidiatus</i>
	<i>Kingia australis</i>
Dilleniaceae	<i>Hibbertia acerosa</i>
	<i>Hibbertia huegelii</i>
	<i>Hibbertia hypericoides</i>
Droseraceae	<i>Drosera macrantha</i>

	<i>Drosera stolonifera</i>
Ericaceae	<i>Andersonia lehmanniana</i> <i>Conostephium pendulum</i> <i>Leucopogon</i> sp <i>Leucopogon?</i> <i>capitellatus</i> <i>Lysinema pentapetalum</i>
Fabaceae	* <i>Vicia benghalensis</i> <i>Acacia barbinervis</i> <i>Acacia huegelii</i> <i>Acacia pulchella</i> <i>Bossiaea eriocarpa</i> <i>Bossiaea ornata</i> <i>Daviesia ?hakeoides</i> <i>Daviesia</i> sp <i>Daviesia triflora</i> <i>Dilwynia laxiflora</i> <i>Gastrolobium spathulatunm</i> <i>Gompholobium marginatum</i> <i>Gompholobium tomentosum</i> <i>Hovea trisperma</i> <i>Jacksonia floribunda</i> <i>Jacksonia sternbergiana</i> <i>Kennedia prostrata</i> <i>Pultenaea ericifolia</i> <i>Sphaerolobium medium</i>
Goodeniaceae	<i>Dampiera alata</i> <i>Dampiera linearis</i> <i>Lechenaultia biloba</i> <i>Scaevola repens</i> <i>Scaevola calliptera</i>
Haemodoraceae	<i>Anigozanthos manglesii</i> <i>Anigozanthos</i> sp <i>Caesia micrantha</i> <i>Chamaescilla corymbosa</i> <i>Conostylis ?setosa</i> <i>Conostylis setigera</i> subsp <i>setigera</i> <i>Conostylis aculeata</i> <i>Constylis</i> sp <i>Corymbia calophylla</i> <i>Goodenia pusilla</i> <i>Haemodorum ?laxum</i> <i>Haemodorum ?spicatum</i> <i>Haemodorum</i> sp <i>Tricoryne elatior</i>
Hemerocallidaceae	<i>Chamaescilla corymbosa</i> <i>Johnsonia ?lupulina</i>
Iridaceae	* <i>Freesia alba</i> × <i>leichtlinii</i> * <i>Gladiolus caryophyllaceus</i> * <i>Hesperantha falcata</i>

	<i>*Moraea flaccida</i>
	<i>*Romulea rosea</i>
	<i>*Watsonia meriana</i> var. <i>bulbillifera</i>
	<i>Patersonia ?juncea</i>
	<i>Patersonia occidentalis</i>
	<i>Patersonia pygmaea</i>
Lamiaceae	<i>Hemiandra pungens</i>
Lauraceae	<i>Cassytha</i> sp
	<i>Cassytha racemosa</i>
Loranthaceae	<i>Nuytsia floribunda</i>
Molluginaceae	<i>Macarthuria australis</i>
Myrtaceae	<i>Melaleuca parviceps</i>
	<i>Calothamnus sanguineus</i>
	<i>Calytrix</i> sp
	<i>Cristonia biloba</i>
	<i>Cyanothamnus ramosus</i>
	<i>Eremaea pauciflora</i>
	<i>Eucalyptus marginata</i>
	<i>Eucalyptus todiana</i>
	<i>Eucalyptus wandoo</i>
	<i>Kunzea recurva</i>
	<i>Pericalymma ellipticum</i>
	<i>Verticordia</i> sp
Orchidaceae	<i>Caladenia flava</i>
	<i>Orchidaceae</i> sp
	<i>Pyrorchis nigricans</i>
	<i>Thelymitra macrophylla</i>
Oxalidaceae	<i>*Oxalis pes-caprae</i>
Pittosporaceae	<i>Marianthus bicolor</i>
Poaceae	<i>*Aira caryophyllea</i>
	<i>*Briza maxima</i>
	<i>*Ehrharta calycina</i>
	<i>*Ehrharta longiflora</i>
	<i>*Lolium perenne</i>
	<i>*Vulpia bromoides</i>
	<i>Amhipogon</i> sp
	<i>Amhipogon turbinatus</i>
	<i>Austrostipa compressa</i>
	<i>Austrostipa elegantissima</i>
	<i>Austrostipa hemipogon</i>
	<i>Lachnagrostis filiformis</i>
	<i>Neurachne alopecuroidea</i>
	<i>Rytidosperma caespitosum</i>
	<i>Rytidosperma setaceum</i>
	<i>Rytidosperma</i> sp
Polygalaceae	<i>Comesperma virgatum</i>
Primulaceae	<i>*Lysimachia arvensis</i>
Proteaceae	<i>Adenanthos cygnorum</i>
	<i>Banksia armata</i>

Banksia attenuata
Banksia menziesii
Banksia nivea
Banksia sessilis
Conospermum stoechadis
Haemodorum laxum
Hakea ruscifolia
Hakea cristata
Hakea lissocarpha
Hakea undulata
Isopogon dubius
Isopogon autumnalis (P3)
Isopogon linearis
Lambertia multiflora
Petrophile linearis
Stirlingia latifolia

Restionaceae

Desmocladius fasciculatus
Desmocladius flexuosus
Hypolaena exsulca
Loxocarya cinerea
Loxocarya flexuosa
Schoenus pedicellatus

Rutaceae

Philotheca spicata

Stylidiaceae

Levenhookia pusilla
Stylidium sp
Stylidium affine
Stylidium ciliatum
Stylidium tenue

Violaceae

Pigea calycina

Xanthorrhoeaceae

Xanthorrhoea acanthostachya
Xanthorrhoea gracilis
Xanthorrhoea preissii

Zamiaceae

Macrozamia riedlei

APPENDIX B
QUADRAT DATA

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FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Q1	Date: 19/10/2022	Site: Talbot Road Nature Reserve
GPS Datum: 50 J 409507.94 m E 6472823.22 m S	Topography: Mid slope	Litter cover: 40% twigs, 0% leaves, 10% logs
Age since fire: <10	Disturbance: Hi Med Lo	Soils: Grey Sand
Vegetation Description: Marri Woodland		
Vegetation Condition: Very Good		
Observations:		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Corymbia calophylla</i>	1000	100		50
Middle	<i>Allocasuarina humilis</i>	100	100		50
Bottom	<i>Conostylis aculeata</i>	60	100		30
	<i>Mesomelaena pseudostygia</i>	60	100		6.5
	<i>Lechenaultia biloba</i>	60	100		8
Opp	<i>Nuytsia floribunda</i>				
	<i>Burchardia congesta</i>				
	<i>Banksia nivea</i>				
	<i>Xanthorrhoea preissii</i>				
	<i>Xanthorrhoea gracilis</i>				
	* <i>Ursinia anthemoides</i>				
	<i>Dasyopogon bromeliifolius</i>				

	<i>Petrophile linearis</i>				
	<i>Bossiaea eriocarpa</i>				
	<i>Anigozanthos manglesii</i>				
	<i>Drosera macrantha</i>				
	<i>Stirlingia latifolia</i>				
	<i>Haemodorum</i> sp				
Sp1	<i>Podolepis gracilis</i>				
	* <i>Gladiolus caryophyllaceus</i>				
	* <i>Hypochaeris glabra</i>				
	<i>Patersonia occidentalis</i>				
	* <i>Ehrharta calycina</i>				
	<i>Hypolaena exsulca</i>				
Sp2	<i>Amphipogon turbinatus</i>				
	<i>Neurachne alopecuroidea</i>				
	<i>Desmocladus flexuosus</i>				
	<i>Chamaescilla corymbosa</i>				
	<i>Gompholobium tomentosum</i>				
	<i>Rytidosperma</i> sp				
	* <i>Taraxacum khatoonae</i>				
	<i>Calectasia narragara</i>				
	<i>Daucus glochidiatus</i>				
	<i>Hibbertia hypericoides</i>				
	<i>Cassytha racemosa</i>				
	<i>Hibbertia huegelii</i>				
	<i>Cyathochaeta avenacea</i>				
	* <i>Briza maxima</i>				
Sp4	<i>Lyginia imberbis</i>				
	<i>Hovea trisperma</i>				
	<i>Pultenaea ericifolia</i>				
	<i>Schoenus pedicellatus</i>				
Sp5	Asteraceae sp				
Sp6	<i>Conostylis ?setosa</i>				
Sp7	<i>Cyanothamnus ramosus</i>				
Opp	<i>Lambertia multiflora</i>				

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FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Q2	Date: 19/10/2022	Site: Talbot Road Nature Reserve
GPS Datum: 50 J 409656.49 m E 6472754.59 m S	Topography: Mid slope	Litter cover: 40% twigs, 80% leaves, 10% logs
Age since fire: <10	Disturbance: Hi Med Lo	Soils: Grey Sand
Vegetation Description: Marri Woodland		
Vegetation Condition: Very Good		
Observations:		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Corymbia calophylla</i>	1000	100		80
Middle	<i>Xanthorrhoea preissii</i>	100	100		9
	<i>Jacksonia sternbergiana</i>	200	80	20	6
	<i>Allocasuarina humilis</i>	120	100		4
Bottom	<i>Conostylis aculeata</i>	60	100		7
	<i>Mesomelaena pseudostygia</i>	60	100		20
	<i>Banksia nivea</i>	40	100		5
	<i>Calectasia narragara</i>				
	<i>Caesia micrantha</i>				
	* <i>Ehrharta calycina</i>				
	<i>Kingia australis</i>				
	<i>Dasypogon bromeliifolius</i>				

	<i>Neurachne alopecuroidea</i>				
	* <i>Gladiolus caryophyllaceus</i>				
	<i>Acacia pulchella</i>				
	<i>Hibbertia hypericoides</i>				
	* <i>Taraxacum khatoonae</i>				
	<i>Lomandra</i> sp				
	<i>Bossiaea eriocarpa</i>				
	<i>Burchardia congesta</i>				
	<i>Morelotia octandra</i>				
	<i>Scaevola calliptera</i>				
	<i>Thysanotus sparteus</i>				
	<i>Chamaescilla corymbosa</i>				
	* <i>Romulea rosea</i>				
	<i>Dampiera linearis</i>				
	<i>Haemodorum ?laxum</i>				
	<i>Desmocladius flexuosus</i>				
	* <i>Ursinia anthemoides</i>				
	<i>Cristonia biloba</i>				
	<i>Pyrorchis nigricans</i>				
	<i>Daucus glochidiatus</i>				
	<i>Xanthorrhoea gracilis</i>				
	<i>Patersonia occidentalis</i>				
Sp4	<i>Schoenus pedicellatus</i>				
Sp1	<i>Podolepis gracilis</i>				
	<i>Cyanothamnus ramosus</i>				
	<i>Hakea ruscifolia</i>				
	<i>Hovea trisperma</i>				

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FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Q3	Date: 19/10/2022	Site: Talbot Road Nature Reserve
GPS Datum: 50 J 409925.72 m E 6472307.33 m S	Topography: Upper slope	Litter cover: 20% twigs, 70% leaves, 10% logs
Age since fire: >10	Disturbance: Hi Med Lo	Soils: brown clay
Vegetation Description: Marri- Wandoo Woodland		
Vegetation Condition: Good		
Observations: Increase weeds on edge		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Corymbia calophylla</i>	1400	100		40
	<i>Eucalyptus wandoo</i>	1400	100		40
Middle	<i>Hakea lissocarpha</i>	40	100		3.5
	<i>Banksia armata</i>	40	100		2
	<i>Xanthorrhoea preissii</i>	150	100		4
Bottom	<i>Xanthosia candida</i>	20	100		6
	<i>Lepidosperma pubisquamea</i>	60	100		7
	<i>Morelotia octandra</i>	60	100		4
	* <i>Briza maxima</i>				
	* <i>Vicia benghalensis</i>				
	* <i>Ehrharta calycina</i>				
	<i>Desmodcladus flexuosus</i>				
	<i>Cassutha racemosa</i>				

	<i>Acacia pulchella</i>				
	<i>Banksia nivea</i>				
	* <i>Ehrharta longiflora</i>				
	* <i>Taraxacum khatoonae</i>				
	<i>Cyathochaeta avenacea</i>				
	<i>Dampiera alata</i>				
Sp 10	<i>Lepidosperma ? apricola</i>				
	* <i>Watsonia meriana</i> var. <i>bulbillifera</i>				
	<i>Lechenaultia biloba</i>				
	* <i>Ehrharta calycina</i>				
	* <i>Hesperantha falcata</i>				
	<i>Mesomelaena tetragona</i>				
	<i>Dilwynia laxiflora</i>				
	<i>Haemodorum</i> sp				
	<i>Desmocladus fasciculatus</i>				
	<i>Daucus glochidiatus</i>				
Sp11	<i>Rytidosperma caespitosum</i>				
	* <i>Freesia alba</i> × <i>leichtlinii</i>				
	* <i>Romulea rosea</i>				
Sp12	<i>Gastrolobium spathulatum</i>				
Sp 13	<i>Loxocarya cinerea</i>				
	* <i>Lolium perenne</i>				
Opp	* <i>Aira caryophyllea</i>				
	<i>Daviesia triflora</i>				

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FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Q4	Date: 19/10/2022	Site: Talbot Road Nature Reserve
GPS Datum: 50 J 409858.46 m E 6472371.00 m S	Topography: Upper slope	Litter cover: 20% twigs, 80% leaves, 10% logs
Age since fire: >10	Disturbance: Hi Med Lo	Soils: Grey/Sand/Clay
Vegetation Description: Marri- Wandoo Woodland		
Vegetation Condition: Good		
Observations: Historic land use and weeds		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Eucalyptus wandoo</i>	1500	100		50
	<i>Corymbia calophylla</i>	1200	100		30
Middle	<i>Hakea trifurcata</i>	100	100		3
	<i>Gastrolobium spathulatum</i>	100	100		7
	<i>Bossiaea eriocarpa</i>	60	100		3
Bottom	<i>Lepidosperma pubisquamea</i>	70	100		5
	<i>Banksia nivea</i>	50	100		2.5
	<i>Lepidosperma ? apricola</i>	70	100		3
	<i>Acacia pulchella</i>				
	* <i>Gladiolus caryophyllaceus</i>				
	<i>Morelotia octandra</i>				
	<i>Desmocladius flexuosus</i>				

	<i>*Briza maxima</i>				
	<i>*Freesia alba × leichtlinii</i>				
	<i>*Oxalis pes-caprae</i>				
	<i>Burchardia congesta</i>				
	<i>Dilwynia laxiflora</i>				
	<i>Lechenaultia biloba</i>				
	<i>Hovea trisperma</i>				
	<i>*Ehrharta calycina</i>				
	<i>Acacia pulchella</i>				
	<i>Sphaerolobium medium</i>				
	<i>Kennedia prostrata</i>				
	<i>*Hesperantha falcata</i>				
	<i>*Vulpia bromoides</i>				
	<i>*Romulea rosea</i>				
Sp 8	<i>Xanthosia candida</i>				
	<i>Gompholobium marginatum</i>				
Sp14	<i>Pultenaea ericifolia</i>				
	<i>Chamaescilla corymbosa</i>				
	<i>Austrostipa elegantissima</i>				
	<i>*Lysimachia arvensis</i>				
	<i>Mesomelaena tetragona</i>				
	<i>Hibbertia hypericoides</i>				
	<i>Stylidium affine</i>				
	<i>Hovea trisperma</i>				
Sp4	<i>Schoenus pedicellatus</i>				
	<i>Patersonia juncea</i>				
	<i>Desmocladius fasciculatus</i>				
	<i>Haemodorum sp</i>				
	<i>Hakea cristata</i>				
Opp	<i>Hakea undulata</i>				
	<i>Stylidium sp</i>				
	<i>Dampiera alata</i>				
	<i>Rytidosperma setaceum</i>				
Opp	<i>*Moraea flaccida</i>				
	<i>Goodenia ?pusilla</i>				

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FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Q5	Date: 19/10/2022	Site: Talbot Road Nature Reserve
GPS Datum: 50 J 409790.82 m E 6472312.90 m S	Topography: Upper slope	Litter cover: 40% twigs, 90% leaves, 10% logs
Age since fire: >10	Disturbance: Hi Med Lo	Soils: Clay/Sand
Vegetation Description: Marri-Wandoo Woodland		
Vegetation Condition: Good		
Observations:		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Eucalyptus wandoo</i>	2000	100		20
	<i>Corymbia calophylla</i>	2000	100		35
Middle	<i>Hakea lissocarpha</i>	60	100		2
	<i>Acacia pulchella</i>	60	100		1.5
	<i>Calothamnus sanguineus</i>	60	100		1
Bottom	<i>Banksia nivea</i>	40	100		2.5
	<i>Lepidosperma pubisquamea</i>	60	100		3
	<i>Xanthosia candida</i>				1.5
Sp14	<i>Pultenaea ericifolia</i>				
	<i>Sphaerolobium medium</i>				
	<i>Lechenaultia biloba</i>				
	<i>Thelymitra macrophylla</i>				

	<i>*Vicia benghalensis</i>				
	<i>*Briza maxima</i>				
	<i>Mesomelaena tetragona</i>				
	<i>*Freesia alba × leichtlinii</i>				
	<i>Laxmannia squarrosa</i>				
	<i>Lepidosperma leptostachyum</i>				
	<i>Rytidosperma setaceum</i>				
	<i>Goodenia ?pusilla</i>				
	<i>Morelotia octandra</i>				
	<i>Stylidium sp</i>				
	<i>Neurachne alopecuroidea</i>				
	<i>Thysanotus manglesianus</i>				
	<i>*Ehrharta calycina</i>				

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FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Q6	Date: 19/10/2022	Site: Talbot Road Nature Reserve
GPS Datum: 50 J 409578.23 m E 6473231.59 m S	Topography: Mid slope	Litter cover: 20% twigs, 50% leaves, 10% logs
Age since fire: <10	Disturbance: Hi Med Lo	Soils: Grey sand
Vegetation Description: Banksia Woodland		
Vegetation Condition: Very Good		
Observations:		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Banksia menziesii</i>	500	100		4
	<i>Banksia attenuata</i>	1000	100		20
Middle	<i>Allocasuarina humilis</i>	100	100		12
	<i>Eremaea pauciflora</i>	60	100		4
	<i>Isopogon autumnalis</i> (P3)	60	100		6
Bottom	<i>Mesomelaena pseudostygia</i>	60	100		7.5
	<i>Lyginia barbata</i>	60	100		5
	<i>Neurostylis</i> sp. Jarrah Forest	60	100		4
	<i>Lysinema pentapetalum</i>				
	<i>Cyathochaeta avenacea</i>				
	<i>Hibbertia huegelii</i>				
	* <i>Ursinia anthemoides</i>				

	<i>Jacksonia floribunda</i>				
	<i>Stirlingia latifolia</i>				
	* <i>Briza maxima</i>				
	* <i>Gladiolus caryophyllaceus</i>				
	<i>Hibbertia hypericoides</i>				
	<i>Haemodorum sp</i>				
	<i>Patersonia occidentalis</i>				
	<i>Cassytha racemosa</i>				
	<i>Banksia nivea</i>				
	<i>Melaleuca parviceps</i>				
	<i>Conostylis ?setosa</i>				
	<i>Burchardia congesta</i>				
Sp2	<i>Amphipogon turbinatus</i>				
	<i>Conostephium pendulum</i>				
	<i>Haemodorum laxum</i>				
	<i>Rytidosperma caespitosum</i>				
	<i>Stylidium tenue</i>				
	<i>Austrostipa compressa</i>				
	<i>Levenhookia pusilla</i>				
	<i>Trachymene pilosa</i>				
	<i>Olearia paucidentata</i>				
	<i>Daucus glochidiatus</i>				
	<i>Daviesia triflora</i>				
	<i>Dasypogon bromeliifolius</i>				
	<i>Hibbertia hypericoides</i>				
	<i>Thysanotus sparteus</i>				
	<i>Isopogon linearis</i>				
	<i>Bossiaea eriocarpa</i>				
	<i>Anigozanthos manglesii</i>				
	<i>Hypolaena exsulca</i>				
	<i>Cristonia biloba</i>				
Opp	<i>Allocasuarina fraseriana</i>				
Sp16	<i>Isopogon drummondii</i>				
	* <i>Gladiolus caryophyllaceus</i>				
	<i>Cyanothamnus ramosus</i>				
	* <i>Taraxacum khatoonae</i>				
Opp	<i>Philothea spicata</i>				

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FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Q7	Date: 19/10/2022	Site: Talbot Road Nature Reserve
GPS Datum: 50 J 410310.07 m E 6473935.24 m S	Topography: Upper slope	Litter cover: 10% twigs, 60% leaves, 10% logs
Age since fire: >10	Disturbance: Hi Med Lo	Soils: Grey Sand
Vegetation Description: Marri Woodland		
Vegetation Condition: Very Good		
Observations:		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Corymbia calophylla</i>	1200	100		70
Middle	<i>Xanthorrhoea preissii</i>	100	100		4
	<i>Kingia australis</i>	80	100		4
Bottom	<i>Morelotia octandra</i>	60	100		9
	<i>Schoenus pedicellatus</i>	60	100		4
	<i>Mesomelaena pseudostygia</i>	60	100		3
	<i>Desmocladius flexuosus</i>				
	* <i>Briza maxima</i>				
	<i>Patersonia juncea</i>				
	<i>Acacia pulchella</i>				
	<i>Conostylis ?setosa</i>				

	<i>*Ehrharta calycina</i>				
	<i>Burchardia congesta</i>				
	<i>Haemodorum</i> sp				
	<i>*Ursinia anthemoides</i>				
	<i>Dasyogon bromeliifolius</i>				
	<i>*Hesperantha falcata</i>				
	<i>*Sonchus oleraceus</i>				
	<i>*Taraxacum khatoonae</i>				
	<i>*Romulea rosea</i>				
	<i>Gompholobium tomentosum</i>				
	<i>Tricoryne elatior</i>				
	<i>Caesia micrantha</i>				
	<i>Cristonia biloba</i>				
	<i>Bossiaea eriocarpa</i>				
	<i>Mesomelaena tetragona</i>				
	<i>Xanthorrhoea gracilis</i>				
	<i>Hypolaena exsulca</i>				
	<i>*Gladiolus caryophyllaceus</i>				
	<i>Calectasia narragara</i>				
	<i>Hibbertia hypericoides</i>				
	<i>Drosera stolonifera</i>				
	<i>Thysanotus manglesianus</i>				
	<i>Lepidosperma leptostachyum</i>				
	Orchidaceae sp				
	<i>Burchardia congesta</i>				

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FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Q8	Date: 21/10/2022	Site: Talbot Road Nature Reserve
GPS Datum: 50 J 410167.80 m E 6473914.42 m S	Topography: Upper slope	Litter cover: 60% twigs, 80% leaves, 10% logs
Age since fire:	Disturbance: Hi Med Lo	Soils: Grey Sand
Vegetation Description: Jarrah Woodland		
Vegetation Condition: Good		
Observations: Transition to Marri/Jarrah Banksia		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Eucalyptus marginata</i>	1200	100		50
Middle	<i>Xanthorrhoea preissii</i>	100	100		2.5
	<i>Banksia sessilis</i>	600	100		6
	<i>Philothea spicata</i>	100	100		1.5
Bottom	<i>Mesomelaena pseudostygia</i>	60	100		8
	<i>Schoenus pedicellatus</i>	60	100		3
	<i>Conostylis aculeata</i>	60			6
	* <i>Briza maxima</i>				
	* <i>Gladiolus caryophyllaceus</i>				
	<i>Burchardia congesta</i>				
	<i>Haemodorum</i> sp				
	<i>Drosera stolonifera</i>				

	<i>Bossiaea eriocarpa</i>				
	<i>Marianthus bicolor</i>				
	<i>Lepidosperma pubisquamea</i>				
	* <i>Ursinia anthemoides</i>				
	<i>Amphipogon turbinatus</i>				
	* <i>Ehrharta calycina</i>				
	<i>Hibbertia hypericoides</i>				
	<i>Dasypogon bromeliifolius</i>				
	* <i>Romulea rosea</i>				
	* <i>Taraxacum khatoonae</i>				
	<i>Chamaescilla corymbosa</i>				
Sp 16	<i>Lachnagrostis filiformis</i>				
	<i>Desmocladius flexuosus</i>				
	* <i>Aira caryophyllea</i>				
	<i>Drosera macrantha</i>				
	<i>Petrophile linearis</i>				
	<i>Hemiandra pungens</i>				
	<i>Cassytha racemosa</i>				
	<i>Patersonia occidentalis</i>				
	<i>Thysanotus manglesianus</i>				
	<i>Gompholobium tomentosum</i>				
Opp	<i>Corymbia calophylla</i>				
	<i>Hibbertia hypericoides</i>				
	<i>Caladenia flava</i>				

Del Botanics Environmental Consulting

FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Q9	Date: 21/10/2022	Site: Talbot Road Nature Reserve
GPS Datum: 50 J 410205.77 m E 6473757.66 m S	Topography: Upper slope	Litter cover: 60% twigs, 80% leaves, 10% logs
Age since fire: <10	Disturbance: Hi Med Lo	Soils: Grey Sand
Vegetation Description: Jarrah Woodland		
Vegetation Condition: Very Good		
Observations: Transition to Marri/Jarrah Banksia		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Eucalyptus marginata</i>	1000	100		18
Middle	<i>Adenanthos cygnorum</i>	500	100		15
	<i>Xanthorrhoea preissii</i>	100	100		1.5
	<i>Jacksonia sternbergiana</i>	120		100	4
Bottom	<i>Mesomelaena pseudostygia</i>	60	100		12
	<i>Dasyogon bromeliifolius</i>	60	100		8
	<i>Schoenus pedicellatus</i>	60	100		5
	<i>*Gladiolus caryophyllaceus</i>				
	<i>Haemodorum</i> sp				
	<i>Macrozamia riedlei</i>				
	<i>Mesomelaena tetragona</i>				
opp	<i>Banksia attenuata</i>				
	<i>Jacksonia floribunda</i>				

	<i>Lechenaultia biloba</i>				
	<i>Bossiaea eriocarpa</i>				
Sp2	<i>Amphipogon turbinatus</i>				
	<i>Patersonia juncea</i>				
	<i>Burchardia congesta</i>				
	<i>Philotheca spicata</i>				
	<i>Neurachne alopecuroidea</i>				
	<i>Hibbertia hypericoides</i>				
	<i>Hyalosperma cotula</i>				
Sp1	<i>Podolepis gracilis</i>				
	<i>Lepidosperma pubisquamea</i>				
	<i>Scaevola repens</i>				
	<i>Scaevola calliptera</i>				
Sp17	<i>Acacia huegelii</i>				
	<i>Pigea calycina</i>				
	<i>Desmocladius flexuosus</i>				
	<i>Conostylis ?setosa</i>				
	<i>Tricoryne elatior</i>				
	<i>Hibbertia huegelii</i>				
	<i>*Ursinia anthemoides</i>				
	<i>Stylidium tenue</i>				
Sp4	<i>Lyginia imberbis</i>				
	<i>Gompholobium tomentosum</i>				
	<i>Podotheca gnaphalioides</i>				
	<i>Daucus glochidiatus</i>				
Sp 16	<i>Lachnagrostis filiformis</i>				
	<i>Hovea trisperma</i>				
	<i>Morelotia octandra</i>				
	<i>Stylidium sp</i>				
	<i>Thysanotus manglesianus</i>				
	<i>Drosera stolonifera</i>				
	<i>Conospermum stoechadis</i>				
	<i>Isopogon linearis</i>				
	<i>*Sonchus oleraceus</i>				
Sp5	Asteraceae sp				
	<i>Banksia nivea</i>				

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FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Q10	Date: 21/10/2022	Site: Talbot Road Nature Reserve
GPS Datum: 50 J 410112.84 m E 6473826.57 m S	Topography: Upper slope	Litter cover: 20% twigs, 50% leaves 10% logs
Age since fire: <10	Disturbance: Hi Med Lo	Soils: Grey Sand
Vegetation Description: Jarrah Woodland		
Vegetation Condition: Good		
Observations:		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Eucalyptus marginata</i>	2000	100		40
Middle	<i>Adenanthos cygnorum</i>	500	100		1.5
	<i>Banksia sessilis</i>	500	100		20
Bottom	<i>Dasypogon bromeliifolius</i>	60	100		8
	<i>Schoenus pedicellatus</i>	60	100		14
	<i>Lepidobolus preissianus</i>	60	100		4
	<i>Anigozanthos manglesii</i>				
	<i>Haemodorum</i> sp				
	<i>Hemiandra pungens</i>				
	<i>Conostylis ?setosa</i>				
	<i>Bossiaea ornata</i>				
	<i>Bossiaea eriocarpa</i>				

	<i>Austrostipa compressa</i>				
	<i>Conostylis aculeata</i>				
	* <i>Gladiolus caryophyllaceus</i>				
	<i>Hyalosperma cotula</i>				
	* <i>Ursinia anthemoides</i>				
	<i>Philotheca spicata</i>				
	<i>Patersonia occidentalis</i>				
	<i>Daucus glochidiatus</i>				
	<i>Stylidium tenue</i>				
	<i>Stylidium sp</i>				
	<i>Burchardia congesta</i>				
	<i>Haemodorum ?spicatum</i>				
	<i>Mesomelaena pseudostygia</i>				
	<i>Hypolaena exsulca</i>				
	<i>Gompholobium tomentosum</i>				
	<i>Lomandra ?caespitosa</i>				
	<i>Drosera stolonifera</i>				
	<i>Drosera macrantha</i>				
Sp 19	<i>Acacia barbinervis</i>				
	<i>Caladenia flava</i>				
	<i>Pyrorchis nigricans</i>				
	<i>Xanthosia huegelii</i>				
Sp 17	<i>Acacia huegelii</i>				
Sp 16	<i>Lachnagrostis filiformis</i>				
Sp4	<i>Amphipogon turbinatus</i>				
	<i>Verticordia sp</i>				
	<i>Lyginia barbata</i>				
	<i>Rytidosperma caespitosum</i>				
	<i>Leucopogon sp</i>				
	<i>Neurachne alopecuroidea</i>				

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FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Q11	Date: 21/10/2022	Site: Talbot Road Nature Reserve
GPS Datum: 50 J 409460.34 m E 6473479.84 m S	Topography: Mid slope	Litter cover: 20% twigs, 50% leaves, 10% logs
Age since fire:	Disturbance: Hi Med Lo	Soils: Grey Sand
Vegetation Description: Banksia Woodland		
Vegetation Condition: Very Good		
Observations:		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Banksia menziesii</i>	1000	100		6
	<i>Banksia attenuata</i>	1000	100		11
Middle	<i>Allocasuarina humilis</i>	100	100		8
	<i>Eremaea pauciflora</i>	60	100		10
	<i>Leucopogon? capitellatus</i>	50	100		3.5
Bottom	<i>Schoenus pedicellatus</i>	60	100		1.5
	<i>Mesomelaena pseudostygia</i>	60	100		3
	<i>Lyginia barbata</i>	70	100		1
	<i>*Gladiolus caryophyllaceus</i>				
	<i>Lysinema pentapetalum</i>				
P3	<i>Jacksonia floribunda</i>				
	<i>Isopogon autumnalis</i>				
	<i>Conostephium pendulum</i>				

	<i>Petrophile linearis</i>				
	<i>Patersonia juncea</i>				
Sp5	Asteraceae sp				
	* <i>Ursinia anthemoides</i>				
	<i>Bossiaea eriocarpa</i>				
	<i>Hypolaena exsulca</i>				
	<i>Thysanotus sparteus</i>				
	<i>Hemiandra pungens</i>				
	<i>Cassytha racemosa</i>				
	<i>Melaleuca parviceps</i>				
	<i>Daviesia triflora</i>				
	<i>Anigozanthos manglesii</i>				
	<i>Cyathochaeta avenacea</i>				
	<i>Austrostipa compressa</i>				
	<i>Scaevola calliptera</i>				
	<i>Conostylis ?setosa</i>				
	<i>Stirlingia latifolia</i>				
	<i>Tripterooccus brunonis</i>				
Sp2	<i>Amphipogon turbinatus</i>				
	<i>Daviesia ?hakeoides</i>				
	<i>Cristonia biloba</i>				
	<i>Cyanothamnus ramosus</i>				
	<i>Levenhookia pusilla</i>				
	<i>Desmocladius flexuosus</i>				
	<i>Daucus glochidiatus</i>				
	<i>Dasypogon bromeliifolius</i>				
	<i>Isolepis sp</i>				
	<i>Stylidium ciliatum</i>				
	<i>Stylidium tenue</i>				
	<i>Rytidosperma caespitosum</i>				
Opp	<i>Eucalyptus todiana</i>				

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FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Q12	Date: 21/10/2022	Site: Talbot Road Nature Reserve
GPS Datum: 50 J 409589.98 m E 6473547.11 m S	Topography: Mid slope	Litter cover: 40% twigs, 60% leaves 20% logs
Age since fire: <10	Disturbance: Hi Med Lo	Soils: Grey Sand
Vegetation Description: Banksia Woodland		
Vegetation Condition: Very Good		
Observations:		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Banksia menziesii</i>	600	100		15
	<i>Banksia attenuata</i>	600	100		20
Middle	<i>Eremaea pauciflora</i>	60	100		50
	<i>Isopogon autumnalis</i>	60	100		3
	<i>Cyanothamnus ramosus</i>	60	100		4
Bottom	<i>Schoenus pedicellatus</i>	60	100	2	
	<i>Mesomelaena pseudostygia</i>	60	100		2.5
	<i>Desmocladius flexuosus</i>	40	100		2
	<i>Jacksonia floribunda</i>				
	<i>Patersonia juncea</i>				
	<i>Petrophile linearis</i>				
	<i>Burchardia congesta</i>				

	<i>*Ursinia anthemoides</i>				
	<i>Conostylis ?setosa</i>				
	<i>Stirlingia latifolia</i>				
	<i>Amphipogon turbinatus</i>				
	<i>Stylidium tenue</i>				
	<i>Conostylis aculeata</i>				
	<i>Calytrix</i> sp				
	<i>Haemodorum</i> sp				
Sp1	<i>Podolepis gracilis</i>				
	<i>Podolepis lessonii</i>				
	<i>Pigea calycina</i>				
	<i>Conostylis setigera subsp setigera</i>				
	<i>Cyathochaeta avenacea</i>				
	<i>Banksia nivea</i>				
	<i>Daviesia ?hakeoides</i>				
	<i>Johnsonia ?lupulina</i>				
	<i>*Gladiolus caryophyllaceus</i>				
	<i>Hibbertia hypericoides</i>				
	<i>Loxocarya cinerea</i>				
	<i>Trachymene pilosa</i>				
	<i>Gompholobium tomentosum</i>				
	<i>Cassytha racemosa</i>				
	<i>Daviesia triflora</i>				
	<i>Melaleuca parviceps</i>				
	<i>Dasypogon bromeliifolius</i>				
	<i>Thysanotus manglesianus</i>				
	<i>Calectasia narragara</i>				
	<i>Austrostipa compressa</i>				
	<i>Daucus glochidiatus</i>				
	<i>Levenhookia pusilla</i>				
	<i>Allocasuarina humilis</i>				
	<i>*Taraxacum khatoonae</i>				
	<i>Conostylis aculeata</i>				
	<i>Drosera macrantha</i>				
	<i>Anigozanthos</i> sp				
	<i>Isopogon linearis</i>				
Sp22	<i>Scaevola repens</i>				
Sp21	<i>Pericalymma ellipticum</i>				

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FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Q13	Date: 21/10/2022	Site: Talbot Road Nature Reserve
GPS Datum: 50 J 409550.17 m E 6473674.00 m S	Topography: Mid slope	Litter cover: 10% twigs, 20% leaves, 10% logs
Age since fire: <10	Disturbance: Hi Med Lo	Soils: Grey Sand
Vegetation Description: <i>Eucalyptus todtiana</i> Heath		
Vegetation Condition: Very Good		
Observations:		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Eucalyptus todtiana</i>	300	100		10
Middle	<i>Allocasuarina humilis</i>	100	100		40
	<i>Lambertia multiflora</i>	100	100		50
	<i>Xanthorrhoea preissii</i>	120	100		3.5
Bottom	<i>Mesomelaena pseudostygia</i>	100	100		12
	<i>Caustis dioica</i>	60	100		1
	<i>Morelotia octandra</i>	60	100		0.5
Sp1	<i>Podolepis gracilis</i>				
	* <i>Ursinia anthemoides</i>				
	<i>Desmocladius flexuosus</i>				
	<i>Burchardia congesta</i>				

	<i>Hibbertia acerosa</i>				
	<i>Lechenaultia biloba</i>				
	* <i>Gladiolus caryophyllaceus</i>				
	<i>Philothea spicata</i>				
	<i>Banksia nivea</i>				
	<i>Isolepis</i> sp				
	<i>Austrostipa elegantissima</i>				
	<i>Austrostipa hemipogon</i>				
	<i>Daucus glochidiatus</i>				
	<i>Lysinema pentapetalum</i>				
	<i>Austrostipa compressa</i>				
	<i>Conostylis setigera</i> subsp <i>setigera</i>				
	<i>Calectasia narragara</i>				
	<i>Drosera stolonifera</i>				
	<i>Melaleuca parviceps</i>				
	<i>Chamaescilla corymbosa</i>				
	<i>Daviesia ?hakeoides</i>				
	<i>Rytidosperma</i> sp				
	<i>Scaevola ? canescens</i>				
	<i>Hibbertia hypericoides</i>				
	<i>Hibbertia huegelii</i>				
	<i>Cristonia biloba</i>				
	<i>Desmocladius flexuosus</i>				
	<i>Petrophile linearis</i>				
	<i>Patersonia pygmaea</i>				
	<i>Leucopogon</i> sp				
	<i>Haemodorum</i> sp				
	<i>Bossiaea eriocarpa</i>				
	<i>Scaevola repens</i>				
	<i>Trachymene pilosa</i>				
	<i>Petrophile ?striata</i>				
	<i>Andersonia lehmanniana</i>				
	<i>Podolepis lessonii</i>				
	<i>Neurachne alopecuroidea</i>				
	<i>Rytidosperma caespitosum</i>				
	* <i>Taraxacum khatoonae</i>				
	* <i>Hypochaeris glabra</i>				
	<i>Thysanotus manglesianus</i>				

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FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Q14	Date: 21/10/2022	Site: Talbot Road Nature Reserve
GPS Datum: 50 J 409460.43 m E 6473649.79 m S	Topography: Upper slope	Litter cover: 30% twigs, 10% leaves, 10% logs
Age since fire: <10	Disturbance: Hi Med Lo	Soils: Grey Sand
Vegetation Description: <i>Eucalyptus tottiana</i> Heath		
Vegetation Condition: Very Good		
Observations:		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Eucalyptus tottiana</i>	400		100	5
Middle	<i>Allocasuarina humilis</i>	60		100	60
	<i>Lambertia multiflora</i>	100			30
	<i>Eremaea pauciflora</i>	60			5
Bottom	<i>Mesomelaena pseudostygia</i>	60		100	5
	<i>Schoenus pedicellatus</i>	70		100	3
	<i>Morelotia octandra</i>	60		100	5
	<i>*Gladiolus caryophyllaceus</i>				
	<i>*Ursinia anthemoides</i>				
	<i>Hibbertia hypericoides</i>				
	<i>Scaevola repens</i>				

Sp1	<i>Podolepis gracilis</i>				
	<i>Acacia barbinervis</i>				
	<i>Daviesia triflora</i>				
	* <i>Gladiolus caryophyllaceus</i>				
	<i>Cassytha racemosa</i>				
	<i>Patersonia occidentalis</i>				
	<i>Lechenaultia biloba</i>				
	<i>Lepidosperma pubisquamea</i>				
	<i>Cristonia biloba</i>				
	<i>Bossiaea eriocarpa</i>				
	<i>Desmocladius flexuosus</i>				
	<i>Haemodorum laxum</i>				
	<i>Burchardia congesta</i>				
	<i>Lomandra</i> sp				
	<i>Amphipogon</i> sp				
	<i>Cyanothamnus ramosus</i>				
	<i>Hibbertia hypericoides</i>				
	<i>Chamaescilla corymbosa</i>				
	* <i>Hypochaeris glabra</i>				
	<i>Pyrorchis nigricans</i>				
	<i>Jacksonia floribunda</i>				
	<i>Hibbertia huegelii</i>				
	<i>Stylidium ciliatum</i>				
	<i>Pterochaeta paniculata</i>				
	<i>Lomandra</i> sp				
	<i>Banksia nivea</i>				
	<i>Stylidium</i> sp				
	<i>Calothamnus sanguineus</i>				
	<i>Haemodorum</i> sp				
	<i>Austrostipa compressa</i>				
	<i>Cassytha</i> sp				
	<i>Isolepis</i> sp				
	<i>Lepidosperma ? apricola</i>				
	<i>Hemiandra pungens</i>				
	<i>Calytrix</i> sp				
	<i>Pigea calycina</i>				
	<i>Thysanotus sparteus</i>				
	<i>Xanthorrhoea preissii</i>				
	<i>Neurachne alopecuroidea</i>				

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FIELD SHEET – FLORA AND VEGETATION SURVEY

Job Code: Q15	Date: 21/10/2022	Site: Talbot Road Nature Reserve
GPS Datum: 50 J 409443.43 m E 6473423.20 m S	Topography: Upper slope	Litter cover: 20% twigs, 10% leaves, 10% logs
Age since fire: >10	Disturbance: Hi Med Lo	Soils: Grey Sand
Vegetation Description: <i>Eucalyptus todtiana</i> Heath		
Vegetation Condition: Very Good		
Observations:		



Coll No.	Taxon	Ht (cm)	% Alive	% Dead	% Cover
Upper	<i>Nuytsia floribunda</i>	600		100	2
Middle	<i>Allocasuarina humilis</i>	60		100	15
	<i>Lambertia multiflora</i>	100		100	12
	<i>Xanthorrhoea preissii</i>	100		100	4
Bottom	<i>Banksia nivea</i>	40		100	7
	<i>Mesomelaena pseudostygia</i>	60		100	3
	<i>Lyginia barbata</i>	60		100	1.5
	* <i>Ursinia anthemoides</i>				
	<i>Anigozanthos manglesii</i>				
	<i>Scaevola repens</i>				
	<i>Conostylis ?setosa</i>				
	<i>Scaevola calliptera</i>				
	<i>Isolepis</i> sp				

	<i>Hemiandra pungens</i>				
	<i>Jacksonia floribunda</i>				
	<i>Hibbertia hypericoides</i>				
	<i>Kunzea recurva</i>				
	<i>Caustis dioica</i>				
Sp1	<i>Podolepis gracilis</i>				
	<i>Desmocladius flexuosus</i>				
	<i>Stylidium ciliatum</i>				
	* <i>Gladiolus caryophyllaceus</i>				
	<i>Burchardia congesta</i>				
	<i>Austrostipa compressa</i>				
	<i>Neurachne alopecuroidea</i>				
Sp2	<i>Amphipogon turbinatus</i>				
	<i>Bossiaea eriocarpa</i>				
	<i>Rytidosperma caespitosum</i>				
	<i>Daviesia triflora</i>				
	* <i>Romulea rosea</i>				
	<i>Lyginia barbata</i>				
Sp4	<i>Schoenus pedicellatus</i>				
	<i>Haemodorum laxum</i>				
	<i>Lechenaultia biloba</i>				
	<i>Isopogon autumnalis</i>				
	<i>Cyathochaeta avenacea</i>				
	<i>Desmocladius flexuosus</i>				
	<i>Drosera stolonifera</i>				
	<i>Petrophile ?striata</i>				
	<i>Conostylis aculeata</i>				
	<i>Lysinema pentapetalum</i>				
	<i>Conostylis setigera subsp setigera</i>				
	<i>Xanthorrhoea acanthostachya</i>				
	<i>Johnsonia ?lupulina</i>				
	<i>Austrostipa elegantissima</i>				
	* <i>Briza maxima</i>				
	<i>Patersonia juncea</i>				
	<i>Comesperma virgatum</i>				
	<i>Thysanotus manglesianus</i>				
	* <i>Vulpia bromoides</i>				
	<i>Pigea calycina</i>				
	<i>Conostylis ?setosa</i>				
	<i>Macarthuria australis</i>				
	<i>Lepidosperma leptostachyum</i>				
	* <i>Aira caryophyllea</i>				
	<i>Cyathochaeta avenacea</i>				

APPENDIX C
BAM ACT DEFINITIONS

BAM Act Definitions

Legal status

Each listed organism is declared under the Biosecurity Management act with certain legal requirements:

Declared Pest, Prohibited - s12

Prohibited organisms are declared pests by virtue of section 22(1), and may only be imported and kept subject to permits. Permit conditions applicable to some species may only be appropriate or available to research organisations or similarly secure institutions.

Permitted - s11

Permitted organisms must satisfy any applicable import requirements when imported. They may be subject to an import permit if they are potential carriers of high-risk organisms.

Declared Pest - s22(2)

Declared pests must satisfy any applicable import requirements when imported, and may be subject to an import permit if they are potential carriers of high-risk organisms. They may also be subject to control and keeping requirements once within Western Australia.

Permitted, Requires Permit - r73

Regulation 73 permitted organisms may only be imported subject to an import permit. These organisms may be subject to restriction under legislation other than the *Biosecurity and Agriculture Management Act 2007*. Permit conditions applicable to some species may only be appropriate or available to research organisations or similarly secure institutions.

Unlisted - s14

If you are considering importing an unlisted organism/s you will need to submit the name/s for assessment, as unlisted organisms are automatically prohibited entry